



Full wwPDB EM Validation Report ⓘ

Mar 24, 2026 – 08:08 AM UTC

PDB ID : 6E1K / pdb_00006e1k
EMDB ID : EMD-8956
Title : Structure of AtTPC1(DDE) reconstituted in saposin A with cat06 Fab
Authors : Kintzer, A.F.; Green, E.M.; Cheng, Y.; Stroud, R.M.
Deposited on : 2018-07-10
Resolution : 3.30 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:

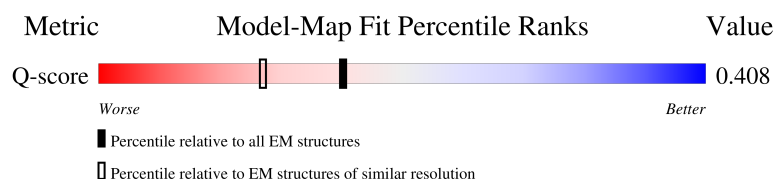
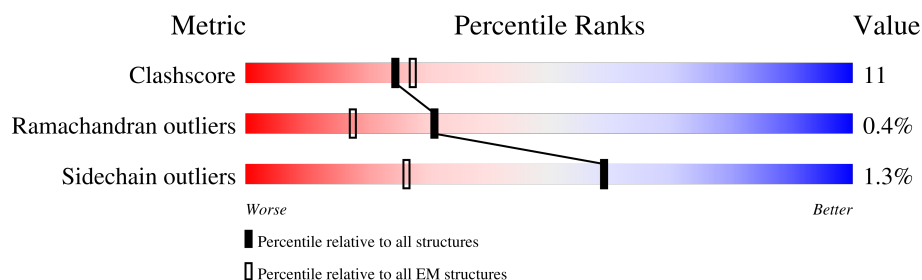
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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) : 2.49

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.30 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	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	15087 (2.80 - 3.80)

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	727	
1	B	727	
2	C	214	
2	E	214	

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Mol	Chain	Length	Quality of chain
3	D	231	
3	F	231	

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
5	PLM	A	806	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 11641 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 Two pore calcium channel protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	536	Total	C	N	O	P	S	0	0
			4278	2815	663	777	3	20		
1	B	536	Total	C	N	O	P	S	0	0
			4278	2815	663	777	3	20		

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	11	MET	-	initiating methionine	UNP Q94KI8
A	240	ASN	ASP	conflict	UNP Q94KI8
A	454	ASN	ASP	conflict	UNP Q94KI8
A	528	GLN	GLU	conflict	UNP Q94KI8
A	734	LEU	-	expression tag	UNP Q94KI8
A	735	VAL	-	expression tag	UNP Q94KI8
A	736	PRO	-	expression tag	UNP Q94KI8
A	737	ARG	-	expression tag	UNP Q94KI8
B	11	MET	-	initiating methionine	UNP Q94KI8
B	240	ASN	ASP	conflict	UNP Q94KI8
B	454	ASN	ASP	conflict	UNP Q94KI8
B	528	GLN	GLU	conflict	UNP Q94KI8
B	734	LEU	-	expression tag	UNP Q94KI8
B	735	VAL	-	expression tag	UNP Q94KI8
B	736	PRO	-	expression tag	UNP Q94KI8
B	737	ARG	-	expression tag	UNP Q94KI8

- Molecule 2 is a protein called cat06 light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	75	Total	C	N	O	S	1	0
			542	341	85	113	3		
2	E	75	Total	C	N	O	S	1	0
			542	341	85	113	3		

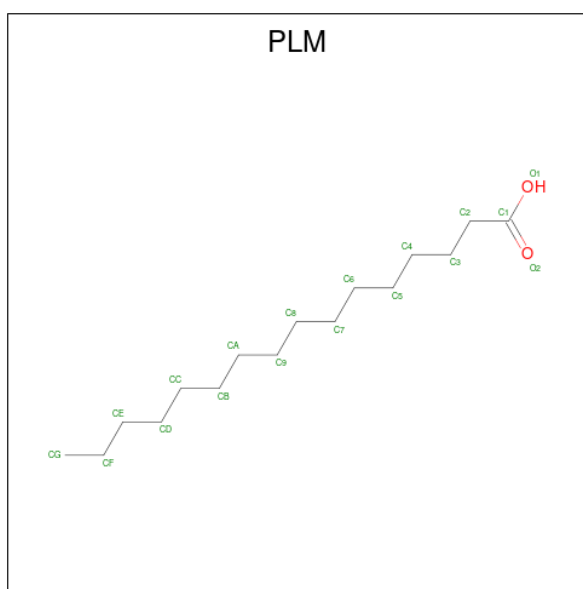
- Molecule 3 is a protein called cat06 heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	114	Total	C	N	O	S	1	0
			870	558	142	167	3		
3	F	114	Total	C	N	O	S	1	0
			870	558	142	167	3		

- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
4	A	4	Total	Ca	0
			4	4	
4	B	3	Total	Ca	0
			3	3	

- Molecule 5 is PALMITIC ACID (CCD ID: PLM) (formula: C₁₆H₃₂O₂).



Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	

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Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	
5	A	1	Total	C	O	0
			18	16	2	
5	B	1	Total	C	O	0
			18	16	2	
5	B	1	Total	C	O	0
			18	16	2	
5	B	1	Total	C	O	0
			18	16	2	
5	B	1	Total	C	O	0
			18	16	2	
5	B	1	Total	C	O	0
			18	16	2	

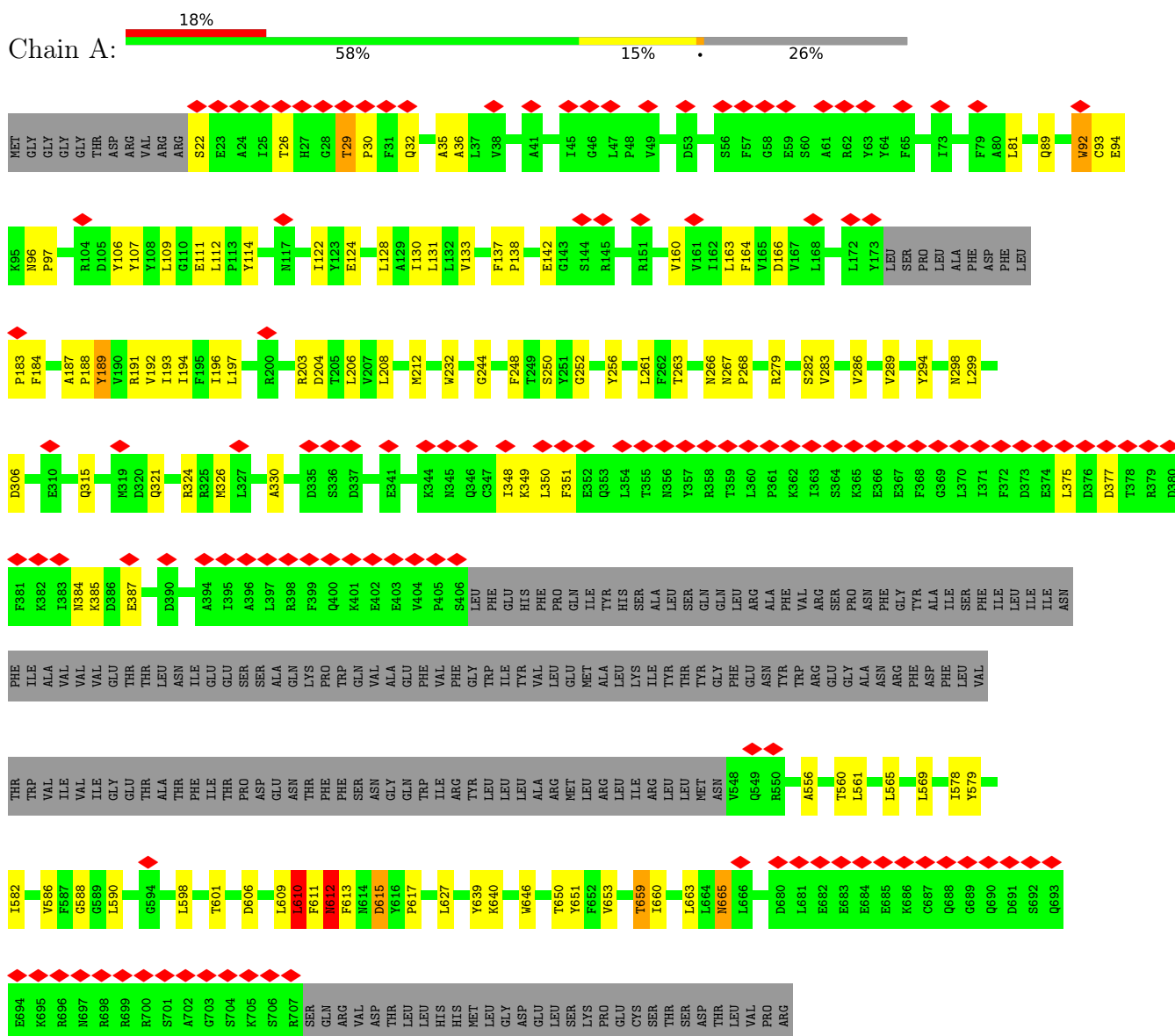
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		AltConf
6	A	1	Total	O	0
			1	1	
6	B	1	Total	O	0
			1	1	

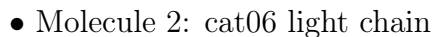
3 Residue-property plots

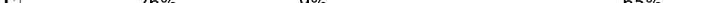
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

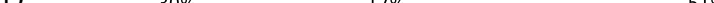
- Molecule 1: Two pore calcium channel protein 1



- Molecule 1: Two pore calcium channel protein 1



Chain E:  11% 26% 9% 65%

Chain D: 

Chain F: 17% 29% 18% 51%

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	224577	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	41132	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	58.423	Depositor
Minimum map value	-55.498	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	6	Depositor
Map size (Å)	311.1936, 311.1936, 311.1936	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.2156, 1.2156, 1.2156	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SEP, PLM, CA, TPO

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	0.81	0/4349	0.90	11/5912 (0.2%)
1	B	0.82	0/4349	0.87	6/5912 (0.1%)
2	C	0.71	0/551	1.11	1/742 (0.1%)
2	E	0.69	0/551	1.09	1/742 (0.1%)
3	D	0.71	0/897	0.94	2/1222 (0.2%)
3	F	0.72	0/897	0.97	3/1222 (0.2%)
All	All	0.79	0/11594	0.92	24/15752 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	B	0	6
3	D	0	4
3	F	0	3
All	All	0	18

There are no bond length outliers.

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	73	LEU	CA-CB-CG	9.67	150.14	116.30
2	C	73	LEU	CA-CB-CG	9.51	149.60	116.30
1	A	610	LEU	N-CA-C	-9.20	91.21	110.80
1	A	609	LEU	CA-C-N	7.24	135.37	121.54
1	A	609	LEU	C-N-CA	7.24	135.37	121.54
3	D	29	VAL	CA-C-N	6.29	133.55	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	29	VAL	C-N-CA	6.29	133.55	121.54
1	A	122	ILE	N-CA-C	-6.21	106.38	111.91
1	A	612	ASN	CA-C-N	6.09	133.17	121.54
1	A	612	ASN	C-N-CA	6.09	133.17	121.54
1	B	122	ILE	N-CA-C	-6.07	106.51	111.91
3	F	29	VAL	CA-C-N	5.95	132.91	121.54
3	F	29	VAL	C-N-CA	5.95	132.91	121.54
1	B	107	TYR	CA-CB-CG	5.63	124.04	113.90
3	F	108	LEU	CB-CA-C	5.62	119.10	109.65
1	B	263	THR	CA-C-N	5.53	132.11	121.54
1	B	263	THR	C-N-CA	5.53	132.11	121.54
1	A	263	THR	CA-C-N	5.53	132.09	121.54
1	A	263	THR	C-N-CA	5.53	132.09	121.54
1	B	261	LEU	CA-CB-CG	5.33	134.95	116.30
1	A	261	LEU	CA-CB-CG	5.32	134.92	116.30
1	A	107	TYR	CA-CB-CG	5.32	123.47	113.90
1	A	267	ASN	CA-C-O	-5.26	112.95	120.16
1	B	267	ASN	CA-C-O	-5.10	113.17	120.16

There are no chirality outliers.

All (18) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	266	ASN	Peptide
1	A	299	LEU	Peptide
1	A	611	PHE	Peptide
1	A	660	ILE	Peptide
1	A	96	ASN	Peptide
1	B	266	ASN	Peptide
1	B	299	LEU	Peptide
1	B	609	LEU	Peptide
1	B	611	PHE	Peptide
1	B	660	ILE	Peptide
1	B	96	ASN	Peptide
3	D	109	GLY	Peptide
3	D	28	ASN	Peptide
3	D	32	TYR	Peptide
3	D	60	TYR	Peptide
3	F	28	ASN	Peptide
3	F	32	TYR	Peptide
3	F	60	TYR	Peptide

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	4278	0	4161	79	0
1	B	4278	0	4161	78	0
2	C	542	0	517	11	0
2	E	542	0	517	12	0
3	D	870	0	813	34	0
3	F	870	0	813	32	0
4	A	4	0	0	0	0
4	B	3	0	0	0	0
5	A	144	0	247	36	0
5	B	108	0	184	18	0
6	A	1	0	0	1	0
6	B	1	0	0	1	0
All	All	11641	0	11413	245	0

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

All (245) 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)
5:A:806:PLM:H61	5:A:811:PLM:H51	1.33	1.07
1:A:582:ILE:HD13	5:A:808:PLM:HB2	1.62	0.81
1:B:582:ILE:HD13	5:B:807:PLM:HB2	1.62	0.81
1:B:112:LEU:HD12	1:B:617:PRO:HG3	1.67	0.76
1:A:112:LEU:HD12	1:A:617:PRO:HG3	1.68	0.76
3:F:24:ALA:HB1	3:F:28:ASN:HD22	1.54	0.71
1:B:606:ASP:OD2	6:B:901:HOH:O	2.08	0.70
3:D:24:ALA:HB1	3:D:28:ASN:HD22	1.57	0.69
1:A:606:ASP:OD2	6:A:901:HOH:O	2.09	0.69
1:A:111:GLU:HB3	5:A:812:PLM:H21	1.72	0.69
1:A:114:TYR:OH	1:A:615:ASP:OD2	2.05	0.68
1:A:197:LEU:O	1:A:203:ARG:NH1	2.28	0.67
3:D:105:THR:O	3:D:105:THR:OG1	2.12	0.67
3:F:105:THR:O	3:F:105:THR:OG1	2.13	0.67
1:B:197:LEU:O	1:B:203:ARG:NH1	2.28	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:32:GLN:H	1:B:35:ALA:HB3	1.60	0.65
5:B:808:PLM:H51	5:B:808:PLM:H92	1.79	0.64
1:A:89:GLN:HA	1:A:92:TRP:HD1	1.62	0.64
1:B:89:GLN:NE2	1:B:188:PRO:O	2.30	0.64
1:B:124:GLU:OE2	1:B:191:ARG:NH1	2.31	0.64
1:A:89:GLN:NE2	1:A:188:PRO:O	2.30	0.63
1:B:89:GLN:HA	1:B:92:TRP:HD1	1.63	0.63
1:A:578:ILE:HG21	5:A:808:PLM:HG3	1.80	0.63
2:C:91:SER:N	3:D:106:SER:OG	2.30	0.63
5:B:804:PLM:H31	5:B:808:PLM:H22	1.80	0.62
1:B:93:CYS:HA	1:B:114:TYR:HD1	1.64	0.62
3:D:39:GLN:NE2	3:D:43:LYS:O	2.33	0.62
1:B:578:ILE:HG21	5:B:807:PLM:HG3	1.81	0.61
1:B:49:VAL:HG23	1:B:322:MET:HE1	1.82	0.61
2:E:91:SER:N	3:F:106:SER:OG	2.33	0.61
1:A:124:GLU:OE2	1:A:191:ARG:NH1	2.34	0.60
1:B:243:GLN:HB2	1:B:274:ALA:HB2	1.84	0.60
1:B:653:VAL:HG12	5:B:809:PLM:HF1	1.84	0.60
1:A:384:ASN:HB2	1:A:387:GLU:HG2	1.84	0.59
3:F:39:GLN:NE2	3:F:43:LYS:O	2.33	0.59
1:A:252:GLY:HA3	5:A:806:PLM:H32	1.83	0.59
3:D:69:THR:HB	3:D:82:GLN:HB3	1.84	0.58
3:F:69:THR:HB	3:F:82:GLN:HB3	1.84	0.58
1:B:398:ARG:HH11	1:B:695:LYS:HB3	1.68	0.58
1:B:375:LEU:HD21	1:B:384:ASN:HB2	1.86	0.58
1:A:653:VAL:HG11	5:A:806:PLM:HD1	1.86	0.58
1:B:372:PHE:H	1:B:697:ASN:HD21	1.50	0.57
1:A:321:GLN:HA	1:A:324:ARG:HB3	1.86	0.57
1:A:653:VAL:HG12	5:A:811:PLM:HF1	1.86	0.57
1:A:324:ARG:NH2	3:F:54:TYR:O	2.38	0.57
1:B:166:ASP:OD2	1:B:187:ALA:HB2	2.05	0.57
1:B:371:ILE:HD11	1:B:391:LEU:HD13	1.87	0.57
3:D:20:LEU:HB2	3:D:81:LEU:HB3	1.86	0.57
1:A:166:ASP:OD2	1:A:187:ALA:HB2	2.05	0.57
2:C:44:PRO:HG2	3:D:45:LEU:HD11	1.87	0.57
3:D:5:VAL:HB	3:D:23:ALA:HB3	1.87	0.56
5:A:805:PLM:H31	5:A:806:PLM:H32	1.88	0.56
2:E:44:PRO:HG2	3:F:45:LEU:HD11	1.86	0.56
1:A:106:TYR:HD1	1:A:109:LEU:HB2	1.70	0.56
3:F:5:VAL:O	3:F:23:ALA:N	2.38	0.56
3:F:5:VAL:HB	3:F:23:ALA:HB3	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:MET:SD	1:B:665:ASN:ND2	2.79	0.55
3:D:39:GLN:HB2	3:D:45:LEU:HD23	1.86	0.55
1:A:93:CYS:HA	1:A:114:TYR:HD1	1.71	0.55
3:D:61:ALA:HB3	3:D:64:VAL:HG22	1.87	0.55
1:B:680:ASP:OD1	1:B:707:ARG:NH1	2.36	0.55
3:D:6:GLU:OE2	3:D:115:GLY:HA3	2.07	0.55
3:F:61:ALA:HB3	3:F:64:VAL:HG22	1.86	0.55
3:D:51:ILE:HG13	3:D:58:THR:HG22	1.88	0.55
3:F:20:LEU:HB2	3:F:81:LEU:HB3	1.89	0.55
3:F:39:GLN:HB2	3:F:45:LEU:HD23	1.87	0.55
3:F:6:GLU:OE2	3:F:115:GLY:HA3	2.07	0.55
1:A:232:TRP:HB2	5:A:809:PLM:HD1	1.90	0.54
1:B:646:TRP:CZ3	5:B:805:PLM:H82	2.43	0.54
2:C:25:ALA:O	2:C:90:GLN:NE2	2.41	0.54
3:F:97:ALA:HB1	3:F:111:ILE:HB	1.89	0.54
1:A:598:LEU:O	1:A:601:THR:OG1	2.26	0.54
2:C:33:VAL:H	3:D:107:THR:HG1	1.56	0.54
3:D:97:ALA:HB1	3:D:111:ILE:HB	1.89	0.54
1:B:326:MET:O	1:B:330:ALA:N	2.39	0.54
1:A:612:ASN:O	1:A:639:TYR:OH	2.23	0.53
2:E:6:GLN:NE2	2:E:86:TYR:O	2.42	0.53
3:F:51:ILE:HG13	3:F:58:THR:HG22	1.90	0.53
1:B:244:GLY:HA2	1:B:248:PHE:HB2	1.91	0.53
2:E:25:ALA:O	2:E:90:GLN:NE2	2.42	0.53
1:A:212:MET:SD	1:A:665:ASN:ND2	2.81	0.53
2:C:6:GLN:NE2	2:C:86:TYR:O	2.43	0.53
3:D:5:VAL:O	3:D:23:ALA:N	2.38	0.52
1:B:106:TYR:HD1	1:B:109:LEU:HB2	1.74	0.52
1:B:612:ASN:O	1:B:639:TYR:OH	2.20	0.52
1:A:650:THR:HG23	5:A:811:PLM:HD2	1.91	0.52
1:A:659:THR:HG22	1:A:663:LEU:HG	1.90	0.52
5:A:805:PLM:H31	5:A:806:PLM:C3	2.38	0.52
1:A:160:VAL:O	1:A:164:PHE:N	2.43	0.52
1:B:646:TRP:CE2	5:B:805:PLM:H51	2.44	0.52
1:B:250:SER:OG	1:B:251:TYR:N	2.41	0.52
3:D:37:VAL:HG22	3:D:47:TRP:HA	1.91	0.51
3:F:37:VAL:HG22	3:F:47:TRP:HA	1.91	0.51
1:A:610:LEU:HD22	1:B:275:TYR:HE2	1.74	0.51
3:F:17[A]:SER:HB3	3:F:83:MET:HB2	1.93	0.51
1:A:646:TRP:CZ3	5:A:806:PLM:H72	2.44	0.51
2:C:32:ALA:HB2	3:D:104:ARG:HE	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:32:GLN:O	1:A:36:ALA:N	2.39	0.51
1:A:138:PRO:O	1:A:142:GLU:N	2.43	0.51
1:B:338:LYS:NZ	3:D:112:ASP:OD2	2.44	0.51
1:A:294:TYR:O	1:A:298:ASN:ND2	2.40	0.50
1:B:598:LEU:O	1:B:601:THR:OG1	2.29	0.50
3:D:17[A]:SER:HB3	3:D:83:MET:HB2	1.93	0.50
1:A:326:MET:O	1:A:330:ALA:N	2.42	0.50
2:C:23:CYS:HB3	2:C:71:PHE:HB2	1.94	0.50
1:A:615:ASP:HB3	1:A:617:PRO:HD2	1.94	0.49
1:B:384:ASN:OD1	3:D:31:SER:OG	2.19	0.49
1:B:81:LEU:HG	1:B:130:ILE:HB	1.94	0.49
1:A:189:TYR:CD2	5:A:807:PLM:HE1	2.48	0.49
1:B:193:ILE:HD11	5:B:806:PLM:HF2	1.95	0.49
1:B:650:THR:HG23	5:B:809:PLM:HD2	1.94	0.49
5:A:806:PLM:H82	5:A:811:PLM:H72	1.95	0.49
2:E:50:SER:N	3:F:107:THR:O	2.46	0.49
3:F:69:THR:O	3:F:82:GLN:N	2.46	0.48
1:A:282:SER:O	1:A:286:VAL:N	2.28	0.48
3:D:69:THR:O	3:D:82:GLN:N	2.46	0.48
1:B:59:GLU:HB2	1:B:62:ARG:HG3	1.95	0.48
1:B:189:TYR:CD2	5:B:806:PLM:HE1	2.49	0.48
1:B:94:GLU:HB3	1:B:97:PRO:HD3	1.95	0.48
3:D:22:CYS:HB3	3:D:79:ALA:HB3	1.96	0.48
1:A:579:TYR:O	1:A:651:TYR:OH	2.23	0.48
1:B:128:LEU:HD11	1:B:163:LEU:HB3	1.96	0.48
1:A:81:LEU:HG	1:A:130:ILE:HB	1.95	0.47
1:B:294:TYR:O	1:B:298:ASN:ND2	2.47	0.47
1:B:643:THR:OG1	1:B:648:SER:OG	2.27	0.47
5:B:807:PLM:H81	5:B:807:PLM:H52	1.45	0.47
1:A:89:GLN:HE22	1:A:192:VAL:HG23	1.79	0.47
3:D:99:SER:HB3	3:D:111:ILE:HG22	1.95	0.47
3:F:29:VAL:HG21	3:F:74:THR:HA	1.96	0.47
1:A:279:ARG:HB2	5:A:810:PLM:H22	1.95	0.47
1:B:160:VAL:O	1:B:164:PHE:N	2.45	0.47
5:A:807:PLM:HG3	5:A:807:PLM:HD2	1.42	0.47
3:D:29:VAL:HG21	3:D:74:THR:HA	1.97	0.46
5:A:808:PLM:H81	5:A:808:PLM:H52	1.44	0.46
2:E:23:CYS:HB3	2:E:71:PHE:HB2	1.97	0.46
1:A:32:GLN:H	1:A:35:ALA:HB3	1.79	0.46
1:A:204:ASP:HB3	1:A:315:GLN:HE22	1.80	0.46
1:A:586:VAL:HG22	5:A:807:PLM:H42	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:346:GLN:HA	1:B:349:LYS:HG2	1.97	0.46
1:A:128:LEU:HD11	1:A:163:LEU:HB3	1.97	0.46
5:A:806:PLM:HB1	5:A:806:PLM:HE2	1.30	0.46
1:A:193:ILE:HD11	5:A:807:PLM:HF2	1.98	0.46
2:C:33:VAL:N	3:D:107:THR:OG1	2.36	0.46
1:B:89:GLN:HE22	1:B:192:VAL:HG23	1.81	0.46
1:A:588:GLY:O	1:A:590:LEU:N	2.46	0.45
1:A:627:LEU:HD11	1:A:659:THR:HG21	1.98	0.45
3:D:73:ASP:N	3:D:78:THR:O	2.45	0.45
1:A:565:LEU:O	1:A:569:LEU:N	2.48	0.45
1:B:114:TYR:OH	1:B:615:ASP:OD2	2.28	0.45
1:B:282:SER:O	1:B:286:VAL:N	2.33	0.45
5:B:806:PLM:HA2	5:B:806:PLM:H71	1.47	0.45
5:A:805:PLM:C1	5:A:809:PLM:H32	2.46	0.45
2:E:47:LEU:HD22	2:E:58:VAL:HG11	1.99	0.45
3:F:22:CYS:HB3	3:F:79:ALA:HB3	1.97	0.45
1:A:610:LEU:HD11	1:B:279:ARG:NH2	2.32	0.45
1:B:223:TRP:CH2	5:B:805:PLM:HG1	2.51	0.45
1:A:306:ASP:OD2	1:B:679:LEU:HG	2.17	0.45
1:A:556:ALA:O	1:A:560:THR:OG1	2.31	0.45
5:A:805:PLM:H21	5:A:809:PLM:H32	1.99	0.45
1:A:112:LEU:HG	5:A:812:PLM:H32	1.98	0.45
1:A:252:GLY:HA3	5:A:806:PLM:H41	1.98	0.45
1:B:640:LYS:HE3	1:B:640:LYS:HB3	1.80	0.45
1:A:106:TYR:CD1	1:A:109:LEU:HB2	2.50	0.44
1:A:244:GLY:HA2	1:A:248:PHE:HB2	2.00	0.44
1:A:646:TRP:CE2	5:A:806:PLM:H51	2.51	0.44
1:B:579:TYR:O	1:B:651:TYR:OH	2.23	0.44
1:B:588:GLY:O	1:B:614:ASN:ND2	2.41	0.44
2:C:28:SER:HB2	2:C:90:GLN:HE21	1.81	0.44
1:A:94:GLU:HB3	1:A:97:PRO:HD3	1.99	0.44
1:B:346:GLN:HA	1:B:349:LYS:HE2	1.99	0.44
3:D:60:TYR:HE2	3:D:66:GLY:H	1.66	0.44
5:B:805:PLM:C7	5:B:809:PLM:H52	2.48	0.44
1:B:196:ILE:HG21	1:B:206:LEU:HD22	2.00	0.44
1:B:212:MET:HB3	1:B:212:MET:HE2	1.78	0.44
1:A:250:SER:OG	5:A:805:PLM:O1	2.35	0.44
1:A:385:LYS:N	3:F:31:SER:OG	2.49	0.44
1:A:29:TPO:HA	1:A:30:PRO:HD3	1.83	0.43
1:B:81:LEU:HD21	1:B:127:THR:HA	1.98	0.43
1:B:324:ARG:NH2	3:D:54:TYR:O	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:107:THR:HG23	3:F:108:LEU:HD22	2.00	0.43
1:B:204:ASP:HB3	1:B:315:GLN:HE22	1.82	0.43
3:D:26:GLY:H	3:D:28:ASN:ND2	2.17	0.43
3:F:36:TRP:HB2	3:F:49:ALA:HB3	1.99	0.43
1:A:93:CYS:SG	1:A:94:GLU:N	2.92	0.43
1:A:268:PRO:HG2	1:B:608:TYR:CZ	2.53	0.43
1:A:348:ILE:HA	1:A:351:PHE:HD2	1.82	0.43
1:A:646:TRP:CD2	5:A:806:PLM:H51	2.53	0.43
1:B:565:LEU:O	1:B:569:LEU:N	2.48	0.43
1:A:256:TYR:HB2	5:A:806:PLM:H92	1.99	0.43
3:D:36:TRP:HB2	3:D:49:ALA:HB3	2.00	0.43
1:A:131:LEU:HD21	1:A:194:ILE:HD13	2.00	0.43
1:B:324:ARG:HB3	3:D:54:TYR:CE2	2.53	0.43
2:C:33:VAL:HA	2:C:89:GLN:O	2.18	0.43
1:A:183:PRO:HB2	1:A:184:PHE:H	1.65	0.43
1:A:232:TRP:CD1	5:A:809:PLM:HB2	2.54	0.43
5:A:805:PLM:H41	5:A:805:PLM:H72	1.68	0.43
3:F:35:HIS:ND1	3:F:50:SER:OG	2.33	0.43
1:A:212:MET:HB3	1:A:212:MET:HE2	1.81	0.42
1:B:384:ASN:HB3	1:B:387:GLU:HG2	2.01	0.42
1:B:586:VAL:HG11	5:B:807:PLM:H31	2.00	0.42
2:E:61:ARG:HD2	2:E:77:SER:HB3	2.01	0.42
2:E:32:ALA:HB1	2:E:90:GLN:HG3	2.01	0.42
2:C:50:SER:HA	3:D:107:THR:HG23	2.01	0.42
1:B:586:VAL:HG22	5:B:806:PLM:H42	2.02	0.42
5:A:805:PLM:H21	5:A:805:PLM:H52	1.55	0.42
1:A:196:ILE:HG21	1:A:206:LEU:HD22	2.02	0.42
5:A:806:PLM:HD2	5:A:811:PLM:CC	2.49	0.42
1:B:227:LEU:O	1:B:231:SER:OG	2.25	0.42
1:A:326:MET:HE3	1:A:326:MET:HB3	1.92	0.42
1:A:349:LYS:HG3	1:A:350:LEU:HG	2.00	0.42
1:A:561:LEU:HA	1:A:561:LEU:HD23	1.88	0.42
1:B:339:ASN:OD1	1:B:340:GLY:N	2.53	0.42
1:A:646:TRP:CE3	5:A:806:PLM:H72	2.55	0.41
1:B:234:ALA:HB1	1:B:248:PHE:CE2	2.55	0.41
3:F:52:SER:HB3	3:F:55:TYR:H	1.85	0.41
1:B:283:VAL:HA	1:B:286:VAL:HG22	2.02	0.41
3:F:26:GLY:H	3:F:28:ASN:ND2	2.17	0.41
3:F:60:TYR:HE2	3:F:66:GLY:H	1.68	0.41
1:B:72:LEU:HA	1:B:75:SER:HB2	2.01	0.41
1:B:324:ARG:HB3	3:D:54:TYR:HE2	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:804:PLM:HB1	5:B:804:PLM:HE1	1.81	0.41
1:A:133:VAL:O	1:A:137:PHE:HB2	2.21	0.41
5:A:807:PLM:H71	5:A:807:PLM:HA2	1.47	0.41
1:B:109:LEU:HD23	1:B:114:TYR:OH	2.21	0.41
1:B:106:TYR:CD1	1:B:109:LEU:HB2	2.56	0.41
1:A:208:LEU:O	1:A:212:MET:N	2.49	0.41
1:A:586:VAL:HG11	5:A:808:PLM:H31	2.01	0.41
5:A:806:PLM:C8	5:A:811:PLM:H72	2.51	0.41
1:B:133:VAL:O	1:B:137:PHE:HB2	2.21	0.41
1:B:578:ILE:HD12	5:B:806:PLM:HF1	2.03	0.41
3:F:73:ASP:N	3:F:78:THR:O	2.53	0.41
1:A:283:VAL:HA	1:A:286:VAL:HG22	2.03	0.41
1:B:276:LYS:HB2	1:B:276:LYS:HE3	1.85	0.41
1:B:659:THR:HA	1:B:662:LEU:HB2	2.03	0.41
2:E:31:SER:HB2	3:F:107:THR:HG21	2.02	0.41
2:E:33:VAL:HA	2:E:89:GLN:O	2.21	0.41
1:A:375:LEU:HD13	1:A:377:ASP:OD2	2.20	0.40
3:F:6:GLU:OE2	3:F:96:CYS:N	2.51	0.40
3:D:111:ILE:HD13	3:D:111:ILE:HG21	1.81	0.40
1:B:216:TYR:CZ	1:B:661:LEU:HB2	2.57	0.40
3:F:6:GLU:H	3:F:116:GLN:HE22	1.68	0.40
1:A:640:LYS:HB3	1:A:640:LYS:HE3	1.80	0.40
1:B:132:LEU:HA	1:B:132:LEU:HD23	1.82	0.40
1:B:321:GLN:O	1:B:325:ARG:HG2	2.22	0.40
2:E:33:VAL:HB	2:E:71:PHE:CE2	2.56	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	528/727 (73%)	472 (89%)	53 (10%)	3 (1%)	21 52

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	528/727 (73%)	473 (90%)	53 (10%)	2 (0%)	30	60
2	C	66/214 (31%)	53 (80%)	13 (20%)	0	100	100
2	E	66/214 (31%)	54 (82%)	12 (18%)	0	100	100
3	D	111/231 (48%)	94 (85%)	17 (15%)	0	100	100
3	F	111/231 (48%)	96 (86%)	15 (14%)	0	100	100
All	All	1410/2344 (60%)	1242 (88%)	163 (12%)	5 (0%)	31	60

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	92	TRP
1	A	613	PHE
1	B	92	TRP
1	B	30	PRO
1	A	665	ASN

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	448/648 (69%)	442 (99%)	6 (1%)	61	74
1	B	448/648 (69%)	444 (99%)	4 (1%)	70	78
2	C	62/189 (33%)	60 (97%)	2 (3%)	34	60
2	E	62/189 (33%)	60 (97%)	2 (3%)	34	60
3	D	89/195 (46%)	86 (97%)	3 (3%)	32	59
3	F	89/195 (46%)	88 (99%)	1 (1%)	65	76
All	All	1198/2064 (58%)	1180 (98%)	18 (2%)	59	72

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	189	TYR

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Mol	Chain	Res	Type
1	A	289	VAL
1	A	610	LEU
1	A	612	ASN
1	A	615	ASP
1	A	659	THR
1	B	189	TYR
1	B	289	VAL
1	B	610	LEU
1	B	659	THR
2	C	65[A]	SER
2	C	65[B]	SER
3	D	105	THR
3	D	107	THR
3	D	108	LEU
2	E	65[A]	SER
2	E	65[B]	SER
3	F	105	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	315	GLN
1	A	393	GLN
1	A	612	ASN
1	B	315	GLN
1	B	393	GLN
3	D	28	ASN
3	F	28	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

6 non-standard protein/DNA/RNA residues 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
1	SEP	A	22	1	8,9,10	1.61	1 (12%)	7,12,14	1.31	1 (14%)
1	TPO	B	26	1	8,10,11	1.64	1 (12%)	10,14,16	1.95	2 (20%)
1	SEP	B	22	1	8,9,10	1.62	1 (12%)	7,12,14	1.46	1 (14%)
1	TPO	A	26	1	8,10,11	1.11	0	10,14,16	2.11	2 (20%)
1	TPO	A	29	1	8,10,11	1.18	0	10,14,16	2.10	2 (20%)
1	TPO	B	29	1	8,10,11	1.08	0	10,14,16	2.19	2 (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
1	SEP	A	22	1	-	2/6/8/10	-
1	TPO	B	26	1	-	1/9/11/13	-
1	SEP	B	22	1	-	1/6/8/10	-
1	TPO	A	26	1	-	2/9/11/13	-
1	TPO	A	29	1	-	2/9/11/13	-
1	TPO	B	29	1	-	5/9/11/13	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	26	TPO	P-O1P	3.53	1.61	1.50
1	B	22	SEP	P-O1P	3.51	1.61	1.50
1	A	22	SEP	P-O1P	3.50	1.61	1.50

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	29	TPO	P-OG1-CB	-6.00	107.03	123.33
1	A	26	TPO	P-OG1-CB	-5.89	107.32	123.33
1	A	29	TPO	P-OG1-CB	-5.78	107.61	123.33
1	B	26	TPO	P-OG1-CB	-5.37	108.74	123.33
1	B	22	SEP	OG-CB-CA	3.33	111.39	108.14
1	A	22	SEP	OG-CB-CA	2.83	110.90	108.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	29	TPO	O-C-CA	-2.41	118.58	124.77
1	A	26	TPO	CG2-CB-CA	-2.24	108.90	113.26
1	A	29	TPO	O-C-CA	-2.01	119.61	124.77
1	B	26	TPO	O-C-CA	-2.01	119.61	124.77

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	22	SEP	CB-OG-P-O1P
1	A	26	TPO	O-C-CA-CB
1	B	29	TPO	N-CA-CB-CG2
1	B	29	TPO	N-CA-CB-OG1
1	B	29	TPO	C-CA-CB-CG2
1	B	29	TPO	O-C-CA-CB
1	A	29	TPO	CB-OG1-P-O1P
1	B	22	SEP	CB-OG-P-O1P
1	B	26	TPO	CB-OG1-P-O2P
1	A	29	TPO	N-CA-CB-CG2
1	B	29	TPO	CB-OG1-P-O1P
1	A	22	SEP	CB-OG-P-O2P
1	A	26	TPO	CB-OG1-P-O2P

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	29	TPO	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 21 ligands modelled in this entry, 7 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
5	PLM	B	807	-	17,17,17	0.53	0	17,17,17	0.87	0
5	PLM	B	809	-	17,17,17	0.58	0	17,17,17	0.74	1 (5%)
5	PLM	A	808	-	17,17,17	0.53	0	17,17,17	0.87	0
5	PLM	B	804	-	17,17,17	0.53	0	17,17,17	0.87	1 (5%)
5	PLM	B	805	-	17,17,17	0.59	0	17,17,17	0.74	0
5	PLM	A	805	-	17,17,17	0.53	0	17,17,17	0.80	0
5	PLM	A	807	-	17,17,17	0.53	0	17,17,17	0.81	0
5	PLM	A	812	-	17,17,17	0.62	0	17,17,17	1.05	2 (11%)
5	PLM	B	808	-	17,17,17	0.59	0	17,17,17	0.85	1 (5%)
5	PLM	A	811	-	17,17,17	0.59	0	17,17,17	0.77	0
5	PLM	A	806	-	17,17,17	0.60	0	17,17,17	0.91	0
5	PLM	A	809	-	17,17,17	0.58	0	17,17,17	0.77	0
5	PLM	A	810	-	17,17,17	0.61	0	17,17,17	0.87	1 (5%)
5	PLM	B	806	-	17,17,17	0.54	0	17,17,17	0.81	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
5	PLM	B	807	-	-	10/15/15/15	-
5	PLM	B	809	-	-	8/15/15/15	-
5	PLM	A	808	-	-	8/15/15/15	-
5	PLM	B	804	-	-	7/15/15/15	-
5	PLM	B	805	-	-	12/15/15/15	-
5	PLM	A	805	-	-	5/15/15/15	-
5	PLM	A	807	-	-	9/15/15/15	-
5	PLM	A	812	-	-	5/15/15/15	-
5	PLM	B	808	-	-	12/15/15/15	-
5	PLM	A	811	-	-	6/15/15/15	-
5	PLM	A	806	-	-	13/15/15/15	-
5	PLM	A	809	-	-	13/15/15/15	-
5	PLM	A	810	-	-	3/15/15/15	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PLM	B	806	-	-	9/15/15/15	-

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	812	PLM	O1-C1-O2	-2.90	115.86	123.33
5	A	812	PLM	O1-C1-C2	2.43	121.68	114.00
5	B	808	PLM	C3-C2-C1	-2.20	108.77	114.51
5	A	810	PLM	O1-C1-C2	2.15	120.80	114.00
5	B	804	PLM	O1-C1-C2	2.08	120.56	114.00
5	B	809	PLM	O1-C1-C2	2.06	120.50	114.00

There are no chirality outliers.

All (120) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	805	PLM	C2-C3-C4-C5
5	B	807	PLM	C7-C8-C9-CA
5	A	808	PLM	C7-C8-C9-CA
5	B	804	PLM	C5-C6-C7-C8
5	B	804	PLM	C7-C8-C9-CA
5	A	806	PLM	CB-CC-CD-CE
5	B	804	PLM	CB-CC-CD-CE
5	A	805	PLM	CB-CC-CD-CE
5	A	808	PLM	C5-C6-C7-C8
5	A	807	PLM	C7-C8-C9-CA
5	B	807	PLM	C5-C6-C7-C8
5	B	806	PLM	C7-C8-C9-CA
5	B	807	PLM	C1-C2-C3-C4
5	A	805	PLM	C4-C5-C6-C7
5	A	809	PLM	C5-C6-C7-C8
5	A	810	PLM	C8-C9-CA-CB
5	A	812	PLM	C8-C9-CA-CB
5	A	812	PLM	CA-CB-CC-CD
5	B	808	PLM	C4-C5-C6-C7
5	A	810	PLM	CA-CB-CC-CD
5	B	809	PLM	C6-C7-C8-C9
5	B	809	PLM	CB-CC-CD-CE
5	A	808	PLM	CA-CB-CC-CD
5	B	807	PLM	CA-CB-CC-CD

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Mol	Chain	Res	Type	Atoms
5	B	809	PLM	CC-CD-CE-CF
5	A	806	PLM	CA-CB-CC-CD
5	B	808	PLM	C7-C8-C9-CA
5	A	811	PLM	C6-C7-C8-C9
5	A	808	PLM	C1-C2-C3-C4
5	B	809	PLM	C9-CA-CB-CC
5	A	811	PLM	CB-CC-CD-CE
5	A	809	PLM	CB-CC-CD-CE
5	A	811	PLM	C2-C3-C4-C5
5	A	806	PLM	C3-C4-C5-C6
5	B	805	PLM	C6-C7-C8-C9
5	A	811	PLM	CC-CD-CE-CF
5	B	805	PLM	C2-C3-C4-C5
5	A	806	PLM	C2-C3-C4-C5
5	A	807	PLM	C5-C6-C7-C8
5	A	807	PLM	C6-C7-C8-C9
5	A	809	PLM	C9-CA-CB-CC
5	B	806	PLM	C5-C6-C7-C8
5	B	806	PLM	C6-C7-C8-C9
5	A	807	PLM	CD-CE-CF-CG
5	B	806	PLM	CD-CE-CF-CG
5	B	805	PLM	CC-CD-CE-CF
5	B	807	PLM	CC-CD-CE-CF
5	B	804	PLM	C3-C4-C5-C6
5	A	808	PLM	CC-CD-CE-CF
5	B	809	PLM	C3-C4-C5-C6
5	B	805	PLM	C4-C5-C6-C7
5	B	805	PLM	C7-C8-C9-CA
5	A	805	PLM	C3-C4-C5-C6
5	B	807	PLM	C8-C9-CA-CB
5	A	811	PLM	C8-C9-CA-CB
5	A	808	PLM	C8-C9-CA-CB
5	B	809	PLM	C2-C3-C4-C5
5	A	807	PLM	CC-CD-CE-CF
5	A	809	PLM	CC-CD-CE-CF
5	B	806	PLM	CC-CD-CE-CF
5	A	807	PLM	CB-CC-CD-CE
5	B	808	PLM	CC-CD-CE-CF
5	B	806	PLM	CB-CC-CD-CE
5	B	804	PLM	C4-C5-C6-C7
5	B	807	PLM	CB-CC-CD-CE
5	A	811	PLM	C7-C8-C9-CA

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Mol	Chain	Res	Type	Atoms
5	A	808	PLM	CB-CC-CD-CE
5	A	807	PLM	C2-C3-C4-C5
5	B	806	PLM	C2-C3-C4-C5
5	B	808	PLM	CD-CE-CF-CG
5	A	809	PLM	CD-CE-CF-CG
5	B	806	PLM	C3-C4-C5-C6
5	A	810	PLM	C3-C4-C5-C6
5	A	806	PLM	C9-CA-CB-CC
5	A	806	PLM	CC-CD-CE-CF
5	A	807	PLM	C3-C4-C5-C6
5	B	805	PLM	C3-C4-C5-C6
5	A	809	PLM	C3-C4-C5-C6
5	A	809	PLM	C7-C8-C9-CA
5	A	812	PLM	C2-C3-C4-C5
5	B	809	PLM	C5-C6-C7-C8
5	A	807	PLM	C9-CA-CB-CC
5	A	809	PLM	C6-C7-C8-C9
5	B	806	PLM	C9-CA-CB-CC
5	A	809	PLM	CA-CB-CC-CD
5	A	806	PLM	C8-C9-CA-CB
5	A	806	PLM	C6-C7-C8-C9
5	A	806	PLM	CD-CE-CF-CG
5	B	808	PLM	C6-C7-C8-C9
5	B	808	PLM	CB-CC-CD-CE
5	B	808	PLM	C1-C2-C3-C4
5	A	805	PLM	C6-C7-C8-C9
5	B	808	PLM	CA-CB-CC-CD
5	B	805	PLM	C5-C6-C7-C8
5	A	809	PLM	C8-C9-CA-CB
5	A	808	PLM	C2-C3-C4-C5
5	A	806	PLM	O2-C1-C2-C3
5	B	805	PLM	O2-C1-C2-C3
5	B	805	PLM	CD-CE-CF-CG
5	A	806	PLM	C5-C6-C7-C8
5	A	806	PLM	O1-C1-C2-C3
5	A	812	PLM	O2-C1-C2-C3
5	B	808	PLM	C2-C3-C4-C5
5	A	812	PLM	O1-C1-C2-C3
5	A	806	PLM	C4-C5-C6-C7
5	B	805	PLM	O1-C1-C2-C3
5	A	809	PLM	O1-C1-C2-C3
5	B	808	PLM	O2-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
5	B	807	PLM	C2-C3-C4-C5
5	B	808	PLM	C9-CA-CB-CC
5	A	809	PLM	O2-C1-C2-C3
5	B	805	PLM	CA-CB-CC-CD
5	B	804	PLM	O2-C1-C2-C3
5	A	809	PLM	C1-C2-C3-C4
5	B	807	PLM	C3-C4-C5-C6
5	B	804	PLM	O1-C1-C2-C3
5	B	808	PLM	O1-C1-C2-C3
5	B	809	PLM	C8-C9-CA-CB
5	B	805	PLM	C1-C2-C3-C4
5	B	807	PLM	O1-C1-C2-C3

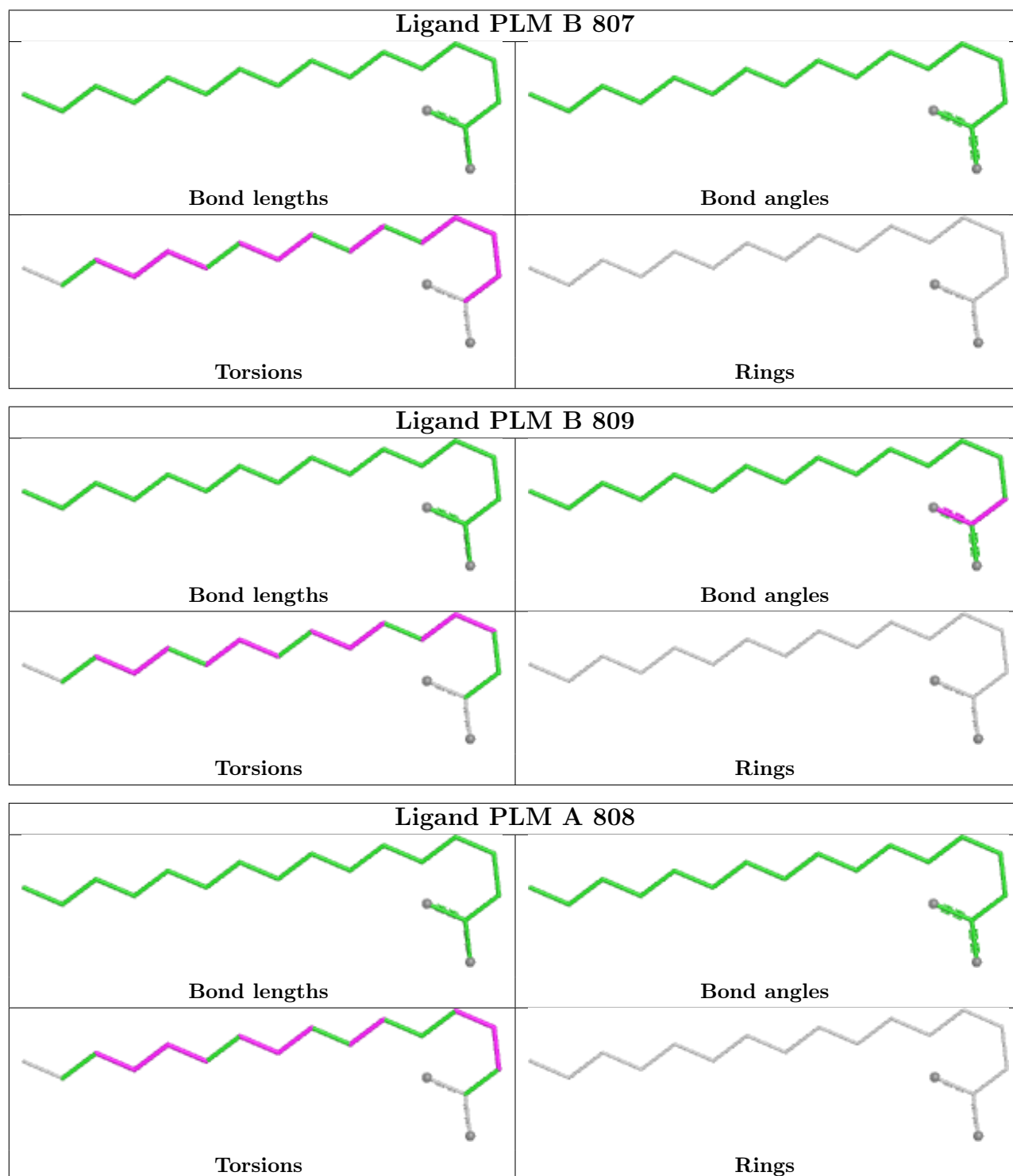
There are no ring outliers.

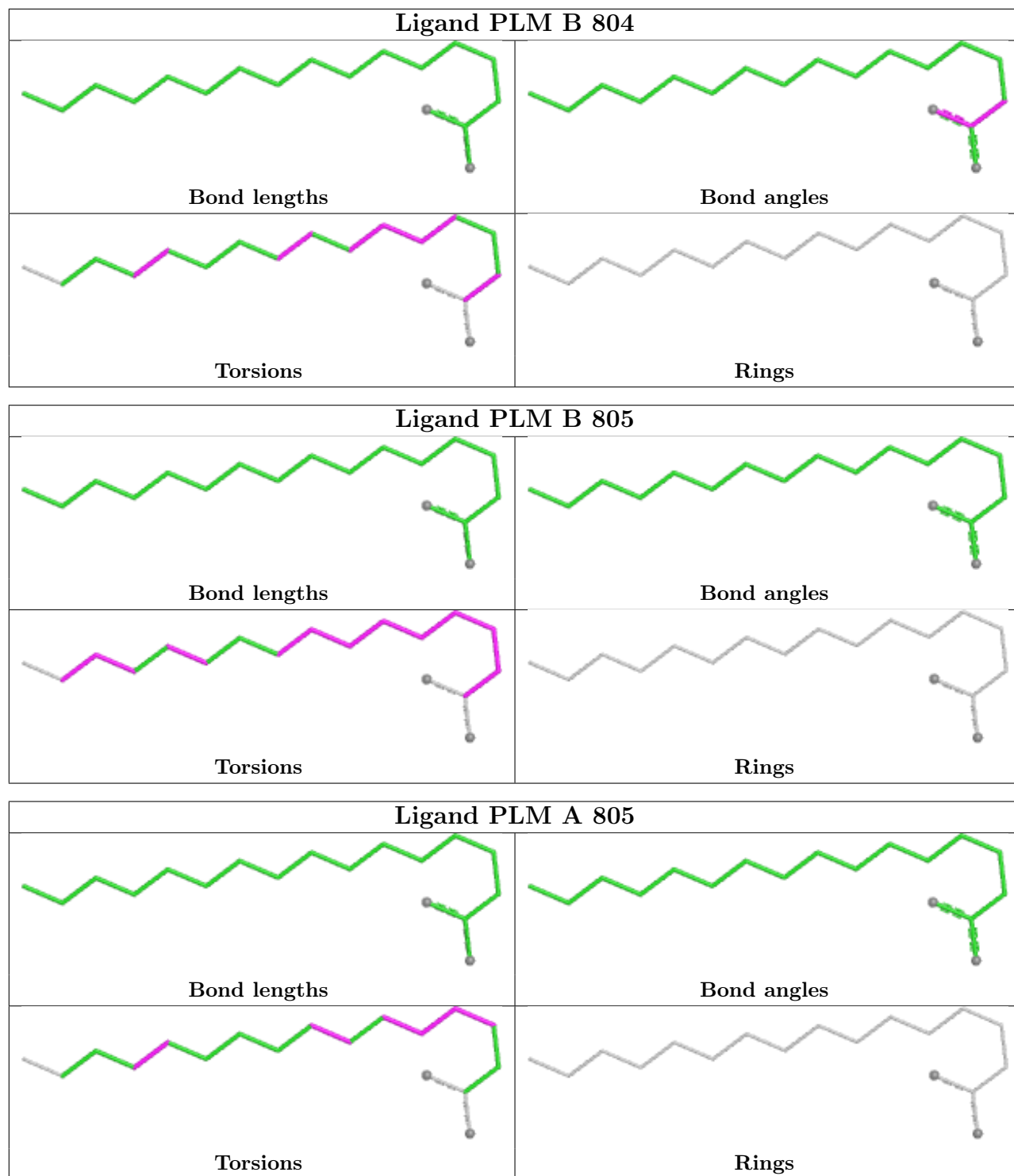
14 monomers are involved in 54 short contacts:

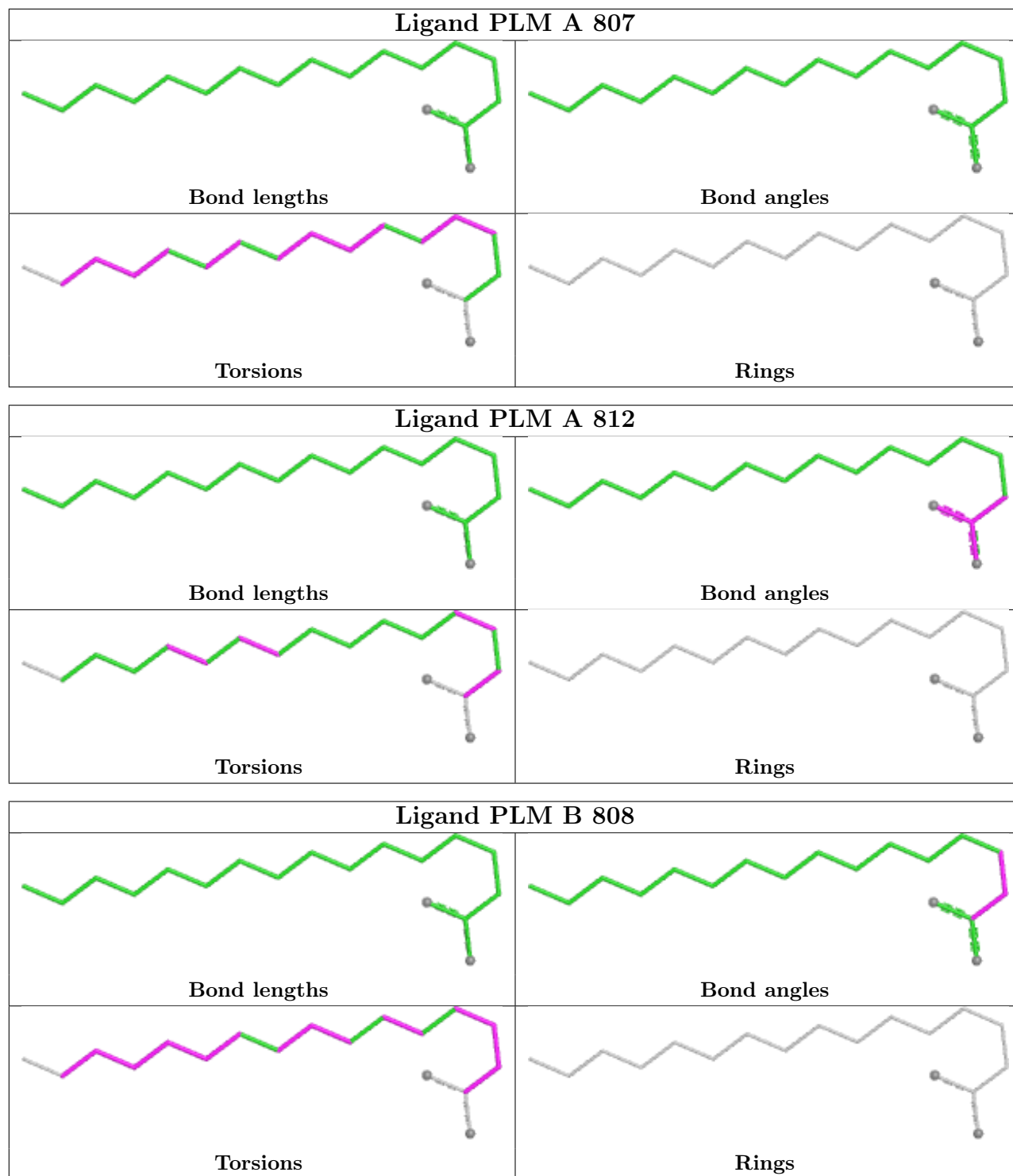
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	807	PLM	4	0
5	B	809	PLM	3	0
5	A	808	PLM	4	0
5	B	804	PLM	2	0
5	B	805	PLM	4	0
5	A	805	PLM	7	0
5	A	807	PLM	5	0
5	A	812	PLM	2	0
5	B	808	PLM	2	0
5	A	811	PLM	6	0
5	A	806	PLM	15	0
5	A	809	PLM	4	0
5	A	810	PLM	1	0
5	B	806	PLM	5	0

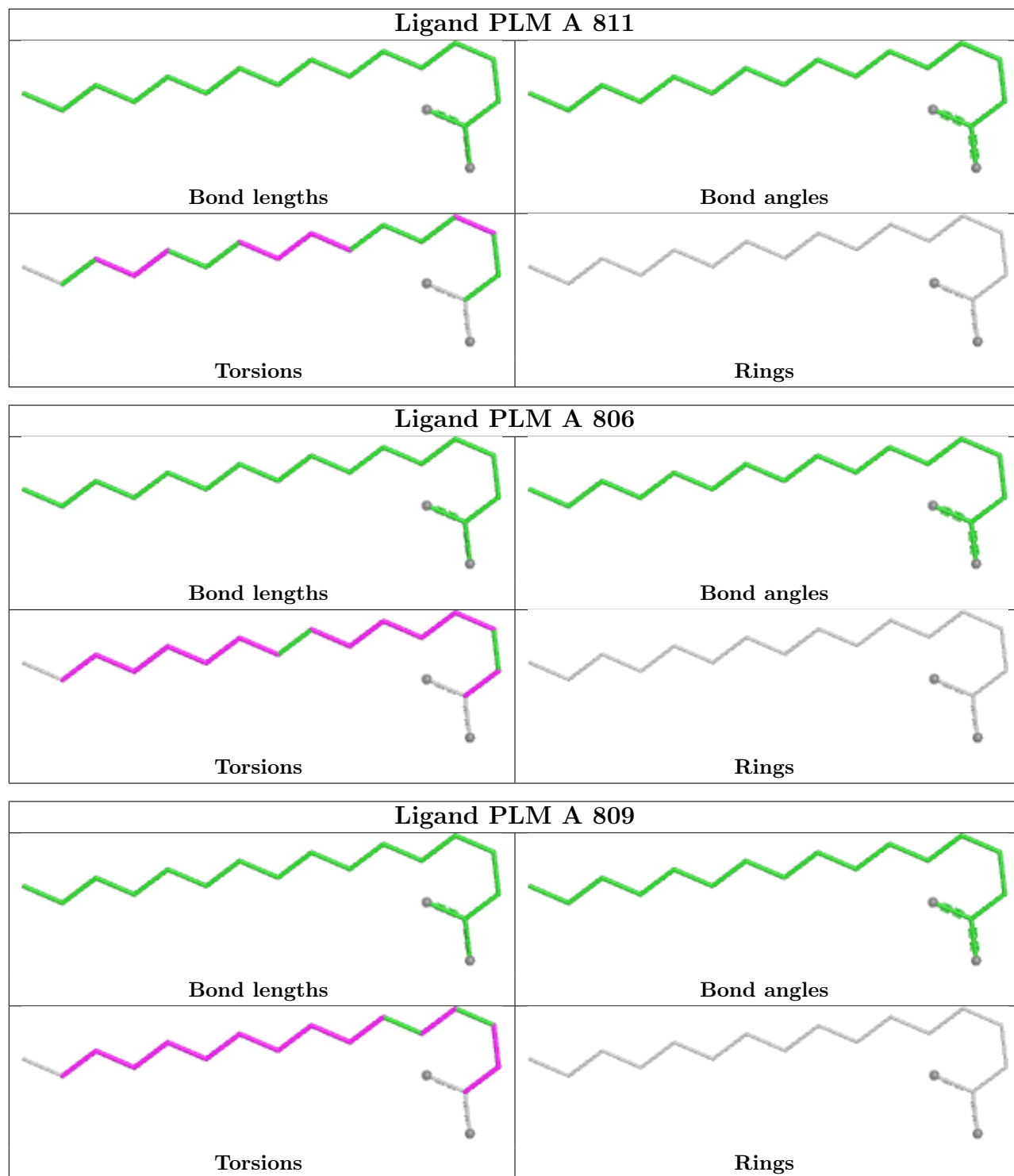
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

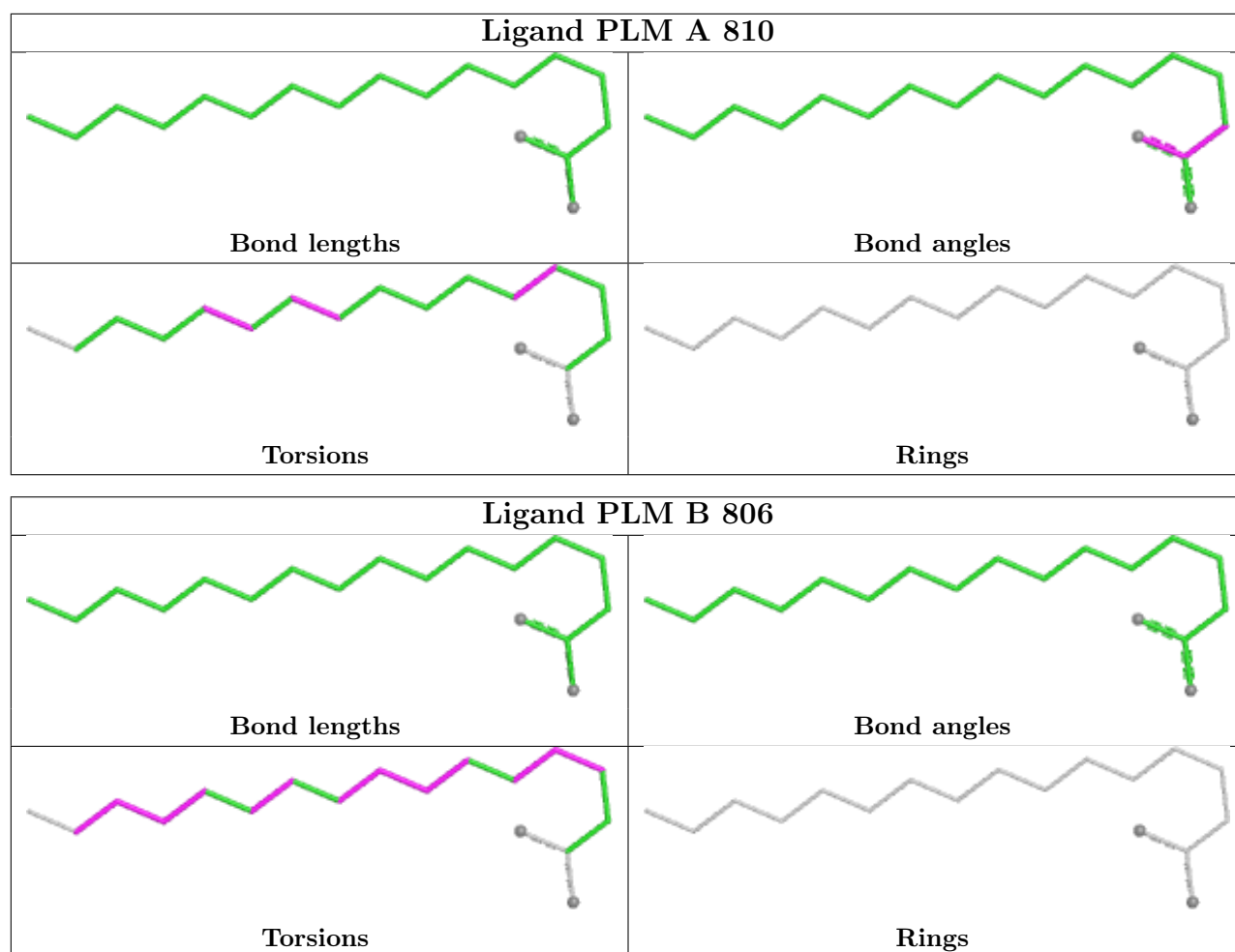
The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











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.

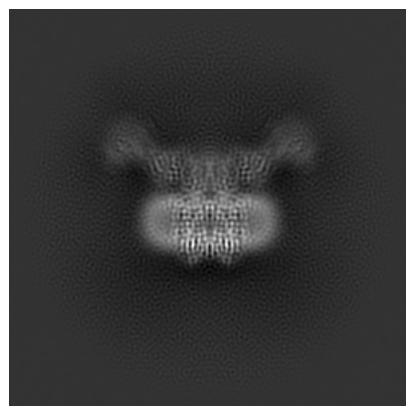
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8956. These allow visual inspection of the internal detail of the map and identification of artifacts.

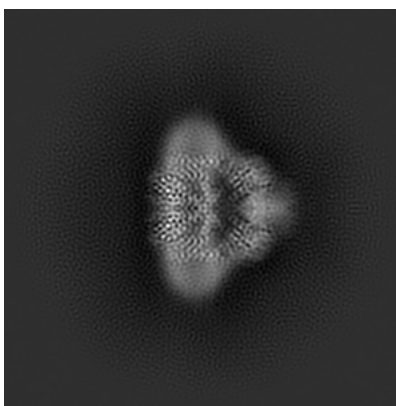
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

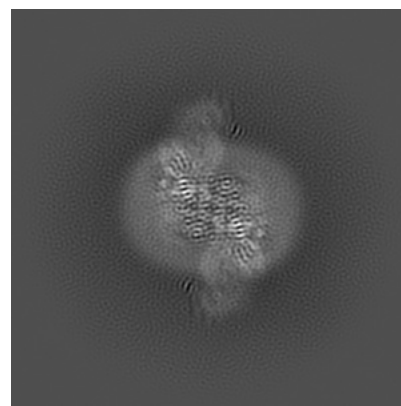
6.1.1 Primary map



X

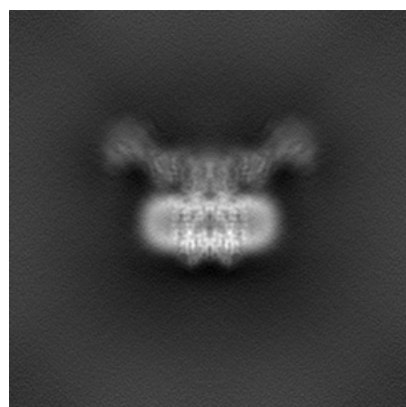


Y

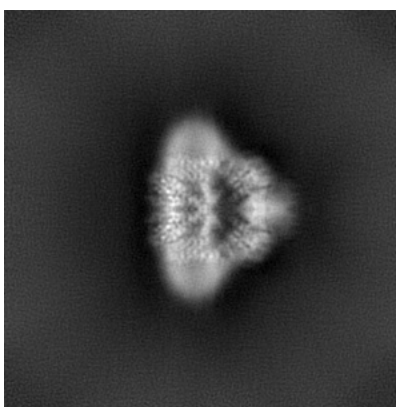


Z

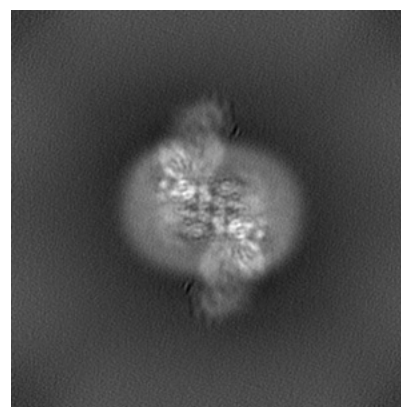
6.1.2 Raw map



X



Y

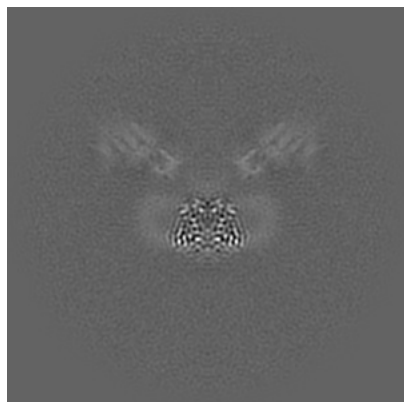


Z

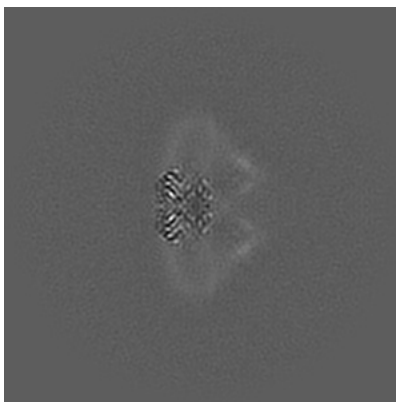
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

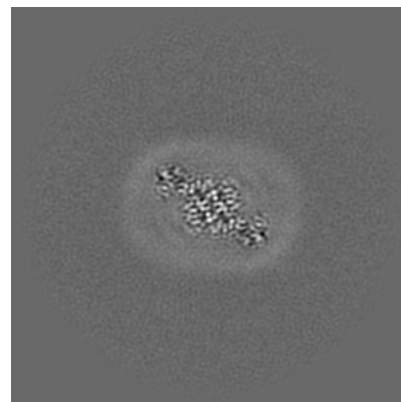
6.2.1 Primary map



X Index: 128

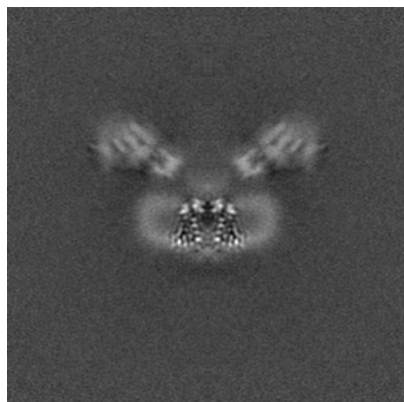


Y Index: 128

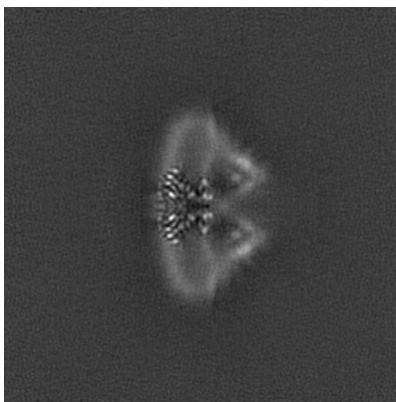


Z Index: 128

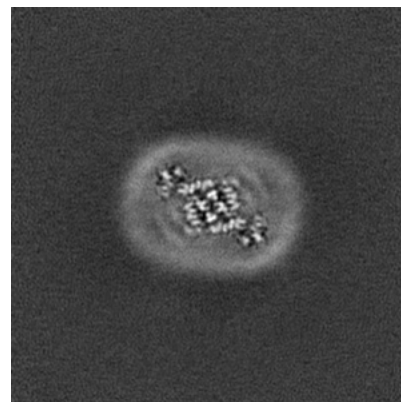
6.2.2 Raw map



X Index: 128



Y Index: 128

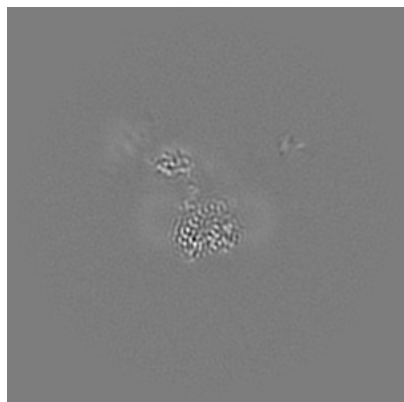


Z Index: 128

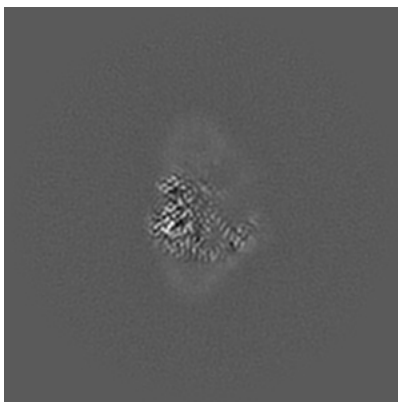
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

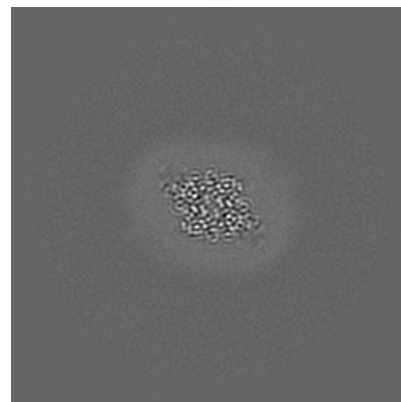
6.3.1 Primary map



X Index: 140

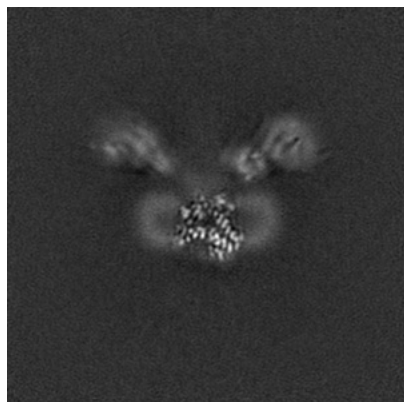


Y Index: 139

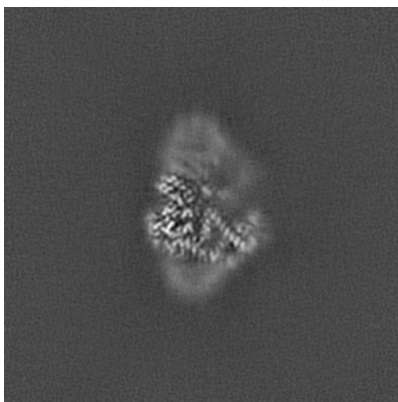


Z Index: 108

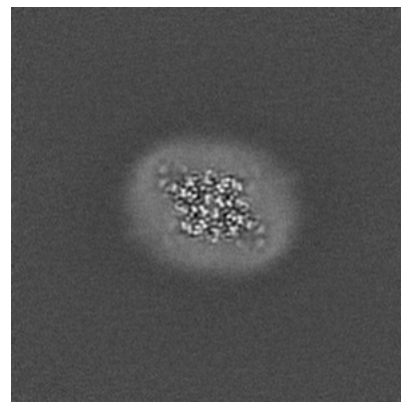
6.3.2 Raw map



X Index: 125



Y Index: 139

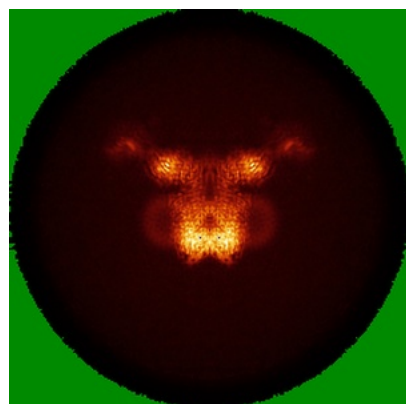


Z Index: 108

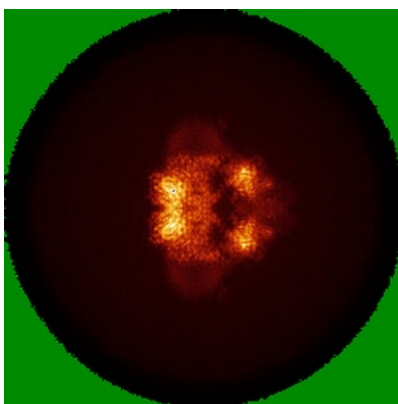
The images above show the largest variance slices of the map in three orthogonal directions.

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

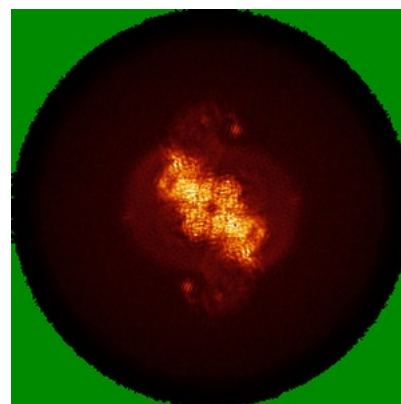
6.4.1 Primary map



X

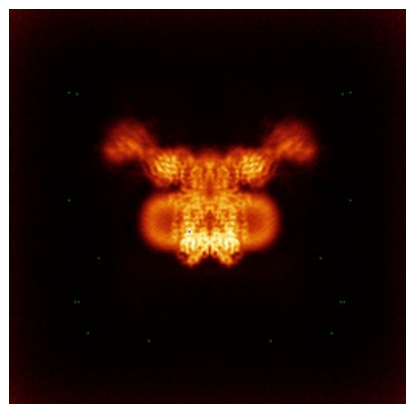


Y

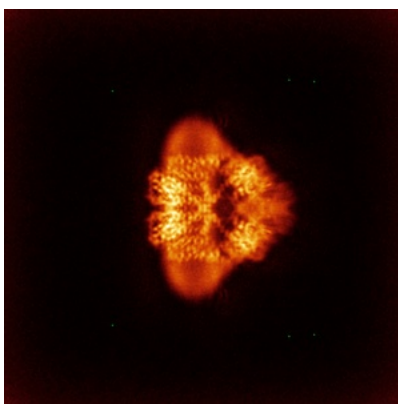


Z

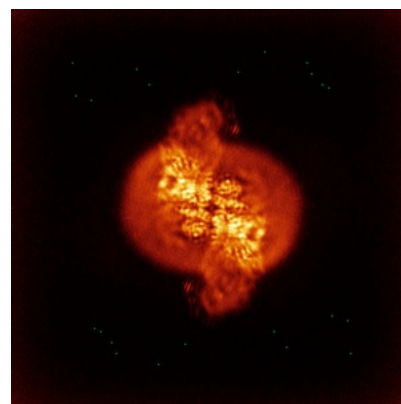
6.4.2 Raw map



X



Y

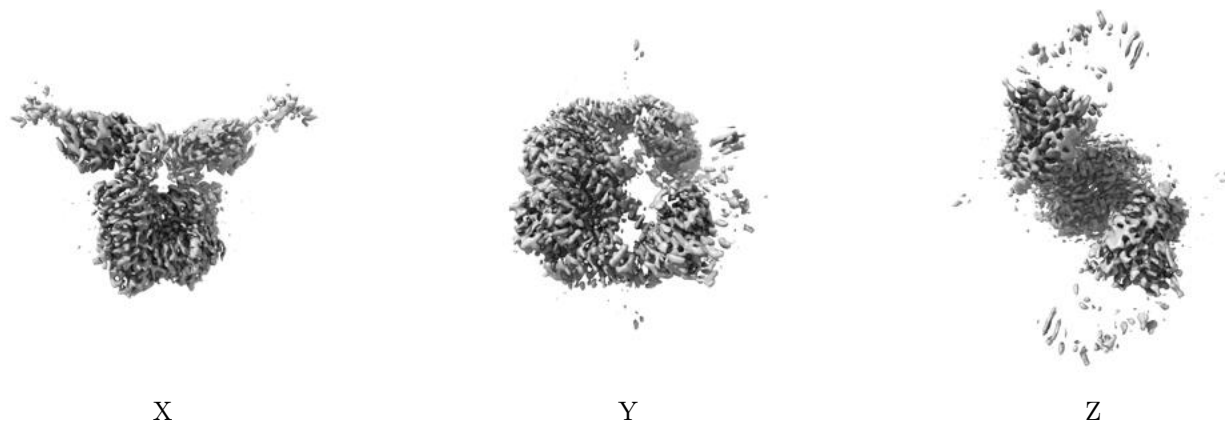


Z

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.

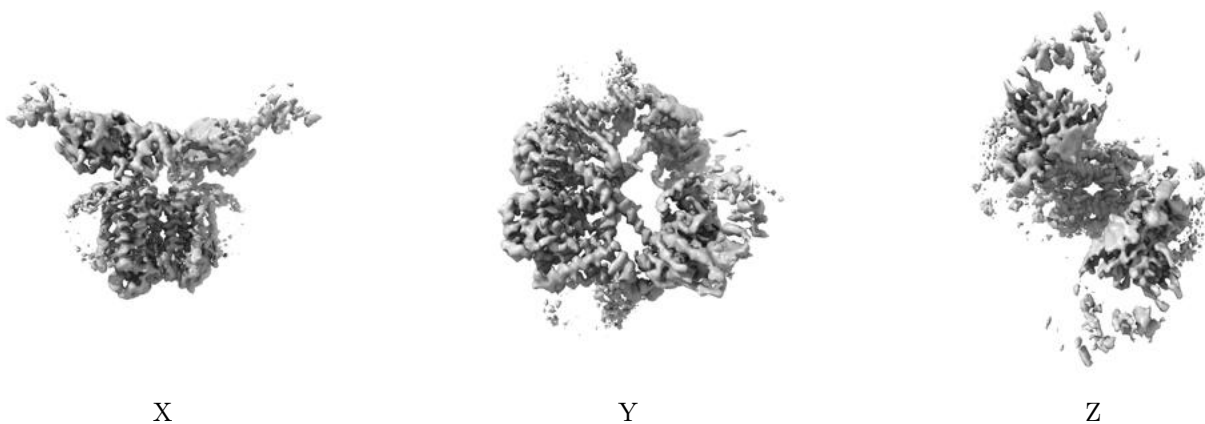
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 6.0. 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.

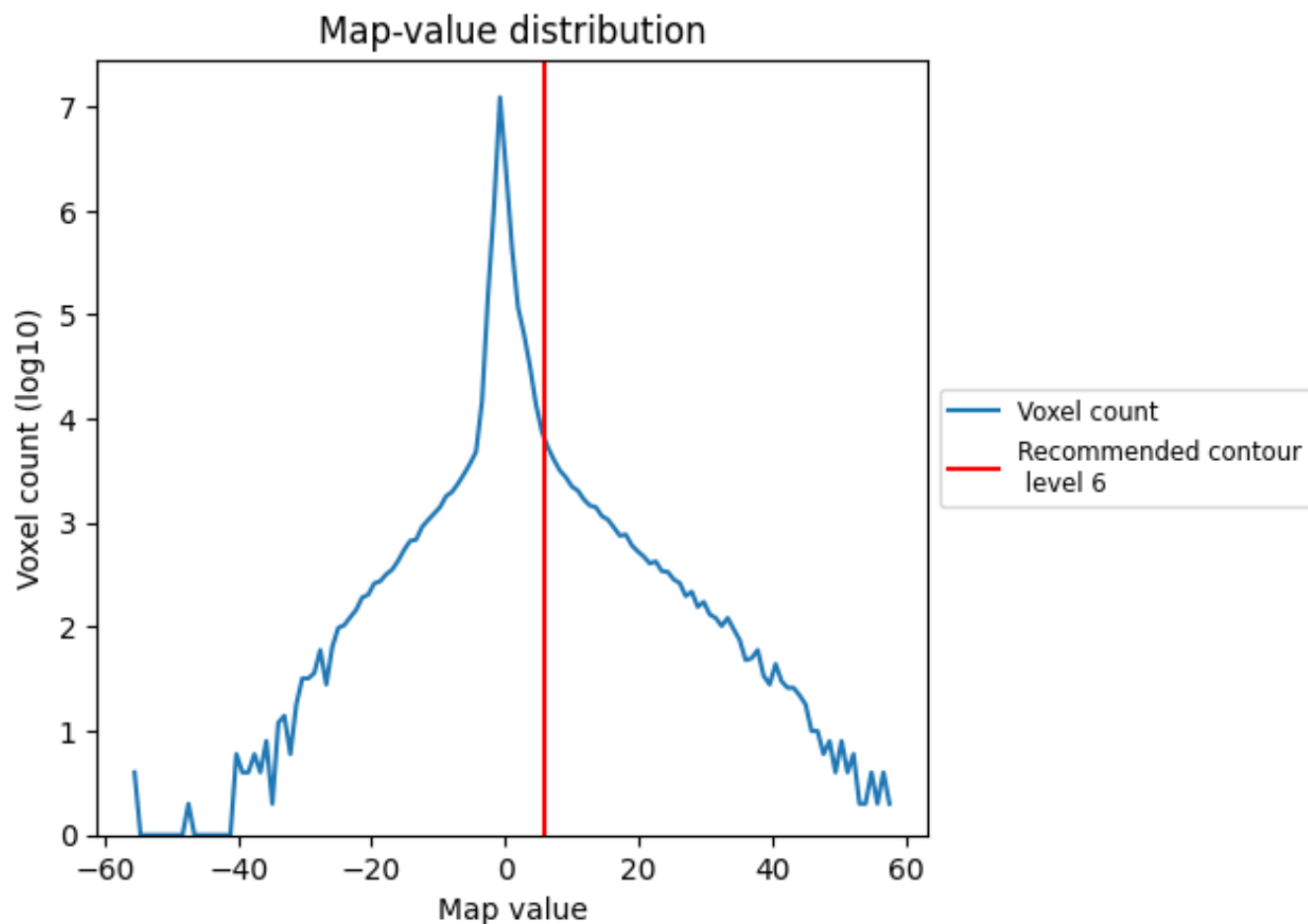
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

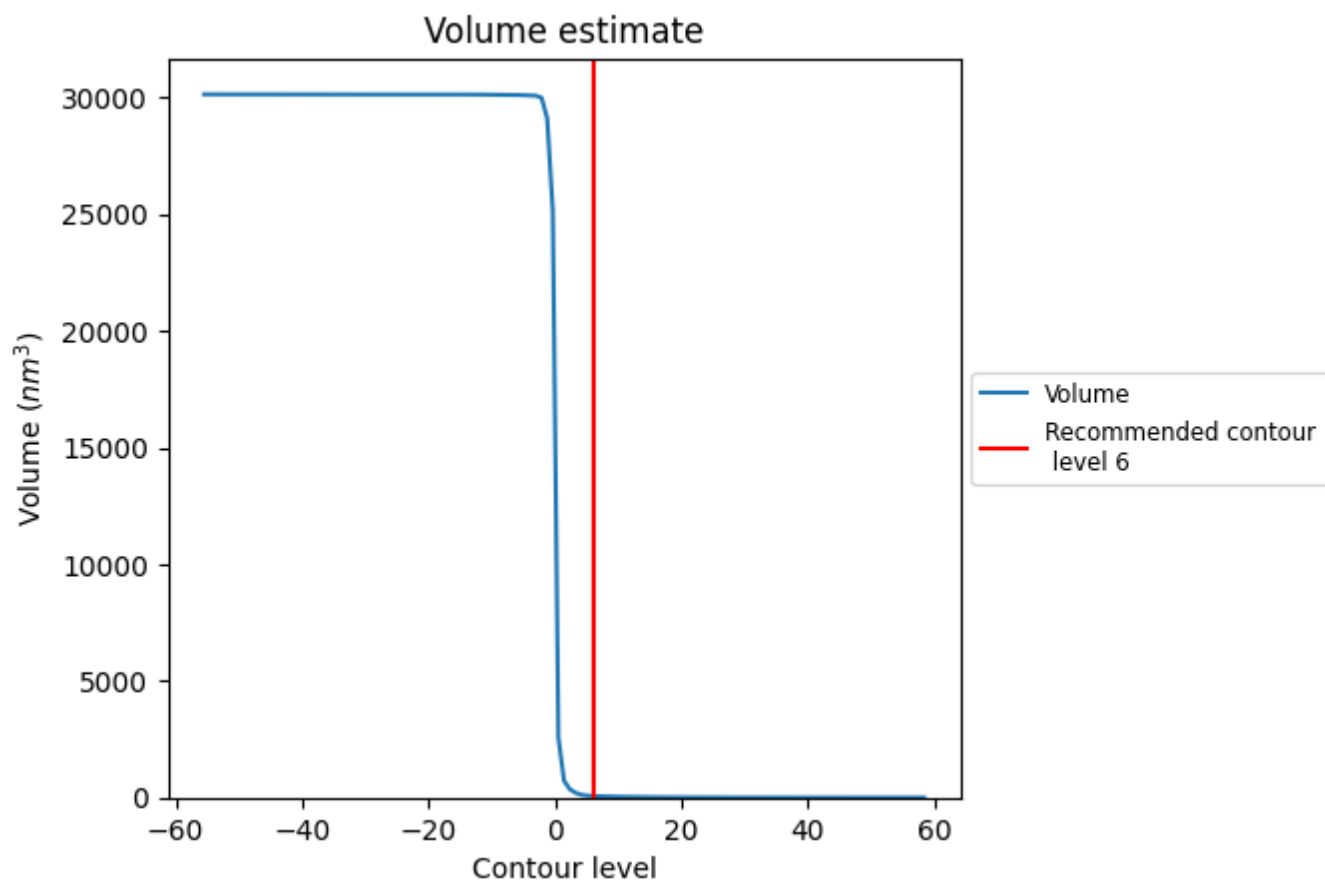
This section contains the results of statistical analysis of the map.

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.

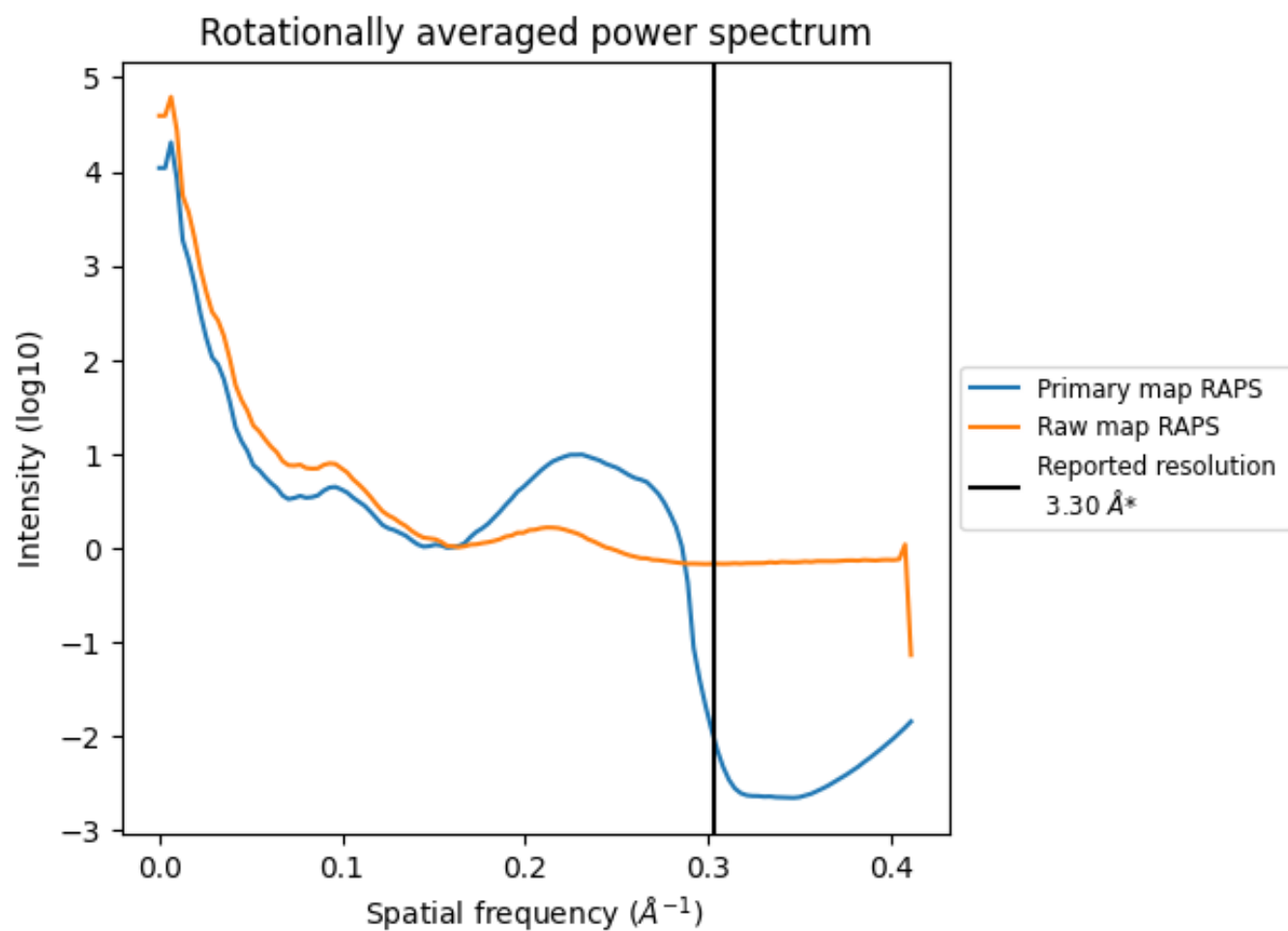
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 67 nm³; this corresponds to an approximate mass of 61 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 ⓘ

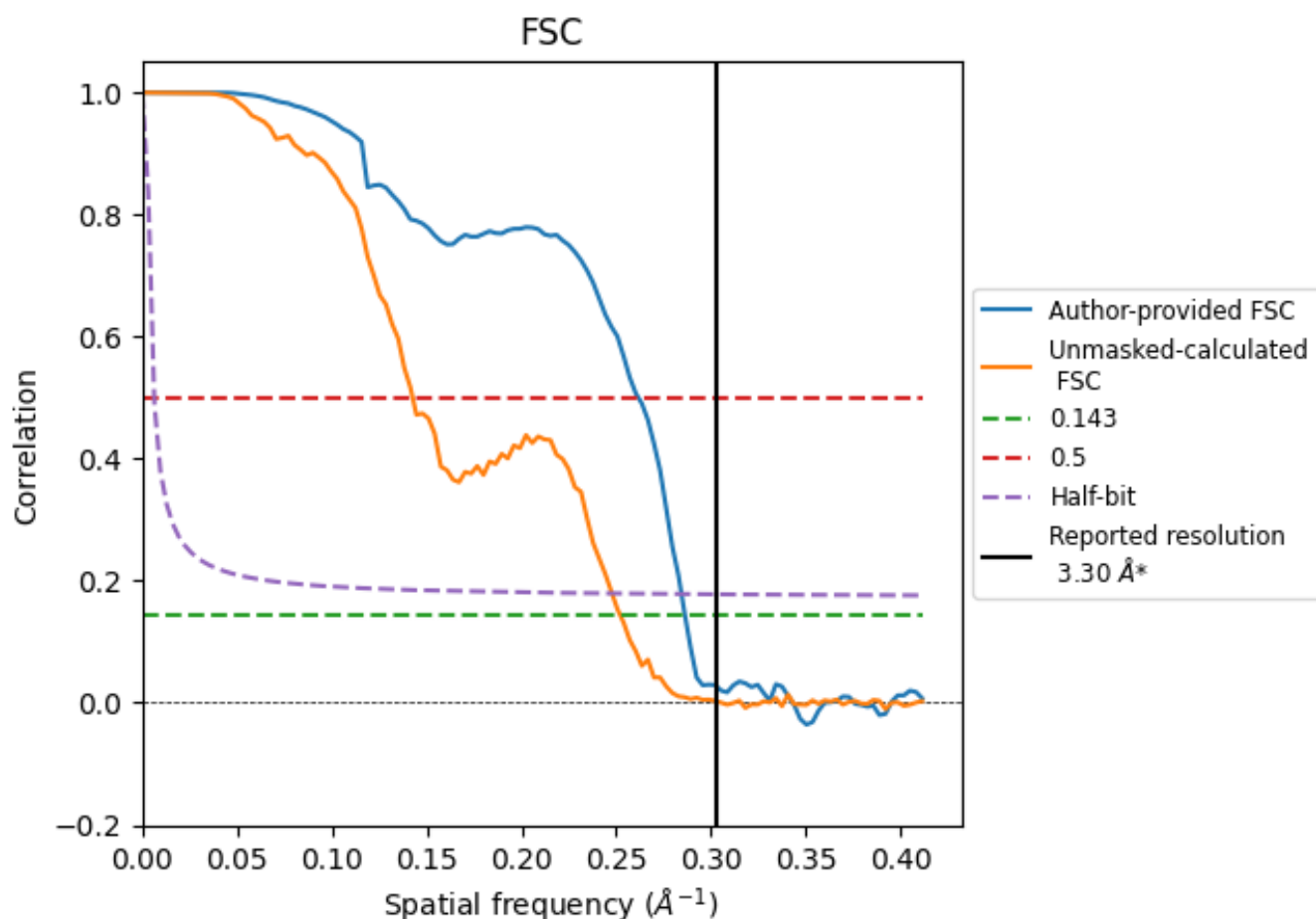


*Reported resolution corresponds to spatial frequency of 0.303 Å⁻¹

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 0.303 Å⁻¹

8.2 Resolution estimates [i](#)

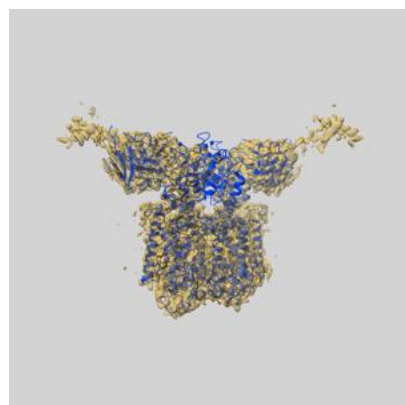
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.49	3.82	3.52
Unmasked-calculated*	3.97	7.01	4.04

*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 3.97 differs from the reported value 3.3 by more than 10 %

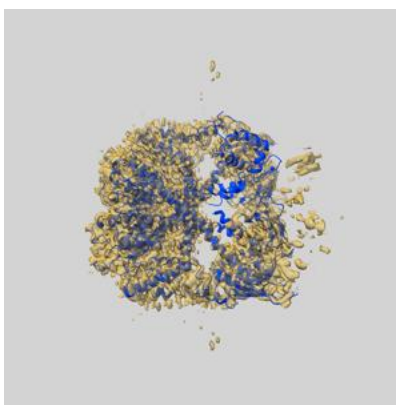
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-8956 and PDB model 6E1K. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

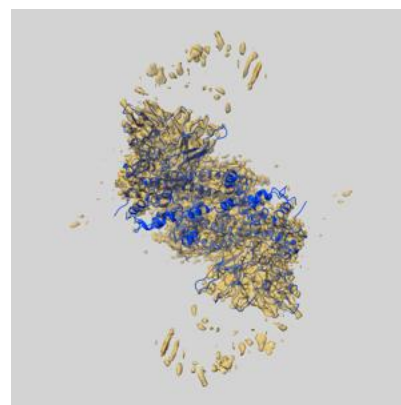
9.1 Map-model overlay [i](#)



X



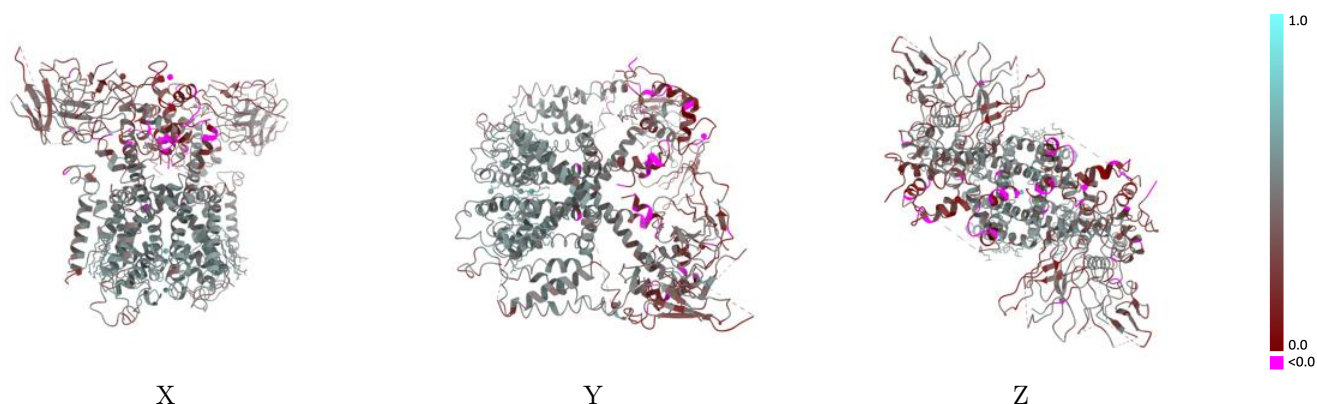
Y



Z

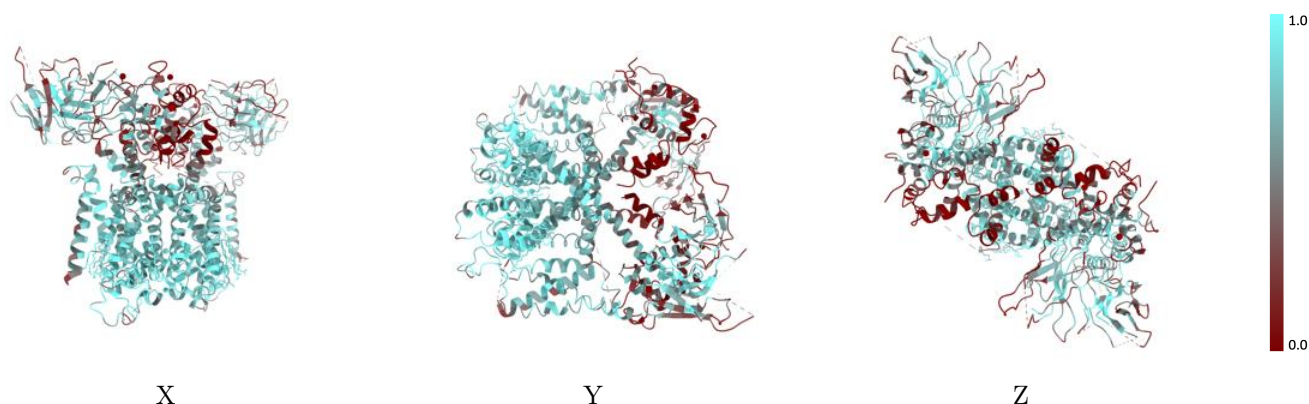
The images above show the 3D surface view of the map at the recommended contour level 6.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



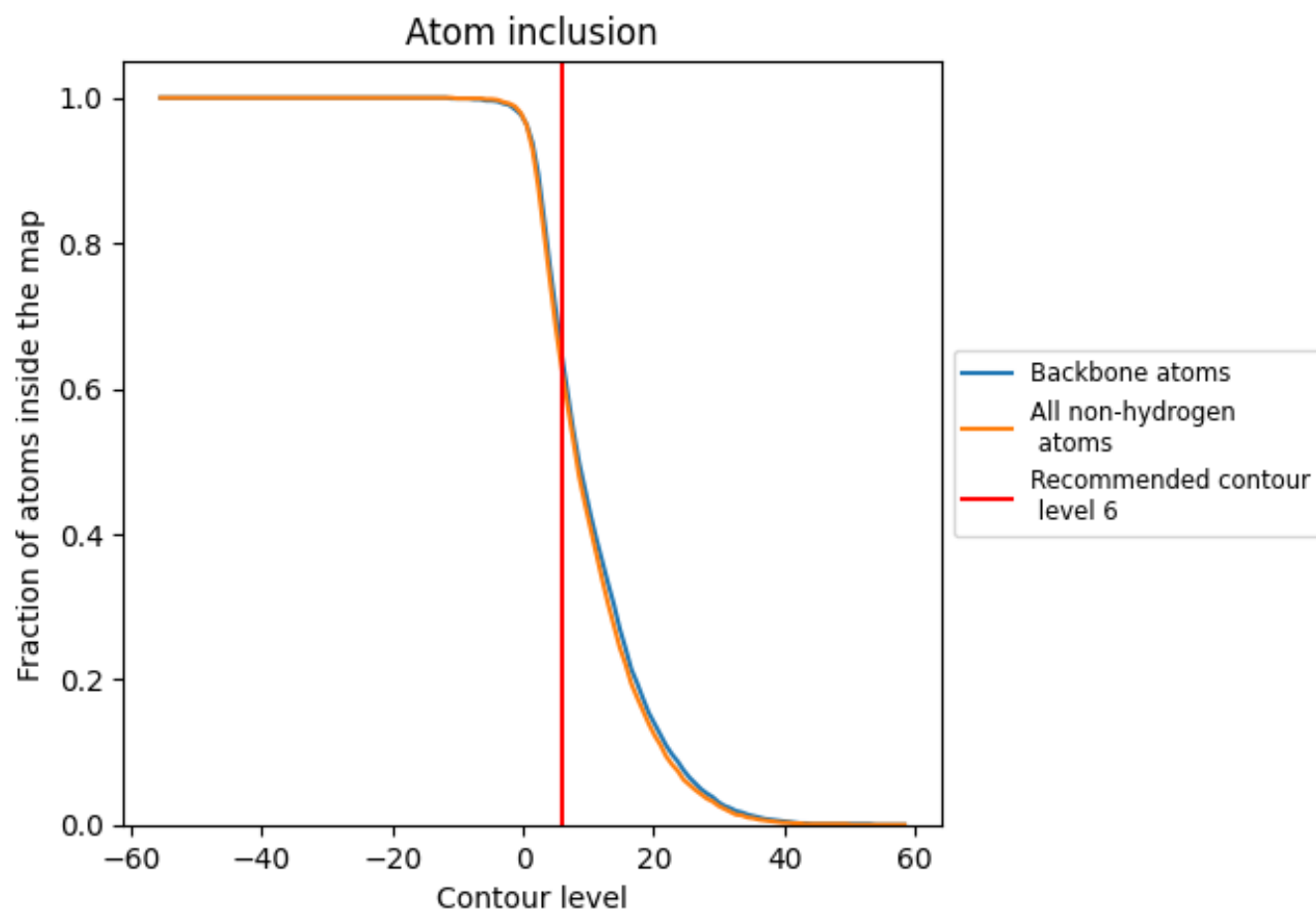
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (6).

9.4 Atom inclusion [i](#)



At the recommended contour level, 64% of all backbone atoms, 62% 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 (6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6230	0.4080
A	0.6460	0.4230
B	0.6420	0.4200
C	0.6050	0.3720
D	0.5670	0.3580
E	0.6000	0.3700
F	0.5720	0.3640

1.0

0.0

<0.0