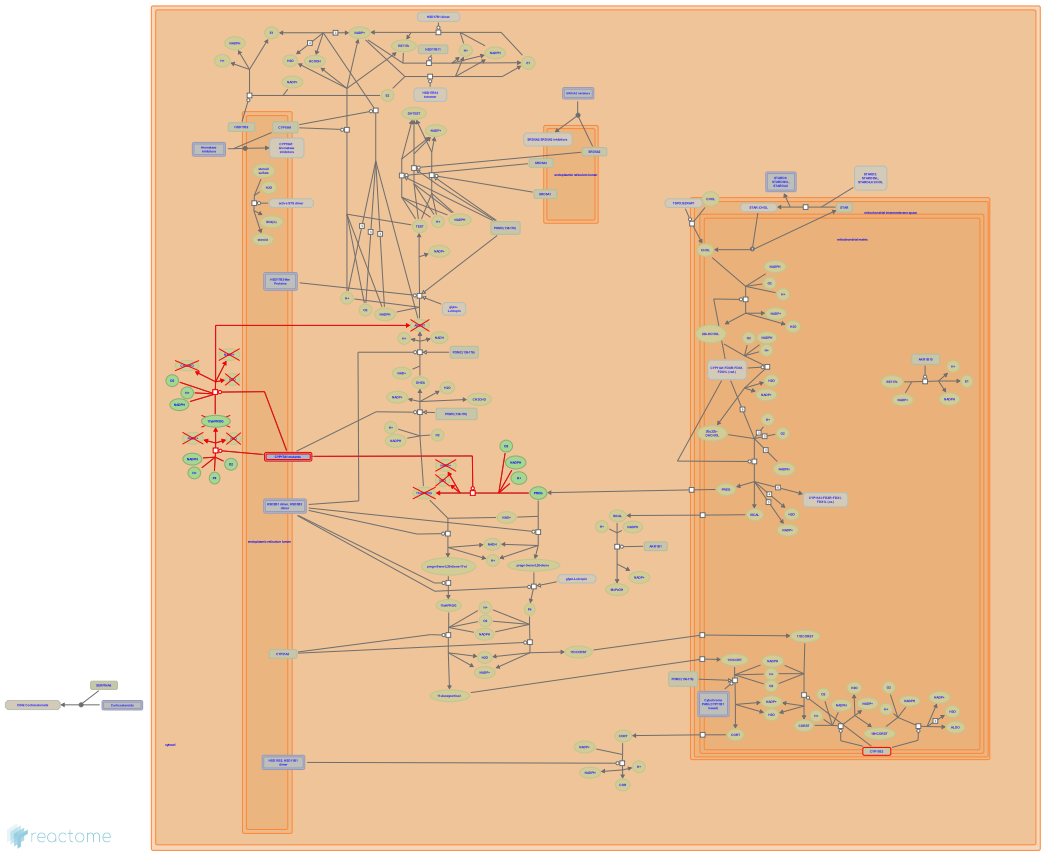
Defective CYP17A1 causes AH5



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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.

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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.
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).

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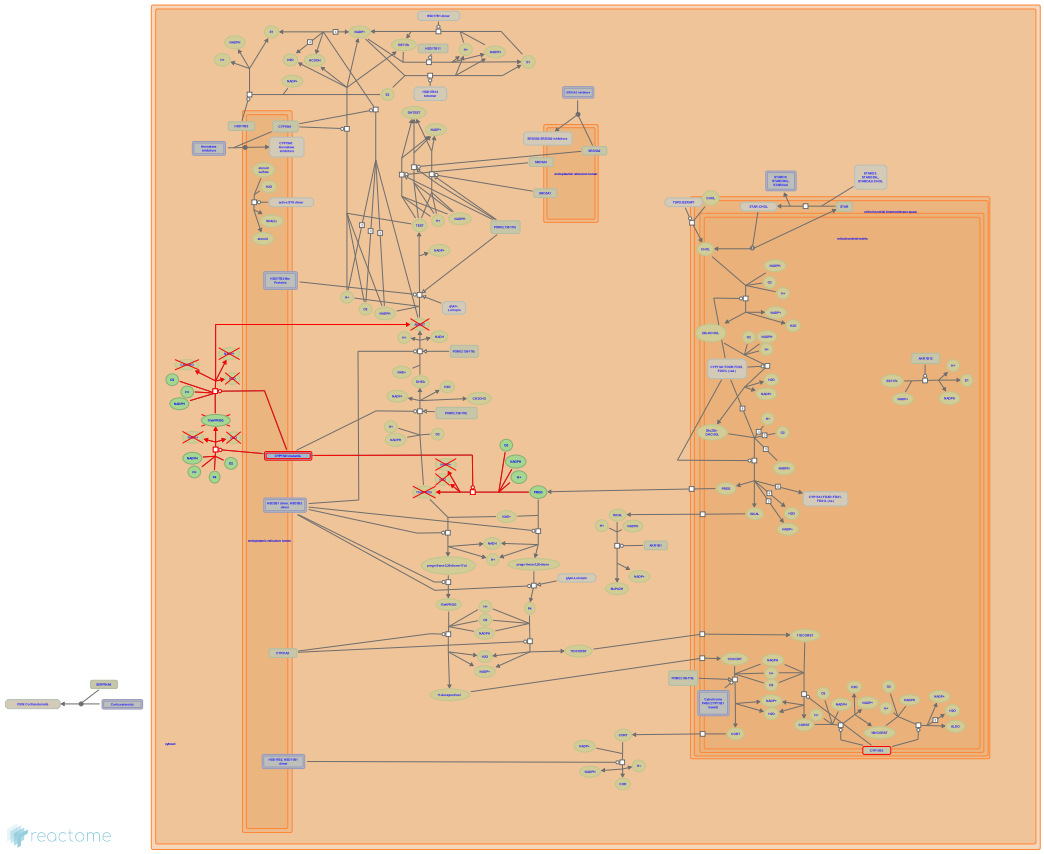
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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 CYP17A1 causes AH5 ↗

Stable identifier: R-HSA-5579028

Diseases: adrenal gland disease



Steroid 17-alpha-hydroxylase/17,20 lyase (CYP17A1) mediates both 17-alpha-hydroxylase and 17,20-lyase activity, allowing the adrenal glands and gonads to synthesise both 17-alpha-hydroxylated glucocorticoids and sex steroids respectively (Kagimoto et al. 1998). Defects in CYP17A1 can cause Adrenal hyperplasia 5 (AH5), a form of congenital adrenal hyperplasia (CAH), a common recessive disease due to defective synthesis of cortisol and sex steroids. Common symptoms include mild hypocortisolism, ambiguous genitalia in genetic males or failure of the ovaries to function at puberty in genetic females, metabolic alkalosis due to hypokalemia and low-renin hypertension. CYP17A1 can have defects in either or both of 17-alpha-hydroxylase and 17,20-lyase activities thus patients can show combined partial 17-alpha-hydroxylase/17,20-lyase deficiency or isolated 17,20-lyase deficiency traits (Yanase et al. 1992, Kater & Biglieri 1994, Fluck & Miller 2006, Miller 2012).

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Editions

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

Defective CYP17A1 does not 17-hydroxylate PREG ↗

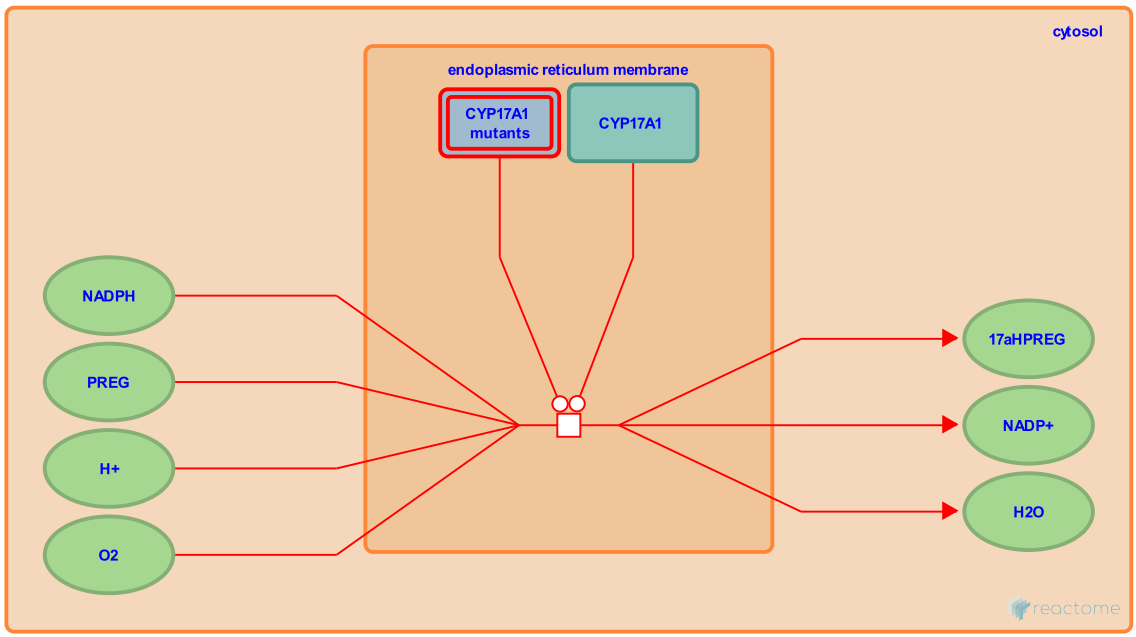
Location: Defective CYP17A1 causes AH5

Stable identifier: R-HSA-5601843

Type: transition

Compartments: endoplasmic reticulum membrane, cytosol

Diseases: adrenal gland disease



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Martin, RM., de Oliveira, ML., Costa, EM., Villar, H., Lin, CJ., Longui, CA. et al. (2003). P450c17 deficiency in Brazilian patients: biochemical diagnosis through progesterone levels confirmed by CYP17 genotyping. *J. Clin. Endocrinol. Metab., 88*, 5739-46. ↗

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Miller, WL., Auchus, RJ., Mendonça, BB., Geller, DH. (1997). The genetic and functional basis of isolated 17,20-lyase deficiency. *Nat. Genet., 17*, 201-5. ↗

Suzuki, Y., Nagashima, T., Nagashima, K., Nomura, Y., Morikawa, A., Onigata, K. (1998). A new compound heterozygous mutation (W17X, 436 + 5G --> T) in the cytochrome P450c17 gene causes 17 alpha-hydroxylase/17,20-lyase deficiency. *J. Clin. Endocrinol. Metab., 83*, 199-202. ↗

Leblanc, JF., Mailloux, J., Labrie, F., Simard, J., Faure, N., Laflamme, N. (1996). Mutation R96W in cytochrome P450c17 gene causes combined 17 alpha-hydroxylase/17-20-lyase deficiency in two French Canadian patients. *J. Clin. Endocrinol. Metab., 81*, 264-8. ↗

Editions

2014-06-13	Authored, Edited	Jassal, B.
2014-11-03	Reviewed	Nakaki, T.

Defective CYP17A1 does not 17-hydroxylate P4 ↗

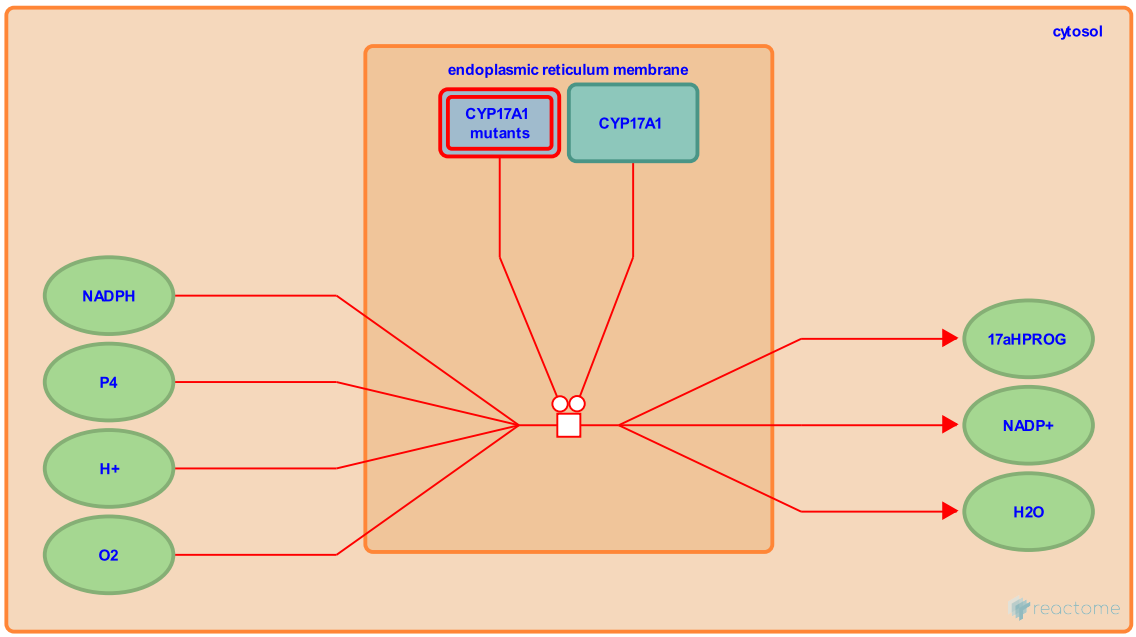
Location: Defective CYP17A1 causes AH5

Stable identifier: R-HSA-9035954

Type: transition

Compartments: endoplasmic reticulum membrane, cytosol

Diseases: adrenal gland disease



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Leblanc, JF., Mailloux, J., Labrie, F., Simard, J., Faure, N., Laflamme, N. (1996). Mutation R96W in cytochrome P450c17 gene causes combined 17 alpha-hydroxylase/17-20-lyase deficiency in two French Canadian patients. *J. Clin. Endocrinol. Metab., 81*, 264-8. ↗

Editions

2014-06-13	Authored, Edited	Jassal, B.
2014-11-03	Reviewed	Nakaki, T.

Defective CYP17A1 does not cleave 17aHPROG ↗

Location: Defective CYP17A1 causes AH5

Stable identifier: R-HSA-9035956

Type: transition

Compartments: endoplasmic reticulum membrane, cytosol

Diseases: adrenal gland disease

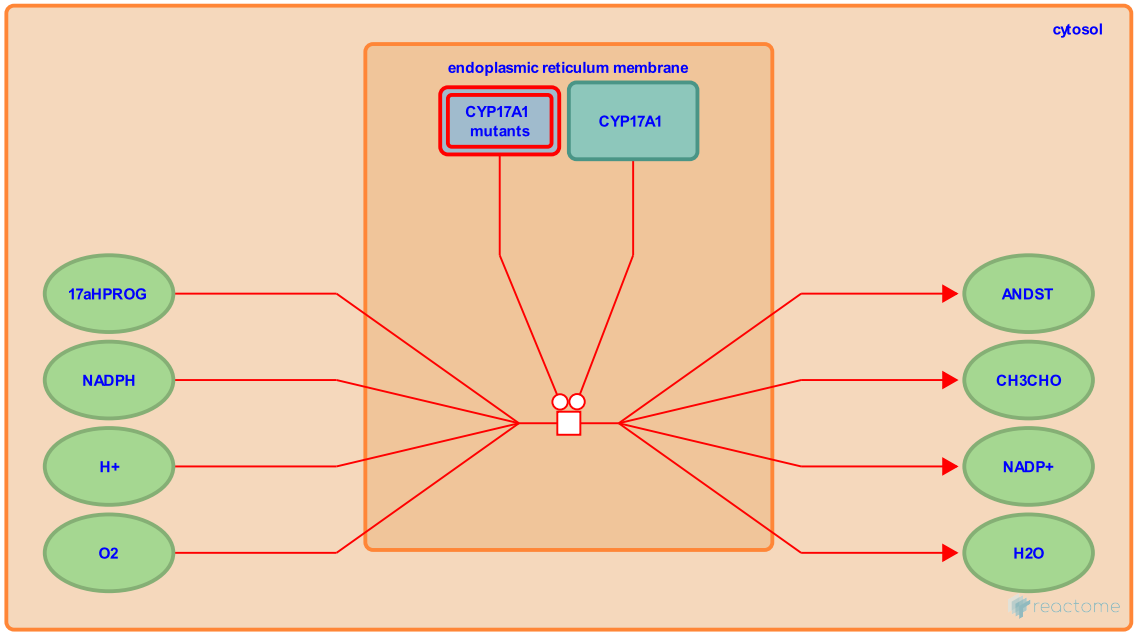

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Table of Contents