

Curriculum Vitae

Yohei Shimizu

Graduate School of Pharmaceutical Sciences, Prof. Kanai Group

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Education / Career

2006.3 **BS**

Department of Pharmaceutical Sciences, The University of Tokyo

Under the supervision of Prof. Masakatsu Shibasaki

2008.3 **Master**

Graduate School of Pharmaceutical Sciences, The University of Tokyo

Under the supervision of Prof. Masakatsu Shibasaki

2011.3 **Ph.D.**

Graduate School of Pharmaceutical Sciences, The University of Tokyo

Under the supervision of Prof. Masakatsu Shibasaki (2008.3-2010.3)

Under the supervision of Prof. Motomu Kanai (2010.4-2011.3)

2011.4-present **Assistant Professor**

Graduate School of Pharmaceutical Sciences, The University of Tokyo (Prof.

Motomu Kanai)

2012.7-2012.9 **Visiting Scientist**

Department of Chemistry, University of Cambridge

Under the supervision of Prof. Matthew J. Gaunt

Fellowship & Grants

2008.4-2011.3 Research Fellow of the Japan Society for the Promotion of Sciences (DC1)

2011.4-2013.3 Grant-in-Aid for Research Activity Start-up from JSPS

2013.4-2015.3 Grant-in-Aid for Young Scientists (B) from JSPS

2015.4-(2018.3) Grant-in-Aid for Scientific Research (C) from JSPS

2016.12-(2017.11) The research grant of Astellas Foundation for Research on Metabolic Disorders

Awards

Best Poster Prize @ Frontiers in Chemistry, Armenia (ArmChemFront 2013)

TORAY Award in Synthetic Organic Chemistry, Japan (2015)

Membership

Pharmaceutical Society of Japan

Society of Synthetic Organic Chemistry of Japan

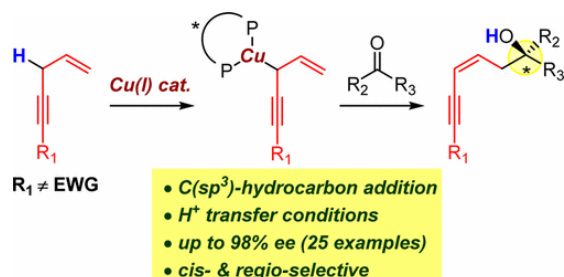
The Chemical Society of Japan

Publication

1. Copper(I)-Catalyzed Enantioselective Addition of Enynes to Ketones

X.-F. Wei, X.-W. Xie, **Y. Shimizu,*** M. Kanai*

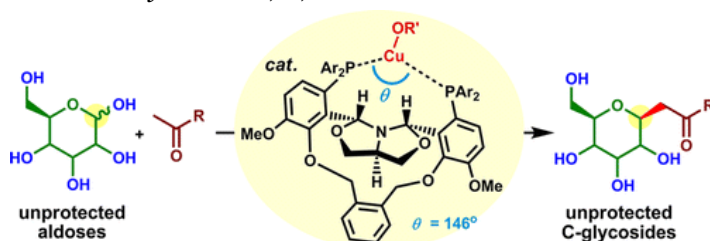
J. Am Chem. Soc. **2017**, *139*, xxx-xxx. DOI: 10.1021/jacs.7b01254



2. Copper(I)-Catalyzed Dehydrative C-Glycosidation of Unprotected Pyranoses with Ketones

X.-F. Wei, S.-L. Shi, X.-W. Xie, **Y. Shimizu,*** M. Kanai*

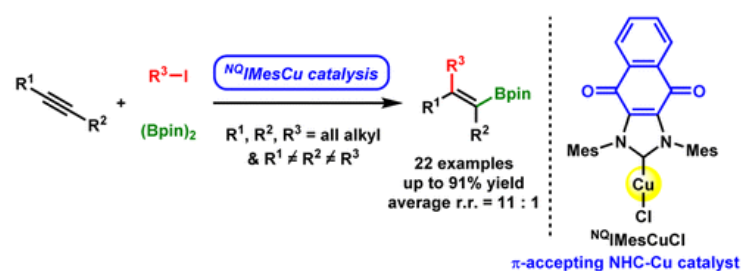
ACS Catalysis **2016**, *6*, 6718-6722. DOI: 10.1021/acscatal.6b02106



3. Ligand-Enabled, Copper-Catalyzed Regio- and Stereoselective Synthesis of Trialkylsubstituted Alkenylboronates from Unactivated Internal Alkynes

T. Itoh, **Y. Shimizu,** M. Kanai*

J. Am Chem. Soc. **2016**, *138*, 7528-7531. DOI: 10.1021/jacs.6b04646



*Featured by Department News

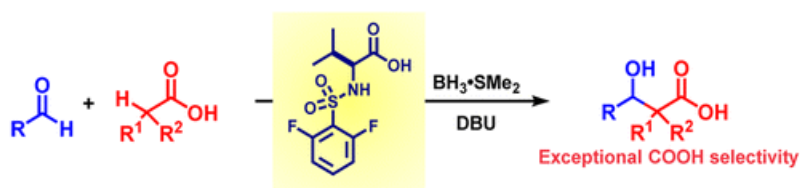
(<http://www.f.u-tokyo.ac.jp/news.html?key=1465524032>)

*Most read articles (1 month) (2016/June) of *J. Am. Chem. Soc.*

4. Ligand Promoted, Boron Mediated Chemoselective Carboxylic Acid Aldol Reaction

H. Nagai, Y. Morita, **Y. Shimizu,*** M. Kanai*

Org. Lett. **2016**, *18*, 2276-2279. DOI: 10.1021/acs.orglett.6b00914

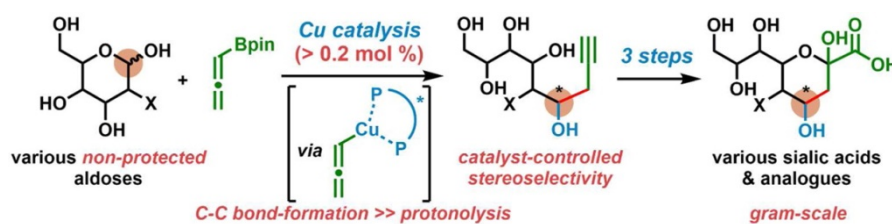


*Featured by SYNFACTS: Synfacts **2016**, *12*, 734. DOI:10.1055/s-0035-1562319

5. An Expedient Synthesis of Sialic Acid Derivatives by Copper(I)-Catalyzed Stereodivergent Propargylation of Unprotected Aldoses

X.-F. Wei, **Y. Shimizu**,* M. Kanai*

ACS Cent. Sci. **2016**, *2*, 21-26. DOI: 10.1021/acscentsci.5b00360



*Selected as cover picture.

*Highlighted on *ACS Central Science* (First Reactions) S. Hong, M. J. Krische *ACS Cent. Sci.* **2016**, *2*, 12-13. DOI:10.1021/acscentsci.6b00002

*Most read articles (1 month) (2016/January) of *ACS Central Science*

*Most read articles (12 months) (2016/May-Sep) of *ACS Central Science*

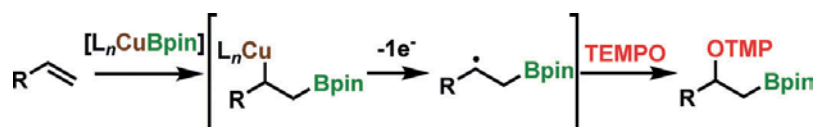
*Featured by Univ. of Tokyo press release

(http://www.f.u-tokyo.ac.jp/~kanai/news/wei_press.pdf)

6. Cu-Catalyzed Oxyboration of Unactivated Alkenes

T. Itoh, T. Matsueda, **Y. Shimizu**,* M. Kanai*

Chem. Eur. J. **2015**, *21*, 15955-15959. DOI:10.1002/chem.201503329

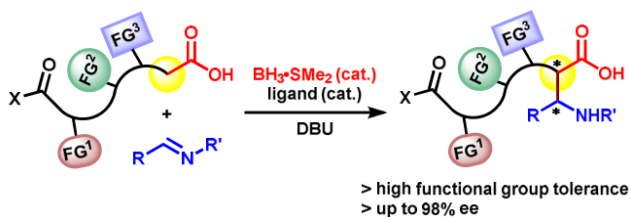


*Featured by SYNFACTS: Synfacts **2016**, *12*, 79. DOI: 10.1055/s-0035-1561019

7. Chemoselective Boron-Catalyzed Nucleophilic Activation of Carboxylic Acids for Mannich-Type Reactions

Y. Morita, T. Yamamoto, H. Nagai, **Y. Shimizu**,* M. Kanai *

J. Am. Chem. Soc. **2015**, *137*, 7075-7078. DOI:10.1021/jacs.5b04175



*Featured by UTokyo Research

(<http://www.u-tokyo.ac.jp/ja/utokyo-research/research-news/new-carboxylic-acid-selective-carbon-carbon-bond-forming-reactions.html>,

<http://www.u-tokyo.ac.jp/en/utokyo-research/research-news/new-carboxylic-acid-selective-carbon-carbon-bond-forming-reactions.html>), Department News

(<http://www.f.u-tokyo.ac.jp/news.html?key=1433120385>), Chem-Station

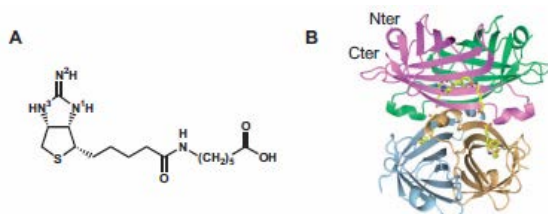
(<http://www.chem-station.com/blog/2015/07/activationcarboxylicacid.html>),

SYNFORM: Synform **2015/10**, A140–A143. DOI: 10.1055/s-0035-1560166

8. Structure-based design of a streptavidin mutant specific for an artificial biotin analogue

T. Kawato,^a E. Mizohata,^a **Y. Shimizu,^a** T. Meshizuka, T. Yamamoto, N. Takasu, M. Matsuoka, H. Matsumura, T. Kodama, M. Kanai, H. Doi,* T. Inoue,* A. Sugiyama*
J. Biochem. **2015**, *6*, 467-475. DOI:10.1093/jb/mvv004

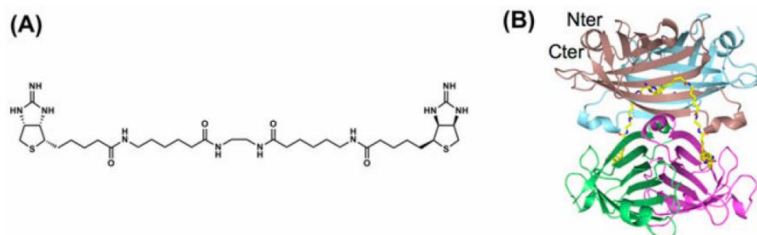
^aThese authors contributed equally to this work.



9. Structure-based design and synthesis of a bivalent iminobiotin analog showing strong affinity toward a low immunogenic streptavidin mutant

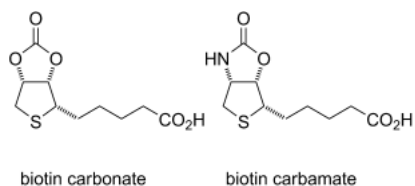
T. Kawato,^a E. Mizohata,^a **Y. Shimizu,^a** T. Meshizuka, T. Yamamoto, N. Takasu, M. Matsuoka, H. Matsumura, T. Kodama, M. Kanai, H. Doi,* T. Inoue,* A. Sugiyama*
Biosci. Biotechnol. Biochem. **2015**, *79*, 640-642. DOI:10.1080/09168451.2014.991692

^aThese authors contributed equally to this work.



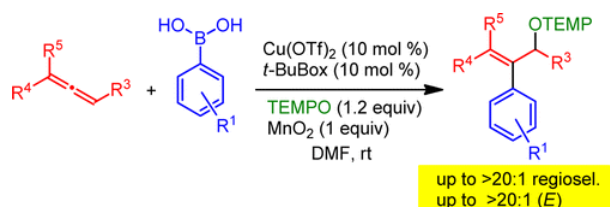
10. Design and Synthesis of biotin analogues reversibly binding with streptavidin

T. Yamamoto, K. Aoki, A. Sugiyama, H. Doi, T. Kodama, **Y. Shimizu,*** M. Kanai*
Chem. Asian J. **2015**, *10*, 1071-1078. DOI: 10.1002/asia.201500120



11. Copper-Catalyzed Regio- and Stereoselective Intermolecular Three-Component Oxyarylation of Allenes

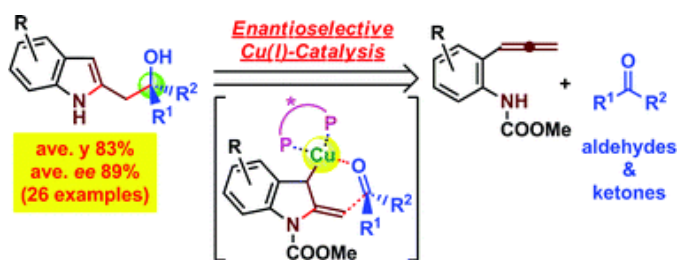
T. Itoh, **Y. Shimizu,*** M. Kanai*
Org. Lett. **2014**, *16*, 2736-2739.



*Featured by SYNFACTS: Synfacts **2014**, *10*, 733.

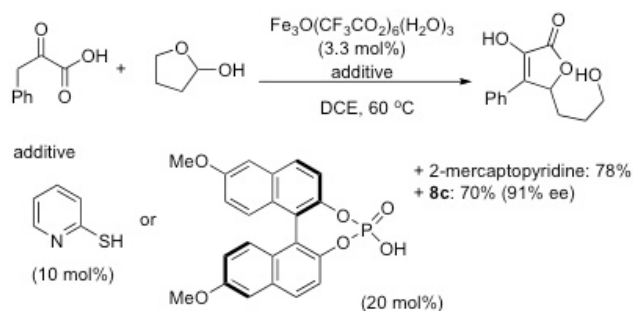
12. Catalytic enantioselective synthesis of 2-(2-hydroxyethyl)indole scaffolds via consecutive intramolecular amido-cupration of allenes and asymmetric addition of carbonyl compounds

P. K. Chikkade, **Y. Shimizu,** M. Kanai*
Chem. Sci. **2014**, *5*, 1585-1590.



13. A Catalytic C-C Bond-Formation with Minimal Use of Protecting Groups: Construction of Functionalized Isotetronic Acid Derivatives

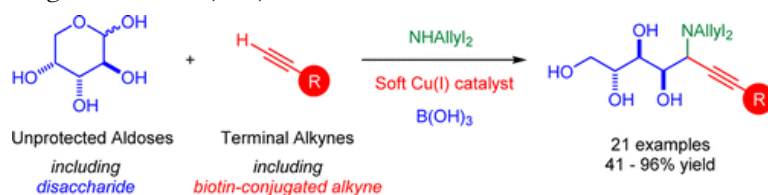
Y. Shimizu,* K. Yasuda, M. Kanai*
HETEROCYCLES **2014**, *88*, 919-927.



14. Catalytic Anomeric Aminoalkynylation of Unprotected Aldoses

Y. Kimura, S. Ito, **Y. Shimizu**, M. Kanai*

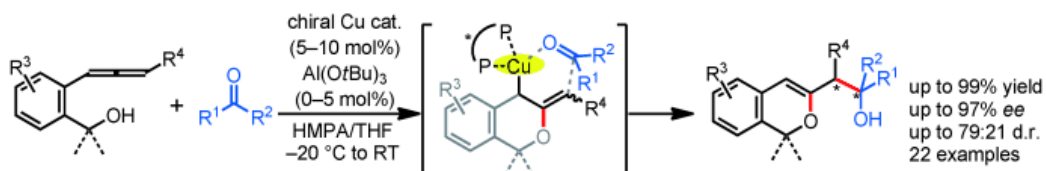
Org. Lett. **2013**, *15*, 4130-4133.



15. *In situ* Catalytic Generation of Allylcopper Species for Asymmetric Allylation: Toward 1H-Isochromene Skeletons

J. Kawai, P. K. Chikkade, **Y. Shimizu**,* M. Kanai*

Angew. Chem. Int. Ed. **2013**, *52*, 7177-7180.

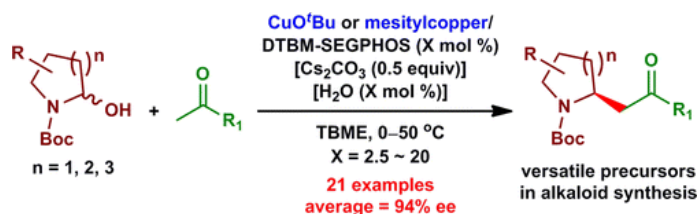


*Featured by SYNFACTS: *Synfacts* **2013**, *9*, 1080.

16. Copper(I)-Catalyzed Enantioselective Incorporation of Ketones to Cyclic Hemiaminals for the Synthesis of Versatile Alkaloid Precursors

S. -L. Shi, X. -F. Wei, **Y. Shimizu**, M. Kanai*

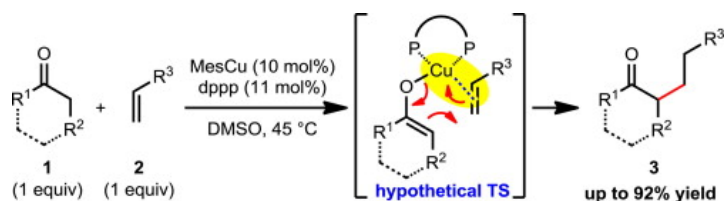
J. Am. Chem. Soc. **2012**, *134*, 17019-17022.



17. Cu(I)-catalyzed α -alkylation of ketones with styrene derivatives

S. Majima, **Y. Shimizu**,* M. Kanai*

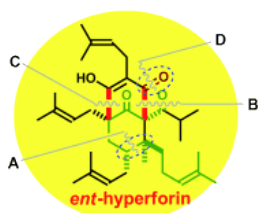
Tetrahedron Lett. **2012**, *53*, 4381-4384.



18. Catalytic Asymmetric Total Synthesis of *ent*-Hyperforin

Y. Shimizu, S.-L. Shi, H. Usuda, M. Kanai,* M. Shibasaki*

Angew. Chem. Int. Ed. **2010**, *49*, 1103-1106.

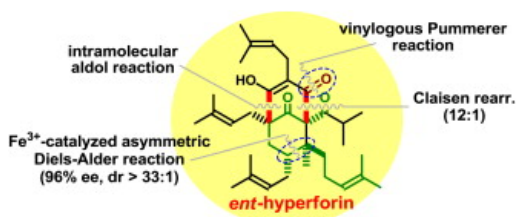


*Featured by SYNFACTS: *Synfacts* **2010**, *5*, 510.

19. The First Catalytic Asymmetric Total Synthesis of *ent*-Hyperforin

Y. Shimizu, S.-L. Shi, H. Usuda, M. Kanai, M.* Shibasaki*

Tetrahedron **2010**, *66*, 6569-6584.



20. Catalytic Asymmetric Synthesis of R207910

Y. Saga, R. Motoki, S. Makino, **Y. Shimizu**, M. Kanai,* M. Shibasaki*

J. Am. Chem. Soc. **2010**, *132*, 7905-7907.

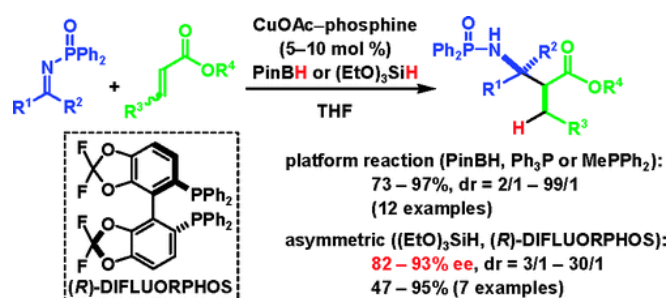
Y-catalyzed enantioselective proton migration



21. Asymmetric Reductive Mannich Reaction to Ketimines Catalyzed by a Cu(I) Complex

Y. Du, L. W. Xu, **Y. Shimizu**, K. Oisaki, M. Kanai,* M. Shibasaki*

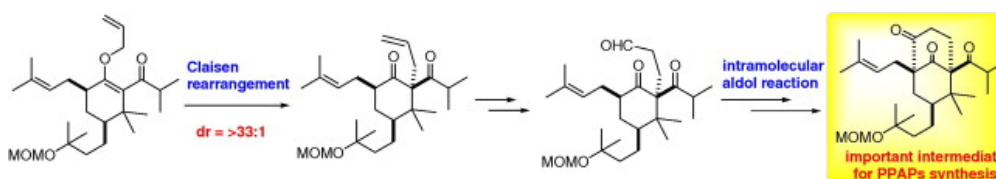
J. Am. Chem. Soc. **2008**, *130*, 16146-16147.



22. A new approach for the construction of a highly congested bicyclic system in polycyclic polyprenylated acylphloroglucinols (PPAPs)

Y. Shimizu, A. Kuramochi, H. Usuda, M. Kanai,* M. Shibasaki*

Tetrahedron Lett. **2007**, *48*, 4173-4177.



Accounts and Review

1. M. Kanai, S. Matsunaga, K. Oisaki, Y. Shimizu, *J. Synth. Org. Chem. Jpn.* **2013**, *71*, 433

2. ファルマシア 49 (7) 695 「有機触媒の力 カルボニル - オレフィンメタセシス」

3. Recent progress in copper-catalyzed difunctionalization of unactivated carbon-carbon multiple bonds

Y. Shimizu*, M. Kanai*

Tetrahedron Lett. **2014**, *55*, 3727-3737.

4. Catalytic Asymmetric Addition Reactions of Cu(I)-Conjugated Soft Carbon Nucleophiles

X.-F. Wei, **Y. Shimizu**, M. Kanai*

Topics in Organometallic Chemistry **2015**, *58*, 169-182. DOI: 10.1007/3418_2015_163

Lectures

1. Copper-Catalyzed C-C Bond Forming Reactions Utilizing Its “Soft” Characteristics

14.07.14 @ University of Alberta, Edmonton, Canada

Hosted by Professor Dennis Hall

2. 保護基フリー合成を目指した化学選択的反応の開発

15.10.04 @ 有機触媒若手セミナー (名古屋)

3. 触媒の特性を活かした化学選択的反応の開発

16.11.05 @ Hoshi University

第 40 回 星薬科大学大学院研究科助手会・大学院自治会 合同公開セミナー (invited)

4. ホウ素触媒によるカルボン酸の化学選択的求核的活性化法の開発

17.03.25 @ 有機合成化学の若い力 日本薬学会 第 137 年会 (仙台)

References

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Microbial Chemistry Research Center

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7-3-1, Hongo, Bunkyo-ku, Tokyo 113-0033

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E-mail: kanai@mol.f.u-tokyo.ac.jp