wwPDB EM Validation Summary Report ⓘ

Nov 6, 2022 – 07:51 AM EST

PDB ID	:	6BCQ
EMDB ID	:	EMD-7085
Title	:	cryo-EM structure of TRPM4 in ATP bound state with long coiled coil at 3.3 angstrom resolution
Authors	:	Guo, J.; She, J.; Chen, Q.; Bai, X.; Jiang, Y.
Deposited on	:	2017-10-20
Resolution	:	3.25 Å(reported)

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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 3.25 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		3
Ramachandran outliers		0
Sidechain outliers		1.2%

Worse *Better*

▮ Percentile relative to all structures

❙ Percentile relative to all EM structures
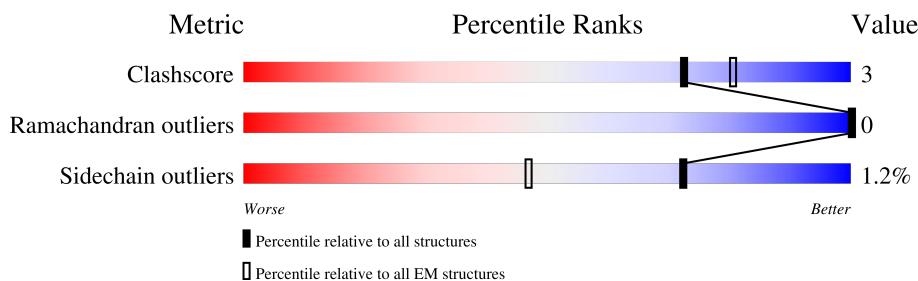
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	A	1254	35% / 71% 7% 22%
1	B	1254	35% / 72% 7% 22%
1	C	1254	36% / 72% 7% 22%
1	D	1254	35% / 71% 7% 22%
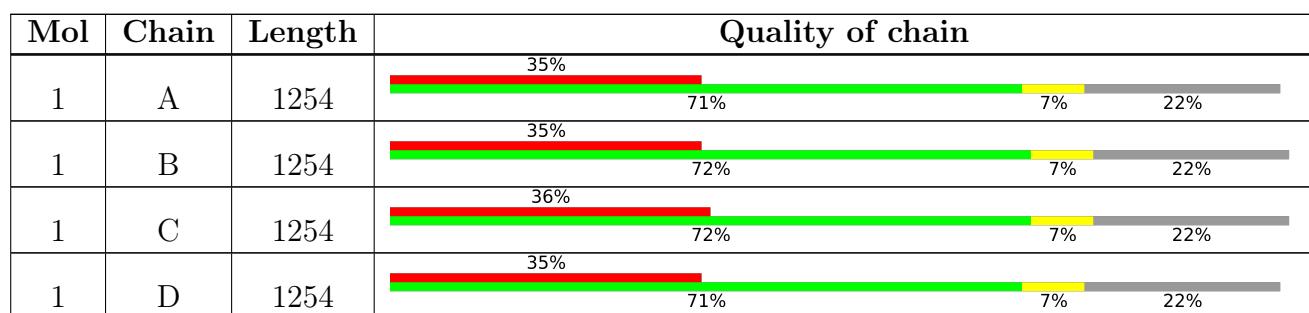
2   Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 31048 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 Transient receptor potential cation channel subfamily M member 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	983	Total	C	N	O	S	0	0
			7731	4976	1353	1367	35		
1	A	983	Total	C	N	O	S	0	0
			7731	4976	1353	1367	35		
1	C	983	Total	C	N	O	S	0	0
			7731	4976	1353	1367	35		
1	D	983	Total	C	N	O	S	0	0
			7731	4976	1353	1367	35		

There are 164 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	1214	ARG	-	expression tag	UNP Q7TN37
B	1215	ASN	-	expression tag	UNP Q7TN37
B	1216	SER	-	expression tag	UNP Q7TN37
B	1217	LYS	-	expression tag	UNP Q7TN37
B	1218	ALA	-	expression tag	UNP Q7TN37
B	1219	TYR	-	expression tag	UNP Q7TN37
B	1220	VAL	-	expression tag	UNP Q7TN37
B	1221	ASP	-	expression tag	UNP Q7TN37
B	1222	GLU	-	expression tag	UNP Q7TN37
B	1223	LEU	-	expression tag	UNP Q7TN37
B	1224	THR	-	expression tag	UNP Q7TN37
B	1225	SER	-	expression tag	UNP Q7TN37
B	1226	ARG	-	expression tag	UNP Q7TN37
B	1227	GLY	-	expression tag	UNP Q7TN37
B	1228	ARG	-	expression tag	UNP Q7TN37
B	1229	LEU	-	expression tag	UNP Q7TN37
B	1230	GLU	-	expression tag	UNP Q7TN37
B	1231	VAL	-	expression tag	UNP Q7TN37
B	1232	LEU	-	expression tag	UNP Q7TN37
B	1233	PHE	-	expression tag	UNP Q7TN37
B	1234	GLN	-	expression tag	UNP Q7TN37

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1235	GLY	-	expression tag	UNP Q7TN37
B	1236	PRO	-	expression tag	UNP Q7TN37
B	1237	ASP	-	expression tag	UNP Q7TN37
B	1238	TYR	-	expression tag	UNP Q7TN37
B	1239	LYS	-	expression tag	UNP Q7TN37
B	1240	ASP	-	expression tag	UNP Q7TN37
B	1241	ASP	-	expression tag	UNP Q7TN37
B	1242	ASP	-	expression tag	UNP Q7TN37
B	1243	ASP	-	expression tag	UNP Q7TN37
B	1244	LYS	-	expression tag	UNP Q7TN37
B	1245	HIS	-	expression tag	UNP Q7TN37
B	1246	HIS	-	expression tag	UNP Q7TN37
B	1247	HIS	-	expression tag	UNP Q7TN37
B	1248	HIS	-	expression tag	UNP Q7TN37
B	1249	HIS	-	expression tag	UNP Q7TN37
B	1250	HIS	-	expression tag	UNP Q7TN37
B	1251	HIS	-	expression tag	UNP Q7TN37
B	1252	HIS	-	expression tag	UNP Q7TN37
B	1253	HIS	-	expression tag	UNP Q7TN37
B	1254	HIS	-	expression tag	UNP Q7TN37
A	1214	ARG	-	expression tag	UNP Q7TN37
A	1215	ASN	-	expression tag	UNP Q7TN37
A	1216	SER	-	expression tag	UNP Q7TN37
A	1217	LYS	-	expression tag	UNP Q7TN37
A	1218	ALA	-	expression tag	UNP Q7TN37
A	1219	TYR	-	expression tag	UNP Q7TN37
A	1220	VAL	-	expression tag	UNP Q7TN37
A	1221	ASP	-	expression tag	UNP Q7TN37
A	1222	GLU	-	expression tag	UNP Q7TN37
A	1223	LEU	-	expression tag	UNP Q7TN37
A	1224	THR	-	expression tag	UNP Q7TN37
A	1225	SER	-	expression tag	UNP Q7TN37
A	1226	ARG	-	expression tag	UNP Q7TN37
A	1227	GLY	-	expression tag	UNP Q7TN37
A	1228	ARG	-	expression tag	UNP Q7TN37
A	1229	LEU	-	expression tag	UNP Q7TN37
A	1230	GLU	-	expression tag	UNP Q7TN37
A	1231	VAL	-	expression tag	UNP Q7TN37
A	1232	LEU	-	expression tag	UNP Q7TN37
A	1233	PHE	-	expression tag	UNP Q7TN37
A	1234	GLN	-	expression tag	UNP Q7TN37
A	1235	GLY	-	expression tag	UNP Q7TN37

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1236	PRO	-	expression tag	UNP Q7TN37
A	1237	ASP	-	expression tag	UNP Q7TN37
A	1238	TYR	-	expression tag	UNP Q7TN37
A	1239	LYS	-	expression tag	UNP Q7TN37
A	1240	ASP	-	expression tag	UNP Q7TN37
A	1241	ASP	-	expression tag	UNP Q7TN37
A	1242	ASP	-	expression tag	UNP Q7TN37
A	1243	ASP	-	expression tag	UNP Q7TN37
A	1244	LYS	-	expression tag	UNP Q7TN37
A	1245	HIS	-	expression tag	UNP Q7TN37
A	1246	HIS	-	expression tag	UNP Q7TN37
A	1247	HIS	-	expression tag	UNP Q7TN37
A	1248	HIS	-	expression tag	UNP Q7TN37
A	1249	HIS	-	expression tag	UNP Q7TN37
A	1250	HIS	-	expression tag	UNP Q7TN37
A	1251	HIS	-	expression tag	UNP Q7TN37
A	1252	HIS	-	expression tag	UNP Q7TN37
A	1253	HIS	-	expression tag	UNP Q7TN37
A	1254	HIS	-	expression tag	UNP Q7TN37
C	1214	ARG	-	expression tag	UNP Q7TN37
C	1215	ASN	-	expression tag	UNP Q7TN37
C	1216	SER	-	expression tag	UNP Q7TN37
C	1217	LYS	-	expression tag	UNP Q7TN37
C	1218	ALA	-	expression tag	UNP Q7TN37
C	1219	TYR	-	expression tag	UNP Q7TN37
C	1220	VAL	-	expression tag	UNP Q7TN37
C	1221	ASP	-	expression tag	UNP Q7TN37
C	1222	GLU	-	expression tag	UNP Q7TN37
C	1223	LEU	-	expression tag	UNP Q7TN37
C	1224	THR	-	expression tag	UNP Q7TN37
C	1225	SER	-	expression tag	UNP Q7TN37
C	1226	ARG	-	expression tag	UNP Q7TN37
C	1227	GLY	-	expression tag	UNP Q7TN37
C	1228	ARG	-	expression tag	UNP Q7TN37
C	1229	LEU	-	expression tag	UNP Q7TN37
C	1230	GLU	-	expression tag	UNP Q7TN37
C	1231	VAL	-	expression tag	UNP Q7TN37
C	1232	LEU	-	expression tag	UNP Q7TN37
C	1233	PHE	-	expression tag	UNP Q7TN37
C	1234	GLN	-	expression tag	UNP Q7TN37
C	1235	GLY	-	expression tag	UNP Q7TN37
C	1236	PRO	-	expression tag	UNP Q7TN37

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1237	ASP	-	expression tag	UNP Q7TN37
C	1238	TYR	-	expression tag	UNP Q7TN37
C	1239	LYS	-	expression tag	UNP Q7TN37
C	1240	ASP	-	expression tag	UNP Q7TN37
C	1241	ASP	-	expression tag	UNP Q7TN37
C	1242	ASP	-	expression tag	UNP Q7TN37
C	1243	ASP	-	expression tag	UNP Q7TN37
C	1244	LYS	-	expression tag	UNP Q7TN37
C	1245	HIS	-	expression tag	UNP Q7TN37
C	1246	HIS	-	expression tag	UNP Q7TN37
C	1247	HIS	-	expression tag	UNP Q7TN37
C	1248	HIS	-	expression tag	UNP Q7TN37
C	1249	HIS	-	expression tag	UNP Q7TN37
C	1250	HIS	-	expression tag	UNP Q7TN37
C	1251	HIS	-	expression tag	UNP Q7TN37
C	1252	HIS	-	expression tag	UNP Q7TN37
C	1253	HIS	-	expression tag	UNP Q7TN37
C	1254	HIS	-	expression tag	UNP Q7TN37
D	1214	ARG	-	expression tag	UNP Q7TN37
D	1215	ASN	-	expression tag	UNP Q7TN37
D	1216	SER	-	expression tag	UNP Q7TN37
D	1217	LYS	-	expression tag	UNP Q7TN37
D	1218	ALA	-	expression tag	UNP Q7TN37
D	1219	TYR	-	expression tag	UNP Q7TN37
D	1220	VAL	-	expression tag	UNP Q7TN37
D	1221	ASP	-	expression tag	UNP Q7TN37
D	1222	GLU	-	expression tag	UNP Q7TN37
D	1223	LEU	-	expression tag	UNP Q7TN37
D	1224	THR	-	expression tag	UNP Q7TN37
D	1225	SER	-	expression tag	UNP Q7TN37
D	1226	ARG	-	expression tag	UNP Q7TN37
D	1227	GLY	-	expression tag	UNP Q7TN37
D	1228	ARG	-	expression tag	UNP Q7TN37
D	1229	LEU	-	expression tag	UNP Q7TN37
D	1230	GLU	-	expression tag	UNP Q7TN37
D	1231	VAL	-	expression tag	UNP Q7TN37
D	1232	LEU	-	expression tag	UNP Q7TN37
D	1233	PHE	-	expression tag	UNP Q7TN37
D	1234	GLN	-	expression tag	UNP Q7TN37
D	1235	GLY	-	expression tag	UNP Q7TN37
D	1236	PRO	-	expression tag	UNP Q7TN37
D	1237	ASP	-	expression tag	UNP Q7TN37

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Chain	Residue	Modelled	Actual	Comment	Reference
D	1238	TYR	-	expression tag	UNP Q7TN37
D	1239	LYS	-	expression tag	UNP Q7TN37
D	1240	ASP	-	expression tag	UNP Q7TN37
D	1241	ASP	-	expression tag	UNP Q7TN37
D	1242	ASP	-	expression tag	UNP Q7TN37
D	1243	ASP	-	expression tag	UNP Q7TN37
D	1244	LYS	-	expression tag	UNP Q7TN37
D	1245	HIS	-	expression tag	UNP Q7TN37
D	1246	HIS	-	expression tag	UNP Q7TN37
D	1247	HIS	-	expression tag	UNP Q7TN37
D	1248	HIS	-	expression tag	UNP Q7TN37
D	1249	HIS	-	expression tag	UNP Q7TN37
D	1250	HIS	-	expression tag	UNP Q7TN37
D	1251	HIS	-	expression tag	UNP Q7TN37
D	1252	HIS	-	expression tag	UNP Q7TN37
D	1253	HIS	-	expression tag	UNP Q7TN37
D	1254	HIS	-	expression tag	UNP Q7TN37

- Molecule 2 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).
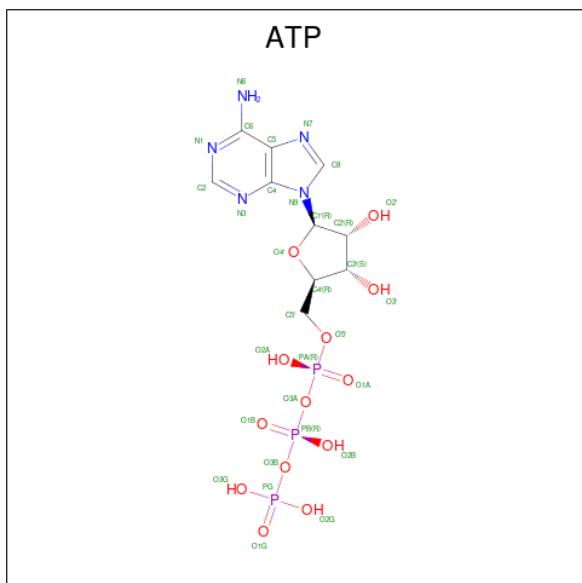
Mol	Chain	Residues	Atoms				AltConf
2	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
2	A	1	Total	C	N	O	P	0
			31	10	5	13	3	

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Mol	Chain	Residues	Atoms						AltConf
2	C	1	Total	C	N	O	P		0
			31	10	5	13	3		
2	D	1	Total	C	N	O	P		0
			31	10	5	13	3		

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: Transient receptor potential cation channel subfamily M member 4

Chain B:

C699 P700 P701 L702 I703 Y704 T705 N706 L707 I708 R711 K712 SER GLU GLU GLU PRO THR GLN LYS ASP LEU ASP PHE ASP MET ASP SER SER ILE ASN GLY ALA GLY PRO PRO GLY THR VAL GLU PRO SER ALA LYS VAL ALA LEU GLU ARG ARG GLN ARG ARG ARG PRO GLY ARG ALA LEU

CYS CYS GLY LYS PHE S765 K766 D770 N782 F793 D800 F801 Q802 P803 T804 K805 E810 L811 F815 F818 C822 E823 E824 L825 G828 L829 G830 GLY GLY TRP GLY SER LEU ALA SER GLY GLY ARG GLY PRO ASP ARG ARG ALA PRO L848 R849 H850 R851 L852 H853 L854

Y855 L856 S857 D858 N861 Q862 C863 D864 L865 L866 F871 L872 L873 G874 V875 G876 C877 R878 L879 T880 P881 G882 L883 D894 R901 K910 D952 R953 V981 G987 N988 C989 S990 M991 E992 R993 G994 A997 E1000 Q1010 N1013 W1054 R1058 E1064 F1065

H1066 S1067 R1068 P1069 A1070 L1071 A1072 P1073 I1076 I1077 I1078 S1079 H1080 V1081 R1082 L1083 L1084 I1085 K1086 W1087 L1088 R1089 R1090 CYS ARG ARG CYS ARG ARG ALA ASN LEU PRO ALA SER PRO VAL PHE GLU HIS PHE ARG VAL CYS L1112 S1113 K1114 E1115 R1118 E1129 R1137 D1138 D1141 S1142 D1143

K1153 V1154 D1155 L1161 G1162 R1165 R1166 Y1167 R1170 H1180 W1187 A1191 L1192 S1193 HIS SER ALA LEU LEU PRO PRO GLY ALA PRO PRO PRO SER PRO THR GLY SER LYS ASP ARG ASN SER LYS ALA TYR VAL ASP GLU LEU THR SER ARG GLY ARG LEU GLU VAL LEU

PHE GLN GLY GLY PRO ASP TYR LYS ASP ASP ASP LYS HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS

• Molecule 1: Transient receptor potential cation channel subfamily M member 4

Chain A:

35%

71% 7% 22%

MET VAL GLY PRO GLU LYS GLU GLN SER TRP ILE P12 K13 I14 F15 R16 K17 K18 V19 C20 T21 T22 F23 I24 VAL ASP LEU SER ASP ASP ALA GLY THR LEU CYS GLN CYS GLY GLN PRO ARG ASP ALA HIS PRO SER VAL ALA VAL GLU ASP ALA PHE GLY ALA ALA VAL VAL THR

GLU TRP ASN SER ASP GLU HIS T68 T69 E70 K71 P72 T73 D74 A75 Y76 G77 D78 L79 D80 F81 T82 Y83 S84 G85 R86 K87 H88 S89 N90 F91 L92 R93 L94 S95 D96 R97 T98 D99 T102 V103 Y104 S105 L106 V107 T108 R109 S110 W111 G112 F113 R114 A115 S121 V122 L123 G124 G125

S126 G127 G128 P129 V130 L131 Q132 T133 W134 L135 Q136 D137 L138 L139 R140 R141 G142 R145 S149 A152 T156 G157 G158 L159 H160 T161 G162 R165 H166 V167 G168 V169 A170 V171 R172 D173 H174 Q175 T176 A177 S178 T179 G180 S181 S182 K183 V184 V185 A186 V189 A190 P191 W192 G193

V194 V195 R196 N197 R198 D199 M200 L201 L202 N203 P204 K205 G206 S207 F208 P209 A210 R211 Y212 R213 W214 R215 G216 D217 P218 E219 D220 G221 V222 E223 F224 P225 L226 D227 Y228 S231 A232 F233 F234 L235 V236 D237 D238 G239 T240 Y241 G242 R243 L244 G245 G246 E247 N248 R249 P250 R251 L252 R253 F254

E255 V258 A259 Q260 Q261 K262 T263 G264 V265 G266 G267 T268 G269 I270 D271 L276 L277 L278 I279 D280 G281 D282 E283 K284 M285 L286 K287 R288 I289 E290 D291 A292 T293 Q294 A295 Q296 L297 P298 C299 L300 L301 V302 A303 G304 S305 G306 G307 A308 A309 D310 C311 L312 V313 E314 T315 L316 E317 ASP

THR LEU ALA PRO GLY SER GLY LEU ARG ARG GLY E331 A332 R333 D334 R335 I336 R337 R338 Y339 F340 P341 K342 G343 D344 P345 E346 V347 L348 Q349 A350 Q351 V352 E353 R354 I355 M356 T357 R358 K359 E360 L361 L362 T363 V364 Y365 S366 E367 E368 D369 G370 S371 E372 E373 F374 F375 R380 A381

L382 V383 K384 A385 C386 G387 S388 S389 E390 A391 S392 A393 Y394 L395 D396 E397 L398 R399 N405 R406 V407 D408 I409 A410 Q411 S412 E413 L414 F415 R416 G417 D418 I419 R422 H425 L426 E427 M431 D437 G449 G453 H454 F455 L456 T457 P458 V459 A467 V468 S469 P470 N471

S472 L473 I474 R475 D479 Q480 A481 S482 H483 A484 SER SER LYS SER PRO PRO VAL ASN GLY THR VAL GLU LEU ARG PRO P501 N502 Q505 R508 L511 G512 E513 T514 C515 A516 P517 R518 Y519 PRO ALA ARG ASN THR ARG ASP SER TYR LEU GLY GLN ASP HIS ARG GLU ASN

ASP SER LEU MET ASP TRP ALA ASN LYS GLN PRO SER THR ASP ALA SER PHE GLU GLN A557 P558 L568 L569 N570 R601 L602 E603 S604 E607 R611 N633 R640 R644 R645 C646 P647 L648 E651 D662 D670 I690 W691 L694 F698 C699 P700

P701 L702 I703 Y704 T705 N706 L707 I708 R711 K712 SER GLU GLU PRO THR GLN LYS ASP LEU ASP PHE ASP MET ASP SER ILE ASN GLY ALA GLY PRO PRO GLY THR VAL GLU PRO SER ALA LYS VAL ALA LEU GLU ARG ARG GLN ARG ARG PRO GLY ARG ALA LEU CYS CYS

GLY LYS PHE S765 K766 D770 N782 F793 D800 F801 Q802 P803 T804 K805 E810 L811 F815 F818 C822 E823 E824 L825 G828 L829 G830 GLY GLY TRP GLY LEU ALA SER GLY GLY ARG ARG PRO ASP ARG ALA PRO L848 R849 H850 R851 L852 H853 L854 Y855 L856

S857 D858 N861 Q862 C863 D864 L865 L866 F871 L872 L873 G874 V875 G876 C877 R878 L879 T880 P881 G882 L883 D894 R901 K910 D952 R953 V981 G987 N988 C989 S990 M991 E992 R993 G994 A997 E1000 Q1010 N1013 W1054 R1058 E1064 F1065 H1066 S1067

R1068 P1069 A1070 L1071 A1072 P1073 I1076 I1077 I1078 S1079 H1080 V1081 R1082 L1083 L1084 I1085 K1086 W1087 L1088 R1089 R1090 CYS ARG ARG CYS ARG ARG ALA ASN LEU PRO ALA SER PRO VAL PHE GLU HIS PHE ARG VAL CYS L1112 S1113 K1114 E1115 R1118 E1129 R1137 D1138 D1141 S1142 D1143 K1153

V1154 D1155 L1161 G1162 R1165 E1166 Y1167 R1170 H1180 V1184 W1187 M1188 A1191 L1192 S1193 HIS SER ALA LEU LEU PRO PRO GLY ALA PRO PRO PRO PRO SER PRO THR GLY SER LYS ASP ARG ASN SER LYS ALA TYR VAL ASP GLU LEU THR SER ARG GLY ARG LEU GLU VAL

LEU PHE GLN GLY PRO ASP TYR LYS ASP ASP ASP LYS HIS HIS HIS HIS HIS HIS HIS HIS

• Molecule 1: Transient receptor potential cation channel subfamily M member 4

Chain C:

36%

72% 7% 22%

MET VAL GLY PRO GLU LYS GLU GLN SER TRP ILE P12 K13 I14 F15 R16 K17 K18 V19 C20 T21 T22 F23 I24 VAL ASP VAL LEU SER ASP ALA GLY GLY THR LEU CYS GLN CYS GLY GLN PRO ARG ASP HIS PRO SER VAL ALA VAL GLU ASP ALA PHE GLY ALA ALA VAL VAL THR

GLU TRP ASN SER ASP GLU HIS T68 T69 E70 K71 P72 T73 D74 A75 V76 G77 D78 L79 D80 F81 T82 Y83 S84 G85 R86 K87 H88 S89 N90 F91 L92 R93 L94 S95 D96 R97 T98 D99 T102 V103 Y104 S105 L106 V107 T108 R109 S110 W111 G112 F113 R114 A115 S121 V122 L123 G124 G125

S126 G127 G128 P129 V130 L131 Q132 T133 W134 L135 Q136 D137 L138 L139 R140 R141 G142 R145 S149 T150 A152 T156 G157 G158 L159 H160 T161 G162 R165 H166 V167 G168 V169 A170 V171 R172 D173 H174 Q175 T176 A177 S178 T179 G180 S181 S182 K183 V184 V185 A186 V189 A190 P191 W192

G193 V194 V195 R196 N197 R198 D199 M200 L201 I202 N203 P204 K205 G206 S207 F208 P209 A210 R211 Y212 R213 W214 R215 G216 D217 P218 E219 D220 G221 V222 E223 F224 P225 L226 D227 Y228 S231 A232 F233 F234 L235 V236 D237 D238 G239 T240 Y241 C242 R243 L244 G245 G246 E247 N248 R249 F250 R251 L252 R253

F254 E255 V258 A259 Q260 Q261 K262 T263 G264 V265 G266 G267 T268 Q269 I270 D271 L276 L277 L278 I279 D280 G281 D282 E283 K284 M285 L286 K287 R288 I289 E290 D291 A292 T293 Q294 A295 Q296 L297 P298 C299 L300 L301 V302 A303 G304 S305 G306 G307 A308 A309 D310 C311 L312 V313 E314 T315 L316 E317

● Molecule 1: Transient receptor potential cation channel subfamily M member 4

Chain D:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	14646	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; The CTF correction was performed during the map refinement in Relion.	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	46730	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.121	Depositor
Minimum map value	-0.067	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.032	Depositor
Map size (Å)	276.06003, 276.06003, 276.06003	wwPDB
Map dimensions	258, 258, 258	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5   Model quality (i)

5.1   Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	A	0.37	0/7903	0.54	0/10719
1	B	0.37	0/7903	0.54	0/10719
1	C	0.37	0/7903	0.54	0/10719
1	D	0.37	0/7903	0.54	0/10719
All	All	0.37	0/31612	0.54	0/42876

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7731	0	7732	55	0
1	B	7731	0	7732	52	0
1	C	7731	0	7732	52	0
1	D	7731	0	7732	54	0
2	A	31	0	12	2	0
2	B	31	0	12	1	0
2	C	31	0	12	1	0
2	D	31	0	12	2	0
All	All	31048	0	30976	212	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 3.

The worst 5 of 212 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:C:86:ARG:HD3	1:C:228:TYR:CD2	2.13	0.82
1:B:86:ARG:HD3	1:B:228:TYR:CD2	2.17	0.80
1:D:86:ARG:HD3	1:D:228:TYR:CD2	2.15	0.80
1:A:86:ARG:HD3	1:A:228:TYR:CD2	2.17	0.79
1:D:160:HIS:HD2	2:D:2000:ATP:C2	2.06	0.73

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	A	967/1254 (77%)	914 (94%)	53 (6%)	0	100	100
1	B	967/1254 (77%)	913 (94%)	54 (6%)	0	100	100
1	C	967/1254 (77%)	913 (94%)	54 (6%)	0	100	100
1	D	967/1254 (77%)	914 (94%)	53 (6%)	0	100	100
All	All	3868/5016 (77%)	3654 (94%)	214 (6%)	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	A	811/1063 (76%)	801 (99%)	10 (1%)	71	83
1	B	811/1063 (76%)	801 (99%)	10 (1%)	71	83
1	C	811/1063 (76%)	801 (99%)	10 (1%)	71	83
1	D	811/1063 (76%)	801 (99%)	10 (1%)	71	83
All	All	3244/4252 (76%)	3204 (99%)	40 (1%)	72	83

5 of 40 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	878	ARG
1	D	570	ASN
1	C	1058	ARG
1	D	93	ARG
1	D	782	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 44 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	633	ASN
1	D	405	ASN
1	C	782	ASN
1	C	1013	ASN
1	D	570	ASN

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 (i)

4 ligands are 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	ATP	A	2000	-	26,33,33	0.90	1 (3%)	31,52,52	1.48	5 (16%)
2	ATP	C	2000	-	26,33,33	0.89	1 (3%)	31,52,52	1.48	5 (16%)
2	ATP	B	2000	-	26,33,33	0.90	1 (3%)	31,52,52	1.49	5 (16%)
2	ATP	D	2000	-	26,33,33	0.90	1 (3%)	31,52,52	1.49	5 (16%)

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	ATP	A	2000	-	-	0/18/38/38	0/3/3/3
2	ATP	C	2000	-	-	0/18/38/38	0/3/3/3
2	ATP	B	2000	-	-	0/18/38/38	0/3/3/3
2	ATP	D	2000	-	-	0/18/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	2000	ATP	C5-C4	2.26	1.46	1.40
2	B	2000	ATP	C5-C4	2.23	1.46	1.40
2	A	2000	ATP	C5-C4	2.21	1.46	1.40
2	C	2000	ATP	C5-C4	2.20	1.46	1.40

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	2000	ATP	PB-O3B-PG	-3.76	119.91	132.83
2	A	2000	ATP	PB-O3B-PG	-3.76	119.93	132.83
2	C	2000	ATP	PB-O3B-PG	-3.76	119.93	132.83

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	2000	ATP	PB-O3B-PG	-3.74	120.00	132.83
2	D	2000	ATP	C3'-C2'-C1'	3.52	106.27	100.98

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2000	ATP	2	0
2	C	2000	ATP	1	0
2	B	2000	ATP	1	0
2	D	2000	ATP	2	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 A 2000

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP C 2000

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 2000

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP D 2000

Bond lengths

Bond angles

Torsions

Rings
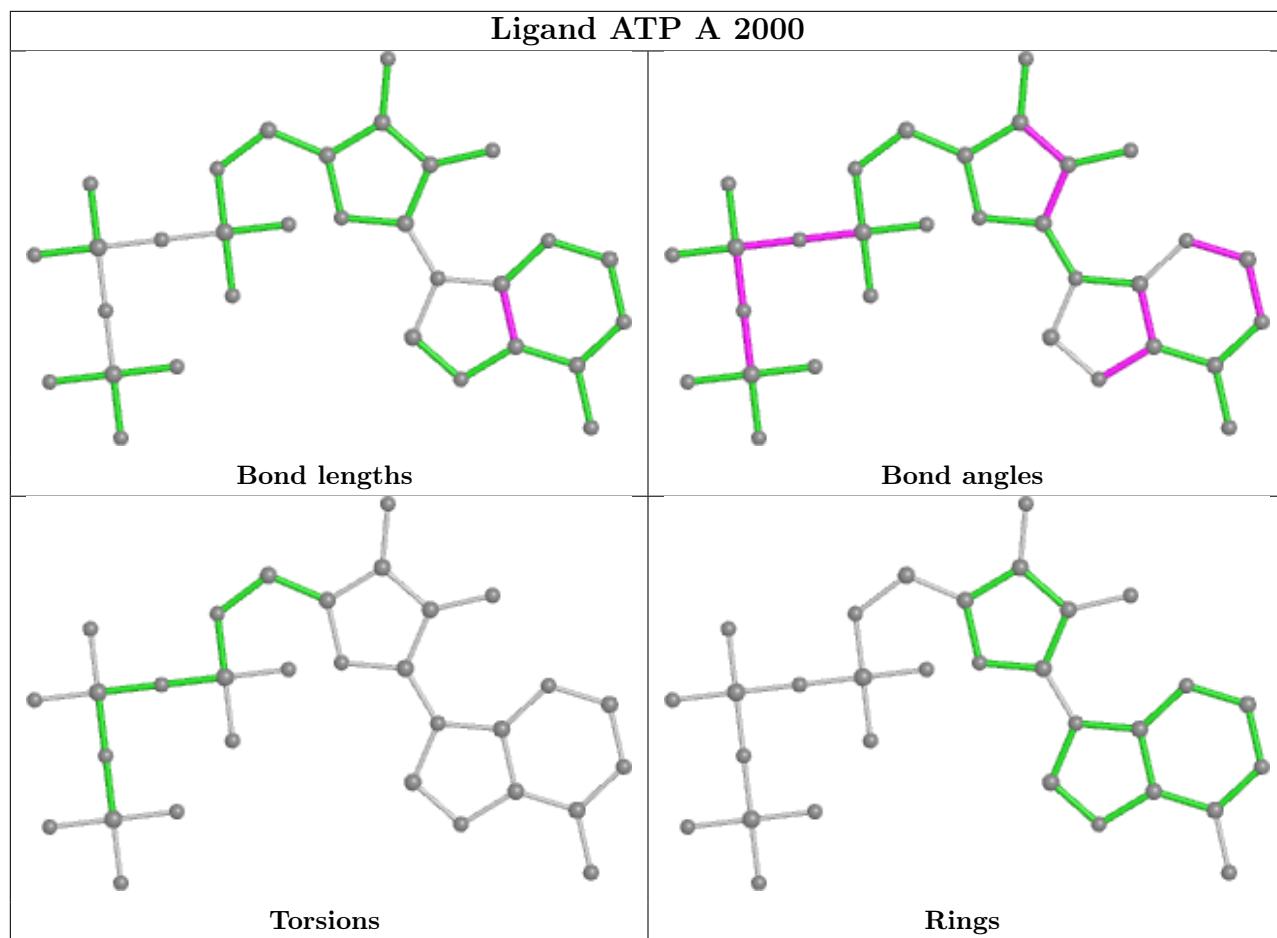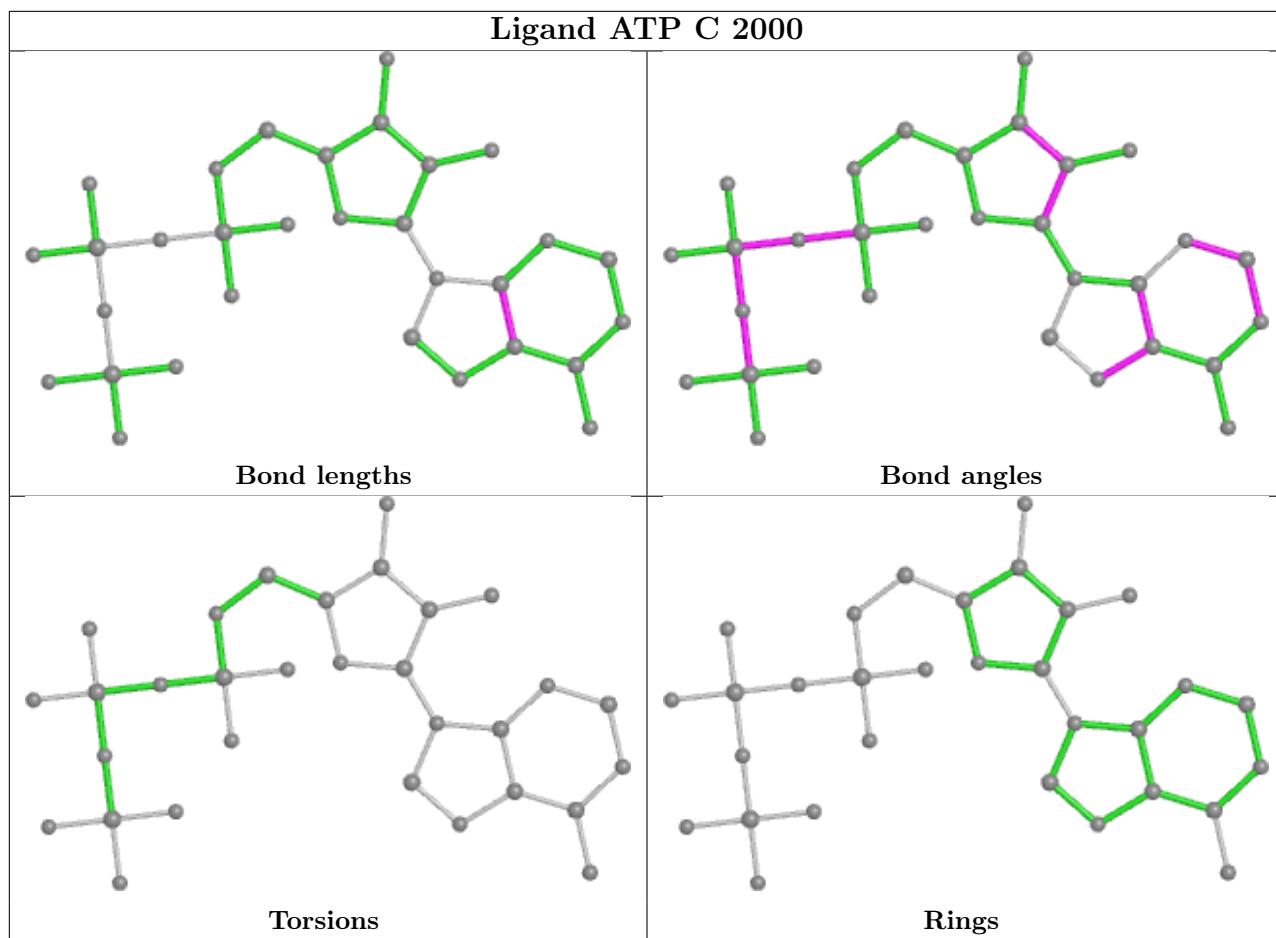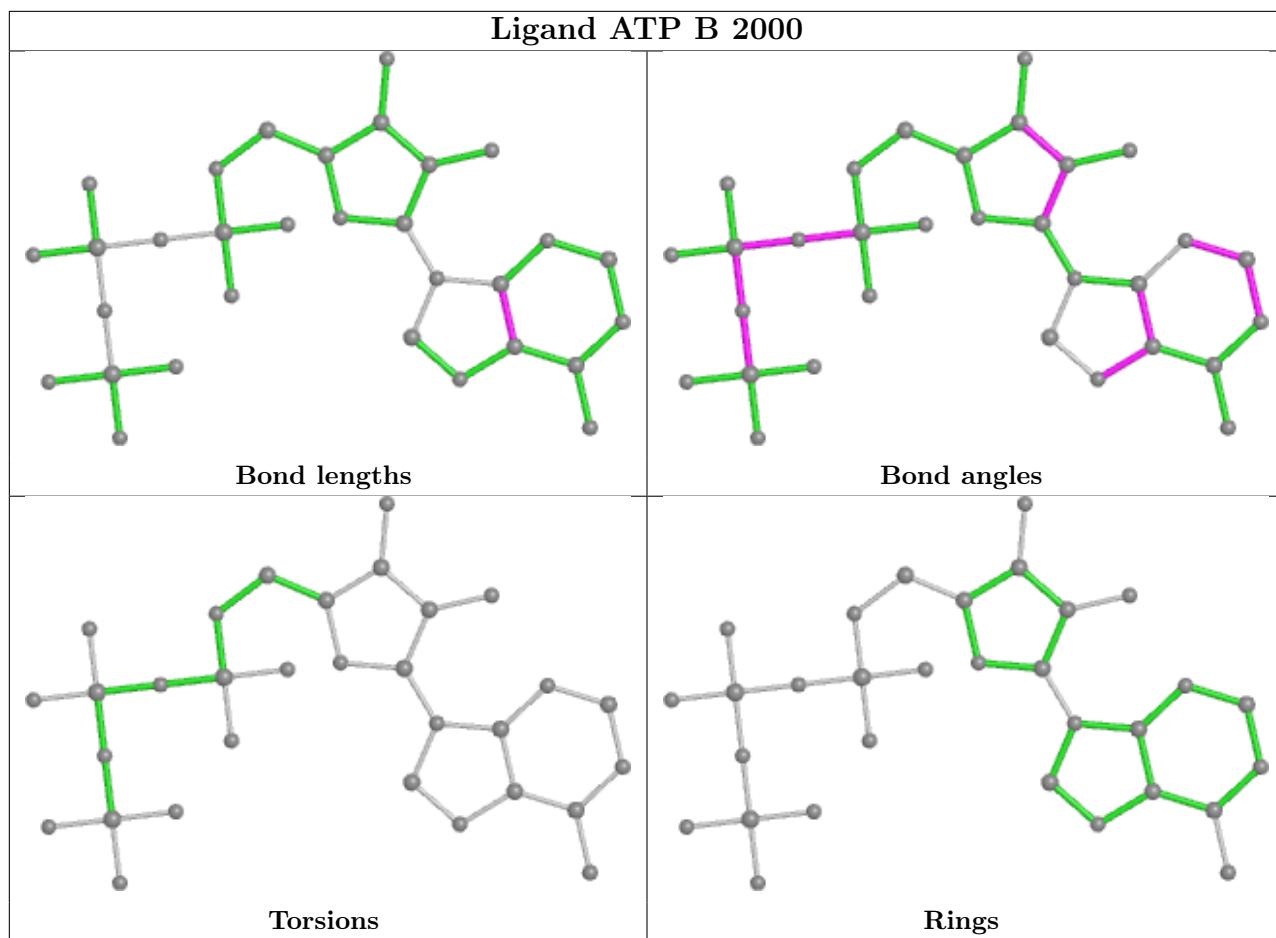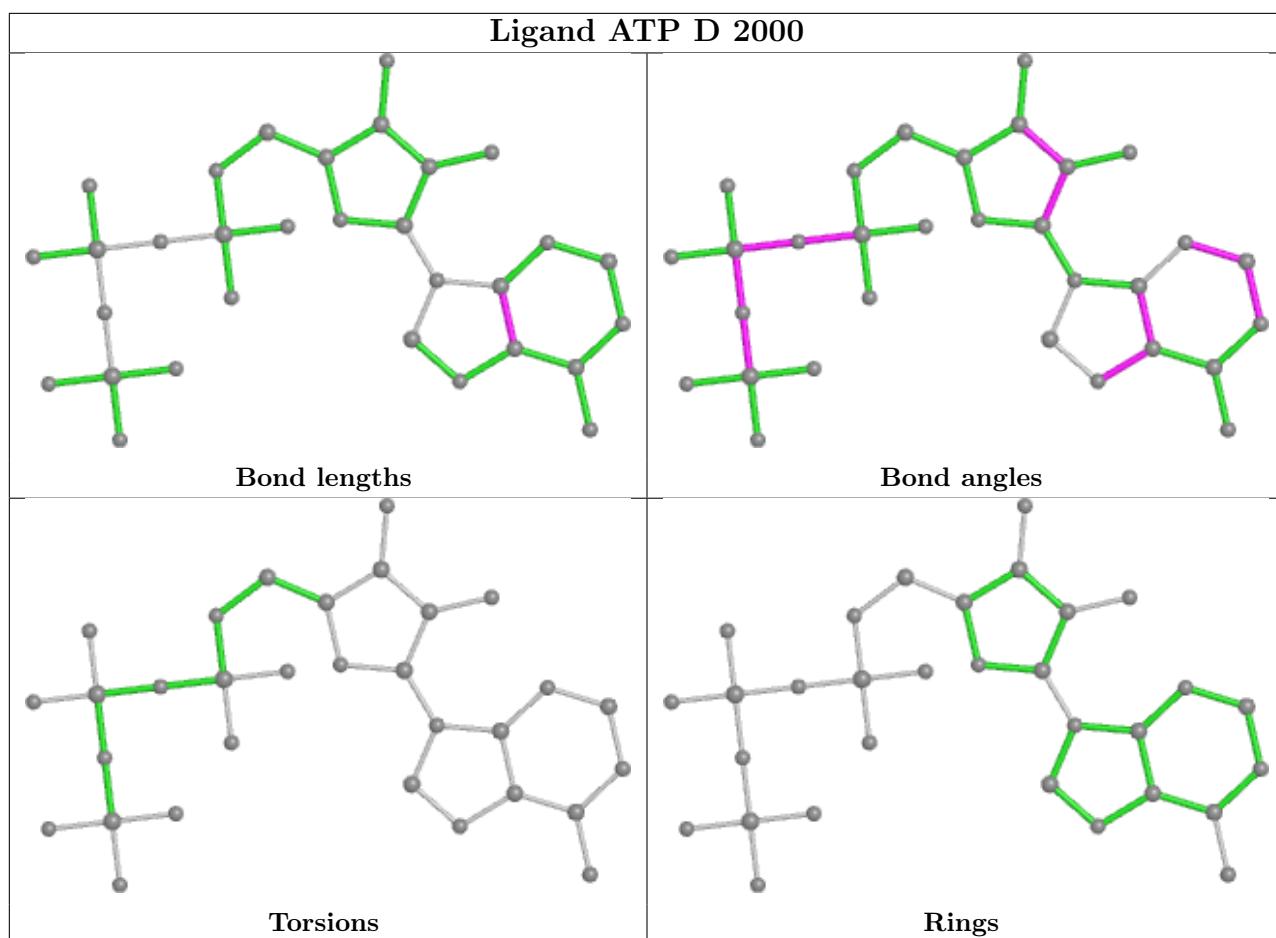
5.7 Other polymers ⓘ

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-7085. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1   Orthogonal projections ⓘ

6.1.1   Primary map

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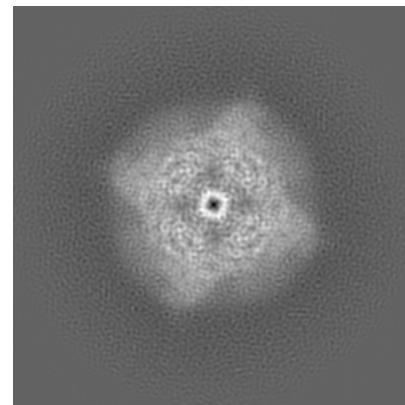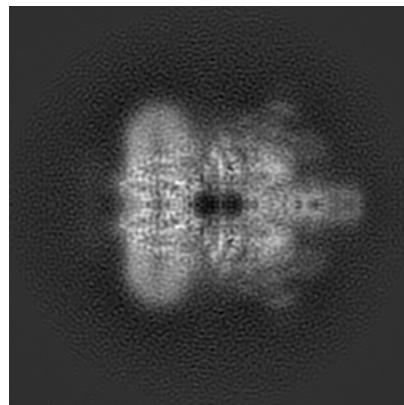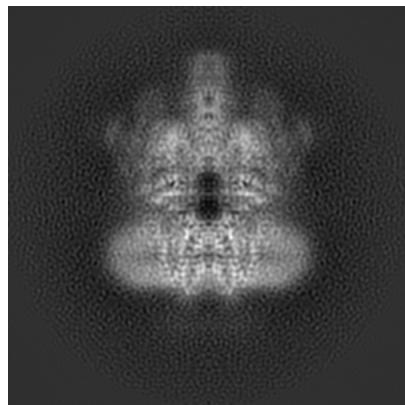
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ

6.2.1   Primary map

| X Index: 129 | Y Index: 129 | Z Index: 129 |
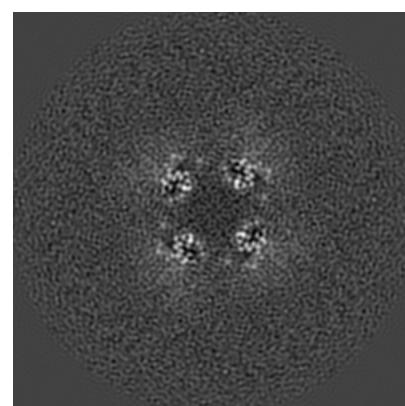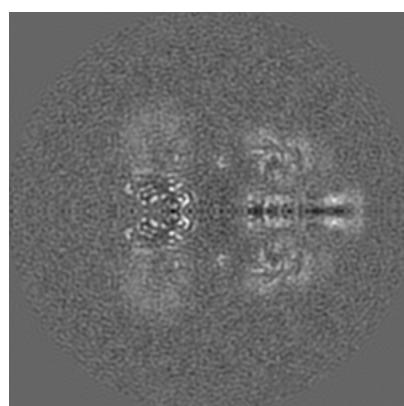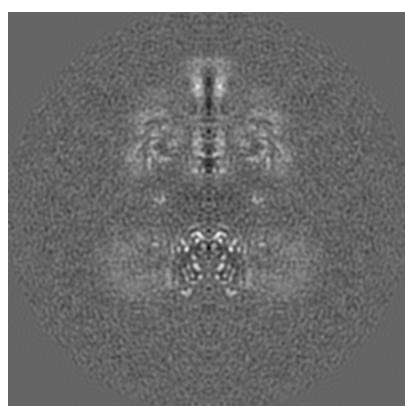
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map
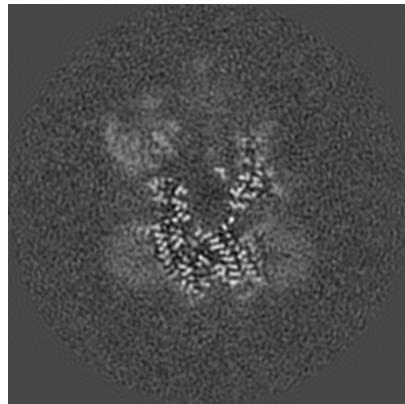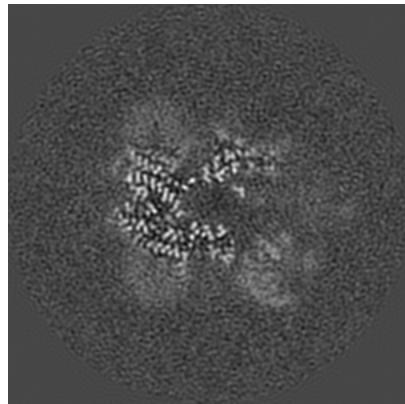
| X Index: 113 | Y Index: 145 | Z Index: 89 |
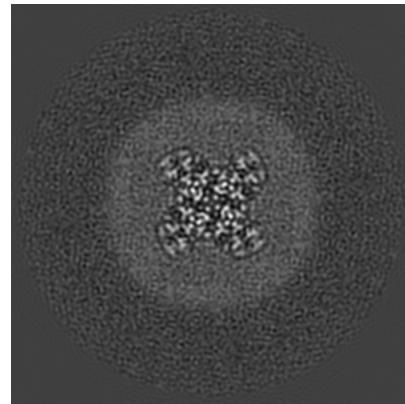
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map
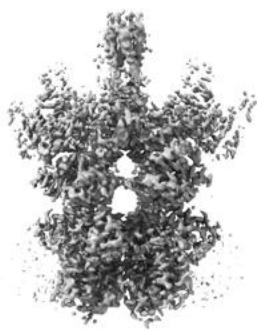
| X | Y | Z |
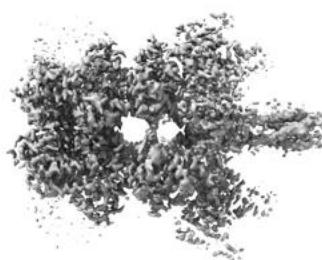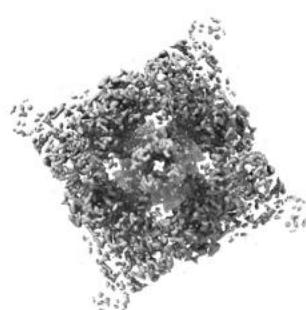
The images above show the 3D surface view of the map at the recommended contour level 0.032. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

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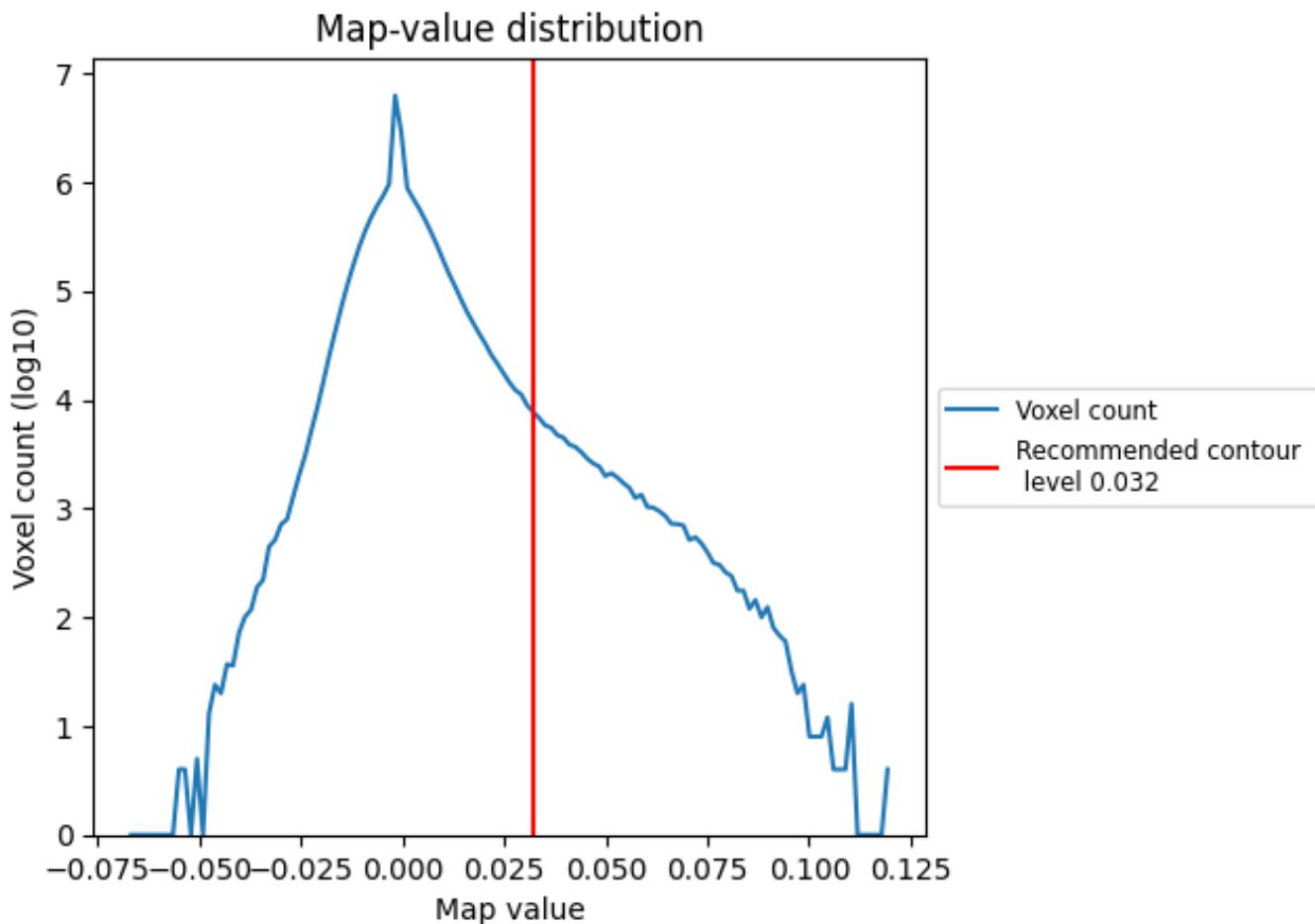
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
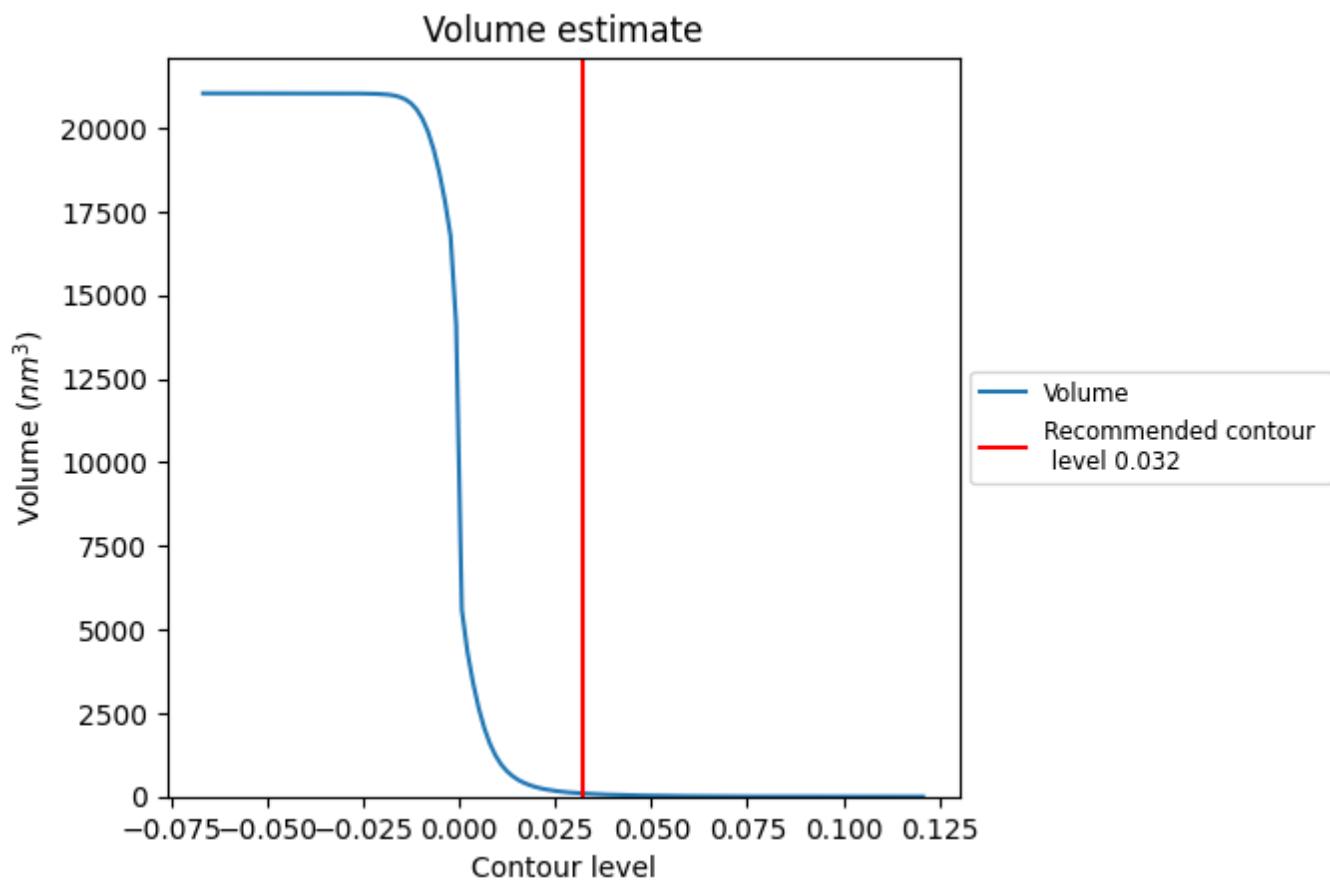
The volume at the recommended contour level is 95 nm^3; this corresponds to an approximate mass of 85 kDa.

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)
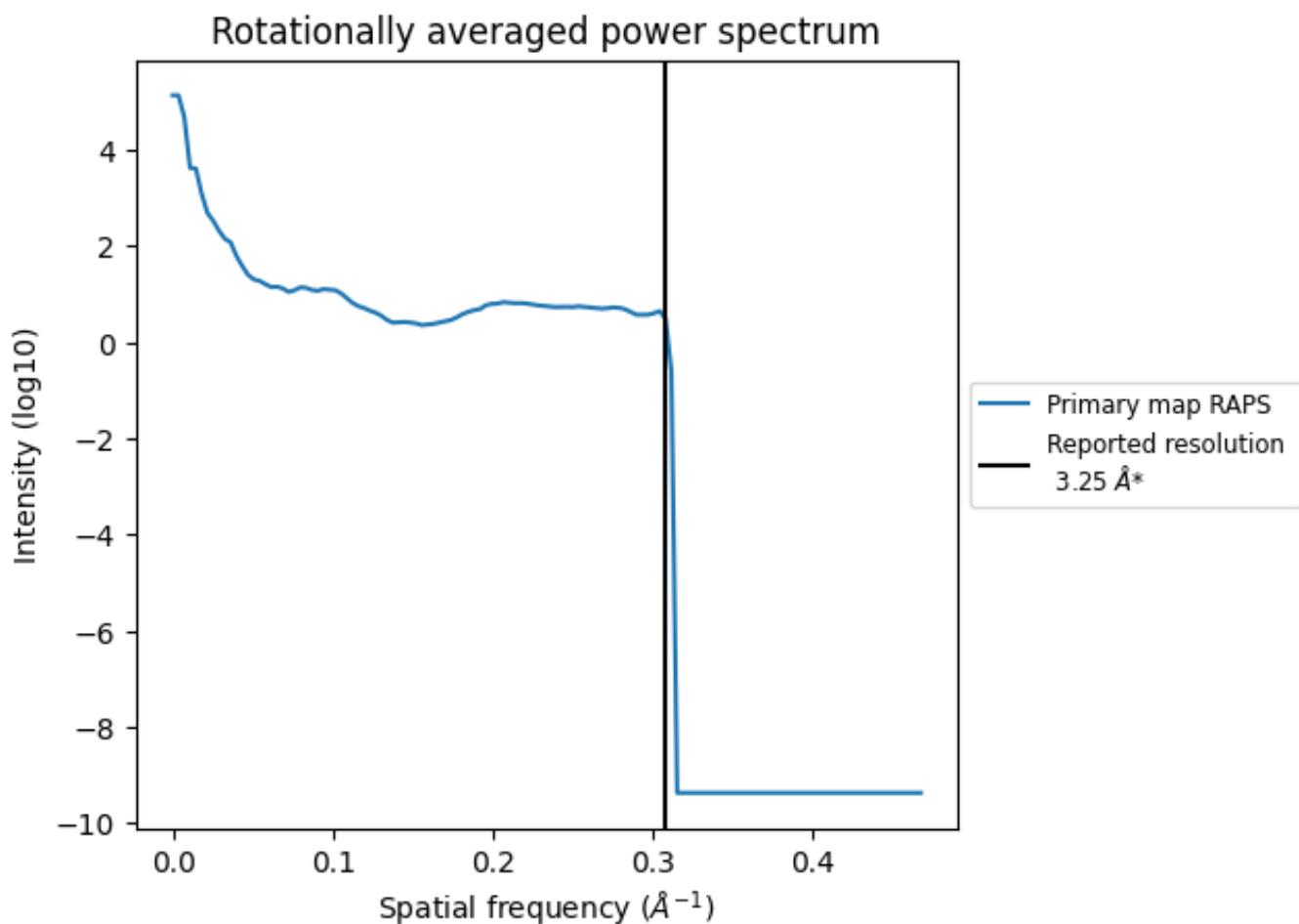
*Reported resolution corresponds to spatial frequency of 0.308 Å^{-1}

8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-7085 and PDB model 6BCQ. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay ⓘ

X   Y   Z
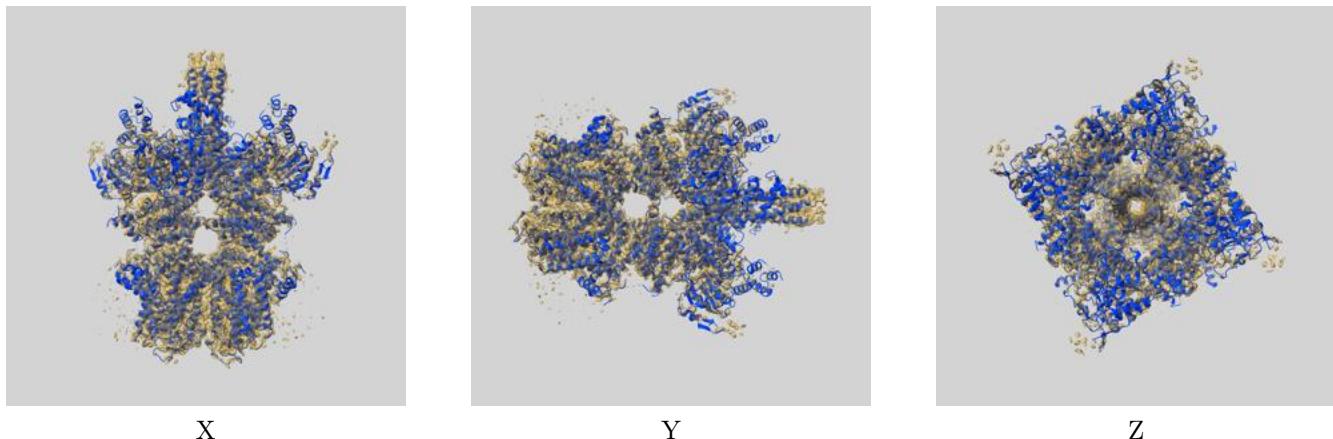
The images above show the 3D surface view of the map at the recommended contour level 0.032 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

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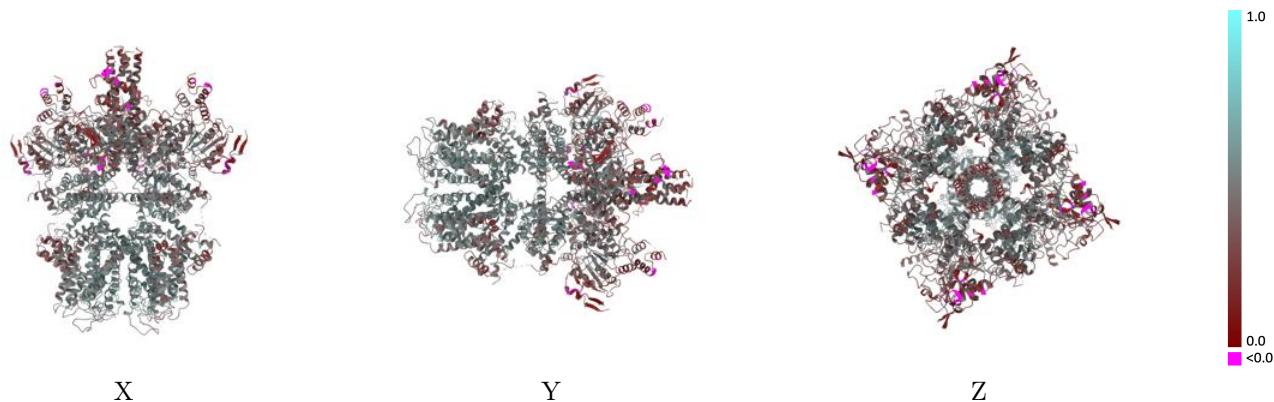
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X   Y   Z
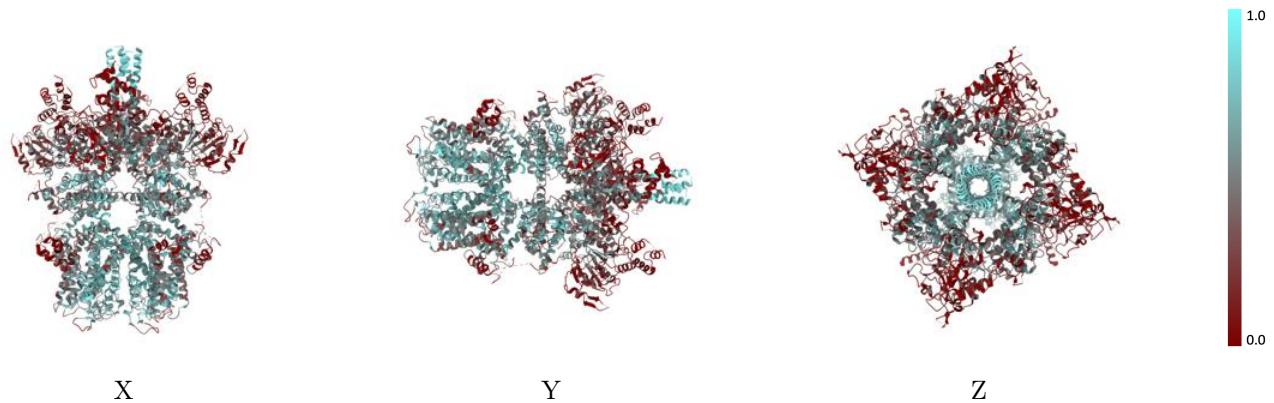
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.032).

9.4　Atom inclusion ⓘ
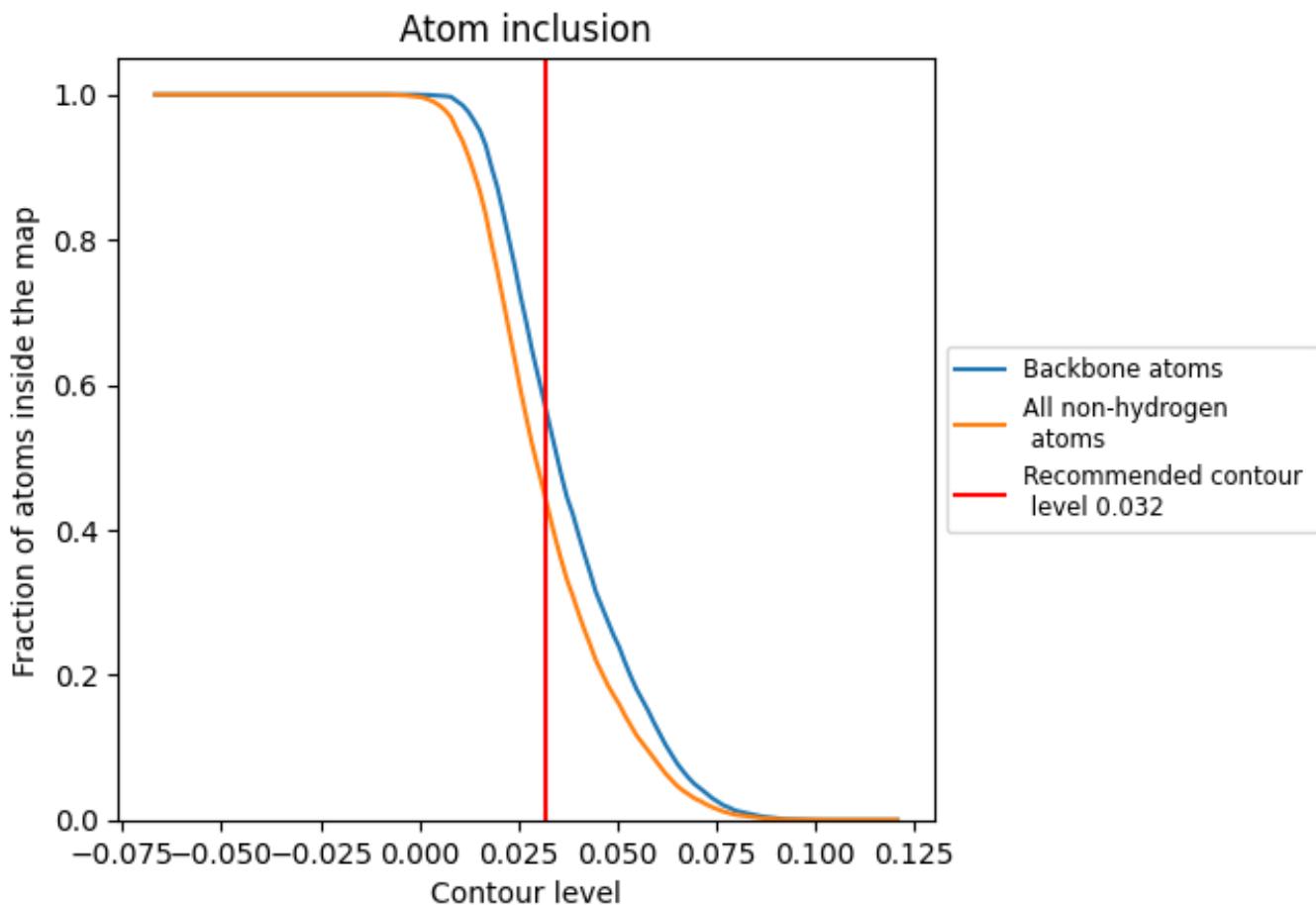
At the recommended contour level, 56% of all backbone atoms, 44% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.032) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4400	0.4330
A	0.4411	0.4330
B	0.4405	0.4330
C	0.4385	0.4330
D	0.4400	0.4330

1.0

0.0

<0.0