



Full wwPDB EM Validation Report ⓘ

Jun 29, 2025 – 02:31 am BST

PDB ID : 8QTR / pdb_00008qtr
EMDB ID : EMD-18653
Title : Cryo-EM structure of the FB-bound yeast Ceramide Synthase
Authors : Schaefer, J.; Clausmeyer, L.; Koerner, C.; Moeller, A.; Froehlich, F.
Deposited on : 2023-10-13
Resolution : 3.20 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.dev118
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
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) : 2.44

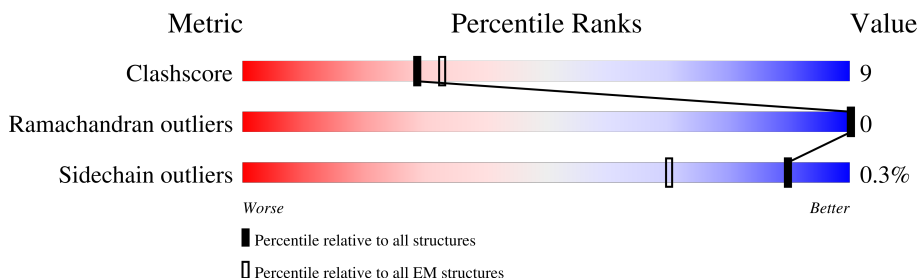
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	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 ≥ 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	309	
2	B	302	
3	C	132	
3	D	132	

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	WXE	B	401	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
7	PIJ	C	202	X	-	-	-
7	PIJ	D	402	X	-	-	-

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 7801 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 Ceramide synthase LAG1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	309	Total	C	N	O	S	0	0
			2636	1790	410	422	14		

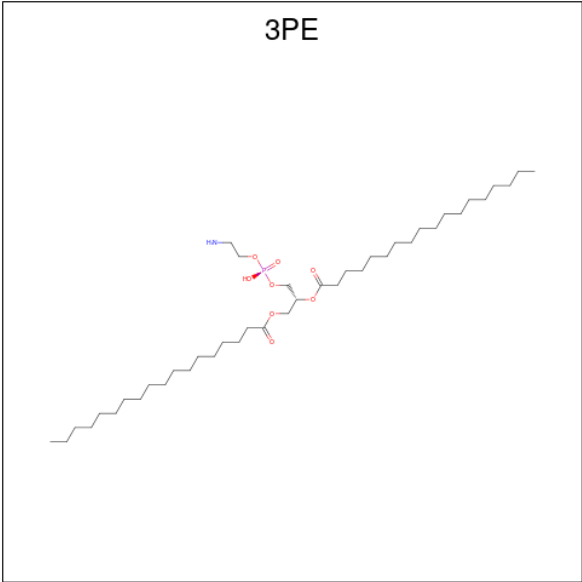
- Molecule 2 is a protein called Ceramide synthase LAC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	302	Total	C	N	O	S	0	0
			2540	1718	400	409	13		

- Molecule 3 is a protein called Ceramide synthase subunit LIP1.

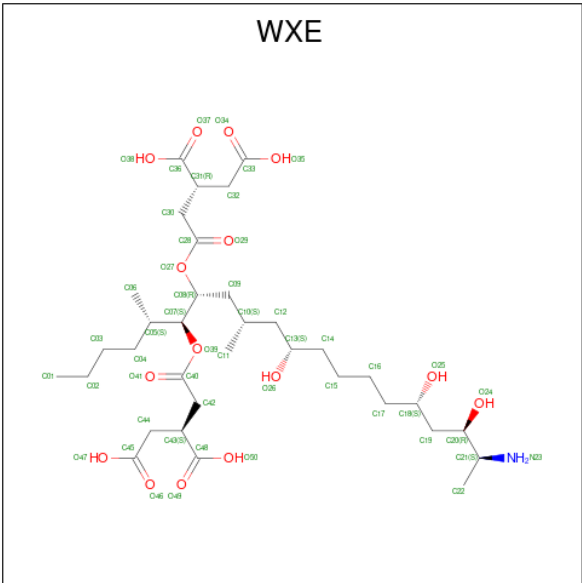
Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	132	Total	C	N	O	S	0	0
			1082	698	177	201	6		
3	D	131	Total	C	N	O	S	0	0
			1073	692	175	200	6		

- Molecule 4 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (CCD ID: 3PE) (formula: C₄₁H₈₂NO₈P).



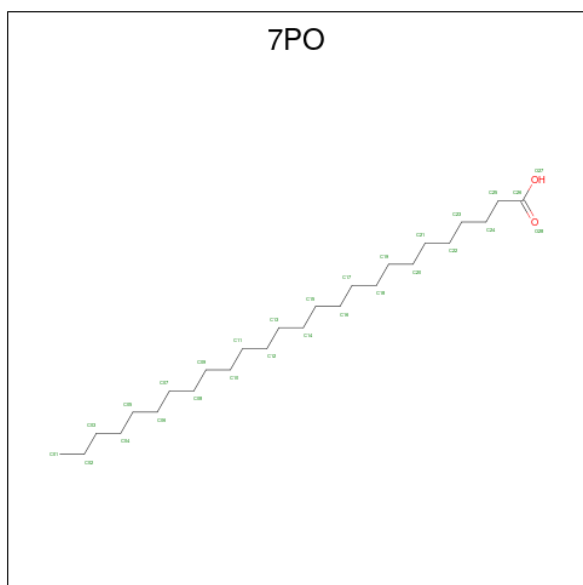
Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
4	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
4	C	1	Total	C	N	O	P	0
			51	41	1	8	1	
4	D	1	Total	C	N	O	P	0
			51	41	1	8	1	

- Molecule 5 is Macrofusine (CCD ID: WXE) (formula: C₃₄H₅₉NO₁₅) (labeled as "Ligand of Interest" by depositor).



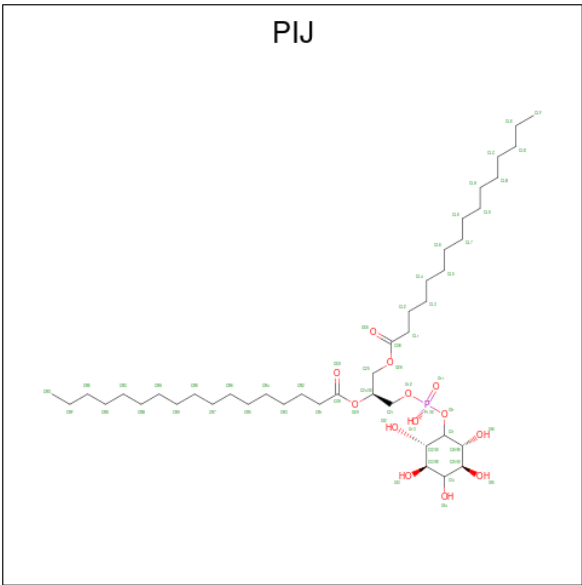
Mol	Chain	Residues	Atoms				AltConf
5	A	1	Total	C	N	O	0
			50	34	1	15	
5	B	1	Total	C	N	O	0
			50	34	1	15	

- Molecule 6 is hexacosanoic acid (CCD ID: 7PO) (formula: $C_{26}H_{52}O_2$) (labeled as "Ligand of Interest" by depositor).



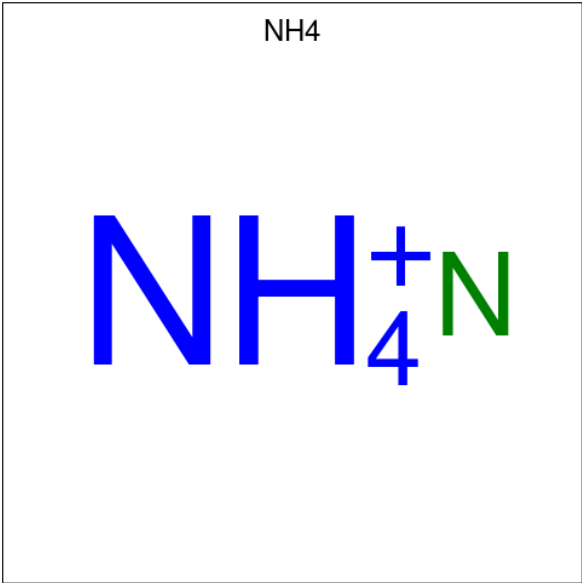
Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total	C	O	0
			27	26	1	
6	B	1	Total	C	O	0
			27	26	1	

- Molecule 7 is [(2S)-1-hexadecanoyloxy-3-[hydroxy-[(2S,3R,5S,6R)-2,3,4,5,6-pentahydroxycyclohexyl]oxy-phosphoryl]oxy-propan-2-yl] heptadecanoate (CCD ID: PIJ) (formula: $C_{42}H_{81}O_{13}P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
7	C	1	Total	C	O	P	0
			55	41	13	1	
7	D	1	Total	C	O	P	0
			55	41	13	1	

- Molecule 8 is AMMONIUM ION (CCD ID: NH4) (formula: H₄N).

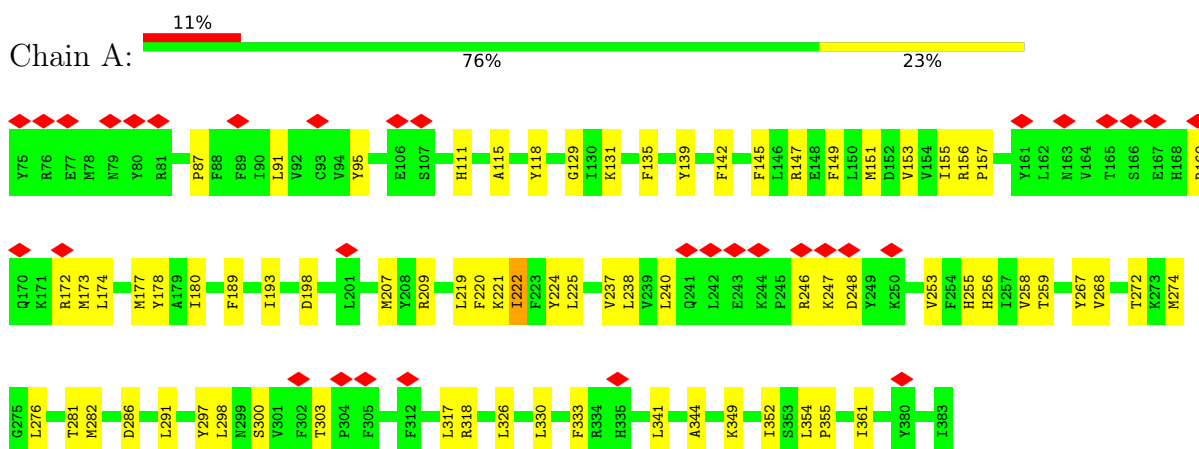


Mol	Chain	Residues	Atoms		AltConf
8	C	1	Total	N	0
			1	1	
8	D	1	Total	N	0
			1	1	

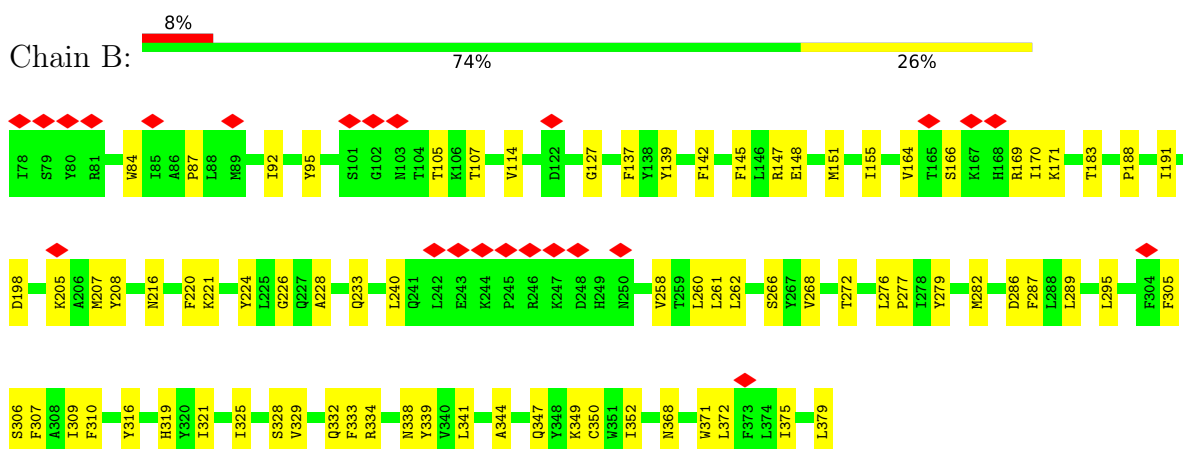
3 Residue-property plots

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.

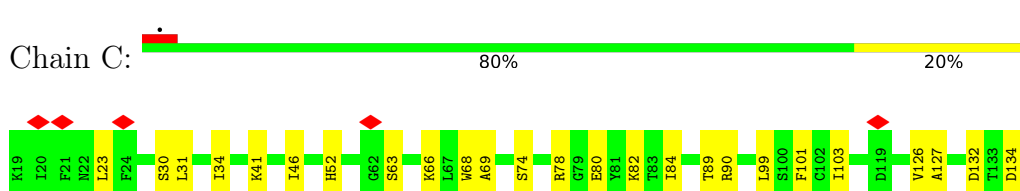
• Molecule 1: Ceramide synthase LAG1



• Molecule 2: Ceramide synthase LAC1

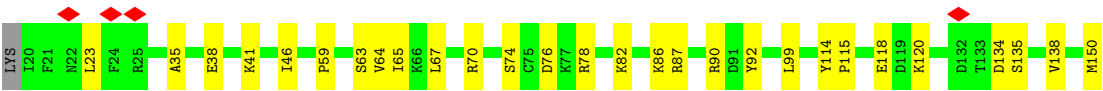


• Molecule 3: Ceramide synthase subunit LIP1



● Molecule 3: Ceramide synthase subunit LIP1

Chain D:  78% 21% .



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	259645	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	1.043	Depositor
Minimum map value	-0.616	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	306.0, 306.0, 306.0	wwPDB
Map dimensions	450, 450, 450	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.68, 0.68, 0.68	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: 7PO, 3PE, PIJ, WXE, NH4

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	0.13	0/2728	0.33	0/3710
2	B	0.12	0/2627	0.31	0/3574
3	C	0.10	0/1114	0.24	0/1512
3	D	0.08	0/1105	0.21	0/1501
All	All	0.11	0/7574	0.30	0/10297

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	2636	0	2642	56	0
2	B	2540	0	2541	50	0
3	C	1082	0	1037	22	0
3	D	1073	0	1024	23	0
4	A	51	0	82	2	0
4	B	51	0	82	2	0
4	C	51	0	82	5	0
4	D	51	0	82	3	0
5	A	50	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	50	0	0	2	0
6	A	27	0	0	0	0
6	B	27	0	0	0	0
7	C	55	0	0	0	0
7	D	55	0	0	0	0
8	C	1	0	0	0	0
8	D	1	0	0	0	0
All	All	7801	0	7572	141	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 9.

All (141) 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)
3:D:99:LEU:HB2	3:D:150:MET:HB2	1.60	0.82
2:B:151:MET:HA	2:B:155:ILE:HB	1.70	0.73
3:C:46:ILE:O	3:C:82:LYS:NZ	2.24	0.71
2:B:282:MET:HE1	2:B:368:ASN:HD21	1.56	0.70
5:B:401:WXE:O25	5:B:401:WXE:O24	2.09	0.69
3:D:46:ILE:O	3:D:82:LYS:NZ	2.26	0.68
2:B:286:ASP:OD2	5:B:401:WXE:N23	2.28	0.66
2:B:261:LEU:HD22	4:C:201:3PE:H2H1	1.79	0.65
3:D:38:GLU:HG3	4:D:401:3PE:H261	1.78	0.64
1:A:246:ARG:HG2	1:A:247:LYS:H	1.63	0.64
1:A:286:ASP:OD1	1:A:318:ARG:NH2	2.32	0.61
3:C:89:THR:HG22	3:C:150:MET:HE1	1.81	0.61
2:B:224:TYR:OH	2:B:266:SER:OG	2.13	0.61
1:A:91:LEU:HD11	1:A:142:PHE:HD1	1.65	0.61
1:A:246:ARG:HG2	1:A:247:LYS:N	2.16	0.61
1:A:180:ILE:HD11	1:A:291:LEU:HA	1.83	0.59
1:A:341:LEU:O	3:D:74:SER:OG	2.17	0.59
1:A:139:TYR:HA	1:A:142:PHE:HB3	1.85	0.59
2:B:260:LEU:HB3	4:C:201:3PE:H2H2	1.87	0.57
3:C:52:HIS:CE1	3:C:74:SER:HG	2.22	0.57
2:B:329:VAL:HA	2:B:333:PHE:HB2	1.85	0.57
1:A:155:ILE:HG22	1:A:174:LEU:HD22	1.87	0.57
1:A:246:ARG:NE	1:A:248:ASP:OD1	2.33	0.56
2:B:307:PHE:HE2	2:B:379:LEU:HB2	1.70	0.56
3:C:99:LEU:HB2	3:C:150:MET:HB2	1.88	0.55
3:D:92:TYR:HB3	3:D:99:LEU:HD11	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:69:ALA:HB3	3:C:80:GLU:HG3	1.88	0.55
1:A:149:PHE:O	1:A:153:VAL:HG12	2.05	0.55
3:D:63:SER:O	3:D:92:TYR:OH	2.23	0.55
2:B:183:THR:HB	2:B:287:PHE:HB2	1.89	0.55
1:A:147:ARG:HB2	1:A:178:TYR:CZ	2.43	0.54
2:B:216:ASN:HD22	2:B:272:THR:HG21	1.73	0.54
1:A:220:PHE:HE1	1:A:276:LEU:HD22	1.72	0.54
2:B:84:TRP:HB3	2:B:148:GLU:HB2	1.89	0.53
2:B:334:ARG:HG2	2:B:339:TYR:CZ	2.44	0.53
4:B:402:3PE:H381	4:B:402:3PE:H2D1	1.89	0.53
1:A:240:LEU:HD11	3:D:23:LEU:HD22	1.91	0.53
2:B:295:LEU:HD12	2:B:306:SER:CB	2.39	0.53
3:C:52:HIS:HD1	3:C:74:SER:HG	1.50	0.53
1:A:87:PRO:HB2	1:A:145:PHE:HB2	1.91	0.52
1:A:111:HIS:CD2	1:A:115:ALA:HB3	2.44	0.52
2:B:127:GLY:O	2:B:221:LYS:NZ	2.42	0.52
1:A:333:PHE:O	1:A:349:LYS:NZ	2.43	0.52
2:B:338:ASN:ND2	2:B:347:GLN:OE1	2.43	0.52
1:A:135:PHE:CE1	1:A:225:LEU:HB3	2.46	0.51
2:B:328:SER:O	2:B:333:PHE:N	2.43	0.51
2:B:198:ASP:OD2	2:B:198:ASP:N	2.43	0.51
2:B:226:GLY:HA3	4:B:402:3PE:H3A1	1.91	0.51
2:B:166:SER:HB2	2:B:169:ARG:HB2	1.93	0.51
1:A:274:MET:HE3	1:A:361:ILE:HD11	1.92	0.51
1:A:268:VAL:O	3:D:41:LYS:NZ	2.43	0.50
3:C:132:ASP:HA	3:C:135:SER:HB2	1.93	0.50
2:B:268:VAL:O	3:C:41:LYS:NZ	2.38	0.50
2:B:137:PHE:HZ	3:C:31:LEU:HD21	1.77	0.50
2:B:305:PHE:O	2:B:309:ILE:HG22	2.11	0.50
3:D:70:ARG:NH2	3:D:118:GLU:O	2.43	0.50
1:A:118:TYR:CZ	1:A:131:LYS:HD2	2.46	0.49
1:A:255:HIS:O	1:A:259:THR:HG23	2.12	0.49
1:A:221:LYS:HE2	1:A:267:TYR:OH	2.12	0.49
1:A:173:MET:O	1:A:177:MET:HG3	2.12	0.49
3:C:63:SER:OG	3:C:134:ASP:OD2	2.27	0.49
3:D:115:PRO:HD2	3:D:120:LYS:HA	1.96	0.48
1:A:198:ASP:OD2	1:A:209:ARG:NH2	2.31	0.48
1:A:207:MET:SD	1:A:274:MET:HB2	2.53	0.48
2:B:220:PHE:HE1	2:B:276:LEU:HD22	1.77	0.48
1:A:151:MET:HA	1:A:155:ILE:HB	1.96	0.48
1:A:303:THR:OG1	5:A:402:WXE:O37	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:371:TRP:O	2:B:375:ILE:HG12	2.14	0.48
3:C:101:PHE:HE2	3:C:103:ILE:HG13	1.78	0.47
1:A:286:ASP:OD1	5:A:402:WXE:N23	2.46	0.47
1:A:238:LEU:HD21	1:A:253:VAL:HG23	1.96	0.47
3:D:67:LEU:HD21	3:D:87:ARG:HB2	1.97	0.47
1:A:147:ARG:HH12	1:A:237:VAL:HG11	1.80	0.47
1:A:268:VAL:HG22	4:D:401:3PE:H331	1.96	0.47
2:B:188:PRO:HA	2:B:191:ILE:HG12	1.97	0.47
3:D:63:SER:OG	3:D:134:ASP:OD2	2.31	0.47
3:D:86:LYS:O	3:D:90:ARG:HB2	2.15	0.47
1:A:95:TYR:HE1	4:A:401:3PE:H342	1.79	0.47
1:A:282:MET:HB3	1:A:282:MET:HE2	1.65	0.47
1:A:333:PHE:CZ	1:A:349:LYS:HG3	2.50	0.47
2:B:147:ARG:HD3	2:B:233:GLN:HE22	1.79	0.46
3:C:30:SER:HB3	4:C:201:3PE:H2F1	1.97	0.46
1:A:246:ARG:CG	1:A:247:LYS:H	2.27	0.46
1:A:354:LEU:HB3	1:A:355:PRO:HD3	1.97	0.46
1:A:224:TYR:OH	1:A:272:THR:O	2.27	0.46
2:B:289:LEU:HB2	2:B:310:PHE:CE1	2.51	0.45
1:A:156:ARG:HB3	1:A:157:PRO:HD3	1.98	0.45
3:D:35:ALA:HB2	4:D:401:3PE:H291	1.98	0.45
1:A:169:ARG:HH21	1:A:297:TYR:HA	1.81	0.45
2:B:350:CYS:SG	2:B:352:ILE:HG12	2.55	0.45
2:B:344:ALA:HB1	3:C:78:ARG:HH21	1.81	0.45
2:B:344:ALA:HB1	3:C:78:ARG:NH2	2.32	0.45
1:A:281:THR:HB	1:A:317:LEU:HB3	1.98	0.45
1:A:189:PHE:O	1:A:193:ILE:HG22	2.18	0.44
3:C:34:ILE:HD11	4:C:201:3PE:H2F2	1.99	0.44
2:B:258:VAL:HG22	2:B:262:LEU:HD13	1.98	0.44
2:B:333:PHE:CE2	2:B:349:LYS:HG3	2.52	0.43
2:B:333:PHE:CZ	2:B:349:LYS:HG3	2.53	0.43
1:A:118:TYR:CZ	1:A:129:GLY:HA3	2.53	0.43
1:A:298:LEU:HD22	1:A:300:SER:HB2	1.99	0.43
3:D:76:ASP:OD1	3:D:76:ASP:N	2.50	0.43
1:A:330:LEU:HD23	1:A:330:LEU:HA	1.88	0.43
2:B:105:THR:HG23	2:B:107:THR:H	1.84	0.43
3:C:46:ILE:HD12	3:D:90:ARG:HG3	2.00	0.43
2:B:164:VAL:HG12	2:B:170:ILE:HG13	2.01	0.43
1:A:177:MET:HE2	1:A:177:MET:HB3	1.95	0.43
2:B:139:TYR:HA	2:B:142:PHE:HB3	2.01	0.43
3:D:135:SER:HA	3:D:138:VAL:HG12	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:189:PHE:HE1	1:A:219:LEU:HG	1.84	0.43
3:C:90:ARG:HG2	3:D:46:ILE:HD12	2.01	0.43
1:A:255:HIS:HA	1:A:258:VAL:HG12	2.01	0.42
2:B:240:LEU:HD13	3:C:23:LEU:HD22	2.01	0.42
1:A:326:LEU:HD23	1:A:326:LEU:HA	1.90	0.42
2:B:92:ILE:HD12	2:B:92:ILE:HA	1.85	0.42
1:A:246:ARG:CG	1:A:247:LYS:N	2.81	0.42
1:A:256:HIS:O	1:A:259:THR:OG1	2.33	0.42
1:A:222:ILE:HG23	4:A:401:3PE:H252	2.01	0.42
1:A:344:ALA:HB1	3:D:78:ARG:NH2	2.34	0.42
2:B:207:MET:HE1	2:B:277:PRO:HG3	2.01	0.42
1:A:172:ARG:NH1	1:A:246:ARG:HD3	2.34	0.42
2:B:316:TYR:O	2:B:321:ILE:HG12	2.19	0.42
3:D:59:PRO:HA	3:D:65:ILE:HA	2.02	0.41
2:B:84:TRP:CD1	2:B:84:TRP:H	2.37	0.41
2:B:87:PRO:HB2	2:B:145:PHE:HB2	2.02	0.41
3:C:68:TRP:HA	3:C:84:ILE:HD11	2.03	0.41
2:B:208:TYR:HB3	2:B:349:LYS:HE2	2.02	0.41
2:B:205:LYS:HA	2:B:332:GLN:HE21	1.86	0.41
3:D:64:VAL:HG23	3:D:134:ASP:HB3	2.03	0.41
1:A:189:PHE:CE1	1:A:219:LEU:HG	2.55	0.41
1:A:352:ILE:O	1:A:355:PRO:HD2	2.20	0.41
3:D:70:ARG:HA	3:D:114:TYR:CE2	2.56	0.41
2:B:171:LYS:HE2	2:B:171:LYS:HB3	1.81	0.41
2:B:228:ALA:HB1	4:C:201:3PE:H2B2	2.02	0.41
2:B:341:LEU:HG	3:C:52:HIS:HE1	1.85	0.41
3:C:66:LYS:HE3	3:C:126:VAL:HG21	2.02	0.41
2:B:325:ILE:O	2:B:329:VAL:HG23	2.20	0.41
2:B:319:HIS:NE2	2:B:372:LEU:HB2	2.37	0.40
2:B:95:TYR:HE1	2:B:114:VAL:HG13	1.87	0.40
3:C:103:ILE:HG12	3:C:127:ALA:HB2	2.02	0.40
3:D:150:MET:HB3	3:D:150:MET:HE3	1.84	0.40
1:A:91:LEU:HD11	1:A:142:PHE:CD1	2.52	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	307/309 (99%)	303 (99%)	4 (1%)	0	100	100
2	B	300/302 (99%)	291 (97%)	9 (3%)	0	100	100
3	C	130/132 (98%)	125 (96%)	5 (4%)	0	100	100
3	D	129/132 (98%)	124 (96%)	5 (4%)	0	100	100
All	All	866/875 (99%)	843 (97%)	23 (3%)	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	287/287 (100%)	286 (100%)	1 (0%)	91	96
2	B	272/272 (100%)	271 (100%)	1 (0%)	89	94
3	C	119/119 (100%)	119 (100%)	0	100	100
3	D	118/119 (99%)	118 (100%)	0	100	100
All	All	796/797 (100%)	794 (100%)	2 (0%)	90	96

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	222	ILE
2	B	279	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	322	ASN
2	B	196	HIS
2	B	250	ASN
2	B	368	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 2 are modelled with single atom - leaving 10 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	$\# Z > 2$
6	7PO	A	403	1	26,26,27	0.65	1 (3%)	25,25,27	0.53	0
6	7PO	B	403	2	26,26,27	0.65	1 (3%)	25,25,27	0.48	0
4	3PE	B	402	-	50,50,50	0.51	0	53,55,55	0.54	1 (1%)
7	PIJ	C	202	-	55,55,56	0.97	2 (3%)	65,67,68	1.20	5 (7%)
7	PIJ	D	402	-	55,55,56	0.97	2 (3%)	65,67,68	1.10	6 (9%)
5	WXE	B	401	-	49,49,49	1.63	8 (16%)	60,64,64	1.33	5 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	3PE	C	201	-	50,50,50	0.51	0	53,55,55	0.54	1 (1%)
4	3PE	A	401	-	50,50,50	0.51	0	53,55,55	0.53	1 (1%)
5	WXE	A	402	-	49,49,49	1.64	8 (16%)	60,64,64	1.37	6 (10%)
4	3PE	D	401	-	50,50,50	0.51	0	53,55,55	0.53	1 (1%)

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	7PO	A	403	1	-	13/24/24/25	-
7	PIJ	C	202	-	1/1/10/10	19/50/74/75	0/1/1/1
4	3PE	B	402	-	-	20/54/54/54	-
6	7PO	B	403	2	-	13/24/24/25	-
7	PIJ	D	402	-	1/1/10/10	22/50/74/75	0/1/1/1
5	WXE	B	401	-	5/5/16/16	32/67/67/67	-
4	3PE	D	401	-	-	6/54/54/54	-
4	3PE	A	401	-	-	15/54/54/54	-
5	WXE	A	402	-	-	38/67/67/67	-
4	3PE	C	201	-	-	11/54/54/54	-

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	402	WXE	C09-C08	4.42	1.60	1.52
5	B	401	WXE	C09-C08	4.15	1.60	1.52
5	B	401	WXE	C07-C08	3.55	1.58	1.52
5	A	402	WXE	C07-C08	3.47	1.58	1.52
5	A	402	WXE	O27-C28	3.42	1.44	1.34
5	B	401	WXE	C42-C40	3.42	1.57	1.50
5	A	402	WXE	C42-C40	3.30	1.57	1.50
5	B	401	WXE	O27-C28	3.21	1.43	1.34
5	B	401	WXE	O39-C40	3.16	1.43	1.34
5	A	402	WXE	O39-C40	3.09	1.43	1.34
6	A	403	7PO	O27-C26	-3.05	1.26	1.42
6	B	403	7PO	O27-C26	-3.04	1.26	1.42
7	C	202	PIJ	O26-CO6	2.88	1.41	1.33
7	D	402	PIJ	O26-CO6	2.84	1.41	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	401	WXE	C30-C28	2.76	1.56	1.50
5	A	402	WXE	C30-C28	2.75	1.56	1.50
7	D	402	PIJ	O29-CO9	2.59	1.41	1.34
7	C	202	PIJ	O29-CO9	2.54	1.41	1.34
5	B	401	WXE	C05-C07	2.31	1.57	1.53
5	A	402	WXE	C05-C07	2.29	1.57	1.53
5	A	402	WXE	C12-C13	2.07	1.57	1.52
5	B	401	WXE	C12-C13	2.04	1.57	1.52

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	C	202	PIJ	CI6-CI1-CI2	5.16	118.30	110.85
5	A	402	WXE	O39-C40-C42	4.39	119.53	111.46
5	A	402	WXE	O27-C28-C30	4.39	119.52	111.46
5	B	401	WXE	O39-C40-C42	4.34	119.43	111.46
5	B	401	WXE	O27-C28-C30	4.27	119.31	111.46
7	C	202	PIJ	O29-CO9-CR1	4.10	120.33	111.50
7	D	402	PIJ	O29-CO9-CR1	3.99	120.11	111.50
7	C	202	PIJ	CI3-CI2-CI1	3.39	117.42	109.68
7	D	402	PIJ	CI4-CI3-CI2	3.16	116.34	110.82
7	D	402	PIJ	CI6-CI1-CI2	3.16	115.40	110.85
7	D	402	PIJ	CI3-CI2-CI1	2.81	116.10	109.68
7	C	202	PIJ	O26-CO6-CL1	2.63	120.17	111.91
7	D	402	PIJ	O26-CO6-CL1	2.63	120.15	111.91
7	C	202	PIJ	CI5-CI6-CI1	2.53	115.45	109.68
5	A	402	WXE	O29-C28-C30	-2.38	119.47	124.73
4	A	401	3PE	O12-P-O14	2.34	123.82	112.24
4	D	401	3PE	O12-P-O14	2.34	123.82	112.24
4	B	402	3PE	O12-P-O14	2.34	123.78	112.24
4	C	201	3PE	O12-P-O14	2.34	123.78	112.24
5	A	402	WXE	O38-C36-C31	2.31	120.27	114.21
5	A	402	WXE	O50-C48-C43	2.27	120.14	114.21
7	D	402	PIJ	CI5-CI4-CI3	2.25	114.75	110.82
5	B	401	WXE	O38-C36-C31	2.21	120.00	114.21
5	B	401	WXE	O50-C48-C43	2.21	119.98	114.21
5	B	401	WXE	C08-O27-C28	-2.20	113.56	117.83
5	A	402	WXE	O41-C40-C42	-2.05	120.19	124.73

All (7) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	B	401	WXE	C31
5	B	401	WXE	C05
5	B	401	WXE	C43
5	B	401	WXE	C07
5	B	401	WXE	C08
7	C	202	PIJ	CI6
7	D	402	PIJ	CI6

All (189) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	401	3PE	C11-O13-P-O14
4	A	401	3PE	O13-C11-C12-N
4	B	402	3PE	C1-O11-P-O14
4	B	402	3PE	O21-C2-C3-O31
4	B	402	3PE	O22-C21-O21-C2
4	C	201	3PE	C11-O13-P-O12
4	C	201	3PE	O13-C11-C12-N
4	D	401	3PE	O22-C21-O21-C2
5	A	402	WXE	C05-C07-C08-C09
5	A	402	WXE	C05-C07-C08-O27
5	A	402	WXE	O39-C07-C08-O27
5	A	402	WXE	O27-C08-C09-C10
5	A	402	WXE	C07-C08-O27-C28
5	A	402	WXE	C08-C09-C10-C11
5	A	402	WXE	C08-C09-C10-C12
5	A	402	WXE	C09-C10-C12-C13
5	A	402	WXE	C11-C10-C12-C13
5	A	402	WXE	C10-C12-C13-C14
5	A	402	WXE	C10-C12-C13-O26
5	A	402	WXE	O25-C18-C19-C20
5	A	402	WXE	C19-C20-C21-N23
5	A	402	WXE	C28-C30-C31-C36
5	A	402	WXE	C40-C42-C43-C44
5	A	402	WXE	C40-C42-C43-C48
5	A	402	WXE	C42-C43-C44-C45
5	A	402	WXE	C48-C43-C44-C45
5	B	401	WXE	C06-C05-C07-O39
5	B	401	WXE	C05-C07-C08-C09
5	B	401	WXE	O39-C07-C08-C09
5	B	401	WXE	C08-C09-C10-C11
5	B	401	WXE	C09-C10-C12-C13
5	B	401	WXE	C11-C10-C12-C13

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Mol	Chain	Res	Type	Atoms
5	B	401	WXE	C12-C13-C14-C15
5	B	401	WXE	O26-C13-C14-C15
5	B	401	WXE	O25-C18-C19-C20
5	B	401	WXE	C18-C19-C20-C21
5	B	401	WXE	C18-C19-C20-O24
5	B	401	WXE	C19-C20-C21-N23
5	B	401	WXE	C30-C28-O27-C08
5	B	401	WXE	C40-C42-C43-C48
7	C	202	PIJ	C21-O12-P1-O11
7	C	202	PIJ	CI1-OI1-P1-O13
7	C	202	PIJ	CL1-CO6-O26-C25
7	D	402	PIJ	CI1-OI1-P1-O13
7	C	202	PIJ	OC6-CO6-O26-C25
4	A	401	3PE	O32-C31-O31-C3
4	C	201	3PE	O32-C31-O31-C3
7	D	402	PIJ	OC6-CO6-O26-C25
5	B	401	WXE	O29-C28-O27-C08
4	C	201	3PE	C32-C31-O31-C3
7	D	402	PIJ	CL1-CO6-O26-C25
4	B	402	3PE	C22-C21-O21-C2
4	D	401	3PE	C22-C21-O21-C2
4	A	401	3PE	C32-C31-O31-C3
5	A	402	WXE	C03-C04-C05-C06
5	A	402	WXE	O39-C07-C08-C09
5	B	401	WXE	C05-C07-C08-O27
6	B	403	7PO	C13-C14-C15-C16
5	A	402	WXE	C30-C28-O27-C08
7	C	202	PIJ	CL2-CL3-CL4-CL5
5	B	401	WXE	C16-C17-C18-O25
7	C	202	PIJ	CO6-CL1-CL2-CL3
7	D	402	PIJ	CR7-CR8-CR9-CRA
5	A	402	WXE	O29-C28-O27-C08
5	A	402	WXE	C17-C18-C19-C20
5	B	401	WXE	C17-C18-C19-C20
7	D	402	PIJ	CI1-OI1-P1-O12
4	D	401	3PE	C3D-C3E-C3F-C3G
7	D	402	PIJ	CL2-CL3-CL4-CL5
7	D	402	PIJ	CR1-CO9-O29-C24
4	D	401	3PE	C38-C39-C3A-C3B
6	A	403	7PO	C19-C20-C21-C22
6	A	403	7PO	C14-C15-C16-C17
7	C	202	PIJ	CL8-CL9-CLA-CLB

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Mol	Chain	Res	Type	Atoms
7	D	402	PIJ	OC9-CO9-O29-C24
4	B	402	3PE	C3B-C3C-C3D-C3E
6	A	403	7PO	C17-C18-C19-C20
7	C	202	PIJ	CR5-CR6-CR7-CR8
7	D	402	PIJ	CL3-CL4-CL5-CL6
4	A	401	3PE	C36-C37-C38-C39
4	A	401	3PE	C2A-C2B-C2C-C2D
6	B	403	7PO	C05-C06-C07-C08
4	C	201	3PE	C23-C24-C25-C26
7	C	202	PIJ	CL7-CL8-CL9-CLA
4	B	402	3PE	C37-C38-C39-C3A
7	D	402	PIJ	CL6-CL7-CL8-CL9
6	B	403	7PO	C21-C22-C23-C24
6	B	403	7PO	C01-C02-C03-C04
6	A	403	7PO	C05-C06-C07-C08
5	B	401	WXE	O39-C07-C08-O27
4	B	402	3PE	C39-C3A-C3B-C3C
4	A	401	3PE	C3E-C3F-C3G-C3H
7	D	402	PIJ	CR2-CR3-CR4-CR5
5	A	402	WXE	C42-C40-O39-C07
4	A	401	3PE	C11-O13-P-O11
6	B	403	7PO	C09-C10-C11-C12
6	B	403	7PO	C20-C21-C22-C23
6	B	403	7PO	C18-C19-C20-C21
6	B	403	7PO	C03-C04-C05-C06
5	A	402	WXE	C07-C08-C09-C10
7	C	202	PIJ	CR4-CR5-CR6-CR7
6	A	403	7PO	C20-C21-C22-C23
7	C	202	PIJ	CL4-CL5-CL6-CL7
4	B	402	3PE	C35-C36-C37-C38
7	C	202	PIJ	CI1-OI1-P1-O12
7	D	402	PIJ	CL1-CL2-CL3-CL4
7	C	202	PIJ	C21-C24-C25-O26
5	A	402	WXE	O41-C40-O39-C07
6	A	403	7PO	C23-C24-C25-C26
7	C	202	PIJ	CI1-OI1-P1-O11
7	D	402	PIJ	CI1-OI1-P1-O11
4	A	401	3PE	C29-C2A-C2B-C2C
4	B	402	3PE	O31-C31-C32-C33
7	C	202	PIJ	O29-C24-C25-O26
4	C	201	3PE	C24-C25-C26-C27
6	B	403	7PO	C06-C07-C08-C09

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Mol	Chain	Res	Type	Atoms
5	A	402	WXE	C03-C04-C05-C07
5	B	401	WXE	C16-C17-C18-C19
6	A	403	7PO	C04-C05-C06-C07
4	B	402	3PE	C34-C35-C36-C37
6	A	403	7PO	C02-C03-C04-C05
4	B	402	3PE	C1-C2-C3-O31
4	A	401	3PE	C22-C21-O21-C2
4	B	402	3PE	O11-C1-C2-O21
4	A	401	3PE	C3F-C3G-C3H-C3I
5	A	402	WXE	C18-C19-C20-O24
4	A	401	3PE	O22-C21-O21-C2
6	B	403	7PO	C07-C08-C09-C10
5	B	401	WXE	O29-C28-C30-C31
7	D	402	PIJ	CL4-CL5-CL6-CL7
6	A	403	7PO	C07-C08-C09-C10
4	B	402	3PE	C1-O11-P-O13
4	C	201	3PE	C2-C1-O11-P
6	B	403	7PO	C16-C17-C18-C19
7	D	402	PIJ	CLC-CLD-CLE-CLF
5	B	401	WXE	C48-C43-C44-C45
7	D	402	PIJ	C21-O12-P1-O13
5	A	402	WXE	C15-C16-C17-C18
5	A	402	WXE	O24-C20-C21-C22
4	B	402	3PE	C31-C32-C33-C34
5	B	401	WXE	O27-C28-C30-C31
5	B	401	WXE	C04-C05-C07-C08
6	A	403	7PO	C15-C16-C17-C18
6	A	403	7PO	C12-C13-C14-C15
7	C	202	PIJ	CL3-CL4-CL5-CL6
4	B	402	3PE	O11-C1-C2-C3
4	B	402	3PE	C2C-C2D-C2E-C2F
7	D	402	PIJ	O12-C21-C24-O29
4	C	201	3PE	C34-C35-C36-C37
4	C	201	3PE	C1-O11-P-O13
7	D	402	PIJ	C21-O12-P1-OI1
6	A	403	7PO	C21-C22-C23-C24
5	B	401	WXE	O41-C40-C42-C43
4	D	401	3PE	C33-C34-C35-C36
5	B	401	WXE	O39-C40-C42-C43
6	A	403	7PO	C24-C25-C26-O27
5	A	402	WXE	C06-C05-C07-C08
5	B	401	WXE	C13-C14-C15-C16

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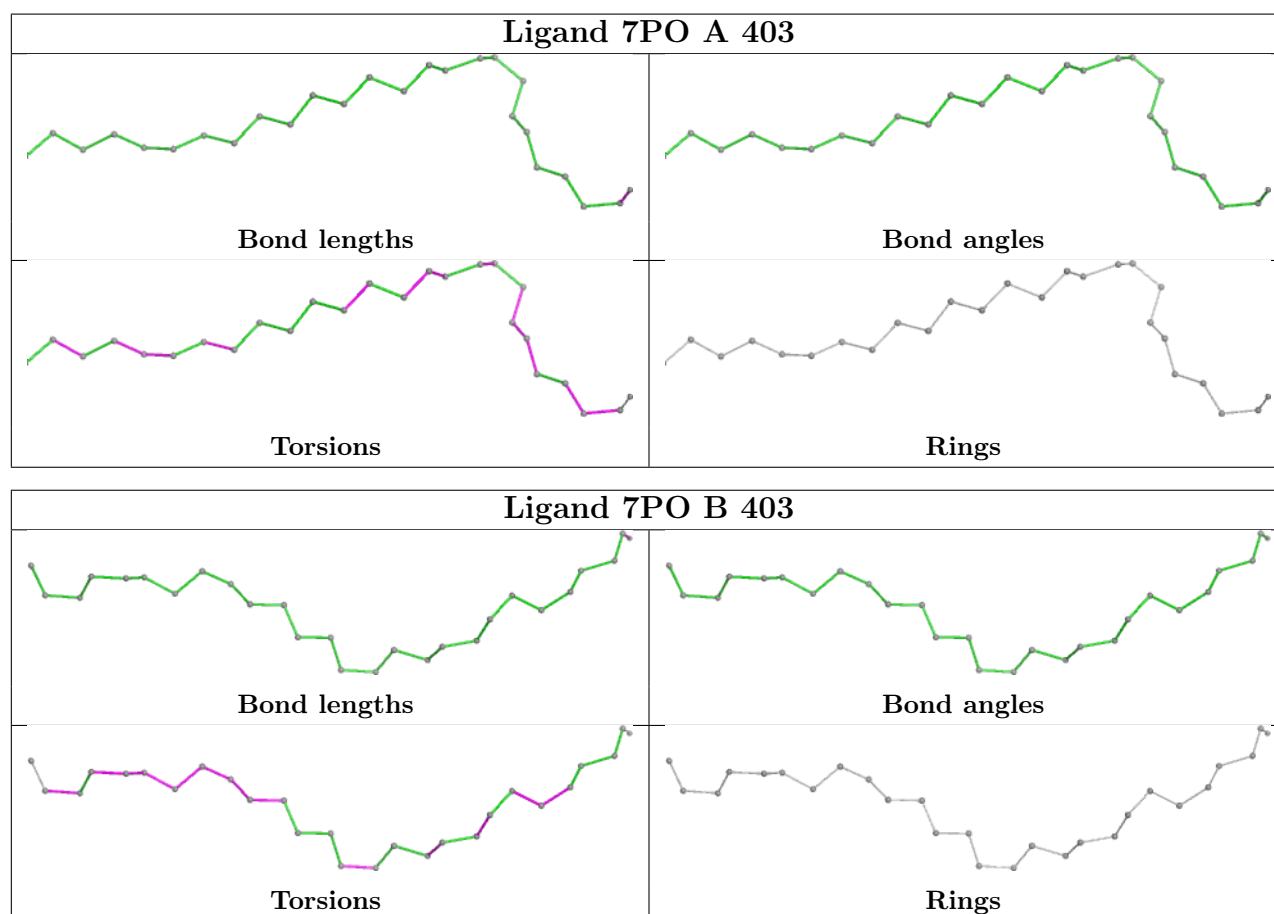
Mol	Chain	Res	Type	Atoms
7	C	202	PIJ	CL1-CL2-CL3-CL4
7	D	402	PIJ	O12-C21-C24-C25
6	B	403	7PO	C04-C05-C06-C07
4	B	402	3PE	C25-C26-C27-C28
5	B	401	WXE	C43-C44-C45-O47
5	A	402	WXE	C01-C02-C03-C04
7	C	202	PIJ	O29-CO9-CR1-CR2
4	A	401	3PE	C2B-C2C-C2D-C2E
6	B	403	7PO	C08-C09-C10-C11
5	B	401	WXE	C43-C44-C45-O46
7	D	402	PIJ	CO9-CR1-CR2-CR3
5	B	401	WXE	C01-C02-C03-C04
5	A	402	WXE	C28-C30-C31-C32
5	B	401	WXE	C40-C42-C43-C44
4	B	402	3PE	O32-C31-C32-C33
4	B	402	3PE	C2B-C2C-C2D-C2E
5	A	402	WXE	C43-C44-C45-O46
7	D	402	PIJ	O29-CO9-CR1-CR2
5	A	402	WXE	O24-C20-C21-N23
4	A	401	3PE	C25-C26-C27-C28
4	C	201	3PE	C25-C26-C27-C28
7	C	202	PIJ	OC9-CO9-CR1-CR2
4	C	201	3PE	C1-O11-P-O14
5	A	402	WXE	C43-C44-C45-O47
7	D	402	PIJ	OC9-CO9-CR1-CR2
4	A	401	3PE	C12-C11-O13-P
4	B	402	3PE	C38-C39-C3A-C3B
5	B	401	WXE	C19-C20-C21-C22
5	A	402	WXE	O41-C40-C42-C43
4	D	401	3PE	C27-C28-C29-C2A
5	A	402	WXE	O39-C40-C42-C43

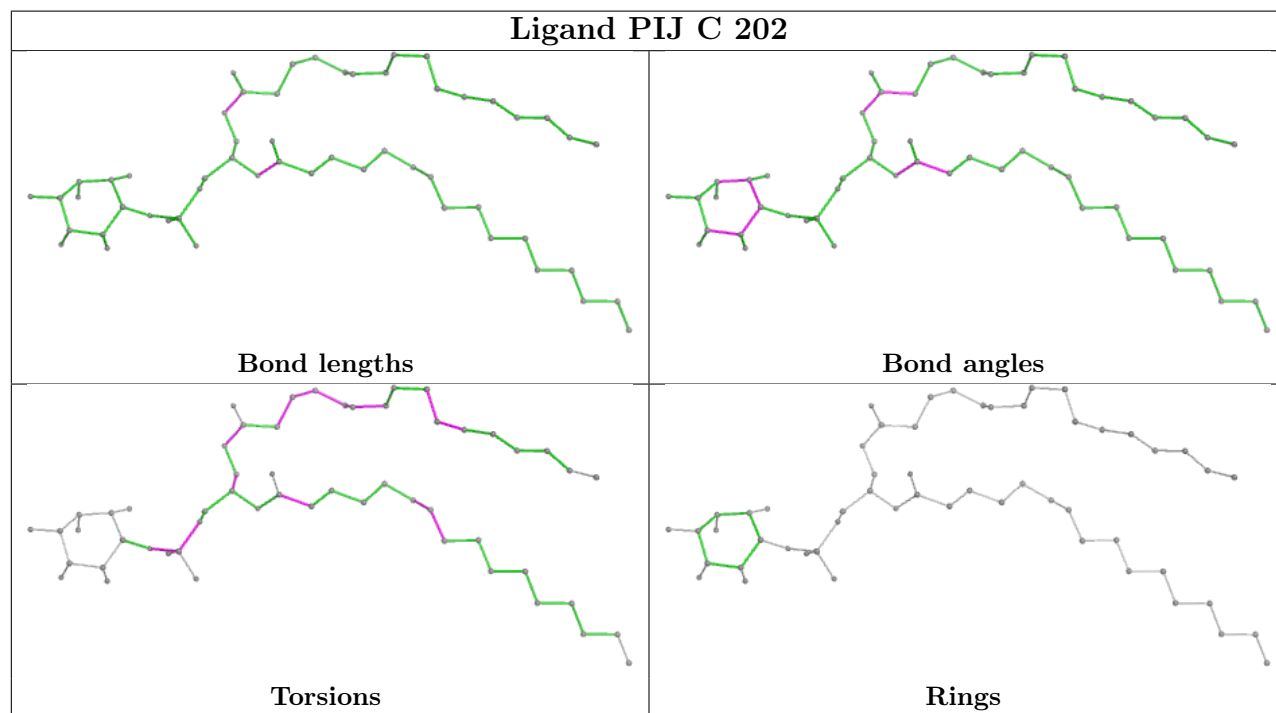
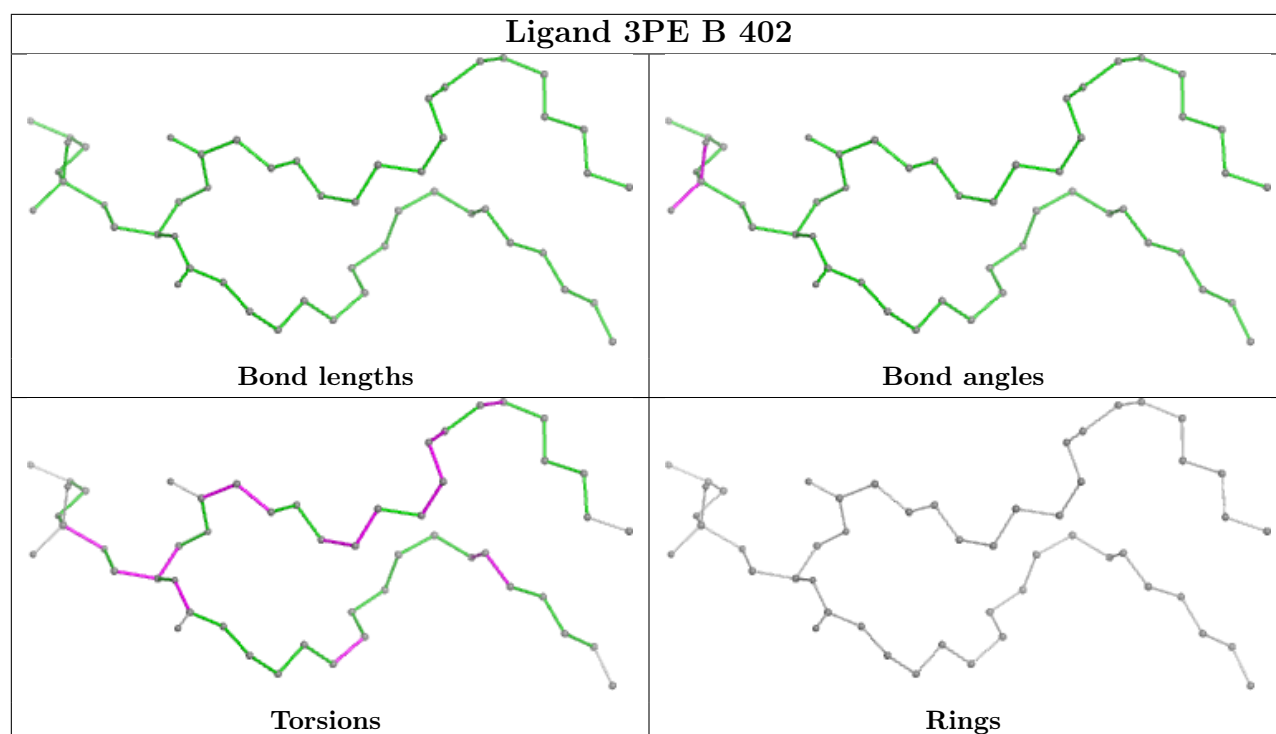
There are no ring outliers.

6 monomers are involved in 16 short contacts:

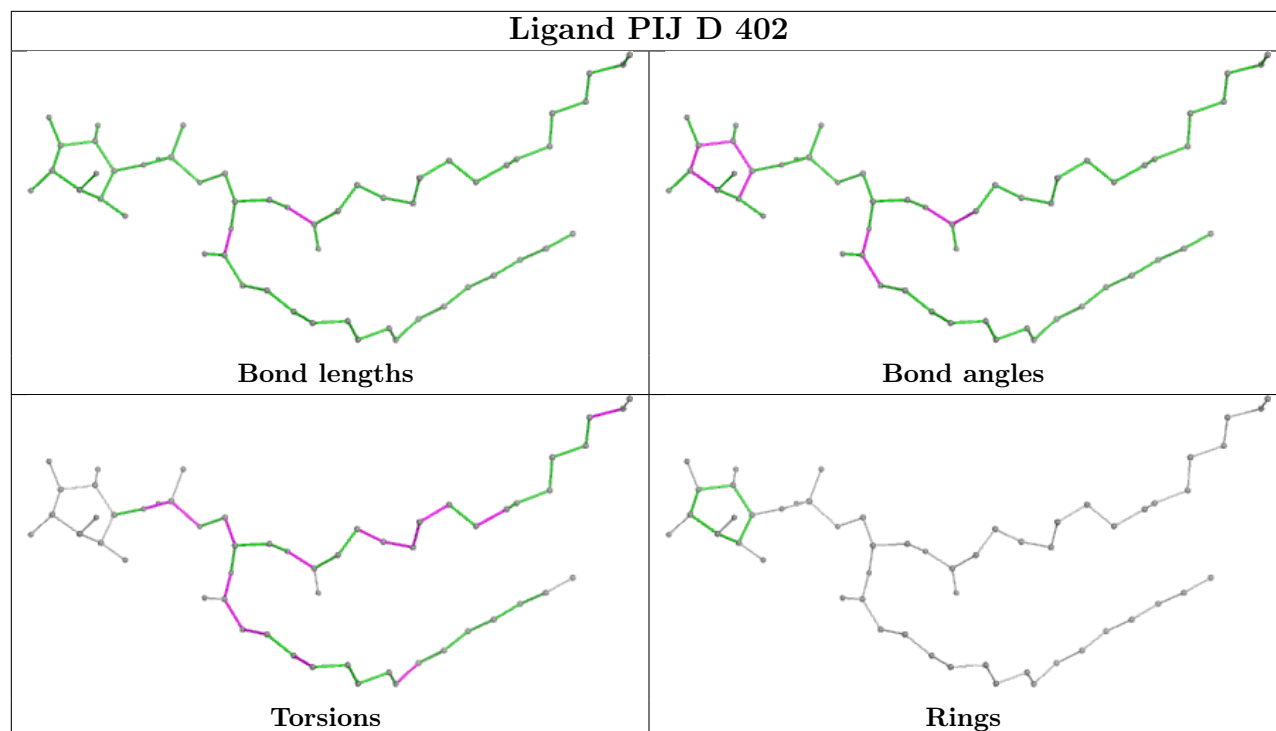
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	402	3PE	2	0
5	B	401	WXE	2	0
4	C	201	3PE	5	0
4	A	401	3PE	2	0
5	A	402	WXE	2	0
4	D	401	3PE	3	0

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.

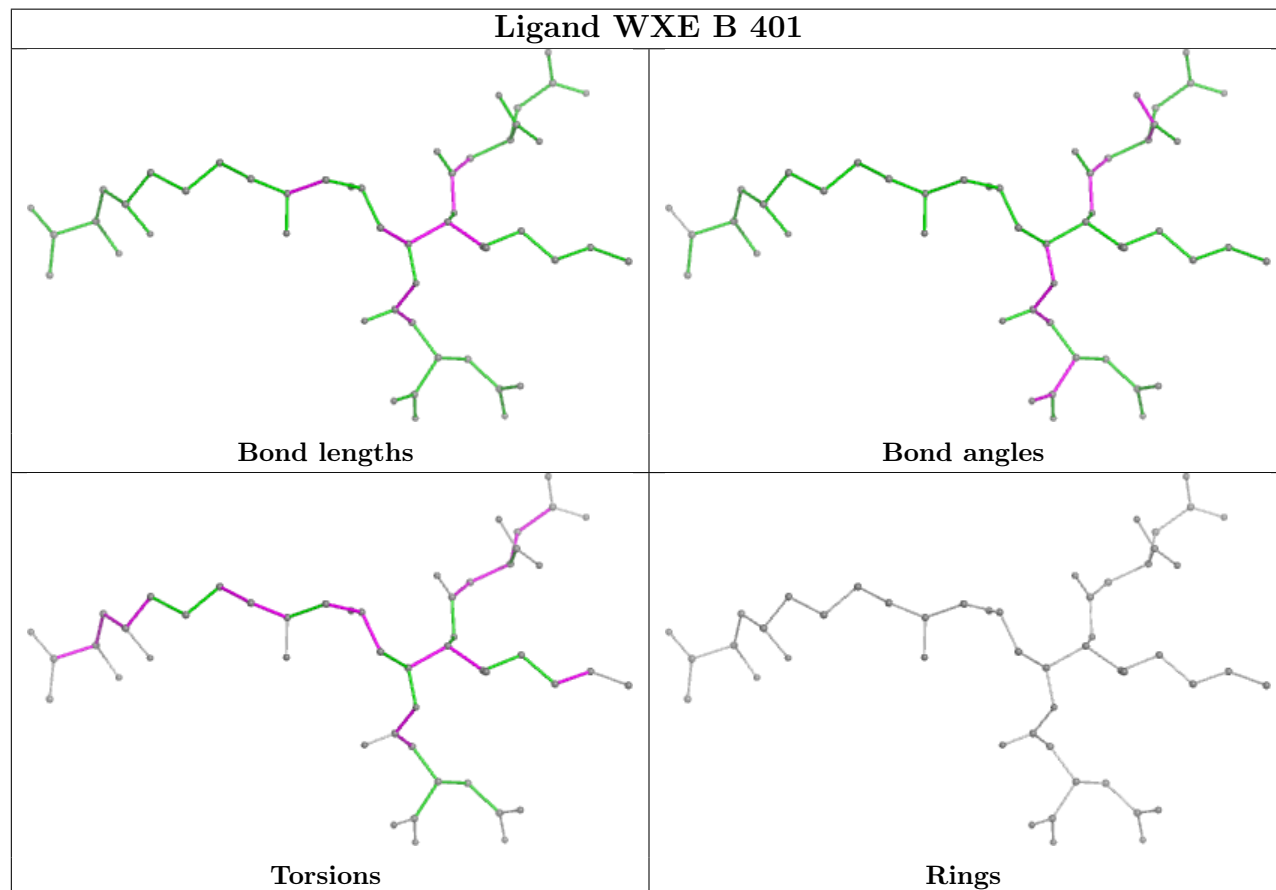


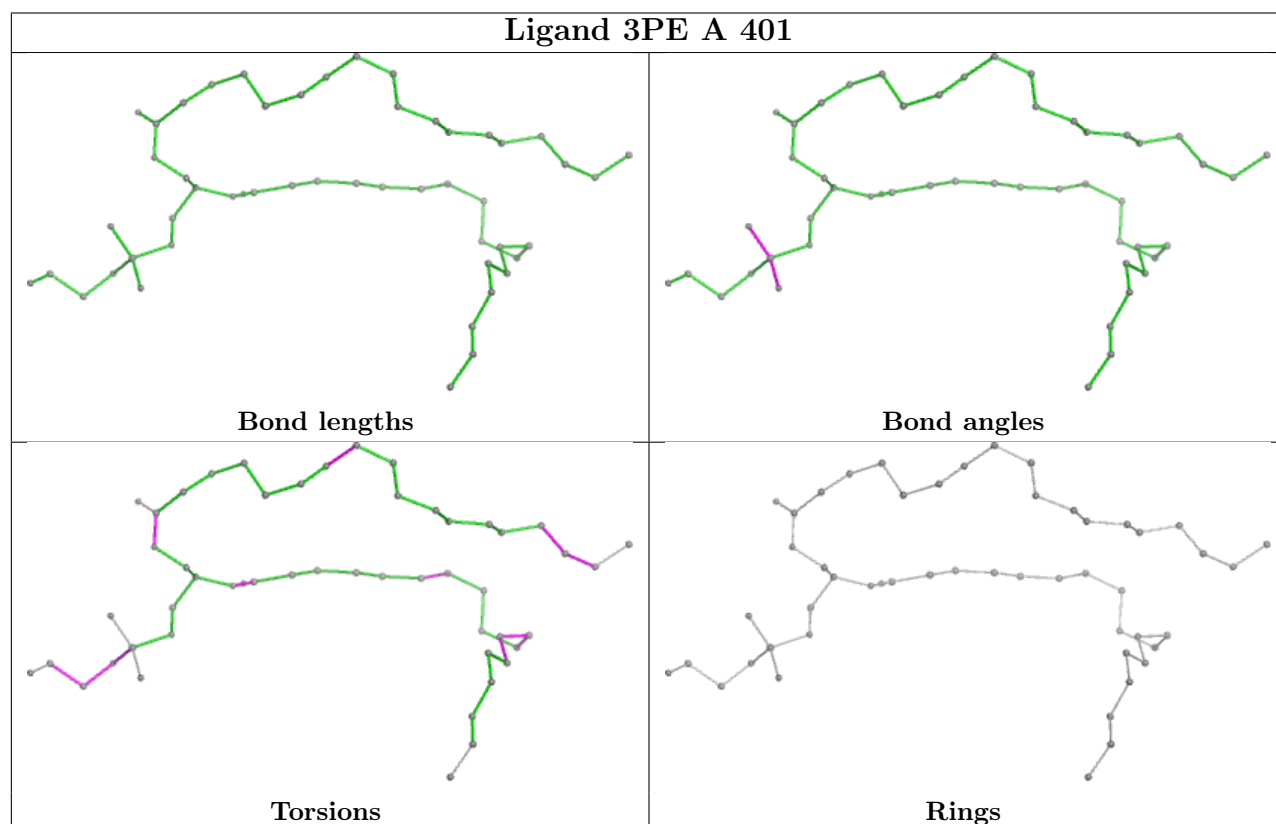
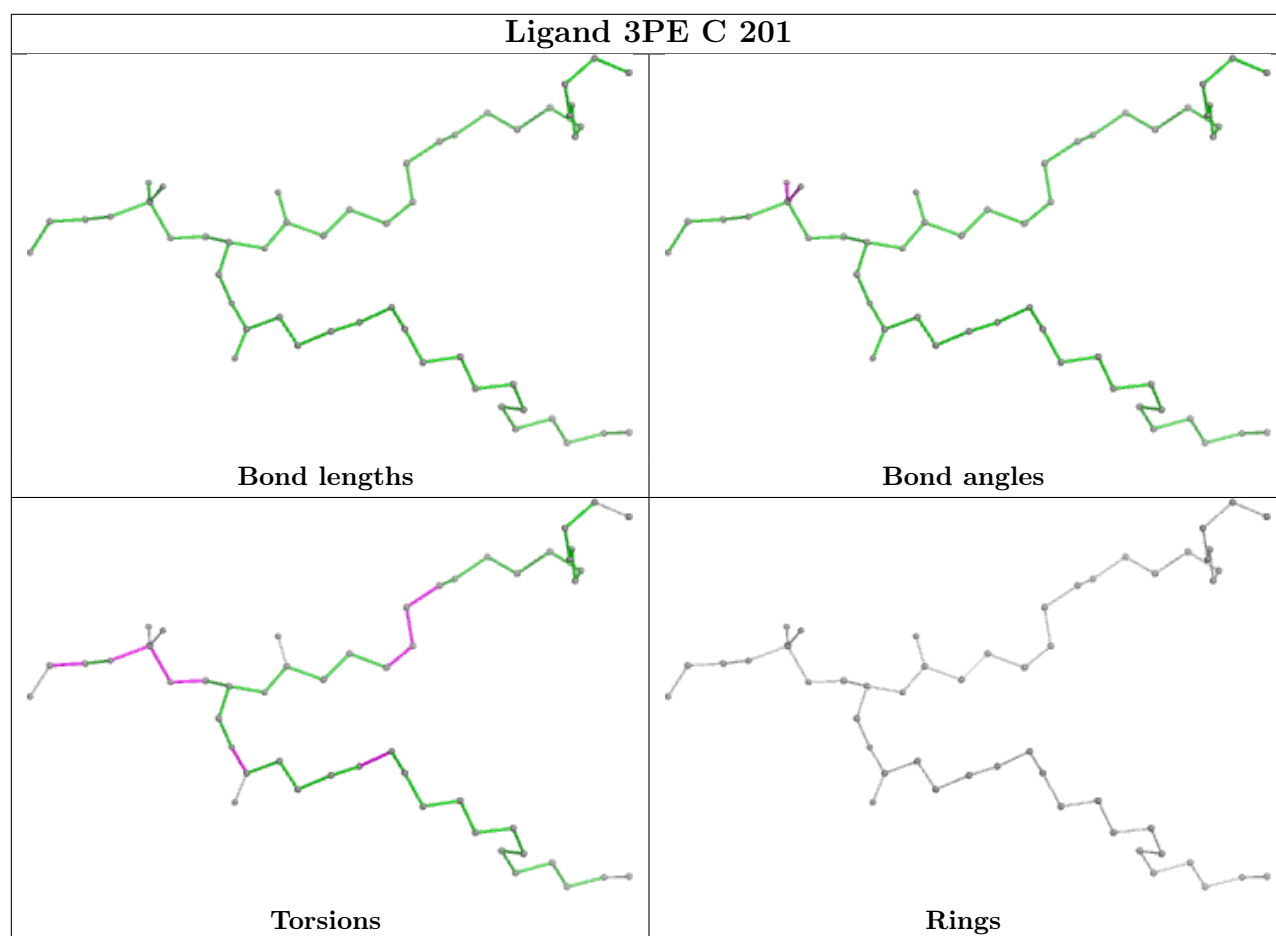


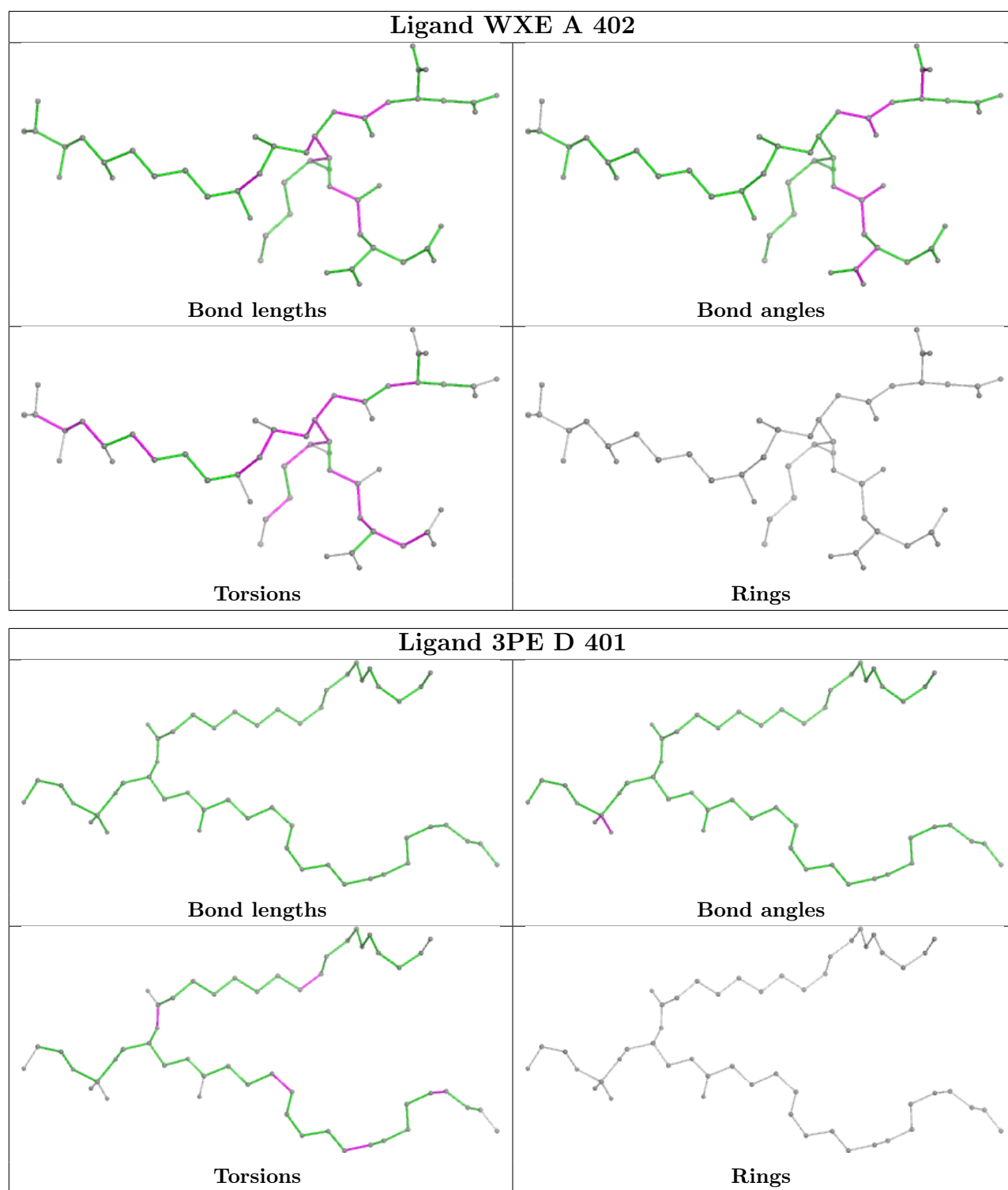
Ligand PIJ D 402



Ligand WXE B 401







5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

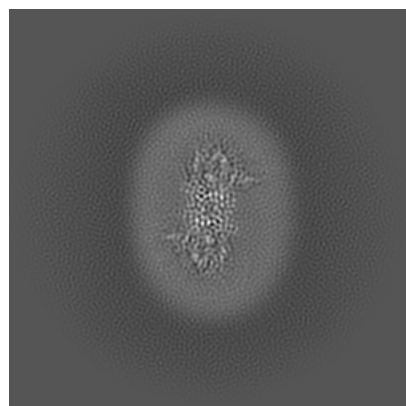
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-18653. These allow visual inspection of the internal detail of the map and identification of artifacts.

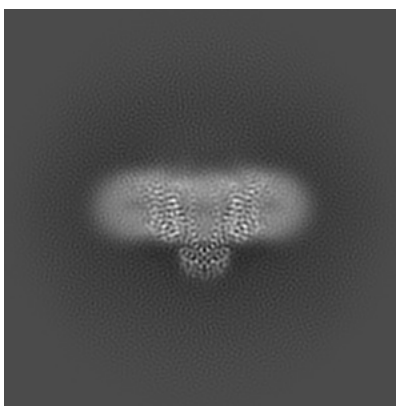
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

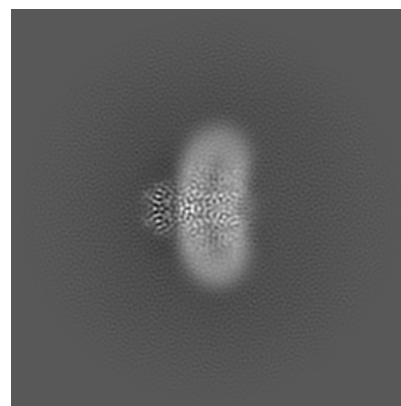
6.1.1 Primary map



X

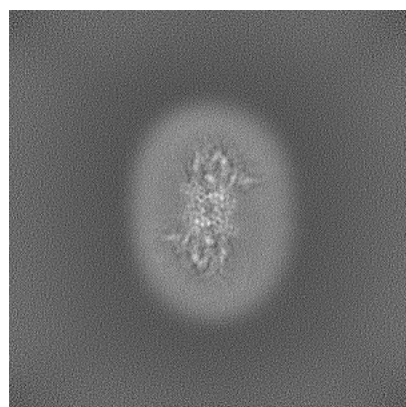


Y

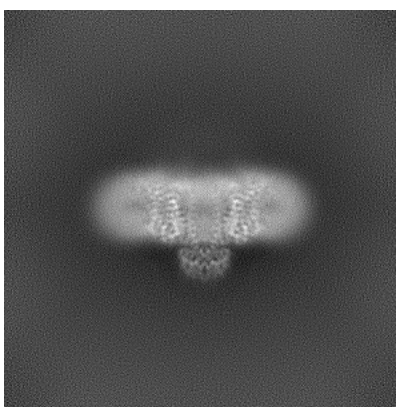


Z

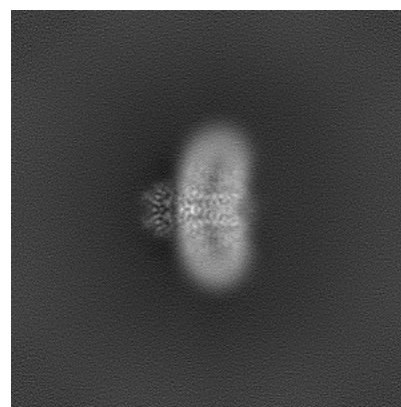
6.1.2 Raw map



X



Y

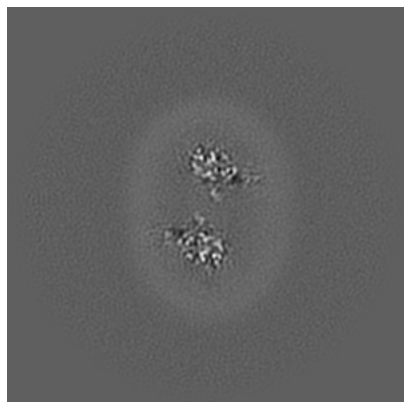


Z

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

6.2 Central slices [i](#)

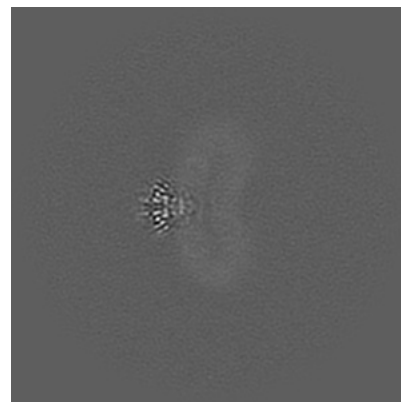
6.2.1 Primary map



X Index: 225

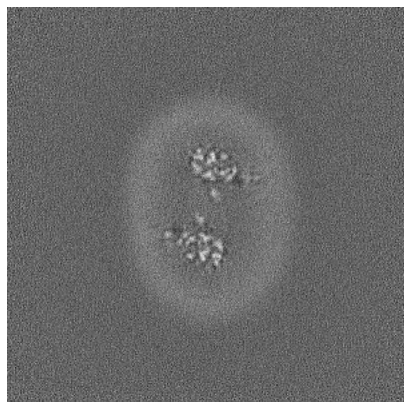


Y Index: 225

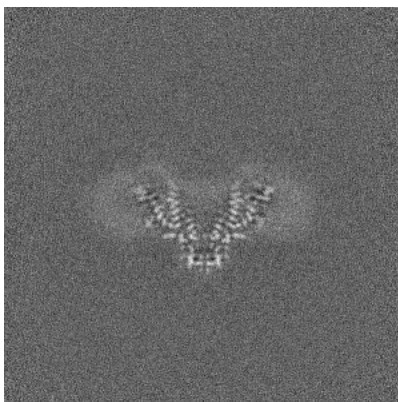


Z Index: 225

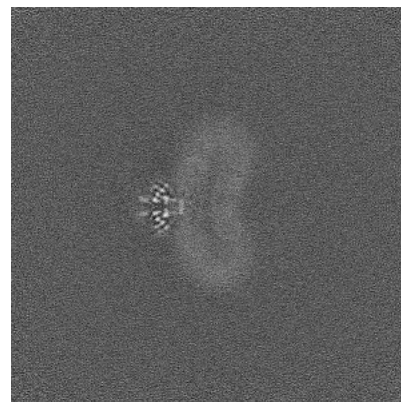
6.2.2 Raw map



X Index: 225



Y Index: 225

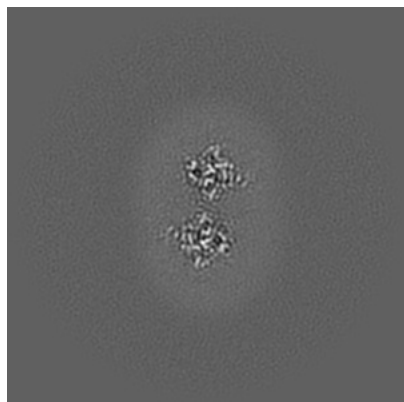


Z Index: 225

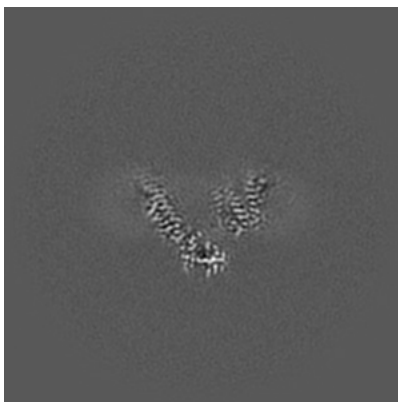
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

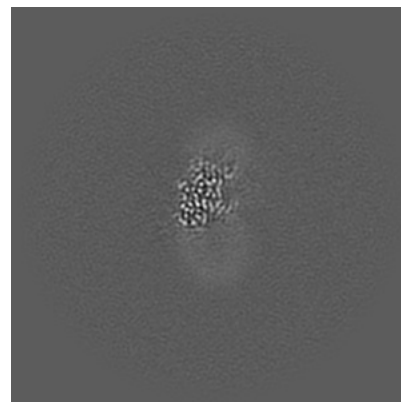
6.3.1 Primary map



X Index: 205

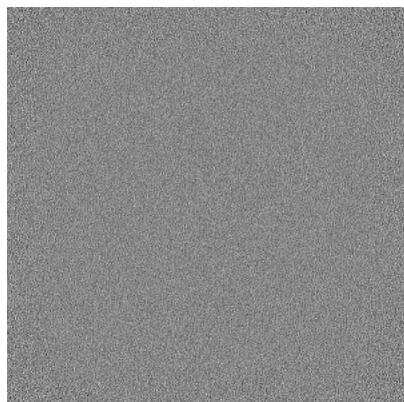


Y Index: 239

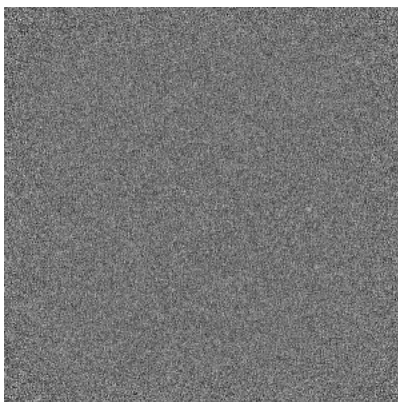


Z Index: 260

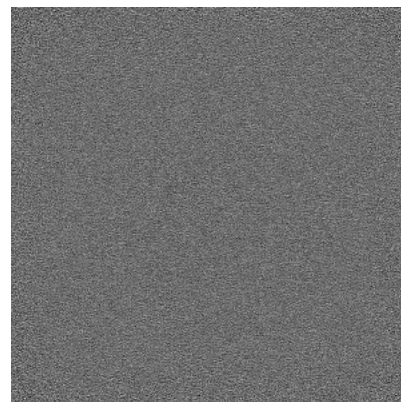
6.3.2 Raw map



X Index: 0



Y Index: 0

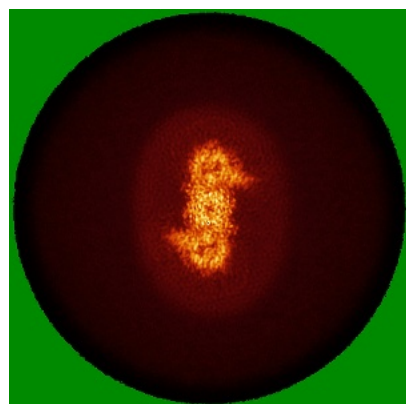


Z Index: 0

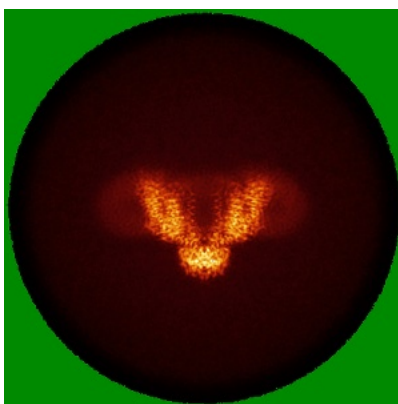
The images above show the largest variance slices of the map in three orthogonal directions.

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

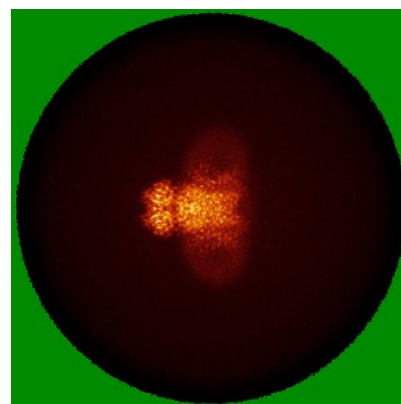
6.4.1 Primary map



X

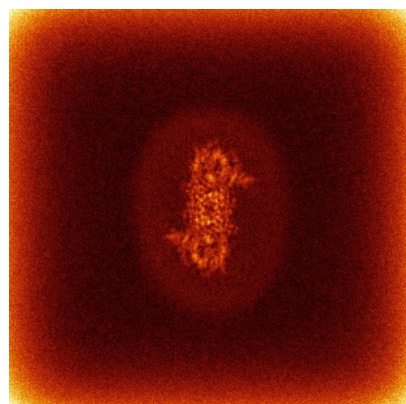


Y

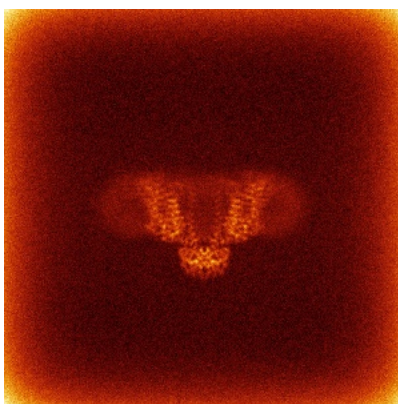


Z

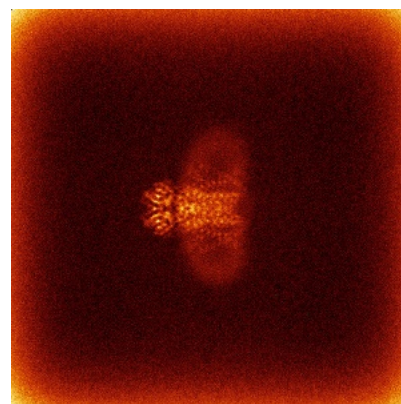
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



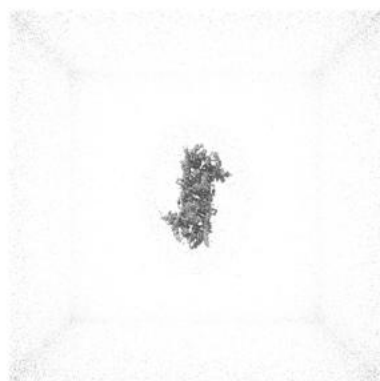
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

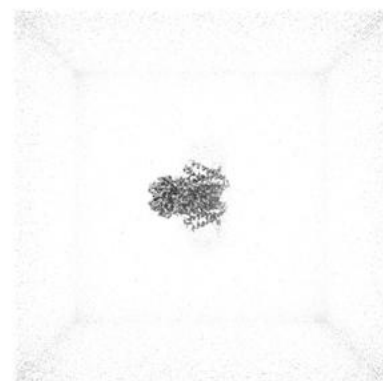
6.5.2 Raw map



X



Y



Z

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.

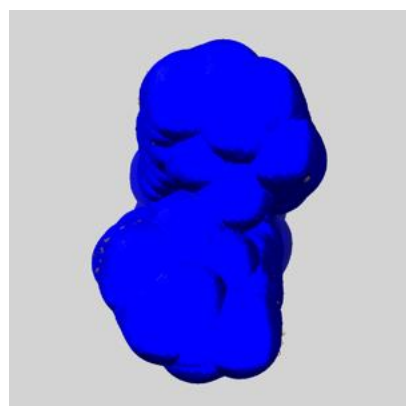
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

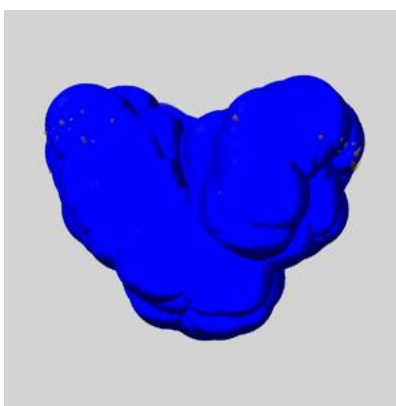
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

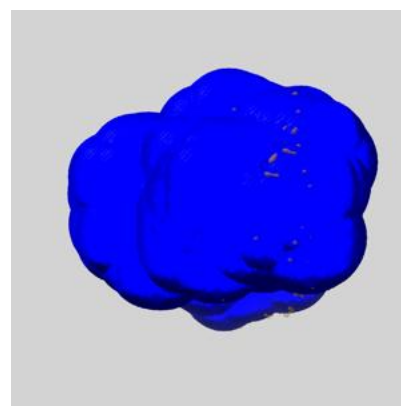
6.6.1 emd_18653_msk_1.map [i](#)



X



Y

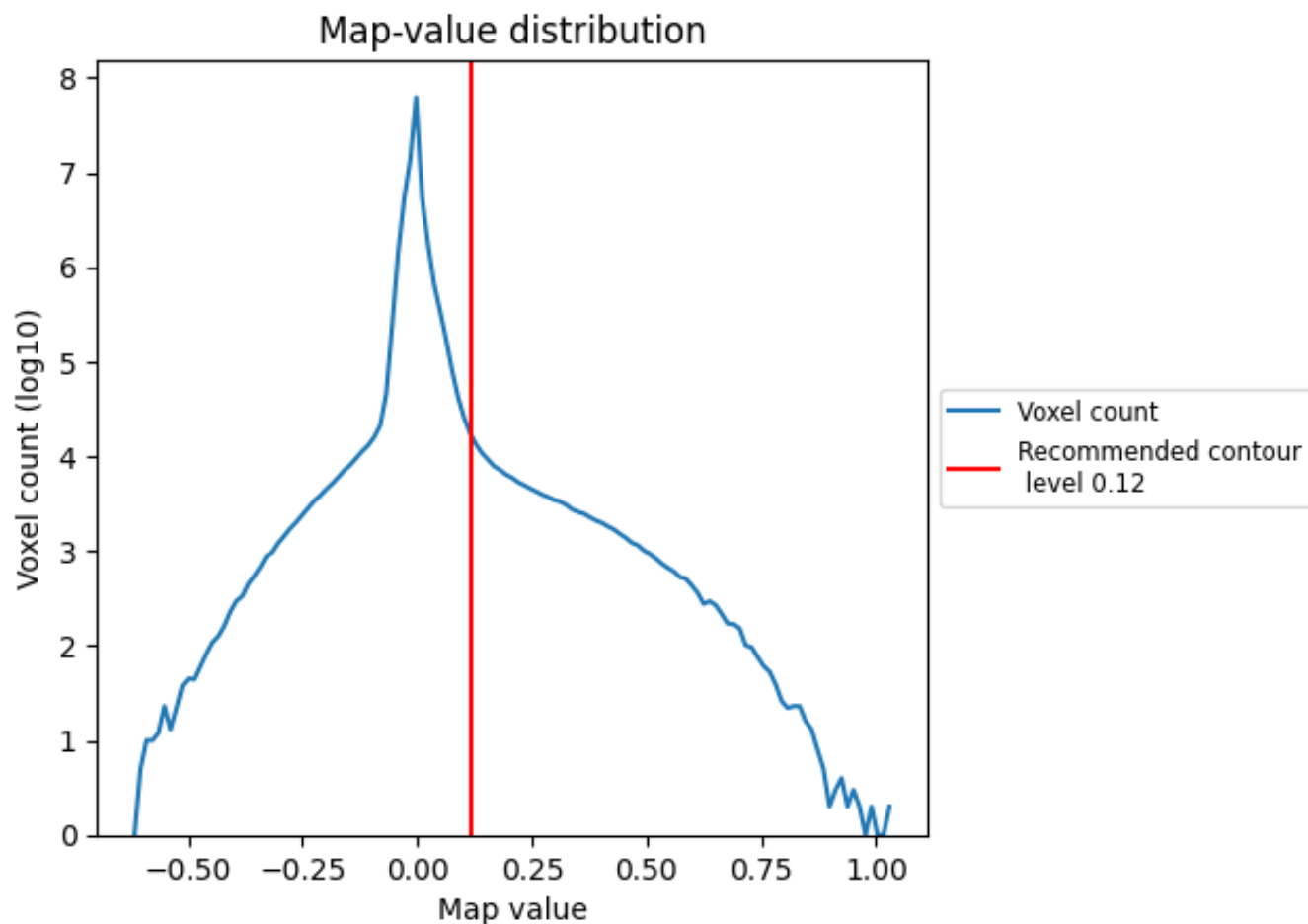


Z

7 Map analysis [i](#)

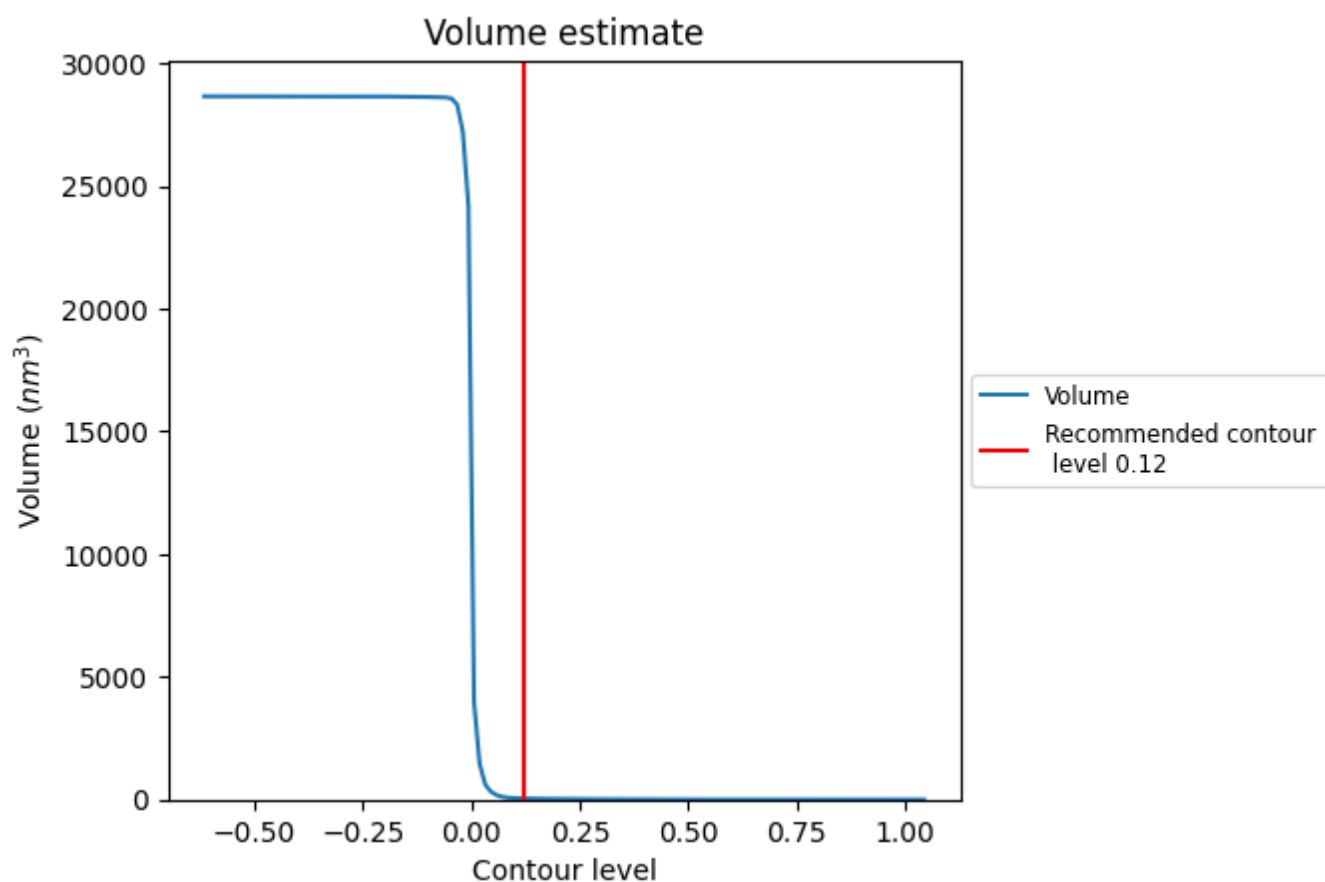
This section contains the results of statistical analysis of the map.

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.

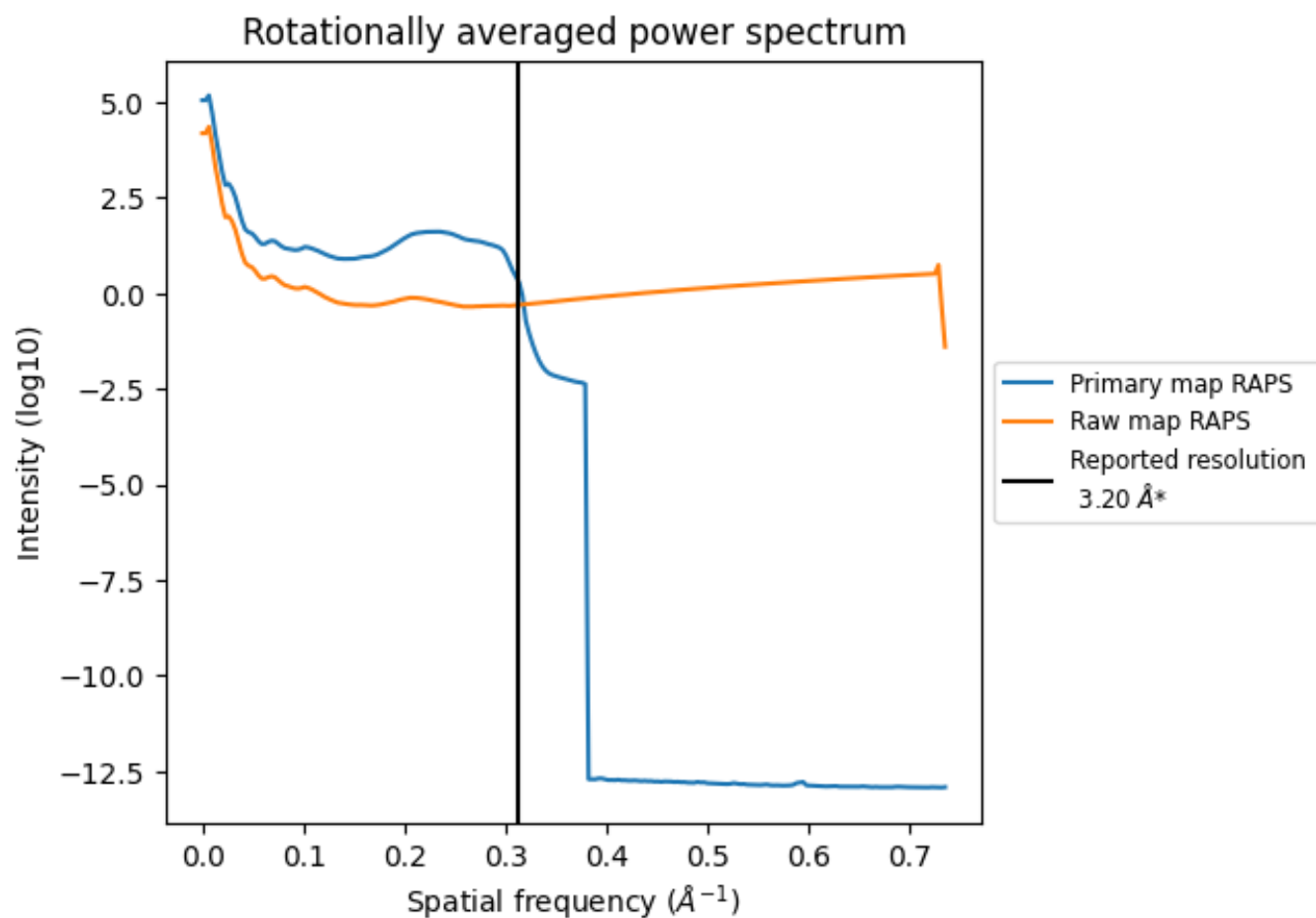
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 44 nm³; this corresponds to an approximate mass of 40 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 ⓘ

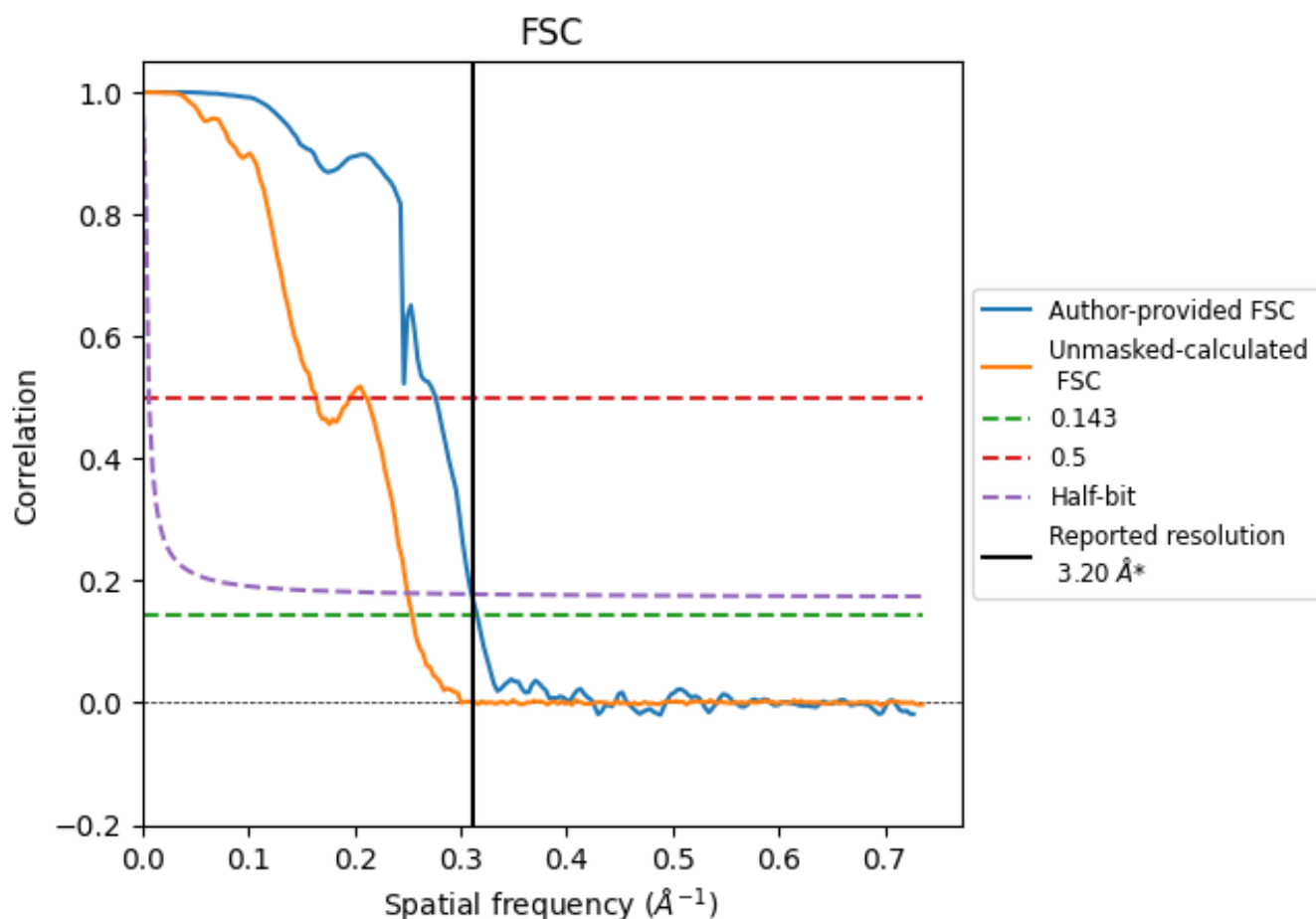


*Reported resolution corresponds to spatial frequency of 0.312 Å⁻¹

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 $0.312 \text{ \AA}^{-1}$

8.2 Resolution estimates [i](#)

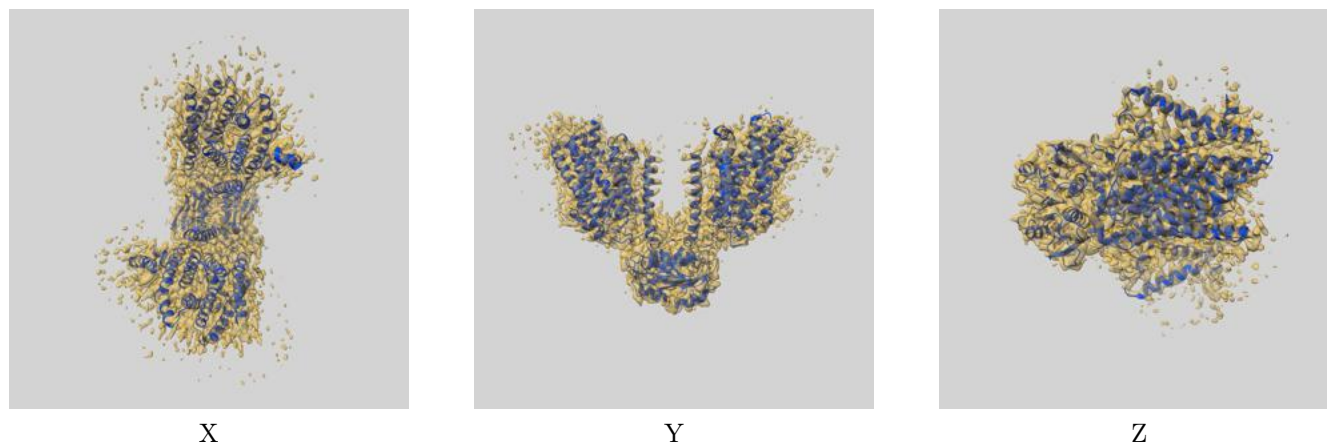
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.17	3.62	3.22
Unmasked-calculated*	3.93	6.10	4.00

*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 3.93 differs from the reported value 3.2 by more than 10 %

9 Map-model fit [i](#)

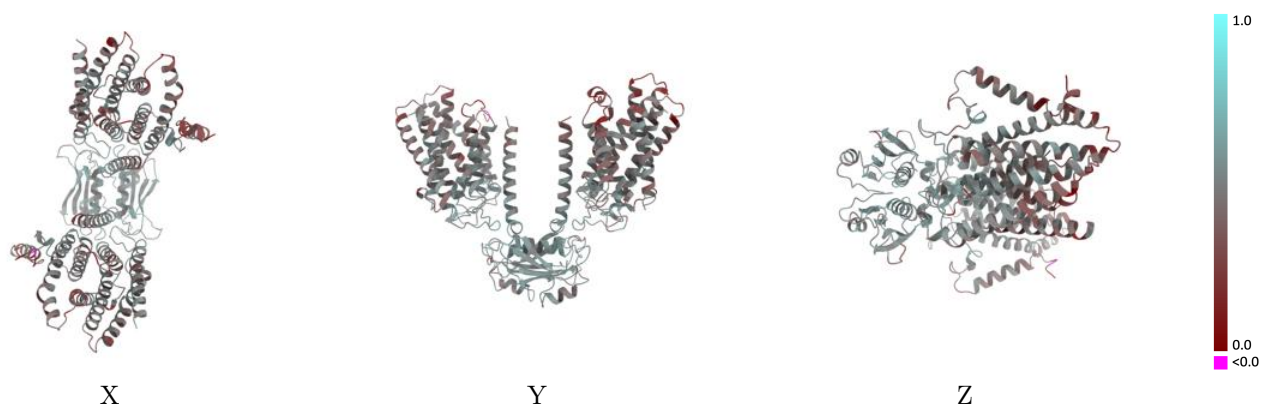
This section contains information regarding the fit between EMDB map EMD-18653 and PDB model 8QTR. Per-residue inclusion information can be found in section [3](#) on page [8](#).

9.1 Map-model overlay [i](#)



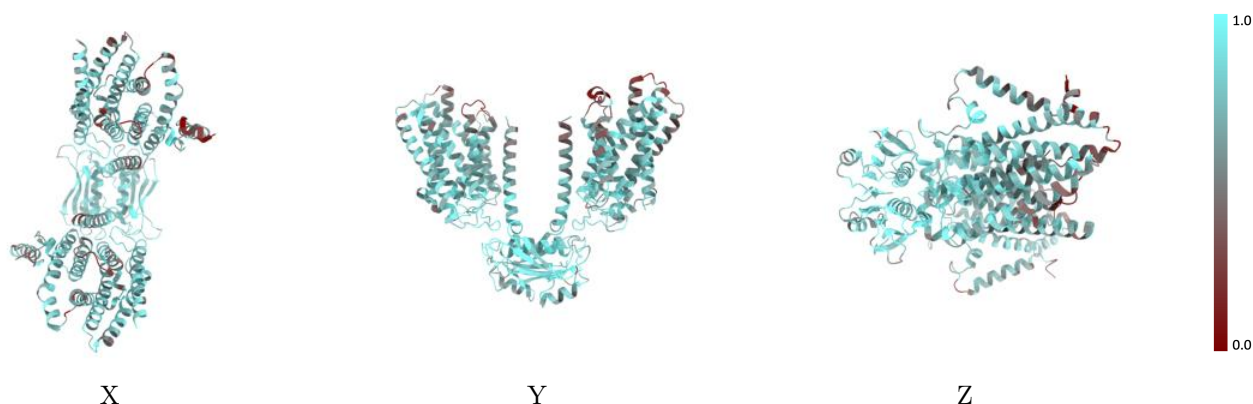
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



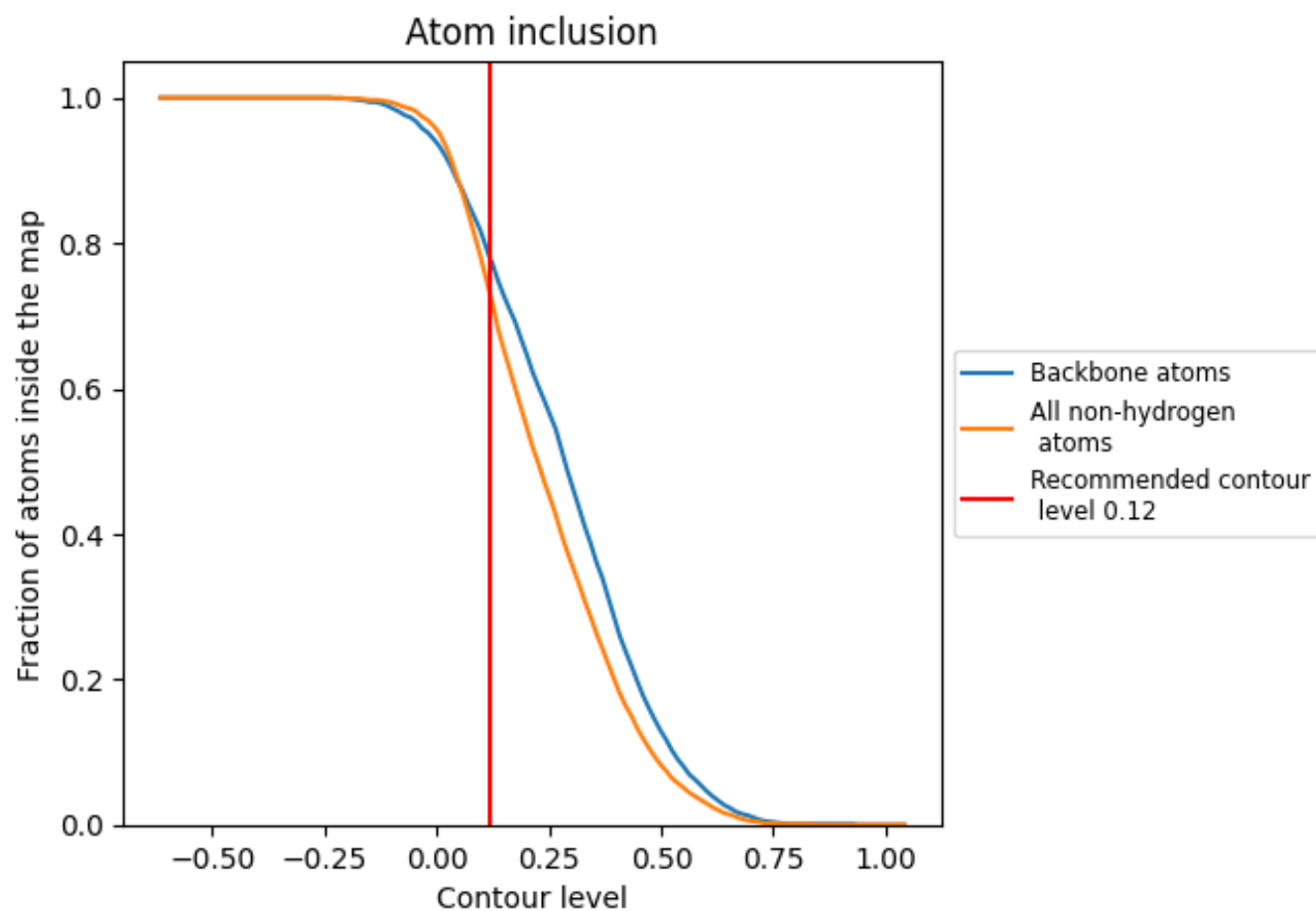
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.12).

9.4 Atom inclusion [i](#)



At the recommended contour level, 78% of all backbone atoms, 73% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7270	0.4640
A	0.6820	0.4360
B	0.7270	0.4510
C	0.7840	0.5130
D	0.7720	0.5080

