



Full wwPDB EM Validation Report ⓘ

Jun 25, 2025 – 03:28 AM JST

PDB ID : 8Z4D / pdb_00008z4d
EMDB ID : EMD-39761
Title : Structure of the S-ring region of the Vibrio flagellar MS-ring protein FliF with 34-fold symmetry applied
Authors : Takekawa, N.; Nishikino, T.; Kishikawa, J.; Hirose, M.; Kato, T.; Imada, K.; Homma, M.
Deposited on : 2024-04-17
Resolution : 3.33 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev118
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

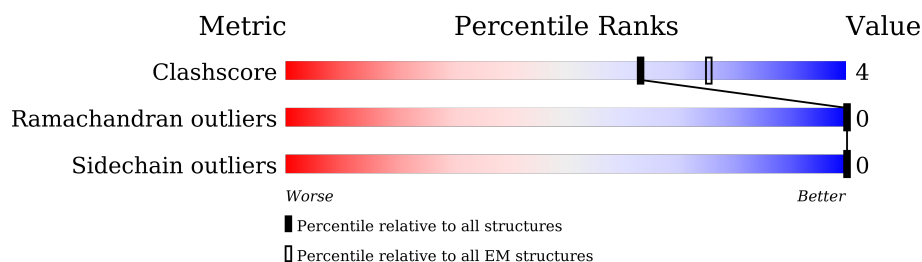
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.33 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.




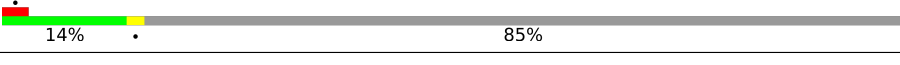



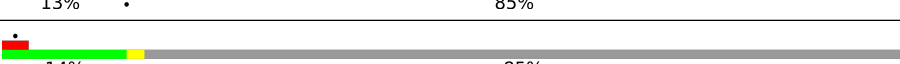
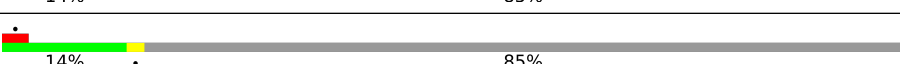



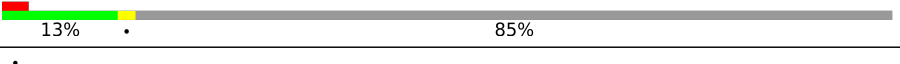



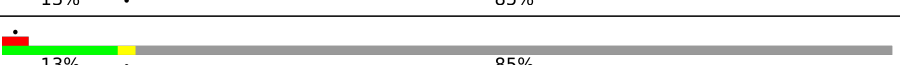
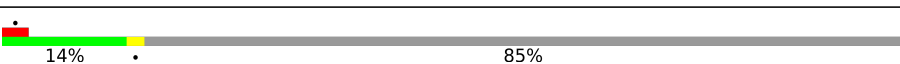









Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1	945	14% . 85%
1	2	945	14% . 85%
1	3	945	14% . 85%
1	4	945	14% . 85%
1	5	945	14% . 85%
1	6	945	14% . 85%
1	7	945	14% . 85%
1	8	945	14% . 85%


Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	9	945	 13% 85%
1	A	945	 14% 85%
1	B	945	 13% 85%
1	C	945	 13% 85%
1	D	945	 13% 85%
1	E	945	 13% 85%
1	F	945	 14% 85%
1	G	945	 14% 85%
1	H	945	 13% 85%
1	I	945	 13% 85%
1	J	945	 14% 85%
1	K	945	 13% 85%
1	L	945	 13% 85%
1	M	945	 13% 85%
1	N	945	 14% 85%
1	O	945	 13% 85%
1	P	945	 13% 85%
1	Q	945	 14% 85%
1	R	945	 14% 85%
1	S	945	 14% 85%
1	T	945	 14% 85%
1	U	945	 14% 85%
1	V	945	 14% 85%
1	W	945	 14% 85%
1	X	945	 13% 85%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	Y	945	 14% . 85%

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 38862 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 Flagellar M-ring protein,Flagellar motor switch protein FliG.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	1	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	2	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	3	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	4	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	5	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	6	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	7	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	8	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	9	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	A	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	B	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	C	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	D	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	E	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	F	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	G	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	H	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					AltConf	Trace
1	I	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	J	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	K	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	L	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	M	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	N	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	O	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	P	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	Q	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	R	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	S	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	T	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	U	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	V	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	W	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	X	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		
1	Y	144	Total	C	N	O	S	0	0
			1143	703	208	230	2		

There are 578 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	-15	MET	-	initiating methionine	UNP Q75N27
1	-14	ASN	-	expression tag	UNP Q75N27
1	-13	HIS	-	expression tag	UNP Q75N27
1	-12	LYS	-	expression tag	UNP Q75N27
1	-11	VAL	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
1	-10	HIS	-	expression tag	UNP Q75N27
1	-9	HIS	-	expression tag	UNP Q75N27
1	-8	HIS	-	expression tag	UNP Q75N27
1	-7	HIS	-	expression tag	UNP Q75N27
1	-6	HIS	-	expression tag	UNP Q75N27
1	-5	HIS	-	expression tag	UNP Q75N27
1	-4	ILE	-	expression tag	UNP Q75N27
1	-3	GLU	-	expression tag	UNP Q75N27
1	-2	GLY	-	expression tag	UNP Q75N27
1	-1	ARG	-	expression tag	UNP Q75N27
1	0	HIS	-	expression tag	UNP Q75N27
1	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
2	-15	MET	-	initiating methionine	UNP Q75N27
2	-14	ASN	-	expression tag	UNP Q75N27
2	-13	HIS	-	expression tag	UNP Q75N27
2	-12	LYS	-	expression tag	UNP Q75N27
2	-11	VAL	-	expression tag	UNP Q75N27
2	-10	HIS	-	expression tag	UNP Q75N27
2	-9	HIS	-	expression tag	UNP Q75N27
2	-8	HIS	-	expression tag	UNP Q75N27
2	-7	HIS	-	expression tag	UNP Q75N27
2	-6	HIS	-	expression tag	UNP Q75N27
2	-5	HIS	-	expression tag	UNP Q75N27
2	-4	ILE	-	expression tag	UNP Q75N27
2	-3	GLU	-	expression tag	UNP Q75N27
2	-2	GLY	-	expression tag	UNP Q75N27
2	-1	ARG	-	expression tag	UNP Q75N27
2	0	HIS	-	expression tag	UNP Q75N27
2	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
3	-15	MET	-	initiating methionine	UNP Q75N27
3	-14	ASN	-	expression tag	UNP Q75N27
3	-13	HIS	-	expression tag	UNP Q75N27
3	-12	LYS	-	expression tag	UNP Q75N27
3	-11	VAL	-	expression tag	UNP Q75N27
3	-10	HIS	-	expression tag	UNP Q75N27
3	-9	HIS	-	expression tag	UNP Q75N27
3	-8	HIS	-	expression tag	UNP Q75N27
3	-7	HIS	-	expression tag	UNP Q75N27
3	-6	HIS	-	expression tag	UNP Q75N27
3	-5	HIS	-	expression tag	UNP Q75N27
3	-4	ILE	-	expression tag	UNP Q75N27
3	-3	GLU	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
3	-2	GLY	-	expression tag	UNP Q75N27
3	-1	ARG	-	expression tag	UNP Q75N27
3	0	HIS	-	expression tag	UNP Q75N27
3	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
4	-15	MET	-	initiating methionine	UNP Q75N27
4	-14	ASN	-	expression tag	UNP Q75N27
4	-13	HIS	-	expression tag	UNP Q75N27
4	-12	LYS	-	expression tag	UNP Q75N27
4	-11	VAL	-	expression tag	UNP Q75N27
4	-10	HIS	-	expression tag	UNP Q75N27
4	-9	HIS	-	expression tag	UNP Q75N27
4	-8	HIS	-	expression tag	UNP Q75N27
4	-7	HIS	-	expression tag	UNP Q75N27
4	-6	HIS	-	expression tag	UNP Q75N27
4	-5	HIS	-	expression tag	UNP Q75N27
4	-4	ILE	-	expression tag	UNP Q75N27
4	-3	GLU	-	expression tag	UNP Q75N27
4	-2	GLY	-	expression tag	UNP Q75N27
4	-1	ARG	-	expression tag	UNP Q75N27
4	0	HIS	-	expression tag	UNP Q75N27
4	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
5	-15	MET	-	initiating methionine	UNP Q75N27
5	-14	ASN	-	expression tag	UNP Q75N27
5	-13	HIS	-	expression tag	UNP Q75N27
5	-12	LYS	-	expression tag	UNP Q75N27
5	-11	VAL	-	expression tag	UNP Q75N27
5	-10	HIS	-	expression tag	UNP Q75N27
5	-9	HIS	-	expression tag	UNP Q75N27
5	-8	HIS	-	expression tag	UNP Q75N27
5	-7	HIS	-	expression tag	UNP Q75N27
5	-6	HIS	-	expression tag	UNP Q75N27
5	-5	HIS	-	expression tag	UNP Q75N27
5	-4	ILE	-	expression tag	UNP Q75N27
5	-3	GLU	-	expression tag	UNP Q75N27
5	-2	GLY	-	expression tag	UNP Q75N27
5	-1	ARG	-	expression tag	UNP Q75N27
5	0	HIS	-	expression tag	UNP Q75N27
5	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
6	-15	MET	-	initiating methionine	UNP Q75N27
6	-14	ASN	-	expression tag	UNP Q75N27
6	-13	HIS	-	expression tag	UNP Q75N27
6	-12	LYS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
6	-11	VAL	-	expression tag	UNP Q75N27
6	-10	HIS	-	expression tag	UNP Q75N27
6	-9	HIS	-	expression tag	UNP Q75N27
6	-8	HIS	-	expression tag	UNP Q75N27
6	-7	HIS	-	expression tag	UNP Q75N27
6	-6	HIS	-	expression tag	UNP Q75N27
6	-5	HIS	-	expression tag	UNP Q75N27
6	-4	ILE	-	expression tag	UNP Q75N27
6	-3	GLU	-	expression tag	UNP Q75N27
6	-2	GLY	-	expression tag	UNP Q75N27
6	-1	ARG	-	expression tag	UNP Q75N27
6	0	HIS	-	expression tag	UNP Q75N27
6	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
7	-15	MET	-	initiating methionine	UNP Q75N27
7	-14	ASN	-	expression tag	UNP Q75N27
7	-13	HIS	-	expression tag	UNP Q75N27
7	-12	LYS	-	expression tag	UNP Q75N27
7	-11	VAL	-	expression tag	UNP Q75N27
7	-10	HIS	-	expression tag	UNP Q75N27
7	-9	HIS	-	expression tag	UNP Q75N27
7	-8	HIS	-	expression tag	UNP Q75N27
7	-7	HIS	-	expression tag	UNP Q75N27
7	-6	HIS	-	expression tag	UNP Q75N27
7	-5	HIS	-	expression tag	UNP Q75N27
7	-4	ILE	-	expression tag	UNP Q75N27
7	-3	GLU	-	expression tag	UNP Q75N27
7	-2	GLY	-	expression tag	UNP Q75N27
7	-1	ARG	-	expression tag	UNP Q75N27
7	0	HIS	-	expression tag	UNP Q75N27
7	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
8	-15	MET	-	initiating methionine	UNP Q75N27
8	-14	ASN	-	expression tag	UNP Q75N27
8	-13	HIS	-	expression tag	UNP Q75N27
8	-12	LYS	-	expression tag	UNP Q75N27
8	-11	VAL	-	expression tag	UNP Q75N27
8	-10	HIS	-	expression tag	UNP Q75N27
8	-9	HIS	-	expression tag	UNP Q75N27
8	-8	HIS	-	expression tag	UNP Q75N27
8	-7	HIS	-	expression tag	UNP Q75N27
8	-6	HIS	-	expression tag	UNP Q75N27
8	-5	HIS	-	expression tag	UNP Q75N27
8	-4	ILE	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
8	-3	GLU	-	expression tag	UNP Q75N27
8	-2	GLY	-	expression tag	UNP Q75N27
8	-1	ARG	-	expression tag	UNP Q75N27
8	0	HIS	-	expression tag	UNP Q75N27
8	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
9	-15	MET	-	initiating methionine	UNP Q75N27
9	-14	ASN	-	expression tag	UNP Q75N27
9	-13	HIS	-	expression tag	UNP Q75N27
9	-12	LYS	-	expression tag	UNP Q75N27
9	-11	VAL	-	expression tag	UNP Q75N27
9	-10	HIS	-	expression tag	UNP Q75N27
9	-9	HIS	-	expression tag	UNP Q75N27
9	-8	HIS	-	expression tag	UNP Q75N27
9	-7	HIS	-	expression tag	UNP Q75N27
9	-6	HIS	-	expression tag	UNP Q75N27
9	-5	HIS	-	expression tag	UNP Q75N27
9	-4	ILE	-	expression tag	UNP Q75N27
9	-3	GLU	-	expression tag	UNP Q75N27
9	-2	GLY	-	expression tag	UNP Q75N27
9	-1	ARG	-	expression tag	UNP Q75N27
9	0	HIS	-	expression tag	UNP Q75N27
9	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
A	-15	MET	-	initiating methionine	UNP Q75N27
A	-14	ASN	-	expression tag	UNP Q75N27
A	-13	HIS	-	expression tag	UNP Q75N27
A	-12	LYS	-	expression tag	UNP Q75N27
A	-11	VAL	-	expression tag	UNP Q75N27
A	-10	HIS	-	expression tag	UNP Q75N27
A	-9	HIS	-	expression tag	UNP Q75N27
A	-8	HIS	-	expression tag	UNP Q75N27
A	-7	HIS	-	expression tag	UNP Q75N27
A	-6	HIS	-	expression tag	UNP Q75N27
A	-5	HIS	-	expression tag	UNP Q75N27
A	-4	ILE	-	expression tag	UNP Q75N27
A	-3	GLU	-	expression tag	UNP Q75N27
A	-2	GLY	-	expression tag	UNP Q75N27
A	-1	ARG	-	expression tag	UNP Q75N27
A	0	HIS	-	expression tag	UNP Q75N27
A	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
B	-15	MET	-	initiating methionine	UNP Q75N27
B	-14	ASN	-	expression tag	UNP Q75N27
B	-13	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-12	LYS	-	expression tag	UNP Q75N27
B	-11	VAL	-	expression tag	UNP Q75N27
B	-10	HIS	-	expression tag	UNP Q75N27
B	-9	HIS	-	expression tag	UNP Q75N27
B	-8	HIS	-	expression tag	UNP Q75N27
B	-7	HIS	-	expression tag	UNP Q75N27
B	-6	HIS	-	expression tag	UNP Q75N27
B	-5	HIS	-	expression tag	UNP Q75N27
B	-4	ILE	-	expression tag	UNP Q75N27
B	-3	GLU	-	expression tag	UNP Q75N27
B	-2	GLY	-	expression tag	UNP Q75N27
B	-1	ARG	-	expression tag	UNP Q75N27
B	0	HIS	-	expression tag	UNP Q75N27
B	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
C	-15	MET	-	initiating methionine	UNP Q75N27
C	-14	ASN	-	expression tag	UNP Q75N27
C	-13	HIS	-	expression tag	UNP Q75N27
C	-12	LYS	-	expression tag	UNP Q75N27
C	-11	VAL	-	expression tag	UNP Q75N27
C	-10	HIS	-	expression tag	UNP Q75N27
C	-9	HIS	-	expression tag	UNP Q75N27
C	-8	HIS	-	expression tag	UNP Q75N27
C	-7	HIS	-	expression tag	UNP Q75N27
C	-6	HIS	-	expression tag	UNP Q75N27
C	-5	HIS	-	expression tag	UNP Q75N27
C	-4	ILE	-	expression tag	UNP Q75N27
C	-3	GLU	-	expression tag	UNP Q75N27
C	-2	GLY	-	expression tag	UNP Q75N27
C	-1	ARG	-	expression tag	UNP Q75N27
C	0	HIS	-	expression tag	UNP Q75N27
C	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
D	-15	MET	-	initiating methionine	UNP Q75N27
D	-14	ASN	-	expression tag	UNP Q75N27
D	-13	HIS	-	expression tag	UNP Q75N27
D	-12	LYS	-	expression tag	UNP Q75N27
D	-11	VAL	-	expression tag	UNP Q75N27
D	-10	HIS	-	expression tag	UNP Q75N27
D	-9	HIS	-	expression tag	UNP Q75N27
D	-8	HIS	-	expression tag	UNP Q75N27
D	-7	HIS	-	expression tag	UNP Q75N27
D	-6	HIS	-	expression tag	UNP Q75N27
D	-5	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	-4	ILE	-	expression tag	UNP Q75N27
D	-3	GLU	-	expression tag	UNP Q75N27
D	-2	GLY	-	expression tag	UNP Q75N27
D	-1	ARG	-	expression tag	UNP Q75N27
D	0	HIS	-	expression tag	UNP Q75N27
D	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
E	-15	MET	-	initiating methionine	UNP Q75N27
E	-14	ASN	-	expression tag	UNP Q75N27
E	-13	HIS	-	expression tag	UNP Q75N27
E	-12	LYS	-	expression tag	UNP Q75N27
E	-11	VAL	-	expression tag	UNP Q75N27
E	-10	HIS	-	expression tag	UNP Q75N27
E	-9	HIS	-	expression tag	UNP Q75N27
E	-8	HIS	-	expression tag	UNP Q75N27
E	-7	HIS	-	expression tag	UNP Q75N27
E	-6	HIS	-	expression tag	UNP Q75N27
E	-5	HIS	-	expression tag	UNP Q75N27
E	-4	ILE	-	expression tag	UNP Q75N27
E	-3	GLU	-	expression tag	UNP Q75N27
E	-2	GLY	-	expression tag	UNP Q75N27
E	-1	ARG	-	expression tag	UNP Q75N27
E	0	HIS	-	expression tag	UNP Q75N27
E	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
F	-15	MET	-	initiating methionine	UNP Q75N27
F	-14	ASN	-	expression tag	UNP Q75N27
F	-13	HIS	-	expression tag	UNP Q75N27
F	-12	LYS	-	expression tag	UNP Q75N27
F	-11	VAL	-	expression tag	UNP Q75N27
F	-10	HIS	-	expression tag	UNP Q75N27
F	-9	HIS	-	expression tag	UNP Q75N27
F	-8	HIS	-	expression tag	UNP Q75N27
F	-7	HIS	-	expression tag	UNP Q75N27
F	-6	HIS	-	expression tag	UNP Q75N27
F	-5	HIS	-	expression tag	UNP Q75N27
F	-4	ILE	-	expression tag	UNP Q75N27
F	-3	GLU	-	expression tag	UNP Q75N27
F	-2	GLY	-	expression tag	UNP Q75N27
F	-1	ARG	-	expression tag	UNP Q75N27
F	0	HIS	-	expression tag	UNP Q75N27
F	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
G	-15	MET	-	initiating methionine	UNP Q75N27
G	-14	ASN	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	-13	HIS	-	expression tag	UNP Q75N27
G	-12	LYS	-	expression tag	UNP Q75N27
G	-11	VAL	-	expression tag	UNP Q75N27
G	-10	HIS	-	expression tag	UNP Q75N27
G	-9	HIS	-	expression tag	UNP Q75N27
G	-8	HIS	-	expression tag	UNP Q75N27
G	-7	HIS	-	expression tag	UNP Q75N27
G	-6	HIS	-	expression tag	UNP Q75N27
G	-5	HIS	-	expression tag	UNP Q75N27
G	-4	ILE	-	expression tag	UNP Q75N27
G	-3	GLU	-	expression tag	UNP Q75N27
G	-2	GLY	-	expression tag	UNP Q75N27
G	-1	ARG	-	expression tag	UNP Q75N27
G	0	HIS	-	expression tag	UNP Q75N27
G	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
H	-15	MET	-	initiating methionine	UNP Q75N27
H	-14	ASN	-	expression tag	UNP Q75N27
H	-13	HIS	-	expression tag	UNP Q75N27
H	-12	LYS	-	expression tag	UNP Q75N27
H	-11	VAL	-	expression tag	UNP Q75N27
H	-10	HIS	-	expression tag	UNP Q75N27
H	-9	HIS	-	expression tag	UNP Q75N27
H	-8	HIS	-	expression tag	UNP Q75N27
H	-7	HIS	-	expression tag	UNP Q75N27
H	-6	HIS	-	expression tag	UNP Q75N27
H	-5	HIS	-	expression tag	UNP Q75N27
H	-4	ILE	-	expression tag	UNP Q75N27
H	-3	GLU	-	expression tag	UNP Q75N27
H	-2	GLY	-	expression tag	UNP Q75N27
H	-1	ARG	-	expression tag	UNP Q75N27
H	0	HIS	-	expression tag	UNP Q75N27
H	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
I	-15	MET	-	initiating methionine	UNP Q75N27
I	-14	ASN	-	expression tag	UNP Q75N27
I	-13	HIS	-	expression tag	UNP Q75N27
I	-12	LYS	-	expression tag	UNP Q75N27
I	-11	VAL	-	expression tag	UNP Q75N27
I	-10	HIS	-	expression tag	UNP Q75N27
I	-9	HIS	-	expression tag	UNP Q75N27
I	-8	HIS	-	expression tag	UNP Q75N27
I	-7	HIS	-	expression tag	UNP Q75N27
I	-6	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
I	-5	HIS	-	expression tag	UNP Q75N27
I	-4	ILE	-	expression tag	UNP Q75N27
I	-3	GLU	-	expression tag	UNP Q75N27
I	-2	GLY	-	expression tag	UNP Q75N27
I	-1	ARG	-	expression tag	UNP Q75N27
I	0	HIS	-	expression tag	UNP Q75N27
I	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
J	-15	MET	-	initiating methionine	UNP Q75N27
J	-14	ASN	-	expression tag	UNP Q75N27
J	-13	HIS	-	expression tag	UNP Q75N27
J	-12	LYS	-	expression tag	UNP Q75N27
J	-11	VAL	-	expression tag	UNP Q75N27
J	-10	HIS	-	expression tag	UNP Q75N27
J	-9	HIS	-	expression tag	UNP Q75N27
J	-8	HIS	-	expression tag	UNP Q75N27
J	-7	HIS	-	expression tag	UNP Q75N27
J	-6	HIS	-	expression tag	UNP Q75N27
J	-5	HIS	-	expression tag	UNP Q75N27
J	-4	ILE	-	expression tag	UNP Q75N27
J	-3	GLU	-	expression tag	UNP Q75N27
J	-2	GLY	-	expression tag	UNP Q75N27
J	-1	ARG	-	expression tag	UNP Q75N27
J	0	HIS	-	expression tag	UNP Q75N27
J	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
K	-15	MET	-	initiating methionine	UNP Q75N27
K	-14	ASN	-	expression tag	UNP Q75N27
K	-13	HIS	-	expression tag	UNP Q75N27
K	-12	LYS	-	expression tag	UNP Q75N27
K	-11	VAL	-	expression tag	UNP Q75N27
K	-10	HIS	-	expression tag	UNP Q75N27
K	-9	HIS	-	expression tag	UNP Q75N27
K	-8	HIS	-	expression tag	UNP Q75N27
K	-7	HIS	-	expression tag	UNP Q75N27
K	-6	HIS	-	expression tag	UNP Q75N27
K	-5	HIS	-	expression tag	UNP Q75N27
K	-4	ILE	-	expression tag	UNP Q75N27
K	-3	GLU	-	expression tag	UNP Q75N27
K	-2	GLY	-	expression tag	UNP Q75N27
K	-1	ARG	-	expression tag	UNP Q75N27
K	0	HIS	-	expression tag	UNP Q75N27
K	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
L	-15	MET	-	initiating methionine	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
L	-14	ASN	-	expression tag	UNP Q75N27
L	-13	HIS	-	expression tag	UNP Q75N27
L	-12	LYS	-	expression tag	UNP Q75N27
L	-11	VAL	-	expression tag	UNP Q75N27
L	-10	HIS	-	expression tag	UNP Q75N27
L	-9	HIS	-	expression tag	UNP Q75N27
L	-8	HIS	-	expression tag	UNP Q75N27
L	-7	HIS	-	expression tag	UNP Q75N27
L	-6	HIS	-	expression tag	UNP Q75N27
L	-5	HIS	-	expression tag	UNP Q75N27
L	-4	ILE	-	expression tag	UNP Q75N27
L	-3	GLU	-	expression tag	UNP Q75N27
L	-2	GLY	-	expression tag	UNP Q75N27
L	-1	ARG	-	expression tag	UNP Q75N27
L	0	HIS	-	expression tag	UNP Q75N27
L	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
M	-15	MET	-	initiating methionine	UNP Q75N27
M	-14	ASN	-	expression tag	UNP Q75N27
M	-13	HIS	-	expression tag	UNP Q75N27
M	-12	LYS	-	expression tag	UNP Q75N27
M	-11	VAL	-	expression tag	UNP Q75N27
M	-10	HIS	-	expression tag	UNP Q75N27
M	-9	HIS	-	expression tag	UNP Q75N27
M	-8	HIS	-	expression tag	UNP Q75N27
M	-7	HIS	-	expression tag	UNP Q75N27
M	-6	HIS	-	expression tag	UNP Q75N27
M	-5	HIS	-	expression tag	UNP Q75N27
M	-4	ILE	-	expression tag	UNP Q75N27
M	-3	GLU	-	expression tag	UNP Q75N27
M	-2	GLY	-	expression tag	UNP Q75N27
M	-1	ARG	-	expression tag	UNP Q75N27
M	0	HIS	-	expression tag	UNP Q75N27
M	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
N	-15	MET	-	initiating methionine	UNP Q75N27
N	-14	ASN	-	expression tag	UNP Q75N27
N	-13	HIS	-	expression tag	UNP Q75N27
N	-12	LYS	-	expression tag	UNP Q75N27
N	-11	VAL	-	expression tag	UNP Q75N27
N	-10	HIS	-	expression tag	UNP Q75N27
N	-9	HIS	-	expression tag	UNP Q75N27
N	-8	HIS	-	expression tag	UNP Q75N27
N	-7	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
N	-6	HIS	-	expression tag	UNP Q75N27
N	-5	HIS	-	expression tag	UNP Q75N27
N	-4	ILE	-	expression tag	UNP Q75N27
N	-3	GLU	-	expression tag	UNP Q75N27
N	-2	GLY	-	expression tag	UNP Q75N27
N	-1	ARG	-	expression tag	UNP Q75N27
N	0	HIS	-	expression tag	UNP Q75N27
N	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
O	-15	MET	-	initiating methionine	UNP Q75N27
O	-14	ASN	-	expression tag	UNP Q75N27
O	-13	HIS	-	expression tag	UNP Q75N27
O	-12	LYS	-	expression tag	UNP Q75N27
O	-11	VAL	-	expression tag	UNP Q75N27
O	-10	HIS	-	expression tag	UNP Q75N27
O	-9	HIS	-	expression tag	UNP Q75N27
O	-8	HIS	-	expression tag	UNP Q75N27
O	-7	HIS	-	expression tag	UNP Q75N27
O	-6	HIS	-	expression tag	UNP Q75N27
O	-5	HIS	-	expression tag	UNP Q75N27
O	-4	ILE	-	expression tag	UNP Q75N27
O	-3	GLU	-	expression tag	UNP Q75N27
O	-2	GLY	-	expression tag	UNP Q75N27
O	-1	ARG	-	expression tag	UNP Q75N27
O	0	HIS	-	expression tag	UNP Q75N27
O	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
P	-15	MET	-	initiating methionine	UNP Q75N27
P	-14	ASN	-	expression tag	UNP Q75N27
P	-13	HIS	-	expression tag	UNP Q75N27
P	-12	LYS	-	expression tag	UNP Q75N27
P	-11	VAL	-	expression tag	UNP Q75N27
P	-10	HIS	-	expression tag	UNP Q75N27
P	-9	HIS	-	expression tag	UNP Q75N27
P	-8	HIS	-	expression tag	UNP Q75N27
P	-7	HIS	-	expression tag	UNP Q75N27
P	-6	HIS	-	expression tag	UNP Q75N27
P	-5	HIS	-	expression tag	UNP Q75N27
P	-4	ILE	-	expression tag	UNP Q75N27
P	-3	GLU	-	expression tag	UNP Q75N27
P	-2	GLY	-	expression tag	UNP Q75N27
P	-1	ARG	-	expression tag	UNP Q75N27
P	0	HIS	-	expression tag	UNP Q75N27
P	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
Q	-15	MET	-	initiating methionine	UNP Q75N27
Q	-14	ASN	-	expression tag	UNP Q75N27
Q	-13	HIS	-	expression tag	UNP Q75N27
Q	-12	LYS	-	expression tag	UNP Q75N27
Q	-11	VAL	-	expression tag	UNP Q75N27
Q	-10	HIS	-	expression tag	UNP Q75N27
Q	-9	HIS	-	expression tag	UNP Q75N27
Q	-8	HIS	-	expression tag	UNP Q75N27
Q	-7	HIS	-	expression tag	UNP Q75N27
Q	-6	HIS	-	expression tag	UNP Q75N27
Q	-5	HIS	-	expression tag	UNP Q75N27
Q	-4	ILE	-	expression tag	UNP Q75N27
Q	-3	GLU	-	expression tag	UNP Q75N27
Q	-2	GLY	-	expression tag	UNP Q75N27
Q	-1	ARG	-	expression tag	UNP Q75N27
Q	0	HIS	-	expression tag	UNP Q75N27
Q	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
R	-15	MET	-	initiating methionine	UNP Q75N27
R	-14	ASN	-	expression tag	UNP Q75N27
R	-13	HIS	-	expression tag	UNP Q75N27
R	-12	LYS	-	expression tag	UNP Q75N27
R	-11	VAL	-	expression tag	UNP Q75N27
R	-10	HIS	-	expression tag	UNP Q75N27
R	-9	HIS	-	expression tag	UNP Q75N27
R	-8	HIS	-	expression tag	UNP Q75N27
R	-7	HIS	-	expression tag	UNP Q75N27
R	-6	HIS	-	expression tag	UNP Q75N27
R	-5	HIS	-	expression tag	UNP Q75N27
R	-4	ILE	-	expression tag	UNP Q75N27
R	-3	GLU	-	expression tag	UNP Q75N27
R	-2	GLY	-	expression tag	UNP Q75N27
R	-1	ARG	-	expression tag	UNP Q75N27
R	0	HIS	-	expression tag	UNP Q75N27
R	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
S	-15	MET	-	initiating methionine	UNP Q75N27
S	-14	ASN	-	expression tag	UNP Q75N27
S	-13	HIS	-	expression tag	UNP Q75N27
S	-12	LYS	-	expression tag	UNP Q75N27
S	-11	VAL	-	expression tag	UNP Q75N27
S	-10	HIS	-	expression tag	UNP Q75N27
S	-9	HIS	-	expression tag	UNP Q75N27
S	-8	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
S	-7	HIS	-	expression tag	UNP Q75N27
S	-6	HIS	-	expression tag	UNP Q75N27
S	-5	HIS	-	expression tag	UNP Q75N27
S	-4	ILE	-	expression tag	UNP Q75N27
S	-3	GLU	-	expression tag	UNP Q75N27
S	-2	GLY	-	expression tag	UNP Q75N27
S	-1	ARG	-	expression tag	UNP Q75N27
S	0	HIS	-	expression tag	UNP Q75N27
S	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
T	-15	MET	-	initiating methionine	UNP Q75N27
T	-14	ASN	-	expression tag	UNP Q75N27
T	-13	HIS	-	expression tag	UNP Q75N27
T	-12	LYS	-	expression tag	UNP Q75N27
T	-11	VAL	-	expression tag	UNP Q75N27
T	-10	HIS	-	expression tag	UNP Q75N27
T	-9	HIS	-	expression tag	UNP Q75N27
T	-8	HIS	-	expression tag	UNP Q75N27
T	-7	HIS	-	expression tag	UNP Q75N27
T	-6	HIS	-	expression tag	UNP Q75N27
T	-5	HIS	-	expression tag	UNP Q75N27
T	-4	ILE	-	expression tag	UNP Q75N27
T	-3	GLU	-	expression tag	UNP Q75N27
T	-2	GLY	-	expression tag	UNP Q75N27
T	-1	ARG	-	expression tag	UNP Q75N27
T	0	HIS	-	expression tag	UNP Q75N27
T	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
U	-15	MET	-	initiating methionine	UNP Q75N27
U	-14	ASN	-	expression tag	UNP Q75N27
U	-13	HIS	-	expression tag	UNP Q75N27
U	-12	LYS	-	expression tag	UNP Q75N27
U	-11	VAL	-	expression tag	UNP Q75N27
U	-10	HIS	-	expression tag	UNP Q75N27
U	-9	HIS	-	expression tag	UNP Q75N27
U	-8	HIS	-	expression tag	UNP Q75N27
U	-7	HIS	-	expression tag	UNP Q75N27
U	-6	HIS	-	expression tag	UNP Q75N27
U	-5	HIS	-	expression tag	UNP Q75N27
U	-4	ILE	-	expression tag	UNP Q75N27
U	-3	GLU	-	expression tag	UNP Q75N27
U	-2	GLY	-	expression tag	UNP Q75N27
U	-1	ARG	-	expression tag	UNP Q75N27
U	0	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
U	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
V	-15	MET	-	initiating methionine	UNP Q75N27
V	-14	ASN	-	expression tag	UNP Q75N27
V	-13	HIS	-	expression tag	UNP Q75N27
V	-12	LYS	-	expression tag	UNP Q75N27
V	-11	VAL	-	expression tag	UNP Q75N27
V	-10	HIS	-	expression tag	UNP Q75N27
V	-9	HIS	-	expression tag	UNP Q75N27
V	-8	HIS	-	expression tag	UNP Q75N27
V	-7	HIS	-	expression tag	UNP Q75N27
V	-6	HIS	-	expression tag	UNP Q75N27
V	-5	HIS	-	expression tag	UNP Q75N27
V	-4	ILE	-	expression tag	UNP Q75N27
V	-3	GLU	-	expression tag	UNP Q75N27
V	-2	GLY	-	expression tag	UNP Q75N27
V	-1	ARG	-	expression tag	UNP Q75N27
V	0	HIS	-	expression tag	UNP Q75N27
V	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
W	-15	MET	-	initiating methionine	UNP Q75N27
W	-14	ASN	-	expression tag	UNP Q75N27
W	-13	HIS	-	expression tag	UNP Q75N27
W	-12	LYS	-	expression tag	UNP Q75N27
W	-11	VAL	-	expression tag	UNP Q75N27
W	-10	HIS	-	expression tag	UNP Q75N27
W	-9	HIS	-	expression tag	UNP Q75N27
W	-8	HIS	-	expression tag	UNP Q75N27
W	-7	HIS	-	expression tag	UNP Q75N27
W	-6	HIS	-	expression tag	UNP Q75N27
W	-5	HIS	-	expression tag	UNP Q75N27
W	-4	ILE	-	expression tag	UNP Q75N27
W	-3	GLU	-	expression tag	UNP Q75N27
W	-2	GLY	-	expression tag	UNP Q75N27
W	-1	ARG	-	expression tag	UNP Q75N27
W	0	HIS	-	expression tag	UNP Q75N27
W	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
X	-15	MET	-	initiating methionine	UNP Q75N27
X	-14	ASN	-	expression tag	UNP Q75N27
X	-13	HIS	-	expression tag	UNP Q75N27
X	-12	LYS	-	expression tag	UNP Q75N27
X	-11	VAL	-	expression tag	UNP Q75N27
X	-10	HIS	-	expression tag	UNP Q75N27
X	-9	HIS	-	expression tag	UNP Q75N27

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
X	-8	HIS	-	expression tag	UNP Q75N27
X	-7	HIS	-	expression tag	UNP Q75N27
X	-6	HIS	-	expression tag	UNP Q75N27
X	-5	HIS	-	expression tag	UNP Q75N27
X	-4	ILE	-	expression tag	UNP Q75N27
X	-3	GLU	-	expression tag	UNP Q75N27
X	-2	GLY	-	expression tag	UNP Q75N27
X	-1	ARG	-	expression tag	UNP Q75N27
X	0	HIS	-	expression tag	UNP Q75N27
X	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0
Y	-15	MET	-	initiating methionine	UNP Q75N27
Y	-14	ASN	-	expression tag	UNP Q75N27
Y	-13	HIS	-	expression tag	UNP Q75N27
Y	-12	LYS	-	expression tag	UNP Q75N27
Y	-11	VAL	-	expression tag	UNP Q75N27
Y	-10	HIS	-	expression tag	UNP Q75N27
Y	-9	HIS	-	expression tag	UNP Q75N27
Y	-8	HIS	-	expression tag	UNP Q75N27
Y	-7	HIS	-	expression tag	UNP Q75N27
Y	-6	HIS	-	expression tag	UNP Q75N27
Y	-5	HIS	-	expression tag	UNP Q75N27
Y	-4	ILE	-	expression tag	UNP Q75N27
Y	-3	GLU	-	expression tag	UNP Q75N27
Y	-2	GLY	-	expression tag	UNP Q75N27
Y	-1	ARG	-	expression tag	UNP Q75N27
Y	0	HIS	-	expression tag	UNP Q75N27
Y	792	SER	GLY	engineered mutation	UNP A0A0T7EAG0





[illegible]

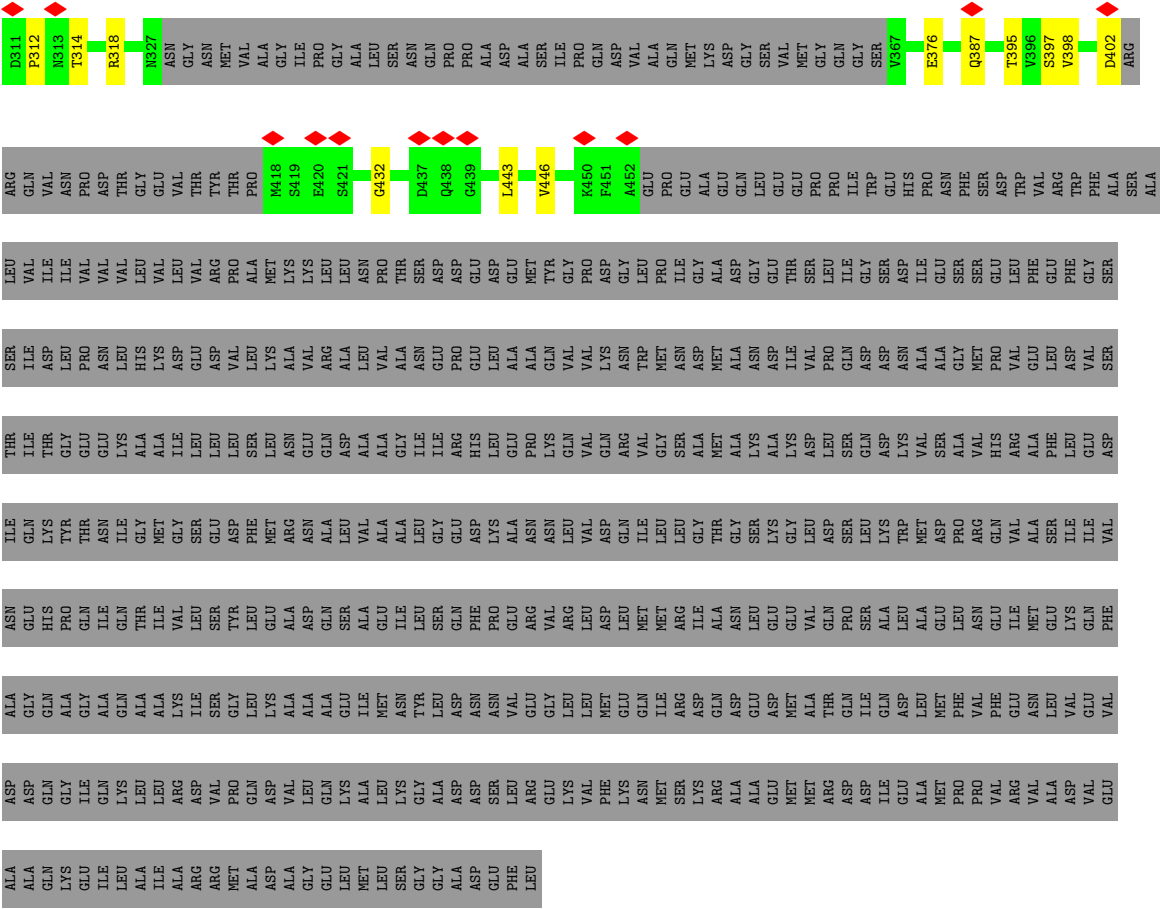
- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG

Chain B: 13% 85%

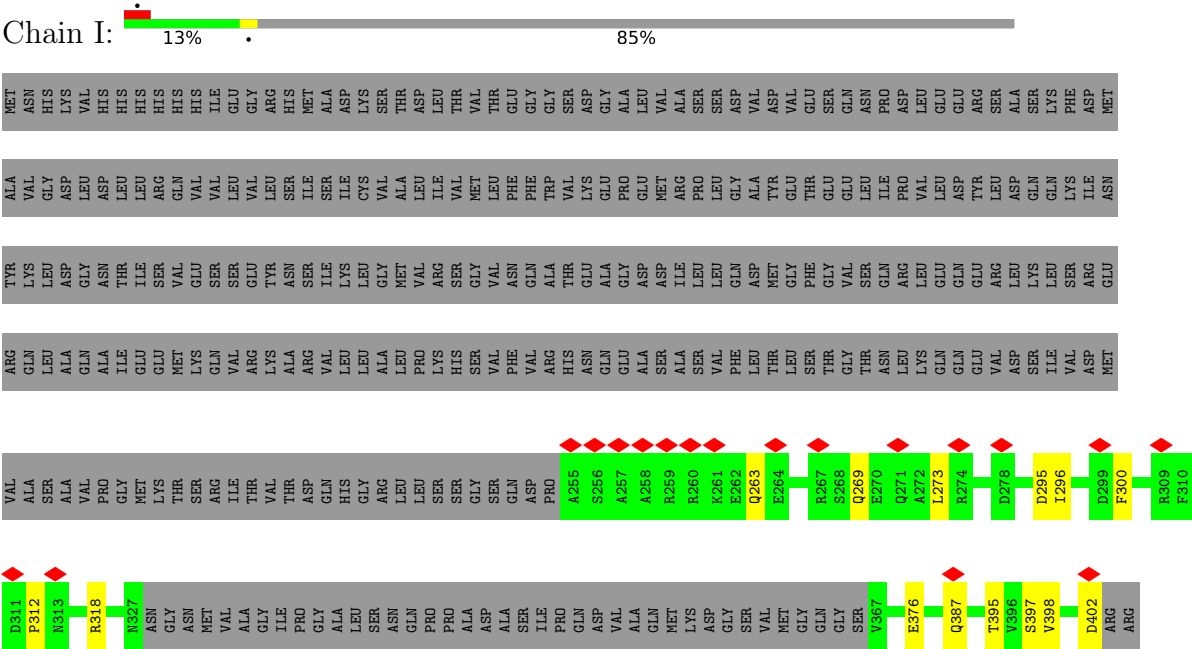
[illegible]

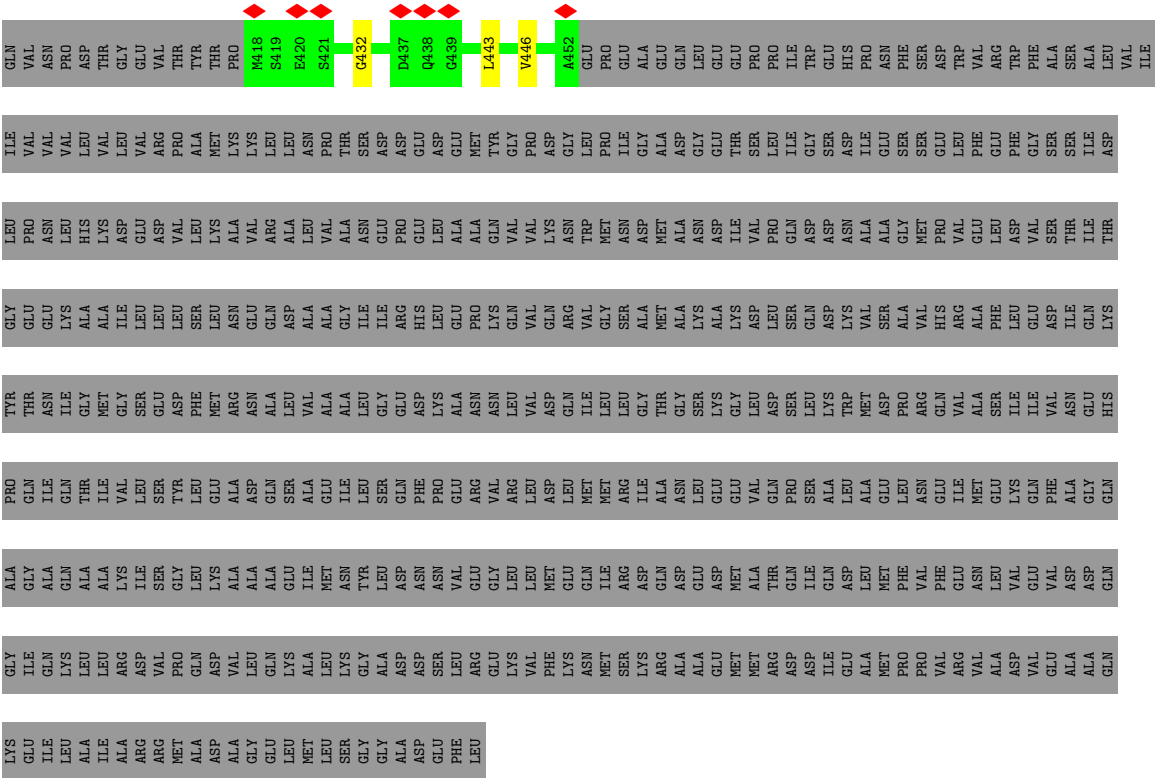




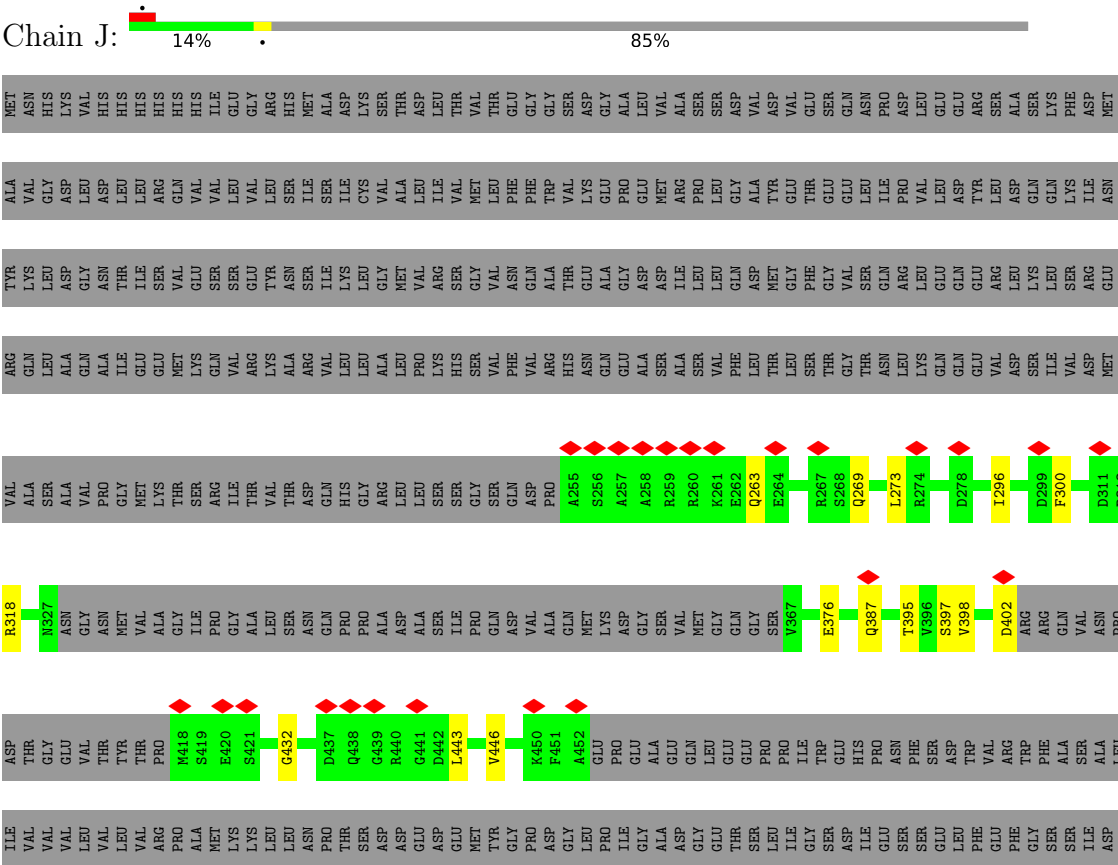


● Molecule 1: Flagellar M-ring protein,Flagellar motor switch protein FliG





● Molecule 1: Flagellar M-ring protein,Flagellar motor switch protein FlgG



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

- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG

Chain K: 13% 85%

[illegible]

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

- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG

[illegible]

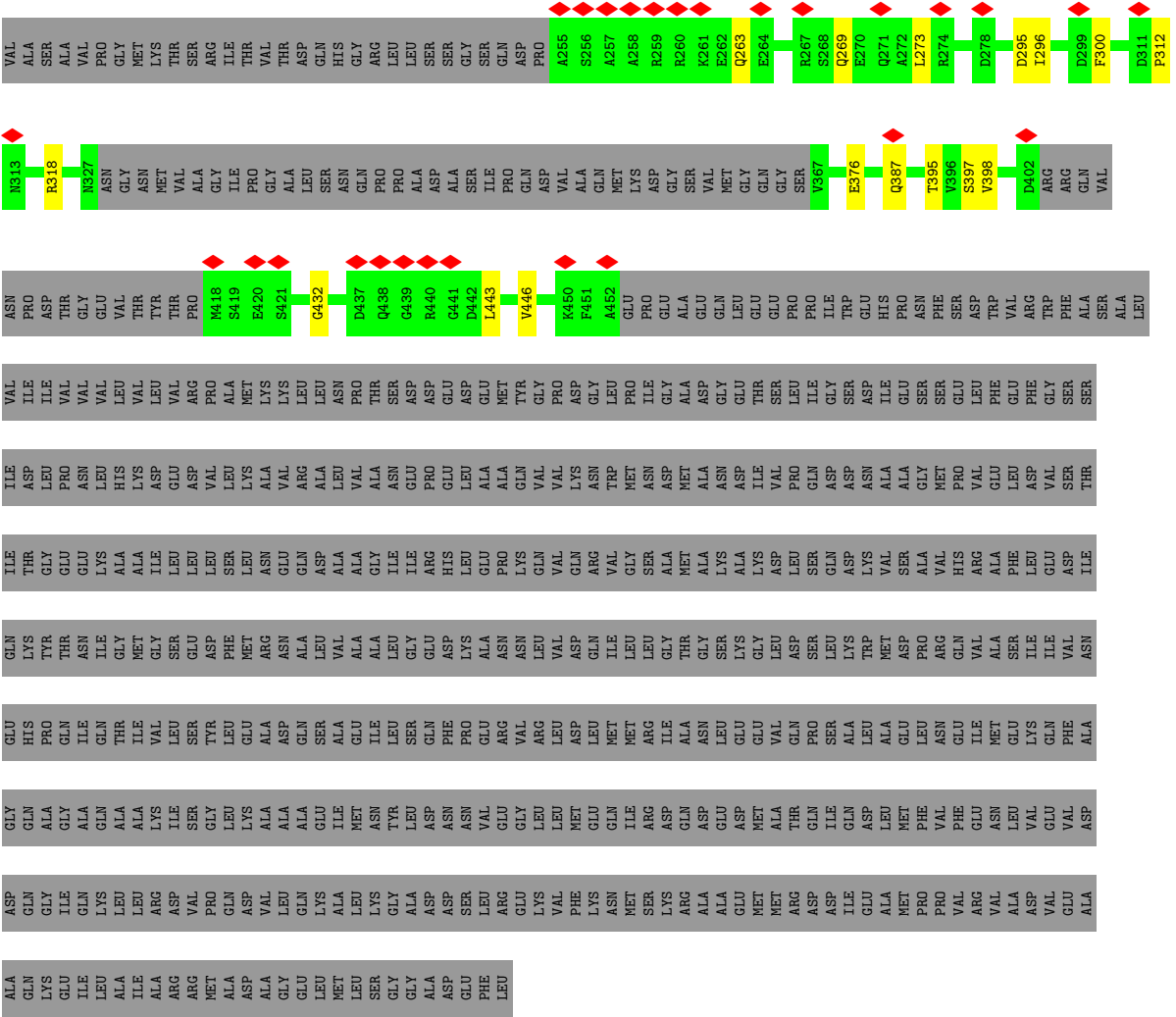
ASN	TLE	THR	SER	LEU
GLU	GLN	ILE	ILE	VAL
HIS	LYS	THR	ASP	LEU
PRO	TYR	GLY	LEU	ILE
GLN	THR	GLU	PRO	VAL
ILE	ASN	GLI	ASN	VAL
GLN	ILE	LYS	LEU	VAL
THR	GLY	ALA	HIS	LEU
ILE	MET	ALA	LYS	VAL
VAL	ILE	ILE	ASP	LEU
LEU	SER	LEU	GLI	VAL
SER	GLU	LEU	ASP	ARG
TYR	ASP	LEU	VAL	PRO
LEU	PHE	SER	LEU	PRO
GLU	MET	LEU	LYS	MET
ALA	ARG	ASN	ALA	ALA
ASP	ASN	GLI	VAL	LYS
GLN	ALA	GLN	ARG	LYS
SER	LEU	ASP	ALA	LEU
ALA	VAL	ALA	LEU	ASN
GLU	ALA	ALA	VAL	PRO
ILE	ALA	GLY	ALA	THR
LEU	LEU	ILE	ASN	SER
SER	GLY	ILE	GLI	ASP
GLN	GLU	ARG	PRO	ASP
PHE	ASP	HIS	LEU	GLU
PRO	LYS	LEU	GLU	ASP
GLU	ASN	GLI	ALA	GLU
ARG	ASN	PRO	ALA	MET
VAL	ASN	LYS	GLN	TYR
ARG	LEU	GLN	VAL	GLY
LEU	VAL	VAL	VAL	PRO
ASP	ASP	GLN	LYS	ASP
ASN	GLN	ARG	ASN	GLY
MET	ILE	VAL	TRP	LEU
MET	LEU	GLY	MET	PRO
ARG	LEU	SER	ASN	ILE
ILE	GLY	ALA	ASP	GLY
THR	THR	MET	MET	ALA
ASN	GLY	ALA	ALA	ASP
LEU	SER	LYS	ASN	GLY
LEU	LYS	ALA	ASP	GLU
GLU	GLY	LYS	ILE	THR
VAL	LEU	ASP	VAL	SER
GLN	ASP	SER	PRO	LEU
PRO	SER	LEU	GLN	ILE
SER	LEU	Gln	ASP	GLY
ALA	LYS	ASP	ASP	SER
LEU	TRP	LYS	ASN	ASP
GLU	MET	VAL	ALA	ILE
GLU	ASP	SER	ALA	GLU
VAL	MET	VAL	GLY	SER
THR	THR	ALA	GLY	SER
GLN	THR	GLN	MET	THR
LEU	THR	LEU	PRO	GLU
ASN	THR	VAL	MET	LEU
GLU	GLN	HIS	PRO	GLU
ILE	VAL	ARG	VAL	LEU
GLU	VAL	ARG	VAL	PHE
THR	ALA	ALA	GLU	PHE
MET	ALA	PHE	LEU	GLY
GLU	SER	LEU	ASP	SER
LYS	ILE	THR	VAL	THR
ASN	VAL	ASP	SER	THR

Chain N: 14% . 85%



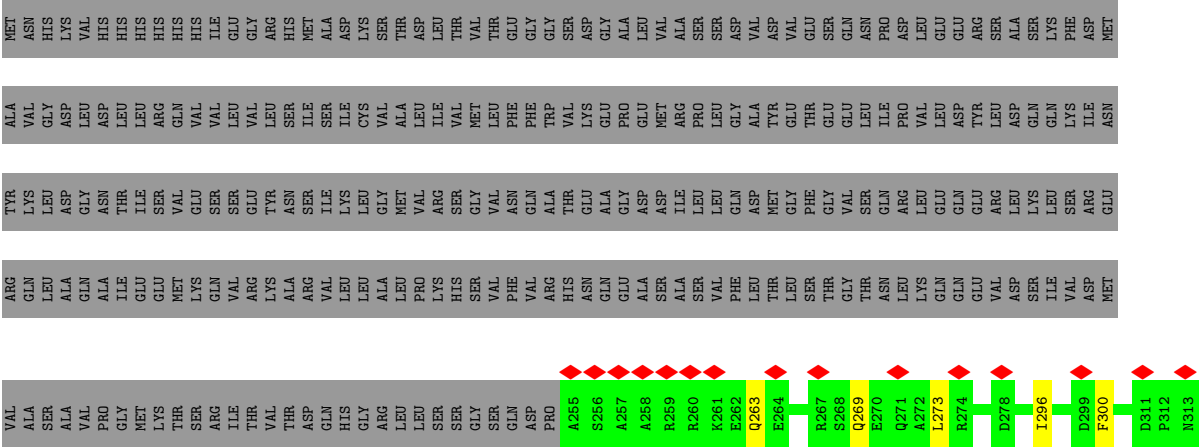
Chain 0:  13% 85%

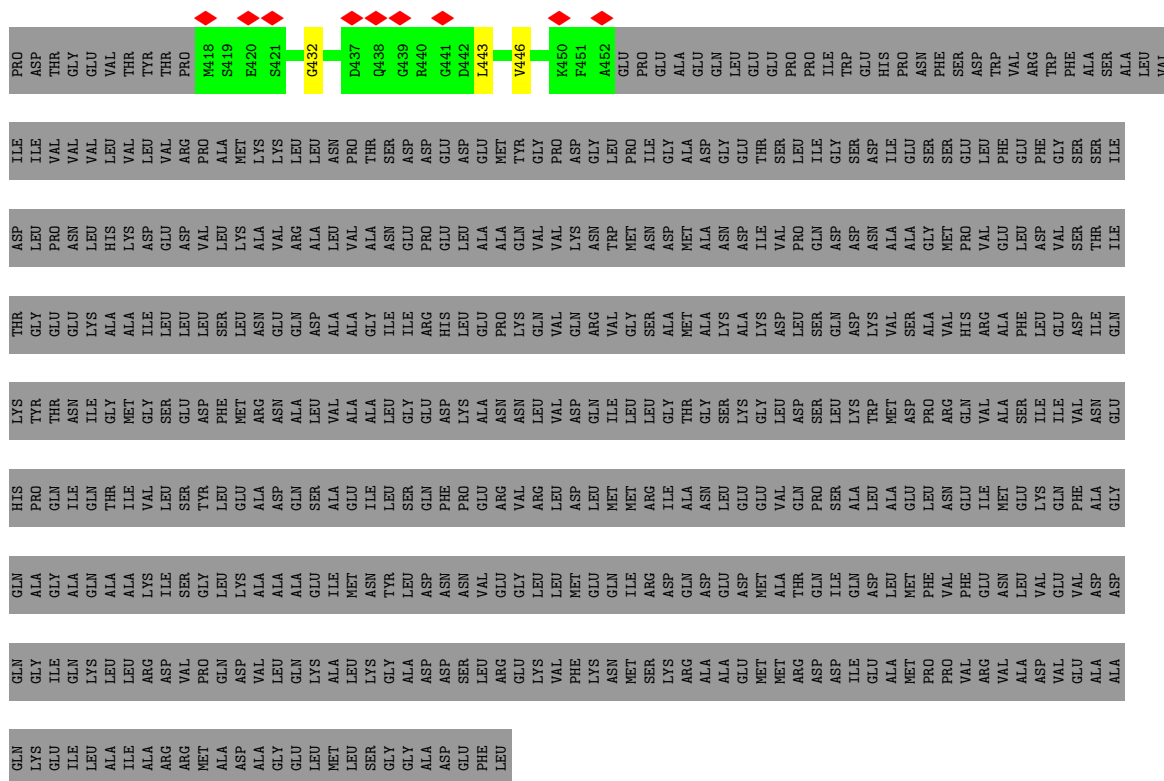
ALA	VAL	GLY	ASP	LEU	ASP	LEU	LEU	LEU	GLN	VAL	VAL	LEU	VAL	GLU	THR	GLU	GLU	LEU	ILE	LEU	VAL	VAL	LYS	GLU	PRO	GLY	ASP	LEU	LEU	THR	TYR	ILE	LEU	VAL	VAL	LEU	ASP	TYR	LEU	GLN	LYS	ILE	ASN
MET	ASN	HIS	VAL	LYS	HIS	HIS	HIS	HIS	HIS	ILE	GLU	GLY	ARG	HIS	THR	LYS	ASP	LEU	THR	ASP	ALA	ASP	ASP	GLY	GLY	ASP	GLY	ASP	VAL	VAL	ASP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



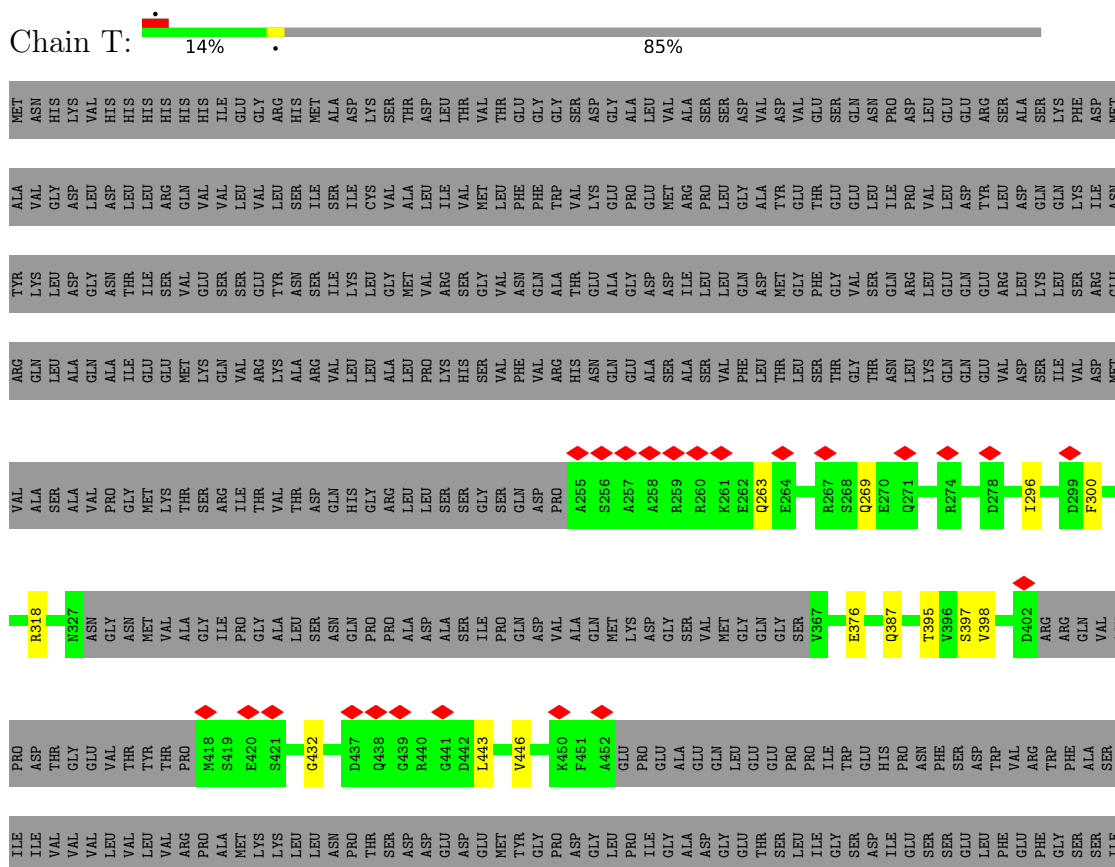
● Molecule 1: Flagellar M-ring protein,Flagellar motor switch protein FliG

Chain R: 14% 85%





- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG



[illegible]

- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG

Chain U: 14% 85%

[illegible]

[illegible]

- Molecule 1: Flagellar M-ring protein, Flagellar motor switch protein FliG

Chain V:  14% 85%

[illegible]



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C34	Depositor
Number of particles used	43546	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	49.7	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1700	Depositor
Magnification	64000	Depositor
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	1.398	Depositor
Minimum map value	-0.702	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.45	Depositor
Map size (\AA)	684.0, 684.0, 684.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.14, 1.14, 1.14	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	1	0.10	0/1153	0.25	0/1550
1	2	0.10	0/1153	0.25	0/1550
1	3	0.10	0/1153	0.25	0/1550
1	4	0.10	0/1153	0.25	0/1550
1	5	0.10	0/1153	0.25	0/1550
1	6	0.10	0/1153	0.25	0/1550
1	7	0.10	0/1153	0.25	0/1550
1	8	0.10	0/1153	0.25	0/1550
1	9	0.10	0/1153	0.25	0/1550
1	A	0.10	0/1153	0.25	0/1550
1	B	0.10	0/1153	0.25	0/1550
1	C	0.10	0/1153	0.25	0/1550
1	D	0.10	0/1153	0.25	0/1550
1	E	0.10	0/1153	0.25	0/1550
1	F	0.10	0/1153	0.25	0/1550
1	G	0.10	0/1153	0.25	0/1550
1	H	0.10	0/1153	0.25	0/1550
1	I	0.10	0/1153	0.25	0/1550
1	J	0.10	0/1153	0.25	0/1550
1	K	0.10	0/1153	0.25	0/1550
1	L	0.10	0/1153	0.25	0/1550
1	M	0.10	0/1153	0.25	0/1550
1	N	0.10	0/1153	0.25	0/1550
1	O	0.10	0/1153	0.25	0/1550
1	P	0.10	0/1153	0.25	0/1550
1	Q	0.10	0/1153	0.25	0/1550
1	R	0.10	0/1153	0.25	0/1550
1	S	0.10	0/1153	0.25	0/1550
1	T	0.10	0/1153	0.25	0/1550
1	U	0.10	0/1153	0.25	0/1550
1	V	0.10	0/1153	0.25	0/1550
1	W	0.10	0/1153	0.25	0/1550
1	X	0.10	0/1153	0.25	0/1550
1	Y	0.10	0/1153	0.25	0/1550

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
All	All	0.10	0/39202	0.25	0/52700

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	1	1143	0	1135	12	0
1	2	1143	0	1135	12	0
1	3	1143	0	1135	12	0
1	4	1143	0	1135	13	0
1	5	1143	0	1135	13	0
1	6	1143	0	1135	13	0
1	7	1143	0	1135	13	0
1	8	1143	0	1135	13	0
1	9	1143	0	1135	14	0
1	A	1143	0	1135	13	0
1	B	1143	0	1135	13	0
1	C	1143	0	1135	14	0
1	D	1143	0	1135	14	0
1	E	1143	0	1135	14	0
1	F	1143	0	1135	13	0
1	G	1143	0	1135	13	0
1	H	1143	0	1135	14	0
1	I	1143	0	1135	14	0
1	J	1143	0	1135	13	0
1	K	1143	0	1135	14	0
1	L	1143	0	1135	14	0
1	M	1143	0	1135	14	0
1	N	1143	0	1135	13	0
1	O	1143	0	1135	14	0
1	P	1143	0	1135	14	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	Q	1143	0	1135	13	0
1	R	1143	0	1135	12	0
1	S	1143	0	1135	12	0
1	T	1143	0	1135	12	0
1	U	1143	0	1135	13	0
1	V	1143	0	1135	13	0
1	W	1143	0	1135	12	0
1	X	1143	0	1135	14	0
1	Y	1143	0	1135	12	0
All	All	38862	0	38590	309	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 (309) 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)
1:4:395:THR:HG22	1:4:443:LEU:HB3	1.83	0.61
1:2:395:THR:HG22	1:2:443:LEU:HB3	1.83	0.61
1:8:395:THR:HG22	1:8:443:LEU:HB3	1.83	0.61
1:1:395:THR:HG22	1:1:443:LEU:HB3	1.83	0.61
1:5:395:THR:HG22	1:5:443:LEU:HB3	1.83	0.61
1:6:395:THR:HG22	1:6:443:LEU:HB3	1.83	0.61
1:A:395:THR:HG22	1:A:443:LEU:HB3	1.83	0.61
1:Y:395:THR:HG22	1:Y:443:LEU:HB3	1.83	0.61
1:7:395:THR:HG22	1:7:443:LEU:HB3	1.83	0.61
1:9:395:THR:HG22	1:9:443:LEU:HB3	1.83	0.61
1:C:395:THR:HG22	1:C:443:LEU:HB3	1.83	0.61
1:3:395:THR:HG22	1:3:443:LEU:HB3	1.83	0.60
1:W:395:THR:HG22	1:W:443:LEU:HB3	1.83	0.60
1:B:395:THR:HG22	1:B:443:LEU:HB3	1.83	0.60
1:D:395:THR:HG22	1:D:443:LEU:HB3	1.83	0.60
1:U:395:THR:HG22	1:U:443:LEU:HB3	1.83	0.60
1:X:395:THR:HG22	1:X:443:LEU:HB3	1.83	0.60
1:E:395:THR:HG22	1:E:443:LEU:HB3	1.83	0.60
1:F:395:THR:HG22	1:F:443:LEU:HB3	1.83	0.60
1:S:395:THR:HG22	1:S:443:LEU:HB3	1.83	0.60
1:V:395:THR:HG22	1:V:443:LEU:HB3	1.83	0.60
1:H:395:THR:HG22	1:H:443:LEU:HB3	1.83	0.60
1:G:395:THR:HG22	1:G:443:LEU:HB3	1.83	0.60
1:Q:395:THR:HG22	1:Q:443:LEU:HB3	1.83	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:395:THR:HG22	1:T:443:LEU:HB3	1.83	0.60
1:J:395:THR:HG22	1:J:443:LEU:HB3	1.83	0.59
1:R:395:THR:HG22	1:R:443:LEU:HB3	1.83	0.59
1:N:395:THR:HG22	1:N:443:LEU:HB3	1.83	0.59
1:I:395:THR:HG22	1:I:443:LEU:HB3	1.83	0.59
1:O:395:THR:HG22	1:O:443:LEU:HB3	1.83	0.59
1:P:395:THR:HG22	1:P:443:LEU:HB3	1.83	0.59
1:L:395:THR:HG22	1:L:443:LEU:HB3	1.83	0.59
1:M:395:THR:HG22	1:M:443:LEU:HB3	1.83	0.59
1:K:395:THR:HG22	1:K:443:LEU:HB3	1.83	0.59
1:S:269:GLN:NE2	1:T:263:GLN:OE1	2.37	0.54
1:Q:269:GLN:NE2	1:R:263:GLN:OE1	2.37	0.54
1:N:269:GLN:NE2	1:O:263:GLN:OE1	2.37	0.53
1:T:269:GLN:NE2	1:U:263:GLN:OE1	2.38	0.53
1:O:269:GLN:NE2	1:P:263:GLN:OE1	2.38	0.52
1:R:269:GLN:NE2	1:S:263:GLN:OE1	2.37	0.52
1:U:269:GLN:NE2	1:V:263:GLN:OE1	2.37	0.52
1:M:269:GLN:NE2	1:N:263:GLN:OE1	2.39	0.52
1:X:269:GLN:NE2	1:Y:263:GLN:OE1	2.37	0.52
1:J:269:GLN:NE2	1:K:263:GLN:OE1	2.37	0.52
1:V:269:GLN:NE2	1:W:263:GLN:OE1	2.39	0.52
1:L:269:GLN:NE2	1:M:263:GLN:OE1	2.38	0.52
1:P:269:GLN:NE2	1:Q:263:GLN:OE1	2.39	0.52
1:1:269:GLN:NE2	1:2:263:GLN:OE1	2.37	0.51
1:K:269:GLN:NE2	1:L:263:GLN:OE1	2.39	0.51
1:I:269:GLN:NE2	1:J:263:GLN:OE1	2.38	0.51
1:W:269:GLN:NE2	1:X:263:GLN:OE1	2.39	0.50
1:G:269:GLN:NE2	1:H:263:GLN:OE1	2.38	0.50
1:2:269:GLN:NE2	1:3:263:GLN:OE1	2.38	0.50
1:H:269:GLN:NE2	1:I:263:GLN:OE1	2.39	0.50
1:3:269:GLN:NE2	1:4:263:GLN:OE1	2.39	0.49
1:F:269:GLN:NE2	1:G:263:GLN:OE1	2.39	0.49
1:X:276:LYS:NZ	1:Y:295:ASP:OD1	2.36	0.49
1:E:269:GLN:NE2	1:F:263:GLN:OE1	2.38	0.49
1:4:269:GLN:NE2	1:5:263:GLN:OE1	2.38	0.49
1:1:269:GLN:HB3	1:1:296:ILE:HD13	1.95	0.48
1:D:269:GLN:NE2	1:E:263:GLN:OE1	2.38	0.48
1:O:269:GLN:HB3	1:O:296:ILE:HD13	1.95	0.48
1:4:269:GLN:HB3	1:4:296:ILE:HD13	1.95	0.48
1:B:269:GLN:NE2	1:C:263:GLN:OE1	2.38	0.48
1:J:269:GLN:HB3	1:J:296:ILE:HD13	1.95	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:269:GLN:HB3	1:L:296:ILE:HD13	1.95	0.48
1:W:269:GLN:HB3	1:W:296:ILE:HD13	1.95	0.48
1:G:269:GLN:HB3	1:G:296:ILE:HD13	1.95	0.48
1:R:269:GLN:HB3	1:R:296:ILE:HD13	1.96	0.48
1:7:269:GLN:HB3	1:7:296:ILE:HD13	1.95	0.48
1:I:269:GLN:HB3	1:I:296:ILE:HD13	1.95	0.48
1:M:269:GLN:HB3	1:M:296:ILE:HD13	1.95	0.48
1:U:269:GLN:HB3	1:U:296:ILE:HD13	1.95	0.48
1:3:269:GLN:HB3	1:3:296:ILE:HD13	1.96	0.48
1:6:269:GLN:HB3	1:6:296:ILE:HD13	1.95	0.48
1:T:269:GLN:HB3	1:T:296:ILE:HD13	1.95	0.48
1:7:269:GLN:NE2	1:8:263:GLN:OE1	2.38	0.48
1:A:269:GLN:HB3	1:A:296:ILE:HD13	1.95	0.48
1:D:269:GLN:HB3	1:D:296:ILE:HD13	1.96	0.48
1:F:269:GLN:HB3	1:F:296:ILE:HD13	1.95	0.48
1:Y:269:GLN:HB3	1:Y:296:ILE:HD13	1.95	0.48
1:9:269:GLN:HB3	1:9:296:ILE:HD13	1.96	0.48
1:C:269:GLN:HB3	1:C:296:ILE:HD13	1.95	0.48
1:M:432:GLY:HA3	1:N:397:SER:HB3	1.96	0.48
1:T:432:GLY:HA3	1:U:397:SER:HB3	1.96	0.48
1:6:269:GLN:NE2	1:7:263:GLN:OE1	2.38	0.48
1:Q:269:GLN:HB3	1:Q:296:ILE:HD13	1.95	0.48
1:X:269:GLN:HB3	1:X:296:ILE:HD13	1.95	0.48
1:9:269:GLN:NE2	1:A:263:GLN:OE1	2.38	0.48
1:9:432:GLY:HA3	1:A:397:SER:HB3	1.95	0.48
1:P:269:GLN:HB3	1:P:296:ILE:HD13	1.95	0.48
1:A:269:GLN:NE2	1:B:263:GLN:OE1	2.38	0.47
1:2:269:GLN:HB3	1:2:296:ILE:HD13	1.95	0.47
1:5:269:GLN:NE2	1:6:263:GLN:OE1	2.39	0.47
1:G:432:GLY:HA3	1:H:397:SER:HB3	1.96	0.47
1:Q:432:GLY:HA3	1:R:397:SER:HB3	1.96	0.47
1:N:269:GLN:HB3	1:N:296:ILE:HD13	1.95	0.47
1:H:269:GLN:HB3	1:H:296:ILE:HD13	1.95	0.47
1:S:432:GLY:HA3	1:T:397:SER:HB3	1.96	0.47
1:U:276:LYS:NZ	1:V:295:ASP:OD1	2.37	0.47
1:V:269:GLN:HB3	1:V:296:ILE:HD13	1.96	0.47
1:I:432:GLY:HA3	1:J:397:SER:HB3	1.96	0.47
1:5:269:GLN:HB3	1:5:296:ILE:HD13	1.95	0.47
1:B:432:GLY:HA3	1:C:397:SER:HB3	1.96	0.47
1:V:432:GLY:HA3	1:W:397:SER:HB3	1.97	0.47
1:3:432:GLY:HA3	1:4:397:SER:HB3	1.96	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:269:GLN:HB3	1:B:296:ILE:HD13	1.95	0.47
1:C:269:GLN:NE2	1:D:263:GLN:OE1	2.39	0.47
1:E:269:GLN:HB3	1:E:296:ILE:HD13	1.95	0.47
1:F:432:GLY:HA3	1:G:397:SER:HB3	1.96	0.47
1:K:269:GLN:HB3	1:K:296:ILE:HD13	1.96	0.47
1:S:269:GLN:HB3	1:S:296:ILE:HD13	1.95	0.47
1:5:276:LYS:NZ	1:6:295:ASP:OD1	2.37	0.47
1:8:269:GLN:HB3	1:8:296:ILE:HD13	1.95	0.47
1:8:269:GLN:NE2	1:9:263:GLN:OE1	2.39	0.47
1:K:432:GLY:HA3	1:L:397:SER:HB3	1.97	0.47
1:W:432:GLY:HA3	1:X:397:SER:HB3	1.97	0.47
1:1:397:SER:HB3	1:Y:432:GLY:HA3	1.97	0.47
1:O:432:GLY:HA3	1:P:397:SER:HB3	1.96	0.47
1:P:432:GLY:HA3	1:Q:397:SER:HB3	1.97	0.47
1:C:432:GLY:HA3	1:D:397:SER:HB3	1.96	0.47
1:E:432:GLY:HA3	1:F:397:SER:HB3	1.97	0.47
1:J:432:GLY:HA3	1:K:397:SER:HB3	1.97	0.46
1:5:432:GLY:HA3	1:6:397:SER:HB3	1.96	0.46
1:K:398:VAL:HB	1:K:446:VAL:HG22	1.98	0.46
1:N:398:VAL:HB	1:N:446:VAL:HG22	1.98	0.46
1:N:432:GLY:HA3	1:O:397:SER:HB3	1.98	0.46
1:P:398:VAL:HB	1:P:446:VAL:HG22	1.98	0.46
1:I:398:VAL:HB	1:I:446:VAL:HG22	1.98	0.46
1:J:398:VAL:HB	1:J:446:VAL:HG22	1.98	0.46
1:M:398:VAL:HB	1:M:446:VAL:HG22	1.98	0.46
1:R:398:VAL:HB	1:R:446:VAL:HG22	1.98	0.46
1:S:398:VAL:HB	1:S:446:VAL:HG22	1.98	0.46
1:T:398:VAL:HB	1:T:446:VAL:HG22	1.98	0.46
1:G:398:VAL:HB	1:G:446:VAL:HG22	1.98	0.46
1:H:398:VAL:HB	1:H:446:VAL:HG22	1.98	0.46
1:H:432:GLY:HA3	1:I:397:SER:HB3	1.98	0.46
1:L:398:VAL:HB	1:L:446:VAL:HG22	1.98	0.46
1:O:398:VAL:HB	1:O:446:VAL:HG22	1.98	0.46
1:Q:398:VAL:HB	1:Q:446:VAL:HG22	1.98	0.46
1:U:398:VAL:HB	1:U:446:VAL:HG22	1.98	0.46
1:V:398:VAL:HB	1:V:446:VAL:HG22	1.98	0.46
1:X:432:GLY:HA3	1:Y:397:SER:HB3	1.96	0.46
1:D:432:GLY:HA3	1:E:397:SER:HB3	1.97	0.46
1:F:398:VAL:HB	1:F:446:VAL:HG22	1.98	0.46
1:W:398:VAL:HB	1:W:446:VAL:HG22	1.98	0.46
1:6:398:VAL:HB	1:6:446:VAL:HG22	1.98	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:8:398:VAL:HB	1:8:446:VAL:HG22	1.98	0.46
1:B:398:VAL:HB	1:B:446:VAL:HG22	1.98	0.46
1:C:398:VAL:HB	1:C:446:VAL:HG22	1.98	0.46
1:E:398:VAL:HB	1:E:446:VAL:HG22	1.98	0.46
1:X:398:VAL:HB	1:X:446:VAL:HG22	1.98	0.46
1:8:432:GLY:HA3	1:9:397:SER:HB3	1.97	0.46
1:A:398:VAL:HB	1:A:446:VAL:HG22	1.98	0.46
1:Y:398:VAL:HB	1:Y:446:VAL:HG22	1.98	0.46
1:1:398:VAL:HB	1:1:446:VAL:HG22	1.98	0.46
1:2:398:VAL:HB	1:2:446:VAL:HG22	1.98	0.46
1:3:398:VAL:HB	1:3:446:VAL:HG22	1.98	0.46
1:4:398:VAL:HB	1:4:446:VAL:HG22	1.98	0.46
1:5:398:VAL:HB	1:5:446:VAL:HG22	1.98	0.46
1:7:398:VAL:HB	1:7:446:VAL:HG22	1.98	0.46
1:9:398:VAL:HB	1:9:446:VAL:HG22	1.98	0.46
1:D:398:VAL:HB	1:D:446:VAL:HG22	1.98	0.46
1:1:263:GLN:OE1	1:Y:269:GLN:NE2	2.44	0.45
1:6:432:GLY:HA3	1:7:397:SER:HB3	1.97	0.45
1:U:432:GLY:HA3	1:V:397:SER:HB3	1.97	0.45
1:1:432:GLY:HA3	1:2:397:SER:HB3	1.98	0.45
1:L:432:GLY:HA3	1:M:397:SER:HB3	1.98	0.45
1:7:432:GLY:HA3	1:8:397:SER:HB3	1.97	0.45
1:R:432:GLY:HA3	1:S:397:SER:HB3	1.98	0.45
1:2:432:GLY:HA3	1:3:397:SER:HB3	1.97	0.45
1:4:432:GLY:HA3	1:5:397:SER:HB3	1.97	0.45
1:1:387:GLN:HG3	1:2:300:PHE:HB2	1.98	0.45
1:D:273:LEU:HD12	1:D:273:LEU:HA	1.89	0.44
1:A:432:GLY:HA3	1:B:397:SER:HB3	1.98	0.44
1:F:387:GLN:HG3	1:G:300:PHE:HB2	2.00	0.44
1:9:387:GLN:HG3	1:A:300:PHE:HB2	2.00	0.44
1:P:273:LEU:HD12	1:P:273:LEU:HA	1.89	0.44
1:I:273:LEU:HD12	1:I:273:LEU:HA	1.89	0.44
1:M:387:GLN:HG3	1:N:300:PHE:HB2	2.00	0.44
1:G:387:GLN:HG3	1:H:300:PHE:HB2	2.00	0.44
1:Q:387:GLN:HG3	1:R:300:PHE:HB2	2.00	0.44
1:P:276:LYS:NZ	1:Q:295:ASP:OD1	2.35	0.44
1:X:387:GLN:HG3	1:Y:300:PHE:HB2	2.00	0.44
1:4:387:GLN:HG3	1:5:300:PHE:HB2	2.00	0.43
1:4:273:LEU:HD12	1:4:273:LEU:HA	1.89	0.43
1:N:387:GLN:HG3	1:O:300:PHE:HB2	2.00	0.43
1:6:387:GLN:HG3	1:7:300:PHE:HB2	2.00	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:R:387:GLN:HG3	1:S:300:PHE:HB2	2.01	0.43
1:T:387:GLN:HG3	1:U:300:PHE:HB2	2.00	0.43
1:B:278:ASP:OD1	1:B:290:TYR:OH	2.35	0.43
1:B:387:GLN:HG3	1:C:300:PHE:HB2	2.01	0.43
1:E:273:LEU:HD12	1:E:273:LEU:HA	1.89	0.43
1:L:387:GLN:HG3	1:M:300:PHE:HB2	2.01	0.43
1:S:387:GLN:HG3	1:T:300:PHE:HB2	2.01	0.43
1:W:387:GLN:HG3	1:X:300:PHE:HB2	2.01	0.43
1:A:387:GLN:HG3	1:B:300:PHE:HB2	2.01	0.43
1:I:387:GLN:HG3	1:J:300:PHE:HB2	2.00	0.43
1:8:387:GLN:HG3	1:9:300:PHE:HB2	2.00	0.43
1:A:314:THR:HG23	1:B:312:PRO:HG3	2.01	0.43
1:3:387:GLN:HG3	1:4:300:PHE:HB2	2.00	0.43
1:5:387:GLN:HG3	1:6:300:PHE:HB2	2.01	0.43
1:C:387:GLN:HG3	1:D:300:PHE:HB2	2.00	0.43
1:J:314:THR:HG23	1:K:312:PRO:HG3	2.01	0.43
1:K:387:GLN:HG3	1:L:300:PHE:HB2	2.01	0.43
1:L:276:LYS:NZ	1:M:295:ASP:OD1	2.36	0.43
1:Q:273:LEU:HD12	1:Q:273:LEU:HA	1.89	0.43
1:J:273:LEU:HD12	1:J:273:LEU:HA	1.89	0.42
1:9:273:LEU:HD12	1:9:273:LEU:HA	1.89	0.42
1:X:273:LEU:HD12	1:X:273:LEU:HA	1.89	0.42
1:Y:318:ARG:NH1	1:Y:376:GLU:OE1	2.52	0.42
1:1:318:ARG:NH1	1:1:376:GLU:OE1	2.52	0.42
1:2:387:GLN:HG3	1:3:300:PHE:HB2	2.00	0.42
1:8:276:LYS:NZ	1:9:295:ASP:OD1	2.35	0.42
1:C:318:ARG:NH1	1:C:376:GLU:OE1	2.52	0.42
1:D:314:THR:HG23	1:E:312:PRO:HG3	2.01	0.42
1:D:387:GLN:HG3	1:E:300:PHE:HB2	2.01	0.42
1:E:387:GLN:HG3	1:F:300:PHE:HB2	2.01	0.42
1:H:387:GLN:HG3	1:I:300:PHE:HB2	2.01	0.42
1:P:387:GLN:HG3	1:Q:300:PHE:HB2	2.00	0.42
1:U:318:ARG:NH1	1:U:376:GLU:OE1	2.52	0.42
1:X:318:ARG:NH1	1:X:376:GLU:OE1	2.52	0.42
1:D:318:ARG:NH1	1:D:376:GLU:OE1	2.52	0.42
1:H:314:THR:HG23	1:I:312:PRO:HG3	2.01	0.42
1:L:314:THR:HG23	1:M:312:PRO:HG3	2.01	0.42
1:O:318:ARG:NH1	1:O:376:GLU:OE1	2.52	0.42
1:P:318:ARG:NH1	1:P:376:GLU:OE1	2.52	0.42
1:S:318:ARG:NH1	1:S:376:GLU:OE1	2.52	0.42
1:T:318:ARG:NH1	1:T:376:GLU:OE1	2.52	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:V:318:ARG:NH1	1:V:376:GLU:OE1	2.52	0.42
1:W:318:ARG:NH1	1:W:376:GLU:OE1	2.52	0.42
1:6:314:THR:HG23	1:7:312:PRO:HG3	2.01	0.42
1:B:318:ARG:NH1	1:B:376:GLU:OE1	2.52	0.42
1:Q:318:ARG:NH1	1:Q:376:GLU:OE1	2.52	0.42
1:R:318:ARG:NH1	1:R:376:GLU:OE1	2.52	0.42
1:2:318:ARG:NH1	1:2:376:GLU:OE1	2.52	0.42
1:A:318:ARG:NH1	1:A:376:GLU:OE1	2.52	0.42
1:E:318:ARG:NH1	1:E:376:GLU:OE1	2.52	0.42
1:F:318:ARG:NH1	1:F:376:GLU:OE1	2.52	0.42
1:J:387:GLN:HG3	1:K:300:PHE:HB2	2.01	0.42
1:N:318:ARG:NH1	1:N:376:GLU:OE1	2.52	0.42
1:V:387:GLN:HG3	1:W:300:PHE:HB2	2.01	0.42
1:E:314:THR:HG23	1:F:312:PRO:HG3	2.02	0.42
1:O:387:GLN:HG3	1:P:300:PHE:HB2	2.01	0.42
1:4:314:THR:HG23	1:5:312:PRO:HG3	2.01	0.42
1:8:314:THR:HG23	1:9:312:PRO:HG3	2.01	0.42
1:9:318:ARG:NH1	1:9:376:GLU:OE1	2.52	0.42
1:G:318:ARG:NH1	1:G:376:GLU:OE1	2.52	0.42
1:H:318:ARG:NH1	1:H:376:GLU:OE1	2.52	0.42
1:M:318:ARG:NH1	1:M:376:GLU:OE1	2.52	0.42
1:3:318:ARG:NH1	1:3:376:GLU:OE1	2.52	0.42
1:8:318:ARG:NH1	1:8:376:GLU:OE1	2.52	0.42
1:I:318:ARG:NH1	1:I:376:GLU:OE1	2.52	0.42
1:K:314:THR:HG23	1:L:312:PRO:HG3	2.02	0.42
1:U:314:THR:HG23	1:V:312:PRO:HG3	2.01	0.42
1:7:318:ARG:NH1	1:7:376:GLU:OE1	2.52	0.41
1:J:318:ARG:NH1	1:J:376:GLU:OE1	2.52	0.41
1:L:318:ARG:NH1	1:L:376:GLU:OE1	2.52	0.41
1:O:314:THR:HG23	1:P:312:PRO:HG3	2.01	0.41
1:4:318:ARG:NH1	1:4:376:GLU:OE1	2.52	0.41
1:6:318:ARG:NH1	1:6:376:GLU:OE1	2.52	0.41
1:2:314:THR:HG23	1:3:312:PRO:HG3	2.01	0.41
1:5:318:ARG:NH1	1:5:376:GLU:OE1	2.52	0.41
1:K:273:LEU:HD12	1:K:273:LEU:HA	1.89	0.41
1:V:314:THR:HG23	1:W:312:PRO:HG3	2.02	0.41
1:D:402:ASP:OD1	1:D:402:ASP:N	2.54	0.41
1:F:314:THR:HG23	1:G:312:PRO:HG3	2.03	0.41
1:G:314:THR:HG23	1:H:312:PRO:HG3	2.02	0.41
1:H:276:LYS:NZ	1:I:295:ASP:OD1	2.36	0.41
1:H:402:ASP:OD1	1:H:402:ASP:N	2.54	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:318:ARG:NH1	1:K:376:GLU:OE1	2.52	0.41
1:R:314:THR:HG23	1:S:312:PRO:HG3	2.01	0.41
1:1:312:PRO:HG3	1:Y:314:THR:HG23	2.01	0.41
1:C:402:ASP:OD1	1:C:402:ASP:N	2.54	0.41
1:E:402:ASP:OD1	1:E:402:ASP:N	2.54	0.41
1:F:402:ASP:OD1	1:F:402:ASP:N	2.54	0.41
1:G:402:ASP:OD1	1:G:402:ASP:N	2.54	0.41
1:I:402:ASP:OD1	1:I:402:ASP:N	2.54	0.41
1:J:402:ASP:OD1	1:J:402:ASP:N	2.54	0.41
1:N:314:THR:HG23	1:O:312:PRO:HG3	2.01	0.41
1:7:387:GLN:HG3	1:8:300:PHE:HB2	2.01	0.41
1:K:402:ASP:OD1	1:K:402:ASP:N	2.54	0.41
1:L:402:ASP:OD1	1:L:402:ASP:N	2.54	0.41
1:N:285:LEU:HD23	1:N:285:LEU:HA	1.94	0.41
1:P:314:THR:HG23	1:Q:312:PRO:HG3	2.01	0.41
1:U:387:GLN:HG3	1:V:300:PHE:HB2	2.01	0.41
1:M:402:ASP:OD1	1:M:402:ASP:N	2.54	0.41
1:X:314:THR:HG23	1:Y:312:PRO:HG3	2.02	0.41
1:B:314:THR:HG23	1:C:312:PRO:HG3	2.02	0.41
1:N:402:ASP:OD1	1:N:402:ASP:N	2.54	0.41
1:5:285:LEU:HD23	1:5:285:LEU:HA	1.94	0.41
1:M:285:LEU:HD23	1:M:285:LEU:HA	1.94	0.41
1:O:402:ASP:OD1	1:O:402:ASP:N	2.54	0.41
1:S:314:THR:HG23	1:T:312:PRO:HG3	2.02	0.41
1:W:314:THR:HG23	1:X:312:PRO:HG3	2.02	0.41
1:7:285:LEU:HD23	1:7:285:LEU:HA	1.94	0.41
1:R:273:LEU:HD12	1:R:273:LEU:HA	1.89	0.41
1:3:285:LEU:HD23	1:3:285:LEU:HA	1.94	0.40
1:7:314:THR:HG23	1:8:312:PRO:HG3	2.01	0.40
1:C:314:THR:HG23	1:D:312:PRO:HG3	2.02	0.40
1:T:314:THR:HG23	1:U:312:PRO:HG3	2.02	0.40
1:4:285:LEU:HD23	1:4:285:LEU:HA	1.94	0.40
1:6:273:LEU:HD12	1:6:273:LEU:HA	1.89	0.40
1:9:314:THR:HG23	1:A:312:PRO:HG3	2.03	0.40
1:1:285:LEU:HD23	1:1:285:LEU:HA	1.94	0.40
1:1:314:THR:HG23	1:2:312:PRO:HG3	2.02	0.40
1:C:276:LYS:HB2	1:C:276:LYS:HE2	1.98	0.40
1:O:273:LEU:HD12	1:O:273:LEU:HA	1.89	0.40
1:A:285:LEU:HD23	1:A:285:LEU:HA	1.94	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	1	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	2	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	3	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	4	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	5	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	6	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	7	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	8	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	9	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	A	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	B	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	C	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	D	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	E	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	F	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	G	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	H	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	I	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	J	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	K	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	L	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	M	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	N	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	O	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	P	138/945 (15%)	137 (99%)	1 (1%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Q	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	R	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	S	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	T	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	U	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	V	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	W	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	X	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
1	Y	138/945 (15%)	137 (99%)	1 (1%)	0	100	100
All	All	4692/32130 (15%)	4658 (99%)	34 (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	1	125/802 (16%)	125 (100%)	0	100	100
1	2	125/802 (16%)	125 (100%)	0	100	100
1	3	125/802 (16%)	125 (100%)	0	100	100
1	4	125/802 (16%)	125 (100%)	0	100	100
1	5	125/802 (16%)	125 (100%)	0	100	100
1	6	125/802 (16%)	125 (100%)	0	100	100
1	7	125/802 (16%)	125 (100%)	0	100	100
1	8	125/802 (16%)	125 (100%)	0	100	100
1	9	125/802 (16%)	125 (100%)	0	100	100
1	A	125/802 (16%)	125 (100%)	0	100	100
1	B	125/802 (16%)	125 (100%)	0	100	100
1	C	125/802 (16%)	125 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	125/802 (16%)	125 (100%)	0	100	100
1	E	125/802 (16%)	125 (100%)	0	100	100
1	F	125/802 (16%)	125 (100%)	0	100	100
1	G	125/802 (16%)	125 (100%)	0	100	100
1	H	125/802 (16%)	125 (100%)	0	100	100
1	I	125/802 (16%)	125 (100%)	0	100	100
1	J	125/802 (16%)	125 (100%)	0	100	100
1	K	125/802 (16%)	125 (100%)	0	100	100
1	L	125/802 (16%)	125 (100%)	0	100	100
1	M	125/802 (16%)	125 (100%)	0	100	100
1	N	125/802 (16%)	125 (100%)	0	100	100
1	O	125/802 (16%)	125 (100%)	0	100	100
1	P	125/802 (16%)	125 (100%)	0	100	100
1	Q	125/802 (16%)	125 (100%)	0	100	100
1	R	125/802 (16%)	125 (100%)	0	100	100
1	S	125/802 (16%)	125 (100%)	0	100	100
1	T	125/802 (16%)	125 (100%)	0	100	100
1	U	125/802 (16%)	125 (100%)	0	100	100
1	V	125/802 (16%)	125 (100%)	0	100	100
1	W	125/802 (16%)	125 (100%)	0	100	100
1	X	125/802 (16%)	125 (100%)	0	100	100
1	Y	125/802 (16%)	125 (100%)	0	100	100
All	All	4250/27268 (16%)	4250 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (97) such sidechains are listed below:

Mol	Chain	Res	Type
1	1	327	ASN
1	1	383	HIS
1	1	394	GLN
1	2	327	ASN
1	2	383	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	394	GLN
1	3	327	ASN
1	3	383	HIS
1	3	394	GLN
1	4	327	ASN
1	4	383	HIS
1	4	394	GLN
1	5	327	ASN
1	5	383	HIS
1	5	394	GLN
1	6	327	ASN
1	6	383	HIS
1	6	394	GLN
1	7	327	ASN
1	7	383	HIS
1	8	327	ASN
1	8	383	HIS
1	8	394	GLN
1	9	327	ASN
1	9	383	HIS
1	9	394	GLN
1	A	327	ASN
1	A	383	HIS
1	A	394	GLN
1	B	327	ASN
1	B	383	HIS
1	B	394	GLN
1	C	327	ASN
1	C	383	HIS
1	C	394	GLN
1	D	327	ASN
1	D	383	HIS
1	D	394	GLN
1	E	327	ASN
1	E	383	HIS
1	E	394	GLN
1	F	327	ASN
1	F	383	HIS
1	F	394	GLN
1	G	327	ASN
1	G	383	HIS
1	G	394	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	H	327	ASN
1	H	383	HIS
1	I	327	ASN
1	I	383	HIS
1	I	394	GLN
1	J	327	ASN
1	J	383	HIS
1	J	394	GLN
1	K	327	ASN
1	K	383	HIS
1	L	327	ASN
1	L	383	HIS
1	M	327	ASN
1	M	383	HIS
1	M	394	GLN
1	N	327	ASN
1	N	383	HIS
1	O	327	ASN
1	O	383	HIS
1	O	394	GLN
1	P	327	ASN
1	P	383	HIS
1	P	394	GLN
1	Q	327	ASN
1	Q	383	HIS
1	Q	394	GLN
1	R	327	ASN
1	R	383	HIS
1	R	394	GLN
1	S	327	ASN
1	S	383	HIS
1	S	394	GLN
1	T	327	ASN
1	T	383	HIS
1	T	394	GLN
1	U	327	ASN
1	U	383	HIS
1	U	394	GLN
1	V	327	ASN
1	V	383	HIS
1	V	394	GLN
1	W	327	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	W	383	HIS
1	W	394	GLN
1	X	327	ASN
1	X	383	HIS
1	X	394	GLN
1	Y	327	ASN
1	Y	383	HIS
1	Y	394	GLN

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.

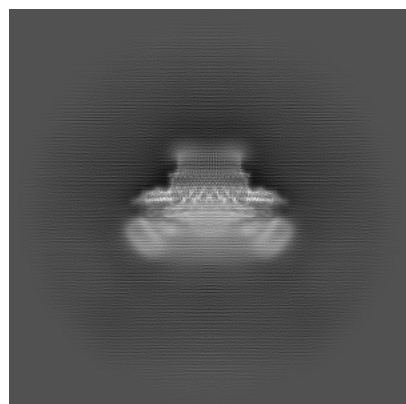
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-39761. These allow visual inspection of the internal detail of the map and identification of artifacts.

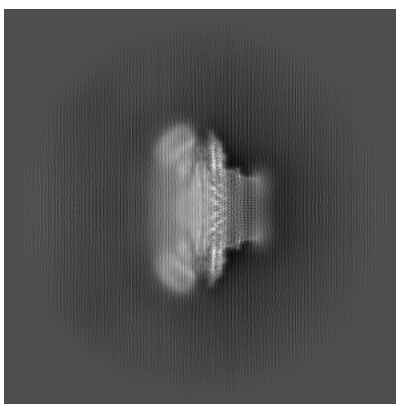
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

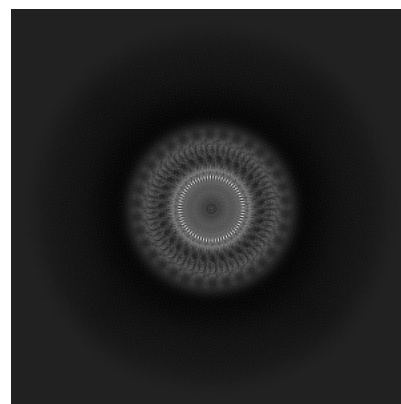
6.1.1 Primary map



X

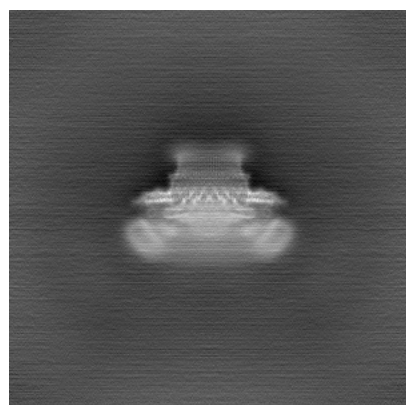


Y

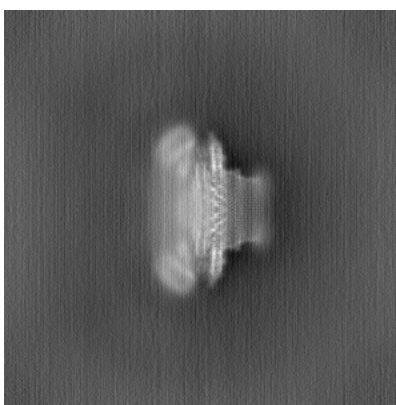


Z

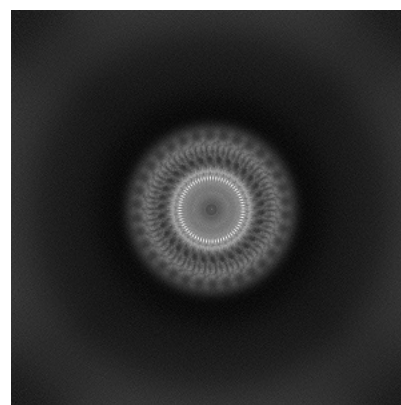
6.1.2 Raw map



X



Y

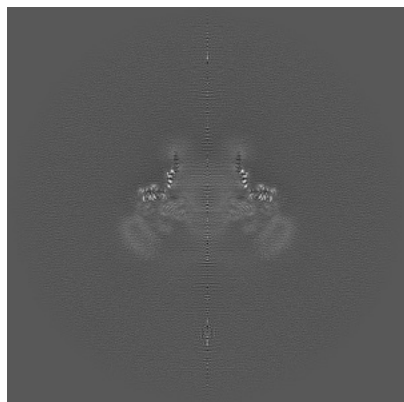


Z

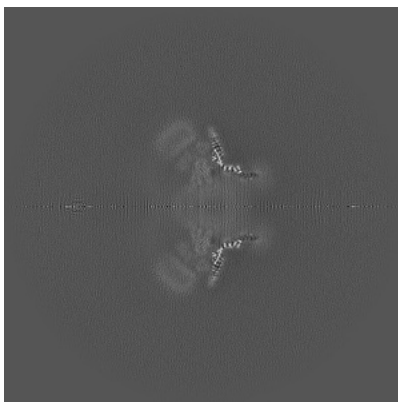
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

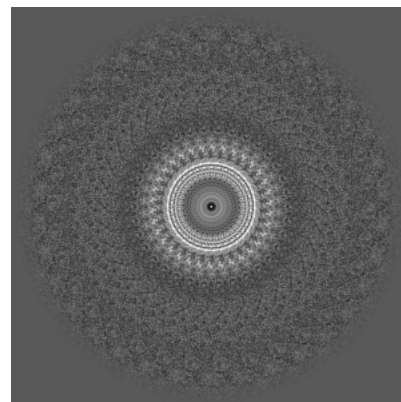
6.2.1 Primary map



X Index: 300

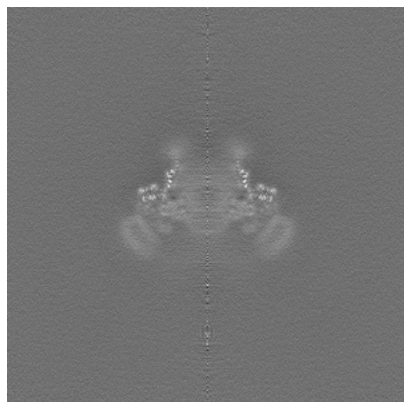


Y Index: 300

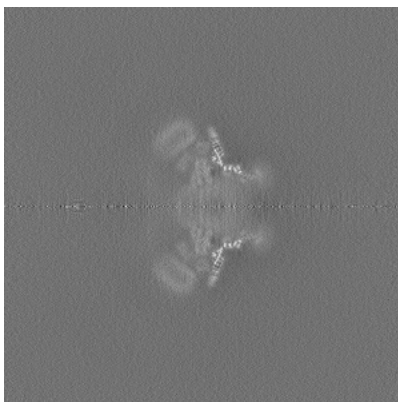


Z Index: 300

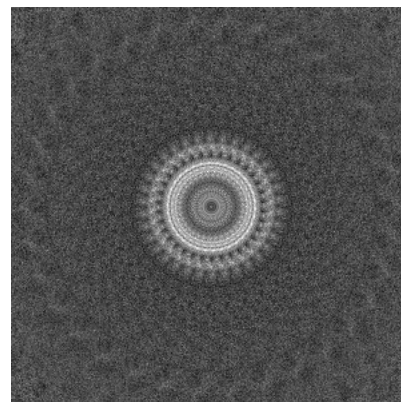
6.2.2 Raw map



X Index: 300



Y Index: 300

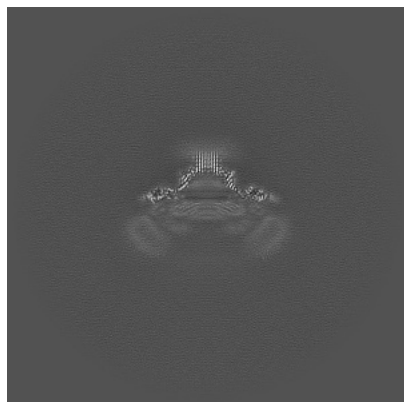


Z Index: 300

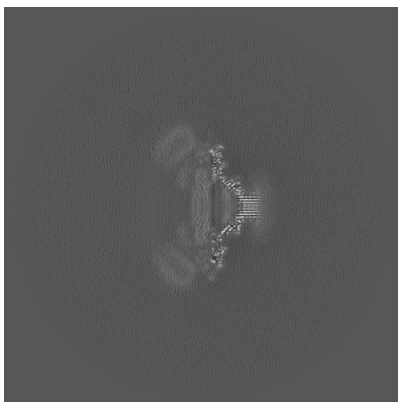
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

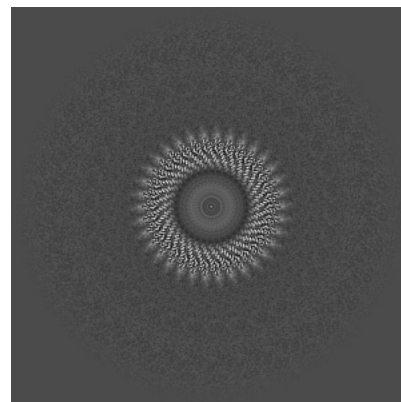
6.3.1 Primary map



X Index: 346

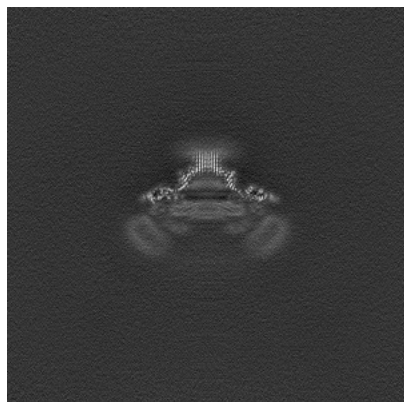


Y Index: 254

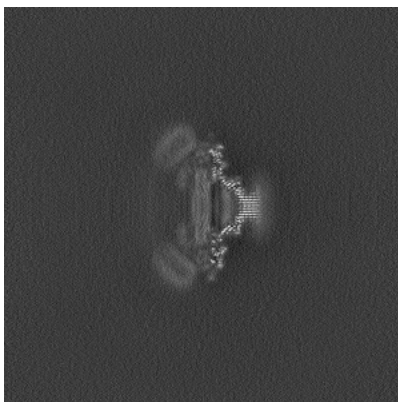


Z Index: 315

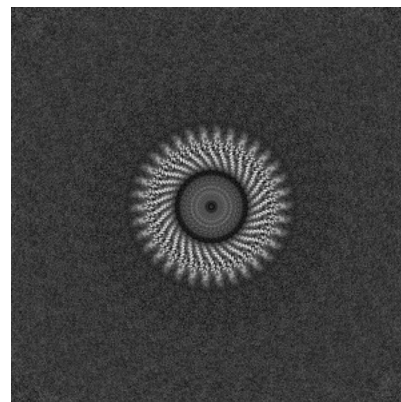
6.3.2 Raw map



X Index: 346



Y Index: 254

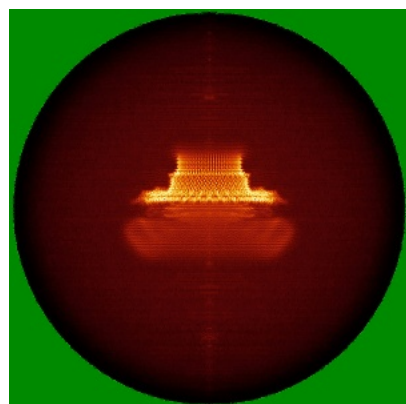


Z Index: 314

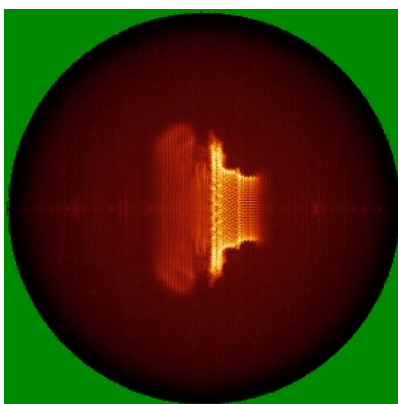
The images above show the largest variance slices of the map in three orthogonal directions.

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

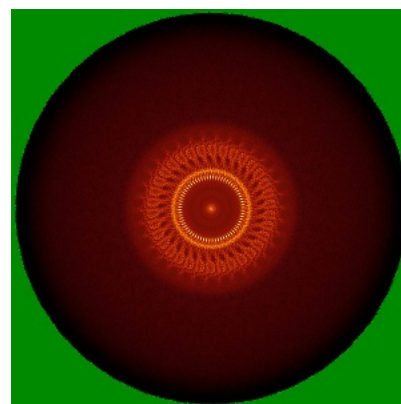
6.4.1 Primary map



X

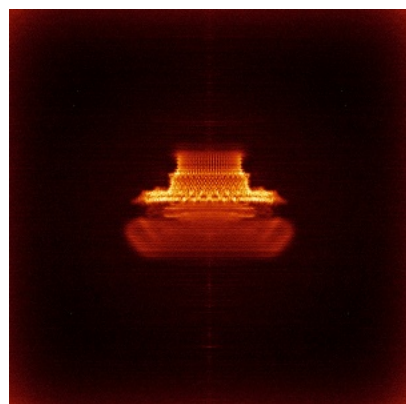


Y

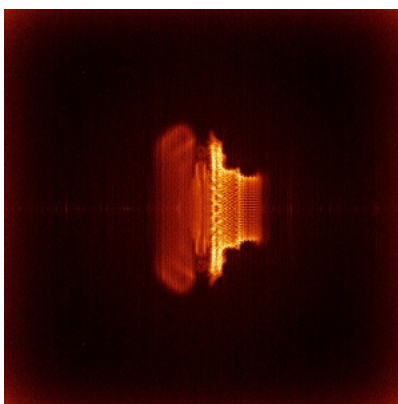


Z

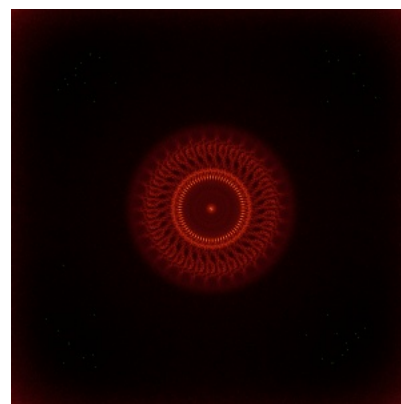
6.4.2 Raw map



X



Y

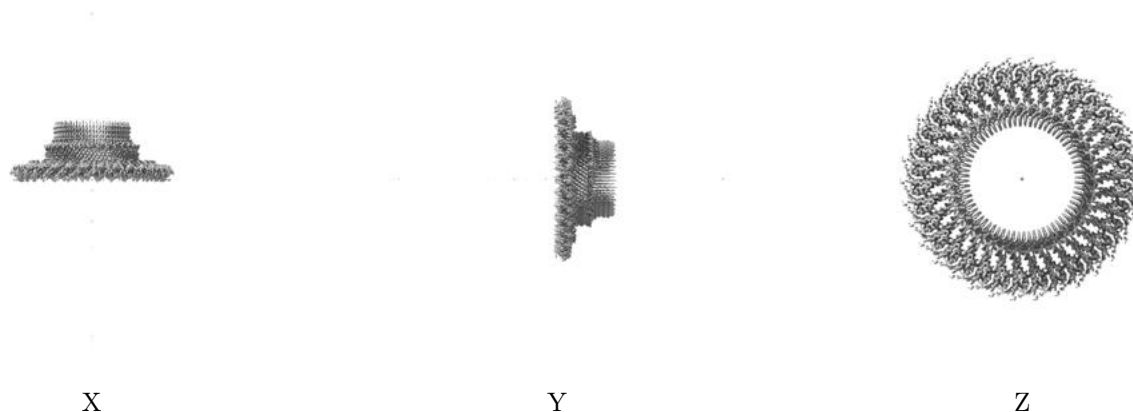


Z

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.

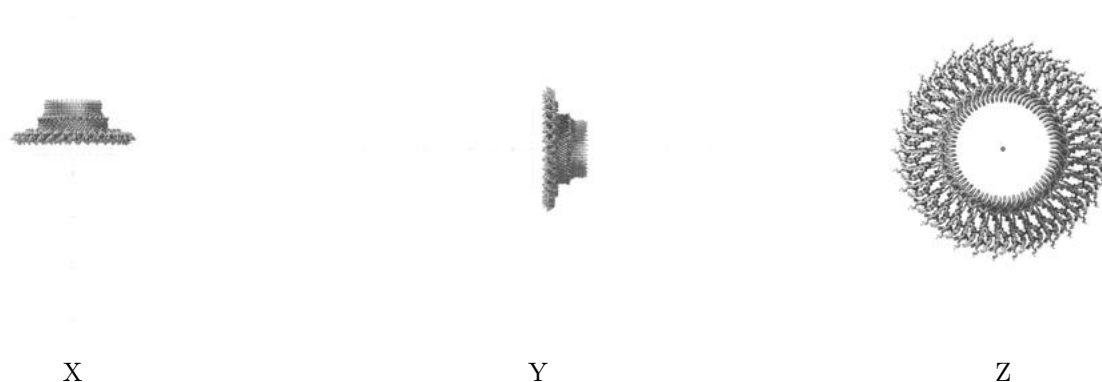
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.45. 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

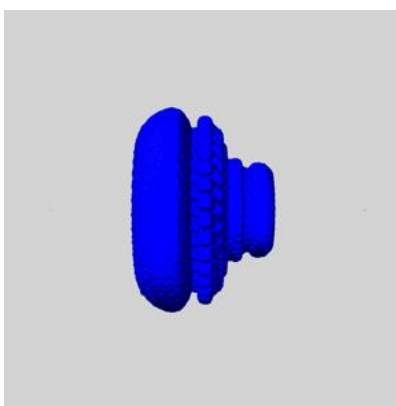
A mask typically either:

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

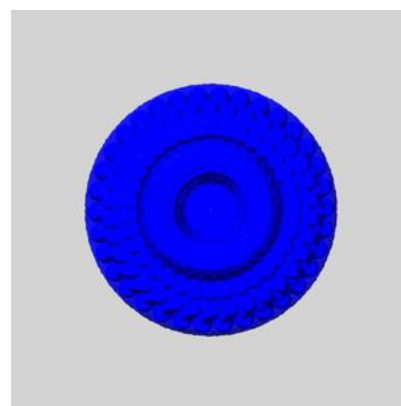
6.6.1 emd_39761_msk_1.map [i](#)



X



Y

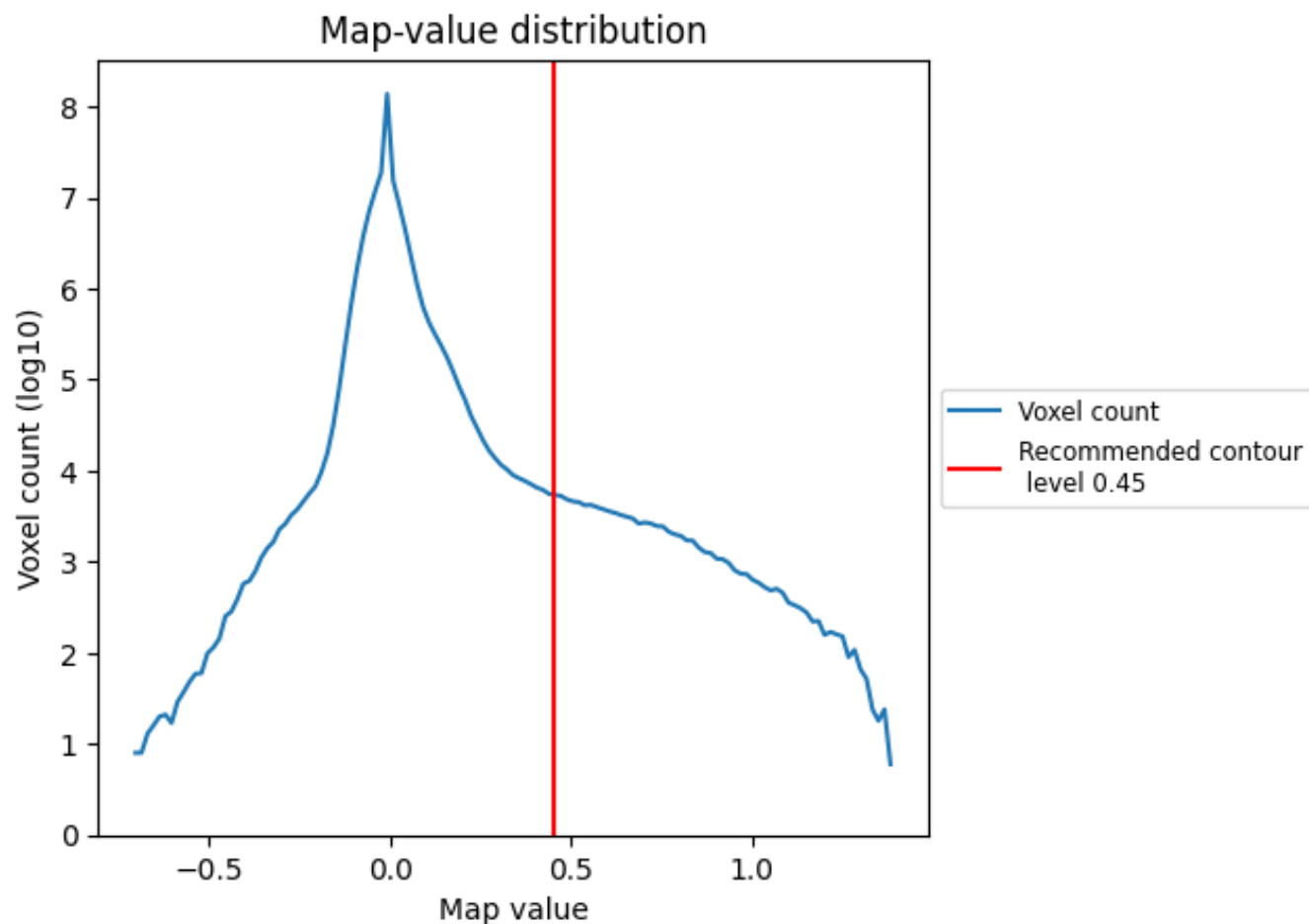


Z

7 Map analysis [i](#)

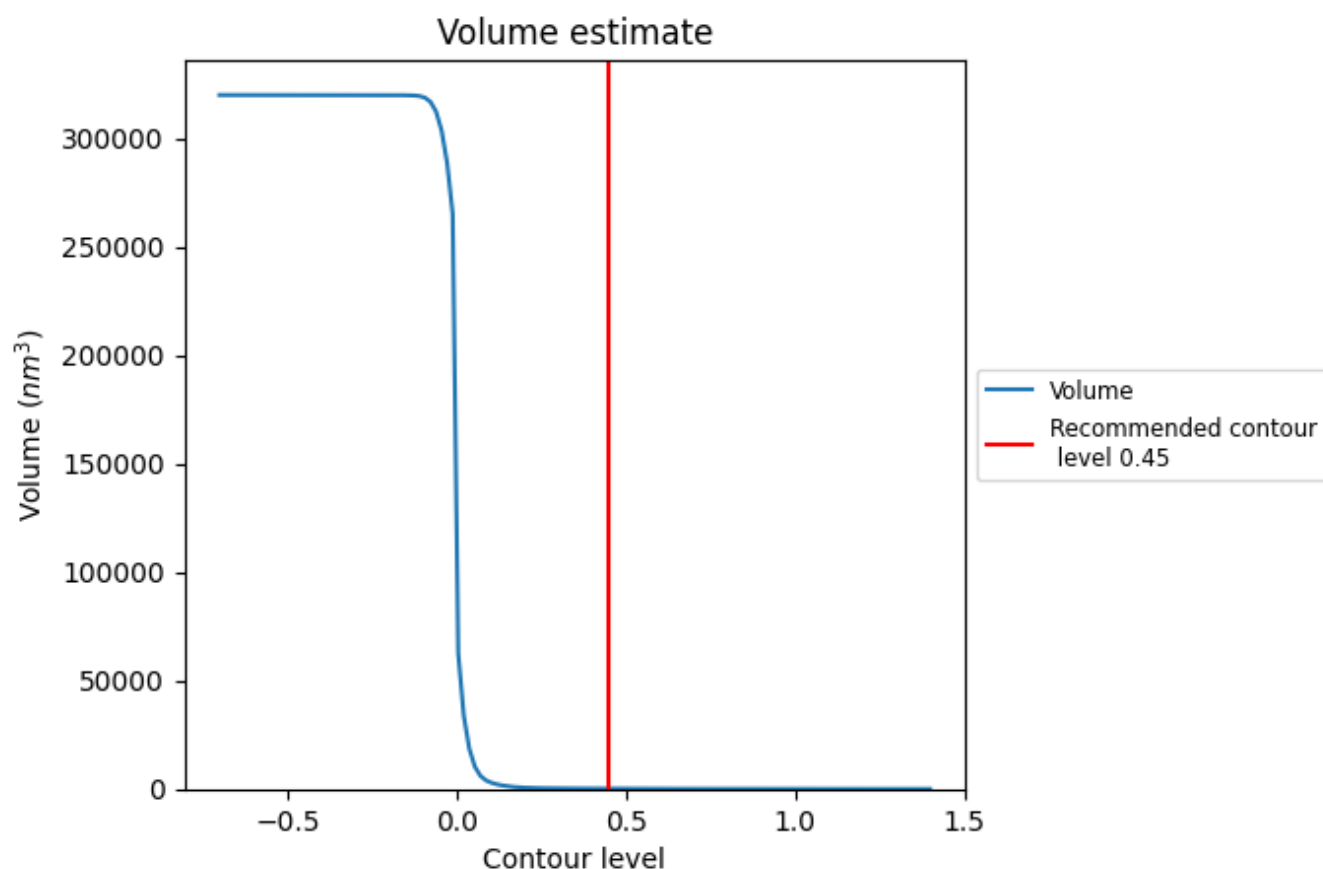
This section contains the results of statistical analysis of the map.

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.

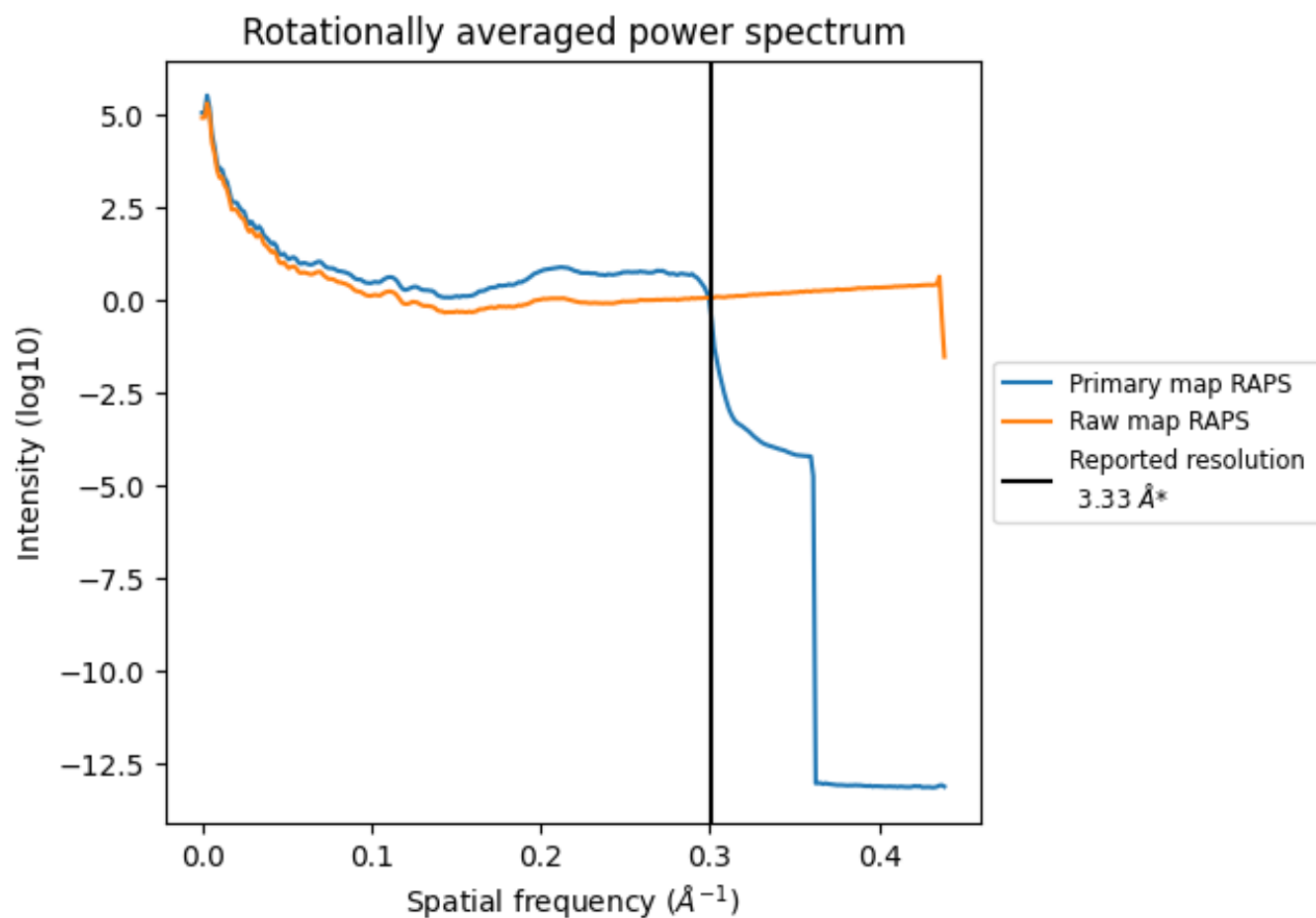
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 144 nm^3 ; this corresponds to an approximate mass of 130 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 ⓘ

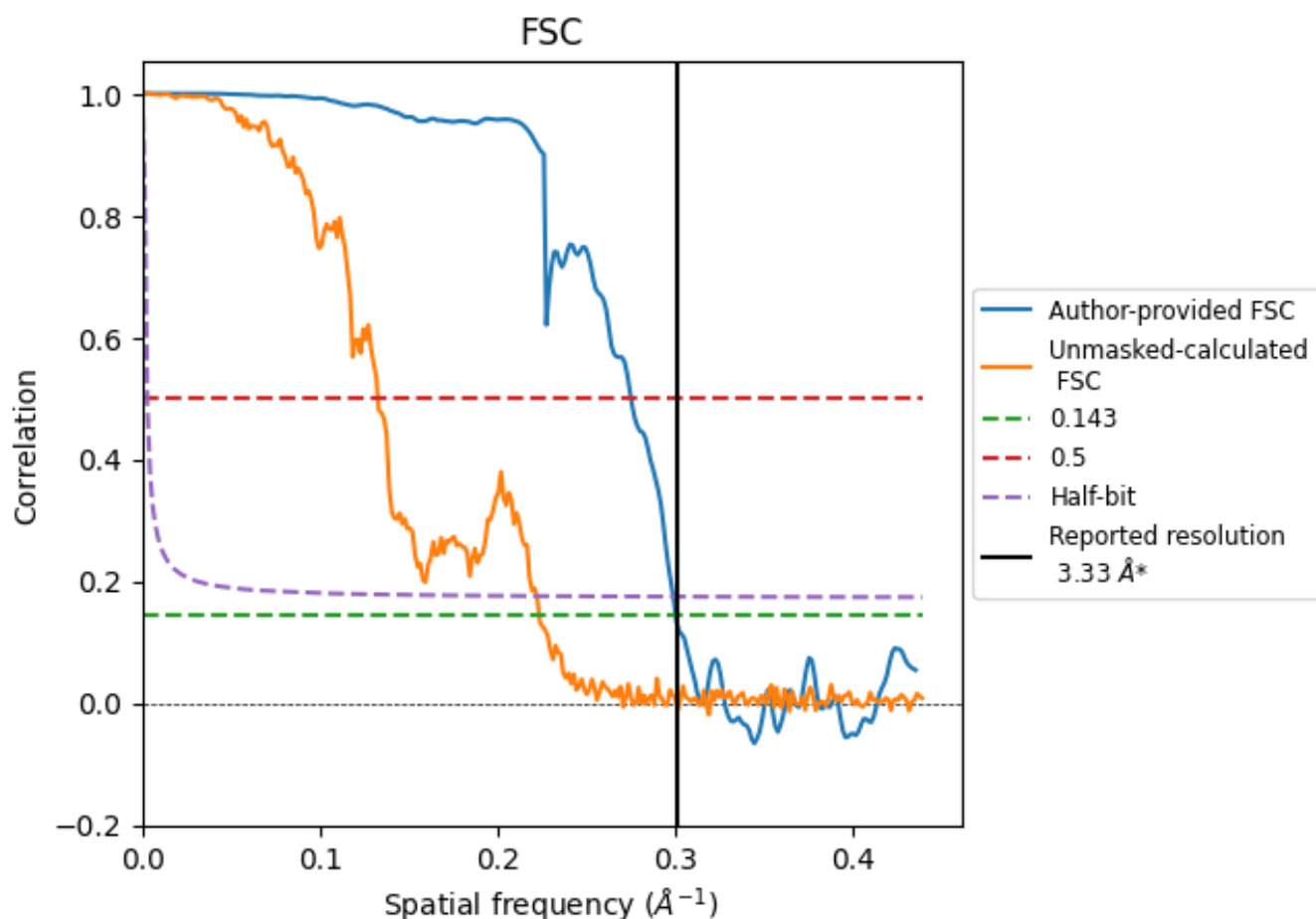


*Reported resolution corresponds to spatial frequency of 0.300 \AA^{-1}

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.300 \AA^{-1}

8.2 Resolution estimates [i](#)

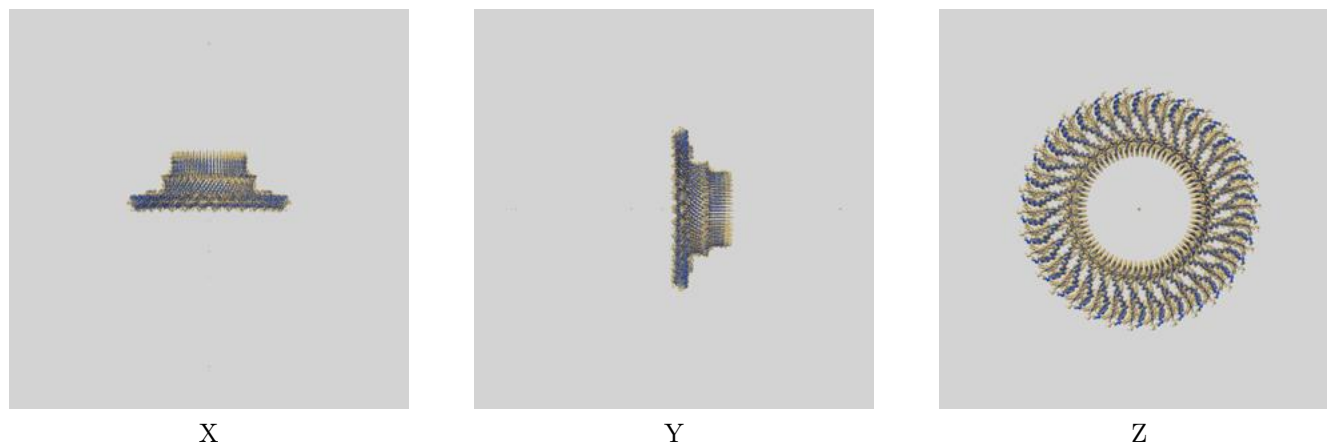
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.33	-	-
Author-provided FSC curve	3.33	3.64	3.35
Unmasked-calculated*	4.48	7.55	4.51

*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 4.48 differs from the reported value 3.33 by more than 10 %

9 Map-model fit [i](#)

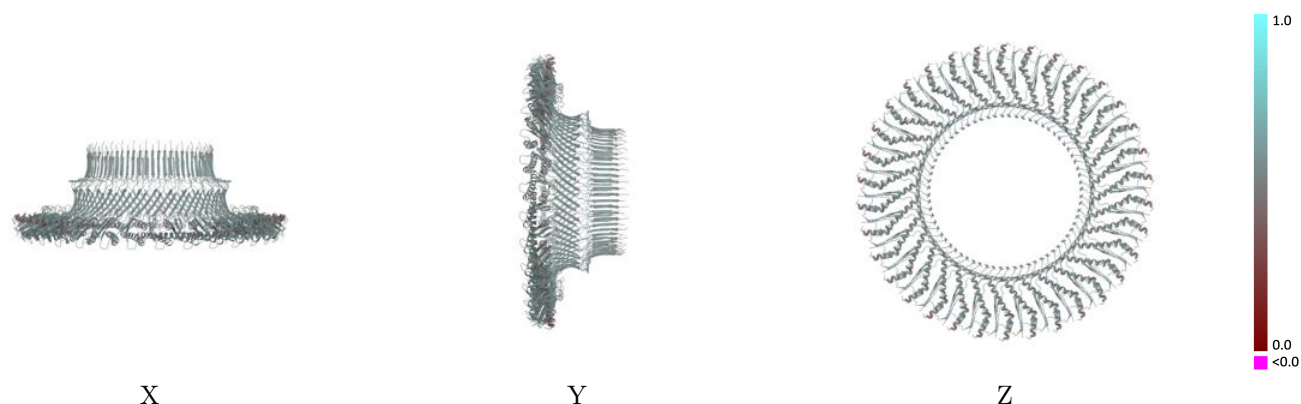
This section contains information regarding the fit between EMDB map EMD-39761 and PDB model 8Z4D. Per-residue inclusion information can be found in section [3](#) on page [21](#).

9.1 Map-model overlay [i](#)



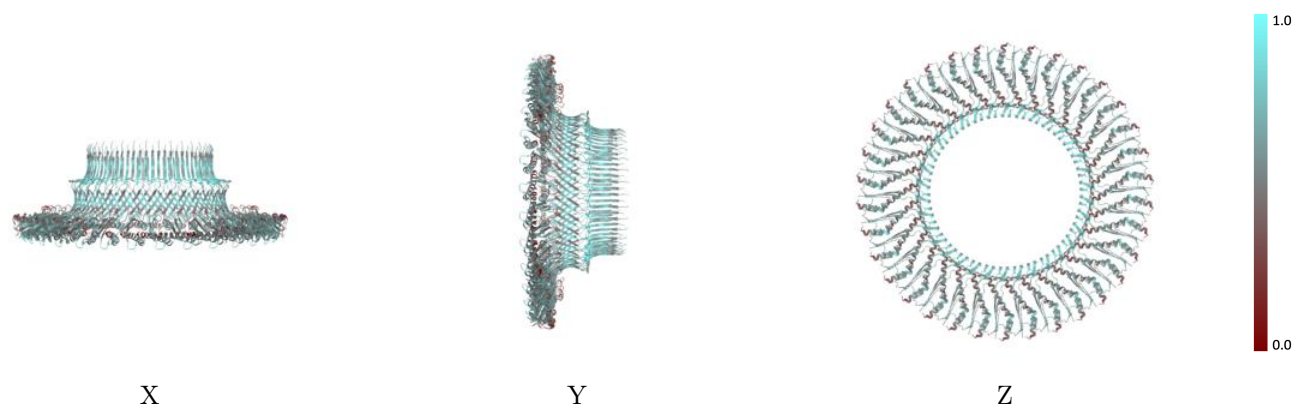
The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



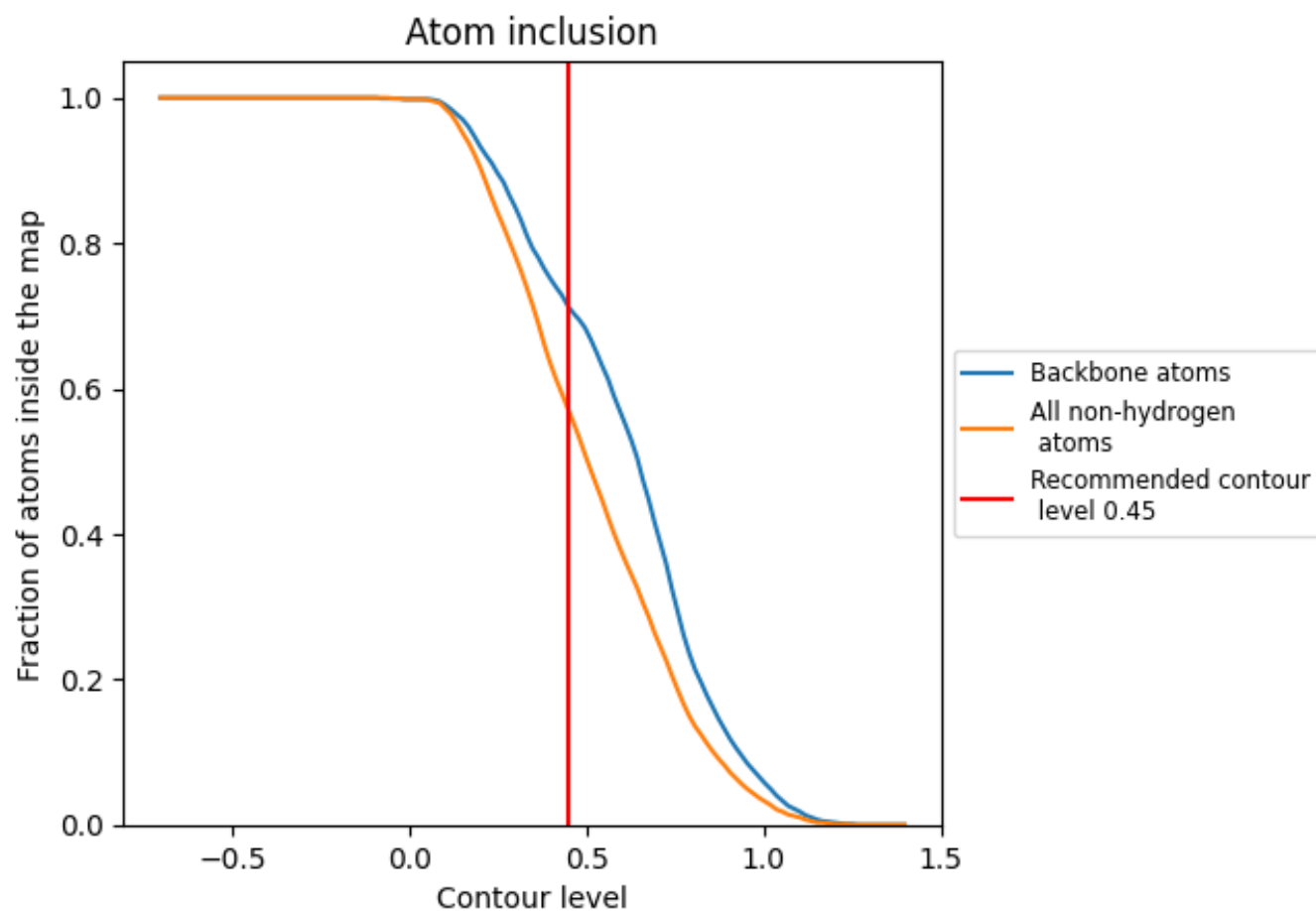
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.45).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 57% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5690	 0.5290
1	 0.5680	 0.5300
2	 0.5720	 0.5310
3	 0.5630	 0.5300
4	 0.5660	 0.5290
5	 0.5630	 0.5290
6	 0.5680	 0.5290
7	 0.5730	 0.5290
8	 0.5700	 0.5280
9	 0.5700	 0.5250
A	 0.5730	 0.5270
B	 0.5710	 0.5260
C	 0.5730	 0.5270
D	 0.5660	 0.5280
E	 0.5700	 0.5300
F	 0.5710	 0.5290
G	 0.5670	 0.5290
H	 0.5660	 0.5270
I	 0.5720	 0.5280
J	 0.5720	 0.5290
K	 0.5630	 0.5310
L	 0.5640	 0.5290
M	 0.5640	 0.5290
N	 0.5680	 0.5300
O	 0.5750	 0.5300
P	 0.5700	 0.5280
Q	 0.5710	 0.5270
R	 0.5730	 0.5300
S	 0.5720	 0.5290
T	 0.5740	 0.5290
U	 0.5660	 0.5300
V	 0.5690	 0.5300
W	 0.5710	 0.5290
X	 0.5650	 0.5290
Y	 0.5680	 0.5290

