

## BIOGRAPHICAL SKETCH: Watanabe, Kenji

**Kenji Watanabe, Ph.D.**

Associate professor

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### Education:

1996 B.S. Bioorganic chemistry, Hokkaido University  
2000 Ph.D. Organic chemistry, Hokkaido University  
2000 Postdoctoral Fellow, University of Wisconsin Madison, Department of Pharmaceutical Sciences  
2001 Postdoctoral Fellow, Stanford University, Department of Chemical Engineering

### Professional Experience:

2009 Associate professor, Department of Pharmaceutical Sciences, University of Shizuoka  
2008 Assistant professor, Research Core for Interdisciplinary Sciences, Okayama University  
2008 Research assistant professor, Department of Chemistry, Hokkaido University  
2004-2008: Research assistant professor, Department of Pharmaceutical Sciences, University of Southern California  
2001-2003: Postdoctoral Fellow, Department of Chemical Engineering, Stanford University  
2000-2001: JSPS Postdoctoral Fellow, Department of Pharmaceutical Sciences, University of Wisconsin Madison

### Academic Honors:

2010 Bioscience, Biotechnology, and Biochemistry Paper Award  
2008 The Japan Bioscience, Biotechnology, and Agrochemistry Society Award for the Encourage of Young Scientists  
2006 Japan Young Scientist Research Award in the Chemistry of Natural Products  
2006 Japan Society for Bioscience, Biotechnology, and Agrochemistry Research Award  
2005 Japan Synthetic Organic Chemistry (Daiichi Pharmaceutical Co. Ltd.) Research Award  
2004 Japan Young Scientist Research Award In Natural Product Chemistry

### Five Most Relevant Publications (out of 74):

- Hotta, K., Chen, X., Paton, R. S., Minami, A., Li, H., Swaminathan, K., Mathews, I. I., Watanabe, K., Oikawa, H., Houk, K. N., Kim, C. Y. "Enzymatic catalysis of anti-Baldwin ring-closure in polyether biosynthesis." *Nature* **2012**, 483, 355-359.
- Minami, A., Shimaya, M., Suzuki, G., Migita, A., Shinde, S. S., Watanabe, K., Tamura, T., Oguri, H., Oikawa, H. "Sequential enzymatic epoxidation involved in polyether lasalocid biosynthesis." *J. Am. Chem. Soc.* **2012**, 134, 7246-7249.
- Koketsu, K., Oguri, H., Watanabe, K., Oikawa, H. "Reconstruction of the saframycin core scaffold defines dual Pictet-Spengler mechanisms." *Nat. Chem. Biol.* **2010**, 6, 408-410.
- Bok, J. W., Chiang, Y. M., Szewczyk, E., Reyes-Domingez, Y., Davidson, A. D., Sanchez, J. F., Lo, H. C., Watanabe, K., Strauss, J., Oakley, B. R., Wang, C. C. C., Keller, N. P. "Chromatin-level regulation of biosynthetic gene clusters." *Nat. Chem. Biol.* **2009**, 5, 462-464.
- Watanabe, K., Hotta, K., Nakaya, M., Praseuth, A. P., Wang, C. C. C., Inada, D., Takahashi, K., Fukushi, F., Oguri, H., Oikawa, H. "*Escherichia coli* allows efficient modular incorporation of newly isolated quinomycin biosynthetic enzyme into echinomycin biosynthetic pathway for rational design and synthesis of potent antibiotic unnatural natural product." *J. Am. Chem. Soc.* **2009**, 131, 9347-9353.

### Five Other Publications:

- Nakazawa, T., Ishiuchi, K., Praseuth, A., Noguchi, H., Hotta, K., Moriya, H., Watanabe, K. "Overexpressing transcriptional regulator in *Aspergillus oryzae* activates a silent biosynthetic pathway to produce novel polyketide." *ChemBioChem* **2012**, 13,855-861.

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- Ishiuchi, K., Nakazawa, T., Ookuma, T., Sugimoto, T., Sato, M., Tsunematsu, Y., Ishikawa, N., Noguchi, H., Hotta, K., Moriya, H., Watanabe, K. "Establishing a new methodology for genome mining and biosynthesis of polyketides and peptides through yeast molecular genetics." *ChemBioChem* **2012**, 13, 846-854.
- Minami, A., Migita, A., Inada, D., Hotta, K., Watanabe, K., Oguri, H., Oikawa, H. "Enzymatic epoxide-opening cascades catalyzed by a pair of epoxide hydrolases in the ionophore polyether biosynthesis." *Org. Lett.* **2011**, 13, 1638-1641.
- Shichijo, Y., Migita, A., Oguri, H., Watanabe, M., Tokiwano, T., Watanabe, K., Oikawa, H. "Epoxide hydrolase Lsd19 for polyether formation in the biosynthesis of Lasalocid A: direct experimental evidence on polyene-polyepoxide hypothesis in polyether biosynthesis." *J. Am. Chem. Soc.* **2008**, 130, 12230-12231.
- Koketsu, K., Oguri, H., Watanabe, K., Oikawa, H. "Enzymatic macrolactonizations in the presence of DNA leading to triostin A analogs." *Chem. Biol.* **2008**, 15, 818-828.

### Synergistic activities

Member of ACS.

I have reviewed manuscripts for *ChemBioChem*, *Chem Biol. etc.*

### Collaborators and other affiliations

#### Collaborators

Professor Yi Tang, Department of Chemical and Biomolecular Engineering, UCLA

Professor Chu-Young Kim, Department of Biological Sciences, The National University of Singapore

Professor Hideaki Oikawa, Department of Chemistry, Hokkaido University

#### Graduate Advisor

Professor Hideaki Oikawa. Hokkaido University, JAPAN

#### Postdoctoral Advisor

Professor Chaitan Khosla, Stanford University

#### Graduate Students Advised

Naoki Morimoto, Takashi Tochihara, Kozo Yamaguchi, Takayoshi Saruwatari, Noriyasu Ishikawa, Satru Sugimoto, Ryuta Kobayashi, Hikaru Sugiura, Takashi Gotanda, Masaru Ichinoseki, Atsuko Nakane

#### Postdoctoral Researcher

Dr. Takehito Nakazawa, Dr. Yuta Tsunematsu, Dr. Kan'ichiro Ishiuchi, Dr. Michio Sato

### Teaching activities

I teach four classes a year at University of Shizuoka, averaging two per semester. I teach two classes of Organic Chemistry and Natural Product Chemistry for undergraduate students. Each of classes has a class size of > 120 students offered to the entire School of Pharmacy. I also teach two classes for Laboratory work. One is for natural product chemistry, which is an undergraduate laboratory class focused at teaching students the basic techniques of isolating natural product, stevioside, from plant (*Stevia rebaudiana* Bertoni). The other is for synthetic chemistry, which is an undergraduate laboratory class focused at teaching students the basic techniques of chemically synthesizing cinnamic acid by Wittig reaction. I strongly believe the combining two lab classes give a starting point to be an expert with chemistry for undergraduate students.

I currently advise ten graduate students and three undergraduate students. I also advise four postdoctoral fellows. During each summer, four high school students from Shizuoka will perform research in my laboratory.