



## Full wwPDB EM Validation Report ⓘ

Mar 26, 2025 – 02:22 PM JST

PDB ID : 9ITG  
EMDB ID : EMD-60861  
Title : Cryo-EM structure of human XPR1-E622A/F623A mutant in complex with InsP6 in inward-facing state in the presence of 10 mM KH<sub>2</sub>PO<sub>4</sub>  
Authors : Zuo, P.; Liang, L.; Yin, Y.  
Deposited on : 2024-07-20  
Resolution : 3.03 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](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev117  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.41.2

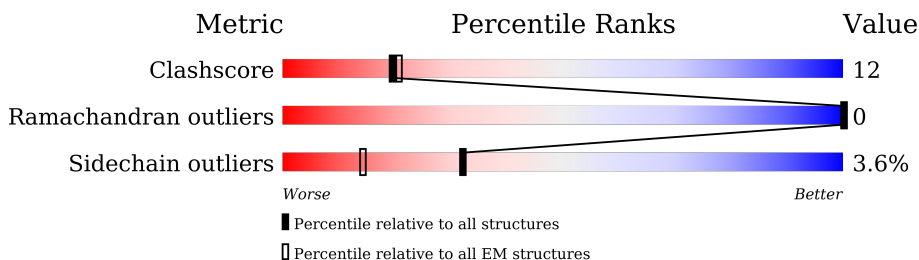
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.03 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	704	 5% 62% 22% • 14%
1	B	704	 5% 61% 24% • 14%

## 2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 10451 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 Solute carrier family 53 member 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	604	Total	C	N	O	S	0	0
			4960	3276	823	840	21		
1	B	605	Total	C	N	O	S	0	0
			4967	3280	824	842	21		

There are 20 discrepancies between the modelled and reference sequences:

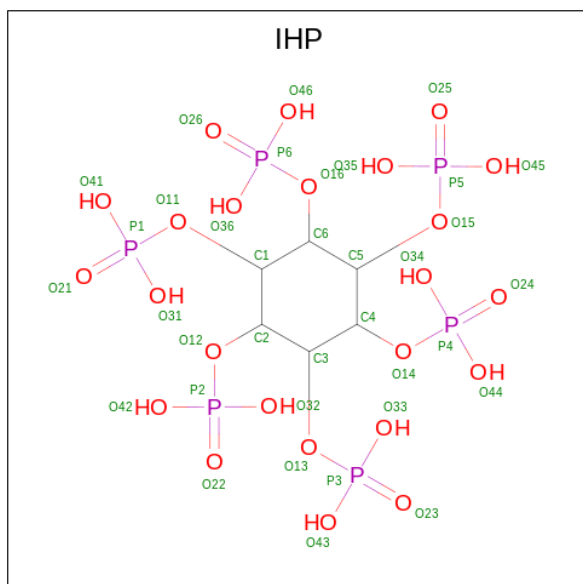
Chain	Residue	Modelled	Actual	Comment	Reference
A	622	ALA	GLU	engineered mutation	UNP Q9UBH6
A	623	ALA	PHE	engineered mutation	UNP Q9UBH6
A	697	SER	-	expression tag	UNP Q9UBH6
A	698	ARG	-	expression tag	UNP Q9UBH6
A	699	GLU	-	expression tag	UNP Q9UBH6
A	700	ASN	-	expression tag	UNP Q9UBH6
A	701	LEU	-	expression tag	UNP Q9UBH6
A	702	TYR	-	expression tag	UNP Q9UBH6
A	703	PHE	-	expression tag	UNP Q9UBH6
A	704	GLN	-	expression tag	UNP Q9UBH6
B	622	ALA	GLU	engineered mutation	UNP Q9UBH6
B	623	ALA	PHE	engineered mutation	UNP Q9UBH6
B	697	SER	-	expression tag	UNP Q9UBH6
B	698	ARG	-	expression tag	UNP Q9UBH6
B	699	GLU	-	expression tag	UNP Q9UBH6
B	700	ASN	-	expression tag	UNP Q9UBH6
B	701	LEU	-	expression tag	UNP Q9UBH6
B	702	TYR	-	expression tag	UNP Q9UBH6
B	703	PHE	-	expression tag	UNP Q9UBH6
B	704	GLN	-	expression tag	UNP Q9UBH6

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
2	A	1	Total	O	P	0
			5	4	1	
2	B	1	Total	O	P	0
			5	4	1	

- Molecule 3 is INOSITOL HEXAKISPHOSPHATE (three-letter code: IHP) (formula:  $C_6H_{18}O_{24}P_6$ ) (labeled as "Ligand of Interest" by depositor).



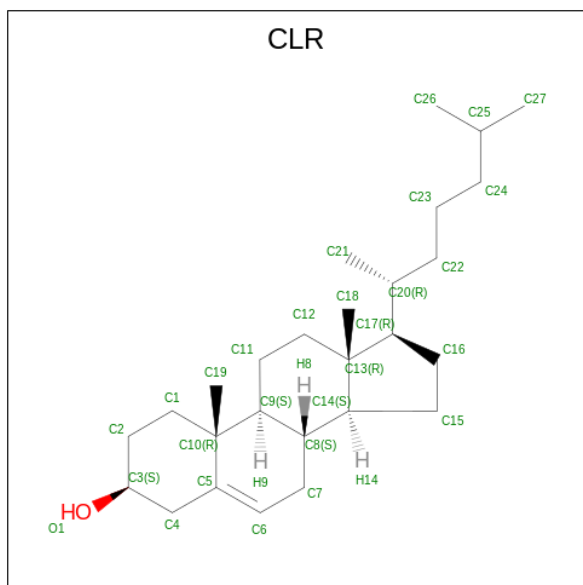
Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	O	P	0
			36	6	24	6	

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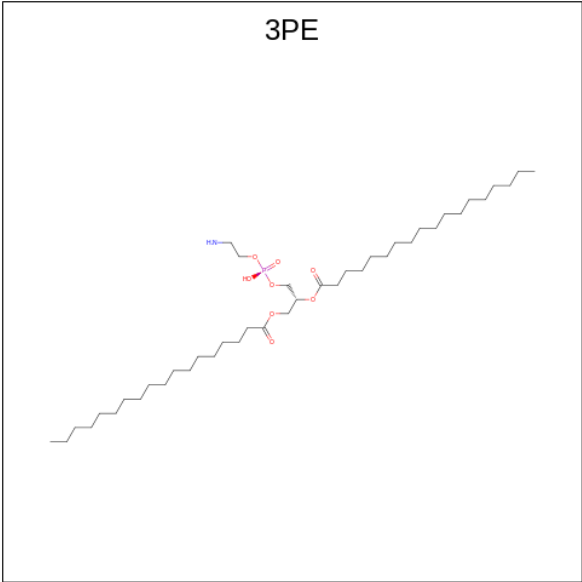
Mol	Chain	Residues	Atoms				AltConf
3	B	1	Total	C	O	P	0
			36	6	24	6	

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



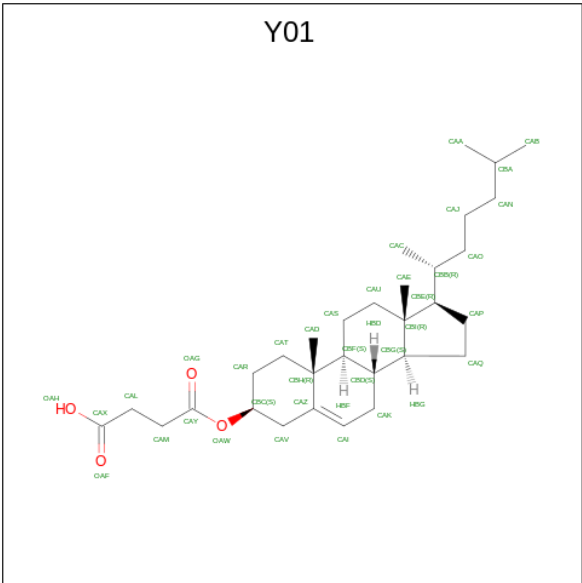
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	O		0
			28	27	1		
4	B	1	Total	C	O		0
			28	27	1		

- Molecule 5 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula:  $C_{41}H_{82}NO_8P$ ) (labeled as "Ligand of Interest" by depositor).



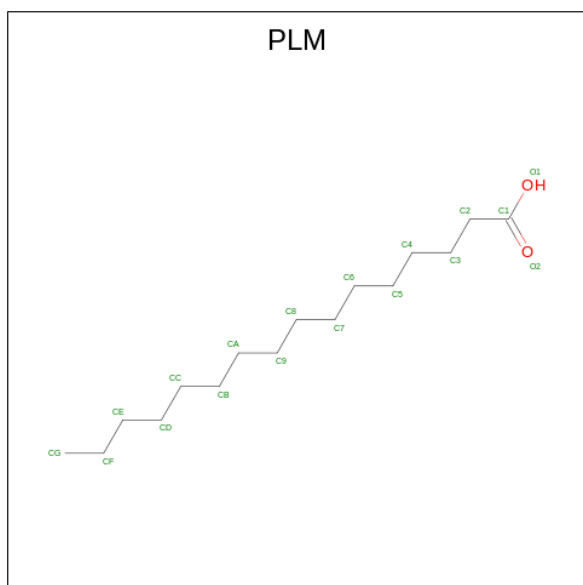
Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
5	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
5	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
5	B	1	Total	C	N	O	P	0
			51	41	1	8	1	

- Molecule 6 is CHOLESTEROL HEMISUCCINATE (three-letter code: Y01) (formula: C<sub>31</sub>H<sub>50</sub>O<sub>4</sub>) (labeled as "Ligand of Interest" by depositor).



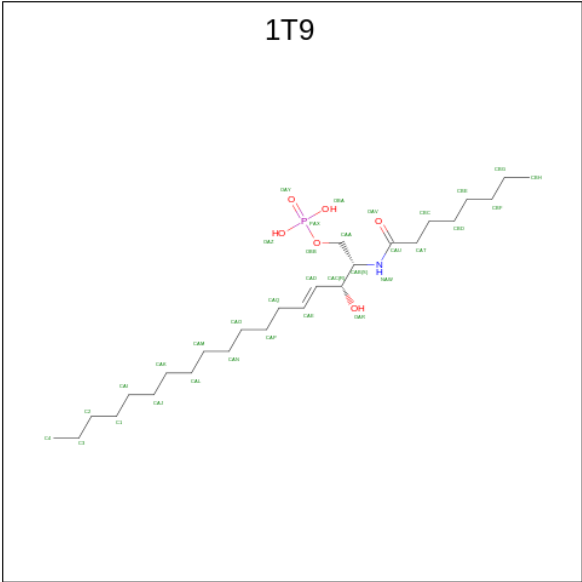
Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total	C	O	0
			35	31	4	
6	B	1	Total	C	O	0
			35	31	4	

- Molecule 7 is PALMITIC ACID (three-letter code: PLM) (formula:  $C_{16}H_{32}O_2$ ) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 8 is (2S,3R,4E)-3-hydroxy-2-(octanoylamino)octadec-4-en-1-yl dihydrogen phosphate (three-letter code: 1T9) (formula:  $C_{26}H_{52}NO_6P$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
8	A	1	Total	C	N	O	P	0
			34	26	1	6	1	
8	B	1	Total	C	N	O	P	0
			34	26	1	6	1	

- Molecule 9 is water.

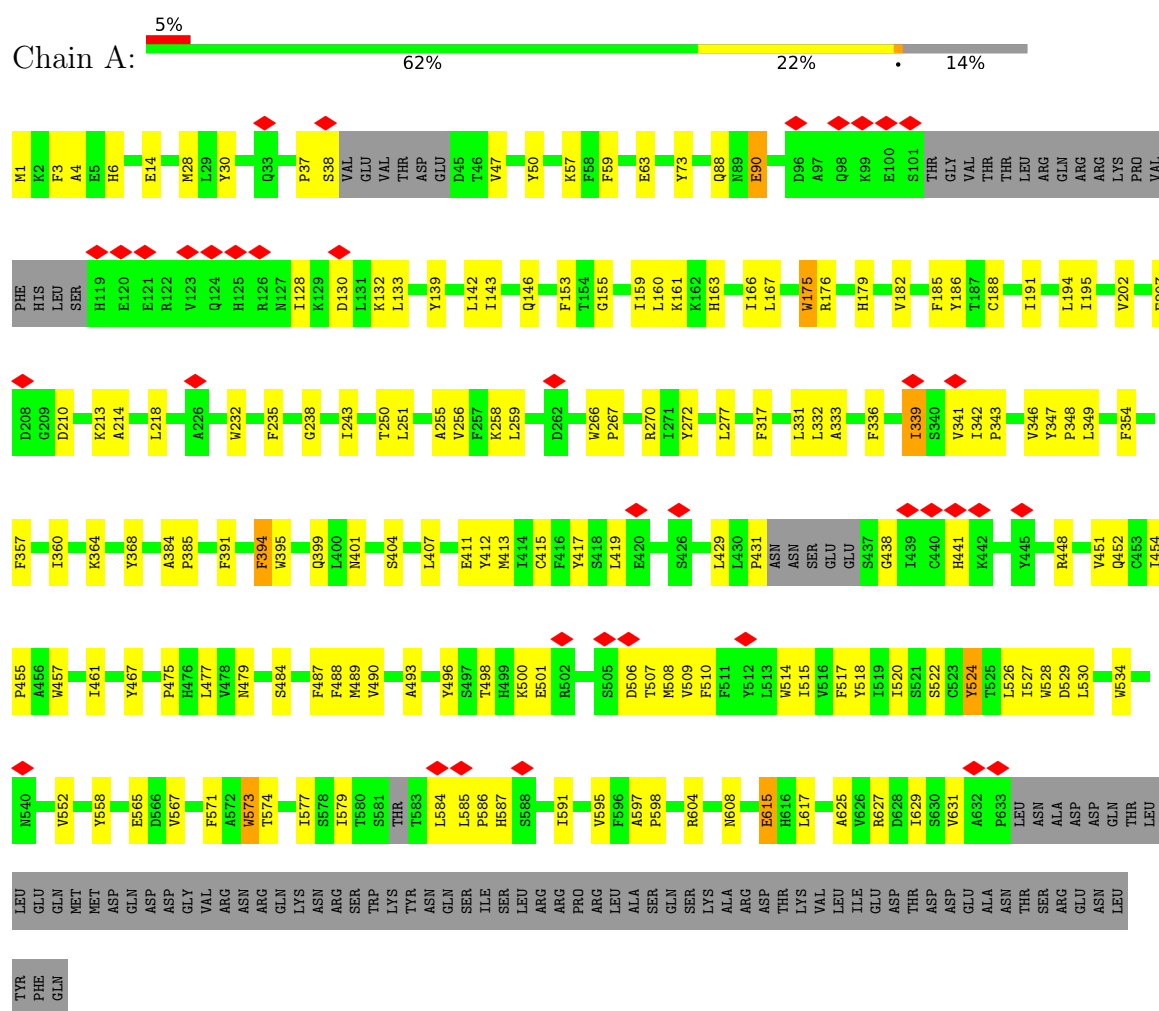
Mol	Chain	Residues	Atoms		AltConf
9	A	4	Total	O	0
			4	4	
9	B	4	Total	O	0
			4	4	



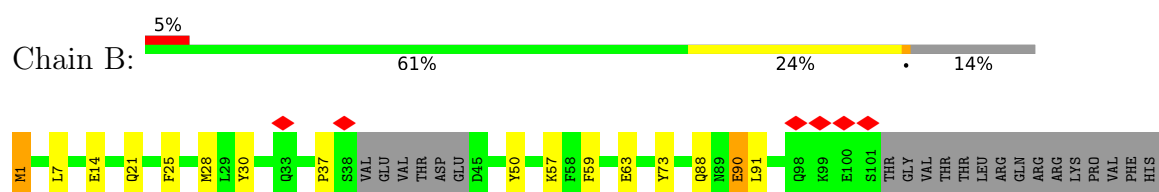
### 3 Residue-property plots

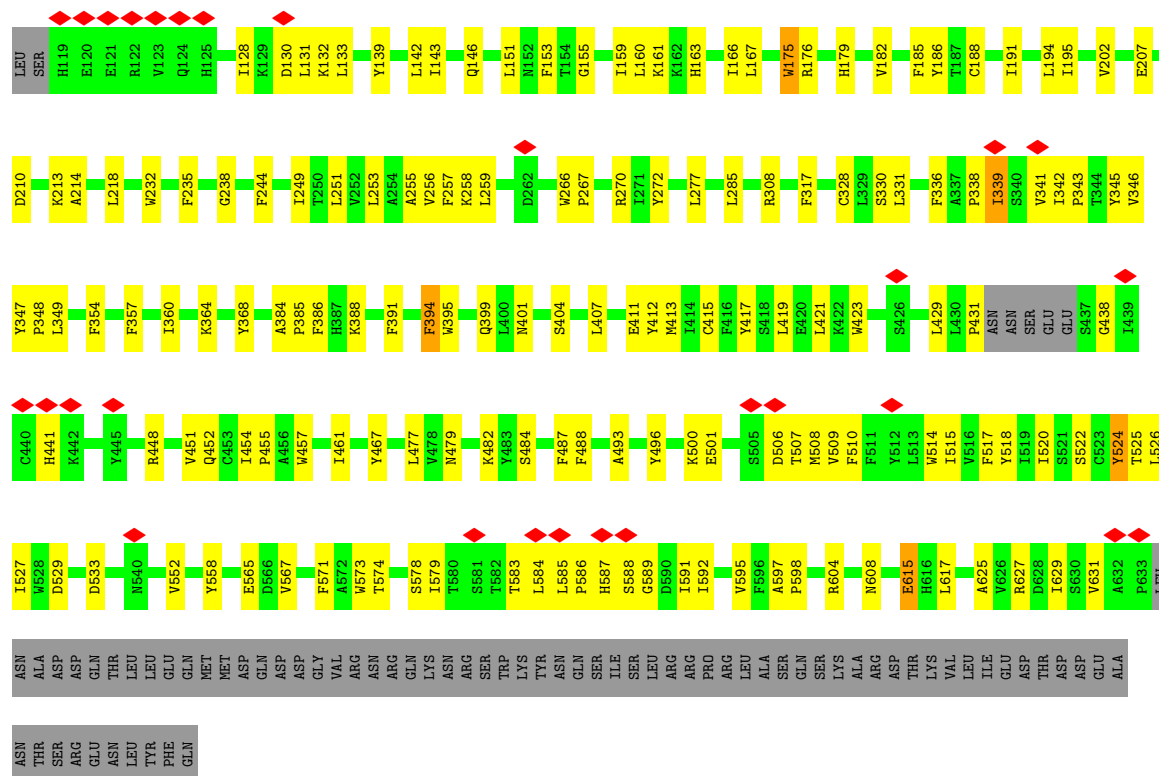
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Solute carrier family 53 member 1



#### • Molecule 1: Solute carrier family 53 member 1





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	34208	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI 20	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	1.614	Depositor
Minimum map value	-0.890	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.037	Depositor
Recommended contour level	0.2	Depositor
Map size (Å)	296.0, 296.0, 296.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.74, 0.74, 0.74	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PLM, PO4, CLR, 3PE, 1T9, IHP, Y01

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	0.59	0/5102	0.61	0/6919
1	B	0.59	0/5110	0.61	0/6932
All	All	0.59	0/10212	0.61	0/13851

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4960	0	4913	119	0
1	B	4967	0	4921	129	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
3	A	36	0	6	2	0
3	B	36	0	6	2	0
4	A	28	0	46	2	0
4	B	28	0	46	2	0
5	A	102	0	164	5	0
5	B	102	0	164	5	0
6	A	35	0	49	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	35	0	49	8	0
7	A	18	0	31	0	0
7	B	18	0	31	0	0
8	A	34	0	50	2	0
8	B	34	0	50	2	0
9	A	4	0	0	0	0
9	B	4	0	0	0	0
All	All	10451	0	10526	258	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 12.

All (258) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:349:LEU:HD11	1:A:417:TYR:CE2	2.26	0.70
1:A:500:LYS:HB2	1:A:507:THR:HG23	1.74	0.70
1:B:500:LYS:HB2	1:B:507:THR:HG23	1.75	0.68
1:B:349:LEU:HD11	1:B:417:TYR:CE2	2.29	0.67
1:A:163:HIS:CE1	1:A:167:LEU:HD22	2.38	0.59
1:B:163:HIS:CE1	1:B:167:LEU:HD22	2.38	0.59
1:B:588:SER:O	1:B:592:ILE:HG12	2.04	0.58
1:A:251:LEU:HD21	1:A:331:LEU:HD23	1.86	0.57
1:A:37:PRO:O	1:A:38:SER:C	2.44	0.56
1:B:202:VAL:HG21	1:B:218:LEU:HD11	1.87	0.56
1:A:202:VAL:HG21	1:A:218:LEU:HD11	1.87	0.56
1:A:266:TRP:CD1	1:A:587:HIS:CE1	2.94	0.56
1:A:415:CYS:SG	1:A:419:LEU:HD12	2.46	0.56
5:B:805:3PE:H2	5:B:805:3PE:H322	1.88	0.55
1:B:415:CYS:SG	1:B:419:LEU:HD12	2.47	0.55
1:B:266:TRP:CD1	1:B:587:HIS:CE1	2.95	0.54
1:A:207:GLU:HG3	1:A:214:ALA:HB2	1.89	0.54
1:A:37:PRO:HD3	1:A:50:TYR:CD2	2.43	0.54
1:B:207:GLU:HG3	1:B:214:ALA:HB2	1.89	0.54
1:A:347:TYR:N	1:A:348:PRO:HD2	2.23	0.53
1:B:130:ASP:HB3	1:B:631:VAL:HA	1.90	0.53
1:B:522:SER:HB3	1:B:571:PHE:CD1	2.43	0.53
1:B:258:LYS:HD2	1:B:336:PHE:CD1	2.44	0.53
1:A:130:ASP:HB3	1:A:631:VAL:HA	1.90	0.53
1:A:258:LYS:HD2	1:A:336:PHE:CD1	2.44	0.53
1:A:342:ILE:HG23	1:A:346:VAL:HG21	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:522:SER:HB3	1:A:571:PHE:CD1	2.43	0.53
1:A:604:ARG:O	1:A:608:ASN:ND2	2.42	0.53
1:A:1:MET:HE2	3:A:802:IHP:H5	1.90	0.52
1:B:347:TYR:N	1:B:348:PRO:HD2	2.24	0.52
1:B:421:LEU:HD23	1:B:423:TRP:CZ2	2.44	0.52
1:B:514:TRP:CE3	1:B:515:ILE:HG23	2.45	0.52
1:B:604:ARG:O	1:B:608:ASN:ND2	2.43	0.52
1:A:488:PHE:HB2	1:A:517:PHE:CD2	2.45	0.52
1:B:73:TYR:OH	1:B:188:CYS:SG	2.66	0.52
1:A:514:TRP:CE3	1:A:515:ILE:HG23	2.45	0.52
1:B:526:LEU:HD21	1:B:567:VAL:HG22	1.92	0.51
1:A:526:LEU:HD21	1:A:567:VAL:HG22	1.92	0.51
1:A:339:ILE:HG22	1:A:341:VAL:HG22	1.93	0.51
1:B:339:ILE:HG22	1:B:341:VAL:HG22	1.93	0.51
1:B:349:LEU:HD11	1:B:417:TYR:CZ	2.45	0.51
1:A:251:LEU:HD11	1:A:331:LEU:HD23	1.92	0.51
1:A:579:ILE:HG21	1:A:584:LEU:HD11	1.93	0.51
1:A:238:GLY:HA2	1:B:235:PHE:CE1	2.45	0.51
1:B:527:ILE:HD12	6:B:806:Y01:HAC1	1.93	0.51
1:A:3:PHE:O	1:A:4:ALA:C	2.49	0.50
1:A:160:LEU:HD13	1:A:176:ARG:HB2	1.94	0.50
1:B:438:GLY:HA2	1:B:441:HIS:CD2	2.47	0.50
1:B:1:MET:CE	3:B:802:IHP:H5	2.41	0.50
1:B:488:PHE:HB2	1:B:517:PHE:CD2	2.45	0.50
1:A:438:GLY:HA2	1:A:441:HIS:CD2	2.47	0.50
1:B:153:PHE:CZ	1:B:186:TYR:CZ	3.00	0.50
1:B:253:LEU:O	1:B:257:PHE:CD2	2.65	0.50
1:B:342:ILE:HG23	1:B:346:VAL:HG21	1.93	0.50
1:B:251:LEU:HD21	1:B:331:LEU:HD23	1.93	0.49
1:A:235:PHE:CE1	1:B:238:GLY:HA2	2.48	0.49
1:A:457:TRP:CH2	1:A:461:ILE:HD11	2.47	0.49
1:A:342:ILE:CG2	1:A:346:VAL:HG21	2.42	0.49
1:B:457:TRP:CH2	1:B:461:ILE:HD11	2.47	0.49
1:B:37:PRO:HD3	1:B:50:TYR:CD2	2.48	0.49
1:A:153:PHE:CZ	1:A:186:TYR:CZ	3.00	0.49
1:A:573:TRP:CZ3	1:A:577:ILE:HG21	2.48	0.49
4:A:803:CLR:H121	4:A:803:CLR:H212	1.95	0.48
5:A:805:3PE:H2	5:A:805:3PE:H322	1.95	0.48
1:B:160:LEU:HD13	1:B:176:ARG:HB2	1.94	0.48
1:B:591:ILE:O	1:B:595:VAL:HG23	2.14	0.48
1:A:232:TRP:CH2	8:B:808:1T9:H21	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:412:TYR:HB2	1:B:448:ARG:HH12	1.79	0.48
1:B:524:TYR:CD1	6:B:806:Y01:HBB	2.49	0.48
8:A:808:1T9:H21	1:B:232:TRP:CH2	2.49	0.48
1:A:467:TYR:CG	1:A:477:LEU:HD21	2.48	0.48
1:A:349:LEU:HD11	1:A:417:TYR:CZ	2.48	0.48
1:B:1:MET:HE2	3:B:802:IHP:H5	1.96	0.48
1:B:394:PHE:CD1	1:B:394:PHE:C	2.87	0.48
1:A:73:TYR:OH	1:A:188:CYS:SG	2.66	0.47
1:B:249:ILE:O	1:B:253:LEU:HD12	2.14	0.47
6:A:806:Y01:CAE	6:A:806:Y01:HAO2	2.44	0.47
1:A:493:ALA:HB2	1:A:514:TRP:CD1	2.50	0.47
1:A:591:ILE:O	1:A:595:VAL:HG23	2.14	0.47
1:A:404:SER:HA	1:A:407:LEU:HD13	1.97	0.47
4:B:803:CLR:H121	4:B:803:CLR:H212	1.95	0.47
1:A:37:PRO:HD2	1:A:47:VAL:HG22	1.95	0.47
1:B:467:TYR:CG	1:B:477:LEU:HD21	2.49	0.47
1:B:584:LEU:HD12	1:B:589:GLY:HA2	1.97	0.47
1:A:243:ILE:HG21	5:A:805:3PE:H3I3	1.95	0.46
1:B:404:SER:HA	1:B:407:LEU:HD13	1.97	0.46
1:A:1:MET:HE3	3:A:802:IHP:H1	1.96	0.46
1:A:394:PHE:CD1	1:A:394:PHE:C	2.87	0.46
1:A:597:ALA:N	1:A:598:PRO:CD	2.79	0.46
1:B:267:PRO:HG2	1:B:431:PRO:CD	2.46	0.46
1:A:267:PRO:HG2	1:A:431:PRO:CD	2.46	0.46
1:A:250:THR:HG22	1:A:332:LEU:HD11	1.97	0.46
1:A:585:LEU:N	1:A:586:PRO:CD	2.79	0.46
1:B:14:GLU:OE1	1:B:625:ALA:HA	2.16	0.46
1:B:153:PHE:CZ	1:B:186:TYR:CE2	3.04	0.46
1:A:153:PHE:CZ	1:A:186:TYR:CE2	3.04	0.46
1:A:210:ASP:HB3	1:A:213:LYS:CE	2.46	0.45
1:A:277:LEU:HD11	1:A:597:ALA:HB1	1.98	0.45
1:A:454:ILE:N	1:A:455:PRO:HD2	2.31	0.45
1:B:354:PHE:CD1	1:B:354:PHE:C	2.90	0.45
1:B:597:ALA:N	1:B:598:PRO:CD	2.79	0.45
6:B:806:Y01:CAB	6:B:806:Y01:HAC2	2.46	0.45
1:A:527:ILE:HD12	6:A:806:Y01:HAC1	1.99	0.45
1:B:552:VAL:CG2	1:B:617:LEU:HD21	2.46	0.45
1:A:14:GLU:OE1	1:A:625:ALA:HA	2.16	0.45
1:A:210:ASP:CB	1:A:213:LYS:HE2	2.47	0.45
1:B:454:ILE:N	1:B:455:PRO:HD2	2.31	0.45
1:A:395:TRP:O	1:A:399:GLN:HG2	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:210:ASP:HB3	1:B:213:LYS:CE	2.46	0.45
1:B:277:LEU:HD11	1:B:597:ALA:HB1	1.98	0.45
1:B:395:TRP:O	1:B:399:GLN:HG2	2.17	0.45
1:B:520:ILE:HA	6:B:806:Y01:HAA2	1.99	0.45
1:A:488:PHE:CB	1:A:517:PHE:CD2	3.00	0.45
1:B:484:SER:HA	1:B:487:PHE:HD2	1.82	0.45
1:B:585:LEU:N	1:B:586:PRO:CD	2.80	0.45
1:A:142:LEU:HB3	1:A:191:ILE:HD11	1.99	0.45
1:A:552:VAL:CG2	1:A:617:LEU:HD21	2.46	0.45
5:A:805:3PE:H321	1:B:257:PHE:CD2	2.51	0.45
1:B:244:PHE:CE1	1:B:328:CYS:SG	3.10	0.45
1:B:37:PRO:HG2	1:B:50:TYR:CG	2.52	0.45
1:B:255:ALA:HA	1:B:259:LEU:HD23	1.97	0.45
1:A:272:TYR:CD2	1:A:331:LEU:HD13	2.52	0.44
1:B:90:GLU:HG2	1:B:631:VAL:HG11	1.99	0.44
1:B:163:HIS:CD2	1:B:163:HIS:C	2.91	0.44
6:A:806:Y01:HAO2	6:A:806:Y01:HAE2	2.00	0.44
1:B:202:VAL:HG11	1:B:218:LEU:HD11	1.98	0.44
1:B:338:PRO:HG2	5:B:805:3PE:H292	2.00	0.44
6:B:806:Y01:CAJ	6:B:806:Y01:HAP1	2.48	0.44
1:A:59:PHE:CD1	1:A:175:TRP:CD1	3.06	0.44
1:A:90:GLU:HG2	1:A:631:VAL:HG11	1.99	0.44
1:A:251:LEU:HD21	1:A:331:LEU:CD2	2.46	0.44
1:A:484:SER:HA	1:A:487:PHE:HD2	1.82	0.44
1:B:59:PHE:CD1	1:B:175:TRP:CD1	3.06	0.44
1:B:210:ASP:CB	1:B:213:LYS:HE2	2.47	0.44
1:A:354:PHE:CD1	1:A:354:PHE:C	2.90	0.44
1:A:202:VAL:HG11	1:A:218:LEU:HD11	1.98	0.44
1:B:88:GLN:HA	1:B:88:GLN:OE1	2.18	0.44
1:B:349:LEU:HD12	1:B:413:MET:HE2	1.99	0.44
1:B:482:LYS:HG3	1:B:525:THR:HG22	1.99	0.44
1:B:142:LEU:HB3	1:B:191:ILE:HD11	2.00	0.44
1:B:488:PHE:CB	1:B:517:PHE:CD2	3.00	0.44
1:B:578:SER:O	1:B:583:THR:HG21	2.18	0.44
1:A:28:MET:SD	1:A:57:LYS:NZ	2.91	0.44
1:A:59:PHE:O	1:A:63:GLU:HG3	2.18	0.44
1:A:524:TYR:CE1	6:A:806:Y01:HAE2	2.52	0.44
1:B:59:PHE:O	1:B:63:GLU:HG3	2.18	0.44
1:B:597:ALA:HB3	1:B:598:PRO:HD3	1.99	0.44
1:A:88:GLN:OE1	1:A:88:GLN:HA	2.18	0.44
1:A:349:LEU:CD1	1:A:417:TYR:CE2	3.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:524:TYR:CD1	6:A:806:Y01:HBB	2.53	0.44
1:A:175:TRP:CE3	1:A:179:HIS:HB2	2.53	0.43
1:A:175:TRP:CZ3	1:A:179:HIS:HB2	2.53	0.43
1:A:411:GLU:OE1	1:A:448:ARG:HD3	2.18	0.43
1:B:364:LYS:HD3	1:B:368:TYR:CD2	2.53	0.43
1:A:412:TYR:HB2	1:A:448:ARG:HH12	1.83	0.43
1:B:175:TRP:CE3	1:B:179:HIS:HB2	2.53	0.43
1:B:357:PHE:HA	1:B:360:ILE:HG12	2.00	0.43
1:A:256:VAL:HG12	1:A:256:VAL:O	2.17	0.43
1:A:343:PRO:HG2	1:A:346:VAL:CG1	2.49	0.43
1:B:467:TYR:CD2	1:B:477:LEU:HD21	2.54	0.43
6:B:806:Y01:CAE	6:B:806:Y01:HAO2	2.49	0.43
1:A:493:ALA:HB2	1:A:514:TRP:NE1	2.34	0.43
6:A:806:Y01:HAP1	6:A:806:Y01:CAJ	2.47	0.43
1:B:28:MET:SD	1:B:57:LYS:NZ	2.91	0.43
1:A:451:VAL:HA	1:A:454:ILE:CD1	2.49	0.43
1:A:597:ALA:HB3	1:A:598:PRO:HD3	1.99	0.43
1:B:342:ILE:CG2	1:B:346:VAL:HG21	2.48	0.43
1:A:142:LEU:HD22	1:A:191:ILE:CD1	2.49	0.43
1:B:218:LEU:HA	1:B:308:ARG:HH12	1.84	0.43
1:A:128:ILE:HG22	1:A:132:LYS:HE2	2.01	0.43
1:A:629:ILE:N	1:A:629:ILE:HD12	2.34	0.43
1:B:272:TYR:CD2	1:B:331:LEU:HD13	2.53	0.43
1:B:330:SER:HA	5:B:805:3PE:H2F1	2.00	0.43
1:B:529:ASP:HA	1:B:533:ASP:HB2	2.01	0.43
1:A:558:TYR:HB3	4:A:803:CLR:H71	2.01	0.43
1:B:142:LEU:HD22	1:B:191:ILE:CD1	2.49	0.43
1:A:163:HIS:CD2	1:A:163:HIS:C	2.91	0.42
1:A:251:LEU:HD11	1:A:331:LEU:CD2	2.49	0.42
1:B:175:TRP:CZ3	1:B:179:HIS:HB2	2.53	0.42
1:A:364:LYS:HD3	1:A:368:TYR:CD2	2.53	0.42
1:A:518:TYR:CD1	1:A:574:THR:HG22	2.54	0.42
1:B:506:ASP:HA	1:B:509:VAL:HG12	2.01	0.42
1:B:128:ILE:HG22	1:B:132:LYS:HE2	2.01	0.42
1:A:30:TYR:CE1	1:A:166:ILE:HD11	2.55	0.42
1:A:417:TYR:OH	1:A:429:LEU:HD13	2.20	0.42
1:B:37:PRO:CD	1:B:50:TYR:CD2	3.03	0.42
1:A:251:LEU:CD2	1:A:331:LEU:HD23	2.49	0.42
6:B:806:Y01:HAC2	6:B:806:Y01:HAB1	2.00	0.42
1:A:255:ALA:HA	1:A:259:LEU:HD23	2.02	0.42
1:A:524:TYR:HA	6:A:806:Y01:HBB	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:530:LEU:CD2	1:A:534:TRP:CZ3	3.03	0.42
1:B:421:LEU:HD23	1:B:423:TRP:CE2	2.55	0.42
1:B:451:VAL:HA	1:B:454:ILE:CD1	2.49	0.42
1:B:493:ALA:HB2	1:B:514:TRP:CD1	2.55	0.42
1:A:3:PHE:O	1:A:6:HIS:N	2.53	0.42
1:A:357:PHE:HA	1:A:360:ILE:HG12	2.00	0.42
1:A:391:PHE:CD1	1:A:615:GLU:HG3	2.55	0.42
1:A:139:TYR:CE2	1:A:143:ILE:HD11	2.55	0.41
1:B:527:ILE:HD12	6:B:806:Y01:HBE	2.02	0.41
1:B:629:ILE:HD12	1:B:629:ILE:N	2.34	0.41
1:A:506:ASP:HA	1:A:509:VAL:HG12	2.02	0.41
1:B:7:LEU:HD13	1:B:151:LEU:HD22	2.02	0.41
1:B:30:TYR:CE1	1:B:166:ILE:HD11	2.55	0.41
1:A:479:ASN:ND2	1:A:528:TRP:NE1	2.68	0.41
1:A:518:TYR:CD2	1:A:518:TYR:C	2.94	0.41
5:A:805:3PE:H391	5:A:805:3PE:H261	2.03	0.41
1:B:251:LEU:HD21	1:B:331:LEU:CD2	2.50	0.41
1:B:417:TYR:HA	1:B:421:LEU:HB2	2.01	0.41
1:B:518:TYR:CD1	1:B:574:THR:HG22	2.54	0.41
1:B:338:PRO:CG	5:B:805:3PE:H292	2.51	0.41
1:B:401:ASN:HA	1:B:455:PRO:HB2	2.03	0.41
1:B:579:ILE:HG21	1:B:584:LEU:HD11	2.02	0.41
1:A:133:LEU:HG	1:A:629:ILE:HG21	2.03	0.41
1:A:153:PHE:CE1	1:A:186:TYR:CD2	3.08	0.41
1:A:349:LEU:HD12	1:A:413:MET:HE2	2.02	0.41
1:A:509:VAL:HG13	1:A:510:PHE:N	2.36	0.41
1:B:270:ARG:HD2	1:B:412:TYR:CE2	2.55	0.41
1:B:391:PHE:CD1	1:B:615:GLU:HG3	2.55	0.41
1:B:417:TYR:OH	1:B:429:LEU:HD13	2.21	0.41
1:B:558:TYR:HB3	4:B:803:CLR:H71	2.01	0.41
1:B:153:PHE:CE1	1:B:186:TYR:CD2	3.09	0.41
1:A:333:ALA:HB2	5:A:805:3PE:H2B2	2.02	0.41
1:A:384:ALA:N	1:A:385:PRO:HD2	2.36	0.41
1:B:317:PHE:CD1	8:B:808:1T9:H9	2.55	0.41
1:B:518:TYR:CD2	1:B:518:TYR:C	2.94	0.41
1:B:411:GLU:OE1	1:B:448:ARG:HD3	2.20	0.41
1:A:270:ARG:HD2	1:A:412:TYR:CE2	2.56	0.41
1:A:317:PHE:CD1	8:A:808:1T9:H9	2.55	0.41
1:A:508:MET:SD	1:A:509:VAL:N	2.94	0.41
1:B:256:VAL:HG12	1:B:256:VAL:O	2.20	0.41
1:B:343:PRO:HG2	1:B:346:VAL:CG1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:506:ASP:O	1:B:510:PHE:CD2	2.74	0.41
1:A:401:ASN:HA	1:A:455:PRO:HB2	2.03	0.41
1:B:388:LYS:HA	1:B:388:LYS:HD2	1.97	0.41
1:A:155:GLY:O	1:A:159:ILE:HG22	2.20	0.40
1:B:21:GLN:O	1:B:25:PHE:CD2	2.75	0.40
1:B:155:GLY:O	1:B:159:ILE:HG22	2.20	0.40
1:B:251:LEU:HD11	1:B:331:LEU:HD23	2.04	0.40
1:B:386:PHE:N	1:B:386:PHE:CD1	2.89	0.40
1:B:146:GLN:NE2	1:B:195:ILE:CD1	2.85	0.40
1:B:285:LEU:CD2	5:B:804:3PE:H351	2.52	0.40
1:A:73:TYR:HH	1:A:188:CYS:HG	1.63	0.40
1:A:146:GLN:NE2	1:A:195:ILE:CD1	2.84	0.40
1:A:210:ASP:HB3	1:A:213:LYS:HE2	2.03	0.40
1:B:91:LEU:CD1	1:B:131:LEU:HD13	2.52	0.40
1:B:139:TYR:CE2	1:B:143:ILE:HD11	2.55	0.40
1:B:210:ASP:HB3	1:B:213:LYS:HE2	2.04	0.40
1:B:517:PHE:HA	1:B:520:ILE:HD12	2.03	0.40
1:A:256:VAL:O	1:A:256:VAL:CG1	2.70	0.40
1:A:489:MET:HE2	1:A:490:VAL:CG2	2.52	0.40
1:A:517:PHE:HA	1:A:520:ILE:HD12	2.03	0.40
1:A:527:ILE:CG2	6:A:806:Y01:HAU1	2.52	0.40
1:B:133:LEU:HG	1:B:629:ILE:HG21	2.03	0.40
1:B:146:GLN:NE2	1:B:195:ILE:HD12	2.37	0.40
1:B:270:ARG:NH2	1:B:441:HIS:CD2	2.90	0.40
1:B:345:TYR:HA	1:B:429:LEU:HD22	2.03	0.40
1:B:508:MET:SD	1:B:509:VAL:N	2.94	0.40
1:B:384:ALA:N	1:B:385:PRO:HD2	2.36	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	594/704 (84%)	567 (96%)	27 (4%)	0	100	100
1	B	597/704 (85%)	566 (95%)	31 (5%)	0	100	100
All	All	1191/1408 (85%)	1133 (95%)	58 (5%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	518/627 (83%)	499 (96%)	19 (4%)	29	60
1	B	519/627 (83%)	501 (96%)	18 (4%)	31	62
All	All	1037/1254 (83%)	1000 (96%)	37 (4%)	32	61

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	90	GLU
1	A	161	LYS
1	A	175	TRP
1	A	182	VAL
1	A	185	PHE
1	A	194	LEU
1	A	339	ILE
1	A	394	PHE
1	A	452	GLN
1	A	475	PRO
1	A	496	TYR
1	A	498	THR
1	A	501	GLU
1	A	524	TYR
1	A	529	ASP
1	A	565	GLU
1	A	573	TRP
1	A	615	GLU

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Mol	Chain	Res	Type
1	A	627	ARG
1	B	1	MET
1	B	90	GLU
1	B	161	LYS
1	B	175	TRP
1	B	182	VAL
1	B	185	PHE
1	B	194	LEU
1	B	339	ILE
1	B	394	PHE
1	B	452	GLN
1	B	479	ASN
1	B	496	TYR
1	B	501	GLU
1	B	524	TYR
1	B	565	GLU
1	B	573	TRP
1	B	615	GLU
1	B	627	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	10	HIS
1	A	146	GLN
1	A	149	GLN
1	A	387	HIS
1	A	399	GLN
1	A	618	ASN
1	B	146	GLN
1	B	149	GLN
1	B	387	HIS
1	B	399	GLN
1	B	618	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

16 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
6	Y01	B	806	-	38,38,38	0.45	0	57,57,57	0.55	0
7	PLM	A	807	-	17,17,17	0.53	0	17,17,17	0.49	0
6	Y01	A	806	-	38,38,38	0.46	0	57,57,57	0.62	0
8	1T9	A	808	-	32,33,33	0.36	0	36,38,38	0.41	0
2	PO4	A	801	-	4,4,4	0.71	0	6,6,6	0.45	0
3	IHP	A	802	-	36,36,36	0.79	0	54,60,60	0.64	0
4	CLR	A	803	-	31,31,31	1.04	2 (6%)	48,48,48	1.41	9 (18%)
5	3PE	A	805	-	50,50,50	0.28	0	53,55,55	0.30	0
5	3PE	B	805	-	50,50,50	0.29	0	53,55,55	0.32	0
7	PLM	B	807	-	17,17,17	0.54	0	17,17,17	0.49	0
4	CLR	B	803	-	31,31,31	1.03	2 (6%)	48,48,48	1.41	9 (18%)
8	1T9	B	808	-	32,33,33	0.36	0	36,38,38	0.41	0
3	IHP	B	802	-	36,36,36	0.78	0	54,60,60	0.64	0
5	3PE	A	804	-	50,50,50	0.29	0	53,55,55	0.34	0
2	PO4	B	801	-	4,4,4	0.67	0	6,6,6	0.45	0
5	3PE	B	804	-	50,50,50	0.30	0	53,55,55	0.34	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	Y01	B	806	-	-	11/19/77/77	0/4/4/4
7	PLM	A	807	-	-	3/15/15/15	-
6	Y01	A	806	-	-	10/19/77/77	0/4/4/4
8	1T9	A	808	-	-	9/36/36/36	-
5	3PE	A	805	-	-	17/54/54/54	-
3	IHP	A	802	-	-	2/30/54/54	0/1/1/1
4	CLR	A	803	-	-	2/10/68/68	0/4/4/4
5	3PE	B	805	-	-	18/54/54/54	-
7	PLM	B	807	-	-	3/15/15/15	-
4	CLR	B	803	-	-	2/10/68/68	0/4/4/4
8	1T9	B	808	-	-	9/36/36/36	-
3	IHP	B	802	-	-	2/30/54/54	0/1/1/1
5	3PE	A	804	-	-	17/54/54/54	-
5	3PE	B	804	-	-	17/54/54/54	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	803	CLR	C10-C9	-2.28	1.52	1.56
4	A	803	CLR	C10-C9	-2.28	1.52	1.56
4	B	803	CLR	C13-C14	-2.15	1.50	1.55
4	A	803	CLR	C13-C14	-2.13	1.50	1.55

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	803	CLR	C13-C17-C20	-3.32	114.29	119.49
4	A	803	CLR	C13-C17-C20	-3.29	114.33	119.49
4	B	803	CLR	C4-C5-C6	-2.84	116.51	120.61
4	A	803	CLR	C4-C5-C6	-2.83	116.53	120.61
4	A	803	CLR	C4-C5-C10	2.65	119.94	116.42
4	B	803	CLR	C4-C5-C10	2.65	119.94	116.42
4	A	803	CLR	C11-C12-C13	-2.63	108.27	112.78
4	B	803	CLR	C11-C12-C13	-2.60	108.33	112.78
4	A	803	CLR	C2-C3-C4	-2.48	106.90	110.31
4	B	803	CLR	C2-C3-C4	-2.44	106.96	110.31
4	A	803	CLR	C7-C8-C14	-2.39	107.44	110.91
4	B	803	CLR	C7-C8-C14	-2.39	107.45	110.91
4	B	803	CLR	C19-C10-C9	-2.36	108.87	111.68
4	A	803	CLR	C19-C10-C9	-2.35	108.88	111.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	803	CLR	C3-C4-C5	-2.23	108.24	112.03
4	A	803	CLR	C3-C4-C5	-2.22	108.27	112.03
4	A	803	CLR	C19-C10-C5	2.06	111.67	108.34
4	B	803	CLR	C19-C10-C5	2.06	111.67	108.34

There are no chirality outliers.

All (122) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	804	3PE	C1-O11-P-O13
5	A	804	3PE	C1-O11-P-O14
5	A	804	3PE	C11-O13-P-O11
5	A	804	3PE	C11-O13-P-O14
5	A	804	3PE	C12-C11-O13-P
5	A	805	3PE	C22-C21-O21-C2
5	B	804	3PE	C1-O11-P-O13
5	B	804	3PE	C1-O11-P-O14
5	B	804	3PE	C11-O13-P-O11
5	B	804	3PE	C11-O13-P-O14
5	B	804	3PE	C12-C11-O13-P
5	B	805	3PE	C22-C21-O21-C2
6	B	806	Y01	CAR-CBC-OAW-CAY
6	B	806	Y01	CAM-CAY-OAW-CBC
8	A	808	1T9	CAC-CAD-CAE-CAQ
8	B	808	1T9	CAC-CAD-CAE-CAQ
5	A	805	3PE	O32-C31-O31-C3
5	B	805	3PE	O32-C31-O31-C3
5	A	805	3PE	O22-C21-O21-C2
5	B	805	3PE	O22-C21-O21-C2
6	B	806	Y01	OAG-CAY-OAW-CBC
4	A	803	CLR	C21-C20-C22-C23
4	B	803	CLR	C21-C20-C22-C23
5	A	805	3PE	C32-C31-O31-C3
5	B	805	3PE	C32-C31-O31-C3
6	A	806	Y01	CAR-CBC-OAW-CAY
6	B	806	Y01	CAJ-CAO-CBB-CBE
5	A	804	3PE	C32-C31-O31-C3
5	B	804	3PE	C32-C31-O31-C3
6	A	806	Y01	CAO-CBB-CBE-CBI
6	A	806	Y01	CAV-CBC-OAW-CAY
6	A	806	Y01	CAJ-CAO-CBB-CBE
6	B	806	Y01	CAO-CBB-CBE-CBI

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Mol	Chain	Res	Type	Atoms
5	A	804	3PE	O32-C31-O31-C3
5	B	804	3PE	O32-C31-O31-C3
6	A	806	Y01	CAC-CBB-CBE-CAP
6	B	806	Y01	CAC-CBB-CBE-CAP
6	A	806	Y01	CAC-CBB-CBE-CBI
6	B	806	Y01	CAC-CBB-CBE-CBI
5	A	804	3PE	C34-C35-C36-C37
5	B	804	3PE	C34-C35-C36-C37
6	A	806	Y01	CAM-CAY-OAW-CBC
6	A	806	Y01	OAG-CAY-OAW-CBC
5	A	804	3PE	C2-C1-O11-P
5	B	804	3PE	C2-C1-O11-P
5	A	804	3PE	C22-C23-C24-C25
5	B	804	3PE	C22-C23-C24-C25
7	A	807	PLM	CB-CC-CD-CE
7	B	807	PLM	CB-CC-CD-CE
6	A	806	Y01	CAN-CAJ-CAO-CBB
8	A	808	1T9	CAT-CBC-CBD-CBE
8	B	808	1T9	CAT-CBC-CBD-CBE
5	B	804	3PE	C3E-C3F-C3G-C3H
5	A	804	3PE	C3E-C3F-C3G-C3H
6	B	806	Y01	CAN-CAJ-CAO-CBB
5	A	804	3PE	O11-C1-C2-C3
5	B	804	3PE	O11-C1-C2-C3
8	A	808	1T9	CBC-CAT-CAU-OAV
8	B	808	1T9	CBC-CAT-CAU-OAV
5	B	805	3PE	C32-C33-C34-C35
5	A	804	3PE	C3C-C3D-C3E-C3F
5	B	804	3PE	C3C-C3D-C3E-C3F
8	B	808	1T9	CAM-CAN-CAO-CAP
4	B	803	CLR	C17-C20-C22-C23
6	B	806	Y01	CAJ-CAO-CBB-CAC
5	A	805	3PE	C36-C37-C38-C39
8	A	808	1T9	CAM-CAN-CAO-CAP
5	A	804	3PE	O11-C1-C2-O21
5	B	804	3PE	O11-C1-C2-O21
5	A	804	3PE	C33-C34-C35-C36
5	B	804	3PE	C33-C34-C35-C36
4	A	803	CLR	C17-C20-C22-C23
5	B	805	3PE	C36-C37-C38-C39
5	B	805	3PE	C2E-C2F-C2G-C2H
6	A	806	Y01	CAJ-CAO-CBB-CAC

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Mol	Chain	Res	Type	Atoms
5	A	805	3PE	C32-C33-C34-C35
5	B	805	3PE	C25-C26-C27-C28
5	B	805	3PE	C29-C2A-C2B-C2C
5	A	805	3PE	C29-C2A-C2B-C2C
8	B	808	1T9	CBC-CAT-CAU-NAW
5	A	805	3PE	C2E-C2F-C2G-C2H
8	A	808	1T9	CBC-CAT-CAU-NAW
3	A	802	IHP	C5-O15-P5-O45
3	B	802	IHP	C5-O15-P5-O45
8	A	808	1T9	CAB-CAA-OBB-PAX
8	B	808	1T9	CAB-CAA-OBB-PAX
5	B	804	3PE	C25-C26-C27-C28
5	A	804	3PE	C25-C26-C27-C28
5	B	805	3PE	C3F-C3G-C3H-C3I
5	A	805	3PE	C3F-C3G-C3H-C3I
5	A	805	3PE	C25-C26-C27-C28
5	A	805	3PE	C26-C27-C28-C29
5	A	805	3PE	C11-O13-P-O11
5	B	805	3PE	C11-O13-P-O11
8	A	808	1T9	C2-C1-CAI-CAJ
8	B	808	1T9	C2-C1-CAI-CAJ
5	B	805	3PE	O13-C11-C12-N
5	A	804	3PE	C3-C2-O21-C21
5	B	804	3PE	C3-C2-O21-C21
7	A	807	PLM	C2-C3-C4-C5
7	B	807	PLM	C2-C3-C4-C5
8	A	808	1T9	CAL-CAM-CAN-CAO
8	B	808	1T9	CAL-CAM-CAN-CAO
6	B	806	Y01	CAO-CBB-CBE-CAP
5	B	805	3PE	C26-C27-C28-C29
7	B	807	PLM	CC-CD-CE-CF
7	A	807	PLM	CC-CD-CE-CF
6	B	806	Y01	CAO-CAJ-CAN-CBA
5	A	805	3PE	C2D-C2E-C2F-C2G
3	A	802	IHP	C5-O15-P5-O35
3	B	802	IHP	C5-O15-P5-O35
8	A	808	1T9	CBE-CBF-CBG-CBH
8	B	808	1T9	CBE-CBF-CBG-CBH
5	B	805	3PE	C2A-C2B-C2C-C2D
5	A	805	3PE	C2A-C2B-C2C-C2D
5	A	805	3PE	C11-O13-P-O14
5	B	805	3PE	C11-O13-P-O14

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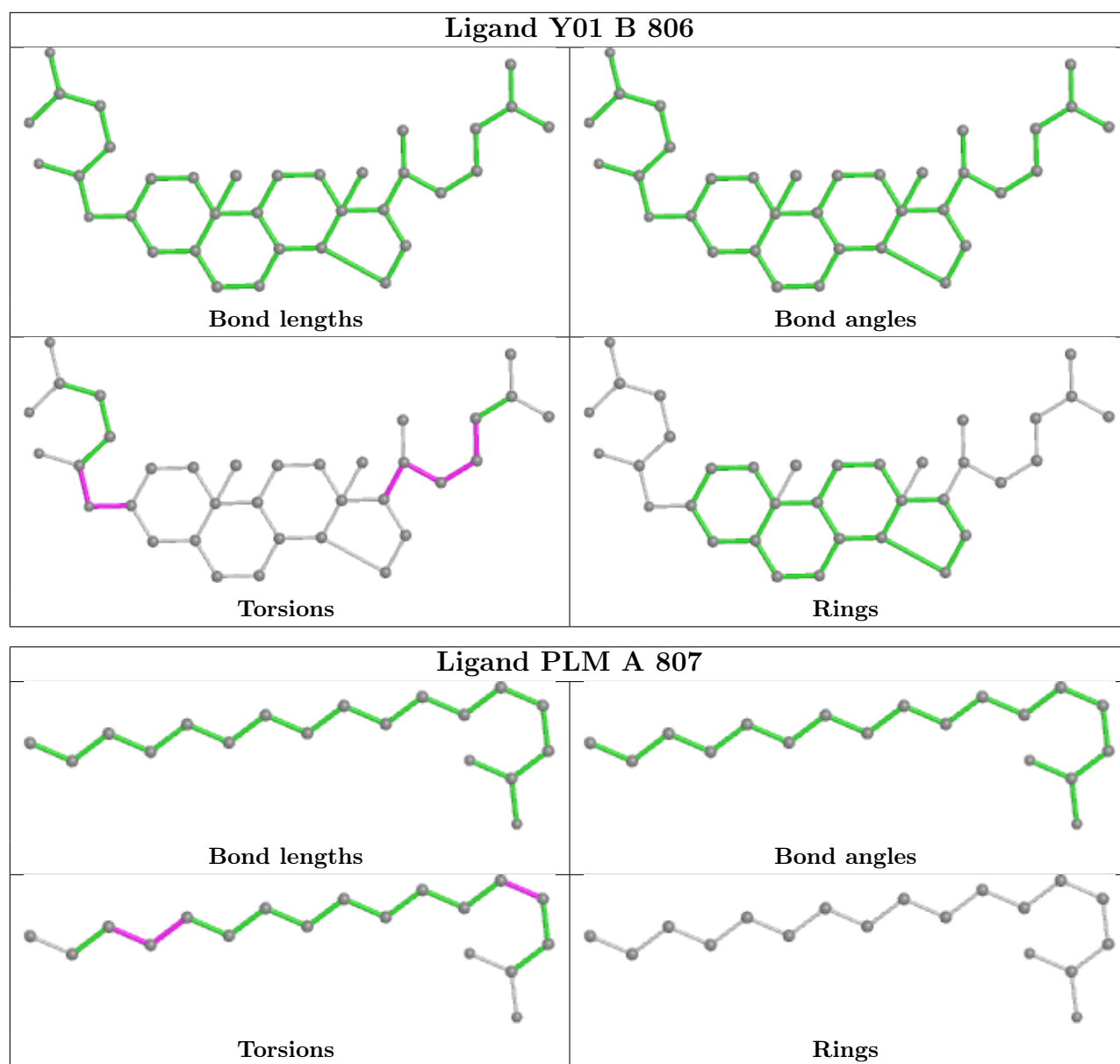
Mol	Chain	Res	Type	Atoms
5	A	805	3PE	C28-C29-C2A-C2B
5	A	805	3PE	O13-C11-C12-N
5	B	805	3PE	C35-C36-C37-C38
5	B	805	3PE	C28-C29-C2A-C2B
5	B	805	3PE	O21-C21-C22-C23

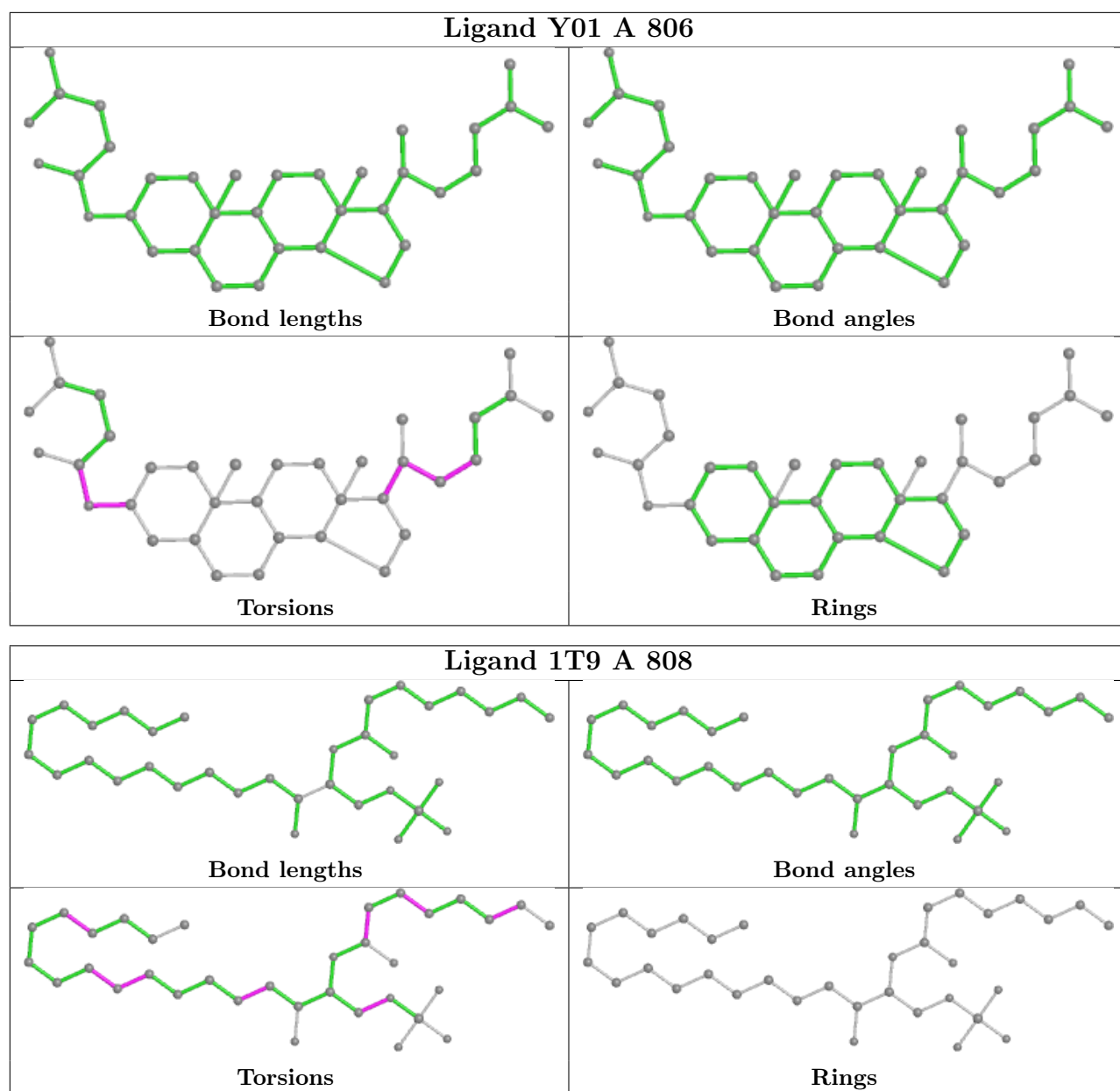
There are no ring outliers.

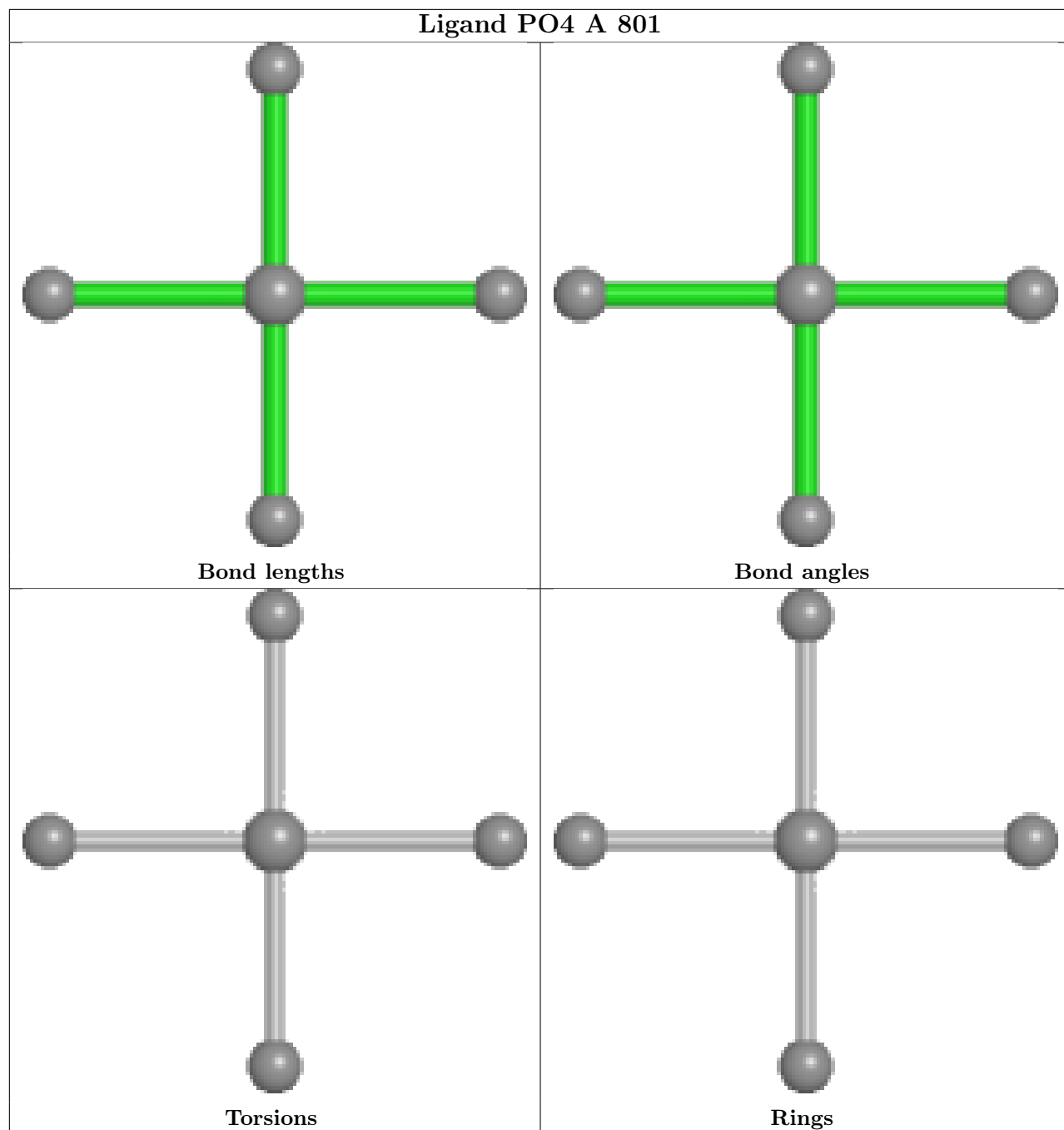
11 monomers are involved in 38 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	806	Y01	8	0
6	A	806	Y01	8	0
8	A	808	1T9	2	0
3	A	802	IHP	2	0
4	A	803	CLR	2	0
5	A	805	3PE	5	0
5	B	805	3PE	4	0
4	B	803	CLR	2	0
8	B	808	1T9	2	0
3	B	802	IHP	2	0
5	B	804	3PE	1	0

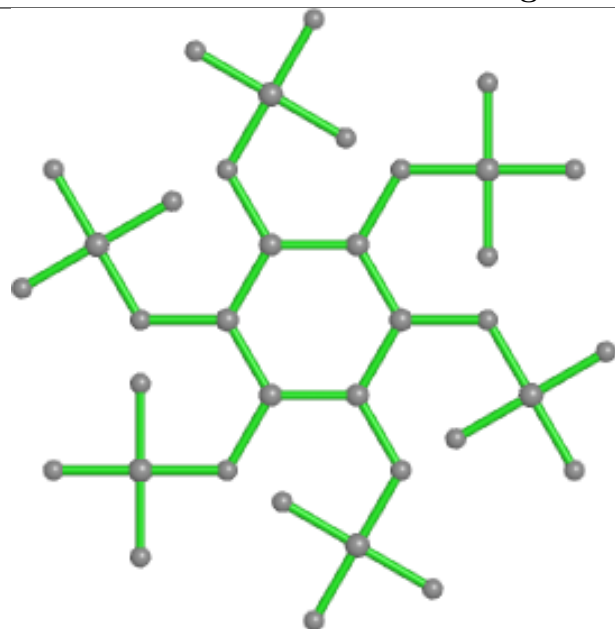
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



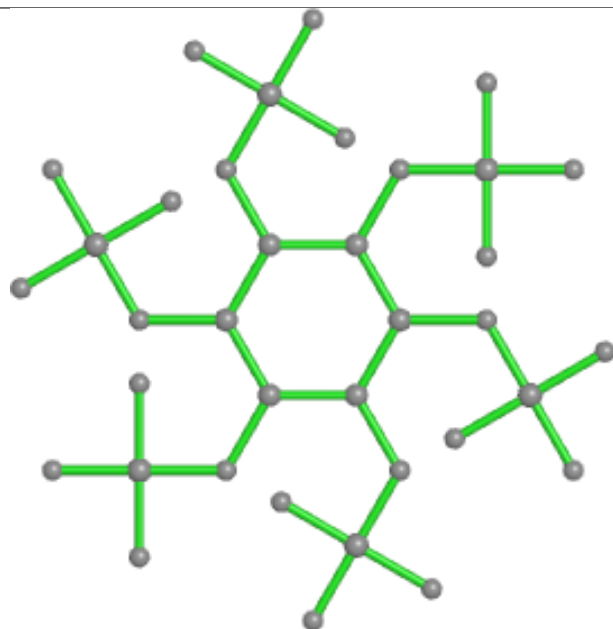




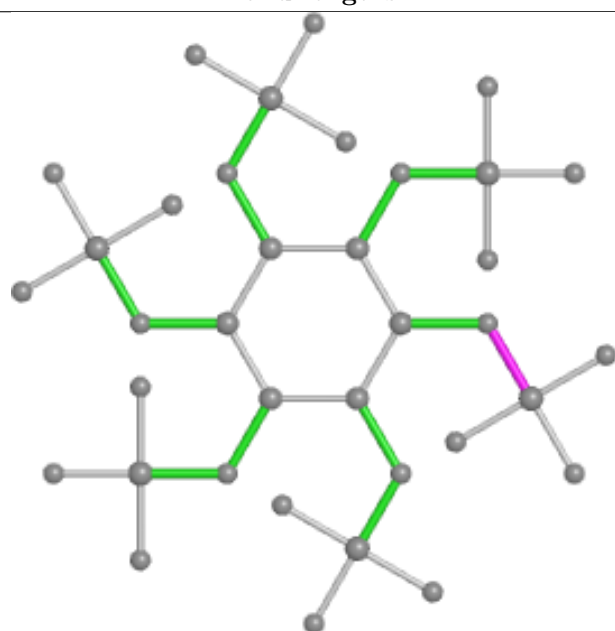
## Ligand IHP A 802



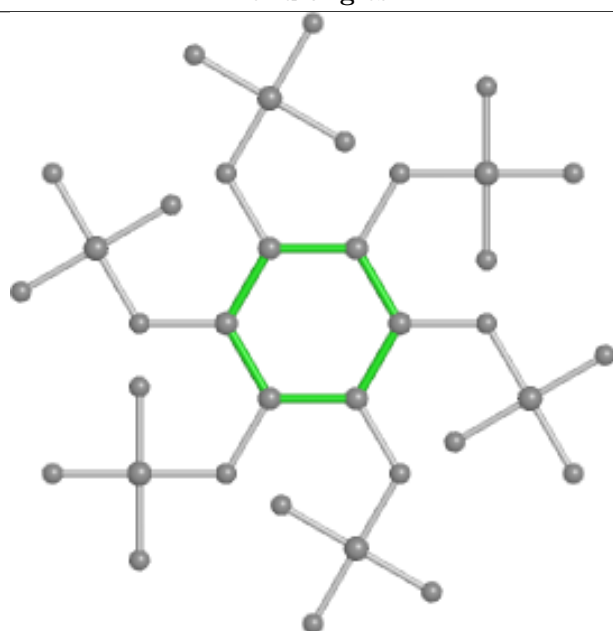
Bond lengths



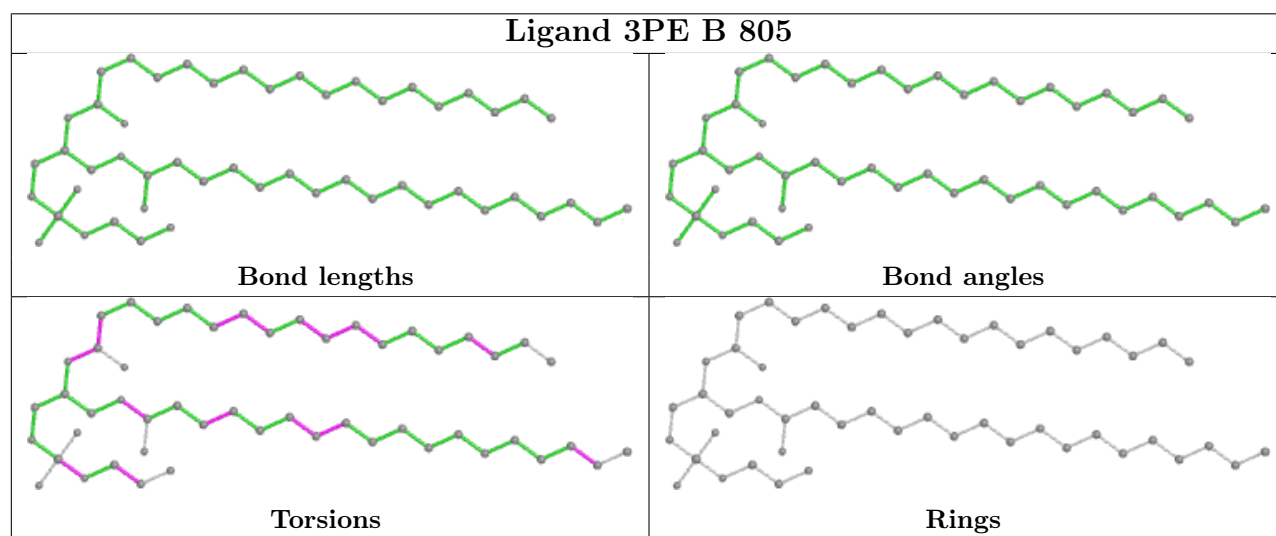
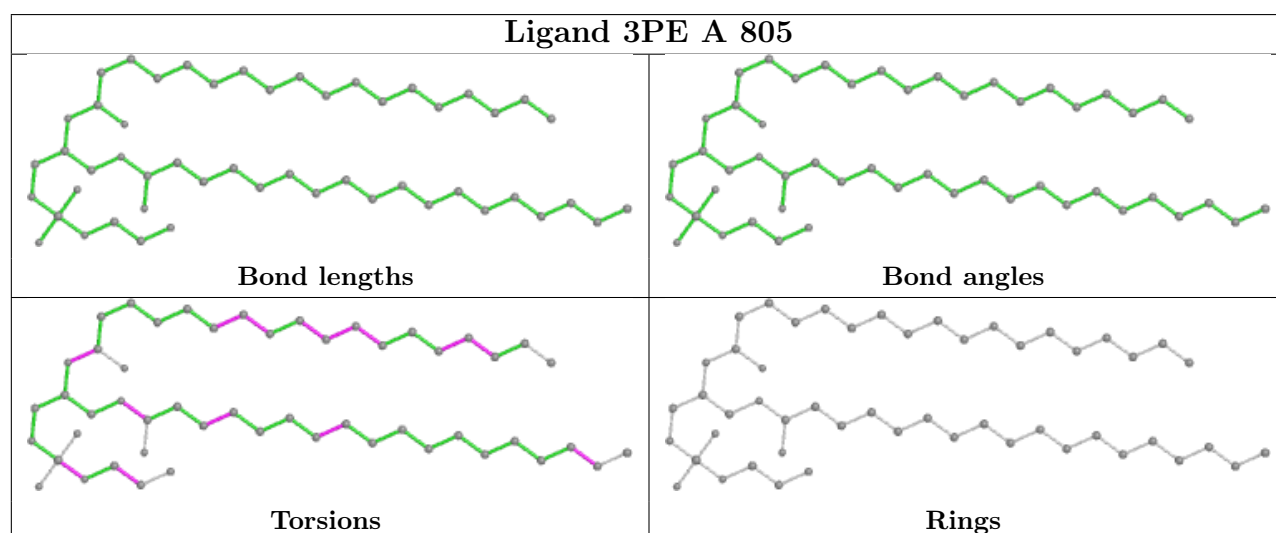
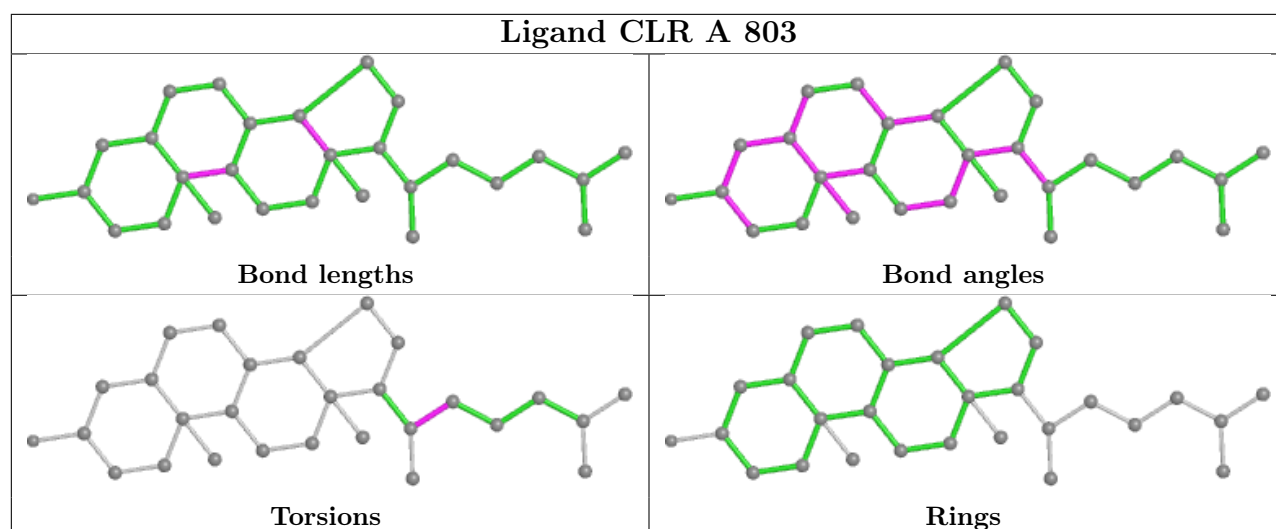
Bond angles



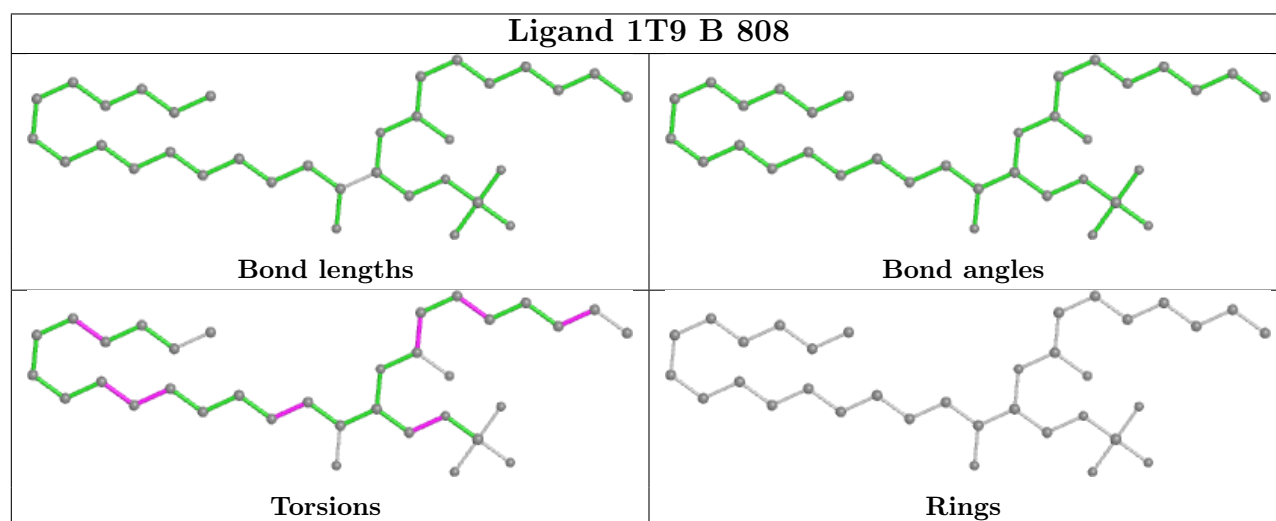
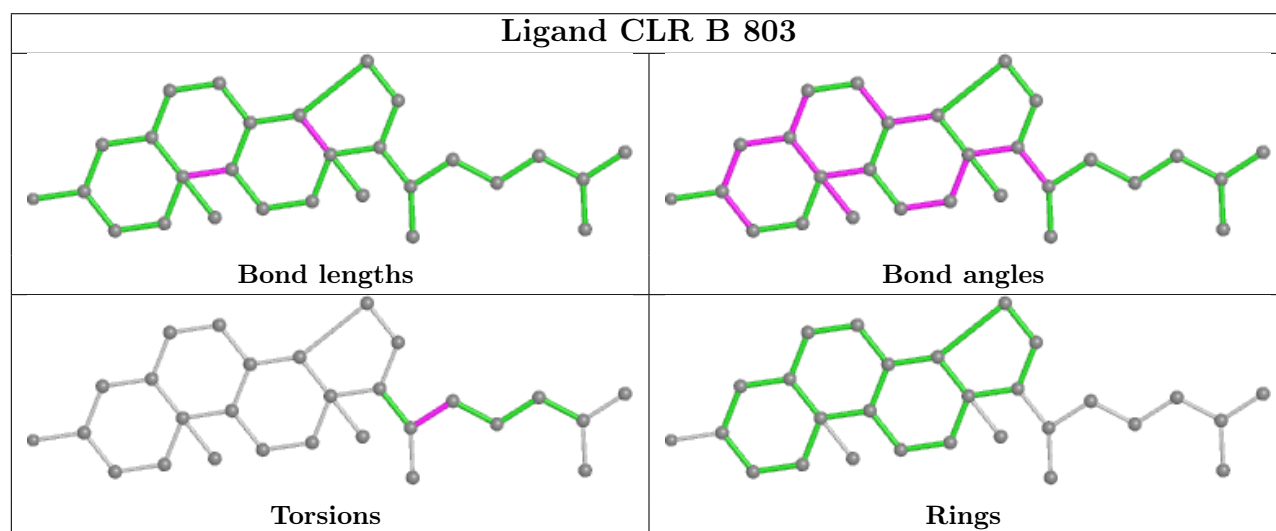
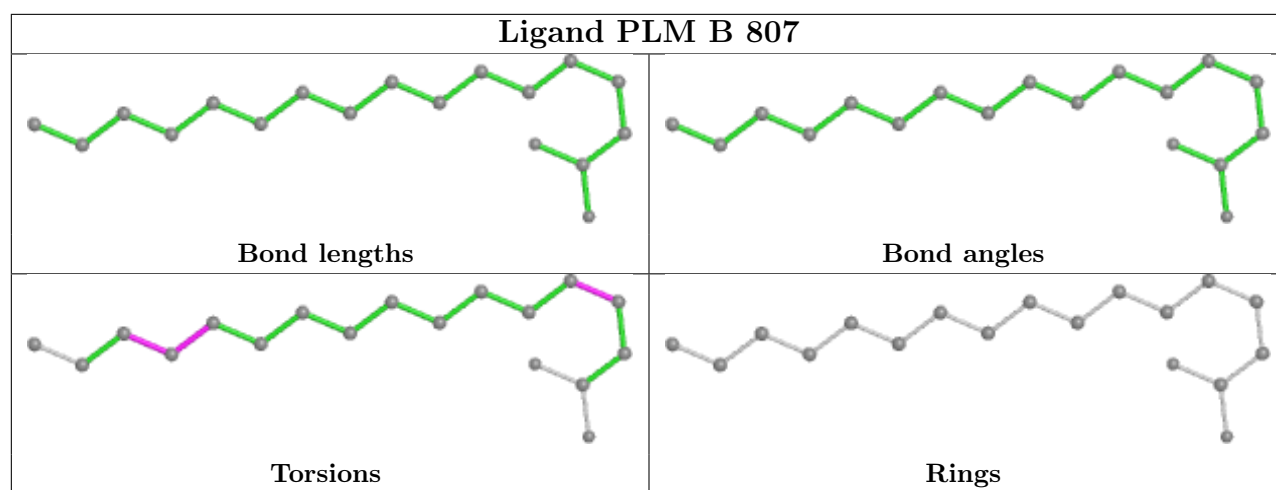
Torsions



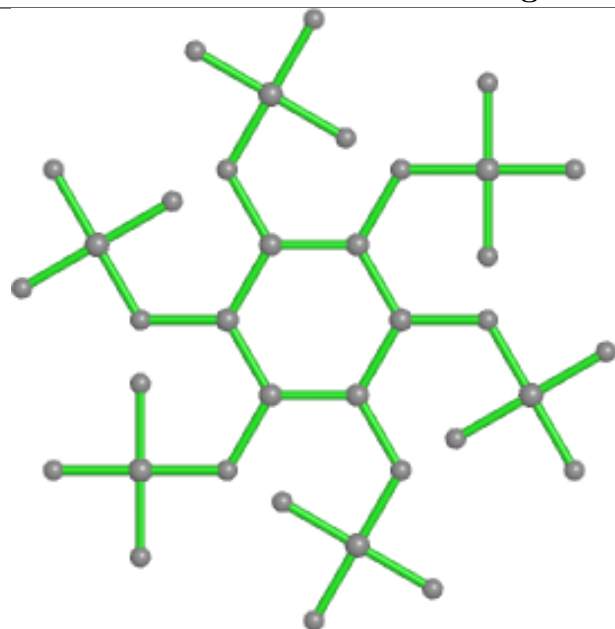
Rings



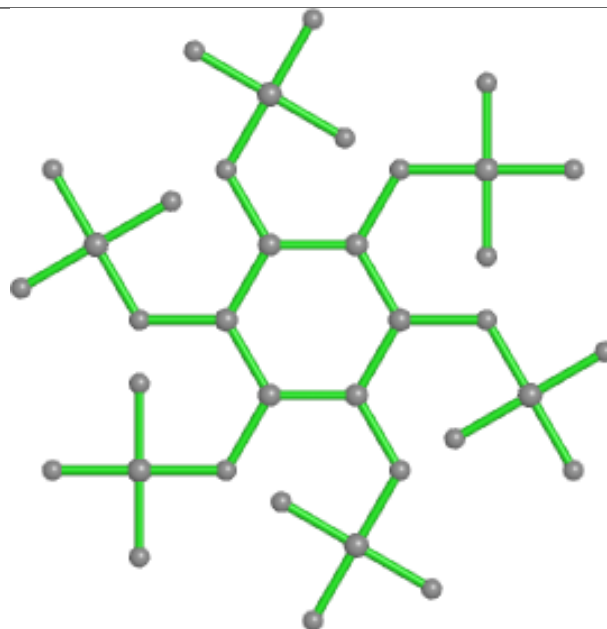




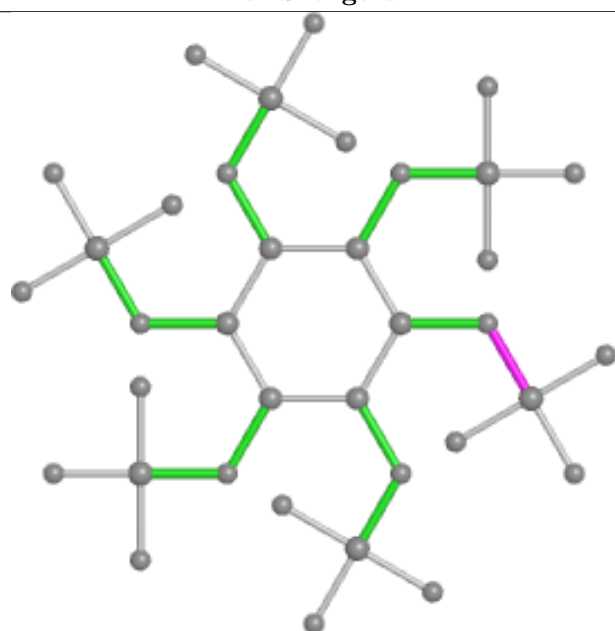
## Ligand IHP B 802



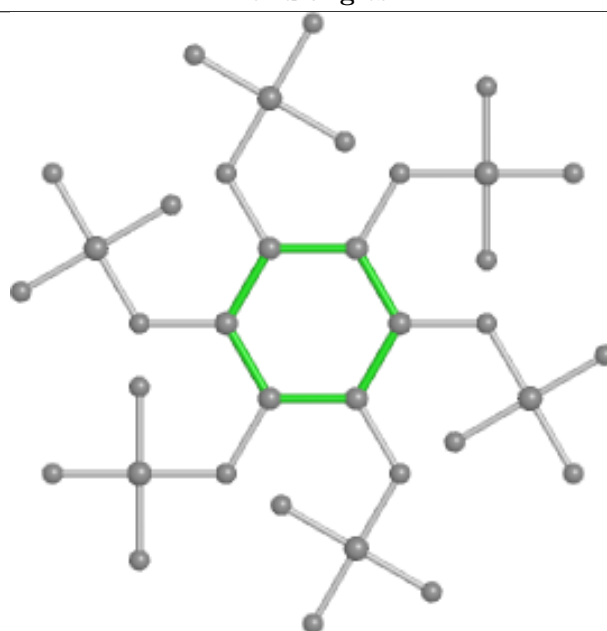
Bond lengths



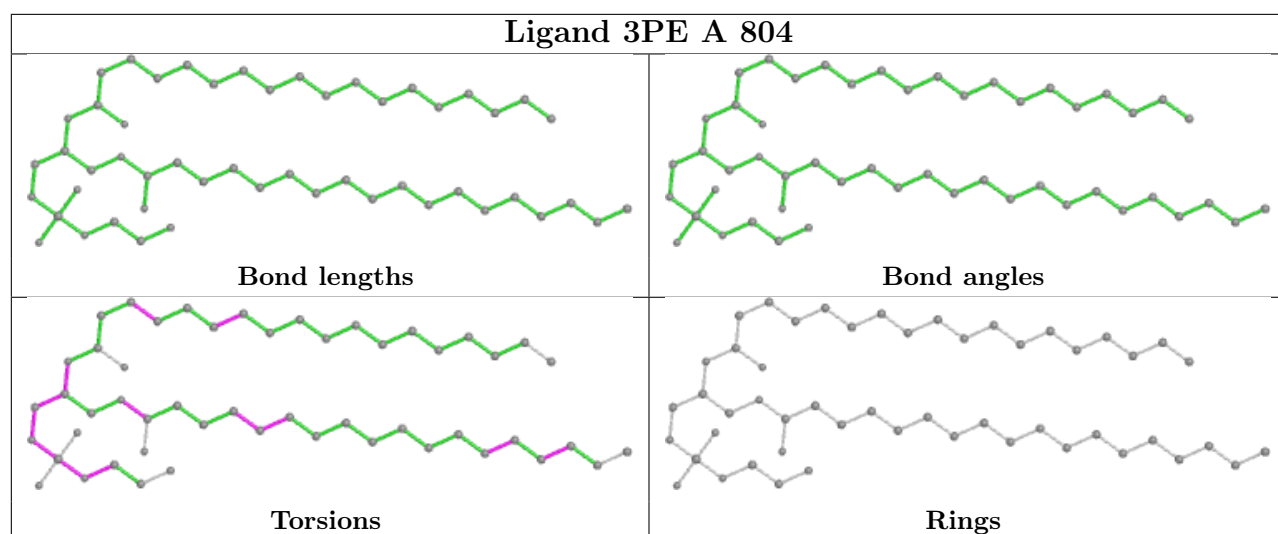
Bond angles

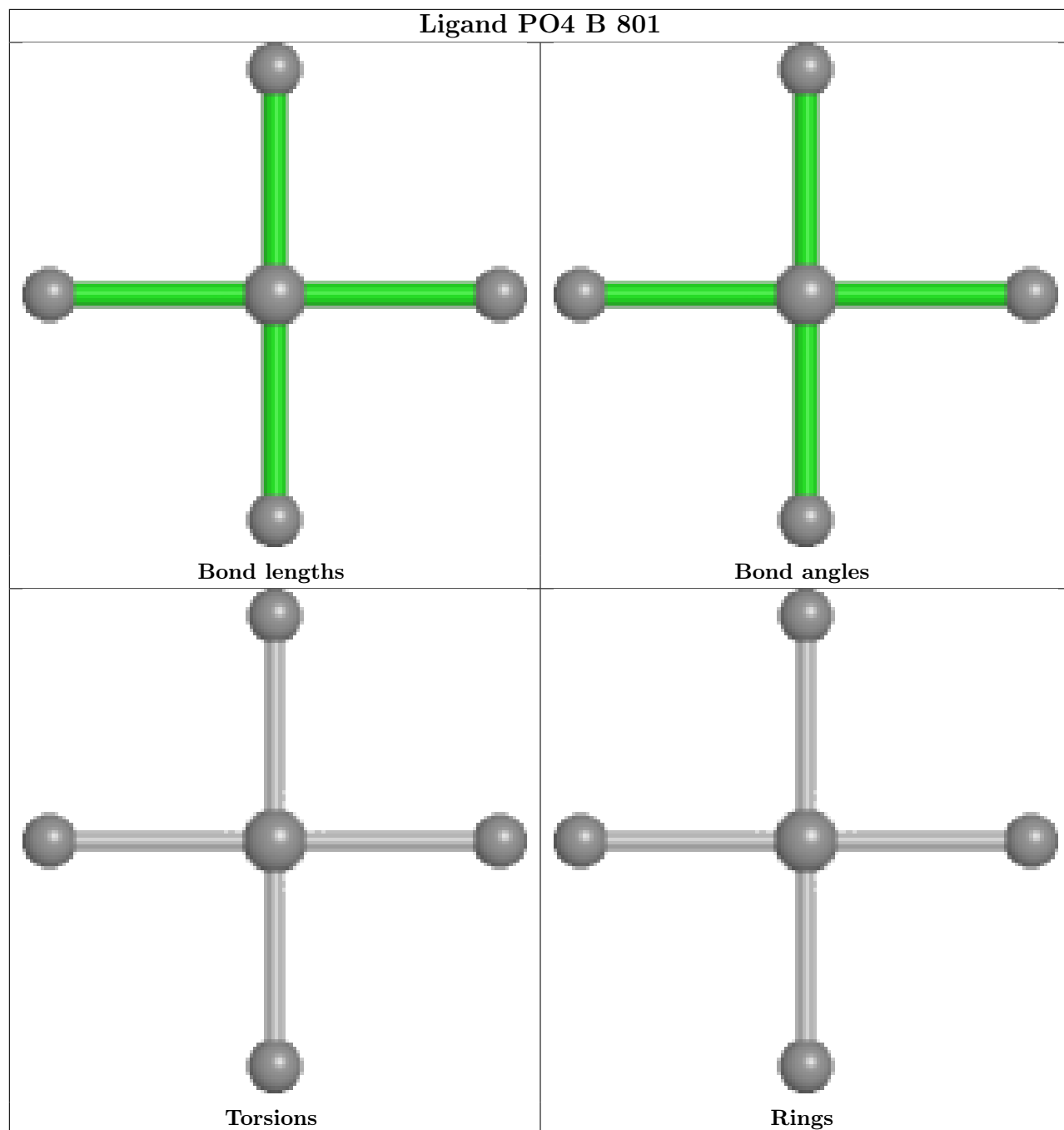


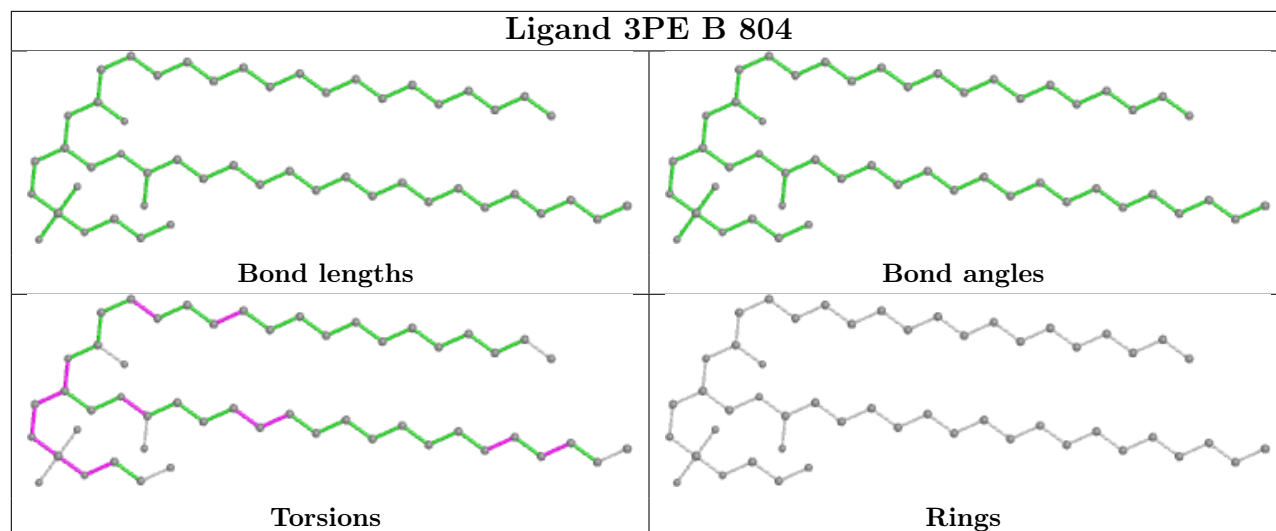
Torsions



Rings







## 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.

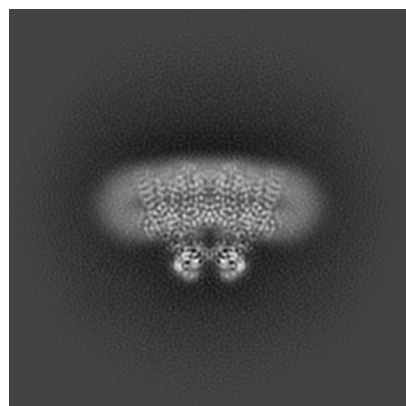
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-60861. These allow visual inspection of the internal detail of the map and identification of artifacts.

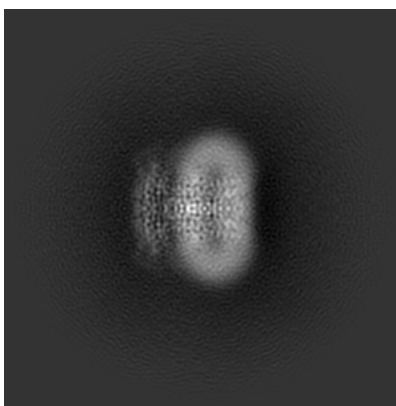
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

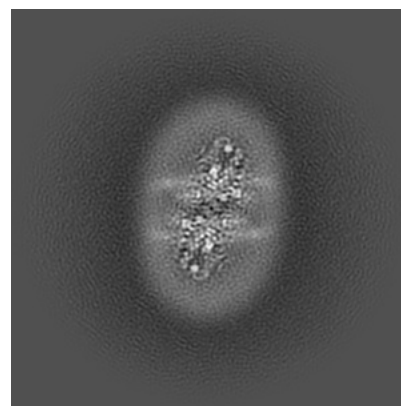
#### 6.1.1 Primary map



X

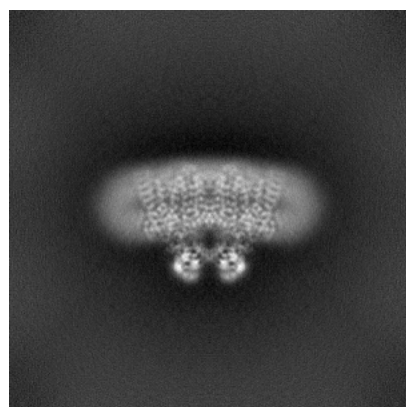


Y

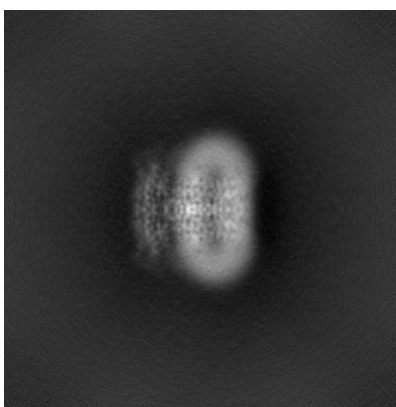


Z

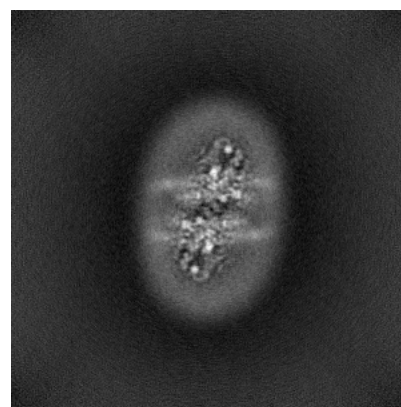
#### 6.1.2 Raw map



X



Y

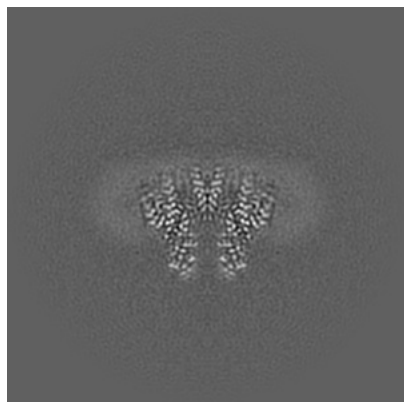


Z

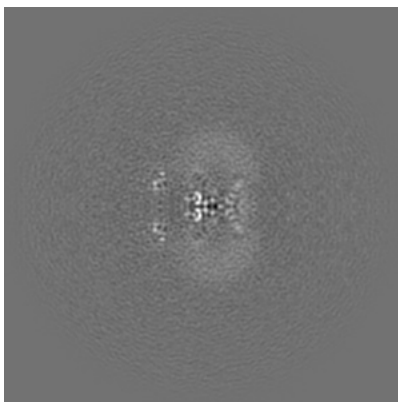
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

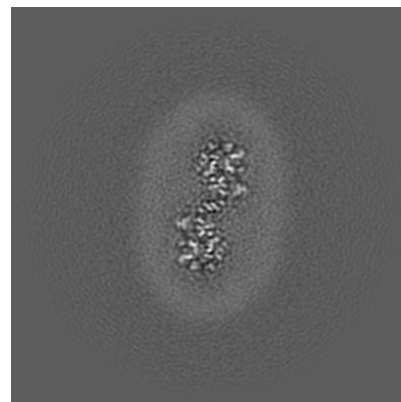
### 6.2.1 Primary map



X Index: 200

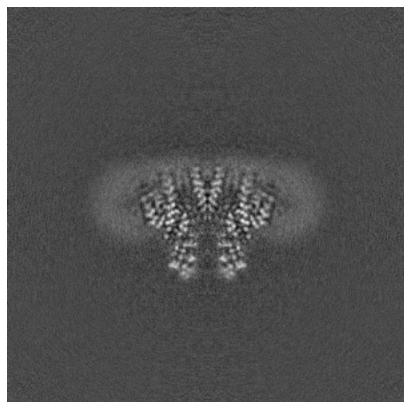


Y Index: 200

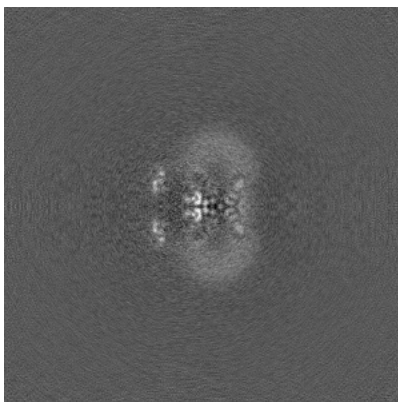


Z Index: 200

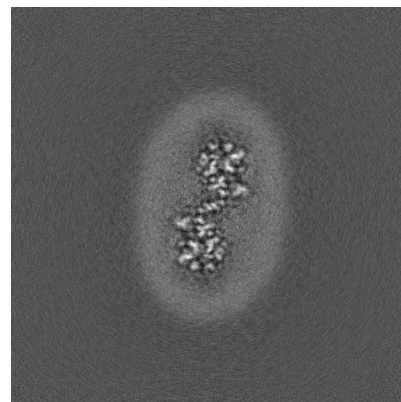
### 6.2.2 Raw map



X Index: 200



Y Index: 200

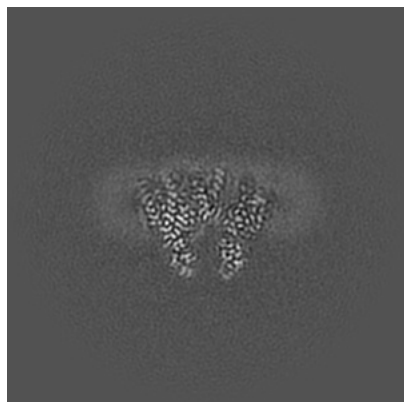


Z Index: 200

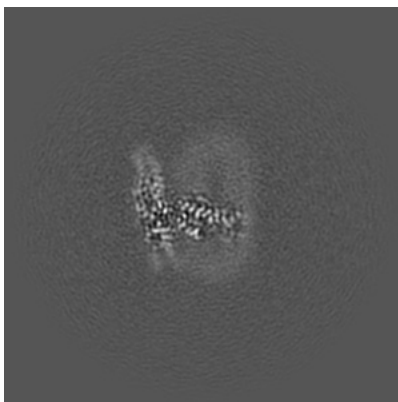
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

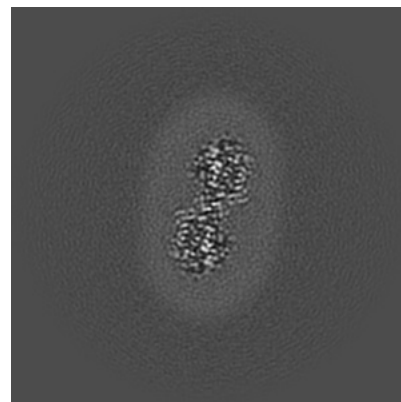
### 6.3.1 Primary map



X Index: 197

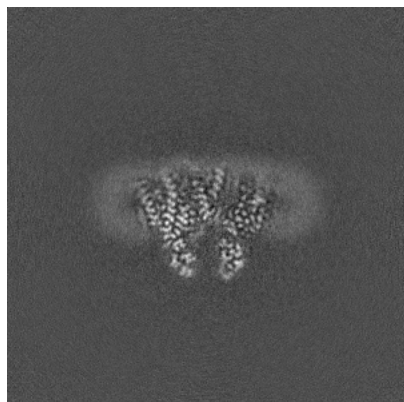


Y Index: 175

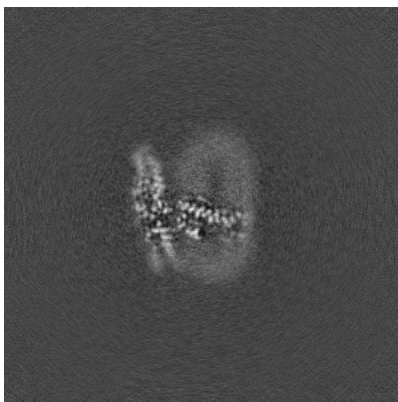


Z Index: 190

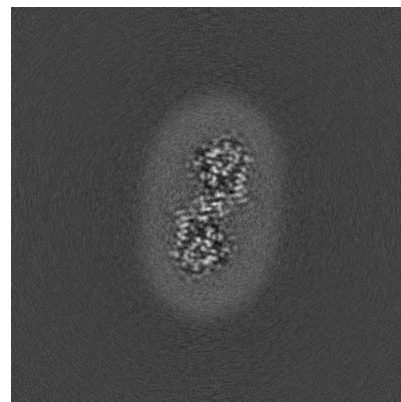
### 6.3.2 Raw map



X Index: 197



Y Index: 175



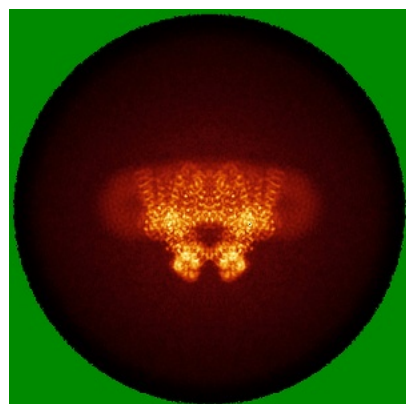
Z Index: 189

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

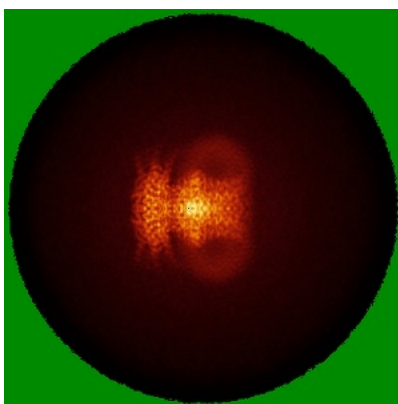


## 6.4 Orthogonal standard-deviation projections (False-color) ⓘ

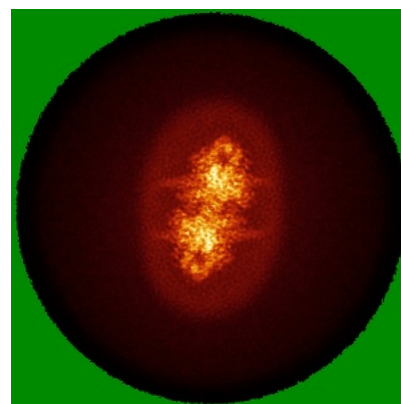
### 6.4.1 Primary map



X

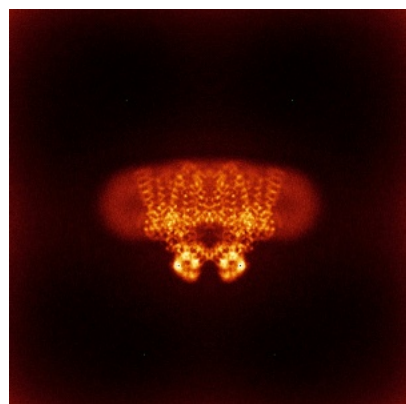


Y

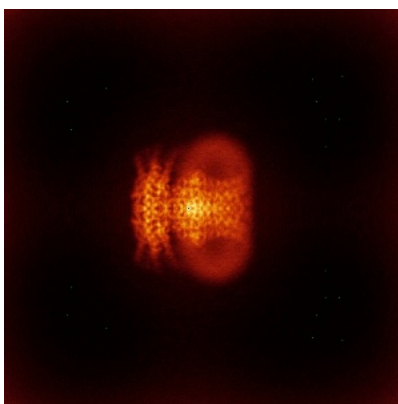


Z

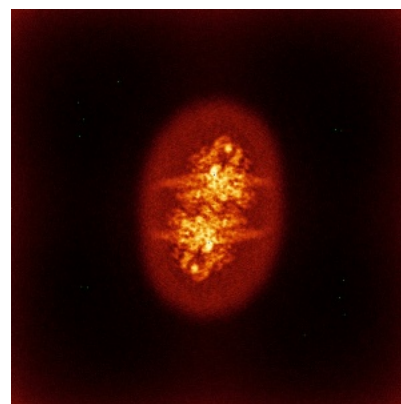
### 6.4.2 Raw map



X



Y

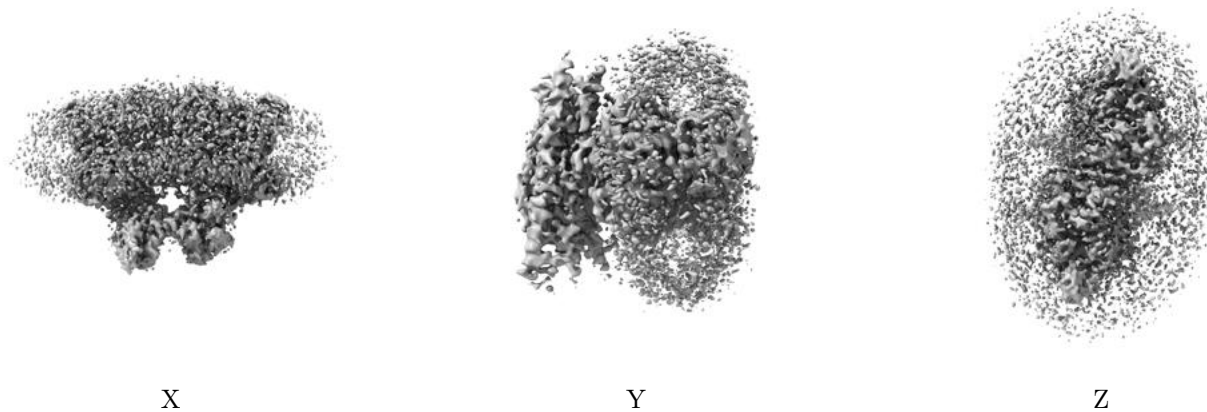


Z

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.

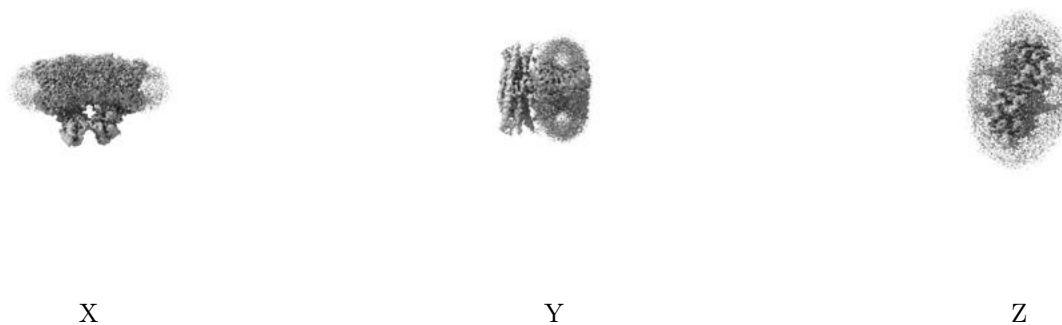
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.2. 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.

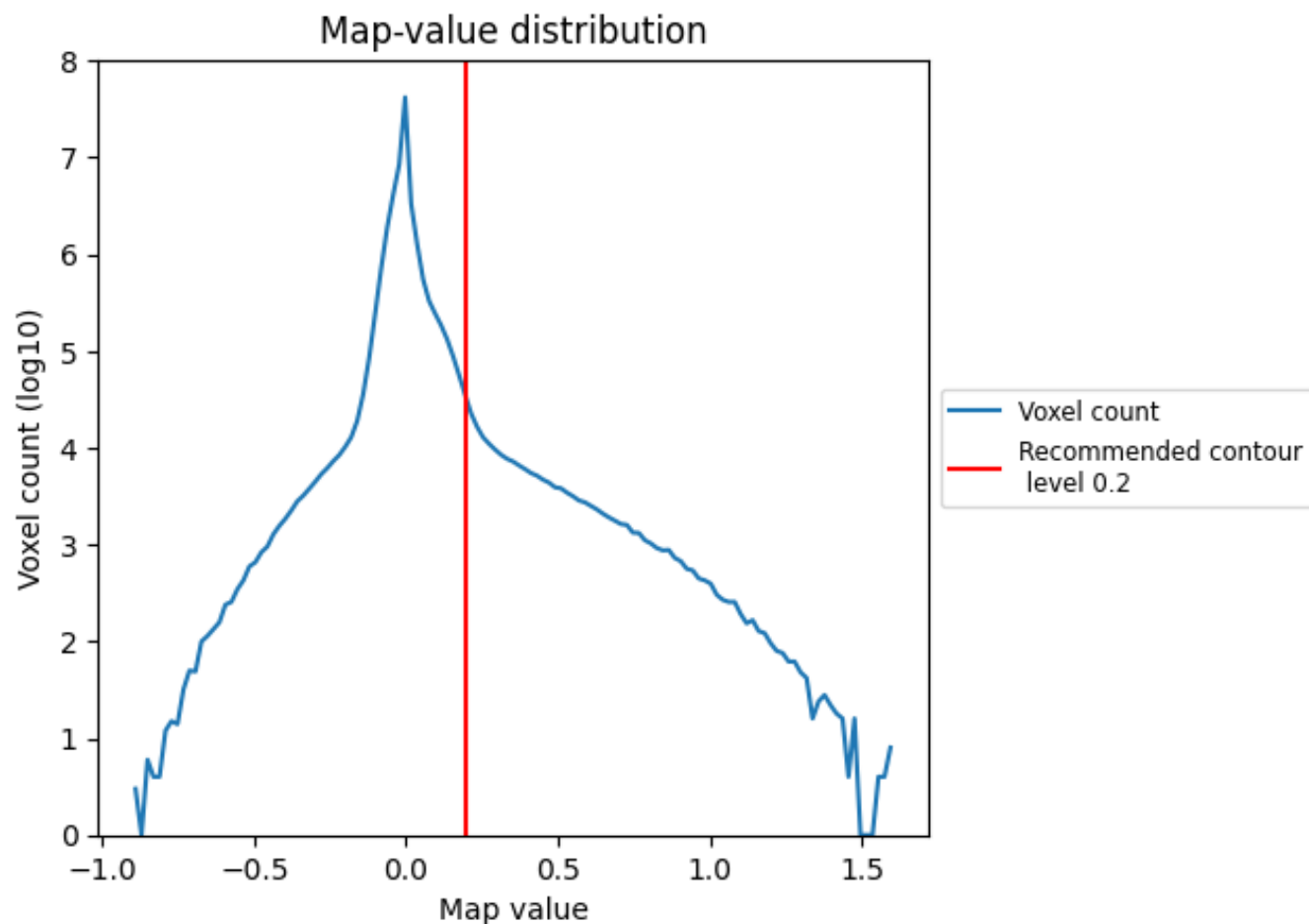
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

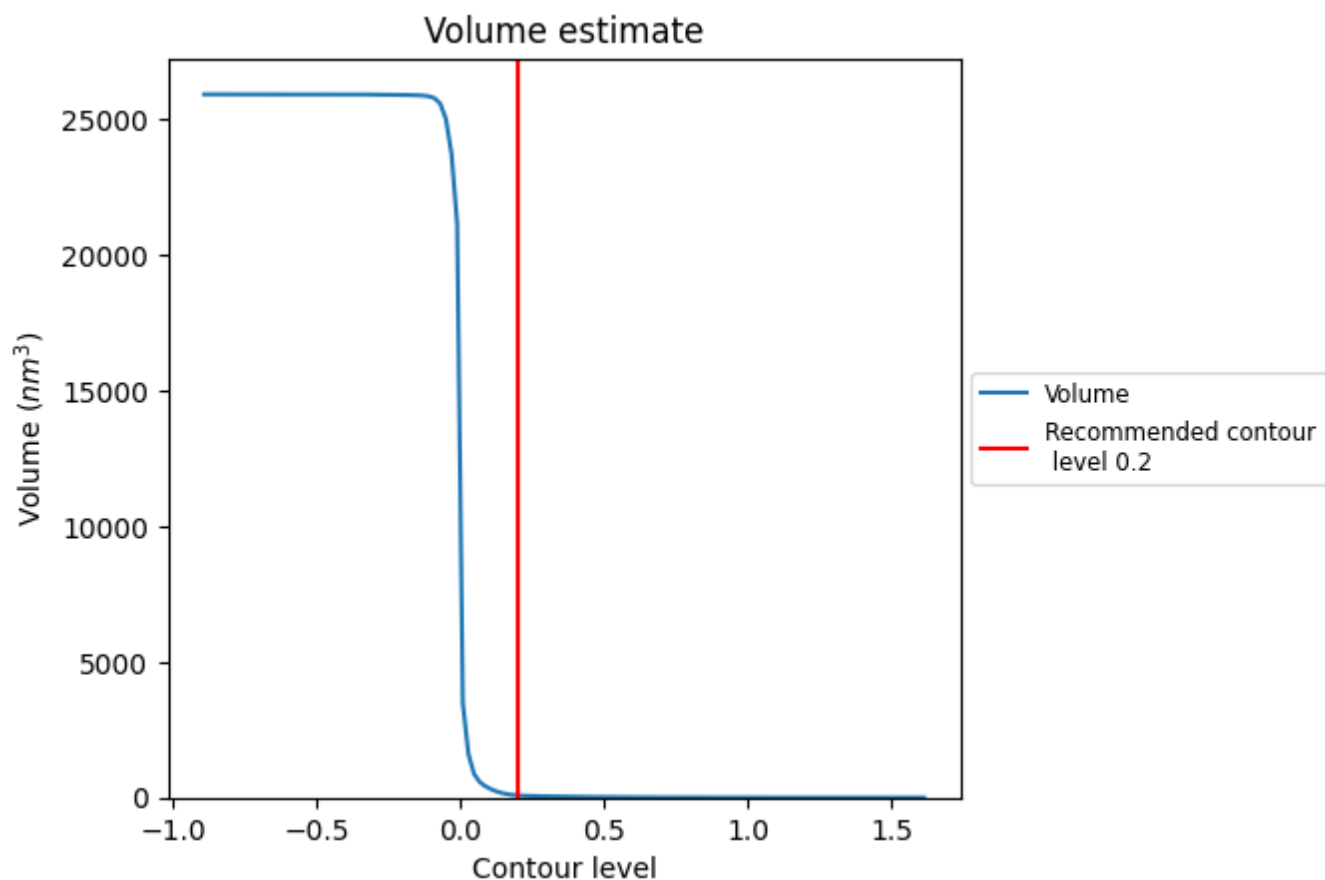
This section contains the results of statistical analysis of the map.

### 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.

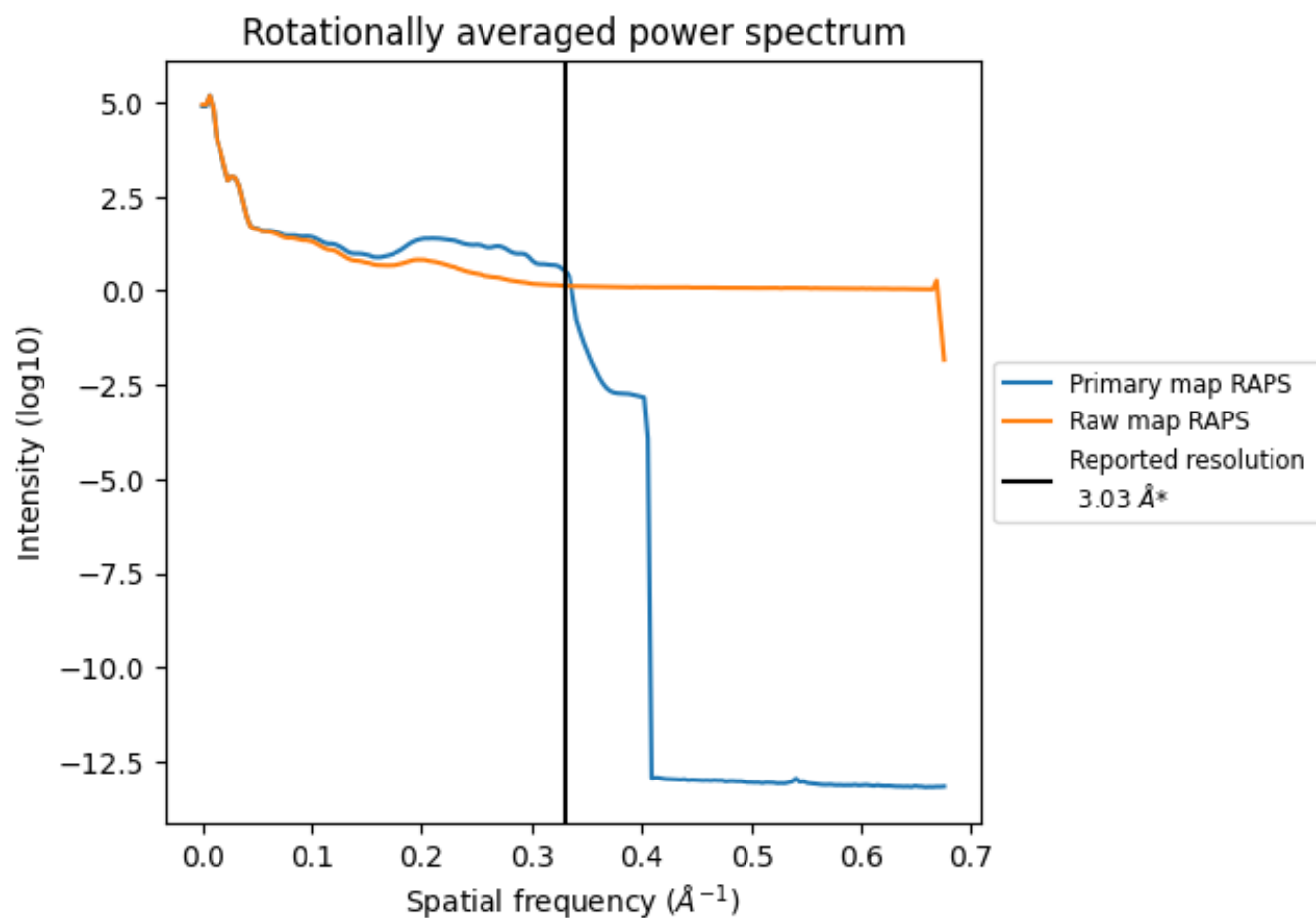
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 82  $\text{nm}^3$ ; this corresponds to an approximate mass of 74 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 ⓘ

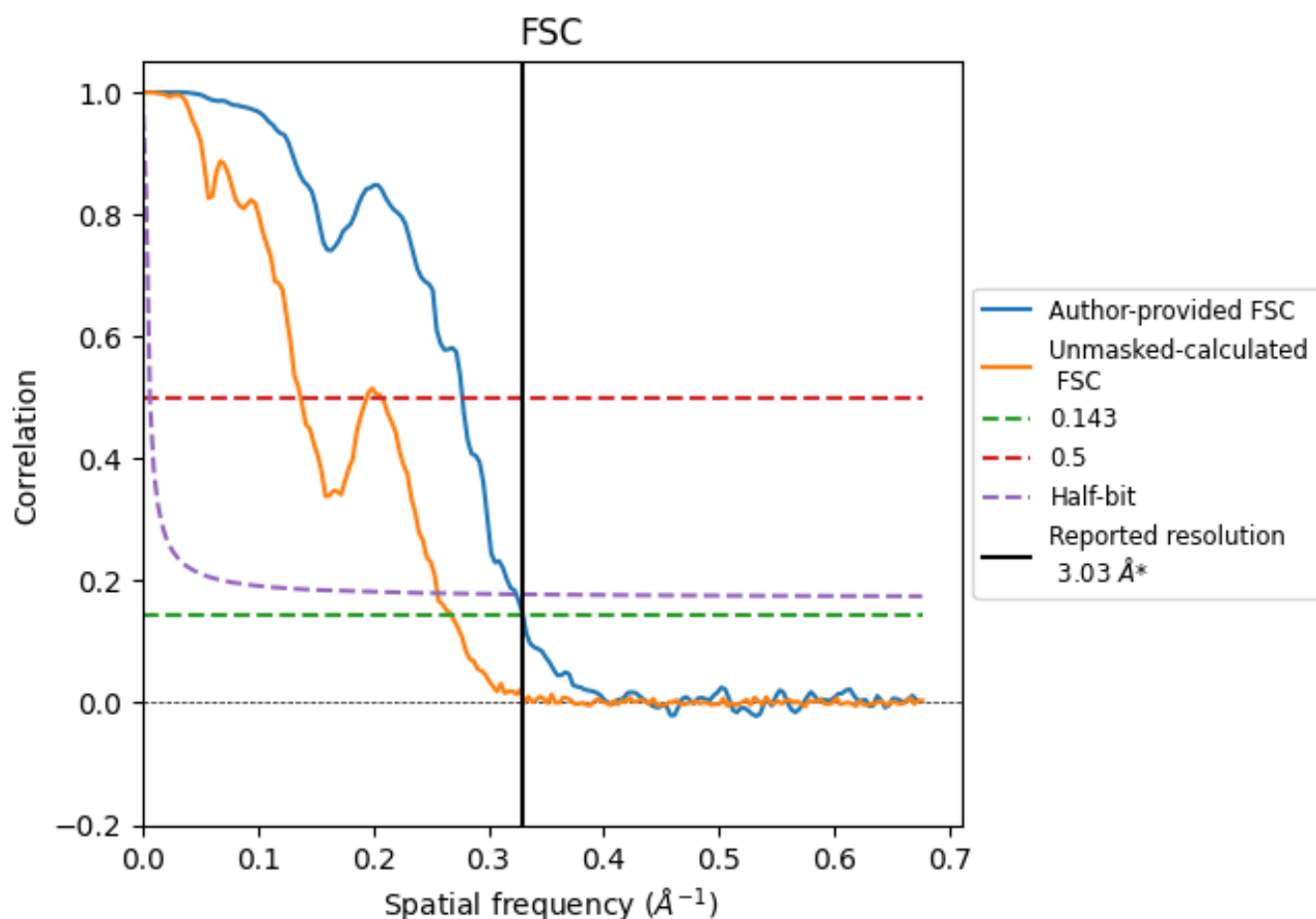


\*Reported resolution corresponds to spatial frequency of 0.330 Å<sup>-1</sup>

## 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 0.330  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

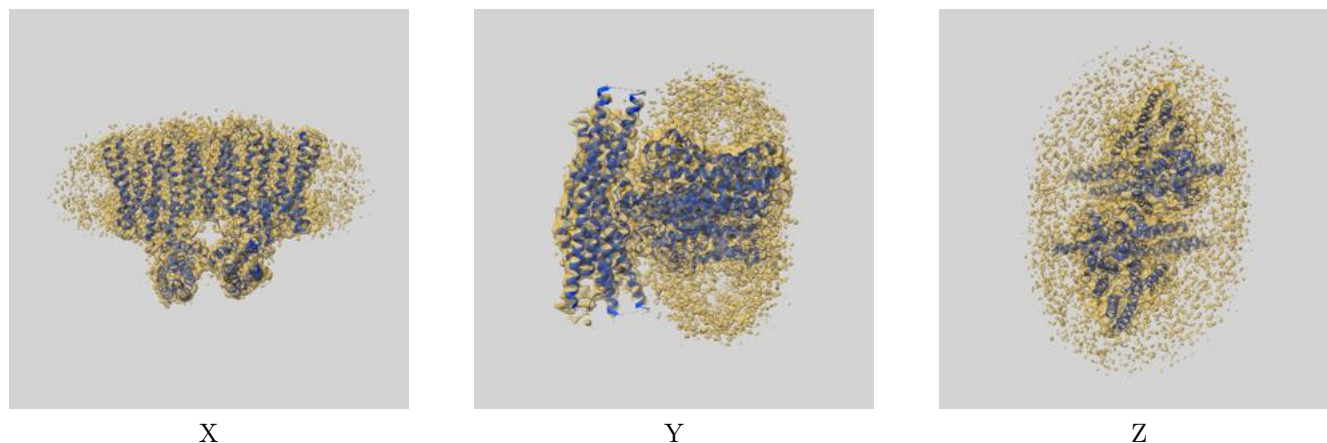
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.03	-	-
Author-provided FSC curve	3.03	3.60	3.09
Unmasked-calculated*	3.73	7.29	3.91

\*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 3.73 differs from the reported value 3.03 by more than 10 %

## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-60861 and PDB model 9ITG. Per-residue inclusion information can be found in section [3](#) on page [9](#).

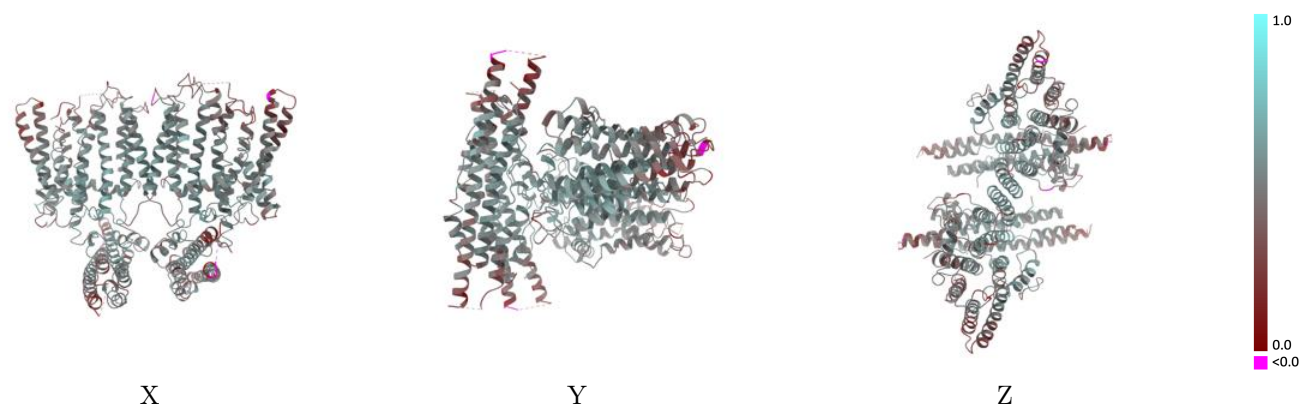
### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.2 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.

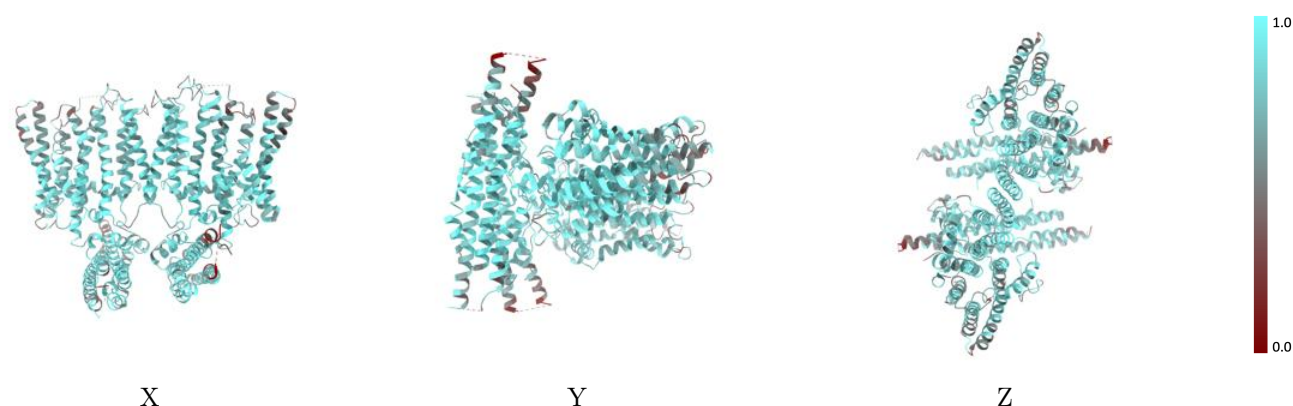


## 9.2 Q-score mapped to coordinate model [i](#)



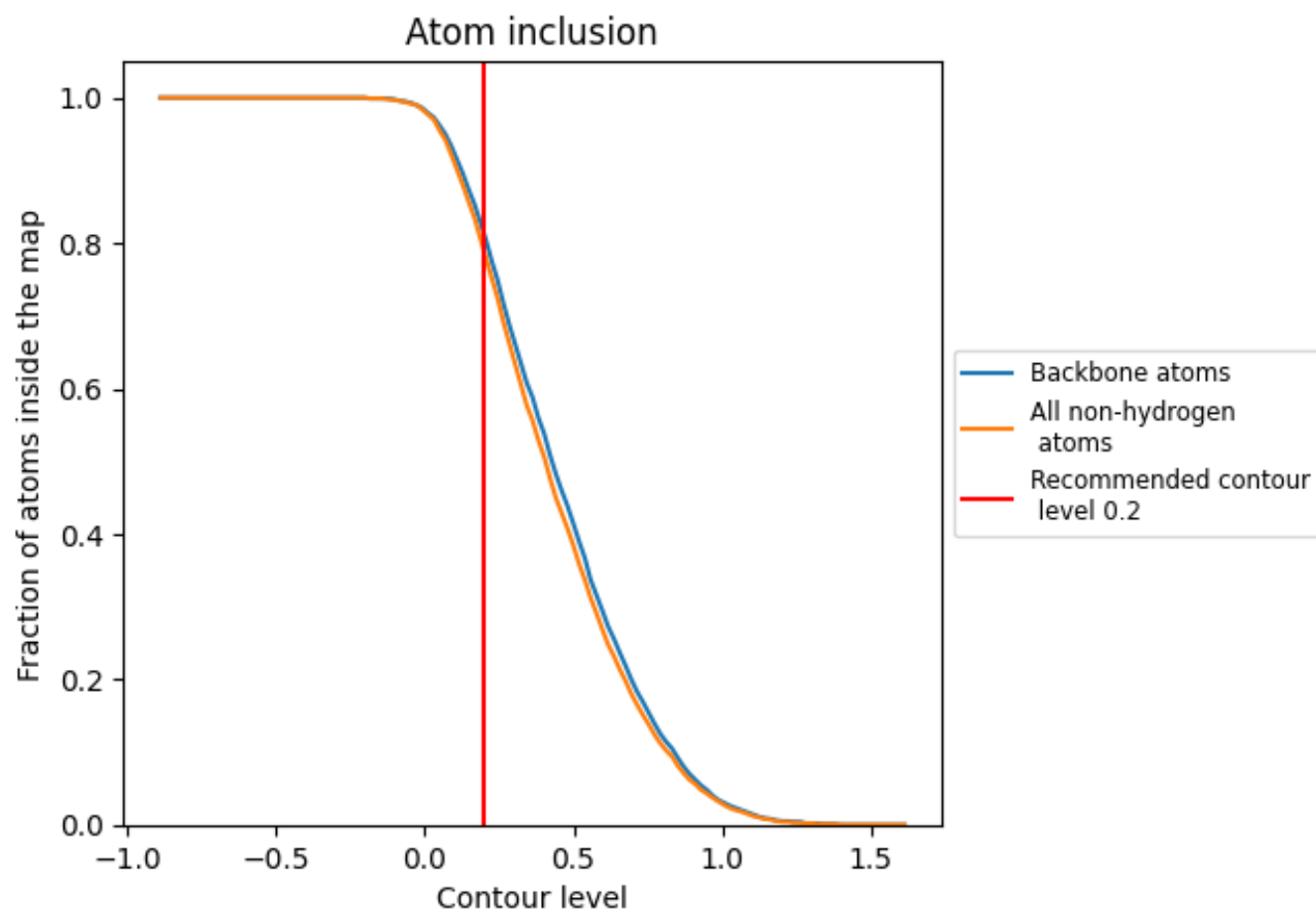
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.2).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 79% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.7870	<div></div> 0.4780
A	<div></div> 0.7880	<div></div> 0.4780
B	<div></div> 0.7890	<div></div> 0.4790

