



Full wwPDB EM Validation Report ⓘ

Mar 28, 2026 – 09:16 AM UTC

PDB ID : 7TKM / pdb_00007tkm
EMDB ID : EMD-25974
Title : Yeast ATP synthase State 3binding(b) with 10 mM ATP backbone model
Authors : Guo, H.; Rubinstein, J.L.
Deposited on : 2022-01-17
Resolution : 4.50 Å(reported)
Based on initial model : 2HLD

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:

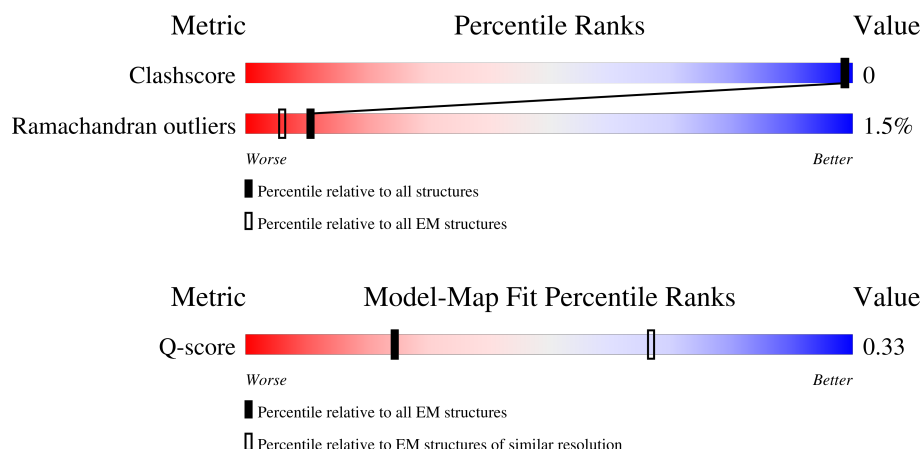
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & 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 4.50 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	-
Q-score	-	25397	2937 (4.00 - 5.00)

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	0	76	11% 96% 5%
1	1	76	11% 93% 5%
1	2	76	97% 5%
1	3	76	5% 88% 8%
1	4	76	11% 93% 5%

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Mol	Chain	Length	Quality of chain
1	5	76	
1	6	76	
1	7	76	
1	8	76	
1	9	76	
2	A	510	
2	B	510	
2	C	510	
3	D	478	
3	E	478	
3	F	478	
4	G	278	
5	H	138	
6	I	61	
7	O	195	
8	T	249	
9	U	209	
10	V	173	
11	W	95	
12	X	92	
13	Y	59	
14	Z	48	

2 Entry composition [i](#)

There are 14 unique types of molecules in this entry. The entry contains 20227 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 ATP synthase subunit 9.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	0	75	Total	C	N	O	0	0
			300	150	75	75		
1	1	75	Total	C	N	O	0	0
			300	150	75	75		
1	2	75	Total	C	N	O	0	0
			300	150	75	75		
1	3	74	Total	C	N	O	0	0
			296	148	74	74		
1	4	75	Total	C	N	O	0	0
			300	150	75	75		
1	5	75	Total	C	N	O	0	0
			300	150	75	75		
1	6	74	Total	C	N	O	0	0
			296	148	74	74		
1	7	73	Total	C	N	O	0	0
			292	146	73	73		
1	8	75	Total	C	N	O	0	0
			300	150	75	75		
1	9	74	Total	C	N	O	0	0
			296	148	74	74		

- Molecule 2 is a protein called ATP synthase subunit alpha.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	A	499	Total	C	N	O	0	0
			1996	998	499	499		
2	B	507	Total	C	N	O	0	0
			2028	1014	507	507		
2	C	496	Total	C	N	O	0	0
			1984	992	496	496		

- Molecule 3 is a protein called ATP synthase subunit beta.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	D	468	Total	C	N	O	0	0
			1872	936	468	468		
3	E	469	Total	C	N	O	0	0
			1876	938	469	469		
3	F	470	Total	C	N	O	0	0
			1880	940	470	470		

- Molecule 4 is a protein called ATP synthase subunit gamma.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	G	265	Total	C	N	O	0	0
			1059	530	265	264		

- Molecule 5 is a protein called ATP synthase subunit delta.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	H	120	Total	C	N	O	0	0
			480	240	120	120		

- Molecule 6 is a protein called ATP synthase subunit epsilon.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	I	48	Total	C	N	O	0	0
			193	96	48	49		

- Molecule 7 is a protein called ATP synthase subunit 5.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	O	187	Total	C	N	O	0	0
			748	374	187	187		

- Molecule 8 is a protein called ATP synthase subunit a.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	T	224	Total	C	N	O	0	0
			897	448	224	225		

- Molecule 9 is a protein called ATP synthase subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	U	155	Total	C	N	O	0	0
			620	310	155	155		

- Molecule 10 is a protein called ATP synthase subunit d.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	V	171	Total	C	N	O	0	0
			685	342	171	172		

- Molecule 11 is a protein called ATP synthase subunit f.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	W	85	Total	C	N	O	0	0
			340	170	85	85		

- Molecule 12 is a protein called ATP synthase subunit H.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	X	62	Total	C	N	O	0	0
			248	124	62	62		

- Molecule 13 is a protein called ATP synthase subunit J.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	Y	37	Total	C	N	O	0	0
			148	74	37	37		

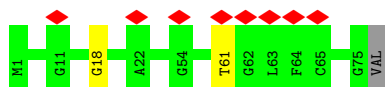
- Molecule 14 is a protein called ATP synthase protein 8.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	Z	48	Total	C	N	O	0	0
			193	96	48	49		

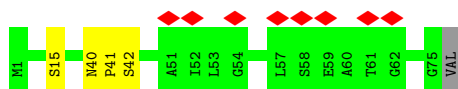
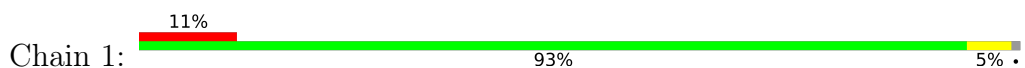
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: ATP synthase subunit 9



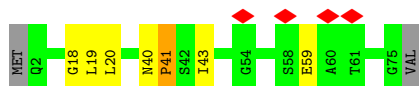
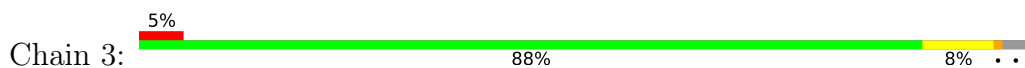
- Molecule 1: ATP synthase subunit 9



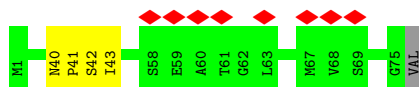
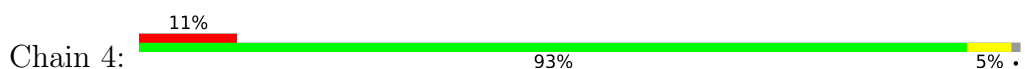
- Molecule 1: ATP synthase subunit 9



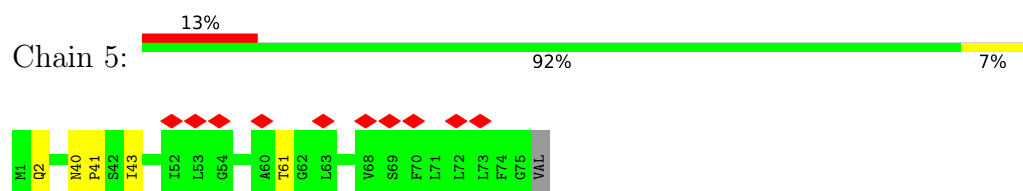
- Molecule 1: ATP synthase subunit 9



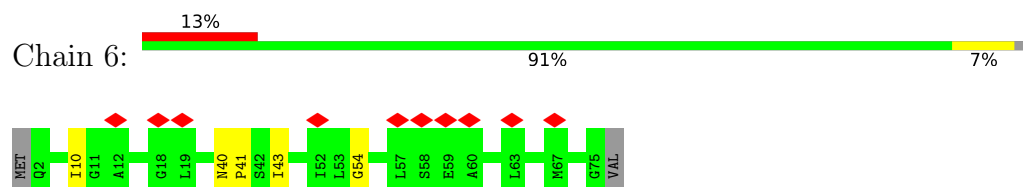
- Molecule 1: ATP synthase subunit 9



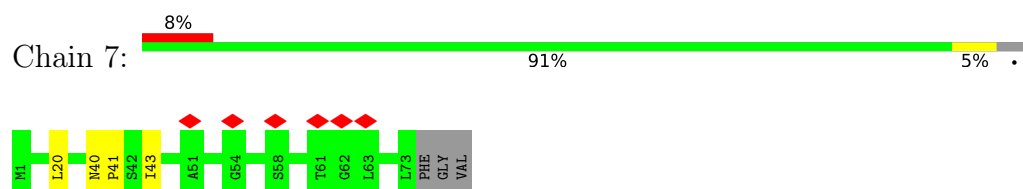
- Molecule 1: ATP synthase subunit 9



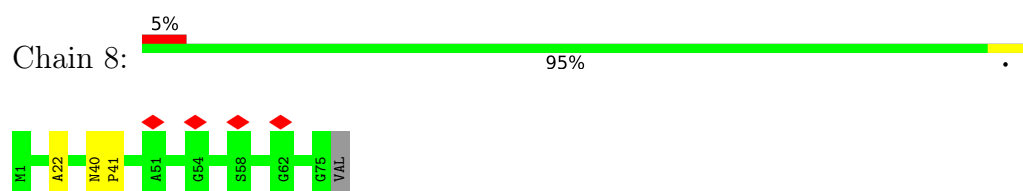
- Molecule 1: ATP synthase subunit 9



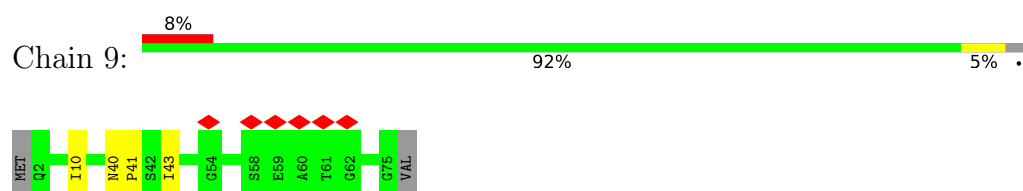
- Molecule 1: ATP synthase subunit 9



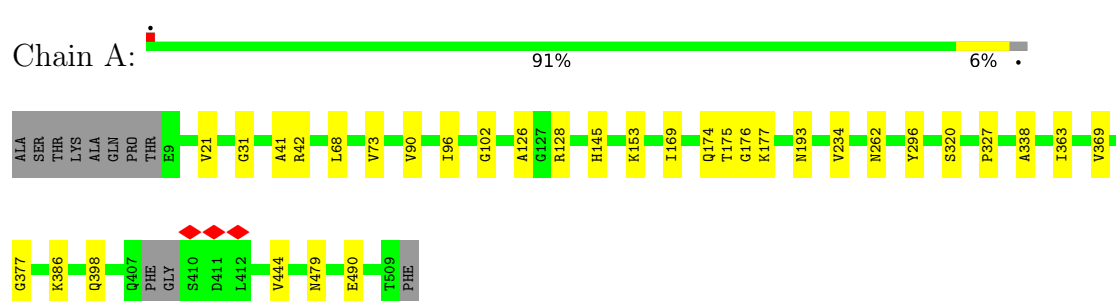
- Molecule 1: ATP synthase subunit 9



- Molecule 1: ATP synthase subunit 9

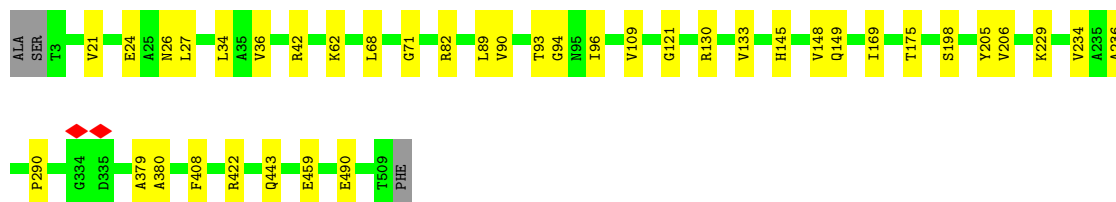


- Molecule 2: ATP synthase subunit alpha



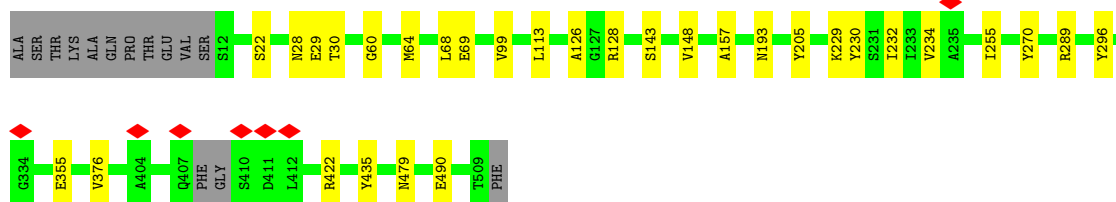
- Molecule 2: ATP synthase subunit alpha

Chain B:  92% 8% .



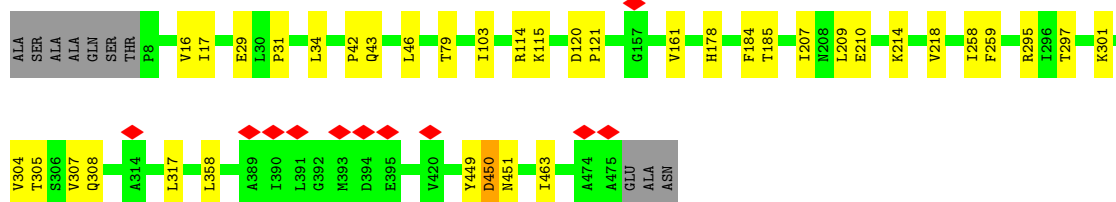
- Molecule 2: ATP synthase subunit alpha

Chain C:  91% 6% .



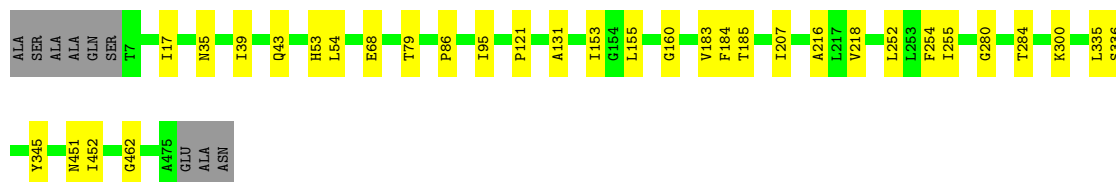
- Molecule 3: ATP synthase subunit beta

Chain D:  90% 8% .



- Molecule 3: ATP synthase subunit beta

Chain E:  91% 7% .



- Molecule 3: ATP synthase subunit beta

Chain F:  91% 7% .





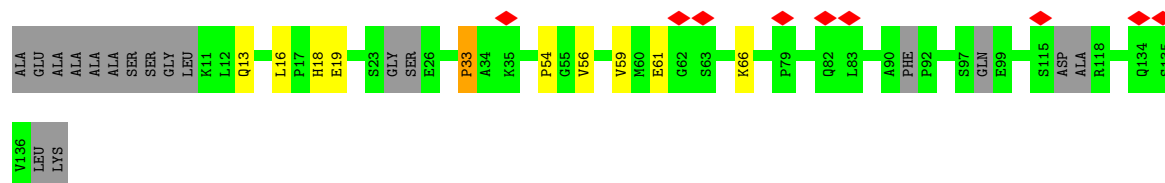
- Molecule 4: ATP synthase subunit gamma

Chain G: 89% 6% 5%



- Molecule 5: ATP synthase subunit delta

Chain H: 7% 80% 7% 13%



- Molecule 6: ATP synthase subunit epsilon

Chain I: 8% 77% 21%



- Molecule 7: ATP synthase subunit 5

Chain O: 87% 9%



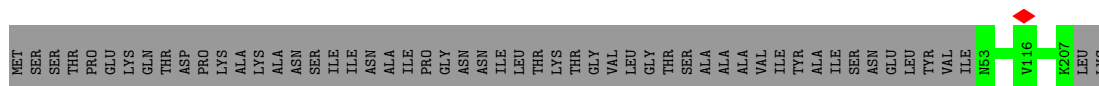
- Molecule 8: ATP synthase subunit a

Chain T: 87% 10%

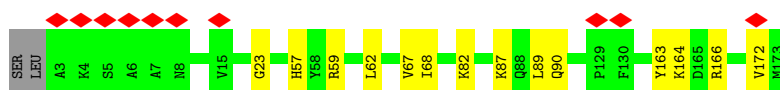
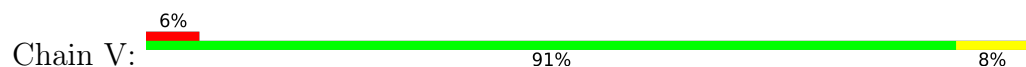


- Molecule 9: ATP synthase subunit 4

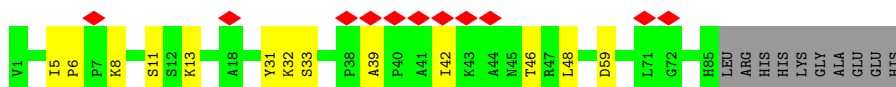
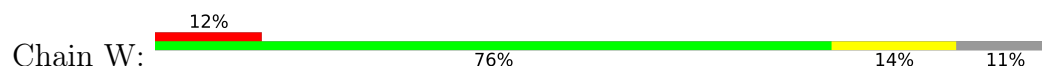
Chain U: 74% 26%



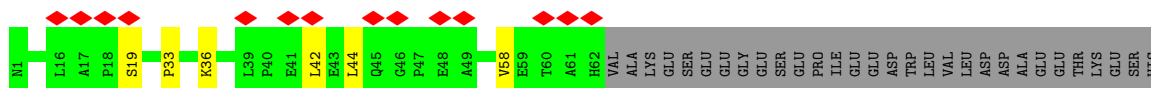
- Molecule 10: ATP synthase subunit d



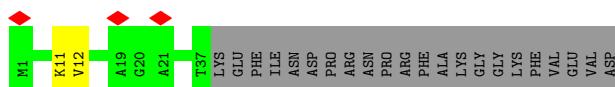
- Molecule 11: ATP synthase subunit f



- Molecule 12: ATP synthase subunit H



- Molecule 13: ATP synthase subunit J



- Molecule 14: ATP synthase protein 8



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	21305	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 ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1100	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	103896	Depositor
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.202	Depositor
Minimum map value	-0.707	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.117	Depositor
Recommended contour level	0.64	Depositor
Map size (Å)	344.96, 344.96, 344.96	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3475, 1.3475, 1.3475	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0	1.19	0/299	1.99	4/372 (1.1%)
1	1	1.23	0/299	1.98	2/372 (0.5%)
1	2	1.26	0/299	2.05	2/372 (0.5%)
1	3	1.27	0/295	1.95	11/367 (3.0%)
1	4	1.24	0/299	2.03	2/372 (0.5%)
1	5	1.26	0/299	2.02	5/372 (1.3%)
1	6	1.25	0/295	2.11	6/367 (1.6%)
1	7	1.25	0/291	2.05	4/362 (1.1%)
1	8	1.25	0/299	2.04	2/372 (0.5%)
1	9	1.25	0/295	2.06	4/367 (1.1%)
2	A	1.58	0/1994	1.74	27/2489 (1.1%)
2	B	1.55	1/2027 (0.0%)	1.71	35/2532 (1.4%)
2	C	1.59	3/1982 (0.2%)	1.77	34/2474 (1.4%)
3	D	1.60	1/1871 (0.1%)	1.84	33/2337 (1.4%)
3	E	1.59	0/1875	1.75	30/2342 (1.3%)
3	F	1.56	1/1879 (0.1%)	1.79	35/2347 (1.5%)
4	G	1.40	0/1057	1.87	14/1318 (1.1%)
5	H	1.43	0/475	1.83	7/585 (1.2%)
6	I	1.39	0/190	1.77	0/231
7	O	1.57	1/747 (0.1%)	1.77	13/932 (1.4%)
8	T	1.34	0/896	1.65	9/1117 (0.8%)
9	U	1.34	0/619	1.74	0/772
10	V	1.42	0/684	1.91	11/852 (1.3%)
11	W	1.31	0/339	1.91	7/422 (1.7%)
12	X	1.40	0/247	2.10	4/307 (1.3%)
13	Y	1.26	0/147	1.64	0/182
14	Z	1.32	0/192	1.57	3/237 (1.3%)
All	All	1.49	7/20191 (0.0%)	1.82	304/25171 (1.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	1	0	1
1	3	0	1
1	4	0	1
1	5	0	1
1	6	0	1
1	7	0	1
1	8	0	1
1	9	0	1
3	E	0	1
3	F	0	1
5	H	0	1
All	All	0	11

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	O	78	HIS	CA-C	-6.08	1.48	1.53
2	C	157	ALA	CA-C	-5.47	1.48	1.52
2	C	28	ASN	N-CA	-5.44	1.42	1.47
3	D	214	LYS	CA-C	-5.35	1.49	1.52
3	F	312	VAL	N-CA	-5.33	1.42	1.46
2	C	28	ASN	CA-C	-5.09	1.48	1.52
2	B	236	ALA	CA-C	-5.08	1.47	1.53

All (304) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	V	67	VAL	N-CA-C	-11.97	102.34	113.71
10	V	59	ARG	N-CA-C	-9.95	103.28	114.62
7	O	33	ILE	N-CA-C	-9.68	103.49	111.81
2	A	398	GLN	N-CA-C	-9.21	102.17	113.41
10	V	172	VAL	N-CA-C	-9.20	101.82	111.58
4	G	204	ASN	CA-C-N	9.06	125.95	120.24
4	G	204	ASN	C-N-CA	9.06	125.95	120.24
2	C	29	GLU	CA-C-N	8.94	137.79	121.70
2	C	29	GLU	C-N-CA	8.94	137.79	121.70
3	E	95	ILE	N-CA-C	-8.82	95.75	108.11
7	O	150	GLY	N-CA-C	-8.78	104.19	113.58
7	O	176	VAL	N-CA-C	-8.28	96.20	108.12
3	D	121	PRO	CA-C-O	-8.17	115.02	120.90
3	D	258	ILE	N-CA-C	-8.10	103.25	113.22
2	A	96	ILE	N-CA-C	-7.96	101.22	110.21
3	D	103	ILE	N-CA-C	-7.87	105.19	112.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	376	VAL	N-CA-C	-7.86	105.52	112.12
2	B	234	VAL	N-CA-C	-7.80	97.25	108.17
3	D	43	GLN	N-CA-C	-7.76	103.87	112.72
5	H	56	VAL	N-CA-C	-7.67	97.37	108.11
10	V	163	TYR	N-CA-C	-7.58	101.09	112.54
7	O	84	TYR	N-CA-C	-7.56	102.39	111.69
3	F	121	PRO	CA-C-O	-7.55	115.47	120.90
2	B	42	ARG	N-CA-C	-7.43	95.10	108.48
2	A	193	ASN	N-CA-C	-7.43	103.81	113.17
3	D	305	THR	N-CA-C	-7.41	97.36	108.99
2	B	27	LEU	N-CA-C	-7.40	102.24	112.30
3	F	53	HIS	N-CA-C	-7.37	97.72	109.59
7	O	101	PHE	N-CA-C	-7.31	103.20	112.93
3	D	207	ILE	N-CA-C	-7.27	97.66	108.12
3	E	284	THR	N-CA-C	-7.16	101.46	112.99
2	A	175	THR	N-CA-C	-7.15	104.92	112.93
5	H	61	GLU	N-CA-C	-7.15	96.61	108.34
3	D	29	GLU	N-CA-C	-7.08	103.29	113.21
10	V	87	LYS	N-CA-C	-7.06	104.79	113.41
11	W	6	PRO	N-CA-C	7.02	119.27	110.70
2	B	175	THR	N-CA-C	-7.01	105.54	112.97
2	B	68	LEU	N-CA-C	-6.90	95.94	108.02
4	G	124	ASN	N-CA-C	-6.90	104.17	112.59
3	F	312	VAL	N-CA-C	-6.88	100.23	107.60
2	C	128	ARG	N-CA-C	-6.85	97.73	108.90
2	A	42	ARG	N-CA-C	-6.84	97.21	108.76
8	T	140	VAL	N-CA-C	-6.83	105.87	112.29
2	B	422	ARG	CA-C-N	6.82	127.55	119.98
2	B	422	ARG	C-N-CA	6.82	127.55	119.98
2	C	28	ASN	N-CA-C	-6.81	103.67	113.21
3	E	252	LEU	N-CA-C	-6.79	98.75	109.07
2	B	109	VAL	N-CA-C	-6.79	98.59	108.71
2	A	296	TYR	N-CA-C	-6.78	101.57	110.39
2	A	479	ASN	N-CA-C	-6.78	104.75	113.16
3	D	304	VAL	N-CA-C	-6.76	102.68	110.05
2	A	363	ILE	N-CA-C	-6.72	96.60	107.28
2	C	479	ASN	N-CA-C	-6.69	105.12	113.28
3	D	307	VAL	N-CA-C	-6.67	98.84	108.17
11	W	48	LEU	N-CA-C	-6.66	103.76	114.09
2	A	386	LYS	N-CA-C	-6.66	104.80	113.12
3	E	218	VAL	N-CA-C	-6.63	98.57	108.12
10	V	164	LYS	N-CA-C	-6.61	104.37	114.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	G	2	THR	N-CA-C	-6.61	104.00	111.14
3	F	255	ILE	N-CA-C	-6.58	98.14	108.86
3	E	255	ILE	N-CA-C	-6.57	98.58	108.17
2	B	82	ARG	N-CA-C	-6.56	105.03	113.16
2	B	26	ASN	N-CA-C	-6.55	105.17	113.02
2	C	99	VAL	N-CA-C	-6.54	103.83	109.19
7	O	180	ILE	N-CA-C	-6.52	106.20	111.81
3	F	89	ARG	N-CA-C	-6.52	105.33	113.28
2	A	234	VAL	N-CA-C	-6.51	99.09	108.53
3	D	114	ARG	N-CA-C	-6.50	99.45	109.52
3	F	311	TYR	N-CA-C	-6.49	98.32	108.90
2	B	62	LYS	N-CA-C	-6.49	98.83	109.40
3	F	422	GLU	N-CA-C	-6.42	104.93	112.89
2	B	443	GLN	N-CA-C	-6.41	105.99	113.88
2	A	128	ARG	N-CA-C	-6.39	99.41	109.50
3	D	120	ASP	CA-C-N	6.31	124.27	119.66
3	D	120	ASP	C-N-CA	6.31	124.27	119.66
2	B	206	VAL	N-CA-C	-6.30	99.29	108.11
3	E	17	ILE	N-CA-C	-6.30	98.05	107.37
12	X	33	PRO	N-CA-C	-6.30	103.02	110.70
5	H	13	GLN	N-CA-C	-6.24	98.24	108.41
1	9	10	ILE	CA-C-N	6.20	126.86	119.98
1	9	10	ILE	C-N-CA	6.20	126.86	119.98
7	O	192	GLU	N-CA-C	-6.17	105.79	113.38
2	B	408	PHE	N-CA-C	-6.16	105.76	113.28
8	T	80	LYS	N-CA-C	-6.15	104.56	114.09
2	B	133	VAL	N-CA-C	-6.14	98.62	107.78
2	B	169	ILE	N-CA-C	-6.12	99.06	107.99
10	V	57	HIS	N-CA-C	-6.11	104.65	113.21
3	D	46	LEU	N-CA-C	-6.08	98.99	108.90
4	G	127	LYS	N-CA-C	-6.06	105.79	113.43
8	T	74	LYS	N-CA-C	-6.04	104.62	112.23
1	6	10	ILE	CA-C-N	6.03	126.68	119.98
1	6	10	ILE	C-N-CA	6.03	126.68	119.98
3	D	185	THR	N-CA-C	-6.03	99.36	109.07
4	G	164	ILE	N-CA-C	-6.00	99.08	108.86
2	C	232	ILE	N-CA-C	-5.99	99.59	108.45
2	C	422	ARG	CA-C-N	5.97	126.57	120.00
2	C	422	ARG	C-N-CA	5.97	126.57	120.00
3	D	317	LEU	N-CA-C	-5.94	106.07	113.38
2	B	490	GLU	N-CA-C	-5.93	99.68	108.99
2	A	169	ILE	N-CA-C	-5.92	99.01	107.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	H	16	LEU	N-CA-C	-5.92	101.38	108.25
3	D	17	ILE	N-CA-C	-5.92	99.35	107.99
10	V	23	GLY	N-CA-C	-5.91	107.01	115.64
3	E	336	SER	CA-C-N	5.91	128.79	120.28
3	E	336	SER	C-N-CA	5.91	128.79	120.28
2	C	234	VAL	N-CA-C	-5.89	100.09	108.58
3	F	152	LYS	CA-C-N	5.88	128.53	120.35
3	F	152	LYS	C-N-CA	5.88	128.53	120.35
12	X	19	SER	N-CA-C	-5.88	104.98	113.21
3	E	53	HIS	N-CA-C	-5.86	99.64	109.07
11	W	13	LYS	N-CA-C	-5.85	106.06	112.72
1	0	61	THR	CA-C-N	5.83	126.46	119.98
1	0	61	THR	C-N-CA	5.83	126.46	119.98
11	W	33	SER	N-CA-C	-5.83	98.38	110.80
2	A	73	VAL	N-CA-C	-5.82	99.79	108.46
3	F	329	LEU	CA-C-N	5.79	127.97	120.44
3	F	329	LEU	C-N-CA	5.79	127.97	120.44
3	F	357	LEU	N-CA-C	-5.79	105.42	112.88
3	E	43	GLN	N-CA-C	-5.77	106.22	113.72
8	T	81	ASN	N-CA-C	-5.77	105.44	112.88
3	F	42	PRO	N-CA-C	-5.76	108.69	114.68
1	4	43	ILE	CA-C-N	5.76	128.79	120.38
1	4	43	ILE	C-N-CA	5.76	128.79	120.38
7	O	174	LYS	N-CA-C	-5.74	99.05	108.76
2	C	69	GLU	N-CA-C	-5.73	103.44	110.31
3	E	39	ILE	N-CA-C	-5.71	100.19	108.36
11	W	6	PRO	CA-C-O	-5.71	112.28	120.56
3	F	162	GLY	N-CA-C	-5.71	105.48	114.10
2	B	148	VAL	N-CA-C	-5.69	99.30	107.78
3	F	425	THR	N-CA-C	-5.69	98.68	110.80
4	G	113	LYS	N-CA-C	5.66	117.53	111.36
2	C	270	TYR	N-CA-C	-5.66	99.51	108.73
4	G	130	ILE	N-CA-C	-5.64	99.37	107.78
3	D	218	VAL	N-CA-C	-5.63	99.43	107.77
14	Z	7	PHE	N-CA-C	-5.63	105.76	113.30
8	T	101	LEU	N-CA-C	-5.62	105.52	112.72
2	C	193	ASN	CA-C-N	5.61	125.31	119.92
2	C	193	ASN	C-N-CA	5.61	125.31	119.92
2	C	289	ARG	N-CA-C	-5.60	100.90	109.64
3	F	136	THR	N-CA-C	-5.60	106.81	113.97
2	A	296	TYR	CA-C-N	5.59	125.59	119.89
2	A	296	TYR	C-N-CA	5.59	125.59	119.89

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	296	TYR	CA-C-N	5.57	126.80	119.84
2	C	296	TYR	C-N-CA	5.57	126.80	119.84
3	E	155	LEU	N-CA-C	-5.56	100.91	109.52
2	A	262	ASN	N-CA-C	-5.55	106.28	113.16
2	B	93	THR	N-CA-C	-5.55	105.31	111.36
2	A	31	GLY	N-CA-C	-5.54	103.05	111.14
1	3	19	LEU	CA-C-N	5.53	127.95	120.38
1	3	19	LEU	C-N-CA	5.53	127.95	120.38
3	F	120	ASP	CA-C-N	5.51	123.68	119.66
3	F	120	ASP	C-N-CA	5.51	123.68	119.66
3	F	413	PHE	N-CA-C	-5.51	106.06	112.89
2	C	205	TYR	N-CA-C	-5.51	100.20	109.07
3	F	206	VAL	N-CA-C	-5.49	105.18	110.72
4	G	100	ASN	N-CA-C	-5.49	106.26	113.17
2	C	296	TYR	N-CA-C	-5.49	100.62	109.40
2	A	444	VAL	CA-C-O	-5.48	115.02	118.69
3	E	79	THR	N-CA-C	-5.47	105.73	112.90
3	F	214	LYS	N-CA-C	-5.47	106.39	112.57
3	E	254	PHE	N-CA-C	-5.46	100.12	109.24
2	B	130	ARG	N-CA-C	-5.45	101.00	109.72
1	1	15	SER	CA-C-N	5.45	128.13	120.28
1	1	15	SER	C-N-CA	5.45	128.13	120.28
3	E	335	LEU	N-CA-C	-5.44	100.03	108.90
3	F	185	THR	N-CA-C	-5.44	99.56	108.76
2	B	205	TYR	N-CA-C	-5.44	100.32	109.07
3	F	86	PRO	N-CA-C	-5.43	101.28	112.47
2	B	34	LEU	N-CA-C	-5.43	107.91	114.75
7	O	154	LYS	N-CA-C	-5.42	101.04	109.72
3	F	247	GLU	N-CA-C	-5.42	106.72	113.38
2	B	198	SER	N-CA-C	-5.41	106.35	113.17
3	E	300	LYS	N-CA-C	-5.41	106.45	113.16
2	C	68	LEU	N-CA-C	-5.41	98.42	107.99
1	7	20	LEU	CA-C-N	5.41	125.98	119.98
1	7	20	LEU	C-N-CA	5.41	125.98	119.98
3	F	289	MET	CA-C-N	5.40	125.98	119.98
3	F	289	MET	C-N-CA	5.40	125.98	119.98
2	C	64	MET	N-CA-C	-5.40	101.21	109.41
3	D	450	ASP	N-CA-C	-5.39	99.32	110.80
3	E	121	PRO	CA-C-N	5.39	125.39	119.89
3	E	121	PRO	C-N-CA	5.39	125.39	119.89
2	A	68	LEU	N-CA-C	-5.38	99.75	108.52
1	5	43	ILE	CA-C-N	5.37	128.22	120.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	5	43	ILE	C-N-CA	5.37	128.22	120.38
3	D	184	PHE	N-CA-C	-5.37	99.97	108.73
1	6	54	GLY	CA-C-N	5.37	127.42	120.44
1	6	54	GLY	C-N-CA	5.37	127.42	120.44
2	C	60	GLY	N-CA-C	-5.36	107.72	115.27
3	E	153	ILE	N-CA-C	-5.35	100.75	108.89
5	H	59	VAL	N-CA-C	-5.35	100.42	108.12
2	A	90	VAL	N-CA-C	-5.34	100.69	108.17
1	5	61	THR	CA-C-N	5.34	125.91	119.98
1	5	61	THR	C-N-CA	5.34	125.91	119.98
1	5	2	GLN	N-CA-C	-5.33	105.55	111.36
4	G	168	ASP	N-CA-C	-5.33	102.94	109.65
2	B	89	LEU	N-CA-C	-5.32	101.60	110.17
3	E	185	THR	N-CA-C	-5.32	99.61	108.34
4	G	74	ILE	N-CA-C	-5.32	100.54	108.46
7	O	151	LYS	N-CA-C	-5.31	99.76	108.41
2	B	96	ILE	N-CA-C	-5.30	102.76	109.80
3	E	184	PHE	N-CA-C	-5.29	100.27	108.90
3	E	54	LEU	N-CA-C	-5.29	106.21	113.30
5	H	66	LYS	N-CA-C	-5.29	100.41	109.24
3	F	21	VAL	N-CA-C	-5.29	100.45	108.17
8	T	112	SER	N-CA-C	-5.29	106.88	113.38
4	G	75	VAL	N-CA-C	-5.28	100.25	108.86
10	V	68	ILE	N-CA-C	-5.28	104.36	111.44
8	T	113	ALA	N-CA-C	-5.27	106.62	113.16
3	D	79	THR	N-CA-C	-5.27	107.02	113.50
8	T	49	ASN	CA-C-N	5.27	131.60	121.54
8	T	49	ASN	C-N-CA	5.27	131.60	121.54
3	D	449	TYR	N-CA-C	-5.26	101.12	109.59
3	E	183	VAL	N-CA-C	-5.25	100.57	108.12
1	0	18	GLY	CA-C-N	5.24	127.83	120.28
1	0	18	GLY	C-N-CA	5.24	127.83	120.28
3	D	42	PRO	N-CA-C	-5.24	107.80	114.35
2	B	24	GLU	N-CA-C	-5.24	101.33	109.24
2	B	290	PRO	N-CA-C	5.23	117.08	110.70
1	2	15	SER	CA-C-N	5.22	127.80	120.28
1	2	15	SER	C-N-CA	5.22	127.80	120.28
3	F	22	ASP	N-CA-C	-5.22	101.64	109.95
2	B	94	GLY	N-CA-C	-5.22	108.07	115.43
2	C	143	SER	CA-C-N	5.21	127.49	120.50
2	C	143	SER	C-N-CA	5.21	127.49	120.50
2	C	490	GLU	N-CA-C	-5.21	100.81	108.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	259	PHE	N-CA-C	-5.21	105.68	111.36
3	D	178	HIS	N-CA-C	-5.21	106.05	112.72
3	F	358	LEU	N-CA-C	-5.20	107.11	112.93
2	A	490	GLU	N-CA-C	-5.20	99.86	108.75
3	F	17	ILE	N-CA-C	-5.19	98.55	109.34
3	D	210	GLU	N-CA-C	-5.18	106.96	113.28
10	V	82	LYS	N-CA-C	-5.18	100.86	108.79
1	3	18	GLY	CA-C-N	5.17	127.73	120.28
1	3	18	GLY	C-N-CA	5.17	127.73	120.28
1	3	41	PRO	N-CA-C	5.17	123.12	112.47
3	F	284	THR	N-CA-C	-5.17	106.82	112.72
2	B	145	HIS	N-CA-C	-5.16	105.99	113.21
2	B	149	GLN	N-CA-C	-5.15	100.01	108.41
1	6	43	ILE	CA-C-N	5.15	127.44	120.38
1	6	43	ILE	C-N-CA	5.15	127.44	120.38
3	D	301	LYS	N-CA-C	-5.15	107.54	113.88
5	H	33	PRO	N-CA-C	-5.15	101.86	112.47
3	E	207	ILE	N-CA-C	-5.15	100.48	107.99
1	9	43	ILE	CA-C-N	5.14	127.17	120.28
1	9	43	ILE	C-N-CA	5.14	127.17	120.28
3	E	452	ILE	CA-C-N	5.14	125.14	119.90
3	E	452	ILE	C-N-CA	5.14	125.14	119.90
2	B	121	GLY	CA-C-N	5.14	126.26	119.84
2	B	121	GLY	C-N-CA	5.14	126.26	119.84
3	D	161	VAL	N-CA-C	-5.13	105.36	112.50
2	A	177	LYS	CA-C-N	5.13	127.16	120.28
2	A	177	LYS	C-N-CA	5.13	127.16	120.28
1	3	43	ILE	CA-C-N	5.13	127.87	120.38
1	3	43	ILE	C-N-CA	5.13	127.87	120.38
12	X	42	LEU	CA-C-N	5.13	128.49	120.75
12	X	42	LEU	C-N-CA	5.13	128.49	120.75
2	C	355	GLU	CA-C-N	5.12	127.14	120.28
2	C	355	GLU	C-N-CA	5.12	127.14	120.28
3	D	463	ILE	CA-C-N	5.12	127.14	120.28
3	D	463	ILE	C-N-CA	5.12	127.14	120.28
1	3	20	LEU	CA-C-N	5.11	125.62	120.00
1	3	20	LEU	C-N-CA	5.11	125.62	120.00
3	E	216	ALA	N-CA-C	-5.11	101.61	109.52
2	A	369	VAL	N-CA-C	-5.10	107.87	113.43
2	C	113	LEU	N-CA-C	-5.10	106.83	113.16
1	8	22	ALA	CA-C-N	5.10	125.60	119.94
1	8	22	ALA	C-N-CA	5.10	125.60	119.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	35	ASN	N-CA-C	-5.10	103.95	110.53
3	D	295	ARG	N-CA-C	-5.10	106.37	112.59
10	V	90	GLN	N-CA-C	-5.09	107.13	113.55
4	G	73	LEU	N-CA-C	-5.09	101.86	109.95
7	O	7	PRO	CA-C-N	5.09	125.62	120.38
7	O	7	PRO	C-N-CA	5.09	125.62	120.38
11	W	39	ALA	CA-C-N	5.09	125.00	119.76
11	W	39	ALA	C-N-CA	5.09	125.00	119.76
14	Z	5	VAL	CA-C-N	5.09	125.08	119.89
14	Z	5	VAL	C-N-CA	5.09	125.08	119.89
2	B	90	VAL	N-CA-C	-5.08	100.89	108.46
2	C	148	VAL	N-CA-C	-5.08	100.58	108.86
2	A	41	ALA	N-CA-C	-5.08	101.65	109.52
2	A	21	VAL	N-CA-C	-5.07	100.34	107.75
3	F	307	VAL	N-CA-C	-5.07	100.35	107.75
4	G	213	THR	N-CA-C	-5.07	107.10	113.28
1	3	59	GLU	CA-C-N	5.06	127.07	120.28
1	3	59	GLU	C-N-CA	5.06	127.07	120.28
3	F	336	SER	CA-C-N	5.06	127.06	120.28
3	F	336	SER	C-N-CA	5.06	127.06	120.28
2	B	459	GLU	CA-C-N	5.06	127.06	120.28
2	B	459	GLU	C-N-CA	5.06	127.06	120.28
2	C	22	SER	CA-C-N	5.04	127.04	120.28
2	C	22	SER	C-N-CA	5.04	127.04	120.28
3	D	308	GLN	N-CA-C	-5.04	101.71	109.52
2	A	377	GLY	N-CA-C	-5.03	108.42	114.66
7	O	52	LYS	N-CA-C	-5.03	100.31	108.41
3	D	115	LYS	CA-C-N	5.03	124.96	119.78
3	D	115	LYS	C-N-CA	5.03	124.96	119.78
3	F	254	PHE	N-CA-C	-5.02	100.53	109.06
3	E	160	GLY	CA-C-N	5.02	127.33	120.46
3	E	160	GLY	C-N-CA	5.02	127.33	120.46
1	7	43	ILE	CA-C-N	5.01	127.24	120.38
1	7	43	ILE	C-N-CA	5.01	127.24	120.38
2	C	255	ILE	CA-C-N	5.01	125.54	119.98
2	C	255	ILE	C-N-CA	5.01	125.54	119.98

There are no chirality outliers.

All (11) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1	40	ASN	Peptide

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Mol	Chain	Res	Type	Group
1	3	40	ASN	Peptide
1	4	40	ASN	Peptide
1	5	40	ASN	Peptide
1	6	40	ASN	Peptide
1	7	40	ASN	Peptide
1	8	40	ASN	Peptide
1	9	40	ASN	Peptide
3	E	345	TYR	Peptide
3	F	256	ASP	Peptide
5	H	54	PRO	Peptide

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	0	300	0	95	0	0
1	1	300	0	95	0	0
1	2	300	0	95	0	0
1	3	296	0	91	0	0
1	4	300	0	95	0	0
1	5	300	0	95	0	0
1	6	296	0	91	0	0
1	7	292	0	91	0	0
1	8	300	0	95	0	0
1	9	296	0	91	0	0
2	A	1996	0	570	2	0
2	B	2028	0	580	0	0
2	C	1984	0	567	0	0
3	D	1872	0	537	0	0
3	E	1876	0	537	0	0
3	F	1880	0	538	0	0
4	G	1059	0	277	1	0
5	H	480	0	122	0	0
6	I	193	0	43	0	0
7	O	748	0	205	0	0
8	T	897	0	248	0	0
9	U	620	0	158	0	0
10	V	685	0	173	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	W	340	0	92	0	0
12	X	248	0	61	0	0
13	Y	148	0	40	0	0
14	Z	193	0	49	0	0
All	All	20227	0	5731	3	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 0.

All (3) 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:G:80:ASP:H	4:G:134:GLY:HA3	1.76	0.50
2:A:102:GLY:HA3	2:A:126:ALA:H	1.81	0.46
2:A:174:GLN:C	2:A:176:GLY:H	2.30	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	0	73/76 (96%)	73 (100%)	0	0	100	100
1	1	73/76 (96%)	70 (96%)	1 (1%)	2 (3%)	4	25
1	2	73/76 (96%)	72 (99%)	1 (1%)	0	100	100
1	3	72/76 (95%)	69 (96%)	2 (3%)	1 (1%)	9	39
1	4	73/76 (96%)	70 (96%)	1 (1%)	2 (3%)	4	25
1	5	73/76 (96%)	71 (97%)	1 (1%)	1 (1%)	9	39
1	6	72/76 (95%)	70 (97%)	1 (1%)	1 (1%)	9	39
1	7	71/76 (93%)	69 (97%)	1 (1%)	1 (1%)	9	39

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	8	73/76 (96%)	70 (96%)	2 (3%)	1 (1%)	9	39
1	9	72/76 (95%)	69 (96%)	2 (3%)	1 (1%)	9	39
2	A	495/510 (97%)	475 (96%)	15 (3%)	5 (1%)	12	47
2	B	505/510 (99%)	478 (95%)	21 (4%)	6 (1%)	10	43
2	C	492/510 (96%)	464 (94%)	23 (5%)	5 (1%)	12	47
3	D	466/478 (98%)	443 (95%)	15 (3%)	8 (2%)	7	35
3	E	467/478 (98%)	432 (92%)	29 (6%)	6 (1%)	9	41
3	F	468/478 (98%)	439 (94%)	21 (4%)	8 (2%)	7	35
4	G	261/278 (94%)	249 (95%)	9 (3%)	3 (1%)	11	45
5	H	110/138 (80%)	102 (93%)	5 (4%)	3 (3%)	4	25
6	I	42/61 (69%)	39 (93%)	2 (5%)	1 (2%)	4	27
7	O	185/195 (95%)	160 (86%)	20 (11%)	5 (3%)	4	25
8	T	222/249 (89%)	214 (96%)	8 (4%)	0	100	100
9	U	153/209 (73%)	152 (99%)	1 (1%)	0	100	100
10	V	169/173 (98%)	151 (89%)	15 (9%)	3 (2%)	6	33
11	W	83/95 (87%)	67 (81%)	8 (10%)	8 (10%)	0	8
12	X	60/92 (65%)	51 (85%)	6 (10%)	3 (5%)	1	16
13	Y	35/59 (59%)	31 (89%)	2 (6%)	2 (6%)	1	14
14	Z	46/48 (96%)	43 (94%)	3 (6%)	0	100	100
All	All	4984/5321 (94%)	4693 (94%)	215 (4%)	76 (2%)	11	38

All (76) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	1	41	PRO
1	3	41	PRO
1	4	41	PRO
1	5	41	PRO
1	6	41	PRO
1	7	41	PRO
1	8	41	PRO
1	9	41	PRO
2	A	338	ALA
2	B	379	ALA
2	C	229	LYS

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Mol	Chain	Res	Type
3	D	358	LEU
3	D	450	ASP
3	E	68	GLU
3	E	451	ASN
3	F	29	GLU
3	F	110	LYS
7	O	61	ALA
10	V	62	LEU
10	V	166	ARG
11	W	8	LYS
13	Y	12	VAL
2	B	229	LYS
3	D	209	LEU
3	D	297	THR
3	D	451	ASN
3	F	462	GLY
6	I	48	LYS
11	W	31	TYR
11	W	32	LYS
11	W	42	ILE
12	X	58	VAL
13	Y	11	LYS
2	B	36	VAL
2	B	71	GLY
2	B	380	ALA
2	C	126	ALA
3	E	86	PRO
3	E	131	ALA
3	E	280	GLY
3	F	131	ALA
3	F	426	GLY
5	H	18	HIS
5	H	19	GLU
5	H	33	PRO
7	O	55	HIS
10	V	89	LEU
11	W	11	SER
1	1	42	SER
1	4	42	SER
2	A	153	LYS
2	A	320	SER
2	B	21	VAL

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Mol	Chain	Res	Type
2	C	230	TYR
3	D	16	VAL
3	F	34	LEU
3	F	425	THR
4	G	102	GLN
7	O	98	LEU
11	W	46	THR
12	X	36	LYS
2	A	145	HIS
2	C	30	THR
2	C	435	TYR
3	D	34	LEU
7	O	10	VAL
11	W	59	ASP
2	A	327	PRO
7	O	171	LEU
12	X	44	LEU
3	E	462	GLY
3	F	86	PRO
4	G	123	PRO
4	G	181	PRO
11	W	5	ILE
3	D	31	PRO

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

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.

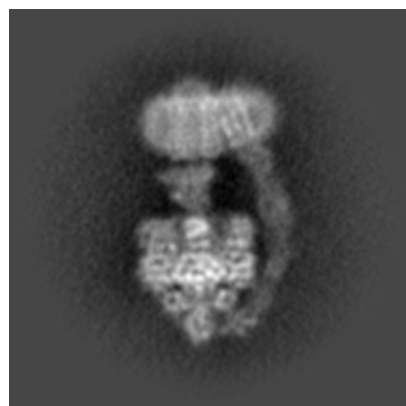
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25974. These allow visual inspection of the internal detail of the map and identification of artifacts.

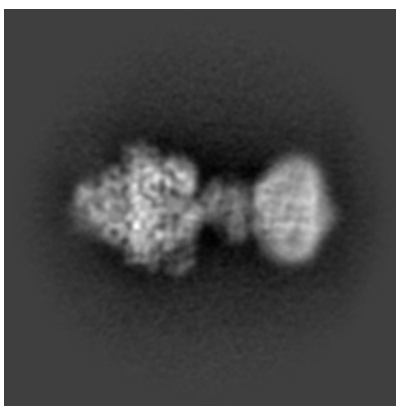
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

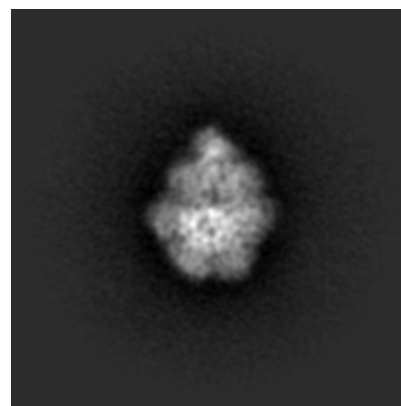
6.1.1 Primary map



X

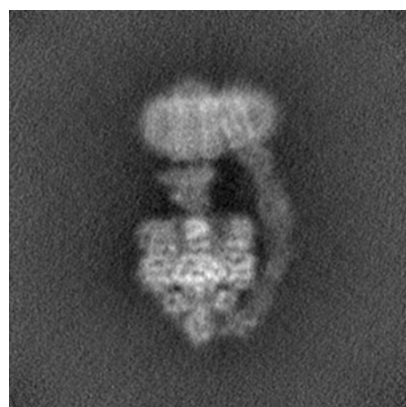


Y

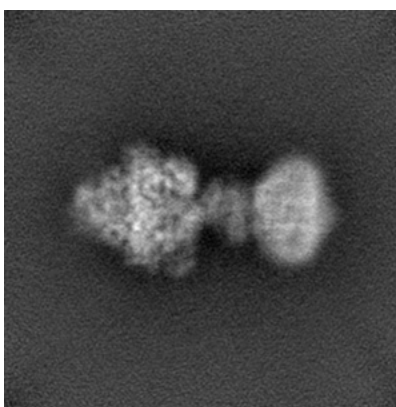


Z

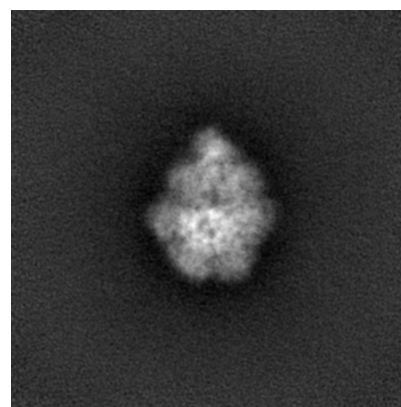
6.1.2 Raw map



X



Y

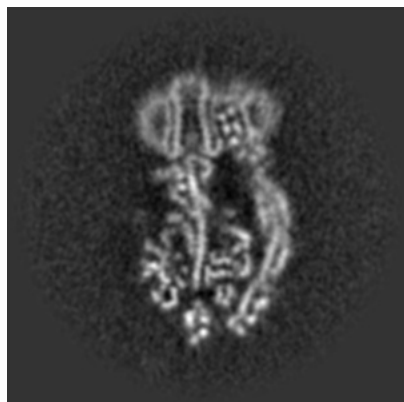


Z

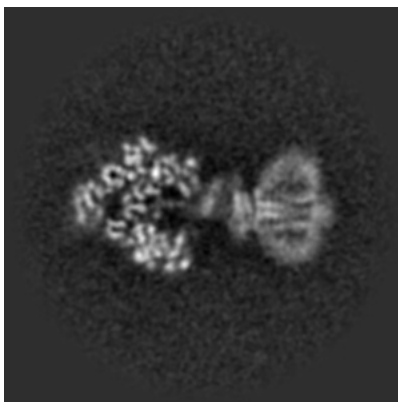
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

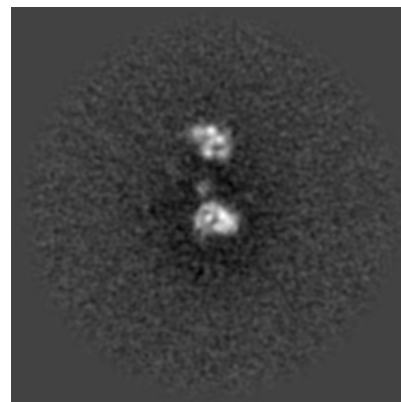
6.2.1 Primary map



X Index: 128

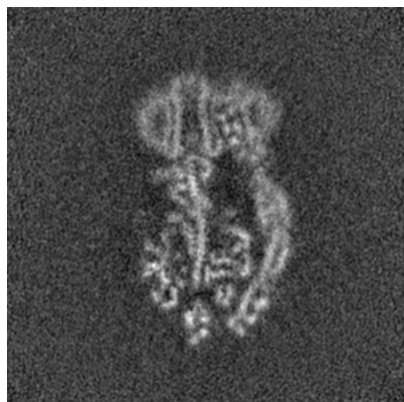


Y Index: 128

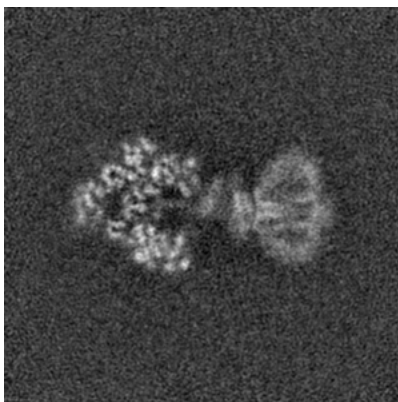


Z Index: 128

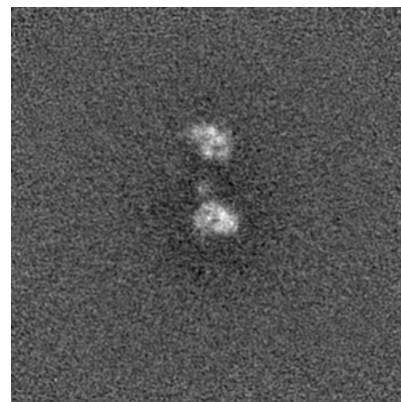
6.2.2 Raw map



X Index: 128



Y Index: 128



Z Index: 128

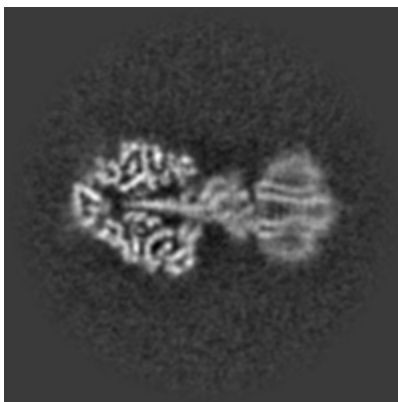
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

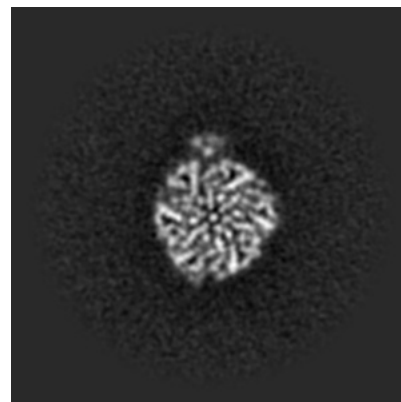
6.3.1 Primary map



X Index: 133

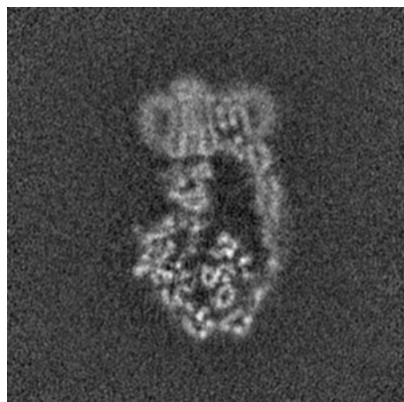


Y Index: 123

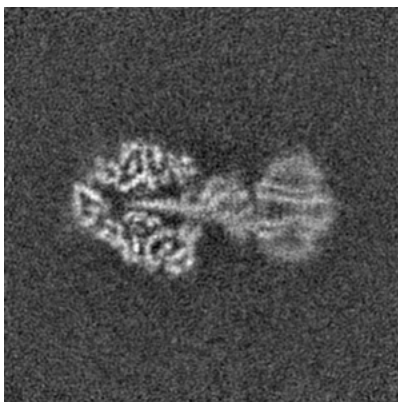


Z Index: 84

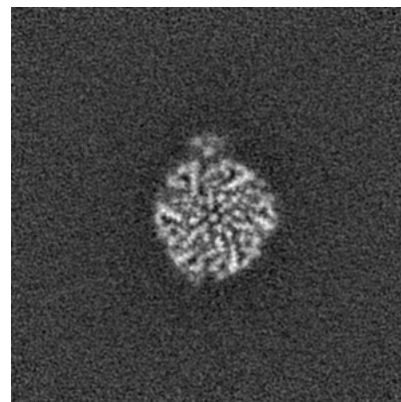
6.3.2 Raw map



X Index: 134



Y Index: 123



Z Index: 84

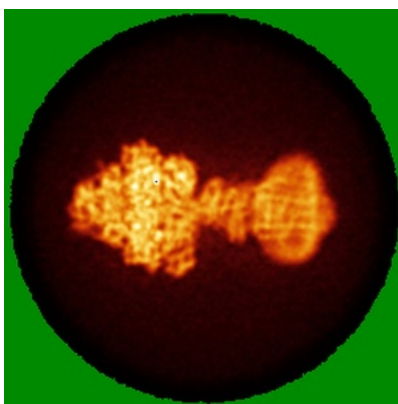
The images above show the largest variance slices of the map in three orthogonal directions.

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

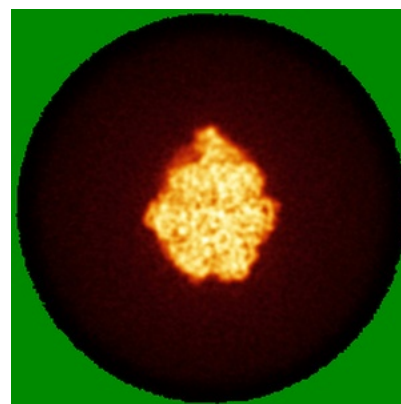
6.4.1 Primary map



X

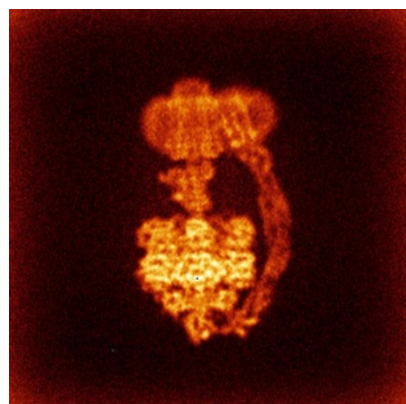


Y

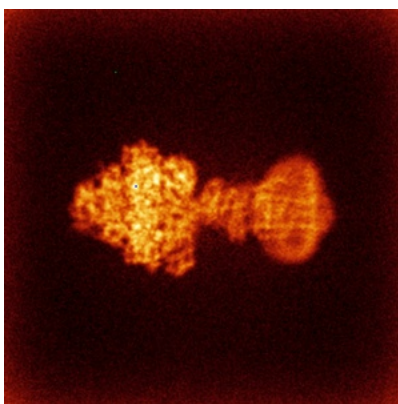


Z

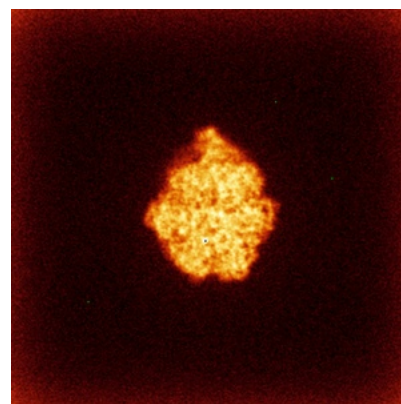
6.4.2 Raw map



X



Y

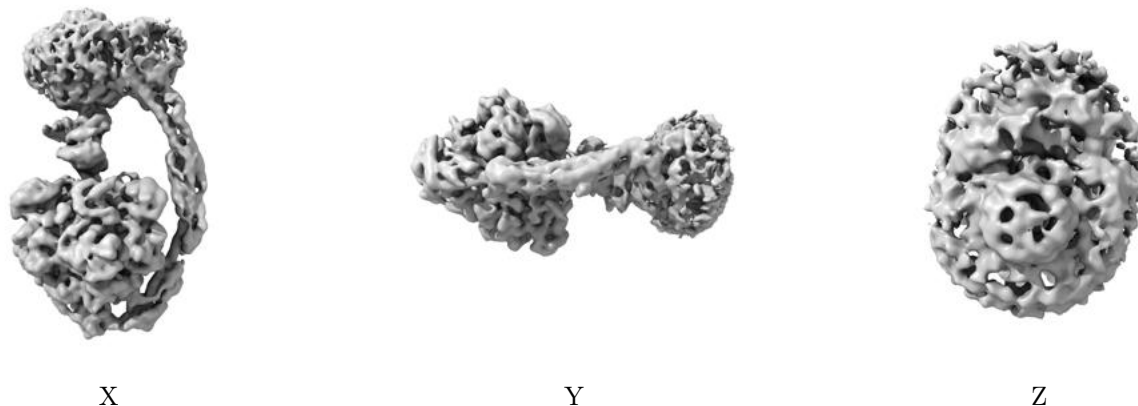


Z

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.

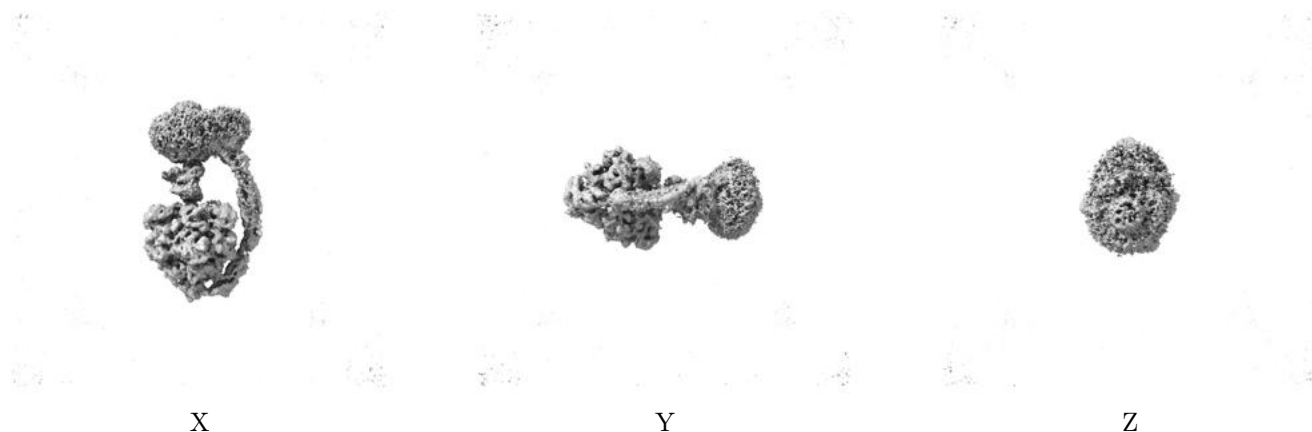
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.64. 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.

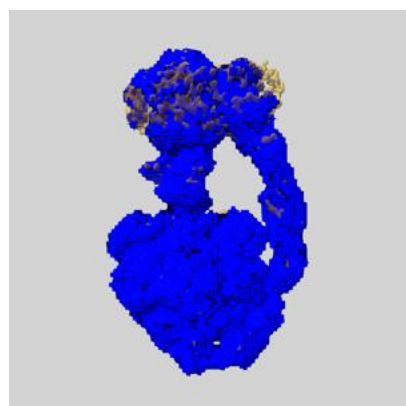
6.6 Mask visualisation [i](#)

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

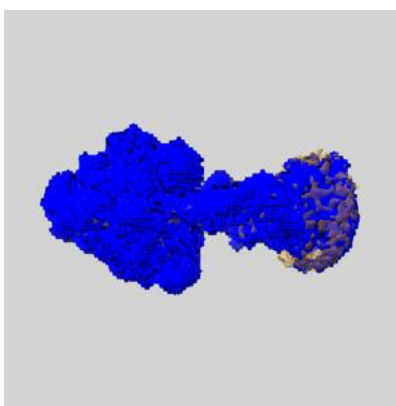
A mask typically either:

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

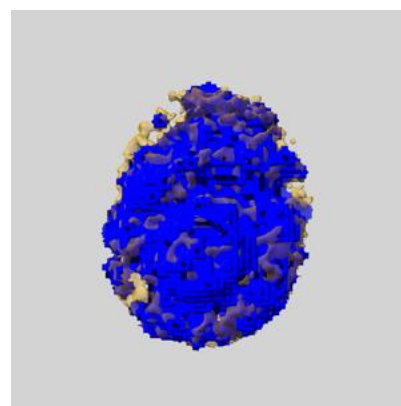
6.6.1 emd_25974_msk_1.map [i](#)



X



Y

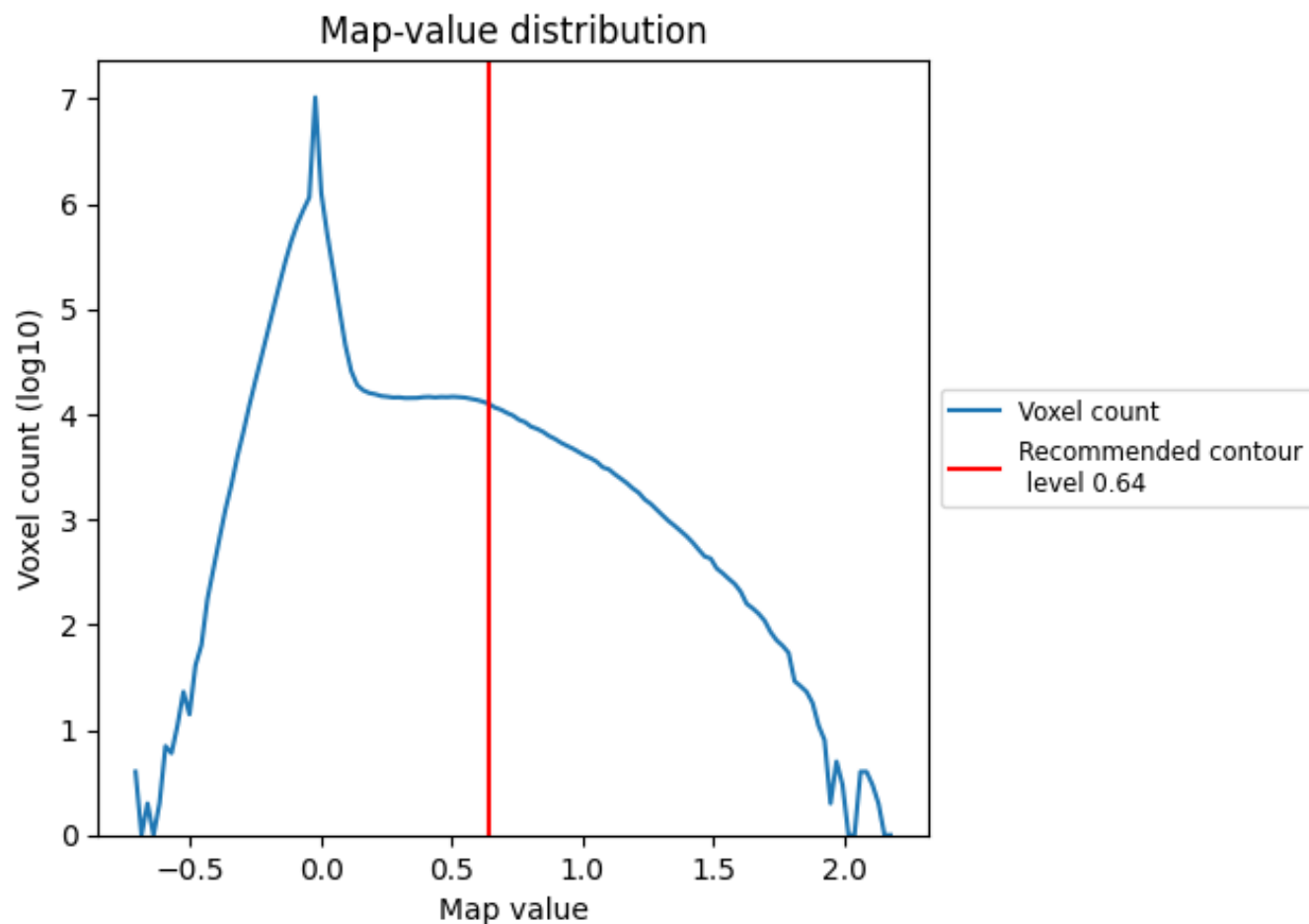


Z

7 Map analysis [i](#)

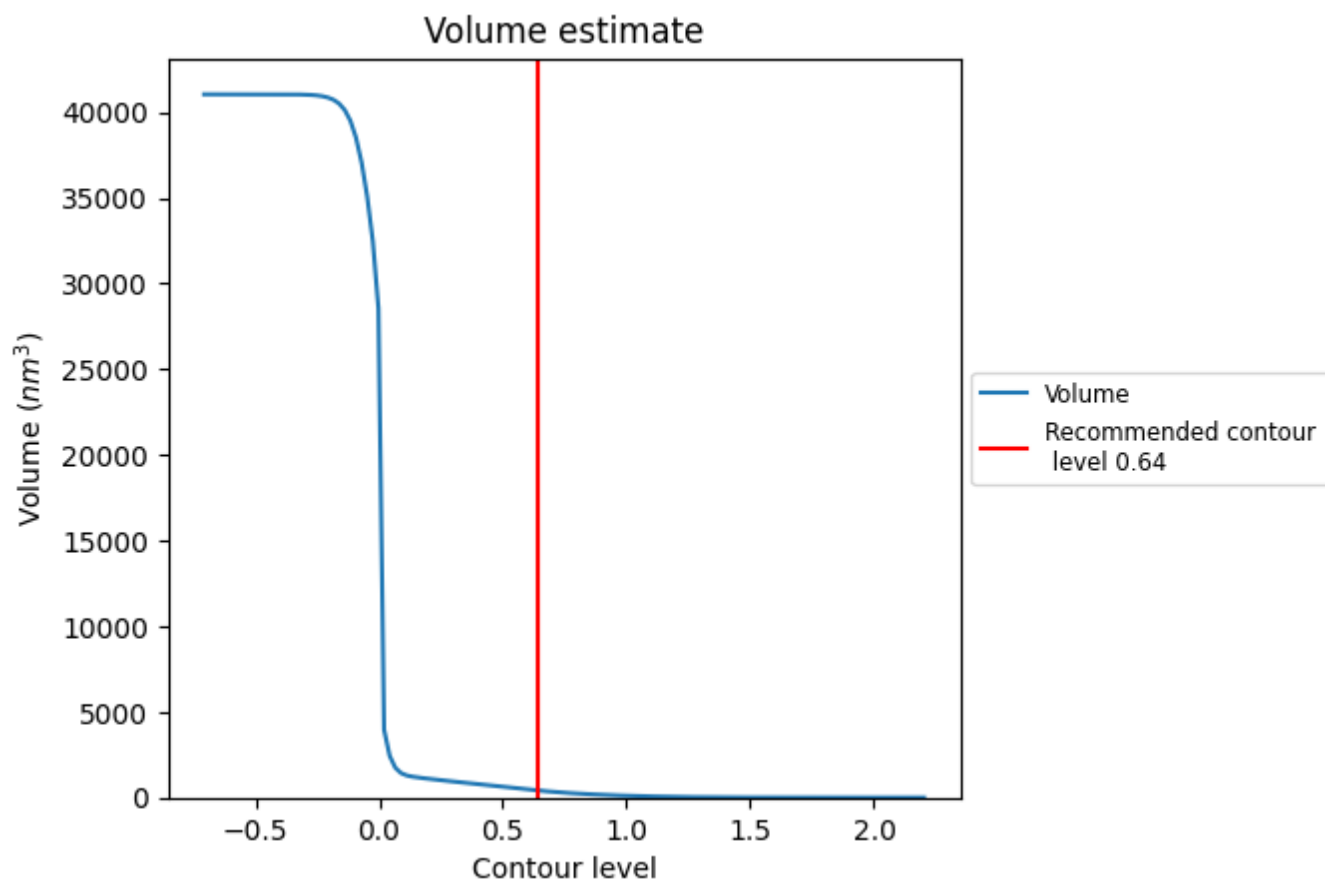
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

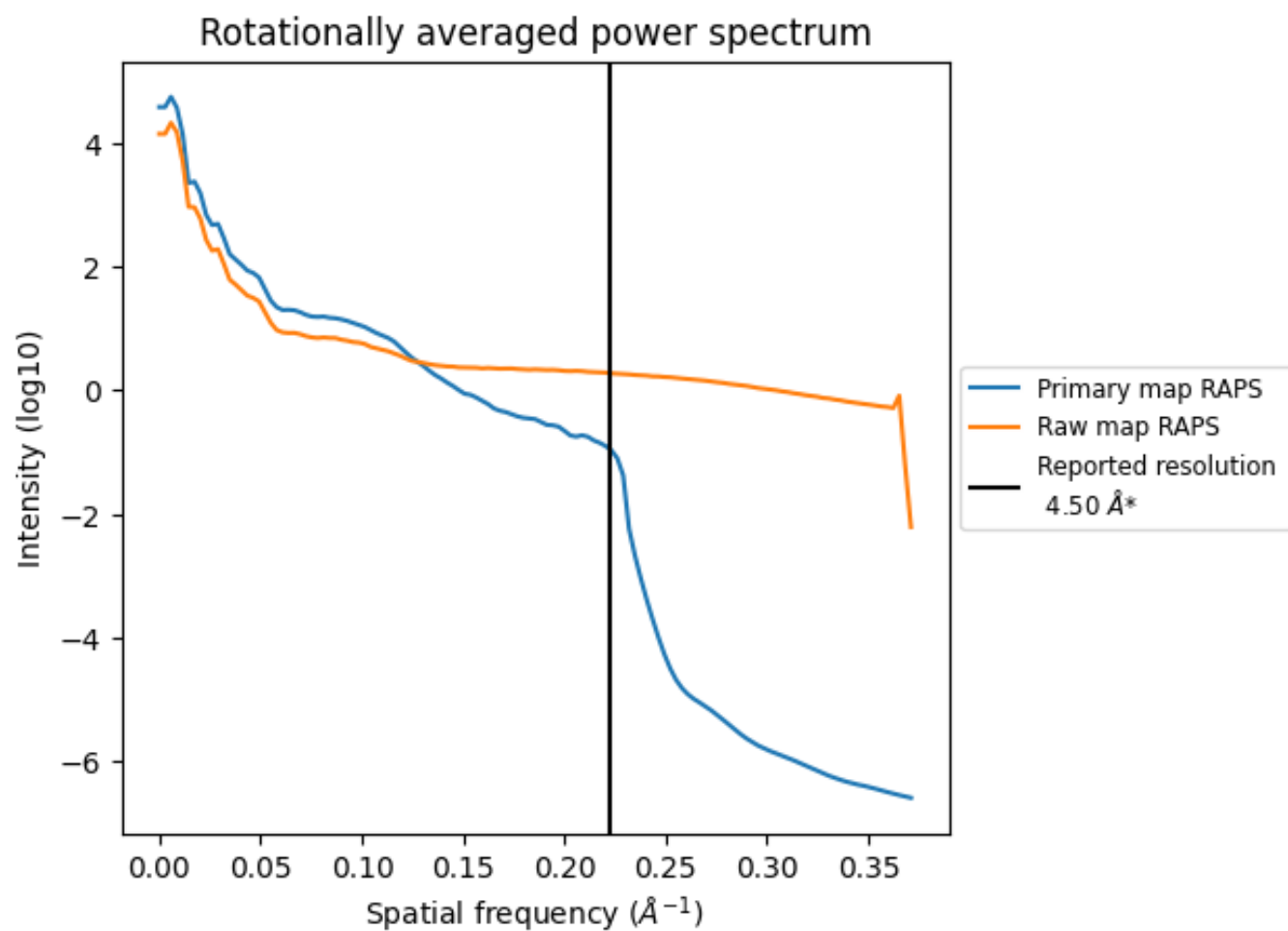
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 415 nm³; this corresponds to an approximate mass of 375 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

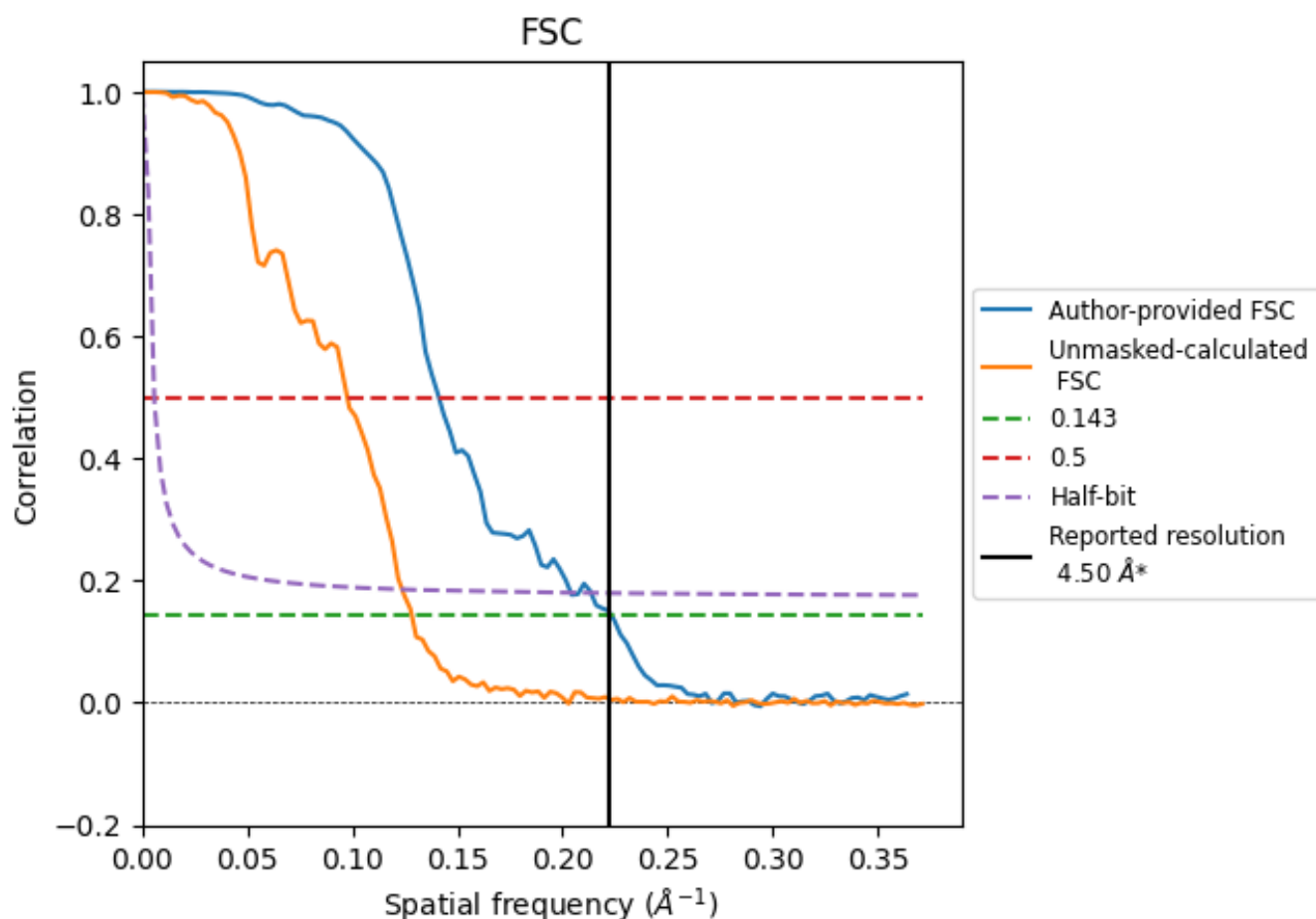


*Reported resolution corresponds to spatial frequency of 0.222 $\text{\AA}^{-1}$

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 0.222 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

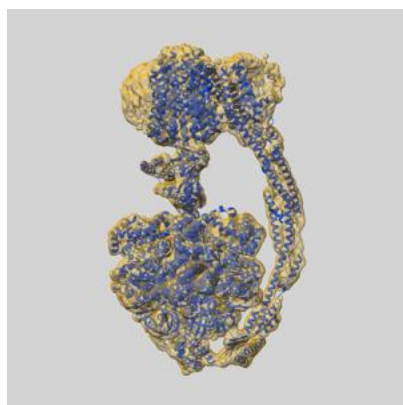
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.50	-	-
Author-provided FSC curve	4.48	7.09	4.90
Unmasked-calculated*	7.80	10.26	8.09

*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 7.80 differs from the reported value 4.5 by more than 10 %

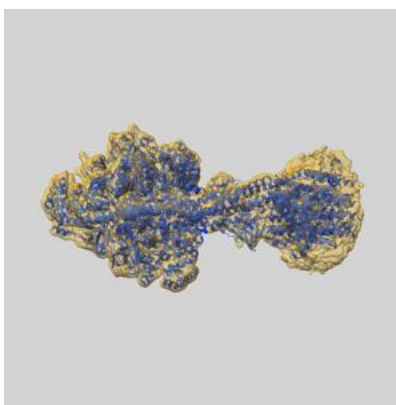
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-25974 and PDB model 7TKM. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

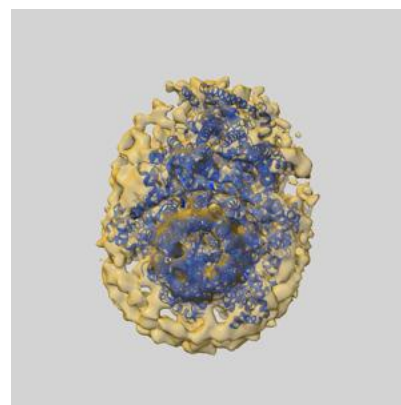
9.1 Map-model overlay [i](#)



X



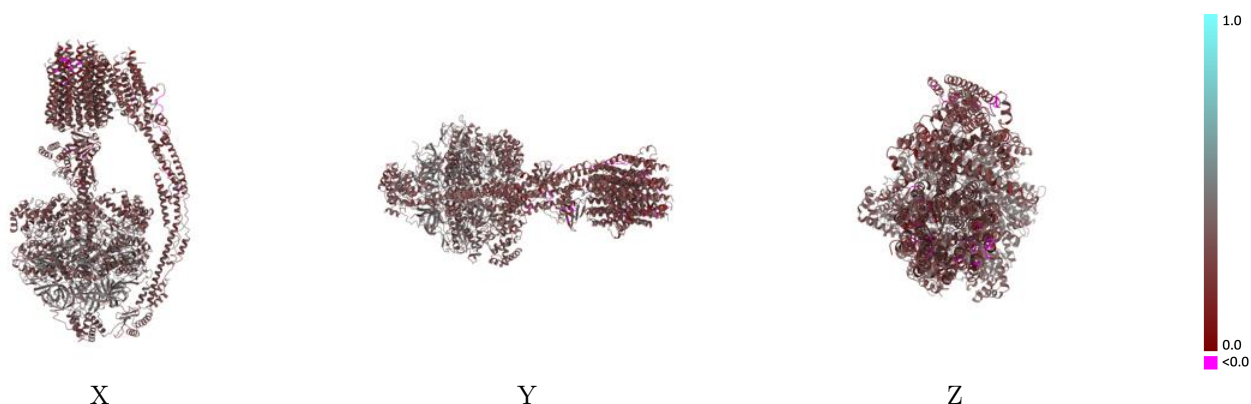
Y



Z

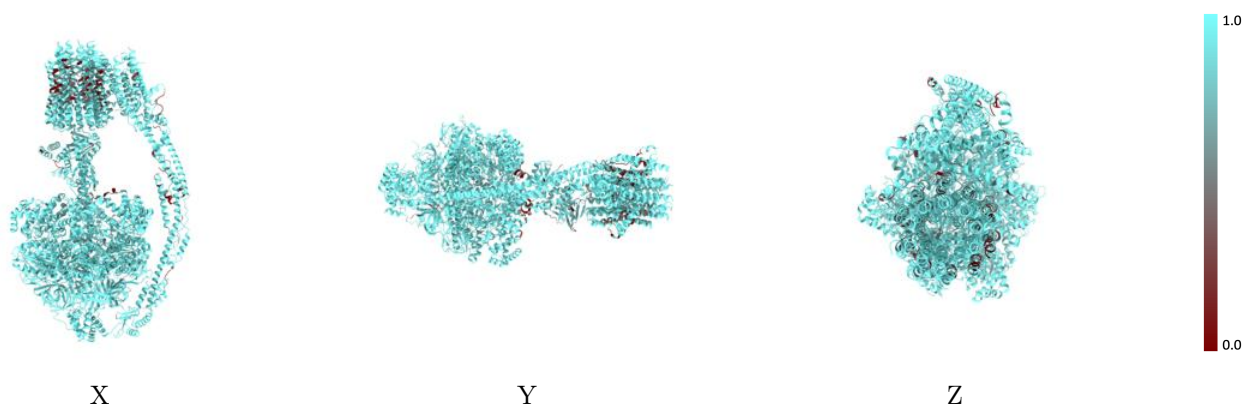
The images above show the 3D surface view of the map at the recommended contour level 0.64 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



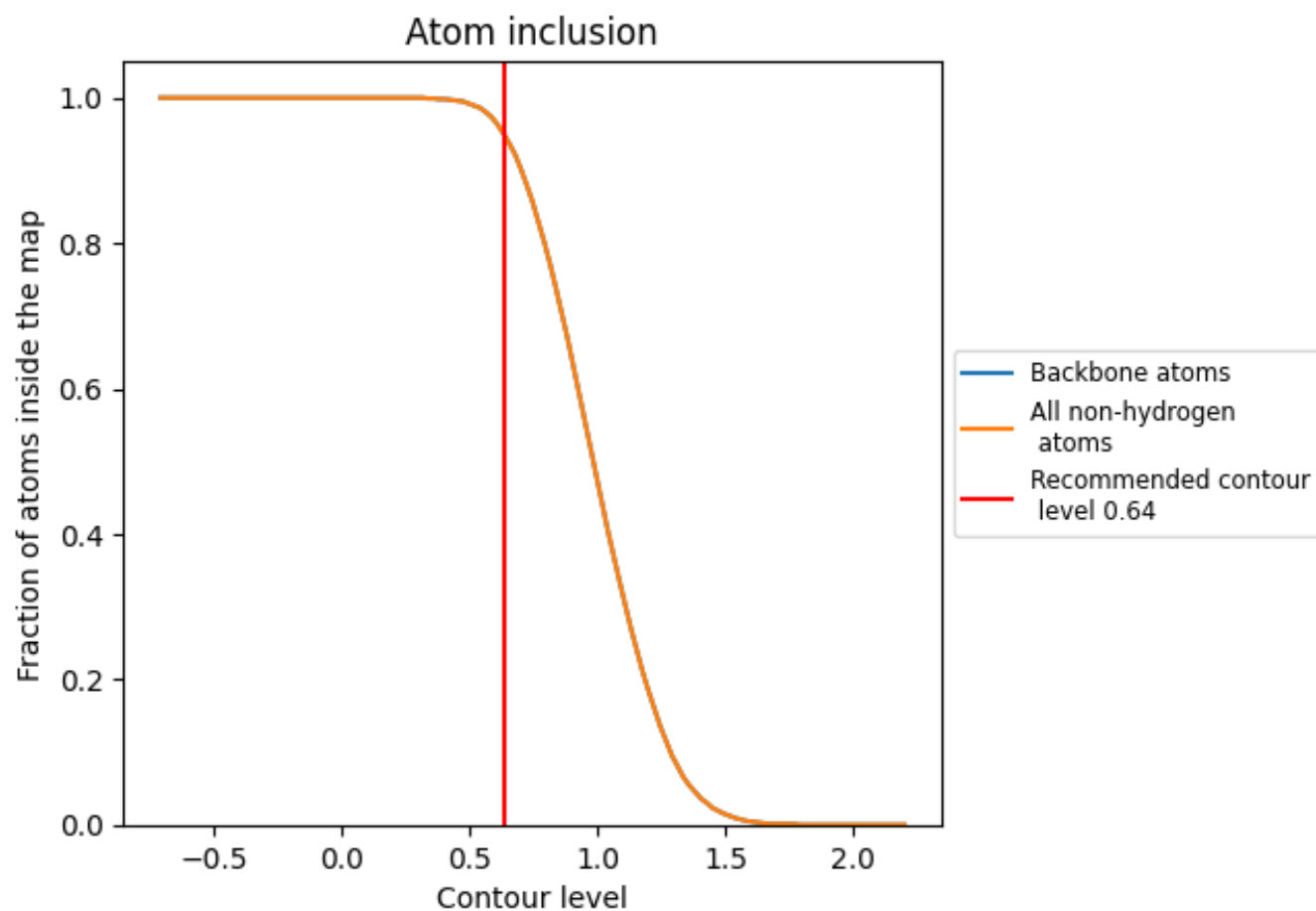
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.64).

9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 95% 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 (0.64) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9470	 0.3300
0	 0.8530	 0.2690
1	 0.8300	 0.2490
2	 0.9200	 0.2650
3	 0.9090	 0.2720
4	 0.8470	 0.2640
5	 0.8230	 0.2430
6	 0.8380	 0.2610
7	 0.8900	 0.2970
8	 0.9000	 0.2850
9	 0.8680	 0.2800
A	 0.9800	 0.3710
B	 0.9910	 0.3700
C	 0.9800	 0.3630
D	 0.9590	 0.3620
E	 0.9950	 0.3850
F	 0.9820	 0.3660
G	 0.9540	 0.2940
H	 0.8460	 0.2510
I	 0.8710	 0.2880
O	 0.9890	 0.3360
T	 0.9290	 0.2780
U	 0.9920	 0.2970
V	 0.9050	 0.2840
W	 0.8090	 0.1920
X	 0.7380	 0.2580
Y	 0.8650	 0.2380
Z	 0.9270	 0.2750

