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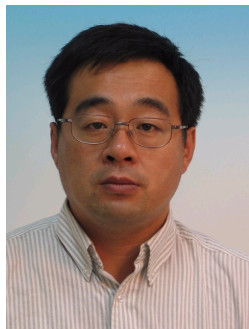
正、副高职称

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科研领域描述

主要研究方向: 结构生物学, 生物大分子动力学的核磁共振研究, 生物核磁共振方法学。

Our research mainly focuses on studies of the structures, dynamics and biological functions of proteins, especially enzymes. In particular, we are interested in the correlation between protein dynamics (structural fluctuations over time) and their functional mechanisms. We employ Nuclear Magnetic Resonance (NMR) technique to determine the solution structures and probe the dynamic properties of biomacromolecules. We also use biochemical methods to characterize the activity and functions of proteins both in vitro and in vivo. Our main goal is to elucidate the structural and dynamic basis of protein functions.

Protein structures and dynamics

To provide structural basis for their biological functions, we use NMR technique to determine the solution structures of proteins and protein complexes. However, protein functions essentially depend on their motions, and static structures alone cannot fully explain their functions. NMR is a powerful tool to probe the motional properties of proteins. Therefore, we use relaxation phenomena, as well as newly developed NMR methods such as PRE and RDC to investigate protein dynamics and their correlation to functions.

Protein interactions

Protein functions through interactions with other molecules (proteins, ligands, or nucleic acids). We use NMR methods to characterize protein interactions. In particular, we are interested in studying (1) interactions between enzymes and substrates during catalysis, (2) interactions between receptors and ligands in signal transduction pathways, (3) protein-protein interactions in the regulation of proteasome.

Membrane proteins

Membrane proteins play essential roles in cells. Recent advances in biochemical and NMR techniques have made it possible to use solution NMR method to study the structures and dynamics of membrane proteins. We are interested in studying the structures of protein cross-membrane translocation machineries, and to elucidate the molecular mechanism or the translocation processes.

Lab Homepage: <http://bnmrc.pku.edu.cn/JinLab.html>

代表性论文

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