



Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 04:39 PM UTC

PDB ID : 6B0X / pdb_00006b0x
EMDB ID : EMD-7030
Title : Capsid protein and C-terminal part of scaffolding protein in the Staphylococcus aureus phage 80alpha procapsid
Authors : Kizziah, J.L.; Dearborn, A.D.; Dokland, T.
Deposited on : 2017-09-15
Resolution : 3.80 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

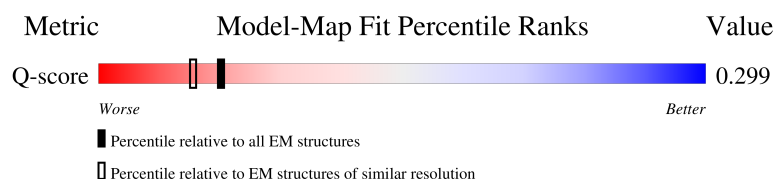
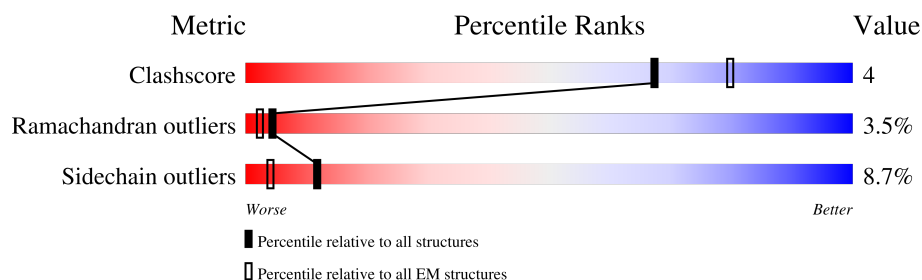
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh &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

1 Overall quality at a glance

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

The reported resolution of this entry is 3.80 Å.

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



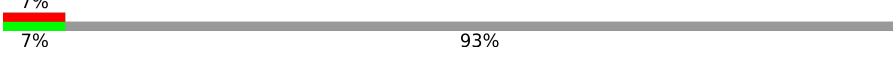
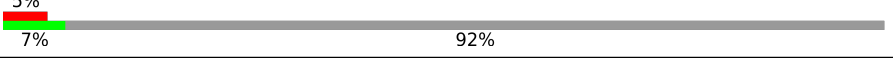
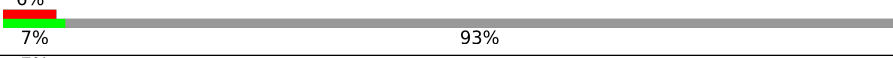
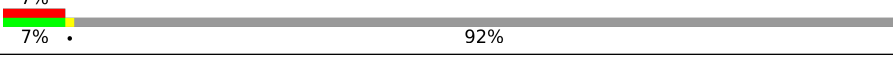
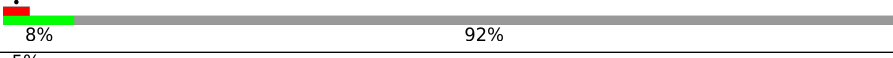
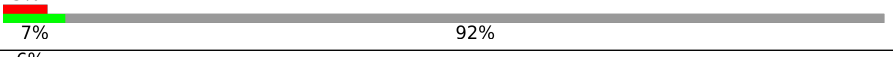
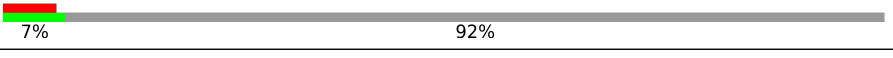
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	10198 (3.30 - 4.30)

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	324	42% 71% 15% • 12%
1	B	324	19% 73% 13% • 12%
1	C	324	21% 74% 13% • 12%
1	D	324	17% 65% 20% • 12%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	E	324	
1	F	324	
1	G	324	
2	a	206	
2	b	206	
2	c	206	
2	d	206	
2	e	206	
2	f	206	
2	g	206	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 16791 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 Major head protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	B	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	C	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	D	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	E	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	F	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		
1	G	284	Total	C	N	O	S	0	0
			2270	1446	370	443	11		

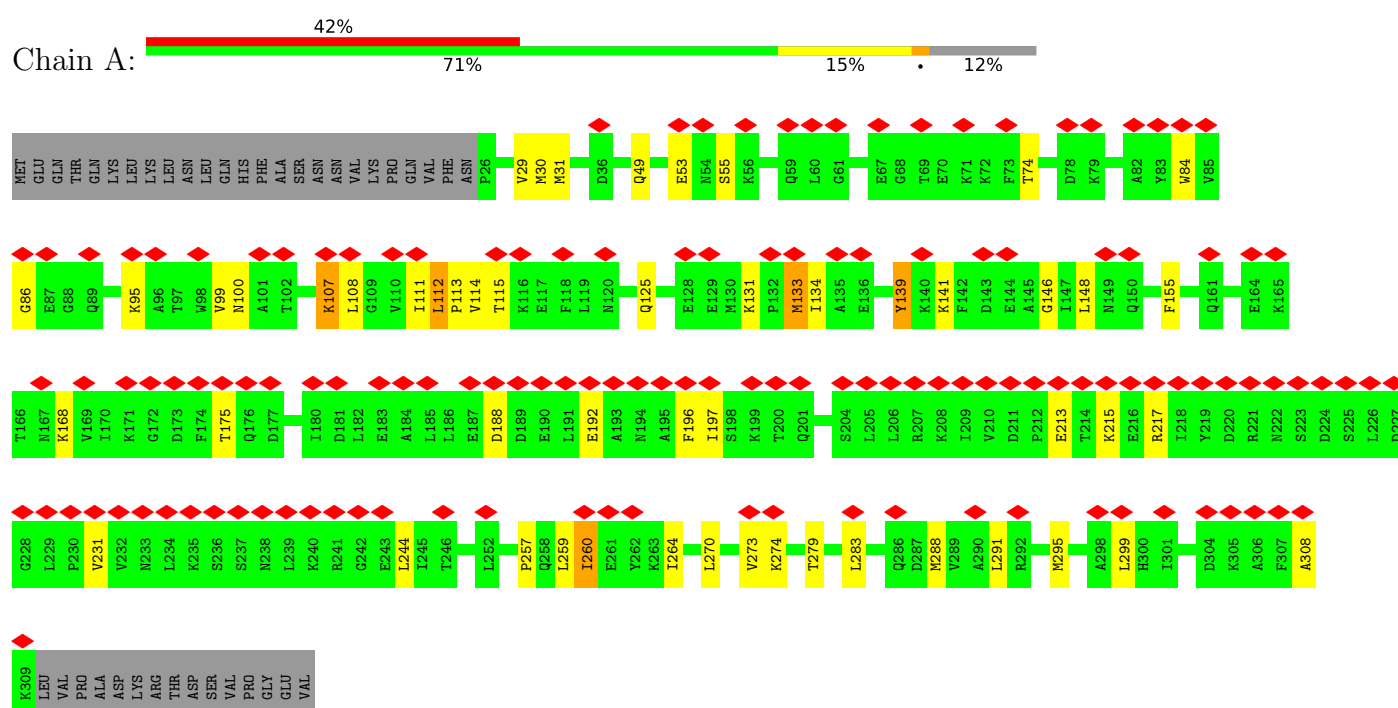
- Molecule 2 is a protein called Scaffold protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	a	14	Total	C	N	O	0	0
			116	72	25	19		
2	b	16	Total	C	N	O	0	0
			132	82	28	22		
2	c	15	Total	C	N	O	0	0
			125	77	27	21		
2	d	16	Total	C	N	O	0	0
			132	82	28	22		
2	e	16	Total	C	N	O	0	0
			132	82	28	22		
2	f	16	Total	C	N	O	0	0
			132	82	28	22		
2	g	16	Total	C	N	O	0	0
			132	82	28	22		

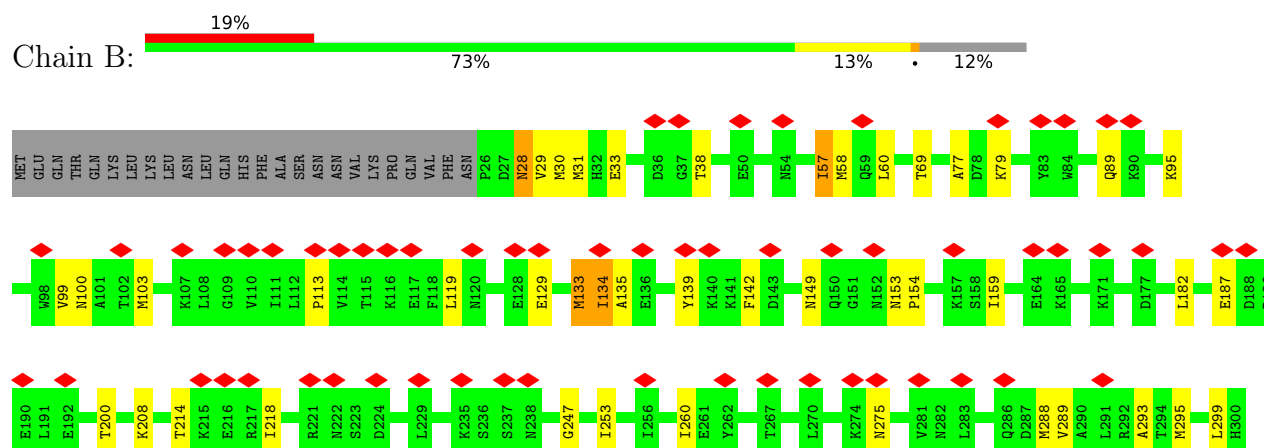
3 Residue-property plots

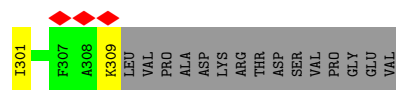
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

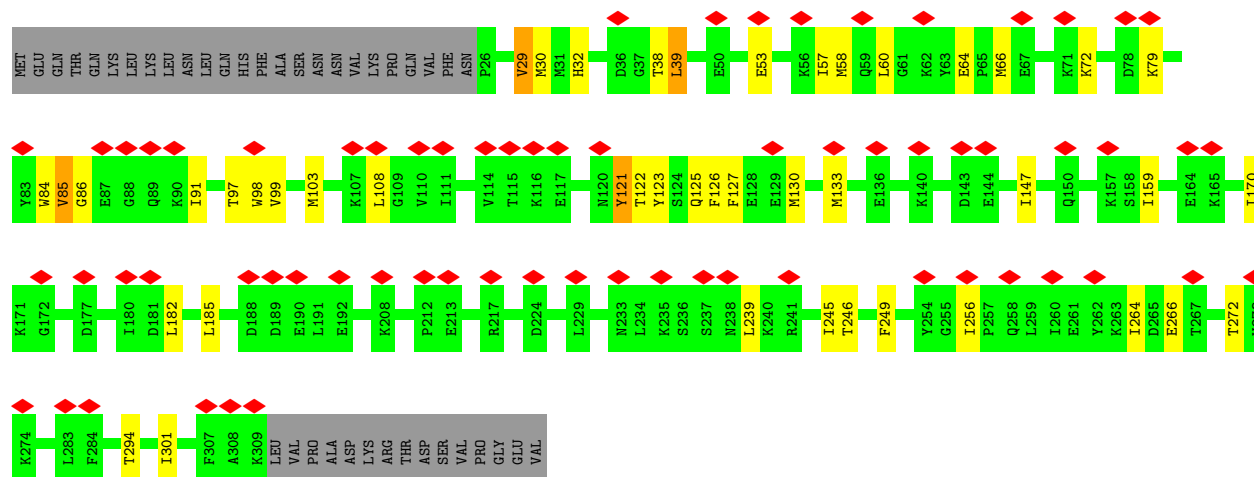
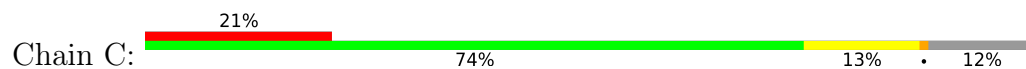


• Molecule 1: Major head protein

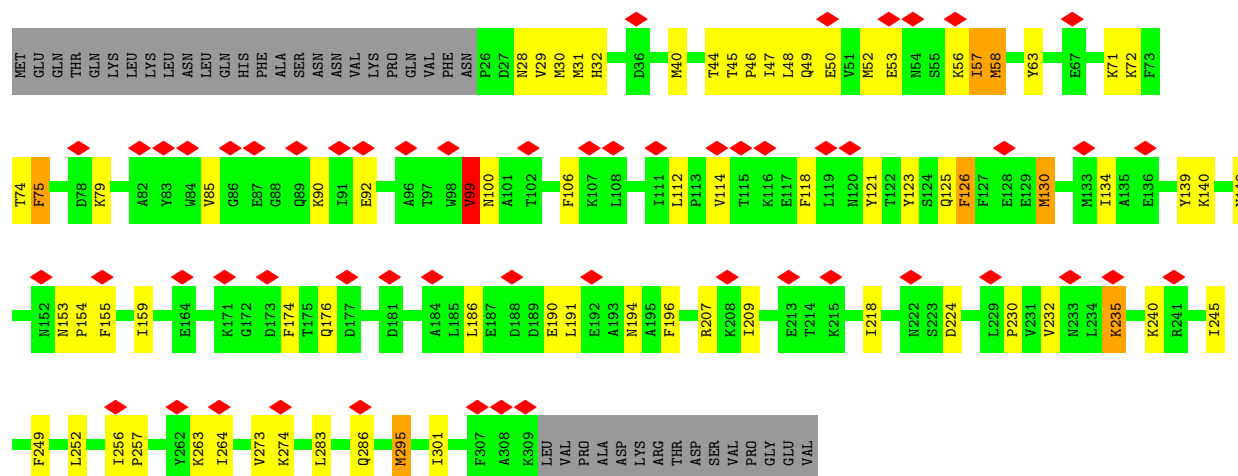




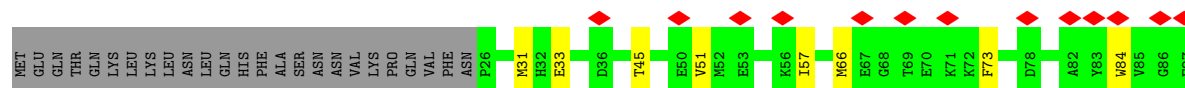
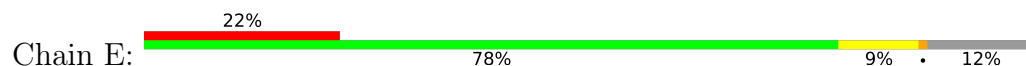
• Molecule 1: Major head protein

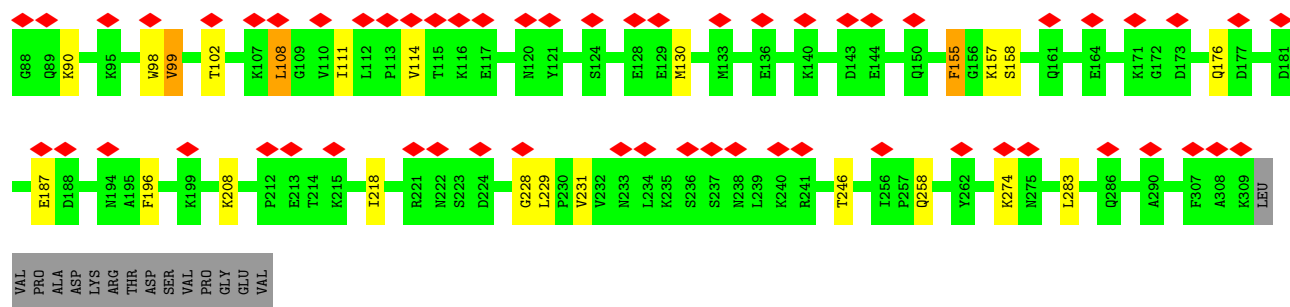


• Molecule 1: Major head protein

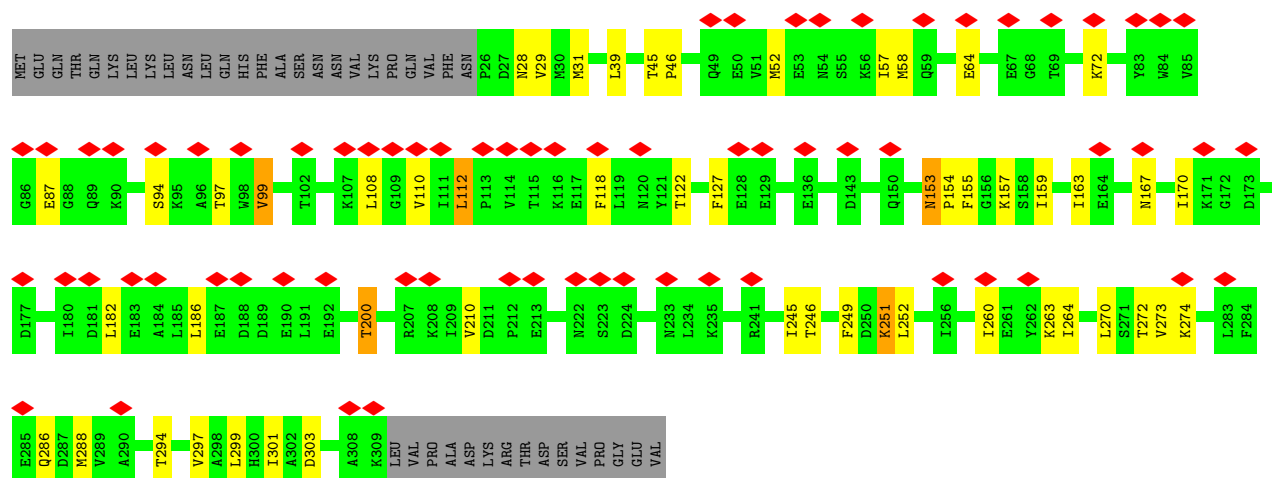


• Molecule 1: Major head protein

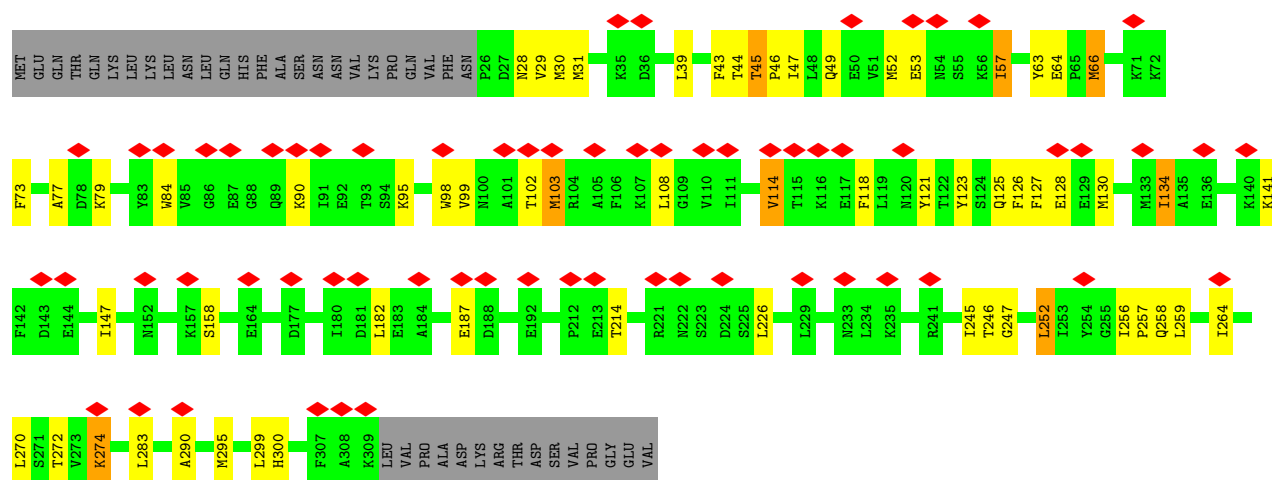




- Molecule 1: Major head protein



- Molecule 1: Major head protein



- Molecule 2: Scaffold protein



[illegible]

- Molecule 2: Scaffold protein

[illegible]

- Molecule 2: Scaffold protein



ASP	ASP	GLU	VAL	MET
SER	SER	ALA	ALA	GLU
PHE	PHE	ARG	HIS	ALA
ASN	ASN	LYS	LYS	ASN
HIS	HIS	MET	LYS	LYS
SER	SER	LEU	LEU	LYS
THR	THR	SER	SER	LYS
ASN	ASN	GLU	GLU	PHE
LYS	LYS	ALA	ALA	ASN
P191	P191	VAL	VAL	GLN
Q192	Q192	ASP	ASP	PHE
N193	N193	SER	SER	PHE
		SER	SER	ALA
E196	E196	ASP	ASP	ASP
		GLU	GLU	GLN
R199	R199	VAL	VAL	SER
Q200	Q200	ASN	ASN	ASP
K201	K201	LEU	LEU	PRO
R202	R202	VAL	VAL	ASP
I203	I203	THR	THR	GLU
I204	I204	ASP	ASP	LYS
K205	K205	ALA	ALA	LYS
N206	N206	GLN	GLN	LYS
		THR	THR	GLY
		LYS	LYS	GLY
		SER	SER	ASN
		ASN	ASN	LYS
		VAL	VAL	PRO
		GLU	GLU	ASP
		ALA	ALA	LYS
		VAL	VAL	LYS
		GLN	GLN	GLY
		THR	THR	GLU
		GLU	GLU	THR
		LEU	LEU	THR
		ALA	ALA	PRO
		VAL	VAL	GLU
		LYS	LYS	GLN
		ASN	ASN	GLN
		ARG	ARG	LYS
		GLU	GLU	VAL
		LEU	LEU	ASP
		ASN	ASN	GLU
		GLU	GLU	ILE
		MET	MET	LEU
		THR	THR	GLU
		GLY	GLY	ARG
		SER	SER	ARG

- Molecule 2: Scaffold protein

[illegible]

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	10557	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	DIRECT ELECTRON DE-20 (5k x 3k)	Depositor
Maximum map value	0.026	Depositor
Minimum map value	-0.014	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.00705	Depositor
Map size ($\text{\AA}$)	580.80005, 580.80005, 290.40002	wwPDB
Map dimensions	480, 480, 240	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.2100002, 1.2100002, 1.2100002	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	A	0.63	0/2312	0.86	3/3116 (0.1%)
1	B	0.59	0/2312	0.78	0/3116
1	C	0.58	0/2312	0.81	1/3116 (0.0%)
1	D	0.60	0/2312	0.84	1/3116 (0.0%)
1	E	0.60	0/2312	0.81	0/3116
1	F	0.60	0/2312	0.83	0/3116
1	G	0.60	0/2312	0.83	0/3116
2	a	0.61	0/115	0.84	0/151
2	b	0.52	0/132	0.93	0/174
2	c	0.56	0/124	0.79	0/163
2	d	0.50	0/132	0.78	0/174
2	e	0.46	0/132	0.80	0/174
2	f	0.51	0/132	0.82	0/174
2	g	0.51	0/132	0.85	0/174
All	All	0.60	0/17083	0.82	5/22996 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	112	LEU	CA-C-N	6.87	128.43	119.84
1	A	112	LEU	C-N-CA	6.87	128.43	119.84
1	D	125	GLN	N-CA-C	6.39	120.67	113.01
1	A	107	LYS	N-CA-C	5.60	118.91	111.75
1	C	85	VAL	N-CA-C	5.19	120.14	109.34

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	2270	0	2261	7	0
1	B	2270	0	2261	8	0
1	C	2270	0	2261	34	0
1	D	2270	0	2261	24	0
1	E	2270	0	2261	6	0
1	F	2270	0	2261	20	0
1	G	2270	0	2261	34	0
2	a	116	0	131	0	0
2	b	132	0	147	0	0
2	c	125	0	139	1	0
2	d	132	0	147	3	0
2	e	132	0	147	0	0
2	f	132	0	147	0	0
2	g	132	0	147	0	0
All	All	16791	0	16832	129	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 (129) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:39:LEU:HD21	1:G:127:PHE:CE2	1.76	1.21
1:C:126:PHE:CD1	1:C:130:MET:HG3	1.78	1.16
1:G:39:LEU:HD21	1:G:127:PHE:HE2	1.13	1.01
1:C:126:PHE:CE1	1:C:130:MET:CG	2.44	1.00
1:C:126:PHE:CD1	1:C:130:MET:CG	2.53	0.91
1:C:126:PHE:CE1	1:C:130:MET:SD	2.65	0.89
1:C:126:PHE:HD1	1:C:130:MET:HG3	1.38	0.82
1:G:39:LEU:CD2	1:G:127:PHE:CE2	2.61	0.81
1:C:39:LEU:CD2	1:C:127:PHE:HE2	1.98	0.76
1:C:121:TYR:O	1:C:125:GLN:HB2	1.87	0.73
1:G:121:TYR:O	1:G:125:GLN:HB2	1.93	0.68
1:C:39:LEU:HD23	1:C:127:PHE:CE2	2.29	0.67
1:G:108:LEU:HD21	1:G:126:PHE:CE2	2.30	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:163:ILE:HD13	1:F:303:ASP:HB2	1.79	0.64
1:D:48:LEU:HD23	2:d:194:LEU:HD11	1.79	0.63
1:G:108:LEU:HD21	1:G:126:PHE:HE2	1.63	0.62
1:C:126:PHE:CE1	1:C:130:MET:HG2	2.33	0.62
1:G:57:ILE:HB	1:G:147:ILE:HD11	1.80	0.62
1:C:126:PHE:O	1:C:130:MET:HG3	2.00	0.62
1:C:126:PHE:CE1	1:C:130:MET:HG3	2.17	0.60
1:G:126:PHE:CZ	1:G:130:MET:HE3	2.37	0.59
1:D:232:VAL:HG13	2:d:203:ILE:HD12	1.83	0.59
1:C:182:LEU:HD21	1:C:245:ILE:HD11	1.84	0.59
1:C:32:HIS:HD2	1:C:123:TYR:HA	1.69	0.58
1:G:103:MET:HE2	1:G:141:LYS:HB2	1.86	0.57
1:C:39:LEU:HD22	1:C:127:PHE:HE2	1.70	0.57
1:C:39:LEU:CD2	1:C:127:PHE:CE2	2.82	0.57
1:C:126:PHE:HE1	1:C:130:MET:HG2	1.69	0.57
1:D:45:THR:HG23	1:D:46:PRO:HD3	1.86	0.57
1:B:134:ILE:HD12	1:B:289:VAL:HG21	1.87	0.56
1:C:159:ILE:HG23	1:C:301:ILE:HG21	1.88	0.56
1:G:45:THR:HG23	1:G:46:PRO:HD3	1.86	0.56
1:E:99:VAL:HG21	1:E:155:PHE:HB3	1.87	0.55
1:A:264:ILE:HG21	1:G:264:ILE:HG22	1.89	0.55
1:G:108:LEU:CD2	1:G:126:PHE:CE2	2.90	0.55
1:A:55:SER:HA	1:A:139:TYR:CD1	2.42	0.54
1:D:57:ILE:HD11	1:D:249:PHE:CE1	2.42	0.54
1:D:74:THR:O	1:D:75:PHE:HB2	2.07	0.54
1:F:108:LEU:HG	1:F:112:LEU:HD11	1.89	0.54
1:C:126:PHE:CD1	1:C:130:MET:SD	3.01	0.53
1:G:126:PHE:CZ	1:G:130:MET:CE	2.92	0.53
1:A:133:MET:SD	1:A:134:ILE:N	2.81	0.53
1:C:108:LEU:HD21	1:C:130:MET:HA	1.90	0.53
1:E:176:GLN:HE21	1:E:218:ILE:HD11	1.73	0.52
1:C:108:LEU:HD22	1:C:133:MET:HB2	1.92	0.52
1:B:159:ILE:HG23	1:B:301:ILE:HG21	1.91	0.52
1:F:52:MET:HE2	1:F:58:MET:HE1	1.91	0.52
1:C:60:LEU:HD13	2:c:204:ILE:HD13	1.92	0.52
1:D:159:ILE:HG23	1:D:301:ILE:HG21	1.91	0.52
1:G:121:TYR:O	1:G:125:GLN:CG	2.58	0.52
1:G:66:MET:HE3	1:G:252:LEU:HD22	1.90	0.51
1:F:45:THR:HG23	1:F:46:PRO:HD3	1.92	0.51
1:F:97:THR:HB	1:F:294:THR:HG21	1.92	0.51
1:C:121:TYR:O	1:C:125:GLN:CG	2.59	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:39:LEU:HD13	1:F:127:PHE:CZ	2.45	0.51
1:A:196:PHE:HB2	1:A:231:VAL:HG22	1.93	0.51
1:D:196:PHE:CZ	1:D:245:ILE:HD11	2.46	0.51
1:C:121:TYR:O	1:C:125:GLN:CB	2.57	0.50
1:G:108:LEU:HD22	1:G:130:MET:HE3	1.92	0.50
1:G:108:LEU:C	1:G:108:LEU:HD23	2.36	0.50
1:D:196:PHE:CE2	1:D:245:ILE:HD11	2.47	0.49
1:D:121:TYR:CE2	1:D:123:TYR:HA	2.47	0.49
1:D:121:TYR:CZ	1:D:126:PHE:HB3	2.47	0.49
1:C:246:THR:HG23	1:C:249:PHE:CE1	2.47	0.49
1:D:58:MET:SD	1:D:63:TYR:OH	2.71	0.48
1:D:44:THR:HG23	1:D:257:PRO:HD3	1.95	0.48
1:G:121:TYR:O	1:G:125:GLN:CB	2.61	0.48
1:B:260:ILE:HG22	1:B:288:MET:HB3	1.95	0.48
1:G:77:ALA:HB3	1:G:79:LYS:HE3	1.95	0.48
1:G:49:GLN:HA	1:G:52:MET:HE3	1.95	0.48
1:G:182:LEU:HD21	1:G:245:ILE:CD1	2.44	0.47
1:F:110:VAL:HG21	1:G:73:PHE:CE1	2.49	0.47
1:D:99:VAL:HG21	1:D:155:PHE:CD1	2.49	0.47
1:D:264:ILE:O	1:D:286:GLN:NE2	2.44	0.47
1:G:102:THR:HG23	1:G:290:ALA:HA	1.96	0.47
1:A:133:MET:SD	1:A:134:ILE:HG23	2.55	0.46
1:C:147:ILE:HA	1:C:159:ILE:HD12	1.97	0.46
1:F:159:ILE:HG23	1:F:301:ILE:HG21	1.96	0.46
1:E:111:ILE:O	1:E:114:VAL:HG22	2.15	0.46
1:D:32:HIS:CE1	1:D:118:PHE:CZ	3.04	0.45
1:F:112:LEU:HD13	1:F:118:PHE:CE1	2.51	0.45
1:G:39:LEU:HD22	1:G:257:PRO:HG2	1.96	0.45
1:B:77:ALA:O	1:G:103:MET:HE1	2.15	0.45
1:C:32:HIS:HB2	1:C:122:THR:C	2.41	0.45
1:F:186:LEU:HD22	1:F:245:ILE:HD13	1.99	0.45
1:E:218:ILE:HD12	1:E:218:ILE:N	2.33	0.44
1:G:43:PHE:CE2	1:G:123:TYR:HE2	2.35	0.44
1:B:142:PHE:CE1	1:B:295:MET:HE2	2.52	0.44
1:D:174:PHE:HB3	1:D:209:ILE:HD11	1.98	0.44
1:G:182:LEU:HD21	1:G:245:ILE:HD11	1.99	0.44
1:G:128:GLU:OE2	1:G:128:GLU:HA	2.18	0.44
1:D:176:GLN:HG3	1:D:218:ILE:HD11	2.00	0.44
1:F:286:GLN:OE1	1:F:286:GLN:N	2.51	0.43
1:C:126:PHE:CZ	1:C:130:MET:SD	3.09	0.43
1:G:108:LEU:HD21	1:G:118:PHE:CZ	2.54	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:153:ASN:N	1:B:154:PRO:CD	2.81	0.43
1:D:126:PHE:CD2	1:D:130:MET:HG3	2.54	0.43
1:F:57:ILE:HG23	1:F:251:LYS:HD2	2.01	0.43
1:D:112:LEU:HD11	1:D:126:PHE:CD2	2.55	0.42
1:D:230:PRO:HB2	2:d:203:ILE:HD11	2.01	0.42
1:G:44:THR:HG23	1:G:257:PRO:HD3	2.02	0.42
1:G:47:ILE:HD12	1:G:134:ILE:HD12	2.01	0.42
1:D:140:LYS:NZ	1:D:235:LYS:O	2.53	0.42
1:F:64:GLU:C	1:F:252:LEU:HD13	2.45	0.42
1:G:214:THR:HG23	1:G:214:THR:O	2.19	0.42
1:E:108:LEU:HD11	1:E:130:MET:HB2	2.02	0.41
1:G:126:PHE:HZ	1:G:130:MET:CE	2.33	0.41
1:C:121:TYR:C	1:C:122:THR:HG23	2.44	0.41
1:D:153:ASN:N	1:D:154:PRO:CD	2.83	0.41
1:C:97:THR:HB	1:C:294:THR:HG21	2.02	0.41
1:F:260:ILE:HD12	1:F:288:MET:HE3	2.01	0.41
1:B:133:MET:O	1:B:135:ALA:N	2.53	0.41
1:D:295:MET:N	1:D:295:MET:SD	2.93	0.41
1:F:99:VAL:HG21	1:F:155:PHE:CB	2.51	0.41
1:F:108:LEU:HD11	1:F:112:LEU:HD21	2.02	0.41
1:F:200:THR:HG22	1:G:187:GLU:HG2	2.01	0.41
1:C:126:PHE:HD1	1:C:126:PHE:O	2.02	0.41
1:E:196:PHE:HB2	1:E:231:VAL:HG22	2.02	0.41
1:A:260:ILE:CG2	1:A:288:MET:HE2	2.51	0.41
1:B:253:ILE:HD13	1:B:293:ALA:HB2	2.03	0.41
1:A:146:GLY:HA3	1:A:295:MET:HE1	2.03	0.41
1:C:170:ILE:HD11	1:C:185:LEU:HD11	2.03	0.41
1:C:39:LEU:HB3	1:C:127:PHE:CZ	2.57	0.40
1:C:182:LEU:HD21	1:C:245:ILE:CD1	2.48	0.40
1:D:49:GLN:HA	1:D:52:MET:HE3	2.03	0.40
1:F:153:ASN:N	1:F:154:PRO:CD	2.84	0.40
1:F:170:ILE:HD12	1:F:182:LEU:HD13	2.04	0.40
1:F:249:PHE:CE2	1:F:297:VAL:HG22	2.56	0.40
1:C:38:THR:HG22	1:C:256:ILE:HG21	2.04	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	282/324 (87%)	235 (83%)	32 (11%)	15 (5%)	1	16
1	B	282/324 (87%)	230 (82%)	39 (14%)	13 (5%)	2	18
1	C	282/324 (87%)	236 (84%)	39 (14%)	7 (2%)	4	28
1	D	282/324 (87%)	236 (84%)	36 (13%)	10 (4%)	3	23
1	E	282/324 (87%)	231 (82%)	44 (16%)	7 (2%)	4	28
1	F	282/324 (87%)	239 (85%)	34 (12%)	9 (3%)	3	24
1	G	282/324 (87%)	228 (81%)	43 (15%)	11 (4%)	2	20
2	a	12/206 (6%)	11 (92%)	1 (8%)	0	100	100
2	b	14/206 (7%)	13 (93%)	0	1 (7%)	1	12
2	c	13/206 (6%)	13 (100%)	0	0	100	100
2	d	14/206 (7%)	13 (93%)	1 (7%)	0	100	100
2	e	14/206 (7%)	12 (86%)	2 (14%)	0	100	100
2	f	14/206 (7%)	14 (100%)	0	0	100	100
2	g	14/206 (7%)	14 (100%)	0	0	100	100
All	All	2069/3710 (56%)	1725 (83%)	271 (13%)	73 (4%)	4	23

All (73) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	30	MET
1	A	113	PRO
1	A	114	VAL
1	A	192	GLU
1	B	113	PRO
1	C	85	VAL
1	D	75	PHE
1	D	99	VAL
1	E	99	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	F	99	VAL
1	G	114	VAL
2	b	205	LYS
1	A	99	VAL
1	A	115	THR
1	A	257	PRO
1	A	283	LEU
1	B	99	VAL
1	C	91	ILE
1	C	99	VAL
1	D	273	VAL
1	E	283	LEU
1	F	122	THR
1	F	273	VAL
1	G	99	VAL
1	G	300	HIS
1	A	188	ASP
1	B	79	LYS
1	C	30	MET
1	D	30	MET
1	D	114	VAL
1	E	274	LYS
1	F	29	VAL
1	F	272	THR
1	G	30	MET
1	G	258	GLN
1	G	283	LEU
1	A	84	TRP
1	A	308	ALA
1	B	29	VAL
1	B	30	MET
1	B	33	GLU
1	D	106	PHE
1	D	224	ASP
1	D	283	LEU
1	E	84	TRP
1	F	28	ASN
1	G	84	TRP
1	A	29	VAL
1	A	131	LYS
1	B	28	ASN
1	B	134	ILE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	214	THR
1	D	28	ASN
1	D	29	VAL
1	E	158	SER
1	E	228	GLY
1	E	258	GLN
1	F	246	THR
1	G	272	THR
1	G	274	LYS
1	A	273	VAL
1	B	57	ILE
1	B	89	GLN
1	B	218	ILE
1	C	272	THR
1	F	153	ASN
1	F	167	ASN
1	B	247	GLY
1	C	86	GLY
1	G	29	VAL
1	G	247	GLY
1	C	29	VAL
1	A	86	GLY

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	249/286 (87%)	219 (88%)	30 (12%)	5	21
1	B	249/286 (87%)	227 (91%)	22 (9%)	9	33
1	C	249/286 (87%)	233 (94%)	16 (6%)	16	42
1	D	249/286 (87%)	216 (87%)	33 (13%)	4	19
1	E	249/286 (87%)	232 (93%)	17 (7%)	14	40
1	F	249/286 (87%)	235 (94%)	14 (6%)	19	45
1	G	249/286 (87%)	225 (90%)	24 (10%)	8	29

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	a	12/178 (7%)	12 (100%)	0	100	100
2	b	14/178 (8%)	13 (93%)	1 (7%)	13	39
2	c	13/178 (7%)	13 (100%)	0	100	100
2	d	14/178 (8%)	14 (100%)	0	100	100
2	e	14/178 (8%)	14 (100%)	0	100	100
2	f	14/178 (8%)	13 (93%)	1 (7%)	13	39
2	g	14/178 (8%)	13 (93%)	1 (7%)	13	39
All	All	1838/3248 (57%)	1679 (91%)	159 (9%)	12	33

All (159) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	MET
1	A	49	GLN
1	A	53	GLU
1	A	74	THR
1	A	95	LYS
1	A	100	ASN
1	A	107	LYS
1	A	108	LEU
1	A	111	ILE
1	A	112	LEU
1	A	125	GLN
1	A	133	MET
1	A	139	TYR
1	A	141	LYS
1	A	148	LEU
1	A	155	PHE
1	A	168	LYS
1	A	175	THR
1	A	197	ILE
1	A	213	GLU
1	A	215	LYS
1	A	217	ARG
1	A	244	LEU
1	A	259	LEU
1	A	260	ILE
1	A	270	LEU
1	A	274	LYS
1	A	279	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	291	LEU
1	A	299	LEU
1	B	28	ASN
1	B	31	MET
1	B	38	THR
1	B	57	ILE
1	B	58	MET
1	B	60	LEU
1	B	69	THR
1	B	95	LYS
1	B	100	ASN
1	B	103	MET
1	B	119	LEU
1	B	129	GLU
1	B	133	MET
1	B	139	TYR
1	B	149	ASN
1	B	182	LEU
1	B	187	GLU
1	B	200	THR
1	B	208	LYS
1	B	275	ASN
1	B	299	LEU
1	B	309	LYS
1	C	29	VAL
1	C	39	LEU
1	C	53	GLU
1	C	57	ILE
1	C	58	MET
1	C	64	GLU
1	C	66	MET
1	C	72	LYS
1	C	79	LYS
1	C	84	TRP
1	C	98	TRP
1	C	103	MET
1	C	121	TYR
1	C	239	LEU
1	C	264	ILE
1	C	266	GLU
1	D	31	MET
1	D	40	MET

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	D	47	ILE
1	D	50	GLU
1	D	53	GLU
1	D	56	LYS
1	D	57	ILE
1	D	58	MET
1	D	71	LYS
1	D	72	LYS
1	D	79	LYS
1	D	85	VAL
1	D	90	LYS
1	D	92	GLU
1	D	99	VAL
1	D	100	ASN
1	D	126	PHE
1	D	130	MET
1	D	134	ILE
1	D	139	TYR
1	D	149	ASN
1	D	186	LEU
1	D	190	GLU
1	D	191	LEU
1	D	194	ASN
1	D	207	ARG
1	D	235	LYS
1	D	240	LYS
1	D	252	LEU
1	D	256	ILE
1	D	263	LYS
1	D	274	LYS
1	D	295	MET
1	E	31	MET
1	E	33	GLU
1	E	45	THR
1	E	51	VAL
1	E	57	ILE
1	E	66	MET
1	E	73	PHE
1	E	90	LYS
1	E	98	TRP
1	E	102	THR
1	E	108	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	155	PHE
1	E	157	LYS
1	E	187	GLU
1	E	208	LYS
1	E	229	LEU
1	E	246	THR
1	F	31	MET
1	F	72	LYS
1	F	87	GLU
1	F	94	SER
1	F	112	LEU
1	F	157	LYS
1	F	200	THR
1	F	210	VAL
1	F	251	LYS
1	F	263	LYS
1	F	264	ILE
1	F	270	LEU
1	F	274	LYS
1	F	299	LEU
1	G	28	ASN
1	G	31	MET
1	G	45	THR
1	G	53	GLU
1	G	57	ILE
1	G	63	TYR
1	G	64	GLU
1	G	66	MET
1	G	90	LYS
1	G	95	LYS
1	G	98	TRP
1	G	103	MET
1	G	114	VAL
1	G	134	ILE
1	G	158	SER
1	G	226	LEU
1	G	246	THR
1	G	252	LEU
1	G	256	ILE
1	G	259	LEU
1	G	270	LEU
1	G	274	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	295	MET
1	G	299	LEU
2	b	205	LYS
2	f	193	ASN
2	g	205	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	HIS
1	A	59	GLN
1	A	125	GLN
1	A	176	GLN
1	A	258	GLN
1	A	275	ASN
1	A	286	GLN
1	B	49	GLN
1	B	59	GLN
1	B	100	ASN
1	B	178	ASN
1	B	194	ASN
1	B	238	ASN
1	B	282	ASN
1	C	32	HIS
1	C	149	ASN
1	C	238	ASN
1	C	275	ASN
1	D	59	GLN
1	D	150	GLN
1	E	176	GLN
1	E	202	ASN
1	F	59	GLN
1	F	89	GLN
1	F	150	GLN
1	F	153	ASN
1	F	167	ASN
1	F	202	ASN
1	F	258	GLN
1	G	176	GLN
1	G	194	ASN
1	G	201	GLN
1	G	238	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	275	ASN
1	G	286	GLN
1	G	300	HIS
2	b	206	ASN
2	d	206	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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

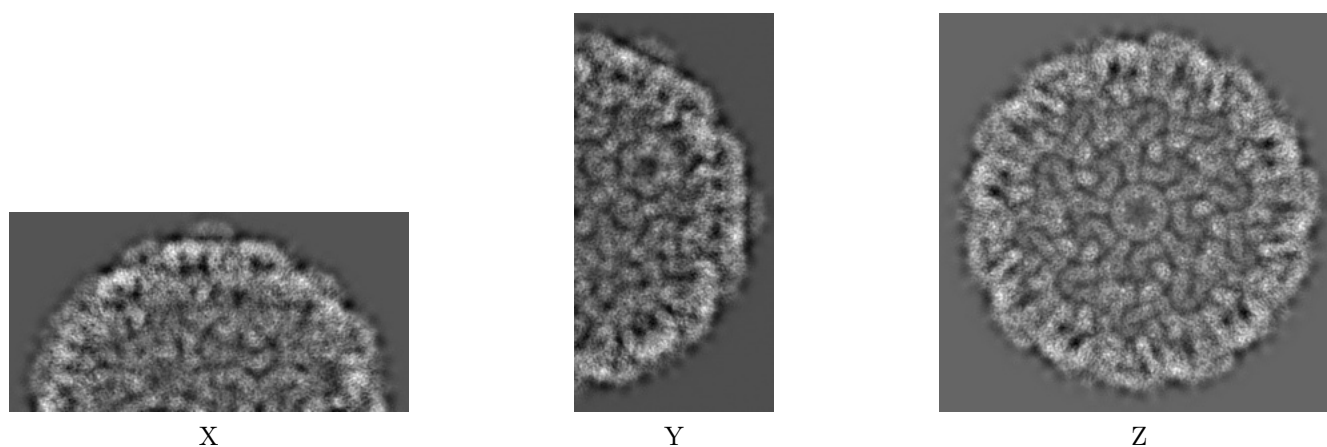
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-7030. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

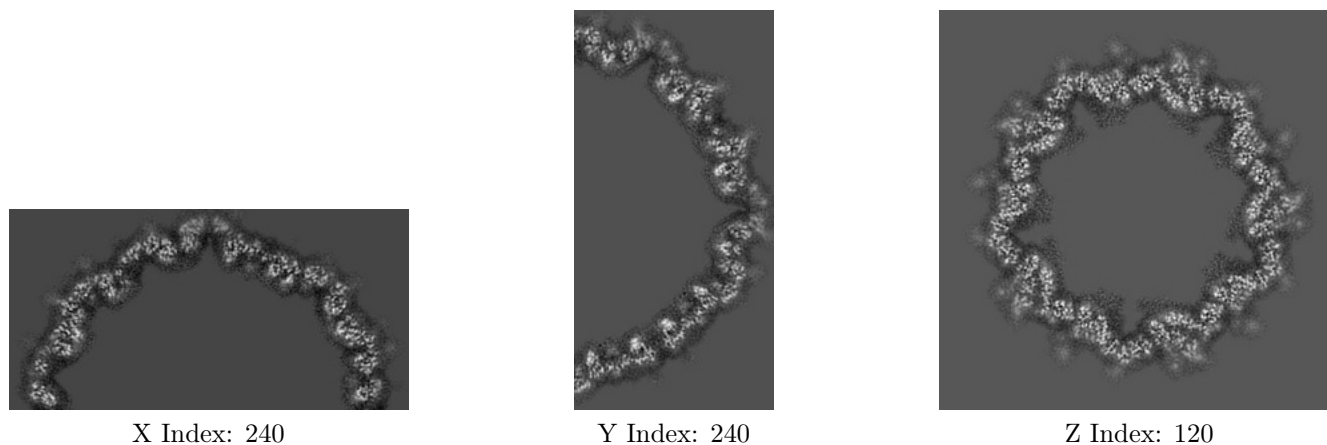
6.1.1 Primary map



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

6.2 Central slices [i](#)

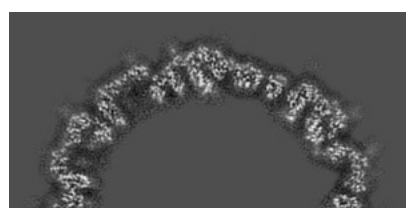
6.2.1 Primary map



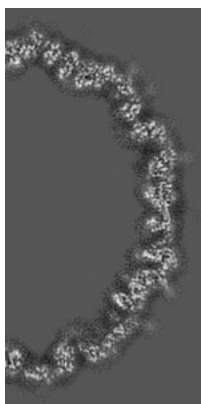
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

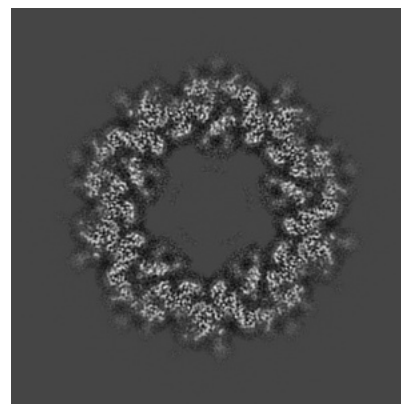
6.3.1 Primary map



X Index: 145



Y Index: 196

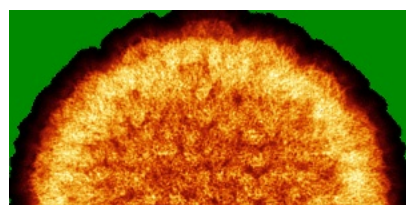


Z Index: 153

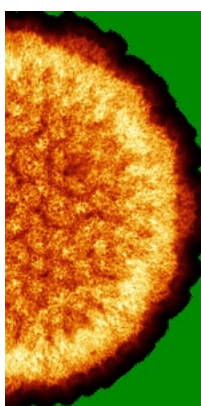
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



X



Y

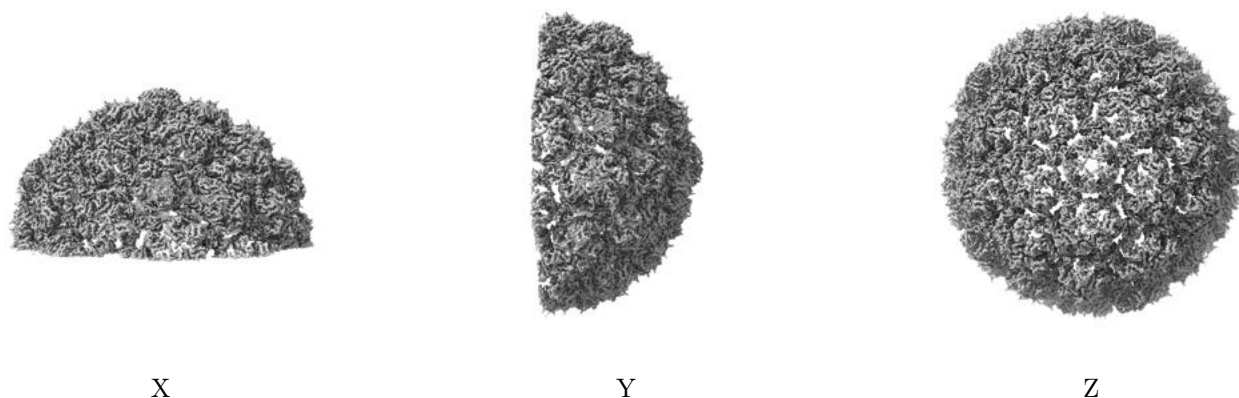


Z

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 0.00705. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

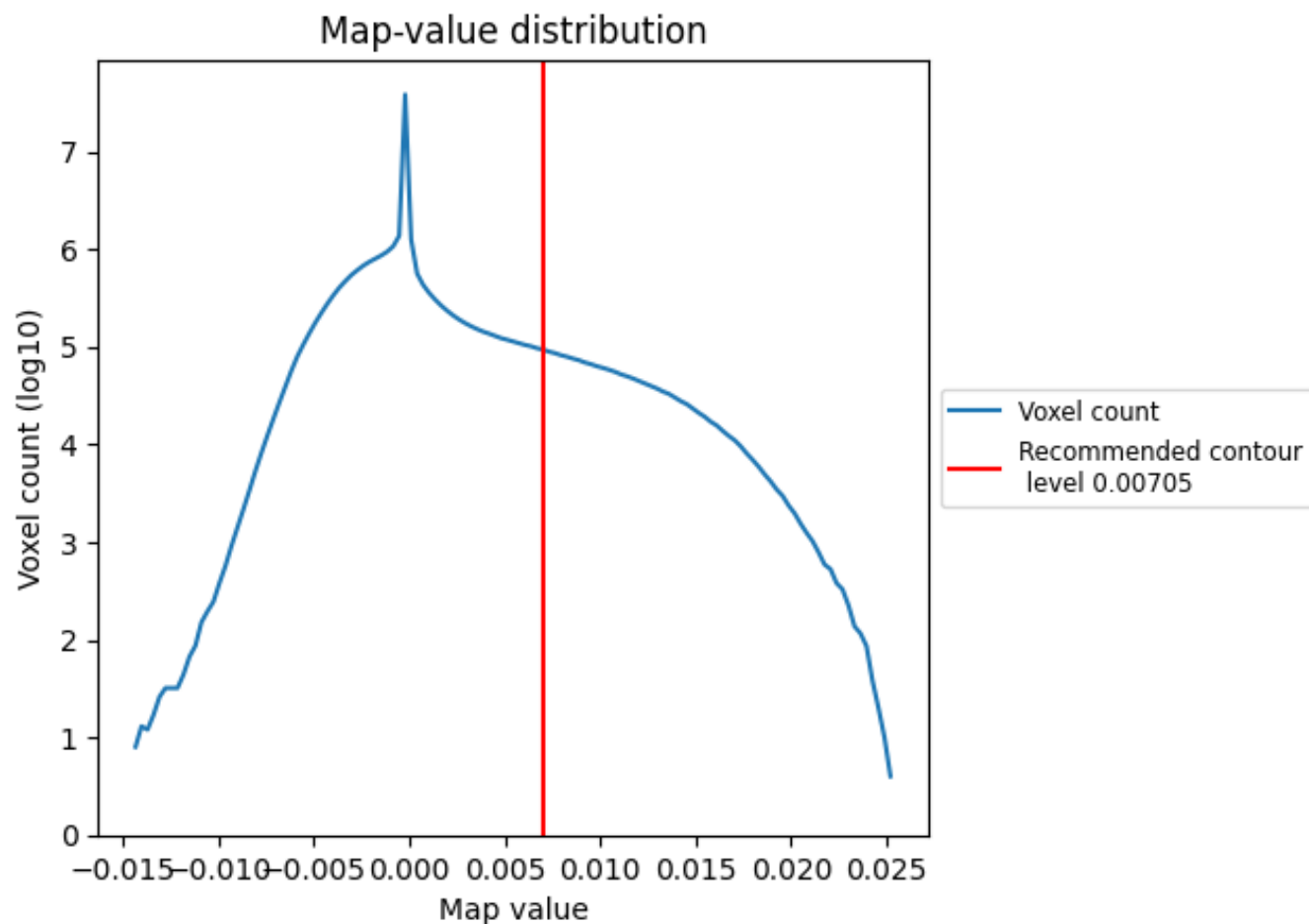
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

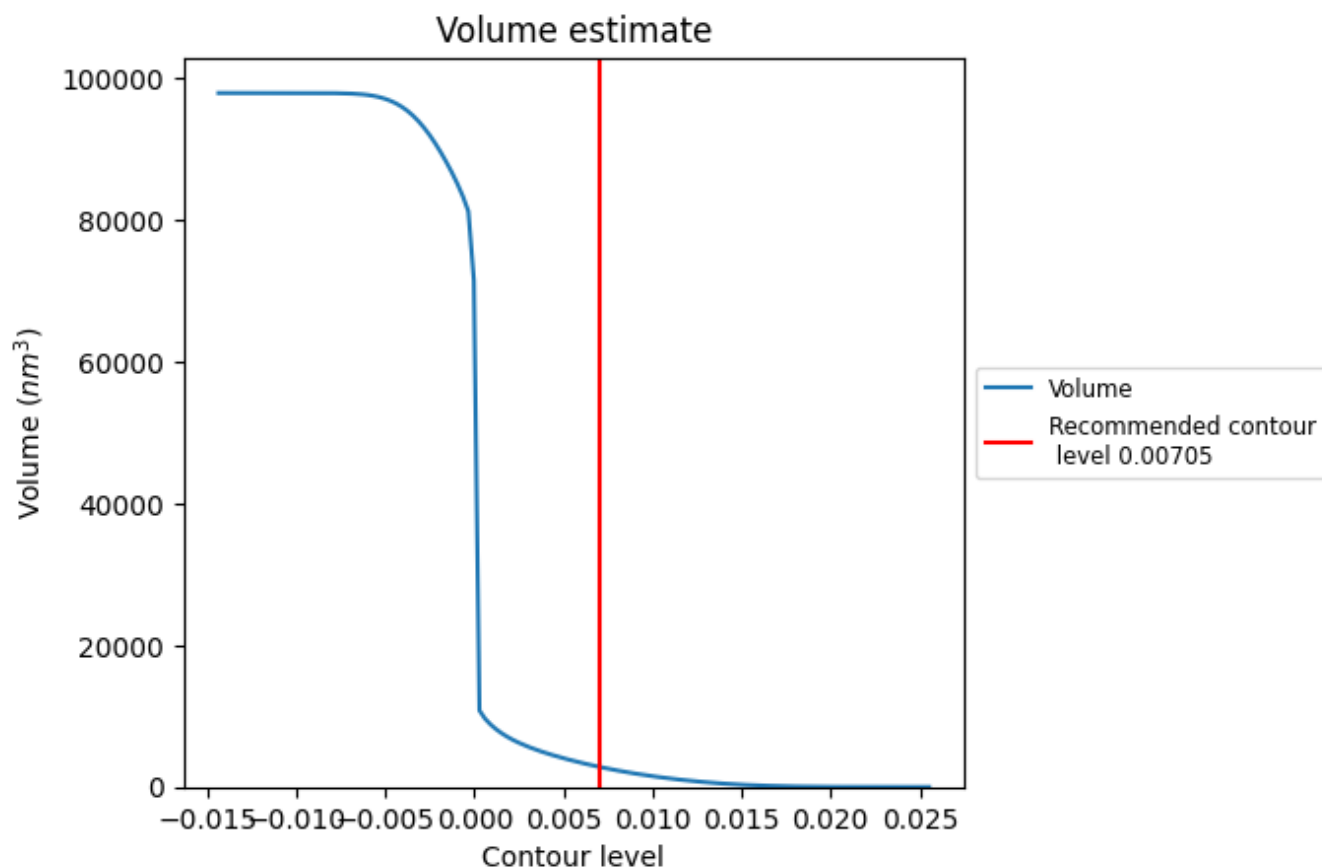
This section contains the results of statistical analysis of the map.

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 2818 nm³; this corresponds to an approximate mass of 2545 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.

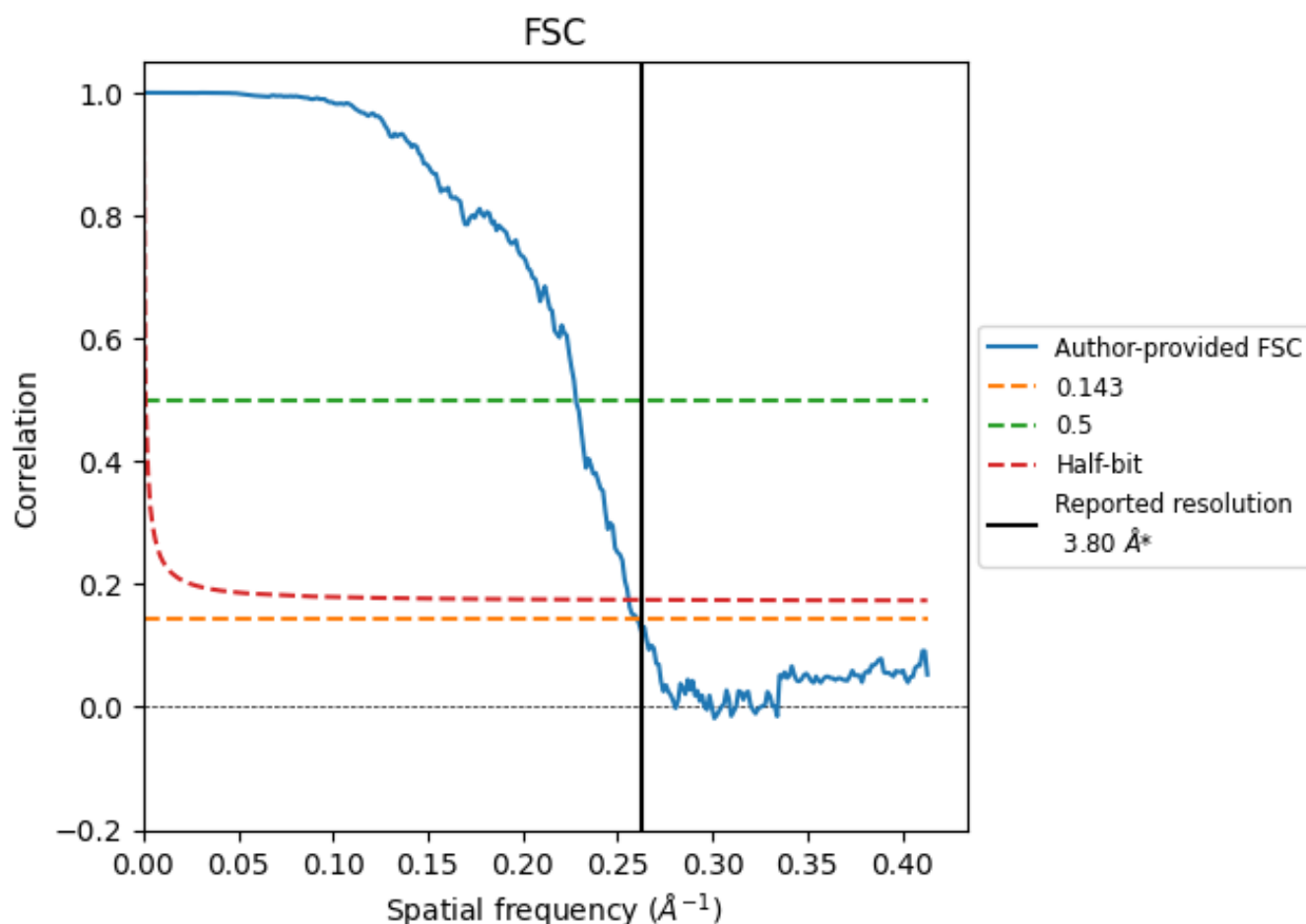
7.3 Rotationally averaged power spectrum [i](#)

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

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 0.263 Å⁻¹

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.84	4.38	3.91
Unmasked-calculated*	-	-	-

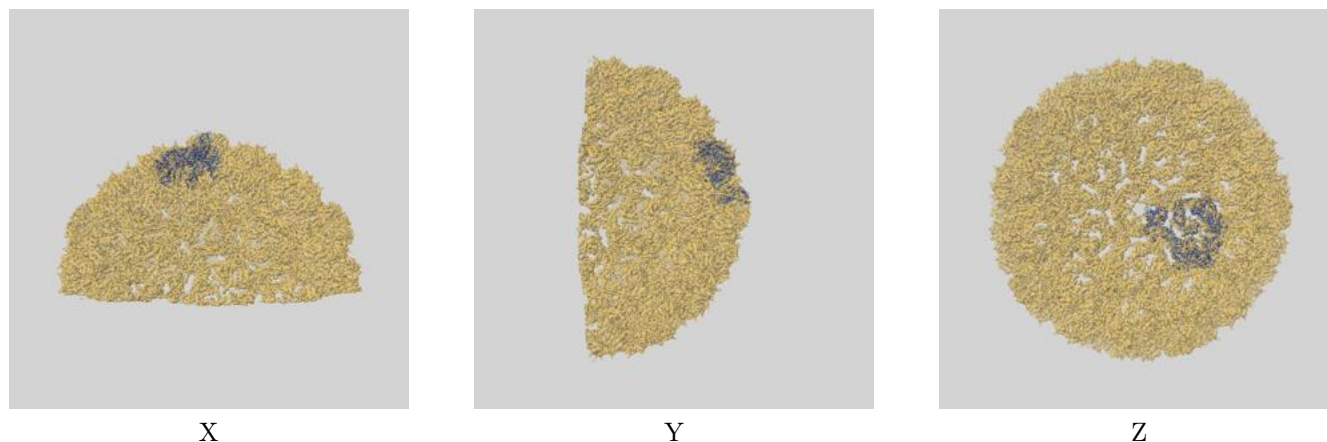
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-7030 and PDB model 6B0X. Per-residue inclusion information can be found in section [3](#) on page [5](#).

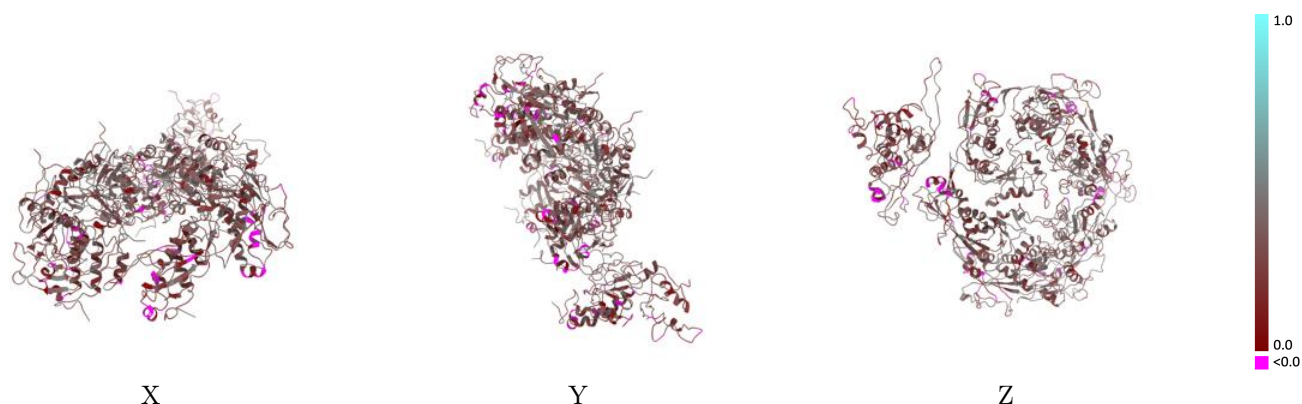
9.1 Map-model overlays

9.1.1 Map-model overlay [i](#)



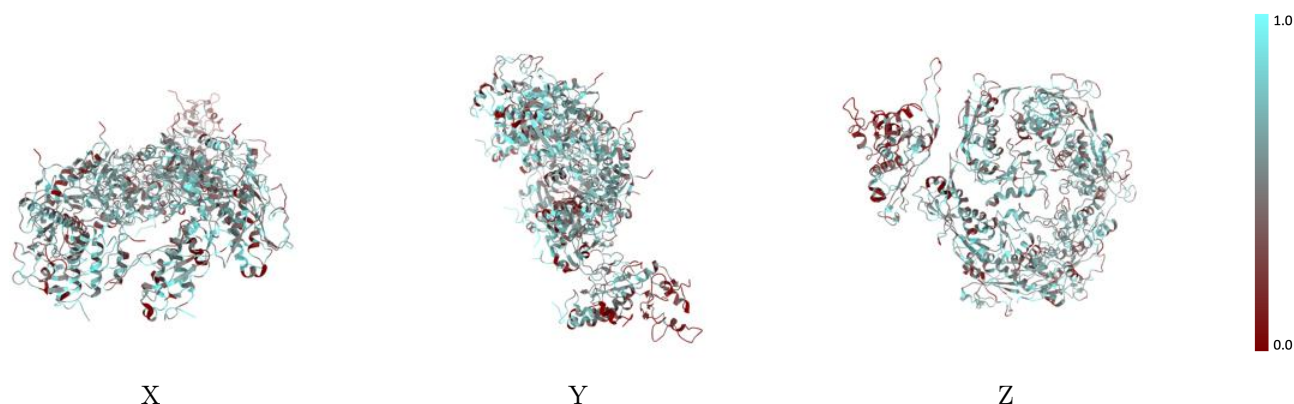
The images above show the 3D surface view of the map at the recommended contour level 0.00705 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



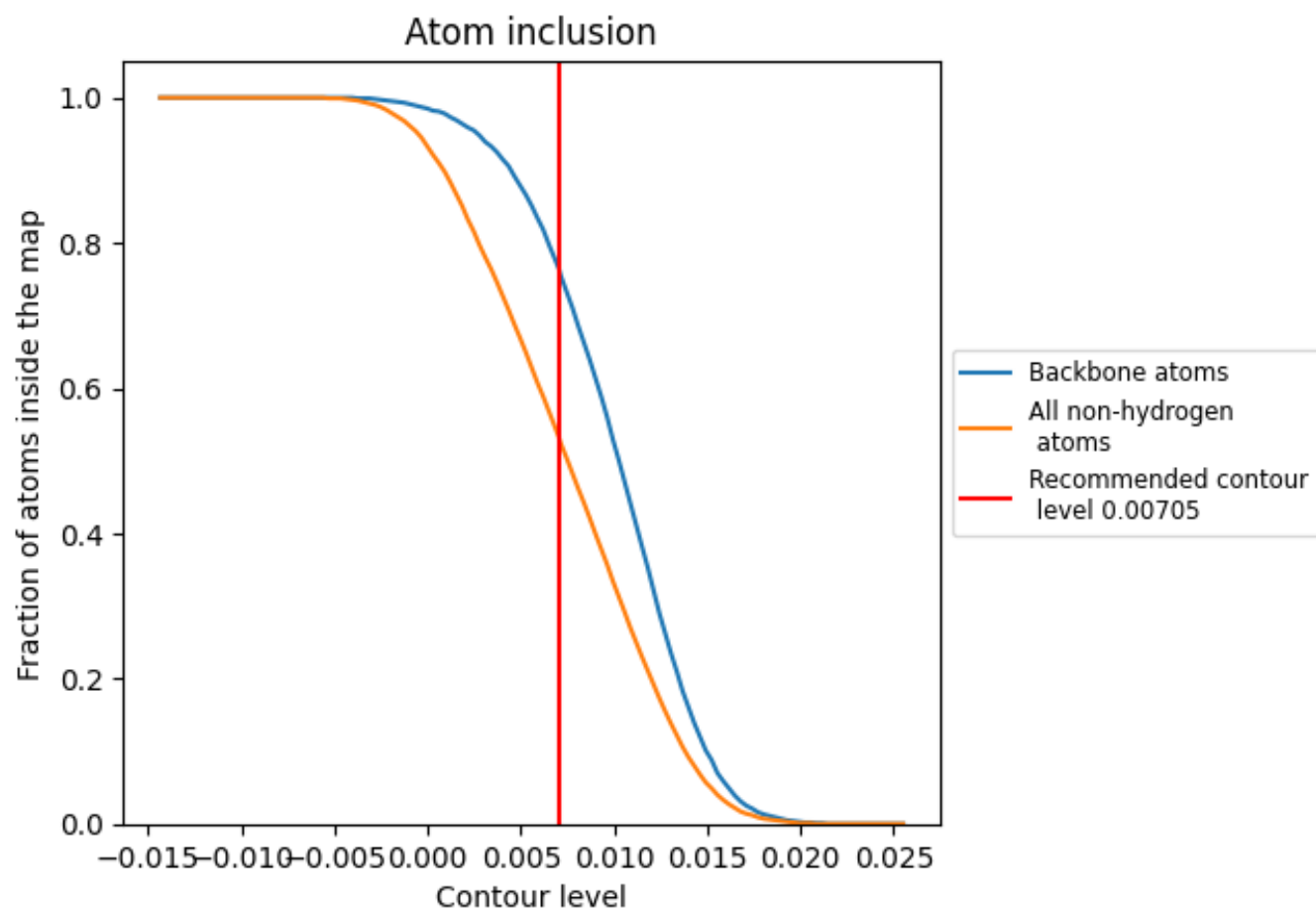
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.00705).

9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 53% 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 (0.00705) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5320	 0.2990
A	 0.4180	 0.2760
B	 0.5720	 0.3170
C	 0.5710	 0.3100
D	 0.5840	 0.2970
E	 0.5620	 0.2980
F	 0.5650	 0.3070
G	 0.5770	 0.3140
a	 0.0000	 0.1740
b	 0.3280	 0.2400
c	 0.2150	 0.2970
d	 0.0550	 0.2130
e	 0.4060	 0.2700
f	 0.1950	 0.2570
g	 0.2420	 0.2000

