

# Characterization of the Heme Environment of the Hemophore PhuS: Implications for Heme Transfer

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The growth of pathogenic bacteria requires iron. A major source of iron is the host's hemoglobin and other heme proteins. Proteins involved in transport and heme utilization as an iron source are known as hemophores. One such hemophore, PhuS, is a 37-kDa cytoplasmic protein found in the gram-negative bacteria, *Pseudomonas aeruginosa*. The proposed function of PhuS is transport of heme from the inner membrane to heme oxygenase, which degrades the heme thereby releasing iron. The heme environment in PhuS is relevant to its mechanistic role in heme transport. Visible absorbance and resonance Raman spectra are presented to address iron spin state, coordination number, oxidation state, and identity of axial ligands. Ligand binding and redox properties are presented to address steric and electronic properties of the heme environment.