



Full wwPDB EM Validation Report ⓘ

Dec 28, 2025 – 08:46 PM JST

PDB ID : 9LW1 / pdb_00009lw1
EMDB ID : EMD-63426
Title : TMEM164-substrate
Authors : Zhang, M.F.
Deposited on : 2025-02-13
Resolution : 2.50 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 : 0.0.1.dev129
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.47

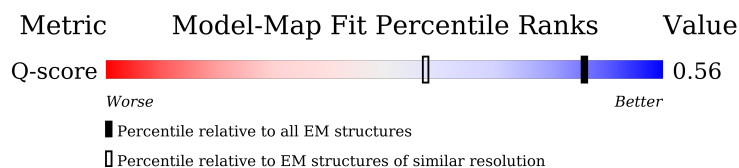
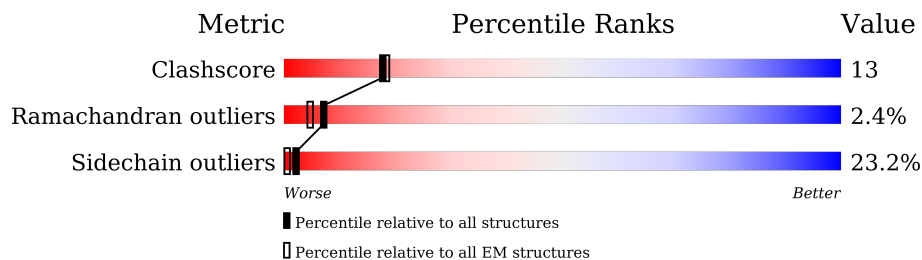
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.50 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	7115 (2.00 - 3.00)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	297	
1	B	297	

2 Entry composition [i](#)

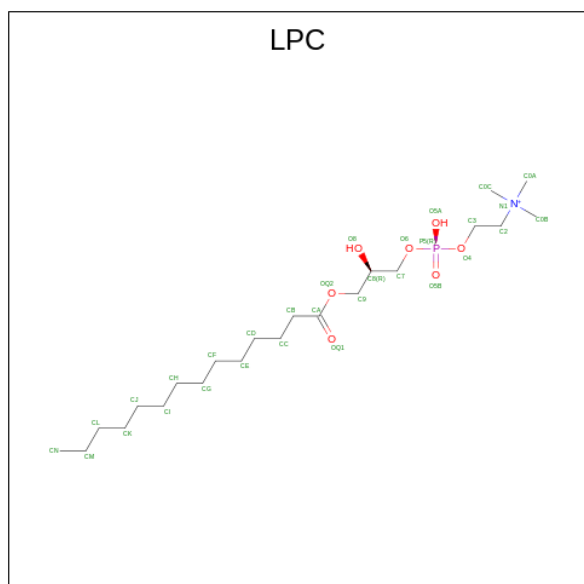
There are 6 unique types of molecules in this entry. The entry contains 4508 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Transmembrane protein 164.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	258	Total	C	N	O	S	0	0
			2052	1369	327	340	16		
1	B	258	Total	C	N	O	S	0	0
			2052	1369	327	340	16		

- Molecule 2 is [1-MYRISTOYL-GLYCEROL-3-YL]PHOSPHONYLCHOLINE (CCD ID: LPC) (formula: $C_{22}H_{47}NO_7P$) (labeled as "Ligand of Interest" by depositor).

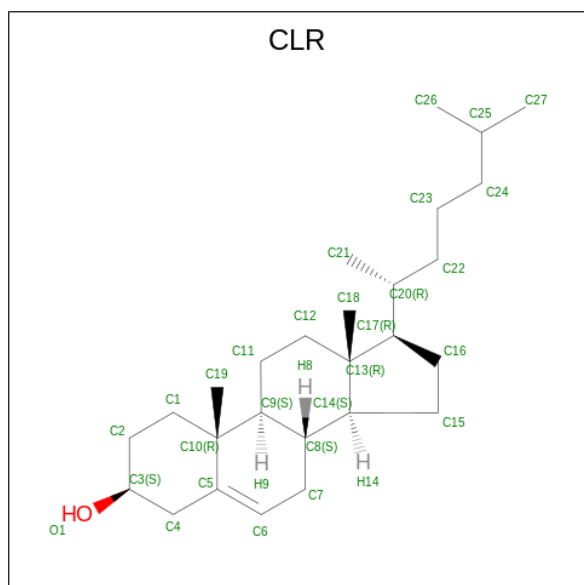


Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			31	22	1	7	1	
2	B	1	Total	C	N	O	P	0
			31	22	1	7	1	

- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

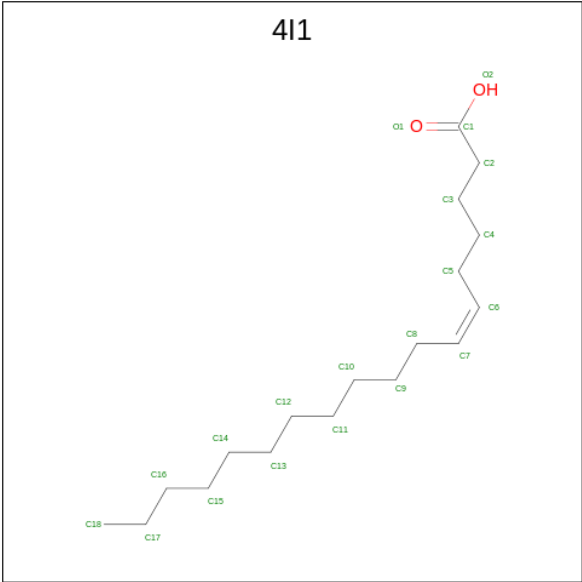
Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total	Zn	0
			1	1	
3	B	1	Total	Zn	0
			1	1	

- Molecule 4 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total	C	O	0
			28	27	1	
4	B	1	Total	C	O	0
			28	27	1	

- Molecule 5 is Petroselinic acid (CCD ID: 4I1) (formula: $C_{18}H_{34}O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			20	18	2	
5	A	1	Total	C	O	0
			20	18	2	
5	A	1	Total	C	O	0
			20	18	2	
5	A	1	Total	C	O	0
			20	18	2	
5	A	1	Total	C	O	0
			20	18	2	
5	A	1	Total	C	O	0
			20	18	2	
5	B	1	Total	C	O	0
			20	18	2	
5	B	1	Total	C	O	0
			20	18	2	
5	B	1	Total	C	O	0
			20	18	2	
5	B	1	Total	C	O	0
			20	18	2	
5	B	1	Total	C	O	0
			20	18	2	

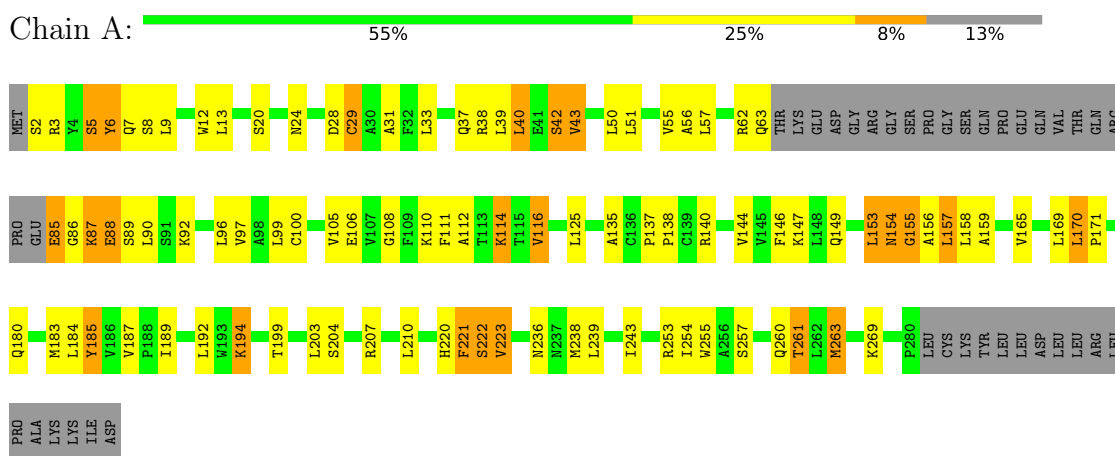
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		AltConf
6	A	2	Total 2	O 2	0
6	B	2	Total 2	O 2	0

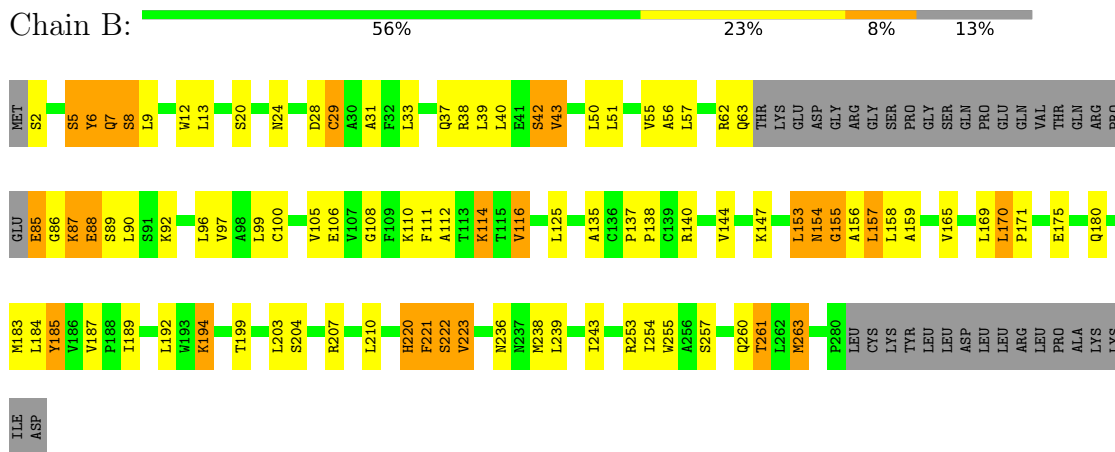
3 Residue-property plots

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: Transmembrane protein 164



• Molecule 1: Transmembrane protein 164



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	45000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.685	Depositor
Minimum map value	-0.455	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.04	Depositor
Map size ($\text{\AA}$)	291.84, 291.84, 291.84	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.57, 0.57, 0.57	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 4I1, CLR, LPC, ZN

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	0.76	0/2112	0.99	15/2879 (0.5%)
1	B	0.76	0/2112	1.00	16/2879 (0.6%)
All	All	0.76	0/4224	0.99	31/5758 (0.5%)

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	6	TYR	N-CA-C	-10.48	101.54	114.75
1	B	7	GLN	N-CA-C	-8.27	103.13	113.55
1	A	86	GLY	N-CA-C	-7.30	102.36	114.76
1	B	86	GLY	N-CA-C	-7.30	102.36	114.76
1	A	88	GLU	N-CA-C	-7.17	95.52	110.80
1	B	88	GLU	N-CA-C	-7.17	95.52	110.80
1	A	223	VAL	N-CA-C	6.86	117.61	110.62
1	B	223	VAL	N-CA-C	6.86	117.61	110.62
1	A	159	ALA	N-CA-C	6.74	121.17	113.15
1	B	159	ALA	N-CA-C	6.74	121.17	113.15
1	A	24	ASN	N-CA-C	-6.70	105.64	113.88
1	B	24	ASN	N-CA-C	-6.70	105.64	113.88
1	A	155	GLY	N-CA-C	-6.62	104.78	112.73
1	B	155	GLY	N-CA-C	-6.62	104.78	112.73
1	A	155	GLY	CA-C-N	-6.49	110.86	121.19
1	A	155	GLY	C-N-CA	-6.49	110.86	121.19
1	B	155	GLY	CA-C-N	-6.49	110.86	121.19
1	B	155	GLY	C-N-CA	-6.49	110.86	121.19
1	B	8	SER	N-CA-C	-6.13	104.67	111.71
1	A	184	LEU	N-CA-C	-6.05	105.54	113.17
1	B	184	LEU	N-CA-C	-6.05	105.54	113.17
1	A	157	LEU	CB-CA-C	-5.82	101.75	110.88

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	157	LEU	CB-CA-C	-5.82	101.75	110.88
1	A	185	TYR	N-CA-C	-5.79	106.87	114.04
1	B	185	TYR	N-CA-C	-5.79	106.87	114.04
1	B	153	LEU	CA-C-N	5.45	128.36	120.79
1	B	153	LEU	C-N-CA	5.45	128.36	120.79
1	A	153	LEU	CA-C-N	5.42	128.32	120.79
1	A	153	LEU	C-N-CA	5.42	128.32	120.79
1	B	194	LYS	N-CA-C	-5.34	105.54	111.36
1	A	194	LYS	N-CA-C	-5.27	105.54	111.28

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	2052	0	2101	77	0
1	B	2052	0	2101	75	0
2	A	31	0	46	6	0
2	B	31	0	46	5	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	28	0	44	9	0
4	B	28	0	44	10	0
5	A	140	0	0	3	0
5	B	140	0	0	3	0
6	A	2	0	0	0	0
6	B	2	0	0	0	0
All	All	4508	0	4382	117	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 13.

All (117) 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:B:210:LEU:HD11	4:B:303:CLR:H182	1.27	1.16
1:A:87:LYS:HG2	1:B:85:GLU:HG3	1.26	1.13
1:A:85:GLU:HG3	1:B:87:LYS:HG2	1.26	1.12
1:A:88:GLU:HB3	1:B:85:GLU:O	1.50	1.11
1:A:210:LEU:HD11	4:A:303:CLR:H182	1.27	1.11
1:A:85:GLU:O	1:B:88:GLU:HB3	1.50	1.07
1:A:210:LEU:HD21	4:A:303:CLR:H111	1.40	1.04
1:B:210:LEU:HD21	4:B:303:CLR:H111	1.40	0.99
1:A:171:PRO:HB2	1:B:111:PHE:O	1.67	0.94
1:A:111:PHE:O	1:B:171:PRO:HB2	1.67	0.93
1:A:85:GLU:HG3	1:B:87:LYS:CG	2.01	0.91
1:A:87:LYS:CG	1:B:85:GLU:HG3	2.01	0.91
1:A:90:LEU:HD21	5:B:307:4I1:O2	1.78	0.83
5:A:307:4I1:O2	1:B:90:LEU:HD21	1.78	0.82
1:A:85:GLU:CG	1:B:87:LYS:HG2	2.11	0.80
1:A:87:LYS:HA	1:B:85:GLU:CG	2.12	0.80
1:A:85:GLU:CG	1:B:87:LYS:HA	2.12	0.78
1:A:87:LYS:HG2	1:B:85:GLU:CG	2.11	0.78
1:A:87:LYS:HA	1:B:85:GLU:HG2	1.68	0.76
1:A:85:GLU:HG2	1:B:87:LYS:HA	1.68	0.74
1:A:157:LEU:HB2	1:A:185:TYR:OH	1.92	0.70
1:B:157:LEU:HB2	1:B:185:TYR:OH	1.92	0.70
1:B:210:LEU:HD11	4:B:303:CLR:C18	2.17	0.67
1:A:210:LEU:HD21	4:A:303:CLR:C11	2.23	0.65
1:A:210:LEU:HD11	4:A:303:CLR:C18	2.17	0.65
1:A:260:GLN:HG3	2:A:301:LPC:HH1	1.79	0.65
1:B:38:ARG:HH12	1:B:239:LEU:HA	1.63	0.63
1:A:171:PRO:CB	1:B:111:PHE:O	2.46	0.63
1:A:88:GLU:CB	1:B:85:GLU:O	2.38	0.63
1:A:85:GLU:O	1:B:88:GLU:CB	2.38	0.62
1:A:170:LEU:HD13	1:B:112:ALA:HB1	1.82	0.62
1:A:87:LYS:HA	1:B:85:GLU:HG3	1.81	0.61
1:A:112:ALA:HB1	1:B:170:LEU:HD13	1.82	0.60
1:A:112:ALA:CB	1:B:170:LEU:HD13	2.32	0.60
1:B:260:GLN:HG3	2:B:301:LPC:HH1	1.83	0.60
1:A:38:ARG:HH12	1:A:239:LEU:HA	1.63	0.60
1:A:85:GLU:HG3	1:B:87:LYS:HA	1.81	0.60
1:B:210:LEU:HD21	4:B:303:CLR:C11	2.23	0.59
1:A:170:LEU:HD13	1:B:112:ALA:CB	2.32	0.58
1:A:90:LEU:HD13	1:B:137:PRO:CD	2.34	0.58
1:A:137:PRO:CD	1:B:90:LEU:HD13	2.34	0.58
1:A:144:VAL:HG21	5:A:304:4I1:C2	2.34	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:144:VAL:HG21	5:B:304:4I1:C2	2.34	0.57
1:A:111:PHE:O	1:B:171:PRO:CB	2.46	0.57
1:A:261:THR:HG21	4:A:303:CLR:H242	1.87	0.57
1:A:56:ALA:HB2	1:A:210:LEU:HB3	1.87	0.56
1:B:261:THR:HG21	4:B:303:CLR:H242	1.87	0.56
1:B:56:ALA:HB2	1:B:210:LEU:HB3	1.87	0.56
1:A:155:GLY:O	1:A:156:ALA:C	2.49	0.55
1:A:137:PRO:HD2	1:B:90:LEU:HD13	1.89	0.54
1:B:155:GLY:O	1:B:156:ALA:C	2.49	0.54
1:A:90:LEU:HD13	1:B:137:PRO:HD2	1.89	0.54
1:A:55:VAL:HG11	4:A:303:CLR:H11	1.93	0.51
1:B:55:VAL:HG11	4:B:303:CLR:H11	1.93	0.51
4:A:303:CLR:H152	5:A:310:4I1:C16	2.42	0.50
4:B:303:CLR:H152	5:B:310:4I1:C16	2.42	0.50
1:A:135:ALA:O	1:B:90:LEU:CD1	2.60	0.50
1:A:90:LEU:CD1	1:B:135:ALA:O	2.60	0.50
1:A:90:LEU:HD13	1:B:137:PRO:HD3	1.96	0.48
1:A:112:ALA:HB1	1:B:170:LEU:CD1	2.43	0.47
1:B:6:TYR:HD1	1:B:6:TYR:HA	1.66	0.47
1:A:57:LEU:HD23	1:A:57:LEU:HA	1.75	0.47
1:A:170:LEU:CD1	1:B:112:ALA:HB1	2.43	0.47
1:A:137:PRO:HD3	1:B:90:LEU:HD13	1.96	0.46
1:B:87:LYS:HB3	1:B:87:LYS:HE3	1.44	0.46
1:A:105:VAL:HG13	1:B:108:GLY:HA2	1.98	0.46
2:B:301:LPC:H31	2:B:301:LPC:H0C1	1.40	0.46
4:B:303:CLR:H183	4:B:303:CLR:H20	1.75	0.46
1:B:12:TRP:O	1:B:116:VAL:HG23	2.16	0.46
2:B:301:LPC:HH2	2:B:301:LPC:HK2	1.69	0.46
1:A:105:VAL:HG13	1:B:108:GLY:CA	2.46	0.46
1:A:221:PHE:O	1:A:222:SER:C	2.59	0.46
2:A:301:LPC:HH2	2:A:301:LPC:HK2	1.53	0.45
1:A:40:LEU:HD13	1:A:40:LEU:HA	1.83	0.45
1:A:87:LYS:HE3	1:A:87:LYS:HB3	1.44	0.45
1:A:108:GLY:CA	1:B:105:VAL:HG13	2.46	0.45
1:B:222:SER:OG	1:B:223:VAL:N	2.50	0.45
1:A:222:SER:OG	1:A:223:VAL:N	2.50	0.45
1:B:221:PHE:O	1:B:222:SER:C	2.59	0.45
1:A:108:GLY:HA2	1:B:105:VAL:HG13	1.98	0.45
1:A:146:PHE:O	1:A:149:GLN:HG3	2.17	0.45
1:A:153:LEU:O	1:A:156:ALA:HB3	2.17	0.45
1:A:12:TRP:O	1:A:116:VAL:HG23	2.16	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:LEU:HD13	4:A:303:CLR:H191	1.38	0.45
1:B:87:LYS:HB3	1:B:88:GLU:H	1.59	0.45
1:B:153:LEU:O	1:B:156:ALA:HB3	2.17	0.45
1:A:114:LYS:HG3	1:B:171:PRO:HG2	2.00	0.44
1:A:183:MET:HE3	1:A:183:MET:HB3	1.80	0.44
1:A:157:LEU:O	1:A:158:LEU:C	2.60	0.44
1:A:100:CYS:SG	1:B:97:VAL:HG22	2.58	0.44
1:B:210:LEU:HD13	4:B:303:CLR:H191	1.38	0.44
1:B:157:LEU:O	1:B:158:LEU:C	2.60	0.44
1:A:171:PRO:HG2	1:B:114:LYS:HG3	2.00	0.43
1:A:97:VAL:HG22	1:B:100:CYS:SG	2.58	0.43
1:A:99:LEU:HD22	1:A:187:VAL:HG21	2.01	0.43
1:A:154:ASN:OD1	1:A:263:MET:HB3	2.18	0.43
4:A:303:CLR:H183	4:A:303:CLR:H20	1.75	0.43
1:B:154:ASN:OD1	1:B:263:MET:HB3	2.18	0.43
4:B:303:CLR:H231	4:B:303:CLR:H211	1.72	0.43
1:A:29:CYS:C	1:A:31:ALA:H	2.27	0.43
1:B:220:HIS:CE1	2:B:301:LPC:HE2	2.54	0.43
1:A:96:LEU:HD21	1:B:97:VAL:HG23	2.01	0.43
1:A:97:VAL:HG23	1:B:96:LEU:HD21	2.01	0.43
1:B:29:CYS:C	1:B:31:ALA:H	2.27	0.42
1:A:260:GLN:HE21	2:A:301:LPC:HE1	1.84	0.42
1:B:99:LEU:HD22	1:B:187:VAL:HG21	2.01	0.42
1:B:183:MET:HE3	1:B:183:MET:HB3	1.80	0.42
1:B:154:ASN:HD21	1:B:263:MET:C	2.28	0.42
1:B:57:LEU:HA	1:B:57:LEU:HD23	1.75	0.42
1:B:42:SER:O	1:B:43:VAL:C	2.63	0.41
1:A:269:LYS:H	1:A:269:LYS:HG2	1.69	0.41
1:A:154:ASN:HD21	1:A:263:MET:C	2.28	0.41
1:A:42:SER:O	1:A:43:VAL:C	2.63	0.41
1:A:155:GLY:CA	2:A:301:LPC:HC1	2.51	0.41
2:A:301:LPC:H0C1	2:A:301:LPC:H31	1.38	0.41
1:B:155:GLY:CA	2:B:301:LPC:HC1	2.50	0.41
1:A:155:GLY:HA3	2:A:301:LPC:HC1	2.03	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	254/297 (86%)	230 (91%)	18 (7%)	6 (2%)	5	8
1	B	254/297 (86%)	230 (91%)	18 (7%)	6 (2%)	5	8
All	All	508/594 (86%)	460 (91%)	36 (7%)	12 (2%)	7	8

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	221	PHE
1	B	221	PHE
1	A	222	SER
1	B	222	SER
1	B	5	SER
1	A	138	PRO
1	A	220	HIS
1	B	138	PRO
1	B	220	HIS
1	A	5	SER
1	A	43	VAL
1	B	43	VAL

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	224/259 (86%)	172 (77%)	52 (23%)	0 1

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	224/259 (86%)	172 (77%)	52 (23%)	0	1
All	All	448/518 (86%)	344 (77%)	104 (23%)	2	1

All (104) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	SER
1	A	3	ARG
1	A	5	SER
1	A	6	TYR
1	A	7	GLN
1	A	8	SER
1	A	9	LEU
1	A	13	LEU
1	A	20	SER
1	A	28	ASP
1	A	29	CYS
1	A	33	LEU
1	A	37	GLN
1	A	39	LEU
1	A	40	LEU
1	A	42	SER
1	A	50	LEU
1	A	51	LEU
1	A	62	ARG
1	A	63	GLN
1	A	85	GLU
1	A	87	LYS
1	A	89	SER
1	A	92	LYS
1	A	106	GLU
1	A	110	LYS
1	A	114	LYS
1	A	116	VAL
1	A	125	LEU
1	A	140	ARG
1	A	147	LYS
1	A	154	ASN
1	A	165	VAL
1	A	169	LEU
1	A	170	LEU
1	A	180	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	189	ILE
1	A	192	LEU
1	A	194	LYS
1	A	199	THR
1	A	203	LEU
1	A	204	SER
1	A	207	ARG
1	A	236	ASN
1	A	238	MET
1	A	243	ILE
1	A	253	ARG
1	A	254	ILE
1	A	255	TRP
1	A	257	SER
1	A	261	THR
1	A	263	MET
1	B	2	SER
1	B	5	SER
1	B	6	TYR
1	B	7	GLN
1	B	8	SER
1	B	9	LEU
1	B	13	LEU
1	B	20	SER
1	B	28	ASP
1	B	29	CYS
1	B	33	LEU
1	B	37	GLN
1	B	39	LEU
1	B	40	LEU
1	B	42	SER
1	B	50	LEU
1	B	51	LEU
1	B	62	ARG
1	B	63	GLN
1	B	85	GLU
1	B	87	LYS
1	B	89	SER
1	B	92	LYS
1	B	106	GLU
1	B	110	LYS
1	B	114	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	116	VAL
1	B	125	LEU
1	B	140	ARG
1	B	147	LYS
1	B	154	ASN
1	B	165	VAL
1	B	169	LEU
1	B	170	LEU
1	B	175	GLU
1	B	180	GLN
1	B	189	ILE
1	B	192	LEU
1	B	194	LYS
1	B	199	THR
1	B	203	LEU
1	B	204	SER
1	B	207	ARG
1	B	236	ASN
1	B	238	MET
1	B	243	ILE
1	B	253	ARG
1	B	254	ILE
1	B	255	TRP
1	B	257	SER
1	B	261	THR
1	B	263	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	24	ASN
1	A	59	HIS
1	A	121	ASN
1	A	154	ASN
1	A	180	GLN
1	A	236	ASN
1	A	237	ASN
1	B	24	ASN
1	B	59	HIS
1	B	121	ASN
1	B	154	ASN
1	B	180	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	236	ASN
1	B	237	ASN

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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 20 ligands modelled in this entry, 2 are monoatomic - leaving 18 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$
5	4I1	B	304	-	19,19,19	1.33	2 (10%)	19,19,19	1.13	2 (10%)
5	4I1	B	309	-	19,19,19	1.34	2 (10%)	19,19,19	1.08	0
5	4I1	A	305	-	19,19,19	1.34	2 (10%)	19,19,19	1.08	0
5	4I1	B	307	-	19,19,19	1.33	2 (10%)	19,19,19	1.10	1 (5%)
5	4I1	A	308	-	19,19,19	1.34	2 (10%)	19,19,19	1.06	1 (5%)
5	4I1	A	310	-	19,19,19	1.35	2 (10%)	19,19,19	1.08	1 (5%)
4	CLR	B	303	-	31,31,31	0.78	1 (3%)	48,48,48	1.33	6 (12%)
2	LPC	A	301	-	30,30,30	0.92	1 (3%)	35,37,37	0.92	3 (8%)
5	4I1	B	310	-	19,19,19	1.35	2 (10%)	19,19,19	1.08	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	4I1	A	309	-	19,19,19	1.34	2 (10%)	19,19,19	1.08	0
5	4I1	B	306	-	19,19,19	1.34	2 (10%)	19,19,19	1.07	1 (5%)
2	LPC	B	301	-	30,30,30	0.93	1 (3%)	35,37,37	0.94	3 (8%)
5	4I1	A	306	-	19,19,19	1.34	2 (10%)	19,19,19	1.07	1 (5%)
5	4I1	A	304	-	19,19,19	1.33	2 (10%)	19,19,19	1.13	2 (10%)
5	4I1	A	307	-	19,19,19	1.33	2 (10%)	19,19,19	1.10	1 (5%)
5	4I1	B	305	-	19,19,19	1.34	2 (10%)	19,19,19	1.08	0
5	4I1	B	308	-	19,19,19	1.34	2 (10%)	19,19,19	1.07	0
4	CLR	A	303	-	31,31,31	0.78	1 (3%)	48,48,48	1.33	6 (12%)

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
5	4I1	B	304	-	-	8/17/17/17	-
5	4I1	B	309	-	-	11/17/17/17	-
5	4I1	A	305	-	-	6/17/17/17	-
5	4I1	B	307	-	-	9/17/17/17	-
5	4I1	A	308	-	-	8/17/17/17	-
5	4I1	A	310	-	-	9/17/17/17	-
4	CLR	B	303	-	-	7/10/68/68	0/4/4/4
2	LPC	A	301	-	-	21/32/32/32	-
5	4I1	B	310	-	-	9/17/17/17	-
5	4I1	A	309	-	-	11/17/17/17	-
5	4I1	B	306	-	-	14/17/17/17	-
2	LPC	B	301	-	-	22/32/32/32	-
5	4I1	A	306	-	-	14/17/17/17	-
5	4I1	A	304	-	-	8/17/17/17	-
5	4I1	A	307	-	-	9/17/17/17	-
5	4I1	B	305	-	-	6/17/17/17	-
5	4I1	B	308	-	-	9/17/17/17	-
4	CLR	A	303	-	-	7/10/68/68	0/4/4/4

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	306	4I1	O2-C1	4.50	1.45	1.30
5	B	306	4I1	O2-C1	4.50	1.45	1.30
5	A	309	4I1	O2-C1	4.49	1.45	1.30
5	B	309	4I1	O2-C1	4.49	1.45	1.30
5	A	310	4I1	O2-C1	4.48	1.45	1.30
5	B	310	4I1	O2-C1	4.48	1.45	1.30
5	A	305	4I1	O2-C1	4.47	1.45	1.30
5	B	305	4I1	O2-C1	4.47	1.45	1.30
5	A	307	4I1	O2-C1	4.46	1.45	1.30
5	B	307	4I1	O2-C1	4.46	1.45	1.30
5	B	308	4I1	O2-C1	4.46	1.45	1.30
5	A	304	4I1	O2-C1	4.46	1.45	1.30
5	B	304	4I1	O2-C1	4.46	1.45	1.30
5	A	308	4I1	O2-C1	4.44	1.45	1.30
2	B	301	LPC	OQ2-CA	4.12	1.45	1.33
2	A	301	LPC	OQ2-CA	4.08	1.45	1.33
5	A	308	4I1	C7-C6	3.66	1.53	1.31
5	B	308	4I1	C7-C6	3.65	1.52	1.31
5	A	310	4I1	C7-C6	3.65	1.52	1.31
5	B	310	4I1	C7-C6	3.65	1.52	1.31
5	A	305	4I1	C7-C6	3.61	1.52	1.31
5	B	305	4I1	C7-C6	3.61	1.52	1.31
5	A	304	4I1	C7-C6	3.60	1.52	1.31
5	B	304	4I1	C7-C6	3.60	1.52	1.31
5	A	307	4I1	C7-C6	3.60	1.52	1.31
5	B	307	4I1	C7-C6	3.60	1.52	1.31
5	A	306	4I1	C7-C6	3.59	1.52	1.31
5	B	306	4I1	C7-C6	3.59	1.52	1.31
5	A	309	4I1	C7-C6	3.59	1.52	1.31
5	B	309	4I1	C7-C6	3.59	1.52	1.31
4	A	303	CLR	C10-C9	-2.21	1.52	1.56
4	B	303	CLR	C10-C9	-2.21	1.52	1.56

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	303	CLR	C13-C17-C20	-3.11	114.61	119.49
4	B	303	CLR	C13-C17-C20	-3.11	114.61	119.49
2	B	301	LPC	OQ2-CA-OQ1	-2.80	116.53	123.59
2	A	301	LPC	OQ2-CA-OQ1	-2.61	117.00	123.59
2	A	301	LPC	C3-C2-N1	-2.60	107.08	115.78
2	B	301	LPC	C3-C2-N1	-2.55	107.27	115.78
4	A	303	CLR	C7-C8-C9	2.41	112.63	109.71

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	303	CLR	C7-C8-C9	2.41	112.63	109.71
4	A	303	CLR	C13-C14-C8	-2.27	111.01	114.38
4	B	303	CLR	C13-C14-C8	-2.27	111.01	114.38
5	A	304	4I1	C3-C2-C1	-2.25	108.80	114.47
5	B	304	4I1	C3-C2-C1	-2.25	108.80	114.47
2	A	301	LPC	OQ2-CA-CB	2.23	118.91	111.91
4	A	303	CLR	C4-C5-C10	2.23	119.38	116.42
4	B	303	CLR	C4-C5-C10	2.23	119.38	116.42
4	A	303	CLR	C10-C9-C8	-2.18	109.46	112.73
4	B	303	CLR	C10-C9-C8	-2.18	109.46	112.73
4	A	303	CLR	C11-C9-C10	-2.15	110.24	113.08
4	B	303	CLR	C11-C9-C10	-2.15	110.24	113.08
5	A	310	4I1	C3-C2-C1	-2.12	109.14	114.47
5	B	310	4I1	C3-C2-C1	-2.12	109.14	114.47
2	B	301	LPC	OQ2-CA-CB	2.08	118.44	111.91
5	A	307	4I1	C3-C2-C1	-2.08	109.24	114.47
5	B	307	4I1	C3-C2-C1	-2.08	109.24	114.47
5	A	306	4I1	C3-C2-C1	-2.03	109.36	114.47
5	B	306	4I1	C3-C2-C1	-2.03	109.36	114.47
5	A	304	4I1	O2-C1-C2	2.01	120.47	114.03
5	B	304	4I1	O2-C1-C2	2.01	120.47	114.03
5	A	308	4I1	C3-C2-C1	-2.00	109.42	114.47

There are no chirality outliers.

All (188) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	LPC	N1-C2-C3-O4
2	A	301	LPC	C3-O4-P5-O5A
2	A	301	LPC	C7-O6-P5-O4
2	A	301	LPC	C7-O6-P5-O5B
2	A	301	LPC	O6-C7-C8-C9
2	A	301	LPC	C7-C8-C9-OQ2
2	B	301	LPC	N1-C2-C3-O4
2	B	301	LPC	C3-O4-P5-O5A
2	B	301	LPC	C7-O6-P5-O4
2	B	301	LPC	C7-O6-P5-O5B
2	B	301	LPC	O6-C7-C8-C9
2	B	301	LPC	OQ1-CA-OQ2-C9
2	A	301	LPC	OQ1-CA-OQ2-C9
4	A	303	CLR	C13-C17-C20-C21
4	B	303	CLR	C13-C17-C20-C21

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
4	A	303	CLR	C16-C17-C20-C21
4	B	303	CLR	C16-C17-C20-C21
4	A	303	CLR	C13-C17-C20-C22
4	B	303	CLR	C13-C17-C20-C22
2	B	301	LPC	CB-CA-OQ2-C9
5	A	309	4I1	C5-C6-C7-C8
5	B	309	4I1	C5-C6-C7-C8
5	A	306	4I1	C10-C11-C12-C13
5	B	306	4I1	C10-C11-C12-C13
4	A	303	CLR	C16-C17-C20-C22
4	B	303	CLR	C16-C17-C20-C22
2	A	301	LPC	O6-C7-C8-O8
2	A	301	LPC	CB-CA-OQ2-C9
2	A	301	LPC	CH-CI-CJ-CK
2	B	301	LPC	CH-CI-CJ-CK
5	A	306	4I1	C12-C13-C14-C15
5	B	306	4I1	C12-C13-C14-C15
2	B	301	LPC	CE-CF-CG-CH
4	A	303	CLR	C21-C20-C22-C23
4	B	303	CLR	C21-C20-C22-C23
2	A	301	LPC	CE-CF-CG-CH
2	B	301	LPC	C7-C8-C9-OQ2
5	A	310	4I1	C11-C10-C9-C8
5	B	310	4I1	C11-C10-C9-C8
5	B	308	4I1	C11-C12-C13-C14
2	B	301	LPC	O6-C7-C8-O8
5	A	307	4I1	C1-C2-C3-C4
5	A	310	4I1	C1-C2-C3-C4
5	B	307	4I1	C1-C2-C3-C4
5	B	310	4I1	C1-C2-C3-C4
5	A	310	4I1	C12-C13-C14-C15
5	B	310	4I1	C12-C13-C14-C15
2	A	301	LPC	O8-C8-C9-OQ2
5	A	307	4I1	C11-C10-C9-C8
5	B	307	4I1	C11-C10-C9-C8
5	A	307	4I1	C14-C15-C16-C17
5	B	307	4I1	C14-C15-C16-C17
5	A	309	4I1	C1-C2-C3-C4
5	B	309	4I1	C1-C2-C3-C4
5	A	306	4I1	C5-C6-C7-C8
5	B	306	4I1	C5-C6-C7-C8
2	B	301	LPC	O8-C8-C9-OQ2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	301	LPC	C3-O4-P5-O6
2	B	301	LPC	C3-O4-P5-O6
2	A	301	LPC	C3-C2-N1-C0A
2	A	301	LPC	C3-C2-N1-C0B
2	A	301	LPC	C3-C2-N1-C0C
2	B	301	LPC	C3-C2-N1-C0A
2	B	301	LPC	C3-C2-N1-C0B
2	B	301	LPC	C3-C2-N1-C0C
5	B	308	4I1	C1-C2-C3-C4
5	A	304	4I1	C9-C10-C11-C12
5	A	307	4I1	C2-C3-C4-C5
5	B	304	4I1	C9-C10-C11-C12
5	B	307	4I1	C2-C3-C4-C5
5	A	309	4I1	C9-C10-C11-C12
5	B	309	4I1	C9-C10-C11-C12
5	A	306	4I1	C11-C10-C9-C8
5	B	306	4I1	C11-C10-C9-C8
5	B	308	4I1	C13-C14-C15-C16
5	B	308	4I1	C9-C10-C11-C12
5	A	308	4I1	C1-C2-C3-C4
5	A	307	4I1	C9-C10-C11-C12
5	B	307	4I1	C9-C10-C11-C12
5	A	309	4I1	C2-C3-C4-C5
5	B	309	4I1	C2-C3-C4-C5
5	A	305	4I1	C13-C14-C15-C16
5	B	305	4I1	C13-C14-C15-C16
5	A	306	4I1	C14-C15-C16-C17
5	A	308	4I1	C11-C10-C9-C8
5	A	310	4I1	C13-C14-C15-C16
5	B	306	4I1	C14-C15-C16-C17
5	B	310	4I1	C13-C14-C15-C16
2	B	301	LPC	CI-CJ-CK-CL
2	A	301	LPC	CA-CB-CC-CD
2	A	301	LPC	CB-CC-CD-CE
2	A	301	LPC	CI-CJ-CK-CL
5	A	306	4I1	C7-C8-C9-C10
5	B	306	4I1	C7-C8-C9-C10
5	A	306	4I1	C1-C2-C3-C4
5	B	306	4I1	C1-C2-C3-C4
2	B	301	LPC	CK-CL-CM-CN
5	A	308	4I1	C13-C14-C15-C16
2	A	301	LPC	CK-CL-CM-CN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	B	301	LPC	CB-CC-CD-CE
5	B	308	4I1	C11-C10-C9-C8
2	B	301	LPC	CA-CB-CC-CD
5	A	304	4I1	C12-C13-C14-C15
5	B	304	4I1	C12-C13-C14-C15
5	A	305	4I1	C6-C7-C8-C9
5	B	305	4I1	C6-C7-C8-C9
5	A	305	4I1	C10-C11-C12-C13
5	B	305	4I1	C10-C11-C12-C13
5	A	310	4I1	C7-C8-C9-C10
5	B	310	4I1	C7-C8-C9-C10
5	A	304	4I1	C4-C5-C6-C7
5	B	304	4I1	C4-C5-C6-C7
5	A	309	4I1	C14-C15-C16-C17
5	B	309	4I1	C14-C15-C16-C17
5	A	306	4I1	C15-C16-C17-C18
5	B	306	4I1	C15-C16-C17-C18
5	B	308	4I1	C5-C6-C7-C8
5	A	306	4I1	C3-C4-C5-C6
5	B	306	4I1	C3-C4-C5-C6
5	A	308	4I1	C9-C10-C11-C12
5	A	304	4I1	C14-C15-C16-C17
5	B	304	4I1	C14-C15-C16-C17
5	A	304	4I1	C1-C2-C3-C4
5	B	304	4I1	C1-C2-C3-C4
5	A	306	4I1	C9-C10-C11-C12
5	B	306	4I1	C9-C10-C11-C12
5	A	304	4I1	C6-C7-C8-C9
5	A	310	4I1	C6-C7-C8-C9
5	B	304	4I1	C6-C7-C8-C9
5	B	310	4I1	C6-C7-C8-C9
5	A	306	4I1	C2-C3-C4-C5
5	B	306	4I1	C2-C3-C4-C5
5	A	306	4I1	C6-C7-C8-C9
5	B	306	4I1	C6-C7-C8-C9
5	A	308	4I1	C5-C6-C7-C8
5	A	308	4I1	C11-C12-C13-C14
5	A	308	4I1	C12-C13-C14-C15
5	B	308	4I1	C10-C11-C12-C13
5	A	304	4I1	C13-C14-C15-C16
5	B	304	4I1	C13-C14-C15-C16
5	A	306	4I1	C11-C12-C13-C14

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
5	B	306	4I1	C11-C12-C13-C14
5	A	307	4I1	C6-C7-C8-C9
5	B	307	4I1	C6-C7-C8-C9
5	A	310	4I1	C9-C10-C11-C12
5	B	310	4I1	C9-C10-C11-C12
5	A	305	4I1	C4-C5-C6-C7
5	B	305	4I1	C4-C5-C6-C7
5	A	309	4I1	C13-C14-C15-C16
5	B	309	4I1	C13-C14-C15-C16
2	B	301	LPC	CC-CD-CE-CF
4	A	303	CLR	C23-C24-C25-C27
4	B	303	CLR	C23-C24-C25-C27
2	A	301	LPC	CC-CD-CE-CF
5	A	305	4I1	O1-C1-C2-C3
5	B	305	4I1	O1-C1-C2-C3
5	A	309	4I1	C4-C5-C6-C7
5	B	309	4I1	C4-C5-C6-C7
5	A	310	4I1	O1-C1-C2-C3
5	B	310	4I1	O1-C1-C2-C3
5	A	305	4I1	O2-C1-C2-C3
5	B	305	4I1	O2-C1-C2-C3
5	A	309	4I1	C15-C16-C17-C18
5	B	309	4I1	C15-C16-C17-C18
5	A	304	4I1	C2-C3-C4-C5
5	B	304	4I1	C2-C3-C4-C5
4	A	303	CLR	C23-C24-C25-C26
4	B	303	CLR	C23-C24-C25-C26
5	A	309	4I1	O1-C1-C2-C3
5	A	309	4I1	O2-C1-C2-C3
5	B	309	4I1	O1-C1-C2-C3
5	B	309	4I1	O2-C1-C2-C3
5	B	308	4I1	C3-C4-C5-C6
5	A	307	4I1	C4-C5-C6-C7
5	B	307	4I1	C4-C5-C6-C7
5	A	310	4I1	O2-C1-C2-C3
5	B	310	4I1	O2-C1-C2-C3
5	A	308	4I1	C3-C4-C5-C6
5	A	306	4I1	O2-C1-C2-C3
5	B	306	4I1	O2-C1-C2-C3
2	B	301	LPC	C8-C7-O6-P5
5	A	309	4I1	C12-C13-C14-C15
5	B	309	4I1	C12-C13-C14-C15

Continued on next page...

Continued from previous page...

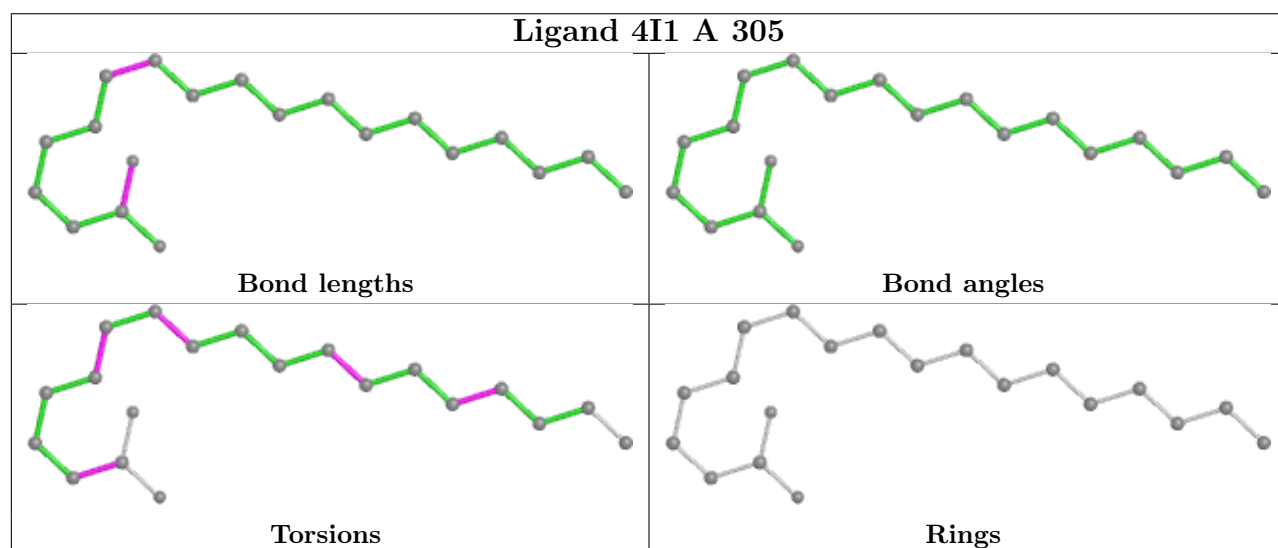
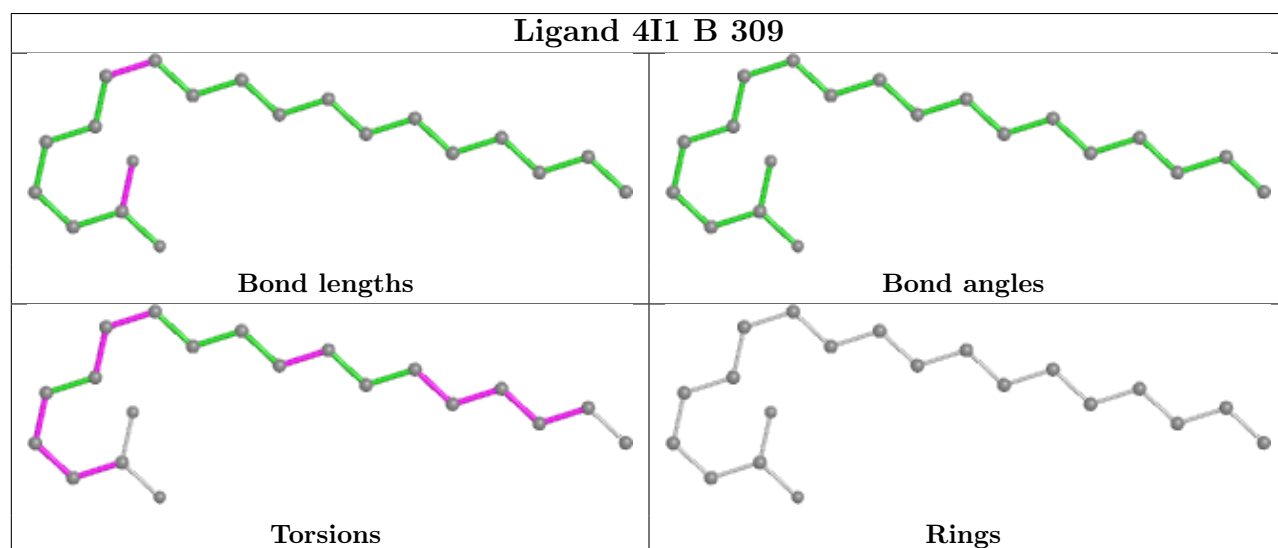
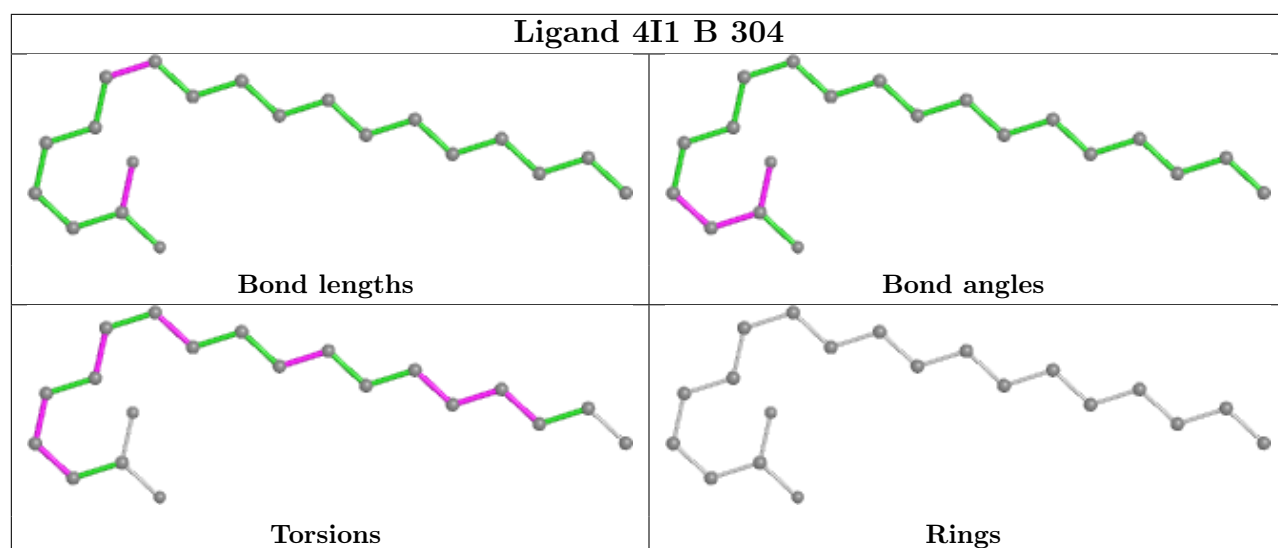
Mol	Chain	Res	Type	Atoms
5	B	308	4I1	O2-C1-C2-C3
5	A	307	4I1	O2-C1-C2-C3
5	B	307	4I1	O2-C1-C2-C3
5	A	307	4I1	O1-C1-C2-C3
5	B	307	4I1	O1-C1-C2-C3

There are no ring outliers.

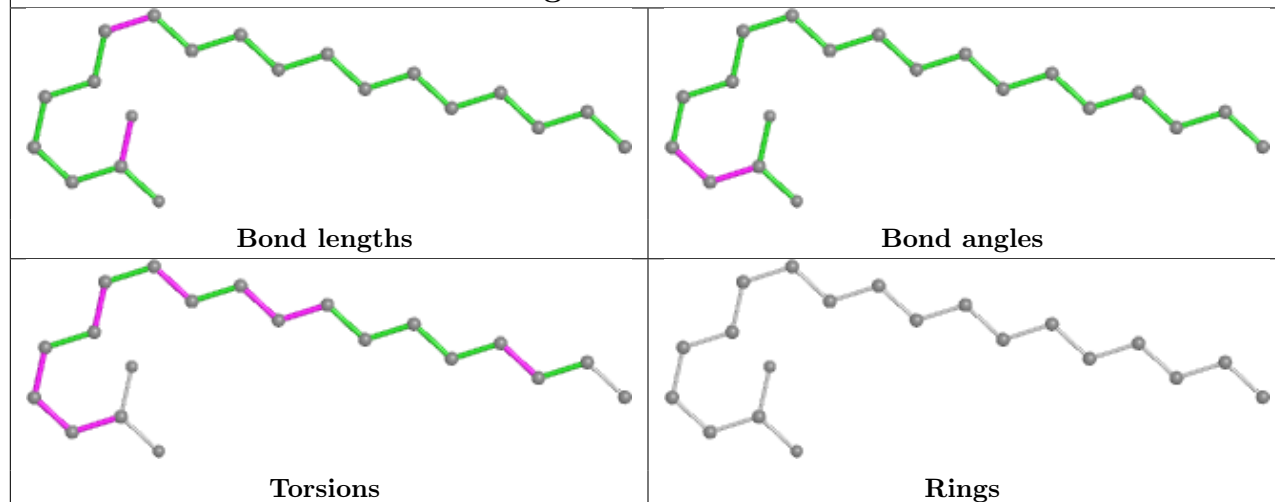
10 monomers are involved in 34 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	304	4I1	1	0
5	B	307	4I1	1	0
5	A	310	4I1	1	0
4	B	303	CLR	10	0
2	A	301	LPC	6	0
5	B	310	4I1	1	0
2	B	301	LPC	5	0
5	A	304	4I1	1	0
5	A	307	4I1	1	0
4	A	303	CLR	9	0

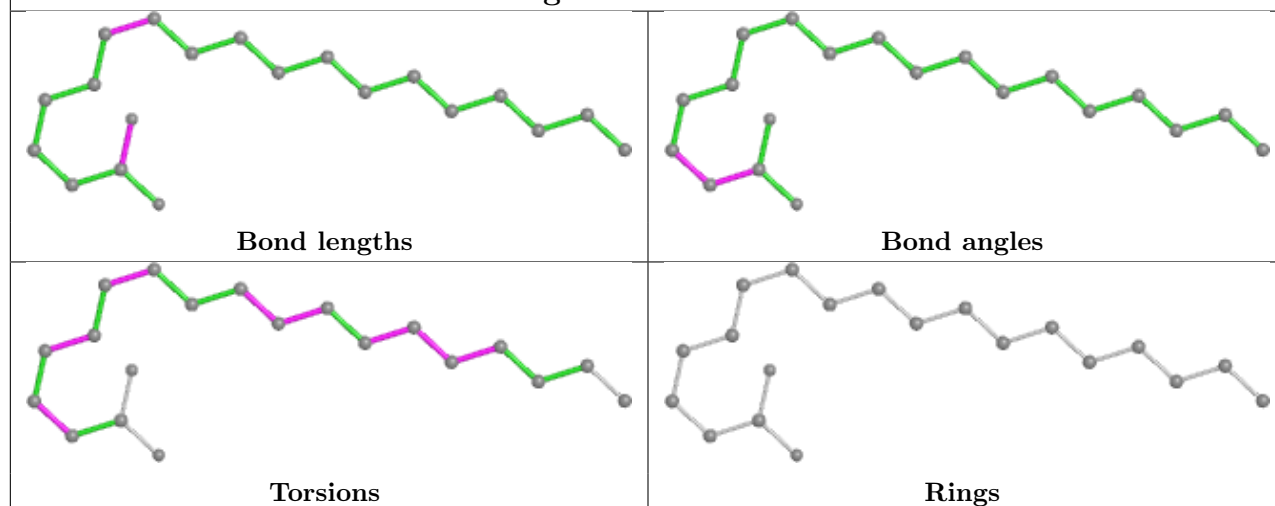
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.



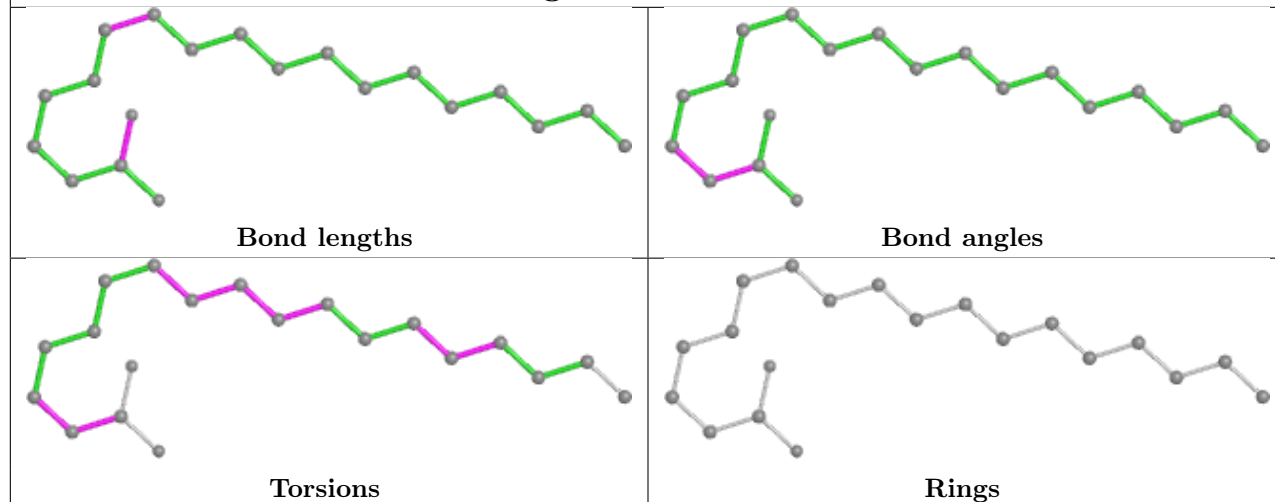
Ligand 4I1 B 307



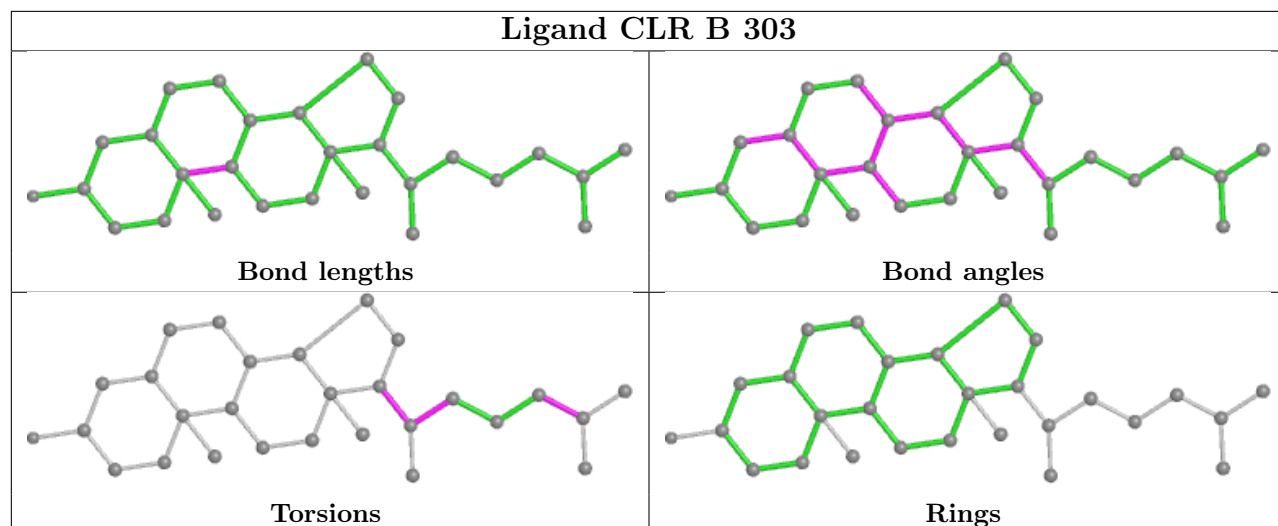
Ligand 4I1 A 308



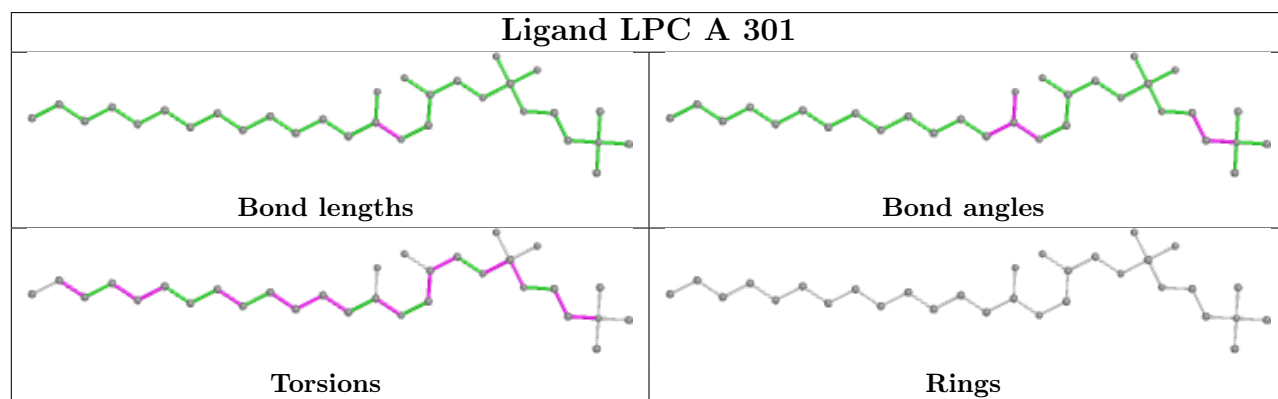
Ligand 4I1 A 310



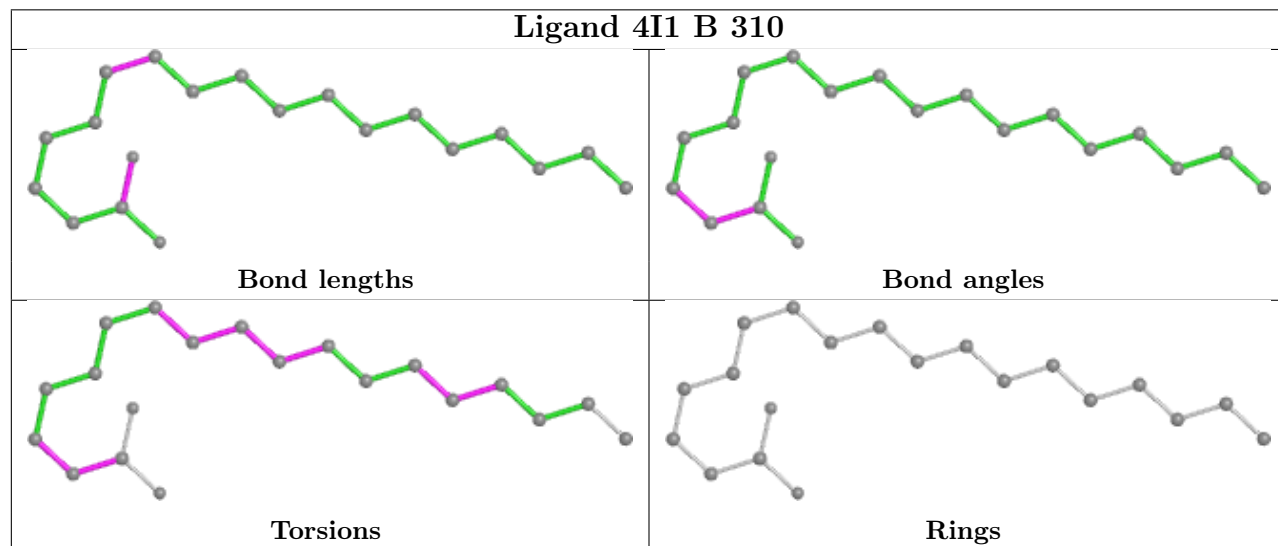
Ligand CLR B 303

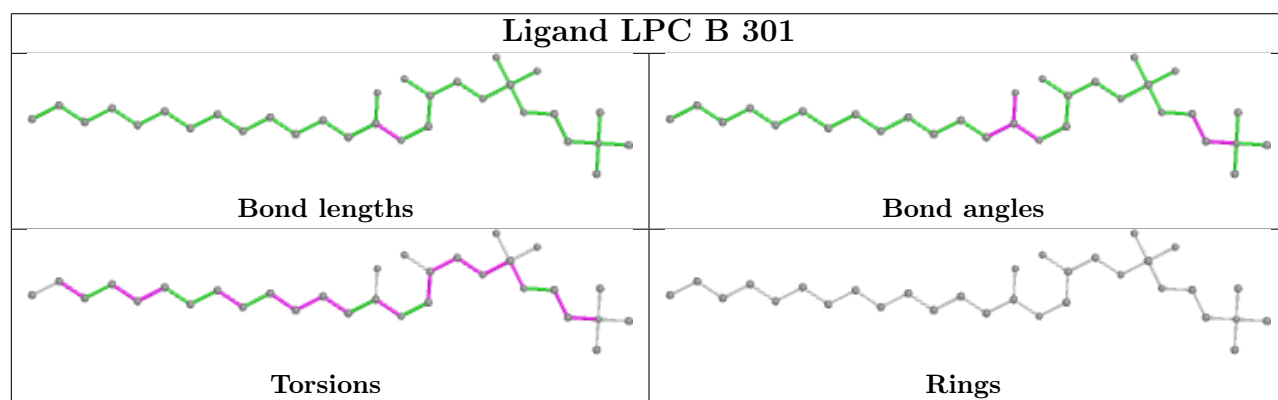
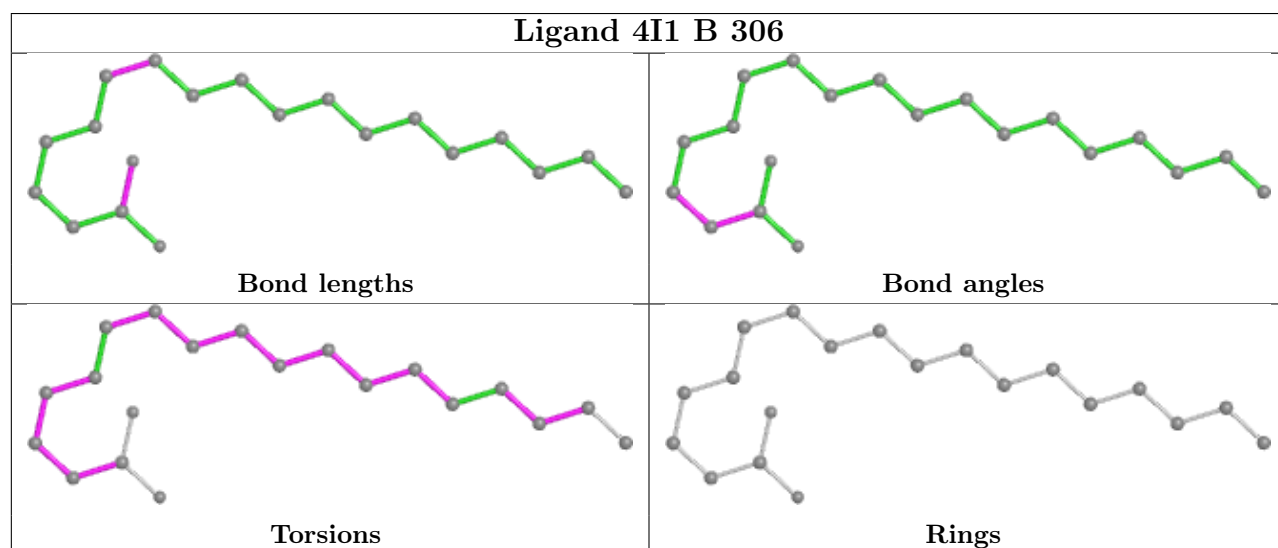
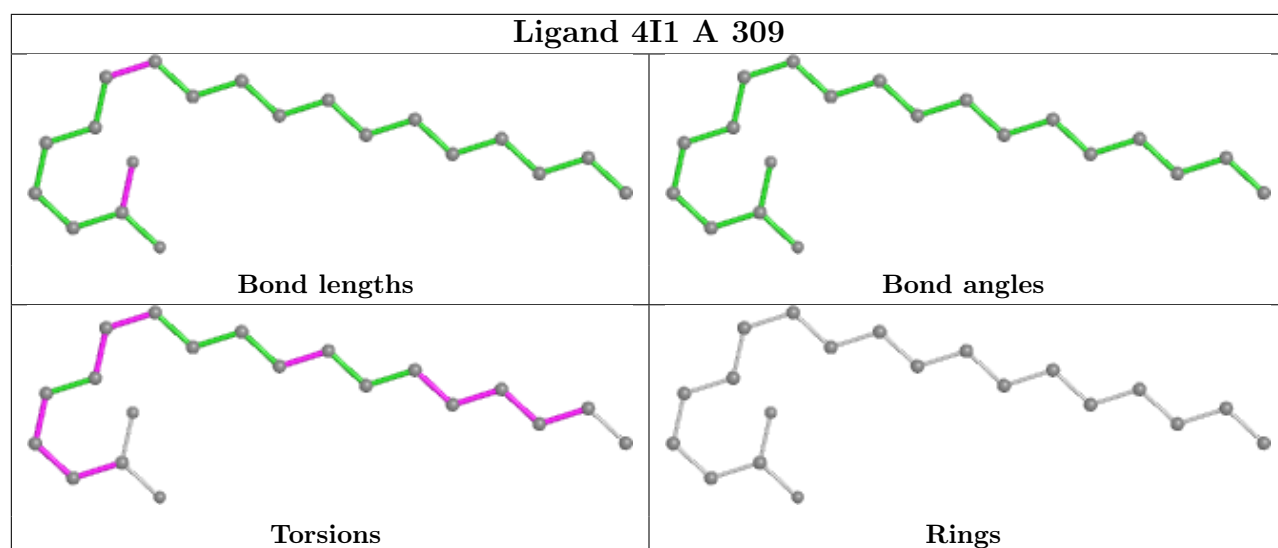


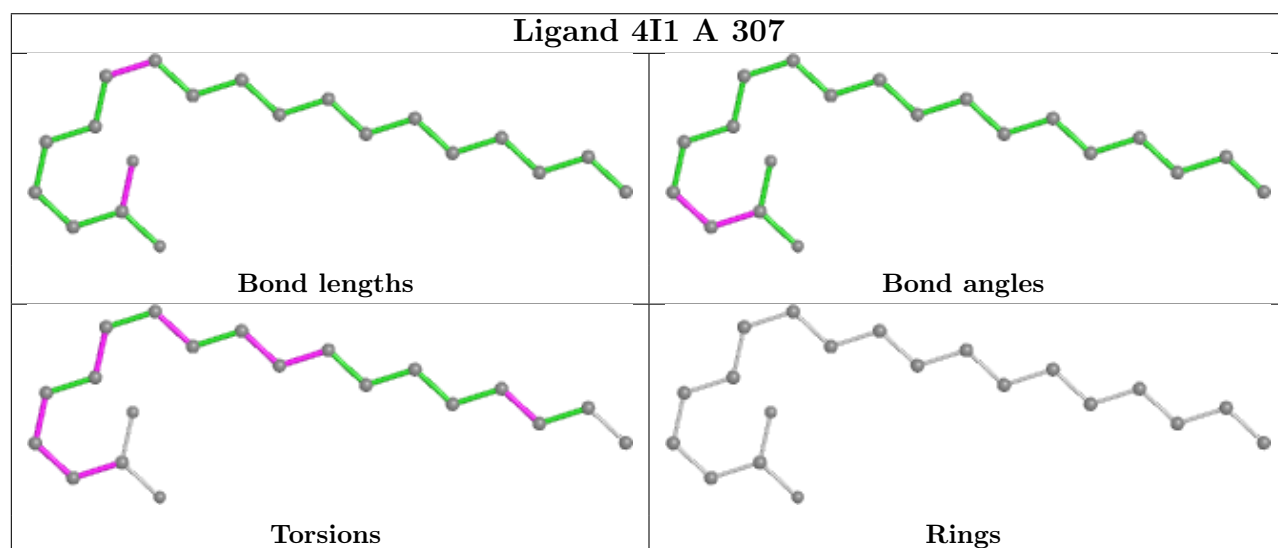
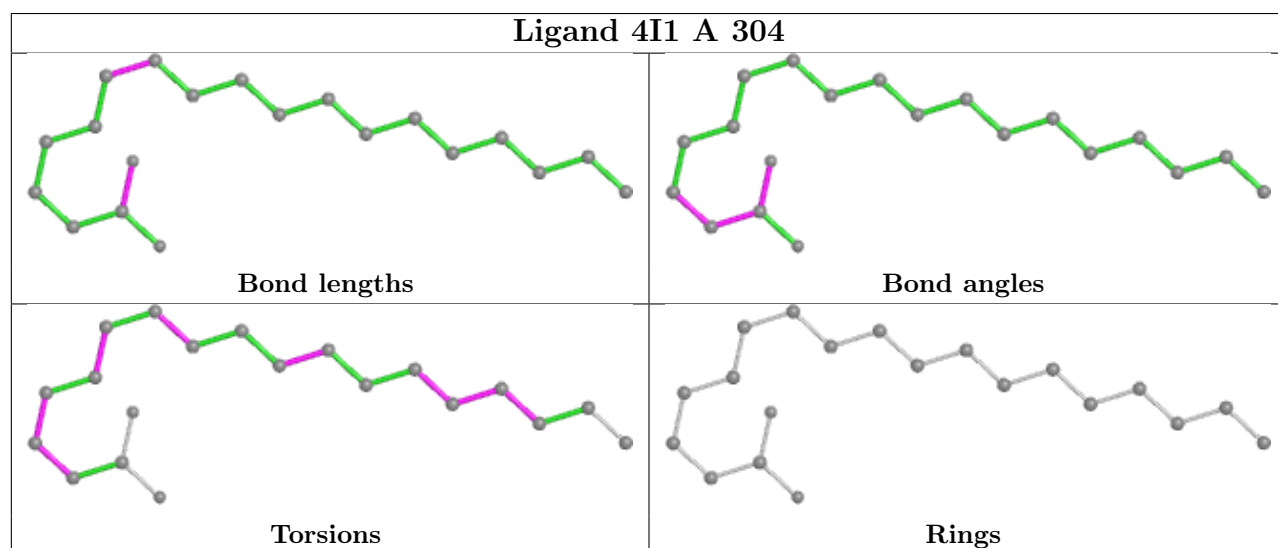
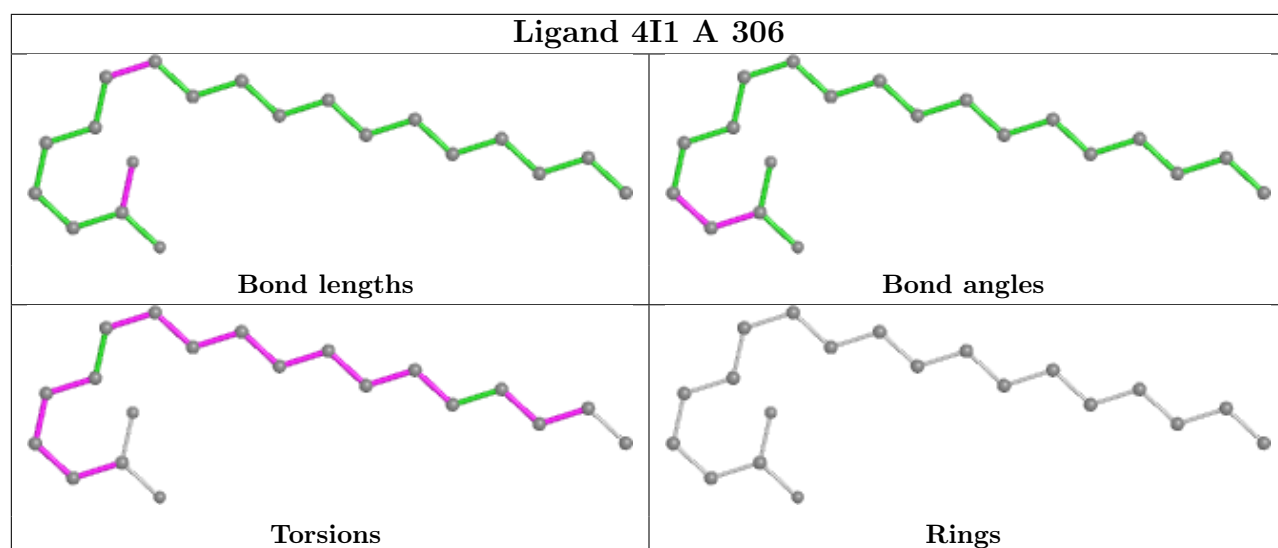
Ligand LPC A 301



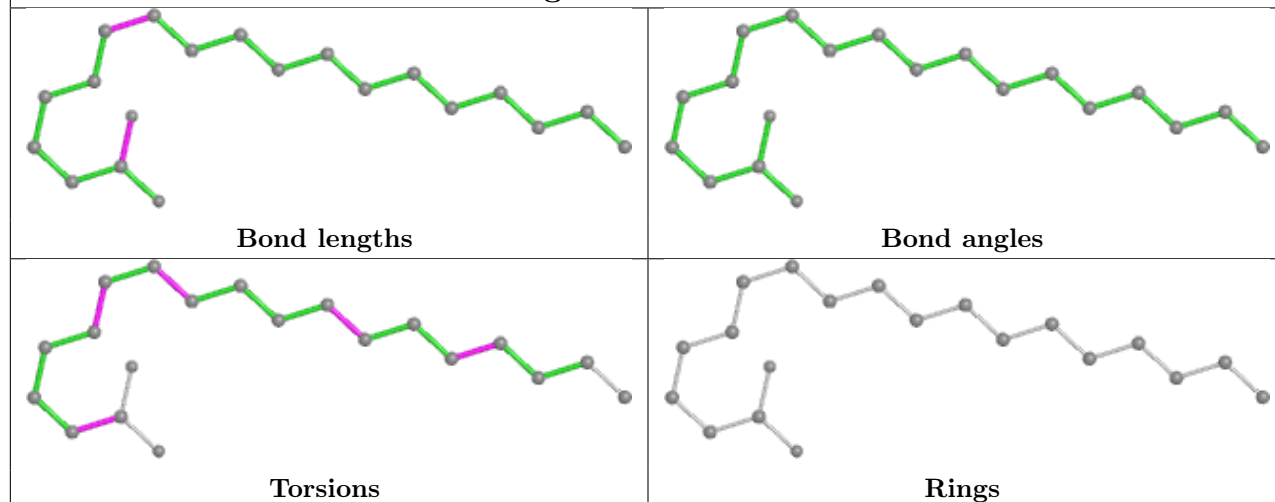
Ligand 4I1 B 310



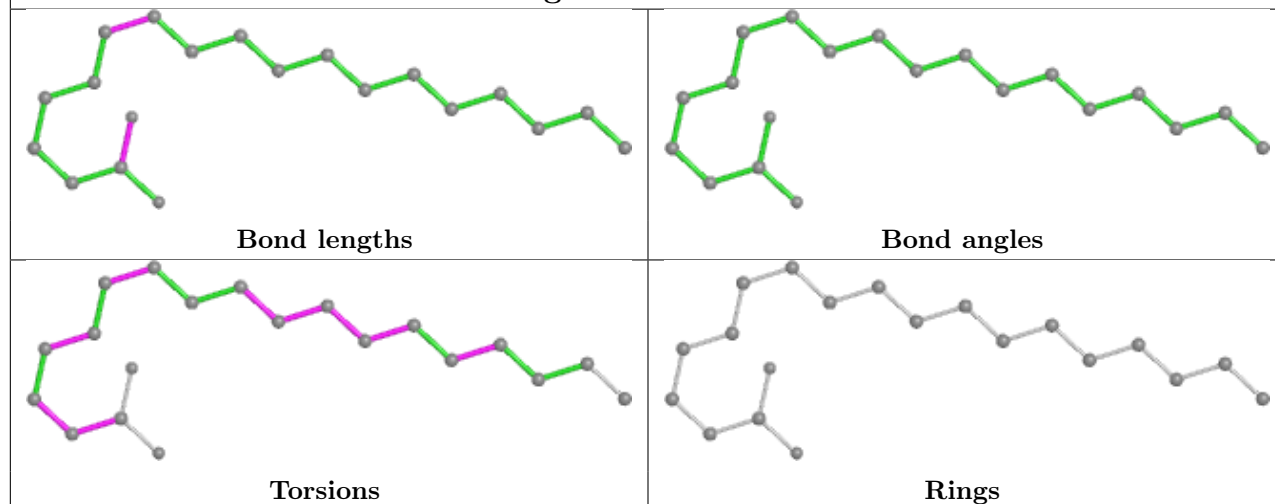




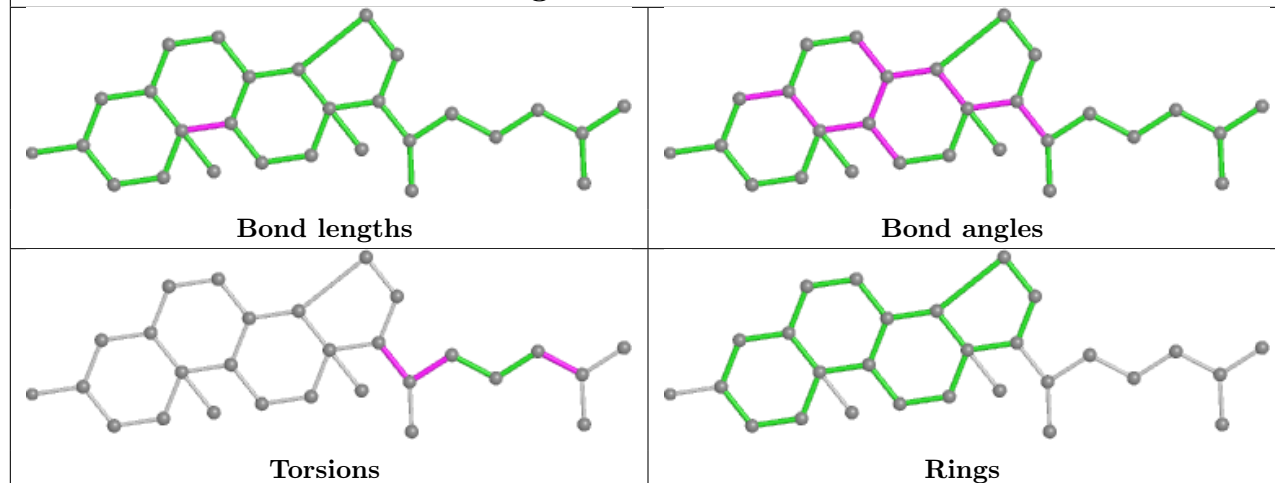
Ligand 4I1 B 305



Ligand 4I1 B 308



Ligand CLR A 303



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.

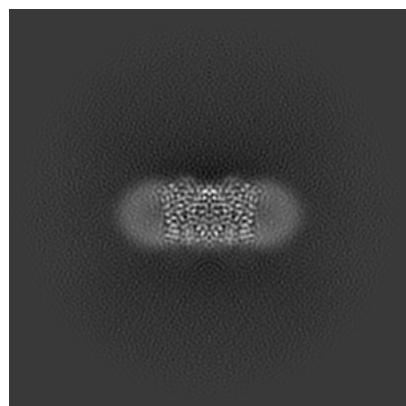
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-63426. These allow visual inspection of the internal detail of the map and identification of artifacts.

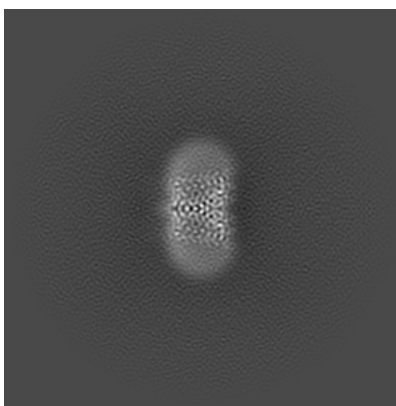
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

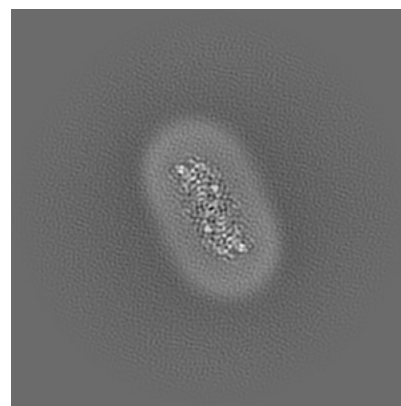
6.1.1 Primary map



X

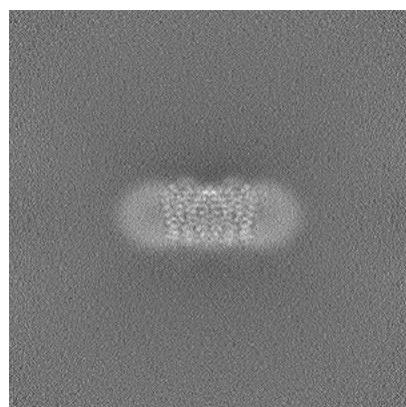


Y

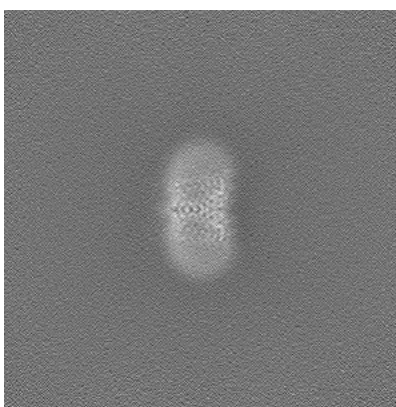


Z

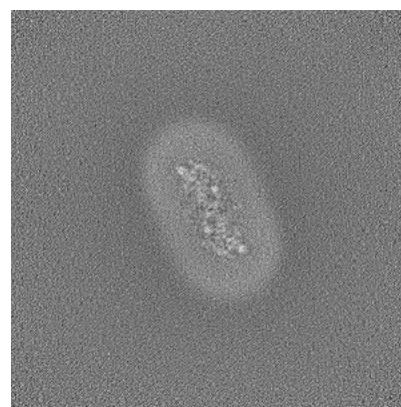
6.1.2 Raw map



X



Y

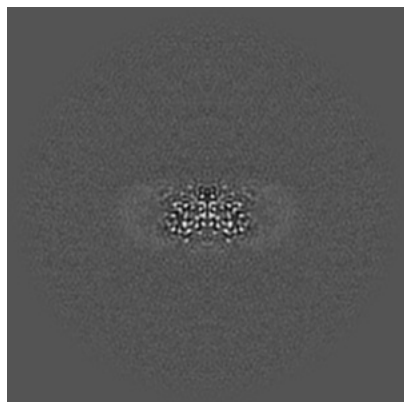


Z

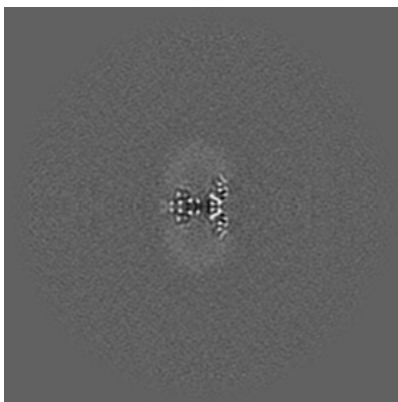
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

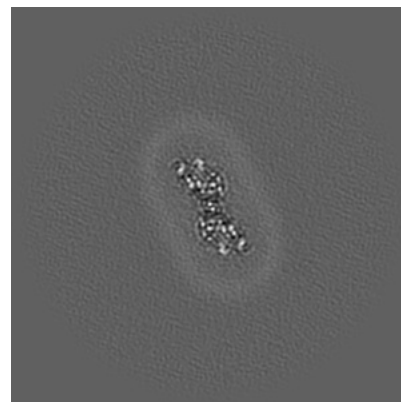
6.2.1 Primary map



X Index: 256

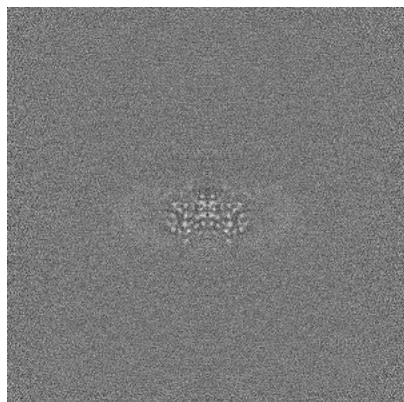


Y Index: 256

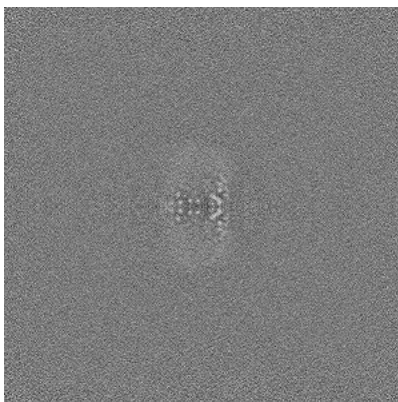


Z Index: 256

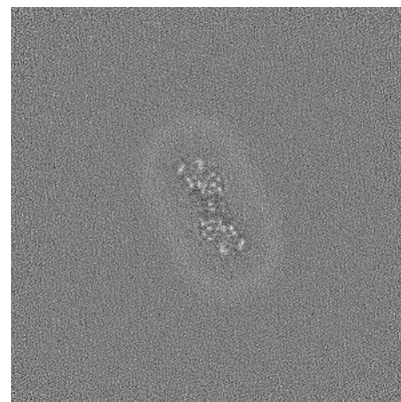
6.2.2 Raw map



X Index: 256



Y Index: 256

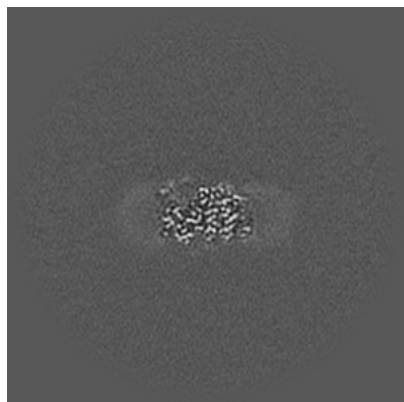


Z Index: 256

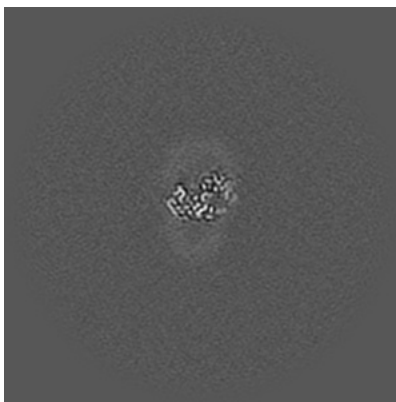
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

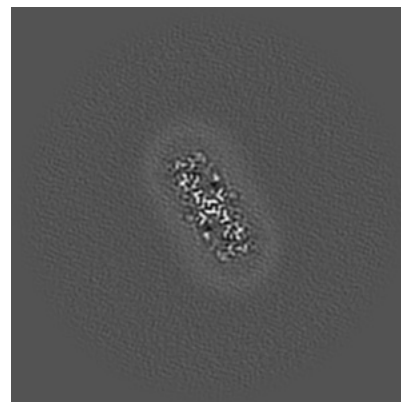
6.3.1 Primary map



X Index: 262

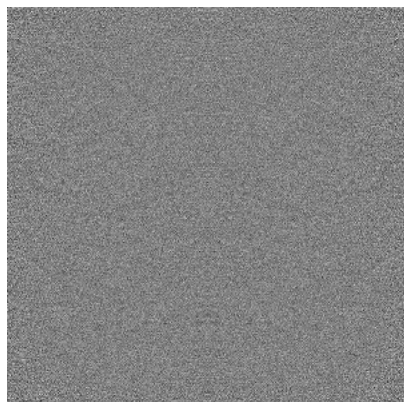


Y Index: 229

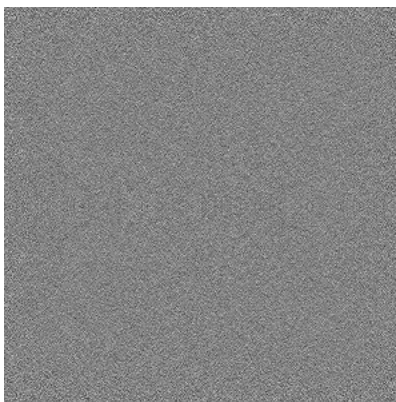


Z Index: 269

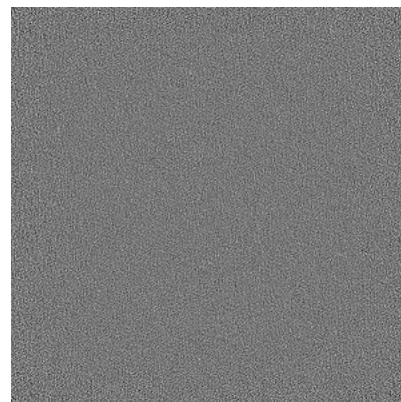
6.3.2 Raw map



X Index: 0



Y Index: 0

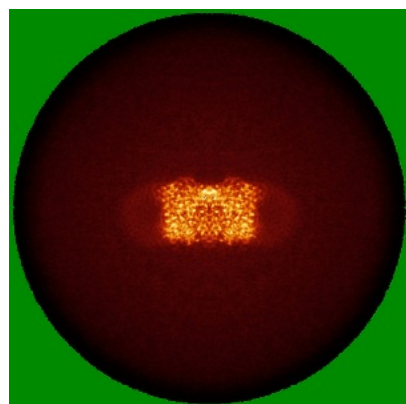


Z Index: 0

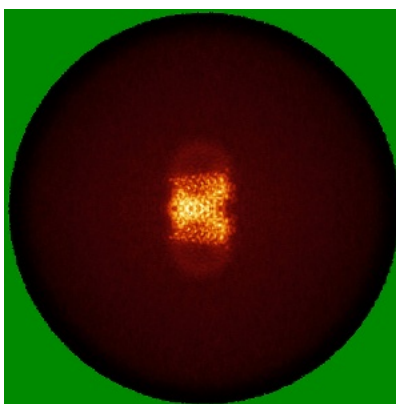
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

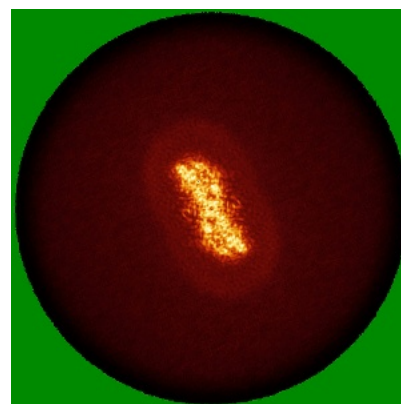
6.4.1 Primary map



X

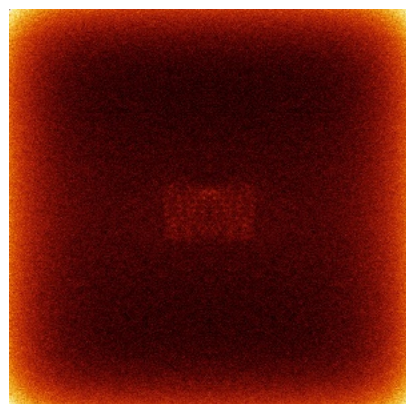


Y

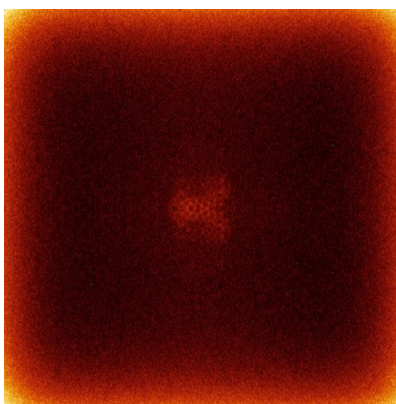


Z

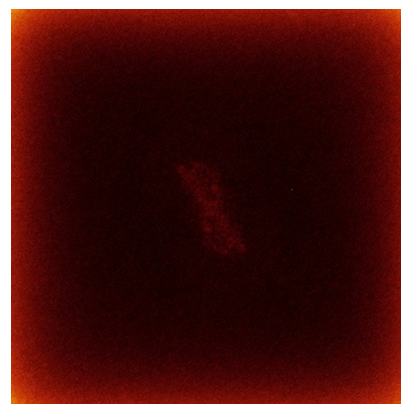
6.4.2 Raw map



X



Y

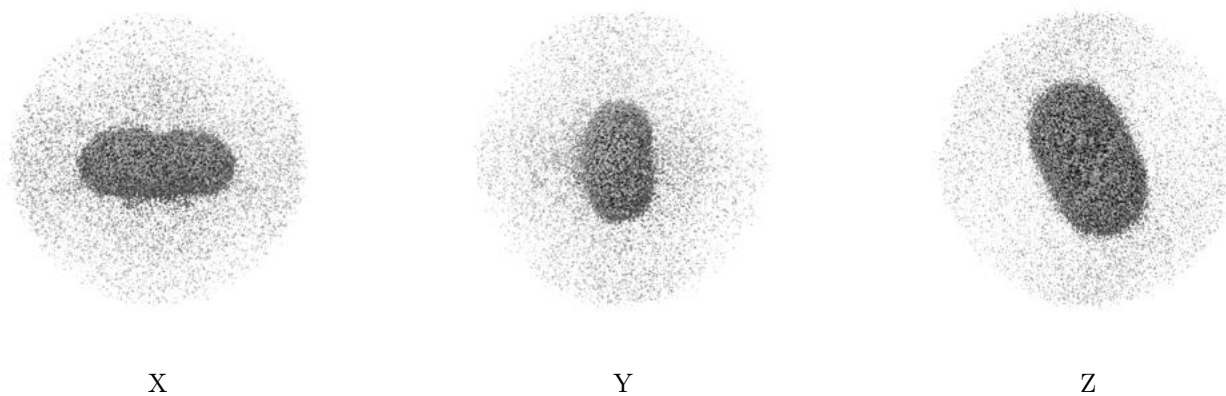


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

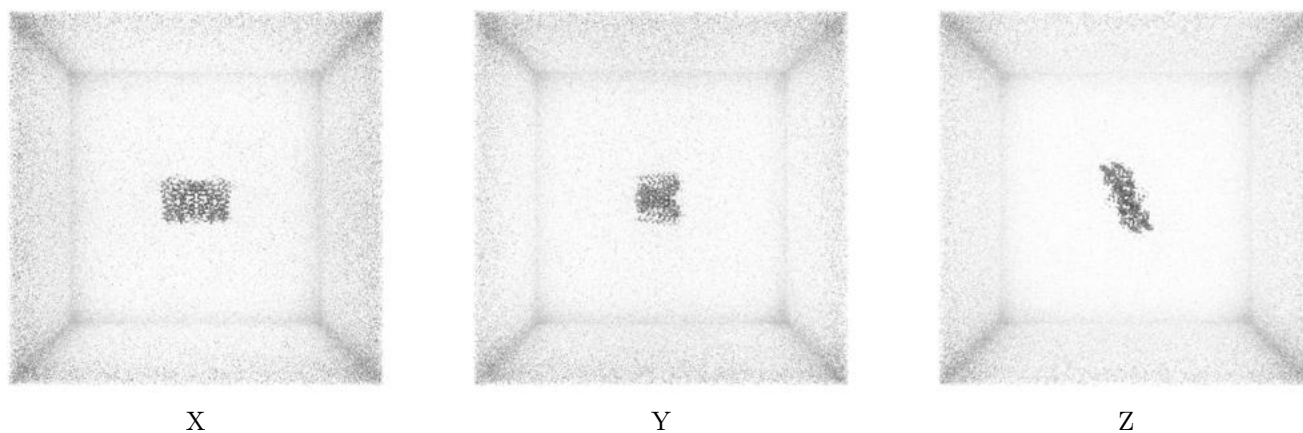
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

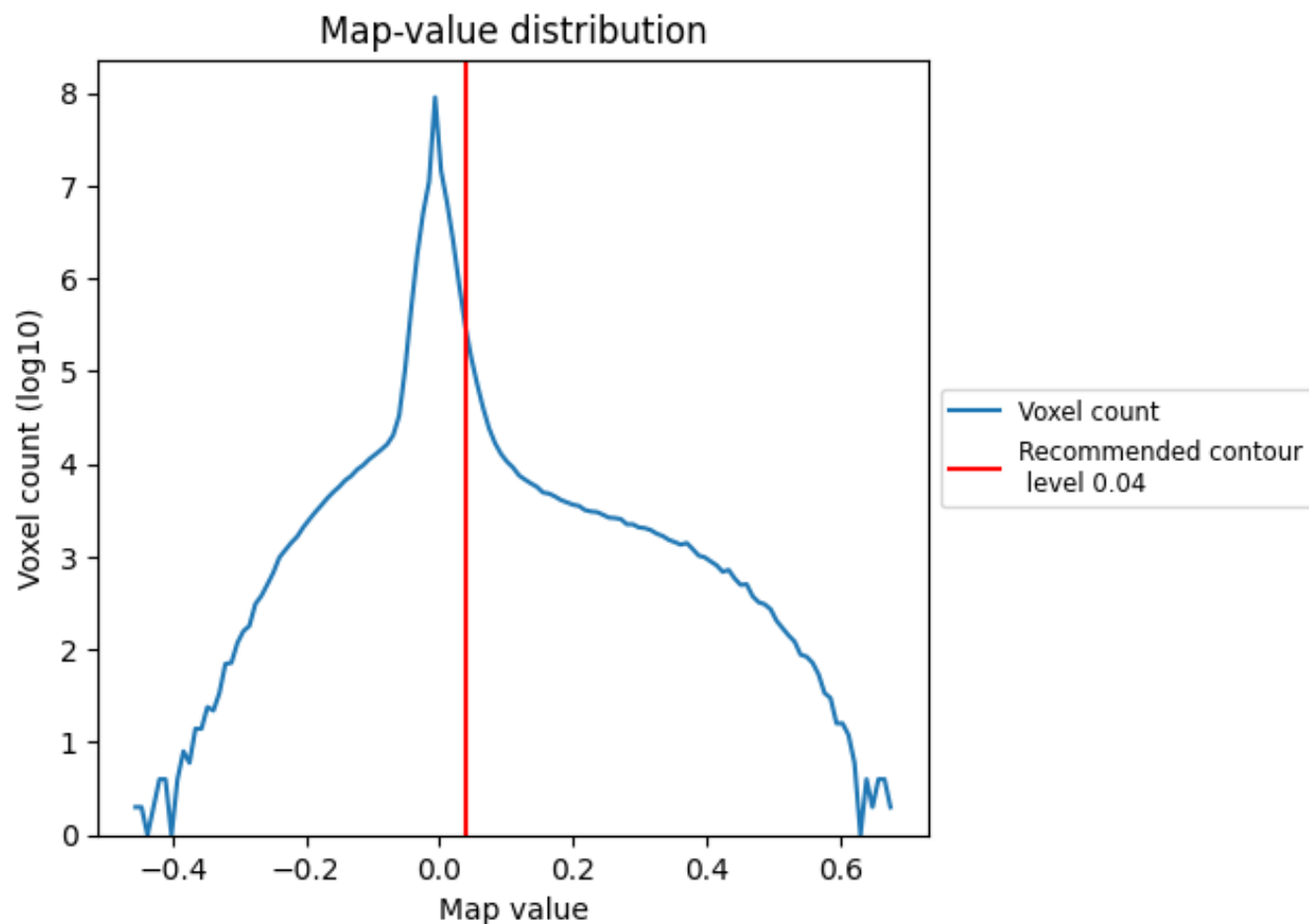
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

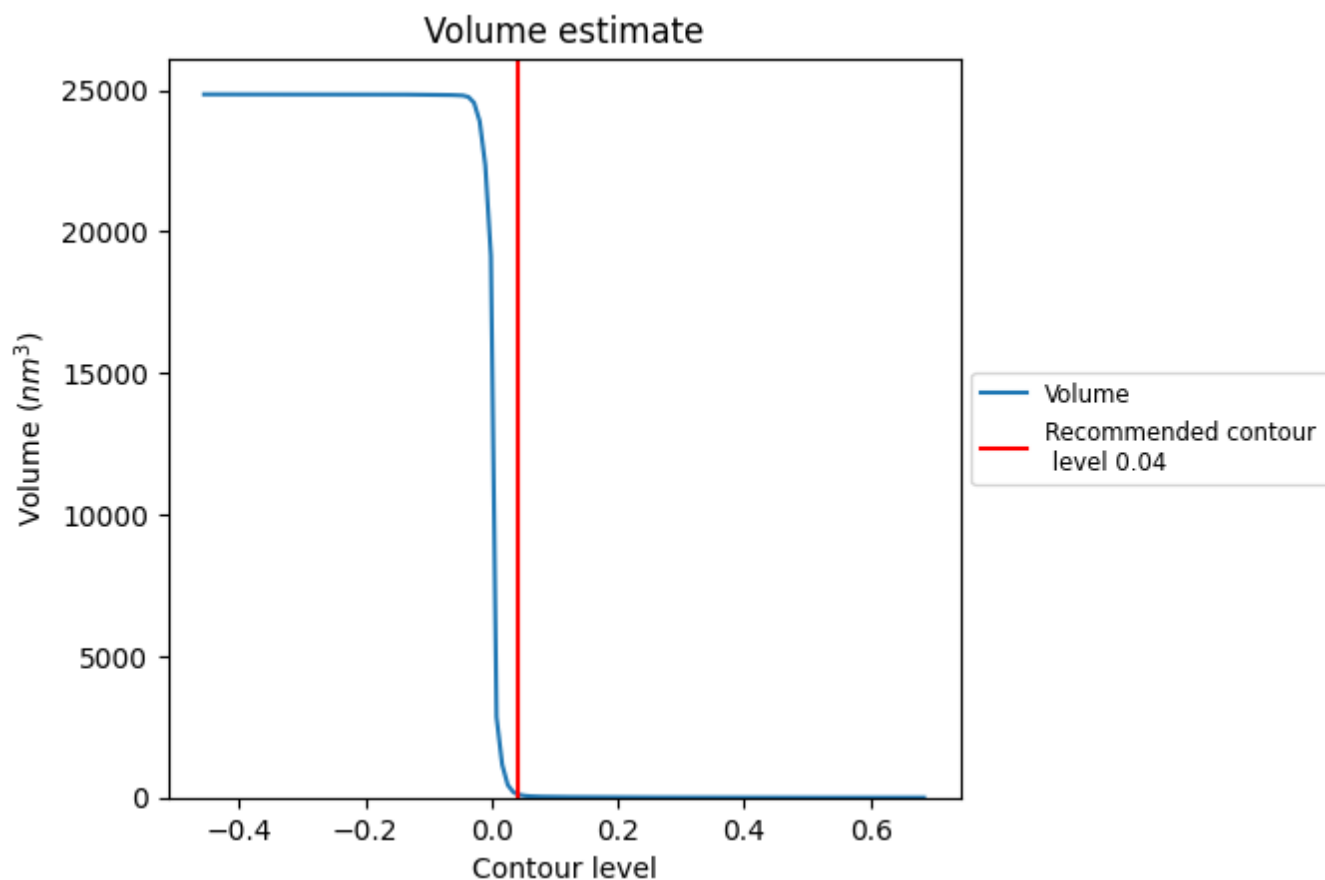
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

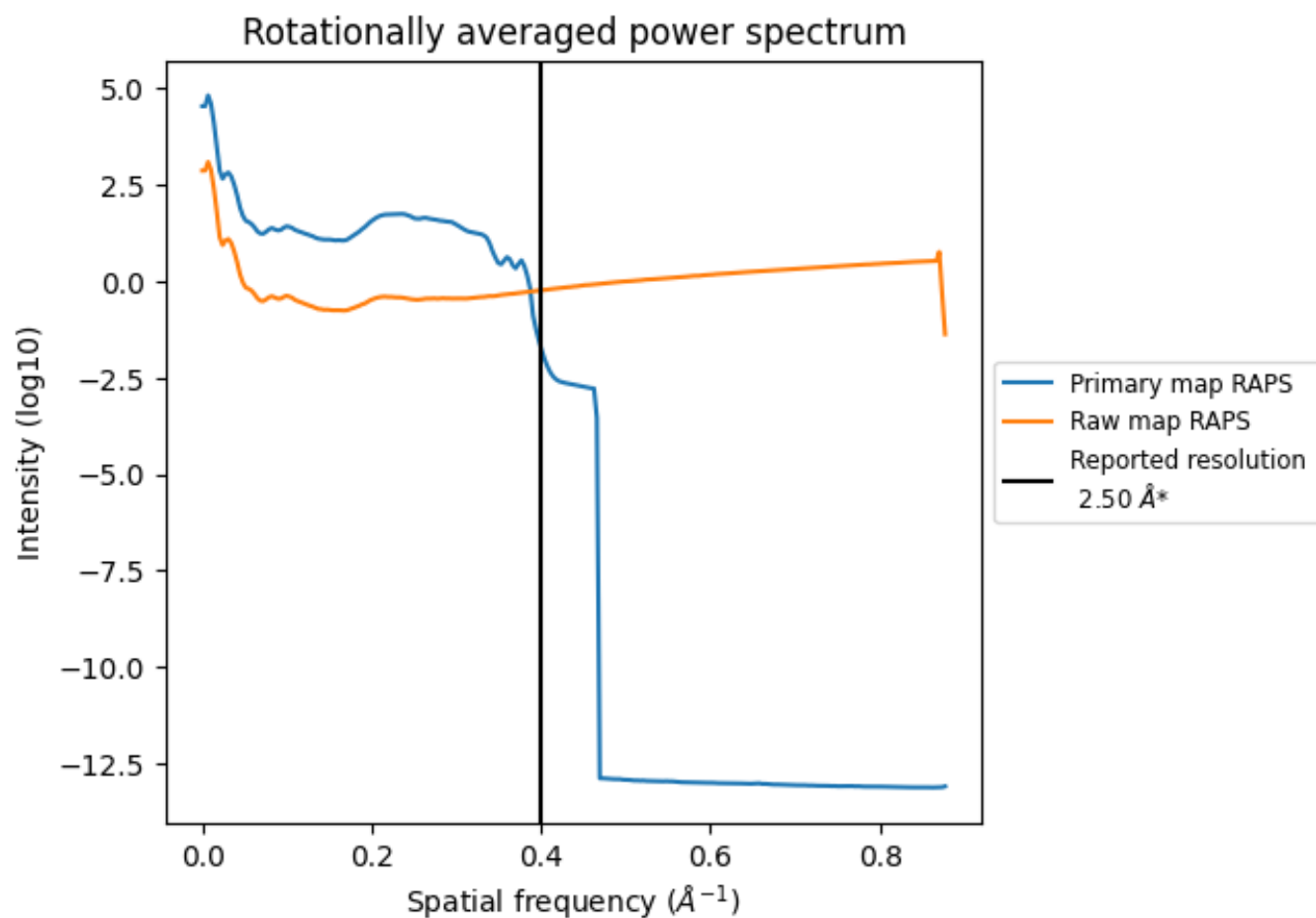
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 135 nm³; this corresponds to an approximate mass of 122 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

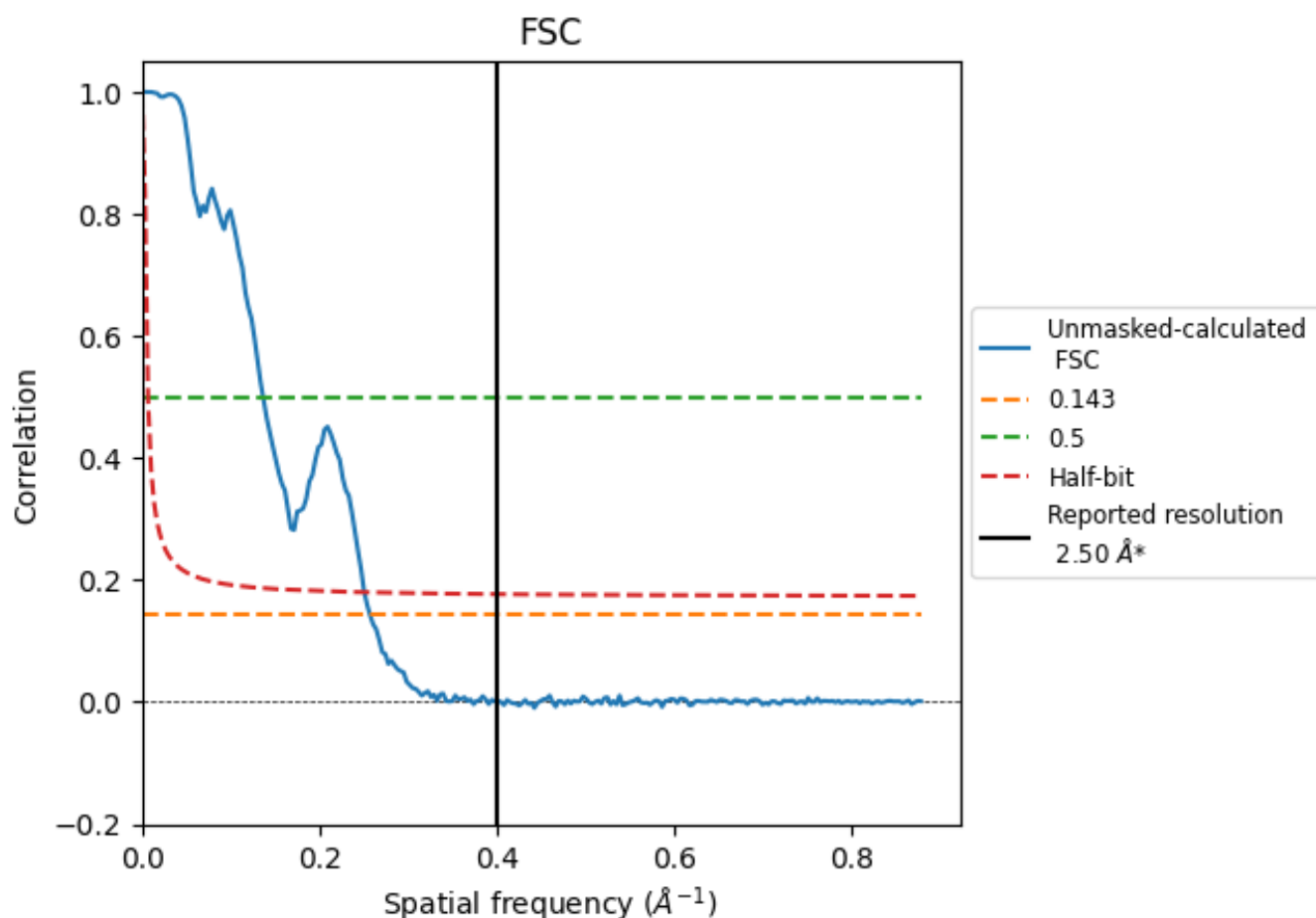


*Reported resolution corresponds to spatial frequency of 0.400 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.400 Å⁻¹

8.2 Resolution estimates [i](#)

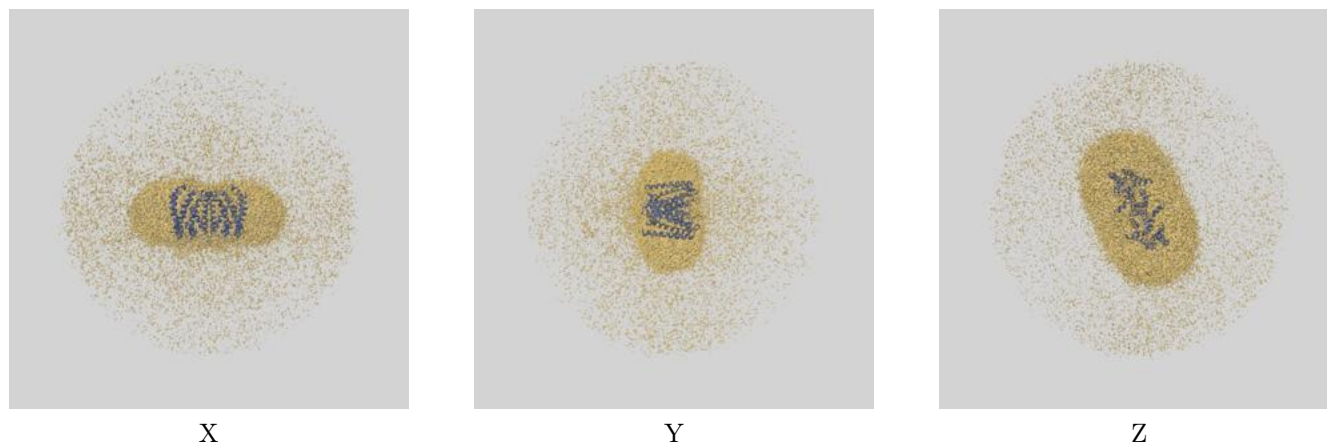
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.50	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.90	7.34	3.99

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.90 differs from the reported value 2.5 by more than 10 %

9 Map-model fit [i](#)

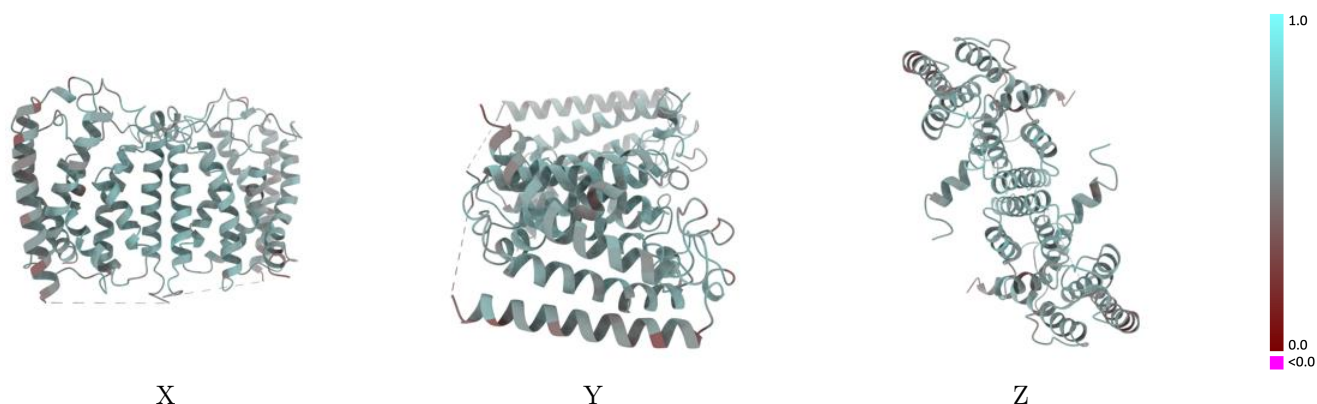
This section contains information regarding the fit between EMDB map EMD-63426 and PDB model 9LW1. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

9.1 Map-model overlay [i](#)



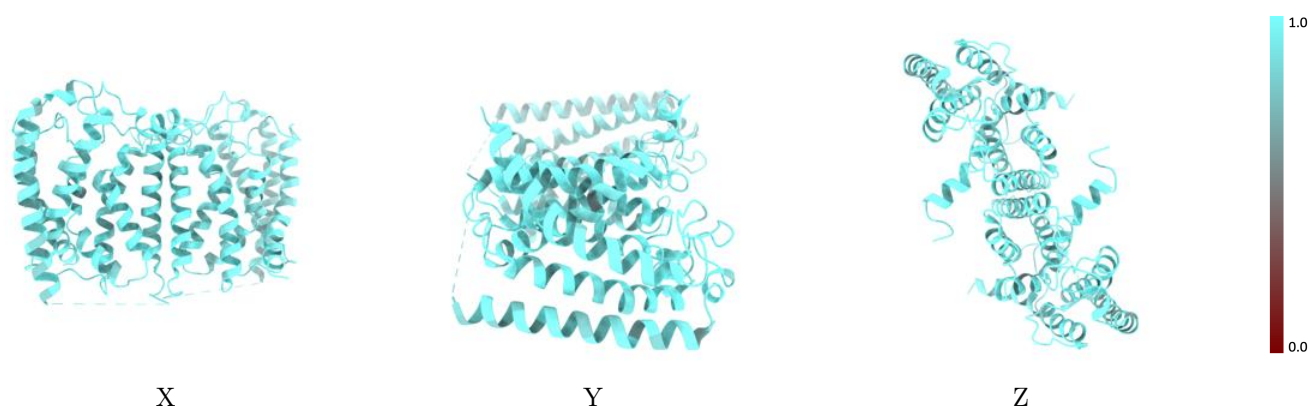
The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



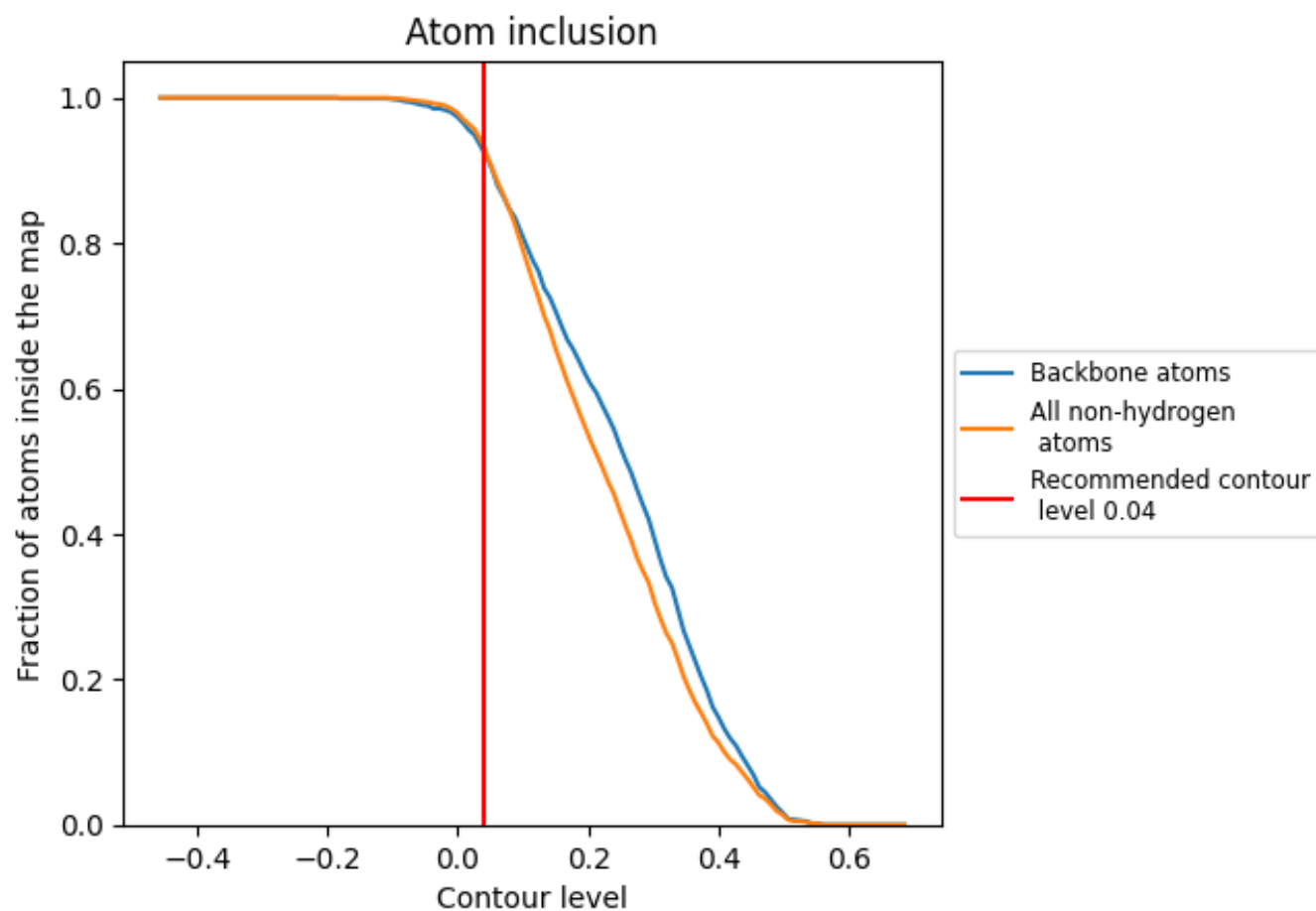
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.04).

9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 93% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9340	0.5600
A	0.9360	0.5600
B	0.9380	0.5600

