

Jianglong Zhu, Ph.D.

Department of Chemistry & Biochemistry and School of Green Chemistry and Engineering
The University of Toledo, 2801 W. Bancroft Street, MS 602, Toledo, OH 43606, USA
Tel: (419) 530-1501; Fax: (419) 530-4033, Email: Jianglong.Zhu@UToledo.edu
<http://www.utoledo.edu/nsm/chemistry/people/Webpages/Zhu.html>

PROFESSIONAL EXPERIENCE

- 8/2017 – present Professor, Department of Chemistry & Biochemistry and School of Green Chemistry and Engineering, The University of Toledo
- 8/2014 – 7/2017 Associate Professor, Department of Chemistry & Biochemistry and School of Green Chemistry and Engineering, The University of Toledo
- 8/2010 – 7/2014 Assistant Professor, Department of Chemistry and School of Green Chemistry and Engineering, The University of Toledo
- 6/2007 – 7/2010 Postdoctoral Scholar, Memorial Sloan-Kettering Cancer Center, New York, NY (with Professor Samuel J. Danishefsky)

EDUCATION

- 9/2001 - 5/2007 Ph.D. in Organic Chemistry, Boston University, Boston, MA (with Professor John A. Porco, Jr.)
- 9/1998 - 4/2001 M.S., Organic Chemistry, Tianjin University, Tianjin, China
- 3/1996 - 7/1998 B.E., Engineering Economics, Tianjin University, Tianjin, China
- 9/1994 - 7/1998 B.S., Chemistry, Tianjin University, Tianjin, China

AWARDS AND HONORS

- 2015 Ad Hoc Reviewer for NIH SBCA Study Section
- 2014 "Young Investigators in Glycoscience" Symposium, ACS meeting at Dallas
- 2005 Feldman Award, Chemistry Department, Boston University, Boston, MA
- 1997 Tianjin Wutian Pharmaceutical Corporation Award, Tianjin University, China
- 1996 "Wang Kechang" Education Fund Award, Tianjin University, China

PROFESSIONAL MEMBERSHIPS

- 2005-present Member of American Chemical Society
Divisions: Organic and Carbohydrate Chemistry
- 2009-2010 Sigma Xi Scientific Research Society
- 2010-present Chinese-American Chemistry & Chemical Biology Professors Association (CAPA)

SERVICE FOR PROFESSIONAL MEETINGS

Co-organized the 9th Midwest Carbohydrate and Glycobiology Symposium, The University of Toledo, Toledo, OH, October 11-12, **2013**.

Served as Session Chair for the 6-8, 10-13th Midwest Carbohydrate and Glycobiology Symposiums held at various locations in the Midwest area (The University of Toledo (**2010**), Michigan State University (**2011**), Wayne State University (**2012**), University of Michigan Ann Arbor (**2014**), Cleveland State University (**2015**), Central Michigan University (**2016**), University of Wisconsin-Madison (**2017**)).

Served as Session Chair for the 246th ACS National Meeting & Exposition (Division of Carbohydrate Chemistry), Indianapolis, IN, September 8-12, **2013**.

Served as Poster Judge for the 2-8th Annual Midwest Graduate Student Research Symposiums, The University of Toledo, Toledo, OH, (**2011-2017**).

PUBLICATIONS

Publications from University of Toledo

36. Bhetuwal, B. R.; Woodward, J.; Li, X.;* **Zhu, J.*** "Stereoselective β -Mannosylation via Anomeric O-Alkylation: Concise Synthesis of β -D-Xyl-(1 \rightarrow 2)- β -D-Man-(1 \rightarrow 4)- α -D-Glc-OMe, a Trisaccharide Oligomer of the *Hyriopsis schlegelii* Glycosphingolipid." *Submitted*.
35. Acharya, P.; Baryal, K. N.; Reno, C.; **Zhu, J.*** "Synthesis of S-Linked Trisaccharide Glycal of Derhodinosylurdamycin A: Discovery of Alkyl Thiocyanate as an Efficient Electrophile for Stereoselective Sulfenylation of 2-Deoxy Glycosyl Lithium." *Carbohydr. Res.* **2017**, *448*, 103-109.
34. Li, X.; **Zhu, J.*** "Glycosylation via Transition-Metal Catalysis: Challenges and Opportunities." *Eur. J. Org. Chem.* **2016**, 4724-4767, DOI: 10.1002/ejoc.201600484. (Most accessed in 10/2016). [This work was highlighted in the Journal Front Cover: Eur. J. Org. Chem. 2016, 4719.](#)
33. Li, X.;* Woodward, J.; Hourani, A.; Zhu, D.; Ayoub, S.; **Zhu, J.*** "Synthesis of the 2-Deoxy Trisaccharide Glycal of Antitumor Antibiotics Landomycins A and E." *Carbohydr. Res.* **2016**, *430*, 54-58.
32. Nguyen, H.; Zhu, D.; Li, X.;* **Zhu, J.*** "Stereoselective Construction of β -Mannopyranosides via Anomeric O-Alkylation: Synthesis of the Trisaccharide Core of N-linked Glycans." *Angew. Chem., Int. Ed.* **2016**, *55*, 4767-4771.
31. Baryal, K. N.; **Zhu, J.*** "Stereoselective Synthesis of S-linked Hexasaccharide of Landomycin A via Umpolung S-Glycosylation." *Org. Lett.* **2015**, *17*, 4530-4533.

30. Khatri, H. R.; Nguyen, H.; Dunaway, J. K.; **Zhu, J.*** "Fluoroalcohol-mediated reductive iodonio-Claisen rearrangement: Synthesis of complex *ortho*-substituted-allyl iodoarenes" *Front. Chem. Sci. Eng.* **2015**, *9*, 359-368.
29. Khatri, H. R.; Nguyen, H.; Dunaway, J. K.; **Zhu, J.*** "Total Synthesis of Antitumor Antibiotic Derhodinosylurdamycin A." *Chem. Eur. J.* **2015**, *21*, 13553-13557.
28. Li, X.*; Saleh, Z.; Egri, B.; Hourani, A.; Harding, L.; Baryal, K. N.; **Zhu, J.** "Selective deprotection of benzyl (Bn) ethers in the presence of para-methoxybenzyl (PMB) ethers." *Tetrahedron Lett.* **2015**, *56*, 1420-1422.
27. Zhu, D.; Adhikari, S.; Baryal, K. N.; Abdullah, B. N.; **Zhu, J.*** "Synthesis of α -Digitoxosides and α -Boivinosides via Chelation-Controlled Anomeric O-Alkylation." *J. Carbohydr. Chem.* **2014**, *33*, 438-451(*special issue, invited submission*).
26. Zhu, D.; Baryal, K. N.; Adhikari, S.; **Zhu, J.*** "Direct Synthesis of 2-Deoxy- β -Glycosides via Anomeric O-Alkylation with Secondary Electrophiles." *J. Am. Chem. Soc.* **2014**, *136*, 3172-3175.
25. Baryal, K. N.; **Zhu, J.*** "Stereoselective Synthesis of S-Linked 2-Deoxy Sugars." *Synlett(Synpacts)* **2014**, *25*, 308-312.
24. Baryal, K. N.; Adhikari, S.; **Zhu, J.*** "Catalytic Stereoselective Synthesis of β -Digitoxosides: Direct Synthesis of Digitoxin and C1'-epi-Digitoxin." *J. Org. Chem.* **2013**, *78*, 12469-12476.
23. Adhikari, S.; Li, X.; **Zhu, J.*** "Studies of S-But-3-ynyl and *gem*-Dimethyl S-But-3-ynyl Thioglycoside Donors in Gold-Catalyzed Glycosylations." *J. Carbohydr. Chem.* **2013**, *32*, 336-359 (*special issue, invited submission*).
22. Nguyen, H.; Khatri, H. R.; **Zhu, J.*** "Reductive Iodonio-Claisen Rearrangement of Iodothiophene Diacetates with Allylsilanes: Formal Synthesis of Plavix®." *Tetrahedron Lett.* **2013**, *54*, 5464-5466. [This work was highlighted in Synfacts, 2013, 9, 1265.](#)
21. Baryal, K. N.; Zhu, D.; Li, X.; **Zhu, J.*** "Umpolung Reactivity in the Stereoselective Synthesis of S-Linked 2-Deoxyglycosides." *Angew. Chem., Int. Ed.* **2013**, *52*, 8012-8016. [This work was highlighted in Synlett \(SYNFACTS\) 2014, 25, 308-312.](#)
20. Adhikari, S.; Baryal, K. N.; Zhu, D.; Li, X.; **Zhu, J.*** "Gold-Catalyzed Synthesis of 2-Deoxy Glycosides Using S-But-3-ynyl Thioglycoside Donors." *ACS Catal.* **2013**, *3*, 57-60.
19. Khatri, H. R.; **Zhu, J.*** "Synthesis of Complex *ortho*-Allyliodoarenes by Employing the Reductive Iodonio-Claisen Rearrangement." *Chem. Eur. J.* **2012**, *18*, 12232-12236.
18. Li, X.; **Zhu, J.*** "Recent Advances in Transition Metal-Catalyzed O-Glycosylations." *J. Carbohydr. Chem.* **2012**, *31*, 284-324 (*special issue, invited submission*).

Graduate and Postdoc Publications

17. O'Cearbhaill, R. E.; Ragupathi, G.; **Zhu, J.**; Wan, Q.; Mironov, S.; Yan, G.; Spassova, M. K.; Iasonos, A; Kravetz, S.; Ouerfelli, O.; Spriggs, D. R.; Danishefsky, S. J.; Sabbatini, P. J. "A Phase I Study of Unimolecular Pentavalent (Globo-H-GM2-sTn-TF-Tn) Immunization of

- Patients with Epithelial Ovarian, Fallopian Tube, or Peritoneal Cancer in First Remission", *Cancers* **2016**, *8*, 46; doi:10.3390/cancers8040046 .
16. Germain, A. R.; Bruggemeyer, D. M.; **Zhu, J.**; Genet, C.; O'Brien, P.; Porco, J. A., Jr.* "Synthesis of the Azaphilones (+)-Sclerotiorin and (+)-8-O-Methylsclerotiorinamine Utilizing (+)-Sparteine Surrogates in Copper-Mediated Oxidative Dearomatization." *J. Org. Chem.* **2011**, *76*, 2577-2584.
 15. Wang, P.; Li, X.; **Zhu, J.**; Chen, J.; Yuan, Y.; Wu, X.; Danishefsky, S. J.* "Encouraging Progress in the ω -Aspartylation of Complex Oligosaccharides as a General Route to β -N-Linked Glycopolypeptides." *J. Am. Chem. Soc.* **2011**, *133*, 1597-1602.
 14. Chen, J.; Wang, P.; **Zhu, J.**; Wan, Q.; Danishefsky, S. J.* "A Program for Ligation at Threonine Sites: Application to the Controlled Total Synthesis of Glycopeptides." *Tetrahedron* **2010**, *66*, 2277-2283.
 13. **Zhu, J.**; Warren, J. D.; Danishefsky, S. J.* "Synthetic Carbohydrate-Based Anticancer Vaccines: The Memorial Sloan-Kettering Experience." *Expert Rev. Vaccines* **2009**, *8*, 1399-1413.
 12. Wang, P.; **Zhu, J.**; Yuan, Y.; Danishefsky, S. J.* "Total Synthesis of the 2,6-Sialylated Immunoglobulin G Glycopeptide Fragment in Homogeneous Form." *J. Am. Chem. Soc.* **2009**, *131*, 16669-16671.
 11. **Zhu, J.**; Wan, Q.; Lee, D.; Yang, G.; Spassova, M. K.; Ouerfelli, O.; Ragupathi, G.; Damani, P.; Livingston, P. O.; Danishefsky, S. J.* "From Synthesis to Biologics: Preclinical Data on the Chemistry Derived Anticancer Vaccines." *J. Am. Chem. Soc.* **2009**, *131*, 9298-9303. [This work was highlighted in advance in Chinese Science Bulletin "Trend" 2008, 53, 2126.](#)
 10. Yuan, Y.; **Zhu, J.**; Li, X.; Wu, X.; Danishefsky, S. J.* "Preparation and Reactions of N-Thioformyl Peptides from Amino Thioacids and Isonitriles." *Tetrahedron Lett.* **2009**, *50*, 2329-2333.
 9. **Zhu, J.**; Wan, Q.; Yang, G.; Ouerfelli, O.; Danishefsky, S. J.* "Synthesis of Human Cancer Associated Globo-H (MBr1 Antigen) Glycosylamino acid: Some Mechanistic and Conformational Reinvestigations." *Heterocycles* **2009**, *79*, 441-449.
 8. **Zhu, J.**; Wan, Q.; Ragupathi, G.; George, C. M.; Livingston, P. O.; Danishefsky, S. J.* "Biologics through Chemistry: Total Synthesis of a Proposed Dual Acting Vaccine Targeting Ovarian Cancer by Orchestration of Oligosaccharide and Polypeptide Domains." *J. Am. Chem. Soc.* **2009**, *131*, 4151-4158. [This work was highlighted in ACS Chemical Biology "Spotlight", 2009, 4, 238.](#)
 7. **Zhu, J.**; Wan, Q.; Danishefsky, S. J.* "Synthesis of Biotinylated Tumor Associated Carbohydrate Antigens for Immunological Studies." *Tetrahedron Lett.* **2009**, *50*, 712-714.
 6. **Zhu, J.**; Wu, X.; Danishefsky, S. J.* "On the Preparation of Enantiomerically Pure Isonitriles from Amino Acid Esters and Peptides." *Tetrahedron Lett.* **2009**, *50*, 577-579.
 5. Chen, J.; Wan, Q.; Yuan, Y.; **Zhu, J.**; Danishefsky, S. J.* "Native Chemical Ligation at Valine: A Contribution to Peptide and Glycopeptide Synthesis." *Angew. Chem., Int. Ed.*, **2008**, *47*, 8521-8524.

4. Dong, S.; **Zhu, J.**; Porco, J. A., Jr.* "Enantioselective Synthesis of Bicyclo[2.2.2]octenones Using a Copper-Mediated Oxidative Dearomatization / [4+2] Dimerization Cascade." *J. Am. Chem. Soc.* **2008**, *130*, 2738-2739.
3. **Zhu, J.**; Porco, J. A., Jr.* "Asymmetric Syntheses of (-)-Mitorubrin and Related Azaphilone Natural Products." *Org. Lett.* **2006**, *8*, 5169-5171.
2. **Zhu, J.**; Grigoriadis, N. P.; Lee, J. P.; Porco, J. A., Jr.* "Synthesis of the Azaphilones Using Copper-Mediated Enantioselective Oxidative Dearomatization." *J. Am. Chem. Soc.* **2005**, *127*, 9342-9343.
1. **Zhu, J.**; Germain, A. R.; Porco, J. A., Jr.* "Synthesis of Azaphilones and Related Molecules by Employing Cycloisomerization of *o*-Alkynylbenzaldehydes." *Angew. Chem., Int. Ed.* **2004**, *43*, 1239-1243.

* denotes the corresponding author.

PATENTS

2. Danishefsky, S. J.; Ragupathi, G.; Livingston, P. O.; **Zhu, J.**; Iyer, K.; Yang, G.; Sabbatini, P. "Multivalent Glycopeptide Constructs and Uses Thereof." **2011**, WO 2011156774.
1. Danishefsky, S.; **Zhu, J.**; Wan, Q.; Jeon, I.; Kim, W.; Nagorny, P.; Lee, D.; Livingston, P.; Ragupathi, G. "Synthesis of Glycopeptide Constructs for Eliciting Antibodies and for Treating Cancer." **2010**, WO 2010006343.

INVITED LECTURES

22. **Zhu, J.** "Complex Carbohydrate Synthesis via Stereoselective Anomeric *O*-Alkylation." Presented at 1st New England Glyco-Chemistry Meeting (NEGCM), Northeastern University, Boston, MA, United States, June 23, **2017**.
21. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Peking University, Beijing, China, May 17, **2017**.
20. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Tsinghua University, Beijing, China, May 16, **2017**.
19. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at 2nd National Youth Conference on Synthetic Carbohydrate Chemistry, Shandong University, Jinan, China, May 12-14, **2017**.
18. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Huazhong University of Science and Technology, Wuhan, China, May 11, **2017**.
17. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Shanghai Jiao Tong University, Shanghai, China, May 10, **2017**.

16. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Shanghai Institute of Organic Chemistry, Shanghai, China, May 9, **2017**.
15. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at University of Alberta, Edmonton, AB, Canada, April 7, **2017**.
14. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Vanderbilt University, Nashville, TN, United States, October 12, **2015**.
13. **Zhu, J.** "Chemical Synthesis of Bioactive Natural Molecules bearing 2-Deoxy Sugars." Presented in the 250th ACS National Meeting & Exposition, Boston, MA, United States, August 16-20, **2015**.
12. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Brandeis University, Waltham, MA, United States, May 15, **2015**.
11. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at Northeastern University, Boston, MA, United States, May 14, **2015**.
10. **Zhu, J.** "New Methods for Stereoselective Construction of Challenging Glycosidic Linkages." Presented at University of Wisconsin – Madison, Madison, WI, United States, March 20, **2015**.
9. **Zhu, J.** "Stereoselective Synthesis of Biologically Significant O- and S-linked 2-Deoxy Sugars." Presented at the 10th Annual Midwest Carbohydrate and Glycobiology Symposium, University of Michigan, Ann Arbor, MI, October 17–18, **2014**.
8. **Zhu, J.** "Stereoselective Synthesis of S-Linked 2-Deoxy Sugars for Biological Studies." Invited to present at Symposium entitled "New Directions in Carbohydrate Synthesis" in the 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, **2014**.
7. **Zhu, J.** "Direct and Stereoselective Synthesis of Biologically Significant 2-Deoxy Sugars." Invited to present at Symposium entitled "Young Investigators in Glycoscience" in the 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, **2014**.
6. **Zhu, J.** "Direct and Stereoselective Synthesis of Biologically Significant O- and S-linked 2-Deoxy Sugars." Scheduled to be presented at Michigan State University, East Lansing, MI, United States, September 4, **2013**.
5. **Zhu, J.** "New Methods for Stereoselective Synthesis of Biologically Significant O- and S-linked 2-Deoxy Sugars." Presented at Cleveland State University, Cleveland, OH, United States, March 29, **2013**.
4. **Zhu, J.** "New Methods for Stereoselective Synthesis of Biologically Significant O- and S-linked 2-Deoxy Sugars." Presented at Oakland University, Rochester, MI, United States, March 6, **2013**.
3. **Zhu, J.** "New Methods for Stereoselective Synthesis of Biologically Significant O- and S-linked 2-Deoxy Sugars." Presented at Department of Medicinal and Biological Chemistry, College of Pharmacy and Pharmaceutical Sciences, University of Toledo, Toledo, OH, United States, February 28, **2013**.

2. **Zhu, J.**; Danishefsky, S. J. "Recent Advances in Synthetic Carbohydrate-Based Anticancer Vaccines." Presented at the 6th Annual Midwest Carbohydrate and Glycobiology Symposium, University of Toledo, Toledo, OH, United States, September 24–25, **2010**.
1. **Zhu, J.** "Synthesis of Azaphilone Natural Products and Carbohydrate-Based Anticancer Vaccines." Presented at the Department of Chemistry, University of Toledo, Toledo, OH, United States, February 17, **2010**.