



Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 05:10 PM UTC

PDB ID : 7Q3E / pdb_00007q3e
EMDB ID : EMD-13790
Title : Structure of the mouse CPLANE-RSG1 complex
Authors : Langousis, G.; Cavadini, S.; Kempf, G.; Matthias, P.
Deposited on : 2021-10-27
Resolution : 3.35 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:

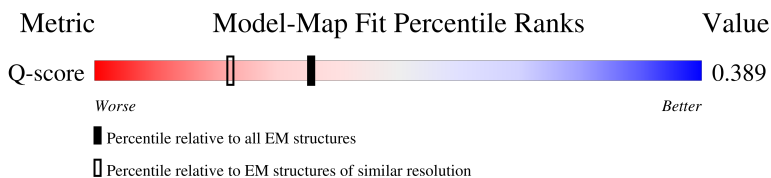
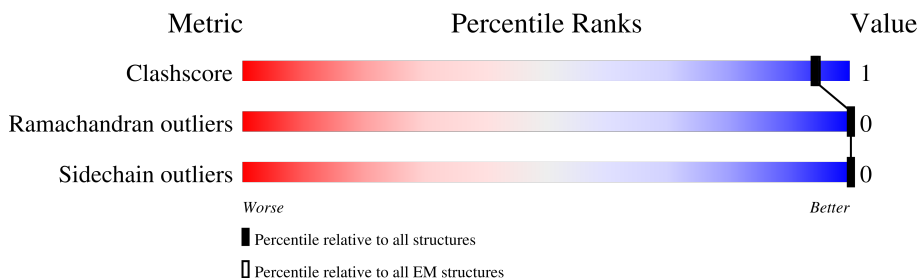
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data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

1 Overall quality at a glance

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

The reported resolution of this entry is 3.35 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	14390 (2.85 - 3.85)

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	766	
2	B	964	
3	C	414	
4	D	258	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 26634 atoms, of which 13380 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 WD repeat-containing and planar cell polarity effector protein fritz homolog.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A	551	8899	2832	4488	749	807	23	0	0

There are 45 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-43	MET	-	initiating methionine	UNP Q8C456
A	-42	ASP	-	expression tag	UNP Q8C456
A	-41	SER	-	expression tag	UNP Q8C456
A	-40	ALA	-	expression tag	UNP Q8C456
A	-39	TRP	-	expression tag	UNP Q8C456
A	-38	SER	-	expression tag	UNP Q8C456
A	-37	HIS	-	expression tag	UNP Q8C456
A	-36	PRO	-	expression tag	UNP Q8C456
A	-35	GLN	-	expression tag	UNP Q8C456
A	-34	PHE	-	expression tag	UNP Q8C456
A	-33	GLU	-	expression tag	UNP Q8C456
A	-32	LYS	-	expression tag	UNP Q8C456
A	-31	GLY	-	expression tag	UNP Q8C456
A	-30	GLY	-	expression tag	UNP Q8C456
A	-29	GLY	-	expression tag	UNP Q8C456
A	-28	SER	-	expression tag	UNP Q8C456
A	-27	GLY	-	expression tag	UNP Q8C456
A	-26	GLY	-	expression tag	UNP Q8C456
A	-25	GLY	-	expression tag	UNP Q8C456
A	-24	SER	-	expression tag	UNP Q8C456
A	-23	GLY	-	expression tag	UNP Q8C456
A	-22	GLY	-	expression tag	UNP Q8C456
A	-21	SER	-	expression tag	UNP Q8C456
A	-20	ALA	-	expression tag	UNP Q8C456
A	-19	TRP	-	expression tag	UNP Q8C456
A	-18	SER	-	expression tag	UNP Q8C456
A	-17	HIS	-	expression tag	UNP Q8C456

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	PRO	-	expression tag	UNP Q8C456
A	-15	GLN	-	expression tag	UNP Q8C456
A	-14	PHE	-	expression tag	UNP Q8C456
A	-13	GLU	-	expression tag	UNP Q8C456
A	-12	LYS	-	expression tag	UNP Q8C456
A	-11	SER	-	expression tag	UNP Q8C456
A	-10	ALA	-	expression tag	UNP Q8C456
A	-9	VAL	-	expression tag	UNP Q8C456
A	-8	ASP	-	expression tag	UNP Q8C456
A	-7	LEU	-	expression tag	UNP Q8C456
A	-6	GLU	-	expression tag	UNP Q8C456
A	-5	VAL	-	expression tag	UNP Q8C456
A	-4	LEU	-	expression tag	UNP Q8C456
A	-3	PHE	-	expression tag	UNP Q8C456
A	-2	GLN	-	expression tag	UNP Q8C456
A	-1	GLY	-	expression tag	UNP Q8C456
A	0	PRO	-	expression tag	UNP Q8C456
A	1	GLY	MET	conflict	UNP Q8C456

- Molecule 2 is a protein called Protein inturned.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	503	Total	C	H	N	O	S	0	0
			7967	2569	3972	659	744	23		

There are 75 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-21	MET	-	initiating methionine	UNP Q059U7
B	-20	GLY	-	expression tag	UNP Q059U7
B	-19	SER	-	expression tag	UNP Q059U7
B	-18	SER	-	expression tag	UNP Q059U7
B	-17	HIS	-	expression tag	UNP Q059U7
B	-16	HIS	-	expression tag	UNP Q059U7
B	-15	HIS	-	expression tag	UNP Q059U7
B	-14	HIS	-	expression tag	UNP Q059U7
B	-13	HIS	-	expression tag	UNP Q059U7
B	-12	HIS	-	expression tag	UNP Q059U7
B	-11	SER	-	expression tag	UNP Q059U7
B	-10	ALA	-	expression tag	UNP Q059U7
B	-9	VAL	-	expression tag	UNP Q059U7
B	-8	ASP	-	expression tag	UNP Q059U7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-7	LEU	-	expression tag	UNP Q059U7
B	-6	GLU	-	expression tag	UNP Q059U7
B	-5	VAL	-	expression tag	UNP Q059U7
B	-4	LEU	-	expression tag	UNP Q059U7
B	-3	PHE	-	expression tag	UNP Q059U7
B	-2	GLN	-	expression tag	UNP Q059U7
B	-1	GLY	-	expression tag	UNP Q059U7
B	0	PRO	-	expression tag	UNP Q059U7
B	1	GLY	-	expression tag	UNP Q059U7
B	2	ALA	-	expression tag	UNP Q059U7
B	3	GLY	-	expression tag	UNP Q059U7
B	4	LEU	-	expression tag	UNP Q059U7
B	5	ALA	-	expression tag	UNP Q059U7
B	6	ARG	-	expression tag	UNP Q059U7
B	7	GLY	-	expression tag	UNP Q059U7
B	8	ASP	-	expression tag	UNP Q059U7
B	9	SER	-	expression tag	UNP Q059U7
B	10	ARG	-	expression tag	UNP Q059U7
B	11	GLY	-	expression tag	UNP Q059U7
B	12	ARG	-	expression tag	UNP Q059U7
B	13	PRO	-	expression tag	UNP Q059U7
B	14	PRO	-	expression tag	UNP Q059U7
B	15	GLU	-	expression tag	UNP Q059U7
B	16	LEU	-	expression tag	UNP Q059U7
B	17	PRO	-	expression tag	UNP Q059U7
B	18	GLY	-	expression tag	UNP Q059U7
B	19	ASP	-	expression tag	UNP Q059U7
B	20	LEU	-	expression tag	UNP Q059U7
B	21	SER	-	expression tag	UNP Q059U7
B	22	SER	-	expression tag	UNP Q059U7
B	23	GLN	-	expression tag	UNP Q059U7
B	24	GLU	-	expression tag	UNP Q059U7
B	25	GLU	-	expression tag	UNP Q059U7
B	26	GLU	-	expression tag	UNP Q059U7
B	27	GLU	-	expression tag	UNP Q059U7
B	28	GLU	-	expression tag	UNP Q059U7
B	29	GLU	-	expression tag	UNP Q059U7
B	30	GLY	-	expression tag	UNP Q059U7
B	31	ASP	-	expression tag	UNP Q059U7
B	32	SER	-	expression tag	UNP Q059U7
B	33	ASP	-	expression tag	UNP Q059U7
B	34	ALA	-	expression tag	UNP Q059U7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	35	GLY	-	expression tag	UNP Q059U7
B	36	ALA	-	expression tag	UNP Q059U7
B	37	SER	-	expression tag	UNP Q059U7
B	38	SER	-	expression tag	UNP Q059U7
B	39	LEU	-	expression tag	UNP Q059U7
B	40	GLY	-	expression tag	UNP Q059U7
B	41	SER	-	expression tag	UNP Q059U7
B	42	TYR	-	expression tag	UNP Q059U7
B	43	SER	-	expression tag	UNP Q059U7
B	44	SER	-	expression tag	UNP Q059U7
B	45	ALA	-	expression tag	UNP Q059U7
B	46	SER	-	expression tag	UNP Q059U7
B	47	SER	-	expression tag	UNP Q059U7
B	48	ASP	-	expression tag	UNP Q059U7
B	49	THR	-	expression tag	UNP Q059U7
B	50	ASP	-	expression tag	UNP Q059U7
B	51	VAL	-	expression tag	UNP Q059U7
B	52	GLU	-	expression tag	UNP Q059U7
B	53	PRO	-	expression tag	UNP Q059U7

- Molecule 3 is a protein called Protein fuzzy homolog.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	392	Total	C	H	N	O	S	0	0
			6161	1949	3125	530	538	19		

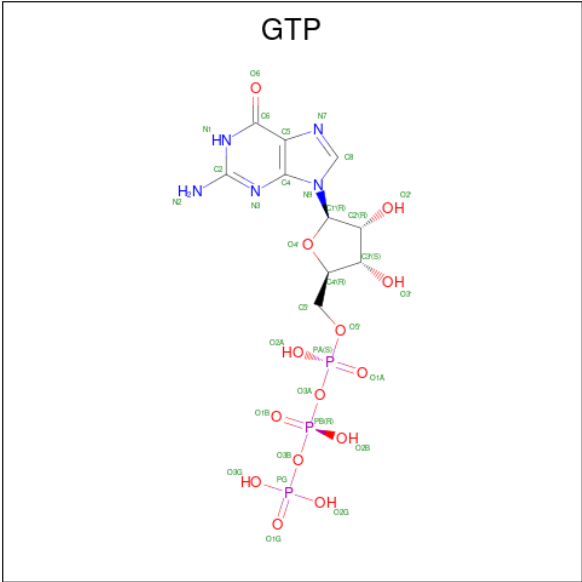
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	2	MET	GLY	conflict	UNP E9QL29

- Molecule 4 is a protein called Ciliogenesis and planar polarity effector 2.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	D	226	Total	C	H	N	O	S	0	0
			3563	1151	1783	305	317	7		

- Molecule 5 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: C₁₀H₁₆N₅O₁₄P₃).



Mol	Chain	Residues	Atoms						AltConf
			Total	C	H	N	O	P	
5	D	1	44	10	12	5	14	3	0



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	94157	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 ($e^-/\text{\AA}^2$)	1.04	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.341	Depositor
Minimum map value	-0.163	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	258.0, 258.0, 258.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.86, 0.86, 0.86	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.71	0/4498	0.95	25/6087 (0.4%)
2	B	0.72	0/4082	0.95	26/5526 (0.5%)
3	C	0.73	0/3109	1.05	36/4240 (0.8%)
4	D	0.70	0/1825	0.96	14/2476 (0.6%)
All	All	0.72	0/13514	0.98	101/18329 (0.6%)

There are no bond length outliers.

All (101) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	570	PHE	CA-C-N	8.56	128.43	120.21
2	B	570	PHE	C-N-CA	8.56	128.43	120.21
1	A	188	GLY	CA-C-N	8.34	128.28	120.03
1	A	188	GLY	C-N-CA	8.34	128.28	120.03
1	A	264	GLN	CA-C-N	8.02	127.66	119.56
1	A	264	GLN	C-N-CA	8.02	127.66	119.56
2	B	655	GLY	CA-C-N	7.53	127.48	120.03
2	B	655	GLY	C-N-CA	7.53	127.48	120.03
4	D	185	VAL	CA-C-N	7.44	127.36	119.85
4	D	185	VAL	C-N-CA	7.44	127.36	119.85
3	C	228	SER	CA-C-N	7.31	127.48	119.87
3	C	228	SER	C-N-CA	7.31	127.48	119.87
4	D	45	LEU	CA-C-N	7.24	124.95	119.66
4	D	45	LEU	C-N-CA	7.24	124.95	119.66
2	B	794	GLY	CA-C-N	7.20	126.84	119.56
2	B	794	GLY	C-N-CA	7.20	126.84	119.56
3	C	282	GLY	CA-C-N	6.92	126.62	119.56
3	C	282	GLY	C-N-CA	6.92	126.62	119.56
1	A	390	SER	CA-C-N	6.91	126.83	119.85
1	A	390	SER	C-N-CA	6.91	126.83	119.85

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	525	ARG	CA-C-N	6.90	127.04	119.87
1	A	525	ARG	C-N-CA	6.90	127.04	119.87
3	C	392	SER	CA-C-N	6.88	126.58	119.56
3	C	392	SER	C-N-CA	6.88	126.58	119.56
3	C	254	PRO	CA-C-N	6.86	126.78	119.85
3	C	254	PRO	C-N-CA	6.86	126.78	119.85
2	B	482	LEU	CA-C-N	6.86	126.84	119.78
2	B	482	LEU	C-N-CA	6.86	126.84	119.78
4	D	165	ALA	CA-C-N	6.79	126.97	120.31
4	D	165	ALA	C-N-CA	6.79	126.97	120.31
1	A	522	ALA	CA-C-N	6.67	126.63	120.03
1	A	522	ALA	C-N-CA	6.67	126.63	120.03
3	C	251	GLY	CA-C-N	6.59	126.28	119.56
3	C	251	GLY	C-N-CA	6.59	126.28	119.56
3	C	38	LEU	CA-C-N	6.58	126.55	119.78
3	C	38	LEU	C-N-CA	6.58	126.55	119.78
4	D	46	PRO	CA-C-N	6.56	126.25	119.56
4	D	46	PRO	C-N-CA	6.56	126.25	119.56
2	B	621	ASN	CA-C-N	6.48	126.39	119.85
2	B	621	ASN	C-N-CA	6.48	126.39	119.85
2	B	814	THR	CA-C-N	6.44	126.42	119.78
2	B	814	THR	C-N-CA	6.44	126.42	119.78
2	B	911	ASN	CA-C-N	6.42	126.11	119.56
2	B	911	ASN	C-N-CA	6.42	126.11	119.56
3	C	157	PRO	CA-C-N	6.35	125.97	119.56
3	C	157	PRO	C-N-CA	6.35	125.97	119.56
2	B	623	GLY	CA-C-N	6.24	126.19	119.76
2	B	623	GLY	C-N-CA	6.24	126.19	119.76
2	B	399	VAL	CA-C-N	6.22	126.19	119.78
2	B	399	VAL	C-N-CA	6.22	126.19	119.78
4	D	42	ARG	CA-C-N	6.22	126.16	119.76
4	D	42	ARG	C-N-CA	6.22	126.16	119.76
1	A	211	TRP	CA-C-N	6.21	126.12	119.85
1	A	211	TRP	C-N-CA	6.21	126.12	119.85
3	C	286	LEU	CA-C-N	6.20	126.16	119.78
3	C	286	LEU	C-N-CA	6.20	126.16	119.78
1	A	254	SER	CA-C-N	6.08	125.83	119.76
1	A	254	SER	C-N-CA	6.08	125.83	119.76
3	C	8	SER	CA-C-N	6.03	125.94	119.85
3	C	8	SER	C-N-CA	6.03	125.94	119.85
2	B	534	LEU	CA-C-N	5.96	125.92	119.78
2	B	534	LEU	C-N-CA	5.96	125.92	119.78

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	394	LEU	CA-C-N	5.94	125.88	119.76
2	B	394	LEU	C-N-CA	5.94	125.88	119.76
2	B	653	SER	CA-C-N	5.92	125.54	119.56
2	B	653	SER	C-N-CA	5.92	125.54	119.56
3	C	224	LEU	CA-C-N	5.92	125.59	119.56
3	C	224	LEU	C-N-CA	5.92	125.59	119.56
1	A	280	GLU	CA-C-N	5.77	125.53	119.76
1	A	280	GLU	C-N-CA	5.77	125.53	119.76
4	D	97	TRP	CA-C-N	5.75	125.66	119.85
4	D	97	TRP	C-N-CA	5.75	125.66	119.85
1	A	133	ILE	N-CA-C	5.72	116.50	110.72
4	D	80	VAL	CA-C-N	5.64	125.55	119.85
4	D	80	VAL	C-N-CA	5.64	125.55	119.85
1	A	112	GLY	CA-C-N	5.59	126.08	120.04
1	A	112	GLY	C-N-CA	5.59	126.08	120.04
1	A	355	HIS	CA-C-N	5.56	125.23	119.56
1	A	355	HIS	C-N-CA	5.56	125.23	119.56
3	C	269	GLN	CA-C-N	5.50	125.17	119.56
3	C	269	GLN	C-N-CA	5.50	125.17	119.56
3	C	412	THR	CA-C-N	5.48	125.15	119.56
3	C	412	THR	C-N-CA	5.48	125.15	119.56
3	C	260	ASP	CA-C-N	5.47	125.30	119.28
3	C	260	ASP	C-N-CA	5.47	125.30	119.28
2	B	913	LYS	CA-C-N	5.37	125.13	119.76
2	B	913	LYS	C-N-CA	5.37	125.13	119.76
3	C	213	PRO	CA-C-N	5.36	125.28	119.76
3	C	213	PRO	C-N-CA	5.36	125.28	119.76
1	A	347	LEU	N-CA-C	5.35	119.91	113.17
3	C	156	ILE	CA-C-N	5.32	125.86	120.38
3	C	156	ILE	C-N-CA	5.32	125.86	120.38
3	C	32	ALA	CA-C-N	5.32	125.24	119.76
3	C	32	ALA	C-N-CA	5.32	125.24	119.76
1	A	139	THR	N-CA-C	5.30	118.12	109.59
1	A	303	ILE	CA-C-N	5.24	125.15	119.76
1	A	303	ILE	C-N-CA	5.24	125.15	119.76
3	C	79	ILE	N-CA-C	5.22	115.42	108.11
3	C	184	SER	CB-CA-C	-5.17	110.63	116.63
3	C	314	GLU	CA-C-N	5.08	124.86	119.28
3	C	314	GLU	C-N-CA	5.08	124.86	119.28

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	4411	4488	4483	8	0
2	B	3995	3972	3965	9	0
3	C	3036	3125	3123	12	0
4	D	1780	1783	1781	4	0
5	D	32	12	12	1	0
All	All	13254	13380	13364	31	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 1.

All (31) 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:A:353:SER:HG	1:A:412:TRP:CD1	2.22	0.57
4:D:68:LYS:NZ	5:D:301:GTP:O2G	2.40	0.55
3:C:314:GLU:N	3:C:315:PRO:CD	2.71	0.53
3:C:269:GLN:N	3:C:270:PRO:CD	2.71	0.53
1:A:374:ASP:OD1	1:A:375:ILE:N	2.41	0.53
2:B:432:ALA:N	2:B:433:PRO:CD	2.73	0.51
4:D:129:LEU:HB3	4:D:130:PRO:HD3	1.92	0.51
2:B:401:LEU:N	2:B:402:PRO:HD2	2.26	0.50
4:D:154:LEU:N	4:D:155:PRO:CD	2.76	0.49
2:B:911:ASN:HB2	2:B:912:PRO:CD	2.44	0.47
3:C:314:GLU:N	3:C:315:PRO:HD3	2.30	0.46
2:B:507:GLU:O	2:B:511:ASP:N	2.47	0.46
3:C:318:ASP:OD2	3:C:319:LYS:NZ	2.44	0.46
1:A:575:ILE:O	1:A:576:HIS:HB3	2.15	0.46
1:A:466:HIS:O	2:B:913:LYS:NZ	2.46	0.45
3:C:412:THR:N	3:C:413:PRO:CD	2.79	0.45
2:B:552:LEU:N	2:B:553:PRO:HD2	2.32	0.45
1:A:525:ARG:HA	1:A:526:PRO:HD2	1.89	0.44
3:C:240:LEU:H	3:C:240:LEU:HD23	1.83	0.44
2:B:816:THR:OG1	2:B:817:HIS:N	2.52	0.43
3:C:205:LEU:N	3:C:206:PRO:HD2	2.34	0.42
3:C:70:VAL:HA	3:C:83:VAL:O	2.20	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:319:LYS:O	3:C:326:ARG:NH2	2.53	0.42
1:A:87:LEU:C	1:A:87:LEU:HD23	2.44	0.42
3:C:279:LEU:N	3:C:280:PRO:HD2	2.34	0.42
1:A:389:TYR:CE1	2:B:930:ILE:HG23	2.55	0.41
3:C:379:ALA:HA	3:C:387:LEU:O	2.20	0.41
1:A:547:PHE:CD1	1:A:547:PHE:C	2.99	0.41
2:B:874:SER:N	2:B:875:PRO:CD	2.84	0.41
4:D:126:ASP:OD1	4:D:126:ASP:N	2.52	0.41
3:C:219:ASP:C	3:C:219:ASP:OD1	2.64	0.41

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	541/766 (71%)	532 (98%)	9 (2%)	0	100	100
2	B	489/964 (51%)	485 (99%)	4 (1%)	0	100	100
3	C	388/414 (94%)	384 (99%)	4 (1%)	0	100	100
4	D	222/258 (86%)	222 (100%)	0	0	100	100
All	All	1640/2402 (68%)	1623 (99%)	17 (1%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	494/676 (73%)	494 (100%)	0	100	100
2	B	442/843 (52%)	442 (100%)	0	100	100
3	C	340/357 (95%)	340 (100%)	0	100	100
4	D	189/212 (89%)	189 (100%)	0	100	100
All	All	1465/2088 (70%)	1465 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	381	ASN
2	B	334	HIS
2	B	377	GLN
2	B	437	HIS
2	B	562	GLN
2	B	836	HIS
2	B	915	GLN
3	C	54	GLN
3	C	59	GLN
3	C	74	ASN
3	C	233	HIS
4	D	91	GLN
4	D	127	HIS
4	D	157	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	GTP	D	301	-	33,34,34	1.33	4 (12%)	50,54,54	1.10	3 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GTP	D	301	-	-	1/22/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	301	GTP	PG-O1G	3.41	1.61	1.50
5	D	301	GTP	PB-O3A	3.04	1.62	1.59
5	D	301	GTP	PB-O1B	2.98	1.61	1.50
5	D	301	GTP	PA-O3A	2.44	1.62	1.59

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	D	301	GTP	O2B-PB-O3B	4.45	119.31	107.27
5	D	301	GTP	O3A-PB-O1B	-3.72	99.52	110.70
5	D	301	GTP	O2A-PA-O3A	3.00	115.37	107.27

There are no chirality outliers.

All (1) torsion outliers are listed below:

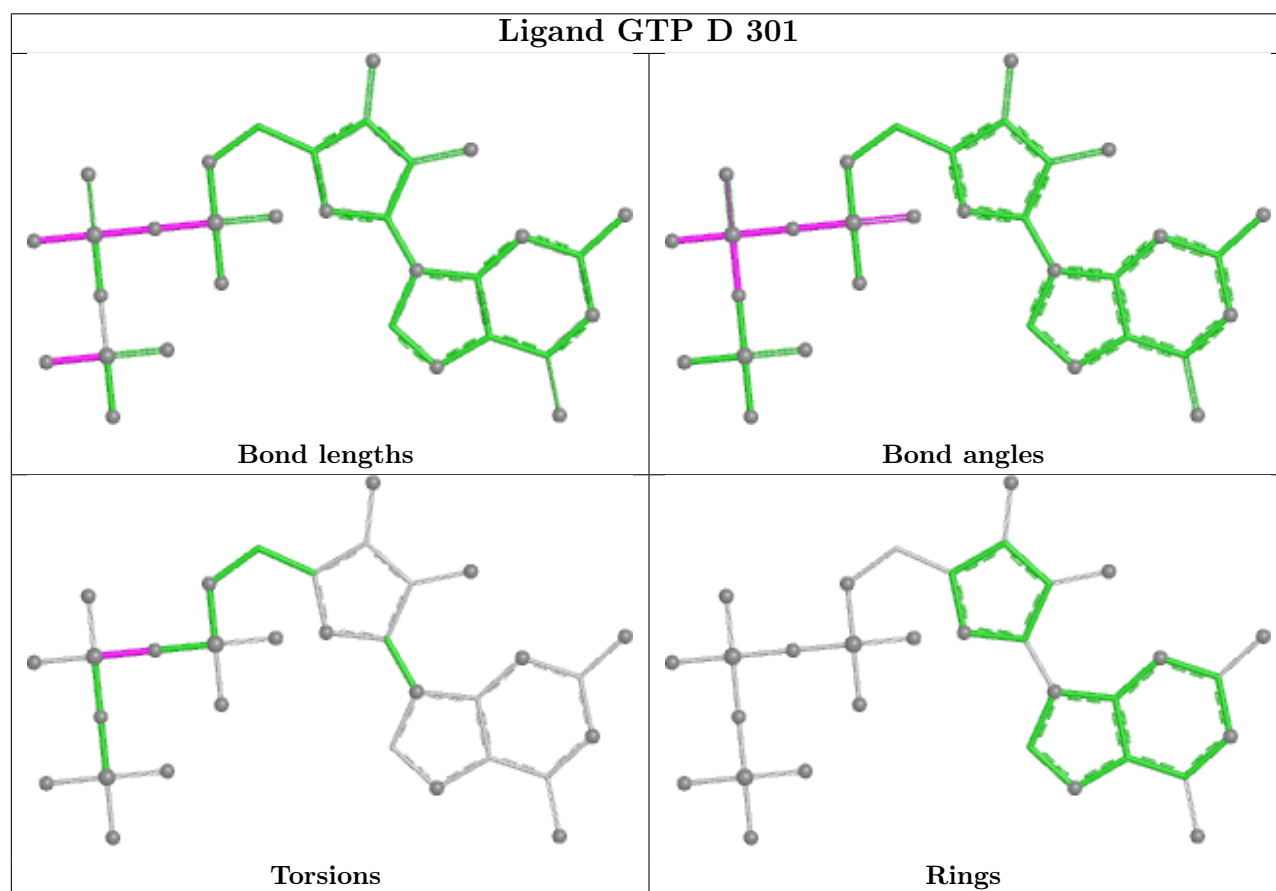
Mol	Chain	Res	Type	Atoms
5	D	301	GTP	PA-O3A-PB-O1B

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	301	GTP	1	0

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



5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

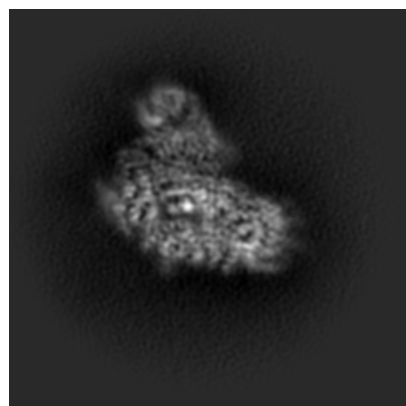
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13790. These allow visual inspection of the internal detail of the map and identification of artifacts.

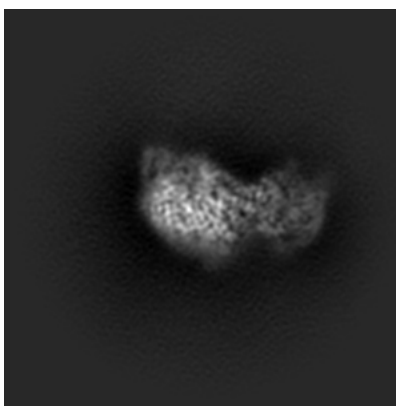
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

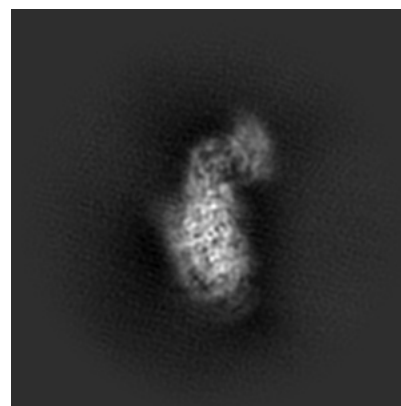
6.1.1 Primary map



X

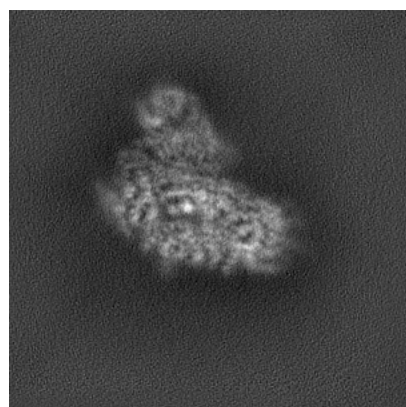


Y

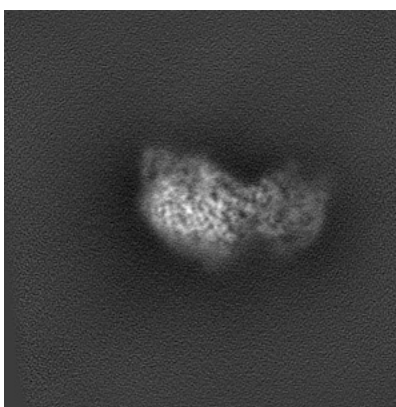


Z

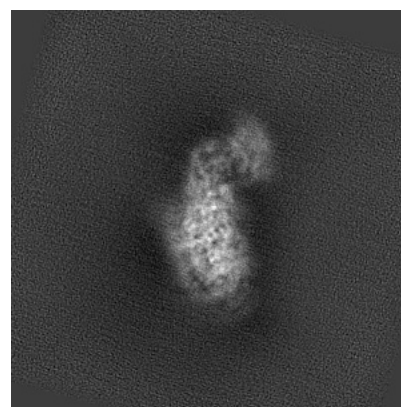
6.1.2 Raw map



X



Y

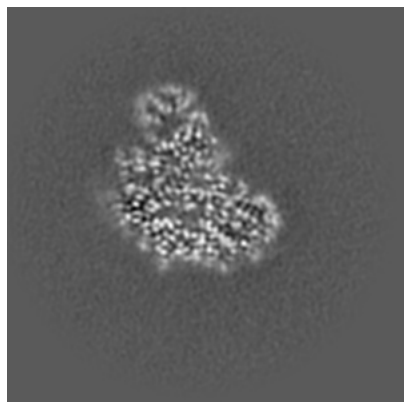


Z

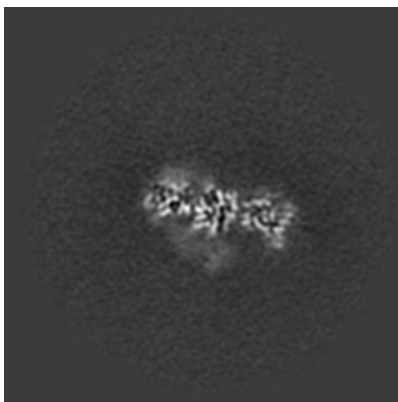
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

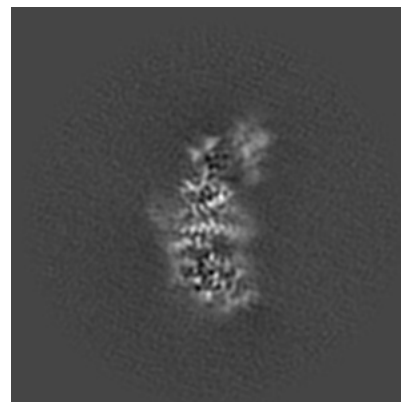
6.2.1 Primary map



X Index: 150

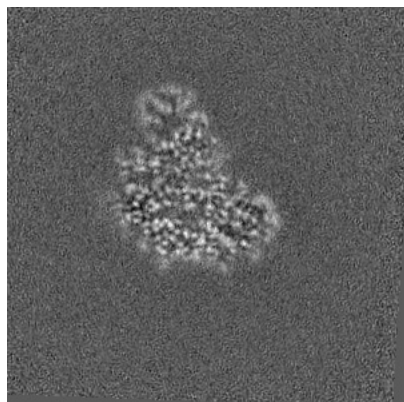


Y Index: 150

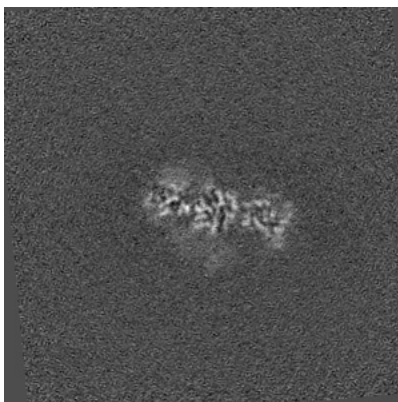


Z Index: 150

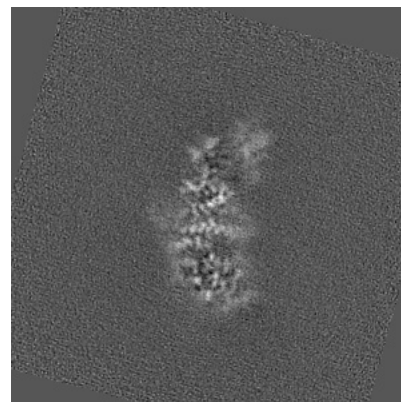
6.2.2 Raw map



X Index: 150



Y Index: 150

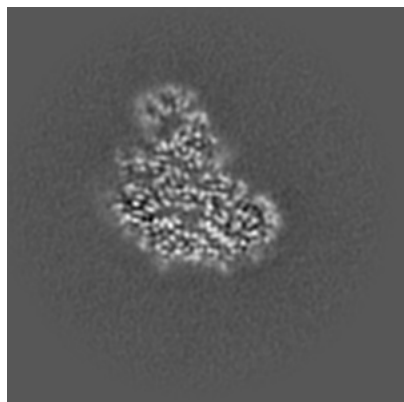


Z Index: 150

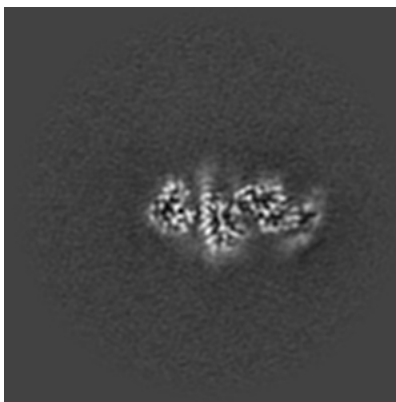
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

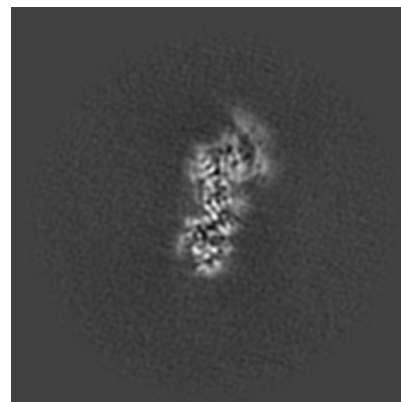
6.3.1 Primary map



X Index: 149

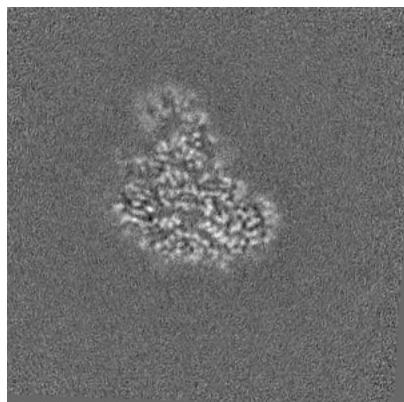


Y Index: 134

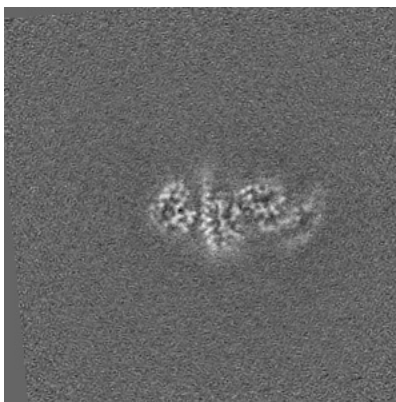


Z Index: 122

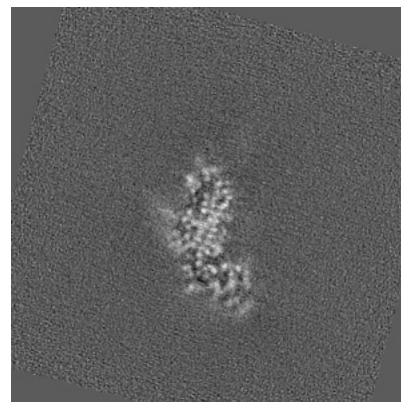
6.3.2 Raw map



X Index: 148



Y Index: 133

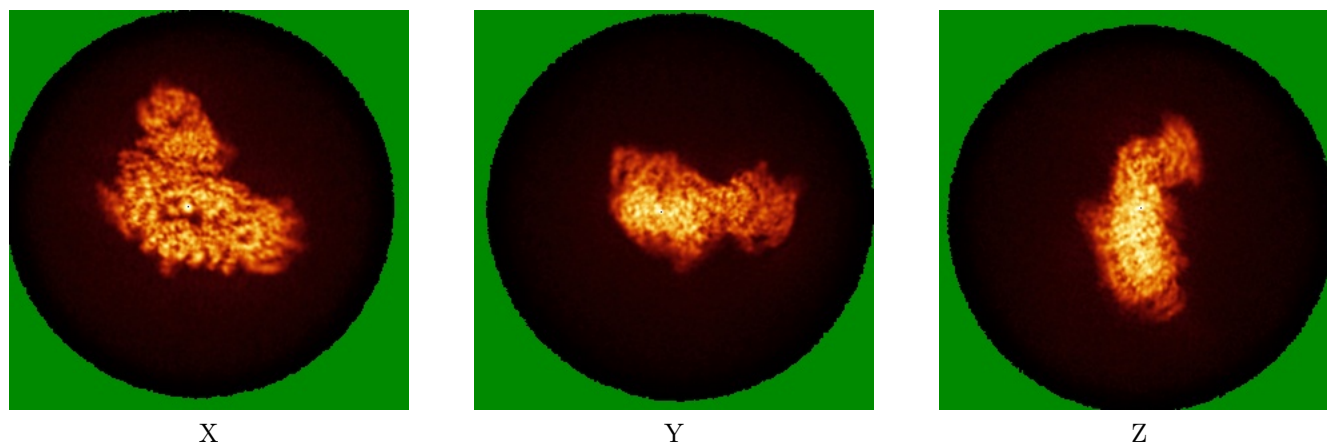


Z Index: 161

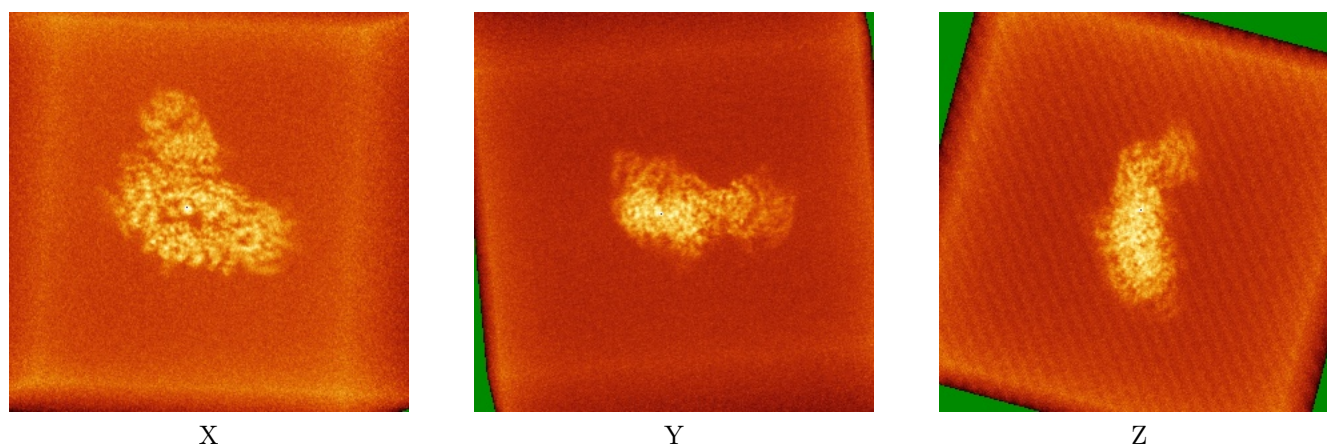
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



6.4.2 Raw map



The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

This section was not generated.

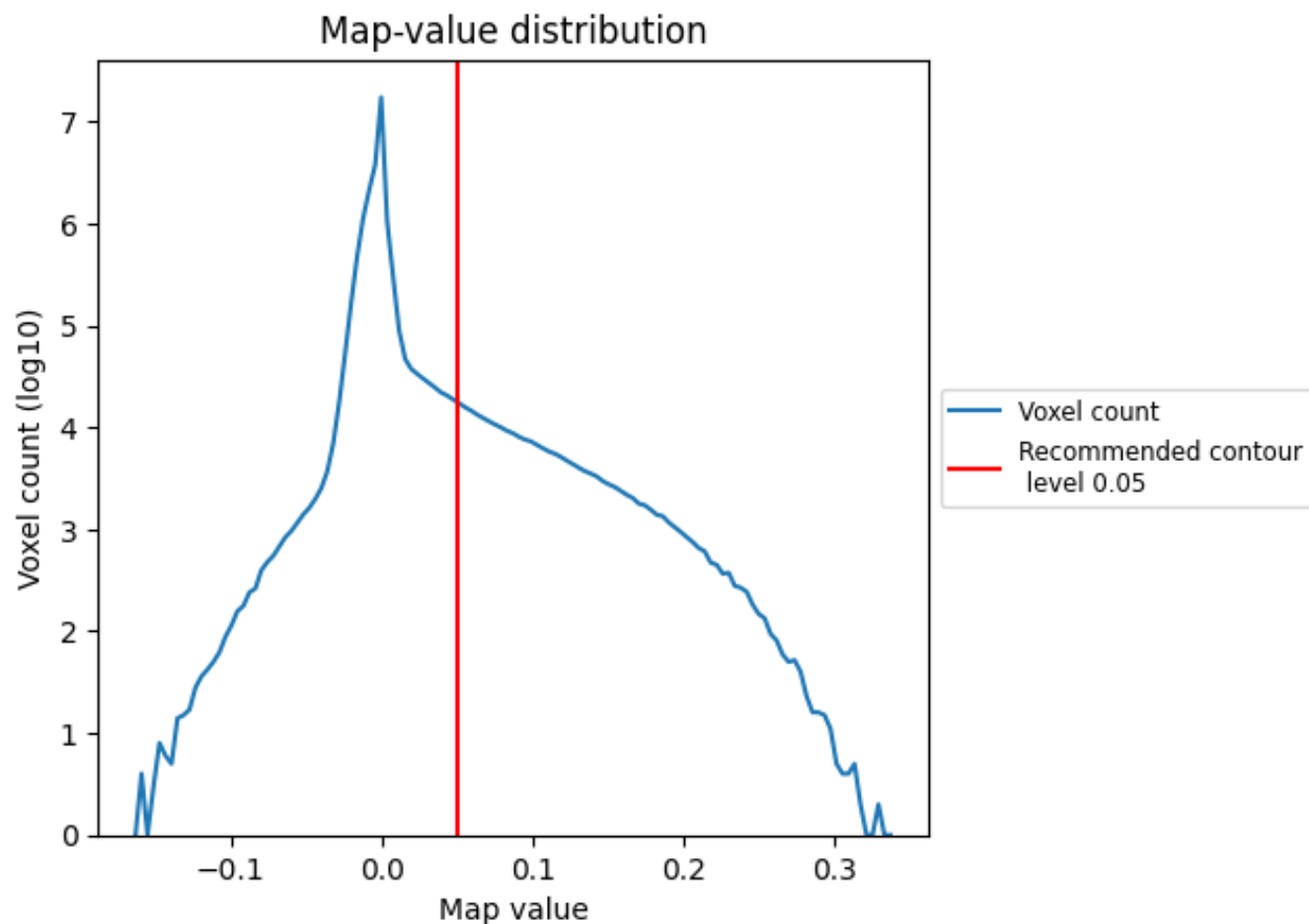
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

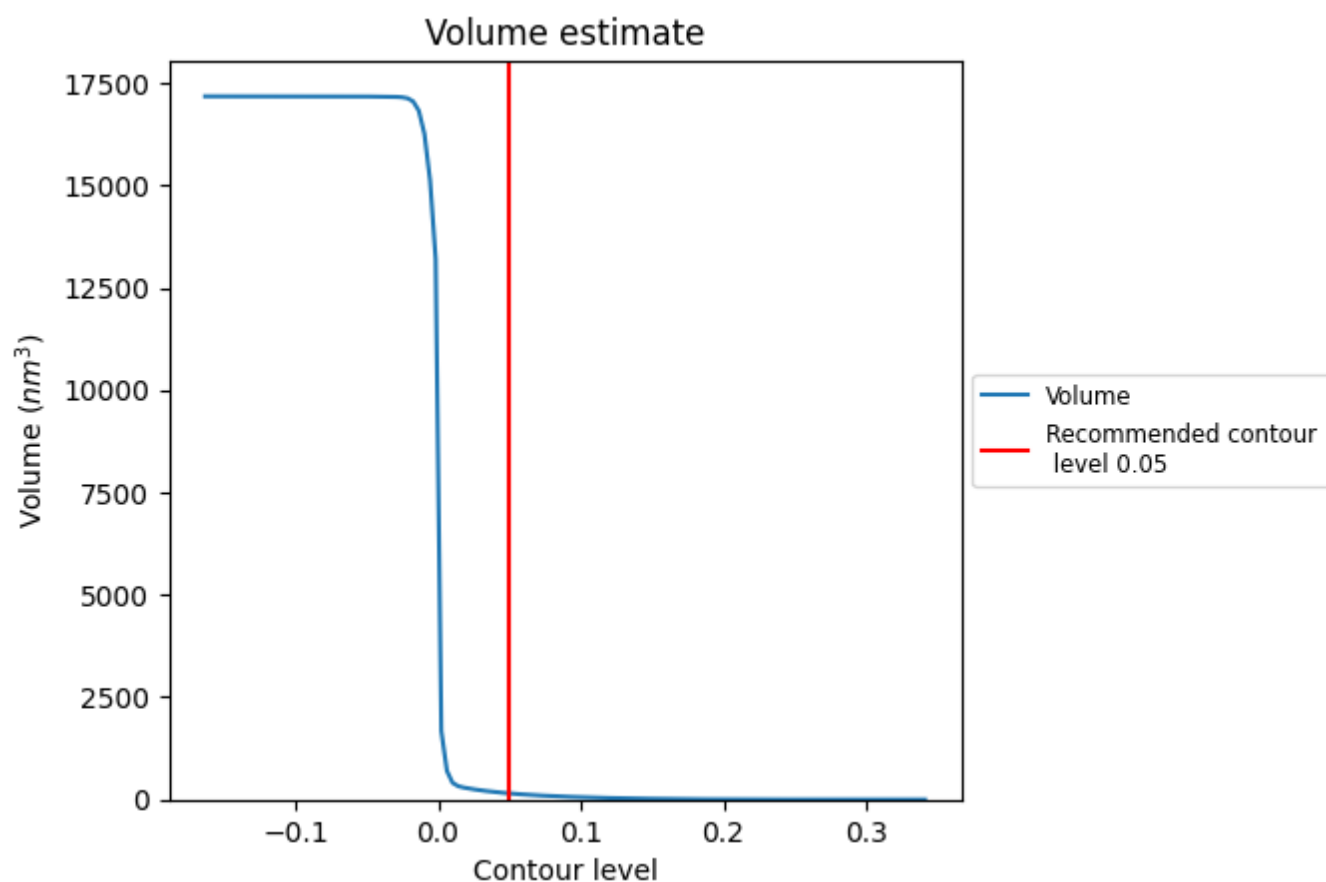
This section contains the results of statistical analysis of the map.

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.

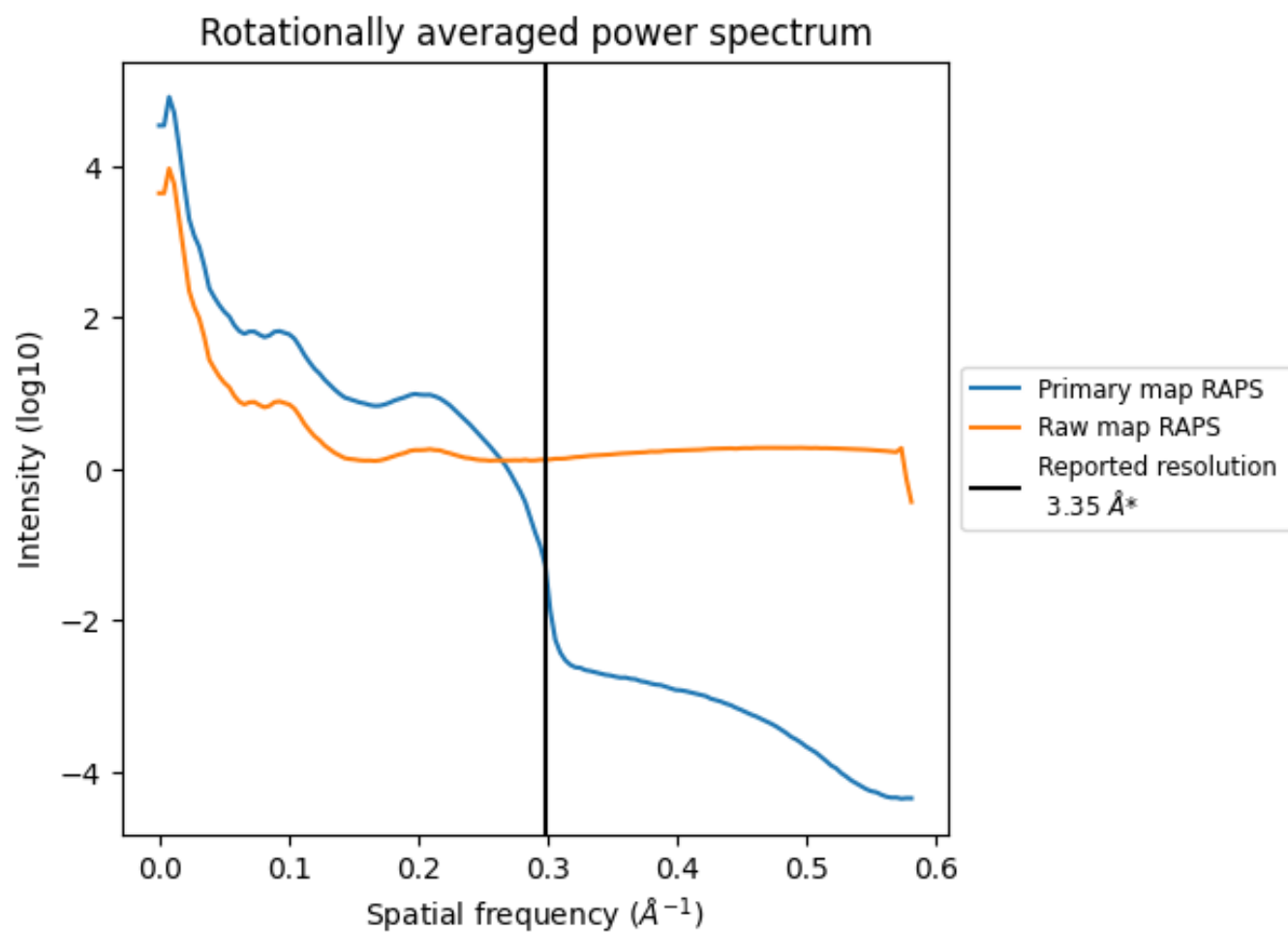
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 151 nm³; this corresponds to an approximate mass of 136 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 ⓘ

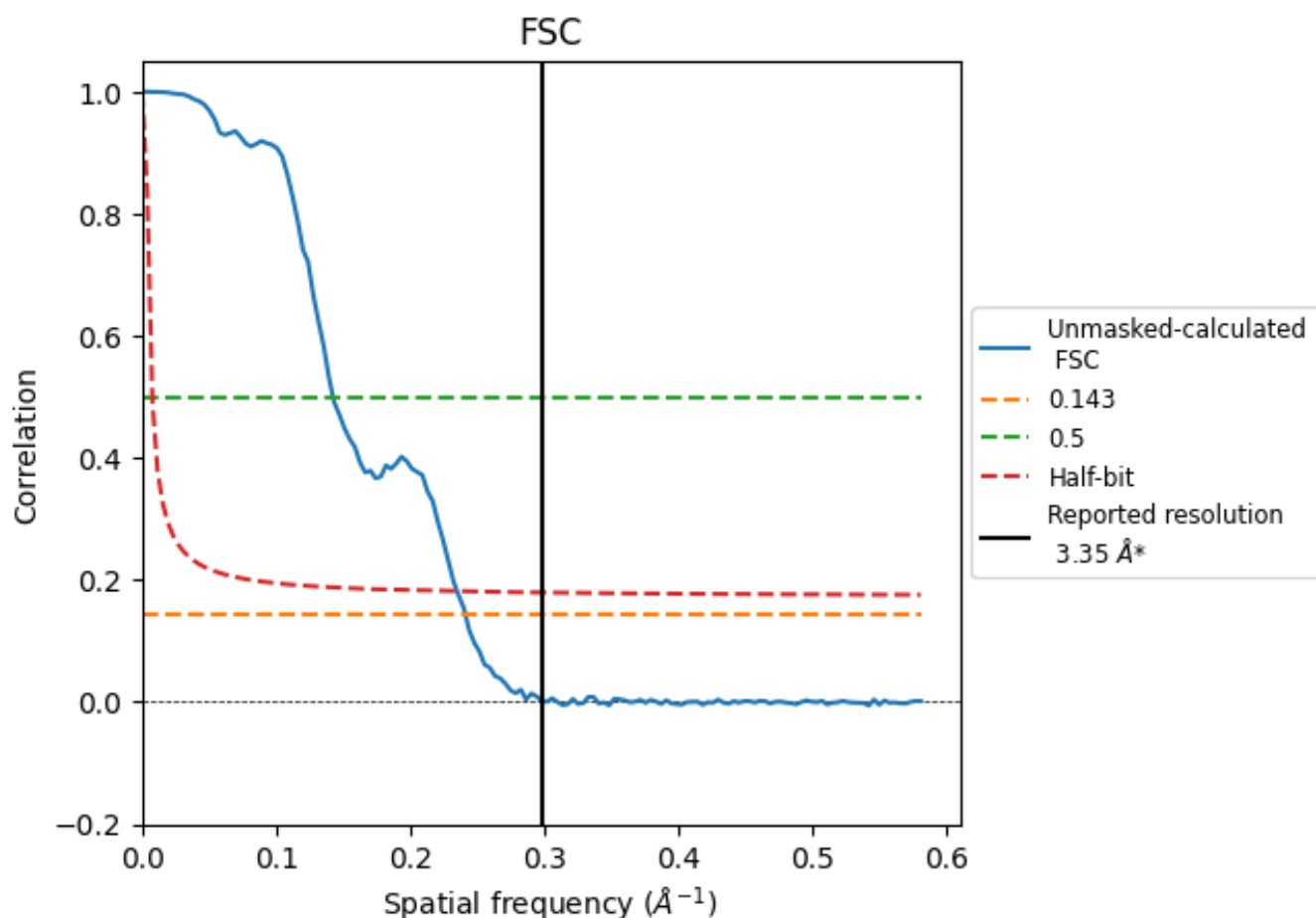


*Reported resolution corresponds to spatial frequency of 0.299 Å⁻¹

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 0.299 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

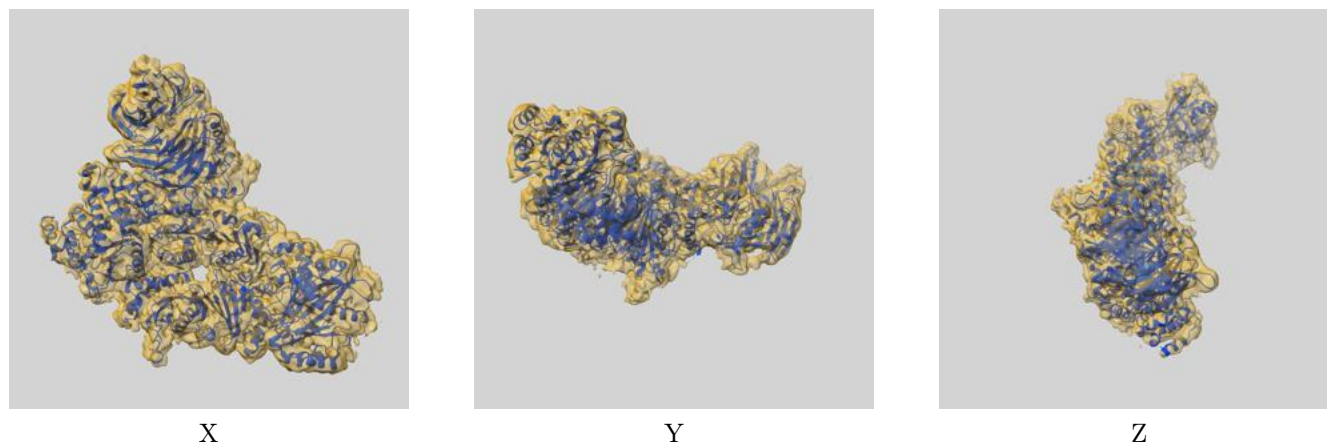
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.35	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.14	7.01	4.25

*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 4.14 differs from the reported value 3.35 by more than 10 %

9 Map-model fit [i](#)

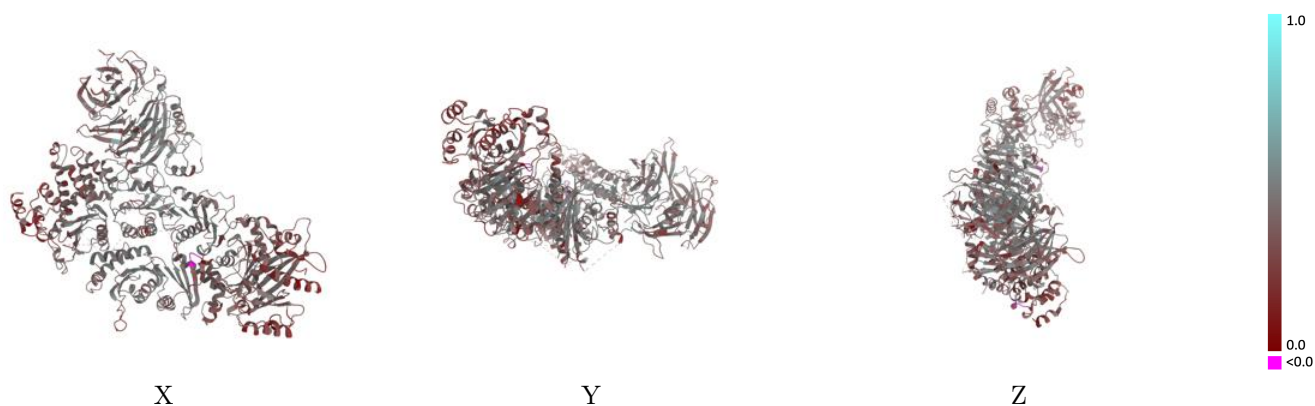
This section contains information regarding the fit between EMDB map EMD-13790 and PDB model 7Q3E. Per-residue inclusion information can be found in section [3](#) on page [8](#).

9.1 Map-model overlay [i](#)



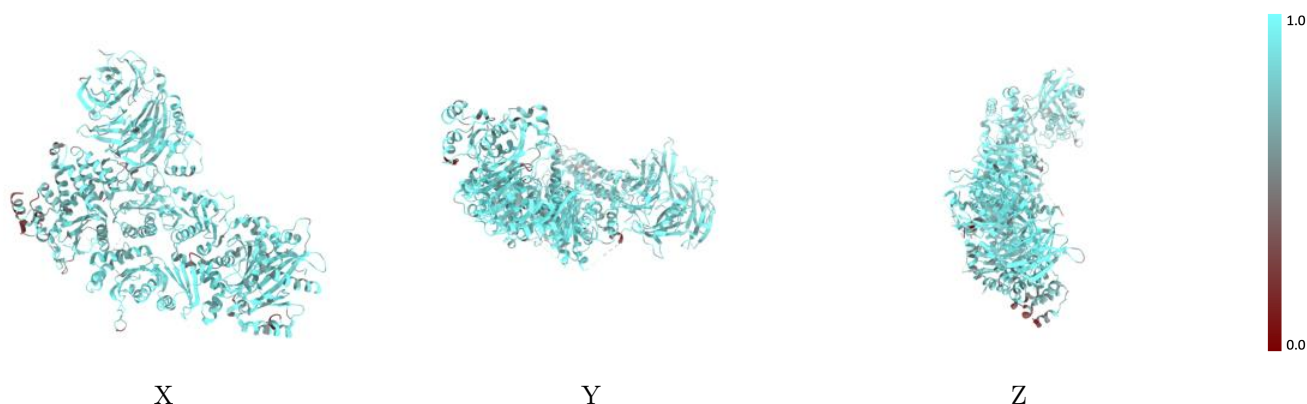
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



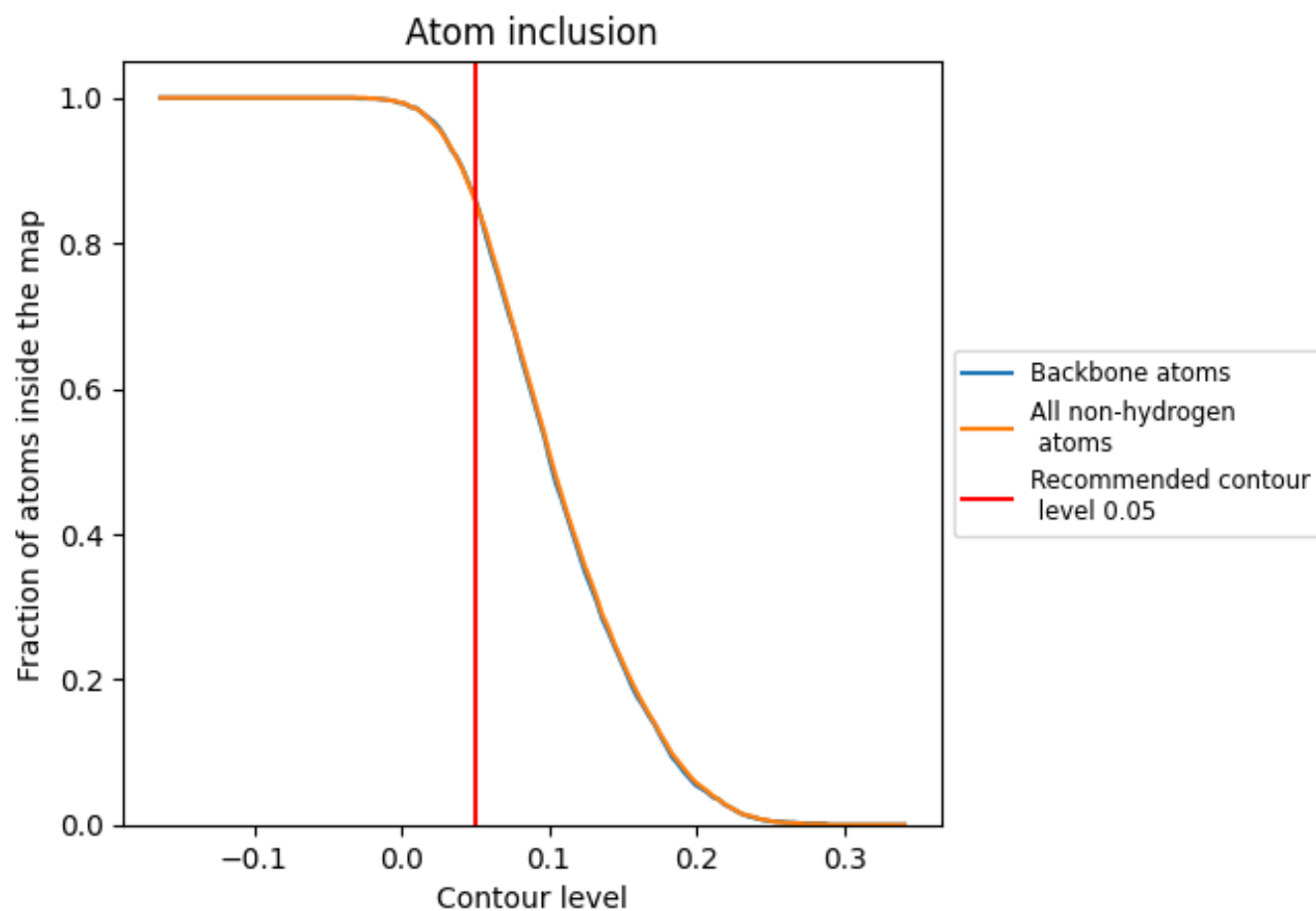
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.05).

9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 86% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8590	0.3890
A	0.8360	0.3900
B	0.8580	0.4080
C	0.9190	0.4070
D	0.8310	0.3130

