



MANIPAL INSTITUTE OF VIROLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)



Virology Skill-based Training Programs



Cell culture and virus isolation techniques

Molecular diagnostic techniques



<https://www.manipal.edu/miv.html>



Manipal Institute of Virology, Manipal

Skill-based Training Programs

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.

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: The rates are subjected to change

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.	MIVMA0026	Cell-culture and Virus Isolation Techniques	18 th to 22 nd March 2024	8,000/-	7,000/-	15 th March 2024	http://tinyurl.com/5yh2t9b6
2.	MIVMA0027	Molecular Diagnostic Techniques	25 th to 29 th November 2024	8,000/-	7,000/-	22 nd November 2024	http://tinyurl.com/3uwyessj

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

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.

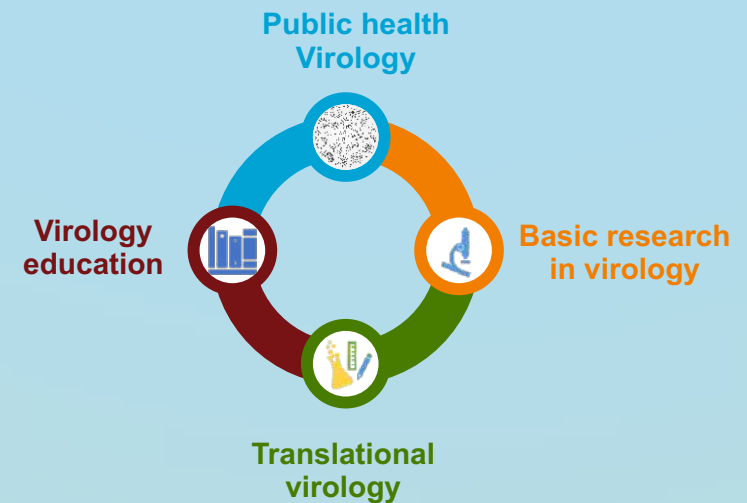
Vision

- Global excellence in Virology

Mission

- Diagnostic virology support to public health services
- Research in basic virology, epidemiology, diagnosis, treatment, and prevention of viral diseases
- 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

USPs



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

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
- 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

Cell culture and virus isolation techniques

Cell culture remains a fundamental part of virology, as viruses are obligate intracellular parasite that requires a living cell to replicate and produce progeny virions. Cell culture is a major consistent and reproducible tool in cellular and molecular biology, helps to study cell metabolism, mutagenesis, diseases, cell homeostasis etc and it acts as the best model system for diseases and drug screening. A cell culture system is the most common method used to isolate viruses as it is easy to maintain, involves lesser ethical concerns and has an adaptability to a wide range of viruses. Virus isolation is a traditional method for diagnosis and generates a source of virus for research purposes.

Learning Objectives:

- This training enables the participant's to understand the basic requirements for a cell culture lab and the necessary aseptic techniques required to maintain a cell culture laboratory
- To provide knowledge about techniques involved in cell culturing and maintenance of cell line
- The participants will be able to learn techniques meant for the isolation of viruses from cell culture and fundamental knowledge of various types of cell lines used for the propagation of viruses

Learning Outcome:

- Training will assist the participants to design and set-up a cell culture laboratory
- Will gain knowledge and practical skill to perform cell culture technique
- Attain theoretical, practical acquaintances towards the method involved in virus inoculation and isolation of virus



Microscopic Observation of cell line



Cell line visualized under inverted microscope



Counting Cells in Countess 3 automated cell counter

Topics:

- Fundamentals techniques in cell culture-laboratory design and equipment, safety aspects
- Sources of cell line, cell type and culture characteristics
- Cell culture media preparation and subculture
- Cryopreservation and reviving of cell line
- Authentication of cell lines, 3D culture and alternative cell culture systems
- Fundamentals of virus isolation, traditional and modern technologies
- Virus isolation in cell culture, confirmation of virus growth and harvesting of virus

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. The final module includes the theory of DNA sequencing and 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 nucleic acid sequencing
- Recognize and troubleshoot problems in routine molecular diagnostic techniques



Modified Sanger sequencing machine-ABI 3500 XL genetic analyser



Automated nucleic acid extraction unit



Multiplex real-time PCR platform

Topics:

- PCR & Nucleic acid extraction Techniques
- Nucleic acid quantification
- Conventional PCR, Agarose gel electrophoresis and analysis
- Real Time PCR-Theory, Demonstration, Interpretation of result and discussion
- Quantitative Real Time PCR- Theory, Demonstration, Interpretation of result and discussion
- Basics of sequencing, primer designing
- PCR Lab-design

Testimonials

"It is a wonderful experience to come to a premier virology institute and see the functioning of a NABL lab. It will help me in the process of lab setup and putting into good lab practises and workflow having seen here"

-Trainee from Batch 2023, Training on Molecular Diagnostic Techniques

"The first thing I liked is the individual attention the trainers gave and the second one is the best accommodation options for the outstation candidates within campus.."

-Trainee from Batch 2023, Training on Molecular Diagnostic Techniques

"It was really captivating and interactive because the trainers were friendly during theory and practical classes, and they have given individual attention."

-Trainee from Batch 2023, Training on Basic Virological Techniques

"All trainers were extremely patient, knowledgeable and humble in all aspects of teaching. Enough time for discussion was provided to clear our doubts and were very approachable."

-Trainee from Batch 2023, Training on Basic Virological Techniques

Training coordinators & Areas of Expertise



Dr Anitha J

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



Dr Sudheesh N

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



Ms Kavitha Karunakaran

Virological techniques including molecular virology and virological assays related to cell culture, immunology and viral vaccine studies



For further information, please contact

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<https://conference.manipal.edu/registration/>

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🐦 @MIVMAHE

📘 @mivmanipal

