

INVITED LECTURE H10

Investigating the forces that drive membrane protein folding

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Understanding the energetics of molecular interactions is fundamental to many of the central quests of structural biology including structure prediction and design, mapping evolutionary pathways, learning how mutations cause disease, drug design, and relating structure to function.

Nevertheless, we know little about the forces that drive membrane protein folding. We have developed experimental methods for investigating the folding energetics of large membrane proteins. Application of these methods leads us to conclude that hydrogen bonding is a relatively modest contributor to membrane protein folding and that packing is a dominant player. We find that membrane proteins do not pack any more efficiently than soluble proteins, however, but instead are able to bury more surface area.