Tuberculosis is a devastating disease and there is urgent need for new drugs. Mycobacterium tuberculosis (Mt) is the infectious agent of TB. Mt has a heme degrading enzyme called Mycobacterium Heme Utilization Degrader (MhuD), which is unique in that it can bind two hemes and has an alanine at residue 71, unlike other homologous heme degraders that only bind one heme and have a phenylalanine in this position. The A71F variant of MhuD was made using site-directed mutagenesis and has been characterized using Electron Absorption (Abs), Circular Dichroism (CD), and Magnetic Circular Dichroism (MCD) spectroscopy. It has been found that this variant has a significant effect on the proximal histidine ligand (H75) when two hemes are bound. There was almost no CD spectrum for diheme cyanide-bound A71F MhuD, which suggests that F71 displaces H75 enough to let cyanide ligate both heme substrates. An H75A variant has been made and will be spectroscopically characterized and compared to the A71F variant in order to determine if F71 has indeed completely displaced the proximal His ligand in the diheme cyanide-bound conformation.