

## YAOQIU ZHU Assistant Professor

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### EDUCATION

**Northwestern University**, Evanston, IL 2001-2006  
Ph.D. Chemistry (Bioorganic & Medicinal), Advisor: Dr. Richard B. Silverman

**Peking University**, Beijing, China 1997-2001  
B.S. Chemistry (Organic), Advisor: Dr. Zhenfeng Xi

### PROFESSIONAL & RESEARCH EXPERIENCES

Department of Chemistry & Border Biomedical Research Center, Univ. of Texas at El Paso, TX 2015-  
**Assistant Professor**

MetabQuest Research Laboratory, Evanston, IL 2012-2014  
**Principal Investigator**

MetabQuest Research and Consulting, Beijing, China & Evanston, IL 2009-2011  
**Founder and Chief Research Investigator**

Global Pharmaceutical R&D, Abbott Laboratories, Abbott Park, IL 2006-2008  
**Senior Research Scientist**

### PERSONAL RESEARCH STATEMENT

My diverse biomedical and drug discovery research experiences, i.e., doctoral thesis studies with the inventor of Pfizer's neurologic drug *Lyrica*, Prof. Richard B. Silverman, at Northwestern University, industrial research at Abbott Laboratories including participation in the discovery of AbbVie's hepatitis C drug *Viekira Pak*, independent research and publication on unraveling the clinical drawbacks of BMS and Sanofi's anti-clotting drug *Plavix* in self-founded laboratories, etc., have shaped my perspectives and approaches in developing novel medicinal chemistry research programs that will provide answers to two highly imaginative questions: 1). Can we treat the human body in better accordance with its biochemical foundation? 2). Can we let the human body generate its own medicine in a targeted, selective, and more potent way?

The past 30-year modern drug discovery has put chemically diversified drugs in human use with generating large bodies of clinical data, which has not only demonstrated the high diversity and disparity in the human body biotransformation system, but also showcased versatile human body catalyzed transformations of chemical entities. These have provided the timing and foundation for developing two research projects toward the above imaginative goals: (a) Biotransformation assisted biomedical explorations: delineation of clinical pharmacology for the optimization of clinical treatments; (b) Biotransformation driven cancer drug discovery: cancer cell selectively/onsite activated potent therapeutics. These research programs can lead to tools not only for drug discovery against challenging molecular targets, but also for studying important biological problems in human health and diseases.

### MANUSCRIPTS UNDER PREPARATION

3. Yaoqiu Zhu\*, Jiawei Xiong, Lei Ma, Xiaodong Ren, Guoying Zhang, Zhenyu Li, et al.  
"Overcoming Clopidogrel Resistance: Clopidogrel Active Metabolite Analogues As the Next Generation Antiplatelet Agents"

2. [Yaoqiu Zhu](#)\*, Xiaodong Ren, Jiang Zhou, Bo Jiao, Bin Geng  
"Identification of a Potentially Important Pharmacological Pathway of Antithrombotic Drug Clopidogrel"

1. [Yaoqiu Zhu](#)\*, et al.  
"Chemical Synthesis of the Clopidogrel Active Metabolite, an Irreversible P2Y<sub>12</sub> Antagonist"

## PUBLICATIONS

### • Independent Research (corresponding author\* and first-author)

3. [Yaoqiu Zhu](#)\*, Jiang Zhou, and Bo Jiao "Clopidogrel Analogues as a New Generation of Antiplatelet Agents" *ACS Med. Chem. Lett.* **2013**, *4*, 349-352.

2. [Yaoqiu Zhu](#)\* and Jiang Zhou "In Vitro Biotransformation Studies of 2-Oxo-clopidogrel: Multiple Thiolactone Ring Opening Pathways Further Attenuate Prodrug Activation" *Chem. Res. Toxicol.* **2013**, *26*, 179-190.

1. [Yaoqiu Zhu](#)\* and Jiang Zhou "Identification of the Significant Involvement and Mechanistic Role of CYP3A4/5 in Clopidogrel Bioactivation" *ACS Med. Chem. Lett.* **2012**, *3*, 844-849.

### • Independent Research for Translational Collaboration (co-author)

2. Yinan Zhang, Radhia Benmohamed, Wei Zhang, [Yaoqiu Zhu](#), Richard I. Morimoto, Robert J. Ferrante, Donald R. Kirsch, and Richard B. Silverman "Chiral Cyclohexane 1,3-diones as Inhibitors of Mutant SOD1-dependent Protein Aggregation for the Treatment of Amyotrophic Lateral Sclerosis" *ACS Med. Chem. Lett.* **2012**, *3*, 584-587.

1. Jiaqi Shan, Boyu Zhang, [Yaoqiu Zhu](#), Bo Jiao, Weiyi Zheng, Xiaowei Qi, Yanchun Gong, Fang Yuan, Fusheng Lv, and Hongbin Sun "Overcoming Clopidogrel Resistance: Discovery of Vicagrel as A Highly Potent and Orally Bioavailable Antiplatelet Agent" *J. Med. Chem.* **2012**, *55*, 3342-3352.

### • Doctoral Research (first-author)

4. [Yaoqiu Zhu](#) and Richard B. Silverman "Revisiting Heme Mechanisms. A Perspective on the Mechanisms of Nitric Oxide Synthase (NOS), Heme Oxygenase (HO), and Cytochrome P450s (CYP450s)" *Biochemistry* **2008**, *47*, 2231-2243.

Among the "Top 10 Most Access Articles of *Biochemistry* in 2008".

3. [Yaoqiu Zhu](#) and Richard B. Silverman "Model Studies for the Mechanism of Heme Oxygenase-Catalyzed Hydroxylation" *Org. Lett.* **2007**, *9*, 1195-1198.

2. [Yaoqiu Zhu](#) and Richard B. Silverman "Electronic Effects of Peripheral Substituents on Porphyrin Meso Positions" *J. Org. Chem.* **2007**, *72*, 233-239.

1. [Yaoqiu Zhu](#), Dejan Nikolic, Richard B. van Breeman, and Richard B. Silverman "Mechanism of Inactivation of Inducible Nitric Oxide Synthase by Amidines. Irreversible Enzyme Inactivation without Inactivator Modification" *J. Am. Chem. Soc.* **2005**, *127*, 858-868.

## INVITED PEER REVIEWERSHIP & SERVICES

- Journal of Pharmaceutical Sciences
- European Journal of Medicinal Chemistry
- Medicinal Chemistry Communications
- RSC Advances
- Bioorganic and Medicinal Chemistry
- Bioorganic and Medicinal Chemistry Letter

- Rapid Communications in Mass Spectrometry
- Archives of Toxicology
- ACS Medicinal Chemistry Letter
- Fundamental and Clinical Pharmacology
- Journal of Labelled Compounds and Radiopharmaceuticals
- Drug Metabolism and Drug Interactions
- Medicinal Chemistry Research
- Biomedical Chromatography
- Letters in Drug Design and Discovery
- Chemistry - An Asian Journal

### **INVITED SEMINAR PRESENTATIONS**

- 2015.11 School of Pharmacy, East China University of Science and Technology, Shanghai, China
- 2015.11 China Agricultural University, China Agricultural University, Beijing, China
- 2015.11 Department of Chemistry, Capital Normal University, Beijing, China
- 2015.11 School of Pharmaceutical Sciences, Peking University, Beijing, China
- 2015.04 Department of Chemistry, University of Iowa, IA
- 2015.04 College of Pharmaceutical Sciences, Shandong University, Jinan, China
- 2014.04 Department of Medicinal Chemistry, College of Pharmacy, University of Washington, WA
- 2014.01 Department of Medicinal Chemistry, College of Pharmacy, Virginia Commonwealth Univ., VA
- 2013.01 Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University, IN
- 2011.03 Institutes of Biomedicine and Health, Chinese Academy of Sciences, Guangzhou, China
- 2011.03 School of Pharmaceutical Sciences, Sun Yat-sen University, Guangzhou, China
- 2010.09 School of Pharmaceutical Sciences, Peking University, Beijing, China
- 2010.09 Institute of Materia Medica, Chinese Academy of Science, Shanghai, China
- 2009.09 Department of Chemistry, Northwestern University, Evanston, IL
- 2009.02 Heng Rui Pharmaceutical, Shanghai, China

### **RESEARCH GRANTS**

UTEP Start-Up Grant (PI) 10/01/2015 -

“Development of Novel Clopidogrel Based Antithrombotic Agents”

The goal of this study is to discover the next generation inhibitors of purinergic receptor P2Y<sub>12</sub> with predictable dose-effect relationship and minimized bleeding risk as well as for battling against the prominent antiplatelet treatment resistances in diabetes and chronic kidney disease patients.

Border Biomedical Research Center Grant (PI) 10/01/2015 -

“Covalent Microtubule Inhibitors and Their Cancer Selective Bioprecursors”

The goal of this study is to develop novel latent chemo therapeutics that will be onsite/selectively activated in tumor tissues to potent irreversible anticancer agents.