

W0543

A Ribonucleotide Reductase Small Subunit from *M. Tuberculosis* with a More Protected Tyrosyl Radical. J.S. Davis, H. Rubin, Dept. of Biochemistry & Molecular Biophysics, Univ. of Pennsylvania, Philadelphia, PA 19104.

Ribonucleotide reductases (RNRs) are enzymes that provide deoxyribonucleotides for DNA synthesis and repair in all organisms. These enzymes are classified into three classes based on cofactor requirement and the type of protein radical formed. Class I RNRs consist of $\alpha_2\beta_2$ proteins, both the large subunit (NrdE) and small subunit (NrdF) are needed for catalysis. While many organisms contain more than one class of RNRs, it is unclear why *Mycobacterium tuberculosis* contains three small subunit class Ib proteins; NrdF1, NrdF2 and NrdB. The function of NrdB is unclear, NrdF2 is functional under normal growth conditions, and NrdF1 appears to be important in response to DNA damaging conditions.

NrdF1 can bind to NrdE in the absence of NrdF2, and is catalytically active. The tyrosyl radical appears to be better protected from hydroxyurea, which suggests a more buried active site, and hence an overall difference in active site structure.

Based on the current structure of NrdF2, we suggested that the major differences would be in the C-termini of these proteins. However, recent data suggests that the active sites of these proteins may be different. The native enzyme with 322 residues diffracted to 3 Å in-house and crystallizes in space group P4₂2₁2.