

SLC6 – Sodium- and chloride-dependent neurotransmitter transporter family

Human gene name	Protein name	Aliases	Predominant substrates	Transport type / coupling ions	Predominant tissue distribution	Link to disease	Human gene locus	Sequence accession ID	Splice variants and their features
SLC6A1	GAT1		GABA	C / Na ⁺ , Cl ⁻	central and peripheral neurons (GABAergic neurons)	(ADHD)	3p25-p24	NM_003042	
SLC6A2	NET	NAT1 NET1	norepinephrine, dopamine	C / Na ⁺ , Cl ⁻	central and peripheral neurons, adrenal gland, placenta	orthostatic intolerance, (ADHD), (depression)	16q12.2	NM_001043	
SLC6A3	DAT1	DAT	dopamine	C / Na ⁺ , Cl ⁻	brain (dopaminergic neurons)	major affective disorder, ADHD, (substance abuse)	5p15.3	NM_001044	
SLC6A4	SERT	5-HTT	serotonin	C / Na ⁺ , Cl ⁻ , K ⁺	central and peripheral nervous system, epithelial cells, platelets	anxiety-related personality traits (obsessive-compulsive disorder) (schizophrenia)	17q11.1-q12	NM_001045	
SLC6A5	GlyT2	NET1	glycine	C / Na ⁺ , Cl ⁻	spinal cord, brain (glycinergic neurons)	hyperekplexia	11p15.2-15.1	NM_004211	
SLC6A6	TauT		taurine, beta-alanine	C / Na ⁺ , Cl ⁻	brain, retina, liver, kidney, heart, spleen, pancreas	(taurine deficiency diseases)	3p25-p24	NM_003043	2 splice variants
SLC6A6P	(pseudogene)						21q21.1	NG_000901	
SLC6A7	PROT		L-proline	C / Na ⁺ , Cl ⁻	brain (glutamatergic neurons)		5q31-q32	NM_014228	
SLC6A8	CT1	CRTR	creatine	C / Na ⁺ , Cl ⁻	ubiquitous	X-linked mental retardation	Xq28	NM_005629	3 splice variants
SLC6A9	GlyT1		glycine	C / Na ⁺ , Cl ⁻	GLYT1a: brain, pancreas, uterus, stomach, spleen, liver, lung GLYT1b,c: neurons	(schizophrenia)	1p33	NM_006934 NM_201649 NM_001024845	3 splice variants
SLC6A10P	(pseudogene)	CT2					16p11.2	NR_003083	
SLC6A11	GAT3	GAT-B, GAT-4	GABA	C / Na ⁺ , Cl ⁻	brain (GABAergic neurons, glia)		3p25.3	NM_014229	
SLC6A12	BGT1		betaine, GABA	C / Na ⁺ , Cl ⁻	kidney, brain		12p13	NM_003044	
SLC6A13	GAT2	GAT3	GABA	C / Na ⁺ , Cl ⁻	brain (meninges, ependyma, choroid plexus), retina, liver, kidney		12p13.3	NM_016615	
SLC6A14	ATB ⁰⁺	beta-alanine carrier system	neutral, cationic amino acids	C / Na ⁺ , Cl ⁻	lung, trachea, salivary gland, mammary gland, stomach, intestine, pituitary.	(obesity)	Xq23-q24	NM_007231	
SLC6A15	SBAT1	B ⁰ AT2, v7-3, NTT7-3	large neutral amino acids	C / Na ⁺	brain (amygdala, putamen, corpus callosum)		12q21.3	NM_018057 NM_182767	3 splice variants
SLC6A16	NTT5			O	testis, pancreas, prostate		19q13.1 -q13.4	NM_014037	
SLC6A17	NTT4	XT1	neutral amino acids	C / Na ⁺	synaptic vesicles		1p13.3	NM_001010898	
SLC6A18	XT2	B ⁰ AT3	(glycine)		kidney (apical)	(iminoglycinuria, hyperglycinuria)	5p15.33	NM_182632	
SLC6A19	B ⁰ AT1	HND	neutral amino acids	C / Na ⁺	intestine and renal proximal tubule (apical)	Hartnup disorder, (iminoglycinuria, hyperglycinuria)	5p15.33	NM_001003841	

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SLC6A20	SIT1	XT3, Xtrp3, system IMINO	imino acids (proline, pipecolate, sarcosine)	C / Na ⁺	intestine, kidney proximal tubule, choroid plexus, microglia, meninges of the brain, ovary	(Iinoglycinuria)	3p21.3	NM_020208 NM_022405	2 splice variants
SLC6A21P	(pseudogene)						19q13.33	NG_009578	
*) C: Cotransporter; E: Exchanger; F: Facilitated transporter; O: Orphan transporter									

References:

Original version of the SLC table:

[Chen NH, Reith ME, Quick MW.](#) Synaptic uptake and beyond: the sodium- and chloride-dependent neurotransmitter transporter family SLC6. *Pflugers Arch.* 2004 Feb;447(5):519-31.

Questions & Comments