Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding

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09/05/2020
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: 72

This document contains 4 pathways (see Table of Contents)
Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding

**Stable identifier:** R-HSA-389958

**Compartments:** cytosol

In the case of actin and tubulin folding, and perhaps other substrates, the emerging polypeptide chain is transferred from the ribosome to TRiC via Prefoldin (Vainberg et al., 1998).

**Literature references**


**Editions**

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Prefoldin mediated transfer of substrate to CCT/TriC

Location: Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding

Stable identifier: R-HSA-389957

Compartments: cytosol

Unfolded actins and tubulins bound to prefoldin are transferred to CCT via a docking mechanism (McCormack and Willison, 2001).

Literature references


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Formation of tubulin folding intermediates by CCT/TriC

Location: Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding

Stable identifier: R-HSA-389960

Compartments: cytosol

TriC/CCT forms a binary complex with unfolded alpha- or beta-tubulin (Frydman et al., 1992; Gao et al., 1993). The tubulin folding intermediates produced by TriC are unstable (Gao et al., 1993). Five additional protein cofactors (cofactor A-E) are required for the generation of properly folded alpha- and beta-tubulin and for the formation of alpha/beta-tubulin heterodimers (Gao et al., 1993) (Tian et al., 1997, Cowan and Lewis 2001).

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Folding of actin by CCT/TriC

Location: Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding

Stable identifier: R-HSA-390450

Compartments: cytosol

Nucleotide-independent transfer of beta-actin from prefoldin to CCT occurs when prefoldin binds to CCT (Vainberg et al., 1998). Following ATP-dependent folding within CCT (Gao et al., 1992), beta-actin is released as a soluble, monomeric protein.

Literature references


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