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Background

2000	B. Sci	Tohoku University, Faculty of Science, Department of chemistry
2002	M.Sci	The Univ. of Tokyo, Graduate School of Agriculture and Life Sciences
2006	Ph.D.	The Univ. of Tokyo, Graduate School of Agriculture and Life Sciences
2006		Research fellow in Biotechnology Research Center, The Univ. of Tokyo
2006-2008		Assistant of Biotechnology Research Center, The Univ. of Tokyo
2008-2020		Assistant professor of Biotechnology Research Center, The Univ. of Tokyo
2020-present		Project Associate professor of Biotechnology Research Center, The Univ. of Tokyo
2013		Achievement Award for Young Scientists, The Foundation of agricultural Scientists of Japan
2016		JSBBA Award for Young Scientists, Japan Society for Bioscience, Biotechnology, and Agrochemistry

Research

Microbes are interesting sources for the proteins with variety and unique features. On the other hand, function of over half of the genes are not clarified even in a hyperthermophile, *Thermus thermophilus*, which is recognized as a model organism with least set of genes to survive. We focus on the regulatory system of amino acid metabolism and enzymes responsible for the biosynthesis of natural compounds. We aim to elucidate the detailed molecular mechanisms of these systems using biochemical and structural biology techniques. Through this research, we aim to contribute to the improvement of microbial productivity and human health.

Key papers

1. [Tomita, T.](#), Matsushita, H., Yoshida, A., Kosono, S., Yoshida, M., Kuzuyama, T., and Nishiyama, M. (2019) Glutamate dehydrogenase from *Thermus thermophilus* is activated by AMP and leucine as a complex with catalytically inactive adenine phosphoribosyltransferase homolog. *J. Bacteriol.*, **201**, e00710-18.
2. [Tomita, T.](#), Kobayashi, M., Karita, Y., Yasuno, Y., Shinada, T., Nishiyama, M. and Kuzuyama, T. (2017) Structure and mechanism of the monoterpene cyclolavandulyl diphosphate synthase that catalyzes consecutive condensation and cyclization. *Angew. Chem. Int. Ed. Engl.*, **56**, 14913-17.
3. [Tomita, T.](#), Yin, L., Nakamura, S., Kosono, S., Kuzuyama, T., and Nishiyama, M. (2017) Crystal structure of the 2-iminoglutarate-bound complex of glutamate dehydrogenase from *Corynebacterium glutamicum*. *FEBS Lett.*, **591**, 1611-1622.
4. [Tomita, T.](#), Kim SY., Teramoto, K., Meguro, A., Ozaki, T., Yoshida, A., Motoyoshi, Y., Mori, N., Ishigami, K., Watanabe, H., Nishiyama, M., and Kuzuyama, T. (2017) Structural insight into the CotB2-catalyzed cyclization of geranylgeranyl diphosphate to the diterpene cycloocta-9-en-7-ol. *ACS Chem. Biol.*, **12**, 1621-1628.
5. Hasebe, F., Matsuda, K., Shiraishi, T., Futamura, Y., Nakano, T., [Tomita, T.](#), Ishigami, K., Taka, H., Mineki, R., Fujimura, T., Osada, H., Kuzuyama, T., and Nishiyama, M. (2016) Amino-group carrier-protein-mediated secondary metabolite biosynthesis in *Streptomyces*. *Nat. Chem. Biol.*, **12**, 967-972.
6. Ouchi, T., [Tomita, T.](#), Horie, A., Yoshida, E., Takahashi, K., Nishida, H., Lassak, K., Taka, H., Mineki, R., Fujimura, T., Kosono, S., Nishiyama, C., Masui, R., Kuramitsu, S., Albers, SV., Kuzuyama, T., Nishiyama, M. (2013) Lysine and arginine biosyntheses mediated by a common carrier protein in *Sulfolobus*. *Nat. Chem. Biol.*, **9**, 277-83.
7. [Tomita, T.](#), Kuzuyama, T., and Nishiyama, M. (2011) Structural basis for leucine-induced allosteric activation of glutamate dehydrogenase. *J. Biol. Chem.*, **286**, 37406-13.
8. Yoshida, A., Tomita, T., Kuzuyama, T., and Nishiyama, M. (2010) Mechanism of concerted inhibition of $\alpha_2\beta_2$ -type hetero-oligomeric aspartate kinase from *Corynebacterium glutamicum*. *J. Biol. Chem.*, **285**, 27477-86.
9. [Tomita, T.](#), Okada, T., Wulandari, A.P., Kuzuyama, T., and Nishiyama, M. (2010) Mechanism of substrate recognition and insight into feedback inhibition of homocitrate synthase from *Thermus thermophilus*. *J. Biol. Chem.*, **285**, 4195-205.
10. Horie, A., [Tomita, T.](#), Saiki, A., Kono, H., Taka, H., Mineki, R., Fujimura, T., Nishiyama, C., Kuzuyama, T., and Nishiyama, M. (2009) Discovery of proteinaceous N-modification in lysine biosynthesis of *Thermus thermophilus*. *Nat. Chem. Biol.*, **5**, 673-679.

