Supplementary Table 1. Residues identified to affect substrate binding and/or selectivity in ABC type I exporters.

Protein	Residues and positions in respective genes	Experiment to identify residue(s) as important	Ref.[a]
TAP			
HsTAP2	C213	Mutagenesis to affect substrate transport	59
HsTAP2	A374D	Mutant affects substrate specificity	58, 55
RnTAP2[b]	A217, E218, Q262, S265, L266	Chimeric transporter experiments	61
RnTAP2[b]	E218	Mutagenesis affects transport of R-C-term peptides, validated by BMOE crosslinking	60
RnTAP2[b]	Q262, S265, L266	Mutagenesis has small effect on transport by selectivity for C-term of peptides	60
RnTAP1	C273	BMOE crosslinking of cysteine-containing TC6R peptide with TAP abrogated by C273A	60
RnTAP1	Y385	Mutagenesis affects peptide interaction, and favors interaction with hydrophobic C-term	60
RnTAP1	E436	BMOE crosslinking of cysteine-containing TC2R peptide to E436C, polymorphism in GgTAP1	60
RnTAP1	C273, Y385, E436, D278, Y326	9-mer peptide docking by anchoring to experiments	60
RnTAP2	E218, Q262, S265, L266, E418, Q424	9-mer peptide docking by anchoring to experiments	60
GgTAP1	R289[B4][c], K131[B4][c], D234[B15][c], E289[B15][c]	Docking of acidic/peptides to alleles B4/B15 interact with polymorphisms	60; Walker B. A., et al, *Proc Natl Acad Sci U S A* **108**, 8396-401, 2011
GgTAP2	R216[B4][c], G216[B15][c]	Docking of acidic/peptides to alleles B4/B15 interact with polymorphisms	60; Walker B. A., et al, *Proc Natl Acad Sci U S A* **108**, 8396-401, 2011
HsTAP1	V348C, E350	$BM[PEO]_3$ crosslinking of P6-peptide, proteolysis with BABE at P6	60; Herget, M. et al, *J Biol Chem* **282**, 3871-80, 2007
HsTAP1	A433 to M480, Q513 to R547	Peptide substrate crosslinked segment	Nijenhuis, M. & Hammerling, G.J., *J Immunol* **157**, 5467-77, 1996; Walker B. A., et al, *Proc Natl Acad Sci U S A* **108**, 8396-401, 2011
HsTAP2	P301 to M389, I414 to M433	Peptide substrate crosslinked segment	Nijenhuis, M. & Hammerling, G.J., *J Immunol* **157**, 5467-77, 1996; Walker B. A., et al, *Proc Natl Acad Sci U S A* **108**, 8396-401, 2011
MRP1			
BtMRP1	K332, H335, L381, F385, Y440, F594, R1196, N1244, R1248	P-pocket, polar and non-polar contacts	37

BtMRP1	W553, T550, M1092, Y1242, W1245	H-pocket, hydrophobic van-der-Waals contacts	37
BtMRP1	K332, H335, L381, F385, F389, T439, Y440, T550, W553, F594, M601, M1092, S1096, R1196, Y1242, N1244, W1245, R1248	Within 4 Å of substrate LTC4 in PDB 5UJA	37
P-gp			
HsP-gp	Y118, V125, S222, I306, S766, I868, G872	Crosslinking with inhibitor affects drug binding	50
HsP-gp	L339, A342, F942, T945, L975, V982, A985	Crosslinking with inhibitor affects drug binding	Loo, T.W. & Clarke, D.M., *J Biol. Chem.* **272**, 31945-31948, 1997; Loo, T.W. & Clarke, D.M., *J Biol Chem* **274**, 35388-92, 1999
HsP-gp	F728	Cysteine crosslinking affects ATPase stimulation ny drug	48
HsP-gp	I306, F343	Cysteine crosslinking with MTS-verapamil and MTS-rhodamine affects ATPase activity	51
HsP-gp	L65, M69, W232, A233, F303, I306 Y310, F336, L339, I340, F343, Q347, Q725, E875, M876, L879, Q946, M949, Y950, Y953, F983, M986, A987, Q990, V991	Within 4 Å of substrate Zosuquidar in PDB 6FN1	26
MsbA			
EcMsbA	R78, R148, Q256, R296, K299	Binding of head-group of LPS	64
EcMsbA	M75, L263, I292	Non-polar contacts to LPS tail	64
EcMsbA	R78, R296, Q307, D41, L45, Q256, S260, L263, F288, I293, A294	Within 4 Å of substrate LPS in PDB 5TV4	64

[a] Reference numbers correspond to reference list with additional citations listed in full.
[b] Experiments done with RnTAP2[a/u], where [a/u] represent alleles that are present in strains of *R. norvegicus*.
[c] [B4] and [B15] are alleles present in different *G. gallus* subpopulations.