

# PIN1 binds p-S345-NCF1

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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

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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. [↗](#)

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Reactome database release: 91

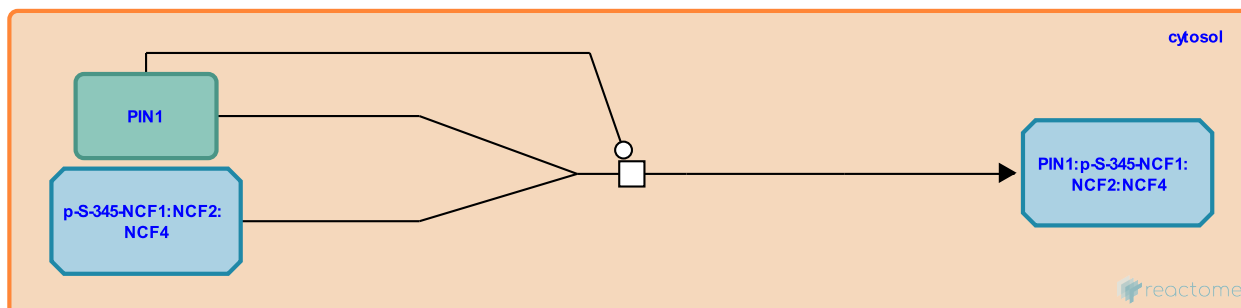
This document contains 1 reaction ([see Table of Contents](#))

## PIN1 binds p-S345-NCF1 [↗](#)

**Stable identifier:** R-HSA-9626816

**Type:** transition

**Compartments:** cytosol



Priming agents such as tumor necrosis factor- $\alpha$  (TNF $\alpha$ ) and toll like receptor 7 (TLR7)/TLR8 agonists induced the activation of the peptidyl-prolyl cis/trans isomerase PIN1 in human neutrophils (Boussetta T et al. 2010; Makni-Maalej K et al. 2015). PIN1 is an enzyme that binds to phosphorylated Ser-Pro or Thr-Pro sequences, and subsequently catalyzes their conformational changes (Liou YC et al. 2011). In intact neutrophils, PIN1 was found to bind to the neutrophil cytosol factor 1 (NCF1 or p47phox) via the phosphorylated residue of Ser345 (Boussetta T et al. 2010). PIN1 then catalyzed a conformational change of NCF1 that facilitated subsequent phosphorylation of the protein on other sites by protein kinase C (PKC) (Boussetta T et al. 2010; El-Benna J et al. 2016). Extensive phosphorylation of the subunit NCF1 (p47phox) occurs during the activation of the NADPH oxidase (NOX2) in intact cells.

### Literature references

Bartegi, A., Malter, JS., El-Benna, J., Arabi Derkawi, R., Hayem, G., Boussetta, T. et al. (2010). The prolyl isomerase Pin1 acts as a novel molecular switch for TNF-alpha-induced priming of the NADPH oxidase in human neutrophils. *Blood*, 116, 5795-802. [↗](#)

### Editions

2018-10-30	Authored, Edited	Shamovsky, V.
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