



Full wwPDB EM Validation Report ⓘ

Sep 17, 2025 – 06:13 PM JST

PDB ID : 8J01 / pdb_00008j01
EMDB ID : EMD-35880
Title : Human KCNQ2-CaM in complex with CBD and PIP2
Authors : Ma, D.; Li, X.; Guo, J.
Deposited on : 2023-04-09
Resolution : 3.10 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

EMDB validation analysis : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.45.1

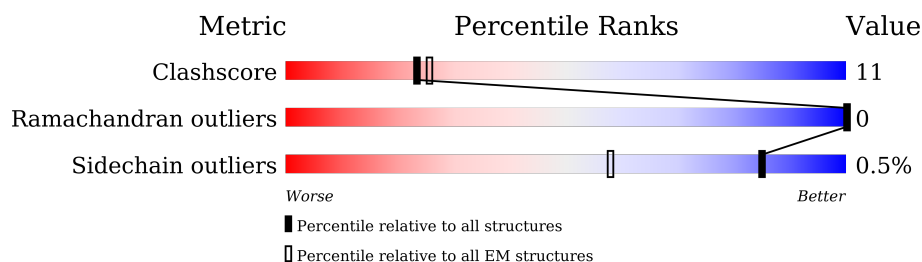
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	656	41% 12% 46%
1	B	656	42% 12% 46%
1	D	656	41% 13% 46%
1	G	656	40% 14% 46%
2	C	177	60% 20% 19%
2	E	177	54% 27% 19%
2	F	177	56% 24% 19%
2	H	177	58% 23% 19%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 32260 atoms, of which 16028 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Potassium voltage-gated channel subfamily KQT member 2.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	354	Total	C	H	N	O	S	0	0
			5741	1889	2882	493	464	13		
1	B	354	Total	C	H	N	O	S	0	0
			5741	1889	2882	493	464	13		
1	D	354	Total	C	H	N	O	S	0	0
			5741	1889	2882	493	464	13		
1	G	354	Total	C	H	N	O	S	0	0
			5741	1889	2882	493	464	13		

There are 68 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	63	MET	-	initiating methionine	UNP O43526
A	703	VAL	-	expression tag	UNP O43526
A	704	GLU	-	expression tag	UNP O43526
A	705	GLY	-	expression tag	UNP O43526
A	706	GLY	-	expression tag	UNP O43526
A	707	SER	-	expression tag	UNP O43526
A	708	SER	-	expression tag	UNP O43526
A	709	GLY	-	expression tag	UNP O43526
A	710	GLY	-	expression tag	UNP O43526
A	711	TRP	-	expression tag	UNP O43526
A	712	SER	-	expression tag	UNP O43526
A	713	HIS	-	expression tag	UNP O43526
A	714	PRO	-	expression tag	UNP O43526
A	715	GLN	-	expression tag	UNP O43526
A	716	PHE	-	expression tag	UNP O43526
A	717	GLU	-	expression tag	UNP O43526
A	718	LYS	-	expression tag	UNP O43526
B	63	MET	-	initiating methionine	UNP O43526
B	703	VAL	-	expression tag	UNP O43526
B	704	GLU	-	expression tag	UNP O43526
B	705	GLY	-	expression tag	UNP O43526
B	706	GLY	-	expression tag	UNP O43526

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	707	SER	-	expression tag	UNP O43526
B	708	SER	-	expression tag	UNP O43526
B	709	GLY	-	expression tag	UNP O43526
B	710	GLY	-	expression tag	UNP O43526
B	711	TRP	-	expression tag	UNP O43526
B	712	SER	-	expression tag	UNP O43526
B	713	HIS	-	expression tag	UNP O43526
B	714	PRO	-	expression tag	UNP O43526
B	715	GLN	-	expression tag	UNP O43526
B	716	PHE	-	expression tag	UNP O43526
B	717	GLU	-	expression tag	UNP O43526
B	718	LYS	-	expression tag	UNP O43526
D	63	MET	-	initiating methionine	UNP O43526
D	703	VAL	-	expression tag	UNP O43526
D	704	GLU	-	expression tag	UNP O43526
D	705	GLY	-	expression tag	UNP O43526
D	706	GLY	-	expression tag	UNP O43526
D	707	SER	-	expression tag	UNP O43526
D	708	SER	-	expression tag	UNP O43526
D	709	GLY	-	expression tag	UNP O43526
D	710	GLY	-	expression tag	UNP O43526
D	711	TRP	-	expression tag	UNP O43526
D	712	SER	-	expression tag	UNP O43526
D	713	HIS	-	expression tag	UNP O43526
D	714	PRO	-	expression tag	UNP O43526
D	715	GLN	-	expression tag	UNP O43526
D	716	PHE	-	expression tag	UNP O43526
D	717	GLU	-	expression tag	UNP O43526
D	718	LYS	-	expression tag	UNP O43526
G	63	MET	-	initiating methionine	UNP O43526
G	703	VAL	-	expression tag	UNP O43526
G	704	GLU	-	expression tag	UNP O43526
G	705	GLY	-	expression tag	UNP O43526
G	706	GLY	-	expression tag	UNP O43526
G	707	SER	-	expression tag	UNP O43526
G	708	SER	-	expression tag	UNP O43526
G	709	GLY	-	expression tag	UNP O43526
G	710	GLY	-	expression tag	UNP O43526
G	711	TRP	-	expression tag	UNP O43526
G	712	SER	-	expression tag	UNP O43526
G	713	HIS	-	expression tag	UNP O43526
G	714	PRO	-	expression tag	UNP O43526

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	715	GLN	-	expression tag	UNP O43526
G	716	PHE	-	expression tag	UNP O43526
G	717	GLU	-	expression tag	UNP O43526
G	718	LYS	-	expression tag	UNP O43526

- Molecule 2 is a protein called Calmodulin-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	C	143	Total	C	H	N	O	S	0	0
			2129	681	1023	178	238	9		
2	F	143	Total	C	H	N	O	S	0	0
			2129	681	1023	178	238	9		
2	H	143	Total	C	H	N	O	S	0	0
			2129	681	1023	178	238	9		
2	E	143	Total	C	H	N	O	S	0	0
			2129	681	1023	178	238	9		

There are 112 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	150	LEU	-	expression tag	UNP P0DP23
C	151	GLU	-	expression tag	UNP P0DP23
C	152	GLY	-	expression tag	UNP P0DP23
C	153	GLY	-	expression tag	UNP P0DP23
C	154	SER	-	expression tag	UNP P0DP23
C	155	SER	-	expression tag	UNP P0DP23
C	156	GLY	-	expression tag	UNP P0DP23
C	157	GLY	-	expression tag	UNP P0DP23
C	158	LEU	-	expression tag	UNP P0DP23
C	159	VAL	-	expression tag	UNP P0DP23
C	160	PRO	-	expression tag	UNP P0DP23
C	161	ARG	-	expression tag	UNP P0DP23
C	162	GLY	-	expression tag	UNP P0DP23
C	163	SER	-	expression tag	UNP P0DP23
C	164	GLY	-	expression tag	UNP P0DP23
C	165	GLY	-	expression tag	UNP P0DP23
C	166	SER	-	expression tag	UNP P0DP23
C	167	SER	-	expression tag	UNP P0DP23
C	168	GLY	-	expression tag	UNP P0DP23
C	169	GLY	-	expression tag	UNP P0DP23
C	170	HIS	-	expression tag	UNP P0DP23
C	171	HIS	-	expression tag	UNP P0DP23

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
C	172	HIS	-	expression tag	UNP P0DP23
C	173	HIS	-	expression tag	UNP P0DP23
C	174	HIS	-	expression tag	UNP P0DP23
C	175	HIS	-	expression tag	UNP P0DP23
C	176	HIS	-	expression tag	UNP P0DP23
C	177	HIS	-	expression tag	UNP P0DP23
F	150	LEU	-	expression tag	UNP P0DP23
F	151	GLU	-	expression tag	UNP P0DP23
F	152	GLY	-	expression tag	UNP P0DP23
F	153	GLY	-	expression tag	UNP P0DP23
F	154	SER	-	expression tag	UNP P0DP23
F	155	SER	-	expression tag	UNP P0DP23
F	156	GLY	-	expression tag	UNP P0DP23
F	157	GLY	-	expression tag	UNP P0DP23
F	158	LEU	-	expression tag	UNP P0DP23
F	159	VAL	-	expression tag	UNP P0DP23
F	160	PRO	-	expression tag	UNP P0DP23
F	161	ARG	-	expression tag	UNP P0DP23
F	162	GLY	-	expression tag	UNP P0DP23
F	163	SER	-	expression tag	UNP P0DP23
F	164	GLY	-	expression tag	UNP P0DP23
F	165	GLY	-	expression tag	UNP P0DP23
F	166	SER	-	expression tag	UNP P0DP23
F	167	SER	-	expression tag	UNP P0DP23
F	168	GLY	-	expression tag	UNP P0DP23
F	169	GLY	-	expression tag	UNP P0DP23
F	170	HIS	-	expression tag	UNP P0DP23
F	171	HIS	-	expression tag	UNP P0DP23
F	172	HIS	-	expression tag	UNP P0DP23
F	173	HIS	-	expression tag	UNP P0DP23
F	174	HIS	-	expression tag	UNP P0DP23
F	175	HIS	-	expression tag	UNP P0DP23
F	176	HIS	-	expression tag	UNP P0DP23
F	177	HIS	-	expression tag	UNP P0DP23
H	150	LEU	-	expression tag	UNP P0DP23
H	151	GLU	-	expression tag	UNP P0DP23
H	152	GLY	-	expression tag	UNP P0DP23
H	153	GLY	-	expression tag	UNP P0DP23
H	154	SER	-	expression tag	UNP P0DP23
H	155	SER	-	expression tag	UNP P0DP23
H	156	GLY	-	expression tag	UNP P0DP23
H	157	GLY	-	expression tag	UNP P0DP23

Continued on next page...

Continued from previous page...

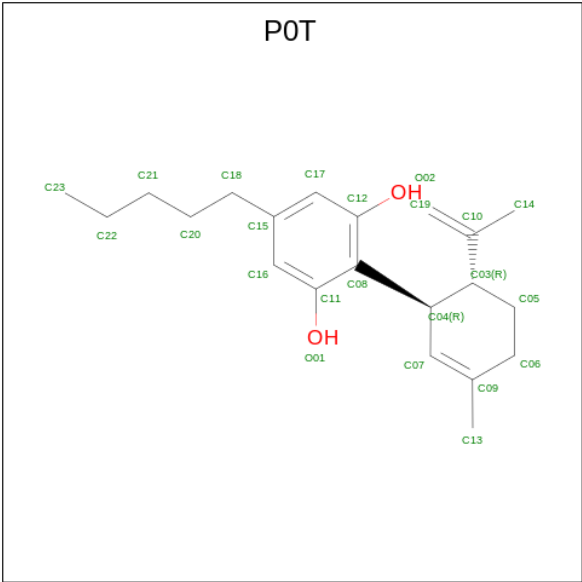
Chain	Residue	Modelled	Actual	Comment	Reference
H	158	LEU	-	expression tag	UNP P0DP23
H	159	VAL	-	expression tag	UNP P0DP23
H	160	PRO	-	expression tag	UNP P0DP23
H	161	ARG	-	expression tag	UNP P0DP23
H	162	GLY	-	expression tag	UNP P0DP23
H	163	SER	-	expression tag	UNP P0DP23
H	164	GLY	-	expression tag	UNP P0DP23
H	165	GLY	-	expression tag	UNP P0DP23
H	166	SER	-	expression tag	UNP P0DP23
H	167	SER	-	expression tag	UNP P0DP23
H	168	GLY	-	expression tag	UNP P0DP23
H	169	GLY	-	expression tag	UNP P0DP23
H	170	HIS	-	expression tag	UNP P0DP23
H	171	HIS	-	expression tag	UNP P0DP23
H	172	HIS	-	expression tag	UNP P0DP23
H	173	HIS	-	expression tag	UNP P0DP23
H	174	HIS	-	expression tag	UNP P0DP23
H	175	HIS	-	expression tag	UNP P0DP23
H	176	HIS	-	expression tag	UNP P0DP23
H	177	HIS	-	expression tag	UNP P0DP23
E	150	LEU	-	expression tag	UNP P0DP23
E	151	GLU	-	expression tag	UNP P0DP23
E	152	GLY	-	expression tag	UNP P0DP23
E	153	GLY	-	expression tag	UNP P0DP23
E	154	SER	-	expression tag	UNP P0DP23
E	155	SER	-	expression tag	UNP P0DP23
E	156	GLY	-	expression tag	UNP P0DP23
E	157	GLY	-	expression tag	UNP P0DP23
E	158	LEU	-	expression tag	UNP P0DP23
E	159	VAL	-	expression tag	UNP P0DP23
E	160	PRO	-	expression tag	UNP P0DP23
E	161	ARG	-	expression tag	UNP P0DP23
E	162	GLY	-	expression tag	UNP P0DP23
E	163	SER	-	expression tag	UNP P0DP23
E	164	GLY	-	expression tag	UNP P0DP23
E	165	GLY	-	expression tag	UNP P0DP23
E	166	SER	-	expression tag	UNP P0DP23
E	167	SER	-	expression tag	UNP P0DP23
E	168	GLY	-	expression tag	UNP P0DP23
E	169	GLY	-	expression tag	UNP P0DP23
E	170	HIS	-	expression tag	UNP P0DP23
E	171	HIS	-	expression tag	UNP P0DP23

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	172	HIS	-	expression tag	UNP P0DP23
E	173	HIS	-	expression tag	UNP P0DP23
E	174	HIS	-	expression tag	UNP P0DP23
E	175	HIS	-	expression tag	UNP P0DP23
E	176	HIS	-	expression tag	UNP P0DP23
E	177	HIS	-	expression tag	UNP P0DP23

- Molecule 3 is cannabidiol (CCD ID: P0T) (formula: C₂₁H₃₀O₂).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	H	O	0
			52	21	29	2	
3	A	1	Total	C	H	O	0
			52	21	29	2	
3	B	1	Total	C	H	O	0
			52	21	29	2	
3	B	1	Total	C	H	O	0
			52	21	29	2	
3	D	1	Total	C	H	O	0
			52	21	29	2	
3	D	1	Total	C	H	O	0
			52	21	29	2	
3	G	1	Total	C	H	O	0
			52	21	29	2	
3	G	1	Total	C	H	O	0
			52	21	29	2	

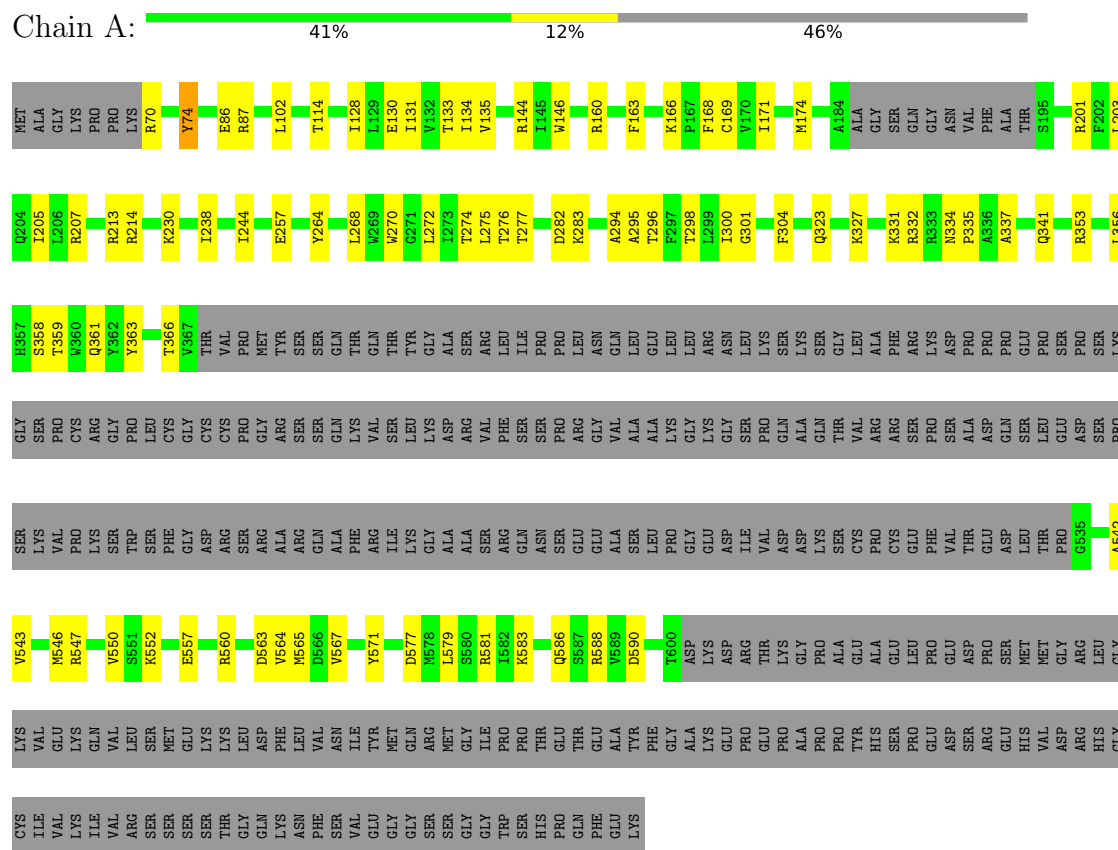
- # PIO

Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total 91	C 25	H 44	O 19	P 3	0
4	B	1	Total 91	C 25	H 44	O 19	P 3	0
4	D	1	Total 91	C 25	H 44	O 19	P 3	0
4	G	1	Total 91	C 25	H 44	O 19	P 3	0

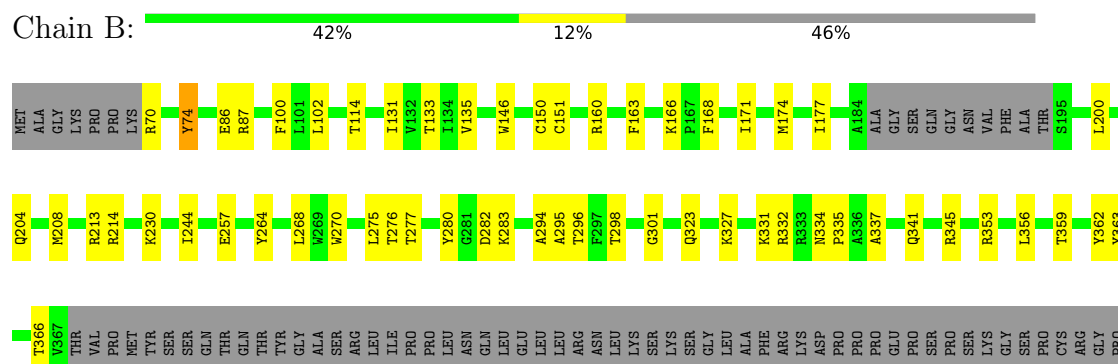
3 Residue-property plots

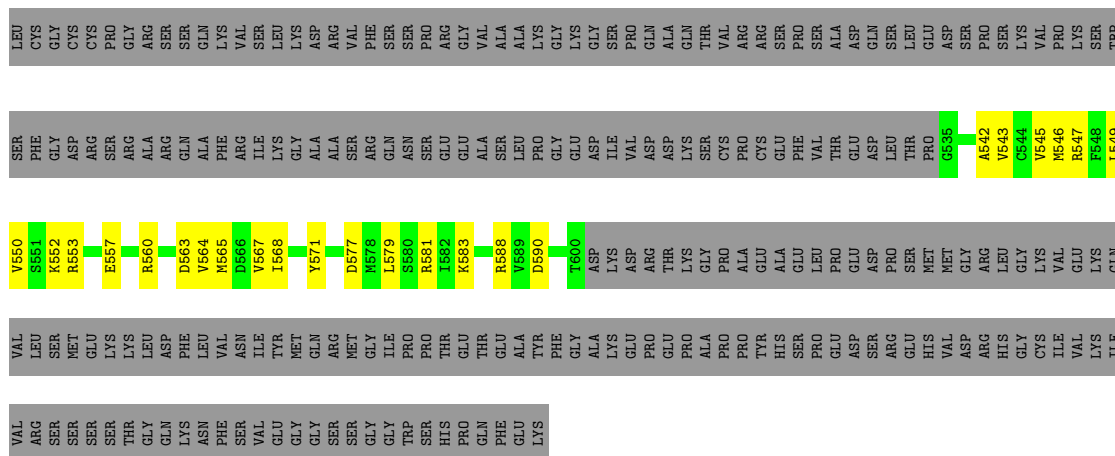
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Potassium voltage-gated channel subfamily KQT member 2

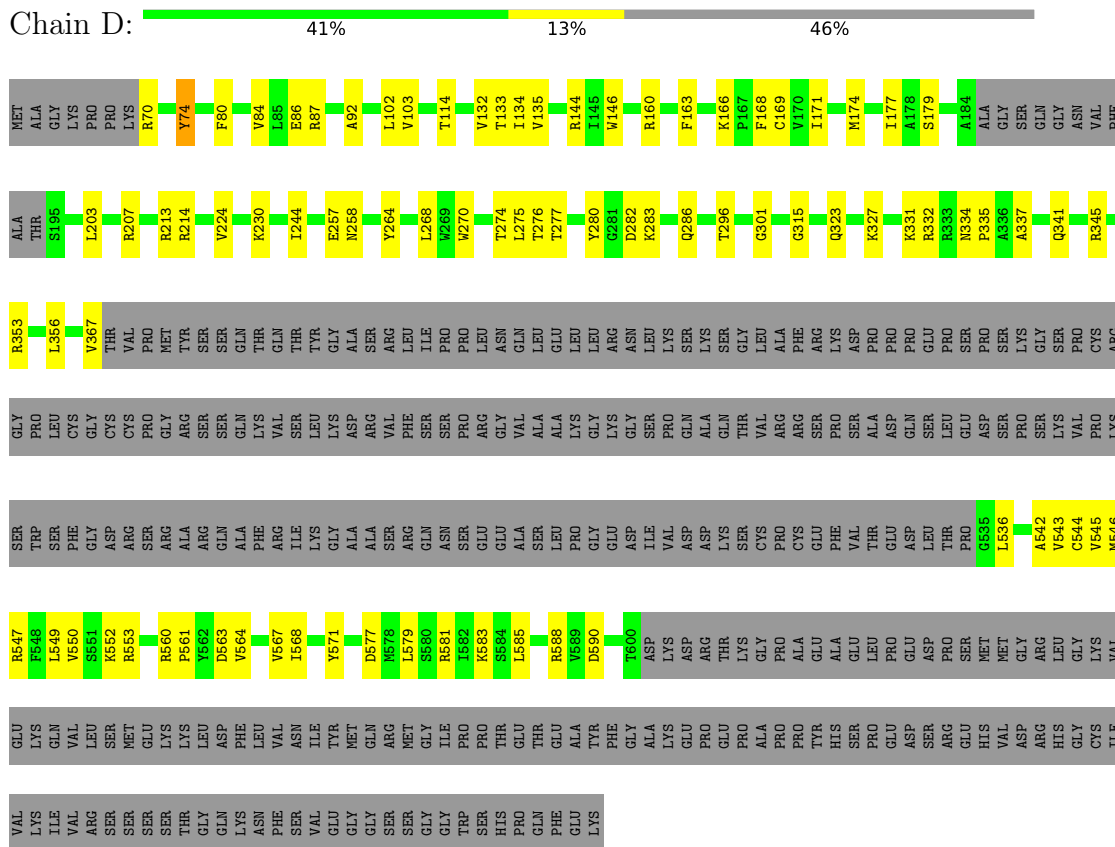


- Molecule 1: Potassium voltage-gated channel subfamily KQT member 2

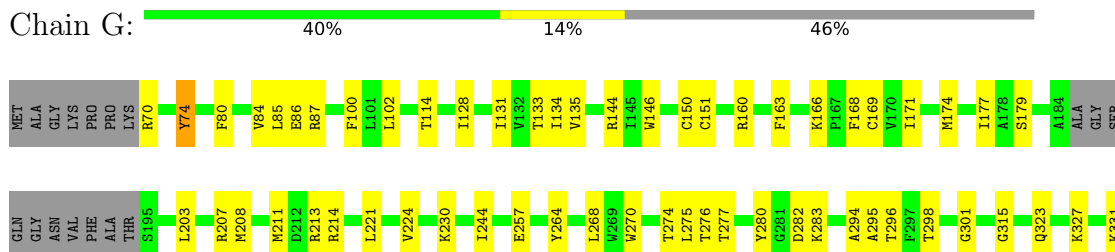




- Molecule 1: Potassium voltage-gated channel subfamily KQT member 2



- Molecule 1: Potassium voltage-gated channel subfamily KQT member 2



T109	T110	T111	T112	T113	T114	T115	T116	T117	T118		E121		E124		D130		D134		Q144	M145	M146	T147		A148	L15	LEU	GLY	GLY	GLY	GLY	SER	SER	GLY	GLY	GLY	LEU	VAL	PRO	ARG	ARG	GLY	GLY	SER	SER	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY
------	------	------	------	------	------	------	------	------	------	--	------	--	------	--	------	--	------	--	------	------	------	------	--	------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	66773	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	52	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PIO, POT

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.14	0/2930	0.29	0/3948
1	B	0.14	0/2930	0.28	0/3948
1	D	0.14	0/2930	0.29	0/3948
1	G	0.14	0/2930	0.29	0/3948
2	C	0.12	0/1118	0.33	0/1502
2	E	0.12	0/1118	0.32	0/1502
2	F	0.13	0/1118	0.32	0/1502
2	H	0.13	0/1118	0.35	0/1502
All	All	0.14	0/16192	0.30	0/21800

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2859	2882	2904	70	0
1	B	2859	2882	2904	64	0
1	D	2859	2882	2904	64	0
1	G	2859	2882	2904	68	0
2	C	1106	1023	1023	36	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	1106	1023	1023	47	0
2	F	1106	1023	1023	38	0
2	H	1106	1023	1023	39	0
3	A	46	58	0	1	0
3	B	46	58	0	1	0
3	D	46	58	0	1	0
3	G	46	58	0	1	0
4	A	47	44	44	2	0
4	B	47	44	44	2	0
4	D	47	44	44	2	0
4	G	47	44	44	2	0
All	All	16232	16028	15884	348	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 11.

All (348) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:102:SER:OG	2:H:105:GLU:OE1	1.93	0.87
2:F:102:SER:OG	2:F:105:GLU:OE1	1.93	0.86
2:C:102:SER:OG	2:C:105:GLU:OE1	1.95	0.85
2:E:102:SER:OG	2:E:105:GLU:OE1	1.94	0.83
2:F:53:ILE:O	2:F:57:ASP:N	2.13	0.82
2:C:53:ILE:O	2:C:57:ASP:N	2.12	0.81
1:A:294:ALA:O	1:A:298:THR:HG22	1.83	0.78
1:B:296:THR:OG1	3:B:803:P0T:O02	2.01	0.78
1:D:270:TRP:CZ2	1:D:270:TRP:CZ3	2.69	0.78
1:B:270:TRP:CZ2	1:B:270:TRP:CZ3	2.69	0.77
1:A:270:TRP:CZ2	1:A:270:TRP:CZ3	2.69	0.77
2:F:31:LYS:O	2:F:35:THR:HG23	1.86	0.76
1:A:296:THR:OG1	3:A:802:P0T:O02	2.02	0.76
1:G:270:TRP:CZ2	1:G:270:TRP:CZ3	2.69	0.75
2:H:77:MET:HE1	2:H:147:THR:HG22	1.68	0.75
2:E:110:MET:HE3	2:E:110:MET:HA	1.66	0.74
1:A:546:MET:HE1	2:E:56:VAL:HB	1.70	0.74
1:A:332:ARG:NH2	1:A:560:ARG:O	2.21	0.73
2:C:77:MET:HE3	2:C:146:MET:HE1	1.69	0.73
2:H:118:THR:OG1	2:H:121:GLU:OE1	2.03	0.72
2:H:53:ILE:O	2:H:57:ASP:N	2.23	0.72
1:D:332:ARG:NH2	1:D:560:ARG:O	2.22	0.71

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:332:ARG:NH2	1:B:560:ARG:O	2.24	0.70
2:E:53:ILE:O	2:E:57:ASP:N	2.25	0.69
1:D:296:THR:OG1	3:D:802:P0T:O02	2.09	0.69
2:F:77:MET:O	2:F:80:THR:OG1	2.11	0.68
1:D:80:PHE:O	1:D:84:VAL:HG23	1.94	0.68
1:G:332:ARG:NH2	1:G:560:ARG:O	2.25	0.67
1:G:543:VAL:HG21	2:H:37:MET:HE1	1.76	0.67
1:B:146:TRP:O	1:B:160:ARG:NH2	2.28	0.67
1:G:80:PHE:O	1:G:84:VAL:HG23	1.94	0.67
2:H:77:MET:O	2:H:80:THR:OG1	2.12	0.67
1:G:131:ILE:O	1:G:135:VAL:HG13	1.96	0.66
1:G:296:THR:OG1	3:G:802:P0T:O02	2.10	0.66
1:B:214:ARG:NH2	4:B:801:PIO:O2	2.29	0.66
1:D:214:ARG:NH2	4:D:803:PIO:O2	2.29	0.66
1:A:131:ILE:O	1:A:135:VAL:HG13	1.96	0.65
1:G:214:ARG:NH2	4:G:803:PIO:O2	2.30	0.65
1:A:146:TRP:O	1:A:160:ARG:NH2	2.31	0.64
2:F:110:MET:HA	2:F:110:MET:HE3	1.80	0.64
1:A:543:VAL:HG11	2:E:37:MET:HE1	1.81	0.63
1:D:171:ILE:HA	1:D:174:MET:HE3	1.81	0.63
1:D:341:GLN:OE1	2:F:115:GLU:N	2.31	0.63
1:G:546:MET:SD	2:H:52:MET:HE2	2.39	0.62
2:E:40:LEU:HD12	2:E:40:LEU:O	1.99	0.62
1:D:547:ARG:NH1	2:F:42:GLN:OE1	2.32	0.62
1:A:341:GLN:NE2	2:E:113:LEU:O	2.31	0.62
1:B:546:MET:HE1	2:C:56:VAL:HB	1.80	0.62
1:A:341:GLN:OE1	2:E:115:GLU:N	2.32	0.62
1:A:214:ARG:NH2	4:A:803:PIO:O2	2.32	0.61
1:B:362:TYR:OH	2:C:42:GLN:NE2	2.32	0.61
1:D:146:TRP:O	1:D:160:ARG:NH2	2.32	0.61
1:B:553:ARG:NH1	2:C:55:GLU:OE1	2.33	0.61
2:C:77:MET:O	2:C:80:THR:OG1	2.18	0.61
2:H:53:ILE:HA	2:H:56:VAL:HG12	1.81	0.61
2:C:140:GLU:N	2:C:140:GLU:OE1	2.33	0.60
1:A:577:ASP:OD2	1:A:581:ARG:NH1	2.33	0.60
1:B:276:THR:O	1:B:277:THR:OG1	2.17	0.60
1:B:327:LYS:NZ	4:B:801:PIO:O43	2.34	0.60
1:A:564:VAL:HG22	1:B:565:MET:HG2	1.84	0.60
1:A:102:LEU:HD21	1:A:133:THR:OG1	2.02	0.60
1:B:577:ASP:OD2	1:B:581:ARG:NH1	2.34	0.59
1:A:542:ALA:HA	2:E:73:MET:HE1	1.85	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:171:ILE:HA	1:G:174:MET:HE3	1.82	0.59
1:G:577:ASP:OD2	1:G:581:ARG:NH1	2.36	0.59
1:A:230:LYS:NZ	1:G:323:GLN:OE1	2.36	0.59
1:D:341:GLN:NE2	2:F:113:LEU:O	2.34	0.59
2:F:6:THR:OG1	2:F:7:GLU:N	2.36	0.59
1:G:102:LEU:HD21	1:G:133:THR:OG1	2.01	0.59
2:C:145:MET:SD	2:C:146:MET:N	2.76	0.59
1:G:294:ALA:O	1:G:298:THR:HG22	2.02	0.59
1:A:323:GLN:OE1	1:B:230:LYS:NZ	2.36	0.58
1:A:588:ARG:NH1	1:B:590:ASP:OD1	2.36	0.58
1:B:102:LEU:HD21	1:B:133:THR:OG1	2.03	0.58
2:F:145:MET:SD	2:F:146:MET:N	2.77	0.58
2:C:6:THR:OG1	2:C:7:GLU:N	2.36	0.58
2:C:85:GLU:N	2:C:85:GLU:OE1	2.36	0.58
2:E:110:MET:HE2	2:E:117:LEU:HD12	1.85	0.58
1:D:542:ALA:HA	2:F:73:MET:HE1	1.85	0.58
1:A:590:ASP:OD1	1:G:588:ARG:NH1	2.36	0.58
1:G:547:ARG:NH1	2:H:42:GLN:OE1	2.35	0.58
2:E:73:MET:HE2	2:E:73:MET:HA	1.84	0.58
1:D:144:ARG:NH1	1:D:169:CYS:SG	2.77	0.58
2:C:117:LEU:HD22	2:C:121:GLU:HG2	1.85	0.57
1:D:577:ASP:OD2	1:D:581:ARG:NH1	2.37	0.57
2:H:117:LEU:HD22	2:H:121:GLU:HG2	1.86	0.57
1:A:547:ARG:NH1	2:E:42:GLN:OE1	2.36	0.57
2:H:73:MET:HE2	2:H:73:MET:HA	1.87	0.57
1:B:547:ARG:NH1	2:C:42:GLN:OE1	2.34	0.57
1:B:131:ILE:O	1:B:135:VAL:HG13	2.05	0.56
1:G:146:TRP:O	1:G:160:ARG:NH2	2.38	0.56
1:D:102:LEU:HD21	1:D:133:THR:OG1	2.05	0.56
1:D:588:ARG:NH1	1:G:590:ASP:OD1	2.37	0.56
2:F:73:MET:HE2	2:F:73:MET:HA	1.87	0.56
2:H:72:MET:HE3	2:H:72:MET:HA	1.88	0.56
2:E:145:MET:SD	2:E:146:MET:N	2.79	0.56
1:B:588:ARG:NH1	1:D:590:ASP:OD1	2.39	0.56
1:D:323:GLN:OE1	1:G:230:LYS:NZ	2.39	0.56
1:G:211:MET:HE3	1:G:211:MET:HA	1.88	0.56
1:B:275:LEU:HD22	1:B:301:GLY:HA3	1.88	0.55
1:A:341:GLN:HG3	2:E:110:MET:HE1	1.87	0.55
1:G:85:LEU:HD21	1:G:144:ARG:HB2	1.88	0.55
1:A:327:LYS:NZ	4:A:803:PIO:O43	2.39	0.54
1:G:353:ARG:HB2	1:G:356:LEU:HD11	1.89	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:264:TYR:HB3	1:G:114:THR:HG21	1.88	0.54
2:F:140:GLU:OE1	2:F:140:GLU:N	2.39	0.54
1:G:563:ASP:OD1	1:G:564:VAL:N	2.40	0.54
2:H:142:PHE:CD2	2:H:146:MET:HE2	2.42	0.54
2:E:77:MET:C	2:E:77:MET:HE2	2.32	0.54
2:F:117:LEU:HD22	2:F:121:GLU:HG2	1.89	0.53
2:E:85:GLU:N	2:E:85:GLU:OE1	2.40	0.53
1:B:323:GLN:OE1	1:D:230:LYS:NZ	2.42	0.53
2:F:85:GLU:OE1	2:F:85:GLU:N	2.40	0.53
2:H:9:GLN:N	2:H:9:GLN:OE1	2.40	0.53
1:B:563:ASP:OD1	1:B:564:VAL:N	2.41	0.53
1:G:150:CYS:SG	1:G:151:CYS:N	2.81	0.53
1:A:563:ASP:OD1	1:A:564:VAL:N	2.42	0.53
2:C:73:MET:HE2	2:C:73:MET:HA	1.91	0.53
1:G:144:ARG:NH1	1:G:169:CYS:SG	2.82	0.53
1:G:561:PRO:HB3	1:G:567:VAL:HG13	1.92	0.52
1:B:70:ARG:O	1:B:74:TYR:N	2.42	0.52
1:D:275:LEU:HD22	1:D:301:GLY:HA3	1.90	0.52
2:E:33:LEU:HD21	2:E:49:LEU:HD22	1.92	0.52
1:A:358:SER:O	1:A:361:GLN:NE2	2.41	0.52
1:B:100:PHE:HE1	1:B:208:MET:HE1	1.75	0.52
1:D:563:ASP:OD1	1:D:564:VAL:N	2.42	0.52
1:D:84:VAL:HG13	1:D:92:ALA:CB	2.40	0.52
1:D:579:LEU:HG	1:D:583:LYS:HE3	1.92	0.52
1:A:552:LYS:NZ	2:E:80:THR:O	2.42	0.51
2:E:6:THR:OG1	2:E:7:GLU:N	2.36	0.51
1:D:552:LYS:NZ	2:F:80:THR:O	2.42	0.51
2:E:56:VAL:HG21	2:E:72:MET:HE3	1.92	0.51
1:D:70:ARG:O	1:D:74:TYR:N	2.43	0.51
1:A:114:THR:HG21	1:B:264:TYR:HB3	1.91	0.51
1:B:200:LEU:HD12	1:B:204:GLN:HE21	1.76	0.51
2:H:79:ASP:OD1	2:H:79:ASP:C	2.54	0.51
1:D:84:VAL:HG13	1:D:92:ALA:HB2	1.93	0.51
1:D:244:ILE:HD13	1:D:268:LEU:HD11	1.92	0.51
1:G:275:LEU:HD22	1:G:301:GLY:HA3	1.92	0.51
2:H:85:GLU:N	2:H:85:GLU:OE1	2.44	0.51
2:E:79:ASP:OD2	2:E:79:ASP:C	2.54	0.51
1:B:345:ARG:NE	2:C:117:LEU:HD21	2.26	0.50
1:D:546:MET:SD	2:F:52:MET:CG	2.99	0.50
1:A:359:THR:OG1	2:E:124:GLU:OE2	2.27	0.50
1:A:353:ARG:HB2	1:A:356:LEU:HD11	1.94	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:6:THR:OG1	2:H:7:GLU:N	2.35	0.50
2:H:21:ASP:OD2	2:H:26:GLY:N	2.43	0.50
2:H:67:PRO:O	2:H:70:LEU:HD12	2.12	0.50
1:G:545:VAL:O	1:G:549:LEU:HD23	2.12	0.50
1:B:150:CYS:SG	1:B:151:CYS:N	2.85	0.50
1:B:545:VAL:O	1:B:549:LEU:HD23	2.12	0.50
2:F:79:ASP:OD1	2:F:79:ASP:C	2.54	0.50
1:A:337:ALA:HB2	2:E:93:PHE:CZ	2.47	0.49
1:B:114:THR:HG21	1:D:264:TYR:HB3	1.92	0.49
2:E:21:ASP:OD2	2:E:26:GLY:N	2.45	0.49
1:A:257:GLU:OE1	1:A:257:GLU:N	2.43	0.49
1:A:275:LEU:HD22	1:A:301:GLY:HA3	1.94	0.49
1:G:70:ARG:O	1:G:74:TYR:N	2.44	0.49
2:H:77:MET:SD	2:H:78:LYS:N	2.85	0.49
1:D:353:ARG:HB2	1:D:356:LEU:HD11	1.95	0.49
1:B:546:MET:SD	2:C:52:MET:HG2	2.53	0.49
1:A:546:MET:SD	2:E:52:MET:HG2	2.52	0.49
1:G:244:ILE:HD13	1:G:268:LEU:HD11	1.93	0.49
1:A:546:MET:HE1	2:E:56:VAL:CB	2.39	0.48
2:C:79:ASP:OD2	2:C:79:ASP:C	2.55	0.48
1:D:546:MET:SD	2:F:52:MET:SD	3.11	0.48
1:A:238:ILE:HD13	1:G:221:LEU:HD22	1.94	0.48
1:D:258:ASN:ND2	1:D:286:GLN:OE1	2.46	0.48
2:H:35:THR:HA	2:H:38:ARG:HE	1.79	0.48
2:F:112:ASN:C	2:F:113:LEU:HD12	2.38	0.48
1:A:579:LEU:HD13	1:G:578:MET:HE3	1.95	0.48
2:H:77:MET:O	2:H:77:MET:HE2	2.14	0.48
1:A:244:ILE:HD13	1:A:268:LEU:HD11	1.96	0.48
1:G:546:MET:SD	2:H:52:MET:HG2	2.54	0.48
1:B:353:ARG:HB2	1:B:356:LEU:HD11	1.95	0.48
1:D:536:LEU:HD23	1:D:536:LEU:H	1.79	0.48
1:A:70:ARG:O	1:A:74:TYR:N	2.44	0.47
1:A:130:GLU:C	1:A:130:GLU:OE1	2.57	0.47
1:G:203:LEU:O	1:G:207:ARG:HG2	2.15	0.47
2:H:77:MET:SD	2:H:77:MET:C	2.98	0.47
1:B:163:PHE:CE1	1:B:166:LYS:HD2	2.50	0.47
1:G:341:GLN:OE1	2:H:115:GLU:N	2.47	0.47
2:E:33:LEU:CD2	2:E:49:LEU:HD22	2.44	0.47
1:A:102:LEU:C	1:A:102:LEU:HD23	2.39	0.47
1:B:552:LYS:NZ	2:C:80:THR:O	2.47	0.47
2:E:117:LEU:HD22	2:E:121:GLU:HG2	1.97	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:77:MET:SD	2:F:78:LYS:N	2.87	0.47
2:H:143:VAL:HA	2:H:146:MET:HE3	1.96	0.47
2:C:43:ASN:OD1	2:C:43:ASN:C	2.58	0.47
2:C:57:ASP:HA	2:C:64:ILE:HD11	1.98	0.47
2:C:83:GLU:OE2	2:C:87:ARG:NH2	2.49	0.47
1:D:114:THR:HG21	1:G:264:TYR:HB3	1.97	0.47
1:D:327:LYS:NZ	4:D:803:PIO:O43	2.48	0.46
2:H:43:ASN:OD1	2:H:43:ASN:C	2.58	0.46
1:A:334:ASN:HB3	1:A:335:PRO:HD3	1.97	0.46
1:G:100:PHE:HE1	1:G:208:MET:HE1	1.79	0.46
1:G:579:LEU:O	1:G:583:LYS:HG3	2.15	0.46
2:E:53:ILE:HA	2:E:56:VAL:HG12	1.98	0.46
1:B:542:ALA:HA	2:C:73:MET:HE1	1.97	0.46
1:B:543:VAL:HG11	2:C:37:MET:HE1	1.97	0.46
1:G:257:GLU:N	1:G:257:GLU:OE1	2.49	0.46
2:E:56:VAL:HG21	2:E:72:MET:CE	2.45	0.46
1:B:295:ALA:HA	1:B:298:THR:HG22	1.96	0.46
2:C:77:MET:O	2:C:77:MET:HE2	2.15	0.46
1:G:337:ALA:HB2	2:H:93:PHE:HZ	1.80	0.46
1:D:367:VAL:HG22	2:F:40:LEU:HA	1.97	0.46
2:F:28:ILE:HG23	2:F:28:ILE:O	2.16	0.46
1:G:276:THR:O	1:G:277:THR:OG1	2.26	0.46
1:A:579:LEU:O	1:A:583:LYS:HG3	2.15	0.46
1:B:334:ASN:HB3	1:B:335:PRO:HD3	1.98	0.46
2:E:28:ILE:HG23	2:E:28:ILE:O	2.14	0.46
1:B:280:TYR:CZ	1:D:274:THR:HG22	2.50	0.46
1:B:294:ALA:O	1:B:298:THR:HG22	2.15	0.46
1:D:280:TYR:CZ	1:G:274:THR:HG22	2.51	0.46
1:G:327:LYS:NZ	4:G:803:PIO:O43	2.49	0.46
1:A:144:ARG:NH1	1:A:169:CYS:SG	2.89	0.45
1:D:561:PRO:HB3	1:D:567:VAL:HG13	1.98	0.45
1:A:201:ARG:O	1:A:205:ILE:HG13	2.16	0.45
1:B:102:LEU:HD23	1:B:102:LEU:C	2.42	0.45
1:D:334:ASN:HB3	1:D:335:PRO:HD3	1.99	0.45
1:G:334:ASN:HB3	1:G:335:PRO:HD3	1.98	0.45
2:E:6:THR:N	2:E:9:GLN:OE1	2.49	0.45
2:F:77:MET:HE1	2:F:147:THR:HA	1.97	0.45
1:G:102:LEU:C	1:G:102:LEU:HD23	2.42	0.45
1:B:579:LEU:O	1:B:583:LYS:HG3	2.16	0.45
1:D:282:ASP:OD1	1:D:283:LYS:N	2.50	0.45
2:E:108:HIS:O	2:E:112:ASN:ND2	2.47	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:274:THR:HG22	1:G:280:TYR:CZ	2.51	0.45
2:F:49:LEU:O	2:F:53:ILE:HG12	2.16	0.45
1:A:171:ILE:HA	1:A:174:MET:HE3	1.99	0.45
1:D:168:PHE:CZ	1:D:213:ARG:HA	2.52	0.45
1:G:86:GLU:O	1:G:87:ARG:C	2.59	0.45
2:H:51:ASP:OD2	2:H:51:ASP:C	2.59	0.45
1:A:300:ILE:HG22	1:A:304:PHE:CE2	2.52	0.45
1:B:557:GLU:OE2	1:B:560:ARG:NE	2.42	0.45
2:C:21:ASP:OD2	2:C:26:GLY:N	2.45	0.45
1:D:86:GLU:O	1:D:87:ARG:C	2.59	0.45
1:G:349:THR:HG23	1:G:541:ARG:HD2	1.98	0.45
2:E:61:ASN:ND2	2:E:63:THR:OG1	2.50	0.45
1:D:579:LEU:O	1:D:583:LYS:HG3	2.17	0.45
1:G:337:ALA:HB2	2:H:93:PHE:CZ	2.51	0.45
1:A:264:TYR:H	1:G:114:THR:HG21	1.82	0.44
2:C:77:MET:HE2	2:C:77:MET:C	2.41	0.44
1:A:203:LEU:O	1:A:207:ARG:HG2	2.17	0.44
1:B:168:PHE:CZ	1:B:213:ARG:HA	2.52	0.44
1:D:553:ARG:NH1	2:F:55:GLU:OE1	2.50	0.44
1:A:86:GLU:O	1:A:87:ARG:C	2.61	0.44
1:D:203:LEU:O	1:D:207:ARG:HG2	2.18	0.44
1:B:337:ALA:HB2	2:C:93:PHE:CZ	2.53	0.44
1:B:363:TYR:O	1:B:366:THR:OG1	2.32	0.44
1:D:276:THR:O	1:D:277:THR:OG1	2.30	0.44
2:F:21:ASP:OD2	2:F:26:GLY:N	2.48	0.44
2:E:118:THR:OG1	2:E:121:GLU:OE1	2.24	0.44
1:B:282:ASP:OD1	1:B:283:LYS:N	2.49	0.44
1:D:345:ARG:NE	2:F:117:LEU:HD21	2.32	0.44
2:F:83:GLU:OE2	2:F:87:ARG:NH2	2.51	0.44
2:F:109:VAL:HA	2:F:113:LEU:HD13	2.00	0.44
2:E:54:ASN:OD1	2:E:54:ASN:C	2.61	0.44
1:A:363:TYR:O	1:A:366:THR:OG1	2.33	0.44
2:F:118:THR:OG1	2:F:121:GLU:OE1	2.32	0.44
1:G:560:ARG:HE	1:G:561:PRO:HD2	1.83	0.44
2:H:28:ILE:O	2:H:28:ILE:HG23	2.18	0.44
1:D:337:ALA:HB2	2:F:93:PHE:CZ	2.53	0.43
1:A:295:ALA:HA	1:A:298:THR:HG22	1.99	0.43
1:A:557:GLU:OE2	1:A:560:ARG:NE	2.45	0.43
1:A:567:VAL:CG2	1:B:568:ILE:HG21	2.48	0.43
1:D:550:VAL:HG11	2:F:52:MET:HE2	2.01	0.43
2:E:72:MET:HG2	2:E:73:MET:N	2.32	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:THR:HG21	1:B:264:TYR:H	1.84	0.43
1:A:168:PHE:CZ	1:A:213:ARG:HA	2.53	0.43
1:A:586:GLN:HG2	1:G:585:LEU:HD21	2.00	0.43
1:B:86:GLU:O	1:B:87:ARG:C	2.60	0.43
1:D:545:VAL:O	1:D:549:LEU:HD23	2.19	0.43
1:A:282:ASP:OD1	1:A:283:LYS:N	2.51	0.43
2:E:110:MET:HE3	2:E:110:MET:CA	2.43	0.43
1:D:585:LEU:HD21	1:G:586:GLN:HG2	2.00	0.43
2:H:67:PRO:O	2:H:71:THR:OG1	2.30	0.43
2:E:17:PHE:O	2:E:21:ASP:N	2.44	0.43
1:A:163:PHE:CE1	1:A:166:LYS:HD2	2.54	0.42
1:A:567:VAL:HG21	1:B:568:ILE:HG21	2.00	0.42
1:B:171:ILE:HA	1:B:174:MET:HE3	2.01	0.42
2:C:35:THR:HA	2:C:38:ARG:HE	1.83	0.42
2:H:145:MET:SD	2:H:145:MET:C	3.02	0.42
1:B:567:VAL:HG21	1:D:568:ILE:HG21	2.00	0.42
1:D:257:GLU:OE1	1:D:257:GLU:N	2.52	0.42
1:D:331:LYS:O	1:D:335:PRO:CD	2.67	0.42
2:E:130:ASP:OD1	2:E:134:ASP:N	2.52	0.42
1:A:565:MET:HG2	1:G:564:VAL:HG22	2.01	0.42
1:B:244:ILE:HD13	1:B:268:LEU:HD11	2.01	0.42
1:B:341:GLN:OE1	2:C:115:GLU:N	2.50	0.42
1:G:331:LYS:O	1:G:335:PRO:CD	2.68	0.42
2:H:125:MET:HE1	2:H:142:PHE:CE2	2.54	0.42
2:E:144:GLN:O	2:E:147:THR:OG1	2.30	0.42
1:G:134:ILE:HD11	1:G:179:SER:OG	2.19	0.42
1:G:579:LEU:HG	1:G:583:LYS:HE3	2.02	0.42
1:B:567:VAL:CG2	1:D:568:ILE:HG21	2.49	0.42
2:C:77:MET:SD	2:C:78:LYS:N	2.93	0.42
1:G:168:PHE:CZ	1:G:213:ARG:HA	2.55	0.42
2:E:43:ASN:OD1	2:E:43:ASN:C	2.63	0.42
2:C:28:ILE:O	2:C:28:ILE:HG23	2.19	0.42
1:D:134:ILE:HD11	1:D:179:SER:OG	2.19	0.42
1:D:224:VAL:HG13	1:D:315:GLY:HA3	2.01	0.42
2:E:146:MET:SD	2:E:146:MET:C	3.02	0.42
1:B:100:PHE:CE1	1:B:208:MET:HE1	2.53	0.42
1:G:542:ALA:HA	2:H:73:MET:HE1	2.02	0.42
1:B:331:LYS:O	1:B:335:PRO:CD	2.68	0.42
1:G:295:ALA:HA	1:G:298:THR:HG22	2.02	0.41
2:H:142:PHE:O	2:H:145:MET:HE3	2.20	0.41
2:E:35:THR:HA	2:E:38:ARG:HE	1.84	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:139:TYR:O	2:C:143:VAL:HG12	2.19	0.41
1:G:552:LYS:NZ	2:H:80:THR:O	2.52	0.41
1:A:272:LEU:HD22	1:B:295:ALA:HB2	2.02	0.41
1:D:163:PHE:CE1	1:D:166:LYS:HD2	2.56	0.41
1:D:345:ARG:HB3	1:D:544:CYS:SG	2.61	0.41
2:F:146:MET:SD	2:F:146:MET:C	3.04	0.41
1:B:337:ALA:HB2	2:C:93:PHE:HZ	1.86	0.41
1:D:102:LEU:HD23	1:D:102:LEU:C	2.46	0.41
1:G:345:ARG:NE	2:H:117:LEU:HD21	2.35	0.41
1:A:331:LYS:O	1:A:335:PRO:CD	2.68	0.41
1:B:547:ARG:HA	1:B:550:VAL:HG12	2.03	0.41
2:F:69:PHE:O	2:F:72:MET:HG2	2.21	0.41
1:A:128:ILE:O	1:A:131:ILE:HG22	2.21	0.41
1:A:546:MET:HE2	1:A:546:MET:HB2	1.92	0.41
1:B:257:GLU:OE1	1:B:257:GLU:N	2.53	0.41
2:C:77:MET:HE3	2:C:146:MET:CE	2.46	0.41
1:G:174:MET:HA	1:G:177:ILE:HG12	2.03	0.41
2:E:110:MET:HA	2:E:110:MET:CE	2.43	0.41
1:A:131:ILE:O	1:A:134:ILE:HG22	2.21	0.41
1:A:276:THR:O	1:A:277:THR:OG1	2.21	0.41
1:A:337:ALA:HB2	2:E:93:PHE:HZ	1.86	0.41
2:C:77:MET:C	2:C:77:MET:SD	3.04	0.41
1:D:102:LEU:HD23	1:D:103:VAL:N	2.36	0.41
1:G:128:ILE:O	1:G:131:ILE:HG22	2.20	0.41
1:G:224:VAL:HG13	1:G:315:GLY:HA3	2.03	0.41
1:B:174:MET:HA	1:B:177:ILE:HG12	2.03	0.41
1:B:359:THR:OG1	2:C:124:GLU:OE2	2.37	0.41
1:A:276:THR:C	1:A:277:THR:HG1	2.21	0.40
2:F:67:PRO:O	2:F:71:THR:OG1	2.31	0.40
1:A:547:ARG:HA	1:A:550:VAL:HG12	2.04	0.40
1:G:163:PHE:CE1	1:G:166:LYS:HD2	2.55	0.40
1:D:174:MET:HA	1:D:177:ILE:HG12	2.03	0.40
1:D:337:ALA:HB2	2:F:93:PHE:HZ	1.87	0.40
1:G:282:ASP:OD1	1:G:283:LYS:N	2.55	0.40
2:E:33:LEU:O	2:E:36:VAL:HG12	2.21	0.40
1:B:102:LEU:HD21	1:B:133:THR:HG23	2.04	0.40
1:D:132:VAL:O	1:D:135:VAL:HG12	2.22	0.40
2:F:90:PHE:HB3	2:F:139:TYR:CG	2.57	0.40
1:G:367:VAL:HG22	2:H:40:LEU:HA	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	348/656 (53%)	337 (97%)	11 (3%)	0	100	100
1	B	348/656 (53%)	337 (97%)	11 (3%)	0	100	100
1	D	348/656 (53%)	337 (97%)	11 (3%)	0	100	100
1	G	348/656 (53%)	337 (97%)	11 (3%)	0	100	100
2	C	141/177 (80%)	136 (96%)	5 (4%)	0	100	100
2	E	141/177 (80%)	138 (98%)	3 (2%)	0	100	100
2	F	141/177 (80%)	137 (97%)	4 (3%)	0	100	100
2	H	141/177 (80%)	138 (98%)	3 (2%)	0	100	100
All	All	1956/3332 (59%)	1897 (97%)	59 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	301/558 (54%)	299 (99%)	2 (1%)	81	90
1	B	301/558 (54%)	299 (99%)	2 (1%)	81	90
1	D	301/558 (54%)	298 (99%)	3 (1%)	73	86
1	G	301/558 (54%)	299 (99%)	2 (1%)	81	90
2	C	118/146 (81%)	118 (100%)	0	100	100
2	E	118/146 (81%)	118 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	F	118/146 (81%)	118 (100%)	0	100	100
2	H	118/146 (81%)	118 (100%)	0	100	100
All	All	1676/2816 (60%)	1667 (100%)	9 (0%)	85	92

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	TYR
1	A	571	TYR
1	B	74	TYR
1	B	571	TYR
1	D	74	TYR
1	D	543	VAL
1	D	571	TYR
1	G	74	TYR
1	G	571	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	260	HIS
1	A	575	HIS
1	B	96	HIS
1	B	260	HIS
1	B	570	GLN
1	B	575	HIS
2	C	112	ASN
1	D	96	HIS
1	D	260	HIS
1	D	570	GLN
1	D	575	HIS
2	F	9	GLN
1	G	96	HIS
1	G	260	HIS
1	G	575	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

12 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	P0T	B	803	-	24,24,24	4.73	11 (45%)	27,33,33	1.53	3 (11%)
4	PIO	G	803	-	47,47,47	1.37	10 (21%)	61,65,65	1.17	3 (4%)
3	P0T	D	801	-	24,24,24	4.67	11 (45%)	27,33,33	1.83	3 (11%)
3	P0T	A	802	-	24,24,24	4.72	11 (45%)	27,33,33	1.56	3 (11%)
3	P0T	G	801	-	24,24,24	4.66	11 (45%)	27,33,33	1.61	3 (11%)
3	P0T	A	801	-	24,24,24	4.67	11 (45%)	27,33,33	1.65	3 (11%)
3	P0T	G	802	-	24,24,24	4.73	11 (45%)	27,33,33	1.56	3 (11%)
4	PIO	D	803	-	47,47,47	1.38	10 (21%)	61,65,65	1.17	3 (4%)
4	PIO	A	803	-	47,47,47	1.37	10 (21%)	61,65,65	1.17	3 (4%)
3	P0T	B	802	-	24,24,24	4.67	11 (45%)	27,33,33	1.60	3 (11%)
3	P0T	D	802	-	24,24,24	4.73	11 (45%)	27,33,33	1.54	3 (11%)
4	PIO	B	801	-	47,47,47	1.37	10 (21%)	61,65,65	1.17	3 (4%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	P0T	B	803	-	-	7/13/26/26	0/2/2/2
4	PIO	G	803	-	-	20/44/68/68	0/1/1/1
3	P0T	D	801	-	-	2/13/26/26	0/2/2/2
3	P0T	A	802	-	-	7/13/26/26	0/2/2/2
3	P0T	G	801	-	-	2/13/26/26	0/2/2/2
3	P0T	A	801	-	-	2/13/26/26	0/2/2/2
3	P0T	G	802	-	-	7/13/26/26	0/2/2/2
4	PIO	D	803	-	-	22/44/68/68	0/1/1/1
4	PIO	A	803	-	-	20/44/68/68	0/1/1/1
3	P0T	B	802	-	-	2/13/26/26	0/2/2/2
3	P0T	D	802	-	-	7/13/26/26	0/2/2/2
4	PIO	B	801	-	-	21/44/68/68	0/1/1/1

All (128) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	803	P0T	C07-C09	16.21	1.60	1.32
3	G	802	P0T	C07-C09	16.11	1.60	1.32
3	D	802	P0T	C07-C09	16.10	1.60	1.32
3	A	802	P0T	C07-C09	16.07	1.60	1.32
3	G	801	P0T	C07-C09	15.94	1.59	1.32
3	D	801	P0T	C07-C09	15.92	1.59	1.32
3	B	802	P0T	C07-C09	15.92	1.59	1.32
3	A	801	P0T	C07-C09	15.87	1.59	1.32
3	D	802	P0T	C05-C03	-9.04	1.36	1.53
3	B	803	P0T	C05-C03	-9.04	1.36	1.53
3	A	802	P0T	C05-C03	-9.02	1.36	1.53
3	G	802	P0T	C05-C03	-9.01	1.36	1.53
3	D	801	P0T	C05-C03	-8.82	1.37	1.53
3	A	801	P0T	C05-C03	-8.79	1.37	1.53
3	B	802	P0T	C05-C03	-8.77	1.37	1.53
3	G	801	P0T	C05-C03	-8.72	1.37	1.53
3	G	802	P0T	C03-C04	8.13	1.67	1.54
3	A	802	P0T	C03-C04	8.08	1.67	1.54
3	D	802	P0T	C03-C04	8.07	1.67	1.54
3	A	801	P0T	C03-C04	8.04	1.67	1.54
3	B	803	P0T	C03-C04	7.99	1.67	1.54
3	B	802	P0T	C03-C04	7.99	1.67	1.54
3	D	801	P0T	C03-C04	7.96	1.67	1.54
3	G	801	P0T	C03-C04	7.89	1.66	1.54
3	D	802	P0T	C05-C06	5.72	1.65	1.52

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	802	P0T	C05-C06	5.70	1.65	1.52
3	B	802	P0T	C05-C06	5.68	1.65	1.52
3	D	801	P0T	C05-C06	5.67	1.65	1.52
3	G	801	P0T	C05-C06	5.67	1.65	1.52
3	G	802	P0T	C05-C06	5.67	1.65	1.52
3	A	801	P0T	C05-C06	5.65	1.65	1.52
3	B	803	P0T	C05-C06	5.63	1.65	1.52
3	B	802	P0T	C19-C10	5.28	1.55	1.34
3	D	801	P0T	C19-C10	5.28	1.55	1.34
3	G	801	P0T	C19-C10	5.28	1.55	1.34
3	A	802	P0T	C19-C10	5.26	1.55	1.34
3	A	801	P0T	C19-C10	5.26	1.55	1.34
3	D	802	P0T	C19-C10	5.26	1.55	1.34
3	G	802	P0T	C19-C10	5.25	1.55	1.34
3	B	803	P0T	C19-C10	5.24	1.55	1.34
3	B	803	P0T	C08-C04	4.17	1.57	1.52
3	G	802	P0T	C08-C04	4.11	1.57	1.52
3	D	802	P0T	C08-C04	4.05	1.57	1.52
3	A	802	P0T	C08-C04	4.00	1.57	1.52
3	B	802	P0T	C08-C04	3.86	1.57	1.52
3	A	801	P0T	C08-C04	3.81	1.57	1.52
3	G	801	P0T	C08-C04	3.80	1.57	1.52
3	D	801	P0T	C08-C04	3.74	1.57	1.52
3	B	802	P0T	C03-C10	3.68	1.57	1.51
3	D	801	P0T	C03-C10	3.66	1.57	1.51
3	A	801	P0T	C03-C10	3.65	1.57	1.51
3	G	801	P0T	C03-C10	3.60	1.57	1.51
3	B	802	P0T	C14-C10	-3.44	1.33	1.47
3	D	801	P0T	C14-C10	-3.43	1.33	1.47
3	G	801	P0T	C14-C10	-3.42	1.33	1.47
3	A	801	P0T	C14-C10	-3.42	1.33	1.47
3	D	802	P0T	C14-C10	-3.41	1.33	1.47
3	G	802	P0T	C14-C10	-3.40	1.33	1.47
3	A	802	P0T	C14-C10	-3.39	1.33	1.47
3	B	803	P0T	C14-C10	-3.38	1.33	1.47
3	A	802	P0T	C03-C10	3.36	1.57	1.51
3	G	802	P0T	C03-C10	3.35	1.57	1.51
3	B	803	P0T	C03-C10	3.34	1.57	1.51
3	D	802	P0T	C03-C10	3.33	1.57	1.51
4	B	801	PIO	P5-O5	3.16	1.65	1.59
4	G	803	PIO	P5-O5	3.15	1.65	1.59
4	D	803	PIO	P5-O5	3.15	1.65	1.59

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	803	PIO	P5-O5	3.15	1.65	1.59
4	D	803	PIO	P4-O4	3.13	1.65	1.59
4	G	803	PIO	P4-O4	3.12	1.65	1.59
4	B	801	PIO	P4-O4	3.11	1.65	1.59
4	A	803	PIO	P4-O4	3.08	1.65	1.59
3	B	802	P0T	C04-C07	-3.06	1.45	1.50
3	G	801	P0T	C04-C07	-3.05	1.45	1.50
3	A	801	P0T	C04-C07	-3.05	1.45	1.50
3	G	802	P0T	C04-C07	-3.03	1.45	1.50
3	D	802	P0T	C04-C07	-3.02	1.45	1.50
3	B	803	P0T	C04-C07	-3.00	1.45	1.50
3	A	802	P0T	C04-C07	-2.99	1.45	1.50
3	D	801	P0T	C04-C07	-2.91	1.45	1.50
4	A	803	PIO	O2C-C2C	-2.56	1.40	1.46
4	B	801	PIO	O2C-C2C	-2.55	1.40	1.46
4	G	803	PIO	O2C-C2C	-2.54	1.40	1.46
4	D	803	PIO	O2C-C2C	-2.54	1.40	1.46
4	D	803	PIO	O3C-C1B	2.43	1.40	1.33
4	B	801	PIO	O3C-C1B	2.40	1.40	1.33
4	G	803	PIO	O3C-C1B	2.40	1.40	1.33
4	A	803	PIO	O3C-C1B	2.39	1.40	1.33
3	D	801	P0T	O02-C12	2.34	1.41	1.36
3	B	802	P0T	O02-C12	2.33	1.41	1.36
3	A	801	P0T	O02-C12	2.31	1.41	1.36
3	G	801	P0T	O02-C12	2.31	1.41	1.36
3	G	802	P0T	O01-C11	2.29	1.41	1.36
3	B	803	P0T	O02-C12	2.27	1.41	1.36
3	B	803	P0T	O01-C11	2.26	1.41	1.36
3	G	802	P0T	O02-C12	2.26	1.41	1.36
3	D	802	P0T	O02-C12	2.26	1.41	1.36
3	A	802	P0T	O01-C11	2.26	1.41	1.36
3	A	802	P0T	O02-C12	2.24	1.41	1.36
3	D	802	P0T	O01-C11	2.23	1.40	1.36
3	D	801	P0T	O01-C11	2.23	1.40	1.36
3	A	801	P0T	O01-C11	2.21	1.40	1.36
3	G	801	P0T	O01-C11	2.21	1.40	1.36
4	A	803	PIO	P4-O41	-2.21	1.46	1.54
4	D	803	PIO	P4-O41	-2.20	1.46	1.54
4	G	803	PIO	P5-O52	-2.20	1.46	1.54
4	G	803	PIO	P4-O41	-2.20	1.46	1.54
4	A	803	PIO	P5-O52	-2.19	1.46	1.54
4	D	803	PIO	P5-O52	-2.19	1.46	1.54

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	801	PIO	P4-O41	-2.19	1.46	1.54
4	B	801	PIO	P5-O52	-2.19	1.46	1.54
4	B	801	PIO	P4-O43	-2.19	1.46	1.54
3	B	802	P0T	O01-C11	2.18	1.40	1.36
4	B	801	PIO	P5-O51	-2.17	1.46	1.54
4	D	803	PIO	P4-O43	-2.17	1.46	1.54
4	G	803	PIO	P5-O51	-2.17	1.46	1.54
4	A	803	PIO	P5-O51	-2.17	1.46	1.54
4	G	803	PIO	P4-O43	-2.16	1.46	1.54
4	D	803	PIO	P5-O51	-2.15	1.46	1.54
4	A	803	PIO	P4-O43	-2.14	1.46	1.54
4	B	801	PIO	O3C-C3C	-2.14	1.40	1.45
4	D	803	PIO	O3C-C3C	-2.12	1.40	1.45
4	A	803	PIO	O3C-C3C	-2.10	1.40	1.45
4	G	803	PIO	O3C-C3C	-2.10	1.40	1.45
4	A	803	PIO	O2C-C1A	2.09	1.40	1.34
4	D	803	PIO	O2C-C1A	2.08	1.40	1.34
4	B	801	PIO	O2C-C1A	2.07	1.40	1.34
4	G	803	PIO	O2C-C1A	2.05	1.40	1.34

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	801	P0T	C06-C09-C07	-7.04	115.91	121.57
3	G	802	P0T	C06-C09-C07	-5.68	117.00	121.57
3	A	801	P0T	C06-C09-C07	-5.63	117.04	121.57
3	A	802	P0T	C06-C09-C07	-5.59	117.07	121.57
3	D	802	P0T	C06-C09-C07	-5.51	117.14	121.57
3	G	801	P0T	C06-C09-C07	-5.40	117.22	121.57
3	B	803	P0T	C06-C09-C07	-5.39	117.23	121.57
3	B	802	P0T	C06-C09-C07	-5.32	117.29	121.57
4	A	803	PIO	O2C-C1A-C2A	4.01	120.14	111.50
4	G	803	PIO	O2C-C1A-C2A	4.00	120.12	111.50
4	B	801	PIO	O2C-C1A-C2A	3.99	120.10	111.50
4	D	803	PIO	O2C-C1A-C2A	3.99	120.09	111.50
3	A	801	P0T	C03-C04-C07	3.51	117.84	110.00
3	B	802	P0T	C03-C04-C07	3.49	117.81	110.00
3	A	801	P0T	C04-C07-C09	-3.40	118.82	124.68
3	D	801	P0T	C03-C04-C07	3.39	117.57	110.00
3	G	801	P0T	C03-C04-C07	3.37	117.52	110.00
3	D	801	P0T	C04-C07-C09	-3.34	118.92	124.68
3	A	802	P0T	C03-C04-C07	3.30	117.38	110.00

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	803	P0T	C03-C04-C07	3.29	117.36	110.00
3	B	802	P0T	C04-C07-C09	-3.29	119.00	124.68
3	G	801	P0T	C04-C07-C09	-3.26	119.06	124.68
3	D	802	P0T	C03-C04-C07	3.25	117.27	110.00
3	G	802	P0T	C03-C04-C07	3.22	117.20	110.00
3	B	803	P0T	C04-C07-C09	-2.88	119.70	124.68
3	A	802	P0T	C04-C07-C09	-2.83	119.79	124.68
3	D	802	P0T	C04-C07-C09	-2.80	119.85	124.68
3	G	802	P0T	C04-C07-C09	-2.76	119.92	124.68
4	G	803	PIO	O3C-C1B-C2B	2.65	120.22	111.91
4	D	803	PIO	O3C-C1B-C2B	2.65	120.22	111.91
4	A	803	PIO	O3C-C1B-C2B	2.63	120.17	111.91
4	B	801	PIO	O3C-C1B-C2B	2.63	120.17	111.91
4	D	803	PIO	O11-P1-O12	-2.30	100.85	112.24
4	A	803	PIO	O11-P1-O12	-2.30	100.88	112.24
4	B	801	PIO	O11-P1-O12	-2.29	100.89	112.24
4	G	803	PIO	O11-P1-O12	-2.29	100.91	112.24

There are no chirality outliers.

All (119) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	801	P0T	C03-C04-C08-C11
3	B	802	P0T	C03-C04-C08-C11
3	D	801	P0T	C03-C04-C08-C11
3	G	801	P0T	C03-C04-C08-C11
4	A	803	PIO	C1-O1-P1-O13
4	A	803	PIO	C1C-O13-P1-O1
4	A	803	PIO	C3-C4-O4-P4
4	A	803	PIO	C5-C4-O4-P4
4	A	803	PIO	O1A-C1A-O2C-C2C
4	B	801	PIO	C1-O1-P1-O13
4	B	801	PIO	C3-C4-O4-P4
4	B	801	PIO	C5-C4-O4-P4
4	B	801	PIO	O1A-C1A-O2C-C2C
4	D	803	PIO	C1-O1-P1-O13
4	D	803	PIO	C1C-O13-P1-O1
4	D	803	PIO	C3-C4-O4-P4
4	D	803	PIO	C5-C4-O4-P4
4	D	803	PIO	O1A-C1A-O2C-C2C
4	D	803	PIO	C2A-C1A-O2C-C2C
4	G	803	PIO	C1-O1-P1-O13

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
4	G	803	PIO	C3-C4-O4-P4
4	G	803	PIO	C5-C4-O4-P4
4	G	803	PIO	O1A-C1A-O2C-C2C
4	A	803	PIO	C2A-C1A-O2C-C2C
4	B	801	PIO	C2A-C1A-O2C-C2C
4	G	803	PIO	C2A-C1A-O2C-C2C
3	B	803	P0T	C15-C18-C20-C21
4	A	803	PIO	C2B-C1B-O3C-C3C
4	B	801	PIO	C2B-C1B-O3C-C3C
4	D	803	PIO	C2B-C1B-O3C-C3C
4	G	803	PIO	C2B-C1B-O3C-C3C
3	D	802	P0T	C15-C18-C20-C21
4	G	803	PIO	O1B-C1B-O3C-C3C
4	B	801	PIO	O1B-C1B-O3C-C3C
3	A	802	P0T	C15-C18-C20-C21
3	G	802	P0T	C15-C18-C20-C21
4	A	803	PIO	O1B-C1B-O3C-C3C
4	D	803	PIO	O1B-C1B-O3C-C3C
3	G	802	P0T	C18-C20-C21-C22
3	D	802	P0T	C18-C20-C21-C22
3	A	802	P0T	C18-C20-C21-C22
3	B	803	P0T	C18-C20-C21-C22
4	A	803	PIO	O2C-C2C-C3C-O3C
4	B	801	PIO	O2C-C2C-C3C-O3C
4	D	803	PIO	O2C-C2C-C3C-O3C
4	B	801	PIO	C1C-O13-P1-O1
3	D	802	P0T	C20-C21-C22-C23
3	B	803	P0T	C20-C21-C22-C23
4	D	803	PIO	C5B-C6B-C7B-C8B
4	G	803	PIO	C5B-C6B-C7B-C8B
4	A	803	PIO	C5B-C6B-C7B-C8B
4	B	801	PIO	C5B-C6B-C7B-C8B
3	G	802	P0T	C20-C21-C22-C23
3	A	802	P0T	C20-C21-C22-C23
4	G	803	PIO	O2C-C2C-C3C-O3C
4	G	803	PIO	C1B-C2B-C3B-C4B
4	B	801	PIO	C1C-C2C-C3C-O3C
4	A	803	PIO	C1-O1-P1-O12
4	B	801	PIO	C1-O1-P1-O12
4	D	803	PIO	C1-O1-P1-O12
4	G	803	PIO	C1-O1-P1-O12
4	A	803	PIO	C2C-C1C-O13-P1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
4	B	801	PIO	C2C-C1C-O13-P1
4	D	803	PIO	C2C-C1C-O13-P1
4	G	803	PIO	C2C-C1C-O13-P1
3	A	801	P0T	C20-C21-C22-C23
4	B	801	PIO	C1B-C2B-C3B-C4B
4	D	803	PIO	C1B-C2B-C3B-C4B
3	B	802	P0T	C20-C21-C22-C23
4	A	803	PIO	C1B-C2B-C3B-C4B
4	A	803	PIO	C1C-C2C-C3C-O3C
4	D	803	PIO	C1C-C2C-C3C-O3C
4	A	803	PIO	O13-C1C-C2C-O2C
4	B	801	PIO	O13-C1C-C2C-O2C
4	G	803	PIO	O13-C1C-C2C-O2C
3	G	801	P0T	C20-C21-C22-C23
3	D	801	P0T	C20-C21-C22-C23
4	G	803	PIO	C1C-O13-P1-O1
4	D	803	PIO	O13-C1C-C2C-O2C
4	G	803	PIO	C1C-C2C-C3C-O3C
3	B	803	P0T	C17-C15-C18-C20
3	D	802	P0T	C17-C15-C18-C20
3	B	803	P0T	C16-C15-C18-C20
3	A	802	P0T	C04-C03-C10-C14
3	B	803	P0T	C04-C03-C10-C14
3	D	802	P0T	C04-C03-C10-C14
3	G	802	P0T	C04-C03-C10-C14
4	A	803	PIO	C5A-C6A-C7A-C8A
4	B	801	PIO	C1-O1-P1-O11
4	A	803	PIO	O13-C1C-C2C-C3C
4	B	801	PIO	O13-C1C-C2C-C3C
4	D	803	PIO	O13-C1C-C2C-C3C
4	G	803	PIO	O13-C1C-C2C-C3C
3	D	802	P0T	C16-C15-C18-C20
3	A	802	P0T	C17-C15-C18-C20
3	G	802	P0T	C17-C15-C18-C20
3	A	802	P0T	C16-C15-C18-C20
4	G	803	PIO	C5A-C6A-C7A-C8A
3	G	802	P0T	C16-C15-C18-C20
4	B	801	PIO	C4-O4-P4-O42
4	B	801	PIO	C5-O5-P5-O53
4	D	803	PIO	C4-O4-P4-O42
4	D	803	PIO	C5-O5-P5-O53
3	A	802	P0T	C04-C03-C10-C19

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	B	803	P0T	C04-C03-C10-C19
3	D	802	P0T	C04-C03-C10-C19
3	G	802	P0T	C04-C03-C10-C19
4	G	803	PIO	C2A-C3A-C4A-C5A
4	A	803	PIO	C4-O4-P4-O43
4	B	801	PIO	C4-O4-P4-O43
4	D	803	PIO	C4-O4-P4-O43
4	G	803	PIO	C4-O4-P4-O43
4	A	803	PIO	C2A-C3A-C4A-C5A
4	D	803	PIO	C5A-C6A-C7A-C8A
4	D	803	PIO	C2A-C3A-C4A-C5A
4	D	803	PIO	C2B-C3B-C4B-C5B
4	B	801	PIO	C2B-C3B-C4B-C5B
4	G	803	PIO	C2B-C3B-C4B-C5B
4	A	803	PIO	C2B-C3B-C4B-C5B

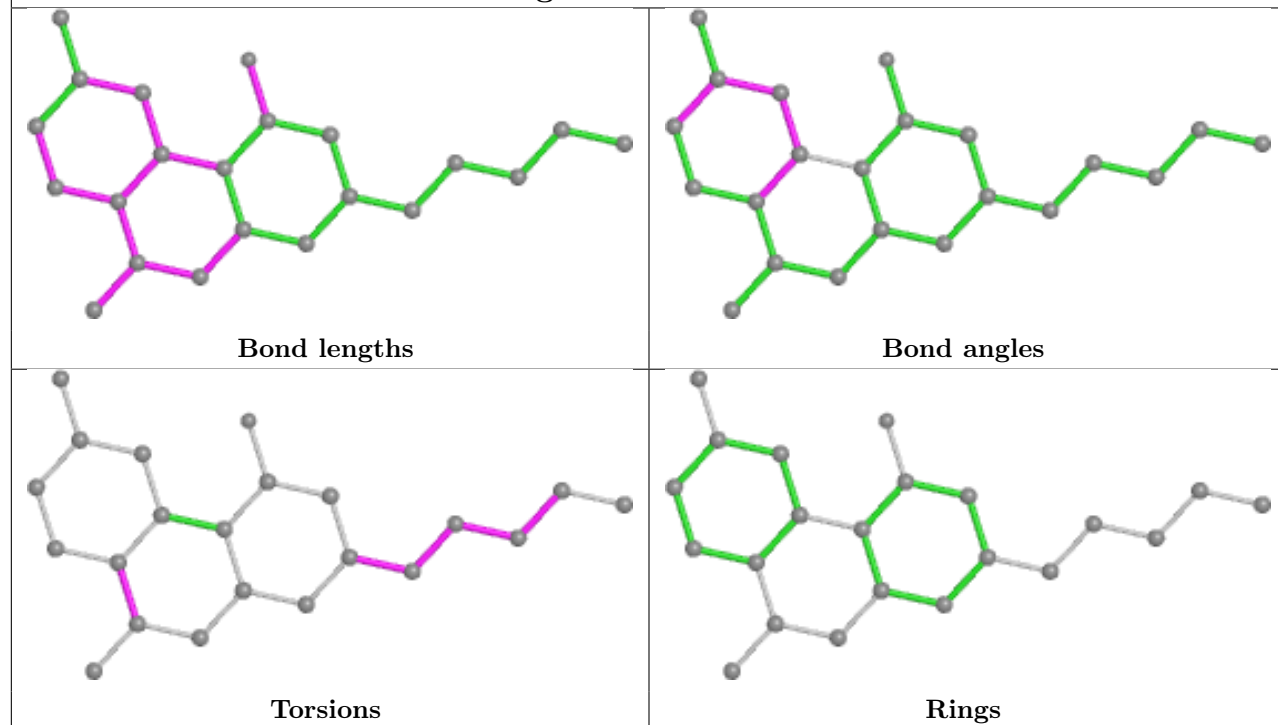
There are no ring outliers.

8 monomers are involved in 12 short contacts:

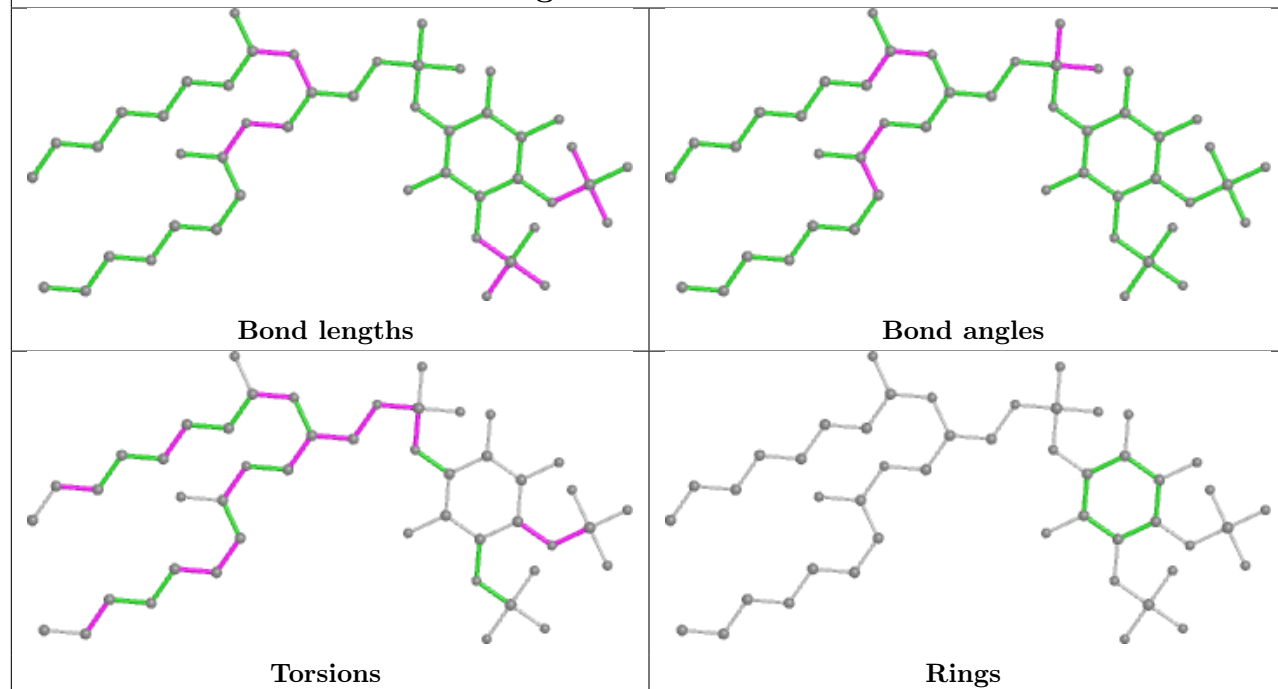
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	803	P0T	1	0
4	G	803	PIO	2	0
3	A	802	P0T	1	0
3	G	802	P0T	1	0
4	D	803	PIO	2	0
4	A	803	PIO	2	0
3	D	802	P0T	1	0
4	B	801	PIO	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

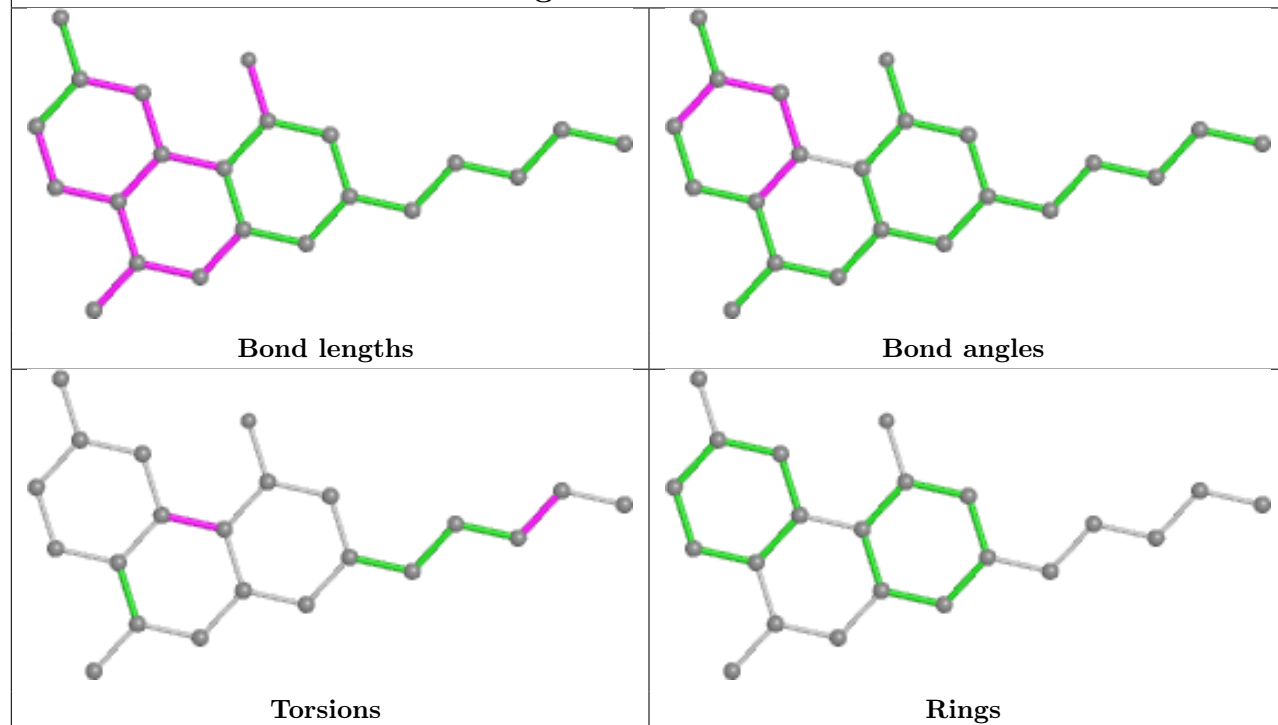
Ligand POT B 803



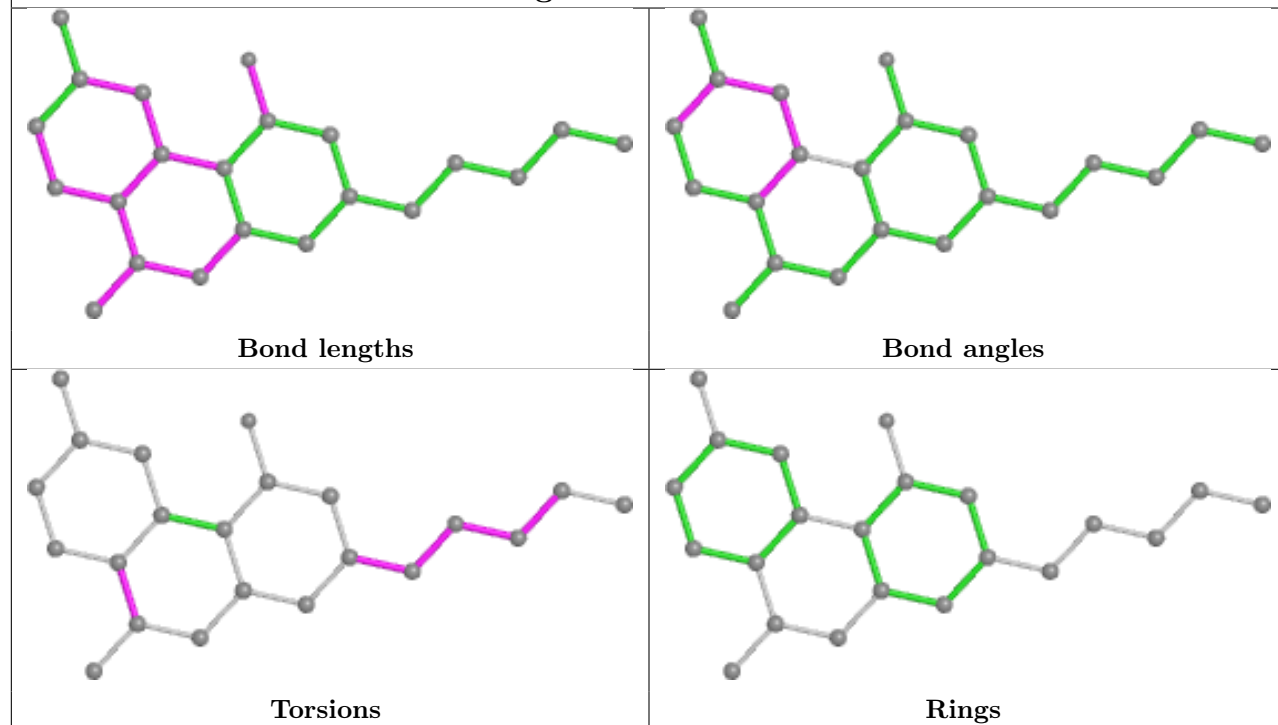
Ligand PIO G 803



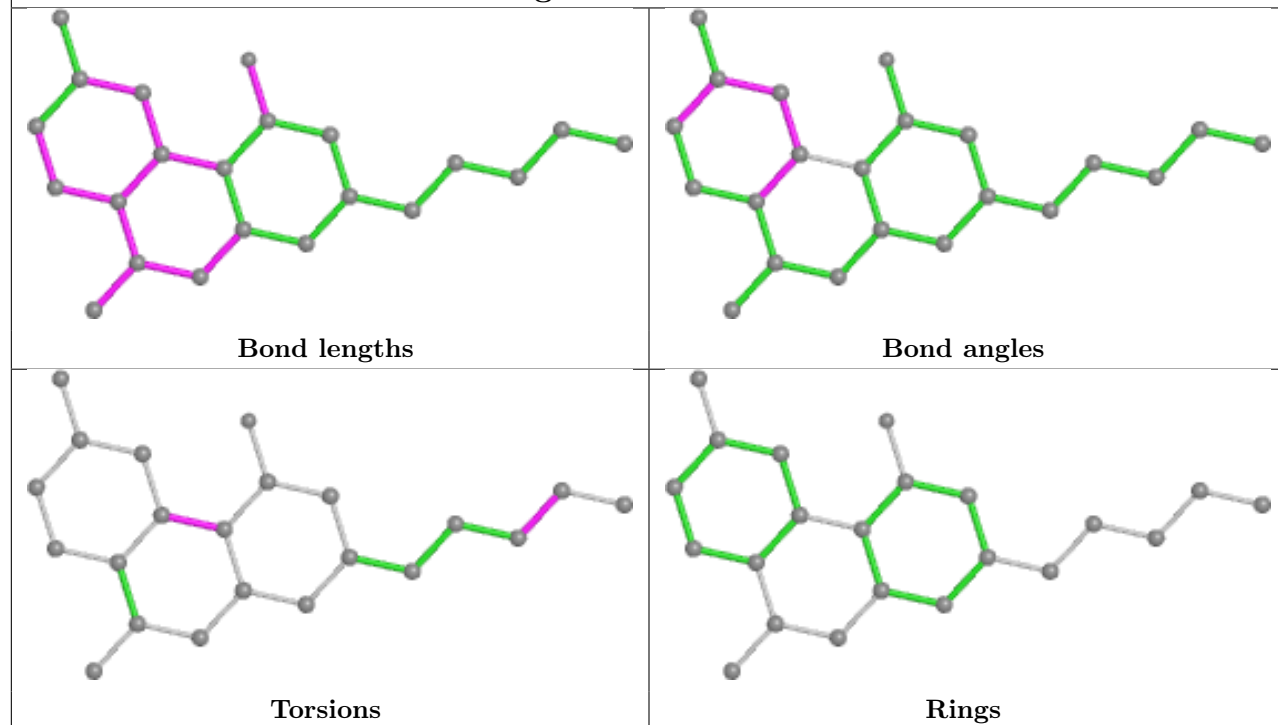
Ligand POT D 801



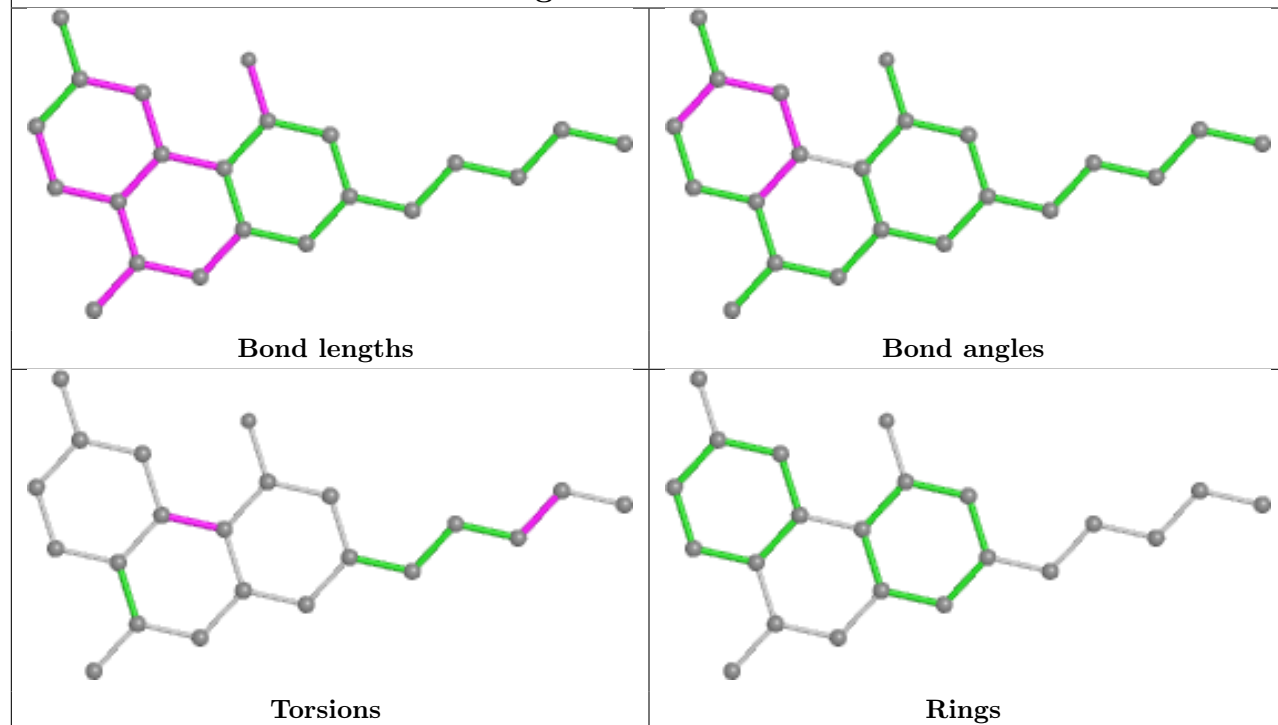
Ligand POT A 802



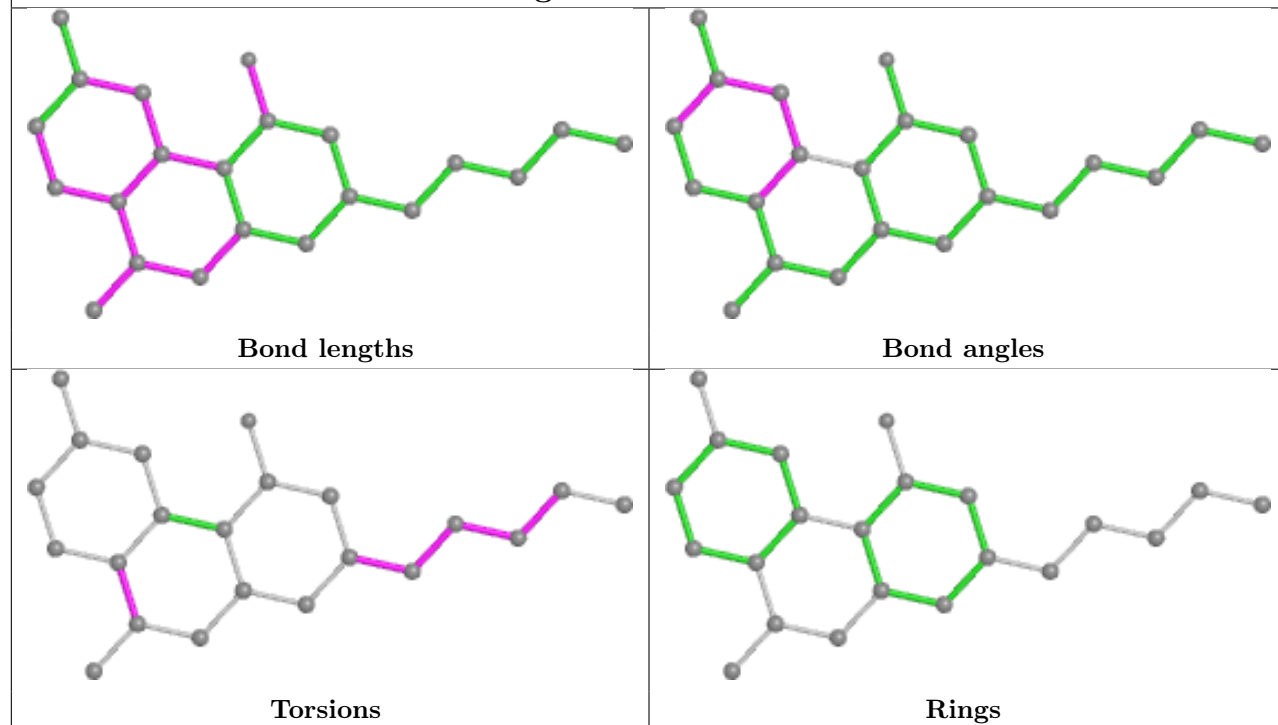
Ligand POT G 801



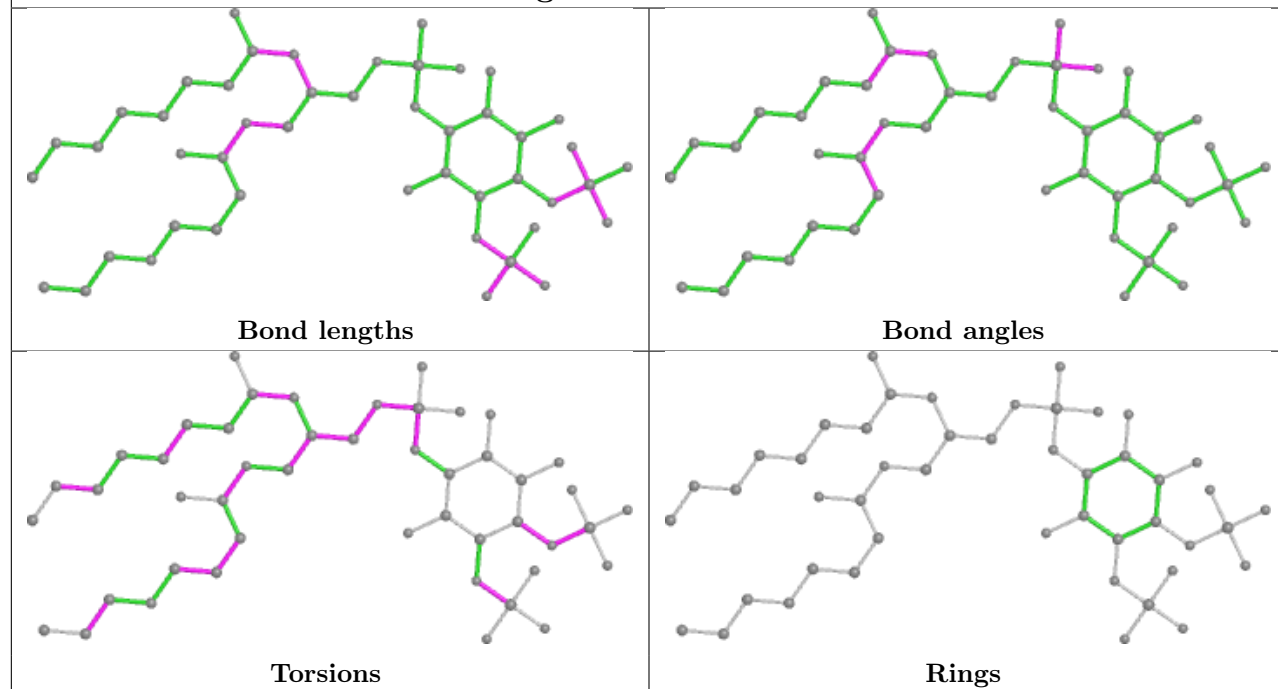
Ligand POT A 801



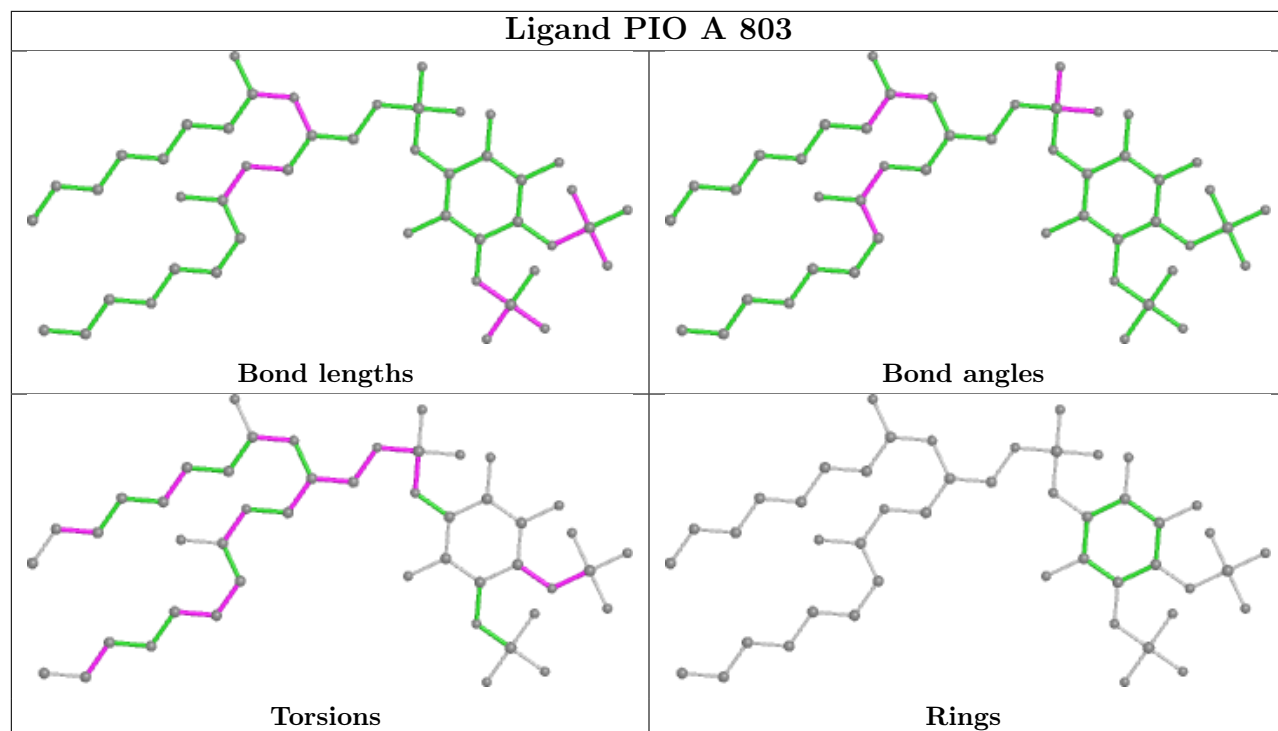
Ligand POT G 802



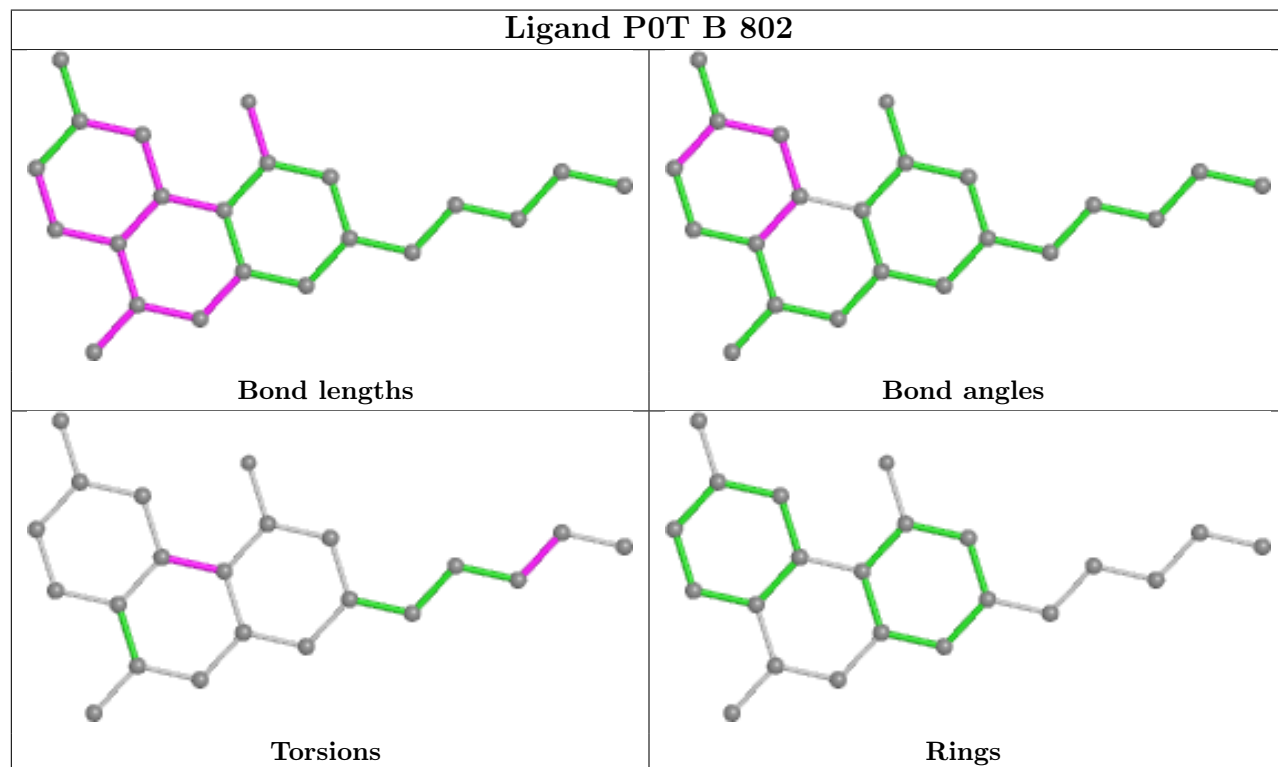
Ligand PIO D 803

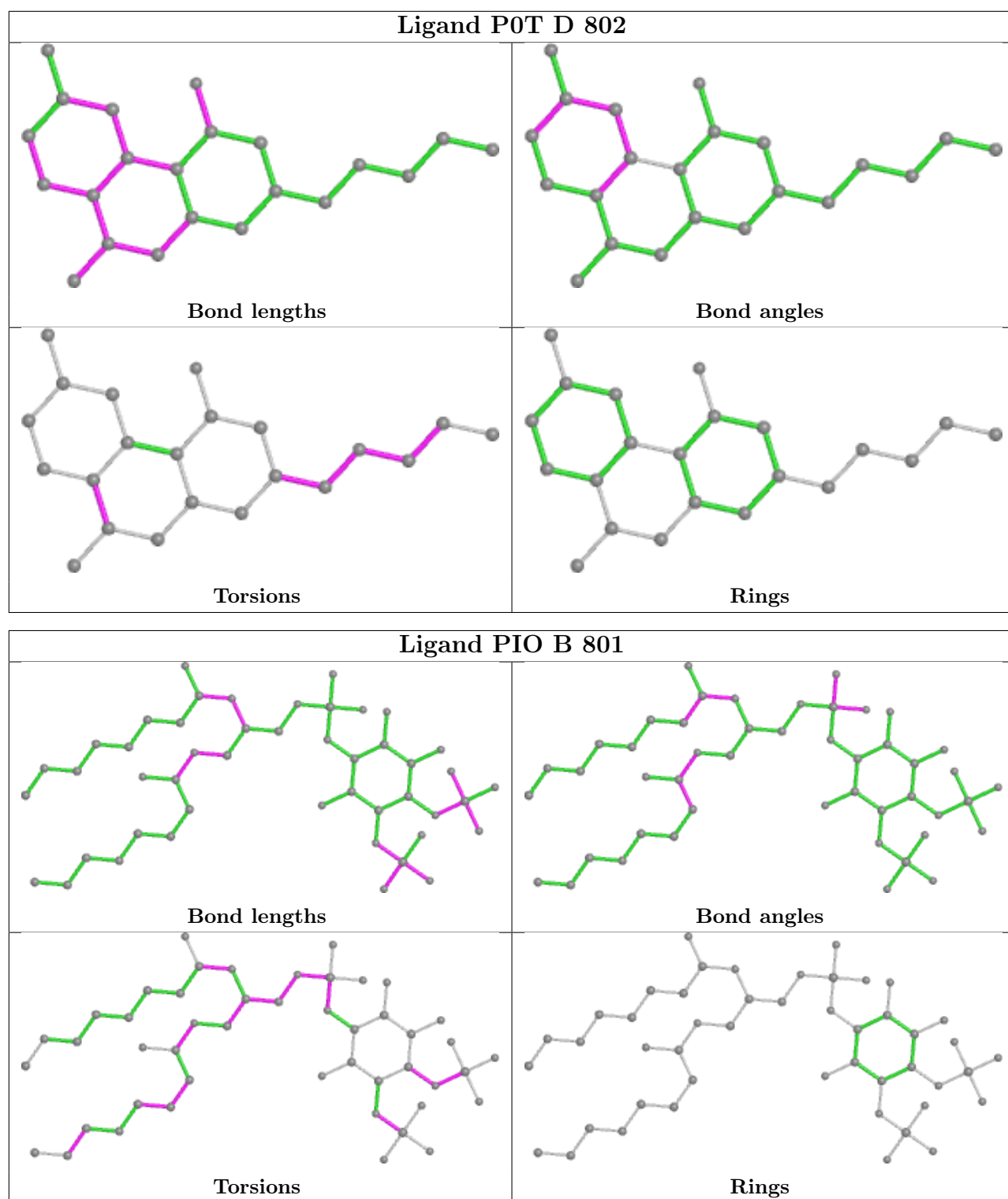


Ligand PIO A 803



Ligand POT B 802





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.