

# ALDH7A1 oxidises BETALD to BET

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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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Reactome database release: 73

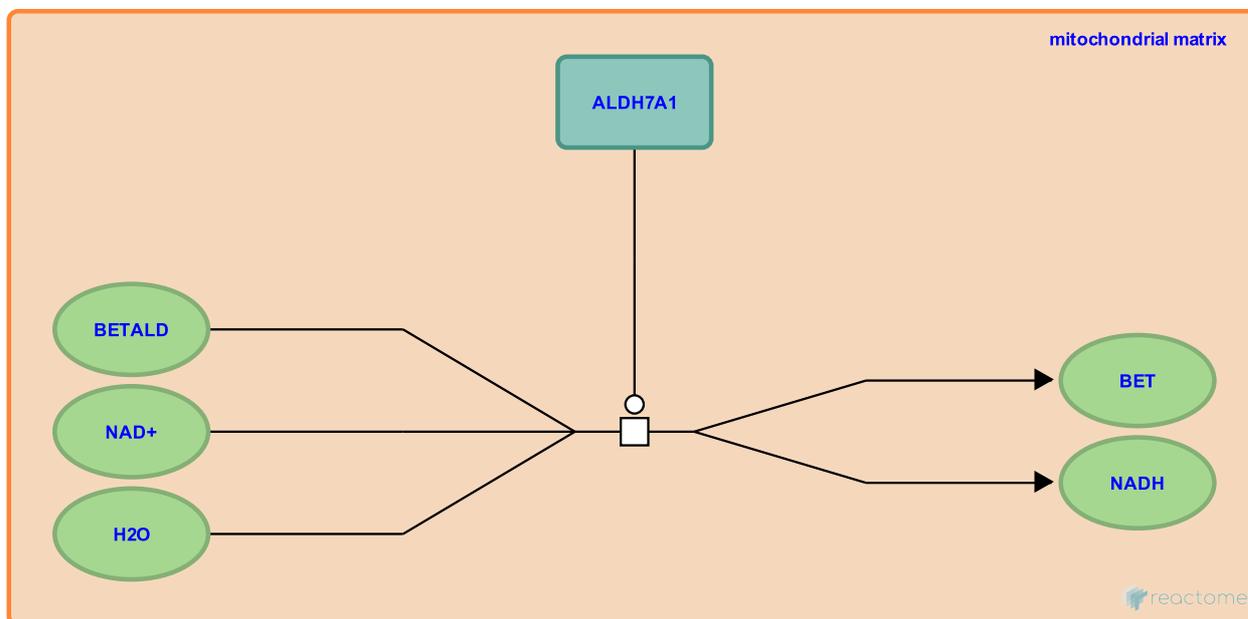
This document contains 1 reaction ([see Table of Contents](#))

## ALDH7A1 oxidises BETALD to BET ↗

**Stable identifier:** R-HSA-6797955

**Type:** transition

**Compartments:** mitochondrial matrix



Alpha-aminoadipic semialdehyde dehydrogenase (ALDH7A1) is a multifunctional enzyme present in mitochondria, nucleus and the cytosol and plays an important role in protecting against hyperosmotic stress and metabolising toxic aldehydes. It is able to oxidise the osmolyte precursor betaine aldehyde (BETALD) to betaine (BET) (as well as the intermediate lysine degradation product, alpha-aminoadipic semialdehyde, not shown here) (Brocker et al. 2010). The mitochondrial isoform of ALDH7A1 is shown here.

### Literature references

Brocker, C., Lassen, N., Estey, T., Pappa, A., Cantore, M., Orlova, VV. et al. (2010). Aldehyde dehydrogenase 7A1 (ALDH7A1) is a novel enzyme involved in cellular defense against hyperosmotic stress. *J. Biol. Chem.*, 285, 18452-63. ↗

### Editions

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