Full wwPDB EM Validation Report ⓘ

May 12, 2025 – 02:00 PM JST

PDB ID	:	9KJC / pdb_00009kjc
EMDB ID	:	EMD-62366
Title	:	Cryo-EM structure of BL-bound atABCB19 in lipid nanodisc
Authors	:	Liu, Y.; Liao, M.
Deposited on	:	2024-11-12
Resolution	:	3.60 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:

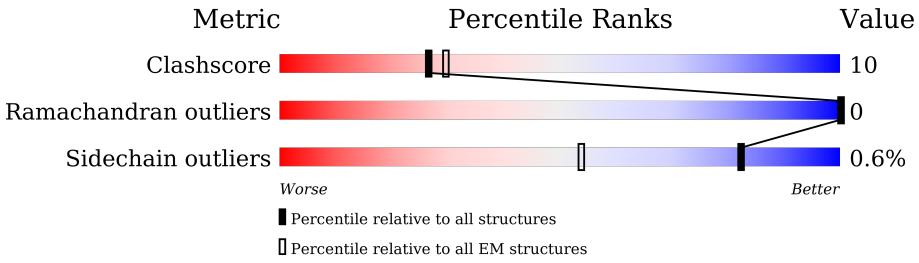
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 3.60 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 >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1252	27% 74% 19% · 7%

2 Entry composition

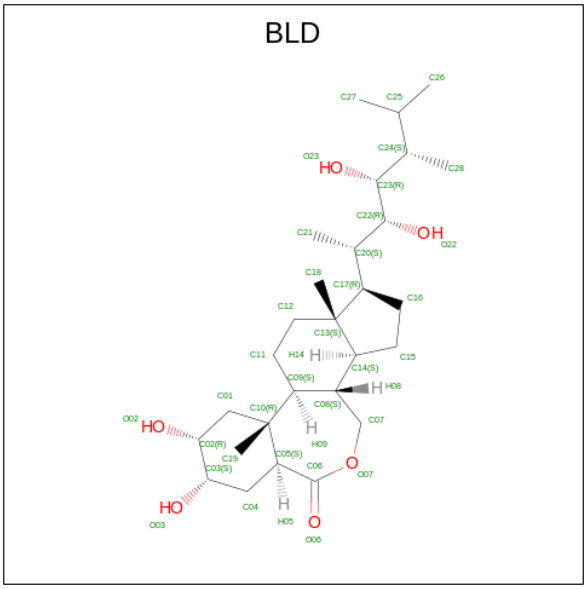
There are 2 unique types of molecules in this entry. The entry contains 9015 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ABC transporter B family member 19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1168	8981	5761	1521	1662	37	0	0

- Molecule 2 is Brassinolide (CCD ID: BLD) (formula: $C_{28}H_{48}O_6$) (labeled as "Ligand of Interest" by depositor).



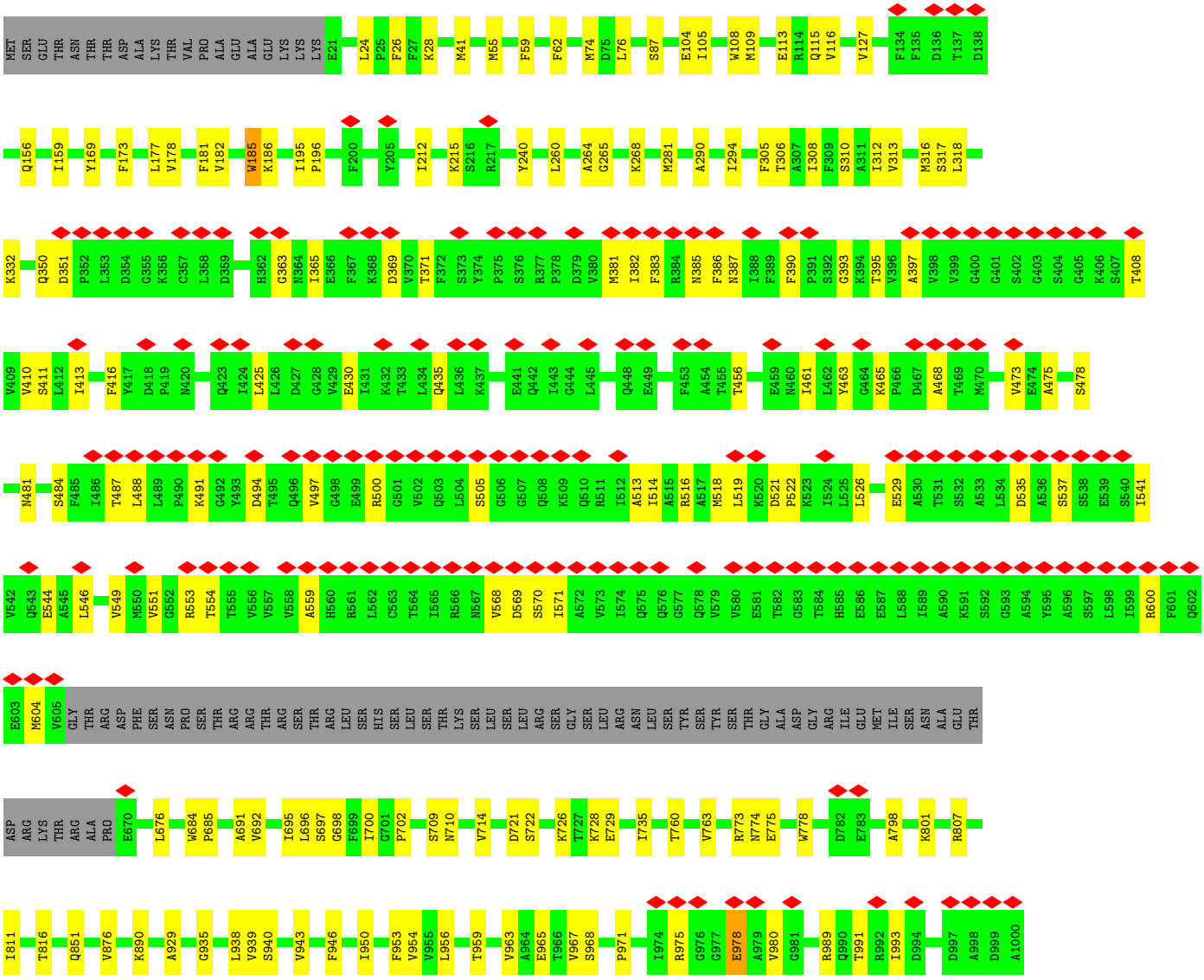
Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
2	A	1	34	28	6	0

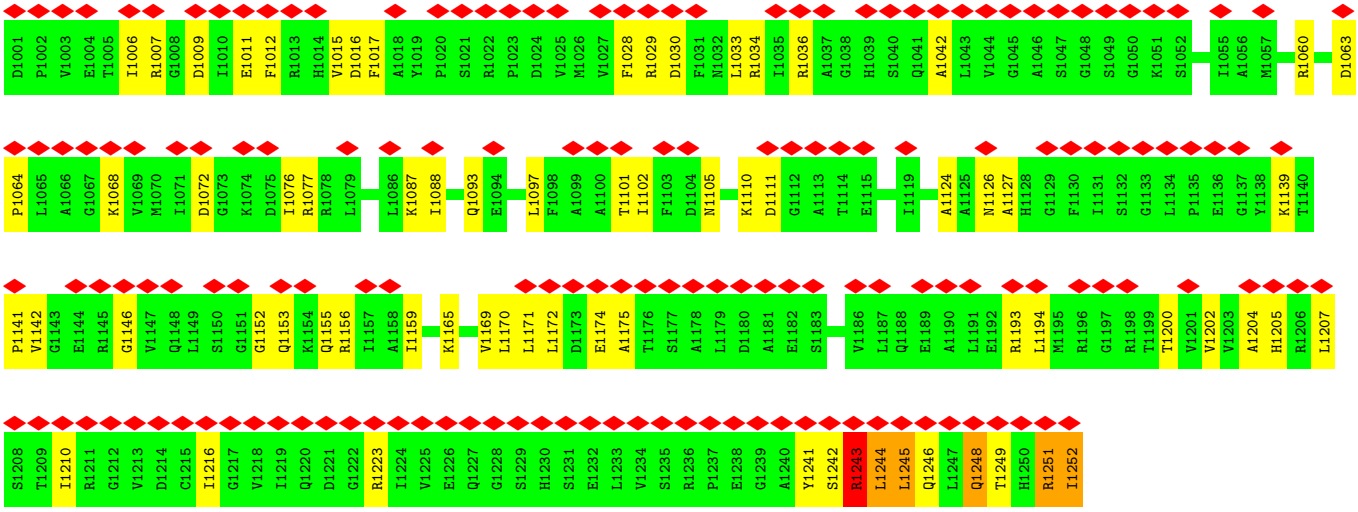
3 Residue-property plots (i)

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: ABC transporter B family member 19

Chain A:




D1001 P1002 V1003 E1004 T1005 I1006 R1007 G1008 D1009 I1010 E1011 F1012 R1013 H1014 V1015 D1016 F1017 A1018 Y1019 P1020 S1021 R1022 P1023 D1024 V1025 M1026 V1027 F1028 R1029 D1030 F1031 N1032 L1033 R1034 I1035 R1036 A1037 G1038 H1039 S1040 Q1041 A1042 L1043 V1044 G1045 A1046 S1047 G1048 S1049 G1050 K1051 S1052 I1055 A1056 M1057 R1060 D1063
P1064 L1065 A1066 G1067 K1068 V1069 M1070 I1071 D1072 G1073 K1074 D1075 I1076 R1077 R1078 L1079 L1086 K1087 I1088 Q1093 E1094 L1097 F1098 A1099 A1100 T1101 I1102 F1103 D1104 N1105 K1110 D1111 G1112 A1113 T1114 E1115 I1119 A1124 A1125 N1126 A1127 H1128 G1129 F1130 I1131 S1132 G1133 L1134 P1135 E1136 G1137 Y1138 K1139 T1140
P1141 V1142 G1143 E1144 R1145 G1146 V1147 Q1148 L1149 S1150 G1151 G1152 Q1153 K1154 Q1155 R1156 I1157 A1158 I1159 K1165 V1169 L1170 L1171 L1172 D1173 E1174 A1175 T1176 S1177 A1178 L1179 D1180 A1181 E1182 S1183 V1186 L1187 Q1188 E1189 A1190 L1191 E1192 R1193 L1194 M1195 R1196 G1197 R1198 T1199 T1200 V1201 V1202 V1203 A1204 H1205 R1206 L1207
S1208 T1209 I1210 R1211 G1212 V1213 D1214 C1215 I1216 G1217 V1218 I1219 Q1220 D1221 G1222 R1223 I1224 V1225 E1226 Q1227 G1228 S1229 H1230 S1231 E1232 L1233 V1234 S1235 R1236 P1237 E1238 G1239 A1240 Y1241 S1242 R1243 L1244 L1245 Q1246 L1247 Q1248 T1249 H1250 R1251 I1252

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	191000	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 ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.610	Depositor
Minimum map value	-1.711	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.053	Depositor
Recommended contour level	0.28	Depositor
Map size (Å)	239.40001, 239.40001, 239.40001	wwPDB
Map dimensions	280, 280, 280	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.855, 0.855, 0.855	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.19	0/9150	0.40	0/12381

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	4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1243	ARG	Sidechain
1	A	1251	ARG	Sidechain
1	A	185	TRP	Peptide
1	A	978	GLU	Peptide

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	8981	0	9076	177	0
2	A	34	0	48	7	0
All	All	9015	0	9124	177	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 10.

All (177) 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:305:PHE:CZ	2:A:1301:BLD:H126	1.38	1.51
1:A:1249:THR:HA	1:A:1252:ILE:CD1	1.61	1.29
1:A:305:PHE:HZ	2:A:1301:BLD:C26	1.54	1.21
1:A:305:PHE:CZ	2:A:1301:BLD:C26	2.25	1.20
1:A:1249:THR:HA	1:A:1252:ILE:HD11	1.09	1.03
1:A:1249:THR:O	1:A:1252:ILE:HD12	1.60	1.00
1:A:1249:THR:CA	1:A:1252:ILE:HD11	1.97	0.94
1:A:1249:THR:CA	1:A:1252:ILE:CD1	2.47	0.92
1:A:1249:THR:HA	1:A:1252:ILE:HD12	1.58	0.84
1:A:1248:GLN:O	1:A:1252:ILE:HG13	1.80	0.81
1:A:281:MET:HE1	1:A:735:ILE:HG12	1.65	0.78
1:A:676:LEU:HD11	1:A:980:VAL:HG21	1.66	0.75
1:A:1207:LEU:HD12	1:A:1210:ILE:HD11	1.70	0.74
1:A:1249:THR:C	1:A:1252:ILE:HD12	2.15	0.71
1:A:410:VAL:HG12	1:A:526:LEU:HD12	1.71	0.71
1:A:1249:THR:CA	1:A:1252:ILE:HD12	2.17	0.71
1:A:312:ILE:HG22	1:A:316:MET:HE1	1.72	0.70
1:A:1152:GLY:O	1:A:1155:GLN:NE2	2.25	0.68
1:A:350:GLN:HG2	1:A:435:GLN:HB2	1.78	0.66
1:A:522:PRO:O	1:A:553:ARG:NH1	2.29	0.66
1:A:684:TRP:CD1	1:A:685:PRO:HD3	2.31	0.65
1:A:305:PHE:CE1	2:A:1301:BLD:C26	2.81	0.63
1:A:461:ILE:HG21	1:A:473:VAL:HG13	1.80	0.63
1:A:195:ILE:HG13	1:A:196:PRO:HD3	1.81	0.62
1:A:1172:LEU:HD12	1:A:1202:VAL:HG22	1.79	0.62
1:A:697:SER:HA	1:A:700:ILE:HD12	1.80	0.62
1:A:305:PHE:HZ	2:A:1301:BLD:H126	0.64	0.61
1:A:240:TYR:HD1	1:A:1165:LYS:HZ3	1.46	0.61
1:A:978:GLU:O	1:A:980:VAL:N	2.34	0.61
1:A:1060:ARG:NH2	1:A:1063:ASP:OD1	2.32	0.61
1:A:1127:ALA:HB2	1:A:1156:ARG:HD3	1.82	0.60
1:A:1141:PRO:HB2	1:A:1146:GLY:HA3	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:365:ILE:HB	1:A:390:PHE:HB2	1.82	0.60
1:A:481:ASN:ND2	1:A:544:GLU:OE2	2.34	0.60
1:A:393:GLY:H	1:A:554:THR:HG22	1.67	0.59
1:A:395:THR:OG1	1:A:569:ASP:OD1	2.21	0.59
1:A:413:ILE:HG21	1:A:526:LEU:HD11	1.85	0.59
1:A:281:MET:HE3	1:A:281:MET:HA	1.84	0.58
1:A:774:ASN:HA	1:A:991:THR:HG21	1.86	0.58
1:A:1068:LYS:HG2	1:A:1077:ARG:HH21	1.68	0.57
1:A:1170:LEU:HD12	1:A:1171:LEU:H	1.69	0.57
1:A:491:LYS:HE2	1:A:494:ASP:HB3	1.87	0.57
1:A:1009:ASP:HB3	1:A:1072:ASP:H	1.70	0.56
1:A:1245:LEU:O	1:A:1249:THR:HG23	2.05	0.56
1:A:465:LYS:HE3	1:A:519:LEU:HD21	1.88	0.56
1:A:938:LEU:HD23	1:A:943:VAL:HG23	1.88	0.55
1:A:116:VAL:HG21	1:A:156:GLN:HB2	1.88	0.55
1:A:760:THR:HA	1:A:763:VAL:HG12	1.87	0.55
1:A:500:ARG:NH1	1:A:505:SER:OG	2.40	0.55
1:A:691:ALA:O	1:A:695:ILE:HD12	2.07	0.55
1:A:371:THR:HG22	1:A:385:ASN:H	1.72	0.54
1:A:381:MET:HA	1:A:381:MET:HE3	1.89	0.54
1:A:26:PHE:HB2	1:A:332:LYS:HD3	1.89	0.53
1:A:397:ALA:HB3	1:A:571:ILE:HG23	1.91	0.53
1:A:692:VAL:O	1:A:696:LEU:HG	2.10	0.52
1:A:1011:GLU:HG3	1:A:1034:ARG:HG3	1.92	0.52
1:A:1159:ILE:HG23	1:A:1194:LEU:HD11	1.91	0.52
1:A:369:ASP:N	1:A:387:ASN:OD1	2.37	0.51
1:A:546:LEU:O	1:A:549:VAL:HG12	2.10	0.51
1:A:1017:PHE:HB3	1:A:1028:PHE:HD2	1.76	0.51
1:A:1060:ARG:HG2	1:A:1060:ARG:HH11	1.76	0.50
1:A:993:ILE:HG23	1:A:1060:ARG:HE	1.77	0.50
1:A:41:MET:HE1	1:A:115:GLN:NE2	2.27	0.50
1:A:127:VAL:HG11	1:A:876:VAL:HG22	1.94	0.50
1:A:465:LYS:HD3	1:A:468:ALA:N	2.26	0.50
1:A:529:GLU:HG3	1:A:559:ALA:HA	1.93	0.49
1:A:956:LEU:HA	1:A:959:THR:HG22	1.95	0.49
1:A:104:GLU:HG3	1:A:105:ILE:N	2.27	0.49
1:A:351:ASP:N	1:A:351:ASP:OD1	2.44	0.49
1:A:55:MET:HE3	1:A:59:PHE:CE2	2.49	0.48
1:A:851:GLN:HE22	1:A:965:GLU:HG3	1.77	0.48
1:A:1029:ARG:HH12	1:A:1223:ARG:HD2	1.78	0.48
1:A:290:ALA:O	1:A:294:ILE:HD12	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:395:THR:O	1:A:570:SER:OG	2.30	0.48
1:A:946:PHE:CE1	1:A:950:ILE:HG13	2.48	0.48
1:A:1012:PHE:HB2	1:A:1033:LEU:H	1.78	0.48
1:A:726:LYS:HA	1:A:729:GLU:OE1	2.14	0.48
1:A:1015:VAL:HG13	1:A:1064:PRO:HB3	1.96	0.48
1:A:1174:GLU:O	1:A:1204:ALA:HA	2.13	0.48
1:A:465:LYS:HD3	1:A:468:ALA:H	1.79	0.48
1:A:1102:ILE:HD11	1:A:1142:VAL:HG11	1.96	0.47
1:A:798:ALA:O	1:A:801:LYS:HG3	2.14	0.47
1:A:305:PHE:CE1	2:A:1301:BLD:H326	2.49	0.47
1:A:568:VAL:HG12	1:A:570:SER:H	1.78	0.47
1:A:721:ASP:N	1:A:721:ASP:OD1	2.46	0.47
1:A:1110:LYS:HD2	1:A:1111:ASP:N	2.29	0.47
1:A:62:PHE:CE2	2:A:1301:BLD:H226	2.49	0.47
1:A:41:MET:HG2	1:A:108:TRP:CH2	2.50	0.47
1:A:475:ALA:O	1:A:478:SER:OG	2.28	0.47
1:A:521:ASP:OD1	1:A:553:ARG:NH2	2.47	0.47
1:A:1093:GLN:HE22	1:A:1175:ALA:H	1.61	0.47
1:A:1242:SER:O	1:A:1243:ARG:C	2.56	0.47
1:A:980:VAL:HG13	1:A:980:VAL:O	2.15	0.47
1:A:1153:GLN:HA	1:A:1156:ARG:HD2	1.96	0.47
1:A:1248:GLN:O	1:A:1252:ILE:CG1	2.58	0.46
1:A:1007:ARG:HH12	1:A:1009:ASP:HB2	1.80	0.46
1:A:109:MET:HE3	1:A:109:MET:HB2	1.82	0.46
1:A:215:LYS:HB3	1:A:260:LEU:HD21	1.96	0.46
1:A:484:SER:O	1:A:487:THR:OG1	2.29	0.46
1:A:185:TRP:HD1	1:A:186:LYS:H	1.64	0.46
1:A:1170:LEU:HD12	1:A:1171:LEU:N	2.30	0.46
1:A:169:TYR:O	1:A:317:SER:HB3	2.16	0.46
1:A:1244:LEU:HD13	1:A:1244:LEU:HA	1.76	0.46
1:A:383:PHE:HB3	1:A:386:PHE:HB2	1.97	0.45
1:A:1016:ASP:OD1	1:A:1016:ASP:N	2.49	0.45
1:A:212:ILE:HD12	1:A:264:ALA:HB1	1.98	0.45
1:A:773:ARG:HD3	1:A:773:ARG:HA	1.70	0.45
1:A:968:SER:O	1:A:971:PRO:HD2	2.16	0.45
1:A:74:MET:HE3	1:A:74:MET:HA	1.99	0.45
1:A:87:SER:HB2	1:A:929:ALA:HB1	1.97	0.45
1:A:488:LEU:O	1:A:488:LEU:HD23	2.17	0.45
1:A:775:GLU:HG2	1:A:778:TRP:H	1.82	0.45
1:A:62:PHE:HE1	1:A:953:PHE:HE2	1.63	0.45
1:A:698:GLY:O	1:A:702:PRO:HD2	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:PHE:CG	1:A:318:LEU:HD21	2.52	0.45
1:A:313:VAL:HA	1:A:316:MET:HE2	1.99	0.45
1:A:807:ARG:O	1:A:811:ILE:HG12	2.17	0.45
1:A:1101:THR:HB	1:A:1139:LYS:HA	1.99	0.45
1:A:156:GLN:HA	1:A:159:ILE:HG22	1.99	0.45
1:A:514:ILE:O	1:A:518:MET:HG2	2.16	0.45
1:A:535:ASP:N	1:A:535:ASP:OD1	2.50	0.45
1:A:178:VAL:O	1:A:182:VAL:HG12	2.17	0.45
1:A:722:SER:O	1:A:726:LYS:HG3	2.17	0.45
1:A:946:PHE:HE1	1:A:950:ILE:HG13	1.82	0.45
1:A:1076:ILE:HG23	1:A:1077:ARG:HG3	1.99	0.45
1:A:1175:ALA:HA	1:A:1205:HIS:HD2	1.80	0.45
1:A:308:ILE:O	1:A:312:ILE:HG13	2.16	0.44
1:A:709:SER:HB2	1:A:954:VAL:HG11	1.99	0.44
1:A:537:SER:O	1:A:541:ILE:HG12	2.17	0.44
1:A:1243:ARG:CZ	1:A:1243:ARG:HA	2.48	0.44
1:A:1124:ALA:HA	1:A:1193:ARG:HH11	1.83	0.44
1:A:306:THR:O	1:A:310:SER:OG	2.31	0.44
1:A:1241:TYR:O	1:A:1244:LEU:HB2	2.18	0.44
1:A:363:GLY:HA3	1:A:554:THR:HG21	1.98	0.44
1:A:600:ARG:O	1:A:604:MET:HE3	2.18	0.44
1:A:1042:ALA:O	1:A:1216:ILE:HG13	2.18	0.44
1:A:971:PRO:O	1:A:975:ARG:N	2.50	0.44
1:A:1251:ARG:O	1:A:1252:ILE:C	2.60	0.43
1:A:28:LYS:HE2	1:A:28:LYS:HB2	1.77	0.43
1:A:177:LEU:O	1:A:181:PHE:HD2	2.02	0.43
1:A:513:ALA:O	1:A:516:ARG:HG2	2.18	0.43
1:A:1126:ASN:O	1:A:1156:ARG:NH1	2.52	0.43
1:A:600:ARG:HG2	1:A:604:MET:HE2	2.00	0.43
1:A:695:ILE:HG23	1:A:816:THR:HG21	2.01	0.43
1:A:696:LEU:O	1:A:700:ILE:HG13	2.18	0.43
1:A:775:GLU:CD	1:A:989:ARG:HH22	2.24	0.43
1:A:1030:ASP:OD2	1:A:1223:ARG:NH1	2.52	0.43
1:A:935:GLY:O	1:A:939:VAL:HG23	2.18	0.42
1:A:1110:LYS:HD2	1:A:1111:ASP:H	1.84	0.42
1:A:1242:SER:HA	1:A:1245:LEU:HG	2.01	0.42
1:A:1252:ILE:HG13	1:A:1252:ILE:H	1.42	0.42
1:A:456:THR:OG1	1:A:494:ASP:HA	2.20	0.42
1:A:425:LEU:HA	1:A:430:GLU:HA	2.01	0.42
1:A:1012:PHE:CD2	1:A:1033:LEU:HB2	2.55	0.42
1:A:411:SER:O	1:A:416:PHE:HB2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:549:VAL:O	1:A:551:VAL:N	2.50	0.42
1:A:1088:ILE:HG12	1:A:1169:VAL:HB	2.02	0.42
1:A:24:LEU:O	1:A:332:LYS:HD2	2.20	0.41
1:A:382:ILE:HG22	1:A:383:PHE:CD1	2.54	0.41
1:A:463:TYR:HE1	1:A:890:LYS:HD2	1.85	0.41
1:A:1097:LEU:HD22	1:A:1105:ASN:HB3	2.01	0.41
1:A:497:VAL:HA	1:A:500:ARG:HH21	1.85	0.41
1:A:383:PHE:CZ	1:A:408:THR:HB	2.54	0.41
1:A:946:PHE:O	1:A:946:PHE:CG	2.74	0.41
1:A:1170:LEU:O	1:A:1200:THR:HA	2.20	0.41
1:A:76:LEU:HD21	1:A:940:SER:HA	2.01	0.41
1:A:993:ILE:HG23	1:A:1060:ARG:HH21	1.86	0.41
1:A:728:LYS:HB2	1:A:728:LYS:HE3	1.71	0.41
1:A:1006:ILE:H	1:A:1087:LYS:HE2	1.86	0.41
1:A:1036:ARG:HD3	1:A:1036:ARG:H	1.84	0.41
1:A:1007:ARG:NH1	1:A:1009:ASP:HB2	2.36	0.41
1:A:963:VAL:O	1:A:967:VAL:HG23	2.21	0.40
1:A:113:GLU:OE2	1:A:156:GLN:NE2	2.54	0.40
1:A:62:PHE:CE1	1:A:953:PHE:HE2	2.38	0.40
1:A:185:TRP:CD1	1:A:186:LYS:H	2.40	0.40
1:A:265:GLY:HA2	1:A:268:LYS:HG2	2.04	0.40
1:A:710:ASN:O	1:A:714:VAL:HG23	2.22	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	1164/1252 (93%)	1074 (92%)	90 (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	951/1027 (93%)	945 (99%)	6 (1%)	84 92

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1243	ARG
1	A	1244	LEU
1	A	1245	LEU
1	A	1246	GLN
1	A	1248	GLN
1	A	1252	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	680	ASN
1	A	814	ASN
1	A	850	GLN
1	A	865	HIS
1	A	888	GLN
1	A	921	GLN
1	A	1092	GLN
1	A	1153	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	BLD	A	1301	-	36,37,37	0.43	0	46,59,59	1.35	4 (8%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BLD	A	1301	-	-	7/20/85/85	1/4/4/4

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1301	BLD	O07-C06-O06	5.11	124.70	116.72
2	A	1301	BLD	C12-C11-C09	4.38	120.70	113.11
2	A	1301	BLD	C05-C04-C03	-3.87	106.48	111.90
2	A	1301	BLD	C14-C08-C09	2.04	111.82	109.09

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1301	BLD	C13-C17-C20-C22
2	A	1301	BLD	C16-C17-C20-C22

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Mol	Chain	Res	Type	Atoms
2	A	1301	BLD	C20-C22-C23-C24
2	A	1301	BLD	C13-C17-C20-C21
2	A	1301	BLD	O23-C23-C24-C28
2	A	1301	BLD	C16-C17-C20-C21
2	A	1301	BLD	O22-C22-C23-O23

All (1) ring outliers are listed below:

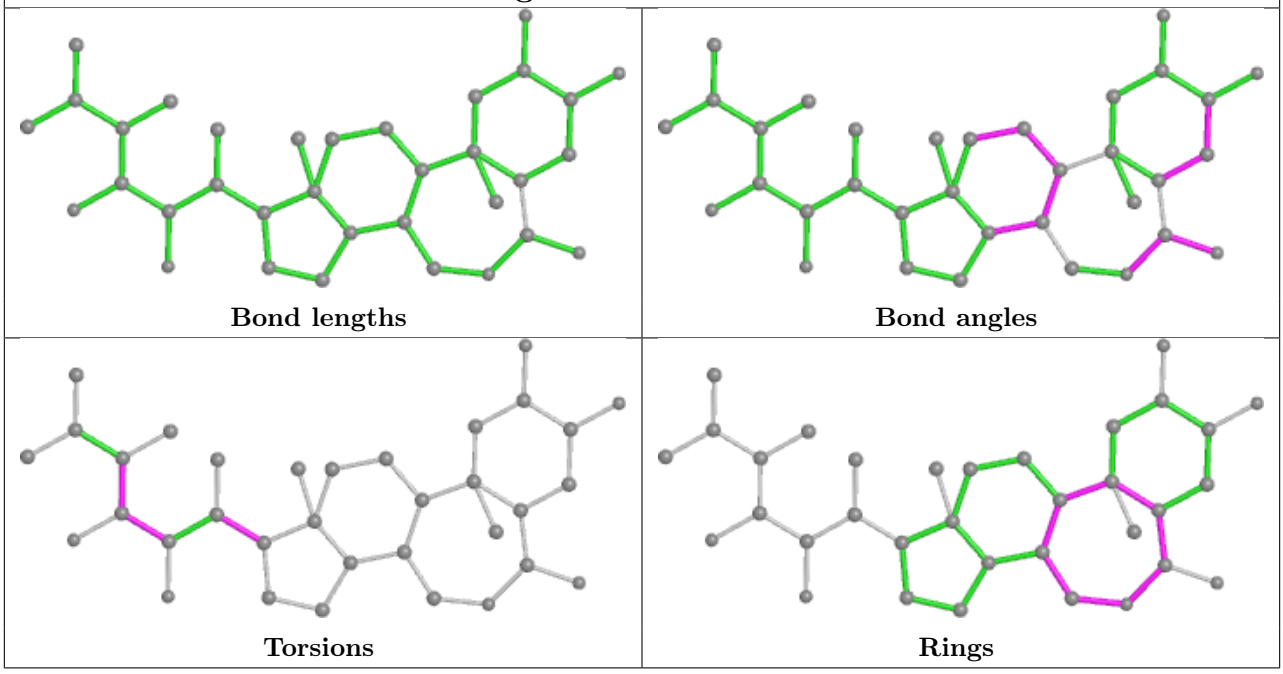
Mol	Chain	Res	Type	Atoms
2	A	1301	BLD	C05-C06-C07-C08-C09-C10-O07

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1301	BLD	7	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand BLD A 1301



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.

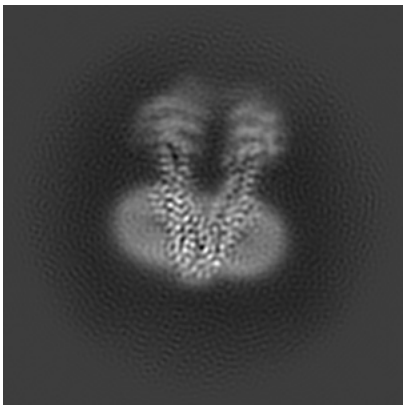
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-62366. These allow visual inspection of the internal detail of the map and identification of artifacts.

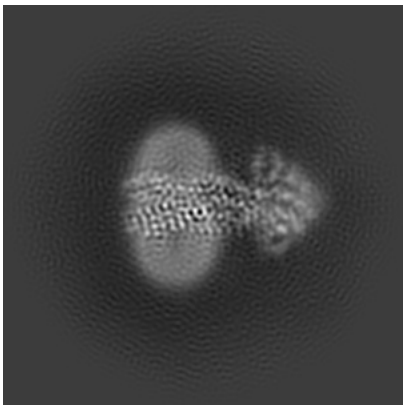
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

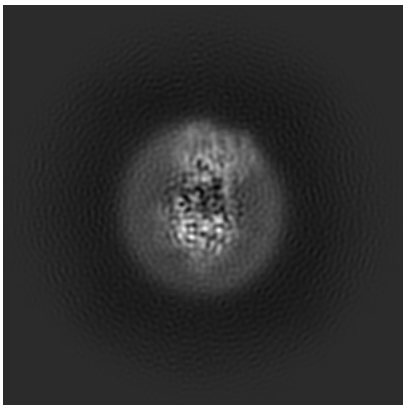
6.1.1 Primary map



X

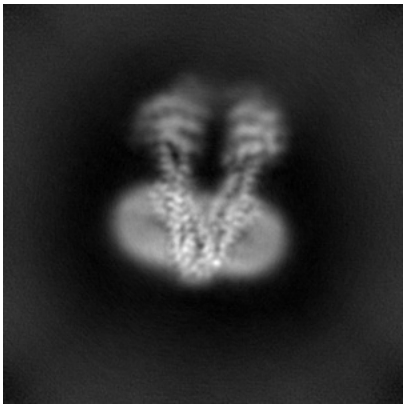


Y

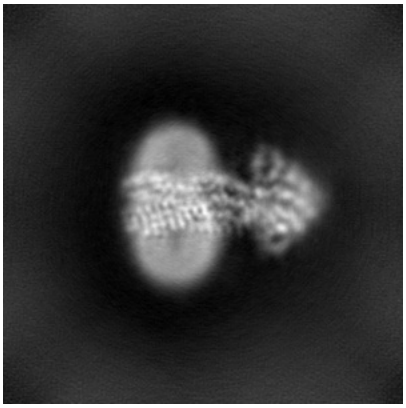


Z

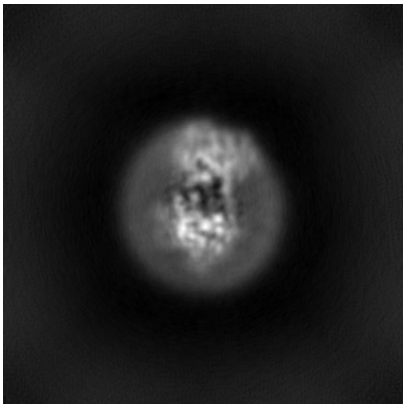
6.1.2 Raw map



X



Y

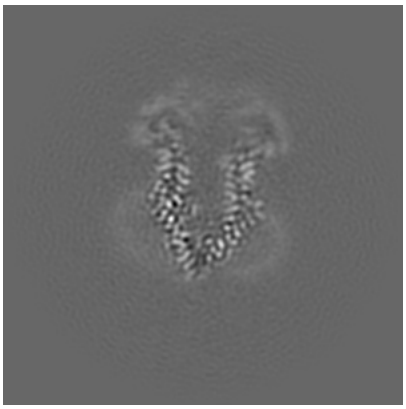


Z

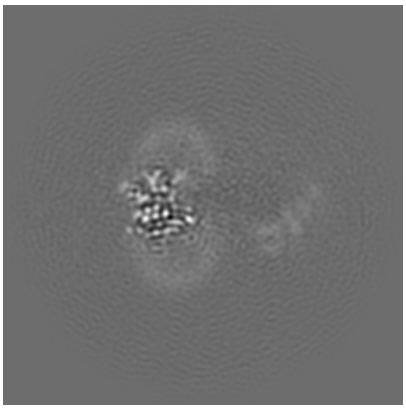
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

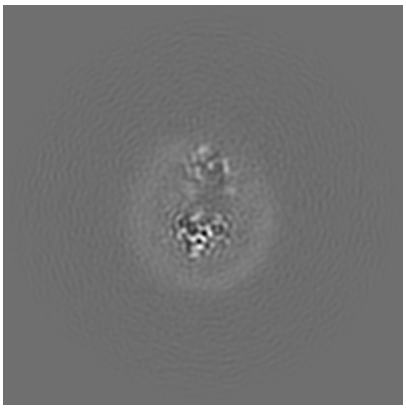
6.2.1 Primary map



X Index: 140

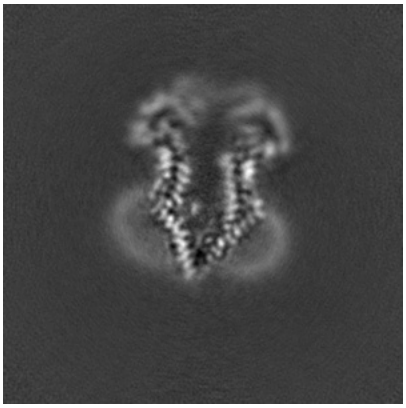


Y Index: 140

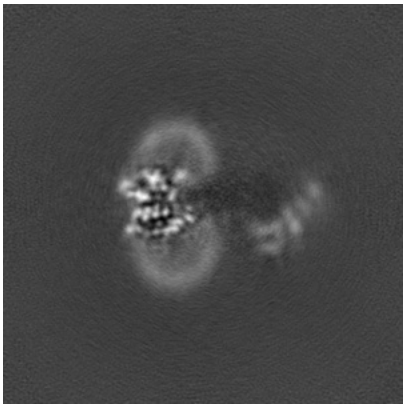


Z Index: 140

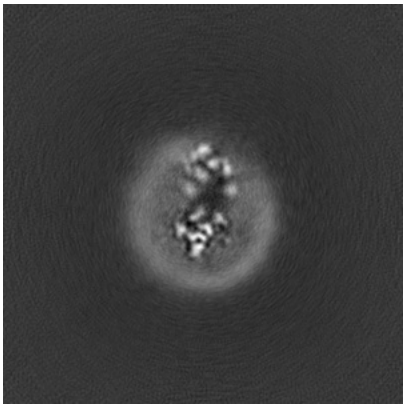
6.2.2 Raw map



X Index: 140



Y Index: 140

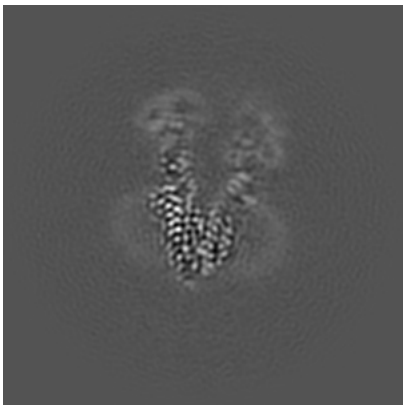


Z Index: 140

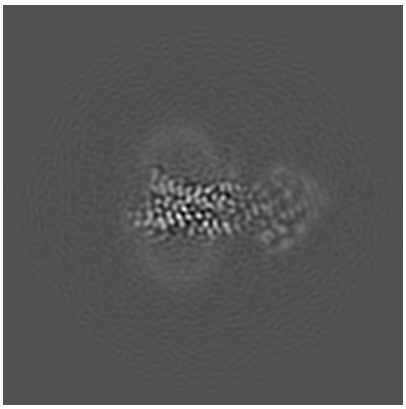
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

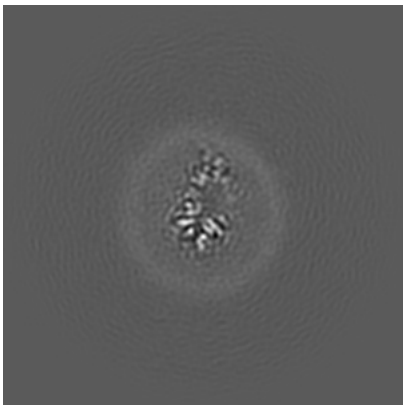
6.3.1 Primary map



X Index: 132

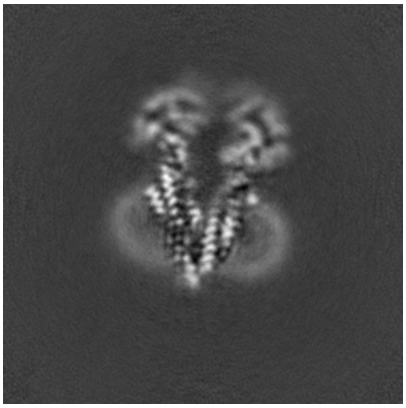


Y Index: 122

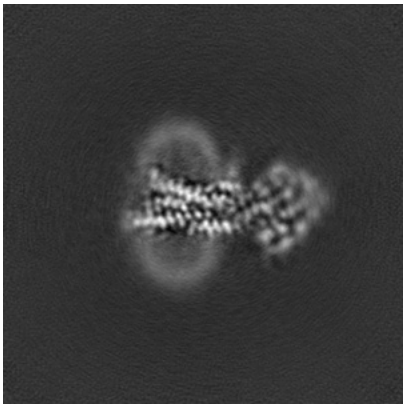


Z Index: 130

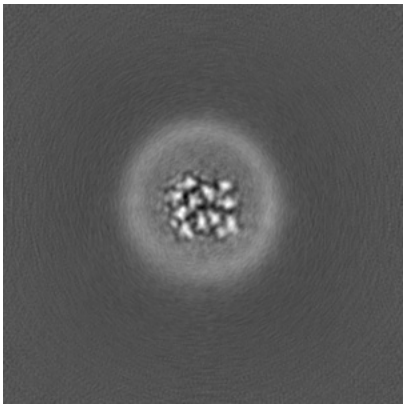
6.3.2 Raw map



X Index: 135



Y Index: 122

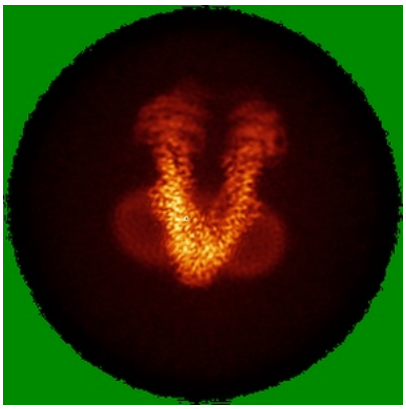


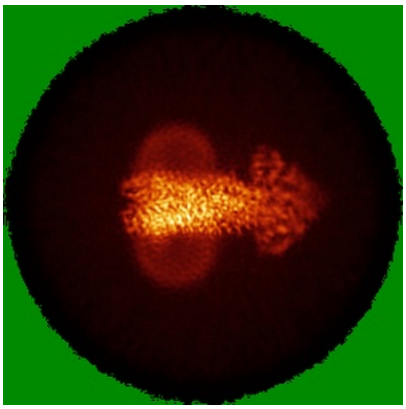
Z Index: 106

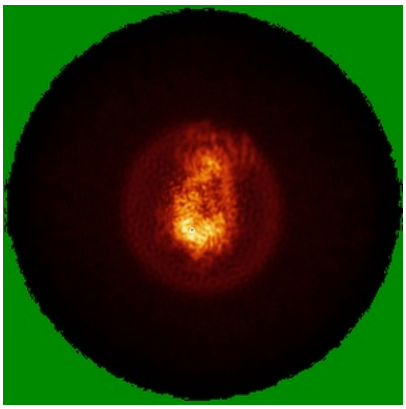
The images above show the largest variance slices of the map in three orthogonal directions.

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

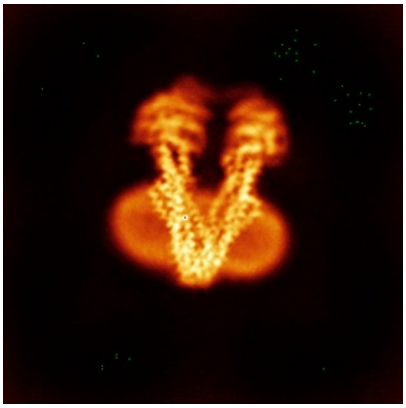
6.4.1 Primary map

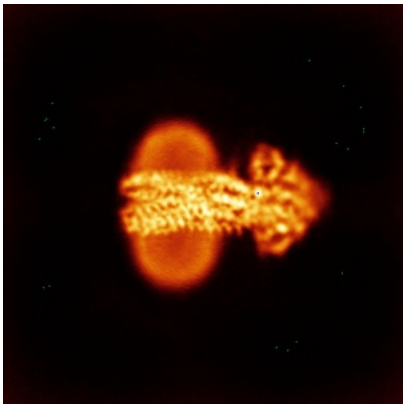

X

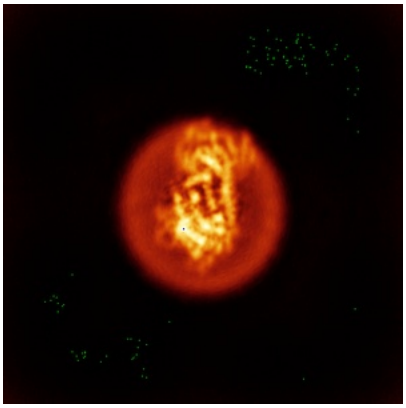

Y


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

6.5.2 Raw map

X Y Z

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

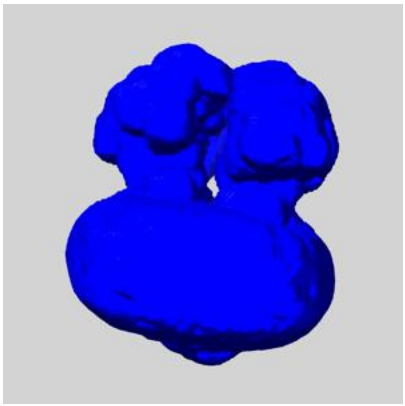
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

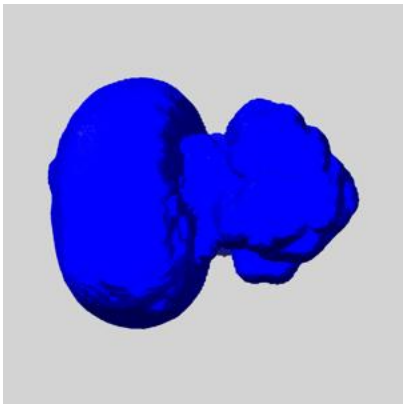
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

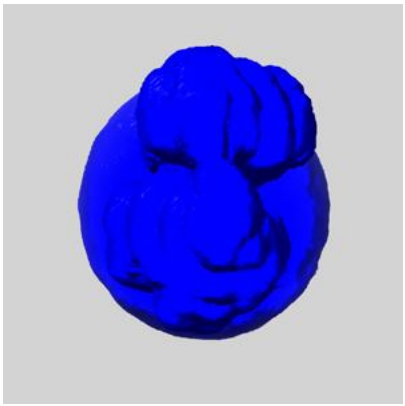
6.6.1 emd_62366_msk_1.map (i)



X



Y

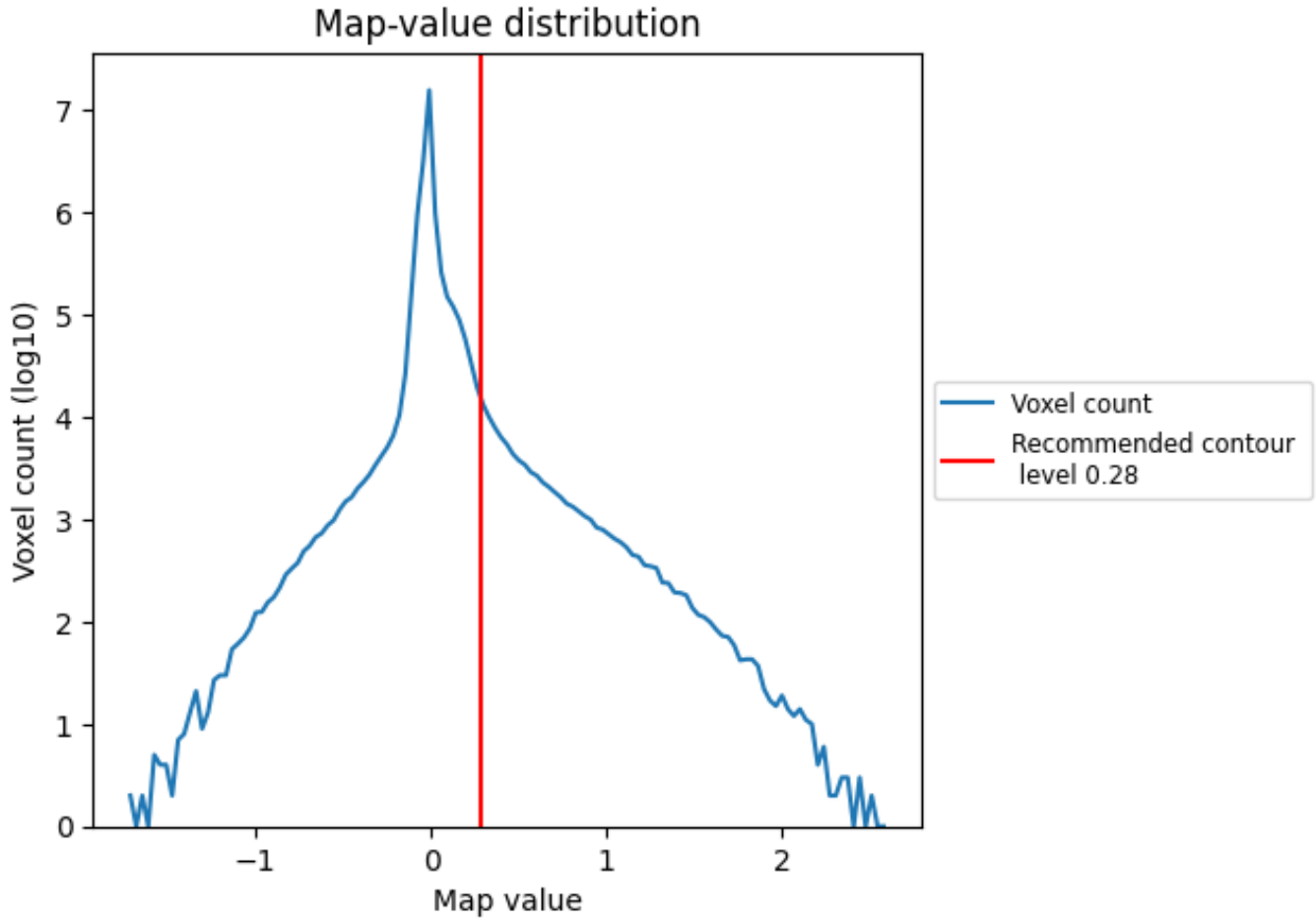


Z

7 Map analysis

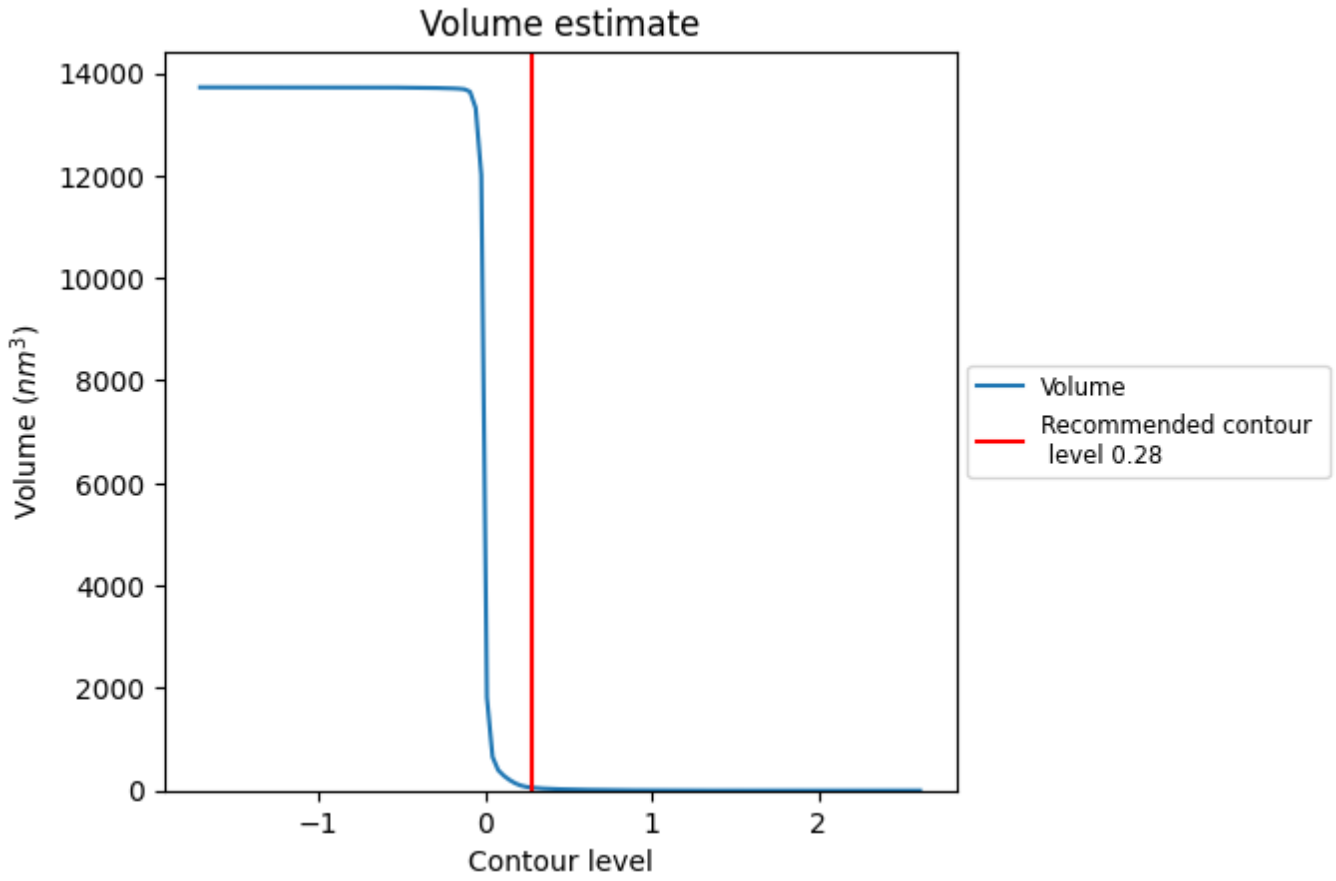
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

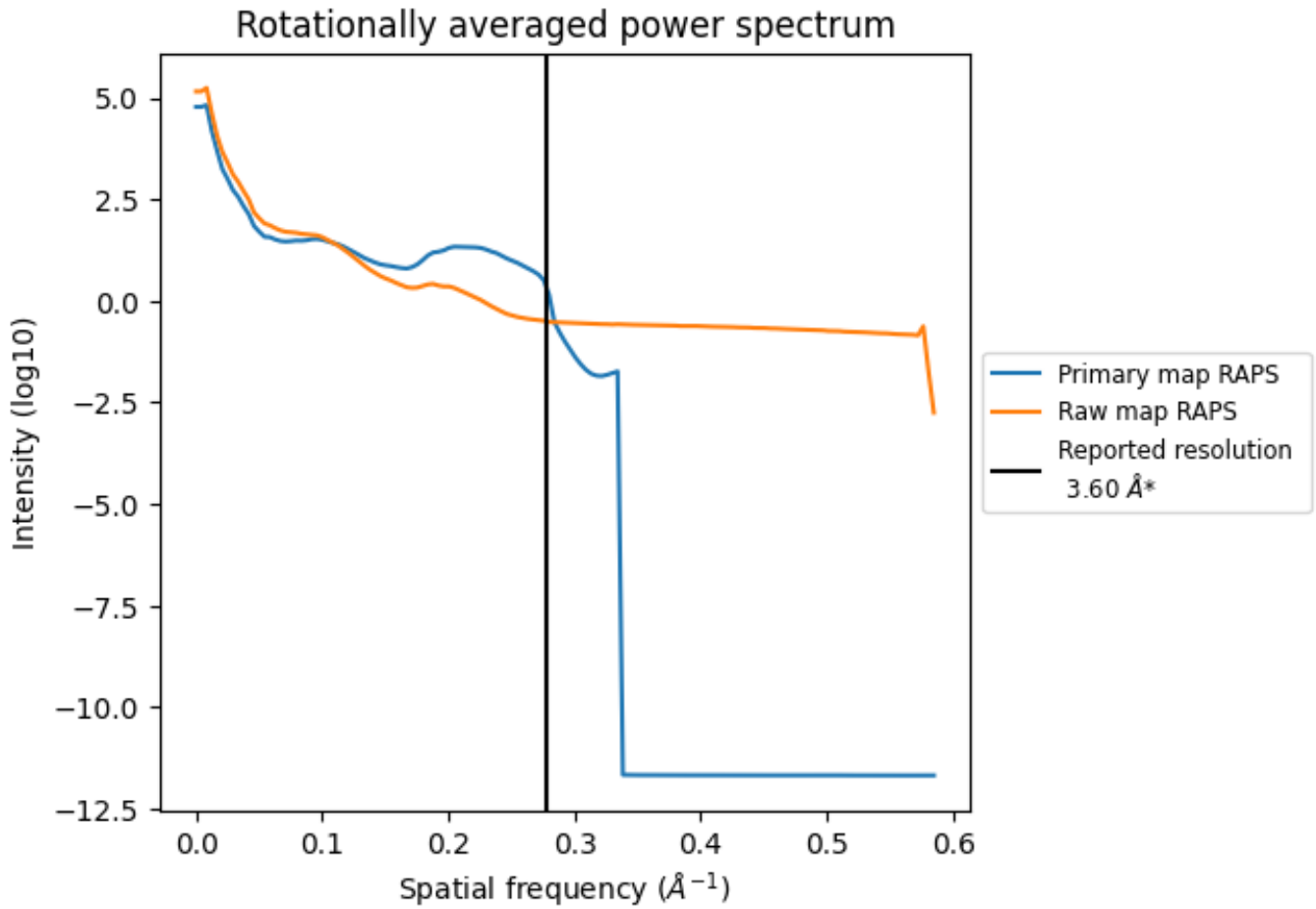
7.2 Volume estimate



The volume at the recommended contour level is 57 nm^3; this corresponds to an approximate mass of 51 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)

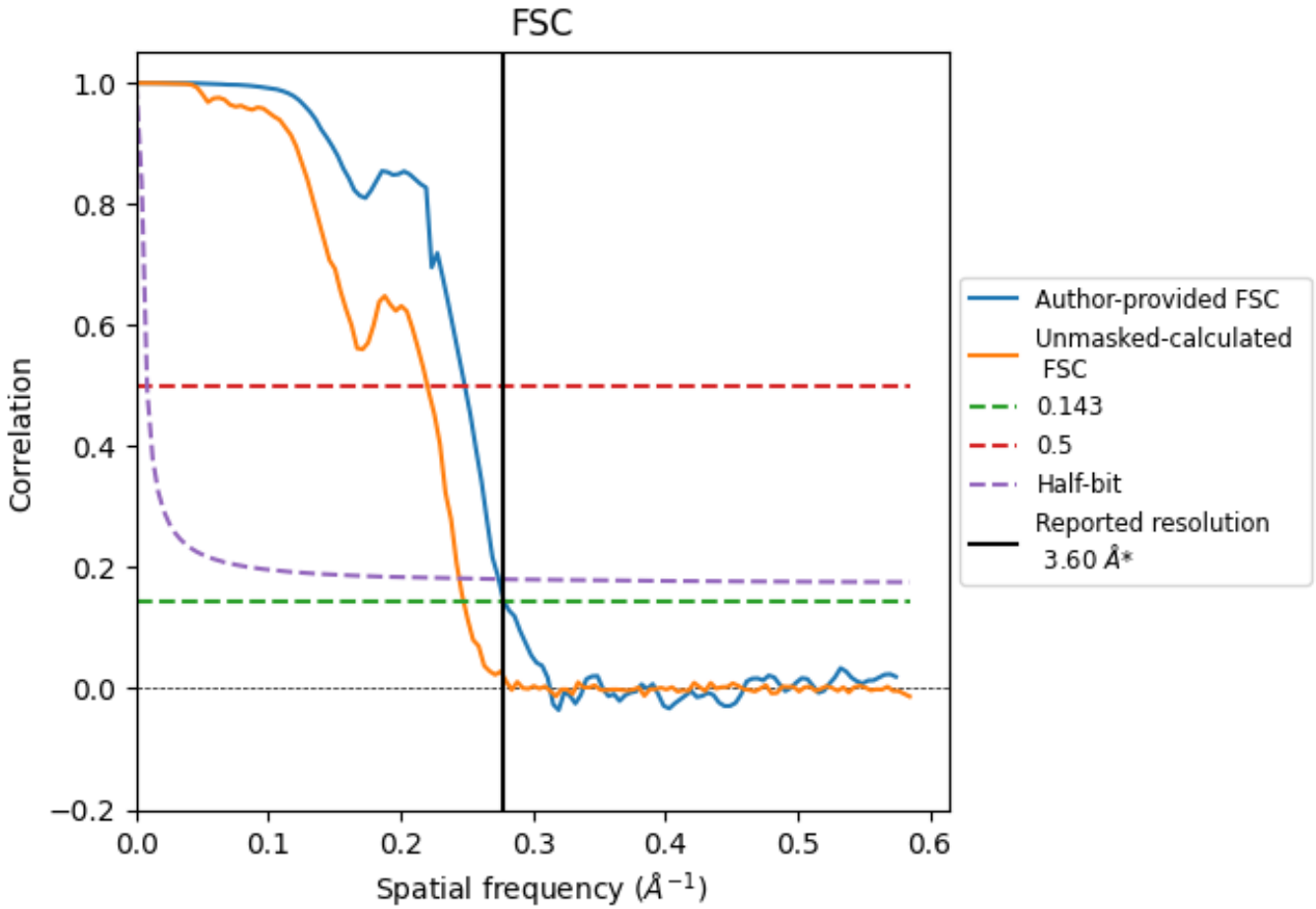


*Reported resolution corresponds to spatial frequency of 0.278 $Å^{-1}$

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 0.278 $Å^{-1}$

8.2 Resolution estimates (i)

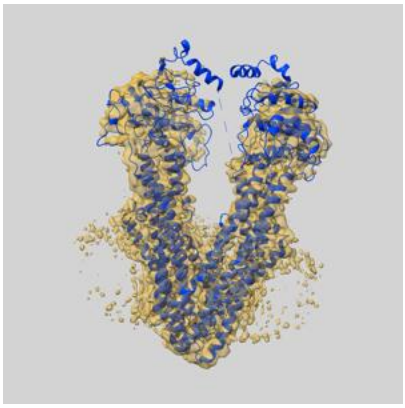
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.59	4.02	3.65
Unmasked-calculated*	4.04	4.54	4.09

*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 4.04 differs from the reported value 3.6 by more than 10 %

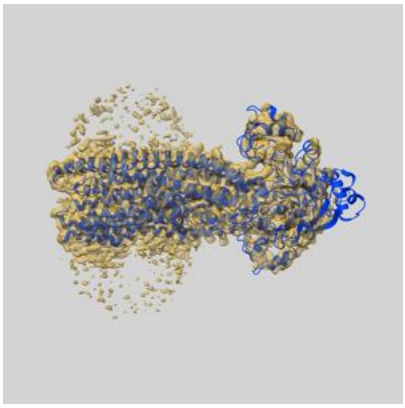
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-62366 and PDB model 9KJC. Per-residue inclusion information can be found in section 3 on page 4.

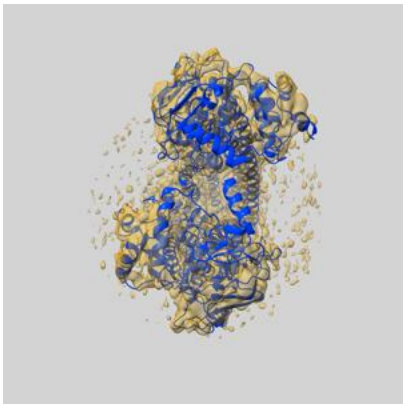
9.1 Map-model overlay



X



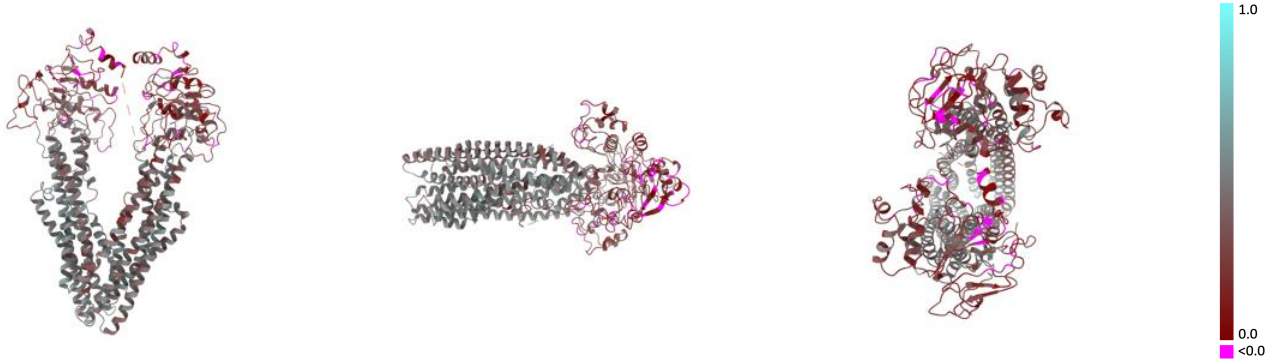
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.28 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.

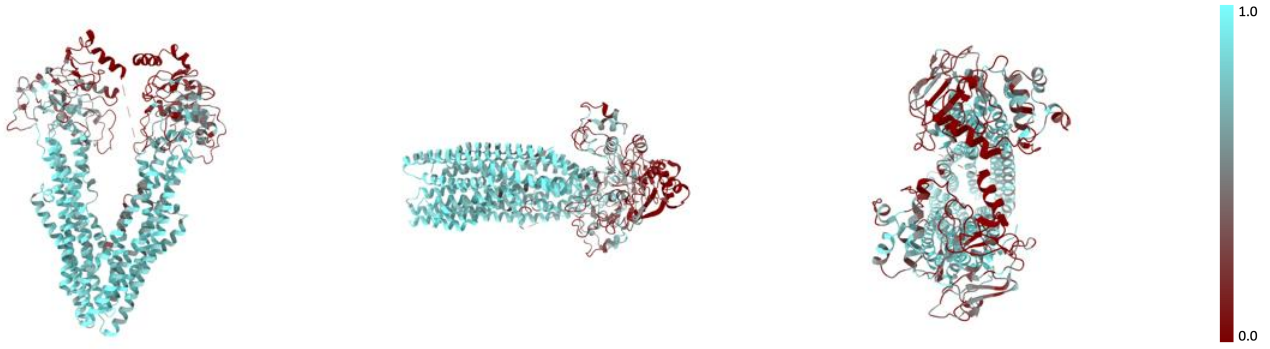
9.2 Q-score mapped to coordinate model (i)



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.

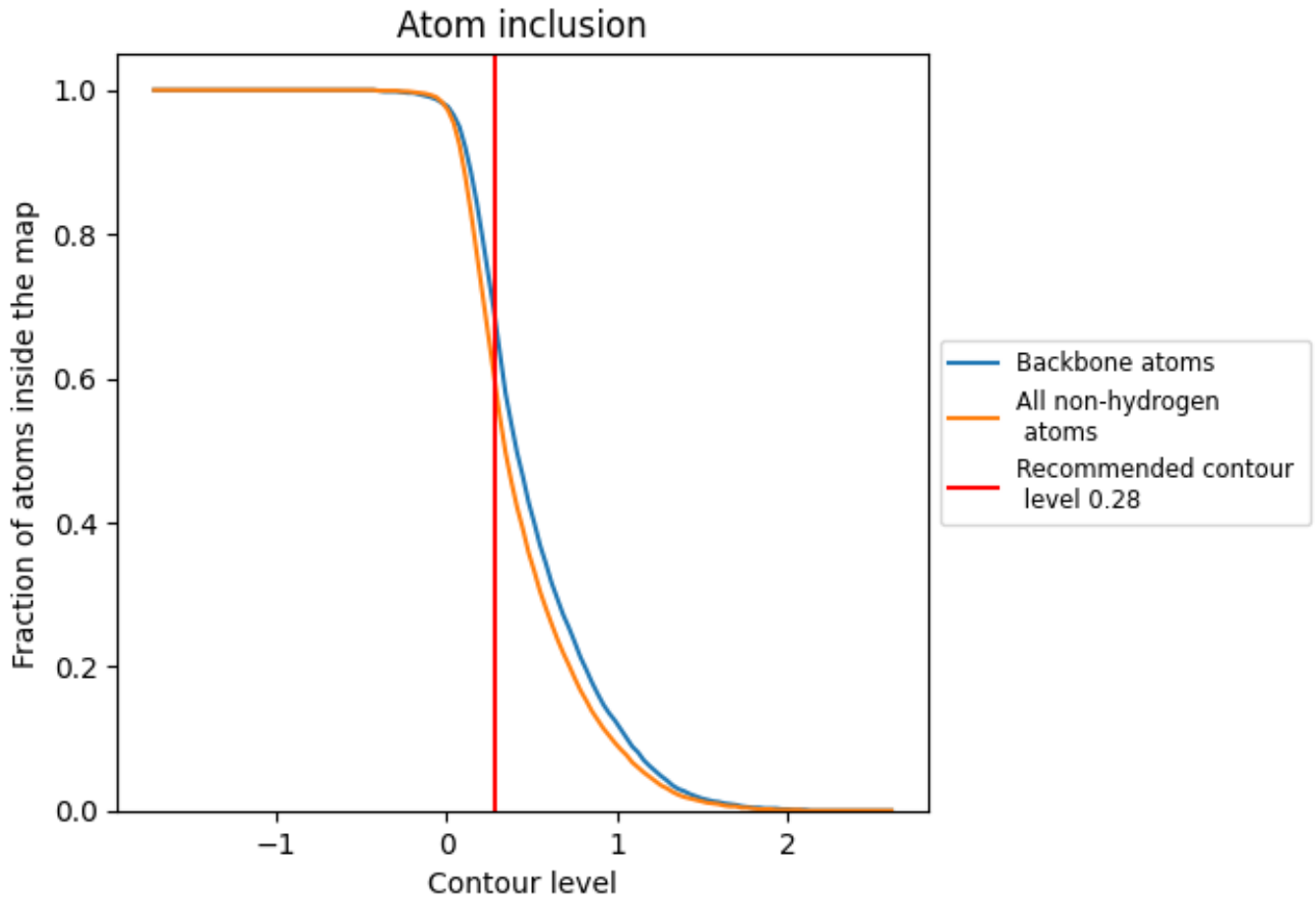
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.28).

9.4 Atom inclusion (i)



At the recommended contour level, 69% of all backbone atoms, 60% 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 (0.28) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6040	0.3470
A	0.6040	0.3470