



Full wwPDB EM Validation Report ⓘ

Sep 22, 2026 – 12:56 PM JST

PDB ID : 9MAN / pdb_00009man
EMDB ID : EMD-63756
Title : Structure of Norrin in complex with human Tspan12 large extracellular loop (Tspan12 LEL)
Authors : Xue, L.; Wang, Z.; Xu, W.
Deposited on : 2025-03-14
Resolution : 3.78 Å(reported)

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

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A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
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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.dev133
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) : 2.50

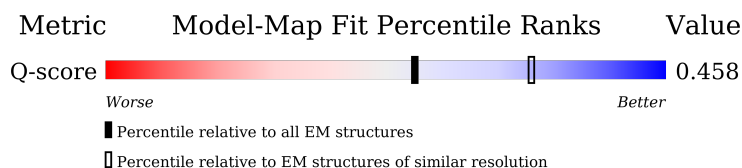
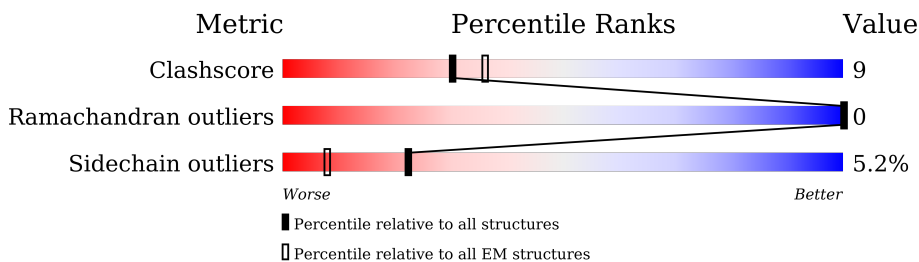
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.78 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	10074 (3.28 - 4.27)

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	500	
1	B	500	
2	C	501	
2	D	501	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 3066 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 Maltose/maltodextrin-binding periplasmic protein,Norrin.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	99	Total	C	N	O	S	0	0
			782	477	153	138	14		
1	B	98	Total	C	N	O	S	0	0
			774	473	152	135	14		

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-366	GLY	-	linker	UNP P0AEY0
A	-365	SER	-	linker	UNP P0AEY0
A	-364	HIS	-	expression tag	UNP P0AEY0
A	-363	HIS	-	expression tag	UNP P0AEY0
A	-362	HIS	-	expression tag	UNP P0AEY0
A	-361	HIS	-	expression tag	UNP P0AEY0
A	-360	HIS	-	expression tag	UNP P0AEY0
A	-359	HIS	-	expression tag	UNP P0AEY0
A	-358	HIS	-	expression tag	UNP P0AEY0
A	-357	HIS	-	expression tag	UNP P0AEY0
A	-356	MET	-	linker	UNP P0AEY0
A	12	ASN	-	linker	UNP P0AEY0
A	13	ALA	-	linker	UNP P0AEY0
A	14	ALA	-	linker	UNP P0AEY0
A	15	ALA	-	linker	UNP P0AEY0
A	16	GLU	-	linker	UNP P0AEY0
A	17	ASN	-	linker	UNP P0AEY0
A	18	LEU	-	linker	UNP P0AEY0
A	19	TYR	-	linker	UNP P0AEY0
A	20	PHE	-	linker	UNP P0AEY0
A	21	GLN	-	linker	UNP P0AEY0
A	22	GLY	-	linker	UNP P0AEY0
A	23	GLU	-	linker	UNP P0AEY0
A	24	PHE	-	linker	UNP P0AEY0
B	-366	GLY	-	linker	UNP P0AEY0
B	-365	SER	-	linker	UNP P0AEY0

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-364	HIS	-	expression tag	UNP P0AEY0
B	-363	HIS	-	expression tag	UNP P0AEY0
B	-362	HIS	-	expression tag	UNP P0AEY0
B	-361	HIS	-	expression tag	UNP P0AEY0
B	-360	HIS	-	expression tag	UNP P0AEY0
B	-359	HIS	-	expression tag	UNP P0AEY0
B	-358	HIS	-	expression tag	UNP P0AEY0
B	-357	HIS	-	expression tag	UNP P0AEY0
B	-356	MET	-	linker	UNP P0AEY0
B	12	ASN	-	linker	UNP P0AEY0
B	13	ALA	-	linker	UNP P0AEY0
B	14	ALA	-	linker	UNP P0AEY0
B	15	ALA	-	linker	UNP P0AEY0
B	16	GLU	-	linker	UNP P0AEY0
B	17	ASN	-	linker	UNP P0AEY0
B	18	LEU	-	linker	UNP P0AEY0
B	19	TYR	-	linker	UNP P0AEY0
B	20	PHE	-	linker	UNP P0AEY0
B	21	GLN	-	linker	UNP P0AEY0
B	22	GLY	-	linker	UNP P0AEY0
B	23	GLU	-	linker	UNP P0AEY0
B	24	PHE	-	linker	UNP P0AEY0

- Molecule 2 is a protein called Maltose/maltodextrin-binding periplasmic protein, Tetraspanin-12.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	90	Total	C	N	O	S	0	0
			755	482	127	135	11		
2	C	90	Total	C	N	O	S	0	0
			755	482	127	135	11		

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-276	GLY	-	linker	UNP P0AEY0
D	-275	SER	-	linker	UNP P0AEY0
D	-274	HIS	-	expression tag	UNP P0AEY0
D	-273	HIS	-	expression tag	UNP P0AEY0
D	-272	HIS	-	expression tag	UNP P0AEY0
D	-271	HIS	-	expression tag	UNP P0AEY0
D	-270	HIS	-	expression tag	UNP P0AEY0

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-269	HIS	-	expression tag	UNP P0AEY0
D	-268	HIS	-	expression tag	UNP P0AEY0
D	-267	HIS	-	expression tag	UNP P0AEY0
D	-266	MET	-	linker	UNP P0AEY0
D	102	ASN	-	linker	UNP P0AEY0
D	103	ALA	-	linker	UNP P0AEY0
D	104	ALA	-	linker	UNP P0AEY0
D	105	ALA	-	linker	UNP P0AEY0
D	106	GLU	-	linker	UNP P0AEY0
D	107	ASN	-	linker	UNP P0AEY0
D	108	LEU	-	linker	UNP P0AEY0
D	109	TYR	-	linker	UNP P0AEY0
D	110	PHE	-	linker	UNP P0AEY0
D	111	GLN	-	linker	UNP P0AEY0
D	112	GLY	-	linker	UNP P0AEY0
D	113	GLU	-	linker	UNP P0AEY0
D	114	PHE	-	linker	UNP P0AEY0
C	-276	GLY	-	linker	UNP P0AEY0
C	-275	SER	-	linker	UNP P0AEY0
C	-274	HIS	-	expression tag	UNP P0AEY0
C	-273	HIS	-	expression tag	UNP P0AEY0
C	-272	HIS	-	expression tag	UNP P0AEY0
C	-271	HIS	-	expression tag	UNP P0AEY0
C	-270	HIS	-	expression tag	UNP P0AEY0
C	-269	HIS	-	expression tag	UNP P0AEY0
C	-268	HIS	-	expression tag	UNP P0AEY0
C	-267	HIS	-	expression tag	UNP P0AEY0
C	-266	MET	-	linker	UNP P0AEY0
C	102	ASN	-	linker	UNP P0AEY0
C	103	ALA	-	linker	UNP P0AEY0
C	104	ALA	-	linker	UNP P0AEY0
C	105	ALA	-	linker	UNP P0AEY0
C	106	GLU	-	linker	UNP P0AEY0
C	107	ASN	-	linker	UNP P0AEY0
C	108	LEU	-	linker	UNP P0AEY0
C	109	TYR	-	linker	UNP P0AEY0
C	110	PHE	-	linker	UNP P0AEY0
C	111	GLN	-	linker	UNP P0AEY0
C	112	GLY	-	linker	UNP P0AEY0
C	113	GLU	-	linker	UNP P0AEY0
C	114	PHE	-	linker	UNP P0AEY0

ASN	ASN	GLY	PRO	PHE
ALA	LEU	LEU	TRP	LYS
ALA	GLU	GLU	ALA	TYR
SER	ALA	ALA	TRP	GLU
GLY	VAL	VAL	SER	ASN
ARG	ASN	ASN	GLY	GLY
GLN	LYS	LYS	ILE	LYS
THR	ASP	ASP	TYR	TYR
VAL	LYS	LYS	ASP	TYR
ASP	PRO	LYS	SER	ILE
GLU	LEU	LEU	LYS	LYS
ALA	GLY	GLY	VAL	ASP
LEU	ALA	ALA	ASN	VAL
LYS	VAL	VAL	TYR	GLY
ASP	ALA	ALA	GLY	VAL
GLN	LEU	LEU	VAL	ASP
ALA	LYS	LYS	THR	ASN
THR	SER	SER	VAL	ALA
ASN	TYR	TYR	LEU	GLY
ALA	GLU	GLU	PRO	ALA
ALA	GLU	GLU	THR	LYS
ALA	GLU	GLU	PHE	ALA
GLU	LEU	LEU	LYS	GLY
ASN	ALA	ALA	GLN	THR
LEU	LYS	LYS	PRO	PHE
TYR	ASP	ASP	SER	LEU
PHE	PRO	PRO	LYS	VAL
GLN	ARG	ARG	ASN	GLY
GLY	ILE	ILE	PRO	ASP
GLU	ALA	ALA	PHE	LEU
PHE	ALA	ALA	VAL	ILE
TYR	THR	THR	GLY	LYS
GLU	MET	MET	VAL	ASN
GLN	VAL	LYS	ILE	ALA
PRO	PRO	GLY	ASN	THR
VAL	GLN	ILE	ALA	ASP
GLN	ILE	MET	SER	TYR
TRP	TRP	PRO	SER	SER
S126	ASN	ASN	ASN	ILE
D127	ILE	ILE	LYS	ALA
M128	PRO	PRO	GLU	GLU
V129	GLN	GLN	LEU	ALA
T130	MET	MET	ALA	ALA
L131	SER	SER	LYS	PHE
K132	ALA	ALA	GLU	ASN
	PHE	PHE	PHE	LYS
M135	THR	THR	LEU	GLY
T136	TYR	TYR	GLU	GLY
	ALA	ALA	ASN	THR
G139	VAL	VAL	TYR	ALA
	ARG	ARG	LEU	MET
R142	THR	THR	LEU	THR
Y143	ALA	ALA	THR	ILE
R144	VAL	VAL	ASP	ASN
W145	L146	ILE	GLU	GLY

T147	GLY	ARG
	THR	LEU
G161	GLY	GLN
	THR	GLY
Y164	THR	THR
F165	THR	THR
T166	THR	THR
D167	THR	THR
W168	THR	THR
L169	THR	THR
E170	THR	THR
M171	THR	THR
T172	THR	THR
	THR	THR
W176	THR	THR
	THR	THR
Q192	THR	THR
	THR	THR
E196	THR	THR
D197	THR	THR
L198	THR	THR
	THR	THR
C206	THR	THR
G207	THR	THR
	THR	THR
W210	THR	THR
	THR	THR
R215	THR	THR
GLY	THR	THR
THR	THR	THR
LYS	THR	THR
GLN	THR	THR
LEU	THR	THR
GLN	THR	THR
VAL	THR	THR
LEU	THR	THR
ARG	THR	THR

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	212449	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.574	Depositor
Minimum map value	-0.286	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.0641	Depositor
Map size ($\text{\AA}$)	465.92, 465.92, 465.92	wwPDB
Map dimensions	560, 560, 560	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.832, 0.832, 0.832	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	A	0.12	0/798	0.27	0/1070
1	B	0.21	0/790	0.38	0/1058
2	C	0.48	0/779	0.66	0/1051
2	D	0.26	0/779	0.47	0/1051
All	All	0.30	0/3146	0.47	0/4230

There are no bond length outliers.

There are no bond angle outliers.

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	A	782	0	771	14	0
1	B	774	0	768	22	0
2	C	755	0	699	12	0
2	D	755	0	699	18	0
All	All	3066	0	2937	54	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 9.

All (54) 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:B:102:LYS:HG3	1:B:124:LEU:HD11	1.73	0.71
1:A:79:VAL:HG11	1:B:48:ILE:HG12	1.78	0.65
2:D:162:VAL:HG12	2:D:163:VAL:HG13	1.80	0.63
1:B:54:LYS:O	1:B:54:LYS:HG2	2.02	0.60
1:A:102:LYS:HD2	2:C:197:ASP:HB2	1.84	0.60
2:D:201:LEU:O	2:D:203:GLN:NE2	2.35	0.59
1:A:98:PRO:HB3	1:A:123:ILE:HG12	1.87	0.57
1:B:102:LYS:HD3	1:B:124:LEU:HD21	1.87	0.57
2:D:197:ASP:OD2	2:D:199:SER:N	2.35	0.57
1:A:65:CYS:HB2	1:B:75:SER:HB2	1.88	0.56
1:B:114:MET:O	1:B:114:MET:HG3	2.09	0.52
2:C:139:GLY:H	2:C:147:THR:HG22	1.75	0.52
1:B:97:ARG:HG3	1:B:129:GLU:HG2	1.92	0.51
2:C:207:GLY:HA2	2:C:210:MET:HE3	1.92	0.51
2:C:161:GLY:O	2:C:206:CYS:N	2.42	0.50
1:A:48:ILE:HG21	1:B:79:VAL:HG21	1.94	0.50
1:A:64:ARG:NH2	1:B:76:GLU:OE2	2.41	0.49
1:A:54:LYS:O	1:A:54:LYS:HG2	2.13	0.48
1:A:60:VAL:HG11	1:A:106:LEU:HD11	1.95	0.48
1:A:103:LEU:HB3	2:C:198:LEU:HB3	1.96	0.48
2:D:194:HIS:HA	2:D:198:LEU:HD13	1.97	0.47
1:B:103:LEU:HD23	2:D:198:LEU:HB3	1.96	0.47
2:C:144:ARG:HE	2:C:144:ARG:HB3	1.56	0.47
1:A:102:LYS:HB3	2:C:197:ASP:HA	1.97	0.46
1:B:52:LEU:O	1:B:52:LEU:HD23	2.16	0.45
1:B:60:VAL:HG11	1:B:106:LEU:HD11	1.99	0.45
1:B:44:TYR:CE1	1:B:62:LEU:HB2	2.51	0.45
2:C:128:MET:HE3	2:C:128:MET:HB3	1.69	0.44
1:B:107:ARG:NH1	2:D:169:LEU:O	2.51	0.44
1:A:39:CYS:HA	1:A:67:GLY:HA3	2.00	0.44
2:D:129:VAL:HA	2:D:132:LYS:HB3	1.99	0.43
2:D:135:MET:HE2	2:D:162:VAL:HG23	2.01	0.43
1:B:130:GLU:OE1	1:B:130:GLU:N	2.50	0.42
1:A:75:SER:HB3	1:B:65:CYS:HB2	2.01	0.42
2:D:163:VAL:HA	2:D:205:GLY:HA3	2.02	0.42
1:B:102:LYS:HB3	2:D:197:ASP:HA	2.01	0.42
2:D:135:MET:HE1	2:D:161:GLY:HA2	2.01	0.42
2:D:166:THR:HA	2:D:169:LEU:HD12	2.02	0.42
2:D:146:LEU:HD21	2:D:150:TRP:HD1	1.84	0.42
2:C:168:TRP:O	2:C:172:THR:HG22	2.20	0.42
2:D:146:LEU:O	2:D:149:ALA:HB3	2.21	0.41
1:A:95:CYS:HB3	1:B:93:CYS:HB2	1.89	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:57:SER:HB3	1:B:108:LEU:HD23	2.02	0.41
2:C:192:GLN:O	2:C:196:GLU:HB2	2.20	0.41
1:B:48:ILE:HD13	1:B:106:LEU:HD12	2.02	0.41
2:D:154:GLN:HB2	2:D:180:SER:HB2	2.02	0.41
2:D:175:ASP:OD1	2:D:175:ASP:N	2.47	0.41
1:B:102:LYS:HB2	1:B:102:LYS:HE2	1.73	0.41
1:A:124:LEU:HD12	1:A:124:LEU:HA	1.92	0.41
2:D:197:ASP:OD2	2:D:197:ASP:C	2.63	0.41
2:D:152:PHE:CZ	2:D:156:GLU:HG3	2.56	0.40
2:C:144:ARG:HA	2:C:147:THR:HG23	2.02	0.40
2:C:135:MET:HE1	2:C:167:ASP:HB3	2.03	0.40
1:B:127:HIS:NE2	1:B:129:GLU:HB3	2.36	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	A	97/500 (19%)	94 (97%)	3 (3%)	0	100	100
1	B	96/500 (19%)	91 (95%)	5 (5%)	0	100	100
2	C	88/501 (18%)	85 (97%)	3 (3%)	0	100	100
2	D	88/501 (18%)	85 (97%)	3 (3%)	0	100	100
All	All	369/2002 (18%)	355 (96%)	14 (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	92/414 (22%)	92 (100%)	0	100	100
1	B	91/414 (22%)	89 (98%)	2 (2%)	45	63
2	C	82/413 (20%)	67 (82%)	15 (18%)	2	11
2	D	82/413 (20%)	81 (99%)	1 (1%)	63	71
All	All	347/1654 (21%)	329 (95%)	18 (5%)	22	45

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	70	SER
1	B	71	GLN
2	D	180	SER
2	C	127	ASP
2	C	128	MET
2	C	129	VAL
2	C	130	THR
2	C	131	LEU
2	C	132	LYS
2	C	136	THR
2	C	142	ARG
2	C	144	ARG
2	C	146	LEU
2	C	164	TYR
2	C	166	THR
2	C	169	LEU
2	C	170	GLU
2	C	176	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

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.

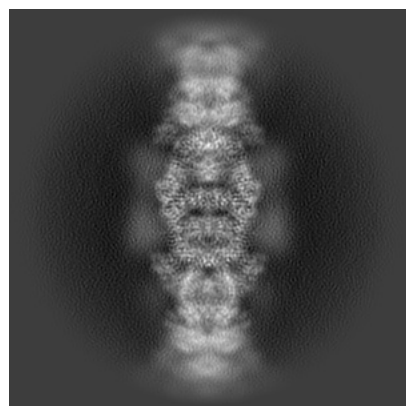
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-63756. These allow visual inspection of the internal detail of the map and identification of artifacts.

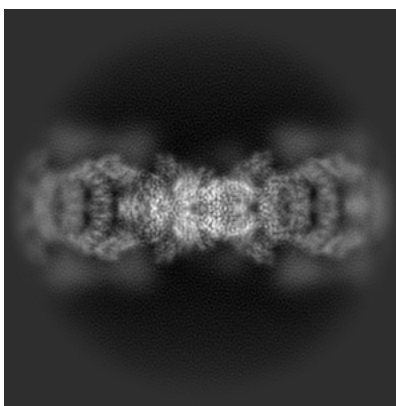
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

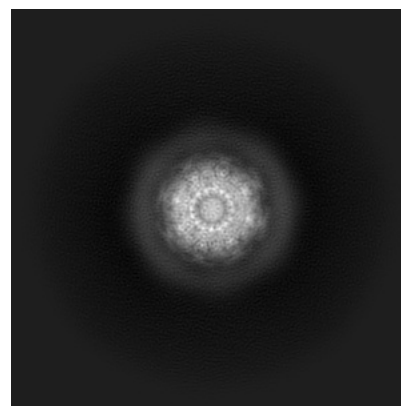
6.1.1 Primary map



X

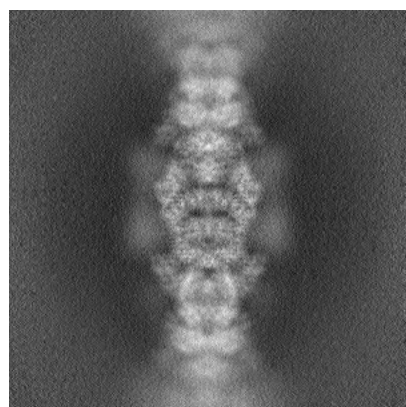


Y

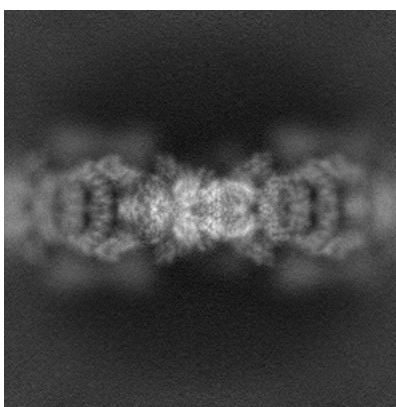


Z

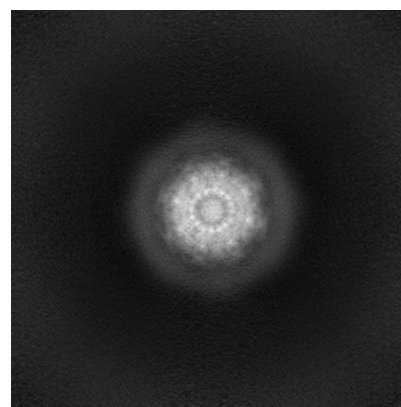
6.1.2 Raw map



X



Y

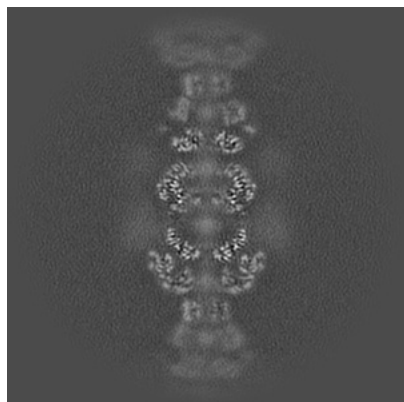


Z

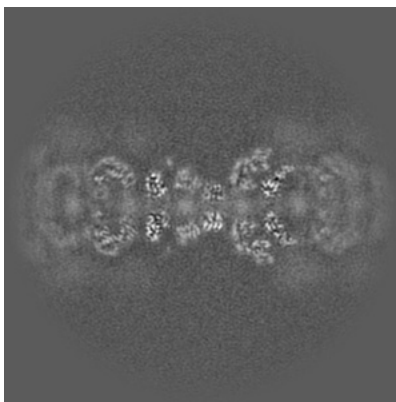
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

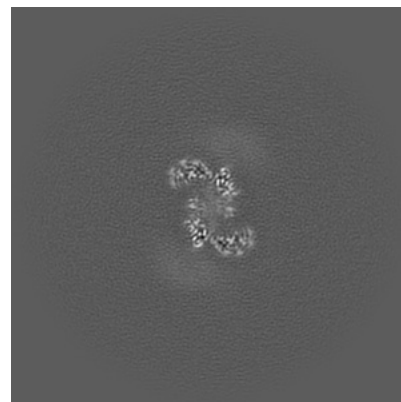
6.2.1 Primary map



X Index: 280

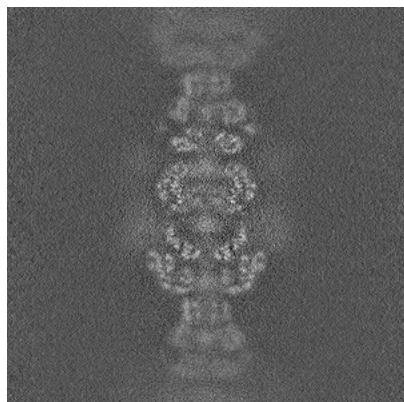


Y Index: 280

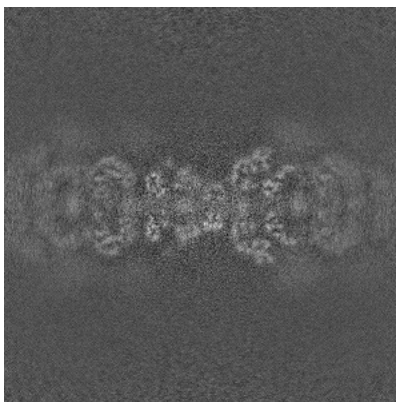


Z Index: 280

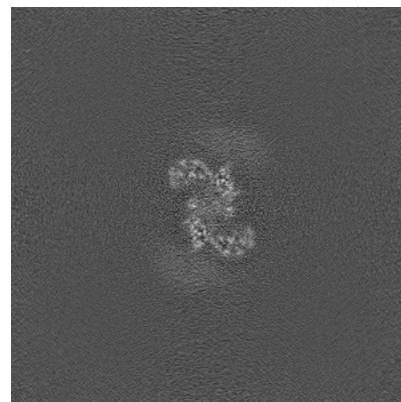
6.2.2 Raw map



X Index: 280



Y Index: 280

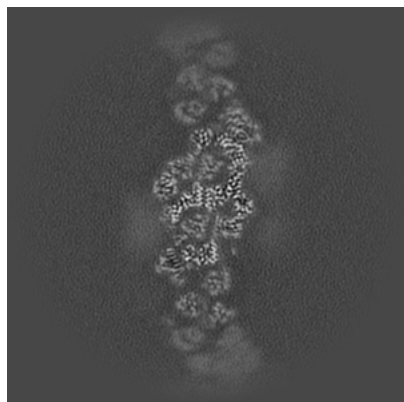


Z Index: 280

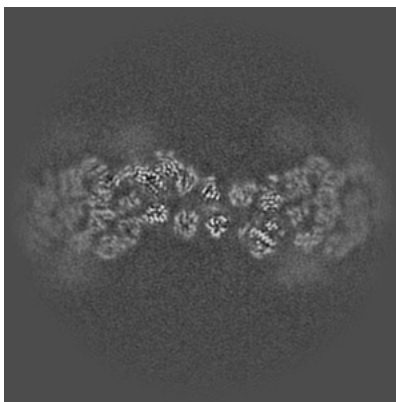
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

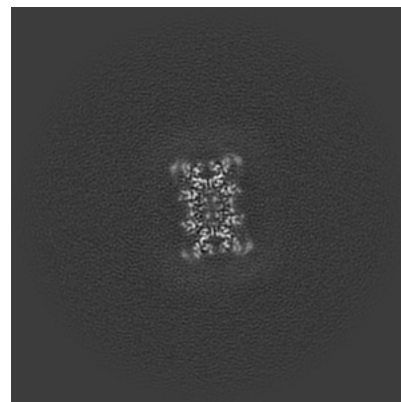
6.3.1 Primary map



X Index: 255

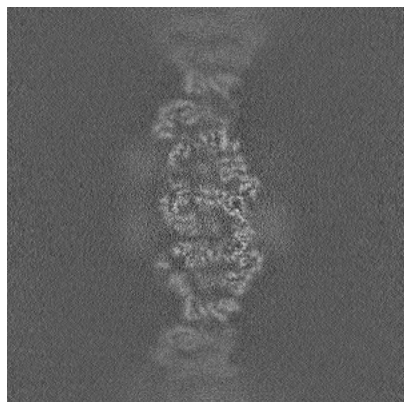


Y Index: 301

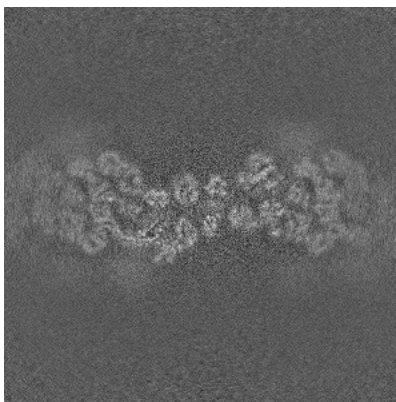


Z Index: 293

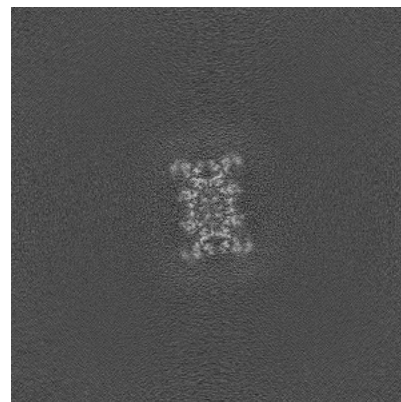
6.3.2 Raw map



X Index: 293



Y Index: 257

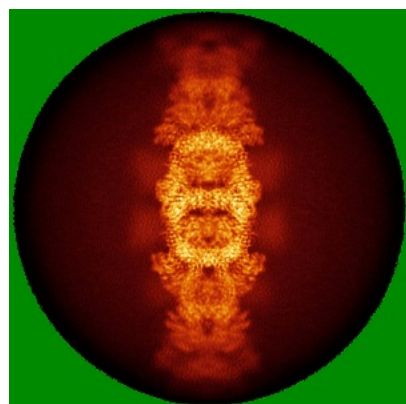


Z Index: 293

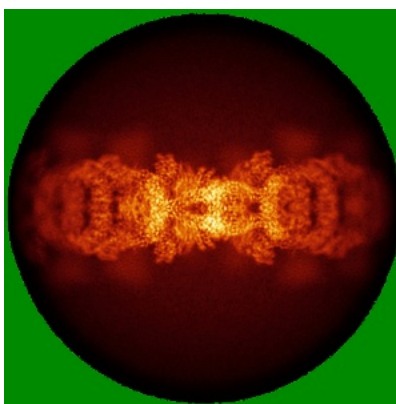
The images above show the largest variance slices of the map in three orthogonal directions.

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

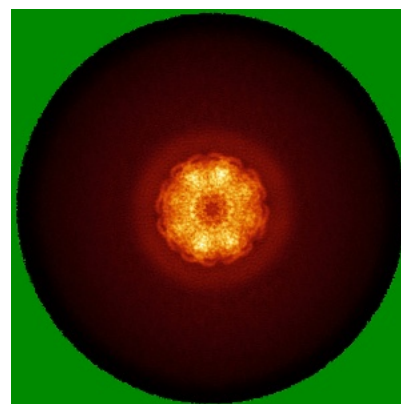
6.4.1 Primary map



X

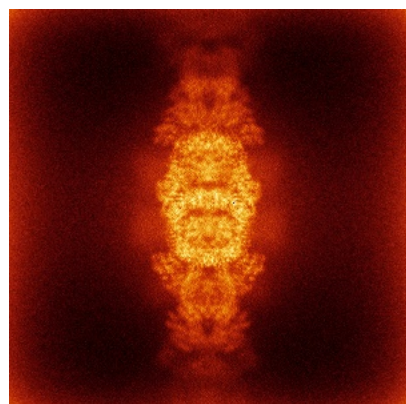


Y

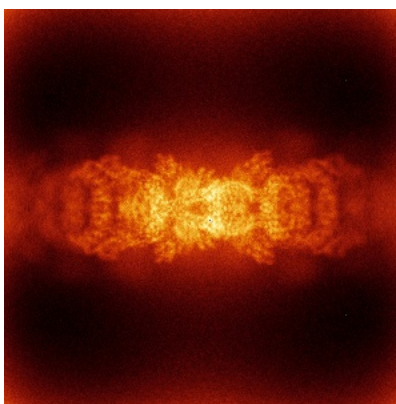


Z

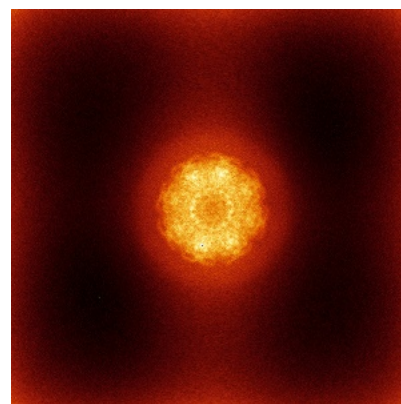
6.4.2 Raw map



X



Y

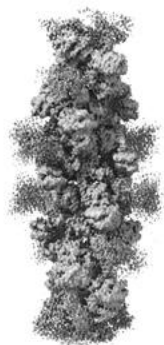


Z

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



X



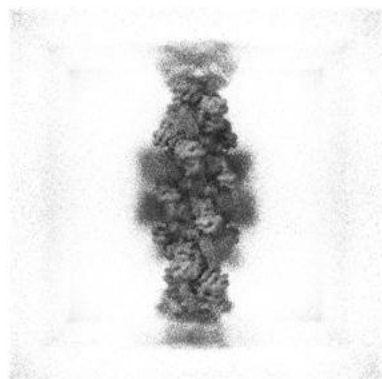
Y



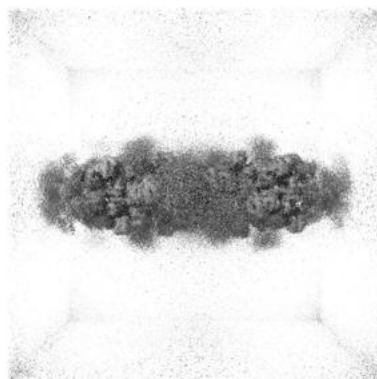
Z

The images above show the 3D surface view of the map at the recommended contour level 0.0641. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

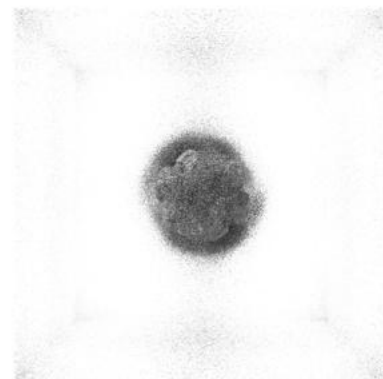
6.5.2 Raw map



X



Y



Z

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.

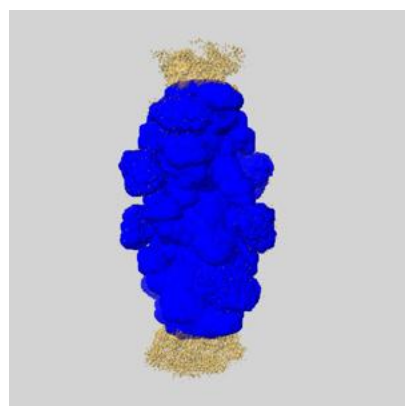
6.6 Mask visualisation [i](#)

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

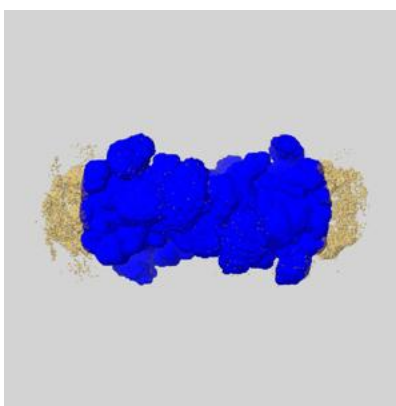
A mask typically either:

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

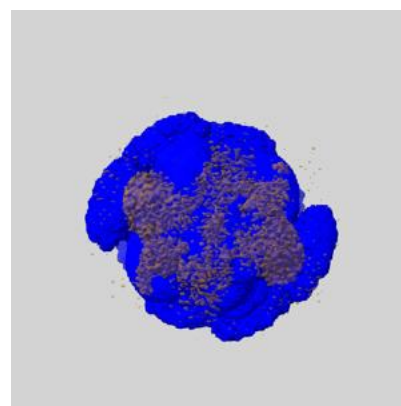
6.6.1 emd_63756_msk_1.map [i](#)



X



Y

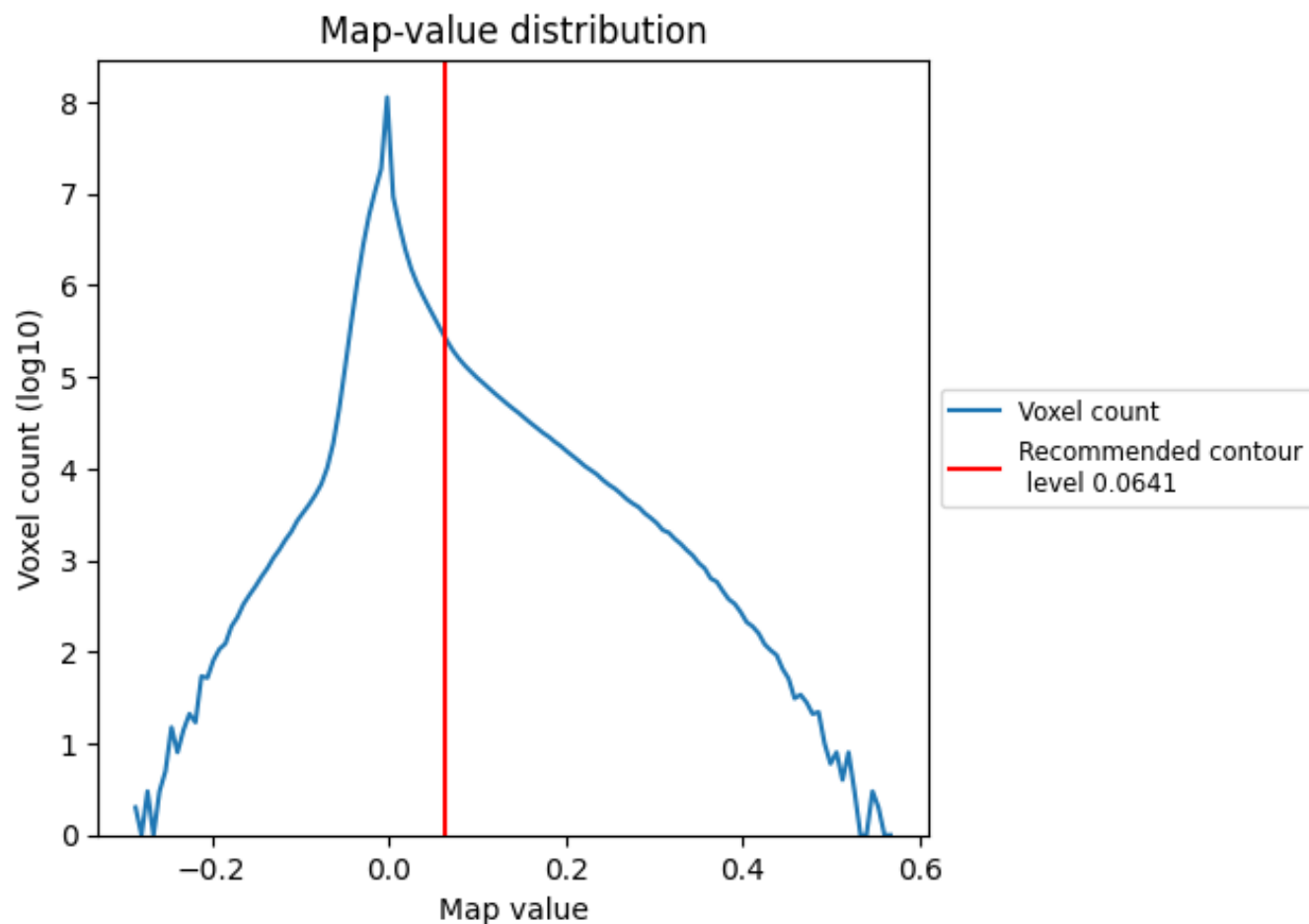


Z

7 Map analysis [i](#)

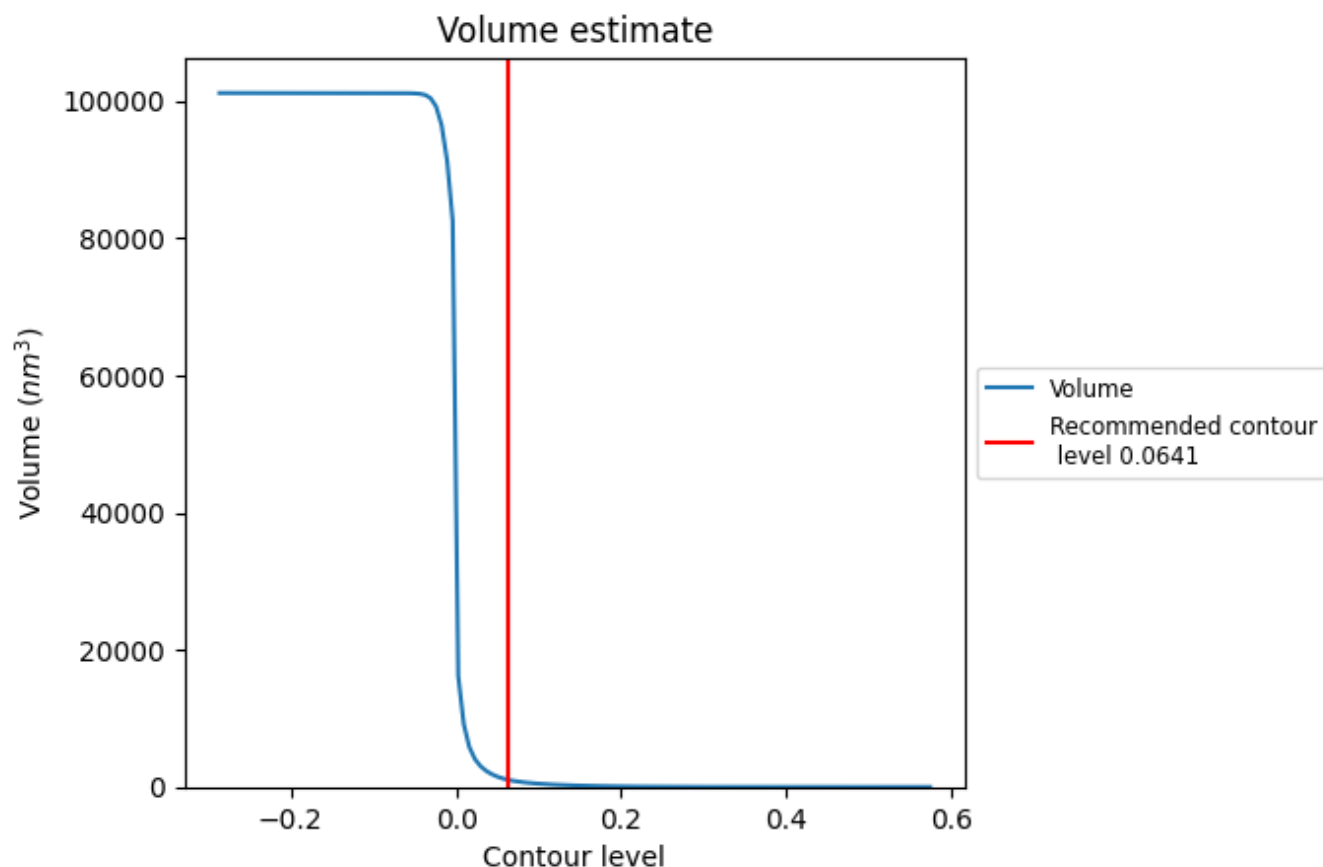
This section contains the results of statistical analysis of the map.

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.

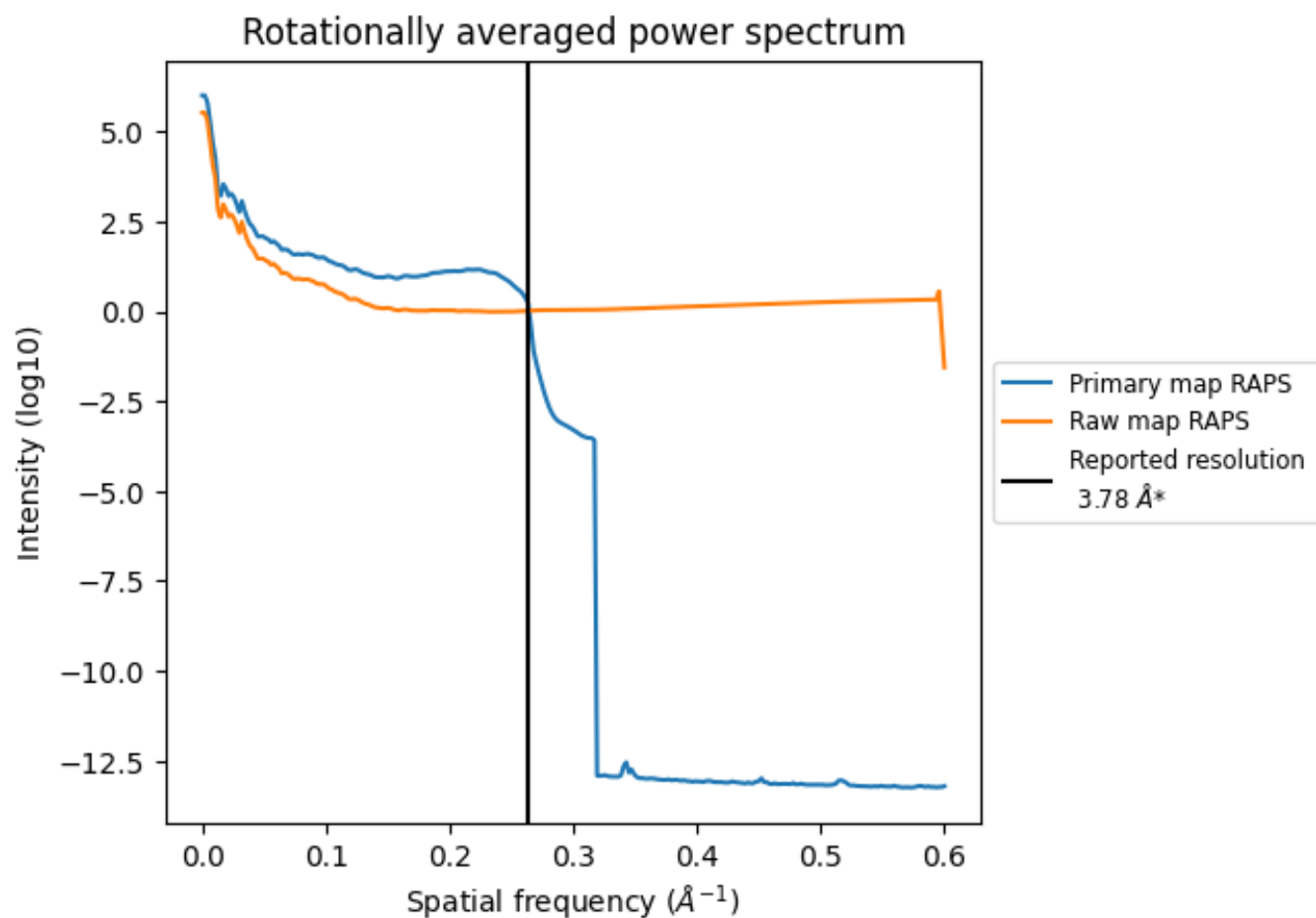
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1013 nm³; this corresponds to an approximate mass of 915 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 ⓘ

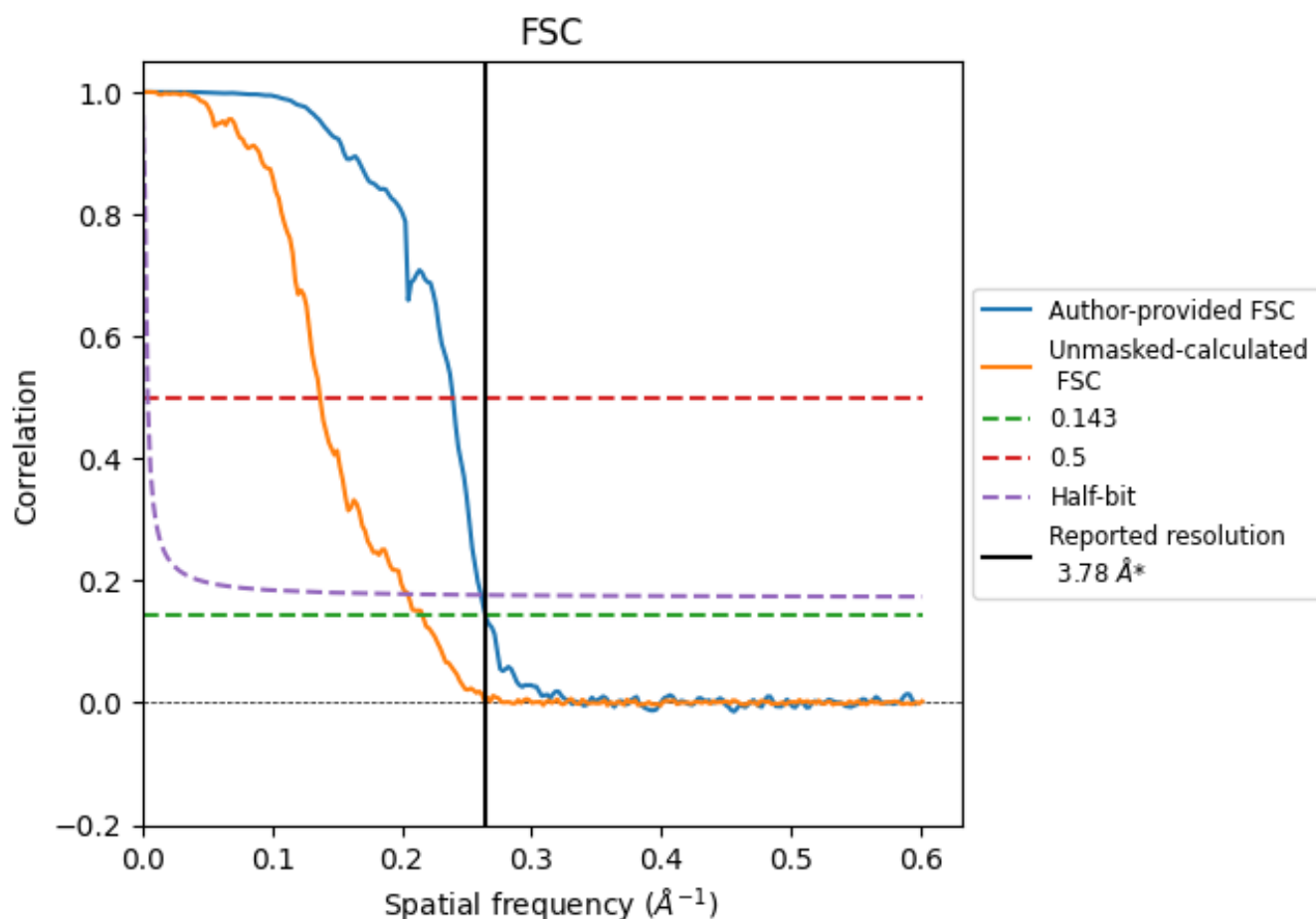


*Reported resolution corresponds to spatial frequency of 0.265 Å⁻¹

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 0.265 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

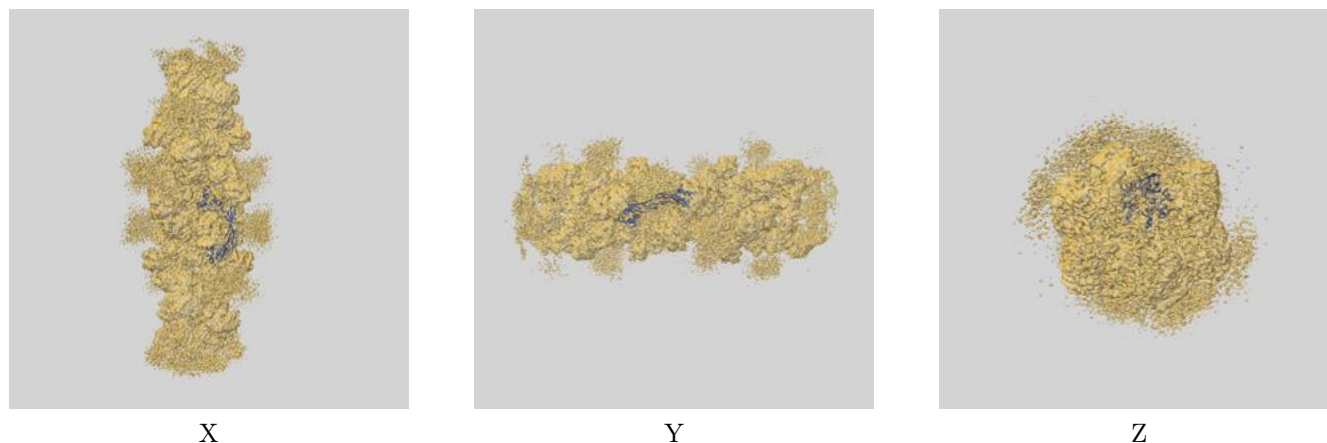
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.78	-	-
Author-provided FSC curve	3.78	4.18	3.83
Unmasked-calculated*	4.63	7.30	4.89

*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 4.63 differs from the reported value 3.78 by more than 10 %

9 Map-model fit [i](#)

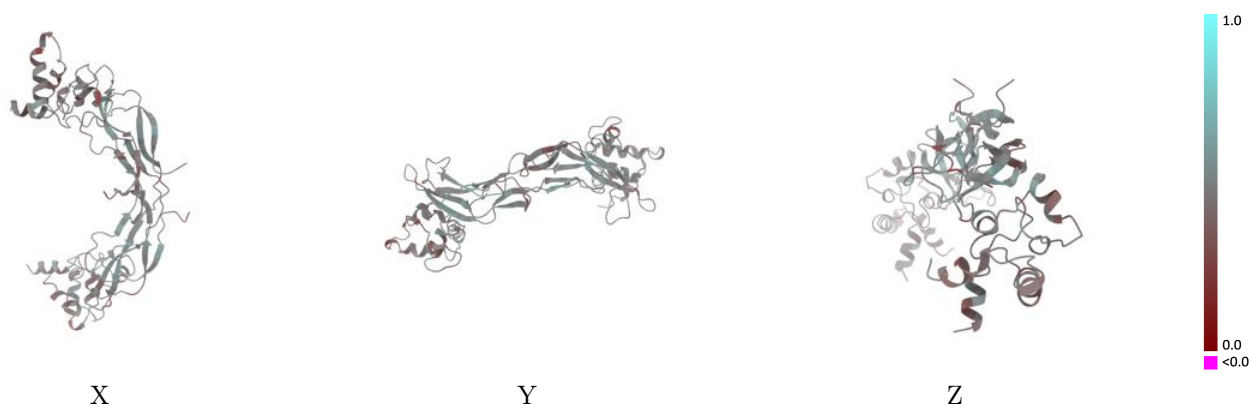
This section contains information regarding the fit between EMDB map EMD-63756 and PDB model 9MAN. Per-residue inclusion information can be found in [section 3](#) on [page 6](#).

9.1 Map-model overlay [i](#)



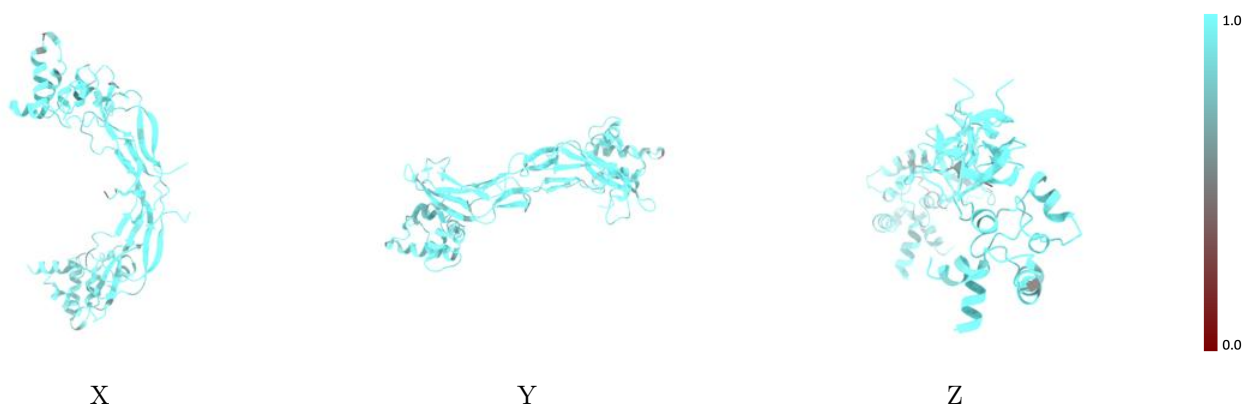
The images above show the 3D surface view of the map at the recommended contour level 0.0641 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



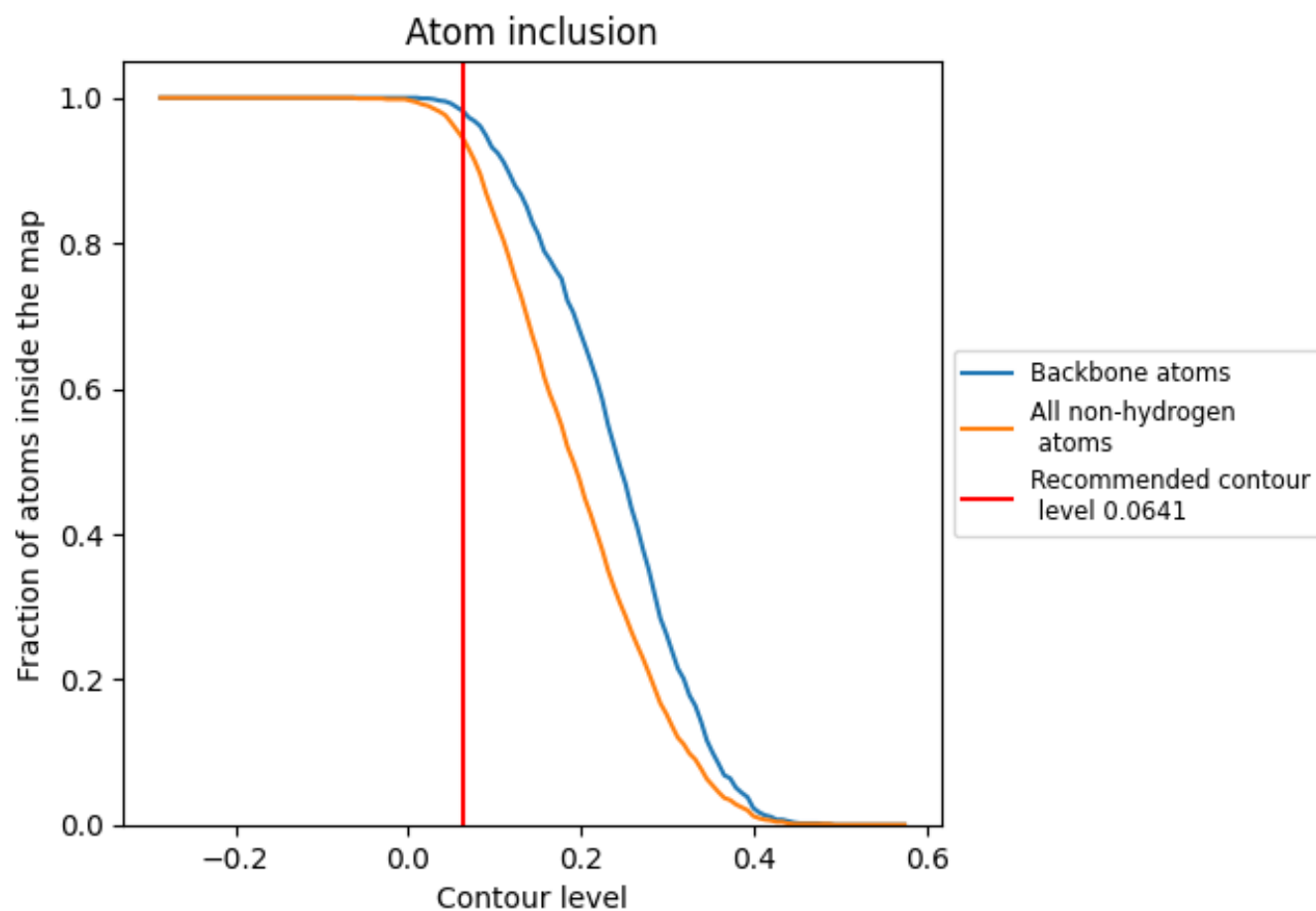
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0641).

9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 94% 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 (0.0641) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9430	0.4580
A	0.9390	0.4780
B	0.9520	0.4770
C	0.9300	0.4370
D	0.9510	0.4400

