MAR06-2005-001226

Abstract for an Invited Paper
for the MAR06 Meeting of
the American Physical Society

A Framework for Globular Proteins[1]

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Due to their remarkable chemical specificity and diversity, globular proteins play a crucial role in the network of molecular interactions of life. Over the past several decades, much experimental data has been accumulated on proteins, but the overarching principles that govern the general features of proteins remain largely unknown. Here, a novel framework for understanding many key attributes of globular proteins is presented. This framework suggests that the characteristics of globular proteins that make them well-suited for biological function are the emergent properties of a unique phase of matter. Implications of this picture include the provision of a fixed backdrop for molecular evolution and natural selection and design restrictions on molecular machinery. The work described here was carried out in collaboration with Jayanth Banavar and Amos Maritan.

[1]This research was supported in part by NSF IGERT grant DGE-9987589.