

Pimchai Chaiyen

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Group website: chaiyengroup.org

School of Biomolecular Science and Engineering
Vidyasirimedhi Institute of Science and Technology (VISTEC)
Address: 555 Moo 1 Payupnai, Wangchan, Rayong 21210 Thailand

Education:

1997 Ph. D. Biological Chemistry, University of Michigan, Ann Arbor, USA
1992 B.Sc. (First Class Hons) Chemistry, Prince of Songkla University, Thailand

Research and Professional Experience:

2021-present Associate Editor, ACS Catalysis
2018-2022 Visiting Professor, Institute for Integrated Cell-Material Sciences (iCeMS),
Institute for Advanced Study, Kyoto University, Japan
2018-2020 Visiting Professor, Biomedical Research Institute, Advanced Industrial
Science and Technology (AIST), Tsukuba, Japan
2017-2023 Adjunct Professor, Dept of Biochemistry, Faculty of Science, Mahidol
University
2017-present Professor, School of Biomolecular Science and Engineering, Vidyasirimedhi
Institute of Science and Technology (VISTEC)
2009-2017 Professor, Dept of Biochemistry, Faculty of Science, Mahidol University
2005 Associate Prof, Dept of Biochemistry, Faculty of Science, Mahidol University
2001 Assistant Prof, Dept of Biochemistry, Faculty of Science, Mahidol University
1997 Lecturer, Dept of Biochemistry, Faculty of Science, Mahidol University
1994 Teaching assistant in Enzyme Kinetics for graduate students, University of
Michigan, Ann Arbor
1993/1996 Teaching assistant in Biochemistry Laboratory for undergraduate and
graduate students, University of Michigan, Ann Arbor

Awards and Distinctions: (2010 – present)

2023 Excellent Invention Award from NRCT “Biocatalyst for conversion of phenolic
compounds to valuable chemicals and pesticide detection technology” from
the National Research Council of Thailand (NRCT)
2023 Research Distinction Award for “Mechanistic studies and rational engineering
for increasing catalytic capability of a flavin-dependent halogenase” from the
National Research Council of Thailand (NRCT)
2021 Appointed Associate Editor of ACS Catalysis
2020 Research Excellence Award for “Pyranose 2-oxidase as an efficient
biocatalyst for sugar conversion” from the National Research Council of
Thailand (NRCT)
2019 Outstanding Protein Scientist of Thailand
2019 Distinguished Alumni Lectureship, Department of Biological Chemistry,
University of Michigan, Ann Arbor, USA
2017 L'oreal-Unesco Woman in Science Crystal Award for the most accomplished
woman scientist in Thailand (Life Science)
2017 First Place in Final Pitch Session “Leaders in Innovation Fellowship” hosted
by Royal Academy of Engineering and Newton Fund, UK
2017 Innovation Award for “Protein Markers” from the National Research Council of
Thailand (NRCT)
2017 Research Excellence Award for “Serine hydroxymethyltransferase as a
malarial drug target” from the National Research Council of Thailand (NRCT)
2016 Received title *TRF Senior Research Scholar* and Research Team Building
Grant from The Thailand Research Fund

2016	Project <i>Bacterial Luciferase as a Gene Reporter</i> invited to participate in Tech Planter Final Grand Prix, Tokyo (A platform promoted by Leave a Nest Co., Japan, to help science professionals develop business skills)
2016	BioTalk Plenary Award from Biotechnology and Biochemical Engineering Society of Taiwan
2015	Outstanding Scientist of Thailand 2015, Foundation for Promotion of Science and Technology under the Patronage of H. M. the King, Thailand
2015	Speaker at TEDx Bangkok 2015
2014	Chair of the Organizing Committee, IUBMB 18th International Symposium on Flavins and Flavoproteins
2012	Outstanding Researcher Award (Chemical Sciences and Pharmacy Section) from the National Research Council of Thailand (NRCT)
2010	TRF-CHE-Scopus Researcher Award
2010	Taguchi Prize for Outstanding Research Achievement in Biotechnology

Publications and Patents: (Details at <https://chaiyengroup.org>)

>36 Patent applications filed. Three patents granted

≥170 publications in leading peer-reviewed international journals;

h-index = 41 (Google Scholar)

Total citations = 5706 (Google Scholar)

Selected publications:

1x Chem Rev; 2x Nature Catalysis; 1x Nat Biomed Eng; 2x J Am Chem Soc; 5x Angewandte Chemie; 3x PNAS; 1x TiBS; 1x Chemical Science; 1x ACS Catalysis; 1x Chem Catalysis; 25x J Biol Chem.; 13x FEBS J.; 14x Biochemistry; 1x ACS Chem Biol; 2x Chemistry-A European Journal; 2x J Med Chem; 1x J Mol Biol; 2x J Bacteriol; 14x Biochemistry; 1x Biosens Bioelectron.; 1x Anal Chem; 1x ACS-Sensors; 2x Molecular Catalysis; 2x Biotech J; 1x Biotechnology Journal; 2x Journal of Biotechnology; 1x J R Soc Interface.; 5x ChemBioChem; 1x ChemMedChem; 6x Arch. Biochem. Biophys; 2x Journal of Biotechnology; 3x J. Photochem. Photobiol; 1x Chem Eng Trans.; 2x PLoS One; 4x J. Chem. Edu

Selected publications as a corresponding author for the last five years

- Intasian P., Sutthaphirom C., Bodeit O., Trisrivirat D., Kimprasoot N., Jaroensuk J., Bakker B., Klipp E., and **Chaiyen, P.** (2024) Enhancement of essential cofactors for in vivo biocatalysis. *Faraday Discussions* 2024.
- Prakinee K., Lawan N., Phintha A., Visitsatthawong S., Chitnumsub P., Jitkaroon W., and **Chaiyen P.** (2024) On the Mechanisms of Hypohalous Acid Formation and Electrophilic Halogenation by Non-Native Halogenases. *Angew Chem Int Ed Engl.* 10;63(24):e202403858.
- Jaroensuk J., Sutthaphirom C., Phonbuppha J., Chinantuya W., Kesornpun C., Akeratchatapan N., Kittipanukul N., Phatinuwat K., Atichartpongkul S., Fuangthong M., Pongtharangkul T., Hollmann F., and **Chaiyen P.** (2024) A versatile in situ cofactor enhancing system for meeting cellular demands for engineered metabolic pathways. *J Biol Chem.* 300(2):105598.
- Phintha A. and **Chaiyen P.** (2023) Unifying and versatile features of flavin-dependent monooxygenases: diverse catalysis by a common C4a-(hydro)peroxyflavin. *J Biol Chem.* 299(12):105413.
- Phonbuppha J., Tinikul R., Ohmiya Y., and **Chaiyen P.** (2023) High sensitivity and low-cost flavin luciferase (FLUXVc)-based reporter gene for mammalian cell expression. *J Biol Chem.* 299(5):104639.

6. Phintha A. and **Chaiyen P.** (2022) Rational and mechanistic approaches for improving biocatalyst performance. *Chem Catalysis*. 2(10):2614-2643.
7. Prakinee K., Phintha A., Visitsatthawong S., Lawan N., Sucharitakul J., Kantiwiriyanitch C., Damborsky J., Chitnumsub P., van Pee KH., and **Chaiyen P.** (2022) Mechanism-guided tunnel engineering to increase efficiency of a flavin-dependent halogenase. *Nat Catal*. 5:534-44.
8. Intasian P., Prakinee K., Phintha A., Trisrivirat D., Weeranoppanant N., Wongnate T., and **Chaiyen P.** (2021) Enzymes, In Vivo Biocatalysis, and Metabolic Engineering for Enabling a Circular Economy and Sustainability. *Chem Rev*. 121(17):10367-10451.
9. Pimviriyakul P., Jaruwat A., Chitnumsub P., and **Chaiyen P.** (2021) Structural insights into a flavin-dependent dehalogenase HadA explain catalysis and substrate inhibition via quadruple π -stacking. *J Biol Chem*. 297(2):100952.
10. Pongpamorn P., Kiattisewee C., Kittipanukul N., Jaroensuk J., Trisrivirat D., Maenpuen S., and **Chaiyen P.** (2021) Carboxylic Acid Reductase Can Catalyze Ester Synthesis in Aqueous Environments. *Angew Chem Int Ed Engl*. 60(11):5749-53.
11. Phintha A., Prakinee K., Jaruwat A., Lawan N., Visitsatthawong S., Kantiwiriyanitch C., Songsunghong W., Trisrivirat D., Chenprakhon P., Mulholland A.J., van Pee K-H, Chitnumsub P., and **Chaiyen P.** (2021) Dissecting the low catalytic capability of flavin-dependent halogenases. *J Biol Chem*. 296:100068.
12. Trisrivirat D., Lawan N., Chenprakhon P., Matsui D., Asano Y., and **Chaiyen P.** (2020) Mechanistic insights into the dual activities of the single active site of L-lysine oxidase/monooxygenase from *Pseudomonas* sp. AIU 813. *J Biol Chem*. 7;295(32):11246-11261.
13. Wathaisong P., Pongpamorn P., Pimviriyakul P., Maenpuen S., Ohmiya Y., and **Chaiyen P.** (2019) A Chemo-Enzymatic Cascade for the Smart Detection of Nitro- and Halogenated Phenols. *Angew Chem Int Ed Engl*. 58(38):13254-13258.
14. Pongpamorn P., Wathaisong P., Pimviriyakul P., Jaruwat A., Lawan N., Chitnumsub P., and **Chaiyen P.** (2019) Identification of a Hotspot Residue for Improving the Thermostability of a Flavin-Dependent Monooxygenase. *Chembiochem*. 13;20(24):3020-3031.
15. Jaroensuk J., Intasian P., Kiattisewee C., Munkajohnpon P., Chunthaboon P., Buttranon S., Trisrivirat D., Wongnate T., Maenpuen S., Tinikul R., and **Chaiyen P.** (2019) Addition of formate dehydrogenase increases the production of renewable alkane from an engineered metabolic pathway. *J Biol Chem*. 26;294(30):11536-11548.
16. Chuaboon L., Wongnate T., Punthong P., Kiattisewee C., Lawan N., Hsu C.Y., Lin C.H., Bornscheuer U., and **Chaiyen P.** (2019) One-Pot Bioconversion of L-Arabinose to L-Ribulose in an Enzymatic Cascade. *Angew Chem Int Ed Engl*. 18;58(8):2428-2432.

Book and Book Chapter

Editor of the Book: The Enzymes, Volume 47.
Flavin-Dependent Enzymes (published on 1st October 2020)

9 chapters in books published by Walter de Gruyter GmbH, Springer-Verlag Berlin-Heidelberg, Wiley-VCH Verlag GmbH & Co, Academic Press, Elsevier, Humana Press (Springer-Nature).

Recognitions from International Communities

>60 Invited lectures at international symposiums and institute overseas
(Including four talks at Gordon Research Conferences)

>20 Invited talks at overseas universities

>5 Talks at international leading companies (BASF (Germany), Amano
(Japan) and Pfizer (USA))

Associate Editor: ACS Catalysis (2021 - present)

Editorial Board: eLife (2019-2023), The Journal of Biological Chemistry (2012-2022),
Archives Biochemistry and Biophysics (2012-present)