

Curriculum Vita

Yu Yuan, Ph.D.
Department of Chemistry
College of Sciences
University of Central Florida

EDUCATION

- B.S. in Polymer Science, University of Science and Technology of China, Hefei, China, July-2001
Thesis Advisor: Professor Yanmei Wang
Thesis Title: The Synthesis and Properties of PNPMA-PSt-PNPMA
- M.A. in Chemistry, Princeton University, Princeton, NJ, Oct-2002
Research Advisor: Professor Chulbom Lee
- Ph.D. in Organic Chemistry, Princeton University, Princeton, NJ, Mar-2007
Thesis Advisor: Professor Chulbom Lee
Thesis Title: Part I. Enantioselective Total Synthesis of (–)-Kendomycin; Part II. Double Cyclization via Rhodium Alkynyl and Vinylidene Catalysis
- Post-Doctoral Fellow, Memorial Sloan-Kettering Cancer Center, New York, NY, Jul-2009
Research Advisor: Professor Samuel J. Danishefsky

EMPLOYMENT HISTORY

- **University of Central Florida, Orlando, FL (2012-present)**
Assistant Professor, Department of Chemistry
 - Transition metal catalysis, organo-catalysis, multi-component and cascade catalysis
 - Total synthesis of anti-cancer natural products and lead optimization
 - Nitro group based cascade reactions
- **Merck Research Laboratories, West Point, PA (2009-2012)**
RNAi Medicinal Chemistry, Sr. Research Chemist
 - Designing novel siRNA conjugates for targeted gene knockdown
 - Improving RNA deliveries efficacy by oligonucleotide internal modifications
 - De novo design of high affinity ligands for tissue and tumor specific siRNA delivery
- **Sloan-Kettering Institute for Cancer Research, New York, NY (2007-2009)**
Advisor: Professor Samuel J. Danishefsky
 - Studies on the chemical synthesis of homogeneous erythropoietin
 - Investigation of two-component coupling reactions between isonitriles and carboxylic acids
 - Development of new methods for glycopeptide ligations

PUBLICATIONS

At UCF (*Corresponding author)

(7) Jin, K., Sam, I.H., Po, H.L., Lin, D., Ghazvini Zadeh, E.H., Chen, S*, **Yuan, Y.***, Li, X.* Total Synthesis of Teixobactin. *Nat. Commun.*, **2016**, minor revision

(6) Logan, M.W.; Yuen, A.L.; Zheng, Y.; Hall, E.A. Hettinger, M.A.; Marks, R.M.; Hosler, M6.L.; Rossi, F.M.; **Yuan, Y.***; Uribe-Romo, F.* Heterogeneous Photoredox Synthesis of N-hydroxy-oxazolidinones Catalyzed by Metal-Organic Frameworks. *Catal. Sci. Technol.*, **2016**, Advanced Article, DOI: 10.1039/C6CY00054A

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(5) Zheng, Y.; Zadeh, E.H.G.; **Yuan, Y*** One-Pot, Enantioselective Synthesis of 2,3-Dihydroazulen-6(1H)-one: A Concise Access to the Core Structure of Cephalotaxus Norditerpenes. *Eur. J. Org. Chem.* **2016**, 2115-2119.

(4) Roberts, B.F.; Iyamu, I.D.; Lee, S.; Lee, E.; Ayong, L.; Kyle, D.E.; **Yuan, Y.**; Manetsch, R. Chakrabarti, D. Spirocyclic chromanes exhibit antiplasmodial activities and inhibit all intraerythrocytic life cycle stages. *Int. J. Parasitol.: Drugs Drug Resist.* **2016**, 85-92.

(3) Craig, W.; Chen, J.; Richardson, D.; Thorpe, R.; **Yuan, Y.***, A Highly Stereoselective and Scalable Synthesis of L-allo-Enduracididine. *Org. Lett.* **2015**, 17, 4620-4623.

(2) Zheng, Y.; Cleaveland, J.; Richardson, D.; **Yuan, Y.***, An Organocatalysis Based Carbocyclic Spiroindoline Synthesis Enables Facile Structure-Activity Relationship (SAR) Study at C2 Position. *Org. Lett.* **2015**, 17, 4240-4243.

(1) Zheng, Y.; Liu, M., **Yuan, Y.*** A Very Mild and Selective Method for O-Benzoylation of Hydroxamic Acids. *Tetrahedron Lett.*, **2014**, 55, 4404-4406.

Book Chapter

(1) **Yuan, Y.***; Wang, W. Post-Synthetic Chemical Modification of Oligonucleotides. Volume 9, *Comprehensive Organic Synthesis, Ed. 2*, 463-493, **2014**. (one of the most important reference books in organic chemistry)

Patent

(1) **Yuan, Y.***; Chakrabarti, D. Antimalarial Carbocyclic 3-Spiroindolines through Sequential Michael Addition and [3+2] Cycloaddition. United States Patent, No.: 62/217,465 (provisional)

Prior to UCF:

(19) Zewge, D.; Gosselin, F.; Tellers, D.M.; Davies, I.W.; Jadhav, V.; Nerurkar, S.S.; **Yuan, Y.**; Li, J.; Flanagan, W.M., Kenski, D.M. High-Throughput Chemical Modification of Oligonucleotides for Systematic Structure-Activity Relationship Evaluation. *Bioconjugate Chem.*, **2014**, 25, 2222.

(18) Janout, V.; Cline, L.L.; Feuston, B.P.; Klein, L.; O'Brien, A.; Tucker, T.; **Yuan, Y.**; O'Neill-Davis, L.A.; Peiffer, R.L.; Nerurkar, S.S.; Jadhav, V.; Tellers, D.M., Regen, S.L. Molecular Umbrella Conjugate for the Ocular Delivery of siRNA. *Bioconjugate Chem.*, **2014**, 25, 197.

(17) Wang, P.; Li, X.; Zhu, J.; Chen, J.; **Yuan, Y.**; Wu, X., Danishefsky, S.J. Encouraging Progress in the omega-Aspartylation of Complex Oligosaccharides as a

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General Route to beta-N-Linked Glycopolypeptides. *J. Am. Chem. Soc.*, **2011**, 133, 1597.

(16) Aaronson, J.G.; Klein, L.J.; Momose, A.A.; O'Brien, A.M.; Shaw, A.W.; Tucker, T.J.; **Yuan, Y.**, Tellers, D.M. Rapid HATU-Mediated Solution Phase siRNA Conjugation. *Bioconjugate Chem.*, **2011**, 22, 1723.

(15) **Yuan, Y.**; Chen, J.; Wan, Q.; Wilson, R.M., Danishefsky, S.J. Toward Fully Synthetic, Homogeneous Glycoproteins: Advances in Chemical Ligation. *Biopolymers*, **2010**, 94, 373.

(14) Joo, J.M.; David, R.A.; **Yuan, Y.**, Lee, C. Concise Synthesis of the Erythrina Alkaloid 3-Demethoxyerythratidinone via Combined Rhodium Catalysis. *Org. Lett.*, **2010**, 12, 5704.

(13) **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.

(12) **Yuan, Y.**; Chen, J.; Wan, Q.; Tan, Z.; Chen, G.; Kan, C., Danishefsky, S.J. 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.*, **2009**, 131, 5432.

(11) Wu, X.; **Yuan, Y.**; Li, X., Danishefsky, S.J. Thio-mediated synthesis of derivatized N-linked glycopeptides using isonitrile chemistry. *Tetrahedron Lett.*, **2009**, 50, 4666.

(10) 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.

(9) Tan, Z.; Shang, S.; Halkina, T.; **Yuan, Y.**, Danishefsky, S.J. Toward Homogeneous Erythropoietin: Non-NCL-Based Chemical Synthesis of the Gln(78)-Arg(166) Glycopeptide Domain. *J. Am. Chem. Soc.*, **2009**, 131, 5424.

(8) Kan, C.; Trzuppek, J.D.; Wu, B.; Chen, G.; Tan, Z.; **Yuan, Y.**, Danishefsky, S.J. Toward Homogeneous Erythropoietin: Chemical Synthesis of the Ala(1)-Gly(28) Glycopeptide Domain by "Alanine" Ligation. *J. Am. Chem. Soc.*, **2009**, 131, 5438.

(7) Wan, Q.; Chen, J.; **Yuan, Y.**, Danishefsky, S.J. Oxo-ester Mediated Native Chemical Ligation: Concept and Applications. *J. Am. Chem. Soc.*, **2008**, 130, 15814.

(6) Li, X.; **Yuan, Y.**; Kan, C., Danishefsky, S.J. Addressing Mechanistic Issues in the Coupling of Isonitriles and Carboxylic Acids: Potential Routes to Peptidic Constructs. *J. Am. Chem. Soc.*, **2008**, 130, 13225.

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(5) Li, X.; **Yuan, Y.**; Berkowitz, W.F.; Todaro, L.J., Danishefsky, S.J. On the Two-Component Microwave-Mediated Reaction of Isonitriles with Carboxylic Acids: Regarding Alleged Formimidate Carboxylate Mixed Anhydrides. *J. Am. Chem. Soc.*, **2008**, 130, 13222.

(4) 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.

(3) **Yuan, Y.**; Lai, A.J.; Kraml, C.M., Lee, C. A highly Enantio- and Diastereoselective 1,3-Dimethylallylation of Aldehydes. *Tetrahedron*, **2006**, 62, 11391.

(2) Joo, J.M.; **Yuan, Y.**, Lee, C. Tandem Cyclization of Alkynes via Rhodium Alkynyl and Alkenylidene Catalysis. *J. Am. Chem. Soc.*, **2006**, 128, 14818.

(1) **Yuan, Y.**; Men, H.B., Lee, C.B. Total Synthesis of Kendomycin: A Macro-C-Glycosidation Approach. *J. Am. Chem. Soc.*, **2004**, 126, 14720.

Patent

(5) Aaronson, J.G.; Barnett, S.F.; Bartz, R.; Colletti, S.L.; Jadhav, V.R.; Momose, A.A.; Shaw, A.W.; Tellers, D.M.; Tucker, T.J.; Wang, W.; **Yuan, Y.** Novel Single Chemical Entities and Methods for Delivery of Oligonucleotides. WO 2011/126974

(4) Colletti, S.L.; Gosselin, F.; Jadhav, V.R.; Shaw, A.W.; Tellers, D.M.; Tucker, T.J.; **Yuan, Y.**; Zewge, D. Novel Single Chemical Entities and Methods for Delivery of Oligonucleotides. WO 2012/030683

(3) Tellers, D. M.; Colletti, S. L.; Dudkin, V.; Aaronson, J.; Momose, A.; Tucker, T. J.; **Yuan, Y.**; Calati, K. B.; Tian, L.; Parmar, R. G.; Shaw, A. W.; Wang, W.; Storr, R. A.; Busuek, M.; Kowtoniuk, R. A. Novel TetraGalNAc and Peptide Containing Conjugates and Methods for Delivery of Oligonucleotides. WO 2013/166155

(2) Tellers, D. M.; Colletti, S. L.; Dudkin, V.; Ikemoto, N.; Liao, H.; Parish, C.; Pei, T.; Shaw, A. W.; Truong, Q.; Wang, L.; **Yuan, Y.**; Zhu, M. Novel TetraGalNAc Containing Conjugates and Methods for Delivery of Oligonucleotides. WO 2013/166121

(1) Danishefsky, S. J.; David, J. D.; Chen, J.; Wu, B.; Chen, G.; Wan, Q.; Tan, Z.; Kan, C.; **Yuan, Y.**; Hua, Z.; Ranganathan, K.; Trzupke, J. D. Preparation of Homogeneous Erythropoietin and Other Peptides and Proteins. WO 2007/120614 A2 20071025

PRESENTATIONS

Presenter, * Corresponding Author

(1) Yuan, Y.* Preparation of enantiopure tropone derivatives by organocatalysis. 250th ACS National Meeting, Boston, Massachusetts, August, 2015.

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(2) Thorpe, R.; Yuan, Y* A Highly Stereoselective and Scalable Synthesis of L-allo-Enduracididine. Gulf Coast Undergraduate Symposium at Rice University, October, 2015.

(3) Thorpe, R.; Yuan, Y* A Highly Stereoselective and Scalable Synthesis of L-allo-Enduracididine. Poster. Conference of Professional Advancement of Black Chemists and Chemical Engineers, Orlando, September, 2015.

TEACHING ACTIVITY

Undergraduate Teaching:

- CHM2210-0001, Organic Chemistry I, Fall 2012, Enrollment 269.
- CHS6251-0001, Applied Organic Synthesis, Spring 2013, Enrollment 15.
- CHM2210-0003, Organic Chemistry I, Fall 2013, Enrollment 248.
- CHS6251-0001, Applied Organic Synthesis, Spring 2014, Enrollment 13
- CHM2210-0003, Organic Chemistry I, Fall 2014, Enrollment 88.
- CHS6251-0001, Applied Organic Synthesis, Spring 2015, Enrollment 11

Graduate Teaching:

SUPERVISED RESEARCHERS

- CHS6251-0001, Applied Organic Synthesis, Spring 2013, Enrollment 15..
- CHS6251-0001, Applied Organic Synthesis, Spring 2014, Enrollment 13
- CHS6251-0001, Applied Organic Synthesis, Spring 2015, Enrollment 11
- CHS6251-0001, Applied Organic Synthesis, Spring 2016, Enrollment 20

➤ Thesis Supervision

- Mahadeo Ramjatan, Ph.D. Student, Aug. 2015-Present
Research Topic: Chiral Auxiliary for Nitroso Diels-Alder Reactions.
- Nameer Ezzat, Ph.D. Student, Aug. 2015-Present
Research Topic: Total Synthesis of Harringtonolide.

➤ Other Research Supervision

- Dr. Yongsheng Zheng, Postdoctoral Fellow, Jun. 2013-Jul. 2015
- Dr. Ebrahim Ghazvini Zadeh, Postdoctoral Fellow, Aug. 2015-Present