WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

May 1, 2025 – 11:30 am BST

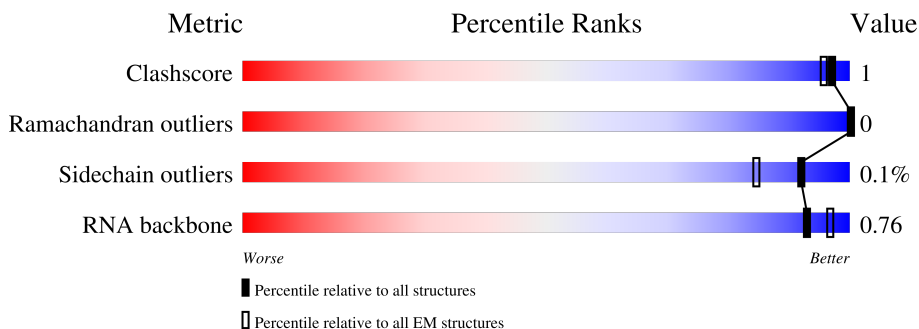|		
PDB ID	:	9HDO / pdb_00009hdo
EMDB ID	:	EMD-52070
Title	:	The Human LINE-1 ORF2p target-primed reverse transcription complex
Authors	:	Ghanim, G.E.; Hu, H.; Nguyen, T.H.D.
Deposited on	:	2024-11-12
Resolution	:	2.30 Å(reported)
Based on initial model	:	.

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 2.30 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	Percentile Ranks	Value
Clashscore		1
Ramachandran outliers		0
Sidechain outliers		0.1%
RNA backbone		0.76

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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 <=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	1797	5% / 56% · 43%
2	B	37	24% / 32% 14% 54%
3	C	30	23% / 33% 67%
4	D	30	30% 70%
5	E	26	65% / 100%
6	F	19	63% / 100%
7	G	4	50% / 50% 50%

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 10290 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 LINE-1 retrotransposable element ORF2 protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1025	8505	5501	1460	1505	39	0	0

There are 79 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-521	MET	-	initiating methionine	UNP P0AEX9
A	-520	VAL	-	expression tag	UNP P0AEX9
A	-519	HIS	-	expression tag	UNP P0AEX9
A	-518	HIS	-	expression tag	UNP P0AEX9
A	-517	HIS	-	expression tag	UNP P0AEX9
A	-516	HIS	-	expression tag	UNP P0AEX9
A	-515	HIS	-	expression tag	UNP P0AEX9
A	-514	HIS	-	expression tag	UNP P0AEX9
A	-513	HIS	-	expression tag	UNP P0AEX9
A	-512	HIS	-	expression tag	UNP P0AEX9
A	-511	GLY	-	expression tag	UNP P0AEX9
A	-510	GLY	-	expression tag	UNP P0AEX9
A	-509	SER	-	expression tag	UNP P0AEX9
A	-508	ALA	-	expression tag	UNP P0AEX9
A	-507	TRP	-	expression tag	UNP P0AEX9
A	-506	SER	-	expression tag	UNP P0AEX9
A	-505	HIS	-	expression tag	UNP P0AEX9
A	-504	PRO	-	expression tag	UNP P0AEX9
A	-503	GLN	-	expression tag	UNP P0AEX9
A	-502	PHE	-	expression tag	UNP P0AEX9
A	-501	GLU	-	expression tag	UNP P0AEX9
A	-500	LYS	-	expression tag	UNP P0AEX9
A	-499	GLY	-	expression tag	UNP P0AEX9
A	-498	GLY	-	expression tag	UNP P0AEX9
A	-497	GLY	-	expression tag	UNP P0AEX9
A	-496	SER	-	expression tag	UNP P0AEX9
A	-495	GLY	-	expression tag	UNP P0AEX9
A	-494	GLY	-	expression tag	UNP P0AEX9

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-493	GLY	-	expression tag	UNP P0AEX9
A	-492	SER	-	expression tag	UNP P0AEX9
A	-491	GLY	-	expression tag	UNP P0AEX9
A	-490	GLY	-	expression tag	UNP P0AEX9
A	-489	SER	-	expression tag	UNP P0AEX9
A	-488	ALA	-	expression tag	UNP P0AEX9
A	-487	TRP	-	expression tag	UNP P0AEX9
A	-486	SER	-	expression tag	UNP P0AEX9
A	-485	HIS	-	expression tag	UNP P0AEX9
A	-484	PRO	-	expression tag	UNP P0AEX9
A	-483	GLN	-	expression tag	UNP P0AEX9
A	-482	PHE	-	expression tag	UNP P0AEX9
A	-481	GLU	-	expression tag	UNP P0AEX9
A	-480	LYS	-	expression tag	UNP P0AEX9
A	-479	GLY	-	expression tag	UNP P0AEX9
A	-478	GLY	-	expression tag	UNP P0AEX9
A	-477	SER	-	expression tag	UNP P0AEX9
A	-167	VAL	ALA	conflict	UNP P0AEX9
A	-112	ASN	-	linker	UNP P0AEX9
A	-111	SER	-	linker	UNP P0AEX9
A	-110	SER	-	linker	UNP P0AEX9
A	-109	SER	-	linker	UNP P0AEX9
A	-108	ASN	-	linker	UNP P0AEX9
A	-107	ASN	-	linker	UNP P0AEX9
A	-106	ASN	-	linker	UNP P0AEX9
A	-105	ASN	-	linker	UNP P0AEX9
A	-104	ASN	-	linker	UNP P0AEX9
A	-103	ASN	-	linker	UNP P0AEX9
A	-102	ASN	-	linker	UNP P0AEX9
A	-101	ASN	-	linker	UNP P0AEX9
A	-100	ASN	-	linker	UNP P0AEX9
A	-99	ASN	-	linker	UNP P0AEX9
A	-98	LEU	-	linker	UNP P0AEX9
A	-97	GLY	-	linker	UNP P0AEX9
A	-34	THR	ARG	conflict	UNP Q12306
A	-27	GLU	ARG	conflict	UNP Q12306
A	5	THR	ASN	conflict	UNP O00370
A	15	ILE	VAL	conflict	UNP O00370
A	21	ALA	PRO	conflict	UNP O00370
A	152	THR	ILE	conflict	UNP O00370
A	175	ALA	THR	conflict	UNP O00370
A	595	MET	VAL	conflict	UNP O00370

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Chain	Residue	Modelled	Actual	Comment	Reference
A	625	THR	MET	conflict	UNP O00370
A	627	PHE	LEU	conflict	UNP O00370
A	744	THR	ASN	conflict	UNP O00370
A	795	GLU	ASP	conflict	UNP O00370
A	932	PHE	LEU	conflict	UNP O00370
A	1141	LEU	VAL	conflict	UNP O00370
A	1182	ASN	LYS	conflict	UNP O00370
A	1183	GLU	ASP	conflict	UNP O00370
A	1212	LYS	ASN	conflict	UNP O00370

- Molecule 2 is a DNA chain called Target DNA strand 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	17	345	170	43	115	17	0	0

- Molecule 3 is a DNA chain called Target DNA strand 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C	10	205	98	43	54	10	0	0

- Molecule 4 is a RNA chain called Template P(A)30 RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	9	198	90	45	54	9	0	0

- Molecule 5 is a DNA chain called Target DNA strand 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	E	26	524	260	64	174	26	0	0

- Molecule 6 is a DNA chain called Target DNA strand 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	F	19	399	190	95	95	19	0	0

- Molecule 7 is a DNA chain called Unassigned Nucleic Acid.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	4	Total	C	N	O	P	0	0
			84	40	20	20	4		

- Molecule 8 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
8	A	1	Total	Mg	0
			1	1	

- Molecule 9 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
9	A	1	Total	Zn	0
			1	1	

- Molecule 10 is 2',3'-DIDEOXY-THYMIDINE-5'-TRIPHOSPHATE (CCD ID: D3T) (formula: $C_{10}H_{17}N_2O_{13}P_3$).

D3T
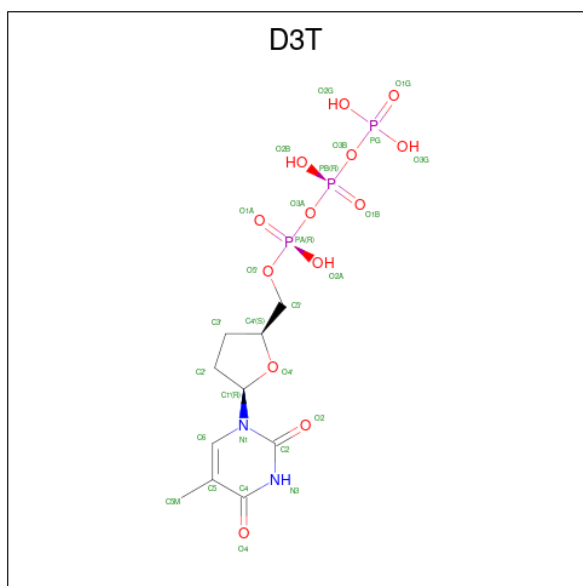
Mol	Chain	Residues	Atoms					AltConf
10	A	1	Total	C	N	O	P	0
			28	10	2	13	3	

3 Residue-property plots ⓘ

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

• Molecule 1: LINE-1 retrotransposable element ORF2 protein

D315 T318 S319 Q320 L321 K322 E323 L324 E325 K326 Q327 E328 Q329 T330 H331 S332 K333 A334 S335 R336 R337 Q338 E339 I340 T341 K342 I343 R344 A345 E346 L347 K348 E349 I350 K358 K383 K384 R385 E386 K387 N388 Q389 I390 D391 T392 I393 K394 N395 D396 K397 G398 D399 I400 G521 R522 D523

T524 T525 K526 K527 E528 N529 V564 M570 D600 R747 I771 K885 S905 E906 I907 Y914 D918 K919 K922 N923 K924 Q925 W963 E978 E979 K992 D993 K997 T998 P999 K1000 K1005 D1006 K1007 I1008 D1009 K1010 W1011 K1023 L1049 A1073

F1080 I1101 N1182 K1185 I1198 E1261 G1273 GLY ASN

• Molecule 2: Target DNA strand 1

Chain B:

24%
32%
14%
54%

DT DT DA DG DT DT DG DC DT DG DA DA DT DT DA DT DT DG DG DA A6 G7 T8 T9 T10 T11 G12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22

• Molecule 3: Target DNA strand 2

Chain C:

23%
33%
67%

A11 C14 A15 A16 A17 A18 C19 T20 DT DC DC DA DA DT DA DA DT DT DC DA DG DC DA DA DC DT DA DA

• Molecule 4: Template P(A)30 RNA

Chain D:

30%
70%

A0 A8 A A A A A A A A A A A A A A A A A A A A A

• Molecule 5: Target DNA strand 3

Chain E:

65%
100%

T25 T26 T27 T28 T29 T30 T31 T32 T33 T34 T35 T36 T37 T38 T39 T44 T45 A50

• Molecule 6: Target DNA strand 4

Chain F:

63%
100%

A1 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19

• Molecule 7: Unassigned Nucleic Acid

Chain G:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	680273	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	8000	Depositor
Maximum defocus (nm)	22000	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	0.080	Depositor
Minimum map value	-0.041	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.011	Depositor
Map size (Å)	362.9, 362.9, 362.9	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.955, 0.955, 0.955	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: D3T, MG, ZN

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	0.43	0/8698	0.71	0/11724
2	B	0.38	0/381	1.00	0/587
3	C	0.37	0/231	0.83	0/353
4	D	0.48	0/224	0.74	0/347
5	E	0.37	0/579	1.07	0/892
6	F	0.36	0/455	0.85	0/699
7	G	0.49	0/95	0.85	0/144
All	All	0.43	0/10663	0.76	0/14746

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	8505	0	8793	7	0
2	B	345	0	202	3	0
3	C	205	0	112	0	0
4	D	198	0	100	0	0
5	E	524	0	309	0	0
6	F	399	0	210	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	G	84	0	45	1	0
8	A	1	0	0	0	0
9	A	1	0	0	0	0
10	A	28	0	13	0	0
All	All	10290	0	9784	11	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 1.

All (11) 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:914:TYR:O	1:A:918:ASP:HB3	2.05	0.57
1:A:885:LYS:HG3	1:A:1049:LEU:HD23	1.92	0.51
1:A:1073:ALA:HB2	1:A:1080:PHE:CD2	2.48	0.48
2:B:16:DT:H2'	2:B:17:DT:H71	1.95	0.48
2:B:18:DT:H2'	2:B:19:DT:H71	1.96	0.47
2:B:19:DT:C2'	2:B:20:DT:H71	2.46	0.46
1:A:919:LYS:HB2	1:A:963:TRP:CE2	2.51	0.45
1:A:1101:ILE:HG23	1:A:1198:ILE:HG21	1.97	0.45
7:G:1:DA:H1'	7:G:2:DA:H2'	1.98	0.45
1:A:771:ILE:C	1:A:771:ILE:HD12	2.45	0.42
1:A:564:VAL:HG12	1:A:570:MET:HE3	2.04	0.41

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	1023/1797 (57%)	1019 (100%)	4 (0%)	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	941/1593 (59%)	940 (100%)	1 (0%)	92 97

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	284	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	258	ASN
1	A	320	GLN
1	A	327	GLN
1	A	371	ASN
1	A	389	GLN
1	A	554	HIS
1	A	618	ASN
1	A	640	ASN
1	A	710	ASN
1	A	1055	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	D	8/30 (26%)	0	0

There are no RNA backbone outliers to report.

There are no RNA pucker outliers to report.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 for Mogul analysis.

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	$\#|Z| > 2$
10	D3T	A	1303	8	25,29,29	1.34	5 (20%)	35,45,45	1.10	2 (5%)

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
10	D3T	A	1303	8	-	6/22/31/31	0/2/2/2

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	1303	D3T	C6-C5	2.87	1.39	1.34
10	A	1303	D3T	C1'-N1	2.69	1.55	1.48
10	A	1303	D3T	C6-N1	2.35	1.42	1.38
10	A	1303	D3T	PG-O1G	2.12	1.57	1.50
10	A	1303	D3T	C3'-C2'	-2.07	1.48	1.54

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	A	1303	D3T	C3'-C2'-C1'	2.93	106.16	102.78
10	A	1303	D3T	PB-O3B-PG	-2.60	123.89	132.83

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	A	1303	D3T	C5'-O5'-PA-O1A
10	A	1303	D3T	C5'-O5'-PA-O2A
10	A	1303	D3T	PB-O3B-PG-O3G
10	A	1303	D3T	C5'-O5'-PA-O3A
10	A	1303	D3T	PA-O3A-PB-O1B
10	A	1303	D3T	PA-O3A-PB-O2B

There are no ring outliers.

No monomer is involved in short contacts.

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 then 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.

Ligand D3T A 1303

Bond lengths

Bond angles

Torsions

Rings
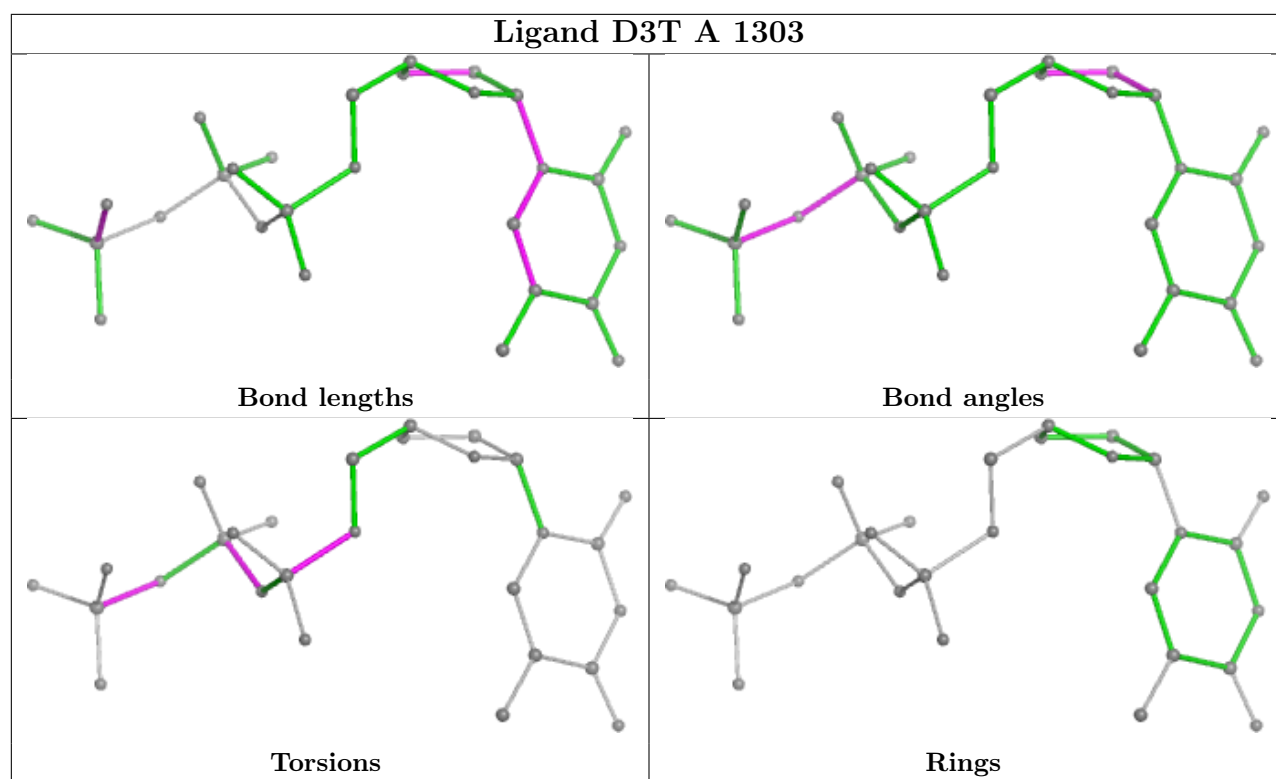
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-52070. 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 ⓘ
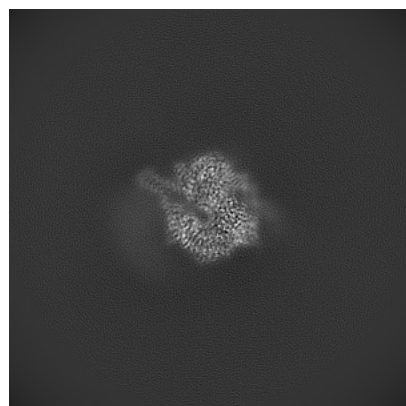
6.1.1　Primary map

X
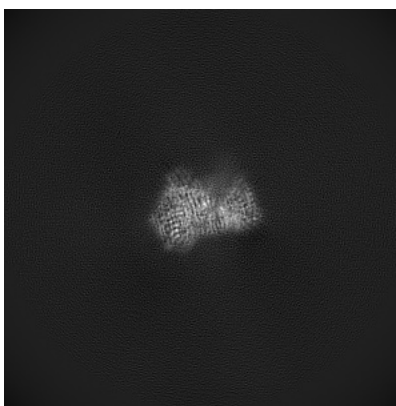
Y
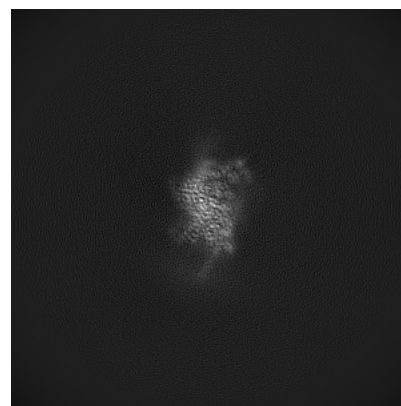
Z

6.1.2　Raw map

X

Y

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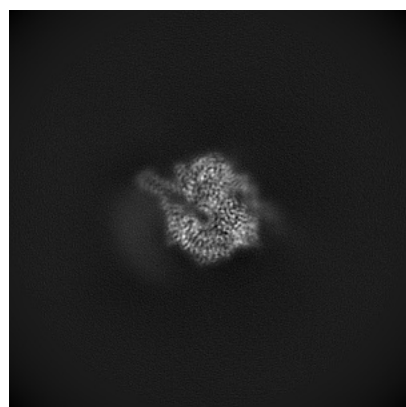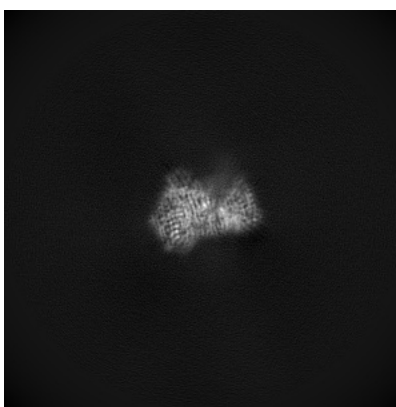
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
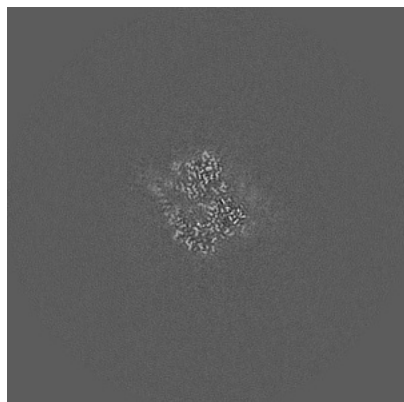
6.2.1 Primary map

X Index: 190
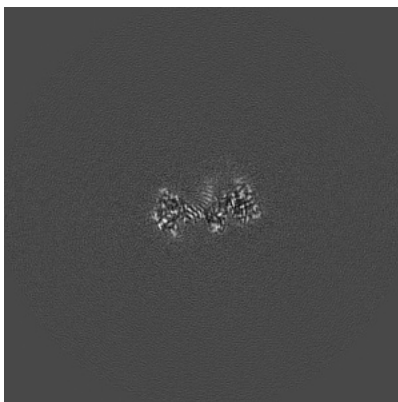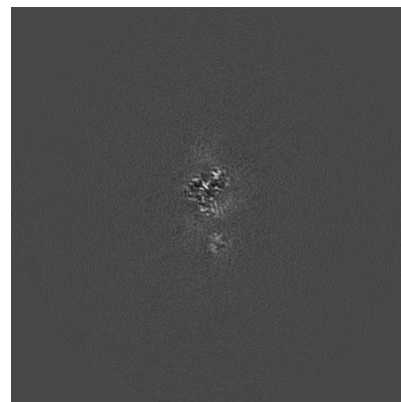
Y Index: 190

Z Index: 190

6.2.2 Raw map
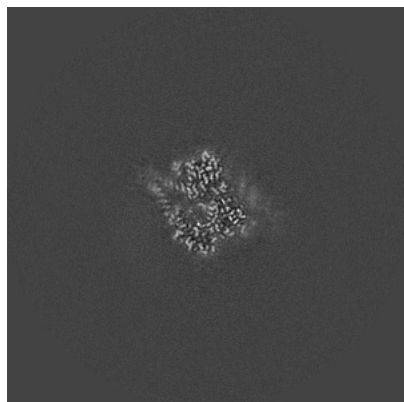
X Index: 190
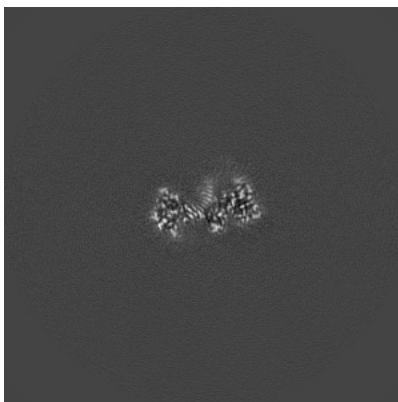
Y Index: 190
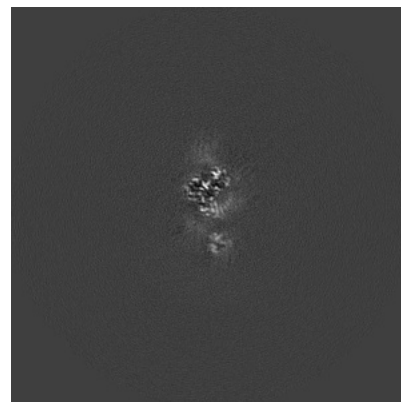
Z Index: 190

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

6.3 Largest variance slices (i)

6.3.1 Primary map
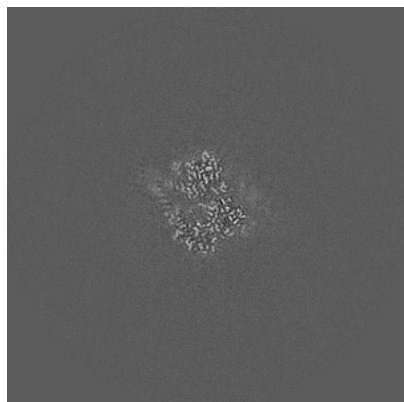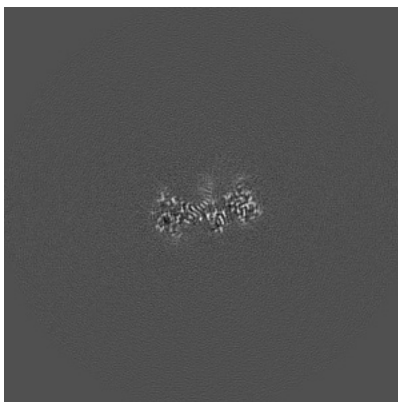
X Index: 190	Y Index: 192	Z Index: 173
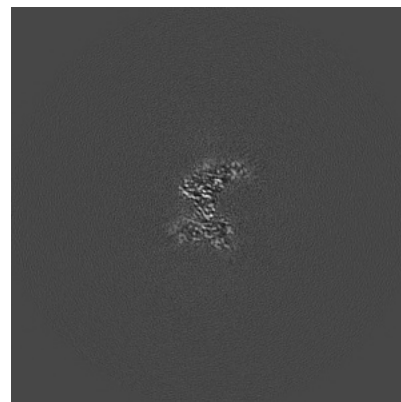
6.3.2 Raw map
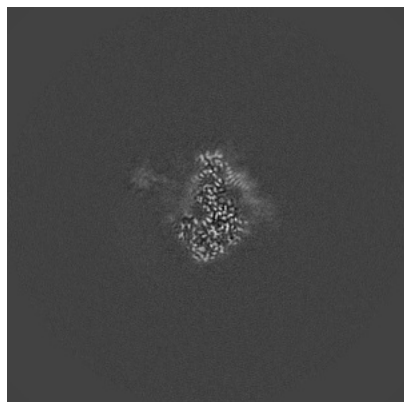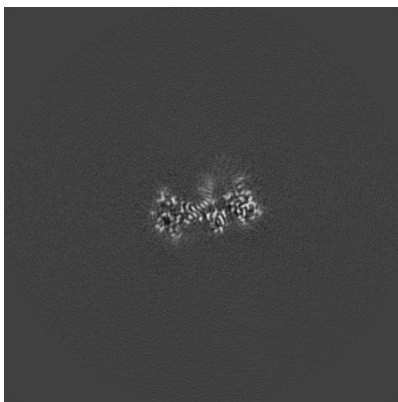
X Index: 180	Y Index: 192	Z Index: 173
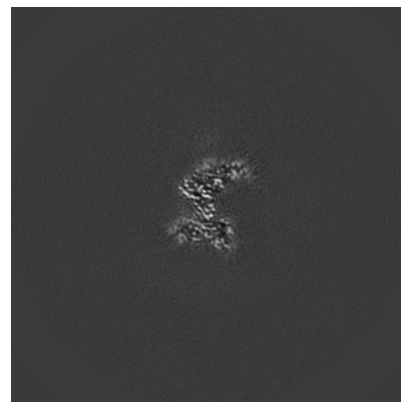
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map
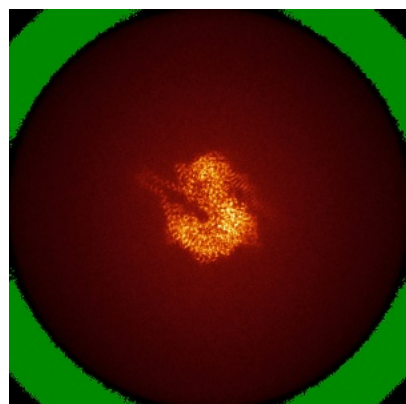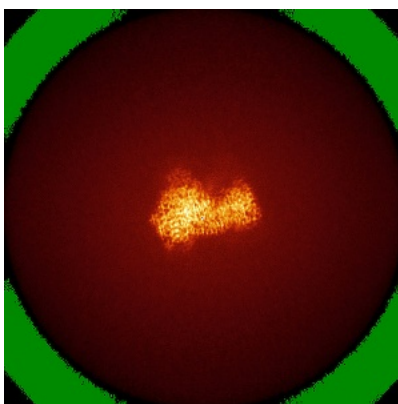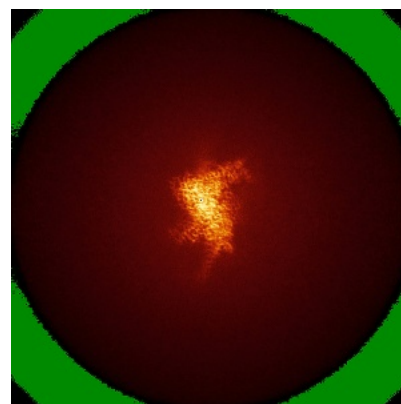
| X | Y | Z |

6.4.2 Raw map

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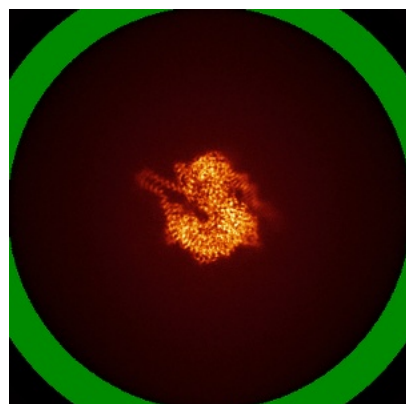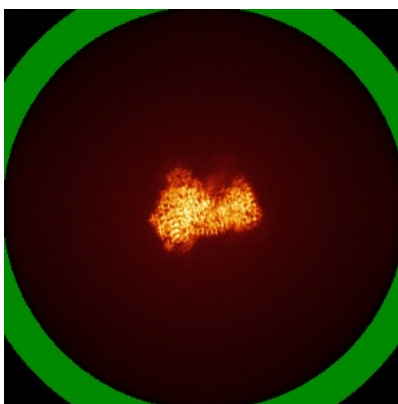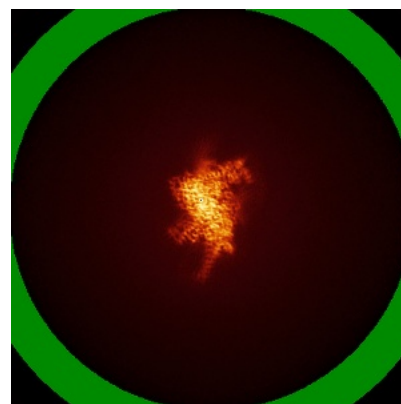
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5　Orthogonal surface views ⓘ

6.5.1　Primary map

| X | Y | Z |
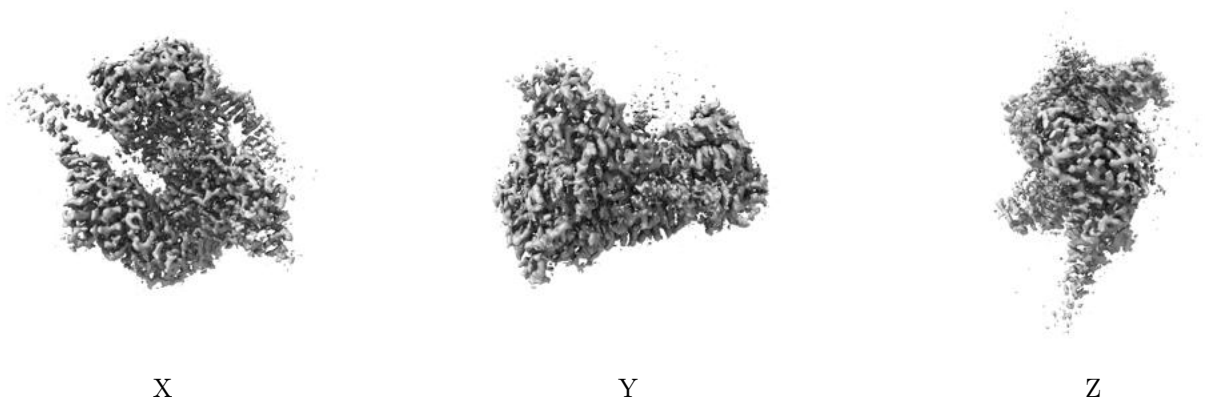
The images above show the 3D surface view of the map at the recommended contour level 0.011. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2　Raw map

| X | Y | Z |
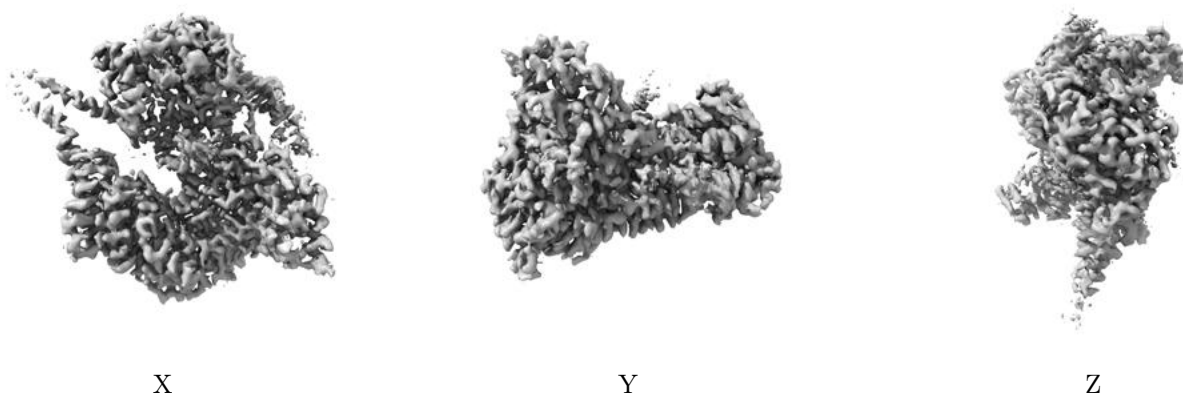
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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_52070_msk_1.map (i)

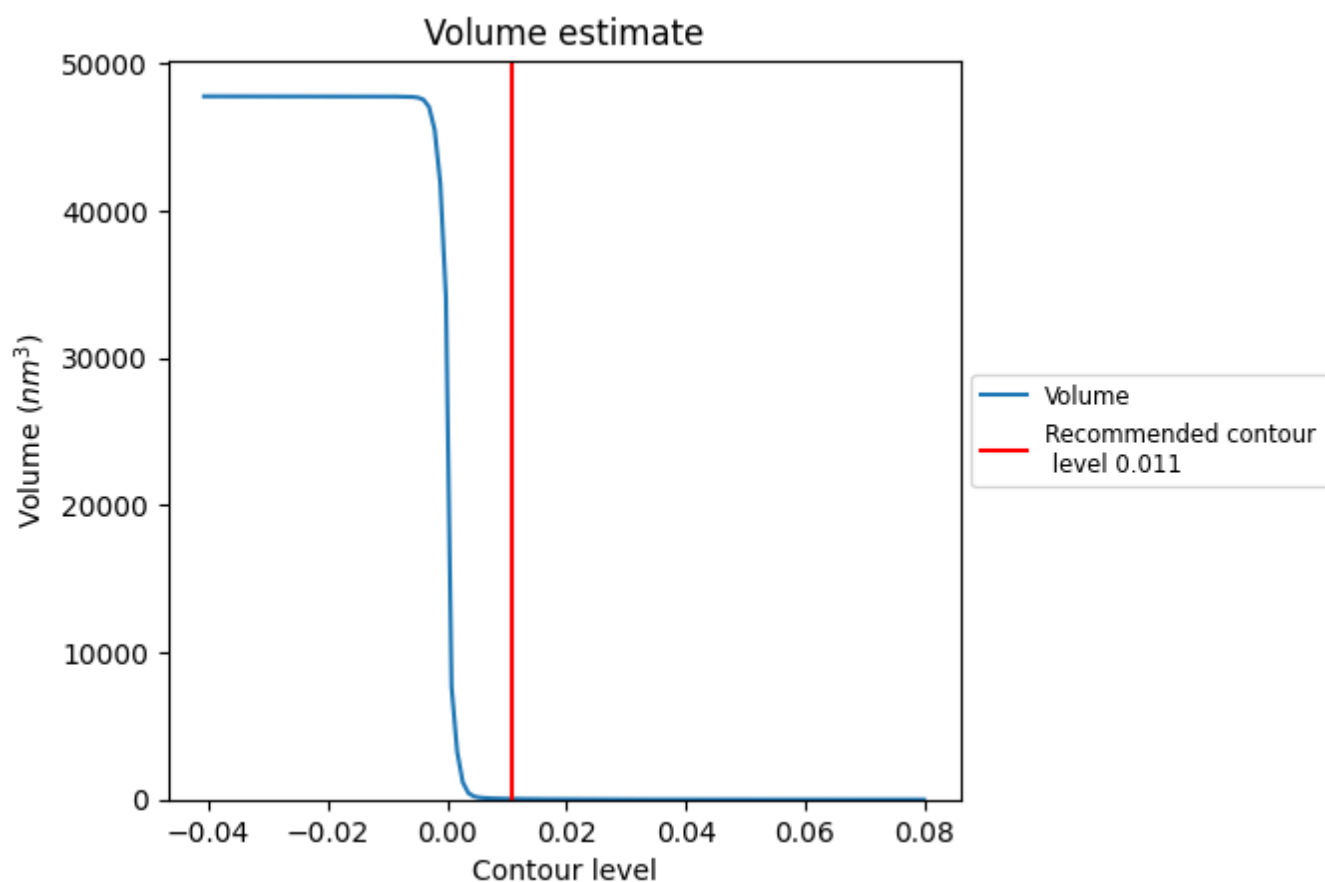X   Y   Z
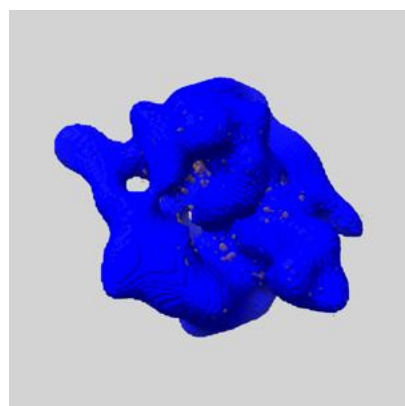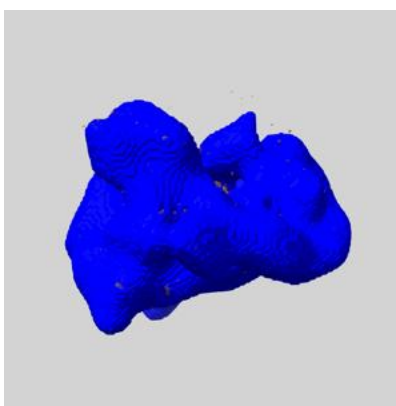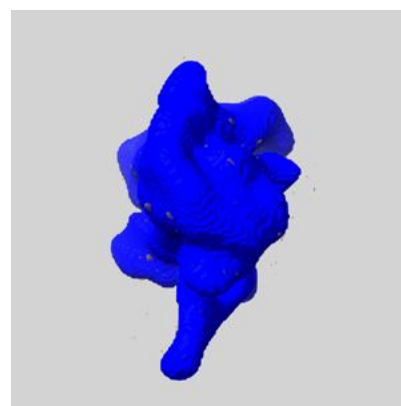
7　Map analysis ⓘ

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

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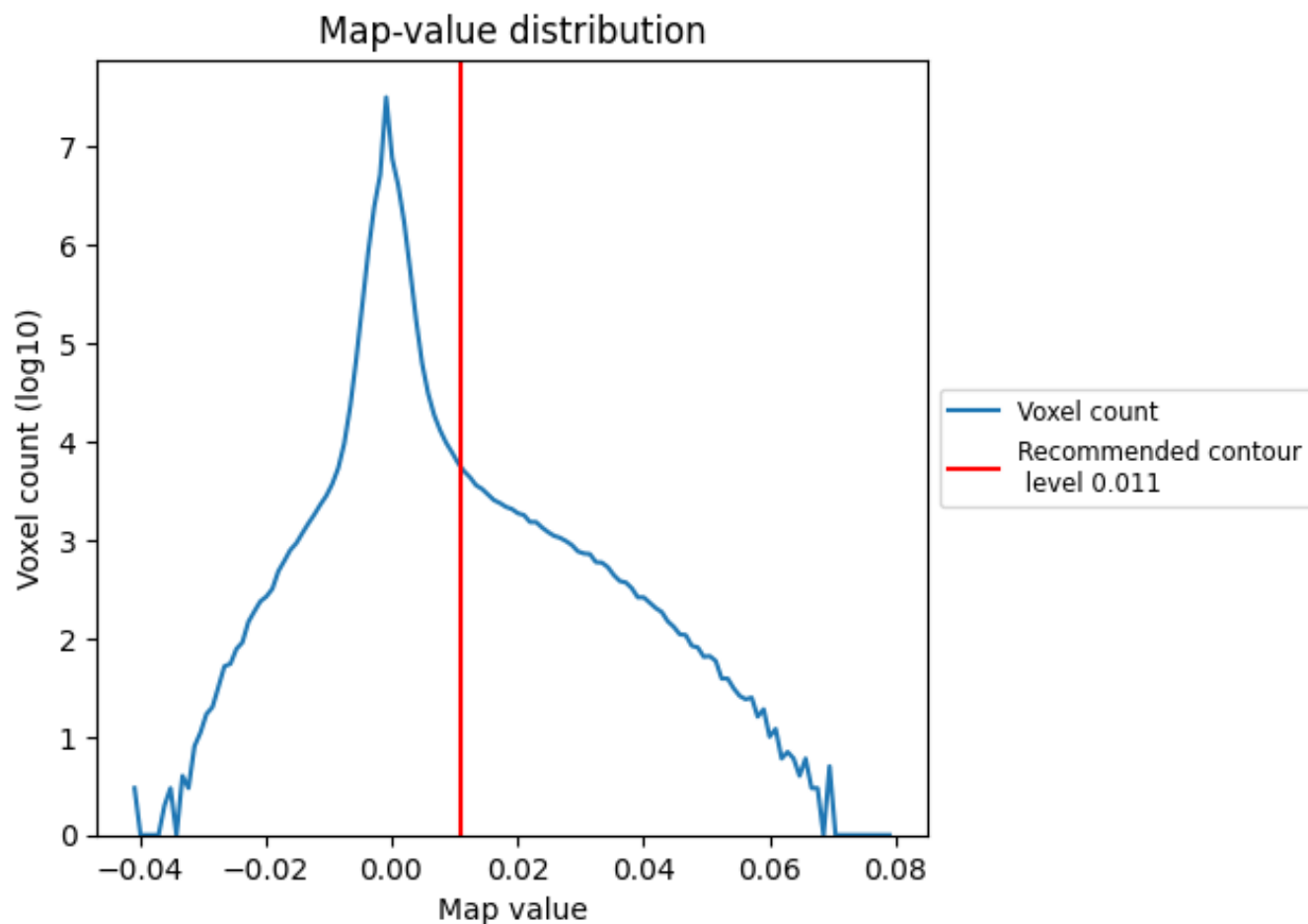
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ

The volume at the recommended contour level is 46 nm^3; this corresponds to an approximate mass of 41 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 ⓘ
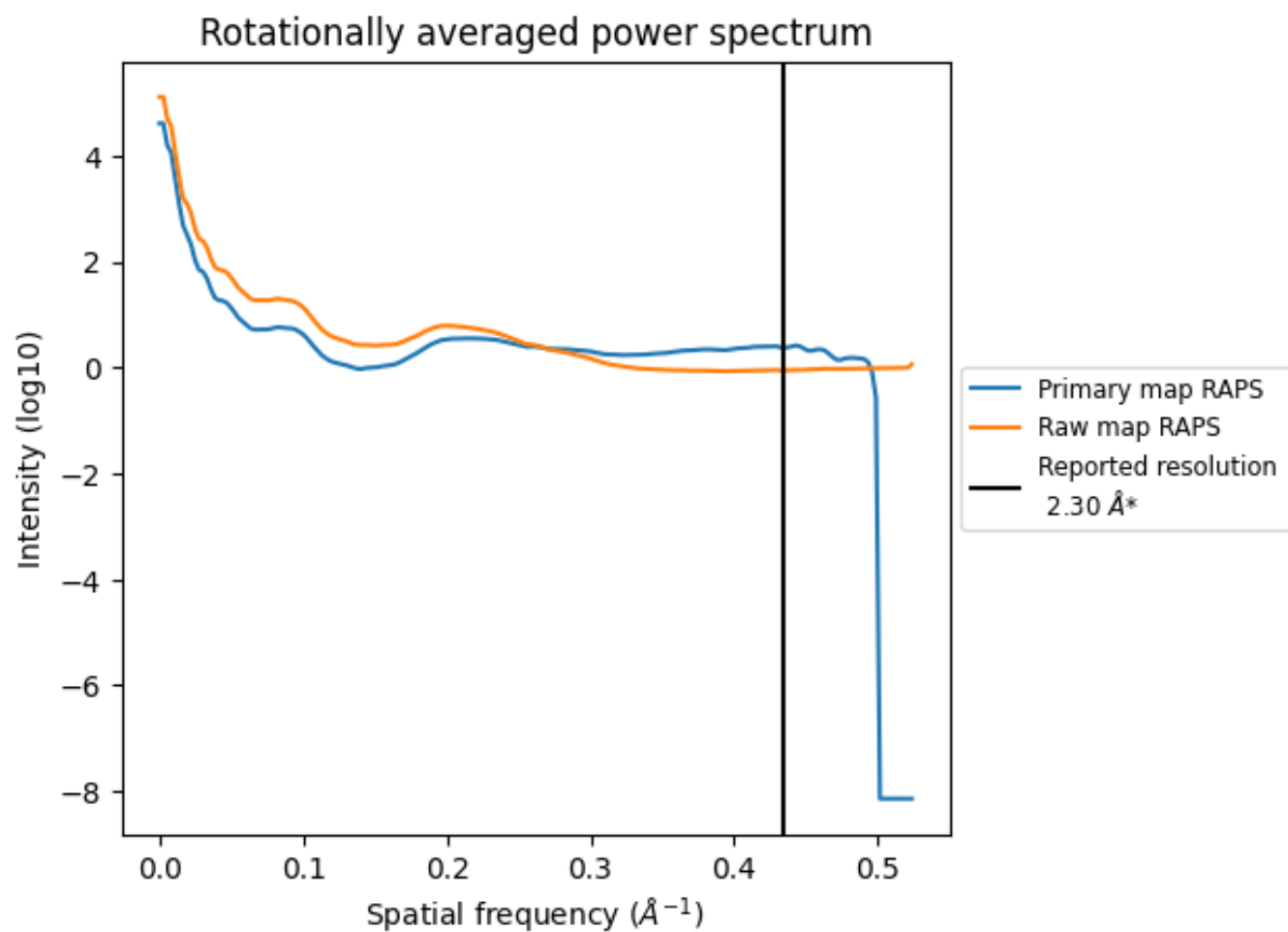
*Reported resolution corresponds to spatial frequency of 0.435 Å^{-1}

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)
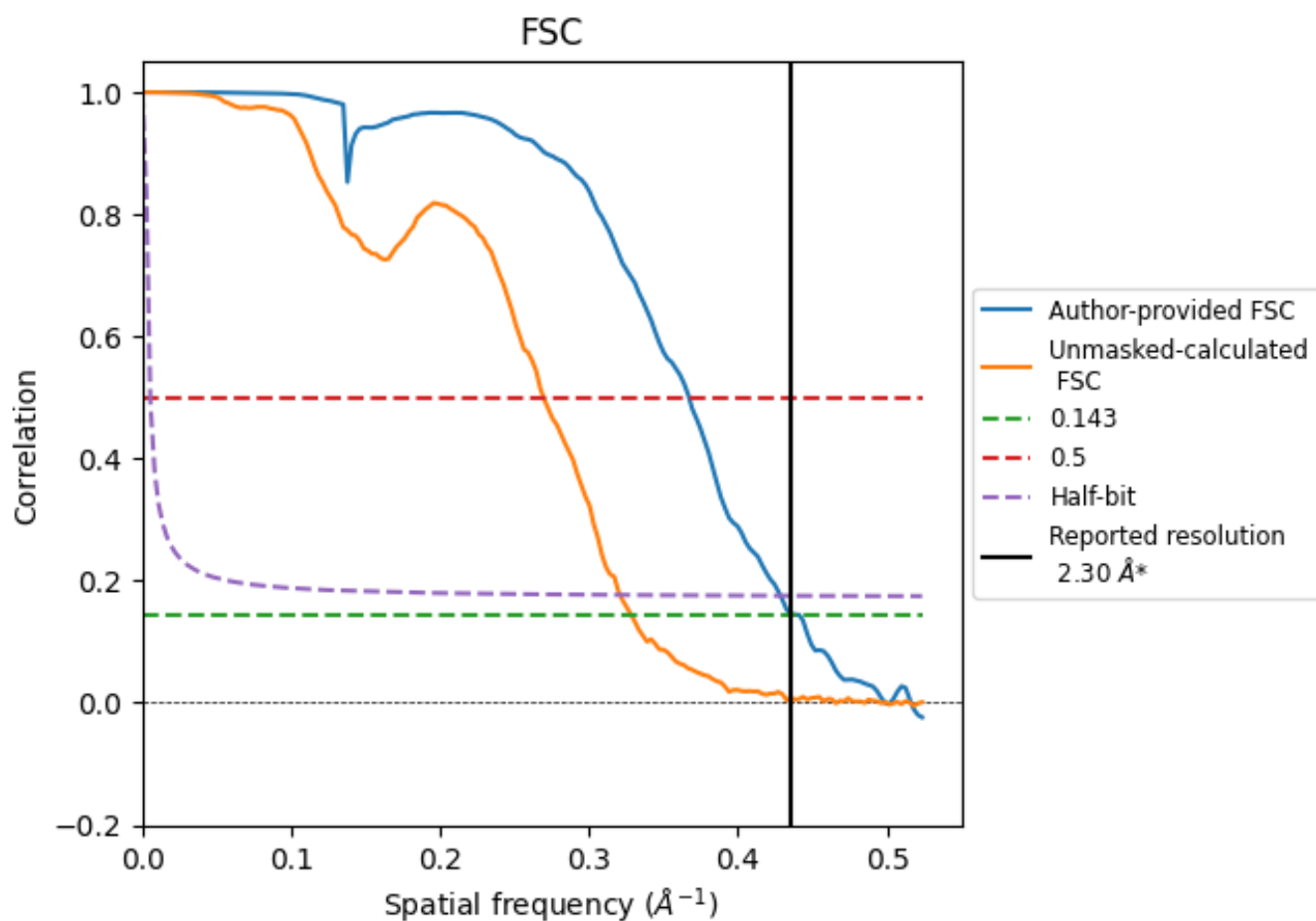
*Reported resolution corresponds to spatial frequency of 0.435 Å^{-1}

8.2　Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.30	-	-
Author-provided FSC curve	2.27	2.72	2.33
Unmasked-calculated*	3.04	3.71	3.12

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.04 differs from the reported value 2.3 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-52070 and PDB model 9HDO. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ


X	Y	Z
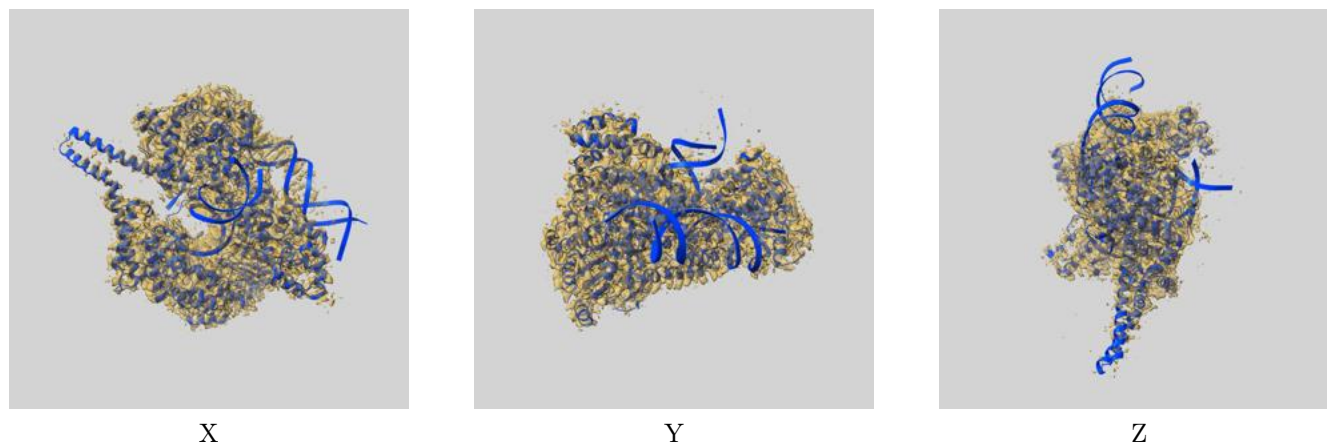
The images above show the 3D surface view of the map at the recommended contour level 0.011 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)
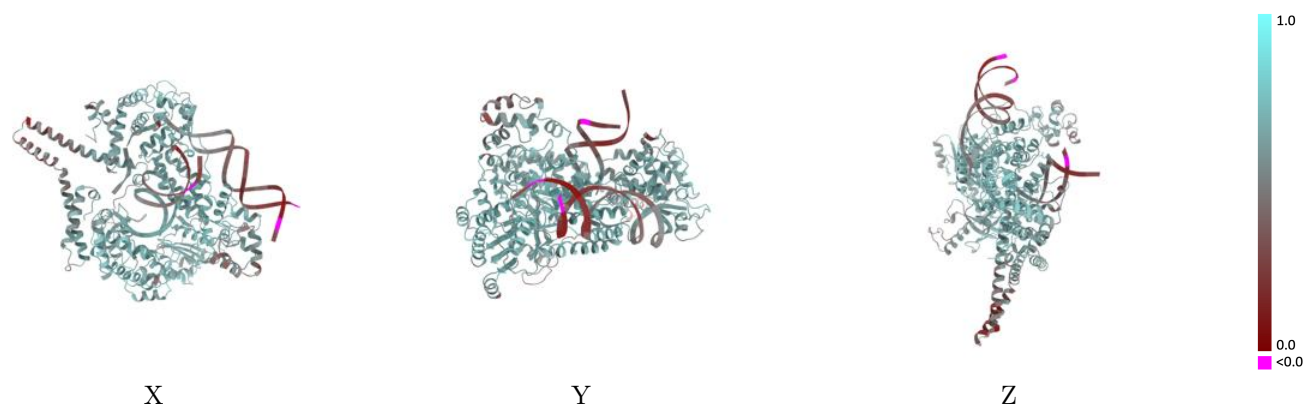
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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)
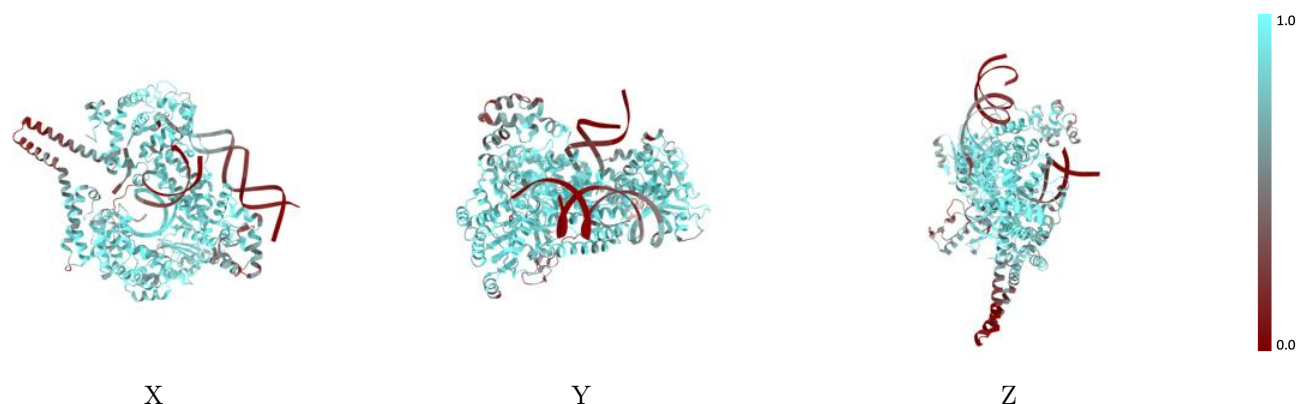
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.011).

9.4　Atom inclusion ⓘ
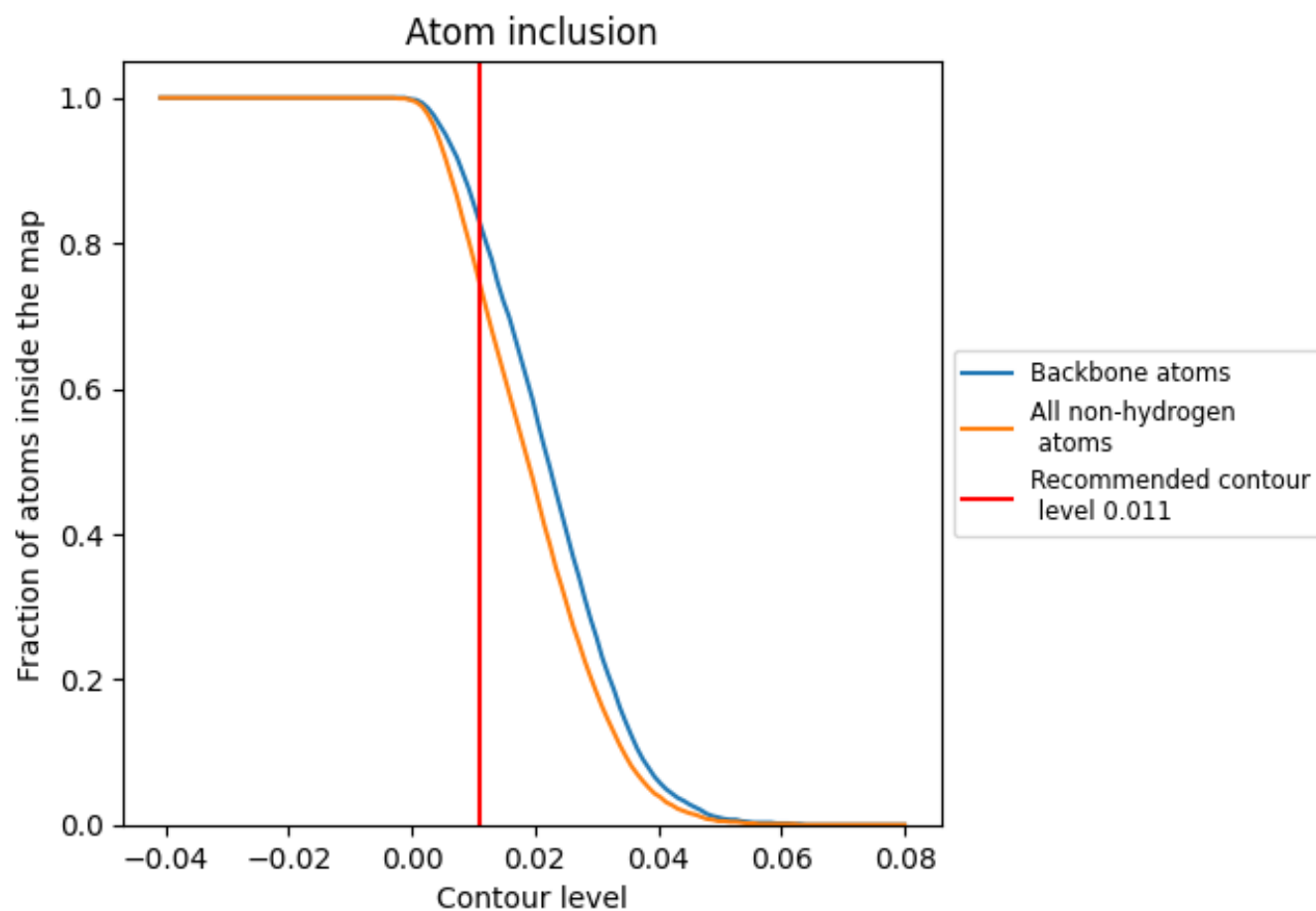
At the recommended contour level, 83% of all backbone atoms, 75% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.011) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7460	0.5910
A	0.8110	0.6260
B	0.4840	0.4520
C	0.2630	0.3600
D	0.9240	0.6610
E	0.3610	0.3840
F	0.3210	0.3260
G	0.4290	0.5420

1.0

0.0
<0.0