Full wwPDB X-ray Structure Validation Report (i)

Jan 7, 2024 – 03:13 am GMT

PDB ID	:	6HD8
Title	:	Crystal structure of the potassium channel MtTMEM175 in complex with a Nanobody-MBP fusion protein
Authors	:	Brunner, J.D.; Jakob, R.P.; Schulze, T.; Neldner, Y.; Moroni, A.; Thiel, G.; Maier, T.; Schenck, S.
Deposited on	:	2018-08-17
Resolution	:	2.40 Å(reported)

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

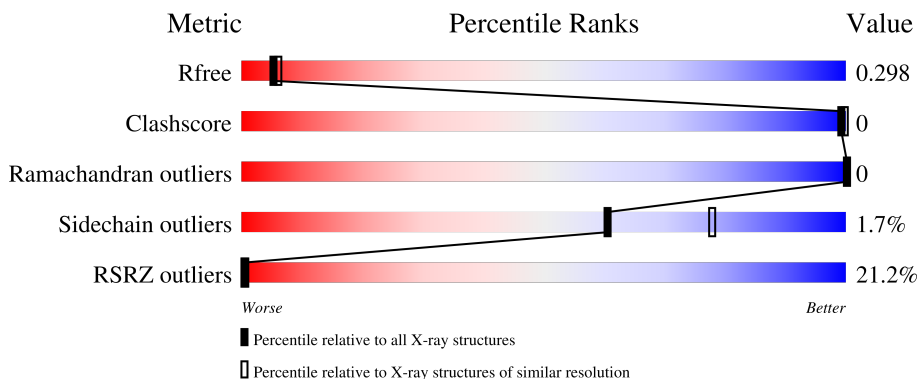|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (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:
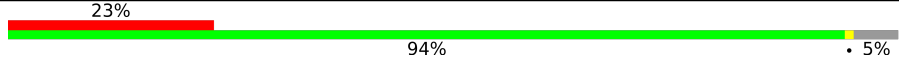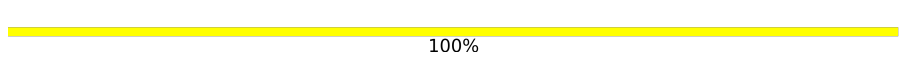*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.40 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	Percentile Ranks	Value
Rfree		0.298
Clashscore		0
Ramachandran outliers		0
Sidechain outliers		1.7%
RSRZ outliers		21.2%

Worse *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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 <=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	486	23% / 94% · 5%
2	B	255	13% / 87% · 9%
3	C	2	100%

WORLDWIDE PDB
PROTEIN DATA BANK

2　Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 11201 atoms, of which 5543 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 Nanobody,Maltose/maltodextrin-binding periplasmic protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	461	Total 7098	C 2288	H 3526	N 594	O 680	S 10	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	484	PRO	-	expression tag	UNP P0AEX9
A	485	GLY	-	expression tag	UNP P0AEX9
A	486	ALA	-	expression tag	UNP P0AEX9

- Molecule 2 is a protein called TMEM175.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	B	232	Total 3854	C 1278	H 1963	N 287	O 318	S 8	0	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	0	MET	-	initiating methionine	UNP E4TN31
B	1	SER	-	expression tag	UNP E4TN31
B	248	ALA	-	expression tag	UNP E4TN31
B	249	LEU	-	expression tag	UNP E4TN31
B	250	GLU	-	expression tag	UNP E4TN31
B	251	VAL	-	expression tag	UNP E4TN31
B	252	LEU	-	expression tag	UNP E4TN31
B	253	PHE	-	expression tag	UNP E4TN31
B	254	GLN	-	expression tag	UNP E4TN31

- Molecule 3 is an oligosaccharide called alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	C	2	Total 44	C 12	H 21	O 11	0	0	0

- Molecule 4 is DODECYL-BETA-D-MALTOSIDE (three-letter code: LMT) (formula: $C_{24}H_{46}O_{11}$).
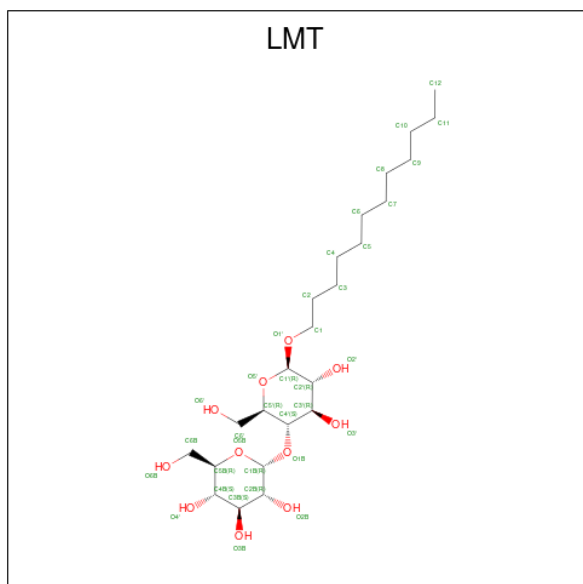
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	B	1	Total 63	C 19	H 33	O 11	0	0

- Molecule 5 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	2	Total 2	K 2	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	84	Total 84	O 84	0	0
6	B	56	Total 56	O 56	0	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 and electron density. 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. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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: Nanobody,Maltose/maltodextrin-binding periplasmic protein
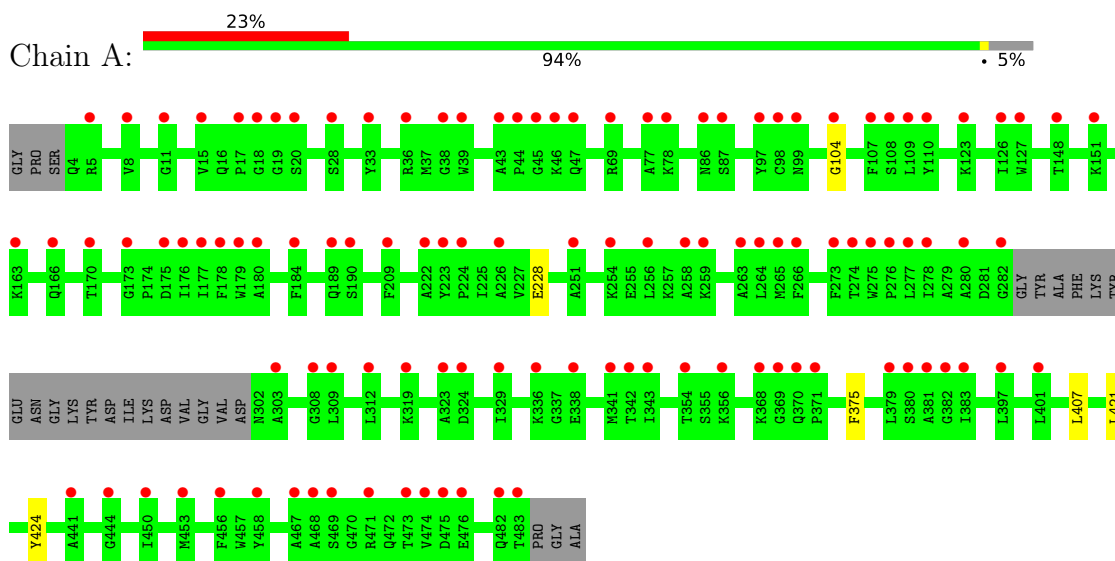
• Molecule 2: TMEM175
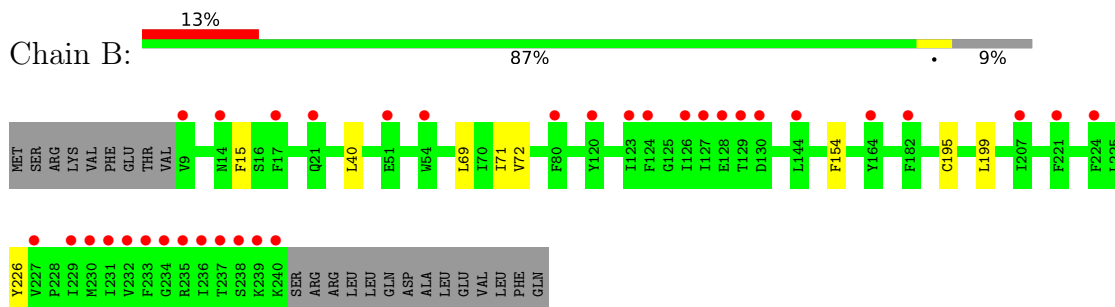
• Molecule 3: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

4 Data and refinement statistics ⓘ
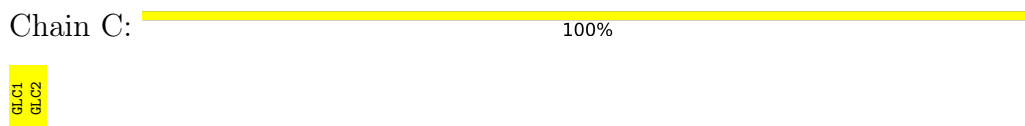
Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α, β, γ	131.21Å 131.21Å 132.59Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	24.16 – 2.40 24.16 – 2.40	Depositor EDS
% Data completeness (in resolution range)	99.3 (24.16-2.40) 99.9 (24.16-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.49 (at 2.41Å)	Xtriage
Refinement program	BUSTER 2.10.3	Depositor
R, R_{free}	0.209 , 0.253 0.257 , 0.298	Depositor DCC
R_{free} test set	2184 reflections (4.78%)	wwPDB-VP
Wilson B-factor (Å^2)	56.2	Xtriage
Anisotropy	0.541	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 98.2	EDS
L-test for twinning [2]	$< \lvert L \rvert > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.000 for -h,l,k 0.000 for -l,-k,-h	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	11201	wwPDB-VP
Average B, all atoms (Å^2)	133.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.07% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< \lvert L \rvert >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GLC, K, LMT

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	0.45	0/3658	0.59	1/4968 (0.0%)
2	B	0.54	0/1941	0.59	0/2637
All	All	0.48	0/5599	0.59	1/7605 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	104	GLY	N-CA-C	-6.38	97.15	113.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	3572	3526	3526	1	0
2	B	1891	1963	1963	1	0
3	C	23	21	20	0	0
4	B	30	33	33	0	0
5	B	2	0	0	0	0
6	A	84	0	0	0	0
6	B	56	0	0	0	0
All	All	5658	5543	5542	2	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 0.

All (2) 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:B:154:PHE:CE1	2:B:199:LEU:HD13	2.48	0.48
1:A:407:LEU:HD12	1:A:421:LEU:HD22	1.95	0.48

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	457/486 (94%)	436 (95%)	21 (5%)	0	100	100
2	B	230/255 (90%)	223 (97%)	7 (3%)	0	100	100
All	All	687/741 (93%)	659 (96%)	28 (4%)	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	371/389 (95%)	368 (99%)	3 (1%)	81	91
2	B	209/231 (90%)	202 (97%)	7 (3%)	38	57

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	580/620 (94%)	570 (98%)	10 (2%)	60 78

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	228	GLU
1	A	375	PHE
1	A	424	TYR
2	B	15	PHE
2	B	40	LEU
2	B	69	LEU
2	B	71	ILE
2	B	72	VAL
2	B	195	CYS
2	B	226	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

2 monosaccharides 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	GLC	C	1	3	12,12,12	1.47	3 (25%)	17,17,17	2.00	6 (35%)
3	GLC	C	2	3	11,11,12	1.84	4 (36%)	15,15,17	2.15	3 (20%)

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	GLC	C	1	3	-	0/2/22/22	0/1/1/1
3	GLC	C	2	3	-	0/2/19/22	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	2	GLC	O5-C1	-3.15	1.38	1.43
3	C	2	GLC	C2-C3	2.74	1.56	1.52
3	C	2	GLC	C4-C5	2.53	1.58	1.53
3	C	1	GLC	O5-C5	-2.52	1.38	1.44
3	C	1	GLC	O5-C1	-2.09	1.37	1.42
3	C	2	GLC	O2-C2	-2.02	1.39	1.43
3	C	1	GLC	O4-C4	-2.01	1.38	1.43

All (9) bond angle outliers are listed below:

| Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1	GLC	C1-O5-C5	5.25	123.56	113.66
3	C	2	GLC	C1-O5-C5	5.23	119.27	112.19
3	C	2	GLC	O5-C5-C6	-4.16	100.67	107.20
3	C	1	GLC	O5-C1-C2	3.27	116.12	110.28
3	C	2	GLC	O3-C3-C4	-3.00	103.42	110.35
3	C	1	GLC	O3-C3-C4	-2.19	105.29	110.35
3	C	1	GLC	O2-C2-C1	2.18	114.23	109.16
3	C	1	GLC	C3-C4-C5	-2.05	106.59	110.24
3	C	1	GLC	C4-C3-C2	-2.03	107.28	110.82

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.
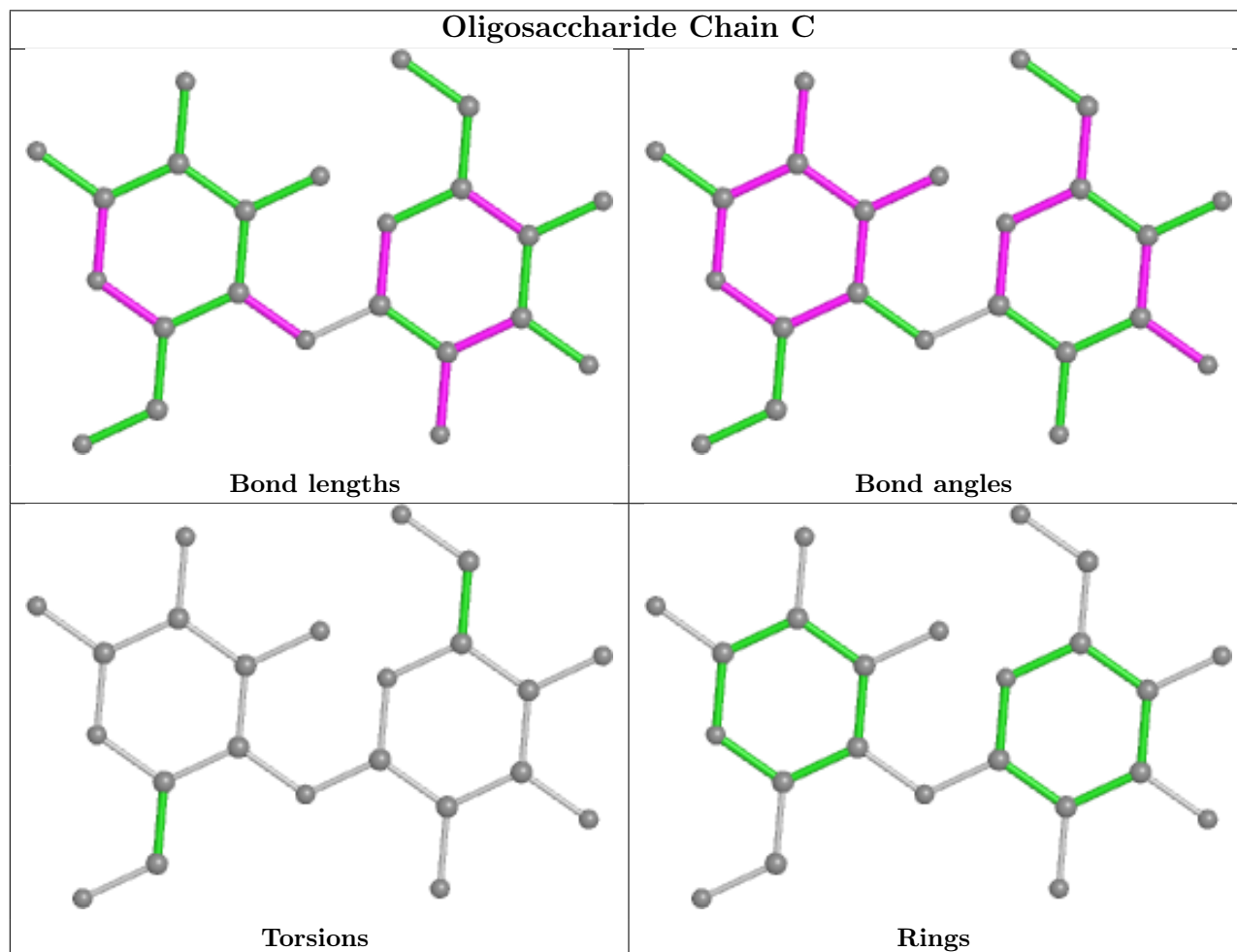
5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 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	$\#|Z| > 2$
4	LMT	B	501	-	31,31,36	1.45	6 (19%)	42,42,47	1.38	4 (9%)

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
4	LMT	B	501	-	-	4/16/56/61	0/2/2/2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	501	LMT	C4B-C3B	3.35	1.60	1.52
4	B	501	LMT	O1'-C1'	2.72	1.44	1.40
4	B	501	LMT	C4B-C5B	2.40	1.58	1.53
4	B	501	LMT	C6B-C5B	2.34	1.59	1.51
4	B	501	LMT	C1B-C2B	2.16	1.58	1.52
4	B	501	LMT	O2'-C2'	-2.00	1.38	1.43

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	501	LMT	O2B-C2B-C3B	-3.26	102.82	110.35
4	B	501	LMT	O5'-C1'-C2'	-2.46	105.14	110.35
4	B	501	LMT	C1'-C2'-C3'	-2.41	104.98	110.00
4	B	501	LMT	C1B-O5B-C5B	2.28	118.16	113.69

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	501	LMT	O5'-C5'-C6'-O6'
4	B	501	LMT	O5B-C5B-C6B-O6B
4	B	501	LMT	C4'-C5'-C6'-O6'
4	B	501	LMT	C4-C5-C6-C7

There are no ring outliers.

No monomer is involved in short contacts.

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 then 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 LMT B 501

Bond lengths | Bond angles | Torsions | Rings
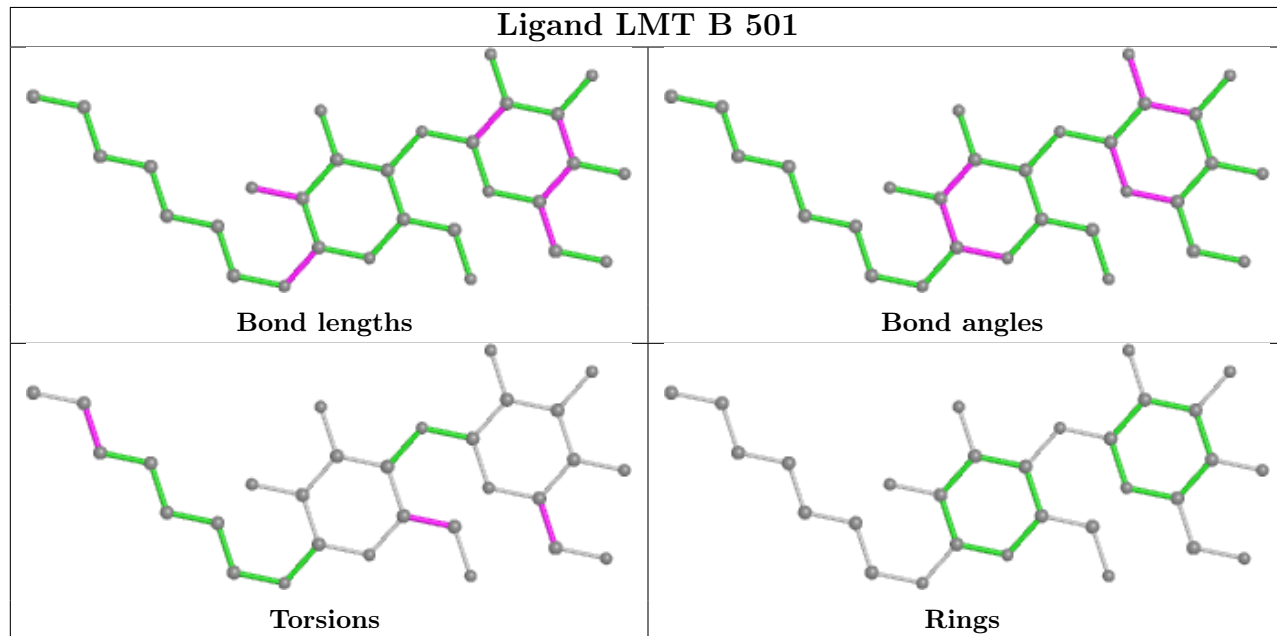
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	461/486 (94%)	1.22	113 (24%)	0	0	89, 143, 201, 245	0
2	B	232/255 (90%)	0.91	34 (14%)	2	2	72, 103, 186, 233	0
All	All	693/741 (93%)	1.12	147 (21%)	0	0	72, 132, 196, 245	0

All (147) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	238	SER	10.2
1	A	381	ALA	9.8
2	B	128	GLU	8.6
1	A	109	LEU	8.2
1	A	468	ALA	8.1
1	A	258	ALA	7.9
1	A	382	GLY	7.8
1	A	356	LYS	7.8
1	A	380	SER	7.4
1	A	170	THR	7.3
2	B	237	THR	7.2
1	A	177	ILE	7.1
2	B	126	ILE	7.1
1	A	456	PHE	7.0
2	B	234	GLY	6.9
1	A	274	THR	6.9
2	B	235	ARG	6.8
2	B	236	ILE	6.6
2	B	239	LYS	6.5
2	B	127	ILE	6.5
1	A	178	PHE	6.4
1	A	266	PHE	6.1
2	B	233	PHE	6.0
1	A	46	LYS	5.9

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Mol	Chain	Res	Type	RSRZ
1	A	176	ILE	5.8
1	A	38	GLY	5.8
2	B	231	ILE	5.6
2	B	224	PHE	5.5
1	A	44	PRO	5.4
1	A	329	ILE	5.4
2	B	240	LYS	5.3
1	A	476	GLU	5.3
1	A	28	SER	5.3
1	A	18	GLY	5.1
1	A	36	ARG	5.0
1	A	98	CYS	4.9
1	A	277	LEU	4.9
1	A	303	ALA	4.8
1	A	78	LYS	4.5
2	B	129	THR	4.5
2	B	124	PHE	4.5
1	A	47	GLN	4.4
1	A	475	ASP	4.3
1	A	368	LYS	4.3
1	A	108	SER	4.2
1	A	107	PHE	4.2
1	A	180	ALA	4.1
1	A	45	GLY	4.1
1	A	354	THR	4.1
1	A	273	PHE	4.0
1	A	184	PHE	3.9
2	B	123	ILE	3.9
1	A	19	GLY	3.9
1	A	104	GLY	3.9
1	A	222	ALA	3.9
1	A	223	TYR	3.9
1	A	482	GLN	3.8
1	A	43	ALA	3.8
1	A	450	ILE	3.7
1	A	336	LYS	3.6
1	A	39	TRP	3.6
1	A	323	ALA	3.5
1	A	309	LEU	3.5
1	A	276	PRO	3.5
1	A	343	ILE	3.4
1	A	151	LYS	3.4

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Mol	Chain	Res	Type	RSRZ
1	A	99	ASN	3.3
1	A	383	ILE	3.2
1	A	397	LEU	3.2
1	A	342	THR	3.1
1	A	209	PHE	3.1
1	A	127	TRP	3.1
2	B	17	PHE	3.1
1	A	275	TRP	3.1
1	A	369	GLY	3.1
1	A	467	ALA	3.1
1	A	401	LEU	3.1
2	B	14	ASN	3.1
2	B	54	TRP	3.0
1	A	379	LEU	3.0
1	A	5	ARG	3.0
1	A	123	LYS	3.0
1	A	471	ARG	2.9
1	A	110	TYR	2.9
1	A	20	SER	2.9
1	A	33	TYR	2.9
2	B	164	TYR	2.9
1	A	163	LYS	2.9
2	B	130	ASP	2.8
1	A	259	LYS	2.8
1	A	86	ASN	2.8
2	B	229	ILE	2.8
1	A	11	GLY	2.8
1	A	173	GLY	2.8
1	A	224	PRO	2.8
1	A	312	LEU	2.7
1	A	453	MET	2.7
2	B	227	VAL	2.7
1	A	126	ILE	2.7
2	B	207	ILE	2.7
1	A	444	GLY	2.7
2	B	9	VAL	2.7
1	A	370	GLN	2.7
1	A	473	THR	2.7
2	B	80	PHE	2.7
1	A	474	VAL	2.6
2	B	232	VAL	2.6
1	A	458	TYR	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	469	SER	2.6
1	A	166	GLN	2.6
1	A	97	TYR	2.6
1	A	308	GLY	2.6
1	A	319	LYS	2.6
1	A	226	ALA	2.5
1	A	264	LEU	2.5
1	A	483	THR	2.5
2	B	182	PHE	2.4
1	A	371	PRO	2.4
2	B	21	GLN	2.4
2	B	221	PHE	2.4
1	A	77	ALA	2.4
1	A	175	ASP	2.4
1	A	69	ARG	2.4
1	A	441	ALA	2.4
1	A	8	VAL	2.3
1	A	341	MET	2.3
1	A	280	ALA	2.3
1	A	278	ILE	2.3
1	A	87	SER	2.3
1	A	148	THR	2.3
1	A	251	ALA	2.3
2	B	230	MET	2.3
2	B	144	LEU	2.3
1	A	15	VAL	2.2
1	A	189	GLN	2.2
1	A	179	TRP	2.2
2	B	120	TYR	2.2
1	A	254	LYS	2.2
1	A	256	LEU	2.2
1	A	324	ASP	2.2
1	A	263	ALA	2.2
1	A	265	MET	2.1
1	A	282	GLY	2.1
1	A	338	GLU	2.1
1	A	190	SER	2.1
1	A	17	PRO	2.0
2	B	51	GLU	2.0

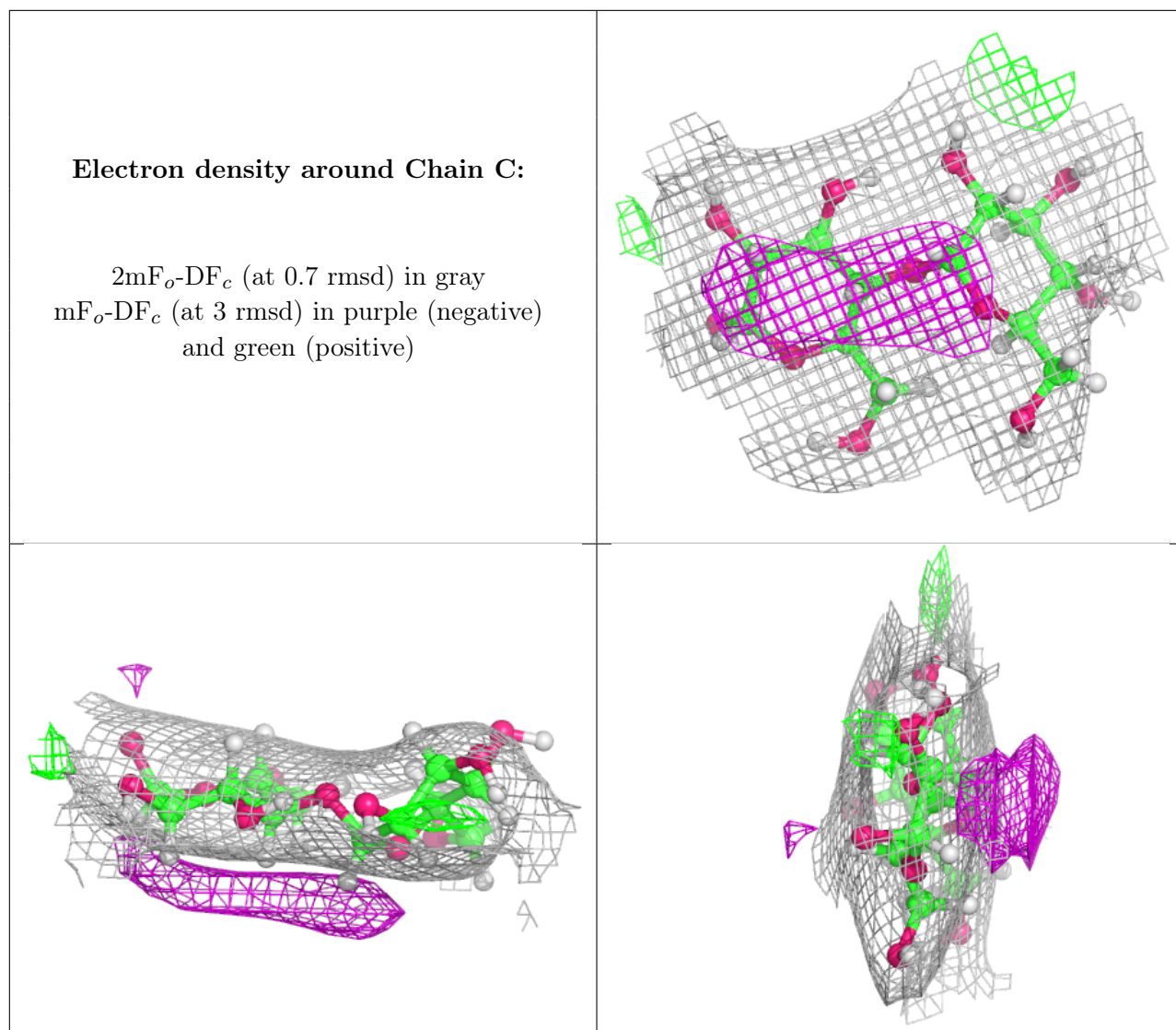## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

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
3	GLC	C	2	11/12	0.92	0.17	83,102,107,110	0
3	GLC	C	1	12/12	0.95	0.18	62,69,78,87	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.
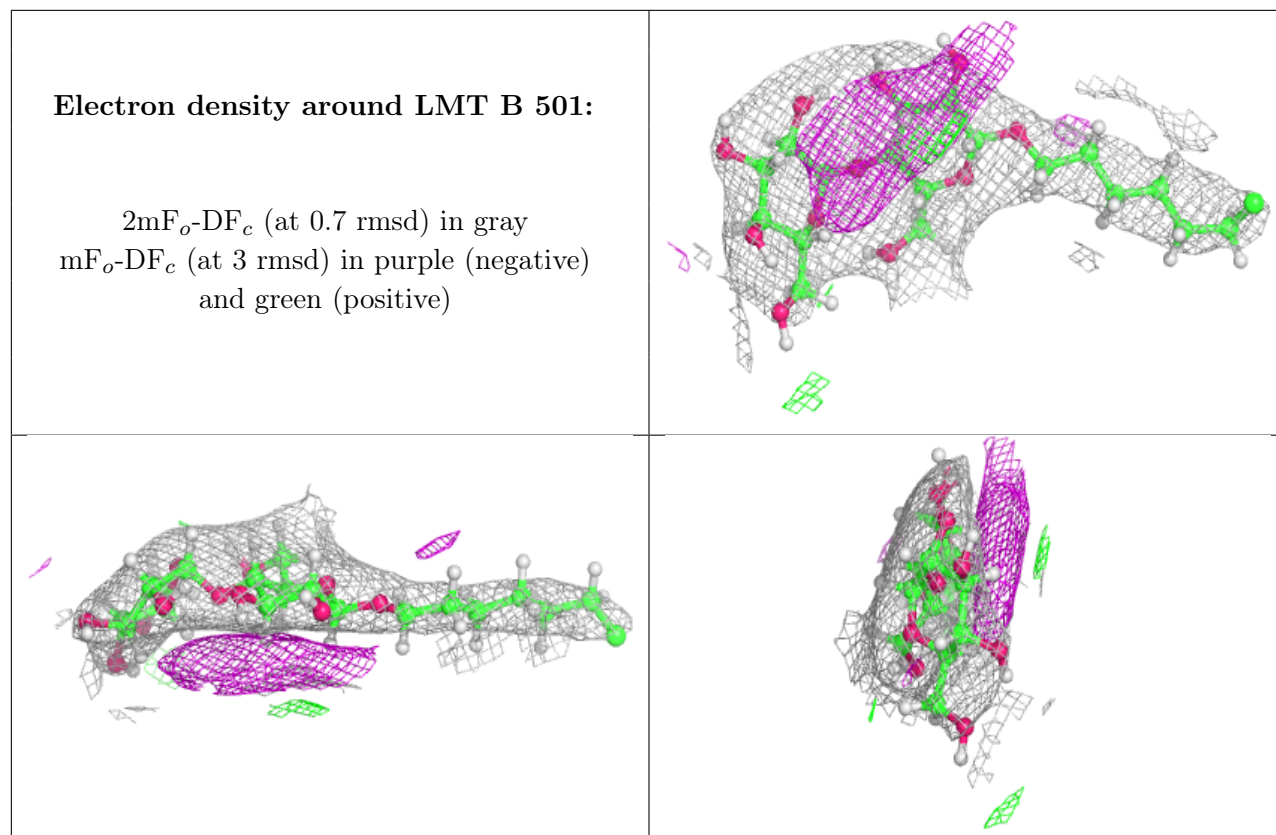
Electron density around Chain C:

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

6.4 Ligands ⓘ

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
5	K	B	502	1/1	0.83	0.06	103,103,103,103	1
5	K	B	503	1/1	0.83	0.56	60,60,60,60	1
4	LMT	B	501	30/35	0.92	0.17	85,99,104,107	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 LMT B 501:

$2mF_o$-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 ⓘ

There are no such residues in this entry.