



wwPDB EM Validation Summary Report ⓘ

Jul 23, 2026 – 07:15 PM JST

PDB ID : 9UKC / pdb_00009ukc
EMDB ID : EMD-64234
Title : CryoEM structure of Brucella melitensis CobN-CobS-CobT holoenzyme with AMPPNP (conformation 1)
Authors : Zhou, Y.L.; Chen, X.; Liu, L.
Deposited on : 2025-04-17
Resolution : 4.26 Å(reported)

This is a wwPDB EM Validation Summary 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:

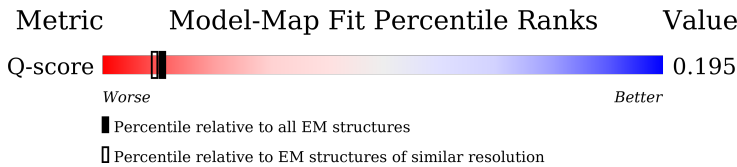
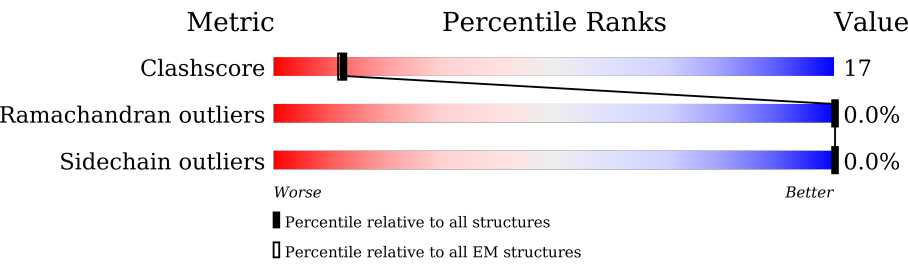
EMDB validation analysis : 0.0.1.dev133
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using 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) : 2.50

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 4.26 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.



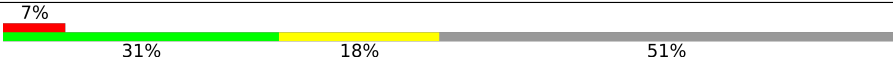
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	4601 (3.76 - 4.76)

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	328	5% 58% 36% 5%
1	B	328	64% 29% 8%
1	C	328	67% 26% 8%
1	D	328	59% 37% .

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Mol	Chain	Length	Quality of chain
1	E	328	
1	F	328	
2	G	637	
2	a	637	
3	N	1263	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 25970 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 Cobaltochelatase subunit CobS.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	310	Total	C	N	O	S	0	0
			2456	1558	430	458	10		
1	B	303	Total	C	N	O	S	0	0
			2409	1528	422	449	10		
1	C	303	Total	C	N	O	S	0	0
			2404	1525	422	447	10		
1	D	316	Total	C	N	O	S	0	0
			2503	1584	439	470	10		
1	E	324	Total	C	N	O	S	0	0
			2555	1617	448	480	10		
1	F	324	Total	C	N	O	S	0	0
			2555	1617	448	480	10		

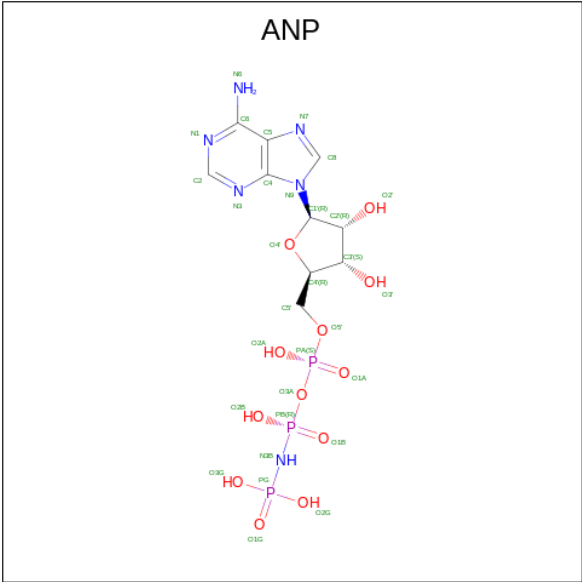
- Molecule 2 is a protein called Cobaltochelatase subunit CobT.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	G	315	Total	C	N	O	S	0	0
			2511	1564	463	474	10		
2	a	204	Total	C	N	O	S	0	0
			1562	959	295	300	8		

- Molecule 3 is a protein called Cobaltochelatase subunit CobN.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	N	900	Total	C	N	O	S	0	0
			6919	4362	1239	1295	23		

- Molecule 4 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: C₁₀H₁₇N₆O₁₂P₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
4	D	1	Total	C	N	O	P	0
			31	10	6	12	3	
4	E	1	Total	C	N	O	P	0
			31	10	6	12	3	
4	F	1	Total	C	N	O	P	0
			31	10	6	12	3	

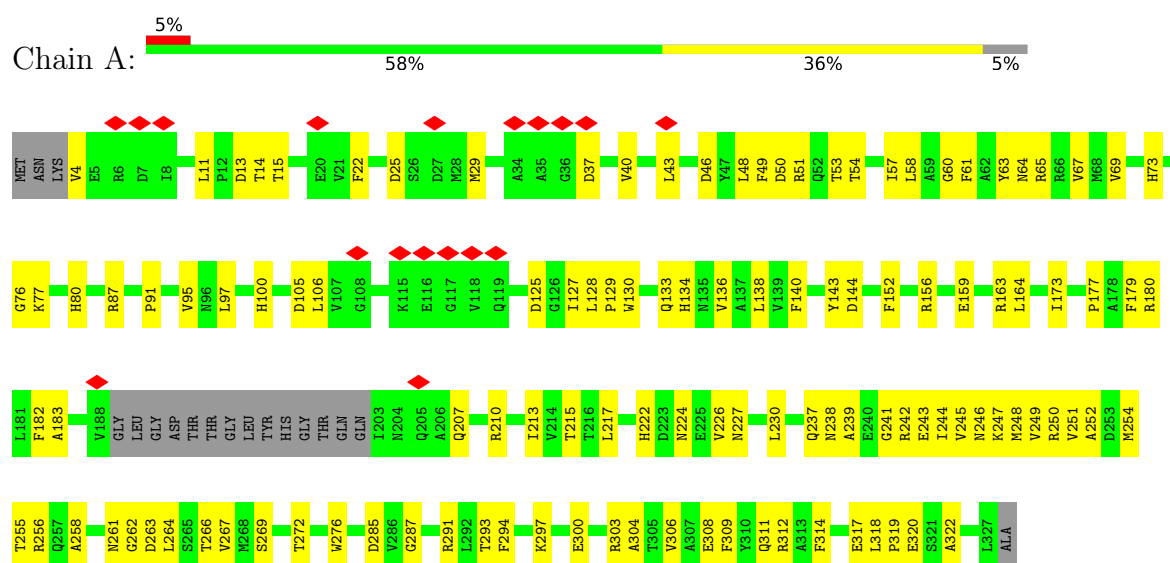
- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
5	D	1	Total	Mg	0
			1	1	
5	E	1	Total	Mg	0
			1	1	
5	F	1	Total	Mg	0
			1	1	

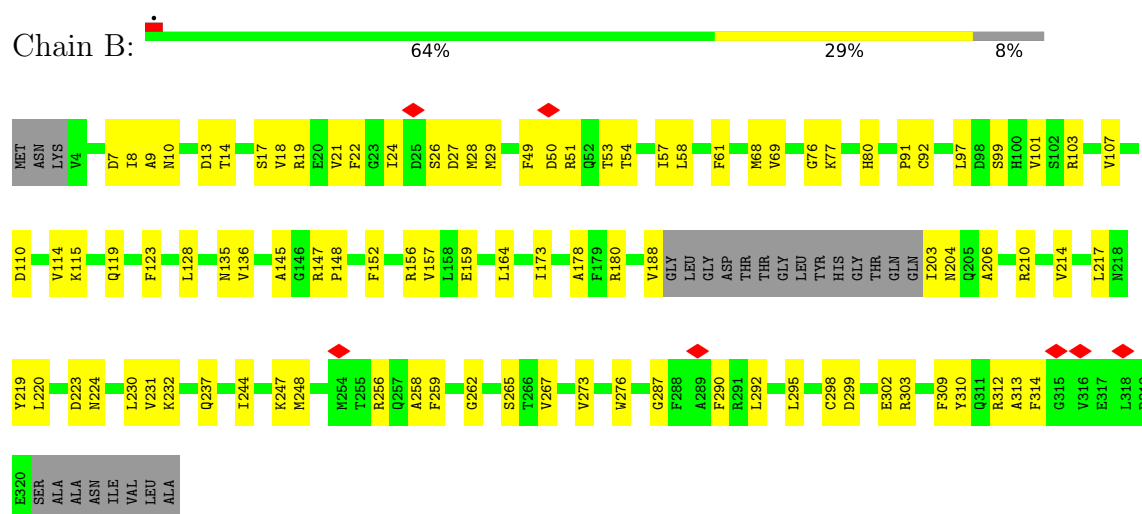
3 Residue-property plots

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: Cobaltochelatase subunit CobS

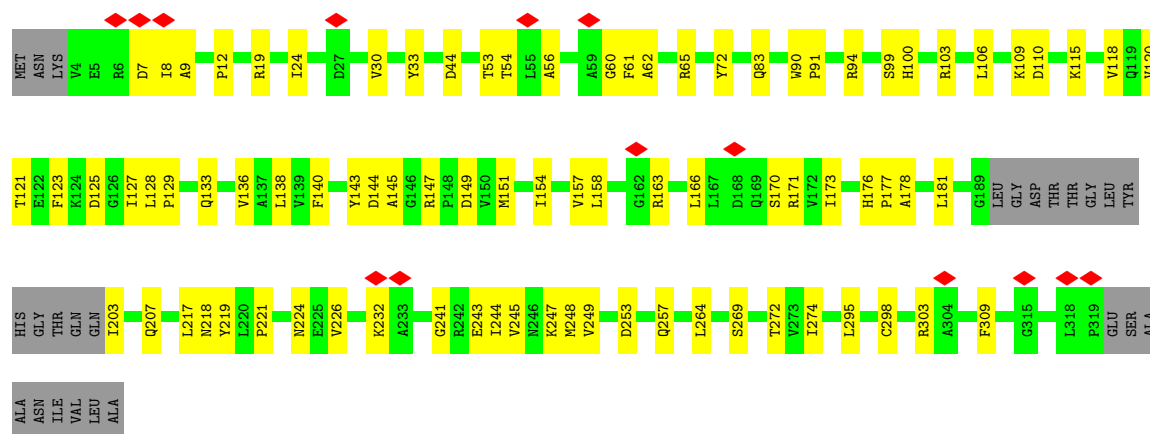


• Molecule 1: Cobaltochelatase subunit CobS

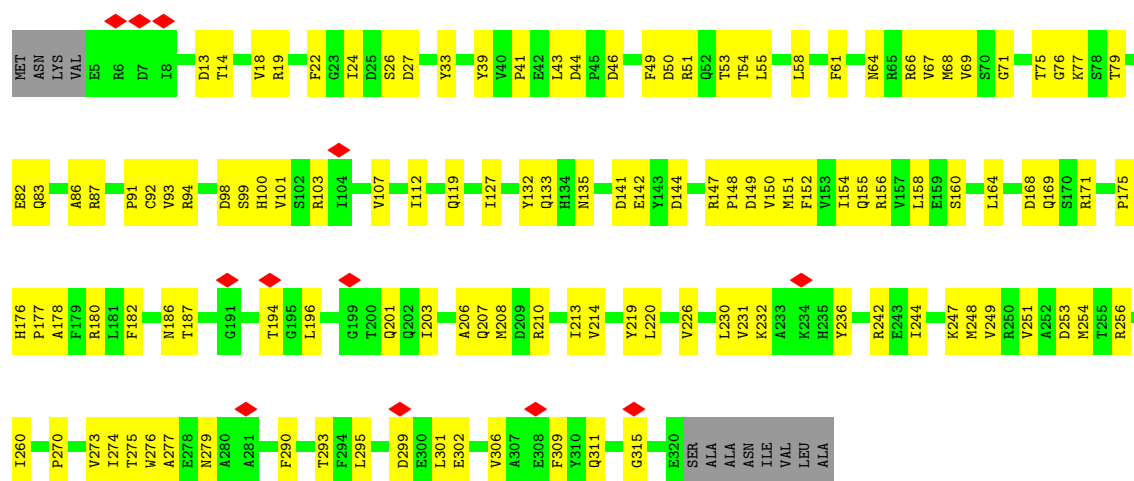


• Molecule 1: Cobaltochelatase subunit CobS

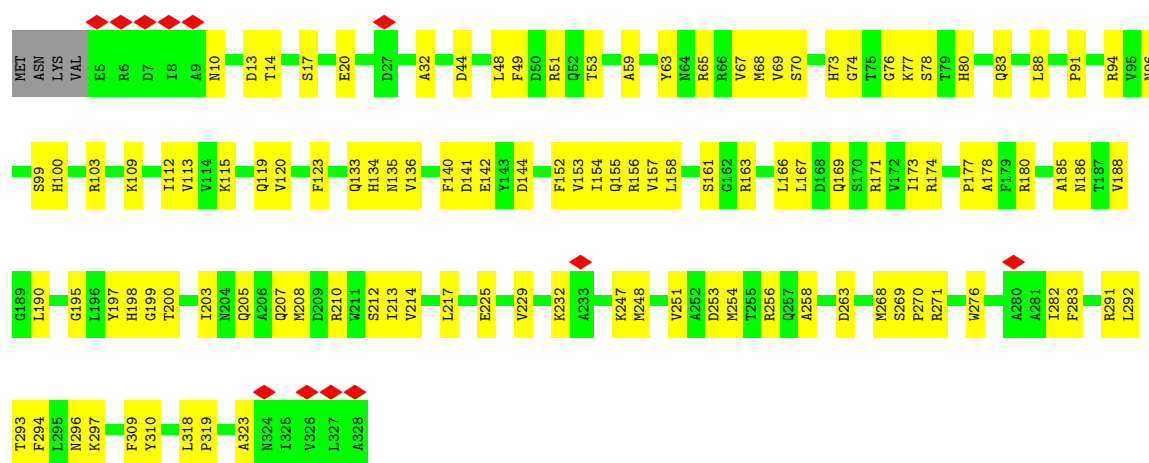




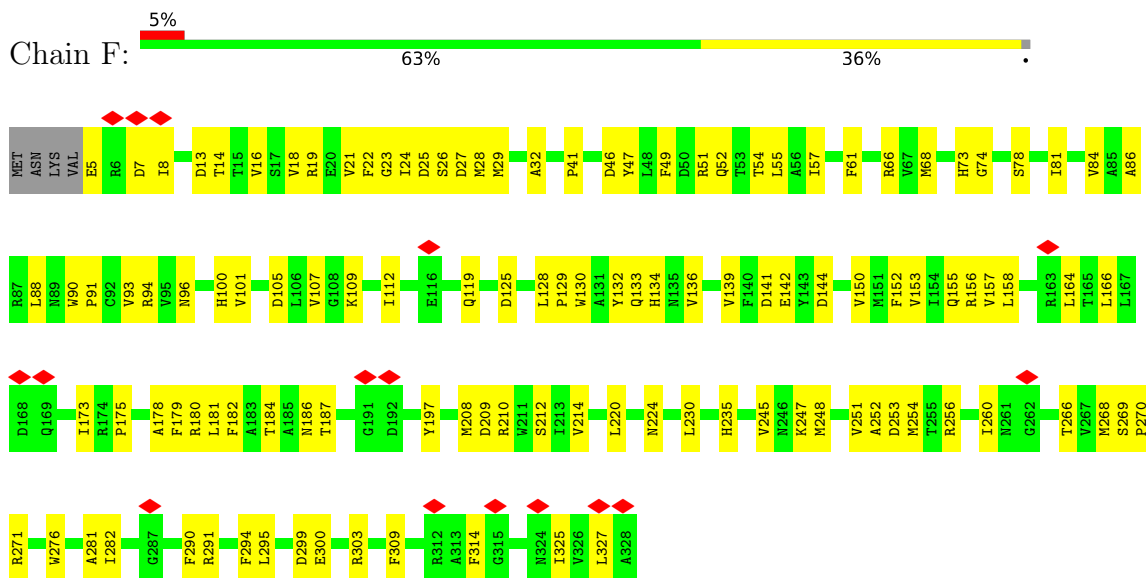
• Molecule 1: Cobaltochelatase subunit CobS



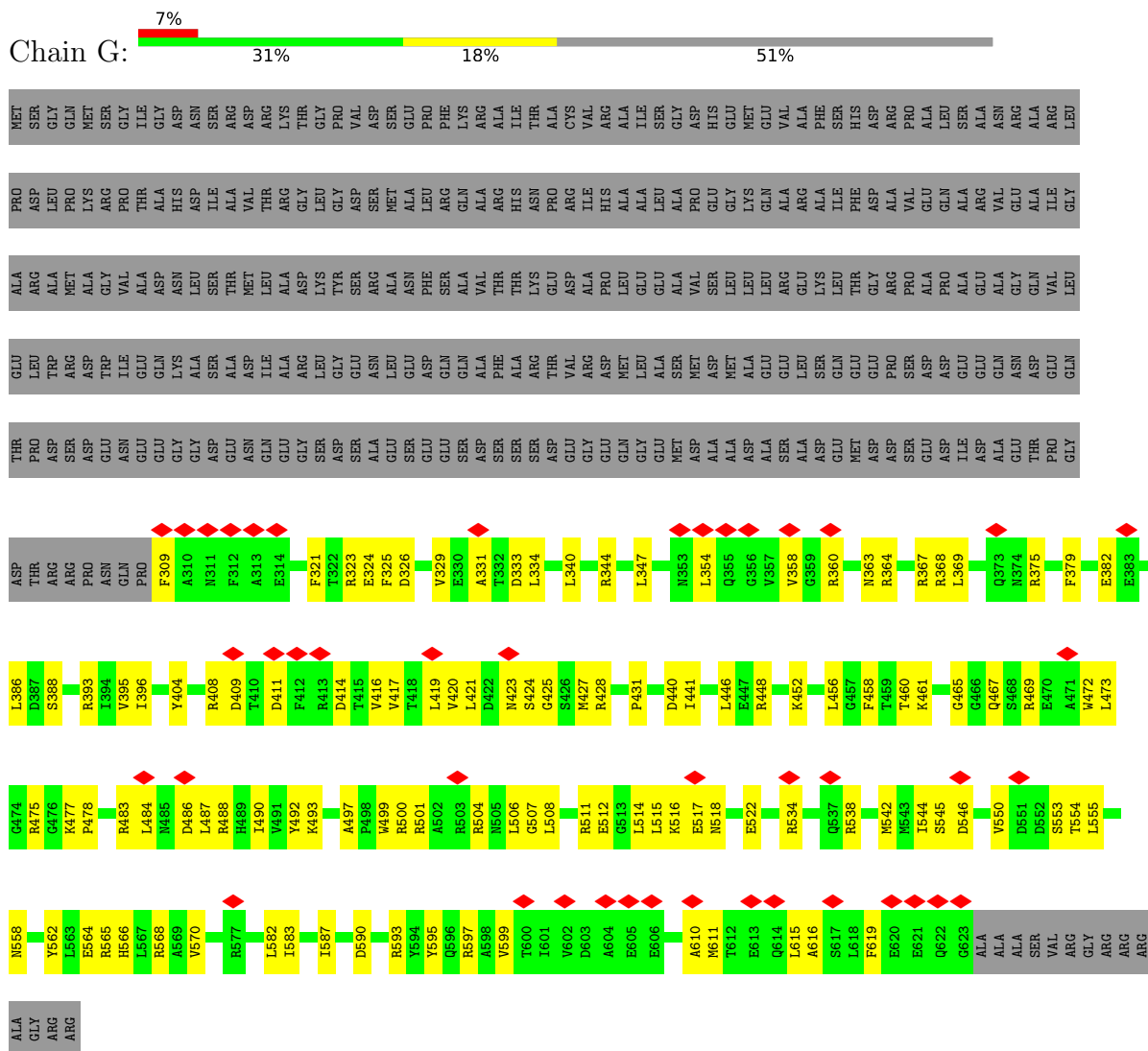
• Molecule 1: Cobaltochelatase subunit CobS



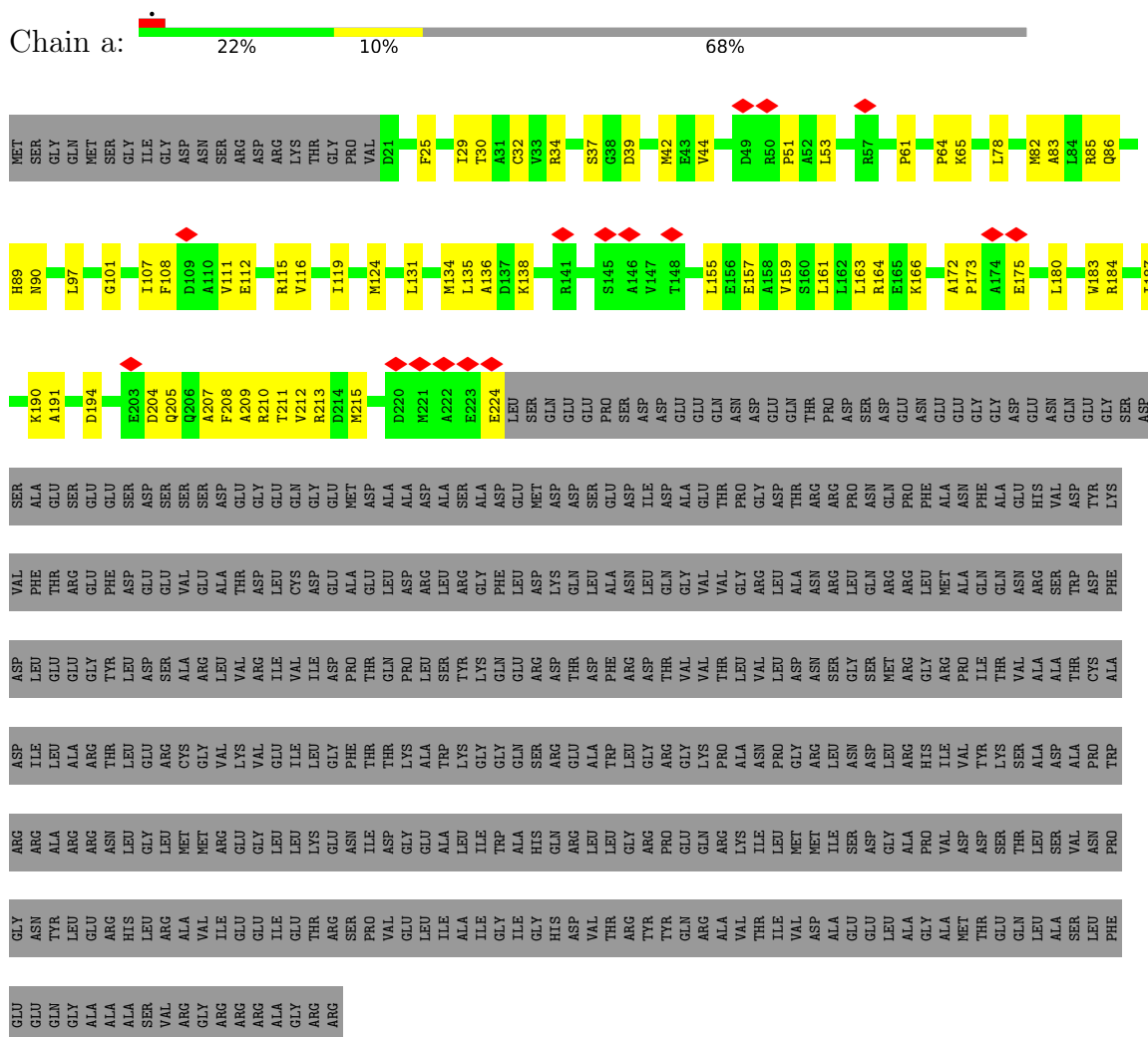
• Molecule 1: Cobaltochelatase subunit CobS



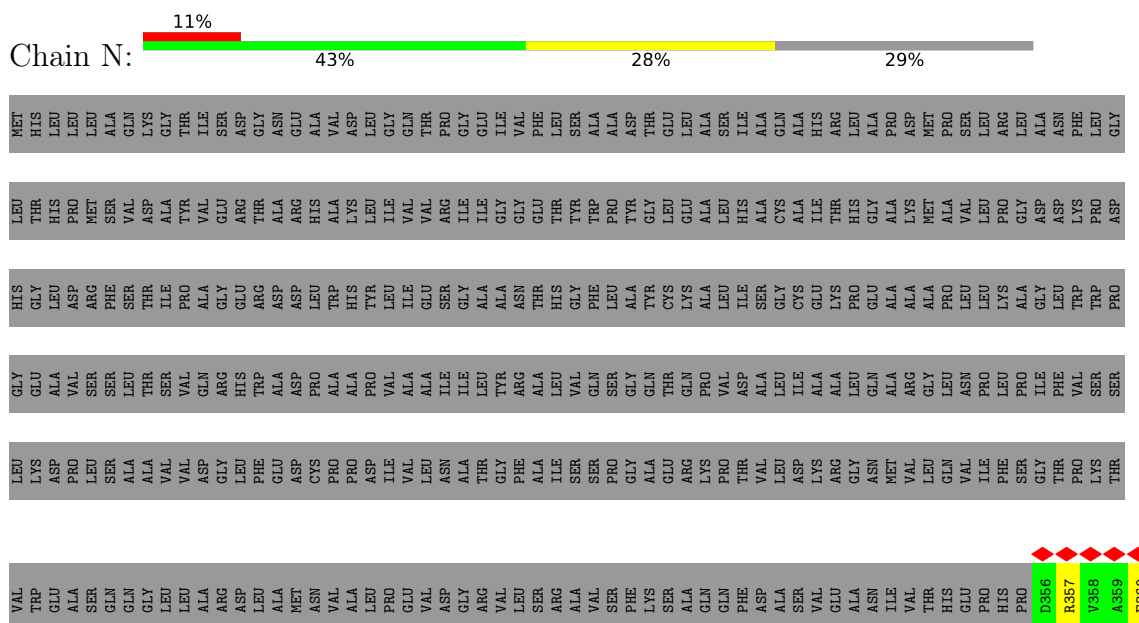
- Molecule 2: Cobaltochelatase subunit CobT



- Molecule 2: Cobaltochelatase subunit CobT



- Molecule 3: Cobaltochelataase subunit CobN



L1255	K1166	D1090	D1011	A921	P825	P749	H666	N589	R511	S428	V361
ASN	G1167	N1091	T1014	L922	S826	C752	D667	D590	N514	D429	A362
PRO	A1168	R1092	A923	L924	E827	W753	H668	P591	G592	M432	E363
GLU	A1169	E1093	A1019	V927	I828	M754	D669	E593	Y521	R433	L364
ARG	L1171	L1096	R1022	Q928	S836	A755	D670	Q596	H522	A434	A365
ALA	T1174	L1097	V1023	D932	G837	E756	M673	R599	L526	M436	A366
ILE	V1175	D1100	F1024	M933	R838	D764	A674	R600	H530	A437	N367
ASN	Y1177	Y1102	G1025	A934	F839	M765	L675	A501	G531	P438	L371
GLY	L1178	Y1103	S1026	A934	F839	L766	Q676	I606	Y532	P439	K372
	L1179	Q1104	K1027	S935	P844	L767	K677	D807	I533	T440	K373
	A1180	F1105	P1028	R936	P844	A768	D684	H608	A534	T441	K374
	E1106	E1106	A1029	R937	S845	A769	L885	L609	A442	A442	P375
	T1112	T1112	Q1036	Y941	G851	S770	L886	L609	A443	A443	P376
	T1117	T1117	I1039	E942	V855	P771	Q687	L613	R447	R447	R379
	G1118	G1118	N1042	A950	L866	A772	M688	T614	E448	E448	R380
	A1119	A1119	M1043	R951	P857	T773	Q689	R615	I449	I449	R381
	M1120	M1120	W1044	R953	P857	T774	I690	A616	R450	R450	A382
	V1123	V1123	A1045	V954	R860	T775	R691	E617	L461	L461	L384
	Y1124	Y1124	G1046	D955	N861	I776	L694	Y619	F462	F462	A385
	H1125	H1125	R1047	F863	F862	G778	Q696	G620	A466	A466	A386
	N1126	N1126	A1048	V956	F863	D779	Q697	L622	L467	L467	N387
	D1127	D1127	D1049	T957	S864	T780	G698	K623	Q470	Q470	Y388
	H1128	H1128	W1054	T865	T865	R783	P701	L625	A471	A471	N389
	P1131	P1131	I1055	R959	D866	I784	Q702	E826	E472	E472	R391
	E1132	E1132	V1056	I960	S867	E785	A703	A627	R476	R476	D392
	K1133	K1133	A1064	R965	F968	I786	R704	L628	L395	L395	G393
	P1134	P1134	Y1060	D966	F968	L787	L705	V629	W477	W477	L396
	R1137	R1137	A1061	W876	T872	Q790	L709	D630	M482	M482	G396
	A1138	A1138	Y1062	E877	L878	L791	L710	E558	R488	R488	N397
	E1140	E1140	G1063	E879	K880	C798	L713	G562	E489	E489	G398
	E1141	E1141	A1064	L886	L887	P799	A714	K563	L490	L490	V399
	L1143	L1143	E1066	T888	T888	E900	R715	A564	D491	D491	G400
	S1144	S1144	Q1069	L887	L888	D801	V716	L565	A492	A492	L401
	V1146	V1146	A1070	T899	S900	R806	I720	L567	A494	A494	D402
	V1147	V1147	E1071	D893	F901	R807	P721	S568	L495	L495	T403
	R1148	R1148	R1072	H894	G902	V808	V722	Q569	P496	P496	P404
	G1149	G1149	G1073	C895	L903	L809	S723	N570	A566	A566	V408
	R1150	R1150	L1074	D986	T904	Q810	L724	G571	L496	L496	R412
	N1153	N1153	L1075	E987	T899	S811	G725	P573	L497	L497	A413
	P1154	P1154	R1078	D988	S900	T812	L724	E574	M498	M498	M414
	I1157	I1157	R1080	D991	F901	E813	G726	A575	R499	R499	A415
	M1161	M1161	V1082	P993	G902	E814	A727	V576	F500	F500	A416
	H1162	H1162	V1085	R997	M911	Q815	S732	V504	G501	G501	E417
	R1163	R1163	V1086	M998	R912	L816	L733	V505	E502	E502	G418
	Y1165	Y1165	Q1087	Q1002	G914	R817	Q734	V506	T503	T503	Y419
			H1088	A1007	Q920	R818	R735	V507	F504	F504	R420
			Q1089			M819	A738	V508	V508	V508	R421
						S822	E745	G506	I507	I507	G422
								Q508	Q508	Q508	E423
								P585	P585	P585	I424
								F586	F586	F586	P425
								A663	A663	A663	A426
											D427

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	34079	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.134	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.039	Depositor
Recommended contour level	0.02	Depositor
Map size ($\text{\AA}$)	293.16, 293.16, 293.16	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.698, 0.698, 0.698	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.13	0/2506	0.35	0/3410
1	B	0.11	0/2459	0.31	0/3345
1	C	0.14	0/2454	0.33	0/3338
1	D	0.16	0/2556	0.36	0/3478
1	E	0.13	0/2608	0.34	0/3550
1	F	0.17	0/2608	0.39	0/3550
2	G	0.11	0/2551	0.32	0/3446
2	a	0.10	0/1586	0.30	0/2144
3	N	0.16	0/7080	0.35	0/9631
All	All	0.14	0/26408	0.35	0/35892

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	2456	0	2423	93	0
1	B	2409	0	2371	67	0
1	C	2404	0	2368	64	0
1	D	2503	0	2454	93	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	2555	0	2510	105	0
1	F	2555	0	2511	96	0
2	G	2511	0	2501	97	0
2	a	1562	0	1549	53	0
3	N	6919	0	6791	264	0
4	D	31	0	13	2	0
4	E	31	0	13	8	0
4	F	31	0	13	3	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
All	All	25970	0	25517	868	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 17.

The worst 5 of 868 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)
3:N:786:ILE:HG12	3:N:790:GLN:HE22	1.31	0.92
1:F:254:MET:HE1	1:F:309:PHE:HB3	1.61	0.83
3:N:876:TRP:CD1	3:N:880:LYS:HZ1	1.97	0.82
1:A:60:GLY:HA2	1:A:65:ARG:HB2	1.60	0.82
3:N:1086:VAL:HG22	3:N:1124:TYR:HB2	1.62	0.82

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	306/328 (93%)	279 (91%)	27 (9%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	299/328 (91%)	278 (93%)	21 (7%)	0	100	100
1	C	299/328 (91%)	272 (91%)	27 (9%)	0	100	100
1	D	314/328 (96%)	294 (94%)	20 (6%)	0	100	100
1	E	322/328 (98%)	299 (93%)	23 (7%)	0	100	100
1	F	322/328 (98%)	297 (92%)	25 (8%)	0	100	100
2	G	313/637 (49%)	292 (93%)	21 (7%)	0	100	100
2	a	202/637 (32%)	193 (96%)	9 (4%)	0	100	100
3	N	898/1263 (71%)	834 (93%)	63 (7%)	1 (0%)	48	83
All	All	3275/4505 (73%)	3038 (93%)	236 (7%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	N	1150	ARG

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	265/278 (95%)	265 (100%)	0	100	100
1	B	260/278 (94%)	260 (100%)	0	100	100
1	C	259/278 (93%)	259 (100%)	0	100	100
1	D	269/278 (97%)	268 (100%)	1 (0%)	84	82
1	E	274/278 (99%)	274 (100%)	0	100	100
1	F	274/278 (99%)	274 (100%)	0	100	100
2	G	264/517 (51%)	264 (100%)	0	100	100
2	a	157/517 (30%)	157 (100%)	0	100	100
3	N	693/978 (71%)	693 (100%)	0	100	100
All	All	2715/3680 (74%)	2714 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	295	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 36 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	279	ASN
3	N	1002	GLN
1	F	324	ASN
2	G	566	HIS
1	C	235	HIS

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](#)

Of 6 ligands modelled in this entry, 3 are monoatomic - leaving 3 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	ANP	F	401	5	32,33,33	0.89	4 (12%)	44,52,52	0.90	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	ANP	D	401	5	32,33,33	0.91	4 (12%)	44,52,52	0.85	1 (2%)
4	ANP	E	401	-	32,33,33	0.90	4 (12%)	44,52,52	0.86	1 (2%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	ANP	F	401	5	-	8/18/38/38	0/3/3/3
4	ANP	D	401	5	-	5/18/38/38	0/3/3/3
4	ANP	E	401	-	-	4/18/38/38	0/3/3/3

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	401	ANP	PB-O3A	-2.44	1.56	1.59
4	D	401	ANP	PG-N3B	2.39	1.69	1.63
4	D	401	ANP	PG-O1G	2.38	1.49	1.46
4	E	401	ANP	PG-O1G	2.37	1.49	1.46
4	D	401	ANP	PB-O3A	-2.36	1.56	1.59

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	401	ANP	PB-O3A-PA	-3.92	118.81	132.62
4	E	401	ANP	PB-O3A-PA	-3.91	118.83	132.62
4	F	401	ANP	PB-O3A-PA	-3.83	119.12	132.62
4	F	401	ANP	O1B-PB-N3B	-2.14	108.63	111.77

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

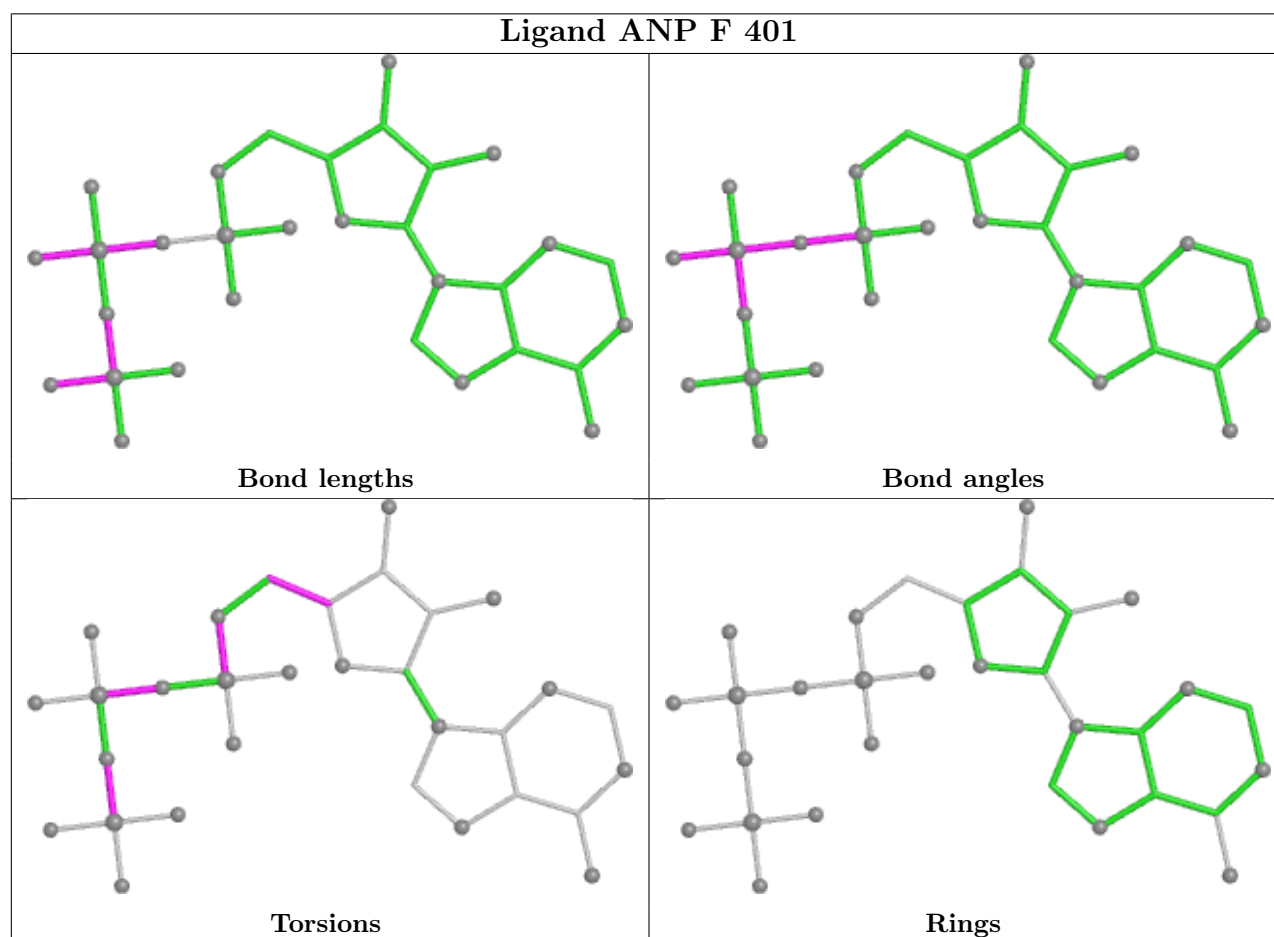
Mol	Chain	Res	Type	Atoms
4	D	401	ANP	PB-N3B-PG-O1G
4	D	401	ANP	PG-N3B-PB-O1B
4	E	401	ANP	PB-N3B-PG-O1G
4	E	401	ANP	C5'-O5'-PA-O2A
4	E	401	ANP	C5'-O5'-PA-O3A

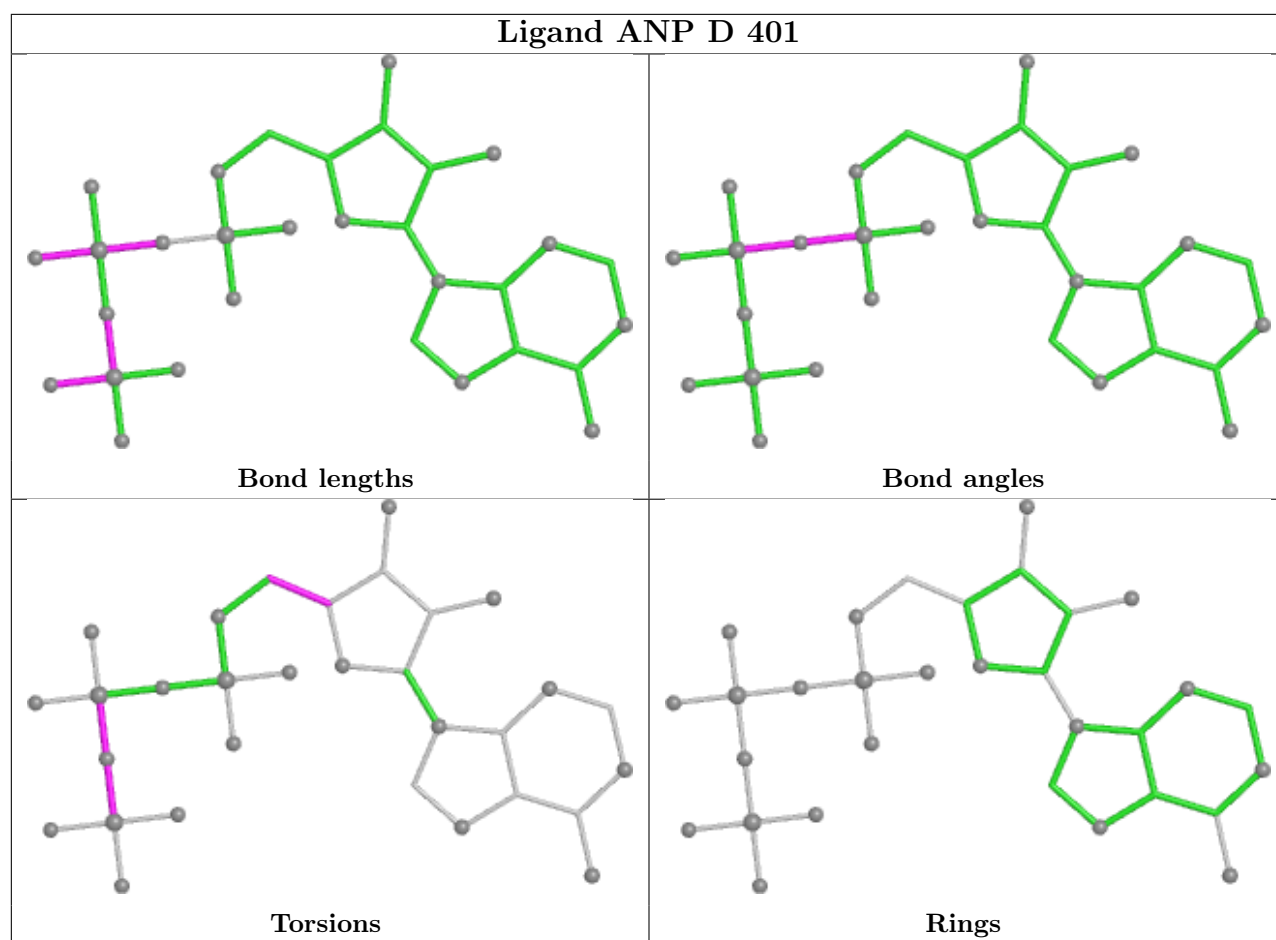
There are no ring outliers.

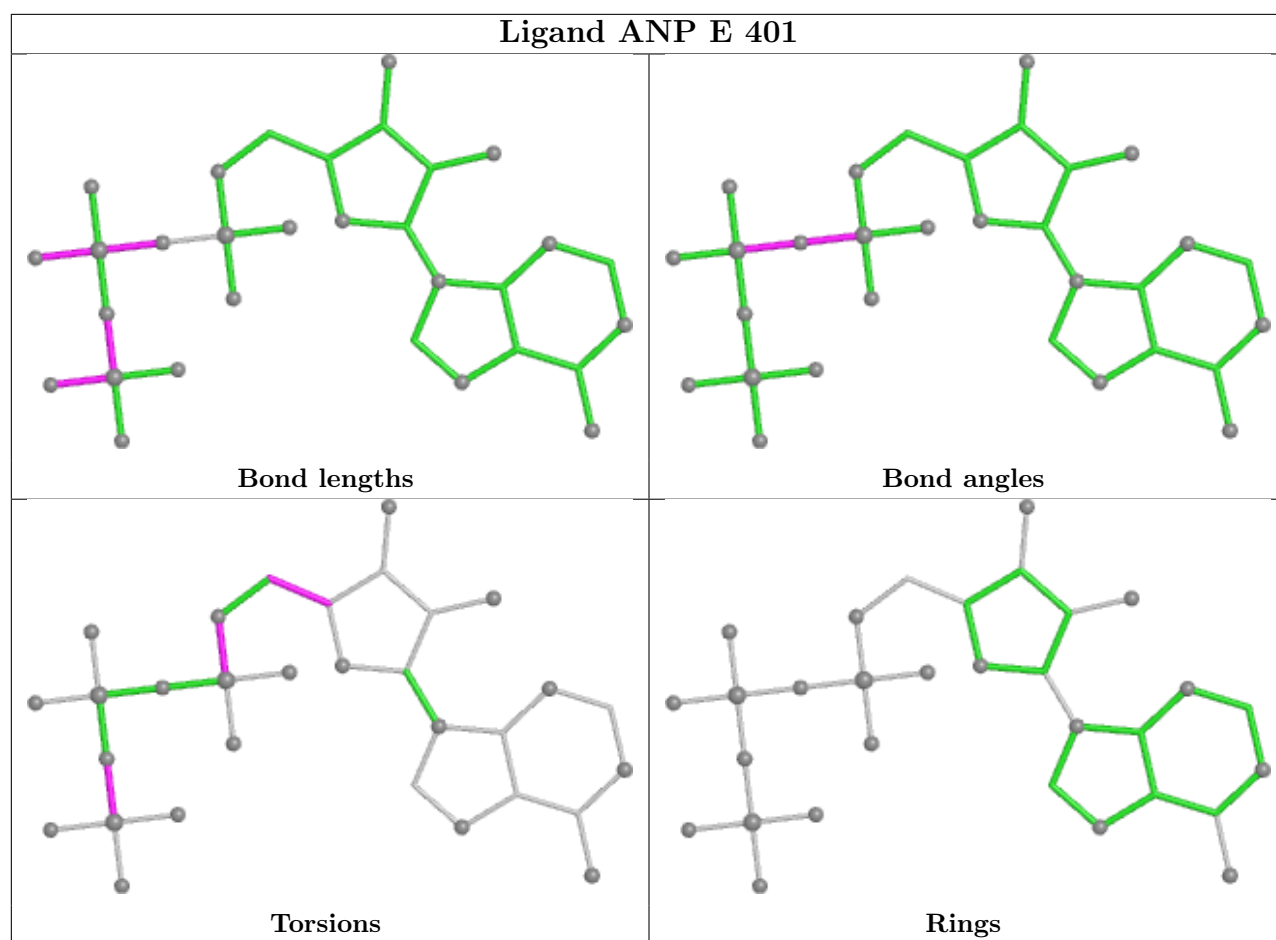
3 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	F	401	ANP	3	0
4	D	401	ANP	2	0
4	E	401	ANP	8	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.







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.

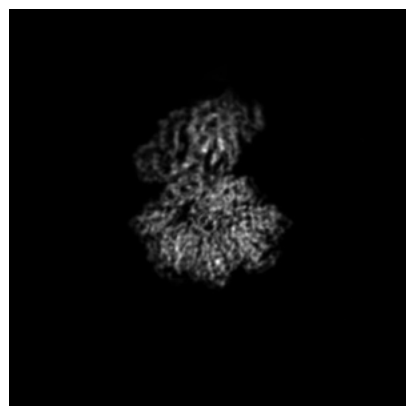
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-64234. These allow visual inspection of the internal detail of the map and identification of artifacts.

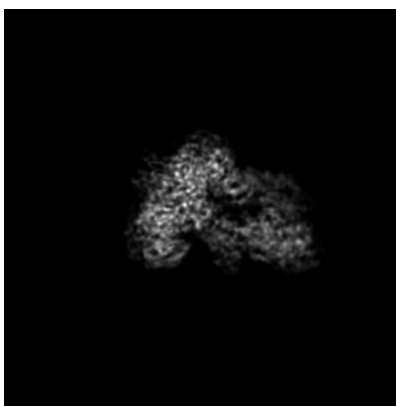
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

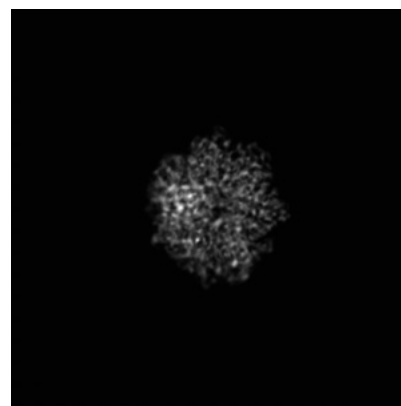
6.1.1 Primary map



X

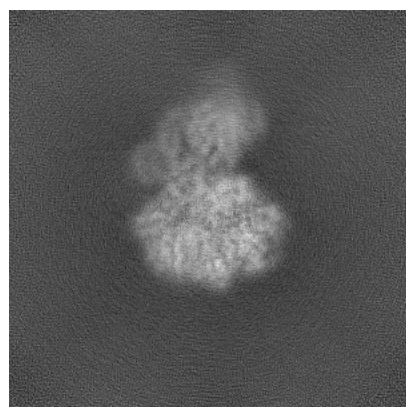


Y

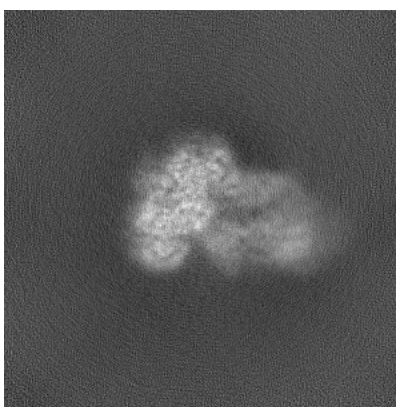


Z

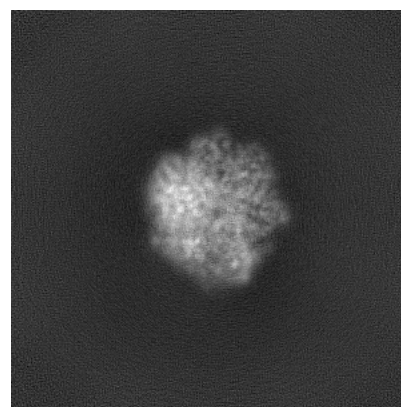
6.1.2 Raw map



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: 210

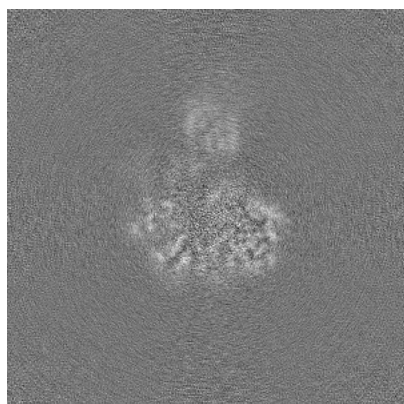


Y Index: 210

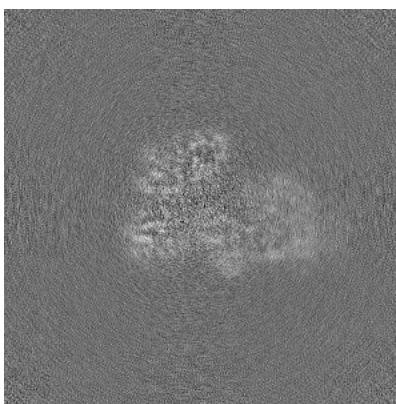


Z Index: 210

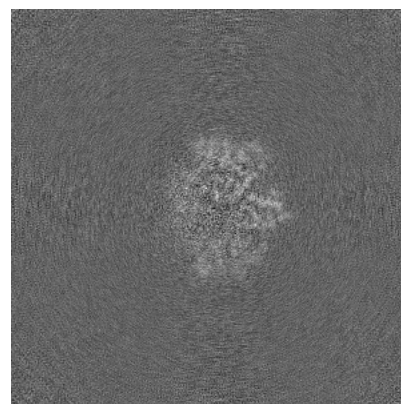
6.2.2 Raw map



X Index: 210



Y Index: 210



Z Index: 210

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: 187

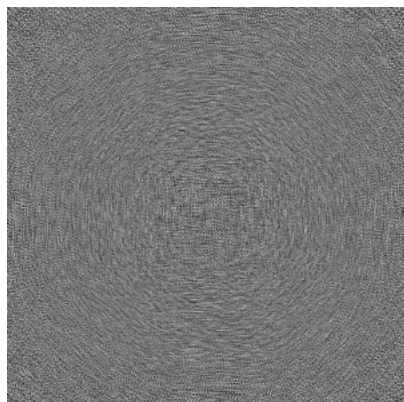


Y Index: 223

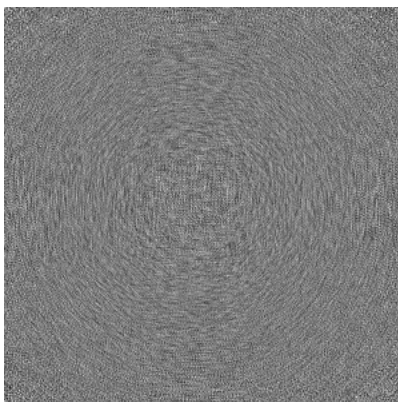


Z Index: 168

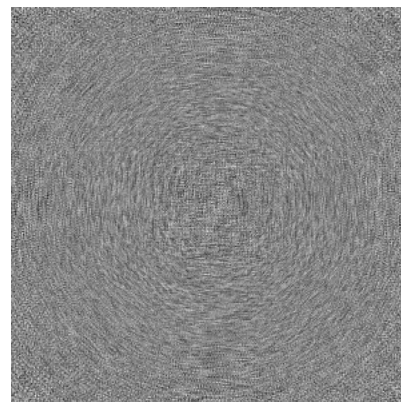
6.3.2 Raw map



X Index: 0



Y Index: 0

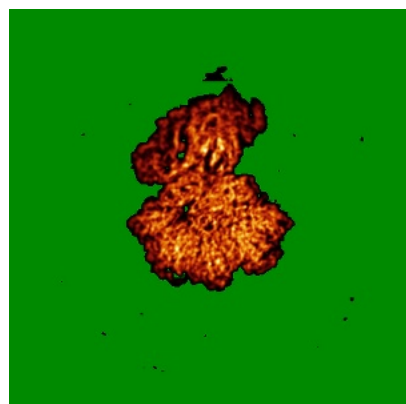


Z Index: 0

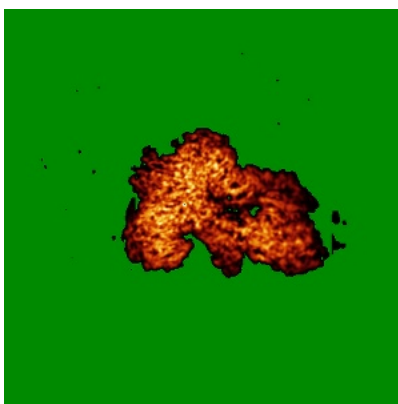
The images above show the largest variance slices of the map in three orthogonal directions.

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

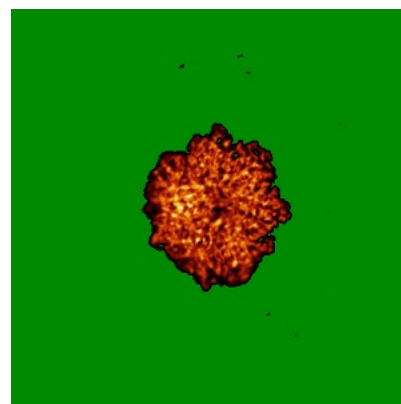
6.4.1 Primary map



X

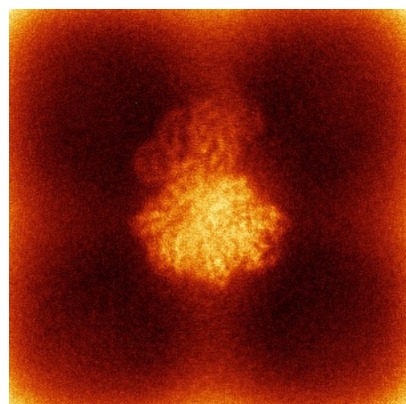


Y

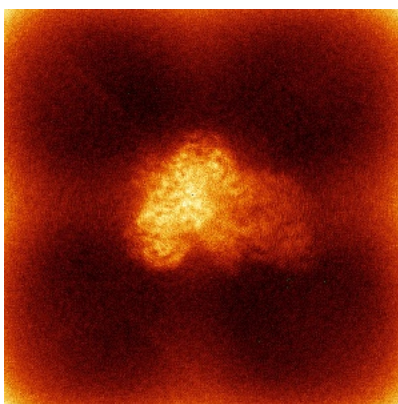


Z

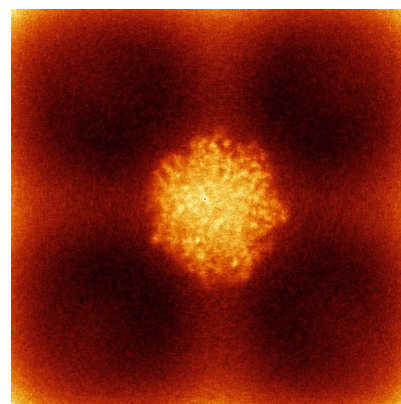
6.4.2 Raw map



X



Y

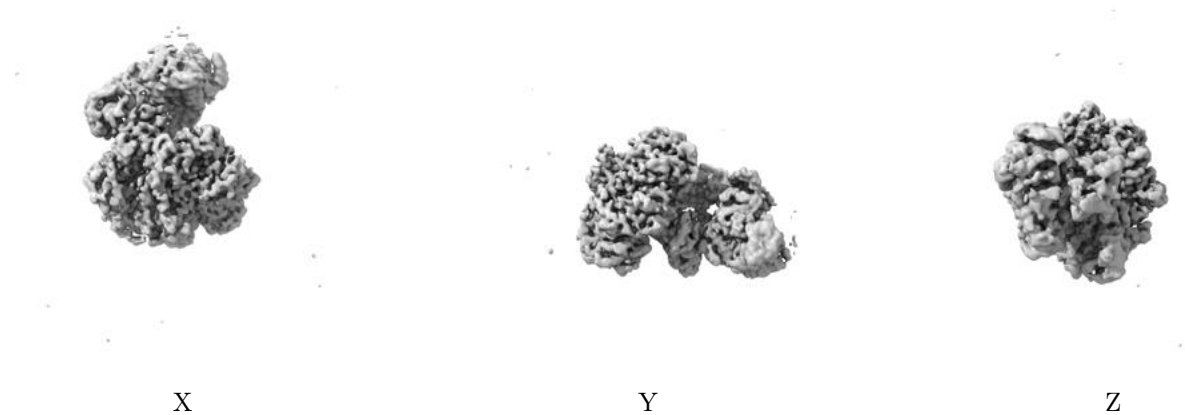


Z

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.

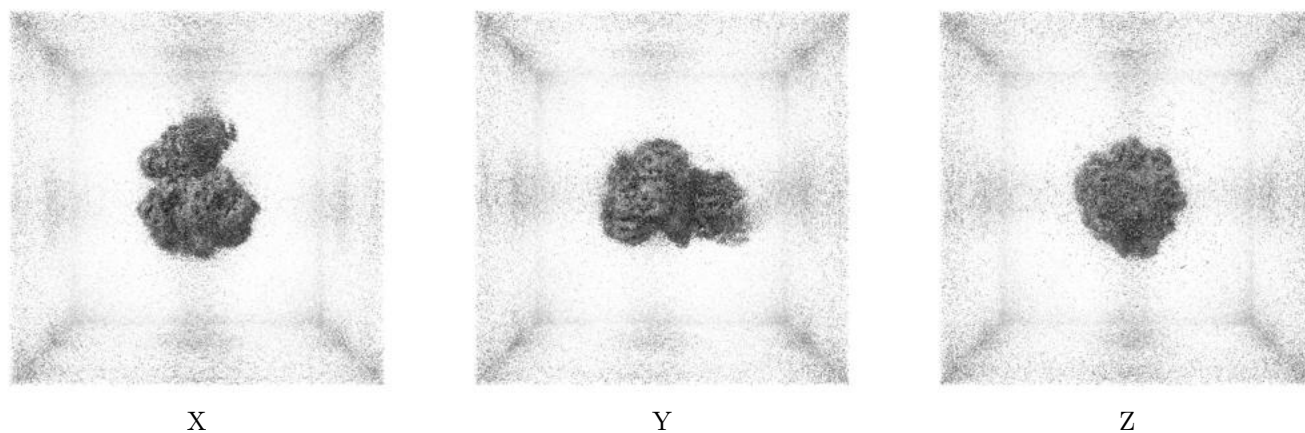
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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.

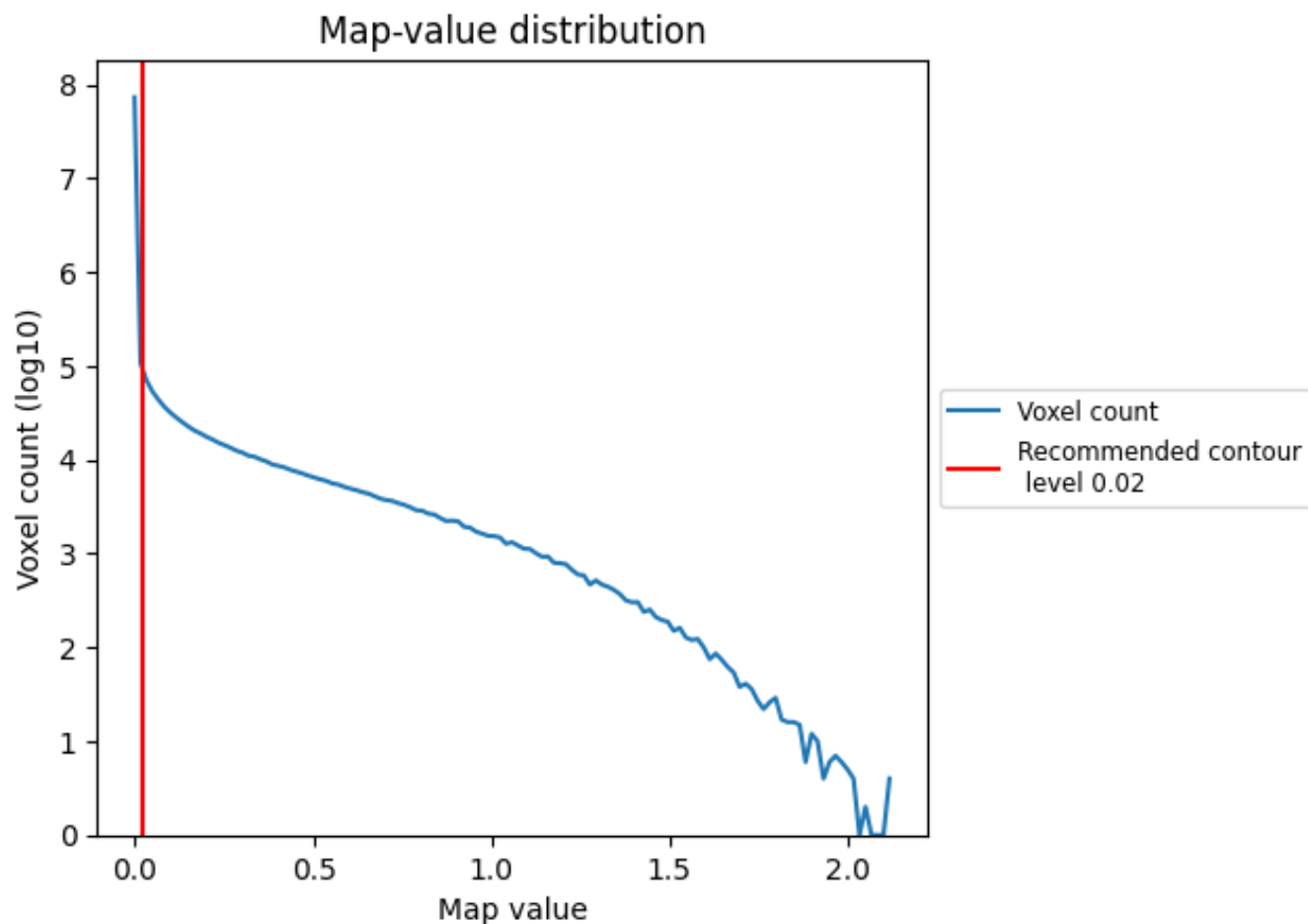
6.6 Mask visualisation [i](#)

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

7 Map analysis ⓘ

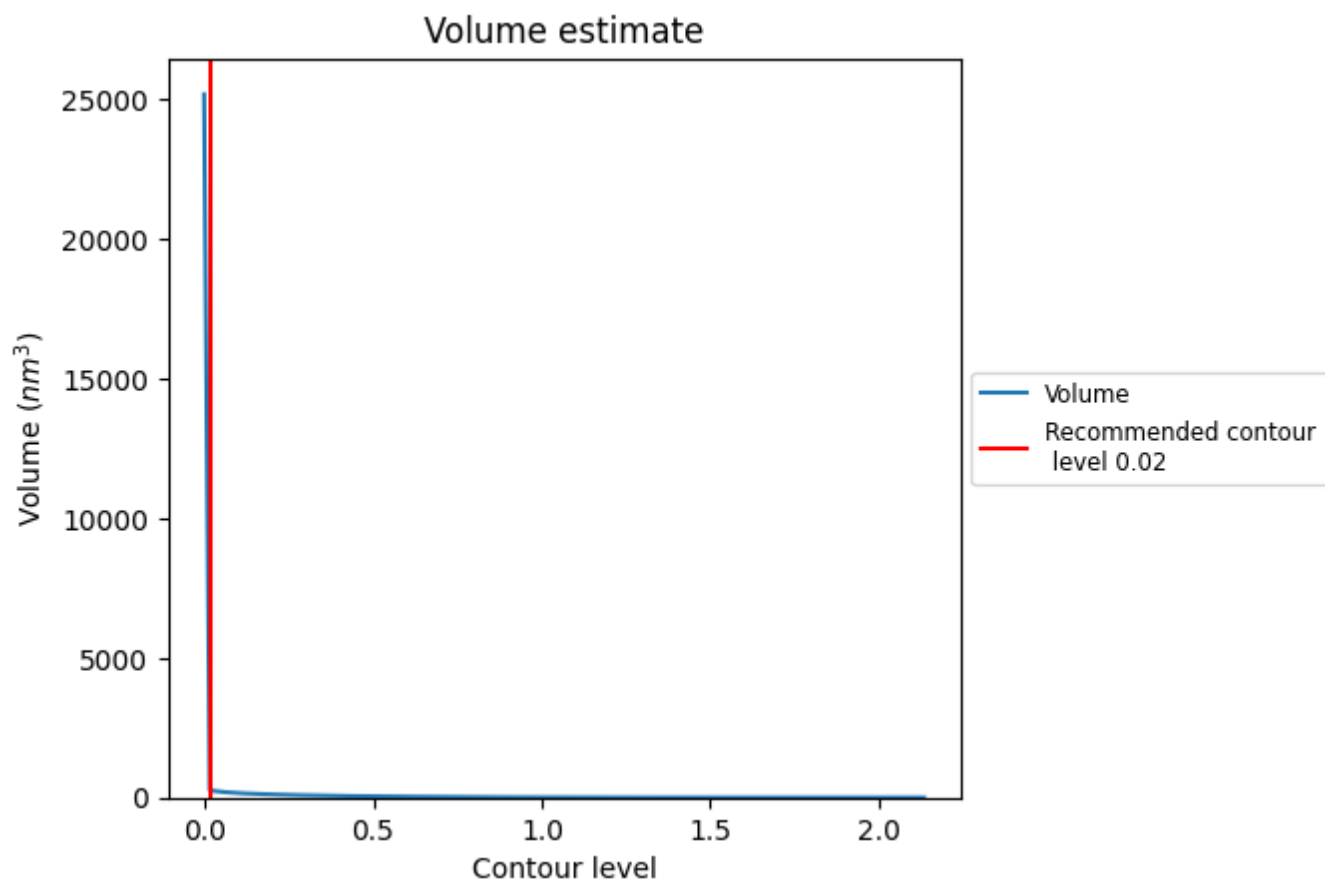
This section contains the results of statistical analysis of the map.

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.

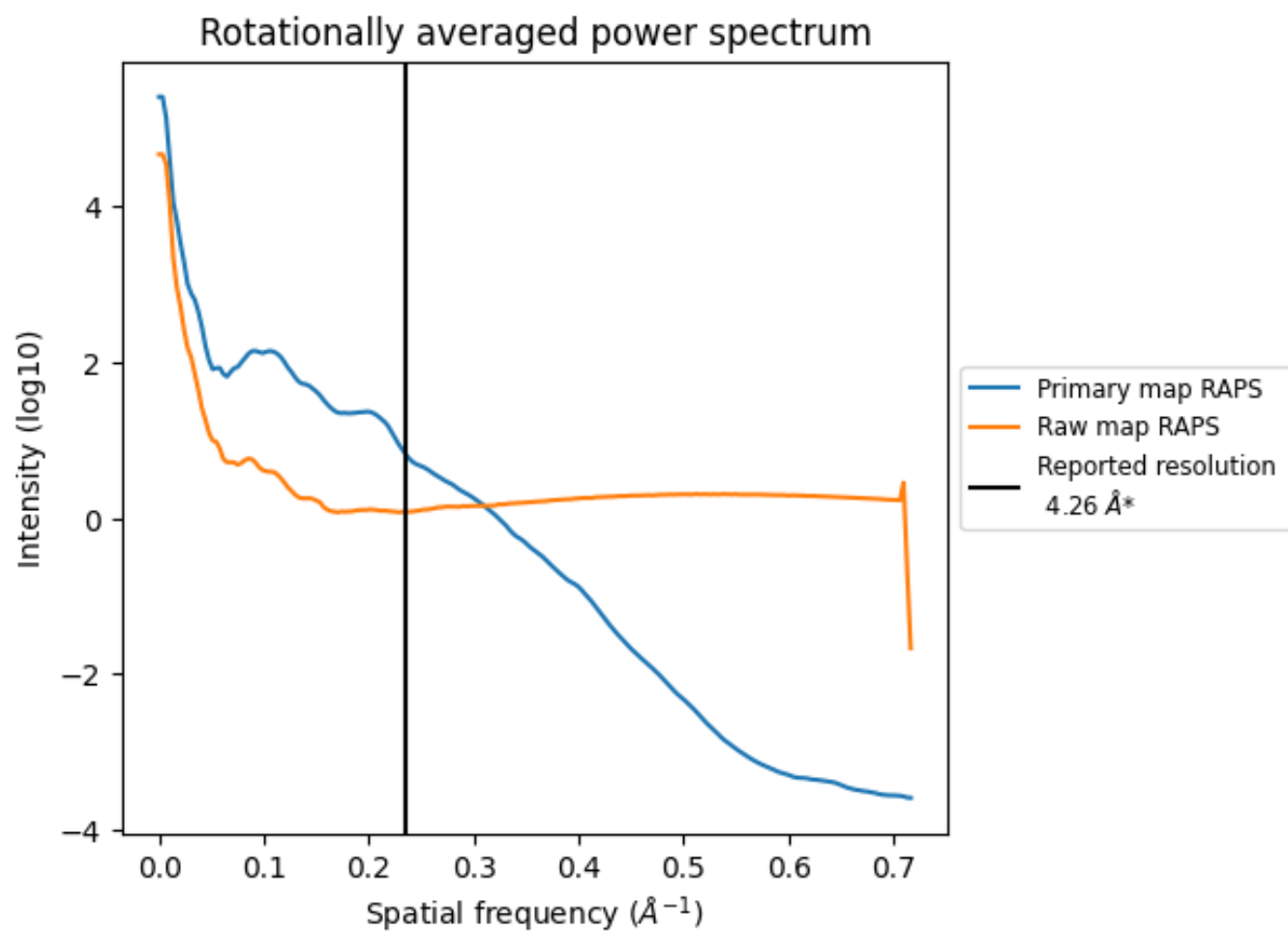
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 257 nm^3 ; this corresponds to an approximate mass of 232 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 ⓘ

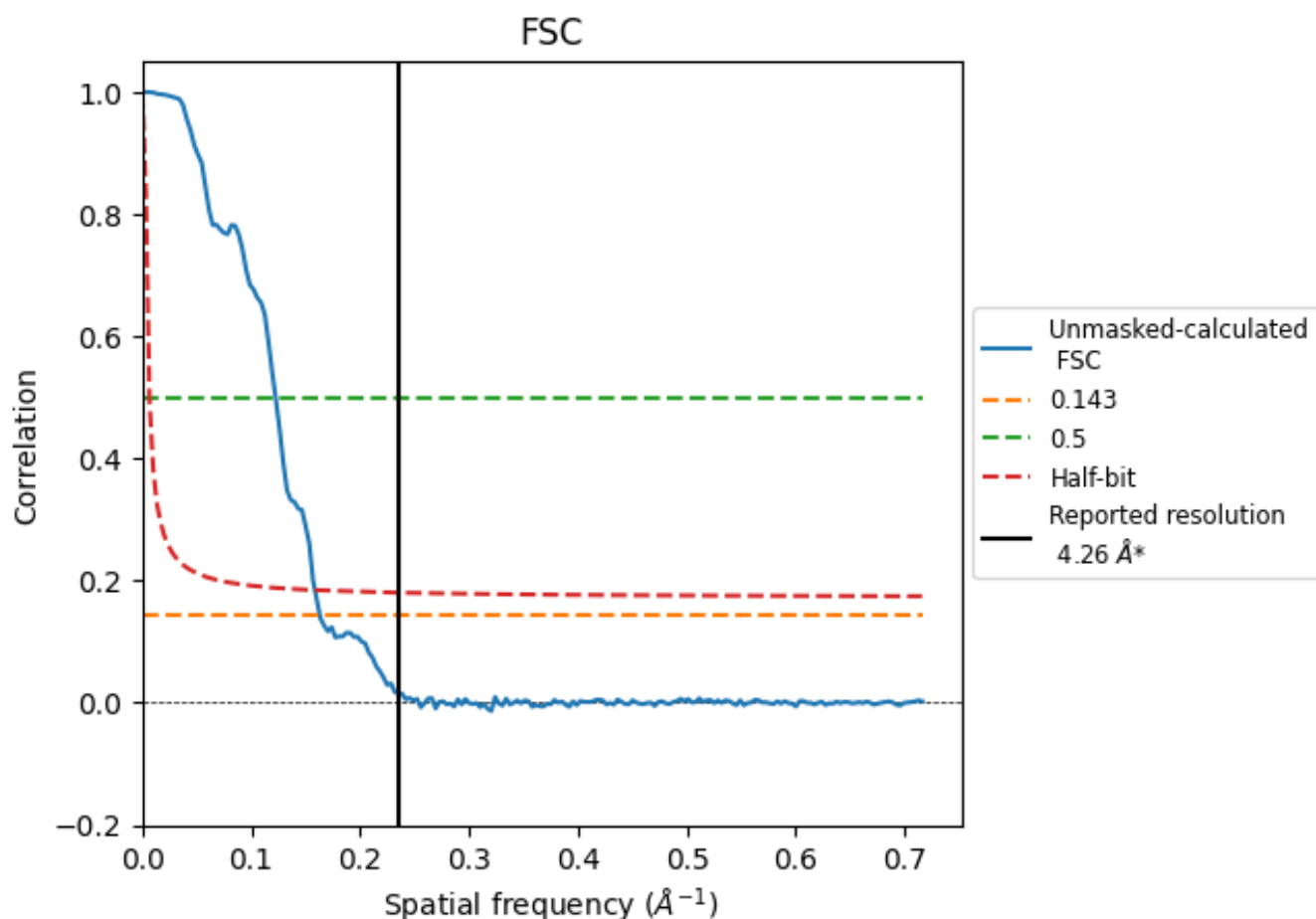


*Reported resolution corresponds to spatial frequency of 0.235 Å⁻¹

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 0.235 Å⁻¹

8.2 Resolution estimates [i](#)

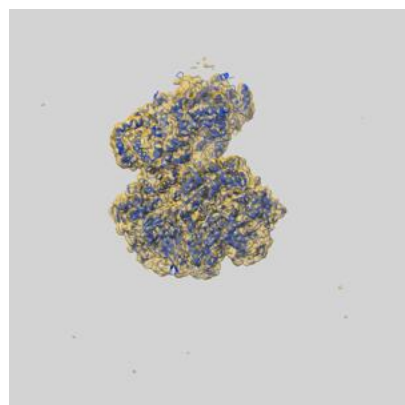
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.26	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.13	8.16	6.30

*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 6.13 differs from the reported value 4.26 by more than 10 %

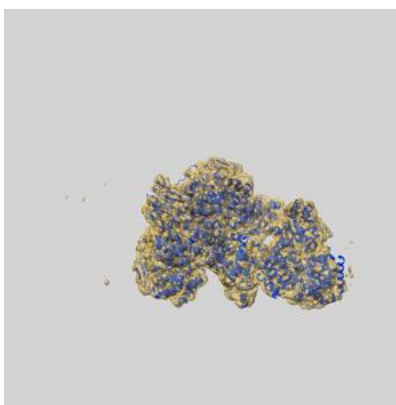
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-64234 and PDB model 9UKC. Per-residue inclusion information can be found in [section 3](#) on [page 6](#).

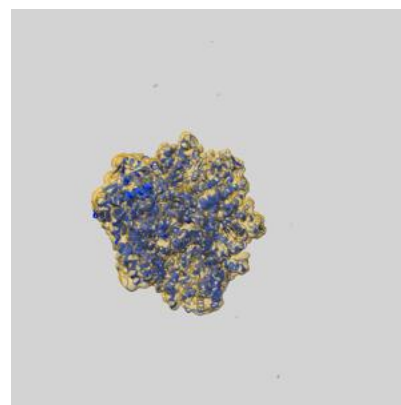
9.1 Map-model overlay [i](#)



X



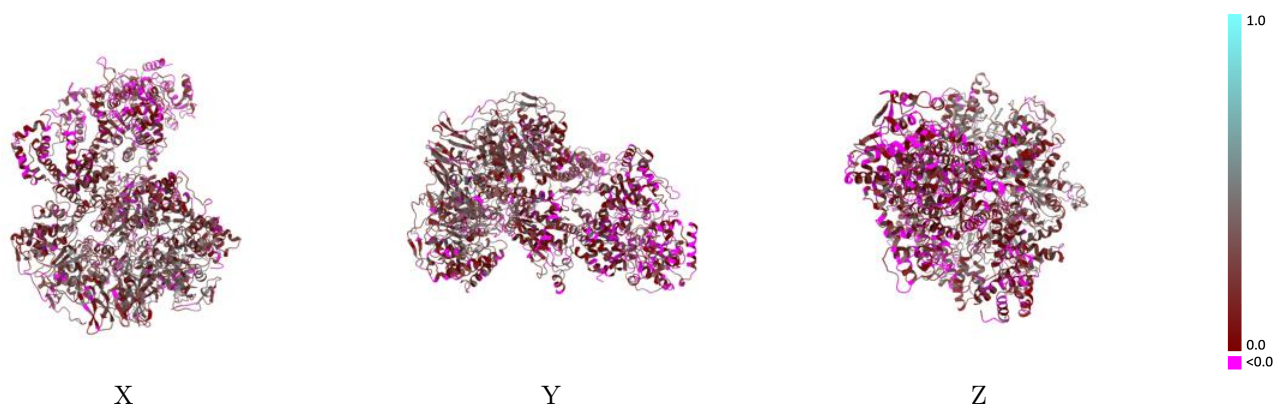
Y



Z

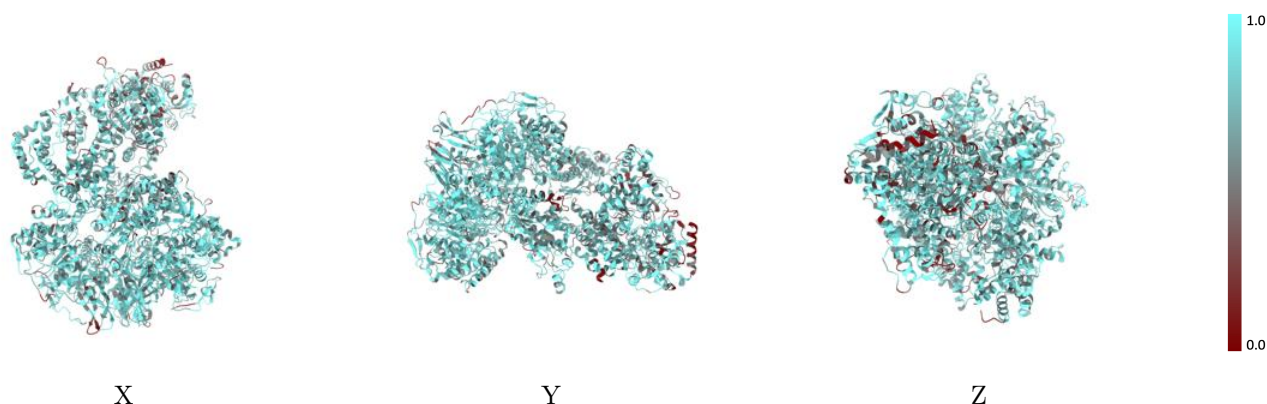
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



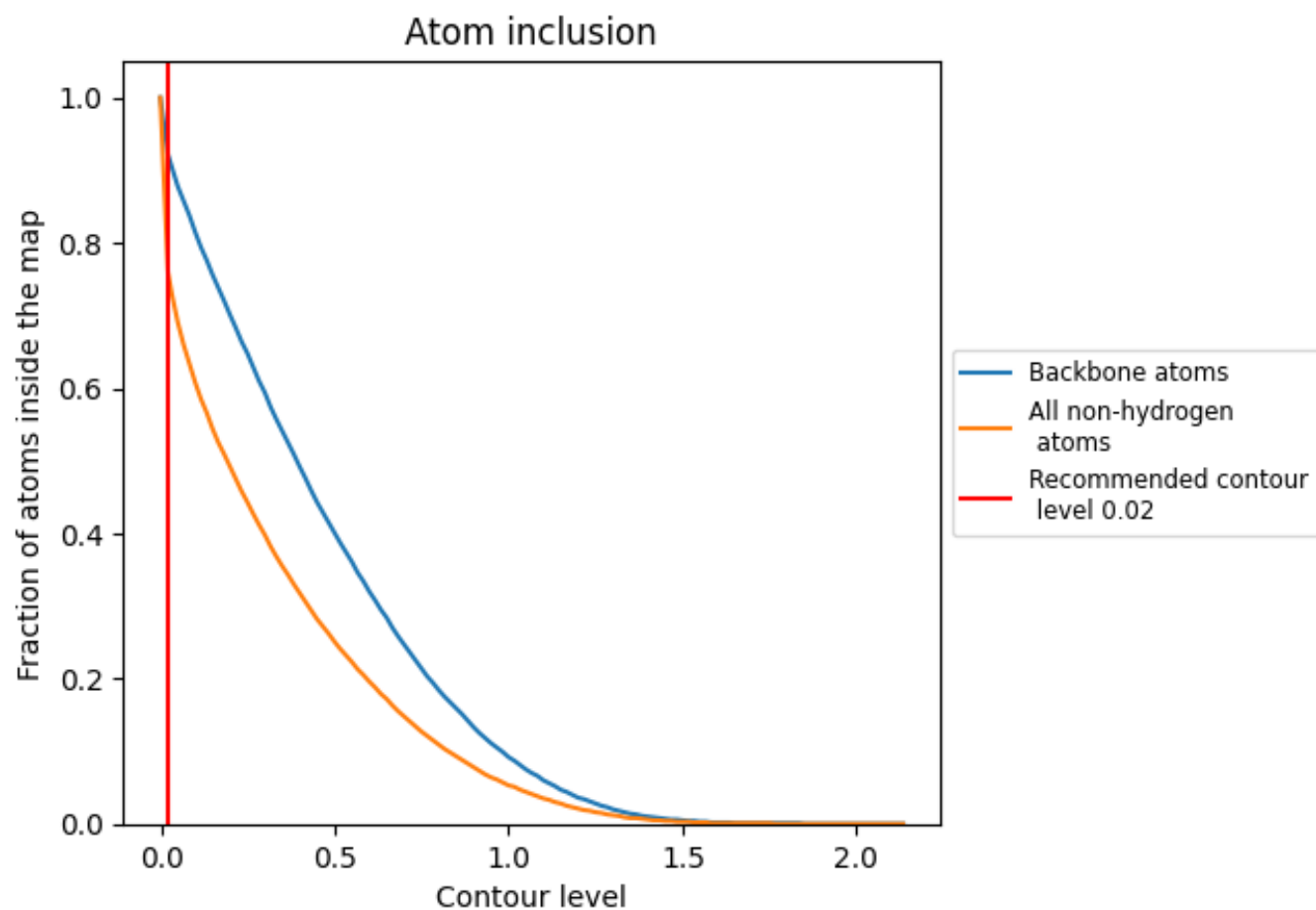
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).

9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 76% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7600	0.1950
A	0.7820	0.2410
B	0.7950	0.2380
C	0.8030	0.2510
D	0.8030	0.2490
E	0.8170	0.2700
F	0.7870	0.2540
G	0.7040	0.1570
N	0.7030	0.1040
a	0.7390	0.1270

1.0

0.0

<0.0