



Curriculum Vitae

Institute of Nutrition, Mahidol University (INMU)

999 Phutthamonthon 4 Rd., Salaya, Phutthamonthon

Name: Nachon Raethong

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Current position: Lecturer

Education

- 2019 Ph.D. (Bioscience), Kasetsart University, Thailand
- 2016 M.S. (Biology), Kasetsart University, Thailand
- 2014 B.S. (Biology) with First Class Honours, Kasetsart University, Thailand

Research Interest and Expertise: Systems biology and bioinformatics; omics data analysis, e.g., genomics, transcriptomics, proteomics, metabolomics, and foodomics; metabolic modeling of gut microbiome; interactions of food, body, and health; omics and bioinformatics for biomarker discovery, nutrition therapy, personalized nutrition, and food product development

Research Experiences

1. Integrative omics-driven analysis for investigating the impacts of food supplements on gut microbiome and health
2. Whole-genome sequencing and functional genomics
3. Genome-scale metabolic modeling

Publications

1. **Raethong, N.**, Thananusak, R., Cheawchanlertfa, P., Prabhakaran, P., Rattanaporn, K., Laoteng, K., . . . Vongsangnak, W. (2023). Functional genomics and systems biology of *Cordyceps* species for biotechnological applications. *Current Opinion in Biotechnology*, 81, 102939.
2. Prabhakaran, P., **Raethong, N.**, Thananusak, R., Nazir, M. Y. M., Sapkaew, C., Soommat, P., . . . Song, Y. (2023). Revealing holistic metabolic responses associated with lipid and docosahexaenoic acid (DHA) production in *Aurantiochytrium* sp. SW1. *Biochimica et Biophysica Acta (BBA)-Molecular and Cell Biology of Lipids*, 1868(5), 159306.
3. Kingkaw, A., **Raethong, N.**, Patumcharoenpol, P., Suratannon, N., Nakphaichit, M., Keawsompong, S., . . . Vongsangnak, W. (2023). Analyzing Predominant Bacterial Species and Potential Short-Chain Fatty Acid-Associated Metabolic Routes in Human Gut Microbiome Using Integrative Metagenomics. *Biology*, 12(1), 21.
4. Thananusak, R., Laoteng, K., **Raethong, N.**, Koffas, M., & Vongsangnak, W. (2022). Dissecting Metabolic Regulation in Mycelial Growth and Fruiting Body Developmental Stages of *Cordyceps militaris* through Integrative Transcriptome Analysis. *Biotechnology and Bioprocess Engineering*, 1-13.



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5. **Raethong, N.**, Santivarangkna, C., Visessanguan, W., Santiyanont, P., Mhuantong, W., & Chokesajjawatee, N. (2022). Whole-genome sequence analysis for evaluating the safety and probiotic potential of *Lactiplantibacillus pentosus* 9D3, a gamma-aminobutyric acid (GABA)-producing strain isolated from Thai pickled weed. *Front Microbiol*, 13, 969548. doi:10.3389/fmicb.2022.969548
6. Prabhakaran, P., **Raethong, N.**, Nazir, Y., Halim, H., Yang, W., Vongsangnak, W., . . . Song, Y. (2022). Whole genome analysis and elucidation of docosaehaenoic acid (DHA) biosynthetic pathway in *Aurantiochytrium* sp. SW1. *Gene*, 846, 146850.
7. Namrak, T., **Raethong, N.**, Jatuponwiphat, T., Nitisinprasert, S., Vongsangnak, W., & Nakphaichit, M. (2022). Probing genome-scale model reveals metabolic capability and essential nutrients for growth of probiotic *Limosilactobacillus reuteri* KUB-AC5. *Biology*, 11(2), 294.
8. Cheawchanlertfa, P., Chitcharoen, S., **Raethong, N.**, Liu, Q., Chumnanpuen, P., Soommat, P., . . . Vongsangnak, W. (2022). Enhancing Genome-Scale Model by Integrative Exometabolome and Transcriptome: Unveiling Carbon Assimilation towards Sphingolipid Biosynthetic Capability of *Cordyceps militaris*. *Journal of Fungi*, 8(8), 887.
9. **Raethong, N.**, Nakphaichit, M., Suratannon, N., Sathitkowitchai, W., Weerapakorn, W., Keawsompong, S., & Vongsangnak, W. (2021). Analysis of human gut microbiome: Taxonomy and metabolic functions in Thai adults. *Genes*, 12(3), 331.
10. Wongsas, B., **Raethong, N.**, Chumnanpuen, P., Wong-Ekkabut, J., Laoteng, K., & Vongsangnak, W. (2020). Alternative metabolic routes in channeling xylose to cordycepin production of *Cordyceps militaris* identified by comparative transcriptome analysis. *Genomics*, 112(1), 629-636.
11. Thananusak, R., Laoteng, K., **Raethong, N.**, Zhang, Y., & Vongsangnak, W. (2020). Metabolic responses of carotenoid and cordycepin biosynthetic pathways in *Cordyceps militaris* under light-programming exposure through genome-wide transcriptional analysis. *Biology*, 9(9), 242.
12. Sirithep, K., Xiao, F., **Raethong, N.**, Zhang, Y., Laoteng, K., Hu, G., & Vongsangnak, W. (2020). Probing carbon utilization of *Cordyceps militaris* by sugar transportome and protein structural analysis. *Cells*, 9(2), 401.
13. **Raethong, N.**, Wang, H., Nielsen, J., & Vongsangnak, W. (2020). Optimizing cultivation of *Cordyceps militaris* for fast growth and cordycepin overproduction using rational design of synthetic media. *Comput Struct Biotechnol J*, 18, 1-8. doi:10.1016/j.csbj.2019.11.003
14. **Raethong, N.**, Laoteng, K., & Vongsangnak, W. (2018). Uncovering global metabolic response to cordycepin production in *Cordyceps militaris* through transcriptome and genome-scale network-driven analysis. *Scientific reports*, 8(1), 1-13.
15. Vongsangnak, W., **Raethong, N.**, Mujchariyakul, W., Nguyen, N. N., Leong, H. W., & Laoteng, K. (2017). Genome-scale metabolic network of *Cordyceps militaris* useful for comparative analysis of entomopathogenic fungi. *Gene*, 626, 132-139.



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16. **Raethong, N.**, Wong-Ekkabut, J., Laoteng, K., & Vongsangnak, W. (2016). Sequence-and structure-based functional annotation and assessment of metabolic transporters in *Aspergillus oryzae*: a representative case study. *BioMed research international*, 2016.
17. Klanchui, A., **Raethong, N.**, Prommeenate, P., Vongsangnak, W., & Meechai, A. (2016). Cyanobacterial biofuels: strategies and developments on network and modeling. *Network Biology*, 75-102.

Training

1. Human Research Ethics, 14-15 October 2021, Organized by the Ethics Committee Faculty of Tropical Medicine, Mahidol University, Thailand.
2. Ethical Principles and Guidelines for the Procedures on Animals for Scientific Purposes, 21 September 2021, National Science and Technology Development Agency (NSTDA), Thailand.
3. Enhancement of Safety Practice of Research Laboratory in Thailand (ESPreL), 3 September 2021, Institute of Nutrition, Mahidol University (INMU), Thailand.
4. ISO/IEC 17025:2017, 6 July 2021, Department of Science Service, Thailand.