

# Xin (Cindy) Qi, Ph.D.

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## RESEARCH INTERESTS

### General Directions:

Conduct research at the interface between Chemistry and Biology with focus on Medicinal Chemistry. Develop innovative technologies in peptoid synthesis and application, peptide and protein engineering, and microarray high through-put screening. Address biologically significant problems in chemical biology and cancer biology, including signaling pathways, cancer pathogenesis and significant functional roles of regulatory molecules in those biological processes.

### Specific Goals:

- Develop new methods to synthesize cyclic and conformation constrained peptoids.
- Probe complex signaling pathways such as apoptosis with regulatory molecules obtained from large peptoid library screening and elucidate their roles in cancer biology.
- Develop facile peptoid and microarray screening to rapid identify high affinity GPCR ligands from large combinatorial library using multi-color quantum dots labeled cell-based screening and microarray technology.

## EDUCATION:

- The Scripps Research Institute, Scripps Florida  
Senior Research Associate/Scientist, Chemistry and Cancer Biology June, 2009-present
- UT Southwestern Medical Center, Dallas, TX  
Postdoctoral Scholar, Biochemistry/Translational Research/Internal Medicine  
July, 2005-May, 2009
- California Institute of Technology, Pasadena, CA  
Ph.D., Bioorganic Chemistry May, 2005
- Wayne state University, Detroit, MI  
M.S., Organic Chemistry May, 2000
- Peking University, Beijing, P. R. China  
B.S., Polymer Chemistry July, 1991

## INDUSTRIAL EXPERIENCE:

**5 years pharmaceutical research and development experience.** Aug. 1991-Aug. 1996  
Beijing Pharmaceutical Company, Beijing, China, Engineer in pilot synthesis and quality control

## RESEARCH EXPERIENCES AND ACHIEVEMENTS

Senior Research Associate/Senior Scientist with Professor Thomas Kodadek,  
The Scripps Research Institute, Florida and UT Southwestern Medical Center

- Novel Cyclic peptoid targeting oncoprotein prothymosin  $\alpha$  in apoptosis
- Design and Synthesis of Peptide Tertiary Amides-A fusion of Peptides and Peptoids
- Rapid identification of Orexin Receptor Binding Ligands using cell-based peptoid screening accelerated with magnetic beads
- Facile Peptoid and microarray screening to rapid identify high affinity GPCR ligand from large combinatorial library
- Oncoprotein profiling in cancer cells and biosensor development using cyclic peptoid library

Postdoctoral Scholar with Professor Xiaodong Wang, UT Southwestern Medical Center

- Role of regulatory molecules and Prothymosin  $\alpha$  in apoptosis pathway

Ph.D. Research with Professor Richard W. Roberts, California Institute of Technology

**Thesis Title:** Unnatural Amino Acid Incorporation to Rewrite the Genetic Code and RNA-peptide Interactions

- Design of Acridine-N peptide conjugates with enhanced binding affinity and specificity to RNA targets
- Synthesis of tRNA synthetase inhibitors and incorporation of non-natural amino acid residues using chemically aminoacylated tRNAs recognizing specific codons
- The Puromycin route to assess stereo- and regiochemical constraints on peptide bond formation in eukaryotic ribosomes
- The N-end rule pathway as a nitric oxide sensor controlling the levels of multiple regulators

M.S. Research with Professor John Montgomery, Wayne State University

- Developed a nickel-catalyzed three-component synthesis of 1,3 dienes
- Synthesized indolizidine alkaloids by the nickel-catalyzed cyclization of ynals

B.S. Research with Professor Shuojian Jiang, Peking University

- Studied the synthesis and curing conditions of epoxy curing agents

## TEACHING/MENTORING EXPERIENCE

- Supervised/mentored a number of graduate students, technicians and postdocs (Scripps Florida, UT Southwestern Medical Center and Caltech).
- Served as teaching assistant and instructor for a variety of graduate and undergraduate courses, including Biochemistry, General Chemistry and Organic Synthesis (Caltech and Wayne State University). Presented several tutorial lectures (Scripps Florida).

## AWARDS AND HONORS

- **ResearchFest winner**— Scripps Florida 2010
- **Young Investigator Support**— GRC 2010
- **Sigma Xi Research winner**— UT Southwestern Medical Center 2007
- **Thomas C. Rumble Fellowship**— Wayne State University 1997
- **Achievement Award** for the Sino-UK Technical Joint Venture Program  
— Beijing Pharmaceutical Company 1993

## PUBLICATIONS

- **Xin Qi**, Pengfei Fang, Min Guo and Thomas Kodadek, “Design and Synthesis of Peptide Tertiary Amides-A fusion of Peptides and Peptoids”, *Proc. Natl. Acad. Sci. USA* **2012**, *submitted*.
- **Xin Qi**, Thomas Kodadek, “Novel Cyclic Peptoids Targeting Oncoprotein Prothymosin  $\alpha$ ”, *J. Am. Chem. Soc.* **2012**, *in preparation*.
- **Xin Qi**, Tianbing Xia, “Structure, Dynamics, and Mechanism of Lead Dependent Ribozyme”, *BioMolecular Concepts*, **2011**, *2*, 305-314.
- Jia Lu, Beena M. Kadakkuzha, Liang Zhao, Martin Fan, **Xin Qi**, and Tianbing Xia, “Dynamic Ensemble View of the Conformational Landscape of HIV-1 TAR RNA and Allosteric Recognition”, *Biochemistry*, **2011**, *50*, 5042-5057.
- **Xin Qi**, John Astle, Thomas Kodadek, “Rapid Identification of Orexin Receptor Binding Ligands using Cell-based Screening Accelerated with Magnetic Beads”, *Mol. BioSyst.* **2010**, *6*, 102-107. PMID: 20024071
- **Xin Qi**, Tianbing Xia, Richard Roberts, “Acridine-N Peptide Conjugates Display Enhanced Affinity and Specificity to Box B RNA Targets”, *Biochemistry*, **2010**, *49*, 5782-5789. DOI: 10.1021/bi100634h
- **Xin Qi**, Lai Wang, Fenghe Du, “Novel Small Molecules Relieve Prothymosin  $\alpha$ - Mediated Inhibition of Apoptosome Formation by Blocking its Interaction with Apaf-1”, *Biochemistry*, **2010**, *49*, 1923-1930. NIHMS: 178260
- Shelley R. Starck, Yongkai Ow, Vivian Jiang, Maria Tokuyama, Mark Rivera, **Xin Qi**, Richard W. Roberts, Nilabh Shastri, “A Distinct Translation Initiation Mechanism Generates Cryptic Peptides for Immune Surveillance”, *PLoS One* **2008**, *3(10)*, e3460. PMCID: PMC 2565129.
- Rong-Gui Hu, Jun Sheng, **Xin Qi**, Zhenming Xu, Terry T. Takahashi, Alexander Varshavsky, “The N-end rule pathway as a nitric oxide sensor controlling the levels of multiple regulators” *Nature* **2005**, *437*, 981-986.
- Shelley R. Starck, **Xin Qi**, Brett N. Olsen, Richard W. Roberts, “The Puromycin Route to Assess Stereo- and Regiochemical Constraints on Peptide Bond Formation in Eukaryotic Ribosomes” *J. Am. Chem. Soc.* **2003**, *125*, 8090-8091.
- **Xin Qi**, John Montgomery, “New Three Component Synthesis of 1,3-Dienes Employing Nickel Catalysis” *J. Org. Chem.* **1999**, *64*, 9310-9313.
- **Xin Qi**, John Montgomery, "Preparation of 1,3-Dienes by Nickel-Catalyzed Three-Component Couplings" Book of Abstracts, 218th ACS National Meeting, New Orleans, Aug. 22-26, **1999**. ORGN-293.

## CONFERENCE PRESENTATIONS

- ASBMB Experimental Biology Meeting 2012, San Diego, Apr. 21-25, 2011. “Design and Synthesis of Peptide Tertiary Amides-A fusion of Peptides and Peptoids”
- EPS Nanjing International Forum on Pharmaceutical, Nutraceutical and Biotechnology 2011, invited speaker, Nanjing, Sept. 20-22, 2011. “Discovery of Novel Molecules with Therapeutic and Diagnostic Applications”
- ASBMB Experimental Biology Meeting 2011, Washington, DC, Apr. 9-13, 2011. “Novel Cyclic Peptoids Targeting Oncoprotein Prothymosin  $\alpha$ ”
- ResearchFest, Scripps Florida, Apr. 20, 2010. “Novel Chemical Screens to Target GPCRs”

- Gordon Research Conferences, Chemistry and Biology of Peptides, Ventura, CA, Feb. 28-Mar. 5, 2010. “Facile Peptoid on Bead to Microarray Screening: Rapid Identification of High Affinity GPCR Ligands from Large Combinatorial Libraries”
- The Scripps Research Institute Symposium, La Jolla, CA, Oct. 1, 2009. “Rapid Identification of Orexin Receptor Binding Ligands using Cell-based Screening Accelerated with Magnetic Beads”
- World’s Best Technologies, WBT showcase 09, Invited presentation, Arlington, TX, March 24-25, 2009. “Rapid Identification of Orexin Receptor Binding Ligands using Cell-based Screening Accelerated with Magnetic Beads”
- Metroplex Meeting, Arlington, TX, March 9, 2009. “Rapid Identification of Orexin Receptor Binding Ligands using Cell-based Screening Accelerated with Magnetic Beads”
- UT Southwestern Medical Center Symposium, Dec. 5, 2007. “Role of Regulatory molecules and Prothymosin  $\alpha$  in apoptosis pathway”
- Cell Death Meeting, Cold Spring Harbor laboratory, Cold Spring Harbor, NY, September 26-30, 2007. “Role of Regulatory molecules and Prothymosin  $\alpha$  in apoptosis pathway”
- 218<sup>th</sup> ACS National Meeting, New Orleans, LA, August 22-26, 1999. “Preparation of 1,3-Dienes by Nickel-Catalyzed Three-Component Couplings”

**VISA STATUS:** U. S. Citizen

**PROFESSIONAL ACTIVITIES:**

1997- Member, Phi Lambda Upsilon  
1998- Member, American Chemical Society  
2006- President, Chinese Student and Scholar Association at UTSW Medical Center  
2006- Member, Career Committee, Postdoctoral Association at UTSW Medical Center  
2006- Board Member, Chinese Association for Science and Technology (CAST), Texas  
2007- Member, Sigma Xi  
2009- *Ad Hoc* Reviewer, Journal of the American Chemical Society  
2010- Treasurer, Scripps Florida Society of Research Fellows  
2011- Distinguished Lecture Series Chair, Scripps Florida Society of Research Fellows  
2011- *Ad Hoc* Reviewer, Nature Chemical Biology  
2012- ASBMB member  
2012- President, Biotech Club at Scripps Florida

**REFERENCES:**

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