

## Publication List of Motomu Kanai

- (1) "An Expeditious Total Synthesis of Dolastatin 10" Kiyoshi Tomioka, Motomu Kanai, and Kenji Koga, *Tetrahedron Letters*, **32**, (21), 2395-2398 (1991).
- (2) "Enantioselective Conjugate Addition of Organocuprate Using a Chiral Amidophosphine Ligand" Motomu Kanai, Kenji Koga, and Kiyoshi Tomioka, *Tetrahedron Letters*, **33**, (37), 7193-7196 (1992).
- (3) "Solvent Effect and NMR Behavior in a Chiral Amidophosphine Mediated Reaction of Organocuprate with Chalcone" Motomu Kanai, Kenji Koga, and Kiyoshi Tomioka, *J. Chem. Soc., Chem. Commun.*, (16), 1248-1249 (1993).
- (4) "Asymmetric Conjugate Addition of Organocopper-Amidophosphine Reagents to Cycloalkenones" Motomu Kanai and Kiyoshi Tomioka, *Tetrahedron Letters*, **35**, (6), 895-898 (1994).
- (5) "Origin of Regioselectivity in Electrophilic Reaction of Ambident Enaldimines" Kiyoshi Tomioka, Tetsuji Okamoto, Motomu Kanai and Hiroshi Yamataka, *Tetrahedron Letters*, **35**, (12), 1891-1892 (1994).
- (6) "Asymmetric Conjugate Addition of Organomagnesium Cuprates Controlled by Stoichiometric Amount of Chiral Phosphine" Motomu Kanai and Kiyoshi Tomioka, *Tetrahedron Letters*, **36** (24), 4273-4274 (1995).
- (7) "Catalytic Asymmetric Conjugate Addition of Grignard Reagents Controlled by Copper(I)-Chiral Bidentate Phosphine Complex" Motomu Kanai and Kiyoshi Tomioka, *Tetrahedron Letters*, **36** (24), 4275-4278 (1995).
- (8) "Asymmetric Conjugate Addition Reaction of Organocopper Based on Metal Differentiating Coordination. (Review in Japanese)" Motomu Kanai and Kiyoshi Tomioka, *Organometallic News*, **2**, 44-49 (1995).
- (9) "Diastereoselective Thiophenol Addition to (S)-N- $\alpha,\beta$ -Unsaturated Carbonyl- $\gamma$ -trityloxy-methyl- $\gamma$ -butyrolactams" Kiyoshi Tomioka, Aki Muraoka, and Motomu Kanai, *J. Org. Chem.*, **60** (19), 6188-6190 (1995).
- (10) "Enantioselective Reaction of An Imine with Methylolithium Catalyzed by A Chiral Ligand" Isao Inoue, Mitsuru Shindo, Kenji Koga, Motomu Kanai, and Kiyoshi Tomioka, *Tetrahedron: Asymmetry*, **6**, (10), 2527-2533 (1995).
- (11) "Conformational Preference and Diastereoselectivity of (S)-N-( $\alpha,\beta$ -Unsaturated Carbonyl)- $\gamma$ -trityloxymethyl- $\gamma$ -butyrolactam" Motomu Kanai, Aki Muraoka, Takanori Tanaka, Masami Sawada, Nobuo Ikota and Kiyoshi Tomioka, *Tetrahedron Letters*, **36** (51), 9349-9352 (1995).
- (12) "Theoretical Calculation-Based Reproduction of Thermodynamic, Kinetic Behaviors and Cytotoxicity of Azasteganes. (Special Issue for the Memory of Prof. Yoshio Ban)" Kiyoshi Tomioka, Motomu Kanai, and Nobuo Ikota, *Heterocycles*, **42** (1), 43-45 (1995).

- (13) "Asymmetric Conjugate Addition Reaction of Organometallic Reagents (Review in Japanese)" Motomu Kanai and Kiyoshi Tomioka, *Kagaku*, **51** (1), 64-65 (1996).
- (14) "Catalytic Asymmetric Conjugate Addition Reaction of Organocopper (Review in Japanese)" Motomu Kanai and Kiyoshi Tomioka, *Farumasia*, **32** (2), 171-174 (1996).
- (15) "Catalytic Asymmetric Conjugate Addition Reaction of Organocopper Reagents (Review in Japanese)" Motomu Kanai, Yuichi Nakagawa, and Kiyoshi Tomioka, *J. Syn. Org. Chem. Jpn.*, **54** (6), 474-480 (1996).
- (16) "Chiral Ligand Controlled Enantioselective Opening of Oxirane and Oxetane" Masashi Mizuno, Motomu Kanai, Akira Iida and Kiyoshi Tomioka, *Tetrahedron: Asymmetry*, **7** (9), 2483-2484 (1996).
- (17) "Structural Requirements of External, Chiral Amidophosphine Ligand for Asymmetric Reaction of Organocopper Reagent" Yuichi Nakagawa, Motomu Kanai, Yasuo Nagaoka, and Kiyoshi Tomioka, *Tetrahedron Letters*, **37** (43), 7805-7808 (1996).
- (18) "A Ternary Complex-Reagent for An Asymmetric Reaction of Lithium Ester Enolates with Imines" Hiroki Fujieda, Motomu Kanai, Takeshi Kambara, Akira Iida and Kiyoshi Tomioka *J. Am. Chem. Soc.*, **117** (8), 2060-2061 (1997).
- (19) "Asymmetric Addition Reaction of Phenyllithium to 1,2-Ethylenediimine with An Aid of A Chiral Ligand" Daisuke Taniyama, Motomu Kanai, Akira Iida and Kiyoshi Tomioka, *Chem. Pharm.Bull.*, **45** (10) 1705-1707 (1997).
- (20) "An External Chiral Ligand Controlled Enantioselective Opening of Oxirane and Oxetane By Organolithiums" Masashi Mizuno, Motomu Kanai, Akira Iida, and Kiyoshi Tomioka, *Tetrahedron*, **53**, 10699-10708 (1997).
- (21) "Varying the Size of Multivalent Ligands: The Dependence of Concanavalin A Binding on Neoglycopolymers Length" Motomu Kanai, Kathleen H. Mortell, Lauara L. Kiessling *J. Am. Chem. Soc.*, **119**, 9931-9932 (1997).
- (22) "Enantioselective Addition of Methylolithium to 2-Furaldehyde Imine with the Aid of Chiral Ligand" Daisuke Taniyama, Motomu Kanai, Akira Iida, Kiyoshi Tomioka *Heterocycles*, 46165-168 (1997).
- (23) "Enantioselective Addition of Thiazolylolithium to Aldimines with the Aid of Chiral Ligand. Asymmetric Synthesis of (*S*)-DOE, a Component of Marine Natural Product, Dolastatin 10" Kiyoshi Tomioka, Maki Satoh, Daisuke Taniyama, Motomu Kanai, and Akira Iida, *Heterocycles*, **47**, 77-80 (1998).
- (24) "An External Chiral Amidophosphine Ligand for Asymmetric Conjugate Addition of Organocopper" Yuichi Nakagawa, Motomu Kanai, Yasuo Nagaoka, and Kiyoshi Tomioka *Tetrahedron* **54**, 10295-10307 (1998).

- (25) "Structural Requirements of a Chiral Ligand for the Catalytic Asymmetric Addition of Thiophenol to  $\alpha,\beta$ -Unsaturated Esters" Kiyoshi Tomioka, Manabu Okuda, Katsumi Nishimura, Shino Manabe, Motomu Kanai, Yasuo Nagaoka, and Kenji Koga *Tetrahedron Lett.* **39**, 2141-2144 (1998).
- (26) "Linking BINOL: C<sub>2</sub>-symmetric Ligands for Investigations on Asymmetric Catalysis" Erasmus M. Vogl, Shigeki Matsunaga, Motomu Kanai, Takehiko Iida, and Masakatsu Shibasaki *Tetrahedron Lett.* **39**, 7917-7920 (1998).
- (27) "Catalytic Asymmetric Michael Addition of Nitromethane to Enones Controlled by (R)-LPB" Ken Funabashi, Yoshinobu Saida, Motomu Kanai, Takayoshi Arai, Hiroaki Sasai, and Masakatsu Shibasaki *Tetrahedron Lett.* **39**, 7557-7558 (1998).
- (28) "Probing Low Affinity and Multivalent Interactions with Surface Plasmon Resonance: Ligands for Concanavalin A" David A. Mann, Motomu Kanai, Dustin J. Maly, and Laura Kiessling *J. Am. Chem. Soc.*, **120**, 10575-10582 (1998).
- (29) "Catalytic Enantioselective Conjugate Addition of Grignard Reagents to Cyclic  $\alpha,\beta$ -Unsaturated Carbonyl Compounds" Motomu Kanai, Yuichi Nakagawa, Kiyoshi Tomioka *Tetrahedron* **55**, 3843-3854 (1999).
- (30) "An Asymmetric Conjugate Addition Reaction of Lithium Organocopper Reagent Controlled by a Chiral Amidophosphine" Motomu Kanai, Yuichi Nakagawa, Kiyoshi Tomioka *Tetrahedron* **55**, 3831-3842 (1999).
- (31) "Catalytic Asymmetric Addition of Diphenylphosphine oxide to Cyclic Imines" Koichi Yamakoshi, Simon, J. Harwood, Motomu Kanai, Masakatsu Shibasaki *Tetrahedron Lett.* **40**, 2565-2568 (1999).
- (32) "A New Bifunctional Asymmetric Catalysis: An Efficient Catalytic Asymmetric Cyanosilylation of Aldehydes" Yoshitaka Hamashima, Daisuke Sawada, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.*, **121**, 2641-2642 (1999).
- (33) "Development of Lewis-Acid Lewis Base Bifunctional Asymmetric Catalyst" Motomu Kanai, Yoshitaka Hamashima, Masakatsu Shibasaki *Farumasia* **35**, 690-694 (1999).
- (34) "Direct Chlorohydrin and Acetoxy Alcohol Synthesis from Olefins Promoted by a Lewis Acid, Bis(trimethylsilyl) Peroxide and (CH<sub>3</sub>)<sub>3</sub>SiX" I. Sakurada, S. Yamasaki, R. Goetlich, T. Iida, M. Kanai, and M. Shibasaki *J. Am. Chem. Soc.* **122**, 1245-1246 (2000).
- (35) "Dichlorotin Oxide-catalyzed New Direct Functionalization of Olefins: Synthesis of trans  $\beta$ -Azidohydrins and 1,2-Diols" I. Sakurada, S. Yamasaki, M. Kanai and M. Shibasaki *Tetrahedron Lett.*, **41**, 2415-2418 (2000).
- (36) "Design of a New Bifunctional Asymmetric Catalyst from Carbohydrates: Application to Catalytic Asymmetric Cyanosilylation of Aldehydes and Acetophenone" M. Kanai, Y. Hamashima and M. Shibasaki *Tetrahedron Lett.*, **41**, 2405-2409 (2000).

- (37) "A Catalytic Asymmetric Strecker-Type Reaction: Interesting Reactivity Difference between TMSCN and HCN" M. Takamura, Y. Hamashima, H. Usuda, M. Kanai and M. Shibasaki *Angew. Chem. Int. Ed.* **2000**, *39*, 1650-1652.
- (38) "Asymmetric Reissert-type Reaction Promoted by Bifunctional Catalyst" M. Takamura, K. Funabashi, M. Kanai, and M. Shibasaki *J. Am. Chem. Soc.*, **122**, 6327-6328 (2000).
- (39) "Catalytic Enantioselective Cyanosilylation of Ketones" Y. Hamashima, M. Kanai, and M. Shibasaki *J. Am. Chem. Soc.*, **122**, 7412-7413 (2000).
- (40) "Highly Enantioselective Cyanosilylation of Aldehydes Catalyzed by a Lewis Acid-Lewis Base Bifunctional Catalyst" Y. Hamashima, D. Sawada, H. Nogami, M. Kanai, and M. Shibasaki *Tetrahedron* **2001**, *57*, 805-814.
- (41) "Enantioselective Total Synthesis of Epothilone A and B Using Multifunctional Asymmetric Catalysis" D. Sawada, M. Kanai and M. Shibasaki *J. Am. Chem. Soc.*, **122**, 10521-10532 (2000)
- (42) "A Catalytic Asymmetric Strecker-Type Reaction Promoted by Lewis Acid-Lewis Base Bifunctional Catalyst" M. Takamura, Y. Hamashima, H. Usuda, M. Kanai, and M. Shibasaki *Chem. Pharm. Bull.*, **48**, 1586-1592 (2000)
- (43) "Enantioselective Strecker-type reaction promoted by polymer-supported bifunctional catalyst" H. Nogami, S. Matsunaga, M. Kanai and M. Shibasaki *Tetrahedron Lett.*, **42**, 279-283 (2001)
- (44) "Catalytic enantioselective cyanosilylation of ketones: improvement of enantioselectivity and catalyst turn-over by ligand tuning" Y. Hamashima, M. Kanai and M. Shibasaki *Tetrahedron Lett.*, **2001**, *42*, 691-694.
- (45) "Novel Multiaction of Zr Catalyst: One-Pot Synthesis of  $\beta$ -Cyanohydrins from Olefins" S. Yamasaki, M. Kanai, M. Shibasaki *J. Am. Chem. Soc.* **2001**, *123*, 1256-1257.
- (46) "Anti- and Syn-Selective Cyanosilylation Reactions Promoted by a Sugar-Based Bifunctional Catalyst: Stereoselective Synthesis of Essential Building Blocks for HIV Protease Inhibitor and Bestatin" Govindaswamy Manickam, Hiroyuki Nogami, Motomu Kanai, Harald Groeger, Masakatsu Shibasaki *Synlett* **2001**, *5*, 617-620.
- (47) "Multifunctional Asymmetric Catalysis" M. Shibasaki, M. Kanai *Chem. Pharm. Bull.* **49**, 511-524 (2001).
- (48) "Catalytic Enantioselective Reissert-Type Reaction: Development and Application to the Synthesis of a Potent NMDA Receptor Antagonist (-)-L-689,560 Using a Solid-Supported Catalyst" M. Takamura, K. Funabashi, M. Kanai, and M. Shibasaki *J. Am. Chem. Soc.*, **123**, 6801-6808 (2001)
- (49) "Zirconium Alkoxides in Catalysis" S. Yamasaki, M. Kanai, and M. Shibasaki *Chem. Eur. J.*, **7**, 4066-4073 (2001)
- (50) "Development and Application of Enantioselective Lewis Acid-Lewis Base Bifunctional

Catalyst" M. Kanai, Y. Hamashima, M. Takamura, and M. Shibasaki *Journal of Synthetic Organic Chemistry, Japan*, **59**, 767-778 (2001)

- (51) "Switching Enantiofacial Selectivities Using One Chiral Source: Catalytic Enantioselective Synthesis of the Key Intermediate for (20S)-Camptothecin Family by (S)-Selective Cyanosilylation of Ketones" K. Yabu, S. Masumoto, S. Yamasaki, Y. Hamashima, M. Kanai, W. Du, D. P. Curran, and M. Shibasaki *J. Am. Chem. Soc.*, **123**, 9908-9909 (2001)
- (52) "Enantioselective Construction of Quaternary Stereocenter through a Reissert-Type Reaction Catalyzed by an Electronically Tuned Bifunctional Catalyst: Efficient Synthesis of Various Biologically Significant Compounds" K. Funabashi, H. Ratni, M. Kanai, and M. Shibasaki *J. Am. Chem. Soc.*, **123**, 10784-10785 (2001)
- (53) "Development and Application of Enantioselective Lewis Acid-Lewis Base Bifunctional Catalyst" M. Kanai *Yakugaku Zasshi*, **121**, 949-960 (2001).
- (54) "Studies toward the Total Synthesis of Garsubellin A: A Concise Synthesis of the 18-epi-Tricyclic Core" H. Usuda, M. Kanai, M. Shibasaki *Org. Lett.*, **4**, 859-862 (2002)
- (55) "Studies toward the total synthesis of garsubellin A: Synthesis of 8-deprendyl-garsubellin A" H. Usuda, M. Kanai, M. Shibasaki *Tetrahedron Lett.*, **43**, 3621-3624 (2002)
- (56) "Control of Multivalent Interactions by Binding Epitope Density" C. W. Cairo, J. E. Gestwicki, M. Kanai, L. L. Kiessling *J. Am. Chem. Soc.*, **124**, 1615-1619 (2002).
- (57) "Practical synthesis of chiral ligands for catalytic enantioselective cyanosilylation of ketones" Shuji Masumoto, Kazuo Yabu, Motomu Kanai and Masakatsu Shibasaki *Tetrahedron Lett.*, **43**, 2919-2922 (2002).
- (58) "Studies toward practical synthesis of (20S)-camptothecin family through catalytic enantioselective cyanosilylation of ketones: improved catalyst efficiency by ligand-tuning" Kazuo Yabu, Shuji Masumoto, Motomu Kanai, Dennis P. Curran and Masakatsu Shibasaki *Tetrahedron Lett.*, **43**, 2923-2926 (2002).
- (59) "Recent progress in asymmetric two-center catalysis" M. Shibasaki, M. Kanai, K. Funabashi *Chem. Commun.* 1989-1999 (2002).
- (60) "A General Catalytic Allylation Using Allyltrimethoxysilane" Shingo Yamasaki, Kunihiko Fujii, Reiko Wada, Motomu Kanai, and Masakatsu Shibasaki *J. Am. Chem. Soc.* **124**, 6536-6537 (2002).
- (61) "Efficient Synthesis of Antihyperglycemic (S)- $\alpha$ -Aryloxy- $\beta$ -phenoxypropionic Acid Using a Bifunctional Asymmetric Catalyst" Takamura, M.; Yanagisawa, H.; Kanai, M.; Shibasaki, M. *Chem. Pharm. Bull.* **50**, 1118-1121 (2002).
- (62) "Dramatic Switching of Protein Kinase C Agonist/Antagonist Activity by Modifying the 12-Ester Side Chain of Phorbol Esters" Wada, R.; Suto, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **124**, 10658-10659 (2002).

- (63) "Enhancement of Lewis Acidity by Ligand-Defined Metal Geometry: A Catalytic Allylation of Aldehydes with Allyltrimethylsilane" Kanai, M.; Kuramochi, A.; Fujii, K.; Shibasaki, M. *Synthesis*, 1956-1958 (2002).
- (64) "A Practical Synthesis of (S)-Oxybutynin" Masumoto, S.; Suzuki, M.; Kanai, M.; Shibasaki, M. *Tetrahedron Lett.* **2002**, 43, 8647-8651.
- (65) "Catalytic Enantioselective Synthesis of (20S)-Camptothecin Intermediates Using Cyanosilylation of Ketones Promoted by D-Glucose-Derived Lanthanide Catalyst" Yabu, K.; Masumoto S.; Kanai, M.; Du, W.; Curran, D. P.; Shibasaki, M. *Heterocycles*, **59**, 369-385 (2003).
- (66) "Efficient Synthesis of a Key Intermediate of Neurokinin Receptor Antagonists Using a Bifunctional Asymmetric Catalyst" Takamura, M.; Yabu, K.; Nishi, T.; Yanagisawa, H.; Kanai, M.; Shibasaki, M. *Synlett* **2003**, 353.
- (67) "Application of the Lewis Acid-Lewis Base Bifunctional Asymmetric Catalysts to Pharmaceutical Syntheses: Streoselective Chiral Building Block Syntheses of HIV Protease Inhibitor and  $\beta$ 3-Adrenergic Receptor Agonist" Nogami, H.; Kanai, M. Shibasaki, M. *Chem. Pharm. Bull.* **2003**, 51, 702-709.
- (68) "Formal Catalytic Asymmetric Total Synthesis of Fostriecin" Fujii, K.; Maki, K.; Kanai, M.; Shibasaki, M. *Org. Lett.* **2003**, 5, 733-736.
- (69) "Catalytic Enantioselective Strecker Reaction of Ketoimines" Masumoto, S.; Usuda, H.; Suzuki, M.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2003**, 125, 5634-5635.
- (70) "A New Method for the Catalytic Aldol Reaction to Ketones" Oisaki, K.; Suto, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2003**, 125, 5644-5645.
- (71) "Direct Catalytic Aldol-Type Reaction Using RCH<sub>2</sub>CN" Suto, Y; Kumagai, N.; Matsunaga, S.; Kanai, M.; Shibasaki, M. *Organic Letters* **2003**, 5, 3147-3150.
- (72) "Multicenter Strategy for the Development of Catalytic Enantioselective Nucleophilic Alkylation of Ketones: Me<sub>2</sub>Zn Addition to  $\alpha$ -Ketoesters" Funabashi K.; Jachmann, M.; Kanai, M.; Shibasaki M. *Angew. Chem. Int. Ed.* **2003**, 42, 5489-5492.
- (73) "General and practical catalytic enantioselective Strecker reaction of ketoimines: significant improvement through catalyst tuning by protic additives" Nobuki Kato, Masato Suzuki, Motomu Kanai, and Masakatsu Shibasaki *Tetrahedron Lett.* **2004**, 45, 3147-3151.
- (74) "Catalytic enantioselective Strecker reaction of ketoimines using catalytic amount of TMSCN and stoichiometric amount of HCN" Nobuki Kato, Masato Suzuki, Motomu Kanai, and Masakatsu Shibasaki *Tetrahedron Lett.* **2004**, 45, 3153-3155.
- O(75) "Identifying Specific Conformations by Using a Carbohydrate Scaffold: Discovery of Subtype-Selective LPA-Receptor Agonists and an Antagonist" Yoko Tamaruya, Masato Suzuki, Goshu Kamura, Motomu Kanai, Kotaro Hama, Kumiko Shimizu, Junken Aoki, Hiroyuki Arai, and

Masakatsu Shibasaki *Angew. Chem. Int. Ed.* **2004**, *43*, 2834-2837.

- (76) “Catalytic Enantioselective Allylboration of Ketones” Reiko Wada, Kounosuke Oisaki, Motomu Kanai, and Masakatsu Shibasaki *J. Am. Chem. Soc.* **2004**, *126*, 8910-8911.
- (77) “New Entries in Lewis Acid-Lewis Base Bifunctional Asymmetric Catalyst: Catalytic Enantioselective Reissert Reaction of Pyridine Derivatives” Eiko Ichikawa, Masato Suzuki, Kazuo Yabu, Matthias Albert, Motomu Kanai, and Masakatsu Shibasaki *J. Am. Chem. Soc.* **2004**, *126*, 11808-11809.
- (78) “Practical Synthesis of Chiral Ligands for Catalytic Enantioselective Cyanosilation of Ketones and Ketoimines” Nobuki Kato, Daisuke Tomita, Keisuke Maki, Motomu Kanai, and Masakatsu Shibasaki *J. Org. Chem.* **2004**, *69*, 6128-6130.
- (79) “Catalytic Asymmetric Synthesis of (*S*)-Oxybutynin and a Versatile Intermediate for Anitimuscarinic Agents” Shuji Masumoto, Masato Suzuki, Motomu Kanai, and Masakatsu Shibasaki *Tetrahedron* **2004**, *60*, 10497-10504.
- (80) “Challenge toward Structural Complexity Using Asymmetric Catalysis: Target-Oriented Development of Catalytic Enantioselective Diels-Alder Reaction” Hiroyuki Usuda, Akiyoshi Kuramochi, Motomu Kanai, and Masakatsu Shibasaki *Org. Lett.* **2004**, *6*, 4387-4390.
- (81) “Catalytic Enantioselective Conjugate Addition of Cyanide to  $\alpha,\beta$ -Unsaturated *N*-Acylpyrroles” Tsuyoshi Mita, Kazuki Sasaki, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2005**, *127*, 514–515.
- (82) “Enantioselective Alkenylation and Phenylation Catalyzed by a Chiral CuF Complex” Daisuke Tomita, Reiko Wada, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2005**, *127*, 4138–4139.
- (83) “New Chiral Bis(diphenylphospholane) Ligands: Design, Synthesis, and Application to Catalytic Enantioselective Aldol Reaction to Ketones” Kounosuke Oisaki, Dongbo Zhao, Yutaka Suto, Motomu Kanai, Masakatsu Shibasaki *Tetrahedron Lett.* **2005**, *46*, 4325–4329.
- (84) “Catalytic Enantioselective Synthesis of Key Intermediates for Triazol Antifungal Agents” Masato Suzuki, Nobuki Kato, Motomu Kanai, Masakatsu Shibasaki *Org. Lett.* **2005**, *7*, 2527–2530.
- (85) “Power of Cooperativity: Lewis Acid–Lewis Base Bifunctional Asymmetric Catalysis” Motomu Kanai, Nobuki Kato, Eiko Ichikawa, Masakatsu Shibasaki *Synlett* **2005**, 1491–1508.
- (86) “Catalytic Enantioselective Desymmetrization of *meso*-*N*-Acylaziridines with TMSCN” Tsuyoshi Mita, Ikuo Fujimori, Reiko Wada, Jianfeng Wen, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2005**, *127*, 11252–11253.
- (87) “Cu(I)-Catalyzed Direct Enantioselective Cross Aldol-Type Reaction of Acetonitrile” Yutaka Suto, Riichiro Tsuji, Motomu Kanai, Masakatsu Shibasaki *Org. Lett.* **2005**, *7*, 3757–3760.
- (88) “Total Synthesis of ( $\pm$ )-Garsubellin A” Akiyoshi Kuramochi, Hiroyuki Usuda, Kenzo

- Yamatsugu, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2005**, *127*, 14200–14201.
- (89) “Recent Progress in Lewis Acid-Lewis Base Bifunctional Asymmetric Catalysis” Motomu Kanai, Nobuki Kato, Eiko Ichikawa, Masakatsu Shibasaki *Pure Appl. Chem.* **2005**, *77*, 2047-2052.
- (90) “Catalyst-Controlled Asymmetric Synthesis of Fostriecin and 8-*epi*-Fostriecin” Keisuke Maki, Rie Motoki, Kunihiko Fujii, Motomu Kanai, Takayasu Kobayashi, Shinri Tamura, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2005**, *127*, 17111-17117.
- (91) “Synthetic Strategies of Fostriecin” Masakatsu Shibasaki, Motomu Kanai, *Heterocycles* **2005**, *66*, 727-741.
- (92) “Chiral, Poly(Rare-Earth Metal) Complexes in Asymmetric Catalysis” Masakatsu Shibasaki, Motomu Kanai, Shigeki Matsunaga, *Aldrichimica Acta* **2006**, *39*, 31-39.
- (93) “Catalytic Asymmetric Total Synthesis of (+)-Lactacystin” Nobuhisa Fukuda, Kazuki Sasaki, T. V. R. S. Sastry, Motomu Kanai, Masakatsu Shibasaki *J. Org. Chem.* **2006**, *71*, 1220-1225.
- (94) “Assembly State of Catalytic Modules as Chiral Switches in Asymmetric Strecker Amino Acid Synthesis” Nobuki Kato, Tsuyoshi Mita, Motomu Kanai, Buruno Therrien, Masaki Kawano, Kentaro Yamaguchi, Hiroshi Danjo, Yoshihisa, Sei, Akihiro Sato, Sanae Furusho, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2006**, *128*, 6768-6769.
- (95) “De Novo Synthesis of Tamiflu via a Catalytic Asymmetric Ring-Opening of *meso*-Aziridines with  $\text{TMN}_3$ ” Yuhei Fukuta, Tsuyoshi Mita, Nobuhisa Fukuda, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2006**, *128*, 6312-6313.
- (96) “Catalytic Enantioselective Allylation of Ketoimines” Reiko Wada, Tomoyuki Shibuguchi, Sae Makino, Kounosuke Oisaki, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2006**, *128*, 7687-7691.
- (97) “Catalytic Enantioselective Aldol Reaction of Ketones” Kounosuke Oisaki, Dongbo Zhao, Motomu Kanai, Masakatsu Shibasaki *J. Am. Chem. Soc.* **2006**, *128*, 7164-7165.
- (98) “Design and Development of Subtype-Selective LPA Ligands Based on Sugar Skeleton (Review in Japanese)” Rie Motoki, Motomu Kanai, Masakatsu Shibasaki *MedChem News* **2006**, *16*, 10-14.
- (99) “Development of Catalytic Asymmetric Reactions Using Chiral Multifunctional Rare-Earth Metal Catalyst (Review in Japanese)” Masakatsu Shibasaki, Motomu Kanai, Shigeki Matsunaga, *TCI Mail* **2006**, *131*, 2-13.
- (100) “Nucleophilic Activation of Alkenyl and Aryl Boronates by a Chiral  $\text{Cu}^{\text{I}}\text{F}$  Complex: Catalytic Enantioselective Alkenylation and Arylation of Aldehydes” Daisuke Tomita, Motomu Kanai, Masakatsu Shibasaki, *Chem. Asian. J.* **2006**, *1*, 161–166.
- (101) “Identification of Potent, Selective Protein Kinase C Inhibitors Based on a Phorbol Skeleton” Yamatsugu, K.; Motoki, R.; Kanai, M.; Shibasaki, M. *Chem. Asian. J.* **2006**, *1*, 314-321.

- (102) "Dramatic Ligand Effect in Catalytic Asymmetric Reductive Aldol Reaction of Allenic Esters to Ketones" Zhao, D.; Oisaki, K.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2006**, *128*, 14440-14441.
- (103) "Catalytic Enantioselective Alkenylation and Phenylation of Trifluoromethyl Ketones" Motoki, R.; Tomita, D.; Kanai, M.; Shibasaki, M. *Tetrahedron Lett.* **2006**, *47*, 8083-8086.
- (104) "Key Role of the Lewis Base Position in Asymmetric Bifunctional Catalysis: Design and Evaluation of a New Ligand for Chiral Polymetallic Catalysts" Fujimori, I.; Mita, T.; Maki, K.; Shiro, M.; Sato, A.; Furusho, S.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2006**, *128*, 16438-16439.
- (105) "Total Synthesis of Lactacystin and Salinosporamide A" Shibasaki, M.; Kanai, M.; Fukuda, N. *Chem. Asian J. (Focus Review)* **2007**, *2*, 20-38.
- (106) "Second Generation Catalytic Asymmetric Synthesis of Tamiflu: Allylic Substitution Route" Mita, T.; Fukuda, N.; Roca, F. X.; Kanai, M.; Shibasaki, M. *Org. Lett.* **2007**, *9*, 259-262.
- (107) "A concise synthesis of Tamiflu: third generation route via the Diels-Alder reaction and the Curtius rearrangement" Yamatsugu, K.; Kamijo, S.; Suto, Y.; Kanai, M.; Shibasaki, M. *Tetrahedron Lett.* **2007**, *48*, 1403-1406.
- (108) "Catalytic Enantioselective Mannich-type Reactions of Ketoimines" Suto, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2007**, *129*, 500-501.
- (109) "Pd-Catalyzed allylic alkylation of secondary nitroalkanes" Maki, K.; Kanai, M.; Shibasaki, M. *Tetrahedron* **2007**, *63*, 4250-4257.
- (110) "Catalytic Asymmetric Synthesis of Biologically Active Molecules" Kanai, M.; Shibasaki, M. *J. Synth. Org. Chem., Jpn.* **2007**, *65*, 439-449.
- (111) "Catalytic Enantioselective Alkylative Aldol Reaction: Efficient Multicomponent-Assembling of Dialkylzincs, Allenic Esters, and Ketones toward Highly Functionalized  $\delta$ -Lactones with Tetrasubstituted Chiral Center" Oisaki, K.; Zhao, D.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2007**, *129*, 7439-7443.
- (112) "A New Approach for the Construction of a Highly Congested Bicyclic System in Polycyclic Polyprenylated Acylphloroglucinols (PPAPS)" Shimizu, Y.; Kuramochi, A.; Usuda, H.; Kanai, M.; Shibasaki, M. *Tetrahedron Lett.* **2007**, *48*, 4173-4177.
- (113) "Toward a rational design of the assembly structure of polymetallic asymmetric catalysts: design, synthesis, and evaluation of new chiral ligands for catalytic asymmetric cyanation reactions" Fujimori, I.; Mita, T.; Maki, K.; Shiro, M.; Sato, A.; Furusho, S.; Kanai, M.; Shibasaki, M. *Tetrahedron* **2007**, *63*, 5820-5831.
- (114) "Catalytic enantioselective construction of tetrasubstituted carbons by self-assembled poly rare earth metal complexes" Shibasaki, M.; Kanai, M. *Org. Biol. Chem.* **2007**, *5*, 2027-2039.

- (115) "Copper(I) Alkoxide-Catalyzed Alkynylation of Trifluoromethyl Ketones" Motoki, R.; Kanai, M.; Shibasaki, M. *Org. Lett.* **2007**, 9, 2997-3000.
- (116) "Embryo Spacing and Implantation Timing Are Differentially Regulated by LPA3-Mediated Lysophosphatidic Acid Signaling in Mice" Hama, K.; Aoki, J.; Inoue, A.; Endo, T.; Amano, T.; Motoki, R.; Kanai, M.; Ye, X.; Chun, J.; Matsuki, N.; Suzuki, H.; Shibasaki, M.; Arai, H. *Biol. Reproduction* **2007**, 77, 954-959.
- (117) "A Method for the Synthesis of an Oseltamivir PET Tracer" Morita, M.; Sone, T.; Yamatsugu, K.; Sohtome, Y.; Matsunaga, S.; Kanai, M.; Watanabe, Y.; Shibasaki, M. *Bioorg. Med. Chem. Lett.* **2008**, 18, 600-602.
- (118) "Pharmacologic Action of Oseltamivir on the Nervous System" K. Ishii, H. Hamamoto, T. Sasaki, Y. Ikegaya, K. Yamatsugu, M. Kanai, M. Shibasaki, K. Sekimizu, *Drug Discoveries & Therapeutics*, **2008**, 2, 24-34.
- (119) "P-Glycoprotein Restricts the Penetration of Oseltamivir across the Blood-Brain Barrier" A. Ose, H. Kusuhara, K. Yamatsugu, M. Kanai, M. Shibasaki, T. Fujita, A. Yamamoto, Y. Sugiyama, *Drug Metab. Dispos.* **2008**, 36, 427-434.
- (120) "Oseltamivir Enhances Hippocampal Network Synchronization" A. Usami, T. Sasaki, N. Satoh, T. Akiba, S. Yokoshima, T. Fukuyama, K. Yamatsugu, M. Kanai, M. Shibasaki, N. Matsuki, Y. Ikegaya, *J. Pharmacol. Sci.* **2008**, 106, 659-662.
- (121) "Synthetic Strategies for Oseltamivir Phosphate" M. Shibasaki, M. Kanai *Eur. J. Org. Chem.* **2008**, 1839-1850.
- (122) "A Catalytic Enantioselective Conjugate Addition of Cyanide to Enones" Tanaka, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2008**, 130, 6072-6073.
- (123) "Cu(I)-catalyzed asymmetric allylation of ketones and ketimines" Kanai, M.; Wada, R.; Shibuguchi, T.; Shibasaki, M. *Pure Appl. Chem.* **2008**, 80, 1055-1062.
- (124) "Asymmetric Synthesis of Tertiary Alcohols and  $\alpha$ -Tertiary Amines via Cu-Catalyzed C–C Bond Formation to Ketones and Ketimines" Shibasaki, M.; Kanai, M. *Chem. Rev.* **2008**, 108, 2853-2873.
- (125) "Catalytic Conjugate Addition of Cyanide to Enones: Cooperative Catalysis of Ni(0) and Gd(OTf)<sub>3</sub>" Tanaka, Y.; Kanai, M.; Shibasaki, M. *Synlett* **2008**, 2295-2298.
- (126) "Asymmetric Reductive Mannich Reaction to Ketimines Catalyzed by a Cu(I) Complex" Du, Y.; Xu, W.; Shimizu, Y.; Oisaki, K.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2008**, 130, 16146-16147.
- (127) "Cu(I)-Catalyzed Hetero-Diels–Alder Reaction between Danishefsky-Type Siloxy Dienes and Ketones" Chen, I.-H.; Oisaki, K.; Kanai, M.; Shibasaki, M. *Org. Lett.* **2008**, 10, 5151-5154.

- (128) “A Synthesis of Tamiflu by Using a Barium-Catalyzed Asymmetric Diels–Alder-Type Reaction” Yamatsugu, K.; Yin, L.; Kamijo, S.; Kimura, Y.; Kanai, M.; Shibasaki, M. *Angew. Chem., Int. Ed.* **2009**, *48*, 1070–1076 (featured by *Synfacts* **2009**, 702).
- (129) “Limited Brain Distribution of [3*R*,4*R*,5*S*]-4-Acetamido-5-Amino-3-(1-Ethoxypropoxy)-1-Cyclohexene-1-Carboxylate Phosphate (Ro 64-0802), a Pharmacologically Active Form of Oseltamivir, by Active Efflux across the Blood-Brain Barrier Mediated by Organic Anion Transporter 3 (Oat3/*Slc22a8*) and Multidrug Resistance-Associated Protein 4 (Mrp4/*Abcc4*)” Ose, A.; Ito, M.; Kusuhsara, H.; Yamatsugu, K.; Kanai, M.; Shibasaki, M.; Hosokawa, M.; Schuetz, J. D.; Sugiyama, Y. *Drug Metab. Disp.* **2009**, *37*, 321-329.
- (130) “Two Methods for Catalytic Generation of Reactive Enolates Promoted by a Chiral Poly Gd Complex: Application to Catalytic Enantioselective Protonation Reactions” Morita, M.; Drouin, L.; Motoki, R.; Kimura, Y.; Fujimori, I.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2009**, *131*, 3858–3859 (featured by *Synfacts* **2009**, 626).
- (131) “Lysophosphatidylmethanol is a pan lysophosphatidic acid receptor agonist and is produced by autotaxin in blood” Tomoko Endo, Kuniyuki Kano, Rie Motoki1, Kotaro Hama, Shinichi Okudaira, Mayuko Ishida, Hideo Ogiso, Masayuki Tanaka, Norio Matsuki, Ryo Taguchi, Motomu Kanai, Masakatsu Shibasaki, Hiroyuki Arai, and Junken Aoki *J. Biochem.* **2009**, *146*, 283–293.
- (132) “Sequential Regulation of DOCK2 Dynamics by Two Phospholipids During Neutrophil Chemotaxis” Akihiko Nishikimi, Hideo Fukuhara, Wenjuan Su, Tsunaki Hongu, Shunsuke Takasuga, Hisashi Mihara, Qinhong Cao, Fumiuki Sanematsu, Motomu Kanai, Hiroshi Hasegawa, Yoshihiko Tanaka, Masakatsu Shibasaki, Yasunori Kanaho, Takehiko Sasaki, Michael A. Frohman, Yoshinori Fukui *Science* **2009**, *324*, 384-387.
- (133) “Design and Synthesis of Immobilized Tamiflu Analog on Resin for Affinity Chromatography” Kimura, Y.; Yamatsugu, K.; Kanai, M.; Echigo, N.; Kuzuhara, T.; Shibasaki, M. *Tetrahedron Lett.* **2009**, *50*, 3205-3208 (50<sup>th</sup> anniversary issue).
- (134) “Enantioselective Synthesis of SM-130686 Based on the Development of Asymmetric Cu(I)F Catalysis To Access 2-Oxindoles Containing a Tetrasubstituted Carbon” Tomita, D.; Yamatsugu, K.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2009**, *131*, 6946–6948.
- (135) “An alternative synthesis of Tamiflu<sup>®</sup>: a synthetic challenge and the identification of a ruthenium-catalyzed dihydroxylation route” Yamatsugu, K.; Kanai, M.; Shibasaki, M. *Tetrahedron* **2009**, *65*, 6017–6024.
- (136) “Nucleophile Generation via Decarboxylation: Asymmetric Construction of Contiguous Trisubstituted and Quaternary Stereocenters through a Cu(I)-Catalyzed Decarboxylative Mannich-Type Reaction” Yin, L.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2009**, *131*, 9610–9611 (featured by *Synfacts* **2009**, 1111).
- (137) “Catalytic Asymmetric Synthesis of Chiral Tertiary Organoboronic Esters through Conjugate Boration of β-Substituted Cyclic Enones” Chen, I.-H.; Yin, L.; Itano, W.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2009**, *131*, 11664–11665.

- (138) "Recent Progress in Asymmetric Bifunctional Catalysis Using Multimetallic Systems" Shibasaki, M.; Kanai, M.; Matsunaga, S.; Kumagai, N. *Acc. Chem. Res.* **2009**, *42*, 1117–1127.
- (139) "Catalytic Asymmetric Total Synthesis of *ent*-Hyperforin" Shimizu, Y.; Shi, S.-L.; Usuda, H.; Kanai, M.; Shibasaki, M. *Angew. Chem., Int. Ed.* **2010**, *49*, 1103–1106 (featured by *Chem. & Eng. News* 2010, Jan. 25, p 28).
- (140) "Design and Synthesis of Resin-Conjugated Tamiflu Analogs for Affinity Chromatography" Kimura, Y.; Yamatsugu, K.; Kanai, M.; Echigo, N.; Kuzuhara, T.; Shibasaki, M. *Bull. Korean Chem. Soc.* **2010**, *31*, 588–594 (dedication issued to Professor Sunggak Kim).
- (141) "Identification of Modular Chiral Bisphosphines Effective for Cu(I)-Catalyzed Asymmetric Allylation and Propargylation of Ketones" Shi, S.-L.; Xu, L.-W.; Oisaki, K.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2010**, *132*, 6638–6639.
- (142) "Catalytic Asymmetric Synthesis of R207910" Saga, Y.; Motoki, R.; Makino, S.; Shimizu, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2010**, *132*, 7905–7907.
- (143) "Catalytic Enantioselective Construction of  $\beta$ -Quaternary Carbons via a Conjugate Addition of Cyanide to  $\beta,\beta$ -Disubstituted  $\alpha,\beta$ -Unsaturated Carbonyl Compound" Tanaka, Y.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2010**, *132*, 8862–8863.
- (144) "The First Catalytic Asymmetric Total Synthesis of *ent*-Hyperforin" Shimizu, Y.; Shi, S.-L.; Usuda, H.; Kanai, M.; Shibasaki, M. *Tetrahedron* **2010**, *33*, 6569–6584.
- (145) "Copper(I)-Secondary Diamine Complex-Catalyzed Enantioselective Conjugate Boration of Linear  $\beta,\beta$ -Disubstituted Enones" Chen, I.-H.; Kanai, M.; Shibasaki, M. *Org. Lett.* **2010**, *12*, 4098–4101 (featured by *Synfacts* **2010**, 1253).
- (146) "Lewis Acid Catalyzed Benzylic C–H Bond Functionalization of Azaarenes: Addition to Enones" Komai, H.; Yoshino, T.; Matsunaga, S.; Kanai, M. *Org. Lett.* **2011**, *13*, 1706–1709.
- (147) "Recent Development in Synthetic Strategies for Oseltamivir Phosphate" Shibasaki, M.; Kanai, M.; Yamatsugu, K. *Isr. J. Chem.* **2011**, *51*, 316–328.
- (148) "Catalytic Asymmetric Ring-Opening of *meso*-Aziridines with Malonates under Heterodinuclear Rare Earth Metal Schiff Base Catalysis" Xu, Y.; Lin, L.; Kanai, M.; Matsunaga, S.; Shibasaki, M. *J. Am. Chem. Soc.* **2011**, *133*, 5791–5793.
- (149) "A Facile Pathway to Enantiomerically Enriched 3-Hydroxy-2-Oxindoles: Asymmetric Intramolecular Arylation of  $\alpha$ -Keto Amides Catalyzed by a Palladium–DifluorPhos Complex" Yin, L.; Kanai, M.; Shibasaki, M. *Angew. Chem., Int. Ed.* **2011**, *50*, 7620–7623.
- (150) "Catalytic Migratory Oxidative Coupling of Nitrones" Hashizume, S.; Oisaki, K.; Kanai, M. *Org. Lett.* **2011**, *13*, 4288–4291.
- (151) "Catalytic Migratory Oxidative Coupling of Nitrones through an Outer-Sphere  $C(sp^3)$ -H Activation Process" Hashizume, S.; Oisaki, K.; Kanai, M. *Chem. Rec.* **2011**, *5*, 236–241.
- (152) "Cu(I)-Catalyzed Decarboxylative Aldol-Type And Mannich-Type Reactions For Asymmetric

- Construction Of Contiguous Trisubstituted and Quaternary Stereocenters" Yin, L.; Kanai, M.; Shibasaki, M. *Tetrahedron* **2012**, *68*, 3497-3506.
- (153) "Asymmetric Synthesis of Dihydropyranones from Ynones by Sequential Copper(I)-Catalyzed Direct Aldol and Silver(I)-Catalyzed Oxy-Michael Reactions" Shi, S.-L.; Kanai, M.; Shibasaki, M. *Angew. Chem. Int. Ed.* **2012**, *51*, 3932-3935.
- (154) "Catalytic Asymmetric Total Synthesis of Chimonanthine, Folicanthine, and Calycanthine through Double Michael Reaction of Bisoxindole" Mitsunuma, H.; Shibasaki, M.; Kanai, M.; Matsunaga, S. *Angew. Chem. Int. Ed.* **2012**, *51*, 5217-5221.
- (155) "Blockade of Inflammatory Responses by a Small-Molecule Inhibitor of the Rac Activator DOCK2" Akihiko Nishikimi, Takehito Urano, Xuefeng Duan, Qinhong Cao, Yuji Okamura, Takashi Saitoh, Nae Saito, Shunsuke Sakaoka, Yao Du, Atsushi Suenaga, Mutsuko Kukimoto-Niino, Kei Miyano, Kazuhito Gotoh, Takayoshi Okabe, Fumiuki Sanematsu, Yoshihiko Tanaka, Hideki Sumimoto, Teruki Honma, Shigeyuki Yokoyama, Tetsuo Nagano, Daisuke Kohda, Motomu Kanai, Yoshinori Fukui *Chem. & Biol.* **2012**, *19*, 488-497.
- (156) "Mg-catalyzed Enantioselective Benzylic C-H Bond Functionalization of Isoindolinones: Addition to Imines" Yudai Suzuki, Motomu Kanai, Shigeki Matsunaga *Chem. Eur. J.* **2012**, *18*, 7654–7657.
- (157) "Lewis Acid Catalyzed Benzylic C-H Bond Functionalization of Azaarenes; Addition to Imines and Enones" Komai, H.; Yoshino, T.; Matsunaga, S.; Kanai, M. *Synthesis* **2012**, *44*, 2185–2194.
- (158) "Catalytic Asymmetric Synthesis of Spirooxindoles by a Mannich-Type Reaction of Isothiocyanato Oxindoles" Shota Kato, Tatsuhiko Yoshino, Masakatsu Shibasaki, Motomu Kanai and Shigeki Matsunaga *Angew. Chem. Int. Ed.* **2012**, *51*, 7007-7010.
- (159) "Functional-Group-Tolerant Catalytic Migratory Oxidative Coupling of Nitrones" Shogo Hashizume, Kounosuke Oisaki and Motomu Kanai, *Chem. Asian J.* **2012**, *7*, 2600–2606.
- (160) "Cu(I)-catalyzed  $\alpha$ -alkylation of ketones with styrene derivatives" Shohei Majima, Yohei Shimizu, Motomu Kanai, *Tetrahedron Lett.* **2012**, *53*, 4381-4384.
- (161) "Catalytic aerobic production of imines *en route* to mild, green, and concise derivatizations of amines" Toshiaki Sonobe, Kounosuke Oisaki, Motomu Kanai, *Chem. Sci.* **2012**, *3*, 3249–3255.
- (162) "Rhodium-Catalyzed Cross-Aldol Reaction: In Situ Aldehyde-Enolate Formation from Allyloxyboranes and Primary Allylic Alcohols" Luqing Lin, Kumiko Yamamoto, Shigeki Matsunaga, Motomu Kanai, *Angew. Chem. Int. Ed.* **2012**, *51*, 10275–10279.
- (163) "Copper(I)-Catalyzed Enantioselective Incorporation of Ketones to Cyclic Hemiaminals for the Synthesis of Versatile Alkaloid Precursors" Shi, S.-L.; Wei, X.-F.; Shimizu, Y.; Kanai, M. *J. Am. Chem. Soc.* **2012**, *134*, 17019–17022.
- (164) "Synthesis of a New Oseltamivir Derivative Through Late-Stage Catalytic C-H Functionalization" Kenta Saito, Motomu Kanai *Heterocycles* **2013**, *86*, 1565-1574.
- (165) "Inhibition of MAO-A and stimulation of behavioural activities in mice by the inactive prodrug form of the anti-influenza agent oseltamivir" Miki Hiasa, Yumiko Isoda, Yasushi Kishimoto, Kenta Saitoh, Yasuaki Kimura, Motomu Kanai, Masakatsu Shibasaki, Dai Hatakeyama,

Yutaka Kirino, Takashi Kuzuhara *British J. Pharmacology* **2013**, *169*, 115-129.

- (166) “A Cationic High-Valent Cp<sup>\*</sup>Co<sup>III</sup> Complex for the Catalytic Generation of Nucleophilic Organometallic Species: Directed C–H Bond Activation” Yoshino, T. Ikemoto, H.; Matsunaga, S.; Kanai, M. *Angew. Chem. Int. Ed.* **2013**, *52*, 2207–2211.
- (167) “Cobalt-Catalyzed C4-Selective Direct Alkylation of Pyridines” Takashi Andou, Yutaka Saga, Hirotomo Komai, Shigeki Matsunaga, Motomu Kanai *Angew. Chem. Int. Ed.* **2013**, *52*, 3213-3216.
- (168) “Copper-Catalyzed C–H Alkoxylation of Azoles” Noriaki Takemura, Yoichiro Kuninobu, Motomu Kanai *Org. Lett.* **2013**, *15*, 844-847.
- (169) “Intracellular activation of acetyl-CoA by an artificial reaction promoter and its fluorescent detection” Hirokazu Komatsu, Yutaka Shindo, Shigehiro A. Kawashima, Kenzo Yamatsugu, Kotaro Oka, Motomu Kanai *Chem. Commun.* **2013**, *49*, 2876-2878.
- (170) “Iron-Catalyzed Oxidative C(3)–H Functionalization of Amines” Noriaki Takasu, Kounosuke Oisaki, and Motomu Kanai *Org. Lett.* **2013**, *15*, 1918–1921.
- (171) “Catalytic Asymmetric Synthesis of Spirooxindoles via Addition of Isothiocyanato Oxindoles to Aldehydes Under Dinuclear Nickel Schiff Base Catalysis” Shota Kato, Motomu Kanai, Shigeki Matsunaga, *Chem. Eur. J.* **2013**,
- (172) “Sultam Synthesis via Cu-Catalyzed Intermolecular Carboamination of Alkenes with N-Fluorobenzenesulfonimide” Keiichi Kaneko, Tatsuhiko Yoshino, Shigeki Matsunaga, Motomu Kanai *Org. Lett.* **2013**, *15*, 2502–2505.
- (173) “From Chiral Base Catalysts to Redox-Active Catalysts: Chasing the Identity of Metal Catalysts in Carbon–Carbon Bond-Forming Reactions” Motomu Kanai, Shigeki Matsunaga, Kounosuke Oisaki, Yohei Shimizu *J. Synth. Org. Chem. Japan* **2013**, *71*, 433-442.
- (174) “In situ Catalytic Generation of Allylcopper Species for Asymmetric Allylation: Toward 1*H*-Isochromene Skeletons” Junya Kawai, Prasanna Kumara Chikkade, Yohei Shimizu and Motomu Kanai *Angew. Chem. Int. Ed.* **2013**, *52*, 7177–7180.
- (175) “Cp<sup>\*</sup>Co<sup>III</sup>-Catalyzed C2-Selective Addition of Indoles to Imines” Tatsuhiko Yoshino, Hideya Ikemoto, Shigeki Matsunaga and Motomu Kanai *Chem. Eur. J.* **2013**, *19*, 9142–9146.
- (176) “Manganese-Catalyzed Aerobic Dehydrogenative Cyclization toward Ring-Fused Indole Skeletons” Oisaki, K.; Abe, J.; Kanai, M. *Org. Biomol. Chem.* **2013**, *11*, 4569–4572.
- (177) “Copper-Catalyzed Intramolecular N–S Bond Formation by Oxidative Dehydrogenative Cyclization” Zhen Wang, Yoichiro Kuninobu, Motomu Kanai, *J. Org. Chem.* **2013**, *78*, 7337–7342.
- (178) “Catalytic Anomeric Aminoalkynylation of Unprotected Aldoses” Kimura, Y.; Ito, S.; Shimizu, Y.; Kanai, M. *Org. Lett.* **2013**, *15*, 4130–4133.
- (179) “Catalytic Asymmetric Synthesis of Spirooxindoles via Addition of Isothiocyanato Oxindoles to Aldehydes Under Dinuclear Nickel Schiff Base Catalysis” Shota Kato, Motomu Kanai, Shigeki Matsunaga, *Chem. Asian J.* **2013**, *8*, 1768-1771.

- (180) "Rhenium-Catalyzed Synthesis of 3-Imino-1-isoindolinones by C–H Bond Activation: Application to the Synthesis of Polyimide Derivatives" Shunsuke Sueki, Yuanfang Guo, Motomu Kanai, Yoichiro Kuninobu, *Angew. Chem. Int. Ed.* **2013**, 52, 11879–11883.
- (181) "Rh-Catalyzed Aldehyde–Aldehyde Cross-Aldol Reaction under Base-Free Conditions: In Situ Aldehyde-Derived Enolate Formation through Orthogonal Activation" Luqing Lin, Kumiko Yamamoto, Shigeki Matsunaga, Motomu Kanai, *Chem. Asian J.* **2013**, 8, 2974–2983.
- (182) "Structure-activity relationship study of novel iminothiadiazolo-1 pyrimidinone antimicrobial agents" Atmika Paudel, Keiichi Kaneko, Ayako Watanabe, Shigeki Matsunaga, Motomu Kanai, Hiroshi Hamamoto, Kazuhisa Sekimizu, *J. Antibiotics* **2013**, 66, 663–667.
- (183) "Attenuation of the Aggregation and Neurotoxicity of Amyloid- $\beta$  Peptides by Catalytic Photooxygenation" Taniguchi, A.; Sasaki, D.; Shiohara, A.; Iwatsubo, T.; Tomita, T.; Sohma, Y.; Kanai, M. *Angew. Chem. Int. Ed.* **2014**, 53, 1382–1385.
- (184) "Enantioselective Synthesis of Spirooxindoles via Direct Catalytic Asymmetric Aldol-Type Reaction of Isothiocyanato Oxindoles" Shota Kato, Motomu Kanai, Shigeki Matsunaga, *Heterocycles*, **2014**, 88, 475–491.
- (185) "A Catalytic C-C Bond-Formation with Minimal Use of Protecting Groups: Construction of Functionalized Isotetronic Acid Derivatives" Yohei Shimizu, Kouji Yasuda, Motomu Kanai, *Heterocycles*, **2014**, 88, 919–927.
- (186) "Cobalt-Catalyzed C-4 Selective Alkylation of Quinolines" Yamamoto, S.; Saga, Y.; Andou, T.; Matsunaga, S.; Kanai, M. *Adv. Synth. Cat.* **2014**, 356, 401–405.
- (187) "Catalytic enantioselective synthesis of 2-(2-hydroxyethyl)indole scaffolds via consecutive intramolecular amido-cupration of allenes and asymmetric addition of carbonyl compounds" Prasanna Kumara Chikkade, Yohei Shimizu, Motomu Kanai, *Chem. Sci.* **2014**, 5, 1585–1590.
- (188) "Regioselective Trifluoromethylation of N-Heteroaromatic Compounds using Trifluoromethylidifluoroborane Activator" Nishida, T.; Ida, H.; Kuninobu, Y.; Kanai, M. *Nat. Commun.* **2014**, 5, 3387 (doi:10.1038/ncomms4387).
- (189) "Synthesis of Pyridine N-Oxide–BF<sub>2</sub>CF<sub>3</sub> Complexes and Their Fluorescence Properties" Tomoaki Nishida, Aiko Fukazawa, Eriko Yamaguchi, Hiroya Oshima, Shigehiro Yamaguchi, Motomu Kanai, Yoichiro Kuninobu, *Chemistry Asian J.* **2014**, 9, 1026–1030.
- (190) "Copper-Catalyzed Intramolecular C(sp<sup>3</sup>)–H and C(sp<sup>2</sup>)–H Amidation by Oxidative Cyclization" Zhen Wang, Jizhi Ni, Yoichiro Kuninobu, Motomu Kanai, *Angew. Chem. Int. Ed.* **2014**, 53, 3496–3499.
- (191) "Copper-Catalyzed Benzylic C(sp<sup>3</sup>)–H Alkoxylation of Heterocyclic Compounds" Takemura, N.; Kuninobu, Y.; Kanai, M. *Org. Biomol. Chem.* **2014**, 12, 2528–2532.
- (192) "Palladium-Catalyzed C–H Fluorosilylation of 2-Phenylpyridines: Synthesis of Silafluorene Equivalents" Qing Xiao, Xiangtai Meng, Motomu Kanai, Yoichiro Kuninobu, *Angew. Chem. Int. Ed.* **2014**, 53, 3168–3172.

- (193) “Asparagine-Selective Cleavage of Peptide Bonds through Hypervalent Iodine-Mediated Hofmann Rearrangement in Neutral Aqueous Solution” Kana Tanabe, Atsuhiko Taniguchi, Takuya Matsumoto, Kounosuke Oisaki, Youhei Sohma, Motomu Kanai, *Chem. Sci.* **2014**, *5*, 2747 – 2753.
- (194) “Palladium-Catalyzed Direct C–H Silylation and Germanylation of Benzamides and Carboxamides” Kyalo Stephen Kanyiva, Yoichiro Kuninobu, Motomu Kanai, *Org. Lett.* **2014**, *16*, 1968–1971.
- (195) “Pyrroloindolone Synthesis via a Cp<sup>\*</sup>Co<sup>III</sup>-Catalyzed Redox-Neutral Directed C–H Alkenylation/Annulation Sequence” Hideya Ikemoto, Tatsuhiko Yoshino, Ken Sakata, Shigeki Matsunaga, Motomu Kanai, *J. Am. Chem. Soc.* **2014**, *136*, 5424–5431.
- (196) “Air-Stable Carbonyl(pentamethylcyclopentadienyl)cobalt Diiiodide Complex as a Precursor for Cationic (Pentamethylcyclopentadienyl)cobalt(III) Catalysis: Application for Directed C-2 Selective C-H Amidation of Indoles” Sun, B.; Yoshino, T.; Matsunaga, S.; Kanai, M. *Adv. Synth. Catal.* **2014**,
- (197) “Copper-Catalyzed Regio- and Stereoselective Intermolecular Three-Component Oxyarylation of Allenes” Itoh, T.; Shimizu, Y.; Kanai, M. *Org. Lett.* **2014**,
- (198) “Recent progress in copper-catalyzed difunctionalization of unactivated carbon-carbon multiple bonds” Shimizu, Y.; Kanai, M. *Tetrahedron Lett.* **2014**,
- (199) “Chemoselective aerobic oxidation catalyzed by a metal/stable organoradical redox conjugate” Seki, Y.; Oisaki, K.; Kanai, M. *Tetrahedron Lett.* **2014**,
- (200) “Serine-Selective Aerobic Cleavage of Peptides and a Protein Using Water-Soluble Copper Organoradical Conjugate” Seki, Y.; Tanabe, K.; Sasaki, D.; Sohma, Y.; Oisaki, K.; Kanai, M. *Angew. Chem. Int. Ed.* **2014**,
- (201) “Rational Design and Identification of Non-Peptidic Aggregation Inhibitor of Amyloid-beta Based on a Pharmacophore Motif Obtained from cyclo[-Lys-Leu-Val-Phe-Phe-]” Tadamasa Arai, Takushi Araya, Daisuke Sasaki, Atsuhiko Taniguchi, Takeshi Sato, Youhei Sohma, Motomu Kanai, *Angew. Chem. In press*.

### Books

- (1) “Asymmetric Michael Reactions” in *Catalytic Asymmetric Synthesis* Motomu Kanai, Masakatsu Shibasaki, Wiley-VCH (2000) I. Ojima Ed., pp. 569-592.
- (2) “Rare earth bimetallic asymmetric catalysis” in *Multimetallic Catalysts in Organic Synthesis* Motomu Kanai, Masakatsu Shibasaki (2004), 103-120.
- (3) “Catalytic Asymmetric Total Synthesis of (-)-Strychnine and Fostriecin” in *Strategies and Tactics in Organic Synthesis* Vol. 4, Elsevier, Masakatsu Shibasaki, Motomu Kanai, Takashi Ohshima 2004年, pp. 347–363.
- (4) “Nitroaldol Reaction” in *Comprehensive Asymmetric Catalysis, Supplement 1* Springer, Berlin, Masakatsu Shibasaki, Harald Gröger, Motomu Kanai, 2004 年, pp.131–133.

- (5) 実験化学講座第5版：触媒化学、電気化学“医薬・農薬” 柴崎正勝、金井求 2006年、pp. 77-88.
- (6) 「抗インフルエンザ薬タミフルの純化学的合成」柴崎正勝、金井求 医学のあゆみ 2006年、Vol. 219, No. 10, 781.
- (7) 「タミフルの新合成法」柴崎正勝、金井求 化学と薬学の教室 2006年、No.155, 33.
- (8) “Chiral Bifunctional Acid/Base Catalysts” in *New Frontiers in Asymmetric Catalysis* Masakatsu Shibasaki and Motomu Kanai, Eds. Mikami, K. and Lautens, M. Wiley Interscience, 2007.
- (9) 「タミフル実用合成への道—切れのある合成を目指して—」柴崎正勝、金井求、山次健三、現代科学 2009年1月号、454, pp 38-43.
- (10) “The Catalytic Asymmetric Strecker Reaction” Shibasaki, M.; Kanai, M.; Mita, T. *Org. React.* **2008**, 70, 1-117.
- (11) 「インフルエンザパンデミックに備える—科学者の使命—」柴崎正勝、金井求、化学と工業 **2009**, 62, 22-24.
- (12) “Catalytic Enantioselective Synthesis of  $\alpha,\alpha$ -Disubstituted Amino Acids: The Strecker Reaction of Ketimines Using Chiral Poly-Gadolinium Complexes” Shibasaki, M.; Kanai, M. in *Asymmetric Synthesis and Application of  $\alpha$ -Amino Acids*, Editors: Vadim A. Soloshonok, Kunisuke Izawa, ACS Symposium Series, Volume 1009, 2009, Chapter 7, pp. 102–115.
- (13) “Recent Topics in Cooperative Catalysis: Asymmetric Catalysis, Polymerization, Hydrogen Activation, and Water Splitting” Kanai, M. in *Organic Chemistry—Breakthroughs and Perspectives*, Editors: Kuiling Ding and Li-Xin Dai, Wiley-VCH, 2012, Chapter 11, pp. 385–412.
- (14) 「銅触媒の多様な活性化形式を活用する反応開発と医薬リード合成」 ”Noble Catalytic Functions by Ubiquitous Copper Complexes: Asymmetric Catalysis to Oxidative Coupling” 嵐峨裕、金井求、「未来を拓く元素戦略—持続可能な社会を実現する化学—」日本化学会編、化学同人 2013年