**Curriculum Vitae**

**Zhenfa Zhang** **PhD**

School of Public Health, University of North Carolina at Chapel Hill

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**Education:**

Ph. D. (2002), Organic /Medicinal Chemistry

Shanghai Institute of Pharmaceutical Industry (SIPI), Chinese Federal Drug Administration

M. Sc. (1997), Organic /Medicinal Chemistry

Shanghai Institute of *Materia Medica*(SIMM), Chinese Academy of Science

B. Sc. (1991), Chemistry, Southwest Normal University, China

**Positions and Appointments:**

***Research***

2013 – Current, Research Assistant Professor.

2008 – 2012. Research Specialist. Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill.

2006-2008 Research Associate

2004-2006 PostdoctoralResearch Fellow: College of Pharmacy, University of Kentucky

2002-2003 Postdoctoral Research Scholar, Department of Biochemistry, University of Washington

***Teaching***

1997-1999, Lecturer, school of pharmacy, Fudan University, China PR

Courses taught: *Medicinal Chemistry*, *Organic Reaction in Pharmaceutical Synthesis* (Undergraduate senior)

**Professional Synergistic Activities**

***Awards for Research and Service:***

NIEHS UNC-CH Center of Environmental Health and Susceptibility, pilot grant 2013, PI. Title: Genotoxicity study of the newly revealed epoxides will provide insights to the molecular mechanisms linking exposure and health outcome

Chinese National Science Foundation, research grant, 2014, Co-PI. Title: Microbial mechanisms of remediation of polycyclic aromatic hydrocarbons-contaminated soil by spent mushroom substrate

***Ad hoc Journal Reviewer:***

*Bioorganic Medicinal Chemistry Letters,*

*Bioorganic Medicinal Chemistry,*

*Tetrahedron Letters.*

*Tetrahedron*

*European Journal of Medicinal Chemistry.*

*Chemical Biology and Drug Design*

*Synthetic communications*

*Organic and Bimolecular Chemistry*

***Thesis Advisor:***

Neil Avinash Bhathela, BSPHhttps://outlook.unc.edu/owa/14.3.123.3/themes/resources/clear1x1.gif 2013, UNC-CH

Sarah Park, BA 2012, UNC-CH

**Honors:**

1. Award for Excellent scientific article, SIPI, Chinese Drug Administration, 2001

2. The Leiyongshang award for the excellent scientific article, Shanghai Pharmaceutical Co. Ltd., 2002

**Publications:**

***Book Chapter***

Dwoskin LP, Pivavarchyk M, Joyce BM, Neugebauer NM, Zheng G, Zhang Z, Bardo MT, Crooks PA. Targeting reward-relevant nicotinic receptors in the discovery of novel pharmacotherapeutic agents to treat tobacco dependence. Nebr Symp Motiv.; V55:31-63.Spinger 2009; Editors: Rich A. Vevins, Anthony R. Caggiula

***Original Scholarly Journal Articles***

1. Ying-Hsuan Lin, Haofei Zhang, Havala O. T. Pye, **Zhenfa Zhang**, Wendy J. Marth, Sarah Park, Maiko Arashiro, Tianqu Cui, Sri Hapsari Budisulistiorini, Kenneth G. Sexton, William Vizuete, Ying Xie, Deborah J. Luecken, Ivan R. Piletic,Edward O. Edney, Libero J. Bartolotti, Avram Gold, Jason D. Surratt. Epoxide as a Precursor to Secondary Organic Aerosol Formation from Isoprene Photooxidation in the Presence of Nitrogen Oxides. *Proceeding of National Academy of Silences (PNAS) USA*. **2013**, 110 (17), 6718–6723.
2. Pye, H. O. T.; Pinder, R. W.; Piletic, I. R.; Xie, Y.; Capps, S. L.; Lin, Y.-H.; Surratt, J. D.; **Zhang, Z.**; Gold, A.; Luecken, D. J.; Hutzell, W. T.; Jaoui, M.; Offenberg, J. H.; Kleindienst, T. E.; Lewandowski, M.; Edney, E. O. Epoxide Pathways Improve Model Predictions of Isoprene Markers and Reveal Key Role of Acidity in Aerosol Formation. Environmental Science & Technology, **2013**, 47(19):11056-11064. doi: 10.1021/es402106h.
3. **Z. Zhang**, Y.-H. Lin, H. Zhang, J. D. Surratt, L. M. Ball, and A. Gold. Synthesis of isoprene atmospheric oxidation products: isomeric epoxydiols and the rearrangement products cis-and trans-3-methyl-3,4-dihydroxytetrahydrofuran. *Atmos. Chem. Phys*., 12, 8529–8535, **2012**. doi:10.5194/acp-12-8529-2012. Atmos. Chem. Phys. Discuss., **2012**, 12, 14247–14268, doi:10.5194/acpd-12-14247-2012
4. Zhang, Haofei; Lin, Ying-Hsuan; **Zhang, Zhenfa**; Zhang, Xiaolu; Shaw, Stephanie L.; Knipping, Eladio M.; Weber, Rodney J.; Gold, Avram; Kamens, Richard M.; Surratt, Jason D. Secondary organic aerosol formation from methacrolein photooxidation: roles of NOx level, relative humidity and aerosol acidity. *Environmental Chemistry*(**2012**), 9(3), 247-262.
5. Lin, Ying-Hsuan; **Zhang, Zhenfa**; Docherty, Kenneth S.; Zhang, Haofei; Budisulistiorini, Sri Hapsari; Rubitschun, Caitlin L.; Shaw, Stephanie L.; Knipping, Eladio M.; Edgerton, Eric S.; Kleindienst, Tadeusz; Gold, Avram; Surratt, Jason D. Isoprene Epoxydiols as Precursors to Secondary Organic Aerosol Formation: Acid-Catalyzed Reactive Uptake Studies with Authentic Compounds. *Environmental Science & Technology* (**2012**), 46(1), 250-258.
6. **Zhenfa Zhang,** Louise M. Ball and Avram Gold. Synthesis of stable isotope labeled polycyclic aromatic hydrocarbons. *Organic and Biomolecular Chemistry*. **2011**, 9(15), 5431-5435**.**
7. **Zhenfa Zhang**, Linda L. Dwoskin and Peter A. Crooks. An Expeditious Synthesis of *cis*-2,3,3a,4,5,9b-hexahydro-1-methyl-pyrrolo-[3,2*h*]isoquinolinevia [3+2] Cycloaddition. *TetrahedronLetters*. **2011**, 52(21), 2667-2669.
8. Guangrong Zheng, **Zhenfa Zhang**,Cheryl Dowell, Elzbieta Wala, Linda P. Dwoskin,Joseph R. Holtman, J. Michael McIntosh, Peter A. Crooks. Discovery of non-peptide, small molecule antagonists of α9α10 nicotinic acetylcholine receptorsas novel analgesics for the treatment of neuropathic and tonic inflammatory pain. *Bioorganic & Medicinal Chemistry Letters*. **2011**, 21, 2476-2479.
9. Marharyta Pivavarchyk, Andrew M. Smith, **Zhenfa Zhang**, Dejun Zhou, Xu Wang, Naoki Toyook,Hiroshi Tsuneki, Toshiyasu Sasaoka, J. Michael McIntosh, Peter A. Crooks, Linda P. Dwoskin. Indolizidine (−)-235B′ and related structural analogs: Discovery of nicotinic receptor antagonists that inhibit nicotine-evoked [3H]dopamine release. *European Journal of Pharmacology.* **2011,** 658,132–139.
10. **Zhenfa Zhang**, Guangrong Zheng, Marharyta Pivavarchyk, A. Gabriela Deaciuc, Linda P. Dwoskin, Peter A. Crooks. Novel bis-, tris-, and tetrakis-tertiary amino analogs as antagonists at neuronal nicotinic receptors that mediate nicotine-evoked dopamine release. *Bioorganic & Medicinal Chemistry Letters***2011**, 21,88–91.
11. Guangrong Zheng, **Zhenfa Zhang**, Paul R. Lockman, Werner J. Geldenhuys, David D. Allen,Linda P. Dwoskin, Peter A. Crooks. Bis-azaaromatic quaternary ammonium salts as ligands for the blood–brain barrier choline transporter. *Bioorganic & Medicinal Chemistry Letters***2010**, 20,3208–3210.
12. Andrew M. Smith, Marharyta Pivavarchyk, Thomas E. Wooters, **Zhenfa Zhang**, Guangrong Zheng,J. Michael McIntosh, Peter A. Crooks, Michael T. Bardo, Linda P. Dwoskin. Repeated nicotine administration robustly increases bPiDDB inhibitory potency at a6b2-containing nicotinic receptors mediating nicotine-evoked dopamine release. *Biochemical Pharmacology***2010**, 80,402–409.
13. **Zhenfa Zhang**, Marharyta Pivavarchyk, Leela Subramanian; Gabriela Deaciuc, Linda P Dwoskin, Peter A Crooks. Novel *bis*-TMP and bis-mecamylamine antagonists at neuronal nicotinic receptors mediating nicotine-evoked dopamine release. *Bioorganic & Medicinal Chemistry Letters.***2010**, 20, 1420-1423.
14. **Zhenfa Zhang**, Paul R. Lockman, Rajendar K. Mittapalli, David D. Allen, Linda P. Dwoskin and Peter A. Crooks.bis-Pyridinium cyclophanes: novel ligands with high affinity for the blood-brain barrier choline transporter. *Bioorganic & Medicinal Chemistry Letters.***2008**18(20): 5622-5625.
15. **Zhenfa Zhang**, Marharyta Pivavarchyk, Agripina G. Deaciuc, Linda P. Dwoskin and Peter A. Crooks. tetrakis-Azaaromatic quaternary ammonium salts: Novel subtype-selective antagonists at neuronal nicotinic receptors that mediate nicotine-evoked dopamine release. *Bioorganic & Medicinal Chemistry Letters.* **2008**18(21) 5753-5757.
16. Guangrong Zheng, **ZhenfaZhang**, Marharyta Pivavarchyk, A. Gabi Deaciuc, Linda P. Dwoskin, Peter A. Crooks.Bis-azaaromatic quaternary ammonium salts as antagonists at nicotinic receptors mediating nicotine-evoked dopamine release: An investigation of binding conformation.*Bioorganic MedicinalChemistry Letter.***2007**17(24):6734-6738.
17. **Zhenfa Zhang**, Aizhen Yu and Weicheng Zhou. Synthesis and Antibacterial Activity of 7-(Substituted)aminomethyl Quinolones. *Biooganic & Medicinal Chemistry*, **2007**, 15(23), 7274-80
18. **Zhenfa Zhang**and Weicheng Zhou, Arylation of nitromethane: masked nucleophilic formylation of fluoroquinolones. *Tetrahedron Letters*, **2005**, 46(22), 3855-3858.
19. Jizhen Li, **Zhenfa Zhang**and Erkang Fan, Solid-phase synthesisof 1,5-substituted 2-(N-alkylamino)-imidazolidin-4-ones. *Tetrahedron Letters*, **2004**, 45(6), 1267~1269.
20. **Zhenfa Zhang**, Weicheng Zhou and Aizhen Yu, Synthesis and Antibacterial Activity of 7-(Substituted)aminomethyl Quinolones. *Biooganic & Medicinal Chemistry Letter*, **2004**, 14(2), 393~395.
21. Xiang Shi; Minru Zhang; Yimeng Zhou**; Zhenfa Zhang;** Weicheng Zhou. Synthesis of racemates of pazufloxacin and its resolution by HPLC. *Zhongguo Yiyao Gongye Zazhi***(***Chinese Journal of Pharmaceuticals)***2004,** 35(6), 321-323.
22. **Zhenfa Zhang**and Weicheng Zhou, SNAr reaction of some fluoroquinolone intermediates with nitromethane, *Chinese Journal of Pharmaceuticals*, **2002**, 33(5): 209-211.
23. **Zhenfa Zhang**and Weicheng Zhou, Coupling reaction of amines and aryl halide catalyzed by Pd and other transition metal complex, *Chinese Journal of Organic Chemistry*, **2002**, 22(10), 685-693.
24. **Zhenfa Zhang**and Weicheng Zhou, Recent progress in the structure-activity relationship research of antibacterial fluoroquinolones, *Chinese Journal of Pharmaceuticals*,**2003**, 34(1) 36-43.
25. **Zhenfa Zhang**and Ren Wen, Synthesis and progress of angiotensin IIinhibitor. *Journal of Tianjing Pharmaceuticals*, **1999**, 8(3) 172-175.
26. Wooters, Thomas E.; Smith, Andrew M.; Pivavarchyk, Marharyta; Siripurapu, Kiran B.; McIntosh, J. Michael; **Zhang, Zhenfa**; Crooks, Peter A.; Bardo, Michael T.; Dwoskin, Linda P. bPiDI: a novel selective α6β2\* nicotinic receptor antagonist and preclinical candidate treatment for nicotine abuse. British Journal of Pharmacology (2011), 163(2), 346-357.
27. Holtman, Joseph R.; Dwoskin, Linda P.; Dowell, Cheryl; Wala, Elzbieta P.; **Zhang, Zhenfa**; Crooks, Peter A.; McIntosh, J. Michael. The novel small molecule α9α10 nicotinic acetylcholine receptor antagonist ZZ-204G is analgesic. European Journal of Pharmacology (**2011**), 670(2-3), 500-508.
28. López-Hernández GY, Thinschmidt JS, Zheng G, **Zhang Zhenfa**, Crooks PA, DwoskinLP, Papke RL. *Mol. Pharmacol.* **2009,** 76(3):652-66
29. Smith AM, Dhawan GK, **Zhang Z**, Siripurapu KB, Crooks PA, Dwoskin LP. The novel nicotinic receptor antagonist, N,N'-dodecane-1,12-diyl-bis-3-picolinium dibromide (bPiDDB), inhibits nicotine-evoked [(3)H]norepinephrine overflow from rat hippocampal slices.*Biochem Pharmacol*. **2009**Oct 1;78(7):889-97
30. Dwoskin LP, Smith AM, Wooters TE, **Zhang Z**, Crooks PA, Bardo MT. Nicotinic receptor-based therapeutics and candidates for smoking cessation.*Biochem Pharmacol*. **2009**Oct 1;78 (7):732-43.
31. ShafiqurRahman, **Zhenfa Zhang**, Roger L. Papke, Peter A. Crooks, Linda P. Dwoskin, Michael T. Bardo.Region-specific effects of N,N'-dodecane-1,12-diyl-bis-3-picolinium dibromide on nicotine-induced increase in extracellular dopamine in vivo.*BritishJournalof Pharmacology*. **2008,**153(4), 792-804.
32. Roger L. Papke, Linda P. Dwoskin, Peter A. Crooks, Guangrong Zheng, **ZhenfaZhang**, J. Michael McIntosh, Clare Stokes.Extending the analysis of nicotinic receptor antagonists with the study of alpha6nicotinic receptor subunit chimeras.*Neuropharmacology*. **2008,** 54(8):1189-1200.
33. Linda P. Dwoskin, ThomasE Wooters, Sangeetha P.Sumithran, Kiran B. Siripurapu, B. Matthew Joyce, Paul R. Lockman, Vamshi K. Manda, Joshua T. Ayers, **ZhenfaZhang**, Agripina G. Deaciuc AG, J. Michael McIntosh, Peter A. Crooks, Michael T. Bardo.N,N'-Alkane-diyl-bis-3-picoliniums as Nicotinic Receptor Antagonists: Inhibition of nicotine-induced dopamine release and hyperactivity.*Journal ofPharmacol Experimental Therapeutics*. **2008**326(2):563-76.
34. Rahman S, Neugebauer NM, Zhang Z, Crooks PA, Dwoskin LP, Bardo MT. The novel nicotinic receptor antagonist N,N'-dodecane-1,12-diyl-bis-3-picolinium dibromide decreases nicotine-induced dopamine metabolism in rat nucleus accumbens.Eur J Pharmacol. **2008**Dec 28;601(1-3):103-5.
35. ShafiqurRahman; Nichole M.Neugebauer; **ZhenfaZhang**; Peter A. Crooks;Linda P.Dwoskin; Michael T. Bardo, The effects of a novel nicotinic receptor antagonist N,N-dodecane-1,12-diyl-bis-3-picolinium dibromide (bPiDDB) onacute and repeated nicotine-induced increases in extracellular dopamine in rat nucleus accumbens. Neuropharmacology **2007**, 52(3), 755-763.
36. Nicole M. Neugebauer, **Zhenfa Zhang**, Peter A. Crooks, Linda P. Dwoskin and Michael T. Bardo.Effect of a novel nicotinic receptor antagonist,*N,N’*-dodecane-1,12-diyl-*bis*-picolinium dibromide (bPiDDB), on Nicotine Self-Administration and Hyperactivity in Rats. *Psychopharmacology*, **2006**, 184, 426-434.

***Patents:***

1. Peter A. Crooks, Linda P. Dwoskin, **Zhenfa Zhang**, Marharyta Pivavarchyk Tetrakis Quaternary Ammonium Compounds that Interact with Neuronal Nicotinic Receptors. U.S. Pat. Appl. Publ. (2009), US 2009143424 A1 20090604
2. Zhou, Weicheng**; Zhang, Zhenfa;** Shi, Xiang**.** Preparation of quinolone derivatives as antibacterial agents. Faming Zhuanli Shenqing Gongkai Shuomingshu (**2004**),CN 1493562 A 20040505 CAN 143:43778 AN 2005:518737
3. Peter A. Crooks, Guangrong Zheng, **Zhenfa Zhang**, Linda P.Dwoskin, and Sangeetha Sumithran, Mono-Quaternary Ammonium Compounds that Interact with Neuronal Nicotinic Receptors”. U.S. Patent Application, US 60/814,423, July 14th, 2006.
4. Peter A. Crooks, Guangrong Zheng, **Zhenfa Zhang**, Linda P. Dwoskin, and Sangeetha Sumithran, Bis-Quaternary Ammonium Compounds that Interact with Neuronal Nicotinic Receptors”.U.S. Patent Application, US 60/758,622, January 13th, 2006
5. Peter A. Crooks, Linda P. Dwoskin, Guangrong Zheng, **Zhenfa Zhang**, Sangeetha Sumithran, David D. Allen, and Paul Lockman, Bis Quaternary Ammonium Cyclophane Compounds that Interact with Neuronal Nicotinic Receptors. U.S. Provisional Patent Application, US 60/814,640, June 16th, 2006.
6. Papke, Roger L.; Crooks, Peter A.; Dwoskin, Linda P.; Hernandez, Gretchen Lopez; **Zhang, Zhenfa**; Thinschmidt, Jeffrey S.; Zheng, Guangrong. Pyridinium, quinolinium and isoquinolinium derivatives, and their preparation and use as alpha-7 nAChR antagonists to suppress pathogenic signal transduction in cancer and AIDS. U.S. Pat. Appl. Publ.(2010),US 20100179186 A120100715.

**Presentations**

***Oral Presentations:***

1. **Zhenfa Zhang**. Organic synthesis in Environmental Sciences. Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill. Nov 2012Chapel Hill NC
2. **Zhenfa Zhang**, Synthesis of nicotinic acetyl choline receptor ligands. Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill. Jul 2008Chapel Hill NC
3. **Zhang Z**, Deaciuc AG, Lockman PR, Allen DD, Dwoskin LP and Crooks PA. Synergistic design of polar bis-pyridinium analogs containing a 1,4-di-(1-butynyl)phenylenediyl linker: Interaction with both nicotinic receptors and the blood-brain barrier choline transporter (BBBCT). The College on Problem in of Drug Dependence (CPDD), 2006Scottsdale AZ

***Poster Presentations*:( (CPDD Annual National Conference and AAPS Annual International Conference)**

1. Ross JT, **Zhang Z**, Crooks PA, Dwoskin LP and Bardo MT. Effects of novel *tris*-quaternary ammonium nicotinic antagonists on locomotor activity and nicotine-induced hyperlocomotion in rats. CPDD, 2007.
2. Neugebauer NM, **Zhang Z**, Crooks PA, Dwoskin LP and Bardo MT. Effect of a novel nicotinic receptor antagonist, *N,N’*-dodecane-1,12-diyl-*bis*-3 picolinium dibromide (bPiDDB), on nicotine self-administration and locomotor activity in rats. CPDD, 2005.
3. Rahman S, Neugebauer NM, **Zhang Z**, Crooks PA, Dwoskin LP and Bardo MT. Effects of novel *N,N’*-dodecane-1,12-diyl-*bis*-3-picolinium dibromide (bPiDDB) on nucleus accumbens dopamine release in rats sensitized to nicotine. CPDD, 2006.
4. Rahman S, **Zhang Z**, CrooksPA, Dwoskin LP and Bardo MT. Local perfusion of the novel nicotinic receptor antagonist *N,N’*-dodecane-1,12-diyl-*bis*-3-picolinium dibromide (bPiDDB) into the ventral tegmental area (VTA) or the nucleus accumbens (N. Acc), differentially regulates nicotine-induced increases in extracellular dopamine in the nucleus accumbens. AAPS, 2007.
5. Rahman S, Neugebauer NM, **Zhang Z**, Crooks PA, Dwoskin LP and Bardo MT. Effects of novel *N,N’*-dodecane-1,12-diyl-*bis*-3-picolinium dibromide on acute nicotine-induced changesin brain dopamine function. SFN, 2005.
6. Wooters TE, **Zhang Z**, Crooks PA, Dwoskin LP and Bardo MT. Effect of *N,N’*-alkyl-*bis*-picolinium analogs on nicotine discrimination and nicotine-induced hyperactivity in rats. SRNT, 2006.
7. **Zhang Z**, Deaciuc AG, Lockman PR, Allen DD, Dwoskin LP and Crooks PA. Synergistic design of polar *bis*-pyridinium analogs containing a 1,4-di-(1-butynyl)phenylenediyl linker: Interaction with both nicotinic receptors and the blood-brain barrier choline transporter (BBBCT). CPDD, 2006.
8. **Zhang Z**, Lockman PR, Geldenhuys WJ, Allen DD, Dwoskin LP and Crooks PA. Synthesis of *bis*-pyridinium analogs and structurally related cyclophanes with high affinity for the blood brain barrier choline transporter. AAPS, 2005.
9. **Zhang Z**, Sumithran SP, Deaciuc AG, Dwoskin LP and Crooks PA. *N*-Alkylpyridinium-and *bis*-*N,N’*-alkylpyridinium analogs as nicotinic receptor antagonists: selective inhibition of neuronal nicotinic acetylcholine receptor subtypes that mediate nicotine-evoked dopamine release. AAPS, 2005.
10. **Zhang Z**, Sumithran SP, Deaciuc AG, Lockman PR, Allen DD, Dwoskin LP and Crooks PA. Synergistic design of polar *bis*-pyridinium analogs containing a conformationally restricted 1,4-di-(1-butynyl)phenylenediyl linker: interaction with both nicotinic receptors and the blood-brain barrier choline transporter (BBBCT). AAPS, 2006.
11. Geldenhuys WJ, Manda VC,Mittapalli RK, Egbert J, Van der Schyf CJ, Zheng G, **Zhang Z**, Crooks PA, Dwoskin LP, Allen DD and Lockman PR. Virtual screening model
12. **Zhang**; **Z.;**Sumithran; SP; Deaciuc; AG; Linda P. Dwoskin and Peter A. Crooks. Tetrakis-quaternary-ammonium: Novel bPiDDB Analogs as Selective Neuronal Nicotinic Receptor Antagonists against Subtypes that Mediate Nicotine-evoked Dopamine Release. AAPS, 2007.