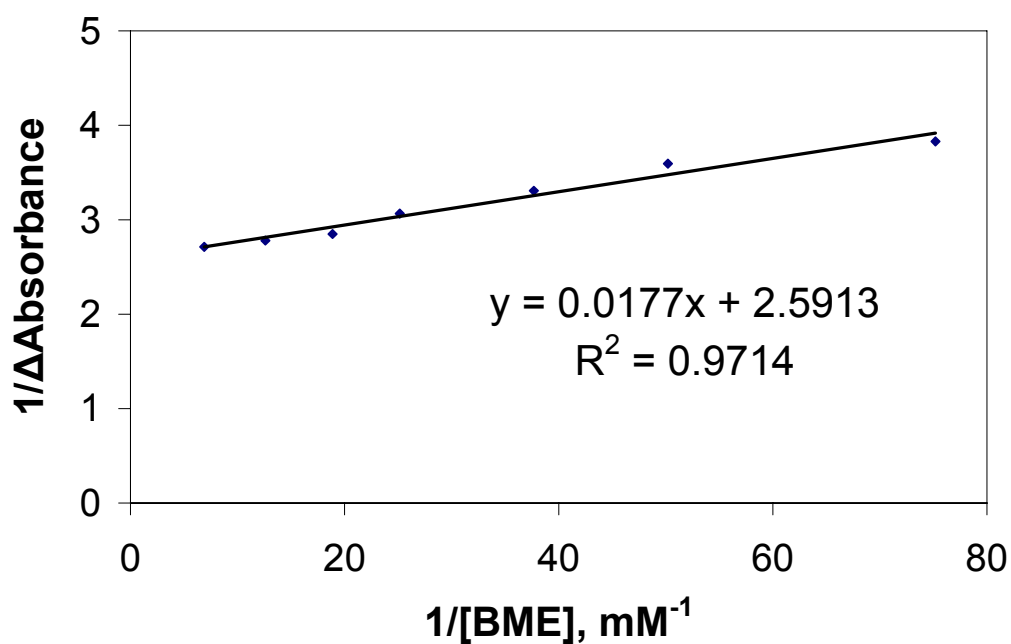**Supplemental Material**


Figure S1




Figure S1. Double reciprocal plot for BME binding to ferric H93G Mb, based on the saturation titration. For $K_d$ calculations $1/\Delta A = (K_d/ \Delta A_\infty)1/[S] + 1/ \Delta A_\infty$ and X intercept is $-1/K_d$. In this plot, X intercept is equal to $-147$ mM$^{-1}$, thus $K_d$ is equal to 6.8 μM


The titration data for BME binding to ferric H93G Mb were analyzed using the double reciprocal plot (Figure S1), which yielded a straight line with an X-axis intercept value of $1/[BME]_{free} = -147$ mM$^{-1}$, indicating that ferric H93G Mb and BME form a 1:1 (mol/mol) complex with a $K_d$ value of ~7 μM.

Figure S2



$y = 4.5899x + 10.491$
$R^2 = 0.959$

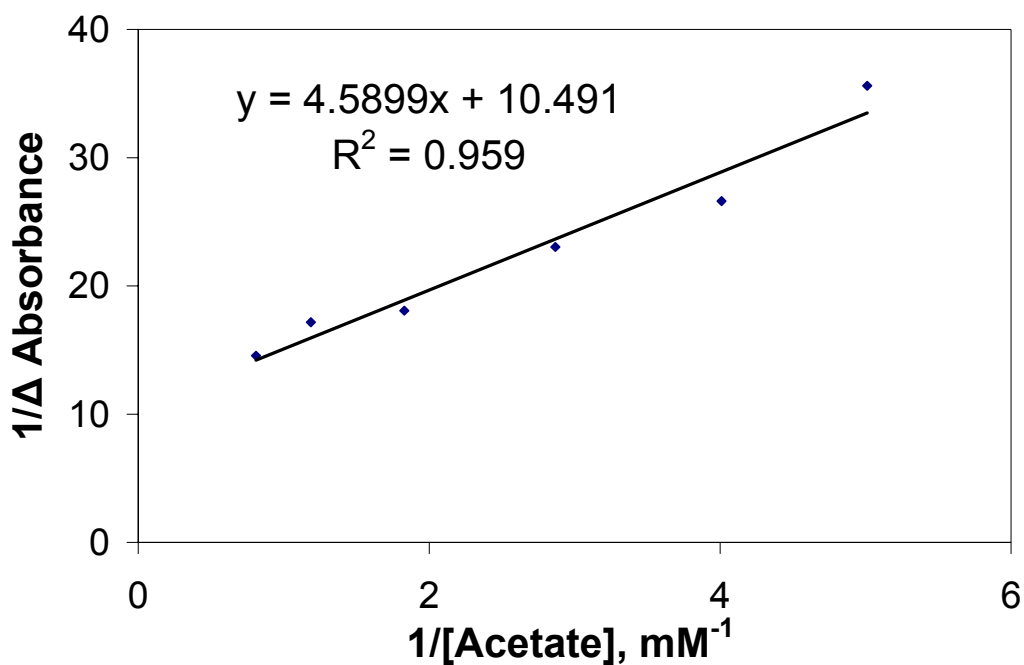(Y-axis: 1/Δ Absorbance; X-axis: 1/[Acetate], mM$^{-1}$)

Figure S2. Double reciprocal plot for acetate binding to ferric H93G Mb, based on the saturation titration. For $K_d$ calculation $1/\Delta A = ( K_d/ \Delta A_\infty )1/[S] + 1/ \Delta A_\infty$ and X intercept is $-1/K_d$. In this plot, X intercept is equal to $-2.286$ mM$^{-1}$, thus $K_d$ is equal to 440 μM

The titration data for acetate binding to ferric H93G Mb were analyzed using the double reciprocal plot (Figure S2), which yielded a straight line with an X-axis intercept value of $1/[acetate]_{free} = -2.286$ mM$^{-1}$, indicating that ferric H93G Mb and acetate form a 1:1 (mol/mol) complex with a $K_d$ value of 440 μM.