



Full wwPDB EM Validation Report ⓘ

May 16, 2026 – 12:33 PM EDT

PDB ID : 9OR5 / pdb_00009or5
EMDB ID : EMD-70771
Title : Cryo-EM structure of rat TRPM1 in the apo state
Authors : Fabrizio, M.; Zhao, C.
Deposited on : 2025-05-21
Resolution : 4.30 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:

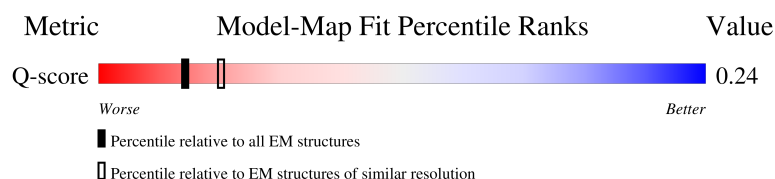
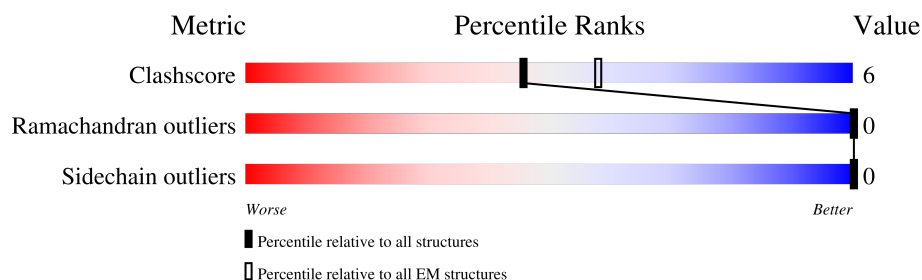
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 4.30 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	4585 (3.80 - 4.80)

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 $\leq 5\%$. 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	1373	
1	B	1373	
1	C	1373	
1	D	1373	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 30436 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 Isoform 2 of Transient receptor potential cation channel sub-family M member 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	946	Total	C	N	O	S	0	0
			7609	4915	1283	1355	56		
1	B	946	Total	C	N	O	S	0	0
			7609	4915	1283	1355	56		
1	C	946	Total	C	N	O	S	0	0
			7609	4915	1283	1355	56		
1	D	946	Total	C	N	O	S	0	0
			7609	4915	1283	1355	56		

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LYS	deletion	UNP Q2WEA5
A	?	-	SER	deletion	UNP Q2WEA5
A	1352	PRO	-	expression tag	UNP Q2WEA5
A	1353	SER	-	expression tag	UNP Q2WEA5
A	1354	ARG	-	expression tag	UNP Q2WEA5
A	1355	LEU	-	expression tag	UNP Q2WEA5
A	1356	GLU	-	expression tag	UNP Q2WEA5
A	1357	GLU	-	expression tag	UNP Q2WEA5
A	1358	GLU	-	expression tag	UNP Q2WEA5
A	1359	LEU	-	expression tag	UNP Q2WEA5
A	1360	ARG	-	expression tag	UNP Q2WEA5
A	1361	ARG	-	expression tag	UNP Q2WEA5
A	1362	ARG	-	expression tag	UNP Q2WEA5
A	1363	LEU	-	expression tag	UNP Q2WEA5
A	1364	THR	-	expression tag	UNP Q2WEA5
A	1365	GLU	-	expression tag	UNP Q2WEA5
A	1366	ASN	-	expression tag	UNP Q2WEA5
A	1367	SER	-	expression tag	UNP Q2WEA5
A	1368	LEU	-	expression tag	UNP Q2WEA5
A	1369	GLU	-	expression tag	UNP Q2WEA5
A	1370	VAL	-	expression tag	UNP Q2WEA5

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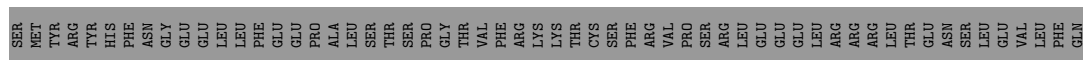
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Chain	Residue	Modelled	Actual	Comment	Reference
A	1371	LEU	-	expression tag	UNP Q2WEA5
A	1372	PHE	-	expression tag	UNP Q2WEA5
A	1373	GLN	-	expression tag	UNP Q2WEA5
B	?	-	LYS	deletion	UNP Q2WEA5
B	?	-	SER	deletion	UNP Q2WEA5
B	1352	PRO	-	expression tag	UNP Q2WEA5
B	1353	SER	-	expression tag	UNP Q2WEA5
B	1354	ARG	-	expression tag	UNP Q2WEA5
B	1355	LEU	-	expression tag	UNP Q2WEA5
B	1356	GLU	-	expression tag	UNP Q2WEA5
B	1357	GLU	-	expression tag	UNP Q2WEA5
B	1358	GLU	-	expression tag	UNP Q2WEA5
B	1359	LEU	-	expression tag	UNP Q2WEA5
B	1360	ARG	-	expression tag	UNP Q2WEA5
B	1361	ARG	-	expression tag	UNP Q2WEA5
B	1362	ARG	-	expression tag	UNP Q2WEA5
B	1363	LEU	-	expression tag	UNP Q2WEA5
B	1364	THR	-	expression tag	UNP Q2WEA5
B	1365	GLU	-	expression tag	UNP Q2WEA5
B	1366	ASN	-	expression tag	UNP Q2WEA5
B	1367	SER	-	expression tag	UNP Q2WEA5
B	1368	LEU	-	expression tag	UNP Q2WEA5
B	1369	GLU	-	expression tag	UNP Q2WEA5
B	1370	VAL	-	expression tag	UNP Q2WEA5
B	1371	LEU	-	expression tag	UNP Q2WEA5
B	1372	PHE	-	expression tag	UNP Q2WEA5
B	1373	GLN	-	expression tag	UNP Q2WEA5
C	?	-	LYS	deletion	UNP Q2WEA5
C	?	-	SER	deletion	UNP Q2WEA5
C	1352	PRO	-	expression tag	UNP Q2WEA5
C	1353	SER	-	expression tag	UNP Q2WEA5
C	1354	ARG	-	expression tag	UNP Q2WEA5
C	1355	LEU	-	expression tag	UNP Q2WEA5
C	1356	GLU	-	expression tag	UNP Q2WEA5
C	1357	GLU	-	expression tag	UNP Q2WEA5
C	1358	GLU	-	expression tag	UNP Q2WEA5
C	1359	LEU	-	expression tag	UNP Q2WEA5
C	1360	ARG	-	expression tag	UNP Q2WEA5
C	1361	ARG	-	expression tag	UNP Q2WEA5
C	1362	ARG	-	expression tag	UNP Q2WEA5
C	1363	LEU	-	expression tag	UNP Q2WEA5
C	1364	THR	-	expression tag	UNP Q2WEA5

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1365	GLU	-	expression tag	UNP Q2WEA5
C	1366	ASN	-	expression tag	UNP Q2WEA5
C	1367	SER	-	expression tag	UNP Q2WEA5
C	1368	LEU	-	expression tag	UNP Q2WEA5
C	1369	GLU	-	expression tag	UNP Q2WEA5
C	1370	VAL	-	expression tag	UNP Q2WEA5
C	1371	LEU	-	expression tag	UNP Q2WEA5
C	1372	PHE	-	expression tag	UNP Q2WEA5
C	1373	GLN	-	expression tag	UNP Q2WEA5
D	?	-	LYS	deletion	UNP Q2WEA5
D	?	-	SER	deletion	UNP Q2WEA5
D	1352	PRO	-	expression tag	UNP Q2WEA5
D	1353	SER	-	expression tag	UNP Q2WEA5
D	1354	ARG	-	expression tag	UNP Q2WEA5
D	1355	LEU	-	expression tag	UNP Q2WEA5
D	1356	GLU	-	expression tag	UNP Q2WEA5
D	1357	GLU	-	expression tag	UNP Q2WEA5
D	1358	GLU	-	expression tag	UNP Q2WEA5
D	1359	LEU	-	expression tag	UNP Q2WEA5
D	1360	ARG	-	expression tag	UNP Q2WEA5
D	1361	ARG	-	expression tag	UNP Q2WEA5
D	1362	ARG	-	expression tag	UNP Q2WEA5
D	1363	LEU	-	expression tag	UNP Q2WEA5
D	1364	THR	-	expression tag	UNP Q2WEA5
D	1365	GLU	-	expression tag	UNP Q2WEA5
D	1366	ASN	-	expression tag	UNP Q2WEA5
D	1367	SER	-	expression tag	UNP Q2WEA5
D	1368	LEU	-	expression tag	UNP Q2WEA5
D	1369	GLU	-	expression tag	UNP Q2WEA5
D	1370	VAL	-	expression tag	UNP Q2WEA5
D	1371	LEU	-	expression tag	UNP Q2WEA5
D	1372	PHE	-	expression tag	UNP Q2WEA5
D	1373	GLN	-	expression tag	UNP Q2WEA5

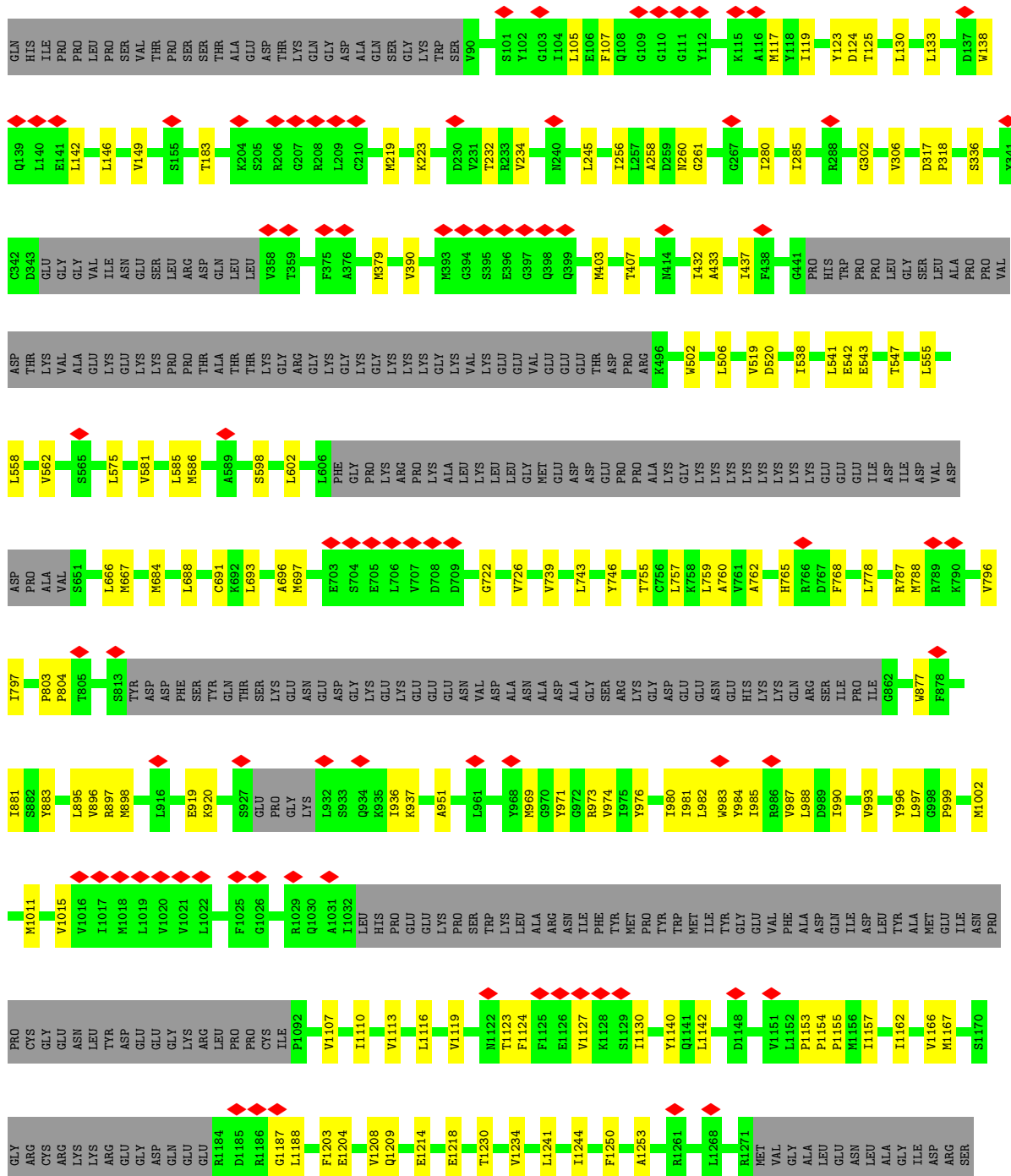


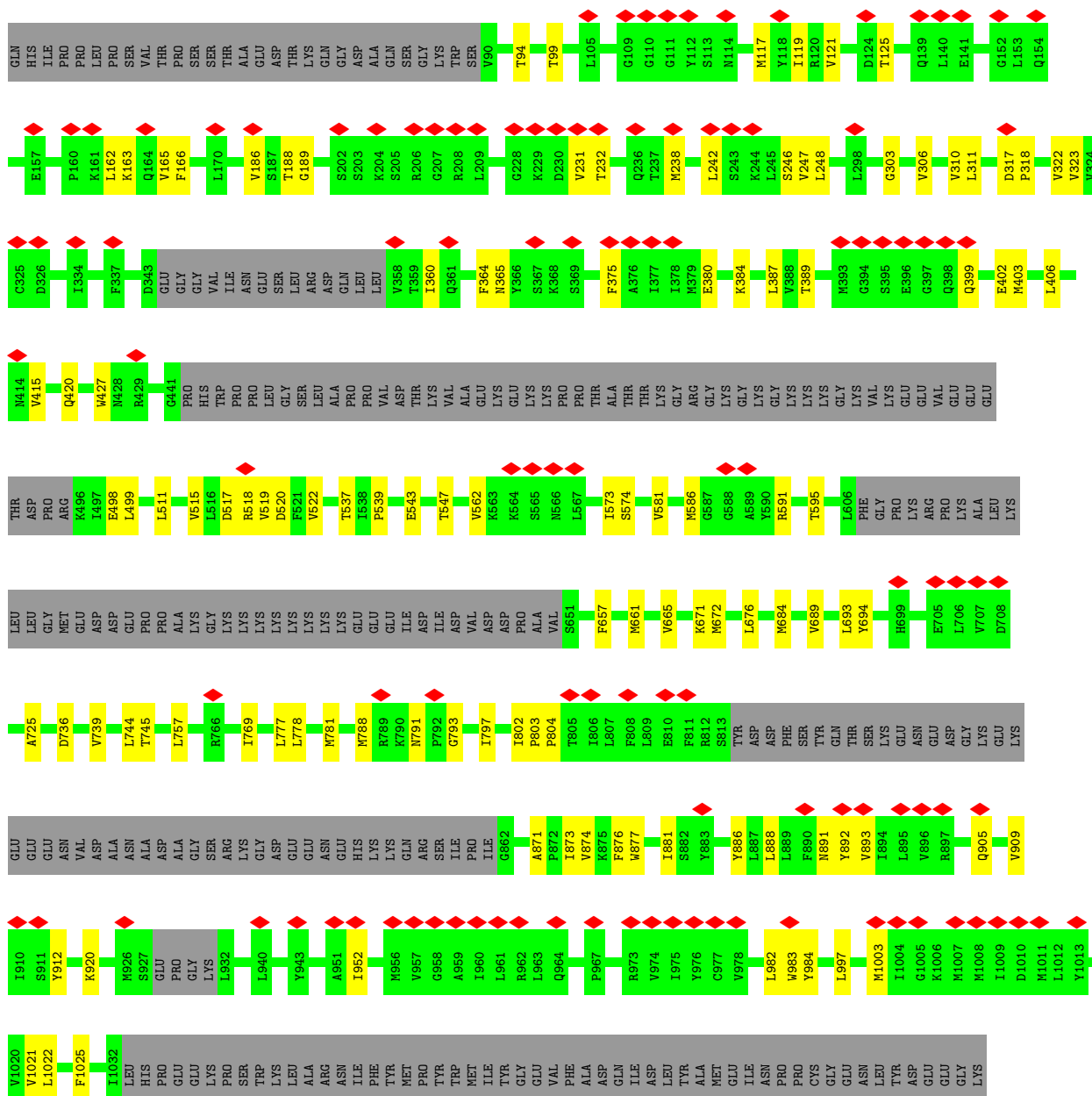
- Chain B: 58% 11% 31%



- Molecule 1: Isoform 2 of Transient receptor potential cation channel subfamily M member 1

MET	GLY	SER	SER	ARG	MET	LYS	LYS	ARG	GLY	SER	SER	SER	PHE	LYS	LYS	LYS	SER	THR	SER	SER	SER	GLN	LYS	GLY	GLN	LYS	ALA	ALA	TRP	ILE	ILE	GLU	GLU	LYS	THR	PHE	CYS	LYS	LYS	ARG	GLU	CYS	CYS	ILE	ILE	PHE	VAL	ILE	ILE	PRO	PRO	ASN	ASN	ARG	ARG	CYS	CYS	CYS	GLY	GLN	LEU	LEU	THR	THR	ASN
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ARG	LEU	PRO	PRO	CYS	ILE	P1092	GL093		L1096		L1100	M1101	A1102	C1103	T1104	L1105	L1106	V1107		L1110	L1111		V1119	F1120	N1121	N1122	T1123	F1124	F1125	E1126	V1127	K1128	S1129	I1130	S1131		F1137		Y1140		V1151	L1152	P1153	P1154	P1155	M1156	I1157	I1158	L1159		I1165	V1166	M1167	R1168	L1169	S1170	GLY	ARG	CYS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
SER	LYS	ARG	LYS	GLU	GLY	ASP	GLN	GLU	R1184	D1185	R1186	G1187	L1188	K1189	L1190	E1204		V1208		S1238		E1242		S1254		V1258		L1262		E1267	L1268	S1269	G1270	R1271	MET	VAL	GLY	ALA	LEU	GLU	ASN	LEU	ALA	GLY	ILE	ASP	ARG	SER	ASP	LEU	ILE	GLN	ALA	ARG	SER	ARG	ALA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SER	SER	GLU	CYS	GLU	ALA	THR	TYR	LEU	LEU	ARG	GLN	SER	SER	ILE	ASN	SER	ALA	ASP	GLY	TYR	SER	MET	TYR	ARG	TYR	HIS	PHE	ASN	GLY	GLU	GLU	LEU	LEU	PHE	GLU	GLU	PRO	ALA	LEU	SER	THR	SER	VAL	PHE	ARG	LYS	LYS	THR	CYS	SER	PHE	ARG	VAL	PRO	SER	ARG	ARG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
LEU	GLU	GLU	GLU	LEU	ARG	ARG	ARG	LEU	THR	GLU	THR	ASN	SER	LEU	GLU	VAL	LEU	PHE	GLN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	18202	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.331	Depositor
Minimum map value	-0.144	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.0779	Depositor
Map size (Å)	396.864, 396.864, 396.864	wwPDB
Map dimensions	416, 416, 416	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95400006, 0.95400006, 0.95400006	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	0.10	0/7764	0.27	0/10487
1	B	0.11	0/7764	0.29	0/10487
1	C	0.11	0/7764	0.29	0/10487
1	D	0.10	0/7764	0.27	0/10487
All	All	0.11	0/31056	0.28	0/41948

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7609	0	7775	97	0
1	B	7609	0	7775	102	0
1	C	7609	0	7775	109	0
1	D	7609	0	7775	99	0
All	All	30436	0	31100	381	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 6.

All (381) 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:876:PHE:O	1:B:880:THR:HG23	1.89	0.73
1:C:788:MET:HE3	1:C:796:VAL:HG13	1.71	0.73
1:A:1004:ILE:HG22	1:A:1008:MET:HE1	1.71	0.72
1:C:1230:THR:O	1:C:1234:VAL:HG23	1.90	0.72
1:D:1106:LEU:O	1:D:1110:ILE:HD12	1.89	0.71
1:A:1100:LEU:HD22	1:D:888:LEU:HD13	1.73	0.71
1:B:544:LEU:HD11	1:B:663:TRP:CZ2	2.27	0.70
1:C:988:LEU:HD11	1:D:1111:LEU:HB2	1.72	0.69
1:C:895:LEU:HD22	1:D:1096:LEU:HD11	1.74	0.68
1:A:783:MET:HE2	1:A:786:LEU:O	1.93	0.68
1:D:543:GLU:O	1:D:547:THR:HG23	1.95	0.67
1:A:438:PHE:HE2	1:A:524:LEU:HD21	1.58	0.67
1:B:227:VAL:HG11	1:B:231:VAL:HG13	1.76	0.66
1:C:117:MET:HE1	1:C:119:ILE:HG13	1.78	0.66
1:D:323:VAL:HG22	1:D:389:THR:OG1	1.95	0.66
1:D:562:VAL:HG21	1:D:581:VAL:HG22	1.77	0.66
1:C:976:TYR:O	1:C:980:ILE:HD12	1.96	0.64
1:C:1154:PRO:HA	1:C:1157:ILE:HD12	1.80	0.64
1:C:760:ALA:HB1	1:C:768:PHE:CZ	2.32	0.64
1:A:519:VAL:HG22	1:A:523:LYS:NZ	2.14	0.63
1:A:1262:LEU:HD11	1:B:1260:LEU:HD22	1.80	0.63
1:A:783:MET:HE2	1:A:786:LEU:C	2.24	0.63
1:C:969:MET:HE2	1:C:969:MET:HA	1.82	0.61
1:C:219:MET:HA	1:C:245:LEU:HD22	1.83	0.61
1:A:299:VAL:O	1:A:324:VAL:HG23	2.00	0.61
1:A:783:MET:HE1	1:A:789:ARG:HD3	1.82	0.60
1:C:117:MET:HE3	1:C:138:TRP:CH2	2.36	0.60
1:A:1109:ASN:O	1:A:1113:VAL:HG23	2.02	0.60
1:D:920:LYS:NZ	1:D:952:ILE:HD12	2.17	0.60
1:C:988:LEU:HD12	1:D:1107:VAL:HG12	1.83	0.60
1:C:951:ALA:HB2	1:C:982:LEU:HD23	1.84	0.59
1:C:107:PHE:HE2	1:C:234:VAL:HG22	1.66	0.59
1:B:323:VAL:HG22	1:B:389:THR:CG2	2.32	0.59
1:D:736:ASP:OD2	1:D:739:VAL:HG23	2.03	0.58
1:A:685:ALA:O	1:A:689:VAL:HG23	2.04	0.58
1:B:532:MET:HE2	1:B:532:MET:N	2.18	0.58
1:C:105:LEU:HD22	1:C:232:THR:HG23	1.86	0.58
1:A:1096:LEU:HD11	1:D:892:TYR:HD2	1.67	0.58
1:C:407:THR:HG22	1:C:432:ILE:HD11	1.84	0.58
1:D:781:MET:HG3	1:D:1188:LEU:HD23	1.84	0.57
1:A:302:GLY:HA2	1:A:306:VAL:HG21	1.86	0.57
1:B:989:ASP:O	1:B:993:VAL:HG23	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:555:LEU:HD11	1:C:666:LEU:HD13	1.86	0.57
1:A:436:GLN:O	1:A:439:VAL:HG22	2.04	0.57
1:C:107:PHE:CE2	1:C:234:VAL:HG22	2.39	0.57
1:C:1167:MET:HE3	1:C:1167:MET:O	2.05	0.56
1:A:1261:ARG:HD2	1:D:1262:LEU:HD23	1.88	0.56
1:C:1124:PHE:HA	1:C:1127:VAL:HG22	1.87	0.56
1:B:526:ILE:HD12	1:B:532:MET:HE3	1.87	0.56
1:C:746:TYR:O	1:C:755:THR:HG23	2.06	0.56
1:A:1096:LEU:HD11	1:D:892:TYR:CD2	2.41	0.55
1:B:519:VAL:HG23	1:B:520:ASP:H	1.72	0.55
1:A:736:ASP:OD2	1:A:739:VAL:HG23	2.05	0.55
1:C:403:MET:O	1:C:407:THR:HG23	2.07	0.55
1:D:877:TRP:O	1:D:881:ILE:HG22	2.06	0.55
1:D:893:VAL:CG2	1:D:909:VAL:HG21	2.36	0.55
1:B:519:VAL:HG21	1:B:671:LYS:HZ2	1.70	0.55
1:C:555:LEU:HD21	1:C:666:LEU:O	2.07	0.55
1:C:988:LEU:HD12	1:D:1107:VAL:CG1	2.37	0.55
1:D:1103:CYS:O	1:D:1107:VAL:HG23	2.07	0.55
1:B:256:ILE:C	1:B:257:LEU:HD22	2.31	0.54
1:C:883:TYR:CZ	1:C:987:VAL:HG22	2.42	0.54
1:B:435:SER:O	1:B:439:VAL:HG23	2.07	0.54
1:C:586:MET:HE2	1:C:586:MET:HA	1.89	0.53
1:C:797:ILE:HD11	1:C:881:ILE:HD11	1.90	0.53
1:D:1254:SER:O	1:D:1258:VAL:HG23	2.09	0.53
1:C:759:LEU:O	1:C:762:ALA:HB3	2.08	0.53
1:A:723:GLN:O	1:A:726:VAL:HG22	2.08	0.53
1:A:1099:ALA:HB3	1:D:891:ASN:HD21	1.73	0.53
1:C:739:VAL:HG11	1:C:1203:PHE:CD1	2.42	0.53
1:B:787:ARG:O	1:B:789:ARG:HD3	2.09	0.53
1:C:688:LEU:HD11	1:C:760:ALA:HB2	1.90	0.53
1:C:797:ILE:HD12	1:C:877:TRP:CD2	2.44	0.53
1:C:433:ALA:O	1:C:437:ILE:HG22	2.08	0.53
1:D:99:THR:O	1:D:99:THR:HG23	2.09	0.53
1:B:890:PHE:CD1	1:B:909:VAL:HG11	2.44	0.52
1:A:511:LEU:O	1:A:515:VAL:HG23	2.09	0.52
1:C:1187:GLY:C	1:C:1188:LEU:HD12	2.34	0.52
1:A:503:VAL:HA	1:A:506:LEU:HD12	1.92	0.52
1:B:339:HIS:NE2	1:B:390:VAL:HG23	2.25	0.52
1:A:131:LEU:O	1:A:135:VAL:HG13	2.09	0.52
1:C:379:MET:HE2	1:C:379:MET:HA	1.92	0.52
1:D:238:MET:O	1:D:238:MET:SD	2.68	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:895:LEU:CD2	1:D:1096:LEU:HD11	2.39	0.52
1:C:999:PRO:HA	1:C:1002:MET:HG3	1.92	0.52
1:A:402:GLU:HA	1:A:405:ILE:HD12	1.91	0.51
1:C:895:LEU:HD22	1:D:1096:LEU:CD1	2.40	0.51
1:B:898:MET:HE1	1:B:962:ARG:HD2	1.92	0.51
1:C:896:VAL:HG12	1:C:898:MET:H	1.76	0.51
1:A:1016:VAL:O	1:A:1020:VAL:HG23	2.10	0.51
1:C:119:ILE:HD12	1:C:256:ILE:HD12	1.93	0.51
1:D:788:MET:HE1	1:D:791:ASN:O	2.11	0.51
1:B:223:LYS:O	1:B:226:LEU:HD23	2.10	0.51
1:D:406:LEU:HD12	1:D:427:TRP:CZ2	2.45	0.51
1:C:598:SER:O	1:C:602:LEU:HD23	2.10	0.51
1:D:518:ARG:O	1:D:522:VAL:HG23	2.10	0.51
1:A:984:TYR:HE1	1:B:1107:VAL:HG21	1.76	0.51
1:B:519:VAL:HG23	1:B:520:ASP:N	2.25	0.51
1:D:1100:LEU:C	1:D:1100:LEU:HD23	2.36	0.50
1:B:1012:LEU:HA	1:B:1015:VAL:HG22	1.94	0.50
1:C:125:THR:HG21	1:C:130:LEU:HD21	1.94	0.50
1:A:519:VAL:CA	1:A:672:MET:HE1	2.41	0.50
1:C:983:TRP:O	1:C:987:VAL:HG23	2.11	0.50
1:D:186:VAL:HG13	1:D:246:SER:HB2	1.94	0.50
1:C:1011:MET:O	1:C:1015:VAL:HG23	2.11	0.50
1:A:519:VAL:HG22	1:A:523:LYS:HZ1	1.76	0.49
1:A:1257:THR:HG22	1:D:1262:LEU:HD21	1.93	0.49
1:B:745:THR:OG1	1:B:1190:LEU:HD12	2.12	0.49
1:B:748:LEU:O	1:B:753:ASN:HA	2.12	0.49
1:A:988:LEU:CD1	1:B:1107:VAL:HG22	2.43	0.49
1:B:538:ILE:HD12	1:B:538:ILE:H	1.77	0.49
1:B:871:ALA:O	1:B:874:VAL:HG22	2.11	0.49
1:D:802:ILE:HG23	1:D:802:ILE:O	2.12	0.49
1:B:227:VAL:HG21	1:B:231:VAL:HG11	1.94	0.49
1:C:562:VAL:HG21	1:C:581:VAL:HG22	1.94	0.49
1:C:1162:ILE:O	1:C:1166:VAL:HG22	2.13	0.49
1:B:890:PHE:CE2	1:B:894:ILE:HD11	2.47	0.49
1:C:1241:LEU:O	1:C:1244:ILE:HG22	2.13	0.49
1:A:519:VAL:HA	1:A:672:MET:HE1	1.95	0.49
1:C:123:TYR:O	1:C:124:ASP:OD1	2.30	0.49
1:C:336:SER:HB2	1:C:390:VAL:HG21	1.93	0.49
1:C:984:TYR:CD1	1:D:1107:VAL:HG21	2.47	0.49
1:D:877:TRP:CZ2	1:D:997:LEU:HD12	2.47	0.49
1:C:585:LEU:HD23	1:C:693:LEU:CD2	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:778:LEU:HD22	1:C:1140:TYR:CD1	2.48	0.49
1:C:541:LEU:CD2	1:C:575:LEU:HD11	2.43	0.49
1:C:883:TYR:CE2	1:C:987:VAL:HG22	2.48	0.49
1:D:1186:ARG:O	1:D:1189:LYS:HG2	2.13	0.49
1:A:991:PHE:HA	1:A:994:ASN:HB3	1.94	0.48
1:B:227:VAL:HG21	1:B:231:VAL:CG1	2.43	0.48
1:B:285:ILE:O	1:B:286:ASN:OD1	2.30	0.48
1:D:94:THR:HG22	1:D:94:THR:O	2.12	0.48
1:A:186:VAL:O	1:A:191:VAL:HG11	2.13	0.48
1:B:299:VAL:HB	1:B:324:VAL:HG12	1.95	0.48
1:B:684:MET:HA	1:B:684:MET:HE2	1.95	0.48
1:C:990:ILE:O	1:C:993:VAL:HG13	2.13	0.48
1:A:865:ILE:HD12	1:A:865:ILE:H	1.78	0.48
1:C:555:LEU:CD1	1:C:666:LEU:HD13	2.42	0.48
1:D:517:ASP:HA	1:D:672:MET:HE3	1.95	0.48
1:A:1190:LEU:HD12	1:A:1192:LEU:HD23	1.95	0.48
1:B:288:ARG:HE	1:B:289:LEU:HD12	1.78	0.48
1:A:1100:LEU:HD23	1:A:1100:LEU:O	2.14	0.48
1:B:971:TYR:O	1:B:974:VAL:HG12	2.13	0.48
1:B:917:ALA:O	1:B:921:ILE:HG13	2.14	0.48
1:D:689:VAL:O	1:D:693:LEU:HD23	2.14	0.47
1:D:1003:MET:HE2	1:D:1003:MET:HA	1.96	0.47
1:A:519:VAL:HG21	1:A:671:LYS:NZ	2.30	0.47
1:A:798:MET:O	1:A:802:ILE:HG22	2.14	0.47
1:A:1115:LEU:O	1:A:1119:VAL:HG13	2.14	0.47
1:C:555:LEU:HD13	1:C:558:LEU:HD21	1.96	0.47
1:D:665:VAL:HG23	1:D:694:TYR:CZ	2.49	0.47
1:A:723:GLN:O	1:A:727:GLU:OE1	2.33	0.47
1:B:935:LYS:HE2	1:B:938:VAL:HG21	1.96	0.47
1:C:1119:VAL:O	1:C:1123:THR:HG23	2.14	0.47
1:D:303:GLY:O	1:D:306:VAL:HG22	2.14	0.47
1:D:365:ASN:ND2	1:D:375:PHE:HB2	2.30	0.47
1:A:1143:ILE:HD13	1:A:1146:PHE:CE2	2.50	0.47
1:B:1211:HIS:O	1:B:1214:GLU:HG3	2.15	0.47
1:A:438:PHE:CE2	1:A:524:LEU:HD21	2.45	0.47
1:A:519:VAL:HG13	1:A:520:ASP:N	2.30	0.47
1:B:401:VAL:HG13	1:B:402:GLU:N	2.30	0.47
1:B:873:ILE:H	1:B:873:ILE:HD12	1.80	0.47
1:D:360:ILE:HD11	1:D:364:PHE:CZ	2.50	0.47
1:D:745:THR:HG23	1:D:1190:LEU:HB3	1.96	0.47
1:A:1215:LYS:N	1:A:1215:LYS:HD2	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1191:PHE:C	1:B:1192:LEU:HD22	2.40	0.46
1:C:146:LEU:HD22	1:C:280:ILE:HG21	1.96	0.46
1:C:543:GLU:O	1:C:547:THR:HG23	2.15	0.46
1:D:657:PHE:O	1:D:661:MET:HE2	2.14	0.46
1:C:149:VAL:HB	1:C:183:THR:HG22	1.98	0.46
1:D:121:VAL:HG12	1:D:125:THR:OG1	2.15	0.46
1:D:519:VAL:HG23	1:D:520:ASP:N	2.30	0.46
1:A:519:VAL:N	1:A:672:MET:HE1	2.31	0.46
1:C:996:TYR:C	1:C:997:LEU:HD22	2.41	0.46
1:D:586:MET:HE1	1:D:693:LEU:HD22	1.96	0.46
1:B:898:MET:HE3	1:B:969:MET:HE2	1.98	0.46
1:A:1152:LEU:O	1:A:1153:PRO:C	2.59	0.46
1:B:709:ASP:C	1:B:709:ASP:OD1	2.59	0.46
1:C:971:TYR:O	1:C:974:VAL:HG22	2.14	0.46
1:D:769:ILE:HG23	1:D:1140:TYR:CE2	2.51	0.46
1:A:562:VAL:HG12	1:A:563:LYS:N	2.31	0.46
1:D:905:GLN:O	1:D:909:VAL:HG23	2.16	0.46
1:C:755:THR:HG22	1:C:757:LEU:H	1.81	0.46
1:C:765:HIS:O	1:C:768:PHE:CD2	2.68	0.46
1:B:1163:TYR:HA	1:B:1166:VAL:HG22	1.97	0.46
1:D:1238:SER:O	1:D:1242:GLU:OE1	2.34	0.46
1:A:745:THR:HG22	1:A:1189:LYS:HA	1.98	0.45
1:B:883:TYR:O	1:B:887:LEU:HD13	2.16	0.45
1:A:541:LEU:HD11	1:A:545:TYR:HE2	1.81	0.45
1:A:792:PRO:O	1:A:796:VAL:HG23	2.16	0.45
1:B:285:ILE:O	1:B:286:ASN:C	2.59	0.45
1:B:519:VAL:HG12	1:B:672:MET:CE	2.46	0.45
1:C:119:ILE:HD13	1:C:133:LEU:HD22	1.96	0.45
1:A:1260:LEU:HD12	1:A:1261:ARG:HE	1.81	0.45
1:A:1261:ARG:CD	1:D:1262:LEU:HD23	2.46	0.45
1:A:598:SER:O	1:A:602:LEU:HD23	2.16	0.45
1:A:1257:THR:CG2	1:D:1262:LEU:HD21	2.46	0.45
1:A:517:ASP:OD1	1:A:672:MET:HE2	2.17	0.45
1:A:1115:LEU:HD12	1:A:1116:LEU:N	2.31	0.45
1:D:777:LEU:HD12	1:D:778:LEU:N	2.31	0.45
1:B:1151:VAL:C	1:B:1152:LEU:HD12	2.41	0.45
1:D:311:LEU:HD13	1:D:380:GLU:HG3	1.99	0.45
1:D:1018:MET:SD	1:D:1022:LEU:HD23	2.56	0.45
1:A:1004:ILE:CG2	1:A:1008:MET:HE1	2.45	0.45
1:C:1250:PHE:O	1:C:1253:ALA:HB3	2.17	0.45
1:B:317:ASP:HB3	1:B:318:PRO:CD	2.47	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:935:LYS:CE	1:B:938:VAL:HG21	2.47	0.45
1:C:1204:GLU:O	1:C:1208:VAL:HG12	2.16	0.45
1:D:242:LEU:HD23	1:D:242:LEU:H	1.82	0.45
1:B:573:ILE:HD12	1:B:573:ILE:H	1.81	0.45
1:B:980:ILE:HD11	1:B:984:TYR:CZ	2.52	0.45
1:B:112:TYR:CE1	1:B:199:LYS:HD3	2.52	0.44
1:B:166:PHE:CZ	1:B:170:LEU:HD11	2.52	0.44
1:B:219:MET:HE2	1:B:265:LYS:HA	1.99	0.44
1:B:890:PHE:HD1	1:B:909:VAL:HG11	1.81	0.44
1:C:883:TYR:CE2	1:C:990:ILE:HG21	2.51	0.44
1:B:891:ASN:HA	1:B:894:ILE:HD12	1.99	0.44
1:D:231:VAL:HG12	1:D:232:THR:N	2.32	0.44
1:A:995:LYS:O	1:A:1002:MET:HE2	2.17	0.44
1:C:1153:PRO:O	1:C:1154:PRO:C	2.59	0.44
1:A:104:ILE:HG22	1:A:105:LEU:N	2.32	0.44
1:D:162:LEU:O	1:D:166:PHE:CD2	2.70	0.44
1:A:1262:LEU:CD1	1:B:1260:LEU:HD22	2.47	0.44
1:B:176:THR:HG22	1:B:176:THR:O	2.17	0.44
1:C:897:ARG:O	1:C:898:MET:C	2.61	0.44
1:D:519:VAL:HG11	1:D:671:LYS:HD3	1.99	0.44
1:B:382:MET:C	1:B:382:MET:SD	3.01	0.44
1:B:104:ILE:HG22	1:B:105:LEU:N	2.33	0.44
1:B:270:VAL:HG23	1:B:271:LYS:N	2.33	0.44
1:B:310:VAL:O	1:B:314:LEU:HD23	2.18	0.44
1:C:585:LEU:CD1	1:C:696:ALA:HB1	2.47	0.44
1:D:537:THR:HG22	1:D:539:PRO:HD2	1.99	0.44
1:A:1230:THR:O	1:A:1234:VAL:HG23	2.17	0.44
1:C:666:LEU:HD12	1:C:667:MET:SD	2.58	0.44
1:A:388:VAL:HG12	1:A:389:THR:N	2.33	0.43
1:C:919:GLU:OE2	1:C:920:LYS:HE3	2.18	0.43
1:B:722:GLY:HA3	1:B:765:HIS:HE2	1.83	0.43
1:C:123:TYR:HE1	1:C:258:ALA:HB1	1.83	0.43
1:C:142:LEU:HD12	1:C:285:ILE:HD11	2.00	0.43
1:C:693:LEU:O	1:C:697:MET:SD	2.76	0.43
1:A:186:VAL:HG13	1:A:246:SER:OG	2.18	0.43
1:B:128:ASP:OD1	1:B:129:SER:N	2.51	0.43
1:C:788:MET:HE3	1:C:796:VAL:CG1	2.46	0.43
1:A:991:PHE:O	1:A:995:LYS:N	2.51	0.43
1:B:933:SER:O	1:B:936:ILE:HG22	2.18	0.43
1:D:777:LEU:HD11	1:D:1140:TYR:OH	2.18	0.43
1:A:164:GLN:O	1:A:168:LYS:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:226:LEU:C	1:B:226:LEU:HD12	2.43	0.43
1:B:1153:PRO:O	1:B:1157:ILE:HD13	2.18	0.43
1:D:117:MET:O	1:D:119:ILE:HD12	2.18	0.43
1:A:133:LEU:C	1:A:133:LEU:HD23	2.44	0.43
1:B:366:TYR:CE2	1:B:368:LYS:HG2	2.53	0.43
1:C:317:ASP:HB3	1:C:318:PRO:CD	2.49	0.43
1:C:973:ARG:O	1:C:976:TYR:HB2	2.17	0.43
1:D:247:VAL:HG22	1:D:248:LEU:N	2.33	0.43
1:A:803:PRO:N	1:A:804:PRO:CD	2.82	0.43
1:A:1153:PRO:O	1:A:1157:ILE:HG23	2.19	0.43
1:C:981:ILE:HG13	1:D:1019:LEU:HD23	2.01	0.43
1:D:1101:MET:SD	1:D:1105:LEU:HD23	2.59	0.43
1:A:247:VAL:HG22	1:A:248:LEU:N	2.33	0.43
1:A:1009:ILE:HD13	1:B:1112:LEU:CD2	2.49	0.43
1:B:910:ILE:HG13	1:B:911:SER:N	2.34	0.43
1:C:993:VAL:HG21	1:C:1142:LEU:HD11	1.99	0.43
1:D:188:THR:HG22	1:D:189:GLY:N	2.33	0.43
1:D:573:ILE:HG22	1:D:574:SER:N	2.33	0.43
1:D:873:ILE:O	1:D:876:PHE:HB3	2.18	0.43
1:D:1093:GLY:HA2	1:D:1096:LEU:HD12	2.00	0.43
1:B:306:VAL:O	1:B:310:VAL:HG23	2.19	0.43
1:D:1204:GLU:O	1:D:1208:VAL:HG12	2.19	0.43
1:C:722:GLY:O	1:C:726:VAL:HG23	2.19	0.43
1:D:163:LYS:HA	1:D:166:PHE:CE2	2.54	0.43
1:A:575:LEU:O	1:A:575:LEU:HD23	2.19	0.42
1:A:709:ASP:OD1	1:A:710:ILE:N	2.51	0.42
1:A:782:TRP:CH2	1:A:873:ILE:HA	2.54	0.42
1:A:942:GLU:CG	1:A:945:ASN:OD1	2.66	0.42
1:B:1160:SER:HA	1:B:1163:TYR:CE2	2.54	0.42
1:D:661:MET:HE1	1:D:676:LEU:HB3	2.01	0.42
1:A:502:TRP:CD1	1:A:506:LEU:HD11	2.54	0.42
1:A:562:VAL:HG21	1:A:581:VAL:HG22	2.01	0.42
1:B:186:VAL:O	1:B:191:VAL:HG11	2.19	0.42
1:B:195:GLY:O	1:B:199:LYS:HG2	2.19	0.42
1:C:432:ILE:HG23	1:C:433:ALA:N	2.33	0.42
1:C:803:PRO:N	1:C:804:PRO:CD	2.82	0.42
1:C:993:VAL:CG2	1:C:1142:LEU:HD11	2.49	0.42
1:C:996:TYR:O	1:C:997:LEU:HD22	2.19	0.42
1:A:433:ALA:O	1:A:437:ILE:HG22	2.19	0.42
1:A:186:VAL:HG13	1:A:246:SER:CB	2.49	0.42
1:B:661:MET:HE1	1:B:677:TRP:HB2	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1260:LEU:HD23	1:B:1260:LEU:C	2.44	0.42
1:C:541:LEU:HD23	1:C:575:LEU:HD11	2.01	0.42
1:A:1154:PRO:O	1:A:1157:ILE:HG12	2.20	0.42
1:B:227:VAL:HG12	1:B:233:ARG:HH12	1.83	0.42
1:B:950:VAL:O	1:B:954:MET:HE3	2.20	0.42
1:C:223:LYS:O	1:C:223:LYS:HG2	2.19	0.42
1:A:1009:ILE:HD13	1:B:1112:LEU:HD23	2.02	0.42
1:B:301:GLU:O	1:B:301:GLU:HG2	2.19	0.42
1:D:684:MET:HE1	1:D:725:ALA:HB1	2.02	0.42
1:D:769:ILE:HG23	1:D:1140:TYR:HE2	1.85	0.42
1:B:803:PRO:N	1:B:804:PRO:CD	2.82	0.42
1:C:999:PRO:HA	1:C:1002:MET:CG	2.50	0.42
1:D:793:GLY:C	1:D:797:ILE:HD12	2.44	0.42
1:A:896:VAL:HG23	1:B:1029:ARG:CG	2.49	0.42
1:A:1146:PHE:N	1:A:1146:PHE:CD1	2.86	0.42
1:C:1113:VAL:HA	1:C:1116:LEU:HB3	2.02	0.42
1:D:511:LEU:O	1:D:515:VAL:HG23	2.19	0.42
1:B:197:ALA:O	1:B:200:ASP:OD1	2.37	0.42
1:C:898:MET:C	1:C:898:MET:SD	3.03	0.42
1:D:871:ALA:O	1:D:874:VAL:HG12	2.19	0.42
1:B:788:MET:SD	1:B:788:MET:C	3.03	0.41
1:B:790:LYS:O	1:B:791:ASN:C	2.63	0.41
1:B:1149:ARG:HB3	1:B:1150:PRO:HD3	2.02	0.41
1:D:1021:VAL:HG12	1:D:1025:PHE:CZ	2.55	0.41
1:A:180:TRP:CD1	1:A:210:CYS:HG	2.38	0.41
1:A:502:TRP:NE1	1:A:506:LEU:HD11	2.35	0.41
1:B:372:HIS:O	1:B:375:PHE:CD2	2.73	0.41
1:B:581:VAL:HG12	1:B:585:LEU:CD1	2.50	0.41
1:C:585:LEU:HD23	1:C:693:LEU:HD23	2.03	0.41
1:D:317:ASP:HB3	1:D:318:PRO:CD	2.50	0.41
1:B:1016:VAL:HG13	1:B:1017:ILE:N	2.36	0.41
1:C:684:MET:HG3	1:C:743:LEU:HD21	2.03	0.41
1:A:980:ILE:O	1:A:984:TYR:CB	2.68	0.41
1:B:526:ILE:HG23	1:B:527:GLU:N	2.35	0.41
1:C:302:GLY:CA	1:C:306:VAL:HG21	2.49	0.41
1:D:498:GLU:O	1:D:499:LEU:HB2	2.19	0.41
1:A:562:VAL:O	1:A:563:LYS:HG3	2.20	0.41
1:A:1011:MET:O	1:A:1015:VAL:HG23	2.21	0.41
1:A:1236:ASN:O	1:A:1239:MET:HG3	2.20	0.41
1:D:415:VAL:HG23	1:D:420:GLN:HE21	1.84	0.41
1:D:1119:VAL:O	1:D:1123:THR:HG23	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:1188:LEU:N	1:D:1188:LEU:HD12	2.36	0.41
1:A:1154:PRO:N	1:A:1155:PRO:HD2	2.36	0.41
1:B:295:VAL:HG12	1:B:296:VAL:N	2.36	0.41
1:B:334:ILE:HD12	1:B:378:ILE:HD13	2.03	0.41
1:B:808:PHE:CD1	1:B:808:PHE:C	2.99	0.41
1:B:980:ILE:HD11	1:B:984:TYR:CE1	2.55	0.41
1:B:1230:THR:O	1:B:1234:VAL:HG23	2.20	0.41
1:D:165:VAL:HG21	1:D:399:GLN:OE1	2.21	0.41
1:A:430:VAL:HG11	1:A:520:ASP:CB	2.51	0.41
1:B:983:TRP:O	1:B:986:ARG:HB3	2.21	0.41
1:C:1214:GLU:O	1:C:1218:GLU:OE1	2.38	0.41
1:D:384:LYS:HB3	1:D:387:LEU:HD12	2.01	0.41
1:B:806:ILE:HG23	1:B:807:LEU:HD22	2.03	0.41
1:C:502:TRP:CZ2	1:C:506:LEU:HD11	2.55	0.41
1:C:691:CYS:SG	1:C:765:HIS:CE1	3.13	0.41
1:D:1158:ILE:HG13	1:D:1159:LEU:N	2.36	0.41
1:A:875:LYS:CG	1:A:1151:VAL:HG21	2.51	0.41
1:A:969:MET:HE1	1:A:976:TYR:CE2	2.56	0.41
1:B:709:ASP:OD1	1:B:710:ILE:N	2.53	0.41
1:C:936:ILE:HG23	1:C:937:LYS:HD2	2.02	0.41
1:C:982:LEU:HA	1:C:985:ILE:HG12	2.03	0.41
1:C:1130:ILE:HD12	1:C:1130:ILE:H	1.86	0.41
1:C:1208:VAL:HG13	1:C:1209:GLN:N	2.35	0.41
1:D:310:VAL:HG22	1:D:322:VAL:HG11	2.01	0.41
1:D:982:LEU:HD12	1:D:983:TRP:N	2.36	0.41
1:B:1162:ILE:HG23	1:B:1163:TYR:N	2.36	0.41
1:B:1239:MET:SD	1:B:1240:ARG:N	2.94	0.41
1:D:591:ARG:NH2	1:D:595:THR:HG21	2.36	0.41
1:D:803:PRO:N	1:D:804:PRO:CD	2.84	0.41
1:A:519:VAL:HG22	1:A:523:LYS:HZ2	1.84	0.40
1:A:586:MET:HE1	1:A:590:TYR:HB2	2.02	0.40
1:C:981:ILE:HD11	1:D:1022:LEU:HG	2.03	0.40
1:A:317:ASP:HB3	1:A:318:PRO:CD	2.51	0.40
1:B:171:ILE:HG23	1:B:172:LYS:N	2.36	0.40
1:C:519:VAL:HG13	1:C:520:ASP:N	2.36	0.40
1:D:165:VAL:HG13	1:D:166:PHE:N	2.37	0.40
1:D:402:GLU:HG2	1:D:403:MET:N	2.37	0.40
1:D:744:LEU:HB3	1:D:757:LEU:HD23	2.02	0.40
1:D:886:TYR:CZ	1:D:912:TYR:HB2	2.55	0.40
1:A:1107:VAL:HG11	1:D:984:TYR:CE2	2.57	0.40
1:A:1158:ILE:HG13	1:A:1159:LEU:N	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:400:ASP:O	1:B:401:VAL:C	2.64	0.40
1:C:538:ILE:HG22	1:C:542:GLU:OE2	2.20	0.40
1:C:1107:VAL:HA	1:C:1110:ILE:HG22	2.03	0.40
1:C:1154:PRO:N	1:C:1155:PRO:HD2	2.37	0.40
1:D:1153:PRO:O	1:D:1154:PRO:C	2.64	0.40
1:A:247:VAL:HG22	1:A:248:LEU:H	1.86	0.40
1:B:1166:VAL:HG23	1:B:1167:MET:N	2.37	0.40
1:C:260:ASN:O	1:C:261:GLY:C	2.63	0.40
1:C:787:ARG:HD2	1:C:787:ARG:O	2.20	0.40
1:D:1156:MET:CE	1:D:1159:LEU:HD22	2.52	0.40
1:C:981:ILE:HG23	1:D:1018:MET:HE1	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	930/1373 (68%)	890 (96%)	40 (4%)	0	100	100
1	B	930/1373 (68%)	891 (96%)	39 (4%)	0	100	100
1	C	930/1373 (68%)	888 (96%)	42 (4%)	0	100	100
1	D	930/1373 (68%)	889 (96%)	41 (4%)	0	100	100
All	All	3720/5492 (68%)	3558 (96%)	162 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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	845/1218 (69%)	845 (100%)	0	100	100
1	B	845/1218 (69%)	845 (100%)	0	100	100
1	C	845/1218 (69%)	845 (100%)	0	100	100
1	D	845/1218 (69%)	845 (100%)	0	100	100
All	All	3380/4872 (69%)	3380 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	279	HIS
1	A	765	HIS
1	A	891	ASN
1	A	1201	HIS
1	B	305	ASN
1	B	365	ASN
1	B	372	HIS
1	B	508	GLN
1	B	731	GLN
1	B	735	HIS
1	B	775	GLN
1	B	1245	ASN
1	C	201	HIS
1	C	372	HIS
1	C	398	GLN
1	C	534	HIS
1	C	572	HIS
1	C	735	HIS
1	C	765	HIS
1	C	994	ASN
1	C	1121	ASN
1	D	339	HIS
1	D	572	HIS
1	D	654	GLN
1	D	716	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

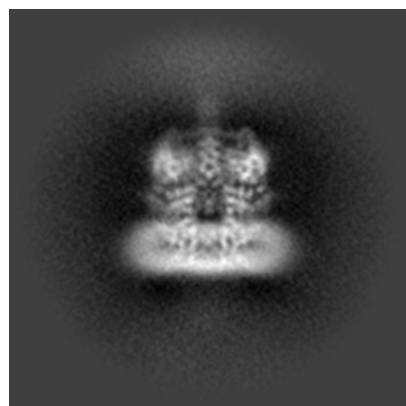
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-70771. These allow visual inspection of the internal detail of the map and identification of artifacts.

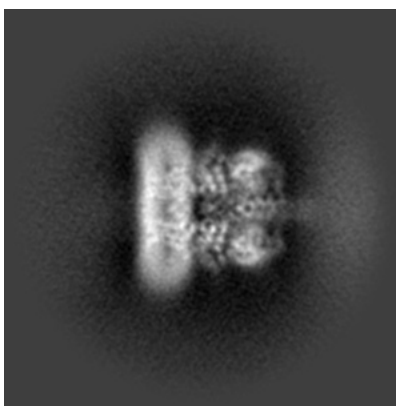
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

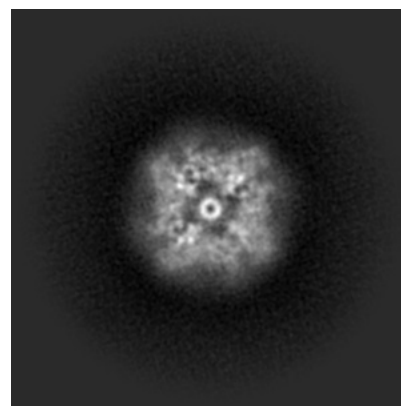
6.1.1 Primary map



X

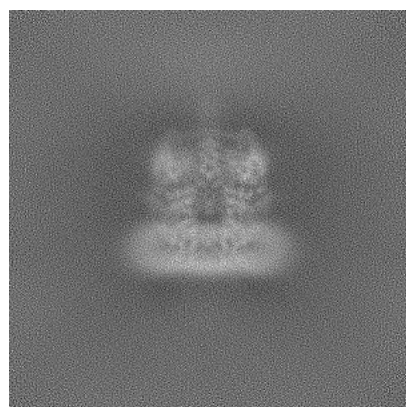


Y

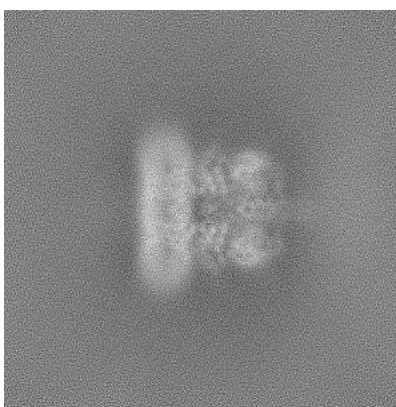


Z

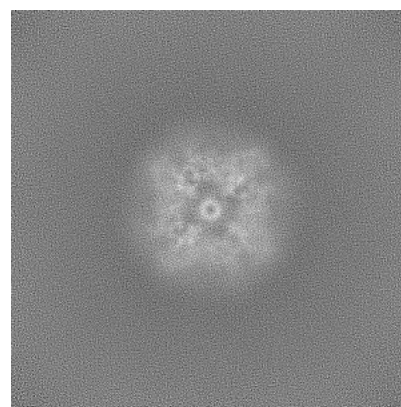
6.1.2 Raw map



X



Y

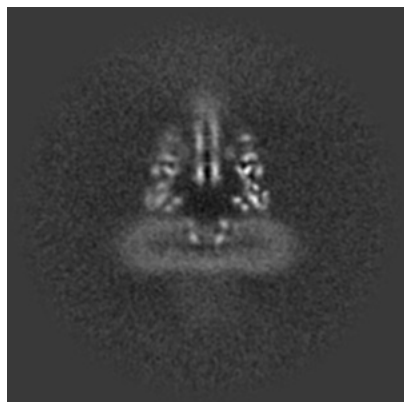


Z

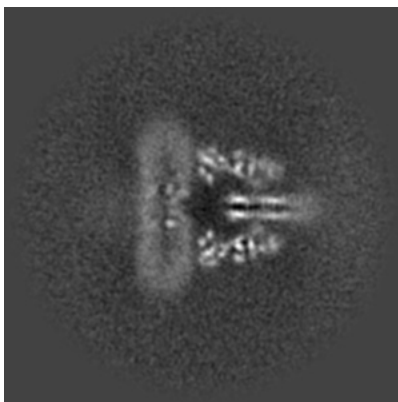
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

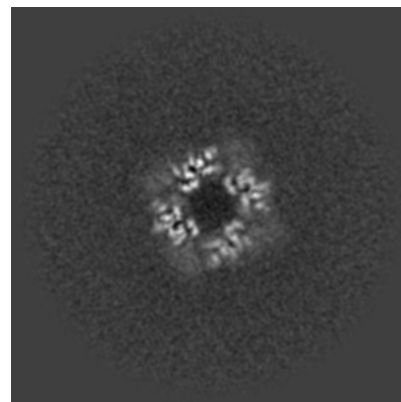
6.2.1 Primary map



X Index: 208

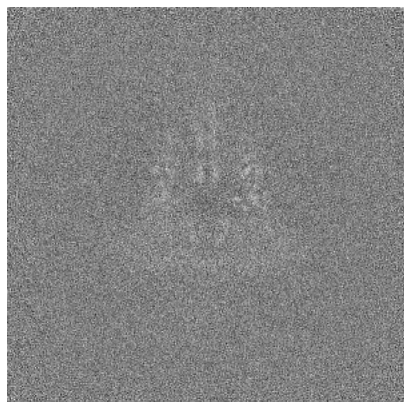


Y Index: 208

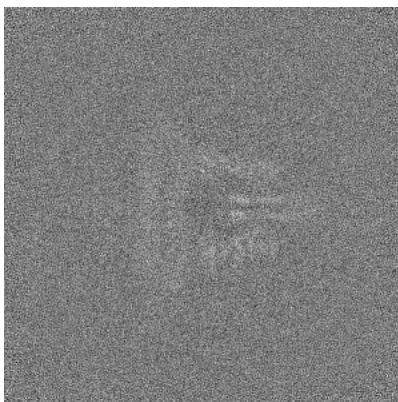


Z Index: 208

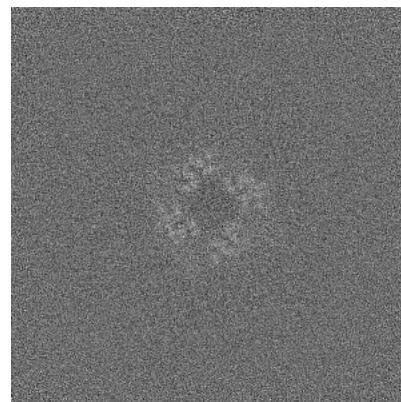
6.2.2 Raw map



X Index: 208



Y Index: 208

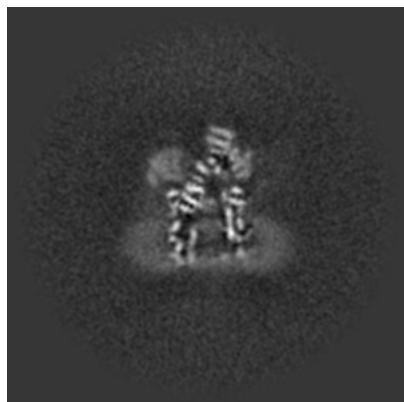


Z Index: 208

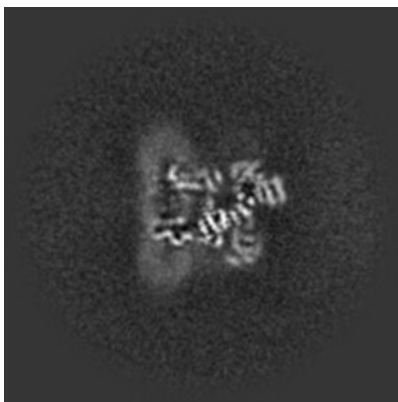
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

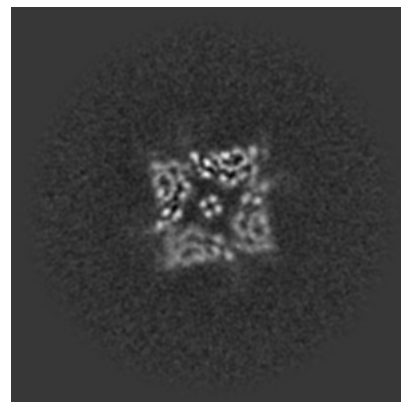
6.3.1 Primary map



X Index: 175

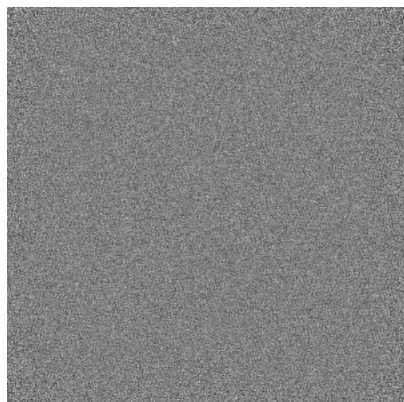


Y Index: 242

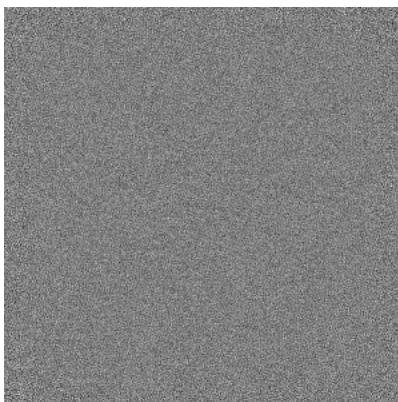


Z Index: 250

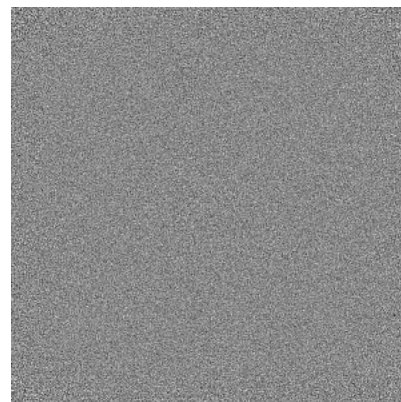
6.3.2 Raw map



X Index: 0



Y Index: 0

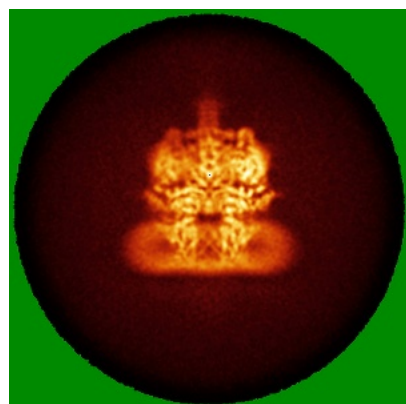


Z Index: 415

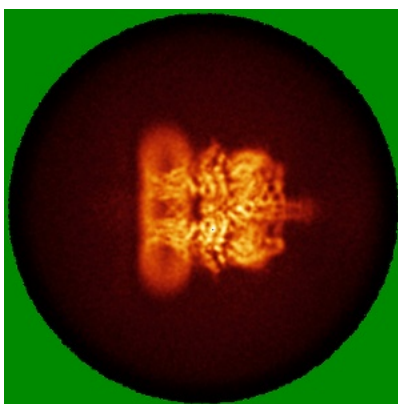
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

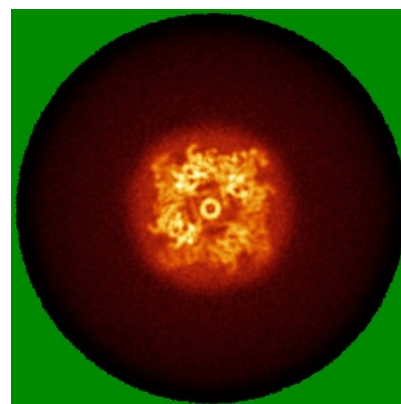
6.4.1 Primary map



X

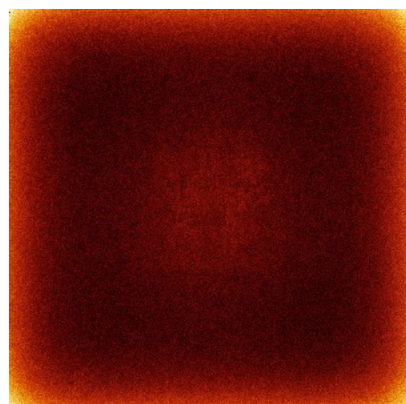


Y

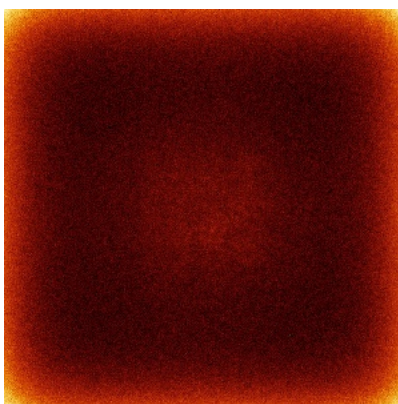


Z

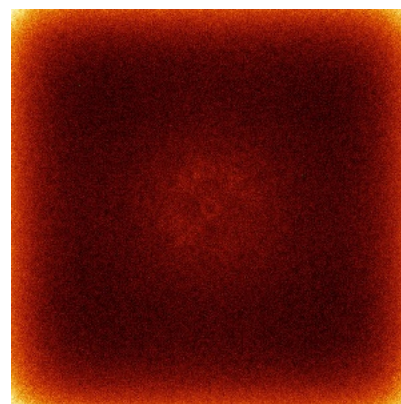
6.4.2 Raw map



X



Y

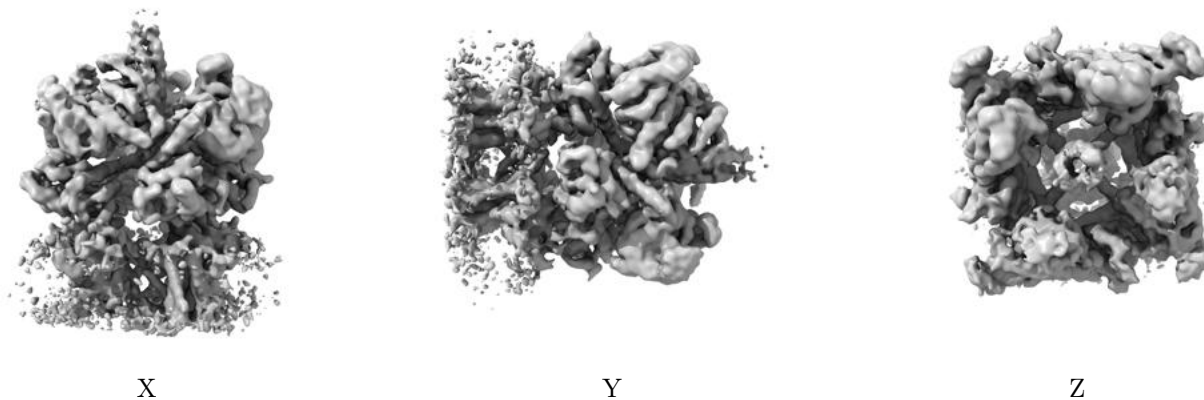


Z

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.

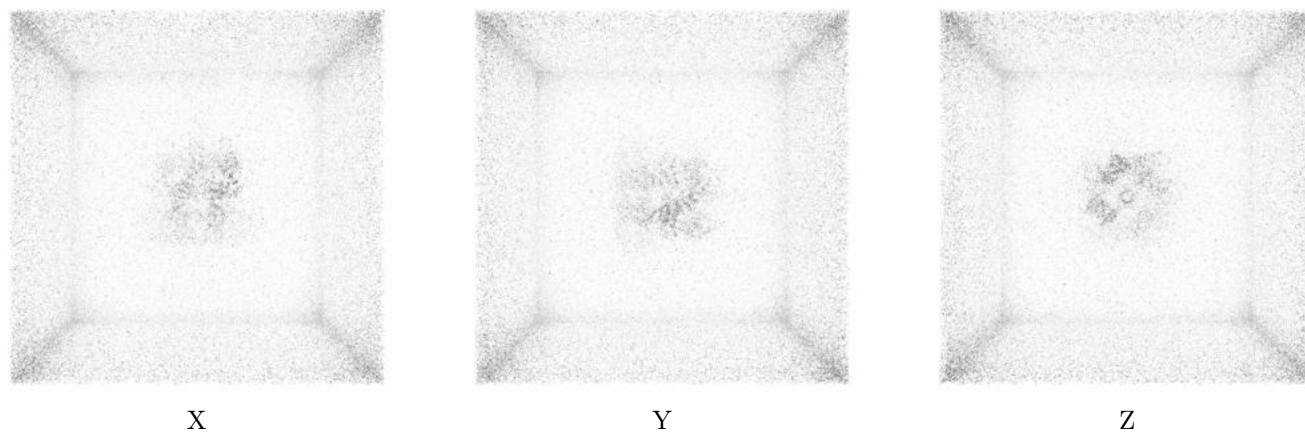
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0779. 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



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.

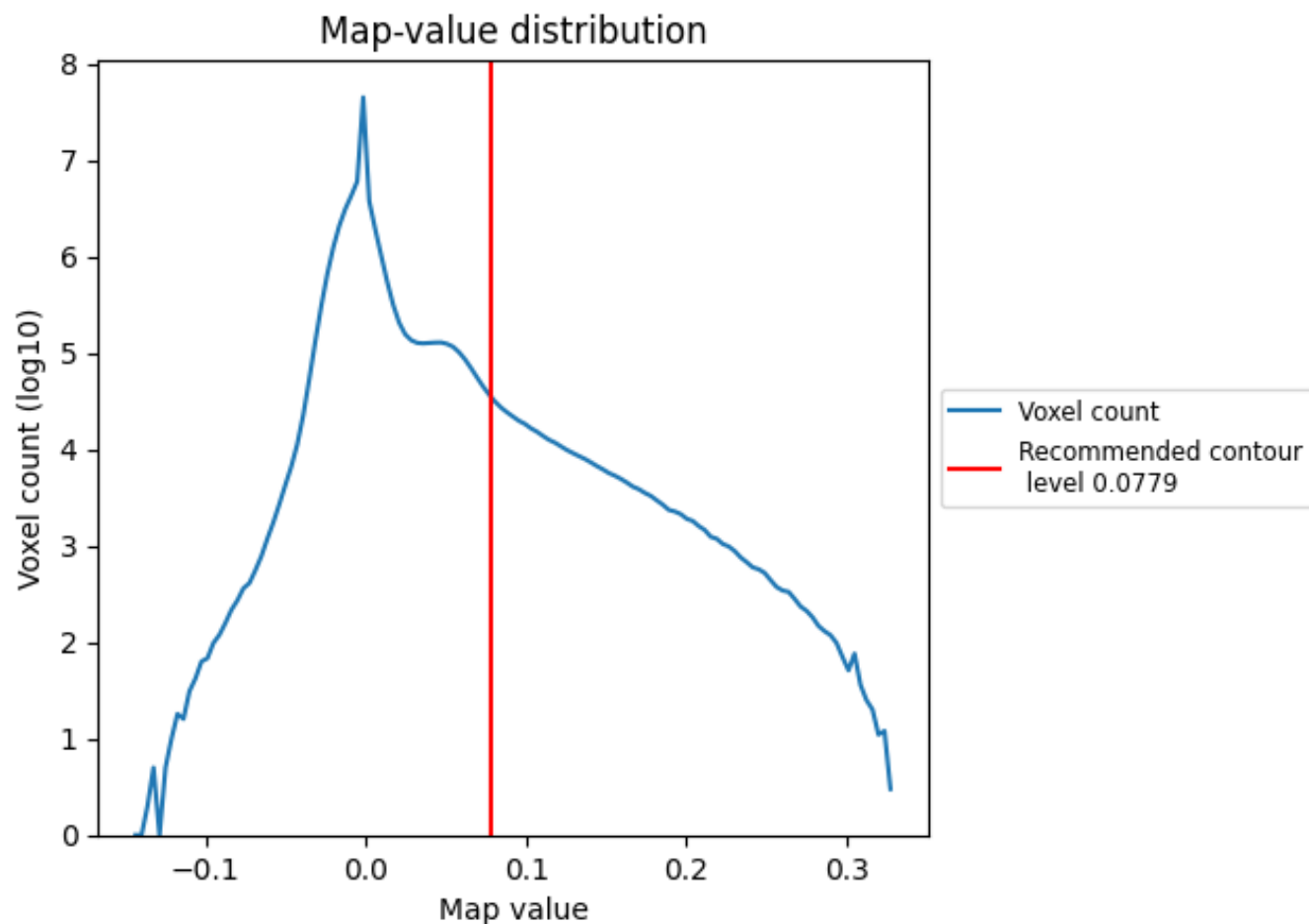
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

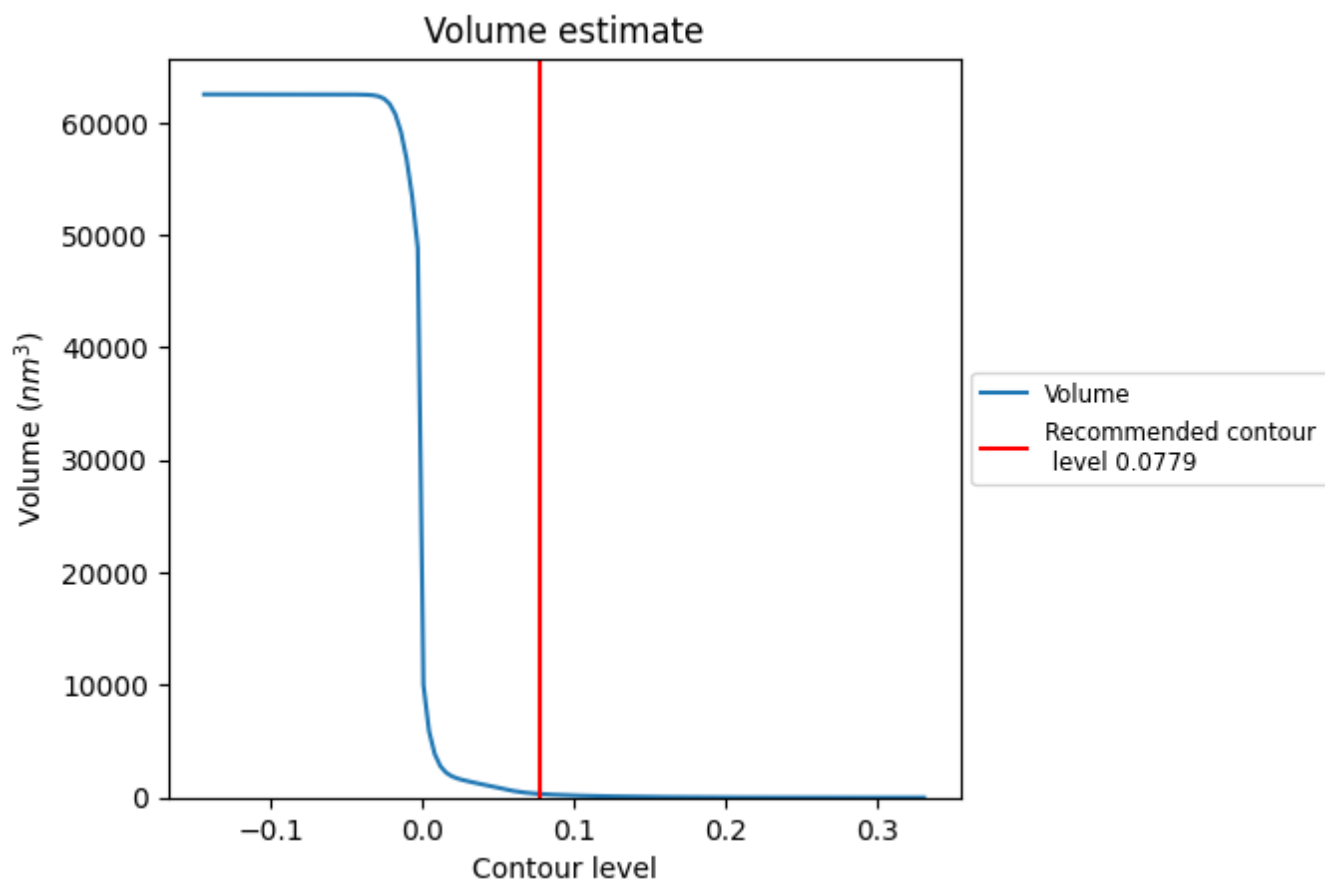
This section contains the results of statistical analysis of the map.

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.

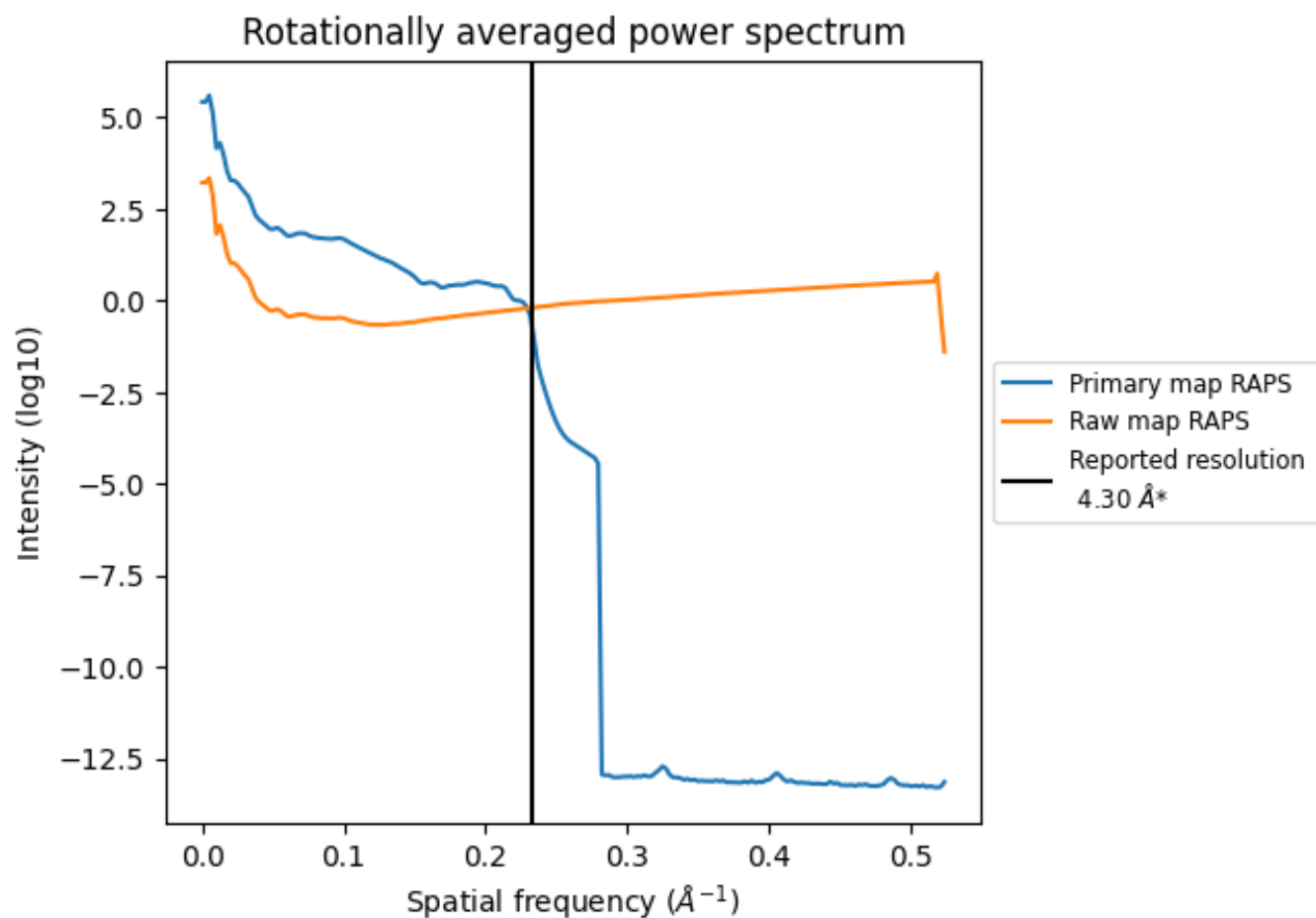
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 323 nm³; this corresponds to an approximate mass of 292 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 ⓘ

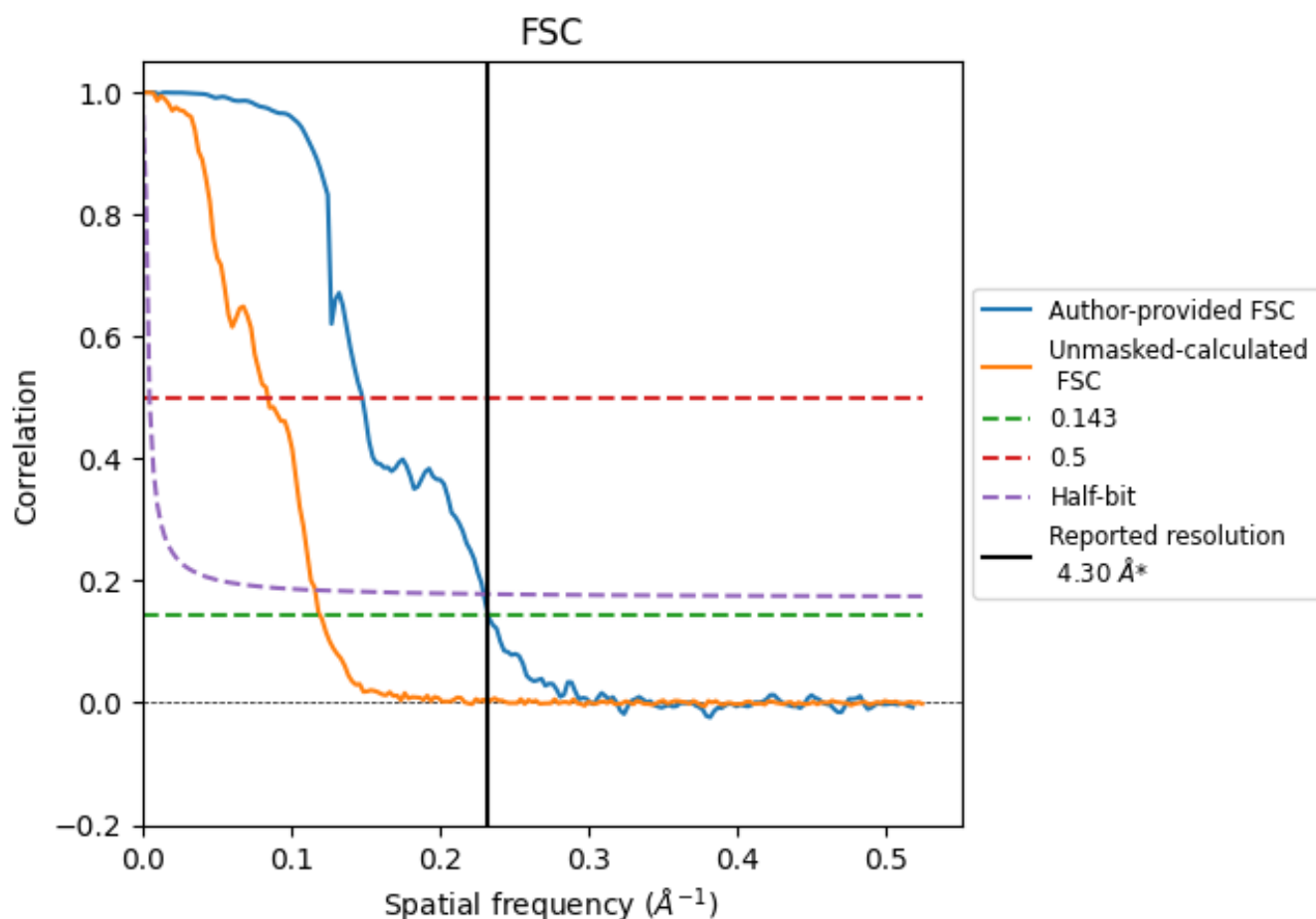


*Reported resolution corresponds to spatial frequency of 0.233 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.233 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

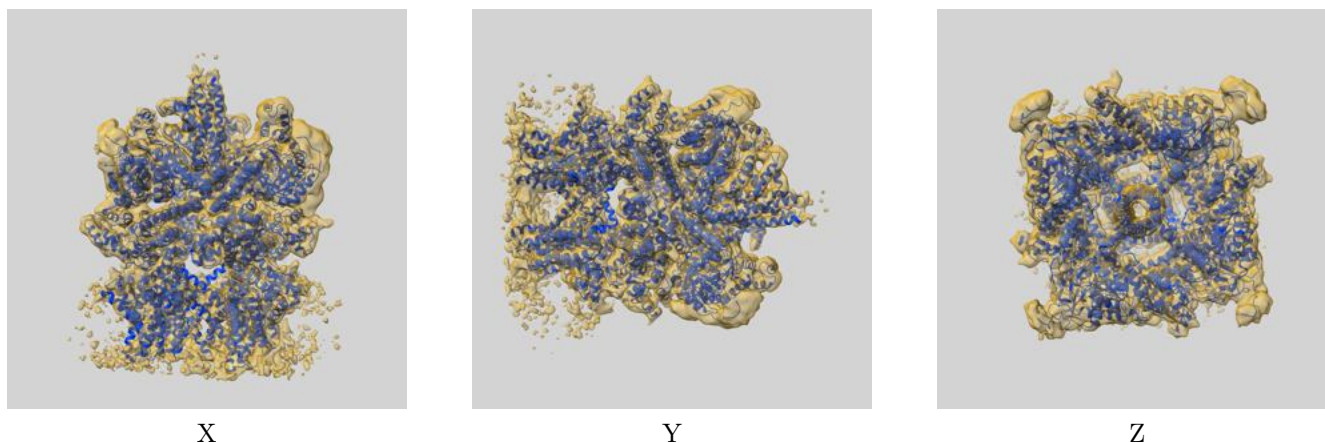
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	4.30	6.77	4.36
Unmasked-calculated*	8.36	11.85	8.61

*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 8.36 differs from the reported value 4.3 by more than 10 %

9 Map-model fit [i](#)

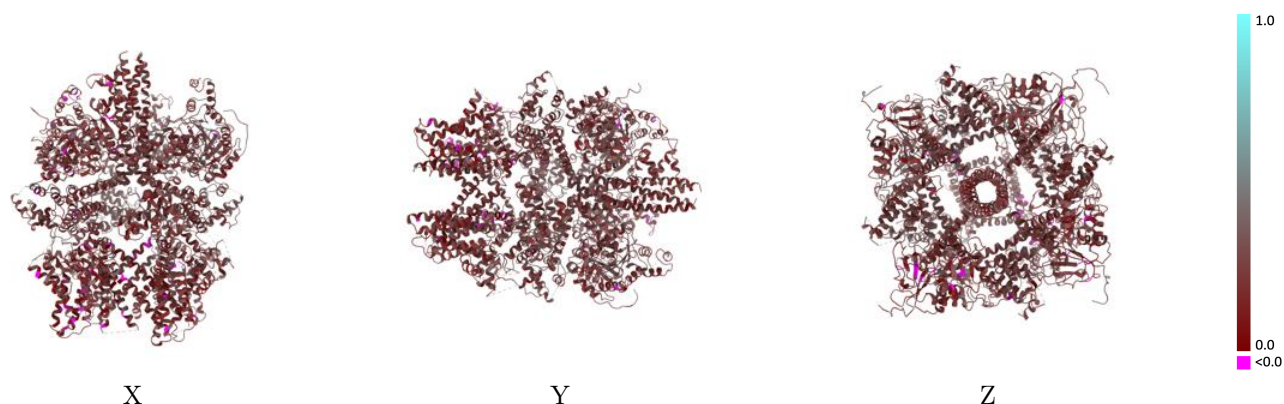
This section contains information regarding the fit between EMDB map EMD-70771 and PDB model 9OR5. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



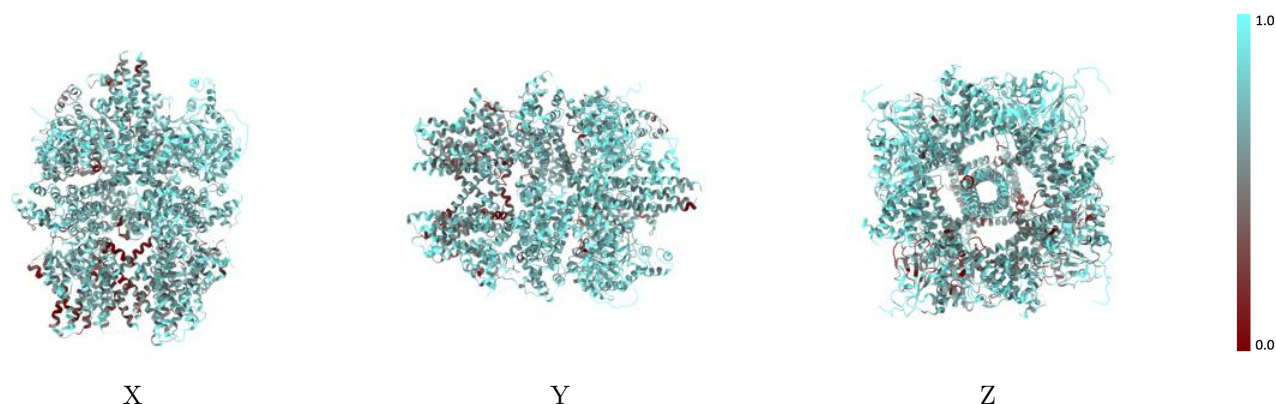
The images above show the 3D surface view of the map at the recommended contour level 0.0779 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



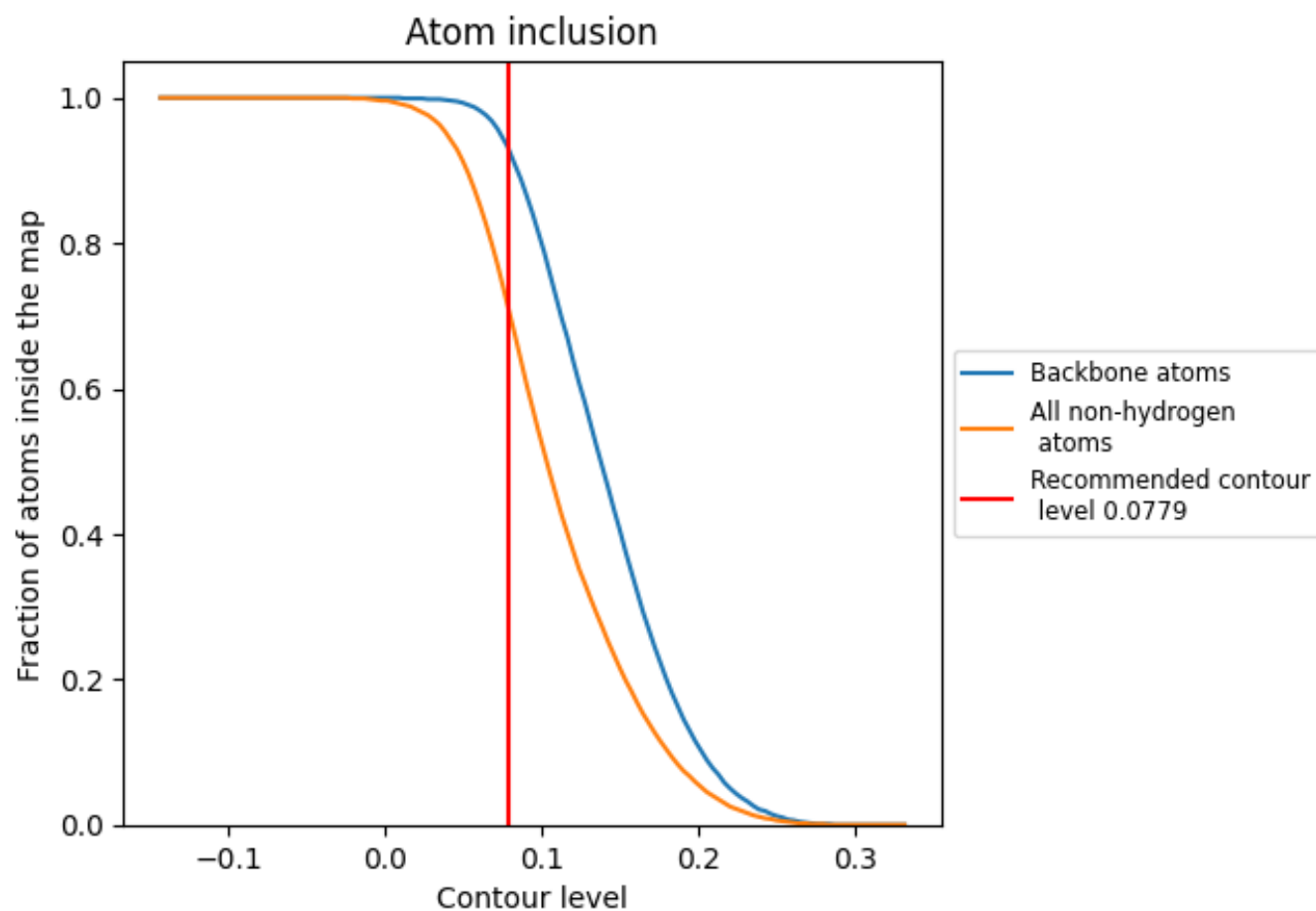
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.0779).

9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 72% 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 (0.0779) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7160	0.2400
A	0.7490	0.2520
B	0.7710	0.2620
C	0.6960	0.2310
D	0.6480	0.2160

