

CURRICULUM VITAE

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INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
Chalmers University of Technology, Sweden	PhD	2010-2014	Bioscience
King Mongkut's University of Technology, Thailand	MSc	2007-2010	Bioinformatics
University of York, UK	MSc	2005-2006	Information Processing
Chulalongkorn University, Thailand	BSc (1 st Hons)	1998-2002	Medical Technology

POSITIONS AND EMPLOYMENT

- 2020-Present **Project leader**, Metabolomics and Systems Biology group (MSB), Siriraj Metabolomics and Phenomics Center (SiMPC), Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
- 2018-2019 **Bioinformatics data scientist**, Data management and statistical analysis center, Faculty of Public Health, Khon Kaen University, Thailand
- 2016-2018 **Instructor**, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
Committee, Siriraj Metabolomics and Phenomics Center (SiMPC), Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
- 2014-2016 **Postdoctoral researcher**, West Coast Metabolomics Center, University of California Davis, USA
- 2006-2007 **Web developer**, Venda Software Development Ltd., Thailand

GRANTS

- 2020-2021 หน่วยบริหารและจัดการทุนด้านการพัฒนากำลังคนและทุนด้านการพัฒนาสถาบันอุดมศึกษา การวิจัยและการสร้างนวัตกรรม (บพค.) (0.375 MTHB)
Co-PI: Development of a machine learning based platform for the analysis of high-dimensional metabolomics data
- 2019-2020 ทุนอุดหนุนการวิจัย ประเภทบูรณาการวิจัยและนวัตกรรม ประจำปีงบประมาณ 2562 มหาวิทยาลัยขอนแก่น (1.0 MTHB)
Co-PI: Development of Thai rice starch composition, molecular structure, and functionality database for research and industrial uses
PI = Principal Investigator; Co-PI = Co-Principal Investigator

SCHOLASTIC ACHIEVEMENT

- 2016-2018 Chalmersphrakiat Grant, Faculty of Medicine Siriraj Hospital, Mahidol University
- 2014-2016 National Institute of Health (NIH), Postdoctoral scholar position
- 2010-2014 Chalmers Foundation, PhD scholarship
- 2013 Chalmers Foundation, travel award for 11th Annual Rocky Mountain Bioinformatics Conference (ISCB), USA
- 2012 Swiss Foundation for Excellence and Talent in Biomedical Research, travel award for European Conference on Computational Biology (ECCB'12), Switzerland
- 2012 Federation of European Microbiological Societies (FEMS), travel award for 9th International Meeting on Yeast Apoptosis (IMYA), Italy
- 2011 Nils Pihlblads Stipendiefond, travel award for EMBO|EMBL Symposium: Structure and Dynamics of Protein Networks, Germany
- 2007-2009 King Mongkut's University of Technology Thonburi Bioinformatics program, MSc scholarship

TEACHING EXPERIENCE

- 2021 **Molecular Networking Strategy for Metabolomics**, SIRE 515 Advanced Bioinformatics, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
- 2020 **Big data and biomedical sciences**, SIBS 515 Biomedical Sciences, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
- Basic Data Integration and Biological Network Analysis**, MD637 712 Systems Biology, Faculty of Medicine, Khon Kaen University, Thailand
- 2019 **Omics Data Integration and Analysis**, Short Course in Advanced Clinical and Natural Product Metabolomics (Advanced CliNaP-M), Khon Kaen University, Thailand
- Basic Data Integration and Network- and pathway-based analysis**, MD637 712 Systems Biology, Faculty of Medicine, Khon Kaen University, Thailand
- Metabolomics Data Analysis**, Short Course in Clinical and Natural Product Metabolomics (CliNaP-M), Khon Kaen University, Thailand
- 2018 **Catching fish in the sea: metabolomics data analysis and interpretation**, Seminar in Computational Biology, Graduate School, Chulalongkorn University, Thailand
- Metabolomics and Microarray Data Analysis**, SCID 303 Bioinformatics, Faculty of Science, Mahidol University, Thailand
- Bioinformatics for clinical research**, Residency Training in Clinical Pathology, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand
- 2017 **Introduction to integrative analysis of omics data**, 2nd International SIMPC Conference, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand

- Bioinformatics for metabolomic analysis and interpretation in a biological context**, 318491 and 318881
Seminar in Biochemistry 1, Faculty of Science, Khon Kaen University, Thailand
- Introduction to Systems Biology and Integrative Analysis**, Advanced Pharmacology, Faculty of Medicine
Siriraj Hospital, Mahidol University, Thailand
- 2016 **Introduction to integrative analysis of omic data**, 1st International SiMPC Conference, Faculty of Medicine
Siriraj Hospital, Mahidol University, Thailand
- 2015 **'Omic' Integration and partial correlation analysis**, International Summer Sessions in Metabolomics,
West coast metabolomics center, USA
- 2011 **Modeling of cell death**, Introduction to cell and molecular biology, Chalmers University of Technology,
Sweden

PUBLICATIONS

- 1) **Wanichthanarak K**, Nookaew I, Pasookhush P, Wongsurawat T, Jenjaroenpun P, Leeratsuwan N, Wattanachaisaereekul S, Visessanguan W, Sirivatanauksorn Y, Nuntasaeen N, Kuhakarn C, Reutrakul V, Ajawatanawong P, Khoomrung S. (2023). Revisiting chloroplast genomic landscape and annotation towards comparative chloroplast genomes of Rhamnaceae. *BMC Plant Biology*. 2023;23(1):59.
- 2) Shunkao S, Theerakulpisut P, **Wanichthanarak K**, Pongdontri P, Thitisaksakul M. (2022). Integrative physiological and metabolomics study reveals adaptive strategies of wheat seedlings to salt and heat stress combination. *Plant Growth Regulation*.
- 3) Duangkumpha K, Jariyasopit N, **Wanichthanarak K**, Dhakal E, Wisanpitayakorn P, Thotsiri S, Sirivatanauksorn Y, Kitiyakara C, Sathirapongsasuti N, Khoomrung S. (2022). GCxGC-TOFMS Metabolomics Analysis Identifies Elevated Levels of Plasma Sugars and Sugar Alcohols in Diabetic Mellitus Patients with Kidney Failure. *J Biol Chem*. 2022:102445.
- 4) Mathema VB, Duangkumpha K, **Wanichthanarak K**, Jariyasopit N, Dhakal E, Sathirapongsasuti N, Kitiyakara C, Sirivatanauksorn Y, Khoomrung S. (2022). CRISP: a deep learning architecture for GCx GC-TOFMS contour ROI identification, simulation and analysis in imaging metabolomics. *Briefings in Bioinformatics*.
- 5) Anekthanakul K, Manochewee S, Chienwichai K, Pongsombat P, Limjiasahapong S, **Wanichthanarak K**, Jariyasopit N, Mathema VB, Kuhakarn C, Reutrakul V, Phetcharaburanin J, Panya A, Phonsatta N, Visessanguan W, Pomyen Y, Sirivatanauksorn Y, Worawichawong S, Sathirapongsasuti N, Kitiyakara C, Khoomrung S. (2021). Predicting lupus membranous nephritis using reduced picolinic acid to tryptophan ratio as a urinary biomarker. *iScience* 24(11), 103355.
- 6) Thitisaksakul M, Mungmonsin U, Promrit P, **Wanichthanarak K**, Tananuwong K. (2021). Granule morphological and structural variability of Thai certified glutinous rice starches in relation to thermal, pasting, and digestible properties. *Cereal Chemistry*. 98: 492– 506.
- 7) **Wanichthanarak K**, Thitisaksakul M. (2020). ThRSDB: a database of Thai rice starch composition, molecular structure and functionality. *Database (Oxford)* 2020. doi: 10.1093/database/baaa068.

- 8) **Wanichthanarak K**, Boonchai C, Kojonna T, Chadchawan S, Sangwongchai W, Thitisaksakul M. (2020). Deciphering rice metabolic flux reprogramming under salinity stress via in silico metabolic modeling. *Comput Struct Biotechnol J* 18, 3555-3566. doi: 10.1016/j.csbj.2020.11.023.
- 9) Winayanuwattikun W, Varothai S, Tuchinda P, Kulthanan K, Prasertworonun N, Dasri P, **Wanichthanarak K**, Akarasereenont P. (2020). A double-blinded, randomized, split-side, vehicle-controlled study of the efficacy of cleanser containing *Acanthus ebracteatus* Vahl., *Suregada multiflora*, and *Acacia concinna* in patients with atopic dermatitis: A pilot study. *Asian Pac J Allergy Immunol*. doi: 10.12932/AP-050519-0554.
- 10) Pomyen Y, **Wanichthanarak K**, Pongsombat P, Fahrman JF, Grapov D, Khoomrung S. (2020). Deep metabolome: Applications of deep learning in metabolomics. *Comput Struct Biotechnol J* 18, 2818-2825. doi: 10.1016/j.csbj.2020.09.033.
- 11) Nyunt T, Britton M, **Wanichthanarak K**, Budamagunta M, Voss JC, Wilson DW, Rutledge JC, Aung HH. (2019). Mitochondrial oxidative stress-induced transcript variants of ATF3 mediate lipotoxic brain microvascular injury. *Free Radic Biol Med* 143, 25-46. doi: 10.1016/j.freeradbiomed.2019.07.024.
- 12) **Wanichthanarak K**, Jeamsripong S, Pornputtpong N, Khoomrung S. (2019). Accounting for biological variation with linear mixed-effects modelling improves the quality of clinical metabolomics data. *Comput Struct Biotechnol J* 17, 611-618. doi: 10.1016/j.csbj.2019.04.009.
- 13) Grapov D, Fahrman JF, **Wanichthanarak K**, Khoomrung S. (2018). Rise of Deep Learning for Genomic, Proteomic, and Metabolomic Data Integration in Precision Medicine. *OMICS* 22(10), 630-636. doi: 10.1089/omi.2018.0097.
- 14) Deol P, Fahrman JF, Yang J, Evans JR, Rizo A, Grapov D, Salemi MR, **Wanichthanarak K**, Fiehn O, Phinney BS, Hammock BD, Sladek FM. (2017). Omega-6 and omega-3 oxylipins are implicated in soybean oil-induced obesity in mice. *Sci Rep* 7(1), 12488. doi: 10.1038/s41598-017-12624-9.
- 15) Khoomrung S, **Wanichthanarak K**, Nookaew I, Thamsermsang O, Seubnooch P, Laohapand T, Akarasereenont P. (2017). Metabolomics and Integrative Omics for the Development of Thai Traditional Medicine. *Front Pharmacol* 8, 474. doi: 10.3389/fphar.2017.00474.
- 16) **Wanichthanarak K**[#], Fan S[#], Grapov D, Barupal DK, Fiehn O. (2017). Metabox: A Toolbox for Metabolomic Data Analysis, Interpretation and Integrative Exploration. *PLoS One* 12(1), e0171046. doi: 10.1371/journal.pone.0171046.
- 17) Fahrman JF, Grapov D, **Wanichthanarak K**, DeFelice BC, Salemi MR, Rom WN, Gandara DR, Phinney BS, Fiehn O, Pass H, Miyamoto S. (2017). Integrated Metabolomics and Proteomics Highlight Altered Nicotinamide- and Polyamine Pathways in Lung Adenocarcinoma. *Carcinogenesis* 38(3), 271-280. doi: 10.1093/carcin/bgw205.
- 18) **Wanichthanarak K**, Fahrman JF, Grapov D. (2015). Genomic, Proteomic, and Metabolomic Data Integration Strategies. *Biomark Insights* 10(Suppl 4), 1-6. doi: 10.4137/BMIS29511.
- 19) Grapov D, **Wanichthanarak K**, Fiehn O. (2015). MetaMapR: pathway independent metabolomic network analysis incorporating unknowns. *Bioinformatics* 31(16), 2757-2760. doi: 10.1093/bioinformatics/btv194.
- 20) **Wanichthanarak K**, Wongtosrad N, Petranovic D. (2015). Genome-wide expression analyses of the stationary phase model of ageing in yeast. *Mech Ageing Dev* 149, 65-74. doi: 10.1016/j.mad.2015.05.008.

- 21) Pornputtpong N[#], **Wanichthanarak K[#]**, Nilsson A, Nookaew I, Nielsen J. (2014). A dedicated database system for handling multi-level data in systems biology. *Source Code Biol Med* 9, 17. doi: 10.1186/1751-0473-9-17.
- 22) **Wanichthanarak K**, Nookaew I, Petranovic D. (2014). yStreX: yeast stress expression database. *Database (Oxford)* 2014. doi: 10.1093/database/bau068.
- 23) **Wanichthanarak K**, Cvijovic M, Molt A, Petranovic D. (2013). yApoptosis: yeast apoptosis database. *Database (Oxford)* 2013, bat068. doi: 10.1093/database/bat068.
- 24) Munoz AJ[#], **Wanichthanarak K[#]**, Meza E[#], Petranovic D. (2012). Systems biology of yeast cell death. *FEMS Yeast Res* 12(2), 249-265. doi: 10.1111/j.1567-1364.2011.00781.x.

Note: [#]Contributed equally

SOFTWARE REPOSITORIES

<https://github.com/kwanjeeraw>

RESEARCH INTERESTS

Bioinformatics, Data science, Integrative analysis, Metabolomics, Network biology

COMPUTATIONAL SKILL SUMMARY

Programming: R, Python, Java, C++, MATLAB, JavaScript, HTML, PHP, CSS

Database systems: relational, document-oriented and graph databases