Congratulations!

WINNERS OF RESEARCH GRANT 2023

FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

TOTAL AMOUNT: RM 1,364,093.00

DR. SUHAILI ABU BAKAR @ JAMALUDIN
Department of Biomedical Science
RM 177,400.00

ASSOC. PROF. DR. THAM CHAU LIM
Department of Biomedical Science
RM 145,170.00

DR. SANDRA A/P MANIAM
Department of Human Anatomy
RM 146,632.00

PROF. DR. JULIANA JALALUDIN
Department of Environmental and Occupational Health
RM103,420.00

DR. NARCISSE MARY A/P SITHER JOSEPH VESUDIAN
Department of Medical Microbiology
RM 131,500.00

DR. ELYSHA NUR ISMAIL
Department of Biomedical Science
RM 177,297.00

ASSOC. PROF. DR. CHEE HUI YEE
Department of Medical Microbiology
RM149,500.00

PROF. DR. SYAFINAZ AMIN NORDIN
Department of Medical Microbiology
RM193,474.00

PROF. DR. BARAKATUN NISAK MOHD YUSOF
Institute for Social Science Studies (IPSAS)/ Department of Dietetics
RM139,700.00

Heartiest congratulations to all the receivers!

Congratulations!

WINNERS OF RESEARCH GRANT 2023

FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Elucidating The Role of Polymorphisms in SLC22, MATE and ATM Genes on The Pharmacogenetics of Metformin among Three Major Ethnics of Malaysian Type 2 Diabetes Mellitus (T2DM) Patients

RM 177,400.00

1 October 2023 - 30 September 2026 (3 years)

Team members:

1. Prof. Ts. Dr. Cheah Yoke Kqueen
2. Ts. Dr. Sharifah Sakinah Syed Alwi
3. Dr. Ng Ooi Chuan

Principal Investigator:
DR. SUHAILI ABU BAKAR @ JAMALUDIN

Aim:
This project aim to proof the role of polymorphisms in these three genes with T2DM risk, and metformin response among the three Malaysian major ethnic.

Why is it important?
In managing the T2DM's patients, metformin is the most commonly used as an oral antidiabetic drug that lowers the serum glucose level (HbA1c) however, individual differences in glycaemic response to metformin exist widely including Malaysian, unfortunately lack scientific evidence. Previous studies reported polymorphisms in the SLC22, MATE and ATM genes can indirectly affect the glycaemic response, and influence the rate of control of T2DM. Findings from this study will provide a useful resource for the T2DM progression, and enable the identification of the precise drug dosage that is most likely to be effective and safe for each patient and reduce the economic impact on a global scale.

How will it be done?
This case-control study will involve with the collection of genomic DNA from both non-T2DM (n=267) and T2DM groups (n=267) from the blood samples. In both groups, about 89 samples from each ethnics: Malays, Indian and Chinese. Generally, genotyping of the SLC22, MATE and ATM variants will be performed using Restriction Fragment Length Polymorphisms (RFLP). Primers will be designed to specifically amplify the polymorphisms in those three genes. Then, amplification of polymorphisms for those genes will be performed by using Polymerase Chain Reaction (PCR). The amplification products then will be digested with specific restriction enzymes to differentiate the genotypes between the subjects. Gel electrophoresis will be performed to observe the different fragment length size that represent the genotype of subjects. Genotypes and allelic distributions for each polymorphisms will be collected and effect of the polymorphisms on the glycaemic response and other clinical parameters will be analysed. 30 selected samples that represent each group of genotypes; homozygous wild type (n=10), heterozygous (n=10) and homozygous mutant (n=10) will then be prepared for DNA sequencing to further validate the genotype. The samples will be amplified again for the purpose of DNA sequencing and the reading of DNA sequencing will be outsources.

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FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Inhibition of Human Mast Cell Tryptase by Gabexate Mesylate and Argatroban in Dengue Virus-Induced Vascular Leakage: Potential Repurposing of Drugs for the Treatment of Dengue

RM 145,170.00

October 2023 – September 2025 (2 years)

Team members:

1. Prof. Dr. Daud Ahmad Israf Ali
2. AP. Dr. Chee Hui Yee
3. AP. Dr. Yong Yoke Keong
4. Dr. Hanis Hazeera Harith
5. Dr. Anim Md Shah

Principal Investigator:
ASSOC. PROF. DR. THAM CHAU LIM

Aim:
This study aims to investigate the effects of approved drugs in inhibiting tryptase activity released by DENV-induced mast cells, as well as their effects on DENV-induced vascular permeability caused by mast cell tryptase.

Why is it important?
Dengue hemorrhagic fever (DHF) is a severe form of dengue with the hallmark of vascular leakage and may lead to mortality. To date, there is no effective treatment for DHF apart from supportive care. Tryptase, the most abundant protein in mast cells, has been recently found to be implicated in the pathogenesis of DHF by breaking endothelial tight junctions and causing vascular leakage. Hence, drugs with the ability to inhibit mast cell tryptase activity could be the potential treatments for dengue virus (DENV)-induced vascular leakage. Unfortunately, none of the tryptase inhibitors has successfully passed all stages of clinical studies.

How will it be done?
The study will be conducted using an in vitro model of vascular leakage which will be designed according to clinical insights.

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FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Exposure Assessment of Bioaerosol and Leukotriene B4 (LTB4), Resolvins E-series(rvei) as Biomarkers of Airway Inflammation Among Preschoolers in the Selected Areas of Klang Valley

RM 103,420.00

1 October 2023 - 30 September 2026 (2 years)

Team members:

1. Dr. Khairul Nizam Mohd Isa (UNIKL)
2. Prof Syafinaz Mohd Amin (UPM)
3. Prof. Dr. Mohd Nasir Mohd Desa (UPM)
4. Dr. Suhaili Abu Bakar (UPM)

Principal Investigator:
PROF. DR. JULIANA JALALUDIN

Aim:
This study aims to evaluate the association between exposure to indoor bioaerosols and airway inflammation among preschool children in selected areas of the Klang Valley. This study responds to emerging local needs by improving the data on the detection of microbiome specifically on the mechanism of how exposure impacts and characterizes health risks among preschool children.

Why is it important?
Early-life exposure to bioaerosol could lead to recurrent irritation and immune activation in the respiratory tract, inducing prolonged inflammation, that promote the inflammation related diseases, such as asthma and rhinitis. There are still limitations and a gap in the study of the association between indoor bioaerosol and their health effects on occupants because of the difficulty in sampling procedures of microbes. The absence of a universal method to explore fungal exposure in indoor settings due to the limitations of the actual existing methods and the ubiquitous nature of microbial spores.

How will it be done?
Study Location:
Preschool children in selected areas in Klang
Methodology:
Activity 1 - Measurement of Indoor Air Quality
Collection of Settled Dust Samples
Activity 2- Settled Dust Extraction and Analysis using Metagenomics Protocol
Activity 3 – Collection of Exhaled Breath Condensate (EBC) Sample and Quantification of RvE1 and LTB4 in EBS Samples

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FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Skin Microbiome Diversity, Vitamin D Variation and Sociodemographic Characters of Non-melanoma Skin Cancer Patients

RM 131,500.00

1 October 2023- 30 September 2026 (3 years)

Team members:

Prof. Dr. Syafinaz Binti Amin Nordin
AP. Thilakavathy A/P Karuppiah
Dr. Razana Binti Mohd Ali
Dr. Izety Shezlinda Binti Noran

Principal Investigator:
DR. NARCISSE MARY A/P SITHER JOSEPH VESUDIAN

Aim:
The study aims to determine skin microbiome diversity, vitamin D variation, and sociodemographic factors as risk factors for non-melanoma skin cancer (NMSC).

Why is it important?
The study identifies novel risk factors, correlation of skin microbiome profile, and serum vitamin D level in NMSC patients. The findings of the study (identifying novel risk factors) are aligned to reduce the negative impact of cancer by decreasing the disease morbidity, and mortality and improving the quality of life.

How will it be done?
1. Determination of the sociodemographic factors skin associated to NMSC patients
2. Comparison of the skin microbiome composition in different stages of NMSC patients and healthy individuals to identify the differences of skin microbiome compositions among NMSC patients compared to that in healthy skin.
3. Study the serum vitamin D level in NMSC patients and in healthy controls to identify the relationship between serum vitamin D level and NMSC.

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WINNERS OF RESEARCH GRANT 2023

FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Evaluating the Protective Role of Ellagic Acid against Inflammatory Bowel Disease through Regulation of NF-kB/STAT1 Activation in Intestinal Epithelial Cells

RM 177,297.00

02 October 2023 - 30 September 2026 (3 years)

Team members:

1. Prof. Sharmili Vidyadaran (UPM)
2. AP. Ts Dr. Reezal Ishak (UniKL-MESTECH)
4. Dr. Noraina Zakuan (UPM)
5. Dr. Zulkefley Othman (UPM)
6. Dr. Hussin Mohammad (IMR)

Principal Investigator:
DR. ELYSHA NUR ISMAIL

Aim:
The objective is to assess the impact of ellagic acid on active inflammation observed in chronic inflammatory diseases, such as inflammatory bowel disease. The overarching aim is to provide protection against the development or progression of chronic inflammatory diseases.

Why is it important?
- Inflammation is a natural defence mechanism of the immune system against foreign bodies and pathogens. Chronic inflammation occurs when the immune response becomes uncontrolled. This is when the immune response continuously targets tissue organs such as lungs, skin, guts and joints leading to damage.
- IBD has no cure and there is no standard regimen for managing all people with IBD. Patients with IBD have a slightly higher risk of colon cancer, blood clots and liver disease. Novel treatment options for IBD are continuously explored and novel drugs are being discovered.
- Studies on natural products (extracts and metabolites) have demonstrated effective treatment for IBD either used alone (as a compound) or in combination with other drugs in reducing intestinal inflammation and inducing tissue healing.
- IBD can be better understood and treated with great precision through targeted gathering, cross-linking and analysis of biological data.
- Our investigation of the cellular and molecular mechanisms underlying the genesis and regulation of inflammatory disease may help us understand the role of ellagic acid in lowering intestinal inflammation and encouraging tissue healing.

How will it be done?
- The study will assess the impact of ellagic acid on three distinct cellular responses triggered by three different inflammatory stimuli. These stimuli induce the production of inflammatory cytokines and chemokines, and the objective is to evaluate ellagic acid's ability to mitigate the effects of these stimuli.
- The mechanism of action of ellagic acid alleviates the cellular response is modulated by the NF-κB/MAPK signalling pathway and the JAK/STAT signalling pathway.
- The study seeks to establish ellagic acid's protective and wound-healing attributes regarding the intestinal epithelial barrier. This will be achieved through an analysis of barrier functions and the reduction of inflammation.

Congratulations!

WINNERS OF RESEARCH GRANT 2023

FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS) 1/ 2023

Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Characterization of The Virulence Factors of Hypervirulent Group B Streptococcus (GBS) ST283 Isolated from Tilapia (Oreochromis spp.) and Human via Genomics, Proteomics, and Phenotypic Approaches

RM 193,474.00

1 October 2023 - 30 September 2026 (3 years)

Team members:

1. Prof. Madya Dr. Mohammad Noor Amal Bin Azmai
2. Prof. Ts. Dr. Mohd Nasir Mohd Desa
3. Dr. Mohd Hafis Yuswan Bin Mohd Yusoff
4. Dr. Narcisse Mary A/P Sither Joseph Vesudian

Principal Investigator:
PROF. DR. SYAFINAZ AMIN NORDIN

Aim:

1. To characterize the genomic and proteomics aspects of GBS ST283 isolated from human and fish samples in Malaysia.

2. To determine the pathogenicity of the collected GBS ST283.

Why is it important?

GBS ST283 is a hypervirulent strain of GBS that causes disease in human and fish, and cross-infects both hosts.The emergence of GBS ST283 has resulted in severe outbreaks among cultured tilapia in South East Asia's fish farming industries. Not only in fish, GBS ST283 also poses a public health challenge because it has been emerged as a zoonotic pathogen via the consumption of raw-farmed fish-dishes. For example, the GBS ST283 caused septicaemia meningitis in healthy adults following the outbreak in Singapore. Food Agriculture Organization (FAO), has identified GBS ST283 as a novel foodborne pathogen capable of causing serious health complications in humans and fish, and urged researchers to investigate the mechanisms through which GBS ST283 causes sickness and serious complications in humans and fish, which is currently unknown.

How will it be done?

This will be a laboratory-based study that investigate the genomic and proteomic aspects of ST283 (a virulent strain of GBS) from samples of fish and human. We will also investigate the virulence factors in ST283 from these samples and further with determining their pathogenicity in vitro.