ABOUT INFORMM

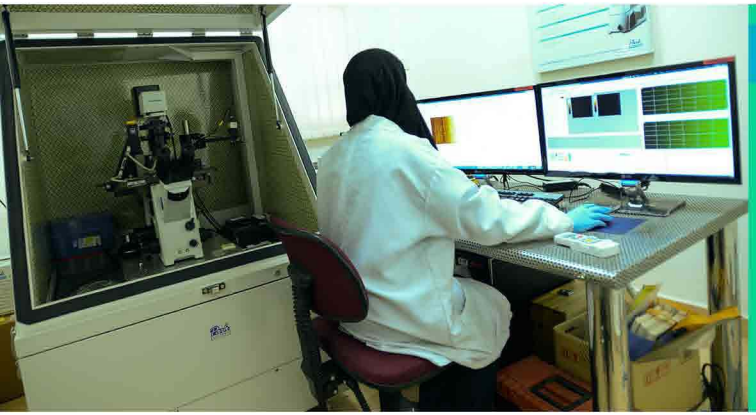
Institute for Research in Molecular Medicine (INFORMM) is a Higher Institution Centre of Excellent (HiCoE) in "Diagnostic solutions for infectious diseases"

ABOUT THE PROGRAMME

This mobility programme is supported by experienced PhD qualified lecturers, skilled technical support staff and friendly energetic student buddies (1 host buddy: 2 participants)

MOLECULAR MEDICINE MOBILITY PROGRAMME

@INFORMM KELANTAN



CONTACT INFORMATION

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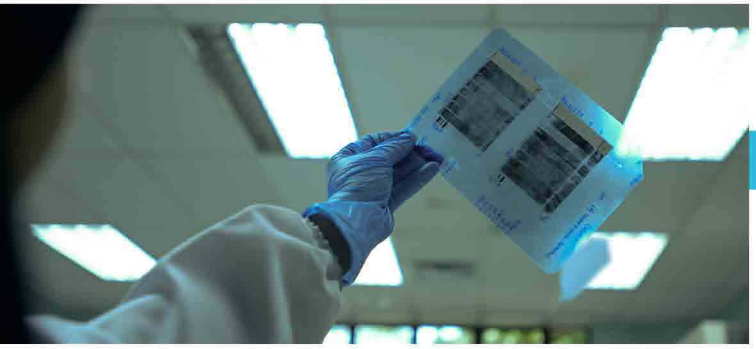
NOW EVERYONE CAN LEARN ABOUT MOLECULAR MEDICINE!

ABOUT THE PROGRAMME

The Molecular Medicine Mobility Programme @ INFORMM Kelantan is a part of mobility programme which focusses on high school, A-level international and undergraduate students who are interested in molecular medicine or related fields, such as biotechnology and biomedicine. This programme seeks to empower participants by providing a basic understanding of the current topics in the cellular and molecular basis of diseases and latest advanced technology.



We offer several lectures and practicals that will be taught by excellent instructors with many years of research and teaching experience. Through engaging lectures and hands-on laboratory sessions, students will learn genomic and proteomic technologies that are usually applied in the field of molecular medicine for diagnostic and therapeutic applications.

OBJECTIVES

Upon completion of this programme, participants will be introduced to :

- The various fields of molecular medicine including biomarker discovery, development of ***in-vitro*** diagnostics, cancer biology and advanced research platforms.
- Basic laboratory techniques in molecular medicine using state-of-the-art facilities at INFORMM.

HOW IT WORKS

Lectures will be conducted informal and interactive with an emphasis on student-centred learning and e-learning. There will be hands-on laboratory practical in relevant topics.

WHAT YOU WILL GET

Upon completion, a certificate of participation will be awarded. Particpants will gains an overview of molecular medicine, a laboratory skills and a unique Malaysian cultural experience especially in East-Coast.

WHO CAN ENROLL

This programmeis suitable for high schools, undergraduates, A-level international school students and science officers from relevant agencies and those interested in the biomedical-related field.

PROGRAMME STRUCTURE

This is an intensive, residential two-week programme. The programmeis conducted in three research areas (***in-vitro*** diagnostic of infectious diseases, cancer research and advanced research technologies)

- Mechanism of cancer diseases
- Neglected Tropical Diseases
- Diagnostic technologies
- Nucleic acid in diagnostic and therapeutics
- Bioinformatics
- 'Halal' medicine

Outdoor activities

- PerhentianIsland with nature forest exploration
- Cultural activities –batik chanting, traditional game, Kelantan heritage tour.

PROGRAMME REQUIREMENTS

Minimum number of participants :
15 persons per group

PROGRAMME FEE *

Malaysian per pax RM4,000.00+
International per pax USD1,000.00+

****Estimated fee shown includes hostel accommodation and outdoor activities but does not include arrival and departure travel costs.***

PROPOSE HANDS-ON TOPICS

Instructor	Topic/Code	Synopsis
Dr. Noor Fatmawati Mukhtar	**K08: "Halal" medicine**	'Halal'(Arabic: الحلال English: "permissible"),is any substance/object or action permissible to use or engage in, according to Islamic/Syariah law. The term encompasses particularly for food/consumptions but actually all matters of life. The opposite of halal is 'haram', which is unlawful or prohibited by the Islamic/Syariah law. This topic discusses especially on the definition of 'halal' in the context of medicine. Additionally, other terms that closely related to 'halal', 'najs' and 'fatwa' will be conferred. With the increase of attentions on 'halal' market globally, certification of 'halal' in Malaysia and around the world will also be deliberated.
Mr. Badrul Syam Zainuddin	**H01: Good Laboratory Practices**	Good laboratory practice (GLP) is a set of principles intended to assure the quality and integrity related to the safety of chemical and biological substances in a laboratory setting. This is important to all researchers perform their work in compliance regulations.
Ms. Elis Rosliza Adzmi	**H02: Cell culture and microbiology techniques**	This topic consists of a mixture of brief lecture and practical training. The hands-on training will be an emphasis on aseptic technique during bacterial and mammalian cells handling.
Miss Basyirah Ghazali	**H03: Gene cloning and recombinant protein expression**	This laboratory hands-on will introduce participants to techniques in gene cloning such ligation of selected gene into a plasmid vector and how to express the cloned gene using eukaryote host. Participants will be introduced to nucleic acid selection technique (SELEX) using DNA Aptamer. This technique is important to ensure the DNA Aptamer is having affinity against antigen binders.
Mr. Amin	**H05: Lateral flow technology**	Lateral flow technology also is known as lateral flow assays intended to detect the presence (or absence) of a target analyte in the sample (matrix) without the need for specialised and costly equipment, though many lab-based applications exist that are supported by reading equipment such PCR. Typically, these tests are used for medical diagnostics either for home testing, the point of care testing, or laboratory use. A widely spread and well-known application is the home pregnancy test..

CONTACT INFORMATION

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MOLECULAR MEDICINE MOBILITY PROGRAMME @INFORMM KELANTAN

INSTITUTE FOR RESEARCH IN MOLECULAR MEDICINE (INFORMM)

HEALTH CAMPUS
UNIVERSITI SAINS MALAYSIA

INSTITUTION PROFILE

INFORMM started as a multi-disciplinary cluster-based research program spearheaded by eleven main researchers from the Schools of Medical Sciences, Dental Sciences, Health Sciences and MITD (Medical Innovation and Technology Development Unit) located at the USM Health Campus in Kelantan. After a rigorous process, the Institute for Research in Molecular Medicine (INFORMM) was established in 2003 following a formalised recognition accorded by the University and the Ministry of Higher Education. This was also the first time in the history of USM that an institute was formed "bottom-up" through the efforts of a group of researchers. As a fully fledged research institute, INFORMM moved into its building in Kelantan in 2003, and at this time, the Penang branch was set up at the Eureka Complex, USM. In December 2007, the Penang team moved to its own new building. From the initial members of the loose research cluster, INFORMM now boasts of 24 full-time lecturers with PhD qualifications. Currently, the main research clusters at INFORMM are 'Diagnostics for Infectious Diseases', 'Advanced Research Technologies' and 'Cancer Research'. The multidisciplinary character of the institution has been maintained and is reflected through the staff development plan of its younger members, who have been trained in the latest techniques in biotechnology and molecular biology, ranging from recombinant antibody development, protein expression and characterization, in-silico modelling, biomarker discovery, proteomics and nano-biotechnology.

Website : www.informm.usm.my

PROGRAMME OVERVIEW

The Molecular Medicine Mobility programme @INFORMM Kelantan focuses on the current topics of the cellular and molecular basis of diseases, latest advanced research technologies and *in-vitro* diagnostic test development. This programme seeks to empower participants by providing a basic understanding of the field of molecular medicine through leisure and flexible type of lectures and hands-on experience in research in the biomedical field. The medium of communication is in English. Upon completion, a certificate of participation will be awarded by INFORMM, Universiti Sains Malaysia.

Programme Objectives

Upon completion of this programme, participants will be introduced to:

1. The various fields of molecular medicine including biomarker discovery, development of *in-vitro* diagnostics, cancer biology and advanced research platforms.

2. Basic laboratory techniques in molecular medicine using state-of-the-art facilities at INFORMM

3. Malaysian cultural and outdoor experiences

PROPOSED SCHEDULE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Arrival	-K05 -H03	- K01 - KO2 - H01	- K03 - K04 - H02	Team building/ nature walk	Team building /nature walk
-K05 -H03	-K06 -H04	Depart Home	- Final Presentation - Cultural Night event	Visit 1 Perhentian Island	Visit 2 East-Coast Heritage Tour	Visit 3 Batik Exploration
Depart Home						

PROPOSED SPEAKERS AND LECTURE TOPICS

Speakers	Topic/Code	Synopsis
Dr. Noor Fatmawati Mukhtar	**K01: Mechanism of diseases**	Among the most important and interesting areas of scientific investigation are the mechanisms that underlie disease. In fact, understanding the molecular and cellular mechanisms of disease is one of the key goals of the modern biomedical research. Dissecting the defects in molecular and cellular processes that trigger specific pathologies during the initiation, progression, and disease dissemination is vital for designing appropriate and effective treatments. This topic can be of great interest to those pursuing fundamental research, as well as those drawn to medicine, biotechnology, law, and public health.
Dr. Khairul Mohd Fadzli Mustaffa	**K02: Gene cloning and recombinant protein expression**	Recombinant proteins are currently utilised for a myriad of biomedical and biotechnological applications. However, researchers new to this area might find themselves confounded by the vast array of choices available for protein expression and purification. Therefore, the aim of this session is to provide a brief introduction to advantages and disadvantages associated with protein expression hosts and unit operations involved in protein isolation.
Assoc. Prof. Dr. Aziah Ismail	**K03: In-vitro Diagnostic: Research to Community**	This lecture will describe the journey taken from the initial research ideas, the discovery process, test development & evaluation/validation and commercialization of a lateral flow rapid test for Typhoid.
Dr. Leow Chiuan Yee	**K04: Human Immunological Exploration**	The topic is designed to emphasise the description of molecular and cellular elements of the immune system and their basic function.
Assoc. Prof. Dr. Aziah Ismail	**K05: Integrity in Medical Research**	The research integrity is an aspect of moral character and experience. It involves intellectual honesty and personal responsibility for ones actions and to a range of practices that characterise responsible research conduct. This topic is designed to emphasise the highest achievable standards of research practice (e.g laboratory, data manipulation and ethics) in order to ensure the integrity of the research and outputs.
Dr. Khairul Mohd Fadzli Mustaffa	**K06: Aptamer: therapeutics and diagnostics**	This topic will emphasis on nucleic acid technology (Aptamer) that has emerged as a valuable tool for detecting, imaging, diagnosing and treating diseases. participants will be introduced to in-vitro selection technique known as Systematic Evolution of Ligand by EXponential enrichment (SELEX)
Dr. Leow Chiuan Yee	**K07: Bioinformatics in molecular medicine research**	The topic is designed to introduce the most important and basic concepts, methods, and tools used in bioinformatics. Topics include (but not limited to) bioinformatics databases, sequence and structure alignment, protein structure prediction, protein folding, genomics and proteomics data analysis. Emphasis will be put on the understanding and utilisation of these concepts and algorithms.