Faculty of Science

Assoc. Prof. Dr. Chatchawan Jantasuriyarat

Faculty: Science

Department: Genetics

Campus: Bangkhen

Field of expertise: Plant Molecular Genetics

Interested field of study: Rice and Rice blast Fungus Interactions

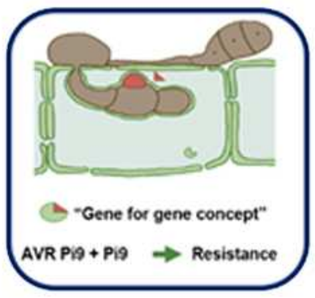
Educational profile: Ph.D. in Plant Pathology The Ohio State University, USA

E-mail: fscicwj@ku.ac.th

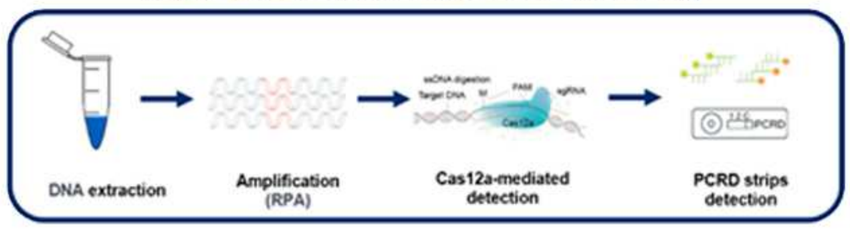
Publications

No.	Document titles	Authors	Years
1	Genetic diversity of an effector gene, AvrPi9, of rice blast pathogen in Thailand and characterization of its promoter.	Damchuay K, Hemsart S, Longya A, Leetanasaksakul K, Kim KT, Chung H, Lim YJ, Yoon YJ, Lee YH, Toojinda T, Jantasuriyarat C.	2024
2	Genome-Wide Association Study using genotyping by sequencing for bacterial leaf blight resistance loci in local Thai indica rice.	Danaisilichaichon C, Vejchasarn P, Patarapuwadol S, Tondelli A, Valè G, Toojinda T, Jantasuriyarat C.	2023
3	Rice blast resistance gene profiling of Thai, Japanese and International rice varieties using gene-specific markers.	Teerasan, W., Moonsap, P., Longya, A., Damchuay, K., Ito, S., Tasanasuwan, P., Kate-Ngam, S., Jantasuriyarat, C.	2022

Research Highlights



Rapid Detection and simple tool for monitoring



Our laboratory is focusing on the interactions between rice and rice blast fungus. Rice blast disease, caused by a fungus Magnaporthe oryzae, is the most devastating disease affecting rice yield reduction worldwide. Genetic diversity of rice blast fungus population in Thailand is examined using DNA markers and Avirulence (AVR) gene sequences. AVR genes, which are involved in pathogenicity, are used to suppress rice defense signaling and enhance host susceptibility. The fungal AVR genes are extremely diverse and rarely have matches in sequence databases. They often are specifically expressed or strongly over-expressed inside plant tissue during plant–pathogen interaction. Very little is known about how these AVR genes are regulated or how does the fungus know that the AVR genes need to be expressed only inside the plant tissue. The overall aims of our research are to understand the genetic diversity and population structure of Thai rice blast populations and to dissect the regulatory mechanism of the rice blast fungal AVR genes using genetic and genomic tools. Additionally, the AVR gene detection kit using CRISPR-Cas technique was developed to help breeders and farmers to be able to rapidly and accurately identify the AVR gene.

Asst. Prof. Dr. Chomdao Sinthuvanich

Faculty: Science

Department: Biochemistry

Campus: Bangkhen

Field of expertise: Biochemistry of peptide and proteins

Interested field of study: Food safety, protein allergens and Biomaterials for medical applications

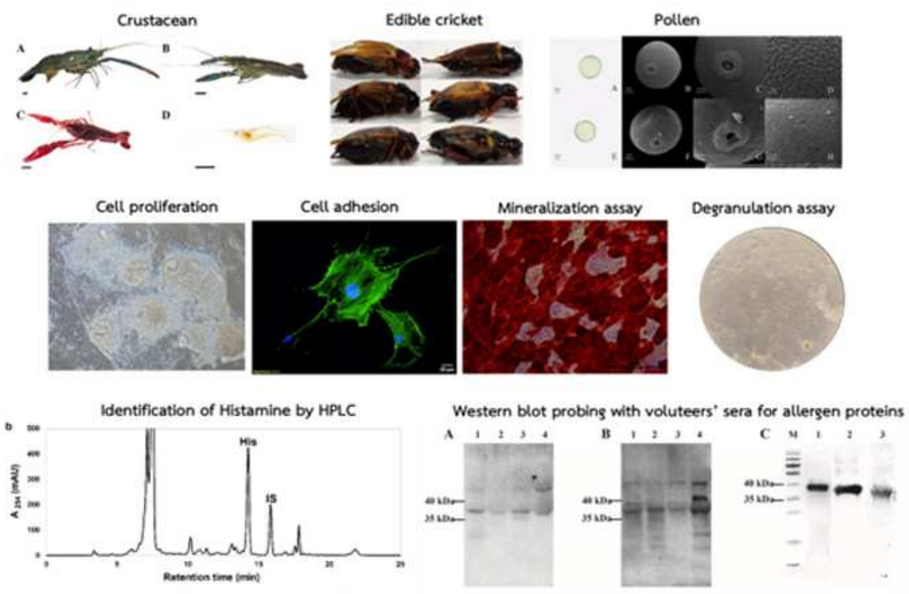
Educational profile: Ph.D. in Biochemistry University of Delaware, USA

E-mail: fscicds@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Factors affecting histamine levels in edible crickets: Implications for post-harvest management and farmed cricket production	Chumjai, C., Tongtavee, N., Inson, C., Sinthuvanich, C.	2023
2	A Pilot Study to Identify Grass Species That Mediate Pollen Allergy in Thailand.	Jarupund, P., Jantrakulroj, P., Suwanphakdee, C., Sinthuvanich, C.	2023
3	Molecular characterization and cross-allergenicity of tropomyosin from freshwater crustaceans.	Laurchan, P., E-kobon, T., Srisapoome, P., Unajak, S., Sinthuvanich, C.	2021

Research Highlights



Our laboratory focus on two main research areas: Allergy and Food Safety, and Biomaterials for Medical Applications. In Allergy and Food Safety, the goal is to identify IgE-binding epitopes of protein allergens and understand cross-reactivity between different species. This involves studying allergen proteins in seafood, edible insects, house dust mites, and pollen, as well as assessing the safety of consuming edible insects like crickets and silkworms. In Biomaterials for Medical Applications, the focus is on enhancing cellular response through peptide functionalization and developing nanoparticles for drug delivery. Applications include stem cells, bone, and cartilage regeneration. Various techniques such as HPLC and HPLC/MS for metabolite and peptide identification, protein allergen analysis using SDA-PAGE, ELISA, Western blot, and degranulation assay, as well as molecular biology techniques like RACE-PCR, cloning, and qPCR, are employed to achieve comprehensive results in these interdisciplinary research areas.

Assoc. Prof. Dr. Gunjana Theeragool

Faculty: Science
Department: Microbiology
Campus: Bangkhen
Field of expertise: Microbiology
Interested field of study: Molecular biology of vinegar and bacterial cellulose production by thermotolerant acetic acid bacteria and their applications
Educational profile: D.Agr. (Biological Science)
E-mail: fscignt@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Implication of amino acid metabolism and cell surface integrity for the thermotolerance mechanism in the thermally adapted acetic acid bacterium Acetobacter pasteurianus TH-3	Matsumoto, N., M. Matsutani, Y. Tanimoto, R. Nakanishi, S. Tanaka, Y. Kanesaki, G. Theeragool, N. Kataoka, T. Yakushi and K. Matsushita	2023
2	Periplasmic dehydroshikimate dehydratase combined with quinate oxidation in Gluconobacter oxydans for protocatechuate production	Nagaki, K., N. Kataoka, G. Theeragool, M. Matsutani, Y. Ano, K. Matsushita and T. Yakushi	2022
3	Enhancement of superfine bacterial nanocellulose production in coconut water at high temperature by the adapted strains of Komagataeibacter oboediens MSKU 3	Sukkasem, T., U. Tippayasak, P. Taweecheep, D. Chonudomkul and G. Theeragool	2022

Research Highlights

Two strains of thermotolerant acetic acid bacteria, Komagataeibacter oboediens MSKU 3 and K. xylinus MSKU 12 were selected for high temperature vinegar and bacterial cellulose (BC) fermentation, respectively. K. oboediens MSKU 3 was independently adapted to high temperature and high ethanol concentration. The thermal and ethanol adapted strains T4 and E3 revealed the potential of strain improvement to further enhance vinegar fermentation with high ethanol concentration at high temperature. However, nonsense mutation in the bcsC gene occurred in the ethanol-adapted strain E3, resulting in the loss of the function to produce BC. The BC producing ability of E3 strain was restored by repeated adaptive mutation. The obtained revertant strain R37- 9 produced BC with a finer structure and narrower range of fibrils width, compared to others. Moreover, a cost-effective strategy for BC production was successfully improved in the adapted strain C 37-30 which was obtained from K. xylinus MSKU 12 by a repetitive cultivation in a low-cost coconut water medium at 37 °C. This strain could produce the high yield of BC (9.69 g/L dry weight) in a low-cost medium. BC from K. oboediens R37- 9 and K. xylinus C 37-30 was used as a raw material for nanofibril films preparation.

Assoc. Prof. Dr. Kannika Duangmal

Faculty: Science

Department: Microbiology

Campus: Bangkhen

Field of expertise: Bacterial Taxonomy, Actinomycetes

Interested field of study: Actinomycetes: taxonomy and their application in agriculture

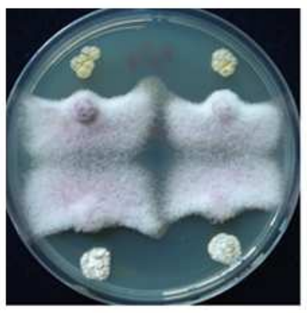
Educational profile: Ph.D. in Microbiology Newcastle University, UK

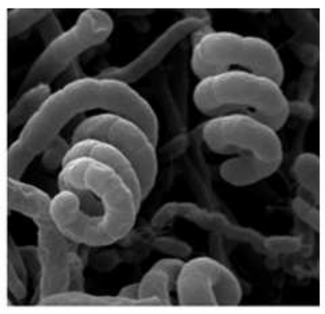
E-mail: fscikkd@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	*Actinoallomurus soli* sp. nov. and A*ctinoallomurus rhizosphaericola* sp. nov., two novel actinobacteria isolated from rhizosphere soil of *Oryza rufipogon* Griff.	Chantavorakit, T., Muangham, S., Teo W. F. A., Duangmal, K. and Hong, K.	2023
2	*Streptomyces silvisoli* sp. nov., a polyene producer, and *Streptomyces tropicalis* sp. nov., two novel actinobacterial species from peat swamp forests in Thailand.	Klaysubun, C., Butdee, W., Suriyachadkun, C., Igarashi, Y. and Duangmal, K.	2023
3	*Saccharopolyspora oryzae* sp. nov., isolated from rhizosphere soil of the wild rice species *Oryza rufipogon.*	Kammanee, S., Muangham, S., Butdee, W., Klaysubun, C., Igarashi, Y. and Duangmal, K.	2023

Research Highlights





Actinomycetes are group of Gram-stain-positive bacteria that can be found mostly in soil. They are well known as a source of antibiotics, plant growth promoting and biocontrol agents. In our laboratory, we isolate actinomycetes from several kind of samples such as soil, sediment and plants. Pure actinomycete isolates are preserved for long time preservation in our culture collection and identified using the 16S rRNA gene sequencing. The abilities of these isolates to produce kinds of plant growth promoting traits such as siderophore production, phosphate solubilization, ACC demaninase activity or antimicrobial activity are recorded. The strains which show potential for novel species are identified and described for novel species using polyphasic taxonomy.

Assoc. Prof. Dr. Kiattawee Choowongkomon

Faculty: Science

Department: Biochemistry

Campus: Bangkhen

Field of expertise: Protein Engineering, Biosensor

Interested field of study: Drug Discovery, Bioactive compounds Biosensor Development

Educational profile: Ph.D. in Cell Physiology Case Western Reserve University, USA

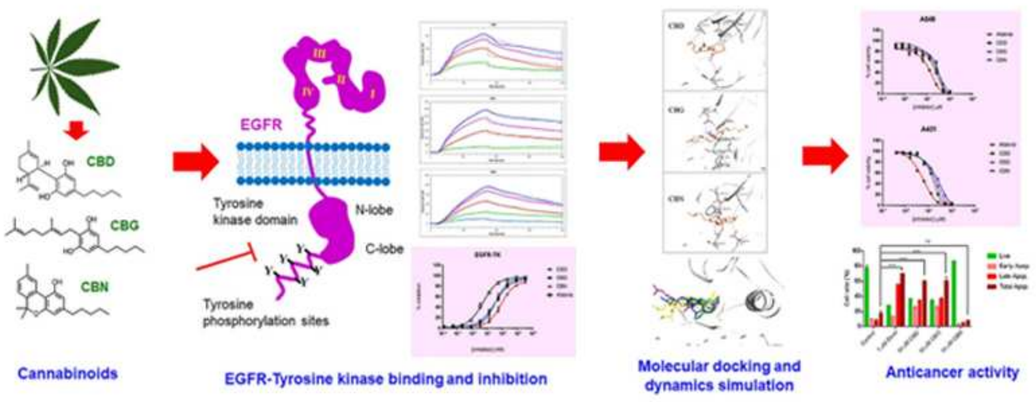
E-mail: Kiattawee.c@ku.th

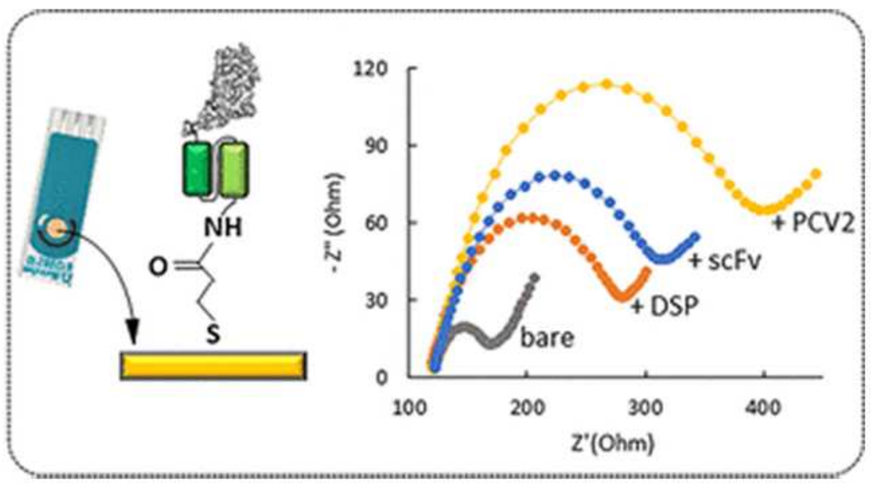
Publications

No.	Document titles	Authors	Years
1	Biochemical and structural comparisons of non-nucleoside reverse transcriptase inhibitors against feline and human immunodeficiency viruses.	Seetaha S, Kamonsutthipaijit N, Yagi-Utsumi M, Seako Y, Yamaguchi T, Hannongbua S, Kato K, Choowongkomon K.	2023
2	Identification of the Brucea javanica Constituent Brusatol as a EGFR-Tyrosine Kinase Inhibitor in a Cell-Free Assay.	Suwattanasophon C, Mistlberger-Reiner A, Alberdi-Cedeño J, Pignitter M, Somoza V, König J, Lamtha T, Wanaragthai P, Kiriwan D, Choowongkomon K.	2023
3	Generation of a Single-Chain Variable Fragment Antibody against Feline Immunoglobulin G for Biosensor Applications.	Rasri N, Tabtimmai L, Kraiya C, Yamabhai M, Sinthuvanich C, Rattanasrisomporn J, Choowongkomon K	2023

Research Highlights

In our avant-garde laboratory, we delve into the realms of protein engineering, pioneering computer-aided drug discovery, cutting-edge protein-based biosensors, and groundbreaking anti-cancer and anti-virus research. Initially, our quest involves unearthing novel bioactive entities from an eclectic mix of synthetic compounds, traditional herbal extracts, peptides, and targeted single-chain antibodies, particularly those combating tyrosine kinase in cancer and protease and reverse transcriptase in viruses. Subsequently, our ambition extends to crafting bespoke aptamers, peptides, and proteins for state-of-the-art biosensor development, encompassing both lateral-flow strip tests and sophisticated electrochemical biosensors. These innovative biosensors are tailored to detect a spectrum of targets, ranging from insidious pesticides to elusive pig and cat viruses. Our prolific contributions to science are evidenced by over 180 scholarly articles published in prestigious international journals and the securing of numerous patents, showcasing our unwavering commitment to scientific advancement and societal betterment.





Assist. Prof. Dr. Koraon Wongkamhaeng

Faculty: Science

Department: Zoology

Campus: Bangkhen

Field of expertise: Taxonomy, Biodiversity

Interested field of study: Crustaceans in coastal areas, microplastic contamination, invasive species

Educational profile: Ph.D. in Biology, Prince of Songkla University, Thailand

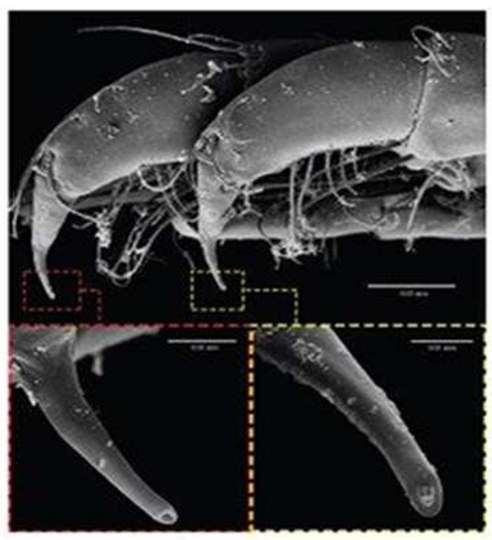
E-mail: fscikaw@ku.ac.th

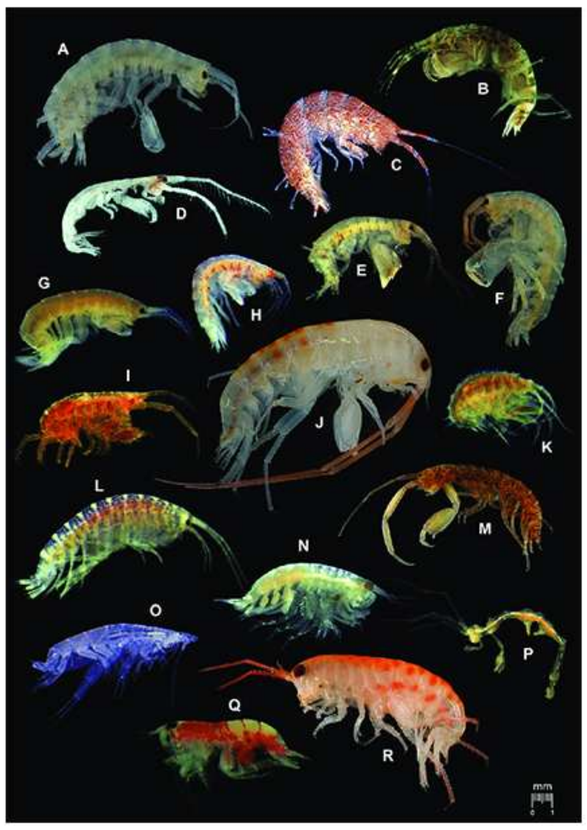
Publications

No.	Document titles	Authors	Years
1	A new species of *Cerapus* (Amphipoda, Senticaudata, Ischyroceridae) from Mae Klong Estuary, with a discussion on their nesting and types of mating behaviour.	Katnoum, C., Keetapithchayakul, T. S., Azman BAR and Wongkamhaeng, K.	2023
2	Two new species of the genus *Floresorchestia* (Crustacea, Amphipoda, Talitridae) from Amphawa Estuary, Samut Songkhram Province, Thailand.	Suklom, A., Keetapithchayakul, T. S., Azman BAR and Wongkamhaeng, K.	2022
3	*Thailandorchestia rhizophila* sp. nov., a new genus and species of driftwood hopper (Crustacea, Amphipoda, Protorchestiidae) from Thailand.	Wongkamhaeng, K, Dumrongrojwattana, P. Sumitrakij, R. Keetapithchayakul, T. S.	2022

Research Highlights

Our laboratory focuses on coastal biodiversity and microplastic contamination along the food web, including benthic and pelagic ecosystems. In terms of biodiversity, we have been working on gammarid amphipods, and 20 new species and two new genera were found in Thailand and Indonesia. The amphipods are a good candidate bioindicator for many coastal ecosystems. Our study includes land hoppers or terrestrial amphipods, which have species complexes and need molecular techniques for species delimitation. This year, we've found tube-building amphipods that can create amphipod silk and potentially develop into underwater glue or wound healer patches.





Assoc. Prof. Dr. Kornsorn Srikulnath

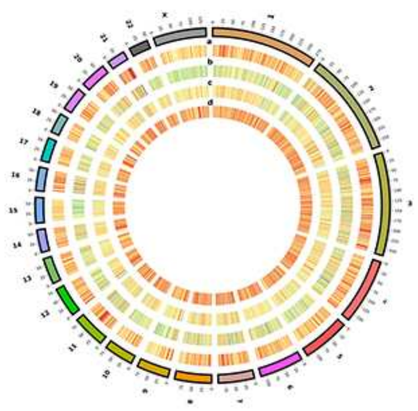
Faculty: Science
Department: Genetics
Campus: Bangkhen
Field of expertise: Animal Genomics and Comparative Genomics
Interested field of study: Introduction to Cytogenetics, Cytogenetics, Principle of Genetics, Laboratory in Genetics, Intensive Genetics, Research Technique in Genetics
Educational profile: Ph.D., Kasetsart University, Thailand
E-mail: kornsorn.s@ku.ac.th

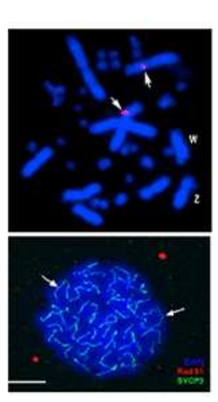
Publications

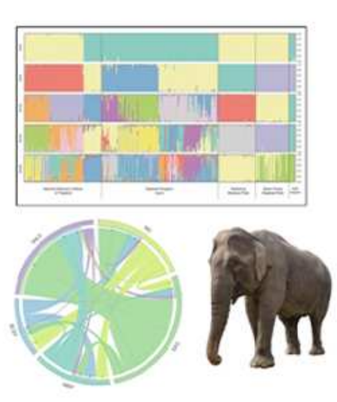
No.	Document titles	Authors	Years
1	Preserving Pure Siamese Crocodile Populations: A Comprehensive Approach Using Multi-Genetic Tools	Panthum T, Ariyaraphong N, Wongloet W, Wattanadilokchatkun P, Laopichienpong N, Rasoarahona R, Singchat W, Ahmad SF, Kraichak E, Muangmai N, Prateep D, Yusuke F, Sam B, Yosapong T, Tariq E, Kornsorn S.	2023
2	Optimizing Microsatellite Marker Panels for Genetic Diversity and Population Genetic Studies: An Ant Colony Algorithm Approach with Polymorphic Information Content	Rasoarahona R, Wattanadilokchatkun P, Panthum T, Thong T, Singchat W, Ahmad SF, Chaiyes A, Han K, Kraichak E, Muangmai N, Akihiko K, Prateep D, Agostinho A, Kornsorn S.	2023
3	Emerging importance of bighead catfish (Clarias macrocephalus) and north African catfish (C. gariepinus) as a bioresource and their genomic perspective	Artem L, Dung HMN, Thitipong P, Syed FA, Worapong S, Jatupong P, Kitipong J, Prapansak S, Prateep D, Sittichai H, Kednapat S, Narongrit M, Sasimanus U, Kyudong H, Uthairat N, Kornsorn S.	2023

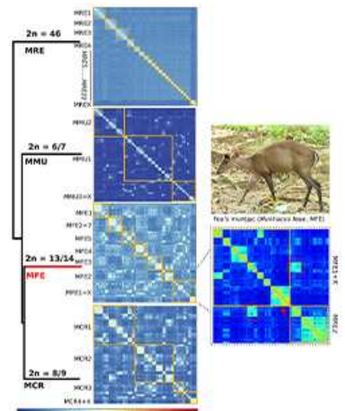
Research Highlights

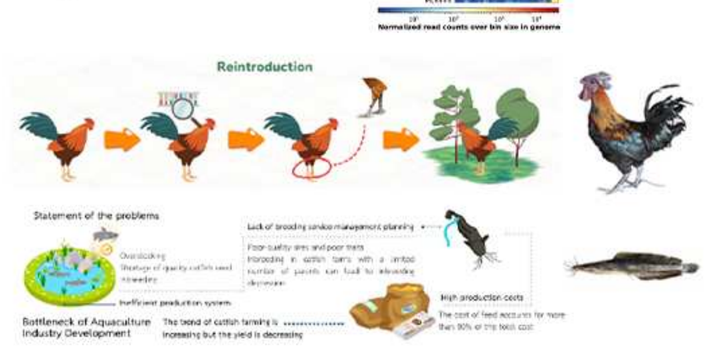
"Igniting S-Curve Agricultural Growth," is a trailblazing venture into utilizing indigenous bioresources to revolutionize the agricultural industry. His focus on integrating cutting-edge science and technology aims to stimulate innovative agricultural practices and foster rural development. This project not only aligns with the aspirations of modern agriculture but also marks a significant leap towards sustainable rural progress, blending traditional knowledge with advanced scientific breakthroughs to catalyze an era of growth and prosperity in agriculture. Prof. Srikulnath's work is a key driver in shaping a resilient and technologically advanced agricultural future.











Assist. Prof. Dr. Noppon Lertwattanasakul

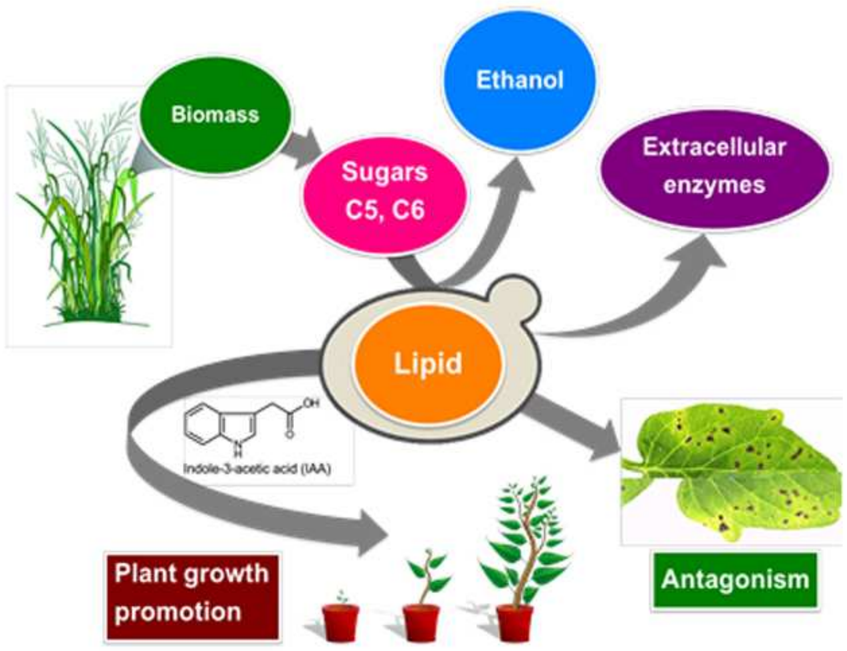
Faculty: Science
Department: Microbiology
Campus: Bangkhen
Field of expertise: Yeast Biotechnology
Interested field of study: Bioethanol, Thermotolerant yeasts, Fermentation technology
Educational profile: Ph.D., Tottori University, Japan
E-mail: fscinple@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Mutants with enhanced multi-stress tolerance of *Kluyveromyces marxianus* and their ability for ethanol fermentation	Lertwattanasakul, N., S. Pattanakittivorakul, S. Nitiyon, M. Matsutani, A. Oguchi, K. Hirata, T. Kosaka, S. Limtong, M. Yamada	2023
2	Distinct metabolic flow in response to temperature in thermotolerant *Kluyveromyces marxianus*	Kosaka, T., T. Tsuzuno, S. Nishida, S. Pattanakittivorakul, M. Murata, I. Miyakawa, N. Lertwattanasakul, S. Limtong, M. Yamada	2022
3	Integration of comprehensive data and biotechnological tools for industrial applications of *Kluyveromyces marxianus*	Nurcholis, M., N. Lertwattanasakul, N. Rodrussamee, T. Kosaka, M. Murata, M. Yamada	2020

Research Highlights

Yeasts are regarded as the first microorganisms used by humans to process food and alcoholic beverages. The technology developed out of these ancient processes has been the basis for modern industrial biotechnology. However since then novel developments of recombinant protein production, metabolic engineering, and systems and synthetic biology, paired by the demand for many products which can be synthesized by yeasts enable a plethora of new applications of yeasts in biotechnology.



Our laboratory has focused on the high temperature ethanol fermentation, lipid production and plant growth promoting abilities. High temperature ethanol fermentation from various raw materials containing hexoses and pentoses using the thermotolerant yeast Kluyveromyces marxianus has been investigated. Rhodosporidiobolus fluvialis DMKU-SP314 is one of interesting oleaginous yeasts. It accumulates high lipid content and can utilize lignocellulosic sugars to achieve the maximum lipid concentration, lipid productivity and lipid yield. Several other yeast strains were newly isolated from various habitats and were investigated for their plant growth promoting abilities including the productions of indole-3-acetic acid and extracellular enzymes (cellulases, xylanase, pectinase, amylase, protease and lipase). Taken together, study and application of yeast strains in biotechnology are of our interest.

Assoc. Prof. Dr. Pichamon Kiatwuthinon

Faculty: Science

Department: Biochemistry

Campus: Bangkhen

Field of expertise: Molecular Biology of Cancer, Transcriptome analysis and Tissue engineering

Interested field of study: Cancer drug resistance, 3D cancer cell culture, Deciphering molecular pathway of cells by transcriptomics, and Characterization of osteoblast and skeletal muscle cells on novel biomaterials.

Educational profile: Ph.D., Biological Engineering, Cornell University, NY, USA

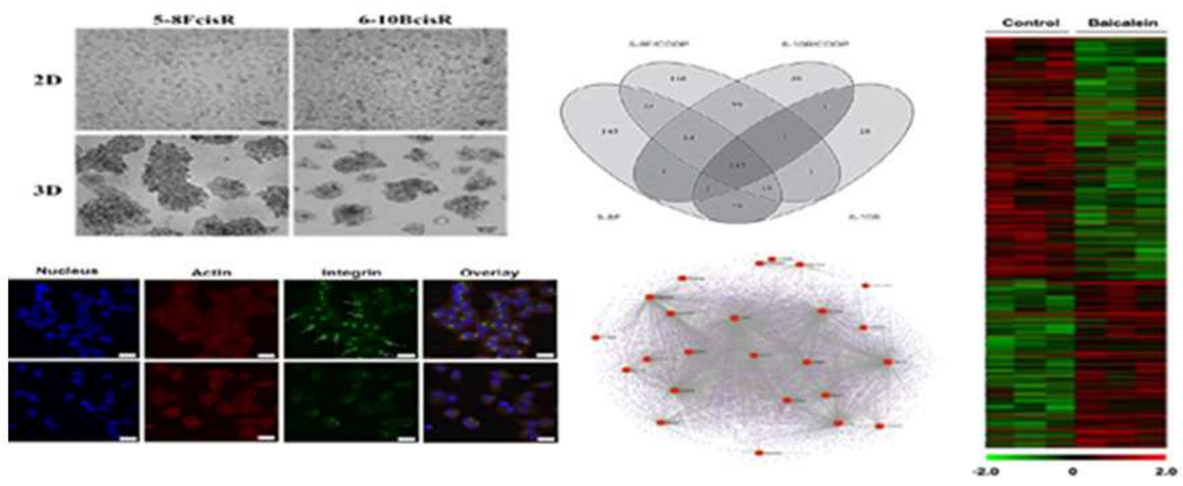
E-mail: fscipmk@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Distinct cholangiocarcinoma cell migration in 2D monolayer and 3D spheroid culture based on galectin-3 expression and localization	Sukphokkit, S., Kiatwuthinon, P., Kumkate, S., Janvilisri, T.	2023
2	Comparative proteomic profiling of cisplatin-resistant nasopharyngeal carcinoma cell lines: Novel biomarkers for improving chemotherapy of NPC	Prathaphan, P., Reamtong O., Ngaokrajang, U., Janvilisri, T., Mongkoldhumrongkul swainson, N., Kiatwuthinon, P.*	2022
3	Baicalein inhibits metastatic phenotypes in nasopharyngeal carcinoma cells via a focal adhesion protein integrin beta 8	Kiatwuthinon, P., Narkthong, T., Ngaokrajang, U., Kumkate, S., Janvilisri, T.	2022

Research Highlights

Molecular biology of cancers: Mechanisms contributing to cancer metastasis, and drug resistance. Biomaterials for biomedical and cultured meat applications: Characterization of osteogenic phenotypes of cells cultured on different modified hydroxyapatite materials and synthesis of scaffolds for cultivated meat application. Deciphering molecular mechanisms by -omics: Investigation of the transcriptomes and proteomics of cancers and yeast cells to reveal associated molecular mechanisms



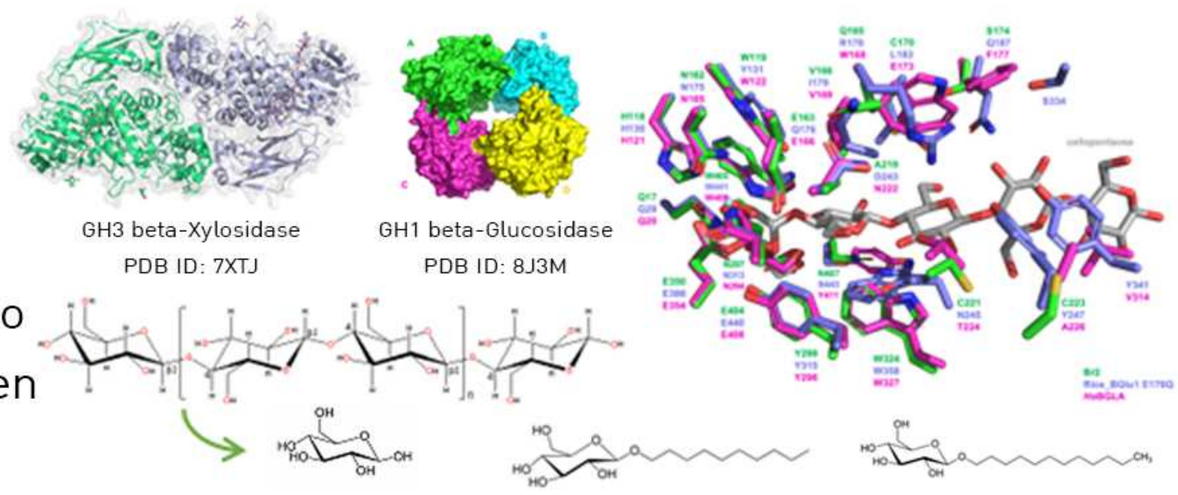
Assoc. Prof. Dr. Prachumporn Kongsaeree

Faculty: Science
Department: Biochemistry
Campus: Bangkhen
Field of expertise: Protein Engineering
Interested field of study: Glycoside hydrolases, Lignocellulose degradation, Glycoside synthesis
Educational profile: Ph.D. University of Sydney, Australia
E-mail: fscippt@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Structural and mutational analysis of glycoside hydrolase family 1 Br2 beta-glucosidase derived from bovine rumen metagenome.	Kaenying, W., ..., Kongsaeree, P.T.	2023
2	Crystal structure and identification of amino acid residues for catalysis and binding of GH3 AnBX beta-xylosidase from Aspergillus niger.	Kaenying, W., ..., Kongsaeree, P.T.	2023
3	Synthesis of long-chain alkyl glucosides via reverse hydrolysis reactions catalyzed by an engineered beta-glucosidase.	Thenchartanan, P., ..., Kongsaeree, P.T.	2020

Research Highlights



Lignocellulose is the most abundant biomass on earth. As an agricultural country, Thailand has a large supply of lignocellulose from agricultural wastes, which are still largely under-utilized. One of many ways to utilize lignocellulose is to hydrolyze them to glucose and other constituen monosaccharides, which can then be used as a starting material to generate second- and third-generation biofuels as well as high-valued chemicals. However, the process of lignocellulose degradation is rather difficult due to the recalcitrant nature of lignocellulose structure and the high-cost, but low-efficiency of the currently available lignocellulolytic enzymes, especially beta-glucosidases and beta-xylosidases, which hydrolyze cellobiose and xylobiose to glucose and xylose, respectively. Therefore, these enzymes are important for degradation of lignocellulose for further utilization. So, we are interested in applying our expertise in protein engineering to examine the structural basis for substrate specificity and thermostability of beta-glucosidases and beta-xylosidases. We also employ a metagenomics approach to search for and characterize a novel beta-glucosidase from other environmental samples. Together, we hope to be able to understand the structure-function relationships in beta-glucosidases and beta-xylosidases, and to apply this knowledge to engineer highly efficient lignocellulolytic enzymes for use in biomass degradation.

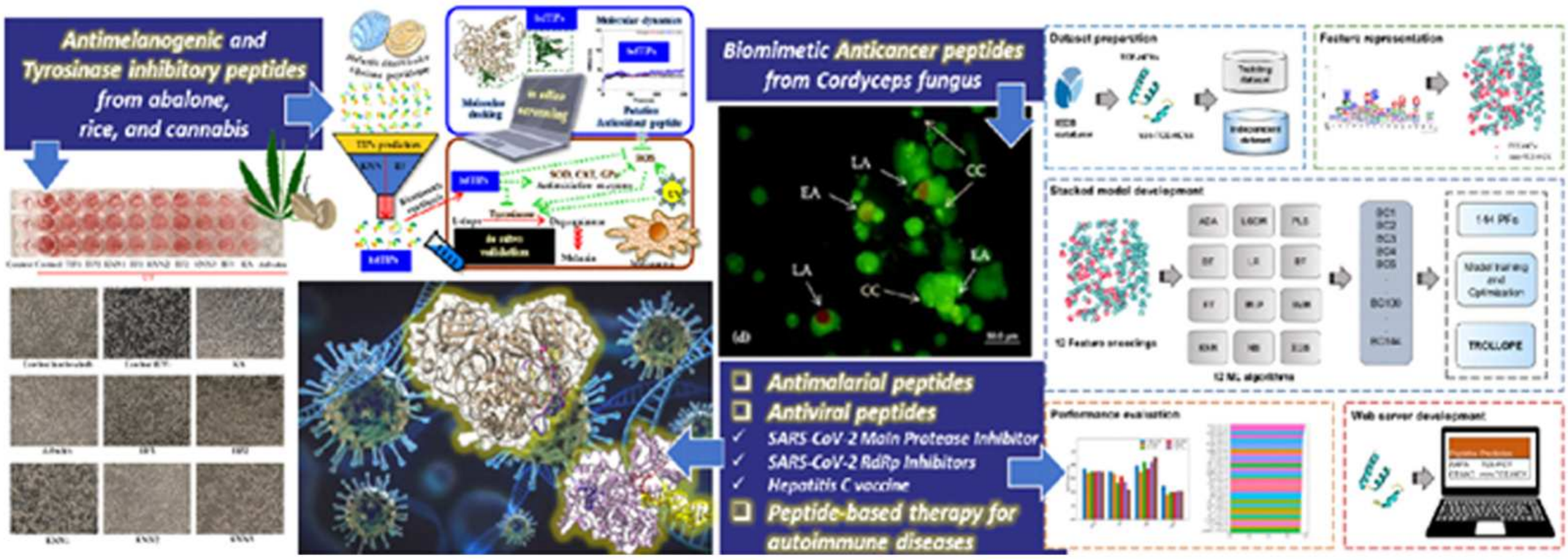
Assoc. Prof. Dr. Pramote Chumnanpuen

Faculty: Science
Department: Zoology
Campus: Bangkhen
Field of expertise: Systems Biology and Bioinformatics
Interested field of study: Medical and Cosmetic Applications of Biomimetic Peptides, Bioinformatics Prediction Tools and Pipeline for Functional Peptides Screening
Educational profile: Ph.D., Chalmers University of Technology, Sweden.
E-mail: pramote.c@ku.th

Publications

No.	Document titles	Authors	Years
1	TIPred: a novel stacked ensemble approach for the accelerated discovery of tyrosinase inhibitory peptides	Charoenkwan, P., Kongsompong, S., Schaduangrat, N., Chumnanpuen, P.*, Shoombuatong, W.*	2023
2	TROLLOPE: A novel sequence-based stacked approach for the accelerated discovery of linear T-cell epitopes of hepatitis C virus	Charoenkwan, P., Waramit, S., Chumnanpuen, P., Schaduangrat, N., Shoombuatong, W.*	2023
3	Computer-Aided Virtual Screening and In Vitro Validation of Biomimetic Tyrosinase Inhibitory Peptides from Abalone Peptidome	Kongsompong, S., E-kobon, T., Taengphan, W., Sangkhawasi, M., Khongkow, M., Chumnanpuen, P.*	2023

Research Highlights



Biomimetic peptides, referred to as bioactive peptides, consist of short amino acid chains that emulate natural peptides present in diverse organisms, including plants, animals, and microbes. These peptides have garnered considerable interest across multiple domains, notably in medicine and cosmetics, owing to their potential applications in therapy and cosmetic formulations. Our current focus involves the creation of bioinformatics tools and pipelines dedicated to predicting functional peptides. This encompasses peptides with potential applications in areas such as antimalarial, anti-melanogenic, anticancer, antiviral, and antidiabetic activities, as well as the identification of specific epitopes for vaccine design.

Assist. Prof. Dr. Sunisa Akkarasamiyo

Faculty: Science
Department: Chemistry
Campus: Bangkhen
Field of expertise: Organic Synthesis
Interested field of study: Green chemistry, Organic synthesis, Catalysis, Medicinal chemistry
Educational profile: Ph.D. (Chemistry), Kasetsart University, Bangkok, Thailand
E-mail: fscisia@ku.ac.th

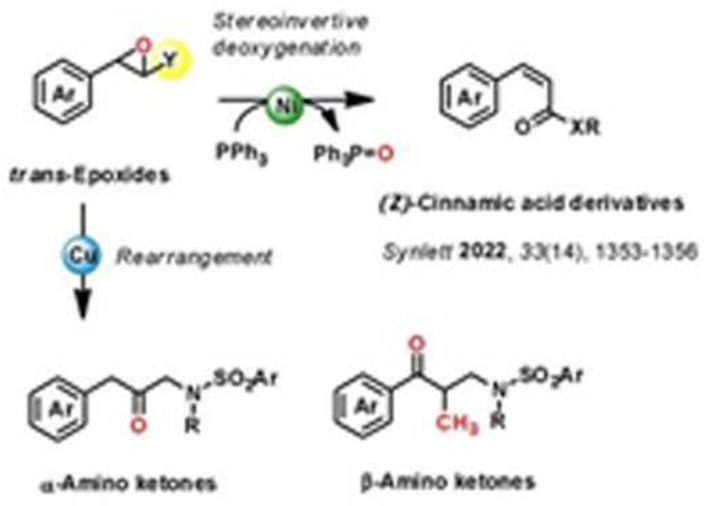
Publications

No.	Document titles	Authors	Years
1	Concise Synthesis of 1,4-Dideoxy-1, 4-imino-L-arabinitol (LAB) from D-Xylose by Intramolecular Stereospecific Substitution of a Hydroxy Group	Akkarasamiyo, S.; Promsaka Na Sakonnakhon, H.; Kuntiyong, P.; Ploypradith, P.; Samec, J. S. M.	2023
2	Synthesis of (Z)-cinnamate esters by nickel-catalyzed stereoinvertive deoxygenation of trans-3-arylglycidates	Akkarasamiyo, S.; Chitsomkhuan, S.; Buakaew, S.; Samec, J. S. M.; Chuawong,P.; Kuntiyong, P.	2022
3	Transition-Metals Catalyzed Suzuki-Miyaura Type Cross Coupling Reaction of π-Activated Alcohols	Akkarasamiyo, S.; Rujirawat, S.; Ploypradith, P.; Samec, J. S. M.	2020

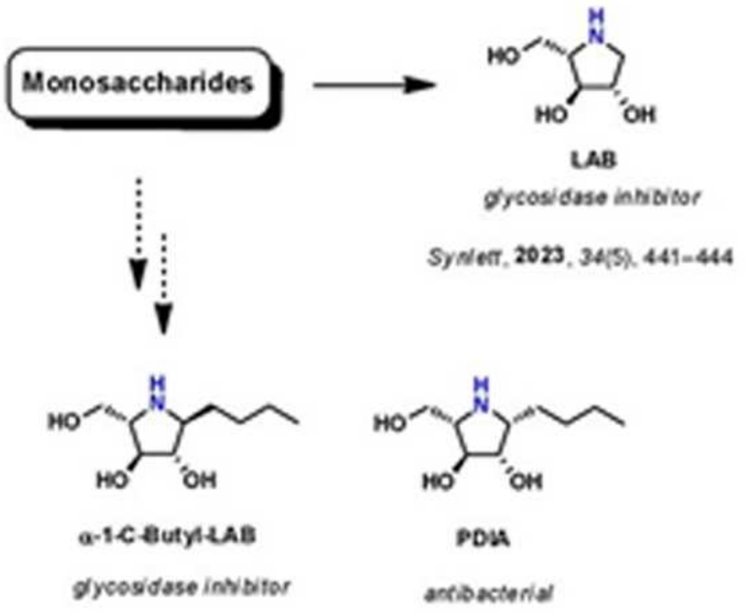
Research Highlights

Development of Greener Methodologies for Organic Synthesis

Epoxide Project



Sugar Project



Our research works focus on development of synthetic methodology and synthesis of biologically active compounds based on green chemistry concept.

1. Deoxygenation of epoxides to alkenes
2. Rearrangement of amino epoxides to amino ketones
3. C-O bond chevage of sugar-based alcohols

Assoc. Prof. Dr. Supiyanit Maiphae

Faculty: Science
Department: Zoology
Campus: Bangkhen
Field of expertise: Systematics and Ecology
Interested field of study: Taxonomy, systematics, biology and ecology of freshwater invertebrates (rotifers, cladocerans and copepods).
Educational profile: Ph.D. in Biology, Prince of Songkla University, Thailand
E-mail: fscisnm@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Biodiversity and species-environment variations in freshwater zooplankton from tropical urban freshwater ponds. Urban Ecosystems.	Jantawong, N., Padhye, S. M. and Maiphae, S*	2023
2	Diversity of Zooplankton in the Rice Fields in Suphan Buri Province, Thailand, with a New Record of Cyclopoid Copepod. Diversity 15, 1054.	Maiphae, S.*, Saetang, T., Jantawong, N., Wongkamhaeng, K. and Piyasaengthong, N.	2023
3	Diversity of the genus Tropodiaptomus Kiefer, 1932 (Crustacea, Copepoda, Calanoida, Diaptomidae) in Thailand, with the description of two new species. Zoosystematics and Evolution	Saetang, T. and Maiphae, S.*	2023

Research Highlights

Cladoceran

Copepod

Bdelloid rotifer

We are interested in solving the taxonomic problems of small invertebrates, including rotifers, cladocerans, and copepods, using integrative taxonomy and studying the diversity of these animals in various types of freshwater habitats, whether they are permanent or temporary, such as ponds, reservoirs, waterfalls, and rice fields. Moreover, we are also interested in semi-terrestrial habitats, such as bryophytes. Furthermore, we also love to know their ecological and biogeographical distribution, and we also apply these organisms to monitor the change in water resources.

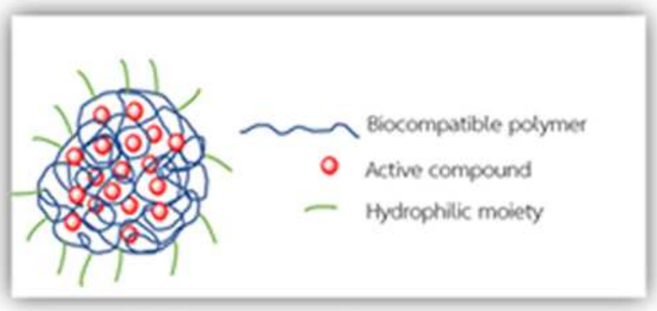
Assoc. Prof. Dr. Thitinun Karpkird

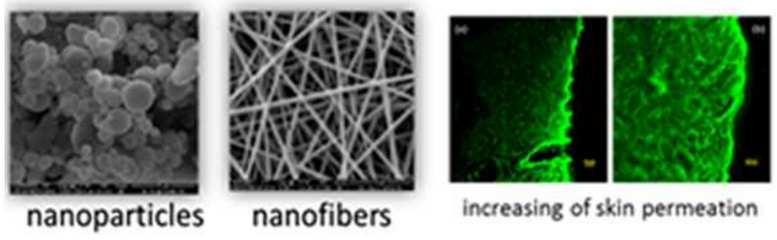
Faculty: Science
Department: Chemistry
Campus: Bangkhen
Field of expertise: Organic Chemistry
Interested field of study: Drug delivery, encapsulation, supramolecular chemistry
Educational profile: Ph.D. in Chemistry Chulalongkorn University, Thailand
E-mail: fscitnm@ku.ac.th

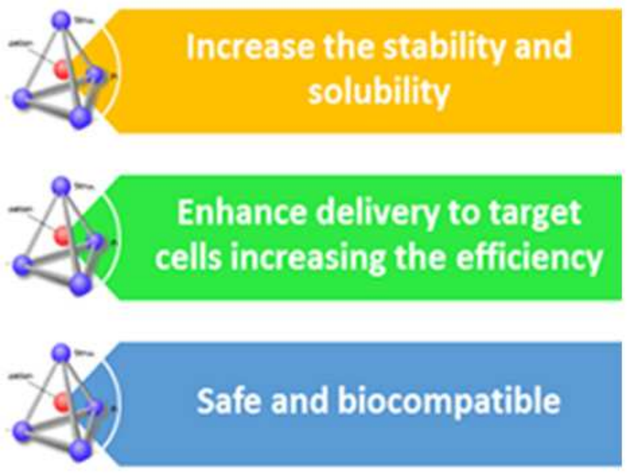
Publications

No.	Document titles	Authors	Years
1	Stability improvement of UV-filter between methoxy cinnamic acid derivatives and cyclodextrins inclusion complexes based on DFT and TD-DFT investigations	M. Promkatkaew, P. Boonsri, S. Suramitr, T. Karpkird, P. Wolschann, S. Hannongbua	2023
2	Cationic cyclodextrin-adamantane poly (vinyl alcohol)-poly (ethylene glycol) assembly for siRNA delivery	C. Seripracharat, C. Sinthuvanich, T. Karpkird*	2022
3	Mao berry as a green reducing agent in natural indigo dyeing on cotton fabrics	L. Saikhao, J. Setthayanond, T. Karpkird, P. Suwanruji	2022

Research Highlights







Our group is focused on developing a drug delivery system based on biocompatible materials. Most biological activity extracted from the herb degrades within a short time. Micro- or nano-encapsulation by polymers has been widely used to improve the biological activity and stability, retarding the release time of the active ingredients in food, pharmaceuticals, cosmetics, textiles and agriculture. The micro- or nano-sphere is a system where the active ingredient is dispersed in a polymer matrix, spherical particle size ranges between 20 nm and 2000 μm. Biodegradable polymers are commonly used; for example, polysaccharide like cellulose, starch, dextran, alginates and chitosan. The modification of functional groups of biocompatible polymers has been studied to improve the efficiency of encapsulation and drug targeting.

Assoc. Prof. Dr. Wachiryah Thong-asa

Faculty: Science

Department: Zoology

Campus: Bangkhen

Field of expertise: Neuroscience

Interested field of study: Neurodegenerative disease, Cognitive neuroscience, Dementia, Ischemic injury, Oxidative stress, Metabolic syndrome, Nutraceuticals

Educational profile: Ph.D (Medical Physiology) Faculty of Medicine Siriraj Hospital, Mahidol University

E-mail: ffsciwyth@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Neuroprotective effects of betanin in mice with cerebral ischemia-reperfusion injury	Thong-Asa, W., Puenpha, K., Lairaksa, T., Saengjinda, S.	2023
2	Benefits of p-coumaric acid in mice with rotenone-induced neurodegeneration	Dolrahman, N., Mukkhaphrom, W., Sutirek, J., Thong-asa, W.	2023
3	Nanostructure lipid carriers enhance alpha-mangostin neuroprotective efficacy in mice with rotenone-induced neurodegeneration	Sakamula, R., Yata, T., Thong-asa, W.	2022

Research Highlights

KU FACULTY OF SCIENCE KASETSART UNIVERSITY คณะวิทยาศาสตร์

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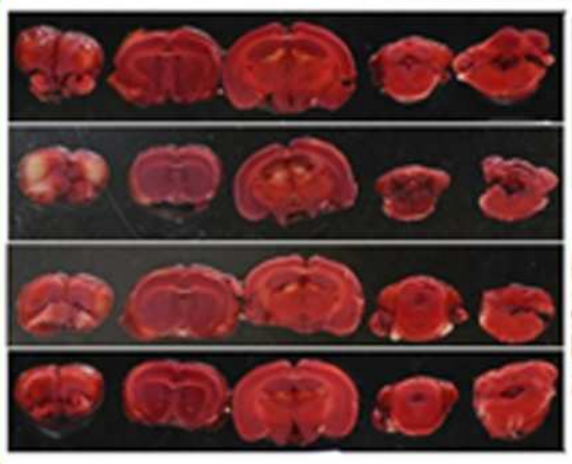

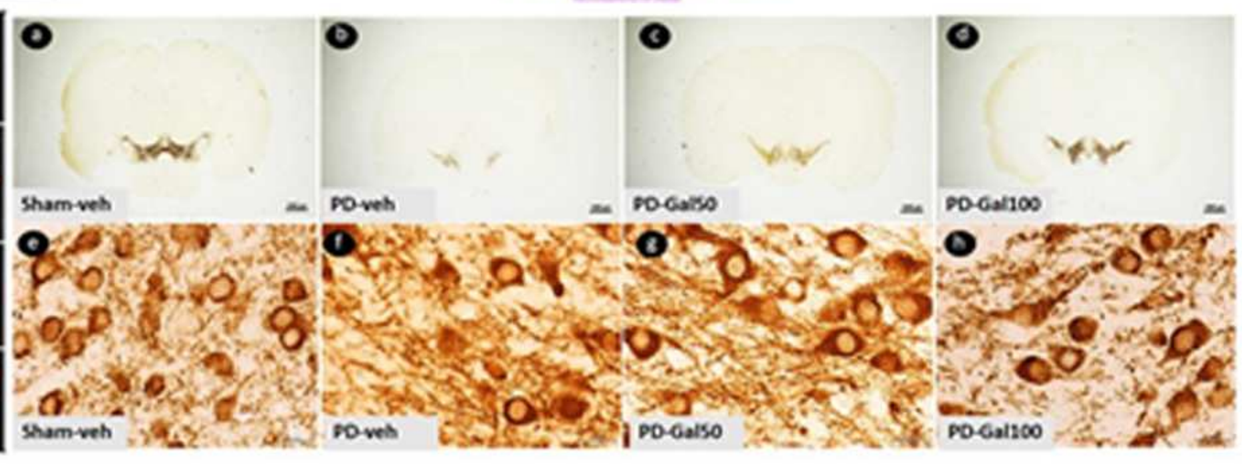

Assoc. Prof. Dr. Wunrada Surat

Faculty: Science
Department: Genetics
Campus: Bangkhen
Field of expertise: Molecular Genetics
Interested field of study: Ancient DNA analysis of domestic animals and human
Educational profile: Ph.D. in Biology Mahidol University, Thailand
E-mail: fsciwrds@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Primer design for extremely damaged DNA specimens of Asian rhinoceros species	Katanyuphana Y and W Surat.	2023
2	Exploration of microbial communities in the guts and casts of *Eudrilus eugeniae*, *Perionyx excavatus*, and *Eisenia fetida*.	Wonnapinij P, A Sriboonlert, W Surat.	2022
3	Origin and distribution of ancient Thai pig lineages.	Chittavichai T, W Surat, S Wetchaphan, S Poungpan, S Boonmal, , S Netmanee, P Auetrakulvit, S Khunsong, A Wattanapituksakul, R Shoosongdej and P Wonnapinij.	2021

Research Highlights

Our laboratory is focusing on finding out the origin of domestic animals and the movement of people during the ancient time. For animals, we would like to know where and when the animal domestication has happened. Moreover, we also would like to know how animal domestication has spread worldwide. In the case of the ancient human project, we would like to know about the ancestry of Thai people. We have examined where our ancestor came from to find out who we are. To do this kind of experiments, we need to access to ancient specimens from archaeologists and Thai Fine Art. The process to get DNA sequences from these specimens should be from both Sanger sequencing and Next Generation sequencing. After we got the DNA sequences, genetic distance, phylogenetic analysis, haplotype network and so on need to be performed.