

W0259

Structure of *E. coli* AMP Nucleosidase Reveals Similarity to Nucleoside Phosphorylases. Yang Zhang, Sarah E. Cottet, Steven E. Ealick, Dept. of Chemistry & Chemical Biology, Cornell Univ., Baker Laboratory, Ithaca, NY 14853 USA.

AMP nucleosidase (AMN) catalyzes the hydrolysis of AMP to form adenine and ribose 5-phosphate. Enzyme activity is stimulated by ATP and suppressed by phosphate. The structure of AMN was determined at 2.7 Å resolution and structures of complexes with either formycin 5'-monophosphate or inorganic phosphate at 3.0 Å resolution. AMN is a biological homohexamer and each monomer is composed of two domains: a catalytic domain and a putative regulatory domain. The overall topology of the catalytic domain and the some features of the substrate binding site resemble that of the nucleoside phosphorylases, suggesting that AMN is a new member of the family. The structure of the regulatory domain consists of a long helix and a three-stranded sheet, and has a novel topology. The active site is consistent with an S_N1-type mechanism with initial formation of an oxocarbenium-like intermediate followed by nucleophilic attack by a water molecule at the anomeric carbon to form the final products adenine and ribose 5-phosphate.