



## Full wwPDB EM Validation Report ⓘ

Oct 5, 2024 – 11:43 PM JST

PDB ID : 8Y9B  
EMDB ID : EMD-39072  
Title : TcdB1 in complex with mini-binder  
Authors : Lv, X.C.; Lu, P.L.  
Deposited on : 2024-02-06  
Resolution : 3.20 Å(reported)  
Based on initial models : 7ml7, .

This is a Full wwPDB EM Validation 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.dev113  
MolProbity : 4.02b-467  
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) : 2.39

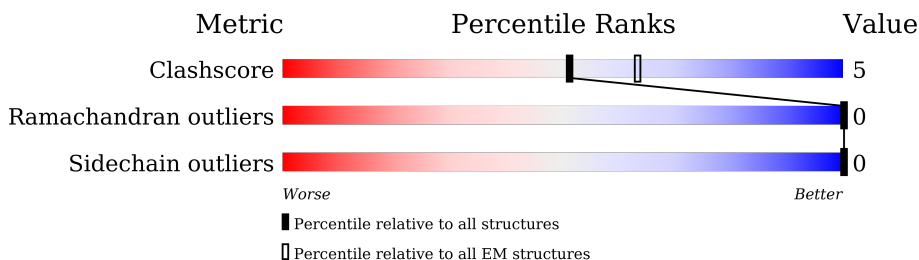
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.20 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	B	2372	
2	A	65	

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 13380 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 Toxin B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	1607	12910	8220	2040	2614	36	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	2367	HIS	-	expression tag	UNP P18177
B	2368	HIS	-	expression tag	UNP P18177
B	2369	HIS	-	expression tag	UNP P18177
B	2370	HIS	-	expression tag	UNP P18177
B	2371	HIS	-	expression tag	UNP P18177
B	2372	HIS	-	expression tag	UNP P18177

- Molecule 2 is a protein called De novo design mini-binder.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	A	65	469	308	75	86	0	0

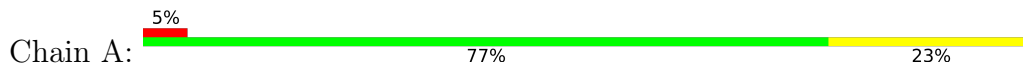
- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
3	B	1	Total	Zn	0
			1	1	



M1752	M1753	T1754	S1755	E1756	V1760	S1761	K1764	T1775	K1779	F1782	D1786	V1792	I1795	S1798	F1799	L1808	G1814	E1821	K1846	P1847	P1848	M1851	L1852	I1853	M1867	M1870	F1899	F1908	T1913	ASP	THR	PHE	ASP	LEU	ASP				
ASP	PHE	THR	GLN	GLY	LEU	ILE	ASP	GLU	ASN	ASN	ASP	GLY	ILE	ASP	ASN	ASP	THR	LEU	ASP	ASP	THR	PHE	GLY	ASP	THR	ASP	GLY	ASP	THR	ASP	LEU	THR	ASP	GLY	ASP	GLY	LEU	ASP	
VAL	MET	GLN	LYS	GLY	PHE	VAL	SER	VAL	SER	ASP	THR	GLY	MET	VAL	GLY	THR	GLY	ASP	ASP	HIS	VAL	PHE	ALA	THR	GLY	GLY	LEU	GLY	VAL	ASP	ASP	THR	ASP	GLY	GLY	THR	ASP	ASP	
GLU	ASP	LEU	GLY	ASN	GLU	THR	PHE	GLY	ASP	ASN	ASP	ASP	ASP	ASP	THR	THR	ASP	THR	ALA	VAL	THR	PHE	ALA	ASP	GLY	GLY	ASP	SER	ASP	THR	THR	ALA	GLY	ALA	PHE	GLY	ASP		
ILE	ASN	GLY	ASP	LYS	THR	THR	PHE	THR	MET	GLN	THR	ILE	ASP	VAL	PHE	THR	THR	GLY	GLY	ILE	THR	THR	THR	GLY	GLY	ASP	ASP	ASP	ASN	THR	ASP	THR	GLY	GLY	ILE	ASP	THR	ASP	
THR	SER	ASP	GLY	TYR	LYS	TYR	PHE	ALA	TYR	ASN	VAL	ASN	ASP	VAL	ASP	VAL	THR	GLY	GLY	THR	VAL	THR	THR	THR	ASP	THR	THR	GLY	THR	THR	MET	THR	GLY	THR	ASP	GLY	THR	THR	
PHE	ASN	PRO	THR	THR	LYS	VAL	ALA	CYS	ALA	GLY	ASP	ASN	ASP	ASN	THR	TYR	THR	THR	THR	LEU	THR	THR	ASP	ASN	THR	ASN	ASP	GLY	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	
TYR	PHE	GLY	GLY	ASP	VAL	MET	GLN	GLY	TYR	THR	PHE	ASN	THR	ASN	PRO	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR
GLY	SER	VAL	ILE	ILE	GLY	GLY	GLU	TYR	PHE	ASP	PRO	ASP	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

• Molecule 2: De novo design mini-binder



H1	F9	F12	I15	R16	M28	G29	G37	T46	R47	E48	V49	K50	E51	V52	A53	T54	V60	R61	L62	R65
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## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	204441	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 ( $e^-/\text{\AA}^2$ )	50.0	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	5.011	Depositor
Minimum map value	-3.628	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.109	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	347.84, 347.84, 347.84	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.087, 1.087, 1.087	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:  
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	B	0.29	0/13133	0.46	0/17752
2	A	0.26	0/477	0.45	0/649
All	All	0.29	0/13610	0.46	0/18401

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	B	12910	0	12655	133	0
2	A	469	0	437	20	0
3	B	1	0	0	0	0
All	All	13380	0	13092	141	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 5.

All (141) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1438:LEU:HD12	2:A:9:PHE:CZ	1.69	1.28
1:B:1438:LEU:HD12	2:A:9:PHE:CE1	1.89	1.06
1:B:1493:LEU:HD11	2:A:15:ILE:HD11	1.39	1.03
1:B:1493:LEU:HD11	2:A:15:ILE:CD1	1.92	1.00
1:B:1438:LEU:CD1	2:A:9:PHE:CE1	2.51	0.94
1:B:1378:GLU:HB2	1:B:1381:LYS:HB3	1.68	0.74
1:B:32:GLU:OE2	1:B:36:ASN:ND2	2.26	0.68
1:B:1438:LEU:CD1	2:A:9:PHE:CZ	2.61	0.68
1:B:1457:GLN:NE2	1:B:1459:ASN:O	2.28	0.66
1:B:1375:LEU:HD13	1:B:1384:LEU:HD12	1.79	0.65
1:B:1752:MET:HG2	1:B:1764:LYS:HG3	1.78	0.64
1:B:1444:GLN:HE21	1:B:1480:LYS:HB3	1.62	0.64
1:B:1438:LEU:HD12	2:A:9:PHE:HZ	1.50	0.63
1:B:154:LEU:HD11	1:B:534:TYR:HB3	1.81	0.63
1:B:1338:LEU:HD11	1:B:1391:PHE:HD2	1.64	0.63
1:B:721:ASP:OD1	1:B:732:GLN:NE2	2.32	0.63
1:B:1735:ASP:OD2	1:B:1739:ARG:NH1	2.32	0.62
2:A:50:LYS:NZ	2:A:60:VAL:O	2.32	0.62
1:B:1353:ARG:NH2	1:B:1407:SER:O	2.30	0.62
1:B:1761:SER:HA	1:B:1808:LEU:HD21	1.82	0.61
1:B:1846:LYS:HG3	1:B:1853:ILE:HG13	1.80	0.61
1:B:1412:ILE:HD13	1:B:1431:GLY:HA3	1.82	0.61
1:B:708:GLU:HG2	1:B:787:ILE:HD12	1.83	0.59
1:B:587:ASP:OD2	1:B:653:HIS:NE2	2.36	0.58
1:B:167:ASP:OD2	1:B:169:ASN:ND2	2.36	0.58
1:B:1434:LYS:NZ	2:A:48:GLU:OE1	2.37	0.58
1:B:752:ARG:O	1:B:763:ASN:ND2	2.37	0.58
1:B:1025:LEU:HD13	1:B:1611:ILE:HG12	1.86	0.58
1:B:1754:THR:HG21	1:B:1814:GLY:HA3	1.86	0.58
1:B:1339:SER:O	1:B:1399:ASN:ND2	2.36	0.58
1:B:1494:ILE:HD12	1:B:1594:PHE:HE1	1.69	0.57
1:B:1379:GLU:OE1	1:B:1380:ASN:ND2	2.38	0.56
1:B:1609:ASN:O	1:B:1611:ILE:HD12	2.06	0.56
1:B:1580:SER:N	1:B:1629:ASP:OD2	2.39	0.56
1:B:1899:PHE:HB2	1:B:1908:PHE:HE2	1.71	0.56
1:B:466:ILE:HG23	1:B:471:PRO:HD2	1.87	0.56
1:B:862:ILE:HD12	1:B:968:LEU:HD11	1.88	0.55
1:B:852:ILE:HG22	1:B:856:LYS:HE3	1.89	0.54
1:B:1508:TYR:OH	1:B:1546:ASP:O	2.24	0.54
1:B:1440:SER:O	1:B:1444:GLN:HG2	2.07	0.54
1:B:1476:ASN:ND2	1:B:1523:ASN:OD1	2.39	0.54
1:B:1782:PHE:HE2	1:B:1792:VAL:HG22	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1534:ASP:OD1	1:B:1535:ASP:N	2.32	0.54
1:B:5:ASN:HD22	1:B:7:LYS:HE2	1.73	0.53
1:B:1493:LEU:HD11	2:A:15:ILE:HD12	1.84	0.53
1:B:5:ASN:ND2	1:B:7:LYS:HE2	2.23	0.53
1:B:1003:ASP:HB2	1:B:1006:LYS:HZ3	1.74	0.53
1:B:1438:LEU:HD11	2:A:9:PHE:CE1	2.42	0.53
1:B:1661:TYR:HD2	1:B:1696:ASN:HD22	1.57	0.52
1:B:1371:ILE:O	1:B:1374:THR:HG22	2.09	0.52
1:B:903:LYS:HB2	1:B:1011:VAL:HG11	1.92	0.52
1:B:924:HIS:O	1:B:927:GLU:HG3	2.10	0.52
1:B:1326:SER:HA	1:B:1347:ASP:HB3	1.92	0.52
1:B:278:LYS:NZ	1:B:279:GLU:OE2	2.44	0.51
1:B:1445:GLN:O	1:B:1449:TYR:HB2	2.10	0.51
1:B:1330:TYR:O	1:B:1387:HIS:NE2	2.43	0.51
1:B:377:PHE:CD1	1:B:502:GLU:HG3	2.46	0.51
1:B:1550:ILE:HD11	1:B:1604:PHE:CE2	2.46	0.51
2:A:49:VAL:HA	2:A:52:VAL:HG12	1.93	0.50
1:B:1775:THR:HG22	1:B:1779:LYS:HE2	1.93	0.50
2:A:46:THR:HA	2:A:49:VAL:HG22	1.93	0.50
1:B:14:ASN:OD1	1:B:16:ARG:NH2	2.45	0.50
1:B:661:ASP:OD1	1:B:661:ASP:N	2.45	0.49
1:B:1351:VAL:O	1:B:1385:ASN:ND2	2.45	0.49
2:A:50:LYS:O	2:A:54:THR:HG23	2.13	0.49
1:B:1846:LYS:HE2	1:B:1853:ILE:HD11	1.93	0.49
1:B:667:ASP:OD1	1:B:667:ASP:N	2.46	0.48
1:B:8:GLN:NE2	1:B:874:GLN:OE1	2.33	0.48
1:B:578:ILE:HD11	1:B:640:ILE:O	2.14	0.48
1:B:375:ILE:HG12	1:B:383:ILE:O	2.14	0.48
1:B:19:THR:O	1:B:68:ARG:NH2	2.44	0.48
1:B:174:LYS:O	1:B:177:GLU:HG2	2.13	0.48
1:B:57:ASP:OD1	1:B:76:LYS:NZ	2.47	0.47
1:B:1402:VAL:HG23	1:B:1418:VAL:HB	1.97	0.47
1:B:561:TYR:O	1:B:564:GLU:HG3	2.14	0.47
1:B:1444:GLN:NE2	1:B:1480:LYS:HD2	2.29	0.47
1:B:791:SER:HB2	1:B:840:ARG:HB3	1.97	0.47
1:B:1353:ARG:HG2	1:B:1367:LEU:HD23	1.96	0.47
1:B:1434:LYS:NZ	2:A:48:GLU:OE2	2.48	0.47
1:B:414:LEU:HD11	1:B:454:LEU:HD21	1.96	0.46
1:B:69:ASN:O	1:B:73:LYS:HG2	2.15	0.46
1:B:1713:THR:HG23	1:B:1760:VAL:HB	1.97	0.46
1:B:1721:ASP:OD1	1:B:1721:ASP:N	2.47	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:644:PRO:HB2	1:B:689:LYS:HE3	1.97	0.46
1:B:1596:ASN:OD1	1:B:1597:PHE:N	2.47	0.46
1:B:1798:SER:O	1:B:1798:SER:OG	2.34	0.46
1:B:480:ASP:OD1	1:B:488:SER:OG	2.28	0.46
1:B:1381:LYS:HE2	1:B:1390:ASN:OD1	2.15	0.45
1:B:1557:LEU:HB3	1:B:1561:GLY:HA3	1.99	0.45
1:B:558:ASP:HB3	1:B:561:TYR:HB3	1.97	0.45
1:B:1003:ASP:HB2	1:B:1006:LYS:NZ	2.30	0.45
1:B:1821:GLU:OE1	1:B:1851:ASN:ND2	2.41	0.45
1:B:1486:SER:HB2	1:B:1493:LEU:HB2	1.98	0.45
2:A:62:LEU:H	2:A:62:LEU:HD23	1.81	0.45
1:B:930:SER:O	1:B:934:GLY:N	2.48	0.45
1:B:1508:TYR:HE2	1:B:1544:LEU:HG	1.81	0.45
1:B:217:GLU:HB2	1:B:220:GLU:HG2	1.99	0.44
1:B:510:GLN:O	1:B:515:GLU:HG2	2.17	0.44
2:A:37:GLY:N	2:A:65:ARG:O	2.45	0.44
1:B:793:ASN:HB3	1:B:796:GLU:HB3	1.98	0.44
1:B:936:ILE:O	1:B:947:LYS:N	2.46	0.44
1:B:1547:GLU:O	1:B:1596:ASN:ND2	2.43	0.44
1:B:176:MET:SD	1:B:458:PHE:HB2	2.57	0.44
1:B:1847:PRO:HB2	1:B:1848:PRO:HD3	1.99	0.44
1:B:1429:ILE:HG13	1:B:1462:TYR:HD1	1.83	0.44
1:B:21:GLU:OE1	1:B:68:ARG:NH2	2.48	0.43
1:B:1786:ASP:OD1	1:B:1786:ASP:N	2.51	0.43
1:B:1739:ARG:NH2	1:B:1756:GLU:OE2	2.41	0.43
1:B:194:ARG:NH1	1:B:200:LEU:O	2.52	0.43
1:B:1465:VAL:HG12	1:B:1470:LYS:HG3	2.00	0.43
1:B:455:ARG:O	1:B:455:ARG:HG3	2.18	0.43
1:B:1352:VAL:HG12	1:B:1371:ILE:HG12	2.01	0.43
1:B:1379:GLU:HA	1:B:1423:LYS:HE2	2.00	0.43
1:B:1434:LYS:NZ	2:A:48:GLU:CD	2.72	0.43
1:B:1684:ILE:O	1:B:1688:VAL:HG23	2.18	0.43
1:B:1488:LEU:HD23	1:B:1491:VAL:O	2.17	0.43
1:B:1488:LEU:O	1:B:1490:ASP:N	2.52	0.43
1:B:377:PHE:CZ	1:B:382:ILE:HG22	2.53	0.43
1:B:794:LEU:HD23	1:B:794:LEU:HA	1.89	0.43
2:A:12:PHE:HZ	2:A:16:ARG:HH21	1.65	0.43
1:B:170:LYS:O	1:B:174:LYS:HG2	2.19	0.42
1:B:531:PHE:CZ	1:B:535:LYS:HD2	2.54	0.42
1:B:873:LYS:HG2	1:B:878:LEU:HD23	2.02	0.42
1:B:1433:LEU:HA	1:B:1433:LEU:HD23	1.76	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:445:ARG:NH2	1:B:491:ILE:H	2.17	0.42
1:B:1677:SER:HB3	1:B:1680:TYR:CE2	2.55	0.42
1:B:1338:LEU:HB3	1:B:1399:ASN:ND2	2.34	0.42
1:B:23:GLU:HB2	1:B:59:TYR:HD1	1.85	0.41
1:B:252:PHE:O	1:B:255:TYR:HB3	2.20	0.41
2:A:48:GLU:O	2:A:51:GLU:HG3	2.19	0.41
1:B:1409:LEU:HD23	1:B:1410:GLU:N	2.36	0.41
1:B:84:LEU:HD23	1:B:84:LEU:HA	1.83	0.41
1:B:1536:ILE:HG23	1:B:1558:ASP:OD1	2.21	0.41
1:B:1867:ASN:HB3	1:B:1870:ASN:HB2	2.02	0.41
1:B:410:LEU:HD13	1:B:450:LEU:HD22	2.01	0.41
1:B:479:GLN:HE21	1:B:488:SER:HB3	1.86	0.41
1:B:1432:GLU:HG2	1:B:1435:ILE:HG12	2.03	0.41
1:B:899:ARG:HB2	1:B:910:PHE:CE2	2.57	0.40
1:B:1001:ILE:HG23	1:B:1006:LYS:HG3	2.04	0.40
1:B:711:TYR:HB3	1:B:712:PRO:HD3	2.03	0.40
1:B:1795:ILE:O	1:B:1799:PHE:HB2	2.21	0.40

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	B	1597/2372 (67%)	1543 (97%)	54 (3%)	0	100	100
2	A	63/65 (97%)	62 (98%)	1 (2%)	0	100	100
All	All	1660/2437 (68%)	1605 (97%)	55 (3%)	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	B	1475/2143 (69%)	1475 (100%)	0	100	100
2	A	42/56 (75%)	42 (100%)	0	100	100
All	All	1517/2199 (69%)	1517 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	1380	ASN
1	B	1444	GLN

### 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 [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

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.

No monomer is involved in short contacts.

## 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.

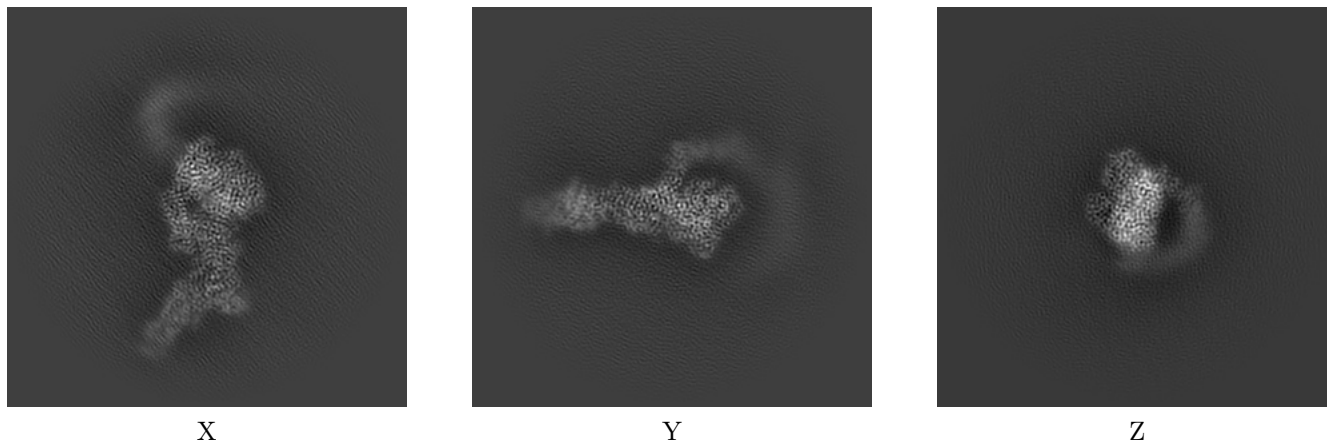
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-39072. These allow visual inspection of the internal detail of the map and identification of artifacts.

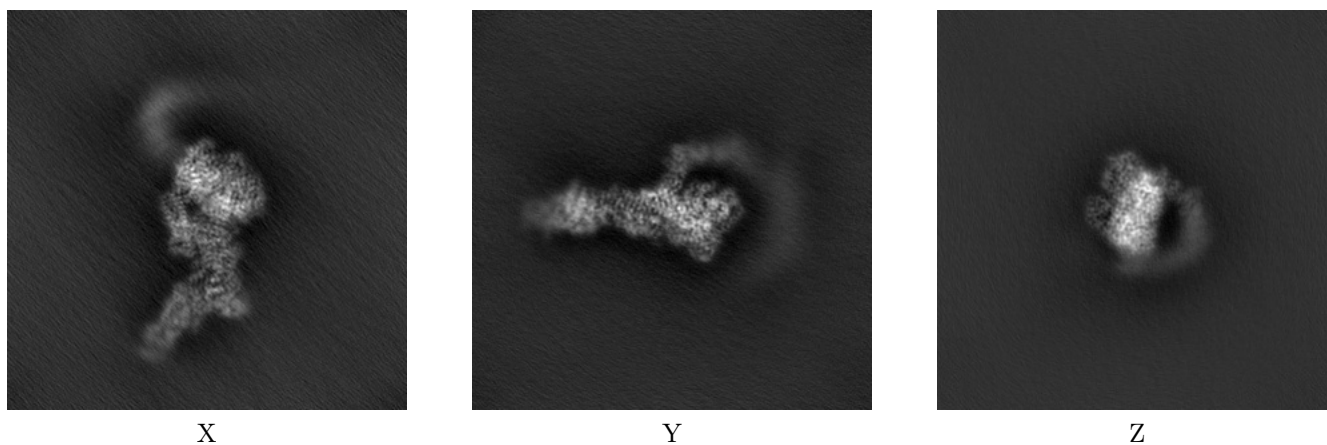
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

#### 6.1.1 Primary map



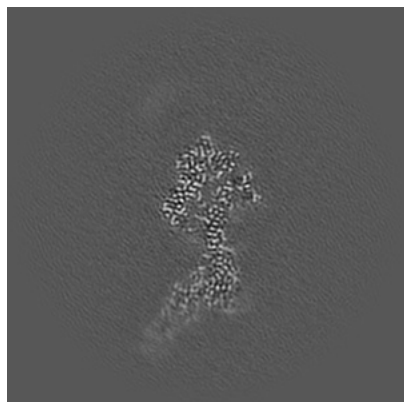
#### 6.1.2 Raw map



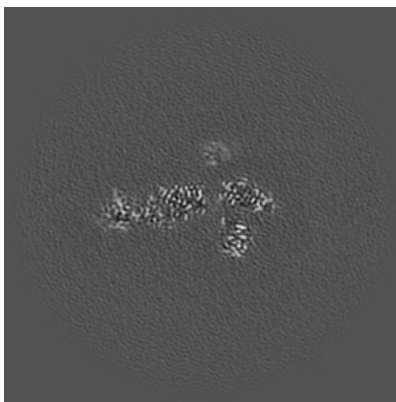
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

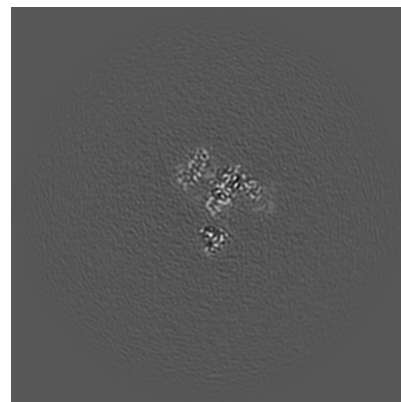
### 6.2.1 Primary map



X Index: 160

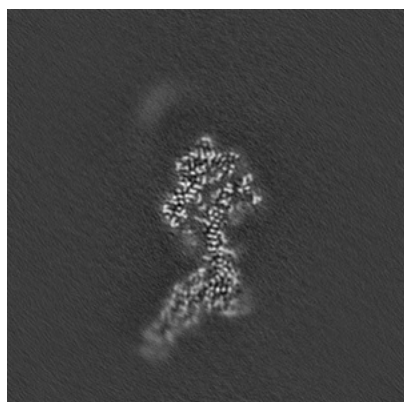


Y Index: 160

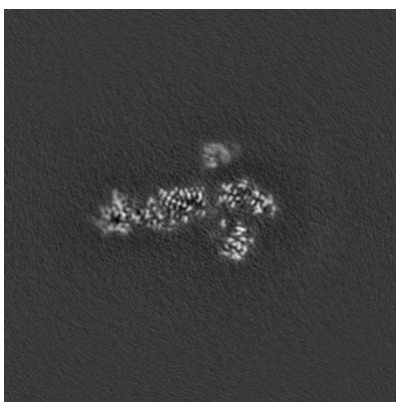


Z Index: 160

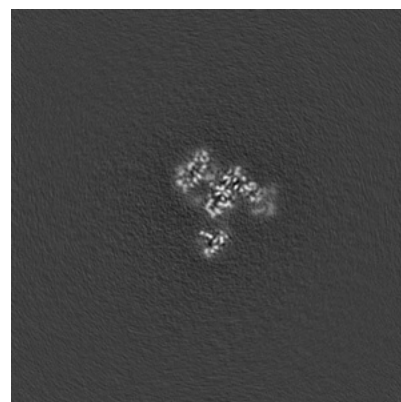
### 6.2.2 Raw map



X Index: 160



Y Index: 160



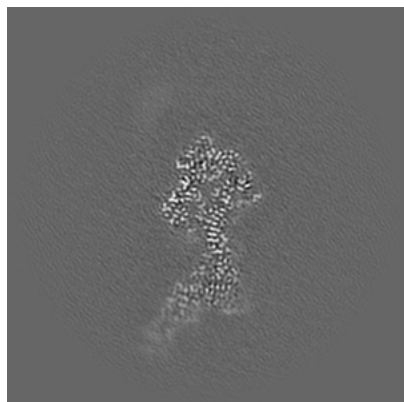
Z Index: 160

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

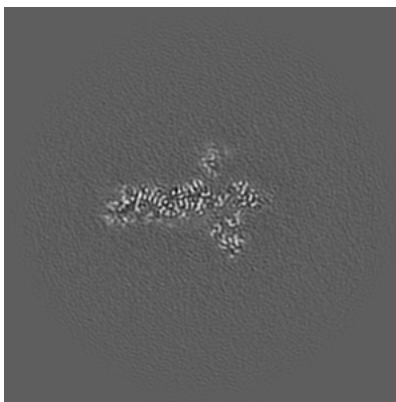


## 6.3 Largest variance slices [i](#)

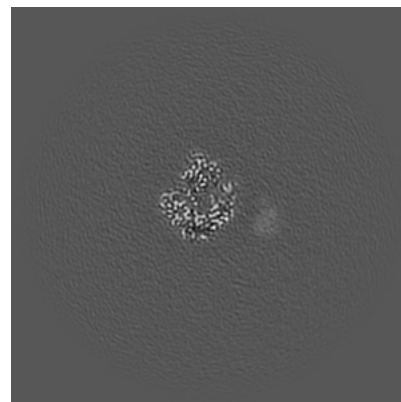
### 6.3.1 Primary map



X Index: 161

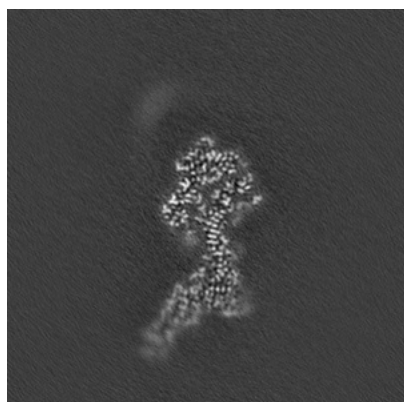


Y Index: 167

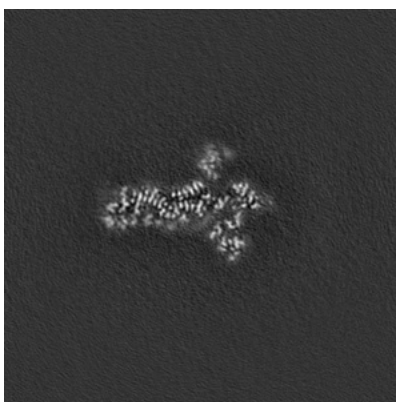


Z Index: 183

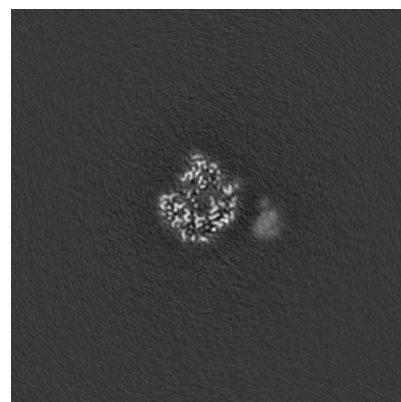
### 6.3.2 Raw map



X Index: 161



Y Index: 167



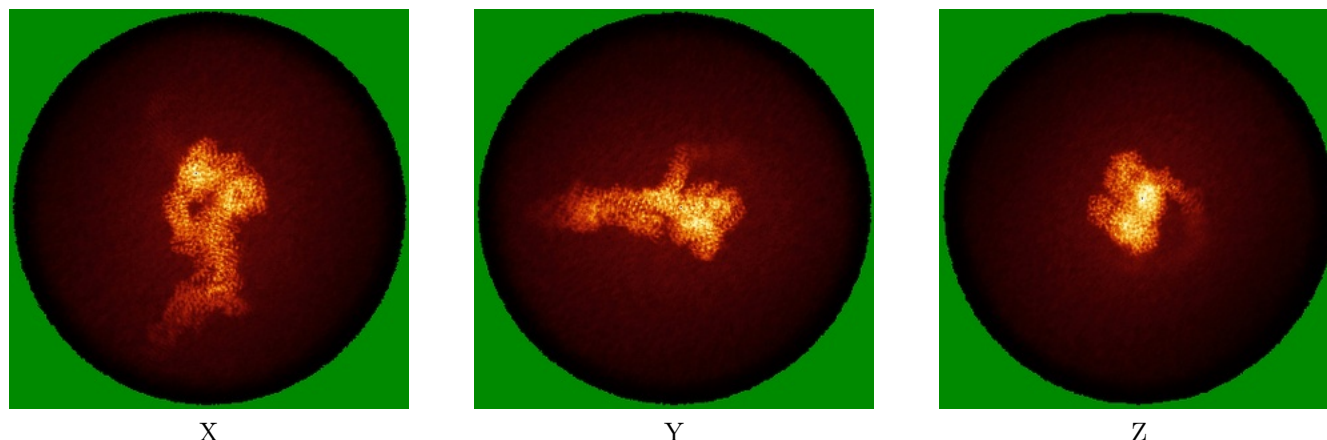
Z Index: 183

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

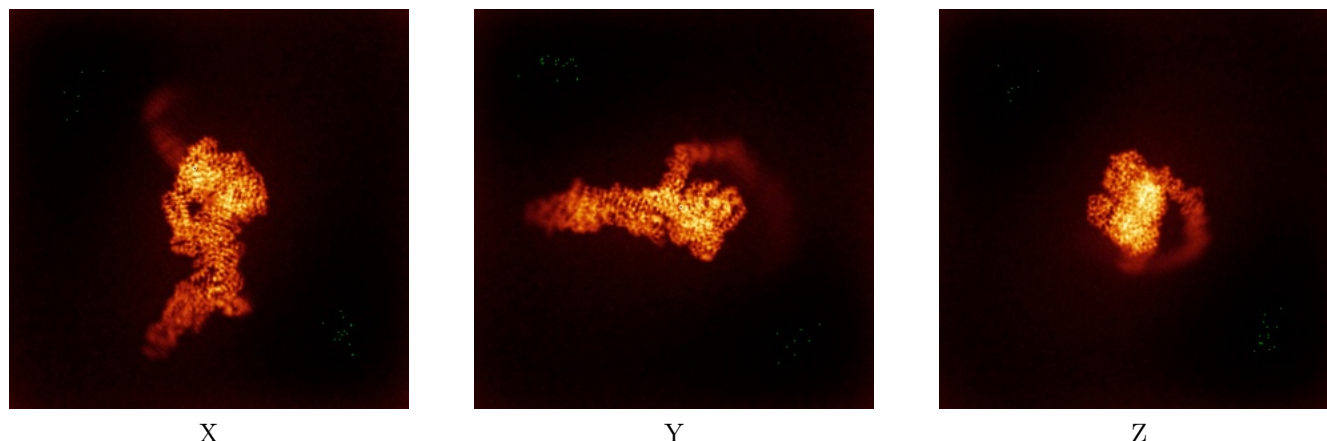


X

Y

Z

### 6.4.2 Raw map



X

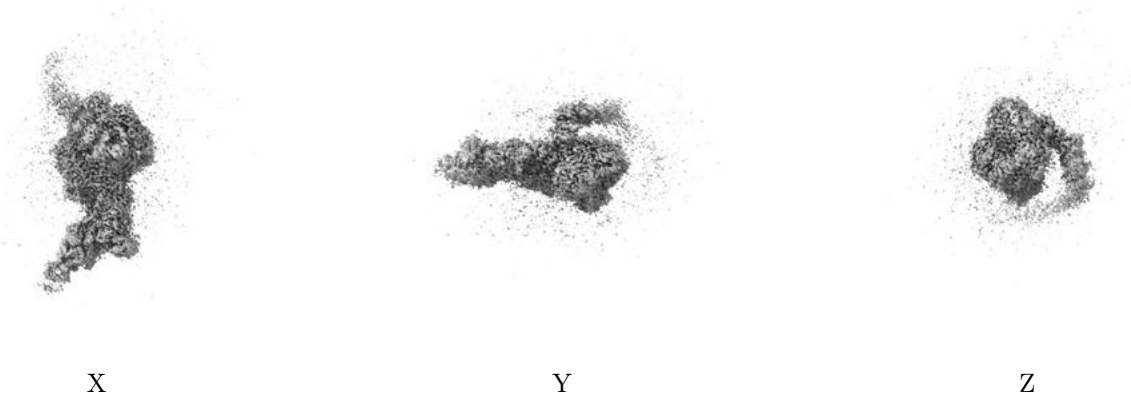
Y

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.

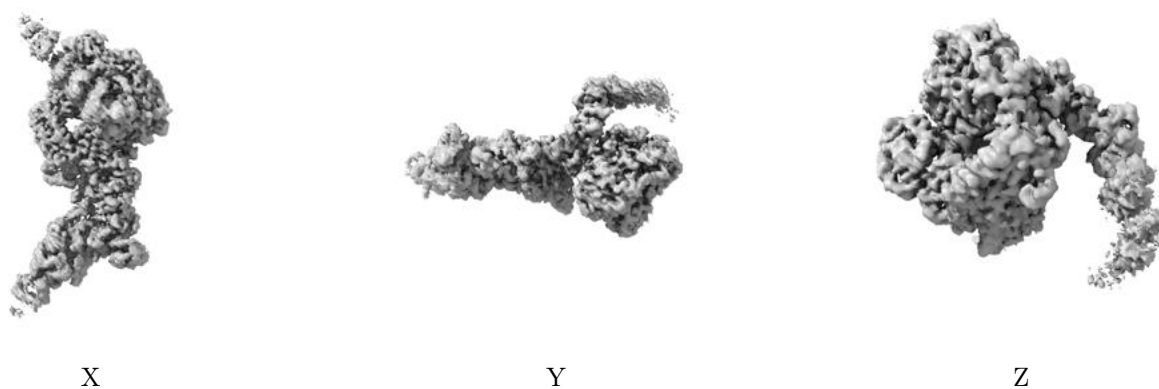
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.4. 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.

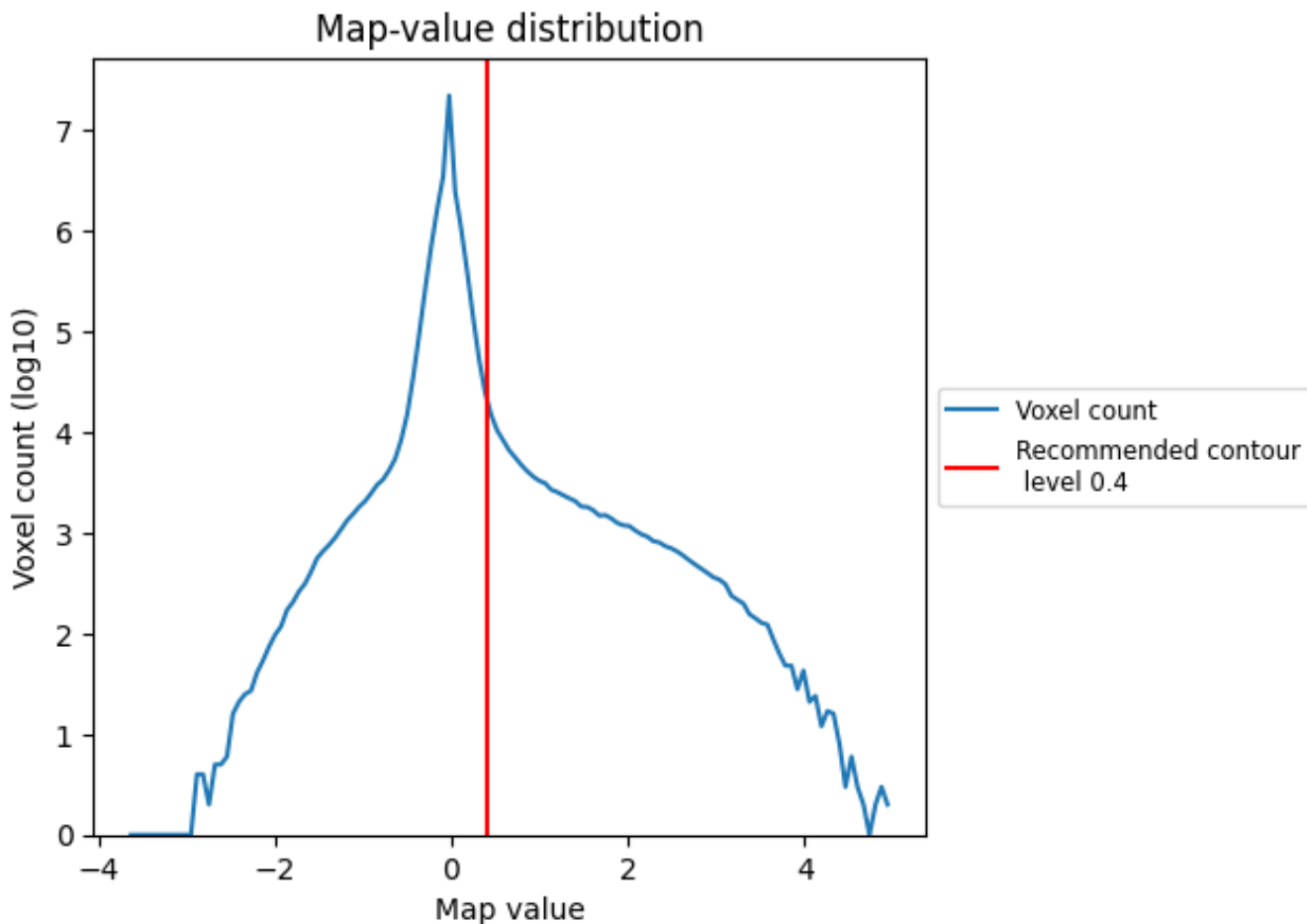
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

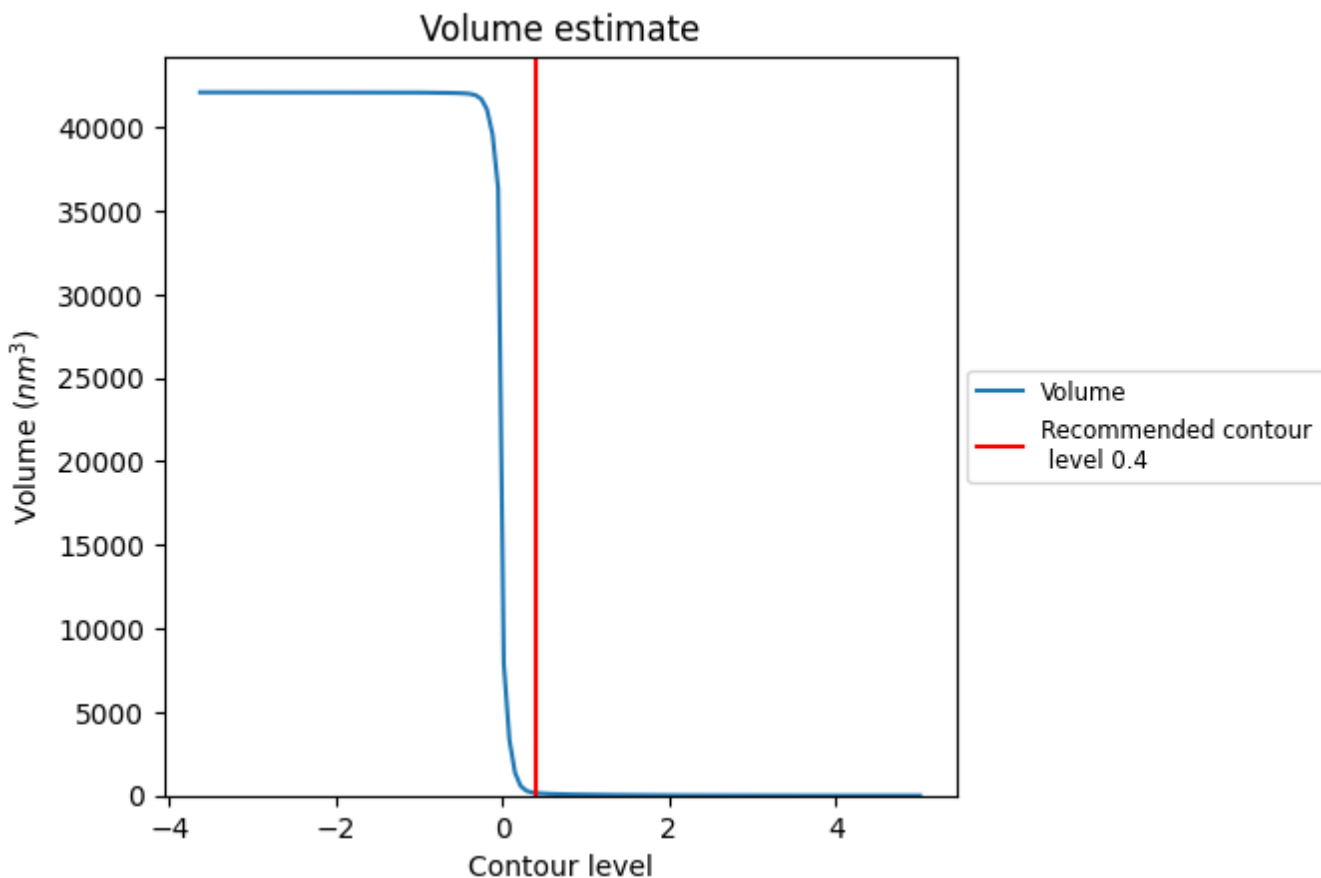
This section contains the results of statistical analysis of the map.

### 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.

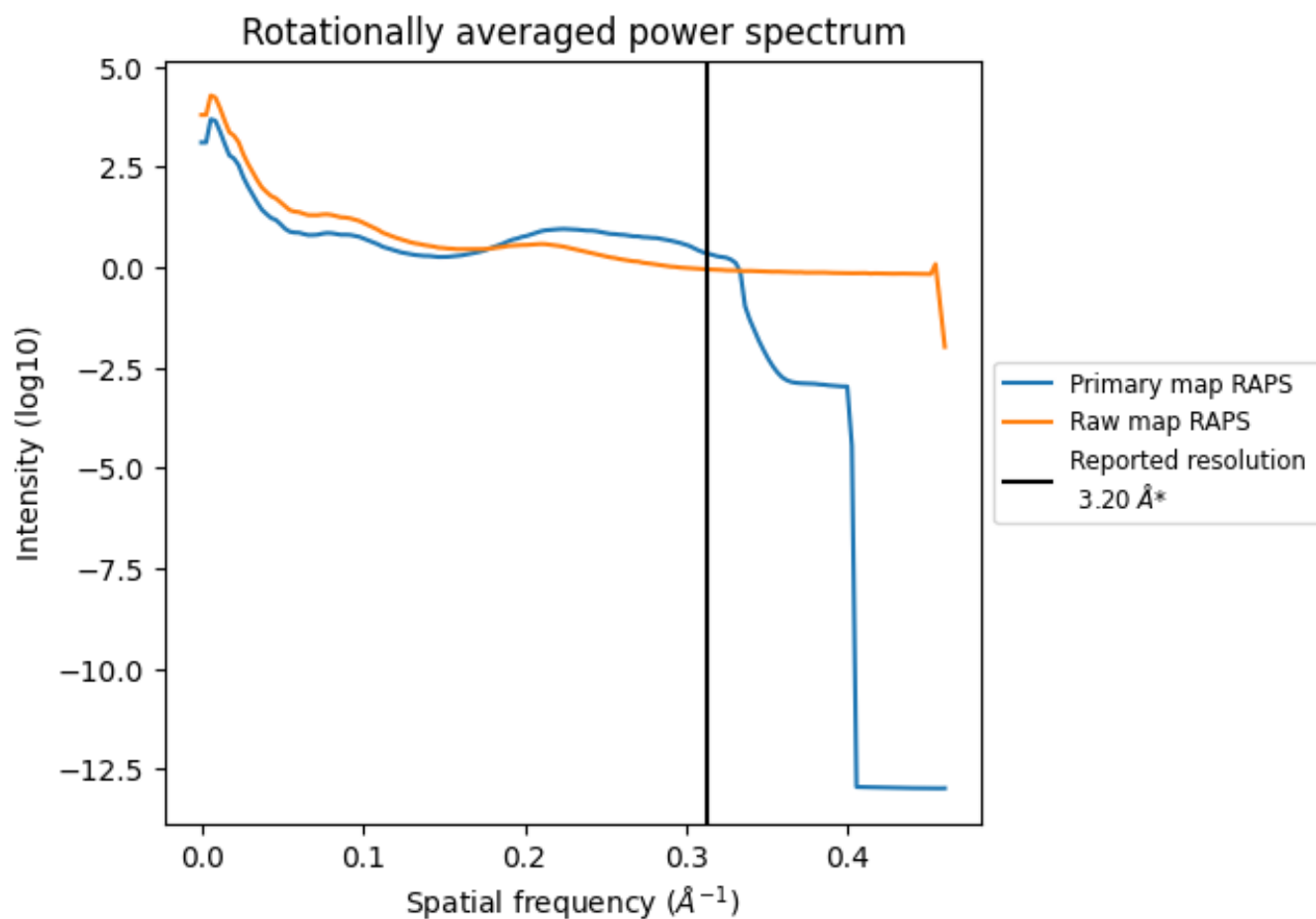
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 157  $\text{nm}^3$ ; this corresponds to an approximate mass of 142 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

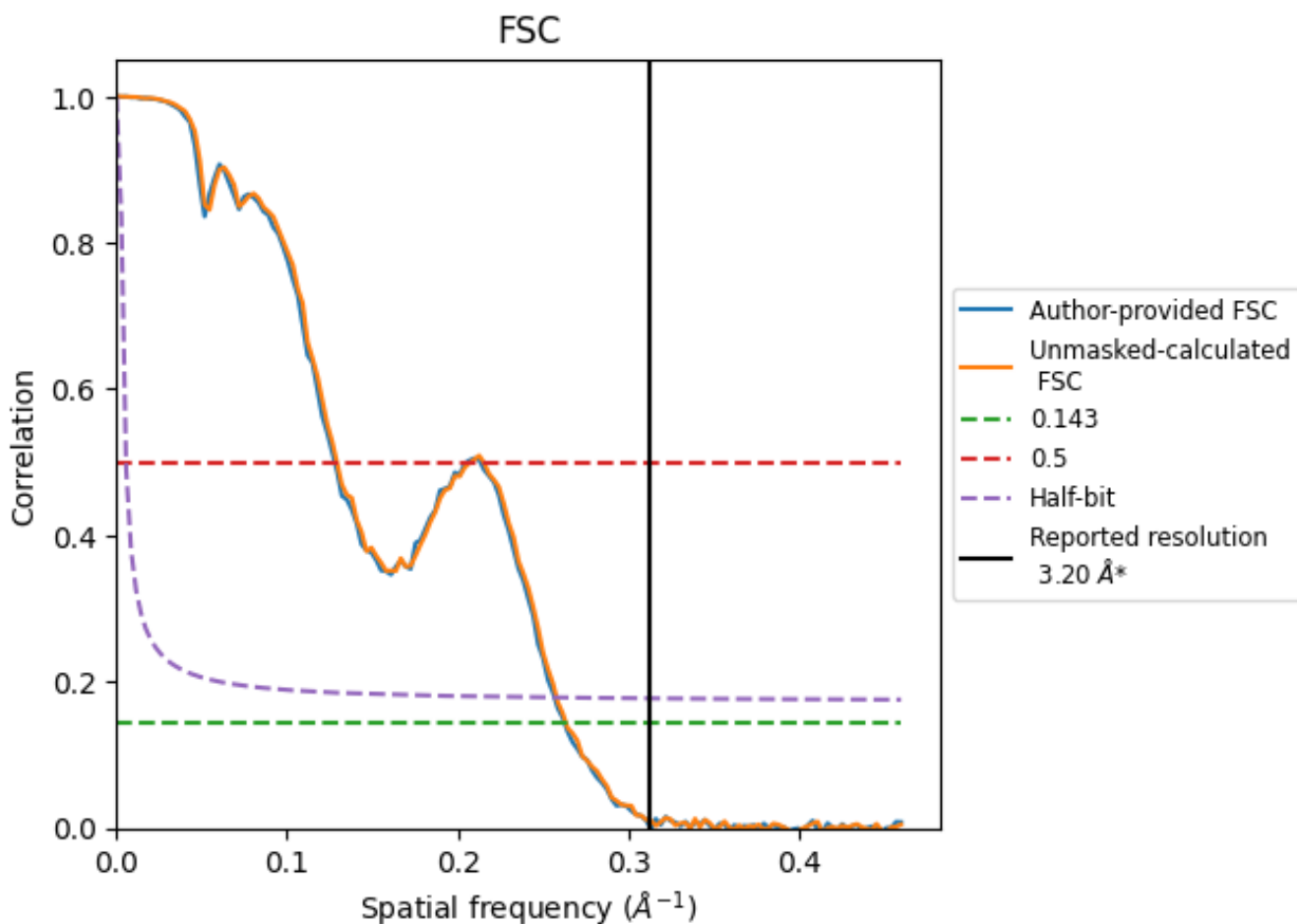


\*Reported resolution corresponds to spatial frequency of 0.312 Å<sup>-1</sup>

## 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 0.312 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	3.20	-	-
Author-provided FSC curve	3.81	7.81	3.89
Unmasked-calculated*	3.79	7.74	3.87

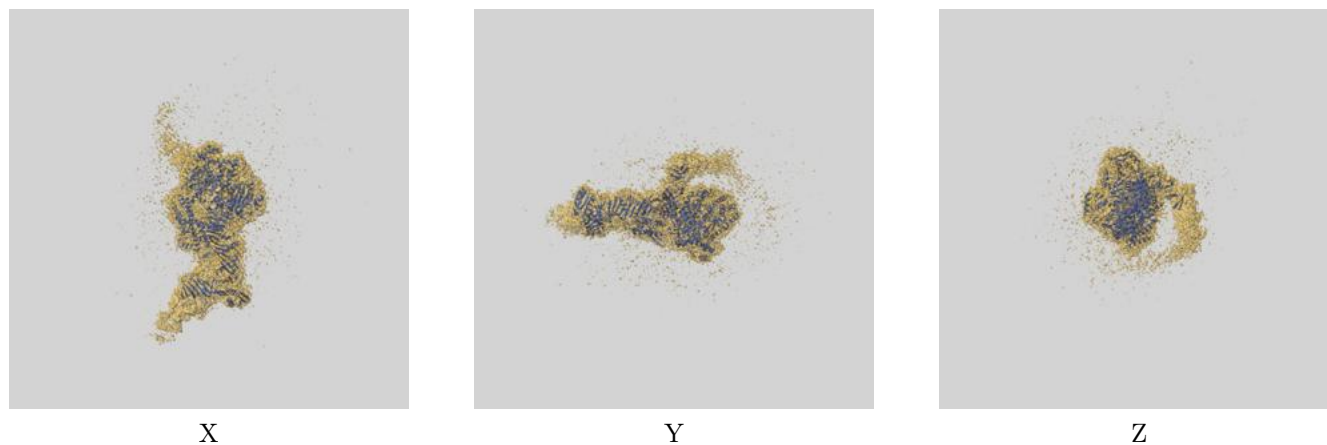
\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.81 differs from the reported value 3.2 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.79 differs from the reported value 3.2 by more than 10 %

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

This section contains information regarding the fit between EMDB map EMD-39072 and PDB model 8Y9B. Per-residue inclusion information can be found in section [3](#) on page [4](#).

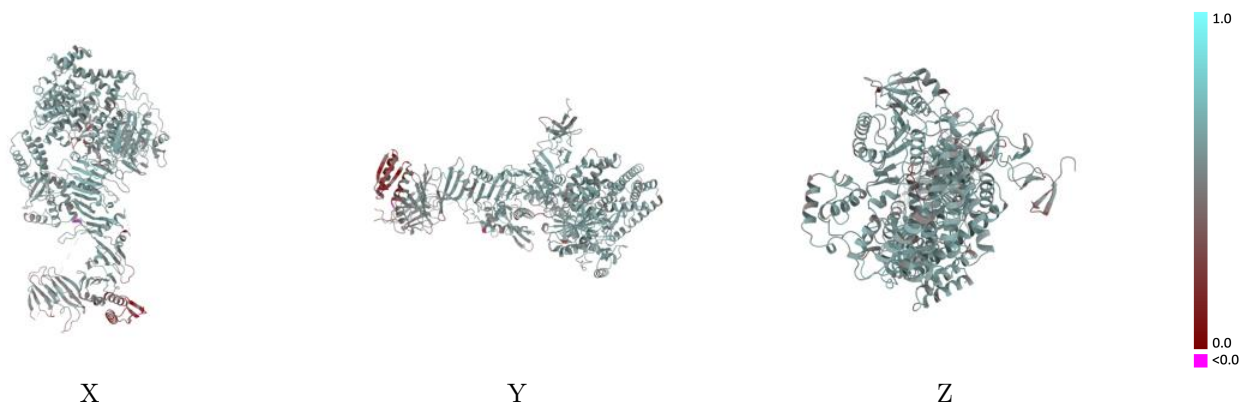
### 9.1 Map-model overlay [i](#)



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

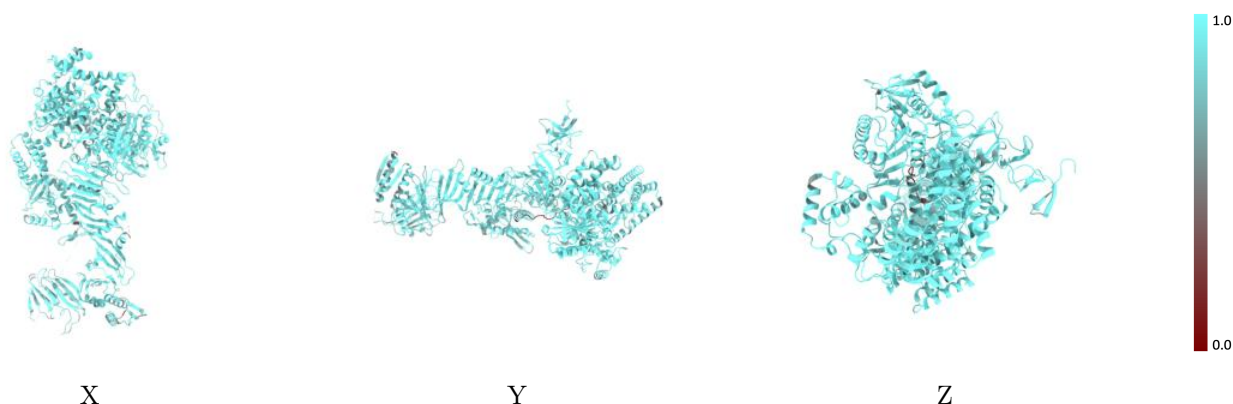


## 9.2 Q-score mapped to coordinate model [\(i\)](#)



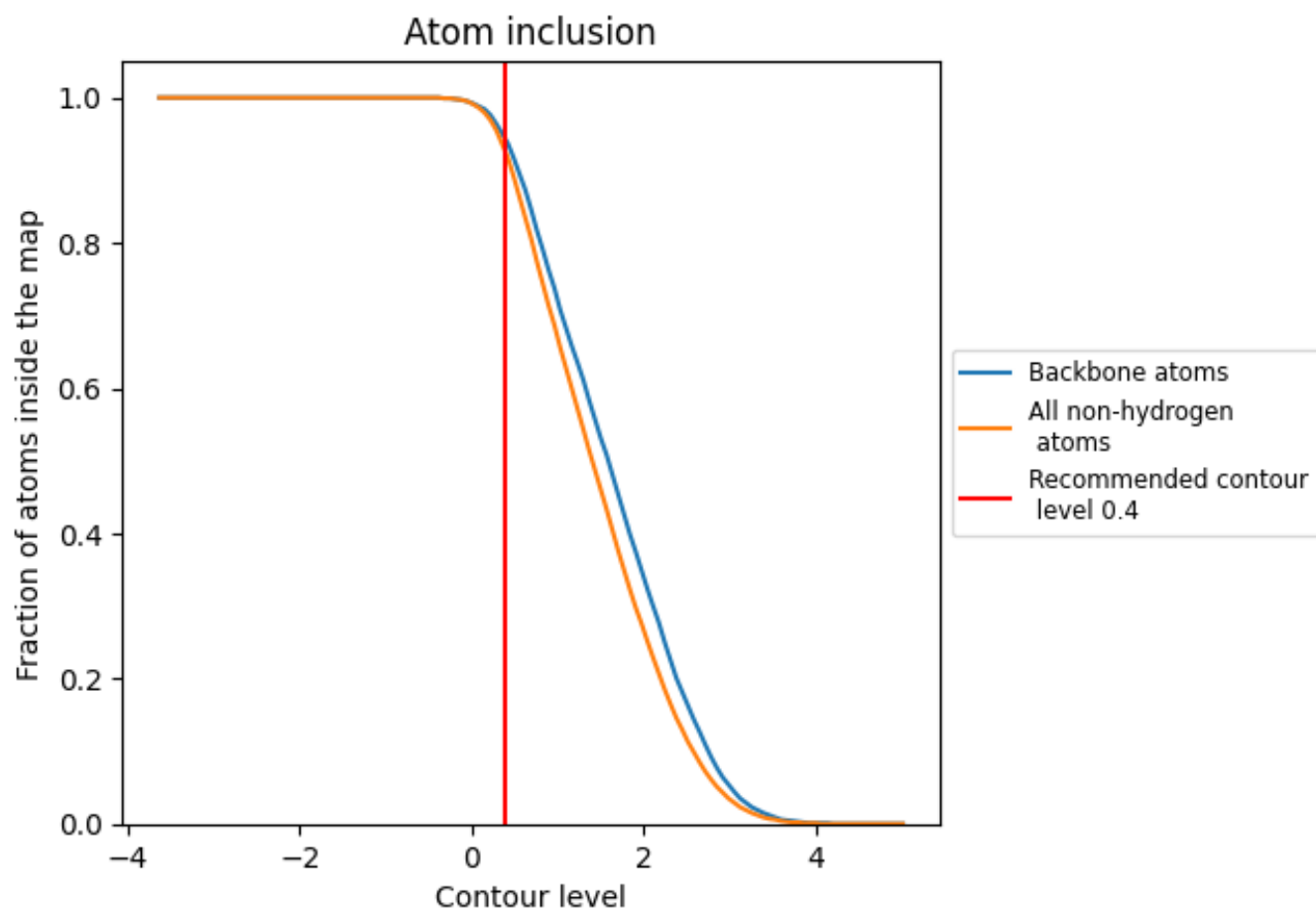
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [\(i\)](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.4).






## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

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

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

Chain	Atom inclusion	Q-score
All	 0.9230	 0.5420
A	 0.7660	 0.2850
B	 0.9290	 0.5510

