Wednesday, November 10, 2021, 12:00 pm

Via Zoom:

https://usc.zoom.us/j/91009235126?pwd=alh3Q2cyUFViUzdQRytqWjhzaWpJUT09

Passcode: 460182

Professor Yaoqiu Zhu

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From Remdesivir (Veklury), (−)-Pavidolide B to Clopidogrel (Plavix), Translational and Integrative Organic Synthesis for Medicine, Science and Humanity

Abstract

Organic synthesis studies, especially those for the development of essential medicines, constitute the core of chemical science. This seminar will introduce three (3) of such studies developed from our young group at UT-El Paso. The first one is our very recent endeavor on COVID-19 drug, remdesivir (Veklury). To address the process challenge and global supply shortage of this emergently approved medicine, efficient new synthetic routes have been under development. Our flexible new routes can also yield structural analogs for antiviral drug development. The second part will briefly introduce our recently accomplished 4-step total synthesis of (−)-pavidolide B, a complex tetracyclic marine diterpenoid. The new route has also delivered three stereoisomers of the false-bioactive natural product, and they have demonstrated exciting anticancer profiles. This work showcases that facile and flexible total synthesis can be developed to facilitate modern drug discovery. The third story is solving the long-overdue clinical conundrums of the blockbuster antiplatelet prodrug clopidogrel (Plavix). Our systematic studies have not only elucidated the biochemical mechanisms underlining the high clinical variability and resistance but also have characterized H2S as the other active metabolite of this serendipitous drug. To overcome the clinical obstacle of metabolic activation, we have developed the first and stereoselective synthesis of the elusive and unstable active metabolite of clopidogrel. Integrative medicinal chemistry and chemical biology studies have unveiled an intriguing drug action of unprecedented mercapto activation and GPCR protein modification and signaling.

Hosted by Professor Chao Zhang

The scientific community is invited

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