W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

wwPDB EM Validation Summary Report (i)

Mar 17, 2022 – 03:41 am GMT

PDB ID	:	7NZ3
EMDB ID	:	EMD-12663
Title	:	Cryo-EM structure of apposed MukBEF-MatP monomers on DNA
Authors	:	Buermann, F.; Lowe, J.
Deposited on	:	2021-03-23
Resolution	:	11.00 Å(reported)

This is a wwPDB EM Validation Summary 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 (i) symbol.

The following versions of software and data (see references (i)) were used in the production of this report:

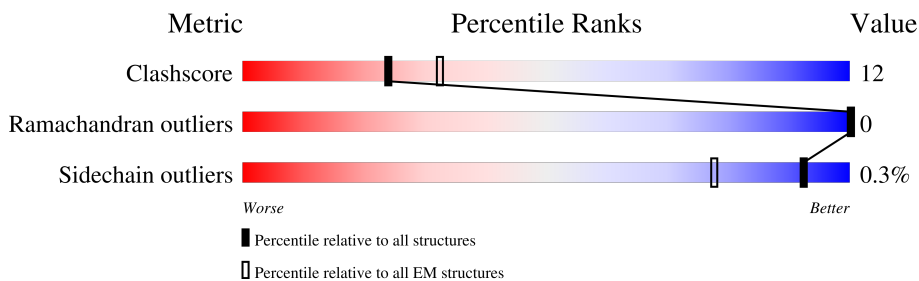|		
EMDB validation analysis	:	0.0.0.dev97
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.27

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 11.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		12
Ramachandran outliers		0
Sidechain outliers		0.3%

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	A1	1482	76% 23% •
1	A2	1482	76% 23% •
1	B1	1482	75% 24% •
1	B2	1482	75% 24% •
2	C1	440	55% 21% 24%
2	C2	440	55% 21% 24%
2	D1	440	14% 8% 79%
2	D2	440	13% 8% 79%

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Mol	Chain	Length	Quality of chain
3	E1	240	60% 28% 12%
3	E2	240	61% 27% 12%
3	F1	240	63% 18% 18%
3	F2	240	64% 18% 18%
4	G1	78	59% 33% 8%
4	G2	78	62% 31% 8%
4	H1	78	68% 24% 8%
4	H2	78	67% 26% 8%
5	I1	151	68% 21% 11%
5	I2	151	68% 21% 11%
5	J1	151	62% 28% 11%
5	J2	151	62% 28% 11%
6	K1	80	19% 40% 55%
6	M1	80	18% 44% 51%
7	L1	80	15% 75% 22%
7	N1	80	18% 74% 24%

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 144972 atoms, of which 70642 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 Chromosome partition protein MukB.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A1	1467	Total	C	H	N	O	S	0	0
			23552	7298	11712	2189	2313	40		
1	A2	1467	Total	C	H	N	O	S	0	0
			23552	7298	11712	2189	2313	40		
1	B1	1467	Total	C	H	N	O	S	0	0
			23552	7298	11712	2189	2313	40		
1	B2	1467	Total	C	H	N	O	S	0	0
			23552	7298	11712	2189	2313	40		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A1	1407	GLN	GLU	engineered mutation	UNP A0A0F7LRY2
A2	1407	GLN	GLU	engineered mutation	UNP A0A0F7LRY2
B1	1407	GLN	GLU	engineered mutation	UNP A0A0F7LRY2
B2	1407	GLN	GLU	engineered mutation	UNP A0A0F7LRY2

- Molecule 2 is a protein called Chromosome partition protein MukF.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	C1	335	Total	C	H	N	O	S	0	0
			5330	1702	2626	470	524	8		
2	C2	335	Total	C	H	N	O	S	0	0
			5330	1702	2626	470	524	8		
2	D1	94	Total	C	H	N	O	S	0	0
			1469	461	736	125	143	4		
2	D2	94	Total	C	H	N	O	S	0	0
			1469	461	736	125	143	4		

- Molecule 3 is a protein called Chromosome partition protein MukE.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	E1	212	Total 3441	C 1090	H 1719	N 301	O 322	S 9	0	0
3	E2	212	Total 3441	C 1090	H 1719	N 301	O 322	S 9	0	0
3	F1	198	Total 3246	C 1029	H 1627	N 284	O 298	S 8	0	0
3	F2	198	Total 3246	C 1029	H 1627	N 284	O 298	S 8	0	0

- Molecule 4 is a protein called Acyl carrier protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	G1	72	Total 1105	C 349	H 543	N 85	O 127	S 1	0	0
4	G2	72	Total 1105	C 349	H 543	N 85	O 127	S 1	0	0
4	H1	72	Total 1105	C 349	H 543	N 85	O 127	S 1	0	0
4	H2	72	Total 1105	C 349	H 543	N 85	O 127	S 1	0	0

- Molecule 5 is a protein called Macrodomain Ter protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	I1	134	Total 2272	C 714	H 1137	N 215	O 202	S 4	0	0
5	I2	134	Total 2272	C 714	H 1137	N 215	O 202	S 4	0	0
5	J1	135	Total 2288	C 719	H 1144	N 217	O 204	S 4	0	0
5	J2	135	Total 2288	C 719	H 1144	N 217	O 204	S 4	0	0

- Molecule 6 is a DNA chain called matS2 DNA 80 b, oligo FBA769.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	K1	78	Total 2479	C 761	H 883	N 280	O 477	P 78	0	0
6	M1	78	Total 2479	C 761	H 883	N 280	O 477	P 78	0	0

- Molecule 7 is a DNA chain called matS2 DNA 80 b, oligo FBA770.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	L1	78	Total	C	H	N	O	P	0	0
			2475	760	873	305	459	78		
7	N1	78	Total	C	H	N	O	P	0	0
			2475	760	873	305	459	78		

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
8	A1	1	Total	Mg	0
			1	1	
8	A2	1	Total	Mg	0
			1	1	
8	B1	1	Total	Mg	0
			1	1	
8	B2	1	Total	Mg	0
			1	1	

- Molecule 9 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).

Mol	Chain	Residues	Atoms						AltConf
9	A1	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	A2	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	B1	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	

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Mol	Chain	Residues	Atoms						AltConf
9	B2	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	

- Molecule 10 is 4'-PHOSPHOPANTETHEINE (three-letter code: PNS) (formula: $C_{11}H_{23}N_2O_7PS$).
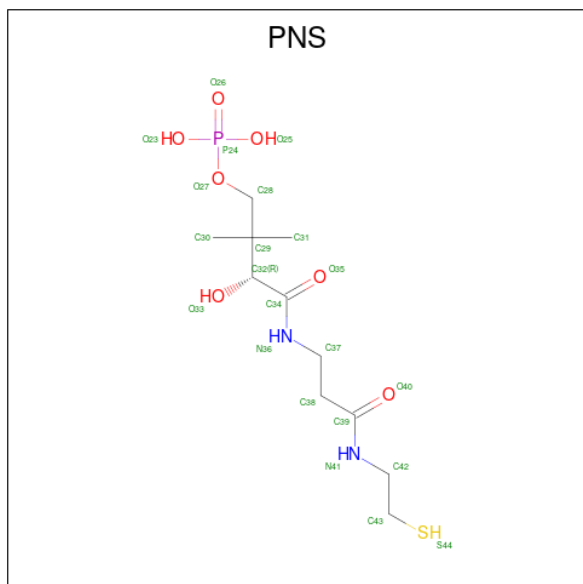
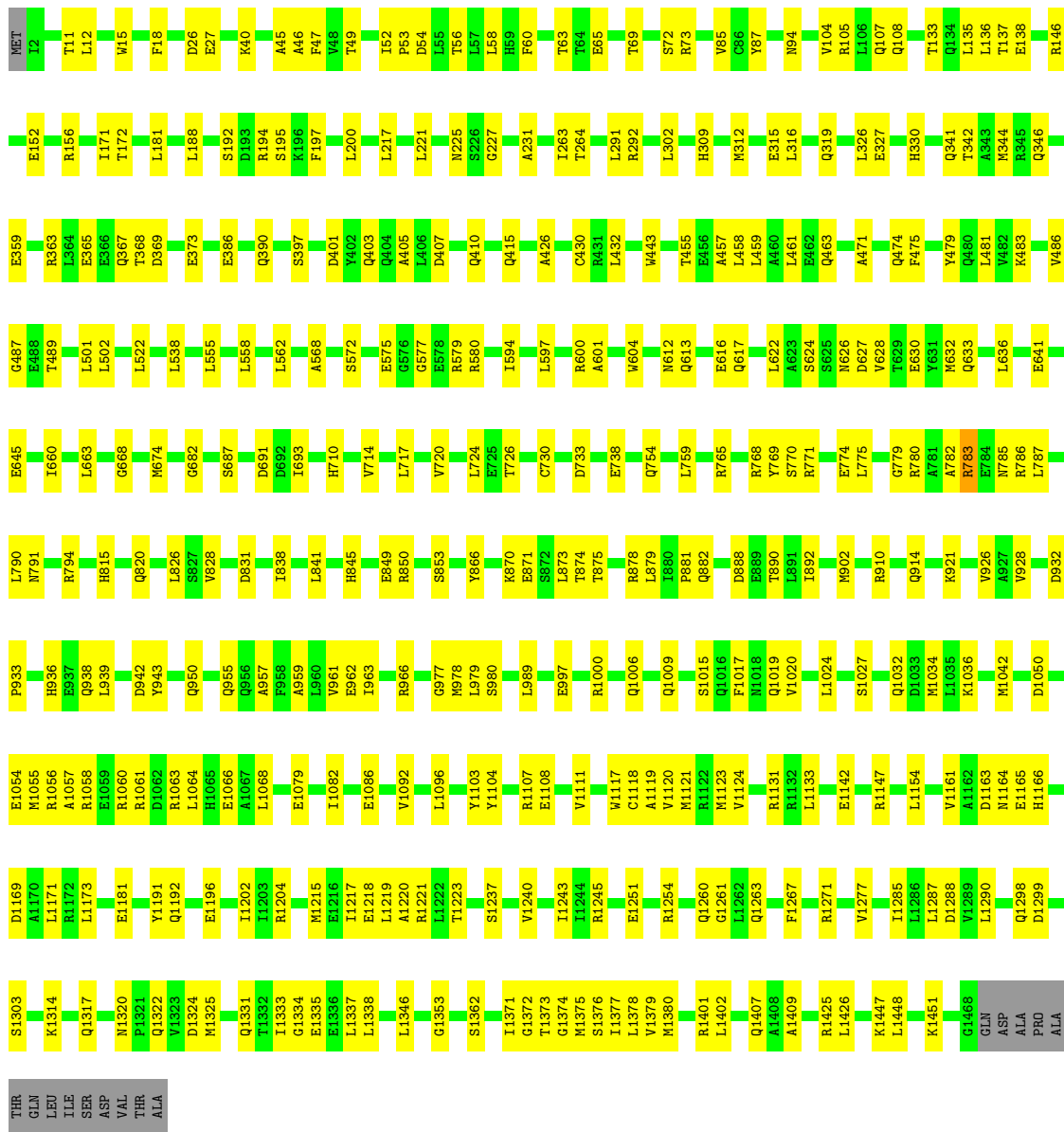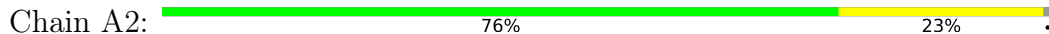| Mol	Chain	Residues	Atoms							AltConf
10	G1	1	Total	C	H	N	O	P	S	0
			42	11	21	2	6	1	1	
10	G2	1	Total	C	H	N	O	P	S	0
			42	11	21	2	6	1	1	
10	H1	1	Total	C	H	N	O	P	S	0
			42	11	21	2	6	1	1	
10	H2	1	Total	C	H	N	O	P	S	0
			42	11	21	2	6	1	1	

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.
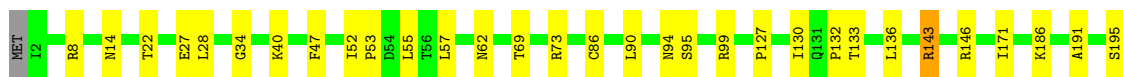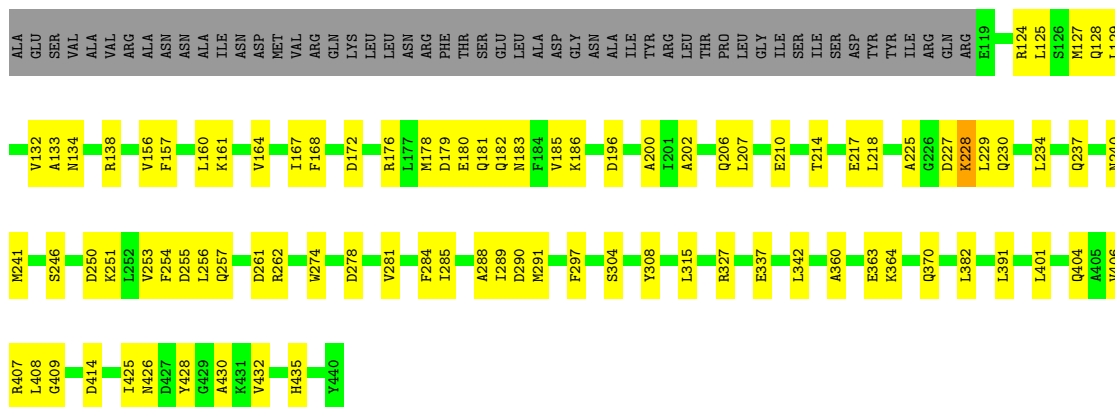
• Molecule 1: Chromosome partition protein MukB

Chain A1:

Q1407 A1408 A1409 R1425 L1426 K1447 L1448 K1451 G1468 GLN ASP ALA PRO ALA THR GLN LEU ILE SER ASP VAL THR ALA

• Molecule 1: Chromosome partition protein MukB

Chain A2: 76% 23%

MET I2 T11 L12 W15 F18 D26 E27 K40 A45 A46 F47 V48 T49 I52 P53 D54 L55 T56 L57 L58 H59 F60 T63 T64 E65 T69 S72 R73 V85 C86 Y87 N94 V104 R105 L106 Q107 Q108 T133 Q134 L135 L136 T137 E138 R146

E152 R156 I171 T172 L181 L188 S192 D193 R194 S195 K196 F197 L200 L217 L221 N225 S226 G227 A231 I263 T264 L291 R292 L302 H309 M312 E315 L316 Q319 L326 E327 H330 Q341 T342 A343 M344 R345 Q346

E359 R363 L364 E365 E366 Q367 T368 D369 E373 E386 Q390 S397 D401 Y402 Q403 Q404 A405 L406 D407 Q410 Q415 A426 C430 R431 L432 W443 T455 E456 A457 L458 L459 A460 L461 E462 Q463 A471 Q474 F475 Y479 Q480 L481 V482 K483 V486

G487 E488 T489 L501 L502 L522 L538 L555 L558 L562 A568 S572 E575 G576 G577 E578 R579 R580 I594 L597 R600 A601 W604 N612 Q613 E616 Q617 L622 A623 S624 G625 N626 D627 V628 T629 E630 Y631 M632 Q633 L636 E641

E645 I660 L663 G668 M674 G682 S687 D691 D692 I693 H710 V714 L717 V720 L724 E725 T726 C730 D733 E738 Q754 L759 R765 R768 Y769 S770 R771 E774 L775 G779 R780 A781 A782 R783 E784 N785 R786 L787

L790 N791 R794 H815 Q820 L826 S827 V828 D831 I838 L841 H845 E849 R850 S853 Y866 K870 E871 S872 L873 T874 T875 R878 L879 I880 P881 Q882 D888 E889 T890 L891 I892 M902 R910 Q914 K921 V926 A927 V928 D932

P933 H936 E937 Q938 L939 D942 Y943 Q950 Q955 Q956 F958 A959 L960 V961 E962 I963 R966 G977 M978 L979 S980 L989 E997 R1000 Q1006 Q1009 S1015 Q1016 F1017 N1018 Q1019 V1020 L1024 S1027 Q1032 D1033 M1034 L1035 K1036 M1042 D1050

E1054 M1055 R1056 A1057 R1058 E1059 R1060 R1061 D1062 R1063 L1064 H1065 E1066 A1067 L1068 E1079 I1082 E1086 V1092 L1096 Y1103 Y1104 R1107 E1108 V1111 W1117 C1118 A1119 V1120 M1121 R1122 M1123 V1124 R1131 R1132 L1133 E1142 R1147 L1154 V1161 A1162 D1163 N1164 E1165 H1166

D1169 A1170 L1171 R1172 L1173 E1181 Y1191 Q1192 E1196 I1202 I1203 R1204 M1215 E1216 I1217 E1218 L1219 A1220 R1221 L1222 T1223 S1237 V1240 I1243 I1244 R1245 E1251 R1254 Q1260 G1261 L1262 Q1263 F1267 R1271 V1277 I1285 L1286 L1287 D1288 V1289 L1290 Q1298 D1299

S1303 K1314 Q1317 N1320 P1321 Q1322 V1323 D1324 M1325 Q1331 T1332 I1333 G1334 E1335 E1336 L1337 L1338 L1346 G1353 S1362 I1371 G1372 T1373 G1374 M1375 S1376 I1377 L1378 V1379 M1380 R1401 L1402 Q1407 A1408 A1409 R1425 L1426 K1447 L1448 K1451 G1468 GLN ASP ALA PRO ALA

THR GLN LEU ILE SER ASP VAL THR ALA

• Molecule 1: Chromosome partition protein MukB

Chain B1: 75% 24%

MET I2 R8 N14 T22 E27 L28 G34 K40 F47 I52 P53 D54 L55 T56 L57 N62 T69 R73 C86 L90 N94 S95 R99 P127 I130 Q131 P132 T133 L136 R143 R146 I171 K186 A191 S195

K196 F197 Y198 I201 E202 A203 G207 G208 I209 S210 S211 T214 R215 P223 E224 N225 S226 G227 A231 F232 Q233 L239 R240 E241 N242 R243 D255 E265 E280 V270 S271 A272 D273 Y274 M275 R276 H277 E280 L285 A288 L289 H299 L302 M312 L316

L326 E327 T328 D329 H330 Q331 L337 N338 Q341 T342 A343 M344 R345 Q346 Q347 E348 K349 Y353 L357 L360 R363 E366 T385 T388 E389 Q390 A400 Q404 A405 L406 D407 V408 I414 Q417 Q418 E424 R425 A426 R427 E428 R431 E441

L444 E445 L459 K464 L465 S466 V467 A468 D469 A470 A471 Q474 F475 E476 Q477 A478 Y479 Q480 K483 N484 I485 V486 G487 A494 S497 L501 L502 R503 L511 A512 D513 R514 V515 L518 L525 L529 Q533 R537 L538 L539 S540 F542 R545 E556

E567 A568 L569 S570 L571 M581 E582 L587 E588 K591 Q592 K593 I594 Q595 A607 L614 N626 E630 E637 R640 E641 E645 Q652 K653 L656 E657 K658 E661 R662 Q665 G668 D671 S672 R673 M674 I675 A676 L677 A678 E679 R680 L686

D691 D692 S702 Y705 R709 L724 L727 E728 D729 C730 D733 L734 D740 F744 D745 Q754 S763 D764 R765 Q766 Y769 S770 R771 E774 L775 P776 L777 R780 E784 N785 R786 L787 F806 V818 F821 V822 H825 L826 S827 V828

E837 L841 H845 L848 V852 F855 T859 Q864 Q865 Y866 A867 Q868 T875 L876 Q882 V883 T884 L885 D888 I892 D893 R894 A905 A908 A909 R910 Q913 Q914 L929 Q930 Q933 P933 H936 Q940 F958 A959 L960 I963 V964 Q965 R966

R967 V968 S971 D974 S975 A976 G977 M978 D984 Q991 E994 H995 A996 E1005 Q1006 L1007 R1008 Q1009 A1012 Q1013 Y1014 S1015 Q1016 Q1019 Y1028 E1029 T1030 D1033 M1034 L1035 K1036 D1044 V1047 Q1048 A1049 E1054 A1057 R1058 R1061 L1064 H1065 L1068

S1073 Q1077 I1082 Q1093 L1096 I1106 R1107 V1120 M1121 R1122 V1129 E1130 R1131 R1132 L1133 H1134 M1149 A1153 L1154 G1155 A1156 L1157 V1161 N1164 E1165 D1169 L1173 E1181 R1182 K1183 V1184 Y1191 E1196 R1199 I1203 M1215 L1219 A1220 R1221

E1224 E1225 R1229 K1232 I1235 V1240 I1243 I1244 R1245 I1248 L1262 Q1263 A1264 R1271 V1277 E1281 S1282 H1283 L1287 D1288 V1289 E1295 L1306 L1319 P1330 I1333 Y1340 L1344 E1345 L1346 D1347 R1352 G1353 K1359 S1366 I1371 S1376

I1377 L1378 V1379 M1380 V1381 V1382 E1386 E1387 E1388 R1401 L1402 L1403 F1404 L1405 D1406 Q1407 A1408 A1409 T1418 E1421 L1422 M1428 E1441 L1448 V1449 R1450 E1457 G1468 GLN ASP ALA PRO ALA THR GLN LEU ILE SER ASP VAL THR ALA

• Molecule 1: Chromosome partition protein MukB

Chain B2:   75%   24%   •

MET I2 R8 N14 T22 E27 L28 G34 K40 F47 P53 D54 L55 T56 L57 N62 T69 R73 C86 L90 N94 S95 R99 P127 I130 Q131 P132 T133 L136 R143 R146 I171 K186 F197 Y198 I201

E202 A203 G207 G208 I209 S210 S211 T214 R215 P223 E224 N225 S226 G227 A231 F232 Q233 L239 R240 E241 N242 R243 D255 E265 V270 D273 Y274 M275 R276 H277 E280 L285 A288 L289 H299 L302 M312 L326 E327 H330 Q341 T342

A343 M344 R345 Q346 Q347 Y353 L357 L360 R363 E366 T385 T388 E389 Q404 D407 V408 I414 Q417 Q418 E424 R425 A426 R427 E428 R431 L432 W443 L444 L459 K464 L465 S466 V467 A468 D469 A470 A471 Q474 F475 E476 Q477 A478 Y479

Q480 K483 N484 I485 V486 G487 A494 S497 L501 L502 R503 L511 A512 D513 R514 V515 L518 S523 E524 L525 E526 Q527 R528 L529 Q533 R537 L538 L539 S540 E541 F542 R545 E556 E567 A568 L569 S570 L571 N574 M581 E582 L587 E588 K591

• Molecule 2: Chromosome partition protein MukF

Chain C1:

55%	21%	24%	

• Molecule 2: Chromosome partition protein MukF

Chain C2:

55%	21%	24%	

ALA GLU SER VAL ALA VAL ARG ASN ALA ASN ALA ILE ASN ASP MET VAL ARG GLN LYS LEU LEU ASN ARG PHE THR SER GLU LEU ALA ASP GLY ASN ALA ILE TYR ARG LEU THR PRO LEU GLY ILE ILE SER ASP TYR TYR ILE ARG GLN ARG **E119** R124 L125 **S126** M127 Q128 L129

V132 A133 N134 R138 **V156** F157 L160 K161 **V164** I167 F168 **D172** R176 **L177** M178 D179 E180 Q181 Q182 N183 **F184** V185 K186 **D196** A200 **I201** A202 Q206 L207 **E210** T214 E217 L218 **A225** G226 D227 K228 L229 Q230 L234 Q237 N240

M241 S246 D250 K251 **L252** V253 F254 D255 L256 Q257 D261 R262 W274 D278 V281 F284 I285 A288 I289 D290 M291 F297 S304 Y308 L315 R327 E337 L342 A360 E363 K364 Q370 L382 L391 L401 Q404 **A405** V406

R407 L408 G409 D414 I425 N426 **D427** Y428 **G429** A430 **K431** V432 H435 **Y440**

● Molecule 2: Chromosome partition protein MukF

Chain D1:   14%   8%   79%

MET SER GLU TYR SER GLN THR VAL PRO GLU LEU VAL SER TRP ALA ARG LYS ASN ASP PHE SER **I22** S23 L24 E27 R28 L29 A30 F31 L32 M33 **A34** I35 A36 V37 L38 N39 S40 E41 R42 E46 D54 A55 F56 R57 **E58** V59 G62 S69 V72 N75 I78

N79 **L86** T91 **L94** N98 **L103** T104 P105 **L106** G107 S111 **I115** ARG GLN ARG GLU PHE SER THR LEU ARG LEU SER MET GLN LEU SER ILE VAL ALA ASN GLU LEU HIS ARG ALA ALA GLU ALA ALA GLU GLY GLY ASP GLU PHE HIS TRP HIS ARG ASN VAL

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

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

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

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

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

● Molecule 2: Chromosome partition protein MukF

Chain D2:   13%   8%   79%

MET SER GLU TYR SER GLN THR VAL PRO GLU LEU VAL SER TRP ALA ARG LYS ASN ASP PHE SER **I22** S23 L24 E27 R28 L29 **A30** F31 L32 M33 **A34** I35 A36 V37 L38 N39 S40 E41 R42 E46 D54 A55 F56 R57 **E58** V59 G62 S69 V72 N75 I78

N79 **L86** R89 **F90** T91 **L94** N98 **Y101** R102 L103 T104 P105 **L106** G107 S111 **I115** ARG GLN ARG GLU MET ASP GLU GLN ASN PHE SER THR LEU ARG LEU SER MET GLN LEU SER ILE VAL ALA ASN GLU LEU HIS ARG ALA ALA GLU ALA ALA GLU GLY GLY ASP GLU PHE HIS TRP

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

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

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

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

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

- Molecule 3: Chromosome partition protein MukE

Chain E1:   60%   28%   12%

MET S2 S3 T4 E7 M10 P11 L14 F23 P24 E25 I36 G37 D40 F50 Q51 E52 Q53 L54 E55 Y58 E64 L65 I66 E70 L75 R76 P77 R78 L82 S89 D92 M93 M94 V95 I98 L99 C100 Y101 L102 S105 R108 L109

Q112 G113 I114 E123 L127 M134 V137 R140 S144 D145 L146 D147 L151 K154 T157 T158 L159 N160 R161 L162 L165 L171 K177 I180 V191 R198 E199 I200 Q201 L202 I205 R206 D207 G208 E209 V213 GLU GLY LEU SER LEU

ASP ASP SER GLU ASN ASP GLU THR PRO ASP ASN SER ALA GLU GLY ALA GLY ASP GLU GLN PRO

- Molecule 3: Chromosome partition protein MukE

Chain E2:   61%   27%   12%

MET S2 E7 M10 P11 L14 F23 P24 E25 I36 G37 D40 F50 Q51 E52 Q53 L54 E55 Y58 E64 L65 I66 E70 L75 R76 P77 R78 L82 S89 D92 M93 M94 V95 I98 L99 C100 Y101 L102 S105 R108 L109 Q112

G113 I114 E123 L127 M134 V137 S144 D145 L146 D147 L151 K154 T157 T158 L159 N160 R161 L162 R163 R164 L165 V168 L171 K177 I180 V191 R198 E199 I200 Q201 L202 I205 R206 D207 G208 E209 V213 GLU GLY SER LEU SER LEU ASP

ASP SER GLU ASN ASP GLU THR PRO ASP SER ASN SER ALA GLU GLY ALA GLY ASP GLU GLN PRO

- Molecule 3: Chromosome partition protein MukE

Chain F1:   63%   18%   •   18%

MET SER SER THR HIS ILE GLU GLN F9 E25 H35 D42 N43 F50 L54 Y61 N62 V63 E64 L65 I66 Y74 R78 L82 I83 S86 S89 E90 M93 M94 V95 L99 L104 S105 P106 E107 R108 Q112 G113 Y121 I125 M134

V137 N138 Q139 R140 L151 V155 N175 N176 K177 I180 T181 E182 A183 V184 A189 R198 E199 R203 M204 I205 R206 ASP GLY ALA MET PRO VAL GLY SER LEU SER LEU ASP SER GLU ASN ASP GLU THR PRO ASP ASN SER ALA GLU GLY ALA GLY ASP

GLU GLN PRO

- Molecule 3: Chromosome partition protein MukE

Chain F2:   64%   18%   •   18%

MET SER THR HIS ILE GLU GLN F9 E25 H35 D42 N43 F50 L54 Y61 N62 V63 E64 L65 I66 Y74 L82 I83 S86 S89 E90 L91 D92 M93 M94 V95 L99 L104 S105 P106 E107 G113 Y121 I125 M134 V137 N138

Q139 R140 L151 V155 T158 N175 N176 K177 I180 T181 E182 A183 V184 A189 R198 E199 R203 M204 I205 R206 ASP GLY GLU ALA MET PRO VAL GLU GLY SER LEU SER LEU ASP SER ASP GLU ASN ASP GLU THR PRO ASP ASN SER ALA GLU GLY ALA GLY ASP GLU

GLN PRO

• Molecule 4: Acyl carrier protein

Chain G1:

MET SER T2 I3 V7 K8 K9 I10 I11 G12 L15 Q19 A34 D35 S36 L37 V40 M44 A45 L46 E47 E48 E53 I54 E57 K61 I62 T63 T64 V65 Q66 A67 A68 I69 N73 GLY HIS GLN ALA

• Molecule 4: Acyl carrier protein

Chain G2:

MET SER T2 I3 V7 K8 K9 I10 I11 G12 L15 Q19 A34 D35 S36 L37 V40 M44 A45 L46 E47 E48 E53 I54 E57 K61 I62 Q66 I69 N73 GLY HIS GLN ALA

• Molecule 4: Acyl carrier protein

Chain H1:

MET SER T2 K9 E13 Q14 L15 G16 N24 N25 A26 V29 E30 A34 D35 S36 V40 E48 E49 E57 E58 T64 V65 Q66 Y71 I72 N73 GLY HIS GLN ALA

• Molecule 4: Acyl carrier protein

Chain H2:

MET SER T2 K9 E13 Q14 L15 G16 N24 N25 A26 V29 E30 A34 D35 S36 V40 V43 E48 E49 E57 E58 T64 V65 Q66 Y71 I72 N73 GLY HIS GLN ALA

• Molecule 5: Macrodomain Ter protein

Chain I1:

M1 K2 Y17 T29 A40 L47 P51 V52 R53 V54 I58 E59 Q60 H61 M62 R69 Q72 T73 I74 R75 R78 K79 A84 E85 H86 Q87 R90 K91 K92 S93 W101 V120 S116 I119 Q121 L122 K129 N134 GLN MET SER SER LEU LYS

HIS ASP LEU GLU ALA ILE LEU LEU GLY LYS ASN GLU

• Molecule 5: Macrodomain Ter protein

Chain I2:

• Molecule 5: Macrodomain Ter protein

Chain J1:

• Molecule 5: Macrodomain Ter protein

Chain J2:

• Molecule 6: matS2 DNA 80 b, oligo FBA769

Chain K1:

• Molecule 6: matS2 DNA 80 b, oligo FBA769

Chain M1:

• Molecule 7: matS2 DNA 80 b, oligo FBA770

Chain L1:

15%

75%

22%

T1 C4 G5 T6 C9 G13 T14 G21 G22 A29 T30 C31 G36 A39 G40 A41 A44 G45 T49 A61 T62 T66 A67 C68 T69 T70 T71 A72 C73 A74 G75 G76 C77 G78 DA DG

• Molecule 7: matS2 DNA 80 b, oligo FBA770

Chain N1:

18%

74%

24%

T1 C4 G5 T6 C9 G13 T14 G21 C31 C32 A33 A39 G40 A41 A44 G45 C46 A47 C48 T49 A61 T62 C65 T66 A67 C68 T69 T70 T71 A72 C73 A74 G75 G76 C77 G78 DA DG

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	8561	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 $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.266	Depositor
Minimum map value	-0.051	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.017	Depositor
Map size (Å)	924.48004, 924.48004, 924.48004	wwPDB
Map dimensions	216, 216, 216	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	4.28, 4.28, 4.28	Depositor

5　Model quality ⓘ

5.1　Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, PNS, ATP

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	A1	0.25	0/11999	0.52	0/16166
1	A2	0.25	0/11999	0.52	0/16166
1	B1	0.26	0/11999	0.53	0/16166
1	B2	0.26	0/11999	0.53	0/16166
2	C1	0.26	0/2753	0.51	0/3727
2	C2	0.26	0/2753	0.51	0/3727
2	D1	0.25	0/741	0.51	0/1000
2	D2	0.25	0/741	0.51	0/1000
3	E1	0.30	0/1753	0.58	0/2361
3	E2	0.30	0/1753	0.57	0/2361
3	F1	0.28	0/1648	0.62	2/2218 (0.1%)
3	F2	0.27	0/1648	0.62	2/2218 (0.1%)
4	G1	0.25	0/565	0.47	0/765
4	G2	0.26	0/565	0.47	0/765
4	H1	0.25	0/565	0.44	0/765
4	H2	0.26	0/565	0.44	0/765
5	I1	0.26	0/1160	0.54	0/1560
5	I2	0.26	0/1160	0.54	0/1560
5	J1	0.26	0/1169	0.53	0/1572
5	J2	0.26	0/1169	0.53	0/1572
6	K1	0.58	0/1786	0.96	2/2755 (0.1%)
6	M1	0.58	0/1786	0.96	2/2755 (0.1%)
7	L1	0.56	0/1800	0.94	0/2775
7	N1	0.55	0/1800	0.93	0/2775
All	All	0.30	0/75876	0.59	8/103660 (0.0%)

There are no bond length outliers.

The worst 5 of 8 bond angle outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F2	106	PRO	CA-N-CD	-7.84	100.53	111.50
3	F1	106	PRO	CA-N-CD	-7.83	100.54	111.50
3	F1	104	LEU	CA-CB-CG	7.55	132.67	115.30
3	F2	104	LEU	CA-CB-CG	7.55	132.66	115.30
6	M1	52	DT	O4'-C1'-N1	6.42	112.49	108.00

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	A1	11840	11712	11708	259	0
1	A2	11840	11712	11708	268	0
1	B1	11840	11712	11707	268	0
1	B2	11840	11712	11707	270	0
2	C1	2704	2626	2623	72	0
2	C2	2704	2626	2623	73	0
2	D1	733	736	735	25	0
2	D2	733	736	735	26	0
3	E1	1722	1719	1718	77	0
3	E2	1722	1719	1717	76	0
3	F1	1619	1627	1626	54	0
3	F2	1619	1627	1626	44	0
4	G1	562	543	542	21	0
4	G2	562	543	542	20	0
4	H1	562	543	542	12	0
4	H2	562	543	542	13	0
5	I1	1135	1137	1136	34	0
5	I2	1135	1137	1136	34	0
5	J1	1144	1144	1144	86	0
5	J2	1144	1144	1144	76	0
6	K1	1596	883	883	106	0
6	M1	1596	883	883	113	0

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	L1	1602	873	874	51	0
7	N1	1602	873	874	41	0
8	A1	1	0	0	0	0
8	A2	1	0	0	0	0
8	B1	1	0	0	0	0
8	B2	1	0	0	0	0
9	A1	31	12	12	2	0
9	A2	31	12	12	3	0
9	B1	31	12	12	0	0
9	B2	31	12	12	0	0
10	G1	21	21	21	1	0
10	G2	21	21	21	1	0
10	H1	21	21	21	0	0
10	H2	21	21	21	0	0
All	All	74330	70642	70607	1738	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.

The worst 5 of 1738 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)
3:F1:140:ARG:NH2	7:L1:49:DT:H3'	1.37	1.37
5:J1:79:LYS:HG3	6:M1:65:DT:OP2	1.14	1.27
5:J2:79:LYS:HG3	6:K1:65:DT:OP2	1.21	1.27
3:E1:140:ARG:NH2	6:K1:31:DT:H5"	1.50	1.24
5:J1:79:LYS:HE2	6:M1:65:DT:O5'	1.35	1.23

There are no symmetry-related clashes.

5.3　Torsion angles　ⓘ

5.3.1　Protein backbone　ⓘ

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	A1	1465/1482 (99%)	1418 (97%)	47 (3%)	0	100	100
1	A2	1465/1482 (99%)	1417 (97%)	48 (3%)	0	100	100
1	B1	1465/1482 (99%)	1414 (96%)	51 (4%)	0	100	100
1	B2	1465/1482 (99%)	1412 (96%)	53 (4%)	0	100	100
2	C1	331/440 (75%)	315 (95%)	16 (5%)	0	100	100
2	C2	331/440 (75%)	315 (95%)	16 (5%)	0	100	100
2	D1	92/440 (21%)	89 (97%)	3 (3%)	0	100	100
2	D2	92/440 (21%)	89 (97%)	3 (3%)	0	100	100
3	E1	210/240 (88%)	207 (99%)	3 (1%)	0	100	100
3	E2	210/240 (88%)	207 (99%)	3 (1%)	0	100	100
3	F1	196/240 (82%)	186 (95%)	10 (5%)	0	100	100
3	F2	196/240 (82%)	186 (95%)	10 (5%)	0	100	100
4	G1	70/78 (90%)	69 (99%)	1 (1%)	0	100	100
4	G2	70/78 (90%)	69 (99%)	1 (1%)	0	100	100
4	H1	70/78 (90%)	66 (94%)	4 (6%)	0	100	100
4	H2	70/78 (90%)	66 (94%)	4 (6%)	0	100	100
5	I1	132/151 (87%)	129 (98%)	3 (2%)	0	100	100
5	I2	132/151 (87%)	129 (98%)	3 (2%)	0	100	100
5	J1	133/151 (88%)	130 (98%)	3 (2%)	0	100	100
5	J2	133/151 (88%)	130 (98%)	3 (2%)	0	100	100
All	All	8328/9564 (87%)	8043 (97%)	285 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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.

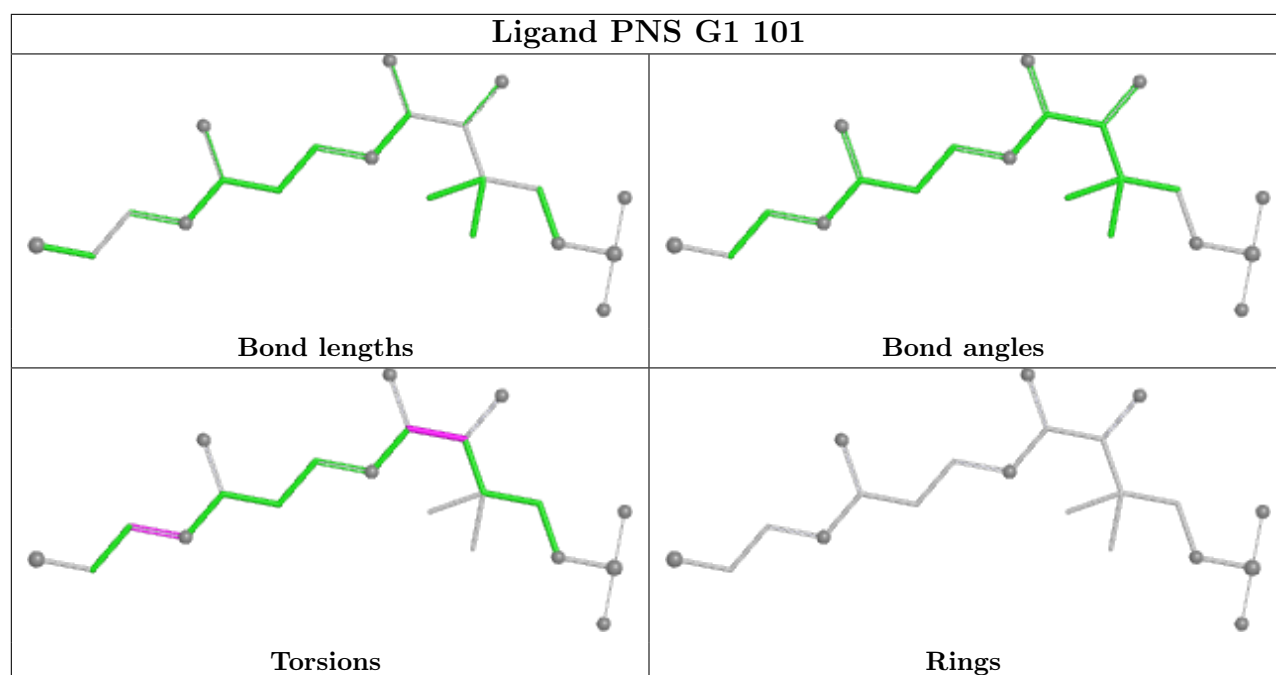| Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A1	1269/1281 (99%)	1266 (100%)	3 (0%)	93	96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A2	1269/1281 (99%)	1266 (100%)	3 (0%)	93	96
1	B1	1269/1281 (99%)	1264 (100%)	5 (0%)	91	94
1	B2	1269/1281 (99%)	1264 (100%)	5 (0%)	91	94
2	C1	286/376 (76%)	284 (99%)	2 (1%)	84	90
2	C2	286/376 (76%)	284 (99%)	2 (1%)	84	90
2	D1	79/376 (21%)	79 (100%)	0	100	100
2	D2	79/376 (21%)	79 (100%)	0	100	100
3	E1	189/212 (89%)	188 (100%)	1 (0%)	88	93
3	E2	189/212 (89%)	188 (100%)	1 (0%)	88	93
3	F1	177/212 (84%)	177 (100%)	0	100	100
3	F2	177/212 (84%)	177 (100%)	0	100	100
4	G1	63/67 (94%)	63 (100%)	0	100	100
4	G2	63/67 (94%)	63 (100%)	0	100	100
4	H1	63/67 (94%)	63 (100%)	0	100	100
4	H2	63/67 (94%)	63 (100%)	0	100	100
5	I1	121/136 (89%)	121 (100%)	0	100	100
5	I2	121/136 (89%)	121 (100%)	0	100	100
5	J1	122/136 (90%)	122 (100%)	0	100	100
5	J2	122/136 (90%)	122 (100%)	0	100	100
All	All	7276/8288 (88%)	7254 (100%)	22 (0%)	92	95

5 of 22 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B2	673	ARG
2	C1	228	LYS
2	C1	17	LYS
2	C2	17	LYS
1	B1	143	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 38 such sidechains are listed below:

Mol	Chain	Res	Type
2	C1	230	GLN

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Mol	Chain	Res	Type
5	I2	61	HIS
2	C2	182	GLN
3	E1	8	GLN
5	J2	60	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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 ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 12 ligands modelled in this entry, 4 are monoatomic - leaving 8 for Mogul analysis.

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	$\#|Z| > 2$
9	ATP	A1	1502	8	26,33,33	0.63	0	31,52,52	1.07	1 (3%)
10	PNS	G2	101	4	13,20,21	0.18	0	18,26,29	0.34	0
9	ATP	B1	2101	8	26,33,33	0.63	0	31,52,52	1.07	3 (9%)
10	PNS	H1	101	4	13,20,21	0.19	0	18,26,29	0.44	0
10	PNS	H2	101	4	13,20,21	0.18	0	18,26,29	0.43	0
10	PNS	G1	101	4	13,20,21	0.18	0	18,26,29	0.34	0
9	ATP	A2	2101	8	26,33,33	0.62	0	31,52,52	1.07	1 (3%)
9	ATP	B2	1502	8	26,33,33	0.63	0	31,52,52	1.07	3 (9%)

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
9	ATP	A1	1502	8	-	1/18/38/38	0/3/3/3
10	PNS	G2	101	4	-	2/24/26/27	-
9	ATP	B1	2101	8	-	2/18/38/38	0/3/3/3
10	PNS	H1	101	4	-	3/24/26/27	-
10	PNS	H2	101	4	-	3/24/26/27	-
10	PNS	G1	101	4	-	2/24/26/27	-
9	ATP	A2	2101	8	-	1/18/38/38	0/3/3/3
9	ATP	B2	1502	8	-	2/18/38/38	0/3/3/3

There are no bond length outliers.

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	A2	2101	ATP	C5-C6-N6	2.30	123.85	120.35
9	B2	1502	ATP	C5-C6-N6	2.28	123.81	120.35
9	B1	2101	ATP	C5-C6-N6	2.27	123.81	120.35
9	A1	1502	ATP	C5-C6-N6	2.25	123.77	120.35
9	B2	1502	ATP	O3'-C3'-C2'	-2.05	105.18	111.82

There are no chirality outliers.

5 of 16 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	H1	101	PNS	C37-C38-C39-N41
10	H2	101	PNS	C37-C38-C39-N41
9	A1	1502	ATP	PB-O3B-PG-O1G
9	A2	2101	ATP	PB-O3B-PG-O1G
10	H1	101	PNS	C37-C38-C39-O40

There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A1	1502	ATP	2	0
10	G2	101	PNS	1	0
10	G1	101	PNS	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A2	2101	ATP	3	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 ATP A1 1502

Bond lengths

Bond angles

Torsions

Rings

Ligand PNS G2 101

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B1 2101

Bond lengths

Bond angles

Torsions

Rings

Ligand PNS H1 101	
Bond lengths	Bond angles
Torsions	Rings

Ligand PNS H2 101	
Bond lengths	Bond angles
Torsions	Rings

Ligand PNS G1 101

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A2 2101

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B2 1502

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-12663. 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 ⓘ
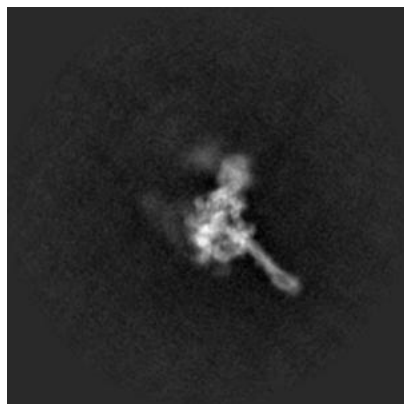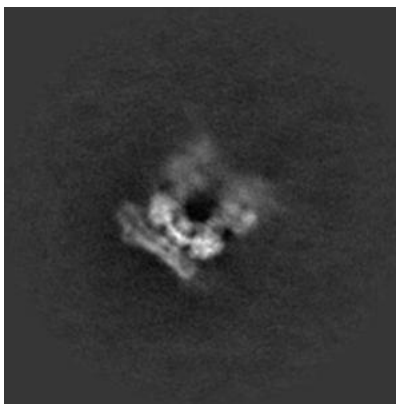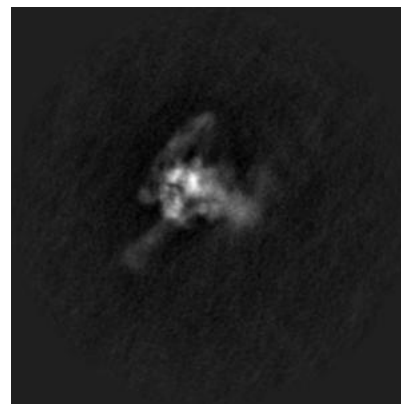
6.1.1 Primary map

X Y Z

6.1.2 Raw map

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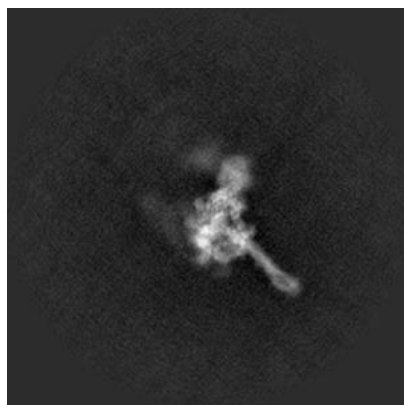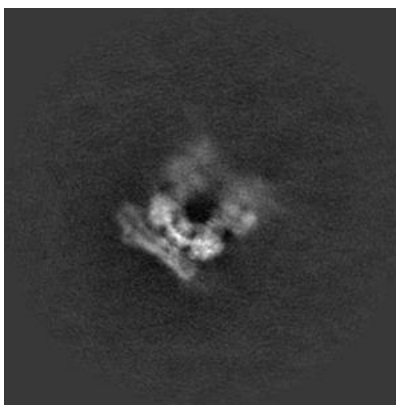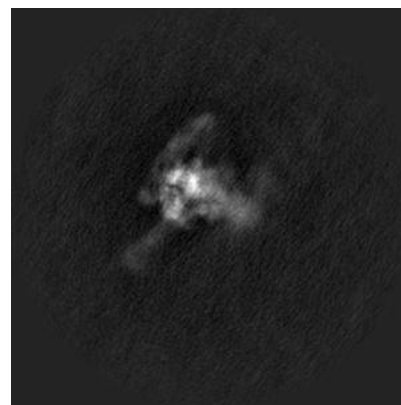
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
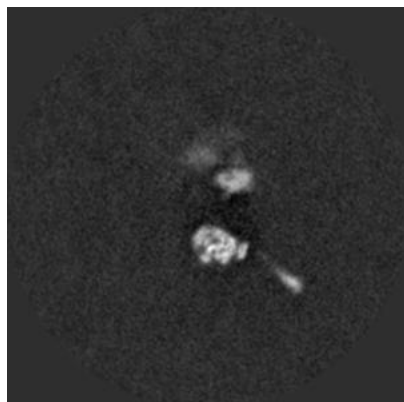
6.2.1 Primary map

X Index: 108
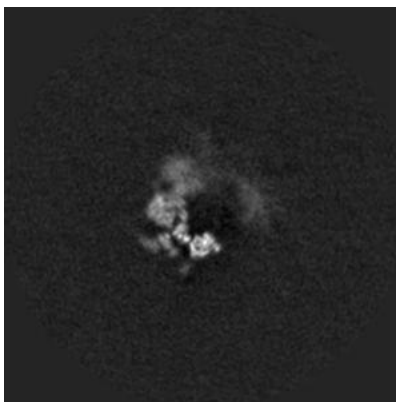
Y Index: 108
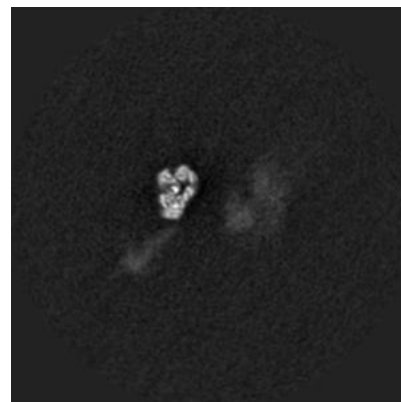
Z Index: 108

6.2.2 Raw map
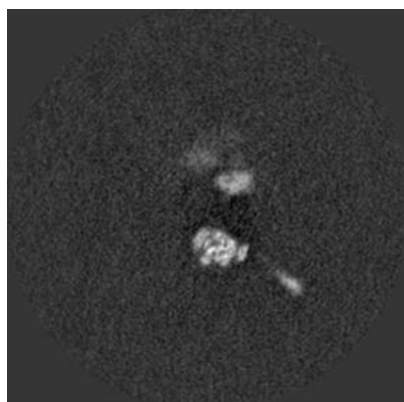
X Index: 108
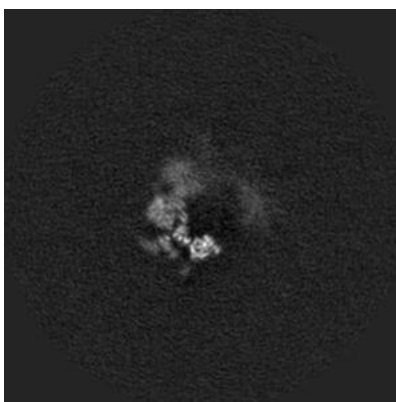
Y Index: 108
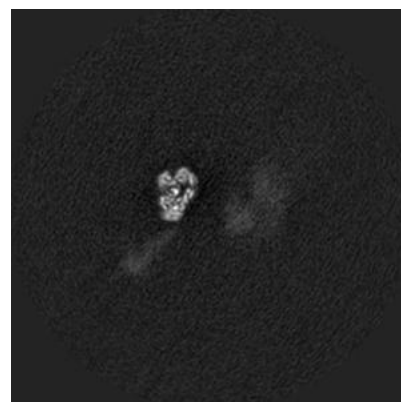
Z Index: 108

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

6.3 Largest variance slices ⓘ
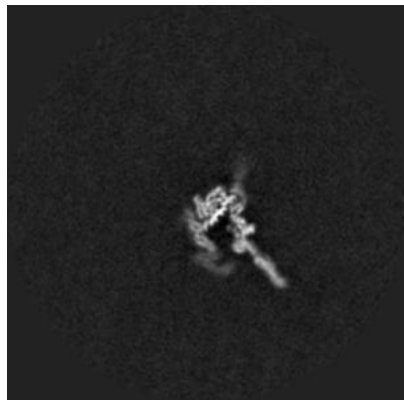
6.3.1 Primary map
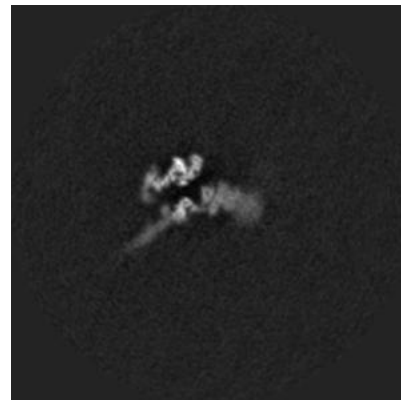
X Index: 89	Y Index: 123	Z Index: 94

6.3.2 Raw map
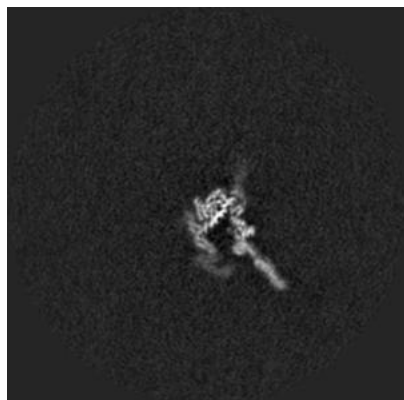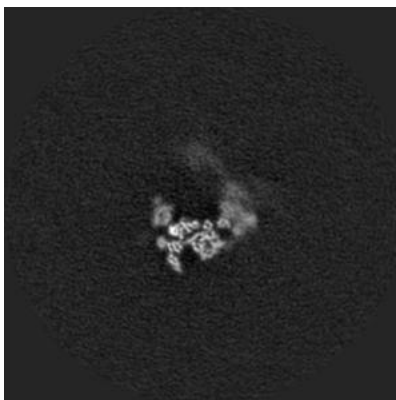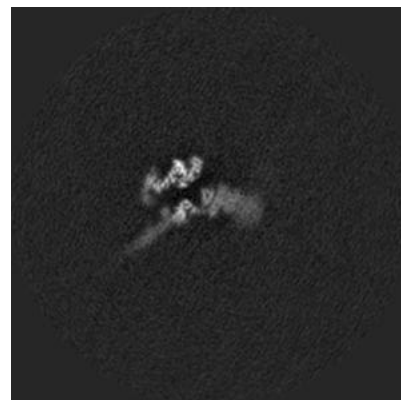
X Index: 89	Y Index: 123	Z Index: 94

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

6.4 Orthogonal surface views ⓘ

6.4.1 Primary map

| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.017. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 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.

6.5 Mask visualisation ⓘ

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

6.5.1 emd_12663_msk_1.map ⓘ

X   Y   Z
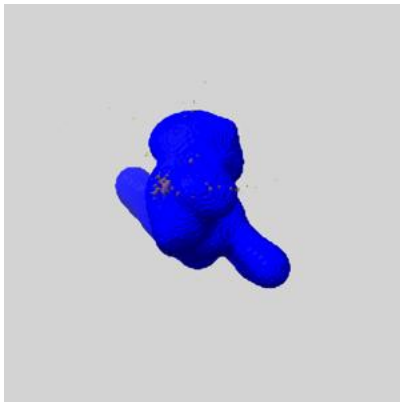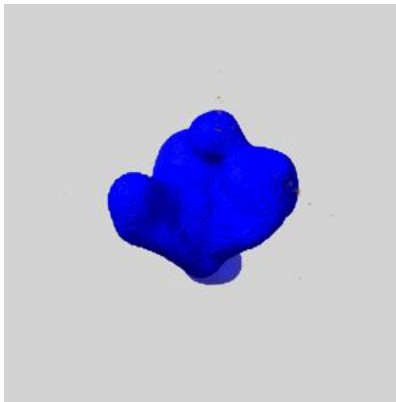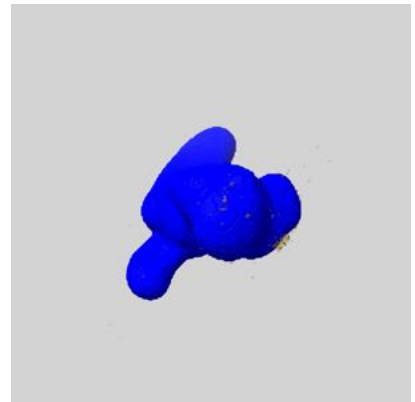
7   Map analysis ⓘ

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 ⓘ
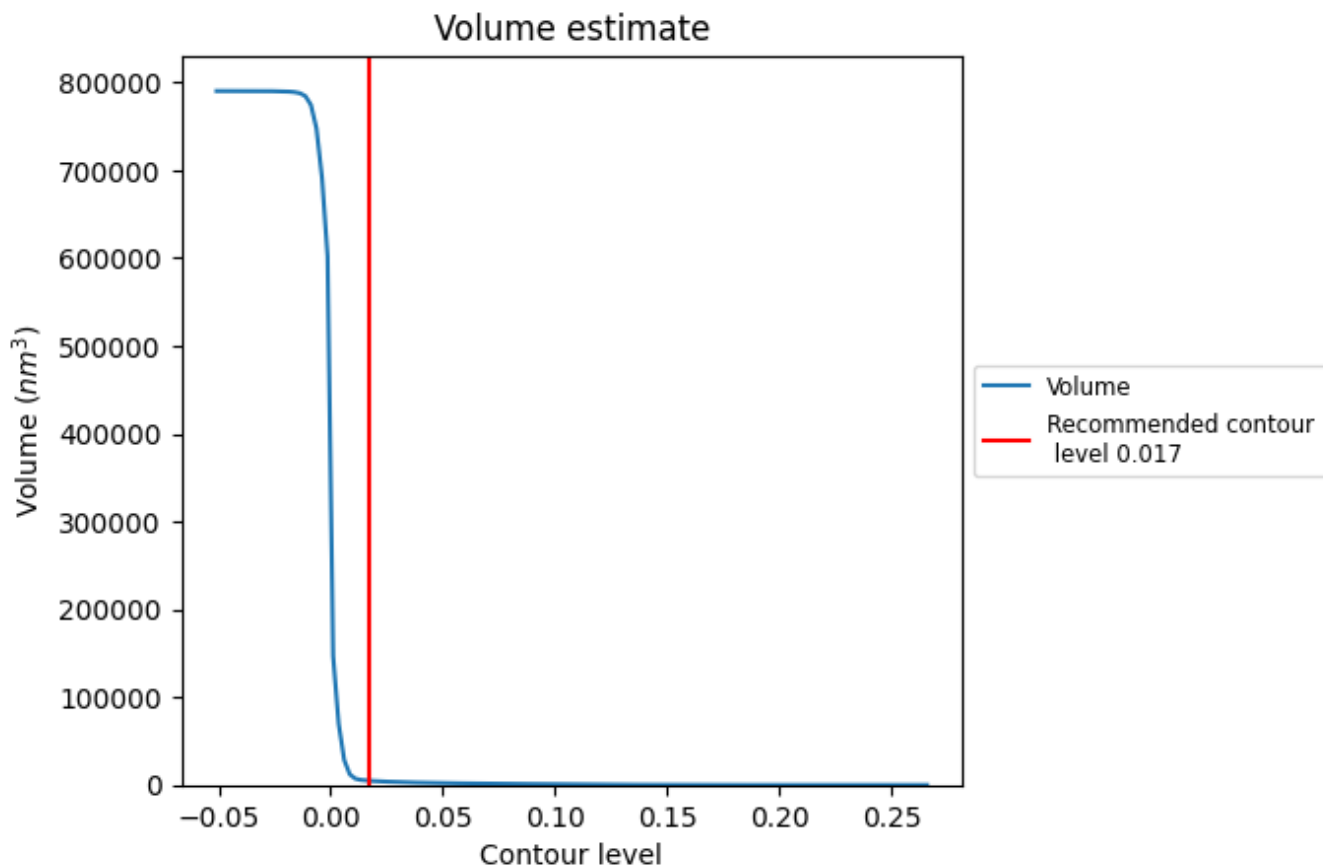
The volume at the recommended contour level is 4868 nm^3; this corresponds to an approximate mass of 4398 kDa.

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 ⓘ
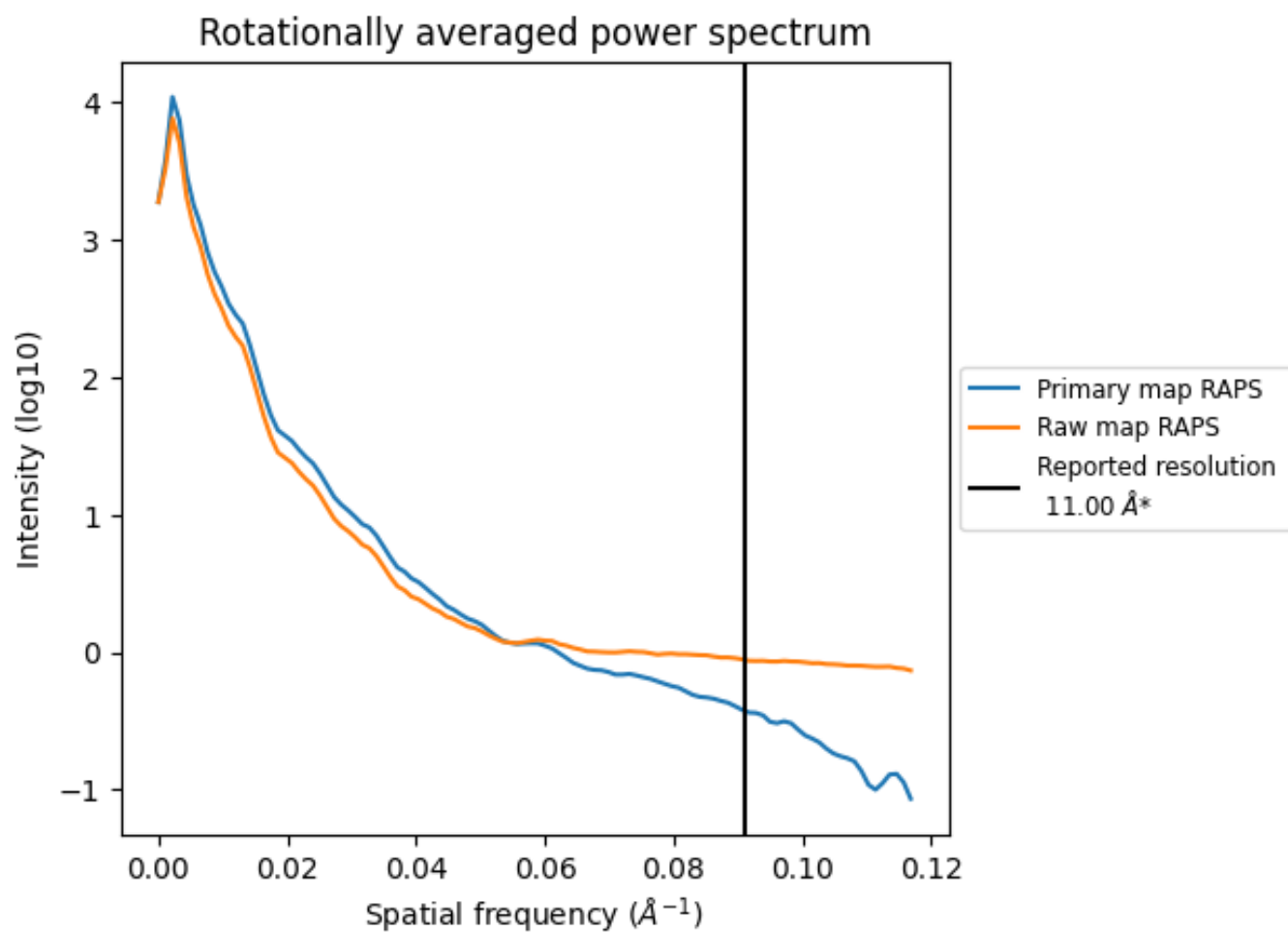
*Reported resolution corresponds to spatial frequency of 0.091 Å^{-1}

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 ⓘ
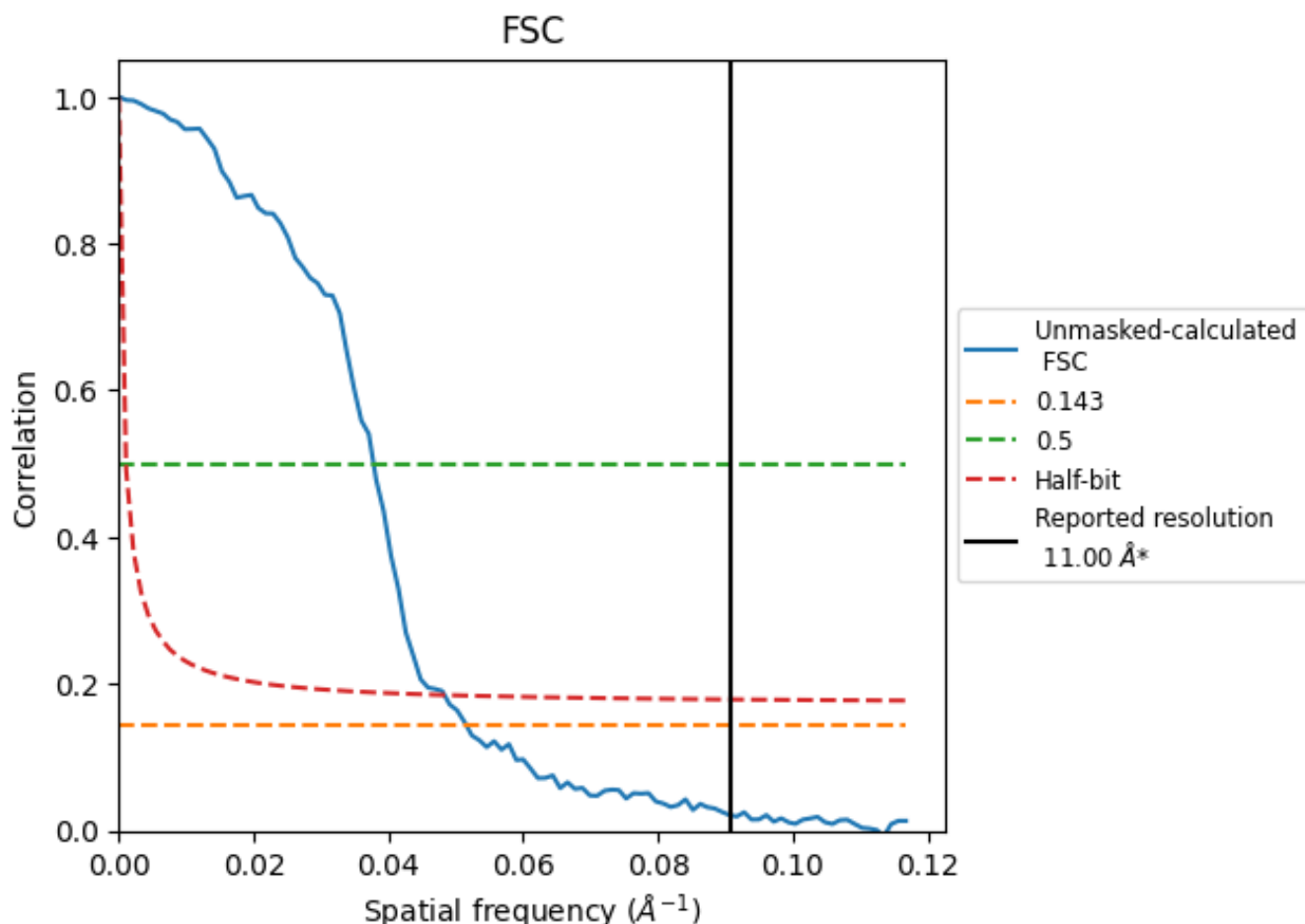
*Reported resolution corresponds to spatial frequency of 0.091 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	11.00	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	19.38	26.46	20.66

*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 19.38 differs from the reported value 11.0 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-12663 and PDB model 7NZ3. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay ⓘ

X   Y   Z
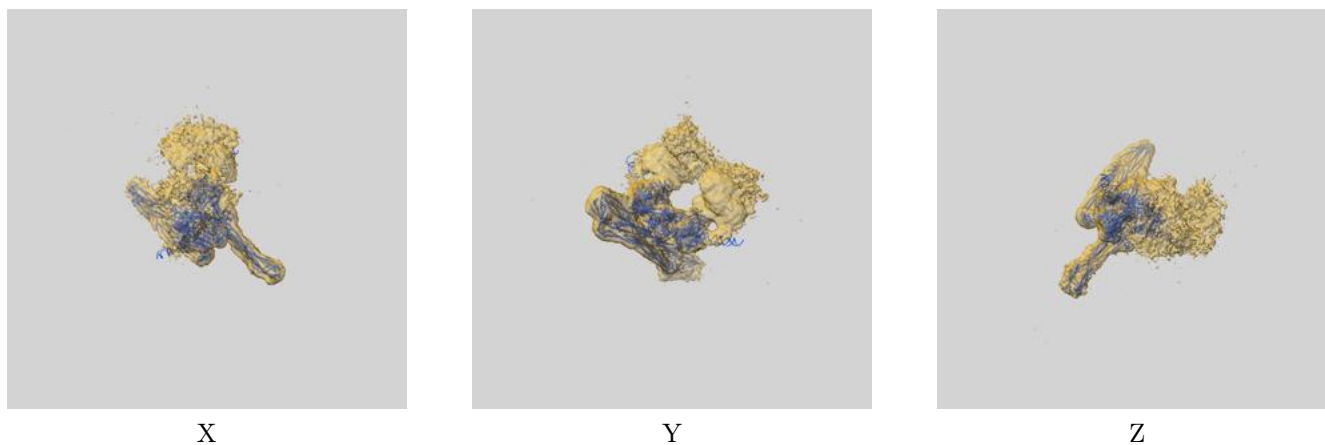
The images above show the 3D surface view of the map at the recommended contour level 0.017 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Atom inclusion ⓘ
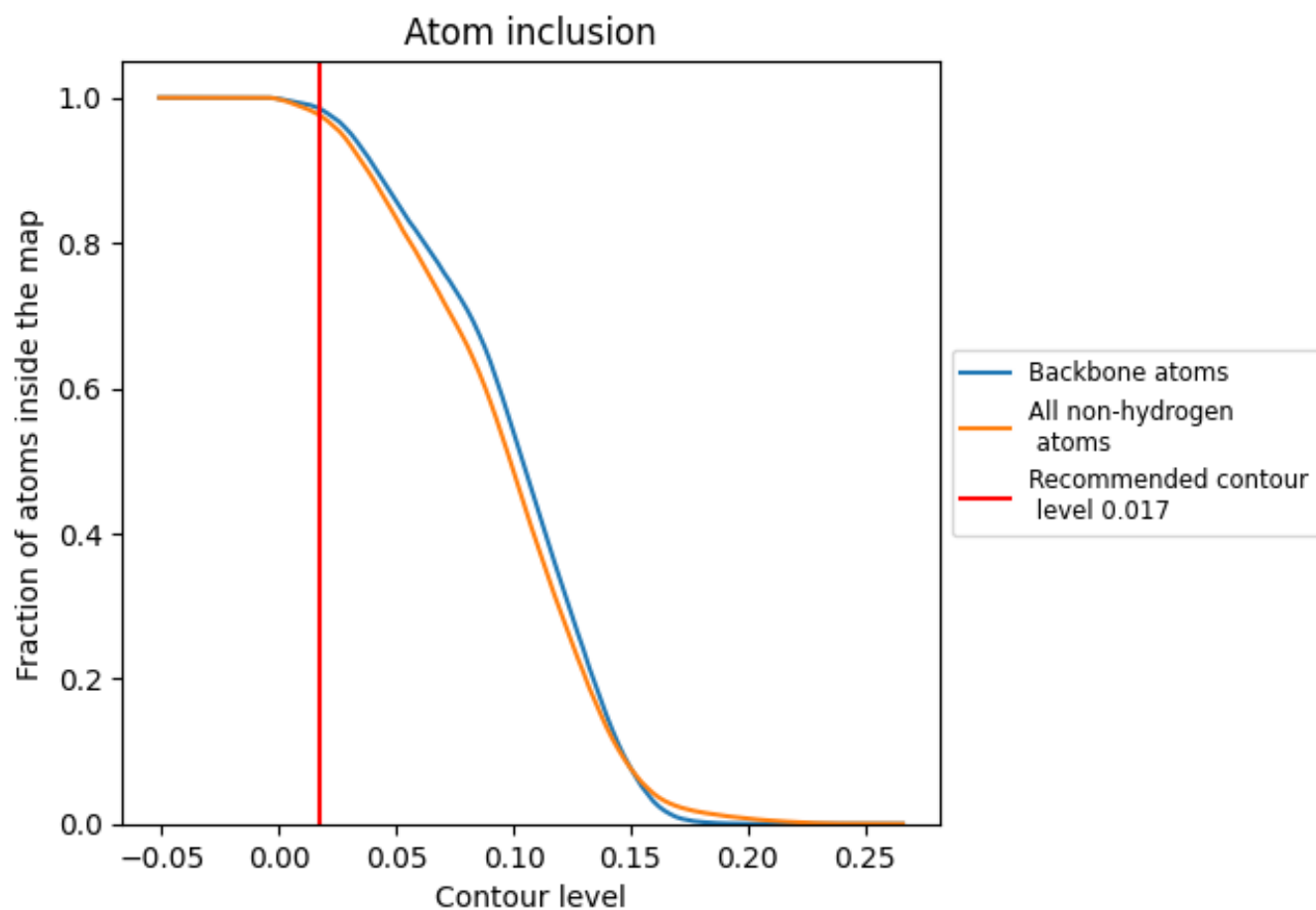
At the recommended contour level, 99% of all backbone atoms, 98% of all non-hydrogen atoms, are inside the map.