



Full wwPDB EM Validation Report ⓘ

Oct 21, 2024 – 11:52 AM JST

PDB ID : 6KLE
EMDB ID : EMD-0709
Title : Monomeric structure of Machupo virus polymerase bound to vRNA promoter
Authors : Peng, R.; Xu, X.; Jing, J.; Peng, Q.; Gao, G.F.; Shi, Y.
Deposited on : 2019-07-30
Resolution : 4.50 Å (reported)
Based on initial model : 6KLD

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at 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>.

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

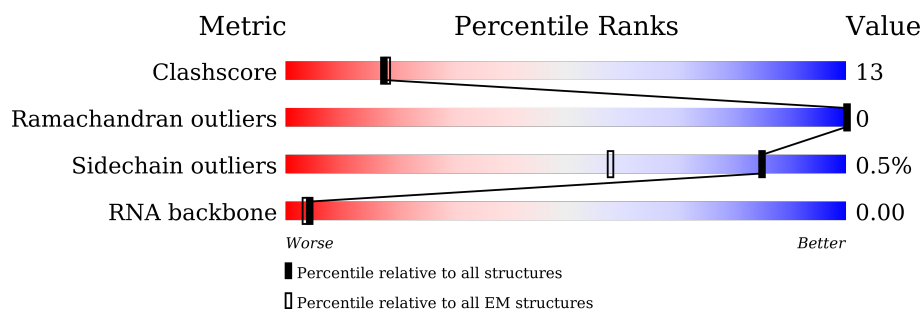
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.50 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
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 $\leq 5\%$. 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	2209	<div> <div>9%</div> <div>50%</div> <div>22%</div> <div>28%</div> </div>
2	B	19	<div> <div>16%</div> <div>21%</div> <div>63%</div> </div>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 12769 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
1	A	1592	Total	C	N	O	S	0	0
			12618	8048	2123	2363	84		

- Molecule 2 is a RNA chain called RNA (5'-R(*GP*CP*CP*UP*AP*GP*GP*AP*UP*CP*CP*AP*CP*UP*GP*UP*GP*CP*G)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	7	Total	C	N	O	P	0	0
			149	66	25	51	7		

- Molecule 3 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total	Mn	0
			1	1	

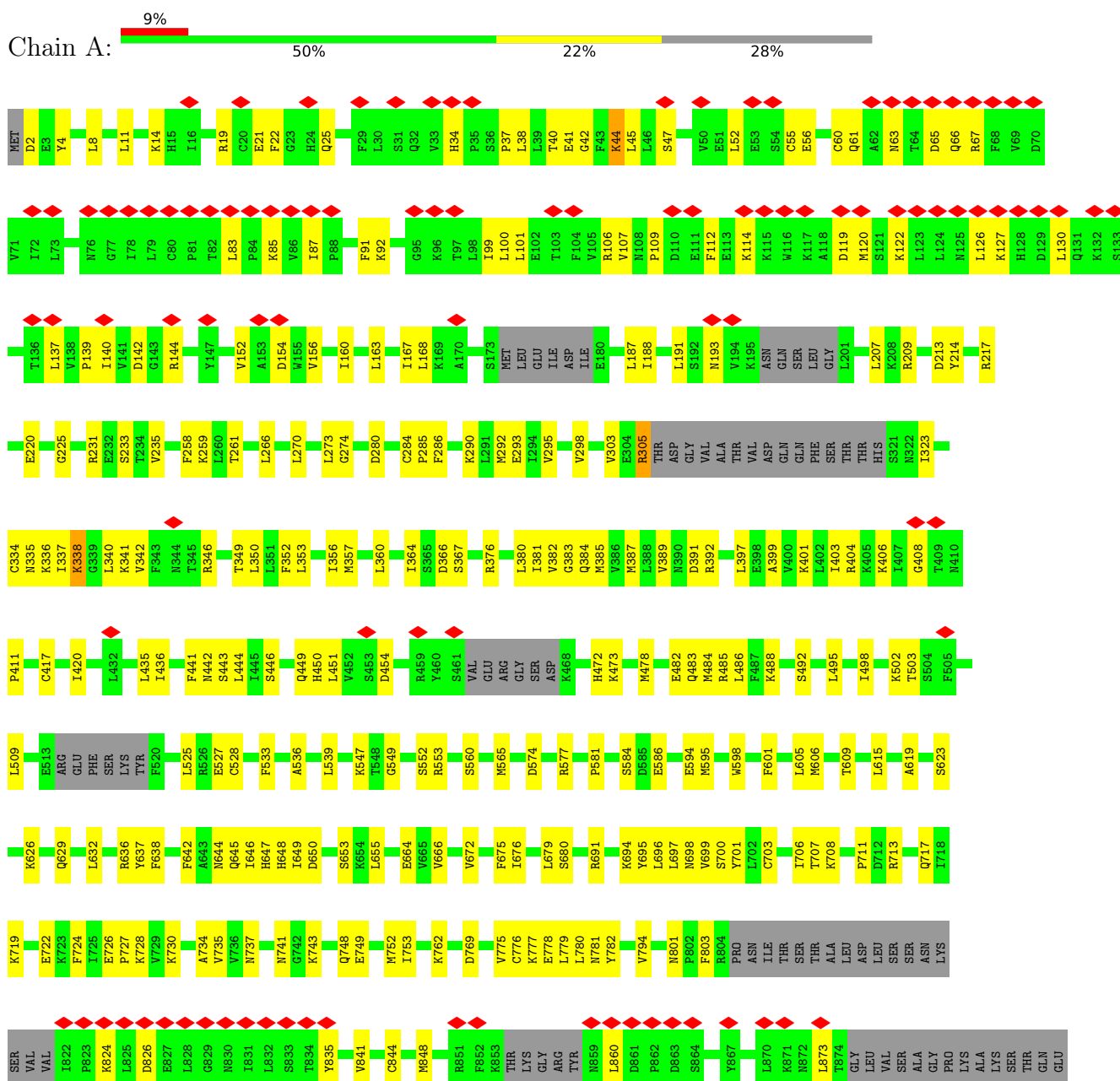
- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

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: RNA-directed RNA polymerase L





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

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

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

● Molecule 2: RNA (5'-R(*GP*CP*CP*UP*AP*GP*GP*AP*UP*CP*CP*AP*CP*UP*GP*UP*GP*CP*G)-3')



G
C
U
U
A
G
G
A
U
C
C
A
C13
U14
G15
U16
G17
C18
G19

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	66000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.164	Depositor
Minimum map value	-0.064	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	272.0, 272.0, 272.0	wwPDB
Map dimensions	200, 200, 200	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.36, 1.36, 1.36	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.26	0/12838	0.51	0/17317
2	B	0.22	0/165	0.83	0/255
All	All	0.26	0/13003	0.51	0/17572

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

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	12618	0	12643	337	0
2	B	149	0	76	8	0
3	A	1	0	0	0	0
4	A	1	0	0	0	0
All	All	12769	0	12719	338	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 13.

All (338) 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:1711:ASN:N	1:A:1806:SER:HG	1.63	0.94
1:A:734:ALA:HB1	1:A:1284:ILE:HD11	1.63	0.80
1:A:1527:LEU:HD13	1:A:1545:LEU:CD2	2.14	0.78
1:A:1150:GLU:OE1	1:A:1297:ASN:ND2	2.20	0.75
1:A:485:ARG:HA	1:A:488:LYS:HE2	1.70	0.73
1:A:19:ARG:HG2	1:A:22:PHE:CD2	2.24	0.72
1:A:83:LEU:HD21	1:A:126:LEU:HD21	1.72	0.71
1:A:1527:LEU:HD13	1:A:1545:LEU:HD21	1.71	0.71
1:A:1132:TYR:HB2	1:A:1294:ILE:HD11	1.71	0.71
1:A:25:GLN:HE22	1:A:41:GLU:HB2	1.56	0.70
1:A:1494:ILE:HD13	1:A:1679:LEU:HD12	1.72	0.70
1:A:285:PRO:HG2	1:A:615:LEU:HD21	1.74	0.69
1:A:408:GLY:H	1:A:411:PRO:HG3	1.57	0.69
1:A:19:ARG:HE	1:A:21:GLU:HG2	1.58	0.68
1:A:1185:CYS:HB2	1:A:1333:THR:HB	1.75	0.68
1:A:1183:LEU:HD13	1:A:1377:THR:HB	1.75	0.68
1:A:1661:ILE:HG22	1:A:1662:ILE:HG23	1.76	0.68
1:A:19:ARG:H	1:A:22:PHE:HD2	1.43	0.67
1:A:1212:THR:OG1	1:A:1216:ARG:N	2.28	0.67
1:A:1586:GLN:NE2	1:A:1751:HIS:O	2.28	0.67
1:A:1089:ALA:O	1:A:1093:ASN:ND2	2.25	0.67
1:A:1107:SER:OG	1:A:1229:LYS:NZ	2.27	0.66
1:A:525:LEU:HD12	1:A:528:CYS:HB3	1.77	0.66
1:A:498:ILE:HG13	1:A:1619:ILE:HD11	1.78	0.66
1:A:19:ARG:NH1	1:A:52:LEU:HD13	2.10	0.65
1:A:303:VAL:O	1:A:305:ARG:NH1	2.29	0.64
1:A:336:LYS:HE3	1:A:336:LYS:HA	1.80	0.64
1:A:549:GLY:O	1:A:553:ARG:NH2	2.28	0.64
1:A:1466:LYS:HD3	1:A:1811:ALA:HB2	1.78	0.64
1:A:1738:GLN:HG3	1:A:1741:ARG:HH21	1.63	0.63
1:A:737:ASN:ND2	1:A:1282:SER:OG	2.31	0.63
1:A:1786:LEU:HB3	1:A:1788:ILE:HG12	1.80	0.63
1:A:63:ASN:OD1	1:A:67:ARG:NH1	2.32	0.63
1:A:1141:MET:HB3	1:A:1227:ILE:HD11	1.81	0.62
1:A:25:GLN:HE21	1:A:45:LEU:HB3	1.63	0.62
1:A:274:GLY:HA3	1:A:672:VAL:HG11	1.81	0.62
1:A:266:LEU:HD23	1:A:642:PHE:HD1	1.65	0.62
1:A:231:ARG:HH12	1:A:233:SER:HB2	1.65	0.61
1:A:127:LYS:NZ	1:A:137:LEU:O	2.33	0.61
1:A:152:VAL:HG13	1:A:154:ASP:H	1.65	0.61
1:A:1711:ASN:N	1:A:1806:SER:OG	2.32	0.61
1:A:502:LYS:HB2	1:A:1619:ILE:HD12	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:509:LEU:HD11	1:A:527:GLU:HB3	1.82	0.61
1:A:225:GLY:O	1:A:781:ASN:ND2	2.27	0.61
1:A:775:VAL:HG23	1:A:1365:LEU:HA	1.84	0.60
1:A:638:PHE:HB2	1:A:655:LEU:HD21	1.82	0.60
1:A:726:GLU:HG3	1:A:727:PRO:HD3	1.82	0.60
1:A:1396:LEU:HG	1:A:1431:VAL:HG13	1.84	0.59
1:A:909:LYS:NZ	1:A:913:GLN:HG3	2.17	0.59
1:A:1585:LEU:HD13	1:A:1588:LYS:HD3	1.84	0.59
1:A:637:TYR:CZ	1:A:1372:LYS:HD2	2.38	0.59
1:A:1465:VAL:HG13	1:A:1467:ASP:H	1.67	0.59
1:A:399:ALA:O	1:A:403:ILE:HG12	2.03	0.58
1:A:636:ARG:HD3	1:A:701:TYR:HE1	1.68	0.58
1:A:1465:VAL:HG11	1:A:1812:HIS:HD2	1.68	0.58
1:A:1788:ILE:O	1:A:1792:LEU:N	2.35	0.58
1:A:142:ASP:OD1	1:A:144:ARG:NH1	2.36	0.58
1:A:366:ASP:OD1	1:A:367:SER:N	2.36	0.58
1:A:914:VAL:O	1:A:918:LYS:HG2	2.03	0.58
1:A:998:LEU:HD22	1:A:1012:LYS:HB3	1.86	0.58
1:A:484:MET:O	1:A:488:LYS:HG3	2.04	0.58
1:A:737:ASN:HD21	1:A:1282:SER:H	1.51	0.58
1:A:595:MET:HE3	1:A:695:TYR:CD1	2.39	0.58
1:A:52:LEU:HG	1:A:56:GLU:OE1	2.03	0.57
1:A:1241:ASN:OD1	1:A:1242:VAL:N	2.37	0.57
1:A:1699:SER:OG	1:A:1700:THR:N	2.37	0.57
1:A:446:SER:O	1:A:450:HIS:ND1	2.38	0.57
1:A:1402:ALA:O	1:A:1406:ASN:ND2	2.37	0.57
1:A:114:LYS:NZ	1:A:1135:ASP:OD2	2.37	0.57
1:A:539:LEU:HA	1:A:560:SER:O	2.05	0.57
1:A:387:MET:SD	1:A:387:MET:N	2.76	0.57
1:A:119:ASP:OD1	1:A:120:MET:N	2.38	0.56
1:A:626:LYS:HD3	1:A:629:GLN:HE21	1.71	0.56
1:A:1697:VAL:O	1:A:1814:ARG:NH1	2.38	0.56
1:A:694:LYS:O	1:A:698:ASN:ND2	2.38	0.56
1:A:37:PRO:O	1:A:40:THR:N	2.39	0.56
1:A:213:ASP:O	1:A:217:ARG:NH2	2.39	0.55
1:A:168:LEU:HD11	1:A:188:ILE:HD13	1.88	0.55
1:A:676:ILE:O	1:A:680:SER:N	2.40	0.55
1:A:1140:LEU:HA	1:A:1143:ARG:HG2	1.88	0.55
1:A:1166:GLU:OE2	1:A:1169:ARG:NH1	2.40	0.55
1:A:4:TYR:HB2	1:A:167:ILE:HD11	1.88	0.55
1:A:577:ARG:NH2	1:A:707:THR:O	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1465:VAL:HG22	1:A:1466:LYS:H	1.71	0.55
1:A:1525:GLU:O	1:A:1528:THR:OG1	2.21	0.55
1:A:382:VAL:HG22	1:A:383:GLY:H	1.72	0.54
1:A:629:GLN:HA	1:A:703:CYS:HB2	1.89	0.54
1:A:391:ASP:OD2	2:B:15:G:N1	2.38	0.54
1:A:1004:VAL:HG23	1:A:1006:PRO:HD3	1.89	0.54
1:A:536:ALA:HB3	1:A:539:LEU:HG	1.89	0.54
1:A:601:PHE:HB3	1:A:691:ARG:NH1	2.22	0.54
1:A:1684:SER:HA	1:A:1779:LEU:HD23	1.90	0.54
1:A:1736:VAL:HG12	1:A:1773:LEU:HD11	1.89	0.54
1:A:19:ARG:HH11	1:A:52:LEU:HD13	1.73	0.53
1:A:713:ARG:HG2	1:A:717:GLN:HE22	1.73	0.53
1:A:1465:VAL:HG11	1:A:1812:HIS:CD2	2.44	0.53
1:A:844:CYS:O	1:A:848:MET:HG2	2.09	0.53
1:A:1615:ALA:O	1:A:1619:ILE:HG12	2.08	0.53
1:A:1293:GLY:HA2	1:A:1296:HIS:NE2	2.23	0.53
1:A:1397:THR:HA	1:A:1400:VAL:HG12	1.90	0.53
1:A:376:ARG:NH1	1:A:381:ILE:HB	2.24	0.53
1:A:383:GLY:HA2	1:A:451:LEU:HD21	1.89	0.53
1:A:55:CYS:C	1:A:60:CYS:HB2	2.29	0.53
1:A:107:VAL:HG11	1:A:193:ASN:HA	1.90	0.53
1:A:1503:ASN:HA	1:A:1506:LYS:HZ2	1.74	0.53
1:A:664:GLU:N	1:A:664:GLU:OE1	2.42	0.53
1:A:909:LYS:HZ1	1:A:913:GLN:HG3	1.74	0.53
1:A:1447:ILE:O	1:A:1450:SER:OG	2.22	0.52
1:A:724:PHE:HE1	1:A:1132:TYR:HH	1.56	0.52
1:A:1177:ALA:HB1	1:A:1182:ASP:HB2	1.90	0.52
1:A:1187:TYR:HB2	1:A:1331:GLN:HG2	1.89	0.52
1:A:1332:ILE:HD11	1:A:1381:GLU:O	2.10	0.52
1:A:1762:SER:HA	1:A:1766:ASP:HB2	1.92	0.52
1:A:917:ALA:HB2	1:A:1010:LEU:HD22	1.90	0.52
1:A:601:PHE:HB3	1:A:691:ARG:HH12	1.75	0.52
1:A:647:HIS:ND1	1:A:648:HIS:O	2.43	0.52
1:A:594:GLU:OE2	1:A:598:TRP:NE1	2.42	0.52
1:A:1211:ARG:HD3	1:A:1216:ARG:HD2	1.91	0.51
1:A:1748:PHE:HA	1:A:1752:LEU:HD23	1.92	0.51
1:A:100:LEU:HD21	1:A:137:LEU:HD13	1.93	0.51
1:A:860:LEU:HA	1:A:1006:PRO:HA	1.91	0.51
1:A:336:LYS:NZ	2:B:16:U:OP2	2.44	0.51
1:A:8:LEU:HD21	1:A:163:LEU:HB3	1.91	0.51
1:A:645:GLN:HB2	1:A:646:ILE:HD12	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1143:ARG:NH2	1:A:1147:ASP:OD2	2.43	0.50
1:A:778:GLU:O	1:A:782:TYR:HD1	1.94	0.50
1:A:1435:ILE:O	1:A:1439:ILE:HG13	2.11	0.50
1:A:1716:PHE:HE1	1:A:1804:LYS:HE2	1.76	0.50
1:A:1498:ALA:HA	1:A:1501:VAL:HG22	1.94	0.50
1:A:727:PRO:HA	1:A:730:LYS:HG2	1.94	0.50
1:A:1294:ILE:HG22	1:A:1295:LEU:HD22	1.92	0.50
1:A:483:GLN:HA	1:A:486:LEU:HD12	1.94	0.49
1:A:629:GLN:HB3	1:A:706:ILE:HD12	1.94	0.49
1:A:1804:LYS:HG3	1:A:1807:ASP:H	1.75	0.49
1:A:577:ARG:CZ	1:A:711:PRO:HG3	2.42	0.49
1:A:1531:LEU:O	1:A:1535:GLY:N	2.44	0.49
1:A:290:LYS:HA	1:A:293:GLU:OE2	2.11	0.49
1:A:1791:HIS:HA	1:A:1794:LYS:NZ	2.28	0.49
1:A:713:ARG:HH22	1:A:1241:ASN:HD22	1.60	0.49
1:A:259:LYS:HG2	1:A:649:ILE:HG22	1.95	0.49
1:A:209:ARG:HD2	1:A:1105:PHE:CZ	2.48	0.49
1:A:1212:THR:HG1	1:A:1216:ARG:H	1.59	0.48
1:A:1691:CYS:HB3	1:A:1727:ILE:HD12	1.95	0.48
1:A:19:ARG:HE	1:A:21:GLU:CG	2.25	0.48
1:A:295:VAL:HA	1:A:298:VAL:HG22	1.95	0.48
1:A:675:PHE:O	1:A:679:LEU:HB2	2.13	0.48
1:A:286:PHE:HB2	1:A:472:HIS:CD2	2.48	0.48
1:A:533:PHE:HB2	2:B:18:C:H41	1.79	0.48
1:A:156:VAL:HG12	1:A:160:ILE:HG13	1.95	0.48
1:A:376:ARG:HH12	1:A:380:LEU:C	2.13	0.48
1:A:19:ARG:NE	1:A:21:GLU:HG2	2.27	0.48
1:A:1221:LEU:HB3	1:A:1224:VAL:HB	1.96	0.48
1:A:1184:SER:OG	1:A:1376:GLY:O	2.24	0.48
1:A:41:GLU:HA	1:A:44:LYS:HG3	1.96	0.48
1:A:495:LEU:HD21	2:B:18:C:N3	2.28	0.48
1:A:1405:HIS:CG	1:A:1406:ASN:H	2.32	0.48
1:A:728:LYS:HG3	1:A:734:ALA:HB2	1.96	0.47
1:A:338:LYS:HG2	1:A:389:VAL:HG21	1.94	0.47
1:A:1548:ARG:HH21	1:A:1676:LYS:HA	1.79	0.47
1:A:350:LEU:HD12	1:A:392:ARG:HH22	1.80	0.47
1:A:916:LEU:HA	1:A:919:MET:HG3	1.97	0.47
1:A:214:TYR:CE1	1:A:749:GLU:HB2	2.49	0.47
1:A:503:THR:HA	2:B:15:G:C6	2.49	0.47
1:A:719:LYS:HA	1:A:722:GLU:OE2	2.15	0.47
1:A:1210:LEU:HG	1:A:1221:LEU:HD11	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1491:THR:HA	1:A:1494:ILE:HG22	1.96	0.47
1:A:1496:ASN:O	1:A:1500:LYS:NZ	2.43	0.47
1:A:42:GLY:O	1:A:45:LEU:HG	2.15	0.47
1:A:382:VAL:HG13	1:A:385:MET:HB2	1.97	0.47
1:A:406:LYS:HE2	1:A:406:LYS:HB2	1.79	0.47
1:A:1699:SER:HB2	1:A:1816:SER:HA	1.97	0.47
1:A:270:LEU:HD12	1:A:273:LEU:HD11	1.97	0.46
1:A:502:LYS:NZ	2:B:17:G:O6	2.38	0.46
1:A:285:PRO:HB3	1:A:666:VAL:HG21	1.96	0.46
1:A:1105:PHE:HB2	1:A:1110:SER:HA	1.97	0.46
1:A:1502:PHE:HA	1:A:1505:ILE:HG22	1.96	0.46
1:A:619:ALA:O	1:A:623:SER:OG	2.23	0.46
1:A:92:LYS:HD2	1:A:99:ILE:HD12	1.96	0.46
1:A:349:THR:O	1:A:353:LEU:HD23	2.16	0.46
1:A:384:GLN:H	1:A:451:LEU:HD23	1.81	0.46
1:A:552:SER:HB2	1:A:574:ASP:HB2	1.98	0.46
1:A:1555:PHE:HD2	1:A:1632:ASP:HA	1.80	0.46
1:A:1141:MET:O	1:A:1144:LEU:HG	2.16	0.46
1:A:1314:LEU:HD11	1:A:1322:PRO:HB3	1.97	0.46
1:A:323:ILE:HD11	1:A:364:ILE:HG23	1.98	0.46
1:A:34:HIS:H	1:A:38:LEU:HD23	1.81	0.45
1:A:824:LYS:HE2	1:A:835:TYR:CZ	2.52	0.45
1:A:1135:ASP:N	1:A:1138:THR:OG1	2.49	0.45
1:A:1428:ALA:HA	1:A:1801:TYR:CD2	2.51	0.45
1:A:1488:ASP:HB3	1:A:1491:THR:OG1	2.16	0.45
1:A:25:GLN:HE21	1:A:45:LEU:HD23	1.81	0.45
1:A:231:ARG:HH22	1:A:233:SER:HB2	1.80	0.45
1:A:737:ASN:ND2	1:A:1282:SER:HG	2.14	0.45
1:A:969:ASP:N	1:A:969:ASP:OD1	2.49	0.45
1:A:25:GLN:NE2	1:A:44:LYS:HE3	2.31	0.45
1:A:695:TYR:O	1:A:699:VAL:HG23	2.17	0.45
1:A:1500:LYS:HA	1:A:1500:LYS:HD3	1.84	0.45
1:A:1579:PRO:HG2	1:A:1582:ILE:HG12	1.98	0.45
1:A:235:VAL:HG13	1:A:782:TYR:HD2	1.80	0.45
1:A:1313:ALA:O	1:A:1317:LEU:HD23	2.17	0.45
1:A:1474:GLY:HA2	1:A:1685:LEU:HD22	1.98	0.45
1:A:1627:SER:OG	1:A:1628:LYS:N	2.49	0.45
1:A:2:ASP:OD1	1:A:2:ASP:N	2.49	0.45
1:A:1323:VAL:HG12	1:A:1334:LEU:HB2	1.99	0.45
1:A:454:ASP:OD2	1:A:565:MET:HB3	2.17	0.45
1:A:741:ASN:HB3	1:A:743:LYS:NZ	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1137:ASN:O	1:A:1140:LEU:HG	2.17	0.45
1:A:1810:LEU:HD23	1:A:1810:LEU:H	1.81	0.45
1:A:109:PRO:O	1:A:112:PHE:N	2.50	0.45
1:A:824:LYS:HG2	1:A:826:ASP:H	1.81	0.45
1:A:1554:SER:OG	1:A:1676:LYS:NZ	2.46	0.45
1:A:502:LYS:HG2	1:A:1619:ILE:HG23	1.98	0.44
1:A:626:LYS:HD3	1:A:629:GLN:NE2	2.32	0.44
1:A:650:ASP:OD1	1:A:653:SER:OG	2.24	0.44
1:A:982:GLU:HG2	1:A:983:LEU:HD22	1.99	0.44
1:A:1124:GLN:HB2	1:A:1127:SER:O	2.17	0.44
1:A:1320:VAL:O	1:A:1322:PRO:HD3	2.17	0.44
1:A:695:TYR:HD2	1:A:696:LEU:HD22	1.82	0.44
1:A:1499:ARG:NH2	1:A:1816:SER:HB2	2.33	0.44
1:A:1771:LYS:HG3	1:A:1772:PHE:CD2	2.52	0.44
1:A:101:LEU:HA	1:A:140:ILE:O	2.18	0.44
1:A:352:PHE:O	1:A:356:ILE:HG12	2.17	0.44
1:A:1196:MET:HB2	1:A:1290:MET:HG3	1.99	0.44
1:A:1716:PHE:CE1	1:A:1804:LYS:HB3	2.53	0.44
1:A:207:LEU:HD12	1:A:1105:PHE:HD1	1.83	0.44
1:A:644:ASN:OD1	1:A:645:GLN:N	2.50	0.44
1:A:778:GLU:HG2	1:A:782:TYR:HE1	1.81	0.44
1:A:334:CYS:HA	1:A:337:ILE:HG22	2.00	0.44
1:A:357:MET:O	1:A:360:LEU:HG	2.18	0.44
1:A:1465:VAL:HG22	1:A:1466:LYS:N	2.33	0.44
1:A:478:MET:HB3	1:A:482:GLU:OE2	2.18	0.43
1:A:971:ASP:HB3	1:A:974:VAL:HG12	2.00	0.43
1:A:1678:ILE:HG23	1:A:1679:LEU:HD22	1.99	0.43
1:A:632:LEU:HB2	1:A:703:CYS:HB3	1.99	0.43
1:A:1226:SER:O	1:A:1229:LYS:HG2	2.18	0.43
1:A:1519:ILE:CD1	1:A:1680:TRP:HZ2	2.31	0.43
1:A:335:ASN:O	1:A:338:LYS:HG3	2.18	0.43
1:A:8:LEU:HD13	1:A:11:LEU:HD21	2.00	0.43
1:A:606:MET:SD	1:A:606:MET:N	2.91	0.43
1:A:1506:LYS:HG3	1:A:1507:ARG:H	1.84	0.43
1:A:65:ASP:HB3	1:A:67:ARG:HD3	1.98	0.43
1:A:435:LEU:HG	1:A:436:ILE:HG23	2.01	0.43
1:A:728:LYS:NZ	1:A:1288:LEU:O	2.51	0.43
1:A:1461:GLU:HB3	1:A:1480:LYS:HB2	1.99	0.43
1:A:502:LYS:HZ1	2:B:15:G:H21	1.66	0.43
1:A:1002:LEU:HD21	1:A:1006:PRO:HD2	2.01	0.43
1:A:1375:ILE:HG22	1:A:1375:ILE:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:41:GLU:HA	1:A:44:LYS:CG	2.48	0.43
1:A:284:CYS:HA	1:A:285:PRO:HD3	1.91	0.43
1:A:547:LYS:HB3	1:A:547:LYS:HE3	1.69	0.43
1:A:1246:TYR:HB3	1:A:1270:PHE:CD2	2.54	0.43
1:A:25:GLN:NE2	1:A:45:LEU:HB3	2.31	0.43
1:A:1014:LEU:HD13	1:A:1030:TYR:CZ	2.52	0.43
1:A:1503:ASN:HA	1:A:1506:LYS:NZ	2.33	0.43
1:A:217:ARG:HA	1:A:220:GLU:CD	2.38	0.43
1:A:708:LYS:HD3	1:A:1125:VAL:HG23	2.01	0.43
1:A:873:LEU:HB3	1:A:1566:LEU:HD11	2.00	0.43
1:A:1311:CYS:HA	1:A:1314:LEU:HG	2.01	0.43
1:A:1471:GLY:O	1:A:1476:ARG:NH2	2.52	0.43
1:A:397:LEU:O	1:A:401:LYS:HG2	2.18	0.42
1:A:794:VAL:HG21	1:A:1156:MET:SD	2.59	0.42
1:A:984:CYS:HA	1:A:987:VAL:HG12	2.00	0.42
1:A:1137:ASN:OD1	1:A:1138:THR:N	2.50	0.42
1:A:217:ARG:HD2	1:A:753:ILE:HD11	1.99	0.42
1:A:340:LEU:HB3	1:A:342:VAL:HG13	2.01	0.42
1:A:441:PHE:HD1	1:A:444:LEU:HD12	1.83	0.42
1:A:492:SER:O	1:A:495:LEU:HG	2.19	0.42
1:A:66:GLN:HB3	1:A:87:ILE:HD11	2.00	0.42
1:A:769:ASP:OD1	1:A:769:ASP:N	2.51	0.42
1:A:187:LEU:O	1:A:191:LEU:HD23	2.19	0.42
1:A:261:THR:HA	1:A:647:HIS:CD2	2.54	0.42
1:A:290:LYS:O	1:A:293:GLU:HG2	2.20	0.42
1:A:1030:TYR:HD1	1:A:1033:ILE:HD11	1.85	0.42
1:A:106:ARG:NH2	1:A:1097:TYR:O	2.52	0.42
1:A:644:ASN:OD1	1:A:1376:GLY:HA3	2.20	0.42
1:A:801:ASN:HD21	1:A:803:PHE:HB2	1.84	0.42
1:A:1466:LYS:HE3	1:A:1466:LYS:HB2	1.90	0.42
1:A:1495:ARG:HG3	1:A:1682:TYR:OH	2.19	0.42
1:A:258:PHE:HE1	1:A:1359:GLU:HG3	1.84	0.42
1:A:261:THR:HG23	1:A:645:GLN:O	2.19	0.42
1:A:1499:ARG:HH22	1:A:1816:SER:HB2	1.85	0.42
1:A:1326:THR:HG22	1:A:1328:SER:H	1.84	0.42
1:A:270:LEU:HD22	1:A:638:PHE:CZ	2.54	0.42
1:A:1506:LYS:HG3	1:A:1507:ARG:N	2.34	0.42
1:A:586:GLU:HG3	1:A:1438:ARG:HD3	2.01	0.42
1:A:748:GLN:O	1:A:752:MET:HG2	2.20	0.42
1:A:1330:ASP:N	1:A:1330:ASP:OD1	2.53	0.42
1:A:1465:VAL:HG13	1:A:1467:ASP:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1658:LYS:HG3	1:A:1661:ILE:HB	2.02	0.42
1:A:130:LEU:HD12	1:A:130:LEU:HA	1.91	0.42
1:A:1728:GLU:O	1:A:1731:LEU:HG	2.20	0.42
2:B:13:C:O2'	2:B:14:U:O4'	2.38	0.41
1:A:61:GLN:HB2	1:A:91:PHE:O	2.20	0.41
1:A:270:LEU:HD22	1:A:638:PHE:CE1	2.55	0.41
1:A:286:PHE:HA	1:A:292:MET:HB3	2.01	0.41
1:A:735:VAL:CG2	1:A:1285:MET:HB3	2.50	0.41
1:A:1355:ILE:HG21	1:A:1375:ILE:HG21	2.02	0.41
1:A:1753:THR:N	1:A:1754:PRO:HD3	2.35	0.41
1:A:119:ASP:HA	1:A:122:LYS:HG2	2.02	0.41
1:A:231:ARG:NH1	1:A:233:SER:HB2	2.34	0.41
1:A:446:SER:O	1:A:449:GLN:HG3	2.21	0.41
1:A:1212:THR:HB	1:A:1213:PRO:HD2	2.03	0.41
1:A:1759:LEU:O	1:A:1763:ARG:HG2	2.20	0.41
1:A:626:LYS:HE2	1:A:626:LYS:HB2	1.81	0.41
1:A:1198:PRO:HG2	1:A:1232:LEU:HA	2.03	0.41
1:A:137:LEU:HD12	1:A:139:PRO:HD3	2.02	0.41
1:A:1196:MET:HA	1:A:1366:ASN:ND2	2.36	0.41
1:A:1357:PHE:CE2	1:A:1361:LEU:HD11	2.55	0.41
1:A:47:SER:OG	1:A:1095:CYS:HB2	2.20	0.41
1:A:442:ASN:OD1	1:A:443:SER:N	2.52	0.41
1:A:473:LYS:HA	1:A:473:LYS:HD2	1.85	0.41
1:A:1241:ASN:OD1	1:A:1242:VAL:HG13	2.21	0.41
1:A:225:GLY:H	1:A:777:LYS:NZ	2.19	0.41
1:A:581:PRO:HA	1:A:584:SER:OG	2.21	0.41
1:A:762:LYS:HD3	1:A:775:VAL:N	2.35	0.41
1:A:779:LEU:HD12	1:A:780:LEU:HD22	2.02	0.41
1:A:14:LYS:HD2	1:A:14:LYS:O	2.21	0.41
1:A:605:LEU:O	1:A:609:THR:OG1	2.31	0.41
1:A:776:CYS:O	1:A:779:LEU:HG	2.21	0.41
1:A:841:VAL:HG23	1:A:912:VAL:HG12	2.01	0.41
1:A:1621:PHE:O	1:A:1625:MET:HG3	2.20	0.41
1:A:1093:ASN:HA	1:A:1097:TYR:HB3	2.03	0.41
1:A:341:LYS:HE3	1:A:346:ARG:HH12	1.86	0.40
1:A:1118:GLY:HA2	1:A:1237:GLU:HG3	2.02	0.40
1:A:1298:THR:O	1:A:1301:LEU:HG	2.21	0.40
1:A:1696:TRP:HA	1:A:1816:SER:OG	2.21	0.40
1:A:737:ASN:ND2	1:A:1282:SER:H	2.17	0.40
1:A:1282:SER:HG	1:A:1283:HIS:CE1	2.38	0.40
1:A:1770:LEU:HB2	1:A:1773:LEU:HB3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:8:LEU:HA	1:A:11:LEU:HG	2.04	0.40
1:A:280:ASP:OD1	1:A:280:ASP:N	2.50	0.40
1:A:509:LEU:HD21	1:A:527:GLU:HB2	2.04	0.40
1:A:697:LEU:O	1:A:700:SER:OG	2.33	0.40
1:A:1280:ILE:HG13	1:A:1281:PRO:HD2	2.02	0.40
1:A:1528:THR:HG22	1:A:1541:VAL:HG13	2.03	0.40
1:A:1531:LEU:HB3	1:A:1536:CYS:SG	2.61	0.40
1:A:417:CYS:O	1:A:420:ILE:HG22	2.21	0.40
1:A:1657:LEU:HD21	1:A:1662:ILE:HD11	2.02	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	1558/2209 (70%)	1439 (92%)	119 (8%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1434/2007 (71%)	1427 (100%)	7 (0%)	86	89

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	LYS
1	A	85	LYS
1	A	305	ARG
1	A	338	LYS
1	A	404	ARG
1	A	1143	ARG
1	A	1527	LEU

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

Mol	Chain	Res	Type
1	A	25	GLN
1	A	472	HIS
1	A	629	GLN
1	A	737	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	B	6/19 (31%)	5 (83%)	0

All (5) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	B	14	U
2	B	15	G
2	B	17	G
2	B	18	C
2	B	19	G

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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 2 are 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.

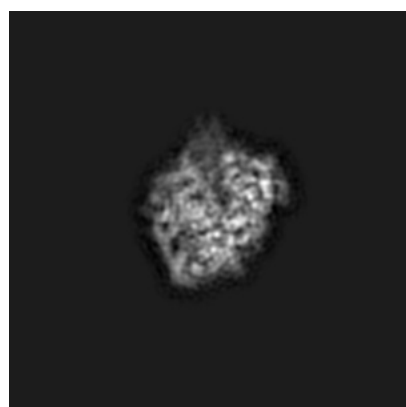
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0709. These allow visual inspection of the internal detail of the map and identification of artifacts.

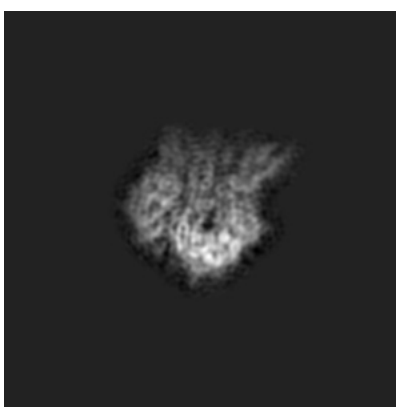
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

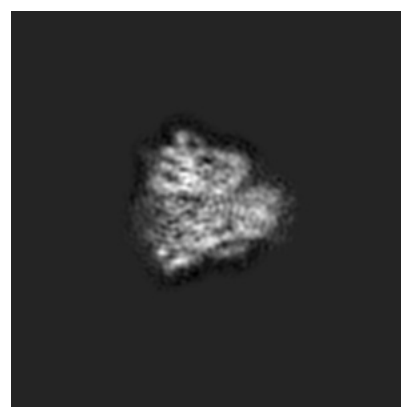
6.1.1 Primary map



X



Y

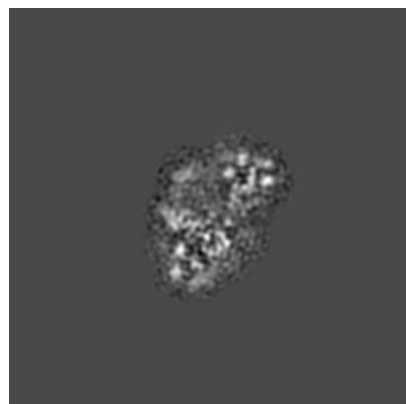


Z

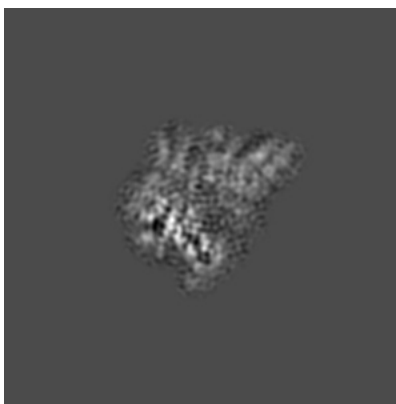
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 100



Y Index: 100

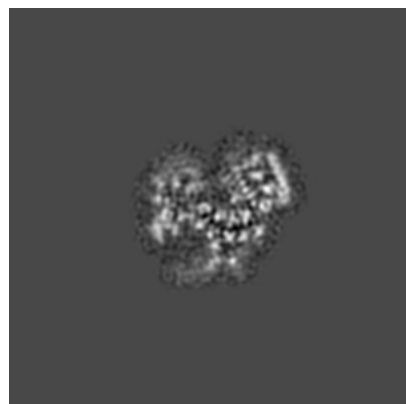


Z Index: 100

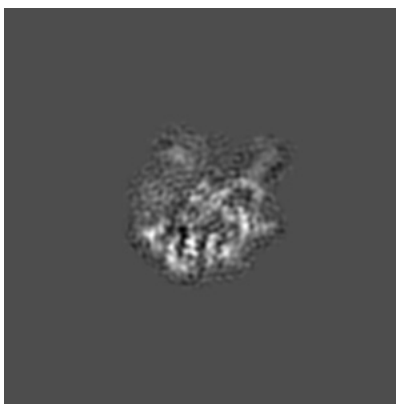
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

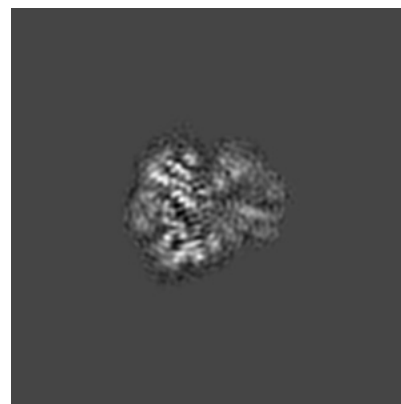
6.3.1 Primary map



X Index: 85



Y Index: 112

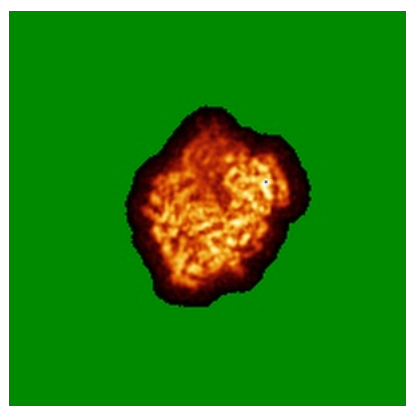


Z Index: 95

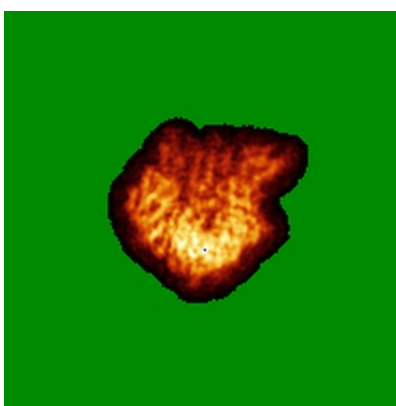
The images above show the largest variance slices of the map in three orthogonal directions.

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

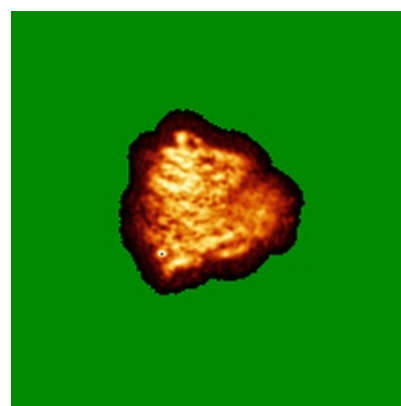
6.4.1 Primary map



X



Y

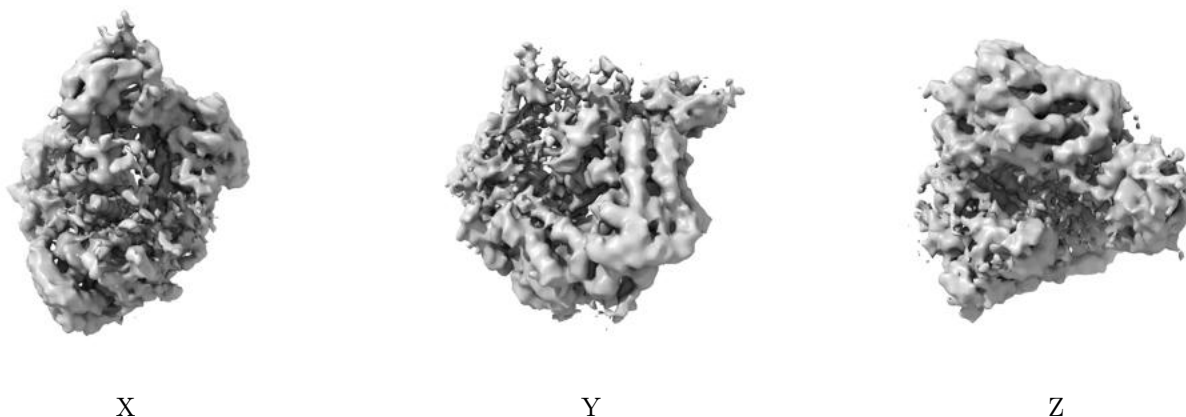


Z

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 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

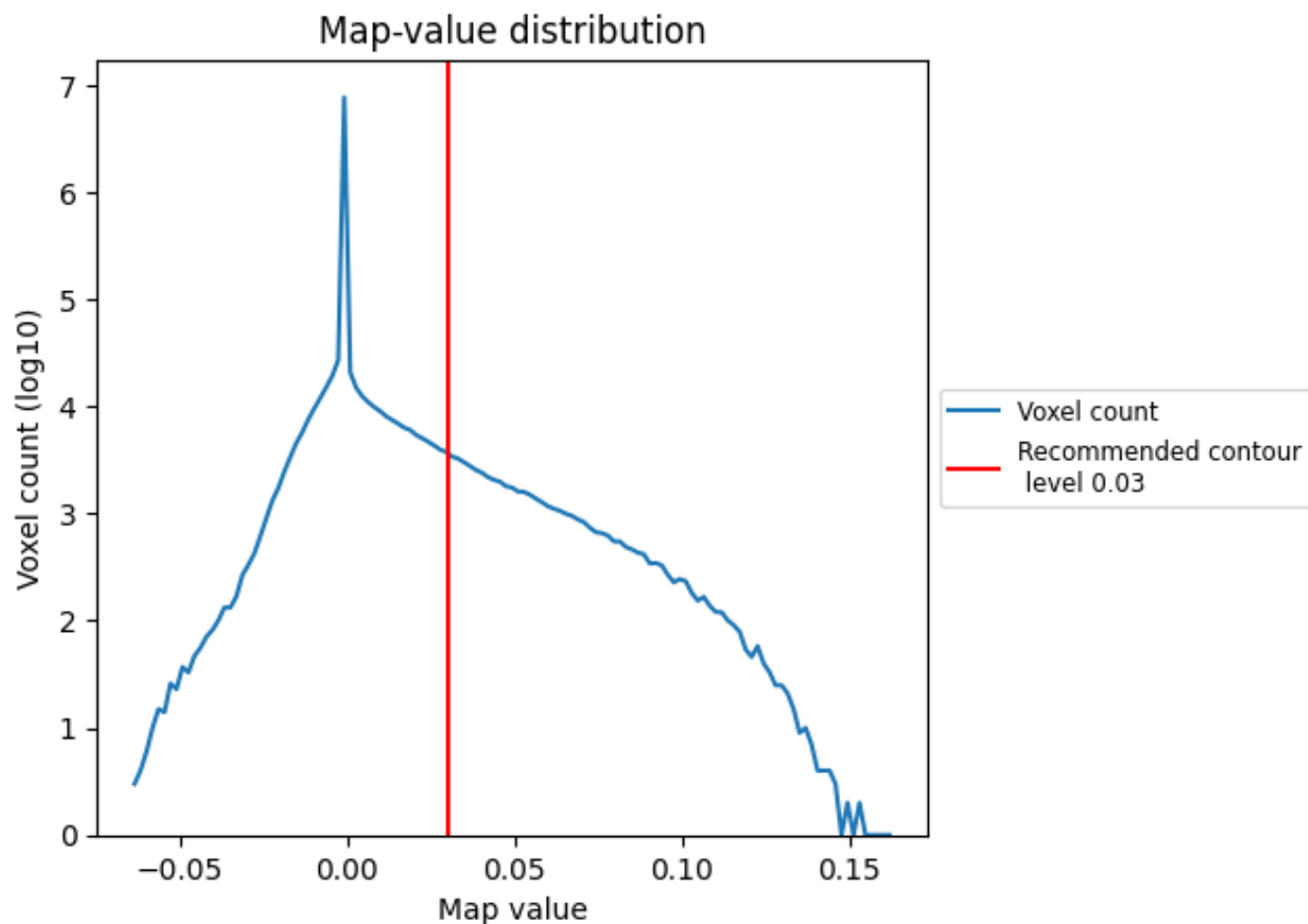
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

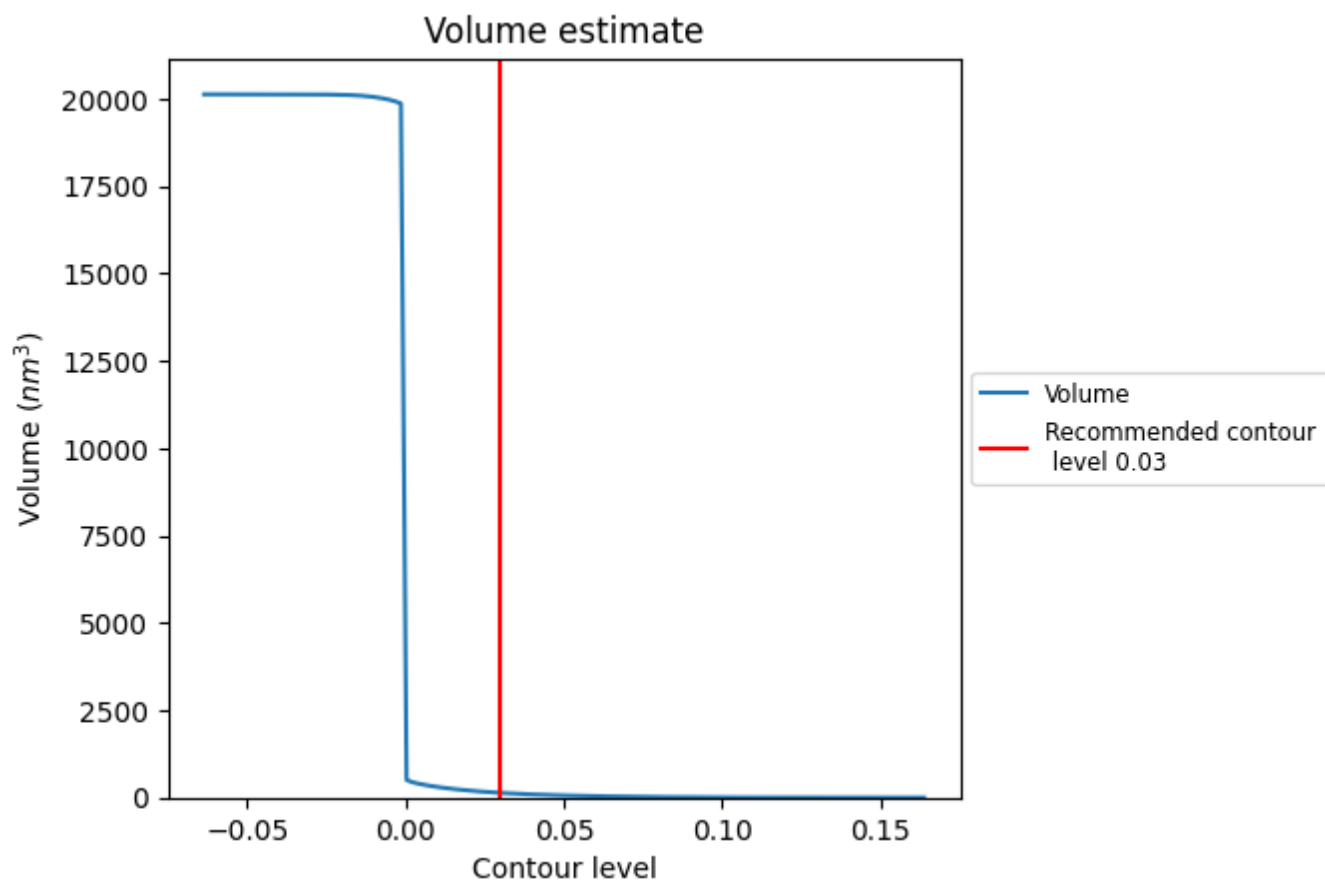
This section contains the results of statistical analysis of the map.

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.

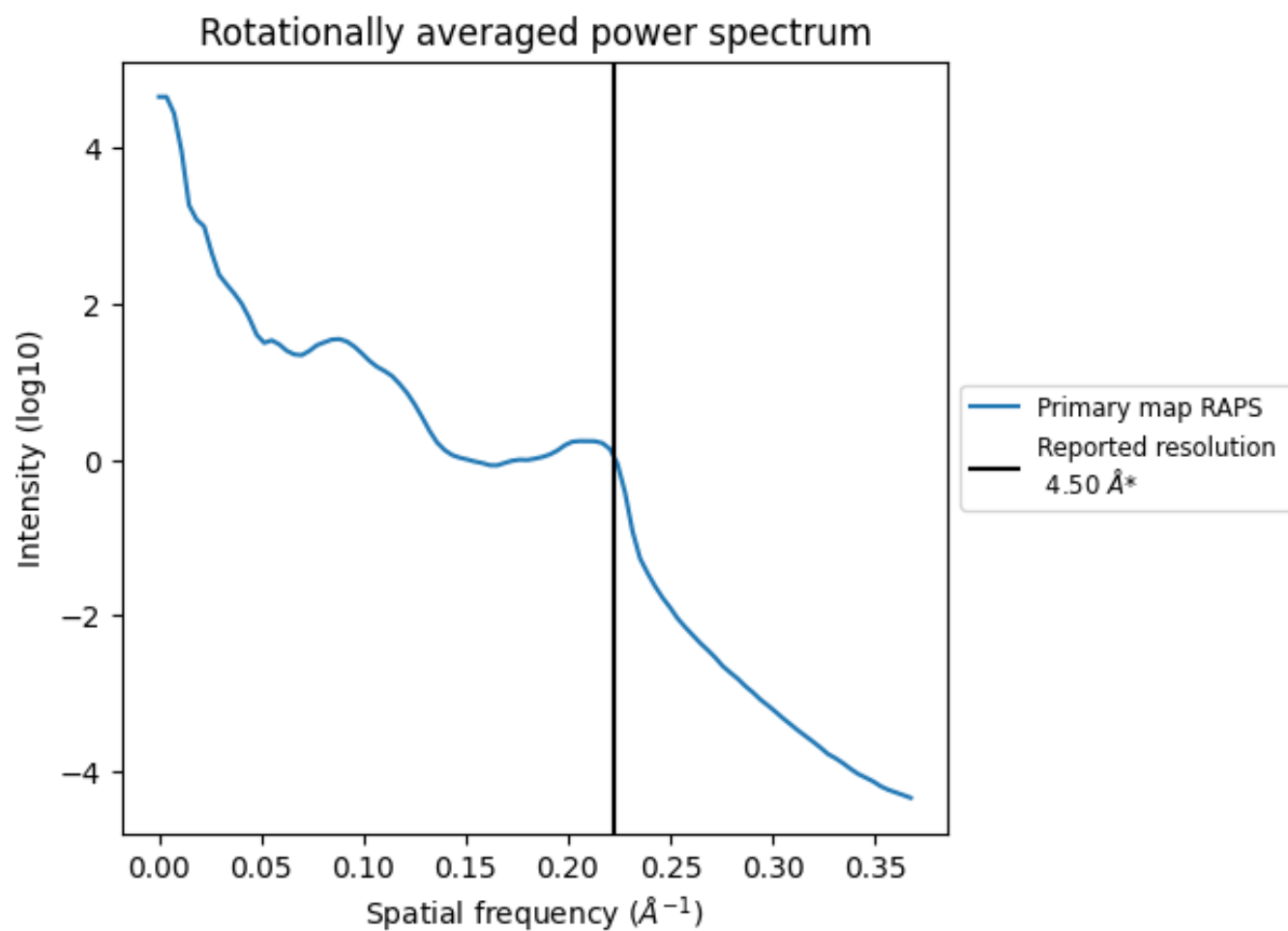
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 134 nm^3 ; this corresponds to an approximate mass of 121 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 ⓘ

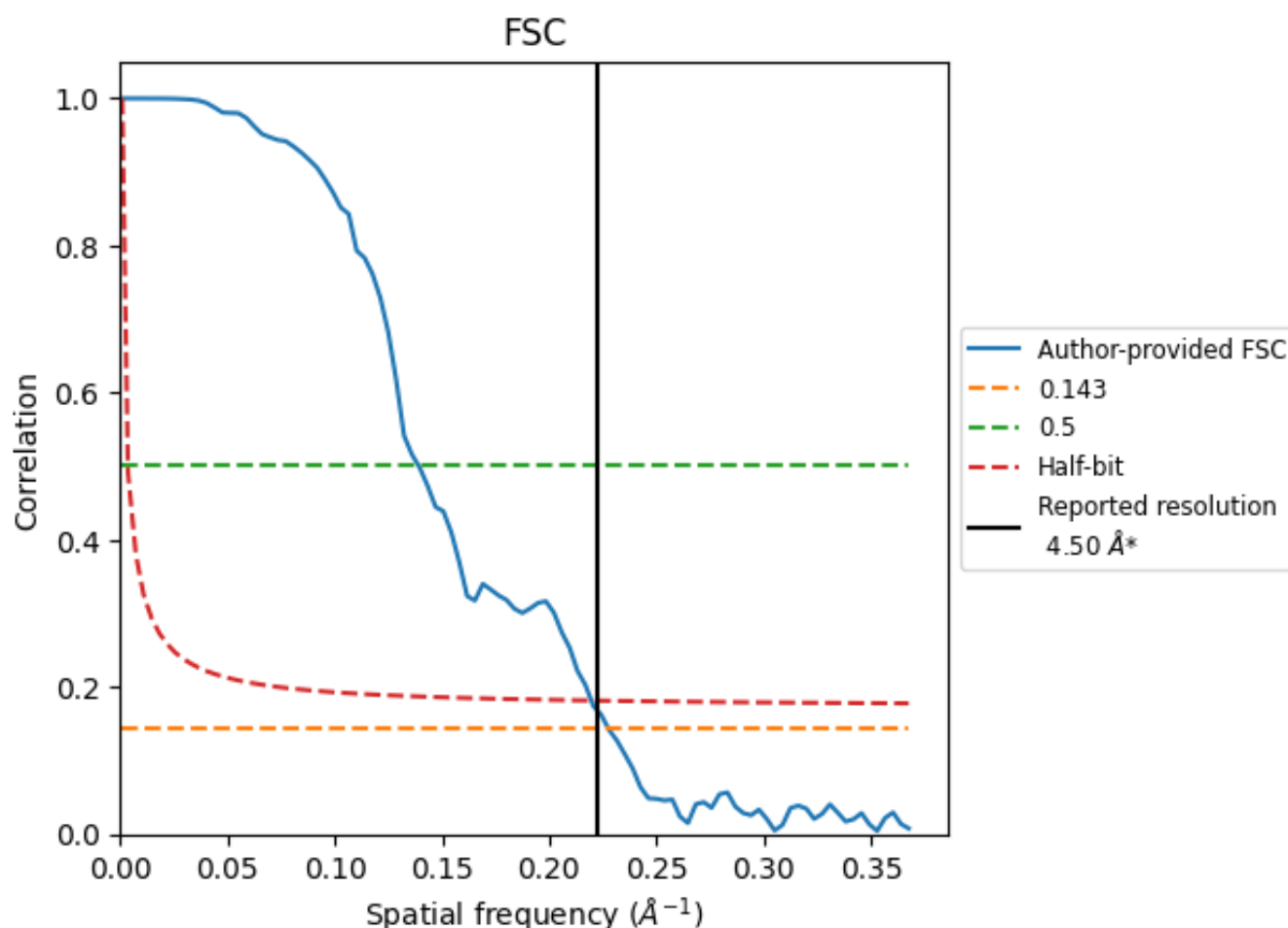


*Reported resolution corresponds to spatial frequency of 0.222 Å⁻¹

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 0.222 \AA^{-1}

8.2 Resolution estimates [i](#)

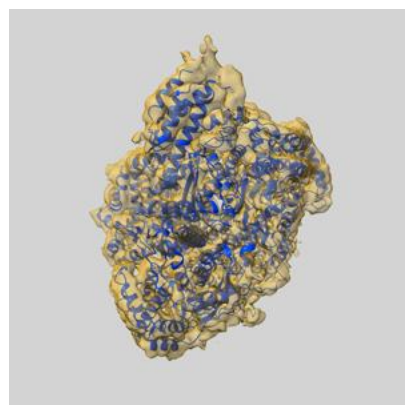
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.50	-	-
Author-provided FSC curve	4.39	7.18	4.55
Unmasked-calculated*	-	-	-

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

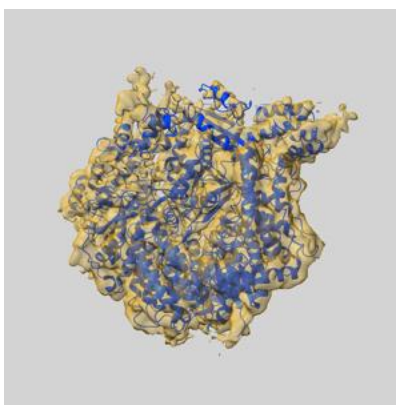
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-0709 and PDB model 6KLE. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

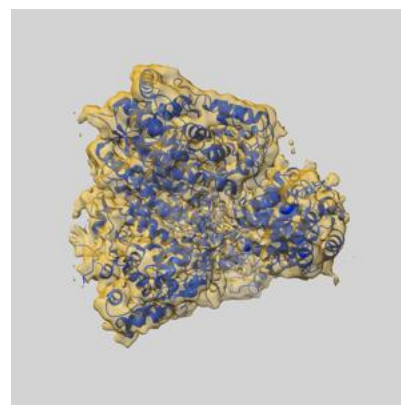
9.1 Map-model overlay [i](#)



X



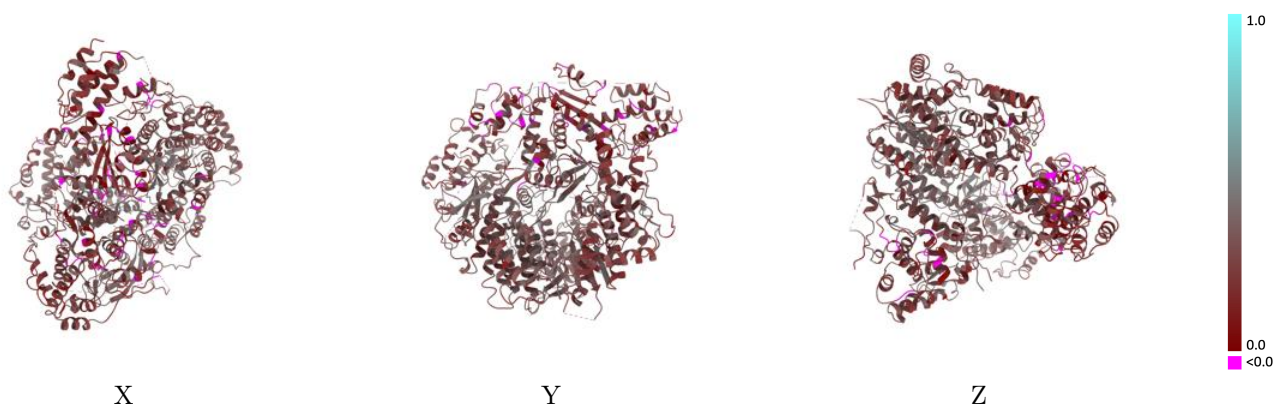
Y



Z

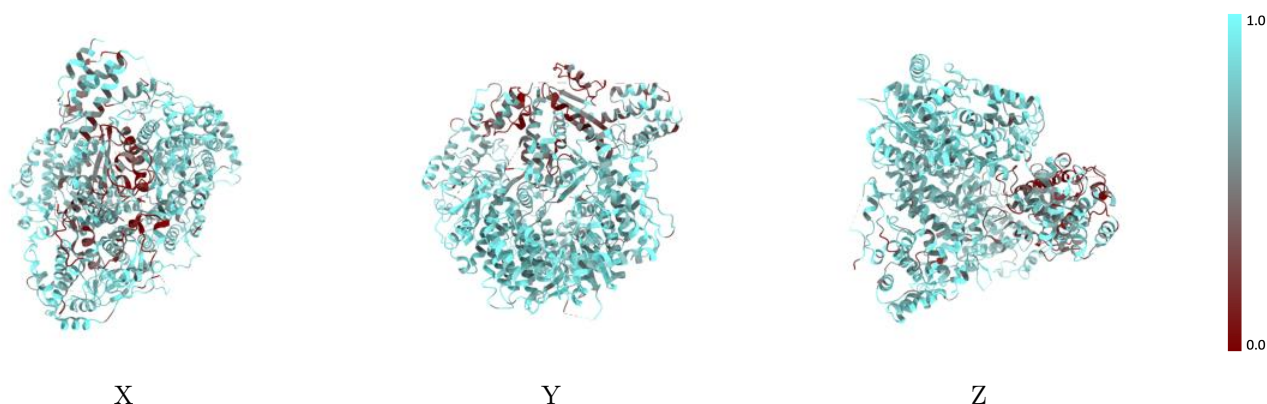
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



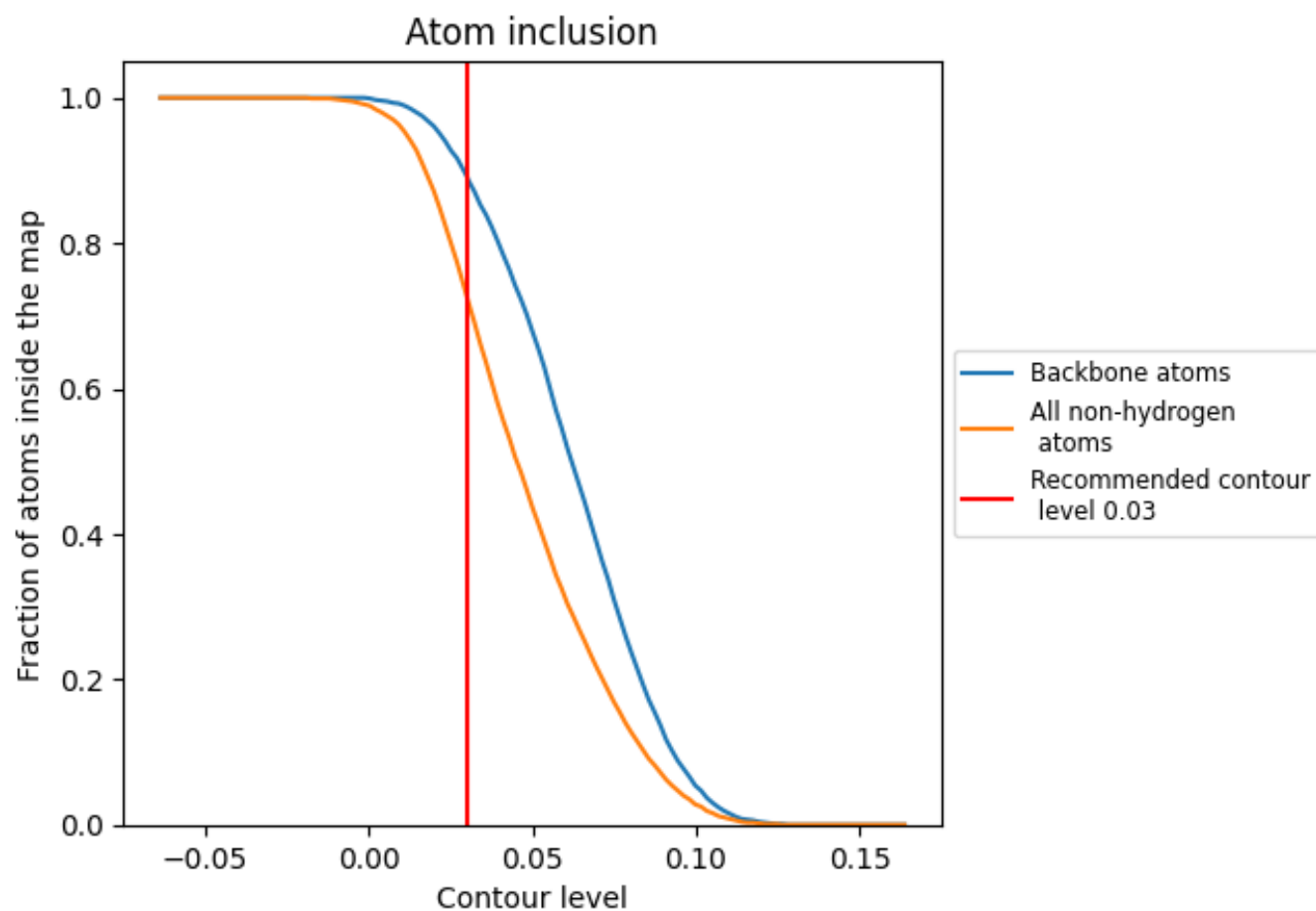
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.03).

9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.7260	<div></div> 0.2700
A	<div></div> 0.7290	<div></div> 0.2690
B	<div></div> 0.5170	<div></div> 0.2750

