Knowing *How* to Fold Them

Sequencing the human genome was a tremendously significant accomplishment, but now comes the hard part: Understanding the structure and function of proteins. The 100,000 proteins in our bodies initiate, control, or perform every one of our biological functions through shapes (called *folds*) and communication with other proteins. Misfolded or mistargeted proteins can cause diseases such as cancer, mad cow, and cystic fibrosis. Computational biologists are using geometry, probability, and knot theory to begin to describe the intricate folding of proteins. Once it is known just exactly how a malfunctioning protein goes awry, drugs can be designed that address the problem, thereby restoring affected cells.

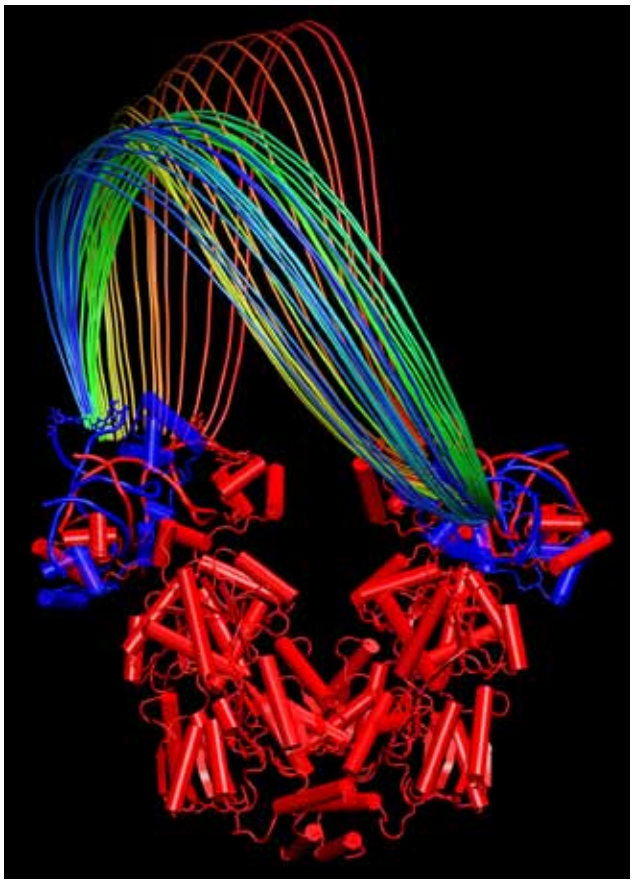

Image courtesy of Theoretical & Computational Biophysics Group, University of Illinois.

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