

**A LEVEL
STUDENTS
SUMMER
INTERNSHIP
PROGRAM**



**Allergy, Immunology & Cell
Biology Unit**

INTRODUCTION

The Allergy, Immunology and Cell Biology Unit (AICBU) was established in 2019. Since then, it has contributed immensely to the needs of Sri Lanka and the international scientific research in the fields of Allergy, Immunology and Molecular Biology.

The unit is a part of the University of Sri Jayewardenepura and is headed by two directors: Prof. Chandima Jeewandara, who serves as the Director of Operations and Clinical Services and Prof. Neelika Malavige, who serves as the Director of Research & Development.

The AICBU conducts many research studies focused on allergy and infectious diseases and collaborates extensively with many international organizations including the National Institutes of Health (NIH), World Health Organization (WHO), SungKyunKwan University (SKKU) and the University of Oxford. During the COVID-19 pandemic, our team pioneered an effort from the university sector to fight against the virus.

Driven by an increasing number of research grants and the excitement of novel findings each term, the team continues to grow rapidly while fulfilling its responsibility of delivering education and training to the scientists of tomorrow as an entity attached to a state university.

VISION

Our mission is to develop human and physical resources and facilitate advanced research to create a world-class innovation platform while contributing to national development and improving health

MISSION

To be a Center of Excellence for Allergy, Immunology and Molecular Medicine



CLINICAL CARE

Established in 2018, the clinic held at the AICBU is one of the leading referral centres for patients with immunological disorders in Sri Lanka.

A team of trained healthcare professionals including professors, medical officers and nurses provide care to patients with the expertise to ensure optimal quality of life while living with allergies.

The clinic is held twice a week at the Family Practice Centre, University of Sri Jayewardenepura from 9am-12pm on Tuesdays and Fridays. There are many services offered to our patients.



RESEARCH

In 2021 and 2022, the AICBU published 29 peer-reviewed journal articles in various renown journals including PLOS Global Public Health, the Journal of Virological Methods, Clinical and Experimental Immunology and the Journal of Biomedical Science. A record of our publications during this period are on the pages that follow and provide an insight into the depth, breadth and success of our research.

TRAINING

The AICBU and Department of Immunology and Molecular Medicine were requested to provide training to Medical Laboratory Science Graduate Interns who were attached to the Ministry of Health and posted at government hospitals. Training was carried out from October 2021 to February 2022 and 183 trainees took part in the program. Participants were split into 10 groups and each group underwent 2 weeks of lectures, demonstrations and hands-on training in PCR, Swabbing, Phlebotomy, Serology, Sequencing and other molecular diagnostic techniques.

In addition we provide industrial training and interships for students from the Applied Sciences Faculty, USJ. A total of 20 students from two batches have already completed their training with us.

A LEVEL STUDENTS SUMMER INTERNSHIP PROGRAM (ALSSIP)

The program is designed for students that are in the process of completing their A Levels, and are awaiting their results and University entrance. Students are offered a mainly observational internship and the opportunity to be part of ongoing cutting edge research.

- Age 16-18 years
- Batch of upto 3 students
- Time period: upto 6 weeks
- Sessions: Monday to Friday 9.00 to 4.00

- Place: AICBU and Department of Immunology and Molecular Medicine Laboratories at the Faculty of Medical Sciences, USJ

- Once the training starts the timings may change depending on the length of the lab work being observed, this needs to be discussed with the training supervisor.

- The intern is expected to do a 10-20 minute presentation on completion of the internship weeks

THE COURSE OUTLINE

1. The Basics

- The Laboratory and Laboratory safety
- Good Lab practise
- Experimental design and ethics
- General equipment used in scientific labs
- A brief introduction to the research done in the labs.

2. Areas of Specialization

- Immunology and Cell Culture
Serology, Cell Culture, Elisa, ELISPOTS, Flowcytometry
- Molecular Biology
Extraction, PCR, Sequencing, Bioinformatics
- Allergy and Autoimmunity
Clinic sessions and Allergy research laboratory work
Allergy tests, Immunocap, ISAC, Autoimmune assays

THE COURSE

1. The Basics

➤ The Laboratory and Laboratory safety

Laboratory safety is a critical aspect of working in a laboratory environment to ensure the protection of individuals, the integrity of research, and the prevention of accidents or injuries. We will be discussing the key components.

➤ Good Lab practice

Good laboratory practices are essential to ensure safety, accuracy, and reliability in laboratory operations. By following established guidelines and protocols, researchers can maintain a consistent standard of quality and minimize the risks associated with laboratory work.

➤ Experimental design and ethics

Experimental design and ethics refer to the process of planning, conducting, and analyzing experiments in a systematic and rigorous manner and keeping with the ethical norms of good scientific practise. This process will be explained to the student.

➤ General equipment used in scientific labs

➤ A brief introduction to the research in the labs.

THE COURSE Cond..

2. Areas of Specialization

Immunology and Cell Culture

➤ Serology

Different blood collection tubes and their uses
Blood separation and storage : A brief description on techniques used, different types of centrifuges, spinning speeds G vs rpm, tubes used for spinning, storage of samples.
Good lab sampling procedures, aseptic/sterile technique in terms of blood separation, labelling. PBMC separation.
Different serology assays performed in the lab very brief summary.
HAT, sVNT, ELISA

➤ Cell Culture

Different types of cell culture, types of cell culture media. How to culture cells. Good laboratory practise required for cell culture.
Laminar flow hoods. The Plaque Assay, FRNT

➤ ELISA

Different types of ELISA methods, a brief summary and what their uses are. The ELISA protocols used in the lab. How ELISA is used in our lab research.

➤ ELISPOTS

ELISPOT techniques. Coating plates, using the ELISPOT reader.

➤ Flowcytometry

An introduction to flowcytometry and the FACSAria machine will be given. If there is research happening during the internship, this can be observed

THE COURSE Cond...

Molecular Biology

➤ Extraction

Explaining about DNA and RNA. Manual extraction, different kits used. Automated extractors

➤ PCR

Working inside a PCR hood. Primers. Different PCR techniques. Conventional PCR, RT-PCR, ddPCR etc.

➤ Sequencing

Nanopore, Illumina and other NGS methods currently in use.

➤ Bioinformatics

Description of the bioinformatics tools used with the different sequencing platforms in the labs.

Allergy and Autoimmunity

➤ Clinic Sessions with allergy patients

Observation of various clinic based tests i.e.. Skin prick test, drug allergy testing etc.

(This is optional depending on the interest of intern and on the discretion of the Doctor in the clinic.)

➤ Allergy Testing

A brief introduction to allergies and allergy testing and use of machines in the Allergy Laboratory i.e.. Phadia (Immunocap), ISAC, etc and how these machines help with allergy diagnosis in a much more targeted manner.

CONTACT US

For any more information please contact us at

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MAP

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