Oxidative demethylation of 1-meA damaged DNA By ALKBH3

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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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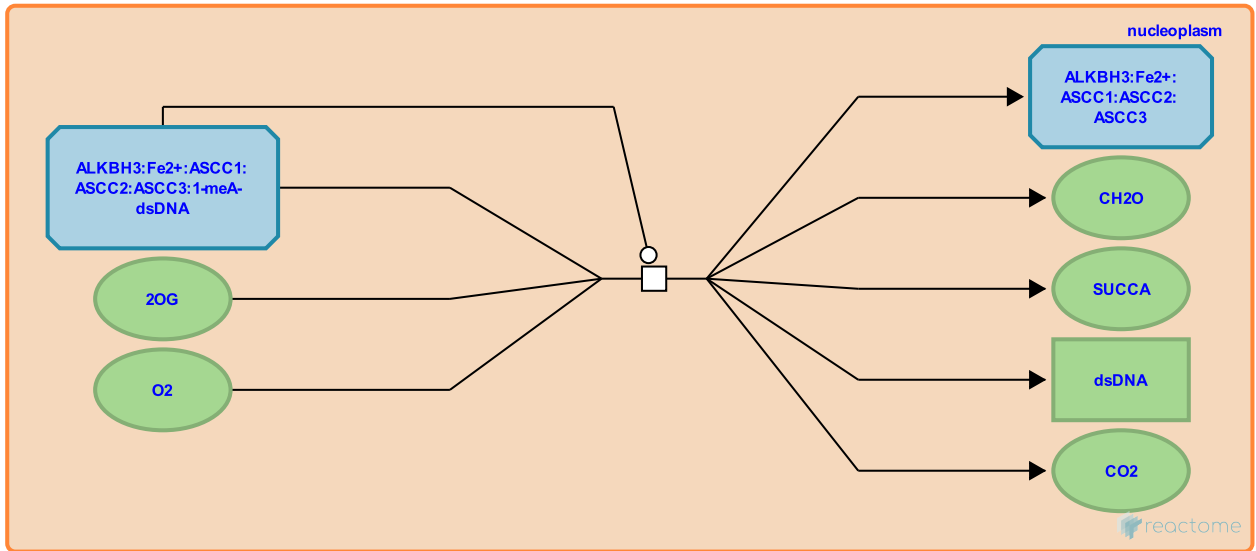
Reactome database release: 88

This document contains 1 reaction (see Table of Contents)

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Stable identifier: R-HSA-112123

Type: transition

Compartments: nucleoplasm

ALKBH3, a homolog of E.coli AlkB (Trewick et al. 2002), removes the methyl group from 1-methyladenine (1-meA) in a reaction dependent on alpha-ketoglutarate, oxygen and Fe2+. ALKBH3 directly reverses alkylating damage of DNA in the form of 1-meA that is accompanied with the release of formaldehyde (Duncan et al. 2002). The reversal of alkylating damage of dsDNA by ALKBH3 requires the presence of DNA helicase ASCC3, a component of the activating signal co-integrator complex (Dango et al. 2011). ALKBH3 can also repair methylated RNA (Aas et al. 2003).

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Editions

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