PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS155/II/2024

Microbial Immunology: Mechanisms and Consequences

Name of the PMRF student

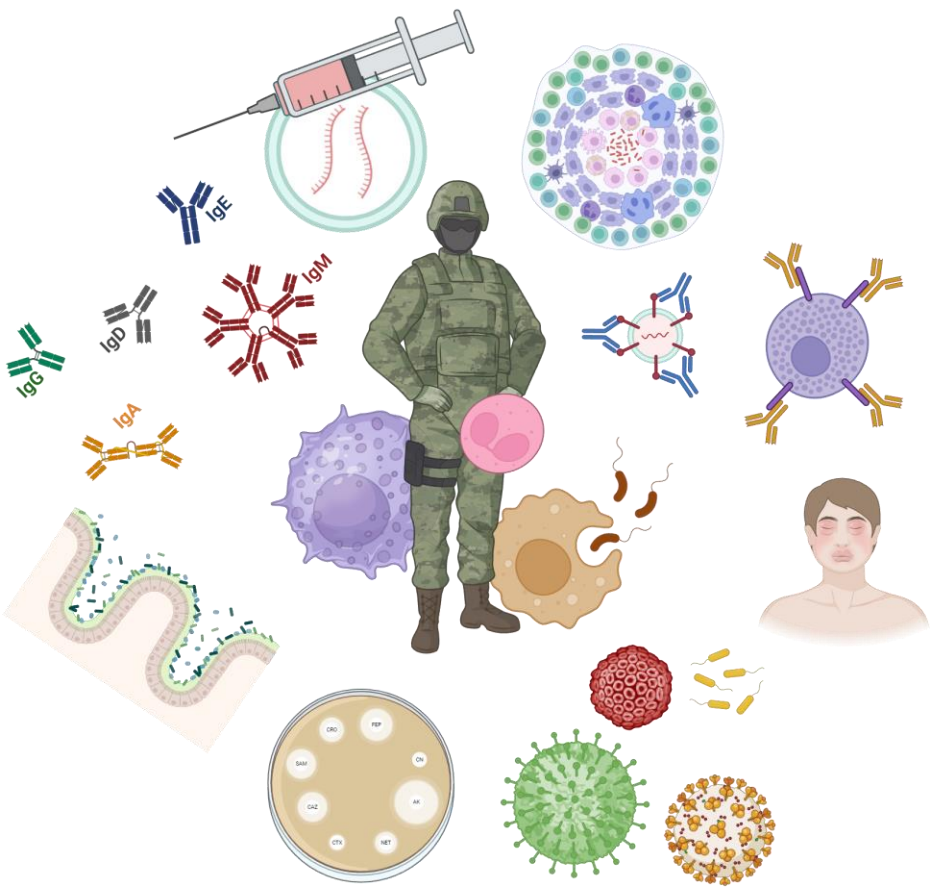
ADITI KANOJIA

Required background of the students taught

A basic understanding of Cell Biology and Biochemistry is appreciated.

Online Session Coordinator

Will be chosen from the list of registrants



Details of the content of the module

In this course, we will dissect the intricacies of microbial Immunology as a field, covering the following topics:

- **History Of Microbial immunology**: Discovery of microorganisms **(Lectures: 2)**, **Bacteriology:** Bacterial structure, classification, genetics, physiology, and ecology. **(Lectures: 3)**, **Virology:** viral structure, replication, pathogenesis, and the development of antiviral treatments and vaccines. **(Lectures: 2)**
- **Basic Immunology:** Antibody-mediated immunity, Cell-mediated immunity, Innate vs. adaptive immunity, Immunoglobulin structure and function, Major Histocompatibility Complex (MHC) **(Lectures: 4)**
- **Pathogen-Associated Molecular Patterns (PAMPs) and Pattern Recognition Receptors (PRRs):** Toll-like receptors (TLRs) and NOD-like receptors (NLRs) **(Lectures: 3)**
- **Immunopathology with examples:** Viral immunology (e.g., influenza, HIV, Dengue, COVID-19), Bacterial immunology (e.g., tuberculosis, pneumonia), Parasitic immunology (e.g., malaria, toxoplasmosis), Fungal immunology (e.g., candidiasis, aspergillosis) **(Lectures: 5)**
- **Immunoevasion Mechanisms:** Strategies, Antimicrobial Resistance**,** antigen variation, immune suppression, and molecular mimicry **(Lectures: 3)**
- **Microbiome and Immunity:** The impact of dysbiosis on health and disease **(Lectures: 2)**
- **Vaccinology:** design, efficacy, and safety of vaccines, strategies for addressing emerging infectious diseases. **(Lectures: 4)**

Will also host two supplementary classes where we will review and discuss cutting-edge research papers related to the course material.

Schedule of the module

Start Date: 27th September 2024
End Date: 3rd January 2025
Total number of sessions: 30 (Including the Discussion sessions)
Duration: 1 Hour
Classes will be held on **Thursdays and Fridays**, from **7 to 8 pm.**

Meeting link : Will be shared later

Contact email
ID: isss.forum@gmail.com

Registration Link:
https://docs.google.com/forms/d/1XqmoQQxiWskVpr2YlhNdDwD41E89lfH5_JsZwTbUCII/edit