MANIPAL INSTITUTE OF VIROLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

icmr | CCoE
INDIAN COUNCIL OF MEDICAL RESEARCH | COLLABORATING CENTRE OF EXCELLENCE

VIROLOGY SKILL-BASED TRAINING PROGRAMS 2025

Innovate, Learn, Lead in Virology

TRAINING PROGRAMS

MEDICAL ENTOMOLOGY
18 to 20 March 2025

BASIC VIROLOGICAL TECHNIQUES
9 to 13 June 2025

ADVANCED MOLECULAR DIAGNOSTIC TECHNIQUES
24 to 28 November 2025

Registration Link
https://conference.manipal.edu/registration/

Scan to Register

REGISTER NOW

PROSPECTS

- Cutting-Edge Knowledge
- Hands-On Training
- Expert Guidance
- Interdisciplinary Exposure
- Career Advancement
- Certification
- Networking Opportunities
- Research Opportunities

+91 8202922663 | Manipal Institute of Virology | virology@manipal.edu

GVN GLOBAL VIRUS NETWORK | #GOARN Global Outbreak Alert and Response Network | World Health Organization | 3 GOOD HEALTH AND WELL-BEING | 4 QUALITY EDUCATION | 17 PARTNERSHIPS FOR THE GOALS

Manipal Institute of Virology

Manipal Institute of Virology (MIV) is a NABL accredited laboratory as per ISO 15189:2012 in the field of medical testing for disciplines of viral serology and molecular testing. MIV has a Biosafety level-2 (BSL-2) laboratory equipped with the latest and technologically advanced instruments.

MIV has a state-of-the-art viral infectious disease diagnostic facility, a blend of classical and advanced methods, which provides the capability to detect 40+ viruses with an average turnaround time (TAT) of 24 hours. The varied areas of research mainly focus on improving clinical diagnosis of viral diseases, infectious disease surveillance and epidemiological studies including molecular epidemiology of emerging and re-emerging viral diseases.

The current thrust research areas at MIV focus on developing strategies for newer and alternative treatment (prophylactic and therapeutic) modalities, platforms for testing antivirals, immunological profiling of viral diseases, and developing diagnostic kits and vaccines. MIV is a part of two major Translational Research Consortia projects related to viruses causing neglected tropical diseases such as Chikungunya and Dengue, in collaboration with national and international partners. MIV is also one of the key performers in the 'ENDFLU - Horizon 2020' project, which has seven Indian and seven European partners.

MIV offers a Postgraduate course in Clinical Virology (MSc. Clinical Virology) and a PhD program in virology, which is a focused, unique competency-based program intended to create a new cadre of virologists. The centre also runs short term courses and training programmes, thereby contributing to creating a stronger public health cadre.

Vision

- Global excellence in Virology

Mission

- Diagnostic virology support to public health services
- Research in basic virology, epidemiology, diagnosis, treatment, and prevention of viral diseases including emerging viruses to inform policy
- Create trained manpower in the field of Virology
- Develop rapid and affordable quality diagnostic assays for viral diseases
- Promote the concept of one health in Virology

Training objectives

- This training will offer illustrious insights in the world of viral diseases and possible developments to expand and conquer new horizons of viral diagnosis and research
- Participants from all the strata of scientific fraternity, including researchers, doctors, interns, professors, post-graduate students, etc will receive onsite training in different avenue of viral diagnostics and research
- Provide the participants a real-time platform to hone their research expertise and skills
- Instil comprehensive knowledge of viral disease diagnosis and research from a laboratory perspective
- Impart experience of evidence-based diagnostics and research in virology

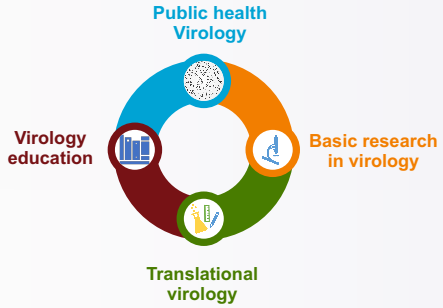
Training Outcomes

- The training modules will empower participants with knowledge and skills required to work in viral diagnostic and research laboratories
- The modules will impart latest knowledge on trending infectious viral diseases and diagnostic aspects
- Overall capacity building and career development

Why one should attend these courses?

- To get acquainted in advanced techniques and handling of sophisticated instruments used in viral disease diagnostic and research
- To get practical-oriented training in laboratory biosafety, biosecurity and biomedical waste management
- To interact with experts from the field and able to translate the knowledge gained into measurable outcomes
- To add a new dimension to individual's professional career path

USPs



Eligible participants:

Medical students (under-graduate), interns, post-graduate (Life sciences) and MD students, Ph.D. students, Post-Docs, junior and mid-level faculty of any medical college or basic science college, and research staff.

Registration:

The registration and payment for the training can be done using the link provided.

Maximum number of participants in each course: 15

Selection Criteria:

Selection of the participants shall be on first come first served basis. Applications will not be accepted once the seats are filled.

Basis of assessment:

At the end of the training, participants will be evaluated with the a short multiple choice questions . Certificate will be provided to participants who score at least 80% in the examinations

Course certification:

Participants will be awarded a certificate of participation and eligible credits from the Manipal Institute of Virology (MIV), a constituent institute of the Manipal Academy of Higher Education, an Institute of Eminence (IoE).

2 credits will be awarded for 5 days of training after the assessment at the end of the training.
1 credit will be awarded for 3 days of training program.

Accommodation:

An accommodation facility is available for out-station participants and will be arranged on request. It is available at the following choices

1.Single attached (Non-AC)- Rs. 280/-
2.Single attached AC- Rs. 672/-
3.Double (Non-AC-Sharing basis)- Rs. 224/-
4.International hostel- Rs. 1250/-

Note:

1. The rates are on a per-day basis
2. Rates are subject to change
3. Accommodation charges are not included in the registration fee and must be borne by the participant additionally

Contact details:

Manipal Institute of Virology (MIV)
Manipal Academy of Higher Education (MAHE), Manipal
Email: virology@manipal.edu; Contact: 08202922663

Medical Entomology

Vector-borne diseases (VBDs) continue to pose significant public health challenges globally, necessitating a strong foundation in medical entomology for effective surveillance, control, and research. This short-term course is designed to provide a comprehensive introduction to the theoretical, field, and laboratory aspects of medical entomology.

Learning Objectives:

- To understand the transmission cycle of important VBDs of India and its host adaptations.
- To familiarize the morphological identification classification techniques of arthropods
- To understand the molecular and immunological tools for VBD detection in vectors

Learning Outcome:

Participants will gain essential knowledge on arthropod vectors, their role in disease transmission, and identification techniques (taxonomy). The course also covers key infectious disease laboratory procedures for arthropod samples, equipping learners with practical skills for entomological investigations.

Tailored for doctoral students, researchers, and public health professionals, this program aims to enhance participants' capabilities in conducting entomological activities relevant to disease control and research. By completing this course, learners will be well-prepared to pursue advanced training in medical entomology and related fields.

Cloth dragging for tick collection

Observation of ticks and mosquitoes under the stereo microscope

Stereo microscopic image of Aedes albopictus

Topics:

- Basic definitions and terminologies (Entomology & Epidemiology) – Commonly known Vector insects and VBDs - Modes of VBD transmission-Biology and ecology of medical important Arthropods
- Vector surveillance Concepts - Sampling Methods - Entomological measures
- Insect Collection tools for various medically important arthropods (Mosquitoes, ticks, mites, sand flies, flea and other arthropods)
- Taxonomic classification of phylum: Arthropoda - class: Insecta - Order: Diptera and Acarina
- Genus level morphological identification of medically important Insect species in India; *Anopheles sp., Culex sp., Aedes sp.* and *Heamaphysalis sp.*
- Infection screening on vector insects: various screening methods
- Molecular techniques: Insect sample preparation, nucleic acid extraction and PCR

Basic Virological Techniques

The participant attending the training will have hands-on exposure to various virological techniques. The training includes biosafety practices in virology, different methods of virus isolation, virus quantification and virus neutralisation assay; hemagglutination assay, immunofluorescence assay and molecular methods for the diagnosis of virus infections.The training also includes novel technologies and the importance of point of care testing in the field of virology.

Learning Objectives:

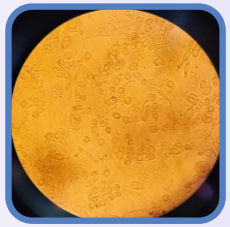
- To provide fundamental knowledge of various classicaland modern virological techniques used for propagation and quantification of viruses in laboratory setting
- To provide the participant with hands on training in classical and contemporary virological techniques

Learning Outcome:

Upon completion of the course the participants should be able to:

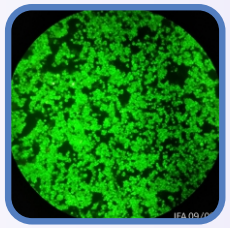
- Explain the various methods of isolation and quantification of viruses and their applications
- Describe the various methods to detect virus growth
  Understand the requirements for establishing a virology laboratory

Propagation of virus in cell culture

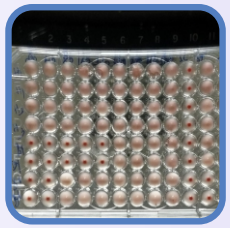


Microscopic image of virus-infected cells

Microscopic observation of cell line under an inverted microscope



Green fluorescence of virus-infected cells after immuno-staining



A 96 well plate showing hemagglutination

Laboratory technologist performing subculture of cell line

Topics:

- Introduction to virological techniques
- Biosafety in virology laboratory
- Virus isolation techniques
- Virus quantification- TCID50, Plaque assay
- Virus neutralization assays-PRNT, micro neutralization
- Hemagglutination assay and hemagglutination inhibition assay
- Immunofluorescence assay

Advanced Molecular Diagnostic Techniques

The advent of polymerase chain reaction in the 1980s changed the face of diagnostics and remarkable innovation has been achieved since then. The progress in next-generation sequencing has revolutionized the field of molecular diagnostics and research.

The training has 3 modules:

The first module includes theory and practical sessions on different nucleic acid extraction methods, conventional PCR including agarose gel electrophoresis and nucleic acid quantitation techniques. The second module consists of real-time PCR including both qualitative and quantitative PCR. The qualitative part includes uniplex and multiplex PCR, interpretation of results, and troubleshooting. The module also includes quality control in the PCR laboratory & digital PCR. The final module includes modified sanger sequencing and the theory next-generation sequencing methods. The practical aspect includes a demo of sequencing equipment and an analysis of DNA sequences.

Learning Objectives:

- To provide practical knowledge to the participants on various molecular techniques used in the field of diagnostics and understand the theoretical aspects of Sanger sequencing as well as next-generation sequencing.

Learning Outcome:

Upon completion of the course the participants should be able to:

- Perform molecular techniques including nucleic acid extraction, conventional and real-time polymerase chain reaction
- Understand the concept of digital PCR
- Understand the concept of nucleic acid sequencing
- Perform sanger sequencing

Modified Sanger sequencing machine- ABI 3500 XL genetic analyser

Automated nucleic acid extraction unit

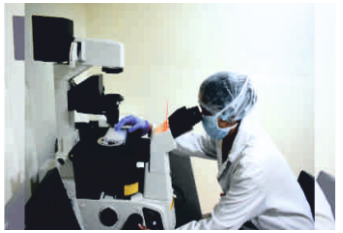
Multiplex real-time PCR platform

Digital PCR platform

Training Schedule & Course Fees

S. No	Course Code	Course Name	Date	Course fee for external candidates	Course fee for internal candidates	Last date for registration	Link for registration
1.	MIVMA0028	Medical Entomology	18th to 20th March 2025	3,000/-	2,500/-	15th March 2025	https://tinyurl.com/bdftdy7z
2.	MIVMA0029	Basic Virological Techniques	9th to 13th June 2025	6,000/-	5,000/-	7th July 2025	https://tinyurl.com/2h2epmf4
3.	MIVMA0030	Advanced Molecular Diagnostic Techniques	24th to 28th November 2025	8,000/-	6,500/-	19th Nov 2025	https://tinyurl.com/hrj8hvmb

Note: The fees include course materials and refreshment and does not include travel and accommodation expenses



Testimonials

"I appreciated how everyone was given an equal opportunity to participate in the hands-on activities. I look forward to more workshops that incorporate additional techniques"

-Trainee from Batch 2024, Training on Molecular Diagnostic Techniques

"The interactive sessions and hands-on activities were engaging and greatly enhanced my understanding of the concept. The training materials and resources provided were comprehensive and highly useful"

-Trainee from Batch 2024, Training on Molecular Diagnostic Techniques

"The training was captivating and interactive, as the trainers were friendly during both theory and practical sessions. They provided individual attention, and everything was explained in detail, making it easy to understand"

-Trainee from Batch 2024, Training on Cell Culture and Virus Isolation Techniques

"Each participant received adequate hands-on practice without feeling rushed. The trainers were also very helpful in answering all our doubts"

-Trainee from Batch 2024, Training on Cell Culture and Virus Isolation Techniques

Training coordinator

Virology laboratory design; Development and validation of serological and PCR assays for viruses; Antiviral screening; Clinical & Diagnostic virology; Laboratory biorisk management system

Dr Sudheesh N

Course coordinators

Standardization of conventional, real time and allelelic discrimination PCR assays; Sanger and Next generation sequencing (NGS) methods; generation of recombinant DNA and protein expression

Dr Anitha J

Infectious disease diagnosis, diagnostic assay development & validation, cellular immune response to viruses, immunotherapeutic

Dr Santhosha Devadiga

Public health entomologist, vector-borne disease surveillance and prediction, tick and tick-borne diseases

Mr Naren Babu