

GONG CHEN

Department of Chemistry
The Pennsylvania State University
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University Park, PA 16802
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Appointment

Assistant Professor June 2008-present
Organic Chemistry / Chemical Biology
Department of Chemistry, The Pennsylvania State University

Education

Postdoctoral research fellow 2005 - 2008
Memorial Sloan-Kettering Cancer Center
Advisor: *Prof. Samuel J. Danishefsky*

Ph.D. in Bioorganic Chemistry 1999 - 2004
Department of Chemistry, Columbia University
Advisor: *Prof. Dalibor Sames*

B.S. in Chemistry 1994 - 1999
Nanjing University, Nanjing, China

Teaching

Bioorganic Chemistry / Chemical Biology CHEM 597E 2008-2012, Spring
Organic Chemistry II, CHEM 212 2010-2013, Fall

Honors

New York State Breast Cancer Research Postdoctoral Fellowship 2007
NSF CAREER Award (CHM) 2011
Thieme Chemistry Journal Award 2011
Amgen Young Investigator Award 2013

Publications (Researcher ID: A-8063-2013, H-index: 22 (1/2014))

Independent Publications:

1. Yiqing Feng and Gong Chen* Total Synthesis of Celogentin C via Stereoselective C-H Activation. *Angew. Chem., Int. Ed.* **2010**, *49*, 958-961.
Highlighted by Organic Chemistry Portal (<http://www.organic-chemistry.org/Highlights/2011/21March.shtm>)
2. Li P, Wang D, Yao H, Doret P, Hao G, Shen Q, Qiu H, Zhang X, Wang Y, Chen, G. Yanming Wang* Coordination of PAD4 and HDAC2 in the regulation of p53 target gene expression. *Oncogene* **2010**,

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- 29, 3153–3162.
3. Yiqing Feng, Bradley Landgraf, Shi Liu, Yuji Wang, and Gong Chen* Facile Benzo-ring Construction via Palladium-catalyzed Functionalization of Unactivated sp^3 C–H bonds Under Mild Reaction Conditions. *Org. Lett.* **2010**, *12*, 3414–3417.
 4. Yupeng Liu, Yan M Chan, Jianhui Wu, Chen Chen, Alan Benesi, Jing Hu, Yanming Wang, and Gong Chen* Chemical Synthesis of a Bis-phosphorylated Mannose-6-Phosphate *N*-Glycan and its Facile Mono-conjugation with Human Carbonic Anhydrase II for *in vivo* Fluorescence Imaging. *ChemBioChem* **2011**, *12*, 685–690.
 5. Gang He and Gong Chen* A Practical Strategy for Structural Modification of Aliphatic Scaffolds via Palladium-Catalyzed Picolinamide Directed Remote Functionalization of Unactivated C(sp^3)–H Bonds: Synthesis of (+)-Obafuorin. *Angew. Chem., Int. Ed.* **2011**, *50*, 5192–5196.
 6. Yuji Wang, Lei Wei, Ming Zhao*, Shenghui Mei, Meiqing Zheng, Yifan Yang, Hong Wang, Gong Chen* and Shiqi Peng* Development of highly effective three-component cytoprotective adjuncts for cisplatin cancer treatment: synthesis and *in vivo* evaluation in S180-bearing mice. *Metallomics* **2011**, *3*, 1212–1217.
 7. Meiqing Zheng, Yifan Yang, Ming Zhao*, Xiaoyi Zhang, Jianhui Wu, Gong Chen*, Li Peng, Yuji Wang, and Shiqi Peng* A class of novel *N*-isoquinoline-3-carbonyl-*l*-amino acid benzylesters: Synthesis, anti-tumor evaluation and 3D QSAR analysis. *Eur. J. Med. Chem.* **2011**, *46*, 1672–1681.
 8. Yingsheng Zhao, and Gong Chen* Palladium-catalyzed Alkylation of ortho-C(sp^2)–H Bonds of Benzylamide Substrates with Alkyl Halides. *Org. Lett.* **2011**, *13*, 4850–4853.
 9. Yunpeng Liu, and Gong Chen* Chemical Synthesis of *N*-linked Glycans Carrying both Mannose-6-phosphate and GlcNAc-Mannose-6-phosphate Motifs. *J. Org. Chem.* **2011**, *76*, 8682–8689.
 10. Gang He, Yingsheng Zhao, Shuyu Zhang, Chengxi Lu, and Gong Chen*. Highly Efficient Syntheses of Azetidines, Pyrrolidines and Indolines via Palladium-Catalyzed Intramolecular Amination of C(sp^3) and C(sp^2)–H Bonds at γ and δ Positions. *J. Am. Chem. Soc.* **2012**, *134*, 3–6.
(Highlighted by *Synfact* **2012**, *8*, 0258)
 11. Shuyu Zhang, Gang He, Yingsheng Zhao, and Gong Chen* Efficient Ether Synthesis via Palladium-catalyzed Picolinamide-directed Alkoxylation of Unactivated C(sp^3) and C(sp^2)–H Bonds at Remote Positions. *J. Am. Chem. Soc.* **2012**, *134*, 7313–7316.
 12. Gang He, Chengxi Lu, Yingsheng Zhao, William A. Nack, and Gong Chen* Improved Protocol for Indoline Synthesis via Palladium-Catalyzed Intramolecular C(sp^2)–H Amination. *Org. Lett.* **2012**, *14*, 2944–2947.
(Highlighted by *Synfact* **2012**, *8*, 1073)
 13. Yingsheng Zhao, Gang He, William A. Nack, and Gong Chen* Palladium-Catalyzed Alkenylation and Alkynylation of ortho-C(sp^2)–H Bonds of Benzylamine Picolinamides. *Org. Lett.* **2012**, *14*, 2948–2951.
 14. Wang, Y.J., Li, P., Wang, S., Hu, J., Fisher, M., Oshaben, K., Wu, J., Zhao, N., Wang, D., Chen, G.* Wang, Y*. Anticancer PAD inhibitors regulate the autophagy flux and the mammalian target of rapamycin complex 1 activity. *J. Biol. Chem.* **2012**, *287*, 25941–25953.
 15. Shuyu Zhang, Gang He, William A. Nack, Yingsheng Zhao, Qiong Li, and Gong Chen* Palladium-Catalyzed Picolinamide-Directed Alkylation of Unactivated C(sp^3)–H Bonds with Alkyl Iodides” *J. Am. Chem. Soc.* **2013**, *135*, 2124–2127.
(Editors’ choice, *ChemInform* **2013**, *44*, issue 32)
 16. Yunpeng Liu, Jared Marshall, Qiong Li, Nicola Edwards, Gong Chen*. Synthesis of Novel Bivalent

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- Mimetic Ligands for Mannose-6-Phosphate Receptors. *Bioorg. Med. Chem. Lett.* **2013**, 23, 2328–2331.
17. Ryan Pearson, Shuyu Zhang, Gang He, Nicola Edwards, and Gong Chen*. Synthesis of Phenanthridines via Palladium-Catalyzed Picolinamide-Directed Sequential C–H Functionalization. *Beilstein J. Org. Chem.* **2013**, 9, 891–899
(Invited contribution to a themed issue)
 18. William A. Nack, Gang He, Shu-Yu Zhang, Chengxi Lu, and Gong Chen*. Iodination of Remote *ortho*-C–H Bonds of Arenes via Picolinamide-Directed Electrophilic Aromatic Substitution: A Streamlined Synthesis Strategy for Tetrahydroquinolines. *Org. Lett.* **2013**, 15, 3440–3443.
 19. Nicola Y. Edwards,* Fang Liu, and Gong Chen. Experimental and Computational Studies of Anion Recognition by Pyridine-Functionalized Calixarenes. *Supramolecular Chem.* **2013**, 25, 481–489.
 20. Gang He, Shu-Yu Zhang, William A. Nack, and Gong Chen*. Use of a Readily Removable Auxiliary Group for the Synthesis of Pyrrolidones by the Palladium-Catalyzed Intramolecular Amination of Unactivated γ C(sp³)–H Bonds. *Angew. Chem. Int. Ed.* **2013**, 52, 11124–11128.
 21. Shu-Yu Zhang, Qiong Li, Gang He, William A. Nack, and Gong Chen*. Stereoselective Synthesis of β -Alkylated α -Amino Acids via Palladium-Catalyzed Alkylation of Methylene C(sp³)–H Bonds. *J. Am. Chem. Soc.* **2013**, 135, 12135–12141.
(Highlighted by *Synfact* **2013**, 9, 1196)
 22. Shu-Yu Zhang, Gang He, Zhaoyan Ai, Qiong Li, William A. Nack, and Gong Chen*. Copper-Catalyzed Picolinamide-Directed Amination of *ortho*-C–H Bonds of Anilines with Alkylamines at Room Temperature. Submitted to *Angew. Chem. Int. Ed.* **2014**.
 23. Chengxi Lu, Shu-Yu Zhang, Gang He, William A. Nack, and Gong Chen*. Palladium-Catalyzed Picolinamide-Directed Halogenation of *ortho* C–H Bonds of Benzylamine Substrates. Submitted to *Tetrahedron* **2014**.
 24. Shuyu Zhang, Qiong Li, Gang He, William A. Nack, and Gong Chen*. Palladium-Catalyzed Picolinamide-Directed Acetoxylation of Unactivated γ C(sp³)–H Bonds of Alkylamines. Submitted to *Adv. Synth. Cat.* **2014**.
 25. Shu Wang, Xiangyun Amy Chen, Jing Hu, Jiankang Jiang, Ying Gu, Gong Chen, Craig Thomas, Yanming Wang*. ATF4 mediated SESN2 expression links ER stress with the mTORC1 signaling pathway and autophagy. Manuscript in preparation, **2013**

Ph.D. and Postdoc work:

1. **Gong Chen**, Alexander Heim, Doris Riether, Dominic J. Yee, Yelena Milgrom, Mary Ann Gawinowicz, and Dalibor Sames. Reactivity of Functional Groups on the Protein Surface: Development of Epoxide Probes for Protein Labeling. *J. Am. Chem. Soc.* **2003**, 125, 8130–8133.
2. **Gong Chen**, Dominic J. Yee, Niko G. Gubernator, and Dalibor Sames. Development of Metabolic Imaging Agents via Rational Design of Fluorescence Switch: New Fluorogenic Probes for Monoamine Oxidases. *J. Am. Chem. Soc.* **2005**, 127, 4544–4545.
3. Jiehao Chen, J. David Warren, Bin Wu, **Gong Chen**, Qian Wan, and Samuel J. Danishefsky. A route to cyclic peptides and glycopeptides by native chemical ligation using in situ derived thioesters. *Tetrahedron Lett.* **2006**, 47, 1969–1972.

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4. Bin Wu, J. David Warren, Jiehao Chen, **Gong Chen**, Zihao Hua, and Samuel J. Danishefsky. Building complex glycopeptides: Development of a cysteine-free native chemical ligation protocol. *Angew. Chem. Int. Ed.* **2006**, *45*, 4116–4125.
5. **Gong Chen**, J. David Warren, Jiehao Chen, Bin Wu, Qian Wan, and Samuel J. Danishefsky. Studies Related to the Relative Thermodynamic Stabilities of C-Terminal Peptidyl Esters of O-Hydroxy Thiophenol: Emergence of a Doable Strategy for Non-Cysteine Ligation Applicable to the Chemical Synthesis of Glycopeptides. *J. Am. Chem. Soc.* **2006**, *128*, 7460–7462.
6. Bin Wu, J. David Warren, Jiehao Chen, **Gong Chen**, Zihao Hua, and Samuel J. Danishefsky. Reiterative Cysteine-based Coupling Leading to Complex, Homogeneous Glycopeptides. *Tetrahedron Lett.* **2006**, *47*, 5219–5223.
7. Bin Wu, Zihao Hua, J. David Warren, Krishnakumar Ranganathan, Qian Wan, **Gong Chen**, Zhongping Tan, Jiehao Chen, Atsushi Endo, and Samuel J. Danishefsky. Synthesis of the fucosylated biantennary N-glycan of erythropoietin. *Tetrahedron Lett.* **2006**, *47*, 5577–5579.
8. Qian Wan, Jiehao Chen, **Gong Chen**, and Samuel J. Danishefsky. A Potentially Valuable Advance in the Synthesis of Carbohydrate Based Anticancer Vaccines Through Extended Cycloaddition Chemistry. *J. Org. Chem.* **2006**, *71*, 8244–8249.
9. Bin Wu, Zhongping Tan, **Gong Chen**, Jiehao Chen, Zihao Hua, Qian Wan, Krishnakumar Ranganathan, and Samuel J. Danishefsky. Mature Homogeneous Erythropoietin Building Blocks by Chemical Synthesis: The EPO 22-37 Glycopeptide Domain Presenting the Fully N-Linked Dodecasaccharide. *Tetrahedron Lett.* **2006**, *47*, 8009–8011.
10. Jiehao Chen, **Gong Chen**, Bin Wu, Qian Wan, Zhongping Tan, Zihao Hua, and Samuel J. Danishefsky. Mature Homogeneous Erythropoietin Building Blocks by Chemical Synthesis: The EPO 114–166 Glycopeptide Domain Presenting Its O-Linked Glycophorin. *Tetrahedron Lett.* **2006**, *47*, 8013–8016.
11. **Gong Chen**, Qian Wan, Zhongping Tan, Cindy Kan, Krishnakumar Ranganathan, Zihao Hua, and Samuel J. Danishefsky. Development of Efficient Methods for Accomplishing Cysteine-Free Peptide and Glycopeptide Coupling. *Angew. Chem. Int. Ed.* **2007**, *46*, 7383–7386. Citation: 40.
12. Yu Yuan, Jin Chen, Qian Wan, Zhongping Tan, **Gong Chen**, Cindy Kan, and Samuel J. Danishefsky. Toward Homogeneous Erythropoietin: Fine Tuning of the C Terminal Acyl Donor in the Chemical Synthesis of the Cys29–Gly77 Glycopeptide Domain. *J. Am. Chem. Soc.* **2009**, *131*, 5432–5437.
13. Cindy Kan, John D. Trzuppek, Bin Wu, Qian Wan, **Gong Chen**, Zhongping Tan, Yu Yuan, and Samuel J. Danishefsky. Toward Homogeneous Erythropoietin: Chemical Synthesis of the Ala1–Gly28 Glycopeptide Domain by ‘Alanine’ Ligation. *J. Am. Chem. Soc.* **2009**, *131*, 5438–5443.
14. Pavel Nagorny, Bernhard Fasching, Xuechen Li, **Gong Chen**, Baptiste Aussedat, and Samuel J. Danishefsky. Toward Fully Synthetic Homogeneous β -Human Follicle-Stimulating Hormone (β -hFSH) with a Biantennary N-Linked Dodecasaccharide. Synthesis of β -hFSH with Chitobiose Units at the Natural Linkage Sites. *J. Am. Chem. Soc.* **2009**, *131*, 5792–5799.

Patents

1. **Gong Chen**, Dominic J. Yee, Niko G. Gubernator, and Dalibor Sames. Diaminocoumarins as fluorogenic substrates for monoamine oxidases, and their preparation, pharmaceutical compositions,

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photophysical properties, and a method for detecting active monoamine oxidases and their inhibitors for treatment of nervous system disorders. US Pat. Appl. 2005/030276, WO 2006026368, **2006**.

2. Bin Wu, J. David Warren, **Gong Chen**, Jiehao Chen, Qian Wan, Zhongping Tan, Zihao Hua, Cindy Kan, Krishnakumar Ranganathan, and Samuel J. Danishefsky. Homogenous Erythropoietin and Other Peptides and Proteins, Method and Intermediates for Their Preparation. US Pat. Appl. 20100081786, WO2007120614, **2007**.
3. Wang, Y.J., Li, P., Wang, S., Hu, J., **Chen, G.**, and **Wang, Y.** Therapeutic compositions and methods of PAD4 inhibitors in cancer and autoimmune diseases. International/US Pat. App PCT/US2011/058791, WO/2012/061390, **2012**.

Invited seminars and presentations

1. 6th Annual Midwest Carbohydrate and Glycobiology Symposium, Toledo, OH, Sept 25th, **2010**.
2. College of Pharmacy, University of Pittsburgh, PA, Oct 6th, **2010**.
3. Cancer Institute, Penn State Hershey Medical Center, PA, Nov 18th, **2010**.
4. "Chemistry Across the Borders Symposium", ACS-MARM, University of Maryland. May 21st, **2011**.
5. Gordon Research Conference on Carbohydrates; June 22nd, **2011**
6. Sino-US Chemistry Professors Conference, Guizhou University, Guiyang, China, June 28th, **2011**.
7. Department of Chemistry, Nanjing University, Nanjing, China, July 1st, **2011**.
8. European Science Foundation, COST Conference on Natural Products Chemistry, Biology and Medicine IV, Acquafredda di Maratea, Italy, Sept 1st, **2011**.
9. Department of Chemistry, Penn State Schuylkill Campus, PA, Nov 3rd, **2011**.
10. Chemical Carcinogenesis and Chemoprevention Meeting, Penn State Hershey Cancer Institute, PA, Dec 21st, **2011**.
11. Department of Chemistry, Duquesne University, PA, Feb 10th, **2012**.
12. Department of Chemistry, University of Pittsburgh, PA, Feb 23rd, **2012**.
13. ACS Susquehanna Valley section, Susquehanna University, PA, March 14th, **2012**.
14. "Breadth and Variety Stemming from Organic Chemistry", ACS-MARM, UMBC, June 1st, **2012**.
15. Department of Chemistry, Georgia State University, June 18th, **2012**.
16. Eli Lilly Company, July 31st, **2012**.
17. "Young Academic Investigators Symposium", ACS, Philadelphia, Aug 21th, **2012**.
18. EuCheMs Organic Division Young Investigator Workshop, Vienna, Austria, Aug 23th, **2012**
19. Department of Chemistry, Chicago University, Oct 5th, **2012**.
20. Department of Chemistry, Cornell University, Oct 11th, **2012**.
21. Department of Chemistry, West Virginia University, Oct 24th, **2012**
22. Department of Chemistry, Queens College, Nov 19th, **2012**.
23. Department of Chemistry, Purdue University, Jan 15th, **2013**
24. Department of Chemistry, UC Davis, Jan 22th, **2013**
25. Department of Chemistry, UC Santa Barbara, Jan 24th, **2013**
26. Department of Biochemistry, UT Southwestern Medical Center, Feb 5th, **2013**
27. Department of Chemistry, Texas A&M University, Feb 7th, **2013**

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28. Department of Molecular Pharmacology & Chemistry Program, Memorial Sloan-Kettering Cancer Center, Feb 21th, **2013**
29. Department of Chemistry, Columbia University, Feb 22nd, **2013**
30. Department of Chemistry, Colorado State University, Feb 26th, **2013**
31. Department of Chemistry, University of Utah, Feb 28th, **2013**
32. Department of Chemistry, University of Delaware, March 6th, **2013**
33. Department of Chemistry, UT Austin, March 22th, **2013**
34. Department of Chemistry, Syracuse University, April 2nd, **2013**
35. Department of Chemistry, UC Irvine, May 1st, **2013**
36. Department of Chemistry, Scripps, May 3rd, **2013**
37. Department of Process Research, BMS, New Brunswick, NJ, June 19th, **2013**
38. Department of Discovery Chemistry, BMS, Lawrenceville, NJ, June 20th, **2013**
39. Gordon Research Conference on Organic Reactions & Processes; July 14th, **2013**
40. Advanced Science Institute, RIKEN, Japan, July 29th, **2013**
41. Graduate School of Pharmaceutical Sciences, University of Tokyo, Japan, July 30th, **2013**
42. Graduate School of Pharmaceutical Sciences, Kyoto University, Japan, Aug 1st, **2013**
43. Graduate School of Pharmaceutical Sciences, Nagoya University, Japan, Aug 2nd, **2013**
44. 16th International symposium on relations between homogeneous and heterogeneous catalysis (ISHHC-16), Hokkaido University, Japan, Aug 9th, **2013**
45. Department of Chemistry, Lanzhou University, Lanzhou, China, Aug 13th, **2013**
46. Shanghai Institute of Organic Chemistry (SIOC), Shanghai, China, Aug 14th, **2013**
47. Department of Chemistry, Peking University, Beijing, China, Aug 15th, **2013**
48. Department of Chemistry, University of Rochester, Sep13th, **2013**
49. Department of Chemistry, UC Berkeley, Sep17th, **2013**
50. Department of Chemistry, UCLA, Oct 8th, **2013**
51. Amgen Young Investigator's Symposium, Amgen Inc., CA, Oct 9th, **2013**
52. Department of Chemistry, Stanford University, CA, Oct 10th, **2013**
53. Department of Chemistry, Penn State University, Oct 31th, **2013**
54. Department of Chemistry and Chemical Biology, Rutgers University, March 4th, **2014**
55. "Advance in C-H Functionalization", ACS, Dallas, March 16th, **2014**.

Competed Support

Agency:	PSU Clinical and Translational Science Institute
Principal Investigator:	Dr. Gong Chen
Co-Investigator(s):	Dr. Yanming Wang (BMB)
Project Title:	Design and Evaluate Anti-Cancer Potential of Haloacetamide-Derived PAD4 Inhibitors
Award Dates:	9/2009 - 9/2010
Awarded:	\$50,000
Budgeted Effort:	0%

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Current Support

Agency: ACS
Principal Investigator: Dr. Gong Chen
Project Title: Catalytic Functionalization of Carbon-Hydrogen Bonds with Alkyl Halides
Award Dates: 9/1/12 – 8/31/14
Awarded: \$100,000
Budgeted Effort: 10%

Agency: Amgen
Principal Investigator: Dr. Gong Chen
Project Title: 2013 Amgen Young Investigator's Award
Award Dates: 10/1/13 – 09/30/14
Awarded: \$25,000
Budgeted Effort: 0%

Agency: GlycoMimetic Inc
Principal Investigator: Dr. Gong Chen
Project Title: P-type Lectin Glycomimetic Ligands
Award Dates: 11/1/11 – 10/31/14
Awarded: \$150,000
Budgeted Effort: 10%

Agency: NSF CAREER
Principal Investigator: Dr. Gong Chen
Project Title: Functionalization of C(sp³)-H Bonds for Synthesis of Complex Molecules
Award Dates: 7/1/11 – 6/30/16
Awarded: \$550,000
Budgeted Effort: 20%

Agency: DOE (ARRA) CLSF Center Grant
Principal Investigator: Dr. D J Cosgrove
Co-Investigator: Dr. G. Chen and several others
Project Title: Center for Lignocellulose Structure and Formation
Award Dates: 08/01/09 – 07/31/14
Awarded: \$21,000,000 (Gong's portion – \$120,000)
Budgeted Effort: 0%

Graduate student and postdoc co-workers

Jerry Yiqing Feng Ph.D. student, 2008-2014, co-advising with Prof. Steven Weinreb
Chengxi Lu Ph.D. student, 2010-present
William A Nack Ph.D. student, 2011-present
Zhaoyan Ai Ph.D. student, 2013-present

Dr. Gang He Postdoc, 2010-present
Dr. Shuyu Zhang Postdoc, 2011-present
Dr. Bo Wang Postdoc, 2013-present
Dr. Qiong Li Visiting scholar, 2012-present

Dr. Yunpeng Liu Postdoc, 2009-2012
Dr. Yuji Wang Postdoc, 2009-2010
Currently, associate professor, Capital Medical University, China.

Dr. Jianhui Wu Postdoc, 2010-2011
Currently, associate professor, Capital Medical University, China.

Dr. Yingsheng Zhao Postdoc, 2010-2012