

The Anatomy of AdoMet Radical Enzymes

Yvain Nicolet¹ and Catherine L. Drennan*

Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139 USA, ¹Present Address: Laboratoire de Cristallographie de Cristallogénèse des Protéines, Institut de Biologie Structurale, Grenoble, France.

One of the more interesting roles of Fe-S clusters in biology is found in the so-called AdoMet radical enzyme superfamily. These enzymes use 4Fe-4S clusters and S-adenosylmethionine (AdoMet) to generate radical species in a variety of enzymatic reactions. Members of this superfamily include biotin synthase (BioB), lipoate synthase, class III ribonucleotide reductase (RNR) activase, pyruvate formate lyase (PFL) activase, and spore photoproduct lyase. These enzymes are involved in diverse pathways (including vitamin biosynthesis and DNA repair), and the substrates' sizes are highly variable (ranging from small molecules such as lysine to proteins such as RNR and PFL). In this talk, I will describe our crystallographic studies of members of the AdoMet radical superfamily, and discuss how these enzymes evolved to recognize such a wide variety of substrates.

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