cRNA Synthesis

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18/02/2020
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


Reactome database release: 71

This document contains 1 pathway and 2 reactions (see Table of Contents)
Synthesis of full length complementary viral RNA (cRNA) requires that vRNA transcription initiates without the help of a host cell methyl RNA cap as a primer (Crow, 2004; Vreede, 2004; Deng, 2006), and that it proceeds to the 5' end of the vRNA template without stuttering on the sub-terminal poly-U sequence. Free viral NP protein appears to play a central role in enabling both of these features of cRNA synthesis, although the molecular details of its role remain unclear (Shapiro, 1988; Medcalf, 1999; Mullin, 2004).

**Literature references**


**Editions**

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**Initiation of cRNA Synthesis**

**Location:** cRNA Synthesis

**Stable identifier:** R-HSA-192832

**Type:** transition

**Compartments:** nucleoplasm

**Diseases:** influenza

Viral vRNA, complexed with NP protein, is bound by the trimeric viral polymerase complex in a stable secondary structure-dependent manner, referred to as a panhandle, fork or cork-screw (Fodor, 1994; Brownlee, 2002; Park, 2003; Crow, 2004). This RNA structure is made of both the 5' and 3' ends of the vRNA. The polymerase is thought to first bind the 5' end of the vRNA and then the 3' end. Synthesis of cRNA initiates without a host cell methylated RNA cap as a primer (Beaton, 1986; Galarza, 1996; Deng, 2006; Engehardt, 2006).

**Followed by:** cRNA Extension

**Literature references**


**Editions**

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Virion vRNP is capable of synthesizing cRNA immediately following entry into the cell nucleus (Vreede, 2006). The PB1 subunit principally catalyzes extension (Nakagawa, 1996). However, cRNA does not accumulate until later in the infection process, possibly requiring NP and the trimeric polymerase for stabilization (Vreede, 2004). The vRNA template is released.

**Preceded by:** Initiation of cRNA Synthesis

**Literature references**


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