BIOGRAPHICAL SKETCH

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NAME: **Zhu, Yaoqiu**

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: **Assistant Professor of Chemistry**

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Peking University, Beijing, China	B.S.	07/2001	Organic Chemistry
Northwestern University	Ph.D.	10/2006	Bioorganic Chemistry

A. Personal 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 (HCV) drug Viekira Pak, independent research and publication on unraveling the clinical drawbacks of BMS/Sanofi's anti-clotting drug Plavix in self-founded laboratories, etc., have shaped my perspectives and approaches in developing novel methodologies that will provide answers to two highly imaginative questions in human health and disease: 1). How can we treat the human body in better accordance with its biochemical foundation? 2). How 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 many drugs in human use with generating large bodies of clinical (pharmacology, metabolism, toxicology, etc.) data, which has not only demonstrated the high diversity and disparity in the human body biotransformation system (e.g., individual's metabolizing system, organ/tissue/cell-dependent metabolizing enzyme distribution, disease-status associated metabolizing enzyme expression and microenvironment distortion, etc.), but also showcased versatile human body catalyzed transformations of chemical entities. These have provided the timing and foundation for developing my two research topics toward the above imaginative goals: (a) Biotransformation assisted biomedical explorations: delineation and optimization of clinical pharmacology; (b) Biotransformation driven cancer drug discovery: cancer cell selectively/onsite activated potent therapeutics. Specifically, I have been rationally exploring the human body diversities and disparities in biotransformation through both researching clinical data of known drugs and developing novel chemical probes. On the one hand, these studies can provide biochemical delineation for variable clinical responses to drugs and therapies, leading to optimizations of existing treatments. On another hand, these understandings can be exploited to develop novel onsite activated precursors of potent medical agents such as covalent inhibitors and gasotransmitters. My research programs at UTEP can lead to tools not only for drug discovery against challenging molecular targets, but also for studying biological problems in human health and disease.

B. Positions

Positions and Employment

2006-2008 Senior Research Scientist, Global Pharmaceutical R&D, Abbott Laboratories, Abbott Park, IL
2009-2014 Founder and Chief Research Investigator, MetabQuest Research Laboratory, Beijing, China
2013-2014 Visiting Scholar, Chemistry of Life Processes Institute, Northwestern University, Evanston, IL
2015-present Assistant Professor, Department of Chemistry, University of Texas, El Paso, TX

Other Experience, Professional Memberships, Honors

2004- American Chemical Society, Division of Medicinal Chemistry
2013-2016 Scientific Advisor, Journal of Pharmaceutical Sciences

Ad Hoc Reviewer for Scientific Journals: European Journal of Medicinal Chemistry, Chemistry - An Asian Journal, Bioorganic and Medicinal Chemistry Letter, Archives of Toxicology, Biomedical Chromatography, and Clinical Pharmacology, Rapid Communications in Mass Spectrometry, Medicinal Chemistry Communications

C. Contribution to Science

Independent Research (corresponding author* and first-author)

1. **Zhu, Y.*** & Zhou, J. (2012). Identification of the significant involvement and mechanistic role of cyp3a4/5 in clopidogrel bioactivation. ACS Medicinal Chemistry Letter, 4, 349-352.
2. **Zhu, Y.*** & Zhou, J. (2012). In vitro biotransformation studies of 2-oxo-clopidogrel: multiple thiolactone ring opening pathways further attenuate prodrug activation. Chemical Research in Toxicology, 26, 179-190.
3. **Zhu, Y.***, Zhou, J. & Jiao, B. (2013). Clopidogrel analogues as a new generation of antiplatelet agents. ACS Medicinal Chemistry Letter, 4, 349-352.

Independent Research for Translational Collaboration (co-author)

1. Zhang, Y., Benmohamed, R., Zhang, W., **Zhu, Y.**, Morimoto, R. I., Ferrante, R. J. Kirsch, D. R. & Silverman, R. B. (2012). Chiral cyclohexane 1,3-diones as inhibitors of mutant sod1-dependent protein aggregation for the treatment of amyotrophic lateral sclerosis ACS Medicinal Chemistry Letter, 3, 584-587.
2. Shan, J., Zhang, B., **Zhu, Y.**, Jiao, B., Zheng, W., Qi, X., Gong, Y., Yuan, F., Lv, F & Sun, H. (2012). Overcoming clopidogrel resistance: discovery of vicagrel as a highly potent and orally bioavailable antiplatelet agent. Journal of Medicinal Chemistry, 55, 3342-3352.

Doctoral Research (first-author)

1. **Zhu, Y.**, Nikolic, D., Breeman, R. V. B. & Silverman, R. B. (2005). Mechanism of inactivation of inducible nitric oxide synthase by amidines. Irreversible enzyme inactivation without inactivator modification. Journal of the American Chemical Society, 127, 858-868.
2. **Zhu, Y.** & Silverman, R. B. (2007). Electronic effects of peripheral substituents on porphyrin meso positions. Journal of Organic Chemistry, 72, 233-239.
3. **Zhu, Y.** & Silverman, R. B. (2007). Model studies for the mechanism of heme oxygenase-catalyzed hydroxylation. Organic Letter, 9, 1195-1198.
4. **Zhu, Y.** & Silverman, R. B. (2008). Revisiting heme mechanisms. A perspective on the mechanisms of nitric oxide synthase (NOS), heme oxygenase (HO), and cytochrome P450s (CYP450s). Biochemistry, 47, 2231-2243.

D. Research Support

Ongoing Research Support

UTEP Start-Up Grants 10/01/2015 -
Development of Novel Clopidogrel Based Antithrombotic Agents
The goal of this study is to discover the next generation inhibitors of purigergic receptor $P2Y_{12}$ 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.
Role: PI

Border Biomedical Research Center Start-Up Grants (Grant no. 226141144A) 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.
Role: PI