

Supplemental Table 2
Evolutionarily Conserved Motif Sequences (green/dark green residues in Figures S4-S6)

Motif Letter*	A	B	C	D	E	F	G	H
Motif Number*	Motif 9	Motif 8	Motif 7	Motif 5	Motif 3	Motif 14	Motif 6	Motif 2
SLC22A15	VEEAFQAVGEMGIYQ			TSIASEWFLIAN	GVISFGQLSDRFGRK	LFAIANGFSPSPYEFFAVTRF	GIAQYALLGYFIRSWRTLAI	IPESRWLVSQGRLESEA
SLC22A16	PEGIYDVGHGFRFQ	THYLASVFMGVTPHHVCRRP	EYTGSKRFFPCVDGIYDQN	STAVFQWNLVCD	GSVTFGYFSDRLGR	LFGIAAFAVDYTFMAARF	GTLVALTGYLVTRTWLYQM	LPETPFWLLSEGRYESEA
SLC22A17				TNAIQWDLVCD	GYLFLGYFADRFGR	PCVGGGAAAGSSVGVMAALRF	GHPFLGLALVSRDWRFLRF	PLESARWLVKRGTEEA
SLC22A18					GGPVFGRFADRGAR	VVGLAMAMSSVVFHCLLVF		
SLC22A23				QNVVSKWDLVCD	GYLITGGCIADVWGRR	LTVALSVNVTMFSTRFFEG	GQFLMPGLAALCRDQVQLQA	FPESLRWLMATQGFESA
SLC22A31				AAAGPTWNLVCG	GCVLGAGCDRFGR	GLGASEALAAFPDLLVRL	GTLLFLGLAALVQDWRLLQG	FPESPCWLLATGQVARA
SLC22A6	FNDLLQOVGVGVRGFRQ	SHNTLQNFTAAIPTHHCRFP	EANGTGATEPCTDGMWYDNS	STIVTEWDLVCS	GAMVFGYLADRGR	VSGTCAAFARNFPIYCAFL	GQFLLAGVAYAVPHWRHLQL	FIESARWHSSSGRDLDT
SLC22A8	FSEILDRVSGMHFQ	NHNLQIFTAATPVHHCRRP	FNDTQRAMEFCLDGMWYNST	DSIVTEWDLVCS	GGVLGDLSDRFGR	ASGSGAASFPTPIYVVERF	GQFILPGLAYALPQWRWLQL	TPESIRWLVLSGKSSKA
SLC22A12	FESLLDIVGGLGRFQ	TQSMLENFSAAVESHRCWAP	TSWSEADTEECVGGWYDRS	STIVAKWNLVCD	GAAACCPASDRFGR	VMGTAAAFAPAFVYCLFRF	GHGHTAAVAYGVRDWTLLQL	LAESARWLLTGRLOWG
SLC22A13	FVQVLAIEIGDFGRFQ	FYFFAHVFMVLDPEPHCAVA	LSHRFNETQPCDMGWEYPEN	PSLKNEFNLVCD	GTLMFGPLCDRIGRK	LIGLATAFVPSFELYMALRF	QQMVLAGLAYGFRWRLLQI	LPESARWLLTRGMDDEA
SLC22A14	FANLLDAVGEFGTFQ		IQFLNDDTDCQDGMVYDPA	RSLINEFDLVCG	GSLIFRLITDKMGRY	IFGFGTAFMNSFHLYLFFRF	GAVLLTGIAYSLPHWQLLFL	LPESRWLMMKGRVKEA
SLC22A1	VDDILEQVGESEGWFP	PICVGVIFLGFTPDHHCQSP	TNRSHLPLGPGQDGMWYDTP	SSIVTEFNLVCA	GSLGVGYFADRFGRK	VSGVLMASFPMYMSMLLFR	GLVALTGLAYALPHWRWLQL	VPESRWLWSQKRNTTEA
SLC22A2	VDDVLEHGGEFHFQ	P1YVGVIFLGFTPDHRCRSP	TNRSRPLGFCRDGMWYETP	SSIVTEFNLVCA	GSMSIGYIADRFRGR	AAGVLMASPTTYTWMILFR	GLLVLAGVAYALPHWRWLQF	TPESRWLISQNKNAEA
SLC22A3	FDEALQRVGEFGRFQ		FPNRSAPLVPCRGWRYAQ	STIVSEFDLVCV	GAFTLGYAADRYGRI	VTGVVVAFAPNPFVVFVIFRF	GIIILPGIAYFIPNQGGIQL	VPESRWLITRRKGDKA
SLC22A4	YDEVIAFLGEWGFQ	FNGMSVVFLAGTPEHRCRVP	VDLQLEQESCLDGEWFSQD	STVTEWNLVCE	GSFVSGQLSDRFGRK	VLFAFMVQVTGFSFLQIFSI	GYMLPLFAFYFIRDWRMLL	IPESRWLISQRRFREA
SLC22A5	YDEVIAFLGEWGFQ	FTGLSSVFLIATPEHRCRVP	VDLQLEQESCLDGEWFSQD	STVTEWNLVCE	GSFISGQLSDRFGRK	GFSFLQIFSKNFEMFVVLV	GYMVLPLFAFYFIRDWRMLLV	IPESRWLISQGRFEEA
Motif Letter*	I	J	K	L	M	N	O	P
Motif Number*	Motif 12	Motif 11	Motif 10	Motif 16	Motif 4	Motif 13	Motif 15	Motif 1
SLC22A15	SFLDLFRYRVLLGHTLILMF	IWFCVSLVYVGLTLS	SIYANLALSGLIEIP	FGRKRTLSAFLCLGG	IVYIYTSELYPTVIRNVGLG	CSMFSRVGGIIAPFIPSLKY	PFIVFGATGLTSGLLSLLL	ETLNSPLETEFSDLQVYSYR
SLC22A16		IWFTGSLGFYSFSLN	NEYLNLFLLGVVEIP	WGRRTVLAISLFCSA	LIVLYTAEIYPTIVRS LAVG	GSMVCRASLAIAPFSDVLS	FQLFVGTMLLSSGLVTLKLF	ETLGRKLAATWEEAAKLESE
SLC22A17	SPASLLNRYNRWKNLLILGF			FGRRGILLSSMTLTG			QHVVLAACALLCILSIMLLF	ETRRKLLPEVIRDGEICRRP
SLC22A18	ATASLLRLEDVPRIFLVRVA							
SLC22A23	AVGSLSVFFCAEITPTVIRC			LGREGLLLFMILTA		AVGSLSVFFCAEITPTVIRC		ESRDQNLPENISNGEHTYRQ
SLC22A31	SPILGILLRTRVWKNLILGF			CGRRPVLLGTMTVG	LSSLFAAEVFPTRVIRGAGL		QQVVFASLAVLALLCVLLLP	ESRSRGLPQSIQADRILRES
SLC22A6	SAMELLRCPILRHLFCLSM	LWFAISFAYVGLVMD	SIYLIQVIFGAVDLP	LGRRPAQMAALLLAG	CIFLYTGLYPTMIRQTMG	GSTMARVGSIVSPLVSMIAE	PLFIYGVAVVAASAVTVLLP	ETLGGPILPTVQDLESRRGK
SLC22A8	TASDLRFIFMLRMTFCISL	AWFAFCFAYISLAMG	NLYILQIIFGGVDVF	LGRHTTQAAALLLAG	CLFLYTSLEYPTVIRNQTGMG	SNLWTRVGSMSPLVKITGE	FNIIYGTALLGGSAAFLFP	ETLNGQIPETTEDLEWNSLR
SLC22A12	SLGTLRMPGLRFRFCISTL	CWFAFGTFPGLALD	NIFLQMFIGVVDIP	LGRRPTLAASLLLAG	CITVYSELFPTRLRMTAVG	GQMAARGGAILGELVRLLVG	PLLVYGTVPVLSGLAALLLP	ETQSLPLPDTIQDVGNQAVK
SLC22A13	NALDLFRHFQLRKVTLLIFC	VWFDVSLGYGLSLQ	DVYLTLQIFGAVEVP	FGRKWSQLGTVLVGG	ISYVSAELFPITLRQTMG	VGIFSRIGGILLPLVILLGE	FMLIYGSPLVAVGLLCTLLP	ETHRGGLKDTLQDELGPHF
SLC22A14	SVLDFCKNRQLCKVTLVMS	VWFTVSYTYFTLSLR	SVHFRHVVSIMEVFP	IGRKWSLAVTLQAI	VFFLYTAEILLPTVLRATGLG			ETRDQPLSESNHSSQIRNK
SLC22A1	SPADLFRTPRLRKRTPILMY	LWFTDSVLYQGLLH	NLYLDFLYSALVEIP	WGRYPMAMSNLLAG	MICLVNAELYPTFVRNLGVM	CSSLCDIGGIITPPFVFRLR	PLILFAVLGLLAAGVTLLLP	ETKGVALPETMKAENLGRK
SLC22A2	SFLDLVRTFPQIRKHTMILMY	NWFTSSVLYQGLIMH	NLYLDFPYLSALVEFP	IGRRYPWAASNVMVAG	IVCLVNAELYPTFIRNLGVH	CSSMCDIGGIITPPFLVYRLT	PLMVFGVLGLVAGGLVLLLP	ETKGVALPETHEAENMQRP
SLC22A3	SFLDLVRTFPQMRKCTLLIMF	AWFTSAVVYQGLVMR	NLYLDFPISGVVEIP	LGRRPFAASNIVAG	IVLVNSLEYPTFLRNFGVS	CSSLCDPFGGIAPFLFLRLA	PLIIFGILASICGLLVMLLP	ETKGVALPETVDDVKELGSP
SLC22A4	FILDLFRTRNIAIMTMSLL	LWMLTSVGYFALS LD	DAYLNCPLSALIEIP	LPRRYIIAAVLFWGG	MLYVTAELYPTLVRNMAVG	TSTASRVGSIIPAPYFVYVLA	PYIVMGSPLVIGLITLFFP	ESLGMTLPETLEQMKQVWKP
SLC22A5	NILDLRTRNIRMTIMSIM	LWMTISVGYFGLSLD	DIFVNCPLSAMVEVP	LPRRYSMATALFLGG	MVYVYTAELYPTVVRNMGV	SSTASRSLGSILSPYFVYVLA	PYILMGSPLTILTAITLFLP	ESFGPLPDTIQMLRVKGM

Blank Cells: Motif sequences that are not found in that particular sequence.

Green: Only SLC22A6, SLC22A8, SLC22A12, SLC22A1, SLC22A2, SLC22A4, and SLC22A5 are displayed in Supplemental Figures 4-6 (green).

*The motif letter order describes the order in which the motifs appear in the sequence. The motif number describes the order in which MEME identified the motif.