



## Full wwPDB EM Validation Report ⓘ

Sep 17, 2024 – 04:16 PM JST

PDB ID : 8KIA  
EMDB ID : EMD-37256  
Title : Tomato spotted wilt virus L protein (apo state)  
Authors : Cao, L.; Wang, X.  
Deposited on : 2023-08-23  
Resolution : 4.00 Å (reported)

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.dev112  
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) : 2.38.2

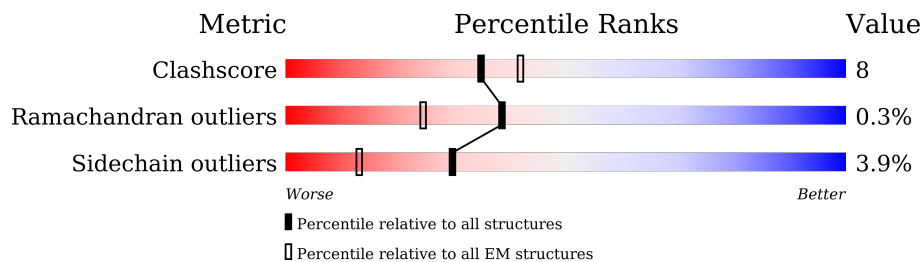
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.00 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	1776	

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 12717 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.

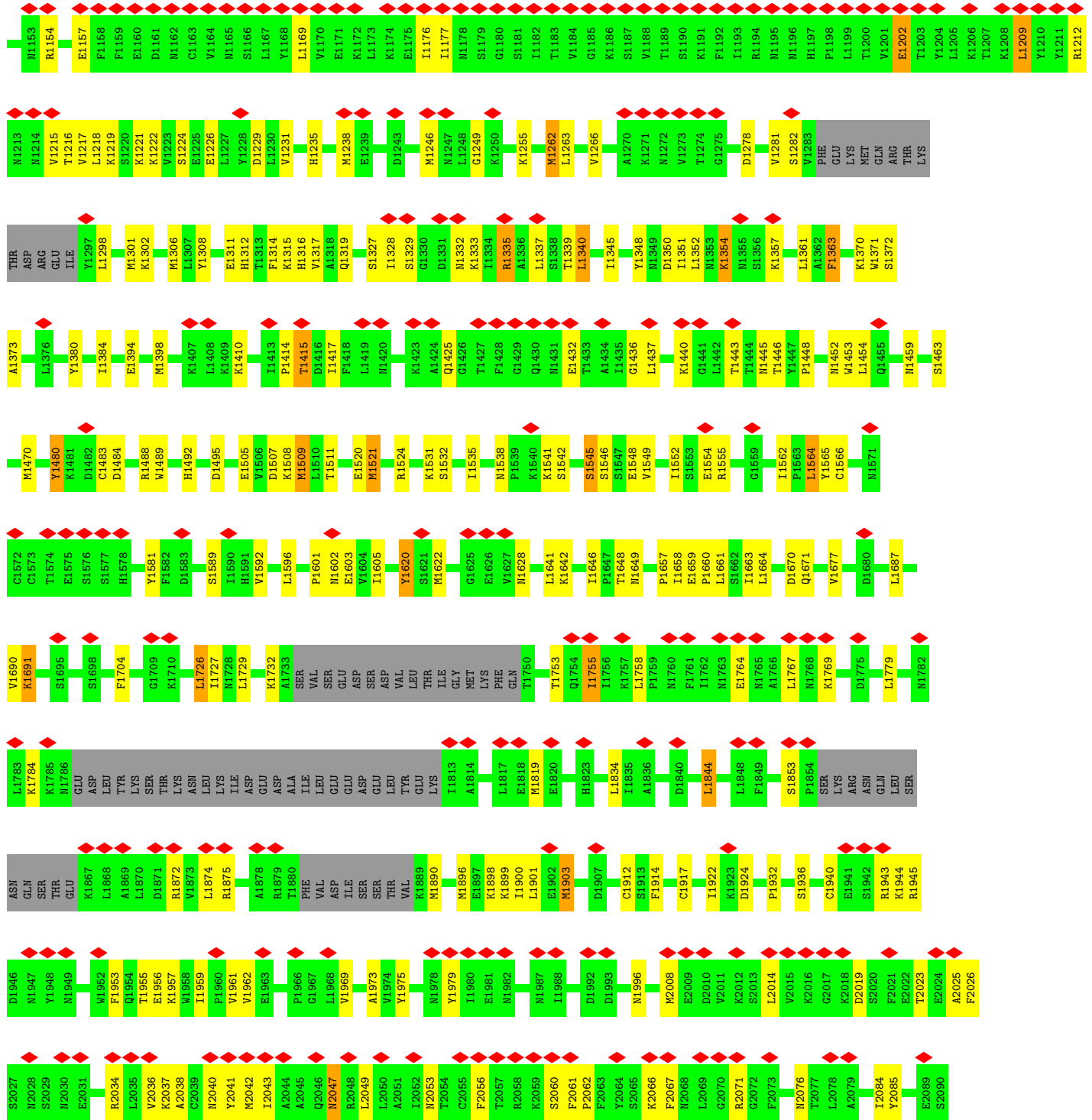
- Molecule 1 is a protein called RNA-directed RNA polymerase L.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1580	12717	8140	2090	2397	90	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	515	CYS	SER	conflict	UNP A0A7G8JUQ9
A	1984	GLY	CYS	conflict	UNP A0A7G8JUQ9





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	359068	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN	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 K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.071	Depositor
Minimum map value	-0.038	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.016	Depositor
Map size (Å)	374.4, 374.4, 374.4	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.04, 1.04, 1.04	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.34	1/12952 (0.0%)	0.73	31/17447 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	859	TRP	CB-CG	5.46	1.60	1.50

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1209	LEU	CA-CB-CG	8.57	135.01	115.30
1	A	1340	LEU	CA-CB-CG	8.49	134.84	115.30
1	A	1509	MET	CA-CB-CG	7.73	126.44	113.30
1	A	1229	ASP	CB-CG-OD1	7.70	125.23	118.30
1	A	1844	LEU	CA-CB-CG	7.32	132.13	115.30
1	A	1691	LYS	CA-CB-CG	6.41	127.49	113.40
1	A	1779	LEU	CA-CB-CG	6.33	129.85	115.30
1	A	1306	MET	CA-CB-CG	6.14	123.74	113.30
1	A	992	LEU	CA-CB-CG	6.09	129.31	115.30
1	A	1521	MET	CA-CB-CG	6.09	123.65	113.30
1	A	1361	LEU	CA-CB-CG	6.04	129.19	115.30
1	A	1890	MET	CA-CB-CG	5.98	123.47	113.30
1	A	1903	MET	CA-CB-CG	5.86	123.27	113.30
1	A	532	LEU	CA-CB-CG	5.68	128.36	115.30
1	A	1758	LEU	CA-CB-CG	5.67	128.35	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1202	GLU	CA-CB-CG	5.64	125.81	113.40
1	A	1437	LEU	CA-CB-CG	5.62	128.23	115.30
1	A	1263	LEU	CA-CB-CG	5.52	128.00	115.30
1	A	433	LYS	CA-CB-CG	5.48	125.45	113.40
1	A	1874	LEU	CA-CB-CG	5.42	127.76	115.30
1	A	832	LEU	CA-CB-CG	5.35	127.60	115.30
1	A	796	MET	CB-CG-SD	5.33	128.40	112.40
1	A	1726	LEU	CA-CB-CG	5.33	127.56	115.30
1	A	1301	MET	CA-CB-CG	5.30	122.32	113.30
1	A	1335	ARG	CA-CB-CG	5.29	125.04	113.40
1	A	2049	LEU	CA-CB-CG	5.26	127.41	115.30
1	A	1105	LYS	CA-CB-CG	5.26	124.97	113.40
1	A	453	GLU	CA-CB-CG	5.26	124.96	113.40
1	A	712	LEU	CA-CB-CG	5.15	127.15	115.30
1	A	680	LEU	CA-CB-CG	5.08	126.99	115.30
1	A	729	LEU	CA-CB-CG	5.08	126.99	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1014	VAL	Peptide

## 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	12717	0	12818	198	0
All	All	12717	0	12818	198	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 8.

All (198) 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:1108:SER:HA	1:A:1219:LYS:O	1.75	0.86
1:A:1099:SER:O	1:A:1103:SER:HB3	1.94	0.68
1:A:1549:VAL:O	1:A:1555:ARG:HA	1.96	0.66
1:A:799:GLN:HA	1:A:802:ILE:HD12	1.78	0.65
1:A:692:THR:O	1:A:696:ASN:HB2	1.98	0.64
1:A:1872:ARG:HA	1:A:1875:ARG:HB2	1.81	0.63
1:A:718:THR:OG1	1:A:1603:GLU:OE1	2.17	0.62
1:A:1328:ILE:HA	1:A:1333:LYS:HD2	1.80	0.62
1:A:1659:GLU:OE2	1:A:1957:LYS:NZ	2.33	0.62
1:A:1596:LEU:HD13	1:A:1658:ILE:HG23	1.82	0.61
1:A:1351:ILE:HG13	1:A:1352:LEU:HD12	1.83	0.61
1:A:586:CYS:SG	1:A:587:MET:N	2.74	0.60
1:A:1899:LYS:O	1:A:1903:MET:CB	2.49	0.60
1:A:341:ARG:HD2	1:A:1045:PRO:HG2	1.83	0.60
1:A:718:THR:HA	1:A:721:LYS:HD2	1.82	0.60
1:A:1677:VAL:HG21	1:A:1726:LEU:HD21	1.83	0.60
1:A:1086:GLU:HA	1:A:1091:PHE:HB2	1.84	0.60
1:A:1099:SER:HA	1:A:1102:LYS:HG2	1.84	0.60
1:A:1350:ASP:O	1:A:1354:LYS:NZ	2.34	0.59
1:A:1581:TYR:HB2	1:A:1620:TYR:HB3	1.84	0.59
1:A:851:LYS:HE2	1:A:1602:ASN:HB2	1.83	0.59
1:A:491:ASN:O	1:A:495:ASN:ND2	2.36	0.58
1:A:897:LEU:HA	1:A:900:MET:HG2	1.85	0.58
1:A:678:PHE:HB2	1:A:882:ILE:HG23	1.84	0.57
1:A:1218:LEU:HD13	1:A:1282:SER:HB3	1.85	0.57
1:A:1157:GLU:OE1	1:A:1212:ARG:NH2	2.37	0.57
1:A:494:ILE:HD12	1:A:498:ARG:HH2	1.69	0.56
1:A:1545:SER:OG	1:A:1546:SER:N	2.39	0.55
1:A:1727:ILE:HD13	1:A:1914:PHE:HB2	1.89	0.54
1:A:1098:ILE:HG22	1:A:1100:THR:H	1.71	0.54
1:A:854:ASN:HA	1:A:857:GLU:HG2	1.88	0.54
1:A:1690:VAL:HG12	1:A:1922:ILE:HD11	1.88	0.54
1:A:1049:MET:N	1:A:1049:MET:SD	2.81	0.54
1:A:1899:LYS:O	1:A:1903:MET:HB2	2.08	0.53
1:A:1899:LYS:O	1:A:1903:MET:HB3	2.08	0.53
1:A:1955:THR:OG1	1:A:1956:GLU:N	2.41	0.53
1:A:588:LYS:O	1:A:595:LYS:NZ	2.42	0.53
1:A:1641:LEU:HD23	1:A:1646:ILE:HD13	1.91	0.53
1:A:1649:ASN:HD21	1:A:1729:LEU:HD11	1.73	0.53
1:A:1249:GLY:HA2	1:A:1255:LYS:H	1.73	0.53
1:A:471:SER:OG	1:A:472:MET:N	2.43	0.52
1:A:924:ILE:HA	1:A:928:PHE:HB2	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:993:GLU:HG2	1:A:1562:ILE:HD12	1.92	0.52
1:A:747:VAL:O	1:A:750:ARG:NH1	2.42	0.52
1:A:880:ILE:HA	1:A:883:ASN:HD22	1.75	0.52
1:A:534:LEU:O	1:A:538:SER:OG	2.27	0.52
1:A:875:MET:SD	1:A:875:MET:N	2.69	0.52
1:A:1209:LEU:HD21	1:A:1445:ASN:HB2	1.92	0.52
1:A:1505:GLU:HG3	1:A:1508:LYS:HB2	1.91	0.52
1:A:587:MET:SD	1:A:590:THR:OG1	2.64	0.52
1:A:873:MET:HB2	1:A:878:LYS:HG3	1.91	0.52
1:A:702:PRO:HG2	1:A:716:LEU:HD12	1.92	0.51
1:A:742:SER:OG	1:A:832:LEU:O	2.27	0.51
1:A:2036:VAL:O	1:A:2040:ASN:HB2	2.09	0.51
1:A:1961:VAL:HG13	1:A:1962:VAL:HG23	1.92	0.51
1:A:730:ALA:HB1	1:A:733:HIS:HB2	1.92	0.51
1:A:1278:ASP:OD1	1:A:1278:ASP:N	2.42	0.51
1:A:1432:GLU:HB3	1:A:1436:GLY:HA3	1.93	0.51
1:A:1962:VAL:HG21	1:A:1975:TYR:HE2	1.75	0.51
1:A:1484:ASP:N	1:A:1484:ASP:OD1	2.44	0.50
1:A:1492:HIS:HB3	1:A:1495:ASP:HB2	1.93	0.50
1:A:1670:ASP:N	1:A:1670:ASP:OD1	2.43	0.50
1:A:1384:ILE:HG21	1:A:1398:MET:HE2	1.93	0.50
1:A:702:PRO:O	1:A:705:LEU:HB2	2.11	0.50
1:A:323:SER:OG	1:A:324:LYS:N	2.45	0.50
1:A:1726:LEU:HA	1:A:1729:LEU:HB3	1.94	0.50
1:A:1319:GLN:HG3	1:A:1327:SER:HB2	1.93	0.50
1:A:1120:GLU:O	1:A:1124:ASN:ND2	2.44	0.50
1:A:1082:ARG:NH2	1:A:1394:GLU:OE2	2.45	0.50
1:A:1764:GLU:HA	1:A:1767:LEU:HG	1.93	0.50
1:A:1209:LEU:HG	1:A:1215:VAL:HG21	1.94	0.49
1:A:507:VAL:HA	1:A:812:PHE:HB3	1.95	0.49
1:A:798:ASP:N	1:A:798:ASP:OD1	2.44	0.49
1:A:534:LEU:HD21	1:A:789:LEU:HD11	1.93	0.49
1:A:1470:MET:HE2	1:A:1489:TRP:HB3	1.95	0.49
1:A:1657:PRO:HB2	1:A:1660:PRO:HD2	1.93	0.49
1:A:437:ILE:HB	1:A:921:LYS:HD2	1.94	0.49
1:A:879:GLN:O	1:A:883:ASN:ND2	2.46	0.49
1:A:1932:PRO:O	1:A:1936:SER:HB3	2.13	0.49
1:A:1520:GLU:OE2	1:A:1524:ARG:NH1	2.46	0.49
1:A:1687:LEU:HD12	1:A:1690:VAL:HB	1.95	0.49
1:A:981:LYS:N	1:A:985:THR:O	2.43	0.48
1:A:1075:ILE:HD11	1:A:1317:VAL:HG13	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1363:PHE:CE1	1:A:1549:VAL:HA	2.48	0.48
1:A:1538:ASN:O	1:A:1542:SER:OG	2.22	0.48
1:A:827:LEU:HD12	1:A:832:LEU:HD23	1.95	0.48
1:A:1090:ASP:HB3	1:A:1093:SER:HB2	1.94	0.48
1:A:2040:ASN:HA	1:A:2043:ILE:HG12	1.96	0.48
1:A:919:ASN:HB2	1:A:923:TYR:HB2	1.96	0.47
1:A:1372:SER:OG	1:A:1452:ASN:OD1	2.28	0.47
1:A:806:LYS:O	1:A:823:ARG:NH1	2.35	0.47
1:A:1896:MET:O	1:A:1900:ILE:HD12	2.14	0.47
1:A:2014:LEU:HD23	1:A:2025:ALA:HB2	1.96	0.47
1:A:1311:GLU:OE1	1:A:1459:ASN:N	2.40	0.47
1:A:586:CYS:HA	1:A:756:SER:HA	1.95	0.47
1:A:1329:SER:OG	1:A:1332:ASN:OD1	2.32	0.47
1:A:1109:GLN:HG3	1:A:1221:LYS:HD3	1.96	0.47
1:A:1834:LEU:HD21	1:A:1996:ASN:HB2	1.97	0.47
1:A:1238:MET:SD	1:A:1238:MET:N	2.80	0.47
1:A:1480:TYR:HE1	1:A:1483:CYS:HB2	1.80	0.47
1:A:1541:LYS:HA	1:A:1541:LYS:HD2	1.73	0.47
1:A:2019:ASP:N	1:A:2019:ASP:OD1	2.47	0.47
1:A:803:CYS:HB3	1:A:804:TYR:HD2	1.80	0.46
1:A:1129:ASP:HB3	1:A:1132:ASN:HB2	1.95	0.46
1:A:1912:CYS:HB2	1:A:2034:ARG:HG3	1.98	0.46
1:A:829:GLN:HA	1:A:832:LEU:HG	1.98	0.46
1:A:1335:ARG:HH12	1:A:1552:ILE:HD11	1.80	0.46
1:A:1943:ARG:NH2	1:A:1969:VAL:O	2.42	0.46
1:A:476:PRO:HG2	1:A:790:HIS:HB3	1.96	0.46
1:A:1222:LYS:O	1:A:1224:SER:N	2.46	0.46
1:A:821:ILE:HD13	1:A:821:ILE:HA	1.85	0.46
1:A:1732:LYS:HD3	1:A:1903:MET:HG2	1.98	0.46
1:A:1565:TYR:CE1	1:A:1601:PRO:HD3	2.50	0.45
1:A:2062:PRO:HB3	1:A:2066:LYS:HD3	1.98	0.45
1:A:490:ASN:OD1	1:A:761:THR:OG1	2.33	0.45
1:A:1440:LYS:O	1:A:1443:THR:OG1	2.19	0.45
1:A:674:LYS:NZ	1:A:883:ASN:OD1	2.41	0.45
1:A:1589:SER:HA	1:A:1592:VAL:HB	1.99	0.45
1:A:785:PRO:HG3	1:A:826:ARG:HE	1.82	0.45
1:A:852:LYS:HD2	1:A:994:ASP:HB3	1.97	0.45
1:A:426:ARG:HH12	1:A:1532:SER:HB2	1.82	0.45
1:A:395:LYS:HE2	1:A:404:HIS:HB2	1.97	0.45
1:A:1154:ARG:HH21	1:A:1209:LEU:HA	1.81	0.45
1:A:1231:VAL:HG13	1:A:1235:HIS:CE1	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:878:LYS:O	1:A:882:ILE:HG13	2.17	0.44
1:A:398:LEU:O	1:A:402:LYS:NZ	2.43	0.44
1:A:1209:LEU:HD23	1:A:1215:VAL:HG11	1.98	0.44
1:A:1663:ILE:HG22	1:A:1664:LEU:HD23	2.00	0.44
1:A:1753:THR:HG23	1:A:1755:ILE:H	1.81	0.44
1:A:1024:PRO:HB3	1:A:1452:ASN:HD22	1.82	0.44
1:A:1784:LYS:NZ	1:A:1819:MET:SD	2.74	0.44
1:A:842:VAL:HG12	1:A:892:GLY:HA3	1.99	0.44
1:A:852:LYS:HA	1:A:852:LYS:HD3	1.72	0.44
1:A:1145:ILE:HD11	1:A:1177:ILE:HD12	1.99	0.44
1:A:2038:ALA:HA	1:A:2041:TYR:CE2	2.53	0.44
1:A:1973:ALA:HA	1:A:2085:TYR:HA	2.00	0.44
1:A:869:ASN:N	1:A:869:ASN:OD1	2.48	0.43
1:A:1308:TYR:O	1:A:1312:HIS:HB2	2.19	0.43
1:A:594:ASN:O	1:A:598:TYR:HB2	2.19	0.43
1:A:1372:SER:OG	1:A:1453:TRP:O	2.36	0.43
1:A:1531:LYS:HD3	1:A:1531:LYS:HA	1.75	0.43
1:A:1282:SER:O	1:A:1298:LEU:HB2	2.19	0.43
1:A:1315:LYS:HE3	1:A:1315:LYS:HB2	1.74	0.43
1:A:696:ASN:HB3	1:A:700:LYS:HE2	2.01	0.43
1:A:1217:VAL:HG11	1:A:1415:THR:HG22	2.01	0.43
1:A:1014:VAL:HG12	1:A:1017:LEU:HD23	1.99	0.43
1:A:1554:GLU:H	1:A:1564:LEU:HD13	1.83	0.43
1:A:1602:ASN:HA	1:A:1953:PHE:CE2	2.54	0.43
1:A:1371:TRP:HZ3	1:A:1535:ILE:HG23	1.84	0.43
1:A:1410:LYS:HE3	1:A:1448:PRO:HG3	2.00	0.43
1:A:1622:MET:HB2	1:A:1628:ASN:HB3	2.00	0.43
1:A:1901:LEU:HD23	1:A:1901:LEU:HA	1.86	0.43
1:A:1339:THR:HG21	1:A:2084:ILE:HB	1.99	0.43
1:A:2053:ASN:OD1	1:A:2053:ASN:N	2.51	0.43
1:A:1112:ILE:HB	1:A:1216:THR:HG23	2.01	0.43
1:A:1370:LYS:HD3	1:A:1370:LYS:HA	1.63	0.43
1:A:472:MET:N	1:A:472:MET:SD	2.92	0.43
1:A:1414:PRO:HD2	1:A:1417:ILE:HD11	2.01	0.43
1:A:2047:ASN:HB3	1:A:2066:LYS:HD2	2.01	0.42
1:A:1687:LEU:O	1:A:1691:LYS:HD2	2.19	0.42
1:A:2023:THR:HB	1:A:2060:SER:HB3	2.02	0.42
1:A:993:GLU:O	1:A:997:ASN:ND2	2.52	0.42
1:A:1278:ASP:HB2	1:A:1302:LYS:HG3	2.01	0.42
1:A:1425:GLN:HG3	1:A:1432:GLU:HG2	2.01	0.42
1:A:741:PHE:CE1	1:A:769:LEU:HD21	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1373:ALA:HA	1:A:1452:ASN:HA	2.01	0.42
1:A:1671:GLN:NE2	1:A:1924:ASP:OD2	2.53	0.42
1:A:437:ILE:HG21	1:A:443:ALA:HB2	2.01	0.42
1:A:1357:LYS:HE2	1:A:1357:LYS:HB2	1.87	0.42
1:A:373:ASP:HA	1:A:376:ILE:HG12	2.02	0.41
1:A:2076:ASN:N	1:A:2076:ASN:OD1	2.53	0.41
1:A:1109:GLN:NE2	1:A:1226:GLU:OE2	2.53	0.41
1:A:760:LEU:HB2	1:A:769:LEU:HB2	2.01	0.41
1:A:470:PHE:HD1	1:A:470:PHE:HA	1.77	0.41
1:A:1410:LYS:HB3	1:A:1446:THR:HG22	2.01	0.41
1:A:2084:ILE:HD12	1:A:2084:ILE:HA	1.88	0.41
1:A:498:ARG:HH21	1:A:538:SER:HB2	1.86	0.41
1:A:1380:TYR:O	1:A:1384:ILE:HD12	2.21	0.41
1:A:707:ILE:HD13	1:A:707:ILE:HA	1.92	0.41
1:A:1122:LEU:HD23	1:A:1169:LEU:HD13	2.02	0.41
1:A:1133:TRP:HH2	1:A:1176:ILE:HD12	1.85	0.41
1:A:1345:ILE:HD11	1:A:1488:ARG:HB2	2.03	0.41
1:A:1507:ASP:O	1:A:1511:THR:HG23	2.21	0.41
1:A:1642:LYS:HD3	1:A:1642:LYS:HA	1.83	0.41
1:A:737:ASP:O	1:A:741:PHE:HB2	2.20	0.41
1:A:788:ALA:HB1	1:A:790:HIS:NE2	2.36	0.41
1:A:831:ARG:HH11	1:A:895:THR:HG22	1.86	0.41
1:A:1769:LYS:HD3	1:A:1769:LYS:HA	1.78	0.41
1:A:355:GLU:OE1	1:A:404:HIS:NE2	2.47	0.40
1:A:1605:ILE:H	1:A:1605:ILE:HD12	1.86	0.40
1:A:1262:MET:O	1:A:1266:VAL:HG23	2.22	0.40
1:A:479:GLU:OE2	1:A:479:GLU:N	2.54	0.40
1:A:924:ILE:HD12	1:A:924:ILE:H	1.86	0.40
1:A:1281:VAL:HG11	1:A:1454:LEU:HD12	2.03	0.40
1:A:1940:CYS:HB2	1:A:1945:ARG:HB3	2.02	0.40
1:A:1043:ILE:HD12	1:A:1043:ILE:HA	1.98	0.40
1:A:1337:LEU:HD23	1:A:1337:LEU:HA	1.98	0.40
1:A:1944:LYS:HD3	1:A:1959:ILE:HD12	2.03	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	A	1556/1776 (88%)	1433 (92%)	118 (8%)	5 (0%)	37 71

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1755	ILE
1	A	1045	PRO
1	A	1044	TYR
1	A	1106	LYS
1	A	1853	SER

### 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	1453/1646 (88%)	1396 (96%)	57 (4%)	27 50

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	321	TRP
1	A	324	LYS
1	A	378	ASP
1	A	409	GLN
1	A	414	SER
1	A	415	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	433	LYS
1	A	451	TYR
1	A	470	PHE
1	A	742	SER
1	A	799	GLN
1	A	809	TYR
1	A	875	MET
1	A	906	MET
1	A	911	PHE
1	A	937	ASP
1	A	995	LEU
1	A	996	TYR
1	A	1005	MET
1	A	1037	PHE
1	A	1049	MET
1	A	1054	ASP
1	A	1202	GLU
1	A	1246	MET
1	A	1262	MET
1	A	1314	PHE
1	A	1316	HIS
1	A	1340	LEU
1	A	1348	TYR
1	A	1354	LYS
1	A	1363	PHE
1	A	1415	THR
1	A	1463	SER
1	A	1480	TYR
1	A	1509	MET
1	A	1521	MET
1	A	1545	SER
1	A	1548	GLU
1	A	1564	LEU
1	A	1566	CYS
1	A	1620	TYR
1	A	1648	THR
1	A	1661	LEU
1	A	1704	PHE
1	A	1844	LEU
1	A	1898	LYS
1	A	1917	CYS
1	A	1979	TYR

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Mol	Chain	Res	Type
1	A	2008	MET
1	A	2026	PHE
1	A	2037	LYS
1	A	2042	MET
1	A	2047	ASN
1	A	2056	PHE
1	A	2061	PHE
1	A	2067	PHE
1	A	2071	ARG

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

Mol	Chain	Res	Type
1	A	495	ASN
1	A	1124	ASN

### 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](#)

There are no ligands in this entry.

### 5.7 Other polymers [i](#)

There are no such residues in this entry.



## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

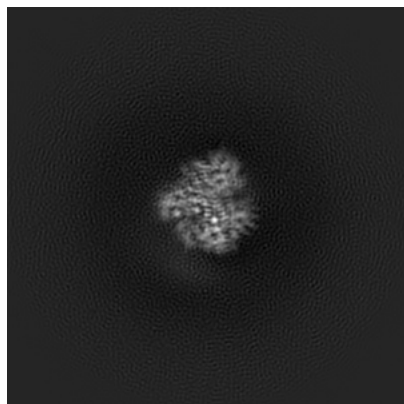
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37256. These allow visual inspection of the internal detail of the map and identification of artifacts.

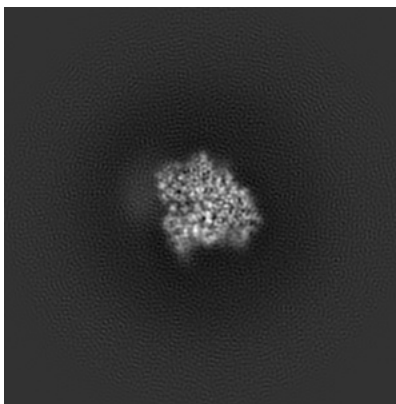
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

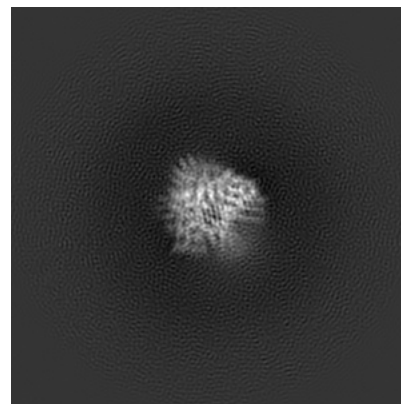
#### 6.1.1 Primary map



X

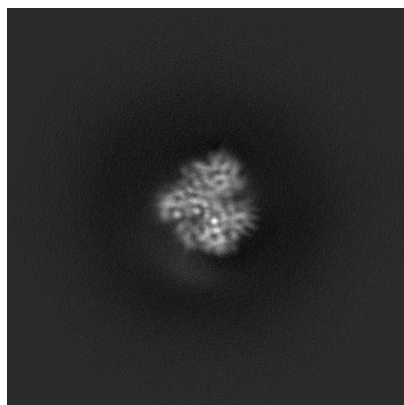


Y

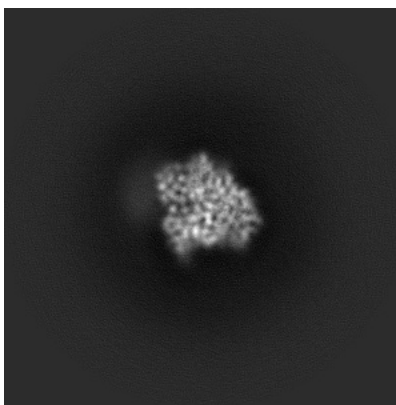


Z

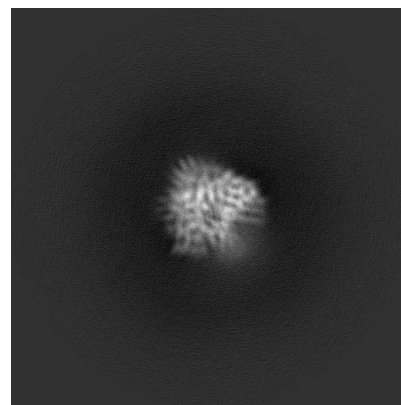
#### 6.1.2 Raw map



X



Y



Z

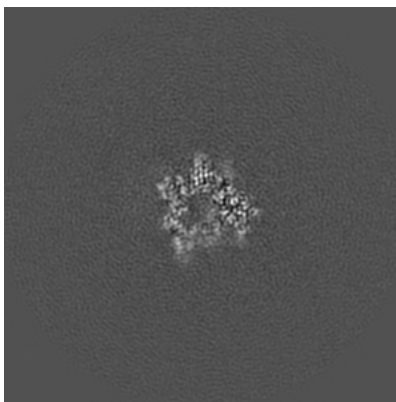
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

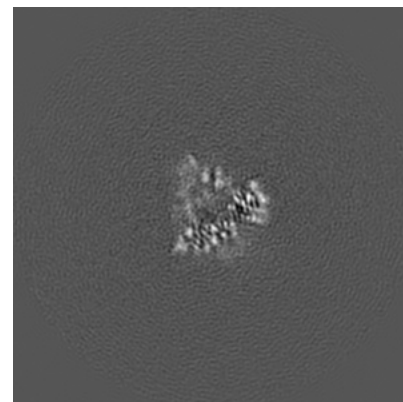
### 6.2.1 Primary map



X Index: 180



Y Index: 180

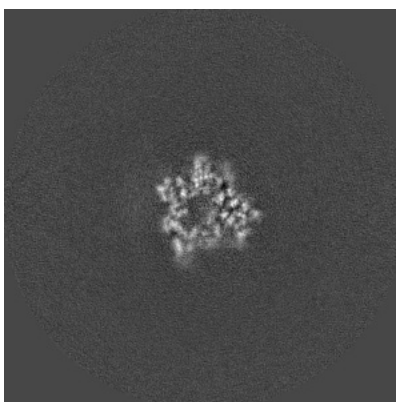


Z Index: 180

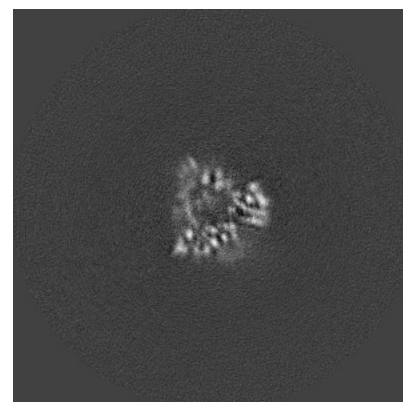
### 6.2.2 Raw map



X Index: 180



Y Index: 180

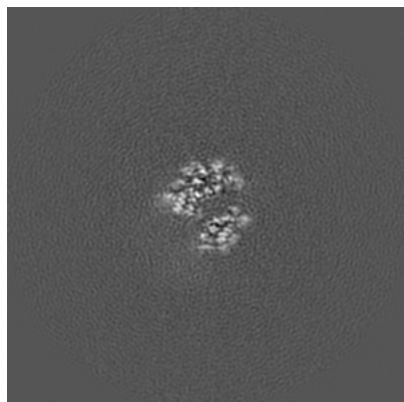


Z Index: 180

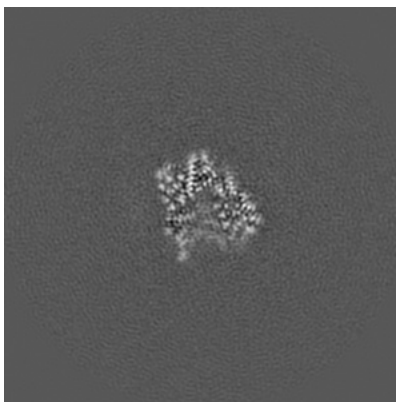
The images above show central slices of the map in three orthogonal directions.

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

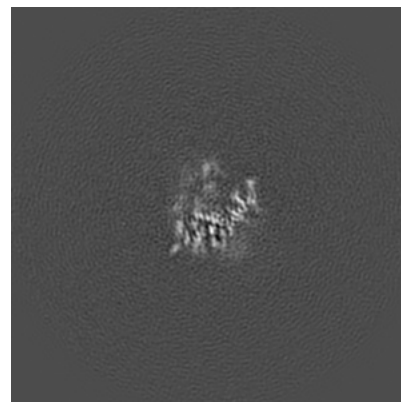
### 6.3.1 Primary map



X Index: 190

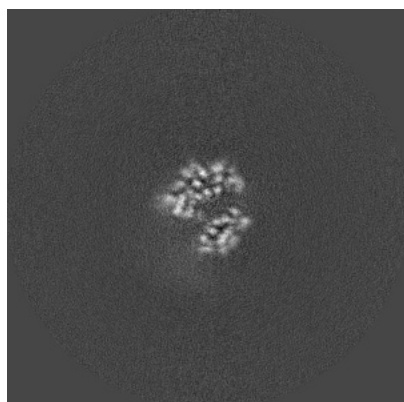


Y Index: 187

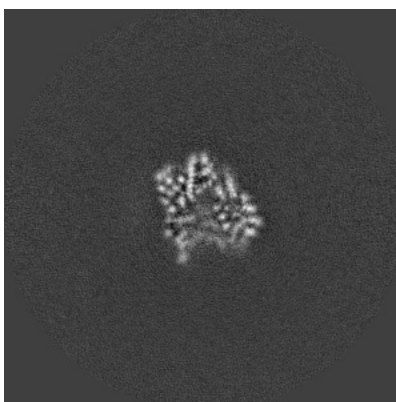


Z Index: 185

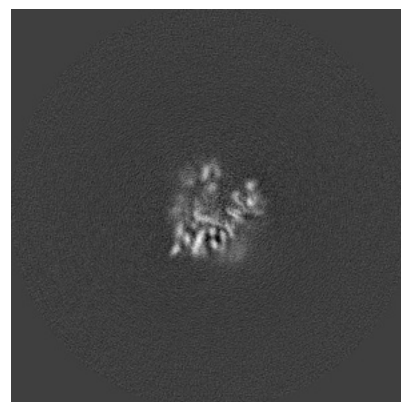
### 6.3.2 Raw map



X Index: 190



Y Index: 187

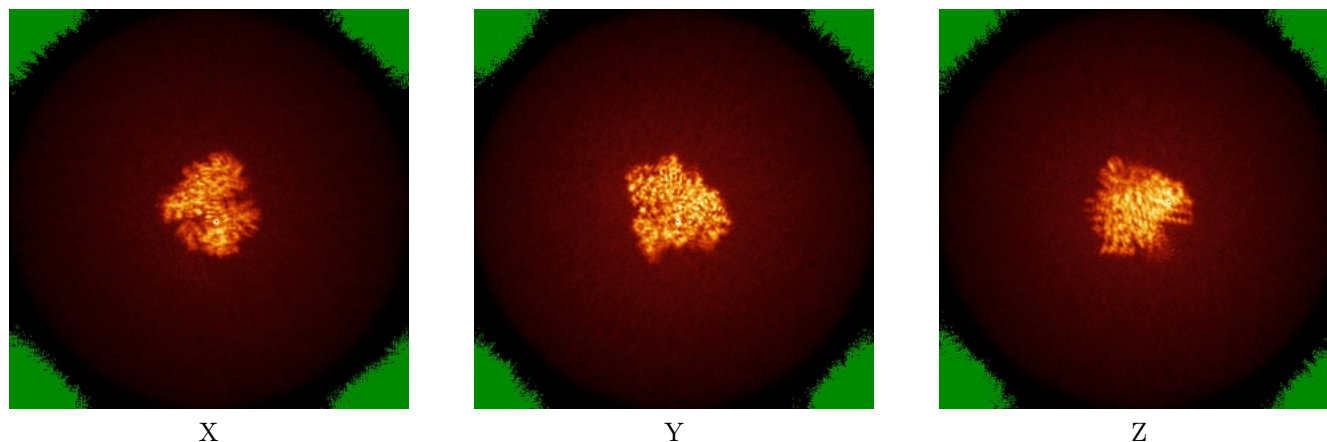


Z Index: 184

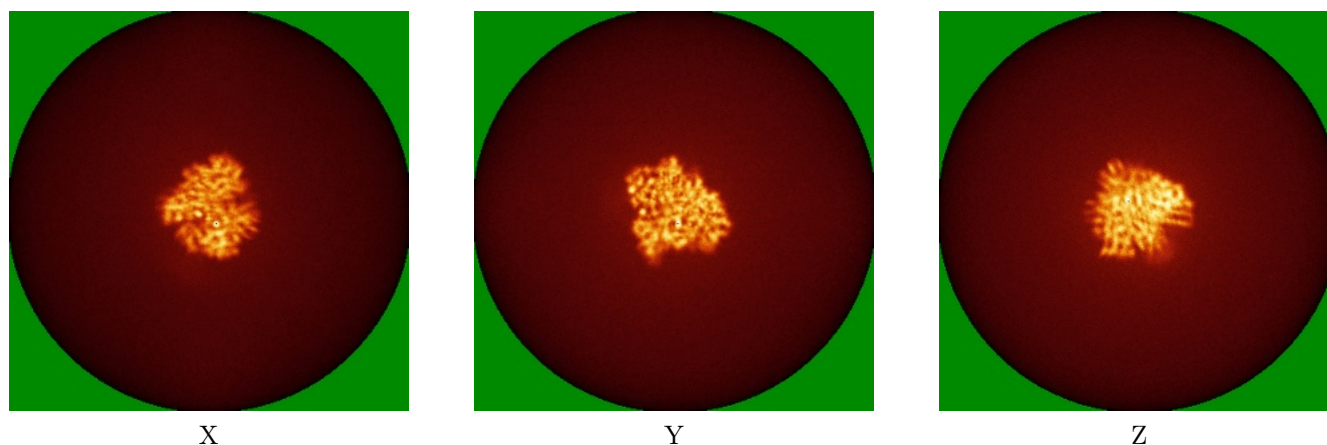
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



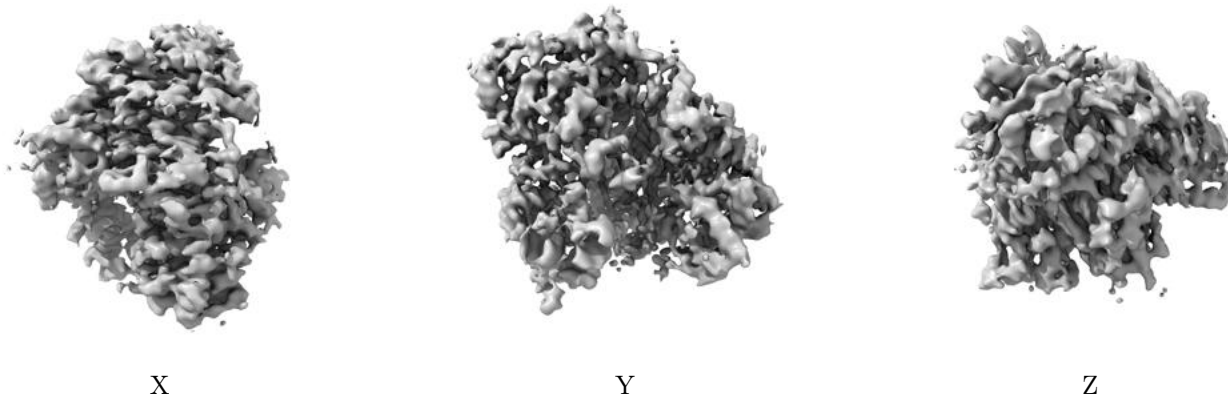
### 6.4.2 Raw map



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

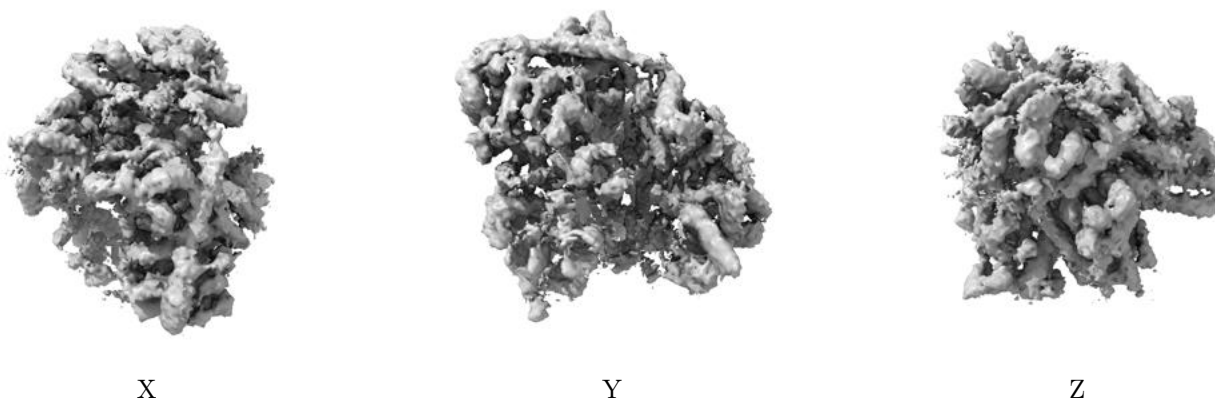
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.016. 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.

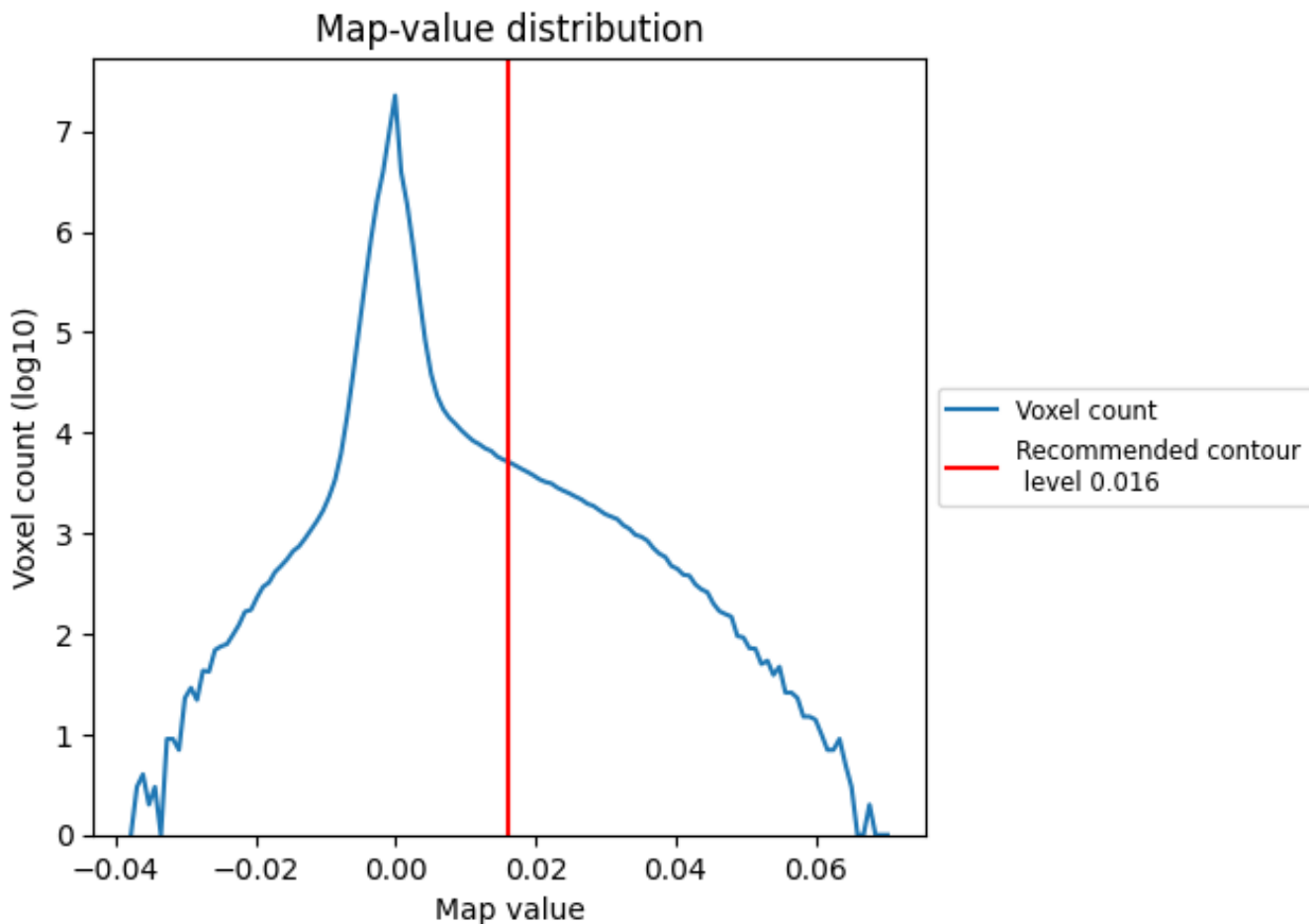
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

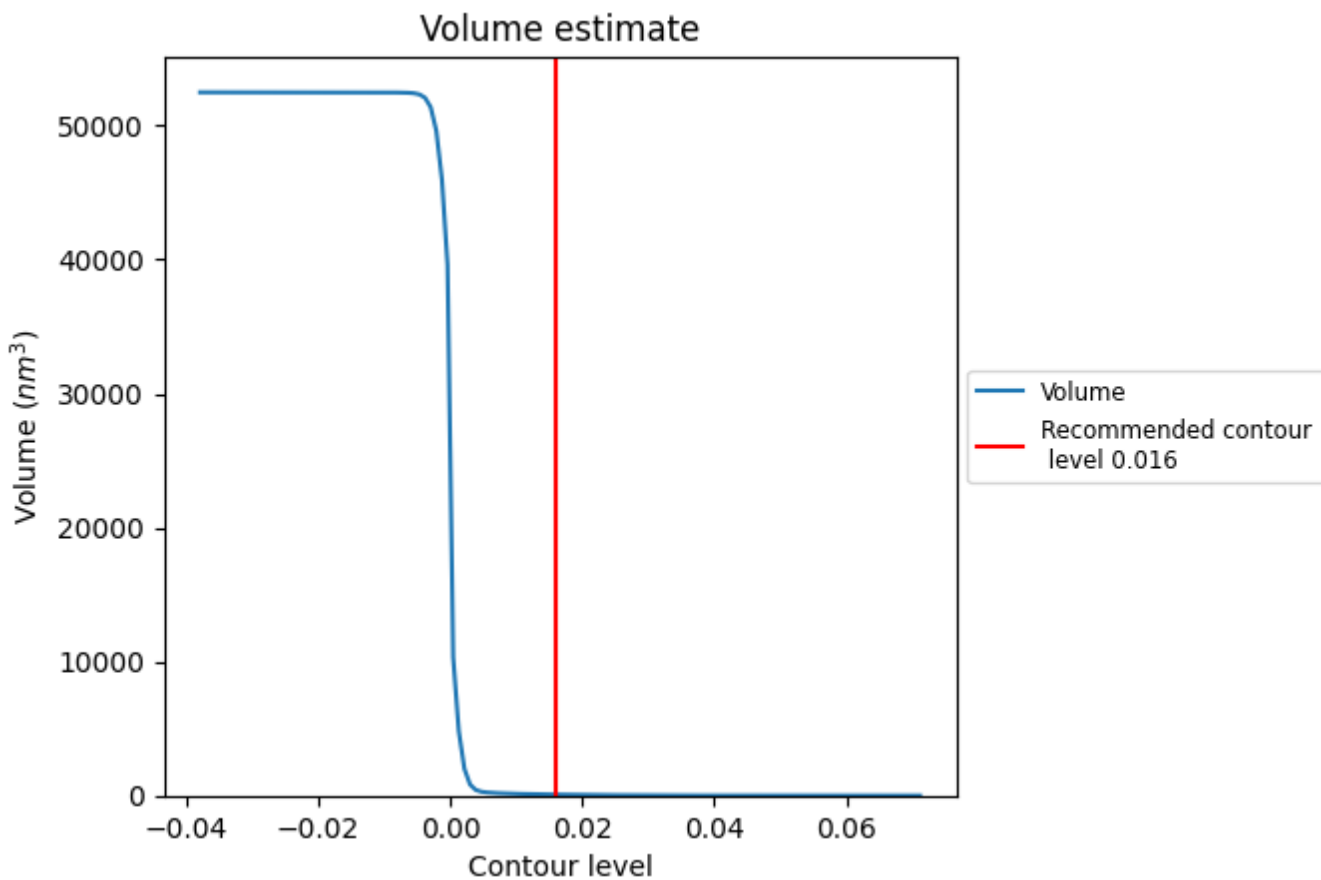
This section contains the results of statistical analysis of the map.

### 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](#)

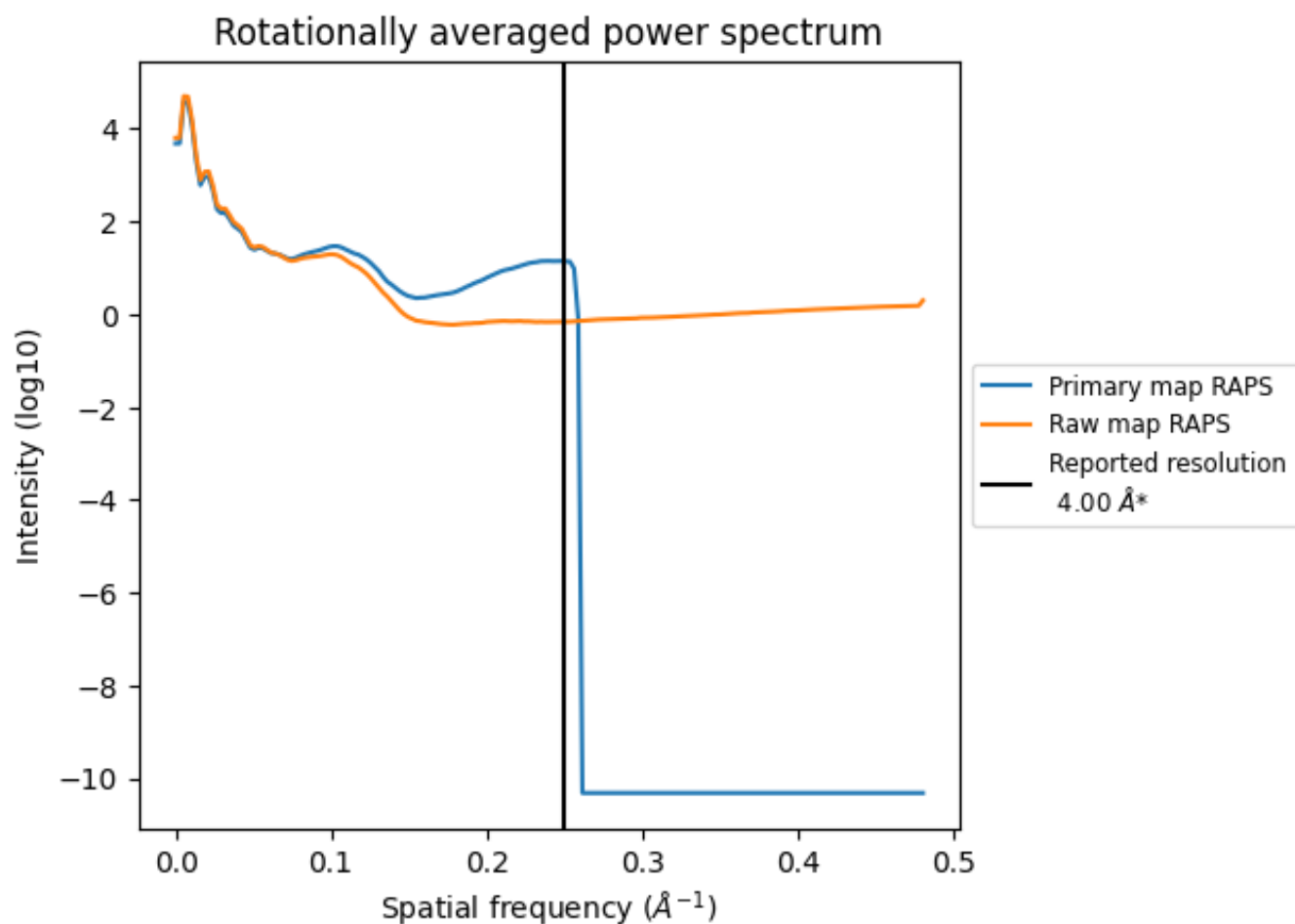


The volume at the recommended contour level is 75 nm<sup>3</sup>; this corresponds to an approximate mass of 68 kDa.

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 [\(i\)](#)

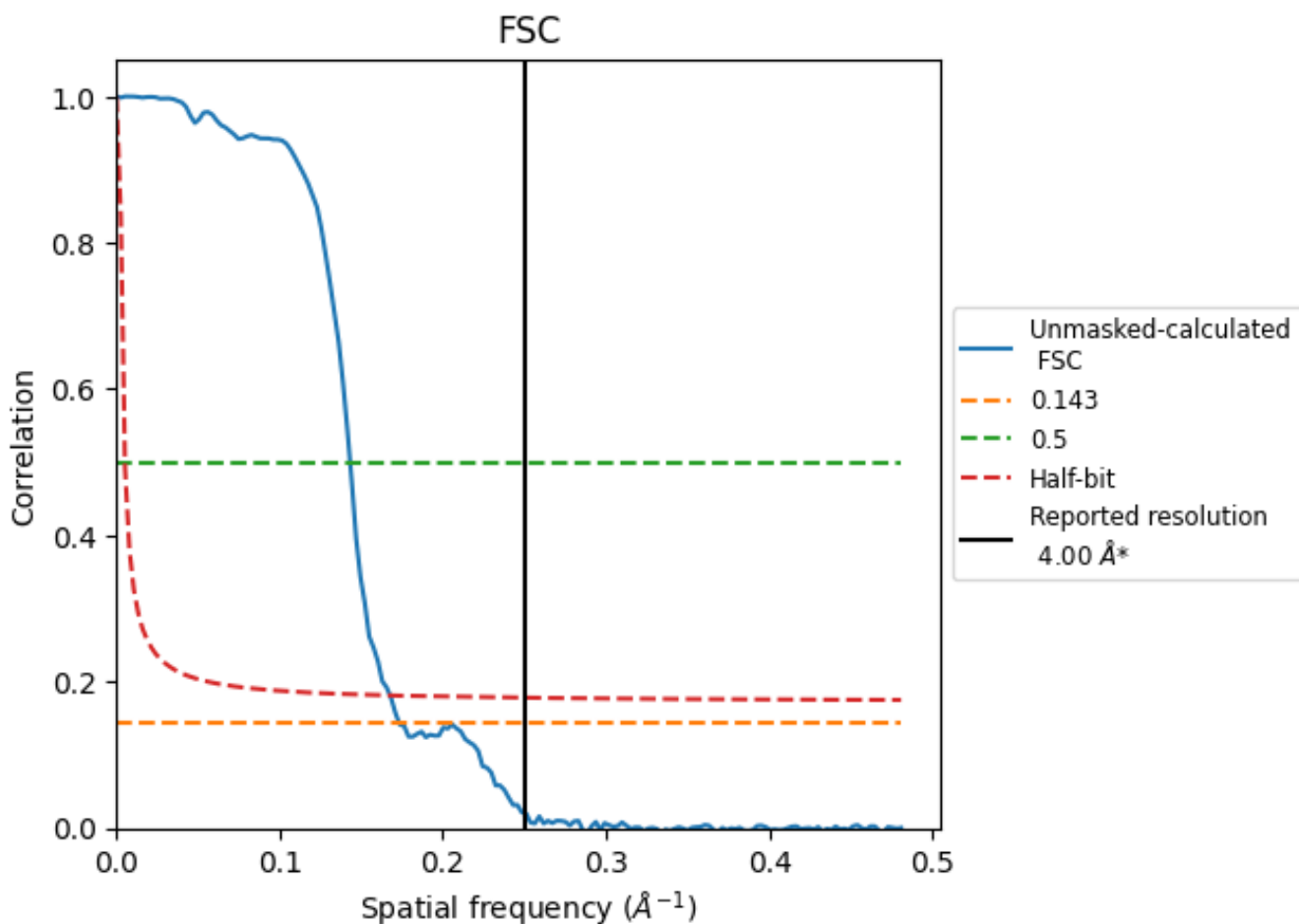


\*Reported resolution corresponds to spatial frequency of 0.250 Å<sup>-1</sup>

## 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 0.250 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

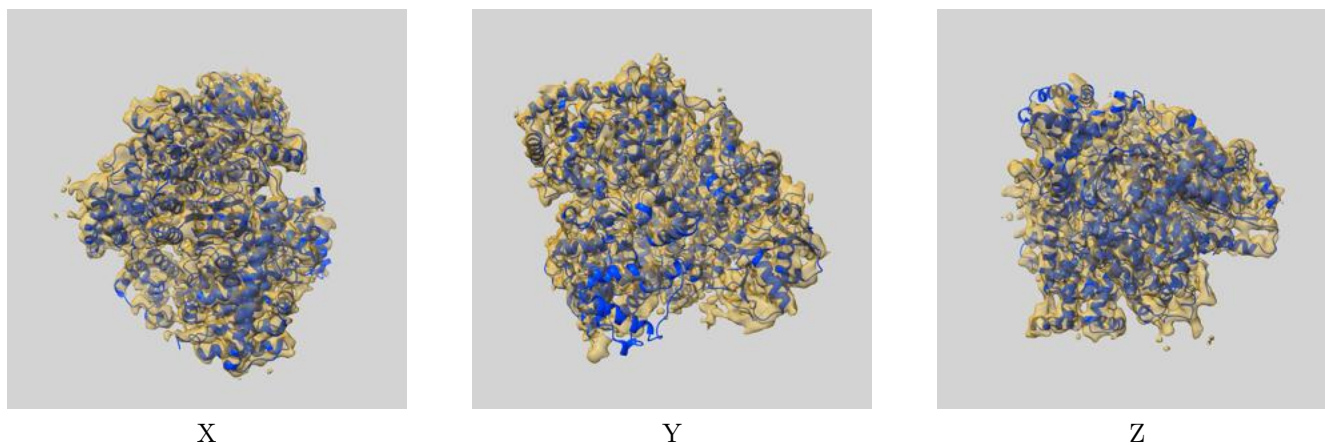
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.00	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	5.77	6.98	5.97

\*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 5.77 differs from the reported value 4.0 by more than 10 %

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

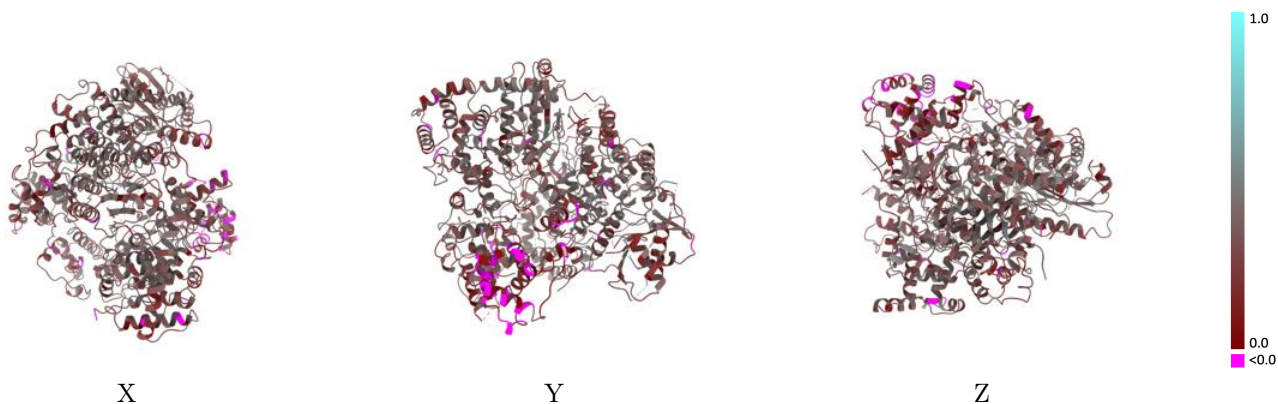
This section contains information regarding the fit between EMDB map EMD-37256 and PDB model 8KIA. Per-residue inclusion information can be found in section 3 on page 4.

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



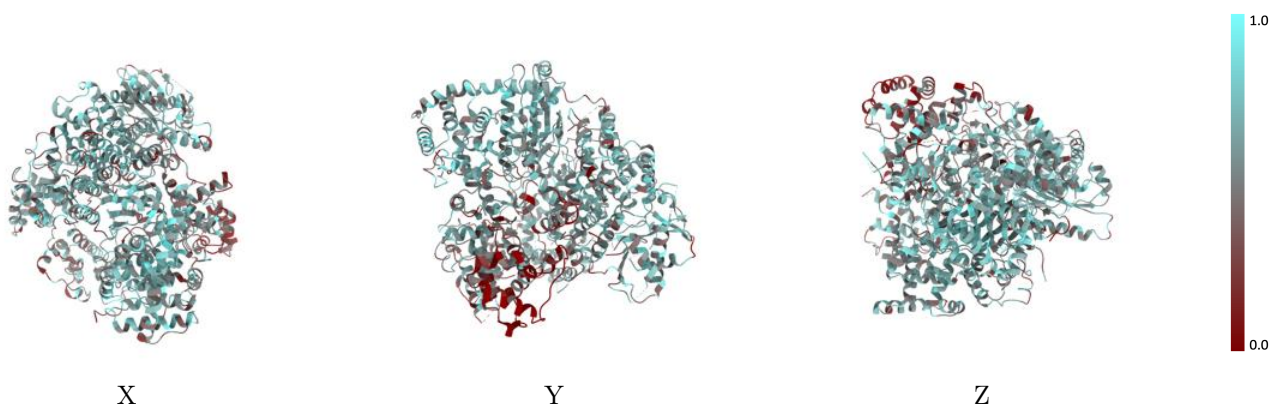
The images above show the 3D surface view of the map at the recommended contour level 0.016 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



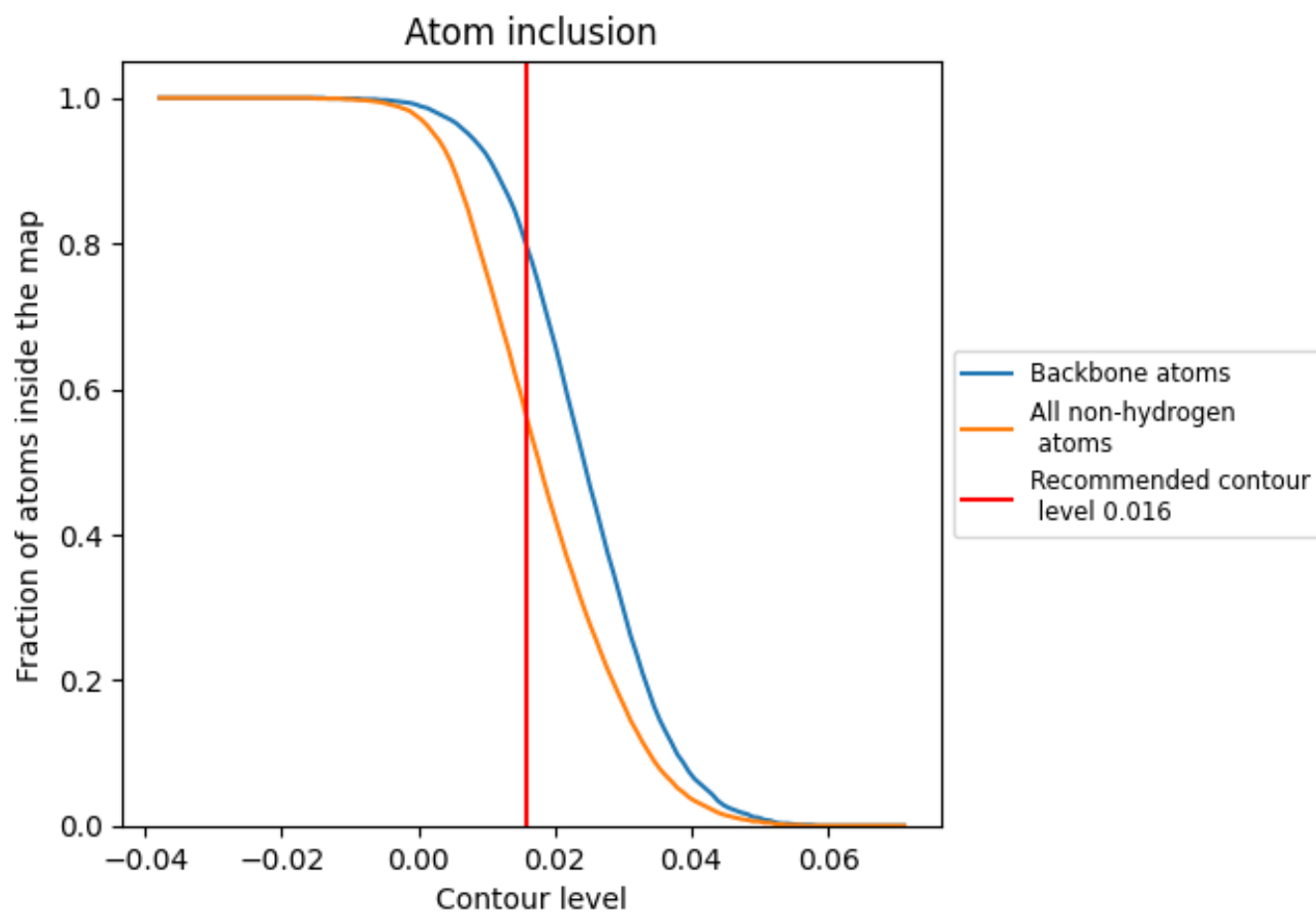
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.016).





## 9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 56% 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 (0.016) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5570	 0.3030
A	 0.5570	 0.3030

