



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 13, 2024 – 06:44 PM JST

PDB ID : 5WTR
Title : Crystal structure of a prokaryotic TRIC channel in 0.5 M KCl
Authors : Ou, X.M.; Wang, L.F.; Yang, H.T.; Liu, X.Y.; Liu, Z.F.
Deposited on : 2016-12-14
Resolution : 2.20 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

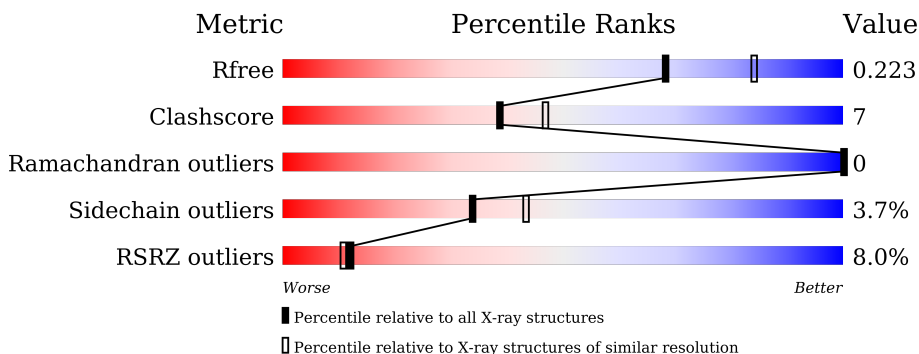
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	213	
1	B	213	
1	C	213	
1	F	213	
1	G	213	
1	H	213	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	EDO	A	302	-	-	-	X
2	EDO	B	302	-	-	-	X
2	EDO	C	302	-	-	-	X
2	EDO	F	302	-	-	-	X
2	EDO	H	302	-	-	-	X
3	K	C	307	-	-	-	X
4	TGL	C	310	-	-	-	X
4	TGL	F	310	-	-	-	X

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 9636 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Uncharacterized protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	197	1512	1019	225	264	4	0	0	0
1	B	197	1512	1019	225	264	4	0	0	0
1	C	196	1504	1013	224	263	4	0	0	0
1	F	197	1512	1019	225	264	4	0	0	0
1	G	196	1504	1013	224	263	4	0	0	0
1	H	196	1504	1013	224	263	4	0	0	0

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	206	LEU	-	expression tag	UNP Q981D4
A	207	GLU	-	expression tag	UNP Q981D4
A	208	HIS	-	expression tag	UNP Q981D4
A	209	HIS	-	expression tag	UNP Q981D4
A	210	HIS	-	expression tag	UNP Q981D4
A	211	HIS	-	expression tag	UNP Q981D4
A	212	HIS	-	expression tag	UNP Q981D4
A	213	HIS	-	expression tag	UNP Q981D4
B	206	LEU	-	expression tag	UNP Q981D4
B	207	GLU	-	expression tag	UNP Q981D4
B	208	HIS	-	expression tag	UNP Q981D4
B	209	HIS	-	expression tag	UNP Q981D4
B	210	HIS	-	expression tag	UNP Q981D4
B	211	HIS	-	expression tag	UNP Q981D4
B	212	HIS	-	expression tag	UNP Q981D4
B	213	HIS	-	expression tag	UNP Q981D4
C	206	LEU	-	expression tag	UNP Q981D4

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
C	207	GLU	-	expression tag	UNP Q981D4
C	208	HIS	-	expression tag	UNP Q981D4
C	209	HIS	-	expression tag	UNP Q981D4
C	210	HIS	-	expression tag	UNP Q981D4
C	211	HIS	-	expression tag	UNP Q981D4
C	212	HIS	-	expression tag	UNP Q981D4
C	213	HIS	-	expression tag	UNP Q981D4
F	206	LEU	-	expression tag	UNP Q981D4
F	207	GLU	-	expression tag	UNP Q981D4
F	208	HIS	-	expression tag	UNP Q981D4
F	209	HIS	-	expression tag	UNP Q981D4
F	210	HIS	-	expression tag	UNP Q981D4
F	211	HIS	-	expression tag	UNP Q981D4
F	212	HIS	-	expression tag	UNP Q981D4
F	213	HIS	-	expression tag	UNP Q981D4
G	206	LEU	-	expression tag	UNP Q981D4
G	207	GLU	-	expression tag	UNP Q981D4
G	208	HIS	-	expression tag	UNP Q981D4
G	209	HIS	-	expression tag	UNP Q981D4
G	210	HIS	-	expression tag	UNP Q981D4
G	211	HIS	-	expression tag	UNP Q981D4
G	212	HIS	-	expression tag	UNP Q981D4
G	213	HIS	-	expression tag	UNP Q981D4
H	206	LEU	-	expression tag	UNP Q981D4
H	207	GLU	-	expression tag	UNP Q981D4
H	208	HIS	-	expression tag	UNP Q981D4
H	209	HIS	-	expression tag	UNP Q981D4
H	210	HIS	-	expression tag	UNP Q981D4
H	211	HIS	-	expression tag	UNP Q981D4
H	212	HIS	-	expression tag	UNP Q981D4
H	213	HIS	-	expression tag	UNP Q981D4

- Molecule 2 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).

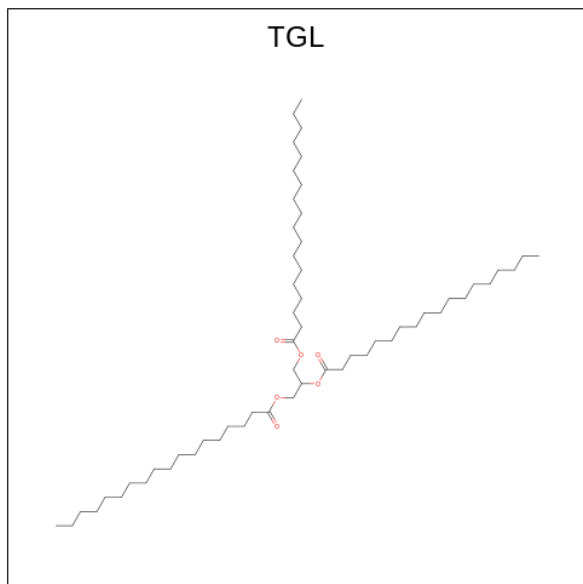


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	B	1	Total C O 4 2 2	0	0
2	B	1	Total C O 4 2 2	0	0
2	C	1	Total C O 4 2 2	0	0
2	C	1	Total C O 4 2 2	0	0
2	F	1	Total C O 4 2 2	0	0
2	F	1	Total C O 4 2 2	0	0
2	G	1	Total C O 4 2 2	0	0
2	G	1	Total C O 4 2 2	0	0
2	H	1	Total C O 4 2 2	0	0
2	H	1	Total C O 4 2 2	0	0

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	5	Total K 5 5	0	0
3	B	4	Total K 4 4	0	0
3	C	7	Total K 7 7	0	0
3	F	7	Total K 7 7	0	0
3	G	5	Total K 5 5	0	0
3	H	5	Total K 5 5	0	0

- Molecule 4 is TRISTEAROYLGLYCEROL (three-letter code: TGL) (formula: $C_{57}H_{110}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 63 57 6	0	0
4	F	1	Total C O 63 57 6	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	67	Total O 67 67	0	0
5	B	47	Total O 47 47	0	0


Continued on next page...

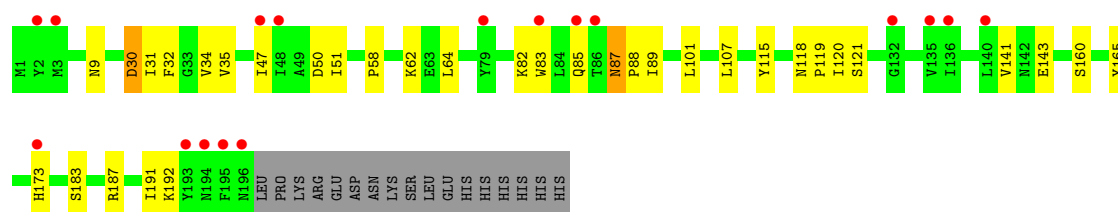
Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	63	Total O 63 63	0	0
5	F	73	Total O 73 73	0	0
5	G	65	Total O 65 65	0	0
5	H	66	Total O 66 66	0	0


HIS

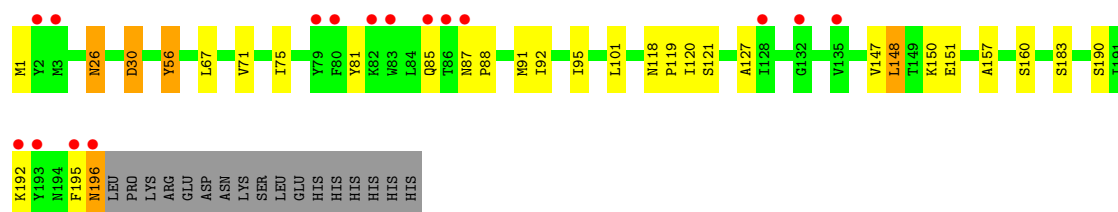
- Molecule 1: Uncharacterized protein

Chain G: 



- Molecule 1: Uncharacterized protein

Chain H: 



4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	152.07Å 87.73Å 173.06Å 90.00° 108.90° 90.00°	Depositor
Resolution (Å)	50.00 – 2.20 42.68 – 2.20	Depositor EDS
% Data completeness (in resolution range)	97.4 (50.00-2.20) 97.4 (42.68-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.43 (at 2.20Å)	Xtrriage
Refinement program	CNS 1.3	Depositor
R, R_{free}	0.211 , 0.229 0.206 , 0.223	Depositor DCC
R_{free} test set	2620 reflections (2.46%)	wwPDB-VP
Wilson B-factor (Å ²)	30.7	Xtrriage
Anisotropy	0.555	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 67.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.066 for 1/2*h-3/2*k,-1/2*h-1/2*k,-1/2*h +1/2*k-1 0.077 for 1/2*h+3/2*k,1/2*h-1/2*k,-1/2*h- 1/2*k-1	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	9636	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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: EDO, K, TGL

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	0.37	0/1546	0.57	0/2106
1	B	0.35	0/1546	0.59	0/2106
1	C	0.39	0/1538	0.58	0/2095
1	F	0.40	0/1546	0.59	0/2106
1	G	0.37	0/1538	0.58	0/2095
1	H	0.36	0/1538	0.58	0/2095
All	All	0.37	0/9252	0.58	0/12603

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	1512	0	1591	29	0
1	B	1512	0	1591	38	0
1	C	1504	0	1579	19	0
1	F	1512	0	1591	26	0
1	G	1504	0	1580	27	0
1	H	1504	0	1579	26	0
2	A	8	0	12	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	8	0	12	0	0
2	C	8	0	12	0	0
2	F	8	0	12	1	0
2	G	8	0	12	1	0
2	H	8	0	12	0	0
3	A	5	0	0	0	0
3	B	4	0	0	0	0
3	C	7	0	0	0	0
3	F	7	0	0	0	0
3	G	5	0	0	0	0
3	H	5	0	0	0	0
4	C	63	0	110	3	0
4	F	63	0	110	4	0
5	A	67	0	0	4	0
5	B	47	0	0	1	0
5	C	63	0	0	3	0
5	F	73	0	0	1	0
5	G	65	0	0	4	0
5	H	66	0	0	2	0
All	All	9636	0	9803	142	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 7.

All (142) 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)
1:A:23:LYS:O	1:A:27:LYS:HG2	1.78	0.83
1:H:87:ASN:HB2	1:H:88:PRO:HD3	1.58	0.83
1:F:120:ILE:HD11	1:H:67:LEU:HD22	1.66	0.77
1:G:82:LYS:HE3	1:G:83:TRP:CH2	2.20	0.77
1:B:193:TYR:HB3	5:B:432:HOH:O	1.85	0.76
1:F:136:ILE:HD11	4:F:310:TGL:HA32	1.69	0.75
1:F:1:MET:HE1	5:F:446:HOH:O	1.86	0.74
1:H:118:ASN:HB2	1:H:119:PRO:HD2	1.70	0.72
1:H:192:LYS:O	1:H:196:ASN:HB2	1.89	0.72
1:B:92:ILE:O	1:B:96:SER:HB2	1.90	0.72
1:A:50:ASP:OD2	1:A:59:GLN:HG2	1.92	0.69
1:A:120:ILE:HD11	1:C:67:LEU:HD22	1.74	0.69
1:G:118:ASN:HB2	1:G:119:PRO:HD2	1.78	0.65
1:B:194:ASN:C	1:B:196:ASN:H	2.00	0.64

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:30:ASP:HB3	1:B:151:GLU:CD	2.19	0.63
1:B:85:GLN:HG2	1:B:88:PRO:HG2	1.81	0.63
1:H:1:MET:N	5:H:401:HOH:O	2.29	0.62
1:F:160:SER:HB2	1:F:183:SER:HB2	1.82	0.61
1:F:193:TYR:CE2	1:F:197:LEU:HD11	2.36	0.61
1:B:88:PRO:O	1:B:92:ILE:HG13	2.01	0.60
1:B:64:LEU:HD13	1:C:120:ILE:CD1	2.32	0.59
1:A:31:ILE:HG23	1:A:32:PHE:N	2.18	0.58
1:A:30:ASP:O	1:A:34:VAL:HG23	2.03	0.58
1:B:31:ILE:O	1:B:35:VAL:HG23	2.04	0.57
1:G:101:LEU:HD23	1:G:101:LEU:C	2.25	0.56
1:B:62:LYS:HG3	1:C:121:SER:OG	2.06	0.56
1:H:91:MET:O	1:H:95:ILE:HG12	2.05	0.56
1:C:160:SER:HB2	1:C:183:SER:HB2	1.86	0.56
1:H:160:SER:HB2	1:H:183:SER:HB2	1.85	0.56
1:B:8:LEU:O	1:B:103:THR:HG21	2.06	0.55
1:B:64:LEU:HD13	1:C:120:ILE:HD11	1.88	0.55
1:B:80:PHE:HA	1:B:83:TRP:HE3	1.72	0.55
1:A:118:ASN:HB2	1:A:119:PRO:CD	2.38	0.55
1:G:31:ILE:HG23	1:G:32:PHE:N	2.22	0.54
1:G:160:SER:HB2	1:G:183:SER:HB2	1.89	0.54
1:B:160:SER:HB2	1:B:183:SER:HB2	1.90	0.54
1:H:147:VAL:HG13	1:H:148:LEU:HD13	1.90	0.53
1:A:4:ILE:HG13	5:A:405:HOH:O	2.08	0.53
1:B:8:LEU:O	1:B:103:THR:CG2	2.56	0.53
1:F:56:TYR:OH	1:H:56:TYR:CE1	2.62	0.53
1:G:47:ILE:O	1:G:51:ILE:HG12	2.08	0.53
1:G:85:GLN:O	1:G:89:ILE:HG13	2.09	0.53
1:B:194:ASN:C	1:B:196:ASN:N	2.61	0.53
1:B:85:GLN:O	1:B:88:PRO:HD2	2.09	0.53
1:F:132:GLY:O	1:F:136:ILE:HG12	2.08	0.52
1:G:64:LEU:HD13	1:H:120:ILE:CD1	2.39	0.52
1:G:87:ASN:HB3	1:G:88:PRO:HD3	1.92	0.52
1:A:119:PRO:HG3	1:A:165:TYR:CE1	2.45	0.52
1:A:82:LYS:HG3	1:A:83:TRP:CD1	2.45	0.52
1:A:140:LEU:HD22	1:B:145:PRO:HG3	1.92	0.51
1:B:119:PRO:HG3	1:B:165:TYR:CE1	2.45	0.51
1:C:119:PRO:HG3	1:C:165:TYR:CE2	2.46	0.51
1:B:103:THR:HG22	1:B:104:PHE:HD1	1.75	0.51
1:C:147:VAL:HG23	1:C:148:LEU:HD13	1.92	0.51
1:C:155:THR:HG23	5:C:411:HOH:O	2.10	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:141:VAL:HG23	1:B:143:GLU:HG3	1.93	0.51
1:C:192:LYS:O	1:C:196:ASN:HB2	2.11	0.51
1:C:172:HIS:CD2	5:C:427:HOH:O	2.63	0.51
1:F:62:LYS:HG3	1:G:121:SER:OG	2.11	0.51
1:C:118:ASN:HB2	1:C:119:PRO:CD	2.41	0.50
1:G:64:LEU:HB2	1:H:120:ILE:HG13	1.93	0.50
1:G:31:ILE:O	1:G:35:VAL:HG23	2.12	0.50
1:A:160:SER:HB2	1:A:183:SER:HB2	1.92	0.50
1:H:26:ASN:ND2	1:H:81:TYR:OH	2.44	0.50
1:A:64:LEU:HB2	1:B:120:ILE:HG13	1.93	0.50
1:C:118:ASN:HB2	1:C:119:PRO:HD2	1.94	0.50
1:B:86:THR:O	1:B:90:LYS:HG3	2.12	0.50
1:H:87:ASN:HB2	1:H:88:PRO:CD	2.37	0.50
1:C:26:ASN:ND2	1:C:81:TYR:OH	2.39	0.49
1:F:136:ILE:CD1	4:F:310:TGL:HA32	2.40	0.49
1:F:197:LEU:HD12	1:F:197:LEU:O	2.12	0.49
1:G:62:LYS:HG2	1:H:121:SER:OG	2.12	0.49
1:C:47:ILE:O	1:C:51:ILE:HG12	2.12	0.49
1:F:120:ILE:HD11	1:H:67:LEU:CD2	2.40	0.48
1:G:107:LEU:HD13	2:G:302:EDO:H11	1.94	0.48
1:A:85:GLN:O	1:A:89:ILE:HG13	2.14	0.48
1:H:101:LEU:C	1:H:101:LEU:HD23	2.33	0.48
1:B:103:THR:HG22	1:B:104:PHE:CD1	2.48	0.47
1:H:71:VAL:O	1:H:75:ILE:HG13	2.13	0.47
1:B:23:LYS:O	1:B:27:LYS:HG2	2.14	0.47
1:F:136:ILE:HD11	4:F:310:TGL:CA3	2.43	0.47
1:F:196:ASN:OD1	1:F:196:ASN:C	2.53	0.47
1:H:88:PRO:O	1:H:92:ILE:HG12	2.15	0.47
1:H:195:PHE:HB3	5:H:436:HOH:O	2.15	0.47
1:A:85:GLN:HB3	1:A:88:PRO:HD2	1.97	0.47
1:A:118:ASN:HB2	1:A:119:PRO:HD2	1.97	0.47
1:B:80:PHE:HA	1:B:83:TRP:CE3	2.50	0.46
1:G:30:ASP:O	1:G:34:VAL:HG23	2.15	0.46
1:B:118:ASN:HB2	1:B:119:PRO:CD	2.44	0.46
1:F:64:LEU:HD13	1:G:120:ILE:CD1	2.45	0.46
1:F:101:LEU:C	1:F:101:LEU:HD23	2.35	0.46
1:A:172:HIS:CD2	5:A:433:HOH:O	2.69	0.46
1:F:119:PRO:HG3	1:F:165:TYR:CE1	2.50	0.46
1:H:127:ALA:HA	1:H:157:ALA:HB1	1.97	0.46
1:B:63:GLU:HG3	1:B:66:TYR:HD2	1.81	0.46
1:B:136:ILE:O	1:B:140:LEU:HG	2.16	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:56:TYR:OH	1:H:56:TYR:CZ	2.67	0.45
1:F:118:ASN:HB2	1:F:119:PRO:HD2	1.99	0.45
1:C:88:PRO:HB2	5:C:457:HOH:O	2.16	0.45
1:A:85:GLN:HG3	5:A:438:HOH:O	2.17	0.45
1:G:30:ASP:HB3	1:H:151:GLU:CD	2.38	0.44
1:A:192:LYS:HE2	5:A:437:HOH:O	2.16	0.44
1:A:60:ILE:HG12	1:A:60:ILE:O	2.18	0.44
1:A:158:LEU:HD22	4:C:310:TGL:H262	2.00	0.44
1:C:128:ILE:HA	4:C:310:TGL:HC71	2.00	0.44
4:F:310:TGL:HA82	4:F:310:TGL:HA51	1.75	0.44
1:A:64:LEU:HD13	1:B:120:ILE:CD1	2.48	0.44
1:B:187:ARG:HA	1:B:187:ARG:HD2	1.83	0.43
1:F:118:ASN:HB2	1:F:119:PRO:CD	2.47	0.43
1:A:135:VAL:HG21	4:C:310:TGL:HA61	2.00	0.43
1:B:12:GLY:HA3	1:B:103:THR:HG21	2.00	0.43
1:G:64:LEU:HD13	1:H:120:ILE:HD12	1.99	0.43
1:G:115:TYR:HE1	5:G:438:HOH:O	2.00	0.43
1:F:56:TYR:HE1	5:G:456:HOH:O	2.00	0.43
1:G:119:PRO:HD3	1:G:165:TYR:CZ	2.53	0.43
1:B:87:ASN:HB3	1:B:88:PRO:HD3	2.01	0.43
1:A:62:LYS:HG2	1:B:121:SER:OG	2.19	0.42
1:B:196:ASN:HD22	1:B:196:ASN:HA	1.60	0.42
1:B:26:ASN:ND2	1:B:81:TYR:OH	2.51	0.42
1:A:88:PRO:O	1:A:92:ILE:HG13	2.19	0.42
1:F:47:ILE:CD1	2:F:302:EDO:H21	2.50	0.42
1:F:151:GLU:CD	1:H:30:ASP:HB3	2.40	0.42
1:A:64:LEU:HD13	1:B:120:ILE:HD11	2.00	0.42
1:A:31:ILE:CG2	1:A:32:PHE:N	2.83	0.42
1:G:82:LYS:HG2	5:G:407:HOH:O	2.18	0.42
1:A:127:ALA:HA	1:A:157:ALA:HB1	2.02	0.42
1:B:118:ASN:HB2	1:B:119:PRO:HD2	2.01	0.42
1:C:2:TYR:HD1	1:C:5:LEU:HD12	1.85	0.42
1:G:82:LYS:HE3	1:G:83:TRP:CZ2	2.54	0.42
1:G:141:VAL:HG23	1:G:143:GLU:HG3	2.02	0.41
1:F:64:LEU:HD13	1:G:120:ILE:HD11	2.02	0.41
1:F:184:PHE:O	1:F:188:ILE:HG12	2.19	0.41
1:G:62:LYS:NZ	5:G:406:HOH:O	2.53	0.41
1:F:193:TYR:CD2	1:F:197:LEU:HD11	2.54	0.41
1:G:187:ARG:O	1:G:191:ILE:HG13	2.20	0.41
1:G:50:ASP:OD2	1:G:58:PRO:HA	2.21	0.41
1:C:181:LEU:O	1:C:185:LEU:HB2	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:85:GLN:O	1:H:88:PRO:HD2	2.20	0.41
1:B:185:LEU:O	1:B:189:LEU:HD13	2.21	0.40
1:A:120:ILE:HD11	1:C:67:LEU:CD2	2.47	0.40
1:F:184:PHE:CZ	1:F:188:ILE:HD11	2.56	0.40
1:H:87:ASN:CB	1:H:88:PRO:HD3	2.42	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	195/213 (92%)	190 (97%)	5 (3%)	0	100	100
1	B	195/213 (92%)	189 (97%)	6 (3%)	0	100	100
1	C	194/213 (91%)	188 (97%)	6 (3%)	0	100	100
1	F	195/213 (92%)	189 (97%)	6 (3%)	0	100	100
1	G	194/213 (91%)	189 (97%)	5 (3%)	0	100	100
1	H	194/213 (91%)	189 (97%)	5 (3%)	0	100	100
All	All	1167/1278 (91%)	1134 (97%)	33 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	163/179 (91%)	157 (96%)	6 (4%)	34	43
1	B	163/179 (91%)	151 (93%)	12 (7%)	13	14
1	C	162/179 (90%)	160 (99%)	2 (1%)	71	83
1	F	163/179 (91%)	159 (98%)	4 (2%)	47	60
1	G	162/179 (90%)	157 (97%)	5 (3%)	40	51
1	H	162/179 (90%)	155 (96%)	7 (4%)	29	36
All	All	975/1074 (91%)	939 (96%)	36 (4%)	34	43

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	GLU
1	A	9	ASN
1	A	30	ASP
1	A	56	TYR
1	A	87	ASN
1	A	91	MET
1	B	1	MET
1	B	26	ASN
1	B	30	ASP
1	B	62	LYS
1	B	63	GLU
1	B	76	PHE
1	B	85	GLN
1	B	96	SER
1	B	173	HIS
1	B	192	LYS
1	B	196	ASN
1	B	197	LEU
1	C	63	GLU
1	C	148	LEU
1	F	62	LYS
1	F	181	LEU
1	F	185	LEU
1	F	192	LYS
1	G	9	ASN
1	G	30	ASP
1	G	87	ASN
1	G	173	HIS
1	G	192	LYS
1	H	26	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	H	30	ASP
1	H	56	TYR
1	H	148	LEU
1	H	150	LYS
1	H	190	SER
1	H	196	ASN

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	9	ASN
1	A	26	ASN
1	A	196	ASN
1	B	26	ASN
1	B	85	GLN
1	B	194	ASN
1	B	196	ASN
1	C	26	ASN
1	C	85	GLN
1	F	26	ASN
1	F	194	ASN
1	G	9	ASN
1	G	26	ASN
1	H	26	ASN
1	H	196	ASN

5.3.3 RNA [i](#)

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 monosaccharides in this entry.

5.6 Ligand geometry

Of 47 ligands modelled in this entry, 33 are monoatomic - leaving 14 for Mogul analysis.

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
2	EDO	B	302	-	3,3,3	0.50	0	2,2,2	0.34	0
2	EDO	C	301	3	3,3,3	0.49	0	2,2,2	0.36	0
2	EDO	G	302	-	3,3,3	0.49	0	2,2,2	0.32	0
2	EDO	A	301	-	3,3,3	0.49	0	2,2,2	0.33	0
4	TGL	F	310	-	62,62,62	0.51	0	65,65,65	1.07	4 (6%)
2	EDO	A	302	-	3,3,3	0.49	0	2,2,2	0.33	0
2	EDO	H	301	-	3,3,3	0.51	0	2,2,2	0.31	0
4	TGL	C	310	-	62,62,62	0.51	0	65,65,65	1.00	2 (3%)
2	EDO	C	302	-	3,3,3	0.49	0	2,2,2	0.34	0
2	EDO	B	301	3	3,3,3	0.49	0	2,2,2	0.36	0
2	EDO	H	302	-	3,3,3	0.49	0	2,2,2	0.34	0
2	EDO	F	301	3	3,3,3	0.48	0	2,2,2	0.36	0
2	EDO	F	302	-	3,3,3	0.50	0	2,2,2	0.34	0
2	EDO	G	301	-	3,3,3	0.49	0	2,2,2	0.34	0

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
2	EDO	B	302	-	-	0/1/1/1	-
2	EDO	C	301	3	-	0/1/1/1	-
2	EDO	G	302	-	-	0/1/1/1	-
2	EDO	A	301	-	-	0/1/1/1	-
4	TGL	F	310	-	-	14/65/65/65	-
2	EDO	A	302	-	-	0/1/1/1	-
2	EDO	H	301	-	-	0/1/1/1	-
4	TGL	C	310	-	-	18/65/65/65	-
2	EDO	C	302	-	-	0/1/1/1	-
2	EDO	B	301	3	-	0/1/1/1	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	H	302	-	-	0/1/1/1	-
2	EDO	F	301	3	-	0/1/1/1	-
2	EDO	F	302	-	-	0/1/1/1	-
2	EDO	G	301	-	-	0/1/1/1	-

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	310	TGL	CG2-OG2-CB1	-2.37	111.97	117.79
4	F	310	TGL	CG3-CG2-CG1	-2.20	106.58	111.79
4	F	310	TGL	CG1-OG1-CA1	-2.15	109.17	117.12
4	C	310	TGL	C13-C12-C11	-2.06	103.98	114.42
4	F	310	TGL	C11-C10-CB9	-2.05	104.03	114.42
4	F	310	TGL	CB9-CB8-CB7	-2.01	104.20	114.42

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	310	TGL	CA2-CA1-OG1-CG1
4	F	310	TGL	CA2-CA1-OG1-CG1
4	C	310	TGL	OA1-CA1-OG1-CG1
4	F	310	TGL	OA1-CA1-OG1-CG1
4	C	310	TGL	CC2-CC1-OG3-CG3
4	C	310	TGL	OC1-CC1-OG3-CG3
4	C	310	TGL	CA1-CA2-CA3-CA4
4	C	310	TGL	CA2-CA3-CA4-CA5
4	C	310	TGL	CA4-CA5-CA6-CA7
4	C	310	TGL	C19-C33-C34-C35
4	F	310	TGL	C23-C24-C25-C26
4	C	310	TGL	CC5-CC6-CC7-CC8
4	F	310	TGL	CA7-CA8-CA9-C20
4	C	310	TGL	CB4-CB5-CB6-CB7
4	C	310	TGL	CA6-CA7-CA8-CA9
4	F	310	TGL	C12-C13-C14-C29
4	C	310	TGL	OB1-CB1-OG2-CG2
4	C	310	TGL	CA7-CA8-CA9-C20
4	C	310	TGL	CB2-CB1-OG2-CG2
4	F	310	TGL	C21-C22-C23-C24
4	C	310	TGL	CC6-CC7-CC8-CC9

Continued on next page...

Continued from previous page...

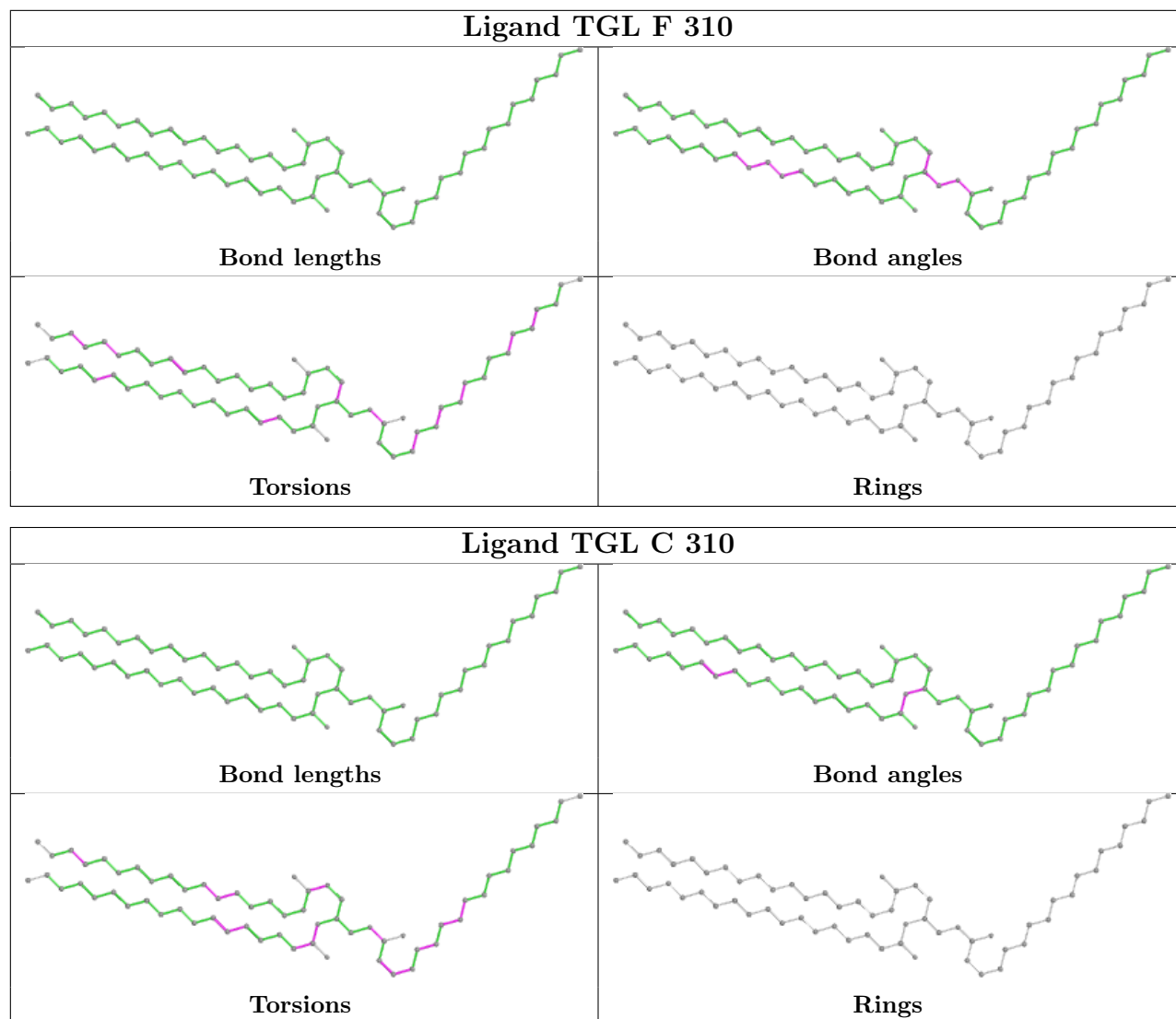
Mol	Chain	Res	Type	Atoms
4	F	310	TGL	C17-C18-C19-C33
4	F	310	TGL	OG2-CG2-CG3-OG3
4	F	310	TGL	CA3-CA4-CA5-CA6
4	F	310	TGL	CB2-CB3-CB4-CB5
4	F	310	TGL	C16-C15-CC9-CC8
4	F	310	TGL	CG1-CG2-CG3-OG3
4	F	310	TGL	C19-C33-C34-C35
4	F	310	TGL	CA5-CA6-CA7-CA8
4	C	310	TGL	OG2-CB1-CB2-CB3
4	C	310	TGL	OB1-CB1-CB2-CB3
4	C	310	TGL	CB5-CB6-CB7-CB8

There are no ring outliers.

4 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	302	EDO	1	0
4	F	310	TGL	4	0
4	C	310	TGL	3	0
2	F	302	EDO	1	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.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	197/213 (92%)	0.29	21 (10%) 6 5	20, 33, 65, 83	0
1	B	197/213 (92%)	0.54	27 (13%) 3 2	27, 39, 73, 101	0
1	C	196/213 (92%)	-0.08	4 (2%) 65 63	19, 29, 46, 72	0
1	F	197/213 (92%)	-0.08	9 (4%) 32 31	18, 28, 47, 84	0
1	G	196/213 (92%)	0.17	17 (8%) 10 8	22, 31, 62, 83	0
1	H	196/213 (92%)	0.20	16 (8%) 11 10	23, 34, 66, 88	0
All	All	1179/1278 (92%)	0.17	94 (7%) 12 11	18, 32, 63, 101	0

All (94) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	197	LEU	8.7
1	B	2	TYR	7.0
1	A	197	LEU	6.6
1	F	197	LEU	6.5
1	H	196	ASN	5.9
1	A	195	PHE	5.9
1	B	193	TYR	5.9
1	B	195	PHE	5.6
1	G	195	PHE	5.2
1	H	193	TYR	5.1
1	B	83	TRP	4.9
1	A	2	TYR	4.7
1	B	173	HIS	4.5
1	H	83	TRP	4.5
1	H	2	TYR	4.5
1	H	195	PHE	4.3
1	A	86	THR	4.1
1	B	79	TYR	4.0
1	A	85	GLN	3.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	196	ASN	3.9
1	H	87	ASN	3.9
1	A	83	TRP	3.8
1	H	79	TYR	3.7
1	F	1	MET	3.7
1	A	79	TYR	3.6
1	C	2	TYR	3.6
1	G	196	ASN	3.6
1	F	2	TYR	3.5
1	A	193	TYR	3.4
1	G	2	TYR	3.4
1	H	192	LYS	3.4
1	B	80	PHE	3.3
1	A	196	ASN	3.3
1	G	83	TRP	3.3
1	H	135	VAL	3.2
1	G	173	HIS	3.2
1	B	44	ALA	3.2
1	A	80	PHE	3.2
1	F	192	LYS	3.2
1	H	86	THR	3.1
1	B	3	MET	3.1
1	B	194	ASN	3.0
1	B	87	ASN	3.0
1	G	79	TYR	2.9
1	B	189	LEU	2.9
1	B	135	VAL	2.9
1	G	193	TYR	2.9
1	A	84	LEU	2.9
1	B	48	ILE	2.8
1	G	3	MET	2.8
1	H	82	LYS	2.8
1	G	85	GLN	2.8
1	H	85	GLN	2.8
1	B	140	LEU	2.7
1	G	194	ASN	2.7
1	B	136	ILE	2.6
1	G	48	ILE	2.6
1	H	3	MET	2.6
1	B	76	PHE	2.6
1	A	135	VAL	2.6
1	G	86	THR	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	F	193	TYR	2.6
1	A	48	ILE	2.5
1	A	87	ASN	2.5
1	A	3	MET	2.5
1	C	136	ILE	2.5
1	F	139	VAL	2.4
1	B	128	ILE	2.4
1	G	136	ILE	2.4
1	G	135	VAL	2.3
1	C	193	TYR	2.3
1	F	136	ILE	2.3
1	F	79	TYR	2.3
1	A	132	GLY	2.3
1	G	47	ILE	2.3
1	B	86	THR	2.2
1	A	136	ILE	2.2
1	G	140	LEU	2.2
1	H	128	ILE	2.2
1	B	1	MET	2.2
1	C	135	VAL	2.2
1	B	85	GLN	2.2
1	B	139	VAL	2.2
1	H	80	PHE	2.2
1	B	82	LYS	2.1
1	A	128	ILE	2.1
1	A	82	LYS	2.1
1	H	132	GLY	2.1
1	F	3	MET	2.1
1	G	132	GLY	2.1
1	A	76	PHE	2.1
1	A	140	LEU	2.0
1	B	47	ILE	2.0
1	B	91	MET	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands i

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	TGL	C	310	63/63	0.52	0.56	55,70,85,86	0
4	TGL	F	310	63/63	0.59	0.49	57,67,79,79	0
2	EDO	C	302	4/4	0.69	1.17	82,82,83,84	0
3	K	C	307	1/1	0.73	0.53	96,96,96,96	0
2	EDO	F	302	4/4	0.75	0.91	76,77,77,78	0
2	EDO	H	302	4/4	0.76	1.18	75,75,76,76	0
2	EDO	A	302	4/4	0.78	0.80	68,68,68,69	0
2	EDO	B	302	4/4	0.78	1.04	70,71,71,71	0
3	K	A	306	1/1	0.81	0.33	85,85,85,85	0
2	EDO	A	301	4/4	0.82	0.27	55,56,57,59	0
3	K	G	307	1/1	0.83	0.49	107,107,107,107	0
3	K	B	305	1/1	0.84	0.61	123,123,123,123	0
3	K	G	306	1/1	0.85	0.39	102,102,102,102	0
3	K	B	304	1/1	0.86	0.29	107,107,107,107	0
2	EDO	B	301	4/4	0.87	0.21	54,55,55,56	0
3	K	H	304	1/1	0.88	0.28	100,100,100,100	0
3	K	H	305	1/1	0.89	0.32	92,92,92,92	0
3	K	H	306	1/1	0.89	0.29	83,83,83,83	0
2	EDO	C	301	4/4	0.89	0.21	54,56,56,58	0
3	K	C	305	1/1	0.89	0.17	102,102,102,102	0
2	EDO	F	301	4/4	0.90	0.20	49,49,50,53	0
2	EDO	H	301	4/4	0.91	0.18	50,51,52,53	0
3	K	F	305	1/1	0.91	0.36	107,107,107,107	0
2	EDO	G	301	4/4	0.91	0.70	63,63,63,63	0
3	K	F	306	1/1	0.92	0.50	94,94,94,94	0
2	EDO	G	302	4/4	0.92	0.23	47,48,49,51	0
3	K	B	303	1/1	0.93	0.11	71,71,71,71	0
3	K	A	305	1/1	0.93	0.27	98,98,98,98	0
3	K	A	307	1/1	0.95	0.20	73,73,73,73	0
3	K	B	306	1/1	0.95	0.14	86,86,86,86	0
3	K	F	309	1/1	0.95	0.31	78,78,78,78	0
3	K	C	308	1/1	0.95	0.13	80,80,80,80	0
3	K	F	304	1/1	0.95	0.08	55,55,55,55	0
3	K	H	303	1/1	0.96	0.07	62,62,62,62	0
3	K	A	304	1/1	0.97	0.10	57,57,57,57	0
3	K	G	303	1/1	0.97	0.08	53,53,53,53	0

Continued on next page...

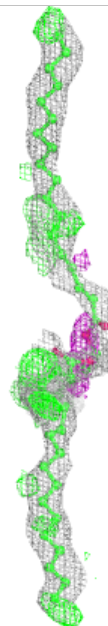
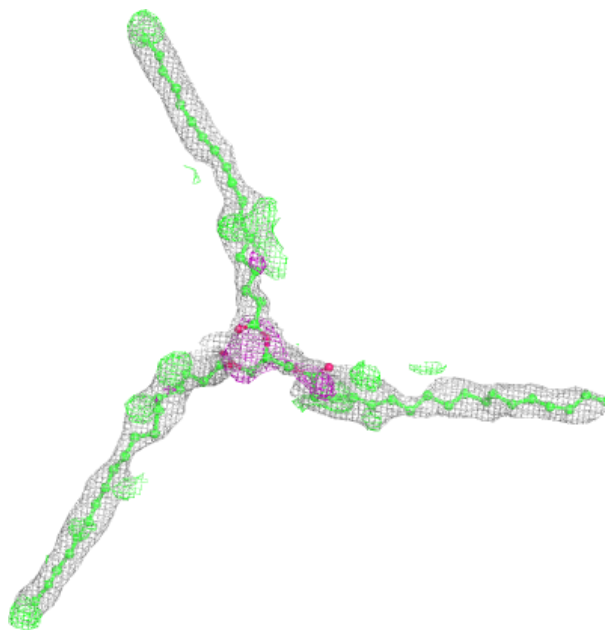
Continued from previous page...

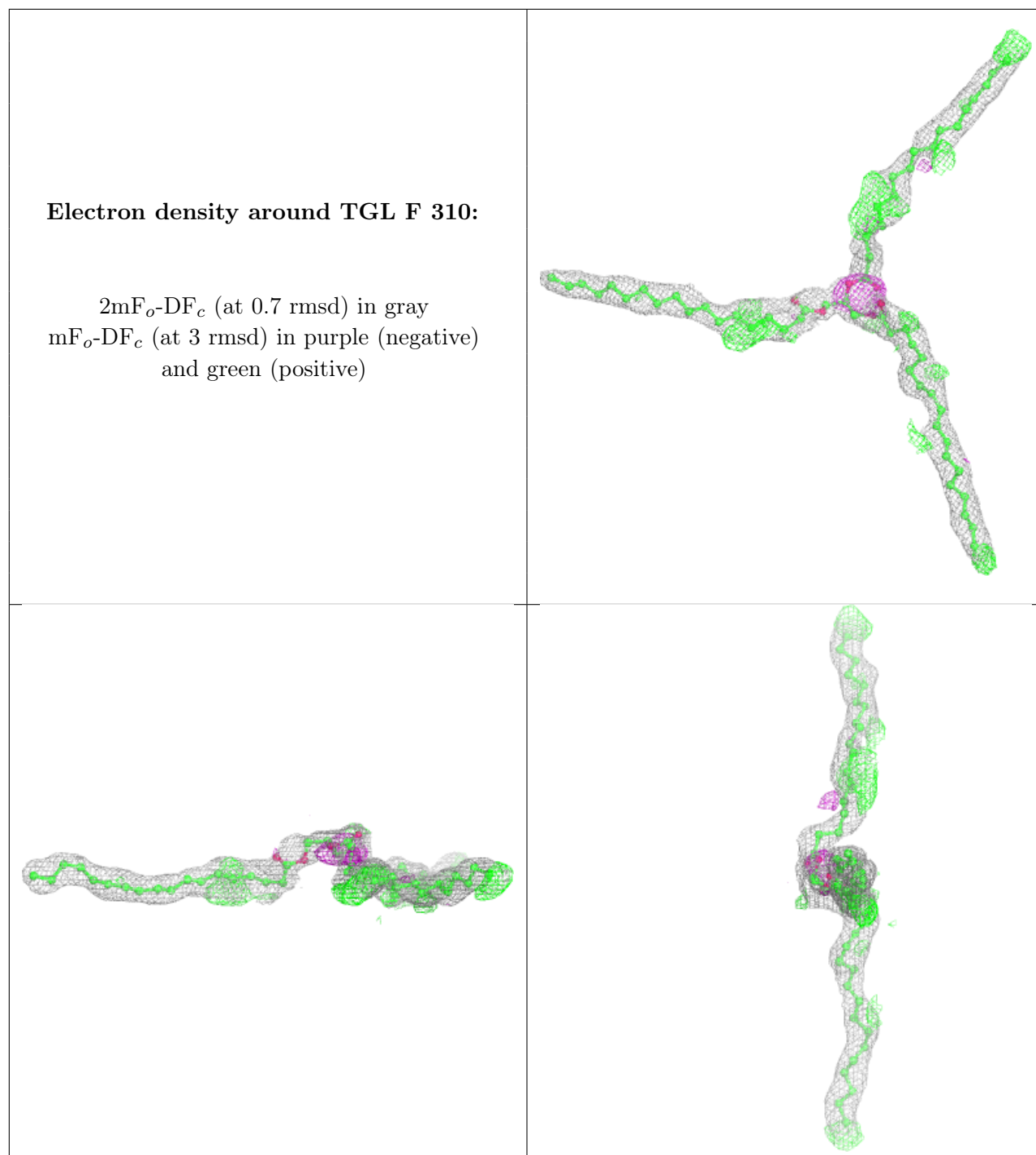
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	K	C	306	1/1	0.97	0.26	67,67,67,67	0
3	K	H	307	1/1	0.97	0.10	64,64,64,64	0
3	K	C	309	1/1	0.97	0.25	69,69,69,69	0
3	K	F	308	1/1	0.97	0.23	32,32,32,32	1
3	K	G	305	1/1	0.98	0.21	75,75,75,75	0
3	K	C	304	1/1	0.98	0.08	49,49,49,49	0
3	K	C	303	1/1	0.98	0.07	56,56,56,56	0
3	K	F	303	1/1	0.98	0.17	34,34,34,34	0
3	K	G	304	1/1	0.98	0.45	88,88,88,88	0
3	K	A	303	1/1	0.99	0.16	37,37,37,37	0
3	K	F	307	1/1	0.99	0.40	77,77,77,77	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around TGL C 310:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.