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**Crystal Structure of Quinolinate Synthase, an Enzyme Involved in the *de novo* NAD Biosynthesis.** Erika Soriano, Ethan C. Settembre, Tadhg P. Begley, Steven E. Ealick, Dept. of Chemistry and Chemical Biology, Cornell Univ., Ithaca, NY 14853, USA.

Nicotinamide adenine dinucleotide (NAD) is an essential cofactor in several metabolic pathways and has recently been shown to play a role in several signaling pathways. Consequently, there is great interest in the biosynthesis of NAD. Quinolinate is the universal precursor in the *de novo* biosynthesis of NAD and can be synthesized starting from either tryptophan in the case of eukaryotes or from aspartate in most prokaryotes. The aspartate pathway begins with L-aspartate oxidase, which converts aspartate to iminoaspartate. Quinolinate synthase (QS) catalyzes the condensation of iminoaspartate and dihydroxyacetone phosphate to form quinolinic acid. This enzyme has been difficult to characterize due to either instability or inactivity when it is overexpressed and purified. QS is the final enzyme in this pathway to be structurally characterized (1WZU; Sakuraba, et al., J. Biol. Chem. 280:26645-8 (2005)). We have determined the crystal structure of QS from *Pyrococcus furiosus* at 2.8 Å resolution. The crystal structure and sequence alignments provide insights into the details of the active site and the enzyme's evolution.