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**Structural Studies of Homologous Cytochromes  $c_7$  Involved in Fe(III) Reduction by *G. sulfurreducens*.** P.R. Pokkuluri, Y.Y. Londer, X. Yang, N.E.C. Duke, G. Johnson, J. Erickson, V. Orshonsky, M. Schiffer, Biosciences Div., Argonne National Laboratory, Argonne, IL 60439.

*Geobacter sulfurreducens* is important for bioremediation of toxic metals in subsurface environments. Its genome encodes over 100 cytochromes  $c$ , many of which function in electron transport to metal ions. We have previously determined the structure of a small three-heme cytochrome  $c_7$ , PpcA (71 residues), which reduces soluble Fe(III) and U(VI) *in vitro* and plays a role in electron transfer in reduction of soluble Fe(III) by the organism. The genome encodes for four additional cytochromes  $c_7$  with protein sequence identities ranging from 57% to 77% to PpcA. We have produced all four homologs of PpcA in *E. coli* and determined their structures by MAD method using data collected at the Fe K-edge (19BM, APS). The different homologs diffract in the range of 2.15 Å to 1.3 Å resolutions, and their structures are being refined. The structures of the four homologs are more similar to each other than to PpcA. Although the sequences and structures of the three-heme cytochromes  $c_7$  are similar their surface electrostatic potentials are different suggesting that these molecules probably interact with different partners in the Fe(III) reduction pathway(s) used by the organism.

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