

# NUDT15 hydrolyses 8-oxo-dGTP to 8-oxo-dGMP

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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. [↗](#)

Reactome database release: 88

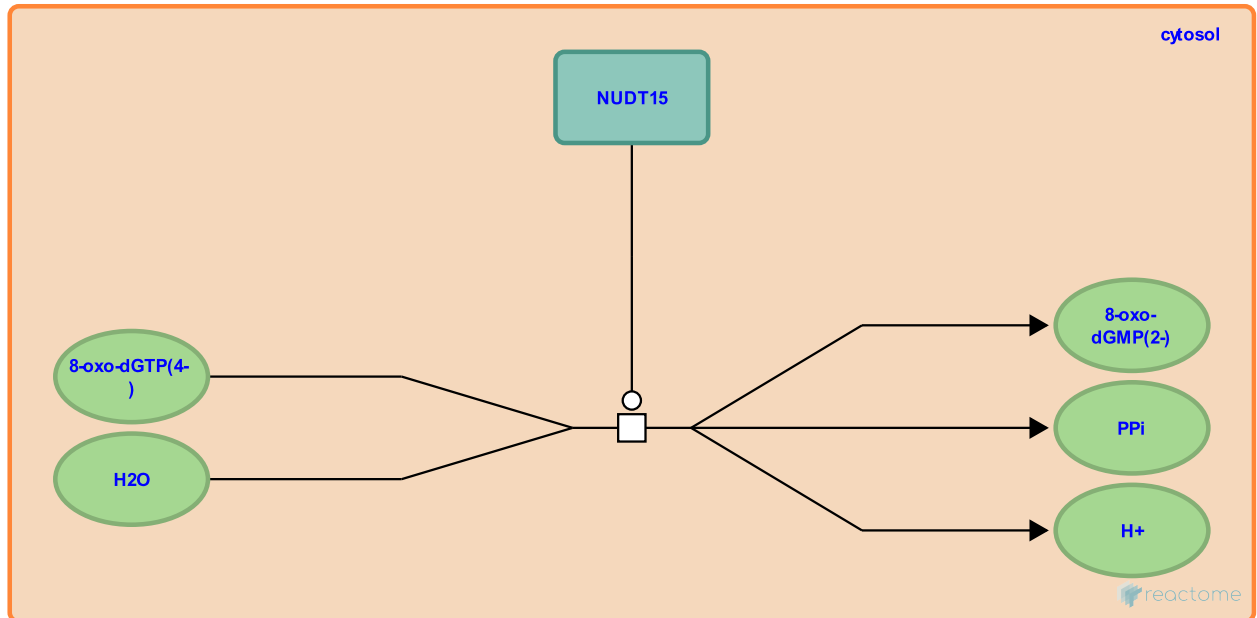
This document contains 1 reaction ([see Table of Contents](#))

## NUDT15 hydrolyses 8-oxo-dGTP to 8-oxo-dGMP [↗](#)

**Stable identifier:** R-HSA-2395869

**Type:** transition

**Compartments:** cytosol



NUDT15 (MTH2) catalyzes the reaction of 8-oxo-dGTP and water to form 8-oxo-dGMP and PPi (pyrophosphate). Cai et al. (2003) first identified this activity in studies of the homologous mouse protein; the activity of the human NUDT15 protein has since been confirmed experimentally (Takagi et al. 2012).

### Literature references

Takagi, Y., Ito, R., Sekiguchi, M., Yamagata, Y., Setoyama, D., Kamiya, H. (2012). Human MTH3 (NUDT18) Protein Hydrolyzes Oxidized Forms of Guanosine and Deoxyguanosine Diphosphates: COMPARISON WITH MTH1 AND MTH2. *J. Biol. Chem.*, 287, 21541-9. [↗](#)

Hayakawa, H., Ishibashi, T., Takagi, Y., Cai, JP., Sekiguchi, M. (2003). Mouse MTH2 protein which prevents mutations caused by 8-oxoguanine nucleotides. *Biochem. Biophys. Res. Commun.*, 305, 1073-7. [↗](#)

### Editions

2012-07-06	Authored, Edited	D'Eustachio, P.
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