The Binding Affinity of Gas Molecules to the Heme Protein CooA

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This research aims to characterize the binding specificity of heme proteins to various gas signal molecules. Heme proteins in the gas-sensing family bind to specific gas signal molecules, causing a certain biological function to be activated or deactivated. In this study, variants of the carbon monoxide sensing heme protein CooA from the bacteria *R.rubrum* and *C. hydrogenoformans* are compared. Key differences in signal binding specificity and heme environment configuration will be investigated. This is done by using site-directed mutagenesis to alter the heme environment, isolating the CooA proteins through protein purification, and analyzing the isolated products through DNA binding assays. By manipulating the heme environment of these variants of CooA and comparing the signal binding specificity and activation to each other and to the wild type proteins, the basis of how CooA proteins are specifically activated by carbon monoxide is further explored.

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Teryn Gerhed is a senior biology and chemistry double major and is looking to attend graduate school for medicinal biology after graduating from Valparaiso. Jessica Lyza is a junior biochemistry major and is also looking to attend graduate school for medicinal biology after graduation. Both Jessica and Teryn are avid runners and play on the Women's Ultimate Frisbee Team at Valpo.

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