

CELLULAR IMMUNITY AND IMMUNOPATHOGENESIS OF MAJOR INFECTIOUS DISEASES

An Integrated Online Module Series

Offered by the

Institute of Biochemistry, Molecular Biology & Biotechnology (IBMBB)
University of Colombo

Programme Information Last Updated: June 2026

Course Coordinator: Dr. Visula Abeysuriya

Understanding Our Online Self-Paced Courses

Our courses are designed to fit your schedule. "Self-paced" means you learn at your own speed, on your own time. There are no fixed class times or live lectures. You can access course materials 24/7 and progress through modules whenever it suits you.

About the Program

This integrated online module series provides a structured and in-depth understanding of **cellular immune responses and immunopathogenesis in major infectious diseases**, with a strong focus on host–pathogen interactions, immune regulation, disease severity, and vaccine relevance.

The programme is designed for students and professionals in **immunology, biomedical sciences, medicine, and public health**, and is based on a disease-oriented approach to cellular immunity. Each module focuses on a specific infectious disease and systematically explores innate immunity, adaptive cellular responses, cytokine networks, immune evasion, and immunopathology.

Emphasis is placed on **conceptual clarity, mechanistic understanding, and clinical relevance**, rather than excessive molecular detail, making the programme suitable for both academic learning and professional development.

- ✓ Conceptually strong and discipline-specific
- ✓ Aligned with immunology and biomedical curricula

- ✓ Disease-focused and clinically relevant
 - ✓ Suitable for coursework, certification, and research training
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Who Should Enroll

Undergraduate and postgraduate students in **Immunology, Biomedical Sciences, Biotechnology, and Public Health**

Medical, dental, and allied health students

Laboratory scientists and research assistants

Postgraduate trainees and early-career researchers

Health professionals seeking a structured understanding of immunopathogenesis

MODULE OUTLINE (5 CORE MODULES)

Module 1 — Cellular Immunity in Dengue Virus Infection

Overview of dengue virus and clinical disease spectrum
Innate immune responses to dengue infection
Role of macrophages, dendritic cells, and NK cells
CD4⁺ and CD8⁺ T-cell responses in dengue
Cytokine storm and immune-mediated pathology
Antibody-dependent enhancement (ADE)
Immune memory and implications for dengue vaccination

Module 2 — Cellular Immunity in Filariasis

Overview of filarial infections and parasite life cycle
Innate immune responses and eosinophil-mediated mechanisms
Th1, Th2, and regulatory T-cell responses
Cytokine networks and immune modulation
Chronic infection, immune tolerance, and hyporesponsiveness
Immunopathogenesis of lymphatic disease
Implications for vaccine and immunotherapeutic strategies

Module 3 — Cellular Immunity in Leishmaniasis

Overview of Leishmania species and transmission
Innate immune recognition and early host responses
Macrophage–parasite interactions
Role of dendritic cells and antigen presentation
Th1 vs Th2 responses and disease outcome
Immune evasion strategies of Leishmania
Cellular immunity and vaccine development

Module 4 — Cellular Immunity in Malaria

Overview of Plasmodium species and life cycle
Innate immune responses in liver and blood stages
Role of dendritic cells and antigen presentation
CD4⁺ and CD8⁺ T-cell responses
Cytokine-mediated immunopathology
Partial immunity in endemic regions
Cellular immunity and malaria vaccine approaches

Module 5 — Cellular Immunity in Tuberculosis

Overview of Mycobacterium tuberculosis infection
Innate immune responses and macrophage survival mechanisms
Role of dendritic cells and T-cell activation
Th1 and Th17 responses in tuberculosis
Granuloma formation and immune containment
Immune evasion, latency, and reactivation
Cellular immunity and tuberculosis vaccine development

Learning Outcomes

By completing this module series, participants will be able to:

- ✓ Explain cellular immune mechanisms involved in major infectious diseases
- ✓ Describe the role of innate and adaptive cellular immunity in disease control and pathology
- ✓ Compare immune responses across viral, parasitic, and bacterial infections

- ✓ Understand immune evasion and chronic infection
 - ✓ Apply cellular immunology concepts to vaccine development and disease prevention
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Timeline

- The course is conducted in 4-month batches, with the first month reserved for registration.
 - Once registered, you may begin the course at any time and complete it at your own pace within the batch period.
 - **Current Batch (Batch 2): June – October, Registration is open in June, and all learners must complete the course by 31st October, regardless of their registration date.**
 - If you are unable to complete the course within the allocated 4-month course period, an additional 10-day grace period will be provided to complete all course requirements.
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Assessment

- Online MCQ-based assessment
 - Comprehensive coverage of all four modules
 - **Pass mark: 80%**
 - Only 3 attempts allowed
 - Time-limited assessment
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Certification

Digital certificates validated and issued every 4 months.

Certificates will be released after the batch end date. Certificates are typically issued approximately 10 days after the course completion deadline.

🏆 **IBMBB Digital Certificate in Vaccinology**

✓ Officially issued by the University of Colombo

Course Fees

Rs. 4,000 (LKR)

How To Apply

[Click here](#) (SSP login)

SSP Login Instructions: Enter your email carefully in the SSP login. Course access will only be sent to this email and cannot be changed or transferred to another address later.

Course Registration Guide

Step 1: Click the Registration Link (SSP login)

Step 2: Create Your Account ([Register here](#))

Step 3: Log In

Step 4: Click "Apply for Courses"

Step 5: Choose Your Course

Select Fundamentals in Immunology and Biostatistics Course, then pick the specific courses you want.

Step 6: Make Payment

Complete the payment process. Once confirmed, you're officially enrolled.

Step 7: Check Your Email for LMS Access

Within 1-3 working days, you'll receive an email with your LMS login details and instructions on how to start your course.

Check your spam folder if you don't see it.

Enrollment & Contact

- Course Coordinator: Dr. Visula Abeysuriya
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- Scientific Support: Ms. Dishmi Bawanga
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