

Title: Targeting Melanocortin Receptors: A Multimodal System for Drug Discovery for our Major Degenerative Diseases



Speaker: **Prof. Minying Cai**

The melanocortin receptor system consists of five 7-transmembrane G-protein coupled receptors (GPCR) generally referred to as MC1R, MC2R, MC3R, MC4R and MC5R. It is a primordial system for survival. They are involved in many critical functions including feeding behavior, energy homeostasis, response to stress, response to UV radiation, sexual function and behavior, pain response, fear flight, and many others. In this regard they are involved in many of our serious degenerative diseases including obesity, anorexia and other feeding disorders; sexual dysfunction; skin cancer; pain; diabetes; and many others. Yet thus far, despite many years of effort, there are only a few medications on the market for this class of receptors and their natural ligands, the melanotropins. In this talk we will discuss efforts to obtain ligands which might address some of diseases associated with this class of receptors. We hope that our work will provide the impetus for further studies in drug development in this area.

Minying Cai is a Research Professor in the Department of Chemistry & Biochemistry at the University of Arizona. She finished her scientific training in Shanghai Institute of Materia Medica, Shanghai Institute of Biochemistry, Shanghai Research Center of Biotechnology, Chinese Academy of Science; and she got her Ph. D. in the Biochemistry & Molecular Biophysics at the University of Arizona. Her major research interests are 1. Structure based drug design and synthesis of GPCR ligands, including developing selective human melanocortin receptors (hMCRs) ligands; 2. Developing novel biophysics tools for molecular imaging; novel molecular biomarker; high-throughput screening system, etc. 3. Exploiting novel scaffold via computational chemistry for small molecule therapeutics for energy balance and cancer study; 4. Exploring the novel physiological functions of melanocortin system involved. In collaboration with other investigators worldwide, she aims to identify and develop molecule modulators of GPCRs for the therapeutic treatment of melanoma, metabolic and CNS disorders. She has more than 100 publications in the area of novel drug discovery for obesity, diabetes, cancer, pain etc. She is a recipient of several national awards in China. She is also a member of Arizona Cancer at the University of Arizona.

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