Supplementary information 1 (Table) | **Mammalian Alkali Cation/Proton Exchangers**

Gene / common name	Tissue distribution	Membrane location	Transport mode	Functions	Murine/human pathophysiology	Refs
SLC9A1/NHE1	ubiquitous	• plasma membrane (basolateral in epithelia)	Na^+/H^+	• cytosolic pH • cell volume • fluid secretion • cell shape, proliferation and migration	• ataxia, seizures, postnatal lethal • reduced parotid gland secretion	1-4
SLC9A2/NHE2	multiple tissues	• plasma membrane; (apical in epithelia)	Na^+/H^+	• fluid secretion	• reduced viability of gastric parietal cells and loss of acid secretion • reduced parotid gland secretion	4, 5
SLC9A3/NHE3	kidney, intestines (other epithelia)	• apical membrane recycling endosomes	Na^+/H^+	• Na^+ & HCO_3^- (re) absorption • early endosome acidification	• diarrhea; acidotic; hypotensive; • tubular proteinuria	6-8
SLC9A4/NHE4	stomach kidney	• basolateral membrane of certain epithelia	Na^+/H^+	• cytosolic pH • fluid secretion	• impaired gastric acid secretion	9, 10
SLC9A5/NHE5	brain (neurons) testis, spleen, and skeletal muscle	• plasma membrane • recycling endosomes	Na^+/H^+	?	unknown	11-13
SLC9A6/NHE6	ubiquitous	• early/recycling endosomes • stereocilia of sensory hair cells	$(Na^+, K^+)/H^+$	• organellar pH	• X-linked metal retardation, epilepsy, ataxia	14-17
SLC9A7/NHE7	ubiquitous	• trans-Golgi network • endosomes	$(Na^+, K^+)/H^+$	• organellar pH	unknown	18, 19
SLC9A8/NHE8	ubiquitous	• endomembranes • apical membranes in kidney	$(Na^+, K^+)/H^+$	• organellar pH	unknown	17, 20, 21
SLC9A9/NHE9	ubiquitous	• recycling endosomes • stereocilia of sensory hair cells	$(Na^+, K^+)/H^+$	• organellar pH	• attention-deficit hyperactivity disorder • autism-spectrum disorder	16, 17, 22, 23
NHA1	ubiquitous	?	?	?	unknown	24
NHA2	multiple tissues	• plasma membrane • inner mitochondrial membrane	$(Na^+, Li^+)/H^+$	?	unknown	24-27

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