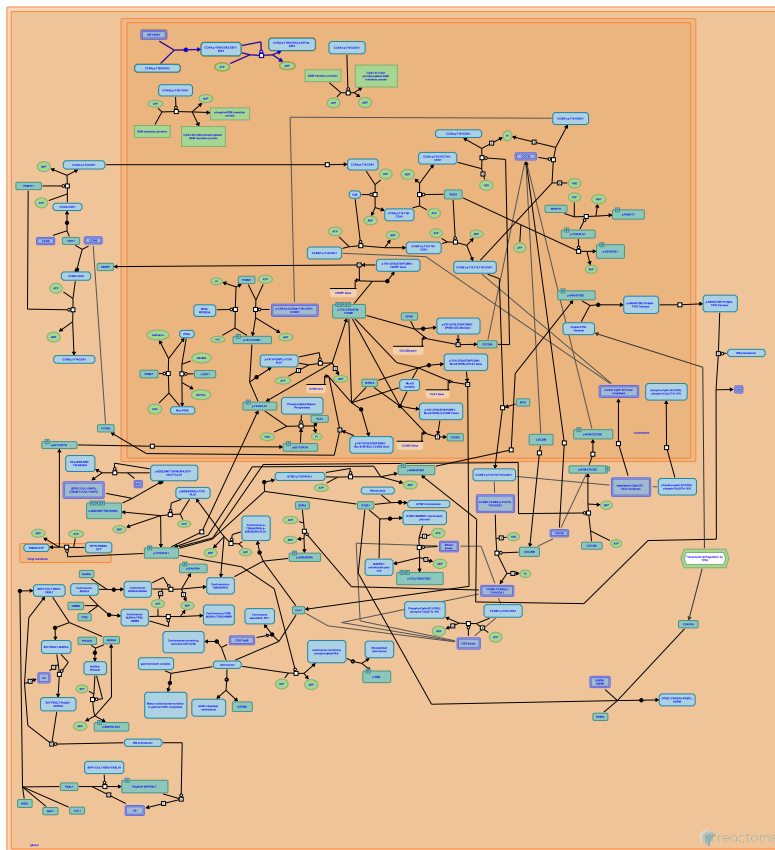


G2 Phase



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the [Reactome Textbook](https://reactome.org/textbook).

25/04/2024

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

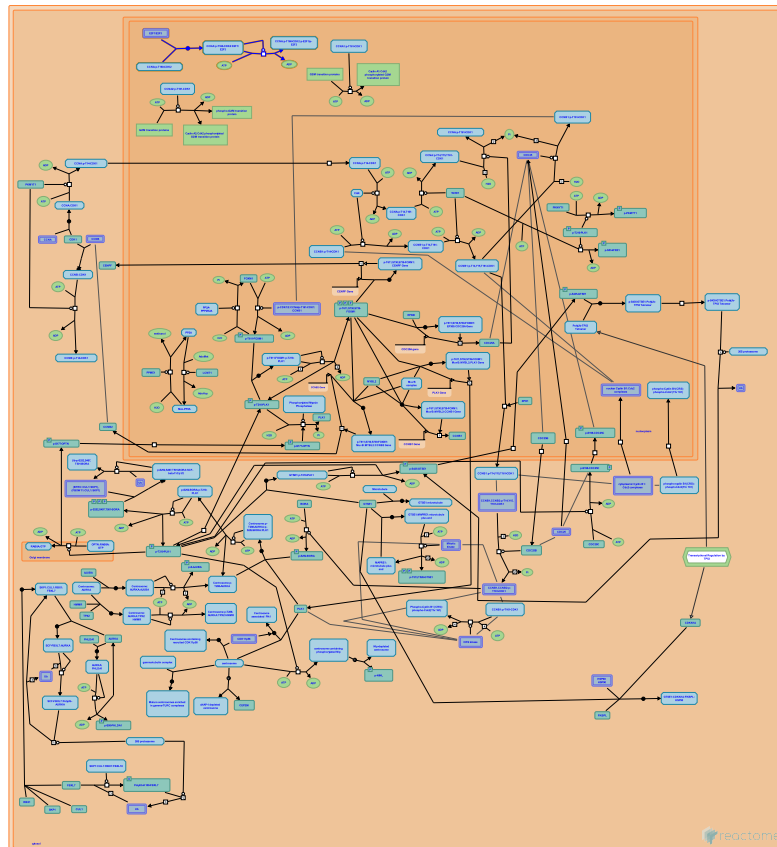
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Reactome database release: 88

This document contains 1 pathway and 2 reactions ([see Table of Contents](#))

G2 Phase ↗

Stable identifier: R-HSA-68911



This is one of two 'gap' phases in the standard eukaryotic mitotic cell cycle. It is the interval between the completion of DNA synthesis and the beginning of mitosis. Protein synthesis occurs in this phase, following DNA replication in the S phase. This is the time when the cell stockpiles on the cytoplasmic contents, before mitosis and cytokinesis occur (Mitchison 2003, Kaldis 2016).

Literature references

Mitchison, JM. (2003). Growth during the cell cycle. *Int. Rev. Cytol.*, 226, 165-258. ↗

Kaldis, P. (2016). Quo Vadis Cell Growth and Division?. *Front Cell Dev Biol*, 4, 95. ↗

Editions

2017-03-25

Edited

Orlic-Milacic, M.

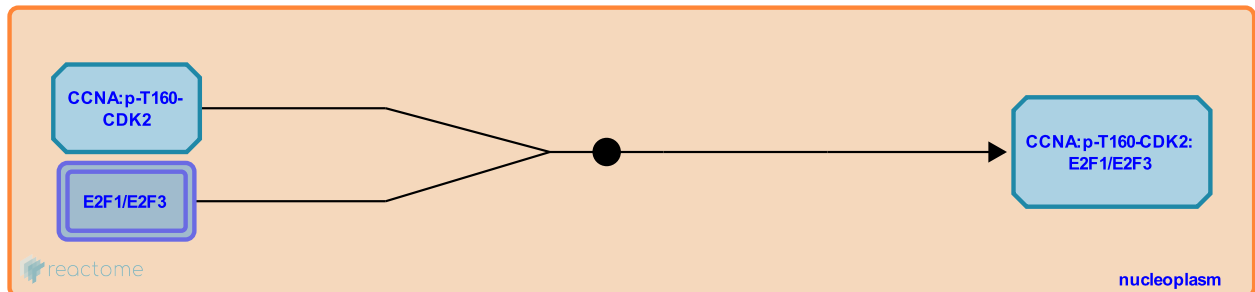
Association of Cyclin A:phospho-Cdk2(Thr 160) with E2F1/E2F3 ↗

Location: G2 Phase

Stable identifier: R-HSA-187937

Type: binding

Compartments: nucleoplasm



In G2, the cyclin A:Cdk2 complex associates with E2F1 and E2F3.

Followed by: Phosphorylation of E2F1/E2F3 by Cyclin A:phospho-Cdk2(Thr 160)

Literature references

Livingston, DM., Arany, Z., Kaelin WG, Jr., Krek, W., Ewen, ME., Shirodkar, S. (1994). Negative regulation of the growth-promoting transcription factor E2F-1 by a stably bound cyclin A-dependent protein kinase. *Cell*, 78, 161-72. ↗

Flores, O., Lees, JA., Dynlacht, BD., Harlow, E. (1994). Differential regulation of E2F transactivation by cyclin/cdk2 complexes. *Genes Dev*, 8, 1772-86. ↗

Editions

2006-09-19	Authored	Pagano, M.
2006-09-28	Edited	Matthews, L.

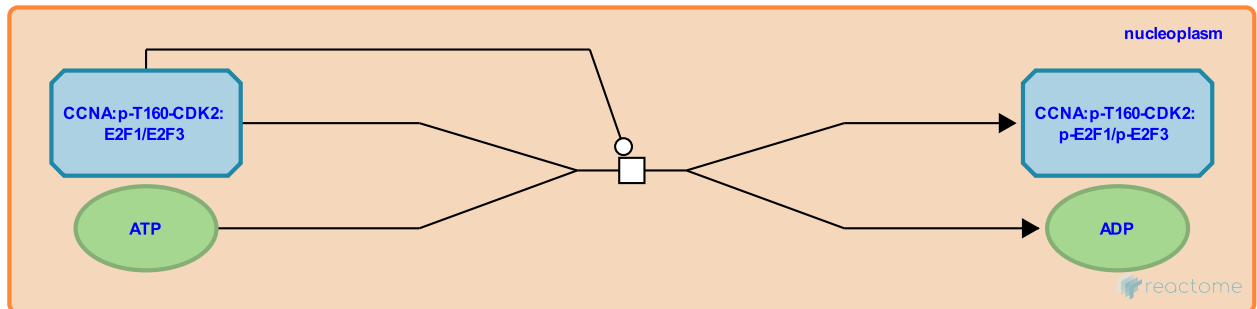
Phosphorylation of E2F1/E2F3 by Cyclin A:phospho-Cdk2(Thr 160) ↗

Location: G2 Phase

Stable identifier: R-HSA-187959

Type: transition

Compartments: nucleoplasm



In G2 Cdk2, in association with cyclin A, phosphorylates E2F1 and E2F3 resulting in the inactivation and possibly degradation of these two transcription factors (Dynlacht et al., 1994; Krek et al., 1994).

Preceded by: Association of Cyclin A:phospho-Cdk2(Thr 160) with E2F1/E2F3

Literature references

Livingston, DM., Arany, Z., Kaelin WG, Jr., Krek, W., Ewen, ME., Shirodkar, S. (1994). Negative regulation of the growth-promoting transcription factor E2F-1 by a stably bound cyclin A-dependent protein kinase. *Cell*, 78, 161-72. ↗

Flores, O., Lees, JA., Dynlacht, BD., Harlow, E. (1994). Differential regulation of E2F transactivation by cyclin/cdk2 complexes. *Genes Dev*, 8, 1772-86. ↗

Editions

2006-09-19	Authored	Pagano, M.
2006-09-28	Edited	Matthews, L.
2006-10-06	Reviewed	Coqueret, O.

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