Synthesis of Pan-CMP Mimics to Inhibit CoaBC

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The increase in multidrug-resistant pathogens due to the overuse of antibiotics, as well as the lack of development of novel therapeutics, has presented an urgent need for the discovery of next-generation antibacterial agents. The enzyme cofactor CoA plays an essential role in the biosynthesis of fatty acids and the generation of energy. The significant differences between microbial and mammalian CoA biosynthesis pathways make it an attractive target for drug development. The importance of CoaBC in prokaryotic metabolism leads to the hypothesis that inhibitors of CoaBC will disrupt CoA synthesis and kill bacterial cells. Bacterial CoaBC is bifunctional and contains both phosphopantothenoylcytoine synthetase (PPCS) and phosphopantothenoylcytoine decarboxylase (PPCDC) activities. Together, these activities catalyze the transformation of 4’-phospho-pantothenic acid (P-Pan) into 4’-phospho-pantetheine (P-PantSH). This reaction proceeds through formation of the reactive 4’-phospho-pantothenoyl-CMP (Pan-CMP) intermediate. My research focuses on synthesizing mimics of Pan-CMP as potential inhibitors of CoaBC as a new antitubercular drug target.

GW Nanofabrication and Imaging Center

Dr. Christine Branter | Senior Research Scientist and Dr. Dilan Ratnayake | Process Engineer

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Friday, October 12, 2018
Duques 151
2:00 – 3:00 p.m.
Refreshments will be served at 1:45 p.m.