



Full wwPDB EM Validation Report ⓘ

Dec 17, 2022 – 02:40 pm GMT

PDB ID : 6ZFB
EMDB ID : EMD-11105
Title : Structure of the B. subtilis RNA POLYMERASE in complex with HelD (dimer)
Authors : Pei, H.-P.; Hilal, T.; Huang, Y.-H.; Said, N.; Loll, B.; Wahl, M.C.
Deposited on : 2020-06-17
Resolution : 3.90 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:

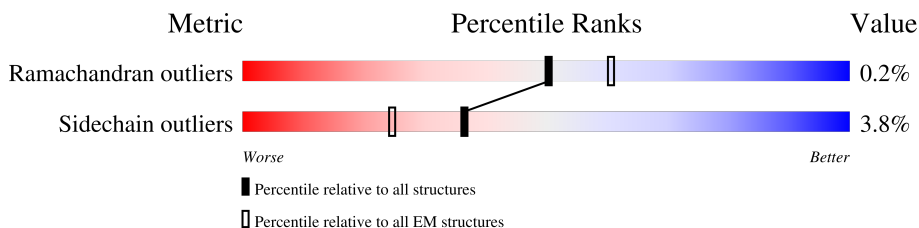
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

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 3.90 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)
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	D	139	
1	d	139	
2	E	69	
2	e	69	
3	U	314	
3	V	314	
3	u	314	
3	v	314	
4	X	1193	

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Mol	Chain	Length	Quality of chain
4	x	1193	 <p>6% 91% 8%</p>
5	Y	1199	 <p>88% 6% 6%</p>
5	y	1199	 <p>88% 6% 6%</p>
6	H	774	 <p>94% 5%</p>
6	h	774	 <p>9% 94% 5%</p>

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 57505 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 DNA-directed RNA polymerase subunit delta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	D	139	998	630	169	197	2	0	0
1	d	139	998	630	169	197	2	0	0

- Molecule 2 is a protein called RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E	69	580	373	92	114	1	0	0
2	e	69	580	373	92	114	1	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	U	231	1774	1116	300	358	0	0
3	V	227	1745	1099	293	353	0	0
3	u	231	1774	1116	300	358	0	0
3	v	227	1745	1099	293	353	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	X	1093	8485	5323	1486	1643	33	0	0
4	x	1092	8478	5318	1485	1642	33	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	Y	1127	8867	5594	1571	1661	41	0	0
5	y	1127	8867	5594	1571	1661	41	0	0

- Molecule 6 is a protein called DNA helicase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	H	771	6306	4005	1086	1184	31	0	0
6	h	771	6306	4005	1086	1184	31	0	0

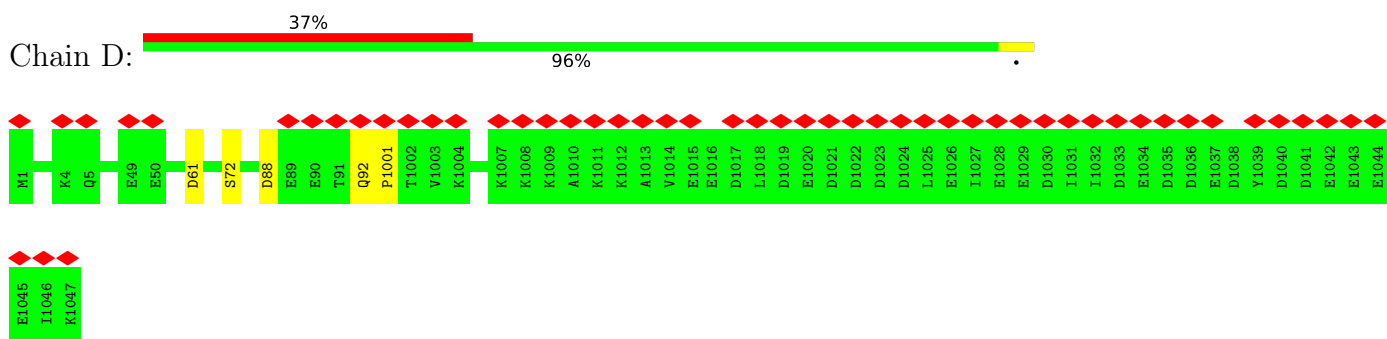
- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
7	Y	1	Total	Zn	0
			1	1	
7	y	1	Total	Zn	0
			1	1	

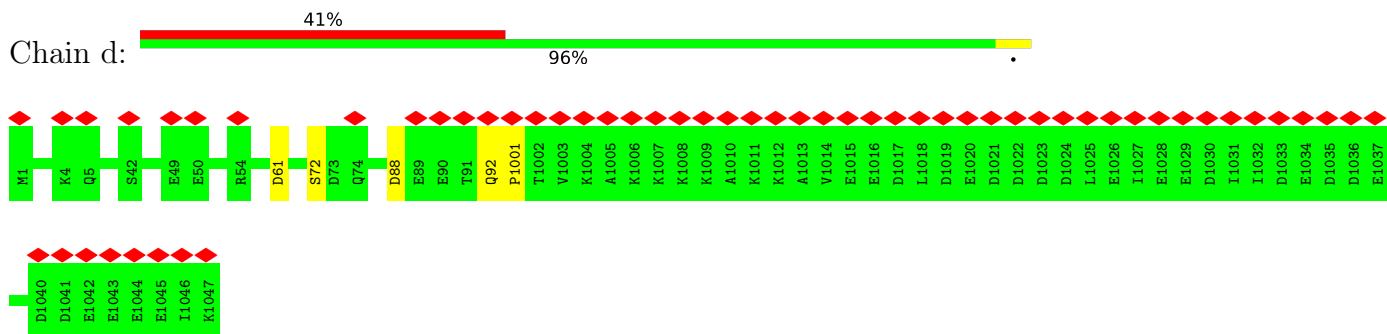
3 Residue-property plots [i](#)

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.

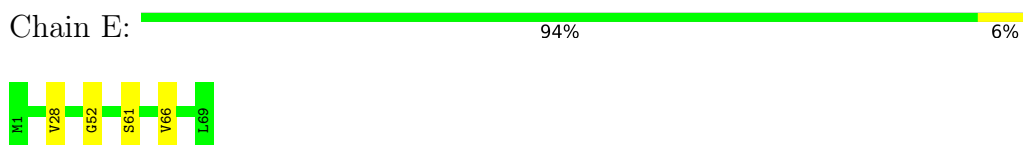
- Molecule 1: DNA-directed RNA polymerase subunit delta



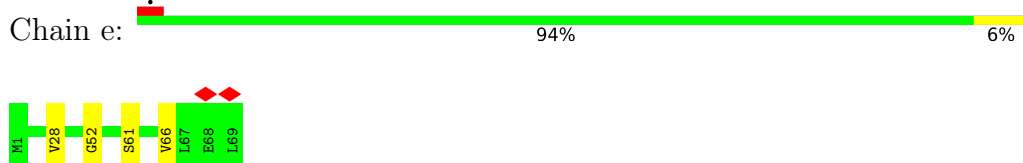
- Molecule 1: DNA-directed RNA polymerase subunit delta

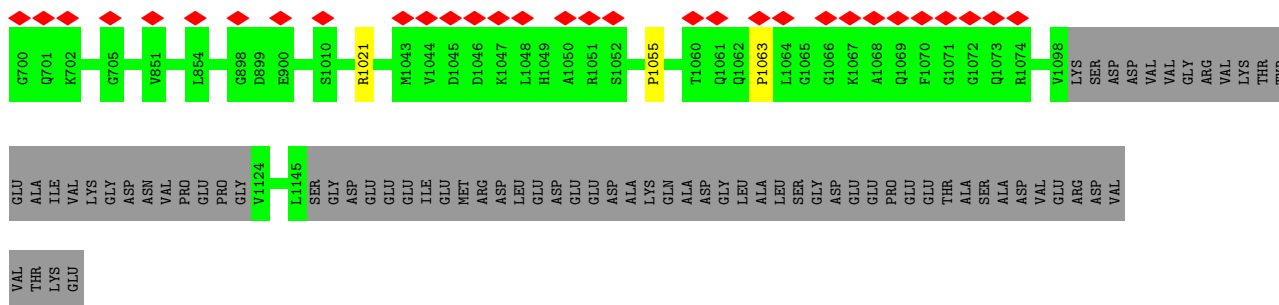


- Molecule 2: RNA polymerase subunit omega

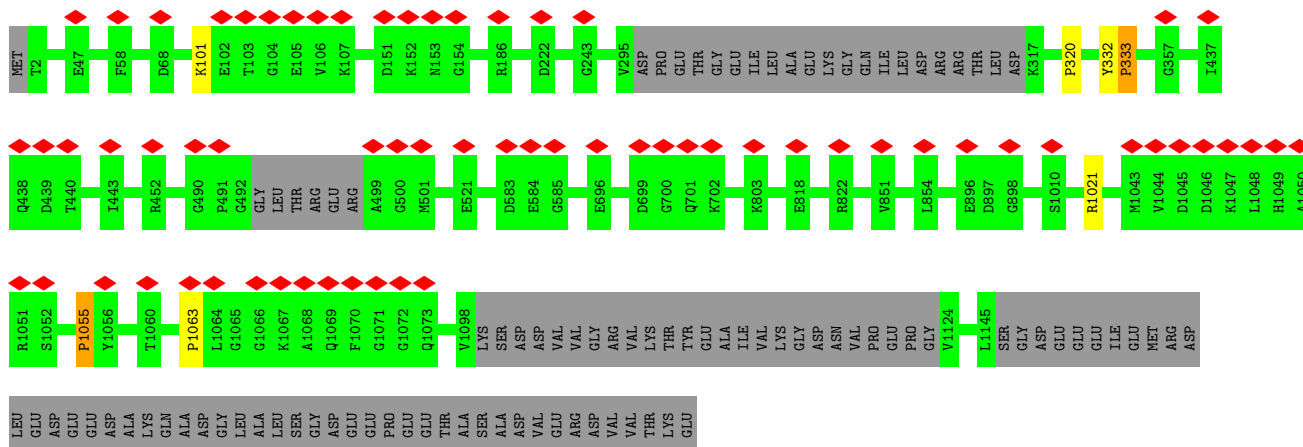


- Molecule 2: RNA polymerase subunit omega

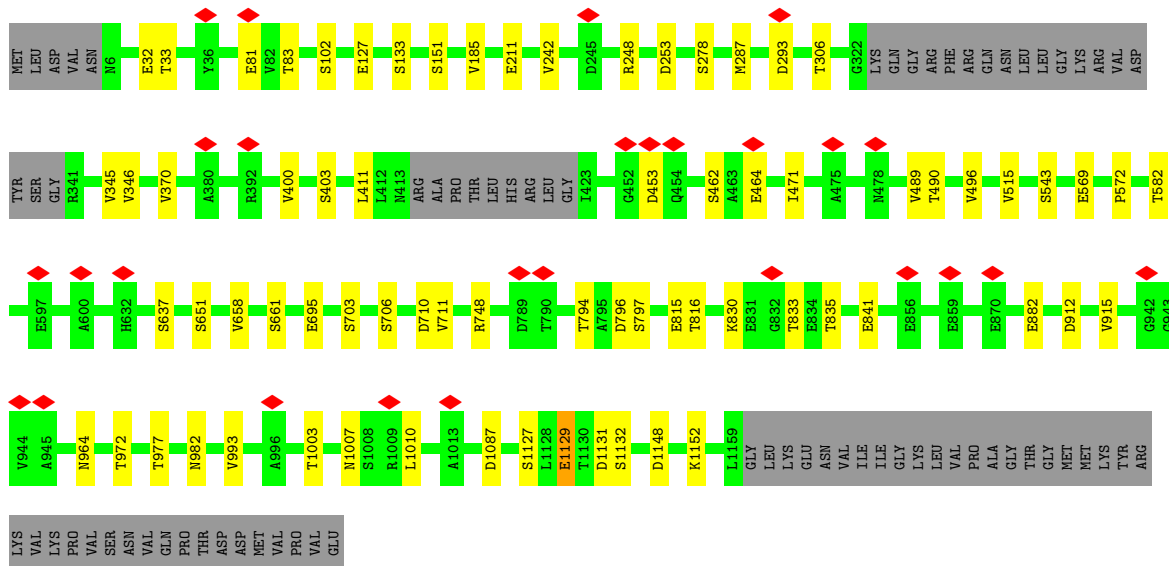
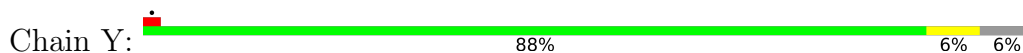





• Molecule 4: DNA-directed RNA polymerase subunit beta

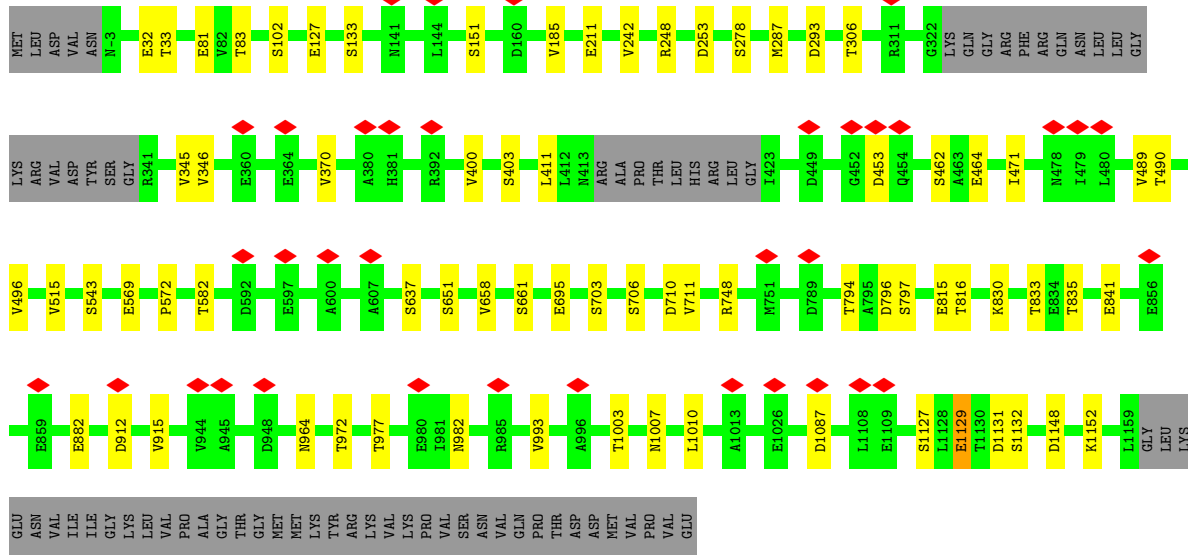


• Molecule 5: DNA-directed RNA polymerase subunit beta'



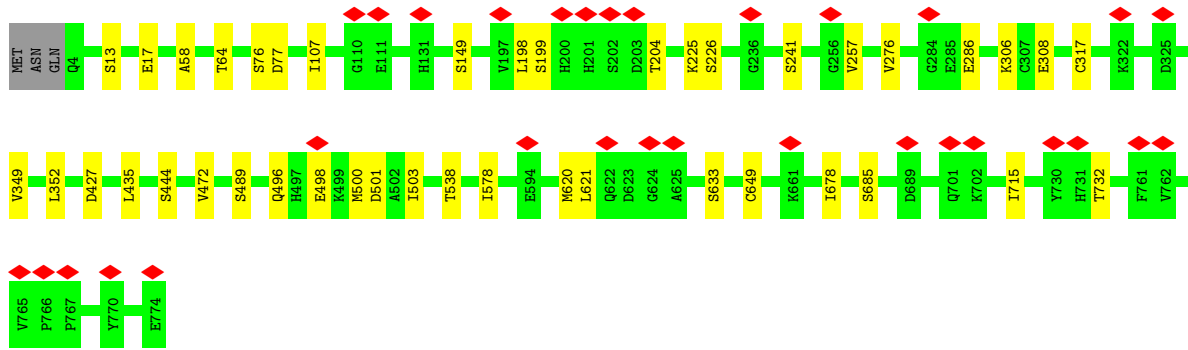
• Molecule 5: DNA-directed RNA polymerase subunit beta'

Chain y: 



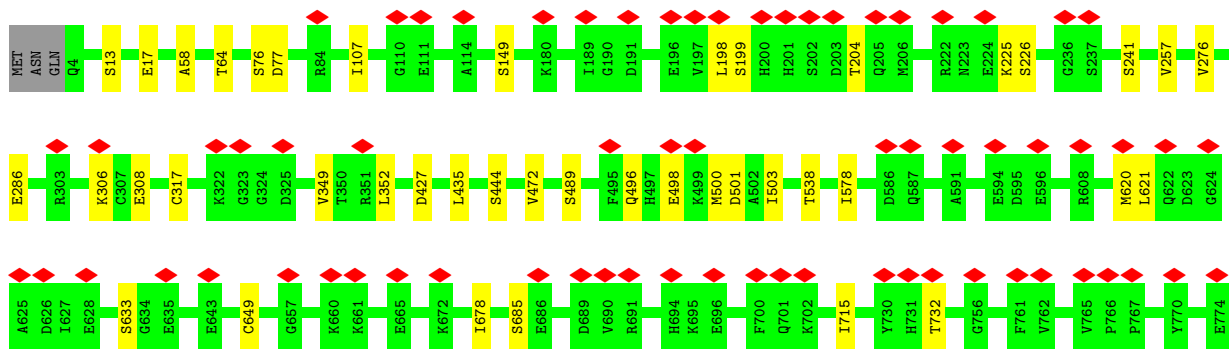
• Molecule 6: DNA helicase

Chain H: 



• Molecule 6: DNA helicase

Chain h: 



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	176374	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)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	96000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.914	Depositor
Minimum map value	-0.463	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.022	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	366.08002, 366.08002, 366.08002	wwPDB
Map dimensions	280, 280, 280	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3074286, 1.3074286, 1.3074286	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:
ZN

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	D	0.25	0/1013	0.41	1/1377 (0.1%)
1	d	0.25	0/1013	0.42	1/1377 (0.1%)
2	E	0.26	0/589	0.47	0/789
2	e	0.26	0/589	0.47	0/789
3	U	0.24	0/1801	0.46	0/2450
3	V	0.24	0/1771	0.45	0/2409
3	u	0.25	0/1801	0.45	0/2450
3	v	0.24	0/1771	0.47	0/2409
4	X	0.25	0/8627	0.44	4/11668 (0.0%)
4	x	0.25	0/8620	0.45	4/11659 (0.0%)
5	Y	0.25	0/9009	0.45	1/12155 (0.0%)
5	y	0.25	0/9009	0.45	1/12155 (0.0%)
6	H	0.26	0/6437	0.45	0/8662
6	h	0.26	0/6437	0.45	0/8662
All	All	0.25	0/58487	0.45	12/79011 (0.0%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	x	333	PRO	N-CA-CB	6.54	111.15	103.30
4	X	333	PRO	N-CA-CB	6.54	111.15	103.30
1	d	1001	PRO	N-CA-CB	5.93	110.42	103.30
1	D	1001	PRO	N-CA-CB	5.91	110.39	103.30
4	x	320	PRO	N-CA-CB	5.69	110.13	103.30
4	X	1055	PRO	N-CA-CB	5.69	110.13	103.30
4	x	1055	PRO	N-CA-CB	5.67	110.10	103.30
4	X	320	PRO	N-CA-CB	5.65	110.08	103.30
4	X	1063	PRO	N-CA-CB	5.58	109.99	103.30
4	x	1063	PRO	N-CA-CB	5.56	109.97	103.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	Y	1129	GLU	CA-CB-CG	5.48	125.45	113.40
5	y	1129	GLU	CA-CB-CG	5.46	125.41	113.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	D	135/139 (97%)	116 (86%)	19 (14%)	0	100	100
1	d	135/139 (97%)	116 (86%)	19 (14%)	0	100	100
2	E	67/69 (97%)	57 (85%)	9 (13%)	1 (2%)	10	45
2	e	67/69 (97%)	57 (85%)	9 (13%)	1 (2%)	10	45
3	U	229/314 (73%)	213 (93%)	16 (7%)	0	100	100
3	V	225/314 (72%)	201 (89%)	23 (10%)	1 (0%)	34	71
3	u	229/314 (73%)	204 (89%)	25 (11%)	0	100	100
3	v	225/314 (72%)	209 (93%)	16 (7%)	0	100	100
4	X	1085/1193 (91%)	993 (92%)	90 (8%)	2 (0%)	47	79
4	x	1084/1193 (91%)	1001 (92%)	80 (7%)	3 (0%)	41	75
5	Y	1121/1199 (94%)	1030 (92%)	89 (8%)	2 (0%)	47	79
5	y	1121/1199 (94%)	1030 (92%)	89 (8%)	2 (0%)	47	79
6	H	769/774 (99%)	701 (91%)	66 (9%)	2 (0%)	41	75
6	h	769/774 (99%)	702 (91%)	65 (8%)	2 (0%)	41	75

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	7261/8004 (91%)	6630 (91%)	615 (8%)	16 (0%)	50 79

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	X	333	PRO
4	x	333	PRO
4	X	332	TYR
2	E	52	GLY
5	Y	1087	ASP
2	e	52	GLY
4	x	332	TYR
5	y	1087	ASP
6	H	496	GLN
6	h	496	GLN
5	Y	572	PRO
6	H	58	ALA
5	y	572	PRO
6	h	58	ALA
4	x	1055	PRO
3	V	161	ILE

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	D	82/126 (65%)	78 (95%)	4 (5%)	25 54
1	d	82/126 (65%)	78 (95%)	4 (5%)	25 54
2	E	65/65 (100%)	62 (95%)	3 (5%)	27 55
2	e	65/65 (100%)	62 (95%)	3 (5%)	27 55
3	U	197/273 (72%)	197 (100%)	0	100 100
3	V	195/273 (71%)	195 (100%)	0	100 100
3	u	197/273 (72%)	197 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	v	195/273 (71%)	195 (100%)	0	100	100
4	X	902/1026 (88%)	901 (100%)	1 (0%)	93	97
4	x	901/1026 (88%)	899 (100%)	2 (0%)	93	96
5	Y	965/1027 (94%)	895 (93%)	70 (7%)	14	43
5	y	965/1027 (94%)	895 (93%)	70 (7%)	14	43
6	H	679/682 (100%)	639 (94%)	40 (6%)	19	49
6	h	679/682 (100%)	639 (94%)	40 (6%)	19	49
All	All	6169/6944 (89%)	5932 (96%)	237 (4%)	36	59

All (237) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	61	ASP
1	D	72	SER
1	D	88	ASP
1	D	92	GLN
2	E	28	VAL
2	E	61	SER
2	E	66	VAL
4	X	1021	ARG
5	Y	32	GLU
5	Y	33	THR
5	Y	81	GLU
5	Y	83	THR
5	Y	102	SER
5	Y	127	GLU
5	Y	133	SER
5	Y	151	SER
5	Y	185	VAL
5	Y	211	GLU
5	Y	242	VAL
5	Y	248	ARG
5	Y	253	ASP
5	Y	278	SER
5	Y	287	MET
5	Y	293	ASP
5	Y	306	THR
5	Y	345	VAL
5	Y	346	VAL
5	Y	370	VAL

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Mol	Chain	Res	Type
5	Y	400	VAL
5	Y	403	SER
5	Y	411	LEU
5	Y	453	ASP
5	Y	462	SER
5	Y	464	GLU
5	Y	471	ILE
5	Y	489	VAL
5	Y	490	THR
5	Y	496	VAL
5	Y	515	VAL
5	Y	543	SER
5	Y	569	GLU
5	Y	582	THR
5	Y	637	SER
5	Y	651	SER
5	Y	658	VAL
5	Y	661	SER
5	Y	695	GLU
5	Y	703	SER
5	Y	706	SER
5	Y	710	ASP
5	Y	711	VAL
5	Y	748	ARG
5	Y	794	THR
5	Y	796	ASP
5	Y	797	SER
5	Y	815	GLU
5	Y	816	THR
5	Y	830	LYS
5	Y	833	THR
5	Y	835	THR
5	Y	841	GLU
5	Y	882	GLU
5	Y	912	ASP
5	Y	915	VAL
5	Y	964	ASN
5	Y	972	THR
5	Y	977	THR
5	Y	982	ASN
5	Y	993	VAL
5	Y	1003	THR

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Mol	Chain	Res	Type
5	Y	1007	ASN
5	Y	1010	LEU
5	Y	1127	SER
5	Y	1129	GLU
5	Y	1131	ASP
5	Y	1132	SER
5	Y	1148	ASP
5	Y	1152	LYS
6	H	13	SER
6	H	17	GLU
6	H	64	THR
6	H	76	SER
6	H	77	ASP
6	H	107	ILE
6	H	149	SER
6	H	198	LEU
6	H	199	SER
6	H	204	THR
6	H	225	LYS
6	H	226	SER
6	H	241	SER
6	H	257	VAL
6	H	276	VAL
6	H	286	GLU
6	H	306	LYS
6	H	308	GLU
6	H	317	CYS
6	H	349	VAL
6	H	352	LEU
6	H	427	ASP
6	H	435	LEU
6	H	444	SER
6	H	472	VAL
6	H	489	SER
6	H	498	GLU
6	H	500	MET
6	H	501	ASP
6	H	503	ILE
6	H	538	THR
6	H	578	ILE
6	H	620	MET
6	H	621	LEU

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Mol	Chain	Res	Type
6	H	633	SER
6	H	649	CYS
6	H	678	ILE
6	H	685	SER
6	H	715	ILE
6	H	732	THR
1	d	61	ASP
1	d	72	SER
1	d	88	ASP
1	d	92	GLN
2	e	28	VAL
2	e	61	SER
2	e	66	VAL
4	x	101	LYS
4	x	1021	ARG
5	y	32	GLU
5	y	33	THR
5	y	81	GLU
5	y	83	THR
5	y	102	SER
5	y	127	GLU
5	y	133	SER
5	y	151	SER
5	y	185	VAL
5	y	211	GLU
5	y	242	VAL
5	y	248	ARG
5	y	253	ASP
5	y	278	SER
5	y	287	MET
5	y	293	ASP
5	y	306	THR
5	y	345	VAL
5	y	346	VAL
5	y	370	VAL
5	y	400	VAL
5	y	403	SER
5	y	411	LEU
5	y	453	ASP
5	y	462	SER
5	y	464	GLU
5	y	471	ILE

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Mol	Chain	Res	Type
5	y	489	VAL
5	y	490	THR
5	y	496	VAL
5	y	515	VAL
5	y	543	SER
5	y	569	GLU
5	y	582	THR
5	y	637	SER
5	y	651	SER
5	y	658	VAL
5	y	661	SER
5	y	695	GLU
5	y	703	SER
5	y	706	SER
5	y	710	ASP
5	y	711	VAL
5	y	748	ARG
5	y	794	THR
5	y	796	ASP
5	y	797	SER
5	y	815	GLU
5	y	816	THR
5	y	830	LYS
5	y	833	THR
5	y	835	THR
5	y	841	GLU
5	y	882	GLU
5	y	912	ASP
5	y	915	VAL
5	y	964	ASN
5	y	972	THR
5	y	977	THR
5	y	982	ASN
5	y	993	VAL
5	y	1003	THR
5	y	1007	ASN
5	y	1010	LEU
5	y	1127	SER
5	y	1129	GLU
5	y	1131	ASP
5	y	1132	SER
5	y	1148	ASP

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Mol	Chain	Res	Type
5	y	1152	LYS
6	h	13	SER
6	h	17	GLU
6	h	64	THR
6	h	76	SER
6	h	77	ASP
6	h	107	ILE
6	h	149	SER
6	h	198	LEU
6	h	199	SER
6	h	204	THR
6	h	225	LYS
6	h	226	SER
6	h	241	SER
6	h	257	VAL
6	h	276	VAL
6	h	286	GLU
6	h	306	LYS
6	h	308	GLU
6	h	317	CYS
6	h	349	VAL
6	h	352	LEU
6	h	427	ASP
6	h	435	LEU
6	h	444	SER
6	h	472	VAL
6	h	489	SER
6	h	498	GLU
6	h	500	MET
6	h	501	ASP
6	h	503	ILE
6	h	538	THR
6	h	578	ILE
6	h	620	MET
6	h	621	LEU
6	h	633	SER
6	h	649	CYS
6	h	678	ILE
6	h	685	SER
6	h	715	ILE
6	h	732	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34)

such sidechains are listed below:

Mol	Chain	Res	Type
3	V	81	HIS
3	V	143	GLN
4	X	600	ASN
5	Y	478	ASN
5	Y	579	ASN
5	Y	809	GLN
5	Y	854	HIS
5	Y	940	HIS
5	Y	982	ASN
5	Y	994	GLN
5	Y	1049	HIS
6	H	290	GLN
6	H	342	GLN
6	H	555	GLN
3	v	38	ASN
3	v	122	ASN
3	v	222	ASN
4	x	100	ASN
4	x	128	ASN
4	x	375	ASN
4	x	600	ASN
4	x	720	GLN
5	y	298	ASN
5	y	478	ASN
5	y	579	ASN
5	y	809	GLN
5	y	854	HIS
5	y	940	HIS
5	y	982	ASN
5	y	994	GLN
5	y	1049	HIS
6	h	290	GLN
6	h	342	GLN
6	h	555	GLN

5.3.3 RNA ⓘ

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](#)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	D	1
1	d	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D	92:GLN	C	1001:PRO	N	26.80
1	d	92:GLN	C	1001:PRO	N	26.80

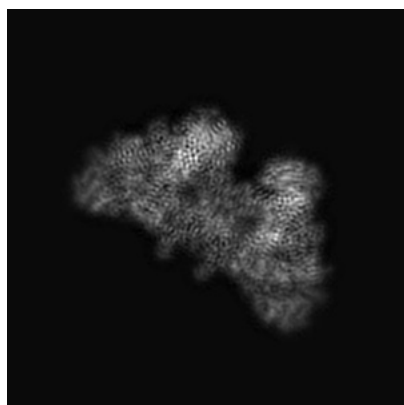
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11105. These allow visual inspection of the internal detail of the map and identification of artifacts.

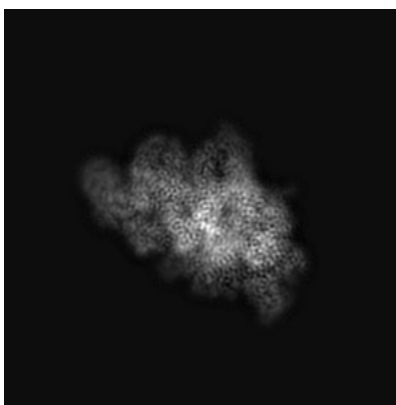
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

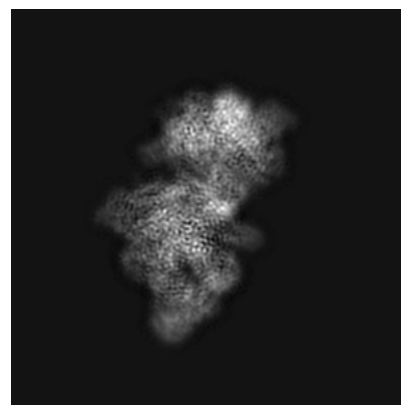
6.1.1 Primary map



X



Y

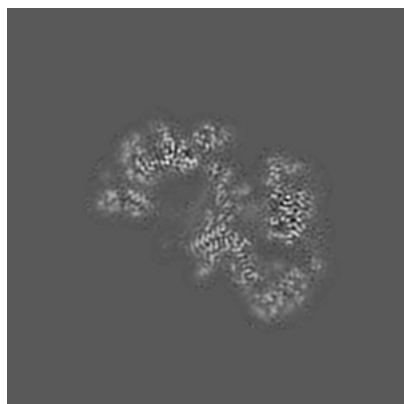


Z

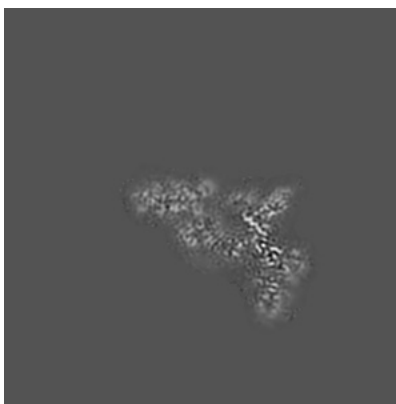
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

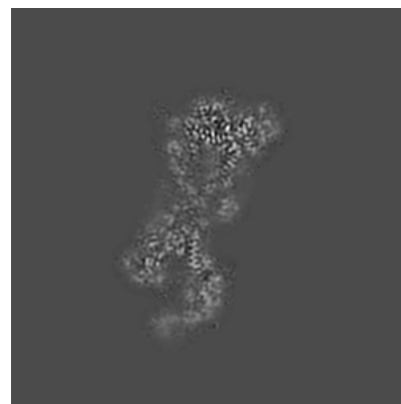
6.2.1 Primary map



X Index: 140



Y Index: 140

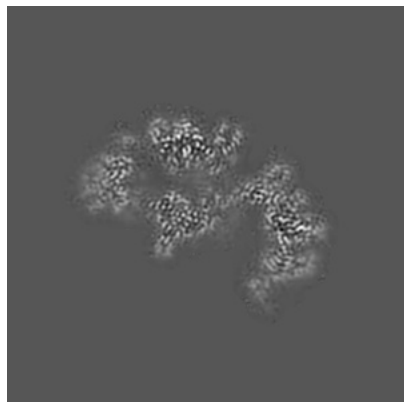


Z Index: 140

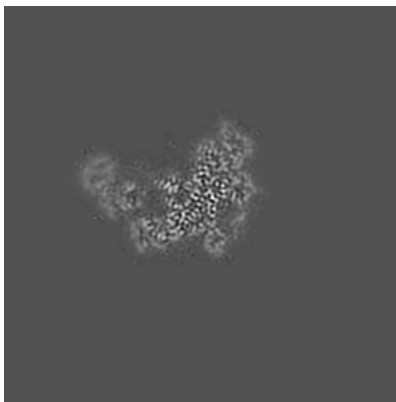
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

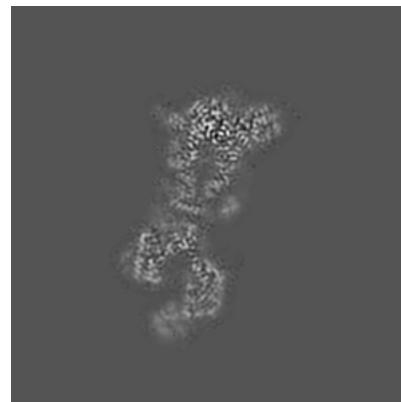
6.3.1 Primary map



X Index: 125



Y Index: 198



Z Index: 143

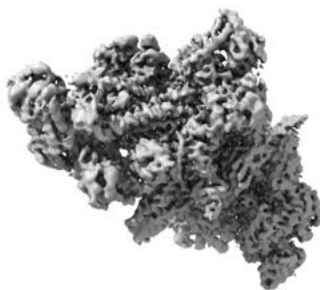
The images above show the largest variance slices of the map in three orthogonal directions.

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 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

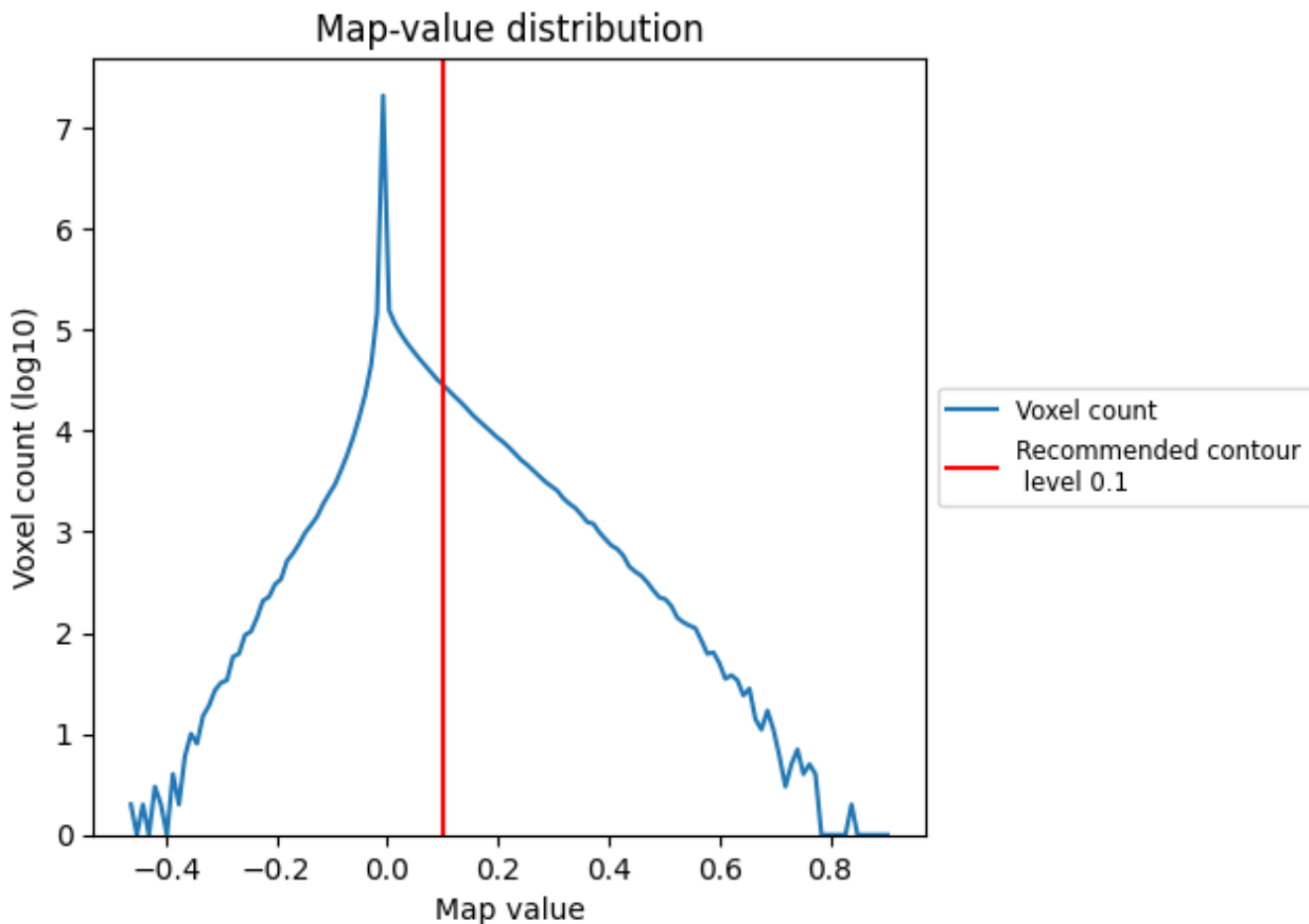
6.5 Mask visualisation

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

7 Map analysis [i](#)

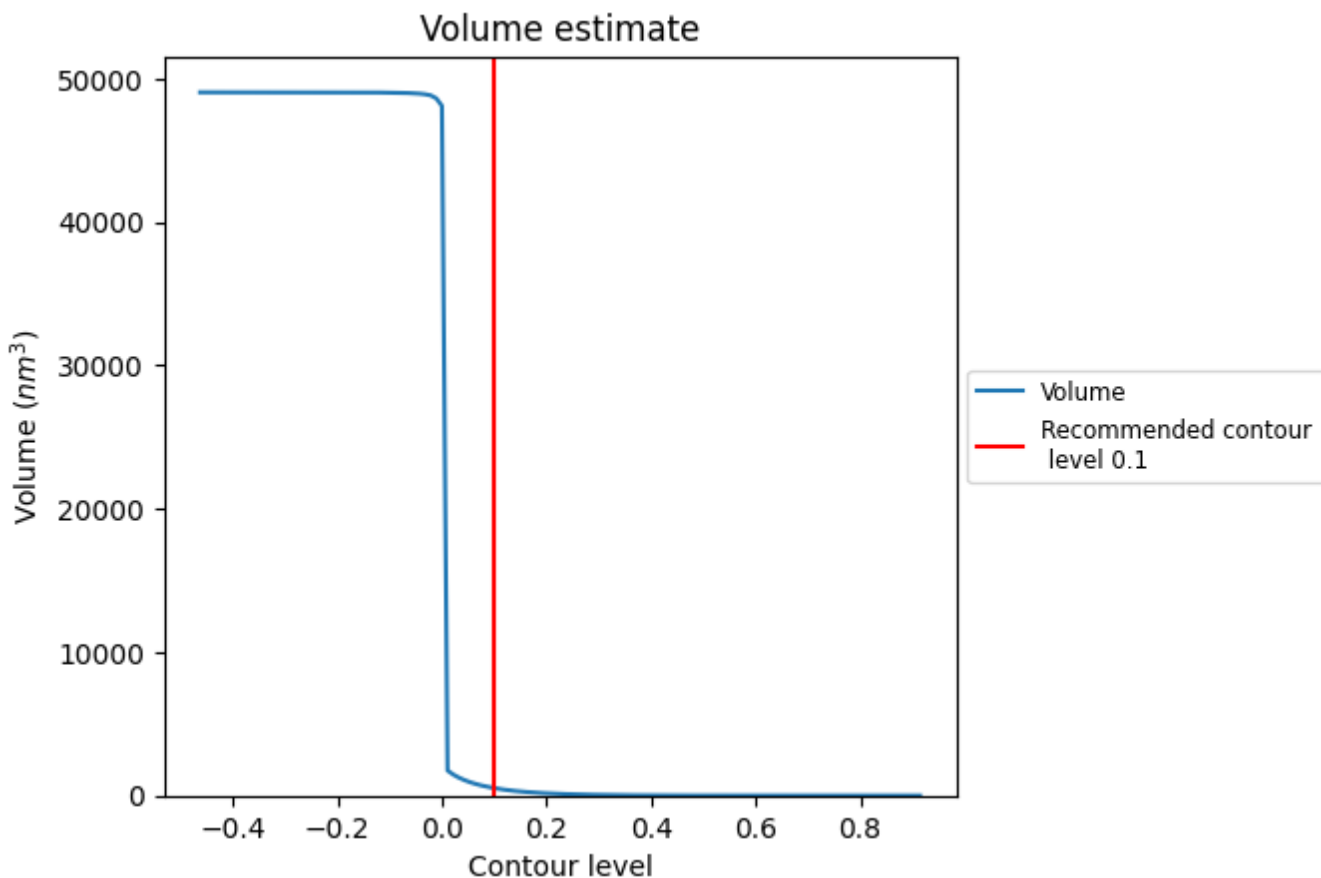
This section contains the results of statistical analysis of the map.

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.

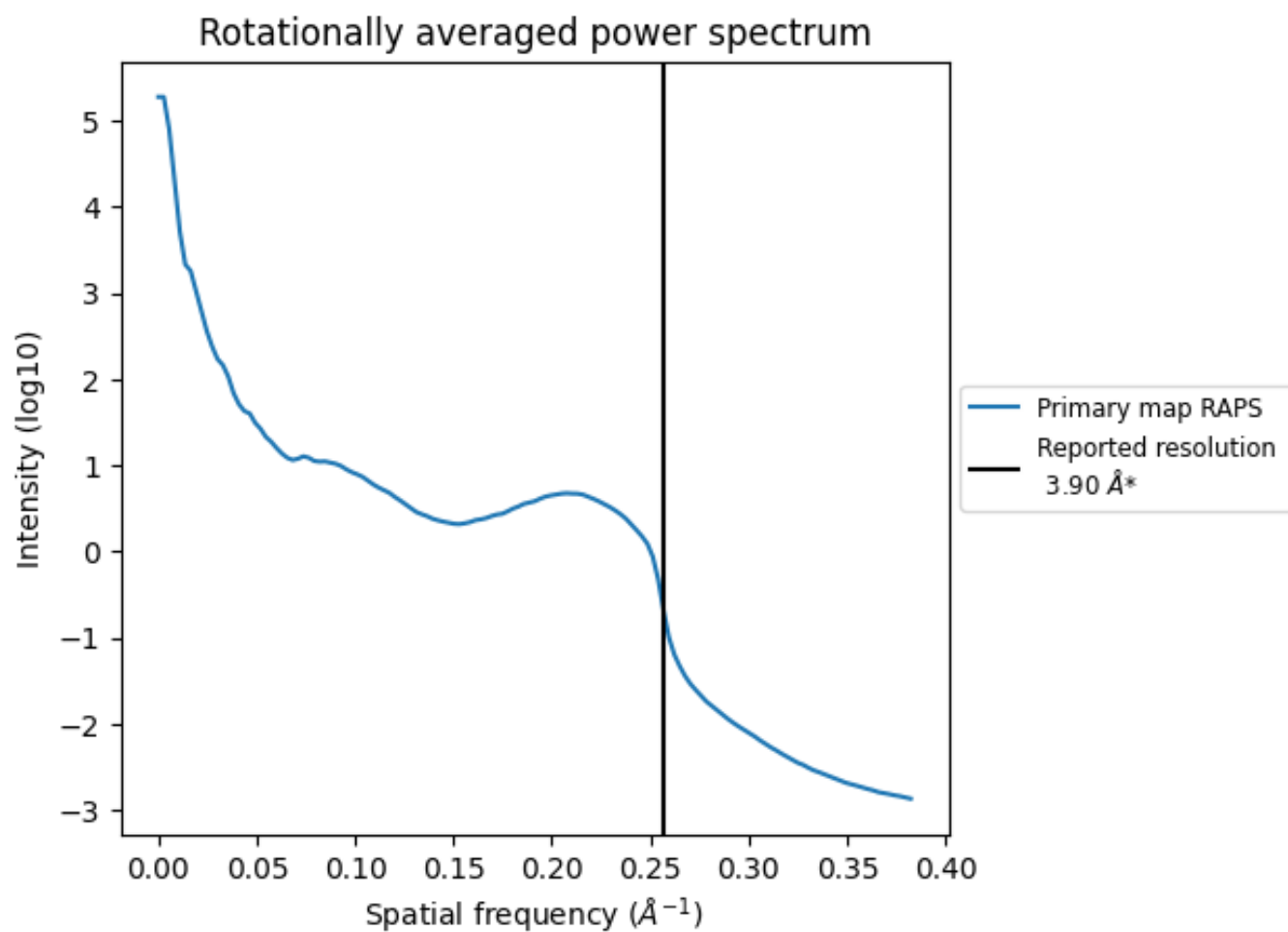
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 519 nm³; this corresponds to an approximate mass of 469 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](#)

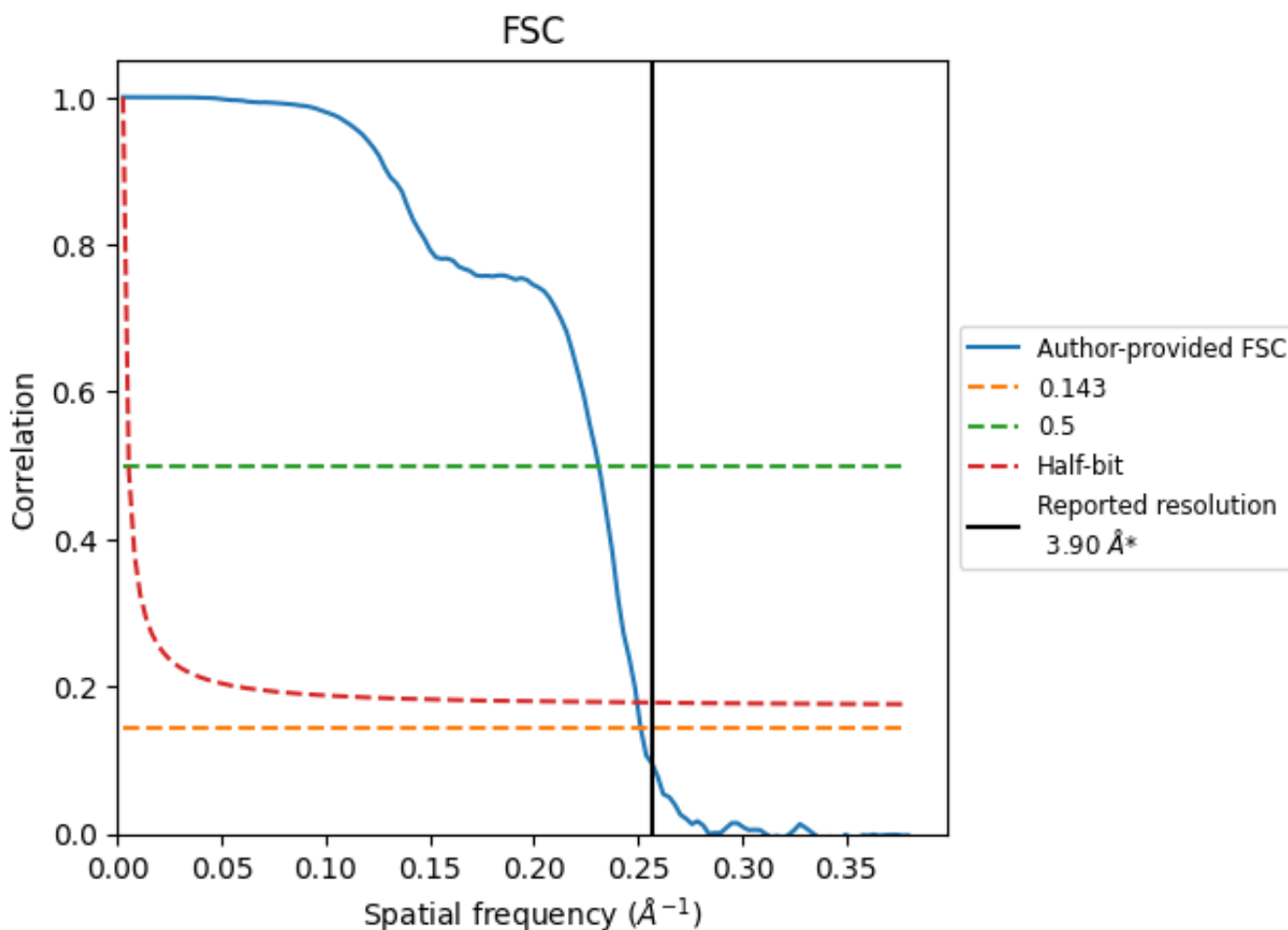


*Reported resolution corresponds to spatial frequency of 0.256\AA^{-1}

8 Fourier-Shell correlation [\(i\)](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [\(i\)](#)



*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

8.2 Resolution estimates [i](#)

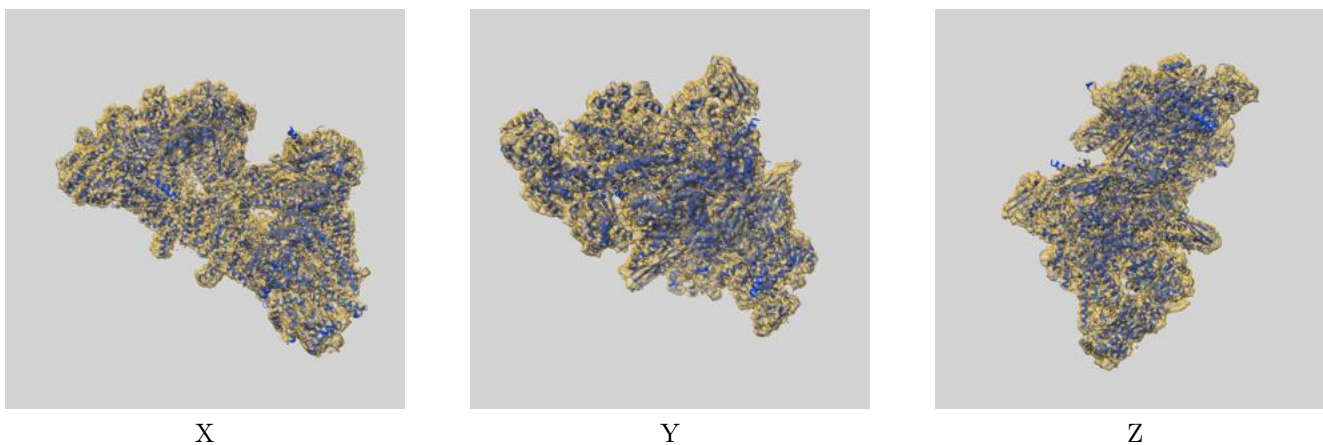
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	3.98	4.33	4.01
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

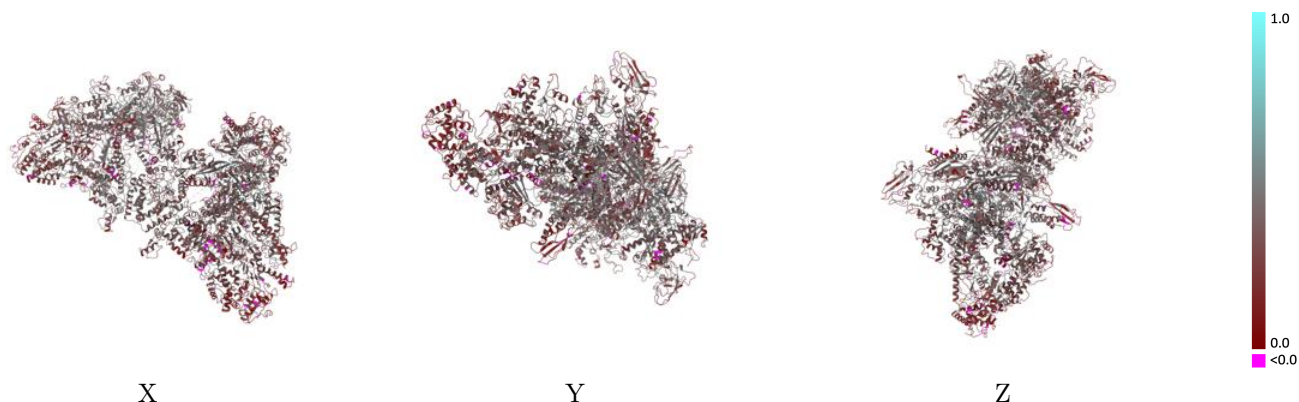
This section contains information regarding the fit between EMDB map EMD-11105 and PDB model 6ZFB. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay [i](#)



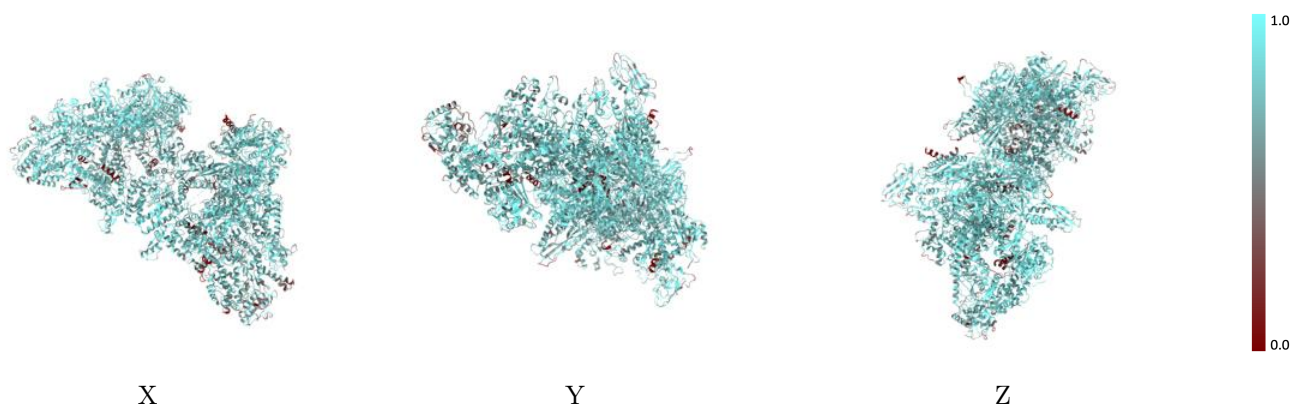
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



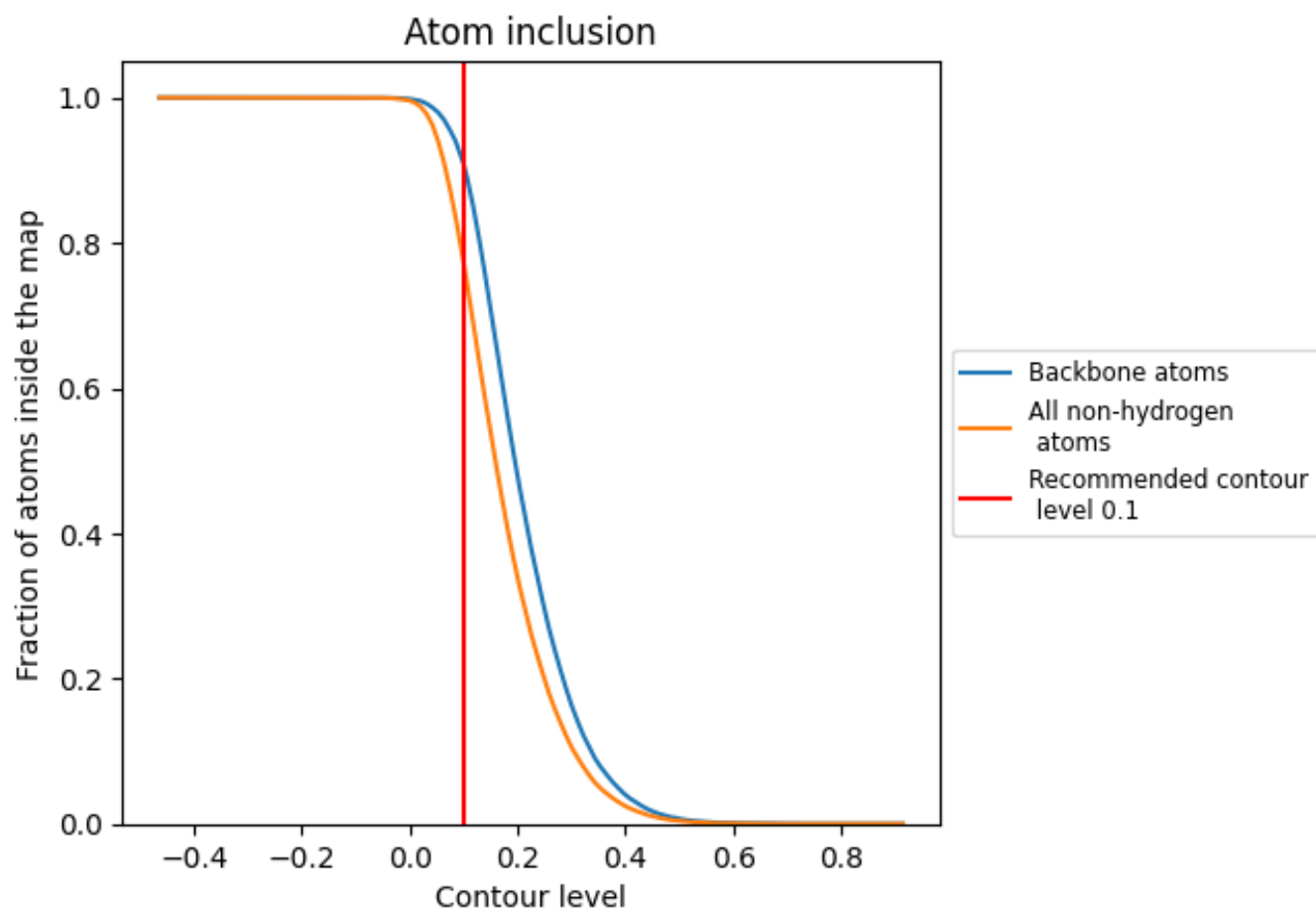
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.1).































9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 78% 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 (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7753	 0.3440
D	 0.5740	 0.2490
E	 0.8053	 0.3370
H	 0.7891	 0.3110
U	 0.7859	 0.3690
V	 0.7468	 0.3290
X	 0.8206	 0.3750
Y	 0.8106	 0.3730
d	 0.5507	 0.2240
e	 0.7789	 0.3360
h	 0.7167	 0.2900
u	 0.7378	 0.3390
v	 0.7072	 0.3120
x	 0.7841	 0.3640
y	 0.7911	 0.3560

