



Full wwPDB EM Validation Report ⓘ

Dec 16, 2025 – 02:51 PM EST

PDB ID : 9Y6U / pdb_00009y6u
EMDB ID : EMD-72631
Title : Cryo-EM Structure of Gp77 within the In Vitro Reconstituted RAZR:GP77 Complex
Authors : Yifei, L.; Zhang, T.; Laub, M.; Ghanbarpour, A.
Deposited on : 2025-09-09
Resolution : 3.10 Å(reported)
Based on initial model : .

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:

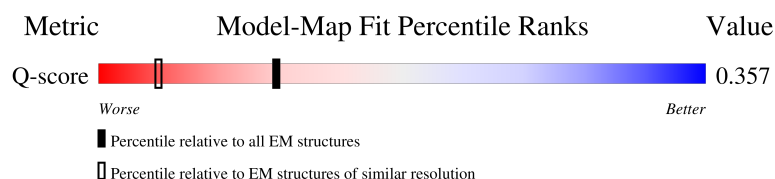
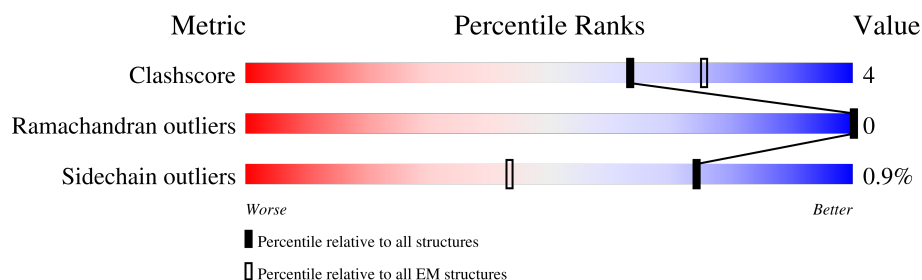
EMDB validation analysis : 0.0.1.dev129
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.47

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 3.10 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	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14724 (2.60 - 3.60)

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	IA	227	
1	IB	227	
1	IC	227	
1	ID	227	

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Mol	Chain	Length	Quality of chain
1	IE	227	
1	IF	227	
1	IG	227	
1	IH	227	
1	II	227	
1	IJ	227	
1	IK	227	
1	IL	227	
1	IM	227	
1	IN	227	
1	IO	227	
1	IP	227	
1	IQ	227	
1	IR	227	
1	IS	227	
1	IT	227	
1	IU	227	
1	IV	227	
1	IW	227	
1	IX	227	

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 47328 atoms, of which 23664 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 Gp77.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	IA	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IB	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IC	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	ID	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IE	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IF	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IG	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IH	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	II	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IJ	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IK	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IL	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IM	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IN	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IO	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IP	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IQ	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		

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Mol	Chain	Residues	Atoms						AltConf	Trace
1	IR	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IS	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IT	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IU	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IV	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IW	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		
1	IX	125	Total	C	H	N	O	S	0	0
			1972	623	986	172	186	5		

There are 240 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
IA	218	GLY	-	expression tag	UNP A0AAE8YXX1
IA	219	SER	-	expression tag	UNP A0AAE8YXX1
IA	220	SER	-	expression tag	UNP A0AAE8YXX1
IA	221	GLY	-	expression tag	UNP A0AAE8YXX1
IA	222	HIS	-	expression tag	UNP A0AAE8YXX1
IA	223	HIS	-	expression tag	UNP A0AAE8YXX1
IA	224	HIS	-	expression tag	UNP A0AAE8YXX1
IA	225	HIS	-	expression tag	UNP A0AAE8YXX1
IA	226	HIS	-	expression tag	UNP A0AAE8YXX1
IA	227	HIS	-	expression tag	UNP A0AAE8YXX1
IB	218	GLY	-	expression tag	UNP A0AAE8YXX1
IB	219	SER	-	expression tag	UNP A0AAE8YXX1
IB	220	SER	-	expression tag	UNP A0AAE8YXX1
IB	221	GLY	-	expression tag	UNP A0AAE8YXX1
IB	222	HIS	-	expression tag	UNP A0AAE8YXX1
IB	223	HIS	-	expression tag	UNP A0AAE8YXX1
IB	224	HIS	-	expression tag	UNP A0AAE8YXX1
IB	225	HIS	-	expression tag	UNP A0AAE8YXX1
IB	226	HIS	-	expression tag	UNP A0AAE8YXX1
IB	227	HIS	-	expression tag	UNP A0AAE8YXX1
IC	218	GLY	-	expression tag	UNP A0AAE8YXX1
IC	219	SER	-	expression tag	UNP A0AAE8YXX1
IC	220	SER	-	expression tag	UNP A0AAE8YXX1
IC	221	GLY	-	expression tag	UNP A0AAE8YXX1
IC	222	HIS	-	expression tag	UNP A0AAE8YXX1

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Chain	Residue	Modelled	Actual	Comment	Reference
IC	223	HIS	-	expression tag	UNP A0AAE8YXX1
IC	224	HIS	-	expression tag	UNP A0AAE8YXX1
IC	225	HIS	-	expression tag	UNP A0AAE8YXX1
IC	226	HIS	-	expression tag	UNP A0AAE8YXX1
IC	227	HIS	-	expression tag	UNP A0AAE8YXX1
ID	218	GLY	-	expression tag	UNP A0AAE8YXX1
ID	219	SER	-	expression tag	UNP A0AAE8YXX1
ID	220	SER	-	expression tag	UNP A0AAE8YXX1
ID	221	GLY	-	expression tag	UNP A0AAE8YXX1
ID	222	HIS	-	expression tag	UNP A0AAE8YXX1
ID	223	HIS	-	expression tag	UNP A0AAE8YXX1
ID	224	HIS	-	expression tag	UNP A0AAE8YXX1
ID	225	HIS	-	expression tag	UNP A0AAE8YXX1
ID	226	HIS	-	expression tag	UNP A0AAE8YXX1
ID	227	HIS	-	expression tag	UNP A0AAE8YXX1
IE	218	GLY	-	expression tag	UNP A0AAE8YXX1
IE	219	SER	-	expression tag	UNP A0AAE8YXX1
IE	220	SER	-	expression tag	UNP A0AAE8YXX1
IE	221	GLY	-	expression tag	UNP A0AAE8YXX1
IE	222	HIS	-	expression tag	UNP A0AAE8YXX1
IE	223	HIS	-	expression tag	UNP A0AAE8YXX1
IE	224	HIS	-	expression tag	UNP A0AAE8YXX1
IE	225	HIS	-	expression tag	UNP A0AAE8YXX1
IE	226	HIS	-	expression tag	UNP A0AAE8YXX1
IE	227	HIS	-	expression tag	UNP A0AAE8YXX1
IF	218	GLY	-	expression tag	UNP A0AAE8YXX1
IF	219	SER	-	expression tag	UNP A0AAE8YXX1
IF	220	SER	-	expression tag	UNP A0AAE8YXX1
IF	221	GLY	-	expression tag	UNP A0AAE8YXX1
IF	222	HIS	-	expression tag	UNP A0AAE8YXX1
IF	223	HIS	-	expression tag	UNP A0AAE8YXX1
IF	224	HIS	-	expression tag	UNP A0AAE8YXX1
IF	225	HIS	-	expression tag	UNP A0AAE8YXX1
IF	226	HIS	-	expression tag	UNP A0AAE8YXX1
IF	227	HIS	-	expression tag	UNP A0AAE8YXX1
IG	218	GLY	-	expression tag	UNP A0AAE8YXX1
IG	219	SER	-	expression tag	UNP A0AAE8YXX1
IG	220	SER	-	expression tag	UNP A0AAE8YXX1
IG	221	GLY	-	expression tag	UNP A0AAE8YXX1
IG	222	HIS	-	expression tag	UNP A0AAE8YXX1
IG	223	HIS	-	expression tag	UNP A0AAE8YXX1
IG	224	HIS	-	expression tag	UNP A0AAE8YXX1

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Chain	Residue	Modelled	Actual	Comment	Reference
IG	225	HIS	-	expression tag	UNP A0AAE8YXX1
IG	226	HIS	-	expression tag	UNP A0AAE8YXX1
IG	227	HIS	-	expression tag	UNP A0AAE8YXX1
IH	218	GLY	-	expression tag	UNP A0AAE8YXX1
IH	219	SER	-	expression tag	UNP A0AAE8YXX1
IH	220	SER	-	expression tag	UNP A0AAE8YXX1
IH	221	GLY	-	expression tag	UNP A0AAE8YXX1
IH	222	HIS	-	expression tag	UNP A0AAE8YXX1
IH	223	HIS	-	expression tag	UNP A0AAE8YXX1
IH	224	HIS	-	expression tag	UNP A0AAE8YXX1
IH	225	HIS	-	expression tag	UNP A0AAE8YXX1
IH	226	HIS	-	expression tag	UNP A0AAE8YXX1
IH	227	HIS	-	expression tag	UNP A0AAE8YXX1
II	218	GLY	-	expression tag	UNP A0AAE8YXX1
II	219	SER	-	expression tag	UNP A0AAE8YXX1
II	220	SER	-	expression tag	UNP A0AAE8YXX1
II	221	GLY	-	expression tag	UNP A0AAE8YXX1
II	222	HIS	-	expression tag	UNP A0AAE8YXX1
II	223	HIS	-	expression tag	UNP A0AAE8YXX1
II	224	HIS	-	expression tag	UNP A0AAE8YXX1
II	225	HIS	-	expression tag	UNP A0AAE8YXX1
II	226	HIS	-	expression tag	UNP A0AAE8YXX1
II	227	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	218	GLY	-	expression tag	UNP A0AAE8YXX1
IJ	219	SER	-	expression tag	UNP A0AAE8YXX1
IJ	220	SER	-	expression tag	UNP A0AAE8YXX1
IJ	221	GLY	-	expression tag	UNP A0AAE8YXX1
IJ	222	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	223	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	224	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	225	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	226	HIS	-	expression tag	UNP A0AAE8YXX1
IJ	227	HIS	-	expression tag	UNP A0AAE8YXX1
IK	218	GLY	-	expression tag	UNP A0AAE8YXX1
IK	219	SER	-	expression tag	UNP A0AAE8YXX1
IK	220	SER	-	expression tag	UNP A0AAE8YXX1
IK	221	GLY	-	expression tag	UNP A0AAE8YXX1
IK	222	HIS	-	expression tag	UNP A0AAE8YXX1
IK	223	HIS	-	expression tag	UNP A0AAE8YXX1
IK	224	HIS	-	expression tag	UNP A0AAE8YXX1
IK	225	HIS	-	expression tag	UNP A0AAE8YXX1
IK	226	HIS	-	expression tag	UNP A0AAE8YXX1

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Chain	Residue	Modelled	Actual	Comment	Reference
IK	227	HIS	-	expression tag	UNP A0AAE8YXX1
IL	218	GLY	-	expression tag	UNP A0AAE8YXX1
IL	219	SER	-	expression tag	UNP A0AAE8YXX1
IL	220	SER	-	expression tag	UNP A0AAE8YXX1
IL	221	GLY	-	expression tag	UNP A0AAE8YXX1
IL	222	HIS	-	expression tag	UNP A0AAE8YXX1
IL	223	HIS	-	expression tag	UNP A0AAE8YXX1
IL	224	HIS	-	expression tag	UNP A0AAE8YXX1
IL	225	HIS	-	expression tag	UNP A0AAE8YXX1
IL	226	HIS	-	expression tag	UNP A0AAE8YXX1
IL	227	HIS	-	expression tag	UNP A0AAE8YXX1
IM	218	GLY	-	expression tag	UNP A0AAE8YXX1
IM	219	SER	-	expression tag	UNP A0AAE8YXX1
IM	220	SER	-	expression tag	UNP A0AAE8YXX1
IM	221	GLY	-	expression tag	UNP A0AAE8YXX1
IM	222	HIS	-	expression tag	UNP A0AAE8YXX1
IM	223	HIS	-	expression tag	UNP A0AAE8YXX1
IM	224	HIS	-	expression tag	UNP A0AAE8YXX1
IM	225	HIS	-	expression tag	UNP A0AAE8YXX1
IM	226	HIS	-	expression tag	UNP A0AAE8YXX1
IM	227	HIS	-	expression tag	UNP A0AAE8YXX1
IN	218	GLY	-	expression tag	UNP A0AAE8YXX1
IN	219	SER	-	expression tag	UNP A0AAE8YXX1
IN	220	SER	-	expression tag	UNP A0AAE8YXX1
IN	221	GLY	-	expression tag	UNP A0AAE8YXX1
IN	222	HIS	-	expression tag	UNP A0AAE8YXX1
IN	223	HIS	-	expression tag	UNP A0AAE8YXX1
IN	224	HIS	-	expression tag	UNP A0AAE8YXX1
IN	225	HIS	-	expression tag	UNP A0AAE8YXX1
IN	226	HIS	-	expression tag	UNP A0AAE8YXX1
IN	227	HIS	-	expression tag	UNP A0AAE8YXX1
IO	218	GLY	-	expression tag	UNP A0AAE8YXX1
IO	219	SER	-	expression tag	UNP A0AAE8YXX1
IO	220	SER	-	expression tag	UNP A0AAE8YXX1
IO	221	GLY	-	expression tag	UNP A0AAE8YXX1
IO	222	HIS	-	expression tag	UNP A0AAE8YXX1
IO	223	HIS	-	expression tag	UNP A0AAE8YXX1
IO	224	HIS	-	expression tag	UNP A0AAE8YXX1
IO	225	HIS	-	expression tag	UNP A0AAE8YXX1
IO	226	HIS	-	expression tag	UNP A0AAE8YXX1
IO	227	HIS	-	expression tag	UNP A0AAE8YXX1
IP	218	GLY	-	expression tag	UNP A0AAE8YXX1

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Chain	Residue	Modelled	Actual	Comment	Reference
IP	219	SER	-	expression tag	UNP A0AAE8YXX1
IP	220	SER	-	expression tag	UNP A0AAE8YXX1
IP	221	GLY	-	expression tag	UNP A0AAE8YXX1
IP	222	HIS	-	expression tag	UNP A0AAE8YXX1
IP	223	HIS	-	expression tag	UNP A0AAE8YXX1
IP	224	HIS	-	expression tag	UNP A0AAE8YXX1
IP	225	HIS	-	expression tag	UNP A0AAE8YXX1
IP	226	HIS	-	expression tag	UNP A0AAE8YXX1
IP	227	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	218	GLY	-	expression tag	UNP A0AAE8YXX1
IQ	219	SER	-	expression tag	UNP A0AAE8YXX1
IQ	220	SER	-	expression tag	UNP A0AAE8YXX1
IQ	221	GLY	-	expression tag	UNP A0AAE8YXX1
IQ	222	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	223	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	224	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	225	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	226	HIS	-	expression tag	UNP A0AAE8YXX1
IQ	227	HIS	-	expression tag	UNP A0AAE8YXX1
IR	218	GLY	-	expression tag	UNP A0AAE8YXX1
IR	219	SER	-	expression tag	UNP A0AAE8YXX1
IR	220	SER	-	expression tag	UNP A0AAE8YXX1
IR	221	GLY	-	expression tag	UNP A0AAE8YXX1
IR	222	HIS	-	expression tag	UNP A0AAE8YXX1
IR	223	HIS	-	expression tag	UNP A0AAE8YXX1
IR	224	HIS	-	expression tag	UNP A0AAE8YXX1
IR	225	HIS	-	expression tag	UNP A0AAE8YXX1
IR	226	HIS	-	expression tag	UNP A0AAE8YXX1
IR	227	HIS	-	expression tag	UNP A0AAE8YXX1
IS	218	GLY	-	expression tag	UNP A0AAE8YXX1
IS	219	SER	-	expression tag	UNP A0AAE8YXX1
IS	220	SER	-	expression tag	UNP A0AAE8YXX1
IS	221	GLY	-	expression tag	UNP A0AAE8YXX1
IS	222	HIS	-	expression tag	UNP A0AAE8YXX1
IS	223	HIS	-	expression tag	UNP A0AAE8YXX1
IS	224	HIS	-	expression tag	UNP A0AAE8YXX1
IS	225	HIS	-	expression tag	UNP A0AAE8YXX1
IS	226	HIS	-	expression tag	UNP A0AAE8YXX1
IS	227	HIS	-	expression tag	UNP A0AAE8YXX1
IT	218	GLY	-	expression tag	UNP A0AAE8YXX1
IT	219	SER	-	expression tag	UNP A0AAE8YXX1
IT	220	SER	-	expression tag	UNP A0AAE8YXX1

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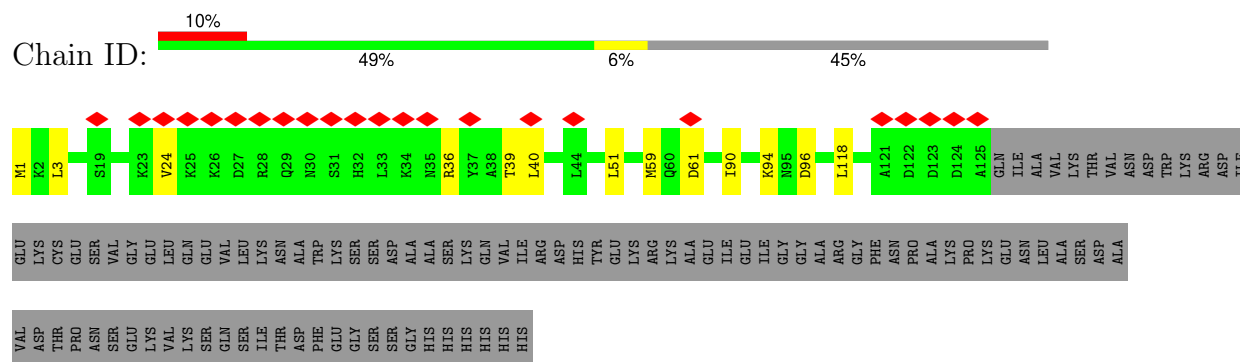
Chain	Residue	Modelled	Actual	Comment	Reference
IT	221	GLY	-	expression tag	UNP A0AAE8YXX1
IT	222	HIS	-	expression tag	UNP A0AAE8YXX1
IT	223	HIS	-	expression tag	UNP A0AAE8YXX1
IT	224	HIS	-	expression tag	UNP A0AAE8YXX1
IT	225	HIS	-	expression tag	UNP A0AAE8YXX1
IT	226	HIS	-	expression tag	UNP A0AAE8YXX1
IT	227	HIS	-	expression tag	UNP A0AAE8YXX1
IU	218	GLY	-	expression tag	UNP A0AAE8YXX1
IU	219	SER	-	expression tag	UNP A0AAE8YXX1
IU	220	SER	-	expression tag	UNP A0AAE8YXX1
IU	221	GLY	-	expression tag	UNP A0AAE8YXX1
IU	222	HIS	-	expression tag	UNP A0AAE8YXX1
IU	223	HIS	-	expression tag	UNP A0AAE8YXX1
IU	224	HIS	-	expression tag	UNP A0AAE8YXX1
IU	225	HIS	-	expression tag	UNP A0AAE8YXX1
IU	226	HIS	-	expression tag	UNP A0AAE8YXX1
IU	227	HIS	-	expression tag	UNP A0AAE8YXX1
IV	218	GLY	-	expression tag	UNP A0AAE8YXX1
IV	219	SER	-	expression tag	UNP A0AAE8YXX1
IV	220	SER	-	expression tag	UNP A0AAE8YXX1
IV	221	GLY	-	expression tag	UNP A0AAE8YXX1
IV	222	HIS	-	expression tag	UNP A0AAE8YXX1
IV	223	HIS	-	expression tag	UNP A0AAE8YXX1
IV	224	HIS	-	expression tag	UNP A0AAE8YXX1
IV	225	HIS	-	expression tag	UNP A0AAE8YXX1
IV	226	HIS	-	expression tag	UNP A0AAE8YXX1
IV	227	HIS	-	expression tag	UNP A0AAE8YXX1
IW	218	GLY	-	expression tag	UNP A0AAE8YXX1
IW	219	SER	-	expression tag	UNP A0AAE8YXX1
IW	220	SER	-	expression tag	UNP A0AAE8YXX1
IW	221	GLY	-	expression tag	UNP A0AAE8YXX1
IW	222	HIS	-	expression tag	UNP A0AAE8YXX1
IW	223	HIS	-	expression tag	UNP A0AAE8YXX1
IW	224	HIS	-	expression tag	UNP A0AAE8YXX1
IW	225	HIS	-	expression tag	UNP A0AAE8YXX1
IW	226	HIS	-	expression tag	UNP A0AAE8YXX1
IW	227	HIS	-	expression tag	UNP A0AAE8YXX1
IX	218	GLY	-	expression tag	UNP A0AAE8YXX1
IX	219	SER	-	expression tag	UNP A0AAE8YXX1
IX	220	SER	-	expression tag	UNP A0AAE8YXX1
IX	221	GLY	-	expression tag	UNP A0AAE8YXX1
IX	222	HIS	-	expression tag	UNP A0AAE8YXX1

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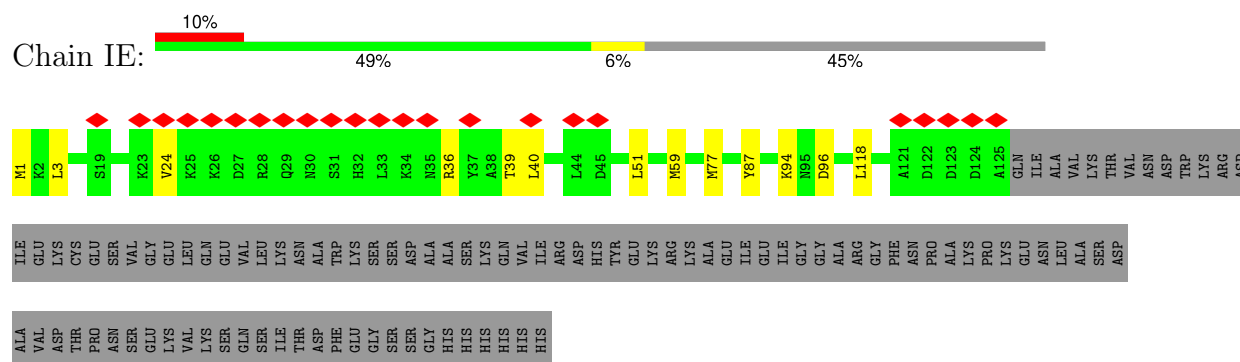
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
IX	223	HIS	-	expression tag	UNP A0AAE8YXX1
IX	224	HIS	-	expression tag	UNP A0AAE8YXX1
IX	225	HIS	-	expression tag	UNP A0AAE8YXX1
IX	226	HIS	-	expression tag	UNP A0AAE8YXX1
IX	227	HIS	-	expression tag	UNP A0AAE8YXX1

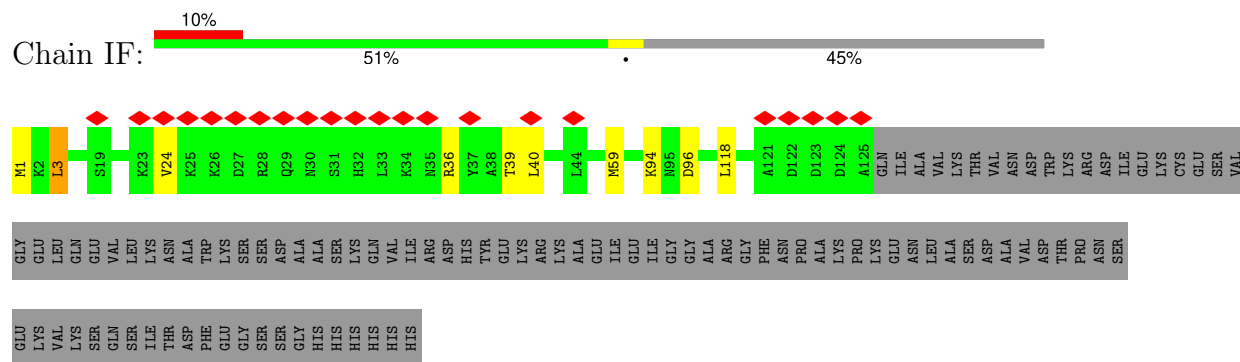
• Molecule 1: Gp77



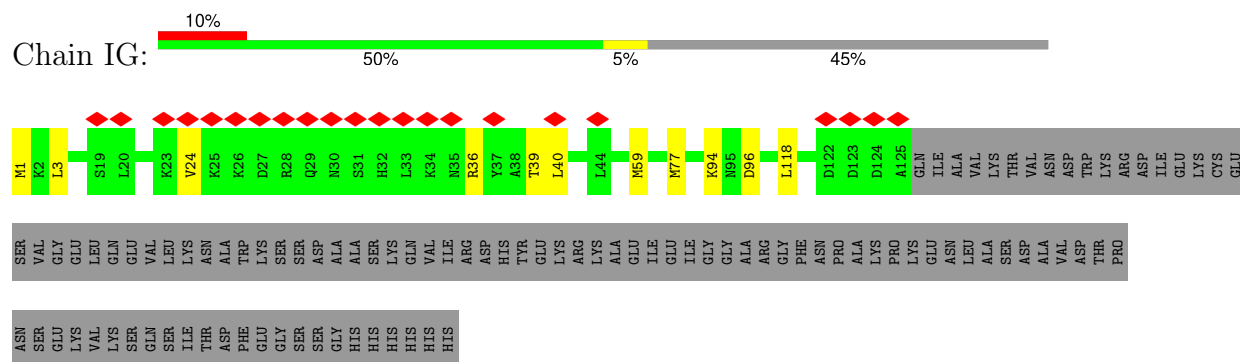
• Molecule 1: Gp77



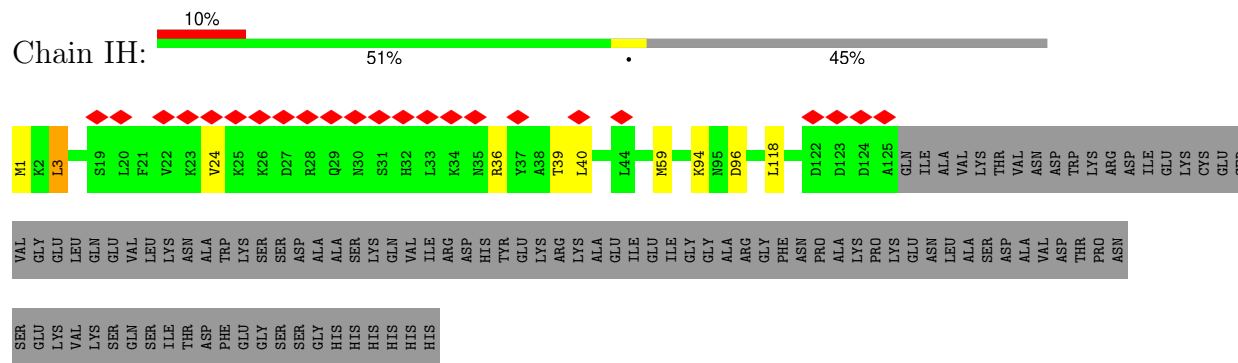
• Molecule 1: Gp77



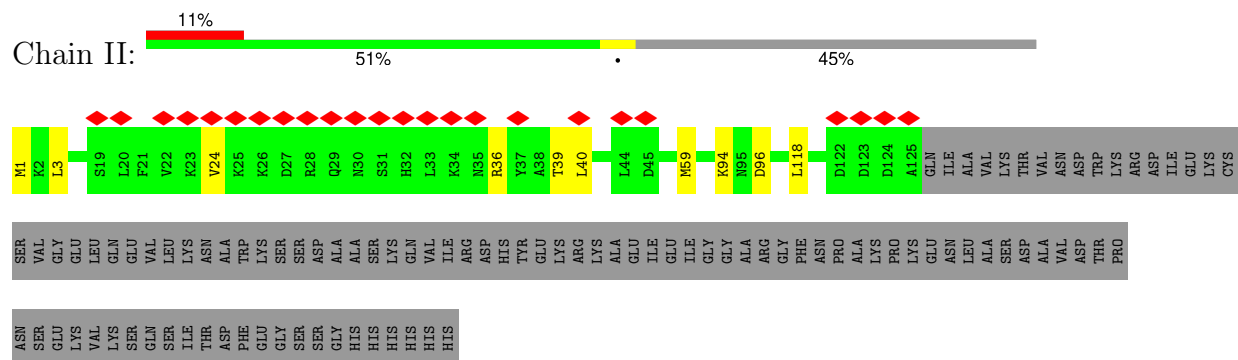
• Molecule 1: Gp77



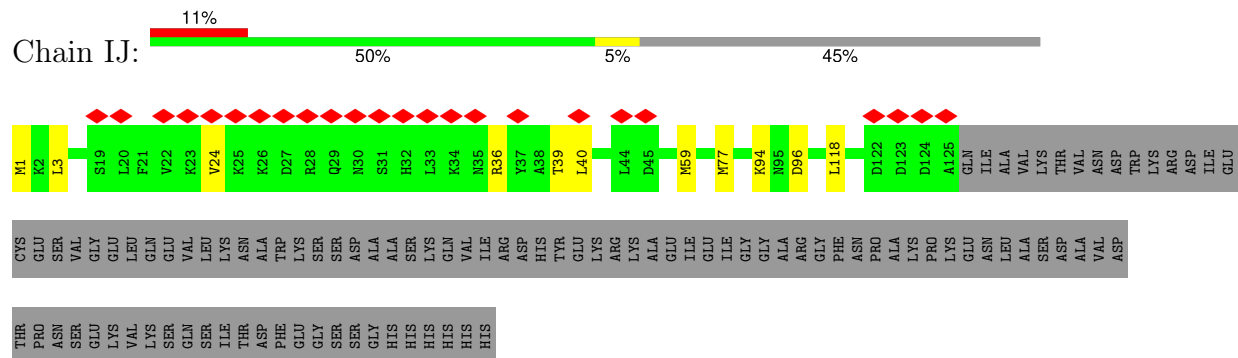
● Molecule 1: Gp77



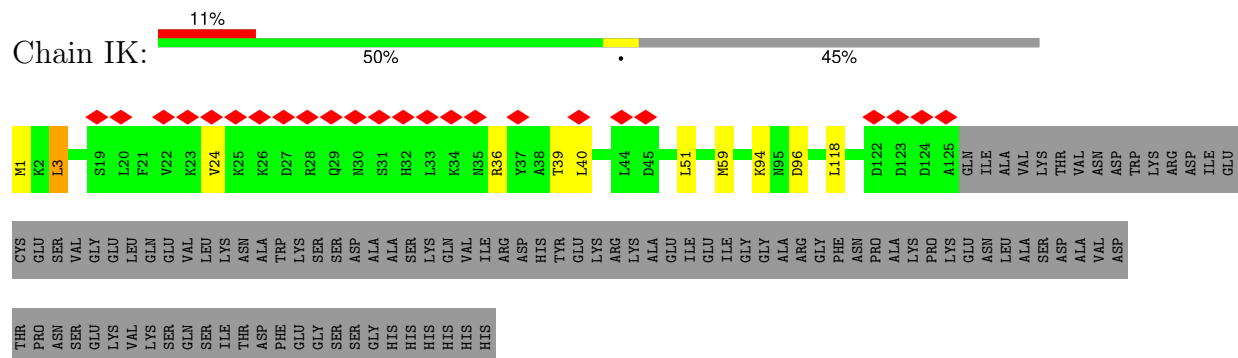
● Molecule 1: Gp77



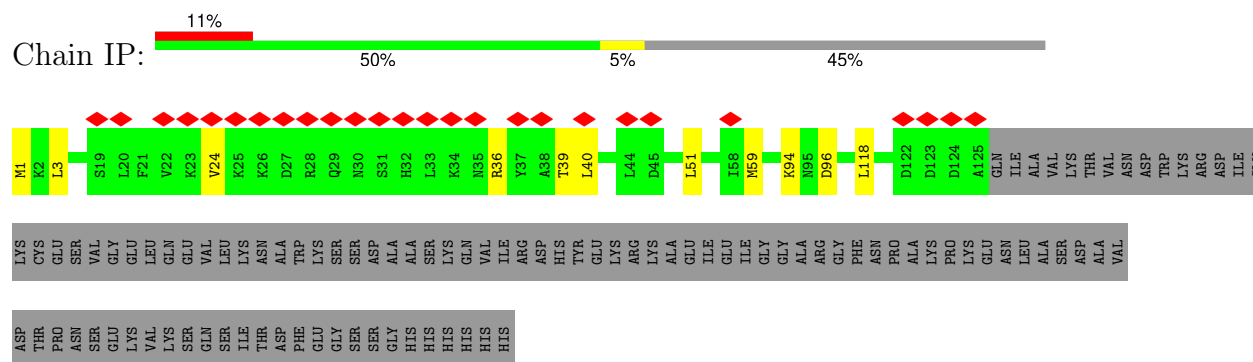
● Molecule 1: Gp77



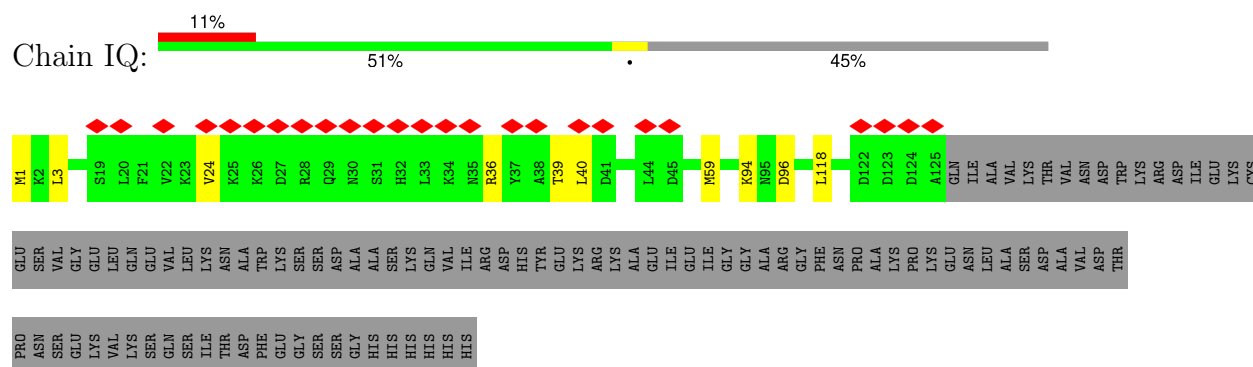
● Molecule 1: Gp77



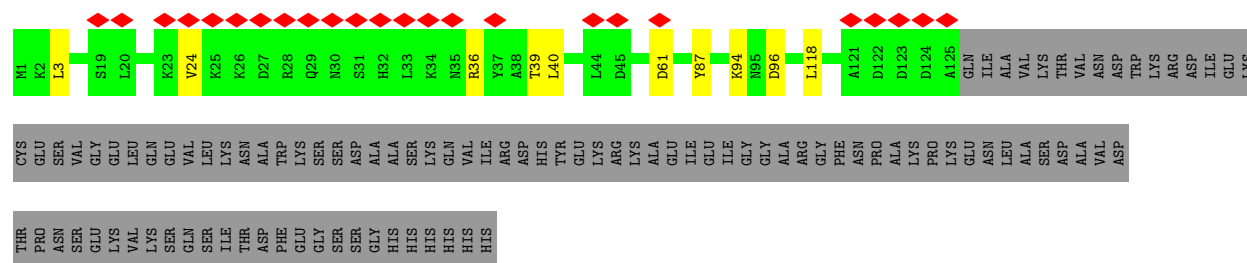
● Molecule 1: Gp77



● Molecule 1: Gp77



Chain IX:



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	28191	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	47.18	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	1.128	Depositor
Minimum map value	-0.461	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.167	Depositor
Map size ($\text{\AA}$)	653.972, 653.972, 653.972	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.4863, 1.4863, 1.4863	Depositor

5 Model quality

5.1 Standard geometry

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	IA	0.12	0/1004	0.27	0/1355
1	IB	0.12	0/1004	0.28	0/1355
1	IC	0.12	0/1004	0.28	0/1355
1	ID	0.12	0/1004	0.27	0/1355
1	IE	0.12	0/1004	0.28	0/1355
1	IF	0.12	0/1004	0.27	0/1355
1	IG	0.12	0/1004	0.27	0/1355
1	IH	0.12	0/1004	0.28	0/1355
1	II	0.12	0/1004	0.28	0/1355
1	IJ	0.12	0/1004	0.27	0/1355
1	IK	0.12	0/1004	0.28	0/1355
1	IL	0.12	0/1004	0.28	0/1355
1	IM	0.12	0/1004	0.27	0/1355
1	IN	0.12	0/1004	0.28	0/1355
1	IO	0.12	0/1004	0.27	0/1355
1	IP	0.12	0/1004	0.27	0/1355
1	IQ	0.12	0/1004	0.28	0/1355
1	IR	0.12	0/1004	0.28	0/1355
1	IS	0.12	0/1004	0.27	0/1355
1	IT	0.12	0/1004	0.28	0/1355
1	IU	0.12	0/1004	0.27	0/1355
1	IV	0.12	0/1004	0.27	0/1355
1	IW	0.12	0/1004	0.27	0/1355
1	IX	0.12	0/1004	0.27	0/1355
All	All	0.12	0/24096	0.27	0/32520

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	IA	986	986	986	9	0
1	IB	986	986	986	9	0
1	IC	986	986	986	9	0
1	ID	986	986	986	11	0
1	IE	986	986	986	11	0
1	IF	986	986	986	9	0
1	IG	986	986	986	9	0
1	IH	986	986	986	10	0
1	II	986	986	986	9	0
1	IJ	986	986	986	10	0
1	IK	986	986	986	12	0
1	IL	986	986	986	12	0
1	IM	986	986	986	13	0
1	IN	986	986	986	11	0
1	IO	986	986	986	10	0
1	IP	986	986	986	10	0
1	IQ	986	986	986	8	0
1	IR	986	986	986	8	0
1	IS	986	986	986	8	0
1	IT	986	986	986	8	0
1	IU	986	986	986	8	0
1	IV	986	986	986	8	0
1	IW	986	986	986	8	0
1	IX	986	986	986	8	0
All	All	23664	23664	23664	188	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 4.

All (188) 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:IL:59:MET:SD	1:IM:1:MET:HE1	2.31	0.70
1:IJ:59:MET:SD	1:IK:1:MET:HE1	2.37	0.64
1:IH:59:MET:SD	1:II:1:MET:HE1	2.38	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:IN:59:MET:SD	1:IO:1:MET:HE1	2.39	0.63
1:IM:59:MET:SD	1:IN:1:MET:HE1	2.40	0.60
1:IO:59:MET:SD	1:IP:1:MET:HE1	2.41	0.60
1:IG:59:MET:SD	1:IH:1:MET:HE1	2.43	0.58
1:IF:59:MET:SD	1:IG:1:MET:HE1	2.45	0.57
1:IK:59:MET:SD	1:IL:1:MET:HE1	2.44	0.57
1:II:59:MET:SD	1:IJ:1:MET:HE1	2.45	0.56
1:IA:24:VAL:HG21	1:IA:36:ARG:CZ	2.36	0.56
1:IP:24:VAL:HG21	1:IP:36:ARG:CZ	2.36	0.56
1:IT:24:VAL:HG21	1:IT:36:ARG:CZ	2.36	0.56
1:IV:24:VAL:HG21	1:IV:36:ARG:CZ	2.36	0.56
1:IR:24:VAL:HG21	1:IR:36:ARG:CZ	2.36	0.56
1:IX:24:VAL:HG21	1:IX:36:ARG:CZ	2.36	0.56
1:IB:24:VAL:HG21	1:IB:36:ARG:CZ	2.36	0.56
1:ID:24:VAL:HG21	1:ID:36:ARG:CZ	2.36	0.56
1:IS:24:VAL:HG21	1:IS:36:ARG:CZ	2.36	0.56
1:IE:24:VAL:HG21	1:IE:36:ARG:CZ	2.36	0.56
1:IG:24:VAL:HG21	1:IG:36:ARG:CZ	2.36	0.56
1:IL:24:VAL:HG21	1:IL:36:ARG:CZ	2.36	0.56
1:IN:24:VAL:HG21	1:IN:36:ARG:CZ	2.36	0.56
1:IF:24:VAL:HG21	1:IF:36:ARG:CZ	2.36	0.56
1:IJ:24:VAL:HG21	1:IJ:36:ARG:CZ	2.36	0.56
1:IW:24:VAL:HG21	1:IW:36:ARG:CZ	2.36	0.56
1:IC:24:VAL:HG21	1:IC:36:ARG:CZ	2.36	0.55
1:IH:24:VAL:HG21	1:IH:36:ARG:CZ	2.36	0.55
1:II:24:VAL:HG21	1:II:36:ARG:CZ	2.36	0.55
1:IQ:24:VAL:HG21	1:IQ:36:ARG:CZ	2.36	0.55
1:IU:24:VAL:HG21	1:IU:36:ARG:CZ	2.36	0.55
1:IE:59:MET:SD	1:IF:1:MET:HE1	2.47	0.55
1:IK:24:VAL:HG21	1:IK:36:ARG:CZ	2.36	0.55
1:IO:24:VAL:HG21	1:IO:36:ARG:CZ	2.36	0.55
1:IM:24:VAL:HG21	1:IM:36:ARG:CZ	2.36	0.55
1:IN:39:THR:HG23	1:IN:40:LEU:HD12	1.92	0.52
1:IQ:39:THR:HG23	1:IQ:40:LEU:HD12	1.92	0.52
1:IR:39:THR:HG23	1:IR:40:LEU:HD12	1.92	0.52
1:IS:39:THR:HG23	1:IS:40:LEU:HD12	1.92	0.52
1:IM:39:THR:HG23	1:IM:40:LEU:HD12	1.92	0.52
1:IO:39:THR:HG23	1:IO:40:LEU:HD12	1.92	0.52
1:IP:39:THR:HG23	1:IP:40:LEU:HD12	1.92	0.52
1:IT:39:THR:HG23	1:IT:40:LEU:HD12	1.92	0.52
1:IU:39:THR:HG23	1:IU:40:LEU:HD12	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:IV:39:THR:HG23	1:IV:40:LEU:HD12	1.92	0.52
1:IL:39:THR:HG23	1:IL:40:LEU:HD12	1.92	0.52
1:IW:39:THR:HG23	1:IW:40:LEU:HD12	1.92	0.52
1:IK:39:THR:HG23	1:IK:40:LEU:HD12	1.92	0.52
1:IL:59:MET:SD	1:IM:1:MET:CE	2.97	0.52
1:IJ:39:THR:HG23	1:IJ:40:LEU:HD12	1.92	0.51
1:IX:39:THR:HG23	1:IX:40:LEU:HD12	1.92	0.51
1:II:39:THR:HG23	1:II:40:LEU:HD12	1.92	0.51
1:IP:59:MET:SD	1:IQ:1:MET:HE1	2.51	0.51
1:IA:39:THR:HG23	1:IA:40:LEU:HD12	1.92	0.51
1:IG:39:THR:HG23	1:IG:40:LEU:HD12	1.92	0.51
1:IF:39:THR:HG23	1:IF:40:LEU:HD12	1.92	0.51
1:IH:39:THR:HG23	1:IH:40:LEU:HD12	1.92	0.51
1:IC:39:THR:HG23	1:IC:40:LEU:HD12	1.92	0.51
1:ID:39:THR:HG23	1:ID:40:LEU:HD12	1.92	0.51
1:IE:39:THR:HG23	1:IE:40:LEU:HD12	1.92	0.51
1:IB:39:THR:HG23	1:IB:40:LEU:HD12	1.92	0.51
1:IQ:59:MET:SD	1:IR:1:MET:HE1	2.50	0.50
1:IM:39:THR:HG23	1:IM:40:LEU:CD1	2.43	0.49
1:IP:39:THR:HG23	1:IP:40:LEU:CD1	2.43	0.49
1:IW:39:THR:HG23	1:IW:40:LEU:CD1	2.43	0.49
1:IU:39:THR:HG23	1:IU:40:LEU:CD1	2.43	0.49
1:IK:39:THR:HG23	1:IK:40:LEU:CD1	2.43	0.49
1:IO:39:THR:HG23	1:IO:40:LEU:CD1	2.43	0.49
1:IQ:39:THR:HG23	1:IQ:40:LEU:CD1	2.43	0.49
1:IT:59:MET:SD	1:IU:1:MET:HE1	2.53	0.49
1:IV:39:THR:HG23	1:IV:40:LEU:CD1	2.43	0.49
1:IB:39:THR:HG23	1:IB:40:LEU:CD1	2.43	0.48
1:IN:39:THR:HG23	1:IN:40:LEU:CD1	2.43	0.48
1:IR:39:THR:HG23	1:IR:40:LEU:CD1	2.43	0.48
1:IX:39:THR:HG23	1:IX:40:LEU:CD1	2.43	0.48
1:IJ:39:THR:HG23	1:IJ:40:LEU:CD1	2.43	0.48
1:IH:39:THR:HG23	1:IH:40:LEU:CD1	2.43	0.48
1:IE:39:THR:HG23	1:IE:40:LEU:CD1	2.43	0.48
1:IL:77:MET:CE	1:IM:3:LEU:HD21	2.44	0.48
1:IS:39:THR:HG23	1:IS:40:LEU:CD1	2.43	0.48
1:IT:39:THR:HG23	1:IT:40:LEU:CD1	2.43	0.48
1:ID:59:MET:SD	1:IE:1:MET:HE1	2.54	0.48
1:IC:39:THR:HG23	1:IC:40:LEU:CD1	2.43	0.48
1:II:39:THR:HG23	1:II:40:LEU:CD1	2.43	0.47
1:IA:39:THR:HG23	1:IA:40:LEU:CD1	2.43	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:IL:39:THR:HG23	1:IL:40:LEU:CD1	2.43	0.47
1:IB:59:MET:SD	1:IC:1:MET:HE1	2.54	0.47
1:ID:39:THR:HG23	1:ID:40:LEU:CD1	2.43	0.47
1:IF:39:THR:HG23	1:IF:40:LEU:CD1	2.43	0.47
1:IG:39:THR:HG23	1:IG:40:LEU:CD1	2.43	0.47
1:IH:59:MET:SD	1:II:1:MET:CE	3.04	0.46
1:IR:59:MET:SD	1:IS:1:MET:HE1	2.55	0.46
1:IS:100:VAL:HG11	1:IT:90:ILE:HD12	1.97	0.46
1:IJ:77:MET:CE	1:IK:3:LEU:HD21	2.46	0.46
1:IJ:59:MET:SD	1:IK:1:MET:CE	3.04	0.45
1:IJ:24:VAL:HG22	1:IJ:118:LEU:HD23	1.99	0.45
1:IH:24:VAL:HG22	1:IH:118:LEU:HD23	2.00	0.44
1:IO:24:VAL:HG22	1:IO:118:LEU:HD23	2.00	0.44
1:IQ:24:VAL:HG22	1:IQ:118:LEU:HD23	2.00	0.44
1:IR:24:VAL:HG22	1:IR:118:LEU:HD23	1.99	0.44
1:IM:24:VAL:HG22	1:IM:118:LEU:HD23	2.00	0.44
1:IE:24:VAL:HG22	1:IE:118:LEU:HD23	2.00	0.44
1:IF:24:VAL:HG22	1:IF:118:LEU:HD23	2.00	0.44
1:IG:24:VAL:HG22	1:IG:118:LEU:HD23	2.00	0.44
1:II:24:VAL:HG22	1:II:118:LEU:HD23	1.99	0.44
1:IK:24:VAL:HG22	1:IK:118:LEU:HD23	2.00	0.44
1:IL:24:VAL:HG22	1:IL:118:LEU:HD23	2.00	0.44
1:IP:24:VAL:HG22	1:IP:118:LEU:HD23	2.00	0.44
1:IT:24:VAL:HG22	1:IT:118:LEU:HD23	2.00	0.44
1:IN:24:VAL:HG22	1:IN:118:LEU:HD23	2.00	0.44
1:IC:24:VAL:HG22	1:IC:118:LEU:HD23	1.99	0.44
1:IU:24:VAL:HG22	1:IU:118:LEU:HD23	2.00	0.44
1:IW:24:VAL:HG22	1:IW:118:LEU:HD23	1.99	0.44
1:IA:24:VAL:HG22	1:IA:118:LEU:HD23	2.00	0.44
1:ID:24:VAL:HG22	1:ID:118:LEU:HD23	1.99	0.44
1:IS:24:VAL:HG22	1:IS:118:LEU:HD23	2.00	0.44
1:IV:24:VAL:HG22	1:IV:118:LEU:HD23	2.00	0.44
1:IA:61:ASP:OD1	1:IB:87:TYR:O	2.36	0.44
1:IX:24:VAL:HG22	1:IX:118:LEU:HD23	1.99	0.43
1:IB:24:VAL:HG22	1:IB:118:LEU:HD23	2.00	0.43
1:IM:59:MET:SD	1:IN:1:MET:CE	3.05	0.43
1:IO:59:MET:SD	1:IP:1:MET:CE	3.06	0.43
1:IJ:24:VAL:CG2	1:IJ:118:LEU:HD23	2.50	0.42
1:IO:24:VAL:CG2	1:IO:118:LEU:HD23	2.50	0.42
1:IU:59:MET:SD	1:IV:1:MET:HE1	2.59	0.42
1:IH:94:LYS:HE2	1:IH:96:ASP:OD1	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:IN:94:LYS:HE2	1:IN:96:ASP:OD1	2.20	0.42
1:IQ:94:LYS:HE2	1:IQ:96:ASP:OD1	2.20	0.42
1:IU:94:LYS:HE2	1:IU:96:ASP:OD1	2.20	0.42
1:II:94:LYS:HE2	1:II:96:ASP:OD1	2.20	0.42
1:IK:94:LYS:HE2	1:IK:96:ASP:OD1	2.20	0.42
1:IL:40:LEU:HD11	1:IM:121:ALA:HB3	2.02	0.42
1:IM:24:VAL:CG2	1:IM:118:LEU:HD23	2.50	0.42
1:IT:94:LYS:HE2	1:IT:96:ASP:OD1	2.20	0.42
1:IV:94:LYS:HE2	1:IV:96:ASP:OD1	2.20	0.42
1:IQ:24:VAL:CG2	1:IQ:118:LEU:HD23	2.50	0.42
1:IC:94:LYS:HE2	1:IC:96:ASP:OD1	2.20	0.42
1:IL:24:VAL:CG2	1:IL:118:LEU:HD23	2.50	0.42
1:IO:94:LYS:HE2	1:IO:96:ASP:OD1	2.20	0.42
1:IG:94:LYS:HE2	1:IG:96:ASP:OD1	2.20	0.42
1:IH:24:VAL:CG2	1:IH:118:LEU:HD23	2.50	0.42
1:IM:94:LYS:HE2	1:IM:96:ASP:OD1	2.20	0.42
1:IP:94:LYS:HE2	1:IP:96:ASP:OD1	2.20	0.42
1:IR:24:VAL:CG2	1:IR:118:LEU:HD23	2.50	0.42
1:IT:24:VAL:CG2	1:IT:118:LEU:HD23	2.50	0.42
1:IB:94:LYS:HE2	1:IB:96:ASP:OD1	2.20	0.42
1:IL:94:LYS:HE2	1:IL:96:ASP:OD1	2.20	0.42
1:IW:94:LYS:HE2	1:IW:96:ASP:OD1	2.20	0.42
1:ID:94:LYS:HE2	1:ID:96:ASP:OD1	2.20	0.42
1:IG:24:VAL:CG2	1:IG:118:LEU:HD23	2.50	0.42
1:II:24:VAL:CG2	1:II:118:LEU:HD23	2.49	0.42
1:IJ:94:LYS:HE2	1:IJ:96:ASP:OD1	2.20	0.42
1:IN:24:VAL:CG2	1:IN:118:LEU:HD23	2.50	0.42
1:IP:24:VAL:CG2	1:IP:118:LEU:HD23	2.50	0.42
1:IK:24:VAL:CG2	1:IK:118:LEU:HD23	2.50	0.42
1:IS:94:LYS:HE2	1:IS:96:ASP:OD1	2.20	0.42
1:IR:94:LYS:HE2	1:IR:96:ASP:OD1	2.20	0.41
1:IA:59:MET:SD	1:IB:1:MET:HE1	2.60	0.41
1:IA:94:LYS:HE2	1:IA:96:ASP:OD1	2.20	0.41
1:IE:24:VAL:CG2	1:IE:118:LEU:HD23	2.50	0.41
1:IG:77:MET:CE	1:IH:3:LEU:HD21	2.49	0.41
1:IW:24:VAL:CG2	1:IW:118:LEU:HD23	2.50	0.41
1:ID:51:LEU:HD23	1:ID:51:LEU:HA	1.96	0.41
1:IF:94:LYS:HE2	1:IF:96:ASP:OD1	2.20	0.41
1:IK:51:LEU:HD23	1:IK:51:LEU:HA	1.96	0.41
1:IV:24:VAL:CG2	1:IV:118:LEU:HD23	2.50	0.41
1:IC:59:MET:SD	1:ID:1:MET:HE1	2.60	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:IN:59:MET:SD	1:IO:1:MET:CE	3.07	0.41
1:IS:24:VAL:CG2	1:IS:118:LEU:HD23	2.50	0.41
1:IX:24:VAL:CG2	1:IX:118:LEU:HD23	2.50	0.41
1:IB:24:VAL:CG2	1:IB:118:LEU:HD23	2.50	0.41
1:IC:100:VAL:HG11	1:ID:90:ILE:HD12	2.02	0.41
1:IU:24:VAL:CG2	1:IU:118:LEU:HD23	2.50	0.41
1:IE:94:LYS:HE2	1:IE:96:ASP:OD1	2.20	0.41
1:IX:94:LYS:HE2	1:IX:96:ASP:OD1	2.20	0.41
1:ID:24:VAL:CG2	1:ID:118:LEU:HD23	2.50	0.41
1:IE:51:LEU:HD23	1:IE:51:LEU:HA	1.96	0.41
1:IF:24:VAL:CG2	1:IF:118:LEU:HD23	2.50	0.41
1:IA:24:VAL:CG2	1:IA:118:LEU:HD23	2.50	0.41
1:IA:87:TYR:O	1:IX:61:ASP:OD1	2.39	0.41
1:IC:24:VAL:CG2	1:IC:118:LEU:HD23	2.50	0.41
1:IM:40:LEU:HD11	1:IN:121:ALA:HB3	2.03	0.41
1:IW:61:ASP:OD1	1:IX:87:TYR:O	2.39	0.41
1:IV:59:MET:SD	1:IW:1:MET:HE1	2.61	0.40
1:IE:77:MET:CE	1:IF:3:LEU:HD21	2.51	0.40
1:IP:51:LEU:HD23	1:IP:51:LEU:HA	1.96	0.40
1:ID:61:ASP:OD1	1:IE:87:TYR:O	2.40	0.40
1:IK:59:MET:SD	1:IL:1:MET:CE	3.09	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	IA	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IB	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IC	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	ID	123/227 (54%)	122 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	IE	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IF	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IG	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IH	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	II	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IJ	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IK	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IL	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IM	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IN	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IO	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IP	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IQ	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IR	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IS	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IT	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IU	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IV	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IW	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
1	IX	123/227 (54%)	122 (99%)	1 (1%)	0	100	100
All	All	2952/5448 (54%)	2928 (99%)	24 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	IA	107/194 (55%)	106 (99%)	1 (1%)	75	88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	IB	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IC	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	ID	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IE	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IF	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IG	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IH	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	II	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IJ	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IK	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IL	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IM	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IN	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IO	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IP	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IQ	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IR	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IS	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IT	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IU	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IV	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IW	107/194 (55%)	106 (99%)	1 (1%)	75	88
1	IX	107/194 (55%)	106 (99%)	1 (1%)	75	88
All	All	2568/4656 (55%)	2544 (99%)	24 (1%)	74	88

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	IA	3	LEU
1	IB	3	LEU
1	IC	3	LEU
1	ID	3	LEU
1	IE	3	LEU
1	IF	3	LEU

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Mol	Chain	Res	Type
1	IG	3	LEU
1	IH	3	LEU
1	II	3	LEU
1	IJ	3	LEU
1	IK	3	LEU
1	IL	3	LEU
1	IM	3	LEU
1	IN	3	LEU
1	IO	3	LEU
1	IP	3	LEU
1	IQ	3	LEU
1	IR	3	LEU
1	IS	3	LEU
1	IT	3	LEU
1	IU	3	LEU
1	IV	3	LEU
1	IW	3	LEU
1	IX	3	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

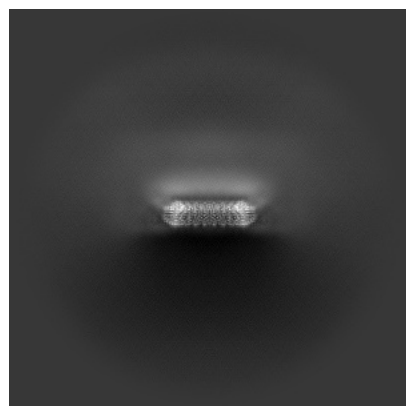
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-72631. These allow visual inspection of the internal detail of the map and identification of artifacts.

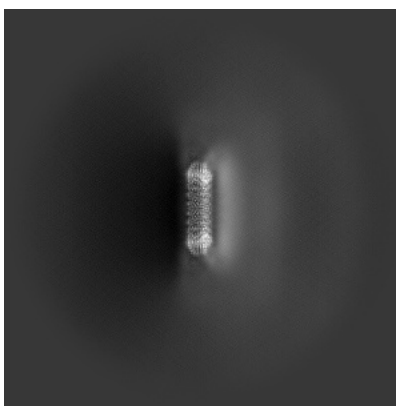
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

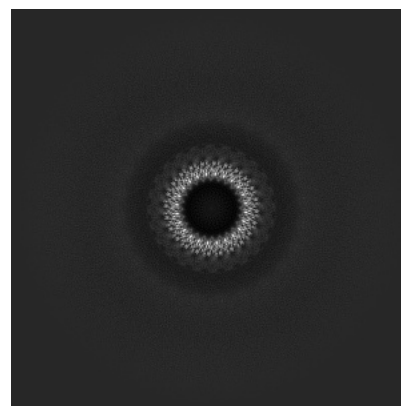
6.1.1 Primary map



X

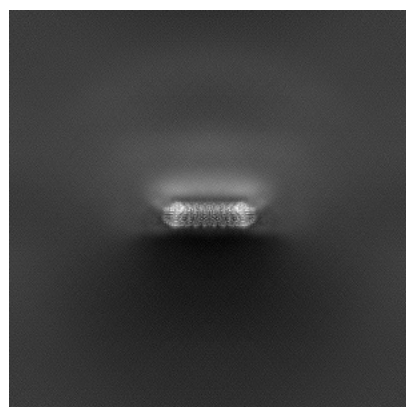


Y

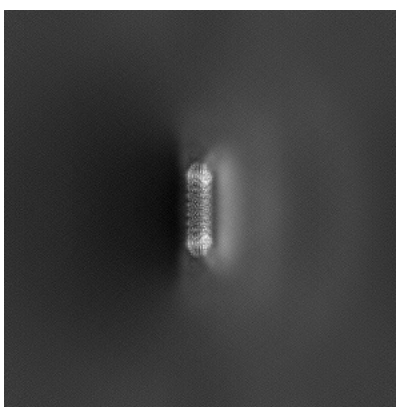


Z

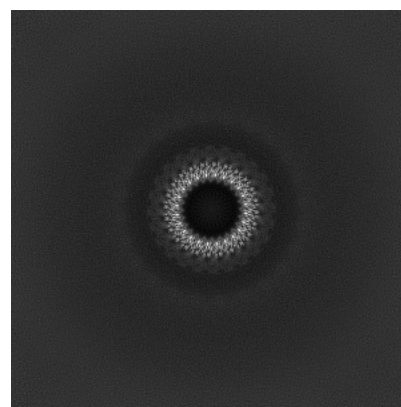
6.1.2 Raw map



X



Y

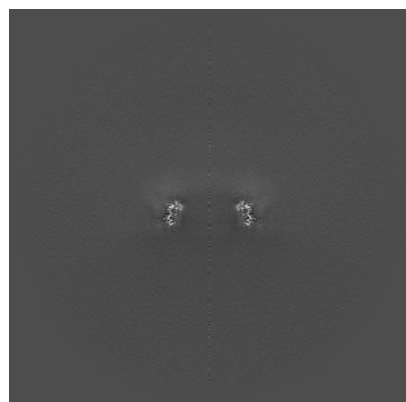


Z

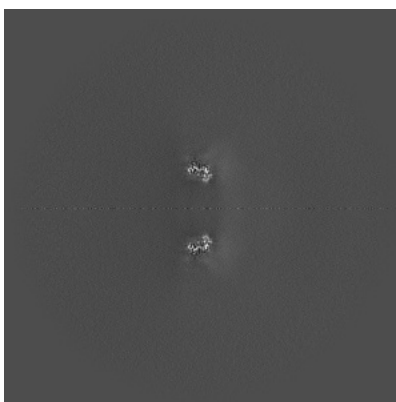
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

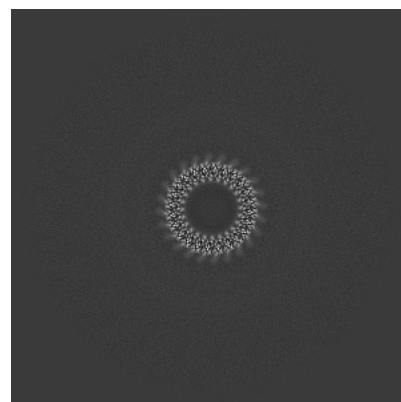
6.2.1 Primary map



X Index: 220

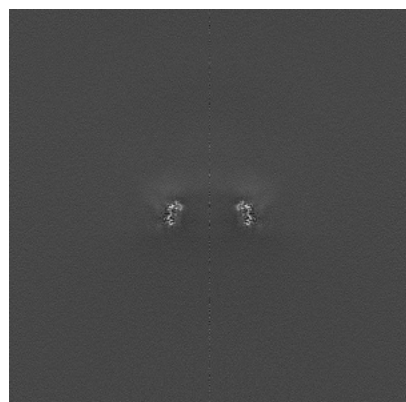


Y Index: 220

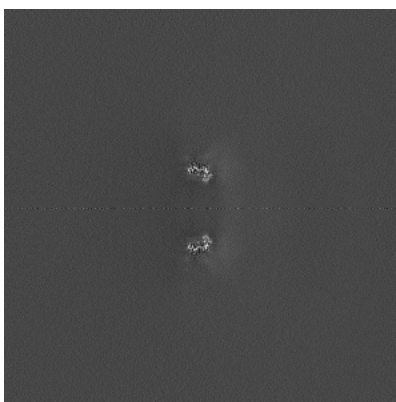


Z Index: 220

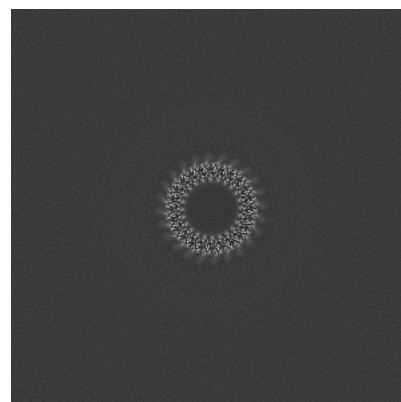
6.2.2 Raw map



X Index: 220



Y Index: 220

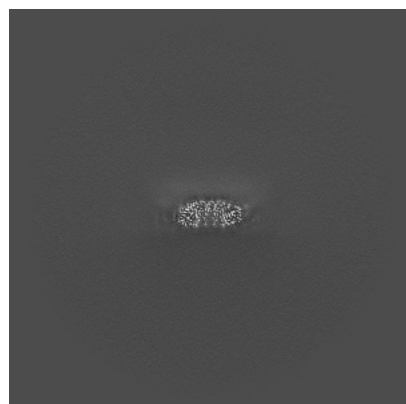


Z Index: 220

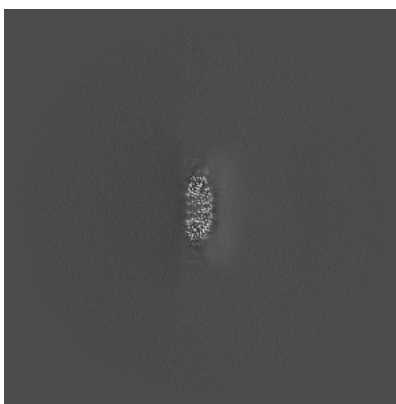
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

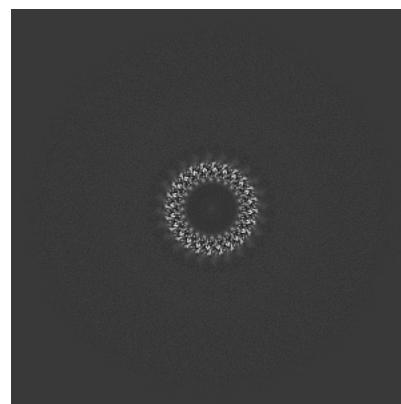
6.3.1 Primary map



X Index: 256

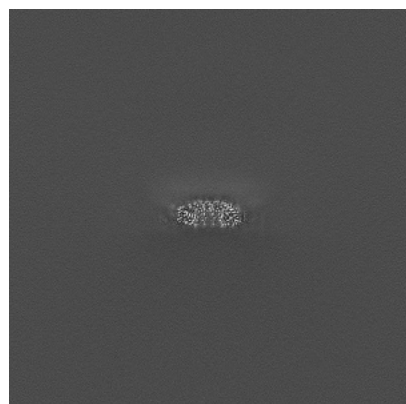


Y Index: 184

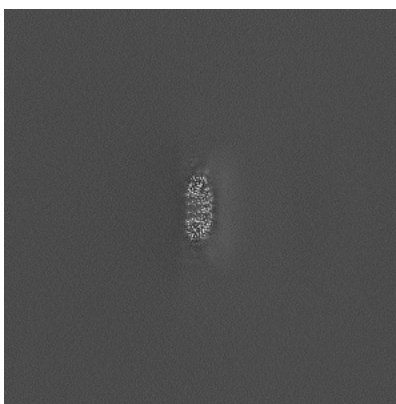


Z Index: 219

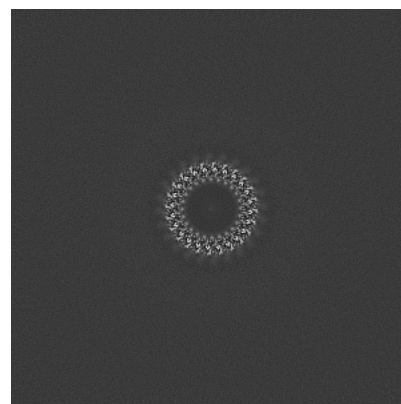
6.3.2 Raw map



X Index: 184



Y Index: 184

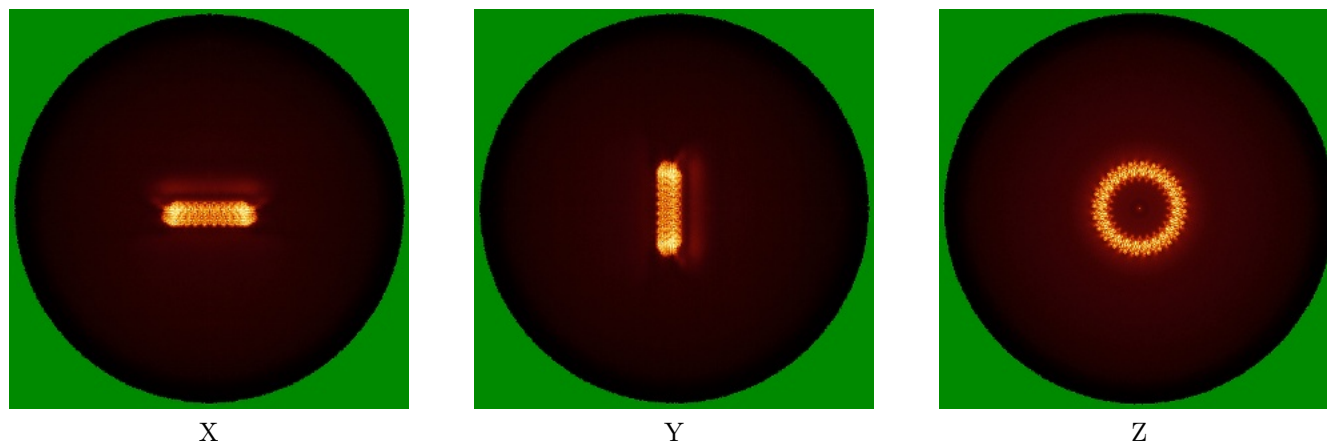


Z Index: 219

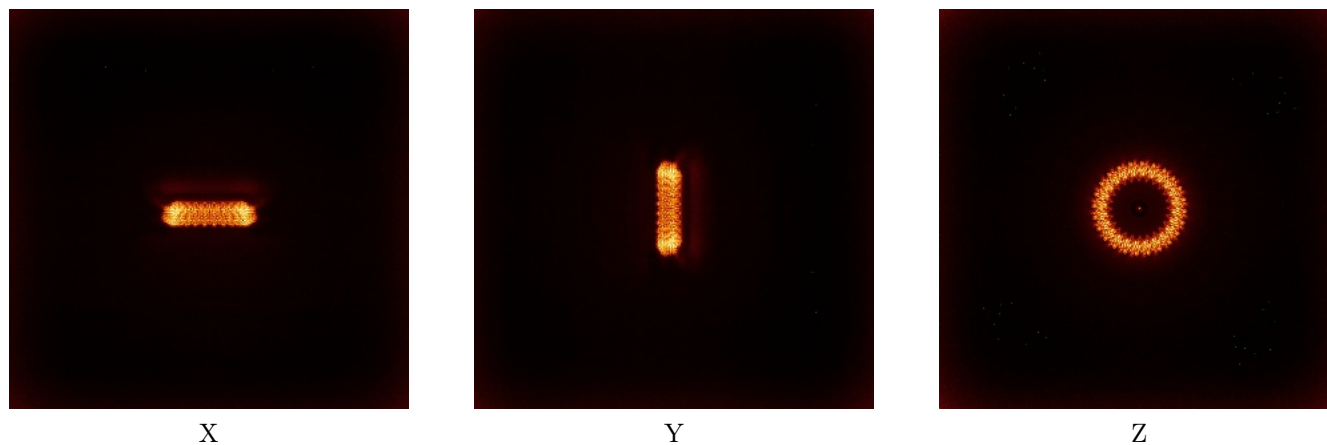
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map



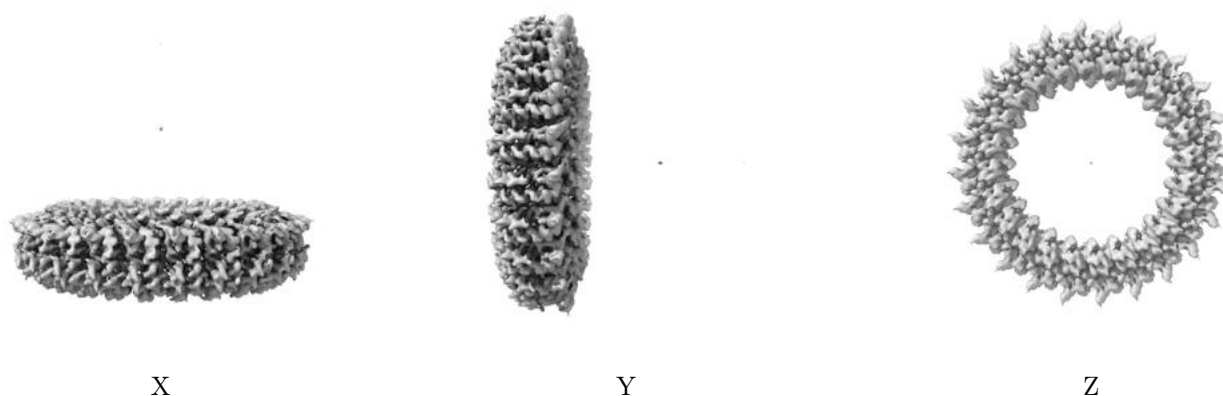
6.4.2 Raw map



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.

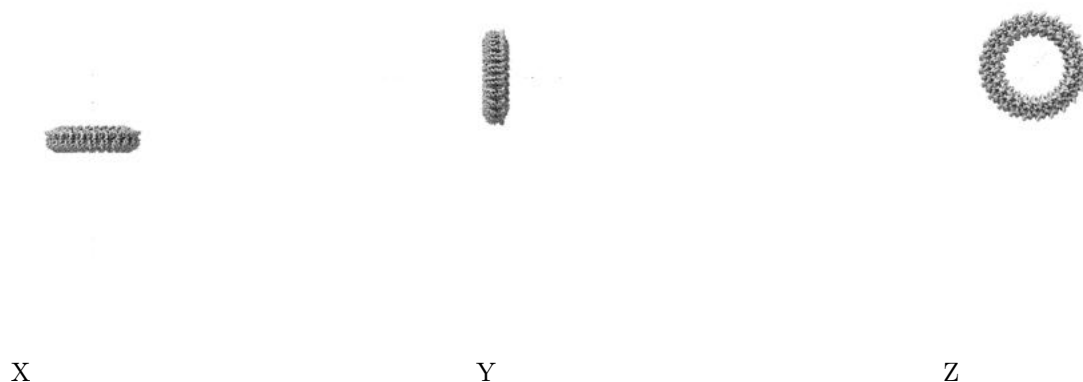
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.167. 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.

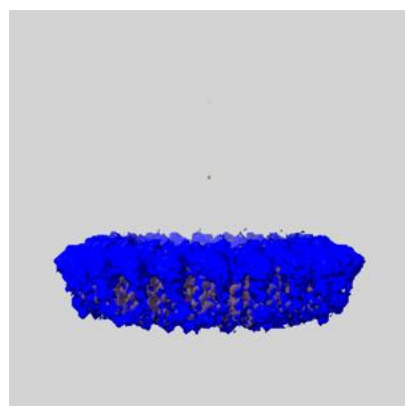
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

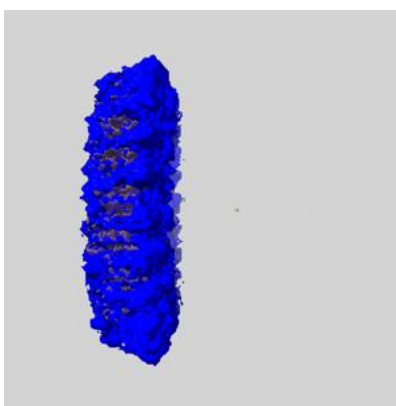
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

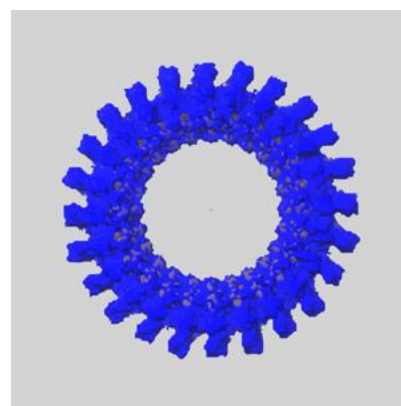
6.6.1 emd_72631_msk_1.map [i](#)



X



Y

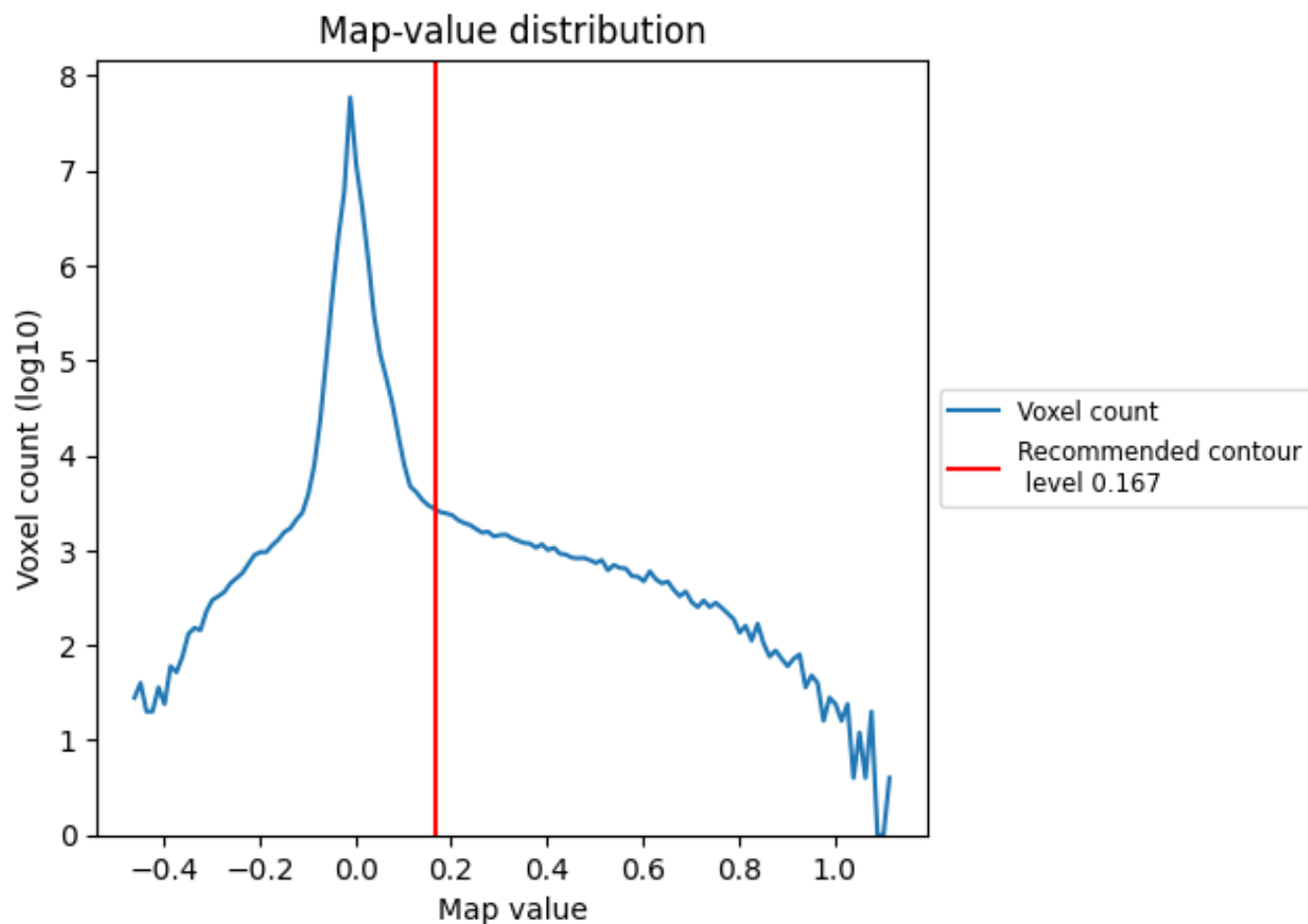


Z

7 Map analysis [i](#)

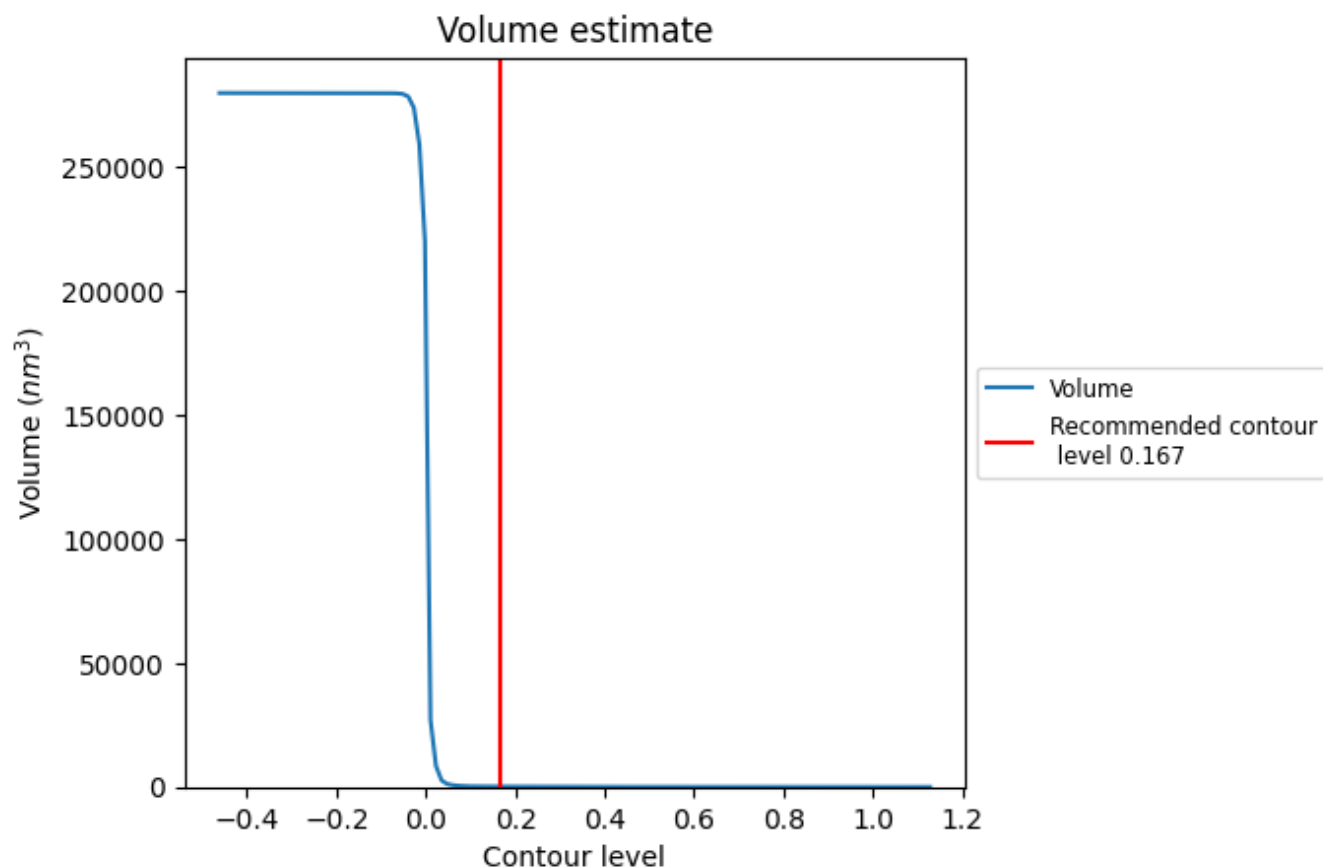
This section contains the results of statistical analysis of the map.

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.

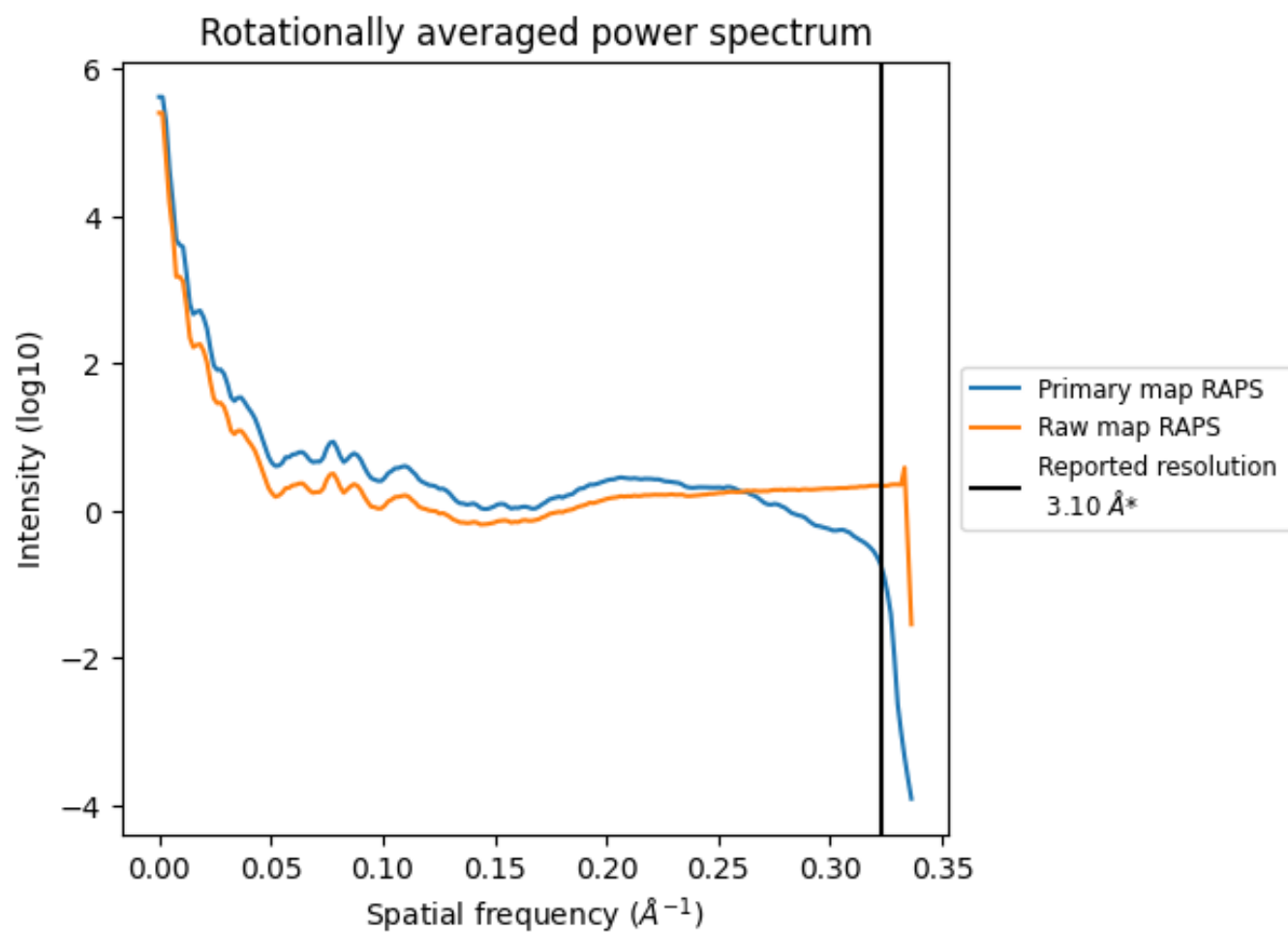
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 168 nm^3 ; this corresponds to an approximate mass of 151 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 ⓘ

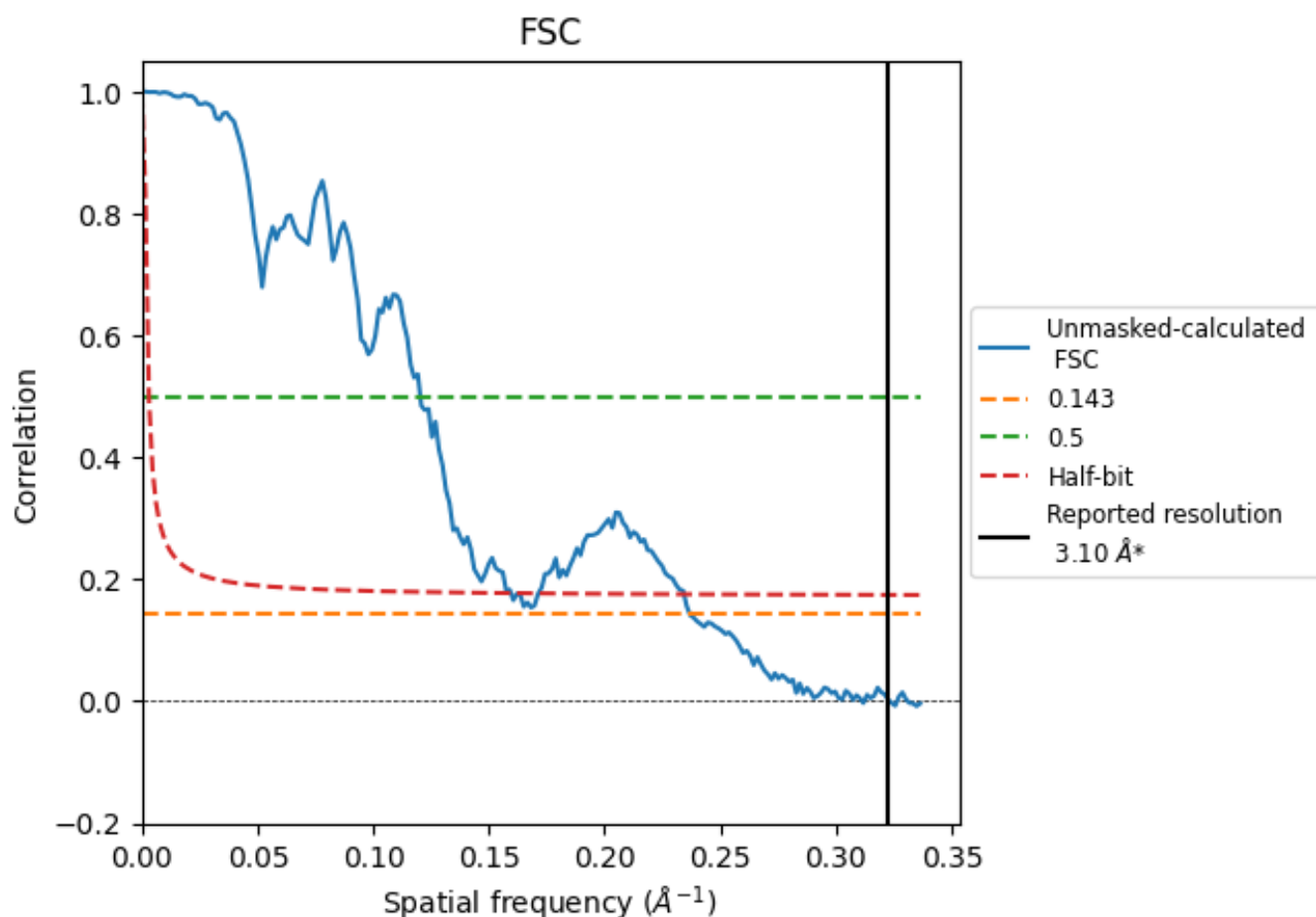


*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

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 0.323 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

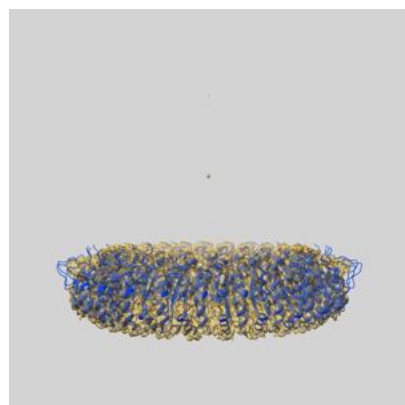
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.22	8.31	6.27

*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 4.22 differs from the reported value 3.1 by more than 10 %

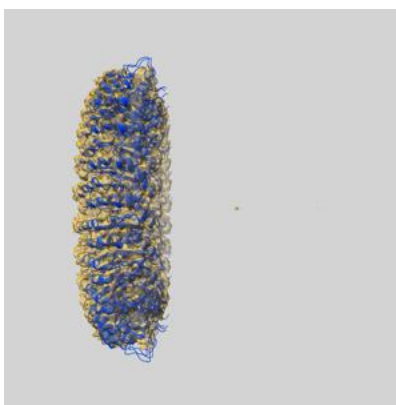
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-72631 and PDB model 9Y6U. Per-residue inclusion information can be found in [section 3](#) on [page 12](#).

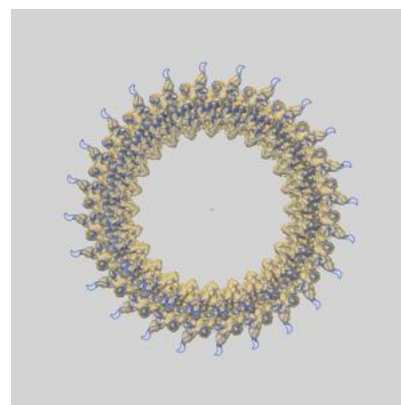
9.1 Map-model overlay [i](#)



X



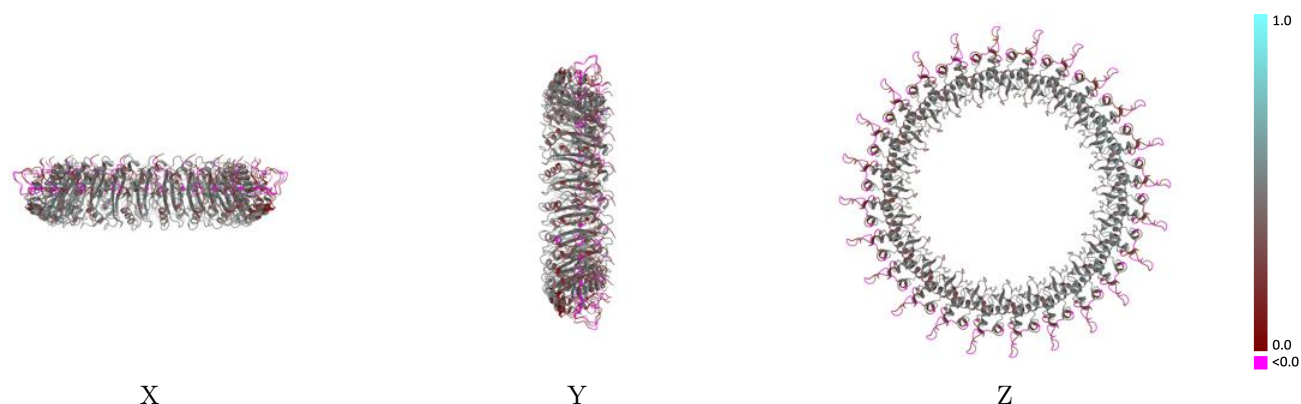
Y



Z

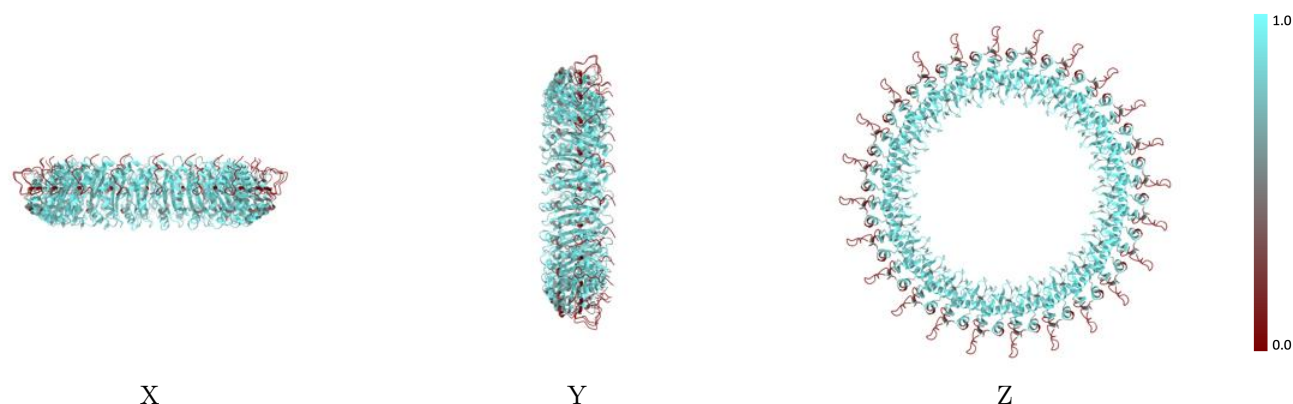
The images above show the 3D surface view of the map at the recommended contour level 0.167 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



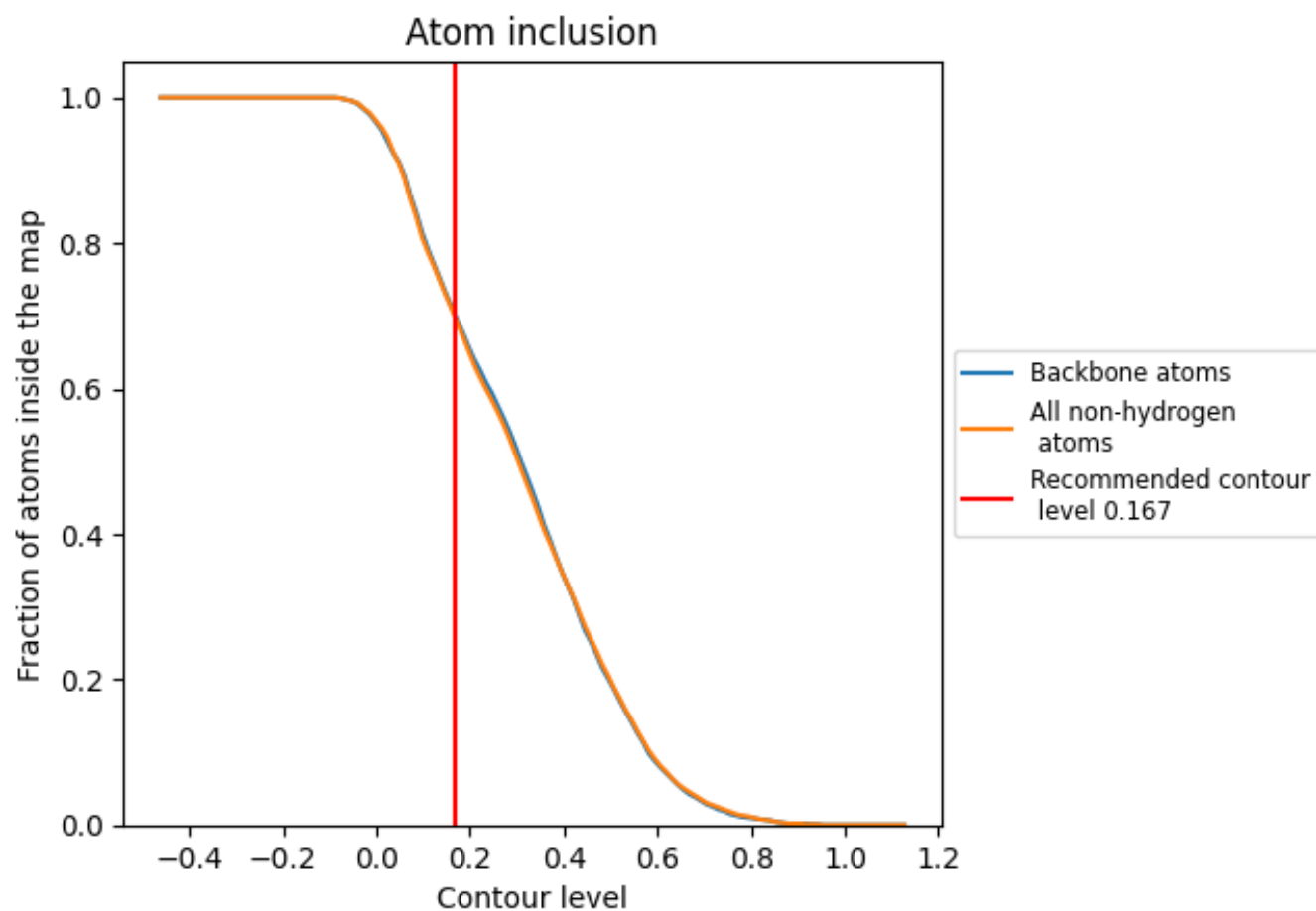
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.167).

9.4 Atom inclusion ⓘ



At the recommended contour level, 70% of all backbone atoms, 70% 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 (0.167) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7000	 0.3570
IA	 0.7060	 0.3710
IB	 0.7090	 0.3680
IC	 0.7090	 0.3710
ID	 0.7130	 0.3720
IE	 0.7140	 0.3720
IF	 0.7180	 0.3680
IG	 0.7210	 0.3680
IH	 0.7170	 0.3720
II	 0.7070	 0.3600
IJ	 0.6930	 0.3540
IK	 0.6910	 0.3500
IL	 0.6870	 0.3450
IM	 0.6820	 0.3430
IN	 0.6780	 0.3370
IO	 0.6820	 0.3430
IP	 0.6730	 0.3350
IQ	 0.6790	 0.3390
IR	 0.6860	 0.3460
IS	 0.6930	 0.3480
IT	 0.6930	 0.3580
IU	 0.6980	 0.3560
IV	 0.7050	 0.3610
IW	 0.7060	 0.3650
IX	 0.7020	 0.3680

