

## Curriculum Vitae

### YOUSONG DING

Department of Medicinal Chemistry  
College of Pharmacy  
University of Florida  
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### RESEARCH INTEREST:

My research program primarily focuses on developing and synergistically combining diverse sets of approaches to discover and develop small molecules and biologics as new therapeutic leads that address significant unmet medical needs such as drugs for obesity, cardiovascular, cancer, diabetic, neurodegenerative and infectious diseases. Researchers in the lab gain broad training spanning organic chemistry, biochemistry, microbiology, molecular biology, cell biology, protein engineering, and synthetic biology.

### EDUCATION AND RESEARCH EXPERIENCE:

- 2013-present     Assistant Professor Department of Medicinal Chemistry, College of Pharmacy, University of Florida, Gainesville, FL  
Natural product-based drug discovery and development; synthetic biology in small molecule production; functionalization of small molecules with developed biocatalysts.
- 2012-2013     Principal Scientist Bioprocess Development Group, Pfizer, Kalamazoo, MI  
Lead an interdisciplinary research team to develop bio-route for cost-efficient production of one best-selling blockbuster drug and to design novel route for significant reduction of cost and environmental contamination in production of a steroid-based drug. Principles of medicinal chemistry, protein engineering, and synthetic chemistry are being integrated in these studies.
- 2010-2012     Postdoctoral Fellow California Institute of Technology  
Advisor: Frances H. Arnold, Division of Chemistry and Chemical Engineering  
Using protein engineering and synthetic biology to engineer biocatalysts for biofuel and high-value chemical production
- 2004-2010     Ph.D. in Medicinal Chemistry, University of Michigan, Ann Arbor  
Advisor: David H. Sherman, Medicinal Chemistry, Chemistry, Microbiology  
Thesis: Characterization and analysis of biosynthetic systems from *Nostoc* sp. ATCC 53789 and selected fungal natural product pathways
- 2001-2004     M.S. Chemistry, University of Nebraska, Lincoln  
Advisor: Liangcheng Du, Chemistry  
Thesis: Overexpression and characterization of three enzymes involved in fumonisins biosynthesis
- 1996-2000     B.S. Applied Chemistry, Beijing University, China  
Advisor: Hongfang Sun, Technological Physics  
Thesis: Syntheses of several biological micro-molecules for nicotine-DNA complex study

**AWARDS:**

2014	Oak Ridge Associated Universities Travel Award
2012	Pfizer GMS Mission Award
2009-2010	Rackham Predoctoral Fellowship, University of Michigan
2009	Outstanding Research Award, Medicinal Chemistry Department, University of Michigan
2008-2009	Eli Lilly & Company Pre-doctoral Fellowship
2005-2006	Elizabeth Broomfield Foundation Scholarship
2004-2005	Lilly Endowment Pharmacy Fellowship,
2004-2005	Sheila B. Cresswell Fellowship
2000	Excellent BS Degree Thesis of Peking University in 2000

**Other Experience and Professional Memberships:**

2013-present Member, American Association of Colleges of Pharmacy  
 2008-present Member, Sigma Xi Society  
 2005-present Member, American Chemical Society

**PEER-REVIEWED PUBLICATIONS:**

1. Yang G, **Ding Y**. Recent advances in biocatalyst discovery, development and their applications. *Bioorg. Med. Chem.* DOI: 10.1016/j.bmc.2014.06.033.
2. **Ding Y**, Rath CM, Bolduc KL, Håkansson K, Sherman DH. Chemoenzymatic synthesis of cryptophycin anticancer agents by an ester bond-forming non-ribosomal peptide synthetase module. *J. Am. Chem. Soc.* 2011, 133:14492-14495.
3. **Ding Y**, Wet JR, Cavalcoli J, Li S, Greshock TJ, Miller KA, Finefield JM, Sunderhaus JD, McAfoos TJ, Tsukamoto S, Williams RM, Sherman DH Genome-based characterization of two prenylation steps in the assembly of the stephacidin and notoamide anticancer agents in a marine *Aspergillus* sp. *J. Am. Chem. Soc.* 2010, 132: 12733-12740.
4. **Ding Y**, Sherman DH. Chemoenzymatic synthesis of polyketides, non-ribosomal peptides and their hybrids. *Comprehensive Natural Products Chemistry Edition II*, 2010, Drs. Lew Mander and Hung-wen (ben) Liu ed. Elsevier, Volume 2, Chapter 17, 559
5. **Ding Y**, Miller KA, Greshock TJ, Sherman DH, Williams RM. Pre-malbrancheamide: synthesis, isotopic labeling, biosynthetic incorporation, and detection in cultures of *Malbranchea aurantiaca*. *Org. Lett.* 2008, 10: 4863-4866
6. **Ding Y**, Gruschow S, Greshock TJ, Finefield J, Sherman DH, Williams RW. Detection of VM55599 and Pre-paraherquamide from *Aspergillus japonicus* and *Penicillium fellutanum*: Biosynthetic Implications. *J. Nat. Prod.* 2008, 71: 1574-1578
7. Miller KA, Welch TR, Greshock TJ, **Ding Y**, Sherman DH, Williams RM. Biomimetic total synthesis of malbrancheamide and malbrancheamide B. *J. Org. Chem.* 2008, 73: 3116-3119
8. **Ding Y**, Williams RM, Sherman DH. Isolation and characterization of a 4-dimethylallyltryptophan synthase from *Malbranchea aurantiaca*. *J. Biol. Chem.* 2008, 283: 16068-16076
9. **Ding Y**, Seufert WH, Beck ZQ, Sherman DH. Analysis of the cryptophycin P450 epoxidase reveals substrate tolerance and cooperativity. *J. Am. Chem. Soc.* 2008, 130: 5492-5498
10. Du L, Yu F, Zhu X, Zaleta-Rivera K, Bojja RS, **Ding Y**, Yi H, and Wang Q. Biochemical and molecular analysis of the biosynthesis of fumonisins. (Polyketides: Biosynthesis, Biological Activities and Genetic Engineering. Rimando AM and Baerson SR ed.) *ACS Symposium Series 955*, ACS, Washington, D. C., pp 81-96. (2007).

11. Magarvey NA, Beck ZQ, Golakoti T, **Ding Y**, Huber U, Hemscheidt TK, Abelson D, Moore RE, Sherman DH. Biosynthetic characterization and chemoenzymatic assembly of the cryptophycins. Potent anticancer agents from cyanobionts. *ACS Chem. Biol.* 2006, 1:766-779.
12. Ding K, Lu Y, Nikolovska-Coleska Z, Qiu S, **Ding Y**, Gao W, Stuckey J, Krajewski K, Roller PP, Tomita Y, Parrish DA, Deschamps JR, Wang S. Structure-based design of potent non-peptide MDM2 inhibitors. *J. Am. Chem. Soc.* 2005, 127: 10130-10131.
13. **Ding Y**, Bojja RS, Du L. Fum3p is a 2-ketoglutarate dependent dioxygenase required for C-5 hydroxylation of fumonisins in *Fusarium verticillioides*. *Appl. Environ. Microbiol.* 2004, 70: 1931-1934.

#### **SELECTED CONFERENCE PRESENTATIONS:**

1. Du L, Yu F, Bojja RS, Zhu X, Bojja RS, **Ding Y**, Zaleta-Rivera K, Yi H. Biosynthesis of fungal polyketide fumonisins in *Fusarium verticillioides*. 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, **2004**
2. **Ding Y**, Beck ZQ, Sherman DH. Overexpression and in vitro characterization of cryptophycin epoxidase. *Society for Industrial Microbiology Annual Meeting and Exhibition*, Baltimore, MD, July 30 – August 3, **2006**
3. **Ding Y**, Seufert WH, Beck ZQ, Sherman DH. Analysis of the cryptophycin P450 epoxidase reveals substrate tolerance and cooperativity. *Gordon Conference in Marine Natural Products* Ventura, CA, February 24-29, **2008**
4. **Ding Y**, Bolduc KL, Rath CM, Sherman DH. Chemoenzymatic total synthesis of the cryptophycin anti-cancer agents utilizing a single multifunctional cryptophycin biosynthetic enzyme. *Society for Industrial Microbiology Annual Meeting and Exhibition*, Toronto, Canada, July 26 - 30, **2009** (Invited talk).
5. **Ding Y**. New approaches toward producing bioactive nitroaromatics. September 26<sup>th</sup>, **2014**. Virginia Commonwealth University, Richmond, VA
6. **Ding Y**. New approaches toward producing bioactive nitroaromatics. October 3<sup>rd</sup>, **2014**. Chemistry Department, University of Florida, Gainesville, FL

#### **PATENT:**

Sherman DH, Beck ZQ, **Ding Y**. Nucleic acids and polypeptides involved in the production of cryptophycin. USPTO 7,566,558.

#### **CURRENT GROUPMEMBERS:**

- 1). Dr. Guang Yang
- 2). Dr. Yu Sha, visiting scholar
- 3). Mr. Guande Jiang, 1st-year graduate student
- 4). Ms. Peilan Zhang, 1st-year graduate student
- 5). Mr. Yi Zhang, 2nd-year graduate student
- 6). Mr. Ran Zuo, 2nd-year graduate student

#### **RESEARCH SUPPORT:**

1. The University of Florida Startup Support
2. America Cancer Society-Institutional Research Grant