



## Full wwPDB EM Validation Report ⓘ

Nov 20, 2022 – 01:40 am GMT

PDB ID : 6GDI  
EMDB ID : EMD-4391  
Title : Structure of P-glycoprotein(ABCB1) in the post-hydrolytic state  
Authors : Ford, R.C.; Thonghin, N.; Collins, R.F.; Barbieri, A.; Shafi, T.; Siebert, A.  
Deposited on : 2018-04-23  
Resolution : 7.90 Å(reported)  
Based on initial model : 4KSB

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
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

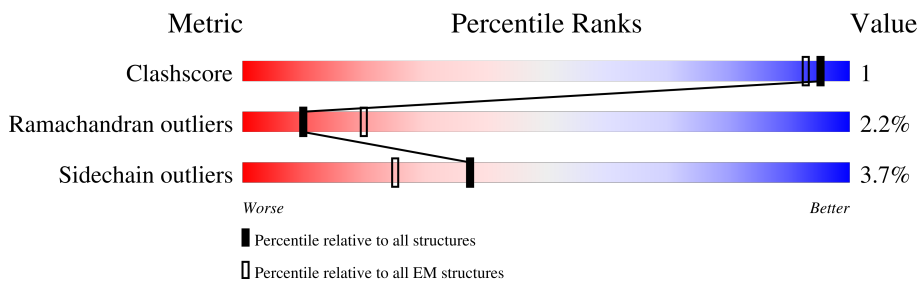
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 7.90 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  $\geq 3$ , 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	1284	

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 9171 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.

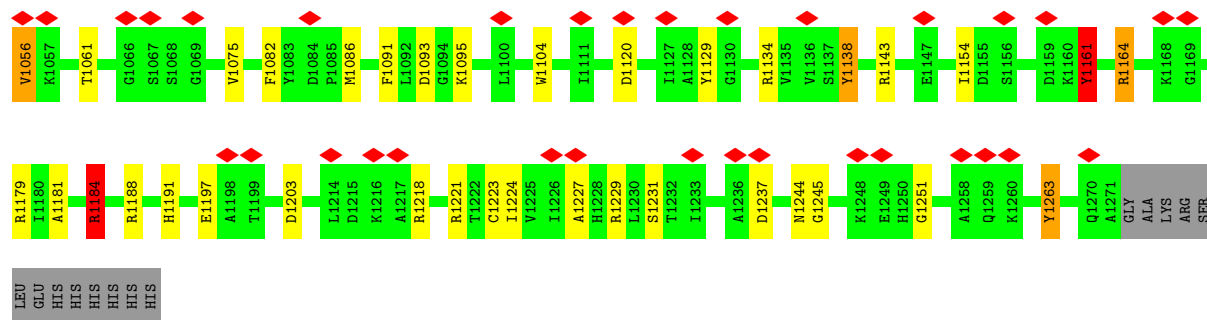
- Molecule 1 is a protein called Multidrug resistance protein 1A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1182	9171	5895	1552	1686	38	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1277	LEU	-	expression tag	UNP P21447
A	1278	GLU	-	expression tag	UNP P21447
A	1279	HIS	-	expression tag	UNP P21447
A	1280	HIS	-	expression tag	UNP P21447
A	1281	HIS	-	expression tag	UNP P21447
A	1282	HIS	-	expression tag	UNP P21447
A	1283	HIS	-	expression tag	UNP P21447
A	1284	HIS	-	expression tag	UNP P21447





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	135357	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 ( $e^-/\text{\AA}^2$ )	70	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.220	Depositor
Minimum map value	-0.149	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.03	Depositor
Map size ( $\text{\AA}$ )	165.35999, 165.35999, 165.35999	wwPDB
Map dimensions	156, 156, 156	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.06, 1.06, 1.06	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	1.70	55/9339 (0.6%)	1.95	203/12626 (1.6%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	25

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1045	SER	CA-CB	7.31	1.64	1.52
1	A	170	ARG	NE-CZ	6.88	1.42	1.33
1	A	130	SER	CA-CB	6.68	1.62	1.52
1	A	885	GLU	CG-CD	6.68	1.61	1.51
1	A	798	SER	CA-CB	6.67	1.62	1.52
1	A	464	GLU	CG-CD	6.63	1.61	1.51
1	A	1251	GLY	CA-C	-6.39	1.41	1.51
1	A	299	PHE	CG-CD1	6.35	1.48	1.38
1	A	706	TYR	CG-CD1	6.32	1.47	1.39
1	A	619	PHE	CA-CB	6.28	1.67	1.53
1	A	751	PHE	CB-CG	6.25	1.61	1.51
1	A	144	ARG	CZ-NH2	6.24	1.41	1.33
1	A	463	ARG	NE-CZ	6.15	1.41	1.33
1	A	71	PHE	CA-CB	6.05	1.67	1.53
1	A	110	TYR	CG-CD1	6.03	1.47	1.39
1	A	1091	PHE	CG-CD1	5.97	1.47	1.38
1	A	440	TYR	CB-CG	5.93	1.60	1.51
1	A	573	ARG	NE-CZ	5.91	1.40	1.33
1	A	840	GLY	CA-C	-5.82	1.42	1.51
1	A	692	SER	CB-OG	5.75	1.49	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1245	GLY	CA-C	-5.71	1.42	1.51
1	A	311	TRP	NE1-CE2	5.69	1.45	1.37
1	A	400	ARG	NE-CZ	5.67	1.40	1.33
1	A	916	TYR	CD1-CE1	5.67	1.47	1.39
1	A	397	TYR	CG-CD2	5.66	1.46	1.39
1	A	686	GLU	CD-OE2	5.65	1.31	1.25
1	A	997	ALA	N-CA	-5.65	1.35	1.46
1	A	706	TYR	CE2-CZ	5.61	1.45	1.38
1	A	407	LYS	C-N	5.59	1.43	1.33
1	A	947	PHE	CG-CD2	5.55	1.47	1.38
1	A	71	PHE	CG-CD1	5.53	1.47	1.38
1	A	562	GLU	CD-OE2	5.49	1.31	1.25
1	A	813	ARG	CZ-NH2	5.49	1.40	1.33
1	A	154	GLN	CA-C	-5.41	1.38	1.52
1	A	1082	PHE	CB-CG	5.41	1.60	1.51
1	A	61	GLY	CA-C	5.40	1.60	1.51
1	A	689	PRO	C-N	5.33	1.44	1.34
1	A	887	GLU	CD-OE1	5.33	1.31	1.25
1	A	306	TYR	CE2-CZ	5.32	1.45	1.38
1	A	903	VAL	CB-CG1	5.29	1.64	1.52
1	A	901	ARG	NE-CZ	5.20	1.39	1.33
1	A	199	GLY	CA-C	-5.14	1.43	1.51
1	A	887	GLU	C-N	5.14	1.42	1.33
1	A	516	PHE	CB-CG	5.13	1.60	1.51
1	A	378	GLY	N-CA	-5.11	1.38	1.46
1	A	461	TYR	CE2-CZ	5.11	1.45	1.38
1	A	1229	ARG	NE-CZ	5.08	1.39	1.33
1	A	258	ARG	CZ-NH2	5.07	1.39	1.33
1	A	1028	GLU	CD-OE2	5.06	1.31	1.25
1	A	949	TYR	CE2-CZ	5.04	1.45	1.38
1	A	1197	GLU	CD-OE1	-5.03	1.20	1.25
1	A	788	VAL	CB-CG1	5.03	1.63	1.52
1	A	1040	TYR	CE1-CZ	5.02	1.45	1.38
1	A	521	GLY	N-CA	-5.02	1.38	1.46
1	A	752	SER	CA-CB	5.01	1.60	1.52

All (203) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	312	TYR	CB-CG-CD1	-18.43	109.94	121.00
1	A	613	ARG	NE-CZ-NH2	-17.89	111.36	120.30
1	A	312	TYR	CB-CG-CD2	16.08	130.65	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1143	ARG	NE-CZ-NH1	14.87	127.73	120.30
1	A	695	ARG	NE-CZ-NH1	-14.45	113.08	120.30
1	A	908	ARG	NE-CZ-NH2	14.11	127.36	120.30
1	A	258	ARG	NE-CZ-NH2	-13.90	113.35	120.30
1	A	463	ARG	NE-CZ-NH1	13.83	127.22	120.30
1	A	613	ARG	NE-CZ-NH1	13.77	127.18	120.30
1	A	695	ARG	NE-CZ-NH2	13.19	126.89	120.30
1	A	460	ARG	NE-CZ-NH2	-11.85	114.38	120.30
1	A	813	ARG	NE-CZ-NH1	11.82	126.21	120.30
1	A	924	TYR	CB-CG-CD2	-11.59	114.05	121.00
1	A	235	PHE	CB-CG-CD2	11.40	128.78	120.80
1	A	461	TYR	CB-CG-CD2	-11.37	114.18	121.00
1	A	938	PHE	CB-CG-CD2	11.36	128.75	120.80
1	A	916	TYR	CB-CG-CD1	10.97	127.58	121.00
1	A	938	PHE	CB-CG-CD1	-10.49	113.46	120.80
1	A	273	TYR	CB-CG-CD2	-10.32	114.81	121.00
1	A	258	ARG	NE-CZ-NH1	10.31	125.45	120.30
1	A	486	TYR	CB-CG-CD2	10.30	127.18	121.00
1	A	97	ARG	NE-CZ-NH1	10.25	125.42	120.30
1	A	785	ARG	NE-CZ-NH1	10.17	125.38	120.30
1	A	206	ARG	NE-CZ-NH2	-10.14	115.23	120.30
1	A	463	ARG	NE-CZ-NH2	-10.13	115.24	120.30
1	A	994	TYR	CB-CG-CD1	-10.07	114.96	121.00
1	A	508	PHE	CB-CG-CD1	-9.94	113.84	120.80
1	A	916	TYR	CB-CG-CD2	-9.82	115.11	121.00
1	A	110	TYR	CB-CG-CD2	-9.66	115.21	121.00
1	A	979	PHE	CB-CG-CD1	9.58	127.51	120.80
1	A	794	ARG	NE-CZ-NH2	-9.48	115.56	120.30
1	A	766	PHE	CB-CG-CD2	-9.33	114.27	120.80
1	A	901	ARG	NE-CZ-NH1	9.18	124.89	120.30
1	A	766	PHE	CB-CG-CD1	8.95	127.07	120.80
1	A	113	TYR	CB-CG-CD2	-8.90	115.66	121.00
1	A	516	PHE	CB-CG-CD1	-8.87	114.59	120.80
1	A	282	ARG	NE-CZ-NH2	-8.79	115.91	120.30
1	A	597	PHE	CG-CD2-CE2	-8.60	111.34	120.80
1	A	200	PHE	CB-CG-CD1	-8.59	114.79	120.80
1	A	1091	PHE	CB-CG-CD2	8.55	126.78	120.80
1	A	728	PHE	CB-CG-CD2	-8.49	114.86	120.80
1	A	900	PHE	CB-CG-CD2	8.49	126.75	120.80
1	A	924	TYR	CB-CG-CD1	8.46	126.08	121.00
1	A	110	TYR	CB-CG-CD1	8.46	126.08	121.00
1	A	339	PHE	CB-CG-CD1	-8.38	114.93	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	491	VAL	CA-CB-CG1	8.34	123.40	110.90
1	A	507	ASP	CB-CG-OD2	8.24	125.72	118.30
1	A	534	ARG	NE-CZ-NH1	8.16	124.38	120.30
1	A	400	ARG	NE-CZ-NH2	-8.07	116.27	120.30
1	A	486	TYR	CB-CG-CD1	-7.91	116.26	121.00
1	A	113	TYR	CB-CG-CD1	7.90	125.74	121.00
1	A	955	PHE	CB-CG-CD1	7.81	126.27	120.80
1	A	1120	ASP	CB-CG-OD2	-7.74	111.34	118.30
1	A	946	TYR	CB-CG-CD1	-7.67	116.40	121.00
1	A	190	PHE	CB-CG-CD1	-7.61	115.47	120.80
1	A	282	ARG	NE-CZ-NH1	7.60	124.10	120.30
1	A	1221	ARG	NE-CZ-NH1	7.59	124.09	120.30
1	A	1091	PHE	CB-CG-CD1	-7.56	115.51	120.80
1	A	455	ARG	NE-CZ-NH2	-7.55	116.53	120.30
1	A	1043	ARG	NE-CZ-NH1	-7.55	116.53	120.30
1	A	967	PHE	CB-CG-CD2	-7.50	115.55	120.80
1	A	49	TYR	CB-CG-CD2	-7.49	116.50	121.00
1	A	71	PHE	CB-CG-CD2	-7.46	115.58	120.80
1	A	228	TRP	CB-CG-CD2	7.44	136.27	126.60
1	A	193	MET	CG-SD-CE	7.42	112.08	100.20
1	A	97	ARG	NE-CZ-NH2	-7.41	116.59	120.30
1	A	1043	ARG	NE-CZ-NH2	-7.41	116.60	120.30
1	A	1038	PHE	CB-CG-CD2	7.39	125.97	120.80
1	A	994	TYR	CB-CG-CD2	7.36	125.42	121.00
1	A	114	TYR	CB-CG-CD1	7.36	125.42	121.00
1	A	1138	TYR	CB-CG-CD2	-7.26	116.64	121.00
1	A	359	TYR	CB-CG-CD1	7.26	125.36	121.00
1	A	508	PHE	CB-CG-CD2	7.24	125.87	120.80
1	A	438	ARG	NE-CZ-NH2	-7.17	116.72	120.30
1	A	745	ARG	NE-CZ-NH2	-7.13	116.73	120.30
1	A	132	TRP	CA-CB-CG	7.11	127.20	113.70
1	A	767	PHE	CB-CG-CD1	-7.08	115.84	120.80
1	A	958	TYR	CB-CG-CD2	-7.03	116.78	121.00
1	A	228	TRP	CB-CG-CD1	-7.00	117.90	127.00
1	A	1184	ARG	NE-CZ-NH2	-7.00	116.80	120.30
1	A	1006	ARG	NE-CZ-NH2	-6.97	116.81	120.30
1	A	597	PHE	CB-CG-CD1	-6.92	115.95	120.80
1	A	831	VAL	CA-CB-CG2	-6.91	100.53	110.90
1	A	684	LEU	CB-CG-CD2	6.87	122.68	111.00
1	A	46	ASP	CB-CG-OD1	6.87	124.48	118.30
1	A	589	ARG	NE-CZ-NH1	6.78	123.69	120.30
1	A	114	TYR	CB-CG-CD2	-6.77	116.94	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1188	ARG	NE-CZ-NH1	6.77	123.68	120.30
1	A	1184	ARG	CD-NE-CZ	-6.76	114.13	123.60
1	A	196	PHE	CG-CD1-CE1	-6.75	113.37	120.80
1	A	455	ARG	NE-CZ-NH1	6.72	123.66	120.30
1	A	476	PHE	CB-CG-CD2	-6.69	116.11	120.80
1	A	523	ARG	NE-CZ-NH2	6.66	123.63	120.30
1	A	476	PHE	CB-CG-CD1	6.66	125.46	120.80
1	A	728	PHE	CB-CG-CD1	6.65	125.46	120.80
1	A	1134	ARG	NE-CZ-NH1	-6.64	116.98	120.30
1	A	609	ASP	CB-CG-OD2	6.62	124.26	118.30
1	A	1129	TYR	CB-CG-CD1	-6.61	117.03	121.00
1	A	1038	PHE	CB-CG-CD1	-6.56	116.21	120.80
1	A	927	ALA	N-CA-CB	6.53	119.24	110.10
1	A	488	ARG	NE-CZ-NH2	6.51	123.56	120.30
1	A	1120	ASP	CB-CG-OD1	6.50	124.15	118.30
1	A	310	PHE	CG-CD2-CE2	-6.44	113.71	120.80
1	A	558	ASP	CB-CG-OD1	6.42	124.08	118.30
1	A	306	TYR	CB-CG-CD2	-6.36	117.19	121.00
1	A	1263	TYR	CB-CG-CD1	-6.34	117.20	121.00
1	A	414	LYS	N-CA-CB	6.31	121.96	110.60
1	A	520	VAL	CA-CB-CG2	-6.30	101.45	110.90
1	A	1075	VAL	CA-CB-CG1	6.30	120.35	110.90
1	A	71	PHE	CB-CG-CD1	6.26	125.18	120.80
1	A	1017	TYR	CB-CG-CD1	-6.24	117.26	121.00
1	A	958	TYR	CB-CG-CD1	6.19	124.72	121.00
1	A	362	PHE	CB-CG-CD2	-6.16	116.49	120.80
1	A	76	ASP	CB-CG-OD2	6.16	123.84	118.30
1	A	258	ARG	CD-NE-CZ	-6.14	115.00	123.60
1	A	1179	ARG	NE-CZ-NH2	-6.14	117.23	120.30
1	A	510	MET	N-CA-CB	6.08	121.55	110.60
1	A	460	ARG	NE-CZ-NH1	6.08	123.34	120.30
1	A	604	GLU	CB-CA-C	-6.07	98.27	110.40
1	A	206	ARG	N-CA-CB	6.03	121.45	110.60
1	A	93	GLU	N-CA-CB	6.01	121.43	110.60
1	A	258	ARG	CG-CD-NE	-6.00	99.19	111.80
1	A	144	ARG	NE-CZ-NH1	5.99	123.30	120.30
1	A	81	VAL	CA-CB-CG2	-5.99	101.92	110.90
1	A	724	PHE	CB-CG-CD2	-5.96	116.63	120.80
1	A	144	ARG	NE-CZ-NH2	-5.94	117.33	120.30
1	A	622	VAL	CA-CB-CG2	-5.91	102.03	110.90
1	A	949	TYR	CB-CG-CD2	-5.85	117.49	121.00
1	A	603	VAL	CG1-CB-CG2	-5.82	101.58	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1075	VAL	CA-CB-CG2	-5.82	102.17	110.90
1	A	1104	TRP	CE2-CD2-CE3	5.78	125.63	118.70
1	A	796	ASP	CB-CG-OD1	-5.76	113.12	118.30
1	A	148	PHE	CB-CG-CD2	-5.72	116.80	120.80
1	A	112	TYR	CB-CG-CD2	-5.71	117.57	121.00
1	A	704	TRP	CD1-NE1-CE2	5.70	114.13	109.00
1	A	152	MET	CG-SD-CE	-5.69	91.09	100.20
1	A	239	GLU	N-CA-CB	5.68	120.83	110.60
1	A	707	PHE	N-CA-CB	5.68	120.82	110.60
1	A	486	TYR	CG-CD1-CE1	5.66	125.83	121.30
1	A	159	PHE	CB-CG-CD2	5.66	124.76	120.80
1	A	955	PHE	CB-CG-CD2	-5.66	116.84	120.80
1	A	1086	MET	CA-CB-CG	5.62	122.85	113.30
1	A	330	VAL	CA-CB-CG2	-5.61	102.48	110.90
1	A	865	ALA	CB-CA-C	-5.59	101.72	110.10
1	A	973	VAL	CA-CB-CG2	-5.57	102.54	110.90
1	A	1237	ASP	CB-CA-C	-5.54	99.31	110.40
1	A	132	TRP	CH2-CZ2-CE2	5.53	122.93	117.40
1	A	333	SER	N-CA-CB	5.52	118.78	110.50
1	A	1056	VAL	CA-CB-CG2	5.51	119.17	110.90
1	A	48	LEU	CB-CG-CD1	-5.49	101.67	111.00
1	A	513	PRO	O-C-N	5.48	131.47	122.70
1	A	1237	ASP	CB-CG-OD2	5.47	123.23	118.30
1	A	114	TYR	N-CA-CB	5.47	120.44	110.60
1	A	961	THR	CA-CB-CG2	-5.46	104.75	112.40
1	A	1043	ARG	NH1-CZ-NH2	5.46	125.41	119.40
1	A	809	ALA	N-CA-CB	5.46	117.74	110.10
1	A	593	VAL	N-CA-C	-5.45	96.28	111.00
1	A	773	PHE	CB-CG-CD2	5.44	124.61	120.80
1	A	848	ILE	O-C-N	-5.43	114.01	122.70
1	A	205	THR	O-C-N	5.40	131.34	122.70
1	A	1138	TYR	CG-CD2-CE2	-5.39	116.99	121.30
1	A	391	LYS	C-N-CA	5.36	135.11	121.70
1	A	58	ILE	O-C-N	5.36	131.28	122.70
1	A	704	TRP	CD1-CG-CD2	-5.36	102.01	106.30
1	A	132	TRP	NE1-CE2-CZ2	5.36	136.29	130.40
1	A	1203	ASP	CB-CG-OD2	5.35	123.11	118.30
1	A	42	ALA	CB-CA-C	5.34	118.11	110.10
1	A	1263	TYR	CZ-CE2-CD2	-5.33	115.00	119.80
1	A	332	PHE	CB-CG-CD1	5.32	124.52	120.80
1	A	813	ARG	NH1-CZ-NH2	-5.32	113.55	119.40
1	A	334	VAL	CG1-CB-CG2	-5.31	102.40	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1244	ASN	N-CA-CB	5.29	120.12	110.60
1	A	861	VAL	CA-CB-CG2	-5.28	102.97	110.90
1	A	603	VAL	CA-CB-CG2	5.28	118.82	110.90
1	A	974	PHE	CB-CG-CD1	-5.27	117.11	120.80
1	A	163	ASP	CB-CA-C	-5.25	99.91	110.40
1	A	1042	THR	CA-CB-CG2	-5.25	105.06	112.40
1	A	745	ARG	CB-CG-CD	5.23	125.20	111.60
1	A	49	TYR	CB-CG-CD1	5.22	124.13	121.00
1	A	946	TYR	CB-CG-CD2	5.22	124.13	121.00
1	A	593	VAL	CA-CB-CG1	5.20	118.70	110.90
1	A	338	ALA	N-CA-CB	-5.18	102.85	110.10
1	A	514	HIS	N-CA-CB	5.17	119.90	110.60
1	A	569	LEU	CB-CG-CD1	-5.14	102.25	111.00
1	A	872	MET	CA-CB-CG	5.14	122.05	113.30
1	A	908	ARG	NH1-CZ-NH2	-5.14	113.74	119.40
1	A	280	ALA	CB-CA-C	-5.14	102.39	110.10
1	A	488	ARG	NE-CZ-NH1	-5.13	117.74	120.30
1	A	228	TRP	CG-CD2-CE3	5.13	138.51	133.90
1	A	235	PHE	CG-CD1-CE1	5.12	126.43	120.80
1	A	767	PHE	CB-CG-CD2	5.11	124.37	120.80
1	A	361	VAL	CA-CB-CG1	-5.10	103.25	110.90
1	A	428	GLY	N-CA-C	-5.10	100.34	113.10
1	A	1161	TYR	CA-CB-CG	-5.10	103.70	113.40
1	A	704	TRP	CG-CD2-CE3	-5.10	129.31	133.90
1	A	235	PHE	CD1-CG-CD2	-5.08	111.70	118.30
1	A	121	VAL	CA-CB-CG2	5.08	118.52	110.90
1	A	303	TYR	CB-CA-C	-5.07	100.25	110.40
1	A	303	TYR	CB-CG-CD2	-5.05	117.97	121.00
1	A	1018	SER	N-CA-CB	5.05	118.07	110.50
1	A	229	ALA	CB-CA-C	-5.04	102.54	110.10
1	A	306	TYR	CB-CG-CD1	5.03	124.02	121.00
1	A	1051	GLY	CA-C-O	-5.02	111.56	120.60

There are no chirality outliers.

All (25) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1138	TYR	Sidechain
1	A	1161	TYR	Sidechain
1	A	1184	ARG	Sidechain
1	A	1218	ARG	Sidechain
1	A	126	TYR	Sidechain

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Mol	Chain	Res	Type	Group
1	A	1263	TYR	Sidechain
1	A	204	PHE	Sidechain
1	A	243	TYR	Sidechain
1	A	322	TYR	Sidechain
1	A	359	TYR	Sidechain
1	A	40	ARG	Sidechain
1	A	438	ARG	Sidechain
1	A	49	TYR	Sidechain
1	A	516	PHE	Sidechain
1	A	539	ARG	Sidechain
1	A	589	ARG	Sidechain
1	A	597	PHE	Sidechain
1	A	619	PHE	Sidechain
1	A	813	ARG	Sidechain
1	A	828	ARG	Sidechain
1	A	900	PHE	Sidechain
1	A	916	TYR	Sidechain
1	A	947	PHE	Sidechain
1	A	955	PHE	Sidechain
1	A	990	PHE	Sidechain

## 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	9171	0	9344	19	0
All	All	9171	0	9344	19	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 1.

All (19) 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:1164:ARG:HE	1:A:1164:ARG:HA	1.60	0.66
1:A:609:ASP:CB	1:A:613:ARG:HH21	2.24	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1181:ALA:HA	1:A:1184:ARG:HE	1.78	0.49
1:A:1223:CYS:O	1:A:1224:ILE:HD13	2.12	0.49
1:A:132:TRP:HA	1:A:183:GLY:HA2	1.98	0.46
1:A:64:LEU:HB2	1:A:65:PRO:HD3	1.98	0.46
1:A:384:ILE:HD13	1:A:384:ILE:HA	1.82	0.44
1:A:594:ILE:HD13	1:A:608:HIS:N	2.34	0.43
1:A:1164:ARG:HE	1:A:1164:ARG:CA	2.28	0.43
1:A:594:ILE:HD12	1:A:594:ILE:N	2.34	0.42
1:A:475:LEU:H	1:A:901:ARG:NH2	2.17	0.42
1:A:963:GLN:HB2	1:A:964:LEU:H	1.69	0.41
1:A:609:ASP:HB3	1:A:613:ARG:HH21	1.85	0.41
1:A:189:PHE:CD1	1:A:348:ILE:HD11	2.55	0.41
1:A:609:ASP:HB2	1:A:613:ARG:HH21	1.85	0.41
1:A:465:ILE:HG22	1:A:465:ILE:O	2.21	0.40
1:A:273:TYR:CE2	1:A:277:LEU:HD11	2.56	0.40
1:A:1154:ILE:HG21	1:A:1161:TYR:CE1	2.56	0.40
1:A:758:LEU:HD13	1:A:758:LEU:HA	1.87	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	1178/1284 (92%)	1073 (91%)	79 (7%)	26 (2%)	<b>6</b> 35

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	92	SER
1	A	321	GLU
1	A	455	ARG
1	A	514	HIS

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Mol	Chain	Res	Type
1	A	707	PHE
1	A	1012	PRO
1	A	90	ASN
1	A	687	ASP
1	A	705	PRO
1	A	1018	SER
1	A	1093	ASP
1	A	1227	ALA
1	A	377	SER
1	A	382	ASP
1	A	404	GLN
1	A	600	GLY
1	A	800	PHE
1	A	1231	SER
1	A	36	LEU
1	A	525	ALA
1	A	797	VAL
1	A	969	ASN
1	A	1010	LYS
1	A	1046	ILE
1	A	379	HIS
1	A	1022	LEU

### 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	976/1065 (92%)	940 (96%)	36 (4%)	34 58

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	90	ASN
1	A	95	ASP
1	A	153	ASN
1	A	191	GLN

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Mol	Chain	Res	Type
1	A	211	THR
1	A	228	TRP
1	A	259	THR
1	A	267	LYS
1	A	326	GLN
1	A	370	SER
1	A	380	LYS
1	A	383	ASN
1	A	414	LYS
1	A	424	ASN
1	A	446	MET
1	A	460	ARG
1	A	471	GLN
1	A	475	LEU
1	A	498	LYS
1	A	516	PHE
1	A	574	GLU
1	A	585	LEU
1	A	597	PHE
1	A	695	ARG
1	A	744	GLN
1	A	781	THR
1	A	812	THR
1	A	833	PHE
1	A	982	MET
1	A	998	THR
1	A	1050	GLN
1	A	1056	VAL
1	A	1061	THR
1	A	1095	LYS
1	A	1164	ARG
1	A	1191	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	90	ASN
1	A	149	HIS
1	A	276	ASN
1	A	292	ASN
1	A	424	ASN
1	A	531	GLN

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Mol	Chain	Res	Type
1	A	717	ASN
1	A	721	GLN
1	A	747	ASN
1	A	795	GLN
1	A	910	GLN
1	A	969	ASN
1	A	1050	GLN
1	A	1189	GLN
1	A	1243	GLN
1	A	1250	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 monosaccharides 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.

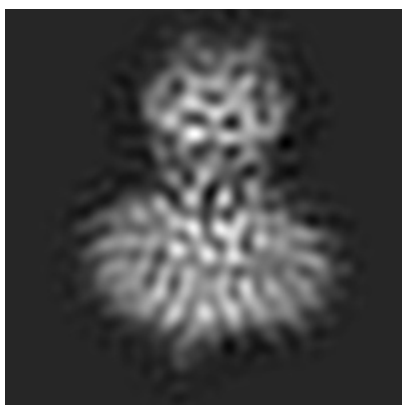
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-4391. These allow visual inspection of the internal detail of the map and identification of artifacts.

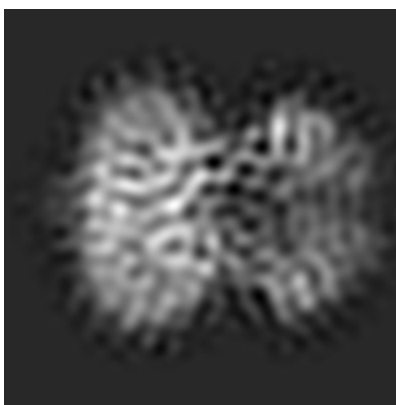
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 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](#)

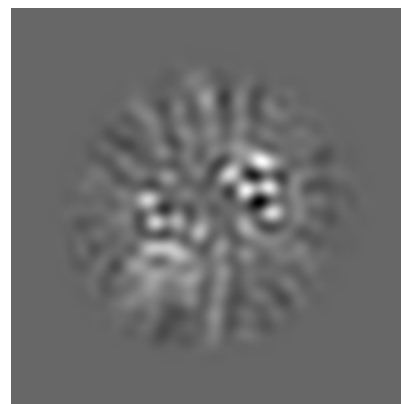
#### 6.2.1 Primary map



X Index: 78



Y Index: 78



Z Index: 78

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: 99



Y Index: 85

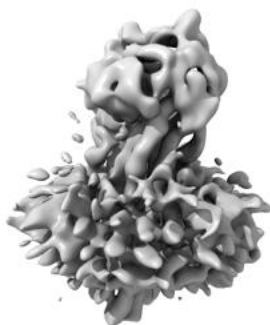


Z Index: 106

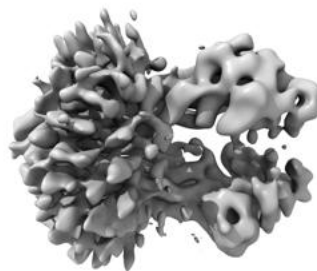
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

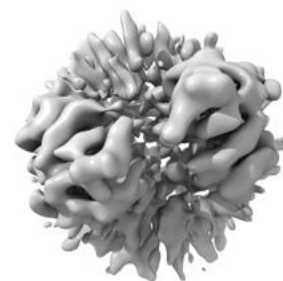
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

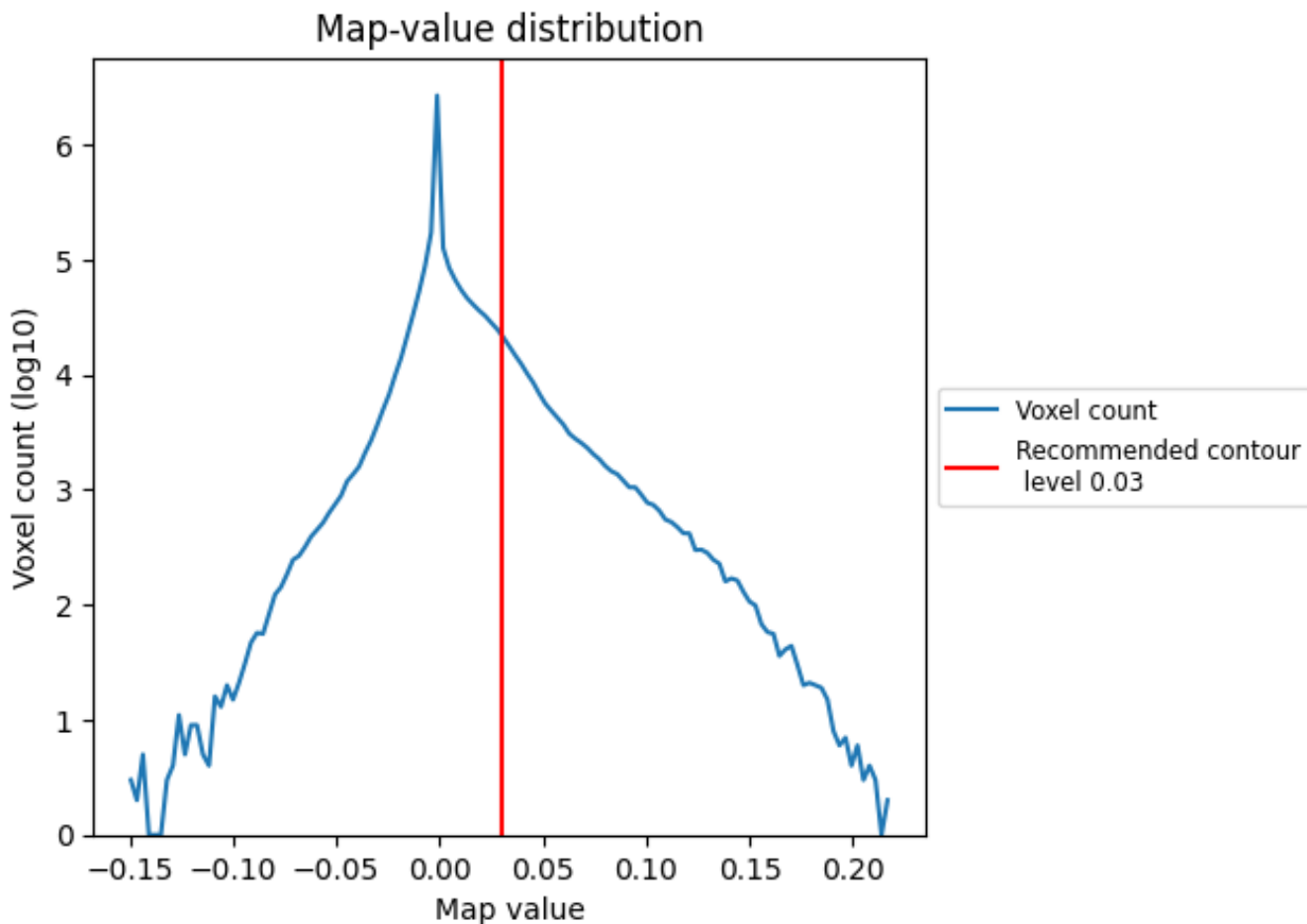
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

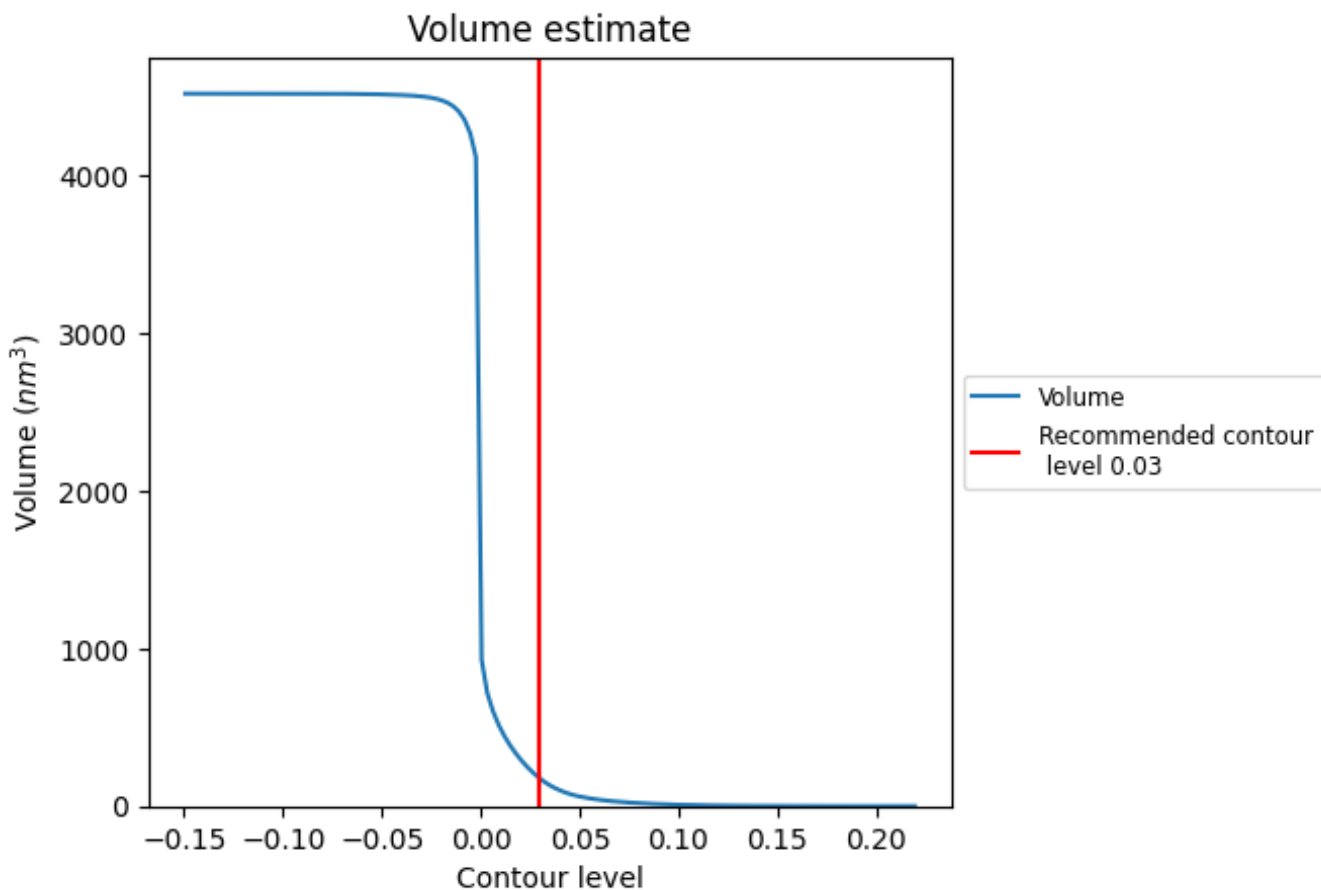
This section contains the results of statistical analysis of the map.

### 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.

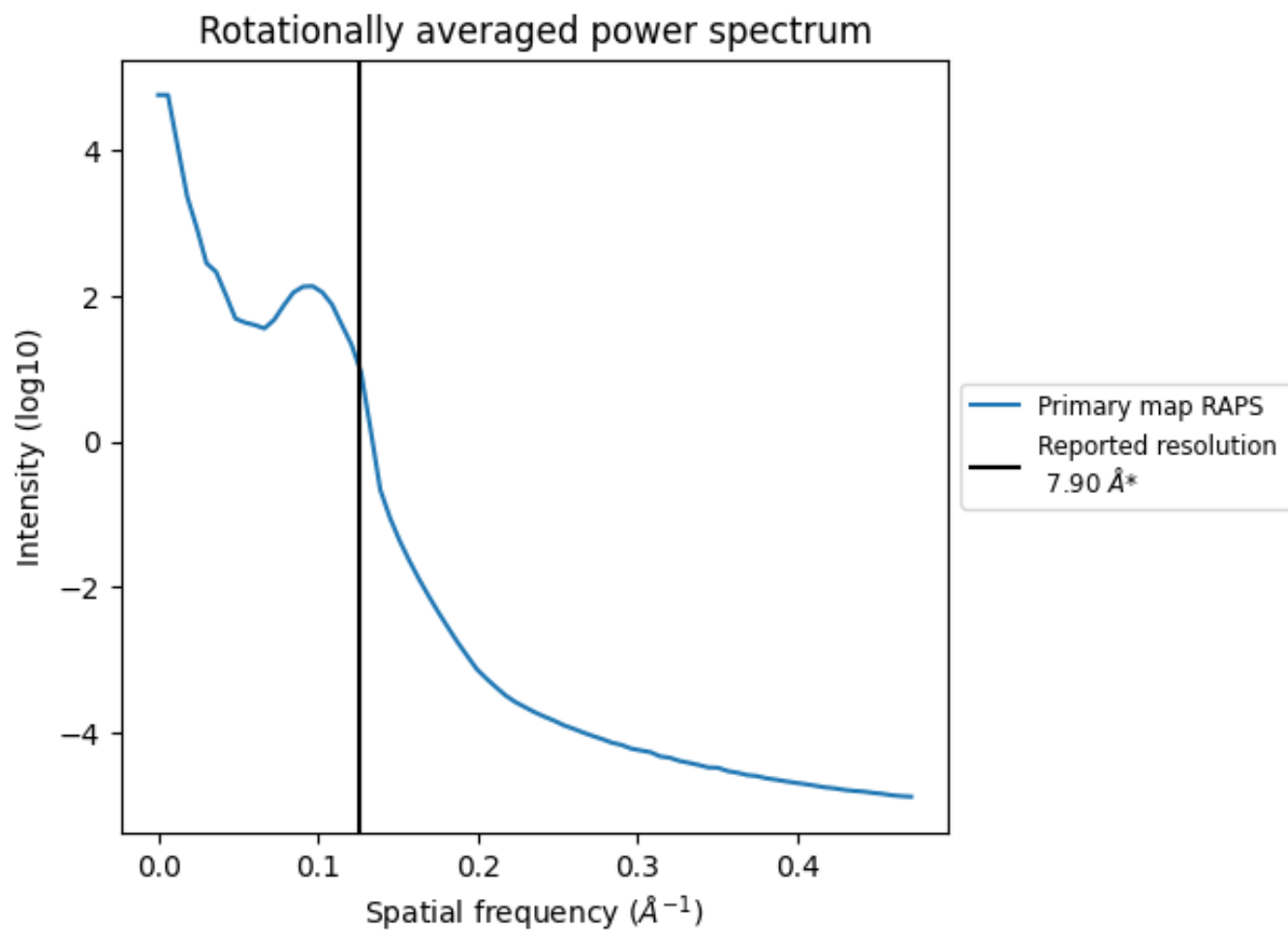
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 176  $\text{nm}^3$ ; this corresponds to an approximate mass of 159 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



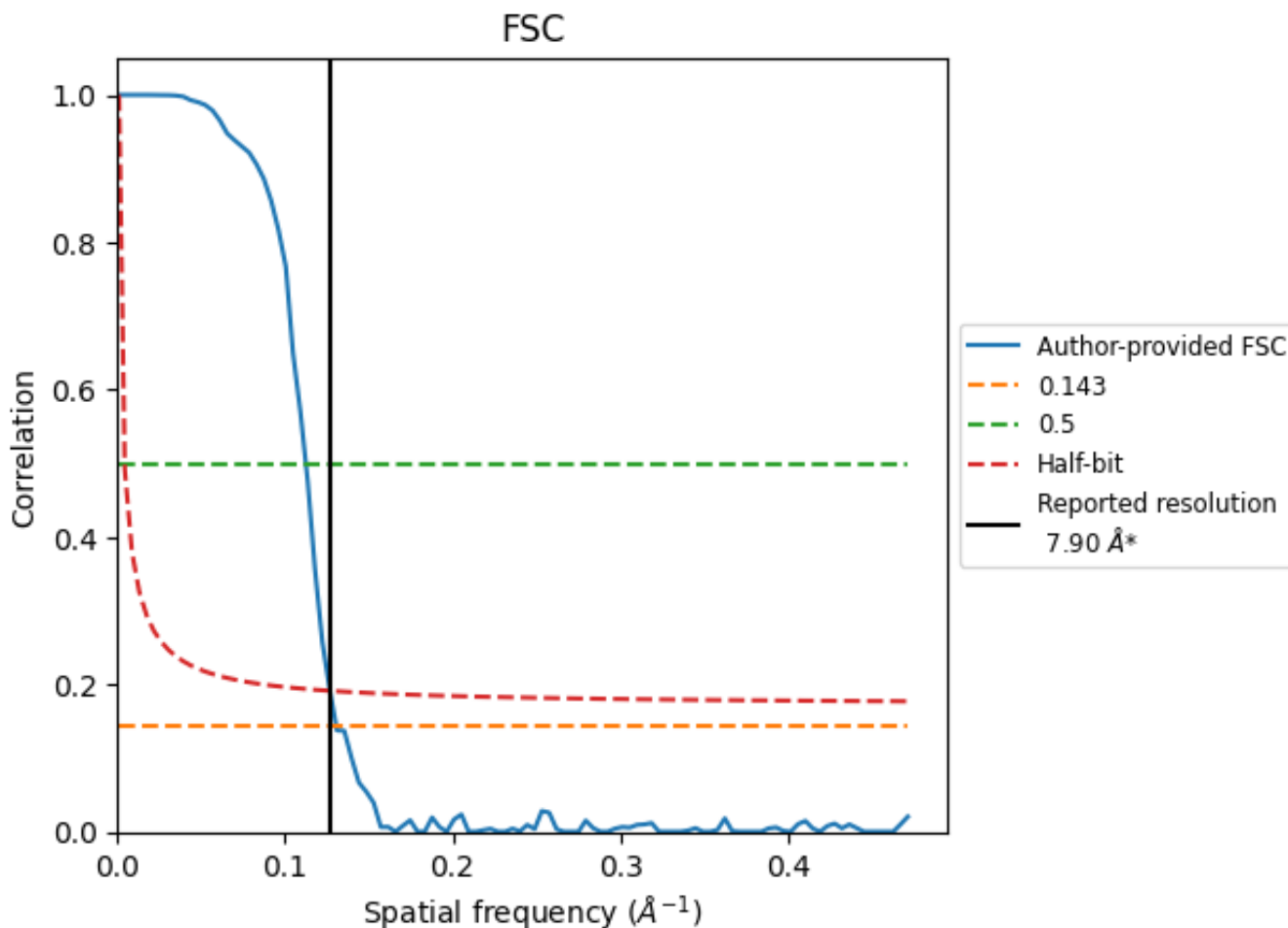
\*Reported resolution corresponds to spatial frequency of 0.127 Å<sup>-1</sup>



## 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 0.127 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

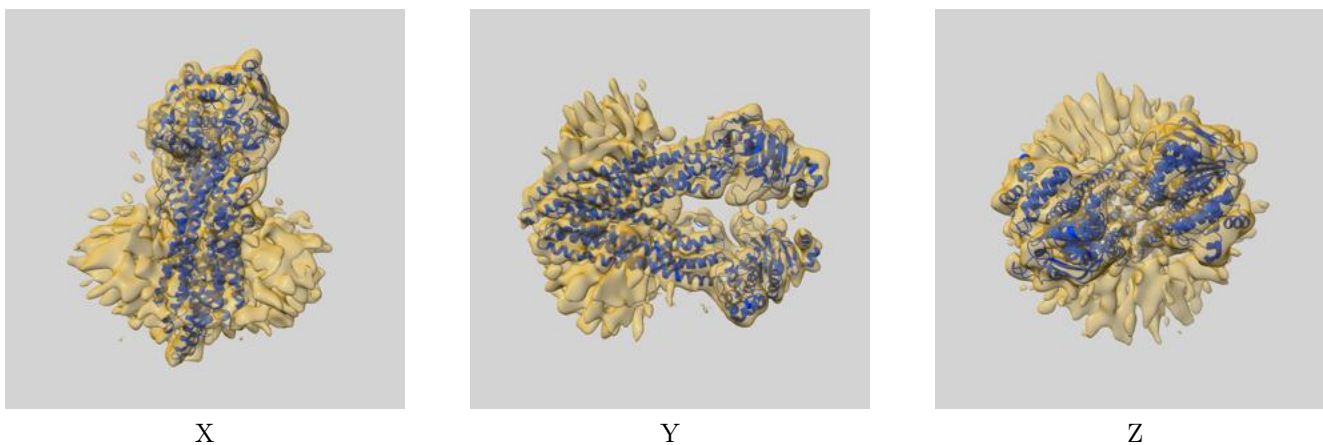
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	7.90	-	-
Author-provided FSC curve	7.66	8.90	7.89
Unmasked-calculated*	-	-	-

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

## 9 Map-model fit [i](#)

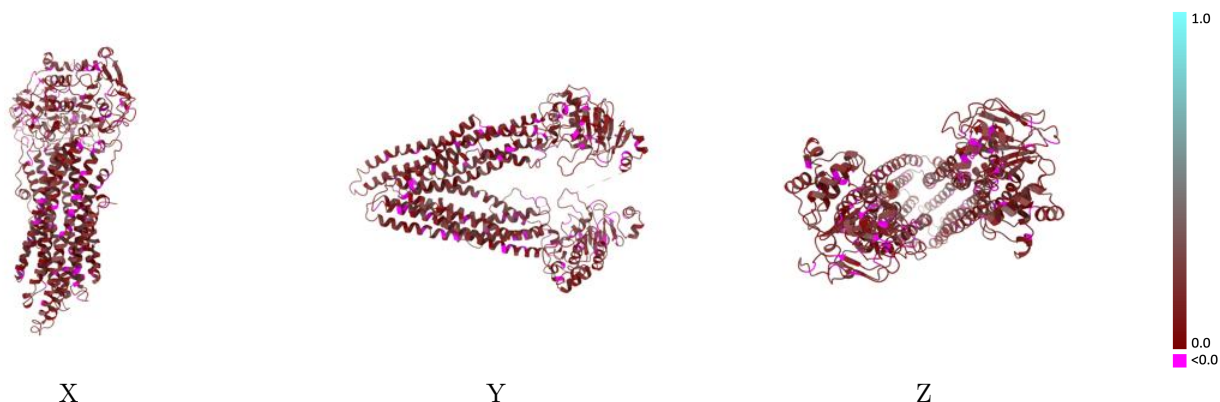
This section contains information regarding the fit between EMDB map EMD-4391 and PDB model 6GDI. Per-residue inclusion information can be found in section [3](#) on page [4](#).

### 9.1 Map-model overlay [i](#)



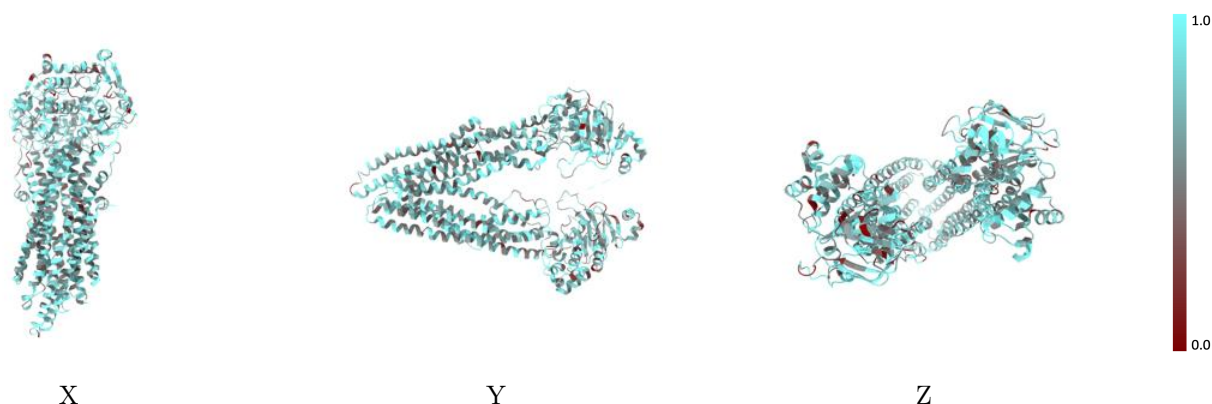
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



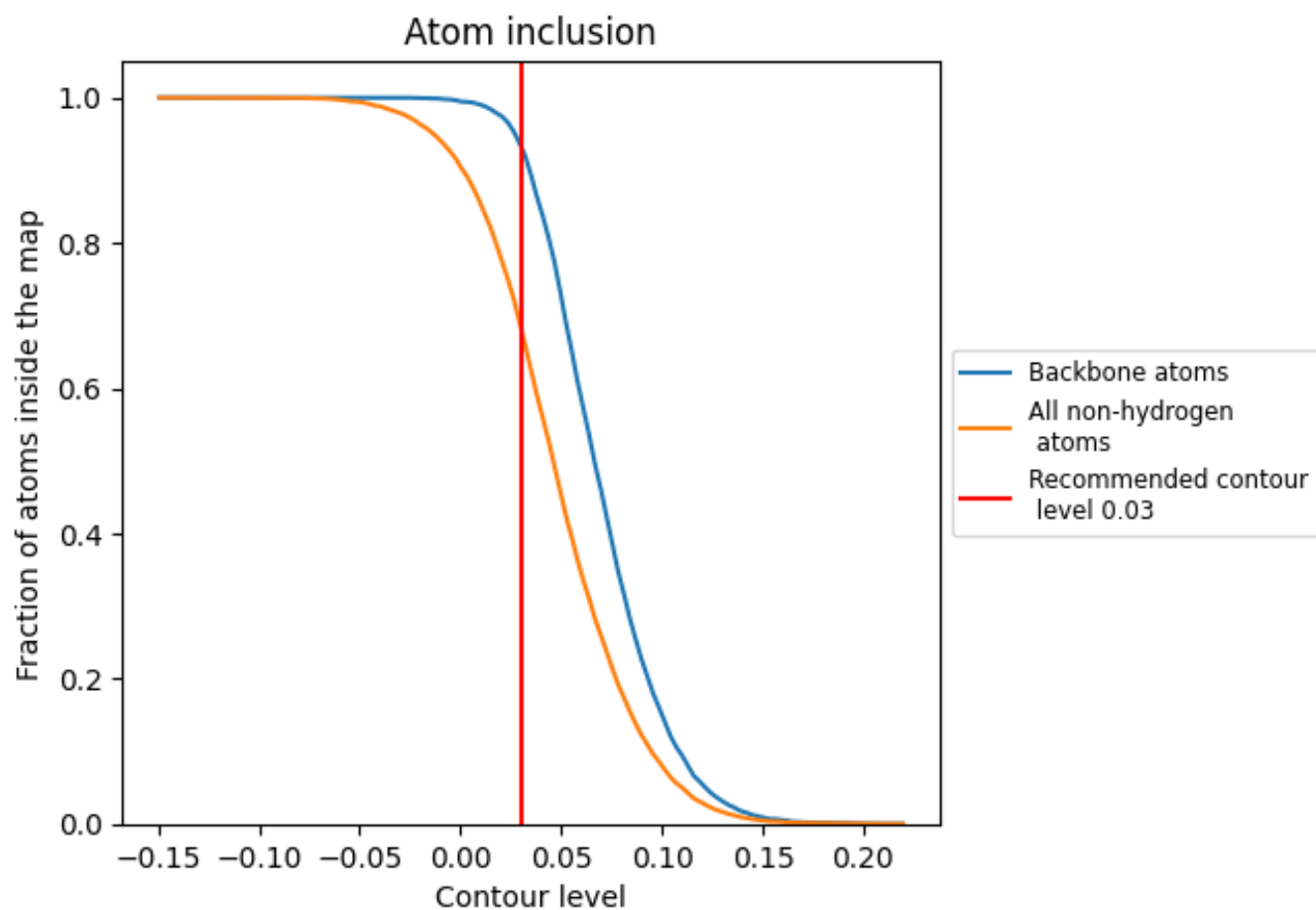
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.03).




## 9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 68% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6833	 0.1410
A	 0.6833	 0.1410

