9-1-2018

Chemistry Colloquium | 2Aryl5carboxytetrazoles A New Class of Photo CrossLinkers, Sept. 17

Ohio University College of Arts & Sciences

Chemistry Colloquium | 2-Aryl-5-carboxytetrazoles: A New Class of Photo-Cross-Linkers, Sept. 17

September 1, 2018
Categories: Events
Tags: Chemistry and biochemistry colloquia, chemistry and biochemistry events, Qing Lin

Dr. Qing Lin

Ohio University's Chemistry & Biochemistry Colloquium Series presents **Dr. Qing Lin** on "2-Aryl-5-carboxytetrazoles: A new class of photo-cross-linkers for medicinal chemistry and chemical biology" on Monday, Sept. 17, from 4:10 to 5 p.m. in Clippinger 194.

Lin is Professor of Chemistry at SUNY Buffalo.

Abstract: In this talk, I will describe our recent work on the development of 2-aryl-5-carboxytetrazoles (ACT) as a new class of photo-cross-linkers. During the studies of the tetrazole reactivity, we observed that the ACT undergoes the photoinduced ring rupture to generate a highly electrophilic carboxy-nitrile imine intermediate, which then reacts with a proximate nucleophile in biological systems. By harnessing this unique reactivity profile, we showed that ACT can serve as an effective photoaffinity label when it is attached to a drug molecule. In this mode, ACT allowed covalent capture of the drug targets with an efficiency equal to or greater than the commonly used photoaffinity labels such as benzophenone and diazirine. In addition, an ACT motif was introduced to the lysine side chain to create a class of unnatural amino acids, which together with an orthogonal aminoacyl-tRNA synthetase/tRNA pair can be incorporated into protein structures in a site-specifically manner. One ACT amino acid, mPyTK, was introduced into an adaptor protein, Grb2, in mammalian cells. The resulting mPyTK-encoded Grb2 mutant allowed the capture of its transient interaction partner, EGFR, in a stimulus and time-dependent manner in live mammalian cells.

The host is **Dr. Justin Holub**, Assistant Professor of Chemistry & Biochemistry at Ohio University.