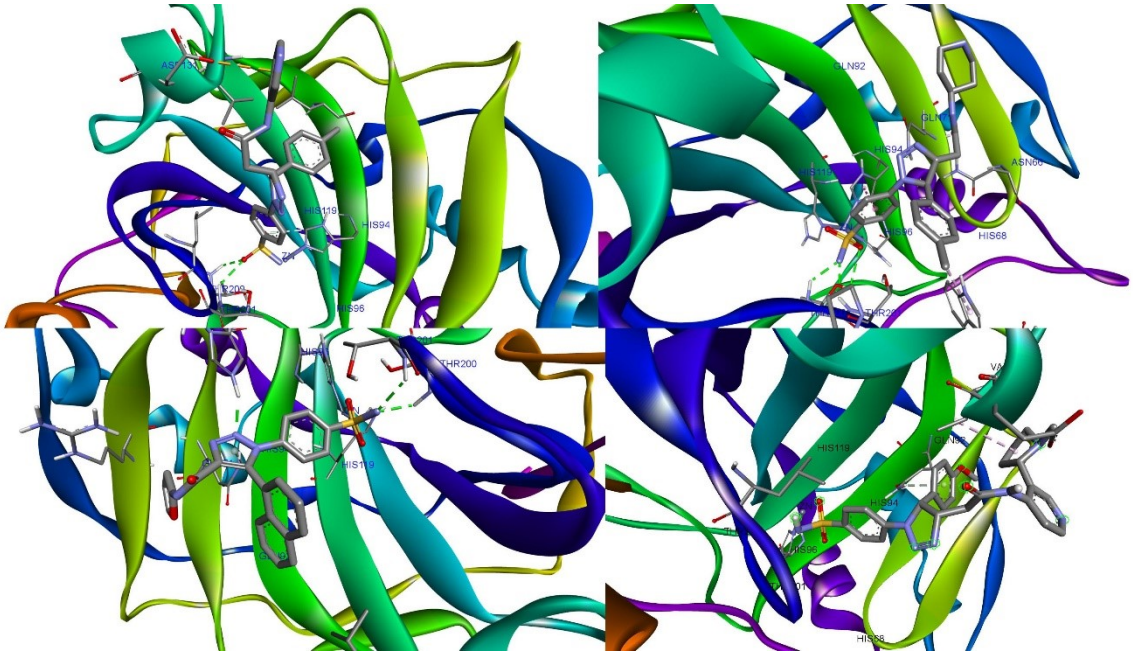
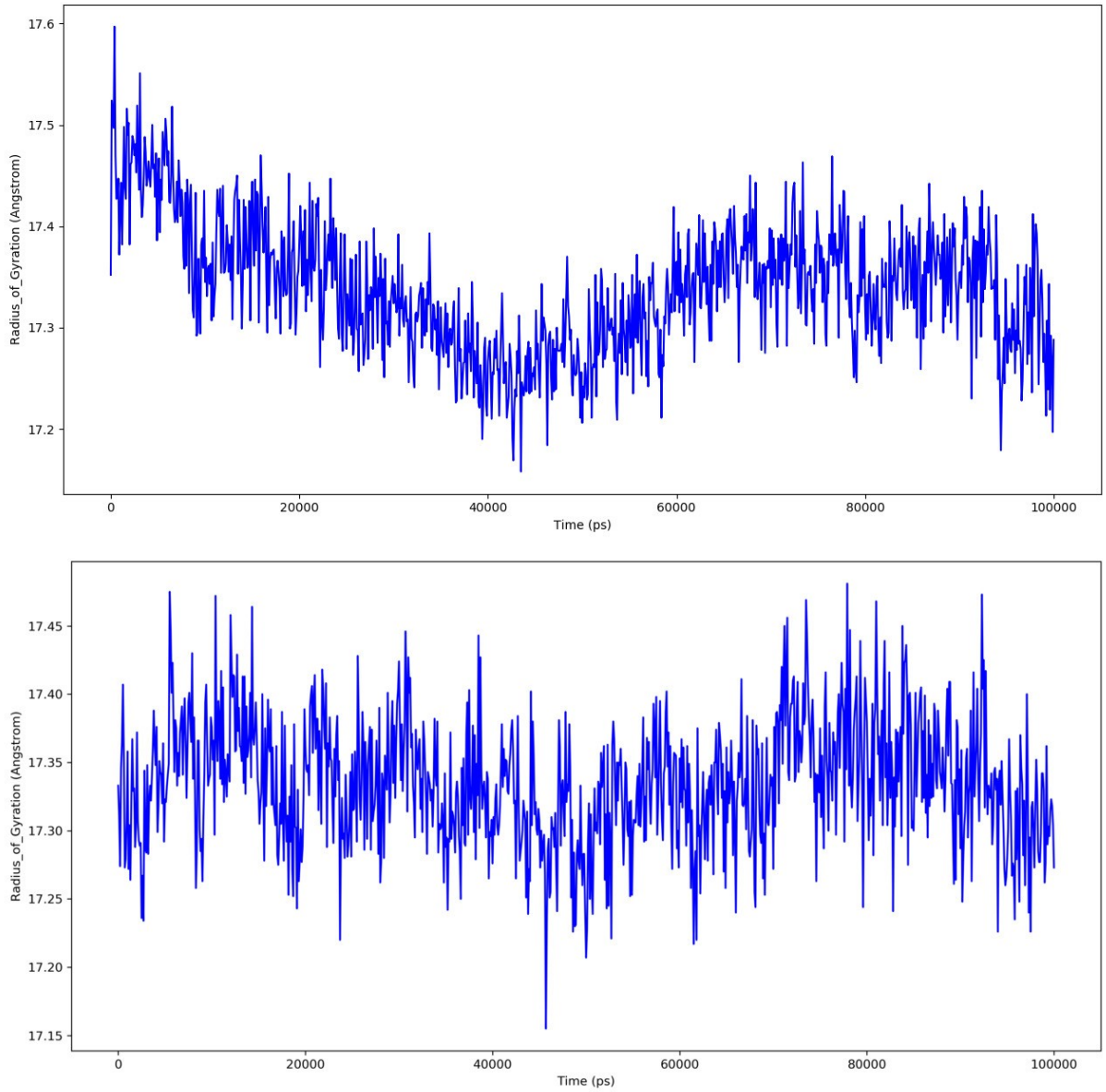
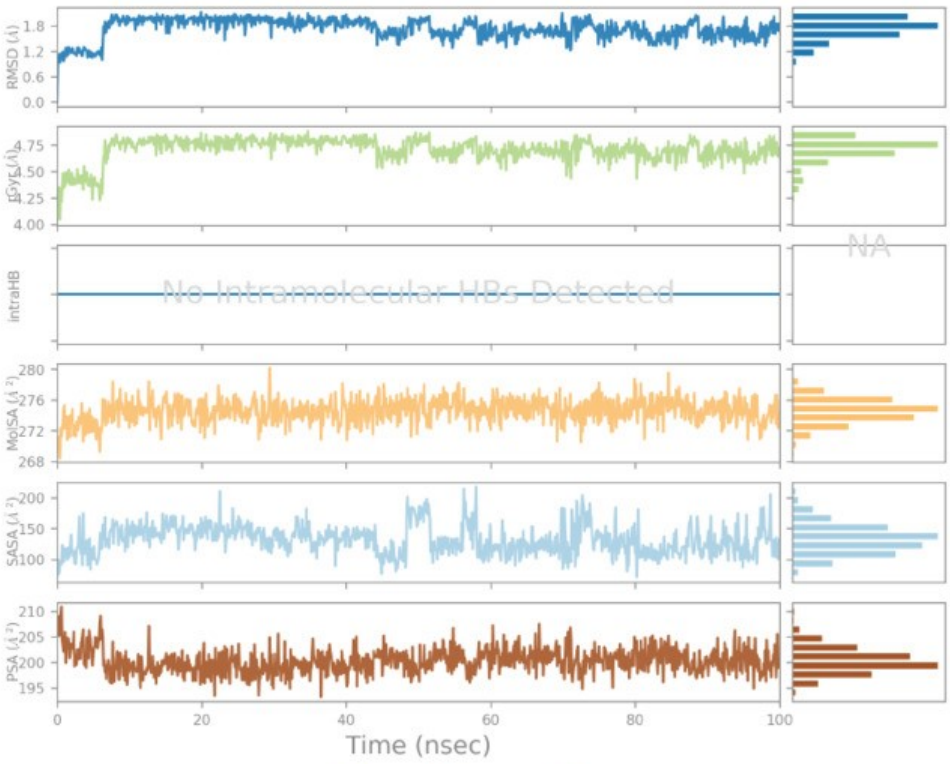


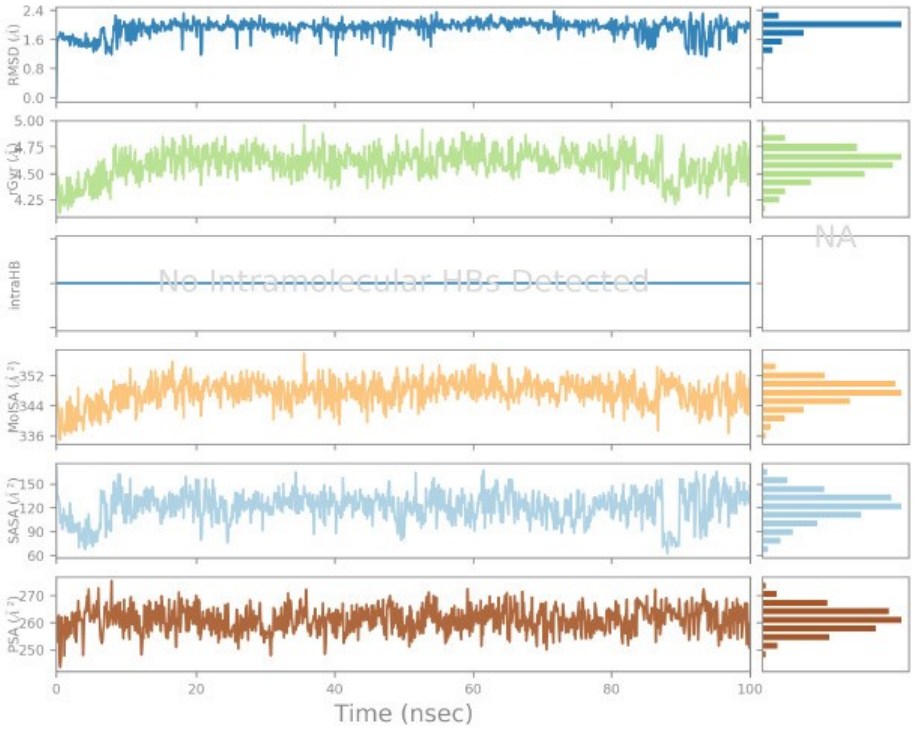
Supplementary Fig. 1: Docking interactions of compound 1 (Top left), compound 2 (Top right), compound 20 (Bottom left) and compound 24 (Bottom right)



Supplementary Fig. 2: Radius of Gyration plot of 5FL4 in complex with SLC0111 (Top) and compound 27 (Bottom)



Ligand Properties



Supplementary Fig. 3: Details of RMSD, rGyr, intraHB, MolSA, SASA and PSA of SLC0111_5FL4 (Top) and compound 27_5FL4 (Bottom) complexes were presented.

Supplementary Table I: Molecular descriptor contribution information

Sl.No.	MoRSEV22	MoRSEC17	MoRSEV1	MoRSEC4	MoRSEE2	pKi by model eq
1	-0.654	0.134	30.612	0.161	-3.572	9.132303
2	-0.426	0.152	28.108	0.346	-6.375	9.655535
3	-0.78	0.139	28.83	0.267	-5.889	8.320288
4	-0.566	0.115	28.646	0.292	-6.391	8.593911
5	-0.893	0.147	30.915	0.251	-7.392	8.35372
6	-0.62	0.126	26.367	0.323	-5.658	8.207527
7	-0.618	0.115	25.608	0.311	-4.003	8.02371
8	-0.61	0.152	25.575	0.295	-5.789	8.410657
9	-0.614	0.139	24.013	0.235	-2.116	8.122925
10	-0.583	0.154	23.011	0.271	-3.775	8.119139
11	-0.765	0.143	30.268	0.17	-5.374	8.636518
12	-0.694	0.147	26.103	0.268	-5.839	8.110032
13	-0.709	0.16	28.639	0.158	-6.052	8.619526
14	-0.541	0.15	28.96	0.238	-9.131	8.899117
15	-0.444	0.158	23.156	0.249	-7.181	8.246254
16	-0.995	0.118	34.171	0.262	-8.454	8.196575
17	-0.786	0.111	30.035	0.284	-7.015	8.02662
18	-0.697	0.125	28.36	0.394	-10.153	8.02165
19	-0.678	0.111	30.776	0.241	-6.838	8.496056
20	-0.487	0.163	29.384	0.18	-2.466	10.04751
21	-0.843	0.131	30.427	0.199	-6.041	8.196424
22	-0.605	0.143	28.544	0.255	-9.791	8.430122
23	-0.841	0.103	34.716	0.184	-6.87	8.620779
24	-0.746	0.173	35.269	0.262	-9.822	10.03263
25	-0.764	0.114	32.502	0.262	-5.945	8.806199
26	-0.995	0.148	31.343	0.244	-7.552	8.095341
27	-0.697	0.299	22.946	0.352	-5.153	10.10375
28	-0.127	0.134	19.353	0.008	-0.474	8.317137
29	-0.237	0.148	20.015	0.147	-4.507	8.145953
SLC	-0.666	0.162	21.85	0.321	-5.452	7.606996

Supplementary Table II: Molecular descriptor contribution information

Sl.No.	MoRSEV22	MoRSEC17	MoRSEV1	MoRSEC4	MoRSEE2	pKi by model eq
1	-0.654	0.134	30.612	0.161	-3.572	9.132303
2	-0.426	0.152	28.108	0.346	-6.375	9.655535
3	-0.78	0.139	28.83	0.267	-5.889	8.320288
4	-0.566	0.115	28.646	0.292	-6.391	8.593911
5	-0.893	0.147	30.915	0.251	-7.392	8.35372
6	-0.62	0.126	26.367	0.323	-5.658	8.207527
7	-0.618	0.115	25.608	0.311	-4.003	8.02371
8	-0.61	0.152	25.575	0.295	-5.789	8.410657
9	-0.614	0.139	24.013	0.235	-2.116	8.122925
10	-0.583	0.154	23.011	0.271	-3.775	8.119139
11	-0.765	0.143	30.268	0.17	-5.374	8.636518
12	-0.694	0.147	26.103	0.268	-5.839	8.110032
13	-0.709	0.16	28.639	0.158	-6.052	8.619526
14	-0.541	0.15	28.96	0.238	-9.131	8.899117
15	-0.444	0.158	23.156	0.249	-7.181	8.246254
16	-0.995	0.118	34.171	0.262	-8.454	8.196575
17	-0.786	0.111	30.035	0.284	-7.015	8.02662
18	-0.697	0.125	28.36	0.394	-10.153	8.02165
19	-0.678	0.111	30.776	0.241	-6.838	8.496056
20	-0.487	0.163	29.384	0.18	-2.466	10.04751
21	-0.843	0.131	30.427	0.199	-6.041	8.196424
22	-0.605	0.143	28.544	0.255	-9.791	8.430122
23	-0.841	0.103	34.716	0.184	-6.87	8.620779
24	-0.746	0.173	35.269	0.262	-9.822	10.03263
25	-0.764	0.114	32.502	0.262	-5.945	8.806199
26	-0.995	0.148	31.343	0.244	-7.552	8.095341
27	-0.697	0.299	22.946	0.352	-5.153	10.10375
28	-0.127	0.134	19.353	0.008	-0.474	8.317137
29	-0.237	0.148	20.015	0.147	-4.507	8.145953
SLC	-0.666	0.162	21.85	0.321	-5.452	7.606996

Supplementary table III: ADMET profiles of selected docked compounds from pkCSM server.

Property	Model Name	Predicted Value of Compound 1	Predicted Value of Compound 2	Predicted Value of Compound 20	Predicted Value of Compound 24	Predicted Value of Compound 27	Predicted Value of SLC0111	Unit
Absorption	Water solubility	-3.36	-3.477	-3.49	-3.157	-4.265	-3.796	Numeric (log mol/L)
Absorption	Caco2 permeability	0.662	-0.189	0.312	0.428	0.343	0.886	Numeric (log Papp in 10^{-6} cm/s)
Absorption	Intestinal absorption (human)	71.219	63.432	88.29	64.057	73.451	78.641	Numeric (% Absorbed)
Absorption	Skin Permeability	-2.736	-2.736	-2.735	-2.735	-2.736	-2.857	Numeric (log Kp)
Absorption	P-glycoprotein substrate	Yes	Yes	Yes	Yes	Yes	Yes	Categorical (Yes/No)
Absorption	P-glycoprotein I inhibitor	No	Yes	Yes	Yes	Yes	No	Categorical (Yes/No)
Absorption	P-glycoprotein II inhibitor	Yes	No	Yes	Yes	No	No	Categorical (Yes/No)
Distribution	VDss (human)	-0.212	0.496	-0.678	0.465	-0.761	-0.883	Numeric (log L/kg)
Distribution	Fraction unbound (human)	0.15	0.249	0.154	0.155	0	0.129	Numeric (Fu)
Distribution	BBB permeability	-1.002	-0.921	-0.452	-1.167	-1.588	-0.872	Numeric (log BB)
Distribution	CNS permeability	-2.803	-3.204	-2.596	-3.066	-3.672	-2.527	Numeric (log PS)
Metabolism	CYP2D6 substrate	No	No	No	No	No	No	Categorical (Yes/No)

Metabolism	CYP3A4 substrate	Yes	Yes	Yes	Yes	No	No	Categorical (Yes/No)
Metabolism	CYP1A2 inhibitior	No	No	No	No	Yes	No	Categorical (Yes/No)
Metabolism	CYP2C19 inhibitior	No	No	Yes	No	No	No	Categorical (Yes/No)
Metabolism	CYP2C9 inhibitior	Yes	No	Yes	No	No	No	Categorical (Yes/No)
Metabolism	CYP2D6 inhibitior	No	No	No	No	No	No	Categorical (Yes/No)
Metabolism	CYP3A4 inhibitior	Yes	No	No	Yes	No	No	Categorical (Yes/No)
Excretion	Total Clearance	0.422	0.593	0.488	0.582	0.114	0.401	Numeric (log ml/min/kg)
Excretion	Renal OCT2 substrate	No	No	No	No	No	No	Categorical (Yes/No)
Toxicity	AMES toxicity	No	No	No	No	No	No	Categorical (Yes/No)
Toxicity	Max. tolerated dose (human)	0.103	0.004	0.586	0.029	0.43	0.615	Numeric (log mg/kg/day)
Toxicity	hERG I inhibitor	No	No	No	No	No	No	Categorical (Yes/No)
Toxicity	hERG II inhibitor	Yes	Yes	Yes	Yes	Yes	No	Categorical (Yes/No)
Toxicity	Oral Rat Acute Toxicity (LD50)	2.291	2.843	3.407	2.388	2.171	1.028	Numeric (mol/kg)
Toxicity	Oral Rat Chronic Toxicity (LOAEL)	2.286	1.409	2.112	2.1	2.594	1.807	Numeric (log mg/kg_bw/day)
Toxicity	Hepatotoxicity	Yes	Yes	Yes	Yes	Yes	No	Categorical (Yes/No)
Toxicity	Skin Sensitisation	No	No	No	No	No	No	Categorical

								(Yes/No)
Toxicity	*T.Pyriformis* toxicity	**0.296**	**0.303**	**0.285**	**0.285**	**0.29**	**0.383**	Numeric (log ug/L)
Toxicity	Minnow toxicity	**0.81**	**5.287**	**0.182**	**1.453**	**0.501**	**2.916**	Numeric (log mM)