Full wwPDB EM Validation Report ⓘ

Jun 10, 2025 – 07:30 PM JST

PDB ID	:	8XQ9 / pdb_00008xq9
EMDB ID	:	EMD-38570
Title	:	Structure of the sea urchin spSLC9C1 in state-2 w/ cAMP dimer
Authors	:	Qu, H.; Zheng, X.
Deposited on	:	2024-01-04
Resolution	:	3.77 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:

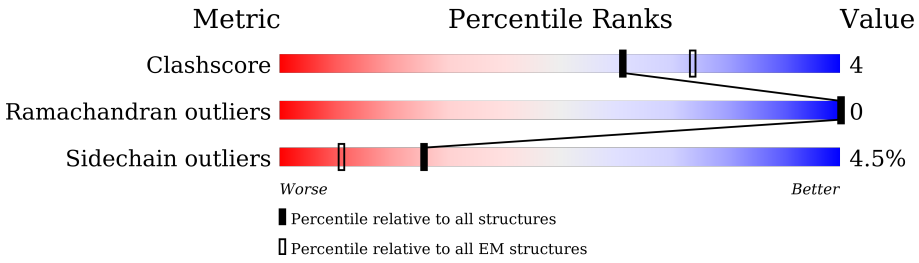
EMDB validation analysis	:	0.0.1.dev118
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.77 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	1308	5% 45% 7% 48%
1	B	1308	5% 44% 7% 48%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 10672 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 Sperm-specific sodium proton exchanger.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	683	Total	C	N	O	S	0	0
			5336	3488	883	935	30		
1	B	683	Total	C	N	O	S	0	0
			5336	3488	883	935	30		

There are 24 discrepancies between the modelled and reference sequences:

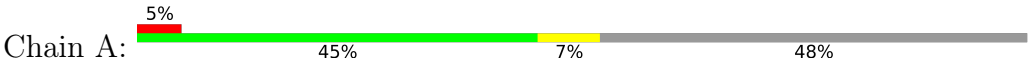
Chain	Residue	Modelled	Actual	Comment	Reference
A	28	GLY	-	expression tag	UNP A3RL54
A	29	SER	-	expression tag	UNP A3RL54
A	1326	ALA	-	expression tag	UNP A3RL54
A	1327	SER	-	expression tag	UNP A3RL54
A	1328	ASN	-	expression tag	UNP A3RL54
A	1329	SER	-	expression tag	UNP A3RL54
A	1330	LEU	-	expression tag	UNP A3RL54
A	1331	GLU	-	expression tag	UNP A3RL54
A	1332	VAL	-	expression tag	UNP A3RL54
A	1333	LEU	-	expression tag	UNP A3RL54
A	1334	PHE	-	expression tag	UNP A3RL54
A	1335	GLN	-	expression tag	UNP A3RL54
B	28	GLY	-	expression tag	UNP A3RL54
B	29	SER	-	expression tag	UNP A3RL54
B	1326	ALA	-	expression tag	UNP A3RL54
B	1327	SER	-	expression tag	UNP A3RL54
B	1328	ASN	-	expression tag	UNP A3RL54
B	1329	SER	-	expression tag	UNP A3RL54
B	1330	LEU	-	expression tag	UNP A3RL54
B	1331	GLU	-	expression tag	UNP A3RL54
B	1332	VAL	-	expression tag	UNP A3RL54
B	1333	LEU	-	expression tag	UNP A3RL54
B	1334	PHE	-	expression tag	UNP A3RL54
B	1335	GLN	-	expression tag	UNP A3RL54

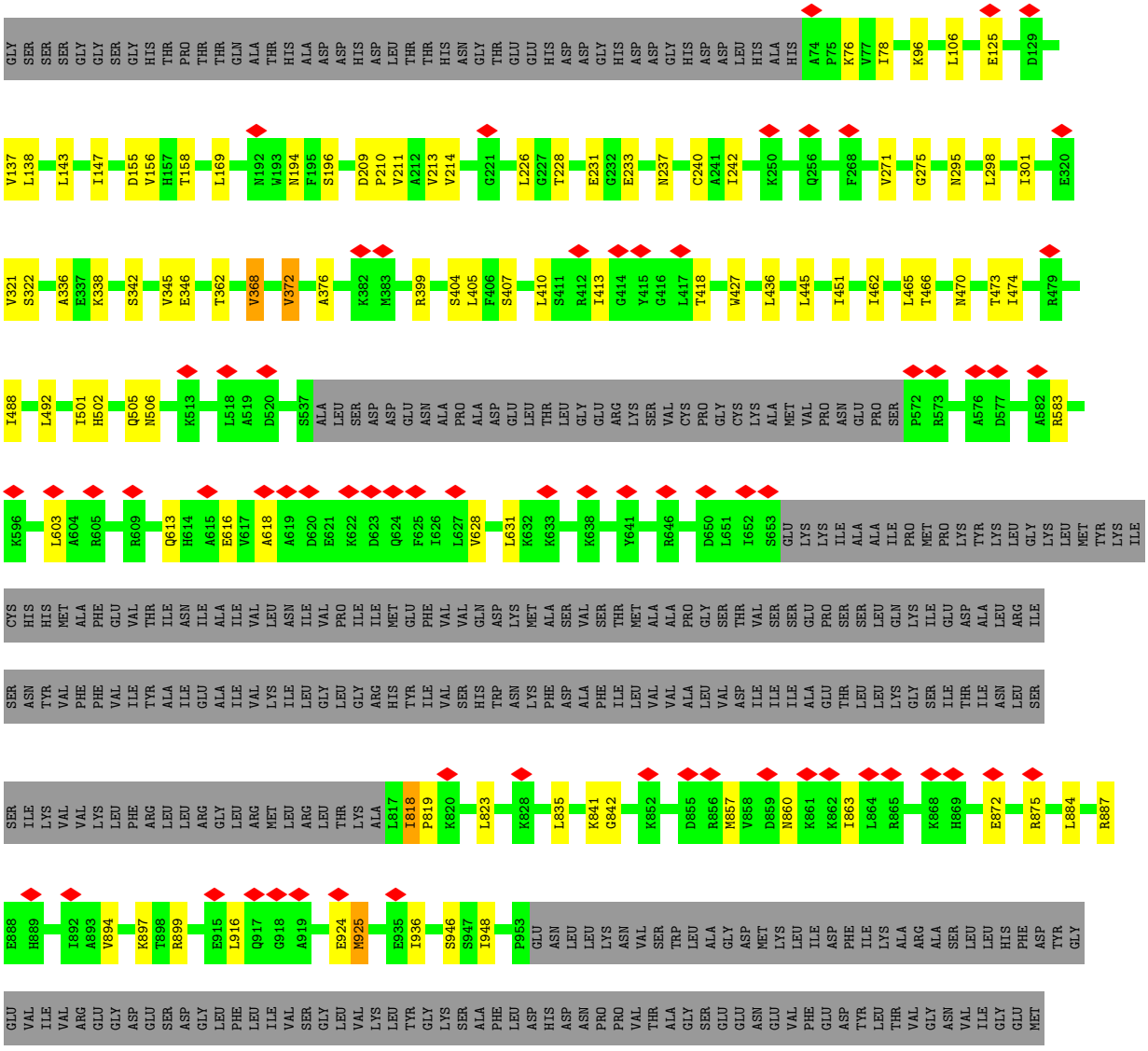
3 Residue-property plots (i)

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: Sperm-specific sodium proton exchanger

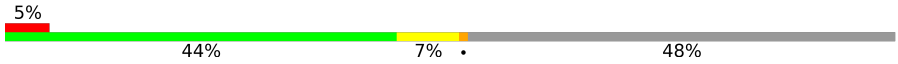
Chain A:

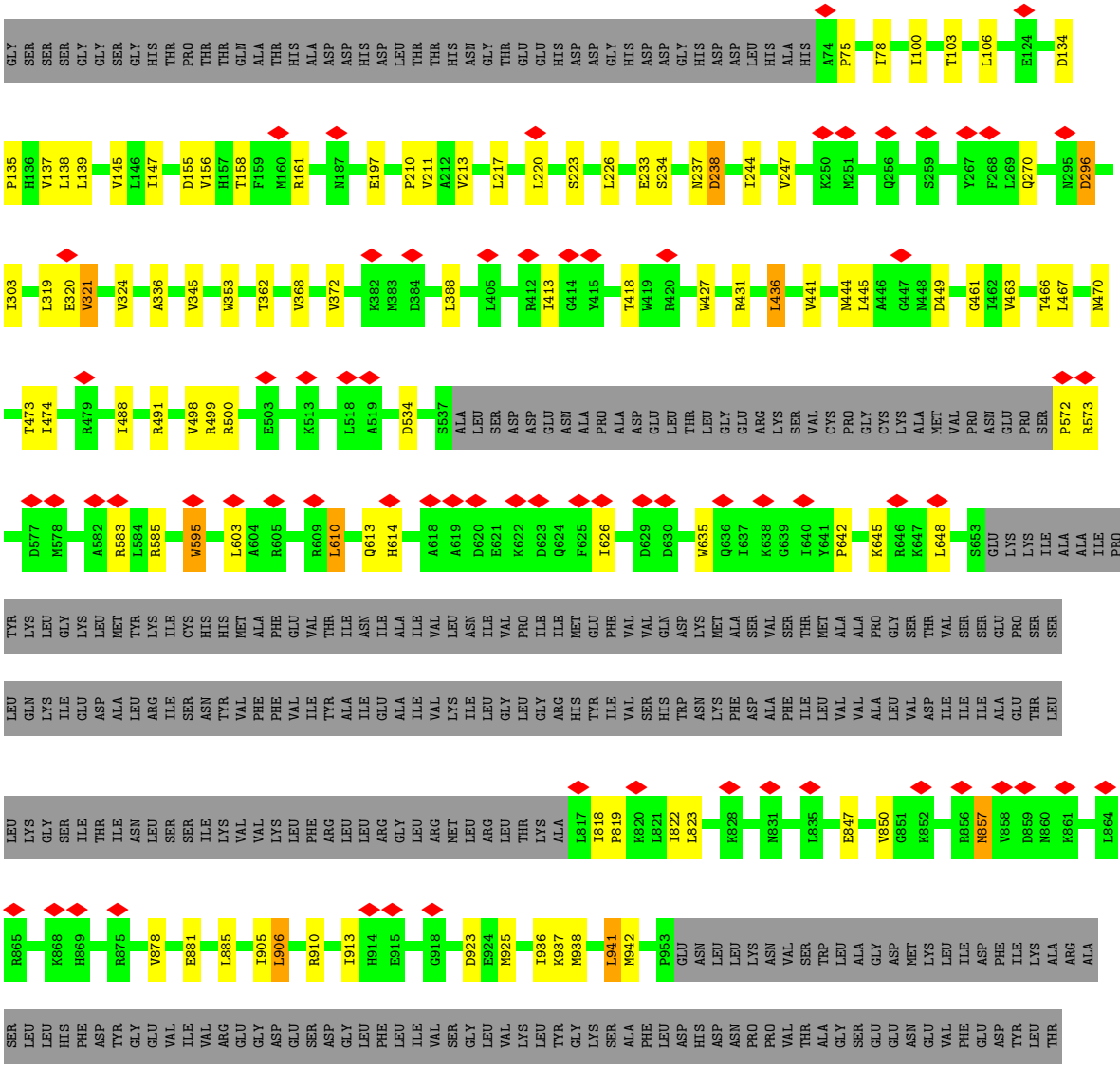


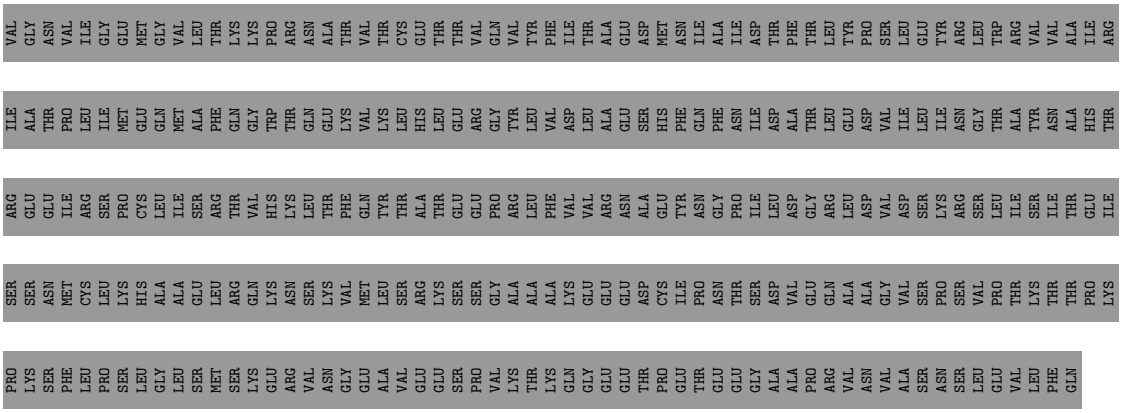


• Molecule 1: Sperm-specific sodium proton exchanger

Chain B:






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

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	111475	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.219	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.13	Depositor
Map size (Å)	276.48, 276.48, 276.48	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	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	0.18	0/5440	0.43	0/7381
1	B	0.18	0/5440	0.42	0/7381
All	All	0.18	0/10880	0.43	0/14762

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	5336	0	5579	43	0
1	B	5336	0	5579	55	0
All	All	10672	0	11158	92	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 4.

All (92) 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:368:VAL:HG21	1:A:436:LEU:HB3	1.73	0.70
1:B:466:THR:O	1:B:470:ASN:HB2	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:470:ASN:O	1:B:474:ILE:HB	1.99	0.62
1:B:910:ARG:NH2	1:B:938:MET:SD	2.76	0.58
1:A:505:GLN:HG2	1:B:905:ILE:HD11	1.84	0.58
1:B:388:LEU:HD11	1:B:461:GLY:HA3	1.84	0.58
1:A:156:VAL:HG11	1:A:336:ALA:HA	1.85	0.57
1:A:466:THR:O	1:A:470:ASN:HB2	2.05	0.57
1:B:610:LEU:O	1:B:614:HIS:ND1	2.38	0.56
1:B:106:LEU:HD21	1:B:362:THR:HG23	1.88	0.56
1:A:583:ARG:NH2	1:A:618:ALA:O	2.39	0.55
1:A:372:VAL:HA	1:A:376:ALA:HB3	1.87	0.55
1:A:872:GLU:OE1	1:A:875:ARG:NH2	2.39	0.55
1:A:894:VAL:HA	1:A:897:LYS:HE2	1.90	0.54
1:B:635:TRP:HD1	1:B:885:LEU:HD13	1.74	0.52
1:B:368:VAL:HG21	1:B:436:LEU:HD12	1.91	0.52
1:B:210:PRO:HB2	1:B:213:VAL:HB	1.93	0.51
1:B:139:LEU:HD13	1:B:441:VAL:HG21	1.91	0.51
1:A:96:LYS:NZ	1:B:296:ASP:OD2	2.44	0.50
1:B:498:VAL:HG21	1:B:534:ASP:HB3	1.93	0.50
1:B:233:GLU:O	1:B:237:ASN:HB2	2.12	0.50
1:B:156:VAL:HG11	1:B:336:ALA:HA	1.93	0.50
1:B:642:PRO:HA	1:B:645:LYS:HB3	1.92	0.50
1:A:462:ILE:O	1:A:466:THR:HB	2.12	0.50
1:A:899:ARG:HH22	1:A:946:SER:HA	1.76	0.50
1:A:271:VAL:HG13	1:A:322:SER:HB3	1.95	0.49
1:B:534:ASP:N	1:B:534:ASP:OD1	2.43	0.49
1:A:233:GLU:O	1:A:237:ASN:HB2	2.13	0.49
1:B:134:ASP:HB3	1:B:137:VAL:HG12	1.95	0.49
1:B:463:VAL:O	1:B:467:LEU:HB2	2.12	0.49
1:A:427:TRP:NE1	1:A:473:THR:OG1	2.44	0.48
1:A:106:LEU:HD21	1:A:362:THR:HG23	1.96	0.48
1:A:275:GLY:HA2	1:A:321:VAL:HG13	1.95	0.47
1:A:502:HIS:O	1:A:506:ASN:ND2	2.47	0.47
1:A:818:ILE:HG13	1:A:819:PRO:HD3	1.96	0.47
1:B:319:LEU:HB2	1:B:321:VAL:HG12	1.97	0.47
1:B:436:LEU:HD21	1:B:463:VAL:HG11	1.96	0.47
1:A:501:ILE:HD12	1:B:913:ILE:HD11	1.95	0.47
1:B:368:VAL:HG11	1:B:436:LEU:HG	1.97	0.47
1:A:169:LEU:HB2	1:A:410:LEU:HD21	1.97	0.47
1:B:158:THR:HA	1:B:161:ARG:HG2	1.97	0.46
1:B:585:ARG:NH1	1:B:857:MET:O	2.49	0.46
1:B:135:PRO:HG3	1:B:444:ASN:HB3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:819:PRO:HA	1:B:822:ILE:HG22	1.98	0.46
1:B:610:LEU:HD12	1:B:613:GLN:HE21	1.80	0.45
1:A:158:THR:HB	1:A:228:THR:HG21	1.98	0.45
1:A:916:LEU:HD11	1:B:500:ARG:HD2	1.98	0.45
1:B:427:TRP:NE1	1:B:473:THR:OG1	2.47	0.45
1:A:404:SER:O	1:A:407:SER:OG	2.35	0.45
1:A:603:LEU:HD21	1:A:842:GLY:HA3	1.97	0.45
1:B:217:LEU:HD23	1:B:220:LEU:HD21	1.97	0.44
1:B:449:ASP:N	1:B:449:ASP:OD1	2.46	0.44
1:A:210:PRO:HB2	1:A:213:VAL:HB	1.99	0.44
1:B:441:VAL:O	1:B:445:LEU:HB2	2.18	0.44
1:B:488:ILE:HG23	1:B:491:ARG:HH12	1.81	0.44
1:B:938:MET:HA	1:B:941:LEU:HD23	2.00	0.44
1:A:194:ASN:OD1	1:A:196:SER:OG	2.29	0.44
1:A:214:VAL:HG21	1:A:231:GLU:HG3	1.98	0.44
1:B:572:PRO:HB2	1:B:573:ARG:H	1.70	0.44
1:A:295:ASN:HB3	1:A:936:ILE:HD11	1.99	0.43
1:A:924:GLU:HB2	1:B:595:TRP:HZ2	1.83	0.43
1:A:470:ASN:O	1:A:474:ILE:HB	2.18	0.43
1:B:270:GLN:HE22	1:B:320:GLU:HB3	1.84	0.43
1:A:76:LYS:NZ	1:A:125:GLU:OE1	2.51	0.43
1:A:338:LYS:NZ	1:A:346:GLU:OE1	2.42	0.43
1:B:878:VAL:HA	1:B:881:GLU:HG2	2.01	0.42
1:B:648:LEU:HD22	1:B:818:ILE:HG23	2.01	0.42
1:B:847:GLU:HA	1:B:850:VAL:HG12	2.02	0.42
1:B:648:LEU:HB2	1:B:822:ILE:HD13	2.01	0.42
1:A:233:GLU:OE2	1:A:399:ARG:NH2	2.39	0.42
1:A:342:SER:HB2	1:A:345:VAL:HG23	2.02	0.42
1:B:603:LEU:HD23	1:B:603:LEU:HA	1.90	0.42
1:B:234:SER:O	1:B:238:ASP:HB2	2.20	0.42
1:B:244:ILE:HA	1:B:247:VAL:HG12	2.01	0.42
1:B:223:SER:HB3	1:B:226:LEU:HB3	2.01	0.42
1:A:860:ASN:HB3	1:A:863:ILE:HG12	2.02	0.42
1:A:925:MET:HE2	1:A:925:MET:HB2	1.85	0.42
1:A:884:LEU:HA	1:A:887:ARG:HE	1.85	0.41
1:B:431:ARG:HB2	1:B:463:VAL:HG23	2.01	0.41
1:A:613:GLN:HA	1:A:616:GLU:HG2	2.02	0.41
1:B:145:VAL:HG12	1:B:353:TRP:HZ3	1.85	0.41
1:A:338:LYS:HB2	1:A:346:GLU:HG2	2.01	0.41
1:B:923:ASP:OD1	1:B:923:ASP:N	2.47	0.41
1:A:137:VAL:HG12	1:B:75:PRO:HD3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:937:LYS:HD3	1:B:937:LYS:HA	1.86	0.41
1:B:147:ILE:HD13	1:B:324:VAL:HG13	2.01	0.41
1:A:298:LEU:HA	1:A:301:ILE:HD12	2.02	0.41
1:B:906:LEU:HD13	1:B:906:LEU:HA	1.96	0.41
1:A:147:ILE:HD13	1:A:147:ILE:HA	1.96	0.40
1:B:942:MET:HE3	1:B:942:MET:HB3	1.93	0.40
1:B:925:MET:N	1:B:925:MET:SD	2.95	0.40
1:A:143:LEU:HD13	1:A:242:ILE:HD13	2.03	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	677/1308 (52%)	659 (97%)	18 (3%)	0	100	100
1	B	677/1308 (52%)	667 (98%)	10 (2%)	0	100	100
All	All	1354/2616 (52%)	1326 (98%)	28 (2%)	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	580/1120 (52%)	554 (96%)	26 (4%)	23	49

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	580/1120 (52%)	554 (96%)	26 (4%)	23 49
All	All	1160/2240 (52%)	1108 (96%)	52 (4%)	26 49

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	78	ILE
1	A	138	LEU
1	A	155	ASP
1	A	209	ASP
1	A	211	VAL
1	A	226	LEU
1	A	240	CYS
1	A	368	VAL
1	A	372	VAL
1	A	405	LEU
1	A	413	ILE
1	A	418	THR
1	A	445	LEU
1	A	451	ILE
1	A	465	LEU
1	A	488	ILE
1	A	492	LEU
1	A	628	VAL
1	A	631	LEU
1	A	818	ILE
1	A	823	LEU
1	A	835	LEU
1	A	841	LYS
1	A	857	MET
1	A	925	MET
1	A	948	ILE
1	B	78	ILE
1	B	100	ILE
1	B	103	THR
1	B	138	LEU
1	B	155	ASP
1	B	197	GLU
1	B	211	VAL
1	B	238	ASP
1	B	296	ASP
1	B	303	ILE

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Mol	Chain	Res	Type
1	B	321	VAL
1	B	345	VAL
1	B	372	VAL
1	B	413	ILE
1	B	418	THR
1	B	436	LEU
1	B	499	ARG
1	B	583	ARG
1	B	595	TRP
1	B	610	LEU
1	B	626	ILE
1	B	823	LEU
1	B	857	MET
1	B	906	LEU
1	B	936	ILE
1	B	941	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	126	HIS
1	A	187	ASN
1	A	264	ASN
1	A	292	HIS
1	A	295	ASN
1	A	374	GLN
1	A	502	HIS
1	B	126	HIS
1	B	140	GLN
1	B	246	ASN
1	B	264	ASN
1	B	295	ASN
1	B	361	ASN
1	B	444	ASN
1	B	475	GLN
1	B	636	GLN
1	B	826	ASN
1	B	889	HIS
1	B	900	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no 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.

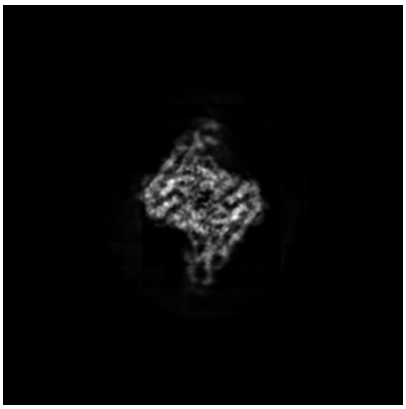
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-38570. These allow visual inspection of the internal detail of the map and identification of artifacts.

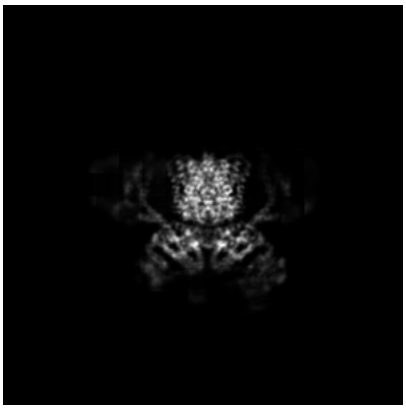
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

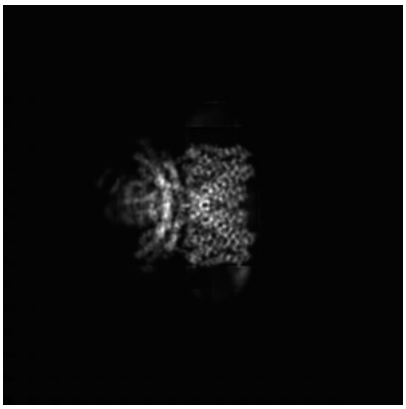
6.1.1 Primary map



X

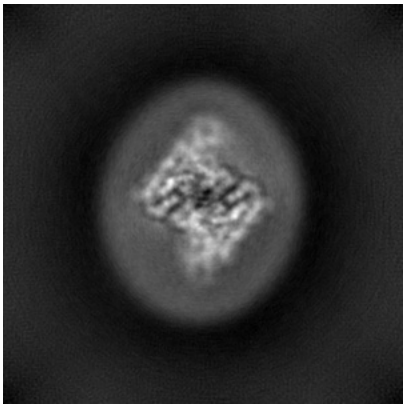


Y

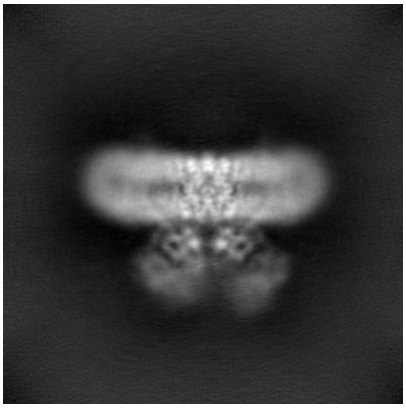


Z

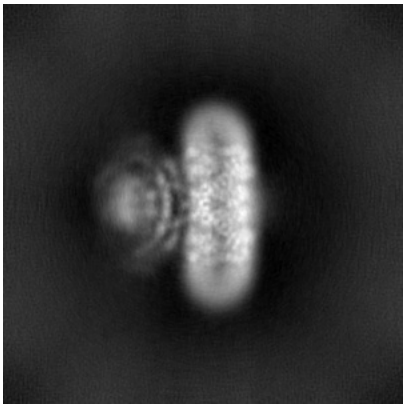
6.1.2 Raw map



X



Y



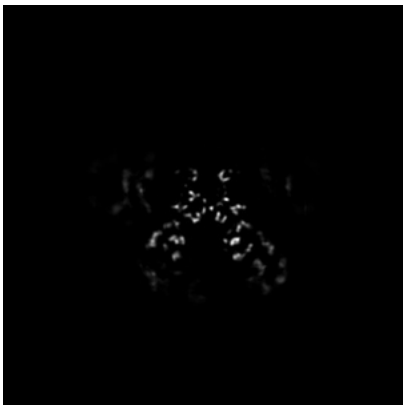
Z

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

6.2 Central slices (i)

6.2.1 Primary map

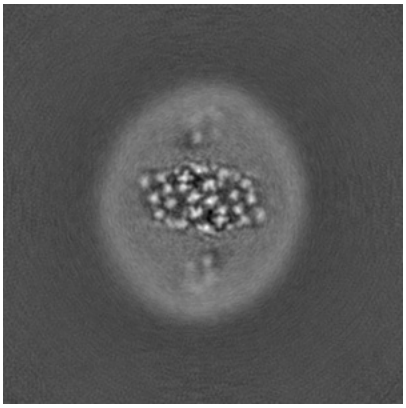
X Index: 128



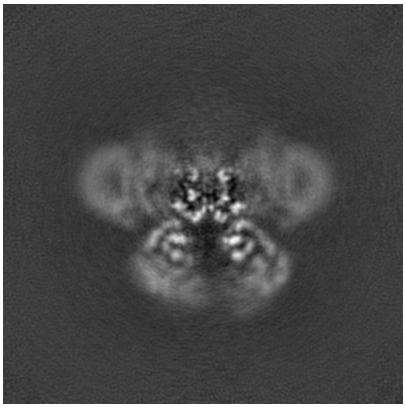
Y Index: 128

Z Index: 128

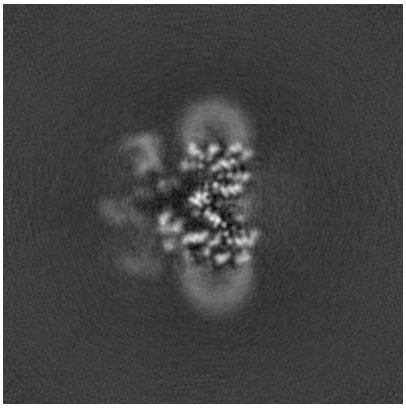
6.2.2 Raw map



X Index: 128



Y Index: 128

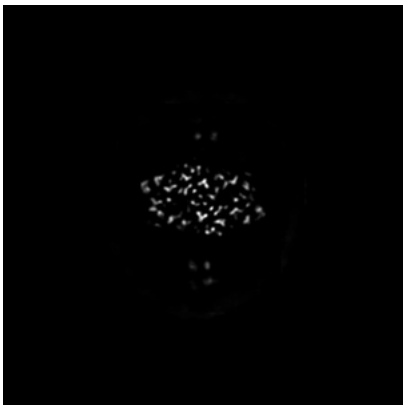


Z Index: 128

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

6.3 Largest variance slices (i)

6.3.1 Primary map

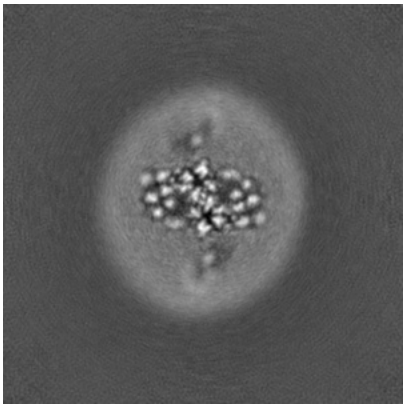


X Index: 131

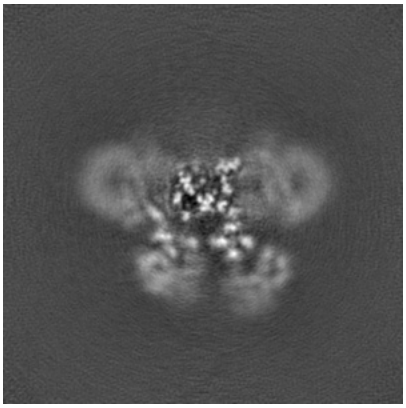
Y Index: 121

Z Index: 124

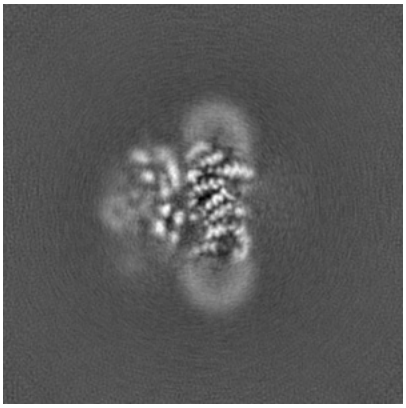
6.3.2 Raw map



X Index: 126



Y Index: 133

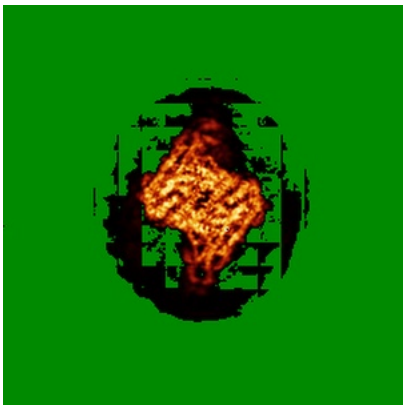


Z Index: 119

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

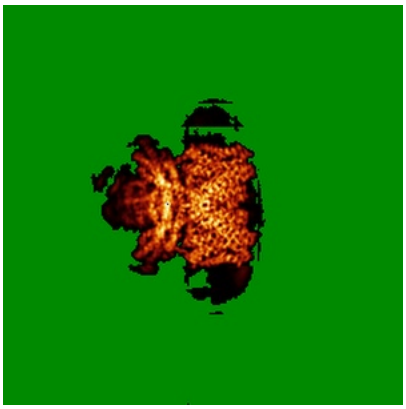
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



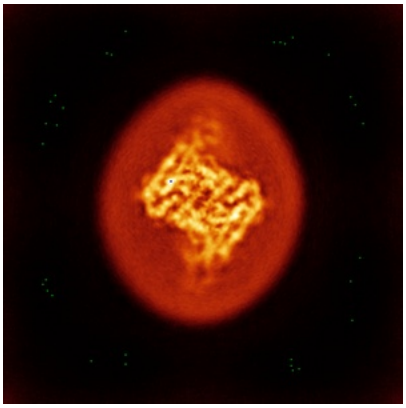
X

Y

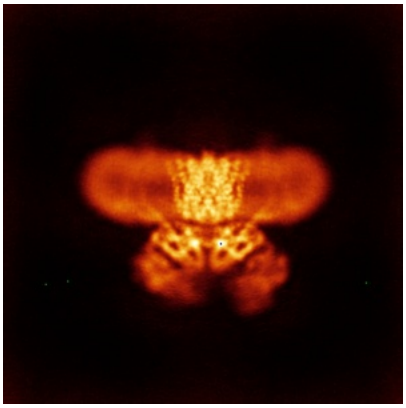


Z

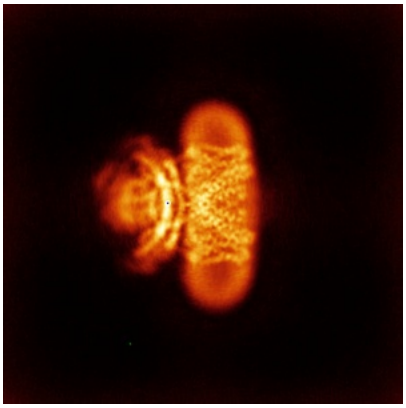
6.4.2 Raw map



X



Y

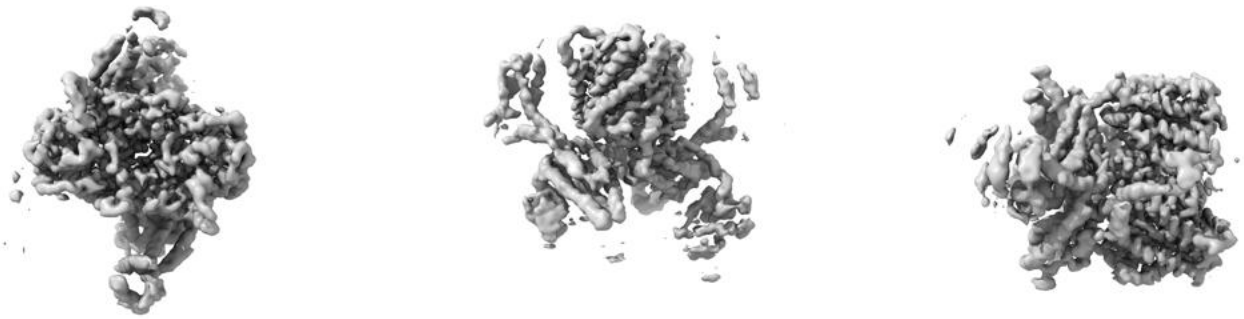


Z

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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.13. 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.

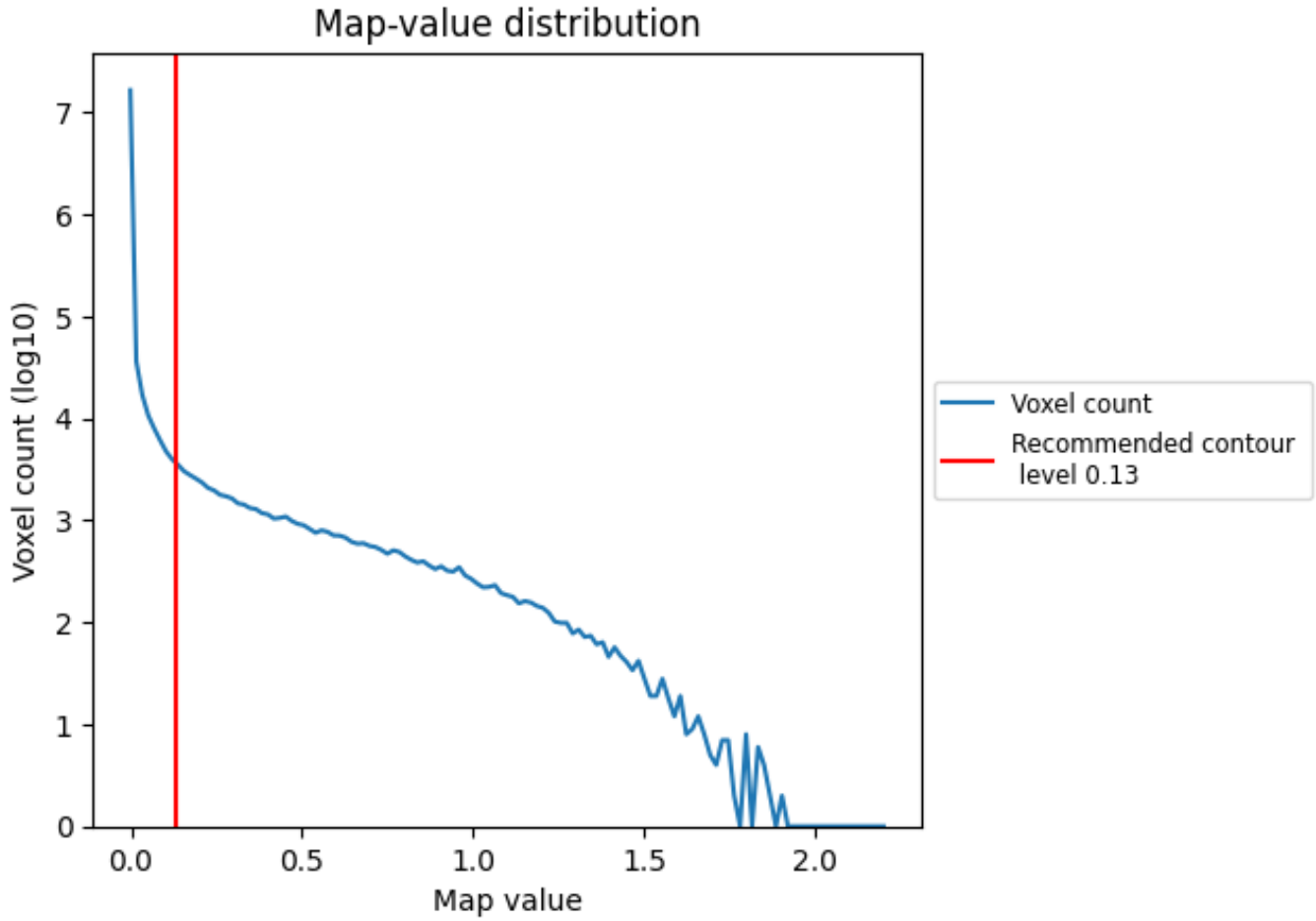
6.6 Mask visualisation (i)

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

7 Map analysis

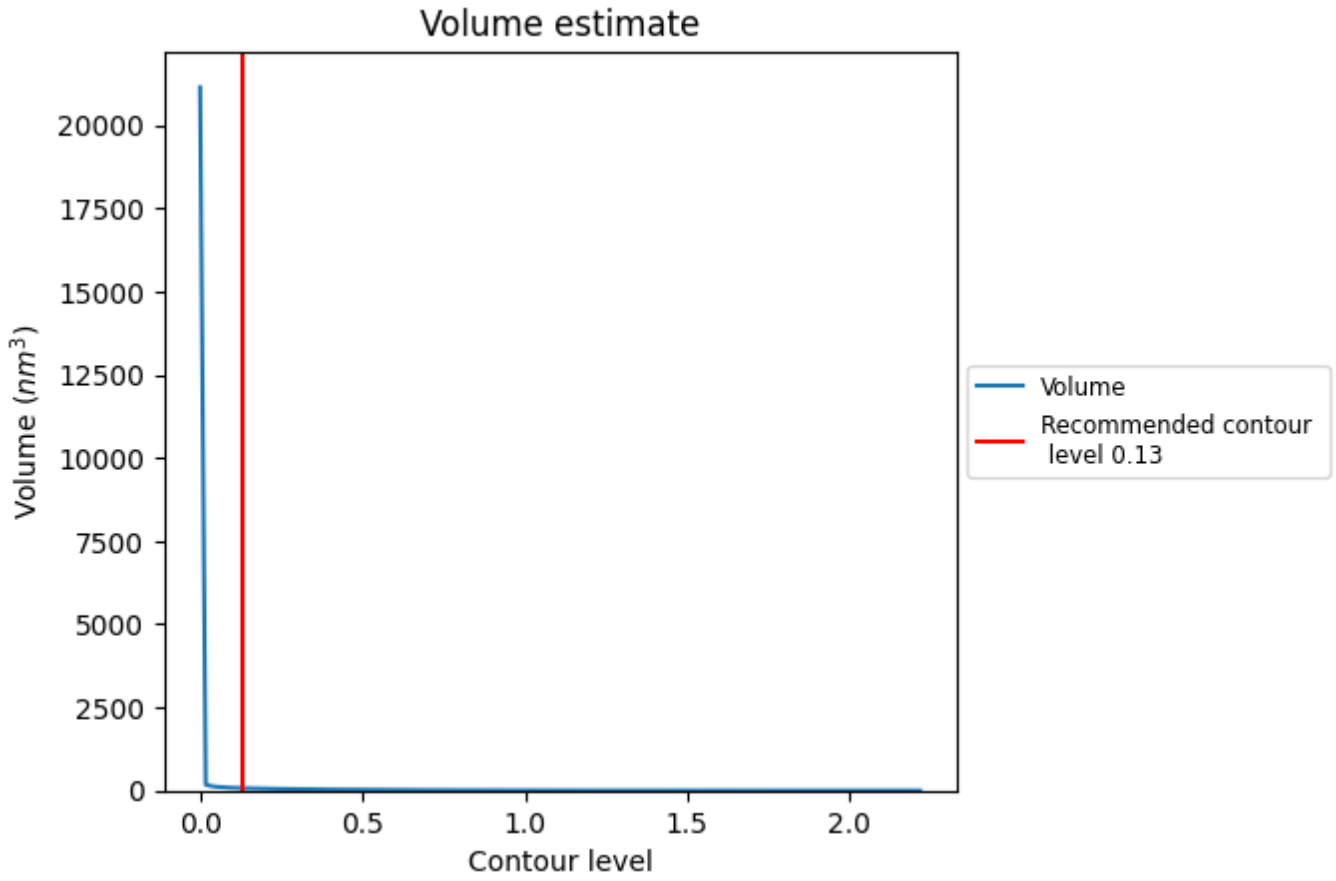
This section contains the results of statistical analysis of the map.

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.

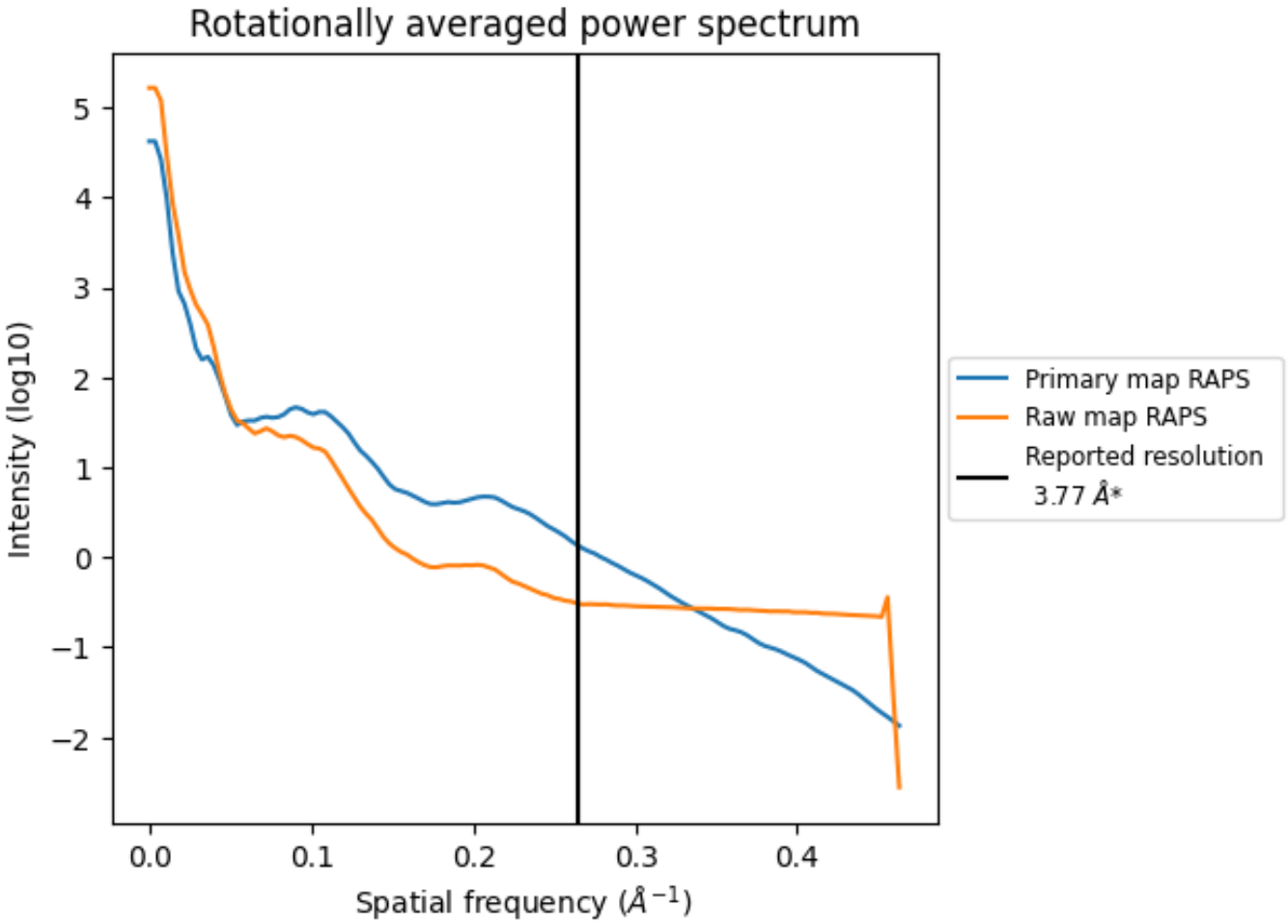
7.2 Volume estimate



The volume at the recommended contour level is 72 nm^3; this corresponds to an approximate mass of 65 kDa.

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

7.3 Rotationally averaged power spectrum (i)

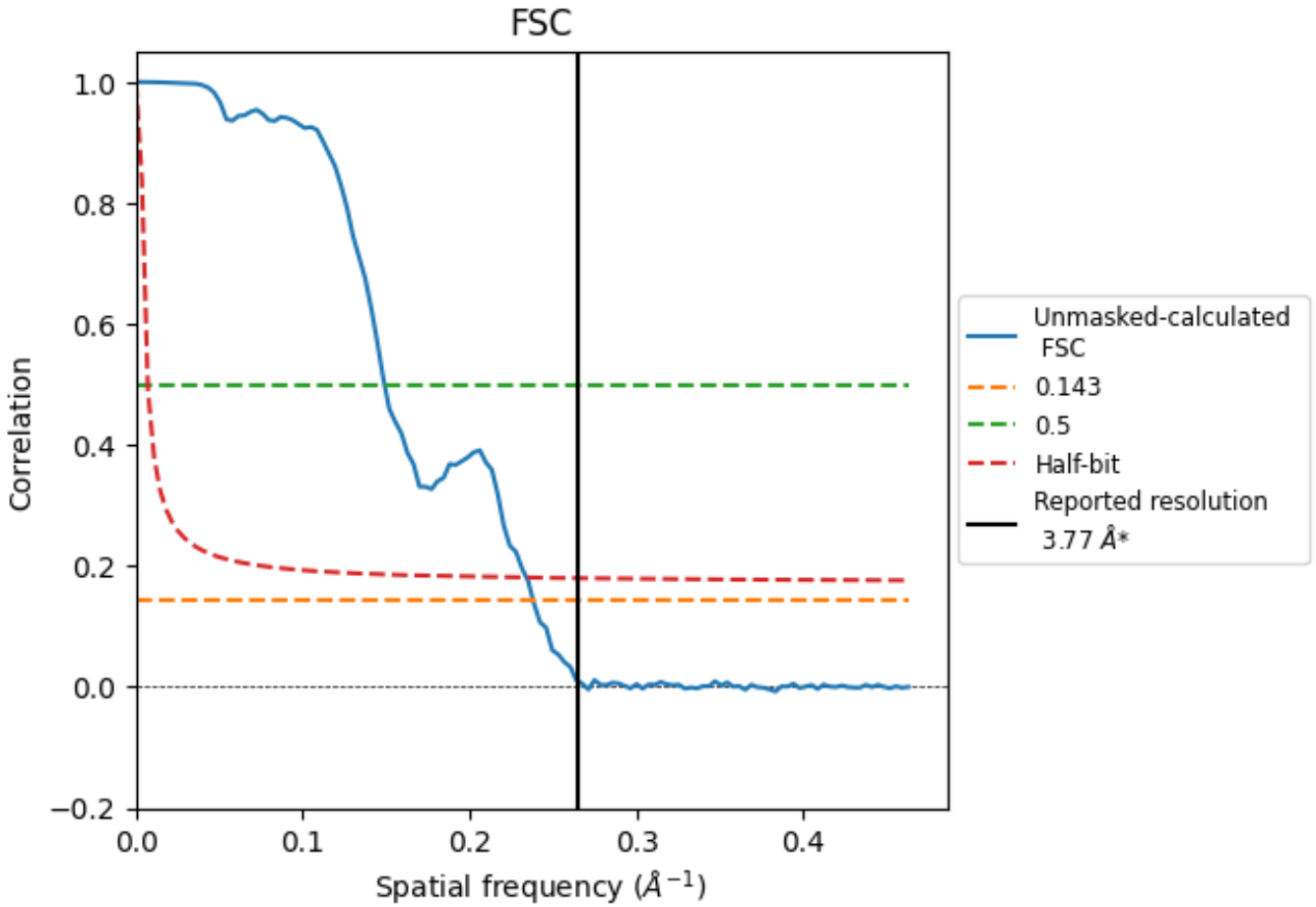


*Reported resolution corresponds to spatial frequency of 0.265 Å^{-1}

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 0.265 Å^{-1}

8.2 Resolution estimates (i)

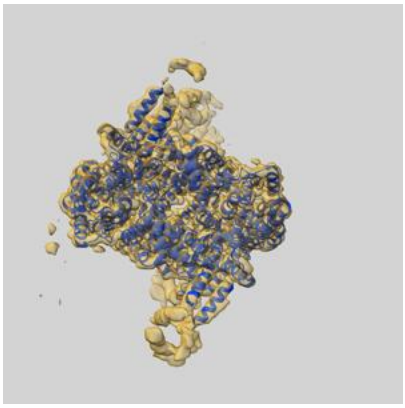
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.77	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.20	6.71	4.27

*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 4.20 differs from the reported value 3.77 by more than 10 %

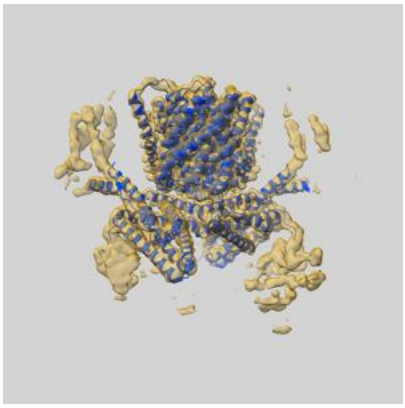
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-38570 and PDB model 8XQ9. Per-residue inclusion information can be found in section 3 on page 4.

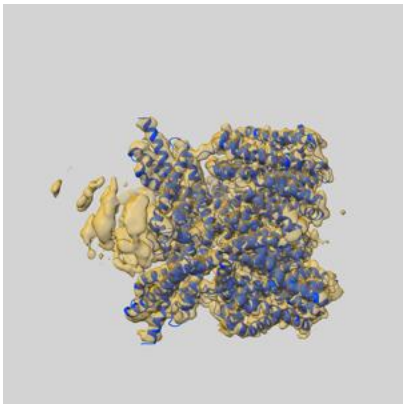
9.1 Map-model overlay



X



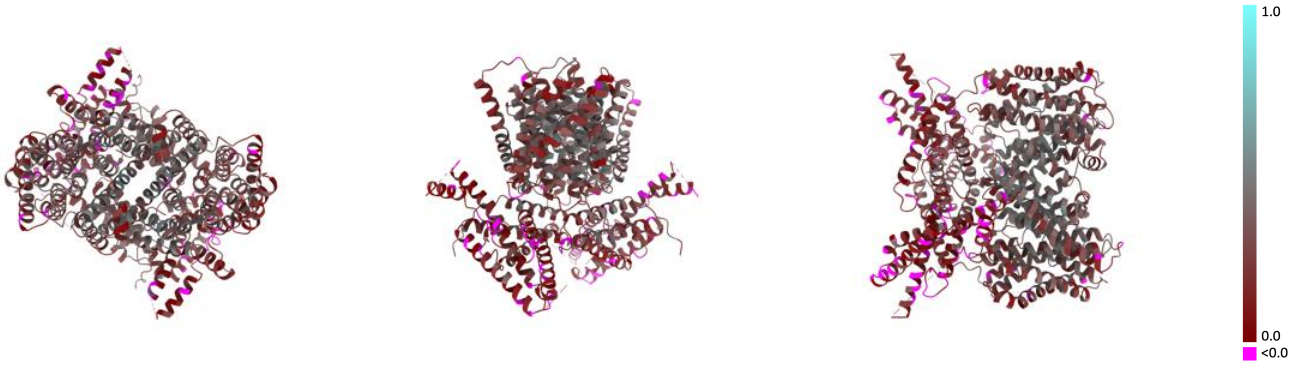
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.13 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.

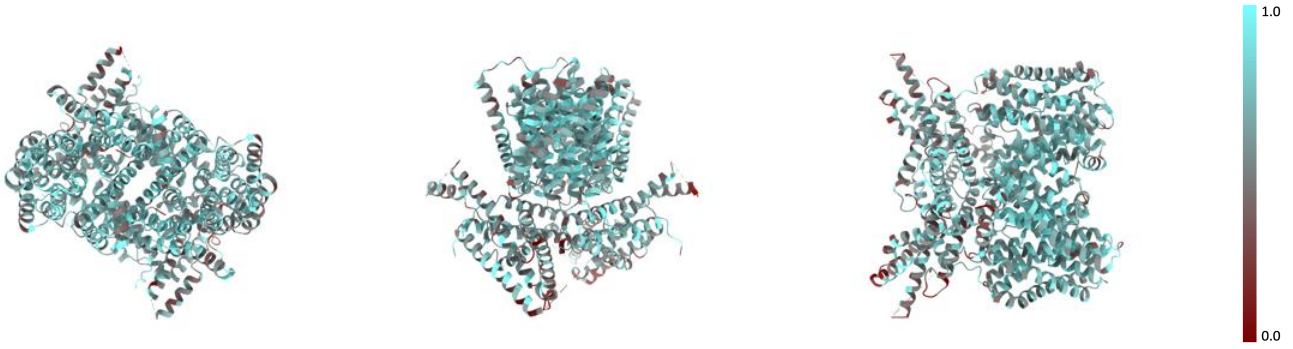
9.2 Q-score mapped to coordinate model (i)



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.

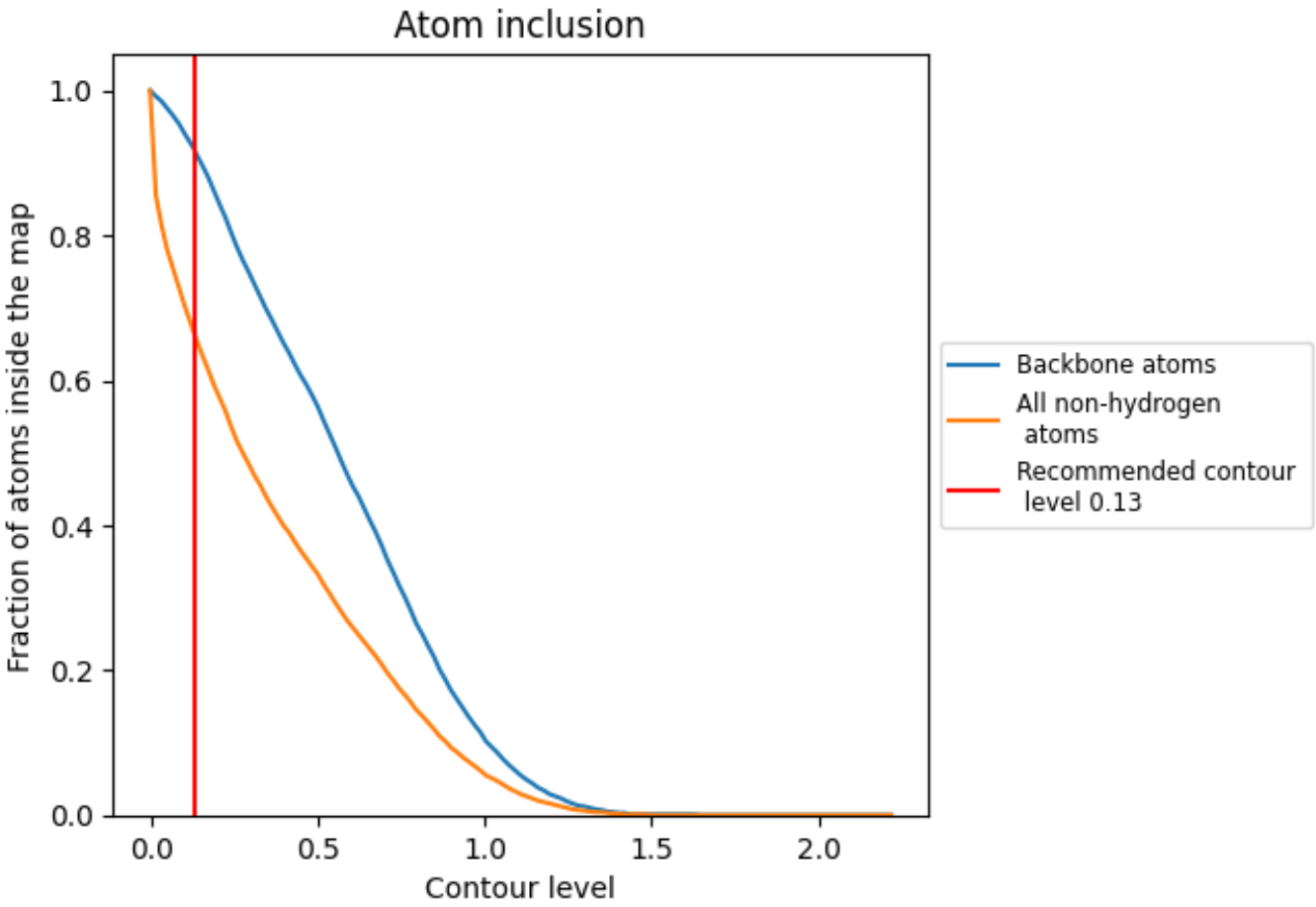
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.13).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 66% 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 (0.13) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6650	0.2610
A	0.6710	0.2670
B	0.6590	0.2560