



# wwPDB EM Validation Summary Report ⓘ

Sep 21, 2024 – 12:16 PM EDT

PDB ID : 9B8S  
EMDB ID : EMD-44357  
Title : Human polymerase epsilon bound to PCNA and DNA in the nucleotide exchange state  
Authors : Wang, F.; He, Q.; Li, H.  
Deposited on : 2024-03-31  
Resolution : 5.01 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.dev112  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.38.3

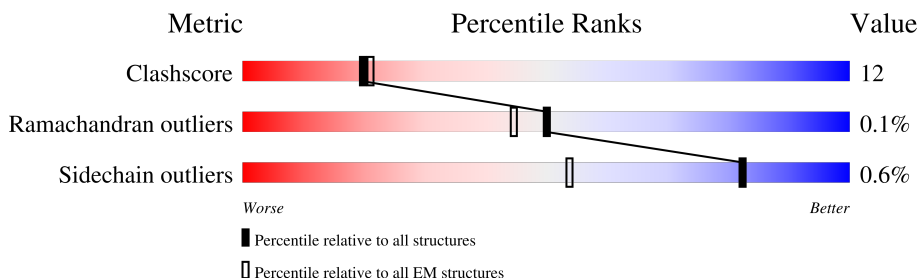
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 5.01 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	2286	
2	B	261	
2	C	261	
2	D	261	
3	P	35	
4	T	59	

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 16364 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 DNA polymerase epsilon catalytic subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1145	Total	C	N	O	S	0	0
			9308	5946	1592	1720	50		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	275	ALA	ASP	engineered mutation	UNP Q07864
A	277	ALA	GLU	engineered mutation	UNP Q07864

- Molecule 2 is a protein called Proliferating cell nuclear antigen.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	261	Total	C	N	O	S	0	0
			2008	1257	328	407	16		
2	C	261	Total	C	N	O	S	0	0
			2008	1257	328	407	16		
2	D	261	Total	C	N	O	S	0	0
			2008	1257	328	407	16		

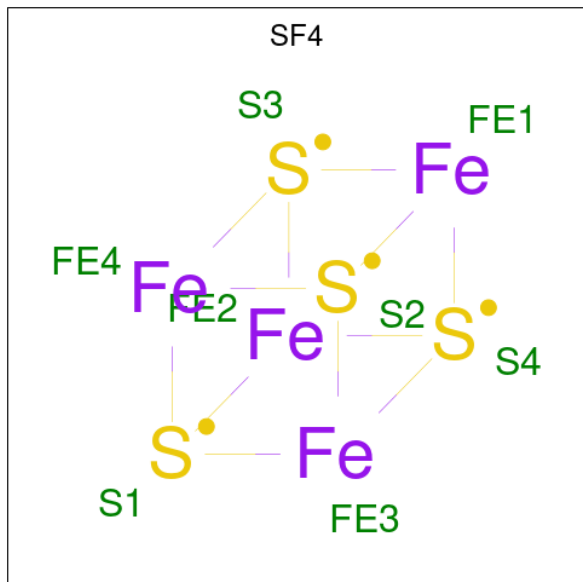
- Molecule 3 is a DNA chain called DNA (5'-D(P\*GP\*TP\*GP\*AP\*TP\*GP\*CP\*TP\*TP\*TP\*AP\*GP\*AP\*TP\*TP\*TP\*TP\*TP\*C)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	P	23	Total	C	N	O	P	0	0
			471	227	79	142	23		

- Molecule 4 is a DNA chain called DNA (5'-D(P\*AP\*AP\*AP\*GP\*TP\*GP\*AP\*AP\*AP\*AP\*AP\*TP\*CP\*TP\*AP\*AP\*AP\*GP\*CP\*AP\*TP\*CP\*AP\*C)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	T	27	Total	C	N	O	P	0	0
			553	264	108	154	27		

- Molecule 5 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula:  $\text{Fe}_4\text{S}_4$ ) (labeled as "Ligand of Interest" by depositor).

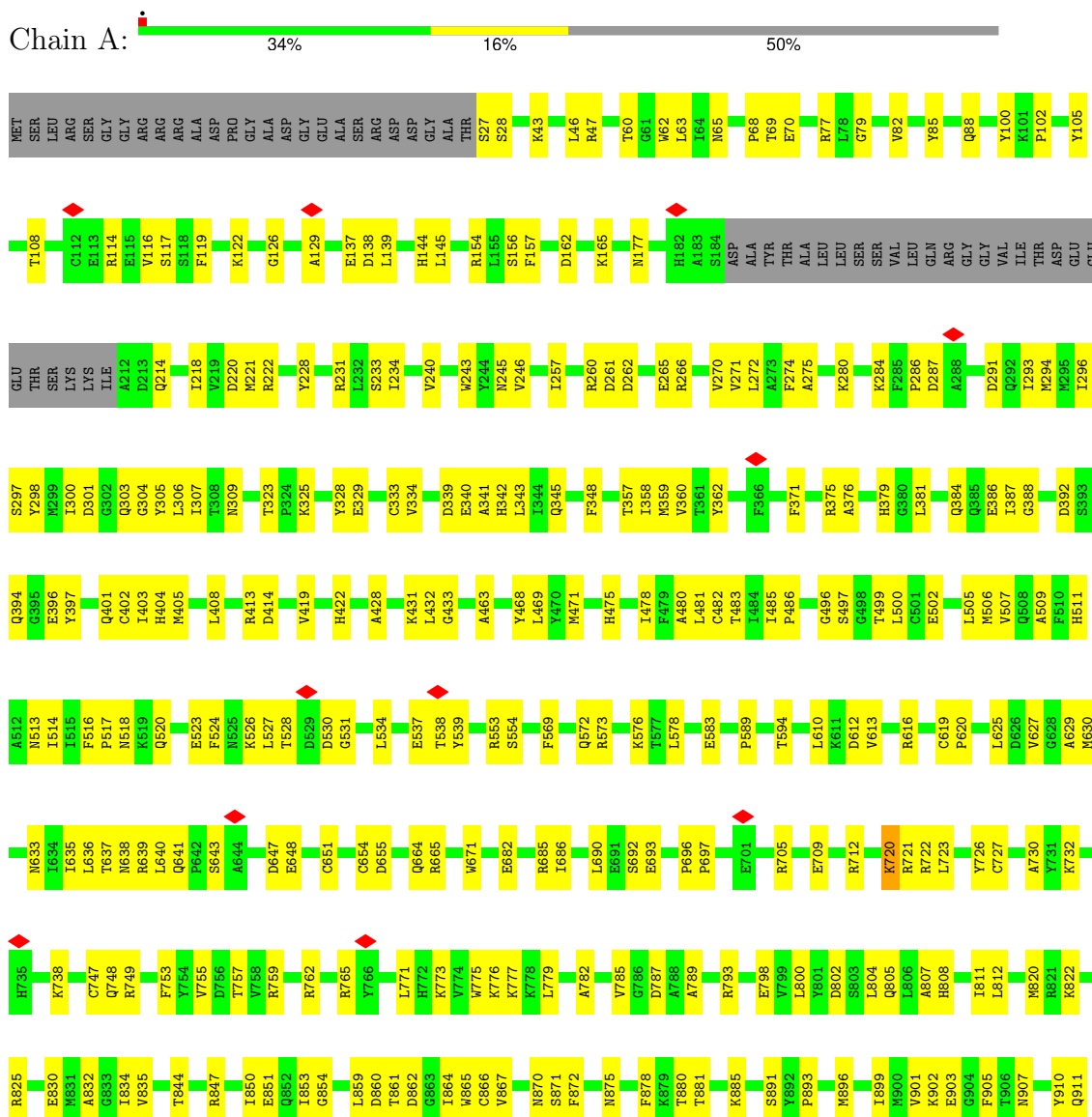


Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
5	A	1	8	4	4	0

### 3 Residue-property plots [i](#)

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.

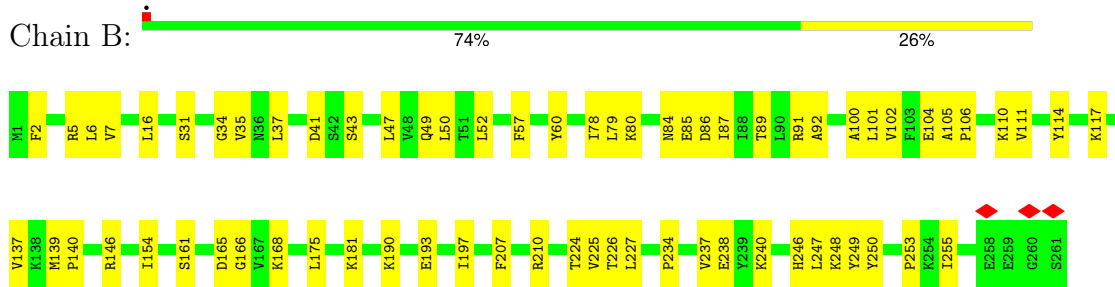
- Molecule 1: DNA polymerase epsilon catalytic subunit A



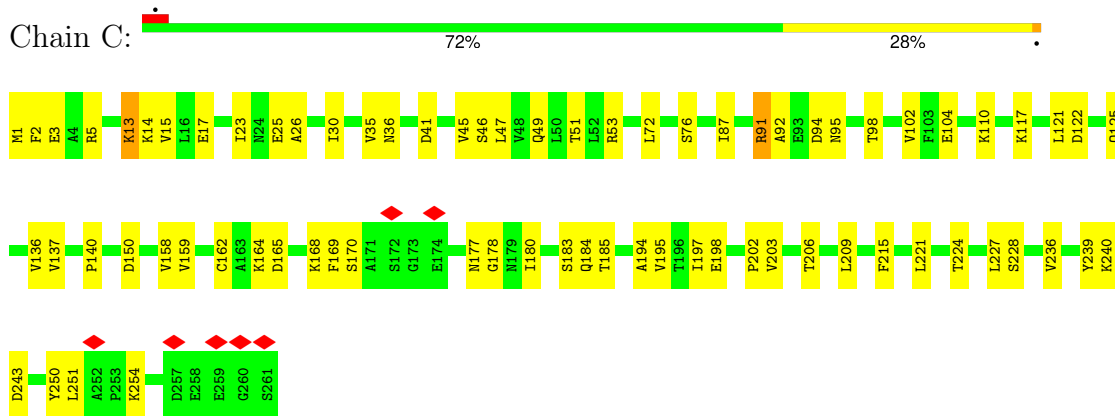
E912	L913	A914	E915	P916	S917	S918	L919	T920	R924	S925	E926	N927	I929	F930	F931	D934	L938	A939	S945	L952	R955	V958	F959	N960	E961	S964	E967	L968	K969	K974	R975	Q980	L981	L982	K983	I984	F990	F993	G996	L1014	P1015	V1016					
D1026	L1029	I1033	N1036	S1040	K1042	L1043	E1044	D1045	Y1046	G1047	E1048	Q1049	D1071	A1072	G1073	I1074	S1075	C1076	R1077	Y1078	I1079	I1080	S1081	R1082	K1083	P1084	E1085	G1086	S1087	T1090	E1091	R1092	P1095	L1096	E1102	P1103	T1104	L1114	I1124	D1129	T1134	L1137	G1139	A1140			
I1141	Q1142	K1143	I1144	I1145	T1146	K1155	N1156	P1157	K1163	F1164	D1165	W1166	K1170	L1171	L1172	E1173	K1174	Q1180	K1181	K1182	I1183	S1184	F1187	T1188	Q1194	V1195	A1198	GLU	ALA	SER	GLU	ASP	E1091	R1092	P1095	L1096	E1102	P1103	T1104	L1114	I1124	D1129	T1134	L1137	G1139	A1140	
PRO	ALA	ALA	PRO	VAL	THR	VAL	LYS	ARG	VAL	LEU	TRP	GLU	GLN	GLU	GLU	SER	GLN	ASP	VAL	PRO	TRP	GLN	S1081	GLY	LEU	GLY	PRO	ALA	LEU	GLY	THR	ALA	VAL	PRO	ASP	PRO	ASP	VAL	GLU	ARG	ASP	PHE	HIS	LYS	LEU	PRO	GLN
ALA	ARG	GLN	ALA	LEU	ALA	ARG	ARG	LYS	ARG	LEU	GLU	SER	ALA	GLY	VAL	LEU	ARG	ASP	GLY	GLY	PRO	TRP	ALA	THR	GLY	LEU	GLY	ARG	ARG	ARG	THR	ALA	VAL	ASP	GLU	VAL	GLU	ILE	VAL	VAL	VAL	VAL	GLN	GLN	ALA	ALA	
GLY	LEU	PHE	ARG	ARG	TRP	LEU	VAL	VAL	GLY	SER	HIS	CYS	LEU	ILE	LEU	PRO	ILE	ASN	GLN	ARG	VAL	THR	ALA	LEU	ALA	GLY	ALA	SER	TYR	ARG	LYS	CYS	ASN	ARG	VAL	VAL	VAL	VAL	VAL	ASN	MET	GLN	VAL	VAL	VAL	VAL	
PRO	GLU	ASP	LEU	MET	TYR	GLU	HIS	ILE	ASN	GLY	ASN	ALA	LEU	PRO	ASP	ILE	GLY	THR	THR	VAL	PRO	VAL	LEU	LEU	PHE	LEU	VAL	HIS	LEU	GLY	GLY	GLY	VAL	VAL	VAL	VAL	VAL	VAL	ASN	HIS	VAL	THR	THR	THR	THR		
PHE	ALA	LEU	HIS	GLY	GLU	GLY	ALA	GLY	GLN	GLY	GLY	LEU	PRO	GLY	SER	GLY	ARG	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
MET	PRO	SER	LEU	GLY	LEU	TYR	SER	SER	GLY	LEU	LEU	LEU	VAL	GLY	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO
THR	LEU	ILE	VAL	VAL	SER	SER	SER	SER	VAL	LEU	LEU	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL
LEU	SER	GLN	ALA	PHE	GLU	MET	ASP	ARG	GLN	THR	PHE	ALA	LEU	PRO	GLY	ASP	ILE	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
CYS	LEU	VAL	MET	GLU	PHE	ASP	ASP	GLN	VAL	VAL	VAL	ILE	PRO	ILE	ILE	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN	ASN
GLN	ALA	SER	LEU	GLY	ASP	MET	ILE	THR	GLY	GLY	GLY	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
ARG	TRP	LEU	SER	VAL	SER	SER	ILE	LEU	THR	GLY	HIS	PRO	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
ALA	ILE	ALA	TYR	VAL	GLU	TYR	ILE	THR	THR	THR	HIS	SER	PRO	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA
ALA	GLY	ALA	GLY	ASP	GLU	GLU	GLN	THR	GLY	GLY	ASP	GLY	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	
TYR	ILE	VAL	ALA	VAL	VAL	HIS	CYS	MET	GLY	ASP	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG
PHE	PHE	THR	ILE	THR	GLN	ILE	GLN	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
ASN	LYS	LEU	ASN	ARG	GLM	LEU	LEU	ARG	VAL	VAL	PHE	GLY	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA

PRO	GLN	TRP	LEU	CYS	SER	ASN	CYS	GLN	ALA	PRO	GLU	TYR	ASP	SER	SER	ALA	ILE	ARG	GLU	ASN	MET	THR	GLN	VAL	GLY	VAL	LEU	GLN	ASP	LEU	VAL	CYS	LEU	GLN	CYS	ARG	GLY	VAL	LYS	GLU	THR	SER	MET	PRO	VAL	TYR	CYS	SER	CYS	ALA	GLY	ASP	PHE			
ALA	LEU	THR	ILE	HIS	THR	GLN	VAL	PHE	MET	GLU	PRO	GLN	GLY	ILE	ILE	PHE	ALA	ARG	ASN	ILE	ILE	ALA	THR	GLN	HIS	VAL	TYR	GLY	VAL	LEU	GLN	ASP	LEU	VAL	CYS	LEU	GLN	CYS	ARG	GLY	VAL	LYS	GLU	THR	SER	MET	PRO	VAL	TYR	CYS	SER	CYS	ALA	GLY	ASP	PHE

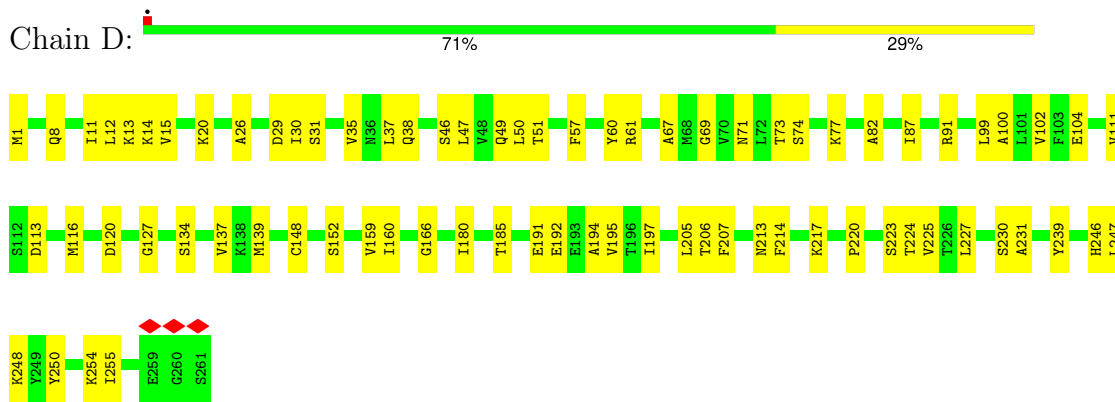
• Molecule 2: Proliferating cell nuclear antigen



• Molecule 2: Proliferating cell nuclear antigen

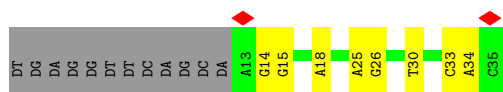


• Molecule 2: Proliferating cell nuclear antigen

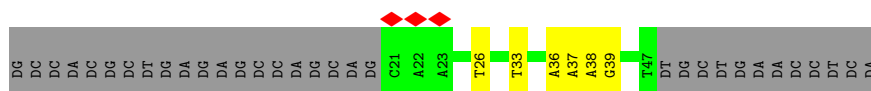
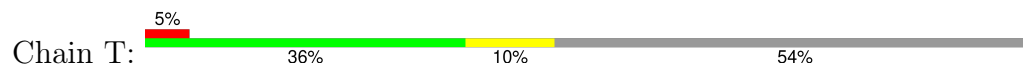


• Molecule 3: DNA (5'-D(P\*GP\*TP\*GP\*AP\*TP\*GP\*CP\*TP\*TP\*TP\*AP\*GP\*AP\*TP\*TP\*T P\*TP\*TP\*C)-3')





- Molecule 4: DNA (5'-D(P\*AP\*AP\*AP\*GP\*TP\*GP\*AP\*AP\*AP\*AP\*AP\*TP\*CP\*TP\*AP\*AP\*AP\*GP\*CP\*AP\*TP\*CP\*AP\*C)-3')





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	71210	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 ( $e^-/\text{\AA}^2$ )	60	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.548	Depositor
Minimum map value	-0.287	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	298.08002, 298.08002, 298.08002	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.82800007, 0.82800007, 0.82800007	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SF4

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	0.31	0/9526	0.61	0/12867
2	B	0.28	0/2034	0.61	0/2747
2	C	0.29	0/2034	0.62	0/2747
2	D	0.29	0/2034	0.61	0/2747
3	P	0.54	0/526	1.03	0/810
4	T	0.53	0/622	0.88	0/956
All	All	0.32	0/16776	0.64	0/22874

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	9308	0	9250	254	0
2	B	2008	0	2003	46	0
2	C	2008	0	2003	48	0
2	D	2008	0	2003	52	0
3	P	471	0	262	6	0
4	T	553	0	303	5	0
5	A	8	0	0	1	0
All	All	16364	0	15824	394	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 12.

The worst 5 of 394 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)
2:C:169:PHE:HB2	2:C:180:ILE:HB	1.62	0.81
2:C:47:LEU:HB2	2:C:250:TYR:HB2	1.66	0.77
1:A:480:ALA:HB1	1:A:807:ALA:HB2	1.66	0.77
1:A:1082:ARG:HB2	1:A:1129:ASP:HA	1.70	0.74
1:A:685:ARG:HH22	2:B:255:ILE:H	1.36	0.73

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	1141/2286 (50%)	1078 (94%)	62 (5%)	1 (0%)	48 83
2	B	259/261 (99%)	250 (96%)	9 (4%)	0	100 100
2	C	259/261 (99%)	244 (94%)	15 (6%)	0	100 100
2	D	259/261 (99%)	245 (95%)	14 (5%)	0	100 100
All	All	1918/3069 (62%)	1817 (95%)	100 (5%)	1 (0%)	50 83

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	861	THR

### 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	1013/2010 (50%)	1006 (99%)	7 (1%)	81	87
2	B	228/228 (100%)	227 (100%)	1 (0%)	89	91
2	C	228/228 (100%)	225 (99%)	3 (1%)	65	77
2	D	228/228 (100%)	228 (100%)	0	100	100
All	All	1697/2694 (63%)	1686 (99%)	11 (1%)	82	88

5 of 11 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	117	LYS
2	C	13	LYS
2	C	91	ARG
2	C	53	ARG
1	A	1085	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	345	GLN
1	A	475	HIS
2	D	49	GLN
2	D	246	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 oligosaccharides in this entry.

## 5.6 Ligand geometry

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	SF4	A	2301	1	0,12,12	-	-	-		

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	SF4	A	2301	1	-	-	0/6/5/5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

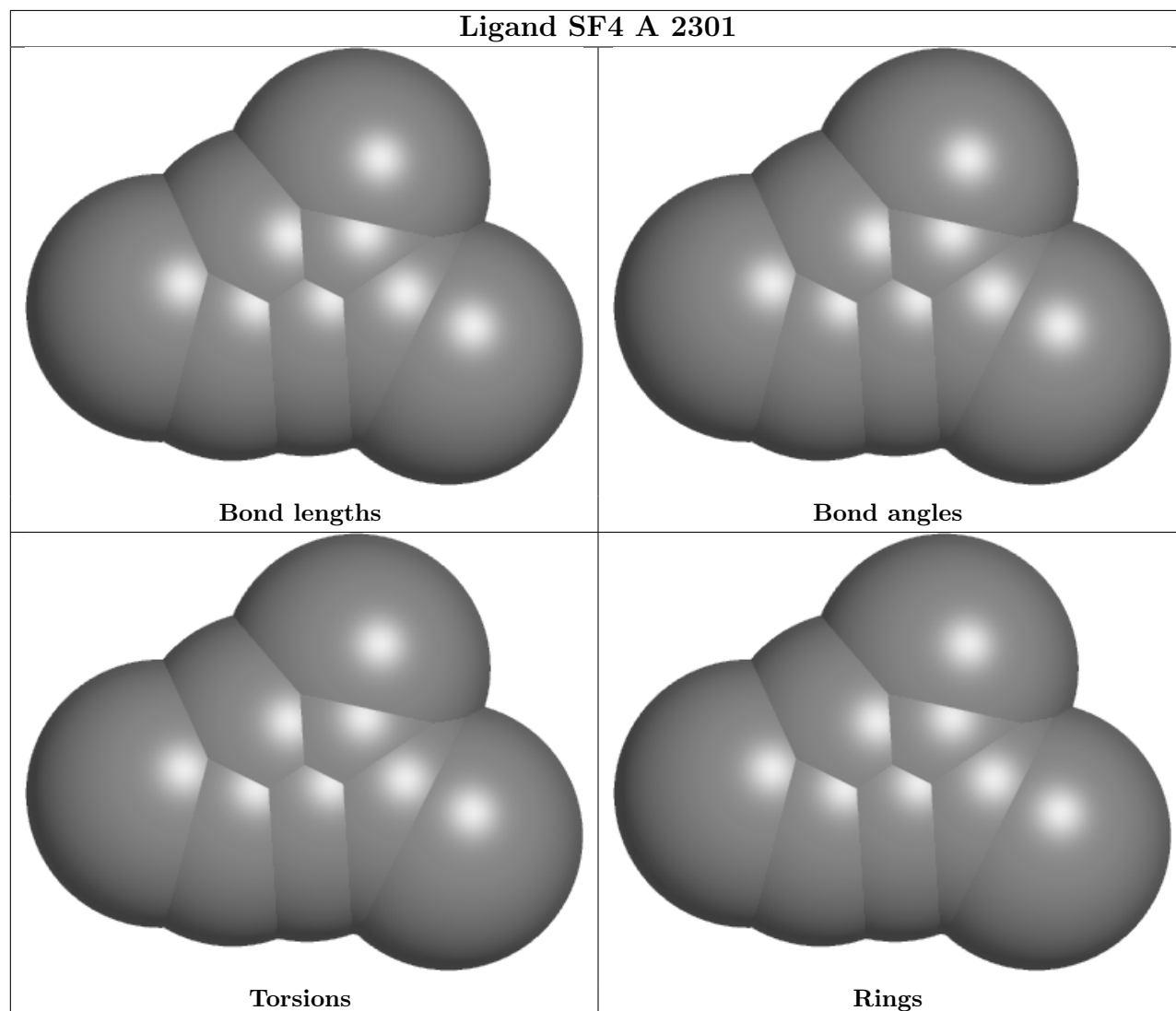
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2301	SF4	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight  $> 250$  and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

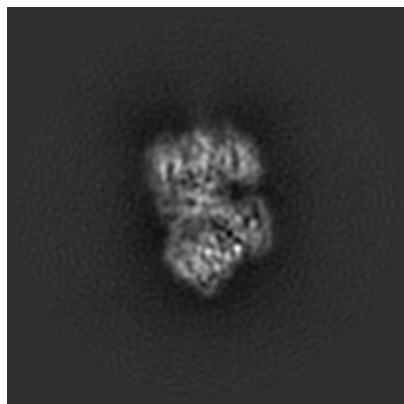
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-44357. These allow visual inspection of the internal detail of the map and identification of artifacts.

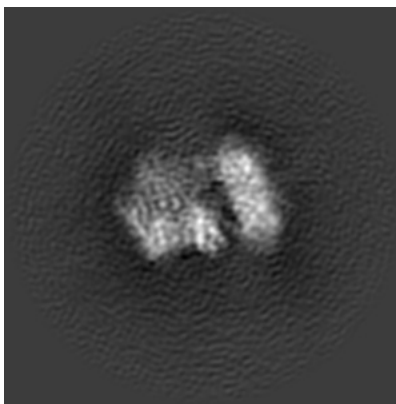
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

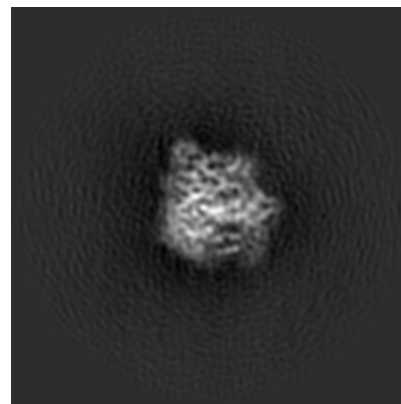
#### 6.1.1 Primary map



X

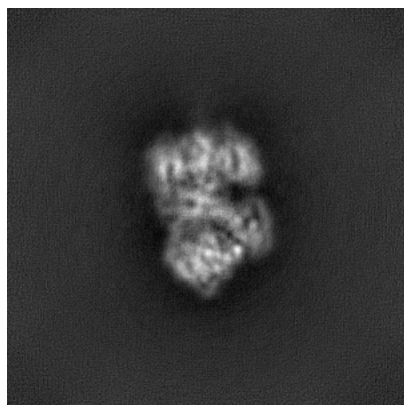


Y

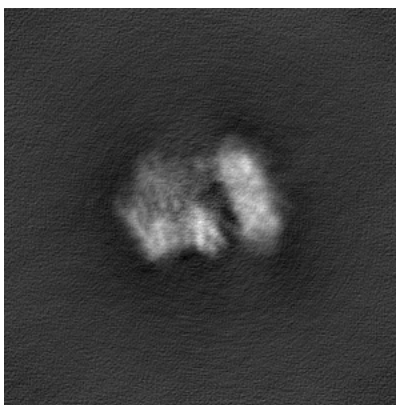


Z

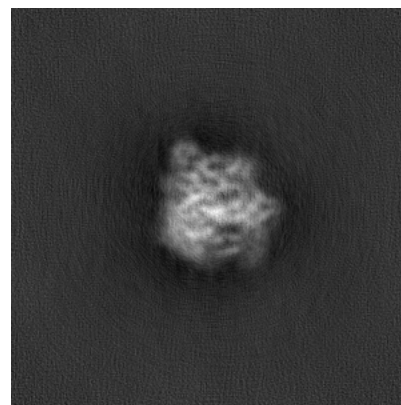
#### 6.1.2 Raw map



X



Y

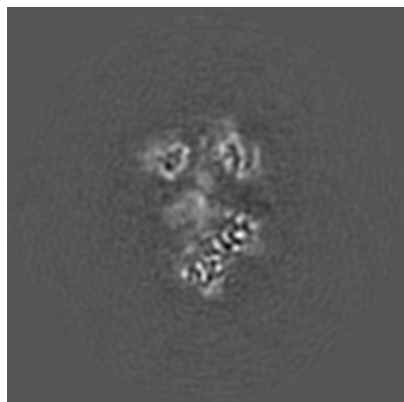


Z

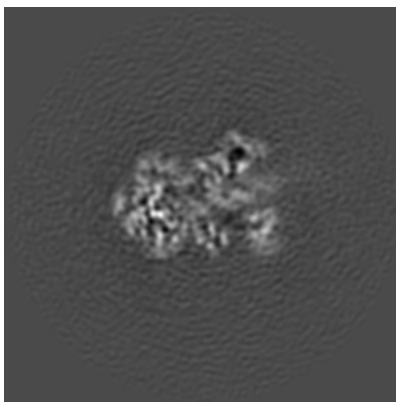
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

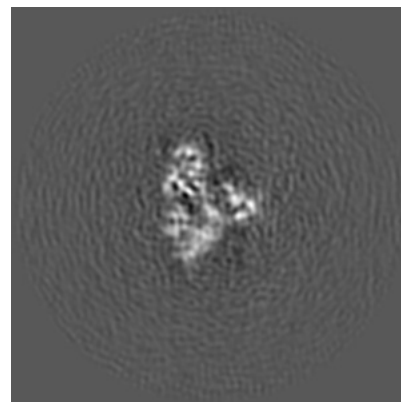
### 6.2.1 Primary map



X Index: 180

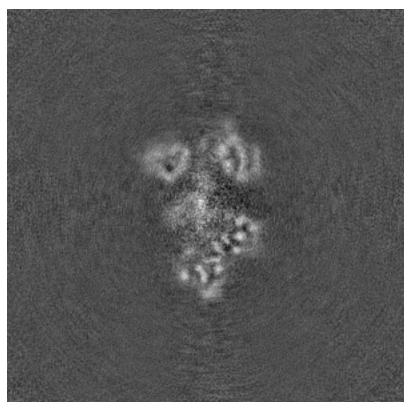


Y Index: 180

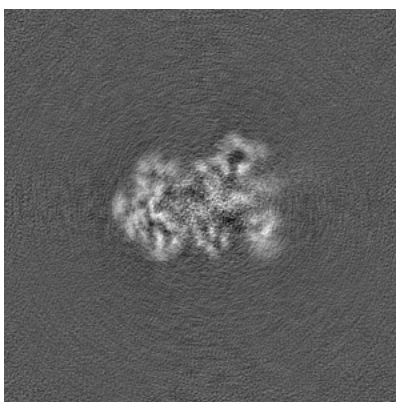


Z Index: 180

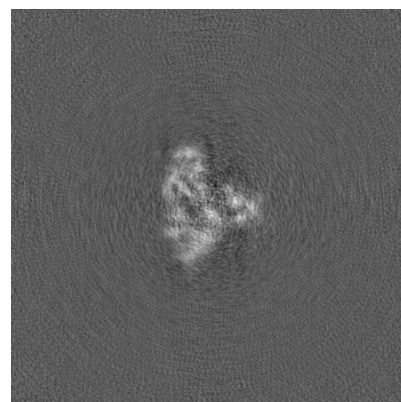
### 6.2.2 Raw map



X Index: 180



Y Index: 180



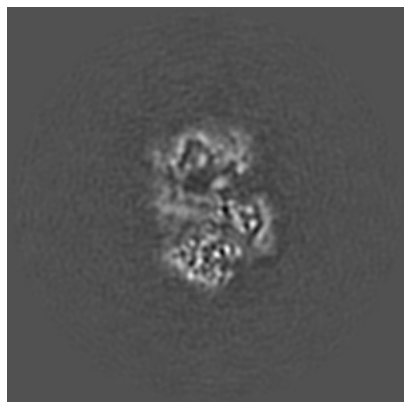
Z Index: 180

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

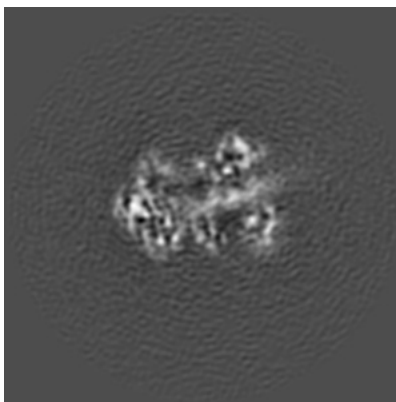


## 6.3 Largest variance slices [i](#)

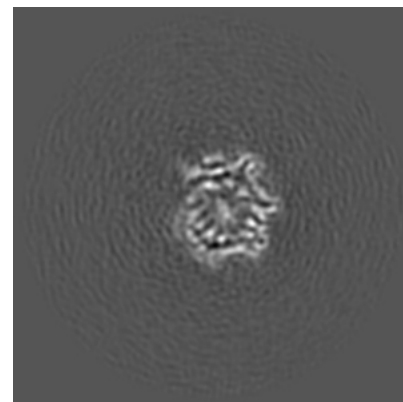
### 6.3.1 Primary map



X Index: 165

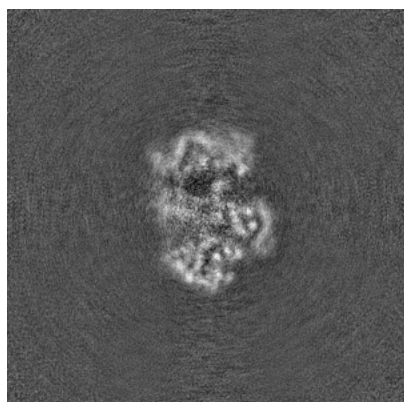


Y Index: 177

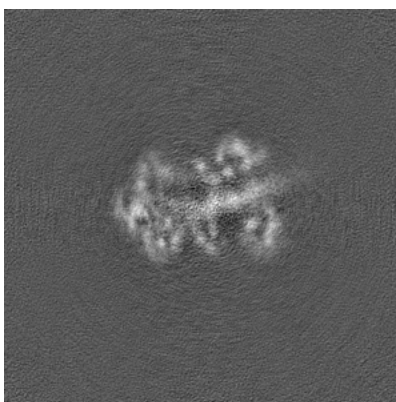


Z Index: 217

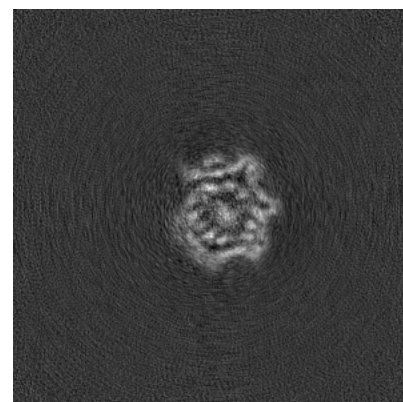
### 6.3.2 Raw map



X Index: 166



Y Index: 176

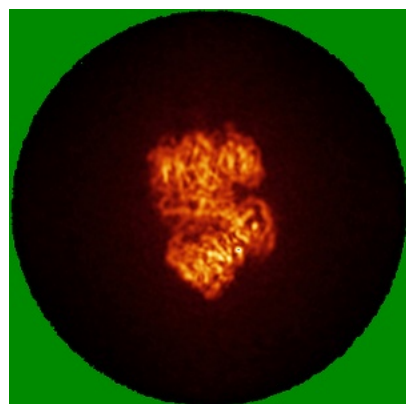


Z Index: 218

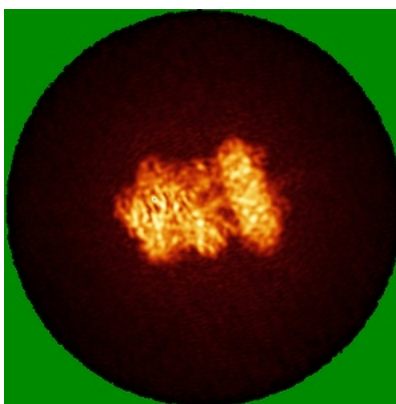
The images above show the largest variance slices of the map in three orthogonal directions.

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

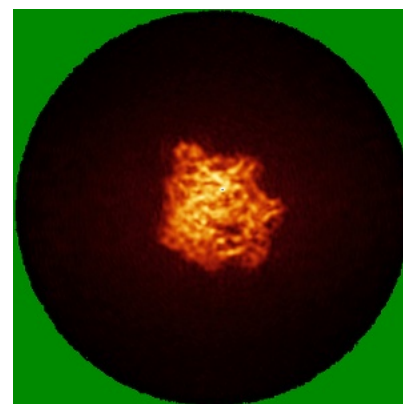
### 6.4.1 Primary map



X

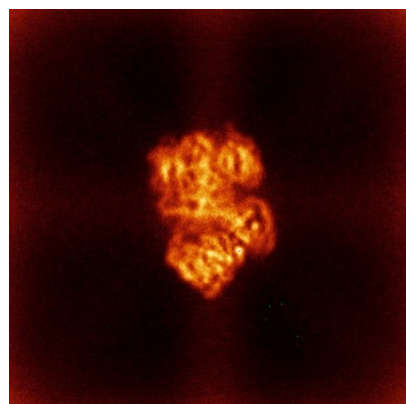


Y

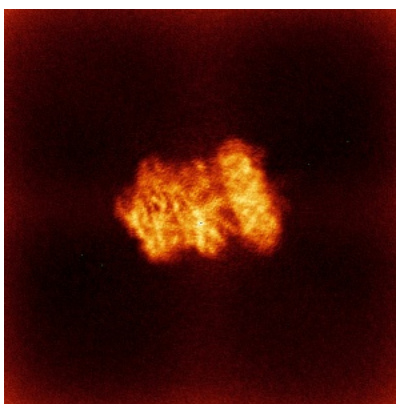


Z

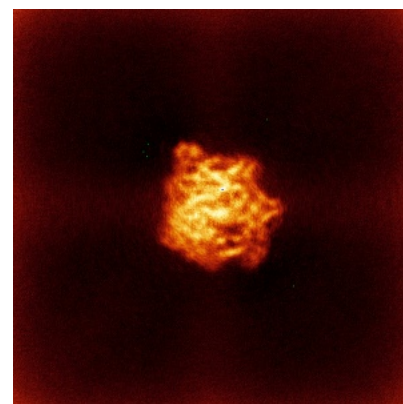
### 6.4.2 Raw map



X



Y

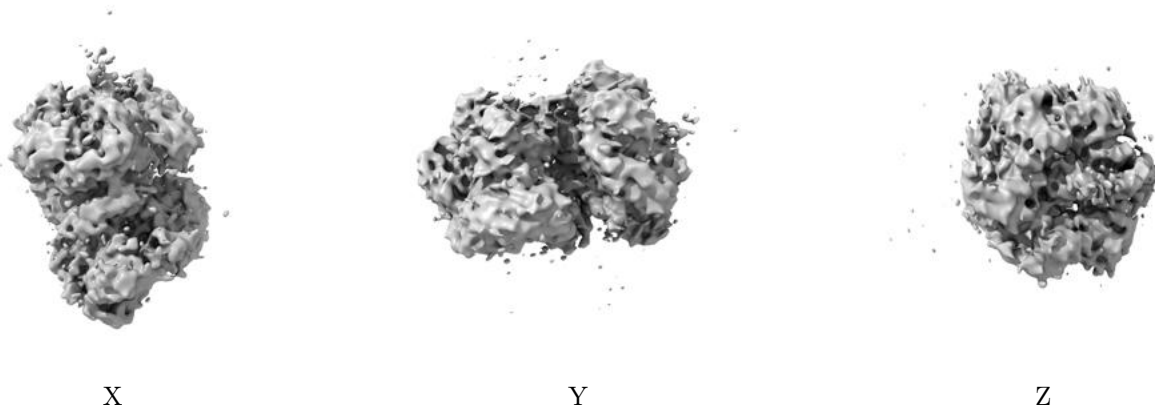


Z

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.

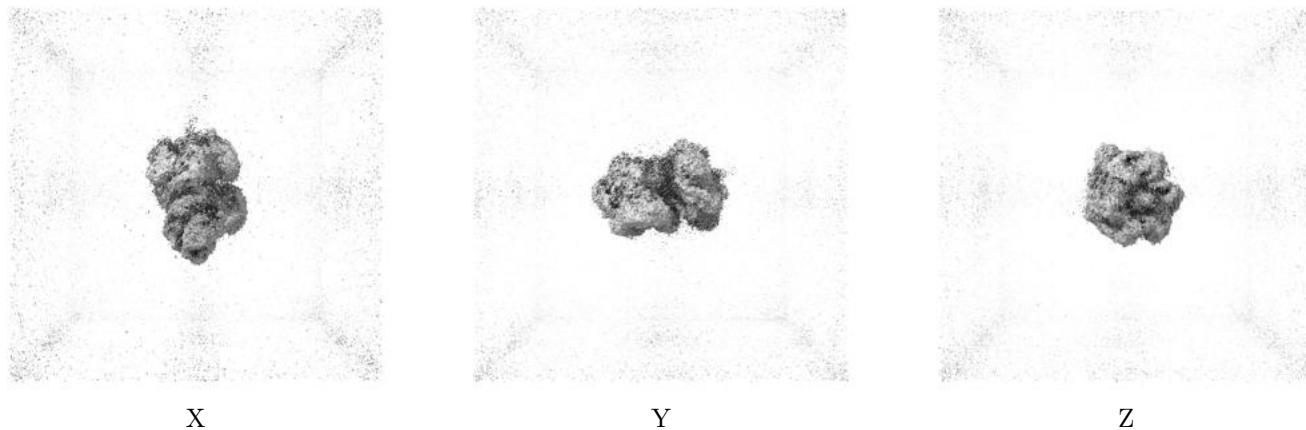
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.04. 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.

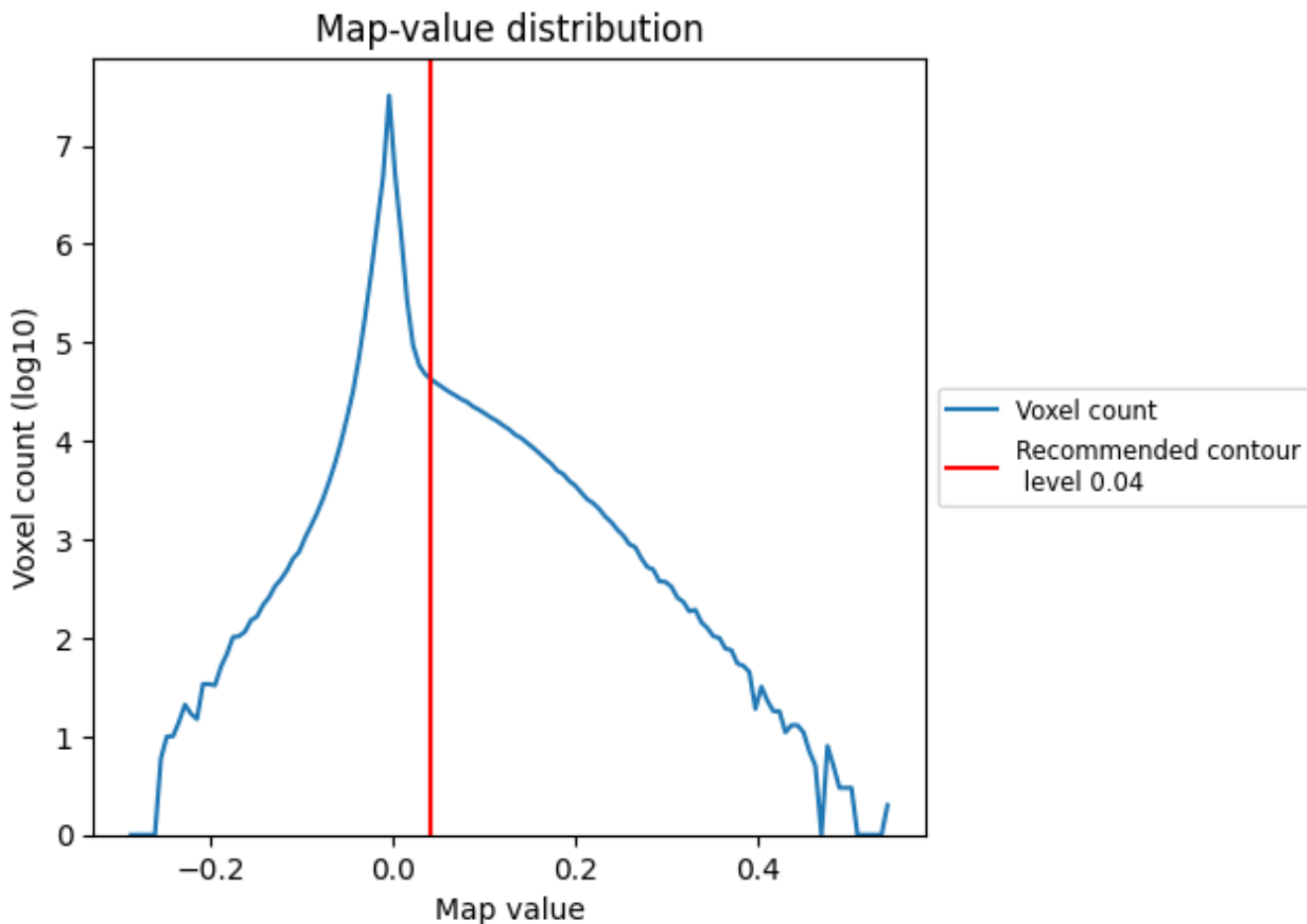
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

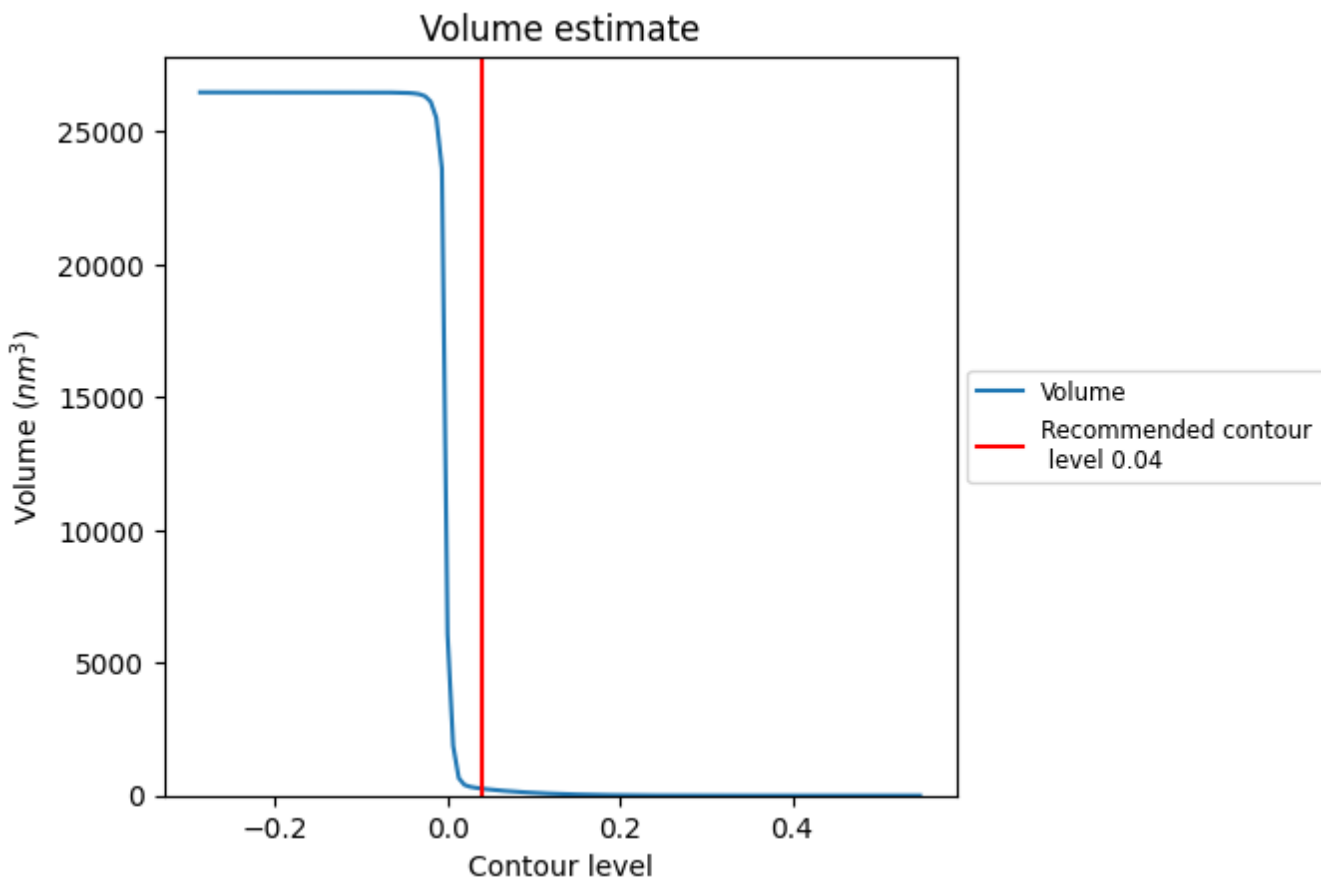
This section contains the results of statistical analysis of the map.

### 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.

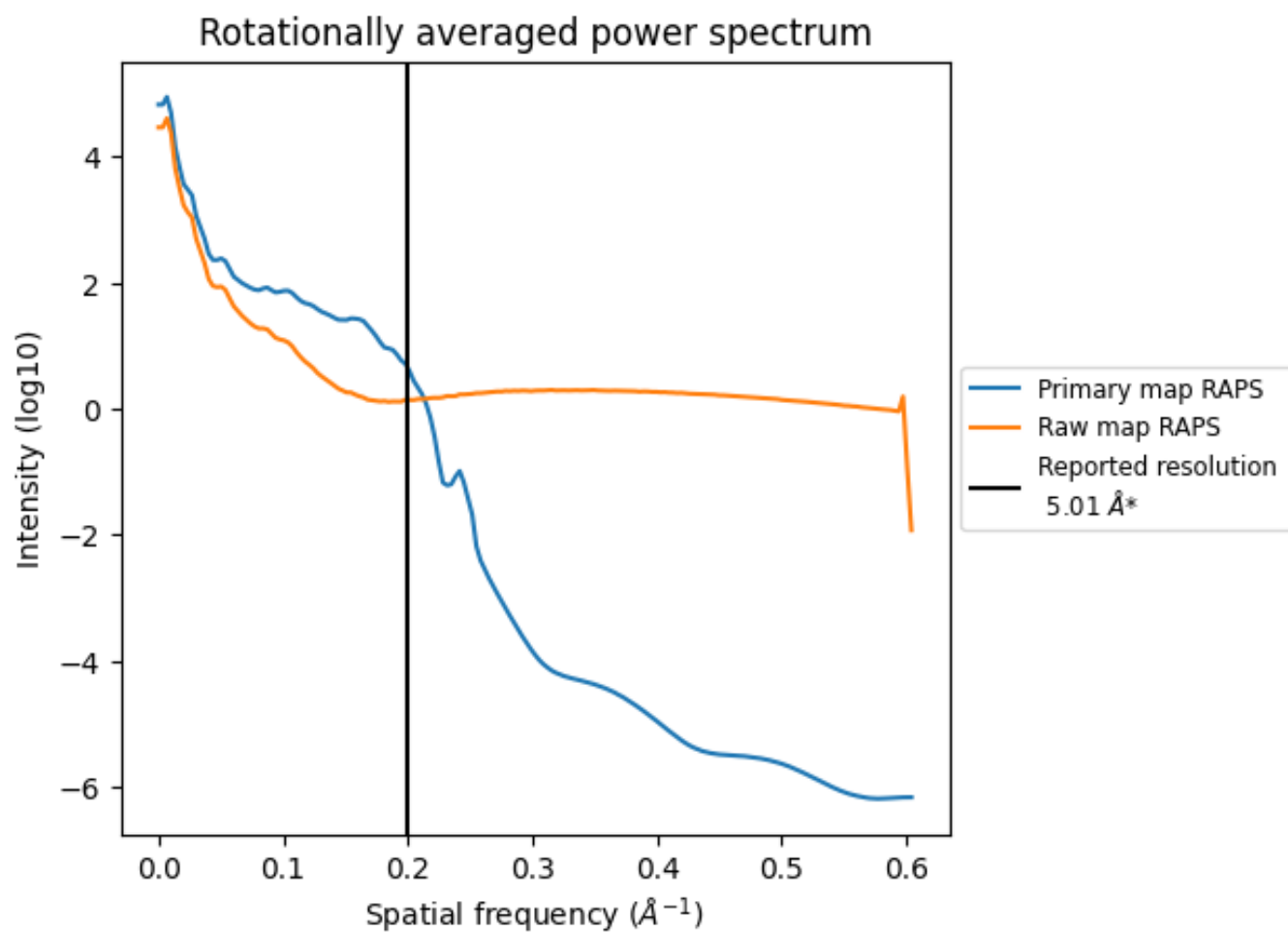
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 262 nm<sup>3</sup>; this corresponds to an approximate mass of 237 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

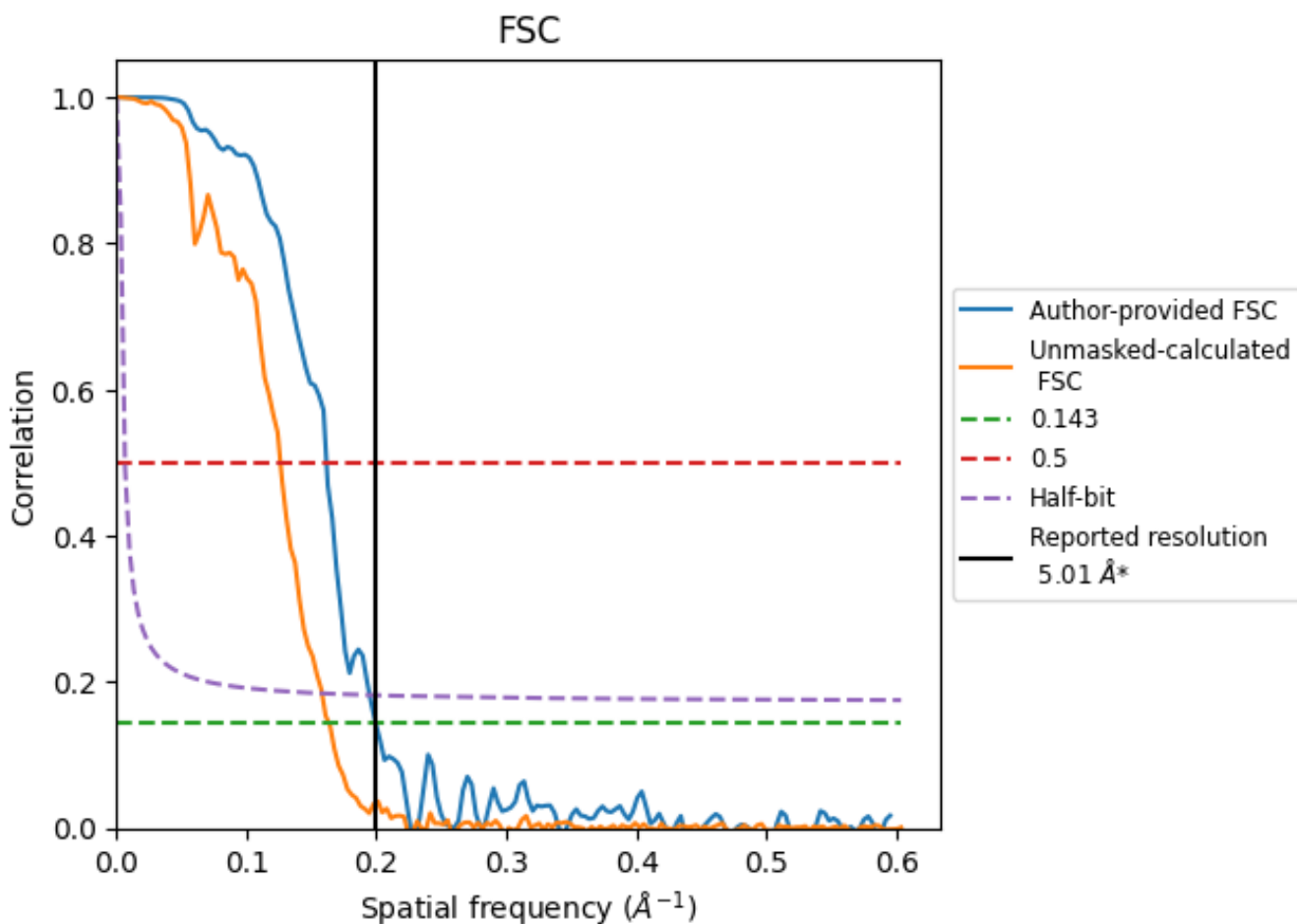


\*Reported resolution corresponds to spatial frequency of 0.200 Å<sup>-1</sup>

## 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 0.200 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	5.01	-	-
Author-provided FSC curve	5.01	6.18	5.13
Unmasked-calculated*	6.11	7.92	6.32

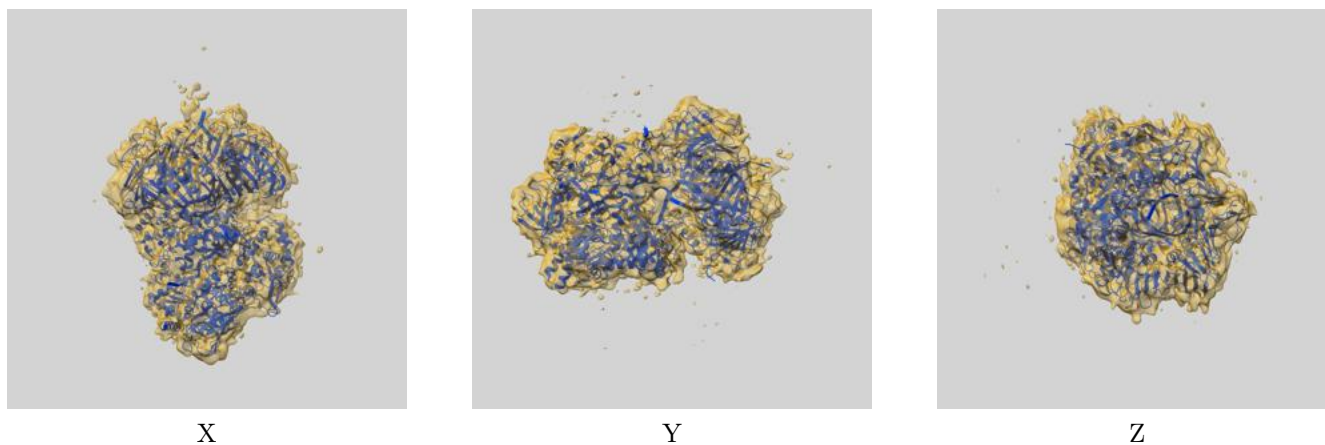
\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.11 differs from the reported value 5.01 by more than 10 %



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

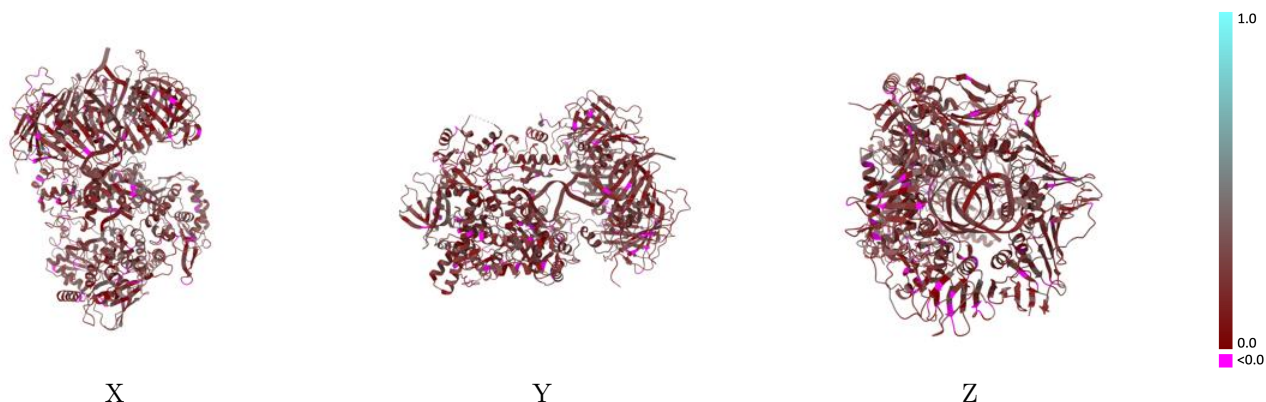
This section contains information regarding the fit between EMDB map EMD-44357 and PDB model 9B8S. Per-residue inclusion information can be found in section 3 on page 5.

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



The images above show the 3D surface view of the map at the recommended contour level 0.04 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](#)



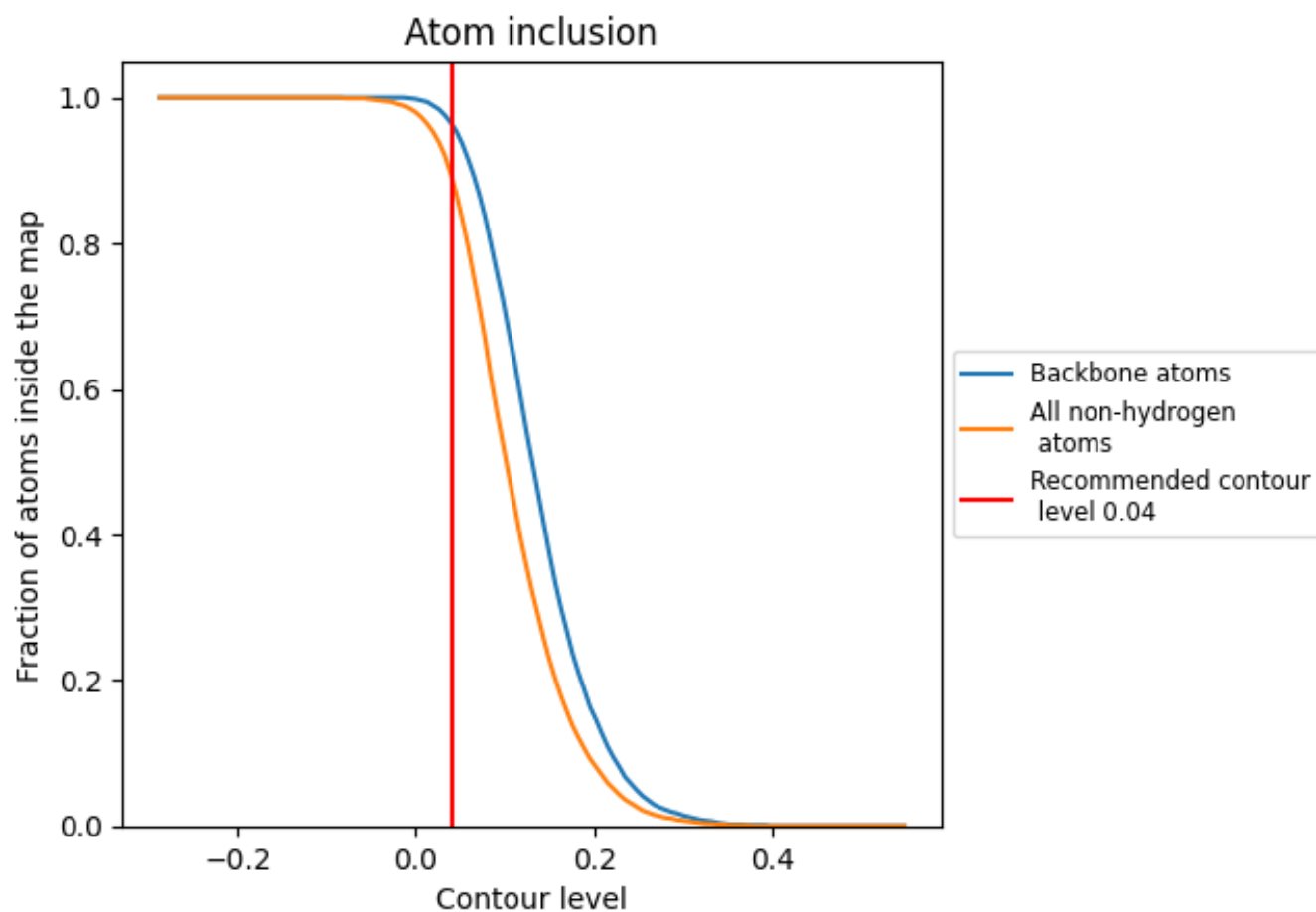
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.04).















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 89% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8940	 0.2120
A	 0.8920	 0.2120
B	 0.9000	 0.2270
C	 0.9110	 0.2020
D	 0.9110	 0.2200
P	 0.8680	 0.1590
T	 0.8140	 0.2170

