

***Academic staff who are not on this list will not be offering projects in Semester 2, 2021

No	Supervisors		Project title	Project description	Discipline of research area Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	Note (optional)
	Main supervisor	Co-supervisor(s)				
1	Assoc. Prof. Emily Goh Joo Kheng	Dr Ang Chee Wei	Synthesis of naphthyridine compounds	Naphthyridine represents an important bioactive scaffold that is found in many natural resources. This project aims to synthesise new naphthyridine compounds and to investigate their physicochemical properties.	CHM	
2	Dr Irene Ling	AP Dr Scott Dalgarno (Heriot-Watt)	Computational approach in understanding molecular properties and intermolecular interactions	Computational chemistry is currently an emerging field in the theoretical chemistry, where the main focus in this area is to solve chemically related problems by computer calculations. Computational chemistry provides scientists with impactful information such as fundamental properties of atoms, molecules, and chemical reactions, using modeling and simulation, data analysis, and visualization that can be used to understand/support experimental evidences or observations. In this project, chemical properties of ionic salts (interaction between cations and anions) will be investigated using computational software.	BTH, MBS, FST, CHM	
3	Dr Lee Yee Ying		Oleogel as Deep Frying Medium	Deep frying is one of the most popular cooking methods used across the world in households or fast food industries. Often, oil that is high saturated fat content that possesses high hydrolytic and oxidative stability such as partially hydrogenated oil is commonly being used for frying. However, utilization of partially hydrogenated oil has its drawbacks as it contains trans fatty acid that is detrimental to health. Oleogel is a type of colloid that entraps liquid vegetable oil into three-dimensional network of gel to give the liquid vegetable oil solid-like properties. As oleogelation does not involve the alteration of the chemical structure of the fats and oils, no trans fatty acids are produced. Hence, the project aims to use oleogel as a healthy deep frying medium.	FST	
4	Dr Lee Yee Ying		Nanocellulose as Pickering Emulsifier	Nanocellulose is cellulosic material with nanosize in range. Recently, nanocellulose received tremendous attention as a natural emulsifier, stabilizer and fat mimetic in the food industries to stabilize food emulsion. As a source of dietary fiber, nanocellulose also exhibits several healthful function properties to manage obesity, cardiovascular disease, diabetes and other types of diseases. The present study aims to evaluate the potential of palm-based nanocellulose as a Pickering emulsifier in an oil-in-water food emulsion system.	FST	
5	Dr Lee Yee Ying		Anti Obesity Effect of Structured Lipids through Lipase Inhibition	Structured lipids are dietary fats and oils that have been structurally modified either with chemical or enzyme to improve their functional properties. Recent studies found that structured lipids such as diacylglycerol (DAG), medium-and long-chain triacylglycerol (MLCT), and medium-chain triglyceride (MCT) showed to have the potential in managing obesity. However, thus far, no studies conducted to compare the efficiency of these anti-obesity structured lipids. Therefore, the objective of the research work is to investigate, understand, and compare the anti-obesity effect of various types of structured lipids using in silico approach.	FST, BTH	This experiment is of computational simulation work meant for dry lab activities
6	Dr. Md Zobaer Hasan		Investigate the influence of socio-economic factors on the coronavirus disease in Malaysia	In this research, we will apply the quantitative technique to investigate the influence of socio-economic factors (occupation, education, income, wealth and living place) on the coronavirus disease in Malaysia.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
7	Dr. Md Zobaer Hasan		Impact of geographic factors on the COVID-19 spreading in different states in Malaysia	The aims of this study are to quantify the relationship between geographic information (i.e., latitude, longitude and altitude) and cumulative infected COVID-19 spreading in different states in Malaysia.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
8	Dr. Md Zobaer Hasan		COVID-19 related knowledge, attitudes, and practices among university students in Malaysia	University students have always their own valuable knowledge and attitudes as well as different practices on any ongoing issues. In this cross-sectional research, we will try to understand the current COVID-19 related knowledge, attitudes, and practices of university students in Malaysia.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
9	Dr. Md Zobaer Hasan		COVID-19 related stress on university students and its effects on their academic performance	This study will examine the impact of COVID-19 on university students in Malaysia. The main objectives are to identify the extent to which stress affects students' academic performance. A quantitative method will be used in gathering and analysing the data.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
10	Dr. Md Zobaer Hasan		Study the impact of COVID-19 on child physical and mental health in Selangor state of Malaysia.	Since the COVID-19 pandemic across the world, many actions have been executed to control the disease. And, such actions may have serious impact on child physical as well as mental health in many countries such as countries in Southeast Asia. The project aims to carry out a critical analysis on the child physical and mental health in the Selangor state of Malaysia in response to the COVID-19 effects.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor

11	Dr. Md Zobaer Hasan		Identify the key risk factors of child malnutrition in Selangor state of Malaysia.	This study attempts to identify the key risk factors of child malnutrition in the Selangor State by using a statistical approach.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
12	Dr. Md Zobaer Hasan		Comparison between undergraduate and post-graduate students about the knowledge, attitude and perception of tobacco consumption in Malaysia	A cross-sectional study will be conducted to determine the knowledge, attitude and perception of tobacco consumption among the undergraduate and post-graduate students and compare them.	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
13	Dr. Md Zobaer Hasan		Investigate the relationship between tobacco consumption and academic achievement among the university students in Malaysia	This study will try to investigate the relationship between tobacco consumption and academic achievement among the university students in Malaysia	BIO, BTH, MBS, CHM.	For the details of the project, student can request for a zoom meeting with the main supervisor
14	Dr Michelle Yap		Shotgun proteomics in construction of venom-based peptides library for drugs discovery	This project aims to undertake combinatorial techniques in high-throughput shotgun proteomics approach to identify potential bioactive peptides from venom specimens. The bioactive peptides will be characterised for physicochemical properties and explored for potential bioactivities.	MBS	
15	Dr Pushpamalar Janarthanan	Dr Thenapakiam (MIPO)	Preparation of Nanocrystalline Cellulose (NCC) From Oil Palm Empty Fruit Bunch and incorporation into graphene oxide for electroactive material	This project is on synthesis and characterization of nanocrystalline cellulose (NCC) from plant fibers has been reported widely and used for building materials, paper, textiles and clothing. These raw materials have received considerable interest as a source of chemical feedstock in recent years due to their high abundance, renewability, biodegradation, nontoxic and low cost of production.	BTH	
16	Dr Pushpamalar Janarthanan	Dr Thenapakiam (MIPO)	Carboxymethylcellulose (CMC) from oil palm fruit bunch with PVA bilayer films as biodegradable material for active food packaging	Cellulose derivative materials have been widely used as an alternative for novel packaging material. The palm oil waste could be used to produce carboxymethylcellulose (CMC) which could be useful in developing packaging material.	FST	
17	Dr Pushpamalar Janarthanan	Dr Thenapakiam (MIPO, MUM)/Dr Pooria (School of Engineering)	An antibacterial packaging film from chitosan-nanolignin reinforced with nanocrystal cellulose from oil palm empty fruit bunch (OPEFB) using electrospinning method	This project introduces the electrospun homogeneous nanofibers of pure chitosan dissolved in strongly concentrated aqueous acetic acid solution without addition of other solvents, with other natural incorporation of nanocellulose and lignin.	FST	
18	Dr Pushpamalar Janarthanan	Prof Phil Andrews (School of Chemistry, MUA)	Developing methods for the incorporation of bismuth into functionalised carboxymethylcellulose hydrogels and subsequent assessment against a range of multi-drug resistant bacteria.	This joint project will develop protocols for the inclusion of known antimicrobial bismuth-based moieties into sulfonated-carboxymethylcellulose at low %Bi loadings (0.5 – 5.0 %) to manufacture an antimicrobial hydrogel. The ultimate aim of preparing bismuth containing sulfonated-carboxymethylcellulose is to study on the biocompatibility characteristic towards healthy cells to be able to employ this material as an antibacterial agent for treatment of Helicobacter pylori, or alternatively as a drug carrier.	MBS	
19	Dr Pushpamalar Janarthanan	Dr Thenapakiam (MIPO)	"Biodegradable hydrogel for 3D Printing Ink"	A novel approach on polymer chemistry strives to achieve sustainability by using intrinsically biodegradable polymers extracted from natural resources to prevent the disruption of the ecological equilibrium in the process of material development. Polymers, or polysaccharides derived from plant-based natural resources are widely applicable in biomedical materials due to their idiosyncrasy of being biochemically analogous to the human extracellular matrix components and thus being capable of successfully undergoing metabolic degradation to serve drug delivery and tissue engineering purposes in the form of a hydrogel or tissue scaffold.	MBS, CHM	
20	Prof Qasim Ayub		Genotyping candidate variants associated with COVID-19 susceptibility and severity in Malaysia.	Genome-wide association studies have identified a dozen or so variations in the human genome that are associated with susceptibility and severity of SARS-CoV-2 viral disease termed coronavirus infectious disease 2019 (COVID-19). In this project selected candidate variants will be genotyped in asymptomatic, mild or severe COVID-19 positive cases from Kelantan, Malaysia, to evaluate the frequency of the alleles associated with disease susceptibility or severity in populations from this region.	BIO, BTH MBS	
21	Dr. Tan Ji Wei		Unravel the interaction between honey's polyphenols with mast cell's signaling molecules	Over the decades, allergic diseases have affected up to 30% of the world population and are currently a major global health problem. Their pathogenesis is constantly linked to the role of mast cells. Although several treatment modalities have been undertaken to tackle the development of allergy, these treatments have limited clinical success and some even lead to serious side effects. Honey is a thick, golden liquid produced by bees that has been used widely for its therapeutic effects. It has been proven to possess various pharmacological properties such as anti-inflammatory and anti-ageing activities due to its high polyphenol content. However, the effects of honey in allergy have yet to be elucidated. Thus, this project was designed to identify whether selected polyphenols from Malaysia stingless bee honey have potential interaction against key signalling molecules in an activated mast cell.	BIO, BTH, MBS	

22	Dr Wee Wei Yee, Gavin		Computational approach to characterize the evolutionary and functional properties of <i>Mycobacterium kansasii</i>	<i>Mycobacterium kansasii</i> , a nontuberculous mycobacterium, is an opportunistic pathogen of humans. It induces pulmonary or disseminated infections in humans infected with HIV. Infection with <i>M. kansasii</i> , accompanied by inflamed lymph nodes or pneumonic lesions, has been described in rhesus monkeys, squirrel monkeys, cattle, llamas, goats, camels, and both domestic and feral pigs. Besides, <i>M. kansasii</i> causes other clinical manifestations such as lymphadenitis, skin and soft tissue infection, tenosynovitis, arthritis, osteomyelitis and disseminated infection in patients co-infected with human immunodeficiency virus. While the whole genome sequences of <i>M. kansasii</i> strains are available on NCBI, no studies have been performed to study the functional properties of <i>M. kansasii</i> and comparing the characteristics of the genomes to each other and to other members of mycobacteria. The project will focus on the comparative genomics study between <i>M. kansasii</i> and other groups of mycobacteria such as slow-growing and pathogenic members (such as <i>M. tuberculosis</i> and <i>M. leprae</i>) and other environmental RGMs in the context of virulence genes may enable us to identify the genes that cause <i>M. kansasii</i> to be pathogenic and resistant to antibiotics, biocides and other harsh environmental factors. Different Bioinformatics approaches will be used in the project. It is very important that we characterize its genome and evolution to decide if efforts should be underway to keep it under close observation and, if required, aid future efforts at diagnosis, drug and vaccine design.	BIO, BTH	
23	Dr Wee Wei Yee, Gavin		Comparative genomic analysis of <i>Mycobacterium paragordoniae</i> , a Potential Novel Live Vaccine for Preventing Mycobacterial Infections	<i>Mycobacterium paragordoniae</i> (Mpg) is a temperature-sensitive Mycobacterium species that can grow at permissive temperatures but fails to grow above 37°C. Due to this unique growth trait, Mpg has recently been proposed as a novel live vaccine candidate for the prevention of mycobacterial infections. However, the reason behind this uniqueness of Mpg has still remain unknown. The genome of Mpg has not yet been well study. Number of Mpg strains have been deposited in the public database but so far only 1 strain has been study. There are lots of biological information can still be extracted through Bioinformatics and comparative genomic analysis. Thus, this project will focus on the Bioinformatics analysis on the Mpg genome to further explore other unique feature and answer for the respective phenotype show by this species.	BIO, BTH	
24	Dr Yek Sze Hue, Zoe		Biodiversity increases the defensibility of the urban environment to tropical diseases	Increase in incidences of in vector-borne accompanied many urban installation. This changed in epidemiology of these diseases are adapted to the conditions of cities, where now most of the world human population is living. In this project, you will search for literatures on the impact (increase or decrease) of biodiversity have on vector diseases. From the literatures, you will suggest a framework where urban planners can adopt to increase the defensibility of an urban environment to the invasion of vectored tropical diseases.	BIO, MBS	
25	Dr Yek Sze Hue, Zoe		The impact of land use conversion (to palm oil and deforestation) on leaf-litter ants functional diversity	Current analyses of biodiversity often focus on taxonomic diversity (e.g. species richness), which does not account for the functional role of a species. Functional diversity of species is likely more relevant to ecosystem service delivery than taxonomic diversity. In this project, you will carry out extensive searches on literatures that use leaf-litter ants as bioindicators and re-analyses the impact of land use changes (for palm oil plantations or deforestation) using functional diversity. Then you will use the functional diversity index to assess the long-term impact of land conversion on ants functional community in tropical forests.	BIO	
28	Dr Yek Sze Hue, Zoe		Are there differences in herbivores damages on two <i>Macaranga</i> ant-plant species?	Obligate <i>Macaranga</i> ant-plant symbioses offer better protection against herbivore damage than an opportunistic ant-plant. However, the questions remain whether there are differences in terms of leaves palatability between the two <i>Macaranga</i> ant-plant species. In this project, you will analyse 100+ <i>Macaranga</i> leaves pictures to categorize the type of herbivores that prey on them. The outcome of your analyses will be part of an on-going manuscript that is up for submission.	BIO	
26	Dr Yek Sze Hue, Zoe		The insects predation pressure on sea turtle eggs in hatcheries	Sea turtle conservation NGOs worldwide use hatcheries to increase the numbers of sea turtle eggs laid. However, there are many predators (fungus, crabs, insects, monitor lizards) that prey on the eggs housed inside hatcheries. The first part of the project is a literature review project where you will search for literatures that documented the type of insects and their life stages that preys on sea turtle eggs. The second part of the project is a meta-analyses that use published hatcheries success data to estimate the insects predation pressures on sea turtle eggs and suggest mitigation pressures against this specific type of predation.	BIO	
27	Dr Yeong Keng Yoon, Ken		Small molecule drug discovery	This project aims to develop novel small molecules that are pharmacologically active (synthesis/computational)	CHM	
28	Dr Yeong Keng Yoon, Ken		Investigations on potential of rare plants in Alzheimer's Disease	The main aim of this project is to investigate the extracts from rare plants for their potential in inhibiting cholinesterase enzymes.	CHM	