



wwPDB EM Validation Summary Report ⓘ

Nov 7, 2022 – 07:10 PM JST

PDB ID : 7WTC
EMDB ID : EMD-32778
Title : Cryo-EM structure of human pyruvate carboxylase with acetyl-CoA in the ground state
Authors : Chai, P.; Lan, P.; Wu, J.; Lei, M.
Deposited on : 2022-02-04
Resolution : 4.00 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:

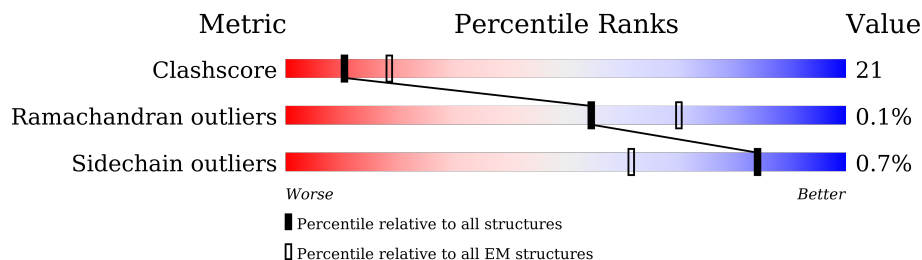
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 4.00 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	1178	
1	B	1178	
1	C	1178	
1	D	1178	

2 Entry composition [i](#)

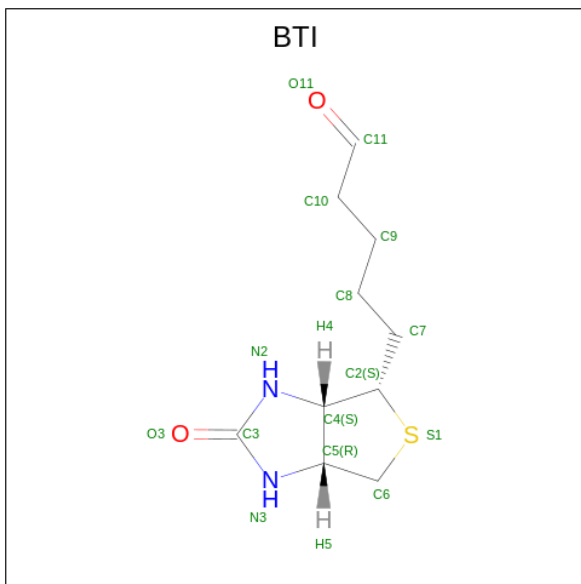
There are 3 unique types of molecules in this entry. The entry contains 28418 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Pyruvate carboxylase, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1146	Total 8869	C 5612	N 1559	O 1651	S 47	0	0
1	B	1147	Total 8877	C 5618	N 1560	O 1652	S 47	0	0
1	C	684	Total 5255	C 3339	N 902	O 978	S 36	0	0
1	D	684	Total 5255	C 3339	N 902	O 978	S 36	0	0

- Molecule 2 is 5-(HEXAHYDRO-2-OXO-1H-THIENO[3,4-D]IMIDAZOL-6-YL)PENTANAL (three-letter code: BTI) (formula: C₁₀H₁₆N₂O₂S).



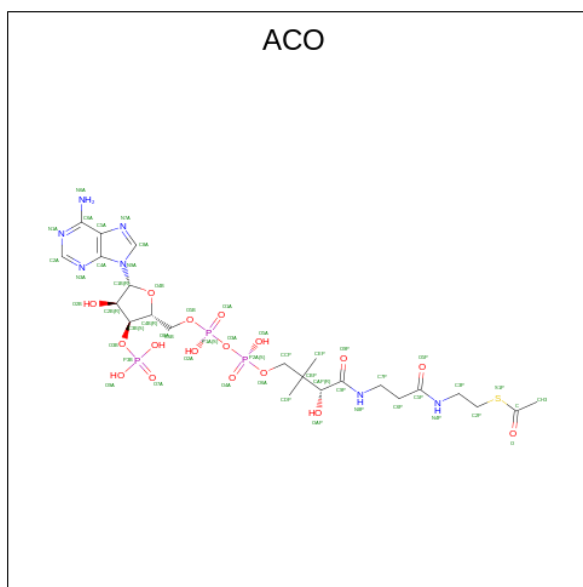
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	S	
2	A	1	Total 15	C 10	N 2	O 2	S 1	0
2	B	1	Total 15	C 10	N 2	O 2	S 1	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	S	
2	C	1	Total	C	N	O	S	0
			15	10	2	2	1	
2	D	1	Total	C	N	O	S	0
			15	10	2	2	1	

- Molecule 3 is ACETYL COENZYME *A (three-letter code: ACO) (formula: C₂₃H₃₈N₇O₁₇P₃S).

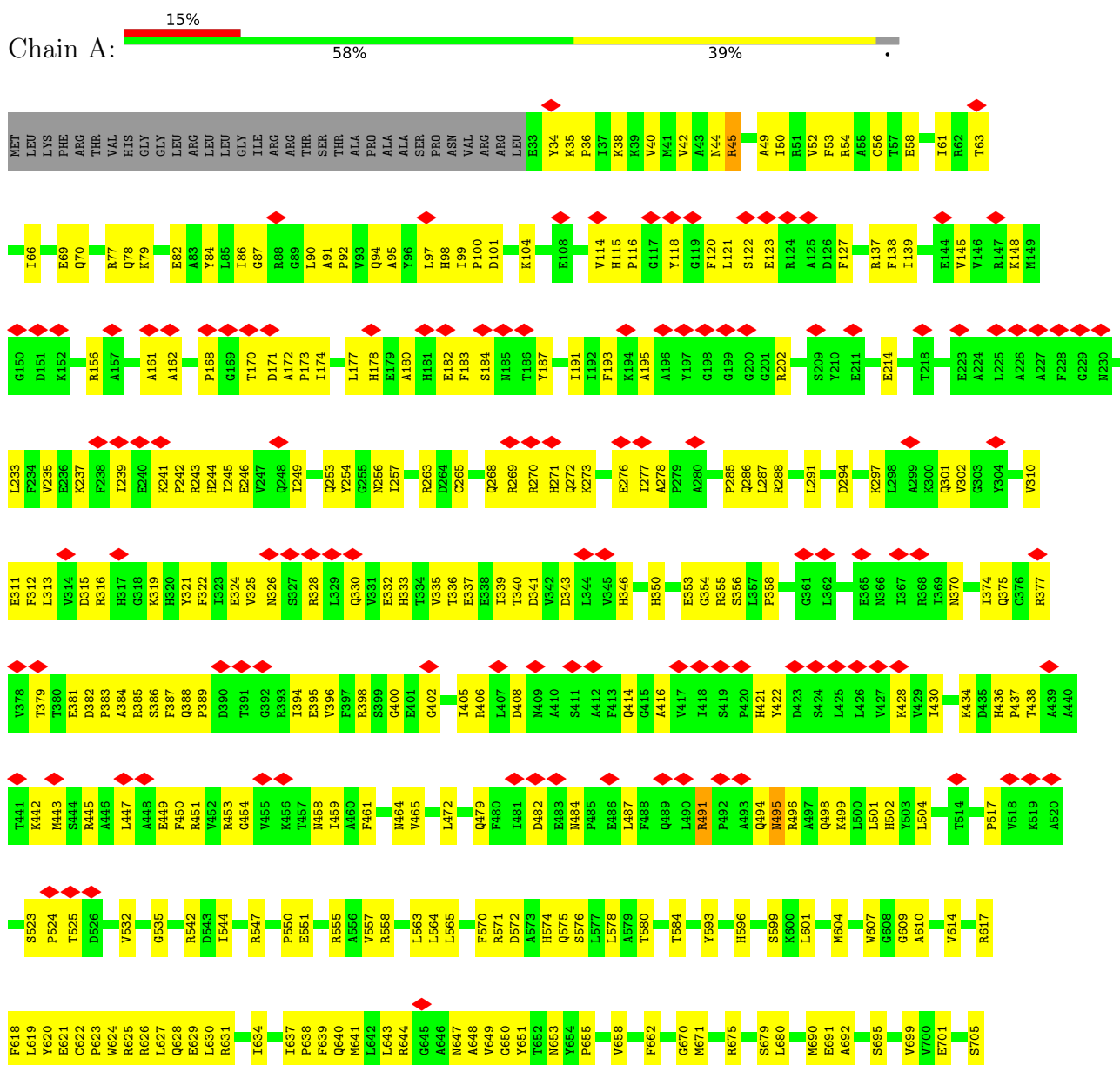


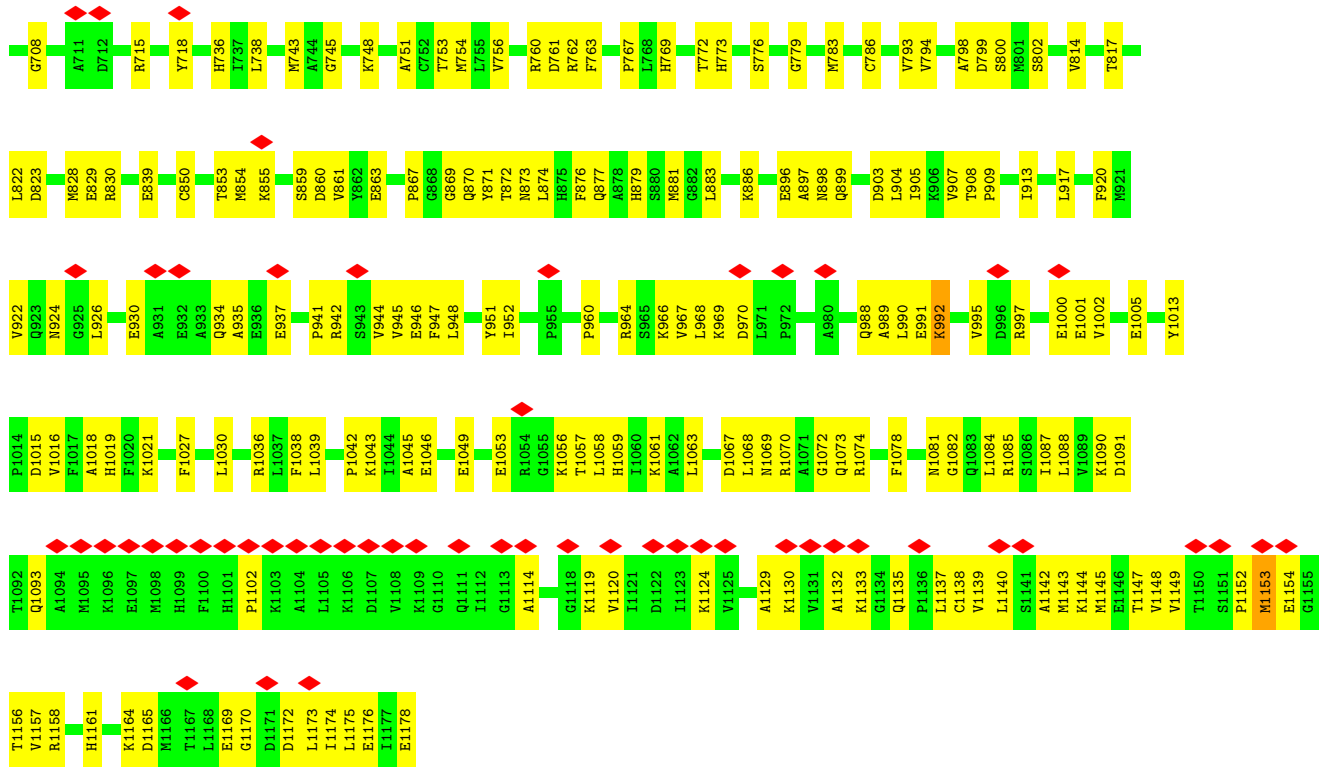
Mol	Chain	Residues	Atoms					AltConf	
			Total	C	N	O	P		S
3	A	1	Total	C	N	O	P	S	0
			51	23	7	17	3	1	
3	B	1	Total	C	N	O	P	S	0
			51	23	7	17	3	1	

3 Residue-property plots

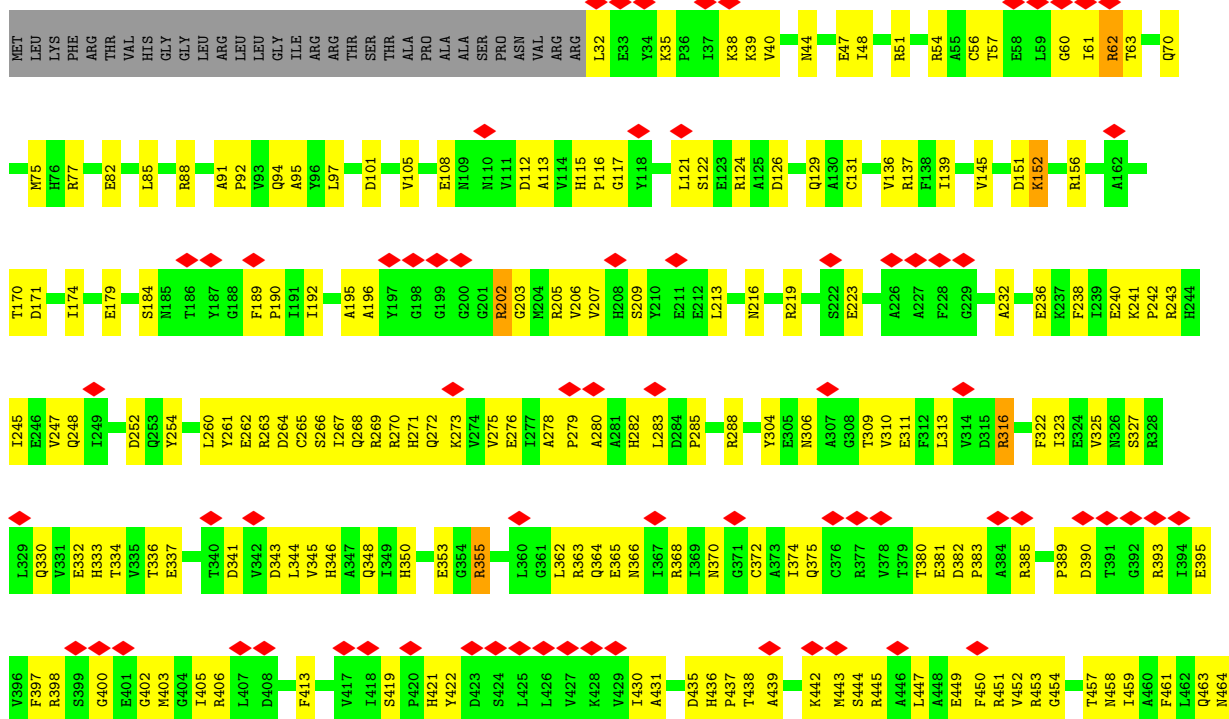
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Pyruvate carboxylase, mitochondrial





● Molecule 1: Pyruvate carboxylase, mitochondrial



A1129	K1061	S910	V814	M724	E621	P550	I1E	HIS	GLY
K1130	A1062	G914	A815	G725	C622	F553	ASP	TYR	LEU
V1131	E1000	Y914	C816	L726	P623	A727	GLU	ARG	ARG
A1132	E1001	G915	T817	A727	N624	R558	ASN	TYR	SER
K1133	S1066	D916	R818	E728	R625	G562	PRO	LEU	ILE
G1134	D1067	Q919	L822	E729	R626	L563	ASN	VAL	ASN
Q1135	E1005	F920	D623	L730	L627	L564	ALA	GLY	ALA
P1136	D1006	N921	P827	V731	Q628	L564	GLY	THR	GLN
L1137	I1007	F922	R828	A733	R631	L566	ILE	ILE	ILE
C1138	S1009	G925	M828	C734	L633	M566	VAL	VAL	VAL
V1139	A1010	L926	R830	H735	L634	D567	ALA	ALA	ASP
L1140	Y1013	S927	A838	H736	F635	R571	VAL	VAL	VAL
S1141	P1014	R928	A838	L738	N636	H574	GLN	ASP	GLY
M1143	D1015	A929	A841	L738	Q640	O575	ASN	HIS	ALA
K1144	V1016	E930	R842	I740	N641	S576	ARG	THR	THR
L1145	F1017	A931	G843	K741	L642	L577	VAL	THR	GLY
M1146	A1018	E932	G843	M743	L643	A579	THR	ALA	GLY
T1147	H1019	Q934	Y845	K748	R644	L578	ALA	HIS	LEU
V1148	F1020	S939	A846	P748	G645	T580	THR	THR	GLY
V1149	K1021	E946	A847	T750	A646	R581	PRO	ILE	ARG
T1150	D1022	F947	F848	T751	N647	V582	ASP	ASP	GLY
S1151	T1023	L948	C850	A751	T652	R583	ALA	VAL	GLY
M1152	A1025	L948	G850	C752	N653	T584	ALA	ASN	VAL
P1152	I1026	T851	R851	I753	N653	H585	LEU	GLN	VAL
M1153	F1027	G950	A852	M754	D586	V508	ALA	ARG	HIS
E1154	G1028	Y951	R853	L755	P655	L587	THR	GLY	GLY
H1155	P1029	P954	M854	D761	D588	K588	THR	VAL	GLY
T1156	I1030	F955	R859	R762	V658	I590	GLY	GLN	GLY
V1157	D1031	H956	S859	P767	A666	A591	ARG	LEU	LEU
R1158	S1032	R964	V862	L768	N669	H596	ILE	THR	GLY
K1159	N1033	S965	E863	H769	D672	N597	VAL	VAL	VAL
H1160	N1034	K966	N864	T772	R675	F598	VAL	VAL	VAL
V1162	I1035	D970	E865	H773	V676	S599	THR	THR	THR
K1163	R1036	L971	R866	D774	F677	K600	ALA	ALA	ALA
H1164	F1038	P972	G869	V780	D678	L601	THR	ALA	ALA
D1165	L1039	P978	Q870	C786	N681	S603	ASP	ALA	ALA
M1166	P1042	S981	Y871	A787	Y682	E605	GLY	GLY	GLY
L1168	K1043	L982	T872	V780	L683	N604	THR	THR	THR
G1170	I1044	L985	R879	A791	L683	N606	ILE	ILE	ILE
D1171	A1045	D986	C884	V794	M686	G508	ALA	ALA	ALA
L1172	E1046	L987	C884	D795	L687	G509	ALA	ALA	ALA
L1173	F1047	L987	F887	V796	V699	A610	ALA	ALA	ALA
L1174	E1049	Q988	K888	D799	E701	F612	GLY	GLY	GLY
D1177	V1050	A989	E896	M801	A702	V614	THR	THR	THR
L1178	I1051	L990	D903	M806	A703	A615	VAL	VAL	VAL
L1179	L1052	E991	D903	I704	M615	M615	ASP	ASP	ASP
L1179	E1053	K992	K906	Q807	R617	R617	THR	THR	THR
L1179	R1054	L994	Y907	P808	Y706	L619	ALA	ALA	ALA
L1179	K1056	Y995	P909	P808	Y706	L619	SER	SER	SER
E1176	I1121	G996	P909	P808	Y706	L619	PRO	PRO	PRO
I1177	D1122	L995	P909	P808	Y706	L619	LEU	LEU	LEU
E1178	I1123	L995	P909	P808	Y706	L619	LEU	LEU	LEU
	K1124	L1068	H1069	I1060					
	V1125	L1068	H1069	I1060					
	V1126	L1068	H1069	I1060					
	A1127	L1068	H1069	I1060					
	G1128	L1068	H1069	I1060					

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	143019	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.037	Depositor
Minimum map value	-0.015	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.008	Depositor
Map size (\AA)	316.80002, 316.80002, 316.80002	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.1, 1.1, 1.1	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.29	0/9060	0.54	0/12277
1	B	0.30	0/9068	0.54	0/12288
1	C	0.31	1/5373 (0.0%)	0.56	3/7284 (0.0%)
1	D	0.28	0/5373	0.53	0/7284
All	All	0.29	1/28874 (0.0%)	0.54	3/39133 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	536	PRO	CG-CD	-7.78	1.25	1.50

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	536	PRO	N-CD-CG	-11.05	86.62	103.20
1	C	536	PRO	CA-N-CD	-6.56	102.32	111.50
1	C	536	PRO	CA-CB-CG	-6.11	92.39	104.00

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	8869	0	8829	387	0
1	B	8877	0	8840	368	0
1	C	5255	0	5248	258	0
1	D	5255	0	5248	210	0
2	A	15	0	15	1	0
2	B	15	0	15	2	0
2	C	15	0	15	4	0
2	D	15	0	15	5	0
3	A	51	0	34	7	0
3	B	51	0	34	10	0
All	All	28418	0	28293	1195	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 21.

The worst 5 of 1195 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:32:LEU:N	1:B:254:TYR:HH	1.61	0.98
1:C:574:HIS:HB3	1:C:580:THR:HA	1.47	0.95
1:D:586:ASP:HA	1:D:589:LYS:HD3	1.49	0.93
1:A:542:ARG:NH1	1:A:634:ILE:O	2.06	0.89
1:A:381:GLU:HA	1:A:389:PRO:HA	1.56	0.87

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	1144/1178 (97%)	1041 (91%)	102 (9%)	1 (0%)	51 84
1	B	1145/1178 (97%)	1050 (92%)	95 (8%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	682/1178 (58%)	626 (92%)	56 (8%)	0	100	100
1	D	682/1178 (58%)	642 (94%)	38 (6%)	2 (0%)	41	75
All	All	3653/4712 (78%)	3359 (92%)	291 (8%)	3 (0%)	54	84

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	1095	MET
1	A	495	ASN
1	D	1099	HIS

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	942/968 (97%)	937 (100%)	5 (0%)	88	93
1	B	943/968 (97%)	933 (99%)	10 (1%)	73	85
1	C	564/968 (58%)	563 (100%)	1 (0%)	93	96
1	D	564/968 (58%)	560 (99%)	4 (1%)	84	90
All	All	3013/3872 (78%)	2993 (99%)	20 (1%)	84	90

5 of 20 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	1146	GLU
1	D	499	LYS
1	D	888	LYS
1	D	828	MET
1	B	152	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 21 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	681	ASN
1	D	574	HIS
1	D	773	HIS
1	D	628	GLN
1	D	498	GLN

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

6 ligands are modelled in this entry.

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$
2	BTI	A	1201	1	16,16,16	6.48	11 (68%)	21,21,21	3.09	10 (47%)
2	BTI	D	1900	1	16,16,16	6.48	11 (68%)	21,21,21	3.08	10 (47%)
3	ACO	A	1202	-	45,53,53	0.57	0	56,79,79	0.68	2 (3%)
2	BTI	B	2002	1	16,16,16	6.48	11 (68%)	21,21,21	3.16	10 (47%)
3	ACO	B	2001	-	45,53,53	0.54	0	56,79,79	0.65	2 (3%)
2	BTI	C	1900	1	16,16,16	6.50	11 (68%)	21,21,21	3.04	10 (47%)

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
2	BTI	A	1201	1	-	3/5/27/27	0/2/2/2
2	BTI	D	1900	1	-	4/5/27/27	0/2/2/2
3	ACO	A	1202	-	-	23/47/67/67	0/3/3/3
2	BTI	B	2002	1	-	2/5/27/27	0/2/2/2
3	ACO	B	2001	-	-	12/47/67/67	0/3/3/3
2	BTI	C	1900	1	-	5/5/27/27	0/2/2/2

The worst 5 of 44 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1201	BTI	C3-N3	13.74	1.58	1.35
2	C	1900	BTI	C3-N3	13.69	1.58	1.35
2	D	1900	BTI	C3-N3	13.57	1.57	1.35
2	B	2002	BTI	C3-N3	13.55	1.57	1.35
2	C	1900	BTI	C6-S1	-12.59	1.44	1.81

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1201	BTI	C6-S1-C2	7.21	104.70	89.89
2	C	1900	BTI	C6-S1-C2	7.07	104.42	89.89
2	D	1900	BTI	C6-S1-C2	6.51	103.27	89.89
2	B	2002	BTI	C6-S1-C2	6.31	102.85	89.89
2	D	1900	BTI	C4-C5-N3	5.77	108.56	102.43

There are no chirality outliers.

5 of 49 torsion outliers are listed below:

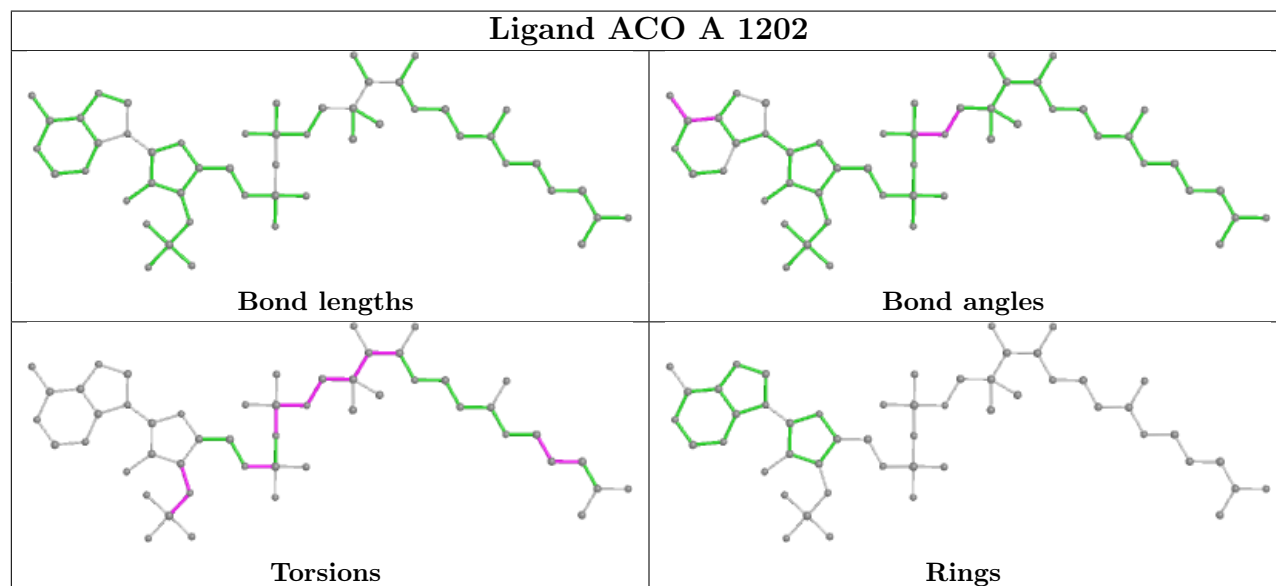
Mol	Chain	Res	Type	Atoms
2	A	1201	BTI	S1-C2-C7-C8
2	A	1201	BTI	C4-C2-C7-C8
2	B	2002	BTI	S1-C2-C7-C8
2	B	2002	BTI	C4-C2-C7-C8
2	C	1900	BTI	S1-C2-C7-C8

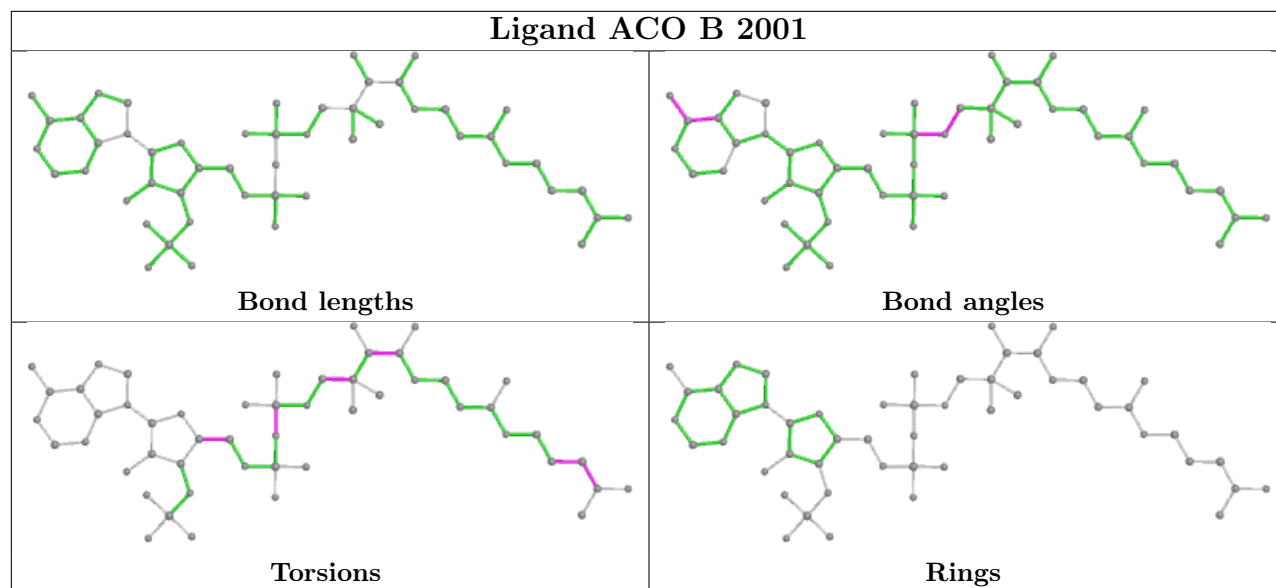
There are no ring outliers.

6 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1201	BTI	1	0
2	D	1900	BTI	5	0
3	A	1202	ACO	7	0
2	B	2002	BTI	2	0
3	B	2001	ACO	10	0
2	C	1900	BTI	4	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.

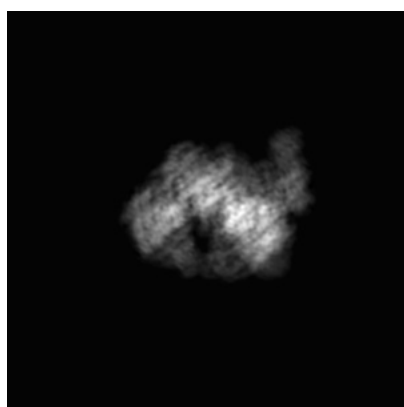
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32778. These allow visual inspection of the internal detail of the map and identification of artifacts.

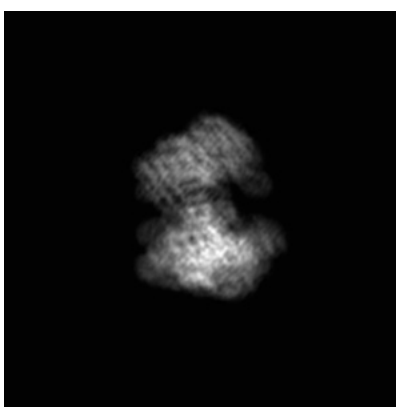
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

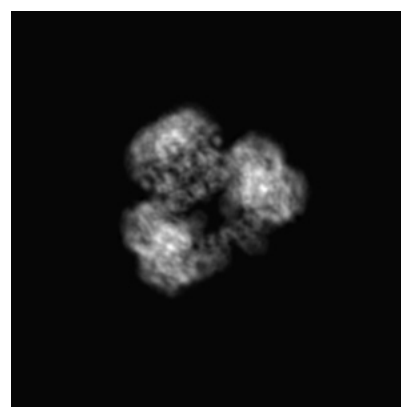
6.1.1 Primary map



X



Y



Z

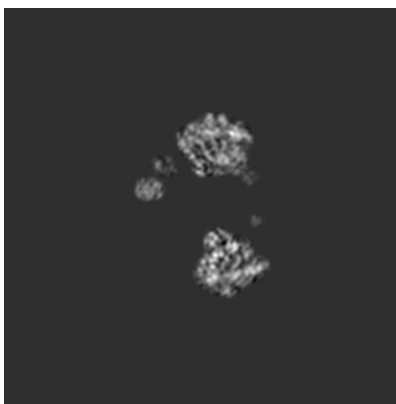
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

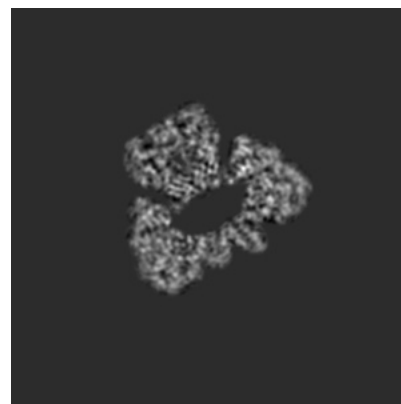
6.2.1 Primary map



X Index: 144



Y Index: 144

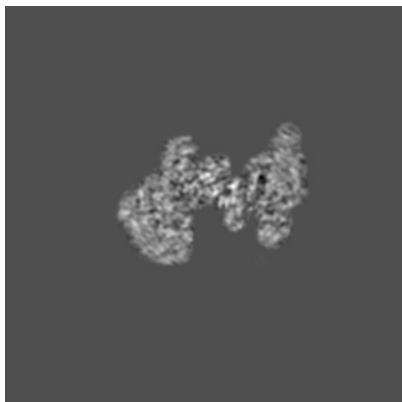


Z Index: 144

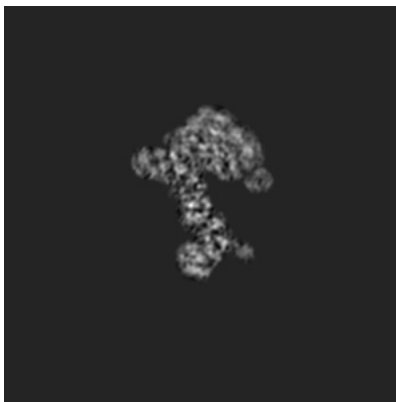
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

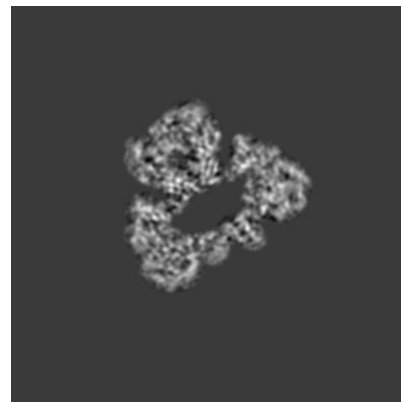
6.3.1 Primary map



X Index: 114



Y Index: 161

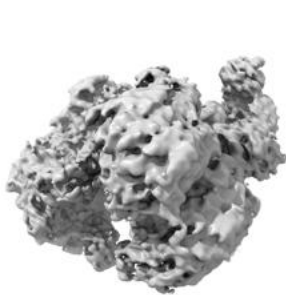


Z Index: 146

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.008. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

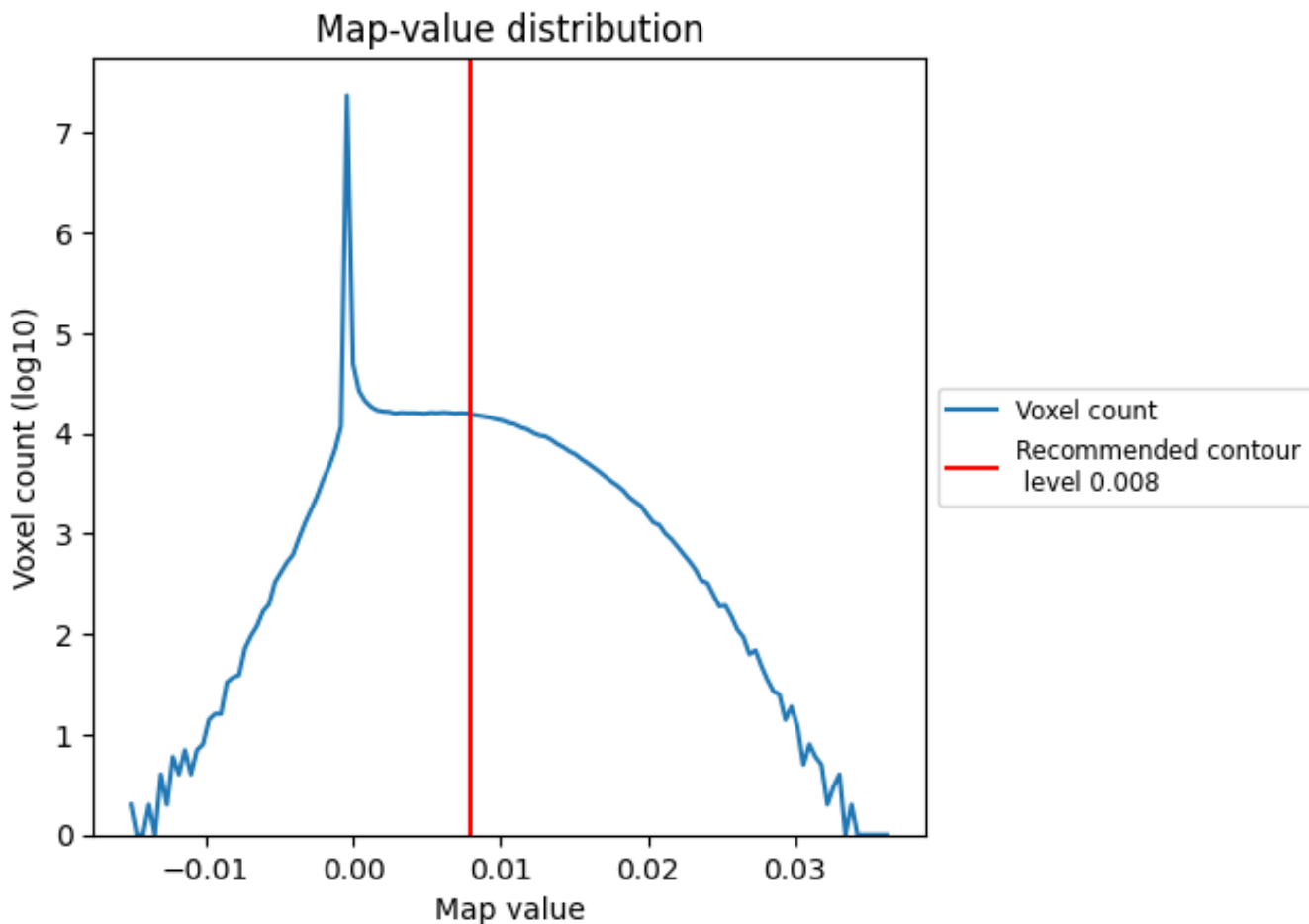
6.5 Mask visualisation

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

7 Map analysis [i](#)

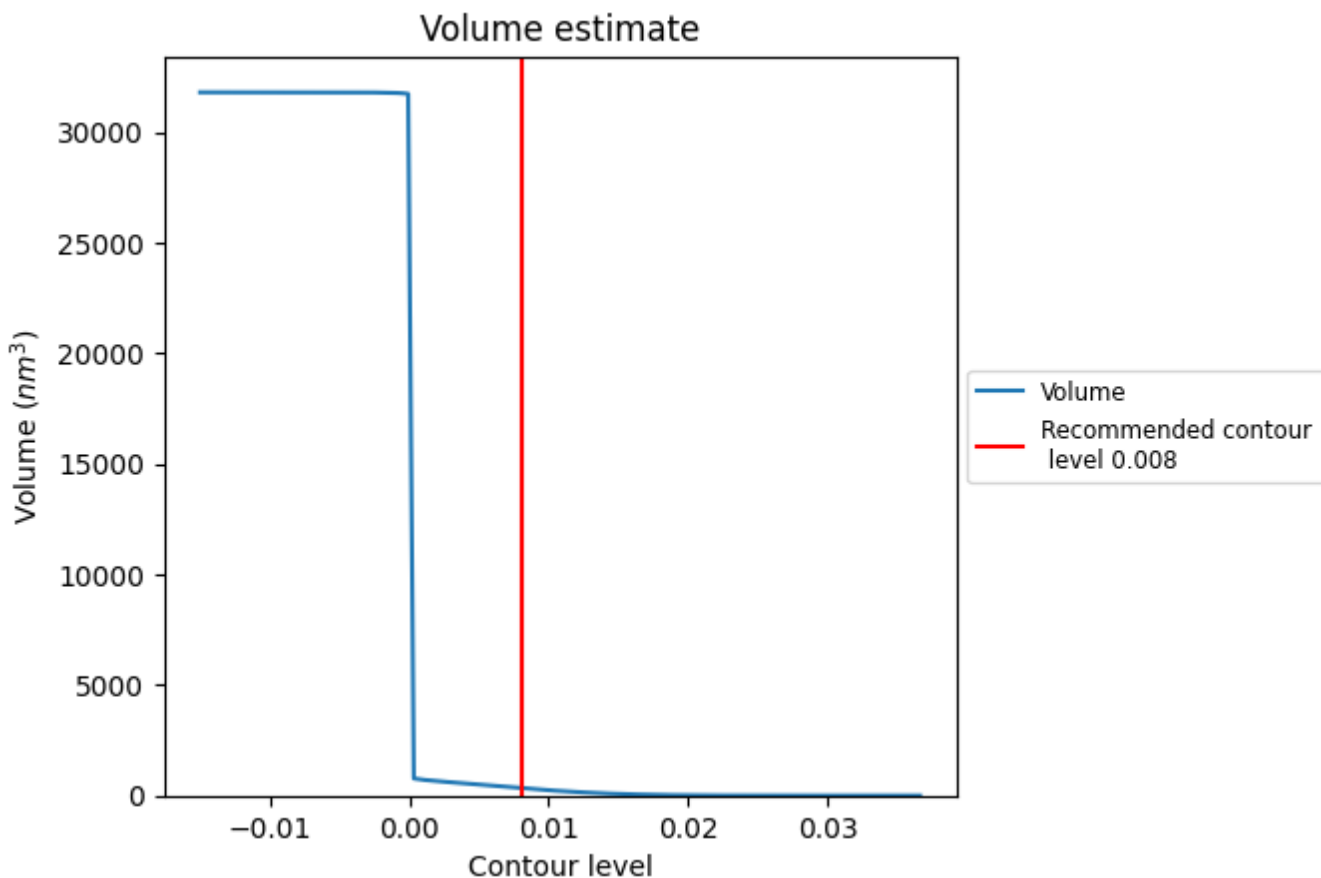
This section contains the results of statistical analysis of the map.

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.

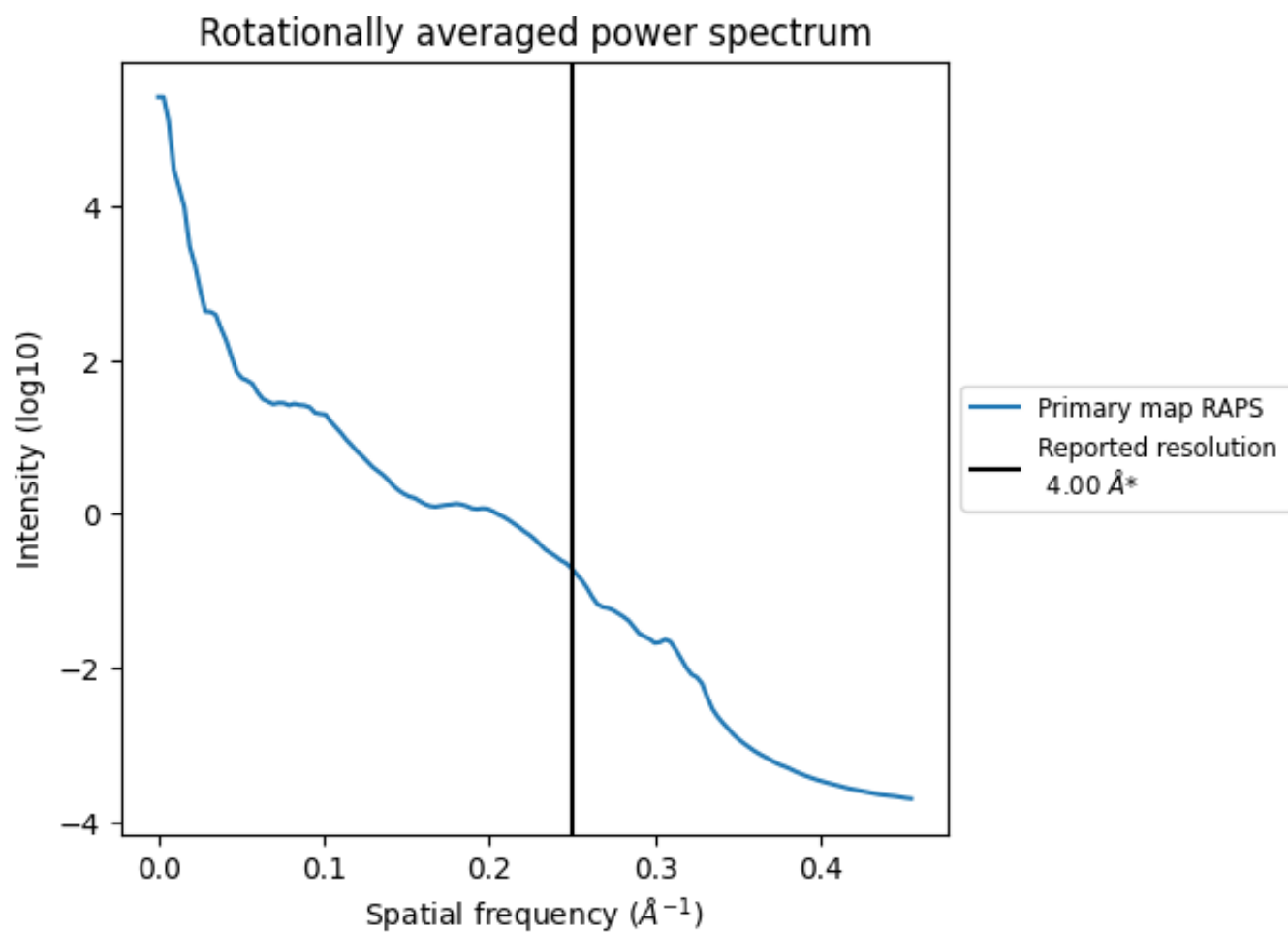
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 338 nm³; this corresponds to an approximate mass of 306 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 0.250 Å⁻¹

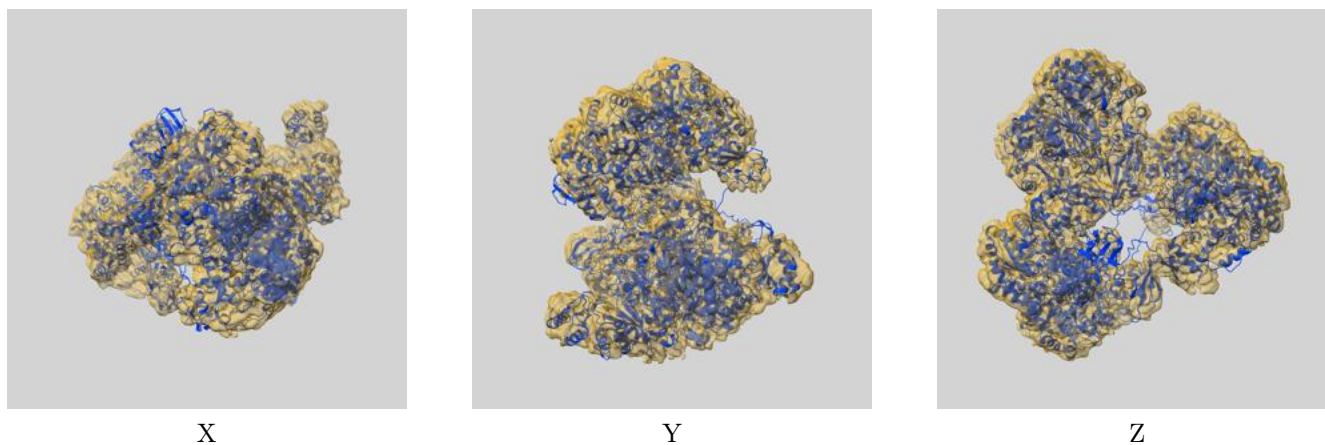
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

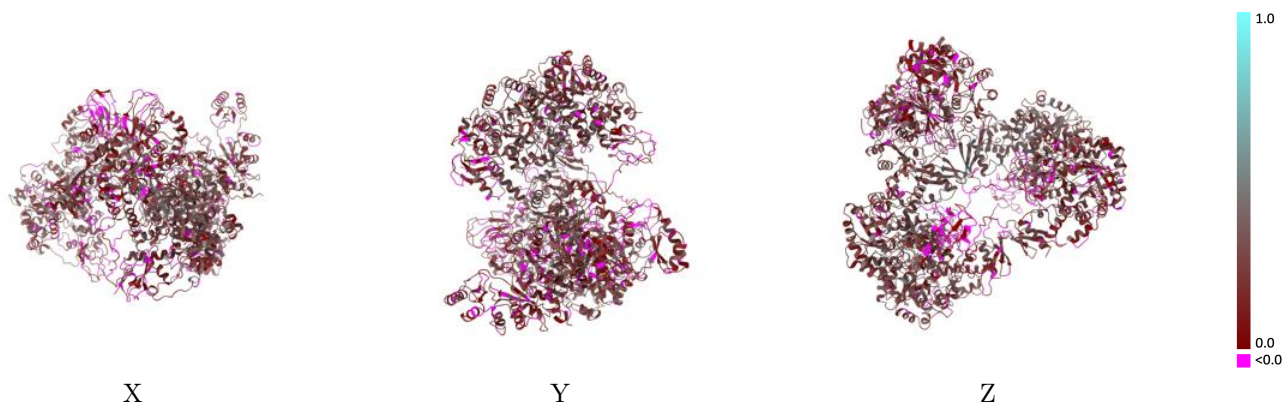
This section contains information regarding the fit between EMDB map EMD-32778 and PDB model 7WTC. Per-residue inclusion information can be found in section [3](#) on page [5](#).

9.1 Map-model overlay [i](#)



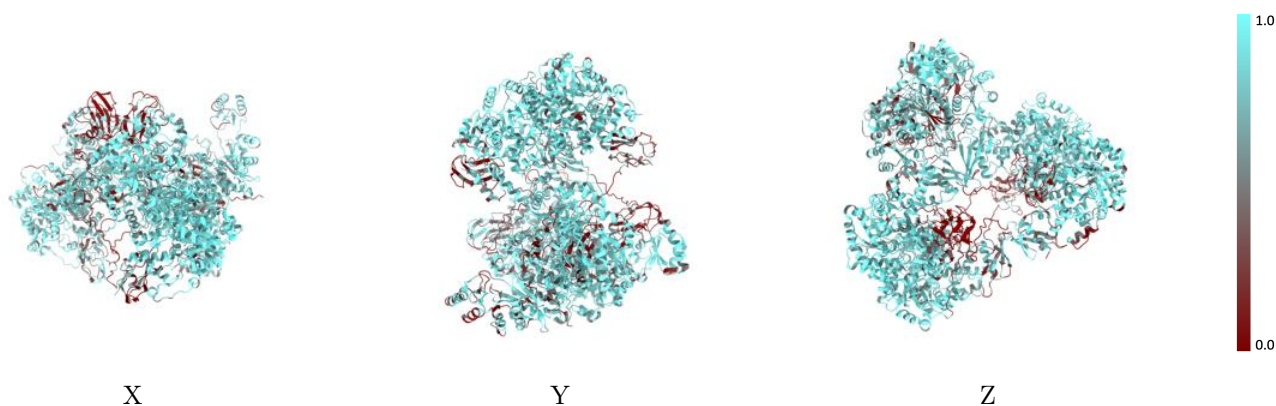
The images above show the 3D surface view of the map at the recommended contour level 0.008 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



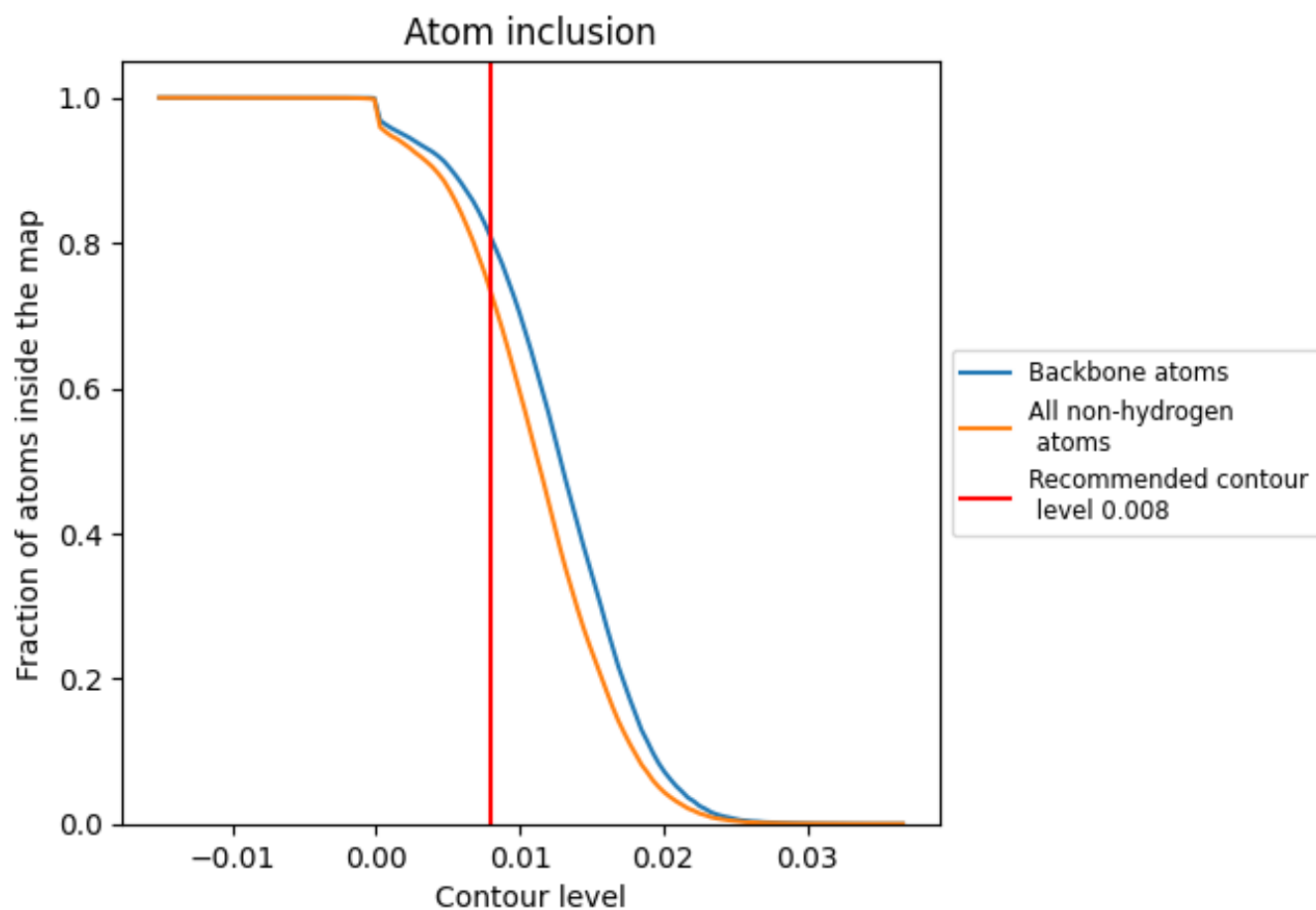
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.008).









9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.008) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7323	 0.2160
A	 0.7572	 0.2280
B	 0.7293	 0.2240
C	 0.7305	 0.2070
D	 0.6969	 0.1920

