



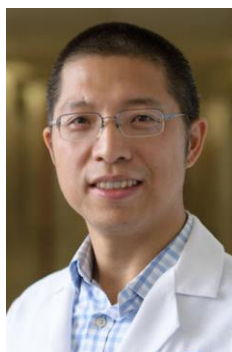
Department of Chemistry

University of Central Florida

Department of Chemistry Seminar Series – Fall Semester 2023

Friday, September 8th, 9:00 AM, Location CB2 105

Synthetic biology and enzymology in natural product research



Prof. Yousong Ding

University of Florida

Host: Prof. Jonathan Caranto

Abstract:

Natural products (NPs) form a validated and preeminent source of new drug leads, but the low rate of new discoveries and the limited access to bioactive compounds are challenging current NPs-based drug discovery and development. On the other hand, recent advances in DNA sequencing techniques illuminate the extraordinarily rich potential of microbial strains for advanced natural product research. In this talk, I will share examples to illustrate the use of genome information to produce NPs and their analogs and to support enzymology research. I will first focus on the development of cyanobacterial chassis and biocatalysis for the production of marine NP analogs and their synthetically challenging synthons (e.g., the polyketide moiety of anticancer apratoxins). Furthermore, I will discuss our latest work on the characterization of ATP-grasp ligases, non-heme Fe(II)- and 2-oxoglutarate-dependent dioxygenase and Rieske-type enzymes involved in the biosynthesis of microbial and plant natural products. Overall, our research showcases that multi-disciplinary approaches can help overcome the challenges facing NP research.

Bio:

Dr. Yousong Ding obtained his B.S. in Applied Chemistry from Peking University in 1996, M.S. in Chemistry from the University of Nebraska, Lincoln in 2004, and Ph.D. in Medicinal Chemistry under the supervision of Prof. David Sherman from the University of Michigan, Ann Arbor in 2010. After postdoctoral training with Prof. Frances Arnold at Caltech, Dr. Ding returned to Michigan to work at Pfizer, Inc. (Kalamazoo, MI) in 2012 and then started his independent career at the University of Florida in July 2013. He is currently an associate professor of Medicinal Chemistry at UF. His research group mainly focuses on discovering and developing bioactive substances from nature for existing and emerging medical needs by using interdisciplinary approaches in medicinal chemistry, microbiology, molecular biology, cell biology, protein science, and synthetic biology. At UF, Dr. Ding has published over 45 papers and filed about 20 disclosures. He is a frequent grant reviewer for NSF, NIH and other funding agencies. His work has been recognized by several awards including the Outstanding Basic Research Award of UF College of Pharmacy, Leroy B. Townsend Lecturer of the Department of Medicinal Chemistry, University of Michigan, Ralph E. Powe Junior Faculty Enhancement Award by Oak Ridge Associated Universities, Air Force Office of Scientific Research Young Investigator, and NIH MIRA. Dr. Ding's research is currently funded through NIGMS, NCI, and NSF.