

NAT10 acetylates cytidine-1337 and cytidine-1842 of 18S rRNA yielding 4-acetylcytidine-1377 and 4-acetylcytidine-1842

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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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- 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

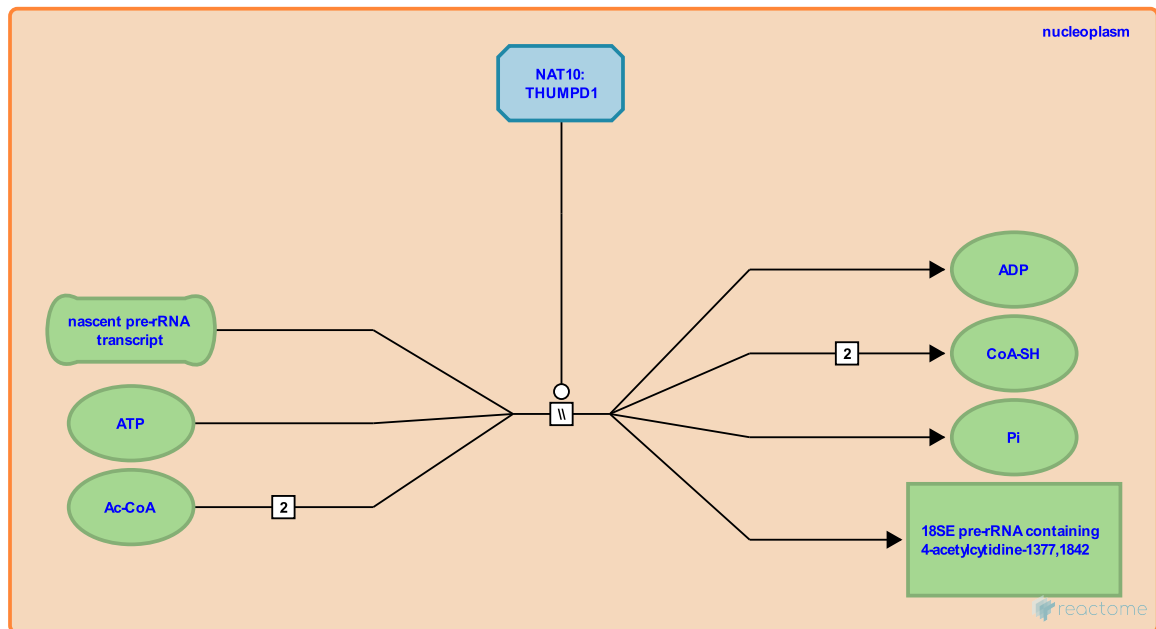
This document contains 1 reaction ([see Table of Contents](#))

NAT10 acetylates cytidine-1337 and cytidine-1842 of 18S rRNA yielding 4-acetylcytidine-1377 and 4-acetylcytidine-1842 [↗](#)

Stable identifier: R-HSA-6790987

Type: omitted

Compartments: nucleoplasm, cytosol



NAT10 transfers an acetyl group from acetyl coenzyme A to the N4 positions of the residues that will become cytidine 1337 and cytidine-1842 in 18S rRNA (Ito et al. 2014, Sharma et al. 2015). (The point at which NAT10 acts during rRNA nucleolytic processing is unknown.) NAT10 also hydrolyzes ATP, presumably to provide helicase activity for the reaction (Ito et al. 2014, Sharma et al. 2015). NAT10 in a complex with THUMPD1 also acetylates tRNAs, however THUMPD1 is not required for acetylation of rRNA (Sharma et al. 2015).

Literature references

Suzuki, T., Tanaka, Y., Suzuki, T., Ito, S., Suzuki, T., Kawauchi, H. et al. (2014). Human NAT10 is an ATP-dependent RNA acetyltransferase responsible for N4-acetylcytidine formation in 18 S ribosomal RNA (rRNA). *J. Biol. Chem.*, 289, 35724-30. [↗](#)

Kötter, P., Sharma, S., Watzinger, P., Langhendries, JL., Entian, KD., Lafontaine, DL. (2015). Yeast Kre33 and human NAT10 are conserved 18S rRNA cytosine acetyltransferases that modify tRNAs assisted by the adaptor Tan1/THUMPD1. *Nucleic Acids Res.*, 43, 2242-58. [↗](#)

Editions

2015-08-15	Authored, Edited	May, B.
2016-01-30	Reviewed	Vincent, NG.
2016-02-12	Reviewed	Sharma, S.