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Developing a Novel, Interdisciplinary Approach to Study Protein Unfolding[1] IAN BENTLEY, Department of Biology, Xavier University, Cincinnati, OH, JUSTIN LINK, Department of Physics, Xavier University, Cincinnati, OH — The ability of a protein to function is a direct result of its ability to properly obtain its native, folded structure. In order to determine the structural stability of proteins and to gain knowledge of their folding mechanism, we must develop protocols that allow us to monitor the controlled unfolding of proteins. Here, we investigate the stability of cytochrome *c*, a well-studied, model protein, under denaturing conditions using circular dichroism (CD) and fluorescence. Using either a chemical denaturant (Guanidine HCl) or heat, we can cause a protein to gradually unfold. The changes in the fluorescence and CD spectra can provide insight into the stability of proteins by providing us with thermodynamic parameters such as the Gibbs free energy, melting temperature and enthalpy. Research in this lab has been explored with mutant proteins and change in CD signal, however further work must still be done to observe their unfolding monitored by fluorescence. This technique will allow us to determine which regions of native cytochrome *c* have the greatest impact on the protein folding process. The objective of this session is to present recent work in developing a protocol to observe the unfolding of wild type and mutant proteins with fluorescence.

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