



wwPDB EM Validation Summary Report ⓘ

Mar 9, 2026 – 01:34 PM UTC

PDB ID : 8FLJ / pdb_00008flj
EMDB ID : EMD-29280
Title : Cas1-Cas2/3 integrase and IHF bound to CRISPR leader, repeat and foreign DNA
Authors : Santiago-Frangos, A.; Henriques, W.S.; Wiegand, T.; Gauvin, C.; Buyukyoruk, M.; Neselu, K.; Eng, E.T.; Lander, G.C.; Wiedenheft, B.
Deposited on : 2022-12-21
Resolution : 3.48 Å(reported)

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A user guide is available at

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

The types of validation reports are described at

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

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

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

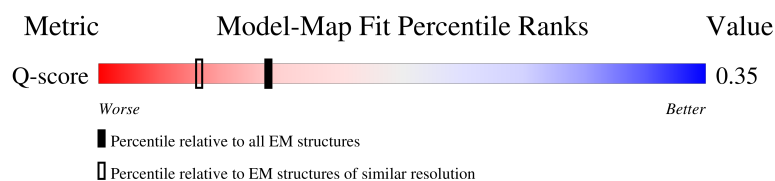
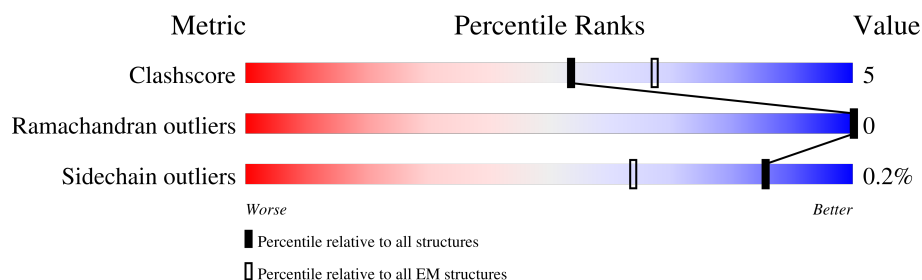
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.48 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	13672 (2.98 - 3.98)

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	341	80% 11% 9%
1	B	341	79% 13% 7%
1	C	341	79% 9% 11%
1	D	341	82% 10% 8%

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Mol	Chain	Length	Quality of chain
2	E	102	
2	G	102	
3	F	96	
3	H	96	
4	I	139	
5	J	171	
6	K	59	
7	L	27	
8	M	1076	
8	N	1076	

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 57091 atoms, of which 25297 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 CRISPR-associated endonuclease Cas1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	310	Total	C	H	N	O	S	0	0
			4834	1540	2388	454	446	6		
1	B	317	Total	C	H	N	O	S	0	0
			4940	1572	2442	462	458	6		
1	C	303	Total	C	H	N	O	S	0	0
			4162	1376	1967	407	406	6		
1	D	315	Total	C	H	N	O	S	0	0
			4920	1566	2434	460	454	6		

There are 68 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	MET	-	expression tag	UNP Q02ML7
A	-15	TRP	-	expression tag	UNP Q02ML7
A	-14	SER	-	expression tag	UNP Q02ML7
A	-13	HIS	-	expression tag	UNP Q02ML7
A	-12	PRO	-	expression tag	UNP Q02ML7
A	-11	GLN	-	expression tag	UNP Q02ML7
A	-10	PHE	-	expression tag	UNP Q02ML7
A	-9	GLU	-	expression tag	UNP Q02ML7
A	-8	LYS	-	expression tag	UNP Q02ML7
A	-7	GLU	-	expression tag	UNP Q02ML7
A	-6	ASN	-	expression tag	UNP Q02ML7
A	-5	LEU	-	expression tag	UNP Q02ML7
A	-4	TYR	-	expression tag	UNP Q02ML7
A	-3	PHE	-	expression tag	UNP Q02ML7
A	-2	GLN	-	expression tag	UNP Q02ML7
A	-1	GLY	-	expression tag	UNP Q02ML7
A	0	SER	-	expression tag	UNP Q02ML7
B	-16	MET	-	expression tag	UNP Q02ML7
B	-15	TRP	-	expression tag	UNP Q02ML7
B	-14	SER	-	expression tag	UNP Q02ML7
B	-13	HIS	-	expression tag	UNP Q02ML7
B	-12	PRO	-	expression tag	UNP Q02ML7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	GLN	-	expression tag	UNP Q02ML7
B	-10	PHE	-	expression tag	UNP Q02ML7
B	-9	GLU	-	expression tag	UNP Q02ML7
B	-8	LYS	-	expression tag	UNP Q02ML7
B	-7	GLU	-	expression tag	UNP Q02ML7
B	-6	ASN	-	expression tag	UNP Q02ML7
B	-5	LEU	-	expression tag	UNP Q02ML7
B	-4	TYR	-	expression tag	UNP Q02ML7
B	-3	PHE	-	expression tag	UNP Q02ML7
B	-2	GLN	-	expression tag	UNP Q02ML7
B	-1	GLY	-	expression tag	UNP Q02ML7
B	0	SER	-	expression tag	UNP Q02ML7
C	-16	MET	-	expression tag	UNP Q02ML7
C	-15	TRP	-	expression tag	UNP Q02ML7
C	-14	SER	-	expression tag	UNP Q02ML7
C	-13	HIS	-	expression tag	UNP Q02ML7
C	-12	PRO	-	expression tag	UNP Q02ML7
C	-11	GLN	-	expression tag	UNP Q02ML7
C	-10	PHE	-	expression tag	UNP Q02ML7
C	-9	GLU	-	expression tag	UNP Q02ML7
C	-8	LYS	-	expression tag	UNP Q02ML7
C	-7	GLU	-	expression tag	UNP Q02ML7
C	-6	ASN	-	expression tag	UNP Q02ML7
C	-5	LEU	-	expression tag	UNP Q02ML7
C	-4	TYR	-	expression tag	UNP Q02ML7
C	-3	PHE	-	expression tag	UNP Q02ML7
C	-2	GLN	-	expression tag	UNP Q02ML7
C	-1	GLY	-	expression tag	UNP Q02ML7
C	0	SER	-	expression tag	UNP Q02ML7
D	-16	MET	-	expression tag	UNP Q02ML7
D	-15	TRP	-	expression tag	UNP Q02ML7
D	-14	SER	-	expression tag	UNP Q02ML7
D	-13	HIS	-	expression tag	UNP Q02ML7
D	-12	PRO	-	expression tag	UNP Q02ML7
D	-11	GLN	-	expression tag	UNP Q02ML7
D	-10	PHE	-	expression tag	UNP Q02ML7
D	-9	GLU	-	expression tag	UNP Q02ML7
D	-8	LYS	-	expression tag	UNP Q02ML7
D	-7	GLU	-	expression tag	UNP Q02ML7
D	-6	ASN	-	expression tag	UNP Q02ML7
D	-5	LEU	-	expression tag	UNP Q02ML7
D	-4	TYR	-	expression tag	UNP Q02ML7

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-3	PHE	-	expression tag	UNP Q02ML7
D	-2	GLN	-	expression tag	UNP Q02ML7
D	-1	GLY	-	expression tag	UNP Q02ML7
D	0	SER	-	expression tag	UNP Q02ML7

- Molecule 2 is a protein called Integration host factor subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	94	Total	C	H	N	O	0	0
			680	276	216	94	94		
2	G	98	Total	C	H	N	O	0	0
			708	287	225	98	98		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	1	GLY	-	expression tag	UNP Q02NN5
E	2	PRO	-	expression tag	UNP Q02NN5
G	1	GLY	-	expression tag	UNP Q02NN5
G	2	PRO	-	expression tag	UNP Q02NN5

- Molecule 3 is a protein called Integration host factor subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	F	94	Total	C	H	N	O	0	0
			670	273	209	94	94		
3	H	94	Total	C	H	N	O	0	0
			670	273	209	94	94		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	1	GLY	-	expression tag	UNP Q02PW7
F	2	PRO	-	expression tag	UNP Q02PW7
H	1	GLY	-	expression tag	UNP Q02PW7
H	2	PRO	-	expression tag	UNP Q02PW7

- Molecule 4 is a DNA chain called CRISPR leader, sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	I	139	Total	C	H	N	O	P	0	0
			4419	1361	1564	535	820	139		

- Molecule 5 is a DNA chain called CRISPR leader and repeat, anti-sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	J	148	Total	C	H	N	O	P	0	0
			4709	1450	1678	533	900	148		

- Molecule 6 is a DNA chain called CRISPR repeat and prespacer, sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	K	36	Total	C	H	N	O	P	0	0
			1145	352	408	128	221	36		

- Molecule 7 is a DNA chain called Prespacer, anti-sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	L	27	Total	C	H	N	O	P	0	0
			854	262	302	107	156	27		

- Molecule 8 is a protein called CRISPR-associated nuclease/helicase Cas3 subtype I-F/YPEST.

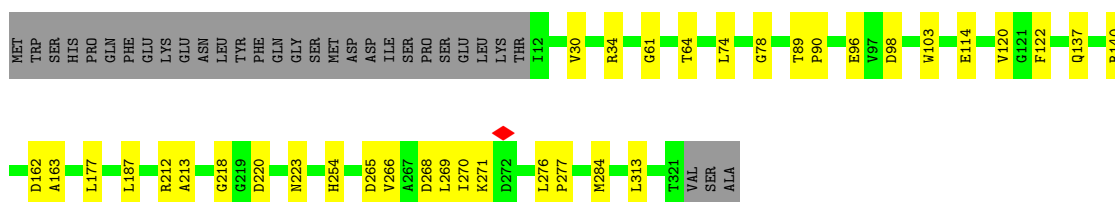
Mol	Chain	Residues	Atoms						AltConf	Trace
8	M	970	Total	C	H	N	O	S	0	0
			12232	4092	5636	1278	1205	21		
8	N	954	Total	C	H	N	O	S	0	0
			12148	4057	5619	1259	1192	21		

3 Residue-property plots

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

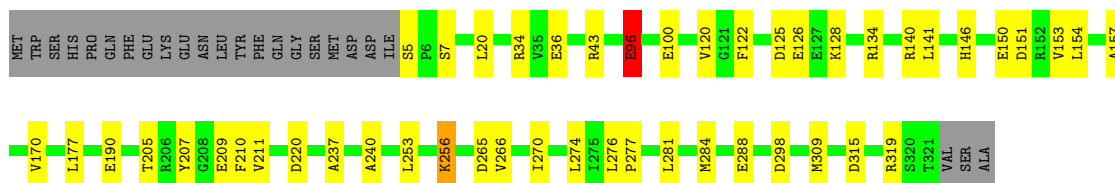
• Molecule 1: CRISPR-associated endonuclease Cas1

Chain A: 



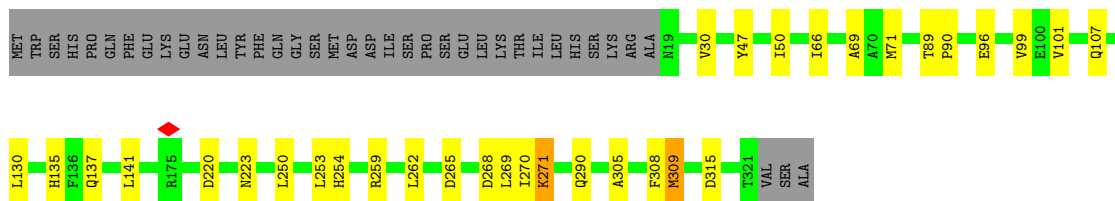
• Molecule 1: CRISPR-associated endonuclease Cas1

Chain B: 



• Molecule 1: CRISPR-associated endonuclease Cas1

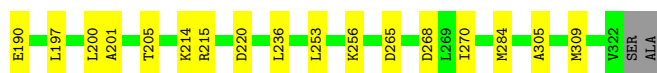
Chain C: 



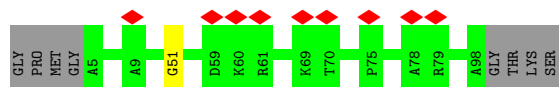
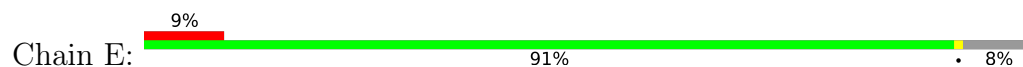
• Molecule 1: CRISPR-associated endonuclease Cas1

Chain D: 

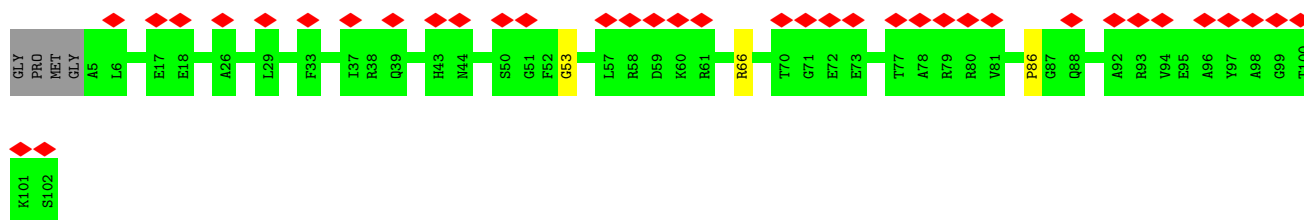




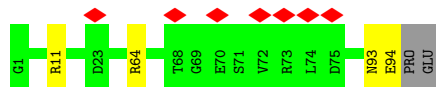
- Molecule 2: Integration host factor subunit alpha



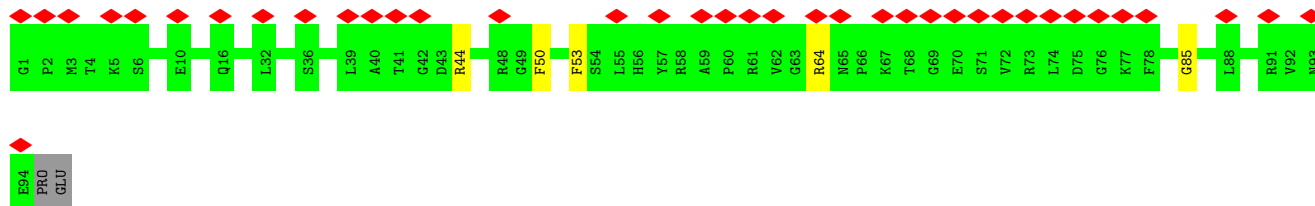
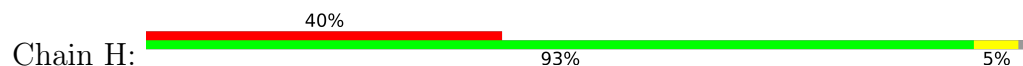
- Molecule 2: Integration host factor subunit alpha



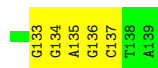
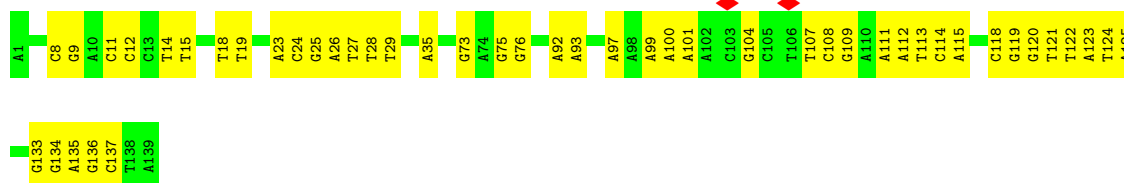
- Molecule 3: Integration host factor subunit beta



- Molecule 3: Integration host factor subunit beta

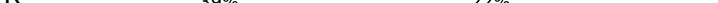


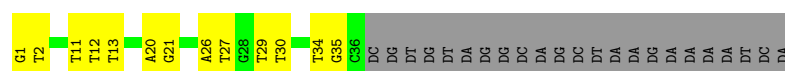
- Molecule 4: CRISPR leader, sense strand of DNA



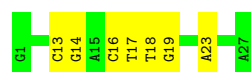
- Chain J:  68% 18% 13%

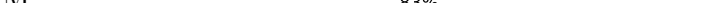


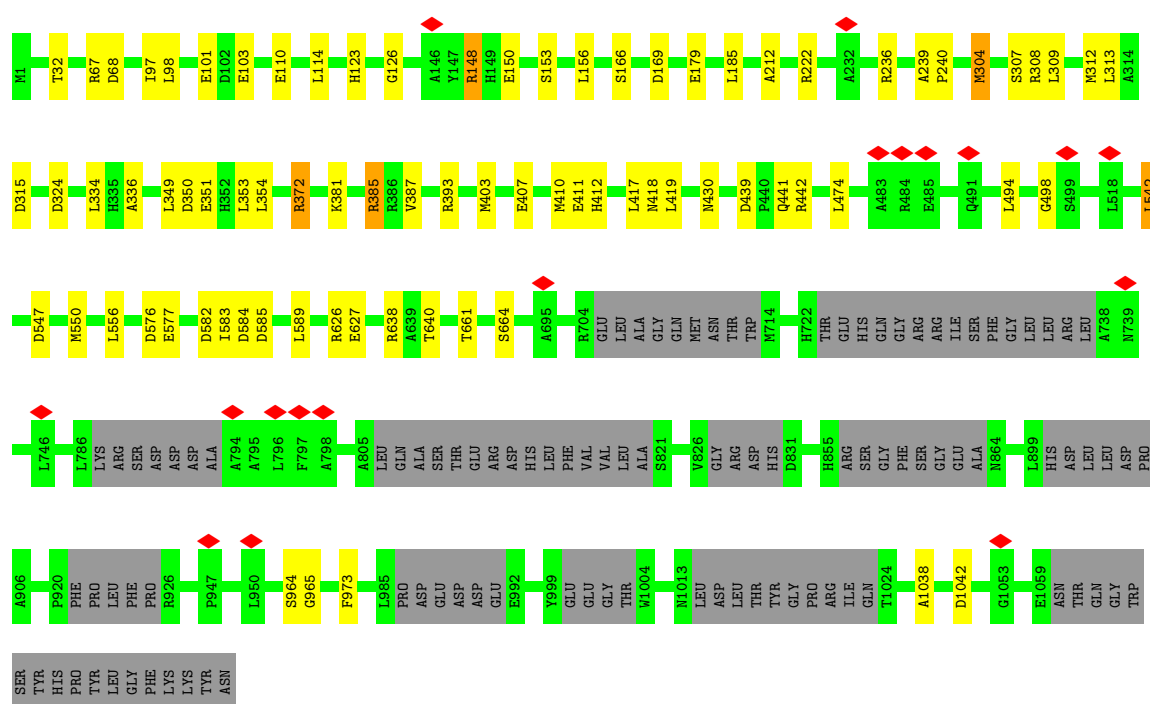
- Chain K:  39% 22% 39%



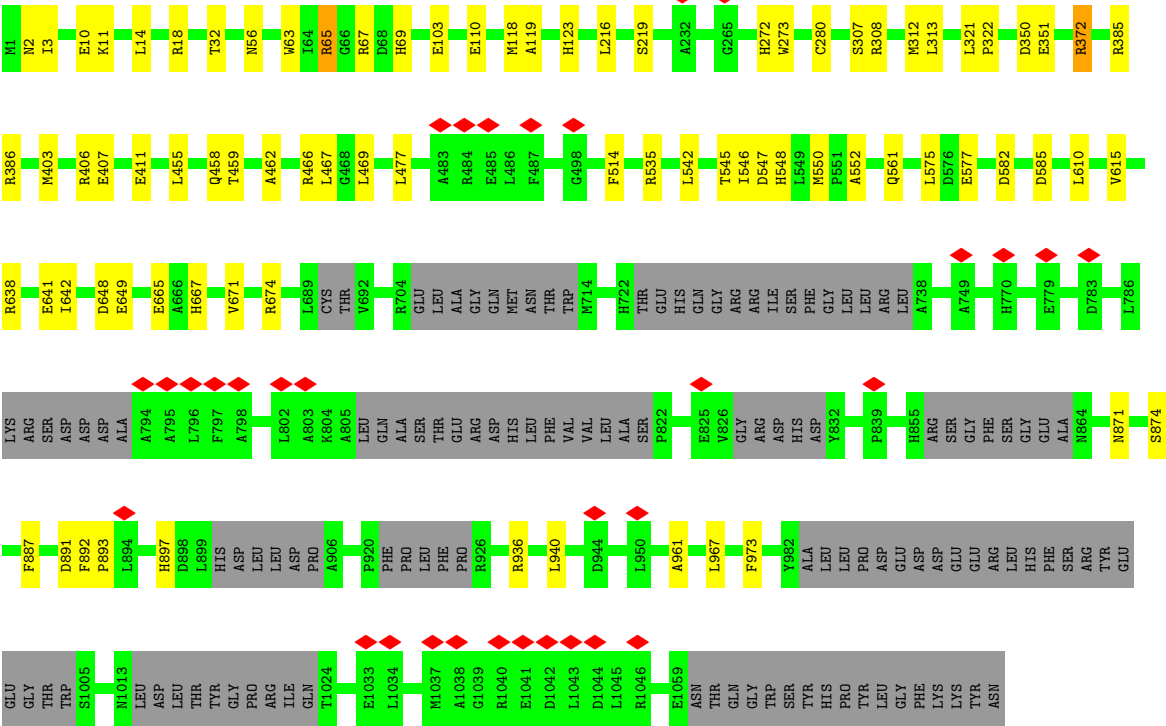
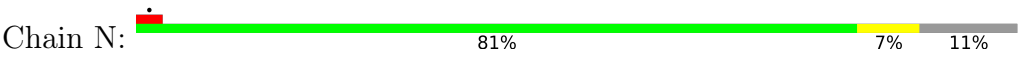
- Chain L: 74% 26%



- Chain M:  83% 7% 10%



- Molecule 8: CRISPR-associated nuclease/helicase Cas3 subtype I-F/YPEST



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	366794	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 ($e^-/\text{\AA}^2$)	69	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2100	Depositor
Magnification	46860	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	42.121	Depositor
Minimum map value	-22.553	Depositor
Average map value	0.001	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	4.6	Depositor
Map size (Å)	409.72803, 409.72803, 409.72803	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.067, 1.067, 1.067	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	A	0.23	0/2498	0.40	0/3384
1	B	0.29	1/2551 (0.0%)	0.48	2/3456 (0.1%)
1	C	0.31	1/2239 (0.0%)	0.57	7/3052 (0.2%)
1	D	0.26	0/2538	0.51	2/3438 (0.1%)
2	E	0.15	0/463	0.47	0/643
2	G	0.13	0/482	0.38	0/669
3	F	0.15	0/460	0.40	0/637
3	H	0.13	0/460	0.43	0/637
4	I	0.21	0/3208	0.48	0/4948
5	J	0.22	0/3395	0.49	0/5239
6	K	0.26	0/824	0.48	0/1270
7	L	0.26	0/620	0.47	0/953
8	M	0.22	0/6702	0.45	9/9133 (0.1%)
8	N	0.23	0/6637	0.46	5/9041 (0.1%)
All	All	0.24	2/33077 (0.0%)	0.47	25/46500 (0.1%)

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	C	0	1
3	F	0	2
3	H	0	3
8	M	0	1
8	N	0	2
All	All	0	9

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	130	LEU	CG-CD2	-8.72	1.23	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	96	GLU	CG-CD	-6.07	1.36	1.52

The worst 5 of 25 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	N	67	ARG	CG-CD-NE	12.66	139.86	112.00
8	M	148	ARG	CG-CD-NE	-11.97	85.67	112.00
1	C	271	LYS	CG-CD-CE	10.54	135.55	111.30
8	M	385	ARG	CA-CB-CG	9.69	133.47	114.10
8	N	458	GLN	CB-CG-CD	8.31	126.73	112.60

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	259	ARG	Sidechain
3	F	11	ARG	Peptide
3	F	64	ARG	Peptide
3	H	44	ARG	Peptide
3	H	53	PHE	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	A	2446	2388	2409	25	0
1	B	2498	2442	2463	37	0
1	C	2195	1967	1987	20	0
1	D	2486	2434	2455	29	0
2	E	464	216	216	1	0
2	G	483	225	225	2	0
3	F	461	209	209	1	0
3	H	461	209	209	1	0
4	I	2855	1564	1564	42	0
5	J	3031	1678	1678	24	0
6	K	737	408	409	10	0
7	L	552	302	302	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	M	6596	5636	5634	61	0
8	N	6529	5619	5618	55	0
All	All	31794	25297	25378	295	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 5.

The worst 5 of 295 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:D:96:GLU:N	1:D:96:GLU:OE1	2.08	0.87
8:M:582:ASP:OD1	8:M:583:ILE:N	2.09	0.85
8:N:407:GLU:OE1	8:N:407:GLU:N	2.09	0.85
4:I:107:DT:O2	5:J:194:DA:N7	2.10	0.84
1:C:305:ALA:O	1:C:309:MET:HG3	1.78	0.83

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	308/341 (90%)	292 (95%)	16 (5%)	0	100	100
1	B	315/341 (92%)	297 (94%)	18 (6%)	0	100	100
1	C	301/341 (88%)	290 (96%)	11 (4%)	0	100	100
1	D	313/341 (92%)	300 (96%)	13 (4%)	0	100	100
2	E	92/102 (90%)	90 (98%)	2 (2%)	0	100	100
2	G	96/102 (94%)	94 (98%)	2 (2%)	0	100	100
3	F	92/96 (96%)	88 (96%)	4 (4%)	0	100	100
3	H	92/96 (96%)	85 (92%)	7 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	M	946/1076 (88%)	905 (96%)	41 (4%)	0	100	100
8	N	930/1076 (86%)	895 (96%)	35 (4%)	0	100	100
All	All	3485/3912 (89%)	3336 (96%)	149 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	248/277 (90%)	247 (100%)	1 (0%)	84	81
1	B	255/277 (92%)	254 (100%)	1 (0%)	84	81
1	C	190/277 (69%)	190 (100%)	0	100	100
1	D	253/277 (91%)	252 (100%)	1 (0%)	84	81
8	M	494/885 (56%)	493 (100%)	1 (0%)	87	84
8	N	498/885 (56%)	498 (100%)	0	100	100
All	All	1938/2878 (67%)	1934 (100%)	4 (0%)	85	84

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	187	LEU
1	B	96	GLU
1	D	95	ASN
8	M	542	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
8	M	299	HIS
8	M	317	HIS
8	N	91	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
8	N	62	HIS
1	D	31	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

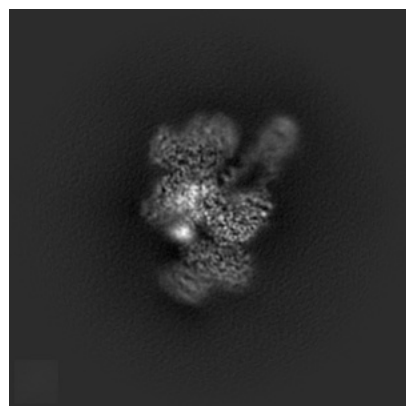
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29280. These allow visual inspection of the internal detail of the map and identification of artifacts.

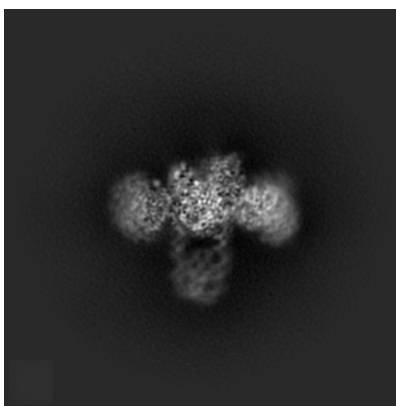
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

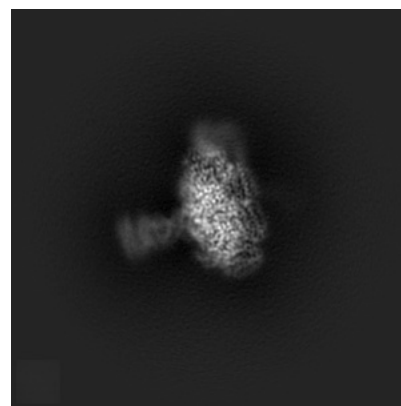
6.1.1 Primary map



X

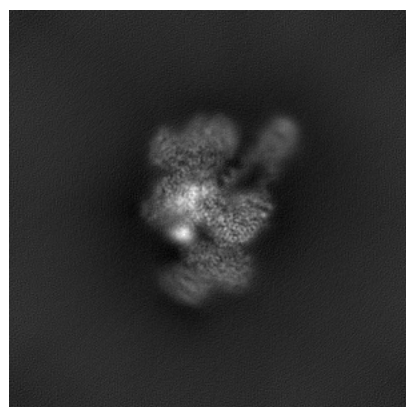


Y

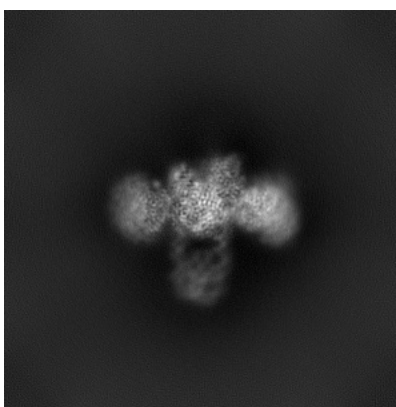


Z

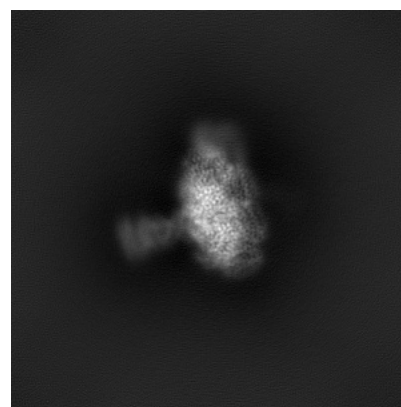
6.1.2 Raw map



X



Y

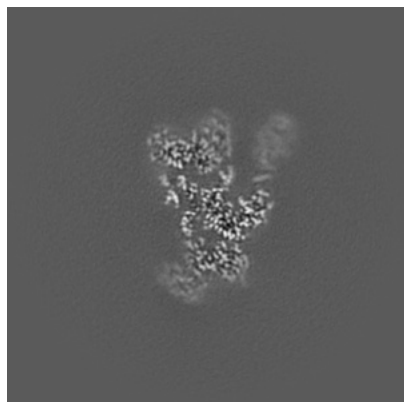


Z

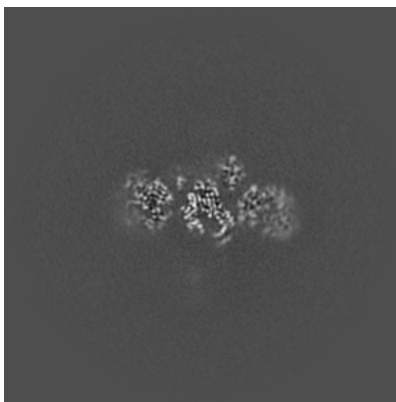
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

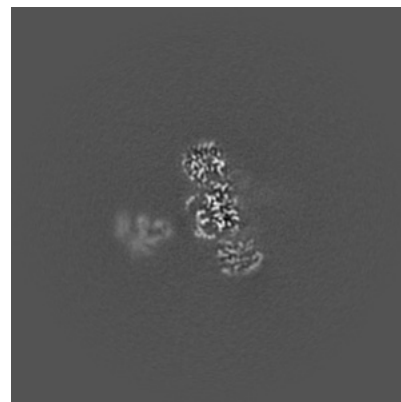
6.2.1 Primary map



X Index: 192

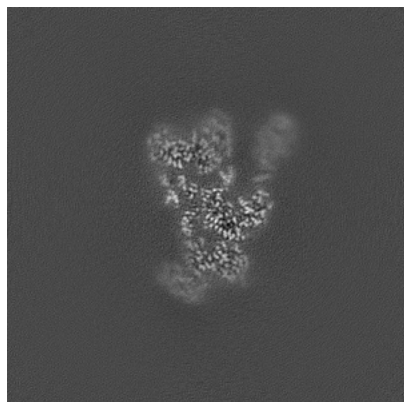


Y Index: 192

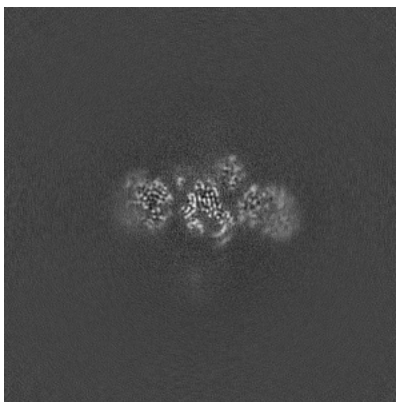


Z Index: 192

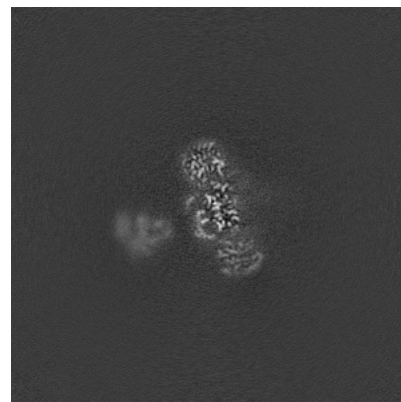
6.2.2 Raw map



X Index: 192



Y Index: 192

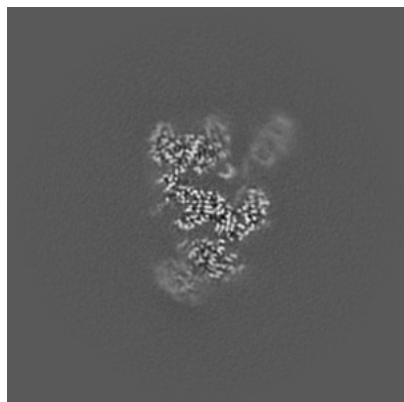


Z Index: 192

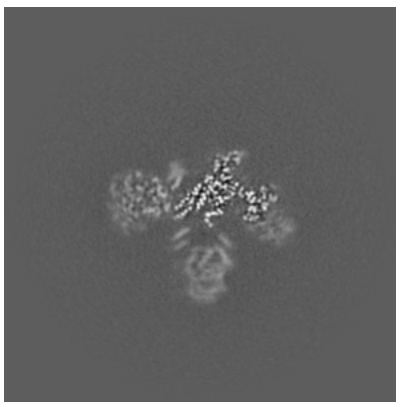
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

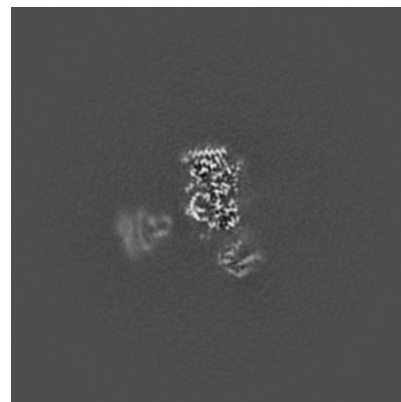
6.3.1 Primary map



X Index: 198

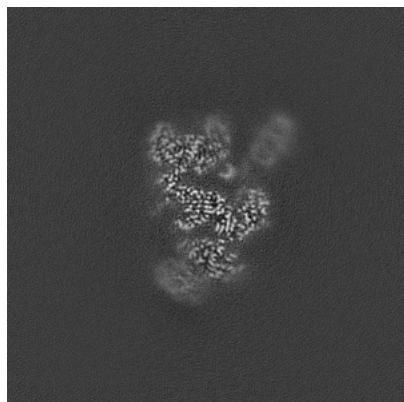


Y Index: 174

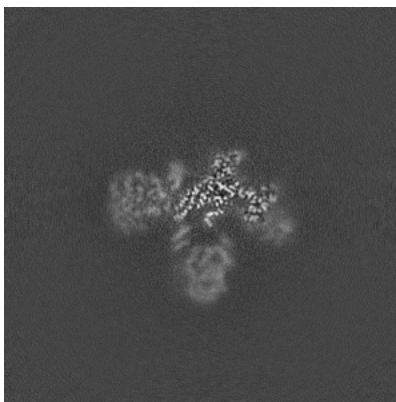


Z Index: 187

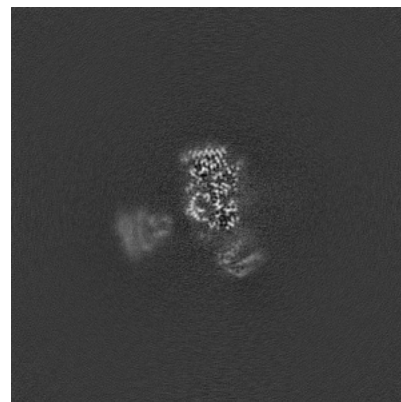
6.3.2 Raw map



X Index: 198



Y Index: 173

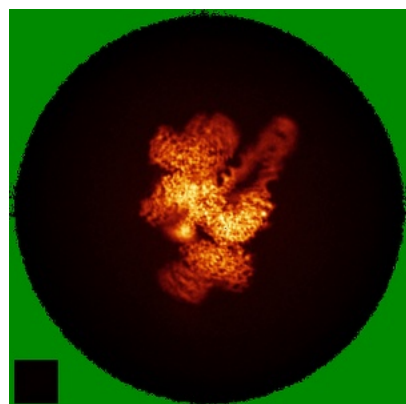


Z Index: 187

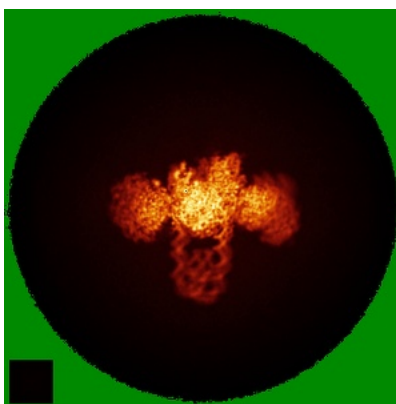
The images above show the largest variance slices of the map in three orthogonal directions.

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

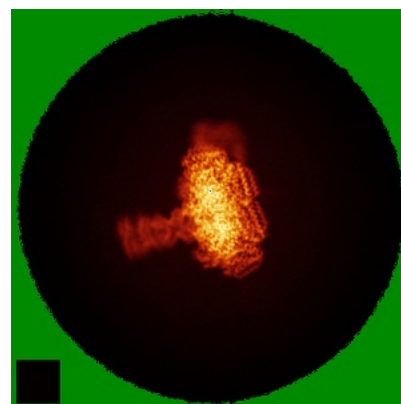
6.4.1 Primary map



X

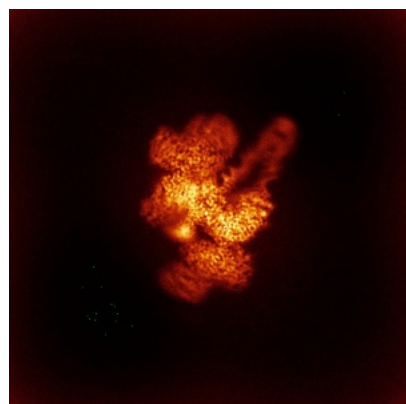


Y

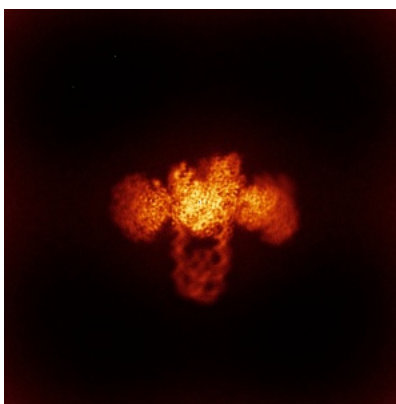


Z

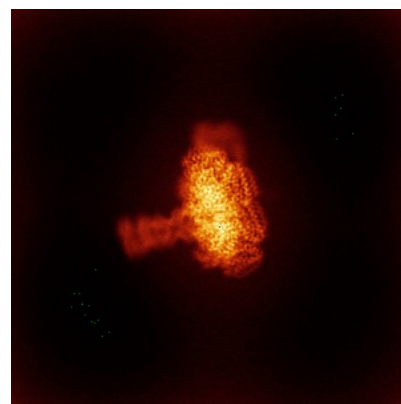
6.4.2 Raw map



X



Y

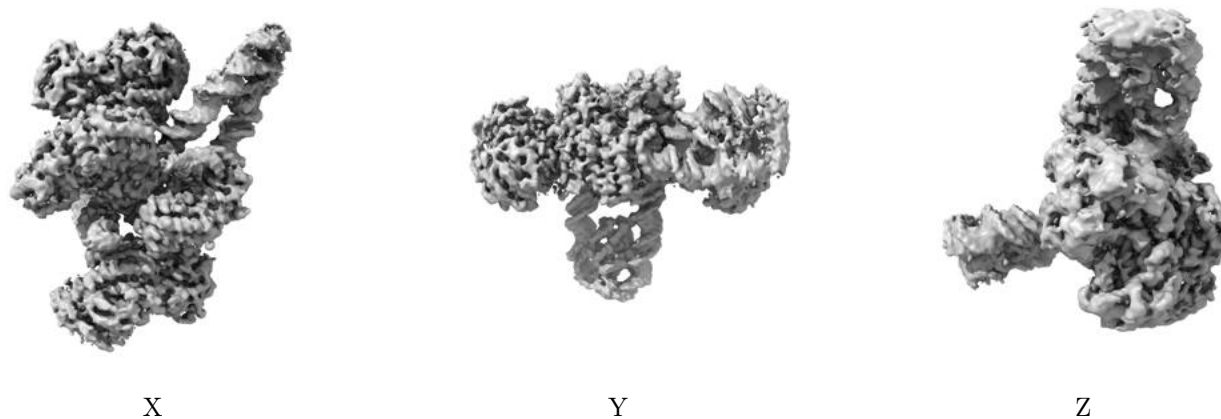


Z

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.

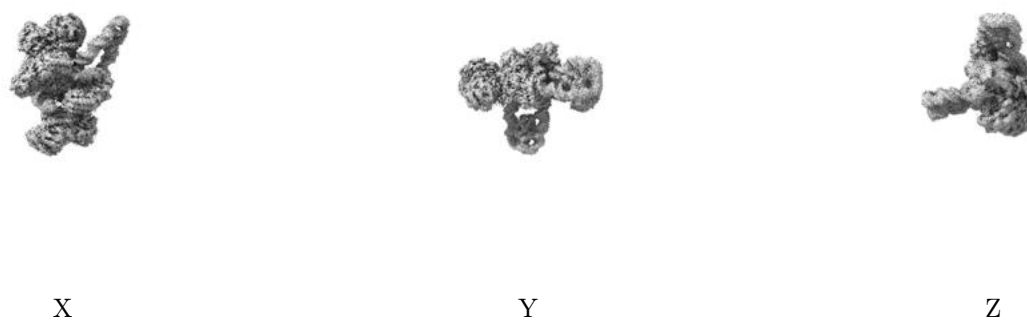
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 4.6. 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.

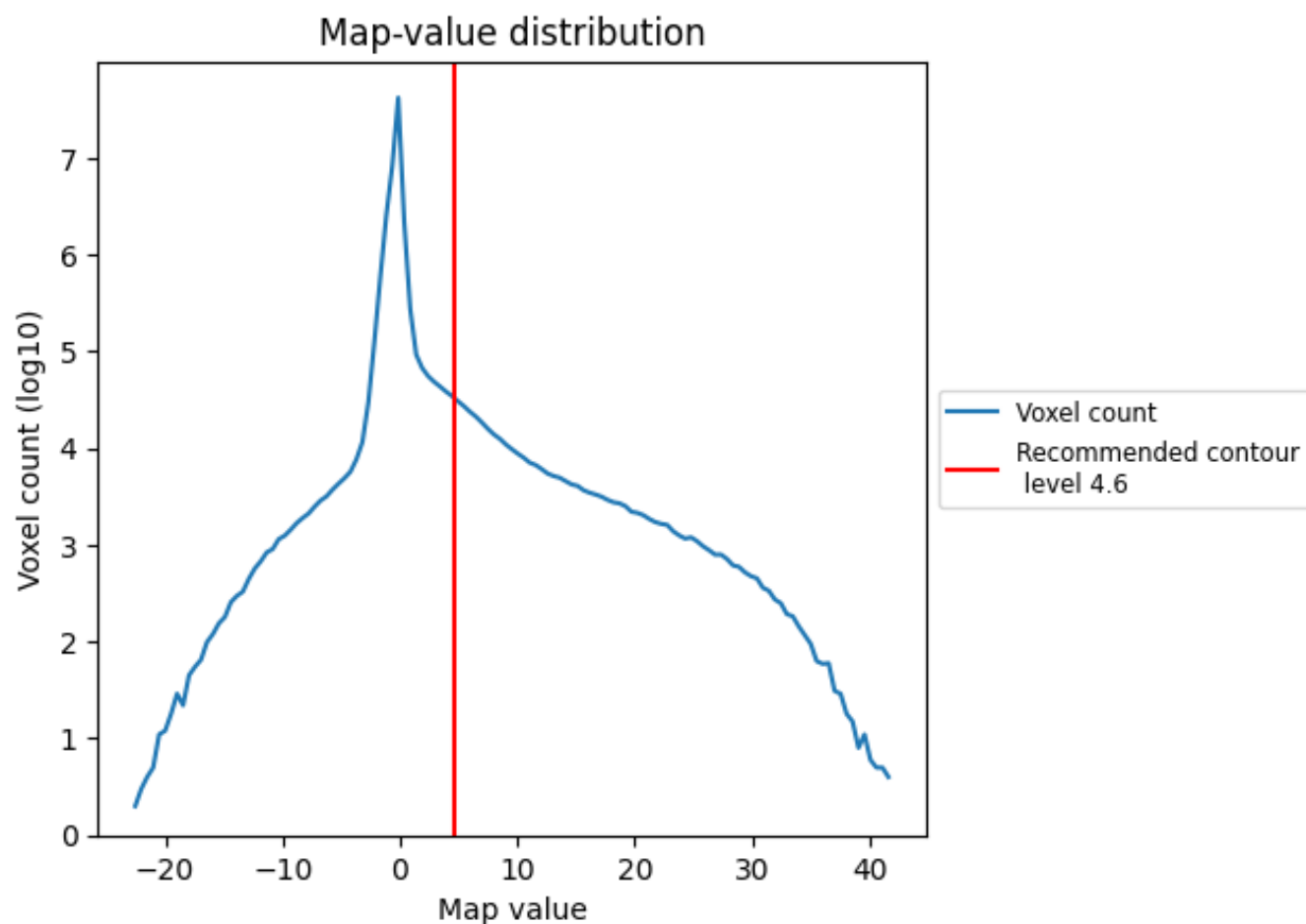
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

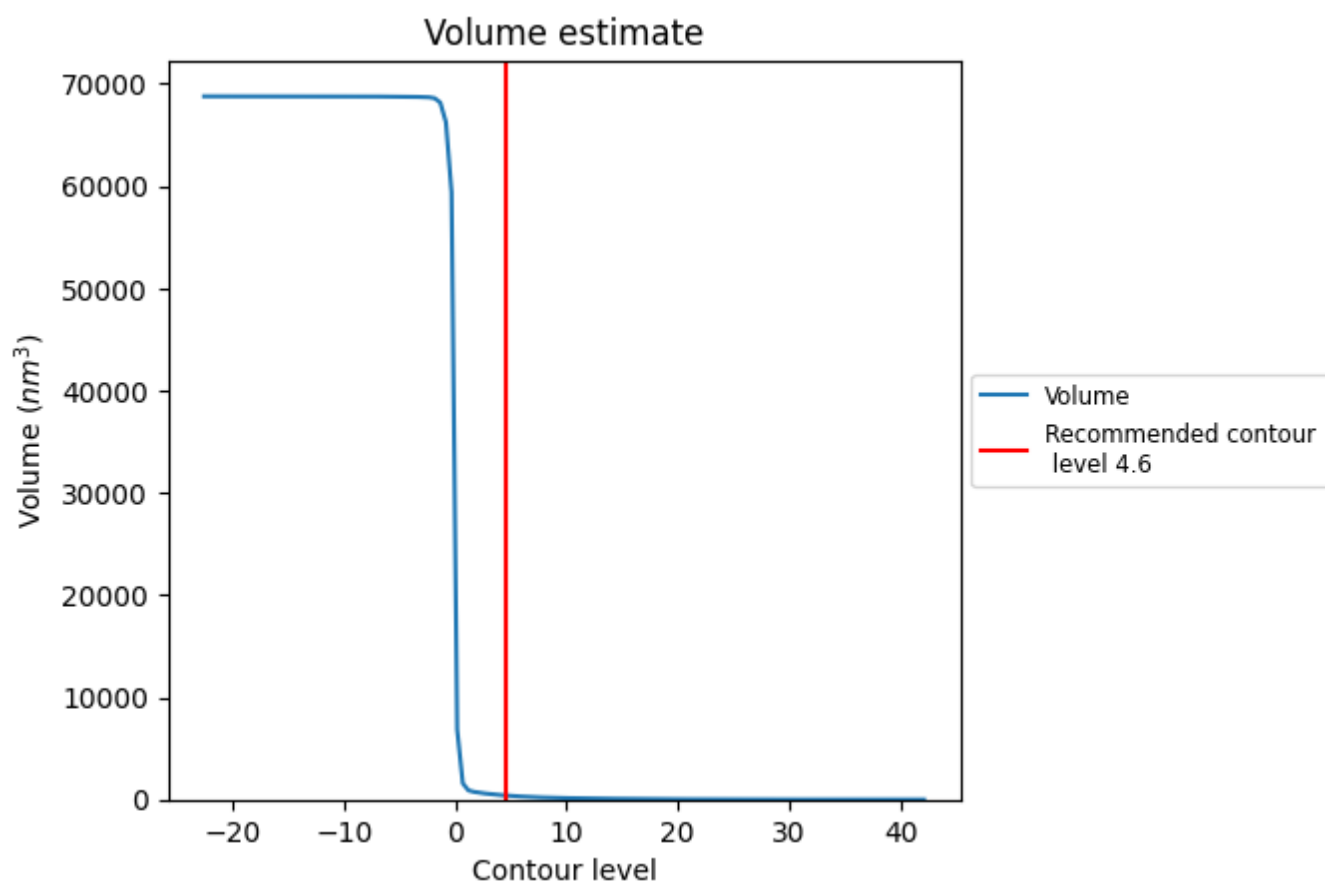
This section contains the results of statistical analysis of the map.

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.

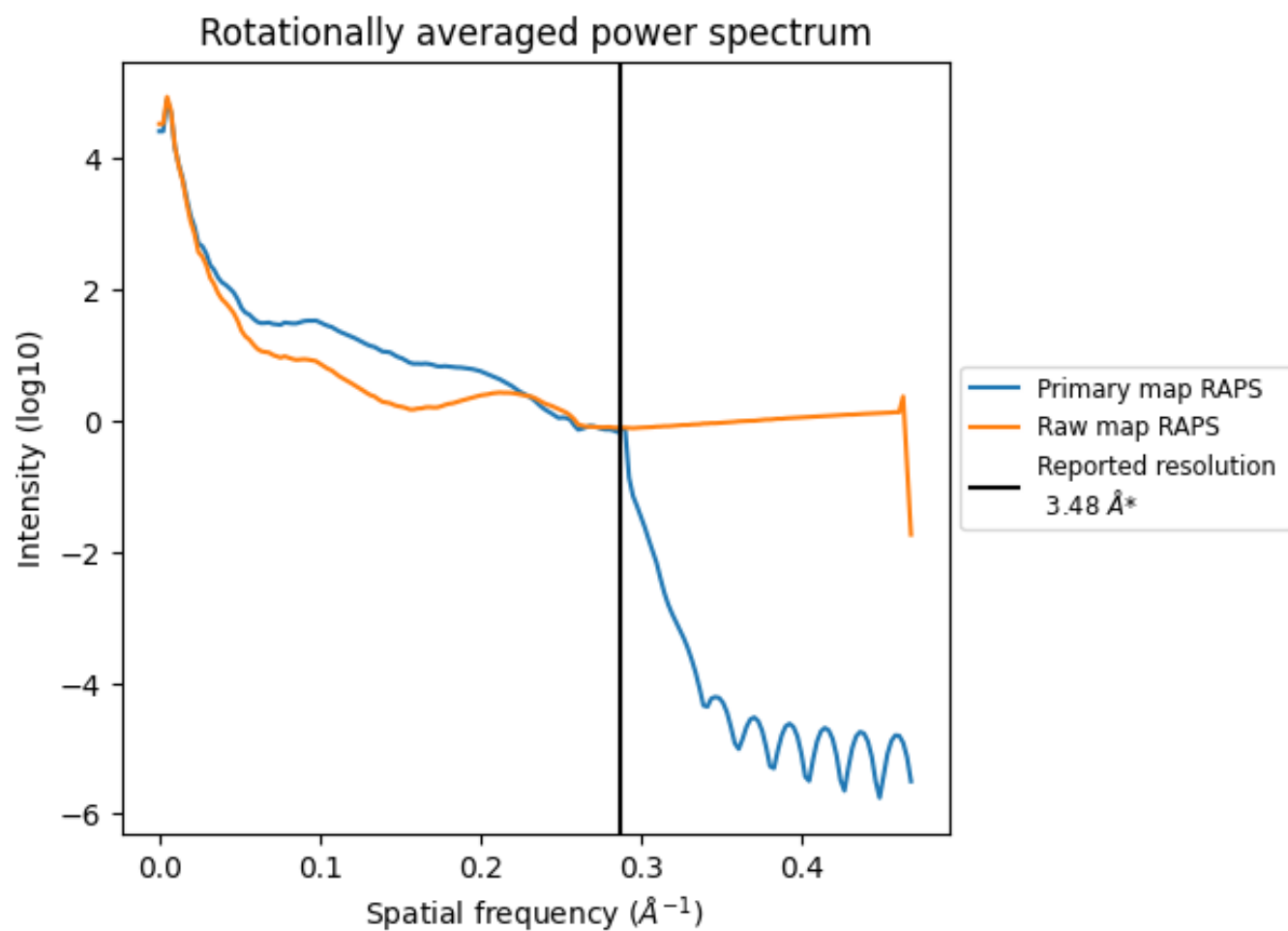
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 395 nm³; this corresponds to an approximate mass of 357 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 ⓘ

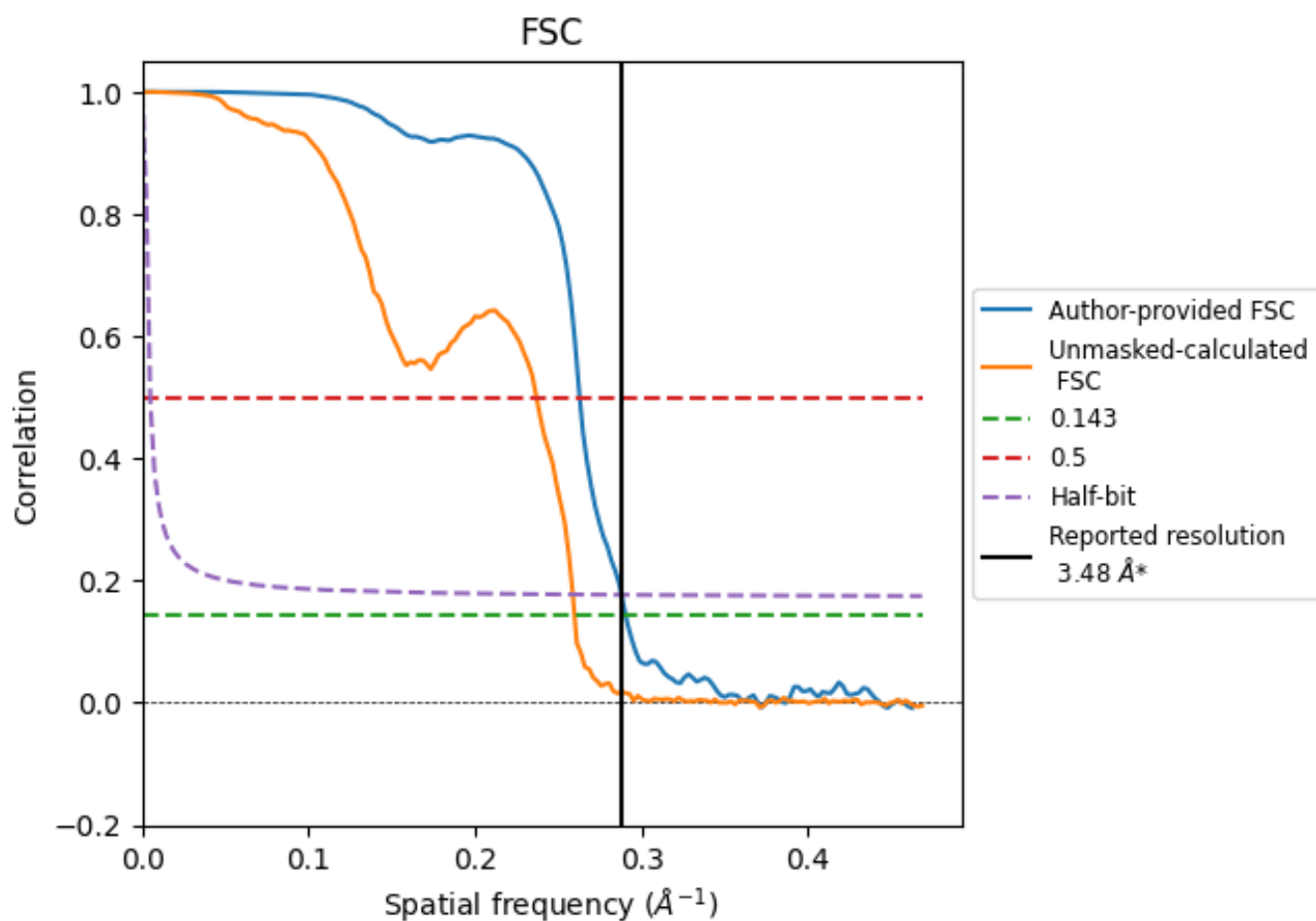


*Reported resolution corresponds to spatial frequency of 0.287 Å⁻¹

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 $0.287 \text{ \AA}^{-1}$

8.2 Resolution estimates [i](#)

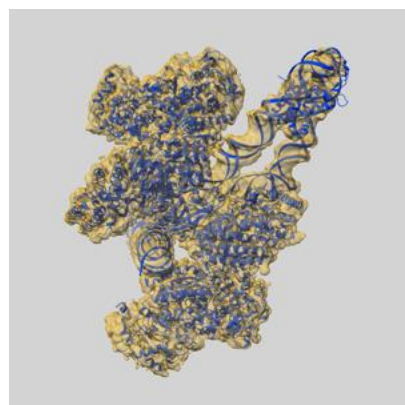
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.48	-	-
Author-provided FSC curve	3.44	3.81	3.47
Unmasked-calculated*	3.85	4.22	3.87

*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 3.85 differs from the reported value 3.48 by more than 10 %

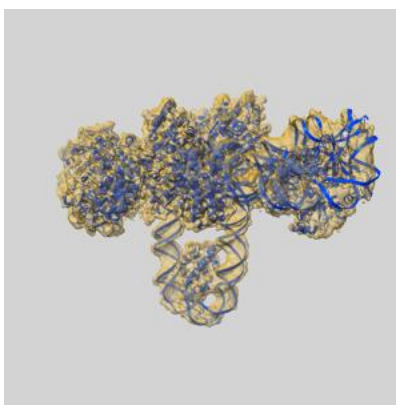
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-29280 and PDB model 8FLJ. Per-residue inclusion information can be found in section [3](#) on page [8](#).

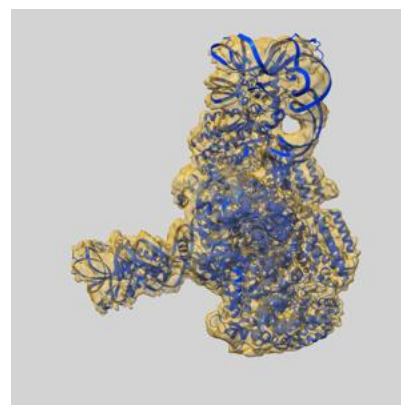
9.1 Map-model overlay [i](#)



X



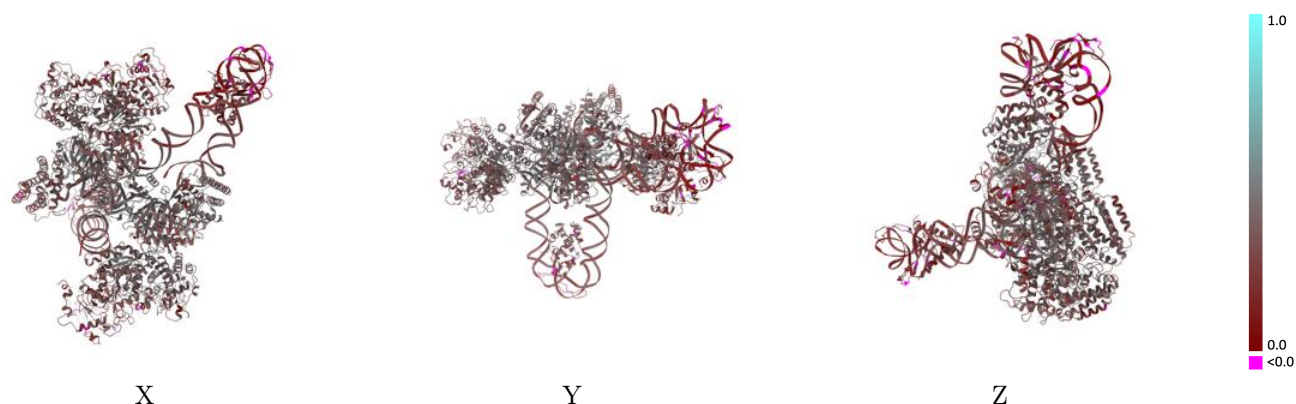
Y



Z

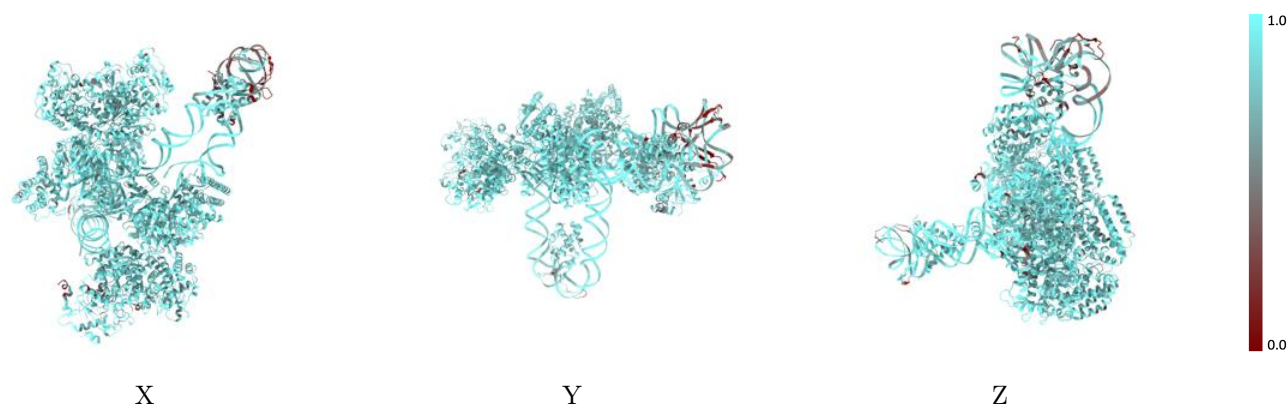
The images above show the 3D surface view of the map at the recommended contour level 4.6 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



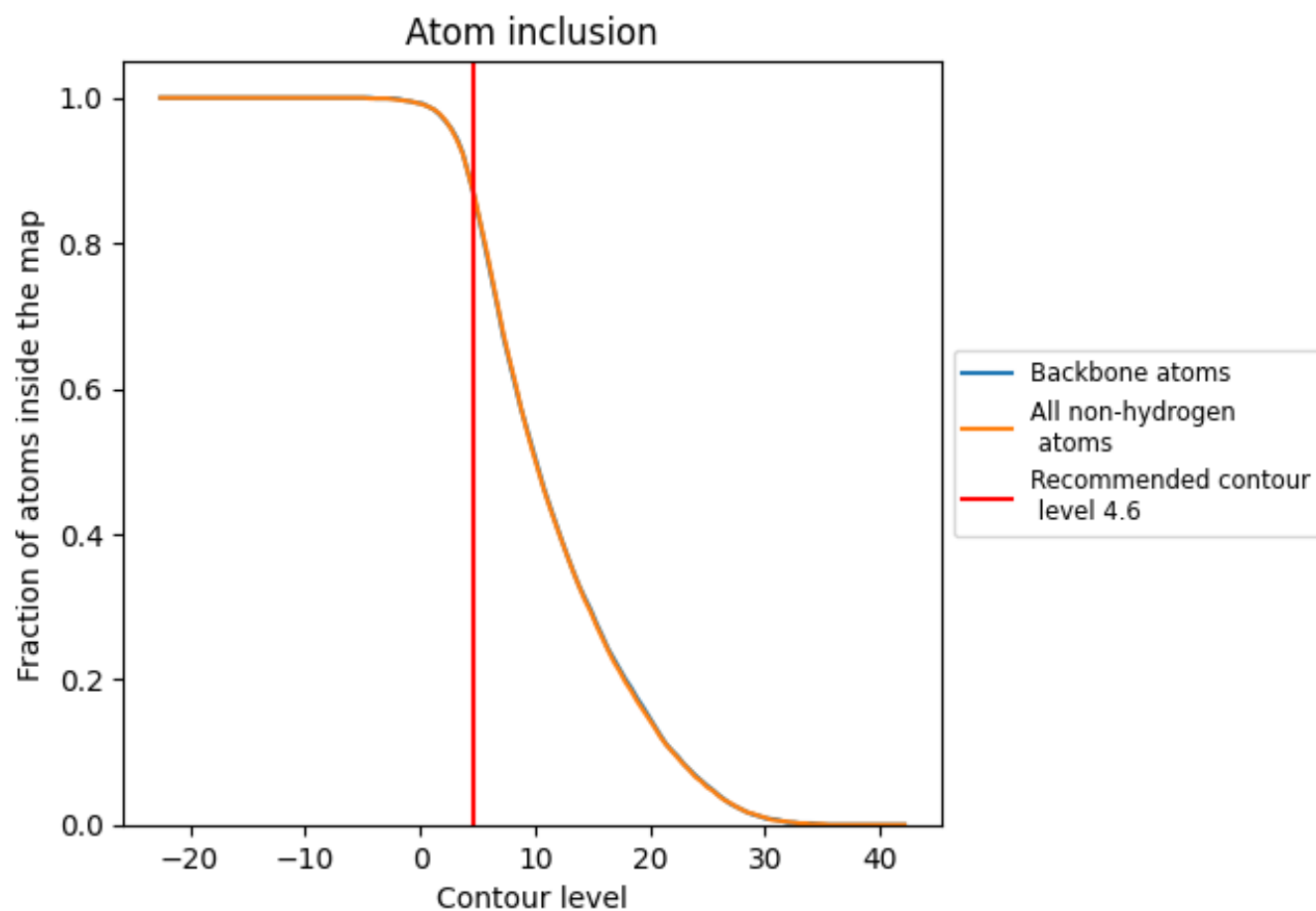
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (4.6).

9.4 Atom inclusion [i](#)



At the recommended contour level, 87% of all backbone atoms, 87% 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 (4.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8730	 0.3500
A	 0.9080	 0.4170
B	 0.8980	 0.4080
C	 0.8900	 0.3880
D	 0.8930	 0.3950
E	 0.8430	 0.2240
F	 0.8680	 0.2150
G	 0.5670	 0.1760
H	 0.5770	 0.1970
I	 0.8850	 0.2630
J	 0.8740	 0.2530
K	 0.9470	 0.3820
L	 0.9660	 0.4000
M	 0.8860	 0.3590
N	 0.8750	 0.3790

