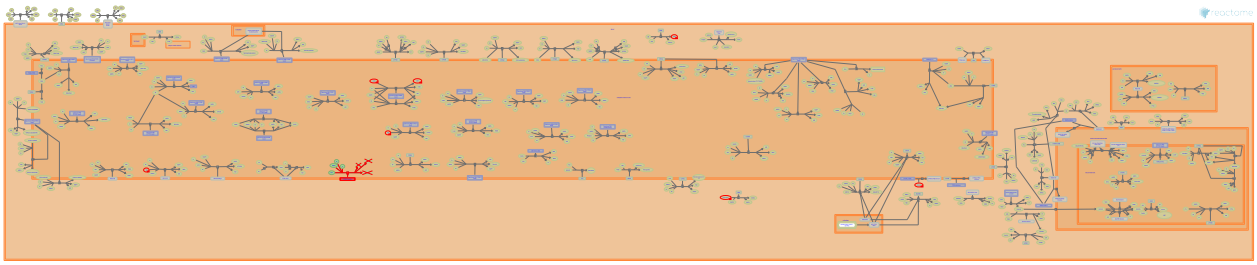
Defective CYP26C1 causes FFDD4



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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

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. ↗

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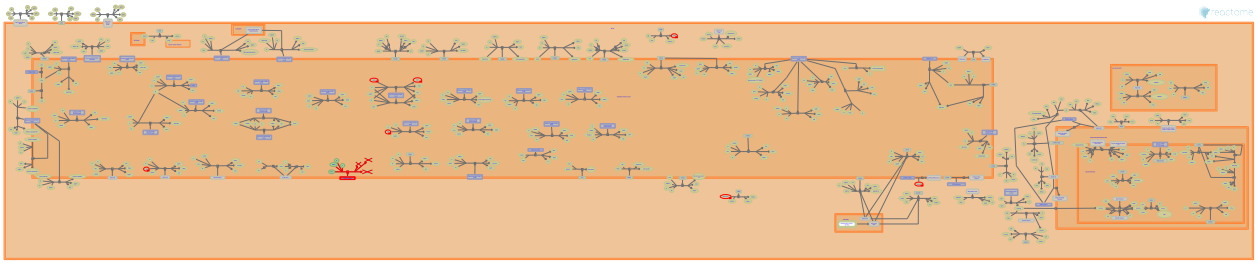
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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 CYP26C1 causes FFDD4 ↗

Stable identifier: R-HSA-5579004

Diseases: skin benign neoplasm



Retinoic acid (RA) is a biologically active analogue of vitamin A (retinol). RA plays an important role in regulating cell growth and differentiation. CYP26C1 is involved in the metabolic breakdown of RA by 4-hydroxylation. While CYP26C1 can hydroxylate the trans form, it is unique in hydroxylating the 9-cis isomer of RA (9cRA) (Taimi et al. 2004). Defects in CYP26C1 can cause focal facial dermal dysplasia 4 (FFDD4; MIM:614974), a rare syndrome characterised by facial lesions.

Literature references

Tang, PL., Petkovich, M., Lao, R., Chu, C., Yahyavi, M., Nazarenko, I. et al. (2013). Focal facial dermal dysplasia, type IV, is caused by mutations in CYP26C1. *Hum. Mol. Genet., 22*, 696-703. ↗

White, J., Taimi, M., Helvig, C., Petkovich, M., Ramshaw, H., Korczak, B. et al. (2004). A novel human cytochrome P450, CYP26C1, involved in metabolism of 9-cis and all-trans isomers of retinoic acid. *J Biol Chem, 279*, 77-85. ↗

Editions

2014-06-06	Authored, Edited	Jassal, B.
2014-11-03	Reviewed	Nakaki, T.

Defective CYP26C1 does not 4-hydroxylate 9cRA ↗

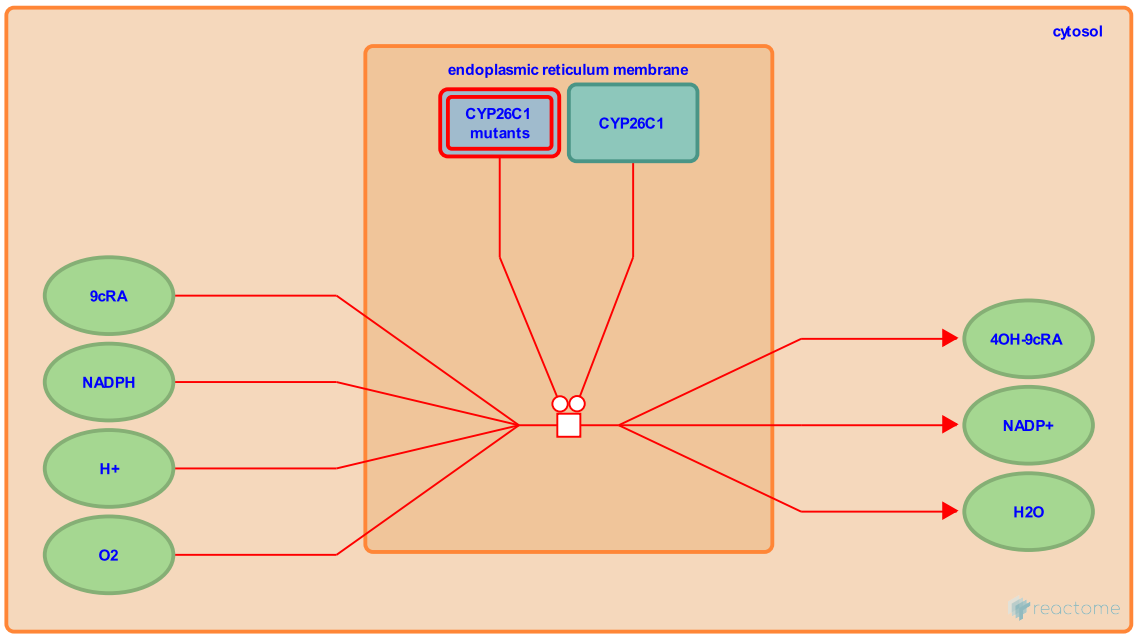
Location: Defective CYP26C1 causes FFDD4

Stable identifier: R-HSA-5602050

Type: transition

Compartments: endoplasmic reticulum membrane, cytosol

Diseases: skin benign neoplasm



Retinoic acid (RA) is a biologically active analogue of vitamin A (retinol). RA plays an important role in regulating cell growth and differentiation. CYP26C1 is involved in the metabolic breakdown of RA by 4-hydroxylation. While CYP26C1 can hydroxylate the trans form, it is unique in hydroxylating the 9-cis isomer of RA (9cRA) (Taimi et al. 2004). Defects in CYP26C1 can cause focal facial dermal dysplasia 4 (FFDD4; MIM:614974), a rare syndrome characterised by facial lesions. Slavotinek et al. identified compound heterozygosity for a 7-bp tandem duplication (844_851dupCCATGCA) in exon 4 of the CYP26C1 gene, causing a frameshift mutation, Q477Hfs*129, and a 1433A-G transition in exon 6 that results in an R478R missense mutation. Both mutations caused loss of CYP26C1 function when transfected into COS-1 cells (Slavotinek et al. 2013).

Literature references

Tang, PL., Petkovich, M., Lao, R., Chu, C., Yahyavi, M., Nazarenko, I. et al. (2013). Focal facial dermal dysplasia, type IV, is caused by mutations in CYP26C1. *Hum. Mol. Genet., 22*, 696-703. ↗

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Editions

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