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Atomic Force Microscopy Studies of DNA Binding Properties of the Archaeal Mini Chromosome Maintenance Complex

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Abstract : Basic cellular processes as DNA replication are crucial to cell life. Understanding at the molecular level the mechanisms that govern DNA replication in proliferating cells is fundamental to understand disease connected to genomic instabilities, as a genetic disease and cancer. A key step for DNA replication to take place, is unwinding the DNA double helix and this carried out by proteins called helicases. The archaeal MCM (minichromosome maintenance) complex from Methanothermobacter thermautotrophicus have being studied using Atomic Force Microscopy (AFM), imaging in air and liquid (Physiological environment). The accurate analysis of AFM topographic images allowed to understand the static conformations as well the interaction dynamic of MCM and DNA double helix in the present of ATP.

Keywords : DNA, protein-DNA interaction, MCM (mini chromosome manteinance) complex, atomic force microscopy (AFM)
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