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 (i)

Nov 8, 2022 – 04:38 pm GMT

|		
PDB ID	:	8B8M
EMDB ID	:	EMD-15917
Title	:	Cryo-EM structure of Ca2+-bound mTMEM16F N562A mutant in Digitonin open/closed
Authors	:	Arndt, M.; Alvadia, C.; Straub, M.S.; Clerico-Mosina, V.; Paulino, C.; Dutzler, R.
Deposited on	:	2022-10-04
Resolution	:	3.49 Å(reported)
Based on initial model	:	6QP6

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 3.49 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		10
Ramachandran outliers		0
Sidechain outliers		3.8%

Worse   *Better*

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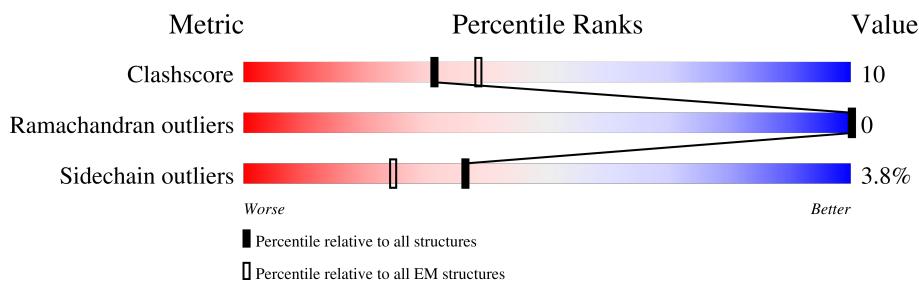
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	975	5% / 55% / 20% / • / 24%
1	B	975	6% / 51% / 18% / • / 30%
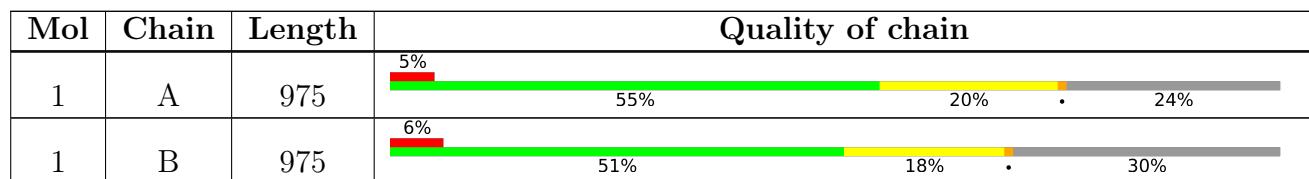
2   Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 11758 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 Anoctamin-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	741	Total	C	N	O	S	0	0
			6121	4021	987	1073	40		
1	B	682	Total	C	N	O	S	0	0
			5631	3708	908	978	37		

There are 130 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	562	ALA	ASN	engineered mutation	UNP Q6P9J9
A	912	ALA	-	expression tag	UNP Q6P9J9
A	913	LEU	-	expression tag	UNP Q6P9J9
A	914	GLU	-	expression tag	UNP Q6P9J9
A	915	VAL	-	expression tag	UNP Q6P9J9
A	916	LEU	-	expression tag	UNP Q6P9J9
A	917	PHE	-	expression tag	UNP Q6P9J9
A	918	GLN	-	expression tag	UNP Q6P9J9
A	919	GLY	-	expression tag	UNP Q6P9J9
A	920	PRO	-	expression tag	UNP Q6P9J9
A	921	GLN	-	expression tag	UNP Q6P9J9
A	922	GLY	-	expression tag	UNP Q6P9J9
A	923	THR	-	expression tag	UNP Q6P9J9
A	924	GLU	-	expression tag	UNP Q6P9J9
A	925	GLN	-	expression tag	UNP Q6P9J9
A	926	LYS	-	expression tag	UNP Q6P9J9
A	927	LEU	-	expression tag	UNP Q6P9J9
A	928	ILE	-	expression tag	UNP Q6P9J9
A	929	SER	-	expression tag	UNP Q6P9J9
A	930	GLU	-	expression tag	UNP Q6P9J9
A	931	GLU	-	expression tag	UNP Q6P9J9
A	932	ASP	-	expression tag	UNP Q6P9J9
A	933	LEU	-	expression tag	UNP Q6P9J9
A	934	ARG	-	expression tag	UNP Q6P9J9
A	935	GLY	-	expression tag	UNP Q6P9J9
A	936	ALA	-	expression tag	UNP Q6P9J9

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Chain	Residue	Modelled	Actual	Comment	Reference
A	937	SER	-	expression tag	UNP Q6P9J9
A	938	MET	-	expression tag	UNP Q6P9J9
A	939	ASP	-	expression tag	UNP Q6P9J9
A	940	GLU	-	expression tag	UNP Q6P9J9
A	941	LYS	-	expression tag	UNP Q6P9J9
A	942	THR	-	expression tag	UNP Q6P9J9
A	943	THR	-	expression tag	UNP Q6P9J9
A	944	GLY	-	expression tag	UNP Q6P9J9
A	945	TRP	-	expression tag	UNP Q6P9J9
A	946	ARG	-	expression tag	UNP Q6P9J9
A	947	GLY	-	expression tag	UNP Q6P9J9
A	948	GLY	-	expression tag	UNP Q6P9J9
A	949	HIS	-	expression tag	UNP Q6P9J9
A	950	VAL	-	expression tag	UNP Q6P9J9
A	951	VAL	-	expression tag	UNP Q6P9J9
A	952	GLU	-	expression tag	UNP Q6P9J9
A	953	GLY	-	expression tag	UNP Q6P9J9
A	954	LEU	-	expression tag	UNP Q6P9J9
A	955	ALA	-	expression tag	UNP Q6P9J9
A	956	GLY	-	expression tag	UNP Q6P9J9
A	957	GLU	-	expression tag	UNP Q6P9J9
A	958	LEU	-	expression tag	UNP Q6P9J9
A	959	GLU	-	expression tag	UNP Q6P9J9
A	960	GLN	-	expression tag	UNP Q6P9J9
A	961	LEU	-	expression tag	UNP Q6P9J9
A	962	ARG	-	expression tag	UNP Q6P9J9
A	963	ALA	-	expression tag	UNP Q6P9J9
A	964	ARG	-	expression tag	UNP Q6P9J9
A	965	LEU	-	expression tag	UNP Q6P9J9
A	966	GLU	-	expression tag	UNP Q6P9J9
A	967	HIS	-	expression tag	UNP Q6P9J9
A	968	HIS	-	expression tag	UNP Q6P9J9
A	969	PRO	-	expression tag	UNP Q6P9J9
A	970	GLN	-	expression tag	UNP Q6P9J9
A	971	GLY	-	expression tag	UNP Q6P9J9
A	972	GLN	-	expression tag	UNP Q6P9J9
A	973	ARG	-	expression tag	UNP Q6P9J9
A	974	GLU	-	expression tag	UNP Q6P9J9
A	975	PRO	-	expression tag	UNP Q6P9J9
B	562	ALA	ASN	engineered mutation	UNP Q6P9J9
B	912	ALA	-	expression tag	UNP Q6P9J9
B	913	LEU	-	expression tag	UNP Q6P9J9

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Chain	Residue	Modelled	Actual	Comment	Reference
B	914	GLU	-	expression tag	UNP Q6P9J9
B	915	VAL	-	expression tag	UNP Q6P9J9
B	916	LEU	-	expression tag	UNP Q6P9J9
B	917	PHE	-	expression tag	UNP Q6P9J9
B	918	GLN	-	expression tag	UNP Q6P9J9
B	919	GLY	-	expression tag	UNP Q6P9J9
B	920	PRO	-	expression tag	UNP Q6P9J9
B	921	GLN	-	expression tag	UNP Q6P9J9
B	922	GLY	-	expression tag	UNP Q6P9J9
B	923	THR	-	expression tag	UNP Q6P9J9
B	924	GLU	-	expression tag	UNP Q6P9J9
B	925	GLN	-	expression tag	UNP Q6P9J9
B	926	LYS	-	expression tag	UNP Q6P9J9
B	927	LEU	-	expression tag	UNP Q6P9J9
B	928	ILE	-	expression tag	UNP Q6P9J9
B	929	SER	-	expression tag	UNP Q6P9J9
B	930	GLU	-	expression tag	UNP Q6P9J9
B	931	GLU	-	expression tag	UNP Q6P9J9
B	932	ASP	-	expression tag	UNP Q6P9J9
B	933	LEU	-	expression tag	UNP Q6P9J9
B	934	ARG	-	expression tag	UNP Q6P9J9
B	935	GLY	-	expression tag	UNP Q6P9J9
B	936	ALA	-	expression tag	UNP Q6P9J9
B	937	SER	-	expression tag	UNP Q6P9J9
B	938	MET	-	expression tag	UNP Q6P9J9
B	939	ASP	-	expression tag	UNP Q6P9J9
B	940	GLU	-	expression tag	UNP Q6P9J9
B	941	LYS	-	expression tag	UNP Q6P9J9
B	942	THR	-	expression tag	UNP Q6P9J9
B	943	THR	-	expression tag	UNP Q6P9J9
B	944	GLY	-	expression tag	UNP Q6P9J9
B	945	TRP	-	expression tag	UNP Q6P9J9
B	946	ARG	-	expression tag	UNP Q6P9J9
B	947	GLY	-	expression tag	UNP Q6P9J9
B	948	GLY	-	expression tag	UNP Q6P9J9
B	949	HIS	-	expression tag	UNP Q6P9J9
B	950	VAL	-	expression tag	UNP Q6P9J9
B	951	VAL	-	expression tag	UNP Q6P9J9
B	952	GLU	-	expression tag	UNP Q6P9J9
B	953	GLY	-	expression tag	UNP Q6P9J9
B	954	LEU	-	expression tag	UNP Q6P9J9
B	955	ALA	-	expression tag	UNP Q6P9J9

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| Chain	Residue	Modelled	Actual	Comment	Reference
B	956	GLY	-	expression tag	UNP Q6P9J9
B	957	GLU	-	expression tag	UNP Q6P9J9
B	958	LEU	-	expression tag	UNP Q6P9J9
B	959	GLU	-	expression tag	UNP Q6P9J9
B	960	GLN	-	expression tag	UNP Q6P9J9
B	961	LEU	-	expression tag	UNP Q6P9J9
B	962	ARG	-	expression tag	UNP Q6P9J9
B	963	ALA	-	expression tag	UNP Q6P9J9
B	964	ARG	-	expression tag	UNP Q6P9J9
B	965	LEU	-	expression tag	UNP Q6P9J9
B	966	GLU	-	expression tag	UNP Q6P9J9
B	967	HIS	-	expression tag	UNP Q6P9J9
B	968	HIS	-	expression tag	UNP Q6P9J9
B	969	PRO	-	expression tag	UNP Q6P9J9
B	970	GLN	-	expression tag	UNP Q6P9J9
B	971	GLY	-	expression tag	UNP Q6P9J9
B	972	GLN	-	expression tag	UNP Q6P9J9
B	973	ARG	-	expression tag	UNP Q6P9J9
B	974	GLU	-	expression tag	UNP Q6P9J9
B	975	PRO	-	expression tag	UNP Q6P9J9

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

| Mol	Chain	Residues	Atoms		AltConf
2	A	3	Total 3	Ca 3	0
2	B	3	Total 3	Ca 3	0

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: Anoctamin-6

VAL GLU GLY LEU ALA GLY GLU LEU GLU GLN LEU ARG ALA ARG LEU GLU HIS HIS PRO GLN GLY GLN ARG GLU PRO

• Molecule 1: Anoctamin-6

6%

Chain B: 51% 18% . 30%

MET GLN MET MET THR ARG LYS VAL LEU LEU ASN MET GLU LEU GLU GLU ASP ASP GLU ASP GLY ASP ILE VAL LEU GLU ASN PHE ASP THR GLN ILE VAL CYS PRO THR PHE GLY LEU SER LEU GLU N43 Q44 Q45 D46 F47 R48 E51 E54 F55 N56 P59 D60 F63

D66 G67 Q68 R69 R70 I71 D72 F73 I74 L75 V76 Y77 E78 D79 E80 S81 LYS LYS GLU ASN ASN LYS LYS G89 T90 N91 Q94 K95 R96 K97 R98 N104 L105 H108 G109 L110 Q111 L112 E113 A114 T115 R116 S117 V118 S119 ASP D121 K122 F125 V126 K127 V128 H129 A130 P131 W132

Y138 K145 K149 PRO ASN ASP LEU LYS THR ARG SER PRO PHE GLY ASN LEU ASN TRP PHE THR LYS VAL LEU ARG VAL ASN GLU SER VAL ILE LYS PRO GLU GLN GLU PHE PHE THR ALA PRO PHE GLU LYS SER ARG MET ASN ASP PHE TYR ILE LEU ASP ARG ASP S202 F203

F204 N205 P206 A207 T208 R209 F215 I216 R219 V220 LYS TYR GLN VAL MET ASN ASN VAL ASN LYS PHE GLY I233 S239 G240 I241 Y242 K243 F246 H249 D250 C251 R252 Y255 E258 D259 I260 S261 C262 R266 L269 Y270 W273 A274 H275 P276 K281 K282 Q283

P284 L287 I288 R289 K290 Y291 Y292 G293 E294 K295 I296 Y306 L322 Y325 L326 D327 Q328 D329 N330 W333 S334 C338 G344 C352 D353 C356 R360 T364 S367 L371 C372 V384 F385 M386 T391 L392 F393 W408 L413 Q414 GLN GLU GLU

GLN ALA ARG PRO GLU TYR GLU ALA GLN CYS ASN HIS VAL VAL ILE ASN GLU ILE THR GLN GLU GLU GLU ARG ILE PRO PHE THR T446 C447 G448 K449 C450 I451 R452 C456 A457 S458 F462 W463 I464 L465 L466 I467 I474 I475 VAL TYR ARG LEU SER VAL PHE ILE VAL PHE SER

THR THR LEU PRO LYS ASN PRO ASN GLY THR ASP PRO ILE GLN LYS TYR LEU THR PRO GLN MET ALA THR SER ILE THR ALA SER ILE ILE S517 F518 I519 L524 N525 T526 E529 K530 V531 A532 F538 E539 L540 P541 R542 Y547 E548 K554 L557 F558 Q559 F560 V561

F572 F573 K574 G575 K576 F577 V578 Y586 L587 L588 G589 K590 Y591 R592 S593 E594 E595 E604 L609 M613 W619 Q623 R639 V640 SER GLY SER GLU K645 I646 T647 P648 R649 Q652 D653 Y654 L662 L669 V682 F685 P686 L687 A688 N695 N696 I697 L698

E699 I700 R701 V702 T709 Q710 R713 P716 E717 K718 Q726 P727 I743 I744 A745 F746 T747 S748 D749 Y757 F760 S761 I762 P763 P764 Y765 G766 T772 M773 Y776 I777 N778 L781 S782 V783 F784 N785 I786 F789 K790 N791 THR ASP LYS E795 R808 P816

G817 H818 P819 Q820 E821 Y822 K823 Y827 I832 K835 I846 K850 K862 I863 T864 K865 S866 K867 I868 K869 R870 E871 K872 Y873 L874 T875 GLN LYS LEU LEU HIS GLU SER HIS LEU LYS ASP LEU THR LYS ASN MET GLY ILE ILE ALA GLU ARG ILE GLY THR VAL ASP

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

ARG LEU GLU HIS HIS PRO GLN GLY GLN ARG GLU PRO

4   Experimental information   (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	124276	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 $(e^-/\text{Å}^2)$	62.4	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.885	Depositor
Minimum map value	-0.563	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.020	Depositor
Recommended contour level	0.149	Depositor
Map size (Å)	338.52002, 338.52002, 338.52002	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.302, 1.302, 1.302	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CA

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	0.28	0/6286	0.45	0/8514
1	B	0.27	0/5786	0.46	0/7840
All	All	0.27	0/12072	0.45	0/16354

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	6121	0	6084	117	0
1	B	5631	0	5608	109	0
2	A	3	0	0	0	0
2	B	3	0	0	0	0
All	All	11758	0	11692	226	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 10.

All (226) 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:B:117:SER:HG	1:B:121:ASP:N	1.77	0.83
1:B:559:GLN:HG3	1:B:669:LEU:HD21	1.65	0.77
1:A:148:LEU:HD13	1:A:195:PHE:H	1.49	0.75
1:A:145:LYS:HA	1:A:190:SER:O	1.90	0.70
1:B:334:SER:OG	1:B:372:CYS:SG	2.47	0.68
1:B:288:ILE:HD11	1:B:296:ILE:HG22	1.75	0.68
1:A:375:ASP:O	1:A:753:ARG:NH2	2.26	0.68
1:A:205:ASN:HD22	1:A:290:LYS:HE2	1.59	0.67
1:A:291:TYR:O	1:A:713:ARG:NH2	2.22	0.67
1:B:270:TYR:HA	1:B:274:ALA:HB3	1.77	0.67
1:B:647:THR:O	1:B:652:GLN:NE2	2.29	0.66
1:B:386:MET:HG3	1:B:682:VAL:HG21	1.78	0.66
1:A:647:THR:O	1:A:652:GLN:NE2	2.30	0.65
1:B:745:ALA:O	1:B:835:LYS:NZ	2.25	0.65
1:A:647:THR:HG23	1:A:652:GLN:HE21	1.63	0.64
1:A:190:SER:OG	1:A:194:ASP:OD2	2.15	0.64
1:B:90:THR:O	1:B:94:GLN:NE2	2.31	0.64
1:B:294:GLU:HB2	1:B:718:LYS:HA	1.80	0.63
1:B:104:ASN:O	1:B:108:HIS:ND1	2.21	0.63
1:B:117:SER:O	1:B:121:ASP:N	2.32	0.62
1:A:344:GLY:O	1:A:360:ARG:NH1	2.33	0.61
1:B:249:HIS:HB3	1:B:266:ARG:HD2	1.82	0.61
1:A:583:ASP:OD1	1:A:791:ASN:ND2	2.33	0.61
1:A:528:TYR:HA	1:A:531:VAL:HG22	1.81	0.61
1:B:291:TYR:O	1:B:713:ARG:NH2	2.34	0.60
1:A:353:ASP:OD1	1:A:592:ARG:NH1	2.35	0.60
1:B:344:GLY:O	1:B:360:ARG:NH1	2.35	0.60
1:A:574:LYS:NZ	1:A:601:CYS:SG	2.72	0.60
1:A:674:GLN:OE1	1:A:695:ASN:ND2	2.34	0.59
1:B:78:GLU:OE1	1:B:122:LYS:NZ	2.36	0.59
1:B:79:ASP:OD2	1:B:98:ARG:NH1	2.36	0.59
1:B:105:LEU:HD22	1:B:110:LEU:HD12	1.84	0.59
1:B:76:VAL:O	1:B:243:LYS:N	2.35	0.59
1:A:105:LEU:HD22	1:A:110:LEU:HD12	1.84	0.59
1:B:709:THR:OG1	1:B:710:GLN:NE2	2.36	0.58
1:A:386:MET:HG3	1:A:682:VAL:HG21	1.85	0.58
1:B:63:PHE:HA	1:B:70:ARG:HA	1.85	0.58
1:A:48:ARG:HE	1:A:99:GLN:HB3	1.69	0.57
1:A:375:ASP:HB3	1:A:602:LEU:HD23	1.87	0.57
1:B:111:GLN:HE21	1:B:131:PRO:HG3	1.70	0.57
1:B:587:LEU:HD21	1:B:593:SER:HB3	1.87	0.57
1:A:559:GLN:HG3	1:A:669:LEU:HD21	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:609:LEU:O	1:B:613:MET:HB2	2.05	0.57
1:A:778:ASN:OD1	1:A:808:ARG:NH1	2.37	0.56
1:A:95:LYS:HD2	1:A:98:ARG:HH12	1.70	0.56
1:B:540:LEU:HD21	1:B:547:TYR:HB2	1.88	0.56
1:A:63:PHE:HA	1:A:70:ARG:HA	1.87	0.56
1:A:236:LEU:HD23	1:A:241:ILE:HD12	1.88	0.56
1:A:812:PHE:HB2	1:A:828:TYR:HB2	1.89	0.55
1:A:596:CYS:SG	1:A:597:ASP:N	2.79	0.55
1:B:649:ARG:NH1	1:B:652:GLN:OE1	2.40	0.55
1:B:251:CYS:O	1:B:266:ARG:NH1	2.36	0.55
1:A:81:SER:O	1:A:91:ASN:ND2	2.40	0.55
1:B:59:PRO:HG2	1:B:258:GLU:HG3	1.88	0.55
1:A:207:ALA:HB1	1:A:716:PRO:HG2	1.88	0.55
1:A:625:VAL:HG23	1:A:702:VAL:HG23	1.89	0.54
1:B:284:PRO:HB2	1:B:287:LEU:HB3	1.90	0.54
1:B:384:VAL:HG13	1:B:846:ILE:HD11	1.88	0.54
1:A:250:ASP:OD2	1:A:265:GLU:N	2.40	0.54
1:A:294:GLU:HG3	1:A:718:LYS:HD2	1.90	0.54
1:A:602:LEU:HD11	1:A:684:SER:HA	1.90	0.54
1:A:749:ASP:OD2	1:A:776:TYR:OH	2.23	0.54
1:A:506:GLN:NE2	1:A:597:ASP:OD2	2.40	0.53
1:A:213:VAL:O	1:A:217:LEU:HG	2.08	0.53
1:A:569:TYR:HA	1:A:573:PHE:HD1	1.72	0.53
1:B:749:ASP:OD2	1:B:776:TYR:OH	2.23	0.53
1:A:90:THR:O	1:A:94:GLN:HG2	2.09	0.53
1:A:525:ASN:OD1	1:A:559:GLN:NE2	2.40	0.52
1:A:541:PRO:HG3	1:A:547:TYR:HD1	1.74	0.52
1:A:709:THR:OG1	1:A:710:GLN:OE1	2.18	0.52
1:A:757:TYR:HB2	1:A:773:MET:SD	2.49	0.52
1:B:778:ASN:OD1	1:B:808:ARG:NH1	2.39	0.52
1:A:608:GLN:HE21	1:A:612:ILE:HD11	1.75	0.52
1:B:526:THR:HA	1:B:529:GLU:HB3	1.91	0.51
1:B:699:GLU:HA	1:B:702:VAL:HG12	1.92	0.51
1:B:81:SER:O	1:B:91:ASN:ND2	2.43	0.51
1:B:464:ILE:HG23	1:B:561:VAL:HG21	1.92	0.51
1:A:62:LEU:HD11	1:A:250:ASP:HA	1.92	0.51
1:B:726:GLN:HB3	1:B:727:PRO:HD3	1.94	0.50
1:A:303:LEU:HG	1:A:700:ILE:HG12	1.93	0.50
1:B:452:ARG:NH1	1:B:538:PHE:O	2.45	0.50
1:A:249:HIS:HB3	1:A:266:ARG:HD2	1.94	0.50
1:A:49:THR:HG22	1:A:52:PHE:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:781:LEU:O	1:B:808:ARG:NH2	2.41	0.50
1:B:207:ALA:HB1	1:B:716:PRO:HG2	1.93	0.50
1:A:616:LYS:O	1:A:620:ASN:HB2	2.12	0.50
1:A:631:MET:SD	1:A:657:GLN:NE2	2.85	0.49
1:A:45:GLN:OE1	1:A:45:GLN:N	2.42	0.49
1:A:706:LYS:HA	1:A:710:GLN:HG2	1.95	0.49
1:A:289:ARG:HD2	1:A:408:TRP:CD2	2.47	0.49
1:A:296:ILE:HG13	1:A:664:LEU:HD11	1.93	0.49
1:A:762:ILE:O	1:A:766:GLY:N	2.42	0.49
1:B:252:ARG:HE	1:B:255:TYR:HD2	1.61	0.48
1:B:273:TRP:CH2	1:B:288:ILE:HG13	2.48	0.48
1:A:305:TYR:CE2	1:A:397:TRP:HB2	2.48	0.48
1:A:302:TRP:HD1	1:A:397:TRP:CE2	2.31	0.48
1:A:273:TRP:HE1	1:A:283:GLN:HG2	1.78	0.48
1:B:333:TRP:HH2	1:B:371:LEU:HB3	1.78	0.48
1:B:762:ILE:O	1:B:766:GLY:N	2.39	0.48
1:A:142:MET:HE3	1:A:212:ILE:HA	1.96	0.47
1:B:112:LEU:HG	1:B:128:VAL:HG22	1.96	0.47
1:B:588:LEU:HG	1:B:590:LYS:H	1.79	0.47
1:B:111:GLN:HG3	1:B:131:PRO:HG3	1.95	0.47
1:B:757:TYR:HB2	1:B:773:MET:SD	2.55	0.47
1:A:279:ILE:HG13	1:A:701:ARG:HG3	1.96	0.47
1:A:586:TYR:HA	1:A:592:ARG:H	1.80	0.47
1:A:781:LEU:O	1:A:808:ARG:NH2	2.38	0.47
1:B:74:ILE:HD13	1:B:127:LYS:HA	1.96	0.46
1:B:391:THR:OG1	1:B:850:LYS:HG2	2.15	0.46
1:B:790:LYS:HZ2	1:B:795:GLU:N	2.12	0.46
1:A:52:PHE:HZ	1:A:116:ARG:HD3	1.80	0.46
1:B:76:VAL:HG22	1:B:125:PHE:CD1	2.50	0.46
1:A:753:ARG:HG2	1:A:776:TYR:CZ	2.51	0.46
1:B:112:LEU:HA	1:B:127:LYS:O	2.15	0.46
1:A:584:PRO:HG3	1:A:592:ARG:NH1	2.31	0.46
1:A:587:LEU:H	1:A:591:TYR:HA	1.80	0.46
1:A:275:HIS:CD2	1:A:277:ARG:H	2.33	0.46
1:B:464:ILE:HD11	1:B:557:LEU:HD23	1.98	0.45
1:A:863:ILE:HG22	1:A:867:LYS:NZ	2.32	0.45
1:A:725:TRP:O	1:A:729:MET:HG3	2.16	0.45
1:A:753:ARG:HA	1:A:776:TYR:CE1	2.51	0.45
1:B:541:PRO:O	1:B:542:ARG:HG2	2.17	0.45
1:A:627:LEU:HB3	1:A:628:PRO:HD3	1.98	0.45
1:A:71:ILE:HG12	1:A:127:LYS:HB3	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:785:ASN:OD1	1:A:786:ILE:N	2.49	0.45
1:B:76:VAL:HG23	1:B:246:PHE:HE1	1.81	0.45
1:B:206:PRO:HA	1:B:209:ARG:HD3	1.99	0.45
1:B:306:TYR:HA	1:B:393:PHE:HE1	1.82	0.45
1:A:134:VAL:HA	1:A:137:THR:HG22	1.99	0.44
1:B:129:HIS:CD2	1:B:209:ARG:HH22	2.36	0.44
1:A:101:TYR:HE1	1:A:220:VAL:HG23	1.82	0.44
1:B:117:SER:HB3	1:B:125:PHE:HE2	1.81	0.44
1:A:251:CYS:O	1:A:266:ARG:NH1	2.40	0.44
1:A:421:PRO:HA	1:A:424:GLU:HG2	1.99	0.44
1:A:205:ASN:O	1:A:209:ARG:HG3	2.17	0.44
1:A:762:ILE:HG13	1:A:764:PRO:HG2	2.00	0.44
1:A:786:ILE:HG12	1:A:805:THR:O	2.17	0.44
1:B:60:ASP:HA	1:B:649:ARG:HG2	2.00	0.44
1:B:239:SER:O	1:B:241:ILE:HG13	2.17	0.44
1:A:74:ILE:HD13	1:A:127:LYS:HA	1.99	0.44
1:A:95:LYS:HE2	1:A:99:GLN:NE2	2.32	0.44
1:A:685:PHE:CE1	1:A:688:ALA:HB2	2.53	0.44
1:A:45:GLN:HB3	1:A:100:ALA:HA	2.00	0.44
1:B:325:TYR:O	1:B:328:GLN:HB2	2.18	0.44
1:B:743:ILE:O	1:B:747:THR:HG22	2.17	0.44
1:A:120:ASP:HB2	1:A:123:LEU:HB2	2.00	0.44
1:A:656:LEU:O	1:A:712:ARG:NH2	2.50	0.44
1:B:532:ALA:HB2	1:B:558:PHE:HE2	1.82	0.44
1:A:191:ARG:HB3	1:A:192:MET:H	1.70	0.43
1:B:138:TYR:CG	1:B:216:ILE:HD11	2.53	0.43
1:B:273:TRP:CD1	1:B:284:PRO:HD2	2.53	0.43
1:B:846:ILE:O	1:B:850:LYS:HG3	2.19	0.43
1:A:374:PHE:O	1:A:379:THR:HG21	2.18	0.43
1:A:745:ALA:O	1:A:835:LYS:NZ	2.29	0.43
1:A:763:PRO:N	1:A:764:PRO:HD2	2.34	0.43
1:B:66:ASP:OD2	1:B:69:ARG:NH1	2.51	0.43
1:B:215:PHE:HD2	1:B:216:ILE:HD12	1.83	0.43
1:B:322:LEU:HD22	1:B:322:LEU:HA	1.89	0.43
1:B:574:LYS:NZ	1:B:604:GLU:OE1	2.42	0.43
1:B:639:ARG:HH22	1:B:645:LYS:NZ	2.17	0.43
1:A:609:LEU:HD13	1:A:685:PHE:HE1	1.83	0.43
1:A:767:ASP:OD1	1:A:767:ASP:N	2.52	0.43
1:A:412:GLU:HG3	1:A:718:LYS:HE2	2.00	0.43
1:A:117:SER:HB3	1:A:120:ASP:O	2.19	0.43
1:B:56:ASN:HD22	1:B:118:VAL:HB	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:785:ASN:OD1	1:B:786:ILE:N	2.52	0.43
1:A:60:ASP:HB3	1:A:258:GLU:HB2	2.00	0.43
1:B:760:PHE:CZ	1:B:827:TYR:HD1	2.37	0.43
1:A:536:THR:HA	1:A:539:GLU:HG2	2.01	0.42
1:B:695:ASN:O	1:B:699:GLU:HB2	2.18	0.42
1:A:751:ILE:HB	1:A:752:PRO:HD3	2.01	0.42
1:A:785:ASN:H	1:A:816:PRO:HG3	1.83	0.42
1:B:685:PHE:CE1	1:B:688:ALA:HB2	2.54	0.42
1:B:80:GLU:OE1	1:B:116:ARG:NH2	2.51	0.42
1:B:364:THR:HG22	1:B:367:SER:HB2	2.01	0.42
1:B:701:ARG:HA	1:B:701:ARG:HD3	1.82	0.42
1:B:283:GLN:OE1	1:B:700:ILE:HD13	2.18	0.42
1:B:820:GLN:N	1:B:820:GLN:OE1	2.52	0.42
1:A:859:ASP:OD1	1:A:859:ASP:N	2.52	0.42
1:B:548:GLU:OE2	1:B:662:LEU:HB3	2.19	0.42
1:B:818:HIS:HB3	1:B:821:GLU:HA	2.01	0.42
1:A:98:ARG:NE	1:A:102:GLU:OE2	2.53	0.42
1:A:392:LEU:HD23	1:A:392:LEU:HA	1.90	0.42
1:A:542:ARG:HG3	1:A:543:THR:HG23	2.01	0.42
1:B:249:HIS:CE1	1:B:713:ARG:HB2	2.54	0.42
1:A:138:TYR:CE1	1:A:216:ILE:HG12	2.55	0.42
1:A:686:PRO:O	1:A:689:PRO:HD2	2.18	0.42
1:B:353:ASP:OD2	1:B:586:TYR:OH	2.36	0.42
1:B:820:GLN:HB3	1:B:823:LYS:HG3	2.02	0.42
1:B:352:CYS:SG	1:B:356:CYS:N	2.93	0.42
1:A:46:ASP:OD1	1:A:46:ASP:N	2.53	0.41
1:A:759:SER:O	1:A:765:TYR:HD2	2.03	0.41
1:B:587:LEU:HB2	1:B:588:LEU:HD23	2.01	0.41
1:B:685:PHE:HA	1:B:686:PRO:HD3	1.85	0.41
1:B:763:PRO:N	1:B:764:PRO:HD2	2.35	0.41
1:A:470:SER:O	1:A:474:ILE:HG12	2.21	0.41
1:A:625:VAL:HG12	1:A:626:LEU:HD23	2.01	0.41
1:B:294:GLU:HG3	1:B:718:LYS:HG2	2.02	0.41
1:A:699:GLU:HA	1:A:702:VAL:HG12	2.02	0.41
1:A:726:GLN:HB3	1:A:727:PRO:HD3	2.03	0.41
1:B:289:ARG:HD2	1:B:408:TRP:CD2	2.56	0.41
1:A:74:ILE:HG13	1:A:248:LEU:HD21	2.03	0.41
1:A:598:PRO:HA	1:A:810:ARG:HD3	2.02	0.41
1:B:72:ASP:OD1	1:B:209:ARG:NH2	2.44	0.41
1:A:527:ILE:O	1:A:531:VAL:HG13	2.21	0.41
1:B:117:SER:OG	1:B:121:ASP:N	2.47	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:524:LEU:HD13	1:B:524:LEU:HA	1.88	0.41
1:B:772:THR:OG1	1:B:773:MET:N	2.53	0.41
1:A:50:PRO:HG2	1:A:112:LEU:O	2.20	0.41
1:B:45:GLN:CD	1:B:45:GLN:H	2.23	0.41
1:B:76:VAL:HG11	1:B:654:TYR:CE1	2.56	0.41
1:B:219:ARG:HA	1:B:219:ARG:HD3	1.81	0.41
1:B:269:LEU:HD13	1:B:287:LEU:HG	2.03	0.41
1:B:275:HIS:ND1	1:B:276:PRO:HD2	2.35	0.41
1:B:572:PHE:O	1:B:576:LYS:HG3	2.20	0.41
1:B:590:LYS:HE2	1:B:590:LYS:HB3	1.79	0.41
1:B:785:ASN:H	1:B:816:PRO:HG3	1.86	0.41
1:B:281:LYS:O	1:B:701:ARG:NH2	2.54	0.41
1:A:108:HIS:CE1	1:A:220:VAL:HG12	2.56	0.40
1:A:423:TYR:CG	1:A:542:ARG:HA	2.56	0.40
1:A:104:ASN:ND2	1:A:222:TYR:HA	2.36	0.40
1:B:578:VAL:HG11	1:B:595:GLU:HG2	2.02	0.40
1:A:365:CYS:SG	1:A:369:LYS:HE3	2.62	0.40
1:A:581:PRO:HB2	1:A:784:PHE:CE1	2.57	0.40
1:A:611:ILE:HD13	1:A:611:ILE:HA	1.91	0.40
1:B:275:HIS:CG	1:B:276:PRO:HD2	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	721/975 (74%)	695 (96%)	26 (4%)	0	100	100
1	B	664/975 (68%)	639 (96%)	25 (4%)	0	100	100
All	All	1385/1950 (71%)	1334 (96%)	51 (4%)	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	667/877 (76%)	647 (97%)	20 (3%)	41	71
1	B	612/877 (70%)	584 (95%)	28 (5%)	27	61
All	All	1279/1754 (73%)	1231 (96%)	48 (4%)	36	65

All (48) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	48	ARG
1	A	73	PHE
1	A	120	ASP
1	A	129	HIS
1	A	196	TYR
1	A	269	LEU
1	A	364	THR
1	A	411	VAL
1	A	413	LEU
1	A	456	CYS
1	A	463	TRP
1	A	504	THR
1	A	536	THR
1	A	609	LEU
1	A	619	TRP
1	A	640	VAL
1	A	647	THR
1	A	668	TYR
1	A	685	PHE
1	A	747	THR
1	B	73	PHE
1	B	95	LYS
1	B	115	THR
1	B	132	TRP
1	B	205	ASN
1	B	288	ILE
1	B	322	LEU

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Mol	Chain	Res	Type
1	B	338	CYS
1	B	364	THR
1	B	413	LEU
1	B	452	ARG
1	B	456	CYS
1	B	463	TRP
1	B	467	ILE
1	B	524	LEU
1	B	530	LYS
1	B	554	LYS
1	B	587	LEU
1	B	623	GLN
1	B	647	THR
1	B	662	LEU
1	B	685	PHE
1	B	697	ILE
1	B	747	THR
1	B	761	SER
1	B	783	VAL
1	B	832	ILE
1	B	873	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	205	ASN
1	A	275	HIS
1	A	549	ASN
1	A	632	ASN
1	A	657	GLN
1	A	730	GLN
1	A	814	ASN
1	B	129	HIS
1	B	559	GLN
1	B	710	GLN
1	B	814	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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-15917. 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
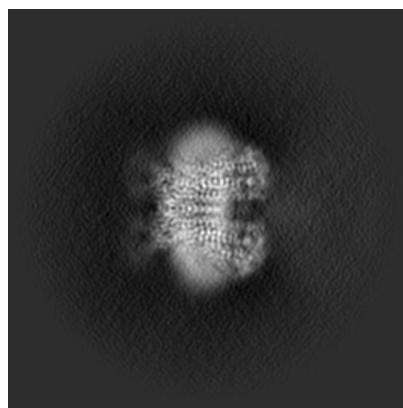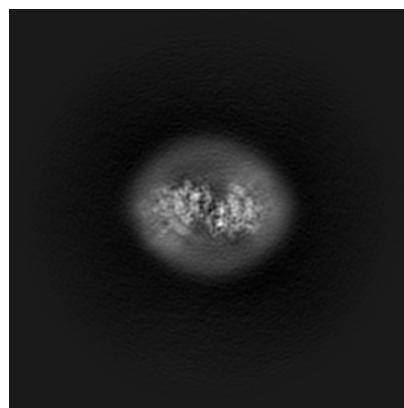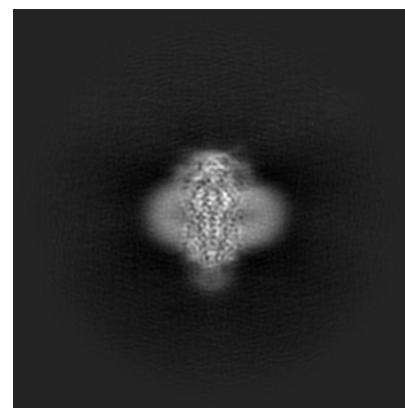
X　　　　　　　　　　Y　　　　　　　　　　Z

6.1.2 Raw map

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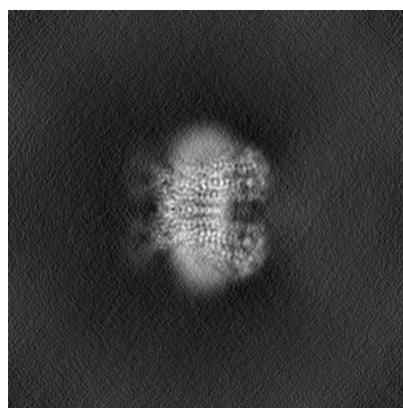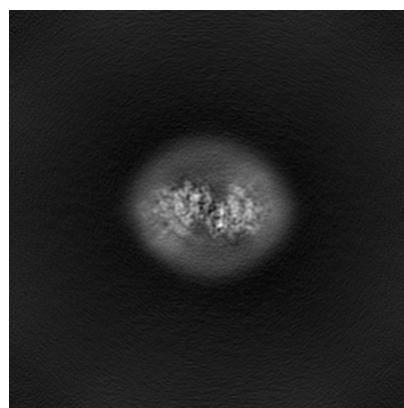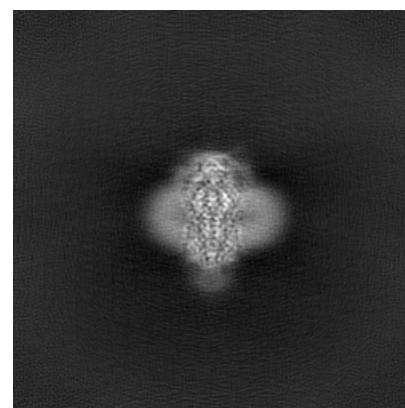
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ
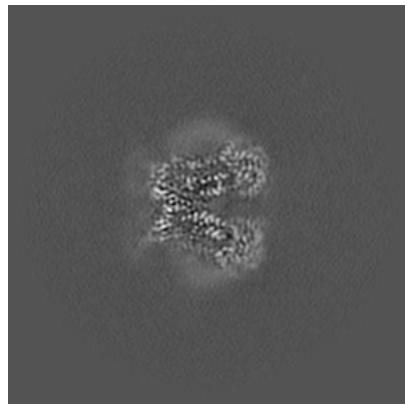
6.2.1　Primary map
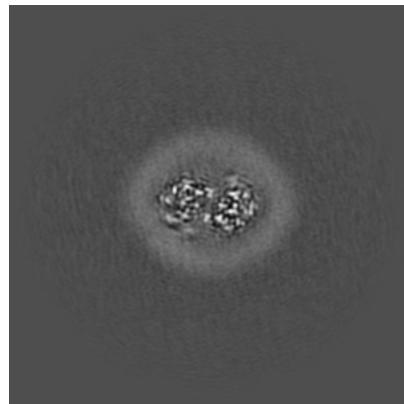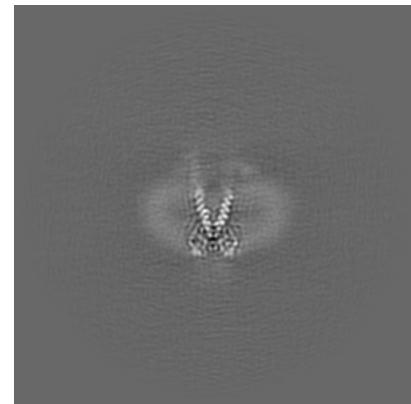
| X Index: 130 | Y Index: 130 | Z Index: 130 |

6.2.2　Raw map
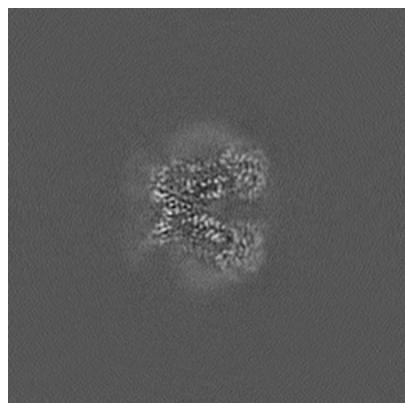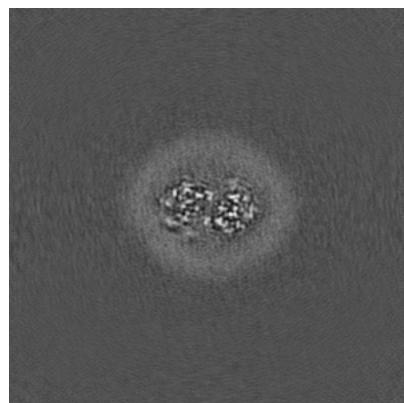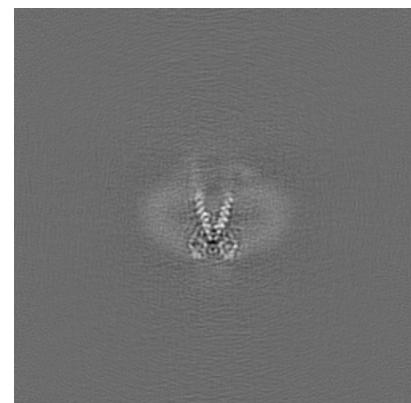
| X Index: 130 | Y Index: 130 | Z Index: 130 |

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

6.3 Largest variance slices ⓘ
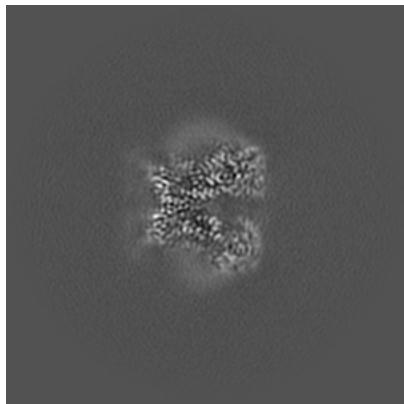
6.3.1 Primary map

X Index: 128
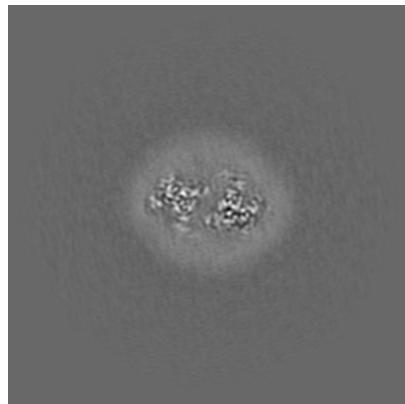
Y Index: 137
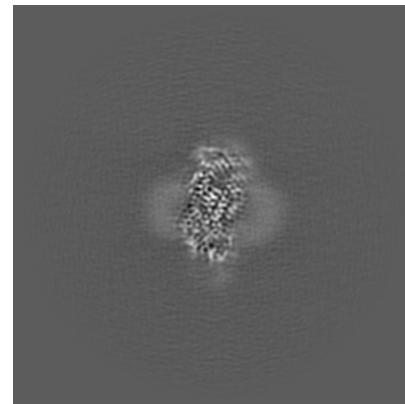
Z Index: 147

6.3.2 Raw map
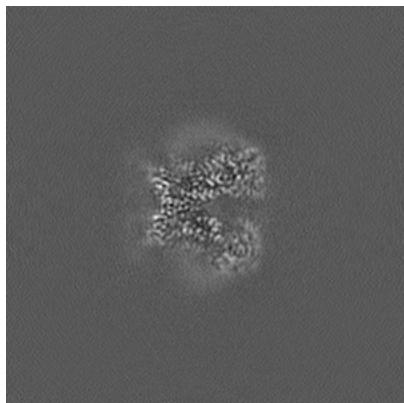
X Index: 128
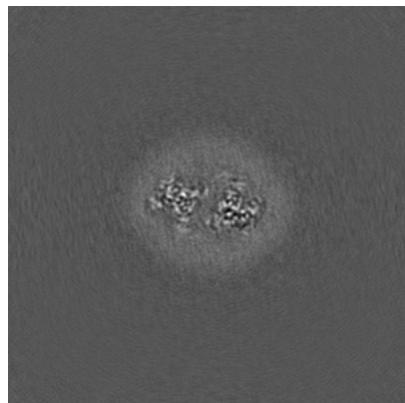
Y Index: 137
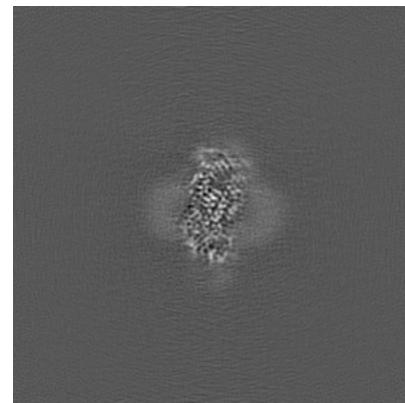
Z Index: 147

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X   Y   Z
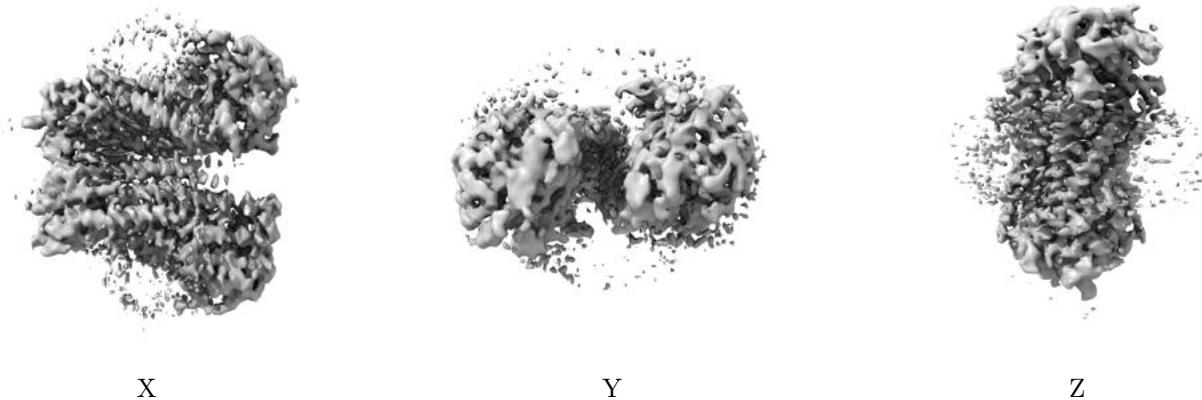
The images above show the 3D surface view of the map at the recommended contour level 0.149. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

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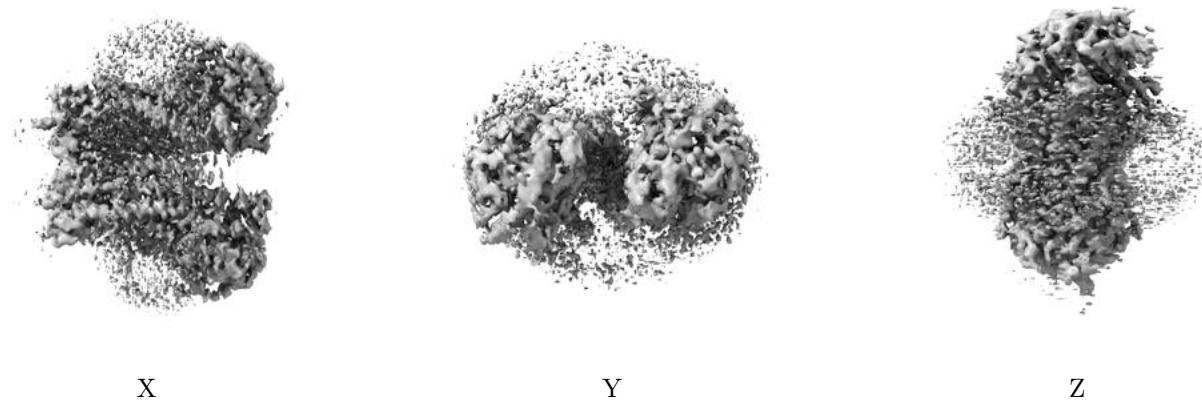
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.5 Mask visualisation (i)

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

7 Map analysis ⓘ

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

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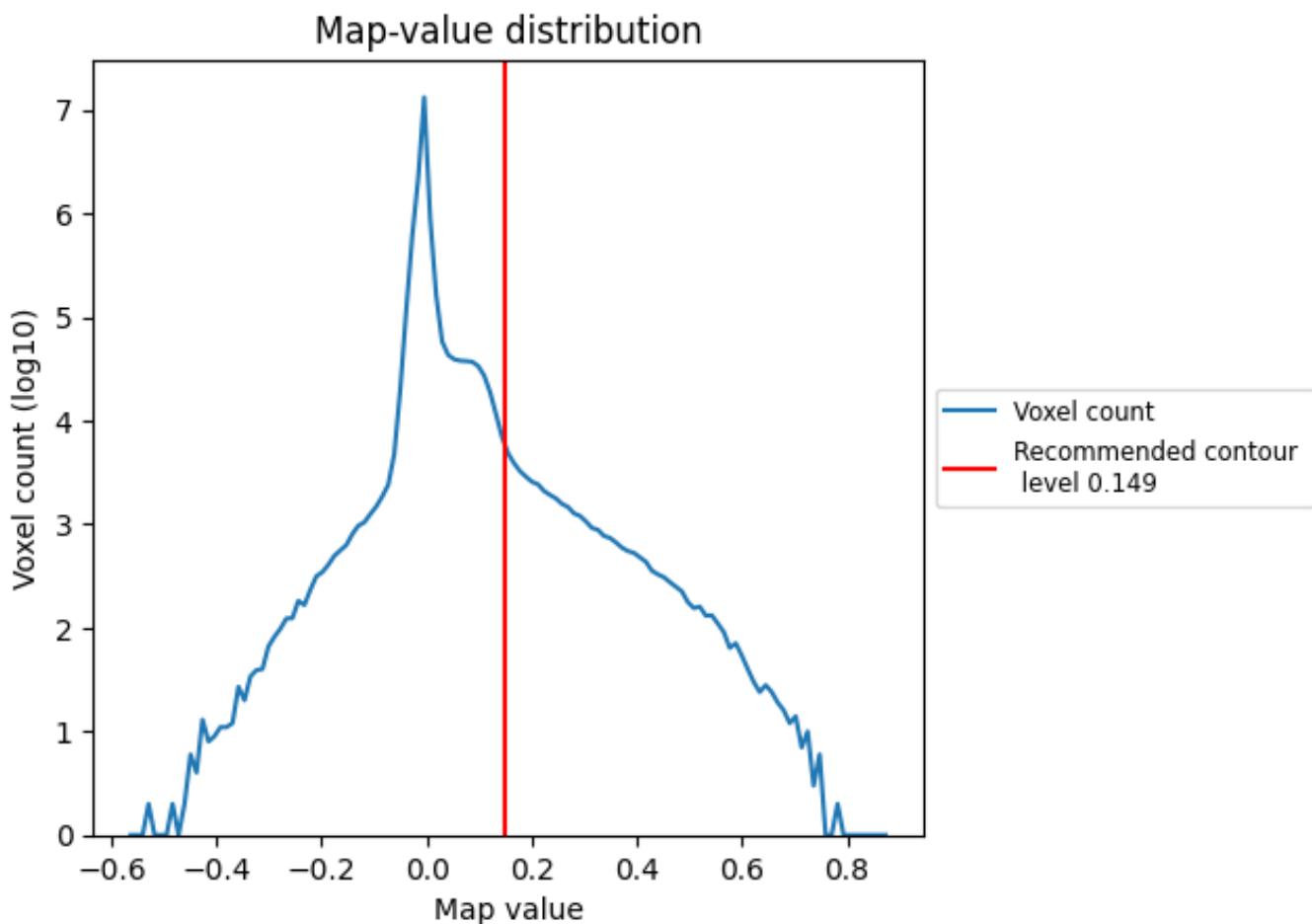
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
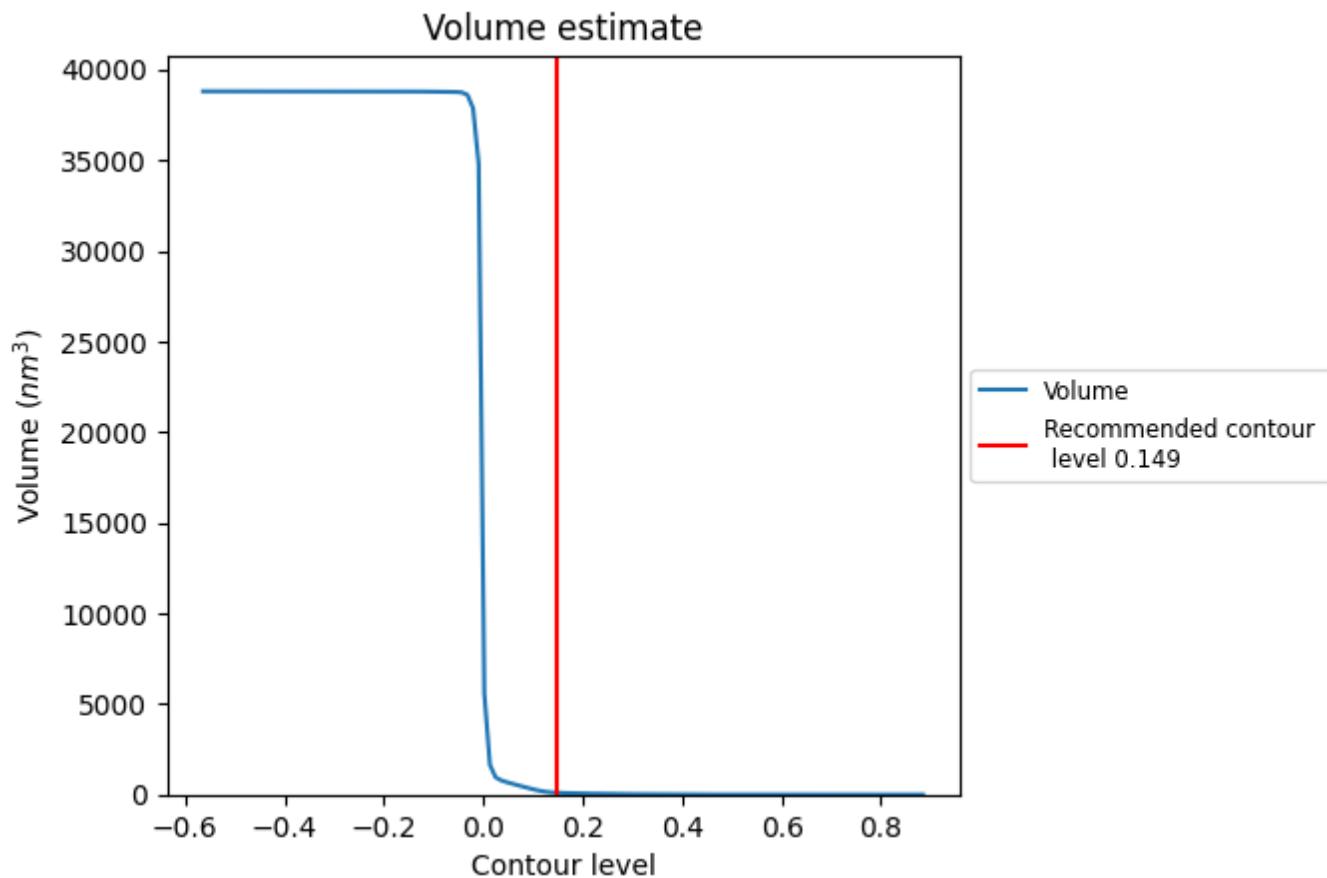
The volume at the recommended contour level is 100 nm^3; this corresponds to an approximate mass of 90 kDa.

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 ⓘ
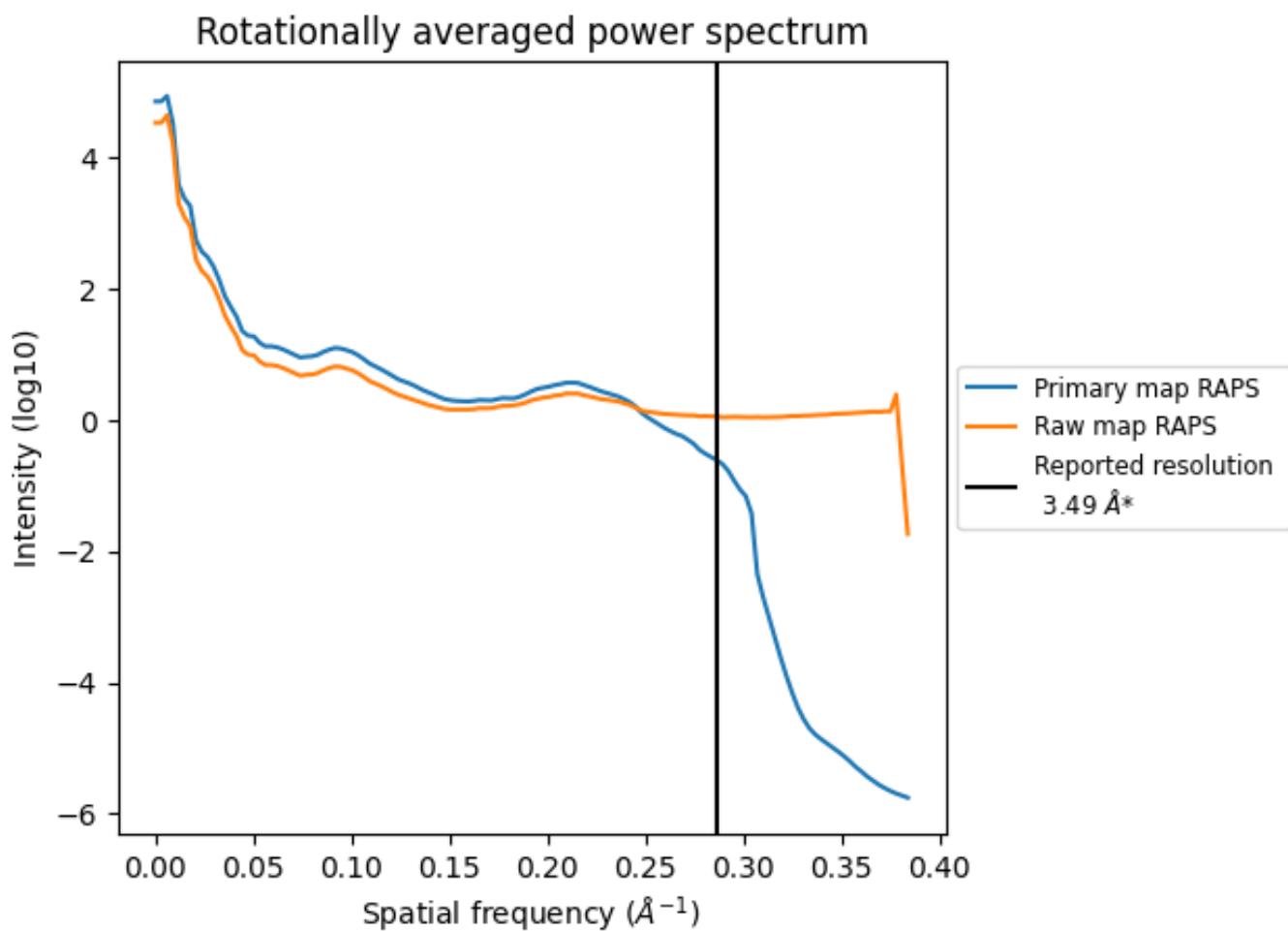
*Reported resolution corresponds to spatial frequency of 0.287 Å^{-1}

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 ⓘ
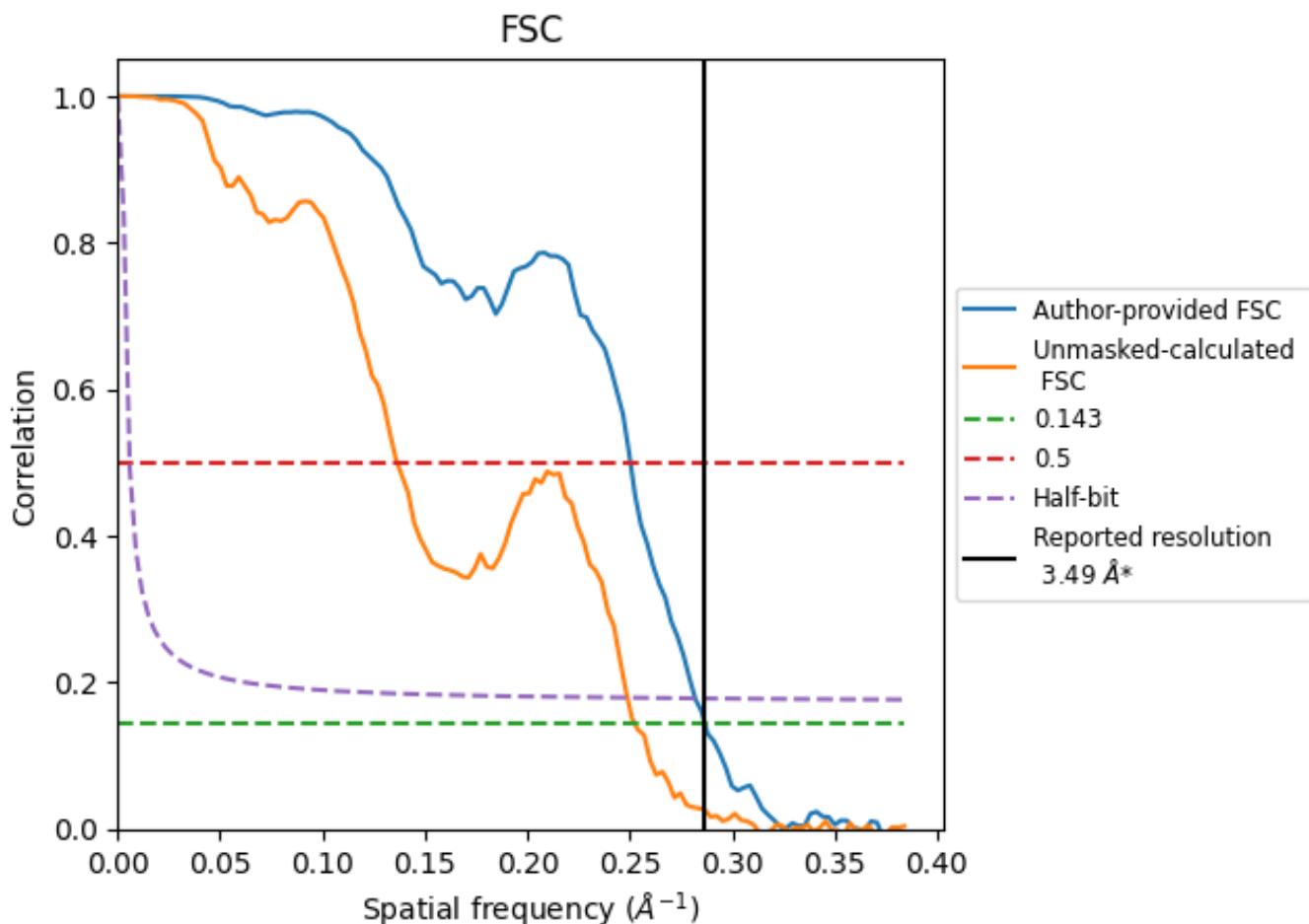
*Reported resolution corresponds to spatial frequency of 0.287 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.49	-	-
Author-provided FSC curve	3.49	4.00	3.55
Unmasked-calculated*	3.96	7.33	4.02

*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 3.96 differs from the reported value 3.49 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-15917 and PDB model 8B8M. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ

X   Y   Z
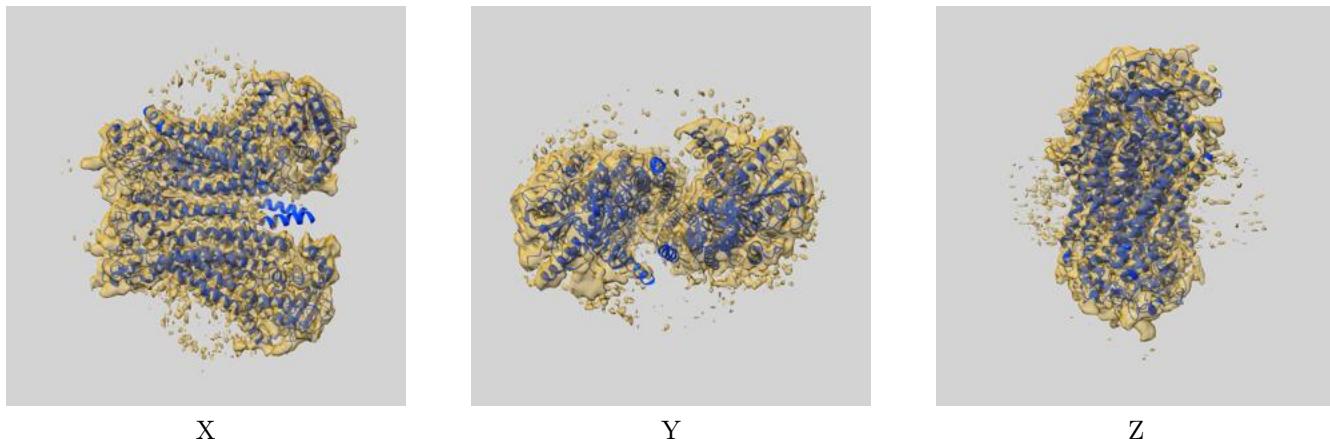
The images above show the 3D surface view of the map at the recommended contour level 0.149 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model (i)

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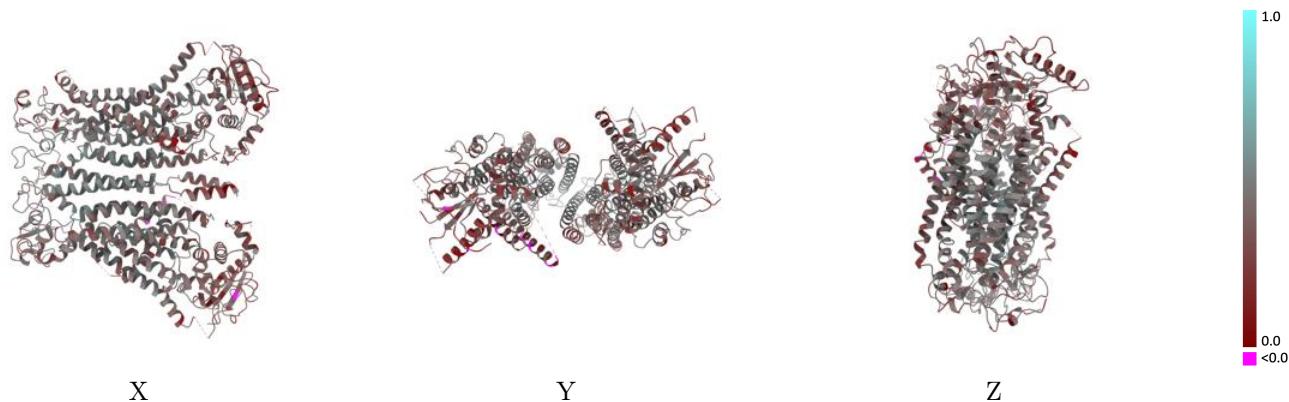
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X   Y   Z
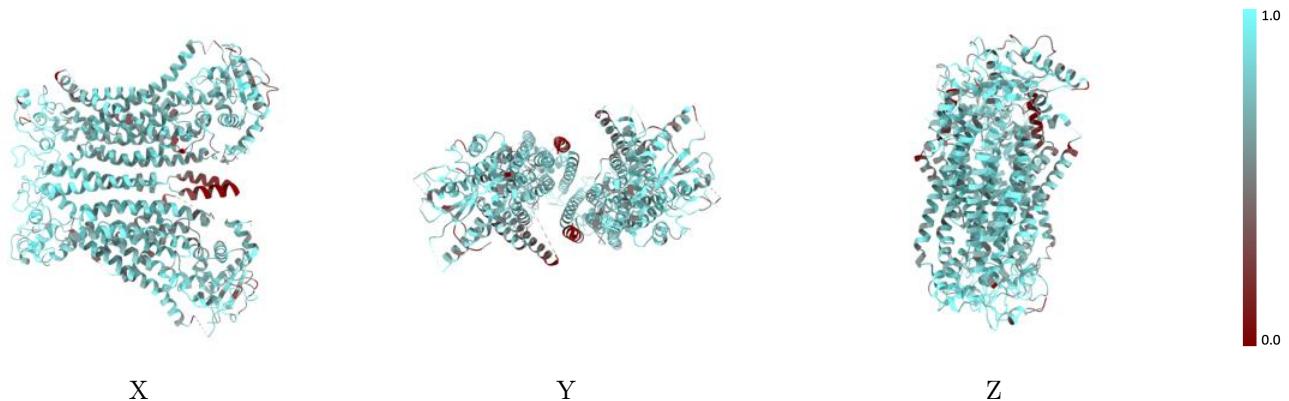
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.149).

9.4 Atom inclusion ⓘ
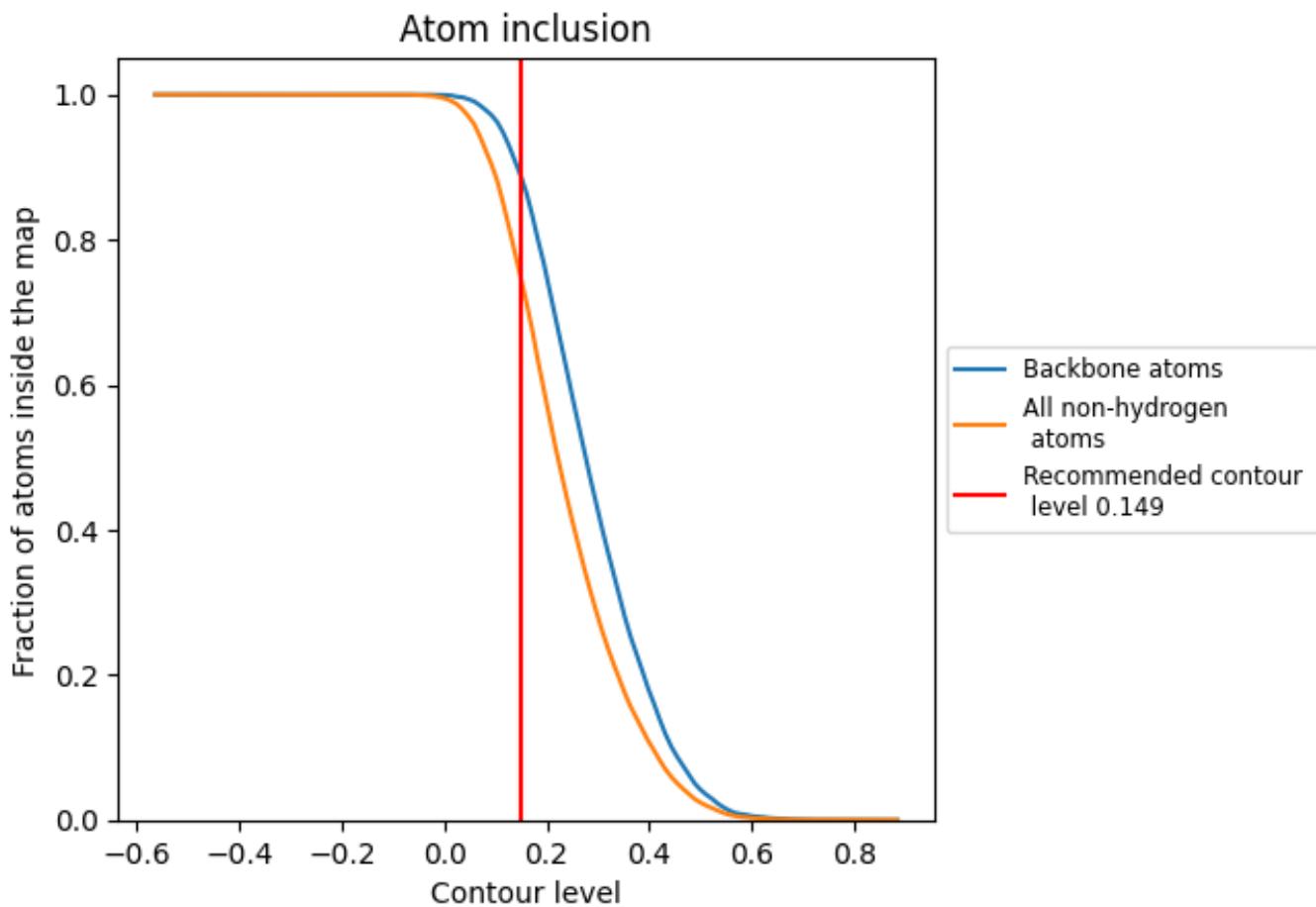
At the recommended contour level, 89% of all backbone atoms, 75% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.149) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7497	0.3910
A	0.7550	0.3970
B	0.7440	0.3840

1.0

0.0
<0.0