RFC binding displaces Pol Alpha on the C-strand of the telomere

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09/05/2024

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.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

Literature references

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Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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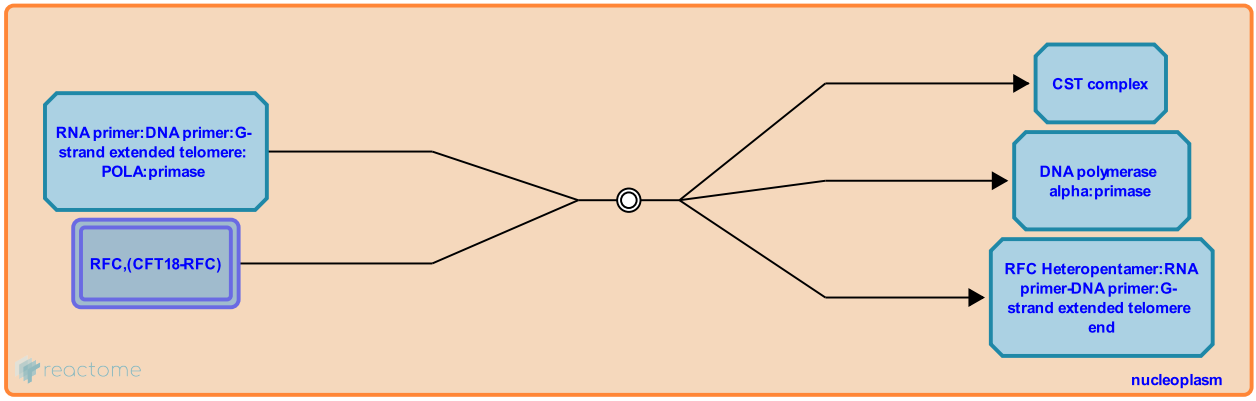
Stable identifier: R-HSA-174452

Type: dissociation

Compartments: nucleoplasm



Once the RNA-DNA primer is synthesized, replication factor C (RFC) initiates a reaction called "polymerase switching"; pol delta, the processive enzyme, replaces pol alpha, the priming enzyme. RFC binds to the 3'-end of the RNA-DNA primer on the Primosome, to displace the pol alpha primase complex. The binding of RFC triggers the binding of the primer recognition complex (Tsurimoto and Stillman 1991, Maga et al. 2000, Mossi et al. 2000). RFC is recruited to telomeres via interaction with 5'-phosphate ends of a telomere repeat sequence (Uchiumi et al. 1996, Uchiumi et al. 1999). In budding yeast, the alternative evolutionarily conserved RFC complex in which the RFC1 subunit is substituted with the CTF18 complex (composed of CHTF18, CHTF8 and DSCC1) plays a critical role in telomere maintenance (Hiraga et al. 2006, Gao et al. 2014). The CTF18-RFC complex is also implicated in telomere maintenance in fission yeast (Khair et al. 2010). It was shown that the human CTF18-RFC complex has a redundant function with the RFC pentamer in PCNA loading and DNA replication (Bermudez et al. 2003), but its role in human telomere maintenance has not been studied. Mouse CFT18 complex is necessary for proper development of germ cells (Berkowitz et al. 2012).

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Editions

2006-03-10	Authored	Blackburn, EH., Seidel, J.
2006-07-13	Reviewed	Price, C.
2019-12-18	Revised	Orlic-Milacic, M.
2020-01-03	Reviewed	Gillespie, ME.
2020-04-29	Reviewed	Hayashi, MT.
2020-05-04	Edited	Orlic-Milacic, M.