

List of RGJ advisors for RGJ- ASEAN Scholarship 2019

No	Title	First Name	Last Name	Program/ Department	School/Faculty	University	Email	Keywords	Research Concept (300 words)
1	Prof. Dr.	Alissara	Reungsang	Biotechnology	Technology	Khon Kaen University	alissara@kku.ac.th	bioenergy, bioplastic, plant digestate, biorefinery, second generation biomass, lignocellulosic materials	Thailand is the fourth largest producer of sugarcane in the world. Sugar mill results in the large amount of wastewater as well as the sugarcane residues including sugarcane bagasse (SCB) and filter cake (FC). SCB is accounted for approximately 25% of sugarcane mass. SCB is commonly used to produce energy by combustion which contributes to the emission of CO ₂ . However, its compositions contain 10–15% sucrose and 12–16% fiber which makes it suitable as the feedstock to produce bioenergy and bio-products, based on fermentation. In this proposed research, an existing dilute acid pre-treatment will be applied to SCB in order to obtain the underlying fermentable sugar for producing H ₂ . After the end of H ₂ fermentation, the acidic effluent containing volatile fatty acids (VFAs) such as acetate, butyrate and valerate are generated. These VFAs can be used as the building blocks to produce polyhydroxyacetic acids (PHAs). However, the appropriate technology for recovering these VFAs is very limited and not cost efficiency. Therefore, the innovative electrodialysis unit will be applied to the acidic effluents to recover the VFAs which will be used to produce PHAs by <i>Cupriavidus</i> sp. KCU38. PHAs can be used to substitute the conventional plastics. It can be completely degraded in the environment, non-toxic and bio-compatible. Another waste from sugar mills is FC which is by-product from the juice clarification and treatment process to remove non-sugar impurities from raw sugarcane juice. Every 100 tons of crushed sugarcane, approximately 3–3.3 tons of FC remain as a by-product. FC is rich in phosphorus and organic matter; hence it can be used as the plant growth promoting digestates after an appropriate technology is applied. The outcome of this proposed biorefinery concept will not only improve the domestic energy security but also create an environmentally friendly and low carbon energy society.
2	Asst. Prof. Dr.	Anusorn	Lungkaphin	Physiology/ Physiology	Faculty of Medicine	Chiang Mai University	onanusorn@yahoo.com	Obesity; Insulin resistance; Renal gluconeogenesis; Sodium-glucose cotransporter 2 inhibitor; Renal function	The increasing trend of obesity worldwide have emphasized that the understanding of the molecular links between obesity, insulin resistance and increased endogenous glucose production is undoubtedly of critical importance. The regulatory pathways and signaling defects of renal and hepatic gluconeogenesis should be thoroughly sought out to identify the potential therapeutic targets for accelerated renal and hepatic gluconeogenesis in obese insulin resistant condition. The conventional anti-diabetic drugs such as biguanides, thiazolidinedione and dipeptidyl peptidase 4 inhibitors are either insulin-secretagogues or insulin-sensitizers. The new emerging gliflozin class of anti-diabetic therapy consists of the inhibitors of sodium dependent glucose cotransporter (SGLT) thus their action to confer glycemic control is through the inhibition of renal glucose reabsorption which is independent of insulin level or insulin sensitivity. The resulting loss of calories from increasing urinary glucose excretion promotes weight reduction which may also serve as an effective measure to prevent or delay the onset and progression of T2D. Furthermore, SGLT inhibitors have pleiotropic effects on various organs including their ability to improve insulin sensitivity [30]. The action of gliflozins on gluconeogenesis is still an area of debate. Some researchers have observed that SGLT1 triggered compensatory increase in EGP while certain studies have indicated that SGLT1 attenuated renal and hepatic gluconeogenesis. It is interesting to study the relationship between SGLT1 and subsequent changes in renal and hepatic gluconeogenesis in obese condition as these could have significant impact on glucose homeostasis. Therefore, we aim to investigate the intracellular signaling mechanisms of increasing renal and hepatic gluconeogenesis in obese insulin-resistant rats and, the effect of SGLT1, dapagliflozin, on these processes.
3	Asst. Prof. Dr.	Anusorn	Cherdthong	Animal Science	Agriculture	Khon Kaen University	anusorn@kku.ac.th	Cassava pulp, Citric waste, Yeast cream, microorganism, Biodiversity-based Bioproduct	There is potential for increased livestock production in Thailand through use of agro-industrial by-products as a supplement in ruminant diets. The utilization of agro-industrial by-products may be economically worthwhile, since conventional feedstuffs are often expensive. In addition, growing interest in utilizing food industrial by-products as animal feed is due to enhanced environmental and economic concerns because most food by-products are environmental waste management problems. Cassava pulp and citric acid waste (CW) are by-products which are abundant from cassava industries of Thailand. Despite their potential use in supplementing ruminant nutrition, agro-industrial by-products have been shown to have high fiber content besides being low in metabolized energy (ME) and crude protein that result in low degradability in the rumen. Therefore, the aim of this project will be interested in develop and produce new kinds of feed resources from agro-industrial by-products (cassava pulp and citric waste) with <i>L. plantarum</i> and yeast cream on feed utilization and performance production in ruminant animals which would be reduce environmental pollution. The experiments will be tested both in vitro and in vivo experiment. All research activities under this project will be carefully conducted using international standard protocols and methodologies. The following research protocols will be employed for all research activities including: 1) In vitro technique will be used for measuring kinetic of gas, digestibility of feed, microbial mass, NH ₃ -N and microbial diversity etc. This technique will be prepared according to Menke and Steingass (1988). 2) In vivo techniques will be used for this project including digestion trial, feeding trial and production trial. These methodologies are involved in using animal such as beef cattle, and dairy cow. The samples of feed, fecal, urine, milk, blood and rumen fluid will be collected and analyzing for digestibility, rumen ecology, health status and performances.

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4	Dr.	Apilak	Salakkam	Biotechnology	Technology	Khon Kaen University	apilsa@kku.ac.th	cassava pulp, value-added products, solid-state fermentation, biorefinery, bio-economy	<p>Cassava pulp (CP) is a starch-rich by-product discharged from the cassava starch industry. Due to its massive amount being discarded each year, and its high starch content, which can be as high as 70% by weight, CP is a very high potential fermentation feedstock for various value-added products. With this in mind, this project aims at developing an integrated process for the production ethanol, enzymes and yeast extract using CP as the feedstock.</p> <p>In this project, CP will be hydrolyzed to produce fermentable sugars for a subsequent ethanol fermentation. Our preliminary study revealed that cold hydrolysis of CP followed by fermentation of the resulting hydrolysate resulted in a satisfactory ethanol yield of 0.27 g-ethanol/g-CP. However, it was observed that only 42% of carbohydrate in the CP was hydrolyzed.</p> <p>To make full use of CP, the conditions for cold hydrolysis will be optimized to increase fermentable sugars production, and therefore ethanol. The residual CP obtained after the hydrolysis will be investigated as a substrate in solid-state fermentation (SSF) for the production of enzymes. These enzymes will be used to hydrolyze yeast cells obtained after the ethanol fermentation to produce yeast extract, which can be used as a supplement or a substitute to conventional nitrogenous nutrients in ethanol fermentation, SSF, and other fermentation processes.</p> <p>It is considered that this project will provide essential knowledge to the development of a biorefinery process for biofuels and biochemicals production, under Thailand 4.0 policy.</p>
5	Asst. Prof. Dr.	Aranya	Siriphon	Sociology and Anthropology	Faculty of Social Sciences	Chiang Mai University	aranyass@gmail.com	Chinese Entrepreneur Capitalism, New Chinese Migrants, Mobile Subjects, Anthropology	<p>The Chinese Entrepreneur Capitalism: New Chinese Migrants and Mobile Subjects in Comparative Studies:</p> <p>The increasing numbers of new Chinese migrants, who are small-scaled traders and entrepreneurs, have been mobile throughout the world, gradually opening their business ventures abroad in e.g. African, European and Southeast Asian regions. The research and the conceptual framework aim to do a comparative study on the new Chinese migrants moving into the Southeast Asian region, especially in ASEAN countries. It examines how new Chinese migrants become entrepreneurial subjects, employing entrepreneurial skills and strategies to serve their economic life goals; in what conditions and under what contexts they could (not) get success through their lives on the move; Are there any common patterns/ particularity that help understand the entrepreneurial subjects of new Chinese migrants in different countries?</p> <p>The research methodology is anthropological based discipline, conducting fieldwork, and document research of relevant literature on new Chinese migrants and their mobile practices in Southeast Asian countries, as well as the role of the Chinese, and relevant countries' policies. The expected result is to gain more understanding about "Chinese Entrepreneur Capitalism", and a contribution to policy making of ASEAN countries or elsewhere, to improve entrepreneurial skills and strategies of migrants in the countries.</p>
6	Prof. Dr.	Artiwan	Shotipruk	Department of Chemical Engineering	Faculty of Engineering	Chulalongkorn University	artiwan.sh@chula.ac.th	Polycosanol, dimethyl ether, green extraction, sugar cane	<p>The sugarcane has been reported as three main sources of policosanol, a mixture of long chain aliphatic primary alcohols, having been shown to decrease platelet aggregation, endothelial damage, and foam cell formation. The effectiveness of policosanol as a lipid-lowering agent has also been studied. Policosanol extraction from these sources is normally carried out using organic solvent. Although extraction yield is rather high, this method presents several drawbacks such as toxicity from organic solvent, solvent recovery requirement, as well as being energy-intensive operation. Consequently, there is a demand for new extraction techniques that is more environmental friendly.</p> <p>Supercritical fluid extraction (SFE) is a green technology that has been applied on a commercial scale for more than three decades. SFE is a high-pressure extraction method in which a mixture of solutes is separated from a solid matrix by bringing the mixture into contact with a fluid in the supercritical state. A supercritical fluid (SCF) is a substance above its critical pressure and temperature. Its properties range between those of liquid and gas. Supercritical extraction is an increasingly important separation technology in which traditional liquid solvents are replaced by supercritical fluids (SCF). The main advantages of SCF over liquid solvents is that their high diffusivity, low viscosity, and low surface tension can speed up mass transfer-limited extractions. The disadvantages of SFT are associated with the high costs of operation and safety related issues. In order to reduce the cost of operation, recent studies involving nearer sub-critical solvents such as dimethyl ether (DME) have been reported. This technique is economically efficient and environmentally friendly by virtue of the unique physical and chemical properties of DME. Additionally, the DME method can extract/remove the desired/undesired components as well as dewater (dry) the wet materials simultaneously. This project aims to study extraction of Polycosanol by DME.</p>

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7	Prof. Dr.	Banthit	Chetsawang	Reserach Center for Neuroscience	Institute of Molecular Biosciences	Mahidol University	banthit.che@mahidol.ac.th	Neuroscience, Molecular neurobiology, Neurodegeneration, Cognitive impairment, Methamphetamine, Neuroinflammation	Methamphetamine is psychostimulant drug that cause to drug abuse or addiction and affect to psychiatric disorders. Methamphetamine affects into dopaminergic neuron and other neurotransmitter that cause to change the function of brain and behavior. Substantial evidence suggests that there are changes in several neurotransmitter systems in the pathophysiological processes leading to the formation of schizophrenia especially high concentration of dopamine (DA) at nerve terminals and excessive stimulation of dopamine D2 receptors in the striatum. The response rate of schizophrenia is unsatisfactory and cognitive decline is common occurred in particular after long term treatment. Moreover, recent evidence have revealed epigenetic risk factors such as drug abuse and stress that might contribute to pathogenesis of schizophrenia. Recent studies demonstrated toxic effects of methamphetamine on induction in neurodegeneration and neuroinflammation. Additionally, the activation in calcium-dependent signaling cascade have gained interest to be a key factor responsible for cell degeneration and inflammation. Therefore, we hypothesized that methamphetamine toxicity dysregulates dopaminergic neurons function via induce inflammation trough oxidative stress and calcium-dependent process, and neuroinflammation may contribute on etiological features and prognostic factors of psychosis and deficits in executive performance in patients with schizophrenia and methamphetamine abusers.
8	Assoc. Prof. Dr.	Boonchai	Techaumnat	Dept. of Electrical Engineering	Faculty of Engineering	Chulalongkorn University	boonchai.t@chula.ac.th	electrostatics; electric field; dielectrophoresis; electromechanics; bioelectromagnetics; microfluidics	<p>This research is related to the separation of particles and/or biological cells in microfluidic systems. The application is focused on biomedical engineering. The dielectrophoretic (DEP) force shall be utilized to sort target particles from cells or sort different-typed cells, whose DEP responses differ. For example, infected blood cells will be separated from a blood sample. The DEP force is an electrostatic force that acts on an uncharged object that has a different polarizability from the background medium. The force either attracts the object to or repels the object from the region of higher electric field. Because the DEP force can be controlled to act specifically on designated cells, the separating process is a noninvasive one. The sorted cells can be used further, e.g., for study on the cell development or the drug responses.</p> <p>The study in this research involves (a) the design of microfluidic devices, including the dimension and electrode optimization, (b) the analysis of dielectric and electromechanical characteristics of cells and particles, and (c) the fabrication of the devices and the experimental verification. Mathematical models shall also be applied to study the behavior of samples according to various electric field activation. The sorting processes on the devices shall be done in a continuous manner so as to be appropriate for practical applications.</p> <p>As the research is a multidisciplinary one, students who graduated from many fields such as electrical engineering, mechanical engineering, physics, biology-related fields, can participate in this work. Essential backgrounds will be built up during the research courses.</p>
9	Asst. Prof. Dr.	Chanatip	Samart	Chemistry	Faculty of Science and Technology	Thammasat University	chanatip@tu.ac.th	deoxygenation; biojet; biomass; catalyst	Petrochemical and fuel were produced from fossil as non-renewable resource which was depleting and becoming world crisis. From this reason, the resource for petrochemical and fuel have been changed to renewable resources including biomass. Our research work interests the conversion of biomass to chemical and fuel via thermochemical reactions. Moreover, heterogeneous catalyst will be developed and applied in the chemical reaction to improve the activity and selectivity to desired product. Biojet is a one of our interesting product. They could be produced by pyrolysis of fast growth biomass but their quality is low due to high oxygen content. In our study, the catalyst will be developed to get rid of the oxygen from bio oil through three different mechanisms as decarboxylation, decarbonylation and dehydration. In addition, the bio-oil can be not only use as fuel but it can be apply for resource of aromatic compound. Therefore, high efficient catalyst in biojet fuel production will be studied. In our research, we aimed to utilize biomass base resources such as fast growth plants, agricultural waste and non-edible vegetable oil to forward "Green Carbon Process".
10	Asst. Prof. Dr.	Chanin	Yoopetch	Marketing	College of Management	Mahidol University	chanin.yoo@mahidol.ac.th	Cross-cultural management; Employee Performance; Airline Companies	The study aims to investigate the employee performance in the airline companies in Thailand. By the nature of the airline industry, it has international working environment due to different nationality of airline staff, including both Thai and Non-Thai employees, especially for the flight attendance. Based on Expectancy Theory, the proposed models are developed by focusing on the employee performance as a dependent variable and other determinants, including self-efficacy, perceived control, employee motivation, expected behaviors, organizational goals and cultural factors of employees. The study has a primary goal to identify significant factors affecting the employee performance in all samples. Furthermore, the study attempts to investigate to search for the differences in the influential factors on employee performance for Thai and Non-Thai group. The study includes all major airlines with the permanent offices in Thailand. The quantitative approach with structural equation modeling will be used to construct and test the model. The benefits of the study are expected to further develop the expectancy theory in the context of cross-cultural management. Practical contributions can help the organizations and their managers to improve the work process to enhance the employee performance in their airline companies for both Thai and Non-Thai employees.
11	Assoc. Prof. Dr.	Chartchai	Krittana	Molecular Biosciences in Agriculture	Institute of Molecular Biosciences	Mahidol University	ckrittana@gmail.com	aquaculture, molecular biology, biotechnology, shrimp, crab, protein, proteomics	Our group at the institute of Molecular Biosciences are interested in crustacean and aquaculture molecular biology. We have applied Molecular Biology approaches to investigate biological mechanism at the protein and proteomic levels. Our current research activity includes shrimp-pathogen interactions, and induction mechanism of molting in softshell mud crabs. Differential expression of proteomic profiles in the animals has been revealed and led to a number of targeted proteins for biological and functional study. The project is now also extended to cover rubber tree to investigate the candidate protein and peptides of economic benefits.

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12	Assoc. Prof. Dr.	Chatree	Faikhamta	Science Education	Faculty of Education	Kasetsart University	feductf@ku.ac.th	STEM Education, Science Teacher Education, Action Research	<p>Title: A Program to Enhance Teachers' Pedagogical Content Knowledge for STEM Education</p> <p>Science, Technology, Engineering and Mathematics (STEM) education has become prioritized as one of major factors that can help to lead a country forward. However, many studies pay much emphasis on short-term teacher training and designing STEM activities for teachers to bring to their classroom. A short-term teacher training does not fulfil and sustain teachers' ability to transform their knowledge of teaching in specific topics to particular context. Besides, STEM activities brought from Western curriculum does not fit well with classroom context in Asian countries. In order to investigate the unique traits of Asian classroom contexts, it is essential to investigate teacher professional development strategies that can enhance teachers' ability to transform STEM education to particular context, so-called pedagogical content knowledge for teaching STEM (PCK for STEM). In this study, we will employ collaborative classroom action research as research methodology. A specific professional development program for in-service teachers will be designed based on constructivist views of learning, teachers' reflective thinking, classroom action research, and professional learning community (PLC). The participants of this study will be primary science teachers. Data were collected through PCK for STEM survey, teachers' lesson plans, classroom observation, interviews and reflective journals. Various data will be analysed using the constant comparative method. Using this data analysis method, we will attempt to discover patterns of growth and changes in the participants' PCK in relation to STEM through the program. The contribution of this study is research findings that can help policy makers to understand how to support teachers' teaching STEM education. It also results in an effective program for enhancing teachers' PCK for STEM that relates to specific context and that could be the prototype for a teacher professional development program in STEM education. ☐</p>
13	Assoc. Prof. Dr.	Chongchin	Polprasert	International doctoral program in Environmental Technology, Department of Sanitary Engineering	Faculty of Public Health	Mahidol University	chongchin.pol@mahidol.ac.th	Phosphorus recovery; Sugarcane industry; Final effluent, Material flow analysis	<p>Sugarcane is one of the major crops popularly grown in ASEAN countries. Its cultivation has been increasing every year to yield a harvest that is used for production of food and fuel as end-user products consumed in the cities. Meanwhile, Phosphorus (P), which is an essential nutrient supporting life of all living things on earth, has been predicted to be dwindling in the near future. This may lead to severe issues on P shortage, which will adversely affect global food production and food security, especially in the countries with limited phosphate rock deposits, including ASEAN. Therefore, a research is proposed to examine and quantify P flows throughout the sugarcane industries, starting from cultivation in agricultural phase until end-user productions in industrial phase, using material flow analysis. Its purpose is to identify P losses occurring along the manufacturing lines and prioritize efforts for P recovery and recycling. Afterwards, appropriate P recovery technology will be researched and developed so as to be used to produce struvite, which is slow-release fertilizer suitable for plant uptake. Successful results may help maintain food security in an era of non-renewable resource scarcity, especially P needed for food cultivation. Also, outcome of this research will find optimized techno-economical process technology for P recycling of wastes generated from sugarcane industrial complex. This effort will not only decrease the amount of waste to be disposed of and P fertilizer imports to ASEAN countries, but also help farmers access to cheaper and better-quality P fertilizer, while millers earn more from selling recovered P.</p>
14	Asst. Prof. Dr.	Dalina	Tanyong	Department of Clinical Microscopy	Faculty of Medical Technology	Mahidol University	dalina.itc@mahidol.ac.th	Thalassemia, Hepcidin, Signaling	<p>Hepcidin is regulated by plasma iron-transferin, intracellular iron stores, and its signaling. Mutations of transferin receptor 2 and HFE lead to hepcidin deficiency.</p> <p>In Thalassemia, transfusion is predominant cause of iron overload rather than dietary iron absorption. Different levels of hepcidin in thalassemia intermediate and major result in different cellular distribution of iron.</p> <p>Hepcidin measurement have recently possible with development of assays for bioactive hepcidin in serum and urine, methodologies include ELISA, MALDI-TOF, LCMS/MS. In addition, the hepcidin signaling plays role in hepcidin regulation and function in Thalassemia. Then, it would be benefit to study the hepcidin signaling involved in dyserythropoiesis of thalassemia.</p>

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15	Asst. Prof. Dr.	Davisakd	Puaksom	Southeast Asian Studies, Department of History	Faculty of Social Sciences	Naresuan University	davisakd.puaksom@gmail.com	Postcolonial Indonesia Literature, Structure of Feelings, Emotions	After the revolution in 1945, Indonesian literature that had newly emerged a few decades earlier at the late colonial period encountered with major changes. After its independence, it is apparent that a post-colonial Indonesian literature could not be separated from a heated cultural debate that took shape under the ideological contention, especially between the leftist, the nationalist, and the Islamic. The ideological struggle during this nation-building period under President Soekarno had arguably formed various forms of cultural entities, i.e. the National Cultural Institute of the nationalist, the Indonesian Muslim Cultural Arts Institute of the Islamic parties, and the Cultural Institute of the Indonesian Communist Party. Indonesian literatures that crafted in this period were, thus, a product of this political environment. And the most distinctive internationally well-known author emerged in this era was the leftist novelist such as Pramoedyana Ananta Toer. However, in the late 1960s, the Indonesian army led by General Soeharto had overthrown President Sukarno and eliminated the leftist and the Islamic cultural influences, including literature. After 1965 – 1990, Indonesian literature was thus closely under the authoritarian surveillance. Indonesian authors that had been allowed to publish their works in this New Order era were either collaborated with the state's ideology or self-censored their own literary writings. With the collapse of Soeharto regime in 1997, Indonesian stern political environment had slowly been unfolded. As freedom of expression had finally open for the political and cultural movements, literature of the post-Soeharto era has represented a new social imagination. Thereby, it is fascinating, for this long period in Indonesian literature, to explore that how the structure of feelings was represented in these literatures. Or, how did it change? And how were different emotions and feelings shaped and shared in literature of those historical periods?
16	Asst.Prof. Dr.	Duangdao	Channei	Department of Chemistry	Faculty of Science	Naresuan University	duangdao@nu.ac.th	Photocatalyst, Advanced oxidation process, Adsorption, metal oxide, composite materials, Photocatalysis, Visible light irradiation, Adsorbent, Porous materials	Textile industry such as "Batik" in South-east asia have been considered as one of the most toxic organic compound causing issues in the water pollution. The traditional treatment technologies have showed their limitation in organic contaminant removal and cannot meet the stringent standard of water quality. As a result, advanced oxidation process (AOPs) have been developed as alternative methods for removing organic contaminant in water. These processes use hydroxyl radical to oxidize organic compounds and mineralize them into carbon dioxide and water. The heterogeneous photocatalysis is one of the AOPs which have been demonstrated to be an effective treatment method by using metal oxide semiconductor such as TiO ₂ , CeO ₂ , ZnO, Fe ₂ O ₃ , BiVO ₄ , and WO ₃ . Under visible light irradiation, metal oxide photocatalyst is excited and generated hydroxyl radical via a series of redox reactions. Therefore, the efficiency of photocatalysis for organic contaminant removal is investigated in this project. One of the factors to improve the photocatalytic efficiency is adsorption ability for organic contaminant on photocatalyst surface. In particular, there is growing interest in the combination of porous materials produce from biomass to enhance adsorption and photocatalytic performance. In the possible reaction mechanism of metal oxide photocatalyst decorating porous materials, the organic contaminant from the bulk solution is concentrated on the porous adsorbent near the surface active site of photocatalyst, which attributed to great absorptivity of organic contaminant molecules and thereby achieve the high photocatalytic efficiency. Thus, this study aimed to support metal oxide photocatalyst on the porous adsorbent. Besides that, the equilibrium, thermodynamic, and kinetic studies are contributed to evaluate more clearly the effectively of process through calculating the degradation rate constant of organic contaminant.
17	Assistant Professor	Jakkrit	Sangkhamanee	PHD in International Development Studies	Faculty of Political Science	Chulalongkorn University	jakkrit.mail@gmail.com	Science, Technology and Society, Science and Technology Studies	The research aims to look at how science and technology shape the social lives of the modern society and especially the modern state formation, and vice versa. In social science studies, on one hand, the explorations of how scientific knowledge is socially constructed and how communities of scientists and engineers are shaped by socio-cultural factors are still very limited. On the other, the idea that science and technology can influence and shape the dynamism of society needs to be analysed in specific of Thailand. This research encourage to expand such knowledge limitation by looking at comparative case studies in ASEAN countries to understand the distinctiveness of science and technological relations with the society it embedded in. This can be ranged from the study of science and technological development after the WW2, the political context of science and technology policy initiation and implementation, the impacts of science and technological-related projects and infrastructure toward society and nature as well as the way in which distinctive cultures and societies deal with the construction, reception, and expansion of science and technology in different forms.

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18	Assoc.Prof. Dr.	Jaroon	Rungamornrat	Department of Civil Engineering	Faculty of Engineering	Chulalongkorn University	jaroon.r@chula.ac.th	size dependent behavior, continuum-based methods, nonlocal constitutive models, couple-stress theory, surface free energy, small-scale influences	<p>Nowadays, both micro- and nano-technologies have played a crucial role in various disciplines. Nanostructured materials and various tiny devices (e.g., MEMS, NEMS, sensors, actuators, chips, etc.) have attracted significant interest, in the past several decades, due to their attractive properties. According to increasing applications of such technologies, extensive researches have been required to supply sufficient fundamental knowledge and in-depth understanding of those problems of interest.</p> <p>Mathematical modeling, via a set of governing physics together with hypothesis/simplifications, is an attractive approach commonly used, in addition to experimental investigations, to study small-scale problems. In past three decades, attempts have been made to develop continuum-based models, where tiny objects are still treated as a continuum, to avoid the massive requirement of computational resources relative to discrete-based approaches but still providing sufficiently accurate results. Unlike problems in macro-scale, various effects have been observed and found significant in small-scale problems such as surface free energy, nonlocality induced by interatomic attractions, and length scale effects. All those influences render the physical response size-dependent. It has been recognized that size-independent continuum mechanics adopted for simulating macro-scale problems have failed to simulate those situations. As a result, those classical theories must be properly modified or enhanced to integrate influences observed in a small-scale before uses.</p> <p>This research aims to develop a framework for modeling/analysis of fundamental mechanics problems with the integration of size-dependent/scaling effects. A set of size-dependent continuum mechanics theories is employed to build mathematical models with embedded length scale parameters and then applied to formulate governing equations for various boundary value problems. Efficient solution procedures are then implemented to construct analytical and numerical results for different scenarios. After benchmarking with reliable solutions, results are used to investigate mechanical response of micro- and nano-scale problems and the influence of length scale on size-dependent characteristics of predicted solutions.</p>
19	Prof. Dr.	Kampon	Kaeoket	Department of Clinical Sciences and Public Health	Faculty of Veterinary Science	Mahidol University, Nakhon Pathom, Thailand	kampon.kae@mahidol.edu	Veterinary, pig production, bacterial disease, diarrhea, vaccine, antibiotic	<p>Diarrhea in piglets is one of the most challenging diseases in swine industry worldwide. During the past decade, in southeast Asian countries including Thailand, the morbidity and mortality of piglets' diarrhea are up to 60% and 30%, respectively. Enterotoxigenic Escherichia coli (ETEC) is the most prevalent pathogen accounting for the piglet diarrhea during suckling and post-weaning. Both adhesins and enterotoxins play important roles as virulence factors in ETEC infection. ETEC utilizes adhesins to facilitate their attachment to specific receptors on the mucosal epithelial cells of the small intestine. Adhesins also play critical roles in the prerequisite for colonization, proliferation and progression of ETEC infections. Among four main fimbriae of ETEC, F4-positive ETEC is a typical pathogen causing diarrhea in young piglets and post-weaning via releasing enterotoxins. ETEC strains express two main types of enterotoxins: heat-labile enterotoxin (LT) and heat-stable enterotoxins (ST). ST type is subdivided into STa and STb according to the differences in protein structure and pathogenesis. Most of strategies is designed to targeting one specific site, it is urgently required to develop novel vaccination against ETEC targeting both fimbriae and enterotoxins. Compared with using antibiotic, vaccination is more effective method to control the piglet diarrhea in terms of costs and labor in treatment. More importantly, on August 7, 2018, the Department of livestock development (DLD) is already prepared a draft announcement of prohibition of using antibiotics in feed medication and water medication for prevention of all bacterial diseases in pig industry. The prohibit antibiotic are Polymyxins (Colistin; Polymyxin), Penicillins (Penicillin, Amoxicillin, Amoxicillin-clavulanic acid, Ampicillin) and Fluoroquinolones (Enrofloxacin, Marbofloxacin, Norfloxacin). This prohibition will have enormous impact to the pig industry since they do not have antibiotic to prevent this particular disease on their farms. Therefore, vaccine providing broad protective immunity against both adhesin and enterotoxin antigens should be developed.</p>
20	Dr.	Kitsakorn	Locharoenrat	Physics	Science	King Mongkut's Institute of Technology Ladkrabang	kitsakorn.lo@kmitl.ac.th	1. Immunosensor; lap-on-chip; nanoparticles Biosensor; nanomaterials; lab-on-chip	<p>1. The principle purpose of this research work is to design, fabricate and improve the sensitivity of the optical waveguide immunosensor for the clinical application. The principle of sensing mechanism is relied upon the evanescent wave absorption spectroscopy by the immobilized bio-reagents over the waveguide. The bioreceptor-analyte pair; such as IgG/anti-IgG is immobilized over chemically modified SU8 surface and the process is investigated via LASER Induced Fluorescence Spectroscopy. The optical waveguides are fabricated over silicon or the flexible substrate using SiO₂/PMMA as the buffer layers. The sensor chip is integrated with a micro fluidic channel to realize a lap-on-chip for biomedical application. The sensitivity of the sensor will be studied with respect to the time and different concentration of the biomolecules using white-LED/LASER as a light source. On the other hand, the optical waveguide Localized Surface Plasmon Resonance approach will be carried out using SU8/noble metal nanoparticles that are mixed with the organic solution in order to form the nanoparticle membrane. Finally, the fabricated polymer based (SU8) optical waveguide structure with and without the metal nanoparticles will be studied through SEM and AFM.</p>

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								2. Biosensor; nanomaterials; lab-on-chip	2. Fabrication of nanomaterials is one of the most challenging researches in a field of materials science. Biological materials, such as proteins have a unique property of naturally adhering to the inorganic ions in nature. By utilizing this unique property we could obtain the amyloid fibrils from denaturation of the proteins by heating it over an elevated temperature. The silver and copper nanoparticles are therefore attached over a surface of these fibrils by a special technique so-called electroless plating. Alternatively a conjugation of copper or silver nanoparticles could be carried out in a solution phase. Thus, we could obtain the ultra thin copper and silver nanowires of different configurations and sizes having a unique property of high conductivity, flexibility and thermal stability. These could be employed for making lab-on-chip devices which can be used for bio-sensor applications. Next, the nanoclusters would be produced by depositing the platinum or palladium nanoparticles using electrochemical process over the pre-formed silica support at an elevated temperature for extended hours by employing suitable surfactants, such as CTAB or sodium citrate as directors for particular form of growth for {111} plane of growth or {100} plane of growth. We could vary a ratio of reducing agent and surfactants to control a growth of the nanoclusters. Finally, the characterization of these synthesized nanomaterials; nanowires and nanoclusters, could be carried out by using TEM techniques, and also by using many spectroscopy techniques (i.e. UV, IR, Raman techniques).
21	Asst. Prof. Dr.	Kitsuchart	Pasupa	Information Technology	Information Technology	King Mongkut's Institute of Technology Ladkrabang	kitsuchart@it.kmitl.ac.th	bioinformatics, large-scale data, algorithm, machine learning	Genomes and genetic information play an important role in both research and data analytic services. Advance technology and genome sequencing technique can greatly speed up the identification of individual genes, that should lead to medical breakthroughs. Moreover, these techniques generate massive amounts of data. Currently, sequencing tools have made the sequencing process much faster and less costly than it was. This leads to more reasonable cost and affordable. This can address the issue of inequality in people in the country. Currently, the Government of Thailand aims to promote precision medicine and genome selection to boost agriculture production in order to step out from the country's revenue trap. However, genomes of creature (e.g. human, animal, plant) are very large and diverse but computer processes and algorithm in Bioinformatics-genome assembly, variant discovery, genome annotation, sequence alignment-are not fully developed and ready to be implemented as a service. The techniques should be fast and accuracy. This research aims to develop an algorithm for bioinformatics that will be used to analyse genetic information using parallel processing
22	Asst. Prof. Dr.	Kornsorn	Srikulnath	Ph.D. (Genetics)/Genetics	Science	Kasetsart University	kornsorn.s@ku.ac.th	genome, sex chromosome, sex determination, sexing, snake	Sex determination in animals has fascinated great minds for centuries but is well studied only in humans and mice. A general understanding of how molecular and environmental influences interact to determine sex remains elusive. Most snake species exhibit conserved ZZ/ZW-type sex chromosomes. Comparative genomics using chromosome maps and whole genome sequences reveal snake sex-linked genes on both Z and W chromosomes; however, nothing is known concerning the molecular mechanisms or role of these gametologous genes regarding male and female sex development. Here, putative gametologous genes will be isolated from available snake genome sequence data, with DArTseq genotyping technology to detect DNA variations between Z and W chromosomes using 26 snake species available in the Queen Saovabha Memorial Institute collaboratively. Candidate genes will be selected to further study molecular evolution and gene function. Results obtained will promote a more comprehensive understanding of the complexity of sex determination and sex chromosomes in snakes and provide important information for snake conservation management and commercial breeding programs. Male and female snakes have similar morphology and accurate sexing to control mating systems is difficult for breeders. Multiple molecular sexing markers will be developed to improve snake sex identification. Snakes play an economically important role in the exotic animal industry and also as a tourist attraction through global management programs at 1% of the country's agricultural and biological income. Filling this knowledge gap will effectively support and maintain a sustainable natural and commercial captive population in accordance with the Thailand 4.0 National Policy and profoundly challenge established views on mechanisms underpinning sex determination in vertebrates. This project is ambitious and has the potential to impact positively at local, regional, national and international levels; thereby, establishing Thailand as the ASEAN hub for modern animal agriculture.
23	Asst. Prof. Dr.	Krit	Somnuk	Department of Mechanical Engineering	Faculty of Engineering	Prince of Songkla University	krit.s@psu.ac.th	Hydrodynamic; Cavitation; Hydrosonic; Biodiesel; Continuous process	The crude palm oil (CPO, oil from palm fiber) and mixed crude palm oil (MCPO, oil from the whole palm fruit) were used as raw materials in biodiesel production in Thailand. However, free fatty acid (FFA) content in CPO or MCPO is a major problem for biodiesel production. When the base-catalyzed transesterification reaction was employed, FFA should not exceed 1 wt.%. Because, FFA in oils will react with base-catalyst to produce soap, therefore, methyl ester conversion is decreased via the saponification reaction. Regarding the application of biodiesel production, in the case of ultrasonic cavitation, the cost of ultrasonic homogenizer was very high and it was carefully required to maintain for industrial scale. To overcome these problems, a hydrosonic reactor was used as the continuous reactor. Therefore, the aim of the proposed research is to investigate the hydrodynamic cavitation for producing the biodiesel from MCPO. The researcher hopes to develop biodiesel production from high FFA oil which is able to adequately represent hydrodynamic cavitation of continuous hydrosonic reactor. In summary, the hydrodynamic cavitation, where the cavities are generated due to alteration of the flow conditions and subjected to turbulent pressure field oscillations, has been a comparatively recent advent and has been shown to be more energy efficient as compared to the sonochemical reactors for applications such as microbial cell disruption, wastewater treatment, and chemical synthesis.

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24	Assoc. Prof. Dr.	Lunchakorn	Wuttisittikulij	Electrical Engineering	Engineering	Chulalongkorn University	wlunchak@chula.ac.th	5G, IoT, protocols, networks, Big data,	<p>The new generation of wireless communications network will seamlessly connect all types of networks including cellular, millimeter-wave, Wi-Fi, and etc. This convergence will allow every device and every people to interconnect seamlessly anywhere and at any time through the Internet, and enable new services that will endlessly enhance our lives and societies in the new era thrust forward by the digital revolution.</p> <p>There are several challenges for this new generation of network. For example, it has to support new usage scenarios never before seen in the previous generations such as Enhanced Mobile Broadband for fast uploads/downloads of high-quality contents via mobile devices; Massive Machine Type Communications supporting conversations among a vast number of Internet of Things devices; and Ultra Reliable and Low Latency Communications that is critical in emerging application areas such as mobile augmented/virtual reality and autonomous cars.</p> <p>This new generation of network that interconnects everything and everyone will be much more complicated than its predecessors and will create a tremendous amount of data, necessitating a strong need for cognitive-computing infrastructure to manage the network and make sense of the data.</p> <p>In a cognitive radio network, secondary users are required to detect the presence of the licensed users and to find spectrum holes, known as white spaces, for opportunistic spectrum access without causing harmful interference to the latter users. However, due to the complicated signal processing, delays in information exchange and limited computation, the secondary users often suffer from imperfect sensing and unreliable spectrum access. Cloud computing can solve this problem by allowing data to be stored and processed in a shared environment. Massive information from a large number of users can be analyzed to build comprehensive resource allocation and interference management at data centers while relieving the front-end computation of sensing at the secondary users.</p>
25	Assoc. Prof. Dr.	Mallika	Kongkeittakajorn	Department of Biotechnology	Faculty of Technology	Khon Kaen University	mallikab@kku.ac.th	Ethanol, cellulosic biomass, fermentation, biorefinery	<p>Cellulosic biomass is abundant. It could be the left-over from agriculture or the waste from agroindustry plants. Due to the sugar monomers in its structure, cellulosic biomass has a good potential to be used as raw material in a biorefinery. This research would be focused on using cellulosic biomass in the production of ethanol as a model chemical. Efficient pretreatments and hydrolysis of the chosen biomass would be studied. The unutilized fractions of the hydrolysate left from ethanol fermentation would be evaluated for its possible uses to produce other products, also via biological means. The overall biorefinery process would then be designed. Scaling up from laboratory scale to the bench scale would also be attempted to demonstrate a possibility of the production process.</p>
26	Assoc. Prof. Dr.	Manat	Chaijan	Doctor of Philosophy Program in Agro-Industry/Department of Agro-Industry	School of Agricultural Technology	Walailak University	cmanat@wu.ac.th	Water hyacinth, protein isolate, nutritional quality, physical characteristics, techno-functional properties, applicability, pH-shift	<p>Title: Nutritional quality, physical characteristics, techno-functional properties and applicability of pH-shifted protein isolate from water hyacinth leaf</p> <p>Water hyacinth (<i>Eichhornia crassipes</i>), a free-floating perennial aquatic plant, is the world's worst aquatic weed. The nutritional value of this weed, particularly leaf part, was investigated by some workers. It is likely to be nutritious because of the high protein content and the presence of unsaturated fats, carotenes, xanthophylls, starch and minerals such as iron, calcium and phosphorus. Water hyacinth has a good feeding quality when used as a supplement to feeds rich in protein for animals. From the biochemistry and physiology points of view, it could have useful application as raw materials for food formulation. This study is an effort to harness the inherent benefits in water hyacinth to prevent wasteful spending on its control.</p> <p>Leaf protein isolate from water hyacinth will be prepared using pH driven technique. This technology efficiently recovers functional and nutritious protein isolates from sources difficult to process through conventional means. The extraction mechanism is to solubilize the proteins at low and high pH and the soluble proteins will be separated from other components e.g. cellular membranes and neutral storage lipids through the centrifugation. The solubilized proteins are collected and recovered by isoelectric precipitation. The pH shift method could likely be applied to efficiently recover functional proteins from water hyacinth leaf for subsequent development of human food ingredients. Therefore, this study aims to recover and characterize the proteins from water hyacinth leaf. The chemical composition, physical characteristics, nutritional value and in vitro digestibility of the protein isolate will be evaluated. Also, technofunctional properties of protein isolate i.g. the interesting hydration (solubility, viscosity), structuration (aggregation, gelation) and surface (foaming, emulsifying) properties will be tested. Finally, protein isolate will be applied in food formulation as a functional ingredient.</p>
27	Assoc. Prof. Dr.	Mitchai	Chongcheawchamnan	Electrical Engineering	Faculty of Engineering	Prince of Songkla University	mitchai.c@psu.ac.th	water status, leaf sensor, IoT	<p>It was reported that the global market trend of internet of thing has been risen exponentially. The market values in 2019 will soon hit 1.8 trillion USD. Before the end of 2025, we will witness 11.1 trillion USD market size in 2025 according to Mckinsey report. The key market contribution in the IoT value chain is sensor devices which will impact to several economic sectors in global.</p> <p>Sensor devices find several application areas. One of the possible areas is to apply sensors for agriculture application. With the global climate change and water drought situation, there is farmers' need to control water usage in their farms. To achieve this we need a small device which is able to monitor water status in plant. Sensing water in soil or atmosphere around the cultivated area is not accurate. In this research, we aim to develop a leaf sensor which is able to monitor water status in plant.</p>

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28	Dr.	Mongkol	Sukwattanasitt	Department of Chemistry	Faculty of Science	Chulalongkorn University	smongkol@chula.ac.th	Chemosensor, Fluorescent dye, Functional dye, Photocatalyst, Photoredox catalysis	Synthesis of "functional dyes" with imminent applications can serve as a strategic training base for synthetic chemists for the development of chemical industry. Recent renewed interest in special functional properties of dyes other than their colors has led to many potential hi-tech applications, such as organic solar cells, optical chemosensors, photoredox catalysis and photodynamic therapy. The major challenge and exciting activity in this revival field is the design and synthesis of novel dyes with superior desired properties. New dyes have been synthesized and evaluated not only to find the best candidates for the applications but also to gain insight of structure-property relationships and the mechanisms involving. A successful development of novel dyes for hi-tech applications requires multidisciplinary knowledges and skills including chemical synthesis, spectroscopy, molecular assembly, material characterization and device fabrication. For biological and medical applications, knowledges and skills in biological science are also essential. With our experience in studying of chemosensors and synthetic methodology during the last decade, we aim to utilize our accumulated knowledges to gain further advancement in development of new functional dyes as optical chemosensors and photocatalysts. In addition, structure-property relationships, which remains largely elusive, learned along the study of photophysical and catalytic properties of these dyes will allow more logical design of new materials for sensing and catalysis applications. Multidisciplinary facets nature (e.g. organic synthesis, spectroscopy, molecular assembly, device fabrication, material characterization, and related biological science) of this research theme will be very beneficial to graduate students in chemistry to develop their independent research topics in their future careers.
29	Assoc. Prof. Dr.	Naeti	Suksomboon	Department of Pharmacy	Faculty of Pharmacy	Mahidol University	naeti.suk@mahidol.ac.th	Diabetes management; Pharmaceutical care	My research interest is cover all aspect of diabetes management.
30	Assoc. Prof. Dr.	Naruemon	Thabchumpon	PhD in International Development Studies	Faculty of Political Science	Chulalongkorn University	nthabchumpon@gmail.com	Civil Society, Social movement, Migration, Social Inequality, Resource Politics and trans-disciplinary methods	The PhD research scholarship aims to answer the task of mainland Southeast Asia that is now facing pressing challenges from regional integration through the formation of the ASEAN community. Example are the regional international migration, which increasing simulate labor migration in this region. Special Economic Zones have recently mushroomed throughout the region and large development projects are causing both displacement and degradation of natural resources. The challenge issues in Southeast Asia are globally and regionally interrelated and they unfold the very complex local phenomena. Accelerated land grabbing, conflicts over resources and social inequality throughout the region have also become issues of national policies and governments for an increased engagement of academia and the private sector to assure sustainable and just economic growth. The studies on underlying mechanisms of interrelation between local realities and global and regional trends are however insufficient and the methods of transdisciplinary research are also in incipient stage only. To support the transdisciplinary comparative methodologies, the study aims to identify a PhD research on three thematic areas – namely between area studies, sociology, political science and development studies. Three common empirical topics have also crystallized out of these encounters, namely on social equality, resource politics and migration to be selected as a topic of research study. Due to its particular focus on transdisciplinary methods, the output of the study will be emphasizing on the politics of civil society and social movements in mainland Southeast Asian in responding to migration, social inequality and resource politics in this region. It aims to emphasize on the creation of a knowledge society expecting to promote social justice, peace and inclusive development.
31	Assoc. Prof. Dr.	Natthida	Weerapreeyakul	Pharmaceutical Chemistry	Pharmaceutical Sciences	Khon Kaen University	natthida@kku.ac.th	natural compound; Prodrug design; target delivery; FTIR microscopy; nanocarrier	Study of delivery enhancement of natural active compound in target cells The study of anti-proliferative and anti-melanogenesis effects have been intensively studied. Many natural compounds have been discovered possessing these potential activities, however, have poor delivery to the target site of action. Increasing administrative dose in order to get the intracellular effective concentration is one among many ways but also causes the toxicity or undesirable effects during dose escalation attempt. In addition to perform chemical modification of the parent compound structure according to the prodrug design, nanocarrier design and development is also of interest. These techniques are thus proposed to enhance specific delivery to the skin cells. The cell culture will be used as a cell model and activity will be tested to prove the hypothesis. The achieved information will be applied for skincare product development.

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32	Dr.	Nopphon	Weeranoppanant	Department of Chemical Engineering	Faculty of Engineering	Burapha University	nopphon.we@eng.buu.ac.th	Flow chemistry, Mass transfer, Multiphase operation, Engineering design	<p>Flow chemistry has been an emerging field that evolves from microfluidic technology. The reactants are mixed and reacted as they are flowed in channels. It offers a number of benefits including more efficient heat and mass transfers, safer to operate, and easier to scale up. Different reactions have been developed in flow, which can be a single phase (liquid) flow or a multiphase flow. In this research, we are interested in liquid-liquid operation in flow with the main focus on catalytic reaction. The flow will contain immiscible liquid phases such as aqueous-organic. By comparing catalysts in a separate liquid phase from reagents and products, one can separate and recover the catalysts more easily. This technique can potentially replace a common method of immobilization of catalysts, which may cause catalyst leaching.</p> <p>In addition, the droplets are smaller in flow than in batch, allowing larger interfacial area for contact between catalyst and reagents or for transfer of chemical species between phases. This research will determine the mass transfer performance as well as the reaction kinetics in flow, and then compare to the conventional batch method. This fundamental knowledge from this research will be useful in a wide range of applications, from manufacturing of pharmaceuticals and high-value chemicals to degradation of dye and toxic compounds.</p>
33	Assoc. Prof. Dr.	Noppol	Leksawasdi	School of Agro- Industry	Faculty of Agro- Industry	Chaing Mai University	noppol@hotmail.com	Lignocellulosic materials, bioenergy, high value chemicals, efficient production process, enzyme technology	<p>The leftover lignocellulosic materials in Thailand has now approaching 40 million tons annually, for example, rice straw and bagasse at 26.9 million tons / year, corn bagasse at 7.8 million tons per year, sugarcane bagasse and leaves at 2 millions, as well as other farms materials at 2.4 million tons / year. The efficiency utilization of these wastes for production processes of biofuels such as ethanol and butanol will be maximized when they are coupled with effective utilization of by-products based on zero waste technology for production of high value chemicals such as black liquor, xylitol, yeast whole cells, phenylacetylcarbinol, and concentrated raffinate with high nitrogen content. This research is important as all bioindustry which currently focuses on production of bioethanol above 100,000 litres per day in Thailand has utilized first generation materials which can interfere with food security. The critical and overview assessment and optimization research on large scale production of 2nd generation biofuels from the available raw materials in Thailand must therefore be carried out to catch up with the foreign technology such as those in China or USA.</p>
34	Dr.	Noraphat	Hwanhlem	Agricultural Biotechnology/Agricu- ltural Science	Faculty of Agriculture Natural Resources and Environment	Naresuan University	noraphat.hwanhlem@outlook.co.th	Bioethanol; Pineapple leaf waste; Saccharomyces cerevisiae; Aspergillus niger; Fermentation	<p>Title: Bioethanol Production from Pineapple Leaf Waste by Co-culture Fermentation of <i>Saccharomyces cerevisiae</i> and <i>Aspergillus niger</i></p> <p>There is a great interest in producing bioethanol from biomass and there is much emphasis on exploiting lignocellulose sources from crop wastes through to energy-rich crops. Some waste streams, however, contain both cellulosic and non-cellulosic sugars. These include pineapple leaf waste. Pineapple leaf are wasted in large amounts after harvesting in Phitsanulok and Phetchabun where a huge area of pineapple plantation is. These wastes are rich of lignocellulose which are composed mainly of cellulose, hemicelluloses and lignin. Lignocellulosic material, one of the most abundant renewable resources available, represents approximately 50 billion tons per year around the world. It can be converted to fermentable sugars (such as glucose and xylose) which are substrates for ethanol production. Since, bioethanol is actually in great demand as an engine fuel, octane enhancer in unleaded gasoline and oxygenated fuel mix for cleaner combustion of gasoline thereby reducing CO₂ emission. Moreover, utilization of energy crops, agro-industrial and agricultural waste for bioethanol production has greatly reduced the greenhouse gas (GHG) emissions. The impact of biofuel production process on GHG emission and energy balance is being evaluated through life cycle assessment (LCA) which is an internationally recognized methodology. Therefore, the purpose of this study is to produce bioethanol from Pineapple Leaf Waste by co-culture fermentation of <i>Saccharomyces cerevisiae</i> and <i>Aspergillus niger</i> for sustainability of any liquid biofuel with respect to economic, environmental and social sustainability.</p>

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35	Assoc. Prof. Dr.	Orawan	Kaewboonchoo	Ph.D. (Nursing)/Public Health Nursing	Public Health	Mahidol	orawan.kae@mahidol.ac.th	depression, aging female workers, comparison study, Thailand, Indonesia, mixed method	<p>Title: Depression among aging female workers: A comparison study between Thailand and Indonesia</p> <p>The proportion of older people in the world population is increasing in developing countries, resulted in increasing the proportion of aging people in various occupations. The effect of depression can reduce the quality of life, physical function and social function as well as work ability of the elderly. The elderly also has a higher incidence of certain psychiatric conditions, such as depression and dementia. Work stress can be a real problem in aging worker.</p> <p>Depression may manifest differently across cultural settings. This study aim to explore the prevalence of and to investigate factors related to depression in female aging workers in an industrial sector in Thailand and Indonesia. Finding from this study can be utilized for planning the surveillance program and health promotion on depression in aging female workers in order to improve work ability and quality of work life of the individual and organization in both countries. ☐</p> <p>An explanatory sequential mixed method study will be used. In the first phase, a correlational cross-sectional study will be conducted by including 200 aging female workers in each country. Descriptive statistics will be used to analyze demographic and descriptive data. Simultaneous multiple regression is applied to determine predictors of depression. In the second phase, qualitative description will be used. Approximately, 15-20 participants from the first phase whose depression score meets the cutoff score of depression will be contacted for semi-structured in-depth interviews by researcher. Probing questions will be used as appropriate to elicit life and cultural context related to depression. The interviews will be tape recorded and transcribed verbatim. Content analysis will be performed by researchers. In the final step, both quantitative and qualitative data will be integrated as final results and will be compared between Thailand and Indonesia.</p>
36	Dr.	Panat	Anuracpreeda	Molecular Medical Biosciences Cluster	Institute of Molecular Biosciences	Mahidol University	panat.anu@mahidol.edu	Anaplasma marginale; anaplasmosis; monoclonal antibody; cross-reaction; ELISA; lateral flow strip test.	<p>Anaplasmosis is an economically important disease in ruminants caused by the rickettsia <i>Anaplasma</i> sp. (Rickettsiales: Anaplasmataceae) including <i>A. marginale</i>, <i>A. centrale</i>, <i>A. bovis</i>, and <i>A. ovis</i>. As well, <i>A. phagocytophilum</i> can infect a wide range of hosts including humans, rodents, birds, dogs and cattle, and <i>A. platys</i> which infects dogs. It results in a significant economic loss throughout the tropical and subtropical countries of the world, including South and Central America, the USA, southern Europe, Asia, Australia, and Thailand. Thailand is an agricultural country located in Southeast Asia, where the livestock industry has been hampered by the severe tick-borne haemoparasites. The current method for diagnosis of anaplasmosis in ruminants is based on direct microscopic detection of the organisms in Giemsa-stained blood smears. However, due to the low parasitemia in animals, this method is not recommended for the detection of subclinical animals or carriers. The animals response to infection has been measured by a variety of serological methods, for example, card agglutination, capillary agglutination tests, complement fixation, and the indirect fluorescence antibody techniques. Although demonstration of circulating antibodies has been used for epidemiological studies, the presence of antibodies is not the direct indicator of active infection, and cross-reactivity with other parasites is often difficult to differentiate. Alternatively, immunodiagnosis based on detection of circulating antigen is the most suitable for detecting the current state of the infection. The major surface proteins (MSPs) are major circulating antigens that are released from the parasite during its course of infection. Purified monoclonal antibody (MoAb) and polyclonal antibody (PoAb) against recombinant MSP antigen of <i>A. marginale</i> could be specific for detecting the infection by this rickettsia. Hence, the aim of this project is to develop the methods for detecting the circulating antigens of <i>A. marginale</i> based on both sandwich ELISA and lateral flow strip tests.</p>
37	Assoc. Prof. Dr.	Panida	Surawatanawong	Chemistry	Science	Mahidol University	panida.sur@mahidol.edu	Metal Lewis-acid cooperativity, H2 activation, CO2 hydrogenation, alkene hydrogenation, DFT	<p>Hydrogen is one of the clean energy resources. The activation of H₂ is considered as the main process for hydrogenation of chemical compounds in fine chemical and pharmaceutical industry. Cooperative metal Lewis-acid (M-LA) complexes have recently emerged as a new type of catalysts for H₂ activation, apart from commonly studied single-site metal and cooperative metal Lewis-base complexes. The resulting metal hydride complex from the H₂ activation have been found its application in hydrogenation of alkene. While hydrogenation of alkene has been studied extensively, hydrogenation of CO₂ has gained much attention just over the last decade as a way to convert CO₂ greenhouse gas into useful chemical compounds, i.e., formate or formic acid.</p> <p>The late transition metal (M) bearing Lewis acid (LA) group 13 element as a sigma-acceptor ligand can form reactive metal hydride complexes, which facilitates the hydride transfer from the metal to CO₂ to generate formate. Due to this electronic property, the M-LA type complexes could have an advantage for CO₂ hydrogenation. Density functional theory will be used to study the electronic structures and the catalytic reaction mechanisms of M-LA type complexes for hydrogenation of alkene and CO₂. Different combination of late transition metal (for M) and group 13 element (for LA) on the same ligand scaffold will be studied to understand the effect of the electronic property. The different ligand scaffold will be explored on the same M-LA combination to understand the effect of positioning of H₂, alkene, and CO₂ substrates on the catalyst. The fundamental understanding in the key features of the M-LA type catalysts could lead to development of highly efficient catalysts for hydrogenation of alkene and CO₂.</p>

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38	Asst. Prof. Dr	Panida	Jongsuksomsakul	Communication Arts Department	Business Economics and Communication	Naresuan University	panidaj@nu.ac.th	advertising, consumer goods and services, cultural fragmentation, indigenous peoples, global brands	Advertisements are messages for consumer information and tools for propagating consumerist and capitalist ideologies to influence public beliefs and behaviour. Advertising is used to present the consumption of goods and services as a solution to material and social needs, thereby becoming a model for social behaviour. Globalization and the media make it possible for the consumption of foreign consumer goods and services as well as cultural products, which influences individuals and society. Globalization and the free-market of goods, services and ideologies resulted in the cultural fragmentation of ethnic groups and homogenization towards consumerism. In this project, the effects of advertising and consumer culture upon the Hmong in Thailand and the Igorot people of the Philippines are considered. The aim is to investigate the effects of advertising related to fast moving goods and services and advertising literacy on indigenous peoples' consumer behaviour. A comparative study between Indigenous communities in Thailand and the Philippines could provide deeper insight into the effects of advertising and the consumption of global brands and whether advertising literacy can be a mitigating influence. The proposed research will use quantitative and qualitative approaches in the collection and analysis of data. The project involves two phases. The first is the quantitative phase which determines advertising effects on individuals of the sample communities and advertising literacy levels. The communities are first selected through the use of a matrix of criteria based on similarities. If a sampling frame is available in the community, random sampling will be used. The quantitative questionnaire will be developed based on important advertising effects on ethnic communities found in the literature focusing on fast moving goods. It will be sent to experts for validation and adjustment. The second phase will involve a qualitative phase which probes deeper into the advertising effects identified in phase 1.
39	Asst. Prof. Dr	Panumart	Thongyoo	Chemistry Department	Science and Technology	Thammasat University	tpanumas@tu.ac.th	Lugdunin, Anti-superbug activity, Antibiotic, Cyclic peptide, Beta- lactam	Nowadays, the development of peptide as prominent pharmaceuticals has gained a significant interest mainly due to their potency, high specificity, particularly low-toxicity. The discovery of biologically active microproteins has led to the applicability as commercial drugs for the treatment of a number of ailments, particularly pain or bacterial infections. To date, a number of microproteins have played an eminent role in various biological processes and mechanism, and importantly a various type of microproteins have continuously been isolated from plants and animals, some of which have particularly been further commercialized as an effective analgesic. The great examples were Conotoxins, a group of neurotoxic peptides isolated from the venom of the marine cone snail applicable as analgesic agents (pain killers). Lugdunin is a novel thiazolidine containing antibiotic, isolated from <i>Staphylococcus lugdunensis</i> . Its structure is consisted of six amino acid residues, including a thiazolidine moiety, demonstrating a highly effective against the bacterium <i>staphylococcus aureus</i> . To this project, a number of lugdunin derivatives will be synthesized in which a thiazolidine unit has been replaced by various war head moieties. The synthesis of lugdunin derivatives was carried out by solid phase peptide synthesis (SPPS) with slight modifications. Finally, lugdunin and lugdunin derivatives will be evaluated the antibacterial activity against a panel of pathogenic bacteria. The discovery of anti-multidrug resistant bacteria candidates derived from the Lugdunin cyclic peptide scaffold will undoubtedly demonstrate the potential for future applications in biological and medical research areas.
40	Dr.	Philip	Hallinger	Ph.D. in Sustainable Leadership	College of Management	Mahidol University	hallinger@gmail.com	Sustainable Development, Leadership	This research and development project addresses the need to develop evidence-based tools that can be used to prepare managers with knowledge, skills, and attitudes that support sustainable development of development the society. This project will design and evaluate a management computer simulation for use in learning to lead for sustainability. Project design will draw on King Bhumipol Adulyadej's 'Sufficiency Thinking' principles as well as global research in sustainable development. A mixed methods research design will be used to evaluate the results of use of the simulation in leadership learning programs. The thesis will contribute to the global knowledge base on sustainable leadership and leadership development. In addition, it will produce a validated computer training simulation that can be used in sustainable leadership education and development programs both in Thailand and abroad.
41	Dr	Pissared	Khuituan	Physiology	Science	Prince of Songkla University	pissared.k@psu.ac.th	Gastrointestinal system; Gut motility; Intestinal barrier function; Constipation; Inflammatory bowel diseases; Prebiotics; Gut microbiota	Inflammatory bowel diseases (IBDs) are gastrointestinal disorders which have a characteristic of either acute or chronic inflammation. They cause a lesion of the gut mucosal layer, damage the enteric nervous system, and disrupt the interstitial cells of Cajal network leading to colonic motility disorders. The major symptoms of IBDs are abdominal pain, diarrhea, rectal bleeding, and the patients may also experience weight loss, fatigue, fever, and loss of appetite which may result in nutrient deficiencies. The pathogenesis of the IBDs is still unclear because there are a lot of factors that can cause IBDs including the imbalance of the gut microbiota. Prebiotics which are undigested carbohydrates are fermented by the specific gut microbiota and can be a benefit for the host health. Short chain fatty acids (SCFAs) are one of the products from the fermentation processes. The SCFAs in normal concentration can help to improve the intestinal epithelial barrier function and intestinal motility. Therefore, several compounds that have the characteristic of prebiotics have been studied, such as fructo-oligosaccharides, inulin, galacto-oligosaccharides, lactulose, and some dietary fibers. Thus the objectives of this research will be to investigate the effects of the interesting natural products which have a prebiotic property for improving the intestinal motility and intestinal epithelial barrier function, studying their anti-inflammatory effects, and reviewing their prebiotic effects via looking at the compositions of gut microbiota and SCFAs in IBD mice.❷

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42	Prof. Dr.	Pornchai	Supnithi	Doctoral Engineering in Electrical Engineering (Telecommunications Engineering)	Engineering	King Mongkut's Institute of Technology Ladkrabang	pornchai.su@kmitl.ac.th	Scintillation, Propagation Delay, Total Electron Content, Disturbance, Ionosphere	Signal propagation in satellite navigation system is often disturbed by the ionosphere, which is at 350 to 1500 km from earth, particularly, for the frequencies below 3 GHz. As the electron density in this layer varies over time, and sometimes drastically fluctuates especially after sunset, the scintillation effect in satellite signals is resulted. Since the global navigation satellite system (GNSS) such as GPS, Galileo, Beidou among others is essential to many industries, some of which include Aeronautical navigation, High-accuracy positioning in agricultural machines, vessels and autonomous cars, it is therefore essential to provide a warning system for ionospheric disturbance. As KMITL currently monitors the ionosphere based on several techniques such as ionosonde system (bottomside monitoring) and GNSS receivers, in this work, the obtained raw data will be simultaneously analyzed to provide such a warning service. In addition, some data analytic techniques will be utilized.
43	Assoc. Prof. Dr.	Pornkasem	Jongpradist	Civil Engineering	Engineering	King Mongkut's University of Technology	pornkasem.jon@kmutt.ac.th	Crack propagation, Rock mass, Element-Free Galerkin, Multiple cacks, Mixed mode	The research aims at further developing the original method based on the Element-Free Galerkin (EFG) method to be able to deal with 1) mixed mode (either tensile or shear cracking) 2) multiple cracks. The main application of the developed method is for underground storage cavern of high pressurized gas, but would be also for various kinds of geotechnical works. The main tasks in the research thus include 1) extending the method to simulate shear crack 2) modifying the algorithm so as both shear and tensile cracks can be simultaneously assessed and chosen 3) equipping with the currently developed algorithm to evaluate the crack initiation point. Series of physical model tests may be also performed to validate the numerical simulation results from the developed method. All equipment and procedure for performing the tests are readily available.
44	Assoc. Prof. Dr.	Pornthap	Thanonkeo	Biotechnology	Technology	Khon Kaen University	portha@kku.ac.th	Acetic- and furfural-tolerant, Ethanol production, Lignocellulosic material, Saccharomyces cerevisiae, Thermotolerant yeast	Lignocellulosic biomass is attractive as a feedstock for bioethanol production. However, the main challenge of using this feedstock is the pretreatment steps in which it has been reported to generate a variety of toxic compounds, such as acetic acid, furfural, 5-hydroxyfurfural, etc. that affect microbial growth and fermentation activity. Strategies have been made to overcome such issues particularly the removal of fermentation inhibitors and the use of inhibitor-tolerant strains. Currently, there is no ideal ethanologenic yeast available for use on an industrial scale. Several efforts have been performed to improve the yeast strain, e.g., chemical and physical mutagenesis, genetic recombination and metabolic engineering. Recently, adaptive laboratory evolution (ALE) has emerged as a valuable method in metabolic engineering for strain development and optimization, and it has been used successfully in some organisms, such as Escherichia coli, Zymomonas mobilis, and Aspergillus niger, however, very few reports have considered the thermotolerant yeast Saccharomyces cerevisiae. Therefore, the aim of this study will be to generate and characterize the acetic- and furfural-tolerant strain of thermotolerant S. cerevisiae using an ALE approach. The scopes of the research will be as follows: 1) Investigation of the effect of acetic acid and furfural at various concentrations on the growth pattern of thermotolerant S. cerevisiae under high temperatures (37 and 40°C), 2) Generation of the acetic- and furfural-tolerant strains of thermotolerant S. cerevisiae using ALE approach, 3) Characterization of the acetic- and furfural-tolerant strains of thermotolerant S. cerevisiae under different growth conditions, such as heat, ethanol, acetic acid, furfural stresses, etc. 4) Optimization conditions for ethanol production from hydrolysate of sugarcane bagasse using the acetic- and furfural-tolerant strain of thermotolerant S. cerevisiae, and 5) Elucidation of the genes involved in ethanol production pathway in the acetic- and furfural-tolerant strain of thermotolerant S. cerevisiae during ethanol fermentation at high temperatures.
45	Prof. Dr.	Porn Tippa	Lekcharoensuk	Genetic Engineering and Bioinformatics	Graduate School	Kasetsart University	fvtpn@ku.ac.th	Rabies; rabies virus; reverse genetics; oral vaccination; vaccine	Rabies is one of the most important life threatening zoonoses caused by rabies virus (RABV). RABV infects all mammalian species; however, dogs and cats are the major reservoirs in developing and under developed countries. In each year, there were more than 50,000 fatal rabies cases in human and bitten by infected dogs. Ninety-nine percent of the affected population were resident in Asia and Africa. More than 80% of people living in rabies endemic area have high risk of RABV exposure. The incident of RABV infected subjects were approximately 1.37 cases/100,000 person-year. Mortality rate is 10-18 times higher in people living in rural area due to limitation of post-exposure prophylaxis. WHO-OIE collaboration on rabies prevention and control has come to a conclusion that prevention and control of RABV infection in dogs and cats in combination with dog population control and appropriate post-exposure practices in human are the most effective way to rabies prevention in human. However, majority of RABV infected reservoirs are stray dogs which are uncontrollable. Thus, regular routes of vaccine administration may be problematic. Recently, oral vaccination of dogs has been developed including virus vector based RABV_G vaccine (vaccinia virus or adenovirus vector) and modified-live RABV vaccine. The experiments showed that most of oral vaccines were effective. Our laboratory has long been working on reverse genetics vaccine of RNA viruses. Therefore, we have propose to generate a cDNA clone of RABV using reverse genetics and modified its genome to attenuate the virus. The genetically modified RABV will be tested for its safety and further used as seed virus for oral vaccine development.

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46	Assoc. Prof. Dr.	Prachumporn	Kongsaeree	Biochemistry	Science	Kasertsart University	fscippt@ku.ac.th	cellulolysis, bioethanol, metagenome, beta-glucosidase, proteins' structure-function	Cellulose is the most abundant biomass on earth. As Thailand is an agricultural country, we have a large supply of cellulose from agricultural wastes, which are still largely under-utilized. One of many ways to utilize cellulose is to hydrolyze cellulose to glucose, which can then be used as (1) a starting material to be fermented into bioethanol (second-generation biofuel) and biobutanol, (2) a feed stock for algaculture to generate algae oil (a third-generation biofuel), and (3) a carbon source for bio-manufacturing of many valuable chemicals. However, the process of cellulose saccharification is rather difficult due to the recalcitrant nature of cellulose structure and the high-cost, but low-efficiency of the currently available cellulolytic enzymes. So, in this research project, we are interested in applying our expertise in structure-function relationships of proteins to characterize wild-type beta-glucosidases, which hydrolyze cellobiose to glucose in a final step of cellulolysis, as well as to engineer novel enzymes to assist in biomass conversion. Specifically, we will clone and characterize, both biochemically and structurally, beta-glucosidases from various thermophilic and cellulolytic bacteria, such as <i>Clostridium thermocellum</i> , <i>Caldicellulosiruptor bescii</i> and <i>Thermoanaerobacter brockii</i> . Also, we will examine the structural basis for substrate specificity of Br2, a beta-glucosidase derived from bovine rumen metagenome. Furthermore, we will employ a metagenomics approach to search for and characterize a novel thermostable beta-glucosidase from other environmental samples. Together, we hope to be able to understand the structure-function relationships in beta-glucosidases, and to apply this knowledge to engineer highly efficient beta-glucosidases for cellulose degradation.
47	Asst. Prof. Dr.	Pramote	Khujitjaru	Department of Food Technology	Faculty of Engineering and Industrial Technology	Silpakorn University	khujitjaru_p@su.ac.th	By-products, bioactive compounds, Subcritical water, subcritical fluids, extraction	Topic: Subcritical fluid technology for obtaining high-value compounds from coffee industry by-products. Currently, food industries are interested more and more on valorizing their by-products by novel methods. Subcritical fluid technology is a promising technology for this purpose. Subcritical water can be used to hydrolyze macromolecules such as polysaccharides, protein, and fat into higher value products such as mono- and oligo-saccharides, amino acids, and fatty acids while subcritical aqueous ethanol can be used to enhance both extraction of bioactive compounds and promote other reactions such as isomerization of sugars into their rare isomers. In this research, coffee by-products such as, coffee pulp, spent coffee ground will be targeted. <u>Selected Papers</u> Klinchongkon, K., Khujitjaru, P., Adachi, S. (2018). Properties of subcritical water-hydrolyzed passion fruit (<i>Passiflora edulis</i>) pectin. <i>Food Hydrocolloids</i> 74: 72-77 Soisangwan, N. Gao, D-M, Kobayashi, T., Khujitjaru, P., Adachi, S. 2016. Kinetic analysis for the isomerization of cellobiose to cellobiulose in subcritical aqueous ethanol. <i>Carbohydrate Research</i> 433, 676-72. Koomyart, I., Nagamizu, H., Khujitjaru, P., Kobayashi, T., Shiga, H., Yoshii, H., Adachi, S. 2015. Compositions, flavour and antiradical properties of products from subcritical water treatment of raw Isada krill. <i>International Journal of Food Science and Technology</i> 50(7): 1632-1633. Khujitjaru, P., Kobayashi, T., Adachi, S. Degradation kinetics of trisaccharides comprising glucose residues in subcritical water. <i>Journal of Carbohydrate Chemistry</i> 35(5):286-299 Khujitjaru, P., Suaylam, B., Adachi, S. 2014. Degradation of caffeic acid in subcritical water and on-line HPLC-DPPH assay of degradation products. <i>Journal of Agricultural and Food Chemistry</i> 62 (8), 1945-1949 Khujitjaru, P., Pokpong, A., Klinchongkon, K., Adachi, S. 2014. Production of oligosaccharides from coconut meal by subcritical water treatment. <i>International Journal of Food Science and Technology</i> 49(8) 1946-1952 Khujitjaru, P., Anantanasuwong, S., Adachi, S. 2011. Emulsifying and foaming properties of defatted soy meal extracts obtained by subcritical water treatment. <i>International Journal of Food Properties</i> 14(1) 9-16.
48	Assoc. Prof. Dr.	Prapan	Kuchonthara	Department of Chemical Technology	Faculty of Science	Chulalongkorn University	prapan.k@chula.ac.th	Biomass gasification, Hydrogen production, Hydrothermal liquefaction, Biofuels	Research areas are focused in developing thermochemical processes to efficiently convert biomass materials into gaseous or liquid fuels. Presently, the topics are divided into two main subjects, including hydrogen production and biofuels (liquid) production. For the first topic, Sorption-enhanced hydrogen production is implemented to integrate to the gasification of biomass in order to enhance the yield and concentration of hydrogen. Bi-functional catalysts playing both roles as a sorbent and a tar-reforming catalyst are developed. The second topic involves in production of liquid fuels from biomass via a direct process. Hydrothermal liquefaction (HTL) is one of promising processes. Influences of process parameters as well as the feedstock properties on the liquid yield and composition are studied to obtain insights into a way to optimize the process to reach the maximum performance.

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49	Assoc. Prof. Dr.	Prapas	Patchanee	Department of Food Animal Clinics	Faculty of Veterinary Medicine	Chiang Mai University	patprapas@gmail.com	Gut Microbiome, Metagenome, Antimicrobial Resistance, Pigs, Broilers	<p>Microbiome is the population of microorganisms colonizes and lived in each organ. The gut microbiome refers to the community of microbes colonize in the gastrointestinal tract and the majority of the gut microbiome are non-pathogenic and, co-habit with the enterocytes in a symbiotic relationship. The functional role of gut microbiome relate to maintain the gut in the normal condition such as, nutrient metabolism, drug metabolism, prevention of colonization of pathogenic microorganisms. Metagenome sequencing is considered for studying of the gut microbiome structure and the role of interaction between the microbiota and host in difference condition.</p> <p>Pigs and broilers are a major protein food worldwide and thus important in global food security, but intensive livestock production encountered with many challenges such as, diseases, environmental problems. So antibiotics have been used for treatment, prevention, and growth promotion for over the past decades. The effect on antibiotics use in food animals is emergence of multi drugs resistance of pathogens and the spread of antibiotic-resistant bacteria and genes is great global concern. Hence, the understanding of the relationship between the gut microbiome and the host is crucial for production development.</p> <p>This work was designed to understand the development, adaptation and response of gut microbiota in pigs and broilers comparing between in-fed antibiotics conventional and antibiotics free farms. Furthermore, the resistance gene pool was observed among the gut microbiome to determine the genetic diversity of antimicrobial resistance genes in each type of farm and this may lead to decrease the risk of transmission of antimicrobial resistance in the food chain.</p>
50	Assoc. Prof. Dr.	Preecha	Phuwapraisiran	Chemistry	Science	Chulalongkorn University	preecha.p@chula.ac.th	Natural Products; Diabetes; Isolation and Structure Elucidation; Glucosidase; Bioorganic Chemistry	<p>Diabetes is a metabolic disorder caused by the elevated glucose level in blood. It threatens people worldwide and the numbers of patients is out of control. To suppress the progress of diabetes, drugs inhibiting alpha-glucosidase, the enzyme that hydrolyzes oligosaccharide into glucose, are required. Although there are several glucosidase inhibitors such as Acarbose, none of them can effectively suppress the increase in blood glucose level. In our research, we search for potential glucosidase inhibitors from medicinal plants and synthesis. The potent glucosidase inhibitors are also investigated for their inhibitory kinetic and molecular docking to get insight into the inhibitory mechanism and proper applications in diabetes management.</p>
51	Assoc. Prof. Dr.	Ramida	Watanapokasin	Molecular Biology/Biochemistry	Department of Biochemistry Faculty of Medicine	Srinakharinwirot University	ramidawa@yahoo.com	apoptosis, cancer, bioactive compound, autophagy, signaling pathway	<p>The research focus on the isolation of novel compound from plants or microorganisms regulating the cell function, because these compounds would be a drug-lead for several human diseases such as cancer and neurodegenerative disease.</p>
52	Assoc. Prof. Dr.	Randall	Shannon	Marketing	College of Management	Mahidol	randall.sha@mahidol.ac.th	Marketing, Consumer Behavior, Retailing, Shopping, Private Label, Cross Culture, Aging, Sustainability, Life Course	<p>As populations continue to grow older and lifespans increase, businesses, governments and consumers are all facing new pressures. Companies must give more consideration to changing needs, companies face issues in terms of recruiting staff, as well as fewer new consumers in the market. Families, hospitals and government face issues related to healthcare. There are a wide variety of dimensions worthy of research in terms of sustainability and aging consumers.</p>
53	Assoc.Prof.Dr.	Roy	Kouwenberg	Faculty	College of Management	Mahidol University	roy.kou@mahidol.ac.th	Finance, Investment, Behavioral Finance, Household Finance, Financial Literacy	<p>In many countries in the world households face the problem of insufficient retirement savings and lack of financial planning for life after retirement. Further, individual investors in practice often display puzzling behavior, such as excessive trading, poor portfolio diversification and low participation in the equity market. These sub-optimal financial decisions are at odds with standard expected utility models often applied in economics. In the fields of psychology and decision theory, several non-standard models for decision making have been developed to explain people's observed choices, such as rank dependent utility and prospect theory. In my research projects I investigate how people save and invest like when they behave according to these non-expected utility models, and what the potential impact on financial markets is. Further, I test the predictions of these models empirically using large household datasets and custom surveys. The research agenda enhances basic scientific knowledge about how people save and invest for retirement. It can lead to recommendations on how to reduce the impact of behavioural biases and lack of financial literacy on household finances.</p>

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54	Dr.	Ruttachuk	Rungsiwiwut	Anatomy	Medicine	Srinakharinwirot	ruttachuk@g.swu.ac.th	stem cells, germ cells, fertility, mangosteen, melatonin	<p>Stem cells are a population of undifferentiated cells that can be found in many organs including in reproductive system. They are considered as potential alternative novel therapeutic agents for patients suffering from infertility due to their unlimited source and high differentiation potency.</p> <p>Women with age over 35 are usually suffered from infertility. Delaying childbearing has led to an increased incidence of age-related female infertility. Infertility not only cause the health and mental problems, but also affect the birth rate in Thailand and probably, in southeast asia.</p> <p>The interest of herbal medicine as an option for fertility care extends to many countries including Thailand. Due to lacking of in depth study of how the herbal medicine improve fertility, the beneficial effect of herbal medicine is still questioned.</p> <p>Therefore, the aim of the research is to clarify the beneficial effect of Thai herbal medicine, mangosteen and natural melatonin on the germ cells (stem cells) in the ovary.</p> <p>The research project will be included;</p> <p>i) identification of stem cells resides in the ovary.</p> <p>ii) improving the quality of oocytes (eggs) through stem cell activation by natural products (alpha mangosteen and melatonin).</p> <p>The results of the research project will be useful for development of natural products for increasing fertility, especially in aged women.</p>
55	Assoc. Prof. Dr.	Sakda	Daduang	Division of Pharmacognosy and Toxicology	Faculty of Pharmaceutical Sciences	Khon Kaen University	sakdad@kku.ac.th	Topical Pharmaceutical Preparations, Arthropod Venom-derived Antimicrobial Peptides Products	<p>Title: Topical Pharmaceutical Preparations of Arthropod Venom-derived Antimicrobial Peptides Products</p> <p>Arthropod venom is well known for its varieties of activities, even causing fatalities in serious cases in humans and animals those are envenomed. It is rich in bioactive compounds. Transcriptomics and proteomic studies revealed various protein and peptide components. The major ones are toxins, ion channel blockers, phospholipase, hyaluronidase, albumin-like protein, antigen 5, serine proteases, mastoparan, dipeptidyl peptidase, immunoreactive proteins, antimicrobial peptides, etc. For antimicrobial peptides, one of the major components in many kinds of arthropod venom, defensins, cecropins and scorpines are those with high antimicrobial activities, possible to be developed as the topical antimicrobial peptides pharmaceutical preparations. These are the new choices to partially replaced antibiotics, those are faced with drug-resistant microorganisms.</p> <p>Defensins and cecropins are antimicrobial peptides that act mainly by disrupting the structure of bacterial cell membranes and lyse bacterial cell membranes and are found in many kinds of arthropod venom. One of scorpine, heteroscorpine-1 (HS-1) is identified as potassium channel blockers from a black giant forest scorpion (<i>Heterometrus laoticus</i>) venom with antimicrobial activities. Native HS-1 apparently inhibits the growth of <i>Bacillus subtilis</i>, <i>Klebsiella pneumoniae</i> and <i>Pseudomonas aeruginosa</i>. Mature sequence composed of 76 amino acid residues with 3 disulfide bridges. HS-1 is a small cationic antimicrobial peptide. The 3D structure reveals 1 α-helical and 2 β-sheet structures, being presumably to disrupt the cell membrane and predicted to inhibit microorganisms by the "carpet model". Topical preparations of 3 kinds in the form of oil, gel and/or cream will be developed for topical used especially for elderly people or ulceration from diabetes mellitus, especially those suffering from the antibiotic resistant microorganisms.</p>
56	Assoc. Prof. Dr.	Sanpawat	Kantabutra	Computer Engineering	Engineering	Chiang Mai University	sanpawat@alumni.tufts.edu	Design and Analysis of Algorithms, Complexity Theory, Graph Theory, Cyber Security	<p>A computer network can be viewed as a graph. For example, the whole Internet is one giant graph. Because cyber security is about a computer network, we can model cyber security and computer networks with graphs. For example, we could use graphs to study the degree of difficulty in attacking a particular network. We could also use graphs to characterize the kind of networks that are safe. The goal of this research is to use mathematical reasoning to try to understand cyber security as much as possible.</p>

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57	Asst.Prof.Dr.	Santad	Wichienchot	Functional Food and Nutrition	Interdisciplinary Graduate School of Nutraceutical and Functional Food	Prince of Songkla University	santad.w@psu.ac.th	Prebiotics, probiotics, gut microbiota, functional food, nutraceutical	<p>Title: Pilot-scale production of prebiotics from agricultural and food processing by-products</p> <p>Objective: This study aims to produce selected prebiotics from agricultural and food processing by-products in pilot-scale. The abundance of agricultural wastes or by-products from industrial and domesticated food processing is the main cause of environment problems. Presently, scientific investigation on the benefits or functional properties of waste and by-products from industrial food processing for their utilization as functional ingredients. The most common by-products are classified under carbohydrate and dietary fiber groups. Prebiotics are non-digestible food ingredients that beneficially affect the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon. However, it differs from the classical dietary fibers in which is selectively stimulates the growth and/or activity of beneficial bacteria, i.e. bifidobacteria and lactobacilli species. The non-digestible and fermentable oligosaccharides are the most popular compounds, which gained specific interest because they had been reported to possess significant prebiotic properties, such as galacto-oligosaccharides (GOS), fructo-oligosaccharides (FOS), gentio-oligosaccharides, gluco-oligosaccharides, isomalto-oligosaccharides (IMO), mannan-oligosaccharides, chito-oligosaccharides (COS), soybean oligosaccharide (SOS), pectic oligosaccharides (POS) and xylo-oligosaccharides (XOS). Potential sources of by-products from food processing for production of prebiotics are derived from various food industries and some from agricultural wastes or by-products. For example, pectic oligosaccharide and fructo-oligosaccharide are generated from fruit and vegetable processing and the sugar cane industry, xylo-oligosaccharide from wood and corncob, chito-oligosaccharide from seafood processing, β-glucan from cereal and mushroom by-products, while soybean oligosaccharide is a by-product from the tofu and soy protein industry. Many manufacturers of prebiotics are shifting the utilization of their raw materials from other alternative sources with lower cost. Among my previous studies, IMO, COS, POS and XOS are potentially for further investigation in pilot-scale production.</p>
58	Dr.	Saran	Promsai	Program Doctor of Science in Bioproducts Science/Department of Science	Faculty of Liberal Arts and Science	Kasetsart University	saranpromsai@hotmail.com	Synbiotic; Probiotic; Prebiotic; Stevia; Rice	<p>Functional food particularly probiotic products has become more popular due to the emerging of healthiness caring, resistance-antibiotic pathogens and aging population concerns. The dairy probiotic products are widely distributed in the markets. An alternative probiotic product is developed such as fruit powder, bakery and cereals to extend the shelf life of probiotic strains. In the present, food that has multiple health benefits is required by the consumers. There are plentiful of bio-resources that contain various nutrients and high value substances in Thailand. Thai pigmented rice and honey that have high value of bioactive compounds are shown to be a potential carrier and prebiotic. Thus, the development of innovative health dietary supplements that combines the pharmaceutical properties of pigmented rice, honey and probiotic strains will be conducted.</p> <p>Development of synbiotic products based on pigmented rice and stevia or Thai medical herbs. This research aimed to produce novel probiotic or synbiotic products using Thai agricultural products that have high nutrients and good benefits for human health. The characterization of prebiotic substances in Thai rice and stevia will be tested. The products will be developed and evaluated the microbial safety. The benefits for health especially testing in cell culture will be conducted. Moreover, the probiotic properties of probiotic microorganisms and synbiotic products will be evaluated. This research will be a knowledge-based application to develop further in the health food industry. An alternative product from this research will be useful for many kinds of consumers and add value to the agricultural products.</p>
59	Assoc. Prof. Dr.	Saroat	Rawdkuen	Food Science and Technology	Agro-Industry	Mae Fah Luang University	saroat@mfu.ac.th	By-products, Fish industry, Film, Food Packaging, Fruit and vegetables, Gelatin, Legume seeds, Oilseed, Rice, Utilization	<p>Utilization of Agricultural & Food Processing By-products: Extraction, Characterization and Its Application</p> <p>By-products originating from agricultural and food processing are a considerable disposal problem for the agriculture and food industry because these waste streams emerge in huge quantities and are often direct impact on the economy and environmental pollution. However, at the same time by-products constitute a rich but yet underutilized source of valuable components, which may find application as ingredients in the food and non-food industries. As a result, numerous projects are currently directed toward the utilization of agricultural and food processing by-products such as animal based biomaterials (fish skin, bone, flesh, and internal organs) and plant based biomaterials (pineapple, mango, longan, banana, tea, sacha Inchi, oilseeds, legumes, rice, etc.). There are many examples of active ingredients deriving from fish processing industry as well as plant based products industry, but in the present review we would like to focus on the potentialities and the current research of compounds and extracts deriving from agro-industrial disposable wastes in the food related utilization. The presentation is to highlight the potential of selected by-products as a source of bioactive/functional compounds in terms of emerging and conventional techniques for extraction, physico-chemical characterization and biological activity monitoring, and application of the extracts, fractions, and isolated compounds as functional food ingredients or bio-based materials for food packaging and others. Considering environmental effect and economic loss, agricultural and food processing by-products should be utilized in various innovative processes in the cause of beneficial product derivation.</p>

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60	Asst. Prof. Dr.	Sarute	Ummartyotin	PhD in Chemistry	Department of Chemistry, Faculty of Science and Technology	Thammasat University	sarute.ummartyotin@gmail.com	Cellulose; Point of care diagnostic; Waste management	The interest in cellulose and its modification as cellulose-based composite has been exponentially increasing. During the last three decades, cellulose and cellulose-based composite have been extensively designed for many aspects of the sensor such as electronic sensor, gas sensor and electrochemical sensor. One of the most interests on the utilization of cellulose was focused on point of care diagnostic material. Cellulose was cheap and it was easy to modify by chemical reaction. Also, utilization of cellulose based sensor is very interesting for the preliminary test for point of care diagnostic. In this research work, cellulose was extracted from nata de coco products, newspaper waste and water hyacinth. The aim of this project was also focused on the circular economy and zero waste policy. Cellulose was chemically and mechanically extracted from waste and it will be further employed as point of care diagnostic materials.
61	Assoc. Prof. Dr.	Satit	Puttipipatkachorn	Department of Manufacturing Pharmacy	Faculty of Pharmacy	Mahidol University	satit.put@mahidol.ac.th	industrial pharmacy, pharmaceuticals, pharmaceutical technology, drug delivery system, nanotechnology, controlled release technology, pharmaceutical product development, pharmaceutical manufacturing technology	Our area of research interest is solid-state characterization of drug substances and excipients, and pharmaceutical product development, especially solid dosage form. The integrated research is conducted based on strong knowledge of material science and molecular pharmaceutics to study the relevance of physicochemical properties and molecular interaction of drug substance in oral solid dosage form on drug product performance including dissolution, stability and bioavailability. Formulation and manufacturing technologies for immediate- and modified-release dosage form of generic drug products are focused. Advanced technologies for formulation and drug delivery, and pharmaceutical manufacturing, including nanotechnology, process analytical technology and quality by design (QbD) are also area of interest.
62	Asst. Prof. Dr.	Siriwan	Prapong	Animal Health and Biomedical Sciences/Department of Physiology	Faculty of Veterinary Medicine	Kasetsart University	fvetsrp@yahoo.co.th	Leptospirosis; Vaccine; Farm trial; Swine; Veterinary Medicine	Farm trial test on Leptospiral vaccine based on local strain for swine of ASEAN swine industries. Siriwan Prapong, D.V.M., M.S., Ph.D. Thai swine industry is cited as the top performance among ASEAN countries. Although veterinarians and companies in veterinary products from Thailand have been exported to ASEAN countries, Leptospirosis is still among zoonotic diseases found in swine farms in ASEAN countries. My laboratory has developed genetically engineered proteins which had been proved their protectivity in hamster model. We also collaborated with Professor from Austria to develop the genetically engineered proteins into oral based form. We hope that this oral based vaccine will be transferred their protectivity concurrent with injection form. The aim of this proposal is to do field trial vaccine test in piglet of ASEAN swine farms, either from Lao, Myanmar, or Vietnam. Whether our local strain vaccine will provide protectivity for leptospiral local serovars prevalence threatening serovars among swine in ASEAN countries will be evaluated.
63	Dr.	Somchai	Pinlaor	PhD. in Parasitology, Department of Parasitology	Faculty of Medicine	Khon Kaen University	psomec@kku.ac.th	Fascioliasis, serodiagnosis, Fasciola gigantica Cathepsin B5 (FgCB5), Lateral flow chromatography, strip kit, Vietnam	Fascioliasis caused by Fasciola spp. infection is still the health problem in human and in economics animal in worldwide, especially in Greater Mekong Sub-Regions. Patients with chronic infections have the experience hardening of the liver (fibrosis) due to the long-term inflammation. So early detection of this disease is necessary to limit the negative impact of infection. The diagnosis of human fascioliasis is usually based on serodiagnosis together with the presence of eosinophilia and other clinical signs because of the low sensitivity of coprological techniques. The commercially-available ELISA kits are usually used for routine laboratory. However, performing of these ELISA kits has to be conceived by experienced, and require special and expensive equipment. Fasciola gigantica Cathepsin B5 (FgCB5) is a secreted protein produced during the early stage of infection and induced strong immune response than other excretory-secretory proteins, providing a potential for early diagnosis of fascioliasis. We are studying the efficiency of different ELISA-based platforms including cystatin-captured ELISA, peptide antigens mimicking FgCB5, and FgCB5 recombinant protein for early diagnosis of human fascioliasis. We found that these platforms exhibited comparable performance with commercial ELISA kits. In this project, we would like to translate our findings into a diagnostic platform of lateral flow immunoassay, which is easy to apply for routine diagnosis as well as epidemiological survey in human and in animal. This project is a collaborative network between Department of Parasitology, KKU, Thailand and the Hue University of Medicine and Pharmacy, Vietnam which specially assigned for Miss Tran Thi Diem Na. Under this collaboration, she is currently undertaking master degree study and will shortly continue her work under PhD program. The project will strengthen the collaboration between KKU and Hue University and will also provide the easy-to-use diagnostic platform, which could be developed and sold in endemic area of fascioliasis.
64	Assoc.Prof.Dr.	Sooksan	Kantabutra	Faculty	College of Management	Mahidol University	sooksan.kan@mahidol.ac.th	Sufficiency Economy, Sustainable Leadership, Sustainable Development, Corporate Sustainability, Transformation Leadership	Approach to Sustainable Enterprise

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65	Dr.	Soorathep	Kheawhom	Department of Chemical Engineering	Faculty of Engineering	Chulalongkorn University	soorathep.k@chula.ac.th	zinc-ion, battery, zinc anode, electrolyte, vanadium oxide, deep eutectic solvent	Advanced battery technologies with cost-effective and high safety are highly beneficial for future energy applications such as electric vehicle, and grid-scale energy storage. Although lithium-ion batteries dominate the battery market, their practical use is limited by the safety issues and the concerns regarding the availability of lithium resources. Therefore, battery technology using nontoxic, safe, abundance and low-cost active materials is desirable. Also, the technology should be able to leverage existing lithium-ion battery manufacturing process as the lithium-ion battery manufacturing process is rapidly scaling. Zinc-ion battery is a promising alternative battery technology. Nevertheless, the development of zinc-ion battery is plagued by the limitation of advanced cathodes with high energy density and compatible electrolytes. In this project, we focus on the development of the cathode material based on various phases, morphologies, and structures of vanadium oxide. Besides, the mechanisms of zinc species intercalation into the cathode host materials in various deep eutectic solvent electrolytes are examined experimentally and computationally using density functional theory. The results obtained from the project will pave the way for the fabrication of high-performance zinc-ion batteries at low cost.
66	Assoc. Prof. Dr.	Sudarat	Jiamyangyuen	Food Science and Technology	Department of Agro-Industry, Faculty of Agriculture, Natural Resources and Environment	Naresuan University	sudaratj@nu.ac.th	Nuclear Magnetic Resonance (NMR), metabolomics approach, rice bran oil, cold press, solvent extraction	Nuclear Magnetic Resonance (NMR) metabolomics approach to study metabolites in rice bran oil obtained from cold press and solvent extraction Refined rice bran oil is extracted using organic solvents. Hexane has been used as the solvent for rice bran extraction by industrialists due to the availability, high oil extractability (98%) and easy operation. This process, however, has some problems with respect to the oil quality, including a high content of free fatty acid, wax, and unsaponifiable matter, and also a dark greenish-brown to light yellow coloration. On the other hand, cold pressed rice bran oil (CRBO) is exceptionally nutritious and rich source of valuable minor nutraceutical components such as γ -oryzanol, tocopherol, tocotrienols, phyosterols, polyphenols and squalene. CRBO is produced without chemicals and successive steps of refining, except membrane filtration whereas RRBO oil involve using chemicals, heat and cold condition in order to improve quality of the oil. Without severe condition, CRBO retains much more concentration of such minor compounds than those RRBO. In this study, rice bran oil samples obtained from cold press and solvent extraction will be compared in terms of metabolite differences using Nuclear Magnetic Resonance (NMR) metabolomics approach. Metabolomics is a comprehensive tool for evaluating the metabolite variation of organisms under different conditions. Proton nuclear magnetic resonance ($^1\text{H-NMR}$) combined with principal component analysis (PCA) and partial least-squares analysis (PLS) will be applied to distinguish variations in metabolites as affected by extraction methods. A wide range of metabolites will be investigated including fatty acids, phenolic compounds, amino acids, organic acids, carbohydrates and other important phytochemical compounds. This differentiation can be measured via metabolomics approach based on several techniques and the implementation of sophisticated statistical analysis. The multivariate statistical methods used in this work help to reduce a huge data sets to a more manageable size.
67	Prof. Dr.	Supan	Fucharoen	Medical Science,	Associated Medical Sciences	Khon Kaen	supan@kku.ac.th	Thalassemia, Hemoglobinopathies, Asean, Southeast Asian, Prevention and control program, Molecular basis, Globin genes defects	Thalassemias are common genetic disorders representing major public health problem in many Asean countries especially in Southeast Asia. Studies have shown that thalassemias rather than iron deficiency are major causes of anemia in Thailand. A national prevention and control program has been implemented. To provide basic knowledge of the diseases in the region, research has been carried out by the Thalassemia Research Group at Khon Kaen University, Thailand. Studies included epidemiology, prevalence and heterogeneity, molecular basis, genotype-phenotype interaction and development of appropriate screening and diagnostic tests. Results have been applied successfully to a prevention and control program in northeast Thailand. Our laboratory has offered complete laboratory services for thalassemia diagnosis and prenatal diagnosis since 1993. Retrospective data confirmed that implementation of this program is successful and a large number of severe diseases have been prevented. In contrast, limited advance on thalassemia research has been made in other Southeast Asian countries. No official prevention and control program is established, accordingly. Most of the cases with in these countries seek their treatment and appropriate management in Thailand. This is not a good approach to the control of thalassemia in these countries where a prevention and control program should be established locally. Preliminary studies on these populations have been conducted at our laboratory. However, information on the exact epidemiological data, prevalence and heterogeneity, molecular basis, genotype-phenotype interaction and appropriate screening and diagnostic tests for thalassemia in the population are still required and are prerequisites. Student under this TRF-Asean program is expected to carry out his/her study on these matters of thalassemia, applying a successful approach being done in northeast Thailand. It is conceivable that the results obtained from his/her study under the TRF-Asean program will prove useful in the development of a prevention and control program of thalassemia in his/her own country.

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68	Assoc.Prof. Dr.	Sutatip	Pongcharoen	Medicine	Medicine	Naresuan University	sutatipp@nu.ac.th	T cell biology, T cell receptor, TCR activation, immunotherapy	T cells play a central role in adaptive immunity. The T cell receptor (TCR) expressed on the surface of T cells is responsible for the recognition of the peptide antigen-major histocompatibility complex (pMHC) leading to the initiation of immune responses to infections and cancers. Although the molecular and biochemical mechanisms of TCR activation are not completely understood, the current knowledge on T cell biology has led to enormous advancement in treatments for patients with immune disorders as well as patients who have metastatic cancers. The current project deals with studies to understand molecular and biochemical mechanisms of TCR activation that involves adaptor molecules and signaling proteins and enzymes in the signaling pathway of T cell activation. Part of the project deals with studies on developing T cells, the so called thymocytes, as well as analysis of T cell repertoires, all of which will be useful for future applications for immunotherapy designed to treat patients with immune disorders and malignancies. In addition to studies using the conventional alpha-beta T cells, a small T cell subset, namely the gamma-delta T cells known to play role against infections and cancers will also be studied.
69	Asst.Prof.Dr.	Sutee	Wangtueai	Food Science and Technology	Faculty of Agro-Industry	Chiang Mai University	sutee.w@cmu.ac.th	Food processing, Bioactive peptides, High-valued extracts, Functional food	The title "Innovative peptides extraction from Thai sea cucumber and jellyfish for high-valued functional food products" Nowadays, the world consumer place more emphasis on health and beauty by promoting the use of natural products then the concept of functional food has become a new and practical approach consumer to achieving good health and reducing the risk of various chronic diseases. Thus the pharmaceutical, cosmetics and functional food industry have steady growth in the world market. Thailand policy is also focusing on the bio-based industry that relates to a variety of agro-industry including marine product processing and by-product utilization. The seafood is a valuable material and high ability to extract bioactive ingredient for using in the valued functional food or cosmetics industries. Most of the current research of the functional foods and therapeutic agents are derived from several marine animals or marine plants. Those bioactive components are peptides or polysaccharides with various activities such as antimicrobial, antioxidant, anti-inflammatory, angiotensin I-converting enzyme (ACE) inhibitory, anti-photoaging or photodamage, anticancer agents, etc. Therefore, the concept of this research will be studied an optimized process of bioactive peptides extraction from Thai sea cucumber and jellyfish by using enzymatic methods. Then the bioactive peptide will be studied the purification and identification and producing high-valued extract products. The final part is an application of bioactive peptides that will be applied in functional food products for a prototype of industry application. This will enhance a local raw material utilization and increase a value of the raw material by converting to high-valued products, leading to a sustainable of functional food industries in Thailand and the world.
70	Assoc. Prof. Dr.	Sutthirat	Sitthisak	Microbiology/Department of Microbiology and Parasitology	Faculty of Medical Science	Naresuan University, Phitsanulok	sutthirats@nu.ac.th	Bacteriophages, Acinetobacter baumannii, bacteriophages-derived proteins, antimicrobial activity	The emergence of the Multidrug-resistant A. baumannii (MDR-AB) has been reported in worldwide. In February, 2017, WHO publishes list of bacteria for which new antibiotics are urgently needed and carbapenem-resistant A. baumannii was listed as a "Critical Priority". The increased incidence of antibiotic resistance has led to the search for an alternative antimicrobial agents. Phage Therapy is the therapeutic use of lytic bacteriophages to treat pathogenic bacterial infections. It is one potential candidate for the treatment of multidrug-resistant bacteria. The molecular processes involved in the viral life cycle has led to the development of viral proteins that can be used as antibacterial agents. Phage-derived proteins such as endolysins, peptidoglycan hydrolases, polysaccharide depolymerases, holins, and phage small proteins have been examined for being potential candidates in phage therapy. However, little study has been reported about enzymes and small proteins of A. baumannii bacteriophages to be used as antimicrobial agents. This study aims to characterize the expression of A. baumannii bacteriophages-derived proteins (enzymes and phage small proteins) encoding genes during the lytic cycle of bacteriophage infection using RNA-Seq (RNA sequencing). After that, peptides derived from phage enzymes and small proteins will be characterized for their antimicrobial activity.
71	Prof. Dr.	Suttichai	Assabumrungrat	Chemical Engineering	Engineering	Chulalongkorn University	suttichai.a@chula.ac.th	Hydrogen; multifunctional reactor; catalyst; glycerol	This project focuses on steam reforming of glycerol, a byproduct from biodiesel production, for hydrogen production. Sorption enhanced steam reforming (SESR) is proposed to intensify the reforming and hydrogen purification steps in one unit operation, allowing the efficient conversion of glycerol into high purity hydrogen with reduced carbon emission. Aspen Plus software will be used to determine a suitable operating window of the SESR. Different active catalysts and CO2 adsorbents will be experimentally screened to find suitable catalyst and sorbent for further development of multifunctional sorbent/catalyst material. Effects of different operating parameters (e.g. steam to glycerol ratio, temperature, % methanol impurity) on hydrogen yield and purity will be evaluated.
72	Prof. Dr.	Teerapol	Srichana	Pharmaceutical Technology	Pharmaceutical Sciences	Prince of Songkla University	teerapol.s@psu.ac.th	Polymyxin B, antimicrobials, formulation design, parenteral dosage form	The polymyxin lipodecapeptides colistin and polymyxin B have become last resort therapies for infections caused by highly drug-resistant Gram-negative bacteria. Unfortunately, their utility is compromised by significant nephrotoxicity and polymyxin-resistant bacterial strains. We have synthesized a promising lipid carrier in house. It is expected to be used as a carrier for polymyxin. Promising formulations underwent additional testing against primary kidney cells isolated from human kidneys to better predict their nephrotoxic potential. The red blood cells hemolysis of polymyxin after incubation with bacterial endotoxin is investigated. We expect that these formulations possess equal or better antimicrobial potency compared to polymyxin B and other formulations, and are less toxic than polymyxin B and colistin against mammalian HepG2 cells and human primary kidney cells.

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73	Asst. Prof. Dr.	Teerapong	Siriboonpiputtana	MSc, PhD in Clinical Pathology (International Program)/Department of Pathology	Faculty of Medicine, Ramathibodi Hospital	Mahidol University	teerapong.sir@mahidol.ac.th	Biology of Leukemia, Biomarker of Cancer, Molecular Genetics, Molecular Oncology, Cancer Stem Cell	My research of interest is to focus on the discovery of biomarkers for clearer understanding in the molecular pathology of leukemia and lymphoma as well as clinical applications including early diagnosis, prognostic, predictive, and monitoring markers.
74	Asst. Prof. Dr.	Naruemon	Thabchumpon	PhD in International Development Studies	Faculty of Political Science	Chulalongkorn University	nthabchumpon@gmail.com	Civil Society, Social movement, Migration, Social Inequality, Resource Politics and trans-disciplinary methods	The PhD research scholarship aims to answer the task of mainland Southeast Asia that is now facing pressing challenges from regional integration through the formation of the ASEAN community. Example are the regional international migration, which increasing simulate labor migration in this region. Special Economic Zones have recently mushroomed throughout the region and large development projects are causing both displacement and degradation of natural resources. The challenge issues in Southeast Asia are globally and regionally interrelated and they unfold the very complex local phenomena. Accelerated land grabbing, conflicts over resources and social inequality throughout the region have also become issues of national policies and governments for an increased engagement of academia and the private sector to assure sustainable and just economic growth. The studies on underlying mechanisms of interrelation between local realities and global and regional trends are however insufficient and the methods of transdisciplinary research are also in incipient stage only. To support the transdisciplinary comparative methodologies, the study aims to identify a PhD research on three thematic areas – namely between area studies, sociology, political science and development studies. Three common empirical topics have also crystallized out of these encounters, namely on social equality, resource politics and migration to be selected as a topic of research study. Due to its particular focus on transdisciplinary methods, the output of the study will be emphasizing on the politics of civil society and social movements in mainland Southeast Asian in responding to migration, social inequality and resource politics in this region. It aims to emphasize on the creation of a knowledge society expecting to promote social justice, peace and inclusive development.
75	Assoc. Prof. Dr.	Thiti	Bovornratanarak	Physics	Science	Chulalongkorn University	thiti.b@gmail.com	High Pressure Physics, Condensed Matter Physics, Crystallography, Raman Spectroscopy, Density Functional Theory, Structural Phase Transition, Energy Storage Materials, Solarcell	My central theme of the current research is high pressure phase transformation in energy materials such as materials for Hybrid Perovskite solarcell, Metal-Air, Metal-ion and 2D materials for supercapacitor applications. My experimental work involved investigation of the structural phase transition in semiconductors, metals and metal oxides using Diamond Anvil Cell and X-ray diffraction techniques both from conventional sources and Synchrotron sources. The physical and chemical properties will be calculated using Density Functional Theory code. We also have in-house state of the art Raman System and X-ray diffraction for material characterization. We have close collaboration with several Extreme Condition Laboratory around the world such as Uppsala University, Carnegie Institute of Washington and University of Edinburgh. We also have in-house computing facility for DFT calculation.
76	Dr.	Tippawan	Liabsuetrakul	Epidemiology/Epidemiology Unit	Faculty of Medicine	Prince of Songkla University	ltippawa@hotmail.com	implementation research, maternal nearmiss, community mobilization, health system strengthening, ethnic population	Background and rationale Maternal death and near miss are the public concern in low- and middle-income countries. The disparity of maternal health and services has been found across and within country, though a country where the maternal death or near miss is not too high. Three delays on seeking care, reaching care facility and receiving good care when reaching the facility are reported to be related the maternal death and near miss. Well-known barriers and attributable factors were a lack of knowledge or awareness of high-risk conditions, cultural and religious beliefs, socioeconomic and financial obstacles and poor-functioned health system. High maternal near miss is common conditions which is an important unfinished agenda in ethnic population in lower southern of Thailand, Myanmar, and Vietnam. Promoting healthy pregnant women and prompt seeking health care behaviors as well as the good preparedness of health system are required to be improved. Although the community mobilization and strengthening health system are recommended worldwide for improving maternal health, the details of model of community mobilization and health system strengthening or action may not be straightforward as there are different contexts of population and country. Definite solutions of model required by involving stakeholders are required. <u>Overall objective</u> To determine the acceptable and feasible model of community mobilization and health system strengthening to reduce maternal near miss among the specific ethnic population in southern Thailand, Myanmar and Vietnam. <u>Methods</u> Mixed qualitative and quantitative study will be conducted and divided into two phases. Phase I is a qualitative study design to identify the relevant model of community mobilization and health system strengthening by the involvement of stakeholders. Phase II including a quantitative study design to test the acceptability and feasibility of constructed model and then assess the effect of model implemented on maternal near miss comparing pre- and post-implementation. ☐

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77	Assoc.Prof.Dr.	Tosawat	Seetawan	Physics	Science and Technology	Sakon Nakhon Rajabhat	t_seetawan@snru.ac.th	Thermoelectrics, Photovoltaic, Bulk, Thin film, Sensor, Alternative energy	We are specialized in the preparation and characterization of thermoelectric (TE) power measurements and Photovoltaic (PV) applications. They established Centre of Excellence on Alternative Energy, which is a specialized research center in Sakon Nakhon Rajabhat University, Thailand. We have published several national/international publications, patents in the areas of thermoelectric, PV cells and international collaborations with Myanmar, Vietnam, Indonesia, Korea, China and Japan etc. Owing to increase in the energy demand and rapid depletion of the fossil fuels, renewable energy sources have become an indispensable part of world energy consumption. Among all the available renewable energy sources, thermoelectric is converted heat to electricity and solar energy is regarded as the most viable source of energy since it is abundantly available. Several researches have been carried out on Magnesium and Manganese silicide thermoelectric cells and Silicon solar cells which have higher conversion efficiencies, but high cost and complicated manufacturing processes. Hence, several research laboratories in national and international levels are vigorously working in the field of various PV-TE cells using nano-crystallite size of bulk & thin film materials to enhance the cells efficiency.
78	Assoc.Prof.Dr.	Vichita	Ractham	Faculty	College of Management	Mahidol University	vichita.rac@mahidol.ac.th	Knowledge Management, Knowledge Creation, Knowledge Transfer, Knowledge Assets, Knowledge Application, Knowledge Management for Sustainable Development	My research concept focuses on the underlying principles of knowledge management processing in business landscape. It explores the framework that has been developed in the field of organizational theory and strategy to clarify understanding of what companies attempt to do when they claim to be "managing knowledge", and how to apply knowledge for value-added and competitive advantage. Fundamental KM concepts are studied through both quantitative and qualitative research approaches on the specific knowledge management practices in both Western and Asian countries. These concepts comprise of knowledge creation, knowledge transfer, knowledge assets, knowledge application, and knowledge for sustainable development. Firstly, knowledge creation research covers knowledge creation process and explore the process in each generation group in workplace. These concepts include critical success factors leading to the solutions of why they are successful and how they started, or what processes drove the knowledge management project forward. Secondly, knowledge transfer process focuses on source of knowledge, knowledge sender, knowledge recipient, critical success factors and work environment. Thirdly, intellectual assets of the business, a repository of knowledge gap in organizational knowledge assets, knowledge codification and knowledge verification are studied. There are several important points of information technology involved, e.g., KM and social media, KM and Big Data, and the adoption of KM in the digital world. Fourthly, how to adopt knowledge management process in an organization, and knowledge management strategy are concentrated in terms of knowledge application research area. Moreover, how to measure the success of knowledge management process in knowledge performance measurement is explored, so that it truly fits within the organization. Lastly, my research concept involves knowledge management in sustainable development and what the future has in store for knowledge management. Knowledge management sustainable business model is examined based on community partnership and Sufficiency Economy Philosophy for sustainable development in knowledge management.
79	Dr.	Vilai	Rungsardthong	Agro-industrial, Food, and Environmental Technology	Faculty of Applied Science	King Mongkut's University of Technology North Bangkok	vilai.r@sci.kmutnb.ac.th	Micro-encapsulation, Nano-encapsulation, bioactive compound, antioxidant, herb, characterization, bioavailability	Micro/Nano-encapsulation of bioactive compounds from Thai herbs as potential delivery systems in food systems: preparation, characterization, and applications in food industry Plant bioactive compounds including carotenoids, essential oils, antioxidants, or flavors are widely used in food products to enhance their sensory properties or to develop their nutritional and health benefits. As several metabolic diseases and ageing-related degenerative disorders are closely associated with oxidative processes in the body, the use of herbs as a source of antioxidants will be investigated. However, the use of these bioactive compound is sometimes limited due to their low solubility in aqueous phases, their instability in food products during processing and preparation as well as their low bioavailability. Encapsulation of bioactive compounds has been practiced as potential approaches to stabilize such bioactive compound and to control their release and increase their bioavailability. Micro/ nanoencapsulation of bioactive compounds is defined as a process by which particles or droplets are surrounded by a coating or embedded in a homogeneous or heterogeneous matrix giving small capsules as micro/ nano size with active properties. This study will focus on validating the antioxidant capacity of 2- 4 potential Thai herbs after harvest, as well as testing their effects on markers of oxidation. Micro/nano-encapsulation will be implemented for better bioactive compound carrier, bioavailability and absorption at the target site. Preparation and characterization of the micro/nanocapsules will be carried out. This will work in parallel with cell line and/ or clinical test, aiming to establish antioxidants as mediators of disease prevent. This work will provide direction for future food with potential contributions of herbs to human health and wellbeing.

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80	Asst. Prof. Dr.	Wanlapat	Suksawas	Political Science and Public Administration	Social Sciences	Naresuan University	wanlapats@hotmail.com	Networks of civil engagement, Political Trust, Political Participation, Northern Thailand	<p>According to the Thailand Human Development Report 2014 (pp. 112-115), the Participation Index shows that the north region achieves the highest index score (0.6810) of all 6 regions, while the average of all regions is 0.6490. The Participation Index was constructed from data on voter turnout, community groups, participation in local groups, and participation in social services. It is very interesting to consider why this region presents such high levels of participation in community, social and political affairs.</p> <p>Many studies argue that networks of civil engagement and political trust have a positive impact on promoting political participation. In order to investigate the role of networks of civil engagement and political trust in enhancing political participation, this study employs Robert D. Putnam's (1993) definition of social capital as a principle theoretical framework. In general, networks of civic engagement are links that connect people together (Putnam, 1993, p. 173). Networks of civic engagement can be created by an active association of members in society (Halpern, 2005, p. 10). Notably, strong networks of civic engagement can play an important part in improving the performance of democratic institutions (Putnam, 1993, p. 155, 1995a, p. 664). Additionally, trust, as argued by Putnam and various scholars, has many benefits: it creates a moral society, allows people to be more tolerant and opens society to greater levels of compromise on major public issues. More importantly, trust enhances the performance of political institutions (Brehm & Rahn, 1997, p. 1008; Cohen, 1999, p. 129; Levi, 1998, p. 96; Putnam, 1993, p. 170; Uslaner, 2000, p. 570; see also Uslaner, 2003, p. 173)</p> <p>The main objective of this study is to investigate whether the capacity of networks of civil engagement and political trust in northern Thai society to increase people's political participation.</p>
81	Asst. Prof. Dr.	Watcharabon	Buddharaksa	PhD (Political Science)/Department of Political Science and Public Administration	Faculty of Social Sciences	Naresuan University	watcharabonb@nu.ac.th	health literacy, policy promotion, policy network, network governance, urban politics, urban regime	<p>Health Literacy, City, and the State: Challenging Network Governance and Urban Politics in Thailand</p> <p>My research is about the study of Thailand's health literacy promotion policy in relation to the role of the Thai state, multi-level network governance, and politics in the urban and rural areas in northern Thailand focusing on case studies in Kamphaeng Phet and Phitsanulok provinces between 2014 and 2018. WHO defines health literacy as the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health. In response to the challenge of providing these necessary skills for health literacy the Thai Department of Health (DOH), launched a 2017 plan for Health Literacy.</p> <p>My research relates to part of the Thailand 4.0 which aims to create a healthy society and improvement of the quality of life for the poor and middle-income groups in the country and addresses the part of Sustainable Development Goals by the United Nations in 2015 (Goal 3: Good Health and Well-Being) This research argues that providing effective health literacy promotion policy may require social and political adjustments not adequately reflected in medical and public health community studies. Conceptions of multilevel policy network, network governance, urban regime theory, and Antonio Gramsci's notions of hegemony, intellectuals, and common sense will be employed as the theoretical framework to help increase understanding.</p> <p>The benefit of my project is tangible as it will concretely improve health literacy for Thai people and advance the promotion of health literacy in Thailand. In addition, knowledge from this research will suggest the most suitable relationship between various actors in the policy process in Thailand. Furthermore, policy recommendations to Thai authorities and other sectors on the matter of health promotion and political development are also possible.</p>
82	Assist. Prof. Dr.	Weerachart	Tangchirapat	Civil Engineering	Engineering	King Mongkut's University of Technology Thonburi	weerachart.tan@kmutt.ac.th	Concrete materials, Pozzolanic materials, Alkali activated materials, Geopolymer materials, Recycled aggregate concrete, High strength concrete, Eco-friendly concrete	<p>Utilization of fly ash, bottom ash, bagasse ash, palm oil fuel ash, and rice husk ash for use as supplementary cementing materials in concrete such as high strength concrete, high volume concrete, and high performance concrete, etc.</p> <p>Development of new cementing materials for producing concrete such as calcium carbide residue mixed with pozzolans, alkali activated materials, and geopolymer materials, etc.</p> <p>Utilization of recycled concrete aggregates with and without treated in high strength concrete aggregate and eco-friendly concrete</p>
83	Dr.	Werayut	Srituravanich	Department of Mechanical Engineering, Biomedical Engineering Program	Faculty of Engineering	Chulalongkorn University	werayut.s@chula.ac.th	medical device, micro system, ageing society	<p>As ASEAN countries are becoming ageing society, there is an urgent need to develop new medical devices, especially micromedical devices to satisfy the continuously growing demands of ageing population. In the MEMS and Nanotechnology laboratory, the Faculty of Engineering, Chulalongkorn University, we are collaborating with several groups at the Faculty of Medicine, Chulalongkorn University as well as some government organizations for the development of a few micromedical devices including microneedles for drug delivery, microtubes for glaucoma patients, needle guides for ultrasound and so on. Furthermore, we are collaborating with several companies to commercialize some of the developed micromedical devices. Therefore, we would like to have an RGJ-ASEAN PHD student joining our laboratory for further study and development of these micromedical devices.</p>

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84	Asst. Prof. Dr.	Wilawan	Khanitchaidecha	Department of Civil Engineering	Faculty of Engineering	Naresuan University	wilawank1@gmail.com	Groundwater purification, Nitrate removal, Agricultural discharge, Denitrification, Biofilm-electrode reactor	<p>A contamination of Nitrate-nitrogen (NO₃-N) in surface and groundwater resources is one of the environmental impacts which is facing in many provinces in Thailand. The contamination is caused by an industrial farming; a lots of nitrogen fertilizers are applied to agricultural crops to increase the crop yields. This results that the NO₃-N contaminates to the natural water resources, especially groundwater. The groundwater is well-known as the significant resource for drinking and other domestic purposes in both rural and urban areas. In 2008, the high NO₃-N was observed in the groundwater in Kanchanaburi and Suphanburi provinces; the concentrations were approximately three times higher than the drinking water standard. The consumption of high NO₃-N water can cause blue baby syndrome for infants, and stomach cancer and urinary bladder cancer for adults. Therefore, the removal of NO₃-N from either surface or groundwater is necessary for providing the qualified water to the residences.</p> <p>In this research proposal, the NO₃-N will be removed from the contaminated water by biological denitrification. Its significant advantages rather than other NO₃-N removals are high-volume treatment and low-cost technology. The conventional heterotrophic denitrification can cause an organic carbon contamination in the effluent (as presented in BOD value) from extensive organic carbon addition. Therefore, the combination of heterotrophic and hydrogenotrophic denitrification becomes alternative. In the hydrogenotrophic denitrification, the NO₃-N removal efficiency is enhanced by utilizing H₂ gas which is from chemical reactions in a biofilm-electrode reactor. Due to no extensive organic carbon in the combination system, the unqualified effluent quality from the organic carbon remaining is not occurred. In this research, various factors of types of electrodes, current densities, ratios of organic and nitrogen, and retention time will be studied to obtain the best performance. Further, the relationship of NO₃-N removal efficiency and microorganisms distribution will be also clarified.</p>
85	Dr.	Wipa	Suginta	School of Biomolecular Science and Engineering		Vidyasirimedhi Institute of Science and Technology (VISTEC)	w_suginta@yahoo.co.uk	biofuel, bioenergy, chitin recycling, chitin sensor, chitin binding protein	<p>Recycling of chitin biomass by <i>Vibrio</i> species offers immense benefits in biocatalyst and bioenergy conversion. Although chitin is the most abundant renewable biopolymer found in the oceans, there is no accumulation of chitin in the ocean-floor sediments, since marine <i>Vibrios</i> are mainly responsible for a rapid turnover of chitin materials that help keep the homeostasis of the carbon and nitrogen cycle in the marine biosphere. In our previous study, we worked with <i>V. harveyi</i>, a fast growing luminescence bacterium, that has adaptive ability to grow under anaerobic and respiratory conditions. Although <i>V. harveyi</i> is known to utilize only chitin as its sole source of energy, the detailed catabolic pathway of chitin degradation by this microorganism is still not fully revealed.</p> <p>In this proposed work, we would like to investigate the structure and function of chitin sensor (so-called ChIS). This protein is located in the inner membrane and forms a large complex with chitin-binding protein on the periplasmic side of the bacterial cells. Its functional role has not been elucidated to date, but has been proposed to control expression of all the genes involved in chitin utilization of <i>Vibrios</i>. The knowledge gained from this study will shed light on how marine <i>Vibrios</i> use chitin as their sole source of energy and this will help us in the bioengineering process to exploit this bacterium in recycling of chitin scraps that can be finally turned into multi-million tons of bioenergy and biofuels.</p>
86	Asst.Prof.Dr.	Worapon	Kiatkittipong	Department of Chemical Engineering	Faculty of Engineering and Industrial Technology	Silpakorn University	kiatkittipong_w@su.ac.th	Biorefinery; Biofuels and Biochemical; Lignin utilization; Aviation fuel	<p>ASEAN is one of the most productive agricultural regions in the world. Conversion of abundant agricultural waste, lignocellulosic biomass, to biofuels and value-added biochemical in biorefinery has received increasing interest. Fractionation of lignocellulosic constituents is a prerequisite for efficient utilization of lignocellulosic biomass in integrated biorefineries. However, in fractionation process, lignin is normally removed as residue and being a major underutilized component of biomass. In term of biofuels, liquid fuels are likely to remain as the energy source for the aviation industry while more flexible energy source for other transportation sectors. Bio-oil from lignin depolymerization via fast pyrolysis mainly consists of phenolic compound such as phenol, anisole, guaiacol, cresol, syringol, etc. Upgrading of lignin-derived bio oil via deoxygenation process could produce aromatic and cycloalkane hydrocarbons in bio-jet fuels. This is meaningful to produce high-grade jet fuels from lignin.</p>
87	Assoc.Prof.Dr.	Worawan	Panpipat	Doctor of Philosophy Program in Agro-Industry/Department of Agro-Industry	School of Agricultural Technology	Walailak University	pworawan@wu.ac.th	Coconut residue, by-product, nanoparticle, surimi, whitening agent	<p>Title: Production and characteristics of cellulose nanoparticle from coconut residue as a whitening agent in surimi</p> <p>Coconut residues are generated as a low value by-product from coconut milk and coconut oil industries. Utilization of this by-product is limited only for animal feed and fertilizer. Coconut residue composed of about 86.73% (dried weight) of total dietary fiber which can be classified into 2 major groups including water soluble dietary fiber (8.26%) and insoluble fiber (78.47%). Insoluble fiber mainly composed of cellulose, hemicellulose and lignin. Thus, it is possible to isolate cellulose from coconut residue and further value-added process can be used to produce cellulose nanoparticle for application as a whitening agent in surimi formulation. The different extraction methods of cellulose from coconut residue will be compared in order to gaining the most efficiency method with the lowest cost. Cellulose nanoparticle is generally white in color and it has water binding capacity. However, the production method can be potentially affected to the cellulose nanoparticle structure and its properties. Also, the derivatization process has been reported to influence the cellulose structure which is directly involved in its application. Therefore, this study aims to manufacture, characterize and apply cellulose nanoparticle from coconut residue as whitening agent in surimi in order to fully utilize the coconut residue by-product.</p>
88	Prof. Dr.	Pasuk	Mahakkhaukrah	Anatomy	Medicine	Chiang Mai	Pasuk034@gmail.com	Anatomy, Forensic osteology	I interested in clinical anatomy research and forensic osteology identification.

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No	Title	First Name	Last Name	Program/ Department	School/Faculty	University	Email	Keywords	Research Concept (300 words)
89	Assoc.Prof.Dr.	Panisadee	Avirutnan	Research Department	Faculty of Medicine Siriraj Hospital	Mahidol University	panisadee.avi@mahidol.edu	dengue virus, dengue hemorrhagic fever, complement activation, dengue pathogenesis, drug repurposing, microparticles, nonstructural protein 1	Dengue hemorrhagic fever and dengue shock syndrome (DHF/DSS) are severe and potentially fatal complications of dengue virus infection. The disease is characterized by a precipitous decrease in blood pressure after several days of continuously high fever with selective vascular leakage at serosal sites. The mechanism of vascular leakage in DHF/DSS is still poorly understood. The complement system is a key component of innate immunity and plays major roles in the pathogenesis and protection of dengue infection. Complement activation triggered by immune complexes formed between viral antigens expressed on cell surfaces, virions, or secreted nonstructural protein NS1 and their specific antibodies, efficiently liberate proinflammatory substances and proinflammatory cytokines, thereby contributing to vascular leakage. Conversely, complement, especially the lectin and classical pathways, can also effectively neutralize DENV to abrogate productive infection process. A long-term goal of the research is to understand how the complement system handles the virus and, vice versa, how the virus evolves to escape or subvert complement to successfully establish infection, leading to pathogenic consequences. The research projects currently running in the laboratory aim to: interrogate the mechanism by which dengue and other related flaviviruses like Zika viruses evade and exploit the complement system to spread the infection and how complement activation influences antiviral and inflammatory responses of the host; investigate the immune evasion functions of secreted viral non-structural protein NS1 and how it interacts with the host using molecular biology, molecular immunology and proteomic/lipidomic approaches; define the roles of microparticles and exosomes in dengue pathogenesis; and search for biomarkers for predicting the development of DHF, the serious clinical syndrome that can be life threatening. Another research area is to search for dengue therapeutics using drug repositioning strategies and conduct clinical trials for assessing the efficacy and safety of new drugs to treat dengue infection and dampen disease severity.
90	Dr.	Kamonrat	Phopin	Center for Research and Innovation	Medical Technology	Mahidol University	kamonrat.php@mahidol.ac.th	Cancer, Neuroprotection, Rambutan, Antioxidant	Population aging is emerging as one of the most compelling impacts on nations worldwide. It is going to have many issues such as causing economic crisis, social issues, and health problems. Dramatically, population aged 60 years or over is projected to increase to 1.6 billion by 2050. The occurrence of aging-related diseases including cancer and neurodegenerative disorders such as Alzheimer's disease (AD) has significantly increased. Therefore, this project aims to investigate anti-cancer (such as cervical and prostate cancers) and anti-neurodegeneration of the rambutan peel extracts and pure compounds. For anti-cancer activities, cell viability, migration, invasion, apoptosis, and signaling pathways related to growth and survival of cancer cells will be determined. While the neuroprotective effects of the rambutan peel extracts and pure compounds will be investigated by using a model of β -amyloid-induced neurotoxicity in human neuronal cells. We strongly expect that rambutan peel extracts and pure compounds will be promising bioactive compounds against cancers and neurodegeneration.
91	Dr.	Albert	Schulte	School of Biomolecular Science and Engineering (BSE)	School of Biomolecular Science and Engineering (BSE)	Vidyasirimedhi Institute of Science and Technology (VISTEC)	albert.s@vistec.ac.th	Bioelectrochemistry, Biosensors, Health Care & Health Monitoring, Aging Society, Electroanalysis, Disease Biomarker	Thailand, as other nations around the globe, is witnessing a remarkable raise of average life expectancy and this is obviously linked with higher chances of major portions of the population to acquire at advanced age classic geriatric diseases such as cancers, joint degeneration, cardiovascular defects and nervous and endocrine system failures, or other illnesses. For an optimal long-term conservation of physical and mental well-being, aging people thus need premium access to exquisite clinical diagnosis for early disease recognition and, in case of occurrence, effective disease monitoring. Electrochemical (bio-) sensors are perfect for clinical analysis due to their high sensitivity, marked specificity, low costs, ease of incorporation into point-of-care systems and portability of instrumentation. As overlapping interdisciplinary research framework of the planned ASEAN-RGJ-PhD project is thus defined the development of easy-to-make and -use electrochemical biosensors for clinical blood and urinary disease biomarker detection. Basis for specific project design will be the outcome of own currently running biosensor projects, including findings from RGJ-PhD sponsored work on detection of urinary disease biomarker p-hydroxy-phenylacetate (refer to: Teanphonkrang, S. et al., Tuned amperometric detection of reduced beta-nicotinamide adenine dinucleotide by allosteric modulation of the reductase component of the p-hydroxy-phenylacetate hydroxylase immobilized within a redox polymer. Anal. Chem. 90 (2018) 5703; Journal Impact Factor 2017: 6.320) and robotic blood glucose biosensing (refer to: Teanphonkrang, S. & Schulte A., Automated quantitative enzyme biosensing in 24-well microplates. Anal. Chem., 89 (2017) 5261; Journal Impact Factor 2017: 6.320). Project tasks will include establishment of novel biosensor architecture and incorporation of sensor structures into flow-based or robotic electrochemical workstations and microfluidic devices. Accomplished tools and methodologies are expected to contribute to an advanced publicly available health care and medical service, which may ultimately help to improve the general living conditions of the young and elderly in Thailand's forward-moving modern society.
92	Assoc. Prof. Dr.	Budsaba	Rerkamnuaychoke	Clinical Pathology Program/Department of Pathology	Faculty of Medicine Ramathibodi Hospital	Mahidol University	budsaba.rer@mahidol.ac.th	Human Genetics, Cytogenomics, Forensic Genetics	Our research concept involves 3 areas of Human Genetic research which can be applied to (1) Cytogenomic study to practice and investigate from the basic to the most advancement of the field (cytogenetic analysis, fluorescent in situ hybridization (FISH) and chromosomal microarray assay), (2) Molecular Oncology in hematologic malignancy to study genetic involvement, expression and functional analysis, and (3) Forensic Genetics to investigate many aspects of factors to improve DNA investigation capability in forensic caseworks and familial member testing. Students can choose an appropriate field of interest from these 3 main fields for their dissertation researches.

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93	Asst.Prof. Dr.	Chayut	Nuntadusit	Department of Mechanical Engineering	Faculty of Engineering	Prince of Songkla University	chayut.n@psu.ac.th	Energy harvestment, Vortex Induced Vibration, Tidal current energy, Blunt body	Vortex-induced vibration energy conversion devices represent a cutting-edge technology for harvesting tidal current energy. The vortex-induced vibration is caused by current stream passing through a blunt body of the devices. Major advantages of this type of equipment include its simple and compact structure, its applicability for shallow water and low velocity, as well as an ease of installation and implementation. The Kingdom of Thailand features two long coastlines totaling up to 3,000 km along the Andaman Sea and the Gulf of Thailand. Over such a distance, the national tidal energy resource could potentially be rich, surprisingly it has never been investigated. The present project aims to establish a novel design of the devices and an effective energy harvesting scheme. This objective will be achieved via a parameter optimization, an evaluation of response characteristics of the system, and possible effects under various conditions of damping. An innovative linear generator will also be established to ensure efficient power transformation and storage systems. Finally, in-situ tests of the prototype machines and associated components will be launched in order to demonstrate their capabilities and efficacies in practical use.
94	Assoc. Prof. Dr.	Darunee	Wattanasiriwech	materials innovation	science	mae fah luang	darunee@mfu.ac.th	geopolymer, composite	Geopolymer is an inorganic polymer produced from aluminosilicate sources such as fly ash,metakaolin. Geopolymer is to be used for cement replacement due to its low CO2 emission. To enhance its performance for a more diverse applications,compositing it with the second material is needed. One approach proposed for enhancing of flexibility to reinforce with natural fibers available domestically.Natural fibers have been used for compositing geopolymer.However, under strong alkalinity of the activator used, stability of the reinforcement must be confirmed before commercialisation.This study will be focussing on fiber exploration and preparation.Its performance will be tested prior to compositing onto geopolymer. Series of tests for key performed will be tested, Later on durability and stability will be tested.
95	Assoc. Prof. Dr.	Jakrapong	Kaewkhao	Physics	Science and Technology	Nakhon Pathom Rajabhat University	mink110@hotmail.com	Glass, Luminescence, Fiber optics	In this work, Er3+ doped glass will be developed and characterised for fiber application. Glass will be prepared by melt-quenching technique and optimized their composition and Er3+ concentration. The Physical, optical and luminescence properties will be investigated. The Judd-Oflet parameters will be used to predict the radiative properties of the luminescent levels of glass and are compared with experimental values for 1.53 um emission. The gain bandwidth of optical amplifier can be evaluated by the product of full width at half maximum and stimulated emission cross-section. Thermal stability factor will be measured by DSC/TGA for sober drawing ability. Finally, new broad band optical amplifier material in the 1.5 um window telecommunication systems will be developed.
96	Assoc.Prof.Dr.	Kitichate	Sridith	Biology	Science	Prince of Songkla University	kitichate.s@psu.ac.th	Flowering Plant Taxonomy Coastal Vegetation Phyto-geography	How did the distribution patterns of plants in eastern Asian Region take place from the Himalayan range to the Malayan range and vise-versa? What is the consequence of this patterns concerning the species composition of plants in those regions. The explanation of the distribution patterns of plants in Himalayan region through South-East Asia in terms of phylo-geography.
97	Assoc. Prof. Dr.	Kulachart	Jangpatarapongsa	PHD in Medical Technology	Faculty of Medical Technology	Mahidol University	kulachart.jan@mahidol.ac.th	Malaria immunity, Asymtomatic malaria, P. vivax, P. falciparum, mixed infection	Immune response against malaria infection in asymptomatic cases of malaria among indigenous people in the Philippines and Thailand Malaria has remained a potentially deadly disease and one of the most important infectious diseases in the world, most especially in the tropical and subtropical regions. As we accepted, the presence of asymptomatic malaria infection provides a good elimination strategy, caused by immune activation by parasites, which could significant reduce the severity of symptom induced by parasite in reservoir and would also make way to interrupt disease transmission. This knowledge could also lead to the development of an effective malaria vaccine in the future. This study therefore aims to investigate the presence of asymptomatic cases of malaria infection by studying the immune responses against malaria infection among indigenous people in comparison between the cases in Philippines and Thailand. The study also seek the answers to 1) Determine the incidence of malaria infection detected through the use of microscopic examination and Real-Time Polymerase Chain Reaction of blood smears. 2) Determine the levels of anti-Plasmodium falciparum and anti-P. vivax specific IgG. 3) Determine adaptive immune responses investigating immunophenotyping including T cells, B cells, Treg, memory T cells, NK cells, as well as malaria antigen specific activation through proliferation assay. This study will be the first report of malaria cases of asymptomatic among indigenous peoples in Philippine and the comparison of immune status of P. vivax infection endemic area and mixed P. vivax-P.falciparum infection endemic area of Thailand. Moreover, this study could be more understanding in the knowledge of immune status among people who living in endemic area which leads to the development of malaria vaccine in the future.

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98	Asst. Prof. Dr.	Kusol	Pootanakit	Molecular Genetics and Genetic Engineering	Institute of Molecular Biosciences	Mahidol University	kusol.poo@mahidol.ac.th	metagenomics, microbial diversity, 16S rRNA, karstic caves, microbial-derived bioproducts	The rise of antibiotic-resistant bacteria, through natural selection, poses a challenge to both science and medicine. This problem can be seen by the appearance of the multidrug-resistant microorganisms and even worse, the presence of strains that are resistant to all commercially-available antibiotics, causing great public health concern. The majority of antibiotics in use are derived from cultivable soil microorganisms. However, only a minority of soil microbes (less than 1%) can be grown under laboratory conditions. Thus, most of microbes have never been studied before. Moreover, extreme habitats are a good source of novel organisms and thus novel antimicrobials, as exemplified by novel extremozymes, biosurfactants, and antitumorals. Despite its protective nature, caves are considered an extreme environment. This is because caves are in general of limited nutrient and biomass but are of high metal contents due to their mineral deposits. Nonetheless, cave microbiology has been studied since 1946 but mostly for cultivable microorganisms. However, since the introduction of culture-independent techniques, the study of cave microbial diversity shifted from just culturable microorganisms to the sum total of microbes found within. Because cave biomes are unique, microorganisms found here often exhibited unique biochemistry as well; thus, they are also the targets of drug discovery. Furthermore, a surprising large number of novel Actinobacteria are found in caves, whose phylum where almost 70% of our antibiotics are derived from. Therefore, in this research concept, culture-independent techniques will be used to examine first the microbial diversity (via 16S rDNA library) in the Khao Wang Khamen karst system and also to screen for potential antimicrobial products using sequenced-based and function-based cave-environment DNA library.
99	Assoc. Prof.	Maitree	Inprasitha	Dept. of Mathematics, Sciences, and Computer Education,	Faculty of Education	Khon Kaen University	imaitr@kku.ac.th	1. Mathematics Education 2. Teacher Education 3. Professional Development	Mathematical problem solving is the central issue of new school mathematics because it is a driving force for students to solve mathematical problem. In order to develop the 21st century skills such as higher-order thinking in mathematics, researching on innovations for teaching and learning new school mathematics is extremely important and highly demanded for an improvement of quality education in Thailand. During the last 15 years, the researcher has been developed "Open Approach" and "Lesson Study" as innovations for teaching and learning mathematics and also professional learning community in many project schools across the country. He has also done research on the development of "mathematics textbook", which focuses on students' real world problem solving. The current research issues are on how to support school teachers to teach new school mathematics with the support of mathematics textbooks.
100	Prof. Dr.	Montri	Choo Wong	Geology	Science	Chulalongkorn University	monkeng@hotmail.com	Geomorphology, sedimentology, river and coastal landforms, geo-hazards, geo-archaeology	My research interest involves the proof of concept in geomorphology and sedimentology fields. I have been working in coastal evolution, coastal hazards (tsunami and storm surge) for several years, so that every research interest in coastal zone is welcome. As well, my recent interest includes the change in river landforms, climate change and frequent hazards (flooding). Comparison in modern river process and ancient evolution is also of my interest. I am now the director of Morphology of Earth Surface and Advanced Geohazards in Southeast Asia (MESA) Research Unit officially supported by Chulalongkorn University. Staffs of MESA RU have high experiences in geomorphology, sedimentology, earthquake, Quaternary geology and geochemistry. All are welcome ASEAN Ph.D. candidates to join our research group. Our field equipments and laboratory include vibracorer, geo-slicer, Quaternary corers, shallow geophysics (GPR), TL/OSL datings, geochemistry and soft sediment laboratory. We have several connections with some Germany, Sweden, Japan, Singapore and China laboratories. We are ready to extend our research area to Southeast Asian countries. Come and join your research interest with us.
101	Assoc. Prof. Dr.	Norased	Nasongkla	Department of Biomedical Engineering,	Faculty of Engineering	Mahidol University	norased.nas@mahidol.ac.th	Antibacterial applications in biomedical applications Polymer chemistry: Polymer synthesis, characterization Nanoparticle fabrication: Nanosphere, microsphere, micelle Drug Delivery Systems: implant, nanocarrier Molecular Imaging: SPECT, MRI probes Nano-coating: Spray and dip coating, plasma treatment	Associate Professor Norased Nasongkla is an associate professor in polymer engineering and technology and the director of BioNEDD lab standing for Biopolymers and Nanoengineering for Drug Delivery and Molecular Imaging. He has developed many polymeric drug delivery systems for cancer diagnostics and therapy in millimeter, nanometer and molecular scale. For the nanoscale, he merges his expertise in chemistry with the professional cancer research ability of the team to generate the remarkable works in drug delivery systems for cancers. Among these researches, he is developing the multifunctional polymeric micelles as cancer-targeted and imaging drug delivery systems. This system can be used as a platform for different imaging techniques, for example MRI and SPECT. His current research in millimeter scale is the development of minimally invasive and intratumoral drug delivery systems for brain and liver cancer including 1) in situ solidifying, intratumoral injectable polymer implants for brain cancer chemotherapy and 2) minimally invasive polymer rods for intratumoral implantable liver cancer chemotherapy. Assoc. Prof. Norased has been published in leading international journals and his publications have been cited more than 1500 times since 2002. He also has two book chapters and one patent. As a PI and director, his grant funding is over \$1 Million from various granting agencies. With the expertise in his research area, he was invited as reviewer for Thailand granting agencies. Over the last 3 years, he was a publication chair in the international conference and delivered 15 invited international and domestic presentations. His research does not only make a contribution to the academic but also attracts a lot of attention to the public where he provided a lot of interviews for TV, radio, website and newspaper.

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No	Title	First Name	Last Name	Program/ Department	School/Faculty	University	Email	Keywords	Research Concept (300 words)
102	Assoc.Prof.Dr.	Pramote	Paengkoum	School of Animal Production Technology	Institute of Agricultural Technology	Suranaree University of Technology	pramote@sut.ac.th	Purple Napier grass, gastrointestinal nematodes, antioxidant, growth performance, gene expression, goat	Gastrointestinal parasites (nematode,worms) in goats are common in all world regions. Parasite burdens have undermined survival of producers and are a limiting factor for farm profitability. Additionally, rampant worm resistance to commercially available anthelmintics adds complexity to parasite management plans and researchers have been looking for alternative compounds with effective anthelmintic properties. Also, organic goat producers have indicated the need of alternative parasite management practices including plant compounds. Efforts to reduce production losses caused by gastrointestinal nematode parasitism in small ruminants (goats) have led to the investigation, development and implementation of a number of alternative control methods to complement or replace commercially available anthelmintics. This research will attempt to focus on the use of herbs and spices (including plant parts) considered "natural alternative compounds" to reduce gastrointestinal parasitism in goats. Purple Napier grass is a plant rich in condensed tannin compounds and anthocyanin as antioxidant compounds. These researches divided by 2 experiments such as; 1) effect of supplementation of Purple Napier grass on ruminal degradability, gas production, oxidative properties and metabolizable energy, 2) The effect of supplementation of Purple Napier grass on reduction of gastro-internal parasite, antioxidant properties and growth performance of goats.
103	Prof. Dr.	Praneet	Opanasopit	Pharmaceutical technology	Pharmacy	Silpakorn	opanasopit_p@su.ac.th	microneedles, anti-tyrosinase activity, melanin	Pigmentary disorders are the third most common dermatologic disorder and cause significant psychosocial impairment. Tyrosinase (TYR) is one of the key enzymes in the melanin biosynthetic pathway. Hydroquinone was one of the most commonly used phenolics compound agents for the treatment of skin hyperpigmentation, although due to its adverse effects, including toxicity and mutagenicity. It is now banned from use in many countries and Thailand also. A number of herbal-derived compounds with an inhibitory effect on melanin hyperpigmentation have been found, and some of them were developed as cosmetic products due to certified safe and efficient ingredients. Aloesin, a natural hydroxymethyl chromone compound isolated from aloe extracts, revealed inhibits tyrosinase at non-cytotoxic concentrations, which makes it a good alternative to hydroquinone. Moreover, Licorice (Glycyrrhiza glabra) is widely employed for the treatment of hyperpigmentation by dispersing the melanin, inhibition of melanin biosynthesis and inhibition of cyclooxygenase activity thereby decreasing free radical production, with its activity due to the presence of glabridin. Dissolving microneedles (DMNs) are a drug delivery system that is currently used to deliver a disparate range of drugs and cosmetic agents. DMNs are interesting since they are effectively delivered macromolecule, self-dissolving and, thereby, leave no biohazardous sharp waste. In addition, they provide advantages such as accurate dosing, as only small amounts of the drug are lost during the production process. Therefore, the aims of this study are to overcome the limitations of cosmetic agent permeation into skin. DMNs incorporating herbal extract are developed to deliver the active ingredients to the skin layers in sufficient amounts. For this purpose, DMNs loaded with herbal extract are fabricated from biodegradable polymers and characterized in vitro for their drug content, mechanical strength, insertion depth, dissolution kinetics, and penetration into excised neonatal porcine skin and then evaluated in B16-melanoma cells for effective of anti-tyrosinase activity.
104	Assoc. Prof. Dr.	Runtip	Chuanchuen	Veterinary Public Health	Veterinary Science	Chulalongkorn University	Chuanchuen.R@gmail.com	Antimicrobial resistance, bacteria, food animals, co-selection, cross resistance, One health approach	The research in our laboratory has focused on using One Health approach to understand and combat antimicrobial resistance (AMR). The main projects at present include molecular epidemiology and mechanisms of antimicrobial resistance in commensal bacteria, foodborne pathogens and nosocomial pathogens. The goals are to understand dynamics of antimicrobial resistance and to provide data to support development of strategic policy to minimize public health risk due to infection from AMR bacteria in Thailand and other Southeast Asian countries. The research has been expanded to cover Southeast Asian countries. I am actively involved in development of laboratory capacity for AMR and surveillance of AMR associated with food animals in Southeast Asia.
105	Prof. Dr.	Somchai	Jongwutiwes	Department of Parasitology	Faculty of Medicine	Chulalongkorn University	jongwutiwes@gmail.com	Malaria, Molecular Epidemiology, Molecular Evolution, Pathogenic free-living amoebae, Enteric coccidia,	Our research areas are mainly dedicated to basic and applied clinical research on both human and nonhuman primate malaria parasites with special emphasis on molecular epidemiology, diagnostic innovation and molecular evolution. The pioneer and cutting-edge research on Plasmodium knowlesi in Thailand has been achieved by our research team. The research unit also works on a broad range of opportunistic pathogens that incriminate in health problems of the country such as microsporidia, enteric coccidian protozoa, Pneumocystis and pathogenic free-living amoebae. Our research projects have been funded by the university, government budget and overseas grants.

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106	Prof. Dr.	Supayang	Voravuthikunchai	Microbiology	Science	Prince of Songkla University	supayang.v@psu.ac.th	Bacteriology, Immunology, Natural Product	Research areas on Natural products, antibacterial mechanisms, industrial applications.
107	Assoc. Prof. Dr.	Tanapat	Palaga	Interdisciplinary Program in Medical Microbiology	Graduate School	Chulalongkorn University	tanapat.p@chula.ac.th	Myeloid-derived Suppressor Cells, Cancer, Inflammatory Diseases	Monocytes and macrophages are innate immune cells that play essential roles in host defense against infections. Monocytes can be found in circulation and macrophages are mainly found as tissue resident cells. The origins and detailed differentiation pathway of monocytes and macrophages in different tissues have been extensively revised in recent years. Some tissue resident macrophages are continuously repopulated from the circulating monocytes and some are exclusively derived from embryonic origin. Monocytes/macrophages respond differently to external stimuli. Upon encountering pathogens, they produce inflammatory cytokines and immune mediators, intending to eliminate pathogens and trigger inflammation. After pathogen elimination, macrophages play an important role in wound healing by dampening inflammatory response and stimulating fibrosis. In addition, recent evidence identified immune suppressive myeloid-derived suppressor cells (MDSCs) originating from monocytes (M-MDSC) in suppressing immune response in various pathological conditions and during maternal tolerance to fetus. The biology of MDSC is not fully understood but it is reported to play an important role in cancer progression. This study aims at investigating the origins, phenotypes, and the roles MDSC plays in cancer and inflammatory conditions. The knowledge gained from this study will be translated into therapeutic application in animal model of cancers and chronic inflammatory diseases.
108	Dr.	Theeraphap	Chareonviriyaphap	Entomology	Agriculture	Kasetsart University	faasthc@ku.ac.th	Mosquito, Traps, Vectors, LED, Aedes aegypti, Chemoreceptors	Aedes aegypti (Linnaeus) and Aedes albopictus (Skuse) are the main vectors of dengue, chikungunya and zika. For host seeking behavior, female mosquitoes follow carbon dioxide from a distance to detect hosts. Other substances such as lactic acid, amino acids, number of red blood cells from vertebrate hosts are also important during finding/feeding hosts. At present, little information about mosquito trapping devices have been studied in Thailand. In this study, chemists and entomologists have collaborated to develop the mosquito lure (s) to attract adult mosquitoes. Additionally, mosquito sensorial systems for instance chemoreceptors, mechanoreceptors, higrroreceptors and thermoreceptors will be explored to understand the mosquito behavior. Light Emitted Diode (LED) with different wavelength sources will be determined and incorporated into the mosquito trapping devices. Therefore, the research team has planned to develop the convenience and powerful mosquito trapping devices which will applies both LED and chemical lures to use as household products to trap mosquitoes caused human diseases.
109	Assoc. Prof. Dr.	Theerapong	Krajaejun	Department of Pathology	Faculty of Medicine, Ramathibodi Hospital	Mahidol University	mr_en@hotmail.com	Pythiosis; Pythium insidiosum; drug repositioning; susceptibility; treatment	Title: Drug repositioning for identification of drugs with anti-Pythium insidiosum activity Concept: Pythium insidiosum is an oomycete microorganism, that shares hyphal morphology with fungi. Phylogenetic analysis shows that P. insidiosum is more closely related to diatoms and algae than the fungi. While most of the pathogenic oomycetes infects plants, P. insidiosum is capable of infecting humans and animals, and causes the life-threatening infectious disease, called pythiosis. Pythiosis has been increasingly reported from tropical regions of the world. The available antifungals and vaccine are often ineffective against P. insidiosum. Most patients undergo surgical removal of the infected organ, and many die from the advanced infection. Effective therapeutic methods for pythiosis are urgently needed. Here, we propose to pursue the drug repositioning strategy to identify drugs with anti-P. insidiosum activity. We will use the up-to-date next generation sequencing platforms to obtain complete and high-quality genomes and proteomes of three different strains of P. insidiosum. The CANDO pipeline will be employed to screen P. insidiosum's proteomes and identify potential FDA-approved drugs for the pathogen control. The CANDO platform employs several bioinformatic and cheminformatic tools, including homology modeling, chemical fingerprinting, and molecular docking with dynamics. By comparing the chemical fingerprint of the ligand bound to the predicted protein binding site to the fingerprint of each of the 2,162 FDA-approved compounds from the DrugBank database, how strongly each compound may interact with each protein can be determined. By using matrix analysis, compounds that may be most likely to bind, and potentially inhibit, all or some of the proteins can be determined. We can rank by magnitude to get a list of top putative compounds for P. insidiosum. The top-ranked compounds will be validated by in vitro susceptibility assay. The potential compounds can be evaluated further in animal studies and in the clinic in the future.

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110	Assoc. Prof. Dr.	Wanwisa	Skolpap	Chemical Engineering	Engineering	Thammasat University	swanwisa@engr.tu.ac.th	Cellulose dissolution, Subcritical, Supercritical, Carbon dioxide, Switchable system, Carbon electrode	Cellulose is one of alternative sustainable raw materials for reducing petroleum-derived polymer dependency in the manufacturing of related industries. To widen the applications of cellulose, novel approaches for dissolution and modification of cellulose are considerable interest to improve processability of poorly soluble cellulose due to strong intra- and inter-molecular hydrogen bonding of cellulose. Homogeneous cellulose form can be successfully prepared and dissolved in the carbon dioxide switchable system (CO ₂ -SWS) composed of 1,8-diazabicyclo [5.4.0] undec-7-ene (DBU), ethylene glycol (EG) and carbon dioxide (CO ₂) mixture under sub-, and supercritical states of CO ₂ . In our preliminary study, the modified cellulose in sub- and supercritical CO ₂ -SWS was assembled with carbon black and subsequently fabricated a porous cathode as a promising candidate binder solution for lithium-air rechargeable battery. The properties of the electrode depend on the phase of cellulose/CO ₂ -SWS, preparing method and drying techniques. After initial discharging the lithium-air battery, the specific energy density was about 10-fold higher than that of conventional lithium-ion battery. The cyclic performance was poor since the lithium-air battery failed after 10th cycles; however, it can potentially extend periods of cycling time of three-cycle results published on lithium-air battery. Thus, the further study focuses on improving the cyclic performance of the prepared hybrid composite cellulose/carbon black electrode by increasing electrode strength.
111	Assoc. Prof. Dr.	Waree	Tiyaboonchai	Pharmaceutical Technology	Pharmaceutical Sciences	Naresuan University	wareet@nu.ac.th	Nanoparticles, Drug delivery system, Cosmetics Neutraceuticals, Fibroin, Ocular delivery, Lipid based nanoparticles	My research interests focus on development of delivery systems for pharmaceuticals, cosmetics, food supplements and feed additives. The interested delivery systems include microparticles, nanoparticles, and lipid based delivery carrier, such as, lipid nanoparticles, self-emulsifying drug delivery system. The developed delivery systems aim to apply for drug and natural bioactive compounds to improve their stability and efficacy. For examples, we developed mucoadhesive nanoparticles for ocular and oral cavity as this system could enhance drug retention time, thus, increasing their bioavailability. In addition, poor bioavailability of water insoluble drug can be improved by increasing its dissolution. To solve this problem, we focus on 3 techniques; solid dispersion, nanoparticles, and self-emulsifying drug delivery system. Furthermore, chemical stability of active compounds can be improved by these delivery systems. Recently, we also developed nanoparticles for cancer drug delivery system.
112	Asst. Prof. Dr.	Warinthorn	Chavasiri	Chemistry	Science	Chulalongkorn University	warinthorn.c@chula.ac.th	natural products, bioactive compounds, methodology in organic synthesis, catalysis	Bioactive compounds from medicinal plants, mangrove plants, tropical weeds, mushrooms and lichens have been investigated. The structure-activity relationship of bioactive compounds is scrutinized in order to deeply understand the role of functional groups towards biological activity. Both pharmaceutical (anticancer, anti-tyrosinase, antioxidant and antimicrobial) and agricultural (antiphytopathogenic microbial, insect controlled agents and allelochemicals) proposes are of interest. The homogeneous catalysis using transition metal complexes applied to fine chemicals is focused. In addition, metal complex supported on polymer or clay using in a variety of organic transformation such as selective oxidation, alkylation, rearrangement, condensation reactions is being studied intensively. The investigation of halogenating agents has led to the discovery of the new and efficient methodology for organic transformation such as the preparation of carboxylic acid derivatives, alkyl halides, halosilanes, haloaromatics, etc. These methods can also feasibly apply for the synthesis of heterocycles and other bioactive compounds.
113	Assoc. Prof. Dr.	Wasin	Charerntantanakul	Biotechnology	Science	Maejo University	wasin@mju.ac.th	Porcine reproductive and respiratory syndrome virus; Transforming growth factor beta; RNA interference; Cell-mediated immunity	Porcine reproductive and respiratory syndrome virus (PRRSV) down-modulates pro-inflammatory cytokine and interferon (IFN) expressions and up-regulates interleukin-10 (IL-10) expression during early infection of monocytes, macrophages, and dendritic cells. On the contrary, recently emerged highly pathogenic PRRSV (HP-PRRSV) strongly up-regulates pro-inflammatory cytokine and IFN expressions of such cells. The underlying causes of different outcome between PRRSV and HP-PRRSV were not known. Transforming growth factor beta (TGFβ) is an anti-inflammatory cytokine of which its expression was up-regulated in PRRSV-infected cells. Our goal of study is to compare and evaluate the effect of increased expression of TGFβ, using RNA interference technology, on expressions of pro-inflammatory cytokines, IFN and IFN-regulated genes, Toll-like receptors (TLRs), co-stimulatory molecules and immune-stimulating ligands in PRRSV- and HP-PRRSV infected cells. Subsequently, TGFβ-coding sequence expressing short-hairpin RNA (shRNA) will be cloned in the same cassette next to PRRSV DNA vaccine and will be injected, either with or without modified-live PRRSV vaccine, to PRRSV-naive pigs. Peripheral blood mononuclear cells (PBMC) will be collected for ex vivo recall exposure. Alteration in T cell subpopulation will be determined by flow cytometry. Change in gene expression levels of above-mentioned immune parameters will be determined by real-time PCR. Benefits of TGFβ knock down on clinical protection will be evaluated following PRRSV or HP-PRRSV challenge.

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114	Assoc. Prof. Dr.	Sarawut	Thepanondh	PhD Program in Environmental Technology (International program) / Department of Sanitary Engineering	Faculty of Public Health	Mahidol University	thepanondh@gmail.com	landfill, odor, emission, dispersion model	Solid waste is one of the critical environmental issues arisen in many developing countries including the ASEAN region. Poor management of the landfill not only cause the problem with waste management but will led to the contaminations of other environmental medias such as air, soil and water pollutions. The purpose research is aimed to evaluate the emission and dispersion of odorous gas emitted from the landfills. Emissions of VOCs and odorous compounds from landfill will be estimated by using the US.EPA Landfill Gas Emissions Model (LandGEM) version 3.02. These emission data will be validated through the direct measurements of ambient air VOCs concentrations in several locations in the vicinity of the landfill. Conversion of concentration to emission will be carried out based on the standard Gaussian dispersion equations solved by the matrix inversion methods. This step will assist in the identification of major odorous compounds released from the landfill. Data will then be used to prioritized for the target compounds which should be managed at and in the surrounding areas of the landfill sites. Emission rates of target compounds will then be used as surrogate for odor emissions to predict the temporal and spatial distributions of odor concentrations via the AERMOD dispersion modeling. Outcomes of this research include evaluation of extend and magnitude of existing odor problem in the landfill site. The odor buffer zone map around the landfill will be illustrate for further use to prevent and manage odor problem of the sources. This study can be served as a prototype for environmental managing of landfill in ASEAN community. One of the anticipated benefit of this study is not only local pollutants (odors) but also the global pollutants (methane; CH ₄) which is one of the major greenhouses gases released from the landfill will be managed.
115	Prof. Dr.	Apinunt	Thanachayanont	Electronic Engineering	Engineering	King Mongkut's Institute of Technology Ladkrabang	apinunt.th@kmit.ac.th	CMOS, integrated circuits and systems, capacitive sensor, biosensor, low power	This research project is concerned with the design and implementation of a CMOS fully-integrated capacitive biosensor for label-free biomolecular detection. Biosensors are one of the key enabling technology platforms for biotechnology. CMOS-based biosensors can be realised by using optical, magnetic and electrical detection approaches. The electrical biosensor detection method typically measures the change in electrical impedance due to the presence of biomolecules. Specifically, CMOS capacitive biosensor arrays offer the advantages of label-free detection, low-cost and miniaturised implementation, thus promising a strong potential to achieve low-cost point-of-care (PoC) diagnostic devices. This project will be involved with the design and implementation of a low-power CMOS capacitive biosensor array suitable for a low-cost PoC diagnostic device. Low-power high-accuracy circuit techniques will be used to realise the CMOS capacitive biosensor array.
116	Assoc. Prof. Dr.	Apinpus	Rujiwatra	Department of Chemistry	Faculty of Science	Chiang Mai University	apinpus.rujiwatra@cmu.ac.th	Coordination polymer, Metal organic framework, Lanthanide, Luminescence, Sensor	Project Title: Lanthanide Coordination Polymers as Prestigious Platforms of Luminescent Sensors The integration of lanthanide metal ions in coordination polymeric frameworks bring about a wide range of potential applications to the fabricated materials owing to the unique characteristics of the intra-configurational f-f transitions. This is particularly attractive for the sensing technology due to several unequalled merits such as rapid response, exceptional sensitivity, and viability in grueling conditions with exceptional performances in terms of precision, resolution and accuracy. The is particularly substantial with the implementation of crystal engineering in which every part of the frameworks including also the endless choices of functional organic species can be designed prior to the synthesis and/or modified subsequently. The insight on how each structural building motifs direct the assembly process and their influences on the final luminescent properties as well as their behaviors in response to various stimuli are, however, not well established. In search of luminescent sensing probes of high performance, new lanthanide coordination polymers will be designed and synthesized using multitopic aromatic carboxylates as the primary linkers. This will include the simple organic synthesis of some ligands. Influences of various structural building motifs, their compositions, structures, and stoichiometry, as examples, on the yielded frameworks and the corresponding luminescent properties in response to temperature, pH, vapors, etc. will be investigated. Potential of the derived materials as luminescent sensing probes will be evaluated, some of which may be further fabricated to sensing stripe prototypes depending on their performances. This project should lead to high standard publications manifesting the caliber of the findings. Prototype(s) of some sensing stripes will be expected. ☐

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117	Assoc. Prof.	Chainarong	Navanukraw	Animal Science	AGRICULTURE	KHON KAEN UNIVERSITY	chanav@kku.ac.th	Utero-Ovarian Function; Reproductive Physiology, Domestic Animals	<p>Relevant Approach of Metabolomics and Proteomics for Utero-Ovarian Functions in Domestic Animals</p> <p>Principle Investigator: Chainarong Navanukraw, Ph.D.</p> <p>In domestic animals, small and large ruminants, early embryonic death is a major problems leading to tremendous economic losses. Failure to maintain pregnancy during early stage of gestation can be caused by incorrect embryonic development or be a consequence of an impaired signaling communication between the conceptus and the uterine environment. There are intimate relationships between the uterus and the ovary especially during the early to mid of pregnancy. Progesterone (P4) released by the corpus luteum (CL) is a key hormone, modulating the endometrium and enabling growth of the conceptus. Ovine and bovine interferon tau (IFNT) proteins were synthesized by the conceptus in order to maintain P4 concentrations and to prevent Luteolysis. Recently, we have demonstrated the validation of lipid droplets (LDs) expression in luteal cells (Khanthusaeng et al., 2016) in which the LDs serve as an energy reservoir for substrate precursors of steroid production (P4, androgens and estradiol). Luteal cell proliferation and vascularity, angiogenic proteins and P4 concentrations depend on the stage of CL development and gestation (Aree et al., 2018a) and dietary lipids (Aree et al., 2018b). In addition, the expression of P4 receptors is differentially distributed in the uterine compartments and is affected by metabolism of nutrition (Grazul-Bilska, et al. 2018). In these studies, metabolomics and proteomics are expected to have a greater impact on the understanding in physiological functions using the advanced analyses. Thus, metabolomics and proteomics approach will be effectively study to quantify the LDs and protein receptors crucial for the utero-ovarian functions and these methods will facilitate in the functional assignment to either signaling transduction or biochemical pathways of embryonic development within the maternal uterine environment and can be applied to reduce the embryonic loss during gestation.</p>
118	Dr.	Boonyarit	Chatthong	Department of Physics	Faculty of Science	Prince of Songkla University	boonyarit.ch@psu.ac.th	proton beam therapy, cancer treatment	<p>Proton therapy is one type of radiation treatments which applies proton particles to destroy cancer cells. High energy protons, if giving appropriately, can be used to treat cancer patients. It can be used alone or sometimes it can be combined with other treatments such as surgery, chemotherapy and immunotherapy. Proton therapy is given as beam radiation, which delivers radiation through the skin without hurting the patients. Normally, a synchrotron or cyclotron machine is used to speed up the protons. Their speeds imply the energy level. The higher the energy level the deeper it can penetrate human body. Proton therapy is better than photon based radiation therapy because there is no x-ray leftover to continue depositing radiation on the healthy tissue.</p> <p>This research will apply computational physics method to simulate proton therapy in human tissue in order to estimate dose on the cancer cells and vicinity healthy cells. Simulation package called GEANT4 will be used in combination with Matlab software to analyze the results. The aim is to investigate and design the proton beam with respect to energy level, angle of beam and beam type in order find the suitable parameters for human treatment.</p>
119	Dr.	Sontaya	Limmatvapirat	Department of Pharmaceutical Technology	Faculty of Pharmacy	Silpakorn University	limmatvapirat_s@su.ac.th	shellac; fiber; particle; physical modification; 3D-printing	<p>Shellac is the biopolymer obtained from secretion of lac insects that widely spread in Asian countries including Myanmar, Laos and Cambodia. It had been applied in various fields including agricultural, food, cosmetic, and pharmaceutical fields. However, the utilization of shellac, especially in pharmaceutical filed, has greatly declined during few decades because of some drawbacks including stability and solubility problems.</p> <p>Recently, we have attempted to chemically modify the shellac structure by salt formation and esterification with various cyclic anhydrides. The obtained shellac salts and shellac esters demonstrated enhanced stability and solubility as compared to native shellac salts and hence could be applied in the pharmaceutical filed as an alternative coating material. However, the modification processes still need some chemical reagents which might be harmful. Therefore, the present project aims to find the alternatives safe method for enhancing the shellac properties. The physical modification including polymer blending, nanosization and 3D printing is proposed to be employed in the study. The blending of shellac with other polymers, especially water soluble biopolymers, is expected to enhance the water solubility of shellac while reducing moisture barrier of co-adding polymers. The fabrication of nanofibers and nanoparticles from shellac is also assumed to be a good carrier for drug targeting. The drug loaded nanofibers as well as nanoparticles will be prepared by electrospinning process and evaluated for their physical, chemical and biological properties regarding with types of dosage forms. Additionally, the shellac, with thermoplastic property, is also planned to be used as the material for 3D printing. The drug will be loaded into shellac and then extruded into the fine filament before transferring to the 3D printer. The tablets with various shape and different internal structure will be designed and evaluated as the novel tool for personalized dosage form in the future.</p>
120	Assoc. Pro. Dr.	Chaturong	Putaporntip	Department of Parasitology	Faculty of Medicine	Chulalongkorn University	p.chaturong@gmail.com	Malaria, Primate malaria, Molecular Parasitology, Microsporidium, Medical protozoa, Pneumocystis	<p>We, I and Prof. Dr. Somchai Jongwutiwee, are working together in the field of medical parasitology. Our research areas are mainly dedicated to basic and applied clinical research on both human and nonhuman primate malaria parasites with special emphasis on molecular epidemiology, diagnostic innovation and molecular evolution. The pioneer and cutting-edge research on Plasmodium knowlesi in Thailand has been achieved by our research team. The research unit also works on a broad range of opportunistic pathogens that incriminate in health problems of the country such as microsporidia, enteric coccidian protozoa, Pneumocystis and pathogenic free-living amoebae. Our research projects have been funded by the university, government budget and overseas grants.</p>

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121	Assist. Prof. Dr.	Channarong	Rodkhum	Veterinary Science and Technology (VST)	Veterinary Science	Chulalongkorn University	Channarong.r@chula.ac.th	Nano-delivery system, Vaccine, bacterial pathogens, fish	Infectious disease caused by bacterial pathogens affecting intensive production of farmed fish globally. The diseases are caused by many kinds of bacterial pathogens such as <i>Franciscella noatunensis</i> subspecies <i>Oreintalis</i> , <i>Streptococcus agalactia</i> , <i>Flavobacterium columnare</i> , <i>Aeromonas veronii</i> , <i>Vibrio harveyi</i> , and etc. The bacterial pathogens have been classified as highly pathogenic bacteria that caused high mortality in farmed fish in Thailand. Vaccine is one of the most strategies which widely used for prevention of many bacterial diseases in fish. Many vaccines for bacterial pathogens have been developed but recently the effective vaccine has not been available used for effective prevention of bacterial infection in farmed fish in Thailand. Nano-delivery systems are the smart delivery systems which required for improvement of the delivery of antigens to the target organs, and then can effectively stimulate the immune system. In order to effective prevention of bacterial infection in fish. We aim to implement nano-delivery system with each type of vaccine such as killed-bacterial vaccine, subunit vaccine and DNA vaccine. Our development will be a positive impact to fish production for Thailand.

As 22 August 2018