

ALKBH2 binds alkylated DNA containing 1- etA

Gillespie, ME., Joshi-Tope, G., Orlic-Milacic, M., Pegg, AE.

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

The contents of this document may be freely copied and distributed in any media, provided the authors, plus the institutions, are credited, as stated under the terms of [Creative Commons Attribution 4.0 International \(CC BY 4.0\) License](https://creativecommons.org/licenses/by/4.0/). For more information see our [license](https://reactome.org/licenses/).

02/05/2024

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. [↗](#)

Reactome database release: 88

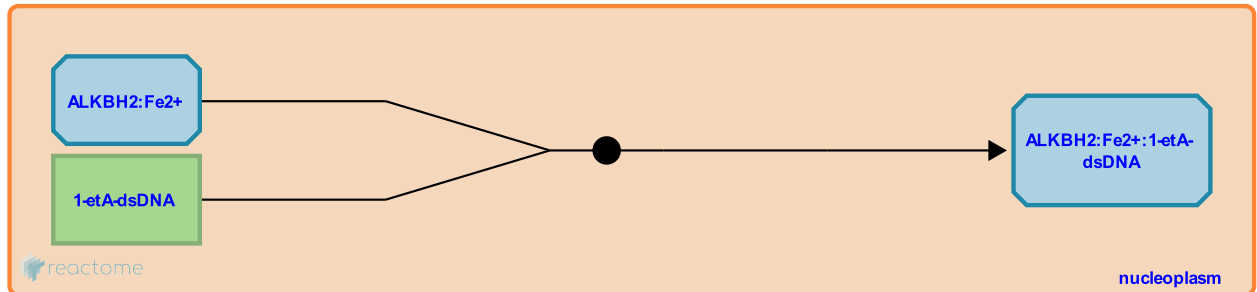
This document contains 1 reaction ([see Table of Contents](#))

ALKBH2 binds alkylated DNA containing 1-etA [↗](#)

Stable identifier: R-HSA-5657649

Type: binding

Compartments: nucleoplasm



ALKBH2 binds alkylated DNA containing 1-ethyladenine (1-etA). ALKBH2 preferentially binds double strand DNA (dsDNA) (Duncan et al. 2002, Aas et al. 2003, Chen et al. 2010). Iron (Fe²⁺) is needed for the catalytic activity of ALKBH2 (Duncan et al. 2002).

Literature references

Falnes, PO., Otterlei, M., Seeberg, E., Akbari, M., Slupphaug, G., Vågbø, CB. et al. (2003). Human and bacterial oxidative demethylases repair alkylation damage in both RNA and DNA. *Nature*, 421, 859-63. [↗](#)

Sun, X., Chen, B., Liu, H., Yang, CG. (2010). Mechanistic insight into the recognition of single-stranded and double-stranded DNA substrates by ABH2 and ABH3. *Mol Biosyst*, 6, 2143-9. [↗](#)

Lindahl, T., Duncan, T., Bates, PA., Sedgwick, B., Trewick, SC., Koivisto, P. (2002). Reversal of DNA alkylation damage by two human dioxygenases. *Proc Natl Acad Sci U S A*, 99, 16660-5. [↗](#)

Editions

2004-02-04	Edited, Reviewed	Joshi-Tope, G.
2004-02-04	Authored	Pegg, AE.
2014-12-16	Edited	Orlic-Milacic, M.
2015-02-06	Reviewed	Gillespie, ME.