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Crystallographic structure of Proliferating Cell Nuclear Antigen from radioresistant archaeon, Thermococcus gammatolerans

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Abstract content

Thermococcus gammatolerans is a strictly anaerobic; hyperthermophilic archaeon belongs to the order Thermococcales in the phylum Euryarchaeota. It was extracted from a hydrothermal vent from the Guaymas Basin (Gulf of California, Mexico). Different studies show that T. gammatolerans is one of the most radioresistant organisms known amongst the archaea. This makes it a unique model to study adaptations to the environment and to study DNA repair mechanisms in an organism able to tolerate harsh conditions. A key protein in these mechanisms is the Proliferation Cell Nuclear Antigen (PCNA). Its function is focused on their ability to slide along the DNA duplex and coordinating the activities of proteins mainly related to DNA edition and processing. Analysis of archaeal proteins have proven to be enormously fruitful, because much of the information obtained from them can be extrapolated to eukaryotic systems, and PCNA is no exception. Here we report the cloning, recombinant expression, crystallization and structure determination of PCNA from T. gammatolerans (TgPCNA).

Summary

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