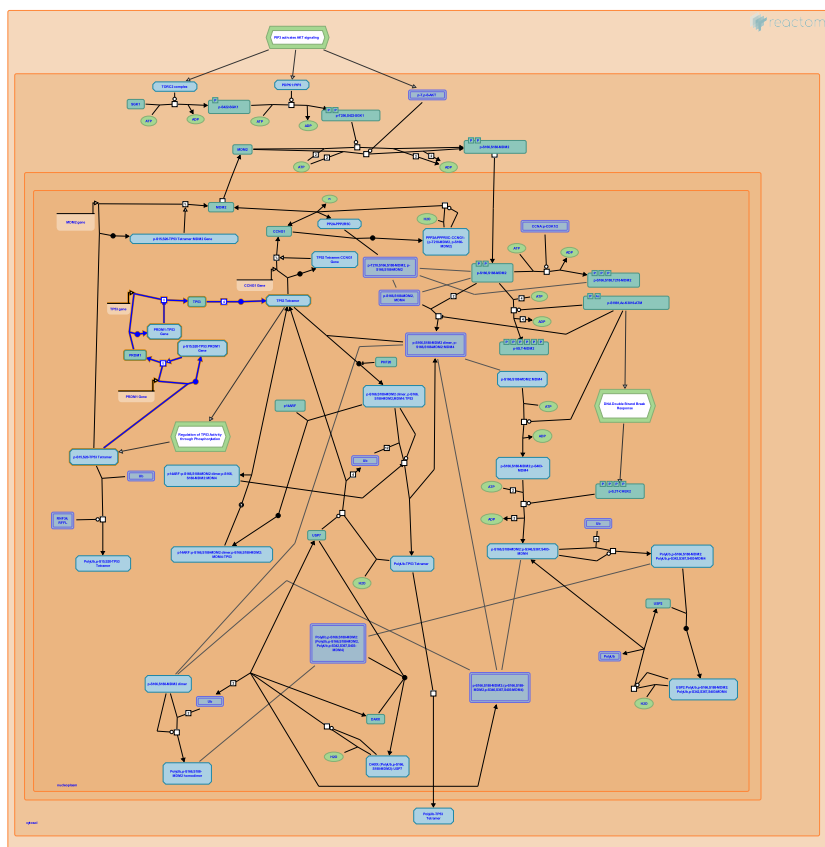


Regulation of TP53 Expression



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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/).

08/05/2024

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

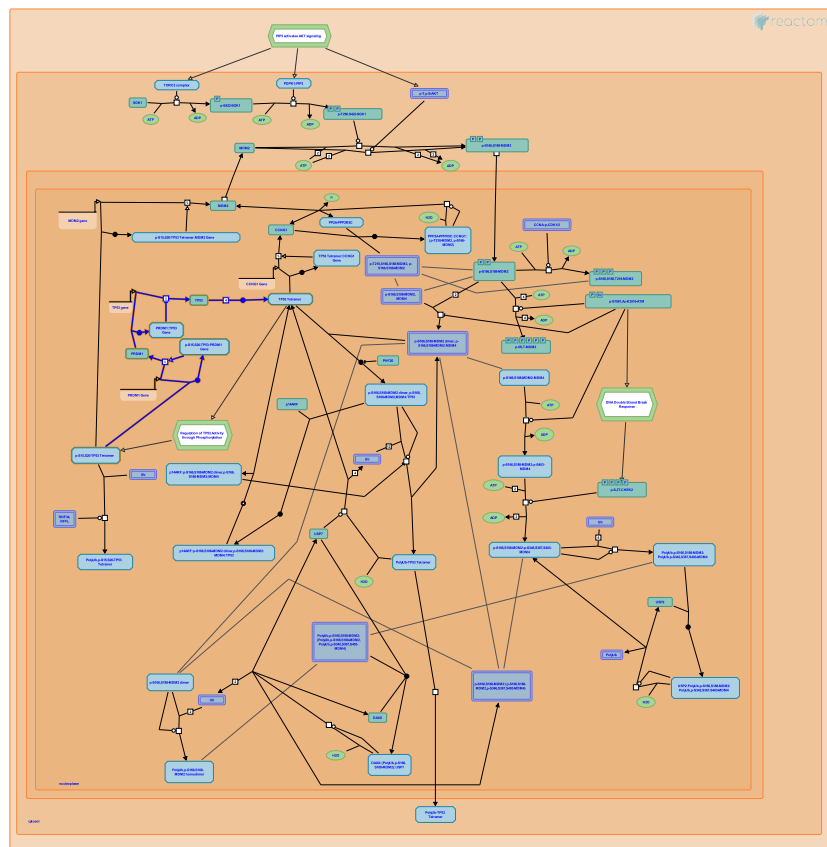
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Reactome database release: 88

This document contains 1 pathway and 5 reactions ([see Table of Contents](#))

Regulation of TP53 Expression ↗

Stable identifier: R-HSA-6804754



Transcription of the TP53 (p53) gene is negatively regulated by the TP53 transcriptional target PRDM1 (BLIMP1), which binds to the promoter region of TP53 and probably induces repressive methylation (Yan et al. 2007).

TP53 functions as a homotetramer (Jeffrey et al. 1995, Waterman et al. 1995).

Literature references

Lim, CA., Ng, HH., Jiang, J., Yan, J., Chin, KC., Wu, Q. (2007). BLIMP1 regulates cell growth through repression of p53 transcription. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 1841-6. ↗

Halazonetis, TD., Shenk, JL., Waterman, JL. (1995). The dihedral symmetry of the p53 tetramerization domain mandates a conformational switch upon DNA binding. *EMBO J.*, 14, 512-9. ↗

Pavletich, NP., Jeffrey, PD., Gorina, S. (1995). Crystal structure of the tetramerization domain of the p53 tumor suppressor at 1.7 angstroms. *Science*, 267, 1498-502. ↗

Editions

2015-10-14	Authored, Edited	Orlic-Milacic, M.
2016-02-04	Reviewed	Inga, A., Zaccara, S.

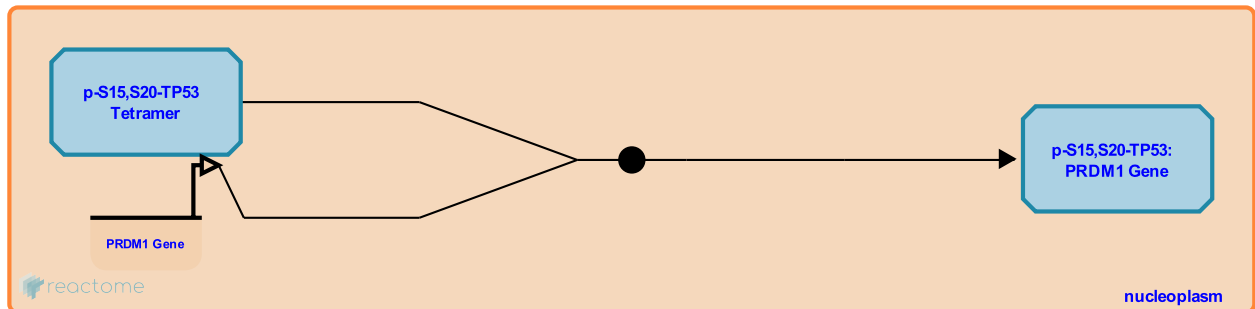
TP53 binds the PRDM1 gene ↗

Location: [Regulation of TP53 Expression](#)

Stable identifier: R-HSA-6804191

Type: binding

Compartments: nucleoplasm



TP53 (p53) binds the p53 response element in the third intron of the PRDM1 (BLIMP1) gene (Yan et al. 2007).

Followed by: [TP53 stimulates PRDM1 expression](#)

Literature references

Lim, CA., Ng, HH., Jiang, J., Yan, J., Chin, KC., Wu, Q. (2007). BLIMP1 regulates cell growth through repression of p53 transcription. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 1841-6. ↗

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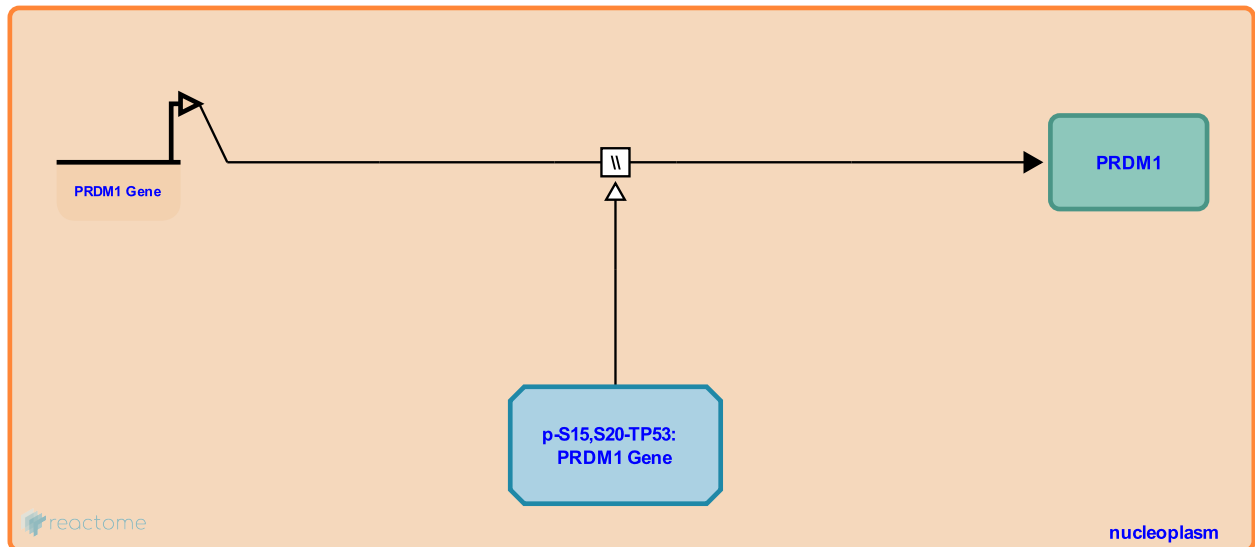
TP53 stimulates PRDM1 expression ↗

Location: [Regulation of TP53 Expression](#)

Stable identifier: R-HSA-6804193

Type: omitted

Compartments: nucleoplasm



Binding of TP53 (p53) to the p53 response element in the third intron of the PRDM1 (BLIMP1) gene stimulates BLIMP1 transcription (Yan et al. 2007).

Preceded by: [TP53 binds the PRDM1 gene](#)

Followed by: [PRDM1 binds the TP53 gene](#)

Literature references

Lim, CA., Ng, HH., Jiang, J., Yan, J., Chin, KC., Wu, Q. (2007). BLIMP1 regulates cell growth through repression of p53 transcription. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 1841-6. ↗

Editions

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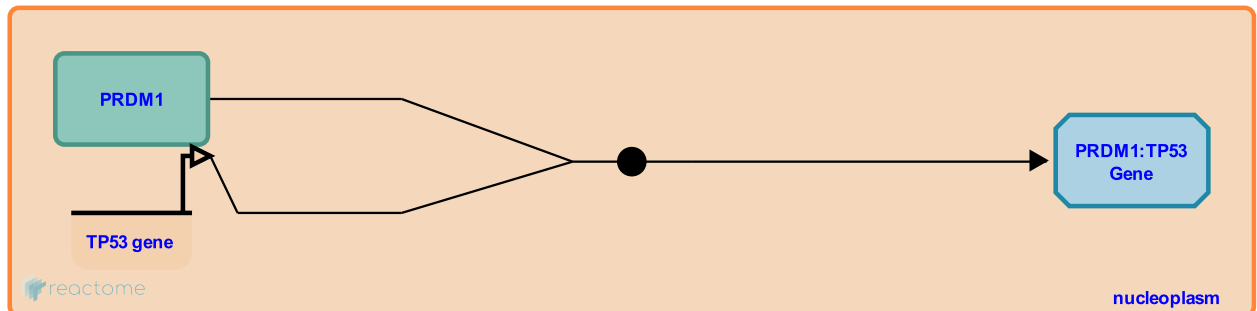
PRDM1 binds the TP53 gene ↗

Location: [Regulation of TP53 Expression](#)

Stable identifier: R-HSA-6804194

Type: binding

Compartments: nucleoplasm



PRDM1 (BLIMP1) zinc finger transcription factor binds in vicinity of the transcription start site of the TP53 (p53) gene (Yan et al. 2007).

Preceded by: [TP53 stimulates PRDM1 expression](#)

Followed by: [PRDM1 represses TP53 expression](#)

Literature references

Lim, CA., Ng, HH., Jiang, J., Yan, J., Chin, KC., Wu, Q. (2007). BLIMP1 regulates cell growth through repression of p53 transcription. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 1841-6. ↗

Editions

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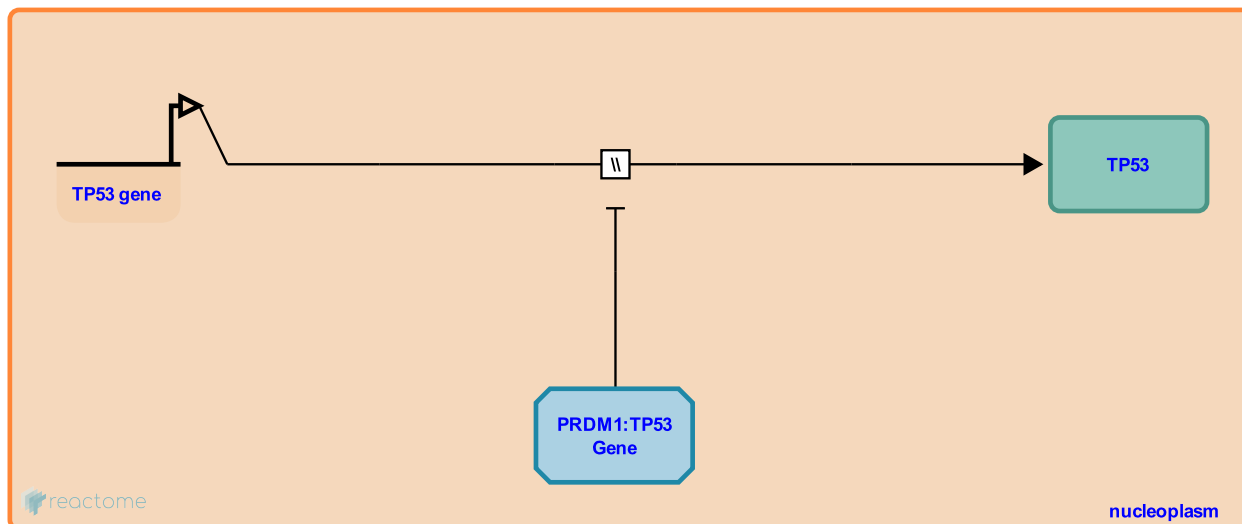
PRDM1 represses TP53 expression ↗

Location: [Regulation of TP53 Expression](#)

Stable identifier: R-HSA-6804188

Type: omitted

Compartments: nucleoplasm



Binding of PRDM1 (BLIMP1) to the promoter region of the TP53 (p53) gene inhibits TP53 transcription (Yan et al. 2007) probably by inducing repressive methylation of the TP53 promoter (Weige et al. 2014).

Preceded by: [PRDM1 binds the TP53 gene](#)

Followed by: [TP53 forms homotetramers](#)

Literature references

Lim, CA., Ng, HH., Jiang, J., Yan, J., Chin, KC., Wu, Q. (2007). BLIMP1 regulates cell growth through repression of p53 transcription. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 1841-6. ↗

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Editions

2015-10-14	Authored, Edited	Orlic-Milacic, M.
2016-02-04	Reviewed	Inga, A., Zaccara, S.

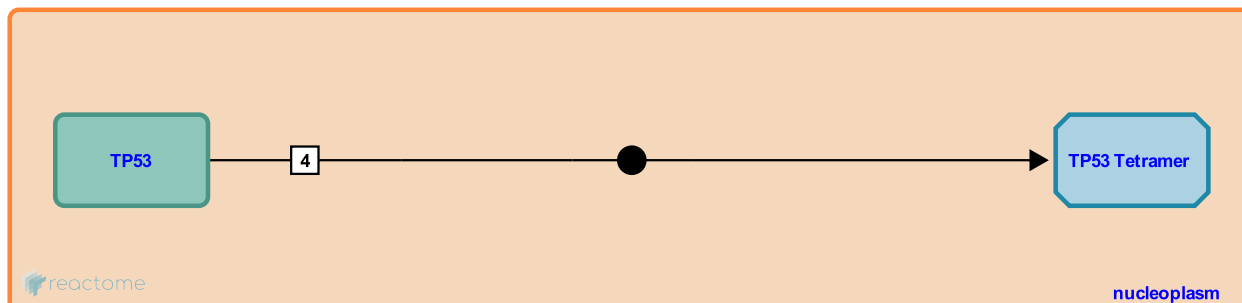
TP53 forms homotetramers [↗](#)

Location: [Regulation of TP53 Expression](#)

Stable identifier: R-HSA-6804762

Type: binding

Compartments: nucleoplasm



TP53 (p53) functions as a stable homotetramer. The tetramerization domain is located within the C-terminus (Stenger et al. 1994, Waterman et al. 1995, Jeffrey et al. 1995, Wang et al. 1995).

Preceded by: [PRDM1 represses TP53 expression](#)

Literature references

Pavletich, NP., Jeffrey, PD., Gorina, S. (1995). Crystal structure of the tetramerization domain of the p53 tumor suppressor at 1.7 angstroms. *Science*, 267, 1498-502. [↗](#)

Halazonetis, TD., Shenk, JL., Waterman, JL. (1995). The dihedral symmetry of the p53 tetramerization domain mandates a conformational switch upon DNA binding. *EMBO J.*, 14, 512-9. [↗](#)

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Mastrangelo, IA., Reed, M., Stenger, JE., Hough, PV., Wang, P., Tegtmeyer, P. et al. (1994). p53 oligomerization and DNA looping are linked with transcriptional activation. *EMBO J.*, 13, 6011-20. [↗](#)

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