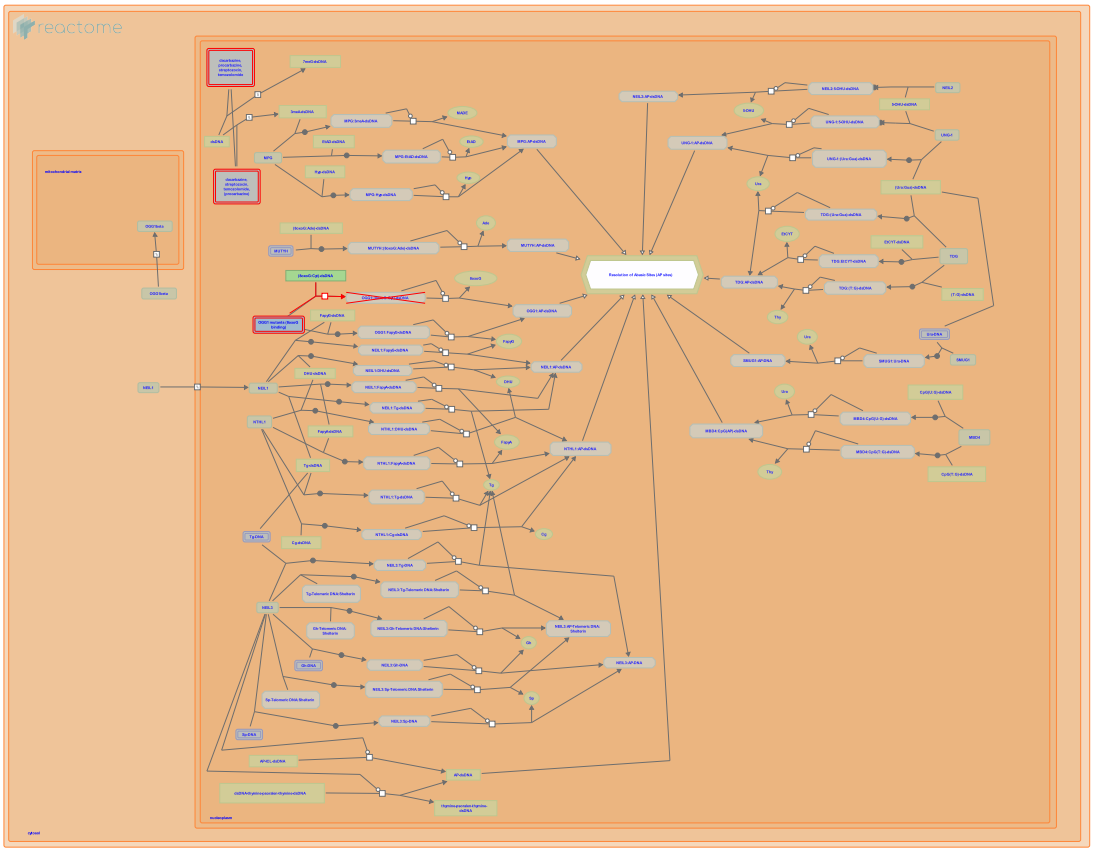
Defective OGG1 Substrate Binding



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the Reactome Textbook.

18/05/2024

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.

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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. ↗

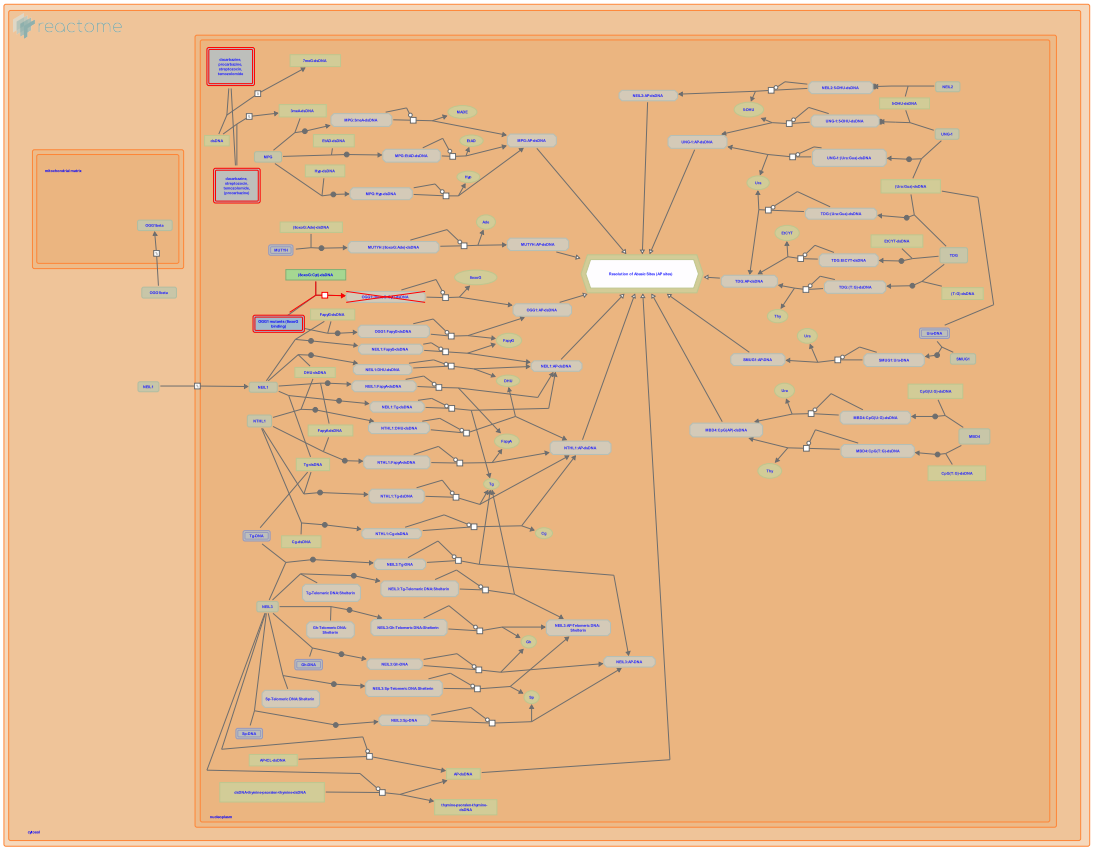
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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. ↗

Defective OGG1 Substrate Binding ↗

Stable identifier: R-HSA-9656255

Diseases: cancer



OGG1 missense mutants reported in Alzheimer's disease, OGG1 A53T and OGG1 A288V, show decreased binding to 8 oxoguanine substrate (Mao et al. 2007).

Literature references

Huang, J., Zhang, Y., Mao, G., Pan, X., Li, GM., Markesbery, WR. et al. (2007). Identification and characterization of OGG1 mutations in patients with Alzheimer's disease. *Nucleic Acids Res., 35*, 2759-66. ↗

Editions

2019-07-30	Authored	Orlic-Milacic, M.
2019-10-02	Reviewed	Vlahopoulos, S.
2019-10-08	Reviewed	Boldogh, I.
2019-10-10	Edited	Orlic-Milacic, M.

Defective OGG1 mutants show decreased binding to 8-oxoguanine

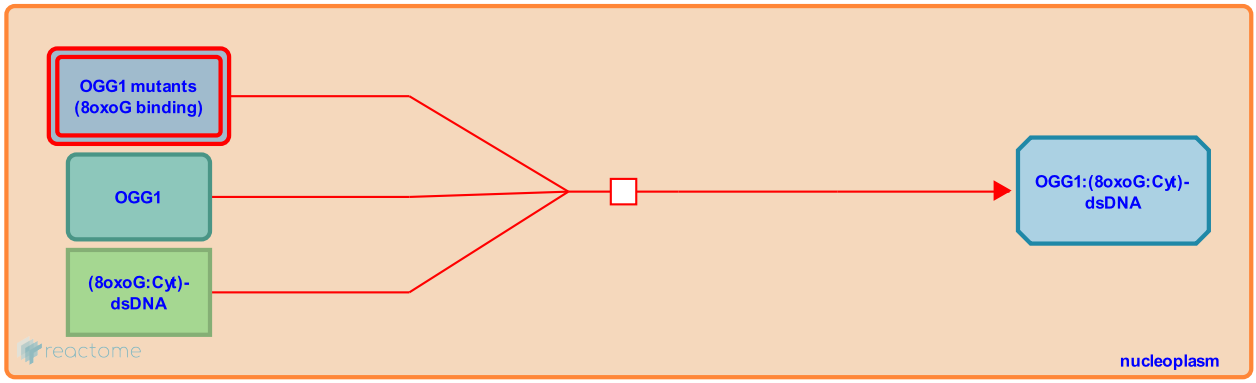
Location: Defective OGG1 Substrate Binding

Stable identifier: R-HSA-9656254

Type: transition

Compartments: nucleoplasm

Diseases: Alzheimer's disease, cancer



OGG1 missense mutants reported in Alzheimer's disease, OGG1 A53T and OGG1 A288V, show decreased DNA glycosylase activity which is due to decreased binding to 8-oxoguanine substrate (Mao et al. 2007). Binding of OGG1 A53T and OGG1 A288V to 2,6-diamino-4-hydroxy-5-formamidopyrimidine (FapyG), a damaged ring-opened guanine that is also an OGG1 substrate, has not been tested.

Literature references

Huang, J., Zhang, Y., Mao, G., Pan, X., Li, GM., Markesbery, WR. et al. (2007). Identification and characterization of OGG1 mutations in patients with Alzheimer's disease. *Nucleic Acids Res., 35*, 2759-66.

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