



## wwPDB EM Validation Summary Report ⓘ

Jul 3, 2024 – 07:39 am BST

PDB ID : 7NP3  
EMDB ID : EMD-12512  
Title : cAMP-free rabbit HCN4 stabilized in LMNG-CHS detergent mixture  
Authors : Giese, H.M.; Chaves-Sanjuan, A.; Saponaro, A.; Clarke, O.; Bolognesi, M.;  
Mancia, F.; Hendrickson, W.A.; Thiel, G.; Santoro, B.; Moroni, A.  
Deposited on : 2021-02-26  
Resolution : 3.30 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](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev92  
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) : 2.37.1

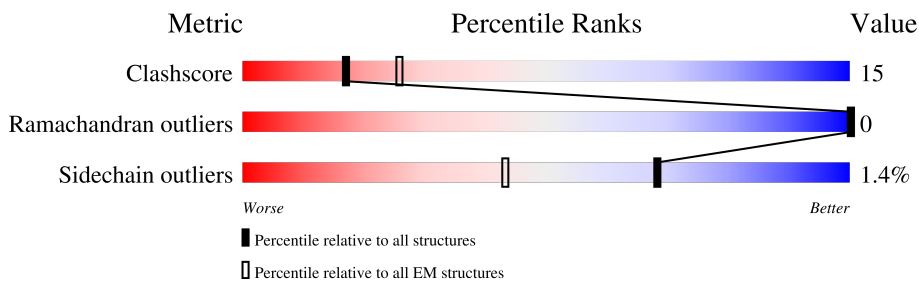
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.30 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

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  $\geq 3$ , 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	892	
1	B	892	
1	C	892	
1	D	892	

## 2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 16132 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 Potassium/sodium hyperpolarization-activated cyclic nucleotide-gated channel 4, Potassium/sodium hyperpolarization-activated cyclic nucleotide-gated channel 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	490	4033	2614	679	708	32	0	0
1	B	490	4033	2614	679	708	32	0	0
1	C	490	4033	2614	679	708	32	0	0
1	D	490	4033	2614	679	708	32	0	0

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LEU	deletion	UNP Q9TV66
A	?	-	LEU	deletion	UNP Q9TV66
A	821	ALA	-	insertion	UNP Q9TV66
A	822	GLY	-	insertion	UNP Q9TV66
A	823	GLY	-	insertion	UNP Q9TV66
A	824	PRO	-	insertion	UNP Q9TV66
A	?	-	PRO	deletion	UNP Q9TV66
A	?	-	ALA	deletion	UNP Q9TV66
A	?	-	GLY	deletion	UNP Q9TV66
A	?	-	GLY	deletion	UNP Q9TV66
B	?	-	LEU	deletion	UNP Q9TV66
B	?	-	LEU	deletion	UNP Q9TV66
B	821	ALA	-	insertion	UNP Q9TV66
B	822	GLY	-	insertion	UNP Q9TV66
B	823	GLY	-	insertion	UNP Q9TV66
B	824	PRO	-	insertion	UNP Q9TV66
B	?	-	PRO	deletion	UNP Q9TV66
B	?	-	ALA	deletion	UNP Q9TV66
B	?	-	GLY	deletion	UNP Q9TV66
B	?	-	GLY	deletion	UNP Q9TV66

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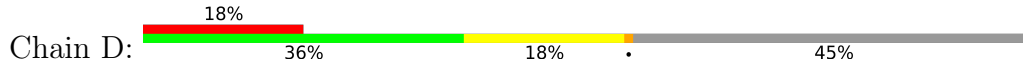
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Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	LEU	deletion	UNP Q9TV66
C	?	-	LEU	deletion	UNP Q9TV66
C	821	ALA	-	insertion	UNP Q9TV66
C	822	GLY	-	insertion	UNP Q9TV66
C	823	GLY	-	insertion	UNP Q9TV66
C	824	PRO	-	insertion	UNP Q9TV66
C	?	-	PRO	deletion	UNP Q9TV66
C	?	-	ALA	deletion	UNP Q9TV66
C	?	-	GLY	deletion	UNP Q9TV66
C	?	-	GLY	deletion	UNP Q9TV66
D	?	-	LEU	deletion	UNP Q9TV66
D	?	-	LEU	deletion	UNP Q9TV66
D	821	ALA	-	insertion	UNP Q9TV66
D	822	GLY	-	insertion	UNP Q9TV66
D	823	GLY	-	insertion	UNP Q9TV66
D	824	PRO	-	insertion	UNP Q9TV66
D	?	-	PRO	deletion	UNP Q9TV66
D	?	-	ALA	deletion	UNP Q9TV66
D	?	-	GLY	deletion	UNP Q9TV66
D	?	-	GLY	deletion	UNP Q9TV66









MET	SER	THR	GLU	V241	V320	L387	M509	V605	N689	ARG	SER	LEU
ASP	ALA	GLY	GLN	E242	V321	R388	F510	L609	F690	GLU	SER	THR
LYS	ALA	GLY	ARG	E243	E322	L395	I518	L612	N691	MET	GLY	ALA
LEU	ALA	SER	PRO	R243	D323	I399	S523	B613	V692	HIS	GLU	PRO
PRO	ALA	HIS	ALA	E244	N324	H400	S524	P619	L693	CYS	SER	VAL
SER	ALA	GLY	ASP	Q245	T325	Q401	R525	P625	E694	ALA	VAL	ALA
MET	GLY	HIS	ALA	E246	D326	W402	R526	R626	E695	ARG	ALA	ALA
GLY	GLY	LEU	VAL	R247	I327	E403	Q527	R627	E696	ARG	ALA	ALA
GLY	GLY	HIS	VAL	V248	I328	E404	V535	R628	Y697	ALA	ALA	ALA
ARG	GLU	HIS	VAL	K249	I405	I405	E536	E626	Y697	GLN	ALA	ALA
LEU	ASP	ASP	VAL	S250	L329	F406	Q537	G627	P698	ALA	ALA	ALA
LEU	SER	SER	GLY	A251	D330	H407	K543	T628	M699	THR	ALA	ALA
THR	ALA	ALA	GLY	G252	P331	M408	R544	R701	H700	THR	GLY	GLY
SER	ALA	ARG	ALA	F253	R332	T409	P545	L702	R702	PRO	GLY	VAL
ARG	ALA	ARG	ALA	W254	R333	Y410	P546	G630	A703	ALA	PHE	VAL
GLN	LEU	LEU	GLY	I255	I334	D411	P546	R631	F704	ALA	ARG	ARG
GLN	LEU	ILE	ASP	H256	K335	L412	R549	R632	F705	ALA	ARG	LYS
VAL	ILE	ALA	LEU	H257	M336	A413	R549	N633	F706	ALA	ALA	LEU
GLY	ALA	GLU	GLY	P258	K337	S414	I552	V643	T706	ALA	ALA	ASN
ALA	ALA	ALA	GLY	P259	Y338	L422	H553	L644	VAL	ALA	ALA	LEU
ALA	ALA	THR	GLY	Y259	L339	L428	D554	T645	LEU	LEU	LEU	LEU
ASP	ALA	PRO	ALA	F261	K340	L432	Y555	R646	ASP	LEU	LEU	LEU
TRP	GLY	SER	ALA	F264	S341	L432	Y556	G647	ARG	LEU	LEU	LEU
ILE	GLY	GLY	SER	Y265	D346	W432	Y560	R649	LEU	LEU	LEU	LEU
MET	PRO	PRO	PRO	L268	F347	V440	K563	E650	ASP	ALA	ALA	ALA
GLU	ALA	PRO	GLY	L271	S350	C450	E568	T651	ARG	ALA	ALA	ALA
GLU	ALA	GLY	THR	M274	I351	Y468	S569	R652	GLY	ALA	ALA	ALA
GLY	ALA	LEU	LEU	L278	P352	F471	I570	D655	LYS	ALA	ALA	ALA
GLY	ALA	ALA	ALA	L281	D354	K472	E573	V658	ILE	LYS	LYS	LYS
GLY	ASP	ALA	ALA	P282	R355	A473	L574	E661	LYS	LYS	LYS	LYS
ARG	CYS	PRO	ARG	I281	I356	M474	S575	E662	VAL	ALA	ALA	ALA
GLN	ARG	ARG	ARG	P282	F357	L478	I582	1662	GLN	ASP	ASP	ASP
ASP	PHE	GLY	ALA	T286	L358	C479	L582	C663	HIS	GLN	GLN	GLN
ARG	GLY	ALA	ALA	F287	I359	I480	C587	L664	ASP	ASP	ASP	ASP
ARG	SER	PRO	PRO	F288	V360	G481	R588	L665	LEU	LEU	LEU	LEU
ARG	LEU	PRO	ALA	K289	E361	Y482	V591	T666	SER	PRO	PRO	PRO
ARG	LEU	PRO	ALA	D290	T362	Q485	A592	R667	GLY	PRO	PRO	PRO
ARG	LEU	PRO	ALA	E291	R363	A486	S593	G668	SER	ASP	ASP	ASP
ARG	SER	ALA	ALA	N292	I364	P487	M594	R669	GLY	GLY	GLY	GLY
ARG	SER	SER	SER	T293	D365	H488	P595	R670	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	T294	S366	G489	G489	R671	LEU	LEU	LEU	LEU
ARG	SER	PRO	ARG	I297	E367	D492	L596	T671	LEU	LEU	LEU	LEU
ARG	SER	PRO	ARG	V301	V368	V493	F597	A672	ARG	ARG	ARG	ARG
ARG	SER	PRO	ARG	D310	Y369	W494	A598	R673	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	L311	K370	L495	N599	R675	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	N314	T371	T496	A600	A676	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	F315	A372	M497	D601	D677	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	T317	R373	M500	P602	T678	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	G318	A374	M500	F604	Y679	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG	I319	L375	M500	N603	Y683	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		R376	M500	F604	S684	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		I377	M500	F604	Y687	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		V378	M500	F604	D688	ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		R379	M500	F604		ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		I383	M500	F604		ALA	ALA	ALA	ALA
ARG	SER	PRO	ARG		L386	M500	F604		ALA	ALA	ALA	ALA



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	51758	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	71.85	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	2.574	Depositor
Minimum map value	-1.473	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.068	Depositor
Recommended contour level	0.3	Depositor
Map size ( $\text{\AA}$ )	226.84799, 226.84799, 226.84799	wwPDB
Map dimensions	272, 272, 272	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.834, 0.834, 0.834	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	0.45	0/4131	0.52	1/5583 (0.0%)
1	B	0.45	0/4131	0.52	1/5583 (0.0%)
1	C	0.45	0/4131	0.52	1/5583 (0.0%)
1	D	0.45	0/4131	0.52	1/5583 (0.0%)
All	All	0.45	0/16524	0.52	4/22332 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	601	ASP	CB-CG-OD2	5.26	123.03	118.30
1	A	601	ASP	CB-CG-OD2	5.26	123.03	118.30
1	D	601	ASP	CB-CG-OD2	5.25	123.03	118.30
1	C	601	ASP	CB-CG-OD2	5.16	122.95	118.30

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	A	4033	0	4046	137	0
1	B	4033	0	4046	133	0
1	C	4033	0	4046	137	0
1	D	4033	0	4046	140	0
All	All	16132	0	16184	499	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 15.

The worst 5 of 499 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:537:GLN:NE2	1:B:563:LYS:HB2	1.58	1.16
1:C:537:GLN:NE2	1:D:563:LYS:HB2	1.59	1.16
1:B:537:GLN:NE2	1:C:563:LYS:HB2	1.60	1.15
1:A:563:LYS:HB2	1:D:537:GLN:NE2	1.60	1.14
1:A:367:GLU:HG3	1:A:370:LYS:HB2	1.45	0.97

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	488/892 (55%)	450 (92%)	38 (8%)	0	100	100
1	B	488/892 (55%)	449 (92%)	39 (8%)	0	100	100
1	C	488/892 (55%)	450 (92%)	38 (8%)	0	100	100
1	D	488/892 (55%)	451 (92%)	37 (8%)	0	100	100
All	All	1952/3568 (55%)	1800 (92%)	152 (8%)	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	444/733 (61%)	438 (99%)	6 (1%)	67	82
1	B	444/733 (61%)	438 (99%)	6 (1%)	67	82
1	C	444/733 (61%)	438 (99%)	6 (1%)	67	82
1	D	444/733 (61%)	438 (99%)	6 (1%)	67	82
All	All	1776/2932 (61%)	1752 (99%)	24 (1%)	68	82

5 of 24 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	339	LEU
1	C	510	PHE
1	C	370	LYS
1	D	324	ASN
1	B	324	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 19 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	314	ASN
1	D	527	GLN
1	D	553	HIS
1	D	401	GLN
1	B	553	HIS

### 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 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.

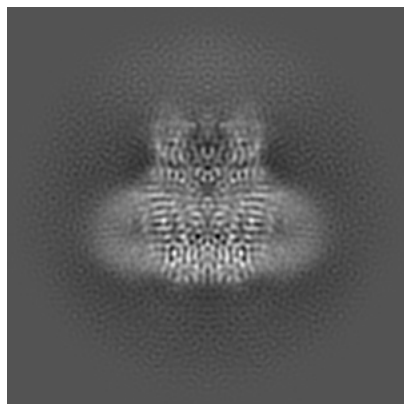
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-12512. These allow visual inspection of the internal detail of the map and identification of artifacts.

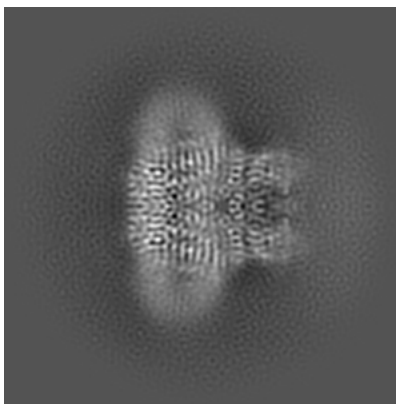
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

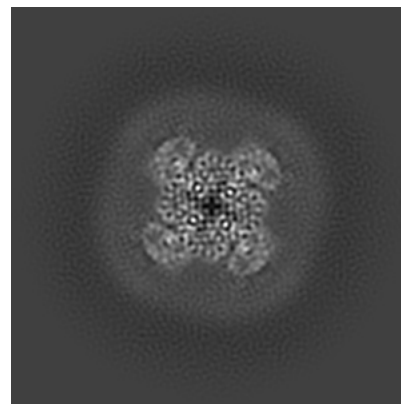
#### 6.1.1 Primary map



X

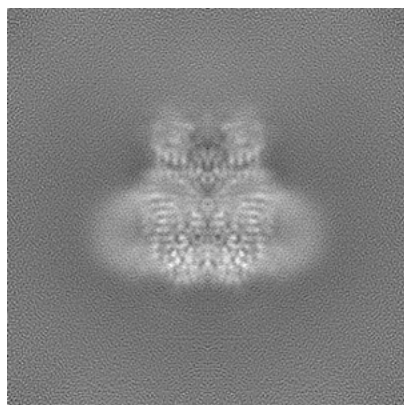


Y

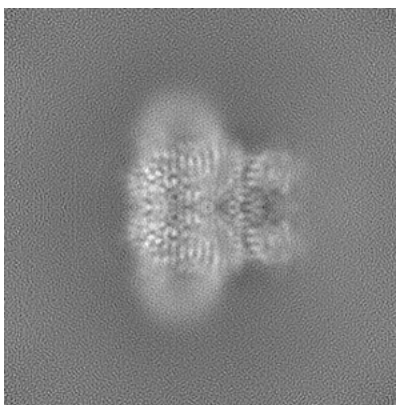


Z

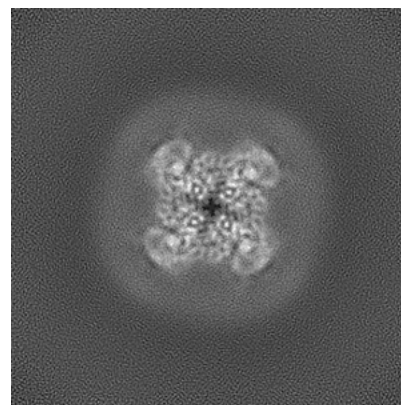
#### 6.1.2 Raw map



X



Y

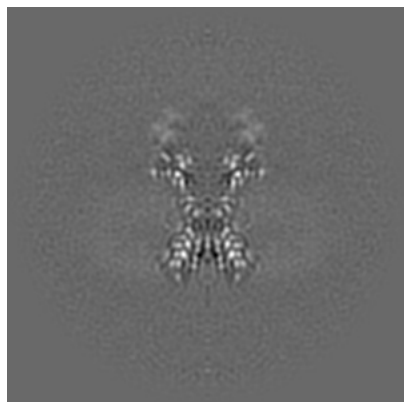


Z

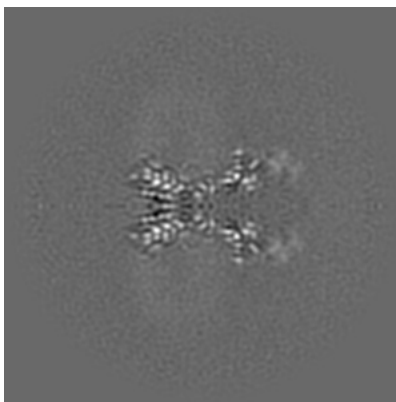
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

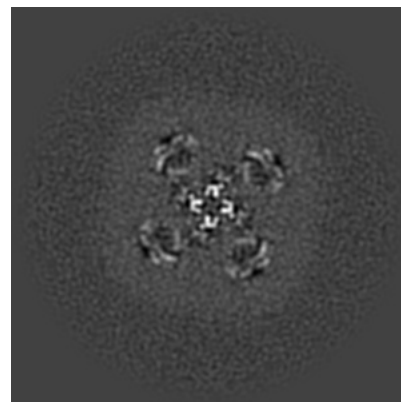
### 6.2.1 Primary map



X Index: 136

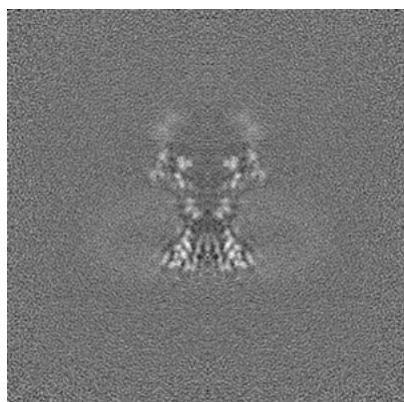


Y Index: 136

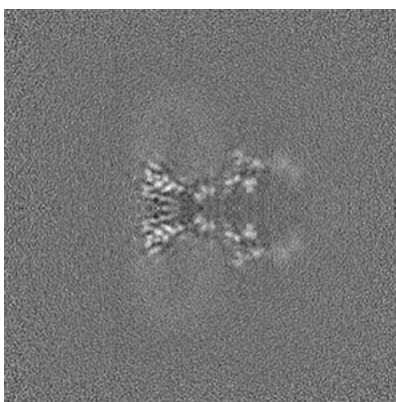


Z Index: 136

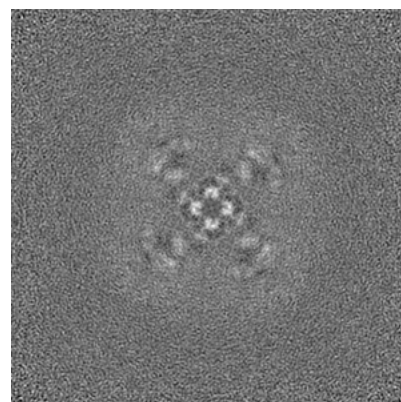
### 6.2.2 Raw map



X Index: 136



Y Index: 136

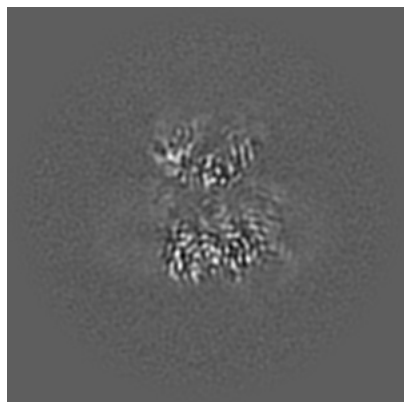


Z Index: 136

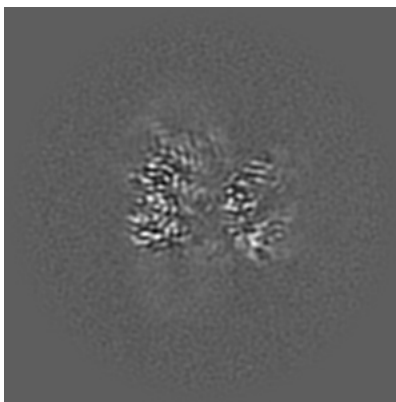
The images above show central slices of the map in three orthogonal directions.

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

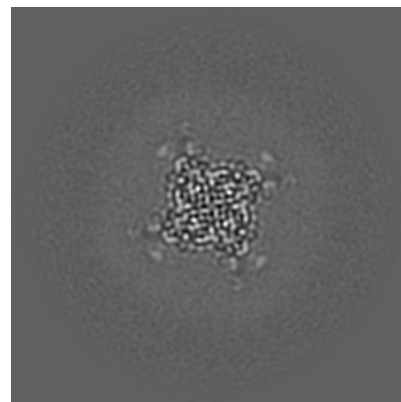
### 6.3.1 Primary map



X Index: 118

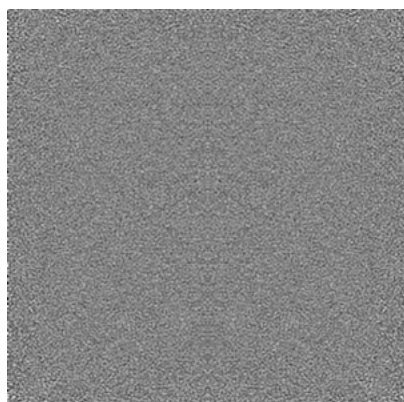


Y Index: 154

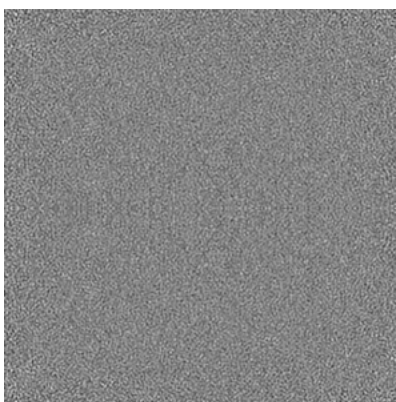


Z Index: 103

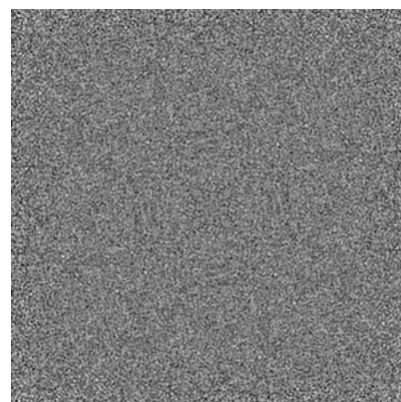
### 6.3.2 Raw map



X Index: 0



Y Index: 0



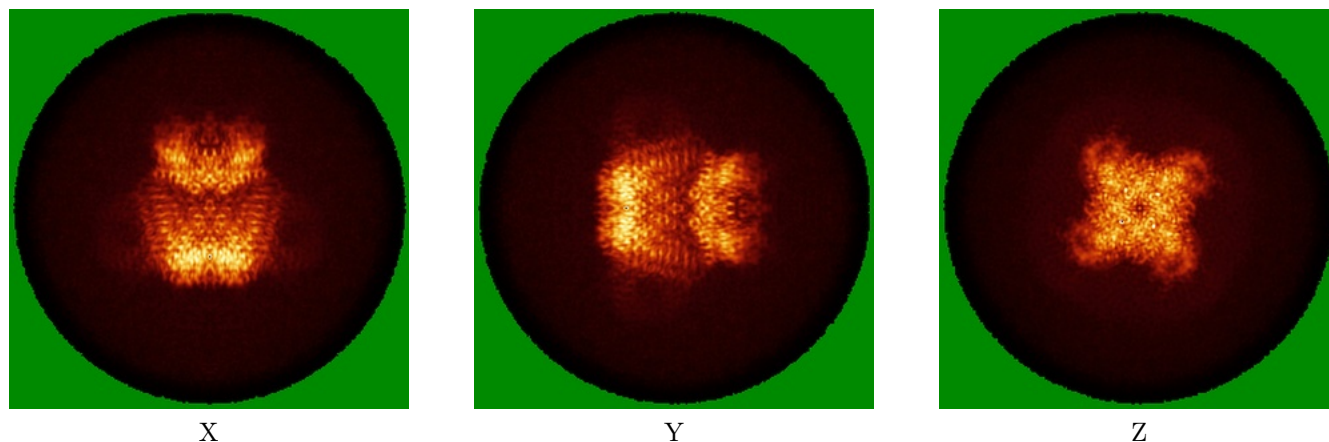
Z Index: 0

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

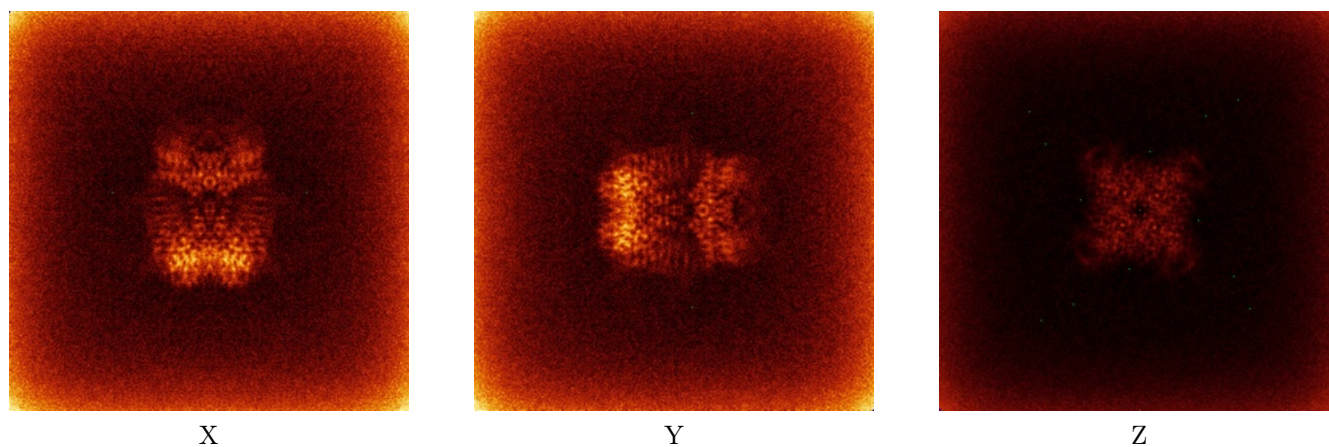


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

### 6.4.1 Primary map



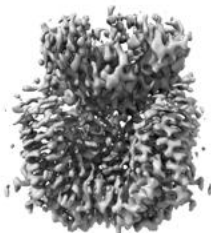
### 6.4.2 Raw map



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](#)

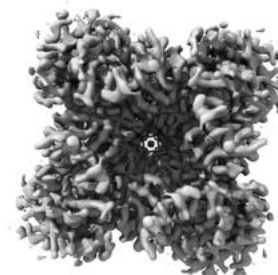
### 6.5.1 Primary map



X



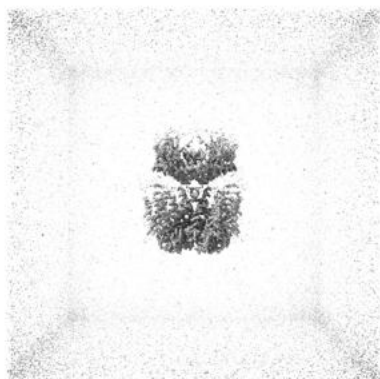
Y



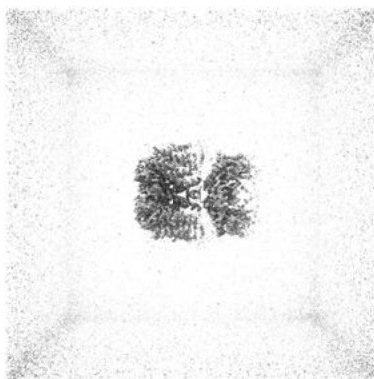
Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

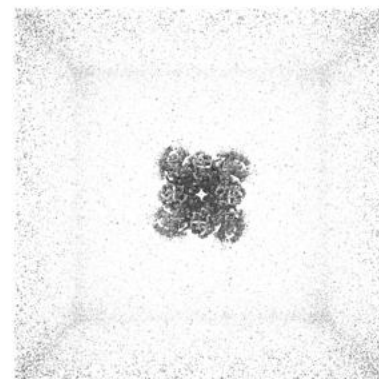
### 6.5.2 Raw map



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.

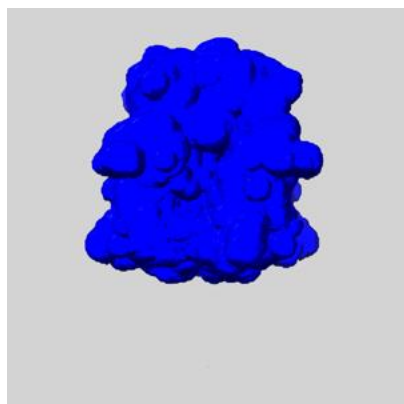
## 6.6 Mask visualisation [i](#)

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

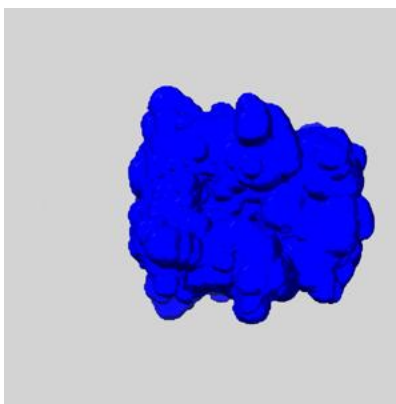
A mask typically either:

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

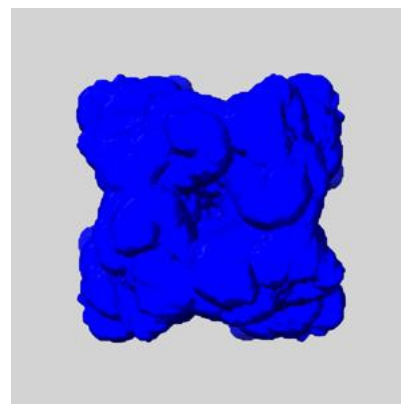
### 6.6.1 emd\_12512\_msk\_1.map [i](#)



X



Y

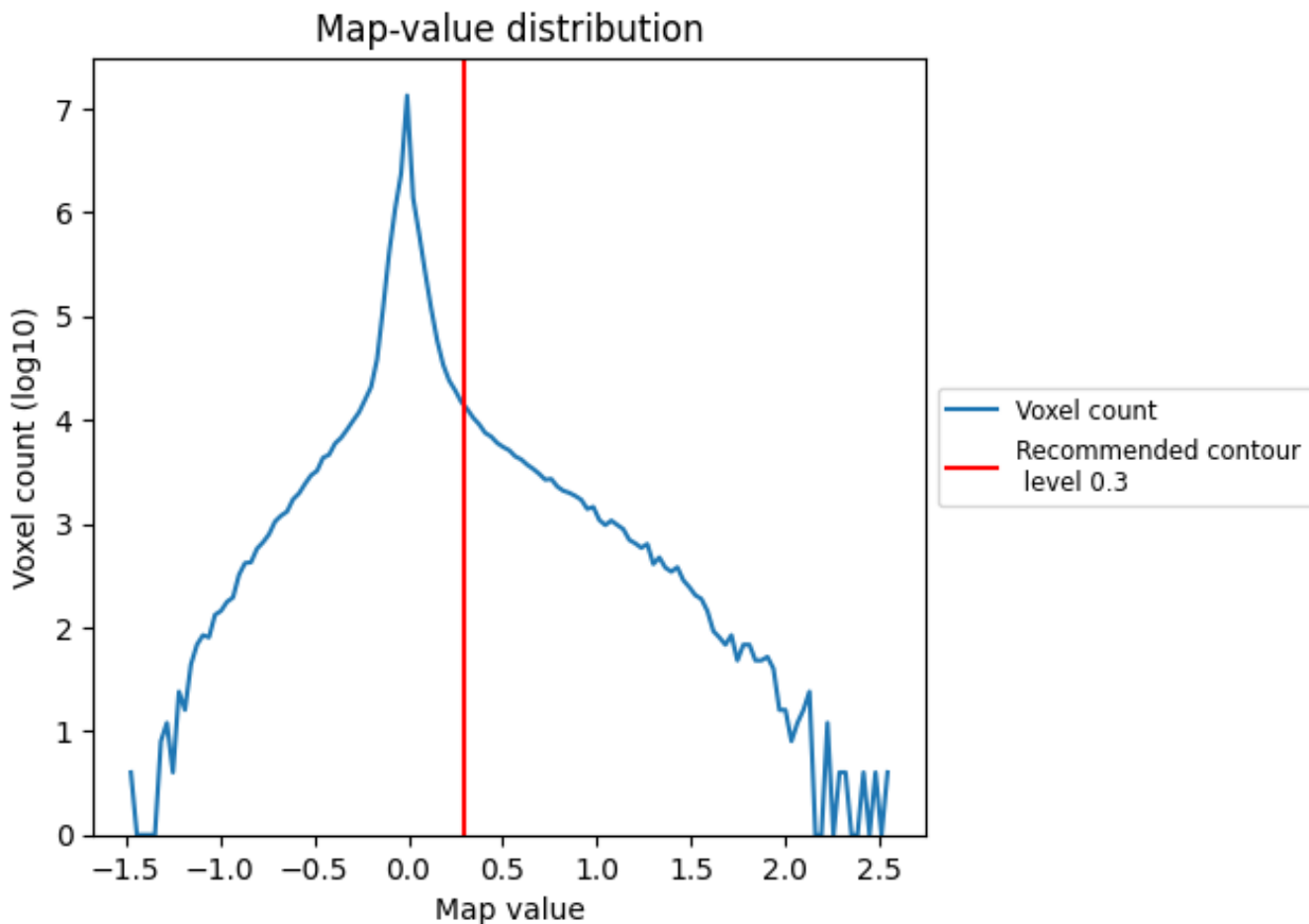


Z

## 7 Map analysis [i](#)

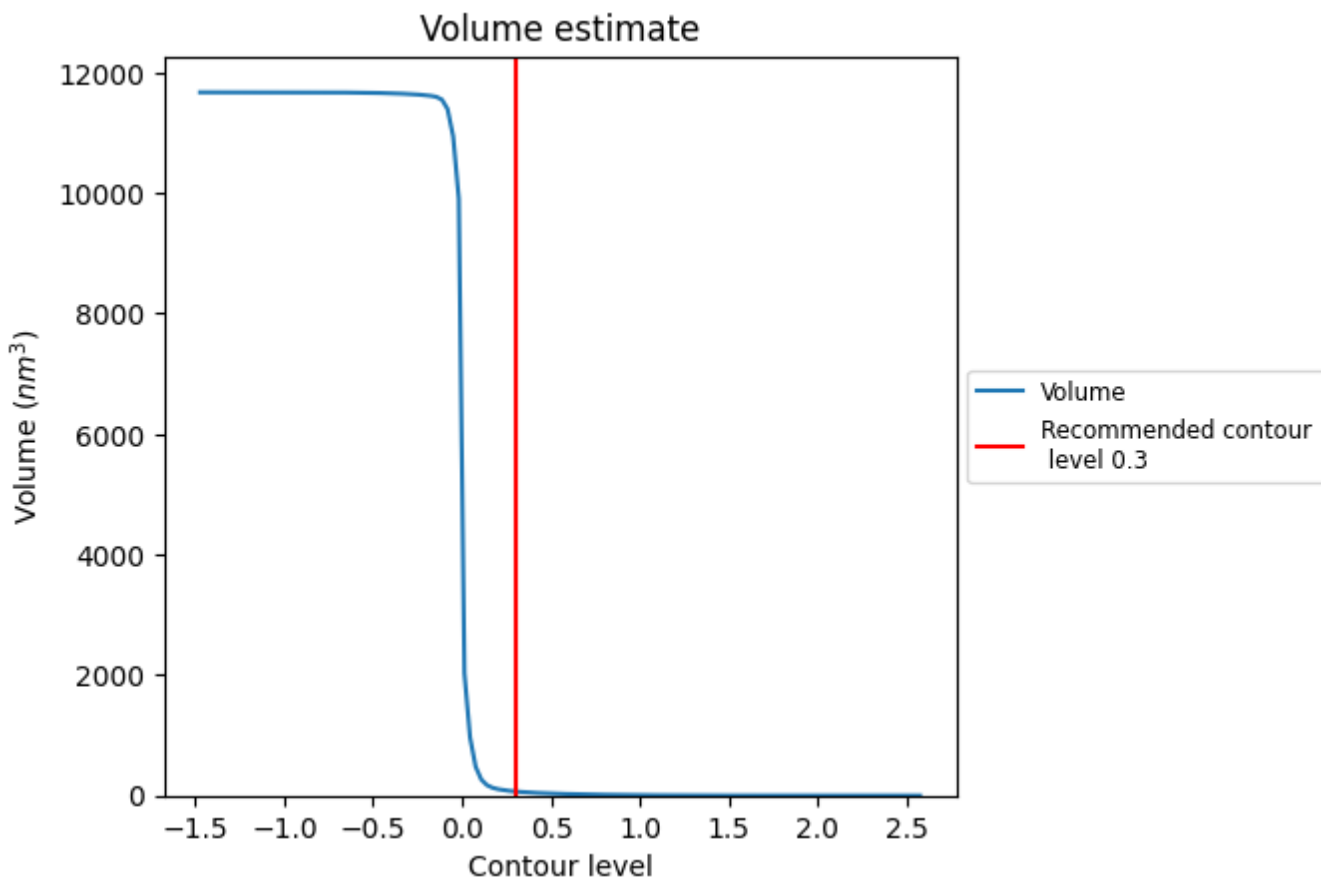
This section contains the results of statistical analysis of the map.

### 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.

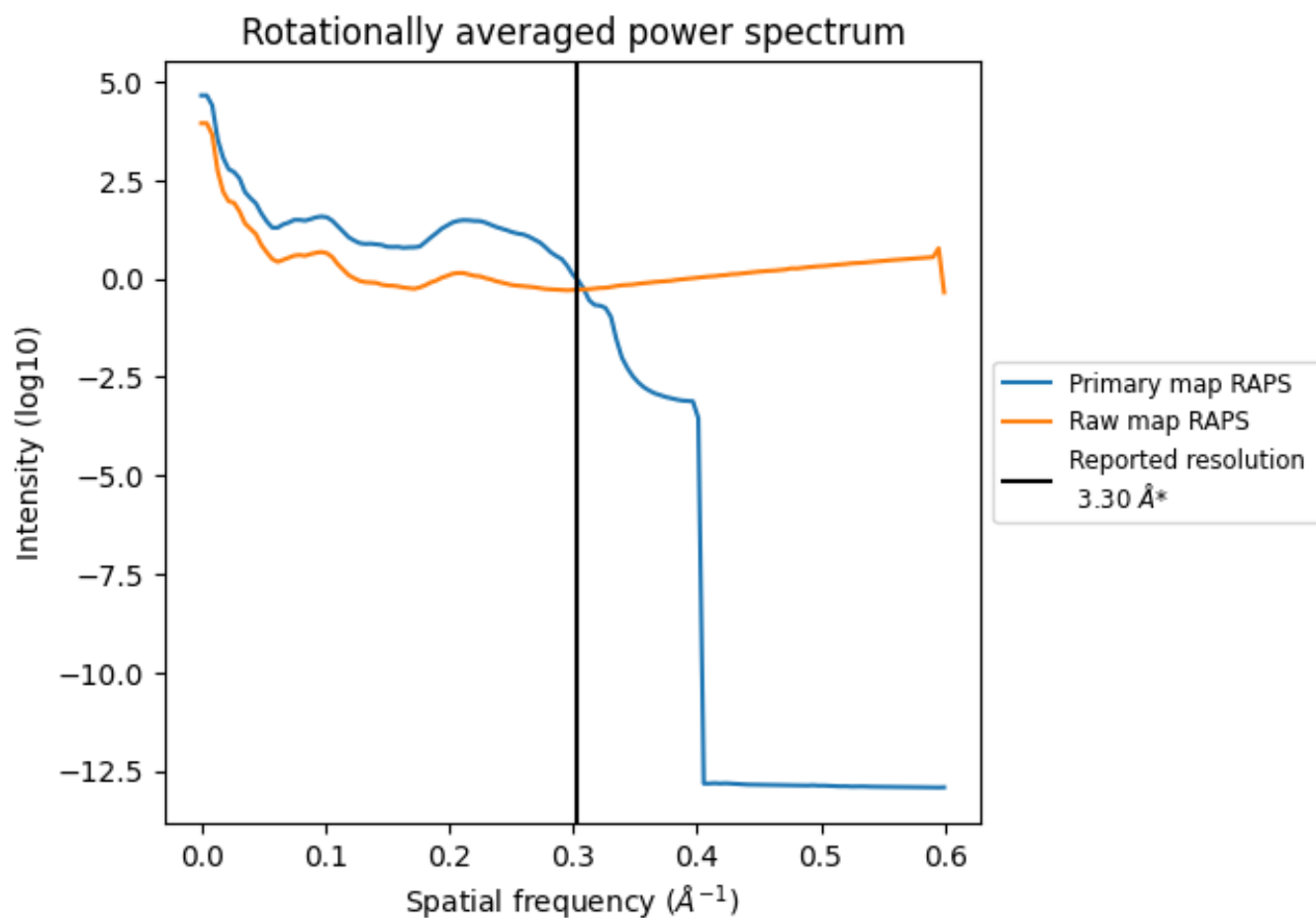
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 68 nm<sup>3</sup>; this corresponds to an approximate mass of 61 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](#)

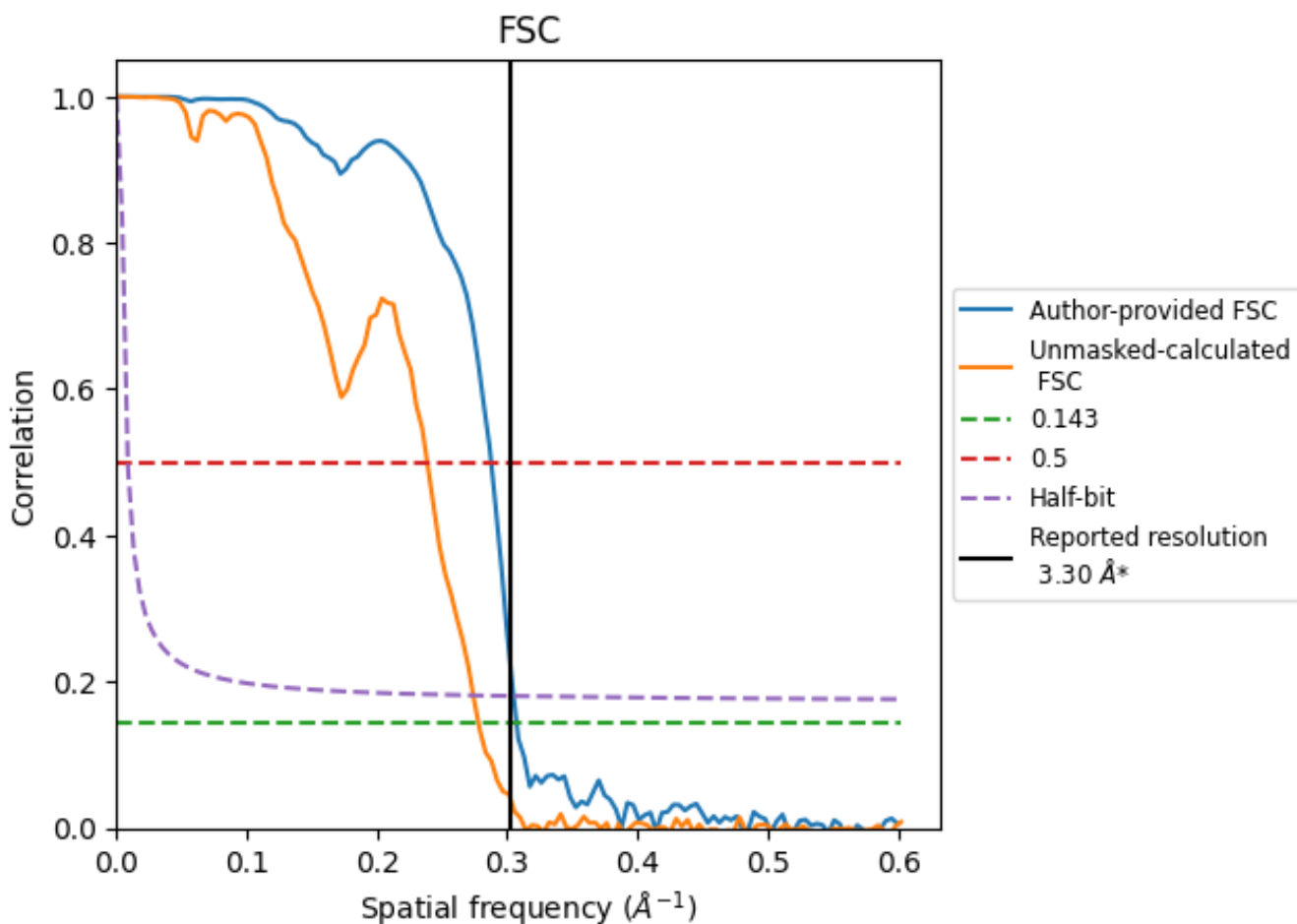


\*Reported resolution corresponds to spatial frequency of 0.303 Å<sup>-1</sup>

## 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 0.303 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.26	3.48	3.28
Unmasked-calculated*	3.60	4.19	3.65

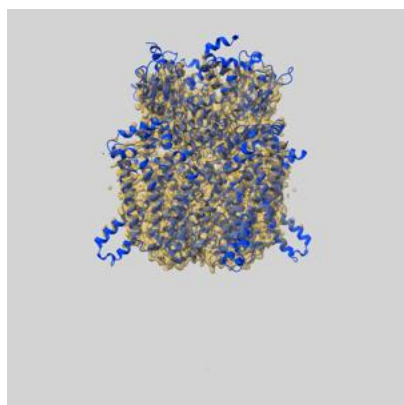
\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.



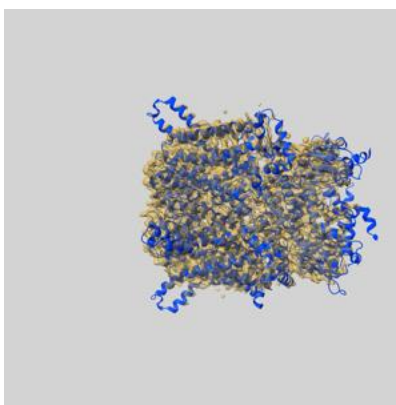
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-12512 and PDB model 7NP3. Per-residue inclusion information can be found in section 3 on page 5.

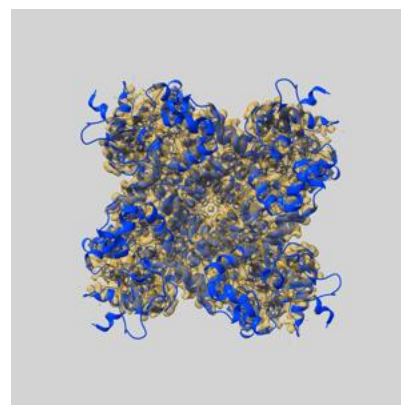
### 9.1 Map-model overlay [i](#)



X



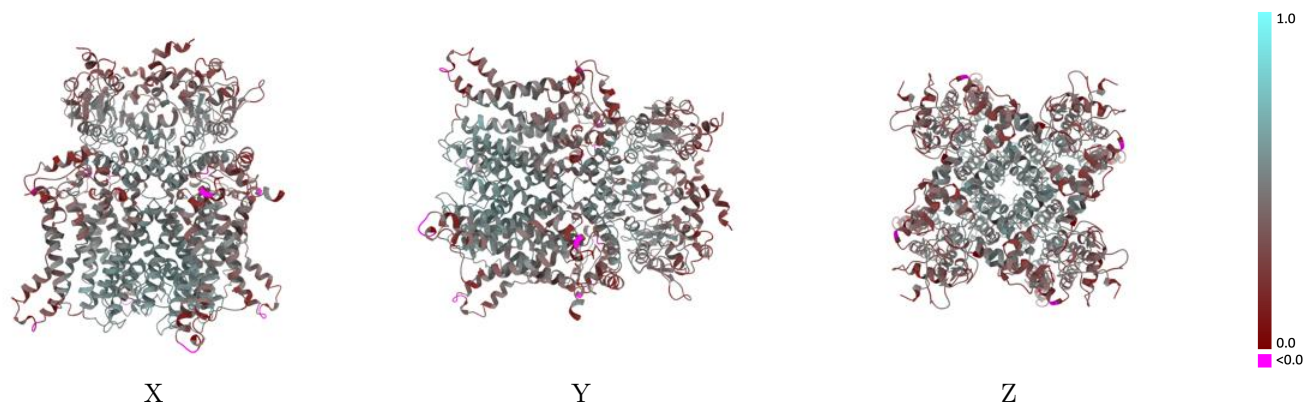
Y



Z

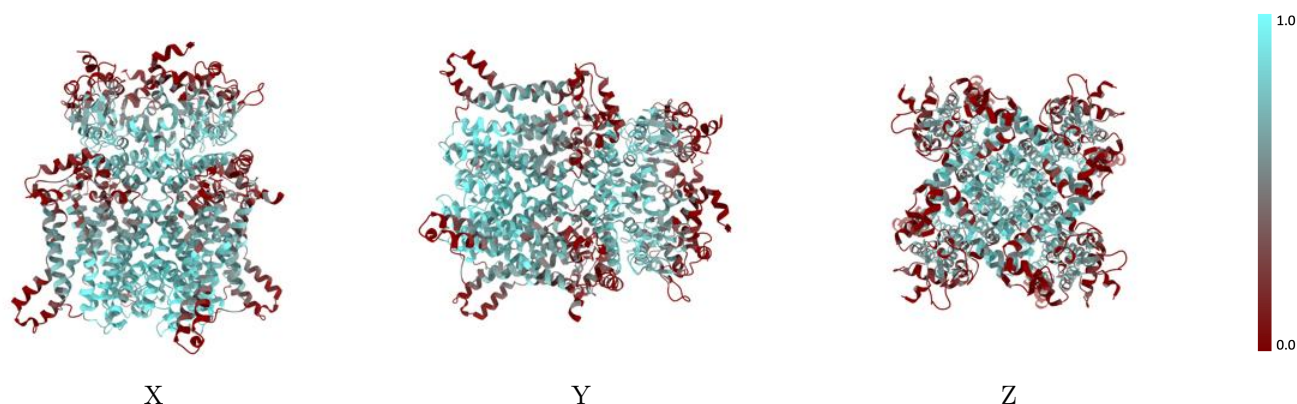
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



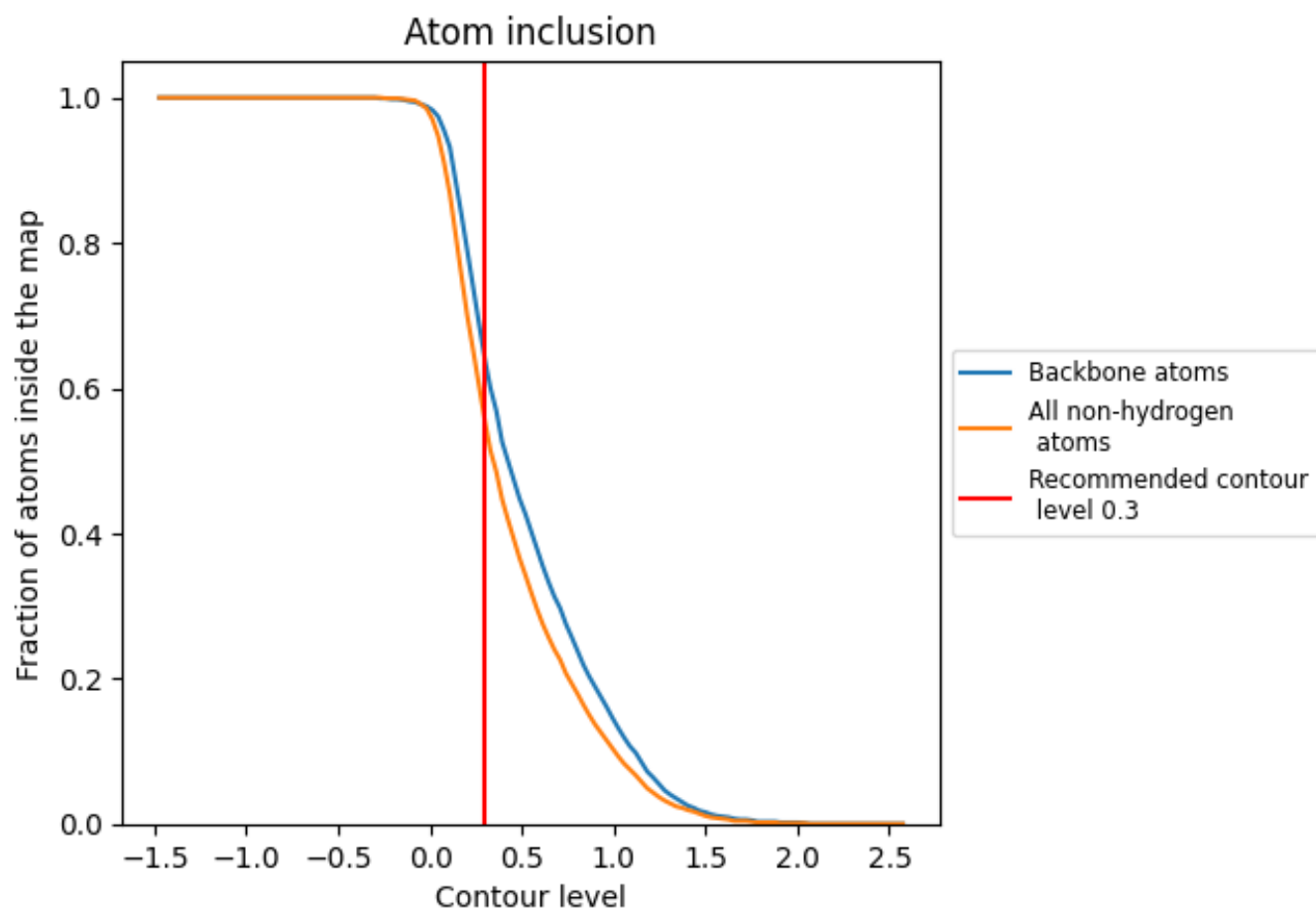
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.3).











## 9.4 Atom inclusion [i](#)



At the recommended contour level, 64% of all backbone atoms, 55% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5530	 0.4190
A	 0.5540	 0.4180
B	 0.5520	 0.4170
C	 0.5530	 0.4200
D	 0.5530	 0.4210

