Sensing transport: label-free in vitro assays as an atTRACTive alternative for solute carrier transporter drug discovery

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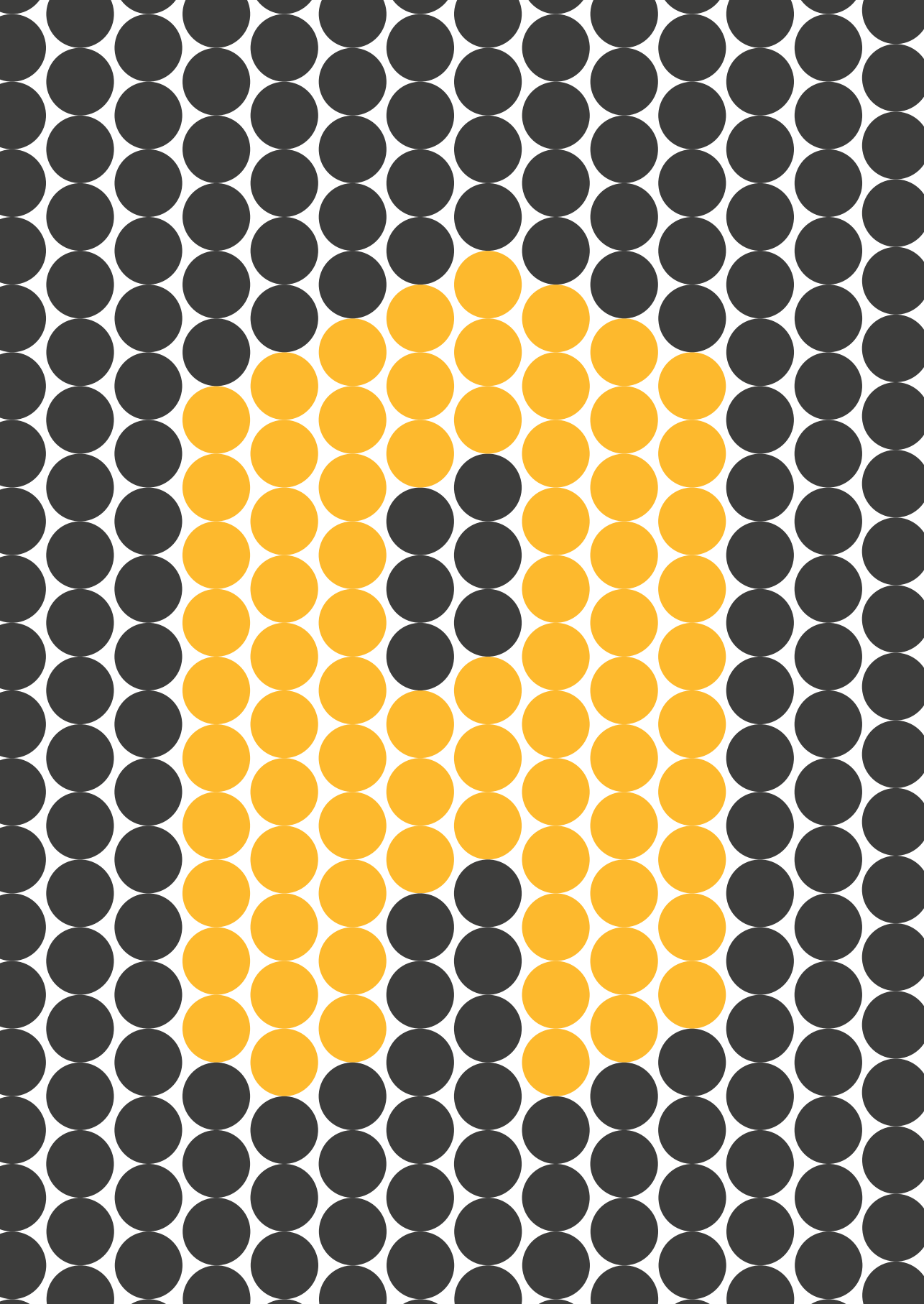

APPENDIX

Table A.1–A.2

The tables in this section highlight the breadth of solute carrier (SLC) transporters that mediate the translocation of ligands/substrates that activate G protein-coupled receptors (GPCRs) (**Table A.1**) and that are co-transporters of Na^+ (**Table A.2**).

Table A.1 – Affinity and potency values of endogenous substrates for various human solute carrier transporters and G protein-coupled receptors.

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
Nucleosides & nucleotides											
SLC28A2	CNT2	6–23 µM	K_m ([^{3}H]ADE uptake, EP)	Influx	1	Adenosine	ADORA1	A_1	100–310 nM	EC_{50} (cAMP assay)	2
SLC28A3	CNT3	2.2–15 µM	K_m ([^{3}H]ADE uptake, EP)	Influx	1		ADORA2A	A_{2A}	310–730 nM	EC_{50} (cAMP assay)	2
SLC29A1	ENT1	32–82 µM	K_m ([^{3}H]ADE uptake)	Influx / efflux	1		ADORA2B	A_{2B}	15,000 nM	EC_{50} (cAMP assay)	2
SLC29A2	ENT2	49–140 µM	K_m ([^{3}H]ADE uptake)	Influx / efflux	1		ADORA3	A_3	290 nM	EC_{50} (cAMP assay)	2
SLC29A3	ENT3	1,620–1,860 µM	K_m ([^{3}H]ADE uptake, pH 5.5)	Influx / efflux	1						
SLC29A4	ENT4	780 µM	K_m ([^{3}H]ADE uptake, pH 5.5)	Influx / efflux	1						
SLC17A9	VNUT	800 µM	K_m ([^{32}P]ATP uptake)	Vesicular	3	ATP	P2YR1	$P2Y_1$	17,700 nM	K_i ([^{3}H]MRS2279 binding)	4
							P2YR2	$P2Y_2$	230 nM	EC_{50} (IP_3 assay)	5
							P2YR11	$P2Y_{11}$	38,000 nM	EC_{50} (IP_3 assay, cAMP assay)	6
							P2YR12	$P2Y_{12}$	690 nM	EC_{50} (cAMP assay)	7
							P2YR13	$P2Y_{13}$	4,200 nM	EC_{50} (IP_3 assay)	8
							GPR17	GPR17	37 nM	EC_{50} (cAMP assay)	9
SLC17A9	VNUT		*Transported**	Vesicular	3	ADP	P2YR1	$P2Y_1$	920 nM	K_i ([^{3}H]MRS2279 binding)	4
							P2YR12	$P2Y_{12}$	42 nM	EC_{50} (cAMP assay)	7
							P2YR13	$P2Y_{13}$	45–194 nM	EC_{50} (IP_3 assay)	8
SLC17A9	VNUT		*Transported**	Vesicular	3	GTP	P2YR4	$P2Y_4$	6,600 nM	EC_{50} (Ca^{2+} assay)	10
Monoamine neurotransmitters											
SLC18A3	VAChT	970 µM	K_m ([^{3}H]ACh uptake)	Vesicular	11	Acetylcholine	CHRM1	M_1	47 µM	K_i ([^{3}H]NMS binding)	12
SLC22A1	OCT1	117 µM	K_m (EP)	Influx / efflux	13		CHRM2	M_2	0.3–47 µM	K_i ([^{3}H]NMS binding)	12,14
SLC22A2	OCT2	580 µM	IC_{50} ([^{3}H]MPP^+ inhibition)	Influx / efflux	13		CHRM3	M_3	4.2–29 µM	K_i ([^{3}H]NMS binding)	12,14
SLC22A4	OCTN1	1,000 µM	K_m ([^{3}H]ACh uptake)	Influx	13		CHRM4	M_4	5.1–32 µM	K_i ([^{3}H]NMS binding)	12,14
							CHRM5	M_5	0.8 nM	K_i ([^{3}H]NMS binding)	14
SLC6A2	NET	0.1–0.7 µM	K_m ([^{3}H]DA uptake)	Influx	15-17	Dopamine	ADRA2A	α_{2A}	2,600 nM	IC_{50} ([^{3}H]MK912 binding)	18
SLC6A3	DAT	1.2–2.5 µM	K_m ([^{3}H]DA uptake)	Influx	16,19		ADRA2C	α_{2C}	3,200 nM	IC_{50} ([^{3}H]MK912 binding)	18
SLC18A1	VMAT1	3.8 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		DRD1	D_1	2,340 nM	K_i ([^{3}H]SCH23390 binding)	21
SLC18A2	VMAT2	1.4 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		DRD2	D_2	710 nM	K_i ([^{125}I]iodosulpiride binding)	22
SLC22A1	OCT1	487 µM	IC_{50} ([^{3}H]TEA inhibition)	Influx	13		DRD3	D_3	29 nM	K_i ([^{125}I]iodosulpiride binding)	22
SLC22A2	OCT2	390–1,400 µM	K_m ([^{3}H]DA uptake)	Influx	13		DRD4	D_4	0.9–47 nM	K_i ([^{3}H]spiperone binding)	23,24
SLC22A3	OCT3	800–1,033 µM	K_m ([^{3}H]DA uptake)	Influx	13,25		DRD5	D_5	228 nM	K_i ([^{3}H]SCH23390 binding)	21
SLC29A4	PMAT	329–406 µM	K_m ([^{3}H]DA uptake)	Influx	25,26		TAAR1	TA_1	422 nM	K_i ([^{3}H]tyramine binding)	27
SLC6A2	NET	2.9–3.2 µM	K_m ([^{3}H]EPI uptake)	Influx	15,17	Epinephrine	ADRA1A	α_{1A}	600 nM	K_i ([^{125}I]HEAT binding)	28
SLC18A1	VMAT1	5.5 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		ADRA1B	α_{1B}	400 nM	K_i ([^{125}I]HEAT binding)	28
SLC18A2	VMAT2	1.9 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		ADRA1D	α_{1D}	56 nM	K_i ([^{125}I]HEAT binding)	28
SLC22A1	OCT1		*Transported**	Influx	13		ADRA2A	α_{2A}	1,479 nM	K_i ([^{3}H]MK912 binding)	29
SLC22A2	OCT2	420 µM	K_m ([^{3}H]EPI uptake)	Influx	13		ADRA2B	α_{2B}	6,309 nM	K_i ([^{3}H]MK912 binding)	29
SLC22A3	OCT3	240–458 µM	K_m ([^{3}H]EPI uptake)	Influx	13,25		ADRA2C	α_{2C}	1,698 nM	K_i ([^{3}H]MK912 binding)	29
SLC29A4	PMAT	951–15,323 µM	K_m ([^{3}H]EPI uptake)	Influx	25,26		ADRB1	β_1	3,970 nM	K_i ([^{125}I]CYP binding)	30
							ADRB2	β_2	735 nM	K_i ([^{125}I]CYP binding)	30
							ADRB3	β_3	126,000 nM	K_i ([^{125}I]CYP binding)	30
							DRD4	D_4	14–240 nM	K_i ([^{3}H]spiperone binding)	24

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
SLC6A2	NET	0.3–0.7 µM	K_m ([^{3}H]NE uptake)	Influx	15,17,31	Norepinephrine	ADRA1A	α_{1A}	990 nM	K_i ([^{125}I]HEAT binding)	28
SLC6A3	DAT	20 µM	K_m ([^{3}H]NE uptake)	Influx	16		ADRA1B	α_{1B}	680 nM	K_i ([^{125}I]HEAT binding)	28
SLC18A1	VMAT1	14 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		ADRA1D	α_{1D}	42 nM	K_i ([^{125}I]HEAT binding)	28
SLC18A2	VMAT2	3.4 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		ADRA2A	α_{2A}	1,995 nM	K_i ([^{3}H]MK912 binding)	29
SLC22A1	OCT1		*Transported**	Influx	13		ADRA2B	α_{2B}	2,754 nM	K_i ([^{3}H]MK912 binding)	29
SLC22A2	OCT2	1,500–5,450 µM	K_m ([^{3}H]NE uptake)	Influx	13		ADRA2C	α_{2C}	1,348 nM	K_i ([^{3}H]MK912 binding)	29
SLC22A3	OCT3	182–2,630 µM	K_m ([^{3}H]NE uptake)	Influx	13,25		ADRB1	β_1	3,570 nM	K_i ([^{125}I]CYP binding)	30
SLC29A4	PMAT	1,078–2,606 µM	K_m ([^{3}H]NE uptake)	Influx	25,26		ADRB2	β_2	26,400 nM	K_i ([^{125}I]CYP binding)	30
							ADRB3	β_3	4,300 nM	K_i ([^{125}I]CYP binding)	30
							DRD4	D_4	33–1,324 nM	K_i ([^{3}H]spiperone binding)	24
							TAAR1	TA_1	> 10,000 nM	K_i ([^{3}H]tyramine binding)	27
SLC6A4	SERT	0.5 µM	K_m ([^{3}H]5-HT uptake)	Influx	32	Serotonin	5-HT1A	5-HT_{1A}	0.2 nM	K_i ([^{3}H]8-OH-DPAT binding)	33
SLC18A1	VMAT1	1.3 µM	K_m ([^{3}H]5-HT uptake)	Vesicular	20		5-HT1B	5-HT_{1B}	4.3 nM	K_i ([^{3}H]5-HT binding)	34
SLC18A2	VMAT2	0.8 µM	K_m ([^{3}H]5-HT uptake)	Vesicular	20		5-HT1D	5-HT_{1D}	3.9 nM	K_i ([^{3}H]5-HT binding)	34
SLC22A1	OCT1	197 µM	K_m ([^{3}H]5-HT uptake)	Influx	13		5-HT1E	5-HT_{1E}	11 nM	K_i ([^{3}H]5-HT binding)	35
SLC22A2	OCT2	80–290 µM	K_m ([^{3}H]5-HT uptake)	Influx	13		5-HT1F	5-HT_{1F}	10 nM	K_i ([^{3}H]5-HT binding)	36
SLC22A3	OCT3	900–988 µM	K_m ([^{3}H]5-HT uptake)	Influx	13,25		5-HT2A	5-HT_{2A}	16 nM	K_i ([^{3}H]ketanserin binding)	37
SLC29A4	PMAT	114–283 µM	K_m ([^{3}H]5-HT uptake)	Influx	25,26		5-HT2B	5-HT_{2B}	13 nM	K_i ([^{3}H]mesulergine binding)	37
							5-HT2C	5-HT_{2C}	5.8 nM	K_i ([^{3}H]mesulergine binding)	37
							5-HT4	5-HT_4	330–1,151 nM	K_i ([^{3}H]GR113808 binding)	38
							5-HT5A	5-HT_{5A}	126 nM	K_i ([^{3}H]5-CT binding)	39
							5-HT6	5-HT_6	65 nM	K_i ([^{3}H]LSD binding)	40
							5-HT7	5-HT_7	8.1 nM	K_i ([^{3}H]5-HT binding)	41
							DRD1	D_1	3,000 nM	K_i ([^{3}H]SCH23390 binding)	21
							DRD5	D_5	9,690 nM	K_i ([^{3}H]SCH23390 binding)	21
							TAAR1	TA_1	> 6,000 nM	K_i ([^{3}H]tyramine binding)	27
SLC18A1	VMAT1	4,696 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20	Histamine	HRH1	H_1	1,259 nM	K_i ([^{3}H]mepyramine binding)	42
SLC18A2	VMAT2	143 µM	K_i ([^{3}H]5-HT inhibition)	Vesicular	20		HRH2	H_2	2,000–8,100 nM	K_i ([^{125}I]I-APT binding)	43
SLC22A1	OCT1	3,007 µM	IC_{50} ([^{3}H]TEA inhibition)	Influx	13		HRH3	H_3	15 nM	K_i ([^{3}H]methylhistamine binding)	44
SLC22A2	OCT2	940–1,300 µM	K_m ([^{3}H]HIS uptake)	Influx	13		HRH4	H_4	8.1 nM	K_i ([^{3}H]histamine binding)	45
SLC22A3	OCT3	180–641 µM	K_m ([^{3}H]HIS uptake)	Influx	13,25		TAAR1	TA_1	> 6,000 nM	K_i ([^{3}H]tyramine binding)	27
SLC29A4	PMAT	4,379–10,471 µM	K_m ([^{3}H]HIS uptake)	Influx	25,26						
SLC2A1	GLUT1		*Transported**	Influx	46	Melatonin	MTNR1A	MT_1	0.2 nM	K_i ([^{125}I]iodomelatonin binding)	47
SLC15A1	PEPT1	600 µM	K_m (LC-MS/MS)	Influx / mito	48		MTNR1B	MT_2	0.4 nM	K_i ([^{125}I]iodomelatonin binding)	47
SLC15A2	PEPT2	1,000 µM	K_m (LC-MS/MS)	Influx / mito	48						
Trace amines											
SLC6A3	DAT	1.7–2.2 µM	K_m ([^{3}H]tyramine uptake, EP)	Influx	49	Tyramine	TAAR1	TA_1	34 nM	K_i ([^{3}H]tyramine binding)	27
SLC6A4	SERT	53 µM	K_m ([^{3}H]tyramine uptake)	Influx	50						
SLC22A1	OCT1	107 µM	IC_{50} ([^{3}H]TEA inhibition)	Influx	13						
SLC22A2	OCT2		*Transported**	Influx / efflux	51						
SLC22A3	OCT3		*Transported**	Influx	13						
SLC29A4	PMAT	238 µM	K_m ([^{3}H]tyramine uptake)	Influx	26						

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
Amino acids											
SLC1A1	EAAT3	62 μM	K_m ([^{3}H]Glu uptake)	Influx	52		CASR	CaR	~1,000 μM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC1A2	EAAT2	97 μM	K_m ([^{3}H]Glu uptake)	Influx	52		GRM1	$mGlu_1$	40–184 μM	EC_{50} (Ca^{2+}, IP_3 assay)	55,56
SLC1A3	EAAT1	48 μM	K_m ([^{3}H]Glu uptake)	Influx	52		GRM2	$mGlu_2$	1.8–26 μM	EC_{50} (Ca^{2+} assay, [^{35}S]GTPγS)	57,58
SLC1A5	ASCT2	3,900–4,800 μM	K_m ([^{3}H]Glu uptake, ΔpH)	Influx / efflux	59		GRM3	$mGlu_3$	1 μM	EC_{50} (Ca^{2+} assay)	57
SLC1A6	EAAT4	2.5 μM	K_m ([^{3}H]Glu uptake)	Influx	60		GRM4	$mGlu_4$	20–38 μM	EC_{50} (cAMP assay)	61,62
SLC1A7	EAAT5	64 μM	EC_{50} (EP)	Influx	63		GRM5	$mGlu_5$	2.7–4.8 μM	EC_{50} (Ca^{2+}, IP_3 assay)	64
SLC7A11	xCT	92 μM	K_m ([^{3}H]Glu uptake)	Efflux	65		GRM6	$mGlu_6$	6.7–7.6 μM	EC_{50} (cAMP assay, [^{35}S]GTPγS)	58,66
SLC17A5	Sialin	~500 μM	*Transported**	Vesicular	67	**L-glutamate**	GRM7	$mGlu_7$	56–1000 μM	EC_{50} (cAMP assay, [^{35}S]GTPγS)	58,61
SLC17A6	VGLUT1	~1,000 μM	*Transported**	Vesicular	68		GRM8	$mGlu_8$	11 μM	EC_{50} (cAMP assay)	61
SLC17A7	VGLUT2	~1,000 μM	*Transported**	Vesicular	68						
SLC17A8	VGLUT3	~1,000 μM	*Transported**	Vesicular	68						
SLC22A7	OAT2		*Transported**	Efflux	69						
SLC22A11	OAT4		*Transported**	Efflux	70,71						
SLC22A13	OAT10		*Transported**	Influx / efflux	72						
SLCO2B1	OATP2B1		*Transported**	Efflux	71						
SLC6A1	GAT1	11–14 μM	K_m ([^{3}H]GABA uptake, EP)	Influx	73,74		GABBR1	$GABA_B$	72 μM	K_i ([^{3}H]CGP54626 binding)	75
SLC6A6	TauT	2,400 μM	K_m ([^{3}H]GABA uptake)	Influx	76		GABBR2	(dimer)	0.16 μM	EC_{50} (Ca^{2+} assay)	
SLC6A11	GAT3	8.1–172 μM	K_m ([^{3}H]GABA uptake)	Influx	74,77						
SLC6A12	BGT1	18–20 μM	K_m ([^{3}H]GABA uptake)	Influx	74,78	**GABA**					
SLC6A13	GAT2	8.2 μM	K_m ([^{3}H]GABA uptake)	Influx	79						
SLC32A1	VGAT		*Transported**	Vesicular	80						
SLC36A1	PAT1	3,100 μM	K_i ([^{3}H]proline inhibition)	Influx	81						
SLC6A10	TAT1	1,212 μM	K_m ([^{14}C]L-DOPA uptake)	Influx	82	**L-DOPA**	GPR143	GPR143	9,340 nM	K_d ([^{3}H]L-DOPA binding)	83
SLC1A4	ASCT1	68 μM	K_m ([^{3}H]alanine uptake)	Influx / efflux	84		GPRC6A	GPRC6	173 μM	EC_{50} (Ca^{2+} assay)	85
SLC1A5	ASCT2	29 μM	K_m ([^{3}H]alanine uptake)	Influx / efflux	86		CASR	CaR	~1,000 μM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC6A14	$ATB^{0,+}$	99 μM	K_m / EC_{50} (EP)	Influx	87						
SLC6A15	B^0AT2		*Transported**	Influx	88						
SLC6A19	B^0AT1		*Transported**	Influx	89						
SLC7A8	LAT2		*Transported**	Influx	90						
SLC7A9	$b^{0,+}AT$		*Transported**	Influx / efflux	91						
SLC7A10	Asc-1	9.2 μM	K_m ([^{14}C]alanine uptake)	Influx	92	**L-alanine**					
SLC36A1	PAT1	6,000 μM	K_i ([^{3}H]proline inhibition)	Influx	81						
SLC36A4	PAT4	1,480 μM	K_i ([^{3}H]proline inhibition)	Influx	93						
SLC38A1	SNAT1		*Transported**	Influx	94						
SLC38A2	SNAT2		*Transported**	Influx	94						
SLC38A4	SNAT4		*Transported**	Influx	94						
SLC38A5	SNAT5		*Transported**	Influx	95						
SLC38A7	SNAT7		*Transported**	Influx	94						

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
SLC6A14	$ATB^{0,+}$	104 µM	K_m / EC_{50} (EP)	Influx	87		GPRC6A	GPRC6	44 µM	EC_{50} (Ca^{2+} assay)	85
SLC7A1	CAT-1	110–160 µM	K_m ([^{3}H]arginine uptake)	Influx	96						
SLC7A2	CAT-2	320–3,900 µM	K_m ([^{3}H]arginine uptake)	Influx	96						
SLC7A3	CAT-3	450 µM	K_m ([^{3}H]arginine uptake)	Influx	97						
SLC7A6	y^+LAT2	120 µM	K_m ([^{14}C]arginine uptake)	Influx / efflux	98	L-arginine					
SLC7A7	y^+LAT1		*Transported**	Influx / efflux	99						
SLC7A9	$b^{0,+}$AT		*Transported**	Influx / efflux	91						
SLC38A4	SNAT4		*Transported**	Influx	94						
SLC38A9	SLC38A9	2,700 µM	K_m ([^{3}H]arginine uptake)	Lysosome	100						
SLC7A5	LAT1	790 µM	K_m ([^{14}C]citrulline uptake)	Influx	101	L-citrulline	GPRC6A	GPRC6	287 µM	EC_{50} (Ca^{2+} assay)	85
SLC1A5	ASCT2	39–1,800 µM	K_m ([^{3}H]glutamine uptake)	Influx / efflux	86		GPRC6A	GPRC6	590 µM	EC_{50} (Ca^{2+} assay)	85
SLC6A14	$ATB^{0,+}$	633 µM	K_m / EC_{50} (EP)	Influx	87		CASR	CaR	~1,000 µM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC6A15	B^0AT2		*Transported**	Influx	88						
SLC6A19	B^0AT1		*Transported**	Influx	89						
SLC7A5	LAT1	1,640 µM	K_m ([^{14}C]glutamine uptake)	Influx / efflux	102						
SLC7A6	y^+LAT2	295 µM	K_m ([^{14}C]glutamine uptake)	Influx	98						
SLC7A8	LAT2		*Transported**	Influx	90						
SLC36A4	PAT4	430 µM	K_i ([^{3}H]proline inhibition)	Influx	93	L-glutamine					
SLC38A1	SNAT1		*Transported**	Influx	94						
SLC38A2	SNAT2		*Transported**	Influx	94						
SLC38A3	SNAT3	1,600 µM	K_m ([^{3}H]glutamine uptake)	Influx	103						
SLC38A5	SNAT5		*Transported**	Influx	95						
SLC38A7	SNAT7		*Transported**	Influx	94						
SLC38A9	SLC38A9	518 µM	K_m ([^{3}H]glutamine uptake)	Lysosome	100						
SLC6A5	GlyT2	108 µM	K_m ([^{3}H]glycine uptake)	Influx	104		GPRC6A	GPRC6	263 µM	EC_{50} (Ca^{2+} assay)	85
SLC6A9	GlyT1	70–90 µM	K_m ([^{3}H]glycine uptake)	Influx / efflux	105						
SLC6A14	$ATB^{0,+}$	111 µM	K_m / EC_{50} (EP)	Influx	87						
SLC7A10	Asc-1		*Transported**	Influx	92						
SLC36A1	PAT1	9,900 µM	K_i ([^{3}H]proline inhibition)	Influx	81						
SLC36A2	PAT2	490 µM	K_m (EP)	Influx	106	Glycine					
SLC38A1	SNAT1		*Transported**	Influx	94						
SLC38A2	SNAT2		*Transported**	Influx	94						
SLC38A4	SNAT4		*Transported**	Influx	94						
SLC38A5	SNAT5		*Transported**	Influx	95						
SLC6A14	$ATB^{0,+}$	100 µM	K_m / EC_{50} (EP)	Influx	87		GPRC6A	GPRC6	169 µM	EC_{50} (Ca^{2+} assay)	85
SLC7A1	CAT-1		*Transported**	Influx	107		CASR	CaR	> 10,000 µM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC7A2	CAT-2		*Transported**	Influx	107						
SLC7A3	CAT-3	650 µM	K_m ([^{3}H]lysine uptake)	Influx	97						
SLC7A6	y^+LAT2		*Transported**	Influx / efflux	98	L-lysine					
SLC7A7	y^+LAT1		*Transported**	Influx / efflux	99						
SLC7A9	$b^{0,+}$AT		*Transported**	Influx / efflux	91						
SLC38A4	SNAT4		*Transported**	Influx	94						

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
SLC6A14	$ATB^{0,+}$	14 μM	K_m / EC_{50} (EP)	Influx	87	L-methionine	GPRC6A	GPRC6	854 μM	EC_{50} (Ca^{2+} assay)	85
SLC6A15	B^0AT2	110 μM	$K_{0.5}$ (EP)	Influx	88						
SLC6A19	B^0AT1		*Transported**	Influx	89						
SLC7A5	LAT1	20 μM	K_m ([^{14}C]methionine uptake)	Influx / efflux	102						
SLC7A9	$b^{0,+}AT$		*Transported**	Influx / efflux	91						
SLC36A4	PAT4	440 μM	K_i ([^{3}H]proline inhibition)	Influx	93						
SLC38A1	SNAT1		*Transported**	Influx	94						
SLC38A2	SNAT2		*Transported**	Influx	94						
SLC38A4	SNAT4		*Transported**	Influx	94						
SLC43A1	LAT3		*Transported**	Influx	108						
SLC43A2	LAT4		*Transported**	Influx / efflux	109						
SLC7A1	CAT-1		*Transported**	Influx	107	L-ornithine	GPRC6A	GPRC6	112 μM	EC_{50} (Ca^{2+} assay)	85
SLC7A2	CAT-2		*Transported**	Influx	107						
SLC7A3	CAT-3	910 μM	K_m ([^{14}C]ornithine uptake)	Influx	97						
SLC6A10	TAT1	741 μM	K_m ([^{14}C]phenylalanine uptake)	Influx	82	L-phenylalanine	GPR139	GPR139	60 μM	EC_{50} (Ca^{2+} assay)	110
SLC6A14	$ATB^{0,+}$	17 μM	K_m / EC_{50} (EP)	Influx	87		CASR	CaR	1,000–3,500 μM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC6A19	B^0AT1		*Transported**	Influx	89						
SLC7A5	LAT1	14 μM	K_m ([^{14}C]phenylalanine uptake)	Influx / efflux	102						
SLC7A8	LAT2		*Transported**	Influx	90						
SLC7A9	$b^{0,+}AT$		*Transported**	Influx / efflux	91						
SLC43A1	LAT3	6.5–1,206 μM	K_m ([^{14}C]phenylalanine uptake)	Influx	108						
SLC43A2	LAT4	178–3,733 μM	K_m ([^{3}H]phenylalanine uptake)	Influx / efflux	109						
SLC6A10	TAT1	452 μM	K_m ([^{14}C]tryptophan uptake)	Influx	82	L-tryptophan	GPR139	GPR139	49 μM	EC_{50} (Ca^{2+} assay)	110
SLC6A14	$ATB^{0,+}$	26 μM	K_m / EC_{50} (EP)	Influx	87		CASR	CaR	30–100 μM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC7A5	LAT1	21 μM	K_m ([^{14}C]tryptophan uptake)	Influx / efflux	102						
SLC7A8	LAT2		*Transported**	Influx	90						
SLC36A4	PAT4	1.7 μM	K_i ([^{3}H]proline inhibition)	Influx	93						
SLC1A4	ASCT1	121 μM	K_m ([^{3}H]serine uptake)	Influx	84	L-serine	GPRC6A	GPRC6	623 μM	EC_{50} (Ca^{2+} assay)	85
SLC1A5	ASCT2	56–6,600 μM	K_m ([^{3}H]serine uptake)	Influx / efflux	86		CASR	CaR	~1,000 μM	EC_{50} (allosteric modulation of Ca^{2+})	53,54
SLC6A14	$ATB^{0,+}$	43 μM	K_m / EC_{50} (EP)	Influx	87						
SLC6A15	B^0AT2		*Transported**	Influx	88						
SLC6A19	B^0AT1		*Transported**	Influx	89						
SLC7A10	Asc-1		*Transported**	Influx	92						
SLC38A1	SNAT1		*Transported**	Influx	94						
SLC38A2	SNAT2		*Transported**	Influx	94						
SLC38A4	SNAT4		*Transported**	Influx	94						
SLC38A5	SNAT5		*Transported**	Influx	95						
SLC38A7	SNAT7		*Transported**	Influx	94						

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
Prostaglandins											
SLCO2A1	PGT	83 nM	$K_{1/2}$ ([^{3}H]PGE_2 inhibition)	Influx / efflux	111	PGD_2	PTGDR	DP_1	1.7 nM	K_i ([^{3}H]PGD_2 binding)	112
							PTGER1	EP_1	5,820 nM	K_i ([^{3}H]PGE_2 binding)	112
							PTGER2	EP_2	2,973 nM	K_i ([^{3}H]PGE_2 binding)	112
							PTGER3	EP_3	421 nM	K_i ([^{3}H]PGE_2 binding)	112
							PTGER4	EP_4	1,483 nM	K_i ([^{3}H]PGE_2 binding)	112
							PTGFR	FP	6.7 nM	K_i ([^{3}H]$PGF_{2\alpha}$ binding)	112
							TBXA2R	TP	6,602 nM	K_i ([^{3}H]SQ-29548 binding)	112
SLCO2A1	PGT	82 nM	$K_{1/2}$ ([^{3}H]PGE_2 inhibition)	Influx / efflux	111	PGE_1	PTGDR	DP_1	53 nM	K_i ([^{3}H]PGD_2 binding)	113
SLCO3A1	OATP3A1	49 nM	K_m ([^{3}H]PGE_1 uptake)	Influx / efflux	114		PTGER1	EP_1	165 nM	K_i ([^{3}H]PGE_2 binding)	115
							PTGER2	EP_2	1 nM	IC_{50} ([^{3}H]PGE_2 binding)	116
							PTGER4	EP_4	1.5 nM	K_i ([^{3}H]PGE_2 binding)	117
							PTGIR	IP	318 nM	K_i ([^{3}H]iloprost binding)	118
SLCO2A1	PGT	100–331 nM	$K_{1/2}$ ([^{3}H]PGE_2 inhibition)	Influx / efflux	111,119	PGE_2	PTGDR	DP_1	307 nM	K_i ([^{3}H]PGD_2 binding)	112
SLCO3A1	OATP3A1	56 nM	K_m ([^{3}H]PGE_2 uptake)	Influx / efflux	114		PTGER1	EP_1	9.1 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A1	OCT1	657 nM #	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER2	EP_2	4.9 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A1	OCT2	29 nM #	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER3	EP_3	0.3 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A6	OAT1	970 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER4	EP_4	0.8 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A7	OAT2	713 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGFR	FP	119 nM	K_i ([^{3}H]$PGF_{2\alpha}$ binding)	112
SLC22A8	OAT3	345 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		TBXA2R	TP	29,000 nM	K_i ([^{3}H]SQ-29548 binding)	112
SLC22A11	OAT4	154 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120						
SLCO2A1	PGT	7,202 nM	$K_{1/2}$ ([^{3}H]PGE_2 inhibition)	Influx / efflux	119	PGE_3	PTGER1	EP_1	110 nM	IC_{50} ([^{3}H]PGE_2 binding)	121
							PTGER2	EP_2	20 nM	IC_{50} ([^{3}H]PGE_2 binding)	121
							PTGER3	EP_3	37 nM	IC_{50} ([^{3}H]PGE_2 binding)	121
							PTGER4	EP_4	17 nM	IC_{50} ([^{3}H]PGE_2 binding)	121
SLCO2A1	PGT	92 nM	$K_{1/2}$ ([^{3}H]PGE_2 inhibition)	Influx / efflux	111	$PGF_{2\alpha}$	PTGDR	DP_1	861 nM	K_i ([^{3}H]PGD_2 binding)	112
SLC16A5	MCT6		*Transported**	Influx	122		PTGER1	EP_1	547 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A1	OCT1	477 nM #	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER2	EP_2	964 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A1	OCT2	334 nM #	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER3	EP_3	38 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A6	OAT1	575 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGER4	EP_4	288 nM	K_i ([^{3}H]PGE_2 binding)	112
SLC22A8	OAT3	1,092 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		PTGFR	FP	3.2 nM	K_i ([^{3}H]$PGF_{2\alpha}$ binding)	112
SLC22A11	OAT4	692 nM	K_m ([^{3}H]PGE_2 uptake)	Influx	120		TBXA2R	TP	8,700 nM	K_i ([^{3}H]SQ-29548 binding)	112

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
Monocarboxylates & short-chain fatty acids											
SLC5A8	SMCT1	159–252 µM	K_m ([^{14}C]lactate uptake, EP)	Influx	123	Lactate	HCAR1	HCA_1	1,500–7,000 µM	EC_{50} ([^{35}S]GTPγS, Ca^{2+} assay)	124
SLC5A12	SMCT2	16,900 µM	IC_{50} ([^{14}C]nicotinate inhibition)	Influx	125						
SLC16A1	MCT1	4,500–6,000 µM	K_m ([^{14}C]lactate uptake)	Influx / efflux	126						
SLC16A3	MCT4	700–37,600 µM	K_m (pH sensor)	Influx / efflux	126						
SLC16A7	MCT2	6,500 µM	K_m ([^{14}C]lactate uptake)	Influx	126						
SLC16A8	MCT3		*Transported**	Influx / efflux	126						
SLC5A8	SMCT1	230 µM	$K_{0.5}$ (EP)	Influx	127	Nicotinate	HCAR2	HCA_2	0.1–0.25 µM	EC_{50} ([^{35}S]GTPγS)	128,129
SLC5A12	SMCT2	3,700 µM	IC_{50} ([^{14}C]nicotinate inhibition)	Influx	125		HCAR3	HCA_3	~ 1,000 µM	EC_{50} ([^{35}S]GTPγS)	128,129
SLC22A7	OAT2	17 µM	K_m ([^{3}H]nicotinate uptake)	Influx	130						
SLC22A9	OAT7		*Transported**	Influx / efflux	131						
SLC22A13	OAT10	22–48 µM	K_m ([^{3}H]nicotinate uptake)	Influx	132						
SLC5A8	SMCT1	72 µM	K_m (EP)	Influx	123	Butyrate	FFAR3	FFA3	158 µM	EC_{50} ([^{35}S]GTPγS)	133
SLC5A12	SMCT2	2,600 µM	IC_{50} ([^{14}C]nicotinate inhibition)	Influx	125		FFAR2	FFA2	371 µM	EC_{50} ([^{35}S]GTPγS)	133
SLC16A1	MCT1	9,000–10,000 µM	K_m ([^{14}C]butyrate uptake)	Influx	126		HCAR2	HCA_2	1,590 µM	EC_{50} ([^{35}S]GTPγS)	129
SLC22A9	OAT7	36 µM	K_m ([^{14}C]butyrate uptake)	Influx / efflux	131						
SLC5A8	SMCT1	2,460 µM	$K_{0.5}$ (EP)	Influx	134	Acetate	FFAR3	FFA3	1,020 µM	EC_{50} ([^{35}S]GTPγS)	133
							FFAR2	FFA2	431 µM	EC_{50} ([^{35}S]GTPγS)	133
SLC5A8	SMCT1	128 µM	K_m (EP)	Influx	123	Propionate	FFAR3	FFA3	127 µM	EC_{50} ([^{35}S]GTPγS)	133
							FFAR2	FFA2	290 µM	EC_{50} ([^{35}S]GTPγS)	133
SLC5A8	SMCT1	1,442 µM	K_m (EP)	Influx	135	β-D-hydroxy-butyrate	HCAR2	HCA_2	767 µM	EC_{50} ([^{35}S]GTPγS)	129
SLC16A1	MCT1	10,000 µM	K_m (pH sensor)	Influx	126		HCAR3	HCA_3	> 25,000 µM	EC_{50} ([^{35}S]GTPγS)	129
SLC16A3	MCT4	130,000 µM	K_m (pH sensor)	Influx	126						
SLC16A7	MCT2		*Transported**	Influx	126						

Solute carrier transporter (SLC)						Substrate	G protein-coupled receptor (GPCR)				
Gene	Protein	Affinity / activity	Comments	Mode of transport	Ref		Gene	Protein	Affinity / potency	Comments	Ref
Other carboxylic acids & signaling lipids											
SLC13A2	NaDC1	590–800 µM	K_m ([^{14}C]succinate uptake)	Influx	136	Succinate	SUCNR1	SUCNR1	28–56 µM	EC_{50} (Ca^{2+} assay)	137
SLC13A3	NaDC3	2–25 µM	K_m ([^{3}H]succinate uptake, EP)	Influx	136						
SLC13A5	NaDC2	1,920 µM	IC_{50} ([^{14}C]citrate inhibition)	Influx	136						
SLC16A1	MCT1		*Transported**	Efflux	138-140						
SLC22A6	OAT1	4,825 µM	IC_{50} ([^{3}H]PAH inhibition)	Influx	141						
SLC22A8	OAT3	55,700 µM	IC_{50} ([^{3}H]estrone sulfate inhibition)	Influx	141						
SLC59A1	MFSD2A		*Transported (SPNS2 complex)*	Influx / efflux	142	Sphingosine-1-phosphate	S1PR1	$S1P_1$	0.9–1.2 nM	EC_{50} ([^{35}S]GTPγS)	143,144
SLC59A2	MFSD2B		*Transported**	Efflux	145		S1PR2	$S1P_2$	2.9–8.9 nM	EC_{50} ([^{35}S]GTPγS)	143,144
SLC63A2	SPNS2		*Transported**	Efflux	146		S1PR3	$S1P_3$	0.2–1.1 nM	EC_{50} ([^{35}S]GTPγS)	143,144
							S1PR4	$S1P_4$	8.6 nM	EC_{50} ([^{35}S]GTPγS)	144
							S1PR5	$S1P_5$	11–44 nM	EC_{50} ([^{35}S]GTPγS)	143,144
							GPR3	GPR3	50 nM #	EC_{50} (Ca^{2+} assay)	147
							GPR6	GPR6	56 nM #	EC_{50} (Ca^{2+} assay)	147
							GPR12	GPR12	106 nM #	EC_{50} (Ca^{2+} assay)	147
							GPR63	GPR63	800 nM #	EC_{50} (Ca^{2+} assay)	148
							P2RY10	$P2Y_{10}$	53 nM	EC_{50} (Ca^{2+} assay)	149
SLC10A1	NTCP	6.3 µM	K_m ([^{3}H]taurocholate uptake)	Influx	150	Bile acids	GPBAR1	GPBAR	0.3–7.7 µM	EC_{50} (cAMP assay)	151
SLC10A2	ASBT	4.1–33 µM	K_m ([^{3}H]bile acid uptake)	Influx	152		S1PR2	$S1P_2$		*Activation**	153
SLC22A24	SLC22A24		*Transported**	Influx / efflux	154						
SLC51A/B	OSTα/β	13–1,000 µM	K_m (LC-MS/MS)	Influx / efflux	155						
SLCO1A2	OATP1A2	19–60 µM	K_m ([^{3}H]bile acid uptake)	Influx	156						
SLCO1B1	OATP1B1	0.7–47 µM	K_m (LC-MS/MS)	Influx	157						
SLCO1B3	OATP1B3	0.5–42 µM	K_m (LC-MS/MS)	Influx	157						
SLCO3A1	OATP3A1		*Transported**	Influx / efflux	158						
SLC27A1	FATP1	0.2 µM	K_m ([^{14}C]oleic acid uptake)	Influx / efflux	159,160	(Very) long-chain fatty acids	FFAR1	FFA1	1–43 µM	EC_{50} (Ca^{2+} assay)	161,162
SLC27A2	FATP2		*Transported**	Influx / efflux	163		FFAR2	FFA4	12–63 µM	EC_{50} (Ca^{2+}, DMR, β-arrestin)	164
SLC27A4	FATP4		*Transported**	Influx / efflux	159,165						
SLC27A6	FATP6		*Transported**	Influx / efflux	159						

* no affinity or potency values reported for human orthologues, but evidence for binding or transport
\# disputed results

Yellow fill — indicates SLC-GPCR pair that has been subject to in-house TRACT assay attempts
Blue fill — indicates SLC-GPCR pair for which TRACT assays are published or reported in this thesis

Table A.2 – List of Na^+-coupled transporters that are expressed at the plasma membrane. Transport stoichiometries were derived from the IUPHAR Guide to Pharmacology[166]. Only transporters for which stoichiometries were described are mentioned in this table; putative and orphan transporters are not included here.

Gene	Protein	Stoichiometry
Na^+-coupled transporters at the plasma membrane		
SLC1A1/2/3/6/7	EAAT3/2/1/4/5	3 Na^+ / 1 glu^- / 1 H^+ in : 1 K^+ out (Cl^- conductivity)
SLC1A4/5	ASCT1/2	1 Na^+ / 1 amino acid in : 1 Na^+ / 1 amino acid out
SLC4A4/5	NBCe1/2	1 Na^+ / 2–3 HCO_3^- or 1 CO_3^{2-} in/out
SLC4A7/10	NBCn1/2	1 Na^+ / 1 HCO_3^- or 1 CO_3^{2-} in/out
SLC4A8	NDCBE	1 Na^+ / 2 HCO_3^- / 1 Cl^- in/out
SLC5A1/2	SGLT1/2	1–2 Na^+ / 1 glucose in
SLC5A3/11	SMIT1/2	2 Na^+ / 1 myo-inositol in
SLC5A5	NIS	2 Na^+ / 1 I^- in
SLC5A6	SMVT	2 Na^+ / 1 biotin in
SLC5A7	CHT	1 Na^+ / 1 choline in
SLC5A8/12	SMCT1/2	2 Na^+ / 1 $monocarboxylate^-$ in
SLC6A1/11/13/12	GAT1/2/3/BGT1	2–3 Na^+ / 1–2 Cl^- / 1 GABA in
SLC6A2	NET	1 Na^+ / 1 Cl^- / 1 NE in
SLC6A3	DAT	1–2 Na^+ / 1 Cl^- / 1 DA in
SLC6A4	SERT	1 Na^+ / 1 Cl^- / 1 5-HT in : 1 K^+ out
SLC6A5/9	GlyT1/2	2–3 Na^+ / 1 Cl^- / 1 glycine in
SLC6A6	TauT	2 Na^+ / 1 Cl^- / 1 taurine in
SLC6A7	PROT	2 Na^+ / 1 Cl^- / 1 L-proline in
SLC6A8	CT1	2 Na^+ / 1 Cl^- / 1 creatine in
SLC6A14/20	$ATB^{0,+}$/SIT1	2–3 Na^+ / 1 Cl^- / 1 amino acid in
SLC6A19/15	$B^0AT1/2$	1 Na^+ / 1 amino acid in
SLC8A1	NCX1	3–4 Na^+ in : 1 Ca^{2+} out (or 1 Ca^{2+} in : 1 Na^+ out)
SLC9 family	NHE	1 Na^+ in : 1 H^+ out
SLC10A1/2	NTCP/ASBT	1–2 Na^+ / 1 bile acid in
SLC12A2/1	NKCC1/2	1 Na^+ / 1 K^+ / 2 Cl^- in
SLC12A3	NCC	1 Na^+ / 1 Cl^- in
SLC13A1/4	NaS1/2	3 Na^+ / SO_4^{2-} in
SLC13A2	NaDC1	3 Na^+ / 1 $dicarboxylate^{2-}$ in
SLC20A1/2	PiT1/2	1 Na^+ / 1 HPO_4^{2-} in
SLC23A1/2	SVCT1/2	2 Na^+ / 1 ascorbic acid in
SLC24A1–5	NKCX1–5	4 Na^+ in : 1 Ca^{2+} / 1 K^+ out
SLC28A1–3	CNT1–3	1 Na^+ / 1 nucleoside
SLC34A1/2/3	NaPi-2a/b/c	3 Na^+ / 1 HPO_4^{2-} in
SLC38A1/2/4	SNAT1/2/4	1 Na^+ / 1 amino acid in
SLC38A3/5	SNAT3/5	1 Na^+ / 1 amino acid in : 1 H^+ out

Abbreviations

5-CT	5-carboxamidotryptamine
5-HT	5-hydroxytryptamine (serotonin)
5-HT_x	serotonin receptor
α_x / β_x	alpha / beta adrenergic receptor
A_x	adenosine receptor
ACh	acetylcholine
ADE	adenosine
ADP	adenosine diphosphate
AGT	aspartate/glutamate transporter
ASBT	apical Na^+/bile acid transporter
ASCT	alanine/serine/cysteine transporter
Asc	Asc-type amino acid transporter
$ATB^{0,+}$	$B^{0,+}$-type amino acid transporter
ATP	adenosine triphosphate
$b^{0,+}AT$	$b^{0,+}$-type amino acid transporter
B^0AT	B^0-type amino acid transporter
BGT	betaine/GABA transporter
cAMP	cyclic adenosine monophosphate
CaR	calcium-sensing receptor
CAT	cationic amino acid transporter
CHT	choline transporter
CNT	concentrative nucleoside transporter
CT1	creatine transporter 1
CYP	cyanopindolol
D_x	dopamine receptor
DA	dopamine
DAT	dopamine transporter
DMR	dynamic mass redistribution
DP_1	prostaglandin D_2 receptor
EAAT	excitatory amino acid transporter
EC_{50}	half maximal effective concentration
EP	electrophysiology
EP_x	prostaglandin $E_{1–4}$ receptor
EPI	epinephrine
ENT	equilibrative nucleoside transporter
FATP	fatty acid transport protein
FFAR	free fatty acid receptor
FP	prostaglandin $F_{2\alpha}$ receptor
GABA	gamma-aminobutyric acid
$GABA_B$	metabotropic GABA receptor
GAT	GABA transporter
Glu	glutamate
GLUT	glucose transporter
GlyT	glycine transporter
GPBAR	G protein-coupled bile acid receptor
GPR	orphan G protein-coupled receptor
GPCR	G protein-coupled receptor
GTP	guanosine triphosphate
H_x	histamine receptor
HCA_x	hydroxycarboxylic acid receptor
HIS	histamine
IC_{50}	half maximal inhibitory concentration
IP	prostaglandin I_2 receptor
IP_3	inositol triphosphate
$K_{0.5}$ / $K_{1/2}$	apparent affinity constant
K_d	dissociation constant
K_i	inhibition constant
K_m	Michaelis-Menten constant
LAT	L-type amino acid transporter
LC-MS	liquid chromatography–mass spectrometry
L-DOPA	L-3,4-dihydroxyphenylalanine (levodopa)
LSD	lysergic acid diethylamide
M_x	muscarinic acetylcholine receptor
MCT	monocarboxylate transporter
$mGlu_x$	metabotropic glutamate receptor
mito	mitochondria
MPP+	1-methyl-4-phenylpyridinium
MT_x	melatonin receptor
NaDC	Na^+/dicarboxylate cotransporter
NaPi-2	Na^+/phosphate cotransporter
NaS	Na^+/sulfate cotransporter
N(K)CC	$Na^+(/K^+)/Cl^-$ cotransporter
N(K)CX	$Na^+(/K^+)/Cl^-$ exchanger
NBCe	electrogenic Na^+/bicarbonate transporter
NBCn	neutral Na^+/bicarbonate transporter
NDCBE	neutral Na^+/bicarbonate/Cl^- transporter
NE	norepinephrine
NET	norepinephrine transporter
NHE	Na^+/proton exchanger
NIS	Na^+/iodide cotransporter
NMS	N-methylscopolamine
NTCP	Na^+/bile acid cotransporter
OAT	organic anion transporter
OATP	organic anion-transporting polypeptides
OCT	organic cation transporter
OCTN1	ergothioneine transporter
OSTα/β	organic solute transporter α/β
P2Y	purinergic P2Y receptor
PAT	proton-coupled amino acid transporter
PAH	para-aminohippurate
PEPT	peptide transporter
PGD_2	prostaglandin D_2
PGE_x	prostaglandin $E_{1–3}$
$PGF_{2\alpha}$	prostaglandin $F_{2\alpha}$
PGT	prostaglandin transporter
PiT	Na^+-dependent phosphate transporter
PMAT	plasma membrane monoamine transporter
PROT	proline transporter
$S1P_x$	sphingosine-1-phosphate receptor
SERT	serotonin transporter
SGLT	Na^+/glucose cotransporter
SIT	Na^+/imino acid transporter
SLC	solute carrier transporter
SMCT	Na^+-coupled monocarboxylate transporter
SMIT	Na^+/myo-inositol cotransporter
SMVT	Na^+/multivitamin transporter
SNAT	Na^+-coupled neutral amino acid transporter
SPNS	Spinster homolog/sphingolipid transporter
SUCNR	succinate receptor
SVCT	Na^+/vitamin C transporter
TA_1	trace amine-associated receptor 1
TAT	T-type amino acid transporter
TauT	taurine transporter
TEA	tetraethylammonium
TP	thromboxane receptor
VAChT	vesicular acetylcholine transporter
VGAT	vesicular GABA transporter
VGLUT	vesicular glutamate transporter
VMAT	vesicular monoamine transporter
VNUT	vesicular nucleoside transporter
y^+LAT	y^+L-type amino acid transporter
xCT	cystine/glutamate transporter

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