Zhongping Tan

3415 Colorado Avenue, UCB 596
University of Colorado Boulder
Boulder, CO 80303

Phone: 303-492-5160; Fax: 303-492-5894
E-mail: zhongping.tan@colorado.edu
Group website: http://www.colorado.edu/lab/tangroup

I. EDUCATION

2000–2005	M.A., M.Phil., Ph.D., Chemical Biology Department of Chemistry, Columbia University, New York, NY *Advisor: Professor Virginia W. Cornish*
1997–2000	M.S., Organic Chemistry College of Chemistry and Molecular Engineering, Peking University, Beijing, China *Advisor: Professor Jianbo Wang*
1992–1997	B.S., Organic Chemistry College of Chemistry and Molecular Engineering, Peking University, Beijing, China *Advisor: Professor Jianbo Wang*

II. POSITIONS

2011–	Assistant Professor, Chemical Glycobiology Department of Chemistry and Biochemistry and BioFrontiers Institute University of Colorado, Boulder, CO
2005–2011	Postdoctoral Research Fellow, Bioorganic Chemistry Molecular Pharmacology and Chemistry Program, Sloan-Kettering Institute Memorial Sloan-Kettering Cancer Center, New York, NY *Advisor: Professor Samuel J. Danishefsky*

III. HONORS AND AWARDS

2017	David Y. Gin Young Investigator Award, American Chemical Society
2015	CAREER Award, National Science Foundation
2005	Hammett Award, Columbia University
2005	Arun Guthikonda Memorial Fellowship, Columbia University
1997	Outstanding Graduate, Beijing, China

IV. PROFESSIONAL AFFILIATIONS

2017-	Chinese-American Chemistry and Chemical Biology Professors Association, Member.
2016–	Society for Glycobiology, Member
2010–	Protein Society, Member
2005–2010	Oligonucleotide Therapeutics Society, Member
2003–2011	New York Academy of Science, Member
2002–	American Chemical Society, Member

V. PUBLICATIONS

39. X. Guan, P.K. Chaffey, Y. Ruan, X. Wang, T.N. Koelsch, A.H. Tran, Z. Tan, (2017) Influence of O-mannosylation on the binding specificity of a CBM-linker. *Chem Sci*, *submitted*.
38. P.K. Chaffey, X. Guan, X. Wei, Y. Ruan, X. Wang, A.H. Tran, W. Liang, Z. Tan, (2017) Quantitative effects of O-glycosylation on protein folding. *Biochemistry, submitted*.
37. X. Guan, P.K. Chaffey, Y. Ruan, X. Wang, E.R. Green, R.K. Shoemaker, A.H. Tran, T.N. Koelsch, C.K. Hurd, M.E. Himmel, G.T. Beckham, H. Long, Z. Tan, (2017) Carbohydrate binding module O-mannosylation alters binding selectivity to cellulose and lignin. *Proc Natl Acad Sci USA*, *submitted*.
36. X. Guan, P.K. Chaffey, X. Wei, D.R. Gulbranson, Y. Ruan, X. Wang, Y. Ouyang, L. Chen, C. Zeng, T.N. Koelsch, A.H. Tran, W. Liang, J. Shen, Z. Tan, (2017) Glycoengineering to optimize the properties of human insulin for oral delivery. *J Am Chem Soc*, s*ubmitted*.
35. P.K. Chaffey, X. Guan, Z. Tan, (2017) Using chemical synthesis to study and apply protein glycosylation. *Biochemistry, submitted*.
34. X. Guan, P.K. Chaffey, H. Chen, X. Wei, Y. Ruan, X. Wang, L. Yang, K. B. Barosh, A.H. Tran, W. Liang, X. Wang, Y. Zheng, Z. Tan, (2017) O-GalNAcylation of CCL5 improves its properties as an HIV-1 entry inhibitor. *Biochemistry, submitted*.
33. X. Guan, P.K. Chaffey, Y. Ruan, X. Wang, C.K. Hurd, D.J. Taatjes, Z. Tan, (2017) Chemical synthesis of the multiply phosphorylated *N*-terminal peptide of human P53TAD. *Synlett, submitted*.
32. P.K. Chaffey, X. Guan, C. Chen, Y. Ruan, X. Wang, A.H. Tran, T.N. Koelsch, Q. Cui, Y. Feng, Z. Tan, Structural insight into the stabilizing effect of O-glycosylation. *Biochemistry*, *in press*.
31. M.A. McKercher, X. Guan, Z. Tan, D.S. Wuttke, (2017) Multimodal recognition of diverse peptides by the *C*-terminal SH2 domain of PLCγ1. *Biochemistry*, *in press*
30. Z. Tan, L-X. Wang, (2016) Book: Chemical Biology of Glycoproteins: A tool for understanding and engineering glycans attached to proteins, DOI: 10.1039/9781782623823.
    and Chapters:
    - P.K. Chaffey, X. Guan, L-X Wang, Z. Tan, (2016) Chapter 1: General aspects of the chemical biology of glycoproteins.
    - P.K. Chaffey, L. Chi, Z. Tan, (2016) Chapter 3: Chemical biology of protein O-glycosylation.
29. X. Guan, P.K. Chaffey, C. Zeng, E.R. Greene, L. Chen, M.R. Drake, C. Chen, A. Groobman, M.G. Resch, M.E. Himmel, G.T. Beckham, Z. Tan, (2015) Molecular-scale features that govern the effects of O-glycosylation on a carbohydrate-binding module. *Chem Sci*, 6:7185 - 7189.
28. R.M. Happs, X. Guan, M.G. Resch, M.F. Davis, G.T. Beckham, Z. Tan, M.F. Crowley, (2015) O-Glycosylation effects on Family 1 carbohydrate-binding module solution structures. *FEBS J*, 282:4341-4356.
27. X. Guan, P.K. Chaffey, C. Zeng, Z. Tan, (2015) New methods for protein chemical synthesis. *Top Curr Chem*, 363:155-192.
26. E.R. Greene, M.E. Himmel, G.T. Beckham, Z. Tan, (2015) Glycosylation of cellulases: Engineering better enzymes for biofuels. *Adv Carbohydr Chem*, 72:63-112.
25. L. Chen, M.R. Drake, M.G. Resch, E.R. Greene, M.E. Himmel, P.K. Chaffey, G.T. Beckham, Z. Tan, (2014) Specificity of O-glycosylation in enhancing the stability and cellulose binding affinity of Family 1 carbohydrate-binding modules. *Proc Natl Acad Sci USA*, 111:7612-7617.
24. C.M. Payne, M.G. Resch, L. Chen, M.F. Crowley, M.E. Himmel, L.E. Taylor, M. Sandgren, J. Ståhlberg, I. Stals, Z. Tan, G.T. Beckham, (2013) Glycosylated linkers in multi-modular lignocellulose degrading enzymes dynamically bind to cellulose. *Proc Natl Acad Sci USA*, 110:14646-14651.
23. X. Guan, M.R. Drake, Z. Tan, (2013) Total synthesis of human galanin-like peptide through an

aspartic acid ligation. *Org Lett*, 15:6128–6131.

22. L. Chen, Z. Tan, (2013) A convenient and efficient synthetic approach to mono-, di-, and tri-O-mannosylated Fmoc amino acids. *Tetrahedron Lett*, 54:2190-2193.

Publications prior to CU-Boulder

21. S. Dong, S. Shang, J. Li, Z. Tan, T. Dean, A. Maeda, T.J. Gardella, S.J. Danishefsky, (2012) Engineering of therapeutic proteins through chemical synthesis: Early lessons from human parathyroid hormone and analogs. *J Am Chem Soc*, 134:15122-15129.
20. S.D. Townsend, Z. Tan, S. Dong, S. Shang, J. Brailsford, S.J. Danishefsky, (2012) Advances in proline ligation. *J Am Chem Soc*, 134:3912-3916.
19. S. Dong, S. Shang, Z. Tan, S.J. Danishefsky, (2011) Toward homogeneous erythropoietin: Application of metal free dethiylation in the chemical synthesis of the Ala79-Arg166 glycopeptide domain. *Isr J Chem*, 51:968-976.
18. S. Shang, Z. Tan, S. Dong, S.J. Danishefsky, (2011) An advance in proline ligation. *J Am Chem Soc*, 133:10784-10786.
17. S. Shang, Z. Tan, S.J. Danishefsky, (2011) Application of the logic of cysteine-free native chemical ligation to the synthesis of human parathyroid hormone (hPTH). *Proc Natl Acad Sci USA*, 108:5986-5989.
16. Z. Tan, S. Shang, S.J. Danishefsky, (2011) Rational development of a strategy for modifying the aggregatibility of proteins. *Proc Natl Acad Sci USA*, 108:4297-4302.
15. Z. Tan, S. Shang, S.J. Danishefsky, (2010) Insights into the finer issues of native chemical ligation: An approach to cascade ligations. *Angew Chem Int Ed*, 49:9500-9503.
14. C. Kan, J.D. Trzupek, B. Wu, Q. Wan, G. Chen, Z. Tan, Y. Yuan, S.J. Danishefsky, (2009) Toward homogeneous erythropoietin: Chemical synthesis of the Ala^{1}-Gly^{28} glycopeptide domain by "alanine" ligation. *J Am Chem Soc*, 131:5438-5443.
13. Y. Yuan, J. Chen, Q. Wan, Z. Tan, G. Chen, C. Kan, S.J. Danishefsky, (2009) Toward homogeneous erythropoietin: Fine tuning of the C-terminal acyl donor in the chemical synthesis of the Cys^{29}–Gly^{77} glycopeptide domain. *J Am Chem Soc*, 131:5432-5437.
12. Z. Tan, S. Shang, T. Halkina, Y. Yuan, S.J. Danishefsky, (2009) Toward homogeneous erythropoietin: Non-NCL based chemical synthesis of the Gln^{78}–Arg^{166} glycopeptide domain. *J Am Chem Soc*, 131:5424-5431.
11. M.Y. Pavlov, R.E. Watts, Z. Tan, V.W. Cornish, M. Ehrenberg, A.C. Forster, (2009) Slow peptide bond formation by proline and other N-alkyl amino acids in translation. *Proc Natl Acad Sci USA*, 106:50-54.
10. G. Chen, Q. Wan, Z. Tan, C. Kan, Z. Hua, K. Ranganathan, S.J. Danishefsky, (2007) Development of efficient methods for accomplishing cysteine-free peptide and glycopeptide coupling. *Angew Chem Int Ed*, 46:7383-7387.
9. B. Zhang, Z. Tan, L. Dickson, M.N.L. Nalam, V.W. Cornish, A.C. Forster (2007) Specificity of Translation for N-Alkyl Amino Acids. *J Am Chem Soc* 129:11316-11317.
8. B. Wu, Z. Tan, G. Chen, J. Chen, Z. Hua, Q. Wan, K. Ranganathan, S.J. Danishefsky, (2006) Mature homogeneous erythropoietin building blocks by chemical synthesis: the EPO 22-37 glycopeptide domain presenting the full N-linked dodecasaccharide. *Tetrahedron Lett*, 47:8009-8011.
7. J. Chen, G. Chen, B. Wu, Q. Wan, Z. Tan, Z. Hua, S.J. Danishefsky, (2006) Mature homogeneous erythropoietin-level building blocks by chemical synthesis: the EPO 114-166 glycopeptide domain, presenting the O-linked glycophorin. *Tetrahedron Lett*, 47:8013-8016.
6. B. Wu, Z. Hua, J.D. Warren, K. Ranganathan, Q. Wan, G. Chen, Z. Tan, J. Chen, A. Endo, S.J. Danishefsky, (2006) Synthesis of the fucosylated biantennary N-glycan of erythropoietin. *Tetrahedron Lett*, 47:5577-5579.

5. Z. Tan, S.C. Blacklow, V.W. Cornish, A.C. Forster, (2005) *De novo* genetic codes and pure translation display. *Methods*, 36:279-290.
4. Z. Tan, A.C. Forster, S.C. Blacklow, V.W. Cornish, (2004) Amino acid backbone specificity of the *E. coli* translation machinery. *J Am Chem Soc*, 126:12752-12753.
3. A.C. Forster, Z. Tan, M.N.L. Nalam, H. Lin, H. Qu, V.W. Cornish, S.C. Blacklow, (2003) Programming peptidomimetic syntheses by translating genetic codes designed *de novo*. *Proc Natl Acad Sci USA*, 100:6353-6357.
2. Z. Tan, Z. Qu, B. Chen, J. Wang, (2000) Diazo decomposition in the presence of tributyltin hydride. Reduction of α-diazo carbonyl compounds. *Tetrahedron*, 56:7457-7461.
1. Z. Tan, L. Wang, J. Wang, (2000) Deprotection of *t*-butyldimethylsiloxy (TBDMS) protecting group with catalytic copper(II) chloride dehydrate. *Chin Chem Lett*, 11:753-756.

VI. PATENTS

2. S.J. Danishefsky, S. Shang, Z. Tan, S. Dong, J. Li, T. Gardella, (2012) Parathyroid hormone analogs, compositions and uses thereof. US20140228293 A1.
1. S.J. Danishefsky, J.D. Warren, J. Chen, B. Wu, G. Chen, Q. Wan, Z. Tan, C. Kan, Y. Yuan, Z. Hua, K. Ranganathan, J.D. Trzupek (2007) Homogeneous erythropoietin and other peptides and proteins, methods and intermediates for their preparation. WO2007120614 A2.

VII: PRESENTATIONS

36. Max Planck Institute of Colloids and Interfaces, Germany, April 28, (2017).
35. Leibniz Institute for Natural Product Research and Infection Biology, Hans Knöll Institute (HKI), Germany, April 26, (2017).
34. Departments of Pharmaceutical Sciences and Chemistry, Utrecht University, Netherlands, April 21, (2017).
33. 253rd ACS National Meeting, San Francisco, CA, USA, April 2-6, (2017).
32. Division of Chemistry and Chemical Engineering, California Institute of Technology, March 22, (2017)
31. Department of Chemical Physiology, The Scripps Research Institute, March 14, (2017)
30. Department of Chemistry and Biochemistry, University of Maryland, March 2, (2017).
29. Department of Chemistry and Chemical Biology, Northeastern University, February 15, (2017).
28. Department of Chemistry, Tufts University, February 14, (2017).
27. Department of Chemistry, Brandeis University, February 13, (2017).
26. Department of Chemistry, University of California Davis, February 2, (2017).
25. Department of Chemistry, Michigan State University, November 16, (2016).
24. 252nd ACS National Meeting, Philadelphia, PA, USA, August 21-25, (2016).
23. International Carbohydrate Symposium, New Orleans, LA, USA, July 17-22 (2016).
22. Boulder Peptide Symposium, Boulder, CO, USA, September 28-October 1, (2015).
21. Peking University Health Science Center, Beijing, China, July 8, (2015).
20. Peking University, Beijing, China, July 7, (2015).
19. Shandong University, Jinan, China, July 3, (2015).
18. Liaocheng University, Liaocheng, China, July 2, (2015)
17. Shanghai Institute of Organic Chemistry, Shanghai, China, June 24, (2015).
16. 11th Sino-US Chemistry & Chemical Biology Professors Conference, Suzhou, Jiangsu, China, June 21-23, 2015.
15. Jiangnan University, Wuxi, China, June 19, (2015)
14. Ocean University of China, Qingdao, China, June 16, (2015).

13. Qingdao Institute of Bioenergy and Bioprocess Technology (QIBEBT), Chinese Academy of Sciences, Qingdao, China, June 15, (2015).
12. 249th ACS National Meeting, Denver, CO, USA, March 22-26, (2015).
11. 248th ACS National Meeting, San Francisco, CA, USA, August 10-14, (2014).
10. 247th ACS National Meeting, Dallas, TX, USA, March 16-20, (2014).
9. Butcher Symposium, Boulder, CO, USA, November 1, (2013).
8. Colorado Glycoscience Initiative, First workshop, Boulder, CO, USA, September 20-21, (2013).
7. Carbohydrates Gordon Research Conference, West Dover, VT, USA, June 16-21, (2013).
6. Department of Chemistry and Biochemistry, University of Denver, Denver, CO, USA, March 28, (2013).
5. Glycobiology Gordon Research Conference, Ventura, CA, USA, March 3-8, (2013).
4. BioFrontiers Institute, University of Colorado Boulder, CO, USA, December 11, (2012).
3. Chemistry & Biology of Peptides Gordon Research Conference, Ventura, CA, USA, February 19-24, (2012).
2. Department of Chemical and Biological Engineering, University of Colorado Boulder, Boulder, CO, USA, February 9, (2012).
1. National Renewable Energy Laboratory (NREL), Golden, CO, USA, November 17, (2011).

VIII: TEACHING

Fall 2016	CHEM 3311 - Organic Chemistry 1, undergraduate course.
Spring 2016	CHEM 5801 – Signaling and Cell Cycle, graduate course (1 week, New course developed).
Fall 2015	CHEM 3311 - Organic Chemistry 1, undergraduate course (New course developed).
Spring 2015	CHEM 6311 - Special Topics – Synthetic Organic Chemistry, graduate course (2 weeks, New course developed).
Fall 2014	CHEM 3351 - Organic Chemistry 1 for Chemistry and Biochemistry Majors, undergraduate course.
Fall 2013	CHEM 3351 - Organic Chemistry 1 for Chemistry and Biochemistry Majors, undergraduate course, , (New course developed).
Fall 2012	CHEM 5341, Chemical Biology and Drug Design, graduate course.
Fall 2011	CHEM 5341, Chemical Biology and Drug Design, graduate course (New course developed).

IX: SERVICE

Department and Institute

2015– 2016	Faculty Search Committee, BioFrontiers Institute
2014–	Graduate Admissions and Recruitment Committee, BioFrontiers Institute
2013–	Safety Committee, BioFrontiers Institute
2013– 2014	Biochemistry Faculty Search Committee, Department of Chemistry and Biochemistry
2012–	Chemical Biology Program, Department of Chemistry and Biochemistry
2012– 2013	Organic Faculty Search Committee, Department of Chemistry and Biochemistry
2011–	Task Force Member, BioFrontiers Institute
2011– 2012	Safety Committee, Department of Chemistry and Biochemistry
2011 – 2013	Graduate Admissions and Recruitment Committee, Department of Chemistry and Biochemistry

2011- Member of Thesis Committee.
2011- Member of Qualifying Exam Committee.

Scientific Community

2016 Served on the NSF review panel to review the 2016 CAREER proposals (Chemistry of Life Processes).

2015 Organizer, symposium "Protein Glycosylation: Simulation, Synthesis, Characterization, and Application", 249th ACS National Meeting, Denver, CO, USA, March 2015

2014 Discussion Leader, symposium "Current Topics in Glycoscience", 248th ACS National Meeting, San Francisco, CA, USA, August 2014

2011- Reviewer for Journals: Biochemistry, Bioorganic & Medicinal Chemistry Letters; Biotechnology Journal; Cellulose; Carbohydrate Research; Chemical Communications; Computational Biology and Chemistry; Frontiers in Chemical Biology; Journal of Proteomics; Journal of the American Chemical Society; Nature Chemical Biology; Organic Letters; PLOS ONE.

Community Service

October 18, 2014 Teacher Professional Development Workshop, "Engineering is Everywhere", CU-Boulder.

July 26, 2014 “Oral Insulin for the Treatment of Diabetes”, STEM Workshop, CU-Boulder.