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Frustration and the Functional and Folding Landscape of Proteins

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The energy landscape for folding is funnel-like and largely correlates topology directly with energetics. Thus many of the “excited states” important for function are ensembles of structures in which entropy balances partial unfolding energy costs. I will discuss such spectra for cytochrome c. Another way of achieving low free energy excitations is via frustration which entails deviations from the simple funnel landscapes responsible for setting the overall protein shape. I will discuss interesting examples of the consequences of frustration for binding, allostery and for membrane protein systems.