



wwPDB EM Validation Summary Report ⓘ

Nov 7, 2022 – 10:37 AM EST

PDB ID : 6NZD
EMDB ID : EMD-0554
Title : Cryo-EM Structure of the Lysosomal Folliculin Complex (FLCN-FNIP2-RagA-RagC-Ragulator)
Authors : Fromm, S.A.; Young, L.N.; Hurley, J.H.
Deposited on : 2019-02-13
Resolution : 3.60 Å (reported)
Based on initial models : 6EHR, 3LLU, 3V42, 6B9X, 6CES

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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

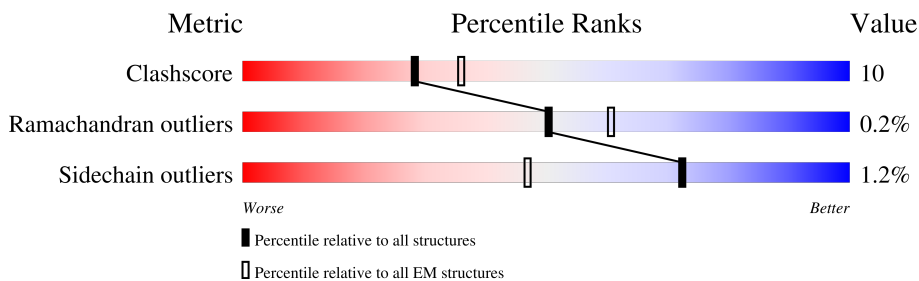
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.60 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.



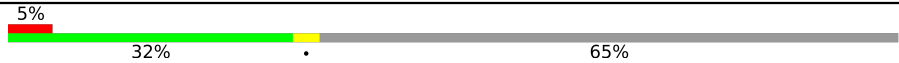
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	166	
2	B	127	
3	C	124	
4	D	99	
5	E	173	
6	F	313	
7	G	404	
8	H	622	

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Mol	Chain	Length	Quality of chain
9	I	1117	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a red segment on the left labeled '5%', a green segment in the middle labeled '32%', and a grey segment on the right labeled '65%'. A small black dot is located at the end of the green segment.</p>

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 13633 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 Ragulator complex protein LAMTOR1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	A	81	622	397	103	122	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	SER	-	expression tag	UNP Q6IAA8
A	-3	ASN	-	expression tag	UNP Q6IAA8
A	-2	ALA	-	expression tag	UNP Q6IAA8
A	-1	GLU	-	expression tag	UNP Q6IAA8
A	0	PHE	-	expression tag	UNP Q6IAA8
A	1	MET	-	expression tag	UNP Q6IAA8
A	2	ALA	-	expression tag	UNP Q6IAA8
A	3	CYS	-	expression tag	UNP Q6IAA8
A	4	CYS	-	expression tag	UNP Q6IAA8

- Molecule 2 is a protein called Ragulator complex protein LAMTOR2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	126	949	596	163	183	7	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-1	GLY	-	expression tag	UNP Q9Y2Q5
B	0	ALA	-	expression tag	UNP Q9Y2Q5

- Molecule 3 is a protein called Ragulator complex protein LAMTOR3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	121	939	604	158	176	1	0	0

- Molecule 4 is a protein called Ragulator complex protein LAMTOR4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	90	684	427	125	130	2	0	0

- Molecule 5 is a protein called Hepatitis B virus x interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	91	666	406	115	138	7	0	0

- Molecule 6 is a protein called Ras-related GTP-binding protein A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	227	1830	1169	310	338	13	0	0

- Molecule 7 is a protein called Ras-related GTP-binding protein C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	299	2429	1570	391	454	14	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	-4	GLY	-	expression tag	UNP Q9HB90
G	-3	ALA	-	expression tag	UNP Q9HB90
G	-2	ASP	-	expression tag	UNP Q9HB90
G	-1	SER	-	expression tag	UNP Q9HB90
G	0	ARG	-	expression tag	UNP Q9HB90
G	181	ASN	ASP	engineered mutation	UNP Q9HB90

- Molecule 8 is a protein called Folliculin.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	387	2934	1896	510	508	20	0	0

There are 43 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-42	MET	-	initiating methionine	UNP Q8NFG4
H	-41	ALA	-	expression tag	UNP Q8NFG4
H	-40	SER	-	expression tag	UNP Q8NFG4
H	-39	TRP	-	expression tag	UNP Q8NFG4
H	-38	SER	-	expression tag	UNP Q8NFG4
H	-37	HIS	-	expression tag	UNP Q8NFG4
H	-36	PRO	-	expression tag	UNP Q8NFG4
H	-35	GLN	-	expression tag	UNP Q8NFG4
H	-34	PHE	-	expression tag	UNP Q8NFG4
H	-33	GLU	-	expression tag	UNP Q8NFG4
H	-32	LYS	-	expression tag	UNP Q8NFG4
H	-31	GLY	-	expression tag	UNP Q8NFG4
H	-30	GLY	-	expression tag	UNP Q8NFG4
H	-29	GLY	-	expression tag	UNP Q8NFG4
H	-28	ALA	-	expression tag	UNP Q8NFG4
H	-27	ARG	-	expression tag	UNP Q8NFG4
H	-26	GLY	-	expression tag	UNP Q8NFG4
H	-25	GLY	-	expression tag	UNP Q8NFG4
H	-24	SER	-	expression tag	UNP Q8NFG4
H	-23	GLY	-	expression tag	UNP Q8NFG4
H	-22	GLY	-	expression tag	UNP Q8NFG4
H	-21	GLY	-	expression tag	UNP Q8NFG4
H	-20	SER	-	expression tag	UNP Q8NFG4
H	-19	TRP	-	expression tag	UNP Q8NFG4
H	-18	SER	-	expression tag	UNP Q8NFG4
H	-17	HIS	-	expression tag	UNP Q8NFG4
H	-16	PRO	-	expression tag	UNP Q8NFG4
H	-15	GLN	-	expression tag	UNP Q8NFG4
H	-14	PHE	-	expression tag	UNP Q8NFG4
H	-13	GLU	-	expression tag	UNP Q8NFG4
H	-12	LYS	-	expression tag	UNP Q8NFG4
H	-11	GLY	-	expression tag	UNP Q8NFG4
H	-10	PHE	-	expression tag	UNP Q8NFG4
H	-9	ASP	-	expression tag	UNP Q8NFG4
H	-8	TYR	-	expression tag	UNP Q8NFG4
H	-7	LYS	-	expression tag	UNP Q8NFG4
H	-6	ASP	-	expression tag	UNP Q8NFG4
H	-5	ASP	-	expression tag	UNP Q8NFG4
H	-4	ASP	-	expression tag	UNP Q8NFG4
H	-3	ASP	-	expression tag	UNP Q8NFG4
H	-2	LYS	-	expression tag	UNP Q8NFG4
H	-1	GLY	-	expression tag	UNP Q8NFG4
H	0	THR	-	expression tag	UNP Q8NFG4

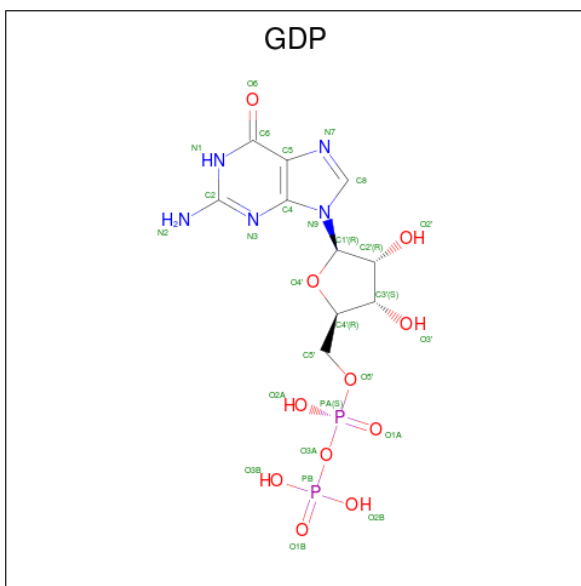
- Molecule 9 is a protein called Folliculin-interacting protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	388	2520	1598	459	454	9	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	-2	GLY	-	expression tag	UNP Q9P278
I	-1	GLY	-	expression tag	UNP Q9P278
I	0	THR	-	expression tag	UNP Q9P278

- Molecule 10 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



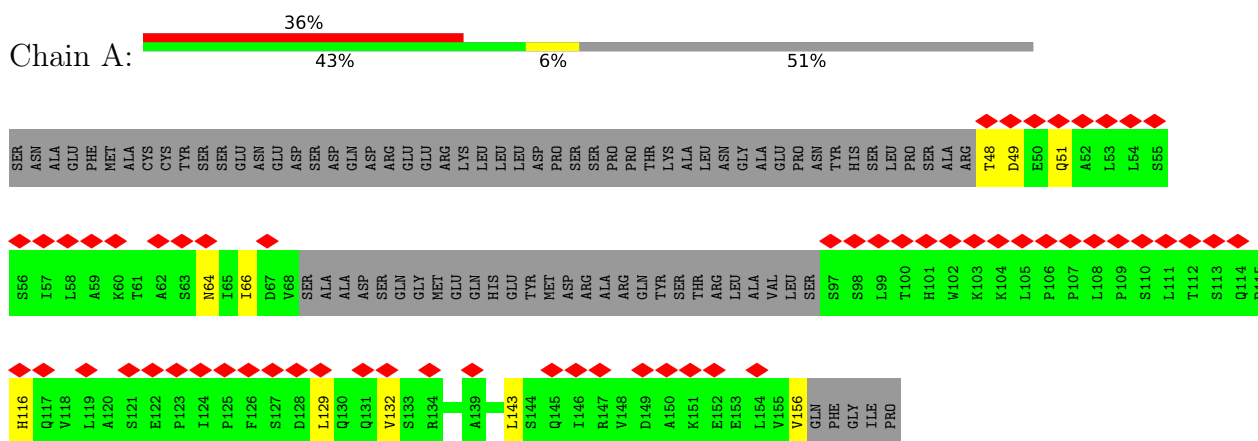
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
10	F	1	28	10	5	11	2	0

- Molecule 11 is 9-{5-O-[(S)-hydroxy{[(R)-hydroxy(thiophosphonoxy)phosphoryl]oxy}phosphoryl]-alpha-L-arabinofuranosyl}-3,9-dihydro-1H-purine-2,6-dione (three-letter code: L8S) (formula: $C_{10}H_{15}N_4O_{14}P_3S$).

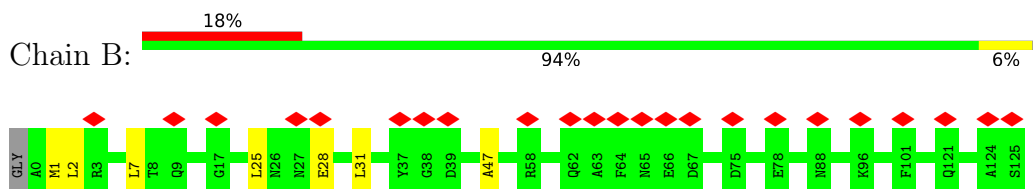
3 Residue-property plots [i](#)

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.

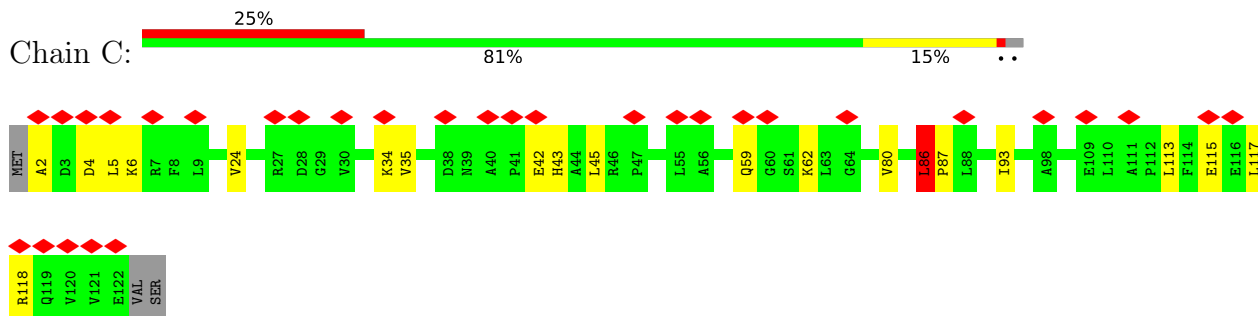
- Molecule 1: Regulator complex protein LAMTOR1



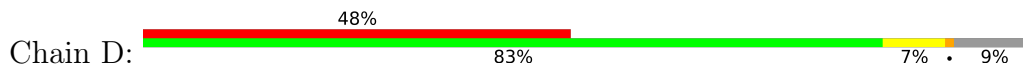
- Molecule 2: Regulator complex protein LAMTOR2

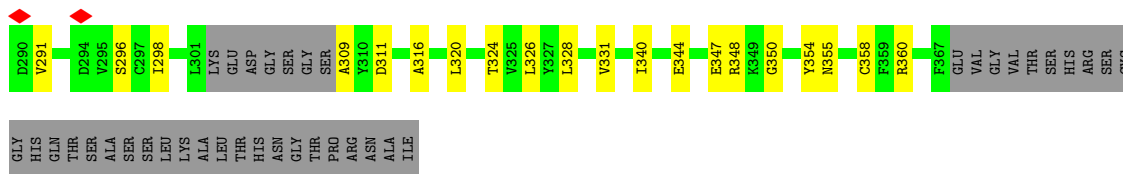


- Molecule 3: Regulator complex protein LAMTOR3

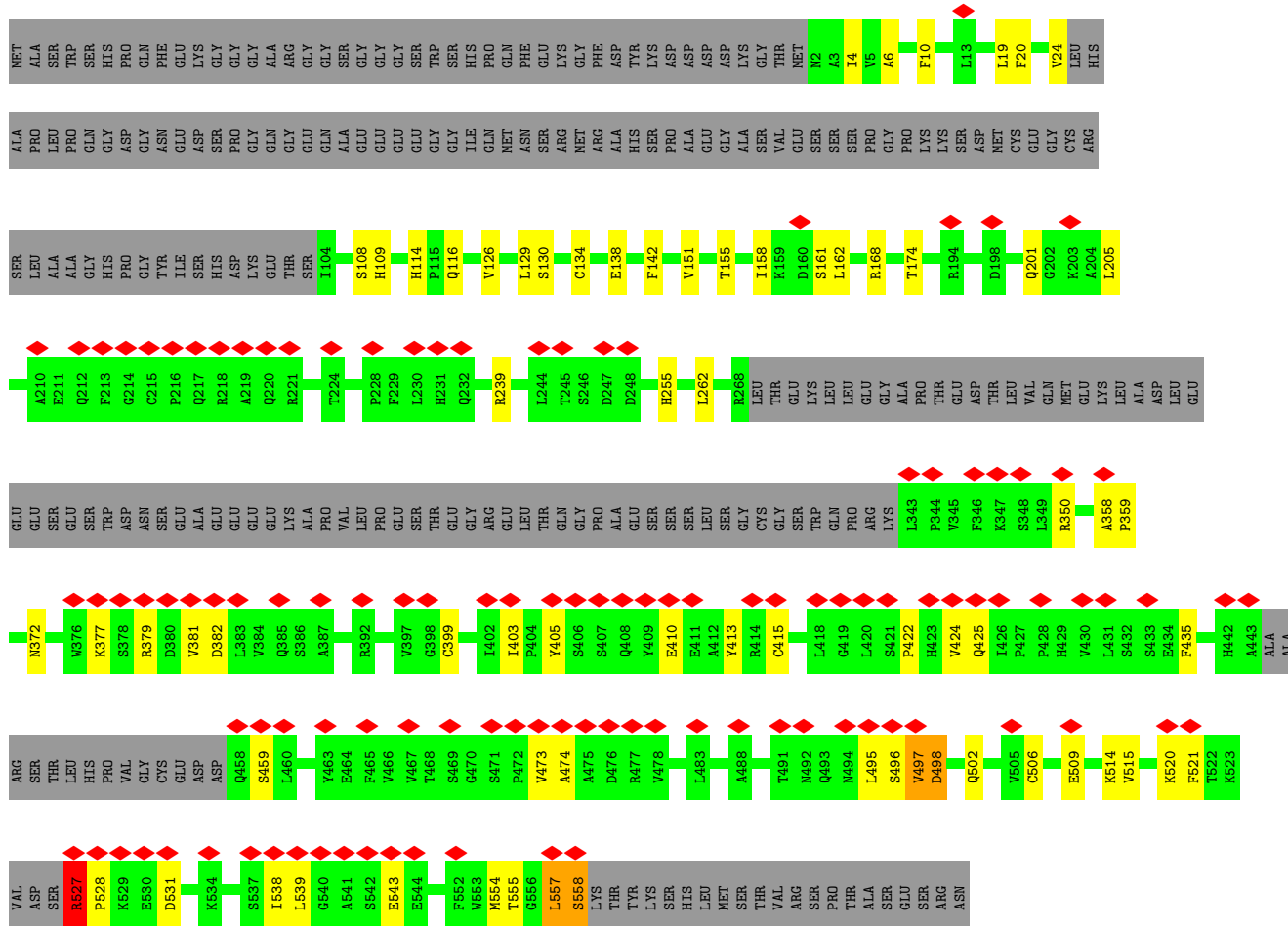


- Molecule 4: Regulator complex protein LAMTOR4

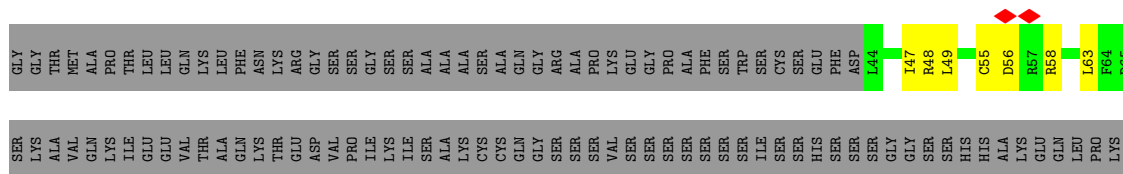




• Molecule 8: Folliculin



• Molecule 9: Folliculin-interacting protein 2



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	163376	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 ($e^-/\text{\AA}^2$)	65.6	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.791	Depositor
Minimum map value	-0.361	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.16	Depositor
Map size (\AA)	413.64, 413.64, 413.64	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.149, 1.149, 1.149	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: GDP, L8S

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	0.32	0/633	0.47	0/864
2	B	0.39	0/960	0.59	0/1300
3	C	0.42	0/956	0.73	2/1297 (0.2%)
4	D	0.44	0/692	0.66	0/934
5	E	0.39	0/672	0.59	0/911
6	F	0.27	0/1859	0.55	1/2502 (0.0%)
7	G	0.33	0/2481	0.56	1/3350 (0.0%)
8	H	1.20	3/3005 (0.1%)	0.73	2/4085 (0.0%)
9	I	0.26	0/2571	0.51	0/3518
All	All	0.63	3/13829 (0.0%)	0.61	6/18761 (0.0%)

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
9	I	0	2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	H	399	CYS	CB-SG	-6.81	1.70	1.82
8	H	410	GLU	CD-OE2	-5.67	1.19	1.25
8	H	413	TYR	CD2-CE2	-5.35	1.31	1.39

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	86	LEU	CA-CB-CG	10.28	138.94	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	86	LEU	CB-CG-CD2	8.76	125.89	111.00
8	H	527	ARG	NE-CZ-NH1	-6.40	117.10	120.30
7	G	69	LEU	CA-CB-CG	5.68	128.37	115.30
8	H	382	ASP	CB-CG-OD1	5.57	123.31	118.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
9	I	162	SER	Peptide
9	I	337	PHE	Peptide

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	622	0	637	17	0
2	B	949	0	960	26	0
3	C	939	0	962	47	0
4	D	684	0	694	9	0
5	E	666	0	663	8	0
6	F	1830	0	1827	30	0
7	G	2429	0	2404	98	0
8	H	2934	0	2817	71	0
9	I	2520	0	1865	45	0
10	F	28	0	12	0	0
11	G	32	0	0	0	0
All	All	13633	0	12841	277	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 10.

The worst 5 of 277 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)
2:B:1:MET:CE	6:F:198:ILE:HG23	1.33	1.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:86:LEU:CD2	3:C:118:ARG:HD2	1.06	1.50
3:C:86:LEU:HG	3:C:87:PRO:CD	1.41	1.49
3:C:86:LEU:CD2	3:C:118:ARG:CD	1.86	1.48
8:H:506:CYS:SG	9:I:1064:LEU:HB3	1.66	1.34

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	77/166 (46%)	76 (99%)	1 (1%)	0	100	100
2	B	124/127 (98%)	123 (99%)	1 (1%)	0	100	100
3	C	119/124 (96%)	115 (97%)	3 (2%)	1 (1%)	19	59
4	D	88/99 (89%)	87 (99%)	1 (1%)	0	100	100
5	E	89/173 (51%)	88 (99%)	1 (1%)	0	100	100
6	F	219/313 (70%)	201 (92%)	18 (8%)	0	100	100
7	G	295/404 (73%)	270 (92%)	24 (8%)	1 (0%)	41	75
8	H	377/622 (61%)	356 (94%)	21 (6%)	0	100	100
9	I	370/1117 (33%)	334 (90%)	35 (10%)	1 (0%)	41	75
All	All	1758/3145 (56%)	1650 (94%)	105 (6%)	3 (0%)	50	79

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	86	LEU
7	G	118	PRO
9	I	433	PHE

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	72/145 (50%)	72 (100%)	0	100	100
2	B	98/98 (100%)	97 (99%)	1 (1%)	76	88
3	C	105/108 (97%)	104 (99%)	1 (1%)	76	88
4	D	75/83 (90%)	74 (99%)	1 (1%)	69	86
5	E	77/140 (55%)	77 (100%)	0	100	100
6	F	203/287 (71%)	202 (100%)	1 (0%)	88	95
7	G	274/343 (80%)	273 (100%)	1 (0%)	91	97
8	H	298/534 (56%)	287 (96%)	11 (4%)	34	66
9	I	154/956 (16%)	154 (100%)	0	100	100
All	All	1356/2694 (50%)	1340 (99%)	16 (1%)	72	87

5 of 16 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	H	557	LEU
8	H	543	GLU
8	H	496	SER
8	H	528	PRO
8	H	459	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 17 such sidechains are listed below:

Mol	Chain	Res	Type
8	H	372	ASN
9	I	328	ASN
7	G	168	ASN
7	G	187	HIS
7	G	200	ASN

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](#)

2 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
10	GDP	F	500	-	24,30,30	0.94	1 (4%)	30,47,47	1.28	4 (13%)
11	L8S	G	500	-	24,34,34	0.97	1 (4%)	28,54,54	1.62	3 (10%)

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
10	GDP	F	500	-	-	5/12/32/32	0/3/3/3
11	L8S	G	500	-	-	5/17/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	F	500	GDP	C6-N1	-2.46	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	G	500	L8S	C5-C6	-2.38	1.42	1.47

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	G	500	L8S	C4-N3-C2	-4.95	120.38	128.11
11	G	500	L8S	N3-C2-N1	4.37	118.44	115.90
10	F	500	GDP	PA-O3A-PB	-3.59	120.51	132.83
11	G	500	L8S	C6-N1-C2	-3.09	124.44	126.88
10	F	500	GDP	C3'-C2'-C1'	2.50	104.75	100.98

There are no chirality outliers.

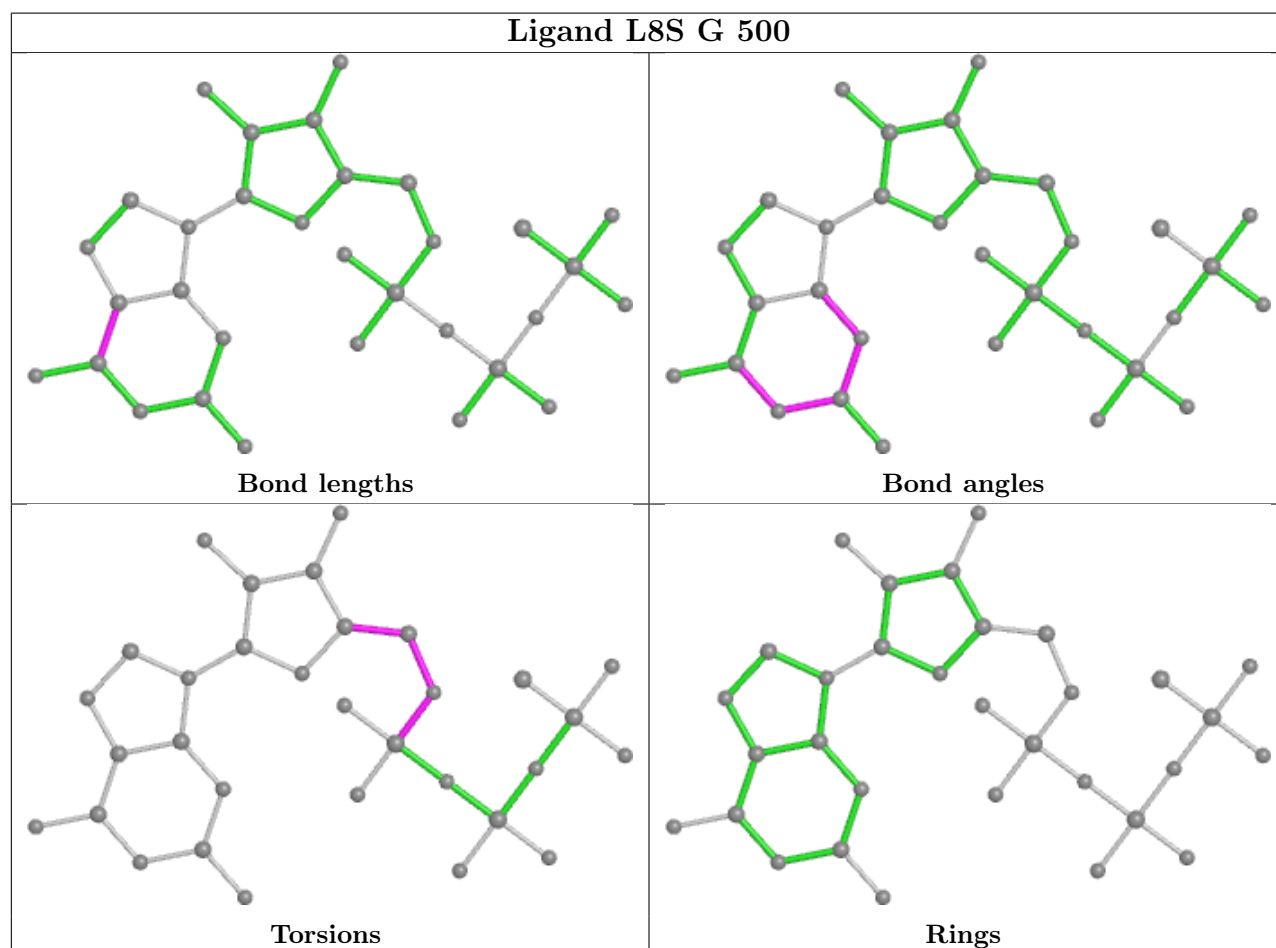
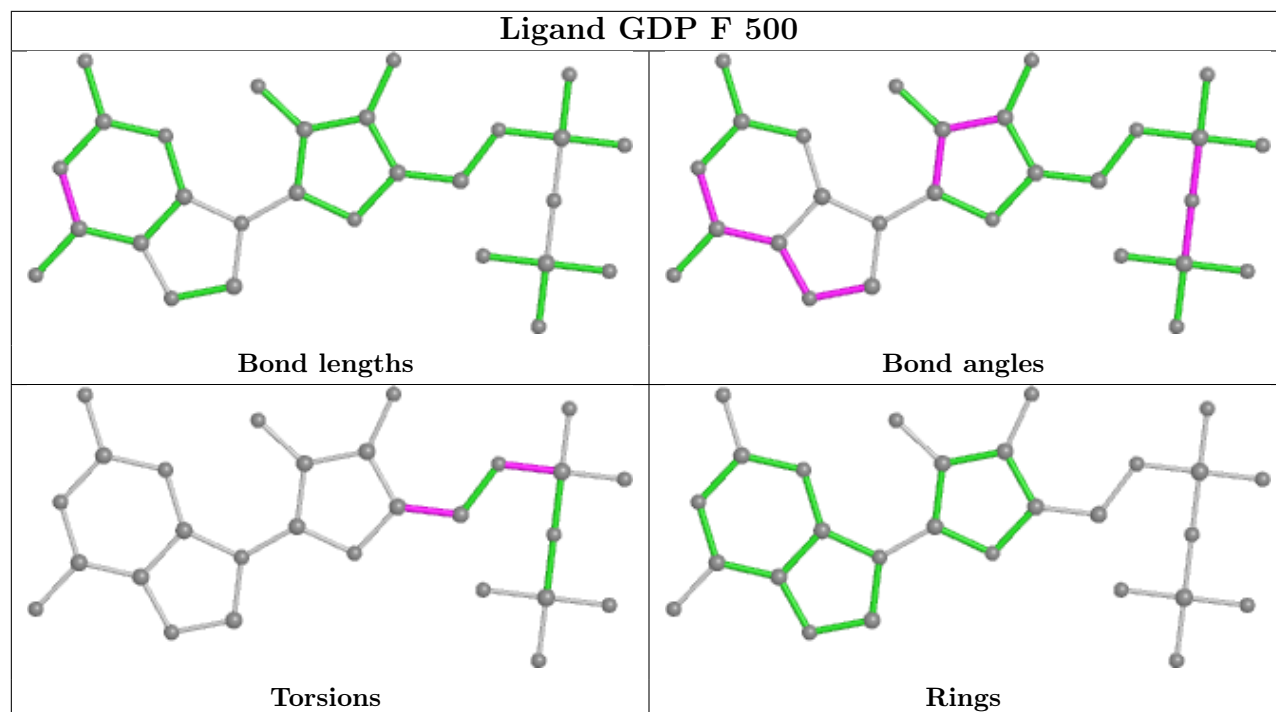
5 of 10 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	F	500	GDP	C5'-O5'-PA-O1A
10	F	500	GDP	C5'-O5'-PA-O2A
11	G	500	L8S	C4'-C5'-O5'-PA
11	G	500	L8S	C5'-O5'-PA-O1A
11	G	500	L8S	C5'-O5'-PA-O2A

There are no ring outliers.

No monomer is involved in short contacts.

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.

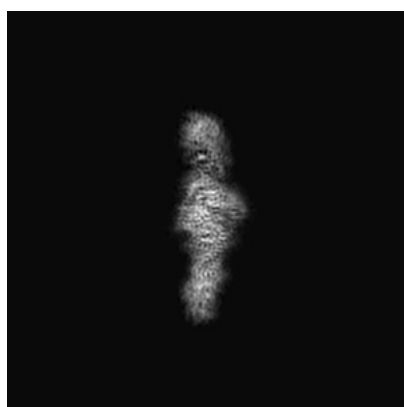
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0554. 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](#)

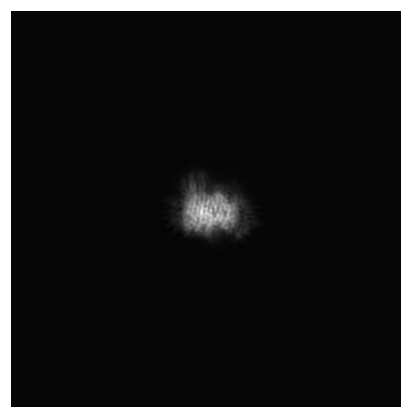
6.1.1 Primary map



X



Y



Z

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

6.2 Central slices [i](#)

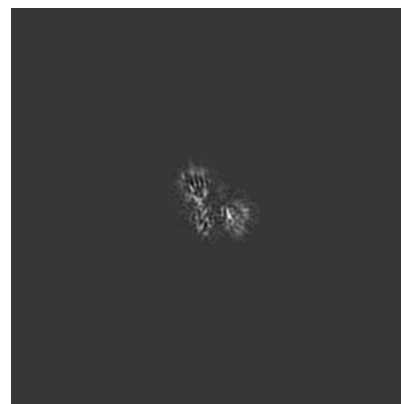
6.2.1 Primary map



X Index: 180



Y Index: 180

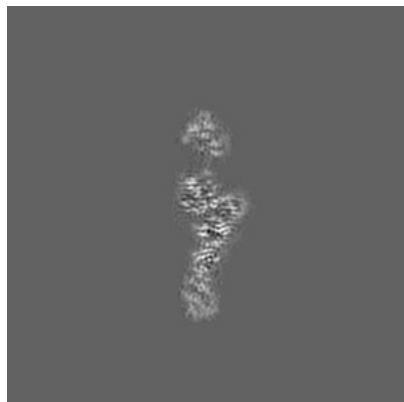


Z Index: 180

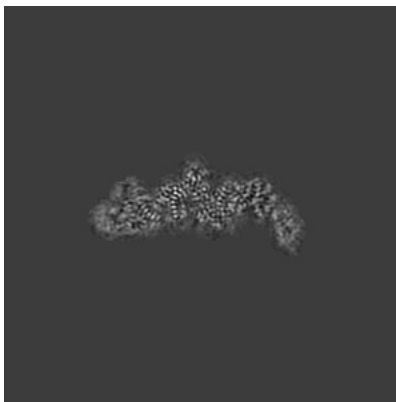
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

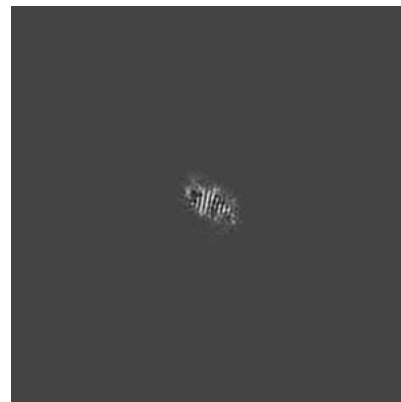
6.3.1 Primary map



X Index: 170



Y Index: 176



Z Index: 154

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

6.4 Orthogonal surface views [i](#)

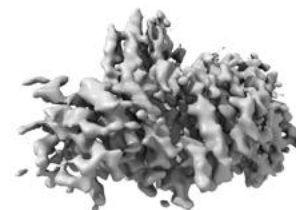
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.16. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

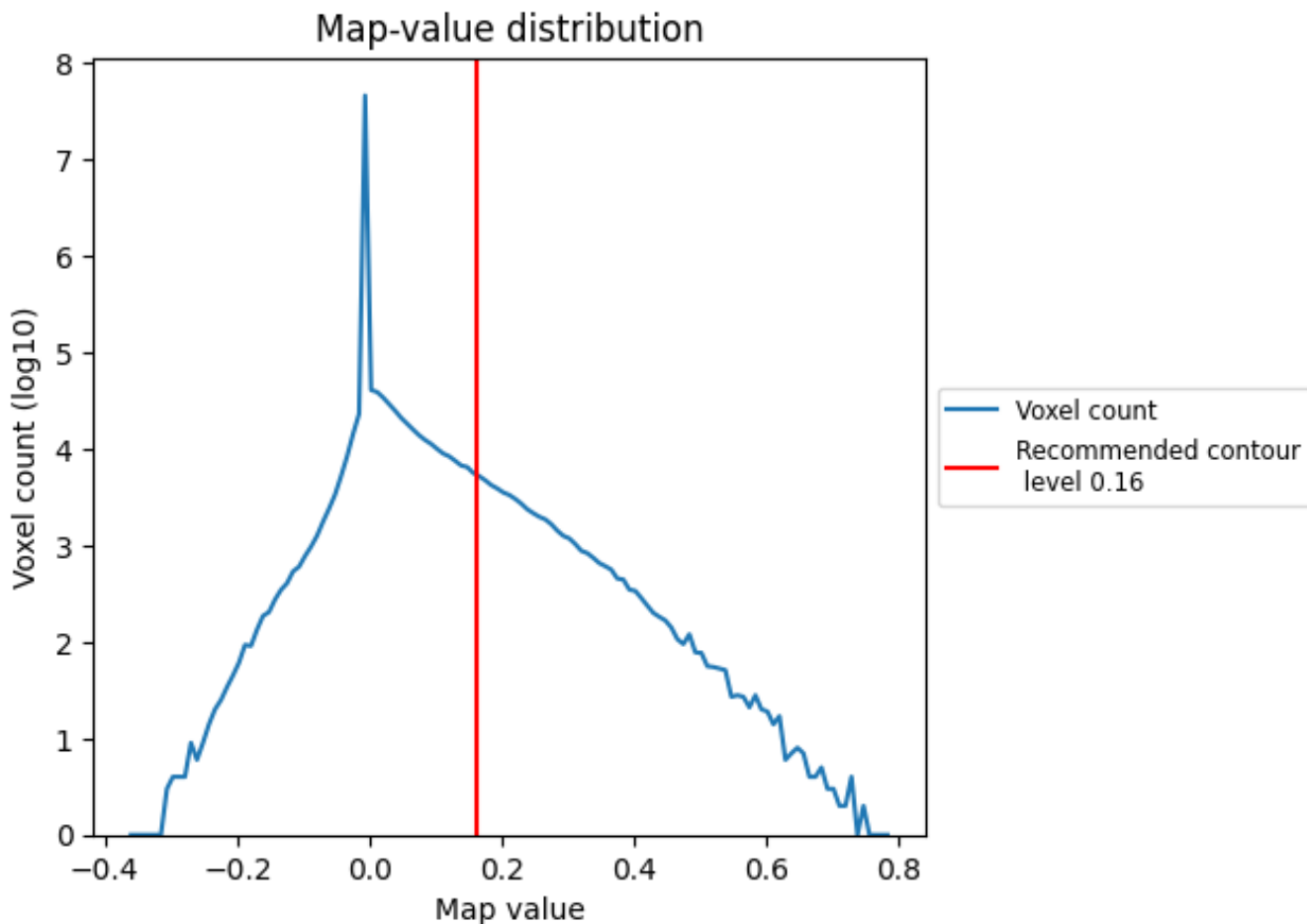
6.5 Mask visualisation

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

7 Map analysis [i](#)

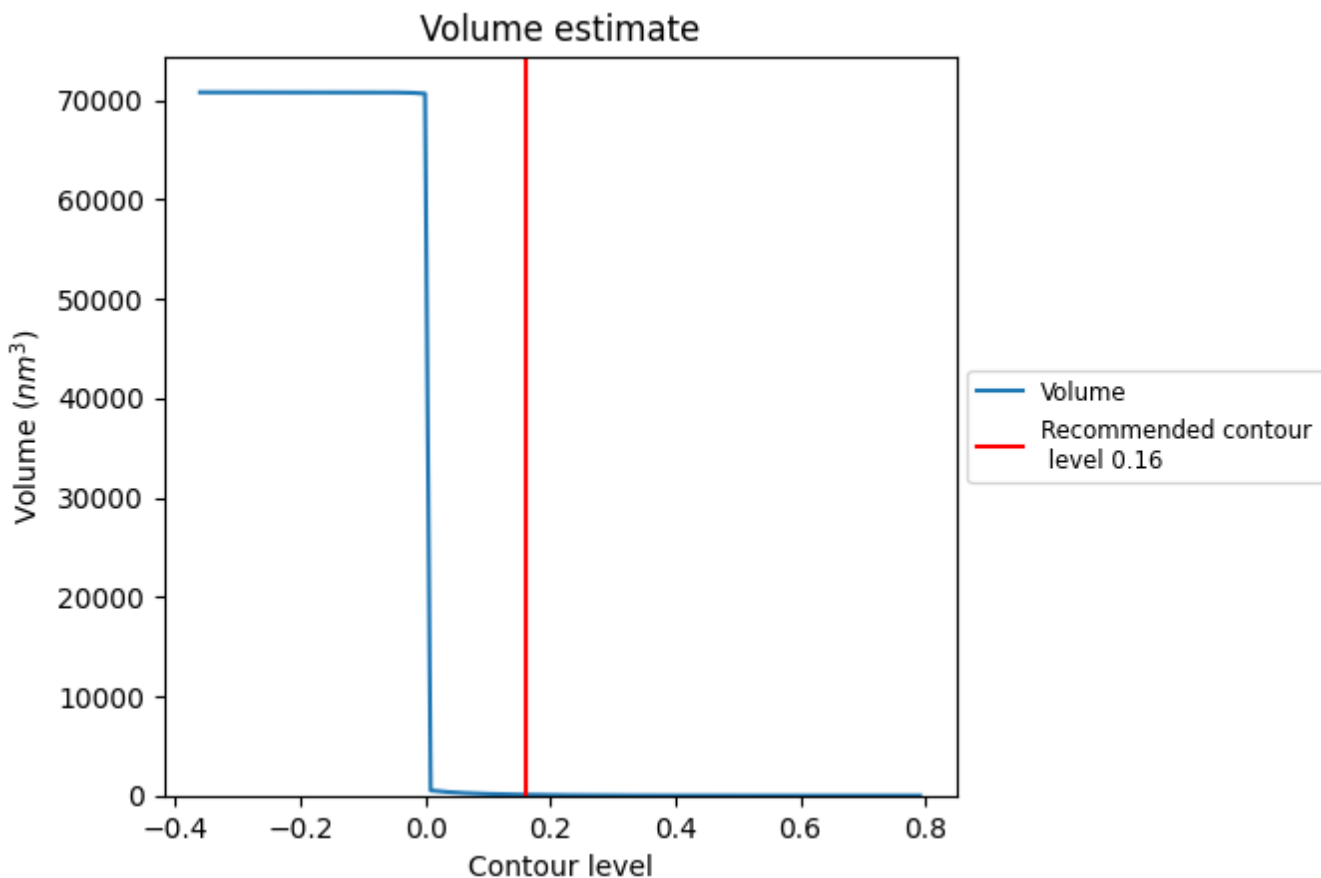
This section contains the results of statistical analysis of the map.

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.

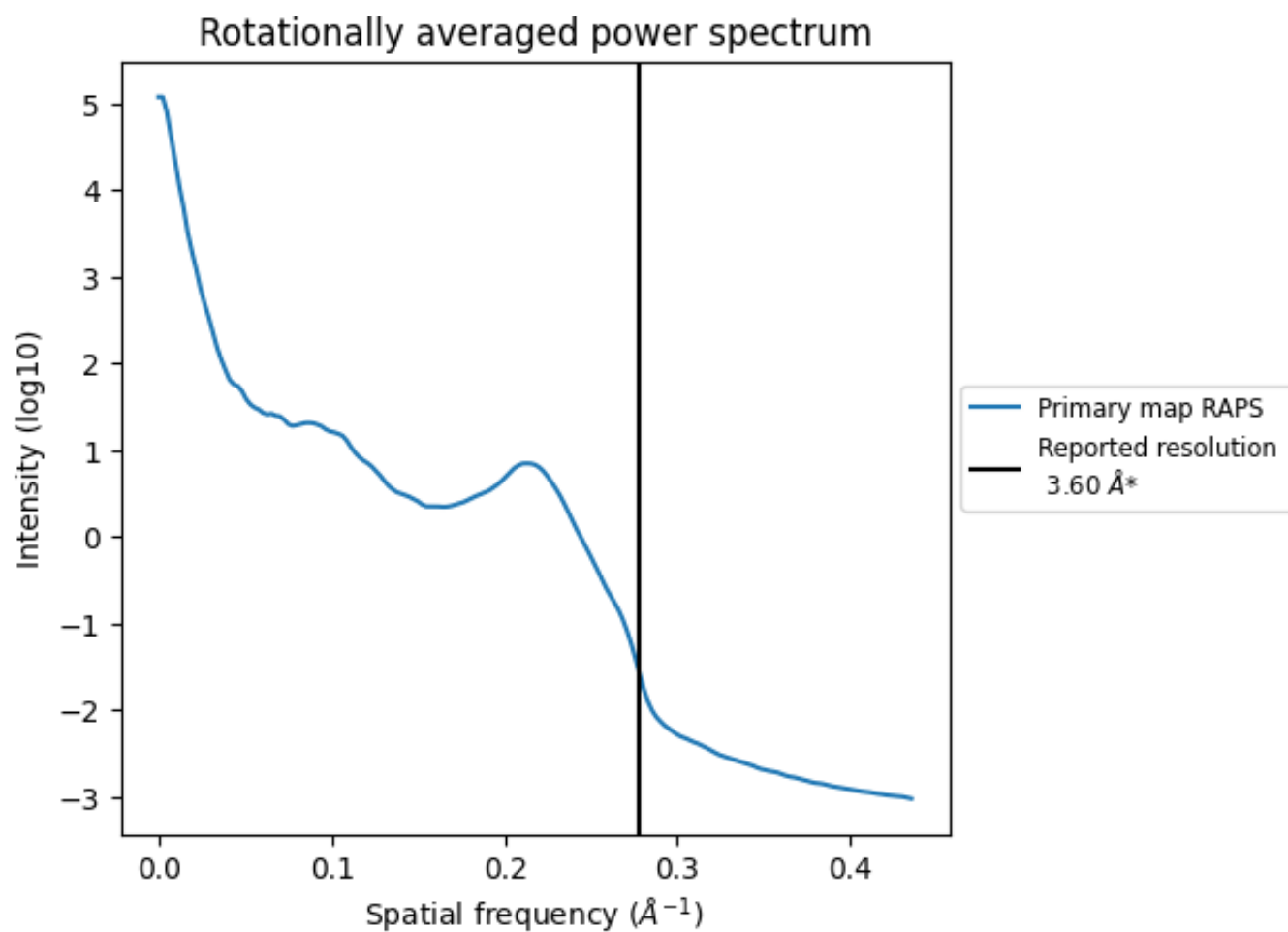
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 87 nm³; this corresponds to an approximate mass of 78 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](#)

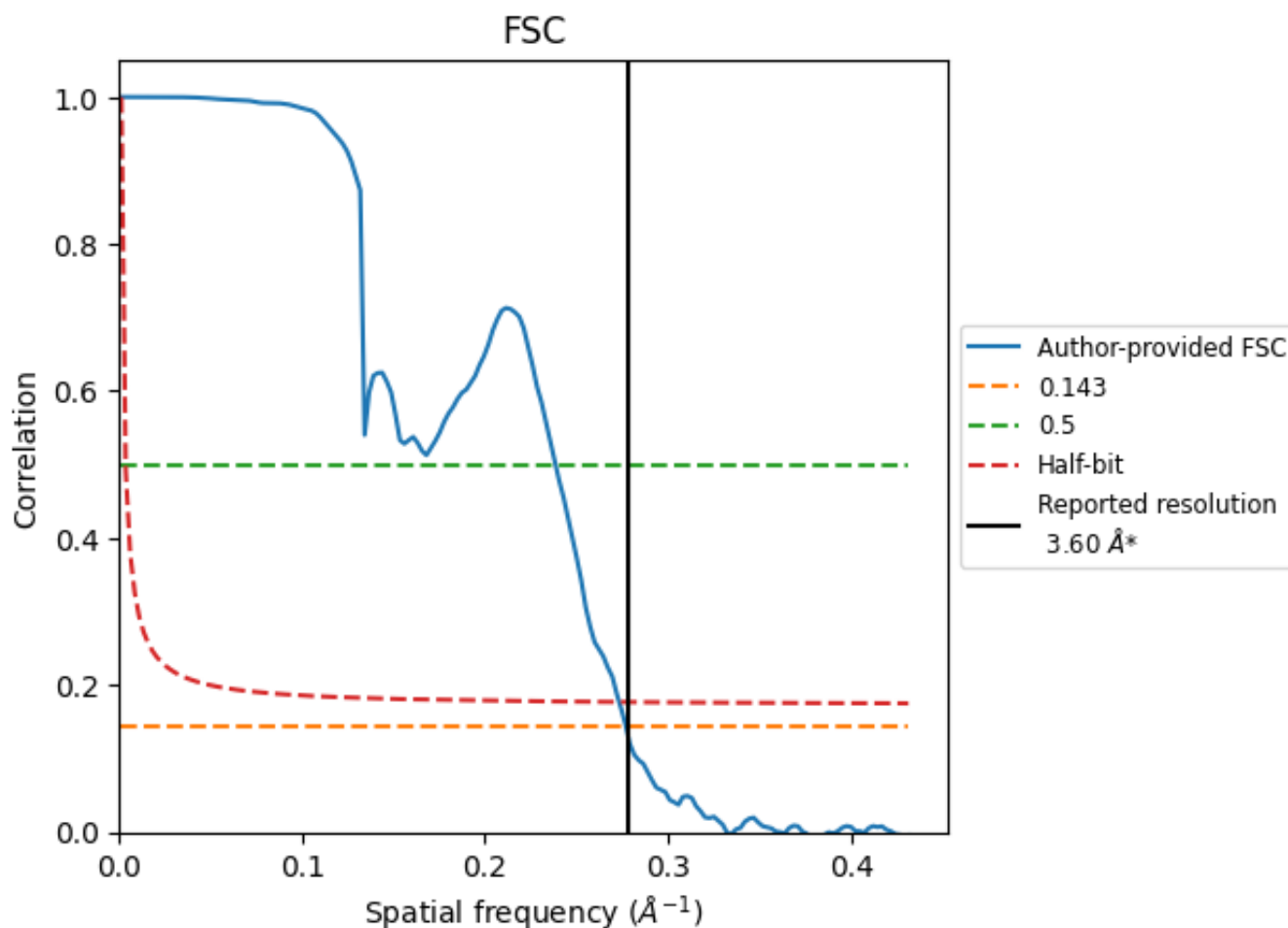


*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

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 0.278 Å⁻¹

8.2 Resolution estimates [i](#)

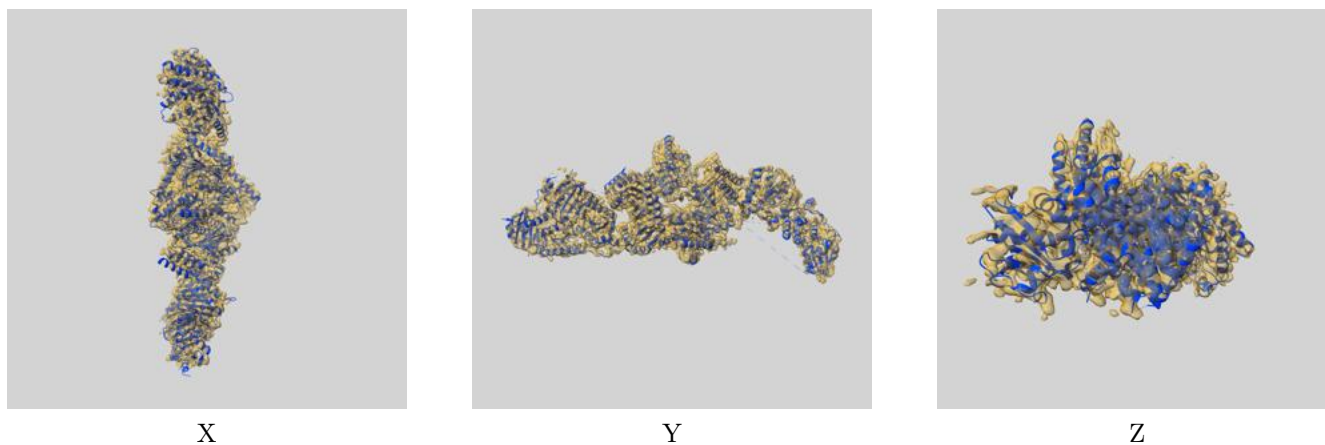
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.61	4.19	3.66
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

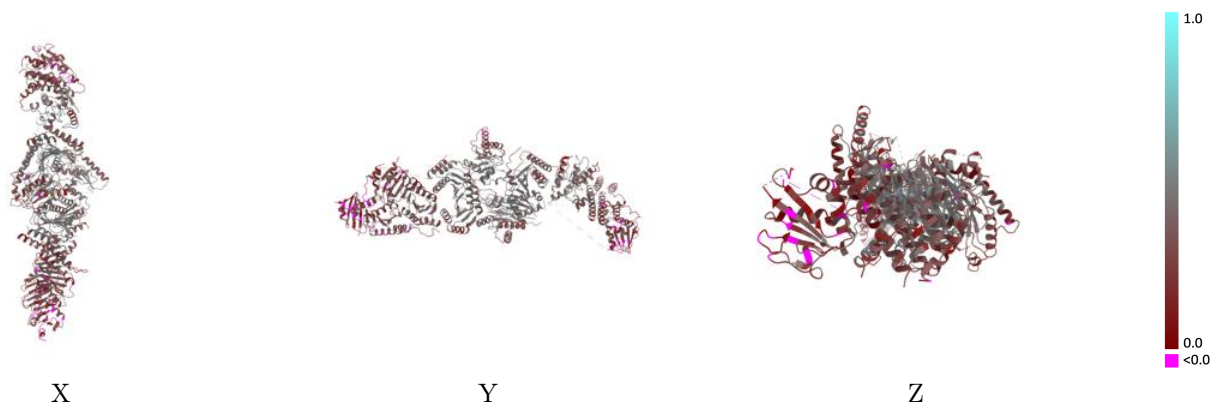
This section contains information regarding the fit between EMDB map EMD-0554 and PDB model 6NZD. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



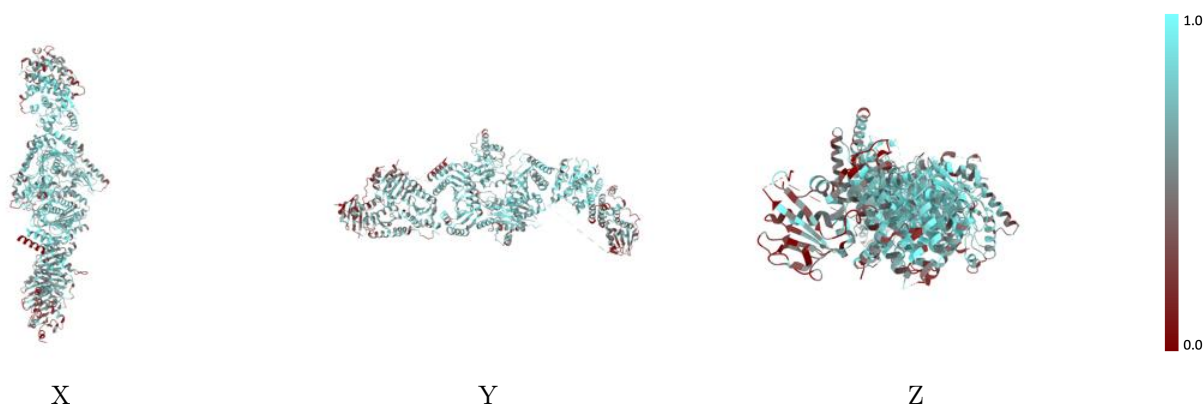
The images above show the 3D surface view of the map at the recommended contour level 0.16 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



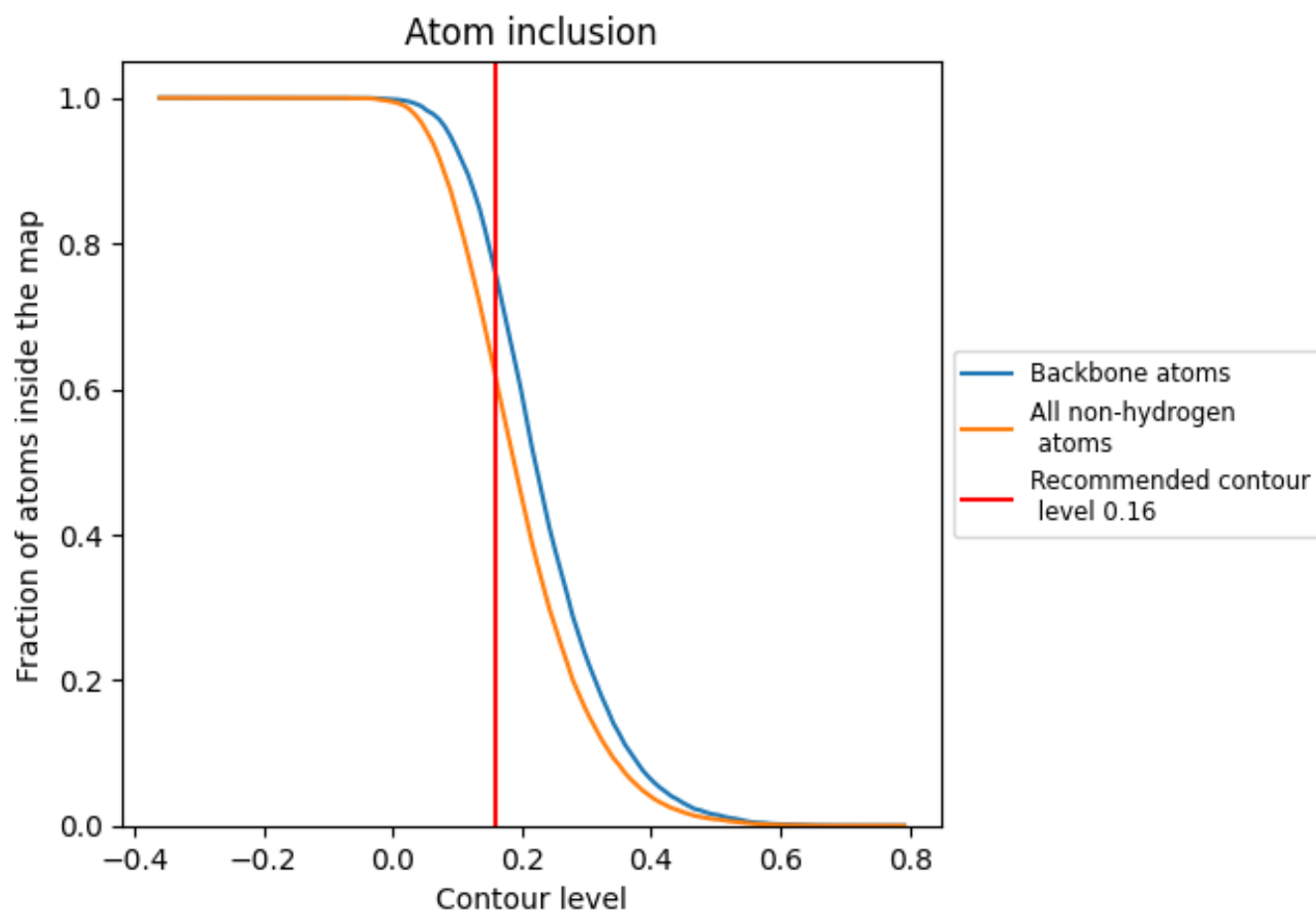
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.16).





















9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 61% 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 (0.16) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6136	 0.3260
A	 0.2846	 0.2010
B	 0.6174	 0.3040
C	 0.5557	 0.2540
D	 0.3528	 0.1280
E	 0.5377	 0.2340
F	 0.6826	 0.3810
G	 0.7083	 0.3860
H	 0.5831	 0.3120
I	 0.6979	 0.3860

