SLC4A1,2,3 exchanges HCO3- for Cl-

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16/09/2024

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

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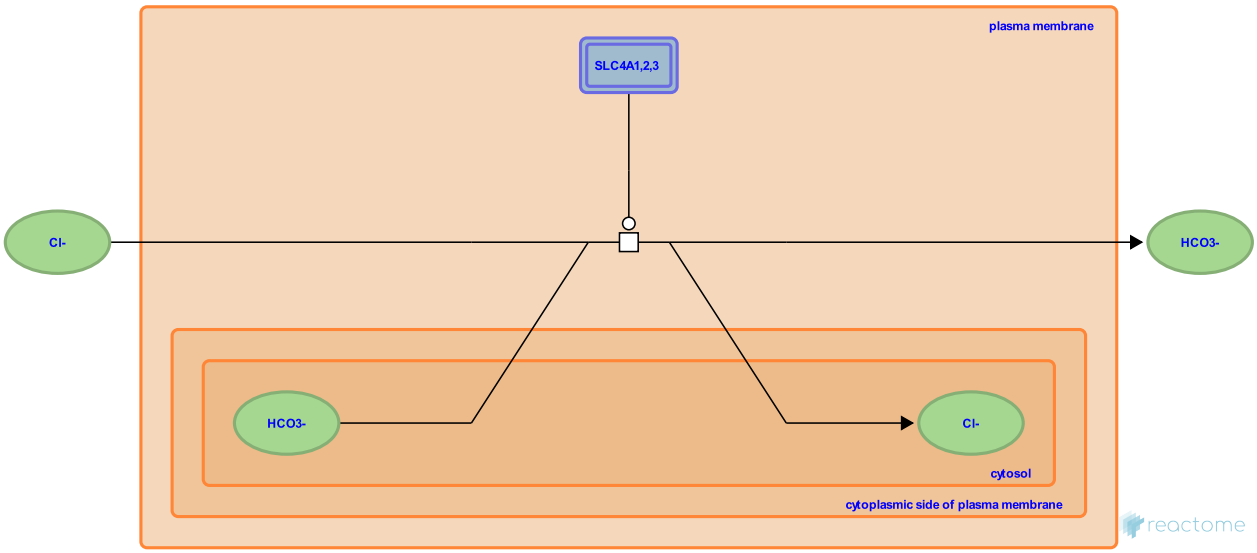
Stable identifier: R-HSA-425482

Type: transition

Compartments: plasma membrane



The proteins responsible for the exchange of Cl- with HCO3- are members of the SLC4 (1-3) and SLC26 (3, 4, 6, 7 and 9) transporter families. The SLC26 members are discussed under the section "Multifunctional anion exchangers".

SLC4A1 (Band 3, AE1, anion exchanger 1) was the first bicarbonate transporter gene to be cloned and sequenced (Lux et al. 1989). It is ubiquitous throughout vertebrates and in humans, is present on erythrocytes and the basolateral surfaces of kidney cells. The erythrocyte and kidney forms are different isoforms of the same protein (Kollert-Jons et al. 1993). Variations in erythroid AE1 determine the Diego blood group system (Bruce et al. 1994). A more serious consequence of mutated erythroid AE1 is Hereditary spherocytosis (a disorder leading to haemolytic anaemia) (Jarolim et al. 1995). Defects in the kidney form of AE1 cause distal (type1) renal tubular acidosis (an inability to acidify urine) (Bruce et al. 1997).

SLC4A2 (Non-erythroid band 3-like protein, AE2, anion exchanger 2) is widely expressed and is considered to be the 'housekeeping' isoform of the bicarbonate transporters (Demuth et al. 1986). SLC4A3 (Cardiac/brain band 3-like protein, AE3) is expressed in heart and brain (Yannoukakos et al. 1994).

Literature references

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Editions

2009-06-04	Authored, Edited	Jassal, B.
2009-08-24	Reviewed	He, L.