

***Academic staff who are not on this list will not be offering research projects in Semester 1 2024

No	Supervisors		Project title	Project description	Discipline of research area	Note (optional)
	Main supervisor	Co-supervisor(s)			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	
1	Pushpa Janarthanan	A/P Wu Ta Yeong (SoEng, MUM)	Preparation of nanocrystalline cellulose (NCC) from oil palm empty fruit bunch and incorporation into graphene oxide for electroactive material.	It is very common for people to get wounds throughout their life. In particular, chronic wounds have been causing a high morbidity and mortality rate which significantly affects the quality of life and pose major burden in economical and healthcare cost. To date, there are a variety of treatment options for chronic wounds including debridement, wound dressings, antibiotics and skin grafting. Among them, hydrogel wound dressings are attracting more attention due to their increasing demand in variety of application. However, most hydrogel are made from petroleum derived synthetic polymer which does not align with sustainability goals as they are non-biodegradable and non-renewable. Recently, natural polymer such as CMC and cellulose are actively used as alternative material for hydrogel as they are renewable, biodegradable, biocompatible and safe to be used. Nanomaterials have also been incorporated as a potential reinforcement to enhance mechanical properties.	MBS,BTH	
2	Pushpa Janarthanan	Dr. Thenapakiam (A*STAR, Spore)	Grafted Carboxymethyl Oil Palm Cellulose/Polyethylene Glycol hydrogel ink for 3D Printing for medical use	This study focused on optimization, synthesis and characterization of carboxymethyl oil palm cellulose (CMOPC), derived from oil palm empty fruit bunch from Kluang, Johor, Malaysia, and aminated polyethylene glycol (PEG) for the application as extrusion ink material for 3D printing of a hydrogel. The application of the intended hydrogel comprises of a wound dressing transdermal intention.	MBS, BTH	
3	Pushpa Janarthanan	Dr. Thenapakiam (A*STAR, Spore)	Green synthesis of silver nanoparticles using extracted cellulose from biomass for colorimetric detection of ammonia and hydrogen peroxide	Metallic nanoparticles have been extensively developed and used as sensors in the last decades. In particular, silver nanoparticles (AgNPs) have attracted much attention from researchers due to their diverse applications in antibacterial, photocatalytic, medical, optical, and electrical properties, leading to commercialization for industrial applications. Green synthesis of AgNPs has received a great deal of attention from researchers due to their environmental friendliness and can be further processed for the industrial sector. Plant biomass is the world's largest crop by production volume. Biomass is a vast amount of agricultural waste, and its disposal requires unnecessary costs. Therefore, biomass has been investigated as a reducing agent for the production of AgNPs, which brings additional value to biomass and benefits such as reducing budget and pollutants for incineration. The development of highly sensitive ammonia sensor technology has always been an active area of research due to its widespread use in industries such as fertilizer, animal feed production, paper and plastic manufacturing, and its toxicity to humans. This technology can only detect ammonia gas. Colorimetric analysis using surface plasmon resonance properties of metal nanoparticles has proven very useful for the analysis of dissolved ammonia due to the ease and speed of detection, high sensitivity, and low cost. Surface plasmon resonance is an optical property observed when electromagnetic radiation excites surface conduction electrons in AgNPs, leading to coherent resonant oscillations of the particles. Changes in the environment, especially the refractive index of the surrounding medium and the adsorption of molecules on metal surfaces, changes in absorption in the visible and near-infrared wavelength range can be observed by UV-Vis spectroscopy and the naked eye. Also, similar to ammonia, hydrogen peroxide sensor technology has been continuously developed with environmental and health concerns in mind as it is widely used in industrial applications, especially in the textile industry. Therefore, both ammonia and hydrogen peroxide should be detected, even at low levels. In this context, detection of ammonia and hydrogen peroxide will be developed using AgNPs synthesized by green technology. In this study, we use plant biomass as a bio-based reducing agent. This represents a new alternative for converting farmland management issues into added value. Cellulose is derived from biomass and used to synthesize silver nanoparticles (AgNPs). This AgNPs developed will further examined with a UV spectrophotometer and with the naked eye for the detection of ammonia and hydrogen peroxide, and the detection limits will be evaluated.	BTH	
4	Thoo Yin Yin		Effect of drying conditions on the mechanical and barrier properties of gellan gum coated paper	Gellan gum-based paper coatings contain a mixture of ingredients. The mechanical and barrier properties of the finished coatings depend on the mixture's stability and drying conditions. Hence, this study aims to characterize the stability of gellan gum-based paper coatings and followed by the effect of drying conditions (temperature and time) on the mechanical and barrier properties of gellan gum-coated paper.	FST and BTH	

***Academic staff who are not on this list will not be offering research projects in Semester 1 2024

No	Supervisors		Project title	Project description	Discipline of research area	Note (optional)
	Main supervisor	Co-supervisor(s)			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	
5	Prof Dr Emily Goh Joo Kheng	Wong Siew Fang	Synthesis, characterization, and antimicrobial evaluation of new imidazonaphthyridine derivatives	Imidazonaphthyridine derivatives have attracted considerable interest from researchers due to their remarkably diverse range of interesting biological activities. Their broad spectrum of biological properties establishes them as promising frameworks in medicinal and therapeutic research. The objective of this project is to synthesize and characterize new imidazonaphthyridine derivatives, exploring their potential antimicrobial effects against both Gram-positive and Gram-negative bacteria.	CHM and BTH	
6	Tan Ji Wei	Adzzie Shazleen Azman	Effect of crude honey on bacteria that causes acne	Honey is often touted as "good" for acne because it's believed to balance bacteria levels on the skin, promote healing, and lower inflammation, but there is no scientific evidence to suggest how honey alone can get rid of acne. As such, the present project aims to study the potential inhibitory effects of Malaysian honey against bacteria that cause acne.	BIO, MBS, BTH	
7	Tan Ji Wei	Adzzie Shazleen Azman	Effect of a C-benzylated flavanone on breast cancer cell line	Breast cancer is one of the most common heterogeneous tumors affecting women worldwide. Distressing diagnoses, increased financial burden, and severe adverse physiological and psychological side effects of different available treatment options prompted scientists to search for alternative and affordable therapeutics for breast cancer. Our current investigation will focus on the anti-carcinogenic properties of Dichamanetin, a C-benzylated flavanone isolated from an actinobacteria species, in a cellular model. This research will contribute to the development of novel alternative to treat cancer and lay the groundwork for any future explorations.	BIO, MBS, BTH	
8	Tan Ji Wei		Wound healing effects of crude honey on skin cells	Wound healing is a complex process with many interdependent pathophysiological and immunological mediators to restore the cellular integrity of damaged tissue. Many different methods have been employed to treat acute and chronic wounds as most wounds are susceptible to infection from microbes and are difficult to treat. The use of honey has recently gained clinical popularity for possible use in wound treatment and regenerative medicine. Honey comprises a wide variety of active compounds, including flavonoids, phenolic acid, organic acids, enzymes, and vitamins, that may act to improve the wound healing process. Thus, this project aims to look into the potential wound healing properties of Malaysian honey using human skin model.	BIO, MBS, BTH	
9	Irene Ling		Structural studies of polymorphs	This is a data mining project - dry-lab. The aim in this work is to investigate several polymorphs that interesting and useful in material science and pharmaceutical (active ingredients); and to evaluate their self-assembly in the solid-state using the structures reported in the Cambridge Structural Database.	FST, BIO, BTH, MBS, CHM	
10	Irene Ling	Dr Lim Siew Huah (UM)	Making new molecular sensors	The objective of this project is to synthesize a series of variable counterions with poly-substituted sensors and to examine the sensing capability.	FST, BIO, BTH, MBS, CHM	
11	Irene Ling	Dr Sakinah (UITM)	Synthesis and characterization of Schiff bases	The project aims to prepare and characterize a series of Schiff base compounds. Selected chemical properties such as structural and optical will be of focus.	FST, BIO, BTH, MBS, CHM	
	Irene Ling		Synthesis of ionic liquids	Ionic liquids are compounds comprised of ions with melting point below 100 °C and exhibit robust properties including high chemical stability, good solubility and low volatility to name a few. The group is currently interested in synthesizing novel cations to develop new ionic liquid systems. Our main goal is to address questions such as: How do the molecules of an ionic liquid interact with each other and with the counterions? What are the effects towards the physicochemical properties when different ions are combined within the system? What effect will this have on the macroscopic properties such as the molecular packing in the solid-state? The outcome of this work will provide a generic predictive model that can make a major contribution to our understanding and in the area of ionic liquids.	FST, BIO, BTH, MBS, CHM	
13	Adeline Ting		Microbial consortia formulations and their influence on microbial viability and efficacy in suppressing pathogen	This study aims to develop microbial consortia into bioformulations. The research further investigates the effectiveness of these bioformulations against pathogens and evaluates the cell viability of the microbial consortia post-formulation.	BIO, BTH, MBS, CHM	

***Academic staff who are not on this list will not be offering research projects in Semester 1 2024

No	Supervisors		Project title	Project description	Discipline of research area	Note (optional)
	Main supervisor	Co-supervisor(s)			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	
14	Adeline Ting		Biosynthesis of mono-, bi- and tri-metallic nanoparticles for antimicrobial activities	The synthesis of important metal nanoparticles into mono-, bi- and tri-metallic forms will be conducted using fungal extracts. The nanoparticles produced will be characterized using various methods for structure analysis. Thereafter, the antimicrobial activities of each mono-, bi- and tri-metallic nanoparticles will be tested against pathogens.	BIO, BTH, MBS, CHM	
15	Adeline Ting		Pretreatment strategies to enhance plastic biodegradation by landfill isolates.	The present work will study the effects of pretreatment methods such as thermal and UV exposure in aiding the microbial breakdown of plastic polymers. The extent of biodegradation resulting from the combined effect of plastic pretreatments and microbial activity will also be assessed through the characterisation of treated plastics (physical or chemical changes). Thus, the aim is to determine the most optimal pretreatment conditions that can maximise the efficiency of plastic biodegradation.	BIO, BTH, MBS, CHM	
16	Wee Wei Yee		Comparative genome analysis of Fish-Pathogenic <i>Mycobacterium pseudoshottsii</i> , Isolated from Yellowtail (<i>Seriola quinqueradiata</i>)	<i>Mycobacterium pseudoshottsii</i> , a slow-growing nontuberculous mycobacterium that can cause mycobacteriosis in fish, has been reported in wild and cultured fish. This pathogen produces a macrolide toxin, mycolactone, and is classified as a mycolactone-producing mycobacterium. A Japanese sardine (<i>Sardinops melanostictus</i>) was randomly sampled from a tank at the Tokyo Sea Life Park in which mycobacteriosis occurred in 2019. The liver was collected from the fish and subjected to mycobacterial culture, resulting in the isolation of <i>M. pseudoshottsii</i> . This study will focus on the genomic analysis of this species and to explore the unique feature of this species through Bioinformatics analysis.	BIO, BTH	
17	Adzzie Azman		Antibacterial activity of plant base compound against foodborne bacteria	The emergence of antibiotic-resistant foodborne bacteria has led to existing antibiotic treatment becoming ineffective and created a pressing need for the development of new antibacterial agents. In this study, the antibacterial activity of a plant base compound against a panel of foodborne bacteria will be determined.	BIO, BTH, MBS	
19	Siow Lee Fong		Comparison of the nutritional and antioxidant properties of selected tropical fruits.	This study aims to determine the nutritional and antioxidant properties of selected tropical fruits namely passion fruits, ambarella, <i>Syzygium nervosum</i> , pineapples		
20	Siow Lee Fong	Lee Sin Yee	Comparison of the antioxidant properties of different varieties and forms of Sabah Snake grass	Sabah snake grass is known to have high antioxidant properties. This study aims to determine the antioxidant properties of various varieties of Sabah snake grass and the effect of drying on the antioxidant properties the snake grass.		
21	Siow Lee Fong	Lee Sin Yee	Effect of drying on the antioxidant and physicochemical properties of selected fruits	This study examines the effect of freeze drying, heat pump drying and convection drying on the antioxidant and physicochemical properties of selected fruits		
22	Ang Chee Wei		Synthesis and characterization of new primaquine compounds	Primaquine is an 8-aminoquinoline antimalarial that has been widely used to cure relapsing malaria. This project aims to synthesize its new derivatives and to compare their properties with the parent compound.	CHM	
23	Ang Chee Wei	Prof Emily Goh Joo Kheng	Synthesis and antimicrobial study of new istain derivatives	Antimicrobial resistance has been declared by the World Health Organization (WHO) as one of the top ten global public health threats facing humanity. Therefore, discovery of new antibiotics are urgently needed to overcome this challenge. Here in this project, we will focus on the synthesis of new isatin derivatives and to study their activity against both Gram-positive and Gram-negative bacteria.	CHM, BTH, MBS	
24	Ken Yeong	Dr Chong Yie Kie	Synthesis of cyclic Bac8c and Jelleines peptides for enhancing antimicrobial activity	There is a great need to develop novel antibiotics with alternative modes of action for the treatment of life-threatening bacterial infections. Cyclic peptides (CPs) have garnered considerable attention in the design of antimicrobial compounds due to their additional characteristic such as large surface area to provides a high affinity, low flexibility to enhance the binding properties, low toxicity, and their ability to target protein-protein interactions. In this project, two natural antimicrobial peptides, Bac8c and Jelleines were selected for cyclization to enhance their antimicrobial activity. Bac8c has demonstrated efficacy against both Gram-positive and Gram-negative bacteria, while Jelleines was found to exhibit a greater propensity for targeting Gram-negative bacteria and fungi, specifically <i>Candida albicans</i> . This study aims to provide valuable insights into potential efficacy of cyclic peptides on the antimicrobial activity.	CHM	

***Academic staff who are not on this list will not be offering research projects in Semester 1 2024

No	Supervisors		Project title	Project description	Discipline of research area	Note (optional)
	Main supervisor	Co-supervisor(s)			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	
25	Ken Yeong	Dr Chong Yie Kie	Studying the antimicrobial properties of selected short peptides	The enormous increase of the antimicrobial resistance (AMR) to many of the conventional antibiotics has become a global public health concern. Thus, finding a new antibiotic has become more challenging. This project aims to evaluate the antimicrobial activity of selected short peptides modified from brain proteins.	BTH, MBS, CHM	
26	Ken Yeong		Discovering a new and efficient synthetic route to benzoxazoles	Benzoxazole is an attractive scaffold in medicinal chemistry due to its diverse biological applications. The goal of this project is to explore a facile but efficient synthetic strategy to build novel benzoxazole molecules which might be of medicinal interest.	CHM	
27	Ken Yeong	Dr Tang Kim San (Pharmacy)	Bioactivity of Sage Apiana (white Sage)	A recent preliminary report has shown that extract from Sage Apiana is able to inhibit acetylcholinesterase (AChE) enzyme. This project will investigate Sage Apiana for its cholinesterase activity against AChE and butyrylcholinesterase (BChE), both which are implicated in Alzheimer's disease.	BTH, CHM	
28	Sadequr Rahman	Patrick Tan, Qasim Ayub	Effect of diet on gut bacteria in the model system Galleria mellonella	It is well known that diet influences gut bacteria in humans but there is considerable overlap due to variations in the lifestyle of humans which cannot be controlled. In this project we will use Galleria mellonella to bring up two lineages of the moth, one primarily vegetarian and the other primarily meat-influenced. We will investigate the effects on diet on the gut bacteria they contain by sequencing and possibly investigate immunological differences between the lineages. This project will include lab-based and bioinformatic investigations.	BIO,BTH,MBS,FST	Variations on this idealised project available. Happy to discuss.
29	Lee Yee Ying		Development of palm-based coconut milk emulsion substitute	Coconut milk emulsion substitute is an alternative to coconut milk to mitigate food security and health issues associated with conventional coconut milk. The emulsion is usually prepared from different type of food ingredients to mimic the physicochemical properties of the conventional coconut milk. The project involves the formulation development and characterization of the coconut milk emulsion substitute followed by shelf stability study	FST	
30	Lee Yee Ying		Development of plant-based fermented dairy products	Plant-based emulsion beverage is a beverage made from plant-based ingredients and used as substitute of dairy milk. The project aims to study the development and characterisation of fermented plant-based milk from palm sources.	FST	
31	Lee Yee Ying		Enzymatic synthesis of the structured lipid medium-and long-chain triacylglycerols	Structured lipids (medium and long chain triacylglycerol) made up of medium chain and long chain fatty acids are commonly known for its various health promising benefits. The project aims to study the influence of enzymatic reaction conditions on the synthesis of medium-and long chain triacylglycerols from palm sources. The physicochemical properties of the structured lipid will also be evaluated.	FST	
32	Lee Yee Ying		Development of gummy bear candies infused with palm phytonutrients	Phytonutrients such as beta carotene are widely known for their beneficial effect in improving eye sights. This project aims to the study the development of gummy bear candies incorporated with the beta carotene phytonutrients alongside with its evaluation on shelf stability that is suitable for kids.	FST	
33	Wan F. A. Jusoh	1) Dr Serina Rahman (Department of Southeast Asian Studies, NUS) 2) Dr Nor Arlina Amirah Ahmad Ghani (Justice for Wildlife Malaysia)	Tracking climate change impacts on Malaysia's west coast fishermen	The project spans over a period of three months and involves data entry and understanding of the mechanics of fish landings study. The objective of the project is to gain knowledge about artisanal fishing communities, climate change impacts, and reduced fish catch issues. The collected data will be processed into graphs and charts and will be used to track fishermen's catch trends between 2016 and 2023. The study will encompass pre- and post-COVID catch and sudden drastic fall in fish landings despite the halt in development over the COVID period. It will also involve a comparison of local reports on weather and seawater changes. Furthermore, the project will calculate fish landing values over that period of time to track impacts on fishermen.	BIO,BTH	This project involves data entries and analysis. No field trip is required.
34	Lee Sin Yee		Development of low-fat vegan ice cream base powder	This project aims to develop low-fat vegan ice cream base powder that requires minimal consumer preparation. In this study, physicochemical properties of the formulated ice cream will also be evaluated.	FST	

***Academic staff who are not on this list will not be offering research projects in Semester 1 2024

No	Supervisors		Project title	Project description	Discipline of research area	Note (optional)
	Main supervisor	Co-supervisor(s)			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CHM)	
35	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.	
36	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.	
37	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.	
38	Md Zobaer Hasan		Impacts of combined effect of geographic factors and population related factors on the COVID-19 spreading in ASEAN countries	The aims of this study are to quantify the combined effect of geographic information (i.e., latitude, longitude and altitude) and population related factors (total population, population density, weighted population density) on the cumulative Covid-19 infected population in the ASEAN countries.	BIO, BTH, MBS, CHM.	
39	Md Zobaer Hasan		Association between major climate variables and transmission of SARS-CoV-2 in the ASEAN countries	In this study, we aimed at analyzing the associations between transmission of Covid-19 and major meteorological variables, such as average temperature, minimum temperature, maximum temperature, and precipitation in the ASEAN countries.	BIO, BTH, MBS, CHM.	
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

***Academic staff who are not on this list will not be offering industry projects in Semester 1, 2024

No	Supervisors		Project title	Project description	Discipline of research	Note (optional)
	Main supervisor	Industry Collaborator			Biology (BIO), Biotechnology (BTH), Medical Bioscience (MBS), Food Science and Technology (FST) or Medicinal Chemistry (CMM)	
1	Siow Lee Fong	EAPP	Effect of the type of fats on the physicochemical and sensory properties of butter sauce	Butter sauce is commonly used in various cuisines. This study aims to explore different type of commercial fats that have different compositions on the physicochemical and sensory properties of butter sauce and its application.	Food Science and Technology (FST)	
2	Lee Yee Ying	EAPP	Effect of the type of fats on the physicochemical and sensory properties of butter cream	Butter cream is commonly used in various baked products. This study aims to explore different type of commercial fats that have different compositions on the physicochemical and sensory properties of butter cream and its application. This project is in collaboration with food industry.	Food Science and Technology (FST)	
3						
4						
5						
6						
7						
8						
9						
10						