

P001 Structural and spectroscopic analysis of EfeB, a component of the EfeUOB iron-transport system of *E. coli*
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The EfeUOB (YcdNOB) system of *Escherichia coli* is a tripartite, low pH, ferrous iron transporter. This system resembles the high-affinity iron transporter (Ftr1p-Fet3p) of yeast in that EfeU is homologous to Ftr1p, an integral-membrane iron-permease. The specific roles of the EfeO and EfeB proteins in EfeU-mediated iron uptake are unclear. We have isolated EfeB in three forms: ferri-haem-containing, an apparent 'compound III'-containing, and an apo-form (haem-free). The structure of apo-EfeB has been determined to 2.0Å resolution. The preliminary structure shows similarity to other haem-dependent peroxidases, despite low sequence homology. Haem-soaking experiments with pre-formed apo-EfeB crystals have been optimised generating complex crystals that diffract to 2.3 Å. Preliminary analyses of these crystals indicated an iron free haem (protoporphyrin IX, PPIX). Recent UV-VIS spectroscopy data suggests that haem binds to apo-EfeB to generate a spectrum that closely resembles the purified holo form. Further, we have shown that PPIX binds to give a spectrum matching that of the so called 'compound III' form. It seems likely that the EfeB protein can remove the iron from haem to generate PPIX. Our latest results will be presented.