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Supplemental Information

A Database of Predicted Binding Sites for Cholesterol on Membrane Proteins, Deep in the Membrane

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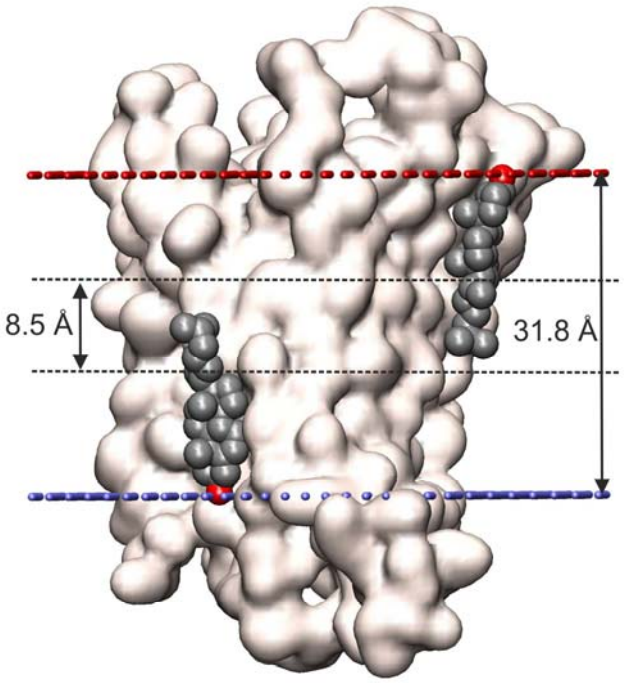

FIGURE S1 Cholesterol molecules in the crystal structure of human purinergic G protein coupled receptor $P2Y_{12}$. The protein surface (PDB code 4NTJ) is shown together with its hydrophobic domain of thickness 31.8 Å as predicted by the OPM database; the EC and IC surfaces are shown in red and blue, respectively. The two resolved cholesterol molecules are shown in space-fill format with oxygen atoms in red. The ends of the two cholesterol rings are separated by 8.5 Å.

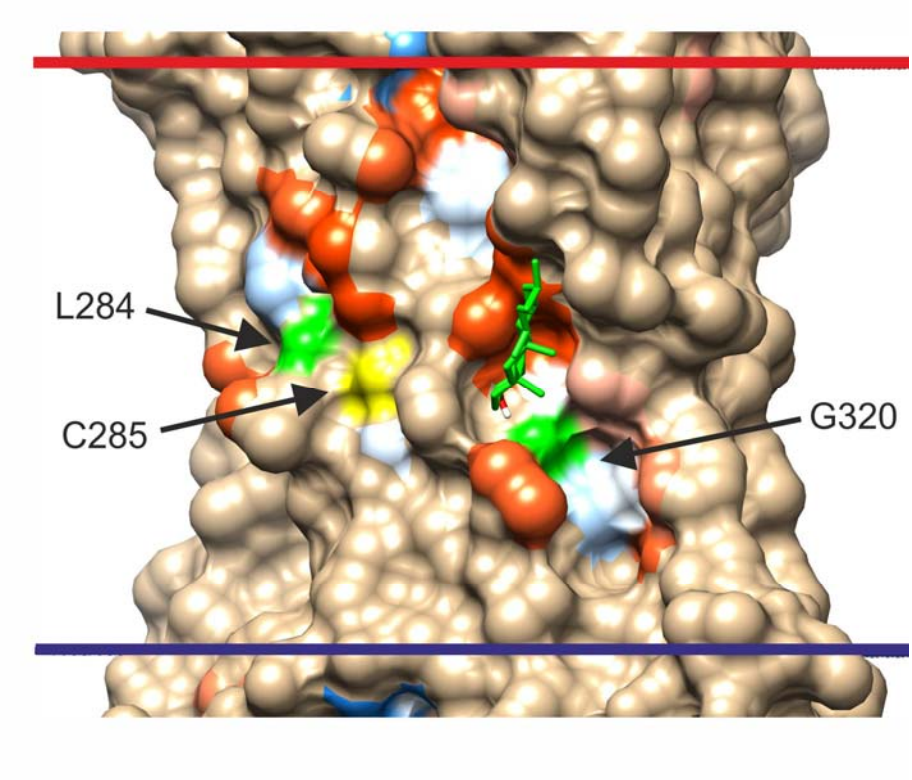

FIGURE S2 The membrane spanning surface of the agonist-free β_2 adrenergic receptor [PDB file 3D4S] with the surface pockets identified using CASTp, coloured from the most hydrophobic (orange) to the most hydrophilic (blue). The most energetically favourable of the cholesterol molecules bound to Gly320 is shown in stick format (light green for carbons and red for oxygen). The locations of the backbone oxygens of Gly320 and Leu284 are shown in green and the side chain S of Cys285 is shown in yellow. Gly320 is the only one of these residues located in a surface pocket.

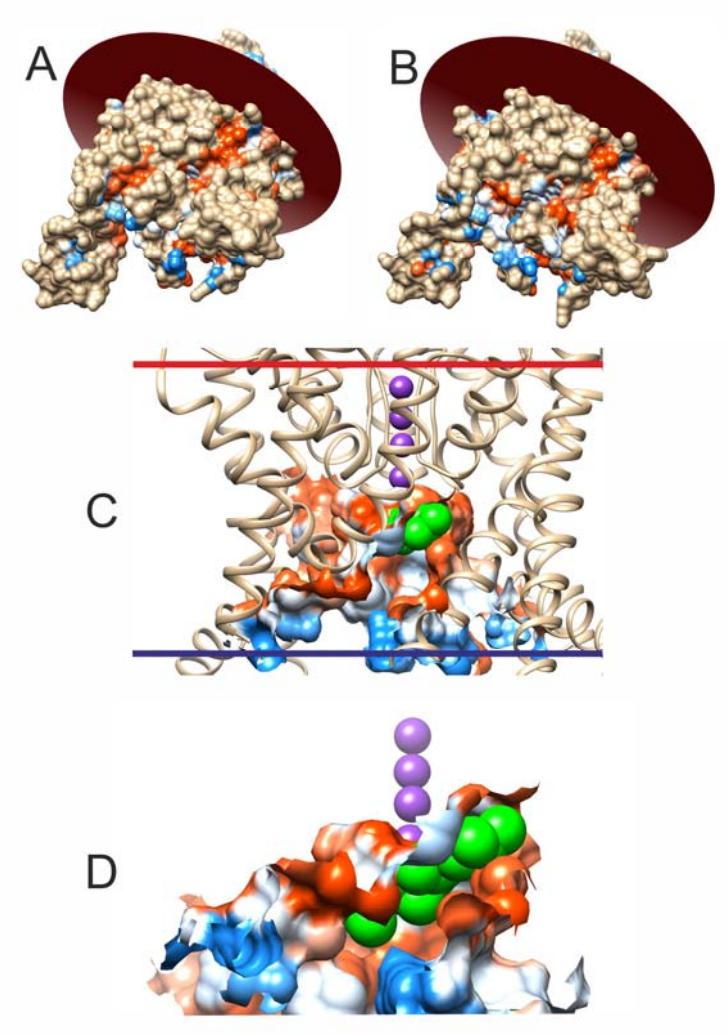

FIGURE S3 Cholesterol docking to TRAAK channels. (*A*, *B*) The membrane-spanning regions of the TRAAK channel in the up (*A*; PDF file 4WFE) and down states (*B*; PDF file 4WFF) with the EC membrane surface shown in red. The views are tilted to show the large openings on the IC side in both the up and down states and the fenestrations present in the down (*B*) but not up (*A*) states. (*C*, *D*) Two views of a bound cholesterol molecule (green) hydrogen bonded to Leu151 in the central cavity in the down state, just below the selectivity filter, shown occupied by four K^+ ions (purple).

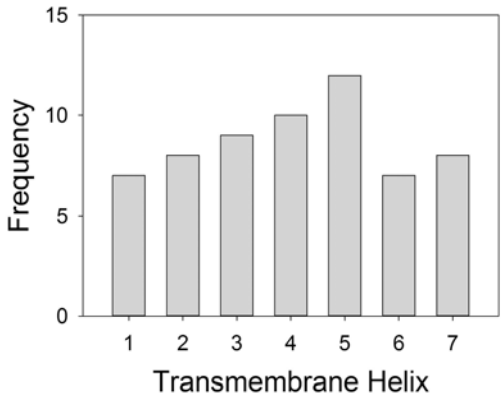

FIGURE S4 Helix involvement in deep cholesterol binding to A class GPCRs. The frequencies with which the seven TM α-helices in the 36 GPCRs studied provide residues involved in hydrogen bonding to deep cholesterol molecules.

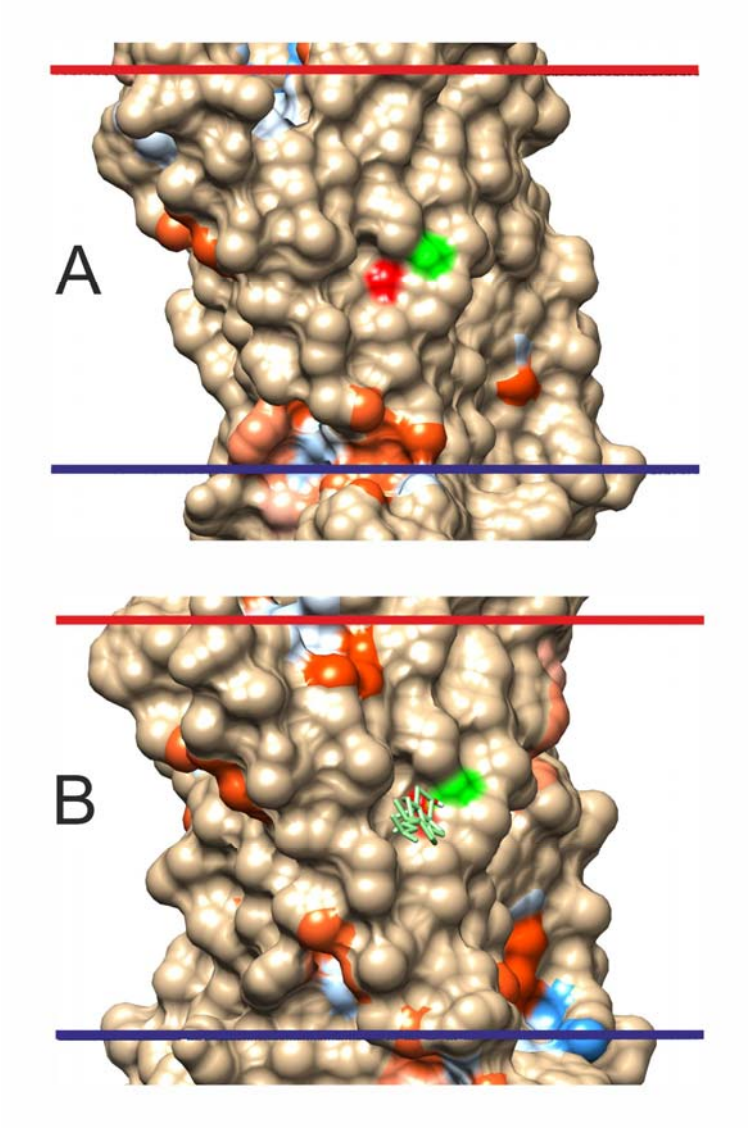

FIGURE S5 Cholesterol binding to the antagonist-bound A_{2A} adenosine receptor. The TM surfaces of PDB files 4EIY (*A*) and 5UIG (*B*) showing surface pockets identified using CASTp. The 5UIG structure shows a single binding site of binding energy -6.1 kcals mol^{-1}. The locations of the backbone oxygens of Gly56 and Val57 are coloured red and green respectively.

TABLE S1 GPCRs

E[1]	Donor	Acceptor			Local Residues (within 3 Å of a cholesterol –OH group)				
GPCR Class A[2]									
5-hydroxytryptamine receptor 1B,bound ergotamine, Human 4iar									
-6.5	Chl	OH	Thr64 [1.47]	OG1	Thr64 [1.47]	Ser99 [2.54]			
5-hydroxytryptamine receptor 1B, bound dihydroergotamine, Human 4iaq									
-6.3	Chl	OH	Ser99 [2.54]	O	Thr64 [1.47]	Ser99 [2.54]			
	Chl	OH	Thr64 [1.47]	OG1					
-6.2	Chl	OH	Thr64 [1.47]	OG1	Thr60 [1.43]	Leu61 [1.44]	Thr64 [1.47]		
-5.8	Chl	OH	Thr64 [1.47]	OG1	Thr60 [1.43]	Thr64 [1.47]	Ser99 [2.54]		
5-hydroxytryptamine receptor 2B, bound ergotamine, Human 4ib4									
-6.0	Chl	OH	Thr228 [5.49]	OG1	Leu223 [5.45]	Phe227 [5.48]	Thr228 [5.49]		
-5.9	Chl	OH	Ala224 [5.46]	O	Ala224 [5.46]	Thr228 [5.49]			
	Chl	OH	Thr228 [5.49]	OG1	Ala224 [5.46]	Thr228 [5.49]			
-5.5	Chl	OH	Met63 [1.411]	O	Met63 [1.411]				
5-hydroxytryptamine receptor 2B, Human 4nc3									
-6.7	Chl	OH	Thr228 [5.49]	OG1	Ala224 [5.46]	Thr228 [5.49]			
-5.7	Chl	OH	Met63 [1.411]	O	Met63 [1.411]				
5-hydroxytryptamine receptor 2B, bound LSD, Human 5tvn									
-5.5	Chl	OH	Thr228 [5.49]	OG1	Thr228 [5.49]				
Adenosine receptor A1, Human 5uen									
-5.8	Ser246 [6.47]	OG	Chl	O	Leu242 [6.43]	Ser246 [6.47]			
Adenosine receptor A1 with PSB36 [PDB residues renumbered], Human 5n2s									
-5.8	Chl	OH	Ser246 [6.47]	OG	Ser246 [6.47]	Leu276 [7.40]	Asn280 [7.45]	Met283 [7.48]	
Adenosine receptor A2a, thermostable mutant, active-like, complex with agonist, Human 4uhr									
None									
Adenosine receptor A2a, thermostable mutant staR2, complex with antagonist, Human 3uza									
-5.8	Chl	OH	Cys185 [5.461]	O	Gln89 [3.37]	Cys185 [5.461]			
Adenosine receptor A2a, complex with inverse-agonist antibody and antagonist ZM241385, Human 3vg9									
-5.9	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a, complex with antagonist ZM241385, Human 3vga									
None									
Adenosine receptor A2a, inactive state, with antagonist ZM241385, Human 3eml									
None									
Adenosine receptor A2a, thermostable mutant staR2, complex with caffeine, Human 3rfm									
None									
Adenosine receptor A2a, thermostable mutant staR2, inactive state, complex with XAC, Human 3rey									
None									
Adenosine receptor A2a, thermostable mutant staR2, nactive state, with ZM241385, Human 3pwh									
None									

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)						
Adenosine receptor A2a, inactive state, with lipids and ZM241385, Human 4eiy									
None									
Adenosine receptor A2a, inactive state, with bound antagonist theophylline, Human 5k2a									
None									
Adenosine receptor A2a, inactive state, with bound antagonist theophylline, Human 5k2b									
None									
Adenosine receptor A2a, inactive state, with bound antagonist theophylline, Human 5k2c									
None									
Adenosine receptor A2a, inactive state, with bound antagonist theophylline, Human 5k2d									
None									
Adenosine receptor A2a, thermostable mutant staR2, inactive state, with bound antagonist theophylline, Human 5mzj									
-5.7	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a, thermostable mutant staR2, inactive state, with bound antagonist caffeine, Human 5mzp									
-5.6	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a, thermostable mutant staR2, inactive state, with bound antagonist PSB36, Human 5n2r									
None									
Adenosine receptor A2a,thermostable mutant staR2, inactive state, with bound antagonist ZMA, Human 5nlx									
None									
Adenosine receptor A2a, thermostable mutant staR2, inactive state, with bound antagonist ZMA, Human 5nm2									
None									
Adenosine receptor A2a,thermostable mutant staR2, inactive state, with bound antagonist ZMA, Human 5nm4									
None									
Adenosine receptor A2a,partially active state with agonist UK-432097, Human 3qak									
None									
Adenosine receptor A2a, thermostable mutant, partially active state with bound adenosine, Human 2ydo									
None									
Adenosine receptor A2a, thermostable mutant,partially active state with agonist NECA, Human 2ydv									
-5.5	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a, with G-alpha-S protein, Human 5g53									
None									
Adenosine receptor A2a, with triazole-carboximidamide antagonist, Human 5uig									
-6.1	Chl	OH	Gly56 [2.54]	O	Ala17 [1.43]	Gly56 [2.54]	Val57 [2.55]		
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a,thermostable mutant, with antagonist, Human 6aqf									
-5.5	Chl	OH	Val57 [2.55]	O	Gly56 [2.54]	Val57 [2.55]			
Adenosine receptor A2a, thermostable mutant StaR2, inactive with lipid, Human 5o1g									
-5.8	Chl	OH	Thr279 [7.44]	OG1	Val275 [7.40]	Leu276 [7.41]	Thr279 [7.44]		
-5.6	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]	Pro61 [2.59]		

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Adenosine receptor A2a, thermostable mutant StaR2, inactive with lipid, Human 5o1h									
-5.8	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]	Pro61 [2.59]		
-5.7	Chl	OH	Thr279 [7.44]	OG1	Val275 [7.40]	Leu276 [7.41]	Thr279 [7.44]		
	Chl	OH	Val57 [2.55]						
Adenosine receptor A2a, thermostable mutant StaR2, inactive with lipid, Human 5om1									
-5.7	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]						
Adenosine receptor A2a, thermostable mutant StaR2, inactive with lipid, Human 5om4									
-5.7	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					
Adenosine receptor A2a, mylar structure, Human 5vra									
-6.0	Chl	OH	Gly56 [2.54]	O	Gly56 [2.54]	Val57 [2.55]			
	Chl	OH	Val57 [2.55]	O					

Angiotensin II receptor Type-1 (AT1) with bound antagonist, Human 4yay									
-5.6	Chl	OH	Phe251 [6.46]	O	Phe251 [6.46]				
Angiotensin II receptor Type-1 (AT1) with bound inverse agonist olmesartan, Human 4zud									
-6.8	Chl	OH	Ser252 [6.47]	OG	Phe248 [6.43]	Phe251 [6.46]	Ser252 [6.47]		
Angiotensin II receptor Type-2 (AT2) active-like state, Human 5ung									
-6.6	Chl	OH	Ser174 [4.56]	OG	Met170 [4.52]	Leu173 [4.55]	Ser174 [4.56]		
Angiotensin II receptor Type-2 (AT2) active-like state, Human 5unf									
-7.1	Chl	OH	Ser174 [4.56]	OG	Met170 [4.52]	Ser174 [4.56]			
Angiotensin II receptor Type-2 (AT2) active-like state, Human 5unh									
-6.6	Chl	OH	Ser174 [4.56]	OG	Met170 [4.52]	Leu173 [4.55]	Ser174 [4.56]		

Beta-1 adrenergic receptor with bound dobutamine, Turkey 2y00									
-6.1	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]	Pro219 [5.50]		
Beta-1 adrenergic receptor with bound dobutamine, Turkey 2y01									
-6.7	Chl	OH	Leu171 [4.55]	O	Ala170 [4.54]	Leu171 [4.55]	Leu175 [4.59]		
-6.3	Chl	OH	Leu171 [4.55]	O	Ala170 [4.54]	Leu171 [4.55]	Phe174 [4.58]	Leu175 [4.59]	
-5.6	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]	Pro219 [5.50]		
Beta-1 adrenergic receptor with bound carmoterol, Turkey 2y02									
-6.7	Chl	OH	Leu171 [4.55]	O	Ala170 [4.54]	Leu171 [4.55]	Leu175 [4.59]		
-6.3	Chl	OH	Leu171 [4.55]	O	Ala170 [4.54]	Leu171 [4.55]	Phe174 [4.58]	Leu175 [4.59]	
-5.8	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]			
-5.5	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]	Pro219 [5.50]		
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor with bound isoprenaline, Turkey 2y03									
-5.7	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor with bound salbutamol, Turkey 2y04									
-5.9	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]			
-5.8	Chl	OH	Leu171 [4.55]	O	Ala170 [4.54]	Leu175 [4.59]			

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Beta-1 adrenergic receptor, with bound carazolol, Turkey 2ycw									
-5.6	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor, with bound cyanopindolol, Turkey 2ycx									
-5.7	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor, with bound cyanopindolol, Turkey 2ycy									
None									
Beta-1 adrenergic receptor, with bound iodoctanopindolol, Turkey 2ycz									
-5.8	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
	Chl	OH	Ile214 [5.45]	O					
-5.6	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]	Pro219 [5.50]		
Beta-1 adrenergic receptor, basal state, Turkey 4gpo									
-5.5	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor, inactive, engineered, Turkey 2vt4									
-5.8	Chl	OH	Ile214 [5.45]	O	Glu130 [3.41]	Ile214 [5.45]			
Beta-1 adrenergic receptor, engineered, with bound carvedilol, Turkey 4amj									
-5.6	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]	Pro219 [5.50]		
	Chl	OH	Ile214 [5.45]	O					
Beta-1 adrenergic receptor, engineered, with bound bucindolol, Turkey 4ami									
-6.1	Chl	OH	Glu130 [3.41]	OE2	Glu130 [3.41]	Ile214 [5.45]			
Beta-1 adrenergic receptor, engineered, with inverse agonist, Turkey 5a8e									
-6.7	Chl	OH	Ser169 [4.53]	OG	Val165 [4.49]	Ile168 [4.52]	Ser169 [4.53]		

Beta-2 adrenergic receptor, active state, complex with antibody, Human 3p0g									
-6.2	Chl	OH	Glu122 [3.41]	OE1	Glu122 [3.41]	Val206 [5.46]			
	Chl	OH	Glu122 [3.41]	OE2					
	Chl	OH	Val206 [5.46]	O					
Beta-2 adrenergic receptor, active state, complex with G-protein, Human 3sn6									
-5.8	Chl	OH	Glu122 [3.41]	OE2	Glu122 [3.41]	Val206 [5.46]			
	Chl	OH	Val206 [5.46]	O					
-5.4	Chl	OH	Glu122 [3.41]	OE2	Glu122 [3.41]				
Beta-2 adrenergic receptor, agonist bound. Human 3pds									
-5.6	Chl	OH	Glu122 [3.41]	OE2	Glu122 [3.41]	Val206 [5.46]			
	Chl	OH	Val206 [5.46]	O					
Beta-2 adrenergic receptor, inactive state, Human 3d4s									
-7.1	Chl	OH	Gly320 [7.47]	O	Val317 [7.43]	Gly320 [7.47]	Phe321 [7.48]		
-6.1	Chl	OH	Ser161 [4.53]	OG	Val157 [4.49]	Ser161 [4.53]			
Beta-2 adrenergic receptor, inactive state, Human 2rh1									
-6.7	Chl	OH	Gly320 [7.47]	O	Val317 [7.43]	Gly320 [7.47]	Phe321 [7.48]		
-5.8	Chl	OH	Gly320 [7.47]	O	Val317 [7.43]	Gly320 [7.47]			

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Beta-2 adrenergic receptor, with allosteric antagonist, Human 5x7d									
-6.0	Chl	OH	Thr164 [4.56]	OG1	Val160 [4.52]	Leu163 [4.55]	Thr164 [4.56]		
C5a anaphylatoxin chemotactic receptor 1, Human 5o9h									
None									
C-C chemokine receptor type 2, Human 5t1a									
-5.9	Chl	OH	Thr296 [7.43]	OG1	Thr296 7.43]	Cys299 [7.47]			
C-C chemokine receptor type 5 with bound Maraviroc Human 4mbs									
None									
C-C chemokine receptor type 9 with vercirnon, Human 5lwe									
None									
C-X-C chemokine receptor type 4, complex with vMIP-II, Human 4rws									
-6.9	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Thr287 [7.37]	Leu290 [7.40]	Ala291 [7.41]	
-6.4	Chl	OH	Ala250 [6.46]	O	Ala250 [6.46]	Cys251 [6.47]			
	Chl	OH	Cys251 [6.47]	O					
-6.0	Chl	OH	Leu208 [5.47]	O	Leu208 [5.47]	Ile209 [5.48]	Gly212 [5.51]		
C-X-C chemokine receptor type 4, inactive, with peptide antagonist CVX15, Human 3oe0									
-7.1	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Thr287 [7.37]	Leu290 [7.40]	Ala291 [7.41]	
-6.9	Chl	OH	Ala250 [6.46]	O	Ala250 [6.46]	Cys251 [6.47]	Pro254 [6.50]		
	Chl	OH	Cys251 [6.47]	O					
-6.3	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Leu290 [7.40]	Ala291 [7.41]		
-6.1	Chl	OH	Gly159 [4.48]	O	Gly159 [4.48]	Val160 [4.49]			
C-X-C chemokine receptor type 4, inactive, with IT1t antagonist, Human 3oe6									
-6.0	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Leu290 [7.40]	Ala291 [7.41]		
-5.7	Chl	OH	Cys251 [6.47]	O	Ala250 [6.46]	Cys251 [6.47]	Pro254 [6.50]		
C-X-C chemokine receptor type 4, with IT1t antagonist, Human 3odu									
-6.8	Chl	OH	Thr168 [4.57]	OG1	Leu165 [4.54]	Thr168 [4.57]	Ile169 [4.59]		
-6.8	Chl	OH	Cys251 [6.47]	O	Ala250 [6.46]	Cys251 [6.47]			
-6.7	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Leu290 [7.40]	Ala291 [7.41]		
-6.3	Chl	OH	Cys251 [6.47]	O	Ala250 [6.46]	Cys251 [6.47]	Pro254 [6.50]		
C-X-C chemokine receptor type 4, with IT1t antagonist, Human 3oe8									
None									
C-X-C chemokine receptor type 4 , with IT1t antagonist, Human 3oe9									
-6.2	Chl	OH	Cys251 [6.47]	O	Cys251 [6.47]	Leu290 [7.40]	Ala291 [7.41]		
-6.2	Chl	OH	Leu86 [2.52]	O	Leu86 [2.52]	Thr90 [2.56]	Ile115 [3.31]		
Cannabinoid receptor 1, complex with antagonist AM6538, Human 5tgz									
-6.2	Chl	OH	Ser284 [5.48]	OG	Val283 [5.47]	Ser284 [5.48]			
-5.7	Chl	OH	Thr391 [7.47]	OG1	Thr391 [7.47]				
Cannabinoid receptor 1, with bound inhibitor taranabant, Human 5u09									
-6.5	Chl	OH	Ser284 [5.48]	OG	Thr283 [5.47]	Ser284 [5.48]			

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Cannabinoid receptor 1, with bound agonist, Human 5xr8									
-7.3	Chl	OH	Ser199 [3.35]	OG	Gly195 [3.31]	Ala198 [3.34]	Ser199 [3.35]		
-6.3	Chl	OH	Thr128 [1.44]	OG1	Gly127 [1.43]	Thr128 [1.44]			
Cannabinoid receptor 1, with bound agonist, Human 5xra									
-7.5	Chl	OH	Thr128 [1.44]	OG1	Leu124 [1.40]	Thr128 [1.44]			
-6.7	Chl	OH	Ser199 [3.35]	OG	Gly195 [3.31]	Ala198 [3.34]	Ser199 [3.35]		
Dopamine D2 receptor complex with risperidone,Human, 6c38									
None									
Dopamine D3 receptor complex with antagonist, Human 3pbl									
None									
Dopamine D4 receptor complex with nemonapride, Human 5wiu									
-7.2	Chl	OH	Thr159 [4.49]	OG1	Phe124 [3.41]	Thr159 [4.49]			
Dopamine D4 receptor Na-bound complex with nemonapride, Human 5wiv									
-6.1	Chl	OH	Thr159 [4.49]	OG1	Phe124. [3.41]	Thr159 4.49]			
-6.1	Chl	OH	Phe202 [5.48]	O	Phe202 [5.48]				
-5.7	Chl	OH	Thr408 [6.49]	OG1	Leu404 [6.45]	Thr408 [6.49]			
Endothelin B receptor without bound endothelin-1, Human 5gli									
None									
Endothelin B receptorwith antagonist, Human 5x93									
None									
Endothelin B receptor, with bound endothelin-1, Human 5glh									
-5.6	Chl	OH	Ser279 [5.45]	OG	Ser279 [5.45]	Phe280 [5.46]			
Free fatty acid receptor 1 GPR40 [PDB residues renumbered], Human 4phu									
-5.5	Chl	OH	Leu235 [6.461]	O	Leu235 [6.461]	Cys2236 [6.47]			
Histamine H1 receptor, complex with doxepin, Human 3rze									
-7.0	Chl	OH	Leu154 [4.52]	O	Leu154 [4.52]	Trp158 [4.57]	Asn198 [5.461]		
Leukotriene BLT1 receptor, Guinea Pig 5x33									
-6.1	Chl	OH	Ser278 [7.46]	OG	Leu275 [7.43]	Ser278 [7.46]			
-6.0	Chl	OH	Ser102 [3.37]	OG	Ile98 [3.33]	Ser102 [3.37]			
Lysophosphatidic acid receptor 1 complex with ONO-9780307, Human 4z34									
-6.2	Chl	OH	Thr173 [4.51]	OG1	Val169 [4.47]	Trp172 [4.50]	Thr173 [4.51]		
Lysophosphatidic acid receptor 1 complex with ONO-9910539, Human 4z35									
-6.2	Chl	OH	Thr173 [4.51]	OG1	Val169 [4.47]	Trp172 [4.50]	Thr173 [4.51]		
Lysophosphatidic acid receptor 1 complex with ONO-3080573, Human 4z36									
-6.2	Chl	OH	Thr173 [4.51]	OG1	Val169 [4.47]	Trp172 [4.50]	Thr173 [4.51]		

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Muscarinic acetylcholine receptor M1 with bound tiotropium, Human 5cxv									
-7.1	Chl	OH	Ser36 [1.43]	OG	Ser36 [1.43]	Gly75 [2.54]	Thr76 [2.55]	Asn80 2.58]	
-5.7	Chl	OH	Ala195 [5.46]	O	Gln110 [3.37]	Ala195 [5.46]	Ala196 [5.461]		
	Chl	OH	Ala196 [5.461]	O					
Muscarinic acetylcholine receptor M2 with bound agonist iperoxo, Human 4mqs									
-7.6	Chl	OH	Ser32 [1.41]	OG	Leu28 [1.37]	Ser32 [1.41]			
-7.1	Chl	OH	Ser32 [1.41]	OG	Leu28 [1.37]	Gly31 [1.40]	Ser32 [1.41]		
Muscarinic acetylcholine receptor M2 with bound antagonist, Human 3uon									
-7.1	Chl	OH	Ser34 [1.43]	OG	Ser34 [1.43]	Asn78 [2.58]			
-6.8	Chl	OH	Ser32 [1.41]	OG	Leu28 [1.37]	Gly31 [1.40]	Ser32 [1.41]		
-6.3	Chl	OH	Ser34 [1.43]	OG	Ser34 [1.43]	Ile38 [1.47]	Gly73 [2.54]	Val74 [2.55]	Asn78 [2.58]
Muscarinic acetylcholine receptor M3, lysozume fusion, with bound tiotropium, Rat 4daj									
-6.9	Chl	OH	Gly117 [2.54]	O	Ala78 [1.43]	Gly117 [2.54]	Asn122 [2.58]		
-5.7	Chl	OH	Ala238 [5.461]	O	Asn152 [3.37]	Val155 [3.40]	Ala238 [5.461]		
Muscarinic acetylcholine receptor M3, lysozyme fusion, with bound tiotropium, Rat 4u15									
-6.8	Trp199 [4.57]	NE1	Chl	O	Asn152 [3.37]	Trp199 [4.57]	Ala238 [5.461]		
-6.1	Chl	OH	Thr504 [6.49]	OG1	Ile500 [6.45]	Thr504 [6.49]			
Muscarinic acetylcholine receptor M4 with bound tiotropium, Human 5dsg									
-7.5	Chl	OH	Ser43 [1.43]	OG	Ser43 [1.43]	Asn87 [2.58]			
-6.8	Chl	OH	Ser41 [1.41]	OG	Thr37 [1.37]	Gly40 [1.40]	Ser41 [1.41]		
-6.0	Chl	OH	Ala203 [5.461]	O	Asn117 [3.37]	Ala203 [5.461]			

Neurotensin receptor type 1,complex with neurotensin, Rat 4grv
None
Neurotensin receptor type 1,agonist bound, Rat 4buo
None
Neurotensin receptor type 1, mutant, Rat 3zev
None
Neurotensin receptor type 1, mutant, Rat 4bv0
None
Neurotensin receptor type 1, engineered, Rat 4xee
None

Neurotensin receptor type 1, engineered, Rat 4xes									
-5.5	Cys152 [3.35]	SG	Chl	O	Leu148 [3.31]	Ala151 [3.34]	Cys152 [3.35]		
Neurotensin receptor type 1, constitutively active mutant, Rat 5t04									
-7.7	Chl	OH	Ser197 [4.53]	OG	Trp194 [4.50]	Ser197 [4.53]	Ala198 [4.54]		

Nociceptin (NOP)receptor with bound C-35, Human 5dhg									
-5.8	Chl	OH	Ser179 [4.54]	OG	Trp175 [4.50]	Ala176 [4.51]	Ser179 [4.54]		
Nociceptin (NOP)receptor, engineered, with bound C-35, Human 5dhh									
-6.1	Chl	OH	Tyr132 [3.34]	OH	Tyr132 [3.34]	Ser179 [4.54]			

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Nociceptin (NOP)receptor with bound peptide, Human 4ea3									
-5.9	Chl	OH	Ser179 [4.54]	OG	Trp175 [4.50]	Ser179 [4.54]			

Opioid delta receptor comples with naltrindol, Mouse 4ej4									
-6.8	Chl	OH	Ser312 [7.47]	OG	Ala309 [7.43]	Ser312 [7.47]	Leu313 [7.48]		
-6.1	Chl	OH	Tyr130 [3.34]	OH	Tyr130 [3.34]	Ser177 [4.54]			
Opioid delta receptor, complex with naltrindol, Human 4n6h									
None									
Opioid delta receptor, complex with tetrapeptide DIPP-NH2, Human 4rwd									
-6.0	Chl	OH	Tyr130 [3.34]	OH	Tyr130 [3.34]	Ser177 [4.54]			
Opioid delta receptor, complex with tetrapeptide DIPP-NH2, Human 4rwa									
-6.2	Chl	OH	Tyr130 [3.34]	OH	Tyr130 [3.34]	Ser177 [4.54]			

Opioid kappa receptor complex with JDTic, Human 4djh									
-7.3	Chl	OH	Tyr140 [3.34]	OH	Tyr140 [3.34]	Trp183 [4.50]	Ser187 [4.54]		
-6.8	Chl	OH	Ser324 [7.47]	O	Ser324 [7.47]	Leu325 [7.48]			
-6.4	Chl	OH	Ser188 [4.55]	OG	Leu184 [4.51]	Ser188 [4.55]			
-6.3	Ser188 [4.55]	OG	Chl	O	Leu185 [4.52]	Ser188 [4.55]			
-6.2	Chl	OH	Ser324 [7.47]	O	Thr321 [7.43]	Ser324 [7.47]	Leu325 [7.48]		
Opioid kappa receptor, Human 6b73									
-7.8	Chl	OH	Ser188 [4.55]	OG	Leu184 [4.51]	Ser187 [4.54]	Ser188 [4.55]		
-7.7	Chl	OH	Ser187 [4.54]	OG	Leu184 [4.51]	Ser187 [4.54]	Ser188 [4.55]		

Opioid mu receptor, a dimer, complex with morphinan antagonist, Mouse 4dkl									
-6.7	Chl	OH	Tyr149 [3.34]	OH	Tyr149 [3.34]	Ser196 [4.54]			
-5.8	Chl	OH	Ser119 [2.55]	OG	Ala115 [2.51]	Leu116 [2.52]	Ser119 [2.55]		
Opioid mu receptor, bound to agonist BU72, Mouse 5c1m									
-6.6	Chl	OH	Thr153 [3.38]	OG1	Tyr149 [3.34]	Asn150 [3.35]	Thr153 [3.38]		
-5.9	Chl	OH	Thr327 [7.44]	OG1	Ala323 [7.40]	Leu324 [7.41]	Thr327 [7.44]		

Orexin receptor type 1, Human 4zjc
None

Orexin receptor type 2, Human, 4s0v
None
Orexin receptor type 2 plus antagonist, Human, 5wqc
None
Orexin receptor type 2 plus antagonist, Human, 5ws3
None

P2Y purinoceptor 1,complex with BPTU, Human 4xnv									
-6.2	Chl	OH	Ser272 [6.47]	OG	Ser272 [6.47]	Asn316 [7.45]			

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)						
P2Y purinoceptor 1, complex with MRS2500, Human 4xnw									
None									

P2Y purinoceptor 12, complex with antithrombotic drug, Human 4ntj									
-7.2	Chl	OH	Leu75 [2.55]	O	Leu72 [2.52]	Leu75 [2.55]	Thr76 [2.56]		
	Chl	OH	Thr76 [2.56]	OG1					
-6.9	Chl	OH	Ser113 [3.41]	OG	Ser113 [3.41]	Asn201 [5.50]			
-6.3	Chl	OH	Thr76 [2.56]	OG1	Leu72 [2.52]	Thr76 [2.56]	Ile103 [3.31]		
P2Y purinoceptor 12, complex with bound agonist 2MeSADP, Human 4pxz									
-7.1	Chl	OH	Leu72 [2.52]	O	Leu72 [2.52]	Thr76 [2.56]			
	Chl	OH	Thr76 [2.56]	OG1					
-7.1	Chl	OH	Leu72 [2.52]	O	Leu72 [2.52]	Leu75 [2.55]	Thr76 [2.56]		
	Chl	OH	Thr76 [2.56]	OG1					
-5.5	Chl	OH	Leu75 [2.55]	O	Leu75 [2.55]	Thr76 [2.56]			
	Chl	OH	Thr76 [2.56]	OG1					

Sphingosine 1-phosphate (S1P) receptor 1, Human 3v2y									
-7.0	Chl	OH	Ser216 [2.53]	OG	Leu212 [5.49]	Ser216 [2.53]			
-6.6	Chl	OH	Thr211 [5.48]	OG1	Thr208 [5.45]	Thr211 [5.48]	Leu212 [5.49]		
-6.3	Chl	OH	Glu62 [1.49]	OE1	Phe58 [1.45]	Glu62 [1.49]	Gly305 [7.47]		

Thrombin (proteinase-activated) receptor 1, PAR1 with antagonist vorapaxar, Human 3vw7									
-5.5	Chl	OH	Leu150 [2.52]	O	Leu150 [2.52]	Phe151 [2.53]			

Viral GPCR US28, complex with fractalkine, Human herpesvirus 4xt3									
None									
Viral GPCR US28, complex with fractalkine and nanobody, Human herpesvirus 4xt1									
-5.7	Chl	OH	Glu191 [5.41]	OE2	Glu191 [5.41]	Leu194 [5.44]	Gly195 [5.45]		

Rhodopsin and Opsin[2]
Rhodopsin, Bovine 1f88
None
Rhodopsin, Bovine 1l9h
None
Rhodopsin, Bovine 1gzm
None
Rhodopsin, Bovine 1hzx
None
Rhodopsin, Bovine 3c9l
None
Rhodopsin, Bovine 1u19
None
Rhodopsin, with beta-ionone, Bovine 3oax

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)						
None									
Rhodopsin, active (meta-II), without transducin peptide, Bovine 3pxo									
None									
Rhodopsin, active (meta-II), with C-terminal fragment of G-alpha, Bovine 3pqr									
None									
Rhodopsin,consititutionally active (meta-II), with C-terminal fragment of G-alpha, Bovine 4a4m									
None									
Rhodopsin, in agonist-induced active state, Bovine 2x72									
None									
Rhodopsin, complex with arrestin, Human 4zwj									
None									
Rhodopsin, complex with arrestin, Human, 5w0p									
None									

Opsin retinal-free state, Bovine, 5te3									
None									
Opsin, Bovine 5wkt									
None									
Opsin retinal-free state, Bovine 3cap									
-6.0	Thr297 [7.43]	OG1	Chl	O	Thr297 [7.43]	Val300 [7.47]	Tyr301 [7.48]		
-6.0	Chl	OH	Thr297 [7.43]	OG1	Thr297 [7.43]	Tyr301 [7.48]			
	Thr297 [7.43]	OG1	Chl	O					
Opsin retinal-free state with bound G-alpha peptide, Bovine 4j4q									
None									
Opsin retinal-free state with bound G-alpha peptide, Bovine 4x1h									
None									
Opsin retinal-free state with bound ArrFL-1, Bovine 4pxf									
None									
Opsin activated state with bound G-alpha peptide, Bovine 3dqb									
None									

Squid rhodopsin, complex with 11-cis retinal, Japanese flying squid 2z73									
-8.4	Chl	OH	Leu85 [2.55]	O	Gly45 [1.43]	Ser84 [2.54]	Leu85 [2.55]	Phe89 [2.59]	
	Chl	OH	Ser84 [2.54]	O					
	Phe89 [2.59]	N	Chl	O					
-5.8	Chl	OH	Ser275 [6.49]	OG	Leu271 [6.45]	Ser275 [6.49]			
-5.7	Ser273 [6.47]	OG	Chl	O	Gln269 [6.43]	Leu272 [6.46]	Ser273 [6.47]		
Squid rhodopsin, complex with 9-cis isorhodopsin, Japanese flying squid 3ayn									
-7.3	Chl	OH	Leu85 [2.55]	O	Ser84 [2.54]	Leu85 [2.55]	Phe89 [2.59]		

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
GPCR Class B[3]									
Corticotropin-releasing factor receptor 1 (CRF1R) with bound antagonist, Human 4k5y									
-6.7	Chl	OH	Thr168 [2.63]	OG1	Leu164 [2.59]	Ala167 [2.62]	Thr168 [2.63]		
-5.7	Chl	OH	Tyr197 [3.38]	OH	Tyr197 [3.38]	Trp236 [4.50]			
Corticotropin-releasing factor receptor 1, (CRF1R) with bound antagonist, Human 4z9g									
-5.9	Chl	OH	Thr168 [2.63]	OG1	Leu164 [2.59]	Thr168 [2.63]			
-5.9	Chl	OH	Tyr197 [3.38]	OH	Tyr197 [3.38]	Trp236 [4.50]			
-5.8	Chl	OH	Thr168 [2.63]	OG1	Leu164 [2.59]	Ala167 [2.62]	Thr168 [2.63]		
Glucagon receptor, Human 4l6r									
-8.9	Chl	OH	Ser189 [2.62]	OG	Leu186 [2.59]	Ser189 [2.62]	Ser190 [2.63]		
	Chl	OH	Ser190 [2.63]	OG					
-8.8	Chl	OH	Leu388 [7.45]	O	Leu388 [7.45]	Phe391 [7.48]	Gln392 [7.49]		
	Chl	OH	Phe391 [7.48]	O					
-7.4	Chl	OH	Leu388 [7.45]	O	His361 [6.52]	Leu388 [7.45]	Gln392 [7.49]		
Glucagon receptor, Human 5xez									
-6.4	Chl	OH	Ser189 [2.62]	OG	Leu186 [2.59]	Ser189 [2.62]	Ser190 [2.63]		
	Ser189 [2.62]	OG	Chl	O					
-5.9	Chl	OH	Gly359 [6.50]	O	Gly359 [6.50]	Val360 [6.51]			
Glucagon receptor, Human 5xf1									
-6.5	Chl	OH	Leu388 [7.45]	O	Leu388 [7.45]	Phe391 [7.48]	Gln392 [7.49]		
Glucagon receptor, with antagonist MK-0893, Human 5ee7									
-5.6	Ser189 [2.62]	OG	Chl	O	Ser189 [2.62]				
Glucagon-like peptide receptor (GLP-1R) complex with NNL0640, Human 5vex									
-6.8	Chl	OH	Leu279 [4.55]	O	Leu279 [4.55]				
-6.1	Chl	OH	Phe390 [7.45]	O	Phe390 [7.45]	Phe393 [7.48]	Gln394 [7.49]		
Glucagon-like peptide receptor (GLP-1R) complex withPF-06372222, Human 5vew									
-6.3	Chl	OH	Leu279 [4.55]	O	Leu279 [4.55]				
GPCR Class C[4]									
Metabotropic glutamate receptor 1, Human 4or2									
-5.7	Chl	OH	Ser715 [4.41]	OG	Ser715 [4.41]	Thr719 [4.45]			
	Chl	OH	Thr719 [4.45]	OG1					
Metabotropic glutamate receptor 5, Human 4oo9									
None									
GPCR Class F[5]									
Smoothened (SMO) receptor with bound antagonist, LY2940680, Human 4jkv									
-5.9	Chl	OH	Ser366 [4.51]	OG	Leu362 [4.47]	Ser366 [4.51]			

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)				
Smoothened (SMO) receptor with bound SANT-1, Human 4n4w									
-6.0	Chl	OH	Tyr323 [3.34]	OH	Tyr323 [3.34]				
Smoothened (SMO) receptor with bound SAG1.5, Human 4qin									
-6.1	Tyr323 [3.34]	OH	Chl	O	Tyr323 3.34]				
-5.8	Chl	OH	Ser366 [4.51]	OG	Ser366 [4.51]	Leu367 [4.52]			
Smoothened (SMO) receptor with bound ANTA XV, Human 4qim									
None									
Smoothened (SMO) receptor with bound cyclopamine, Human 4o9r									
-5.6	Chl	OH	Ser468 [6.49]	OG	Leu464 [6.45]	Ile465 [6.46]	Ser468 [6.49]		
Smoothened (SMO) receptor in complex with cholesterol, Human 5l7d									
-6.7	Ala324 [3.35]	N	Chl	O	Val319 [3.30]	Ile320 [3.31]	Tyr323 [3.34]	Ala324 [3.35]	
	Chl	OH	Ile320 [3.31]	O					
-6.0	Chl	OH	Leu458 [6.39]	O	Phe457 [6.38]	Leu458 [6.39]	Gly461 [6.42]		
-5.8	Chl	OH	Tyr323 [3.34]	OH	Tyr323 [3.34]	Trp365 [4.50]			
-5.8	Phe462 [6.43]	N	Chl	O	Leu458 [6.39]	Gly461 [6.42]	Phe462 [6.43]		
Smoothened (SMO) receptor with bound vismodegib, Human 5l7i									
-6.4	Ala324 [3.35]	N	Chl	O	Val319 [3.30]	Ile320 [3.31]	Tyr323 [3.34]	Ala324 [3.35]	
	Chl	OH	Ile320 [3.31]	O					

GPCR Adiponectin Receptor[6]

AdipoR1, Human 3wxv									
-6.0	Chl	OH	Thr312 [6]	OG1	Val308 [6]	Thr312 [6]			
AdipoR1,open conformation, Human, 5lxg									
-7.8	Chl	OH	Ser219 [3]	OG	Leu215 [3]	Ile216 [3]	Ser219 [3]		
-6.3	Chl	OH	Thr312 [6]	OG1	Val308 [6]	Ile311 [6]	Thr312 [6]		
AdipoR2, Human, 5lwy									
-6.0	Chl	OH	Ser319 [6]	OG	Met315 [6]	Ala318 [6]	Ser319 [6]		
AdipoR2 complex with fatty acid, Human, 5lx9									
-6.4	Chl	OH	Ser319 [6]	OG	Met315 [6]	Ala318 [6]	Ser319 [6]		
AdipoR2 complex with fatty acid, Human, 5lxa									
-6.6	Chl	OH	Thr323 [6]	OG1	Ser319 [6]	Thr323 [6]			
-6.4	Chl	OH	Ser319 [6]	OG	Met315 [6]	Ser319 [6]			

1. kcals mol^{-1}, with molar concentration units.
2. With residue numbers in the Ballesteros-Weinstein numbering system (1).
3. With residue numbers in the Wootten numbering system (2).
4. With residue numbers in the Pin numbering system (3).
5. With residue numbers in the Wang numbering system (4).
6. With TM helix numbers.

TABLE S2 Channels

[A-J refers to TM subunits as given in the PDB file, followed by the TM helix number; P Pore Helix].

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Ion Channels								
Potassium Channels								
Two-pore domain TWIK-1 human, 3ukm								
-8.3	Chl	OH	Thr225 [A P2]	OG1	Ser224 [A P2]	Thr225 [A P2]		
-8.2	Chl	OH	Thr225 [B P2]	OG1	Thr117 [A P1]	Ser224 [B P2]	Thr225 [B P2]	
-7.6	Chl	OH	Leu115 [A P1]	O	Leu115 [A P1]	Ile142 [A2]		
Two-pore domain TRAAK in non-conductive down state, human, 3um7								
-8.4	Chl	OH	Thr238 [B P2]	OG1	Thr129 [A P1]	Thr237 [B P2]	Thr238 [B P2]	
-8.1	Chl	OH	Ser45 [B1]	OG	Tyr42 [B1]	Ser45 [B1]	Gly46 [B1]	
-7.0	Chl	OH	Thr212 [B3]	OG1	Leu207 [B3]	Leu211 [B3]	Thr212 [B3]	
-7.0	Chl	OH	Leu151 [B2]	O	Leu151 [B2]			
-6.5	Chl	OH	Leu208 [A3]	O	Leu208 [A3]	Pro213 [A3]		
Two-pore domain TRAAK in non-conductive down state in K+, human, 4wff								
-6.6	Chl	OH	Leu236 [A P2]	O	Leu236 [A P2]			
-6.6	Chl	OH	Leu151 [A2]	O	Leu151 [A2]			
-6.4	Chl	OH	Ile127 [B P1]	O	Ile127 [B P1]	Ile154 [B2]	Phe157 [B2]	Gly158 [B2]
-6.4	Chl	OH	Tyr42 [A1]	OH	Tyr42 [A1]	Phe148 [B2]	Tyr149 [B2]	
Two-pore domain TRAAK in non-conductive down state in Tl+, human, 4wfh								
-9.9	Chl	OH	Ile127 [B P1]	O	Ile154 [B2]	Gly158 [B2]		
-8.5	Chl	OH	Thr237 [A P2]	O	Thr237 [A P2]	Thr238 [A P2]		
	Chl	OH	Thr238 [A P2]	OG1				
-8.3	Chl	OH	Leu236 [A P2]	O	Leu236 [A P2]	Thr237 [A P2]		
-8	Chl	OH	Leu151 [A2]	O	Leu151 [A2]			
-6.3	Chl	OH	Tyr42 [A1]	OH	Tyr42 [A1]	Phe148 [B2]	Tyr149 [B2]	
-5.9	Chl	OH	Leu208 [B3]	O	Leu208 [B3]	Pro213 [B3]	Trp264 [B4]	
Two-pore domain TRAAK in conductive up state in K+, human, 4wfe								
6.5	Chl	OH	Tyr42 [B1]	OH	Phe148 [A2]	Tyr149 [A2]	Tyr42 [B1]	
-6.1	Chl	OH	Tyr271 [A4]	OH	Cys206 [A3]	Tyr271 [A4]		
	Tyr271 [A4]	OH	Chl	OH				
Two-pore domain TRAAK in conductive up state in Tl+, human, 4wfg								
-6.6	Tyr42 [A1]	OH	Chl	OH	Tyr42 [A1]	Phe148 [B2]	Tyr149 [B2]	
-6.3	Chl	OH	Tyr42 [A1]	OH	Tyr42 [A1]	Phe148 [B2]	Tyr149 [B2]	
	Tyr42 [A1]	OH	Chl	OH				
Two-pore domain TRAAK, domain-swapped, closed fenestrations, human, 4i9w								
-6.8	Chl	OH	Tyr42 [A1]	OH	Tyr42 [A1]	Phe148 [B2]	Tyr149 [B2]	

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Two-pore domain TREK-1 up state human, 4twk								
-7.5	Chl	OH	Tyr284 [A4]	OH	Ile215 [A3]	Tyr284 [A4]		
-6.1	Chl	OH	Tyr57 [B1]	OH	Ile161 [A2]	Tyr162 [A2]	Leu165 [A2]	Tyr57 [B1]
Two-pore domain TREK-1 up state mouse, 5vk5								
-6.2	Chl	OH	Tyr57 [A1]	OH	Tyr57 [A1]	Ile161 [B2]	Tyr162 [B2]	
-5.9	Chl	OH	Leu221 [A3]	O	Leu221 [A3]	Pro226 [A1]	Trp277 [A4]	
Two-pore domain TREK-1 up state mouse, 5vkn								
-5.6	Chl	OH	Tyr284 [A4]	OH	Cys219 [A3]	Tyr284 [A4]		
-5.5	Chl	OH	Leu221 [A3]	O	Leu221 [A3]	Phe222 [A3]		
Two-pore domain TREK-1 complex with ML402, mouse, 5vkp								
-5.6	Chl	OH	Leu221 [A3]	O	Leu221 [A3]	Trp277 [A4]		
Two-pore domain TREK-2 up state human, 4bw5								
-6.6	Chl	OH	Tyr87 [A1]	OH	Tyr87 [A1]	Leu191 [B2]	Tyr192 [B2]	Tyr87 [B1]
Two-pore domain TREK-2 down state human (res. 3.8 A), 4xdj								
-8.1	Chl	OH	Thr281 [A P2]	OG1	Thr280 [A P2]	Thr281 [A P2]		
-7.8	Chl	OH	Ile194 [A2]	O	Ile194 [A2]			
-7.6	Chl	OH	Leu279 [B P2]	O	Leu279 [B P2]			
Two-pore domain TREK-2 down state, Br-fluoxetine bound, human, 4xdl								
-8.2	Chl	OH	Ile194 [C2]	O	Ile194 [C2]			
-8.2	Chl	OH	Thr281 [D P2]	OG1	Thr280 [D P2]	Thr281 [D P2]		
Two-pore domain TREK-2 down state, norfluoxetine bound (res 3.6 Å), human, 4xdk								
-8.4	Chl	OH	Ile170 [A P1]	O	Ile197 [A2]	Gly201 [A2]		
-8.2	Chl	OH	Leu279 [B P2]	O	Leu279 [B P2]	Thr280 [B P2]	Thr281 [B P2]	

Voltage-gated channel Kv1.2, rat, 3lut								
None								
Voltage-gated channel Kv1.2, rat, 2a79								
-8.0	Chl	OH	Thr401 [A6]	OG1	Phe334 [A5]	Thr401 [A6]		
-7.9	Chl	OH	Thr401 [A6]	OG1	Ala397 [A5]	Thr401 [A6]		
Voltage-gated channel Kv1.2/Kv2.1 paddle chimera [PDB numbering changed to match 2a79], rat, 2r9r								
-6.3	Chl	OH	Thr401 [A6]	OG1	Phe334 [A5]	Gly338 [A5]	Thr401 [A6]	
Voltage-gated channel Kv1.2/Kv2.1 paddle chimera [PDB numbering changed to match 2a79] rat, 3lnm								
-7.8	Chl	OH	Thr401 [A6]	OG1	Phe334 [A5]	Gly338 [A5]	Met372 [A P]	Thr401 [A6]
Voltage-gated channel Kv1.2/Kv2.1 paddle chimera, inactivated V410W mutant, rat, 5wie								
None								

Inward-rectifier Kir 2.2 chicken, 3jyc								
-6.7	Trp94 [A1]	NE1	Chl	O	Trp94 [A1]	Gln141 [A P]		
Inward-rectifier Kir 2.2 mutant apo form, 3spj								
-9.1	Chl	OH	Gln141 [A P]	O	Gln141 [A P]	Ser166 [A2]	Gly169 [A2]	Cys170 [A2]
-7.7	Trp94 [A1]	NE1	Chl	O	Phe90 [A1]	Trp94 [A1]	Gln141 [A P]	
Inward-rectifier Kir 2.2 in complex with PIP2 chicken, 3spi								
-7.0	Chl	OH	Gln141 [A P]	O	Gln141 [A P]	Ser166 [A2]	Gly169 [A2]	Cys170 [A2]

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)
Inward-rectifier Kir 2.2 mutant in complex with PIP2 chicken, 3spg			
None			
Inward-rectifier Kir 2.2 mutant in complex with PIP2 chicken, 3sph			
None			
Inward-rectifier Kir 2.2 in complex with PPA chicken, 3spc			
None			
Inward-rectifier Kir 2.2 K62W mutant chicken, 5kuk			
None			

G-protein gated channel, GIRK2 (Kir 3.2) wild type. mouse, 3syo								
-7.0	Chl	OH	Ser181 [A2]	OG	Ser177 [A2]	Gly180 [A2]	Ser181 [A2]	
G-protein gated channel, GIRK2 (Kir 3.2) D228N mutant. mouse, 3syc								
-6.1	Chl	OH	Tyr102 [A1]	OH	Tyr102 [A1]			
	Tyr102 [A1]	OH	Chl	OH				
-6.0	Chl	OH	Glu152 [B P]	OE2	Tyr102 [B1]	Glu152 [B P]		
	Tyr102 [B1]	OH	Chl	OH				
G-protein gated channel, GIRK2 (Kir 3.2) wild type plus PIP2, mouse, 3sya								
-7.2	Chl	OH	Ser181 [A2]	OG	Ser177 [A2]	Ser181 [A2]	Tyr102 [D1]	
G-protein gated channel, GIRK2 (Kir 3.2) R201A mutant plus PIP2, mouse, 3syq								
-9.1	Chl	OH	Ser181 [C2]	OG	Ser177 [C2]	Ser181 [C2]		
-9.1	Chl	OH	Glu152 [B P]	O	Glu152 [B P]	Gly180 [B2]		
	Chl	OH	Gly180 [B2]	O				
-7.9	Chl	OH	Ser177 [B2]	O	Ser177 [B2]	Gly180 [B2]	Ser181 [B2]	
	Chl	OH	Ser181 [B2]	OG				
-7.5	Chl	OH	Tyr102 [D1]	OH	Tyr102 [D1]	Asn184 [D2]		
	Tyr102 [D1]	OH	Chl	OH				
G-protein gated channel, GIRK2 (Kir 3.2) plus G-protein subunits. mouse, 4kfm								
-9.6	Chl	OH	Ser181 [F2]	OG	Ser177 [F2]	Ser181 [F2]		
-8.9	Chl	OH	Glu152 [J P]	O	Glu152 [J P]	Gly180 [J2]		
	Chl	OH	Glu152 [J P]	OE2				
-8.5	Chl	OH	Ser181 [A2]	OG	Ser181 [A2]	Asn184 [J2]		

Calcium-activated channel Slo1 (BK) sea slug, 5tj6								
-7.5	Chl	OH	Ser29 [A1]	OG	Thr26 [A1]	Ser29 [A1]	Gly30 [A1]	

Lysosomal K+-selective channel TMEM175 homolog, marine worm, 5vre
None

Calcium-ion selective Channels

Orai calcium release-activated CRAC channel, Drosophila, 4hkr								
-6.8	Chl	OH	Thr283 [A4]	O	Thr283 [A4]	Leu286 [A4]	Ile287 [A4]	
Orai calcium release-activated CRAC channel mutant, Drosophila, 4hks								
-6.6	Chl	OH	Thr283 [A4]	O	Thr283 [A4]	Leu286 [A4]	Ile287 [A4]	

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Transient Receptor Potential (TRP) Channels								
TRPM4 cation channel, apo state, human, 6bcj								
None								
TRPM4 cation channel, apo state, human, 6bcl								
None								
TRPM4 cation channel, ATP bound, human, 6bco								
None								
TRPM4 cation channel, ATP bound, human, 6bcq								
None								
TRPM4 cation channel, Ca-free, human, 6bqr								
None								
TRPM4 cation channel, Ca-bound, human, 6bqv								
None								
TRPML1, human, 5wj9								
-7.8	Chl	OH	Tyr439 [A5]	OH	Tyr439 [A5]	Ser500 [A6]		
-6.9	Chl	OH	Ser503 [A6]	OG	Tyr499 [A6]	Ser503 [A6]		
TRPML3, marmoset, 5w3s								
-7.1	Chl	OH	Tyr491 [A6]	OH	Tyr491 [A6]	Ile455 [D P]		
	Tyr491 [A6]	OH	Chl	OH				
TRPV1 rat, 3j5p								
-7.7	Chl	OH	Thr550 [A4]	OG1	Met547 [A4]	Thr550 [A4]	Asn551 [A4]	
-7.5	Chl	OH	Ser483 [A2]	OG	Ser483 [A2]	Gly484 [A2]		
	Ser483 [A2]	OG	Chl	OH				
TRPV1 rat, 5irz								
-8.2	Chl	OH	Ser483 [A2]	OG	Ser483 [A2]	Gly484 [A2]		
	Ser483 [A2]	OG	Chl	OH				
-8.0	Chl	OH	Thr550 [A4]	OG1	Ala546 [A4]	Met547 [A4]	Thr550 [A4]	
TRPV1 complex with DkTx and RTX, rat, 5irx								
-8.6	Chl	OH	Thr550 [A4]	OG1	Ala546 [A4]	Met547 [A4]	Thr550 [A4]	
-6.9	Chl	OH	Ser483 [A2]	OG	Ser483 [A2]	Gly484 [A2]		
	Ser483 [A2]	OG	Chl	OH	Ser483 [A2]	Gly484 [A2]		
TRPV1 complex with capsaicin, rat, 5is0								
-8.7	Chl	OH	Thr550 [A4]	OG1	Ala546 [A4]	Met547 [A4]	Thr550 [A4]	
-6.6	Chl	OH	Ser483 [A2]	OG	Ile479 [A2]	Val482 [A2]	Ser483 [A2]	
TRPV6 rat, 5iwk								
None								
TRPV6 rat, 5wo6								
-5.8	Chl	OH	Thr430 [A3]	OG1	Val426 [A3]	Ile427 [A3]	Thr430 [A3]	
TRPV6 rat, 5wo7								
-6.3	Chl	OH	Val498 [A5]	O	Val498 [A5]	Val499 [A5]	Gly502 [A5]	
TRPV6-Del1, rat, 5wo8								
-6.1	Chl	OH	Thr430 [A3]	OG1	Val426 [A3]	Ile427 [A3]	Thr430 [A3]	

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
TRPV6, plus Ca2+, rat, 5wo9								
-7.1	Chl	OH	Cys462 [A4]	O	Trp461 [A4]	Cys462 [A4]	Val464 [A4]	Met465 [A4]
	Met465 [A4]	N	Chl	OH				

PKD2 polycystic kidney disease channel, human, 5t4d								
-6.7	Chl	OH	Thr663 [A6]	OG1	Tyr611 [A5]	Thr663 [A6]		
	Tyr611 [A5]	OH	Chl	OH				

Glutamate Receptors

GluA2 glutamate receptor (AMPA) apo form A, rat, 4u2p								
-9.1	Tyr533 [A1]	OH	Chl	OH	Tyr533 [A1]	Arg599 [D2]		
-8.2	Chl	OH	Thr609 [A2]	OG1	Trp605 [A2]	Thr609 [A2]		
-7.3	Chl	OH	Thr609 [A2]	OG1	Trp605 [A2]	Thr609 [A2]		
	Trp605 [A2]	NE1	Chl	OH				
GluA2 glutamate receptor (AMPA) with kainate crystal form A, rat, 4u1w								
-7.8	Chl	OH	Thr609 [A2]	OG1	Trp605 [A2]	Thr609 [A2]		
-7.5	Trp605 [A2]	NE1	Chl	OH	Trp605 [A2]	Thr609 [A2]		
GluA2 glutamate receptor (AMPA) with kainate crystal form B, rat, 4u1x								
-7.6	Chl	OH	Thr609 [A2]	OG1	Thr609 [A2]			
-6.8	Chl	OH	Thr609 [A2]	OG1	Thr609 [A2]	Trp606 [D2]		
GluA2 glutamate receptor (AMPA) mutant with toxin etc, rat, 4u5b								
-9.2	Tyr533 [C1]	OH	Chl	OH	Arg599 [B2]	Tyr533 [C1]		
-8.3	Chl	OH	Thr609 [A2]	OG1	Trp605 [A2]	Thr609 [A2]		
	Trp605 [A2]	NE1	Chl	OH				
-7.7	Trp605 [A2]	NE1	Chl	OH	Trp605 [A2]			

P2X channels

ATP-gated P2X3 channel closed apo state, human, 5svj								
-6.9	Chl	OH	Thr336 [A2]	OG1	Gly333 [A2]	Thr336 [A2]		
ATP-gated P2X3 channel ATP bound open state, human, 5svk								
-7.7	Chl	OH	Ser331[A2]	OG	Thr330 [A2]	Ser331 [A2]		
	Chl	OH	Thr330 [A2]	OG1				
	Chl	OH	Thr330 [A2]	O				
-6.2	Chl	OH	Ser36 [A1]	OG1	Leu33 [A1]	Ser36 [A1]	Tyr37 [A1]	
ATP-gated P2X3 channel ATP-bound, desensitized state, human, 5svl								
-8.9	Chl	OH	Thr330 [A2]	OG1	Thr330 [A2]	Ser331 [A2]		
-8.9	Chl	OH	Ser331 [A2]	OG	Thr330 [A2]	Ser331 [A2]		
ATP-gated P2X3 channel agonist bound desensitized state, human, 5svm								
-11.4	Chl	OH	Ser331 [A2]	OG	Ala327 [A2]	Thr330 [A2]	Ser331 [A2]	
	Chl	OH	Thr330 [A2]	OG1				
ATP-gated P2X3 channel agonist bound desensitized state, human, 5svp								
-11.4	Chl	OH	Ser331 [A2]	OG	Ala327 [A2]	Thr330 [A2]	Ser331 [A2]	
	Chl	OH	Thr330 [A2]	OG1				
ATP-gated P2X3 channel competitive antagonist bound closed state, human, 5svq								
None								

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
ATP-gated P2X3 channel competitive antagonist bound closed state, human, 5svr								
-6.6	Chl	OH	Ser36 [A1]	OG	Ser36 [A1]			
-6.3	Chl	OH	Thr336 [A2]	OG1	Val332 [A2]	Gly333 [A2]	Thr336 [A2]	
ATP-gated P2X4 channel apo state, zebra fish, 3h9v								
None								
ATP-gated P2X4 channel apo closed state, zebra fish, 3i5d								
None								
ATP-gated P2X4 channel plus CTP open state, zebra fish, 5wzy								
-6.9	Chl	OH	Ala344 [A2]	O	Ala344 [A2]	Ala347 [A2]	Leu348 [A2]	
ATP-gated P2X4 channel ATP bound open state, zebra fish, 4dw1								
-7.3	Chl	OH	Gly343 [A2]	O	Gly343 [A2]	Ala344 [A2]		
ATP-gated P2X4 channel ATP-free closed state, zebra fish, 4dw0								
None								
ATP-gated P2X4 channel ATP bound open state, Gulf Coast tick, 5f1c								
None								
ATP-gated P2X7 channel plus competitive antagonist, chicken, 5xw6								
-8.4	Chl	OH	Ser326 [B2]	OG	Thr322 [B2]	Ser326 [B2]		
-6.6	Chl	OH	Tyr330 [C2]	OH	Tyr330 [C2]			
-6.5	Chl	OH	Thr327 [C2]	OG1	Thr327 [C2]	Ile328 [C2]		
	Thr327 [C2]	OG1	Chl	OH				
Acid-sensing ion-channel (ASIC), chicken, 4nyk								
None								
Chloride channels								
Bestrophin-1 (BEST1) Ca-activated Cl channel, jungle fowl, 4rdq								
-9.5	Chl	OH	Ala73 [A2]	O	Asn70 [A2]	Ser71 [A2]	Ala73 [A2]	Glu74 [A2]
Bestrophin-1 (BEST1) Ca-activated Cl channel mutant, jungle fowl, 5t5n								
-8.9	Chl	OH	Ala73 [A2]	O	Asn70 [A2]	Ala73 [A2]	Arg255 [A3]	
Neurotransmitter-gated ion channels of the Cys-loop receptor family								
Glycine receptor complex with strychnine, human, 5cfb								
-7.2	Chl	OH	Ser296 [A3]	OG	Leu292 [A3]	Ser296 [A3]		
Glycine receptor complex with AM-3607, human, 5tio								
-7.5	Chl	OH	Ser296 [A3]	OG	Leu292 [A3]	Ser296 [A3]		
Glycine receptor, mutant, complex with AM-3607, human, 5tin								
-8.3	Chl	OH	Ser296 [A3]	OG	Leu292 [A3]	Phe293 [A3]	Ser296 [A3]	
Glycine receptor, complex with Gly and ivermectin, human, 5vdh								
-8.0	Chl	OH	Ser296 [A3]	OG	Leu292 [A3]	Phe293 [A3]	Ser296 [A3]	
GABA-A receptor (β3 homopentamer), human, 4cof								
-7.5	Chl	OH	Ser436 [A4]	OG	Pro432 [A4]	Phe435 [A4]	Ser436 [A4]	
GABA-A receptor (α5 TMD - β3 ECD chimera) with pregnanolone, human, 5o8f								
-8.1	Chl	OH	Ser302 [A3]	OG	Ala298 [A3]	Ser302 [A3]		
	Ser302 [A3]	OG	Chl	OH				
-7.5	Chl	OH	Thr408 [A4]	OG1	Leu405 [A4]	Thr408 [A4]	Phe409 [A4]	

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Serotonin 5-HT3 receptor, mouse, 4pir								
-7.6	Chl	OH	Thr445 [A4]	OG1	Ala441 [A4]	Tyr442 [A4]	Thr445 [A4]	

Porins etc.

AQPO aquaporin lens, cow, 1ymg								
None								
AQPO aquaporin lens, sheep, 1sor								
None								
AQPO aquaporinn lens, sheep, 2b6o								
None								
AQPO aquaporin lens, sheep, 2b6p								
None								
AQPO aquaporin lens, sheep, 3m9i								
None								
AQP1 aquaporin red blood cell, human, 4csk								
None								
AQP1 aquaporin red blood cell, cow, 1j4n								
None								
AQP2 aquaporin, kidney, human, 4nef								
None								
AQP4 aquaporin glial cell, rat, 2d57								
-5.8	Chl	OH	Thr120 [A3]	OG1	Thr120 [A3]			
AQP4 aquaporin glial cell, mutant, rat, 2zz9								
-5.7	Chl	OH	Thr120 [A3]	OG1	Thr120 [A3]			
AQP4 aquaporin, human, 3gd8								
None								
AQP5 aquaporin, human, 3d9s								
None								
SoPIP2 plant aquaporin, spinach, mutant, 3cll								
None								
SoPIP2 plant aquaporin, spinach, mutant, 3cn5								
None								
SoPIP2 plant aquaporin, spinach, mutant, 3cn6								
None								
TIP2, ammonia-permeable aquaporin, Arabidopsis, 5i32								
None								
Urea Transporters								
UT-B, cow, 4ezc								
-7.6	Chl	OH	Ala147 [A3]	O	Ala147 [A3]	Thr151 [A3]		
	Chl	OH	Thr151 [A3]	OG1				
	Thr151 [A3]	OG1	Chl	OH				
UT-B bound to selenourea, cow, 4ezd								
-7.0	Chl	OH	Thr151 [A3]	OG1	Ala147 [A3]	Thr151 [A3]		

E[1]	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)
Rh ammonia channel			
Rh C glycoprotein ammonia transporter, human, 3hd6			
None			

1. kcals mol^{-1}, with molar concentration units.

TABLE S3 Transporters [With subunits as given in the PDB file, and TM helix number]

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
ATPases								
Calcium ATPase [B sarcolipin; C phospholamban]								
E1 with bound Ca and AMPPCP, rabbit 1vfp								
-6.1	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Met941 [9]	Ser942 [9]	
-5.9	Chl	OH	Leu797 [6]	O	Leu797 [6]	Leu802 [6]	Ser940 [9]	
E1 with bound Ca, rabbit 1su4								
-6.4	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
-6.2	Chl	OH	Met909 [8]	O	Thr906 [8]	Met909 [8]	Cys910 [8]	
-5.8	Gly979 [10]	N	Chl	O	Leu975 [10]	Gly979 [10]		
E1 with bound Ca, rabbit, 2c9m								
-7.0	Chl	OH	Thr906 [8]	OG1	Thr906 [8]	Cys910 [8]		
	Thr906 [8]	OG1	Chl	OH				
-6.1	Chl	OH	Gly842 [7]	O	Gly842 [7]			
Structure in ultrathin crystals, rabbit, 3j7t								
-6.4	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
E1 Mg bound state with TNPAMP, rabbit, 3w5b								
-6.3	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
Ca bound phosphorylated form with AMPPN, rabbit 3ba6								
-7.0	Chl	OH	Leu797 [6]	O	Leu797 [6]	Val798 [6]	Ser940 [9]	
-6.4	Chl	OH	Ala839 [7]	O	Met838 [7]	Ala839 [7]	Gly842 [7]	Tyr843 [7]
-6.4	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
-6.3	Chl	OH	Met909 [8]	O	Thr906 [8]	Met909 [8]	Cys910 [8]	
	Chl	OH	Thr906 [8]	O				
E1 with bound Ca and AMPPCP, rabbit 1t5s								
-6.9	Chl	OH	Met909 [8]	O	Thr906 [8]	Met909 [8]	Cys910 [8]	
	Chl	OH	Thr906 [8]	O				
E1 state with bound Ca and AMPPCP, rabbit, 4xou								
-7.3	Chl	OH	Leu797 [6]	O	Leu797 [6]	Val798 [6]	Ser940 [9]	
-6.9	Chl	OH	Ser940 [9]	OG	Leu797 [6]	Val798 [6]	Ser940 [9]	
-6.4	Chl	OH	Ala839 [7]	O	Met838 [7]	Ala839 [7]	Gly842 [7]	Tyr843 [7]
	Tyr843 [7]	N	Chl	OH				
E1 Ca bound state mutant with AMPPCP, rabbit, 4nab								
None								
E2 State with phosphate, rabbit, 3w5d								
-6.7	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Met941 [9]	Ser942 [9]	
E2 state, and thapsigargin, rabbit 1iwo								
-6.7	Chl	OH	Tyr295 [4]	O	Tyr295 [4]			
E2 thapsigargin compex, rabbit, 5xab								
-6.3	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
-6.2	Chl	OH	Tyr295 [4]	O	Tyr295 [4]			
E2 state, Ca free with thapsigargin, rabbit, 2c8l								
-6.6	Cys910 [8]	SG	Chl	OH	Thr906 [8]	Cys910 [8]		
-6.2	Chl	OH	Tyr295 [4]	O	Tyr295 [4]			

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
With bound thapsigargin, rabbit, 2ear								
-7.2	Chl	OH	Cys268 [3]	O	Cys268 [3]	Trp272 [3]		
	Trp272 [3]	N	Chl	OH				
-6.3	Trp794 [6]	N	Chl	OH	Val790 [6]	Trp794 [6]		
E2 state and magnesium fluoride rabbit 1wpg								
5.7	Trp794 [6]	N	Chl	O	Val790 [6]	Leu793 [6]	Trp794 [6]	
E2 state and thapsigargin and aluminium fluoride rabbit 1xp5								
-6.0	Chl	OH	Tyr295 [4]	O	Tyr295 [4]			
E2 state, Ca free with thapsigargin and AMPPCP, rabbit, 2c8k								
-6.3	Cys910 [8]	SG	Chl	OH	Thr906 [8]	Cys910 [8]		
E2 state and AMPPN and aluminium fluoride rabbit 3b9r								
-6.5	Chl	OH	Pro91 [2]	O	Ala69 [1]	Pro91 [2]	Leu95 [2]	
E2-Pi state and beryllium fluoride rabbit 3b9b								
None								
With bound BHQ and thapsigargin, rabbit 2agv								
None								
With bound thapsigargin derivative, rabbit 2by4								
-7.4	Chl	OH	Val790 [6]	O	Val790 [6]	Leu793 [6]	Trp794 [6]	
-6.4	Chl	OH	Leu975 [10]	O	Leu975 [10]	Pro976 [10]	Gly979 [10]	
E2 Ca free state with dibutanoyl thapsigargin, 2yfy								
-6.7	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Met941 [9]	Ser942 [9]	
With bound thapsigargin and AMPPCP, rabbit 2c88								
-6.6	Chl	OH	Tyr295 [4]	O	Tyr295 [4]	Ala299 [4]		
-6.3	Chl	OH	Gly842 [7]	O	Ala839 [7]	Gly842 [7]	Tyr843 [7]	
-6.2	Cys910 [8]	SG	Chl	O	Thr906 [8]	Met909 [8]	Cys910 [8]	
With bound CPA and thapsigargin, rabbit, 2eat								
-6.2	Chl	OH	Pro91 [2]	O	Ala69 [1]	Pro91 [2]		
-6	Chl	OH	Leu266 [3]	O	Leu266 [3]	Ile267 [3]		
-5.7	Chl	OH	Leu793 [6]	O	Leu793 [6]	Trp794 [6]		
With bound CPA and curcumin, rabbit, 2eau								
None								
With bound cyclopiazonic acid and aluminium fluoride, rabbit 2o9j								
-6.8	Chl	OH	Val790 [6]	O	Val790 [6]	Leu793 [6]	Trp794 [6]	
-5.9	Cys910 [8]	SG	Chl	O	Thr906 [8]	Cys910 [8]		
-5.6	Chl	OH	Ala270 [3]	O	Ala270 [3]	Leu273 [3]		
	Chl	OH	Leu273 [3]	O				
With bound cyclopiazonic acid and ADP, rabbit, 2oao								
-7.2	Chl	OH	Val790 [6]	O	Val790 [6]	Trp794 [6]		
-5.9	Chl	OH	Gly842 [7]	O	Ala839 [7]	Gly842 [7]	Tyr843 [7]	
E2-vandate complex with thapsigargin and TNP-AMPPCP, rabbit, 5a3q								
-6.1	Chl	OH	Cys268 [3]	O	Cys268 [3]	Trp272 [3]		
	Trp272 [3]	N	Chl	OH				

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
E2-vanadate complex with thapsigargin and TNP-ATPP, rabbit, 5a3s								
-5.9	Chl	OH	Tyr295 [4]	O	Tyr295 [4]			
-5.7	Cys70 [1]	N	Chl	OH	Leu66 [1]	Cys70 [1]		
-5.7	Chl	OH	Cys268 [3]	O	Cys268 [3]	Trp272 [3]		
E2-BeF3 complex with TNP-AMPPCP, rabbit, 5a3r								
-6.6	Chl	OH	Ile264 [3]	O	Ile264 [3]	Ser265 [3]		
	Chl	OH	Ser265 [3]	OG				
-6.0	Chl	OH	Ala306 [4]	O	Ala306 [4]			
-5.9	Chl	OH	Ala69 [1]	O	Ala69 [1]	Pro91 [2]		
E1-Ca bound with lipid, rabbit, 5xa7								
-6.4	Chl	OH	Ser942 [9]	OG	Cys938 [9]	Ser942 [9]		
-6.1	Chl	OH	Met909 [8]	O	Met909 [8]	Leu913 [8]		
-6.0	Gly979 [10]	N	Chl	OH	Leu975 [10]	Pro976 [10]	Gly979 [10]	
E1-AlF4 complex with Ca and ADP, rabbit, 5xa8								
-6.4	Chl	OH	Leu797 [6]	O	Leu797 [6]	Val798 [6]	Ser940 [9]	
	Chl	OH	Ser940 [9]	OG				
E2-AlF4 complex with thapsigargin, , rabbit, 5xa9								
-6.9	Chl	OH	Val790 [6]	O	Val790 [6]	Trp794 [6]		
	Trp794 [6]	N	Chl	OH				
E2-AlF4 complex with thapsigargin, different crystal form, rabbit, 5xaa								
-6.7	Chl	OH	Cys268 [3]	O	Cys268 [3]	Tyr295 [4]		
	Chl	OH	Tyr295 [4]	OH				
-6.4	Chl	OH	Val790 [6]	O	Val790 [6]	Leu793 [6]	Trp794 [6]	
-6.1	Chl	OH	Pro91 [2]	O	Ala69 [1]	Pro91 [2]	Ile94 [2]	
-5.9	Chl	OH	Pro976 [10]	O	Leu975 [10]	Pro976 [10]	Ile978 [10]	Gly979 [10]
	Gly979 [10]	N	Chl	OH				
With bound tetrahydrocarbazole and TNP-ATP, rabbit, 5ncq								
None								
E1 with bound Ca and sarcolipin, rabbit 4h1w								
-6.9	Chl	OH	Thr18 [B]	OG1	Val14 [B]	Thr18 [B]		
-6.2	Chl	OH	Thr18 [B]	OG1	Leu96 [2]	Ala100 [2]	Thr18 [B]	
-6.2	Chl	OH	Cys268 [3]	O	Cys268 [3]	Val269 [3]		
With sarcolipin and magnesium in E1 state, rabbit 3w5a								
-6.1	Chl	OH	Cys268 [3]	O	Cys268 [3]	Val269 [3]		
-6.0	Gly979 [10]	N	Chl	O	Leu975 [10]	Gly979 [10]		
With two bound phospholamban, rabbit 4kyt								
7.0	Chl	OH	Ile33 [C]	O	Ile33 [C]	Asn34 [C]		
-6.3	Chl	OH	Ser974 [10]	OG	Thr906 [8]	Cys910 [8]	Ser974 [10]	
	Cys910 [8]	SG	Chl	O				
SERCA pig heart, 5mpm								
None								

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Na,K- ATPase [A, alpha subunit; B, β1 subunit; G, γ subunit]								
Pig kidney, 3b8e								
-7.0	Chl	OH	Leu46 [B]	O	Tyr43 [B]	Leu46 [B]	Ala47 [B]	
-6.6	Chl	OH	Ser298 [A 3]	OG	Phe294 [A 3]	Ser298 [A 3]		
-6.5	Chl	OH	Gly806 [A 6]	O	Gly806 [A 6]	Thr807 [A 6]	Val810 [A 6]	
-6.4	Chl	OH	Leu36 [G]	O	Leu36 [G]			
-6.4	Chl	OH	Glu953 [A 9]	OE2	Glu953 [A 9]			
-6.3	Chl	OH	Ala101 [A 1]	O	Trp98 [A 1]	Ala101 [A 1]	Ile102 [A 1]	
Pig kidney with bound Na, pre-E1P state without oligomycin, 3wgu								
-8.0	Chl	OH	Ser988 [A 10]	OG	Ala925 [A 8]	Ser988 [A 10]	Leu989 [A 10]	
-7.2	Chl	OH	Glu953 [A 9]	OE1	Glu953 [A 9]	Leu957 [A 9]		
-7.1	Chl	OH	Gly806 [A 6]	O	Leu805 [A 6]	Gly806 [A 6]	Met809 [A 6]	Val810 [A 6]
	Chl	OH	Leu805 [A 6]	O				
Pig kidney with bound Na, pre-E1P state with oligomycin, 3wgv								
-6.8	Chl	OH	Gly806 [A 6]	O	Gly806 [A 6]	Glu954 [A 9]		
-6.7	Chl	OH	Gly806 [A 6]	O	Leu805 [A 6]	Gly806 [A 6]	Val810 [A 6]	
	Chl	OH	Leu805 [A 6]	O				
-6.5	Chl	OH	Glu953 [A 9]	OE1	Glu953 [A 9]			
Pig kidney with bound Rb (K analogue), 3kdp								
-7.1	Chl	OH	Leu36 [G]	O	Phe33 [G]	Leu36 [G]		
	Chl	OH	Phe33 [G]	O				
-6.9	Thr955 [A 9]	OG1	Chl	O	Trp924 [A 8]	Thr955 [A 9]		
-6.8	Thr955 [A 9]	OG1	Chl	O	Leu951 [A 9]	Phe952 [A 9]	Thr955 [A 9]	
-6.6	Chl	OH	Gly806 [A 6]	O	Leu805 [A 6]	Gly806 [A 6]		
	Chl	OH	Leu805 [A 6]	O				
-6.4	Ala925 [A 8]	N	Chl	O	Val921 [A 8]	Trp924 [A 8]	Ala925 [A 8]	Ser988 [A 10]
	Chl	OH	Ser988 [A 10]	OG				
-6.3	Chl	OH	Glu953 [A 9]	OE2	Gly806 [A 6]	Glu953 [A 9]		
	Chl	OH	Gly806 [A 6]	O				
Pig kidney phosphorylated form with bufalin, 4res								
-7.9	Thr955 [A 9]	OG1	Chl	O	Trp924 [A 8]	Leu951 [A 9]	Thr955 [A 9]	
-7.4	Chl	OH	Gly848 [A 7]	O	Tyr847 [A 7	Gly848 [A 7]	Tyr43 [B]	
	Chl	OH	Tyr847 [A 7]	O				
	Tyr43 [B]	OH	Chl	O				
Pig kidney phosphorylated form with ouabain, 4hyt								
-6.6	Ala925 [A 8]	N	Chl	O	Val921 [A 8]	Trp924 [A 8]	Ala925 [A 8]	
-6.5	Chl	OH	Gly848 [A 7]	O	Tyr847 [A 7]	Gly848 [A 7]	Tyr43 [B]	
	Chl	OH	Tyr43 [B]	OH				
	Chl	OH	Tyr847 [A 7]	O				
	Tyr43 [B]	OH	Chl	O				

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Shark, 2zxe								
-8.1	Chl	OH	Thr814 [A 6]	O	Gly813 [A 6]	Thr814 [A 6]	Met816 [A 6]	Val817 [A 6] Pro818 [A6]
-6.9	Chl	OH	Ser995 [A 10]	OG	Ser995 [A 10]	Leu996 [A 10]		
-6.6	Chl	OH	Glu960 [A 9]	OE1	Glu960 [A 9]			
-6.3	Chl	OH	Thr138 [A 2]	OG1	Val134 [A 2]	Ser137 [A 2]	Thr138 [A 2]	
Shark complex with ouabain, 3a3y								
-7.6	Chl	OH	Ser995 [A 10]	OG	Ser995 [A 10]	Leu996 [A 10]		
-7.1	Chl	OH	Leu41 [B]	O	Tyr40 [B]	Leu41 [B]	Gly45 [B]	
-7.1	Chl	OH	Ile327 [A 4]	O	Ala299 [A 3]	Ile327 [A 4]		
-6.9	Ala932 [A 8]	N	Chl	O	Val928 [A 8]	Trp931 [A 8]	Ala932 [A 8]	Ser995 [A 10]
Shark with Tl substitution, 5avr								
-8.1	Chl	OH	Ser995 [A 10]	OG	Ser995 [A 10]	Leu996 [A 10]		
Shark with Rb substitution, 5aw4								
-7.6	Chl	OH	Ser995 [A 10]	OG	Ser995 [A 10]	Leu996 [A 10]		
-6.8	Chl	OH	Ser995 [A 10]	OG	Ala932 [A 8]	Ser995 [A 10]	Leu996 [A 10]	

Solute Carrier (SLC) Transporter Superfamily

EAAT1 excitatory amino acid transporter (SLC1), mutant, bound to L-Asp, human, 5llu								
-5.9	Chl	OH	Trp267 [5]	O	Trp267 [5]	Tyr268 [5]	Pro270 [5]	Leu271 [5]
GLUT1 glucose transporter (SLC2), mutant, human, 4pyp								
None								
GLUT1 glucose transporter (SLC2), bound to cytocholasin, human, 5eqi								
-7.1	Chl	OH	Ser73 [2]	OG	Ser73 [2]	Trp412 [11]		
GLUT1 glucose transporter (SLC2), bound to GLUT-i1 inhibitor, human, 5eqg								
-6.6	Chl	OH	Ser73 [2]	OG	Ser73 [2]	Trp412 [11]		
GLUT1 glucose transporter (SLC2), bound to GLUT-i2 inhibitor, human, 5eqh								
-6.6	Chl	OH	Ser73 [2]	OG	Ser73 [2]	Trp412 [11]		
GLUT3 glucose transporter (SLC2), mutant, bound to D-glucose, outward facing form, human, 4zw9								
-6.0	Chl	OH	Thr103 [3]	OG1	Leu99 [3]	Val102 [3]	Thr103 [3]	
-5.8	Chl	OH	Thr441 [12]	OG1	Gly437 [12]	Ile440 [12]	Thr441 [12]	
GLUT3 glucose transporter (SLC2), mutant, bound to maltose, outward facing form, human, 4zwb								
-5.9	Chl	OH	Thr103 [3]	OG1	Leu99 [3]	Thr103 [3]		
-5.9	Chl	OH	Thr441 [12]	OG1	Gly437 [12]	Ile440 [12]	Thr441 [12]	
GLUT3 glucose transporter (SLC2), mutant, bound to D-glucose, outward facing form, human, 4zwc								
-5.7	Chl	OH	Thr103 [3]	OG1	Leu99 [3]	Val102 [3]	Thr103 [3]	
-5.5	Chl	OH	Thr441 [12]	OG1	Gly437 [12]	Phe438 [12]	Thr441 [12]	
GLUT5 fructose transporter (SLC2), open-inward facing form, bovine, 4yb9								
-7.2	Chl	OH	Thr452 [12]	OG1	Ile448 [12]	Thr452 [12]		
-7	Chl	OH	Ser422 [11]	OG	Val418 [11]	Ser422 [11]		
-6.4	Chl	OH	Thr354 [9]	OG1	Thr354 [9]	Ala355 [9]		
GLUT5 fructose transporter (SLC2), open-outward facing form [renumbered to matxh 4yb9], rat, 4ybq								
-6.6	Chl	OH	Ser422 [11]	OG	Val418 [11]	Ser422 [11]		

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)
Erythrocyte Band 3 anion exchange (SLC4), human, 4yzf			
None			

DAT Dopamine transporter (SLC6), bound to antidepressant, Drosophila, 4m48								
None								
DAT Dopamine transporter (SLC6),bound to dopamine, Drosophila, 4xp1								
-7.8	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
-6.7	Chl	OH	Thr535 [11]	OG1	Thr535 [11]			
DAT Dopamine transporter (SLC6),bound to D-amphetamine, Drosophila, 4xp9								
-8.1	Chl	OH	Ser412 [8]	OG	Ala408 [8]	Ser412 [8]		
DAT Dopamine transporter (SLC6),bound to methamphetamine, Drosophila, 4xp6								
-7.6	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
-6.9	Chl	OH	Thr535 [11]	OG1	Leu484 [10]	Thr535 [11]		
DAT Dopamine transporter (SLC6),bound to 3,4-dichlorophenethylamine, Drosophila, 4xpa								
-8	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
DAT Dopamine transporter (SLC6),bound to cocaine, Drosophila, 4xp4								
-7.4	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Ser453 [9]		
DAT Dopamine transporter (SLC6),bound to cocaine analogue, Drosophila, 4xp5								
-6.9	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
DAT Dopamine transporter (SLC6),mutant, bound to cocaine, Drosophila, 4xpb								
-6.5	Chl	OH	Ser566 [12]	OG	Cys562 [12]	Ile563 [12]	Ser566 [12]	
-6.4	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
DAT Dopamine transporter (SLC6),mutant, bound to RTI55, Drosophila, 4xpf								
-7.4	Chl	OH	Thr355 [7]	OG1	Ile351 [7]	Ala354 [7]	Thr355 [7]	
DAT Dopamine transporter (SLC6),mutant, bound to beta-CFT, Drosophila, 4xpg								
-7.8	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Ser453 [9]		
DAT Dopamine transporter (SLC6),mutant, bound to 3,4-dichlorophenethylamine, Drosophila, 4xph								
-7.7	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Ser453 [9]		
-6.9	Chl	OH	Ser482 [10]	PG	Ser482 [10]	Ala564 [12]	Val568 [12]	
DAT Dopamine transporter (SLC6),mutant with 3,4-dichlorophenethylamine, Drosophila, 4xpt								
-7.5	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Phe452 [9]	Ser453 [9]	
DAT Dopamine transporter (SLC6),bound to nisoxetine, Drosophila, 4xnu								
-6.9	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Ser453 [9]		
DAT Dopamine transporter (SLC6),bound to reboxetine, Drosophila, 4xnx								
-7.5	Chl	OH	Ser453 [9]	OG	Ala449 [9]	Ser453 [9]		

Serotonin transporter (SLC6), bound to paroxetine, human, 5i6x								
-8.5	Chl	OH	Thr264 [4]	OG1	Met260 [4]	Thr264 [4]		
-7.7	Chl	OH	Thr503 [10]	OG1	Pro499 [10]	Ala500 [10]	Thr503 [10]	
-7.1	Chl	OH	Thr433 [8]	OG1	Leu429 [8]	Thr433 [8]		
-6.9	Chl	OH	Ser584 [12]	O	Ile167 [3]	Tyr171 [3]	Ser584 [12]	
	Chl	OH	Tyr171 [3]	OH				
Serotonin transporter (SLC6), mutant, bound to s-citalopram, human, 5i71								
-9.1	Chl	OH	Phe263 [4]	O	Met260 [4]	Phe263 [4]	Thr264 [4]	
	Chl	OH	Thr264 [4]	OG1				

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
-7.5	Chl	OH	Thr371 [7]	OG1	Val367 [7]	Met370 [7]	Thr371 [7]	
Serotonin transporter (SLC6), mutant, bound to s-citalopram at more sites, human, 5i73								
-9.2	Chl	OH	Phe263 [4]	O	Met260 [4]	Phe263 [4]	Thr264 [4]	
-8.0	Chl	OH	Phe263 [4]	O	Met260 [4]	Phe263 [4]	Thr264 [4]	
	Chl	OH	Thr264 [4]	OG1				
-6.3	Chl	OH	Phe548 [12]	O	Leu547 [12]	Phe548 [12]		
-6.2	Chl	OH	Thr286 [5]	OG1	Val283 [5]	Thr286 [5]	Phe287 [5]	
Serotonin transporter (SLC6), mutant, bound to Br-citalopram, human, 5i74								
-8.5	Chl	OH	Thr264 [4]	OG1	Met260 [4]	Phe263 [4]	Thr264 [4]	
-6.2	Chl	OH	Phe548 [12]	O	Leu547 [12]	Phe548 [12]	Phe551 [12]	
Serotonin transporter (SLC6), mutant, bound to citalopram and Br-citalopram, human, 5i75								
-9.1	Chl	OH	Phe263 [4]	O	Met260 [4]	Phe263 [4]	Thr264 [4]	
	Chl	OH	Thr264 [4]	OG1				
-6.5	Chl	OH	Thr286 [5]	OG1	Val283 [5]	Thr286 [5]	Phe287 [5]	
-6.3	Chl	OH	Phe548 [12]	O	Leu547 [12]	Phe548 [12]		

Antiporters

Mitochondrial ADP/ATP Carrier with carboxyatractyloside, heart, bovine, 1okc								
-6.7	Chl	OH	Ala24 [1]	O	Ala24 [1]			
Mitochondrial ADP/ATP Carrier, with bound cardiolipins, heart, bovine, 2c3e								
-7.3	Chl	OH	Gly224 [5]	O	Gly224 [5]	Ser227 [5]	Tyr228 [5]	
-6.5	Arg234 [5]	NH2	Chl	OH	Leu127 [3]	Ser179 [4]	Arg234 [5]	
	Chl	OH	Ser179 [4]	OG				
-6.3	Chl	OH	Ala24 [1]	O	Ala24 [1]			

ATP Binding Cassette (ABC) Transporters

P-Glycoprotein, nucleotide-free, inward-facing, mouse, 4q9h								
-8.7	His60 [1]	NE2	Chl	OH	His60 [1]	Gln191 [3]	Gln942 [11]	
-8.4	Chl	OH	Tyr303 [5]	OH	Tyr303 [5]	Gln721 [7]		
-6.2	Chl	OH	Thr765 [8]	OG1	Cys713 [7]	Thr765 [8]		
P-Glycoprotein, ATP-bound, outward-facing, human, 6cOv								
-7.4	Chl	OH	Ser222 [4]	OG	Ser222 [4]	Gly226 [4]		
	Ser222 [4]	OG	Chl	OH				
-7.0	Chl	OH	Thr845 [9]	OG1	Ala841 [9]	Thr845 [9]		
-6.5	Chl	OH	Ala987 [9]	O	Asn839 [9]	Ala987 [9]		
MRP-1 drug resistance protein, ATP-bound, outward facing, bovine, 6bhu								
-9.6	Chl	OH	Ser446 [3]	OG	Asp336 [1]	Ser446 [3]	Gln450 [3]	
-7.6	Chl	OH	Thr378 [2]	OG1	Ala374 [2]	Thr378 [2]	Asn1207 [11]	
ABCB10 mitochondrial ABC transporter with bound AMPPC, human, 4ayt								
-8.7	Chl	OH	Ser182 [1]	OG	Leu178 [1]	Ser182 [1]	Arg295 [3]	
-8.7	Chl	OH	Ser326 [4]	OG	Val322 [4]	Val325 [4]	Ser326 [4]	
-8.0	Chl	OH	Ser181 [1]	OG				
	Ser181 [1]	OG	Chl	OH	Ser181 [1]	Ser182 [1]		
-7.9	Chl	OH	Ser301 [3]	OG	Gly297 [3]	Ser301 [3]		

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
ABCB10 mitochondrial ABC transporter with bound AMPPC, rod form, human, 4ayx								
-8.6	Trp440 [6]	NE1	Chl	OH	Gln299 [3]	Trp440 [6]		
-8.6	Chl	OH	Ser182 [1]	OG	Leu178 [1]	Ser181 [1]	Ser182 [1]	
-8.6	Chl	OH	Ser182 [1]	OG	Ser182 [1]	Gln299 [3]		
-8	Chl	OH	Ser181 [1]	OG	Ser181 [1]	Gly225 [2]		
-7.7	Chl	OH	Ser326 [4]	OG	Val322 [4]	Val325 [4]	Ser326 [4]	
ABCB10 mitochondrial ABC transporter with bound AMPPC, plate form, human, 4ayw								
-9.5	Chl	OH	Ser181 [1]	OG	Ser181 [1]	Gly225 [2]		
-9.5	Chl	OH	Ser326 [4]	OG	Val322 [4]	Val325 [4]	Ser326 [4]	
-8.5	Trp440 [6]	NE1	Chl	OH	Ser185 [1]	Gln299 [3]	Trp440 [6]	
ABCB10 mitochondrial ABC transporter, nucleotide-free rod form, human, 3zdq								
-8.4	Chl	OH	Ser181 [1]	OG	Ser181 [1]	Asn229 [2]		
	Ser181 [1]	OG	Chl	OH				
-8.3	Chl	OH	Ser182 [1]	OG	Ser182 [1]	Gln299 [3]		
-8.3	Trp440 [6]	NE1	Chl	OH	Gln299 [3]	Trp440 [6]		

Cystic Fibrosis Transmembrane conductance regulator (CFTR), Zebra fish, 5tsi								
-9.2	Chl	OH	Leu1114 [11]	O	Leu1114 [11]	Phe1115 [11]		
-8.1	Chl	OH	Ser232 [4]	OG	Leu228 [4]	Ser232 [4]		
-7.7	Chl	OH	Glu871 [7]	OE1	Glu871 [7]	Tyr927 [8]	Leu934 [8]	
	Chl	OH	Tyr927 [8]	OH				
-7.5	Chl	OH	Phe313 [5]	O	Ala310 [5]	Phe313 [5]	Ser314 [5]	
-6.9	Arg941 [8]	NH1	Chl	OH	Arg941 [8]			
-6.9	Chl	OH	Thr133 [2]	OG1	Gly129 [2]	Leu130 [2]	Thr133 [2]	
-6.5	Chl	OH	Thr1120 [11]	OG1	Val1116 [11]	Phe1117 [11]	Thr1120 [11]	

1. kcals mol^{-1}, with molar concentration units.

TABLE S4 Other Membrane Proteins

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Novel Receptors								
STRA6 retinol uptake receptor, zebra fish, 5sy1								
-7.3	Chl	OH	Ser48 [A1]	OG	Ala45 [A1]	Ser48 [A1]	Leu49 [A1]	
-6.4	Chl	OH	Thr133 [A3]	OG1	Leu129 [A3]	Thr133 [A3]		
-6.0	Chl	OH	Ala191 [A5]	O	Ala191 [A5]	Cys192 [A5]		
Tetraspanins								
CD81 tetraspanin, human, 5tcx								
None								
Intramembrane Proteases								
CAAX protease ZMPSTE24, human, 4aw6								
-11.5	Chl	OH	Ser208 [5]	OG	Thr204 [5]	Ser208 [5]	Gln353 [6]	
-11.5	Chl	OH	Thr204 [5]	OG1	Thr204 [5]	Leu205 [5]	Ser208 [5]	Gln353 [6]
-10.6	Chl	OH	Glu86. [2]	OE2	Glu86 [2]	Thr90 [2]		
CAAX protease ZMPSTE24, mutant, complex with tetrapeptide, human, 2ypt								
-11.2	Chl	OH	Ser208 [5]	OG	Thr204 [5]	Ser208 [5]	Gln353 [6]	
-10.1	Chl	OH	Glu86 [2]	OE2	Glu86 [2]	Thr90 [2]		
-8.8	Chl	OH	Ser134 [3]	OG	Ala130 [3]	Thr131 [3]	Ser134 [3]	
-8.4	Chl	OH	Ser208 [5]	OG	Thr204 [5]	Leu205 [5]	Ser208 [5]	Gln353 [6]
	Chl	OH	Thr204 [5]	OG1				
γ-secretase, human, 5a63								
-7.3	Chl	OH	Thr99 [B1]	OG1	Val95 [B1]	Ala98 [B1]	Thr99 [B1]	
-6.4	Chl	OH	Tyr181 [B2]	OH	Thr99 [B1]	Tyr181 [B2]		
	Tyr181 [B2]	OH	Chl	OH				
Membrane-associated proteins in Eicosanoid and Glutathione metabolism proteins (MAPEG)								
Microsomal Glutathione transferase I, rat, 2h8a								
-6.3	Chl	OH	Phe134 [B4]	O	Phe133 [B4]	Phe134 [B4]	Tyr137 [B4]	Gly138 [B4]
-6.2	Chl	OH	Tyr115 [C3]	OH	Tyr115 [C3]			
	Tyr115 [C3]	OH	Chl	OH				
Microsomal prostaglandin E synthase, human, 3dww								
-6.7	His102 [A3]	ND1	Chl	OH	Met101 [A3]	His102 [A3]		
-6.7	Chl	OH	Gln134 [A4]	O	Gln134 [A4]	Cys137 [A4]	Ala138 [A4]	
-6.4	Chl	OH	Leu132 [A4]	O	Val105 [A3]	Gly109 [A3]	Leu132 [A4]	
-6.2	Chl	OH	Ser139 [A4]	OG	Leu135 [A4	Pro136 [A4	Ser139 [A4	
Microsomal prostaglandin E synthase, human, 4al0								
None								
5-lipoxygenase-activating protein, human, 2q7m								
None								
Leukotriene LTC-4 synthase, human, 2pno								
None								
Leukotriene LTC-4 synthase, human, 2uuh								
None								

E^1	Donor	Acceptor	Local Residues (within 3 Å of a cholesterol –OH group)
LeukotrieneLTC-4 synthase with bound leukotriene analog I, human, 4jcz			
None			
LeukotrieneLTC-4 synthase mutant with bound leukotriene analog I, human, 4jrz			
None			
LeukotrieneLTC-4 synthase with bound leukotriene analog II, human, 4j7t			
None			
LeukotrieneLTC-4 synthase with bound leukotriene analog III, human, 4j7y			
None			

Sterol-Sensing Domain (SSD) Proteins

Niemann-Pick C1 protein, human, 5u73								
-6.5	Chl	OH	Thr743 [6]	OG1	Thr743 [6]	Val744 [6]		
-6.0	Ser666 [4]	OG	Chl	OH	Leu662 [4]	Ile663 [4]	Ser666 [4]	
Niemann-Pick C1 protein, human, 5u74								
-6.6	Chl	OH	His1239 [13]	ND1	Thr1238 [13]	His1239 [13]		
-6.4	Ser666 [4]	OG	Chl	OH	Leu662 [4]	Ser666 [4]		
-6.2	Chl	OH	Thr743 [6]	OG1	Phe740 [6]	Thr743 [6]	Val744 [6]	

Palmitoyl Transferase

Palmitoyl transferase, human, 6bml								
None								
Palmitoyl transferase, human, 6bmm								
-5.9	Chl	OH	Thr23 [1]	OG1	Thr23 [1]			
Palmitoyl transferase, human, 6bmn								
-5.5	Chl	OH	Thr23 [1]	OG1	Val19 [1]	Leu20 [1]	Thr23 [1]	

Fatty Acid Desaturase

Stearoyl-coenzyme A desaturase (SCD1), with substrate, human, 4zyo: ih, inner helix								
-7.7	Chl	OH	Tyr108 [2]	OH	Tyr108 [2]	Leu290 [ih]	Gly291 [ih]	
-7.2	Chl	OH	Thr231 [3]	OG1	Phe227 [3]	Thr231 [3]	Thr250 [4]	
Stearoyl-coenzyme A desaturase (SCD1), with substrate, mouse, 4ymk								
-7.2	Chl	OH	Thr106 [2]	OG1	Phe102 [2]	Met105 [2]	Thr106 [2]	

Hydrolases

Estrone sulphatase, placenta, human, 1p49								
-5.9	Chl	OH	Thr196 [1]	OG1	Ile192 [1]	Thr196 [1]		

Electron Transport Chain Complex II

Succinate:ubiquinone oxidoreductase (SQR, Complex II), heart, chicken, 2fbw								
-5.7	Chl	OH	Ala90 [C2]	O	Ala90 [C2]	Leu91 [C2]	Pro94 [C2]	
	Chl	OH	Leu91 [C2]	O				
Succinate:ubiquinone oxidoreductase (SQR, Complex II) with TEO, heart, chicken, 2h88								
None								
Succinate:ubiquinone oxidoreductase (SQR, Complex II), heart, pig, 1zoy								
-8.6	Chl	OH	Thr77 D2]	OG1	Ala74 [D2]	Thr77 [D2]	Leu78 [D2]	

E^1	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Succinate:ubiquinone oxidoreductase (SQR, Complex II), chicken, 1yq3								
-5.7	Chl	OH	Tyr73 D3]	OH	Tyr73 [D3]			
	Tyr73 [D3]	OH	Chl	OH				
Succinate:ubiquinone oxidoreductase (SQR, Complex II), worm, 3vr8								
-7.2	Chl	OH	Thr132 [C2]	OG1	Ile128 [C2]	Ala129 [C2]	Thr132 [C2]	
-6.4	Chl	OH	Thr85 [C1]	OG1	Ala81 [C1]	Thr85 [C1]		
	Thr85 [C1]	OG1	Chl	OH				
-6.0	Chl	OH	Ile123 [C2]	O	Ile123 [C2]	Ile124 [C2]		
	Chl	OH	Ile124 [C2]	O				

Electron Transport Chain Complex III (Cytochrome bc1)

Cytochrome bc1, bovine heart,1bgy								
-9.6	Chl	OH	Tyr358 [C8]	OH	Ser297 [C6]	Tyr358 [C8]		
-8.1	Ser34 [K1]	OG	Chl	OH	Val25 [J1]	Ala28 [J1]	Leu29 [J1]	Ser34 [K1]
-7.8	Chl	OH	Thr334 [C7]	OG1	Ala330 [C7]	Asp331 [C7]	Thr334 [C7]	
Cytochrome bc1, bovine heart,[subunits renamed to match 1bgy],1pp9								
-7.5	Chl	OH	Asp331 [C7]	OD1	Ala330 [C7]	Asp331 [C7]	Thr334 [C7]	
-7.2	Chl	OH	Tyr358 [C8]	OH	Ser297 [C6]	Tyr358 [C8]		
-7.1	Chl	OH	Thr42 [E1]	OG1	Thr42 [E1]			
Cytochrome bc1, bovine heart,[subunits renamed to match 1bgy],5nmi								
-8.0	Chl	OH	Ser34 [K1]	OG	Gly31 [K1]	Ser34 [K1]	Ala35 [K1]	
	Ser34 [K1]	OG	Chl	OH				
Cytochrome bc1, with inhibitor, bovine heart,2fyu								
-8.8	Chl	OH	Tyr358 [C8]	OH	Ser297 [C6]	Tyr358 [C8]		
-7.9	Chl	OH	Asp331 [C7]	OD2	Ala330 [C7]	Asp331 [C7]	Thr334 [C7]	
Cytochrome bc1, bovine heart,[subunits renamed to match 1bgy], 1ntm								
-8.6	Chl	OH	Tyr358 [C8]	OH	Ser297 [C6]	Ile298 [C6]	Tyr358 [C8]	
Cytochrome bc1, bovine heart,[subunits renamed to match 1bgy], 1l0l								
-9.0	Chl	OH	Tyr358 [C8]	OH	Ser297 [C6]	Leu301 [C6]	Tyr358 [C8]	
-8.0	Chl	OH	Asp331 [C7]	OD1	Ala330 [C7]	Asp331 [C7]	Thr334 [C7]	
-8.0	Chl	OH	Thr44 [E1]	OG1	Thr44 [E1]	Ala48 [E1]		
Cytochrome bc1, human, [subunits renamed to match 1bgy],5xte								
-8.1	Chl	OH	Ala126 [E1]	O	Ala126 [E1]	Lys130 [E1]		
-6.9	Chl	OH	Ser238 [C5]	OG	Leu234 [C5]	Phe235 [C5]	Ser238 [C5]	

Electron Transport Chain Complex IV (Cytochrome c Oxidase)

Cytochrome c oxidase, fully oxidised, [early structure], bovine heart, 1occ								
-7.2	Chl	OH	Ser27 [G1]	OG	Leu23 [G1]	Ala24 [G1]	Ser27 [G1]	
-7.1	Chl	OH	His151 [A4]	ND1	His151 [A4]	Thr207 [A5]		
-7.0	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Thr48 [C2]		
-6.9	Chl	OH	Thr95 [C3]	OG1	Val91 [C3]	Thr95 [C3]		

E[1]	Donor		Acceptor		Local Residues (within 3 Å of a cholesterol –OH group)			
Cytochrome c oxidase, fully oxidised, bovine heart, 1v54								
-8.5	Chl	OH	Ser89 [C3]	OG	Ser89 [C3]	Glu90 [C3]		
-7.6	Chl	OH	Thr174 [C5]	OG1	Gly170 [C5]	Val171 [C5]	Thr174 [C5]	Ser212 [C6]
-7.3	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Thr48 [C2]		
-7.2	Chl	OH	Ser28 [I1]	OG	Ala24 [I1]	Ser28 [I1]		
Cytochrome c oxidase, fully reduced, bovine heart, 1v55								
-8.4	Chl	OH	Ser89 [C3]	OG	Ser89 [C3]			
-7.8	Chl	OH	Ser212 [C6]	OG	Gly170 [C5]	Thr174 [C5]	Ser212 [C6]	
	Chl	OH	Thr174 [C5]	OG1				
-7.4	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Leu47 [C2]	Thr48 [C2]	
-7.2	Chl	OH	Ser27 [G1]	OG	Leu23 [G1]	Ala24 [G1]	Ser27 [G1]	
Cytochrome c oxidase, with bound cyanide, bovine heart, 3x2q								
-8.3	Chl	OH	Ser89 [C3]	OG	Ser89 [C3]	Glu90 [C3]		
-7.2	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Thr48 [C2]		
-7.2	Chl	OH	Ser212 [C6]	OG	Gly170 [C5]	Thr174 [C5]	Ser212 [C6]	
	Chl	OH	Thr174 [C5]	OG1				
-7.0	Chl	OH	Ser28 [I1]	OG	Ala24 [I1]	Ser28 [I1]		
-7.0	Chl	OH	Ser27 [G1]	OG	Leu23 [G1]	Ala24 [G1]	Ser27 [G1]	
Cytochrome c oxidase, with bound cytochrome c, bovine heart, 5iy5								
-8.8	Chl	OH	Ser89 [C3]	OG	Ser89 [C3]			
-7.8	Chl	OH	Ser212 [C6]	OG	Gly170 [C5]	Thr174 [C5]	Ser212 [C6]	
	Chl	OH	Thr174 [C5]	OG1				
-7.2	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Leu47 [C2]	Thr48 [C2]	
Cytochrome c oxidase, at neutral pH, bovine heart, 5xdq								
-8.6	Chl	OH	Ser89 [C3]	OG	Ser89 [C3]			
-8.2	Chl	OH	Ser212 [C6]	OG	Gly170 [C5]	Thr174 [C5]	Ser212 [C6]	
	Chl	OH	Thr174 [C5]	OG1				
-7.6	Chl	OH	Thr48 [C2]	OG1	Met44 [C2]	Thr48 [C2]		

1. kcals mol^{-1}, with molar concentration units.

TABLE S5 Residues interacting with cholesterol in more than two members of the Class A GPCRs

No.[1]	Residue	GPCR
1.43	Ser	mAChR M1, M2, M4
2.54	Ser, Gly	$5HT_{1B}$, $A2_a$, mAChR M3
2.55	Val, Ser, Leu	$A2_a$, Opioid μ, $P2Y_{12}$
3.34	Tyr	NOP, Opioid δ, κ, μ
5.46 + 5.461	Ala, Cys,Val	$5HT_{1B}$, $A2_a$, β_2AR, mAChR M1, M3, M4
6.46 + 6.461	Ala, Leu, Phe	CXC4, FFAR1, AT1
6.47	Cys, Ser	CXC4, $P2Y_1$, AT1
7.47	Gly, Thr, Ser	β_2AR, CB_1, Opioid δ, κ

1. Residue number in the Ballesteros-Weinstein numbering system (1).

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