Full wwPDB EM Validation Report ⓘ

Dec 11, 2022 – 09:05 am GMT

PDB ID	:	6S3S
EMDB ID	:	EMD-10096
Title	:	Structure of the FliPQR complex from the flagellar type 3 secretion system of Vibrio mimicus.
Authors	:	Kuhlen, L.; Johnson, S.; Deme, J.C.; Lea, S.M.
Deposited on	:	2019-06-25
Resolution	:	4.10 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

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

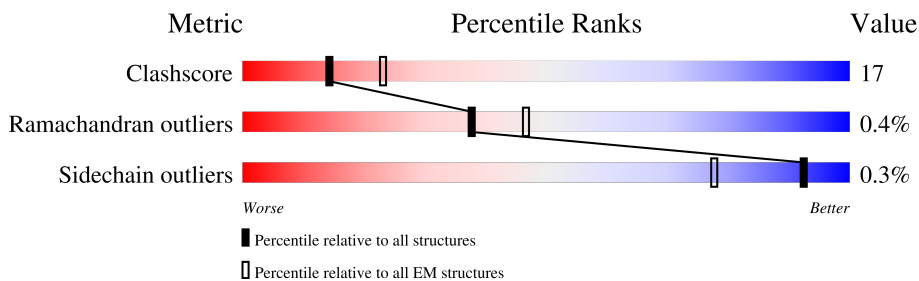|		
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 4.10 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.
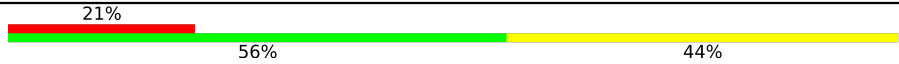
Metric	Percentile Ranks	Value
Clashscore		17
Ramachandran outliers		0.4%
Sidechain outliers		0.3%

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	A	299	10% — 38% / 25% / • / 36%
1	B	299	11% — 41% / 24% / 35%
1	C	299	18% — 37% / 28% / • / 34%
1	D	299	20% — 38% / 27% / 34%
1	E	299	12% — 35% / 27% / 37%
2	F	299	16% — 52% / 34% / 14%
3	G	89	17% — 76% / 24%
3	H	89	20% — 76% / 24%

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Mol	Chain	Length	Quality of chain
3	I	89	21% / 56% / 44%
3	J	89	21% / 55% / 35% / 10%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 12321 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 Flagellar biosynthetic protein FliP.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	191	Total	C	N	O	S	0	0
			1482	981	228	256	17		
1	B	195	Total	C	N	O	S	0	0
			1513	1003	232	260	18		
1	C	196	Total	C	N	O	S	0	0
			1520	1007	233	262	18		
1	D	196	Total	C	N	O	S	0	0
			1520	1007	233	262	18		
1	E	187	Total	C	N	O	S	0	0
			1454	962	224	252	16		

- Molecule 2 is a protein called Flagellar biosynthetic protein FliR.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	F	257	Total	C	N	O	S	0	0
			2000	1329	311	341	19		

There are 39 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	261	GLU	-	expression tag	UNP A0A1D8S9I5
F	262	ASN	-	expression tag	UNP A0A1D8S9I5
F	263	LEU	-	expression tag	UNP A0A1D8S9I5
F	264	TYR	-	expression tag	UNP A0A1D8S9I5
F	265	PHE	-	expression tag	UNP A0A1D8S9I5
F	266	GLN	-	expression tag	UNP A0A1D8S9I5
F	267	GLY	-	expression tag	UNP A0A1D8S9I5
F	268	GLN	-	expression tag	UNP A0A1D8S9I5
F	269	PHE	-	expression tag	UNP A0A1D8S9I5
F	270	GLY	-	expression tag	UNP A0A1D8S9I5
F	271	SER	-	expression tag	UNP A0A1D8S9I5
F	272	TRP	-	expression tag	UNP A0A1D8S9I5
F	273	SER	-	expression tag	UNP A0A1D8S9I5

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Chain	Residue	Modelled	Actual	Comment	Reference
F	274	HIS	-	expression tag	UNP A0A1D8S9I5
F	275	PRO	-	expression tag	UNP A0A1D8S9I5
F	276	GLN	-	expression tag	UNP A0A1D8S9I5
F	277	PHE	-	expression tag	UNP A0A1D8S9I5
F	278	GLU	-	expression tag	UNP A0A1D8S9I5
F	279	LYS	-	expression tag	UNP A0A1D8S9I5
F	280	GLY	-	expression tag	UNP A0A1D8S9I5
F	281	GLY	-	expression tag	UNP A0A1D8S9I5
F	282	GLY	-	expression tag	UNP A0A1D8S9I5
F	283	SER	-	expression tag	UNP A0A1D8S9I5
F	284	GLY	-	expression tag	UNP A0A1D8S9I5
F	285	GLY	-	expression tag	UNP A0A1D8S9I5
F	286	GLY	-	expression tag	UNP A0A1D8S9I5
F	287	SER	-	expression tag	UNP A0A1D8S9I5
F	288	GLY	-	expression tag	UNP A0A1D8S9I5
F	289	GLY	-	expression tag	UNP A0A1D8S9I5
F	290	GLY	-	expression tag	UNP A0A1D8S9I5
F	291	SER	-	expression tag	UNP A0A1D8S9I5
F	292	TRP	-	expression tag	UNP A0A1D8S9I5
F	293	SER	-	expression tag	UNP A0A1D8S9I5
F	294	HIS	-	expression tag	UNP A0A1D8S9I5
F	295	PRO	-	expression tag	UNP A0A1D8S9I5
F	296	GLN	-	expression tag	UNP A0A1D8S9I5
F	297	PHE	-	expression tag	UNP A0A1D8S9I5
F	298	GLU	-	expression tag	UNP A0A1D8S9I5
F	299	LYS	-	expression tag	UNP A0A1D8S9I5

- Molecule 3 is a protein called Flagellar biosynthetic protein FliQ.

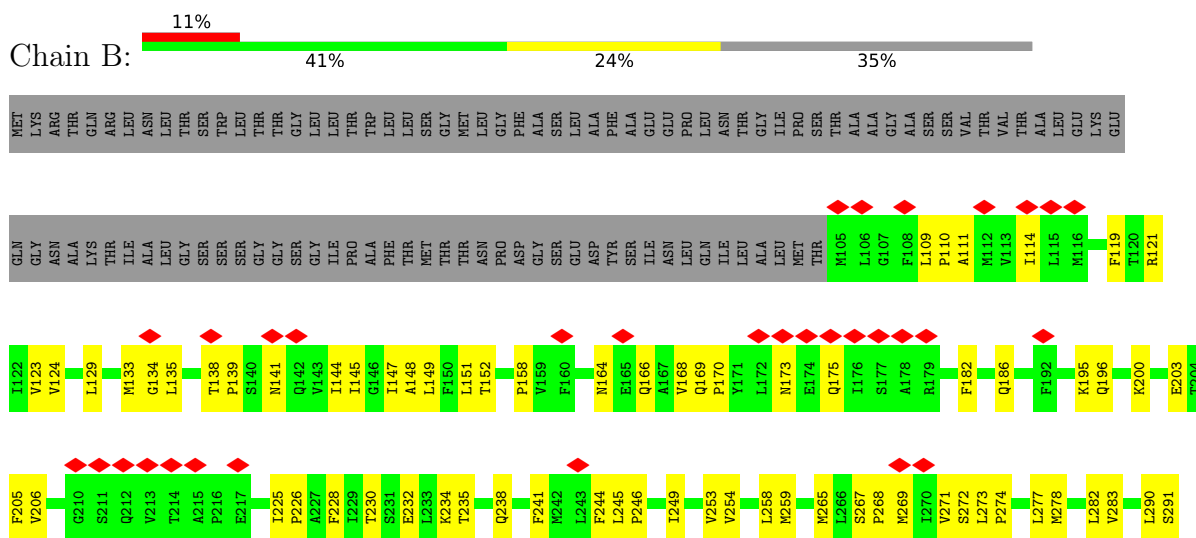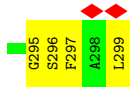| Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	89	Total	C	N	O	S	0	0
			724	493	105	118	8		
3	H	89	Total	C	N	O	S	0	0
			724	493	105	118	8		
3	I	89	Total	C	N	O	S	0	0
			724	493	105	118	8		
3	J	80	Total	C	N	O	S	0	0
			660	456	94	102	8		

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.
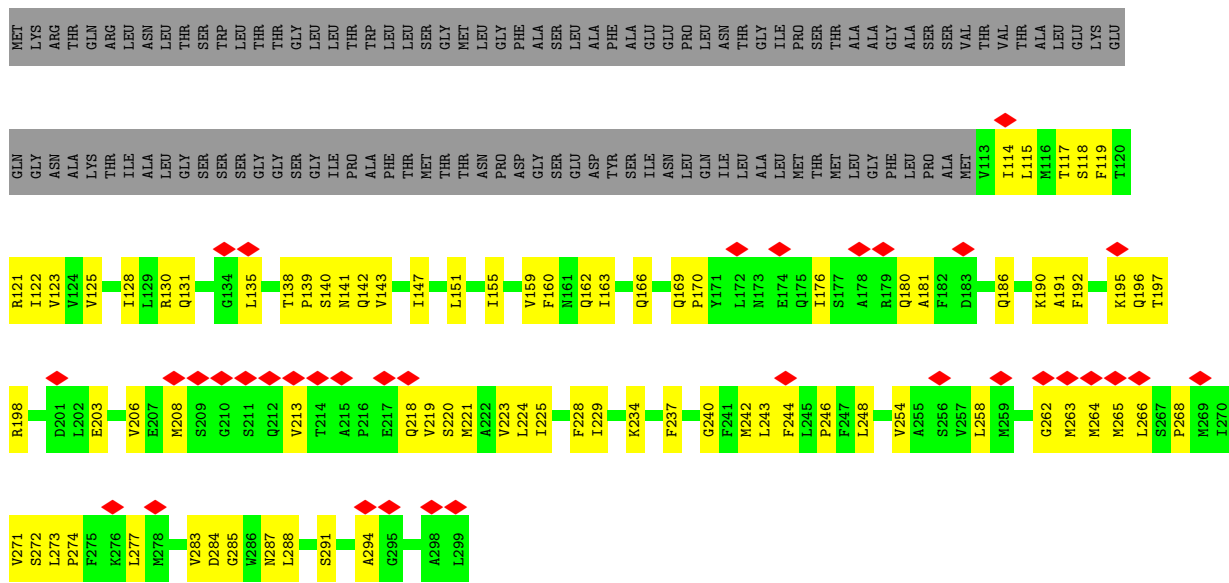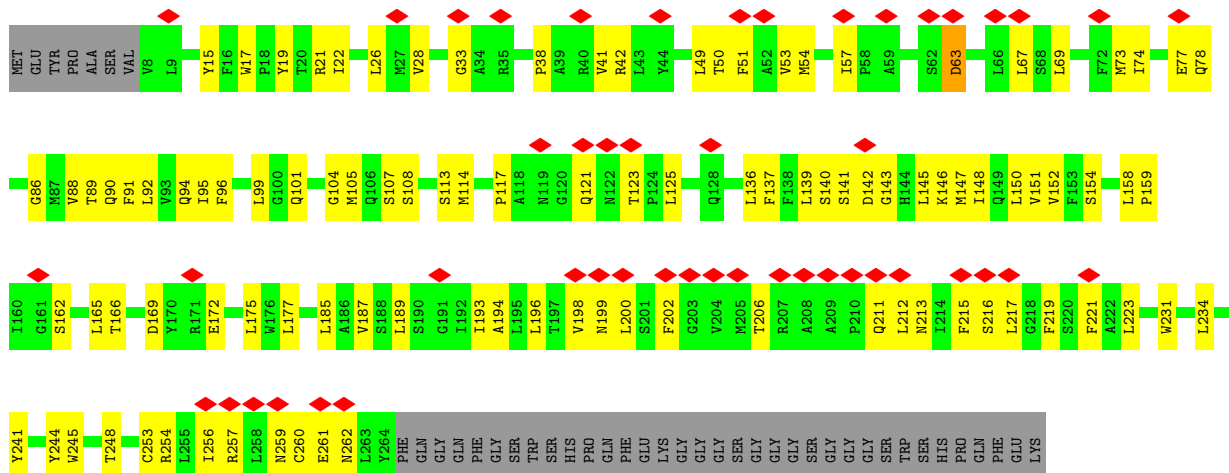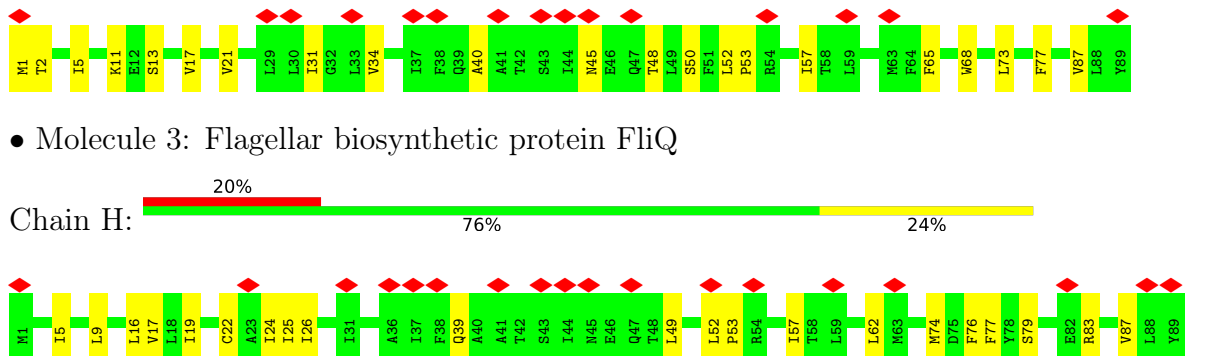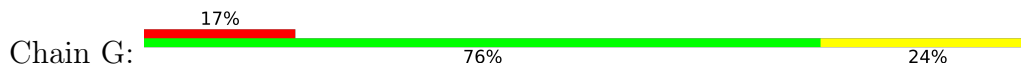
• Molecule 1: Flagellar biosynthetic protein FliP

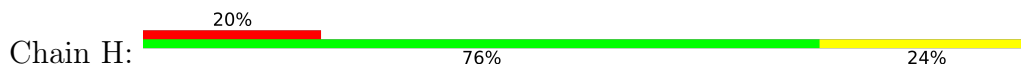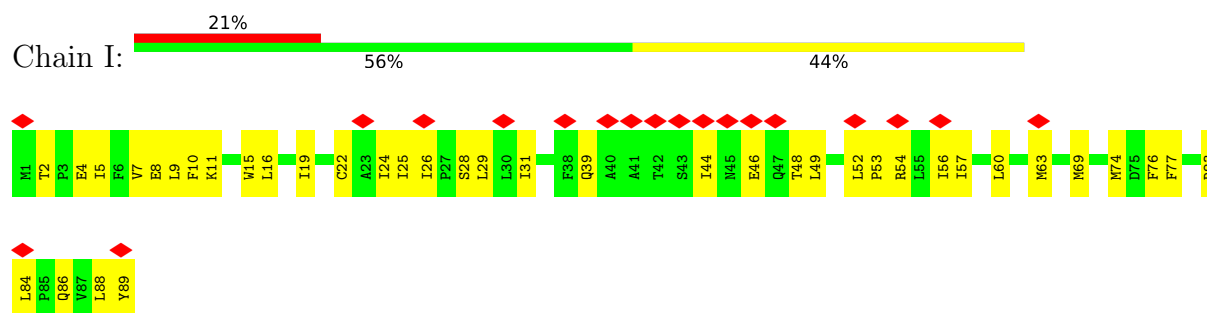• Molecule 1: Flagellar biosynthetic protein FliP

G295 S296 F297 A298 L299

• Molecule 1: Flagellar biosynthetic protein FliP

Chain C:

18%

37%　　　　　　　28%　　　•　　34%

MET LYS ARG THR GLN ARG LEU ASN LEU THR SER TRP LEU THR THR GLY LEU LEU THR TRP LEU LEU SER GLY

GLN GLY ASN ALA LYS THR ILE ALA LEU GLY SER SER GLY GLY SER GLY ILE PRO ALA PHE THR MET THR THR ASN PRO ASP GLY SER GLU ASP TYR SER ILE ASN LEU GLN ILE LEU ALA LEU MET T104 M105 L106 G107 F108 L109 P110 A111 M112 V113 I114 L115 M116 T117 S118 F119 T120

R121 M126 S127 R130 G134 L135 Q136 Q137 T138 P139 S140 N141 Q142 V143 I144 I145 G146 I147 A148 L149 F150 L151 T152 F153 F154 A157 N161 N164 E165 Q166 A167 V168 Q169 P170 Y171 L172 N173 E174 Q175 I176 S177 A178 R179 Q180 A181 F182 F192 M193 L194 K195 Q196 T197 R198

D201 L202 F205 V206 G210 S211 Q212 V213 T214 A215 P216 E217 Q218 M221 A222 I225 P226 A227 F228 E232 L233 K234 T235 Q238 P246 F247 L248 I249 I250 D251 L252 V253 V254 V257 L258 M259 A260 M261 G262 M263 M264 M265 L266 S267 P268 M269 I270 V271 S272 L273

K276 L277 M278 V283 D284 G285 W286 N287 L288 I289 L290 S291 T292 G295 S296 F297 A298 L299

• Molecule 1: Flagellar biosynthetic protein FliP

Chain D:

20%

38%　　　　　　27%　　　　　34%

MET LYS ARG THR GLN ARG LEU ASN LEU THR SER TRP LEU THR THR GLY LEU LEU THR TRP LEU LEU SER GLY LEU

GLN GLY ASN ALA LYS THR ILE ALA LEU GLY SER SER GLY GLY SER GLY ILE PRO ALA PHE THR MET THR THR ASN PRO ASP GLY SER GLU ASP TYR SER ILE ASN LEU GLN ILE LEU ALA LEU MET T104 M105 L106 G107 F108 L109 P110 A111 M112 V113 I114 L115 M116 T117 S118 F119 T120

R121 I122 V125 M126 S127 I128 L129 R130 G134 L135 Q136 Q137 T138 P139 S140 N141 Q142 V143 I144 I145 G146 F150 L151 F154 I155 P158 N161 E165 Q166 A167 V168 Q169 P170 Y171 L172 N173 E174 Q175 I176 S177 A178 R179 Q180 A181 F182 D183 K195 D201 L202 E203

V206 E207 M208 S209 G210 S211 Q212 V213 T214 A215 P216 E217 Q218 M221 A222 V223 L224 I225 P226 A227 F228 I229 T230 S231 E232 L233 K234 F237 M242 P246 F247 I250 D251 L252 V253 V257 L258 M259 A260 M261 G262 M263 M264 M265 L266 S267 P268 M269 I270 V271 S272 L273 P274 F275

K276 L277 M278 L279 F280 V281 L282 V283 D284 G285 W286 I289 L290 S291 T292 L293 A294 G295 S296 F297 A298 L299

• Molecule 1: Flagellar biosynthetic protein FliP

Chain E:

12%

35%　　　　　　27%　　　　　37%

• Molecule 2: Flagellar biosynthetic protein FliR

Chain F:

16%

52%   34%   14%

• Molecule 3: Flagellar biosynthetic protein FliQ

Chain G:

17%

76%   24%

• Molecule 3: Flagellar biosynthetic protein FliQ

Chain H:

20%

76%   24%

• Molecule 3: Flagellar biosynthetic protein FliQ

Chain I:

21%

56%   44%

M1 T2 P3 E4 I5 F6 V7 E8 L9 F10 K11 W15 L16 I19 C22 A23 I24 I25 I26 P27 S28 L29 L30 I31 F38 Q39 A40 A41 T42 S43 I44 N45 E46 Q47 T48 L49 L52 P53 R54 L55 I56 I57 L60 M63 M69 M74 D75 F76 F77 R83

L84 P85 Q86 V87 L88 Y89

• Molecule 3: Flagellar biosynthetic protein FliQ

Chain J:

21%

55%   35%   10%

M1 T2 I5 K11 W15 L16 V17 L18 I19 M20 V21 C22 A23 I24 I25 I26 P27 S28 I31 G32 V35 A36 I37 F38 Q39 ALA ALA THR SER ILE ASN GLU GLN THR L49 S50 F51 L52 P53 R54 L55 I56 I57 T58 L59 L60 A61 L62 M63 G66 H67 T70

M74 Y78 S79 M80 I81 E82 R83 Q86 V87 L88 Y89

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	243489	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 $(e^-/\text{Å}^2)$	48	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.092	Depositor
Minimum map value	-0.039	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.035	Depositor
Map size (Å)	210.432, 210.432, 210.432	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.822, 0.822, 0.822	Depositor

5   Model quality (i)

5.1   Standard geometry (i)

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	0/1510	0.48	0/2047
1	B	0.37	0/1542	0.48	0/2089
1	C	0.36	0/1549	0.51	0/2099
1	D	0.34	0/1549	0.46	0/2099
1	E	0.36	0/1481	0.47	0/2007
2	F	0.38	0/2046	0.50	1/2780 (0.0%)
3	G	0.36	0/742	0.46	0/1009
3	H	0.36	0/742	0.45	0/1009
3	I	0.36	0/742	0.46	0/1009
3	J	0.33	0/677	0.43	0/918
All	All	0.36	0/12580	0.48	1/17066 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	C	0	2
All	All	0	4

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	F	63	ASP	CB-CG-OD1	5.46	123.22	118.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

Mol	Chain	Res	Type	Group
1	A	138	THR	Peptide
1	A	173	ASN	Peptide
1	C	136	GLN	Peptide
1	C	138	THR	Peptide

5.2   Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1482	0	1569	64	0
1	B	1513	0	1601	64	0
1	C	1520	0	1608	70	0
1	D	1520	0	1608	74	0
1	E	1454	0	1537	70	0
2	F	2000	0	2073	80	0
3	G	724	0	768	19	0
3	H	724	0	768	16	0
3	I	724	0	768	32	0
3	J	660	0	707	21	0
All	All	12321	0	13007	437	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 17.

All (437) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:254:VAL:HG11	1:A:272:SER:HB3	1.61	0.83
1:B:173:ASN:HB2	1:B:175:GLN:HE22	1.45	0.80
1:B:283:VAL:HG12	3:H:74:MET:HG3	1.63	0.79
1:C:171:TYR:HA	1:C:174:GLU:HA	1.64	0.79
1:E:263:MET:HB2	1:E:266:LEU:HD11	1.64	0.78
1:A:259:MET:HB3	2:F:223:LEU:HD11	1.68	0.75
1:D:137:GLN:HB3	1:D:139:PRO:HG2	1.69	0.75
1:D:257:VAL:HG12	3:J:25:ILE:HD11	1.70	0.74
1:C:166:GLN:O	1:C:180:GLN:NE2	2.22	0.73
1:C:137:GLN:HG3	1:C:138:THR:H	1.54	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:135:LEU:HD22	1:A:138:THR:HG21	1.72	0.72
1:C:174:GLU:O	1:C:176:ILE:N	2.23	0.72
2:F:17:TRP:HB3	2:F:78:GLN:HE22	1.54	0.72
1:A:268:PRO:HA	1:A:271:VAL:HG12	1.72	0.72
1:A:130:ARG:NH2	1:A:138:THR:O	2.21	0.70
1:E:258:LEU:HB3	1:E:266:LEU:HD13	1.74	0.69
1:A:263:MET:O	1:A:265:MET:N	2.25	0.69
1:E:192:PHE:O	1:E:196:GLN:NE2	2.25	0.69
1:E:258:LEU:O	1:E:262:GLY:N	2.23	0.69
1:C:258:LEU:HD11	1:C:271:VAL:HG11	1.74	0.68
1:D:207:GLU:HA	1:D:212:GLN:HE22	1.58	0.68
1:A:279:LEU:HD11	3:G:73:LEU:HD22	1.76	0.67
2:F:211:GLN:NE2	3:G:45:ASN:OD1	2.27	0.67
1:B:138:THR:OG1	1:B:139:PRO:HD3	1.95	0.67
1:B:268:PRO:HA	1:B:271:VAL:HG12	1.75	0.67
1:E:274:PRO:HG3	2:F:196:LEU:HD11	1.76	0.66
1:C:246:PRO:HG2	3:I:77:PHE:HD1	1.61	0.66
1:D:213:VAL:HG22	1:D:215:ALA:H	1.61	0.66
1:A:142:GLN:HG2	1:B:111:ALA:HB2	1.79	0.65
2:F:259:ASN:O	2:F:262:ASN:ND2	2.30	0.65
1:E:128:ILE:HG23	1:E:244:PHE:CE2	2.31	0.65
1:E:138:THR:OG1	1:E:139:PRO:HD3	1.97	0.64
1:B:170:PRO:HA	1:B:175:GLN:HE21	1.62	0.64
1:B:254:VAL:HG11	1:B:272:SER:HB2	1.79	0.64
1:A:195:LYS:HD3	1:A:299:LEU:HA	1.79	0.64
2:F:253:CYS:SG	2:F:260:CYS:HB2	2.38	0.64
1:B:121:ARG:NH1	1:B:296:SER:OG	2.30	0.63
1:D:174:GLU:O	1:D:176:ILE:N	2.31	0.63
1:C:154:PHE:HE1	1:D:209:SER:HB3	1.63	0.63
1:C:287:ASN:ND2	1:D:201:ASP:OD1	2.30	0.63
1:D:224:LEU:O	1:D:228:PHE:N	2.29	0.62
1:A:198:ARG:NH1	3:G:1:MET:SD	2.71	0.62
2:F:199:ASN:HA	2:F:202:PHE:CD2	2.34	0.62
1:B:149:LEU:O	1:B:152:THR:OG1	2.14	0.62
1:E:143:VAL:HG21	2:F:94:GLN:HG3	1.81	0.62
3:H:39:GLN:HE21	3:H:49:LEU:HD23	1.64	0.62
1:B:274:PRO:HG3	1:C:248:LEU:HD13	1.82	0.62
3:H:79:SER:O	3:H:83:ARG:NH1	2.32	0.62
1:C:114:ILE:O	1:C:117:THR:OG1	2.16	0.61
1:D:151:LEU:HD21	1:D:290:LEU:HD23	1.82	0.61
1:E:191:ALA:O	1:E:195:LYS:NZ	2.33	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:J:2:THR:HG23	3:J:5:ILE:H	1.66	0.61
1:D:140:SER:HA	1:D:143:VAL:HG12	1.81	0.61
1:C:246:PRO:HA	1:C:249:ILE:HD12	1.83	0.61
1:C:283:VAL:HG12	3:I:74:MET:HG3	1.83	0.60
3:J:39:GLN:NE2	3:J:50:SER:OG	2.34	0.60
1:E:147:ILE:HD13	2:F:177:LEU:HB2	1.84	0.60
1:D:203:GLU:HA	1:D:206:VAL:HG12	1.82	0.60
1:B:170:PRO:HA	1:B:175:GLN:NE2	2.17	0.60
1:B:232:GLU:O	1:B:235:THR:OG1	2.18	0.59
1:A:284:ASP:O	1:A:286:TRP:N	2.35	0.59
1:B:203:GLU:HA	1:B:206:VAL:HG12	1.84	0.59
2:F:28:VAL:O	2:F:90:GLN:NE2	2.34	0.59
2:F:53:VAL:HG23	2:F:57:ILE:HD11	1.85	0.59
1:D:126:MET:HB3	1:D:144:ILE:HD12	1.84	0.59
2:F:19:TYR:HB2	2:F:50:THR:HG21	1.85	0.59
1:E:284:ASP:OD1	1:E:287:ASN:ND2	2.35	0.59
1:A:281:VAL:HG23	1:B:234:LYS:HG3	1.84	0.59
1:B:258:LEU:HD12	1:B:268:PRO:HG3	1.85	0.58
1:D:171:TYR:HA	1:D:174:GLU:HA	1.85	0.58
2:F:206:THR:HG22	2:F:212:LEU:HD23	1.85	0.58
1:E:140:SER:O	1:E:143:VAL:N	2.34	0.58
2:F:96:PHE:HA	2:F:99:LEU:HD12	1.84	0.58
2:F:136:LEU:O	2:F:140:SER:N	2.27	0.58
3:G:17:VAL:O	3:G:21:VAL:HG23	2.04	0.58
3:I:2:THR:HG23	3:I:5:ILE:H	1.68	0.58
1:A:133:MET:O	1:A:135:LEU:N	2.32	0.58
1:A:130:ARG:NH2	1:A:139:PRO:O	2.37	0.58
1:D:247:PHE:HA	1:D:250:ILE:HD12	1.86	0.58
1:E:160:PHE:HA	1:E:163:ILE:HD12	1.86	0.57
2:F:21:ARG:NH1	2:F:154:SER:OG	2.37	0.57
3:H:52:LEU:HD22	3:I:29:LEU:HD11	1.86	0.57
2:F:194:ALA:O	2:F:198:VAL:HG23	2.05	0.57
2:F:202:PHE:O	2:F:206:THR:HG23	2.04	0.57
3:J:59:LEU:HA	3:J:62:LEU:HD12	1.86	0.56
1:C:258:LEU:HD12	1:C:268:PRO:HB3	1.85	0.56
1:E:258:LEU:HD22	1:E:266:LEU:HD13	1.87	0.56
2:F:231:TRP:HA	2:F:234:LEU:HD12	1.88	0.56
1:A:234:LYS:NZ	2:F:142:ASP:OD2	2.28	0.56
1:E:288:LEU:O	1:E:291:SER:OG	2.16	0.56
1:E:268:PRO:HA	1:E:271:VAL:HG12	1.87	0.56
3:H:62:LEU:HD21	3:I:10:PHE:HE2	1.70	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:140:SER:O	1:E:142:GLN:N	2.39	0.56
1:A:135:LEU:HB3	1:A:138:THR:OG1	2.05	0.56
1:A:164:ASN:HA	1:A:168:VAL:HB	1.86	0.56
1:A:258:LEU:HD11	1:A:271:VAL:HG11	1.87	0.55
1:D:176:ILE:HD11	1:D:180:GLN:HB2	1.88	0.55
1:E:277:LEU:HB3	2:F:185:LEU:HD11	1.88	0.55
1:A:281:VAL:HG21	1:B:238:GLN:HG3	1.88	0.55
2:F:67:LEU:HD23	2:F:67:LEU:H	1.72	0.55
2:F:212:LEU:HD11	2:F:217:LEU:HB2	1.89	0.55
1:A:122:ILE:HG23	1:A:293:LEU:HD23	1.89	0.55
2:F:231:TRP:HE1	3:G:11:LYS:HB3	1.72	0.55
2:F:148:ILE:O	2:F:152:VAL:HG23	2.07	0.54
1:E:121:ARG:O	1:E:125:VAL:HG23	2.06	0.54
1:D:140:SER:O	1:D:144:ILE:HG12	2.07	0.54
1:A:139:PRO:HG3	1:B:124:VAL:HG22	1.89	0.54
2:F:158:LEU:HB2	2:F:256:ILE:HG22	1.90	0.54
1:C:130:ARG:NH1	1:C:141:ASN:OD1	2.29	0.54
1:A:140:SER:O	1:A:143:VAL:N	2.39	0.54
1:B:135:LEU:HB3	1:B:138:THR:OG1	2.08	0.54
3:H:22:CYS:HB2	3:H:26:ILE:HD11	1.90	0.54
1:B:133:MET:HB3	1:B:135:LEU:HG	1.90	0.53
1:C:121:ARG:HB2	1:C:232:GLU:OE1	2.09	0.53
1:A:283:VAL:HG21	3:G:77:PHE:CE2	2.43	0.53
1:D:121:ARG:NH1	1:D:296:SER:OG	2.41	0.53
1:C:292:THR:O	1:C:296:SER:N	2.42	0.53
1:A:240:GLY:O	1:A:244:PHE:N	2.37	0.53
3:I:52:LEU:HB3	3:I:53:PRO:HD3	1.90	0.52
1:A:206:VAL:HG11	1:A:213:VAL:HA	1.91	0.52
1:B:246:PRO:HG2	3:H:77:PHE:HD1	1.74	0.52
1:D:137:GLN:HE21	1:E:131:GLN:NE2	2.06	0.52
1:C:193:MET:O	1:C:197:THR:HG23	2.09	0.52
1:D:274:PRO:HG3	1:E:244:PHE:HB3	1.91	0.52
1:D:286:TRP:HB3	1:D:290:LEU:HD13	1.91	0.52
2:F:159:PRO:HG2	2:F:162:SER:HB3	1.92	0.52
1:A:197:THR:HG22	1:A:228:PHE:HA	1.92	0.52
1:A:243:LEU:O	1:A:246:PRO:HD2	2.10	0.52
3:J:25:ILE:O	3:J:28:SER:OG	2.20	0.52
1:C:114:ILE:HG13	1:C:115:LEU:N	2.25	0.51
2:F:215:PHE:HD2	3:G:48:THR:HG22	1.76	0.51
1:C:284:ASP:HA	1:D:234:LYS:HE3	1.91	0.51
1:D:151:LEU:HD11	1:D:290:LEU:HG	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:235:THR:HA	1:C:238:GLN:OE1	2.11	0.51
2:F:198:VAL:HG12	2:F:202:PHE:CE1	2.45	0.51
1:E:254:VAL:HG21	1:E:272:SER:HB2	1.91	0.51
2:F:38:PRO:HG2	2:F:41:VAL:HG23	1.91	0.51
1:D:176:ILE:HG23	1:D:181:ALA:HB2	1.91	0.51
1:C:291:SER:O	1:C:295:GLY:N	2.42	0.51
1:E:265:MET:HB2	2:F:206:THR:HG21	1.92	0.51
2:F:166:THR:N	2:F:169:ASP:OD2	2.29	0.51
1:A:171:TYR:O	1:A:174:GLU:HG2	2.11	0.51
1:A:283:VAL:HG23	1:A:285:GLY:H	1.75	0.51
3:H:19:ILE:HA	3:H:22:CYS:SG	2.51	0.51
3:I:22:CYS:HB2	3:I:26:ILE:HD11	1.92	0.51
1:C:197:THR:HG22	1:C:228:PHE:HA	1.92	0.50
1:C:283:VAL:HG23	1:C:285:GLY:H	1.75	0.50
3:J:22:CYS:HB2	3:J:26:ILE:HD11	1.92	0.50
1:B:138:THR:HG1	1:B:139:PRO:HD3	1.75	0.50
1:D:135:LEU:HB3	1:D:137:GLN:OE1	2.12	0.50
1:D:269:MET:HG3	2:F:117:PRO:HD2	1.93	0.50
1:E:220:SER:HB3	1:E:223:VAL:HG12	1.93	0.50
3:H:24:ILE:HG22	3:H:25:ILE:HD13	1.92	0.50
1:B:141:ASN:O	1:B:145:ILE:HG12	2.12	0.50
1:C:254:VAL:HG11	1:C:272:SER:HB2	1.94	0.50
1:C:286:TRP:HB2	1:D:230:THR:OG1	2.11	0.50
1:C:140:SER:HB3	1:C:143:VAL:HG23	1.93	0.50
1:A:284:ASP:OD1	1:B:234:LYS:NZ	2.34	0.50
1:E:243:LEU:O	1:E:246:PRO:HD2	2.12	0.50
3:H:52:LEU:HD13	3:I:29:LEU:HD11	1.94	0.50
1:B:121:ARG:NE	1:B:232:GLU:OE2	2.42	0.49
1:C:176:ILE:HD11	1:C:179:ARG:HB3	1.94	0.49
3:G:2:THR:O	3:G:5:ILE:HG22	2.12	0.49
1:B:225:ILE:O	1:B:228:PHE:N	2.45	0.49
1:C:154:PHE:HZ	1:D:208:MET:HB2	1.77	0.49
1:D:274:PRO:HG2	1:E:248:LEU:HD13	1.93	0.49
1:E:143:VAL:HG13	2:F:91:PHE:HE1	1.76	0.49
3:I:31:ILE:HG23	3:I:54:ARG:HG3	1.94	0.49
2:F:105:MET:HB3	2:F:114:MET:SD	2.53	0.49
1:B:205:PHE:HE2	1:B:230:THR:HG21	1.77	0.49
1:C:265:MET:HB2	1:D:268:PRO:HD2	1.93	0.49
2:F:86:GLY:O	2:F:89:THR:OG1	2.24	0.49
1:C:202:LEU:O	1:C:206:VAL:HG22	2.12	0.49
1:E:197:THR:HG22	1:E:228:PHE:HA	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:267:SER:H	1:C:269:MET:HE3	1.78	0.49
1:D:289:ILE:O	1:D:292:THR:OG1	2.19	0.49
3:J:66:GLY:O	3:J:70:THR:HG22	2.13	0.49
1:A:144:ILE:HA	1:A:147:ILE:HG22	1.95	0.49
1:C:272:SER:O	1:C:276:LYS:HG3	2.13	0.49
1:D:228:PHE:O	1:D:231:SER:OG	2.26	0.49
2:F:213:ASN:N	2:F:216:SER:OG	2.30	0.49
1:E:128:ILE:HD12	1:E:244:PHE:HE2	1.78	0.49
2:F:172:GLU:HA	2:F:175:LEU:HD12	1.94	0.49
1:B:265:MET:HG2	1:C:267:SER:HA	1.93	0.48
1:D:154:PHE:HZ	1:E:208:MET:HB3	1.78	0.48
2:F:165:LEU:HD12	2:F:165:LEU:H	1.78	0.48
1:E:258:LEU:HD12	1:E:268:PRO:HB3	1.95	0.48
1:A:158:PRO:O	1:A:162:GLN:HG2	2.14	0.48
2:F:91:PHE:O	2:F:95:ILE:HG13	2.14	0.48
2:F:141:SER:O	2:F:143:GLY:N	2.46	0.48
3:I:25:ILE:O	3:I:28:SER:OG	2.20	0.48
1:C:198:ARG:HH12	1:C:235:THR:HG23	1.78	0.48
1:E:135:LEU:HG	1:E:273:LEU:HD11	1.96	0.48
2:F:54:MET:HA	2:F:57:ILE:HD12	1.94	0.48
1:B:273:LEU:N	1:B:274:PRO:HD2	2.29	0.48
1:D:258:LEU:HD22	1:D:266:LEU:HD23	1.95	0.48
1:D:115:LEU:HG	1:D:229:ILE:HD11	1.94	0.47
1:E:130:ARG:HD3	1:E:139:PRO:HD2	1.96	0.47
1:B:151:LEU:CD2	1:B:290:LEU:HD12	2.44	0.47
2:F:33:GLY:HA2	2:F:42:ARG:HH11	1.79	0.47
1:C:137:GLN:O	1:C:139:PRO:HD2	2.15	0.47
1:D:246:PRO:O	1:D:250:ILE:HG13	2.15	0.47
1:E:151:LEU:HD23	1:E:151:LEU:HA	1.68	0.47
3:I:4:GLU:HA	3:I:7:VAL:HG12	1.95	0.47
3:J:80:MET:HE1	3:J:83:ARG:HD2	1.96	0.47
1:A:258:LEU:HD12	1:A:268:PRO:HG3	1.96	0.47
2:F:108:SER:OG	2:F:219:PHE:HB3	2.14	0.47
1:D:251:ASP:OD2	1:D:276:LYS:HE3	2.15	0.47
1:D:267:SER:HG	1:D:270:ILE:HG12	1.80	0.47
1:B:241:PHE:HE2	3:H:9:LEU:HD22	1.79	0.47
1:D:258:LEU:HD11	1:D:271:VAL:HG21	1.97	0.47
1:B:164:ASN:O	1:B:169:GLN:N	2.36	0.47
1:C:267:SER:O	1:C:269:MET:N	2.42	0.46
2:F:69:LEU:O	2:F:73:MET:HG3	2.15	0.46
3:G:50:SER:O	3:G:50:SER:OG	2.32	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:15:TRP:O	3:I:19:ILE:HG12	2.16	0.46
3:J:17:VAL:O	3:J:21:VAL:HG12	2.15	0.46
3:I:19:ILE:HA	3:I:22:CYS:SG	2.55	0.46
1:E:169:GLN:HB2	1:E:170:PRO:HD3	1.98	0.46
2:F:49:LEU:O	2:F:53:VAL:HG22	2.16	0.46
1:A:155:ILE:HD11	1:A:294:ALA:HA	1.98	0.46
1:C:118:SER:HB3	1:C:192:PHE:CZ	2.50	0.46
1:D:121:ARG:O	1:D:125:VAL:HG12	2.15	0.46
1:D:122:ILE:HD12	1:D:122:ILE:H	1.80	0.46
1:D:176:ILE:CD1	1:D:180:GLN:HB2	2.45	0.46
1:E:258:LEU:HB3	1:E:266:LEU:CD1	2.43	0.46
2:F:121:GLN:HE22	2:F:123:THR:HG22	1.80	0.46
1:A:190:LYS:HG3	1:A:224:LEU:HD13	1.97	0.46
1:E:135:LEU:HB3	1:E:138:THR:HG21	1.96	0.46
1:A:191:ALA:O	1:A:195:LYS:HG3	2.16	0.46
1:B:144:ILE:HA	1:B:147:ILE:HG22	1.97	0.46
1:C:277:LEU:HG	1:D:237:PHE:HB3	1.97	0.46
1:D:137:GLN:HB2	1:D:140:SER:HB2	1.98	0.46
1:D:250:ILE:HD11	1:D:279:LEU:HD13	1.98	0.46
1:E:118:SER:O	1:E:122:ILE:HG13	2.16	0.46
1:B:119:PHE:CZ	1:B:123:VAL:HG21	2.51	0.45
1:C:266:LEU:HD23	1:C:266:LEU:O	2.15	0.45
1:C:288:LEU:HD23	1:C:288:LEU:HA	1.80	0.45
1:B:134:GLY:HA3	1:B:269:MET:SD	2.56	0.45
1:B:249:ILE:O	1:B:253:VAL:HG12	2.17	0.45
1:D:114:ILE:HG13	1:D:115:LEU:N	2.30	0.45
1:D:283:VAL:HG12	1:D:283:VAL:O	2.17	0.45
1:E:186:GLN:O	1:E:190:LYS:HG3	2.17	0.45
1:A:263:MET:HG2	1:B:259:MET:HG3	1.98	0.45
1:C:251:ASP:OD1	1:C:276:LYS:HE2	2.16	0.45
2:F:139:LEU:HD23	2:F:139:LEU:HA	1.84	0.45
2:F:146:LYS:O	2:F:150:LEU:HG	2.16	0.45
3:J:19:ILE:HA	3:J:22:CYS:SG	2.56	0.45
1:A:283:VAL:HG21	3:G:77:PHE:HE2	1.81	0.45
1:D:270:ILE:HG13	1:D:271:VAL:HG13	1.98	0.45
1:C:249:ILE:HD13	3:I:16:LEU:HD12	1.97	0.45
2:F:113:SER:OG	2:F:121:GLN:O	2.29	0.45
1:D:136:GLN:O	1:E:131:GLN:NE2	2.49	0.45
1:E:242:MET:O	1:E:246:PRO:HD3	2.17	0.45
2:F:245:TRP:HA	2:F:248:THR:HG22	1.99	0.45
3:I:57:ILE:HD13	3:I:57:ILE:HA	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:88:LEU:HB3	3:I:89:TYR:HD1	1.82	0.45
1:C:118:SER:HB3	1:C:192:PHE:HZ	1.82	0.45
1:D:166:GLN:O	1:D:170:PRO:HG2	2.17	0.45
1:E:219:VAL:HG22	1:E:223:VAL:HG13	1.99	0.45
2:F:15:TYR:CE1	2:F:54:MET:HG3	2.51	0.45
3:J:5:ILE:HD13	3:J:87:VAL:HG22	1.99	0.45
1:A:274:PRO:HG3	1:B:244:PHE:CD2	2.52	0.45
2:F:99:LEU:HD21	2:F:187:VAL:HB	1.99	0.45
1:E:213:VAL:HG21	1:E:218:GLN:HB2	2.00	0.44
3:J:31:ILE:HD11	3:J:54:ARG:HA	1.97	0.44
1:C:176:ILE:HG21	1:C:180:GLN:HB3	1.99	0.44
2:F:104:GLY:O	2:F:107:SER:N	2.51	0.44
2:F:212:LEU:HD12	2:F:216:SER:OG	2.17	0.44
1:D:277:LEU:HD22	1:E:237:PHE:CD1	2.53	0.44
3:G:53:PRO:O	3:G:57:ILE:HG12	2.17	0.44
3:G:65:PHE:HD1	3:G:68:TRP:CE3	2.35	0.44
3:J:52:LEU:HB3	3:J:53:PRO:HD3	1.99	0.44
1:D:283:VAL:HG13	3:J:78:TYR:CE1	2.53	0.44
1:D:137:GLN:HB3	1:D:140:SER:H	1.82	0.44
1:D:221:MET:O	1:D:225:ILE:HG12	2.18	0.44
1:A:242:MET:HE1	3:G:87:VAL:HG11	2.00	0.44
1:A:282:LEU:HD23	1:A:282:LEU:HA	1.83	0.44
1:B:249:ILE:HG23	3:H:17:VAL:HG23	1.99	0.44
1:B:258:LEU:HD11	1:B:271:VAL:HG11	2.00	0.44
3:I:24:ILE:HD11	3:I:69:MET:HE1	1.99	0.44
1:A:121:ARG:NE	1:A:232:GLU:OE1	2.49	0.44
1:A:244:PHE:HE2	1:A:248:LEU:HD12	1.83	0.44
1:B:182:PHE:O	1:B:186:GLN:HG2	2.18	0.44
1:E:268:PRO:O	1:E:272:SER:CB	2.66	0.44
3:I:8:GLU:OE2	3:I:11:LYS:HD2	2.18	0.44
1:B:109:LEU:N	1:B:110:PRO:HD2	2.33	0.44
1:B:200:LYS:O	1:B:203:GLU:HG3	2.18	0.44
1:E:119:PHE:O	1:E:123:VAL:HG12	2.17	0.44
1:E:138:THR:HG22	2:F:101:GLN:CD	2.39	0.44
1:E:143:VAL:HG13	2:F:91:PHE:CE1	2.52	0.44
1:B:164:ASN:HD22	1:B:168:VAL:HG21	1.83	0.43
1:A:113:VAL:HA	1:A:116:MET:HE2	2.01	0.43
1:A:263:MET:HA	1:B:259:MET:SD	2.58	0.43
1:A:290:LEU:HD12	1:B:230:THR:HB	1.99	0.43
1:C:138:THR:HG22	1:D:127:SER:HB2	1.99	0.43
3:I:24:ILE:HG22	3:I:25:ILE:HD13	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:117:THR:OG1	1:D:118:SER:N	2.52	0.43
1:D:260:ALA:HA	3:I:48:THR:HG21	2.00	0.43
2:F:231:TRP:NE1	3:G:11:LYS:HB3	2.33	0.43
3:I:56:ILE:O	3:I:60:LEU:HG	2.18	0.43
1:C:192:PHE:HA	1:C:195:LYS:NZ	2.34	0.43
1:E:176:ILE:HD11	1:E:180:GLN:HB3	1.99	0.43
1:E:203:GLU:HA	1:E:206:VAL:HG12	2.01	0.43
2:F:137:PHE:HB3	2:F:241:TYR:CE2	2.53	0.43
1:A:206:VAL:O	1:A:209:SER:OG	2.36	0.43
1:B:267:SER:N	1:C:269:MET:HE3	2.33	0.43
1:C:253:VAL:O	1:C:257:VAL:HG12	2.19	0.43
2:F:51:PHE:HA	2:F:54:MET:HE3	2.01	0.43
3:J:56:ILE:O	3:J:60:LEU:HG	2.19	0.43
1:D:155:ILE:O	1:D:158:PRO:HD2	2.19	0.43
2:F:196:LEU:O	2:F:200:LEU:HG	2.19	0.43
3:J:15:TRP:O	3:J:19:ILE:HG12	2.19	0.43
1:B:151:LEU:HD21	1:B:290:LEU:HD12	1.99	0.43
1:B:278:MET:O	1:B:282:LEU:HG	2.19	0.43
1:D:113:VAL:O	1:D:117:THR:HG22	2.18	0.43
3:G:52:LEU:HB3	3:G:53:PRO:HD3	2.01	0.43
3:H:16:LEU:HD23	3:H:19:ILE:HD11	2.01	0.43
1:A:121:ARG:O	1:A:125:VAL:HG23	2.19	0.43
1:B:235:THR:HA	1:B:238:GLN:OE1	2.18	0.43
1:C:262:GLY:O	1:C:264:MET:N	2.51	0.43
1:D:280:PHE:CE1	1:D:285:GLY:HA2	2.54	0.43
2:F:92:LEU:HD21	2:F:241:TYR:HE1	1.84	0.43
3:I:9:LEU:HD12	3:I:83:ARG:HD2	2.01	0.43
1:B:158:PRO:HB2	1:B:299:LEU:HD11	2.01	0.43
1:C:164:ASN:HA	1:C:168:VAL:HB	1.99	0.43
1:C:170:PRO:HB2	1:C:180:GLN:HE22	1.84	0.43
1:C:289:ILE:HG22	1:C:290:LEU:HD23	1.99	0.43
1:D:137:GLN:HB2	1:D:140:SER:CB	2.49	0.43
1:D:225:ILE:HB	1:D:226:PRO:HD3	2.01	0.43
2:F:74:ILE:HA	2:F:77:GLU:HB2	2.01	0.43
1:C:110:PRO:O	1:C:114:ILE:HG12	2.19	0.42
1:D:121:ARG:HB2	1:D:232:GLU:OE1	2.18	0.42
2:F:22:ILE:HD12	2:F:50:THR:HG22	2.00	0.42
2:F:154:SER:HB2	2:F:256:ILE:HG21	2.01	0.42
1:A:239:ILE:O	1:A:243:LEU:HG	2.19	0.42
1:B:265:MET:HB3	1:C:268:PRO:HD2	2.01	0.42
1:C:169:GLN:HA	1:C:172:LEU:HD23	1.99	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:201:ASP:OD1	2:F:145:LEU:HD11	2.19	0.42
1:D:121:ARG:NE	1:D:232:GLU:OE1	2.46	0.42
1:D:261:MET:HG2	3:J:58:THR:HG21	2.01	0.42
2:F:26:LEU:HD23	2:F:26:LEU:HA	1.86	0.42
1:A:245:LEU:HD21	3:G:13:SER:HB3	2.01	0.42
1:B:277:LEU:HD23	1:B:277:LEU:HA	1.74	0.42
3:I:60:LEU:HA	3:I:63:MET:HE2	2.02	0.42
1:A:129:LEU:HD23	1:A:129:LEU:HA	1.80	0.42
1:A:130:ARG:HH12	1:A:141:ASN:HA	1.85	0.42
1:A:250:ILE:HD11	1:A:279:LEU:HD22	2.01	0.42
1:C:174:GLU:C	1:C:176:ILE:H	2.19	0.42
3:J:59:LEU:HD13	3:J:62:LEU:HD12	2.02	0.42
1:A:195:LYS:HB3	1:A:195:LYS:HE2	1.75	0.42
1:B:195:LYS:HB2	1:B:195:LYS:HE3	1.77	0.42
1:B:245:LEU:O	1:B:249:ILE:HG13	2.19	0.42
1:D:273:LEU:O	1:D:277:LEU:HG	2.19	0.42
1:E:283:VAL:C	1:E:285:GLY:H	2.22	0.42
2:F:211:GLN:HG3	3:G:40:ALA:HB2	2.01	0.42
3:G:31:ILE:HA	3:G:34:VAL:HG12	2.02	0.42
3:I:39:GLN:HB3	3:I:44:ILE:O	2.19	0.42
1:A:280:PHE:HE1	1:A:289:ILE:HD12	1.85	0.42
1:C:198:ARG:HH12	1:C:235:THR:CG2	2.32	0.42
3:H:16:LEU:HD11	3:H:76:PHE:HB2	2.02	0.42
1:C:109:LEU:N	1:C:110:PRO:HD2	2.35	0.42
1:C:225:ILE:HB	1:C:226:PRO:HD3	2.02	0.42
1:E:155:ILE:HD11	1:E:294:ALA:HA	2.02	0.42
1:E:268:PRO:O	1:E:272:SER:HB2	2.20	0.42
1:B:138:THR:HG22	1:C:127:SER:HB2	2.00	0.42
1:C:135:LEU:HD12	1:C:273:LEU:HD11	2.01	0.42
1:C:234:LYS:HG2	1:C:238:GLN:NE2	2.34	0.42
1:C:246:PRO:HG2	3:I:77:PHE:CD1	2.49	0.42
3:I:84:LEU:HG	3:I:88:LEU:HD23	2.02	0.42
1:C:109:LEU:HA	1:C:112:MET:HE2	2.02	0.41
2:F:189:LEU:O	2:F:193:ILE:HG12	2.20	0.41
2:F:231:TRP:O	2:F:234:LEU:HB2	2.20	0.41
2:F:260:CYS:SG	2:F:261:GLU:N	2.93	0.41
3:I:83:ARG:O	3:I:86:GLN:HG2	2.20	0.41
1:A:288:LEU:HD23	1:A:288:LEU:HA	1.81	0.41
1:B:196:GLN:HE21	1:B:297:PHE:HB3	1.86	0.41
1:D:213:VAL:HG21	1:D:218:GLN:O	2.20	0.41
1:D:282:LEU:HB3	3:J:74:MET:SD	2.60	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:176:ILE:HG23	1:E:181:ALA:HB2	2.03	0.41
1:E:240:GLY:HA2	1:E:243:LEU:HG	2.01	0.41
3:I:16:LEU:HD23	3:I:16:LEU:HA	1.83	0.41
1:B:158:PRO:HD2	1:B:299:LEU:HD21	2.01	0.41
1:C:126:MET:HE1	1:C:148:ALA:HB2	2.02	0.41
1:D:154:PHE:CZ	1:E:208:MET:HB3	2.56	0.41
1:E:225:ILE:O	1:E:229:ILE:HG13	2.21	0.41
2:F:257:ARG:H	2:F:257:ARG:HG3	1.66	0.41
1:B:114:ILE:HD12	1:B:114:ILE:HA	1.87	0.41
1:E:198:ARG:HD2	1:E:234:LYS:NZ	2.35	0.41
3:I:46:GLU:OE1	3:I:49:LEU:HB2	2.20	0.41
3:I:63:MET:HB3	3:J:11:LYS:HG3	2.02	0.41
1:B:291:SER:O	1:B:295:GLY:N	2.53	0.41
1:C:157:ALA:O	1:C:161:ASN:HB2	2.20	0.41
1:E:135:LEU:HD11	1:E:273:LEU:HD21	2.03	0.41
1:E:254:VAL:O	1:E:258:LEU:HG	2.21	0.41
2:F:15:TYR:CZ	2:F:54:MET:HG3	2.56	0.41
1:E:115:LEU:HD12	1:E:229:ILE:HD11	2.03	0.41
3:J:32:GLY:HA2	3:J:35:VAL:HG12	2.01	0.41
1:B:129:LEU:HA	1:B:129:LEU:HD23	1.79	0.41
1:C:151:LEU:HD23	1:C:151:LEU:HA	1.80	0.41
1:C:213:VAL:HG21	1:C:218:GLN:HB2	2.02	0.41
1:C:261:MET:SD	1:C:261:MET:N	2.94	0.41
1:D:122:ILE:HG21	1:D:151:LEU:HD12	2.03	0.41
1:D:258:LEU:HD12	1:D:268:PRO:HB3	2.03	0.41
1:D:265:MET:HB2	1:E:264:MET:SD	2.61	0.41
1:E:114:ILE:HD12	1:E:114:ILE:H	1.85	0.41
1:E:162:GLN:O	1:E:166:GLN:HG2	2.21	0.41
2:F:202:PHE:CZ	2:F:221:PHE:HB2	2.55	0.41
2:F:244:TYR:O	2:F:248:THR:HG22	2.21	0.41
3:H:53:PRO:O	3:H:57:ILE:HG12	2.21	0.41
1:E:139:PRO:O	1:E:143:VAL:HB	2.21	0.41
1:E:273:LEU:N	1:E:274:PRO:HD2	2.36	0.41
1:A:144:ILE:O	1:A:147:ILE:HG22	2.21	0.40
1:A:182:PHE:O	1:A:186:GLN:N	2.50	0.40
1:A:279:LEU:HD21	3:G:73:LEU:HD22	2.03	0.40
1:D:129:LEU:HD11	1:D:247:PHE:HE2	1.86	0.40
1:E:114:ILE:O	1:E:117:THR:OG1	2.32	0.40
1:E:221:MET:O	1:E:224:LEU:HG	2.21	0.40
2:F:123:THR:HB	2:F:125:LEU:HD13	2.04	0.40
2:F:185:LEU:HD23	2:F:185:LEU:HA	1.87	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:28:SER:HA	3:I:31:ILE:HG22	2.02	0.40
1:E:159:VAL:HG12	1:E:163:ILE:HD11	2.01	0.40
3:H:5:ILE:HD13	3:H:87:VAL:HG22	2.03	0.40
1:A:154:PHE:HB2	1:B:226:PRO:HG2	2.04	0.40
1:A:283:VAL:C	1:A:285:GLY:H	2.24	0.40
1:B:166:GLN:O	1:B:170:PRO:HG2	2.21	0.40
1:E:130:ARG:CD	1:E:139:PRO:HD2	2.50	0.40
2:F:147:MET:O	2:F:151:VAL:HG23	2.20	0.40
2:F:256:ILE:HG13	2:F:256:ILE:O	2.21	0.40
1:A:151:LEU:HD11	1:A:290:LEU:HB3	2.02	0.40
1:A:253:VAL:O	1:A:257:VAL:HG23	2.22	0.40
1:B:148:ALA:O	1:B:152:THR:HG23	2.21	0.40
1:C:170:PRO:HB3	1:C:175:GLN:NE2	2.37	0.40
1:D:167:ALA:C	1:D:170:PRO:HD2	2.42	0.40
1:D:253:VAL:O	1:D:257:VAL:HG22	2.21	0.40
2:F:88:VAL:HA	2:F:91:PHE:CD2	2.56	0.40
3:I:16:LEU:HD11	3:I:76:PHE:CG	2.57	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	189/299 (63%)	159 (84%)	27 (14%)	3 (2%)	9	43
1	B	193/299 (64%)	178 (92%)	15 (8%)	0	100	100
1	C	194/299 (65%)	175 (90%)	18 (9%)	1 (0%)	29	67
1	D	194/299 (65%)	177 (91%)	16 (8%)	1 (0%)	29	67
1	E	185/299 (62%)	170 (92%)	14 (8%)	1 (0%)	29	67
2	F	255/299 (85%)	230 (90%)	25 (10%)	0	100	100
3	G	87/89 (98%)	86 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	H	87/89 (98%)	85 (98%)	2 (2%)	0	100	100
3	I	87/89 (98%)	86 (99%)	1 (1%)	0	100	100
3	J	76/89 (85%)	75 (99%)	1 (1%)	0	100	100
All	All	1547/2150 (72%)	1421 (92%)	120 (8%)	6 (0%)	38	71

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	175	GLN
1	D	175	GLN
1	E	141	ASN
1	A	264	MET
1	A	285	GLY
1	A	139	PRO

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	167/252 (66%)	167 (100%)	0	100	100
1	B	170/252 (68%)	170 (100%)	0	100	100
1	C	171/252 (68%)	169 (99%)	2 (1%)	71	83
1	D	171/252 (68%)	171 (100%)	0	100	100
1	E	164/252 (65%)	164 (100%)	0	100	100
2	F	217/247 (88%)	215 (99%)	2 (1%)	78	87
3	G	82/82 (100%)	82 (100%)	0	100	100
3	H	82/82 (100%)	82 (100%)	0	100	100
3	I	82/82 (100%)	82 (100%)	0	100	100
3	J	75/82 (92%)	75 (100%)	0	100	100
All	All	1381/1835 (75%)	1377 (100%)	4 (0%)	92	95

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	135	LEU
1	C	221	MET
2	F	63	ASP
2	F	254	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	164	ASN
1	B	175	GLN
1	B	196	GLN
1	C	142	GLN
1	C	175	GLN
1	D	212	GLN
1	E	131	GLN
1	E	173	ASN
2	F	262	ASN
3	H	39	GLN
3	H	45	ASN
3	H	47	GLN
3	I	47	GLN
3	I	71	GLN
3	J	39	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 ⓘ

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 (i)

This section contains visualisations of the EMDB entry EMD-10096. 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 (i)

6.1.1 Primary map
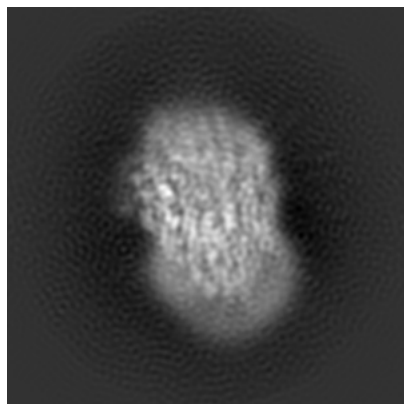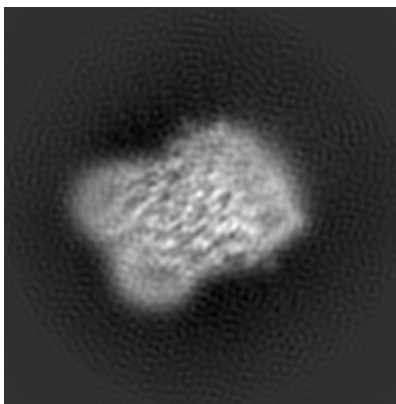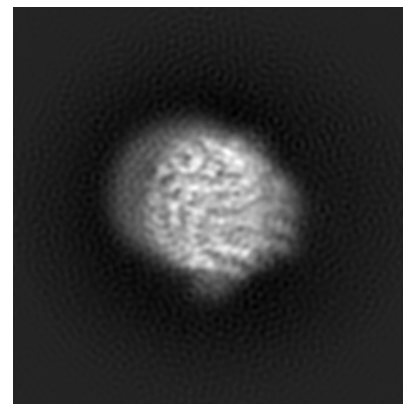
X   Y   Z

6.1.2 Raw map

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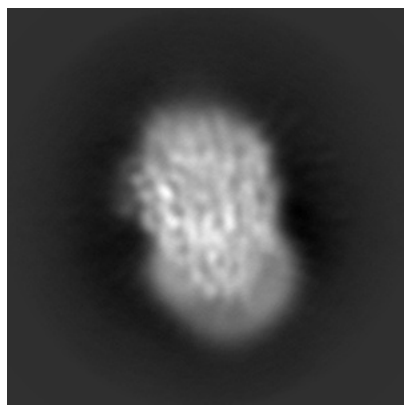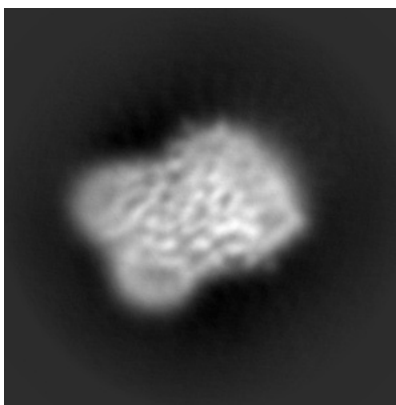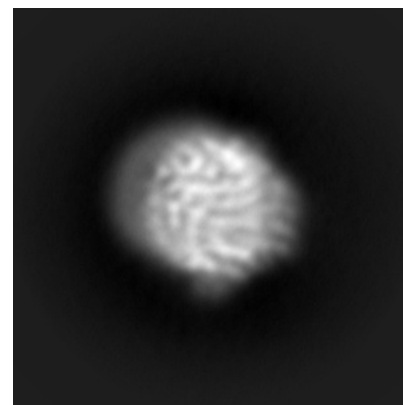
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
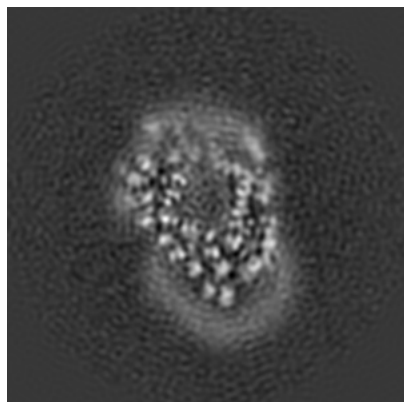
6.2.1 Primary map
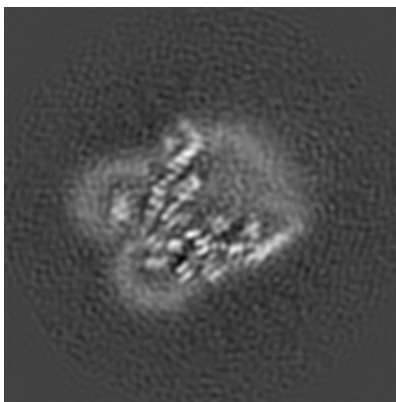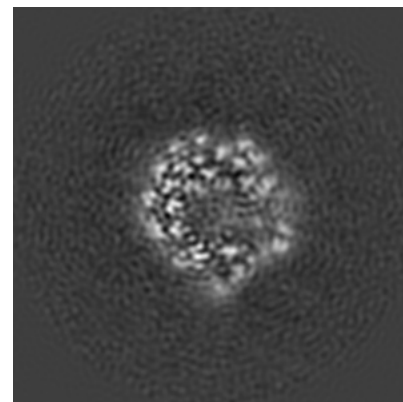
X Index: 128	Y Index: 128	Z Index: 128

6.2.2 Raw map
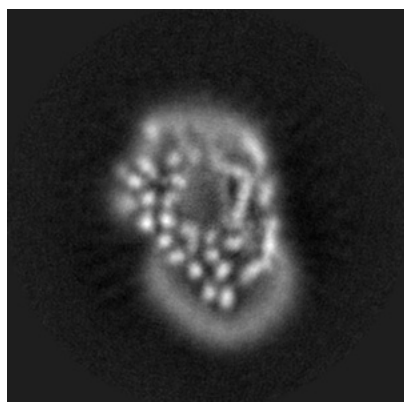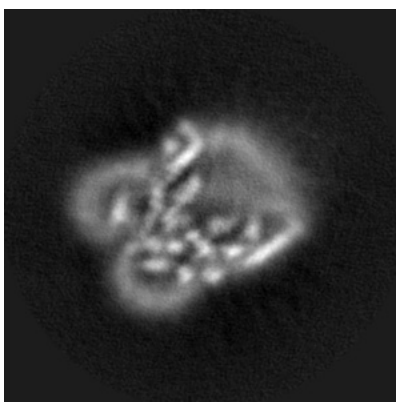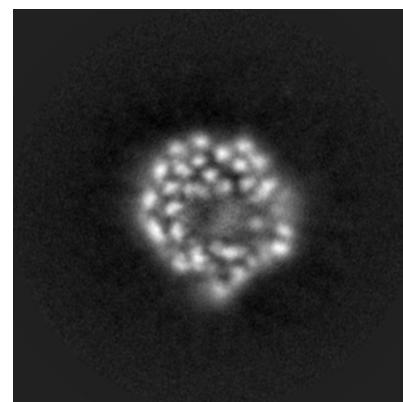
X Index: 128	Y Index: 128	Z Index: 128

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

6.3　Largest variance slices (i)

6.3.1　Primary map
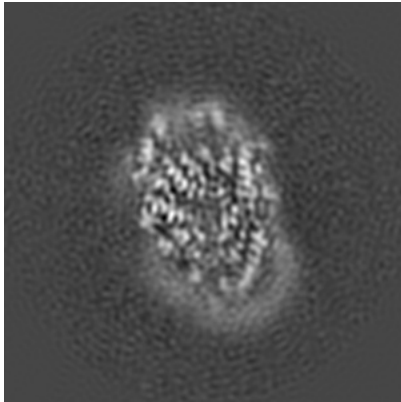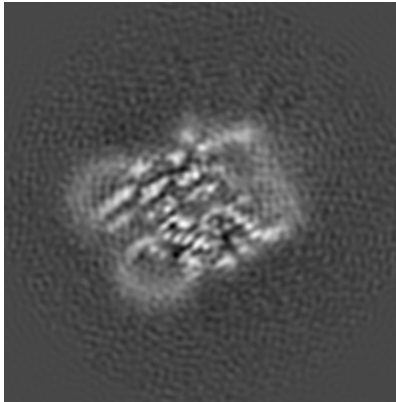
X Index: 115	Y Index: 141	Z Index: 117
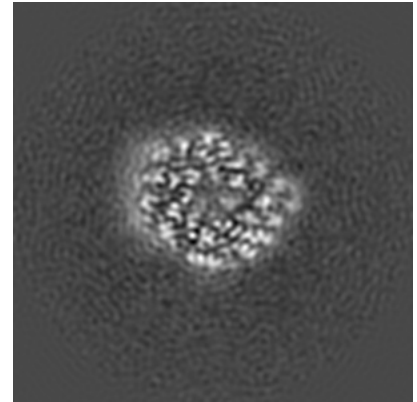
6.3.2　Raw map
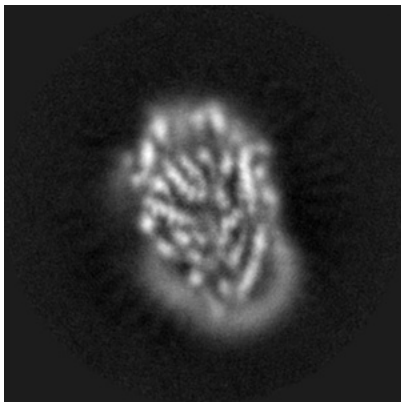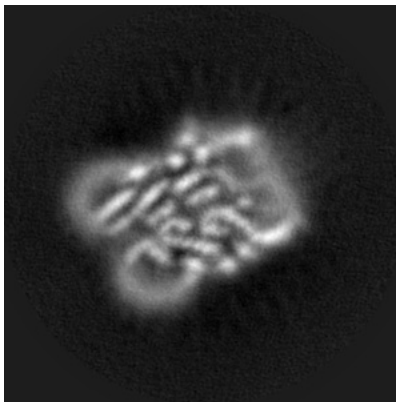
X Index: 115	Y Index: 140	Z Index: 118
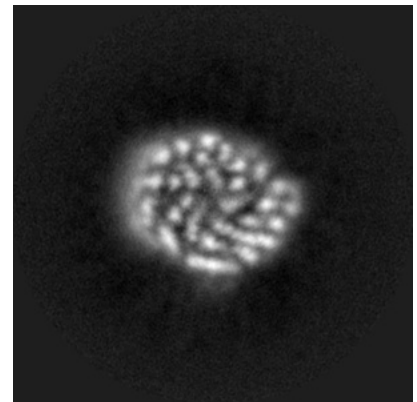
The images above show the largest variance slices of the map in three orthogonal directions.

6.4　Orthogonal surface views　ⓘ
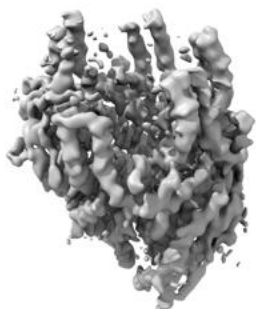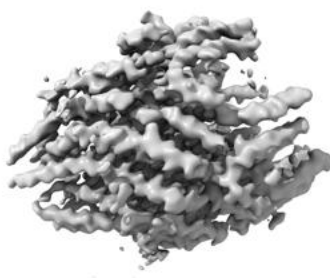
6.4.1　Primary map

X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z
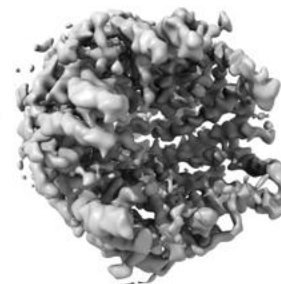
The images above show the 3D surface view of the map at the recommended contour level 0.035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2　Raw map
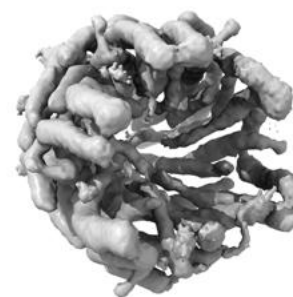
X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z

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_10096_msk_1.map ⓘ
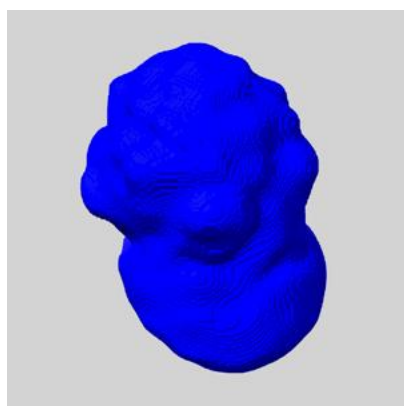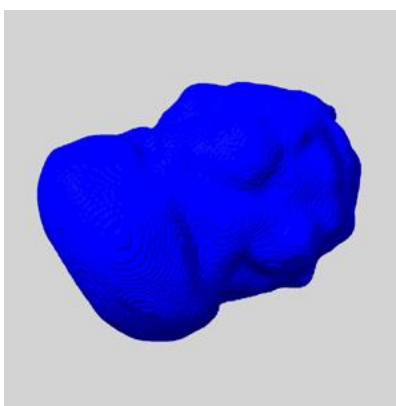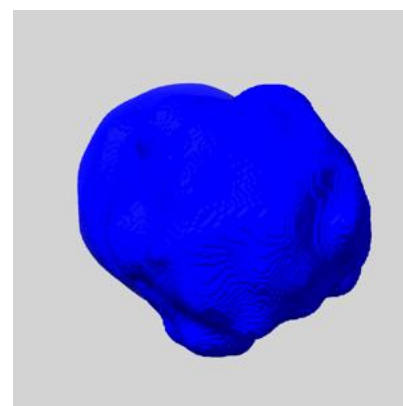
X   Y   Z

7   Map analysis (i)

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

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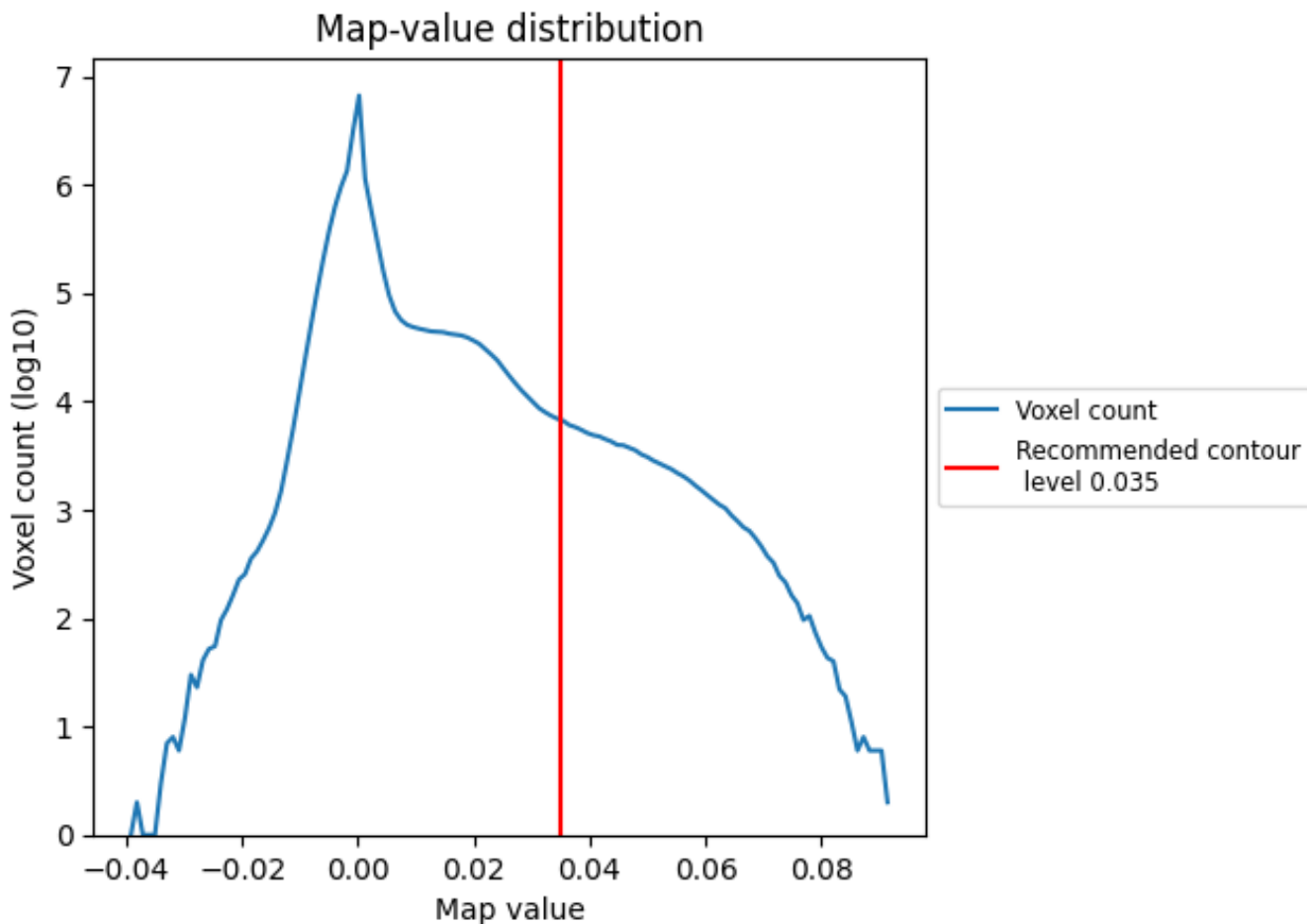
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
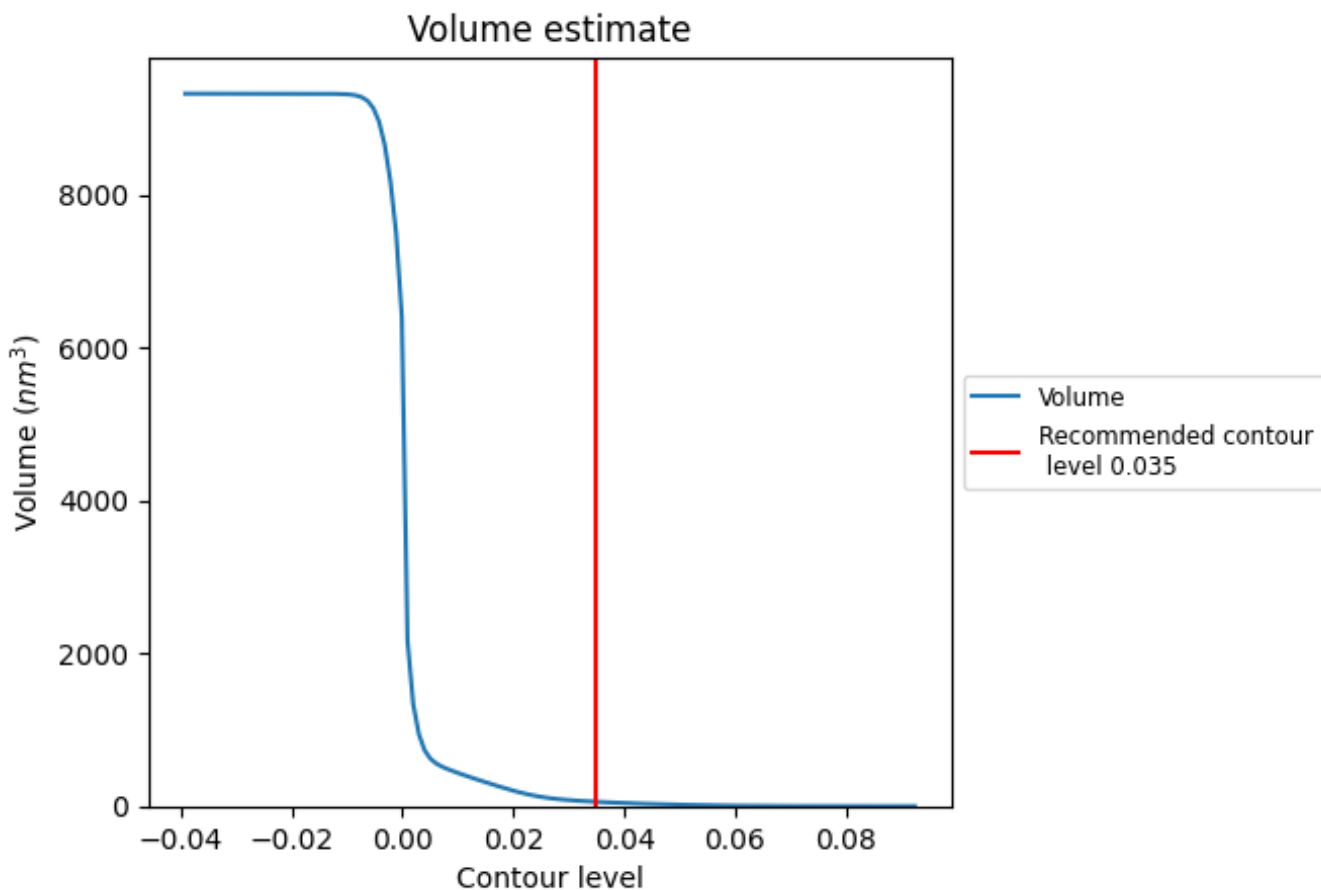
The volume at the recommended contour level is 57 nm^3; this corresponds to an approximate mass of 51 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3   Rotationally averaged power spectrum   (i)
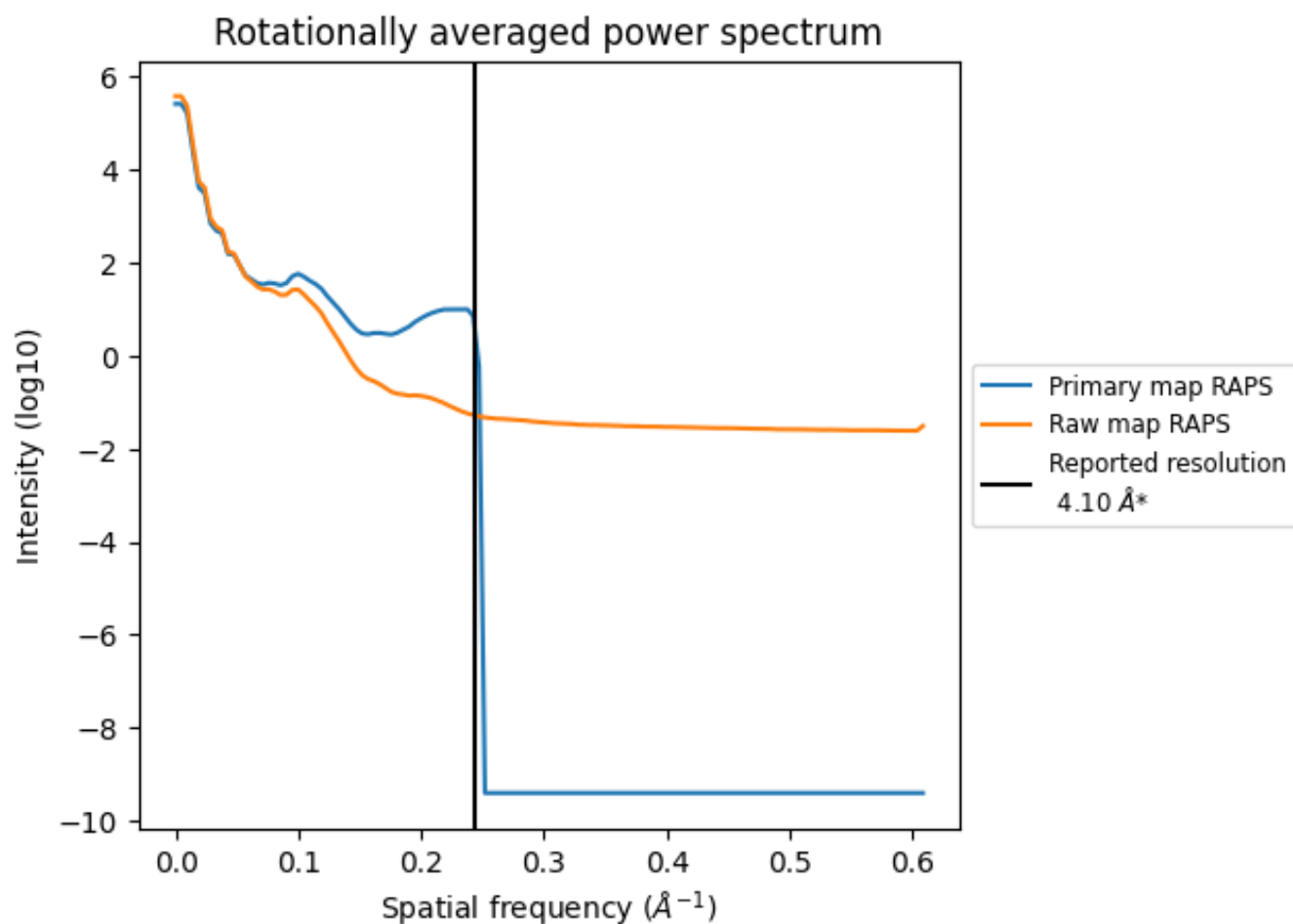
*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

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 ⓘ
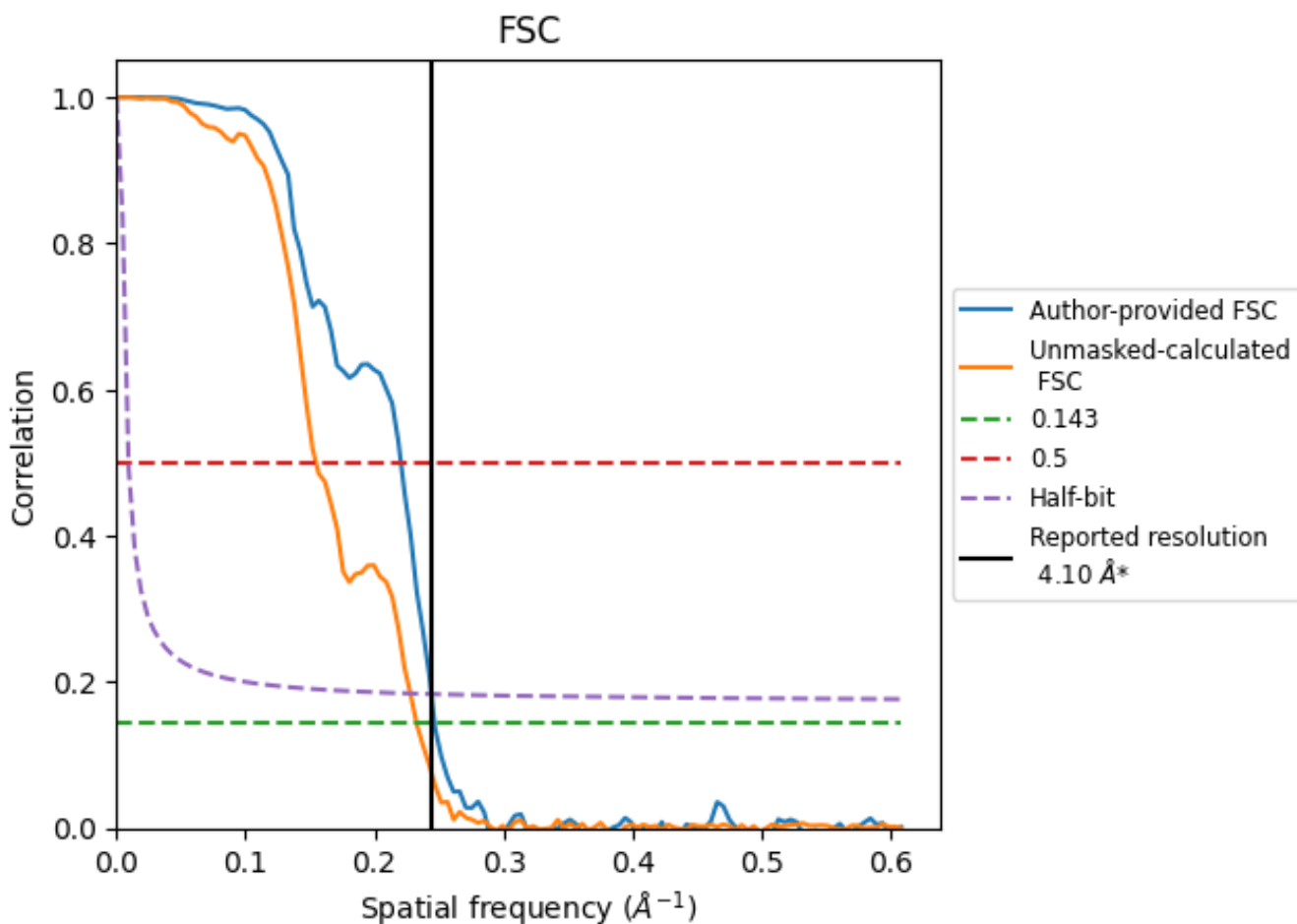
*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.10	-	-
Author-provided FSC curve	4.06	4.54	4.10
Unmasked-calculated*	4.30	6.46	4.39

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-10096 and PDB model 6S3S. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay ⓘ
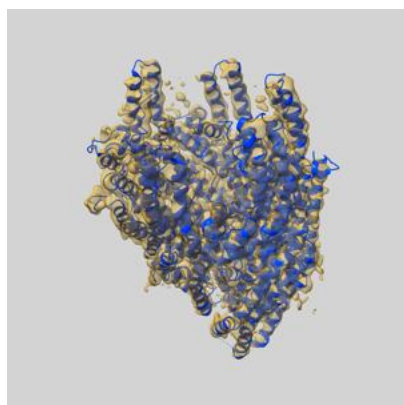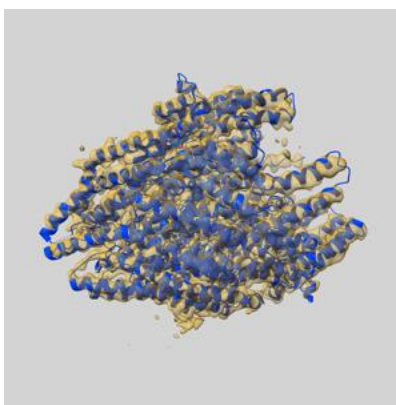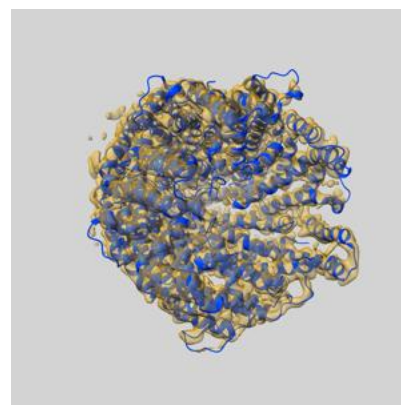
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.035 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 ⓘ
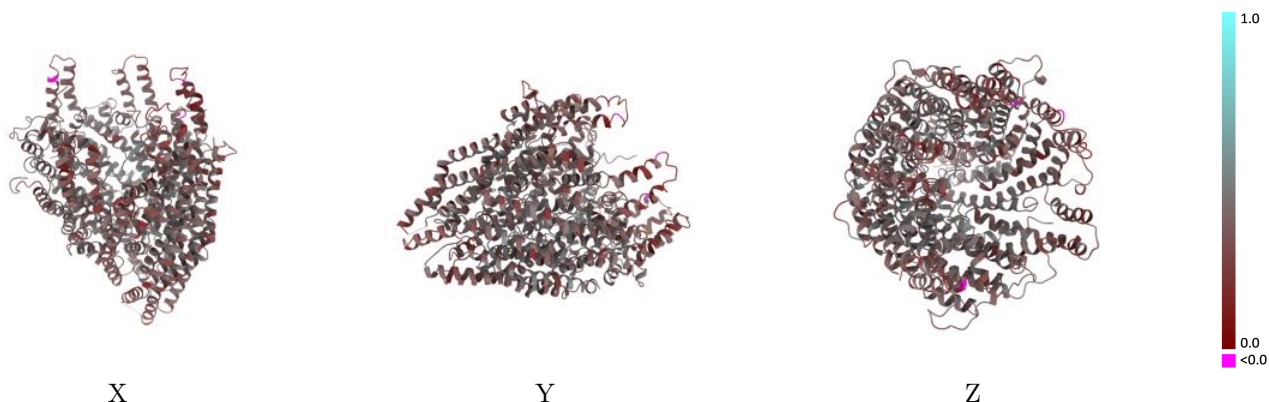
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
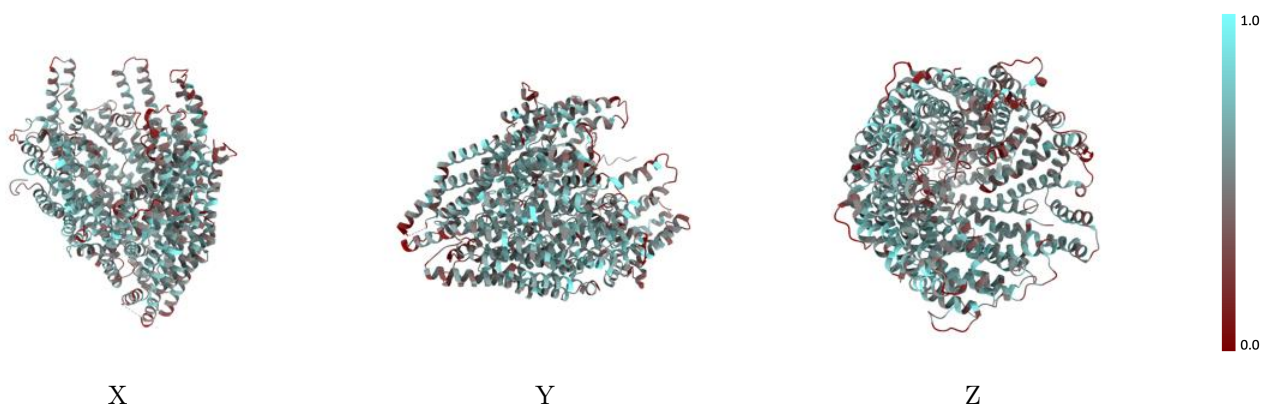
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.035).

9.4　Atom inclusion ⓘ
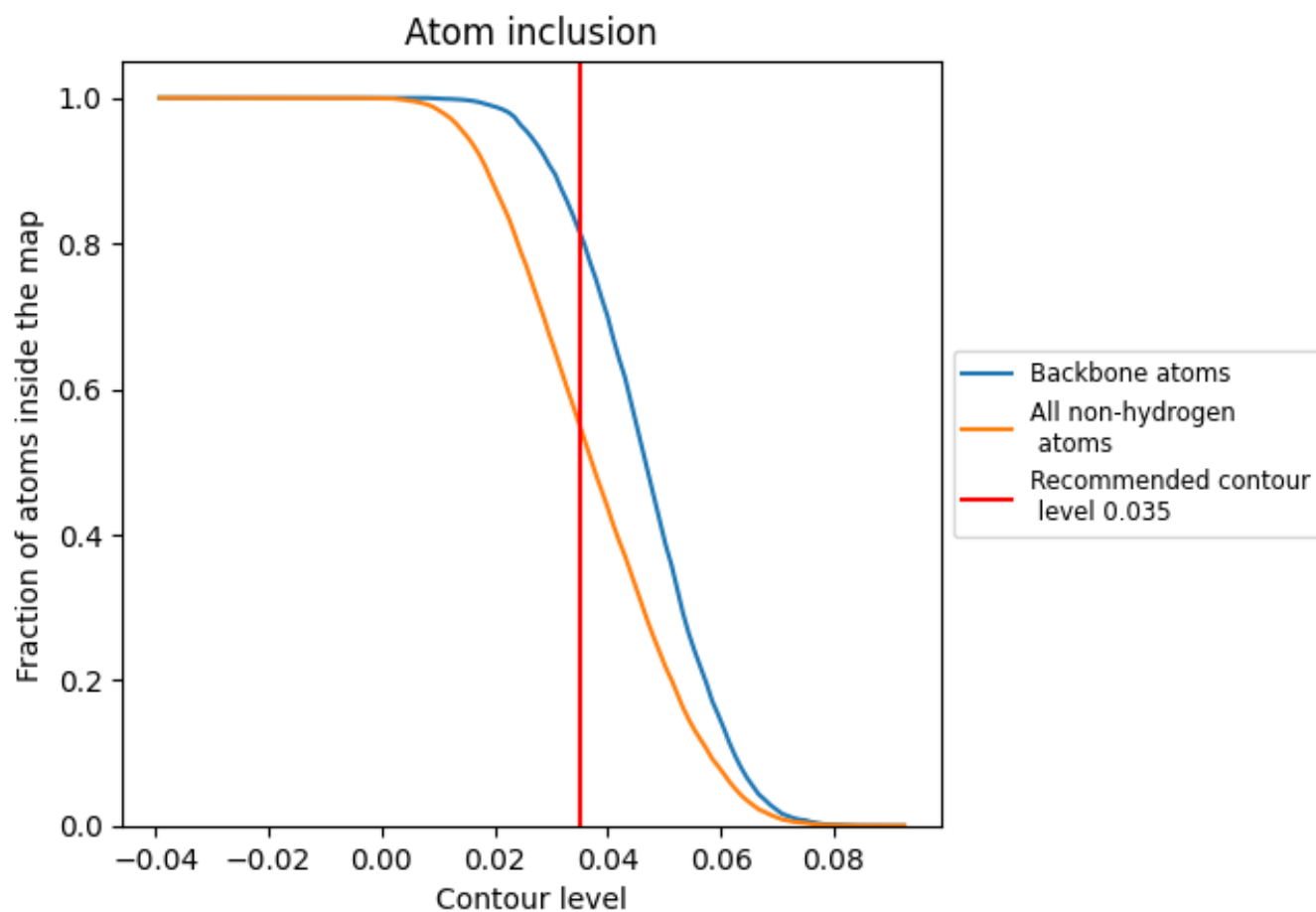
At the recommended contour level, 82% of all backbone atoms, 55% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5522	0.3760
A	0.5802	0.3900
B	0.5642	0.3870
C	0.5344	0.3660
D	0.4987	0.3570
E	0.5499	0.3610
F	0.5774	0.3920
G	0.5964	0.3840
H	0.5573	0.3830
I	0.5475	0.3680
J	0.5061	0.3540

1.0

0.0
<0.0