Jiaoyang Jiang, PhD

School of Pharmacy
University of Wisconsin-Madison
777 Highland Avenue
Madison, WI 53705

Phone: (608) 265-6732
Fax: (608) 262-5345
Email: jiaoyang.jiang@wisc.edu
Webpage: https://pharmacy.wisc.edu/jiang-lab

EDUCATION

PhD, Chemistry, Brown University, 2009

BS, Chemistry, University of Science and Technology of China (USTC), 2004

EXPERIENCE

Assistant Professor 08/2013 – present

Pharmaceutical Sciences Division, School of Pharmacy, University of Wisconsin-Madison, Studying the molecular mechanism and biological function of protein glycosylation using chemical biology, enzymology, mass spectrometry, X-ray crystallization, and cell biology approaches.

Postdoctoral Research, Advisor: Dr. Suzanne Walker 11/2008 – 07/2013

Department of Microbiology and Immunobiology, Harvard Medical School, Biochemical characterization of the glycosyltransferase & the unique proteolytic activities of O-GlcNAc transferase (OGT), and discovery of small molecule inhibitors of protein glycosyltransferase.

- Investigated the molecular mechanism of the glycosyltransfer reaction catalyzed by OGT to guide crystallization and inhibitor design.
- Discovered a class of OGT inhibitors with a novel mechanism of inhibition and demonstrated the dicarbamate scaffold functions as a neutral diphosphate mimic.
- Uncovered the mechanism of the unique proteolytic activity of OGT in the maturation process of HCF-1, an important regulator of the cell cycle.

Doctoral Research, Advisor: Dr. David E. Cane 01/2005 – 09/2008

Department of Chemistry, Brown University, Geosmin biosynthesis and discovery of the neopentalenolactone biosynthetic pathway.

- Identified and characterized the biosynthetic genes of the earthy odorant geosmin, through reconstitution of geosmin biosynthetic enzymes and new assay development. These studies facilitated early detection of sources of geosmin contamination in water supplies.
- Characterized the properties and functions of a new monooxygenase PtlE in the hypothetical biosynthetic pathway of antibiotic pentalenolactone in *Streptomyces avermitilis*, and discovered a previously unknown metabolite, neopentalenolactone D, a new branch of the pentalenolactone family tree.

Undergraduate Research, Advisor: Dr. Zhiyong Wang 10/2002 – 05/2004

Department of Chemistry, USTC, Theoretical studies on the mechanisms of organic reactions.

TEACHING

- Phmsci786: Natural Product Synthesis, Biosynthesis, and Drug Discovery Spring 2015, 2017
- Phmsci532: Medicinal Chemistry II Spring 2014, 2015, 2016, 2017

- Phmsci780: Principles of Pharmaceutical Sciences Fall 2013, 2014, 2015, 2016
- Phmsci432: Pharmaceutical Biochemistry Fall 2016

HONORS AND AWARDS

- Young Chemical Biologist Award, International Chemical Biology Society, San Francisco 2014
- Vilas Research Investigator Award, William F. Vilas Trust Estate 2014
- First Prize Poster Award & Travel Award, 244th ACS National Meeting, Philadelphia, PA 2012
- Ash Stevens Outstanding Poster Award, Gordon Research Conference 2011
- Potter Prize for Most Outstanding PhD Thesis, Brown University 2009
- Sigma Xi Award for Excellence in Graduate Research, Brown University 2008
- Best Poster Awards, Brown University 2006, 2007
- Travel Award, 232nd American Chemical Society, San Francisco, CA 2006
- China Goodwill and Peace Development Foundation Scholarship, USTC 2003
- Outstanding Student Scholarship, Anhui Province, China 2003
- Bao Gang Education Scholarship, USTC 2002
- Outstanding Student Leader, USTC 2002
- Outstanding Student Scholarships, USTC 2000, 2001

JOURNAL REVIEWER

ACS Chemical Biology, Analytical Methods, ASSAY and Drug Development Technologies, Biochemical Journal, Carbohydrate Research, Current Drug Targets, Frontiers in Chemical Biology (Review Editor), Journal of the American Chemical Society, Journal of Natural Products, Metabolomics, Molecular BioSystems, Rapid Communications in Mass Spectrometry

SEMINARS

- Carbohydrates Gordon Research Conference, West Dover, VT 06/2017
- Biochemistry Seminar & Pediatrics Pulmonary Seminar, Case Western Reserve University, Cleveland, OH 05/2016
- Cancer Biology Seminar, UW-Madison, Madison, WI 01/2016
- 11th Annual Midwest Carbohydrate and Glycobiology Symposium, Cleveland, OH 10/2015
- Georgia State University, Atlanta, GA 09/2015
- Peking University, Beijing, China 07/2015
- National Institute of Biological Sciences, Beijing, China 07/2015
- Tianjin University, Tianjin, China 07/2015
- Nanjing University, Nanjing, China 06/2015
- University of Science and Technology of China, Hefei, China 06/2015
- Huazhong University of Science and Technology, Wuhan, China 06/2015
- Wuhan University, Wuhan, China 06/2015
- Nanjing University of Science and Technology, Nanjing, China 06/2015
- Shanghai Institute of Organic Chemistry, Shanghai, China 06/2015
- Shanghai Jiao Tong University, Shanghai, China 06/2015
- 11th SINO-US Chemistry Professors Conference, Suzhou, China 06/2015
- Carbohydrates Gordon Research Conference, West Dover, VT 06/2015
- 3rd Annual Conference of the International Chemical Biology Society, San Francisco 11/2014

- Chemical Biology Seminar, UW-Madison, Madison, WI 01/2014
- University of Washington, Seattle, WA 03/2013
- University of Arizona, Tucson, AZ 02/2013
- University of Pittsburgh, Pittsburgh, PA 02/2013
- University of Michigan, Ann Arbor, MI 02/2013
- Baylor College of Medicine, Houston, TX 01/2013
- Boston College, Boston, MA 01/2013
- University of Illinois at Urbana-Champaign, Urbana, IL 01/2013
- Yale University, New Haven, CT 01/2013
- University of Wisconsin-Madison, Madison, WI 01/2013
- Duke University, Durham, NC 12/2012
- Stony Brook University, Stony Brook, NY 12/2012
- Central Michigan University, Mount Pleasant, MI 11/2012
- Brown University, Providence, RI 09/2012
- Harvard Medical School, Boston, MA 11/2010
- Harvard University, Cambridge, MA 10/2010

PUBLICATIONS

Jiang Lab Publications

1. Hu CW[#], Worth M[#], Fan D[#], Li B[#], Li H[#], Lu L, Zhong X, Lin Z, Wei L, Ge Y, Li L, **Jiang J***. Electrophilic probes for deciphering substrate recognition by O-GlcNAc transferase. *Nature Chemical Biology* (accepted).
2. Liu F, Ma F, Wang Y, Hao L, Zeng H, Jia C, Wang Y, Liu P, Ong IM, Li B, Chen G, **Jiang J**, Gong S, Li L, Xu W. PKM2 methylation by CARM1 activates aerobic glycolysis to promote tumorigenesis. *Nature Cell Biology* (accepted).
3. Li B[#], Li H[#], Hu CW, **Jiang J***. Structural insights into the substrate binding adaptability and specificity of human O-GlcNAcase. *Nature Communications* (2017) 8:666. doi: 10.1038/s41467-017-00865-1.
4. Li B, Li H, Lu L, **Jiang J***. Structures of human O-GlcNAcase and its complexes reveal a new substrate recognition mode. *Nature Structural & Molecular Biology* (2017), 24, 362-69.
5. Worth M[#], Li H[#], **Jiang J***. Deciphering the functions of protein O-GlcNAcylation with chemistry. *ACS Chemical Biology* (2017), 12, 326-35.
6. Lu L, Fan D, Hu CW, Worth M, Ma ZX, **Jiang J***. Distributive O-GlcNAcylation on the highly repetitive C-terminal domain of RNA polymerase II. *Biochemistry* (2016) 55, 1149-58.

Previous Publications

1. Ortiz-Meoz RF, **Jiang J**, Lazarus MB, Orman M, Janetzko J, Fan C, Duveau DY, Tan ZW, Thomas CJ, Walker S. A small molecule that inhibits OGT activity in cells. *ACS Chemical Biol*ogy (2015) 10, 1392-7.
2. Lazarus, MB*; **Jiang, J***; Kapuria V, Bhuiyan T, Janetzko J, Zandberg WF, Vocadlo DJ, Herr W, Walker S. HCF-1 is cleaved in the active site of O-GlcNAc transferase. (*equal contribution) *Science* (2013), 342, 1235-9.
3. Lazarus, MB*; **Jiang, J***; Gloster, TM; Zandberg, WF; Whitworth, GE; Vocadlo, DJ; Walker, S. Structural snapshots of the reaction coordinate for O-GlcNAc transferase. (*equal contribution) *Nature Chemical Biology* (2012), 8, 966-8.
4. **Jiang, J***; Lazarus, MB*; Pasquina, L; Sliz, P; Walker, S. A neutral diphosphate mimic crosslinks the active site of human O-GlcNAc transferase. (*equal contribution) *Nature Chemical Biology* (2012), 8, 72-7.

5. Lazarus, MB; Nam, Y; **Jiang, J**; Sliz, P; Walker, S. Structure of human O-GlcNAc transferase and its complex with a peptide substrate. *Nature* (2011), 469, 564-7. (Highlighted by the News and Views in *Nature Chemical Biology* (2011), 7, 134-5 and this structure was named by the Protein Data Bank as Molecule of the Month.)
6. **Jiang, J**; Tetzlaff, CN; Takamatsu, S; Iwatsuki, M; Komatsu, M; Ikeda, H; Cane, DE. Genome mining in *Streptomyces avermitilis*. A biochemical Baeyer-Villiger reaction and discovery of a new branch of the pentalenolactone family tree. *Biochemistry* (2009), 48, 6431-40.
7. Giglio, S; **Jiang, J**; Saint, CP; Cane, DE; Monis, PT. Isolation and characterization of the gene associated with geosmin production in cyanobacteria. *Environmental Science & Technology* (2008), 42, 8027-32.
8. **Jiang, J**; Cane, DE. Geosmin biosynthesis. Mechanism of the fragmentation-rearrangement in the conversion of germacradienol to geosmin. *Journal of the American Chemical Society* (2008), 130, 428-9.
9. Nawrath, T; Dickschat, JS; Muller, R; **Jiang, J**; Cane, DE; Schulz, S. Identification of (8S,9S,10S)-8,10-dimethyl-1-octalin, a key intermediate in the biosynthesis of geosmin in bacteria. *Journal of the American Chemical Society* (2008), 130, 430-1.
10. Vedula, SL; **Jiang, J**; Zakharian, T; Cane, DE; Christianson, DW. Structural and mechanistic analysis of trichodiene synthase using site-directed mutagenesis: probing the catalytic function of tyrosine-295 and the asparagine-225/serine-229/glutamate-233-Mg^{2+}_{B} motif. *Archives of Biochemistry and Biophysics* (2008), 469, 184-94.
11. **Jiang, J**; He, X; Cane, DE. Biosynthesis of the earthy odorant geosmin by a bifunctional *Streptomyces coelicolor* enzyme. *Nature Chemical Biology* (2007), 3, 711-5. (Highlighted by the News and Views in *Nature Chemical Biology* (2007), 3, 690-1 and featured in *Chemical and Engineering News* (2007), 85, 19.)
12. **Jiang, J**; He, X; Cane, DE. Geosmin biosynthesis. *Streptomyces coelicolor* germacradienol/germacrene D synthase converts farnesyl diphosphate to geosmin. *Journal of the American Chemical Society* (2006), 128, 8128-9.
13. Zhou, C; **Jiang, J**; Zhou, Y; Xie, Z; Miao, Q; Wang, Z. Chemoselective carbonyl benzylation mediated by Zn/$CdCl_2$/$InCl_3$ in tap water. *Letters in Organic Chemistry* (2005), 2, 61-4.
14. Zha, Z; Qiao, S; **Jiang, J**; Wang, Y; Miao, Q; Wang, Z. Barbier-type reaction mediated with tin nano-particles in water. *Tetrahedron* (2005), 61, 2521-7.
15. Zhou, C; Zhou, Y; **Jiang, J**; Xie, Z; Wang, Z; Zhang, J; Wu, J; Yin, H. Organometallic reactions in aqueous media: the allylations of carbonyl compounds mediated in Zn/$CdSO_4$ and Zn/$SnCl_2$ bimetal systems. *Tetrahedron Letters* (2004), 45, 5537-40.

PATENTS

- Walker, S; **Jiang, J**; Lazarus, MB. Diphosphate mimetics and uses thereof. Pub. No. WO2013006758 A1.
- Cane, DE; Giglio, S; **Jiang, J**; Saint, CP; Monis, PT. Early detection of sources of microbial sesquiterpene contamination in water supplies and aquaculture. Pub. No. WO2010033670 A1.