Wenjun Tang, Ph.D.

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State Key Laboratory of Chemical Biology
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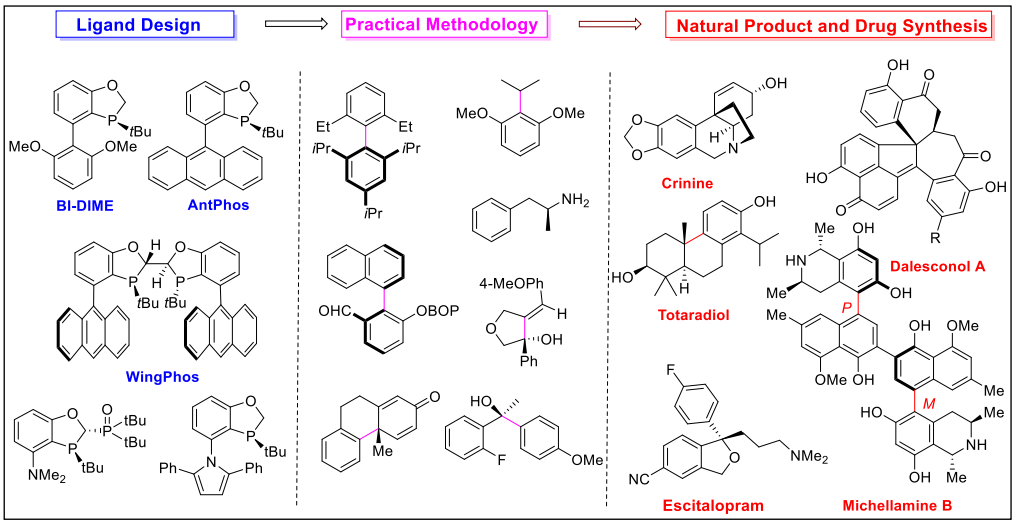
RESEARCH INTERESTS

- ❖ Design and development of novel, efficient, and practical chiral catalytic reactions
- ❖ Total synthesis of complex and biologically active natural products
- ❖ Development of efficient, economical, and green chemical processes for pharmaceutically important molecules



EDUCATION

2003-2005 Postdoctoral research, Organic Chemistry, The Scripps Research Institute
Advisor: Professor K. C. Nicolaou

1998-2003 Ph. D., Organic and Organometallic Chemistry, The Pennsylvania State University
Thesis title: "Development of Efficient Chiral Ligands for Asymmetric Catalysis"
Advisor: Professor Xumu Zhang

1995-1998 M.S., Organic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences
Thesis title: "Synthetic Studies of Benzolactam V8 Derivatives"
Advisor: Professor Dawei Ma

1991-1995 B. Eng., Pharmaceutical Engineering, East China University of Sciences and Technology
Thesis title: "Synthetic Studies of Enofloxacin and Vitamin E Succinate"
Advisor: Professor Guohou Cheng

WORK EXPERIENCE

2018-present President, CEO, and chief scientist, ZejunPharma http://zejunpharma.com
Dedicated to catalytic synthetic technology and thrived to be a reliable provider of special catalysts, ligands, pharmaceutical intermediates, and special API for pharmaceutical and bio-phamaceutical companies worldwide. The company currently supply a series of efficient and structurally unique phosphorus ligands, chiral diamines, and polymeric ligands from gram to metric ton scale.

2019-present Chief Professor, School of Chemistry and Materials Science, Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences

2011.7-present Research Professor, State Key Laboratory of Bioorganic and Natural Products Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, P. R. China

Lead a group of students, postdocs, and lab assistants in various research areas; Develop a unique ligand system for green syntheses of chiral natural products and drugs that have been widely applied in both academia and industry; Develop several novel catalytic reactions for efficient syntheses of natural products and small molecule drugs; Specialized in asymmetric cross-coupling reactions, asymmetric hydrogenation, asymmetric boration, and asymmetric cyclization; Specialized in developing highly efficient catalytic reactions (high TONs) and green synthesis of drugs.

2009-2011 Principal Scientist, Department of Chemical Development, Boehringer Ingelheim Pharmaceuticals, Inc.
2005-2009 Senior Scientist, Department of Chemical Development, Boehringer Ingelheim Pharmaceuticals, Inc.

Made numerous contributions on many key BI projects as a lead process chemist; designed and developed practical and economical synthetic processes; produced and delivered various drug substances in multi kilo-grams

2003-2005 Postdoctoral Research Associate, Department of Chemistry, The Scripps Research Institute

- Accomplished the structural determination and first total synthesis of a complex marine toxin --- azaspiracid (Highlight in C&ENews, **2004**)
- Developed a novel, catalytic asymmetric three-component reaction for the synthesis of chiral 2,3-disubstituted cycloalkanone
- Furnished a key intermediate with correct stereochemistry for the synthesis of a complex metabolite-Vannusal

1998-2003 Research Assistant, Department of Chemistry, The Pennsylvania State University

- Developed several structurally novel, efficient, and practical chiral phosphorous and nitrogen ligands for asymmetric hydrogenation such as TangPhos (Highlight in C&ENews, **2002**), BINAPINE (Highlight in C&EN news, **2003**), *o*-Ph-HexaMeO-BIPHEP, *o*-BINAPO, phospholane oxazoline, and NOBIN-based ligands
- Investigated extensively various metal-catalyzed asymmetric reactions, particularly asymmetric hydrogenation, asymmetric cyclopropanation, asymmetric Michael addition, and asymmetric Heck reaction.
- Established several excellent hydrogenation and cyclopropanation catalysts for efficient syntheses of important chiral intermediates (α-amino acids, β-amino acids, chiral amines)
- Developed a novel synthesis of an antidepressant drug, sertraline via asymmetric hydrogenation by using a new designed catalyst

1995-1998 Research Assistant, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences

- Accomplished the synthesis of a series of Benzolactam V8 derivatives in seeking novel isozyme-selective Protein Kinase C regulators.

1994-1995 Research Assistant, Department of Pharmaceutical Engineering, East China University of Sciences and Technology

- Improved a synthetic step for the synthesis of Enofloxacin. Conducted the synthetic study of Vitamin E succinate
- Gained strong training in chemical engineering and pharmaceutical engineering. Familiarized the manufacturing process of drugs.

AWARDS

1. Shanghai Natural Science Award (1st Rank), 2025
2. Royal Society of Chemistry Organic Chemistry Horizon Prize: Robert Robinson Prize in Synthetic Organic Chemistry, 2024
3. Chinese Academy of Sciences Excellent Teaching Award, 2023
4. WuXi AppTech Life Science and Chemistry Award, 2019
5. National "Ten-thousand Talents" Program, 2019
6. Young and Middle-Aged Leading Scientists, Engineers and Innovators, 2018
7. The National Science Fund for Distinguished Young Scholars, 2017
8. Asian Core Program Lectureship Award, 2015
9. National Homogeneous Catalysis Youth Award, 2015
10. May 4th Medal, The Science and Technology Commission of Shanghai Municipality, 2014
11. Shanghai "Pujiang Talents" Program, 2013
12. Thieme Chemistry Journal Award, 2012
13. Excellence in Action Award, 2010, Boehringer Ingelheim Pharmaceuticals, Inc.
14. President's Award, 2009, Boehringer Ingelheim Pharmaceuticals, Inc.
15. Individual Excellence Award, 2009, Boehringer Ingelheim Pharmaceuticals, Inc.
16. Team Spirit Award (twice), 2008, Boehringer Ingelheim Pharmaceuticals, Inc.
17. Golden Achievement Award, 2007, Boehringer Ingelheim Pharmaceuticals, Inc.
18. Golden Achievement Award, 2006, Boehringer Ingelheim Pharmaceuticals, Inc.
19. Golden Achievement Award, 2005, Boehringer Ingelheim Pharmaceuticals, Inc.
20. Dalalian Fellowship, 2002, The Pennsylvania State University
21. Dalalian Fellowship, 2001, The Pennsylvania State Univeristy
22. Dalalian Graduate Research Award, 2000, The Pennsylvania State University

PROFESSIONAL AFFILIATIONS American Chemical Society, Chinese Chemical Society, Royal Chemical Society

2023-- Secretary of Commission of Process Chemistry, Chinese Chemical Society

2020-- Member of Commission of Agrochemistry, Chinese Chemical Society

2023-- Member of Commission of Phosphorus Chemistry, Chinese Chemical Society

2024-- FRSC, Royal Chemical Society

JOURNAL PUBLICATIONS

1 Dazhuang Zhang, He Yang,* Qinghai Zhou,* **Wenjun Tang*** Enantioselective Synthesis of Chiral 2,3-cis-Disubstituted Piperidines and C1-Substituted Tetrahydroisoquinolines by Asymmetric Cu-Catalyzed Cyclizative Aminoboration *Nat. Commun.* **2025**, in press.

2 Nan Wang, **Wenjun Tang*** A sterically hindered phosphorus ligand for sterically hindered aryl-alkyl coupling reaction *Chin. J. Org. Chem.* **2025**, in press.

3 Tian Chen, Hao-Yang Wang, Ronghua Xu, Guangqing Xu, He Yang, Jiangtao Sun,* Lung Wa Chung,* **Wenjun Tang*** Asymmetric intramolecular reductive coupling of bisimines templated by chiral diborons *Chem. Sci.* **2025**, 10.1039/D5SC03633J

4 Zhuhai Zhang, Yu Feng, Jianfu Chen, Xiangqian Liu,* Martin D. Smith,* Kang Du,* **Wenjun Tang*** Visible Light-Promoted Construction of Cage-Like Frameworks by Sequential [2 + 2] Cycloaddition *Org. Lett.* **2025**, *27*, 7120–7125

5 Yiteng Yu, Yehua Tang, Siyao Xu, Yiwen Lv, Xinquan Hu,* **Wenjun Tang*** Development of P-Chiral Bisoxaphospholane Ligand BIOP and Its Application in Rhodium-Catalyzed Asymmetric Hydroformylation *Org. Lett.* **2025**, *27*, 6251–6256

6 Zhen Cao,* Dongyang He, Lin Luo, **Wenjun Tang*** Recent Advances in Enantioselective Transition Metal Catalysis Mediated by Ligand–Substrate Noncovalent Interactions *Catalyst* **2025**, *15*, 395.

7 Xinpeng Fu, Hanxiao Yu, Haoyang Gao, Yuhao Dai, He Yang, **Wenjun Tang*** A chiral ferrocene-tethered ruthenium diamine catalyst for asymmetric transfer hydrogenation of ketones *Org. Chem. Front.* **2025**, *12*, 2957-2962.

8 Jianxun Huang, Chao Pei, He Yang,* Bin Wu,* **Wenjun Tang*** Enantioselective Palladium-Catalyzed α-Arylation of Acyclic Esters *Angew. Chem. Int. Ed.* **2025**, 10.1002/anie.202505458

9 Zoutao Wang, Shuai Guo, Ziyang Shen, Ran Wei, Ruijie Jiang, Guodu Liu, Qinghai Zhou,* Kang Du,* **Wenjun Tang*** Enantioselective palladium-catalyzed α-arylation of primary alkylamines *Chem. Catal.* **2025**, in press.

10 Yuxin Zhu, Yuchen Zhang, Dongyang He, He Yang,* Xiao-Song Xue,* **Wenjun Tang*** Rhodium-Catalyzed Asymmetric Reductive Hydroformylation of α-Substituted Enamides *J. Am. Chem. Soc.* **2024,** *146*, 33249.

11 Yaodong Lin，Guangqing Xu, **Wenjun Tang*** Chiral Polymeric Diamine Ligands for Iridium-Catalyzed Asymmetric Transfer Hydrogenation *J. Am. Chem. Soc.***2024,** *146*, 27736.

12 Yiwen lv, Haihua Liao, **Wenjun Tang*** Synthesis of a Sitagliptin Intermediate via Ruthenium-Catalyzed Asymmetric Hydrogenation of Enamne Ester *Chin. J. Org. Chem.* **2024**, in press.

13 Wenfeng Dong, Nan Wang, He Yang, Guangqing Xu, **Wenjun Tang*** A Polymeric Phosphorus Ligand for the Synthesis of Herbicide Rinskor *Acta Chimica Sinica* **2024**, in press.

14 Zhen Cao, Dongyang He, **Wenjun Tang*** Catalysis and Synthesis Enabled by P-Chiral Dihydrobenzooxaphosphole Ligands *Org. Process Res. Dev.* **2024**, *28*, 949.

15 Heng Bai, Wei Gu, Di Zhao, Guangqing Xu,* **Wenjun Tang*** Synthesis of dydrogesterone by aromatization-dearomatization strategy *Green Synth. Catal.* Doi: 10.1016/j.gresc.2023.12.001

16 Henian Peng, Dake Zhao, **Wenjun Tang,*** Ai Peng* Dienediamine: A Safe Surrogate of Herbicide Paraquat *Mol. Plant* **2023**, *16*, 1962-1975.

17 Ziyue Liu, Ben Gao, Konstantin Chernichenko, He Yang,*, Sebastien Lemaire,* **Wenjun Tang*** Enantioselective C–H Arylation for Axially Chiral Heterobiaryls *Org. Lett.* **2023**, 25, 7004-7008.

18 He Yang, Hanxiao Yu, Stolarzewicz,* **Wenjun Tang*** Enantioselective transformations in the synthesis of therapeutic agents *Chem. Rev.* **2023**, 123, 9397-9446.

19 Jiawei Sun, Yuan Chen, Sherif Shaban Ragab, Wei Gu, Ziqiang Tang, Yuexun Tang, and **Wenjun Tang*** "Total Syntheses of Polyhydroxylated Steroids via Unsaturation-Functionalization Strategy" *Angew. Chem., Int. Ed.* **2023**, *135*, e202303639.

20 Mingkang Zhou, Yaodong Lin, Xiao-Xuan Chen, Guangqing Xu,* Lung Wa Chung,* **Wenjun Tang*** "Asymmetric Synthesis of Vicinal Tetrasubstituted Diamines via Reductive Coupling of Ketimines Templated by Chiral Diborons" *Angew. Chem., Int. Ed.* **2023**, *135*, e202300334.

21 Yuxin Zhu, Wenfeng Dong, **Wenjun Tang*** "Palladium-Catalyzed Cross-Couplings in the Synthesis of Agrochemicals". *Advanced Agrochem* **2022**, *1*, 125-138

22 Bowen Li, Bangke Luo, He Yang,* **Wenjun Tang*** Heck Reaction of *N*-Heteroaryl Halides for the Concise Synthesis of Chiral α-Heteroaryl-substituted Heterocyles *Angew. Chem. Int. Ed.* **2022,** *61*, e202209087.

23 He Yang, **Wenjun Tang*** Enantioselective Construction of ortho-Sulfur- or Nitrogen-Substituted Axially Chiral Biaryls and Asymmetric Synthesis of Isoplagiochin D *Nat. Commun.* **2022** *13*, 4577.

24 Minghui Zhu, Peixin Wang, Qinglong Zhang, **Wenjun Tang,*** Weiwei Zi* Diasterodivergent Aldol-type Coupling of Alkoxyallenes with Pentafluorophenyl Esters Enabled by Synergistic Palladium/Chiral Lewis Base Catalysis *Angew. Chem. Int. Ed.* **2022,** *61*, e202207621.

25 Xuehua Kang, Chao Qian, He Yang, Jicheng Shi,* Jerome Claverie,* **Wenjun Tang*** Protection-group-free enantioselective tandem allylic substitution of o-phenylenediamines and o-aminophenols *Green Synth. Catal.* **2022**, *3*, 185.

26 Zhenya Li, Ronghua Xu, Huichuang Guo, He Yang, Guangqing Xu, Enxue Shi,* Junhua Xiao,* **Wenjun Tang*** *Org. Lett.* **2022**, *24*, 714.

27 Ting Wu, Qinghai Zhou, **Wenjun Tang*** Enantioselective α‐Carbonylative Arylation for Facile Construction of Chiral Spirocyclic β,β'‐Diketones *Angew. Chem. Int. Ed.* **2021,** *60*, 9978-9983.

28 Duanshuai Tian, Ronghua Zhu, Jinbin Zhu, Jianxun Huang, Wei Dong, Jerome P. Claverie, **Wenjun Tang*** Asymmetric Hydroesterification of Diarylmethyl Carbinols *Angew. Chem. Int. Ed.* **2021,** *60*, 6305-6309.

29 "Synthesis of α-Heteroaryl Propionic Esters by Palladium-Catalyzed α-Heteroarylaiotn of Silyl Ketene Acetals" Bowen Li, Bangke Luo, Caroline A. Blakemore,* Aaron C. Smith, Daniel W. Widlicka, Simon Berritt, **Wenjun Tang*** *Org. Lett.* **2021**, doi:10.1021/acs.orglett.1c02257.

30 Wei Tian, Bowen Li, Duanshuai Tian, **Wenjun Tang*** Regioselective 2-alkylation of indoles with α-bromo esters catalyzed by Pd/P,P=O system" *Chin. Chem. Lett.* **2021,** doi: 10.1016/j.cclet.2021.06.091

31 Jiawei Sun, Wei Gu, He Yang,* **Wenjun Tang*** Enantioselective total synthesis of parnafungin A1 and 10a-epi-hirtusneanine" *Chem. Sci.* **2021,** doi: 10.1039/D1SC02919C

32 Fen Wan, Nan Wang,Yuxin Zhu, Chuyan Tang, Jarome P. Claverie,* **Wenjun Tang*** Enantioselective Hydrogenation of Cyclic Tetrasubstituted-Olefinic Dehydroamino Acid Derivatives *Chem. Commun.* **2021**, *57*, 5546-5549.

33 Henian Peng, Tiejun Li; Duanshuai Tian, He Yang, Guangqing Xu, **Wenjun Tang*** Metal-Free Reduction of Unsaturated Carbonyls, Quinones, and Pyridinium Salts with Tetrahydroxydiboron/Water *Org. Biomol. Chem.* **2021**, *19*, 4327-4337.

34 Ronghua Xu, Zhenhua Gao, Yiteng Yu, Yehua Tang; Duanshuai Tian, Tian Chen, Yibing Chen, Guangqing Xu,* Enxue Shi,* **Wenjun Tang,*** A Facile and Practical Preparation of P-Chiral Phosphine Oxides *Chem. Commun.* **2021**, *57*, 3335-3338.

35 Jiawei Sun, He Yang,* **Wenjun Tang*** Recent advances in total syntheses of complex dimeric natural products *Chem. Soc. Rev.* **2021**, *50*, 2320-2336.

36 Fen Wan, **Wenjun Tang*** Phosphorus Ligands from the Zhang Lab: Design, Asymmetric Hydrogenation, and Industrial Applications *Chin. J. Chem.* **2021**, *39*, 954-968.

37 Ting Wu, **Wenjun Tang*** "Construction of Bridged Polycyclic Skeletons via Transition-Metal Catalyzed Carbon-Carbon Bond-Forming Reaction" *Chem. Eur. J.* **2021**, *27*, 3944-3956.

38 Muinat A. Aliyu, Bowen Li, He Yang, **Wenjun Tang*** Palladium-catalyzed reductive cross-coupling between α-bromo carboxamides and terminal alkynes *Org. Chem. Front.* **2020**, *7*, 3505-3508.

39 Kaidi Li, Ming Nie, **Wenjun Tang*** "Synthesis of α-tertiary allylsilanes by palladium-catalyzed hydrosilylation of 1,1-disubstituted allenes" *Green Synth. Catal.* **2020**, *1*, 171-174.

40 Hanxiao Yu, He Yang,* Enxue Shi,* **Wenjun Tang*** "Development and Clinical Application of Phosphorus-Containing Drugs" *Med. Drug. Discov.* **2020**, *8*, 100063.

41 Bowen Li, Muinat Aliyu, Zhenhua Gao, Tiejun Li, Wei Dong, Junchen Li, Enxue Shi,* **Wenjun Tang*** "A General Synthesis of Chiral α,α-Diaryl Carboxamides by Enantioselective Palladium-Catalyzed Cross-Coupling *Org. Lett.* **2020**, *13*, 4974-4978.

42 Ting Wu, Xuehua Kang, Heng Bai, Wenrui Xiong, Guangqing Xu, **Wenjun Tang*** Enantioselective Construction of Spiro Quaternary Carbon Stereocenters via Pd-Catalyzed Intramolecular α-Arylation *Org. Lett.* **2020**, *22*, 4602-4607.

43 Chao Qian, **Wenjun Tang*** A Verstatile Synthesis of Vinyl-substituted Heterocycles via Regio- and Enantioselective Pd-Catalyzed Tandem Allylic Substitution *Org. Lett.* **2020**, *22*, 4483-4488.

44 Mingkang Zhou, Kaidi Li, Dongping Chen, Ronghua Xu, Guangqing Xu,* **Wenjun Tang*** Enantioselective Reductive Coupling of Imines Templated by Chiral Diboron *J. Am. Chem. Soc.* **2020**, *142*, 10337-10342.

45 He Yang, Jiawei Sun, Wei Gu, **Wenjun Tang***, Enantioselective Cross-Coupling for Axially Chiral Tetra-*ortho*-Substituted Biaryls and Asymmetric Synthesis of Gossypol" *J. Am. Chem. Soc*. **2020**, *142*, 8036-8043.

46 Ziyue Liu, Tiejun Li, Jianhong Zhao,* **Wenjun Tang*** A Substituted Tricyclohexylphosphane with "conformational lock" *Tetrahedron* **2020**, *76*, 131216.

47 Ronghua Xu, He Yang*, **Wenjun Tang***, "Efficient Synthesis of Chiral Drugs Facilitated by P-Chiral Phosphorus Ligands", *Chin. J. Org. Chem.* **2020**, *14*, 581 (Account)

48 "P-Chiral Phosphorus Ligands for Cross-Coupling and Asymmetric Hydrogenation Reactions" Ting Wu, Guangqing Xu, **Wenjun Tang***, *Aldrichimica ACTA* **2020**, *53*, 27.

49 "Enantioselective Formation of Quaternary Carbon Stereocenters in Natural Product Synthesis: A Recent Update" Chengxi Li, Sherif Shaban Ragab, Guodu Liu,* **Wenjun Tang***, *Nat. Prod. Rep.* **2020,** *37*, 276.

50 "Expedite Construction of Various Bridged Polycyclic Skeletons by Palladium-Catalyzed Dearomatization" Xingye Mu, Henian Peng, Wenrui Xiong, Ting Wu, **Wenjun Tang*** *Angew. Chem. Int. Ed.* **2020,** *59*, 8143-8147.

51 "Efficient Enantioselective Syntheses of Chiral Natural Products Facilitated by Ligand Design" He Yang, **Wenjun Tang*** *Chem. Rec.* **2020,** *20*, 23-40.

52 "Enantioselective Rhodium-Catalyzed Addition of Arylboroxines to N-Unprotected Ketimines: Efficient Synthesis of Cipargamin" Jinbin Zhu, Linwei Huang, Wei Dong, Naikai Li, Xingxin Yu, Wei-Ping Deng,* **Wenjun Tang*** *Angew. Chem. Int. Ed.* **2019**, 16119-16123.

53 "Stereoelectronic Effects in Ligand Design: Enantioselective Rhodium-Catalyzed hydrogenation of Aliphatic Cyclic Tetrasubstituted Enamides and Concise Synthesis of (R)-Tofacitinib" Chengxi Li, Feng Wan, Yuan Chen, Henian Peng, **Wenjun Tang**,* Shu Yu,* J. Christopher McWilliams,* Jason Mustakis, Lacey Samp, Robert J. Maguire, *Angew. Chem. Int. Ed.* **2019**, 58, 13573-13583.

54 "Enantioselective Palladium-Catalyzed Cross-Coupling between α-Bromo Carboxamides an Arylboronic Acids"Bowen Li, Tiejun Li, Myinat A. Aliyu, Zhen Hua Li, **Wenjun Tang*** *Angew. Chem. Int. Ed.* **2019**, 58, 11355-11359.

55 "P-Chiral Phosphorus Ligands on the Basis of a 2,3-Dihydrobenzo[d][1,3]oxaphosphole Motif for Asymmetric Catalysis" Guangqing Xu, Chris H. Senanayake, **Wenjun Tang*** *Acc. Chem. Res.* **2019**, *52*, 1101-1112.

56 “P-Chiral Monophosphorus Ligands for Asymmetric Copper-Catalyzed Allylic Alkylation” Wenrui Xiong, Guangqing Xu, Xinhong Yu*, **Wenjun Tang*** *Organometallics* **2019**, *38*, 4003.

57 "Enantioselective palladium-catalyzed C(sp2)-H carbamoylation" Wenfeng Dong, Guangqing Xu, **Wenjun Tang*** *Tetrahedron* **2019**, *75*, 3239-3247.

58 “Ligand-free nickel-catalyzed Kumada couplings of aryl bromides with *tert*-butyl Grignard reagents” ZhenghanWu, Tengda Si, Guangqing Xu, Bin Xu,* **Wenjun Tang*** *Chin. Chem. Lett.* **2019**, *30*, 597−600. .

59 “Efficient Nickel-Catalyzed Regioselective Enantioselective Intramolecular Reductive Cyclization of N-Alkynones” Guodu Liu, Wenzhen Fu, Xingye Mu, Ting Wu, Ming Nie, Kaidi Li, Xiaodong Xu, **Wenjun Tang*** *Communication. Chemistry* **2018**, *1*, 90. DOI: 10.1038/s42004-018-0092.

60 “Optically active N-Alkyl Aziridines via Stereospecific Reductive Cyclization of α-Mesylated Acetamides” Duanshuai Tian, Henian Peng, Ziyue Liu, **Wenjun Tang*** *Org. Chem. Front.* **2018**, *5*, 2723-2727.

61 “Efficient Synthesis of (-)-Corynoline by Enantioselective Palladium Catalyzed α-Arylation with Sterically Hindered Substrates” Xiaofeng Rao,§ Naikai, Li,§ Heng Bai,§ Chaodi Dai, Zheng Wang, **Wenjun Tang*** *Angew. Chem. Int. Ed.* **2018**, *57*, 12328-12332.

62 “Stereospecific Nucleophilic Substitution with Arylboronic Acids as Nucleophiles in the Presence of a CONH Group” Duanshuai Tian,§ Chengxi Li,§ Guoxian Gu, Henian Peng, Xumu Zhang,* **Wenjun Tang*** *Angew. Chem. Int. Ed.* **2018**, *57*, 7176-7180.

63 “Asymmetric Construction of 3-Azabicyclo[3.1.0]hexane Skeleton with Five Contiguous Stereogenic Centers by Cu-Catalyzed 1,3-Dipolar Cycloaddition of Trisubstituted Cyclopropenes” Hua Deng, Wu-Lin Yang, Fei Tian, Wenjun Tang, Wei-Ping Deng,* *Org. Lett.* **2018**, *20*, 4121-4125.

64 “Enantioselective Synthesis of Chiral-at-Cage o-carborane via Pd-Catalyzed Asymmetic B-H Substitution” Ruofei Chen, Bowen Li, Jie Wu, Jie Zhang, Zaozao Qiu, **Wenjun Tang**, Shu-Li You, Yong Tang, Zuowei Xie *J. Am. Chem. Soc.* **2018**, *140*, 4508-4511.

65 “Asymmetric Synthesis of 3,4-Dihydroquinolin-2-ones via a Stereoselective Palladium-Catalyzed Decarboxylative [4+2] Cycloaddition” Jing-Hai Jin, Hao Wang, Zhong-Tao Yang, Wu-Lin Yang, **Wenjun Tang**,* Wei-Ping Deng* *Org. Lett.* **2018**, *20*, 104-107.

66 “Efficient P-Chiral Biaryl Bisphosphorus Ligands for Palladium-Catalyzed Asymmetric Hydrogenation” Wenhao Jiang, Qing Zhao, **Wenjun Tang*** *Chin. J. Chem*. **2018**, *36*, 153-156.

67 “Efficient Cross-Coupling of Aryl/Alkenyl Triflates with Acyclic Secondary Alkylboronic Acids” Tengda Si, Bowen Li, Wenrui Xiong, Bin Xu*, **Wenjun Tang*** *Org. Bioorg. Chem.* **2017**, *15*, 9903-9909.

68 “Practical and Asymmetric Reductive Coupling of Isoquinolines Templated by Chiral Diborons” Dongping Chen, Guangqing Xu, Qinghai Zhou, Lung Wa Chung, **Wenjun Tang*** *J. Am. Chem. Soc.* **2017**, *139*, 9767−9770.

69 Total Synthesis and Stereochemical Assignment of Delavatine A: Rh-Catalyzed Aysmmetric Hyrogenation of Inden-Type Tetrasubstituted Olefins and Kinetic Resolution through Pd-Catalyzed Triflamide-Directed C-H Olefination" Zhongyin Zhang, Jinxin Wang, Jian Li, Fan Yang, **Wenjun Tang**, Weiwei He, Jian-Jun Fu, Yun-Heng Shen, Ang Li, Wei-Dong Zhang, *J. Am. Chem. Soc.* **2017**, *139*, 5558-5567.

70 "Efficient Syntheses of (-)-Crinine and (-)-Aspidospermidine, and the Formal Synthesis of (-)-Minfiensine by Enantioselective Intramolecular Dearomative Cyclization" Kang Du, He Yang, Pan Guo, Liang Feng, Guangqing Xu, Qianghai Zhou, Lung Wa Chung, **Wenjun Tang*** *Chem. Sci.* **2017**, *8*, 6247-6256.

71 "Enantioselective Palladium-Catalyzed Diboration of 1,1-Disubstituted Allenes" Jiawang Liu, Ming Nie, Qinghai Zhou, Shen Gao, Wenhao Jiang, Lung Wa Chung,* **Wenjun Tang,*** Kuiling Ding,* *Chem. Sci.* **2017**, 8, 5161-5165.

72 "Efficient Enantioselective Syntheses of (+)-Dalesconol A & B" Guoqing Zhao, Guangqing Xu, Chao Qian, **Wenjun Tang*** *J. Am. Chem. Soc.* **2017**, 139，3360-3363.

73 "Sequential C-H Arylation and Enantioselective Hydrogenation Enables Ideal Asymmetric Entry to the Indenopiperidine Core of an 11 β -HSD-1 Inhibitor" Xudong Wei, **Wenjun Tang** et al. *J. Am. Chem. Soc.* **2016**, *138*, 15473-15481.

74 "Transition-Metal-Free Stereospecific Cross-Coupling with Alkenylboronic Acids as Nucleophiles" Chengxi Li, Yuanyuan Zhang, Qi Sun, Tongnian Gu, Henian Peng, **Wenjun Tang*** *J. Am. Chem. Soc.* **2016**, *138*, 10774-10777.

75 "Highly Enantioselective Rhodium-Catalyzed Addition of Arylboroxines to Simple Ketones: Efficient Synthesis of Escitalopram" Linwei Huang, Jinbin Zhu, Guangjun Jiao, Zheng Wang, Xinxin Yu, Wei-Ping Deng,* **Wenjun Tang*** *Angew. Chem., Int. Ed.* **2016**, *55*, 4527.

76 "Synthesis of Chiral 1,4-Benzodioxanes and Chromans by Enantioselective Palladium-Catalyzed Alkene Aryloxyarylation" Naifu Hu, Ke Li, Zheng Wang, **Wenjun Tang*** *Angew. Chem., Int. Ed.* **2016**, *55*, 5044.

77 "Transition-Metal-Free Stereospecific Cross-Coupling with Alkenylboronic Acids as Nucleophiles". Chengxi Li, Yuanyuan Zhang, Qi Sun, Tongnian Gu, Henian Peng, **Wenjun Tang*** *J. Am. Chem. Soc.* **2016**, *138*, 15473-15481

78 "Addressing the Challenges in Suzuki–Miyaura Cross-Couplings by Ligand Design" Chengxi Li, Dongping Chen, **Wenjun Tang*** *Synlett* **2016**, *27*, 2183-2200 (invited account)

79 "Chiral Monophosphorus Ligands for Asymmetric Catalytic Reactions" Wenzhen Fu, **Wenjun Tang*** *ACS Catal*. **2016**, *6*, 4814 (invited review)

80 "Transition-metal catalyzed asymmetric carbon–carbon cross-coupling with chiral ligands" He Yang, Xingtong Yang, **Wenjun Tang*** *Tetrahedron* **2016**, *72*, 6143 (invited review).

81 "Synthesis of Triptoquinone H and its C-5 Epimer via Efficient Asymmetric Dearomative Cyclization" Zhen Cao, Kang Du, Jianhui Liu,* **Wenjun Tang*** *Tetrahedron* **2016**, *72*, 1782-1786.

82 "Efficient synthesis of chiral biaryls via asymmetric Suzuki-Miyaura cross-coupling of ortho-bromo aryl triflates" Xingtong Yang, Guangqing Xu, **Wenjun Tang*** *Tetrahedron* **2016**, *72*, 5178-5183(Invited paper).

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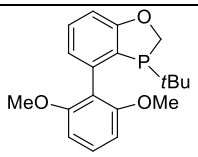
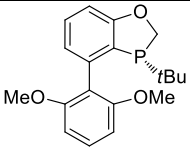
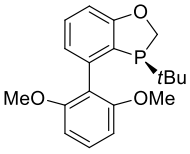
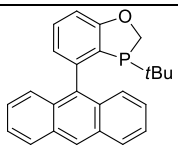
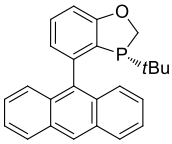
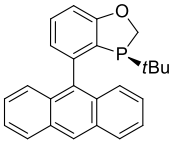
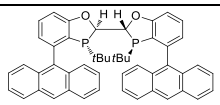
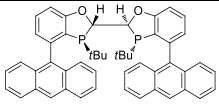
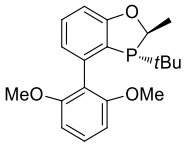
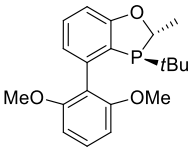
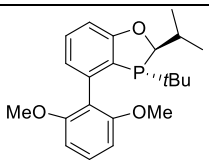
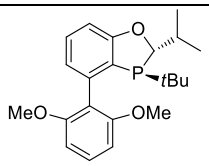
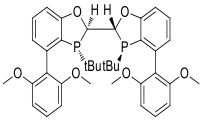
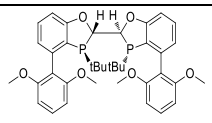
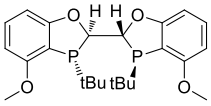
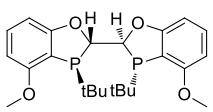
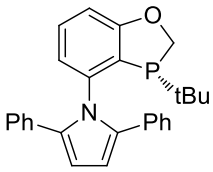
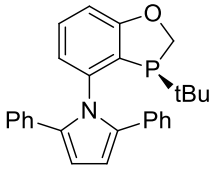
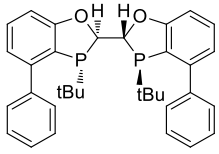
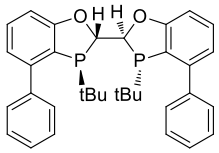
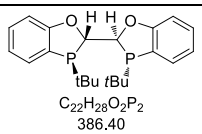
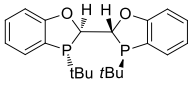
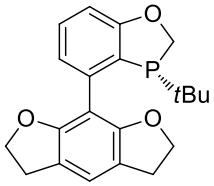
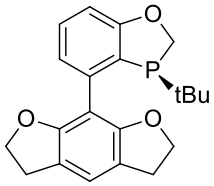
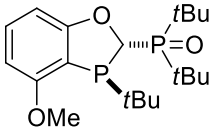
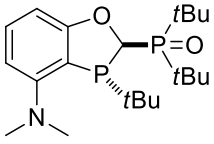
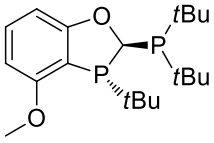
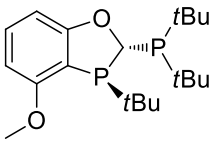
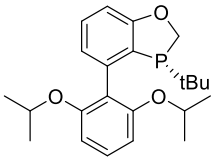
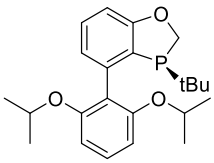
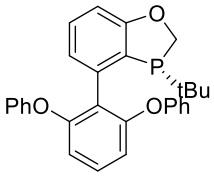
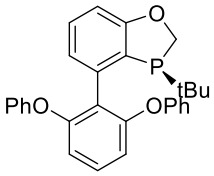
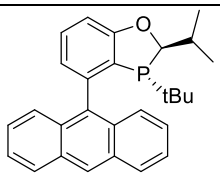
List of commercialized ligands						
No	Nickname	Full name	Structure	CAS No.	Spec.	Cat. No.

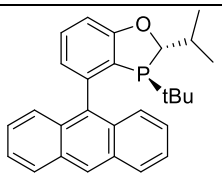
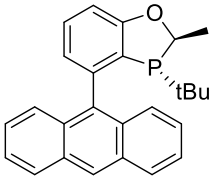
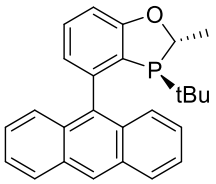
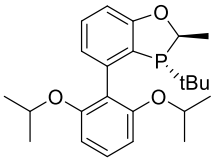
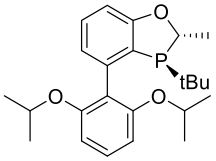
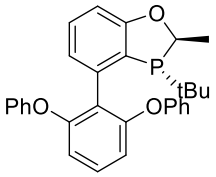
1	*rac*-BIDIME	3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{19}H_{23}O_3P$ MW: 330.36	1246888-90-3	97% purity	ZJ-0011
2	*(R)*-BIDIME	(*R*)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{19}H_{23}O_3P$ MW: 330.36	1338454-03-7	97% purity >99% ee	ZJ-0022
3	*(S)*-BIDIME	(*S*)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{19}H_{23}O_3P$ MW: 330.36	1373432-09-7	97% purity >99% ee	ZJ-0018
4	*rac*-AntPhos	4-(anthracen-9-yl)-3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{23}OP$ MW: 370.42	1268693-24-8	97% purity	ZJ-0014
5	*(R)*-AntPhos	(*R*)-4-(anthracen-9-yl)-3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{23}OP$ MW: 370.42	1456816-37-7	97% purity >99% ee	ZJ-0026
6	*(S)*-AntPhos	(*S*)-4-(anthracen-9-yl)-3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{23}OP$ MW: 370.42	1807740-34-6	97% purity >99% ee	ZJ-0024
7	(*2R,2R',3R,3R'*)-WingPhos	(*2R,2'R,3R,3'R*)-4,4'-di(anthracen-9-yl)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{50}H_{44}O_2P_2$ MW: 738.83	1884680-45-8	97% purity >99% ee	ZJ-0031
8	(*2S,2S',3S,3S'*)-WingPhos	(*2S,2'S,3S,3'S*)-4,4'-di(anthracen-9-yl)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{50}H_{44}O_2P_2$ MW: 738.83	1435940-19-4	97% purity >99% ee	ZJ-0032

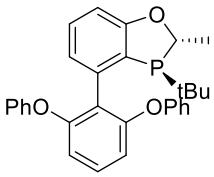
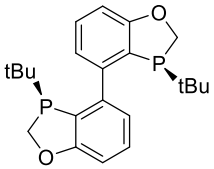
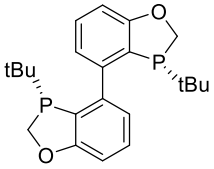
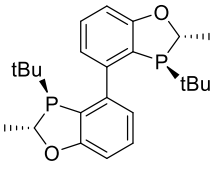
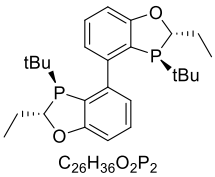
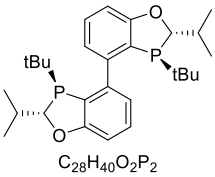
9	(2R,3R)-Me-BIDIME	(2R,3R)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{20}H_{25}O_3P$ MW: 344.38	1477517-18-2	97% purity >99% ee	ZJ-0034
10	(2S,3S)-Me-BIDIME	(2S,3S)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{20}H_{25}O_3P$ MW: 344.38	1373432-11-1	97% purity >99% ee	ZJ-0040
11	(2R,3R)-iPr-BIDIME	(2R,3R)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-isopropyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{22}H_{29}O_3P$ MW; 372.44	1477517-19-3	97% purity >99% ee	ZJ-0036
12	(2S,3S)-iPr-BIDIME	(2S,3S)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-isopropyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{22}H_{29}O_3P$ MW; 372.44	1477517-21-7	97% purity >99% ee	ZJ-0042
13	(2R,2'R,3R,3'R)-Bis-BIDIME	(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-4,4'-bis(2,6-dimethoxyphenyl)-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{38}H_{44}O_6P_2$ 658.70	1884680-48-1	97% purity >99% ee	ZJ-0044
14	(2S,2'S,3S,3'S)-Bis-BIDIME	(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-4,4'-bis(2,6-dimethoxyphenyl)-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{38}H_{44}O_6P_2$ 658.70	1435940-21-8	97% purity >99% ee	ZJ-0046
15	(2R,2'R,3R,3'R)-MeO-BIBOP	(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-4,4'-dimethoxy-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{24}H_{32}O_4P_2$ 446.46	1228758-57-3	97% purity >99% ee	ZJ-0048

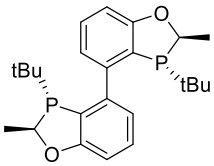
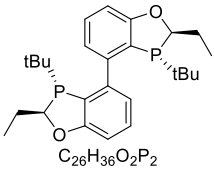
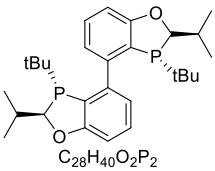
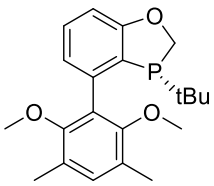
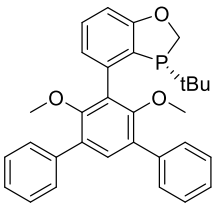
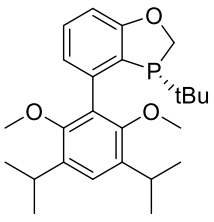
16	(2S,2'S,3S,3'S)-MeO-BIBOP	(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-4,4'-dimethoxy-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{24}H_{32}O_4P_2$ 446.46	1202033-19-9	97% purity >99% ee	ZJ-0050
17		(R)-1-(3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-4-yl)-2,5-diphenyl-1H-pyrrole	 $C_{27}H_{26}NOP$ 411.48	1884457-40-2	97% purity >99% ee	ZJ-0065
18		(S)-1-(3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-4-yl)-2,5-diphenyl-1H-pyrrole	 $C_{27}H_{26}NOP$ 411.48	1683581-58-9	97% purity >99% ee	ZJ-0067
19	(2R,2'R,3R,3'R)-Ph-BIBOP	(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-4,4'-diphenyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{34}H_{36}O_2P_2$ 538.60	2301856-53-9	97% purity >99% ee	ZJ-0069
20	(2S,2'S,3S,3'S)-Ph-BIBOP	(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-4,4'-diphenyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{34}H_{36}O_2P_2$ 538.60	1202033-21-3	97% purity >99% ee	ZJ-0086
21	(2S,2'S,3S,3'S)-BIBOP	(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{22}H_{28}O_2P_2$ 386.40	1202033-17-7	97% purity >99% ee	ZJ-0072

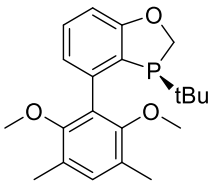
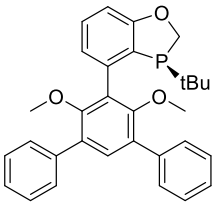
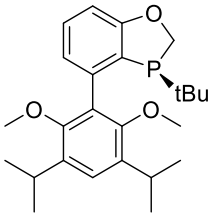
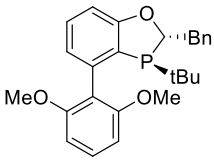
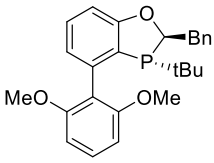
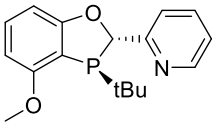
22	(2R,2'R,3R,3'R)-BIBOP	(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole	 $C_{22}H_{28}O_2P_2$ 386.40	1610785-35-7	97% purity >99% ee	ZJ-0075
23		(R)-3-(tert-butyl)-4-(2,3,5,6-tetrahydrobenzo[1,2-b:5,4-b']difuran-8-yl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{23}O_3P$ 354.39	1835717-07-1	97% purity >99% ee	ZJ-0077
24		(S)-3-(tert-butyl)-4-(2,3,5,6-tetrahydrobenzo[1,2-b:5,4-b']difuran-8-yl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{23}O_3P$ 354.39	Unknown	97% purity >99% ee	ZJ-0079
25		di-tert-butyl(3-(tert-butyl)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)phosphine oxide	 $C_{20}H_{34}O_3P_2$ 384.43	1788085-46-0	97% purity	ZJ-0081(rac)
26		di-tert-butyl-(3-(tert-butyl)-4-(dimethylamino)-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)phosphine oxide	 $C_{21}H_{37}NO_2P_2$ 397.48	1788085-47-1	97% purity	ZJ-0083(rac)
27	(2S,3R)-MeO-POP	(2S,3R)-3-(tert-butyl)-2-(di-tert-butylphosphino)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{20}H_{34}O_2P_2$ 368.44	1215081-28-9	97% purity >99% ee	ZJ-0087

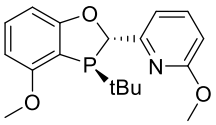
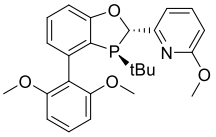
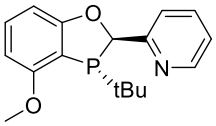
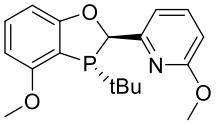
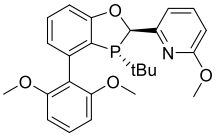
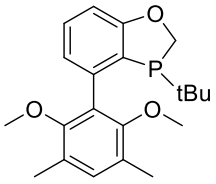
28	(2R,3S)-MeO-POP	(2R,3S)-3-(tert-butyl)-2-(di-tert-butylphosphino)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{20}H_{34}O_2P_2$ 368.44	N/A	97% purity >99% ee	ZJ-0088
29		(R)-3-(tert-butyl)-4-(2,6-diisopropoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{23}H_{31}O_3P$ 386.20	1338454-38-8	97% purity >99% ee	ZJ-0089
30		(S)-3-(tert-butyl)-4-(2,6-diisopropoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{23}H_{31}O_3P$ 386.20	N/A	97% purity >99% ee	ZJ-0090
31		(R)-3-(tert-butyl)-4-(2,6-diphenoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{29}H_{27}O_3P$ 454.17	1441830-74-5	97% purity >99% ee	ZJ-0091
32		(S)-3-(tert-butyl)-4-(2,6-diphenoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{29}H_{27}O_3P$ 454.16978	N/A	97% purity >99% ee	ZJ-0092
33		(2R,3R)-4-(anthracen-9-yl)-3-(tert-butyl)-2-isopropyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{28}H_{29}OP$ 412.51	1891002-60-0	97% purity >99% ee	ZJ-0094

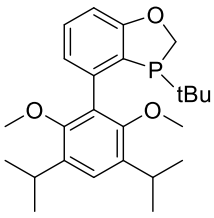
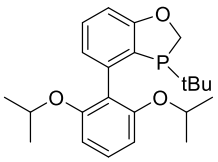
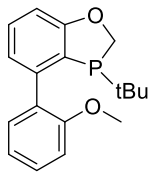
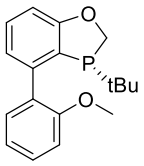
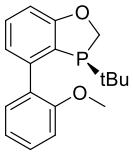
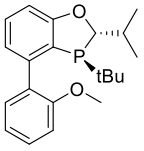
34		(2S,3S)-4-(anthracen-9-yl)-3-(tert-butyl)-2-isopropyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{28}H_{29}OP$ 412.51	1891002-61-1	97% purity >99% ee	ZJ-0096
35		(2R,3R)-4-(anthracen-9-yl)-3-(tert-butyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{26}H_{25}OP$ 384.46	1477517-20-6	97% purity >99% ee	ZJ-0098
36		(2S,3S)-4-(anthracen-9-yl)-3-(tert-butyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{26}H_{25}OP$ 384.46	1884594-02-8	97% purity >99% ee	ZJ-0100
37		(2R,3R)-3-(tert-butyl)-4-(2,6-diisopropoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{24}H_{33}O_3P$ 400.21673	N/A	97% purity >99% ee	ZJ-0101
38		(2S,3S)-3-(tert-butyl)-4-(2,6-diisopropoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{24}H_{33}O_3P$ 400.21673	N/A	97% purity >99% ee	ZJ-0102
39		(2R,3R)-3-(tert-butyl)-4-(2,6-diphenoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{30}H_{29}O_3P$ 468.18543	N/A	97% purity >99% ee	ZJ-0103

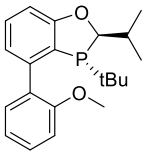
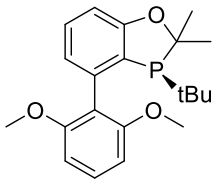
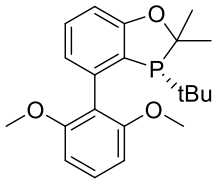
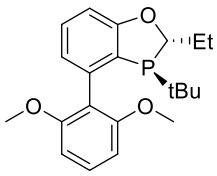
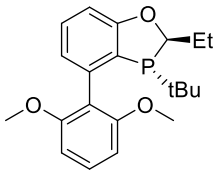
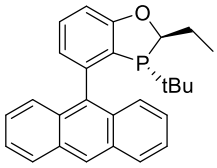
40		(2S,3S)-3-(tert-butyl)-4-(2,6-diphenoxyphenyl)-2-methyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{30}H_{29}O_3P$ 468.18543	N/A	97% purity >99% ee	ZJ-0104
41		(3S,3'S)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{22}H_{28}O_2P_2$ 386.41152	2207601-04-3	97% purity >99% ee	ZJ-0105
42		(3R,3'R)-3,3'-di-tert-butyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{22}H_{28}O_2P_2$ 386.41152	2214207-73-3	97% purity >99% ee	ZJ-0106
43		(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-2,2'-dimethyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{24}H_{32}O_2P_2$ 414.46552	2207601-10-1	97% purity >99% ee	ZJ-0107
44		(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-2,2'-diethyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{26}H_{36}O_2P_2$ 442.51952	N/A	97% purity >99% ee	ZJ-0108
45		(2S,2'S,3S,3'S)-3,3'-di-tert-butyl-2,2'-diisopropyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{28}H_{40}O_2P_2$ 470.57352	2207601-12-3	97% purity >99% ee	ZJ-0109

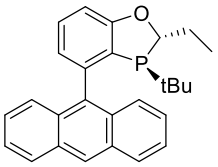
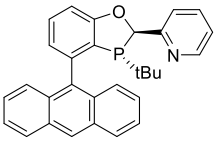
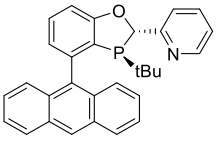
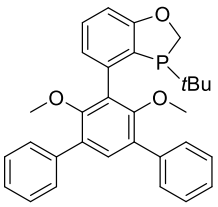
46		(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-2,2'-dimethyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{24}H_{32}O_2P_2$ 414.46552	2214207-74-4	97% purity >99% ee	ZJ-0110
47		(2R,2'R,3R,3'R)-3,3'-di-tert-butyl-2,2'-diethyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{26}H_{36}O_2P_2$ 442.51952	N/A	97% purity >99% ee	ZJ-0111
48		(2R,2'S,3R,3'R)-3,3'-di-tert-butyl-2,2'-diisopropyl-2,2',3,3'-tetrahydro-4,4'-bibenzo[d][1,3]oxaphosphole	 $C_{28}H_{40}O_2P_2$ 470.57352	2214207-75-5	97% purity >99% ee	ZJ-0112
49		(R)-3-(tert-butyl)-4-(2,6-dimethoxy-3,5-dimethylphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	N/A	97% purity >99% ee	ZJ-0113
50		(R)-3-(tert-butyl)-4-(4',6'-dimethoxy-[1,1':3',1"-terphenyl]-5'-yl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{31}H_{31}O_3P$ 482.20108	N/A	97% purity >99% ee	ZJ-0114
51		(R)-3-(tert-butyl)-4-(3,5-diisopropyl-2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{35}O_3P$ 414.23238	N/A	97% purity >99% ee	ZJ-0115

52		(S)-3-(tert-butyl)-4-(2,6-dimethoxy-3,5-dimethylphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	2021202-03-7	97% purity >99% ee	ZJ-0116
53		(S)-3-(tert-butyl)-4-(4',6'-dimethoxy-[1,1':3',1"-terphenyl]-5'-yl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{31}H_{31}O_3P$ 482.20108	2021201-99-8	97% purity >99% ee	ZJ-0117
54		(S)-3-(tert-butyl)-4-(3,5-diisopropyl-2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{35}O_3P$ 414.23	N/A	97% purity >99% ee	ZJ-0118
55		(2S,3S)-2-benzyl-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{26}H_{29}O_3P$ 420.18543	1373432-13-3	97% purity >99% ee	ZJ-0119
56		(2R,3R)-2-benzyl-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{26}H_{29}O_3P$ 420.18543	1884457-36-6	97% purity >99% ee	ZJ-0120
57		2-((2S,3S)-3-(tert-butyl)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)pyridine	 $C_{17}H_{20}NO_2P$ 301.32576	N/A	97% purity >99% ee	ZJ-0123

58		2-((2S,3S)-3-(tert-butyl)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)-6-methoxypyridine	 $C_{18}H_{22}NO_3P$ 331.35176	1777796-37-8	97% purity >99% ee	ZJ-0125
59		2-((2S,3S)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)-6-methoxypyridine	 $C_{25}H_{28}NO_4P$ 437.47576	2003230-67-7	97% purity >99% ee	ZJ-0127
60		2-((2R,3R)-3-(tert-butyl)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)pyridine	 $C_{17}H_{20}NO_2P$ 301.32576	1542796-07-5	97% purity >99% ee	ZJ-0157
61		2-((2R,3R)-3-(tert-butyl)-4-methoxy-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)-6-methoxypyridine	 $C_{18}H_{22}NO_3P$ 331.35176	1542796-16-6	97% purity >99% ee	ZJ-0159
62		2-((2R,3R)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)-6-methoxypyridine	 $C_{25}H_{28}NO_4P$ 437.47576	N/A	97% purity >99% ee	ZJ-0161
63		3-(tert-butyl)-4-(2,6-dimethoxy-3,5-dimethylphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	N/A	97% purity >99% ee	ZJ-0128

64		3-(tert-butyl)-4-(3,5-diisopropyl-2,6-dimethoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{25}H_{35}O_3P$ 414.23238	N/A	97% purity >99% ee	ZJ-0129
65		3-(tert-butyl)-4-(2,6-diisopropoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{23}H_{31}O_3P$ 386.20108	N/A	97% purity >99% ee	ZJ-0130
66		3-(tert-butyl)-4-(2-methoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{18}H_{21}O_2P$ 300.12792	1246888-88-9	97% purity >99% ee	ZJ-0136
67		(R)-3-(tert-butyl)-4-(2-methoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{18}H_{21}O_2P$ 300.12792	1338454-28-6	97% purity >99% ee	ZJ-0137
68		(S)-3-(tert-butyl)-4-(2-methoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{18}H_{21}O_2P$ 300.12792	N/A	97% purity >99% ee	ZJ-0138
69		(2S,3S)-3-(tert-butyl)-2-isopropyl-4-(2-methoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_2P$ 342.17487	N/A	97% purity >99% ee	ZJ-0139

70		(2R,3R)-3-(tert-butyl)-2-isopropyl-4-(2-methoxyphenyl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_2P$ 342.17487	N/A	97% purity >99% ee	ZJ-0140
71		(S)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,2-dimethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	2227217-19-6	97% purity >99% ee	ZJ-0141
72		(R)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2,2-dimethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	N/A	97% purity >99% ee	ZJ-0142
73		(2S,3S)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-ethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	2247162-97-4	97% purity >99% ee	ZJ-0143
74		(2R,3R)-3-(tert-butyl)-4-(2,6-dimethoxyphenyl)-2-ethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{21}H_{27}O_3P$ 358.16978	N/A	97% purity >99% ee	ZJ-0144
75		2R,3R)-4-(anthracen-9-yl)-3-(tert-butyl)-2-ethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{27}H_{27}OP$ 398.48576	N/A	97% purity >99% ee	ZJ-0145

76		(2S,3S)-4-(anthracen-9-yl)-3-(tert-butyl)-2-ethyl-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{27}H_{27}OP$ 398.48576	1884594-03-9	97% purity >99% ee	ZJ-0146
77		2-((2R,3R)-4-(anthracen-9-yl)-3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)pyridine	 $C_{30}H_{26}NOP$ 447.51776	1542796-14-4	97% purity >99% ee	ZJ-0147
78		2-((2S,3S)-4-(anthracen-9-yl)-3-(tert-butyl)-2,3-dihydrobenzo[d][1,3]oxaphosphol-2-yl)pyridine	 $C_{30}H_{26}NOP$ 447.51776	N/A	97% purity >99% ee	ZJ-0148
79		3-(tert-butyl)-4-(4',6'-dimethoxy-[1,1':3',1"-terphenyl]-5'-yl)-2,3-dihydrobenzo[d][1,3]oxaphosphole	 $C_{31}H_{31}O_3P$ 482.20108	N/A	97% purity >99% ee	ZJ-0162