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原子力显微镜对纳米生物结构的观察和操纵

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原子力显微镜不仅能对纳米生物结构进行观察，而且也能对其进行操纵。对纳米生物结构的观察已深入到生物大分子结构水平。原子力显微镜对生物大分子的操纵包括从染色质中提取DNA用于基因分析、对膜蛋白的结构进行观察、对蛋白构象进行可控操纵等。这些纳米技术的应用将揭示生物系统更多的结构和功能信息。

OBSERVATION AND MANIPULATION OF BIOLOGICAL STRUCTURES WITH AFM

Many biologists had a dream of physically touching and manipulating the biomoleculars they are investigating. With the invention of the atomic force microscope (AFM), this dream is coming true. AFM observation of the nanostructure of the biological samples has deepened the general under-standing of biomolecules. Examples of AFM application in nanomanipulation include the extraction of chromosomal DNA for genetic analysis, the dissection of biological membranes, and the controlled modu-lation of protein conformation etc. Future application of these nanotechniques will reveal new information on the structure, function and assembly of biomolecules. Here, recent applications of AFM to imagining and manipulating biological systems are reviewed.

关键词