



Full wwPDB EM Validation Report ⓘ

Jan 29, 2024 – 10:32 AM EST

PDB ID : 8EVJ
EMDB ID : EMD-28631
Title : CX3CR1 nucleosome bound PU.1 and C/EBPa
Authors : Guan, R.; Bai, Y.; Lian, T.
Deposited on : 2022-10-20
Resolution : 4.10 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.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

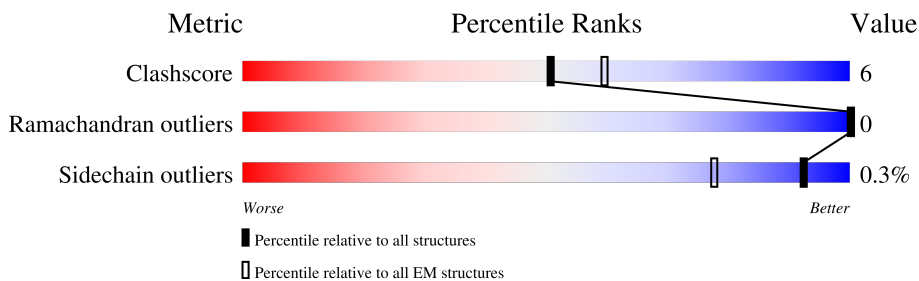
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.10 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	J	167	
2	I	167	
3	A	136	
3	E	136	
4	B	103	
4	F	103	
5	C	129	
5	G	129	

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Mol	Chain	Length	Quality of chain
6	D	126	 67% 7% 25%
6	H	126	 62% 13% 25%
7	M	265	 71% 14% 15%
7	N	265	 70% 15% 15%
8	O	285	 26% 5% 69%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 15951 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 DNA (167-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	J	138	2830	1346	538	809	137	0	0

- Molecule 2 is a DNA chain called DNA (167-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	I	138	2825	1349	493	845	138	0	0

- Molecule 3 is a protein called Histone H3.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	A	98	810	511	157	138	4	0	0
3	E	96	790	499	151	136	4	0	0

- Molecule 4 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	B	82	653	413	127	112	1	0	0
4	F	81	648	410	126	111	1	0	0

- Molecule 5 is a protein called Histone H2A type 2-C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	C	107	819	517	159	141	2	0	0
5	G	108	828	523	161	142	2	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	76	CYS	THR	engineered mutation	UNP Q16777
G	76	CYS	THR	engineered mutation	UNP Q16777

- Molecule 6 is a protein called Histone H2B type 2-E.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	D	94	Total	C	N	O	S	0	0
			731	459	131	139	2		
6	H	94	Total	C	N	O	S	0	0
			731	459	131	139	2		

- Molecule 7 is a protein called ScFv.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	M	226	Total	C	N	O	S	0	0
			1769	1115	289	357	8		
7	N	226	Total	C	N	O	S	0	0
			1769	1115	289	357	8		

- Molecule 8 is a protein called Transcription factor PU.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	O	89	Total	C	N	O	S	0	0
			748	482	137	125	4		

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	-12	MET	-	initiating methionine	UNP P17433
O	-11	GLY	-	expression tag	UNP P17433
O	-10	SER	-	expression tag	UNP P17433
O	-9	SER	-	expression tag	UNP P17433
O	-8	HIS	-	expression tag	UNP P17433
O	-7	HIS	-	expression tag	UNP P17433
O	-6	HIS	-	expression tag	UNP P17433
O	-5	HIS	-	expression tag	UNP P17433
O	-4	HIS	-	expression tag	UNP P17433
O	-3	HIS	-	expression tag	UNP P17433
O	-2	SER	-	expression tag	UNP P17433
O	-1	SER	-	expression tag	UNP P17433
O	0	GLY	-	expression tag	UNP P17433

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Chain	Residue	Modelled	Actual	Comment	Reference
O	220	CYS	GLY	engineered mutation	UNP P17433

● Molecule 7: ScFv

Chain M: 71% 14% 15%

MET	GLY	LYS	SER	GLY	SER	SER	SER	HIS	HIS	HIS	HIS	HIS	HIS	HIS	GLU	GLU	ASN	ASN	ALA	MET	E23	Q28	E35	F36	G37	T38	T50	S53	Q57	Q61	L67	K89	S107	L108	V115	C118	K121	T128	L129	S137	S141	SER	GLY	GLY			
GLY	SER	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	D159	I160	K161	M162	S165	T180	S184	L191	Y194	K197	K200	A209	D214	R219	G224	F229	N235	L236	E237	D240	T241	A242	Q248	K265	ARG	ALA

● Molecule 7: ScFv

Chain N: 70% 15% 15%

MET	LYS	SER	SER	HIS	HIS	HIS	HIS	HIS	HIS	GLU	ASN	LEU	TYP	PHE	GLN	SER	ASN	ALA	MET	E23	Q28	E35	K41	Y54	Q57	R64	Q65	I73	T91	V101	Y102	M103	E104	T109	D112	V115	K121	R124	S127	T128	L129	G133		
S137	S141	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	SER	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	D159	P166	R176	I179	I187	R188	S189	Y190	W193	Y194	Q195	Q196	K197	K200	L205	I206	N234	L247	Q248	P253	Y254	K265	ARG	ALA

● Molecule 8: Transcription factor PU.1

Chain O: 26% 5% 69%

MET	GLY	SER	SER	HIS	HIS	HIS	HIS	HIS	HIS	HIS	HIS	GLU	LEU	LEU	GLN	ALA	CYS	LYS	MET	E23	Q28	E35	K41	Y54	Q57	R64	Q65	I73	T91	V101	Y102	M103	E104	T109	D112	V115	K121	R124	S127	T128	L129	G133		
ASP	HIS	TYR	TRP	ASP	HIS	PHE	SER	TYR	ALA	LEU	PRO	VAL	PHE	GLU	GLU	ALA	ASN	PHE	PRO	GLU	D159	P166	R176	I179	I187	R188	S189	Y190	W193	Y194	Q195	Q196	K197	K200	L205	I206	N234	L247	Q248	P253	Y254	K265	ARG	ALA
LEU	SER	HIS	GLN	VAL	SER	TYR	TYR	MET	ARG	GLU	PRO	ASP	LEU	LEU	GLN	VAL	ASN	THR	PRO	GLU	D159	P166	R176	I179	I187	R188	S189	Y190	W193	Y194	Q195	Q196	K197	K200	L205	I206	N234	L247	Q248	P253	Y254	K265	ARG	ALA

SER	LYS	K171	I172	R173	L174	F177	D180	L181	L182	R183	S184	M187	S190	I191	V194	D195	K196	D197	F201	L211	N221	R222	K223	K247	G256	E257	V258	L259	GLY	ARG	GLY	LEU	ALA	GLU	ARG	ARG	ARG	LEU	PRO	PRO	HIS
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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	15710	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	53.8	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.102	Depositor
Minimum map value	-0.044	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.01	Depositor
Map size (\AA)	253.44, 253.44, 253.44	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.056, 1.056, 1.056	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	J	0.55	0/3181	0.94	0/4906
2	I	0.53	0/3162	0.99	0/4880
3	A	0.33	0/822	0.79	1/1102 (0.1%)
3	E	0.33	0/802	0.73	0/1076
4	B	0.32	0/660	0.81	1/885 (0.1%)
4	F	0.35	0/655	0.83	1/878 (0.1%)
5	C	0.33	0/829	0.64	0/1116
5	G	0.30	0/838	0.64	0/1127
6	D	0.35	0/742	0.70	0/998
6	H	0.31	0/742	0.70	0/998
7	M	0.28	0/1811	0.60	1/2454 (0.0%)
7	N	0.28	0/1811	0.56	0/2454
8	O	0.28	0/763	0.70	2/1013 (0.2%)
All	All	0.41	0/16818	0.81	6/23887 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	M	214	ASP	CB-CG-OD2	7.39	124.95	118.30
4	B	62	LEU	CA-CB-CG	7.07	131.56	115.30
8	O	187	MET	CA-CB-CG	7.07	125.32	113.30
3	A	92	LEU	CA-CB-CG	6.57	130.42	115.30
8	O	187	MET	CB-CG-SD	5.46	128.79	112.40
4	F	24	ASP	CB-CG-OD1	5.25	123.03	118.30

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	J	2830	0	1548	23	0
2	I	2825	0	1564	20	0
3	A	810	0	851	22	0
3	E	790	0	826	12	0
4	B	653	0	695	17	0
4	F	648	0	693	17	0
5	C	819	0	877	15	0
5	G	828	0	891	16	0
6	D	731	0	747	9	0
6	H	731	0	747	14	0
7	M	1769	0	1708	23	0
7	N	1769	0	1708	25	0
8	O	748	0	781	8	0
All	All	15951	0	13636	170	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 6.

All (170) 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:F:92:ARG:HH12	6:H:97:LEU:HB3	1.58	0.69
5:G:23:LEU:HD12	5:G:56:GLU:HG3	1.76	0.67
6:H:88:SER:O	6:H:92:GLN:HB2	1.95	0.67
3:E:50:GLU:HA	3:E:53:ARG:HG2	1.77	0.67
7:N:73:ILE:HG21	7:N:101:VAL:HG21	1.77	0.66
7:N:41:LYS:HD2	7:N:102:TYR:HB3	1.77	0.66
1:J:46:DC:N4	1:J:47:DA:N6	2.47	0.63
2:I:105:DG:N3	3:A:40:ARG:NH2	2.47	0.63
4:F:77:LYS:HE3	6:H:89:ARG:HH22	1.63	0.62
7:M:28:GLN:NE2	7:M:118:CYS:SG	2.73	0.62
3:A:92:LEU:HD21	4:B:66:ILE:HD11	1.82	0.62
1:J:23:DG:H3'	5:C:28:GLY:HA3	1.81	0.62
3:A:50:GLU:HA	3:A:53:ARG:HG2	1.82	0.62
3:A:65:LEU:HD12	3:A:68:GLN:HE21	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:O:221:ASN:ND2	8:O:223:LYS:O	2.34	0.61
4:F:60:VAL:O	4:F:64:ASN:ND2	2.35	0.60
4:F:75:HIS:HB2	6:H:93:THR:HG21	1.84	0.60
5:G:84:GLN:HE21	5:G:102:ILE:HB	1.68	0.59
7:N:64:ARG:HD2	7:N:65:GLN:HG3	1.85	0.58
4:B:62:LEU:HA	4:B:65:VAL:HG12	1.86	0.57
1:J:52:DG:N2	2:I:112:DT:O2	2.38	0.57
3:E:65:LEU:HD12	3:E:68:GLN:HE21	1.70	0.56
7:M:219:ARG:NH2	7:M:240:ASP:OD2	2.38	0.56
4:F:75:HIS:O	6:H:89:ARG:NH2	2.38	0.56
4:F:60:VAL:HA	4:F:63:GLU:HG2	1.87	0.55
5:G:84:GLN:HA	5:G:87:ILE:HG22	1.87	0.55
3:E:106:ASP:OD2	3:E:131:ARG:NH1	2.40	0.54
3:E:121:PRO:HA	3:E:124:ILE:HG22	1.89	0.54
2:I:155:DT:H3'	8:O:223:LYS:HD2	1.90	0.53
7:M:219:ARG:NH2	7:M:235:ASN:O	2.42	0.53
1:J:105:DC:H4'	5:G:42:ARG:HE	1.73	0.53
3:A:106:ASP:OD2	3:A:131:ARG:NH1	2.41	0.53
6:D:41:VAL:HA	6:D:44:GLN:HG3	1.90	0.53
5:G:15:LYS:O	5:G:20:ARG:NH2	2.42	0.53
7:N:128:THR:HG1	7:N:194:TYR:HH	1.57	0.53
7:M:162:MET:HG2	7:M:248:GLN:HG2	1.92	0.52
7:M:115:VAL:HA	7:M:137:SER:HA	1.91	0.52
7:M:219:ARG:HH12	7:M:237:GLU:HG3	1.75	0.52
1:J:47:DA:N1	2:I:117:DG:C6	2.78	0.52
7:M:160:ILE:HG23	7:M:184:SER:HB3	1.91	0.52
7:N:91:THR:HB	7:N:104:GLU:HB3	1.92	0.52
5:C:30:VAL:HG13	5:C:48:PRO:HB3	1.91	0.51
3:E:68:GLN:HA	3:E:71:VAL:HG22	1.90	0.51
7:N:128:THR:OG1	7:N:194:TYR:OH	2.28	0.51
7:M:89:LYS:NZ	7:M:107:SER:O	2.44	0.51
1:J:84:DG:N2	2:I:80:DT:O2	2.43	0.51
7:M:37:GLY:H	7:M:108:LEU:HB2	1.76	0.51
3:A:56:LYS:HA	5:G:81:ARG:HH12	1.75	0.51
7:N:195:GLN:HB3	7:N:205:LEU:HD21	1.91	0.51
7:M:165:SER:HB2	7:M:180:THR:HB	1.93	0.51
6:D:102:GLU:OE1	7:N:54:TYR:OH	2.29	0.51
4:F:39:ARG:NH1	4:F:43:VAL:O	2.43	0.51
5:G:97:LEU:HD21	6:H:62:PHE:HE1	1.76	0.50
7:N:35:GLU:HA	7:N:141:SER:HB2	1.94	0.50
1:J:74:DG:H4'	4:F:45:ARG:HE	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:C:84:GLN:NE2	5:C:88:ARG:HE	2.10	0.50
1:J:13:DC:H2''	1:J:14:DA:H5''	1.94	0.50
3:A:57:SER:O	4:B:40:ARG:NH2	2.45	0.50
5:C:29:ARG:HG3	5:C:32:ARG:HH21	1.76	0.50
3:A:118:THR:HG22	4:B:45:ARG:HG2	1.94	0.50
1:J:117:DT:O2	2:I:47:DG:N1	2.44	0.49
3:A:73:GLU:OE2	4:B:25:ASN:ND2	2.44	0.49
5:G:78:ILE:HB	6:H:51:ILE:HG13	1.93	0.49
7:N:176:ARG:NH2	7:N:234:ASN:O	2.46	0.48
5:G:87:ILE:HD12	5:G:93:LEU:HB3	1.94	0.48
2:I:52:DA:H3'	5:G:28:GLY:HA3	1.94	0.48
4:F:57:VAL:HA	4:F:60:VAL:HG12	1.95	0.48
7:M:61:GLN:HB2	7:M:67:LEU:HD23	1.94	0.48
1:J:33:DG:N2	2:I:131:DT:O2	2.47	0.48
3:A:68:GLN:HA	3:A:71:VAL:HG12	1.96	0.48
2:I:51:DC:H3'	5:G:32:ARG:HH12	1.79	0.48
1:J:44:DG:N2	2:I:120:DT:O2	2.47	0.48
3:E:83:ARG:HB3	4:F:80:THR:HA	1.96	0.48
5:C:85:LEU:O	5:C:89:ASN:ND2	2.46	0.48
1:J:63:DT:H5''	4:B:45:ARG:HH12	1.78	0.47
1:J:50:DC:H2''	1:J:51:DA:C8	2.49	0.47
2:I:153:DG:H5'	8:O:174:LEU:HD21	1.96	0.47
5:C:84:GLN:HE22	5:C:88:ARG:HE	1.63	0.47
4:F:23:ARG:O	4:F:25:ASN:ND2	2.47	0.47
7:N:121:LYS:HB2	7:N:129:LEU:HD13	1.97	0.47
7:N:193:TRP:H	7:N:206:ILE:HG22	1.80	0.47
7:N:248:GLN:NE2	7:N:253:PRO:O	2.48	0.47
6:H:73:GLU:HG3	6:H:98:LEU:HD11	1.97	0.46
4:B:29:ILE:HD11	4:B:55:ARG:HG2	1.97	0.46
4:B:91:LYS:HG2	4:B:96:THR:HG22	1.97	0.46
5:C:112:GLN:HB2	5:C:115:LEU:HG	1.98	0.46
8:O:177:PHE:HA	8:O:180:ASP:HB2	1.97	0.46
2:I:104:DG:H2''	2:I:105:DG:C8	2.51	0.46
7:N:247:LEU:HD11	7:N:254:TYR:HB3	1.97	0.46
7:M:121:LYS:HB2	7:M:129:LEU:HD13	1.98	0.46
3:A:50:GLU:OE2	4:B:39:ARG:NE	2.48	0.46
6:H:38:VAL:HA	6:H:41:VAL:HG22	1.97	0.46
1:J:120:DC:H2''	1:J:121:DA:C8	2.51	0.46
5:C:92:GLU:OE1	7:N:124:ARG:NH1	2.48	0.46
7:M:191:LEU:HB3	7:M:209:ALA:HB2	1.97	0.46
1:J:74:DG:H5''	4:F:47:SER:HA	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:73:GLU:HG3	4:B:25:ASN:HB2	1.97	0.45
7:N:197:LYS:HB2	7:N:200:LYS:HB2	1.98	0.45
4:F:73:THR:HG21	4:F:81:VAL:HG22	1.98	0.45
7:N:115:VAL:HA	7:N:137:SER:HA	1.98	0.45
8:O:190:SER:HB2	8:O:211:LEU:HD11	1.98	0.45
1:J:111:DT:H2''	1:J:112:DG:C8	2.52	0.45
1:J:41:DC:H2''	1:J:42:DT:C5	2.52	0.45
7:M:197:LYS:HB2	7:M:200:LYS:HB2	1.98	0.45
4:B:75:HIS:HB2	6:D:93:THR:HG21	1.99	0.45
7:N:166:PRO:HG2	7:N:179:ILE:HD12	1.99	0.45
5:C:104:GLN:N	3:E:94:GLU:OE2	2.34	0.45
3:A:113:HIS:NE2	3:E:123:ASP:OD1	2.39	0.44
5:C:15:LYS:O	5:C:20:ARG:NH1	2.50	0.44
5:C:76:CYS:SG	5:C:77:ARG:N	2.89	0.44
7:M:128:THR:OG1	7:M:129:LEU:N	2.50	0.44
2:I:162:DT:H6	2:I:162:DT:H2'	1.65	0.44
5:C:51:MET:HA	5:C:54:VAL:HG12	1.99	0.44
3:A:129:ARG:HB2	3:A:134:ARG:HH21	1.83	0.44
8:O:191:ILE:HD11	8:O:201:PHE:HB2	1.99	0.44
2:I:161:DT:H6	2:I:161:DT:H2'	1.68	0.44
5:C:104:GLN:HB2	6:D:54:LYS:HZ1	1.83	0.43
7:N:109:THR:N	7:N:112:ASP:OD2	2.50	0.43
4:F:92:ARG:HH22	6:H:97:LEU:HD22	1.83	0.43
4:F:91:LYS:NZ	6:H:80:TYR:OH	2.36	0.43
7:M:28:GLN:HE22	7:M:118:CYS:H	1.64	0.43
1:J:63:DT:H6	1:J:63:DT:H2'	1.67	0.43
6:D:54:LYS:HE2	6:D:54:LYS:HB3	1.79	0.43
6:D:106:HIS:HE2	7:N:127:SER:HG	1.57	0.43
2:I:116:DT:H2'	2:I:117:DG:C8	2.54	0.43
5:C:13:LYS:HA	5:C:13:LYS:HD2	1.85	0.43
7:M:35:GLU:HA	7:M:141:SER:HB2	2.00	0.43
7:N:57:GLN:HB2	7:N:129:LEU:HD11	2.00	0.43
1:J:81:DG:H2''	1:J:82:DA:C8	2.53	0.43
3:A:119:ILE:HG12	4:B:46:ILE:HA	2.01	0.42
6:D:38:VAL:HG11	6:D:59:MET:HG3	2.02	0.42
7:N:200:LYS:HB3	7:N:200:LYS:HE3	1.77	0.42
8:O:182:LEU:HD21	8:O:191:ILE:HG13	2.01	0.42
1:J:46:DC:N4	1:J:47:DA:H62	2.16	0.42
5:G:44:GLY:HA3	6:H:87:THR:HG22	2.02	0.42
2:I:138:DC:N3	2:I:139:DA:N6	2.67	0.42
3:A:116:ARG:NH1	3:A:118:THR:O	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:N:28:GLN:HE21	7:N:133:GLY:HA3	1.85	0.42
5:G:39:TYR:HB3	6:H:75:SER:HB3	2.01	0.42
2:I:28:DC:H2''	2:I:29:DT:H5''	2.02	0.42
2:I:54:DC:OP1	5:G:20:ARG:NH2	2.51	0.42
3:E:61:LEU:HD12	4:F:36:ARG:HB3	2.02	0.42
3:E:103:LEU:HD21	3:E:124:ILE:HG13	2.02	0.42
4:F:54:THR:HA	4:F:57:VAL:HG12	2.00	0.42
5:C:80:PRO:HA	5:C:83:LEU:HD12	2.02	0.41
4:B:50:ILE:O	4:B:54:THR:OG1	2.34	0.41
7:M:35:GLU:OE2	7:M:38:THR:OG1	2.37	0.41
1:J:15:DC:H1'	1:J:16:DA:H5'	2.02	0.41
7:N:41:LYS:HA	7:N:41:LYS:HD3	1.83	0.41
7:N:187:ILE:HG22	7:N:190:TYR:H	1.85	0.41
3:A:70:LEU:HD11	4:B:26:ILE:HD12	2.02	0.41
1:J:0:DA:H2''	1:J:1:DA:C8	2.55	0.41
7:M:50:THR:O	7:M:53:SER:OG	2.32	0.41
7:M:197:LYS:HD3	7:M:242:ALA:HB2	2.03	0.41
3:E:41:TYR:HE2	3:E:49:ARG:HH12	1.68	0.41
2:I:113:DG:H5''	3:A:66:PRO:HD3	2.02	0.41
3:A:108:ASN:ND2	4:B:42:GLY:O	2.54	0.41
7:M:224:GLY:HA3	7:M:229:PHE:HA	2.02	0.41
1:J:113:DC:N3	1:J:114:DA:N6	2.69	0.41
6:H:105:LYS:HA	6:H:108:VAL:HG22	2.02	0.41
8:O:183:ARG:NH2	8:O:259:LEU:O	2.54	0.41
3:A:94:GLU:OE1	5:G:104:GLN:N	2.51	0.40
6:D:106:HIS:O	6:D:110:GLU:HG2	2.22	0.40
3:E:75:ALA:HB1	3:E:82:LEU:HD12	2.03	0.40
7:M:57:GLN:HB2	7:M:129:LEU:HD11	2.03	0.40
7:M:128:THR:OG1	7:M:194:TYR:OH	2.35	0.40
2:I:145:DC:H4'	6:D:30:ARG:HE	1.86	0.40
3:A:94:GLU:CD	5:G:104:GLN:H	2.25	0.40
4:B:60:VAL:HA	4:B:63:GLU:HG3	2.03	0.40
3:A:62:ILE:HD11	4:B:37:LEU:HD11	2.04	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	A	96/136 (71%)	93 (97%)	3 (3%)	0	100	100
3	E	94/136 (69%)	91 (97%)	3 (3%)	0	100	100
4	B	80/103 (78%)	76 (95%)	4 (5%)	0	100	100
4	F	79/103 (77%)	77 (98%)	2 (2%)	0	100	100
5	C	105/129 (81%)	101 (96%)	4 (4%)	0	100	100
5	G	106/129 (82%)	103 (97%)	3 (3%)	0	100	100
6	D	92/126 (73%)	89 (97%)	3 (3%)	0	100	100
6	H	92/126 (73%)	89 (97%)	3 (3%)	0	100	100
7	M	222/265 (84%)	209 (94%)	13 (6%)	0	100	100
7	N	222/265 (84%)	212 (96%)	10 (4%)	0	100	100
8	O	87/285 (30%)	84 (97%)	3 (3%)	0	100	100
All	All	1275/1803 (71%)	1224 (96%)	51 (4%)	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	A	86/111 (78%)	86 (100%)	0	100	100
3	E	84/111 (76%)	84 (100%)	0	100	100
4	B	67/79 (85%)	67 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	F	67/79 (85%)	67 (100%)	0	100	100
5	C	83/99 (84%)	83 (100%)	0	100	100
5	G	84/99 (85%)	84 (100%)	0	100	100
6	D	80/106 (76%)	79 (99%)	1 (1%)	69	81
6	H	80/106 (76%)	80 (100%)	0	100	100
7	M	199/224 (89%)	199 (100%)	0	100	100
7	N	199/224 (89%)	198 (100%)	1 (0%)	88	93
8	O	79/253 (31%)	78 (99%)	1 (1%)	69	81
All	All	1108/1491 (74%)	1105 (100%)	3 (0%)	92	95

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	D	44	GLN
7	N	188	ARG
8	O	173	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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.

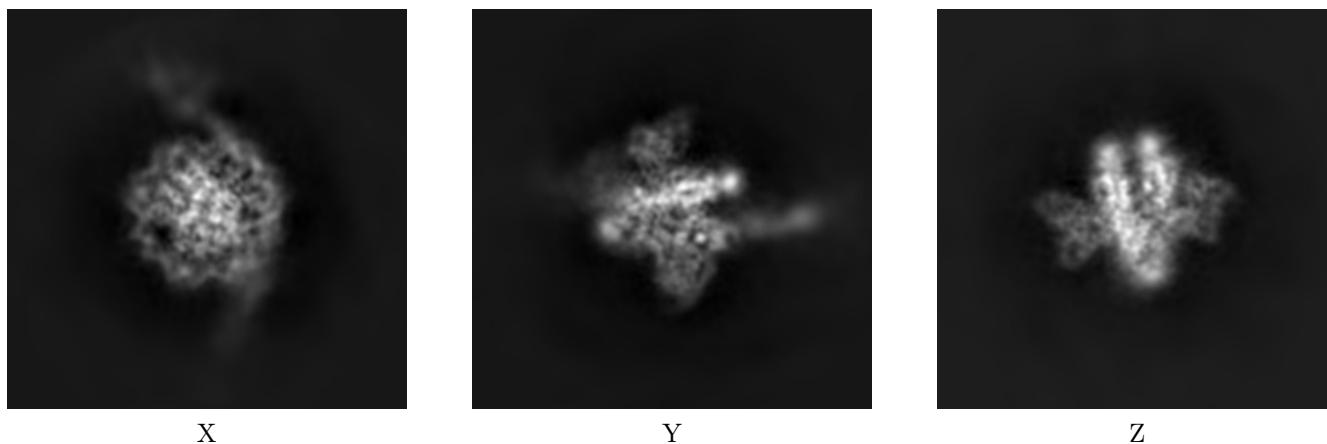
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-28631. These allow visual inspection of the internal detail of the map and identification of artifacts.

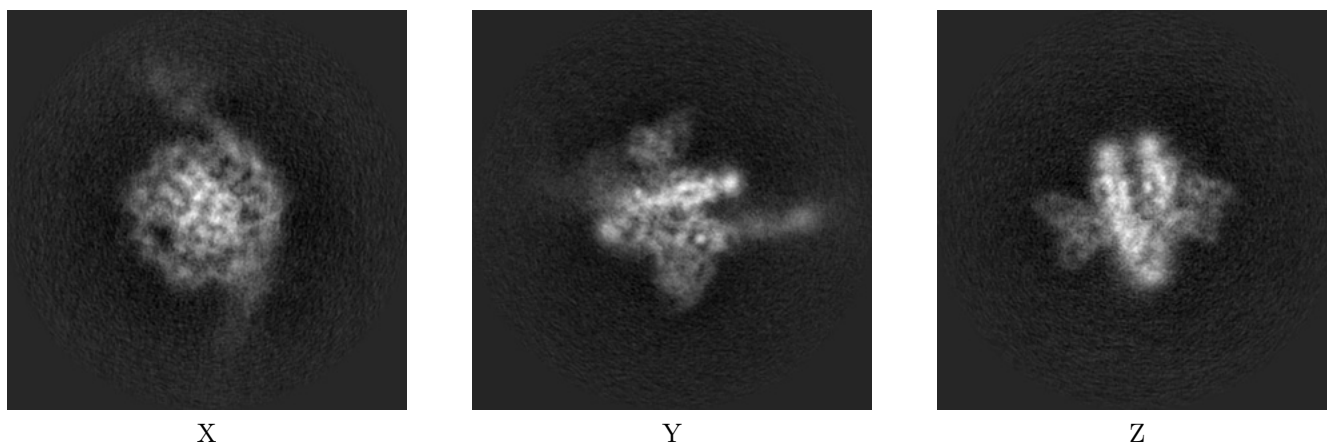
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

6.1.1 Primary map



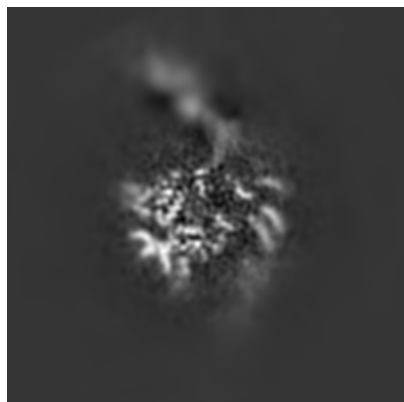
6.1.2 Raw map



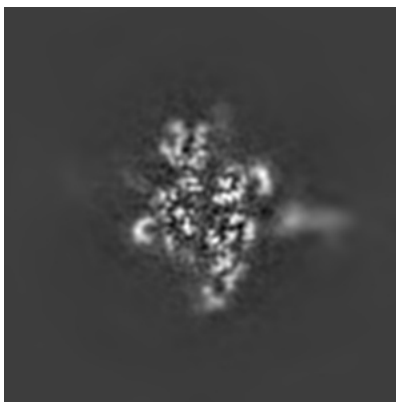
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

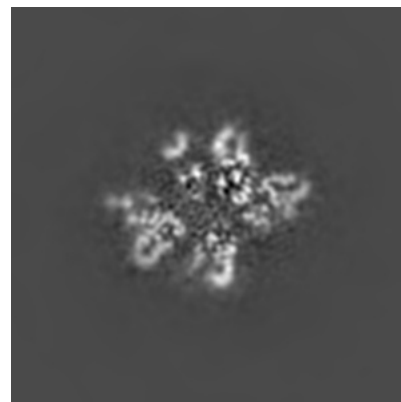
6.2.1 Primary map



X Index: 120

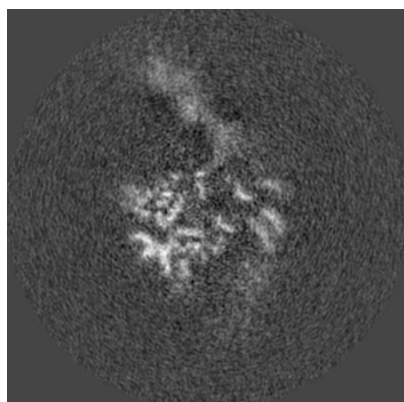


Y Index: 120

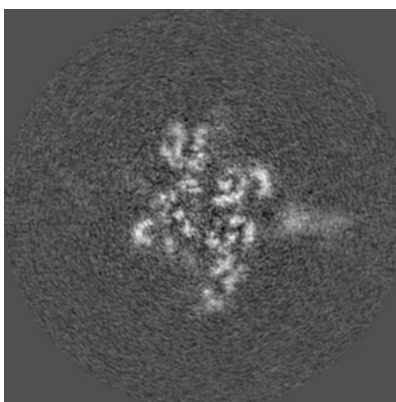


Z Index: 120

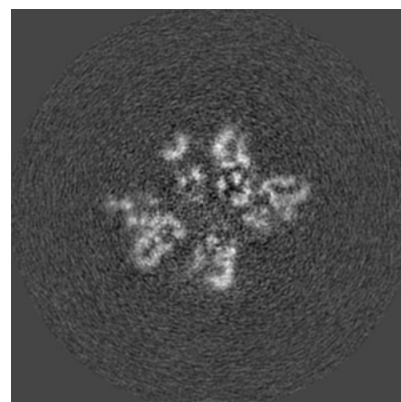
6.2.2 Raw map



X Index: 120



Y Index: 120

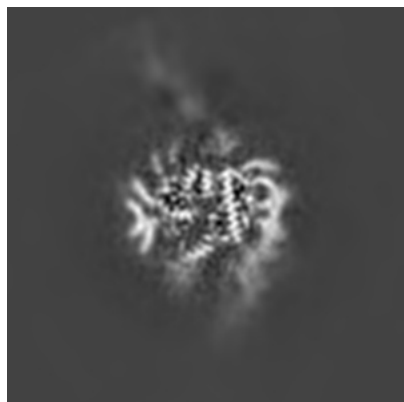


Z Index: 120

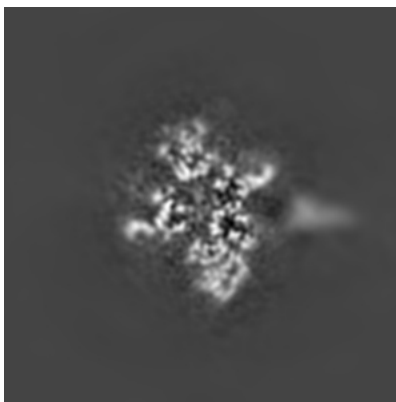
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

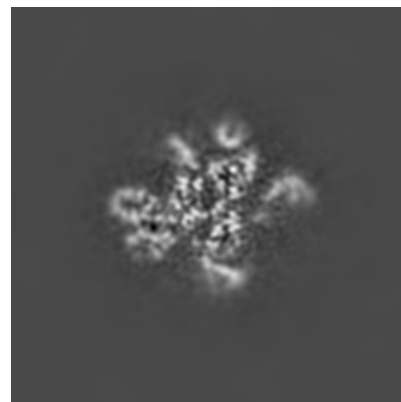
6.3.1 Primary map



X Index: 126

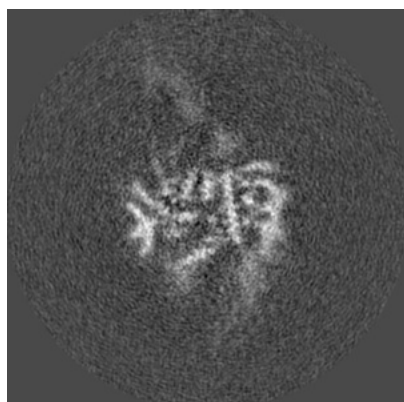


Y Index: 114

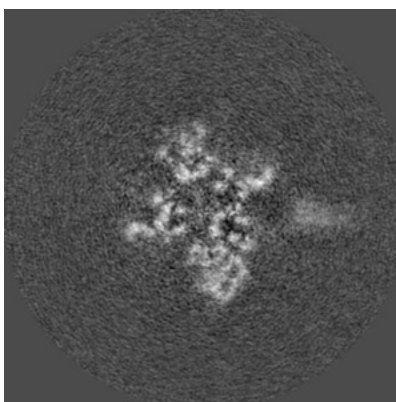


Z Index: 127

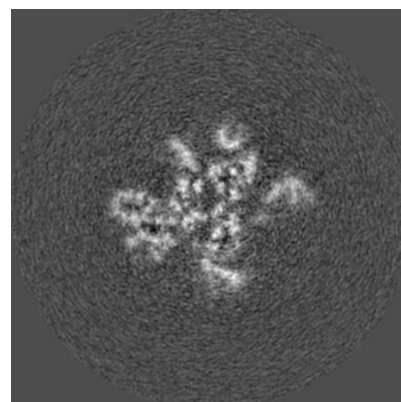
6.3.2 Raw map



X Index: 125



Y Index: 114

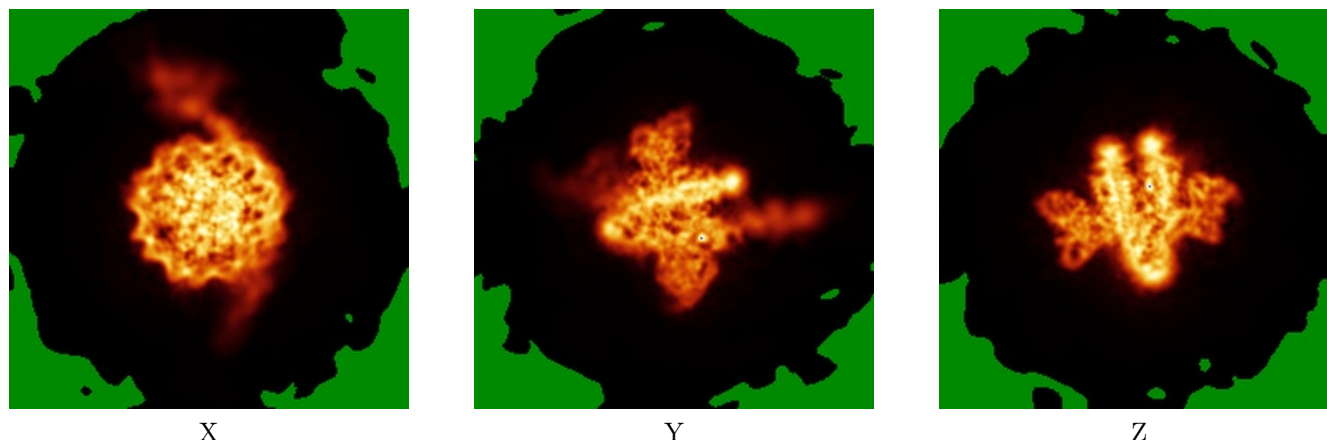


Z Index: 127

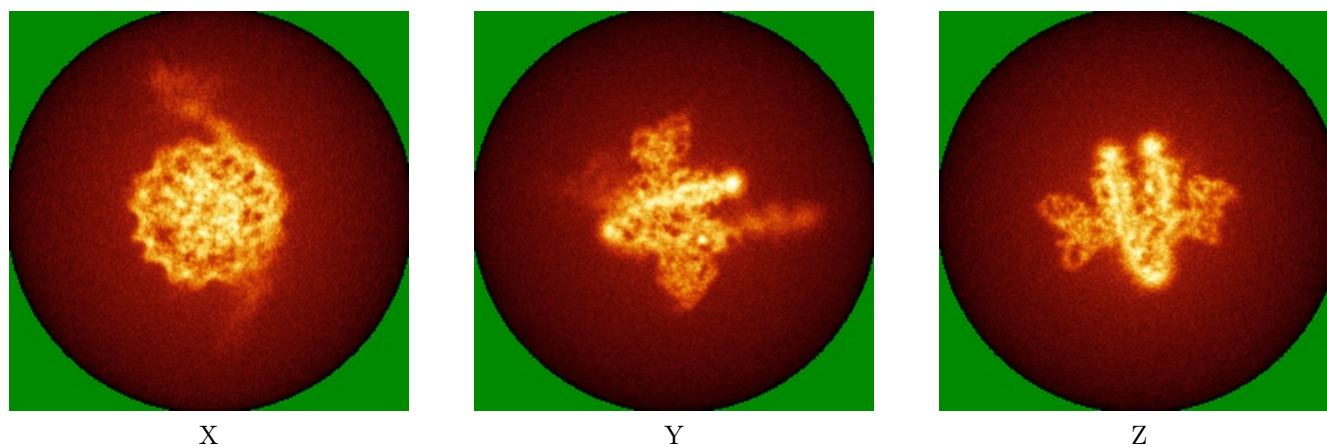
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



6.4.2 Raw map



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.

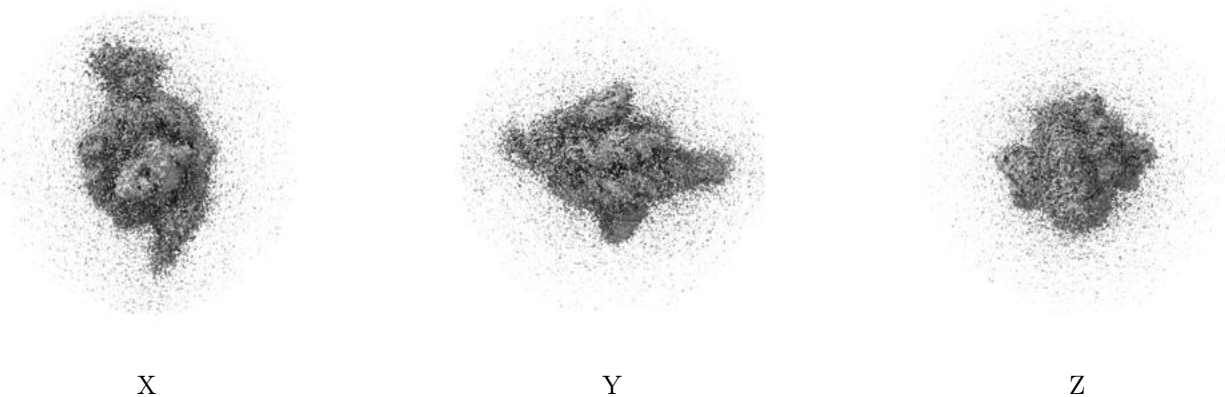
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. 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.

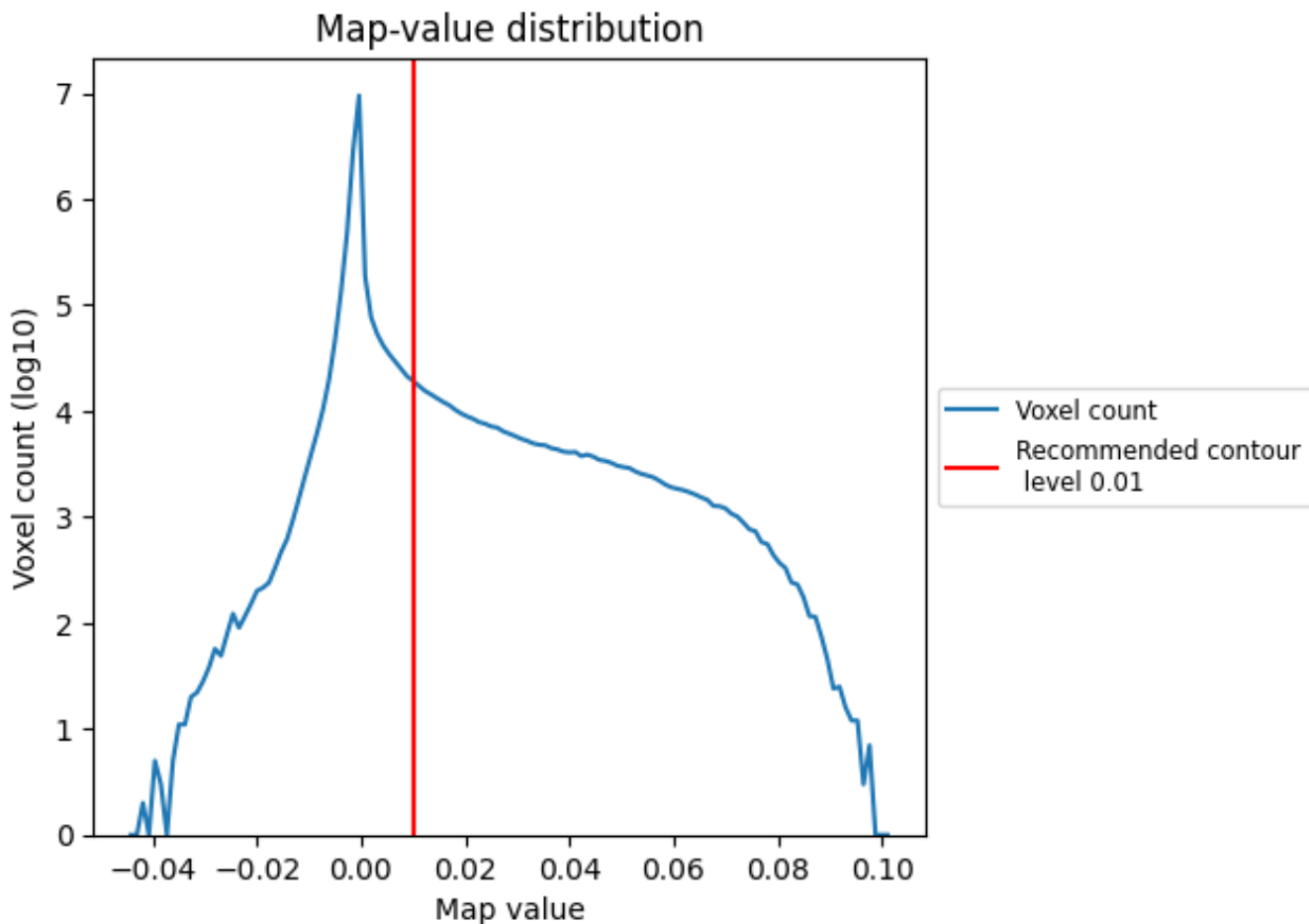
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

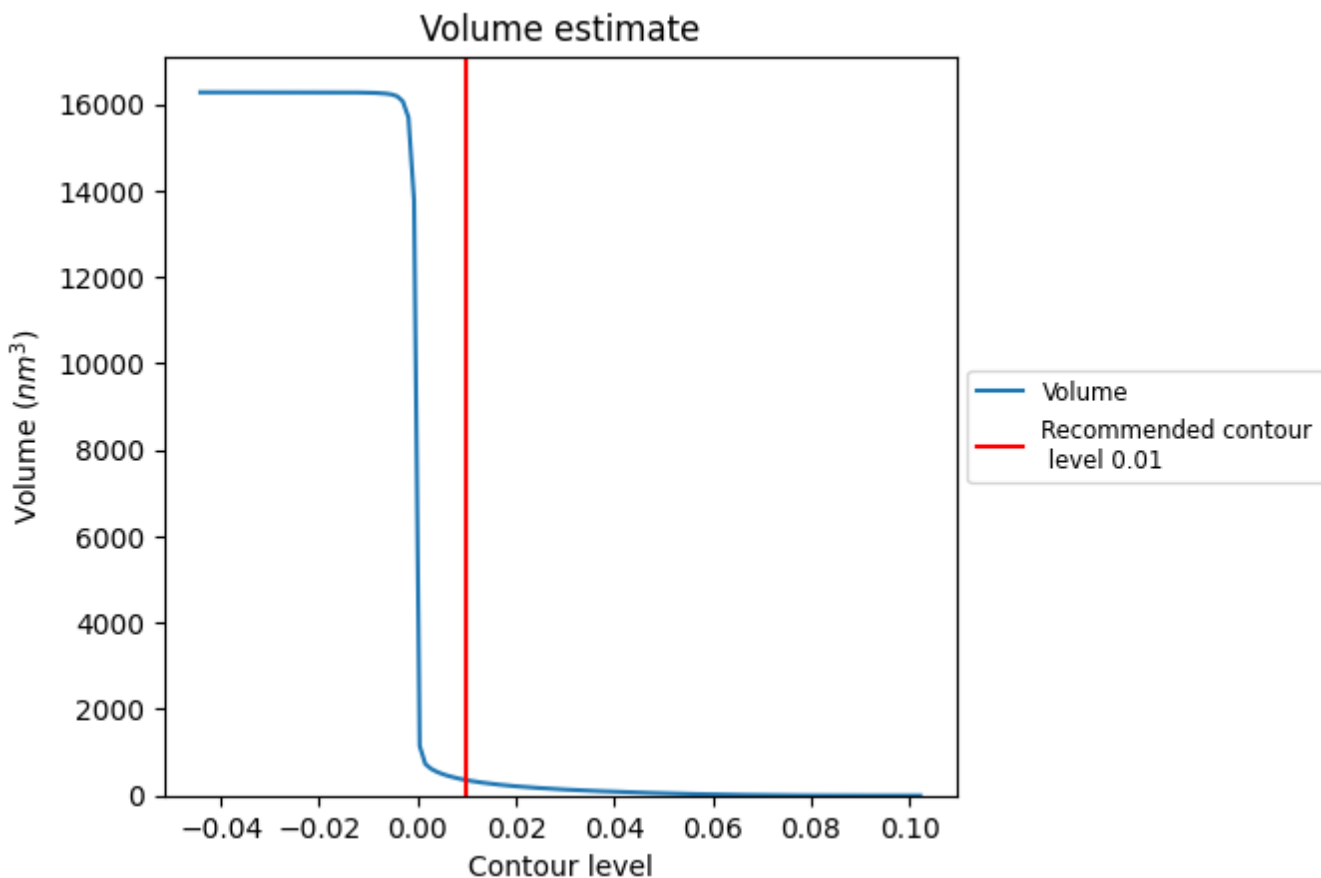
This section contains the results of statistical analysis of the map.

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.

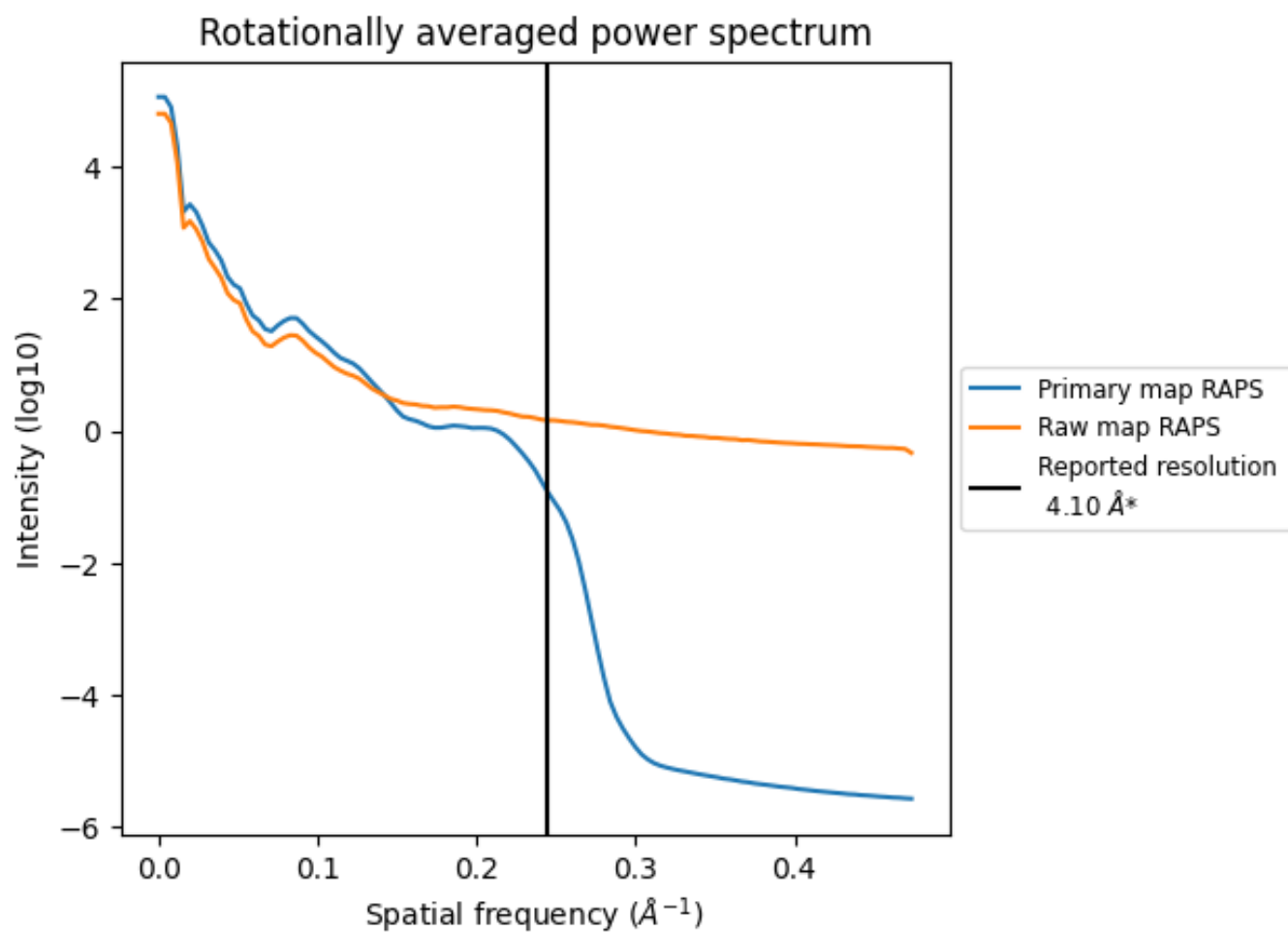
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 356 nm³; this corresponds to an approximate mass of 322 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

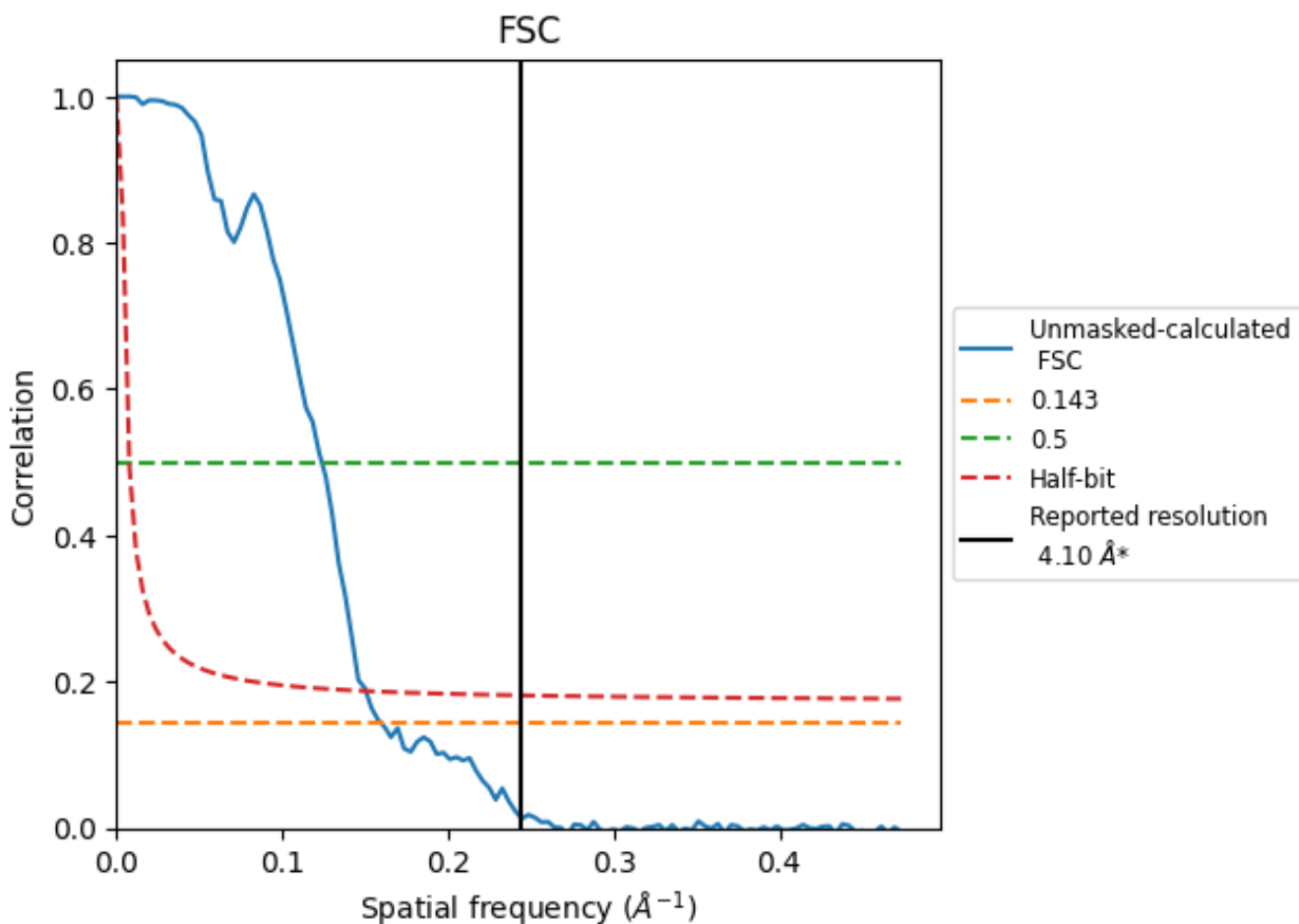


*Reported resolution corresponds to spatial frequency of 0.244 Å⁻¹

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 0.244 Å⁻¹

8.2 Resolution estimates [i](#)

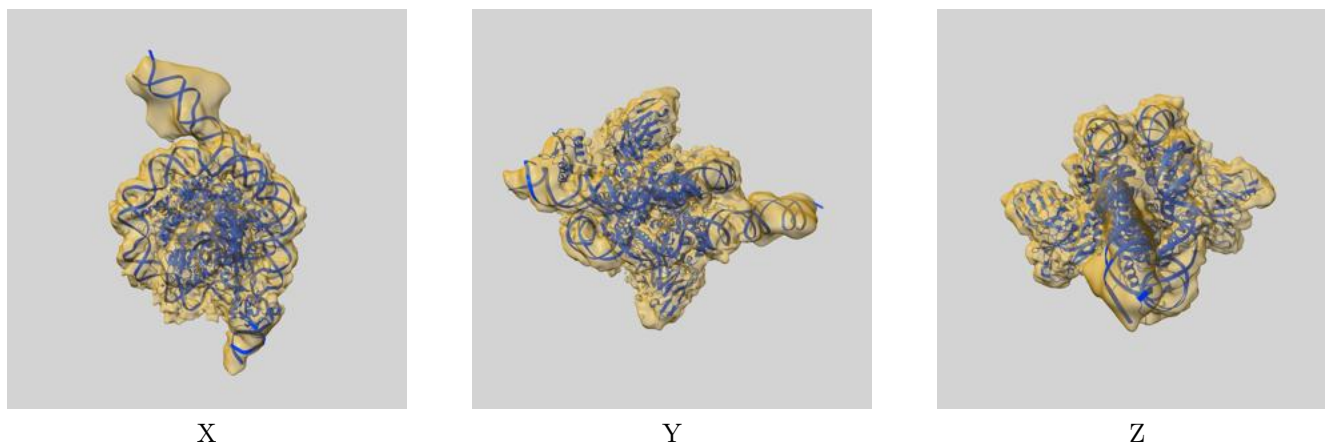
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.26	8.07	6.64

*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 6.26 differs from the reported value 4.1 by more than 10 %

9 Map-model fit [i](#)

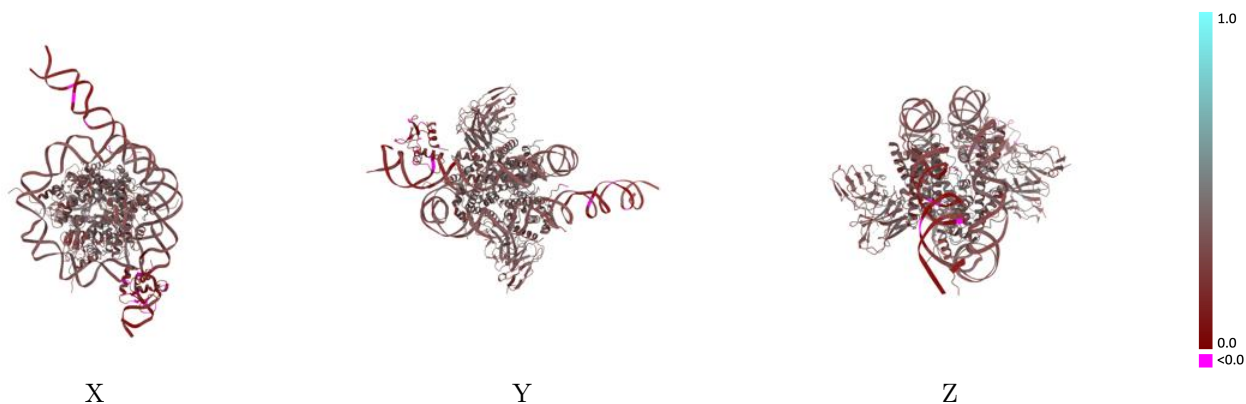
This section contains information regarding the fit between EMDB map EMD-28631 and PDB model 8EVJ. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



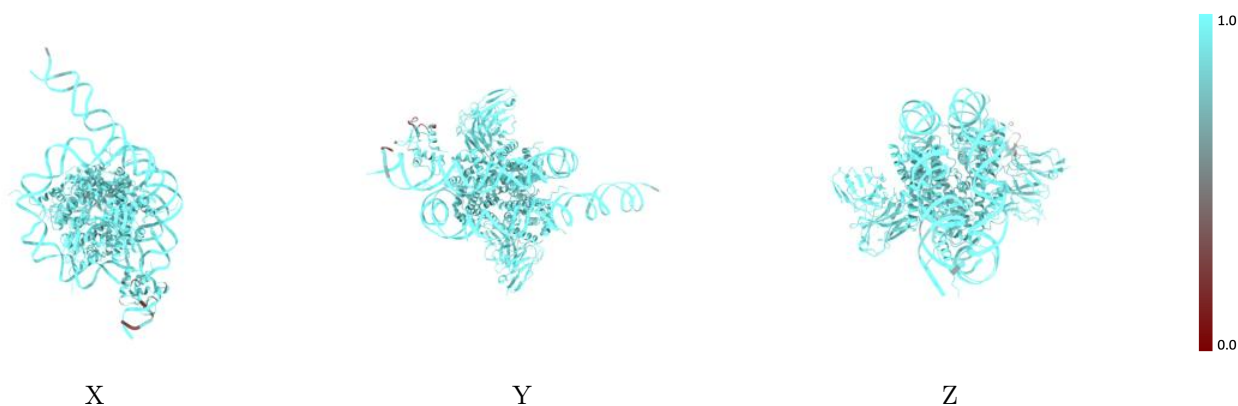
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



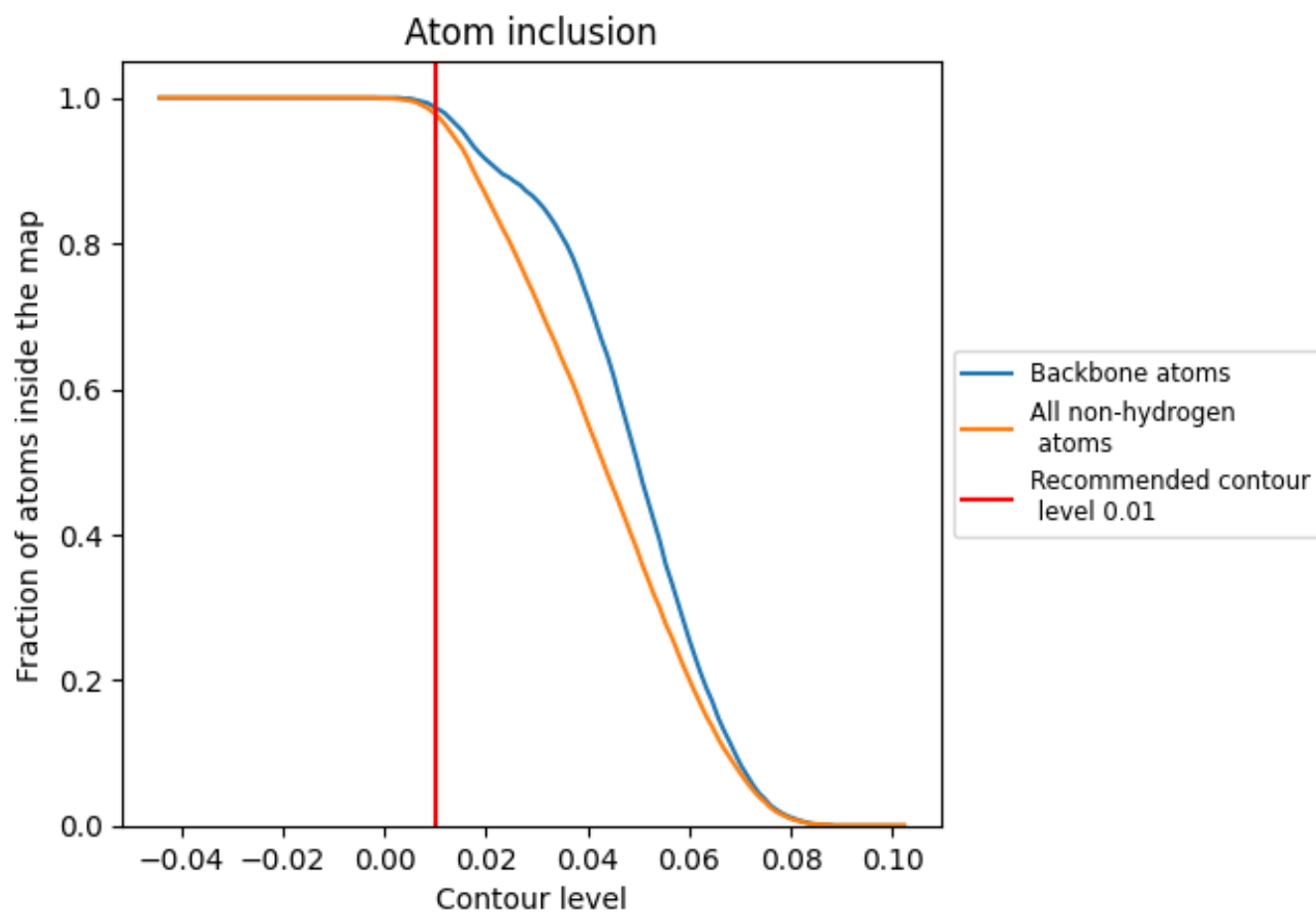
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).





























9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 98% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9780	 0.3100
A	 0.9850	 0.3310
B	 0.9830	 0.3690
C	 0.9890	 0.3780
D	 0.9820	 0.3620
E	 0.9840	 0.3470
F	 0.9760	 0.3690
G	 0.9790	 0.3580
H	 0.9920	 0.3380
I	 0.9710	 0.2660
J	 0.9900	 0.2680
M	 0.9930	 0.3280
N	 0.9940	 0.3440
O	 0.8350	 0.1320

