W O R L D W I D E

wwPDB

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

Full wwPDB EM Validation Report ⓘ

Nov 11, 2024 – 03:27 AM EST

PDB ID	:	8HCQ
EMDB ID	:	EMD-34663
Title	:	Cryo-EM structure of endothelin1-bound ETAR-Gq complex
Authors	:	Yuan, Q.; Jiang, Y.; Xu, H.E.; Ji, Y.; Duan, J.
Deposited on	:	2022-11-02
Resolution	:	3.01 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.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.01 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.
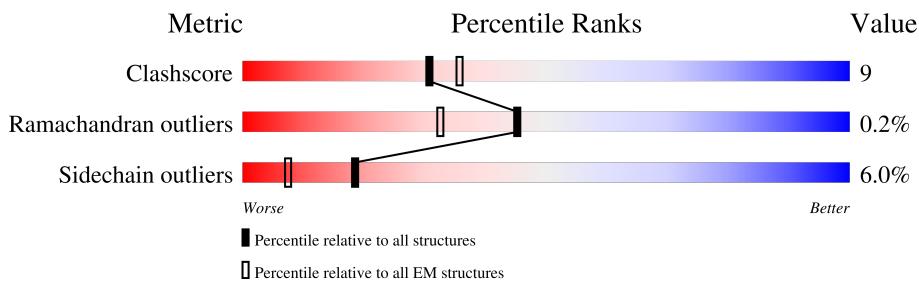
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	246	30% / 60% 21% • 16%
2	B	377	18% / 66% 23% • 10%
3	E	285	21% / 64% 15% • 19%
4	G	71	54% / 70% 8% • 20%
5	L	21	52% / 81% 19%
6	R	622	17% / 40% 8% • 51%

2   Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 8991 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 Guanine nucleotide-binding protein G(q) subunit alpha-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	206	Total 1687	C 1063	N 301	O 316	S 7	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	338	Total 2591	C 1599	N 464	O 508	S 20	0	0

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-5	MET	-	initiating methionine	UNP P62873
B	-4	HIS	-	expression tag	UNP P62873
B	-3	HIS	-	expression tag	UNP P62873
B	-2	HIS	-	expression tag	UNP P62873
B	-1	HIS	-	expression tag	UNP P62873
B	0	HIS	-	expression tag	UNP P62873
B	1	HIS	-	expression tag	UNP P62873
B	2	GLY	-	expression tag	UNP P62873
B	3	SER	-	expression tag	UNP P62873
B	4	LEU	-	expression tag	UNP P62873
B	5	LEU	-	expression tag	UNP P62873
B	6	GLN	-	expression tag	UNP P62873
B	346	GLY	-	expression tag	UNP P62873
B	347	SER	-	expression tag	UNP P62873
B	348	SER	-	expression tag	UNP P62873
B	349	GLY	-	expression tag	UNP P62873
B	350	GLY	-	expression tag	UNP P62873
B	351	GLY	-	expression tag	UNP P62873
B	352	GLY	-	expression tag	UNP P62873
B	353	SER	-	expression tag	UNP P62873

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Chain	Residue	Modelled	Actual	Comment	Reference
B	354	GLY	-	expression tag	UNP P62873
B	355	GLY	-	expression tag	UNP P62873
B	356	GLY	-	expression tag	UNP P62873
B	357	GLY	-	expression tag	UNP P62873
B	358	SER	-	expression tag	UNP P62873
B	359	SER	-	expression tag	UNP P62873
B	360	GLY	-	expression tag	UNP P62873
B	361	VAL	-	expression tag	UNP P62873
B	362	SER	-	expression tag	UNP P62873
B	363	GLY	-	expression tag	UNP P62873
B	364	TRP	-	expression tag	UNP P62873
B	365	ARG	-	expression tag	UNP P62873
B	366	LEU	-	expression tag	UNP P62873
B	367	PHE	-	expression tag	UNP P62873
B	368	LYS	-	expression tag	UNP P62873
B	369	LYS	-	expression tag	UNP P62873
B	370	ILE	-	expression tag	UNP P62873
B	371	SER	-	expression tag	UNP P62873

- Molecule 3 is a protein called scFv16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	E	232	1769	1124	292	344	9	0	0

- Molecule 4 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	G	57	410	258	72	78	2	0	0

- Molecule 5 is a protein called Endothelin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	L	21	171	109	25	32	5	0	0

- Molecule 6 is a protein called Endothelin-1 receptor,Oplophorus-luciferin 2-monooxygenase catalytic subunit chimera.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	R	303	2363	1572	372	395	24	0	0

There are 107 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	-57	MET	-	initiating methionine	UNP P25101
R	-56	ASP	-	expression tag	UNP P25101
R	-55	SER	-	expression tag	UNP P25101
R	-54	LYS	-	expression tag	UNP P25101
R	-53	GLY	-	expression tag	UNP P25101
R	-52	SER	-	expression tag	UNP P25101
R	-51	SER	-	expression tag	UNP P25101
R	-50	GLN	-	expression tag	UNP P25101
R	-49	LYS	-	expression tag	UNP P25101
R	-48	GLY	-	expression tag	UNP P25101
R	-47	SER	-	expression tag	UNP P25101
R	-46	ARG	-	expression tag	UNP P25101
R	-45	LEU	-	expression tag	UNP P25101
R	-44	LEU	-	expression tag	UNP P25101
R	-43	LEU	-	expression tag	UNP P25101
R	-42	LEU	-	expression tag	UNP P25101
R	-41	LEU	-	expression tag	UNP P25101
R	-40	VAL	-	expression tag	UNP P25101
R	-39	VAL	-	expression tag	UNP P25101
R	-38	SER	-	expression tag	UNP P25101
R	-37	ASN	-	expression tag	UNP P25101
R	-36	LEU	-	expression tag	UNP P25101
R	-35	LEU	-	expression tag	UNP P25101
R	-34	LEU	-	expression tag	UNP P25101
R	-33	CYS	-	expression tag	UNP P25101
R	-32	GLN	-	expression tag	UNP P25101
R	-31	GLY	-	expression tag	UNP P25101
R	-30	VAL	-	expression tag	UNP P25101
R	-29	VAL	-	expression tag	UNP P25101
R	-28	SER	-	expression tag	UNP P25101
R	-27	ASP	-	expression tag	UNP P25101
R	-26	TYR	-	expression tag	UNP P25101
R	-25	LYS	-	expression tag	UNP P25101
R	-24	ASP	-	expression tag	UNP P25101
R	-23	ASP	-	expression tag	UNP P25101
R	-22	ASP	-	expression tag	UNP P25101
R	-21	ASP	-	expression tag	UNP P25101

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Chain	Residue	Modelled	Actual	Comment	Reference
R	-20	VAL	-	expression tag	UNP P25101
R	-19	ASP	-	expression tag	UNP P25101
R	-18	MET	-	expression tag	UNP P25101
R	-17	GLY	-	expression tag	UNP P25101
R	-16	GLN	-	expression tag	UNP P25101
R	-15	PRO	-	expression tag	UNP P25101
R	-14	GLY	-	expression tag	UNP P25101
R	-13	ASN	-	expression tag	UNP P25101
R	-12	GLY	-	expression tag	UNP P25101
R	-11	SER	-	expression tag	UNP P25101
R	-10	ALA	-	expression tag	UNP P25101
R	-9	PHE	-	expression tag	UNP P25101
R	-8	LEU	-	expression tag	UNP P25101
R	-7	LEU	-	expression tag	UNP P25101
R	-6	ALA	-	expression tag	UNP P25101
R	-5	PRO	-	expression tag	UNP P25101
R	-4	ASN	-	expression tag	UNP P25101
R	-3	GLY	-	expression tag	UNP P25101
R	-2	SER	-	expression tag	UNP P25101
R	-1	HIS	-	expression tag	UNP P25101
R	0	ALA	-	expression tag	UNP P25101
R	1	PRO	-	expression tag	UNP P25101
R	2	ASP	-	expression tag	UNP P25101
R	3	HIS	-	expression tag	UNP P25101
R	4	ASP	-	expression tag	UNP P25101
R	5	VAL	-	expression tag	UNP P25101
R	6	THR	-	expression tag	UNP P25101
R	7	GLN	-	expression tag	UNP P25101
R	8	GLN	-	expression tag	UNP P25101
R	9	ARG	-	expression tag	UNP P25101
R	10	ASP	-	expression tag	UNP P25101
R	11	GLU	-	expression tag	UNP P25101
R	12	GLU	-	expression tag	UNP P25101
R	13	ASN	-	expression tag	UNP P25101
R	14	LEU	-	expression tag	UNP P25101
R	15	TYR	-	expression tag	UNP P25101
R	16	PHE	-	expression tag	UNP P25101
R	17	GLN	-	expression tag	UNP P25101
R	18	GLY	-	expression tag	UNP P25101
R	19	ALA	-	expression tag	UNP P25101
R	407	VAL	THR	conflict	UNP Q9GV45
R	411	GLU	ALA	conflict	UNP Q9GV45

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Chain	Residue	Modelled	Actual	Comment	Reference
R	418	GLU	GLN	conflict	UNP Q9GV45
R	422	ALA	GLY	conflict	UNP Q9GV45
R	425	LEU	GLN	conflict	UNP Q9GV45
R	434	VAL	LEU	conflict	UNP Q9GV45
R	438	LEU	PHE	conflict	UNP Q9GV45
R	440	ASN	ALA	conflict	UNP Q9GV45
R	442	ALA	GLY	conflict	UNP Q9GV45
R	450	ARG	LYS	conflict	UNP Q9GV45
R	451	ILE	VAL	conflict	UNP Q9GV45
R	453	ARG	LEU	conflict	UNP Q9GV45
R	458	ALA	GLY	conflict	UNP Q9GV45
R	461	ILE	ALA	conflict	UNP Q9GV45
R	474	ALA	GLY	conflict	UNP Q9GV45
R	475	ASP	PHE	conflict	UNP Q9GV45
R	478	ALA	GLY	conflict	UNP Q9GV45
R	479	GLN	LEU	conflict	UNP Q9GV45
R	482	GLU	MET	conflict	UNP Q9GV45
R	483	VAL	ILE	conflict	UNP Q9GV45
R	497	VAL	ILE	conflict	UNP Q9GV45
R	500	PRO	HIS	conflict	UNP Q9GV45
R	514	LEU	ILE	conflict	UNP Q9GV45
R	515	ASN	ASP	conflict	UNP Q9GV45
R	522	GLU	PRO	conflict	UNP Q9GV45
R	531	LYS	GLN	conflict	UNP Q9GV45
R	545	ILE	TYR	conflict	UNP Q9GV45
R	551	THR	ASN	conflict	UNP Q9GV45
R	556	MET	LEU	conflict	UNP Q9GV45
R	564	SER	GLY	conflict	UNP Q9GV45

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(q) subunit alpha-1

Chain A:

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

Chain B:

● Molecule 3: scFv16

Chain E:

● Molecule 4: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2

Chain G:

● Molecule 5: Endothelin-1

Chain L:

● Molecule 6: Endothelin-1 receptor,Oplophorus-luciferin 2-monooxygenase catalytic subunit chimera

Chain R:

N151 D152 F153 F156 L157 C158 K159 F163 K166 S167 L174 C177 D182 R185 A188 S189 W190 S191 R192 V193 Q194 G195 I196 G197 L200 A203 I204 E205 I206 V207 S208 I209 W210 I211 I215 I218 P219 E220 A221 I222 G223 F224 E230 Y231 R232 G233 E234

Q235 H236 M240 L241 N242 A243 T244 S245 K246 F247 M248 E249 F250 D253 V254 K255 D256 W257 G261 F264 C265 M266 P267 L268 V269 C270 I273 C280 E281 N284 ARG ARG ASN GLY SER LEU ARG ILE ALA L294 S295 E296 H297 L298 K299 R302 A316 L317 C318 R326

I327 L328 K329 K330 T331 V332 Y333 ASN E335 M336 D337 K338 N339 R340 C341 E342 F346 D351 Y352 M360 N361 I364 Y370 S373 K374 K375 F376 K377 N378 CYS PHE GLN SER CYS LEU CYS CYS CYS TYR GLN SER LYS SER LEU MET THR SER VAL PRO MET ASN GLY THR

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

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

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

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	510197	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 $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.777	Depositor
Minimum map value	-0.051	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.266	Depositor
Map size (Å)	210.944, 210.944, 210.944	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.824, 0.824, 0.824	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0.26	0/1715	0.54	0/2307
2	B	0.25	0/2638	0.55	0/3579
3	E	0.26	0/1813	0.52	0/2461
4	G	0.26	0/416	0.55	1/566 (0.2%)
5	L	0.25	0/175	0.54	0/234
6	R	0.26	0/2423	0.46	0/3301
All	All	0.25	0/9180	0.52	1/12448 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	15	LEU	CA-CB-CG	6.02	129.16	115.30

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	1687	0	1650	42	0
2	B	2591	0	2487	58	0
3	E	1769	0	1702	28	0
4	G	410	0	400	3	0
5	L	171	0	157	3	0
6	R	2363	0	2363	27	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	8991	0	8759	154	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 9.

All (154) 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:307:ARG:HD2	1:A:328:PHE:HE1	1.28	0.98
1:A:307:ARG:HD2	1:A:328:PHE:CE1	2.19	0.73
3:E:38:GLN:HB2	3:E:44:LEU:HD23	1.71	0.73
6:R:68:TYR:HD1	6:R:69:CYS:H	1.36	0.71
3:E:175:TYR:HB2	3:E:230:MET:HB3	1.72	0.71
2:B:59:HIS:CD2	2:B:85:ILE:HD12	2.27	0.69
1:A:307:ARG:HG3	1:A:328:PHE:CZ	2.27	0.68
3:E:246:GLU:N	3:E:246:GLU:OE2	2.30	0.65
1:A:287:GLU:N	1:A:287:GLU:OE2	2.29	0.65
2:B:163:VAL:HG13	2:B:195:LEU:HD21	1.81	0.64
1:A:34:LEU:HD11	1:A:348:ILE:HD11	1.81	0.63
3:E:180:ARG:HB2	3:E:183:GLN:HB2	1.81	0.62
1:A:307:ARG:HG3	1:A:328:PHE:HZ	1.63	0.62
1:A:192:VAL:HG11	6:R:190:TRP:HH2	1.66	0.61
6:R:196:ILE:HD12	6:R:197:GLY:H	1.66	0.60
6:R:74:LYS:NZ	6:R:341:CYS:SG	2.75	0.60
2:B:316:HIS:HD1	2:B:336:SER:HG	1.46	0.59
2:B:279:THR:HG21	2:B:321:SER:HA	1.83	0.59
2:B:32:ASP:OD2	4:G:31:SER:OG	2.19	0.59
5:L:16:HIS:NE2	6:R:144:GLY:O	2.35	0.59
3:E:172:THR:OG1	3:E:192:MET:SD	2.56	0.58
1:A:182:ILE:HD11	2:B:122:LEU:HB3	1.86	0.58
1:A:223:VAL:HG12	1:A:224:ASP:N	2.17	0.58
2:B:203:LEU:HB3	2:B:215:LEU:HD11	1.86	0.58
2:B:336:SER:OG	2:B:338:ASP:OD1	2.20	0.58
6:R:182:ASP:OD1	6:R:185:ARG:NH2	2.37	0.57
1:A:231:LEU:O	1:A:235:LEU:HG	2.04	0.57
2:B:295:ASP:OD1	2:B:319:ARG:NH1	2.35	0.57
4:G:15:LEU:HD23	4:G:19:LEU:HD23	1.86	0.57
2:B:15:GLU:O	2:B:19:LEU:HG	2.05	0.56
2:B:192:VAL:HA	2:B:208:ALA:HA	1.86	0.56
1:A:42:ASP:N	1:A:42:ASP:OD1	2.35	0.56
3:E:97:ARG:NH2	3:E:108:ASP:OD2	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:R:98:ASN:HD21	6:R:126:ASP:HB2	1.72	0.55
1:A:190:ASP:OD2	1:A:338:ARG:NH1	2.40	0.55
3:E:39:ALA:HB3	3:E:42:LYS:HB2	1.88	0.54
3:E:178:LEU:HB3	3:E:186:GLN:HG2	1.90	0.53
1:A:323:ILE:HG23	1:A:325:TYR:HE1	1.71	0.53
2:B:15:GLU:HA	2:B:18:GLN:HB3	1.91	0.53
2:B:191:ASP:O	2:B:209:CYS:N	2.39	0.53
1:A:204:ASP:OD1	1:A:205:GLU:N	2.41	0.52
2:B:15:GLU:CD	2:B:15:GLU:H	2.12	0.52
2:B:27:ARG:O	2:B:264:GLN:NE2	2.40	0.52
6:R:268:LEU:HD11	6:R:316:ALA:HB2	1.91	0.52
2:B:276:CYS:HB2	2:B:295:ASP:HB2	1.91	0.52
1:A:254:LEU:HB2	1:A:326:PRO:HA	1.92	0.52
2:B:56:LEU:HD22	2:B:341:LEU:HB2	1.91	0.52
2:B:21:ASN:HA	2:B:24:ARG:HH12	1.75	0.51
3:E:187:LEU:HD21	3:E:190:TYR:HB3	1.92	0.51
3:E:66:ARG:O	3:E:83:THR:OG1	2.26	0.51
6:R:174:LEU:HB3	6:R:209:ILE:HD12	1.92	0.51
1:A:240:SER:O	1:A:244:ASN:HB2	2.11	0.50
1:A:183:PHE:HB3	1:A:198:ASP:HB3	1.93	0.50
3:E:51:SER:O	3:E:71:ARG:NH1	2.43	0.50
1:A:223:VAL:CG1	1:A:224:ASP:N	2.75	0.49
2:B:63:ILE:O	2:B:321:SER:OG	2.22	0.49
2:B:70:THR:OG1	2:B:112:PRO:O	2.20	0.49
2:B:105:VAL:HA	2:B:121:GLY:HA3	1.93	0.49
2:B:281:VAL:HG13	2:B:290:LEU:HD11	1.93	0.49
5:L:9:LYS:HD2	6:R:231:TYR:CD1	2.47	0.49
6:R:100:THR:O	6:R:104:ILE:HG13	2.13	0.49
3:E:11:VAL:HG21	3:E:17:ARG:HD2	1.95	0.49
1:A:233:GLU:N	1:A:233:GLU:OE2	2.43	0.48
2:B:17:GLU:H	2:B:17:GLU:CD	2.17	0.48
3:E:169:ASN:OD1	3:E:170:GLY:N	2.46	0.48
1:A:29:LYS:NZ	1:A:29:LYS:HB3	2.29	0.47
1:A:307:ARG:CD	1:A:328:PHE:HE1	2.12	0.47
3:E:157:ILE:HD13	3:E:227:TYR:HD2	1.80	0.47
2:B:17:GLU:OE1	2:B:17:GLU:N	2.38	0.47
2:B:59:HIS:HD2	2:B:85:ILE:HD12	1.76	0.47
2:B:40:ASN:HA	2:B:306:LYS:HE3	1.97	0.47
1:A:41:ALA:O	1:A:44:SER:OG	2.25	0.47
1:A:307:ARG:O	1:A:311:VAL:HG23	2.15	0.47
1:A:235:LEU:CD2	1:A:310:PHE:CE1	2.98	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:231:GLN:HE22	3:E:237:LEU:HA	1.79	0.46
6:R:163:PHE:HB2	6:R:221:ALA:HB2	1.97	0.46
2:B:230:HIS:CD2	2:B:256:ARG:HH11	2.33	0.46
2:B:230:HIS:HD2	2:B:256:ARG:HH11	1.64	0.46
2:B:300:ASN:OD1	2:B:309:ARG:NE	2.49	0.46
1:A:44:SER:HB2	1:A:222:VAL:HG12	1.97	0.46
2:B:28:LYS:HE3	2:B:28:LYS:HA	1.98	0.46
2:B:79:SER:OG	2:B:81:ASP:OD1	2.26	0.46
3:E:28:PHE:O	3:E:28:PHE:HD1	1.98	0.46
2:B:301:VAL:HG23	2:B:310:ALA:HB3	1.98	0.46
1:A:344:CYS:HA	1:A:347:ILE:HG22	1.98	0.45
3:E:155:VAL:HG21	3:E:219:LEU:HD22	1.97	0.45
1:A:307:ARG:CG	1:A:328:PHE:CE1	3.00	0.45
3:E:44:LEU:HB2	3:E:239:PHE:HD2	1.80	0.45
2:B:237:ILE:HG13	2:B:248:THR:HB	1.98	0.45
2:B:255:CYS:HB2	2:B:269:TYR:HB2	1.98	0.45
6:R:141:LEU:HG	6:R:352:TYR:CE2	2.52	0.45
3:E:178:LEU:HB2	3:E:188:LEU:HD21	1.98	0.45
1:A:197:PHE:HD2	1:A:213:PHE:HE1	1.64	0.45
1:A:324:CYS:C	1:A:325:TYR:HD1	2.20	0.45
2:B:259:ASP:HB2	2:B:266:LEU:HD22	1.97	0.45
2:B:320:VAL:HA	2:B:336:SER:HA	1.98	0.45
6:R:338:LYS:HE3	6:R:338:LYS:HA	1.98	0.45
6:R:330:LYS:N	6:R:330:LYS:HD2	2.32	0.44
6:R:302:ARG:NE	6:R:302:ARG:HA	2.32	0.44
2:B:278:ILE:N	2:B:278:ILE:HD12	2.32	0.44
6:R:326:ARG:NH1	6:R:351:ASP:OD2	2.49	0.44
2:B:272:ASP:N	2:B:272:ASP:OD1	2.51	0.44
3:E:195:LEU:HD12	3:E:196:ALA:H	1.81	0.44
1:A:307:ARG:CG	1:A:328:PHE:CZ	2.99	0.44
2:B:71:ASP:OD1	2:B:71:ASP:N	2.51	0.44
5:L:14:PHE:O	5:L:18:ASP:N	2.51	0.44
3:E:90:THR:OG1	3:E:116:LEU:O	2.36	0.43
6:R:96:VAL:O	6:R:100:THR:OG1	2.26	0.43
1:A:8:GLU:HG3	1:A:10:LYS:H	1.83	0.43
2:B:17:GLU:HA	2:B:20:LYS:HB2	1.99	0.43
3:E:108:ASP:OD1	3:E:108:ASP:N	2.52	0.43
3:E:235:TYR:N	3:E:236:PRO:HD2	2.33	0.43
1:A:192:VAL:HG11	6:R:190:TRP:CH2	2.50	0.43
1:A:225:SER:OG	1:A:257:ASN:O	2.31	0.43
2:B:274:ILE:HD12	2:B:274:ILE:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:66:ARG:NH1	3:E:84:SER:O	2.52	0.43
1:A:283:TYR:HE1	1:A:308:LYS:HD3	1.83	0.42
1:A:298:ARG:HB3	1:A:298:ARG:CZ	2.49	0.42
2:B:13:ARG:HE	2:B:13:ARG:H	1.67	0.42
6:R:318:CYS:SG	6:R:361:ASN:HB2	2.59	0.42
1:A:214:ASN:O	1:A:214:ASN:ND2	2.47	0.42
2:B:21:ASN:HA	2:B:24:ARG:NH1	2.34	0.42
2:B:168:ASP:O	2:B:170:THR:HG22	2.20	0.42
3:E:38:GLN:NE2	3:E:42:LYS:O	2.47	0.42
2:B:207:GLY:HA3	2:B:234:ILE:HG21	2.02	0.42
6:R:264:PHE:O	6:R:268:LEU:HB2	2.20	0.42
1:A:16:SER:HB2	2:B:93:ASN:HB2	2.02	0.42
2:B:142:ARG:NE	2:B:176:ILE:O	2.52	0.42
2:B:274:ILE:O	2:B:275:ILE:HD13	2.19	0.42
2:B:24:ARG:NH1	2:B:24:ARG:HB3	2.35	0.41
2:B:34:THR:O	2:B:37:GLN:NE2	2.53	0.41
3:E:178:LEU:HD23	3:E:188:LEU:HD11	2.01	0.41
1:A:313:ILE:HD12	1:A:313:ILE:HA	1.89	0.41
2:B:86:ILE:HD12	2:B:96:HIS:HB2	2.02	0.41
2:B:266:LEU:HD12	2:B:266:LEU:HA	1.81	0.41
3:E:86:ARG:H	3:E:89:ASP:HB2	1.86	0.41
4:G:37:LEU:HD12	4:G:37:LEU:HA	1.96	0.41
6:R:194:GLN:H	6:R:194:GLN:HG2	1.78	0.41
1:A:325:TYR:HD2	1:A:343:ASP:OD1	2.03	0.41
1:A:327:HIS:HB2	1:A:339:ARG:NH2	2.35	0.41
2:B:267:MET:HE3	2:B:267:MET:HB2	1.87	0.41
6:R:92:ILE:HD12	6:R:92:ILE:HA	1.94	0.41
6:R:215:ILE:HA	6:R:218:ILE:HD12	2.04	0.40
6:R:261:GLY:HA2	6:R:265:CYS:HB2	2.02	0.40
1:A:263:ALA:HA	1:A:299:VAL:HG11	2.04	0.40
3:E:151:PRO:HA	3:E:219:LEU:HB3	2.04	0.40
1:A:244:ASN:OD1	1:A:245:ARG:N	2.54	0.40
2:B:59:HIS:ND1	2:B:63:ILE:HD11	2.36	0.40
2:B:295:ASP:HA	2:B:319:ARG:HB2	2.03	0.40
6:R:128:ILE:HA	6:R:131:VAL:HG12	2.02	0.40
6:R:240:MET:HE2	6:R:240:MET:HB3	1.94	0.40
2:B:255:CYS:SG	2:B:278:ILE:HG12	2.61	0.40
2:B:250:SER:OG	2:B:252:ASP:OD1	2.35	0.40
2:B:251:ASP:HA	2:B:277:GLY:HA3	2.04	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	196/246 (80%)	187 (95%)	9 (5%)	0	100	100
2	B	336/377 (89%)	326 (97%)	10 (3%)	0	100	100
3	E	228/285 (80%)	223 (98%)	5 (2%)	0	100	100
4	G	55/71 (78%)	53 (96%)	1 (2%)	1 (2%)	7	30
5	L	19/21 (90%)	18 (95%)	1 (5%)	0	100	100
6	R	297/622 (48%)	280 (94%)	16 (5%)	1 (0%)	37	69
All	All	1131/1622 (70%)	1087 (96%)	42 (4%)	2 (0%)	45	76

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	G	25	ILE
6	R	149	ASP

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	182/213 (85%)	169 (93%)	13 (7%)	12	39
2	B	279/308 (91%)	262 (94%)	17 (6%)	15	44
3	E	193/228 (85%)	183 (95%)	10 (5%)	19	50
4	G	39/58 (67%)	37 (95%)	2 (5%)	20	51
5	L	21/21 (100%)	21 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	R	253/554 (46%)	237 (94%)	16 (6%)	15	43
All	All	967/1382 (70%)	909 (94%)	58 (6%)	18	45

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	42	ASP
1	A	206	ARG
1	A	214	ASN
1	A	232	GLN
1	A	236	ASN
1	A	255	PHE
1	A	257	ASN
1	A	298	ARG
1	A	310	PHE
1	A	312	ASP
1	A	328	PHE
1	A	336	ASN
1	A	339	ARG
2	B	13	ARG
2	B	28	LYS
2	B	59	HIS
2	B	66	MET
2	B	102	SER
2	B	110	TYR
2	B	134	ARG
2	B	157	LEU
2	B	158	ASP
2	B	193	MET
2	B	202	ARG
2	B	219	ARG
2	B	233	ASP
2	B	238	CYS
2	B	239	PHE
2	B	272	ASP
2	B	276	CYS
3	E	20	SER
3	E	28	PHE
3	E	75	LYS
3	E	81	GLN
3	E	86	ARG
3	E	140	MET

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Mol	Chain	Res	Type
3	E	142	GLN
3	E	192	MET
3	E	231	GLN
3	E	235	TYR
4	G	13	ARG
4	G	46	LYS
6	R	68	TYR
6	R	91	PHE
6	R	95	MET
6	R	103	ARG
6	R	113	ASN
6	R	158	CYS
6	R	166	LYS
6	R	177	CYS
6	R	182	ASP
6	R	224	PHE
6	R	231	TYR
6	R	240	MET
6	R	248	MET
6	R	255	LYS
6	R	257	TRP
6	R	280	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	195	HIS
2	B	225	GLN
6	R	98	ASN
6	R	175	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 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-34663. 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 ⓘ
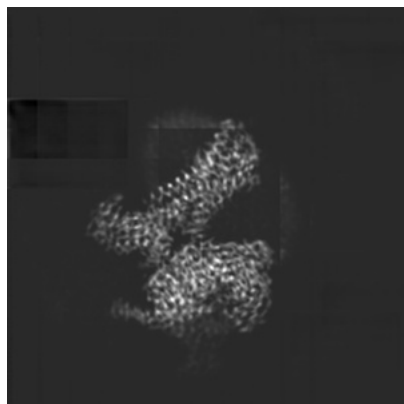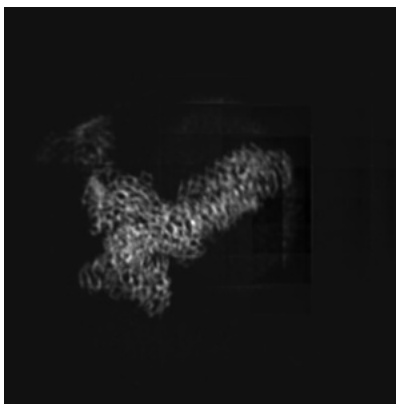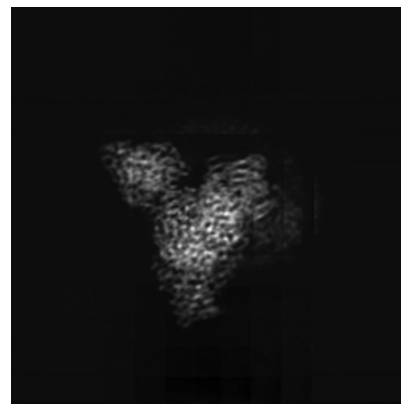
6.1.1 Primary map

X Y Z

6.1.2 Raw map

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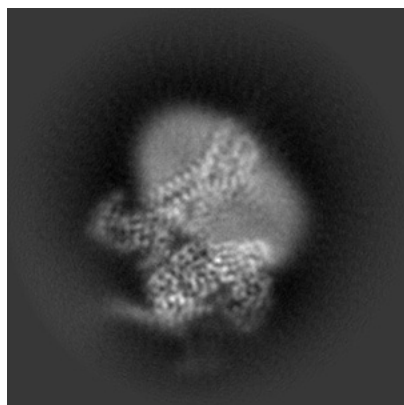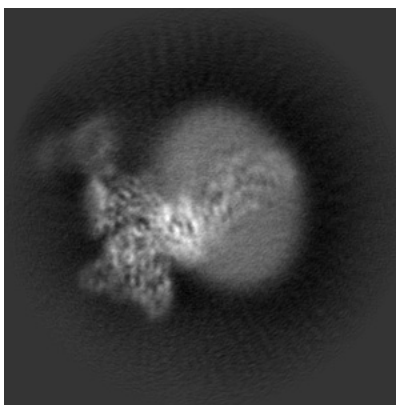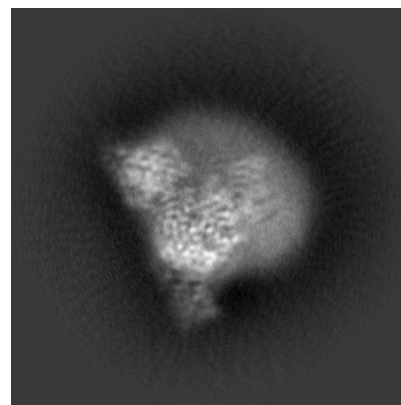
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

6.2.1 Primary map

| X Index: 128 | Y Index: 128 | Z Index: 128 |

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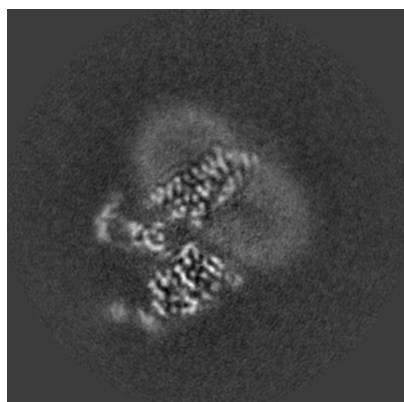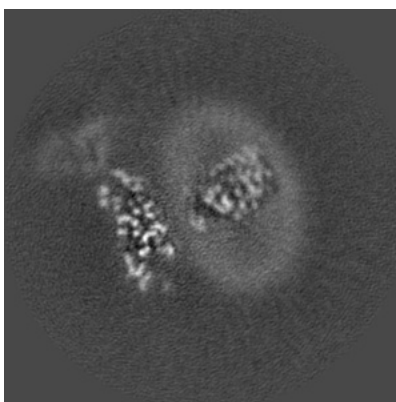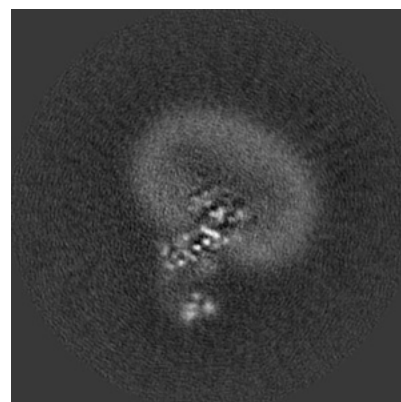
| X Index: 128 | Y Index: 128 | Z Index: 128 |

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

6.3 Largest variance slices ⓘ
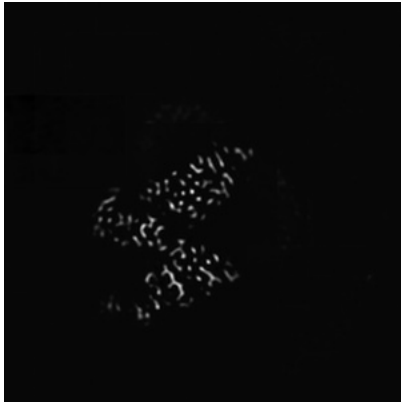
6.3.1 Primary map
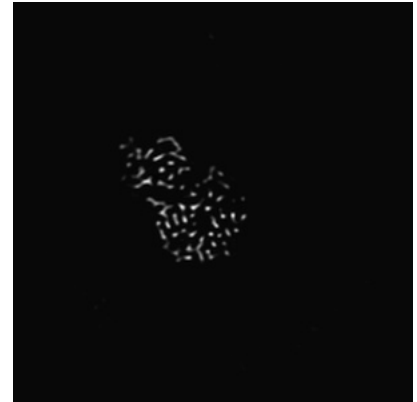
X Index: 126	Y Index: 124	Z Index: 80

6.3.2 Raw map
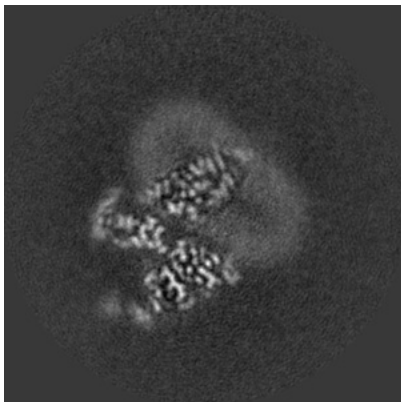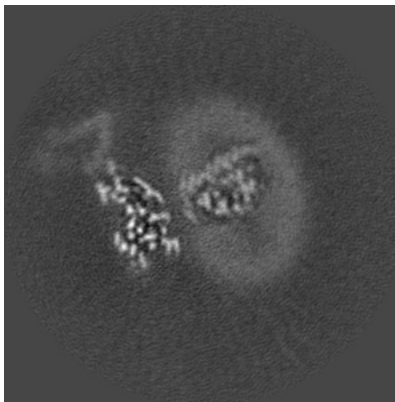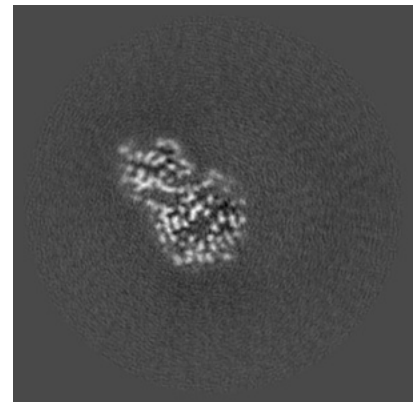
X Index: 126	Y Index: 124	Z Index: 82

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
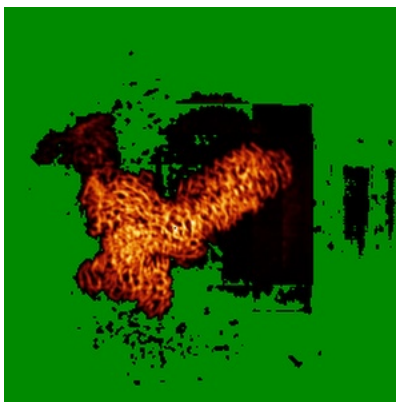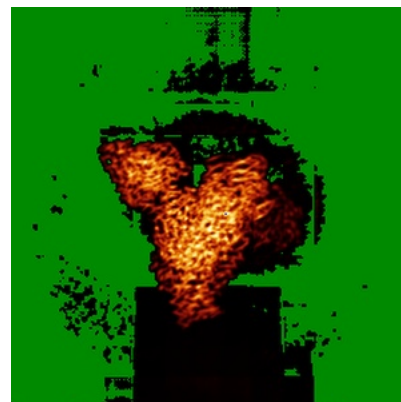
X　　　　　　　　　　Y　　　　　　　　　　Z

6.4.2　Raw map

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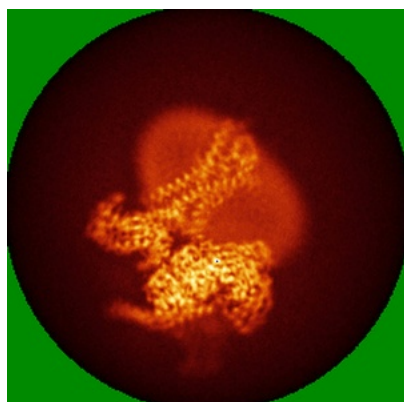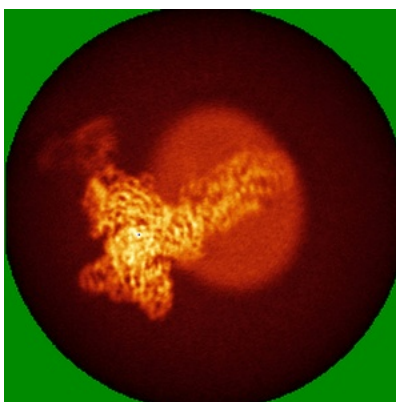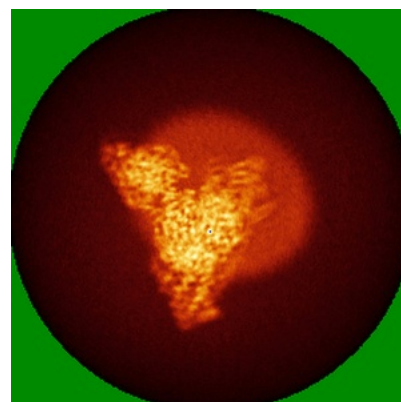
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
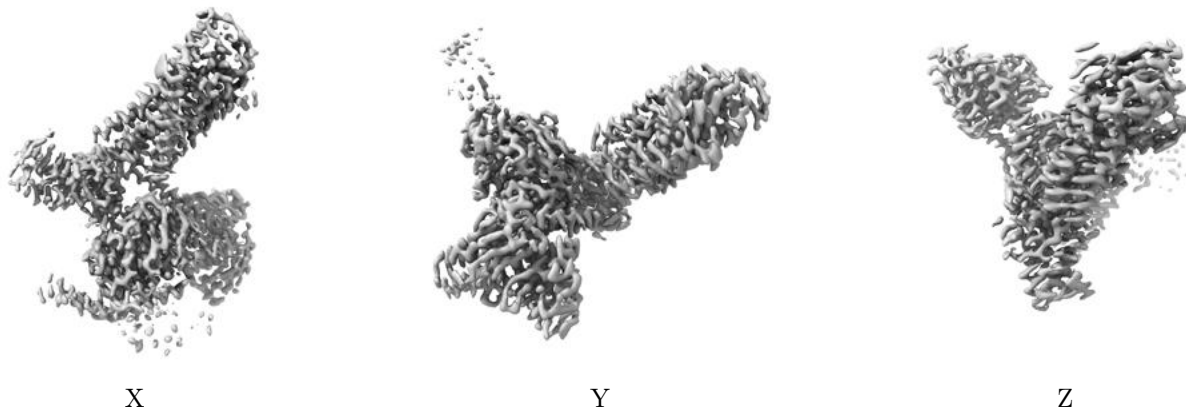
The images above show the 3D surface view of the map at the recommended contour level 0.266. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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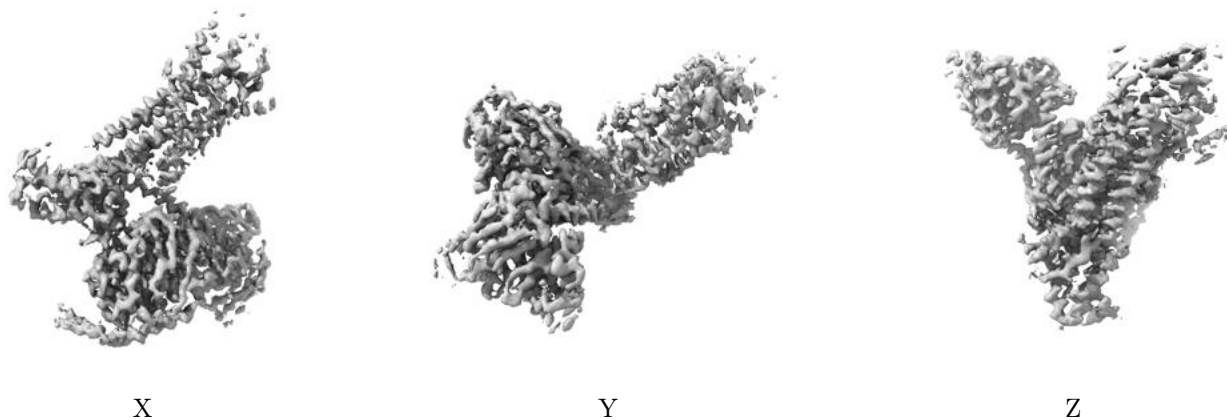
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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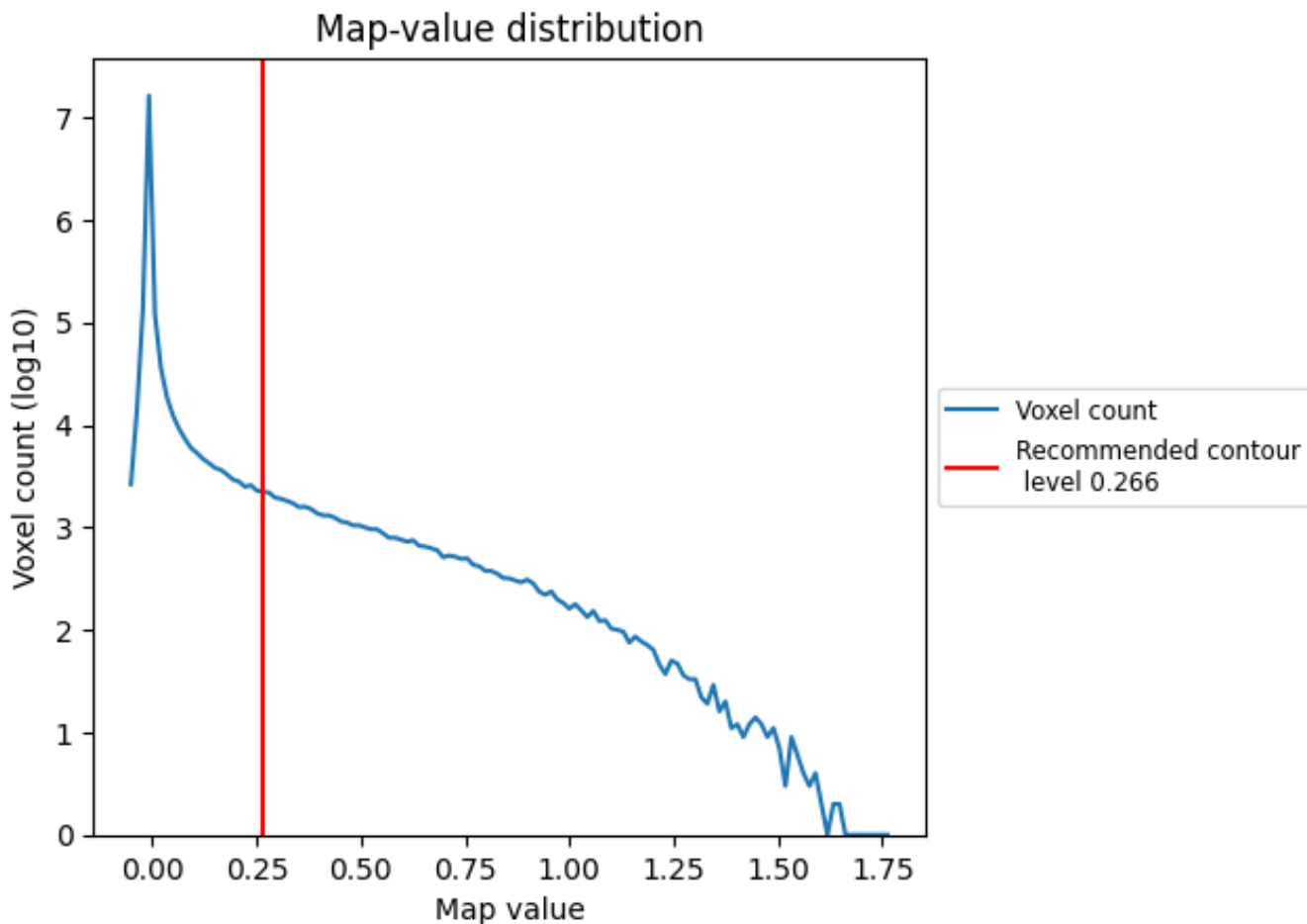
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
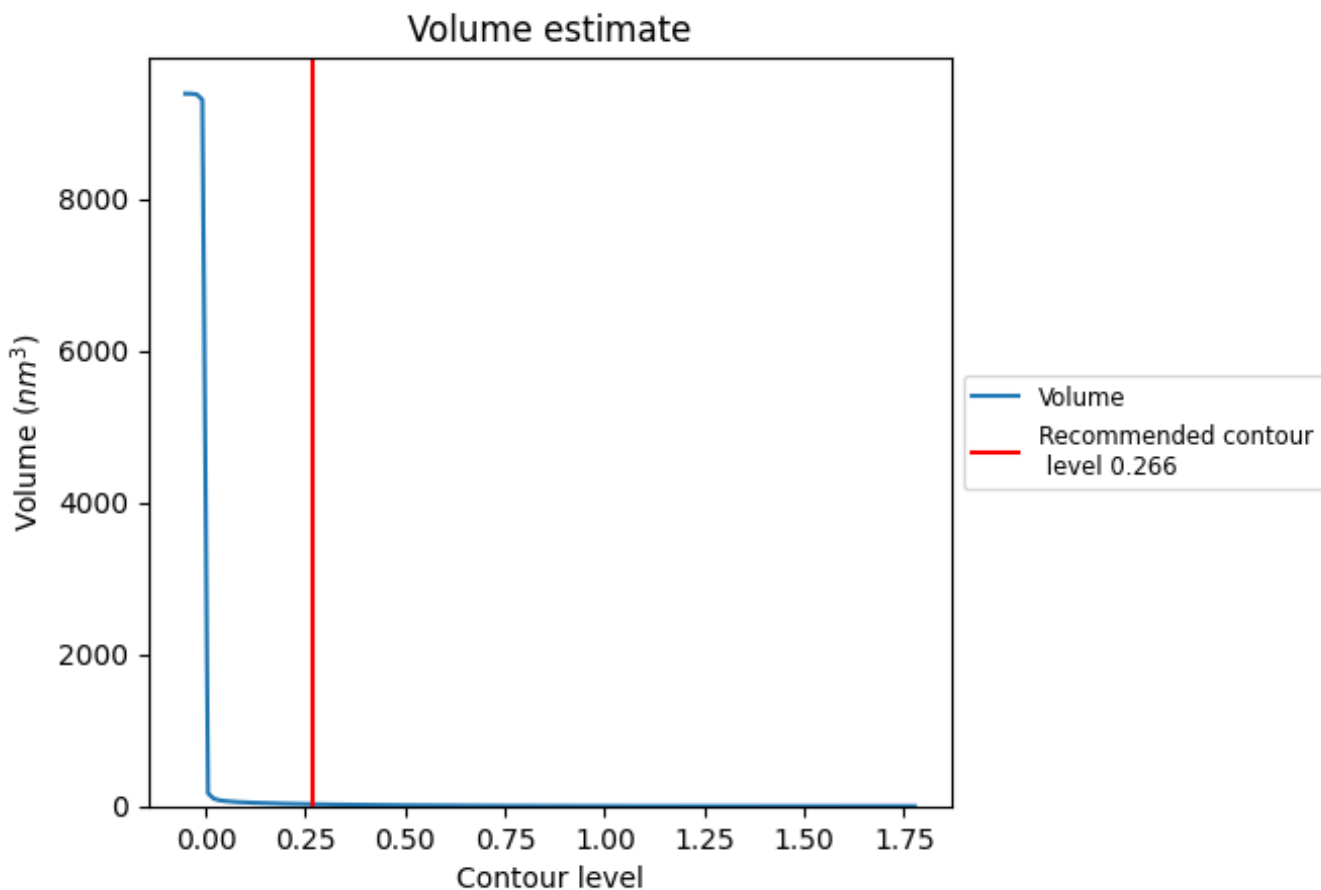
The volume at the recommended contour level is 26 nm^3; this corresponds to an approximate mass of 23 kDa.

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 ⓘ
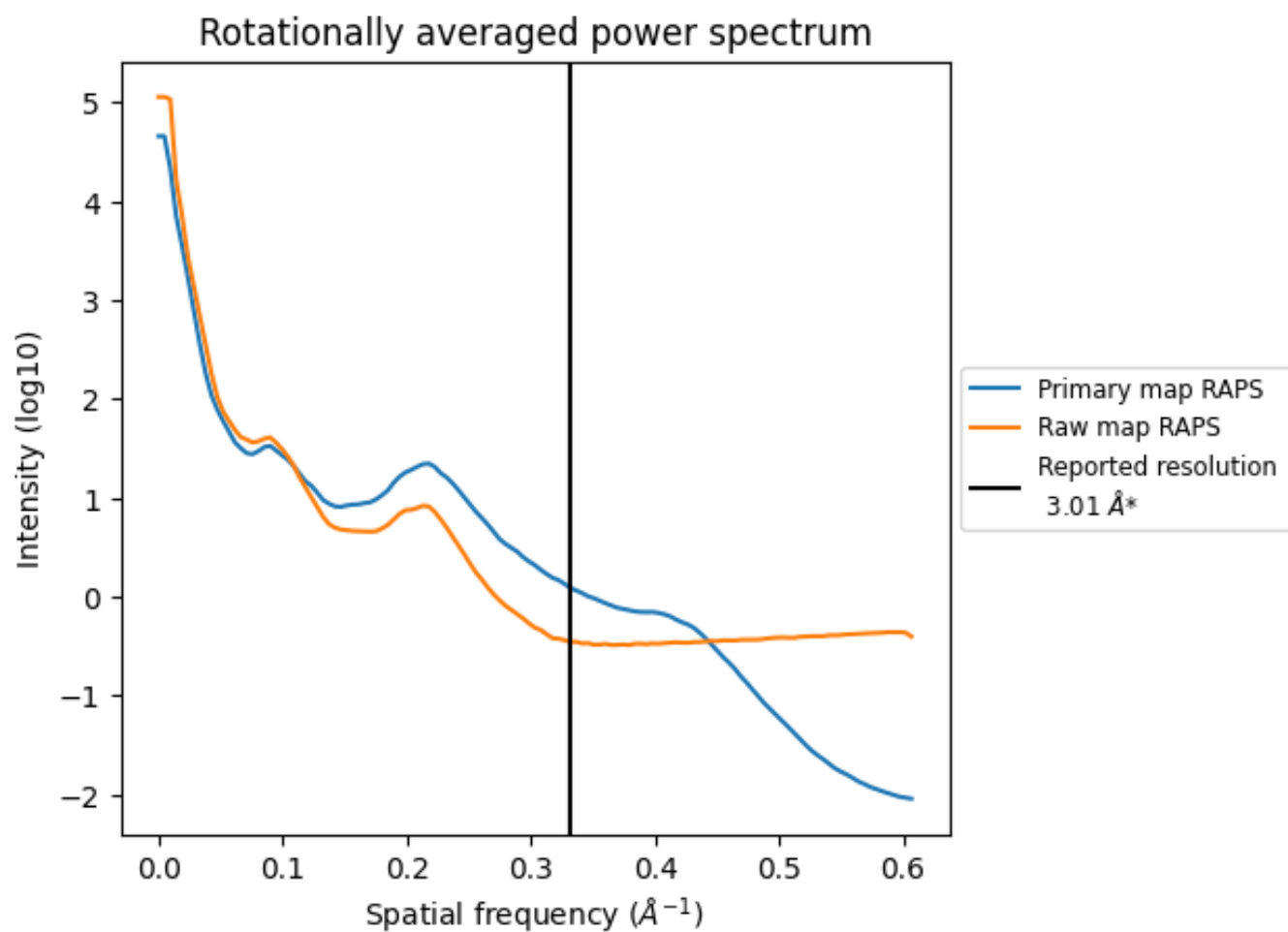
*Reported resolution corresponds to spatial frequency of 0.332 Å^{-1}

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 ⓘ
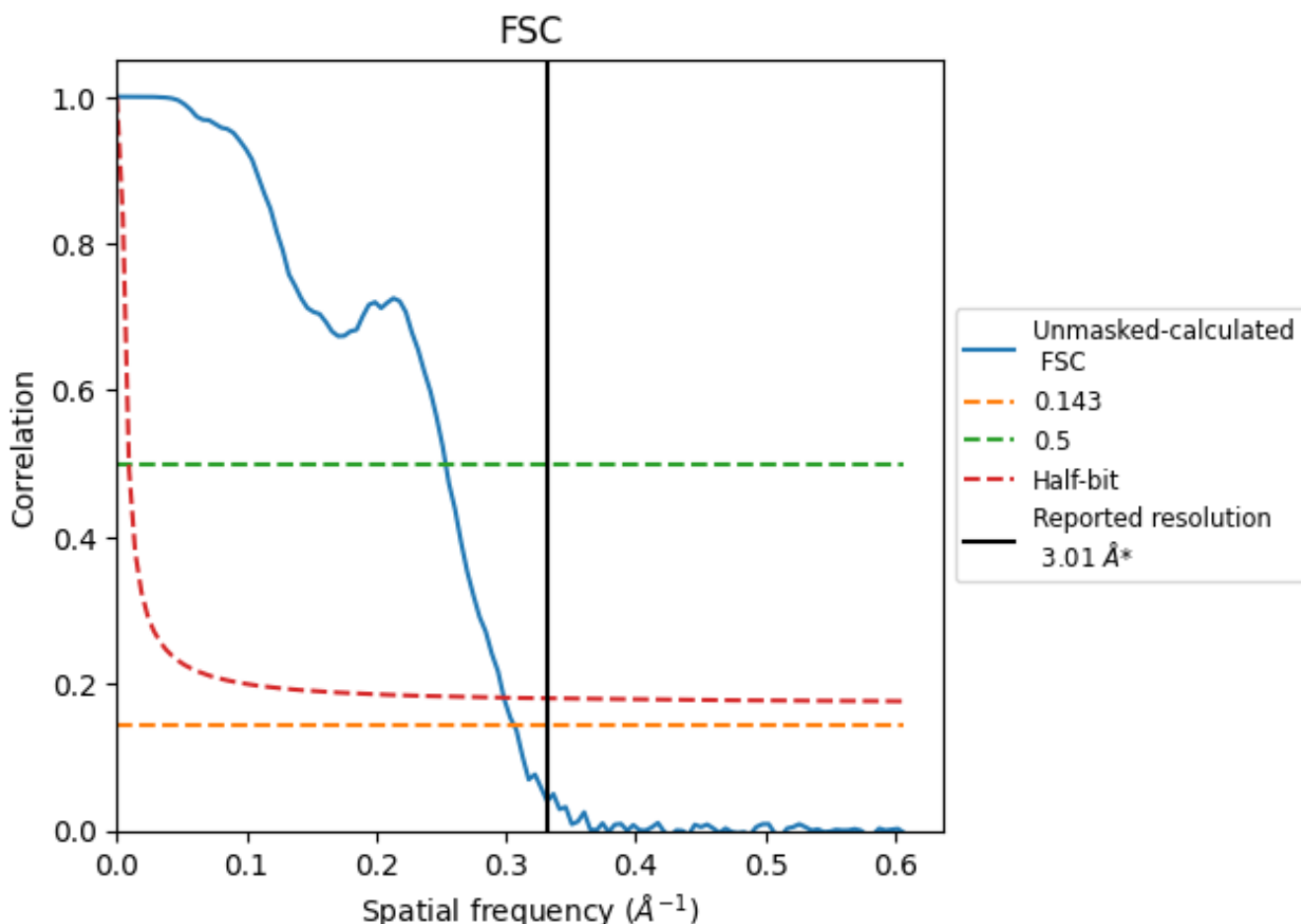
*Reported resolution corresponds to spatial frequency of 0.332 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.01	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.26	3.94	3.35

*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-34663 and PDB model 8HCQ. Per-residue inclusion information can be found in section 3 on page 8.

## 9.1 Map-model overlay ⓘ

X   Y   Z
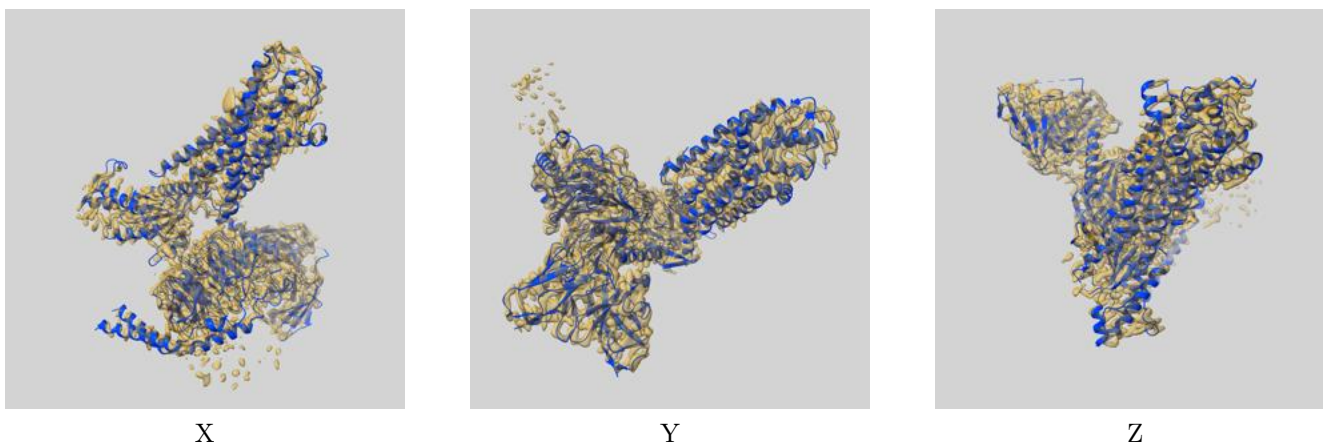
The images above show the 3D surface view of the map at the recommended contour level 0.266 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ
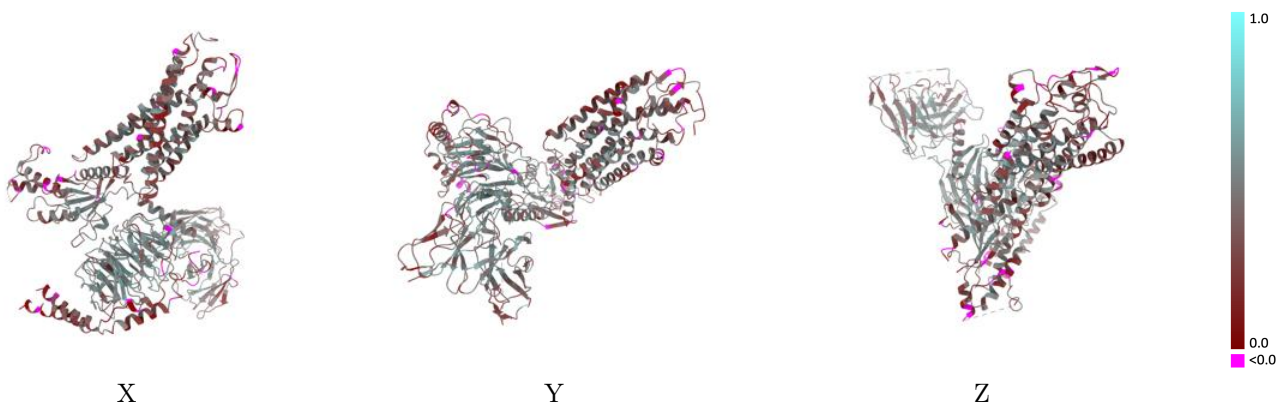
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
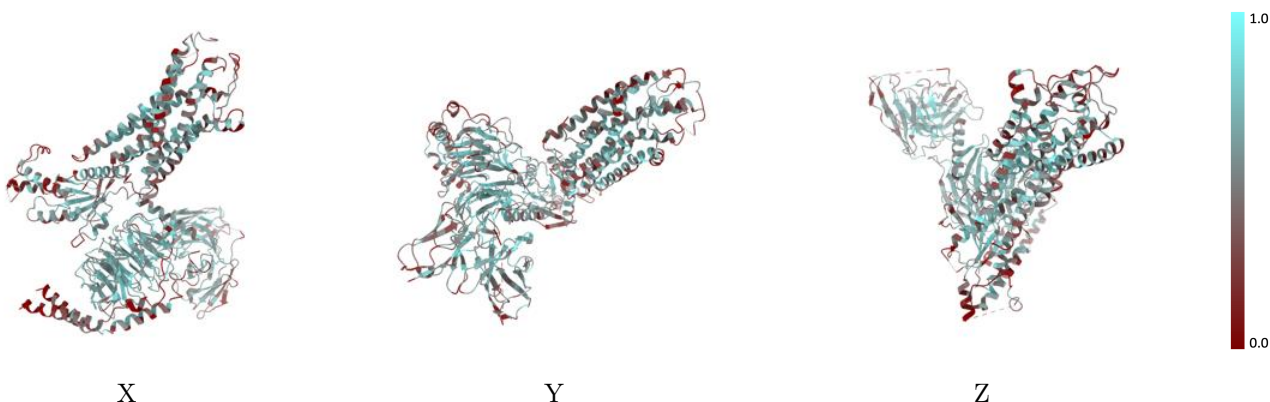
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.266).

9.4　Atom inclusion ⓘ
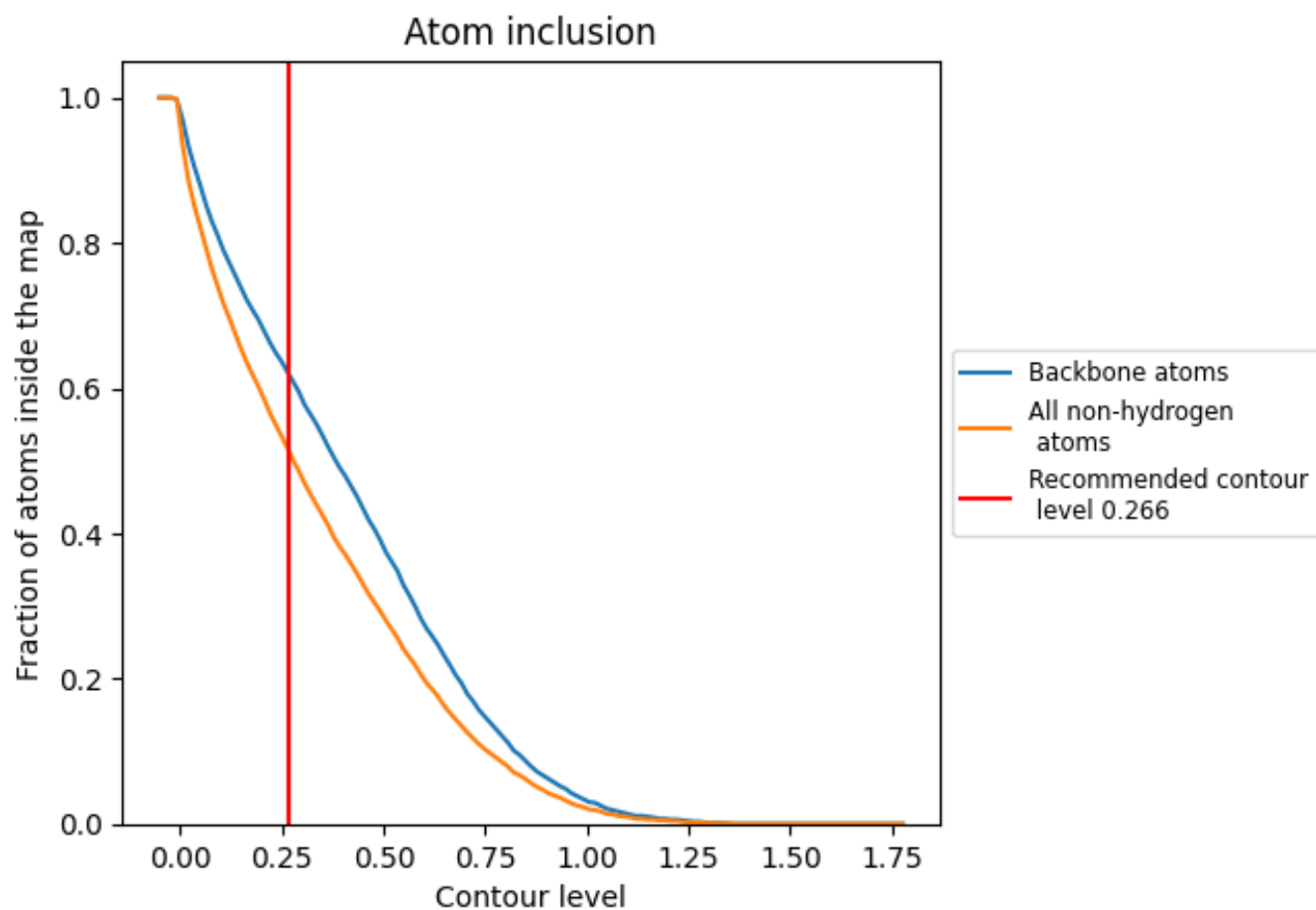
At the recommended contour level, 62% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.266) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5150	0.3940
A	0.4820	0.3740
B	0.5740	0.4550
E	0.5510	0.4290
G	0.3140	0.1990
L	0.4500	0.3190
R	0.4880	0.3530

1.0

0.0
<0.0