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Professional Experience

2020–current Assistant Professor
Graduate School of Pharmaceutical Sciences, The University of Tokyo

Education

2013–2019 PhD, The University of Texas at Austin, TX, USA
(Advisor: Dr. Hung-wen (Ben) Liu)
2011–2013 M.S. in Chemistry, Nagoya University, Japan
(Advisor: Dr. Ryoji Noyori and Dr. Hiroshi Naka)
2007–2011 B.S. in Chemistry, Nagoya University, Japan
(Advisor: Dr. Ryoji Noyori and Dr. Hiroshi Naka)

Selected Publications

1. **Ushimaru, R.**,* Cha, L., Shimo, S., Li, X., Paris, J., Mori, T., Miyamoto, K., Coffey, L., Uchiyama, M., Guo, Y.,* Chang, W.-c.,* Abe, I.* "Mechanistic analysis of the stereodivergent nitroalkane cyclopropanation catalyzed by nonheme iron enzymes." *J. Am. Chem. Soc.* 145, 145, 24210-24217 (2023)
2. **Ushimaru, R.**,* Ding, Y., Mori, T., Miyamoto, K., Uchiyama, M., Abe, I.* "Structural and mechanistic insights into the C–C bond forming rearrangement reaction catalyzed by heterodimeric hinokiresinol synthase." *J. Am. Chem. Soc.* 145, 145, 21966-21973 (2023)
3. **Ushimaru, R.**,* Lyu, J., Ling, M., Abe, I.* "Multiple C–C bond cleavage reactions catalyzed by tolyporphin tetrapyrrole biosynthetic enzymes." *J. Am. Chem. Soc.* 145, 9834-9839 (2023)
4. Tao, H.,[†] **Ushimaru, R.**,[†]* Awakawa, T., Mori, T., Uchiyama, M., Abe, I.* "Stereoselectivity and substrate specificity of the Fe(II)/ α -ketoglutarate-dependent oxygenase TqaL." *J. Am. Chem. Soc.* 144, 21512-21520 (2022)
5. Shimo, S.,[†] **Ushimaru, R.**,[†]* Engelbrecht, A., Harada, M., Miyamoto, K., Uchiyama, M., Kaysser, L., Abe, I.* "Stereodivergent nitrocyclopropane formation during biosynthesis of belactosins and hormaomycins" *J. Am. Chem. Soc.* 143, 18413-18418 (2021)
6. Mori, T., Zhai, **R.**, **Ushimaru, R.**, Matsuda, Y., Abe, I. "Molecular insights into the endoperoxide formation by Fe(II)/ α -KG-dependent oxygenase Nvfl." *Nature Commun.* 12, Article number: 4417 (2021)
7. **Ushimaru, R.**,[†] Chen, Z.,[†] Zhao, H., Fan, P.-h., Liu, H.-w. "Identification of the enzymes mediating maturation of the seryl-tRNA synthetase inhibitor SB-217452 during biosynthesis of albomycins." *Angew. Chem. Int. Ed.* 59, 3558-3562 (2020)
8. Wang, S. A., Lin, C. I., Zhang, J., **Ushimaru, R.**, Sasaki, E., Liu, H.-w. "Studies of lincosamide formation complete the biosynthetic pathway for lincomycin A." *Proc. Natl. Acad. Sci. USA* 116, 24794-24801 (2020)
9. **Ushimaru, R.**, Liu, H.-w. "Biosynthetic origin of the atypical stereochemistry in the thioheptose core of albomycin nucleoside antibiotics." *J. Am. Chem. Soc.* 141, 2211- 2214 (2019)
10. **Ushimaru, R.**, Rusczycky, M. W., Liu, H.-w. "Changes in regioselectivity of H atom abstraction during the hydroxylation and cyclization reactions catalyzed by hyoscyamine 6 β -hydroxylase." *J. Am. Chem. Soc.* 141, 1062-1066 (2019)
11. **Ushimaru, R.**, Rusczycky, M. W., Chang, W.-c., Yan, F., Liu, Y.-n., Liu, H.-w. "Substrate conformation correlates with the outcome of hyoscyamine 6 β -hydroxylase catalyzed oxidation reactions." *J. Am. Chem. Soc.* 140, 7433-7436 (2018)