# p14ARF mutants do not bind C1QBP

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# 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.

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## Literature references

Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics, 18*, 142. ↗

Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics, 33*, 3461-3467. ↗

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. ↗

Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968. ↗

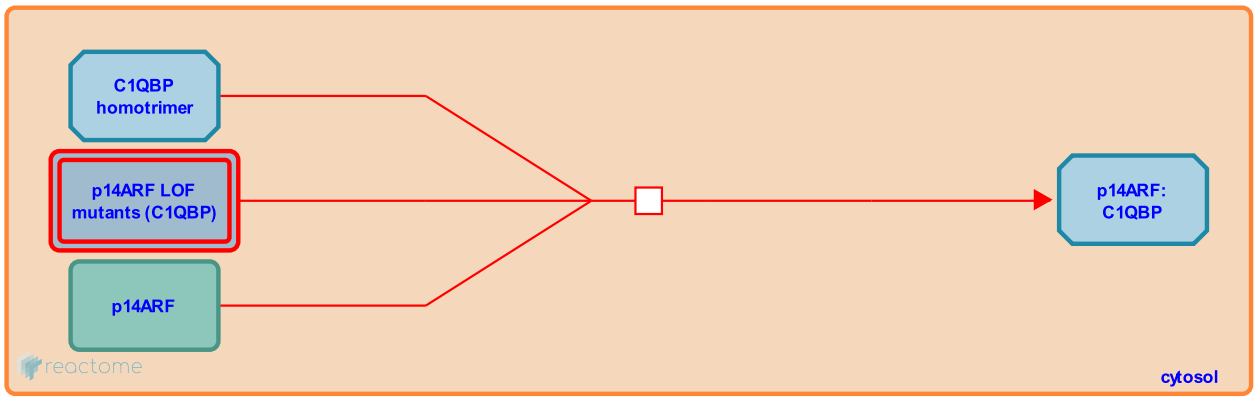
## p14ARF mutants do not bind C1QBP ↗

**Stable identifier:** R-HSA-9645766

**Type:** transition

**Compartments:** cytosol

**Diseases:** cancer




Several cancer-derived missense mutations in the CDKN2A gene result in substitution of arginine residues in the C-terminal arginine-rich region of p14ARF ( CDKN2A-4). p14ARF mutants p14ARF R81G, p14ARF R82C, p14ARF R87C, p14ARF R88Q, p14ARF R90H, p14ARF R98Q, p14ARF R99C and p14ARF R98L;R99S are unable to bind to C1QBP (p32) and they do not localize to mitochondria. Binding of these mutants to other p14ARF interacting proteins, such as MDM2 and NPM1 (B23), remains unaffected. Mutations in p14ARF that affect binding to C1QBP interfere with p53-mediated apoptosis (Itahana and Zhang 2008).
Missense mutations affecting arginine residue R98 have also been reported to affect p14ARF localization to nucleolus and to diminish, due to partial mislocalization, the ability of p14ARF to sequester MDM2 (Zhang et al. 1999).

## Literature references

Itahana, K., Zhang, Y. (2008). Mitochondrial p32 is a critical mediator of ARF-induced apoptosis. *Cancer Cell, 13*, 542-53. ↗

## Editions

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|---|---|---|
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