



wwPDB EM Validation Summary Report ⓘ

Feb 26, 2024 – 09:41 PM EST

PDB ID : 6VQW
EMDB ID : EMD-21359
Title : Type I-F CRISPR-Csy complex with its inhibitor AcrF8
Authors : Zhang, K.; Li, S.; Pintilie, G.; Zhu, Y.; Huang, Z.; Chiu, W.
Deposited on : 2020-02-06
Resolution : 3.42 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

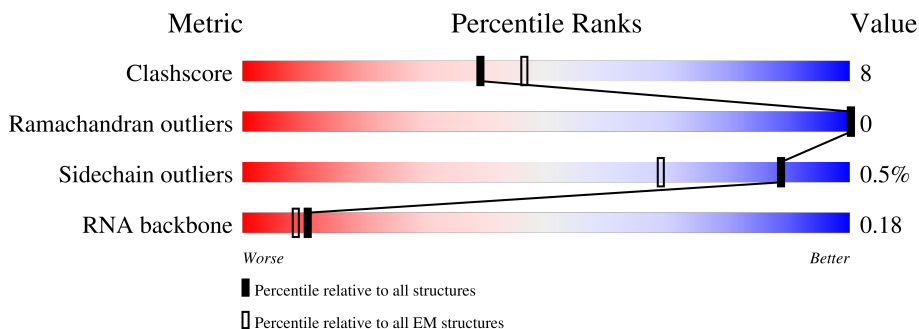
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance

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

The reported resolution of this entry is 3.42 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.



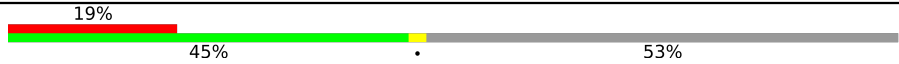

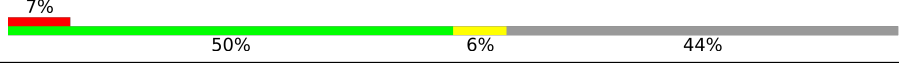

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	C	327	 9% 74% 17% 9%
2	D	360	 61% 20% 19%
2	E	360	 75% 18% 8%
2	F	360	 74% 18% 7%
2	G	360	 70% 22% 8%
2	H	360	 75% 16% 10%
2	I	360	 72% 19% 9%

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Mol	Chain	Length	Quality of chain
3	J	187	
4	A	92	
5	B	434	
6	K	60	

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 20479 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 Type I-F CRISPR-associated protein Csy2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C	297	2309	1462	428	415	4	0	0

- Molecule 2 is a protein called CRISPR-associated protein Csy3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	D	293	2272	1430	409	431	2	0	0
2	E	333	2575	1614	468	491	2	0	0
2	F	334	2587	1623	470	492	2	0	0
2	G	331	2559	1607	465	485	2	0	0
2	H	325	2516	1581	457	476	2	0	0
2	I	326	2523	1582	460	479	2	0	0

There are 114 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	1	MET	-	expression tag	UNP A0A444M080
D	2	LYS	-	expression tag	UNP A0A444M080
D	3	SER	-	expression tag	UNP A0A444M080
D	4	SER	-	expression tag	UNP A0A444M080
D	5	HIS	-	expression tag	UNP A0A444M080
D	6	HIS	-	expression tag	UNP A0A444M080
D	7	HIS	-	expression tag	UNP A0A444M080
D	8	HIS	-	expression tag	UNP A0A444M080
D	9	HIS	-	expression tag	UNP A0A444M080
D	10	HIS	-	expression tag	UNP A0A444M080
D	11	GLU	-	expression tag	UNP A0A444M080

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Chain	Residue	Modelled	Actual	Comment	Reference
D	12	ASN	-	expression tag	UNP A0A444M080
D	13	LEU	-	expression tag	UNP A0A444M080
D	14	TYR	-	expression tag	UNP A0A444M080
D	15	PHE	-	expression tag	UNP A0A444M080
D	16	GLN	-	expression tag	UNP A0A444M080
D	17	SER	-	expression tag	UNP A0A444M080
D	18	ASN	-	expression tag	UNP A0A444M080
D	19	ALA	-	expression tag	UNP A0A444M080
E	1	MET	-	expression tag	UNP A0A444M080
E	2	LYS	-	expression tag	UNP A0A444M080
E	3	SER	-	expression tag	UNP A0A444M080
E	4	SER	-	expression tag	UNP A0A444M080
E	5	HIS	-	expression tag	UNP A0A444M080
E	6	HIS	-	expression tag	UNP A0A444M080
E	7	HIS	-	expression tag	UNP A0A444M080
E	8	HIS	-	expression tag	UNP A0A444M080
E	9	HIS	-	expression tag	UNP A0A444M080
E	10	HIS	-	expression tag	UNP A0A444M080
E	11	GLU	-	expression tag	UNP A0A444M080
E	12	ASN	-	expression tag	UNP A0A444M080
E	13	LEU	-	expression tag	UNP A0A444M080
E	14	TYR	-	expression tag	UNP A0A444M080
E	15	PHE	-	expression tag	UNP A0A444M080
E	16	GLN	-	expression tag	UNP A0A444M080
E	17	SER	-	expression tag	UNP A0A444M080
E	18	ASN	-	expression tag	UNP A0A444M080
E	19	ALA	-	expression tag	UNP A0A444M080
F	1	MET	-	expression tag	UNP A0A444M080
F	2	LYS	-	expression tag	UNP A0A444M080
F	3	SER	-	expression tag	UNP A0A444M080
F	4	SER	-	expression tag	UNP A0A444M080
F	5	HIS	-	expression tag	UNP A0A444M080
F	6	HIS	-	expression tag	UNP A0A444M080
F	7	HIS	-	expression tag	UNP A0A444M080
F	8	HIS	-	expression tag	UNP A0A444M080
F	9	HIS	-	expression tag	UNP A0A444M080
F	10	HIS	-	expression tag	UNP A0A444M080
F	11	GLU	-	expression tag	UNP A0A444M080
F	12	ASN	-	expression tag	UNP A0A444M080
F	13	LEU	-	expression tag	UNP A0A444M080
F	14	TYR	-	expression tag	UNP A0A444M080
F	15	PHE	-	expression tag	UNP A0A444M080

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Chain	Residue	Modelled	Actual	Comment	Reference
F	16	GLN	-	expression tag	UNP A0A444M080
F	17	SER	-	expression tag	UNP A0A444M080
F	18	ASN	-	expression tag	UNP A0A444M080
F	19	ALA	-	expression tag	UNP A0A444M080
G	1	MET	-	expression tag	UNP A0A444M080
G	2	LYS	-	expression tag	UNP A0A444M080
G	3	SER	-	expression tag	UNP A0A444M080
G	4	SER	-	expression tag	UNP A0A444M080
G	5	HIS	-	expression tag	UNP A0A444M080
G	6	HIS	-	expression tag	UNP A0A444M080
G	7	HIS	-	expression tag	UNP A0A444M080
G	8	HIS	-	expression tag	UNP A0A444M080
G	9	HIS	-	expression tag	UNP A0A444M080
G	10	HIS	-	expression tag	UNP A0A444M080
G	11	GLU	-	expression tag	UNP A0A444M080
G	12	ASN	-	expression tag	UNP A0A444M080
G	13	LEU	-	expression tag	UNP A0A444M080
G	14	TYR	-	expression tag	UNP A0A444M080
G	15	PHE	-	expression tag	UNP A0A444M080
G	16	GLN	-	expression tag	UNP A0A444M080
G	17	SER	-	expression tag	UNP A0A444M080
G	18	ASN	-	expression tag	UNP A0A444M080
G	19	ALA	-	expression tag	UNP A0A444M080
H	1	MET	-	expression tag	UNP A0A444M080
H	2	LYS	-	expression tag	UNP A0A444M080
H	3	SER	-	expression tag	UNP A0A444M080
H	4	SER	-	expression tag	UNP A0A444M080
H	5	HIS	-	expression tag	UNP A0A444M080
H	6	HIS	-	expression tag	UNP A0A444M080
H	7	HIS	-	expression tag	UNP A0A444M080
H	8	HIS	-	expression tag	UNP A0A444M080
H	9	HIS	-	expression tag	UNP A0A444M080
H	10	HIS	-	expression tag	UNP A0A444M080
H	11	GLU	-	expression tag	UNP A0A444M080
H	12	ASN	-	expression tag	UNP A0A444M080
H	13	LEU	-	expression tag	UNP A0A444M080
H	14	TYR	-	expression tag	UNP A0A444M080
H	15	PHE	-	expression tag	UNP A0A444M080
H	16	GLN	-	expression tag	UNP A0A444M080
H	17	SER	-	expression tag	UNP A0A444M080
H	18	ASN	-	expression tag	UNP A0A444M080
H	19	ALA	-	expression tag	UNP A0A444M080

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Chain	Residue	Modelled	Actual	Comment	Reference
I	1	MET	-	expression tag	UNP A0A444M080
I	2	LYS	-	expression tag	UNP A0A444M080
I	3	SER	-	expression tag	UNP A0A444M080
I	4	SER	-	expression tag	UNP A0A444M080
I	5	HIS	-	expression tag	UNP A0A444M080
I	6	HIS	-	expression tag	UNP A0A444M080
I	7	HIS	-	expression tag	UNP A0A444M080
I	8	HIS	-	expression tag	UNP A0A444M080
I	9	HIS	-	expression tag	UNP A0A444M080
I	10	HIS	-	expression tag	UNP A0A444M080
I	11	GLU	-	expression tag	UNP A0A444M080
I	12	ASN	-	expression tag	UNP A0A444M080
I	13	LEU	-	expression tag	UNP A0A444M080
I	14	TYR	-	expression tag	UNP A0A444M080
I	15	PHE	-	expression tag	UNP A0A444M080
I	16	GLN	-	expression tag	UNP A0A444M080
I	17	SER	-	expression tag	UNP A0A444M080
I	18	ASN	-	expression tag	UNP A0A444M080
I	19	ALA	-	expression tag	UNP A0A444M080

- Molecule 3 is a protein called CRISPR-associated endonuclease Cas6/Csy4.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	J	87	Total	C	N	O	0	0
			350	175	87	88		

- Molecule 4 is a protein called AcrF8.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	A	80	Total	C	N	O	S	0	0
			552	343	92	116	1		

- Molecule 5 is a protein called CRISPR-associated protein Csy1.

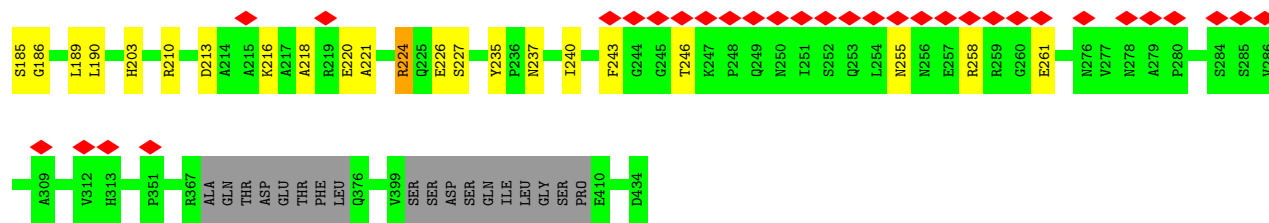
Mol	Chain	Residues	Atoms				AltConf	Trace
5	B	242	Total	C	N	O	0	0
			1391	813	295	283		

- Molecule 6 is a RNA chain called CrRNA (40-MER).

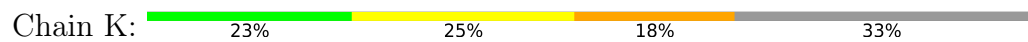
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	K	40	845	379	148	279	39	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	53	A	G	conflict	GB 313291946



• Molecule 6: CrRNA (40-MER)



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	91080	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 ($e^-/\text{\AA}^2$)	7.6	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	2.405	Depositor
Minimum map value	-1.419	Depositor
Average map value	0.016	Depositor
Map value standard deviation	0.098	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	237.43999, 237.43999, 237.43999	wwPDB
Map dimensions	224, 224, 224	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	C	0.41	0/2363	0.62	2/3216 (0.1%)
2	D	0.42	0/2315	0.53	0/3143
2	E	0.50	0/2622	0.57	0/3557
2	F	0.54	0/2634	0.57	0/3572
2	G	0.56	0/2605	0.62	2/3534 (0.1%)
2	H	0.55	0/2562	0.60	0/3477
2	I	0.47	0/2569	0.56	1/3485 (0.0%)
3	J	0.23	0/348	0.48	0/432
4	A	0.37	0/558	0.63	0/763
5	B	0.31	0/1416	0.51	0/1862
6	K	1.08	0/943	1.00	0/1468
All	All	0.52	0/20935	0.61	5/28509 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	228	LEU	CB-CG-CD1	-5.90	100.97	111.00
2	G	291	ASP	CB-CG-OD1	5.89	123.60	118.30
1	C	180	LEU	CA-CB-CG	5.59	128.16	115.30
2	G	251	LEU	CA-CB-CG	5.55	128.06	115.30
1	C	181	LEU	CA-CB-CG	5.26	127.39	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	C	2309	0	2289	36	0
2	D	2272	0	2232	48	0
2	E	2575	0	2554	42	0
2	F	2587	0	2576	46	0
2	G	2559	0	2545	52	0
2	H	2516	0	2501	37	0
2	I	2523	0	2500	47	0
3	J	350	0	95	2	0
4	A	552	0	489	4	0
5	B	1391	0	959	17	0
6	K	845	0	429	28	0
All	All	20479	0	19169	311	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 8.

The worst 5 of 311 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:C:271:ARG:HD2	6:K:4:A:H62	1.57	0.69
2:I:35:LYS:HG3	2:I:118:LEU:HB2	1.75	0.69
2:I:95:GLN:NE2	6:K:13:C:N3	2.43	0.65
2:D:286:ASP:HB3	2:D:298:ILE:HG22	1.79	0.64
5:B:255:ASN:HB3	5:B:258:ARG:HB2	1.79	0.64

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	C	293/327 (90%)	251 (86%)	42 (14%)	0	100	100
2	D	287/360 (80%)	257 (90%)	30 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	E	331/360 (92%)	291 (88%)	40 (12%)	0	100	100
2	F	332/360 (92%)	293 (88%)	39 (12%)	0	100	100
2	G	327/360 (91%)	288 (88%)	39 (12%)	0	100	100
2	H	321/360 (89%)	285 (89%)	36 (11%)	0	100	100
2	I	322/360 (89%)	285 (88%)	37 (12%)	0	100	100
3	J	83/187 (44%)	66 (80%)	17 (20%)	0	100	100
4	A	78/92 (85%)	59 (76%)	19 (24%)	0	100	100
5	B	236/434 (54%)	193 (82%)	43 (18%)	0	100	100
All	All	2610/3200 (82%)	2268 (87%)	342 (13%)	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	C	239/270 (88%)	238 (100%)	1 (0%)	91	96
2	D	230/290 (79%)	230 (100%)	0	100	100
2	E	264/290 (91%)	262 (99%)	2 (1%)	81	92
2	F	266/290 (92%)	265 (100%)	1 (0%)	91	96
2	G	262/290 (90%)	262 (100%)	0	100	100
2	H	258/290 (89%)	258 (100%)	0	100	100
2	I	258/290 (89%)	257 (100%)	1 (0%)	91	96
3	J	1/160 (1%)	1 (100%)	0	100	100
4	A	52/77 (68%)	51 (98%)	1 (2%)	57	80
5	B	87/365 (24%)	83 (95%)	4 (5%)	27	60
All	All	1917/2612 (73%)	1907 (100%)	10 (0%)	89	95

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	B	213	ASP
5	B	224	ARG
5	B	246	THR
2	F	332	ARG
2	I	96	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 38 such sidechains are listed below:

Mol	Chain	Res	Type
2	H	341	GLN
5	B	188	HIS
2	H	347	ASN
2	I	274	HIS
5	B	271	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
6	K	39/60 (65%)	20 (51%)	0

5 of 20 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	K	2	U
6	K	3	A
6	K	6	A
6	K	8	A
6	K	9	U

There are no RNA pucker outliers to report.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

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.

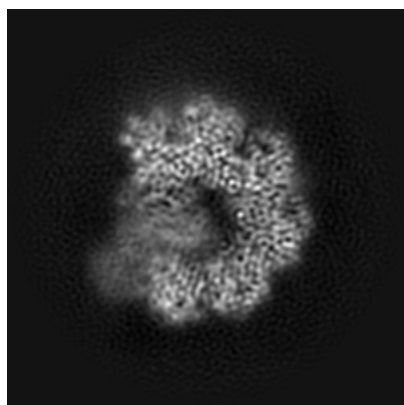
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-21359. These allow visual inspection of the internal detail of the map and identification of artifacts.

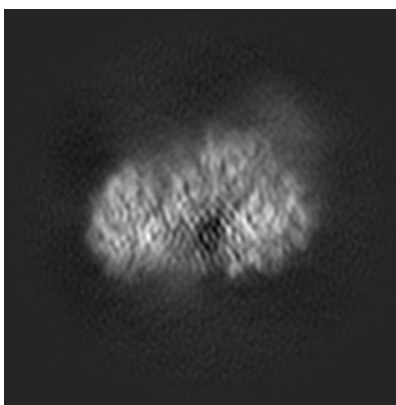
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

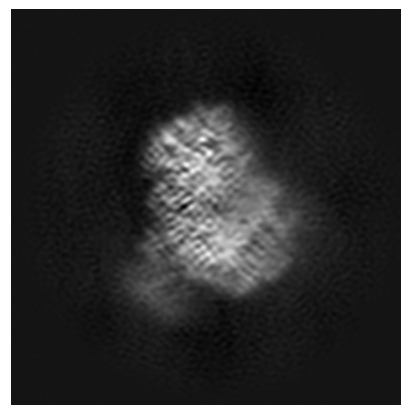
6.1.1 Primary map



X



Y

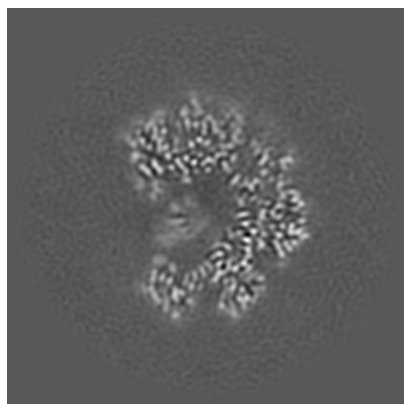


Z

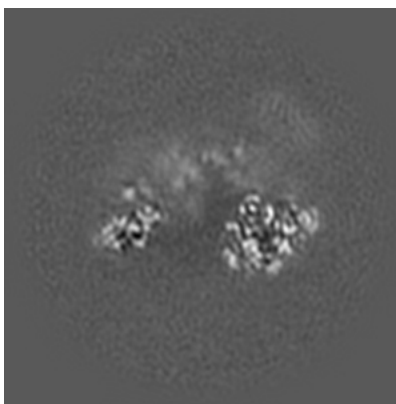
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

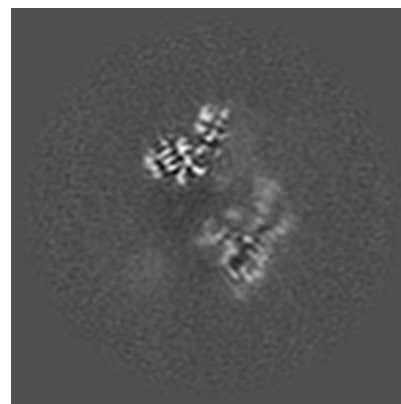
6.2.1 Primary map



X Index: 112



Y Index: 112

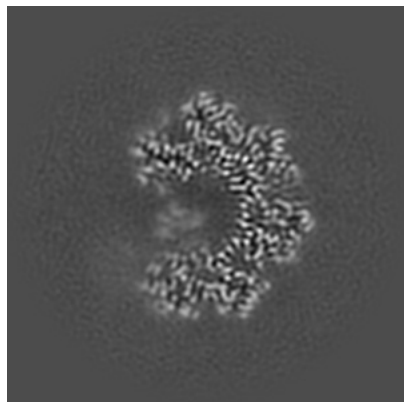


Z Index: 112

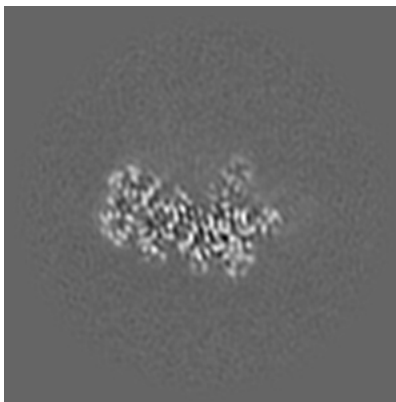
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

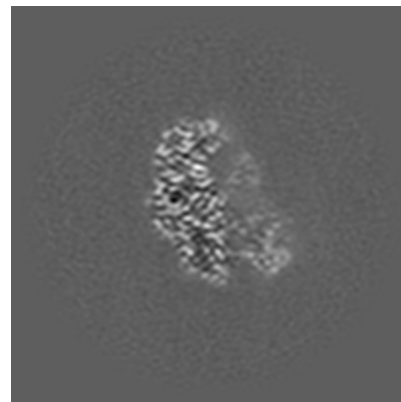
6.3.1 Primary map



X Index: 105



Y Index: 136

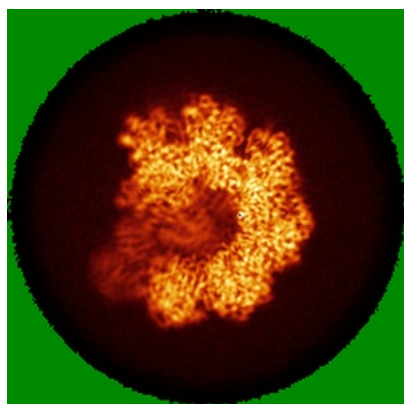


Z Index: 138

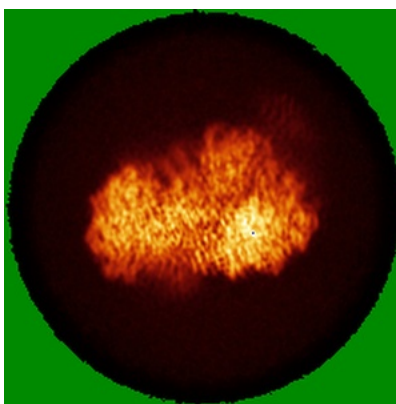
The images above show the largest variance slices of the map in three orthogonal directions.

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

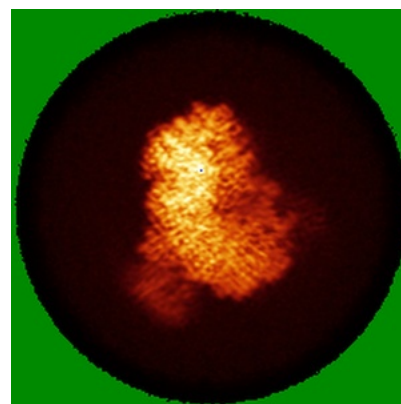
6.4.1 Primary map



X



Y

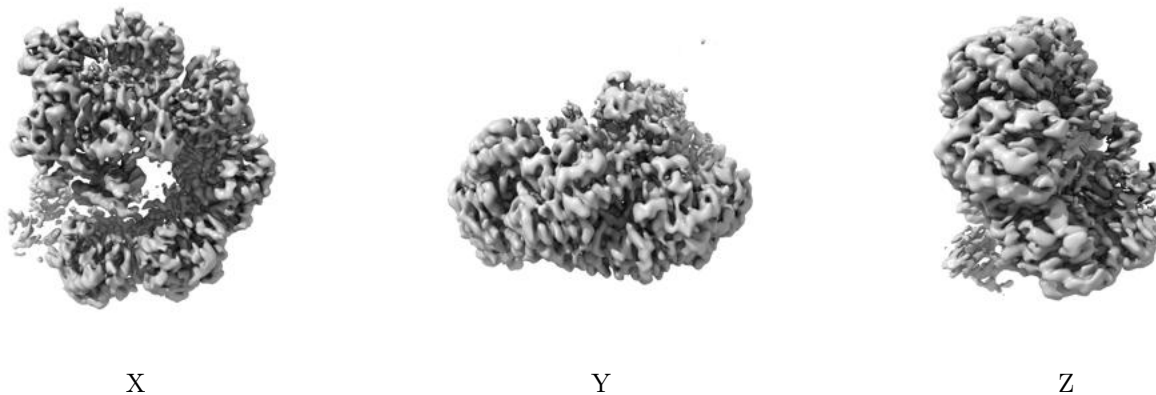


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

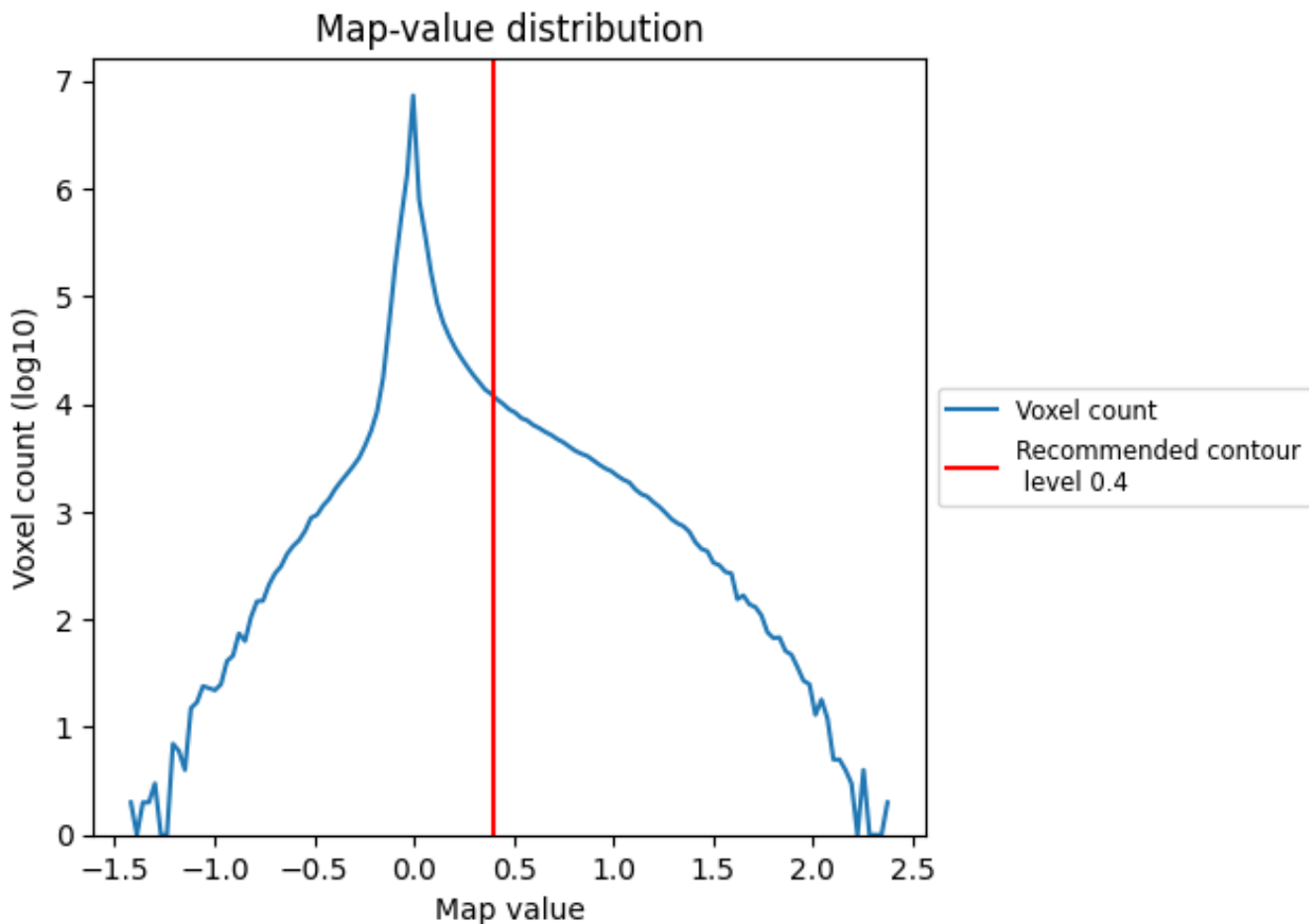
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

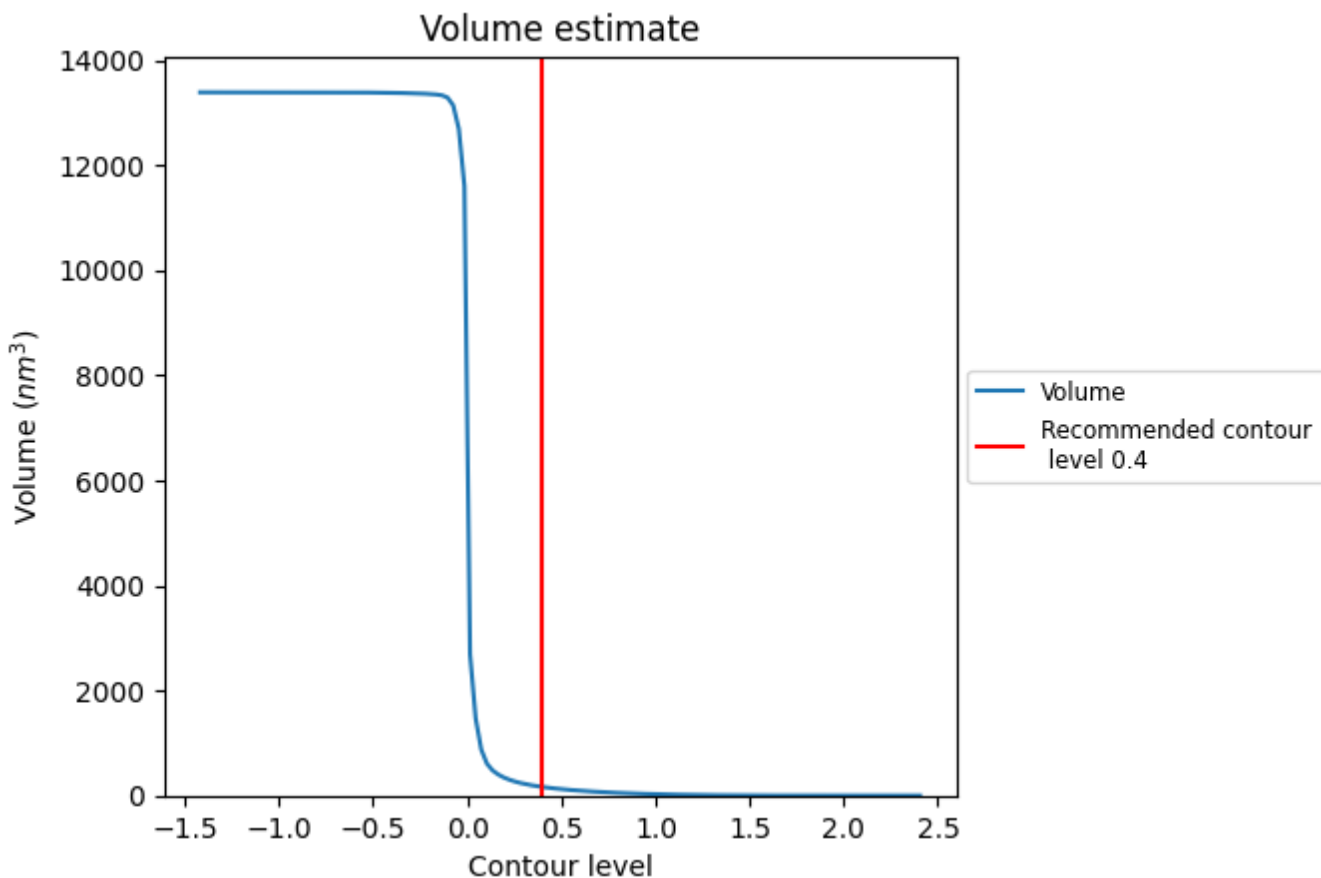
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

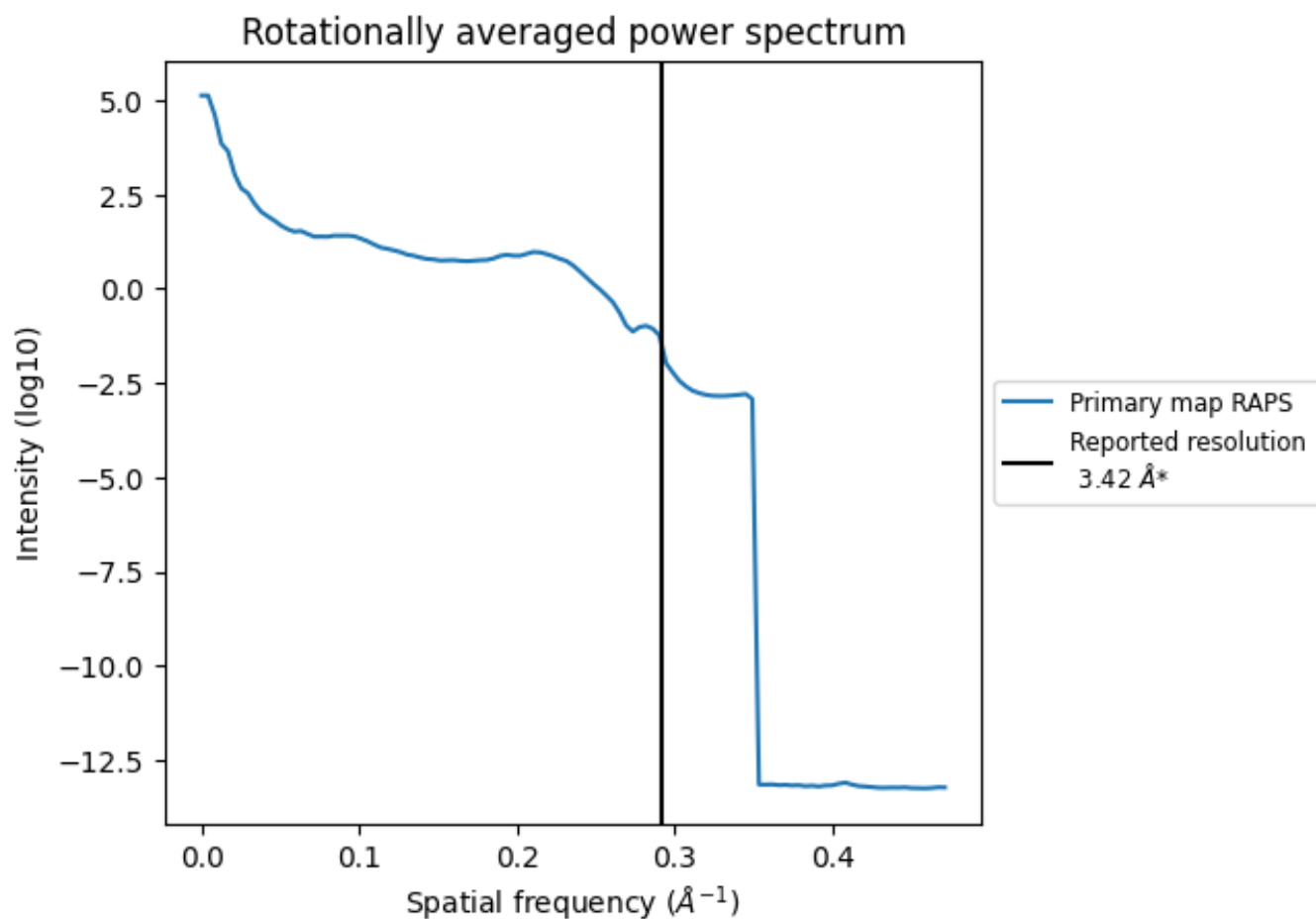
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 164 nm³; this corresponds to an approximate mass of 148 kDa.

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

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.292 Å⁻¹

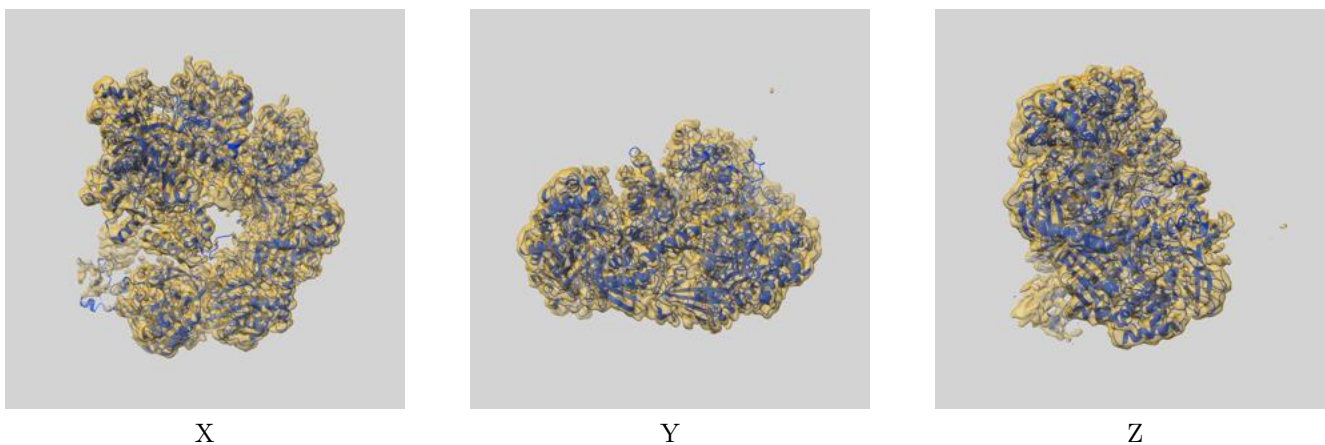
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

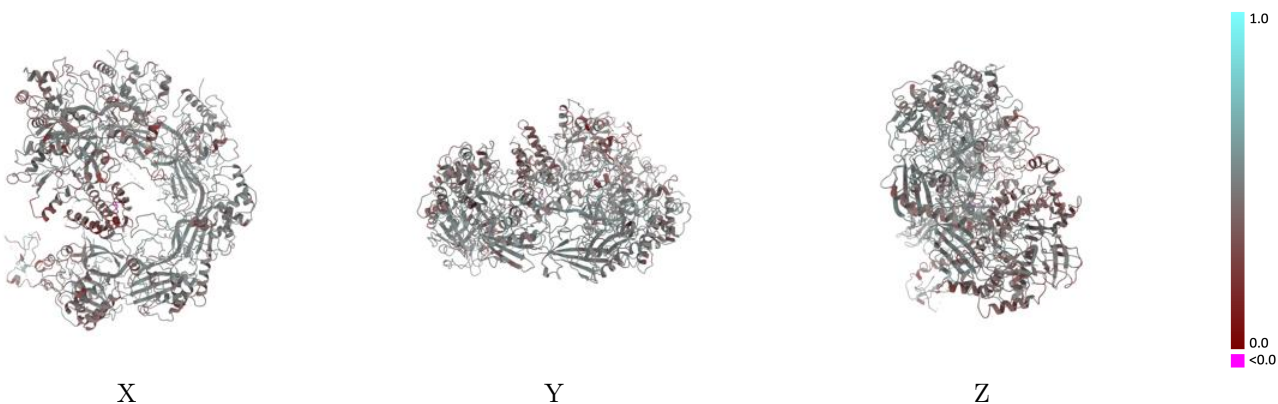
This section contains information regarding the fit between EMDB map EMD-21359 and PDB model 6VQW. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



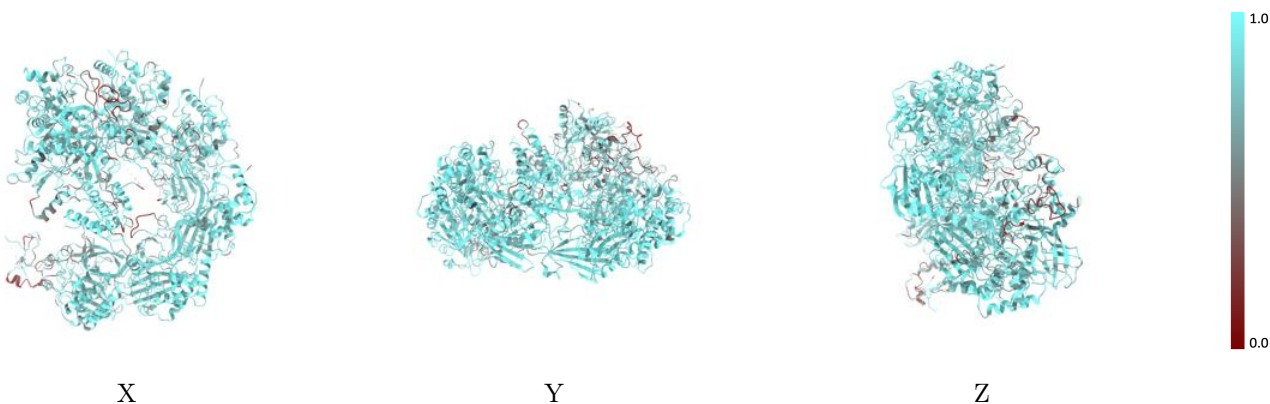
The images above show the 3D surface view of the map at the recommended contour level 0.4 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



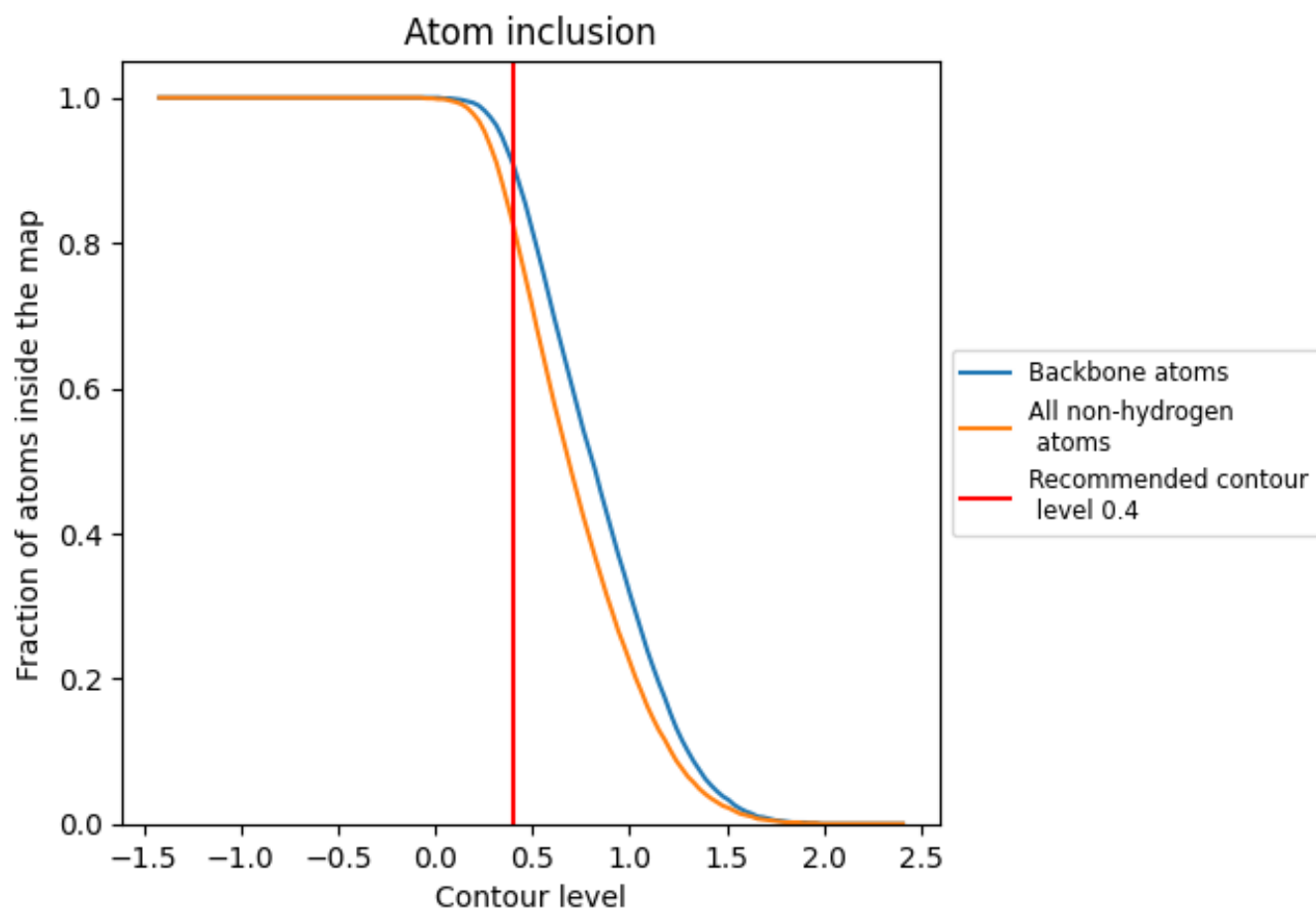
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.4).

























9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 83% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8260	 0.4620
A	 0.5890	 0.4210
B	 0.7290	 0.3810
C	 0.7370	 0.4330
D	 0.8410	 0.4520
E	 0.8510	 0.4720
F	 0.8670	 0.4850
G	 0.8850	 0.4920
H	 0.8880	 0.4860
I	 0.8300	 0.4590
J	 0.4910	 0.4070
K	 0.9150	 0.4900

