

Mcm10 associates with the pre-replicative complex, stabilizing Mcm2-7

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

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Reactome database release: 74

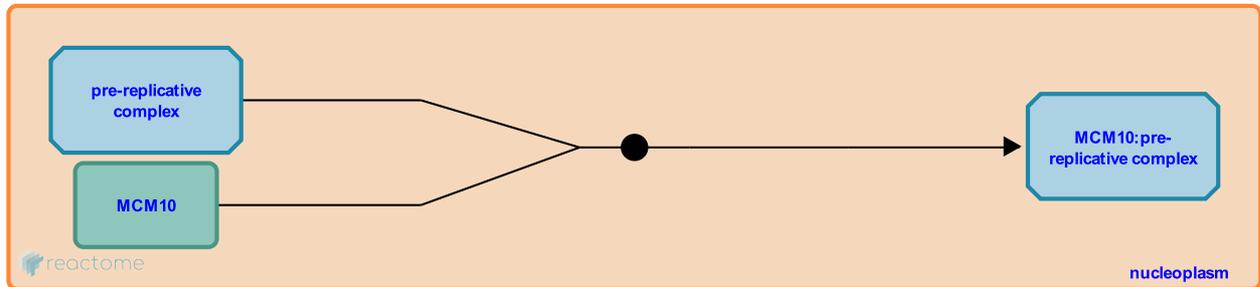
This document contains 1 reaction ([see Table of Contents](#))

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Stable identifier: R-HSA-68919

Type: binding

Compartments: nucleoplasm



MCM10 is required for human DNA replication. In *S. cerevisiae*, Mcm10, like Mcm2-7, is required for minichromosome maintenance, but Mcm10 has no sequence homology with these other proteins (Merchant et al., 1997). Genetic studies have demonstrated that Mcm10 is required for DNA replication in *S. pombe* (Aves et al., 1998) and *S. cerevisiae* cells (Homesley et al., 2000) and immunodepletion of XlMcm10 interferes with DNA replication in *Xenopus* egg extracts (Wohlschlegel et al., 2002). Human Mcm10 interacts with chromatin in G1 phase and then dissociates during G2 phase. In *S. cerevisiae*, Mcm10 has been shown to localize to origins during G1 (Ricke and Bielinsky, 2004), and it may stabilize the association of Mcm2-7 with the pre-replicative complex (Sawyer et al., 2004). This timing of association is consistent with studies that demonstrate that, in *Xenopus* egg extracts, Mcm10 is required for association of Cdc45, but not Mcm2-7 with chromatin. Biochemical evidence that Mcm10 plays a direct role in the activation of the pre-replicative complex includes the requirement for SpMcm10 in the phosphorylation of the Mcm2-7 complex by DDK (Lee et al., 2004) and the fact that SpMcm10 binds and stimulates DNA polymerase alpha activity (Fien et al., 2004).

Literature references

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