WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Apr 24, 2025 – 04:42 PM JST

PDB ID	:	9IK9 / pdb_00009ik9
EMDB ID	:	EMD-60651
Title	:	Cryo-EM Structure of SST analogs bond SSTR1-Gi complex
Authors	:	Wong, T.S.; Zeng, Z.C.; Xiong, T.T.; Gan, S.Y.; Du, Y.
Deposited on	:	2024-06-26
Resolution	:	3.37 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 (i) symbol.

The types of validation reports are described at
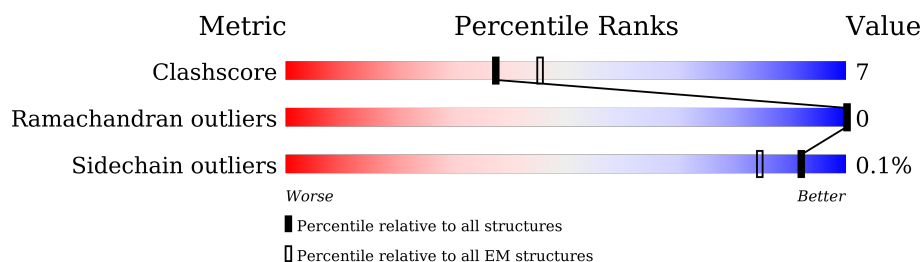http://www.wwpdb.org/validation/2017/FAQs#types.

---

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 3.37 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		7
Ramachandran outliers		0
Sidechain outliers		0.1%

Worse   *Better*

▮ Percentile relative to all structures
⧠ Percentile relative to all EM structures

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	350	9% · 56% · 6% · 38%
2	B	373	· 77% · 13% · 10%
3	C	71	8% · 75% · 25%
4	E	338	· 57% · 12% · 31%
5	D	393	8% · 60% · 12% · 28%
6	F	9	22% · 11% · 44% · 44%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	4J2	F	1	-	X	-	-
6	DTY	F	3	-	-	X	-
6	DTR	F	4	-	-	X	-
6	DVA	F	6	-	-	X	-

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 17031 atoms, of which 8426 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 Guanine nucleotide-binding protein G(i) subunit alpha-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	217	Total 3261	C 1065	H 1597	N 286	O 301	S 12	0	0

- Molecule 2 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	336	Total 4915	C 1564	H 2391	N 450	O 491	S 19	0	0

There are 34 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-21	MET	-	initiating methionine	UNP P62873
B	-20	HIS	-	expression tag	UNP P62873
B	-19	HIS	-	expression tag	UNP P62873
B	-18	HIS	-	expression tag	UNP P62873
B	-17	HIS	-	expression tag	UNP P62873
B	-16	HIS	-	expression tag	UNP P62873
B	-15	HIS	-	expression tag	UNP P62873
B	-14	HIS	-	expression tag	UNP P62873
B	-13	HIS	-	expression tag	UNP P62873
B	-12	HIS	-	expression tag	UNP P62873
B	-11	HIS	-	expression tag	UNP P62873
B	-10	LEU	-	expression tag	UNP P62873
B	-9	GLU	-	expression tag	UNP P62873
B	-8	VAL	-	expression tag	UNP P62873
B	-7	LEU	-	expression tag	UNP P62873
B	-6	PHE	-	expression tag	UNP P62873
B	-5	GLN	-	expression tag	UNP P62873
B	-4	GLY	-	expression tag	UNP P62873
B	-3	PRO	-	expression tag	UNP P62873
B	-2	GLY	-	expression tag	UNP P62873

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-1	SER	-	expression tag	UNP P62873
B	0	SER	-	expression tag	UNP P62873
B	1	GLY	-	expression tag	UNP P62873
B	341	VAL	-	expression tag	UNP P62873
B	342	SER	-	expression tag	UNP P62873
B	343	GLY	-	expression tag	UNP P62873
B	344	TRP	-	expression tag	UNP P62873
B	345	ARG	-	expression tag	UNP P62873
B	346	LEU	-	expression tag	UNP P62873
B	347	PHE	-	expression tag	UNP P62873
B	348	LYS	-	expression tag	UNP P62873
B	349	LYS	-	expression tag	UNP P62873
B	350	ILE	-	expression tag	UNP P62873
B	351	SER	-	expression tag	UNP P62873

- Molecule 3 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	53	Total 749	C 241	H 372	N 66	O 67	S 3	0	0

- Molecule 4 is a protein called scFv16.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	E	232	Total 3416	C 1116	H 1668	N 295	O 328	S 9	0	0

- Molecule 5 is a protein called Somatostatin receptor type 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	D	283	Total 4543	C 1467	H 2328	N 361	O 363	S 24	0	0

There are 2 discrepancies between the modelled and reference sequences:

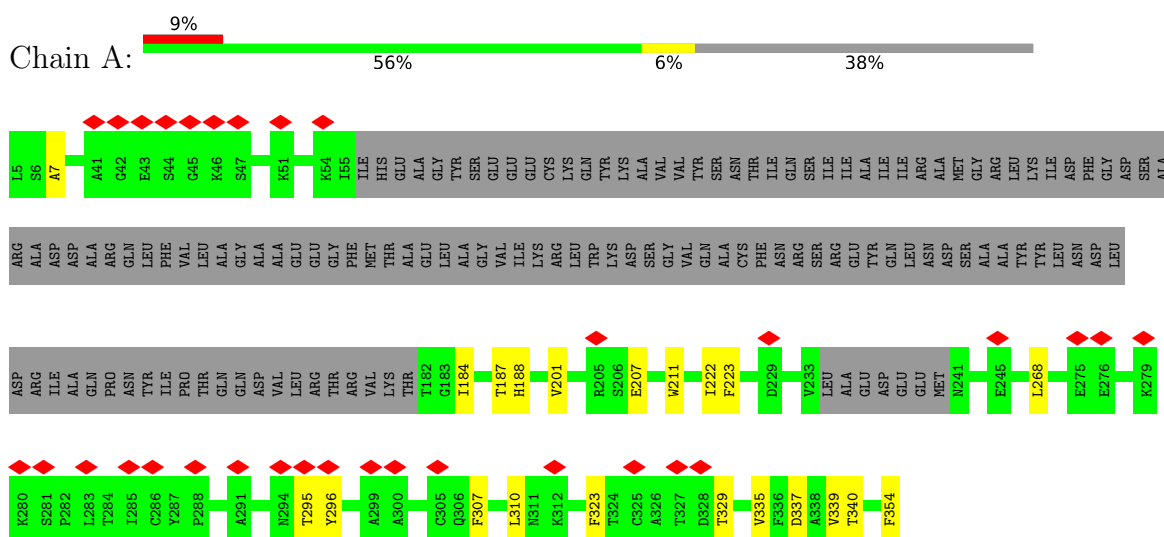| Chain	Residue	Modelled	Actual	Comment	Reference
D	392	LEU	-	expression tag	UNP P30872
D	393	GLU	-	expression tag	UNP P30872

- Molecule 6 is a protein (with D amino acids) called (4J2)(DCY)(DTY)(DTR)K(DVA)(DCY)(ALO)(NH2).

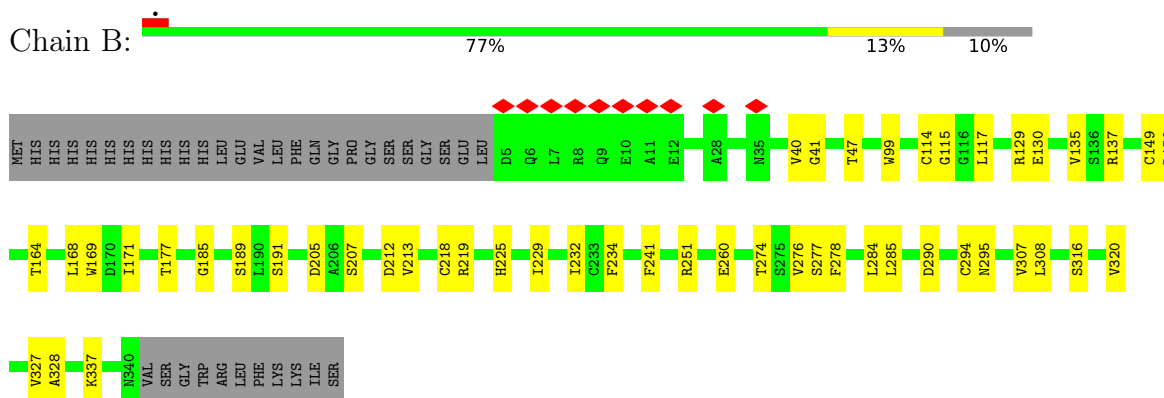| Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	9	Total	C	H	N	O	S	0	1
			147	54	70	11	10	2		

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.

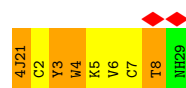• Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1

• Molecule 2: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1

• Molecule 3: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2

MET ALA SER ASN THR ALA SER I9 A10 Q11 A12 R13 K14 Q18 F61 ARG GLU LYS LYS PHE PHE CYS ALA ILE LEU

• Molecule 4: scFv16

Chain E:

57% 12% 31%

V2 Q3 E6 S7 G8 L20 F29 A40 P41 W47 V48 A49 Y50 I51 R72 T91 Y94 V97 R98 G114 T118 S121 GLY GLY GLY SER GLY GLY GLY SER GLY GLY GLY S124 D125 I126 Q130 A131 L153 L154 H155 Y161

L162 L166 Q167 G193 S194 F200 T201 L202 T203 I204 S205 R206 L207 E208 Y215 L221 T226 A229 L235 SER ILE SER CYS ARG SER SER LYS SER LEU LEU HIS SER ASN GLY ASN THR TYR LEU TYR TRP PHE LEU GLN ARG PRO GLY GLN SER PRO GLN LEU LEU

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

• Molecule 5: Somatostatin receptor type 1

Chain D:

8%

60% 12% 28%

MET PHE PRO ASN GLY THR ALA SER SER PRO SER SER SER PRO SER PRO SER PRO GLY SER CYS GLY GLU GLY GLY GLY SER ARG GLY PRO GLY ALA GLY ALA ASP MET GLY GLU GLU PRO GLY ARG ASN ALA SER GLN ASN GLY THR LEU SER GLU GLY GLN GLY GLY S57 A58 I59 L60

I61 S62 F63 I64 Y65 L70 C74 I83 A87 K88 M89 I95 L100 V111 P112 F113 L114 V115 T116 S117 T118 L119 L120 W123 G126 L132 V136 D137 C147 L148 T149 V150 A165 A174 L179 A199 ALA ASN SER GLN ASP GLY THR VAL A207

C208 N209 M210 L211 Q217 L220 V221 G222 F223 V224 L225 F228 L234 P235 C240 Q261 R262 K268 I269 V276 V277 M278 V279 F280 M285 P286 V290 Q291 L292 V295 F296 A297 E298 Q299 D300 S305 I310 D328 N329 F330 S333 F334 Q335 R336 I337

L338 C339 L340 S341 W342 M343 D344 N345 A346 ALA GLU GLU PRO VAL ASP TYR TYR ALA THR ALA LEU LYS SER ARG ALA TYR SER VAL GLU ASP PHE GLN PRO GLU ASN LEU GLU SER GLY GLY VAL PHE ARG ASN GLY THR CYS THR SER SER ARG ILE THR THR LEU LEU GLU

• Molecule 6: (4J2)(DCY)(DTY)(DTR)K(DVA)(DCY)(ALO)(NH2)

Chain F:

22%

11% 44% 44%

4J21 C2 Y3 W4 K5 V6 C7 T8 NH29

4　Experimental information　ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	217201	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 $(e^-/\text{Å}^2)$	53.6	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	1400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.833	Depositor
Minimum map value	-1.171	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	326.40002, 326.40002, 326.40002	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8500001, 0.8500001, 0.8500001	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: DCY, DVA, DTY, DTR, 4J2, NH2, ALO

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	0.36	0/1693	0.49	0/2279
2	B	0.43	0/2571	0.61	0/3494
3	C	0.29	0/383	0.40	0/522
4	E	0.39	0/1792	0.58	0/2434
5	D	0.35	0/2262	0.48	0/3082
6	F	1.37	0/8	1.51	0/8
All	All	0.38	0/8709	0.54	0/11819

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1664	1597	1598	16	0
2	B	2524	2391	2391	35	0
3	C	377	372	372	0	0
4	E	1748	1668	1669	26	0
5	D	2215	2328	2337	42	0
6	F	77	70	61	23	0
All	All	8605	8426	8428	124	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 7.

All (124) 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)
5:D:223:PHE:HE2	6:F:4:DTR:HZ2	1.30	0.95
4:E:29:PHE:O	4:E:72:ARG:NH2	2.03	0.91
5:D:220:LEU:HD22	6:F:3:DTY:CZ	2.03	0.89
5:D:305:SER:HB2	6:F:7:DCY:HB2	1.60	0.84
5:D:223:PHE:CE2	6:F:4:DTR:HZ2	2.15	0.81
5:D:305:SER:CB	6:F:7:DCY:HB2	2.16	0.76
2:B:276:VAL:HG13	2:B:285:LEU:HD11	1.68	0.75
5:D:209:ASN:OD1	6:F:6:DVA:CG1	2.36	0.73
5:D:209:ASN:OD1	6:F:6:DVA:HG11	1.88	0.72
1:A:184:ILE:HD12	1:A:201:VAL:HG23	1.74	0.70
2:B:99:TRP:CD1	2:B:117:LEU:HD12	2.26	0.70
1:A:295:THR:HG22	1:A:296:TYR:N	2.08	0.68
5:D:65:TYR:CE1	5:D:310:ILE:HG22	2.31	0.66
5:D:220:LEU:HB3	6:F:3:DTY:OH	1.95	0.66
4:E:207:LEU:HD23	4:E:208:GLU:N	2.10	0.66
2:B:189:SER:HB2	2:B:232:ILE:HG22	1.80	0.64
5:D:220:LEU:HD22	6:F:3:DTY:CE1	2.28	0.63
4:E:162:LEU:HD13	4:E:200:PHE:CD2	2.33	0.63
5:D:295:VAL:HG23	5:D:296:PHE:CD2	2.33	0.63
5:D:217:GLN:O	5:D:221:VAL:HG22	2.01	0.60
5:D:269:ILE:O	5:D:269:ILE:HG22	2.02	0.60
6:F:6:DVA:HG13	6:F:8:ALO:CG2	2.31	0.60
1:A:295:THR:HG22	1:A:296:TYR:H	1.67	0.58
2:B:277:SER:O	2:B:285:LEU:HD12	2.04	0.58
4:E:153:LEU:HD12	4:E:200:PHE:CE2	2.39	0.58
1:A:7:ALA:HB1	4:E:221:LEU:O	2.05	0.57
2:B:212:ASP:OD1	2:B:213:VAL:N	2.38	0.57
2:B:99:TRP:CG	2:B:117:LEU:HD12	2.39	0.56
1:A:184:ILE:HG13	2:B:117:LEU:HD13	1.87	0.55
5:D:123:TRP:NE1	5:D:126:GLY:O	2.39	0.55
5:D:100:LEU:HD11	5:D:148:LEU:HD12	1.88	0.55
4:E:91:THR:HG23	4:E:118:THR:HA	1.89	0.55
5:D:300:ASP:HB2	6:F:2:DCY:SG	2.46	0.55
5:D:285:MET:HB3	5:D:286:PRO:HD3	1.88	0.55
4:E:166:LEU:HD13	4:E:215:TYR:CE1	2.43	0.54
5:D:112:PRO:O	5:D:116:THR:HG23	2.06	0.54
1:A:295:THR:CG2	1:A:296:TYR:N	2.70	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:276:VAL:CG1	2:B:285:LEU:HD11	2.36	0.54
5:D:261:GLN:OE1	5:D:261:GLN:N	2.34	0.54
1:A:295:THR:CG2	1:A:296:TYR:H	2.21	0.53
2:B:205:ASP:OD1	2:B:207:SER:OG	2.20	0.53
5:D:300:ASP:OD1	6:F:1:4J2:CZ3	2.56	0.53
2:B:294:CYS:SG	2:B:295:ASN:N	2.80	0.53
4:E:51:ILE:HD13	4:E:72:ARG:HB2	1.89	0.53
2:B:251:ARG:NH1	2:B:260:GLU:OE1	2.39	0.53
4:E:153:LEU:HD12	4:E:200:PHE:HE2	1.74	0.53
4:E:130:GLN:OE1	4:E:229:ALA:N	2.41	0.52
2:B:129:ARG:O	2:B:130:GLU:CB	2.58	0.52
5:D:114:LEU:O	5:D:118:THR:HG23	2.10	0.52
5:D:328:ASP:N	5:D:328:ASP:OD1	2.41	0.52
2:B:164:THR:HG22	2:B:185:GLY:O	2.09	0.52
2:B:284:LEU:HD12	2:B:284:LEU:O	2.09	0.52
5:D:240:CYS:SG	5:D:277:VAL:HG11	2.50	0.52
2:B:47:THR:HG21	2:B:337:LYS:NZ	2.25	0.52
2:B:168:LEU:HD23	2:B:169:TRP:N	2.23	0.52
1:A:207:GLU:O	1:A:211:TRP:NE1	2.43	0.51
2:B:135:VAL:O	2:B:135:VAL:HG13	2.11	0.51
6:F:4:DTR:HB3	6:F:5:LYS:HB3	1.93	0.51
1:A:268:LEU:HD12	1:A:323:PHE:CE1	2.45	0.51
4:E:6:GLU:OE1	4:E:114:GLY:N	2.32	0.50
5:D:116:THR:O	5:D:120:LEU:N	2.44	0.50
2:B:327:VAL:HG12	2:B:328:ALA:N	2.26	0.50
5:D:111:VAL:N	5:D:112:PRO:HD2	2.27	0.50
5:D:234:LEU:HB3	5:D:235:PRO:HD3	1.94	0.50
2:B:274:THR:HG21	2:B:316:SER:HA	1.94	0.50
4:E:155:HIS:HB2	4:E:161:TYR:CE1	2.46	0.50
2:B:290:ASP:O	2:B:290:ASP:OD1	2.29	0.49
4:E:193:GLY:O	4:E:194:SER:OG	2.27	0.49
4:E:47:TRP:NE1	4:E:49:ALA:O	2.41	0.49
4:E:166:LEU:HD12	4:E:167:GLN:H	1.76	0.49
4:E:40:ALA:HB1	4:E:41:PRO:CD	2.42	0.49
1:A:337:ASP:O	1:A:340:THR:HG22	2.13	0.48
2:B:114:CYS:SG	2:B:115:GLY:N	2.84	0.48
2:B:191:SER:HG	2:B:234:PHE:HD2	1.60	0.48
5:D:276:VAL:HG12	5:D:276:VAL:O	2.14	0.48
4:E:40:ALA:HB1	4:E:41:PRO:HD2	1.94	0.48
6:F:3:DTY:HA	6:F:6:DVA:HA	1.95	0.48
6:F:1:4J2:CD1	6:F:2:DCY:H2	2.26	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:126:ILE:O	4:E:226:THR:HG21	2.14	0.48
5:D:132:LEU:O	5:D:136:VAL:HG23	2.13	0.48
5:D:220:LEU:HD22	6:F:3:DTY:OH	2.14	0.47
4:E:2:VAL:HG12	4:E:3:GLN:N	2.28	0.47
5:D:210:MET:O	5:D:211:LEU:HD23	2.14	0.47
4:E:8:GLY:HA3	4:E:20:LEU:HD23	1.96	0.47
2:B:168:LEU:HD13	2:B:213:VAL:HG13	1.97	0.47
5:D:95:ILE:HG21	5:D:174:ALA:HB1	1.97	0.47
5:D:223:PHE:HE2	6:F:4:DTR:CZ2	2.15	0.47
2:B:40:VAL:HG13	2:B:41:GLY:N	2.29	0.46
2:B:218:CYS:SG	2:B:219:ARG:N	2.88	0.46
2:B:47:THR:HG21	2:B:337:LYS:HZ2	1.78	0.46
2:B:232:ILE:HD11	2:B:241:PHE:CD2	2.50	0.46
1:A:354:PHE:O	5:D:268:LYS:HE2	2.14	0.46
1:A:222:ILE:HG22	1:A:223:PHE:N	2.31	0.46
2:B:225:HIS:CD2	2:B:229:ILE:HD11	2.50	0.46
4:E:94:TYR:O	4:E:114:GLY:CA	2.64	0.46
1:A:187:THR:HG22	1:A:188:HIS:N	2.31	0.46
4:E:204:ILE:HG22	4:E:205:SER:N	2.31	0.46
1:A:335:VAL:O	1:A:339:VAL:HG23	2.16	0.46
5:D:147:CYS:HA	5:D:150:VAL:HG12	1.98	0.45
2:B:177:THR:HG22	2:B:177:THR:O	2.16	0.45
4:E:153:LEU:O	4:E:221:LEU:HD13	2.16	0.45
6:F:4:DTR:C	6:F:6:DVA:HA	2.47	0.44
6:F:3:DTY:CD2	6:F:4:DTR:HD1	2.47	0.44
5:D:225:LEU:HD21	5:D:292:LEU:HD11	1.99	0.44
2:B:225:HIS:CE1	2:B:251:ARG:HD2	2.52	0.44
5:D:286:PRO:O	5:D:290:VAL:HG22	2.18	0.44
5:D:83:ILE:HA	5:D:87:ALA:HB3	1.99	0.44
5:D:279:VAL:HG23	5:D:280:PHE:N	2.33	0.44
1:A:329:THR:HG23	1:A:329:THR:O	2.18	0.43
6:F:5:LYS:N	6:F:6:DVA:C	2.80	0.43
2:B:137:ARG:HG3	2:B:171:ILE:HG23	2.00	0.43
6:F:4:DTR:CB	6:F:5:LYS:HB3	2.48	0.43
5:D:111:VAL:HG12	5:D:115:VAL:HG21	2.00	0.43
4:E:202:LEU:HD23	4:E:203:THR:N	2.34	0.42
5:D:300:ASP:OD1	6:F:1:4J2:CZ2	2.67	0.42
2:B:169:TRP:N	2:B:169:TRP:CD1	2.88	0.42
1:A:307:PHE:HA	1:A:310:LEU:HD11	2.02	0.42
4:E:97:VAL:HG12	4:E:98:ARG:N	2.35	0.41
2:B:149:CYS:O	2:B:150:ARG:NH1	2.53	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:278:PHE:O	2:B:320:VAL:HG21	2.21	0.41
5:D:286:PRO:O	5:D:290:VAL:HG13	2.21	0.41
5:D:220:LEU:CD2	6:F:3:DTY:OH	2.69	0.40
4:E:161:TYR:CD2	4:E:221:LEU:HA	2.57	0.40
2:B:307:VAL:HG12	2:B:308:LEU:N	2.36	0.40

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	211/350 (60%)	191 (90%)	20 (10%)	0	100	100
2	B	334/373 (90%)	299 (90%)	35 (10%)	0	100	100
3	C	51/71 (72%)	46 (90%)	5 (10%)	0	100	100
4	E	228/338 (68%)	198 (87%)	30 (13%)	0	100	100
5	D	279/393 (71%)	250 (90%)	29 (10%)	0	100	100
6	F	1/9 (11%)	0	1 (100%)	0	100	100
All	All	1104/1534 (72%)	984 (89%)	120 (11%)	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	167/302 (55%)	167 (100%)	0	100	100
2	B	263/312 (84%)	263 (100%)	0	100	100
3	C	35/58 (60%)	35 (100%)	0	100	100
4	E	184/278 (66%)	184 (100%)	0	100	100
5	D	246/332 (74%)	245 (100%)	1 (0%)	89	93
6	F	1/1 (100%)	1 (100%)	0	100	100
All	All	896/1283 (70%)	895 (100%)	1 (0%)	92	97

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	D	137	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	119	ASN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

7 non-standard protein/DNA/RNA residues 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	$\#|Z| > 2$
6	4J2	F	1	6	15,16,17	7.99	10 (66%)	18,21,23	5.12	16 (88%)
6	DCY	F	7	6	4,5,6	0.88	0	1,5,7	1.74	0
6	DVA	F	6	6	4,6,7	0.48	0	6,7,9	0.58	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
6	DCY	F	2	6	4,5,6	0.54	0	1,5,7	1.76	0
6	DTY	F	3	6	11,12,13	4.40	6 (54%)	12,15,17	1.41	1 (8%)
6	ALO	F	8	6	5,6,7	0.68	0	6,7,9	1.55	2 (33%)
6	DTR	F	4	6	13,15,16	1.79	4 (30%)	13,20,22	1.94	5 (38%)

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
6	4J2	F	1	6	-	2/5/6/8	0/2/2/2
6	DCY	F	7	6	-	1/1/4/6	-
6	DVA	F	6	6	-	0/5/6/8	-
6	DCY	F	2	6	-	1/1/4/6	-
6	DTY	F	3	6	-	2/5/6/8	0/1/1/1
6	ALO	F	8	6	-	5/5/6/8	-
6	DTR	F	4	6	-	1/4/6/8	0/2/2/2

All (20) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	F	1	4J2	CD1-CG	-15.33	1.05	1.38
6	F	1	4J2	CZ3-CZ2	11.96	1.64	1.36
6	F	1	4J2	CE3-CE2	-11.79	1.13	1.41
6	F	1	4J2	CE1-CD1	-11.14	1.13	1.36
6	F	1	4J2	CD2-CE2	8.43	1.61	1.42
6	F	3	DTY	CE1-CD1	8.42	1.54	1.38
6	F	1	4J2	CE4-CE3	-8.32	1.17	1.36
6	F	1	4J2	CE2-CZ1	8.27	1.61	1.42
6	F	1	4J2	CZ2-CZ1	7.86	1.61	1.41
6	F	3	DTY	CE2-CZ	7.15	1.52	1.38
6	F	3	DTY	CD2-CG	6.44	1.52	1.38
6	F	1	4J2	CD2-CG	-5.95	1.23	1.37
6	F	3	DTY	CE1-CZ	-3.87	1.31	1.38
6	F	3	DTY	CD1-CG	-3.77	1.30	1.38
6	F	3	DTY	CE2-CD2	-3.70	1.32	1.38
6	F	4	DTR	CD1-NE1	-3.34	1.29	1.36
6	F	4	DTR	CZ2-CE2	-2.94	1.36	1.41
6	F	4	DTR	CD2-CE2	2.11	1.48	1.42
6	F	4	DTR	CZ3-CE3	2.05	1.41	1.36

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	F	1	4J2	CB-CG	2.02	1.56	1.51

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	F	1	4J2	CZ2-CZ1-CE1	9.83	146.18	123.19
6	F	1	4J2	CD2-CE2-CZ1	-7.60	108.13	118.96
6	F	1	4J2	CZ2-CZ1-CE2	-7.27	105.89	118.92
6	F	1	4J2	CE1-CZ1-CE2	-6.12	107.94	118.92
6	F	1	4J2	CD1-CE1-CZ1	5.72	129.68	120.82
6	F	1	4J2	CD1-CG-CD2	5.57	129.66	118.85
6	F	1	4J2	CZ3-CE4-CE3	5.42	128.03	120.44
6	F	1	4J2	CE3-CE2-CZ1	5.34	128.48	118.92
6	F	1	4J2	CE4-CE3-CE2	5.15	128.50	120.44
6	F	1	4J2	CE4-CZ3-CZ2	-4.30	114.41	120.44
6	F	4	DTR	CB-CG-CD2	-4.06	119.92	126.25
6	F	3	DTY	CG-CB-CA	-3.86	106.28	114.10
6	F	1	4J2	CZ3-CZ2-CZ1	-3.69	114.68	120.44
6	F	1	4J2	CE1-CD1-CG	3.68	128.71	121.14
6	F	8	ALO	CB-CA-C	-3.07	106.87	111.77
6	F	1	4J2	CG-CB-CA	-2.99	108.04	114.10
6	F	4	DTR	CD2-CE2-NE1	-2.98	101.31	107.92
6	F	1	4J2	CB-CG-CD2	-2.90	114.20	120.57
6	F	1	4J2	CG-CD2-CE2	-2.71	115.89	121.22
6	F	4	DTR	CE3-CD2-CG	2.51	139.02	134.42
6	F	1	4J2	CB-CG-CD1	-2.40	116.14	120.91
6	F	4	DTR	CZ2-CE2-NE1	2.29	137.14	130.80
6	F	4	DTR	CG-CB-CA	2.22	117.96	114.53
6	F	8	ALO	O-C-CA	-2.08	119.31	124.78

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	F	1	4J2	N-CA-CB-CG
6	F	1	4J2	C-CA-CB-CG
6	F	7	DCY	N-CA-CB-SG
6	F	8	ALO	N-CA-CB-CG2
6	F	8	ALO	C-CA-CB-CG2
6	F	8	ALO	C-CA-CB-OG1
6	F	3	DTY	C-CA-CB-CG
6	F	2	DCY	N-CA-CB-SG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	F	3	DTY	N-CA-CB-CG
6	F	4	DTR	CA-CB-CG-CD1
6	F	8	ALO	N-CA-CB-OG1
6	F	8	ALO	O-C-CA-CB

There are no ring outliers.

7 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	F	1	4J2	3	0
6	F	7	DCY	2	0
6	F	6	DVA	6	0
6	F	2	DCY	2	0
6	F	3	DTY	7	0
6	F	8	ALO	1	0
6	F	4	DTR	7	0

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

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-60651. 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 ⓘ
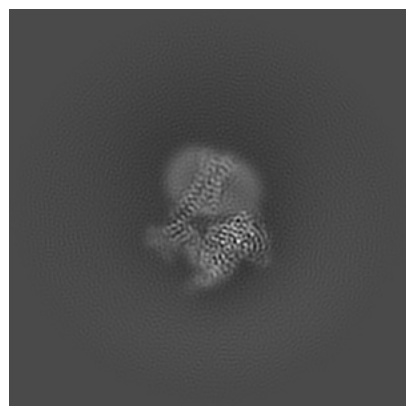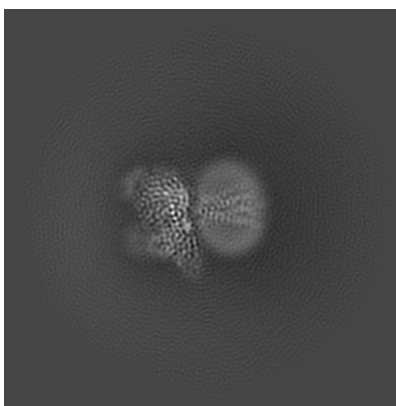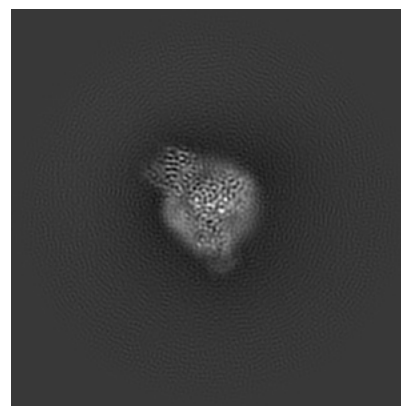
6.1.1 Primary map

X Y Z

6.1.2 Raw map

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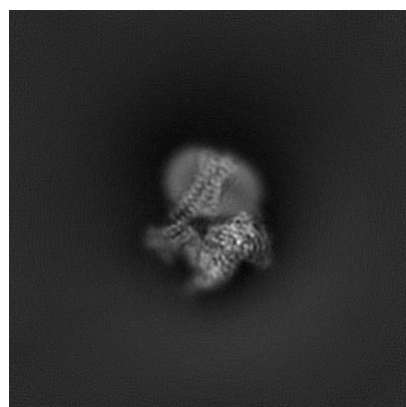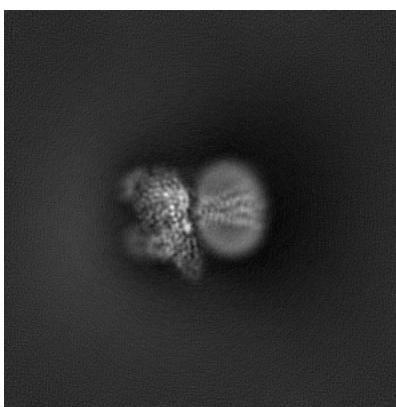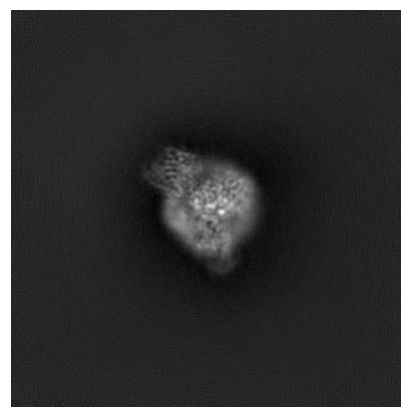
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
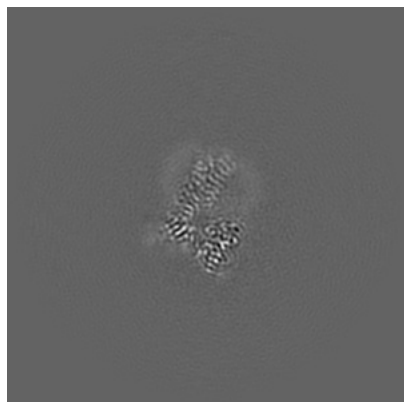
6.2.1 Primary map
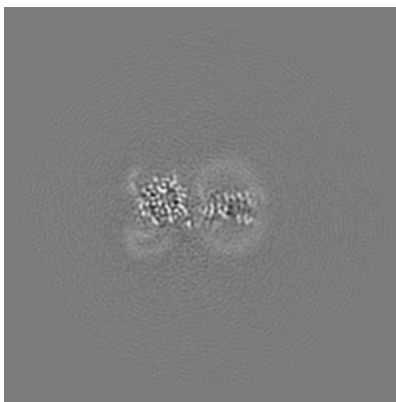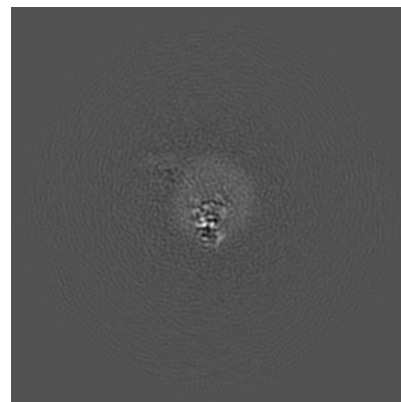
X Index: 192   Y Index: 192   Z Index: 192

6.2.2 Raw map
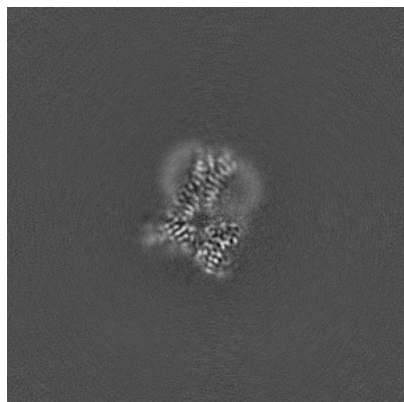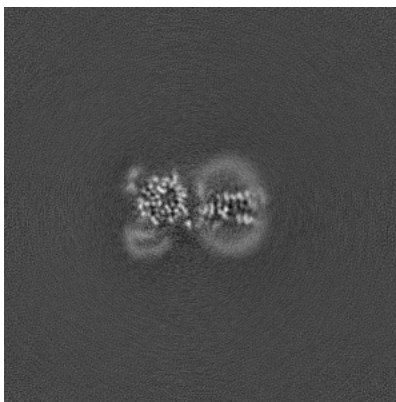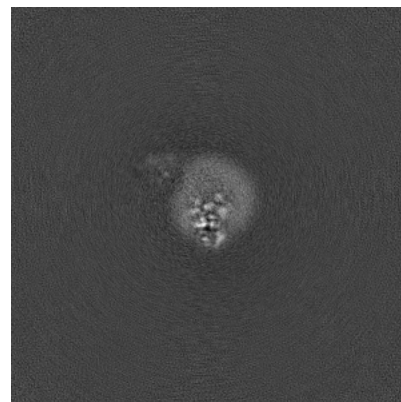
X Index: 192   Y Index: 192   Z Index: 192

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
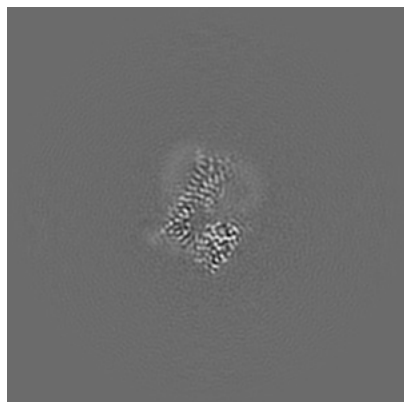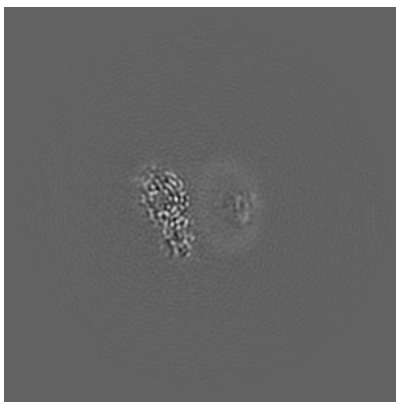
| X Index: 188 | Y Index: 209 | Z Index: 167 |
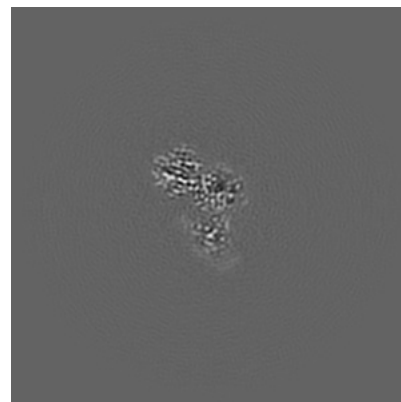
6.3.2 Raw map
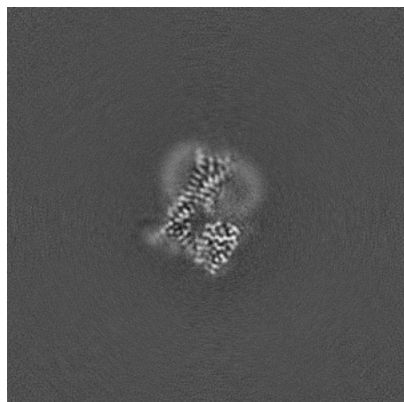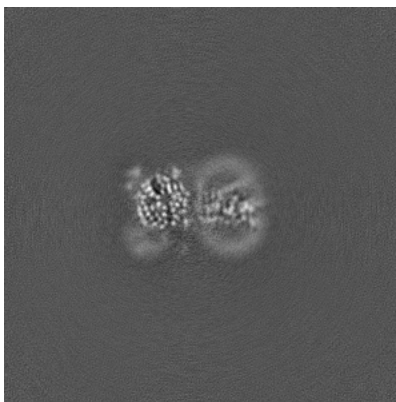
| X Index: 188 | Y Index: 196 | Z Index: 170 |
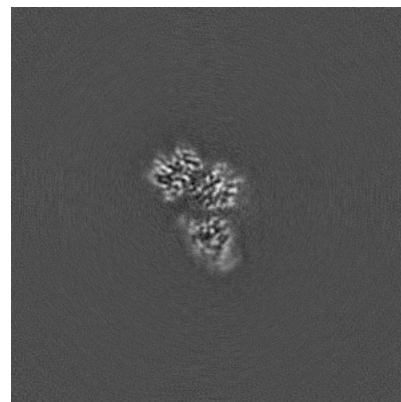
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1　Primary map
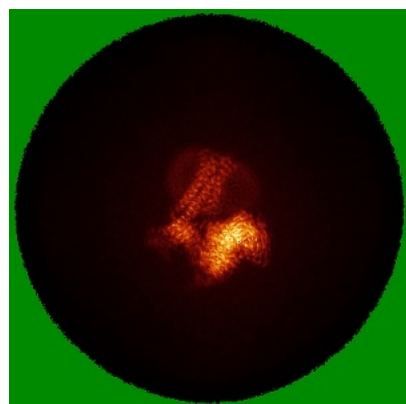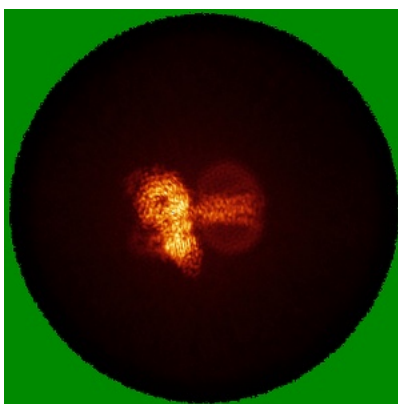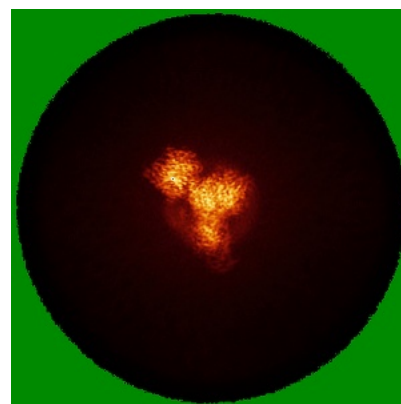
| X | Y | Z |

6.4.2　Raw map

| X | Y | Z |
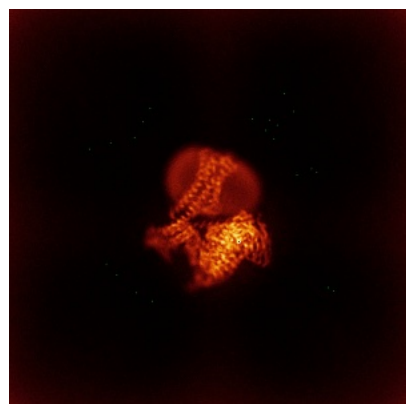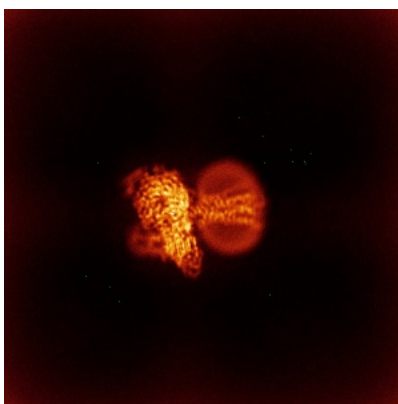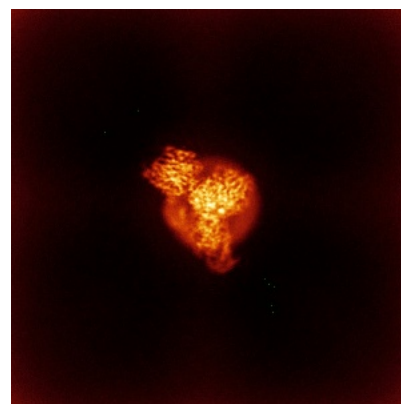
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ
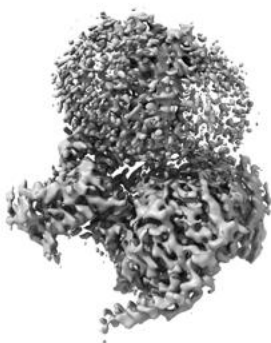
6.5.1 Primary map

| X | Y | Z |
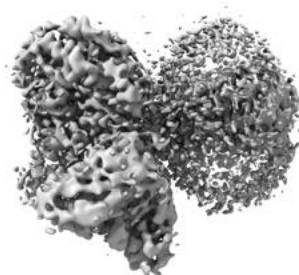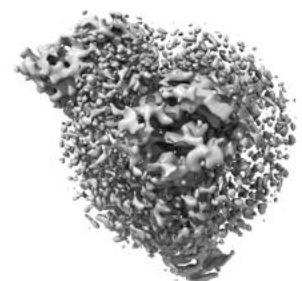
The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

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 ⓘ

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

7 Map analysis ⓘ

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

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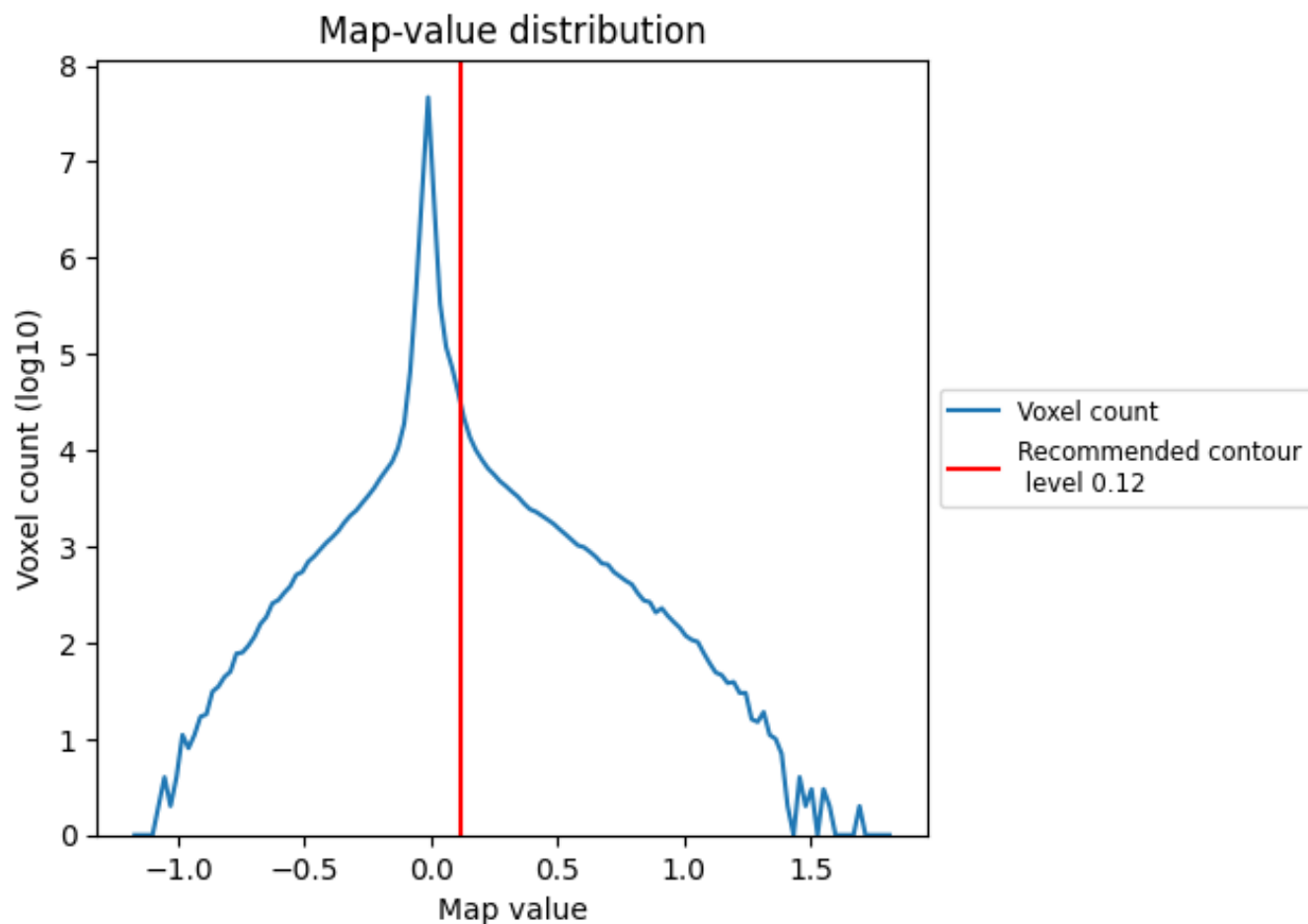
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate (i)
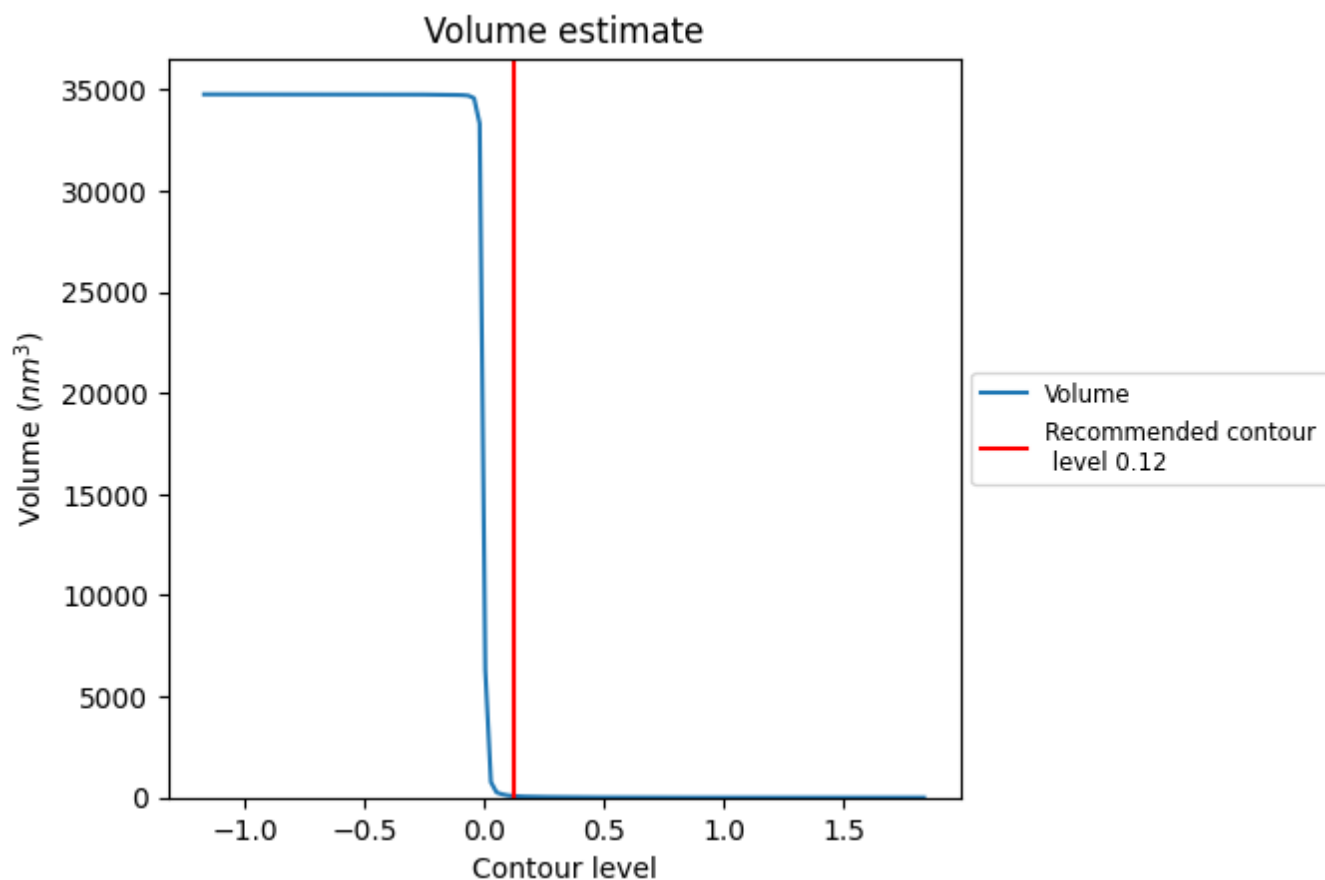
The volume at the recommended contour level is 75 nm^3; this corresponds to an approximate mass of 68 kDa.

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 ⓘ
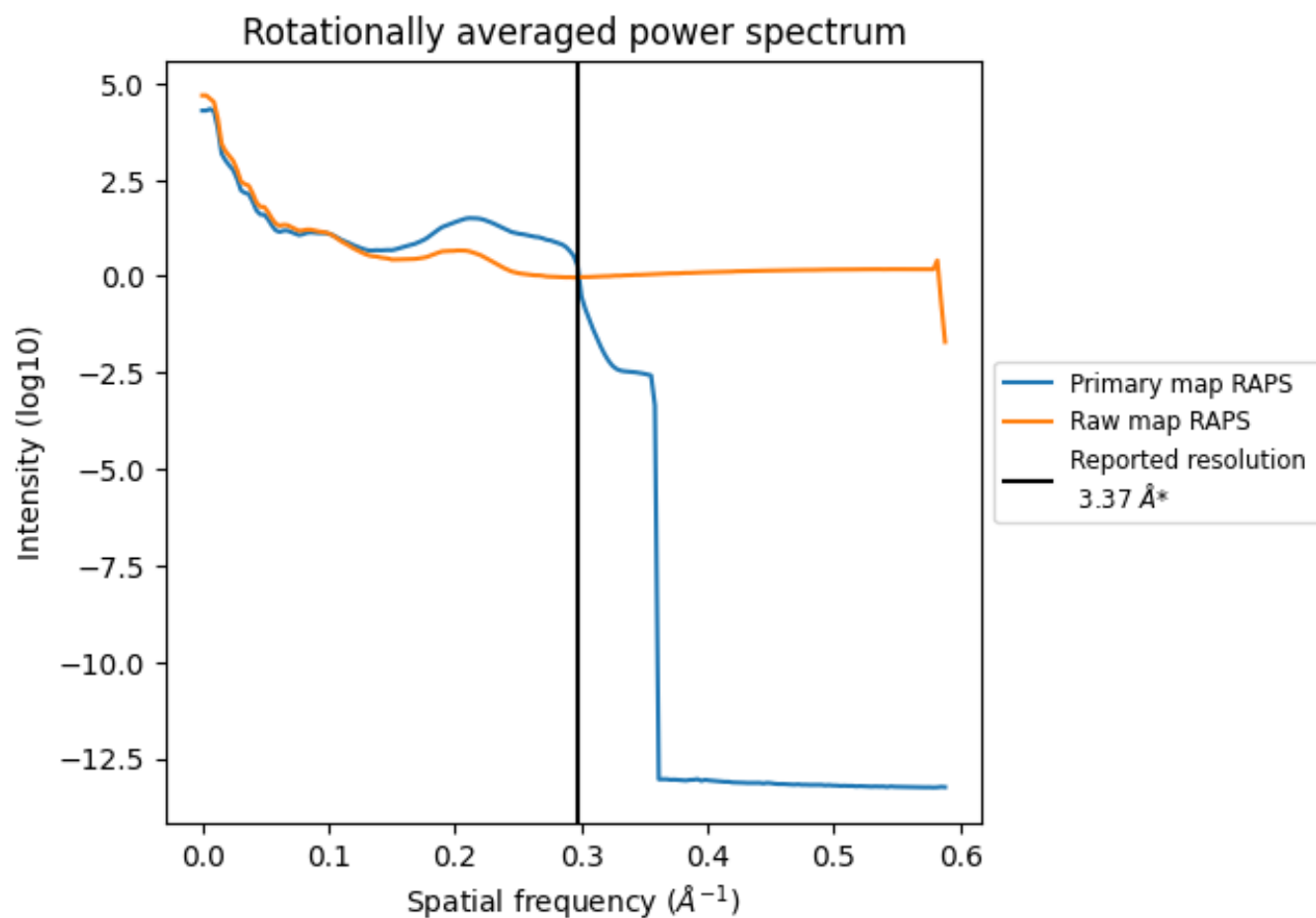
*Reported resolution corresponds to spatial frequency of 0.297 Å^{-1}

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 ⓘ
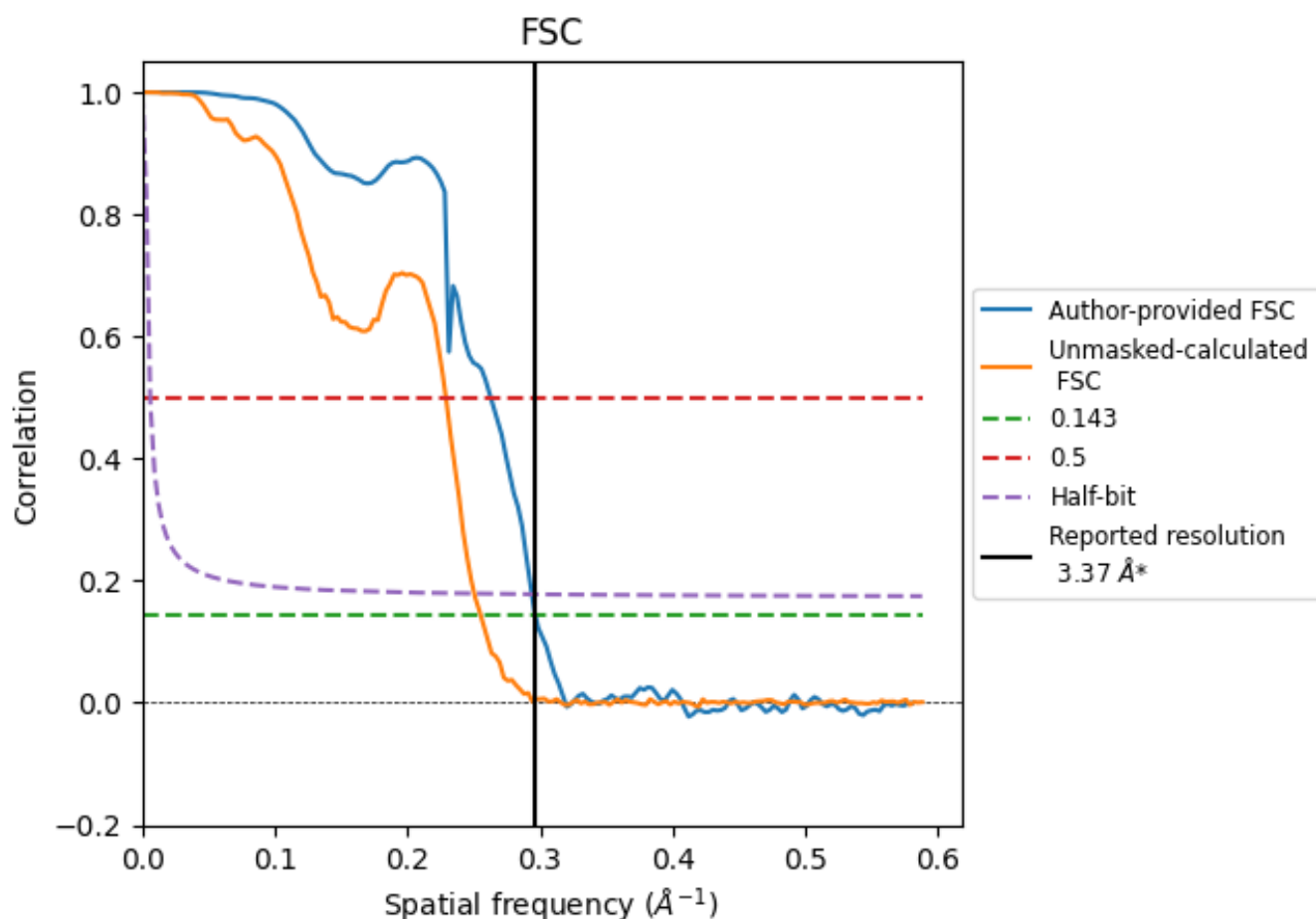
*Reported resolution corresponds to spatial frequency of 0.297 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.37	-	-
Author-provided FSC curve	3.37	3.81	3.40
Unmasked-calculated*	3.92	4.37	3.99

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.92 differs from the reported value 3.37 by more than 10 %
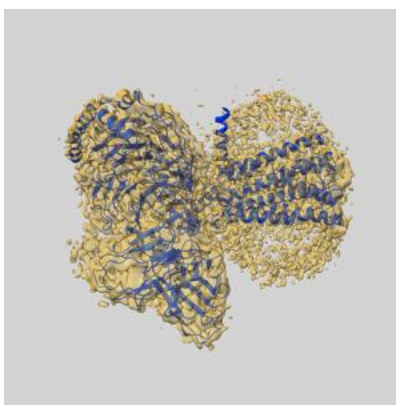
9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-60651 and PDB model 9IK9. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ
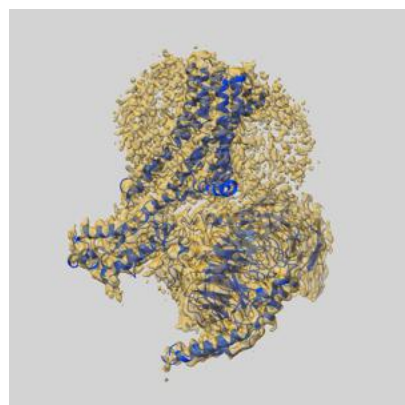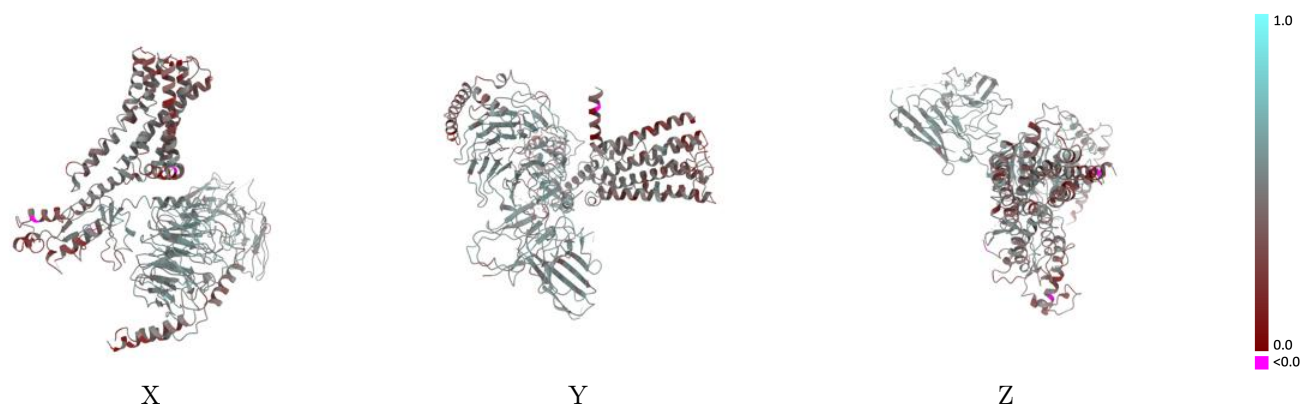

X   Y   Z
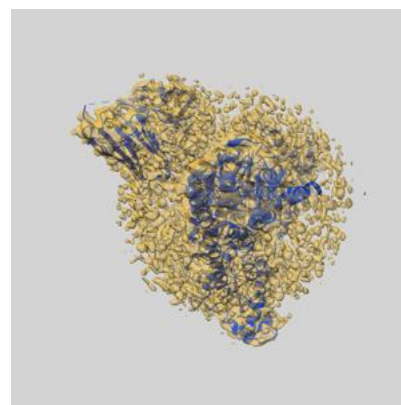
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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
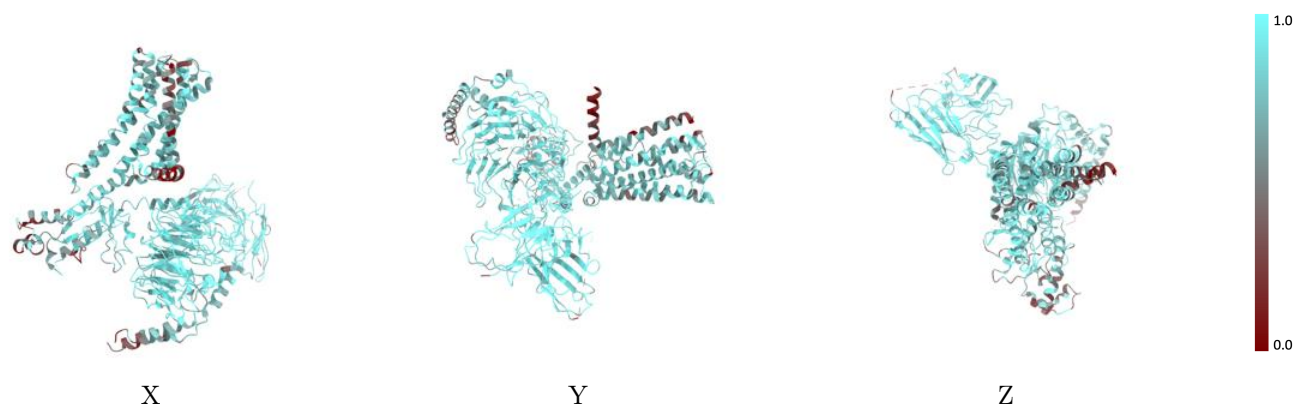
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.12).

9.4 Atom inclusion ⓘ
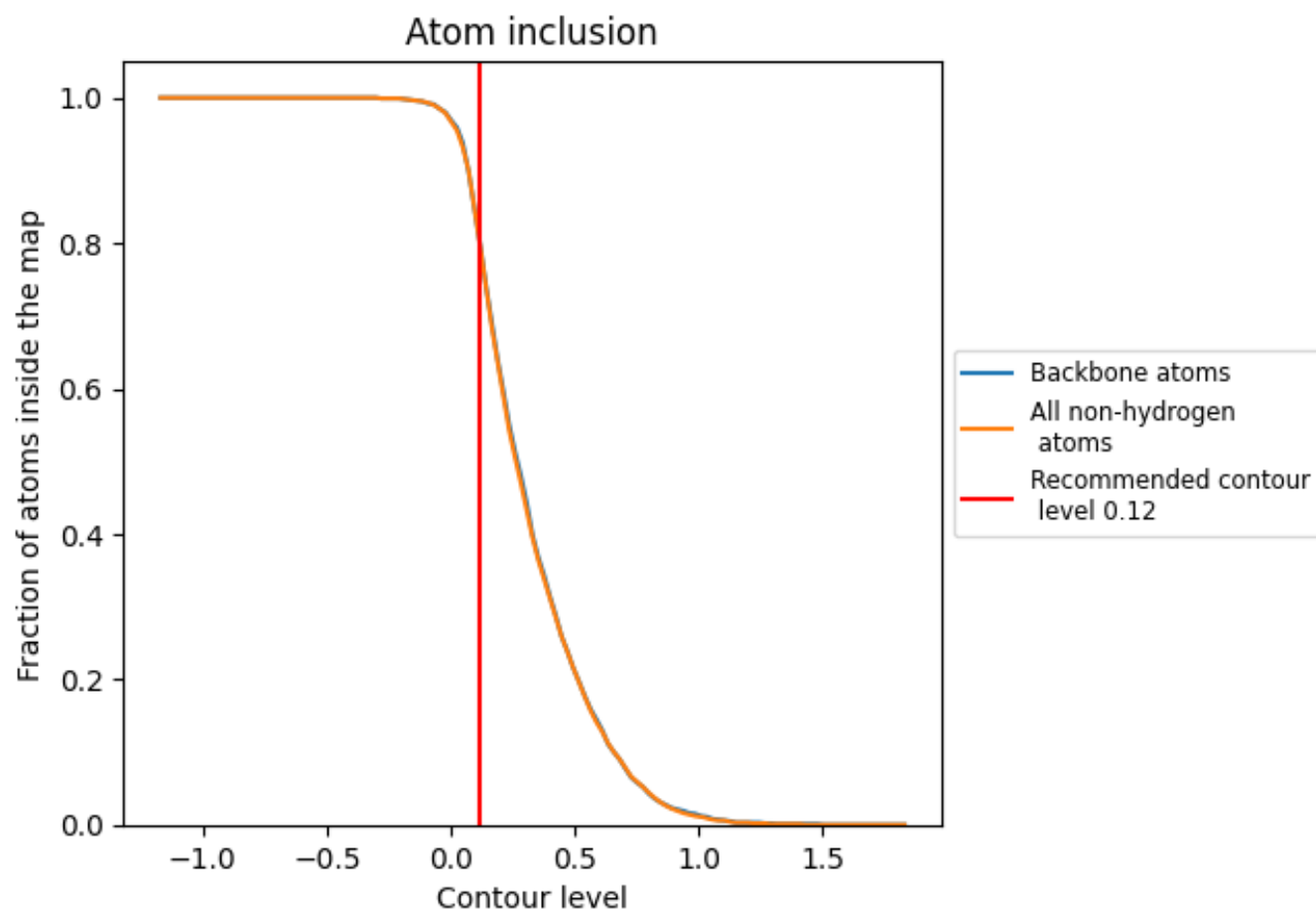
At the recommended contour level, 80% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7960	0.4640
A	0.7320	0.4350
B	0.8670	0.5150
C	0.7040	0.4350
D	0.7050	0.3930
E	0.8780	0.5200
F	0.7200	0.3730

1.0

0.0
<0.0