Molecular Microbial Science Seminar

Date: May 28, 15:00 – 16:30
Room: N-531C

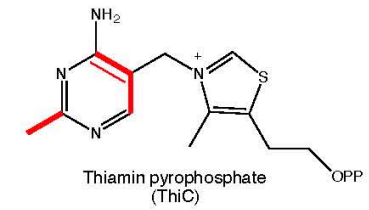
Prof. Tadhg P. Begley
Texas A & M University

Distinguished Professor of Chemistry
Derek Barton Professor in Chemistry
Robert A. Welch Foundation Chair

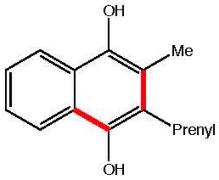
Radical SAM enzymes in cofactor biosynthesis:

Tadhg P. Begley, Department of Chemistry, Texas A&M University.

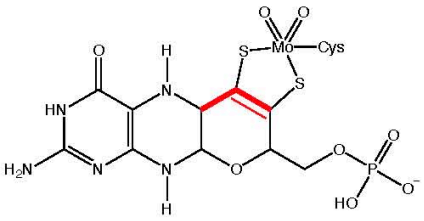
In contrast to most of the other primary metabolites, radical SAM enzymes play a major role in the biosynthesis of the cofactors. This lecture will describe the reconstitution and mechanistic characterization of radical SAM mediated reactions involved in molybdopterin (MoaA), thiamin (ThiC), deazaflavin (CofG and CofH) and menaquinone (MqnC and MqnD) biosynthesis. These examples will be used to demonstrate that radical SAM enzymes are uniquely suitable for catalyzing the complex rearrangements found in cofactor biosynthesis.



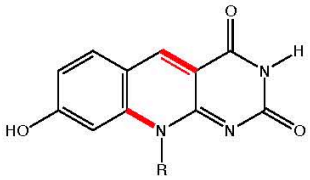
Thiamin pyrophosphate
(ThiC)



Menaquinone
(MqnC and MqnE)



Molybdenum cofactor
(MoaA)



Deazaflavin
(CofG and CofH)

Scheme 1: Structures of the cofactors discussed in the lecture. The red-colored bonds are formed in radical SAM catalyzed rearrangement reactions involving new chemistry.

Organized by Tatsuo Kurihara
Laboratory of Molecular Microbial Science
Institute for Chemical Research, Kyoto Univ.