



Full wwPDB EM Validation Report ⓘ

Jan 30, 2024 – 01:48 PM EST

PDB ID : 8FQC
EMDB ID : EMD-29383
Title : Structure of baseplate with receptor binding complex of Agrobacterium phage Milano
Authors : Sonani, R.R.; Leiman, P.G.; Wang, F.; Kreutzberger, M.A.B.; Sebastian, A.; Esteves, N.C.; Kelly, R.J.; Scharf, B.; Egelman, E.H.
Deposited on : 2023-01-05
Resolution : 3.20 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

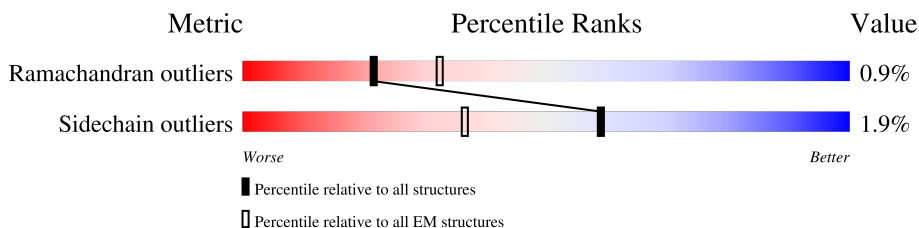
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
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	C1	457	
2	E1	136	
2	a1	136	
2	f1	136	
2	g1	136	
3	F1	396	
3	G1	396	
3	h1	396	
3	i1	396	


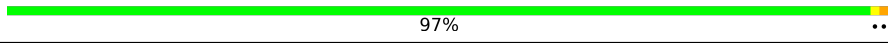
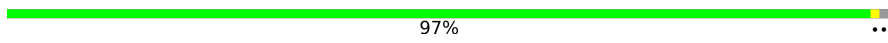

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Mol	Chain	Length	Quality of chain	
4	H1	178		
4	j1	178		
5	I1	503		
5	K1	503		
5	k1	503		
5	m1	503		
6	J1	286		
6	l1	286		
7	P1	587	27%	72%
7	Q1	587	28%	71%
7	R1	587	29%	71%
7	r1	587	27%	72%
7	s1	587	29%	71%
7	t1	587	29%	71%
8	S1	300	39%	60%
8	T1	300	39%	60%
8	V1	300	39%	60%
8	W1	300	40%	60%
8	X1	300	40%	60%
8	Y1	300	40%	60%
8	u1	300	39%	60%
8	v1	300	39%	60%
8	w1	300	40%	60%
8	x1	300	39%	60%
8	y1	300	40%	60%

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Mol	Chain	Length	Quality of chain
8	z1	300	
9	U1	398	
9	e1	398	
10	A	188	

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 66089 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 Baseplate hub protein, gp26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C1	326	2551	1610	434	500	7	0	0

- Molecule 2 is a protein called Tail-tube, gp21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E1	131	995	617	165	206	7	0	0
2	a1	131	995	617	165	206	7	0	0
2	f1	131	995	617	165	206	7	0	0
2	g1	131	995	617	165	206	7	0	0

- Molecule 3 is a protein called Baseplate Wedge 2 protein, gp29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	F1	393	3016	1900	515	580	21	0	0
3	G1	393	3016	1900	515	580	21	0	0
3	h1	393	3016	1900	515	580	21	0	0
3	i1	393	3016	1900	515	580	21	0	0

- Molecule 4 is a protein called Baseplate wedge 1, gp28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	H1	176	1334	817	244	264	9	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	j1	176	1334	817	244	264	9	0	0

- Molecule 5 is a protein called Tail sheath protein, gp20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	I1	498	3739	2342	633	742	22	0	0
5	K1	494	3706	2322	628	735	21	0	0
5	k1	498	3739	2342	633	742	22	0	0
5	m1	494	3706	2322	628	735	21	0	0

- Molecule 6 is a protein called Baseplate Wedge 3 protein, gp30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	J1	285	2185	1390	355	420	20	0	0
6	l1	285	2185	1390	355	420	20	0	0

- Molecule 7 is a protein called Tail Spike protein, gp124.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	P1	162	1227	782	194	248	3	0	0
7	Q1	173	1308	835	210	260	3	0	0
7	R1	173	1308	835	210	260	3	0	0
7	r1	162	1227	782	194	248	3	0	0
7	s1	173	1308	835	210	260	3	0	0
7	t1	173	1308	835	210	260	3	0	0

- Molecule 8 is a protein called Short Tail Fibers, gp31.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	S1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	T1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	V1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	W1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	X1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	Y1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	v1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	w1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	x1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	y1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	u1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		
8	z1	119	Total	C	N	O	S	0	0
			878	545	150	174	9		

- Molecule 9 is a protein called Baseplate Centerpiece, gp25.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	U1	394	Total	C	N	O	S	0	0
			3027	1910	522	590	5		
9	e1	394	Total	C	N	O	S	0	0
			3027	1910	522	590	5		

- Molecule 10 is a protein called Baseplate Central Spike, gp27.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	A	168	Total	C	N	O	S	0	0
			1289	799	223	264	3		

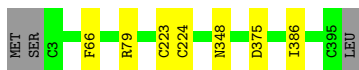
- Molecule 11 is FE (III) ION (three-letter code: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
11	A	1	Total 1	Fe 1	0



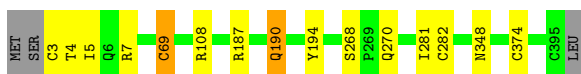
- Molecule 3: Baseplate Wedge 2 protein, gp29

Chain F1: 97%



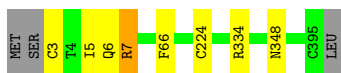
- Molecule 3: Baseplate Wedge 2 protein, gp29

Chain G1: 95%



- Molecule 3: Baseplate Wedge 2 protein, gp29

Chain h1: 97%



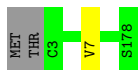
- Molecule 3: Baseplate Wedge 2 protein, gp29

Chain i1: 97%



- Molecule 4: Baseplate wedge 1, gp28

Chain H1: 98%



- Molecule 4: Baseplate wedge 1, gp28

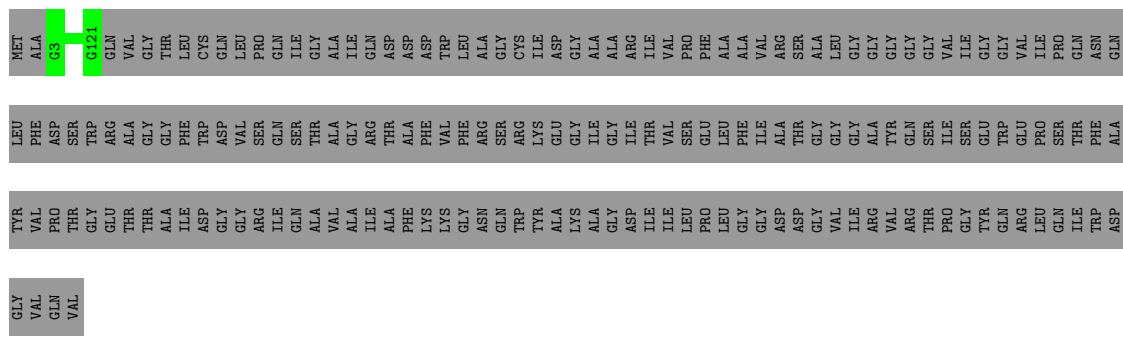
Chain j1: 98%



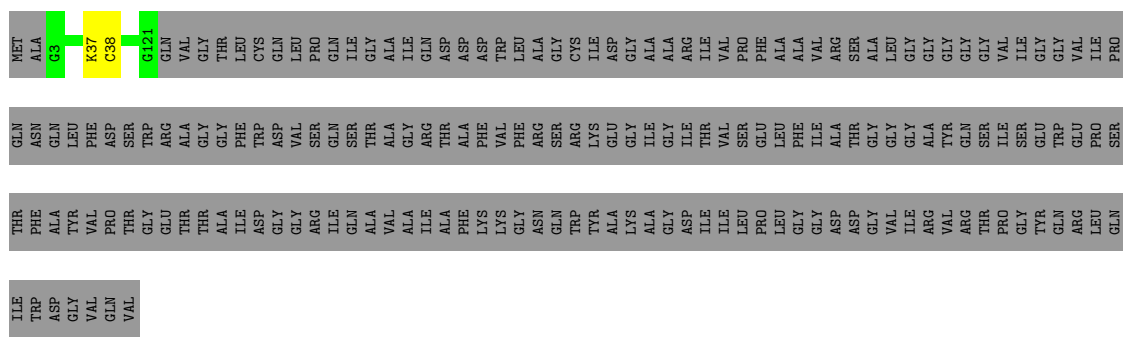
- Molecule 5: Tail sheath protein, gp20

Chain I1: 98%

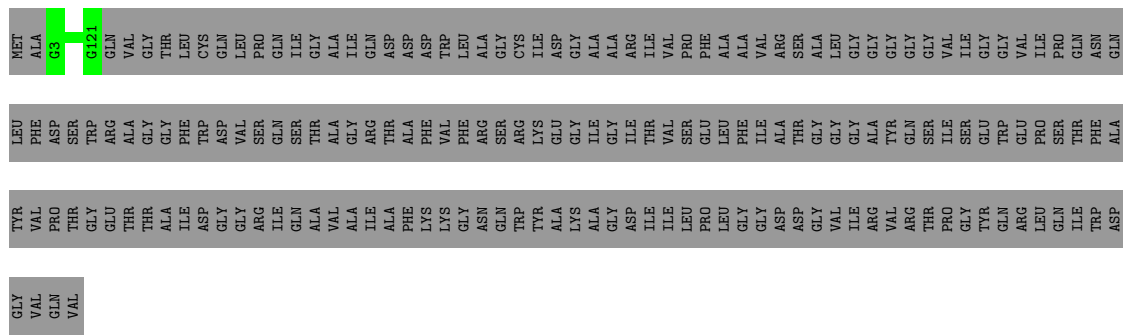
• Molecule 8: Short Tail Fibers, gp31



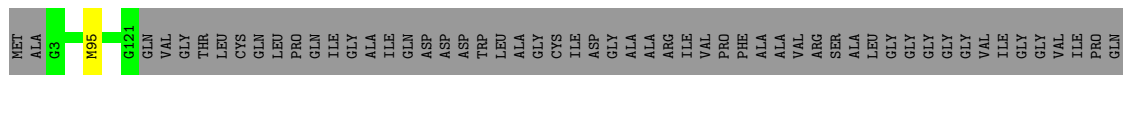
• Molecule 8: Short Tail Fibers, gp31



• Molecule 8: Short Tail Fibers, gp31



• Molecule 8: Short Tail Fibers, gp31



- Molecule 9: Baseplate Centerpiece, gp25

Chain U1:  97% ...




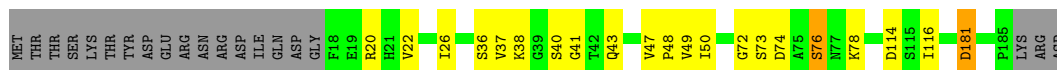
- Molecule 9: Baseplate Centerpiece, gp25

Chain e1:  97% ..



- Molecule 10: Baseplate Central Spike, gp27

Chain A:  78% 10% 11%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14856	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.478	Depositor
Minimum map value	-0.780	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.045	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	624.24005, 624.24005, 624.24005	wwPDB
Map dimensions	578, 578, 578	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: FE

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	C1	0.38	0/2598	0.57	0/3525
2	E1	0.46	0/1011	0.52	0/1382
2	a1	0.40	0/1011	0.52	0/1382
2	f1	0.38	0/1011	0.51	0/1382
2	g1	0.41	0/1011	0.52	0/1382
3	F1	0.42	0/3085	0.49	0/4207
3	G1	0.47	0/3085	0.55	0/4207
3	h1	0.42	0/3085	0.48	0/4207
3	i1	0.46	0/3085	0.54	0/4207
4	H1	0.37	0/1353	0.51	0/1831
4	j1	0.37	0/1353	0.51	0/1831
5	I1	0.41	0/3815	0.53	0/5211
5	K1	0.38	0/3781	0.51	0/5165
5	k1	0.42	0/3815	0.52	0/5211
5	m1	0.37	0/3781	0.50	0/5165
6	J1	0.44	0/2237	0.53	0/3063
6	l1	0.41	0/2237	0.50	0/3063
7	P1	0.33	0/1269	0.45	0/1755
7	Q1	0.35	0/1352	0.50	0/1868
7	R1	0.30	0/1352	0.47	0/1868
7	r1	0.33	0/1269	0.45	0/1755
7	s1	0.36	0/1352	0.46	0/1868
7	t1	0.32	0/1352	0.47	0/1868
8	S1	0.29	0/892	0.46	0/1217
8	T1	0.28	0/892	0.46	0/1217
8	V1	0.28	0/892	0.49	0/1217
8	W1	0.32	0/892	0.44	0/1217
8	X1	0.30	0/892	0.46	0/1217
8	Y1	0.29	0/892	0.45	0/1217
8	u1	0.31	0/892	0.48	0/1217
8	v1	0.30	0/892	0.47	0/1217
8	w1	0.28	0/892	0.45	0/1217

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
8	x1	0.28	0/892	0.49	0/1217
8	y1	0.31	0/892	0.45	0/1217
8	z1	0.31	0/892	0.44	0/1217
9	U1	0.44	0/3093	0.49	0/4214
9	e1	0.44	0/3093	0.50	1/4214 (0.0%)
10	A	0.62	0/1320	0.91	3/1791 (0.2%)
All	All	0.40	0/67510	0.51	4/92226 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	e1	138	LEU	CA-CB-CG	5.73	128.49	115.30
10	A	116	ILE	N-CA-C	-5.73	95.53	111.00
10	A	181	ASP	CB-CG-OD2	5.18	122.96	118.30
10	A	72	GLY	N-CA-C	-5.14	100.25	113.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C1	320/457 (70%)	247 (77%)	65 (20%)	8 (2%)	5	32
2	E1	129/136 (95%)	117 (91%)	12 (9%)	0	100	100
2	a1	129/136 (95%)	117 (91%)	12 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	f1	129/136 (95%)	118 (92%)	11 (8%)	0	100	100
2	g1	129/136 (95%)	118 (92%)	10 (8%)	1 (1%)	19	58
3	F1	391/396 (99%)	371 (95%)	19 (5%)	1 (0%)	41	74
3	G1	391/396 (99%)	366 (94%)	21 (5%)	4 (1%)	15	54
3	h1	391/396 (99%)	378 (97%)	10 (3%)	3 (1%)	19	58
3	i1	391/396 (99%)	363 (93%)	26 (7%)	2 (0%)	29	67
4	H1	174/178 (98%)	149 (86%)	24 (14%)	1 (1%)	25	64
4	j1	174/178 (98%)	145 (83%)	27 (16%)	2 (1%)	14	51
5	I1	496/503 (99%)	439 (88%)	56 (11%)	1 (0%)	47	79
5	K1	492/503 (98%)	421 (86%)	64 (13%)	7 (1%)	11	46
5	k1	496/503 (99%)	441 (89%)	53 (11%)	2 (0%)	34	69
5	m1	492/503 (98%)	404 (82%)	80 (16%)	8 (2%)	9	43
6	J1	283/286 (99%)	258 (91%)	20 (7%)	5 (2%)	8	41
6	l1	283/286 (99%)	253 (89%)	27 (10%)	3 (1%)	14	51
7	P1	160/587 (27%)	146 (91%)	13 (8%)	1 (1%)	25	64
7	Q1	171/587 (29%)	155 (91%)	12 (7%)	4 (2%)	6	34
7	R1	171/587 (29%)	158 (92%)	12 (7%)	1 (1%)	25	64
7	r1	160/587 (27%)	147 (92%)	12 (8%)	1 (1%)	25	64
7	s1	171/587 (29%)	158 (92%)	10 (6%)	3 (2%)	8	41
7	t1	171/587 (29%)	156 (91%)	15 (9%)	0	100	100
8	S1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	T1	117/300 (39%)	112 (96%)	4 (3%)	1 (1%)	17	56
8	V1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	W1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	X1	117/300 (39%)	107 (92%)	10 (8%)	0	100	100
8	Y1	117/300 (39%)	111 (95%)	6 (5%)	0	100	100
8	u1	117/300 (39%)	110 (94%)	6 (5%)	1 (1%)	17	56
8	v1	117/300 (39%)	107 (92%)	10 (8%)	0	100	100
8	w1	117/300 (39%)	114 (97%)	3 (3%)	0	100	100
8	x1	117/300 (39%)	105 (90%)	12 (10%)	0	100	100
8	y1	117/300 (39%)	110 (94%)	7 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	z1	117/300 (39%)	108 (92%)	7 (6%)	2 (2%)	9	42
9	U1	392/398 (98%)	368 (94%)	21 (5%)	3 (1%)	19	58
9	e1	392/398 (98%)	361 (92%)	30 (8%)	1 (0%)	41	74
10	A	166/188 (88%)	142 (86%)	13 (8%)	11 (7%)	1	9
All	All	8648/13631 (63%)	7807 (90%)	764 (9%)	77 (1%)	21	56

All (77) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	F1	375	ASP
6	J1	2	ASN
5	K1	378	PRO
7	Q1	117	ILE
7	Q1	119	VAL
9	U1	129	LEU
3	i1	68	CYS
6	l1	23	CYS
5	m1	104	PRO
7	s1	12	VAL
10	A	48	PRO
10	A	49	VAL
10	A	50	ILE
1	C1	353	LYS
3	G1	4	THR
6	J1	207	GLU
5	K1	199	ALA
5	K1	379	ASN
7	Q1	118	SER
9	U1	130	SER
3	h1	5	ILE
3	h1	6	GLN
3	i1	225	ALA
4	j1	171	ILE
5	k1	184	SER
5	m1	74	THR
7	s1	120	GLU
8	z1	36	PRO
10	A	37	VAL
10	A	40	SER
10	A	76	SER
1	C1	355	THR

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Mol	Chain	Res	Type
3	G1	69	CYS
6	J1	205	ALA
5	K1	415	THR
7	P1	23	ASP
9	U1	138	LEU
9	e1	319	HIS
5	m1	105	ALA
8	u1	95	MET
8	z1	37	LYS
10	A	22	VAL
1	C1	4	PRO
1	C1	53	ARG
1	C1	56	GLU
1	C1	352	ALA
3	G1	190	GLN
5	K1	354	GLY
3	h1	7	ARG
5	m1	177	THR
5	m1	181	SER
7	s1	7	LEU
10	A	114	ASP
1	C1	313	HIS
6	J1	3	VAL
5	K1	196	GLN
5	k1	500	ASN
6	l1	4	LEU
5	m1	75	CYS
5	m1	375	LYS
7	r1	23	ASP
1	C1	180	ASN
3	G1	268	SER
5	I1	68	LEU
6	J1	210	THR
7	Q1	8	GLN
2	g1	128	LEU
5	m1	415	THR
10	A	26	ILE
10	A	41	GLY
4	H1	7	VAL
10	A	47	VAL
7	R1	21	GLY
5	K1	200	GLY

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Mol	Chain	Res	Type
8	T1	83	ILE
4	j1	7	VAL
6	l1	3	VAL

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	
1	C1	281/383 (73%)	271 (96%)	10 (4%)	35	69
2	E1	115/116 (99%)	115 (100%)	0	100	100
2	a1	115/116 (99%)	115 (100%)	0	100	100
2	f1	115/116 (99%)	115 (100%)	0	100	100
2	g1	115/116 (99%)	115 (100%)	0	100	100
3	F1	330/333 (99%)	324 (98%)	6 (2%)	59	82
3	G1	330/333 (99%)	317 (96%)	13 (4%)	32	67
3	h1	330/333 (99%)	324 (98%)	6 (2%)	59	82
3	i1	330/333 (99%)	321 (97%)	9 (3%)	44	75
4	H1	145/147 (99%)	145 (100%)	0	100	100
4	j1	145/147 (99%)	145 (100%)	0	100	100
5	I1	404/408 (99%)	399 (99%)	5 (1%)	71	88
5	K1	400/408 (98%)	392 (98%)	8 (2%)	55	80
5	k1	404/408 (99%)	393 (97%)	11 (3%)	44	75
5	m1	400/408 (98%)	394 (98%)	6 (2%)	65	85
6	J1	245/247 (99%)	231 (94%)	14 (6%)	20	56
6	l1	245/247 (99%)	239 (98%)	6 (2%)	49	77
7	P1	129/473 (27%)	129 (100%)	0	100	100
7	Q1	138/473 (29%)	135 (98%)	3 (2%)	52	79
7	R1	138/473 (29%)	135 (98%)	3 (2%)	52	79
7	r1	129/473 (27%)	127 (98%)	2 (2%)	62	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
7	s1	138/473 (29%)	135 (98%)	3 (2%)	52	79
7	t1	138/473 (29%)	137 (99%)	1 (1%)	84	94
8	S1	97/229 (42%)	96 (99%)	1 (1%)	76	90
8	T1	97/229 (42%)	97 (100%)	0	100	100
8	V1	97/229 (42%)	95 (98%)	2 (2%)	53	79
8	W1	97/229 (42%)	97 (100%)	0	100	100
8	X1	97/229 (42%)	97 (100%)	0	100	100
8	Y1	97/229 (42%)	97 (100%)	0	100	100
8	u1	97/229 (42%)	95 (98%)	2 (2%)	53	79
8	v1	97/229 (42%)	95 (98%)	2 (2%)	53	79
8	w1	97/229 (42%)	97 (100%)	0	100	100
8	x1	97/229 (42%)	96 (99%)	1 (1%)	76	90
8	y1	97/229 (42%)	97 (100%)	0	100	100
8	z1	97/229 (42%)	94 (97%)	3 (3%)	40	72
9	U1	314/316 (99%)	308 (98%)	6 (2%)	57	81
9	e1	314/316 (99%)	309 (98%)	5 (2%)	62	84
10	A	143/162 (88%)	134 (94%)	9 (6%)	18	52
All	All	7194/10979 (66%)	7057 (98%)	137 (2%)	59	81

All (137) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C1	55	LYS
1	C1	56	GLU
1	C1	58	LEU
1	C1	67	PHE
1	C1	128	LYS
1	C1	132	ASP
1	C1	312	PHE
1	C1	351	ASP
1	C1	353	LYS
1	C1	355	THR
3	F1	66	PHE
3	F1	79	ARG
3	F1	223	CYS
3	F1	224	CYS

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Mol	Chain	Res	Type
3	F1	348	ASN
3	F1	386	ILE
3	G1	3	CYS
3	G1	5	ILE
3	G1	7	ARG
3	G1	69	CYS
3	G1	108	ARG
3	G1	187	ARG
3	G1	190	GLN
3	G1	194	TYR
3	G1	270	GLN
3	G1	281	ILE
3	G1	282	CYS
3	G1	348	ASN
3	G1	374	CYS
5	I1	66	GLU
5	I1	184	SER
5	I1	185	VAL
5	I1	186	THR
5	I1	448	PHE
6	J1	1	MET
6	J1	4	LEU
6	J1	5	ILE
6	J1	8	ILE
6	J1	32	GLU
6	J1	125	CYS
6	J1	151	TYR
6	J1	203	THR
6	J1	206	CYS
6	J1	207	GLU
6	J1	211	LEU
6	J1	213	VAL
6	J1	276	PHE
6	J1	277	CYS
5	K1	12	ARG
5	K1	26	CYS
5	K1	27	LYS
5	K1	327	CYS
5	K1	353	SER
5	K1	374	GLU
5	K1	377	ARG
5	K1	480	TYR

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Mol	Chain	Res	Type
7	Q1	3	LYS
7	Q1	116	GLU
7	Q1	119	VAL
7	R1	23	ASP
7	R1	24	CYS
7	R1	25	GLN
8	S1	12	CYS
9	U1	53	ILE
9	U1	97	PHE
9	U1	129	LEU
9	U1	130	SER
9	U1	138	LEU
9	U1	198	LYS
8	V1	20	CYS
8	V1	95	MET
9	e1	93	ARG
9	e1	97	PHE
9	e1	199	TRP
9	e1	319	HIS
9	e1	395	ARG
3	h1	3	CYS
3	h1	7	ARG
3	h1	66	PHE
3	h1	224	CYS
3	h1	334	ARG
3	h1	348	ASN
3	i1	20	ARG
3	i1	43	LEU
3	i1	68	CYS
3	i1	187	ARG
3	i1	215	ASP
3	i1	224	CYS
3	i1	234	CYS
3	i1	240	PHE
3	i1	336	ILE
5	k1	21	PHE
5	k1	22	PHE
5	k1	28	ILE
5	k1	185	VAL
5	k1	216	CYS
5	k1	364	TYR
5	k1	372	ARG

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Mol	Chain	Res	Type
5	k1	374	GLU
5	k1	375	LYS
5	k1	377	ARG
5	k1	499	ASP
6	l1	1	MET
6	l1	2	ASN
6	l1	5	ILE
6	l1	23	CYS
6	l1	151	TYR
6	l1	275	ARG
5	m1	12	ARG
5	m1	74	THR
5	m1	182	CYS
5	m1	300	CYS
5	m1	481	ARG
5	m1	497	LEU
7	r1	24	CYS
7	r1	175	ASP
7	s1	7	LEU
7	s1	119	VAL
7	s1	175	ASP
7	t1	175	ASP
8	v1	37	LYS
8	v1	38	CYS
8	x1	95	MET
8	u1	94	ASP
8	u1	95	MET
8	z1	37	LYS
8	z1	38	CYS
8	z1	40	VAL
10	A	20	ARG
10	A	36	SER
10	A	38	LYS
10	A	43	GLN
10	A	73	SER
10	A	74	ASP
10	A	76	SER
10	A	78	LYS
10	A	181	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (112) such sidechains are listed below:

Mol	Chain	Res	Type
1	C1	137	HIS
1	C1	184	ASN
1	C1	192	GLN
1	C1	224	ASN
1	C1	238	ASN
1	C1	246	HIS
1	C1	255	ASN
1	C1	280	HIS
1	C1	290	GLN
1	C1	313	HIS
3	F1	11	GLN
3	F1	48	GLN
3	F1	222	ASN
3	F1	355	ASN
3	F1	389	ASN
3	G1	11	GLN
3	G1	15	ASN
3	G1	57	GLN
3	G1	193	GLN
3	G1	387	ASN
4	H1	80	ASN
4	H1	155	GLN
4	H1	160	ASN
4	H1	173	ASN
5	I1	33	GLN
5	I1	60	GLN
5	I1	304	ASN
5	I1	313	GLN
5	I1	365	ASN
5	I1	452	ASN
5	I1	470	GLN
5	K1	365	ASN
7	P1	25	GLN
7	Q1	43	GLN
7	R1	34	ASN
7	R1	162	ASN
7	R1	170	ASN
8	S1	59	ASN
8	T1	59	ASN
8	T1	78	ASN
9	U1	67	ASN
9	U1	90	HIS
9	U1	344	ASN

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Mol	Chain	Res	Type
9	U1	380	ASN
8	V1	13	ASN
8	V1	17	ASN
8	V1	41	GLN
8	V1	59	ASN
8	V1	113	GLN
8	V1	117	ASN
8	W1	46	GLN
8	W1	78	ASN
8	W1	113	GLN
8	W1	117	ASN
8	X1	82	ASN
8	X1	117	ASN
8	Y1	59	ASN
2	a1	84	GLN
9	e1	90	HIS
9	e1	126	ASN
9	e1	227	ASN
9	e1	294	ASN
9	e1	380	ASN
3	h1	346	ASN
3	i1	11	GLN
3	i1	15	ASN
3	i1	57	GLN
3	i1	114	GLN
3	i1	183	GLN
3	i1	193	GLN
3	i1	227	ASN
3	i1	355	ASN
4	j1	18	GLN
4	j1	80	ASN
4	j1	93	ASN
4	j1	173	ASN
5	k1	33	GLN
5	k1	196	GLN
5	k1	365	ASN
5	k1	379	ASN
6	l1	208	ASN
5	m1	33	GLN
5	m1	60	GLN
5	m1	178	ASN
5	m1	365	ASN

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Mol	Chain	Res	Type
5	m1	369	ASN
5	m1	379	ASN
5	m1	414	ASN
7	r1	34	ASN
7	s1	8	GLN
7	s1	25	GLN
7	s1	43	GLN
7	t1	94	ASN
8	v1	48	ASN
8	v1	59	ASN
8	v1	113	GLN
8	v1	117	ASN
8	w1	113	GLN
8	w1	117	ASN
8	x1	17	ASN
8	y1	39	ASN
8	y1	41	GLN
8	y1	78	ASN
8	y1	113	GLN
8	y1	117	ASN
8	u1	59	ASN
8	z1	41	GLN
8	z1	46	GLN
8	z1	59	ASN
8	z1	117	ASN
10	A	28	HIS
10	A	157	HIS

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](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

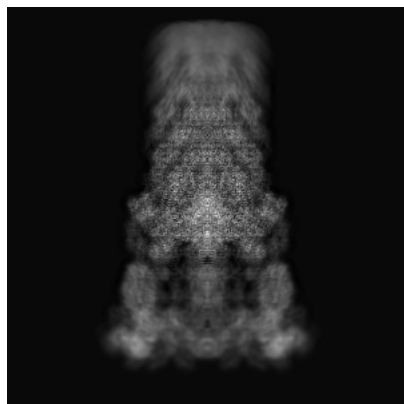
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29383. These allow visual inspection of the internal detail of the map and identification of artifacts.

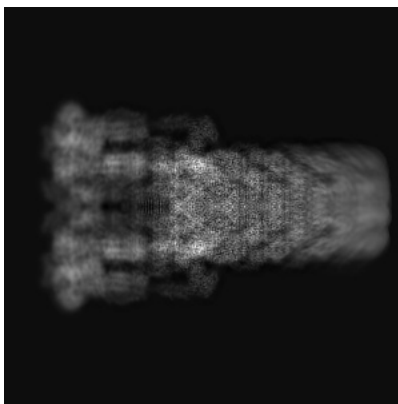
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

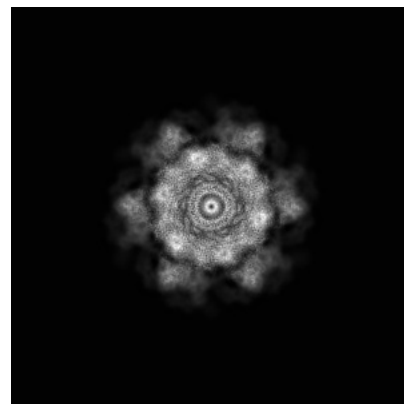
6.1.1 Primary map



X

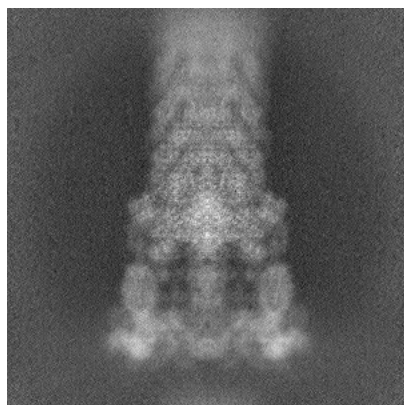


Y

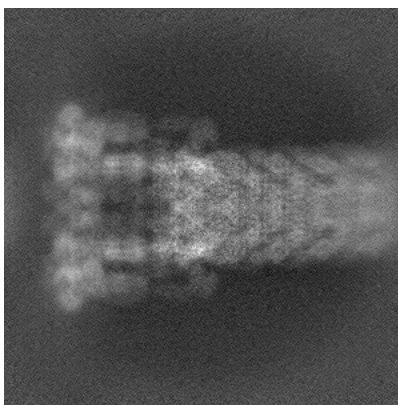


Z

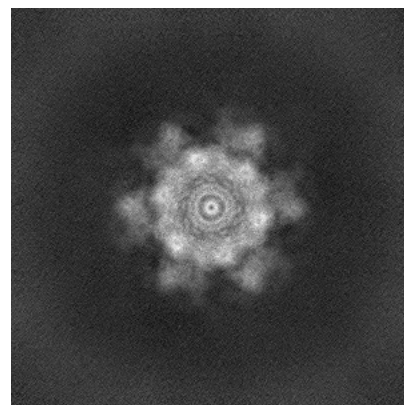
6.1.2 Raw map



X



Y

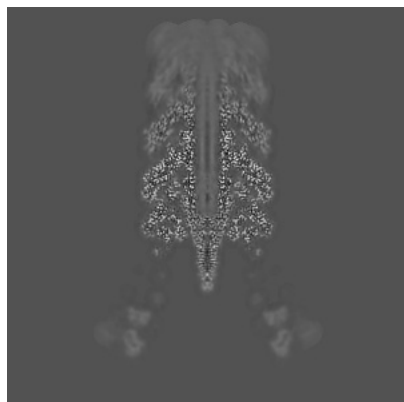


Z

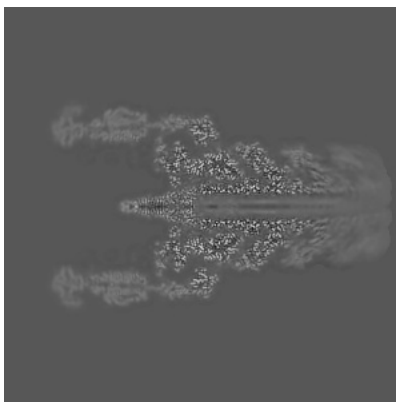
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

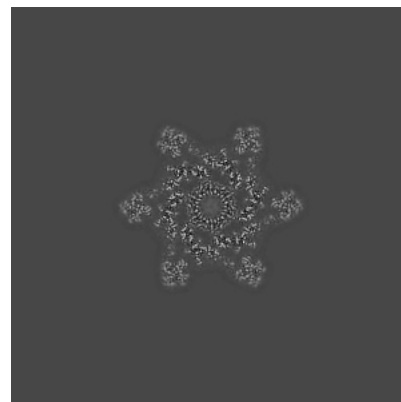
6.2.1 Primary map



X Index: 289

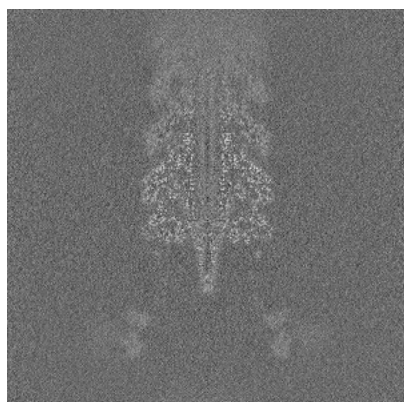


Y Index: 289

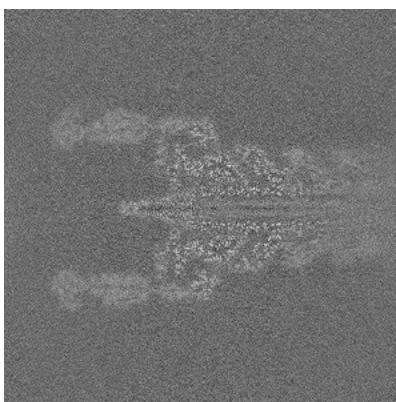


Z Index: 289

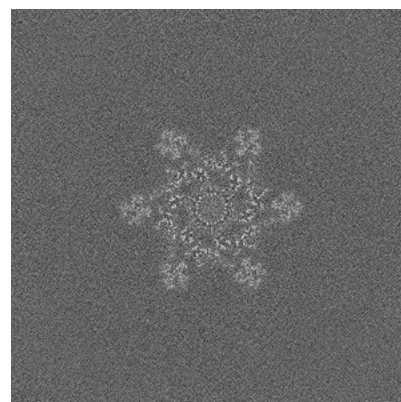
6.2.2 Raw map



X Index: 289



Y Index: 289

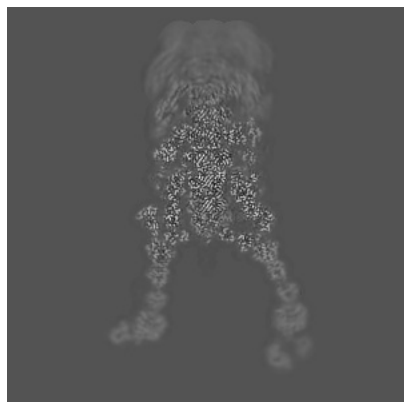


Z Index: 289

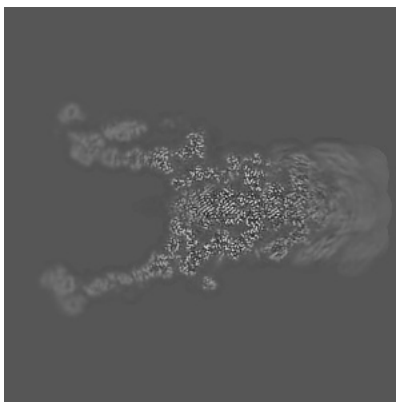
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

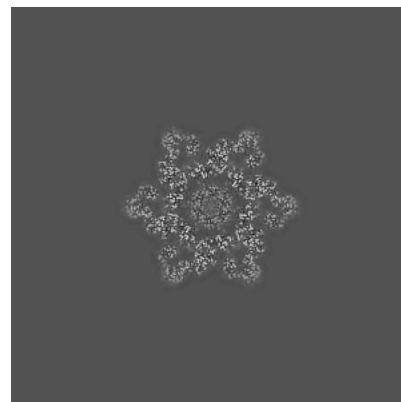
6.3.1 Primary map



X Index: 310

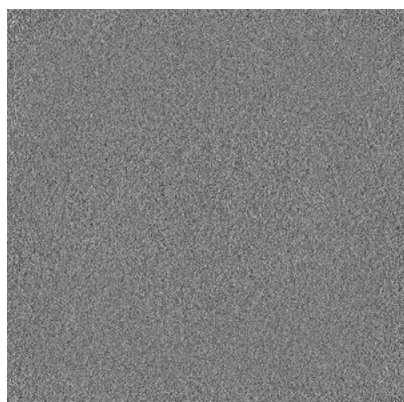


Y Index: 268

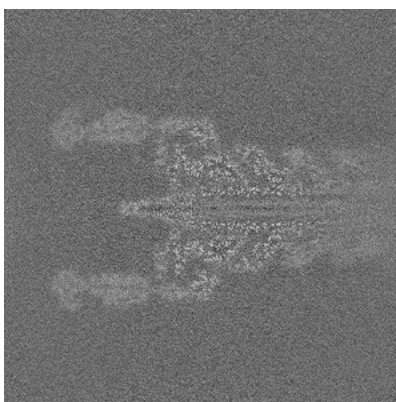


Z Index: 276

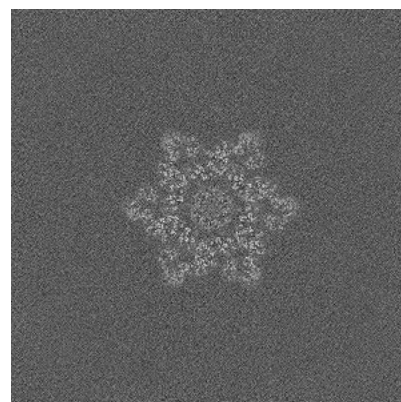
6.3.2 Raw map



X Index: 0



Y Index: 289

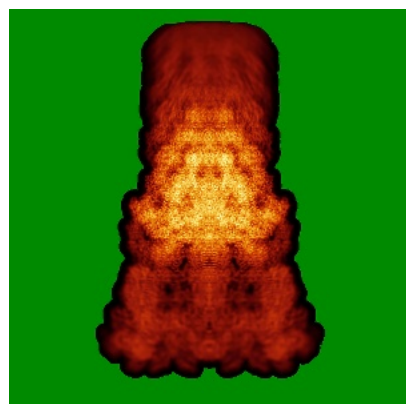


Z Index: 276

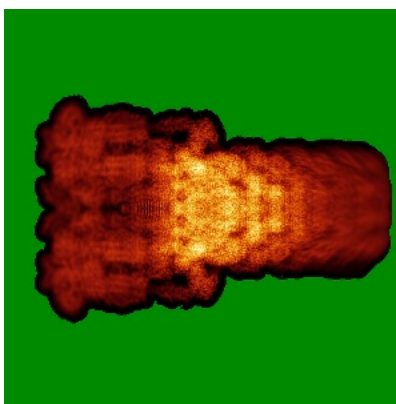
The images above show the largest variance slices of the map in three orthogonal directions.

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

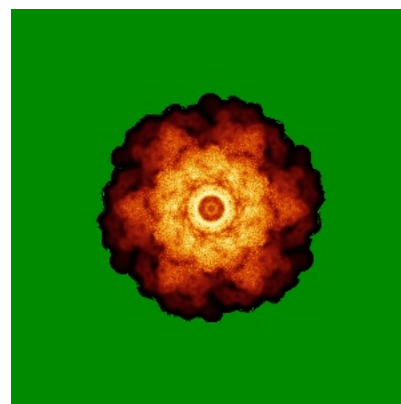
6.4.1 Primary map



X

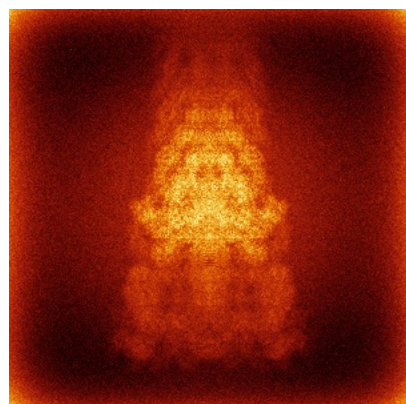


Y

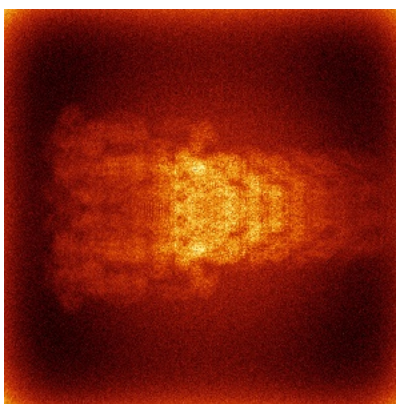


Z

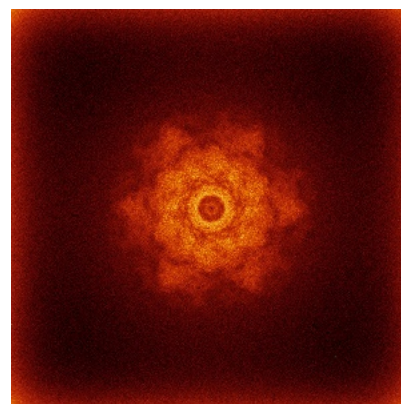
6.4.2 Raw map



X



Y

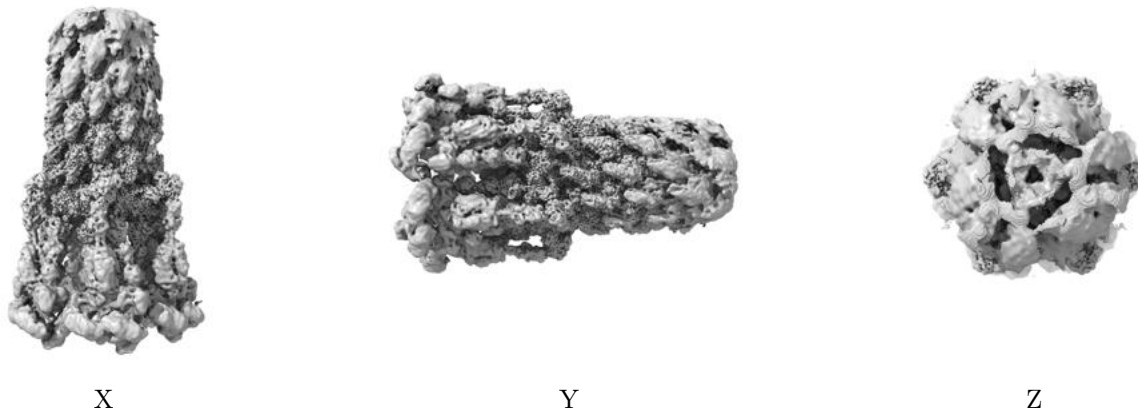


Z

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.

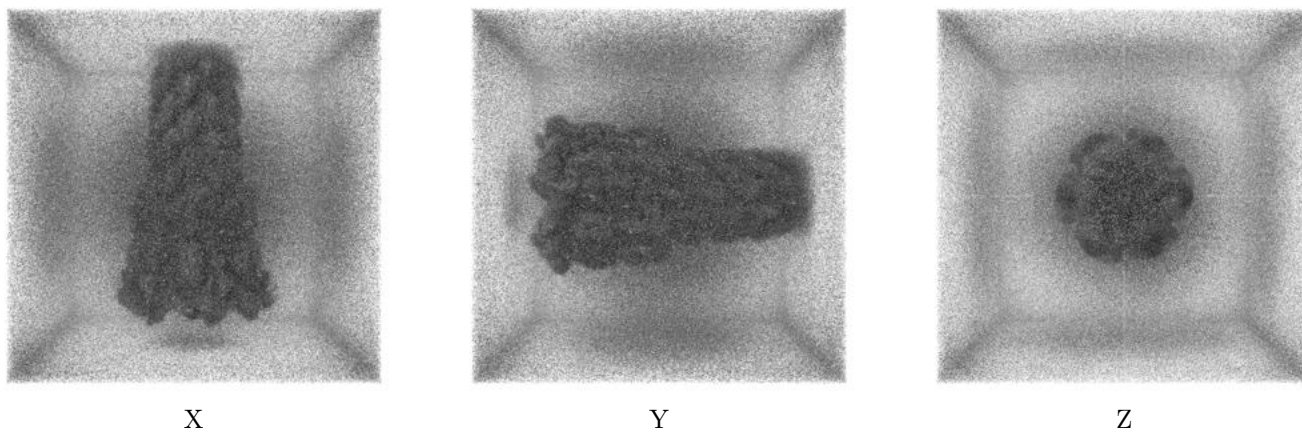
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.1. 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.

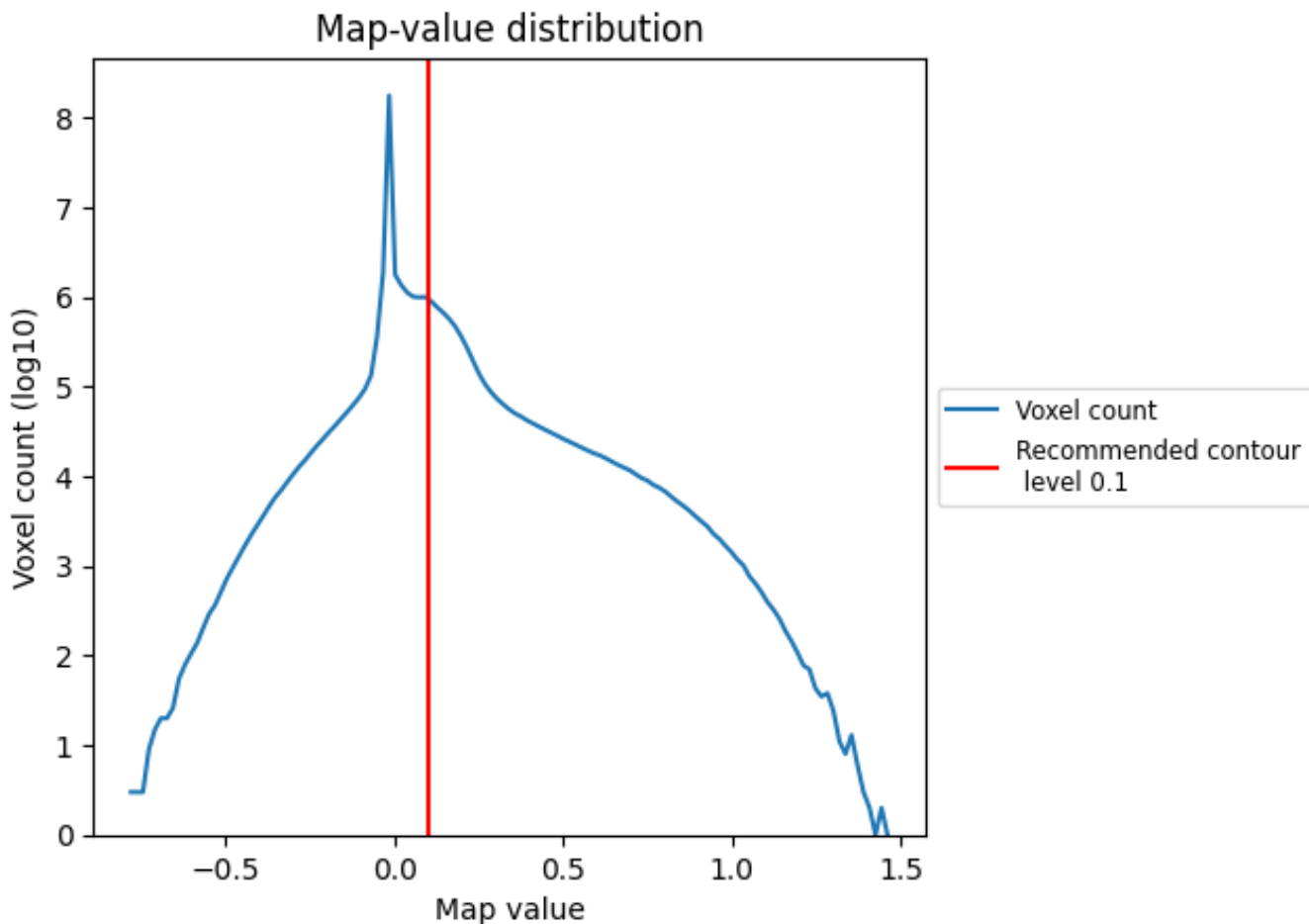
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

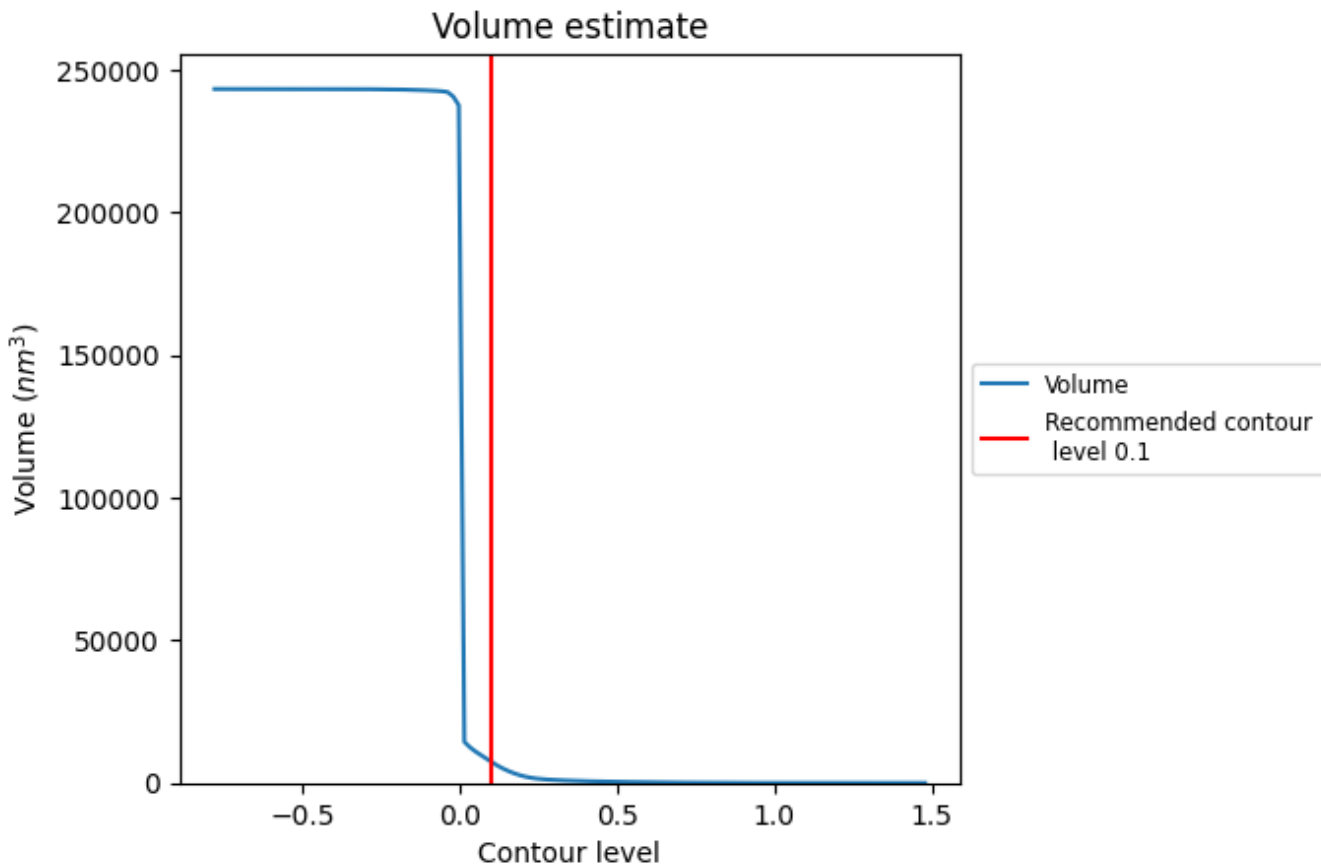
This section contains the results of statistical analysis of the map.

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.

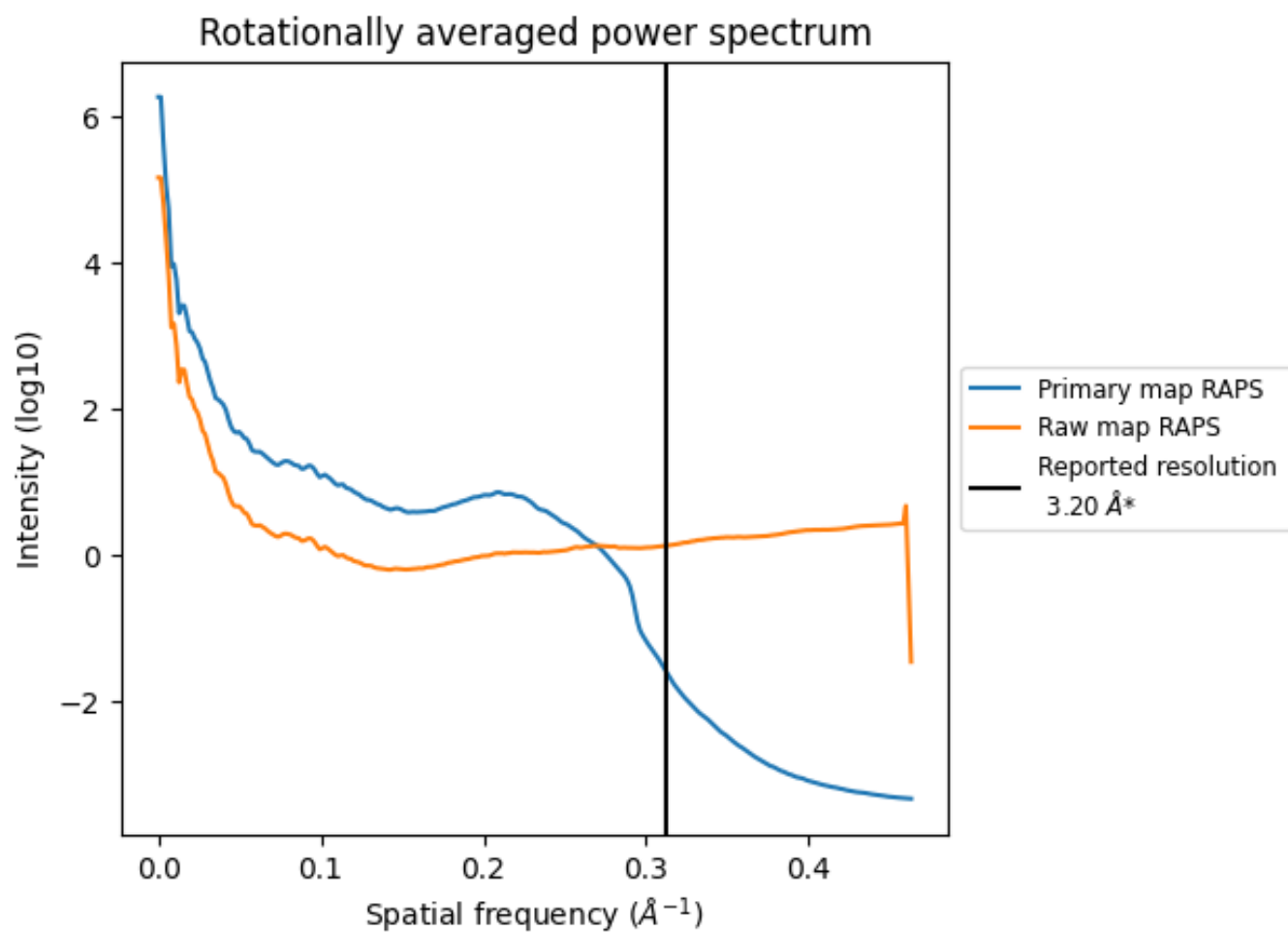
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 7391 nm^3 ; this corresponds to an approximate mass of 6676 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

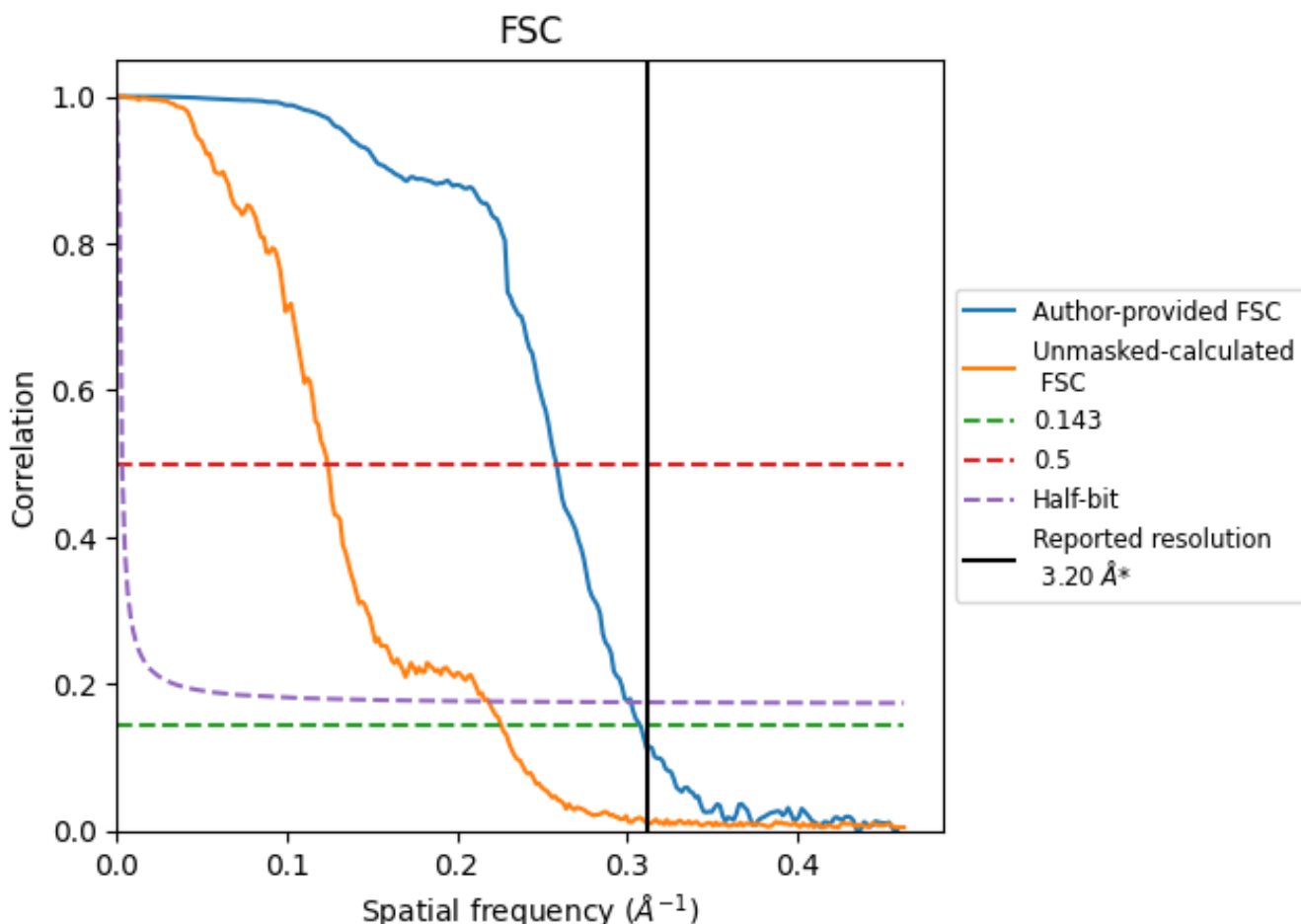


*Reported resolution corresponds to spatial frequency of 0.312 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



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

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.25	3.87	3.31
Unmasked-calculated*	4.42	8.07	4.58

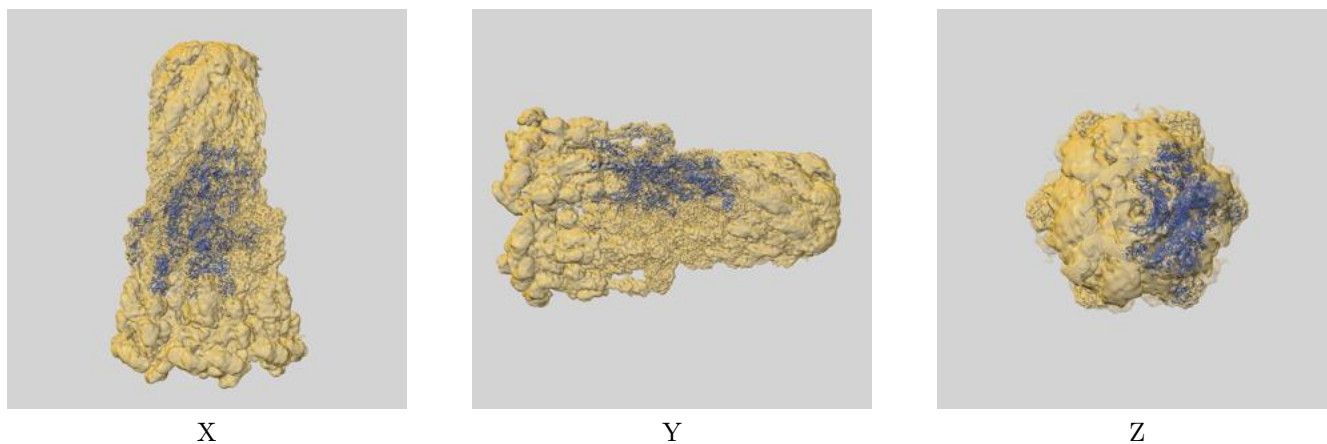
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.42 differs from the reported value 3.2 by more than 10 %

9 Map-model fit [i](#)

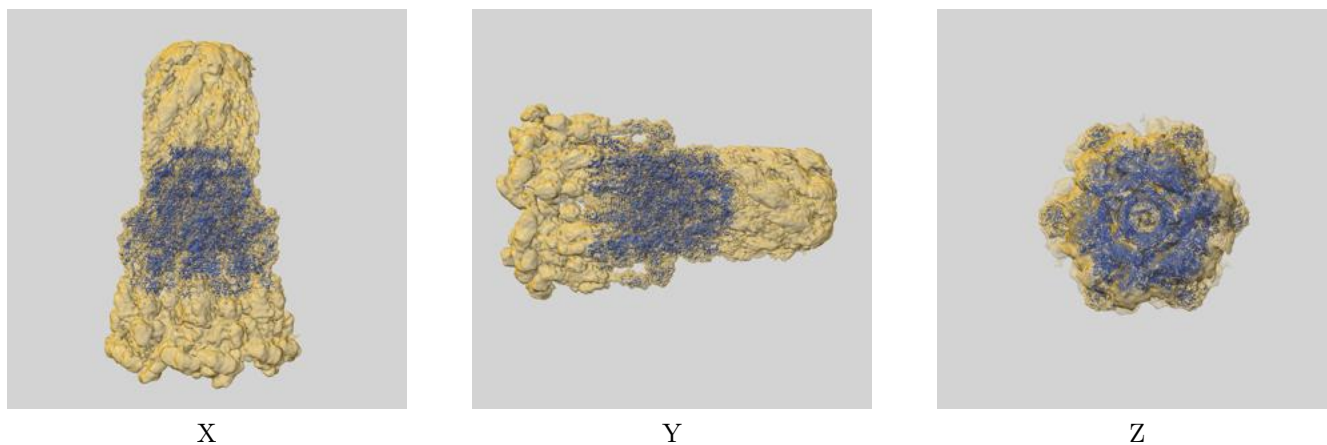
This section contains information regarding the fit between EMDB map EMD-29383 and PDB model 8FQC. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlays

9.1.1 Map-model overlay [i](#)

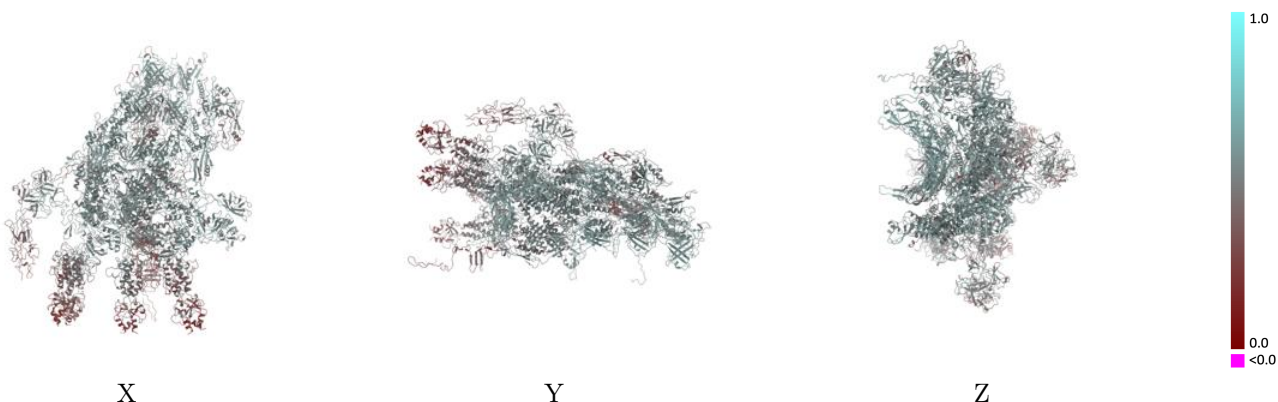


9.1.2 Map-model assembly overlay [i](#)



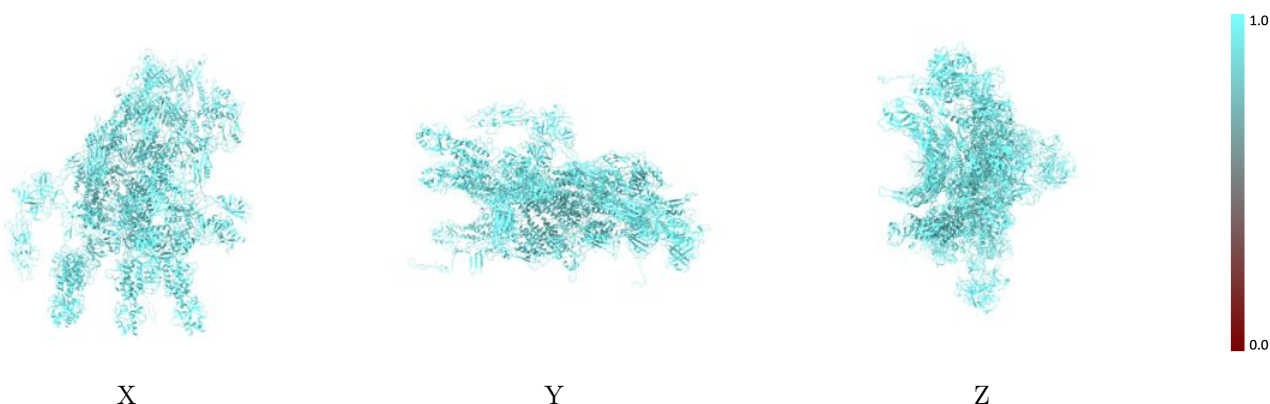
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



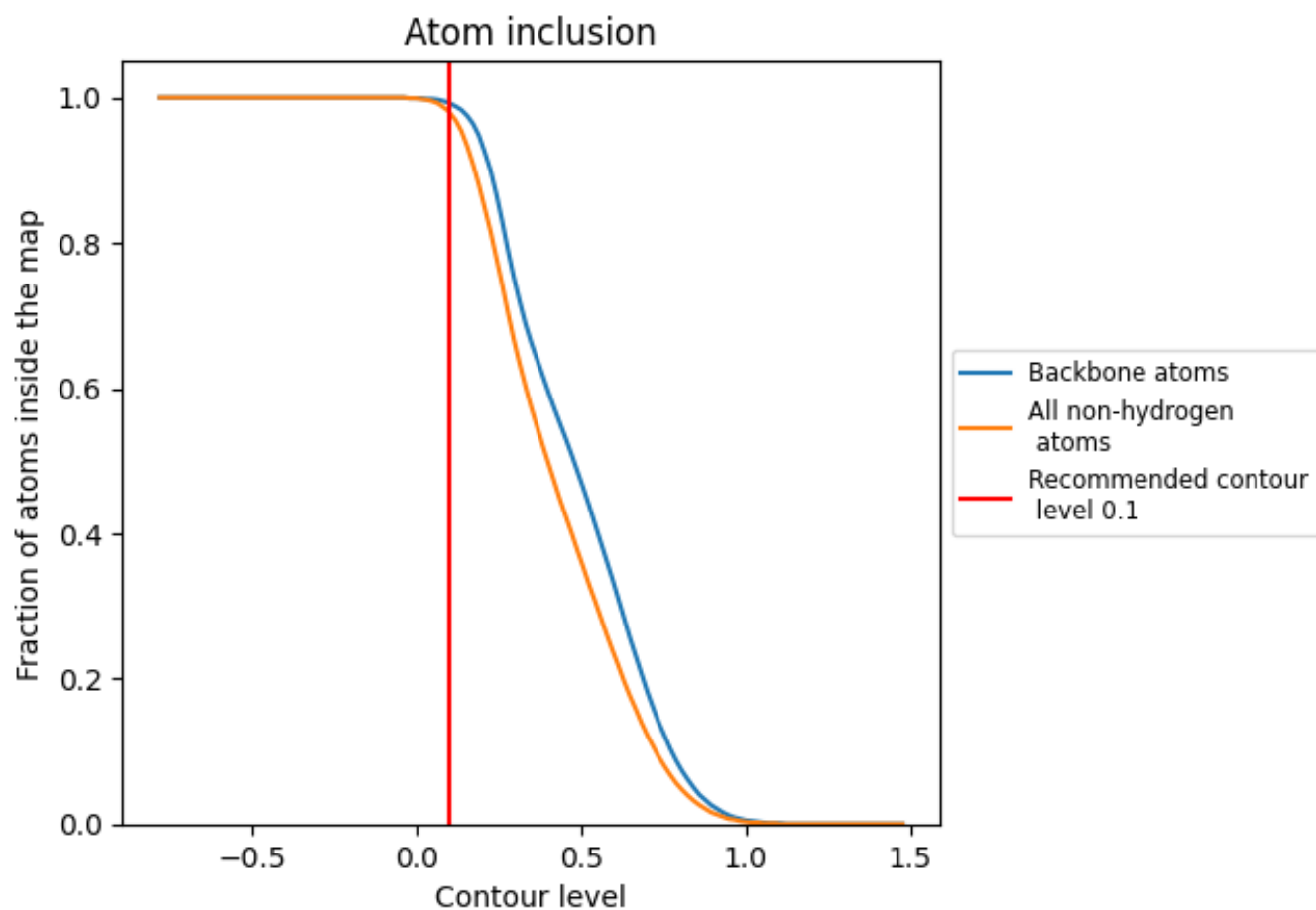
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.1).







































































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 (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9810	 0.4980
A	 0.9070	 0.3820
C1	 0.9400	 0.4770
E1	 0.9870	 0.5640
F1	 0.9840	 0.5370
G1	 0.9880	 0.5390
H1	 0.9770	 0.5290
I1	 0.9860	 0.5410
J1	 0.9880	 0.5400
K1	 0.9790	 0.4980
P1	 0.9880	 0.4520
Q1	 0.9890	 0.4560
R1	 0.9820	 0.4260
S1	 0.9780	 0.3790
T1	 0.9900	 0.3780
U1	 0.9780	 0.5470
V1	 0.9820	 0.3670
W1	 0.9910	 0.4300
X1	 0.9860	 0.4260
Y1	 0.9900	 0.4110
a1	 0.9840	 0.5560
e1	 0.9790	 0.5530
f1	 0.9910	 0.5590
g1	 0.9820	 0.5630
h1	 0.9840	 0.5390
i1	 0.9860	 0.5380
j1	 0.9780	 0.5300
k1	 0.9890	 0.5440
l1	 0.9840	 0.5380
m1	 0.9800	 0.5010
r1	 0.9860	 0.4470
s1	 0.9890	 0.4560
t1	 0.9870	 0.4320
u1	 0.9830	 0.4140
v1	 0.9760	 0.3780



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Chain	Atom inclusion	Q-score
w1	 0.9820	 0.3860
x1	 0.9680	 0.3610
y1	 0.9850	 0.4160
z1	 0.9780	 0.4070