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Crystal Structure of a Homolog of the RNase P Protein Rpp29 from the Archaeon *Archaeoglobus fulgidus*. D. J. Sidote, D.W. Hoffman, Institute for Cellular and Molecular Biology, The Univ. of Texas at Austin, Austin, TX 78712.

A protein component of the *Archaeoglobus fulgidus* RNase P was expressed in *E. coli*, purified, and structurally characterized using x-ray crystallography. The dominant structural features of this 11 KDa protein are a sheet of six antiparallel β -strands, wrapped around a core of hydrophobic residues and two terminal helices that cap the β -sheet structure. Interestingly, the native and SeMet forms crystallized in different space groups. The final structure was refined to 1.7 Å.

Amino acid sequence comparisons among a diverse set of species indicate that the *Archaeoglobus fulgidus* protein is homologous to the human RNase P protein Rpp29, yeast RNase P protein Pop4 and a known archaeal RNase P protein from *Methanobacter thermoautotrophicus*; conserved hydrophobic residues indicate that the homologous protein in each of these species contains a similar structure. The structural model of an RNase P protein component provided by the present work provides an essential step toward understanding the overall architecture of this complex enzyme, and the mechanism by which it performs its functions.

