NTPDase7 hydrolyzes nucleoside triphosphates

Orlic-Milacic, M., Sévigny, J.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

04/05/2024

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

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. ↗

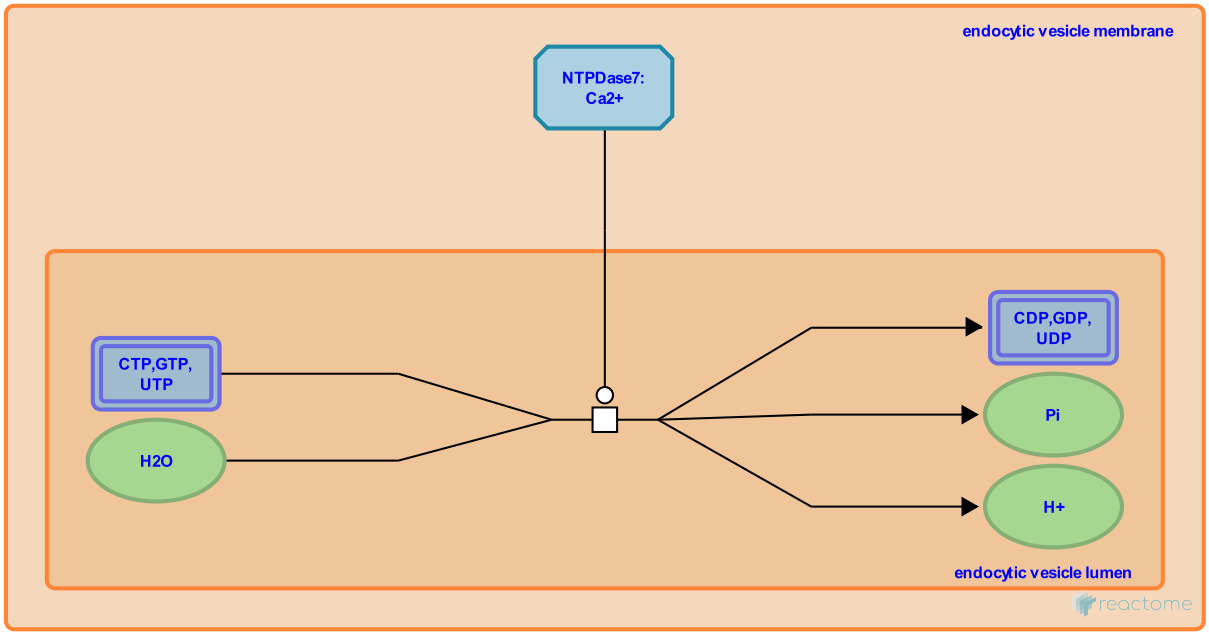
Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968. ↗

NTPDase7 hydrolyzes nucleoside triphosphates ↗

Stable identifier: R-HSA-8851494

Type: transition

Compartments: endocytic vesicle lumen, endocytic vesicle membrane



NTPDase7 (LALP1), encoded by the ENTPD7 gene, is a cytoplasmic vesicle membrane-bound nucleotide phosphatase that hydrolyzes nucleoside triphosphates CTP, GTP and UTP to nucleoside diphosphates CDP, GDP and UDP, respectively. NTPDase7 may have a low activity towards ATP and nucleoside diphosphates (Shi et al. 2001). NTPDase7 requires Ca2+ for catalytic activity (Shi et al. 2001). In mice, NTPDase7 was shown to regulate development of IL17-secreting Th17 cells in the small intestine, possibly by regulating extracellular ATP levels (Kusu et al. 2013).

Literature references

Cruz, PE., Lian, W., Wu, DH., Kukar, T., Gu, Y., Wang, CY. et al. (2001). Molecular cloning and characterization of a novel mammalian endo-apyrase (LALP1). *J. Biol. Chem., 276*, 17474-8. ↗

Okumura, R., Takeda, K., Nishimura, J., Saiga, H., Goto, Y., Honda, K. et al. (2013). Ecto-nucleoside triphosphate diphosphohydrolase 7 controls Th17 cell responses through regulation of luminal ATP in the small intestine. *J. Immunol., 190*, 774-83. ↗

Editions

2015-12-30	Authored, Edited	Orlic-Milacic, M.
2016-05-11	Reviewed	Sévigny, J.