

Fumihiko Yoshimura, Ph.D.

Curriculum Vitae

Associate Professor
School of Pharmaceutical Sciences
University of Shizuoka
52-1 Yada, Suruga-ku, Shizuoka 422-8526, Japan
Phone: +81-54-264-5740
Fax: +81-54-264-5745 (shared)
E-mail: fumi@u-shizuoka-ken.ac.jp

Born: 9 March 1974



ORCID: 0000-0002-1187-6062
ResearchID: A-4116-2012
Researchmap: <https://researchmap.jp/read0055409>

RESEARCH FOCUS

- Total synthesis of biologically active natural products with quaternary asymmetric carbon centers
- Development of novel synthetic methods
- Molecular design and synthesis of probe molecules for elucidation of biological functions

PROFESSIONAL EXPERIENCE

University of Shizuoka, Shizuoka, Japan (May 2017–Present)

- Associate Professor (Laboratory of Professors Toshiyuki Kan and Ryo Takita)

Hokkaido University, Sapporo, Japan (April 2004–April 2017)

- Assistant Professor, Department of Chemistry, Faculty of Science
(Laboratory of Professors Masaaki Miyashita and Keiji Tanino)

EDUCATION

Sloan-Kettering Institute for Cancer Research, New York, NY, USA
(May 2002–March 2004)

- Postdoctoral Research Fellow
- Research Topic: *Total Synthesis of Second-Generation Epothilones and Rishirilide A*
- Advisor: Professor Samuel J. Danishefsky

Tohoku University, Sendai, Japan (April 1996–March 2002)

- Ph.D. in Organic Chemistry
- Thesis: *Synthetic Study of Kedarcidin Chromophore*
- Research Advisor: Professor Masahiro Hirama

Tohoku University, Sendai, Japan (April 1992–March 1996)

- B.S. degree in Chemistry
- Research Advisor: Professor Masahiro Hirama

HONORS AND AWARDS

- Young Chemist Award of the CSJ Hokkaido Branch for 2013 (2014)
- Mitsubishi Tanabe Pharma Award in synthetic Organic Chemistry, Japan (2012)
- Asian Core Program Lectureship Award, 1st International Conference on Cutting-Edge Organic Chemistry in Asia (2006)
- Uehara Memorial Foundation Postdoctoral Fellowship (2002–2003)
- JSPS Research Fellowship for Young Scientist (DC1) (1998–2001)

RESEARCH PUBLICATIONS (REFEREED)

1. Nakahara, Y.; Fukuda, T.; Fujii, R.; Kanakogi, M.; Ouchi, H.; Yoshimura, F.; Takita, R.; Kan, T.; Inai, M.*; Hamashima, Y.*
“Formal Synthesis of Lobatamides A and C”
Org. Lett. **2025**, *27*, 3066–3070.
2. Yoshimura, F.*; Uchida, M.; Aratame, K.; Ouchi, H.; Inai, M.; Kondo, M.; Takita, R.; Kan, T.
“Total Synthesis of (±)-Halichonine B”
Org. Biomol. Chem. **2025**, *23*, 3076–3080.
3. Inai, M.*; Sagara, H.; Ueno, Y.; Oiuchi, H.; Yoshimura, F.; Asakawa, T.; Hamashima, T.; Kan, T.
“Total Synthesis of (+)-Silybin A”
Chem. Pharm Bull. **2024**, *72*, 570–573.
4. Nishizawa, S.; Ouchi, H.*; Suzuki, H.; Ohnishi, T.; Sasaki, S.; Oyagi, Y.; Kanakogi, M.; Matsumura, Y.; Nakagawa, S.; Asakawa, T.; Egi, M.; Inai, M.; Yoshimura, F.; Takita, R.; Kan, T.*
“Total Synthesis of (–)-Domoic Acid, A Potent Ionotropic Glutamate Receptor Agonist and the Key Compound in Oceanic Harmful Algal Blooms”
Org. Biomol. Chem. **2023**, *21*, doi: 10.1039/d2ob02325c.
5. Kamada, R.; Uno, S.; Kimura, N.; Yoshimura, F.; Tanino, K.; Sakaguchi, K.*
“Lipid Droplet Formation is Regulated by Ser/Thr Phosphatase PPM1D via Dephosphorylation of Perilipin 1”
Int. J. Mol. Sci. **2022**, *23*, 12046.
6. Inai, M.*; Ueno, Y.; Sagara, H.; Ouchi, H.; Yoshimura, F.; Kan, T.*
“Total Synthesis of Isosilybin B”
Eur. J. Org. Chem. **2022**, e202200653.
7. Murakami, H.; Asakawa, T.; Muramatsu, Y.; Ishikawa, R.; Hiza, A.; Tsukaguchi, Y.; Tokumaru, Y.; Egi, M.; Inai, M.; Ouchi, H.; Yoshimura, F.; Taniguchi, T.; Ishikawa, Y.; Kondo, M.; Kan, T.*
“Total Synthesis of Sophoraflavanone H and Confirmation of Its Absolute Configuration”
Org. Lett. **2020**, *22*, 3820–3824.
8. Miura, Y.; Ouchi, H.; Inai, M.; Osawa, T.; Yoshimura, F.; Kanazawa, J.; Uchiyama, M.; Kondo, M.; Kan, T.*
“Synthetic Studies on Pactamycin: A Synthesis of Johnson’s Intermediate”
Org. Lett. **2020**, *22*, 3515–3518.
9. Ohmi, K.; Miura, Y.; Nakao, Y.; Goto, A.; Yoshimura, S.; Ouchi, H.; Inai, M.*; Asakawa, T.; Yoshimura, F.; Kondo, M.; Kan, T.*
“Pactamycin and its Derivatives: Improved Synthesis Route”
Eur. J. Org. Chem. **2020**, 488–491.
10. Kobayashi, M.; Ueno, H.; Yoshida, N.; Ouchi, H.; Asakawa, T.; Yoshimura, F.; Inai, M.*; Kan, T.*

“Diastereodivergent and Regiodivergent Total Synthesis of Princepin and Isoprincepin in Both (7''R,8''R) and (7''S,8''S) Isomers”
J. Org. Chem. **2019**, *84*, 14227–14240.

11. Kamada, R.; Kimura, N.; Yoshimura, F.; Tanino, K.; Sakaguchi, K.*
“Inhibition of lipid droplet formation by Ser/Thr protein phosphatase PPM1D inhibitor, SL-176”
PLoS ONE **2019**, *14*, e0212682.
12. Yoshimura, F.*; Okada, T.; Tanino, K.*
“Asymmetric Total Synthesis of Laurallene”
Org. Lett. **2019**, *21*, 559–562.
13. Yoshimura, F.*; Abe, T.; Ishioka, Y.; Tanino, K.*
“Synthetic study of andrastins: Stereoselective construction of the BCD-ring system”
J. Antibiot. **2019**, *72*, 384–388.
14. Yoshimura, F.*; Itoh, R.; Torizuka, M.; Mori, G.; Tanino, K.*
“Asymmetric Total Synthesis of Brasilicardins”
Angew. Chem. Int. Ed. **2018**, *57*, 17161–17167.
15. Yoshimura, F.*; Saito, H.; Abe, T.; Tanino, K.*
“Nucleophilic Addition of Alkanenitriles to Aldehydes via *N*-Silyl Ketene Imines Generated In Situ”
Synlett **2017**, *28*, 1816–1820.
16. Kamada, R.; Kudoh, F.; Yoshimura, F.; Tanino, K.; Sakaguchi, K.*
“Inhibition of Ser/Thr phosphatase PPM1D induces neutrophil differentiation in HL-60 cells”
J. Biochem. **2017**, *162*, 303–308.
17. Yoshimura, F.*; Abe, T.; Tanino, K.*
“Synthesis of Aryl Amine Derivatives from Benzyl Nitriles via Electrocyclization of in Situ Generated *N*-Silyl Ketene Imines”
Org. Lett. **2016**, *18*, 1630–1633.
18. Ogasawara, S.; Kiyota, Y.; Chuman, Y.; Kowata, A.; Yoshimura, F.; Tanino, K.; Kamada, R.; Sakaguchi, K.*
“Novel Inhibitors Targeting PPM1D Phosphatase Potently Suppress Cancer Cell Proliferation”
Bioorg. Med. Chem. **2015**, *23*, 6246–6249.
19. Kozakai, Y.; Kamada, R.; Kiyota, Y.; Yoshimura, F.; Tanino, K.; Sakaguchi, K.*
“Inhibition of C-terminal truncated PPM1D enhances the effect of doxorubicin on cell viability in human colorectal carcinoma cell line”
Bioorg. Med. Chem. Lett. **2014**, *24*, 5593–5596.
20. Yoshimura, F.*; Abe, T.; Tanino, K.*
“Nucleophilic Addition Reactions of Nitriles to Nitrones under Mild Silylation Conditions”
Synlett **2014**, *25*, 1863–1868.
21. Tanino, K.*; Yamada, T.; Yoshimura, F.; Suzuki, T.*
“Cyanoazulene-based Multistage Redox Systems Prepared from Vinylcyclopropanecarbonitrile and Cyclopentenone via Divinylcyclopropane-rearrangement Approach”
Chem. Lett. **2014**, *43*, 607–609.
22. Yamada, T.; Yoshimura, F.; Tanino, K.*
“Synthesis of 2-cyano-1,4-cycloheptadiene derivatives via divinylcyclopropane rearrangement and alkylation of novel cycloheptadienyl anion species”

Tetrahedron Lett. **2013**, *54*, 522–525.

23. Yoshimura, F.*; Kowata, A.; Tanino, K.*
“Stereocontrolled synthesis of carbocyclic compounds with a quaternary carbon atom based on S_N2’ alkylation of γ,δ -epoxy- α,β -unsaturated ketones”
Org. Biomol. Chem. **2012**, *10*, 5431–5442.
24. Yoshimura, F.*; Torizuka, M.; Mori, G.; Tanino, K.*
“Intramolecular Conjugate Addition of α,β -Unsaturated Lactones Having an Alkanenitrile Side Chain: Stereocontrolled Construction of Carbocycles with Quaternary Carbon Atoms”
Synlett **2012**, *23*, 251–254.
25. Yagi, H.; Chuman, Y.; Kozakai, Y.; Imagawa, T.; Takahashi, Y.; Yoshimura, F.; Tanino, K.; Sakaguchi, K.*
“A small molecule inhibitor of p53-inducible protein phosphatase PPM1D”
Bioorg. Med. Chem. Lett. **2012**, *22*, 729–732.
26. Yoshimura, F.; Takahashi, Y.; Tanino, K.*; Miyashita, M.*
“Synthetic Studies of the Zoanthamine Alkaloids: Total Synthesis of Zoanthenol based on an Isoaromatization Strategy”
Chem. Asian J. **2011**, *6*, 922–931.
27. Takahashi, Y.; Yoshimura, F.; Tanino, K.*; Miyashita, M.*
“Total Synthesis of Zoanthenol”
Angew. Chem. Int. Ed. **2009**, *48*, 8905–8908.
28. Yoshimura, F.; Matsui, A.; Hirai, A.; Tanino, K.; Miyashita, M.*
“Stereoselective S_N2’-alkylation reaction sequence of the γ,δ -epoxy α,β -unsaturated ester system via γ,δ -chlorohydrin intermediates by the use of a R₃Al-CuCN reagent”
Tetrahedron Lett. **2009**, *50*, 5126–5129.
29. Yoshimura, F.; Sasaki, M.; Hattori, I.; Komatsu, K.; Sakai, M.; Tanino, K.; Miyashita, M.*
“Synthetic Studies of the Zoanthamine Alkaloids: The Total Syntheses of Norzoanthamine and Zoanthamine”
Chem. Eur. J. **2009**, *15*, 6626–6644.
30. Yoshimura, F.; Takahashi, M.; Tanino, K.; Miyashita, M.*
“An Efficient Synthetic Method for 3-Bromofuran Derivatives via Stereoselective Cyclization of γ,δ -Epoxy-(*E*)- α -bromoacrylates”
Heterocycles **2009**, *77*, 201–206.
31. Yu, X.-Q.; Yoshimura, F.; Tanino, K.; Miyashita, M.*
“Stereospecific interconversion of *cis*- and *trans*- γ,δ -epoxy α,β -unsaturated ester systems”
Tetrahedron Lett. **2008**, *49*, 7442–7445.
32. Yoshimura, F.; Takahashi, M.; Tanino, K.; Miyashita, M.*
“Stereospecific epoxide-opening reactions with 1,1-dibromo-3,4-epoxy-1-alkenes with carbon nucleophiles”
Tetrahedron Lett. **2008**, *49*, 6991–6994.
33. Yu, X.-Q.; Yoshimura, F.; Ito, F.; Sasaki, M.; Hirai, A.; Tanino, K.; Miyashita, M.*
“Palladium-catalyzed Stereospecific Substitution of α,β -Unsaturated γ,δ -Epoxy Esters by Alcohols with Double Inversion of Configuration: Synthesis of 4-Alkoxy-5-hydroxy-2-pentenoates”
Angew. Chem. Int. Ed. **2008**, *47*, 750–754.

34. Yoshimura, F.; Lear, M. J.*; Ohashi, I.; Koyama, Y.; Hirama, M.*
“Synthesis of the entire carbon framework of the kedarcidin chromophore aglycon”
Chem. Commun. **2007**, 3057–3059.
35. Hirama, M.*; Akiyama, K.*; Das, P.; Mita, T.; Lear, M. J.; Iida, K.; Sato, I.; Yoshimura, F.; Usuki, T.; Tero-Kubota, S.
“Direct Observation of ESR Spectra of Bicyclic Nine-membered Enediynes at Ambient Temperature”
Heterocycles **2006**, *69*, 83–89.
36. Koyama, Y.; Lear, M. J.*; Yoshimura, F.; Ohashi, I.; Mashimo, T.; Hirama, M.*
“Efficient Construction of the Kedarcidin Chromophore Ansamacrolide”
Org. Lett. **2005**, *7*, 267–270.
37. Rivkin, A.; Yoshimura, F.; Gabarda, A. E.; Cho, Y. S.; Chou, T.-C.; Dong, H.; Danishefsky, S. J.*
“Discovery of (*E*)-9,10-Dehydroepothilones through Chemical Synthesis: On the Emergence of 26-Trifluoro-(*E*)-9,10-dehydro-12,13-desoxyepothilone B as a Promising Anticancer Drug Candidate”
J. Am. Chem. Soc. **2004**, *126*, 10913–10922.
38. Usuki, T.; Mita, T.; Lear, M. J.*; Das, P.; Yoshimura, F.; Inoue, M.; Hirama, M.*; Akiyama, K.*; Tero-Kubota, S.
“Spin-Trapping of ¹³C-Labeled *p*-Benzynes Generated by Masamune-Bergman Cyclization of Bicyclic Nine-Membered Enediynes”
Angew. Chem. Int. Ed. **2004**, *43*, 5249–5253.
39. Ohashi, I.; Lear, M. J.*; Yoshimura, F.; Hirama, M.*
“Use of Polystyrene-Supported DBU in the Synthesis and α -Selective Glycosylation Study of the Unstable Schmidt Donor of L-Kedarcidin”
Org. Lett. **2004**, *6*, 719–722.
40. Chou, T.-C.; Dong, H.; Rivkin, A.; Yoshimura, F.; Gabarda, A. E.; Cho, Y. S.; Tong, W. P.; Danishefsky, S. J.*
“Design and Total Synthesis of a Superior Family of Epothilone Analogues, which Eliminate Xenograft Tumors to a Nonrelapsable State”
Angew. Chem. Int. Ed. **2003**, *42*, 4762–4767.
41. Yoshimura, F.; Rivkin, A.; Gabarda, A. E.; Chou, T.-C.; Dong, H.; Sukenick, G.; Morel, F. F.; Taylor, R. E.; Danishefsky, S. J.*
“Synthesis and Conformational Analysis of (*E*)-9,10-Dehydroepothilone B: A Suggestive Link between the Chemistry and Biology of Epothilones”
Angew. Chem. Int. Ed. **2003**, *42*, 2518–2521.
42. Rivkin, A.; Yoshimura, F.; Gabarda, A. E.; Chou, T.-C.; Dong, H.; Tong, W. P.; Danishefsky, S. J.*
“Complex Target-Oriented Total Synthesis in the Drug Discovery Process: The Discovery of a Highly Promising Family of Second Generation Epothilones”
J. Am. Chem. Soc. **2003**, *125*, 2899–2901.
43. Lear, M. J.; Yoshimura, F.; Hirama, M.*
“A Direct and Efficient α -Selective Glycosylation Protocol for the Kedarcidin Sugar, L-Mycarose: AgPF₆ as a Remarkable Activator of 2-Deoxythioglycosides”
Angew. Chem. Int. Ed. **2001**, *40*, 946–949.
44. Yoshimura, F.; Kawata, S.; Hirama, M.*
“Synthetic study of kedarcidin chromophore: atropselective construction of the ansamacrolide”
Tetrahedron Lett. **1999**, *40*, 8281–8285.

45. Kawata, S.; Yoshimura, F.; Irie, J.; Ehara, H.; Hiramama, M.*
“Synthetic Study of Kedarcidin Chromophore: Advanced Models and Their Chemical Behavior”
Synlett **1997**, 250–252.

REVIEWS (REFEREED)

1. Yoshimura, F.*; Itoh, R.; Torizuka, M.; Mori, G.; Tanino, K.*
“Chemical Synthesis of Brasilicardins”
J. Synth. Org. Chem., Jpn. **2020**, *78*, 1085–1093.
2. Yoshimura, F.*; Tanino, K.; Miyashita, M.
“Recent developments in the synthesis of zoanthamine alkaloids”
Tetrahedron Lett. **2014**, *55*, 2895–2903.
3. Yoshimura, F.; Tanino, K.; Miyashita, M.*
“Chemical Synthesis of Zoanthamine Alkaloids”
J. Synth. Org. Chem., Jpn. **2013**, *71*, 124–135.
4. Yoshimura, F.; Tanino, K.; Miyashita, M.*
“Total Synthesis of Zoanthamine Alkaloids”
Acc. Chem. Res. **2012**, *45*, 746–755.
5. Rivkin, A.; Cho, Y. S.; Gabarda, A. E.; Yoshimura, F.; Danishefsky, S. J.*
“Application of Ring-Closing Metathesis Reactions in the Synthesis of Epothilones”
J. Nat. Prod. **2004**, *67*, 139–143.

PATENTS

1. Sakaguchi, K.; Tanino, K.; Chuman, Y.; Yoshimura, F.; Yagi, H.
“Protein Phosphatase Inhibitor”
PCT Int. Appl., (**2010**), WO 2010041401.
2. Danishefsky, S. J.; Rivkin, A.; Yoshimura, F.; Chou, T.-C.; Gabarda, A. E.; Dong, H.; Wu, K.; Moore, M. A.; Dorn, D.
“Synthesis of Epothilones, Intermediates thereto, Analogues and Uses thereof”
PCT Int. Appl., (**2005**), WO 2005084222.
3. Danishefsky, S. J.; Rivkin, A.; Yoshimura, F.; Gabarda, A. E.; Cho, Y. S.; Chou, T.-C.; Dong, H.
“Synthesis of Epothilones, Intermediates thereto, Analogues and Uses thereof”
PCT Int. Appl., (**2004**), WO 2004018478.

BOOKS (ENGLISH)

1. Itoh, R.; Tanino, K.; Yoshimura, F.*
“A Journey to the Total Synthesis of Brasilicardins”
Modern Natural Product Synthesis; Nakada, M., Tanino, K., Nagasawa, K., Yokoshima, S., Eds;
Springer, **2024**; pp 1–30.
2. Okada, T.; Yoshimura, F.
“Bis[5,5-dimethyl-1-(4-methylpiperazin-1-yl)-1,2,4-hexanetrionato- κ^2O, κ^4O] cobalt(II)”
Encyclopedia of Reagents for Organic Synthesis (e-EROS), **2022**,
doi: 10.1002/047084289X.rn02474

BOOKS (JAPANESE)

1. 吉村文彦, 高井和彦
“高井反応”

天然物合成で活躍した反応, 有機合成化学協会 編, 化学同人, **2011**, pp 8-9.

3. 吉村文彦, 谷野圭持

“伊藤-三枝酸化”, “オレフィン化”, “三成分連結反応”,
“光学活性アリルシランの合成と反応”, “S_N2’ および S_N2 反応”,
“Trost 酸化と TPAP 酸化”
“エポキシドのアリルアルコールへの変換とオゾン酸化”, “一重項酸素酸化”
天然物合成で活躍した反応, 有機合成化学協会 編, 化学同人, **2011**, pp 26-27; pp 28-29; pp
44-45; pp 80-81; pp 94-95; pp 118-119; pp 128-129; pp 132-133.

4. 宮下正昭, 谷野圭持, 吉村文彦

“ゾアンタミン系アルカロイドの全合成研究”
天然物全合成の最新動向, 監修 北泰行, シーエムシー出版, **2009**, pp 191-212.