Nhathuy Chu

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Research Interests

Biochemistry, metabolomics, microbial metabolism, fermentation systems, biotechnology, and functional analysis of microbial biochemical pathways.

Professional Preparation

Hanoi University of Science, VNU Hanoi	Organic Chemistry	Bachelor, 2000–2004
Hanoi University of Science, VNU Hanoi	Organic Chemistry	M.S., 2004–2006
Ehime University, UGAS	Biochemistry	Ph.D., 2008–2011 (Advisor: Toshiharu YAGI)

Appointments

Institute of Biology, VAST	Researcher, 2014–present
GUST, VAST	Lecturer, 2014–present
University of Science and Technology of Hanoi (USTH)	Jointly Affiliated Lecturer, 2026–present
Thanh Do University	Lecturer, 2024–present
Vietnam Japan University, VNU Hanoi	Lecturer, 2016–present
Hanoi University of Science and Technology	Lecturer of Organic Chemistry, 2005–2014

Research Grants and Projects (Principal Investigator)

- Enhancing biopolymer biosynthesis efficiency through genetic engineering and pilot-scale fermentation, 2022–2026.
- Oxidation of mediator compounds by fungal laccase (laccase-mediator system) and the effects of mediator concentration on laccase activity, Jan 2021–Dec 2021.
- Screening of laccase-producing microorganisms for the removal of low-concentration pollutants (micropollutants), Jan 2020–Dec 2020.
- Isolation of soil actinomycetes from coffee plantations capable of degrading the pesticide chlorpyrifos, Jan 2019–Dec 2019.
- Genomic ecology of viruses in representative coral reef systems in Phu Quoc and Con Dao Islands, Vietnam (DALIDA project), 2016–2023.
- Isolation of basidiomycete strains capable of laccase production with potential application in chlorpyrifos degradation, Jan 2016–Dec 2016.
- Establishment of hairy root cultures of *Codonopsis javanica* and evaluation of bioactive compounds for pharmaceutical applications, 2015–2016.

- Optimization of hairy root biomass cultivation of *Panax vietnamensis* in bioreactor systems and preliminary evaluation of saponin content, 2015–2016.

Publications

1. Nguyen, C. T., Hoang, P. Q., Le, M. V., Le, D. H., Nguyen, M. T. Q., Nguyen, D. H., Ta, T. T. T., Vu, T. H. N., Chu, N. H., Phi, Q.-T., & Quach, N. T. (2027). Comparative genomics and phenotypic characterization revealing *Staphylococcus gallinarum* SP6 as a promising candidate starter culture for salted shrimp paste. *Archives of Microbiology, 209*, 40. https://doi.org/10.1007/s00203-026-05295-6

2. Chu, N. H., Pham, T. K. L., Le, H. D., Pham, Q. T., & Chu, H. H. (2026). Integrated ^{1}H-NMR metabolomics and growth kinetics uncover three distinct metabolic scenarios in *Lactiplantibacillus pentosus* P7 fermentation of plant-derived prebiotics. *Applied Biochemistry and Biotechnology*. https://doi.org/10.1007/s12010-026-05911-7

3. Chu, N. H., Le, H. D., Quach, N. T., Pham, T. K. L., Ho, N. A., Nguyen, T. H. H., Tran, X. K., Pham, B. N., & Chu, H. H. (2026). CRISPR/Cas9-mediated knockout of the NAD-dependent lactate dehydrogenases for altered stereospecific lactic acid production in *Lacticaseibacillus paracasei* NC4. *Biochemical Genetics*. https://doi.org/10.1007/s10528-026-11374-6

4. Nguyen, T. G., Doan, T. T., Pham, T. K. L., Chu, N. H., & Pham, B. N. (2026). Cloning and expression of the lactate dehydrogenase gene from *Lactobacillus pentosus* P7 in *Escherichia coli* BL21 (DE3). *Academia Journal of Biology, 48*(3). https://doi.org/10.15625/2615-9023/23528

5. Hoang, H. P., Nguyen, T. M., Le, T. T. A., Bui, H. G., Ho, N. A., Ngo, T. H., & Chu, N. H. (2025). Metabolite profiling from the fermentation of marine-derived extracts by *Lactobacillus acidophilus* LB. *PeerJ, 13*, e20399. https://doi.org/10.7717/peerj.20399

6. Quach, N. T., Le, H. D., Ho, N. A., Nguyen, V. K., Le, M. V., Nguyen, T. H. H., Tran, X. K., Truong, N. M., Pham, L. T. K., Pham, B. N., Chu, H. H., & Chu, N. H. (2025). Functional genomic and phenotypic analysis of *Lactiplantibacillus pentosus* P7 isolated from pickled mustard greens reveals capacity for exopolysaccharide, B-vitamin, and lactic acid production. *Applied Sciences, 15*(17), 9486. https://doi.org/10.3390/app15179486

7. Nguyen, M. T., Ha, P. T., Le, T. T. H., Bui, H. G., Phan, K. S., Chu, N. H., Mai, T. T. T., Ung, T. D. T., Le, A. T. T., & Hoang, P. H. (2025). A floatable TiO_2–Ag photocatalyst enables effective antibiotic degradation and pathogen growth control. *RSC Advances, 15*(23), 18324–18337.

8. Hoang, P. H., Nguyen, M. T., Ngo, H. T. T., Chu, N. H., Ha, P. T., Bui, H. G., & To, L. H. (2024). Enhancement of bioactive compounds and survival of *Lactobacillus acidophilus* grown in the omega-6,-7 riched *Cyanobacteria Spirulina platensis*. *Current Microbiology, 81*(11), 380.

9. Hoang, P. H., Nguyen, M. T., Phan, K. S., Bui, H. G., Le, T. T. H., Chu, N. H., Ho, N. A., Pham, Q. H., Tran, X. K., & Ha, P. T. (2024). Multilayer immobilizing of denitrifying *Bacillus* sp. and TiO_2–AgNPs on floating expanded clay carrier for co-treatment of nitrite and pathogens in aquaculture. *RSC Advances, 14*(3), 1984–1994.

10. Quach, N. T., Nguyen, T. T. A., Vu, T. H. N., Nguyen, T. T. N., Tran, X. K., Chu, N. H., Ta, T. T. T., Chu, H. H., & Phi, Q.-T. (2024). New insight into protective effect against oxidative stress and biosynthesis of exopolysaccharides produced by *Lacticaseibacillus paracasei* NC4 from fermented eggplant. *Current Genetics, 70*(1), 7.

11. Bui, V. N., Nguyen, D. H., Chu, N. H., Bettarel, Y., Auguet, J.-C., Bouvier, T., & Chu, H. H. (2023). Diversity and biogeography of coral mucus-associated bacterial communities: The case of *Acropora formosa*. *Journal of Marine Science and Engineering, 11*(1), 74.

12. Nguyen, D. H., Chu, N. H., Bettarel, Y., Auguet, J.-C., Bouvier, T., Chu, H. H., & Bui, V. N. (2023). Metagenomic data of bacterial communities associated with *Acropora* species from Phu Quoc Islands, Vietnam. *Data in Brief, 47*, 108977.

13. Hoang, P. H., Nguyen, M. T., Chu, N. H., & Bui, H. G. (2023). The growth and probiotic characteristics of *Bacillus velezensis* BS in soybean meal used as synbiotic-like preparations for *Litopenaeus vannamei* culture. *Vietnam Journal of Biotechnology, 21*(1), 167–177.

14. Bui, V. N., & Chu, N. H. (2022). Diversity and composition of bacterial communities associated with healthy and bleached coral *Fungia* sp. in Nha Trang bay, Vietnam. *Vietnam Journal of Biotechnology, 20*(4), 761–771. https://doi.org/10.15625/1811-4989/16889

15. Hoang, Q.-B., Nguyen, T.-N., Nguyen, T.-P., Nguyen, A.-D., Chu, N.-H., Ta, V.-T., Nguyen, V.-H., & Mai, X.-D. (2022). Size-dependent reactivity of highly photoluminescent CdZnTeS alloyed quantum dots to mercury and lead ions. *Chemical Physics, 552*, 111378.

16. Trieu, T. A., Nguyen, P. A., Le, M. N., & Chu, H. N. (2022). Myosin-II proteins are involved in the growth, morphogenesis, and virulence of the human pathogenic fungus *Mucor circinelloides*. *Frontiers in Cellular and Infection Microbiology, 12*, 1031463.

17. Tam, N. T., Tam, N. P., Nguyen, V. T. H., Hung, N. K., Chu, N. H., Pham, B. N., Chu, H. H., & Tien, P. Q. (2018). Isolation and screening of endophytic bacteria capable of producing β-glucosidase from *Panax vietnamensis* (Ha et Grushv.). *Journal of Biology, 40*(2), 153–161.

18. Tran, T. T., Nguyen, N. T., Pham, N. B., Chu, H. N., Nguyen, T. D., Kishimoto, T., Van Chau, M., & Chu, H. H. (2018). Hairy root cultures of *Eurycoma longifolia* and production of anti-inflammatory 9-methoxycanthin-6-one. *Natural Product Communications, 13*(5), 1934578X1801300507.

19. Tran, T., Pham, N. B., Chu, H. N., Hoang, H. T. T., Nguyen, N. T., & Chu, H. H. (2017). Biological activities of methanolic extracts from hairy roots and natural roots of *Eurycoma longifolia* Jack. *VNU Journal of Science: Natural Sciences and Technology*. https://doi.org/10.25073/2588-1140/vnunst.4478

20. Nagase, T., Mugo, A. N., Chu, H. N., Yoshikane, Y., Ohnishi, K., & Yagi, T. (2012). The *mll6786* gene encodes a repressor protein controlling the degradation pathway for vitamin B_6 in *Mesorhizobium loti*. *FEMS Microbiology Letters, 329*(2), 116–122.

21. Chu, H. N., Kobayashi, J., Mikami, B., & Yagi, T. (2011). The crystal structure of SDR-type pyridoxal 4-dehydrogenase of *Mesorhizobium loti*. *Bioscience, Biotechnology, and Biochemistry, 75*(2), 388–390.

22. Chu, H. N., Kobayashi, J., Yoshikane, Y., Mikami, B., & Yagi, T. (2010). Crystallization and preliminary X-ray analysis of SDR-type pyridoxal dehydrogenase from *Mesorhizobium loti*. *Acta Crystallographica Section F: Structural Biology and Crystallization Communications, 66*(6), 718–720.

23. Matsuda, S., Yokochi, N., Yoshikane, Y., Kobayashi, J., Chu, H. N., Baba, S., Kuramitsu, S., Mikami, B., & Yagi, T. (2009). Crystallization and preliminary X-ray analysis of 4-pyridoxolactonase from *Mesorhizobium loti*. *Acta Crystallographica Section F: Structural Biology and Crystallization Communications, 65*(9), 886–889.

24. Kobayashi, J., Yoshida, H., Chu, H. N., Yoshikane, Y., Kamitori, S., & Yagi, T. (2009). Crystallization and preliminary X-ray analysis of AAMS amidohydrolase, the final enzyme in degradation pathway I of pyridoxine. *Acta Crystallographica Section F: Structural Biology and Crystallization Communications, 65*(8), 829–831.

Master Theses Advised

- Thitam Nguyen, Master's student, GUST, 2016–2017.
- Huonggiang Bui, Master's student, GUST, 2023–2024.

Doctoral Thesis Advised

- Thutrang Tran, Ph.D. student, GUST, 2017–2020.
  Enhancing the accumulation of bioactive alkaloids in hairy root cultures of *Eurycoma longifolia* (Jack) for pharmaceutical applications.

Techniques and Research Skills

- Metabolite profiling
- Fermentation experiments
- Microbial biochemistry
- Functional genomics
- Data analysis for biochemical research