Full wwPDB EM Validation Report ⓘ

Nov 18, 2026 – 08:17 AM JST

PDB ID	:	27ZG / pdb_000027zg
EMDB ID	:	EMD-81558
Title	:	Atomic structure of the ASFV virus early transcription factor in PR state
Authors	:	Yang, Y.G.; Xin, Y.H.
Deposited on	:	2026-06-18
Resolution	:	3.20 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*
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:

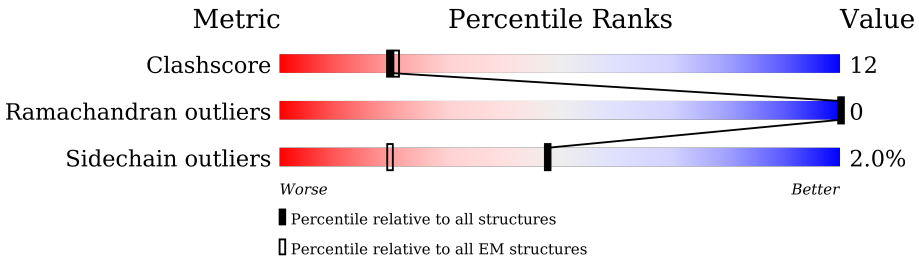
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

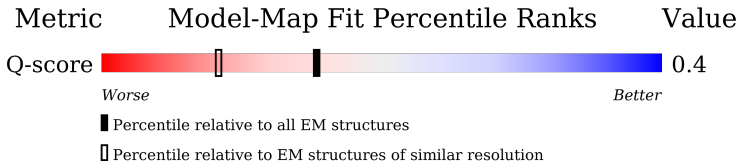
1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	15020 (2.70 - 3.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	B	1141	12% 51% 19% • 29%
2	A	1377	19% 60% 23% • 16%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 15957 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 Early transcription factor large subunit homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	810	Total	C	N	O	S	0	0
			6494	4156	1119	1193	26		

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	879	PRO	LEU	conflict	UNP Q89525
B	1134	HIS	-	expression tag	UNP Q89525
B	1135	HIS	-	expression tag	UNP Q89525
B	1136	HIS	-	expression tag	UNP Q89525
B	1137	HIS	-	expression tag	UNP Q89525
B	1138	HIS	-	expression tag	UNP Q89525
B	1139	HIS	-	expression tag	UNP Q89525
B	1140	HIS	-	expression tag	UNP Q89525
B	1141	HIS	-	expression tag	UNP Q89525

- Molecule 2 is a protein called Early transcription factor large subunit homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	1155	Total	C	N	O	S	0	0
			9463	6158	1539	1740	26		

There are 46 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-28	MET	-	initiating methionine	UNP Q65177
A	-27	TRP	-	expression tag	UNP Q65177
A	-26	SER	-	expression tag	UNP Q65177
A	-25	HIS	-	expression tag	UNP Q65177
A	-24	PRO	-	expression tag	UNP Q65177
A	-23	GLN	-	expression tag	UNP Q65177
A	-22	PHE	-	expression tag	UNP Q65177
A	-21	GLU	-	expression tag	UNP Q65177

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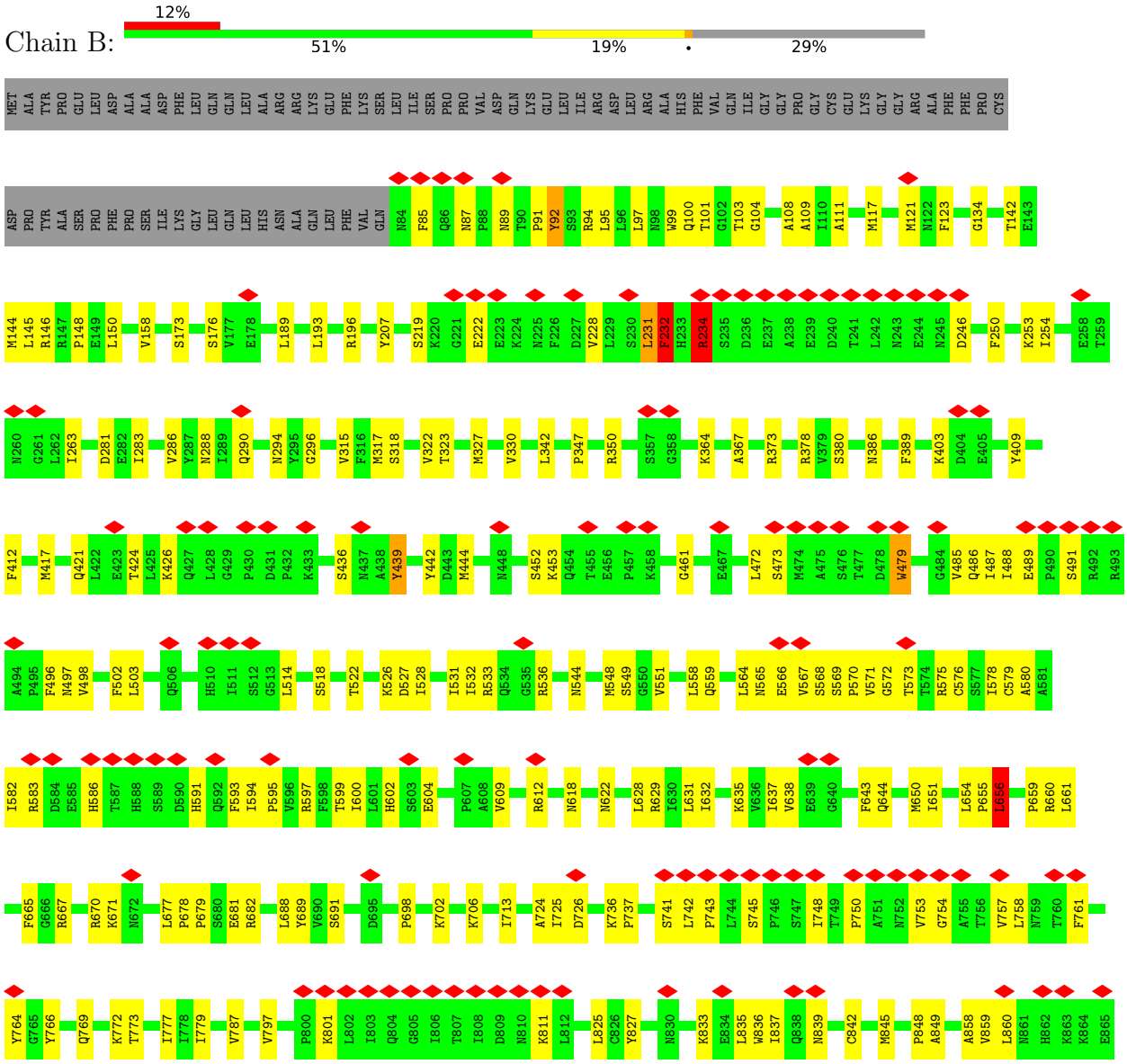
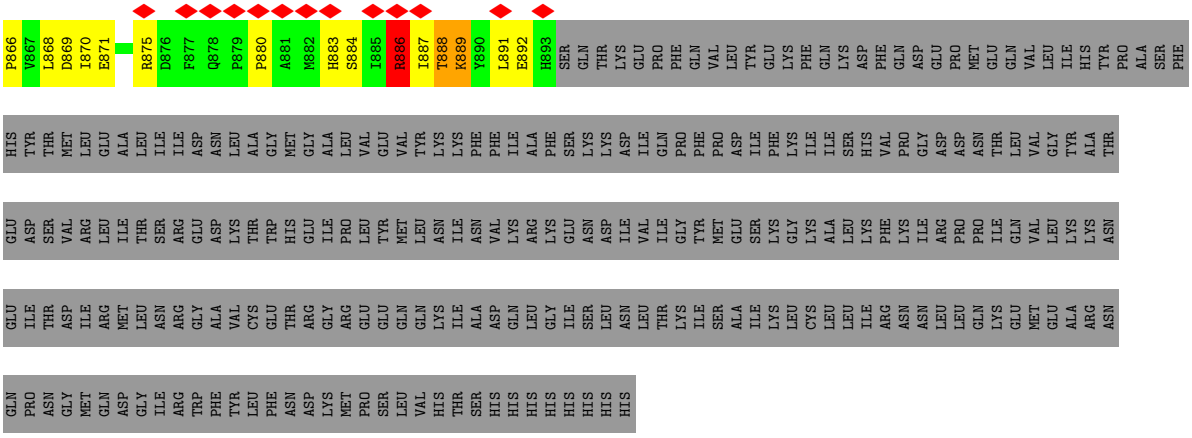
Chain	Residue	Modelled	Actual	Comment	Reference
A	-20	LYS	-	expression tag	UNP Q65177
A	-19	GLY	-	expression tag	UNP Q65177
A	-18	GLY	-	expression tag	UNP Q65177
A	-17	GLY	-	expression tag	UNP Q65177
A	-16	SER	-	expression tag	UNP Q65177
A	-15	GLY	-	expression tag	UNP Q65177
A	-14	GLY	-	expression tag	UNP Q65177
A	-13	GLY	-	expression tag	UNP Q65177
A	-12	SER	-	expression tag	UNP Q65177
A	-11	GLY	-	expression tag	UNP Q65177
A	-10	GLY	-	expression tag	UNP Q65177
A	-9	SER	-	expression tag	UNP Q65177
A	-8	ALA	-	expression tag	UNP Q65177
A	-7	TRP	-	expression tag	UNP Q65177
A	-6	SER	-	expression tag	UNP Q65177
A	-5	HIS	-	expression tag	UNP Q65177
A	-4	PRO	-	expression tag	UNP Q65177
A	-3	GLN	-	expression tag	UNP Q65177
A	-2	PHE	-	expression tag	UNP Q65177
A	-1	GLU	-	expression tag	UNP Q65177
A	0	LYS	-	expression tag	UNP Q65177
A	20	VAL	ALA	conflict	UNP Q65177
A	62	GLU	LYS	conflict	UNP Q65177
A	91	ARG	SER	conflict	UNP Q65177
A	175	VAL	LEU	conflict	UNP Q65177
A	225	ILE	MET	conflict	UNP Q65177
A	504	VAL	ILE	conflict	UNP Q65177
A	552	THR	ALA	conflict	UNP Q65177
A	906	GLY	GLU	conflict	UNP Q65177
A	965	ILE	VAL	conflict	UNP Q65177
A	1341	HIS	-	expression tag	UNP Q65177
A	1342	HIS	-	expression tag	UNP Q65177
A	1343	HIS	-	expression tag	UNP Q65177
A	1344	HIS	-	expression tag	UNP Q65177
A	1345	HIS	-	expression tag	UNP Q65177
A	1346	HIS	-	expression tag	UNP Q65177
A	1347	HIS	-	expression tag	UNP Q65177
A	1348	HIS	-	expression tag	UNP Q65177

3 Residue-property plots (i)

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

- Molecule 1: Early transcription factor large subunit homolog

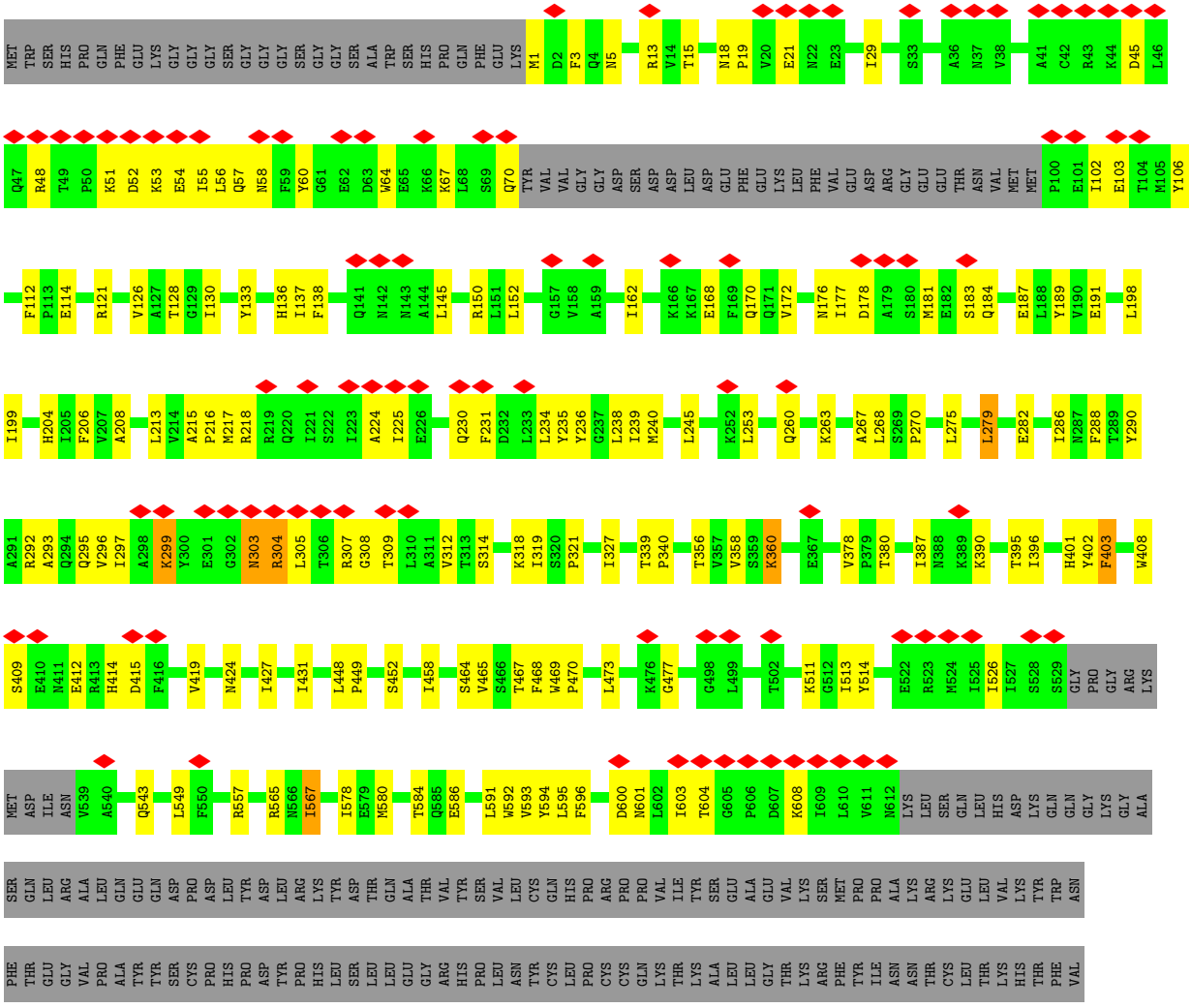


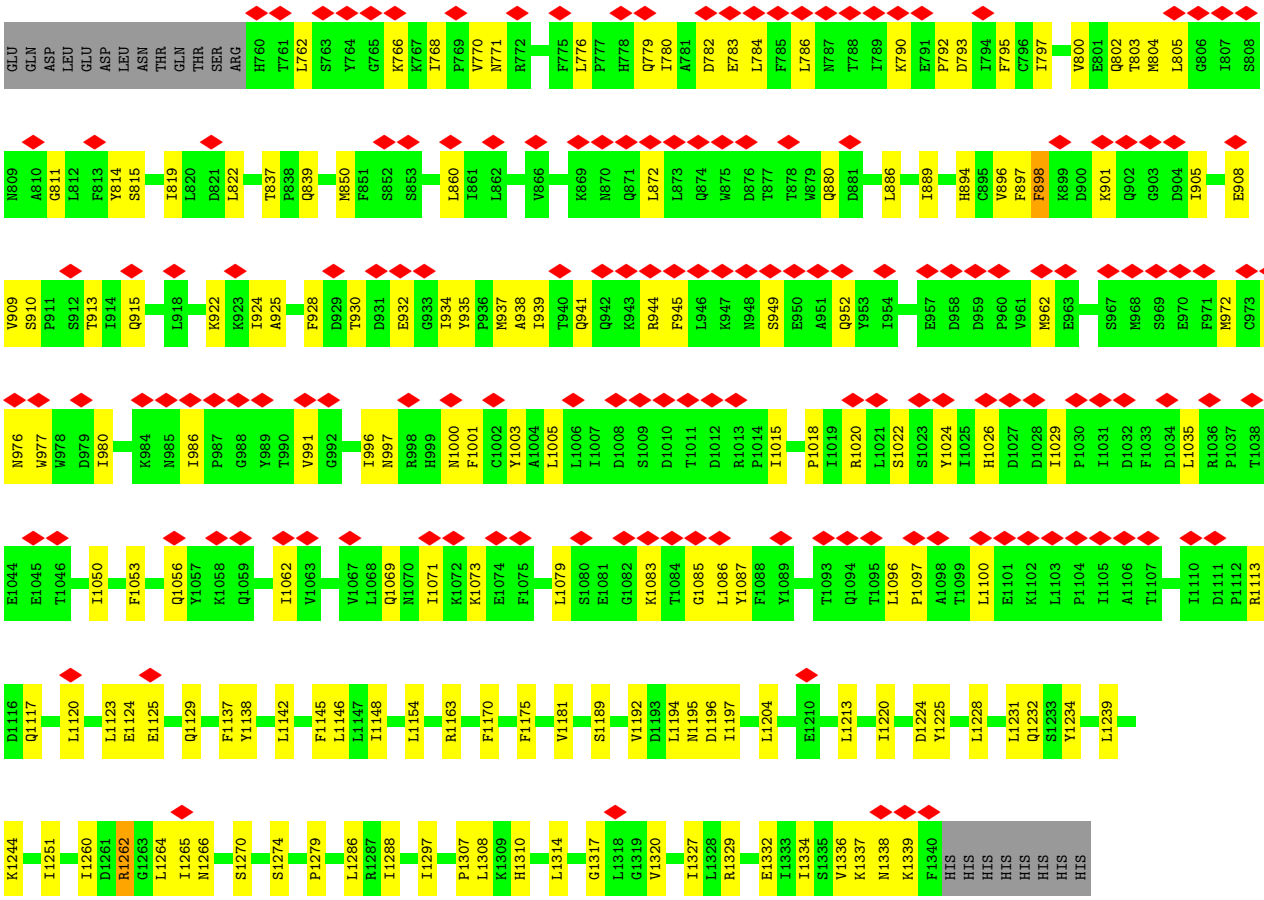


• Molecule 2: Early transcription factor large subunit homolog

Chain A:






GLU GLN ASP LEU GLU ASP LEU ASN THR GLN THR SER ARG H760 T761 L762 S763 Y764 G765 K766 K767 I768 P769 V770 N771 R772 F775 L776 P777 H778 Q779 I780 A781 D782 E783 L784 F785 L786 N787 T788 I789 K790 E791 P792 D793 I794 F795 C796 I797 V800 E801 Q802 T803 M804 L805 G806 I807 S808
N809 A810 G811 L812 F813 Y814 S815 I819 L820 D821 L822 T837 P838 Q839 M850 F851 S852 S853 L860 I861 L862 V866 K869 N870 Q871 L872 L873 Q874 W875 D876 T877 T878 W879 Q880 D881 L886 I889 H894 C895 V896 F897 F898 K899 D900 K901 Q902 G903 D904 I905 E908
V909 S910 P911 S912 T913 I914 Q915 L918 K922 K923 I924 A925 F928 D929 T930 D931 E932 G933 I934 Y935 P936 M937 A938 I939 T940 Q941 Q942 K943 R944 F945 L946 K947 N948 S949 E950 A951 Q952 Y953 I954 E957 D958 D959 P960 V961 M962 E963 S967 M968 S969 E970 F971 M972 C973 K974 D975
N976 W977 W978 D979 I980 K984 N985 I986 P987 G988 Y989 T990 V991 G992 I996 N997 R998 H999 N1000 F1001 C1002 Y1003 A1004 L1005 L1006 I1007 D1008 S1009 D1010 T1011 D1012 R1013 P1014 I1015 P1018 I1019 R1020 L1021 S1022 S1023 Y1024 I1025 H1026 D1027 D1028 I1029 P1030 I1031 D1032 F1033 D1034 L1035 R1036 P1037 T1038 F1043
E1044 E1045 T1046 I1050 F1053 Q1056 Y1057 K1058 Q1059 I1062 V1063 V1067 L1068 Q1069 N1070 I1071 K1072 K1073 E1074 F1075 L1079 S1080 E1081 G1082 K1083 T1084 G1085 L1086 Y1087 F1088 Y1089 T1093 Q1094 T1095 L1096 P1097 A1098 T1099 L1100 E1101 K1102 L1103 P1104 I1105 A1106 T1107 I1110 D1111 P1112 R1113 D1114 I1115
D1116 Q1117 L1120 L1123 E1124 E1125 Q1129 F1137 Y1138 L1142 F1145 L1146 L1147 I1148 L1154 R1163 F1170 F1175 V1181 S1189 V1192 D1193 L1194 N1195 D1196 I1197 L1204 E1210 L1213 I1220 D1224 Y1225 L1228 L1231 Q1232 S1233 Y1234 L1239
K1244 I1251 I1260 D1261 R1262 G1263 L1264 I1265 N1266 S1270 S1274 P1279 L1286 R1287 I1288 I1297 P1307 L1308 K1309 H1310 L1314 G1317 L1318 G1319 V1320 I1327 L1328 R1329 E1332 I1333 I1334 S1335 V1336 K1337 N1338 K1339 F1340 HIS HIS HIS HIS HIS HIS HIS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	171772	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	0.654	Depositor
Minimum map value	-0.445	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.0623	Depositor
Map size (Å)	298.88, 298.88, 298.88	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.934, 0.934, 0.934	Depositor

5 Model quality

5.1 Standard geometry

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	0.26	0/6645	0.46	3/9008 (0.0%)
2	A	0.21	0/9698	0.40	0/13167
All	All	0.23	0/16343	0.42	3/22175 (0.0%)

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	B	0	2
2	A	0	3
All	All	0	5

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	656	LEU	CA-C-O	-8.00	112.27	121.07
1	B	232	PHE	CB-CA-C	5.54	118.54	109.90
1	B	656	LEU	N-CA-C	-5.02	104.90	111.02

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A	1262	ARG	Sidechain
2	A	304	ARG	Sidechain
2	A	565	ARG	Sidechain
1	B	234	ARG	Sidechain
1	B	886	ARG	Sidechain

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	6494	0	6524	178	0
2	A	9463	0	9462	242	0
All	All	15957	0	15986	398	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 12.

All (398) 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:889:LYS:H	2:A:905:ILE:HD11	1.38	0.89
2:A:415:ASP:O	2:A:419:VAL:HG23	1.79	0.83
1:B:109:ALA:HB2	1:B:317:MET:HE1	1.59	0.82
2:A:339:THR:CG2	2:A:340:PRO:HD2	2.10	0.82
1:B:761:PHE:HB3	1:B:766:TYR:HB2	1.61	0.81
1:B:380:SER:HA	1:B:724:ALA:HB1	1.61	0.81
1:B:551:VAL:HB	1:B:600:ILE:HD11	1.65	0.78
2:A:790:LYS:HG3	2:A:792:PRO:HD3	1.65	0.78
2:A:1232:GLN:NE2	2:A:1310:HIS:HE1	1.84	0.76
2:A:339:THR:HG23	2:A:340:PRO:HD2	1.67	0.75
2:A:13:ARG:HB2	2:A:204:HIS:HD1	1.52	0.74
2:A:1232:GLN:NE2	2:A:1310:HIS:CE1	2.56	0.73
1:B:572:GLY:HA2	1:B:583:ARG:HD2	1.71	0.73
2:A:860:LEU:HD21	2:A:872:LEU:HD22	1.69	0.73
2:A:930:THR:HG22	2:A:932:GLU:H	1.52	0.73
2:A:288:PHE:HE2	2:A:601:ASN:HD21	1.37	0.72
2:A:1083:LYS:HG2	2:A:1085:GLY:H	1.55	0.71
2:A:1154:LEU:HD11	2:A:1231:LEU:HD11	1.73	0.70
1:B:94:ARG:NH1	1:B:380:SER:H	1.90	0.70
2:A:168:GLU:HB2	2:A:176:ASN:HB3	1.74	0.70
1:B:884:SER:HB2	2:A:908:GLU:HA	1.73	0.70
1:B:533:ARG:HE	1:B:580:ALA:HB3	1.58	0.69
2:A:473:LEU:HD22	2:A:477:GLY:HA3	1.75	0.69
1:B:91:PRO:HB3	1:B:108:ALA:HB1	1.74	0.68
1:B:532:ILE:HA	1:B:629:ARG:HH21	1.60	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:235:TYR:HA	2:A:239:ILE:HD13	1.76	0.67
1:B:232:PHE:HB2	1:B:294:ASN:HB3	1.76	0.66
2:A:339:THR:CG2	2:A:340:PRO:CD	2.74	0.66
2:A:260:GLN:HG3	2:A:263:LYS:HZ1	1.60	0.65
1:B:290:GLN:O	1:B:290:GLN:HG3	1.97	0.65
2:A:339:THR:HG22	2:A:340:PRO:HD2	1.79	0.65
2:A:358:VAL:HG22	2:A:1336:VAL:HG13	1.78	0.65
2:A:136:HIS:HB3	2:A:208:ALA:HB3	1.79	0.64
1:B:777:ILE:HD11	1:B:797:VAL:HG13	1.80	0.64
1:B:599:THR:HB	1:B:631:LEU:HD12	1.79	0.64
1:B:656:LEU:O	1:B:706:LYS:HE2	1.98	0.64
1:B:753:VAL:HG23	1:B:754:GLY:H	1.63	0.64
2:A:1097:PRO:HD2	2:A:1100:LEU:HB2	1.79	0.64
1:B:622:ASN:HD21	1:B:628:LEU:HB3	1.62	0.64
1:B:779:ILE:HG23	1:B:835:LEU:HD13	1.80	0.63
2:A:138:PHE:HB2	2:A:145:LEU:HD11	1.81	0.63
2:A:1035:LEU:HD21	2:A:1113:ARG:HH21	1.62	0.63
2:A:567:ILE:HG21	2:A:595:LEU:HD11	1.80	0.63
1:B:679:PRO:HB2	2:A:822:LEU:HD11	1.81	0.62
2:A:54:GLU:HA	2:A:57:GLN:OE1	1.98	0.62
1:B:602:HIS:HD2	1:B:604:GLU:HG2	1.65	0.62
1:B:870:ILE:HD11	2:A:1120:LEU:HD13	1.82	0.61
2:A:762:LEU:HD13	2:A:768:ILE:HG22	1.82	0.61
1:B:485:VAL:HG12	1:B:486:GLN:N	2.16	0.61
2:A:800:VAL:HG11	2:A:814:TYR:HB3	1.82	0.61
1:B:836:TRP:HE1	1:B:839:ASN:HA	1.65	0.61
1:B:609:VAL:HG22	1:B:612:ARG:HH21	1.66	0.60
2:A:1232:GLN:HE22	2:A:1310:HIS:HE1	1.48	0.60
1:B:779:ILE:HG12	1:B:835:LEU:HD22	1.84	0.60
2:A:780:ILE:HD12	2:A:784:LEU:HB3	1.84	0.60
1:B:667:ARG:HH11	1:B:670:ARG:HH12	1.48	0.59
1:B:100:GLN:HG2	1:B:101:THR:H	1.67	0.59
1:B:99:TRP:CD1	1:B:103:THR:HG23	2.38	0.59
2:A:427:ILE:O	2:A:427:ILE:HG22	2.01	0.59
2:A:1050:ILE:HD12	2:A:1053:PHE:HB3	1.85	0.59
1:B:753:VAL:HG23	1:B:754:GLY:N	2.17	0.59
1:B:148:PRO:HG3	1:B:158:VAL:HG21	1.85	0.59
2:A:183:SER:HB2	2:A:184:GLN:OE1	2.02	0.59
1:B:142:THR:O	1:B:146:ARG:HB3	2.03	0.58
2:A:270:PRO:HG2	2:A:275:LEU:HD22	1.86	0.58
1:B:95:LEU:HD12	1:B:378:ARG:HG2	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:126:VAL:HG21	2:A:279:LEU:HD23	1.85	0.58
1:B:417:MET:HG2	1:B:691:SER:OG	2.03	0.58
2:A:177:ILE:HD11	2:A:234:LEU:HD23	1.85	0.58
2:A:395:THR:HG23	2:A:395:THR:O	2.03	0.58
1:B:99:TRP:HD1	1:B:103:THR:HG23	1.69	0.58
2:A:1170:PHE:HE1	2:A:1204:LEU:HD11	1.68	0.58
2:A:408:TRP:CH2	2:A:419:VAL:HG13	2.38	0.57
2:A:1114:ASP:HA	2:A:1117:GLN:HE21	1.69	0.57
1:B:618:ASN:HD21	1:B:644:GLN:H	1.52	0.57
2:A:133:TYR:HB3	2:A:268:LEU:HD22	1.85	0.57
2:A:293:ALA:O	2:A:297:ILE:HG23	2.03	0.57
2:A:321:PRO:HB3	2:A:449:PRO:HG3	1.87	0.57
1:B:472:LEU:HD13	1:B:498:VAL:HG21	1.86	0.56
2:A:811:GLY:HA2	2:A:814:TYR:HB2	1.87	0.56
1:B:757:VAL:HG12	1:B:758:LEU:HD12	1.85	0.56
1:B:886:ARG:HB2	2:A:972:MET:HE3	1.86	0.56
2:A:1264:LEU:HD23	2:A:1279:PRO:HG2	1.87	0.56
2:A:215:ALA:HA	2:A:218:ARG:HG3	1.87	0.56
1:B:97:LEU:HD12	1:B:317:MET:HE2	1.87	0.56
2:A:216:PRO:HB2	2:A:217:MET:SD	2.46	0.56
2:A:238:LEU:HG	2:A:239:ILE:HD12	1.87	0.56
2:A:102:ILE:HG12	2:A:103:GLU:H	1.71	0.56
1:B:283:ILE:HG22	1:B:318:SER:HB3	1.88	0.55
2:A:896:VAL:HG13	2:A:909:VAL:HG22	1.87	0.55
2:A:1138:TYR:HD1	2:A:1264:LEU:HD11	1.71	0.55
1:B:380:SER:OG	1:B:725:ILE:N	2.39	0.55
1:B:725:ILE:HG13	1:B:726:ASP:H	1.71	0.55
2:A:469:TRP:CD1	2:A:470:PRO:HD2	2.41	0.55
2:A:1050:ILE:HD13	2:A:1062:ILE:HD12	1.89	0.55
1:B:232:PHE:HD1	1:B:253:LYS:HD3	1.71	0.55
1:B:544:ASN:HD21	1:B:655:PRO:HA	1.71	0.55
1:B:741:SER:C	1:B:743:PRO:HD3	2.32	0.55
2:A:178:ASP:HB3	2:A:181:MET:HE1	1.88	0.55
2:A:804:MET:HE3	2:A:805:LEU:H	1.71	0.55
2:A:70:GLN:HB2	2:A:102:ILE:H	1.72	0.55
1:B:323:THR:HG23	1:B:659:PRO:HB2	1.89	0.55
1:B:373:ARG:HH11	1:B:742:LEU:HD13	1.71	0.55
1:B:602:HIS:CD2	1:B:604:GLU:HG2	2.42	0.55
2:A:886:LEU:HD23	2:A:889:ILE:HD11	1.88	0.54
2:A:297:ILE:HG22	2:A:593:VAL:HG12	1.88	0.54
1:B:452:SER:O	1:B:453:LYS:HG3	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:770:VAL:HG22	2:A:771:ASN:OD1	2.07	0.54
2:A:797:ILE:HD12	2:A:935:TYR:HD1	1.71	0.54
1:B:479:TRP:CZ2	1:B:485:VAL:HG11	2.41	0.54
2:A:5:ASN:HB2	2:A:290:TYR:HD2	1.73	0.54
1:B:234:ARG:HG3	1:B:288:ASN:HD21	1.71	0.54
1:B:94:ARG:NH2	1:B:99:TRP:HZ3	2.05	0.54
1:B:89:ASN:HD21	1:B:104:GLY:HA3	1.73	0.54
1:B:254:ILE:HD12	1:B:254:ILE:H	1.72	0.54
1:B:679:PRO:HA	1:B:682:ARG:HG3	1.89	0.54
2:A:1232:GLN:HE22	2:A:1310:HIS:CE1	2.24	0.53
2:A:1244:LYS:HG3	2:A:1297:ILE:HG21	1.90	0.53
2:A:304:ARG:HG3	2:A:309:THR:HG21	1.91	0.53
2:A:360:LYS:HB2	2:A:1334:ILE:HG13	1.91	0.53
2:A:795:PHE:HD1	2:A:937:MET:HE2	1.72	0.53
1:B:586:HIS:CD2	1:B:593:PHE:HB2	2.44	0.53
1:B:442:TYR:HB3	1:B:698:PRO:HG2	1.89	0.53
2:A:396:ILE:HG23	2:A:402:TYR:HB3	1.90	0.53
1:B:743:PRO:HG2	2:A:1308:LEU:HG	1.91	0.53
2:A:240:MET:HE1	2:A:543:GLN:HE21	1.74	0.53
2:A:253:LEU:HD21	2:A:260:GLN:HB2	1.91	0.53
2:A:339:THR:HG22	2:A:340:PRO:CD	2.37	0.53
1:B:748:ILE:HG13	1:B:764:TYR:HB3	1.92	0.52
2:A:356:THR:HB	2:A:1338:ASN:HA	1.90	0.52
1:B:145:LEU:HD22	1:B:189:LEU:HB3	1.89	0.52
2:A:802:GLN:HE21	2:A:935:TYR:HE2	1.57	0.52
2:A:52:ASP:O	2:A:56:LEU:HG	2.10	0.52
2:A:934:ILE:HD12	2:A:934:ILE:H	1.75	0.52
2:A:427:ILE:HG22	2:A:431:ILE:HG12	1.92	0.52
1:B:849:ALA:HA	2:A:1123:LEU:HD13	1.90	0.52
2:A:172:VAL:HB	2:A:177:ILE:HD12	1.92	0.51
2:A:776:LEU:HD12	2:A:795:PHE:HB3	1.92	0.51
1:B:578:ILE:HD11	1:B:594:ILE:HD12	1.92	0.51
2:A:339:THR:HG23	2:A:340:PRO:CD	2.35	0.51
2:A:467:THR:HB	2:A:578:ILE:HG12	1.92	0.51
2:A:782:ASP:HA	2:A:786:LEU:HB2	1.93	0.51
1:B:848:PRO:HB2	2:A:1123:LEU:HB2	1.93	0.51
1:B:835:LEU:CD1	1:B:837:ILE:HG13	2.40	0.51
2:A:5:ASN:HB2	2:A:290:TYR:CD2	2.46	0.51
2:A:286:ILE:HD12	2:A:594:TYR:OH	2.10	0.51
2:A:48:ARG:HG2	2:A:53:LYS:HZ2	1.75	0.51
2:A:307:ARG:HD2	2:A:470:PRO:HD3	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:548:MET:HG3	1:B:549:SER:N	2.27	0.50
1:B:656:LEU:HD23	1:B:660:ARG:HH11	1.77	0.50
1:B:514:LEU:HB3	1:B:522:THR:HG22	1.93	0.50
1:B:254:ILE:HG23	1:B:263:ILE:HD11	1.93	0.50
2:A:327:ILE:HD11	2:A:448:LEU:HD13	1.93	0.50
2:A:448:LEU:HD12	2:A:449:PRO:HD2	1.94	0.50
2:A:1228:LEU:O	2:A:1232:GLN:HG3	2.11	0.50
1:B:743:PRO:HB3	2:A:1307:PRO:HD2	1.91	0.50
2:A:15:THR:HB	2:A:206:PHE:HD1	1.76	0.50
1:B:558:LEU:HD12	1:B:632:ILE:HD11	1.94	0.50
2:A:319:ILE:HG12	2:A:458:ILE:HG22	1.93	0.50
1:B:638:VAL:HG21	1:B:660:ARG:NH2	2.27	0.50
1:B:123:PHE:HD1	2:A:1195:ASN:HD21	1.60	0.49
1:B:737:PRO:HG3	2:A:1194:LEU:HG	1.94	0.49
1:B:825:LEU:HD23	1:B:833:LYS:HG2	1.94	0.49
2:A:55:ILE:HA	2:A:58:ASN:ND2	2.27	0.49
2:A:308:GLY:HA3	2:A:468:PHE:CD2	2.47	0.49
2:A:390:LYS:HZ1	2:A:409:SER:HB2	1.77	0.49
2:A:1020:ARG:HG3	2:A:1086:LEU:HD11	1.94	0.49
2:A:894:HIS:HB3	2:A:913:THR:HG23	1.93	0.49
1:B:173:SER:HB2	1:B:176:SER:HB3	1.94	0.49
1:B:573:THR:HA	1:B:582:ILE:HD11	1.93	0.49
2:A:837:THR:HG22	2:A:839:GLN:HG2	1.94	0.49
1:B:85:PHE:CE2	1:B:87:ASN:HB2	2.46	0.49
2:A:45:ASP:HA	2:A:48:ARG:HH21	1.77	0.49
2:A:793:ASP:HB3	2:A:941:GLN:HB3	1.95	0.49
1:B:485:VAL:CG1	1:B:486:GLN:N	2.75	0.49
2:A:1145:PHE:HB3	2:A:1286:LEU:HD11	1.93	0.49
1:B:364:LYS:HB2	1:B:367:ALA:HB2	1.93	0.49
2:A:937:MET:HE3	2:A:938:ALA:N	2.28	0.49
1:B:380:SER:HA	1:B:724:ALA:CB	2.37	0.48
1:B:570:PRO:HG3	1:B:595:PRO:HB3	1.94	0.48
1:B:654:LEU:HD12	1:B:654:LEU:O	2.14	0.48
2:A:819:ILE:HD13	2:A:925:ALA:HB1	1.96	0.48
2:A:1175:PHE:HD1	2:A:1181:VAL:HG22	1.79	0.48
1:B:575:ARG:HH11	1:B:580:ALA:HB1	1.77	0.48
2:A:19:PRO:HG2	2:A:213:LEU:HD11	1.96	0.48
2:A:1327:ILE:HG23	2:A:1327:ILE:O	2.13	0.48
2:A:292:ARG:HA	2:A:295:GLN:NE2	2.28	0.48
2:A:458:ILE:HG13	2:A:458:ILE:O	2.13	0.48
1:B:884:SER:O	2:A:972:MET:HE2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:528:ILE:O	1:B:532:ILE:HG13	2.14	0.48
1:B:650:MET:HE2	1:B:689:TYR:HE2	1.78	0.48
2:A:897:PHE:HB2	2:A:908:GLU:HB2	1.95	0.48
1:B:889:LYS:O	1:B:892:GLU:HG3	2.14	0.48
2:A:18:ASN:HB3	2:A:21:GLU:HB3	1.95	0.48
2:A:408:TRP:HB3	2:A:412:GLU:CD	2.39	0.48
2:A:150:ARG:HG2	2:A:191:GLU:HB2	1.96	0.47
1:B:421:GLN:HE21	1:B:518:SER:HA	1.78	0.47
1:B:544:ASN:ND2	1:B:655:PRO:HA	2.29	0.47
1:B:651:ILE:HD13	1:B:665:PHE:HE1	1.79	0.47
1:B:835:LEU:HD11	1:B:837:ILE:CD1	2.44	0.47
1:B:858:ALA:HB2	1:B:868:LEU:HD13	1.96	0.47
1:B:91:PRO:HG3	1:B:111:ALA:HB3	1.96	0.47
1:B:489:GLU:HG3	1:B:491:SER:HB3	1.96	0.47
1:B:787:VAL:HG12	1:B:787:VAL:O	2.15	0.47
2:A:941:GLN:HG2	2:A:944:ARG:HB2	1.95	0.47
1:B:403:LYS:HE2	1:B:403:LYS:HB2	1.74	0.47
2:A:395:THR:CG2	2:A:403:PHE:CD2	2.97	0.47
2:A:121:ARG:NH1	2:A:245:LEU:HD11	2.29	0.47
1:B:232:PHE:HB2	1:B:294:ASN:CB	2.42	0.47
1:B:835:LEU:HD11	1:B:837:ILE:HD11	1.97	0.47
2:A:815:SER:O	2:A:819:ILE:HG13	2.15	0.47
1:B:886:ARG:HB2	2:A:972:MET:CE	2.45	0.47
2:A:51:LYS:O	2:A:54:GLU:HG3	2.15	0.47
2:A:901:LYS:HD2	2:A:901:LYS:HA	1.65	0.47
2:A:358:VAL:HG13	2:A:1336:VAL:HG22	1.96	0.47
2:A:224:ALA:O	2:A:230:GLN:HB2	2.15	0.46
1:B:250:PHE:O	1:B:254:ILE:HD12	2.14	0.46
1:B:637:ILE:HD12	1:B:643:PHE:HE2	1.80	0.46
2:A:152:LEU:HD12	2:A:189:TYR:HB3	1.96	0.46
2:A:511:LYS:HA	2:A:511:LYS:HD2	1.73	0.46
2:A:803:THR:O	2:A:804:MET:HG2	2.15	0.46
1:B:219:SER:HA	1:B:222:GLU:HB3	1.98	0.46
1:B:572:GLY:CA	1:B:583:ARG:HD2	2.44	0.46
2:A:945:PHE:HA	2:A:949:SER:HA	1.97	0.46
1:B:811:LYS:HB2	1:B:811:LYS:HE2	1.65	0.46
1:B:842:CYS:SG	1:B:859:VAL:HG12	2.56	0.46
2:A:29:ILE:HB	2:A:106:TYR:HA	1.98	0.46
2:A:114:GLU:H	2:A:114:GLU:HG2	1.50	0.46
2:A:321:PRO:HD2	2:A:401:HIS:ND1	2.30	0.46
2:A:991:VAL:HG12	2:A:1029:ILE:HG21	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:322:VAL:HG23	1:B:713:ILE:HG23	1.97	0.46
2:A:55:ILE:HA	2:A:58:ASN:HD21	1.80	0.46
2:A:937:MET:HE3	2:A:938:ALA:H	1.80	0.46
1:B:342:LEU:HD13	1:B:347:PRO:HA	1.98	0.46
1:B:578:ILE:HB	1:B:591:HIS:CE1	2.50	0.46
1:B:887:ILE:HG13	1:B:888:THR:H	1.81	0.46
2:A:424:ASN:HD21	2:A:452:SER:HB3	1.81	0.46
2:A:513:ILE:HD11	2:A:591:LEU:HD21	1.97	0.46
2:A:584:THR:HG22	2:A:586:GLU:H	1.81	0.46
1:B:743:PRO:HG3	2:A:1307:PRO:HB2	1.98	0.46
2:A:762:LEU:HD23	2:A:766:LYS:HE2	1.98	0.46
2:A:976:ASN:HB3	2:A:977:TRP:H	1.65	0.46
2:A:15:THR:HB	2:A:206:PHE:CD1	2.50	0.45
2:A:1228:LEU:HA	2:A:1231:LEU:HD12	1.98	0.45
1:B:656:LEU:HD13	1:B:656:LEU:HA	1.68	0.45
1:B:424:THR:HG23	1:B:461:GLY:H	1.80	0.45
1:B:736:LYS:HD2	2:A:1225:TYR:OH	2.16	0.45
2:A:339:THR:HG22	2:A:340:PRO:N	2.32	0.45
2:A:387:ILE:O	2:A:387:ILE:HG13	2.17	0.45
1:B:839:ASN:HB3	2:A:915:GLN:HE22	1.81	0.45
1:B:436:SER:HA	1:B:439:TYR:CD2	2.52	0.45
1:B:835:LEU:HD12	1:B:837:ILE:HG13	1.98	0.45
2:A:600:ASP:HA	2:A:603:ILE:HD12	1.98	0.45
2:A:880:GLN:HE21	2:A:880:GLN:HB3	1.58	0.45
2:A:312:VAL:HA	2:A:465:VAL:HA	1.99	0.45
1:B:327:MET:O	1:B:330:VAL:HG22	2.17	0.45
2:A:170:GLN:HB3	2:A:177:ILE:O	2.17	0.45
1:B:134:GLY:HA2	1:B:207:TYR:CE2	2.52	0.45
2:A:1192:VAL:HB	2:A:1196:ASP:HB2	1.99	0.45
1:B:870:ILE:HG21	2:A:1003:TYR:CZ	2.52	0.45
1:B:880:PRO:HB3	2:A:910:SER:HA	1.98	0.45
1:B:330:VAL:HG21	1:B:350:ARG:HG3	2.00	0.44
2:A:567:ILE:HG23	2:A:580:MET:HG2	1.98	0.44
2:A:977:TRP:HA	2:A:1020:ARG:NH1	2.33	0.44
2:A:225:ILE:HA	2:A:231:PHE:HB2	1.99	0.44
2:A:1270:SER:O	2:A:1274:SER:HB2	2.17	0.44
1:B:773:THR:O	1:B:777:ILE:HG23	2.17	0.44
1:B:801:LYS:HE2	2:A:850:MET:HA	1.99	0.44
2:A:282:GLU:O	2:A:286:ILE:HG12	2.18	0.44
2:A:297:ILE:CG2	2:A:593:VAL:HG12	2.47	0.44
2:A:804:MET:HE3	2:A:804:MET:HB3	1.71	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1001:PHE:HB3	2:A:1022:SER:HB2	2.00	0.44
1:B:522:THR:O	1:B:526:LYS:HG3	2.18	0.44
2:A:800:VAL:CG1	2:A:814:TYR:HB3	2.47	0.44
2:A:986:ILE:HB	2:A:1056:GLN:NE2	2.33	0.44
2:A:57:GLN:HG3	2:A:64:TRP:NE1	2.33	0.44
1:B:871:GLU:HB3	1:B:875:ARG:HH21	1.81	0.44
2:A:974:LYS:HA	2:A:974:LYS:HD2	1.66	0.44
2:A:299:LYS:HD3	2:A:299:LYS:HA	1.61	0.44
2:A:395:THR:CG2	2:A:403:PHE:HD2	2.31	0.44
2:A:1142:LEU:HD21	2:A:1288:ILE:HG13	2.00	0.44
2:A:1069:GLN:HE21	2:A:1073:LYS:HA	1.82	0.43
2:A:1234:TYR:HD2	2:A:1239:LEU:HD13	1.83	0.43
2:A:797:ILE:HD12	2:A:935:TYR:CD1	2.51	0.43
2:A:1329:ARG:HD2	2:A:1332:GLU:OE2	2.19	0.43
1:B:559:GLN:HE21	1:B:565:ASN:HB3	1.81	0.43
1:B:417:MET:CG	1:B:691:SER:OG	2.66	0.43
1:B:635:LYS:O	1:B:638:VAL:HG22	2.18	0.43
1:B:889:LYS:C	1:B:891:LEU:N	2.77	0.43
2:A:1120:LEU:HD12	2:A:1120:LEU:HA	1.81	0.43
2:A:1024:TYR:CE1	2:A:1026:HIS:HB3	2.54	0.43
2:A:128:THR:OG1	2:A:130:ILE:HG12	2.18	0.43
1:B:92:TYR:CE2	1:B:726:ASP:HA	2.54	0.43
1:B:117:MET:HE3	1:B:117:MET:HB2	1.69	0.43
1:B:144:MET:HE2	1:B:193:LEU:HD22	2.01	0.43
2:A:996:ILE:HG23	2:A:1000:ASN:HA	2.01	0.43
1:B:536:ARG:HH22	1:B:681:GLU:HG3	1.83	0.43
2:A:1079:LEU:HD23	2:A:1079:LEU:HA	1.82	0.43
2:A:292:ARG:HD2	2:A:295:GLN:HE21	1.82	0.43
2:A:408:TRP:HH2	2:A:419:VAL:HG13	1.83	0.43
1:B:94:ARG:CZ	1:B:380:SER:HB3	2.50	0.42
1:B:386:ASN:OD1	1:B:386:ASN:O	2.37	0.42
1:B:827:TYR:CD1	1:B:845:MET:HE1	2.54	0.42
2:A:378:VAL:O	2:A:380:THR:HG23	2.18	0.42
2:A:604:THR:HA	2:A:608:LYS:HG2	2.01	0.42
2:A:1018:PRO:HG3	2:A:1087:TYR:O	2.19	0.42
1:B:452:SER:O	1:B:453:LYS:CG	2.67	0.42
1:B:473:SER:HA	1:B:487:ILE:HD13	2.01	0.42
2:A:198:LEU:HD11	2:A:514:TYR:CD1	2.54	0.42
2:A:898:PHE:HB2	2:A:928:PHE:HA	2.01	0.42
2:A:1071:ILE:O	2:A:1071:ILE:HG22	2.18	0.42
1:B:485:VAL:CG1	1:B:486:GLN:H	2.31	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:60:TYR:HB3	2:A:67:LYS:HE3	1.99	0.42
2:A:112:PHE:O	2:A:199:ILE:HD11	2.20	0.42
2:A:526:ILE:HG12	2:A:557:ARG:HE	1.83	0.42
2:A:1083:LYS:HG2	2:A:1085:GLY:N	2.30	0.42
2:A:1137:PHE:HE2	2:A:1264:LEU:HB2	1.84	0.42
2:A:1170:PHE:HE2	2:A:1213:LEU:HG	1.84	0.42
1:B:655:PRO:HG2	1:B:661:LEU:HB2	2.02	0.42
1:B:772:LYS:HD2	1:B:772:LYS:O	2.19	0.42
2:A:1097:PRO:HG2	2:A:1100:LEU:HD13	2.01	0.42
2:A:395:THR:HG23	2:A:403:PHE:CD2	2.54	0.42
2:A:1163:ARG:NH2	2:A:1220:ILE:HA	2.34	0.42
2:A:1224:ASP:HB2	2:A:1314:LEU:HD22	2.01	0.42
1:B:228:VAL:O	1:B:231:LEU:HB2	2.19	0.42
1:B:564:LEU:O	1:B:597:ARG:HA	2.20	0.42
1:B:618:ASN:ND2	1:B:644:GLN:H	2.16	0.42
2:A:1137:PHE:CD2	2:A:1264:LEU:HD12	2.54	0.42
1:B:884:SER:HB3	2:A:909:VAL:H	1.85	0.42
2:A:184:GLN:HB2	2:A:187:GLU:HG2	2.01	0.42
1:B:246:ASP:HA	1:B:350:ARG:NH1	2.34	0.42
2:A:390:LYS:NZ	2:A:409:SER:HB2	2.35	0.42
2:A:19:PRO:HB3	2:A:162:ILE:HG13	2.02	0.42
2:A:318:LYS:HE2	2:A:403:PHE:HE1	1.84	0.42
1:B:117:MET:O	1:B:121:MET:HG2	2.19	0.42
1:B:572:GLY:HA2	1:B:583:ARG:HB3	2.02	0.42
1:B:677:LEU:HG	1:B:678:PRO:HD2	2.02	0.42
2:A:57:GLN:HG3	2:A:64:TRP:CD1	2.55	0.42
2:A:427:ILE:O	2:A:427:ILE:CG2	2.66	0.42
2:A:1015:ILE:HD13	2:A:1015:ILE:HA	1.92	0.42
1:B:753:VAL:CG2	1:B:754:GLY:H	2.31	0.41
1:B:485:VAL:HG12	1:B:486:GLN:H	1.83	0.41
1:B:576:CYS:HB3	1:B:579:CYS:O	2.20	0.41
1:B:745:SER:HB2	1:B:750:PRO:HG2	2.01	0.41
2:A:236:TYR:HE1	2:A:240:MET:HE3	1.84	0.41
2:A:1148:ILE:HD13	2:A:1317:GLY:O	2.19	0.41
2:A:1189:SER:HA	2:A:1197:ILE:HD11	2.02	0.41
2:A:1264:LEU:O	2:A:1265:ILE:C	2.63	0.41
1:B:496:PHE:CZ	1:B:498:VAL:HG23	2.55	0.41
1:B:654:LEU:HA	1:B:655:PRO:HD3	1.90	0.41
1:B:769:GLN:O	1:B:773:THR:HG23	2.21	0.41
1:B:860:LEU:HA	1:B:866:PRO:HA	2.02	0.41
2:A:924:ILE:HG21	2:A:962:MET:HE1	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1146:LEU:HD12	2:A:1146:LEU:HA	1.89	0.41
2:A:1154:LEU:HD23	2:A:1154:LEU:HA	1.83	0.41
1:B:286:VAL:HG12	1:B:296:GLY:HA2	2.03	0.41
1:B:315:VAL:HG12	1:B:315:VAL:O	2.21	0.41
1:B:566:GLU:HG2	1:B:628:LEU:HD11	2.01	0.41
1:B:787:VAL:O	1:B:787:VAL:CG1	2.68	0.41
2:A:267:ALA:HB1	2:A:549:LEU:HD22	2.02	0.41
2:A:922:LYS:HB3	2:A:922:LYS:HE3	1.89	0.41
2:A:1083:LYS:HE3	2:A:1083:LYS:HB3	1.85	0.41
1:B:412:PHE:CD1	1:B:688:LEU:HD22	2.55	0.41
1:B:444:MET:HA	1:B:518:SER:HB3	2.03	0.41
1:B:884:SER:CB	2:A:909:VAL:H	2.33	0.41
2:A:1260:ILE:HG23	2:A:1279:PRO:HB2	2.03	0.41
1:B:281:ASP:HA	1:B:317:MET:HG3	2.03	0.41
1:B:389:PHE:HB2	1:B:671:LYS:HD2	2.02	0.41
2:A:293:ALA:O	2:A:296:VAL:HG22	2.20	0.41
2:A:469:TRP:CD1	2:A:596:PHE:HE2	2.38	0.41
1:B:94:ARG:HH11	1:B:380:SER:H	1.67	0.41
1:B:196:ARG:HA	1:B:196:ARG:HD3	1.80	0.41
1:B:671:LYS:HE3	1:B:671:LYS:HB3	1.90	0.41
1:B:702:LYS:O	1:B:706:LYS:HG3	2.21	0.41
1:B:725:ILE:CG1	1:B:726:ASP:H	2.32	0.41
2:A:198:LEU:HD11	2:A:514:TYR:CG	2.55	0.41
2:A:939:ILE:HG21	2:A:952:GLN:HG2	2.03	0.41
1:B:485:VAL:HG22	1:B:502:PHE:CD1	2.56	0.41
1:B:488:ILE:HG21	1:B:497:ASN:HB3	2.01	0.41
1:B:527:ASP:O	1:B:531:ILE:HG12	2.20	0.41
1:B:869:ASP:OD1	2:A:997:ASN:HB2	2.21	0.41
2:A:465:VAL:O	2:A:465:VAL:HG13	2.20	0.41
2:A:779:GLN:O	2:A:783:GLU:HB3	2.22	0.40
2:A:802:GLN:OE1	2:A:811:GLY:HA3	2.21	0.40
2:A:1266:ASN:HB2	2:A:1320:VAL:HB	2.03	0.40
1:B:426:LYS:HA	1:B:426:LYS:HD3	1.75	0.40
2:A:303:ASN:O	2:A:304:ARG:C	2.64	0.40
2:A:318:LYS:HG2	2:A:403:PHE:CD1	2.57	0.40
2:A:1251:ILE:HD13	2:A:1251:ILE:HA	1.87	0.40
2:A:137:ILE:HA	2:A:206:PHE:O	2.21	0.40
2:A:318:LYS:HE2	2:A:403:PHE:CE1	2.56	0.40
2:A:962:MET:HE2	2:A:962:MET:HA	2.03	0.40
2:A:1124:GLU:O	2:A:1125:GLU:C	2.64	0.40
1:B:575:ARG:NH1	1:B:580:ALA:HB1	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1:MET:HE1	2:A:592:TRP:CZ3	2.56	0.40
2:A:314:SER:HB3	2:A:464:SER:OG	2.22	0.40
2:A:414:HIS:HB3	2:A:419:VAL:HG22	2.03	0.40
2:A:1265:ILE:O	2:A:1265:ILE:HG13	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	808/1141 (71%)	715 (88%)	93 (12%)	0	100	100
2	A	1147/1377 (83%)	1071 (93%)	76 (7%)	0	100	100
All	All	1955/2518 (78%)	1786 (91%)	169 (9%)	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	721/1016 (71%)	703 (98%)	18 (2%)	42	69
2	A	1056/1252 (84%)	1039 (98%)	17 (2%)	55	75
All	All	1777/2268 (78%)	1742 (98%)	35 (2%)	48	72

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	92	TYR
1	B	150	LEU
1	B	231	LEU
1	B	232	PHE
1	B	234	ARG
1	B	409	TYR
1	B	439	TYR
1	B	479	TRP
1	B	503	LEU
1	B	567	VAL
1	B	568	SER
1	B	569	SER
1	B	571	VAL
1	B	656	LEU
1	B	883	HIS
1	B	886	ARG
1	B	888	THR
1	B	889	LYS
2	A	3	PHE
2	A	279	LEU
2	A	299	LYS
2	A	303	ASN
2	A	305	LEU
2	A	360	LYS
2	A	403	PHE
2	A	567	ILE
2	A	898	PHE
2	A	980	ILE
2	A	1005	LEU
2	A	1096	LEU
2	A	1115	ILE
2	A	1129	GLN
2	A	1262	ARG
2	A	1337	LYS
2	A	1339	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	162	HIS
1	B	421	GLN

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Mol	Chain	Res	Type
1	B	559	GLN
1	B	591	HIS
1	B	592	GLN
1	B	602	HIS
1	B	618	ASN
1	B	622	ASN
1	B	642	ASN
1	B	723	HIS
1	B	853	HIS
2	A	135	GLN
2	A	295	GLN
2	A	344	GLN
2	A	424	ASN
2	A	543	GLN
2	A	571	HIS
2	A	601	ASN
2	A	809	ASN
2	A	859	ASN
2	A	880	GLN
2	A	915	GLN
2	A	1000	ASN
2	A	1069	GLN
2	A	1117	GLN
2	A	1141	HIS
2	A	1165	HIS
2	A	1195	ASN
2	A	1219	ASN
2	A	1232	GLN
2	A	1266	ASN
2	A	1310	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (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 (i)

There are no chain breaks in this entry.

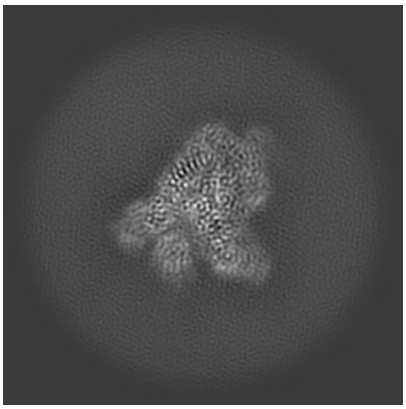
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-81558. These allow visual inspection of the internal detail of the map and identification of artifacts.

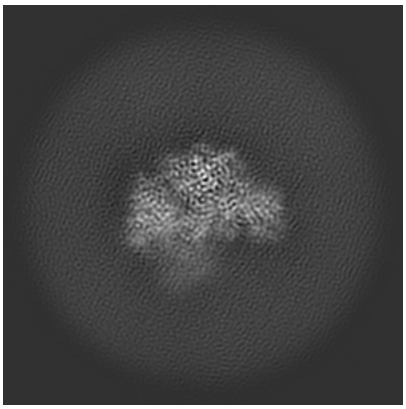
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

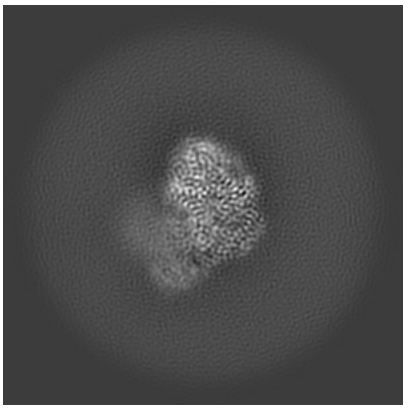
6.1.1 Primary map



X

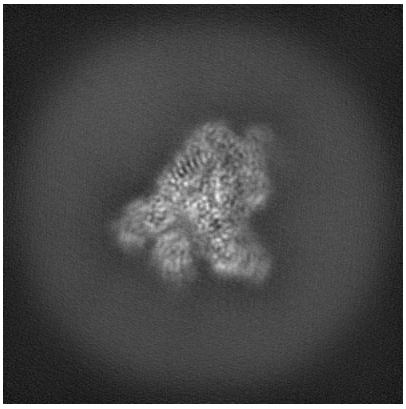


Y

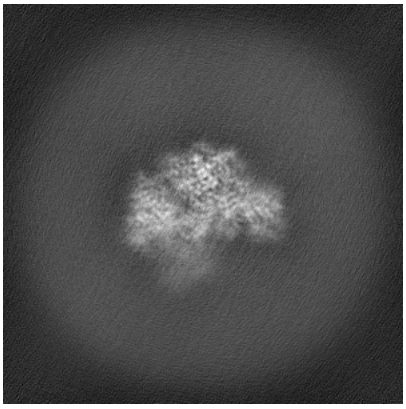


Z

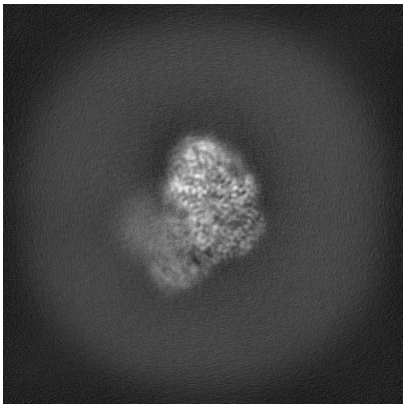
6.1.2 Raw map



X



Y

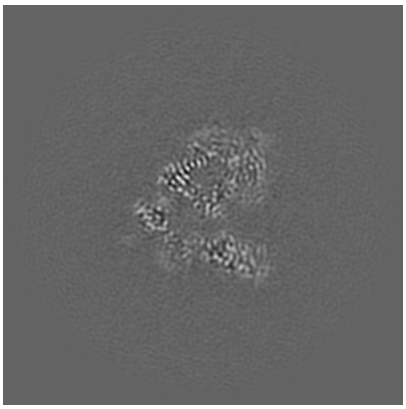


Z

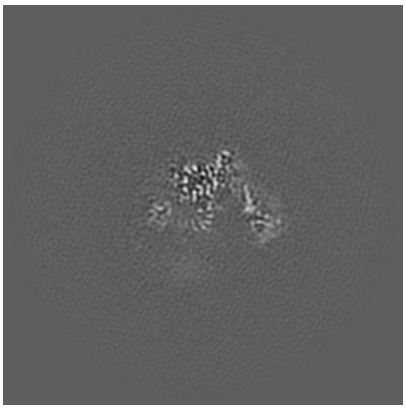
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

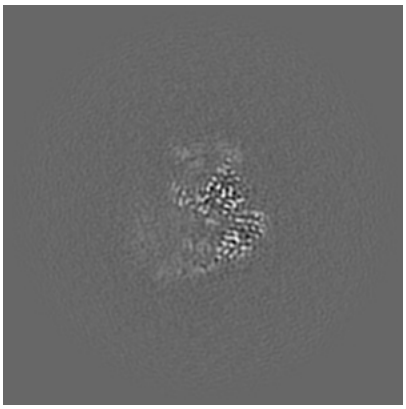
6.2.1 Primary map



X Index: 160

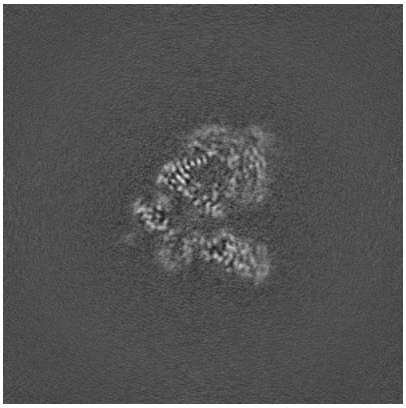


Y Index: 160

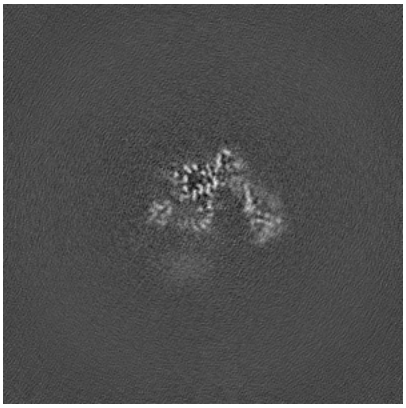


Z Index: 160

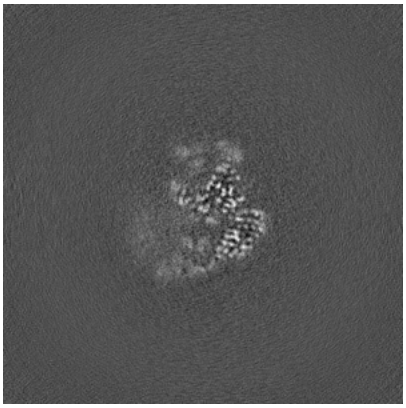
6.2.2 Raw map



X Index: 160



Y Index: 160

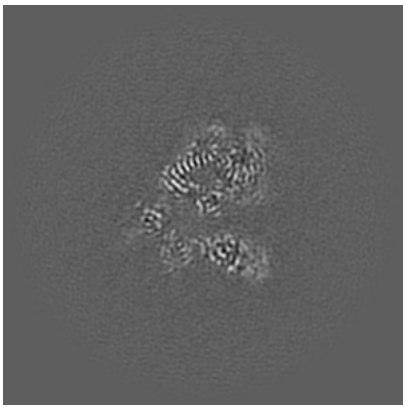


Z Index: 160

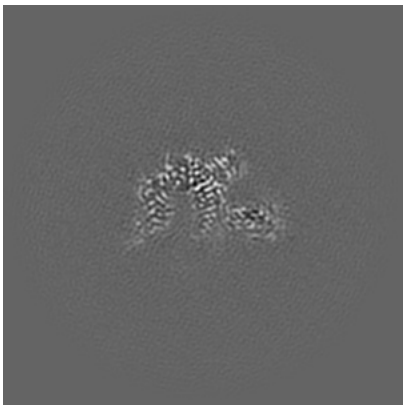
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

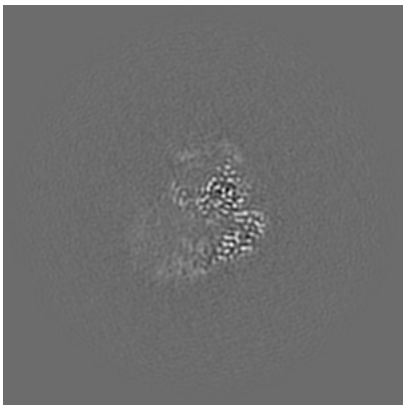
6.3.1 Primary map



X Index: 158

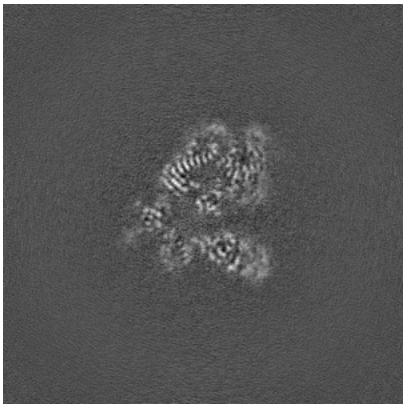


Y Index: 171

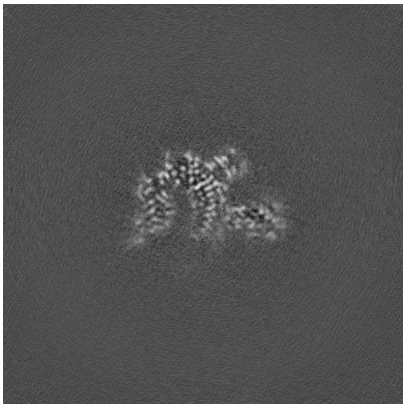


Z Index: 159

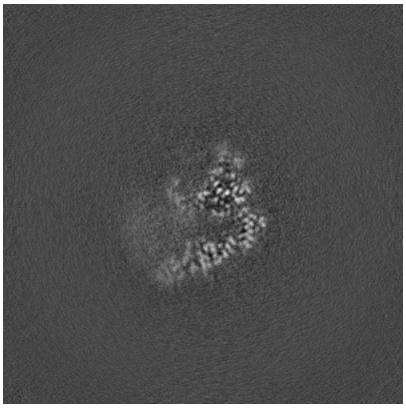
6.3.2 Raw map



X Index: 158



Y Index: 171

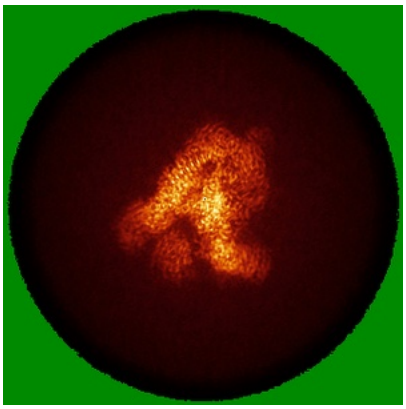


Z Index: 155

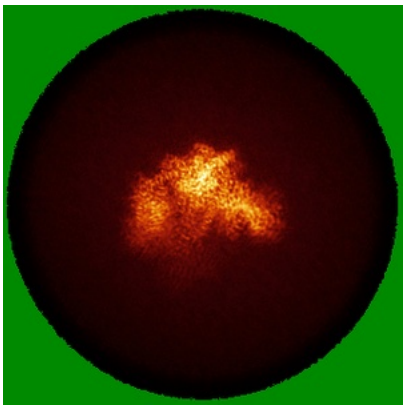
The images above show the largest variance slices of the map in three orthogonal directions.

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

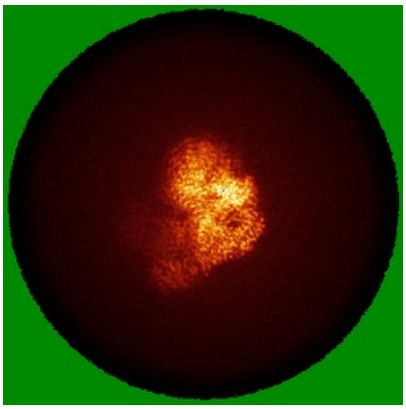
6.4.1 Primary map



X

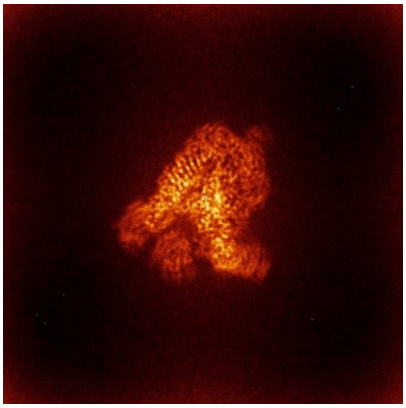


Y

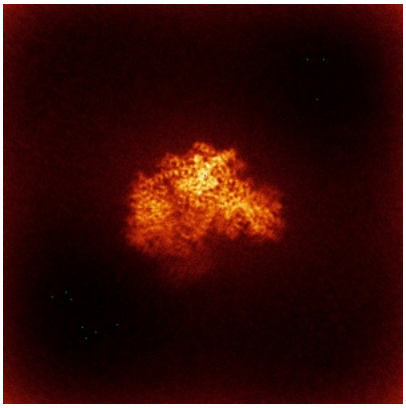


Z

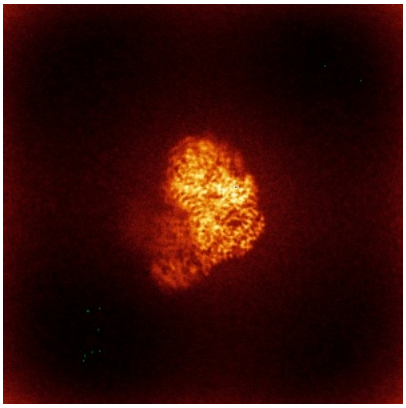
6.4.2 Raw map



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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0623. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

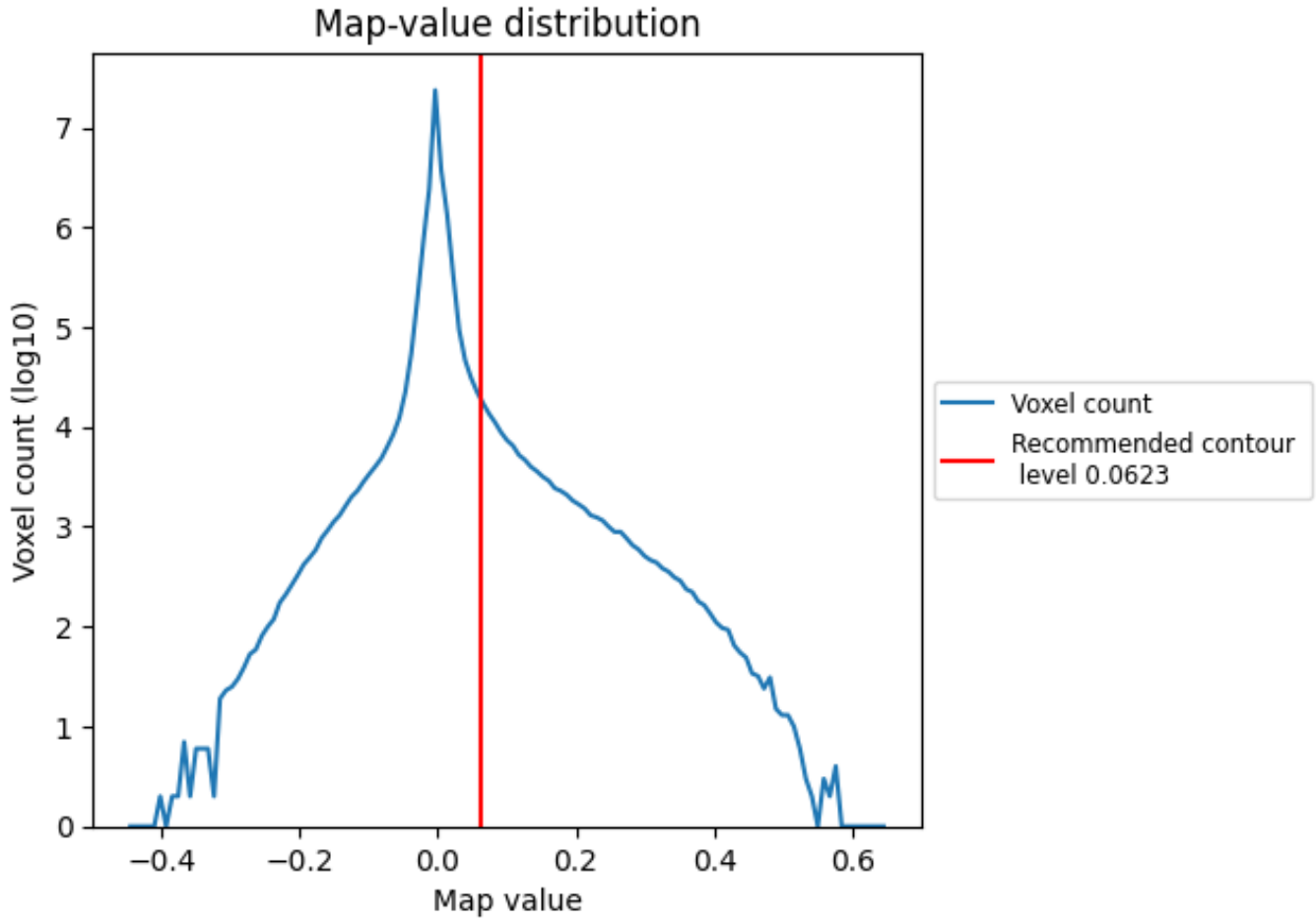
6.6 Mask visualisation (i)

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

7 Map analysis

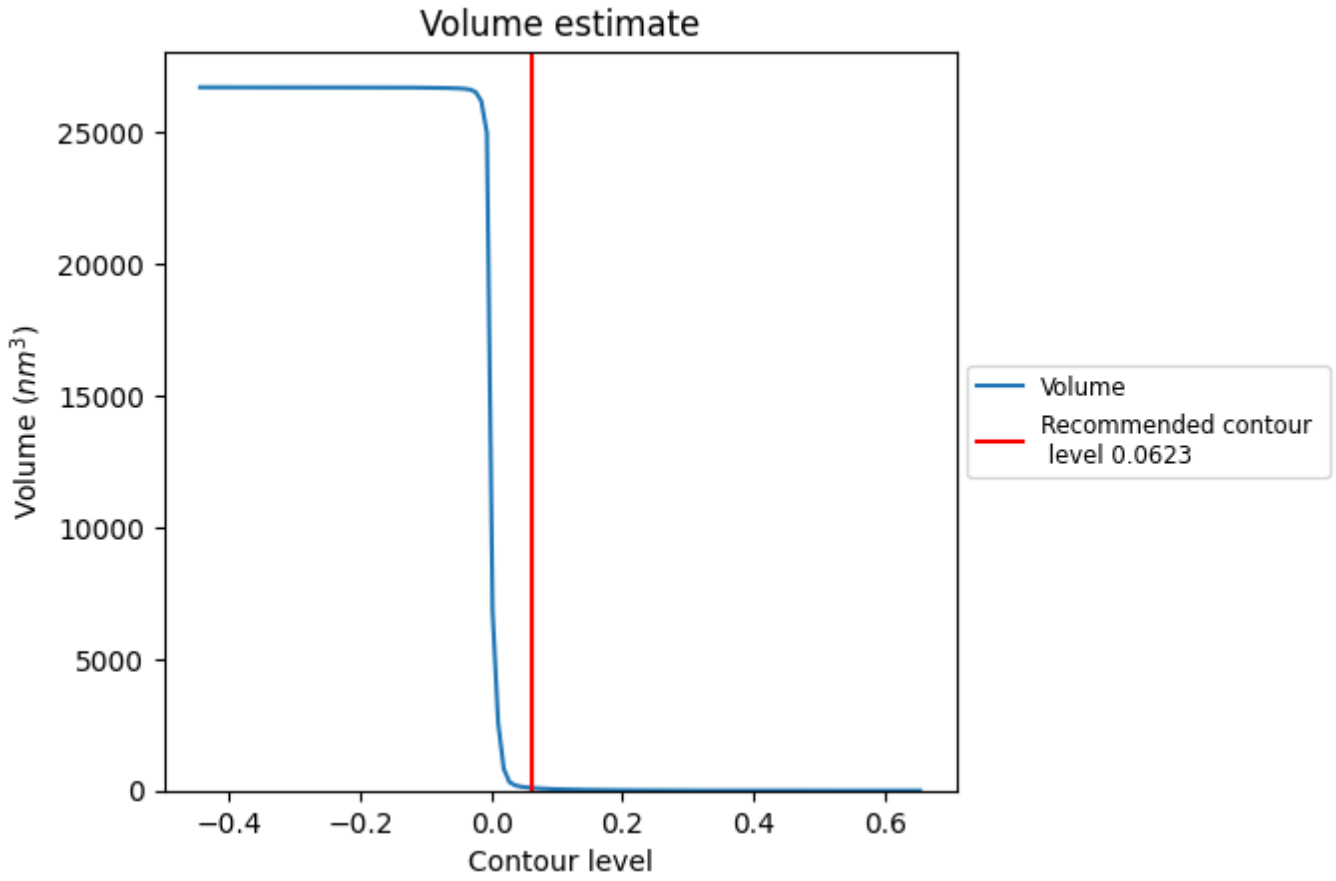
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

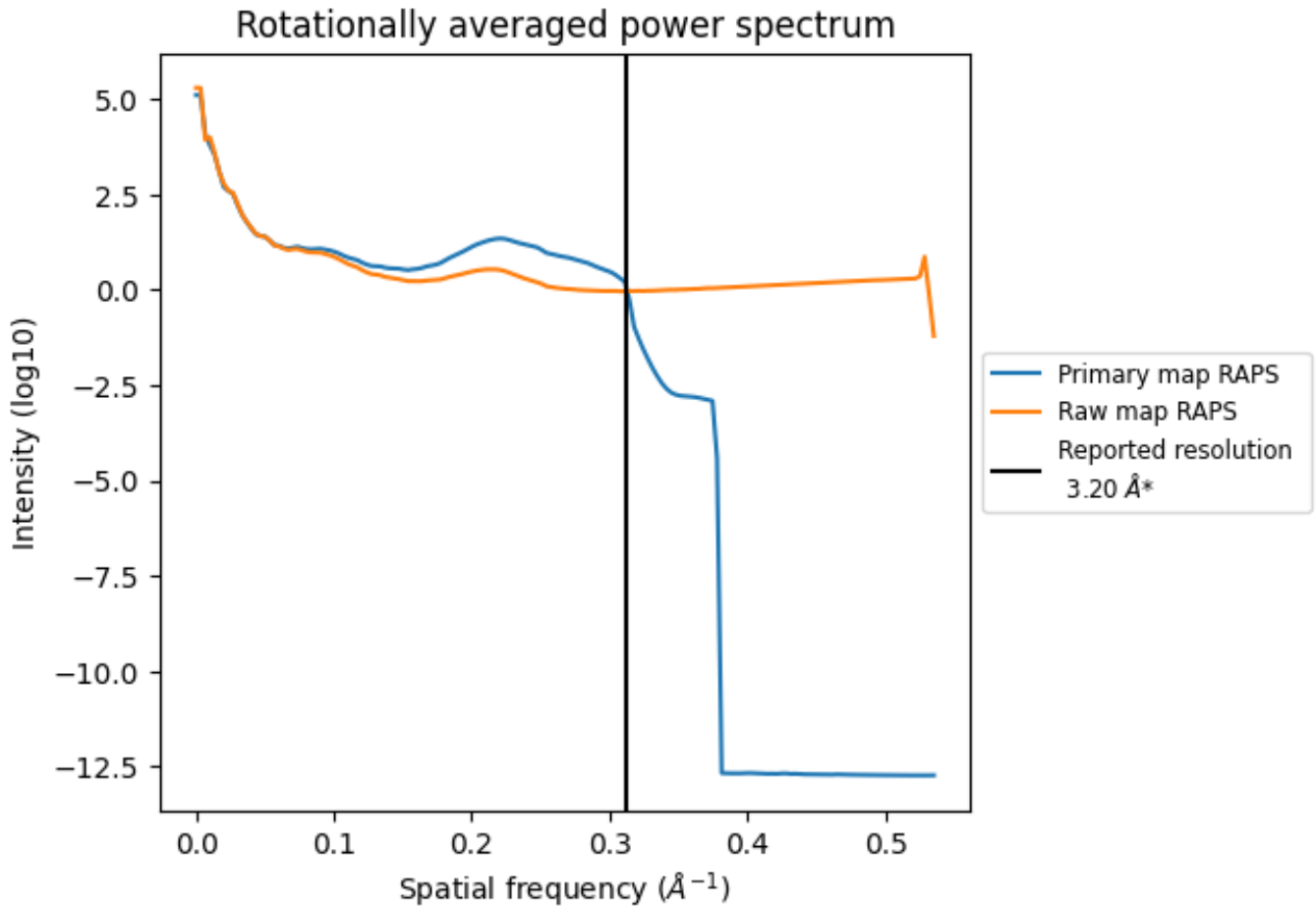
7.2 Volume estimate (i)



The volume at the recommended contour level is 99 nm^3; this corresponds to an approximate mass of 89 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)

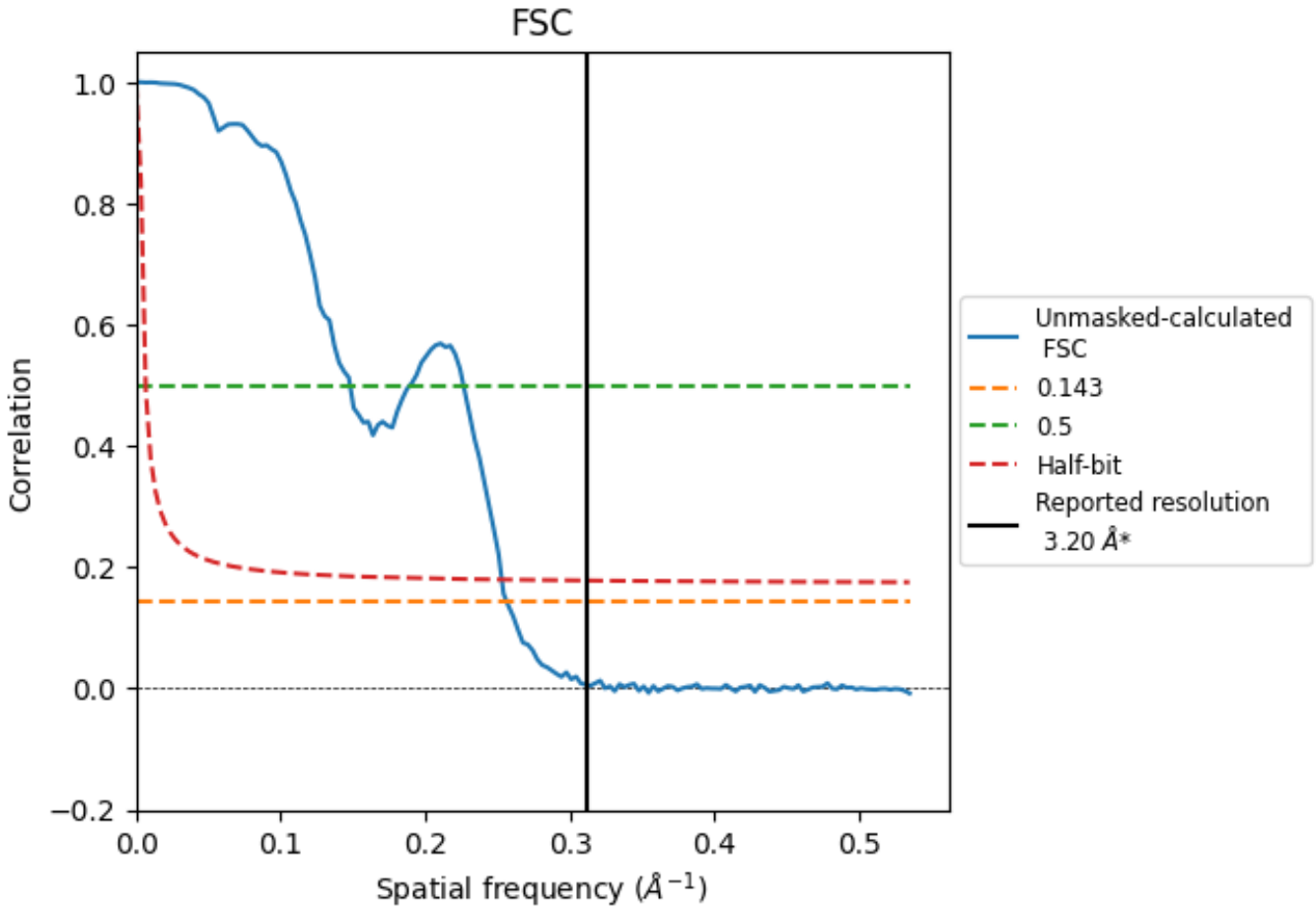


*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2 Resolution estimates (i)

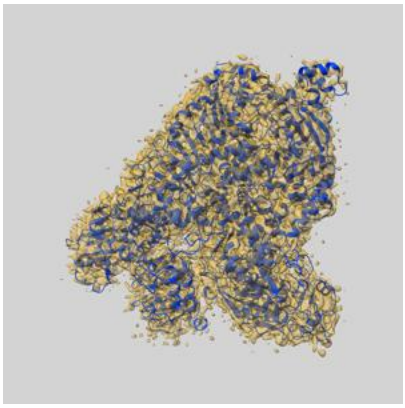
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.90	6.75	3.95

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.90 differs from the reported value 3.2 by more than 10 %

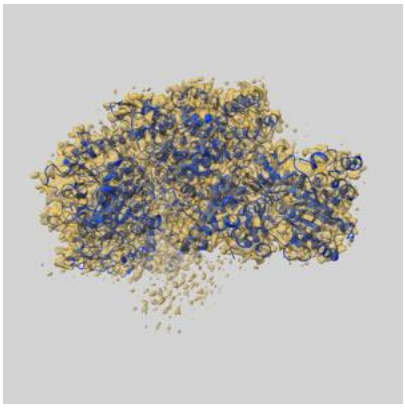
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-81558 and PDB model 27ZG. Per-residue inclusion information can be found in section 3 on page 5.

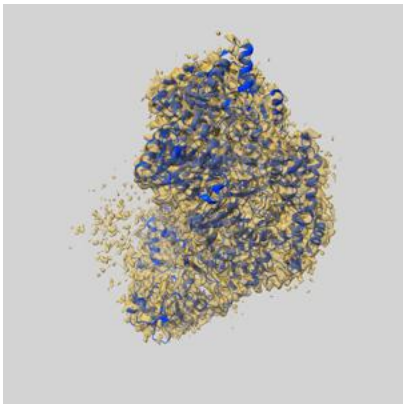
9.1 Map-model overlay



X



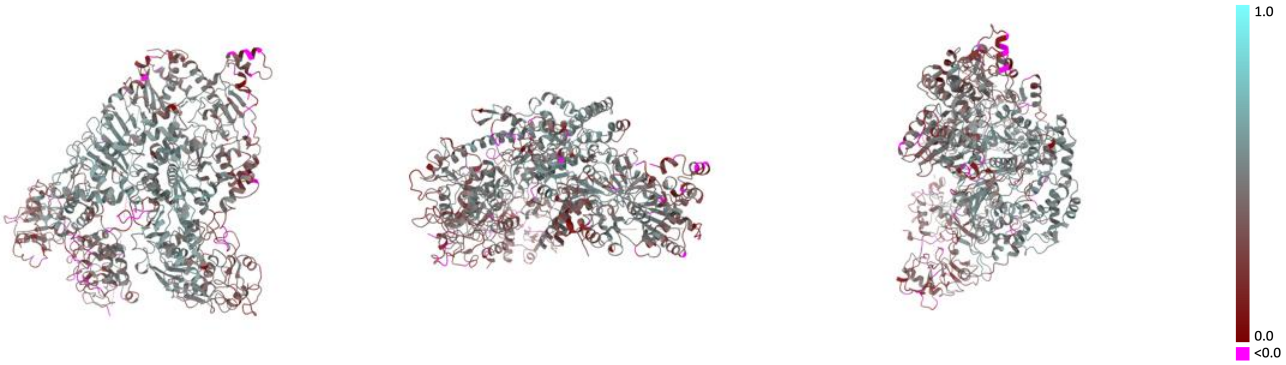
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0623 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.

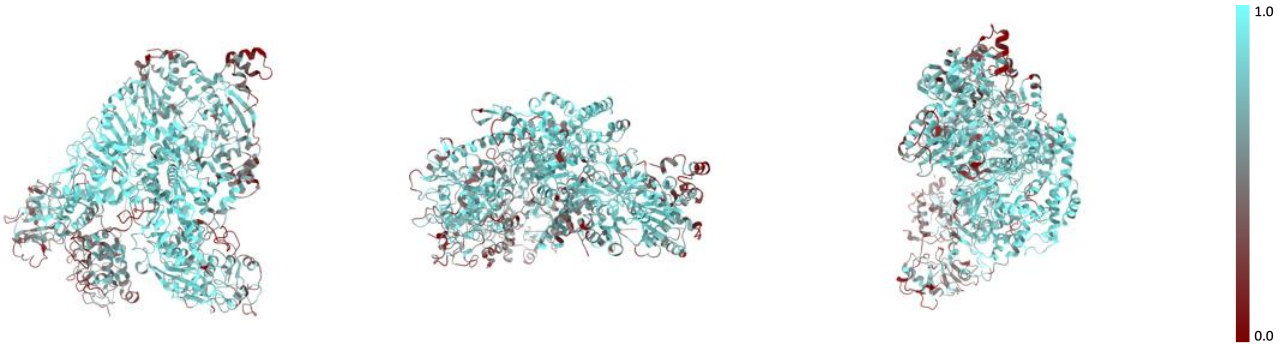
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

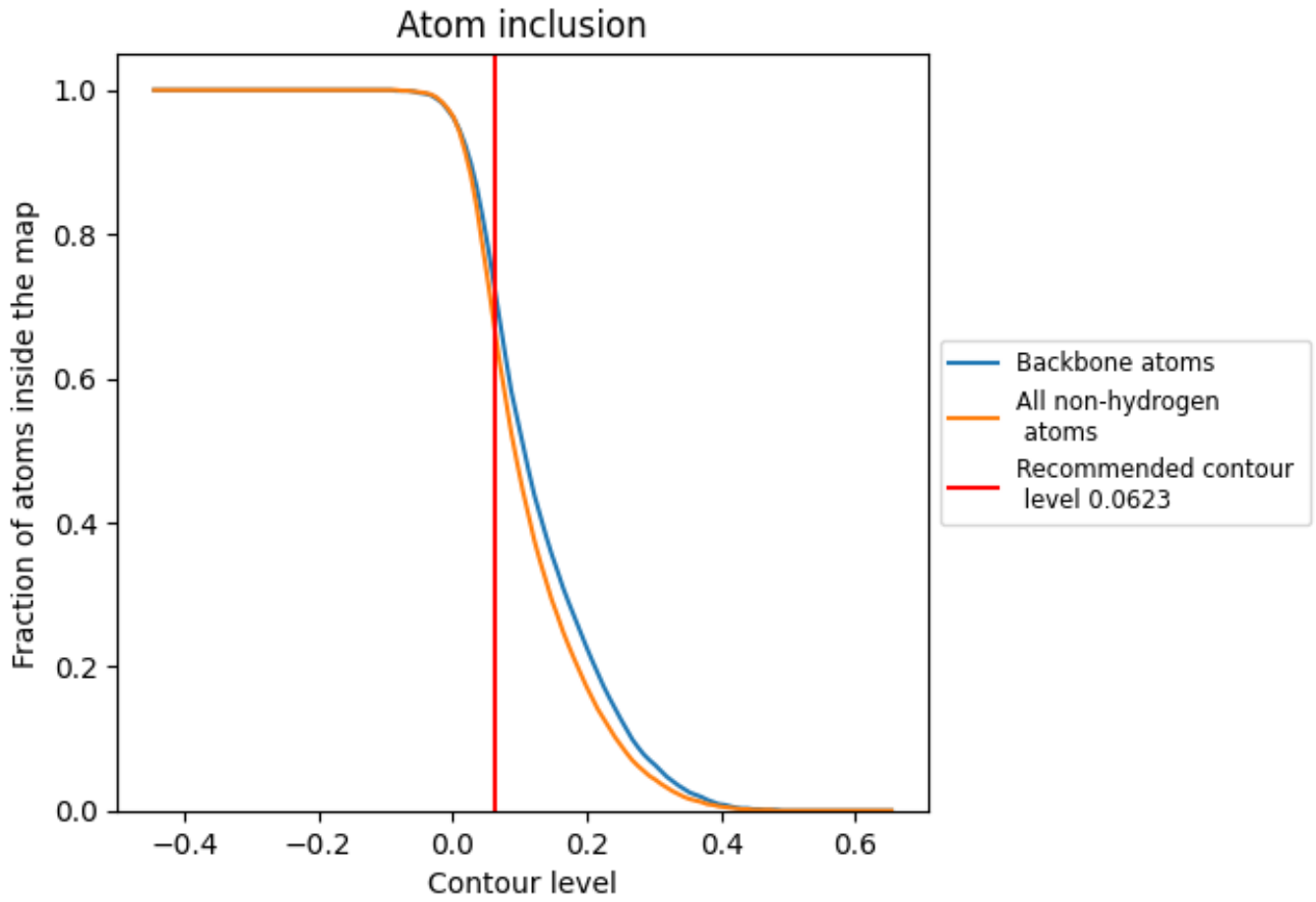
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.0623).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 67% 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 (0.0623) and Q-score for the entire model and for each chain.



Chain	Atom inclusion	Q-score
All	0.6710	0.4000
A	0.6530	0.3920
B	0.6970	0.4110