

W0080

The Crystal Structure of Cytochrome P460 from *N. europaea* Reveals a Novel Cytochrome Fold and Crosslinked Heme. A.R. Pearson¹, B.O. Elmore¹, C. Yang², A.B. Hooper¹, C.M. Wilmot¹, ¹Univ. of Minnesota, Minneapolis, MN, ²RigakuMSC Inc., The Woodlands, TX.

Heme P460 is unusual among *c*-type hemes in that it contains three covalent links to a protein scaffold. Two are to thioethers from cysteines in the CXXCH motif, common to all *c*-type hemes; the third is between a protein sidechain and a *meso* carbon of the porphyrin ring.

Heme P460 has so far been identified and biochemically characterized in two proteins from *N. europaea*. In hydroxylamine oxidoreductase (HAO), a homo-trimer containing 21 *c*-hemes and 3 catalytic hemes P460, the additional crosslink involving a tyrosine sidechain has been confirmed by X-ray crystallography (Igarashi *et al.* [1997] *NSB* 4 276-284).

We report the crystal structure of the second protein, cytochrome P460 (cytP460), a small 19 kDa mono-heme cytochrome, containing only a heme P460. The structure to 1.7 Å was determined by sulfur SAD using Cr K α X-radiation, revealing a novel *c*-type cytochrome fold which is predominantly β -sheet. The structure confirms biochemical analyses which indicated the third crosslink involves a conserved lysine residue, K70 (Arciero & Hooper [1997] *FEBS Lett.* 410 457-460). In contrast to HAO, the crosslink is to the opposite *meso*-carbon of the porphyrin ring.