



wwPDB EM Validation Summary Report ⓘ

Mar 24, 2026 – 05:12 AM UTC

PDB ID : 7CPY / pdb_00007cpy
EMDB ID : EMD-30435
Title : Lovastatin nonaketide synthase with LovC
Authors : Wang, J.; Wang, Z.
Deposited on : 2020-08-08
Resolution : 3.60 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:

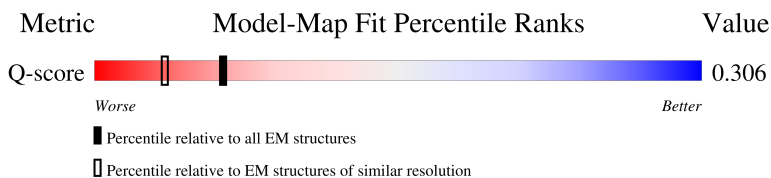
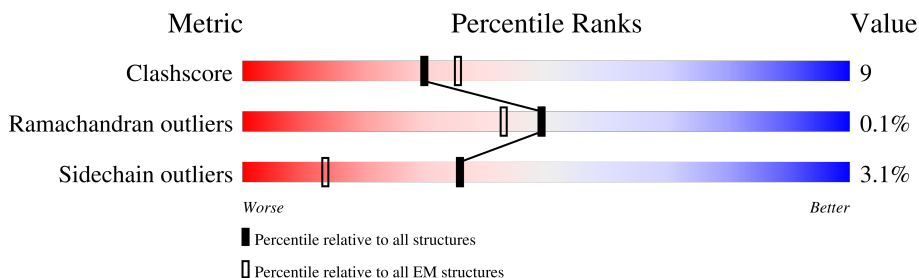
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 3.60 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	12797 (3.10 - 4.10)

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	C	371	
1	D	371	
2	A	3046	
2	B	3046	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 75606 atoms, of which 34722 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 Lovastatin nonaketide synthase, enoyl reductase component lovC.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	357	Total	C	N	O	S	0	0
			2742	1738	480	511	13		
1	D	357	Total	C	N	O	S	0	0
			2742	1738	480	511	13		

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	364	LEU	-	expression tag	UNP Q9Y7D0
C	365	GLU	-	expression tag	UNP Q9Y7D0
C	366	HIS	-	expression tag	UNP Q9Y7D0
C	367	HIS	-	expression tag	UNP Q9Y7D0
C	368	HIS	-	expression tag	UNP Q9Y7D0
C	369	HIS	-	expression tag	UNP Q9Y7D0
C	370	HIS	-	expression tag	UNP Q9Y7D0
C	371	HIS	-	expression tag	UNP Q9Y7D0
D	364	LEU	-	expression tag	UNP Q9Y7D0
D	365	GLU	-	expression tag	UNP Q9Y7D0
D	366	HIS	-	expression tag	UNP Q9Y7D0
D	367	HIS	-	expression tag	UNP Q9Y7D0
D	368	HIS	-	expression tag	UNP Q9Y7D0
D	369	HIS	-	expression tag	UNP Q9Y7D0
D	370	HIS	-	expression tag	UNP Q9Y7D0
D	371	HIS	-	expression tag	UNP Q9Y7D0

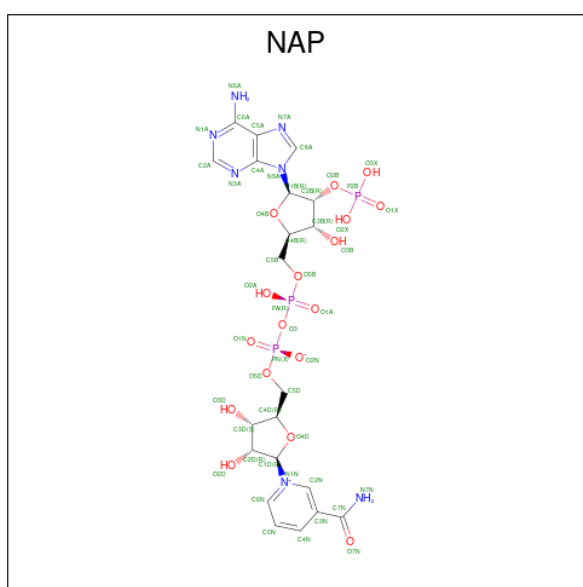
- Molecule 2 is a protein called Lovastatin nonaketide synthase, polyketide synthase component.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	2262	Total	C	H	N	O S	0	0
			34988	11177	17336	3061	3325 89		
2	B	2262	Total	C	H	N	O S	0	0
			34988	11177	17336	3061	3325 89		

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1884	GLN	GLY	engineered mutation	UNP Q9Y8A5
A	1885	ALA	GLN	engineered mutation	UNP Q9Y8A5
A	3039	HIS	-	expression tag	UNP Q9Y8A5
A	3040	VAL	-	expression tag	UNP Q9Y8A5
A	3041	HIS	-	expression tag	UNP Q9Y8A5
A	3042	HIS	-	expression tag	UNP Q9Y8A5
A	3043	HIS	-	expression tag	UNP Q9Y8A5
A	3044	HIS	-	expression tag	UNP Q9Y8A5
A	3045	HIS	-	expression tag	UNP Q9Y8A5
A	3046	HIS	-	expression tag	UNP Q9Y8A5
B	1884	GLN	GLY	engineered mutation	UNP Q9Y8A5
B	1885	ALA	GLN	engineered mutation	UNP Q9Y8A5
B	3039	HIS	-	expression tag	UNP Q9Y8A5
B	3040	VAL	-	expression tag	UNP Q9Y8A5
B	3041	HIS	-	expression tag	UNP Q9Y8A5
B	3042	HIS	-	expression tag	UNP Q9Y8A5
B	3043	HIS	-	expression tag	UNP Q9Y8A5
B	3044	HIS	-	expression tag	UNP Q9Y8A5
B	3045	HIS	-	expression tag	UNP Q9Y8A5
B	3046	HIS	-	expression tag	UNP Q9Y8A5

- Molecule 3 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$) (labeled as "Ligand of Interest" by depositor).

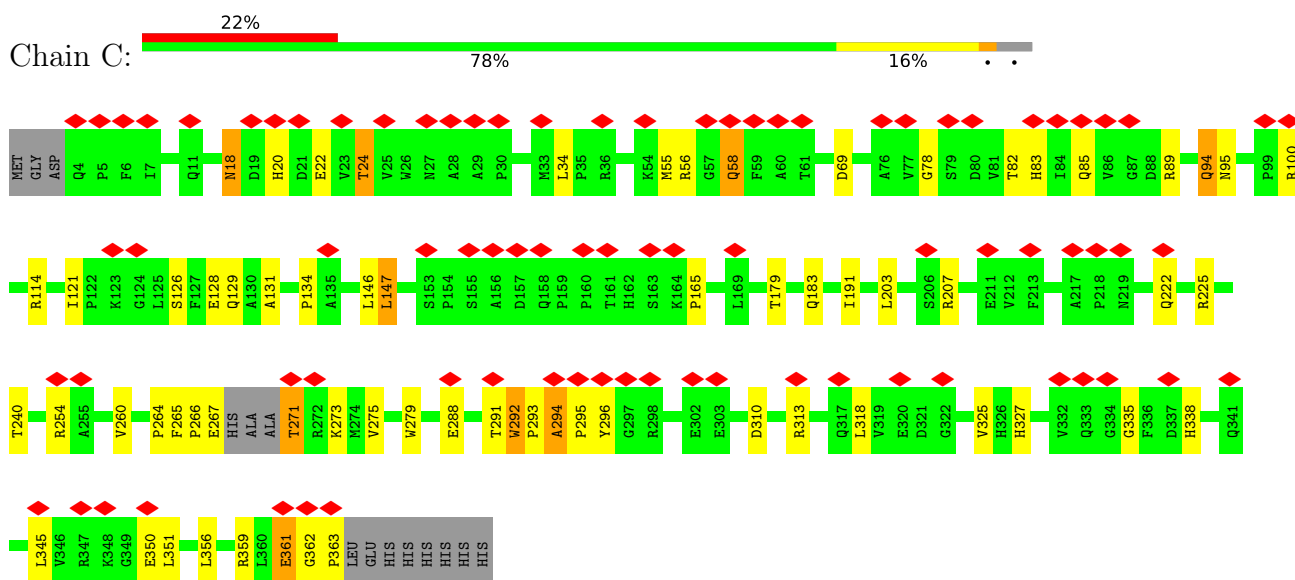


Mol	Chain	Residues	Atoms						AltConf
3	A	1	Total	C	H	N	O	P	0
			73	21	25	7	17	3	
3	B	1	Total	C	H	N	O	P	0
			73	21	25	7	17	3	

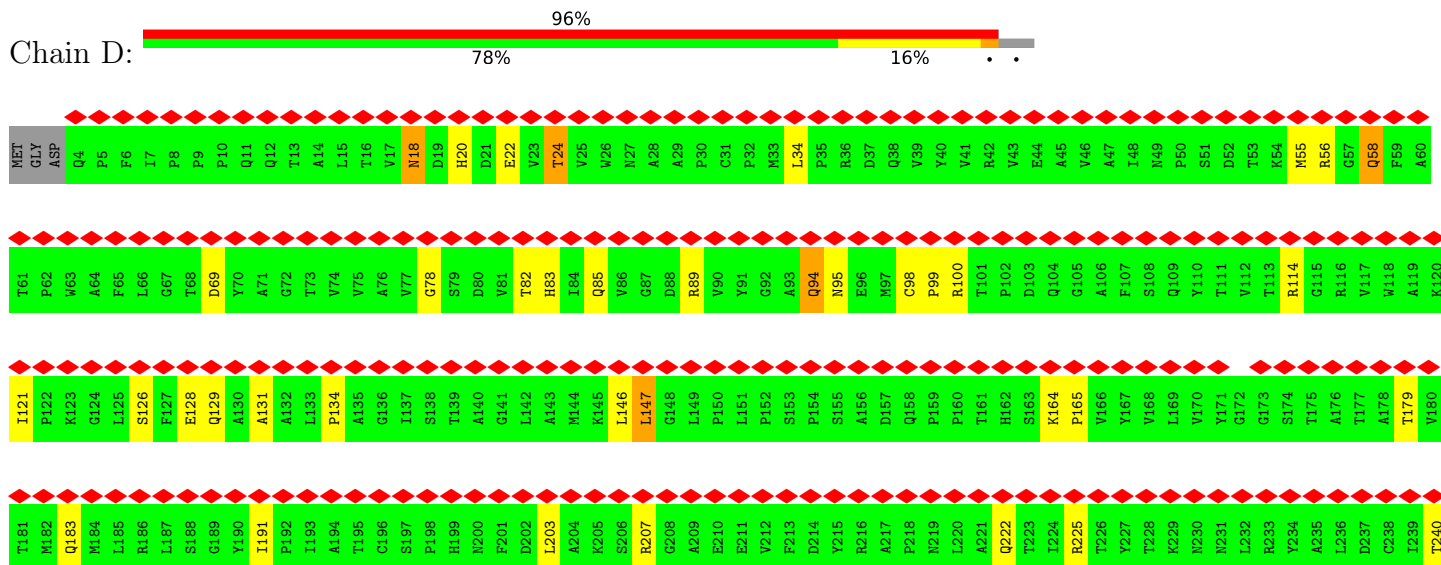
3 Residue-property plots

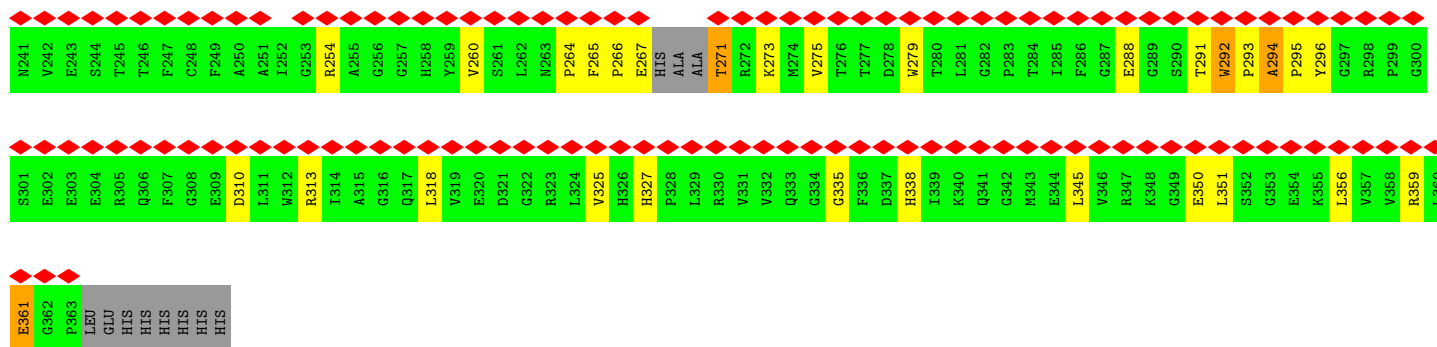
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

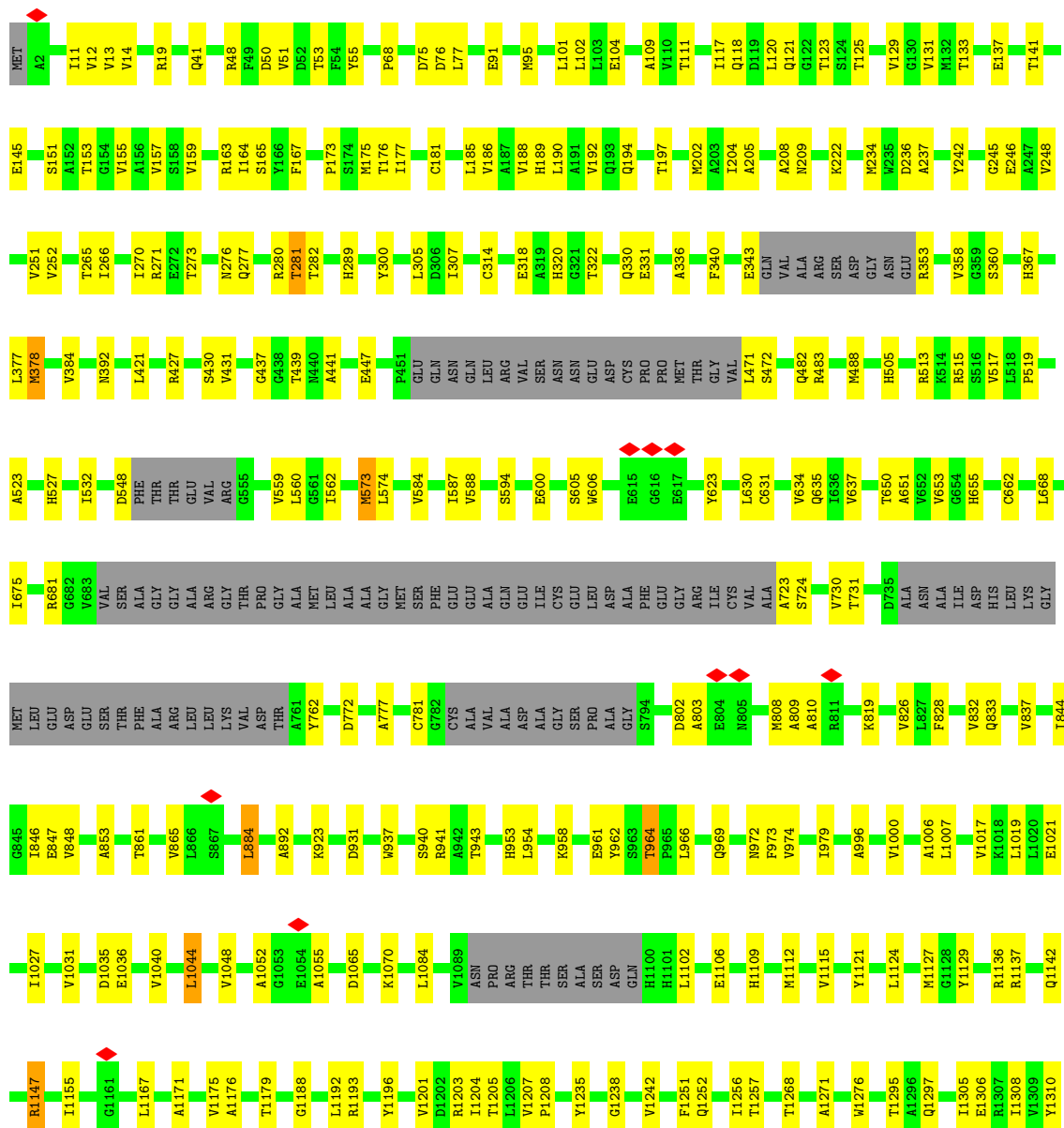


- Molecule 1: Lovastatin nonaketide synthase, enoyl reductase component lovC

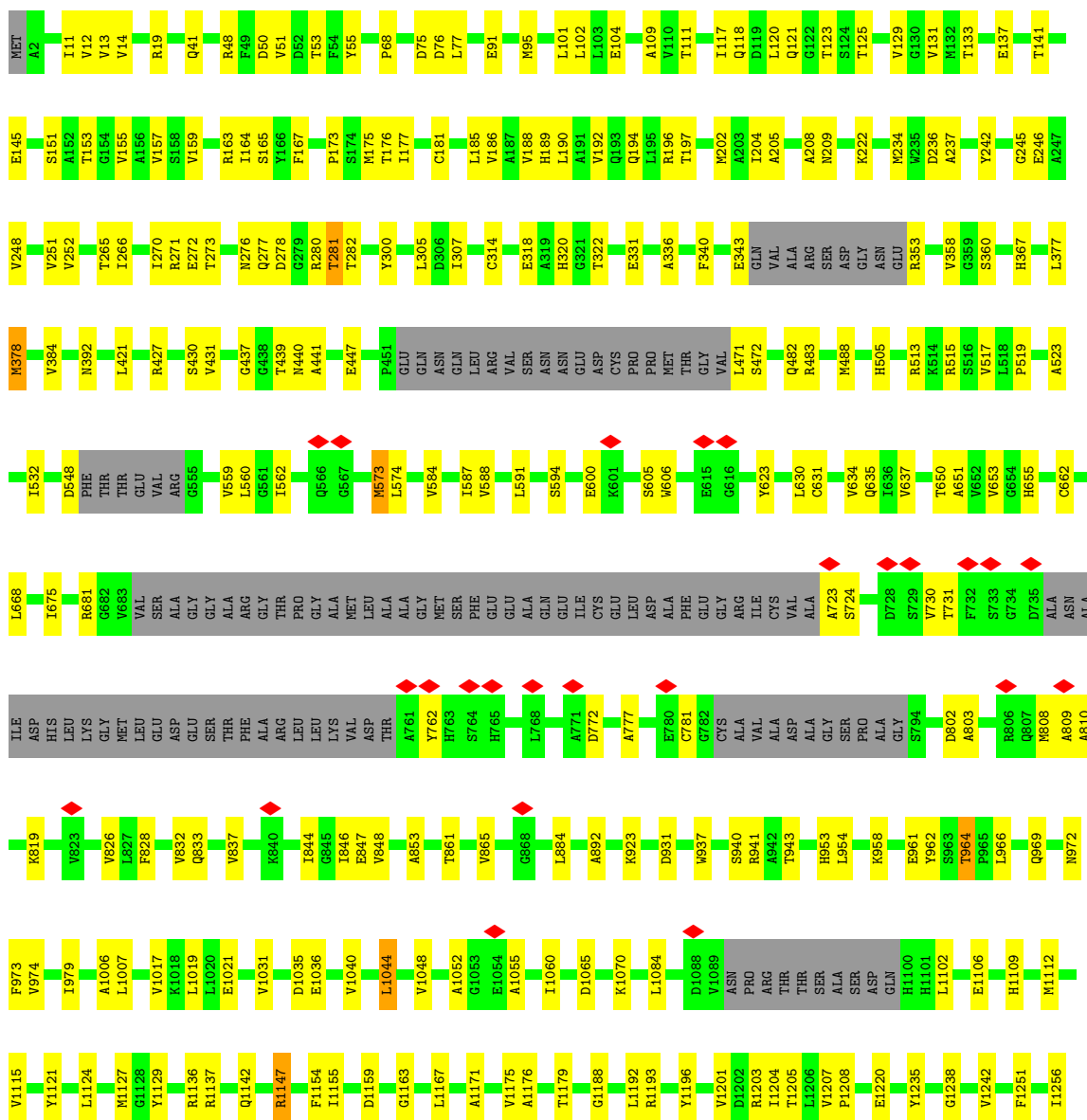




- Molecule 2: Lovastatin nonaketide synthase, polyketide synthase component







LEU	VAL	GLU	VAL	GLN	VAL	PHE	ASN	THR	VAL	ALA	G2300	T2147	VAL	V1869	W1731	D1584	F1487	E1363	T1257
GLY	ALA	GLY	ASN	GLY	THR	ASN	VAL	GLY	VAL	GLY	T2307	D2148	ALA	M1866	L1744	R1585	E1488	I1366	T1268
SER	GLN	THR	THR	GLY	THR	THR	THR	ASP	ASP	ASP	T2151	T2151	ASP	M1866	R1745	L1590	D1489	C1370	A1271
SER	ALA	THR	ARG	GLY	THR	SER	SER	VAL	VAL	SER	T2158	T2158	ALA	S1876	R1749	R1601	L1496	T1371	R1275
ASP	VAL	THR	GLY	VAL	PHE	GLY	THR	VAL	VAL	VAL	C2312	C2312	LYS	C1877	V1758	T1602	T1497	A1372	W1276
THR	GLY	ASP	THR	LYS	SER	THR	SER	LYS	LYS	LYS	T2313	L2161	GLU	P1878	L1759	T1603	D1937	N1373	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2314	L2161	ASP	L1881	L1759	D1604	I1498	N1373	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	Q2315	G2163	LEU	L1881	V1761	R1605	T1374	T1295	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2164	L2164	LEU	V1883	D1762	N1608	F1507	A1296	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	Q2320	L2164	LEU	V1883	D1762	N1608	F1507	A1296	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	Q2321	L2164	LEU	Q1884	A1763	L1609	Q1297	Q1297	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2330	D2167	ALA	F1888	T1766	F1610	H1510	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2331	L2168	THR	T1766	PHE	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	D2332	L2168	ASN	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2172	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2173	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	R2174	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	W2175	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2176	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	Q2177	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	Q2178	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	H2179	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2180	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2186	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2187	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	V2215	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2237	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	F2241	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	P2243	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2244	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	V2245	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	M2254	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2261	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	V2262	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2263	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2267	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2268	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2269	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	V2270	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	H2274	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	F2277	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	S2126	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	T2127	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	V2128	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	G2129	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	S2130	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	W2131	L2168	LEU	T1766	ASP	P1611	I1515	I1305	
THR	GLY	THR	THR	GLN	SER	GLY	GLY	GLN	GLY	GLY	L2140	L2168	LEU	T1766	ASP	P1611	I1515	I1305	

HIS	ARG	LEU	ARG
HIS	PRO	GLN	LEU
HIS	THR	HIS	THR
HIS	ASP	ALA	ASP
HIS	VAL	VAL	THR
	VAL	PRO	ASP
	VAL	THR	LEU
	GLY	GLY	VAL
	THR	VAL	GLY
	ASP	LEU	LEU
	ASP	ASP	ALA
	PRO	GLN	ASP
	THR	LEU	THR
	LYS	GLY	ASN
	ASP	LEU	ARG
	PRO	GLU	ALA
	LEU	VAL	THR
	LEU	PRO	VAL
	THR	VAL	ASP
	ALA	PRO	GLU
	LYS	THR	MET
	LEU	SER	ALA
	GLN	ASN	ALA
	SER	GLN	MET
	SER	PRO	GLY
	ARG	ALA	PHE
	TVR	PRO	PHE
	GLU	LEU	ALA
	ALA	PHE	ASN
	HIS	GLN	LEU
	HIS	ALA	LEU
	PRO	VAL	PRO
	GLN	PHE	LEU
	ALA	ASP	ARG
	PHE	TYR	PHE
	LEU	LYS	ARG
	GLU	GLN	ASP
	SER	GLY	PHE
	TVR	GLN	ARG
	MET	ALA	PRO
	SER	GLU	HIS
	LEU	SER	ILE
	LEU	GLY	THR
	LEU	THR	PHE
	MET	ILE	GLY
	PHE	GLY	GLY
	SER	GLY	HIS
	MET	ALA	LEU
	ASN	LYS	ILE
	PRO	ILE	ALA
	ALA	THR	THR
	LEU	GLU	ARG
	LYS	VAL	ASP
	LEU	ILE	LEU
	LEU	ALA	VAL
	HIS	THR	ARG
	VAL	ARG	GLU
	HIS	TVR	ALA

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	83573	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 ($e^-/\text{\AA}^2$)	60.8	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	0.087	Depositor
Minimum map value	-0.051	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0082	Depositor
Map size (Å)	350.0, 350.0, 350.0	wwPDB
Map dimensions	350, 350, 350	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0, 1.0, 1.0	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: NAP

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	C	0.94	0/2815	0.99	0/3842
1	D	0.94	0/2815	0.99	0/3842
2	A	0.10	0/18071	0.32	6/24587 (0.0%)
2	B	0.10	0/18071	0.32	6/24587 (0.0%)
All	All	0.36	0/41772	0.47	12/56858 (0.0%)

There are no bond length outliers.

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1620	ILE	CA-C-N	5.78	132.58	121.54
2	A	1620	ILE	C-N-CA	5.78	132.58	121.54
2	B	1620	ILE	CA-C-N	5.77	132.57	121.54
2	B	1620	ILE	C-N-CA	5.77	132.57	121.54
2	B	1405	HIS	CA-C-N	5.64	132.31	121.54

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	C	2742	0	2694	52	0
1	D	2742	0	2694	52	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	17652	17336	17276	328	0
2	B	17652	17336	17276	331	0
3	A	48	25	25	0	0
3	B	48	25	25	0	0
All	All	40884	34722	39990	738	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 9.

The worst 5 of 738 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:D:361:GLU:O	1:D:361:GLU:HG2	1.71	0.90
1:C:361:GLU:O	1:C:361:GLU:HG2	1.71	0.89
1:C:294:ALA:H	1:C:295:PRO:CD	1.89	0.85
2:A:2362:GLU:OE1	2:A:2362:GLU:N	2.10	0.84
1:D:294:ALA:H	1:D:295:PRO:CD	1.89	0.84

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	C	353/371 (95%)	340 (96%)	12 (3%)	1 (0%)	36	65
1	D	353/371 (95%)	340 (96%)	12 (3%)	1 (0%)	36	65
2	A	2236/3046 (73%)	2147 (96%)	88 (4%)	1 (0%)	100	100
2	B	2236/3046 (73%)	2146 (96%)	89 (4%)	1 (0%)	100	100
All	All	5178/6834 (76%)	4973 (96%)	201 (4%)	4 (0%)	49	79

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	294	ALA
1	D	294	ALA
2	A	1577	THR
2	B	1577	THR

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	292/303 (96%)	276 (94%)	16 (6%)	19	47
1	D	292/303 (96%)	276 (94%)	16 (6%)	19	47
2	A	1904/2547 (75%)	1852 (97%)	52 (3%)	39	61
2	B	1904/2547 (75%)	1852 (97%)	52 (3%)	39	61
All	All	4392/5700 (77%)	4256 (97%)	136 (3%)	36	59

5 of 136 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	1601	ARG
2	B	1725	TRP
2	B	2330	THR
2	A	937	TRP
2	A	884	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 64 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	1879	HIS
2	B	2178	GLN
2	A	98	GLN
2	A	56	HIS
2	B	2253	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

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$
3	NAP	B	3500	-	50,52,52	2.93	18 (36%)	71,80,80	2.46	17 (23%)
3	NAP	A	3500	-	50,52,52	2.94	18 (36%)	71,80,80	2.46	16 (22%)

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
3	NAP	B	3500	-	-	14/35/67/67	0/5/5/5
3	NAP	A	3500	-	-	14/35/67/67	0/5/5/5

The worst 5 of 36 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	3500	NAP	C5A-N7A	7.28	1.52	1.39

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	3500	NAP	C5A-N7A	7.24	1.52	1.39
3	A	3500	NAP	C2N-N1N	6.90	1.42	1.35
3	B	3500	NAP	C2N-N1N	6.83	1.42	1.35
3	A	3500	NAP	C7N-N7N	6.76	1.45	1.33

The worst 5 of 33 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	3500	NAP	C4A-N9A-C8A	12.18	118.53	105.74
3	A	3500	NAP	C4A-N9A-C8A	12.14	118.49	105.74
3	A	3500	NAP	C4B-O4B-C1B	-6.28	95.61	109.47
3	B	3500	NAP	C4B-O4B-C1B	-6.26	95.65	109.47
3	A	3500	NAP	C6N-N1N-C2N	-5.98	116.79	121.88

There are no chirality outliers.

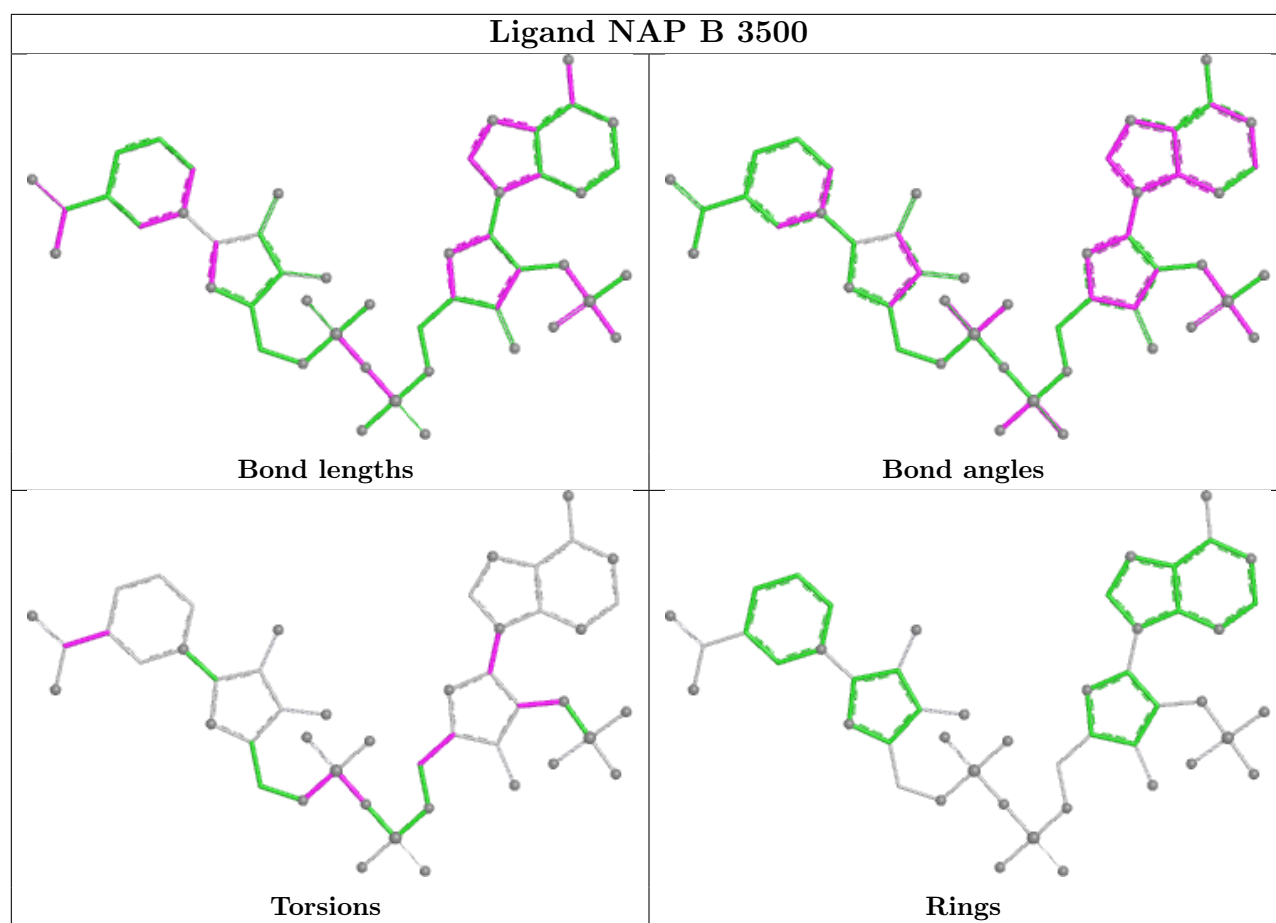
5 of 28 torsion outliers are listed below:

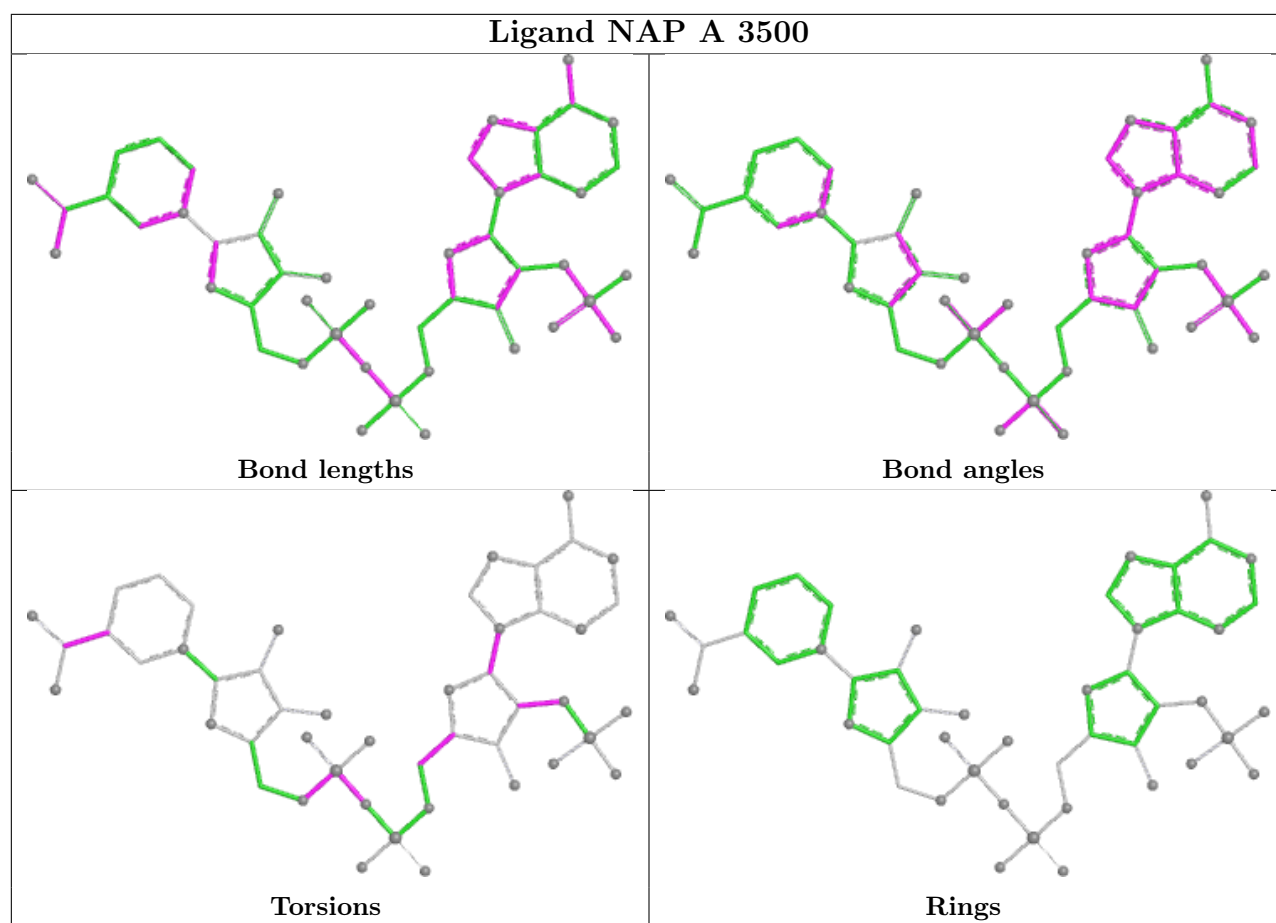
Mol	Chain	Res	Type	Atoms
3	A	3500	NAP	C5D-O5D-PN-O3
3	A	3500	NAP	C5D-O5D-PN-O2N
3	B	3500	NAP	C5D-O5D-PN-O3
3	B	3500	NAP	C5D-O5D-PN-O2N
3	A	3500	NAP	C1B-C2B-O2B-P2B

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.

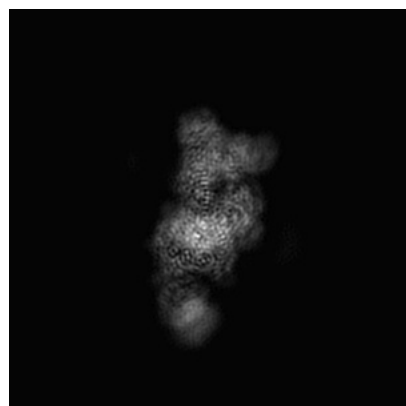
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30435. These allow visual inspection of the internal detail of the map and identification of artifacts.

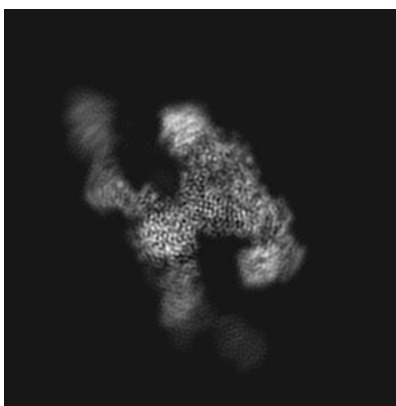
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

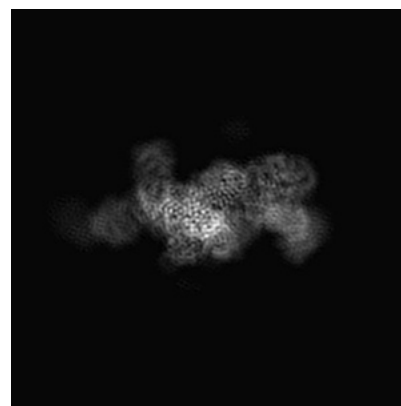
6.1.1 Primary map



X

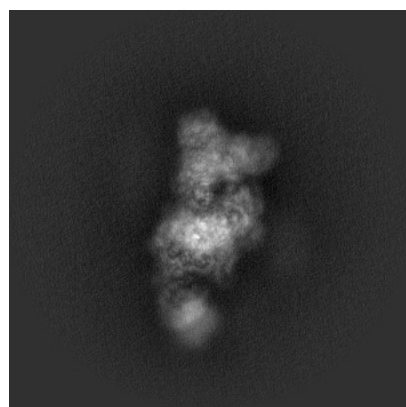


Y

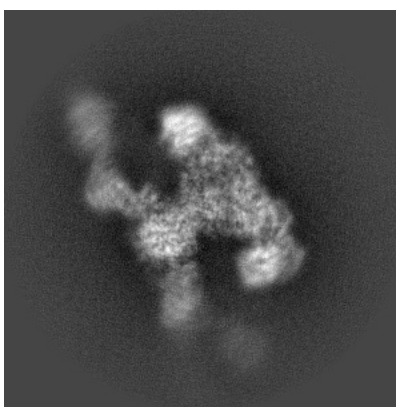


Z

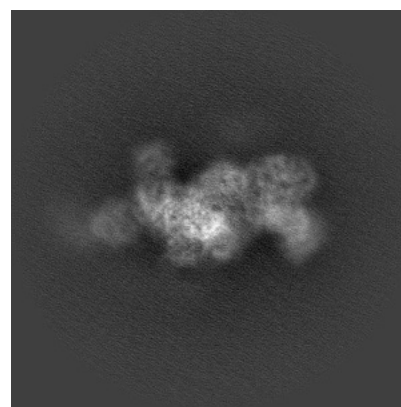
6.1.2 Raw map



X



Y

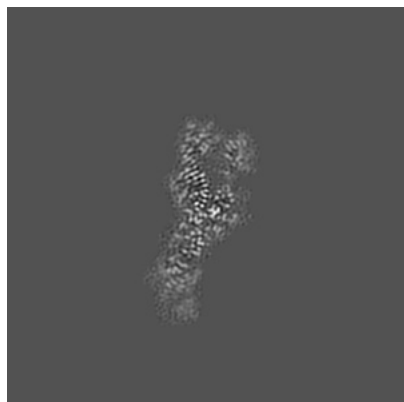


Z

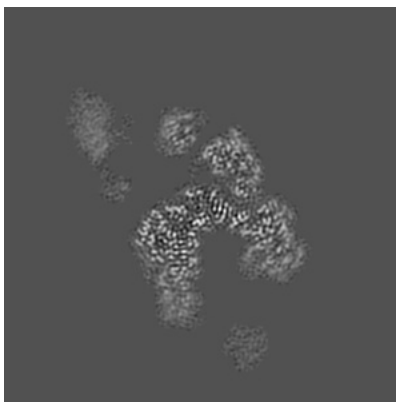
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

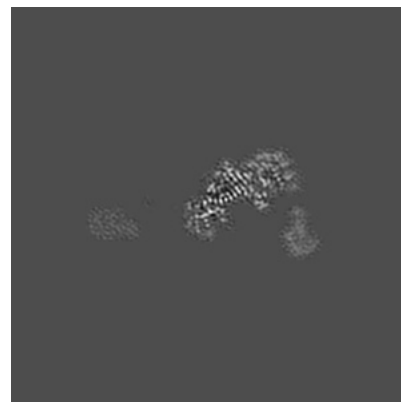
6.2.1 Primary map



X Index: 175

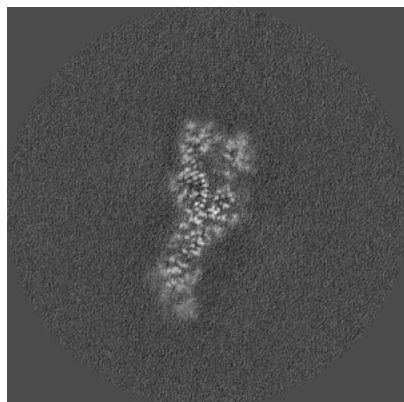


Y Index: 175

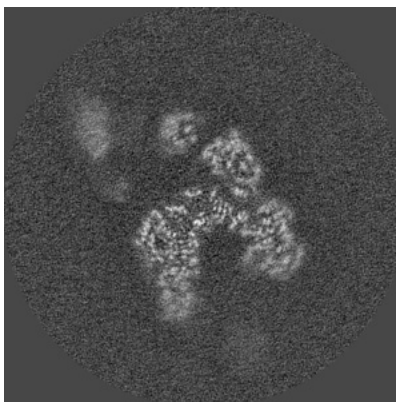


Z Index: 175

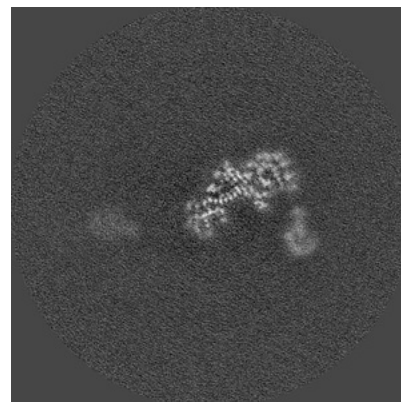
6.2.2 Raw map



X Index: 175



Y Index: 175

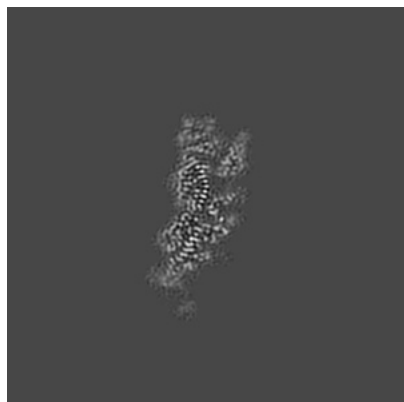


Z Index: 175

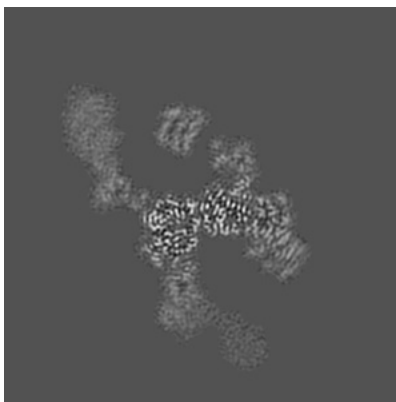
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

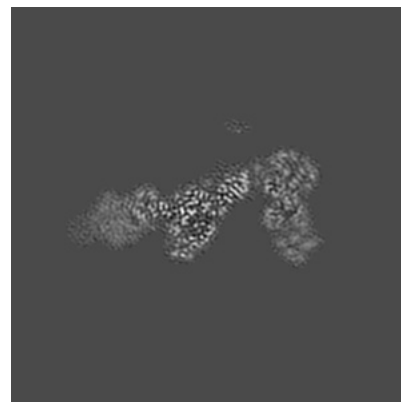
6.3.1 Primary map



X Index: 170

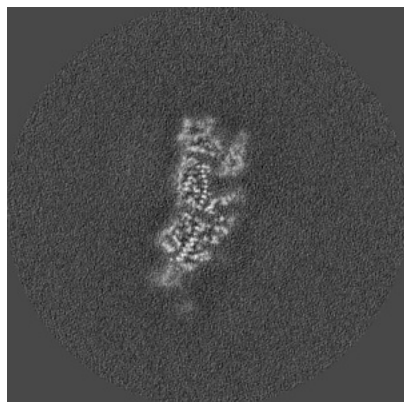


Y Index: 165

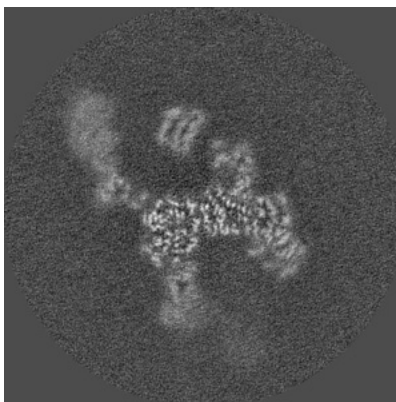


Z Index: 158

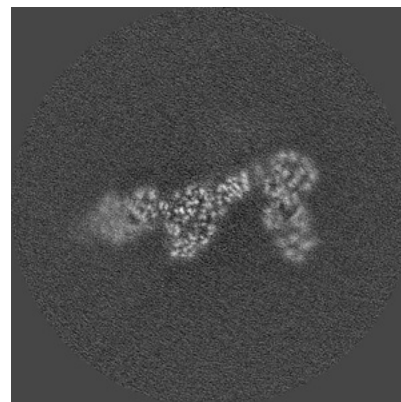
6.3.2 Raw map



X Index: 169



Y Index: 165

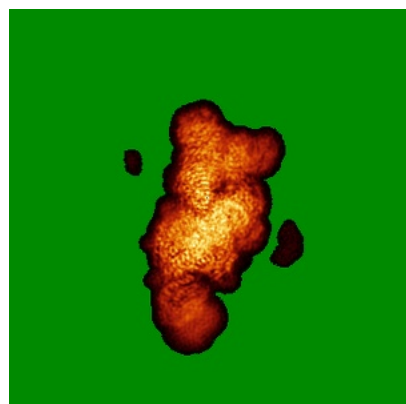


Z Index: 157

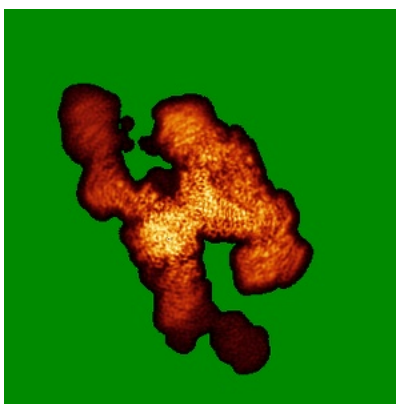
The images above show the largest variance slices of the map in three orthogonal directions.

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

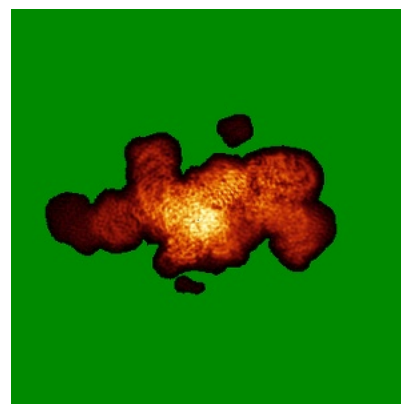
6.4.1 Primary map



X

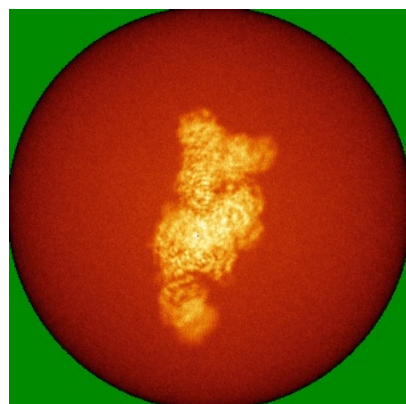


Y

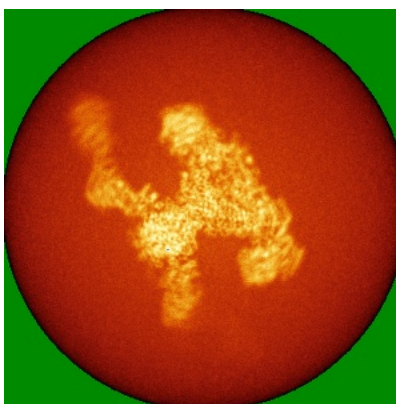


Z

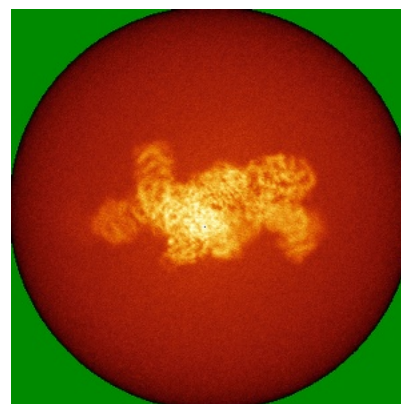
6.4.2 Raw map



X



Y

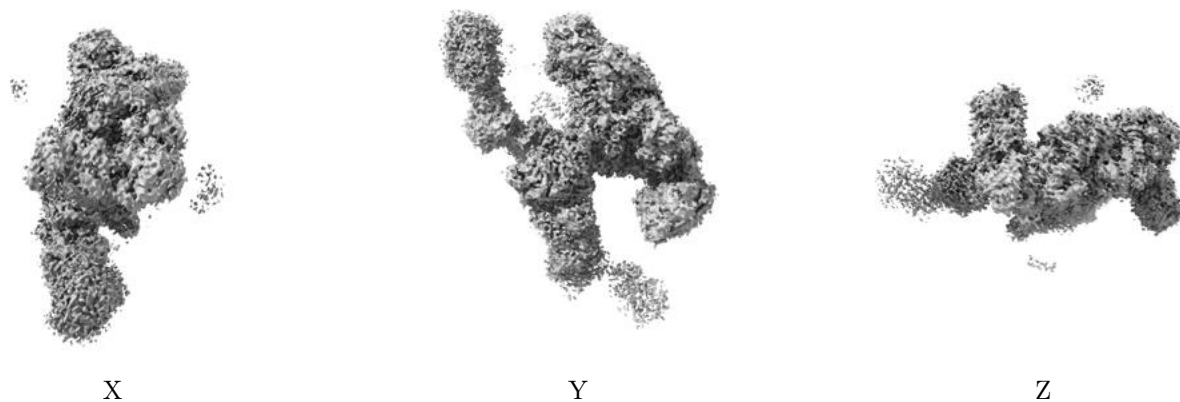


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

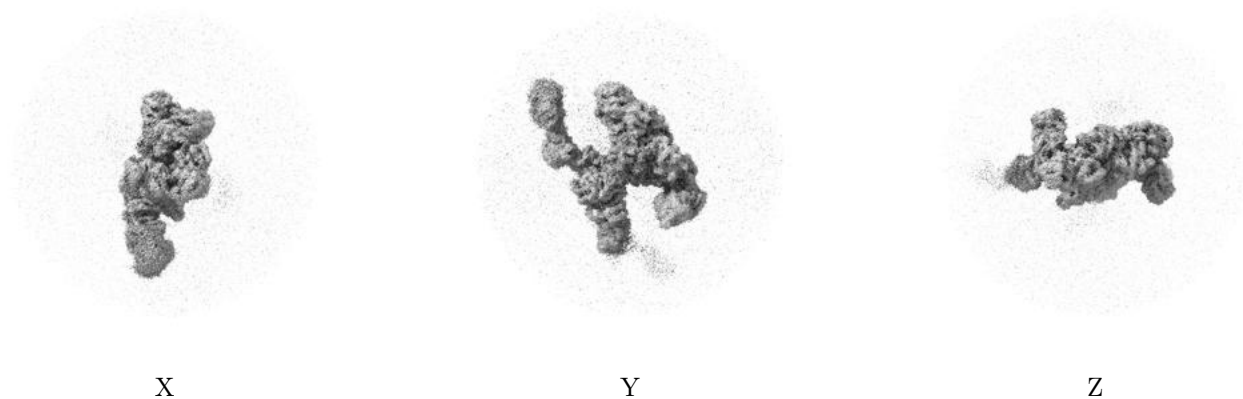
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0082. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

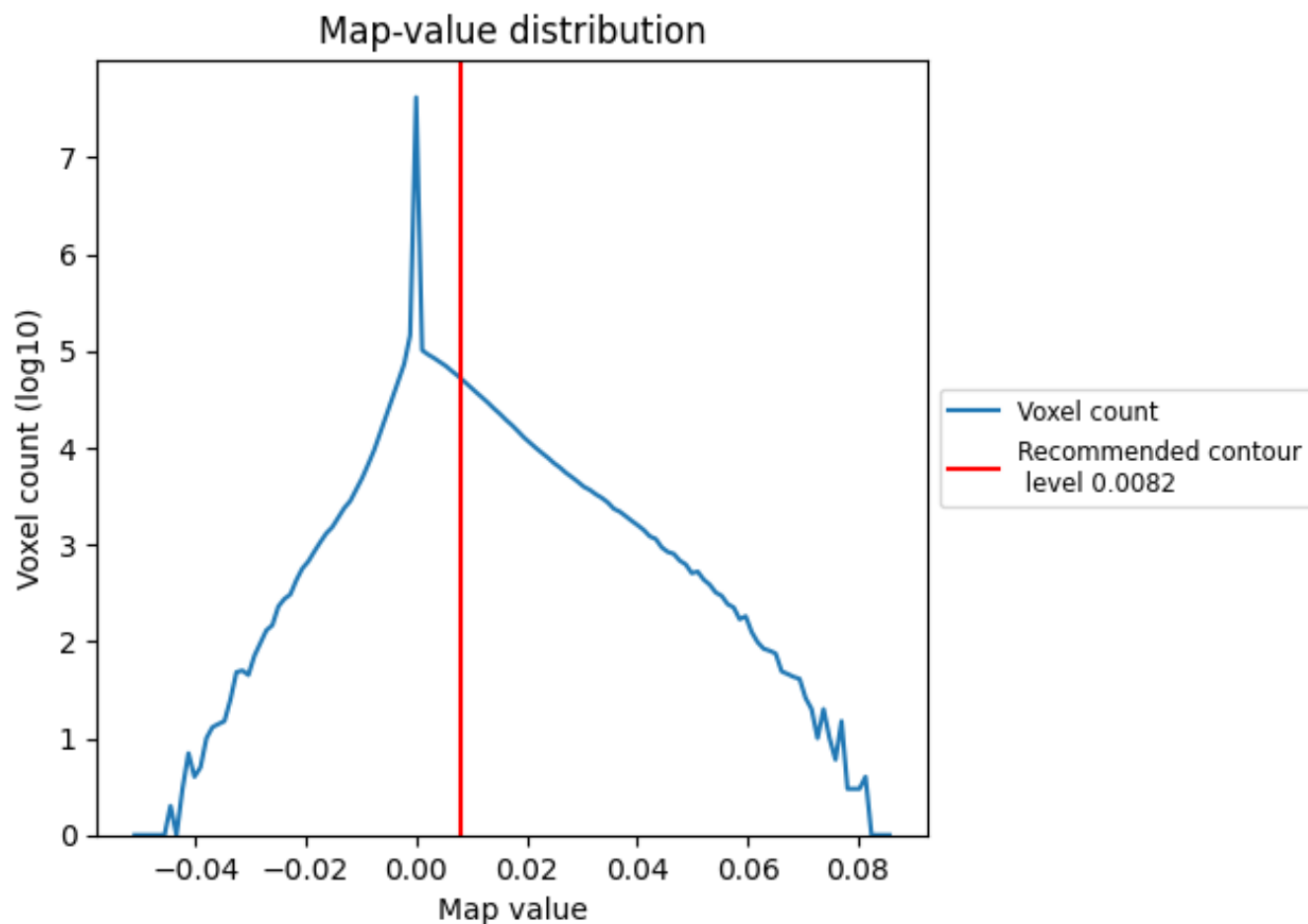
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

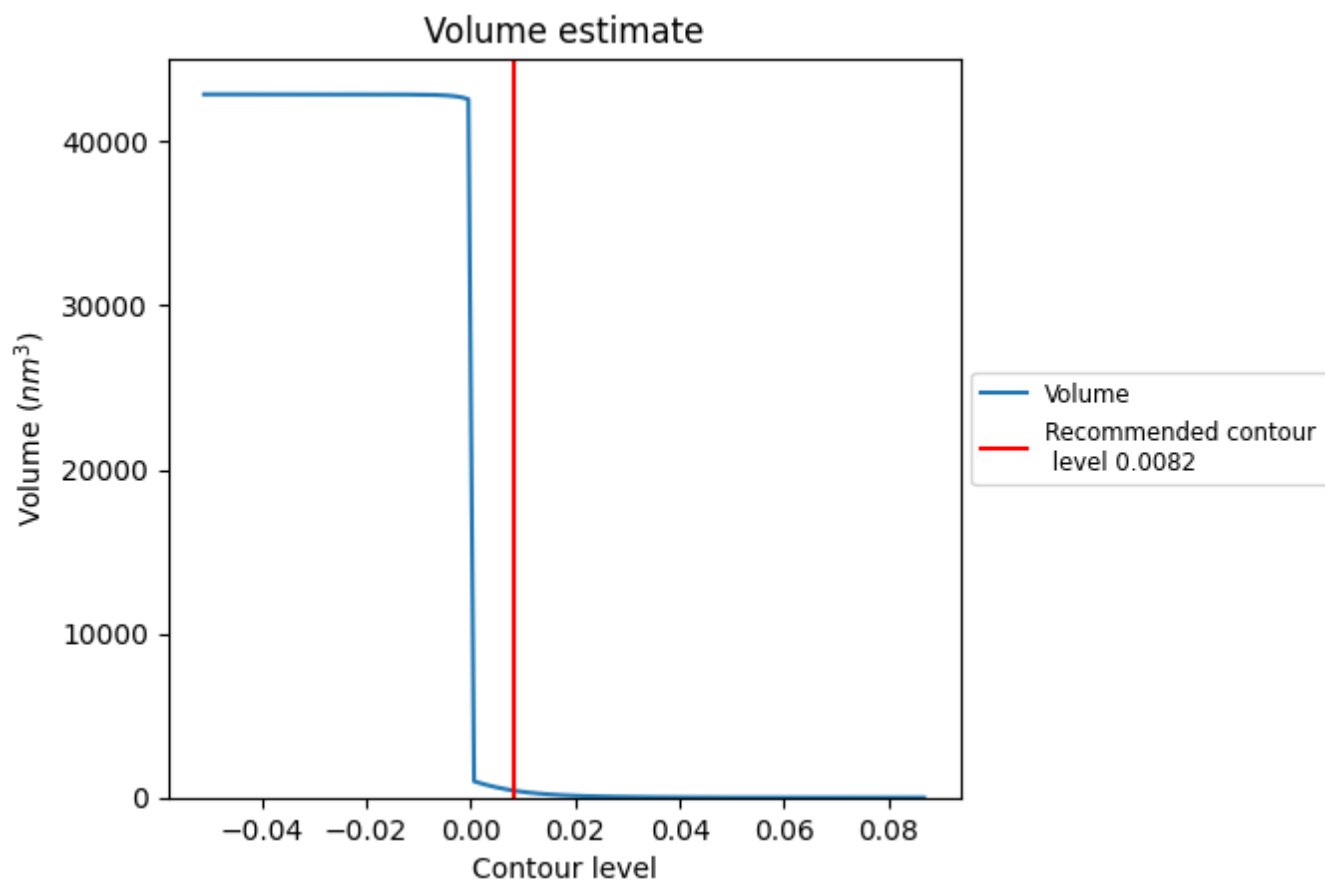
This section contains the results of statistical analysis of the map.

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.

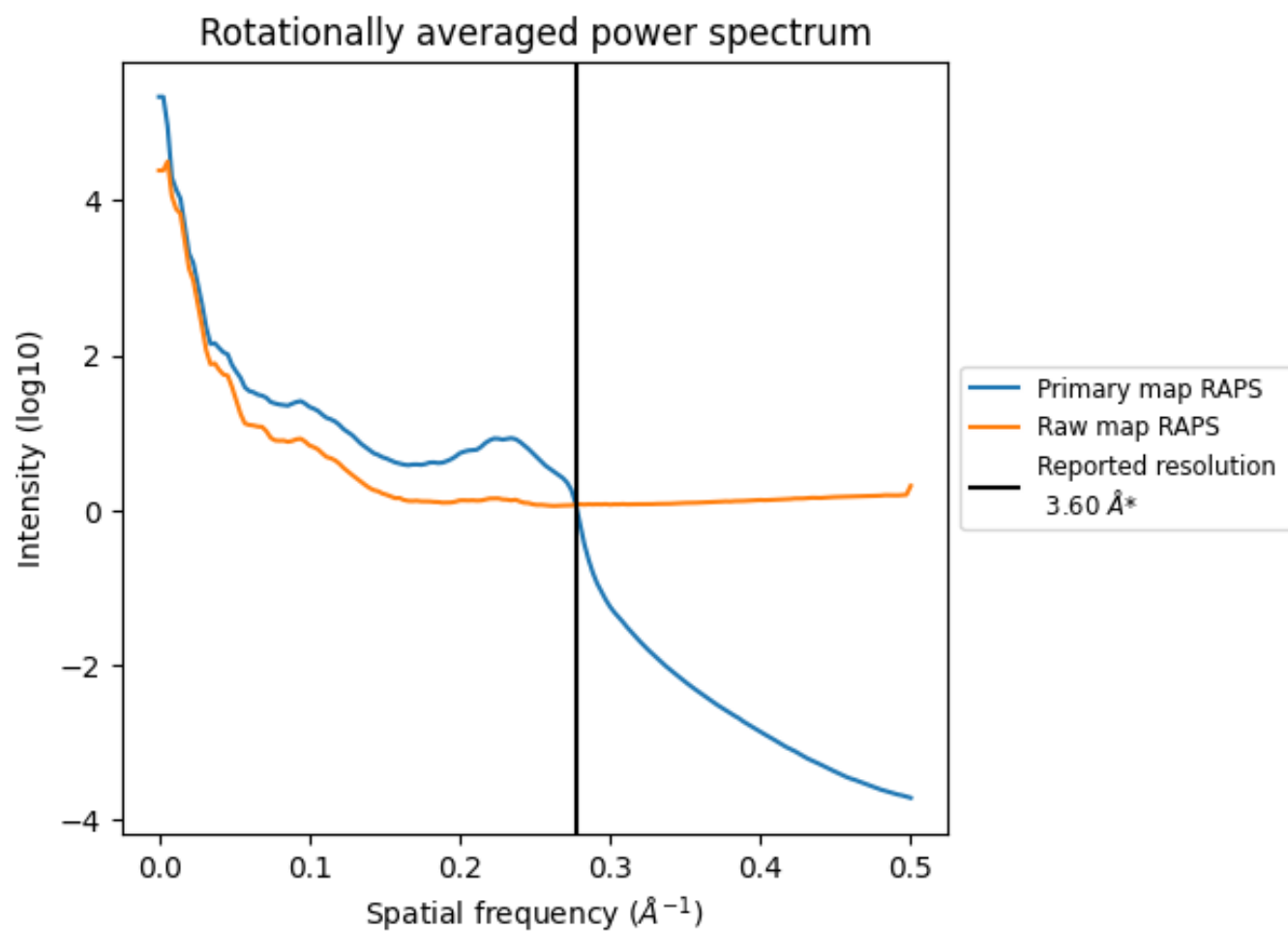
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 429 nm³; this corresponds to an approximate mass of 387 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

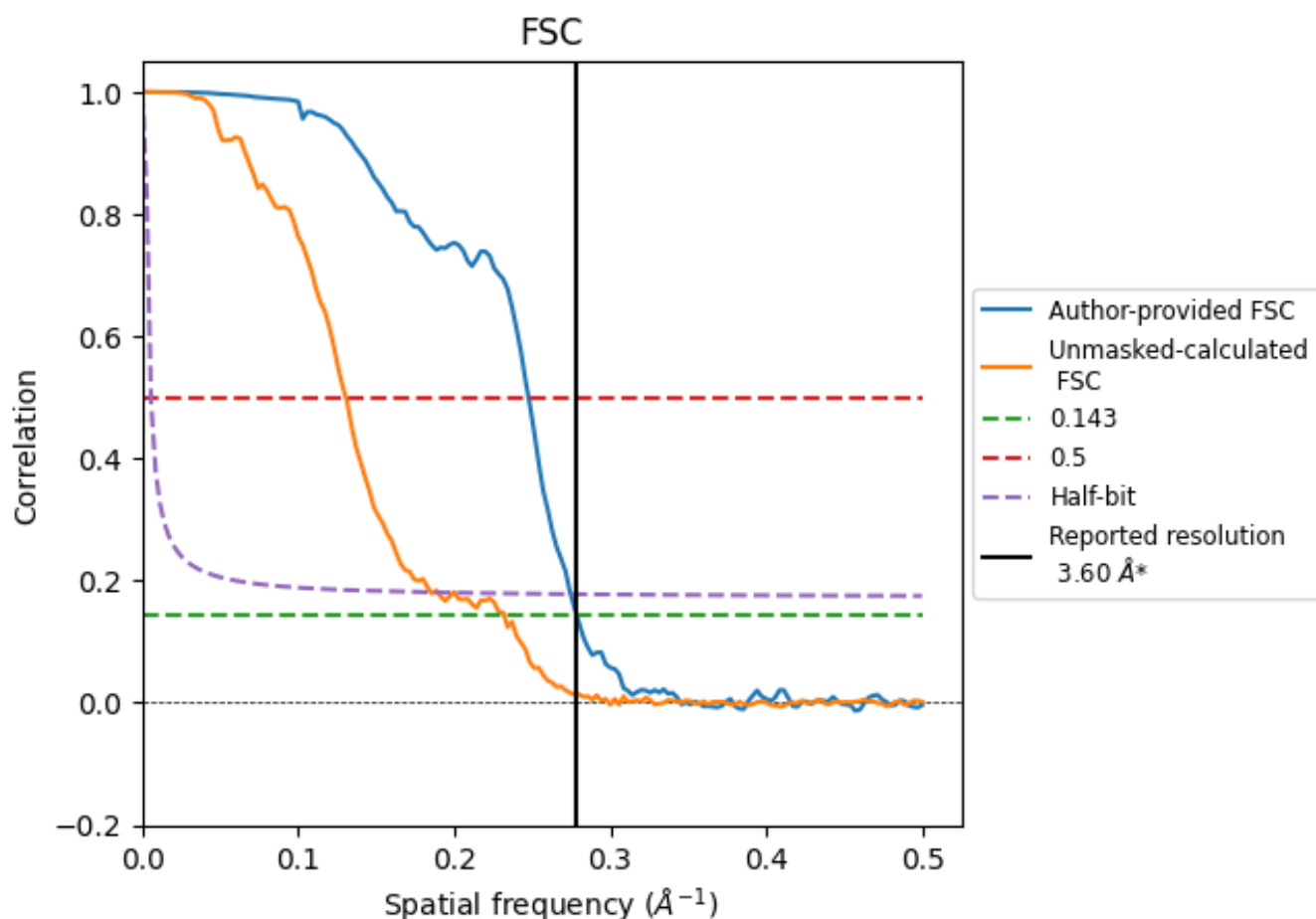


*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

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](#)

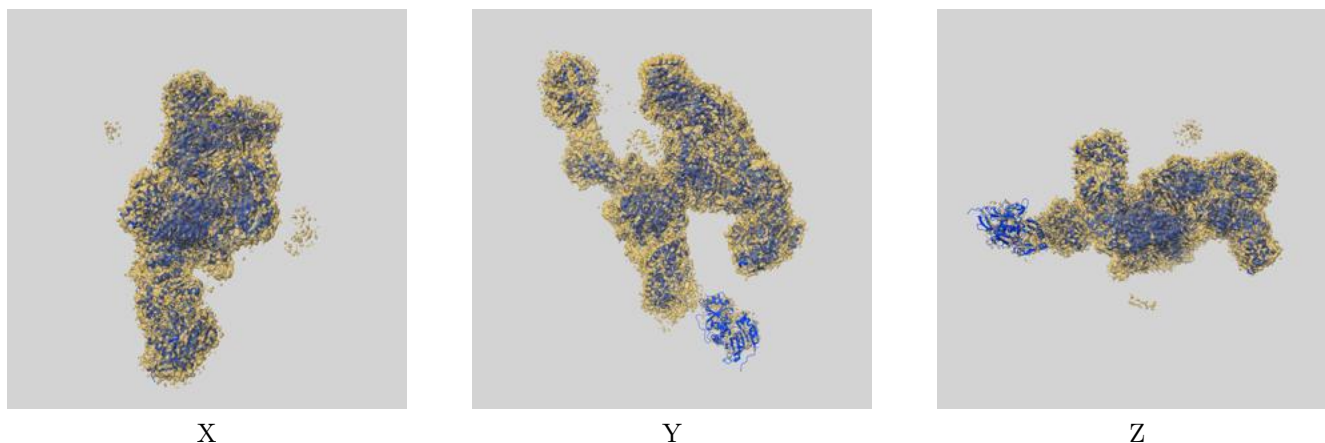
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.59	4.04	3.64
Unmasked-calculated*	4.31	7.66	5.40

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.31 differs from the reported value 3.6 by more than 10 %

9 Map-model fit [i](#)

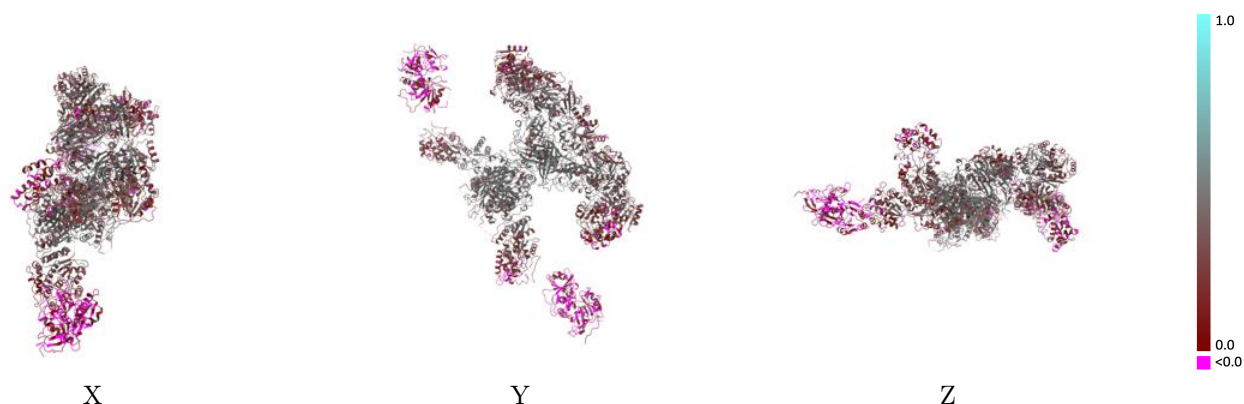
This section contains information regarding the fit between EMDB map EMD-30435 and PDB model 7CPY. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



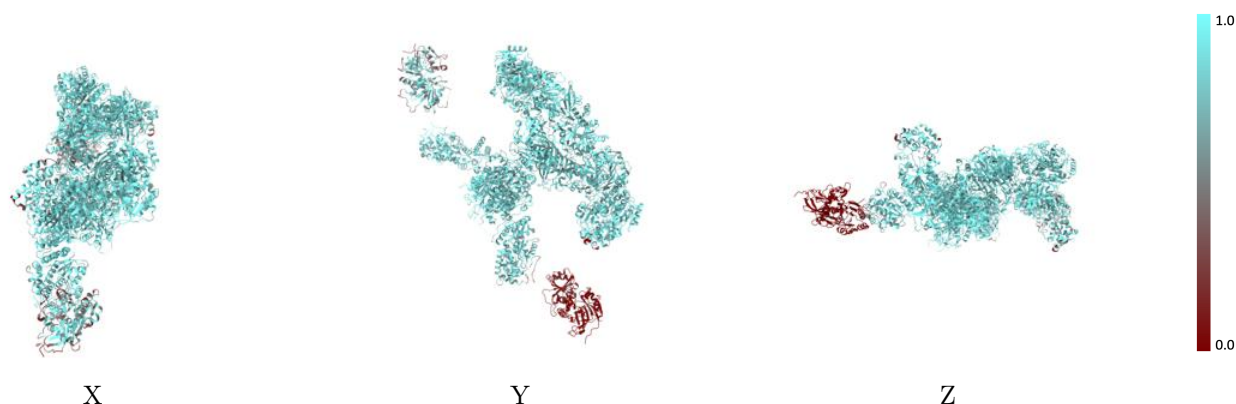
The images above show the 3D surface view of the map at the recommended contour level 0.0082 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



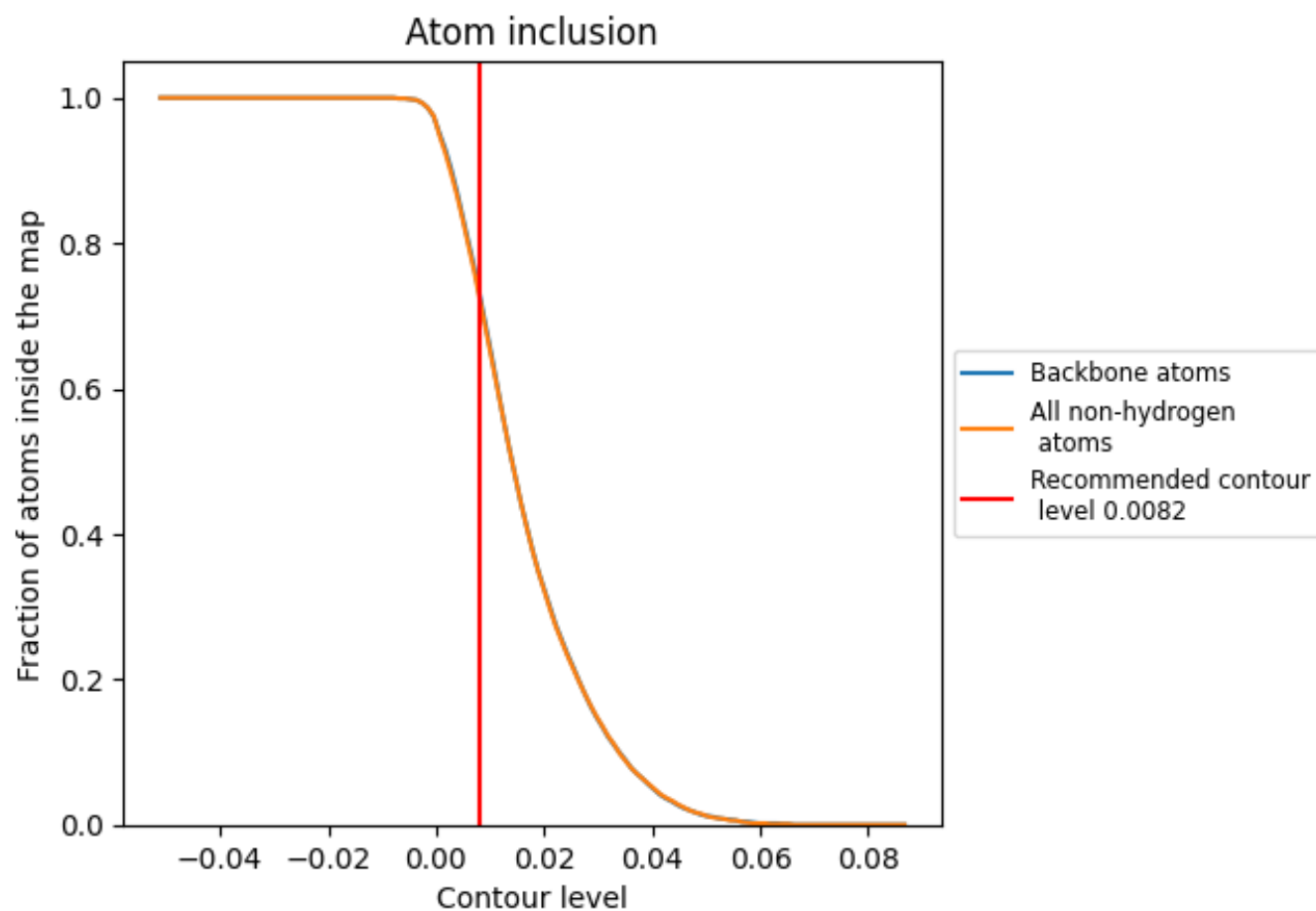
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0082).

9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 72% 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 (0.0082) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.7200	<div></div> 0.3060
A	<div></div> 0.8570	<div></div> 0.3600
B	<div></div> 0.8420	<div></div> 0.3390
C	<div></div> 0.6200	<div></div> 0.0380
D	<div></div> 0.0300	<div></div> 0.0070

