Full wwPDB EM Validation Report

Jun 16, 2026 – 06:28 PM EDT

PDB ID	:	10ME / pdb_000010me
EMDB ID	:	EMD-75283
Title	:	SemiClosed Eco-ePEC: Cryo-EM structure of Eco RNAP his-elemental paused elongation complex with a semi-closed active site (closed TL and SI3, open RH-FL)
Authors	:	Dhingra, Y.; Darst, S.A.
Deposited on	:	2026-01-27
Resolution	:	4.00 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 (i) 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 (1)) were used in the production of this report:

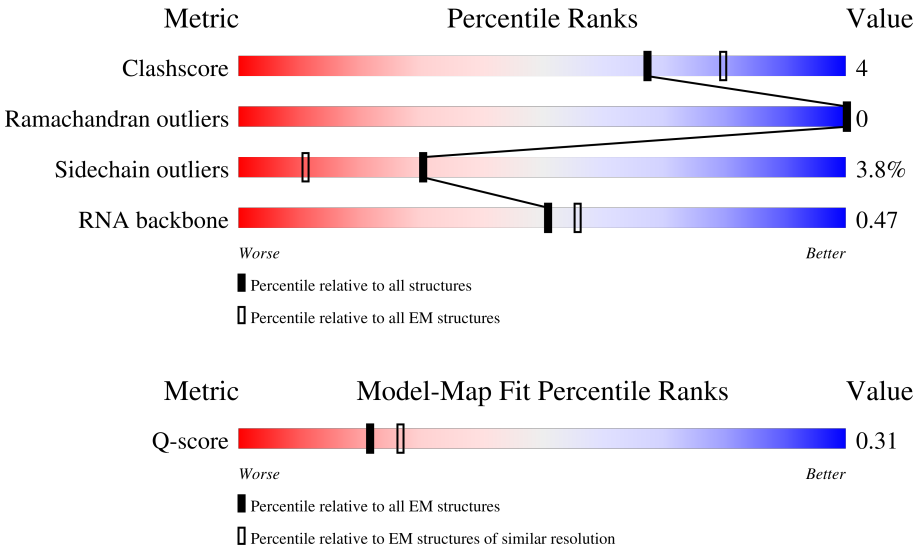
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.00 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	7587 (3.50 - 4.50)

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 <=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	32	47% 25% 28%
2	B	32	66% 31% .
3	G	329	62% . 34%

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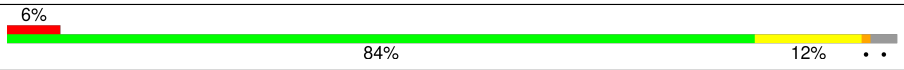
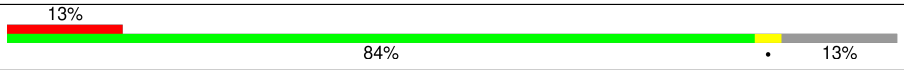
Mol	Chain	Length	Quality of chain
3	H	329	
4	I	1342	
5	J	1407	
6	K	91	
7	R	19	

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 26246 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 DNA chain called non-template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	23	Total	C	N	O	P	0	0
			472	225	90	135	22		

- Molecule 2 is a DNA chain called template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	31	Total	C	N	O	P	0	0
			627	299	112	185	31		

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	218	Total	C	N	O	S	0	0
			1679	1051	297	325	6		
3	H	219	Total	C	N	O	S	0	0
			1689	1056	298	329	6		

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	I	1316	Total	C	N	O	S	0	0
			10375	6511	1807	2014	43		

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	J	1358	Total	C	N	O	S	0	0
			10533	6614	1882	1987	50		

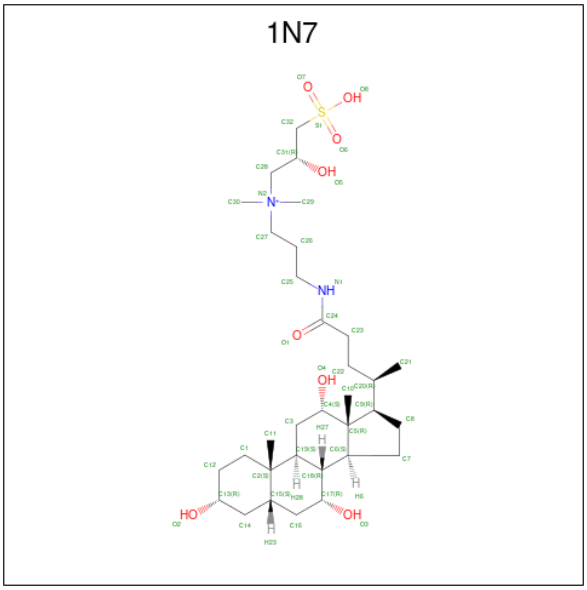
- Molecule 6 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	K	79	Total	C	N	O	S	0	0
			627	382	118	126	1		

- Molecule 7 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	R	10	Total	C	N	O	P	0	0
			214	95	36	73	10		

- Molecule 8 is CHAPSO (CCD ID: 1N7) (formula: $C_{32}H_{59}N_2O_8S$).



Mol	Chain	Residues	Atoms			AltConf
8	I	1	Total	C	O	0
			27	24	3	

- Molecule 9 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
9	J	2	Total	Zn	0
			2	2	

- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

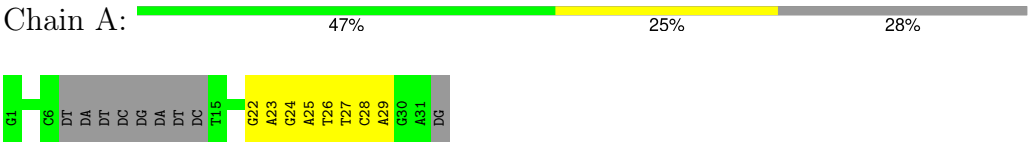
Mol	Chain	Residues	Atoms		AltConf
10	R	1	Total	Mg	0
			1	1	

3 Residue-property plots (i)

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.

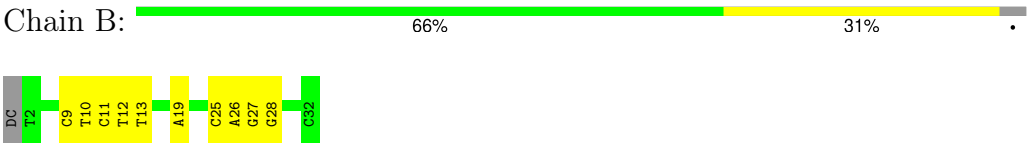
• Molecule 1: non-template DNA

Chain A:



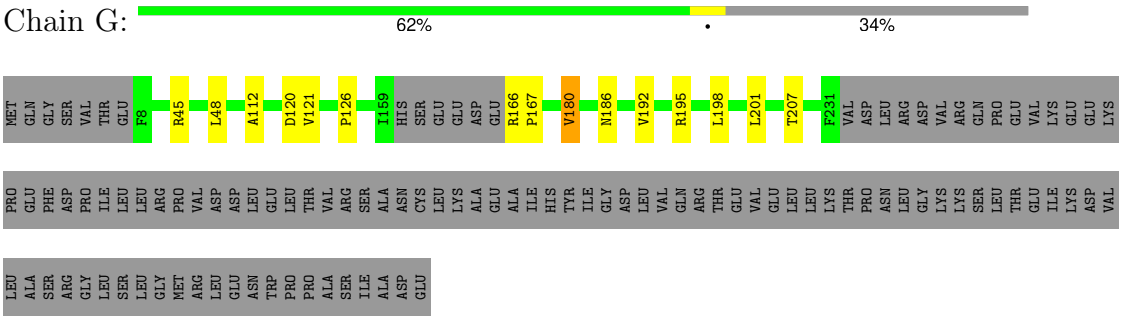
• Molecule 2: template DNA

Chain B:



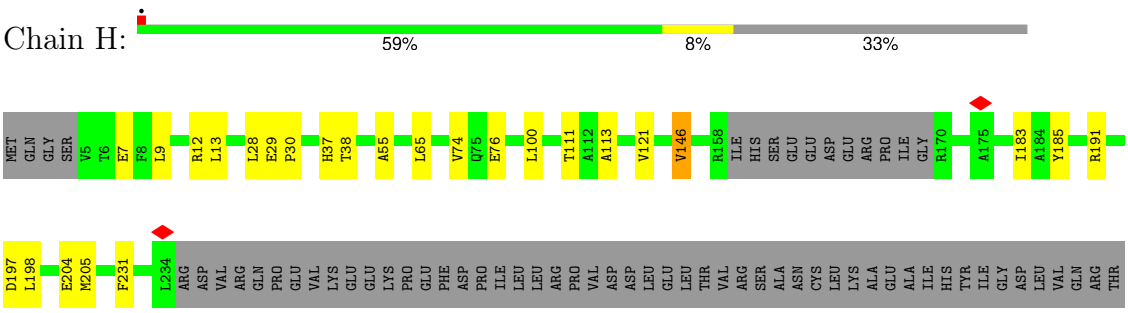
• Molecule 3: DNA-directed RNA polymerase subunit alpha

Chain G:



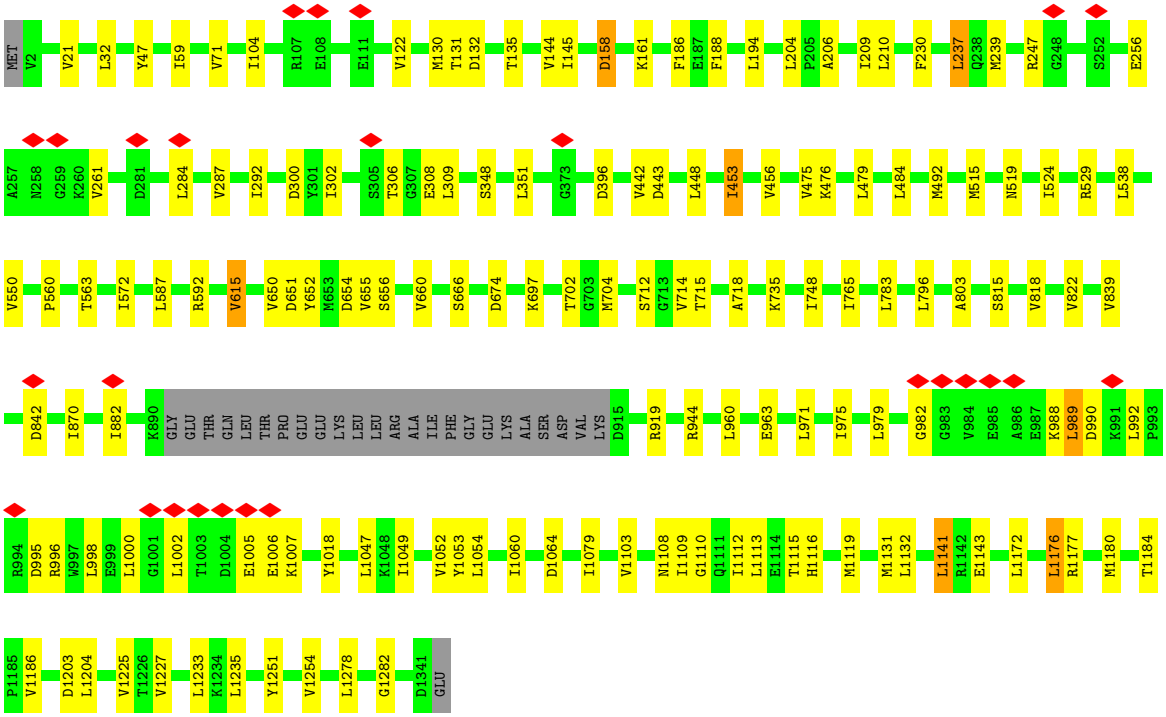
• Molecule 3: DNA-directed RNA polymerase subunit alpha

Chain H:



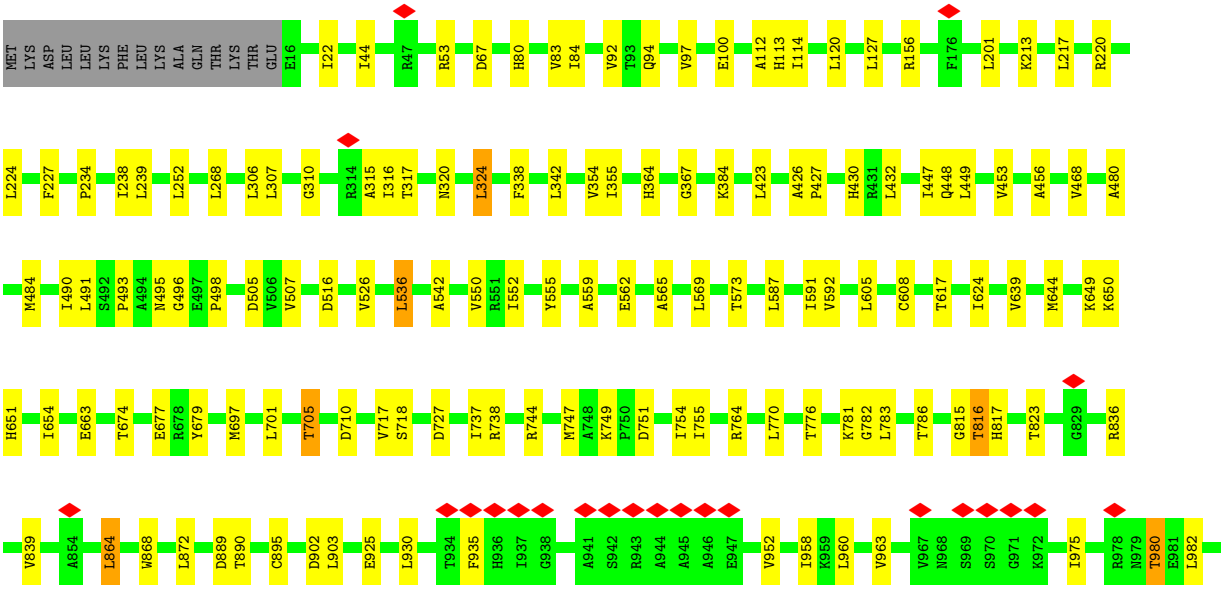
• Molecule 4: DNA-directed RNA polymerase subunit beta

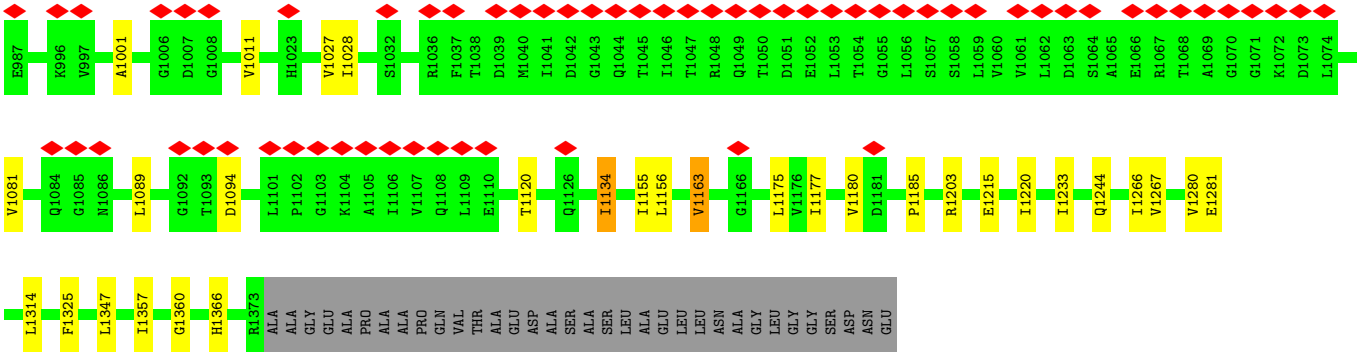
Chain I:



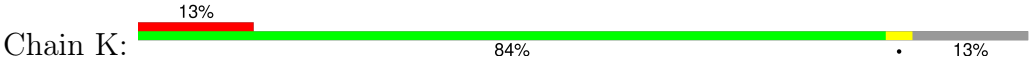
• Molecule 5: DNA-directed RNA polymerase subunit beta'

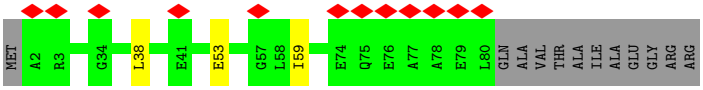
Chain J:



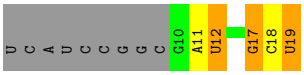


• Molecule 6: DNA-directed RNA polymerase subunit omega





• Molecule 7: RNA



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	23537	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.133	Depositor
Minimum map value	-0.071	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.015	Depositor
Map size (Å)	259.58398, 259.58398, 259.58398	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.67599994, 0.67599994, 0.67599994	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 1N7, MG, ZN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.20	0/529	0.40	0/813
2	B	0.21	0/701	0.42	0/1077
3	G	0.14	0/1699	0.27	0/2302
3	H	0.13	0/1708	0.27	0/2315
4	I	0.18	0/10541	0.28	0/14225
5	J	0.16	0/10694	0.29	0/14441
6	K	0.10	0/629	0.20	0/847
7	R	0.18	0/238	0.34	0/369
All	All	0.17	0/26739	0.29	0/36389

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

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	472	0	261	8	0
2	B	627	0	349	10	0
3	G	1679	0	1717	10	0
3	H	1689	0	1725	14	0
4	I	10375	0	10381	71	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	J	10533	0	10746	87	0
6	K	627	0	634	3	0
7	R	214	0	107	4	0
8	I	27	0	39	0	0
9	J	2	0	0	0	0
10	R	1	0	0	0	0
All	All	26246	0	25959	197	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 4.

All (197) 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)
4:I:1109:ILE:HD11	5:J:644:MET:HE2	1.55	0.86
5:J:903:LEU:O	5:J:903:LEU:HD13	1.89	0.72
4:I:702:THR:HG23	4:I:1184:THR:O	1.91	0.71
4:I:453:ILE:HD12	4:I:587:LEU:HD21	1.76	0.68
5:J:1163:VAL:HG23	5:J:1175:LEU:HD11	1.76	0.67
4:I:560:PRO:HB2	5:J:776:THR:HG21	1.76	0.66
5:J:213:LYS:HE2	5:J:217:LEU:HD11	1.77	0.66
5:J:114:ILE:HG22	5:J:307:LEU:HD23	1.77	0.65
4:I:1103:VAL:HG21	4:I:1112:ILE:HD11	1.77	0.64
3:H:100:LEU:HD21	3:H:121:VAL:HG21	1.79	0.63
5:J:744:ARG:HG2	5:J:747:MET:HE1	1.80	0.63
4:I:975:ILE:HD13	4:I:998:LEU:HD21	1.81	0.63
1:A:25:DA:H2'	1:A:26:DT:H72	1.80	0.62
3:G:45:ARG:HE	3:H:38:THR:HG22	1.63	0.62
5:J:963:VAL:HG22	5:J:980:THR:OG1	1.99	0.62
5:J:1089:LEU:HD22	5:J:1094:ASP:HA	1.82	0.62
5:J:591:ILE:HG13	5:J:592:VAL:HG13	1.81	0.61
5:J:1155:ILE:C	5:J:1156:LEU:HD12	2.24	0.61
2:B:12:DT:C2'	2:B:13:DT:H71	2.30	0.61
5:J:651:HIS:HA	5:J:654:ILE:HD12	1.82	0.61
5:J:839:VAL:HG22	5:J:864:LEU:HD11	1.82	0.60
2:B:12:DT:H2'	2:B:13:DT:H71	1.83	0.59
6:K:53:GLU:HB3	6:K:59:ILE:HD12	1.85	0.59
4:I:982:GLY:HA3	4:I:1002:LEU:HD21	1.83	0.59
4:I:1132:LEU:HD23	4:I:1177:ARG:CZ	2.32	0.59
5:J:1314:LEU:HD21	5:J:1325:PHE:HD2	1.68	0.59
4:I:1109:ILE:CD1	5:J:644:MET:HE2	2.33	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:475:VAL:HG13	4:I:492:MET:HE2	1.87	0.57
3:G:186:ASN:O	3:G:201:LEU:HD12	2.05	0.57
4:I:988:LYS:HE3	4:I:1000:LEU:HD13	1.86	0.57
5:J:1134:ILE:HD13	5:J:1244:GLN:HG3	1.86	0.57
5:J:426:ALA:HB3	5:J:427:PRO:CD	2.36	0.56
4:I:209:ILE:HG23	4:I:210:LEU:HD22	1.89	0.55
4:I:479:LEU:HB2	4:I:492:MET:HE1	1.88	0.55
4:I:529:ARG:HD3	4:I:572:ILE:HG21	1.88	0.54
5:J:426:ALA:HB3	5:J:427:PRO:HD3	1.89	0.54
4:I:32:LEU:HA	4:I:130:MET:HE1	1.89	0.54
4:I:842:ASP:HB3	4:I:1047:LEU:HD21	1.88	0.54
2:B:11:DC:H2'	2:B:12:DT:C6	2.43	0.54
4:I:348:SER:HA	4:I:351:LEU:HD12	1.90	0.54
5:J:674:THR:HG23	5:J:677:GLU:H	1.73	0.54
5:J:80:HIS:O	5:J:83:VAL:HG12	2.08	0.54
4:I:302:ILE:HG22	4:I:309:LEU:HA	1.89	0.53
3:H:13:LEU:HD23	3:H:29:GLU:HB3	1.90	0.53
5:J:268:LEU:HD13	5:J:306:LEU:HA	1.90	0.53
5:J:605:LEU:HD21	5:J:617:THR:HG23	1.89	0.53
2:B:19:DA:C6	7:R:17:G:O6	2.62	0.53
3:G:112:ALA:HB3	3:G:126:PRO:HA	1.90	0.53
5:J:697:MET:HE1	5:J:737:ILE:HG22	1.89	0.53
5:J:975:ILE:HD12	5:J:1001:ALA:HB3	1.90	0.53
5:J:755:ILE:HD12	5:J:755:ILE:N	2.25	0.52
7:R:18:C:H2'	7:R:19:U:N1	2.24	0.52
3:H:111:THR:HG23	3:H:113:ALA:H	1.75	0.52
4:I:21:VAL:HG11	4:I:592:ARG:CZ	2.40	0.52
5:J:113:HIS:HD2	5:J:239:LEU:HD21	1.74	0.52
5:J:423:LEU:HD22	5:J:468:VAL:HG22	1.91	0.52
5:J:786:THR:HG21	5:J:935:PHE:HD1	1.73	0.52
4:I:818:VAL:HB	4:I:1079:ILE:HD13	1.92	0.52
4:I:206:ALA:O	4:I:209:ILE:HG22	2.10	0.51
5:J:114:ILE:CG2	5:J:307:LEU:HD23	2.39	0.51
4:I:1203:ASP:O	4:I:1204:LEU:HD23	2.11	0.51
5:J:587:LEU:HD21	5:J:608:CYS:HB2	1.93	0.51
5:J:550:VAL:O	5:J:569:LEU:HD12	2.11	0.51
5:J:1280:VAL:HG22	5:J:1281:GLU:H	1.76	0.51
4:I:989:LEU:HD23	4:I:990:ASP:N	2.26	0.50
5:J:367:GLY:O	5:J:447:ILE:HG23	2.12	0.50
4:I:145:ILE:HB	4:I:456:VAL:HG22	1.93	0.50
4:I:735:LYS:HD2	4:I:748:ILE:HG22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:59:ILE:HD11	4:I:476:LYS:HD2	1.92	0.50
4:I:306:THR:HG23	4:I:308:GLU:H	1.76	0.49
4:I:979:LEU:HA	4:I:1002:LEU:HD22	1.94	0.49
5:J:705:THR:HG23	5:J:718:SER:HA	1.93	0.49
5:J:495:ASN:C	5:J:903:LEU:HD11	2.38	0.49
4:I:979:LEU:HD11	4:I:989:LEU:HD13	1.95	0.49
3:G:48:LEU:HD23	3:G:180:VAL:HG21	1.95	0.48
5:J:310:GLY:HA2	5:J:315:ALA:HB2	1.94	0.48
3:H:183:ILE:HD12	3:H:204:GLU:O	2.13	0.48
5:J:491:LEU:HD23	5:J:498:PRO:HA	1.95	0.48
3:H:28:LEU:HD22	3:H:28:LEU:N	2.28	0.48
4:I:1053:TYR:C	4:I:1054:LEU:HD12	2.39	0.47
5:J:432:LEU:HD13	5:J:456:ALA:HB1	1.96	0.47
5:J:1028:ILE:HA	5:J:1120:THR:HA	1.96	0.47
4:I:131:THR:HG22	4:I:132:ASP:N	2.29	0.47
5:J:952:VAL:HG21	5:J:1011:VAL:HG12	1.96	0.47
4:I:300:ASP:HB2	4:I:309:LEU:HD11	1.95	0.47
5:J:316:ILE:HG13	5:J:324:LEU:HD11	1.96	0.47
5:J:491:LEU:HD22	5:J:496:GLY:O	2.15	0.47
4:I:287:VAL:HG13	4:I:292:ILE:HD11	1.96	0.47
1:A:26:DT:H2'	1:A:27:DT:H72	1.95	0.47
5:J:1215:GLU:HB3	5:J:1220:ILE:HD11	1.97	0.47
5:J:960:LEU:HB3	5:J:963:VAL:HG21	1.97	0.47
5:J:1134:ILE:HD12	5:J:1134:ILE:O	2.15	0.47
4:I:524:ILE:HD11	4:I:712:SER:HA	1.96	0.47
5:J:113:HIS:NE2	5:J:307:LEU:HD21	2.30	0.46
5:J:480:ALA:HA	5:J:484:MET:HE3	1.97	0.46
7:R:11:A:H2'	7:R:12:U:C6	2.50	0.46
5:J:817:HIS:O	5:J:817:HIS:CG	2.69	0.46
3:H:29:GLU:HB3	3:H:30:PRO:HD3	1.98	0.46
3:G:45:ARG:HE	3:H:38:THR:CG2	2.29	0.46
3:G:192:VAL:HG21	3:G:198:LEU:HB2	1.98	0.46
5:J:605:LEU:HD23	5:J:605:LEU:O	2.16	0.46
1:A:24:DG:H4'	1:A:25:DA:OP1	2.15	0.45
4:I:256:GLU:HB3	4:I:261:VAL:HG22	1.98	0.45
5:J:960:LEU:HD21	5:J:982:LEU:HD12	1.98	0.45
4:I:1172:LEU:C	4:I:1172:LEU:HD23	2.42	0.45
5:J:44:ILE:HD12	5:J:252:LEU:HD23	1.97	0.45
5:J:555:TYR:CE2	5:J:565:ALA:HB2	2.51	0.45
4:I:1052:VAL:HG12	4:I:1053:TYR:N	2.32	0.45
5:J:354:VAL:HG12	5:J:355:ILE:H	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:615:VAL:HG13	4:I:650:VAL:HA	1.99	0.45
5:J:1266:ILE:HG22	5:J:1267:VAL:N	2.31	0.45
5:J:697:MET:HE2	5:J:738:ARG:HA	2.00	0.44
1:A:28:DC:H2"	1:A:29:DA:N7	2.32	0.44
2:B:19:DA:C6	7:R:17:G:C6	3.05	0.44
6:K:38:LEU:HD13	6:K:59:ILE:HD11	1.98	0.44
2:B:27:DG:H2"	2:B:28:DG:N7	2.33	0.44
4:I:992:LEU:HD22	4:I:1000:LEU:HD11	1.99	0.44
1:A:26:DT:H2'	1:A:27:DT:C7	2.48	0.44
4:I:237:LEU:HD22	4:I:237:LEU:C	2.42	0.44
4:I:1119:MET:HE3	4:I:1204:LEU:HD13	1.99	0.44
5:J:94:GLN:O	5:J:97:VAL:HG22	2.18	0.44
2:B:12:DT:H2"	2:B:13:DT:H71	1.98	0.44
4:I:1002:LEU:HD23	4:I:1007:LYS:HB3	1.99	0.44
3:H:183:ILE:HD13	3:H:205:MET:HE2	1.99	0.43
4:I:1109:ILE:O	4:I:1110:GLY:C	2.59	0.43
5:J:930:LEU:HD23	5:J:1134:ILE:HG12	1.99	0.43
3:G:45:ARG:NE	3:H:38:THR:HG22	2.32	0.43
4:I:144:VAL:HG23	4:I:515:MET:HB2	2.00	0.43
4:I:714:VAL:HG23	4:I:715:THR:HG23	2.01	0.43
4:I:803:ALA:HB2	4:I:1227:VAL:HG22	2.00	0.43
4:I:870:ILE:HD12	4:I:944:ARG:HG2	1.99	0.43
5:J:1280:VAL:HG22	5:J:1281:GLU:N	2.34	0.43
2:B:9:DC:H2'	2:B:10:DT:H72	2.01	0.43
4:I:592:ARG:O	4:I:652:TYR:HA	2.19	0.43
4:I:712:SER:OG	4:I:714:VAL:HG22	2.18	0.43
4:I:971:LEU:HD23	4:I:1018:TYR:CD2	2.53	0.43
5:J:701:LEU:HD23	5:J:701:LEU:O	2.17	0.43
5:J:836:ARG:HA	5:J:839:VAL:HG12	2.01	0.43
1:A:24:DG:H5"	5:J:120:LEU:HD12	2.00	0.43
3:G:120:ASP:OD1	3:G:121:VAL:HG23	2.19	0.43
5:J:737:ILE:HD12	5:J:737:ILE:N	2.34	0.43
5:J:815:GLY:O	5:J:816:THR:C	2.61	0.42
4:I:131:THR:HG22	4:I:132:ASP:H	1.84	0.42
4:I:239:MET:O	4:I:284:LEU:HD12	2.19	0.42
4:I:1282:GLY:O	5:J:1360:GLY:HA3	2.19	0.42
4:I:1176:LEU:HD13	4:I:1180:MET:HA	2.02	0.42
5:J:1314:LEU:HD21	5:J:1325:PHE:CD2	2.53	0.42
4:I:1131:MET:HE2	4:I:1141:LEU:HD23	2.01	0.42
4:I:158:ASP:C	4:I:442:VAL:HG11	2.44	0.42
4:I:186:PHE:HB3	4:I:194:LEU:HD11	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:J:536:LEU:HD22	5:J:542:ALA:HB3	2.02	0.42
5:J:782:GLY:O	5:J:786:THR:HG23	2.19	0.42
5:J:127:LEU:HD21	5:J:234:PRO:HB3	2.02	0.42
5:J:201:LEU:HD11	5:J:220:ARG:HH11	1.85	0.42
5:J:493:PRO:O	5:J:903:LEU:HD12	2.19	0.42
5:J:650:LYS:HG3	5:J:651:HIS:N	2.35	0.42
5:J:749:LYS:HG3	5:J:755:ILE:HD11	2.02	0.42
4:I:1233:LEU:HD12	4:I:1233:LEU:N	2.35	0.42
5:J:354:VAL:HG12	5:J:355:ILE:N	2.35	0.42
5:J:495:ASN:CA	5:J:903:LEU:HD11	2.49	0.42
2:B:25:DC:H2"	2:B:26:DA:C8	2.55	0.41
4:I:882:ILE:HD13	4:I:919:ARG:HG2	2.02	0.41
5:J:84:ILE:N	5:J:84:ILE:HD12	2.35	0.41
5:J:1177:ILE:O	5:J:1185:PRO:HA	2.19	0.41
4:I:484:LEU:HD22	4:I:484:LEU:N	2.35	0.41
5:J:1347:LEU:N	5:J:1347:LEU:HD12	2.35	0.41
3:H:197:ASP:O	3:H:198:LEU:HD23	2.20	0.41
4:I:519:ASN:ND2	4:I:796:LEU:HD23	2.36	0.41
4:I:718:ALA:HB2	4:I:783:LEU:HD11	2.02	0.41
5:J:1180:VAL:HG13	5:J:1203:ARG:NH1	2.36	0.41
3:H:74:VAL:HG12	3:H:76:GLU:H	1.85	0.41
4:I:1005:GLU:HG3	4:I:1006:GLU:H	1.86	0.41
5:J:902:ASP:O	5:J:903:LEU:HB3	2.20	0.41
4:I:839:VAL:HG12	4:I:1049:ILE:HG12	2.02	0.41
5:J:448:GLN:O	5:J:449:LEU:HD12	2.20	0.41
6:K:38:LEU:HD12	6:K:38:LEU:N	2.35	0.41
3:G:166:ARG:N	3:G:167:PRO:HD2	2.36	0.41
5:J:338:PHE:HD1	5:J:342:LEU:HD12	1.86	0.41
5:J:958:ILE:HD12	5:J:982:LEU:HD11	2.03	0.41
1:A:22:DG:H2"	1:A:23:DA:C8	2.55	0.41
4:I:230:PHE:HB3	4:I:237:LEU:HD23	2.02	0.41
4:I:1115:THR:O	4:I:1116:HIS:C	2.64	0.41
4:I:1235:LEU:HD23	4:I:1235:LEU:N	2.36	0.41
5:J:112:ALA:HA	5:J:238:ILE:HG23	2.03	0.41
4:I:666:SER:O	4:I:1186:VAL:HG22	2.21	0.41
5:J:559:ALA:HB3	5:J:562:GLU:HB3	2.03	0.41
3:H:65:LEU:HD23	3:H:65:LEU:H	1.86	0.40
5:J:890:THR:HG23	5:J:895:CYS:HB2	2.03	0.40
1:A:25:DA:C2'	1:A:26:DT:H72	2.50	0.40
2:B:10:DT:C2	2:B:11:DC:C5	3.09	0.40
3:H:55:ALA:C	3:H:146:VAL:HG23	2.46	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:960:LEU:O	4:I:963:GLU:HG2	2.21	0.40
4:I:1108:ASN:O	4:I:1108:ASN:OD1	2.39	0.40
3:G:192:VAL:HG11	3:G:195:ARG:HB3	2.03	0.40
5:J:220:ARG:O	5:J:224:LEU:HD23	2.21	0.40
4:I:209:ILE:CG2	4:I:210:LEU:HD22	2.52	0.40
5:J:868:TRP:O	5:J:872:LEU:HG	2.22	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	
3	G	214/329 (65%)	203 (95%)	11 (5%)	0	100	100
3	H	215/329 (65%)	207 (96%)	8 (4%)	0	100	100
4	I	1312/1342 (98%)	1229 (94%)	83 (6%)	0	100	100
5	J	1356/1407 (96%)	1283 (95%)	73 (5%)	0	100	100
6	K	77/91 (85%)	75 (97%)	2 (3%)	0	100	100
All	All	3174/3498 (91%)	2997 (94%)	177 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	
3	G	185/286 (65%)	183 (99%)	2 (1%)	65	74
3	H	187/286 (65%)	179 (96%)	8 (4%)	26	48
4	I	1134/1157 (98%)	1091 (96%)	43 (4%)	29	51
5	J	1131/1168 (97%)	1081 (96%)	50 (4%)	25	48
6	K	67/75 (89%)	67 (100%)	0	100	100
All	All	2704/2972 (91%)	2601 (96%)	103 (4%)	30	51

All (103) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	G	180	VAL
3	G	207	THR
3	H	7	GLU
3	H	9	LEU
3	H	12	ARG
3	H	37	HIS
3	H	146	VAL
3	H	185	TYR
3	H	191	ARG
3	H	231	PHE
4	I	47	TYR
4	I	71	VAL
4	I	104	ILE
4	I	122	VAL
4	I	135	THR
4	I	158	ASP
4	I	161	LYS
4	I	188	PHE
4	I	204	LEU
4	I	237	LEU
4	I	247	ARG
4	I	396	ASP
4	I	443	ASP
4	I	448	LEU
4	I	453	ILE
4	I	538	LEU
4	I	550	VAL
4	I	563	THR
4	I	615	VAL
4	I	651	ASP
4	I	654	ASP

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Mol	Chain	Res	Type
4	I	655	VAL
4	I	656	SER
4	I	660	VAL
4	I	674	ASP
4	I	697	LYS
4	I	704	MET
4	I	765	ILE
4	I	815	SER
4	I	822	VAL
4	I	989	LEU
4	I	995	ASP
4	I	996	ARG
4	I	1060	ILE
4	I	1064	ASP
4	I	1113	LEU
4	I	1141	LEU
4	I	1143	GLU
4	I	1176	LEU
4	I	1225	VAL
4	I	1251	TYR
4	I	1254	VAL
4	I	1278	LEU
5	J	22	ILE
5	J	53	ARG
5	J	67	ASP
5	J	92	VAL
5	J	100	GLU
5	J	156	ARG
5	J	227	PHE
5	J	317	THR
5	J	320	ASN
5	J	324	LEU
5	J	364	HIS
5	J	384	LYS
5	J	430	HIS
5	J	453	VAL
5	J	490	ILE
5	J	505	ASP
5	J	507	VAL
5	J	516	ASP
5	J	526	VAL
5	J	536	LEU

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Mol	Chain	Res	Type
5	J	552	ILE
5	J	573	THR
5	J	624	ILE
5	J	639	VAL
5	J	649	LYS
5	J	663	GLU
5	J	679	TYR
5	J	705	THR
5	J	710	ASP
5	J	717	VAL
5	J	727	ASP
5	J	751	ASP
5	J	754	ILE
5	J	764	ARG
5	J	770	LEU
5	J	781	LYS
5	J	783	LEU
5	J	816	THR
5	J	823	THR
5	J	864	LEU
5	J	889	ASP
5	J	925	GLU
5	J	980	THR
5	J	1027	VAL
5	J	1081	VAL
5	J	1134	ILE
5	J	1163	VAL
5	J	1233	ILE
5	J	1357	ILE
5	J	1366	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
5	J	477	GLN
5	J	651	HIS
5	J	1235	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
7	R	9/19 (47%)	3 (33%)	0

All (3) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
7	R	12	U
7	R	17	G
7	R	19	U

There are no RNA pucker outliers to report.

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 4 ligands modelled in this entry, 3 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
8	1N7	I	1401	-	30,30,46	0.42	0	47,48,72	0.83	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
8	1N7	I	1401	-	-	2/7/72/92	0/4/4/4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

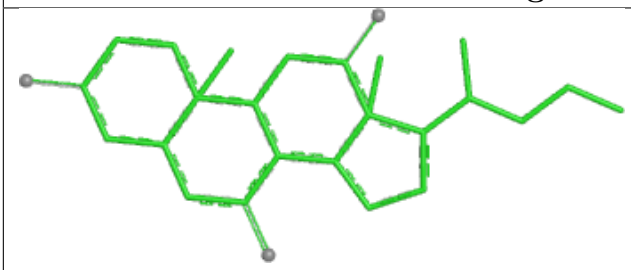
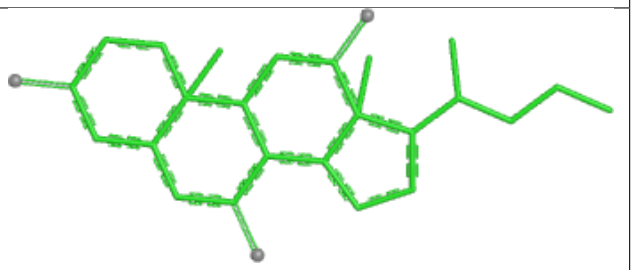
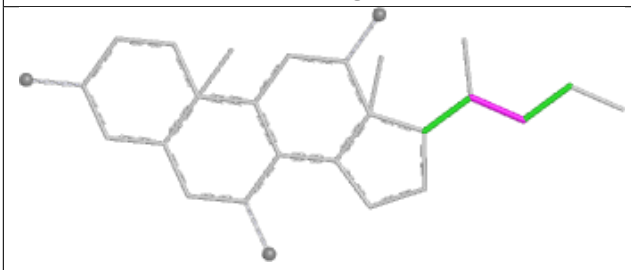
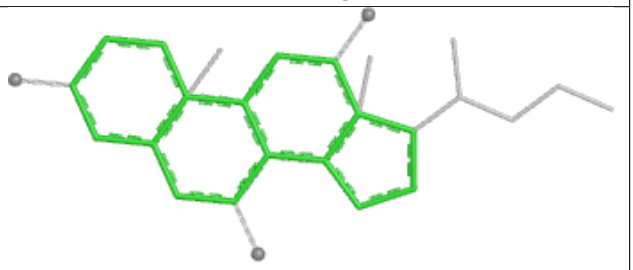
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	I	1401	1N7	C9-C20-C22-C23
8	I	1401	1N7	C21-C20-C22-C23

There are no ring outliers.

No monomer is involved in short contacts.

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

Ligand 1N7 I 1401	
 Bond lengths	 Bond angles
 Torsions	 Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

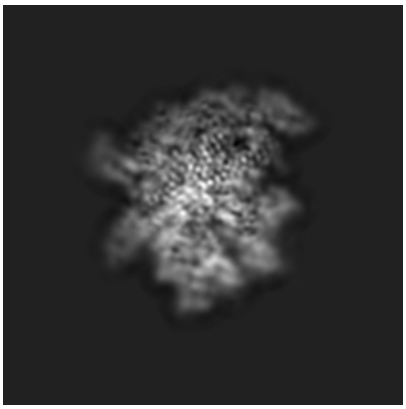
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-75283. These allow visual inspection of the internal detail of the map and identification of artifacts.

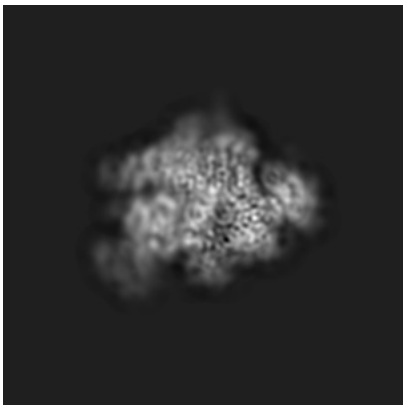
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

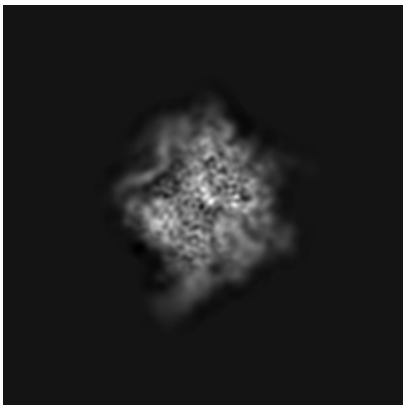
6.1.1 Primary map



X

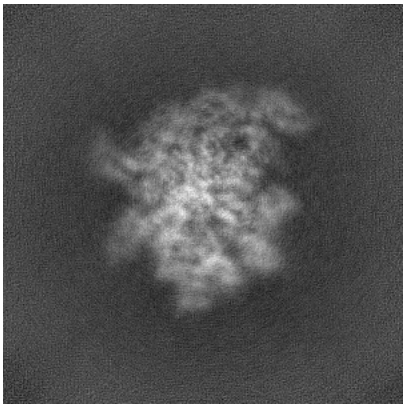


Y

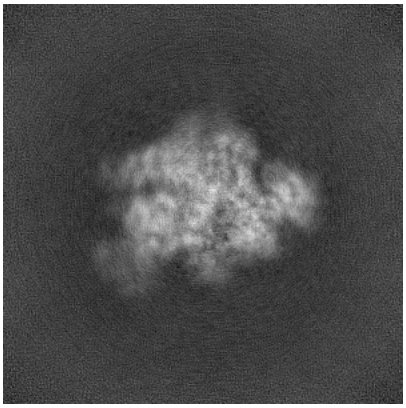


Z

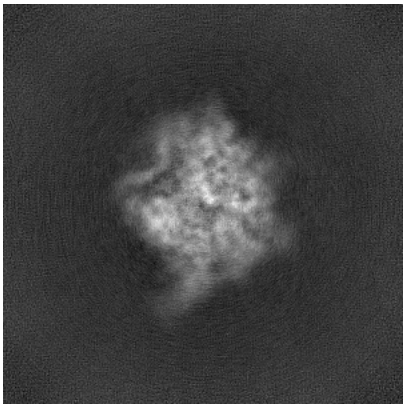
6.1.2 Raw map



X



Y



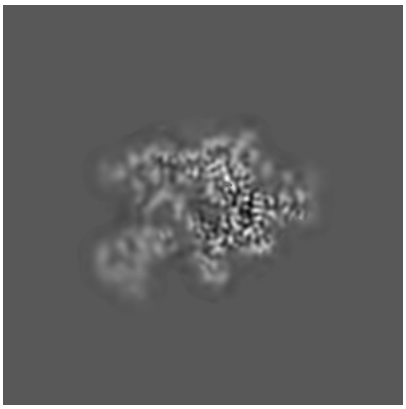
Z

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

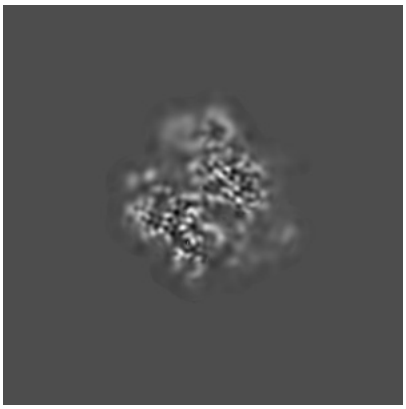
6.2 Central slices (i)

6.2.1 Primary map

X Index: 192

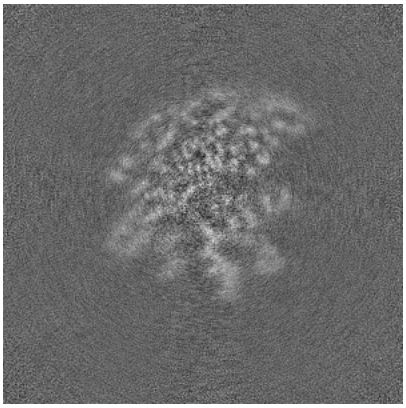


Y Index: 192

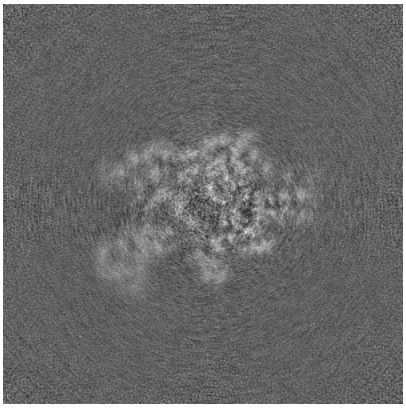


Z Index: 192

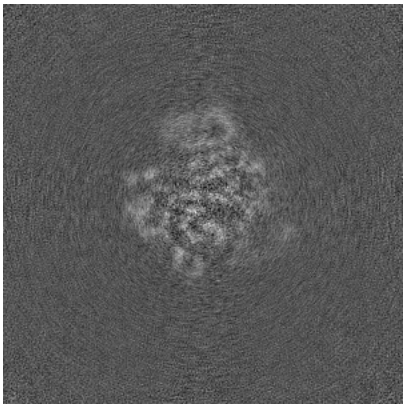
6.2.2 Raw map



X Index: 192



Y Index: 192

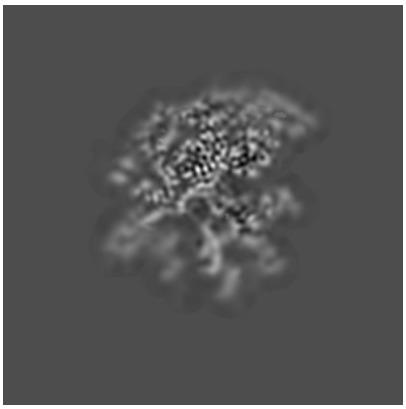


Z Index: 192

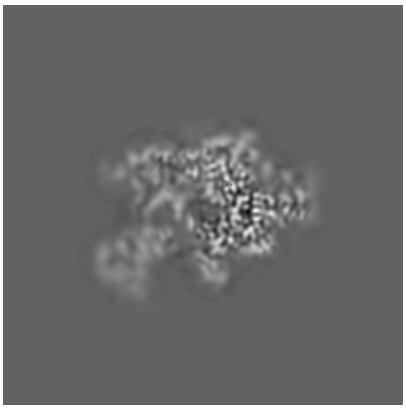
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

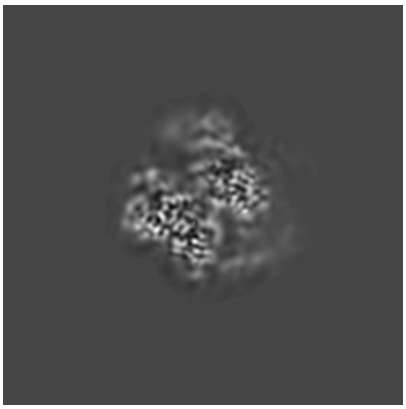
6.3.1 Primary map



X Index: 195

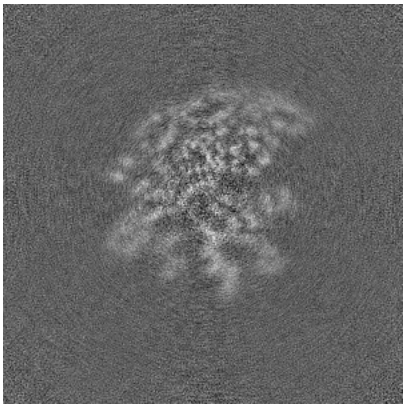


Y Index: 193

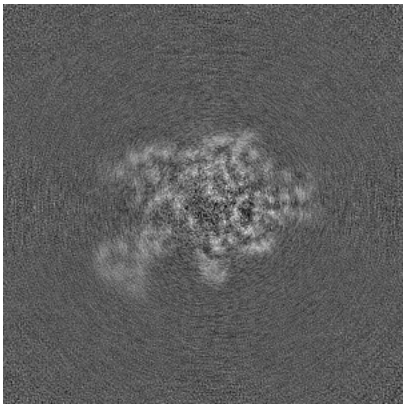


Z Index: 198

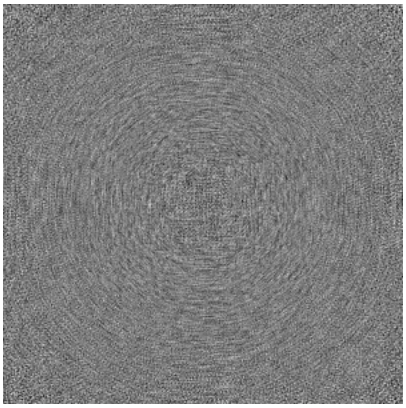
6.3.2 Raw map



X Index: 193



Y Index: 193

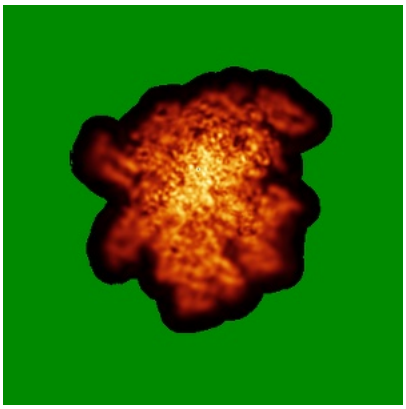


Z Index: 0

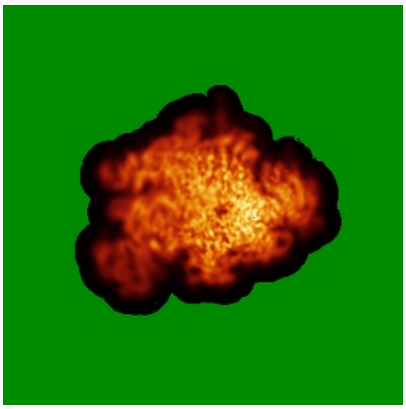
The images above show the largest variance slices of the map in three orthogonal directions.

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

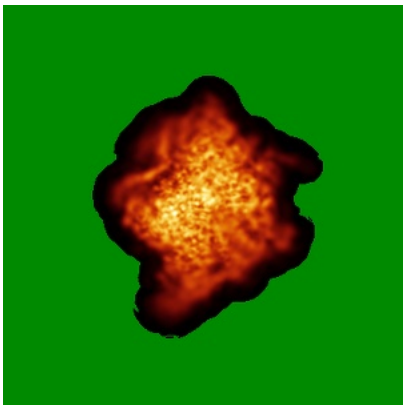
6.4.1 Primary map



X

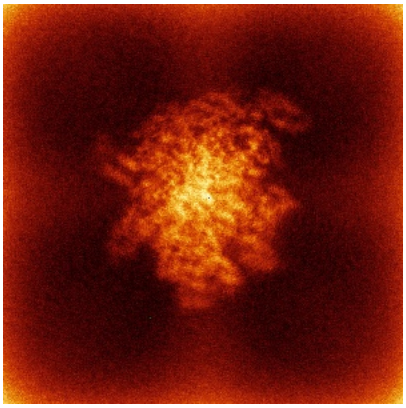


Y

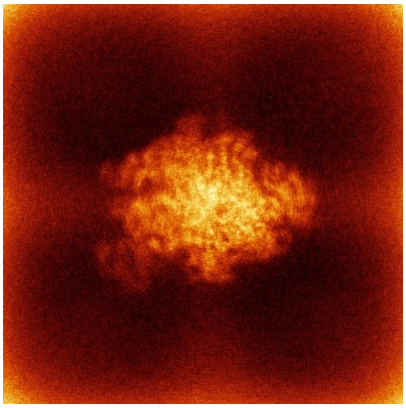


Z

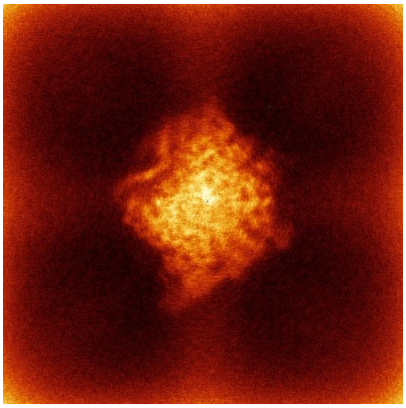
6.4.2 Raw map



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.

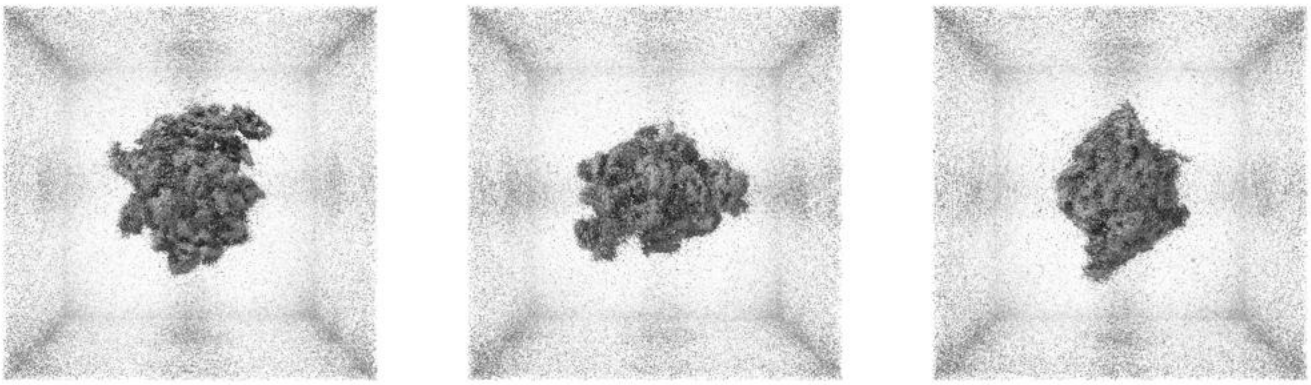
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.015. 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.

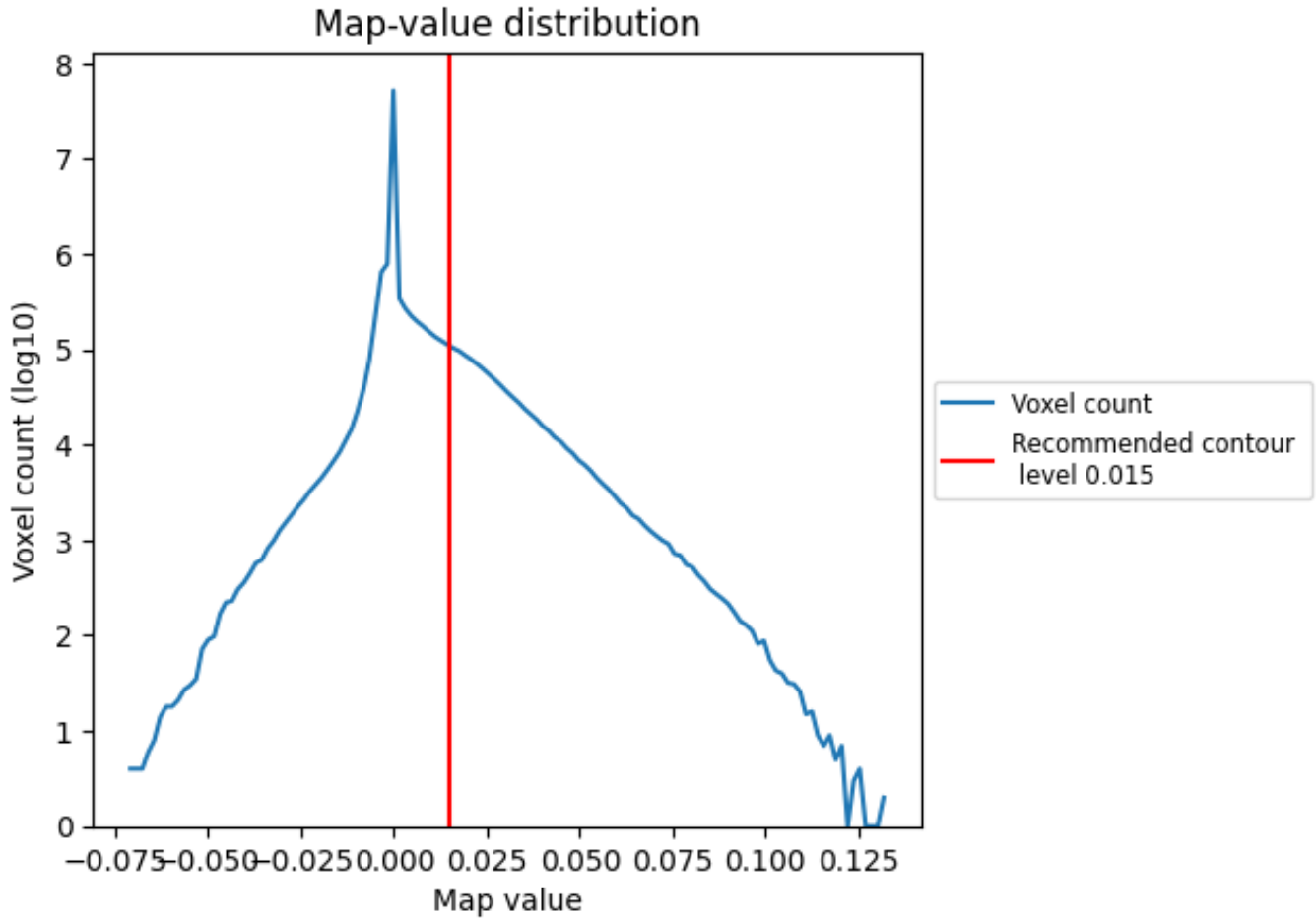
6.6 Mask visualisation (i)

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

7 Map analysis

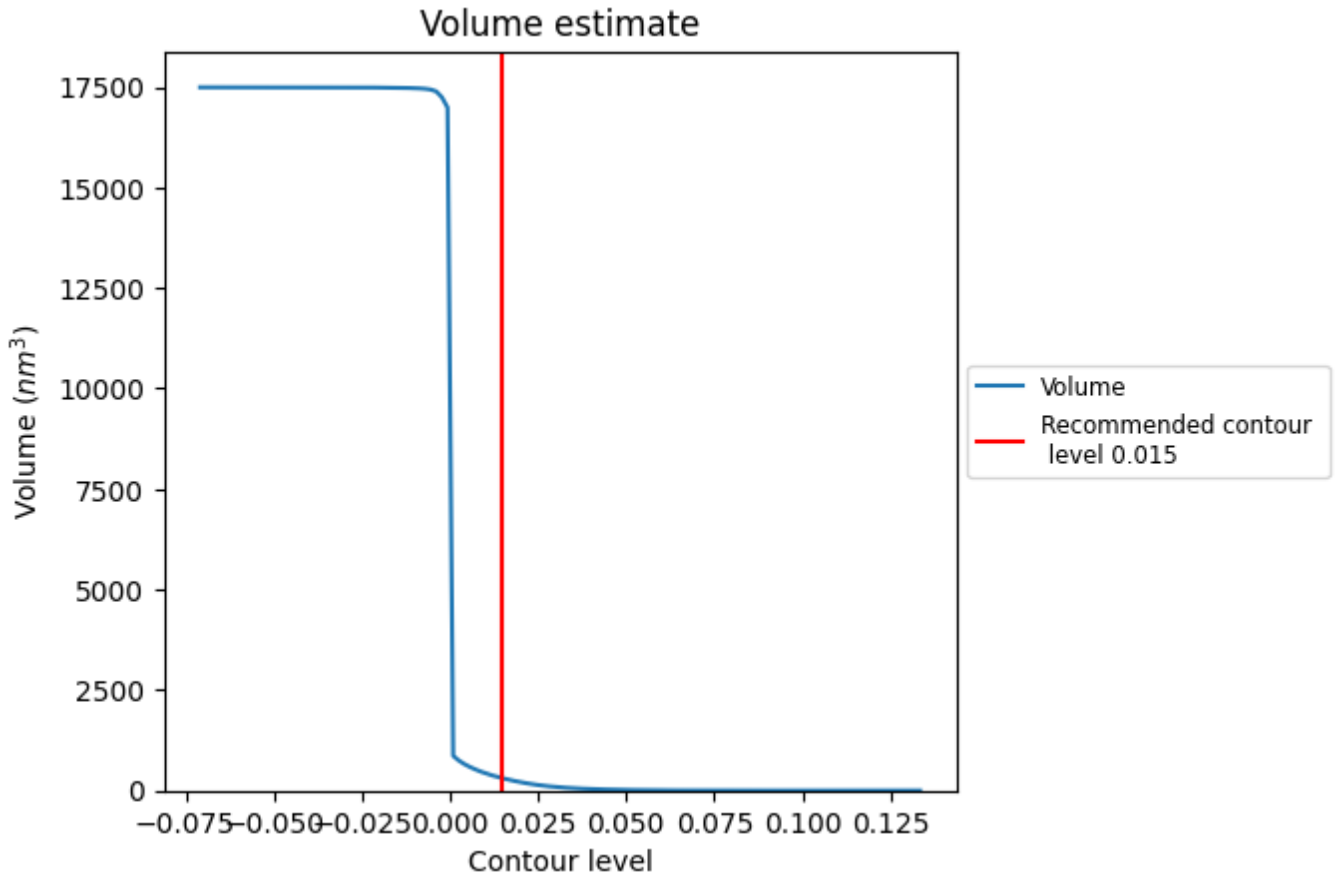
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

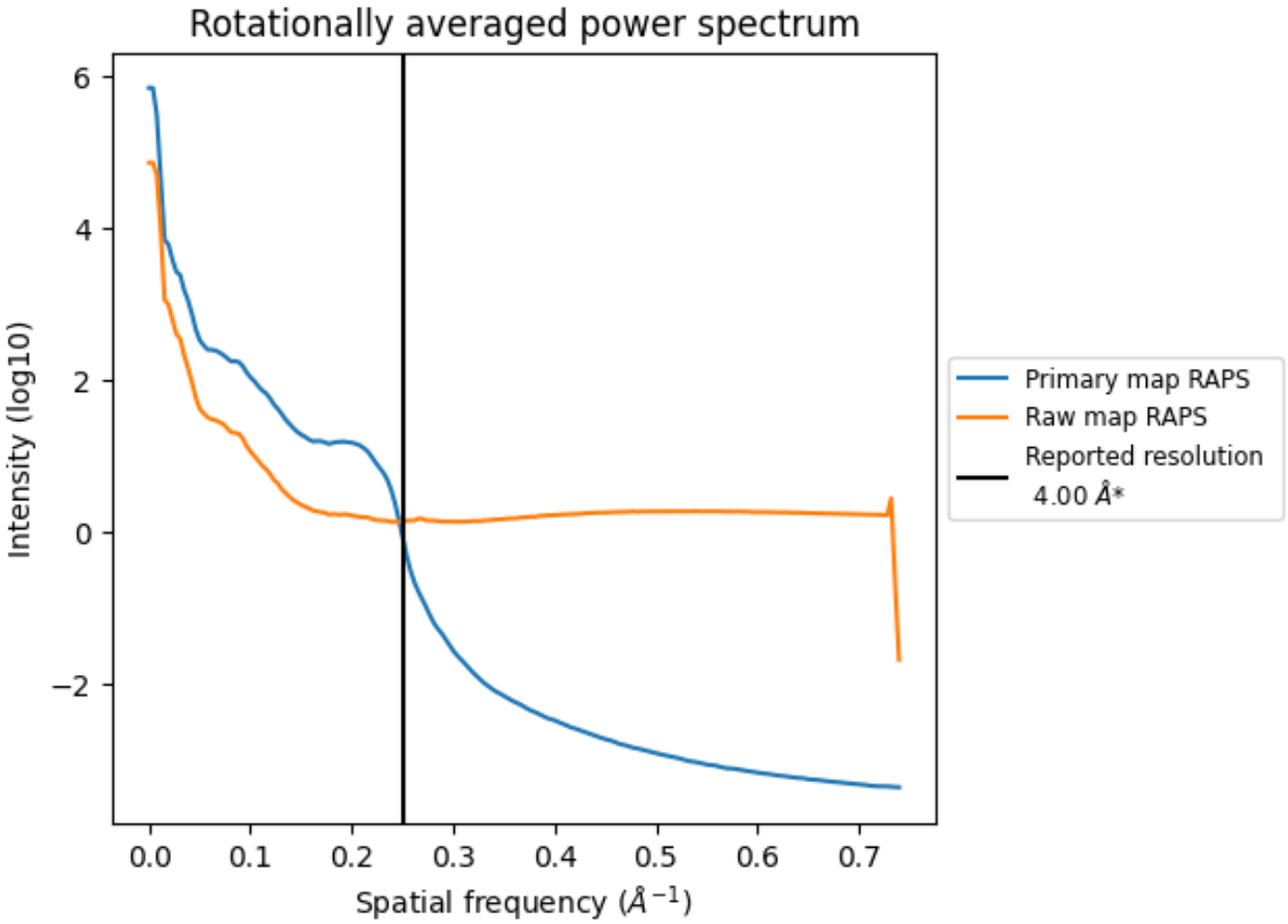
7.2 Volume estimate



The volume at the recommended contour level is 306 nm^3; this corresponds to an approximate mass of 276 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 (i)

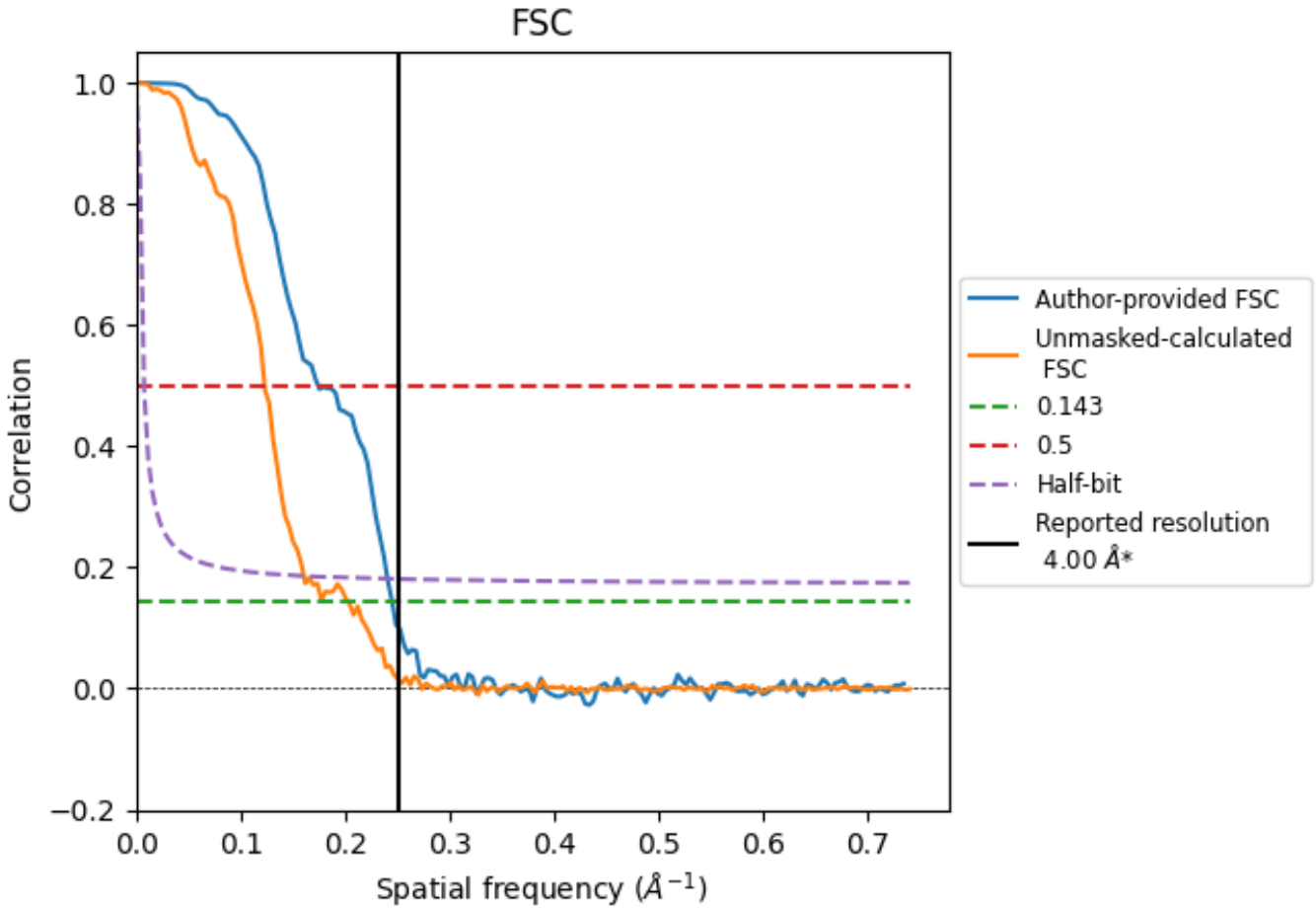


*Reported resolution corresponds to spatial frequency of 0.250 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.250 Å^{-1}

8.2 Resolution estimates (i)

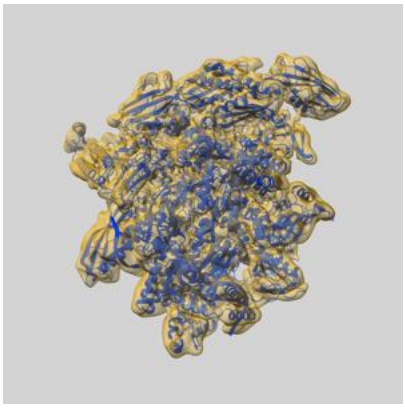
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.00	-	-
Author-provided FSC curve	4.08	5.75	4.16
Unmasked-calculated*	4.93	8.14	6.23

*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 4.93 differs from the reported value 4.0 by more than 10 %

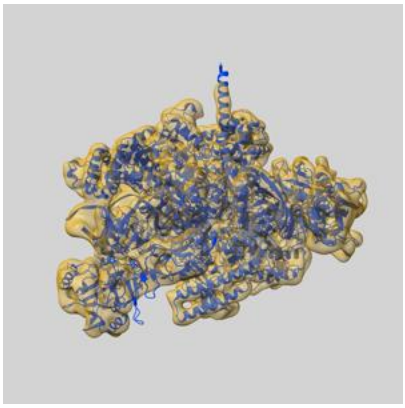
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-75283 and PDB model 10ME. Per-residue inclusion information can be found in section 3 on page 6.

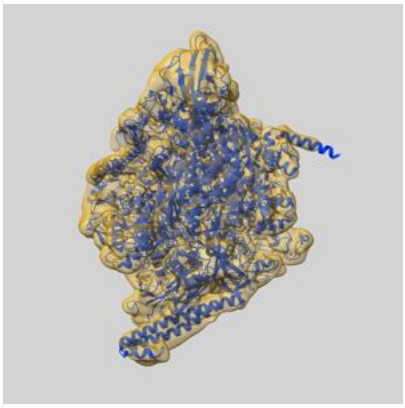
9.1 Map-model overlay



X



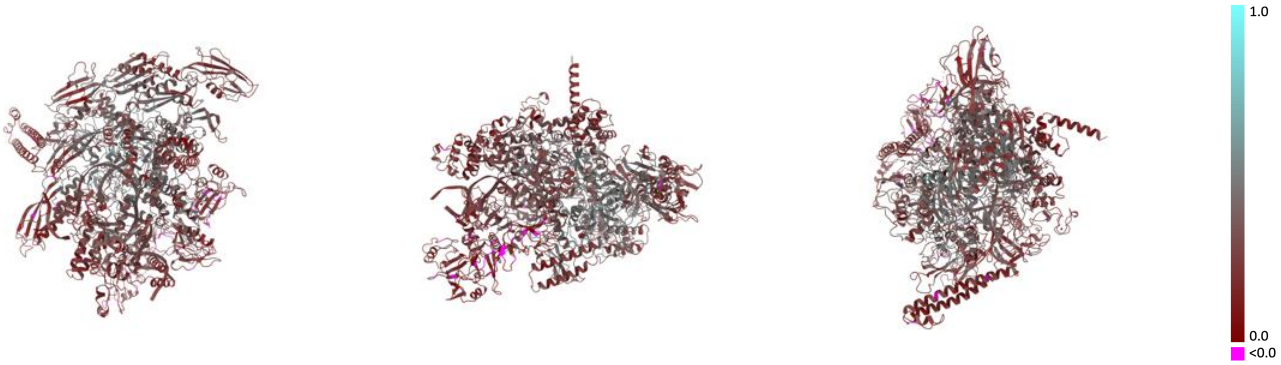
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.015 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.

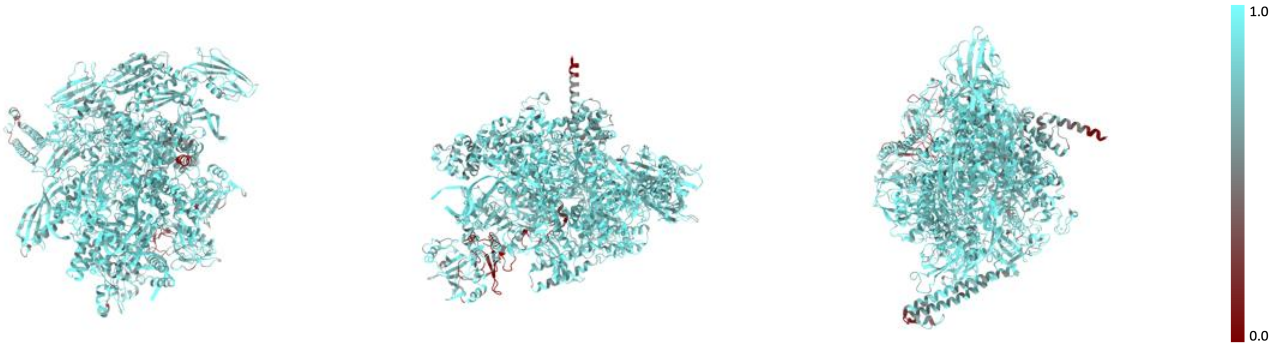
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

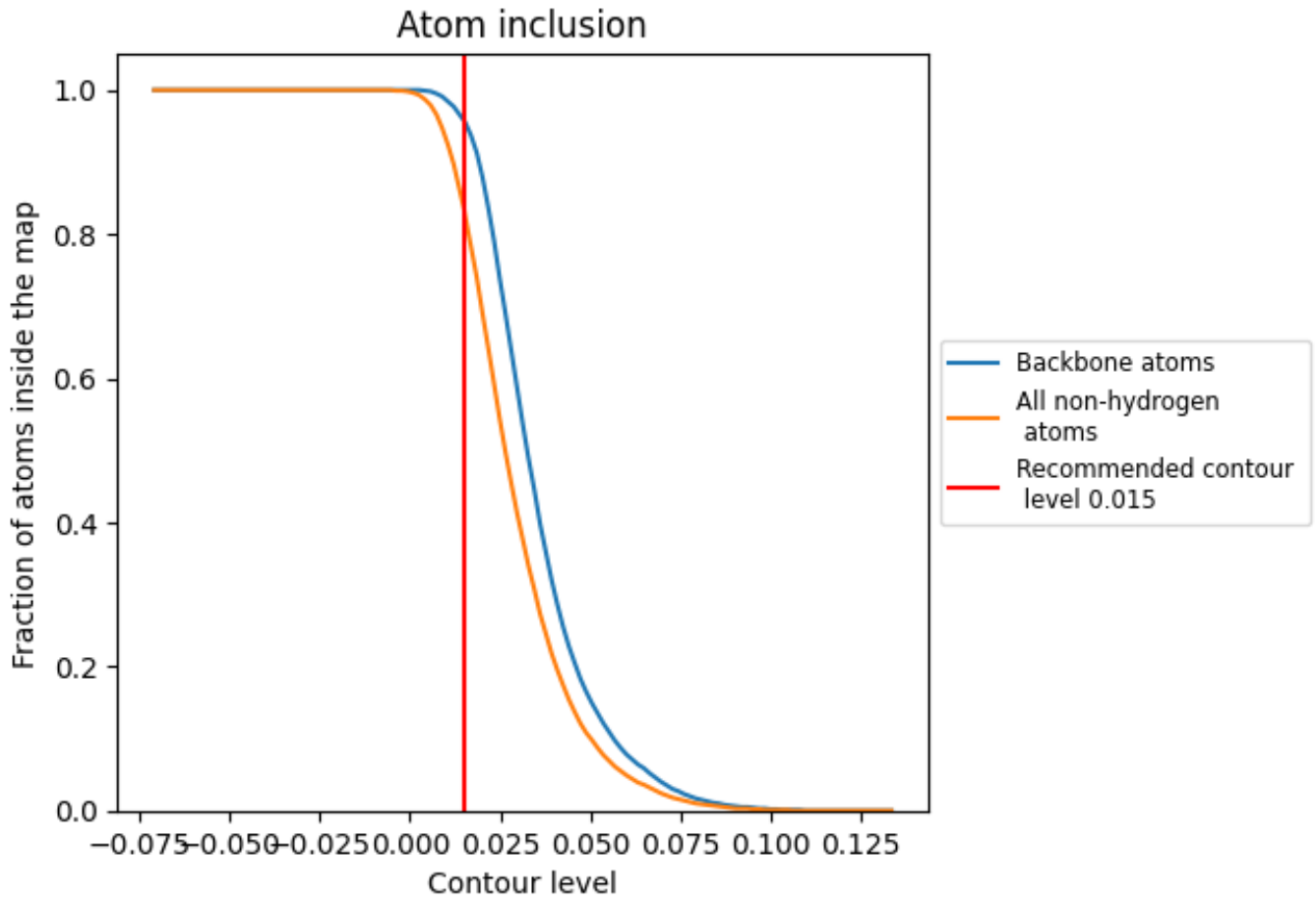
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.015).

9.4 Atom inclusion (i)



At the recommended contour level, 96% of all backbone atoms, 83% 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 (0.015) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8340	0.3100
A	0.9620	0.2860
B	0.9790	0.3000
G	0.8270	0.3370
H	0.8050	0.2980
I	0.8570	0.3310
J	0.8150	0.2920
K	0.5600	0.2140
R	0.9950	0.3720