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分子马达定向运动的两态模型

韩英荣*[1]、赵同军[1,2]、展永[1]、吴建海[1]
1 河北工业大学理学院
2 河北工业大学电气工程学院

采用非对称周期势来描述马达蛋白与具有周期性和极性的微丝轨道之间的相互作用，计算了马达蛋白两态模型的几率流和有效势之间的关系。计算结果表明：马达蛋白的定向运动不仅与有效势的整体倾斜密切相关，还与有效势的势垒高度有关。有效势倾斜等效于一个平均力的作用，而这一平均力的存在体现了两态跃迁细致平衡的破坏。同时将不同ATP浓度下力与速度的关系曲线与实验作了比较，这些曲线与实验定性吻合。

TWO-STATE MODEL FOR DIRECTED MOTION OF BROWNIAN MOTOR

Asymmetric and periodic potential was used to describe the interaction between motor pro-teins and filaments that were periodic and polar. The current and effective potential in the two-state model were calculated. It was shown that the directed motion of motor protein was relevant to the effec-tive potential. The slope of the effective potential corresponded to an average force. Therefore existence of the average force incarnated that detailed balance was broken in two-state transition. The curve of force-velocity theoretical relationship was also compared with the experimental data, it was qualitative tallied with the experiment.

关键词