Full wwPDB EM Validation Report

Dec 11, 2022 – 06:39 am GMT

PDB ID	:	6RWY
EMDB ID	:	EMD-10046
Title	:	Export apparatus core and inner rod of the Shigella type 3 secretion system
Authors	:	Lunelli, M.; Kamprad, A.
Deposited on	:	2019-06-06
Resolution	:	5.11 Å(reported)
Based on initial models	:	6F2D, 2MME

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

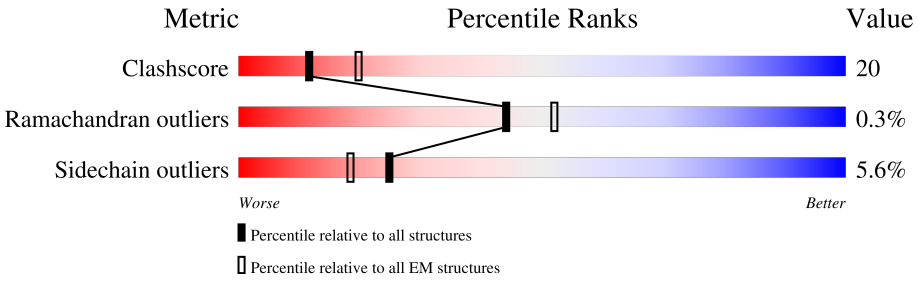
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 5.11 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	59	12% 93% 7%
1	G	59	5% 95% 5%
1	H	59	· 97% ·
1	I	59	7% 92% 8%
1	J	59	· 97% ·
1	K	59	97% ·
2	B	73	7% 95% 5%
2	C	73	· 97% ·

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Mol	Chain	Length	Quality of chain
2	D	73	5% 95% 5%
2	E	73	10% 96%
2	F	73	5% 95% 5%
3	L	98	6% 53% 21% 26%
3	M	98	7% 55% 19% 26%
3	N	98	47% 28% 26%
3	O	98	7% 51% 23% 26%
3	P	98	49% 24% 26%
3	Q	98	48% 26% 26%
3	R	98	7% 46% 27% 26%
3	S	98	8% 56% 18% 26%
3	T	98	49% 24% 26%
3	U	98	12% 52% 22% 26%
3	V	98	5% 54% 18% 26%
4	a	216	30% 90% 6%
4	b	216	31% 88% 8%
4	c	216	29% 88% 8%
4	d	216	27% 86% 11%
4	e	216	32% 89% 7%
5	f	256	29% 87% 6% 6%
6	g	86	31% 93% 7%
6	h	86	38% 93% 7%
6	i	86	29% 85% 13%
6	j	86	27% 76% 21%
6	k	86	13% 48% 50%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 22743 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 Inner rod protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	A	59	Total 295	C 177	N 59	O 59	0	0
1	G	59	Total 295	C 177	N 59	O 59	0	0
1	H	59	Total 295	C 177	N 59	O 59	0	0
1	I	59	Total 295	C 177	N 59	O 59	0	0
1	J	59	Total 295	C 177	N 59	O 59	0	0
1	K	59	Total 295	C 177	N 59	O 59	0	0

- Molecule 2 is a protein called Inner rod protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	B	73	Total 365	C 219	N 73	O 73	0	0
2	C	73	Total 365	C 219	N 73	O 73	0	0
2	D	73	Total 365	C 219	N 73	O 73	0	0
2	E	73	Total 365	C 219	N 73	O 73	0	0
2	F	73	Total 365	C 219	N 73	O 73	0	0

- Molecule 3 is a protein called Protein MxiH.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	L	73	Total 571	C 357	N 95	O 119	0	0
3	M	73	Total 571	C 357	N 95	O 119	0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
3	N	73	Total 571	C 357	N 95	O 119	0	0
3	O	73	Total 571	C 357	N 95	O 119	0	0
3	P	73	Total 571	C 357	N 95	O 119	0	0
3	Q	73	Total 571	C 357	N 95	O 119	0	0
3	R	73	Total 571	C 357	N 95	O 119	0	0
3	S	73	Total 571	C 357	N 95	O 119	0	0
3	T	73	Total 571	C 357	N 95	O 119	0	0
3	U	73	Total 571	C 357	N 95	O 119	0	0
3	V	73	Total 571	C 357	N 95	O 119	0	0

There are 165 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	-14	MET	-	initiating methionine	UNP P0A223
L	-13	ALA	-	expression tag	UNP P0A223
L	-12	SER	-	expression tag	UNP P0A223
L	-11	TRP	-	expression tag	UNP P0A223
L	-10	SER	-	expression tag	UNP P0A223
L	-9	HIS	-	expression tag	UNP P0A223
L	-8	PRO	-	expression tag	UNP P0A223
L	-7	GLN	-	expression tag	UNP P0A223
L	-6	PHE	-	expression tag	UNP P0A223
L	-5	GLU	-	expression tag	UNP P0A223
L	-4	LYS	-	expression tag	UNP P0A223
L	-3	ILE	-	expression tag	UNP P0A223
L	-2	GLU	-	expression tag	UNP P0A223
L	-1	GLY	-	expression tag	UNP P0A223
L	0	ARG	-	expression tag	UNP P0A223
M	-14	MET	-	initiating methionine	UNP P0A223
M	-13	ALA	-	expression tag	UNP P0A223
M	-12	SER	-	expression tag	UNP P0A223
M	-11	TRP	-	expression tag	UNP P0A223
M	-10	SER	-	expression tag	UNP P0A223
M	-9	HIS	-	expression tag	UNP P0A223

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Chain	Residue	Modelled	Actual	Comment	Reference
M	-8	PRO	-	expression tag	UNP P0A223
M	-7	GLN	-	expression tag	UNP P0A223
M	-6	PHE	-	expression tag	UNP P0A223
M	-5	GLU	-	expression tag	UNP P0A223
M	-4	LYS	-	expression tag	UNP P0A223
M	-3	ILE	-	expression tag	UNP P0A223
M	-2	GLU	-	expression tag	UNP P0A223
M	-1	GLY	-	expression tag	UNP P0A223
M	0	ARG	-	expression tag	UNP P0A223
N	-14	MET	-	initiating methionine	UNP P0A223
N	-13	ALA	-	expression tag	UNP P0A223
N	-12	SER	-	expression tag	UNP P0A223
N	-11	TRP	-	expression tag	UNP P0A223
N	-10	SER	-	expression tag	UNP P0A223
N	-9	HIS	-	expression tag	UNP P0A223
N	-8	PRO	-	expression tag	UNP P0A223
N	-7	GLN	-	expression tag	UNP P0A223
N	-6	PHE	-	expression tag	UNP P0A223
N	-5	GLU	-	expression tag	UNP P0A223
N	-4	LYS	-	expression tag	UNP P0A223
N	-3	ILE	-	expression tag	UNP P0A223
N	-2	GLU	-	expression tag	UNP P0A223
N	-1	GLY	-	expression tag	UNP P0A223
N	0	ARG	-	expression tag	UNP P0A223
O	-14	MET	-	initiating methionine	UNP P0A223
O	-13	ALA	-	expression tag	UNP P0A223
O	-12	SER	-	expression tag	UNP P0A223
O	-11	TRP	-	expression tag	UNP P0A223
O	-10	SER	-	expression tag	UNP P0A223
O	-9	HIS	-	expression tag	UNP P0A223
O	-8	PRO	-	expression tag	UNP P0A223
O	-7	GLN	-	expression tag	UNP P0A223
O	-6	PHE	-	expression tag	UNP P0A223
O	-5	GLU	-	expression tag	UNP P0A223
O	-4	LYS	-	expression tag	UNP P0A223
O	-3	ILE	-	expression tag	UNP P0A223
O	-2	GLU	-	expression tag	UNP P0A223
O	-1	GLY	-	expression tag	UNP P0A223
O	0	ARG	-	expression tag	UNP P0A223
P	-14	MET	-	initiating methionine	UNP P0A223
P	-13	ALA	-	expression tag	UNP P0A223
P	-12	SER	-	expression tag	UNP P0A223

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Chain	Residue	Modelled	Actual	Comment	Reference
P	-11	TRP	-	expression tag	UNP P0A223
P	-10	SER	-	expression tag	UNP P0A223
P	-9	HIS	-	expression tag	UNP P0A223
P	-8	PRO	-	expression tag	UNP P0A223
P	-7	GLN	-	expression tag	UNP P0A223
P	-6	PHE	-	expression tag	UNP P0A223
P	-5	GLU	-	expression tag	UNP P0A223
P	-4	LYS	-	expression tag	UNP P0A223
P	-3	ILE	-	expression tag	UNP P0A223
P	-2	GLU	-	expression tag	UNP P0A223
P	-1	GLY	-	expression tag	UNP P0A223
P	0	ARG	-	expression tag	UNP P0A223
Q	-14	MET	-	initiating methionine	UNP P0A223
Q	-13	ALA	-	expression tag	UNP P0A223
Q	-12	SER	-	expression tag	UNP P0A223
Q	-11	TRP	-	expression tag	UNP P0A223
Q	-10	SER	-	expression tag	UNP P0A223
Q	-9	HIS	-	expression tag	UNP P0A223
Q	-8	PRO	-	expression tag	UNP P0A223
Q	-7	GLN	-	expression tag	UNP P0A223
Q	-6	PHE	-	expression tag	UNP P0A223
Q	-5	GLU	-	expression tag	UNP P0A223
Q	-4	LYS	-	expression tag	UNP P0A223
Q	-3	ILE	-	expression tag	UNP P0A223
Q	-2	GLU	-	expression tag	UNP P0A223
Q	-1	GLY	-	expression tag	UNP P0A223
Q	0	ARG	-	expression tag	UNP P0A223
R	-14	MET	-	initiating methionine	UNP P0A223
R	-13	ALA	-	expression tag	UNP P0A223
R	-12	SER	-	expression tag	UNP P0A223
R	-11	TRP	-	expression tag	UNP P0A223
R	-10	SER	-	expression tag	UNP P0A223
R	-9	HIS	-	expression tag	UNP P0A223
R	-8	PRO	-	expression tag	UNP P0A223
R	-7	GLN	-	expression tag	UNP P0A223
R	-6	PHE	-	expression tag	UNP P0A223
R	-5	GLU	-	expression tag	UNP P0A223
R	-4	LYS	-	expression tag	UNP P0A223
R	-3	ILE	-	expression tag	UNP P0A223
R	-2	GLU	-	expression tag	UNP P0A223
R	-1	GLY	-	expression tag	UNP P0A223
R	0	ARG	-	expression tag	UNP P0A223

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Chain	Residue	Modelled	Actual	Comment	Reference
S	-14	MET	-	initiating methionine	UNP P0A223
S	-13	ALA	-	expression tag	UNP P0A223
S	-12	SER	-	expression tag	UNP P0A223
S	-11	TRP	-	expression tag	UNP P0A223
S	-10	SER	-	expression tag	UNP P0A223
S	-9	HIS	-	expression tag	UNP P0A223
S	-8	PRO	-	expression tag	UNP P0A223
S	-7	GLN	-	expression tag	UNP P0A223
S	-6	PHE	-	expression tag	UNP P0A223
S	-5	GLU	-	expression tag	UNP P0A223
S	-4	LYS	-	expression tag	UNP P0A223
S	-3	ILE	-	expression tag	UNP P0A223
S	-2	GLU	-	expression tag	UNP P0A223
S	-1	GLY	-	expression tag	UNP P0A223
S	0	ARG	-	expression tag	UNP P0A223
T	-14	MET	-	initiating methionine	UNP P0A223
T	-13	ALA	-	expression tag	UNP P0A223
T	-12	SER	-	expression tag	UNP P0A223
T	-11	TRP	-	expression tag	UNP P0A223
T	-10	SER	-	expression tag	UNP P0A223
T	-9	HIS	-	expression tag	UNP P0A223
T	-8	PRO	-	expression tag	UNP P0A223
T	-7	GLN	-	expression tag	UNP P0A223
T	-6	PHE	-	expression tag	UNP P0A223
T	-5	GLU	-	expression tag	UNP P0A223
T	-4	LYS	-	expression tag	UNP P0A223
T	-3	ILE	-	expression tag	UNP P0A223
T	-2	GLU	-	expression tag	UNP P0A223
T	-1	GLY	-	expression tag	UNP P0A223
T	0	ARG	-	expression tag	UNP P0A223
U	-14	MET	-	initiating methionine	UNP P0A223
U	-13	ALA	-	expression tag	UNP P0A223
U	-12	SER	-	expression tag	UNP P0A223
U	-11	TRP	-	expression tag	UNP P0A223
U	-10	SER	-	expression tag	UNP P0A223
U	-9	HIS	-	expression tag	UNP P0A223
U	-8	PRO	-	expression tag	UNP P0A223
U	-7	GLN	-	expression tag	UNP P0A223
U	-6	PHE	-	expression tag	UNP P0A223
U	-5	GLU	-	expression tag	UNP P0A223
U	-4	LYS	-	expression tag	UNP P0A223
U	-3	ILE	-	expression tag	UNP P0A223

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Chain	Residue	Modelled	Actual	Comment	Reference
U	-2	GLU	-	expression tag	UNP P0A223
U	-1	GLY	-	expression tag	UNP P0A223
U	0	ARG	-	expression tag	UNP P0A223
V	-14	MET	-	initiating methionine	UNP P0A223
V	-13	ALA	-	expression tag	UNP P0A223
V	-12	SER	-	expression tag	UNP P0A223
V	-11	TRP	-	expression tag	UNP P0A223
V	-10	SER	-	expression tag	UNP P0A223
V	-9	HIS	-	expression tag	UNP P0A223
V	-8	PRO	-	expression tag	UNP P0A223
V	-7	GLN	-	expression tag	UNP P0A223
V	-6	PHE	-	expression tag	UNP P0A223
V	-5	GLU	-	expression tag	UNP P0A223
V	-4	LYS	-	expression tag	UNP P0A223
V	-3	ILE	-	expression tag	UNP P0A223
V	-2	GLU	-	expression tag	UNP P0A223
V	-1	GLY	-	expression tag	UNP P0A223
V	0	ARG	-	expression tag	UNP P0A223

- Molecule 4 is a protein called Surface presentation of antigens protein SpaP.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	a	208	Total	C	N	O	S	0	0
			1643	1089	249	295	10		
4	b	208	Total	C	N	O	S	0	0
			1643	1089	249	295	10		
4	c	208	Total	C	N	O	S	0	0
			1643	1089	249	295	10		
4	d	208	Total	C	N	O	S	0	0
			1643	1089	249	295	10		
4	e	208	Total	C	N	O	S	0	0
			1643	1089	249	295	10		

- Molecule 5 is a protein called Surface presentation of antigens protein SpaR.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	f	240	Total	C	N	O	S	0	0
			1881	1268	287	318	8		

- Molecule 6 is a protein called Surface presentation of antigens protein SpaQ.

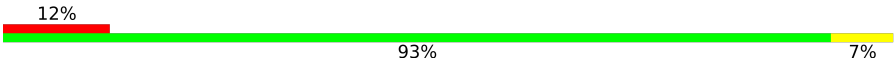
Mol	Chain	Residues	Atoms					AltConf	Trace
6	g	86	Total	C	N	O	S	0	0
			663	447	98	114	4		
6	h	86	Total	C	N	O	S	0	0
			663	447	98	114	4		
6	i	75	Total	C	N	O	S	0	0
			574	393	83	94	4		
6	j	68	Total	C	N	O	S	0	0
			528	361	76	87	4		
6	k	43	Total	C	N	O	S	0	0
			343	232	49	58	4		

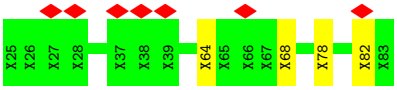
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Inner rod protein

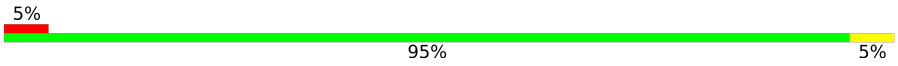
Chain A:

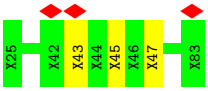




• Molecule 1: Inner rod protein

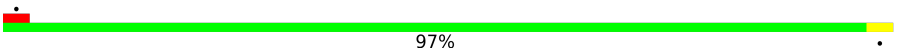
Chain G:

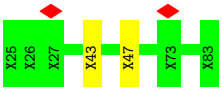




• Molecule 1: Inner rod protein

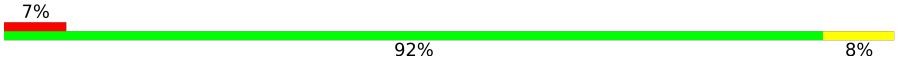
Chain H:

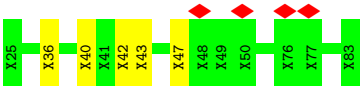




• Molecule 1: Inner rod protein

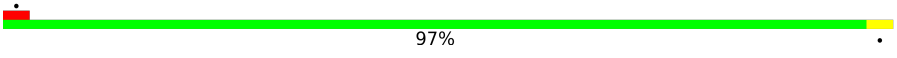
Chain I:

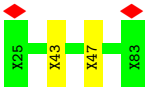




• Molecule 1: Inner rod protein

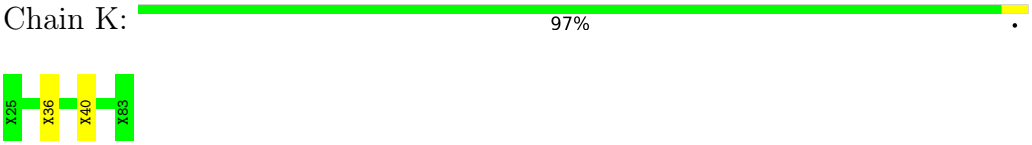
Chain J:





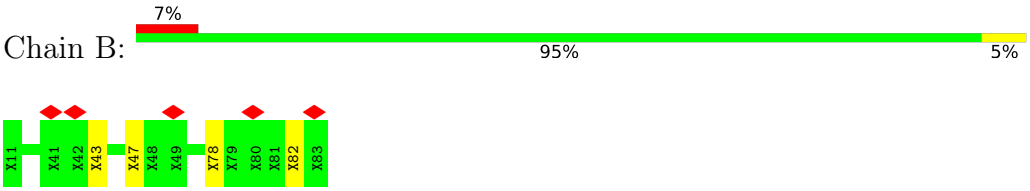
• Molecule 1: Inner rod protein

Chain K:



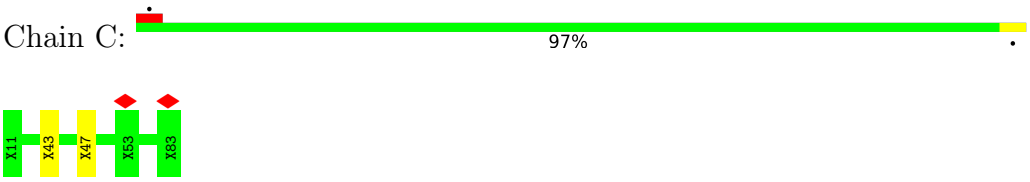
• Molecule 2: Inner rod protein

Chain B:



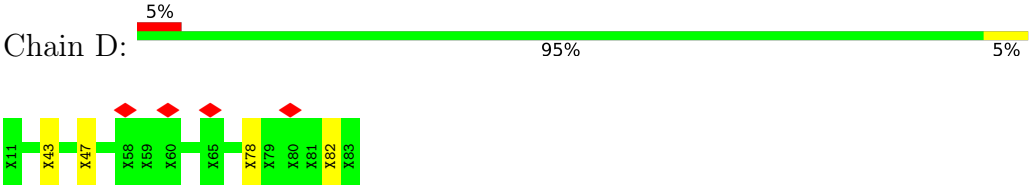
• Molecule 2: Inner rod protein

Chain C:



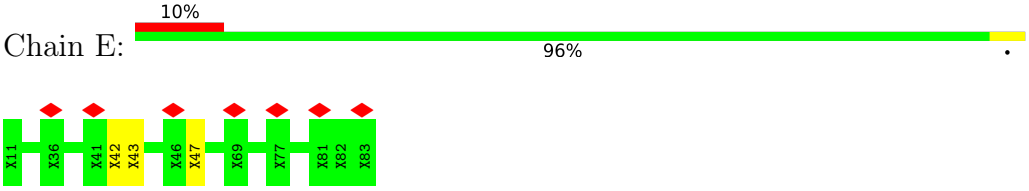
• Molecule 2: Inner rod protein

Chain D:



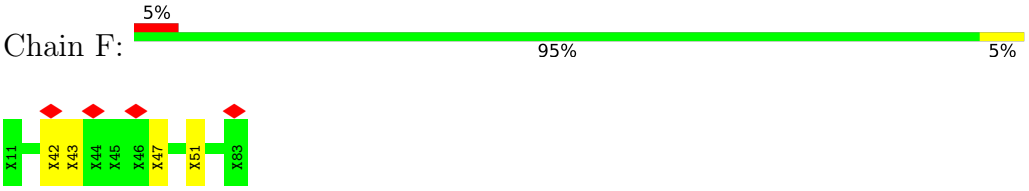
• Molecule 2: Inner rod protein

Chain E:



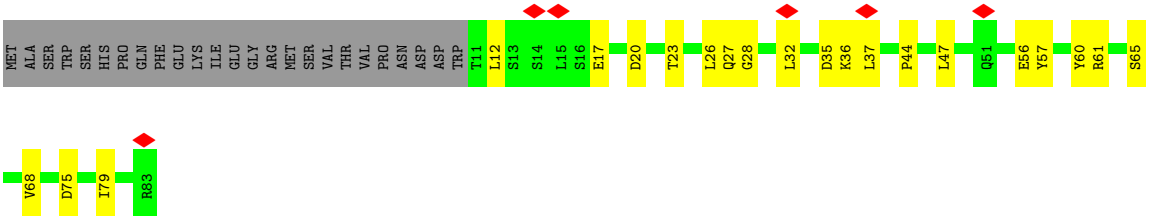
• Molecule 2: Inner rod protein

Chain F:

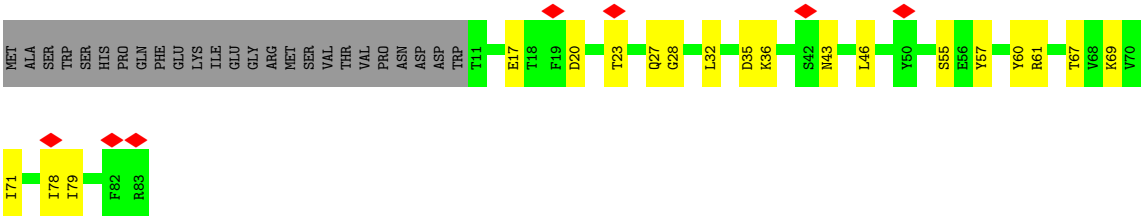


• Molecule 3: Protein MxiH

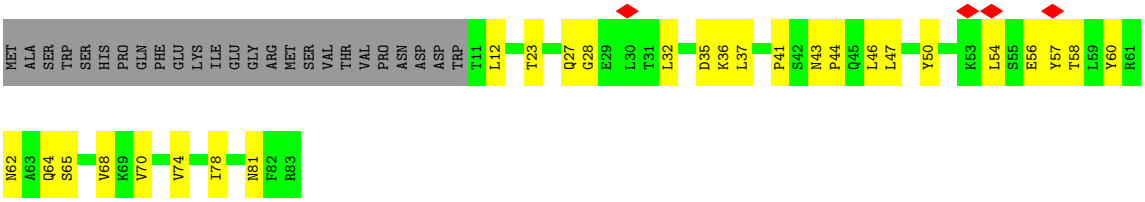
Chain L:



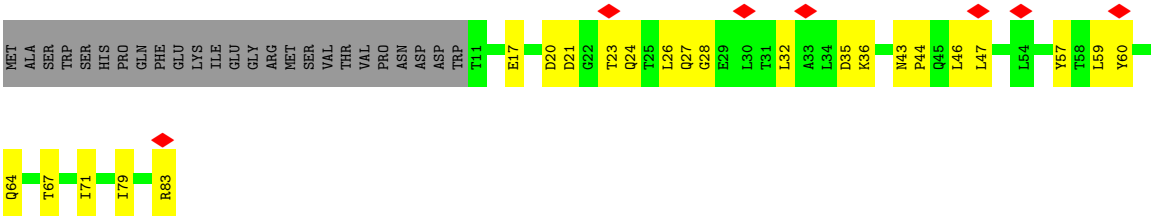
• Molecule 3: Protein MxiH



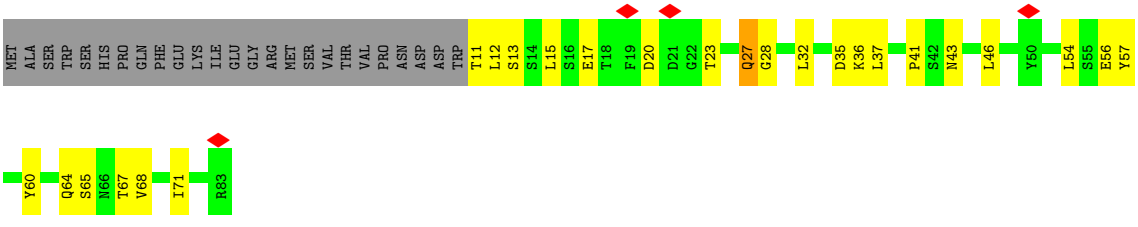
• Molecule 3: Protein MxiH



• Molecule 3: Protein MxiH

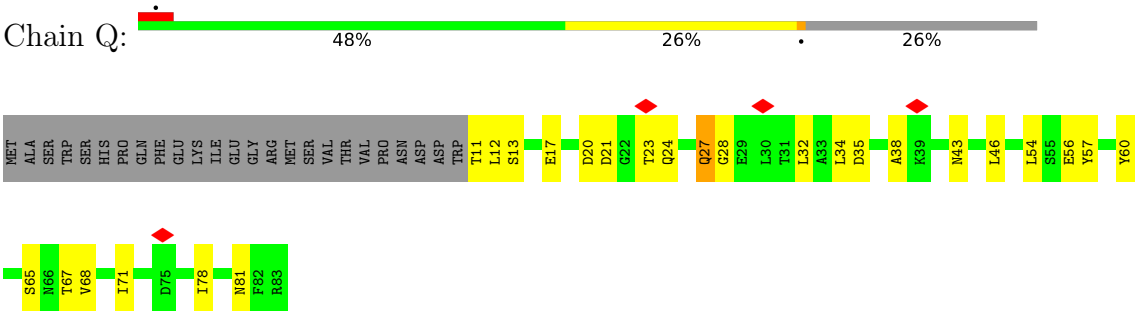


• Molecule 3: Protein MxiH



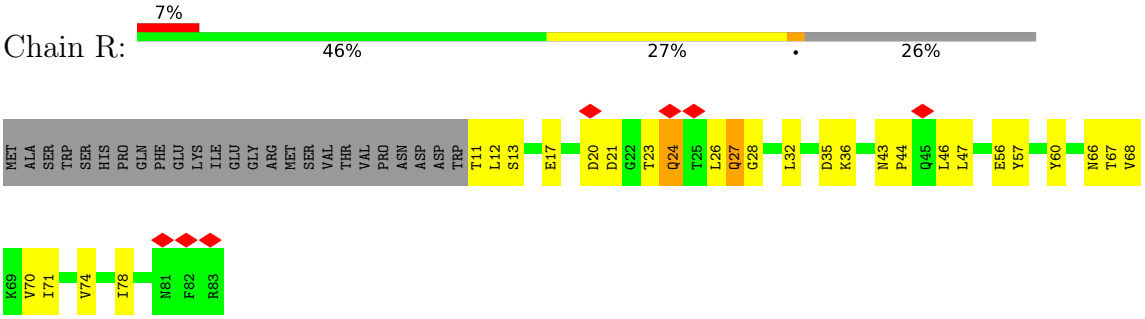
• Molecule 3: Protein MxiH

Chain Q:



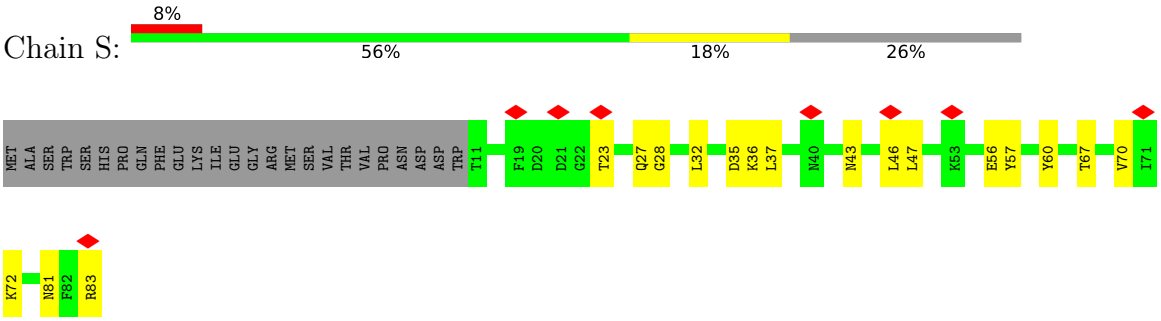
• Molecule 3: Protein MxiH

Chain R:



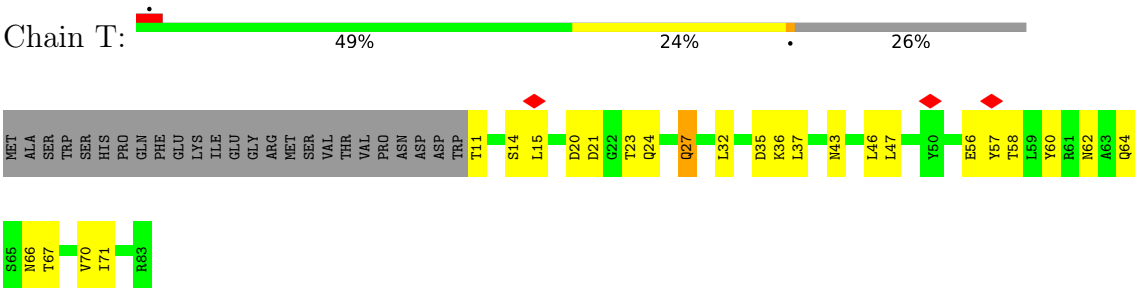
• Molecule 3: Protein MxiH

Chain S:



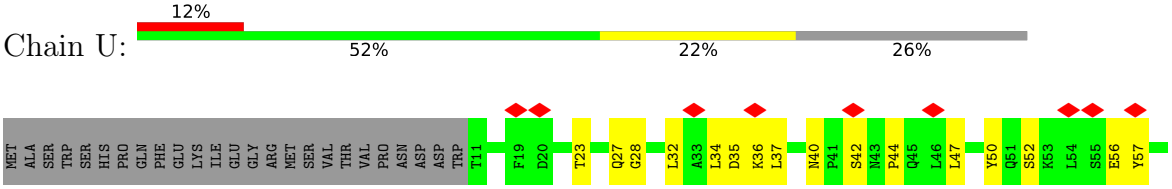
• Molecule 3: Protein MxiH

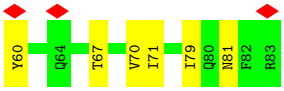
Chain T:



• Molecule 3: Protein MxiH

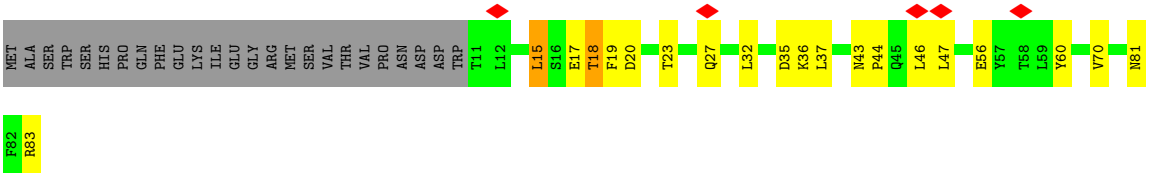
Chain U:





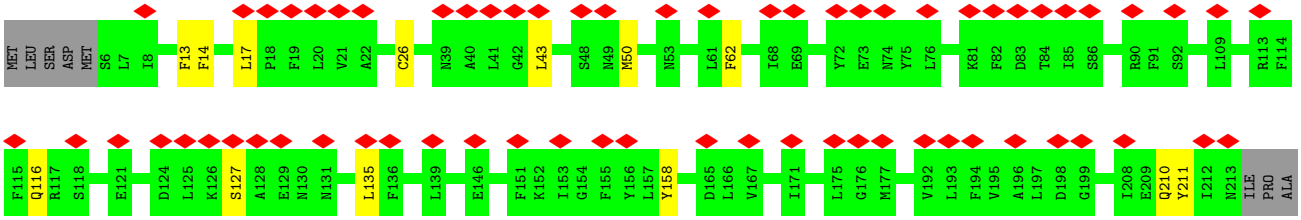
• Molecule 3: Protein MxiH

Chain V:



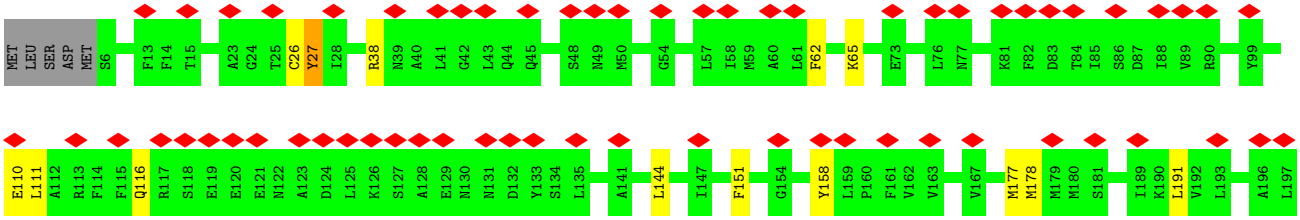
• Molecule 4: Surface presentation of antigens protein SpaP

Chain a:



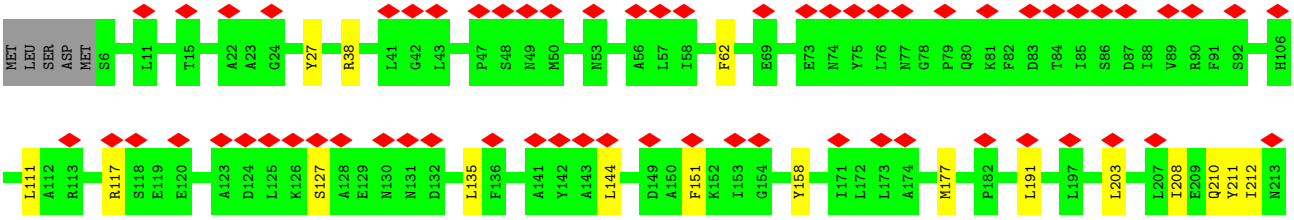
• Molecule 4: Surface presentation of antigens protein SpaP

Chain b:



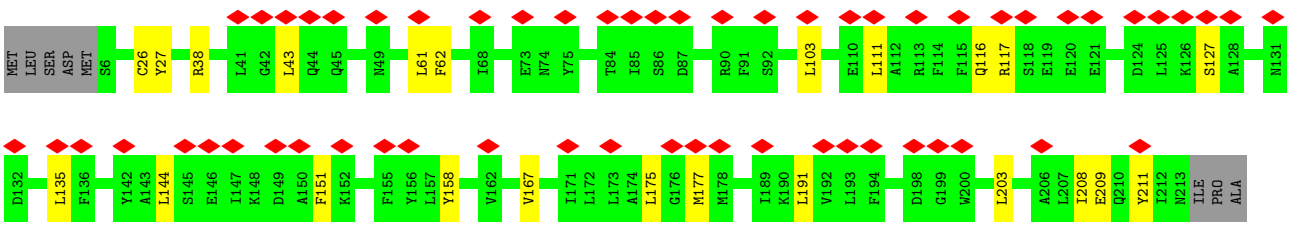
• Molecule 4: Surface presentation of antigens protein SpaP

Chain c:



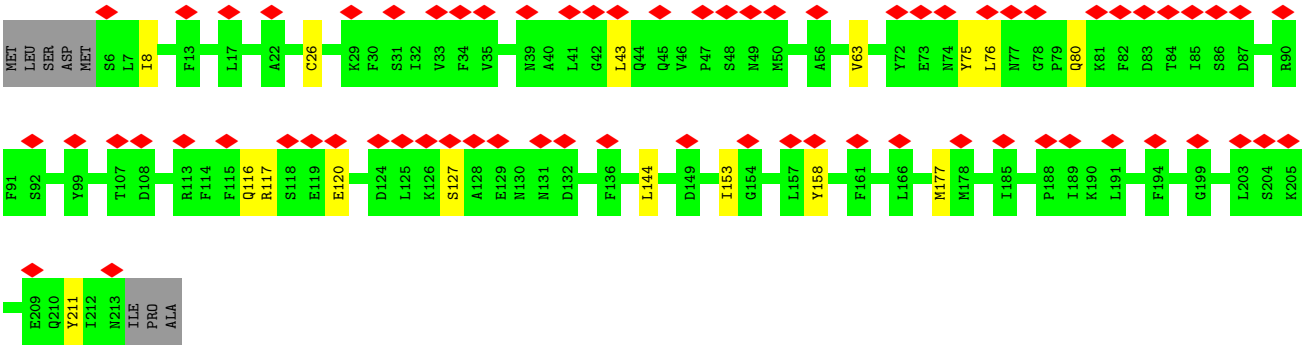
• Molecule 4: Surface presentation of antigens protein SpaP

Chain d:



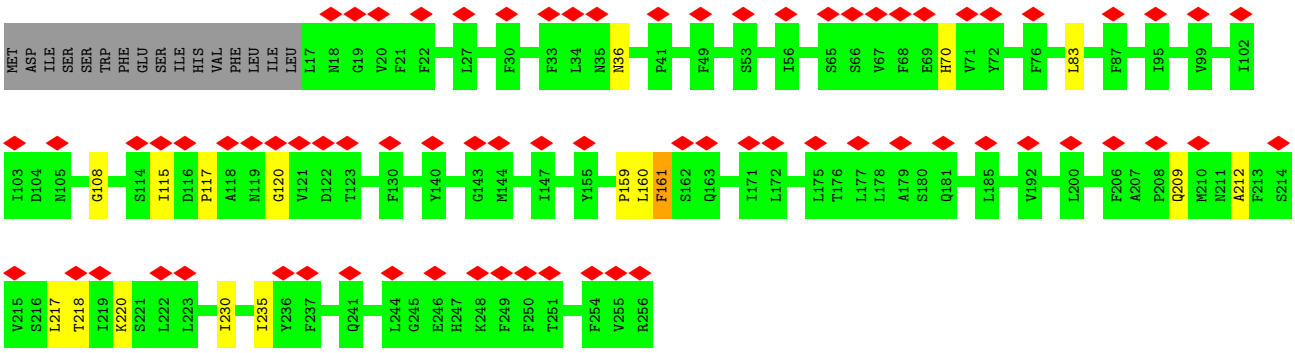
• Molecule 4: Surface presentation of antigens protein SpaP

Chain e:



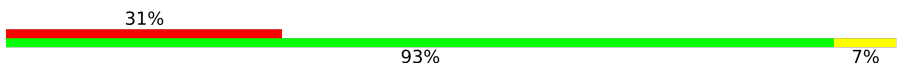
• Molecule 5: Surface presentation of antigens protein SpaR

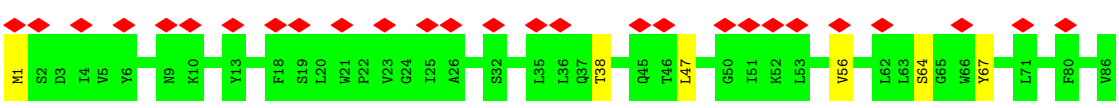
Chain f:



• Molecule 6: Surface presentation of antigens protein SpaQ

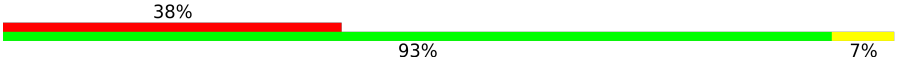
Chain g:

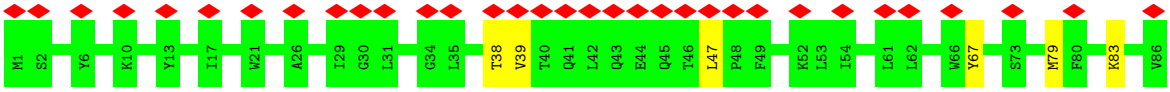




• Molecule 6: Surface presentation of antigens protein SpaQ

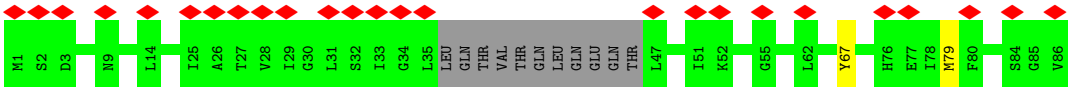
Chain h:





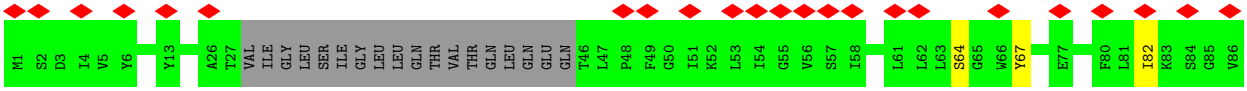
• Molecule 6: Surface presentation of antigens protein SpaQ

Chain i:



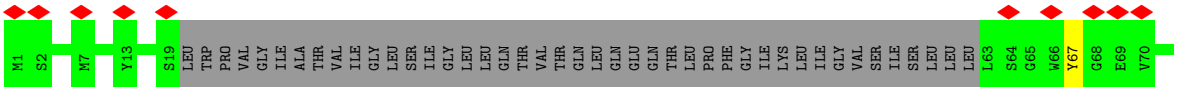
• Molecule 6: Surface presentation of antigens protein SpaQ

Chain j:



• Molecule 6: Surface presentation of antigens protein SpaQ

Chain k:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	72298	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25	Depositor
Minimum defocus (nm)	1.5	Depositor
Maximum defocus (nm)	4	Depositor
Magnification	101179	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.347	Depositor
Minimum map value	-0.164	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	664.1712, 664.1712, 664.1712	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.38369, 1.38369, 1.38369	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	$\#\|Z\| > 5$
3	L	0.28	0/577	0.48	1/782 (0.1%)
3	M	0.28	0/577	0.47	1/782 (0.1%)
3	N	0.27	0/577	0.45	1/782 (0.1%)
3	O	0.28	0/577	0.46	1/782 (0.1%)
3	P	0.27	0/577	0.46	1/782 (0.1%)
3	Q	0.28	0/577	0.45	1/782 (0.1%)
3	R	0.27	0/577	0.46	1/782 (0.1%)
3	S	0.28	0/577	0.45	1/782 (0.1%)
3	T	0.27	0/577	0.44	1/782 (0.1%)
3	U	0.27	0/577	0.46	1/782 (0.1%)
3	V	0.28	0/577	0.46	1/782 (0.1%)
4	a	0.34	0/1678	0.53	0/2274
4	b	0.35	0/1678	0.59	2/2274 (0.1%)
4	c	0.33	0/1678	0.57	1/2274 (0.0%)
4	d	0.35	0/1678	0.57	0/2274
4	e	0.33	0/1678	0.55	0/2274
5	f	0.34	0/1929	0.53	0/2619
6	g	0.31	0/676	0.49	0/918
6	h	0.31	0/676	0.46	0/918
6	i	0.31	0/586	0.42	0/793
6	j	0.33	0/540	0.47	0/731
6	k	0.31	0/350	0.47	0/469
All	All	0.32	0/19494	0.51	14/26420 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
4	a	0	1
4	b	0	1
4	c	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
5	f	0	1
6	h	0	1
All	All	0	5

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	b	191	LEU	CA-CB-CG	-5.61	102.39	115.30
4	c	191	LEU	CA-CB-CG	-5.45	102.77	115.30
3	S	35	ASP	CB-CG-OD2	5.23	123.01	118.30
3	V	35	ASP	CB-CG-OD2	5.22	123.00	118.30
3	M	35	ASP	CB-CG-OD2	5.22	123.00	118.30
3	O	35	ASP	CB-CG-OD2	5.21	122.99	118.30
3	L	35	ASP	CB-CG-OD2	5.20	122.98	118.30
3	N	35	ASP	CB-CG-OD2	5.19	122.97	118.30
3	Q	35	ASP	CB-CG-OD2	5.18	122.96	118.30
3	U	35	ASP	CB-CG-OD2	5.17	122.95	118.30
3	P	35	ASP	CB-CG-OD2	5.16	122.95	118.30
3	R	35	ASP	CB-CG-OD2	5.16	122.94	118.30
3	T	35	ASP	CB-CG-OD2	5.16	122.94	118.30
4	b	27	TYR	CA-CB-CG	5.14	123.16	113.40

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	a	210	GLN	Peptide
4	b	210	GLN	Peptide
4	c	210	GLN	Peptide
5	f	160	LEU	Peptide
6	h	39	VAL	Peptide

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	295	0	61	2	0
1	G	295	0	61	2	0
1	H	295	0	61	1	0
1	I	295	0	61	3	0
1	J	295	0	61	1	0
1	K	295	0	61	1	0
2	B	365	0	76	2	0
2	C	365	0	75	1	0
2	D	365	0	75	2	0
2	E	365	0	75	2	0
2	F	365	0	76	4	0
3	L	571	0	572	14	0
3	M	571	0	572	11	0
3	N	571	0	572	23	0
3	O	571	0	572	15	0
3	P	571	0	572	20	0
3	Q	571	0	572	19	0
3	R	571	0	572	19	0
3	S	571	0	572	16	0
3	T	571	0	572	19	0
3	U	571	0	572	16	0
3	V	571	0	572	16	0
4	a	1643	0	1696	0	0
4	b	1643	0	1696	0	0
4	c	1643	0	1696	0	0
4	d	1643	0	1696	0	0
4	e	1643	0	1696	0	0
5	f	1881	0	1952	0	0
6	g	663	0	713	0	0
6	h	663	0	713	0	0
6	i	574	0	622	0	0
6	j	528	0	565	0	0
6	k	343	0	353	0	0
All	All	22743	0	20433	184	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 20.

All (184) 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)
3:T:23:THR:O	3:T:27:GLN:HB2	1.59	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:R:23:THR:O	3:R:27:GLN:HB2	1.75	0.87
3:Q:38:ALA:HB2	3:V:18:THR:HG23	1.59	0.83
2:E:43:UNK:O	2:E:47:UNK:N	2.11	0.83
3:P:23:THR:O	3:P:27:GLN:HB2	1.85	0.76
2:C:43:UNK:O	2:C:47:UNK:N	2.19	0.75
3:T:11:THR:HB	3:T:14:SER:HB3	1.69	0.74
2:F:43:UNK:O	2:F:47:UNK:N	2.21	0.73
3:R:12:LEU:HD21	3:R:68:VAL:HG13	1.71	0.72
2:D:78:UNK:O	2:D:82:UNK:N	2.24	0.71
3:Q:12:LEU:HD11	3:Q:68:VAL:HG13	1.72	0.70
3:O:23:THR:O	3:O:27:GLN:HB2	1.91	0.69
3:S:23:THR:O	3:S:27:GLN:HB2	1.93	0.69
3:L:23:THR:O	3:L:27:GLN:HB2	1.94	0.67
3:S:57:TYR:HA	3:S:60:TYR:CD2	2.30	0.66
3:V:23:THR:O	3:V:27:GLN:HB2	1.95	0.66
3:P:12:LEU:HD21	3:P:68:VAL:HG13	1.77	0.66
3:M:17:GLU:HA	3:M:20:ASP:HB2	1.77	0.66
3:Q:23:THR:O	3:Q:27:GLN:HB2	1.96	0.65
3:U:57:TYR:HA	3:U:60:TYR:CD2	2.33	0.63
3:U:44:PRO:HA	3:U:47:LEU:HD12	1.82	0.62
3:P:12:LEU:HD11	3:P:68:VAL:HA	1.81	0.61
3:N:23:THR:HG21	3:N:60:TYR:HB3	1.82	0.61
1:I:42:UNK:O	3:T:11:THR:OG1	2.13	0.61
3:N:12:LEU:HD21	3:N:68:VAL:HG13	1.81	0.61
3:L:27:GLN:OE1	3:L:61:ARG:NH2	2.34	0.61
3:L:23:THR:HG21	3:L:60:TYR:HB3	1.83	0.60
3:N:54:LEU:HG	3:S:70:VAL:HG11	1.84	0.60
3:L:12:LEU:HD21	3:L:68:VAL:HG13	1.82	0.60
3:U:28:GLY:O	3:U:32:LEU:HG	2.02	0.59
3:N:41:PRO:HG2	3:S:60:TYR:HE1	1.66	0.59
3:N:50:TYR:HH	3:S:67:THR:HG1	1.43	0.59
3:S:43:ASN:HB3	3:S:46:LEU:HB2	1.85	0.59
3:N:23:THR:O	3:N:27:GLN:HB2	2.02	0.59
3:P:23:THR:HG21	3:P:60:TYR:HB3	1.83	0.59
3:T:43:ASN:HB3	3:T:46:LEU:HB2	1.85	0.58
3:L:44:PRO:HA	3:L:47:LEU:HD12	1.86	0.57
3:Q:23:THR:HG21	3:Q:60:TYR:HB3	1.86	0.57
3:L:75:ASP:O	3:L:79:ILE:HG13	2.05	0.57
1:I:36:UNK:O	1:I:40:UNK:N	2.38	0.57
3:N:32:LEU:O	3:N:36:LYS:HG3	2.04	0.56
3:L:56:GLU:HB3	3:L:60:TYR:CZ	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:T:11:THR:HB	3:T:14:SER:CB	2.33	0.56
3:M:55:SER:HB3	3:S:72:LYS:HD2	1.88	0.56
2:B:78:UNK:O	2:B:82:UNK:N	2.39	0.56
1:G:43:UNK:O	1:G:47:UNK:N	2.39	0.56
3:P:65:SER:OG	3:U:81:ASN:ND2	2.33	0.56
3:R:57:TYR:HA	3:R:60:TYR:CD2	2.40	0.56
3:U:23:THR:HG21	3:U:60:TYR:HB3	1.88	0.56
3:S:23:THR:HG21	3:S:60:TYR:HB3	1.89	0.55
1:K:36:UNK:O	1:K:40:UNK:N	2.38	0.55
3:P:41:PRO:HG2	3:U:60:TYR:CE1	2.41	0.55
3:V:56:GLU:HB3	3:V:60:TYR:CZ	2.41	0.55
3:M:23:THR:HG21	3:M:60:TYR:HB3	1.87	0.55
3:O:23:THR:HG21	3:O:60:TYR:HB3	1.88	0.55
3:R:23:THR:HG21	3:R:60:TYR:HB3	1.87	0.55
1:J:43:UNK:O	1:J:47:UNK:N	2.40	0.55
3:N:41:PRO:HG2	3:S:60:TYR:CE1	2.43	0.54
3:U:23:THR:O	3:U:27:GLN:HB2	2.06	0.54
3:Q:43:ASN:HB3	3:Q:46:LEU:HB2	1.88	0.54
3:R:56:GLU:HB3	3:R:60:TYR:CZ	2.42	0.54
3:L:17:GLU:HA	3:L:20:ASP:HB2	1.89	0.54
3:Q:21:ASP:HA	3:Q:24:GLN:HB2	1.90	0.54
3:T:21:ASP:HA	3:T:24:GLN:HB2	1.91	0.53
1:I:43:UNK:O	1:I:47:UNK:N	2.42	0.53
3:M:32:LEU:O	3:M:36:LYS:HG3	2.09	0.52
3:N:12:LEU:HD11	3:N:68:VAL:HA	1.91	0.52
3:M:43:ASN:HB3	3:M:46:LEU:HB2	1.90	0.52
3:T:58:THR:HG22	3:T:62:ASN:HD21	1.74	0.52
3:R:43:ASN:HB3	3:R:46:LEU:HB2	1.91	0.52
3:Q:54:LEU:HG	3:V:70:VAL:HG11	1.92	0.52
3:Q:56:GLU:HB3	3:Q:60:TYR:CZ	2.45	0.52
2:D:43:UNK:O	2:D:47:UNK:N	2.42	0.52
3:N:28:GLY:O	3:N:32:LEU:HG	2.10	0.52
3:P:43:ASN:HB3	3:P:46:LEU:HB2	1.91	0.51
3:O:17:GLU:HA	3:O:20:ASP:HB2	1.92	0.51
3:R:32:LEU:O	3:R:36:LYS:HG3	2.11	0.51
3:L:32:LEU:O	3:L:36:LYS:HG3	2.10	0.51
3:M:23:THR:O	3:M:27:GLN:HB2	2.09	0.51
3:M:67:THR:O	3:M:71:ILE:HG12	2.10	0.51
3:N:58:THR:HG22	3:N:62:ASN:HD21	1.73	0.51
3:L:26:LEU:HD13	3:L:60:TYR:OH	2.10	0.51
3:P:54:LEU:HG	3:U:70:VAL:HG11	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:Q:17:GLU:HA	3:Q:20:ASP:HB2	1.91	0.51
3:P:28:GLY:O	3:P:32:LEU:HG	2.11	0.51
3:Q:57:TYR:HA	3:Q:60:TYR:CD2	2.46	0.51
3:O:32:LEU:O	3:O:36:LYS:HG3	2.11	0.51
2:B:43:UNK:O	2:B:47:UNK:N	2.44	0.51
3:O:57:TYR:HA	3:O:60:TYR:CD2	2.46	0.51
1:A:78:UNK:O	1:A:82:UNK:N	2.44	0.50
3:T:56:GLU:HB3	3:T:60:TYR:CZ	2.46	0.50
3:R:28:GLY:O	3:R:32:LEU:HG	2.11	0.50
3:T:37:LEU:HD11	3:T:47:LEU:HA	1.94	0.50
1:G:45:UNK:HA	3:M:61:ARG:HH21	1.76	0.49
3:L:28:GLY:O	3:L:32:LEU:HG	2.12	0.49
3:M:28:GLY:O	3:M:32:LEU:HG	2.12	0.49
3:N:56:GLU:HB3	3:N:60:TYR:CZ	2.47	0.49
3:T:57:TYR:HA	3:T:60:TYR:CD2	2.47	0.49
3:L:37:LEU:HD11	3:L:47:LEU:HA	1.95	0.49
3:O:28:GLY:O	3:O:32:LEU:HG	2.13	0.49
3:O:20:ASP:OD1	3:O:64:GLN:NE2	2.46	0.48
3:N:37:LEU:HD11	3:N:47:LEU:HA	1.95	0.48
2:E:42:UNK:O	3:P:12:LEU:N	2.44	0.48
2:F:43:UNK:CB	3:Q:11:THR:HA	2.43	0.48
3:T:23:THR:O	3:T:27:GLN:CB	2.48	0.48
3:M:69:LYS:NZ	3:S:83:ARG:O	2.44	0.48
3:Q:38:ALA:CB	3:V:18:THR:HG23	2.37	0.48
3:T:11:THR:HG22	3:T:14:SER:H	1.79	0.48
2:F:47:UNK:O	2:F:51:UNK:CB	2.61	0.48
3:M:57:TYR:HA	3:M:60:TYR:CD2	2.49	0.47
3:R:17:GLU:HA	3:R:20:ASP:HB2	1.95	0.47
3:O:44:PRO:HA	3:O:47:LEU:HD12	1.96	0.47
3:R:21:ASP:HA	3:R:24:GLN:HB2	1.95	0.47
3:V:44:PRO:HA	3:V:47:LEU:HD12	1.95	0.47
3:R:67:THR:O	3:R:71:ILE:HG12	2.15	0.47
3:L:65:SER:CB	3:Q:81:ASN:HD22	2.28	0.47
3:U:40:ASN:OD1	3:U:42:SER:OG	2.29	0.47
3:U:81:ASN:OD1	3:V:83:ARG:NE	2.41	0.47
3:P:67:THR:O	3:P:71:ILE:HG12	2.16	0.46
3:N:64:GLN:O	3:N:68:VAL:HG23	2.15	0.46
3:P:32:LEU:O	3:P:36:LYS:HG3	2.15	0.46
3:N:12:LEU:HD11	3:N:68:VAL:HG13	1.97	0.46
3:V:43:ASN:HB3	3:V:46:LEU:HB2	1.95	0.46
2:F:42:UNK:O	3:Q:12:LEU:HB2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:59:LEU:HD22	3:U:79:ILE:HD12	1.99	0.45
3:P:57:TYR:HA	3:P:60:TYR:CD2	2.51	0.45
3:N:43:ASN:HB3	3:N:46:LEU:HB2	1.97	0.45
3:S:56:GLU:HB3	3:S:60:TYR:CZ	2.52	0.45
3:V:23:THR:HG21	3:V:60:TYR:HB3	1.99	0.45
3:O:21:ASP:HA	3:O:24:GLN:HB2	1.99	0.45
3:V:37:LEU:HD11	3:V:47:LEU:HA	1.98	0.45
3:O:26:LEU:HD13	3:O:60:TYR:OH	2.17	0.44
3:Q:28:GLY:O	3:Q:32:LEU:HG	2.17	0.44
3:P:56:GLU:HB3	3:P:60:TYR:CZ	2.53	0.44
3:R:26:LEU:HD13	3:R:60:TYR:OH	2.16	0.44
3:V:18:THR:HG22	3:V:19:PHE:N	2.32	0.44
3:N:44:PRO:HA	3:N:47:LEU:HD12	1.99	0.44
3:N:65:SER:CB	3:S:81:ASN:HD22	2.31	0.44
3:P:11:THR:O	3:P:15:LEU:HG	2.17	0.44
3:R:12:LEU:HD11	3:R:68:VAL:HG22	1.99	0.44
3:R:11:THR:HG22	3:R:13:SER:H	1.83	0.44
3:V:32:LEU:O	3:V:36:LYS:HG3	2.18	0.43
3:Q:67:THR:O	3:Q:71:ILE:HG12	2.18	0.43
3:L:57:TYR:HA	3:L:60:TYR:CD2	2.54	0.43
3:U:67:THR:O	3:U:71:ILE:HG12	2.18	0.43
3:T:23:THR:HG21	3:T:60:TYR:HB3	2.01	0.43
3:N:70:VAL:O	3:N:74:VAL:HG23	2.18	0.43
3:U:52:SER:O	3:U:56:GLU:HG3	2.19	0.43
3:T:36:LYS:HB3	3:T:46:LEU:HD13	2.01	0.42
3:N:57:TYR:HA	3:N:60:TYR:CD2	2.54	0.42
3:S:28:GLY:O	3:S:32:LEU:HG	2.20	0.42
3:P:64:GLN:O	3:P:68:VAL:HG23	2.19	0.42
3:Q:34:LEU:HD21	3:V:15:LEU:HB3	2.00	0.42
3:O:43:ASN:HB3	3:O:46:LEU:HB2	2.00	0.42
3:P:17:GLU:HA	3:P:20:ASP:HB2	2.02	0.42
3:R:74:VAL:O	3:R:78:ILE:HG13	2.19	0.42
3:R:66:ASN:O	3:R:70:VAL:HG23	2.19	0.42
3:V:17:GLU:HA	3:V:20:ASP:HB2	2.02	0.42
3:U:37:LEU:HD11	3:U:47:LEU:HA	2.02	0.42
3:R:44:PRO:HA	3:R:47:LEU:HD12	2.02	0.42
3:N:36:LYS:HB3	3:N:46:LEU:HD13	2.02	0.42
3:P:37:LEU:HD23	3:P:37:LEU:HA	1.90	0.42
3:S:32:LEU:O	3:S:36:LYS:HG3	2.20	0.41
3:Q:65:SER:OG	3:V:81:ASN:ND2	2.36	0.41
3:S:37:LEU:HD11	3:S:47:LEU:HA	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:U:34:LEU:HD13	3:U:50:TYR:CZ	2.56	0.41
3:Q:11:THR:HG22	3:Q:13:SER:H	1.84	0.41
1:H:43:UNK:O	1:H:47:UNK:N	2.52	0.41
3:N:65:SER:OG	3:S:81:ASN:ND2	2.46	0.41
3:R:20:ASP:O	3:R:24:GLN:HB2	2.20	0.41
3:U:32:LEU:O	3:U:36:LYS:HG3	2.21	0.41
3:P:11:THR:HG22	3:P:13:SER:H	1.86	0.41
3:T:67:THR:O	3:T:71:ILE:HG12	2.20	0.41
3:V:15:LEU:H	3:V:15:LEU:HG	1.61	0.41
3:O:67:THR:O	3:O:71:ILE:HG12	2.20	0.41
3:O:20:ASP:O	3:O:24:GLN:HB2	2.21	0.41
3:P:12:LEU:HD11	3:P:68:VAL:HG13	2.03	0.41
3:R:23:THR:O	3:R:27:GLN:CB	2.57	0.41
3:T:11:THR:O	3:T:15:LEU:HG	2.20	0.41
3:T:20:ASP:OD1	3:T:64:GLN:NE2	2.53	0.41
3:N:81:ASN:OD1	3:O:83:ARG:NH2	2.45	0.41
3:T:32:LEU:O	3:T:36:LYS:HG3	2.20	0.40
1:A:64:UNK:O	1:A:68:UNK:CB	2.69	0.40
3:T:66:ASN:O	3:T:70:VAL:HG23	2.21	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	
3	L	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
3	M	71/98 (72%)	71 (100%)	0	0	100	100
3	N	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
3	O	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
3	P	71/98 (72%)	71 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	Q	71/98 (72%)	71 (100%)	0	0	100	100
3	R	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
3	S	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
3	T	71/98 (72%)	71 (100%)	0	0	100	100
3	U	71/98 (72%)	71 (100%)	0	0	100	100
3	V	71/98 (72%)	70 (99%)	1 (1%)	0	100	100
4	a	206/216 (95%)	185 (90%)	21 (10%)	0	100	100
4	b	206/216 (95%)	190 (92%)	16 (8%)	0	100	100
4	c	206/216 (95%)	188 (91%)	18 (9%)	0	100	100
4	d	206/216 (95%)	190 (92%)	15 (7%)	1 (0%)	29	68
4	e	206/216 (95%)	192 (93%)	14 (7%)	0	100	100
5	f	238/256 (93%)	204 (86%)	27 (11%)	7 (3%)	4	31
6	g	84/86 (98%)	73 (87%)	11 (13%)	0	100	100
6	h	84/86 (98%)	75 (89%)	9 (11%)	0	100	100
6	i	71/86 (83%)	68 (96%)	3 (4%)	0	100	100
6	j	64/86 (74%)	62 (97%)	2 (3%)	0	100	100
6	k	39/86 (45%)	38 (97%)	1 (3%)	0	100	100
All	All	2391/2844 (84%)	2240 (94%)	143 (6%)	8 (0%)	44	76

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	f	212	ALA
5	f	161	PHE
4	d	62	PHE
5	f	159	PRO
5	f	108	GLY
5	f	117	PRO
5	f	120	GLY
5	f	115	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	L	65/88 (74%)	65 (100%)	0	100 100
3	M	65/88 (74%)	63 (97%)	2 (3%)	40 62
3	N	65/88 (74%)	64 (98%)	1 (2%)	65 80
3	O	65/88 (74%)	64 (98%)	1 (2%)	65 80
3	P	65/88 (74%)	64 (98%)	1 (2%)	65 80
3	Q	65/88 (74%)	63 (97%)	2 (3%)	40 62
3	R	65/88 (74%)	63 (97%)	2 (3%)	40 62
3	S	65/88 (74%)	65 (100%)	0	100 100
3	T	65/88 (74%)	64 (98%)	1 (2%)	65 80
3	U	65/88 (74%)	65 (100%)	0	100 100
3	V	65/88 (74%)	63 (97%)	2 (3%)	40 62
4	a	182/189 (96%)	170 (93%)	12 (7%)	16 43
4	b	182/189 (96%)	166 (91%)	16 (9%)	10 33
4	c	182/189 (96%)	167 (92%)	15 (8%)	11 36
4	d	182/189 (96%)	160 (88%)	22 (12%)	5 21
4	e	182/189 (96%)	166 (91%)	16 (9%)	10 33
5	f	214/230 (93%)	204 (95%)	10 (5%)	26 52
6	g	75/75 (100%)	69 (92%)	6 (8%)	12 37
6	h	75/75 (100%)	70 (93%)	5 (7%)	16 42
6	i	64/75 (85%)	62 (97%)	2 (3%)	40 62
6	j	59/75 (79%)	56 (95%)	3 (5%)	24 50
6	k	38/75 (51%)	36 (95%)	2 (5%)	22 49
All	All	2150/2518 (85%)	2029 (94%)	121 (6%)	25 47

All (121) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	M	78	ILE
3	M	79	ILE
3	N	78	ILE
3	O	79	ILE
3	P	27	GLN
3	Q	27	GLN

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Mol	Chain	Res	Type
3	Q	78	ILE
3	R	24	GLN
3	R	27	GLN
3	T	27	GLN
3	V	15	LEU
3	V	18	THR
4	a	13	PHE
4	a	14	PHE
4	a	17	LEU
4	a	26	CYS
4	a	43	LEU
4	a	50	MET
4	a	62	PHE
4	a	116	GLN
4	a	127	SER
4	a	135	LEU
4	a	158	TYR
4	a	211	TYR
4	b	26	CYS
4	b	27	TYR
4	b	38	ARG
4	b	62	PHE
4	b	65	LYS
4	b	110	GLU
4	b	111	LEU
4	b	116	GLN
4	b	144	LEU
4	b	151	PHE
4	b	158	TYR
4	b	177	MET
4	b	178	MET
4	b	208	ILE
4	b	211	TYR
4	b	212	ILE
4	c	27	TYR
4	c	38	ARG
4	c	62	PHE
4	c	111	LEU
4	c	117	ARG
4	c	127	SER
4	c	135	LEU
4	c	144	LEU

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Mol	Chain	Res	Type
4	c	151	PHE
4	c	158	TYR
4	c	177	MET
4	c	203	LEU
4	c	208	ILE
4	c	211	TYR
4	c	212	ILE
4	d	26	CYS
4	d	27	TYR
4	d	38	ARG
4	d	43	LEU
4	d	61	LEU
4	d	103	LEU
4	d	111	LEU
4	d	116	GLN
4	d	117	ARG
4	d	127	SER
4	d	135	LEU
4	d	144	LEU
4	d	151	PHE
4	d	158	TYR
4	d	167	VAL
4	d	175	LEU
4	d	177	MET
4	d	191	LEU
4	d	203	LEU
4	d	208	ILE
4	d	209	GLU
4	d	211	TYR
4	e	8	ILE
4	e	26	CYS
4	e	43	LEU
4	e	63	VAL
4	e	75	TYR
4	e	76	LEU
4	e	80	GLN
4	e	116	GLN
4	e	117	ARG
4	e	120	GLU
4	e	127	SER
4	e	144	LEU
4	e	153	ILE

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Mol	Chain	Res	Type
4	e	158	TYR
4	e	177	MET
4	e	211	TYR
5	f	36	ASN
5	f	70	HIS
5	f	83	LEU
5	f	161	PHE
5	f	209	GLN
5	f	217	LEU
5	f	218	THR
5	f	220	LYS
5	f	230	ILE
5	f	235	ILE
6	g	1	MET
6	g	38	THR
6	g	47	LEU
6	g	56	VAL
6	g	64	SER
6	g	67	TYR
6	h	38	THR
6	h	47	LEU
6	h	67	TYR
6	h	79	MET
6	h	83	LYS
6	i	67	TYR
6	i	79	MET
6	j	64	SER
6	j	67	TYR
6	j	82	ILE
6	k	67	TYR
6	k	83	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
3	L	24	GLN
3	M	24	GLN
3	N	24	GLN
3	N	62	ASN
3	O	24	GLN
3	P	24	GLN
3	Q	24	GLN

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Mol	Chain	Res	Type
3	R	24	GLN
3	R	62	ASN
3	S	24	GLN
3	T	24	GLN
3	T	27	GLN
3	T	62	ASN
3	U	24	GLN
3	V	24	GLN
4	a	39	ASN
4	a	45	GLN
4	b	39	ASN
4	b	77	ASN
4	c	77	ASN
4	d	45	GLN
4	e	45	GLN
4	e	80	GLN
5	f	105	ASN
5	f	209	GLN
6	h	9	ASN
6	h	37	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

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.

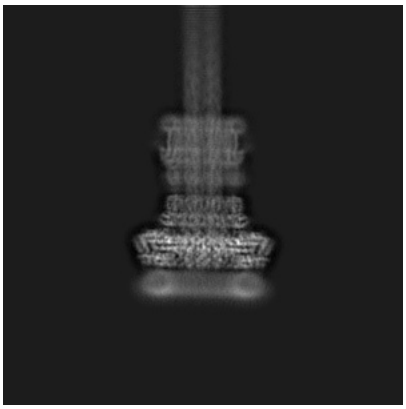
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-10046. These allow visual inspection of the internal detail of the map and identification of artifacts.

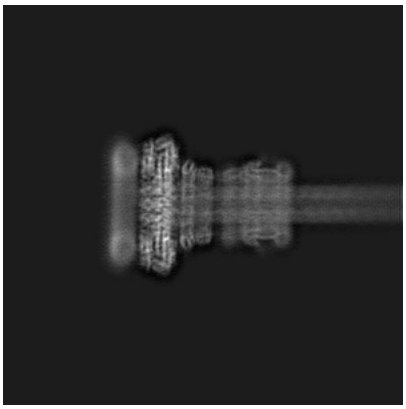
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

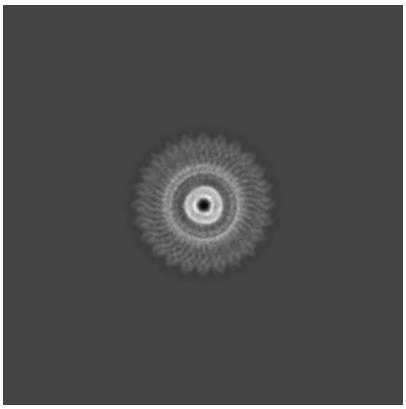
6.1.1 Primary map



X

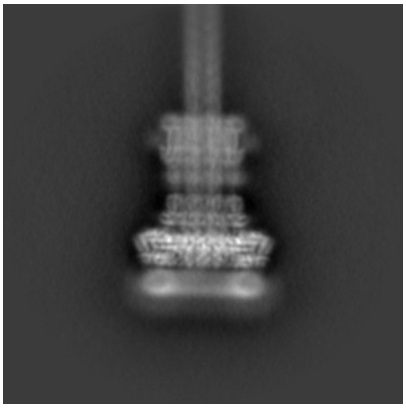


Y

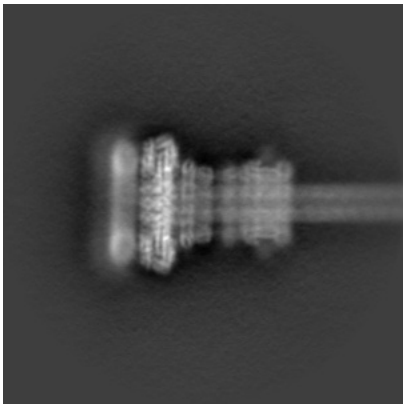


Z

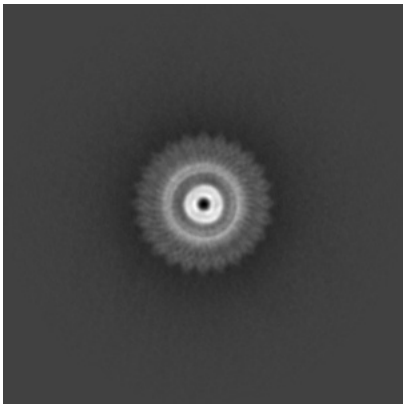
6.1.2 Raw map



X



Y

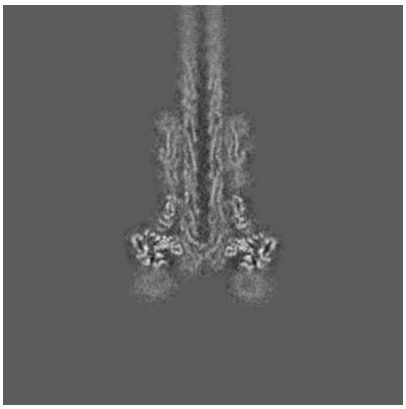


Z

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

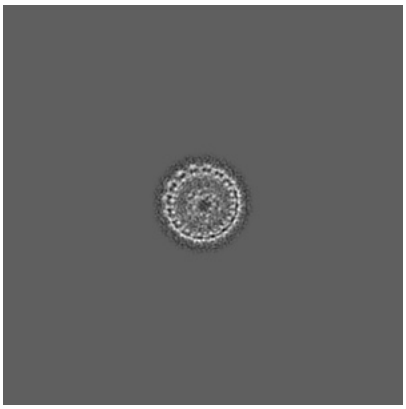
6.2 Central slices (i)

6.2.1 Primary map



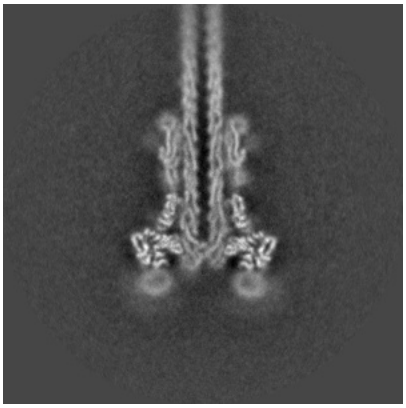
X Index: 240

Y Index: 240

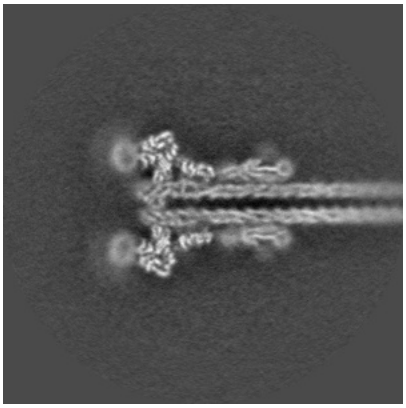


Z Index: 240

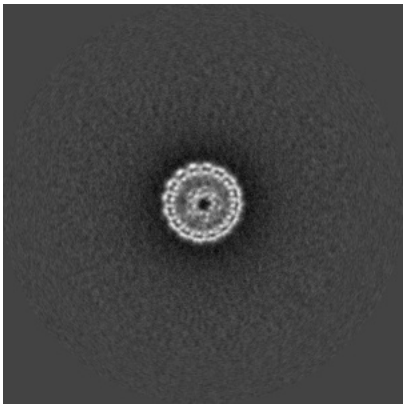
6.2.2 Raw map



X Index: 240



Y Index: 240

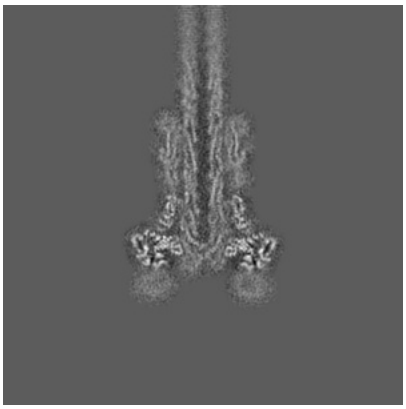


Z Index: 240

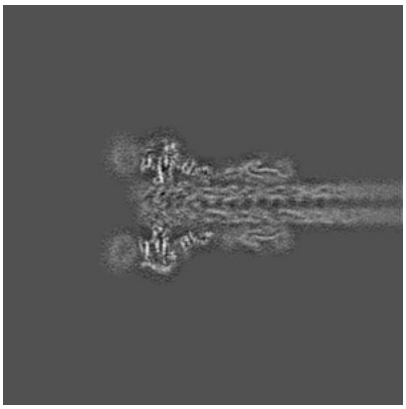
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

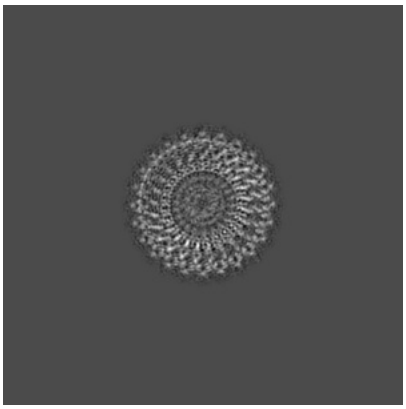
6.3.1 Primary map



X Index: 240

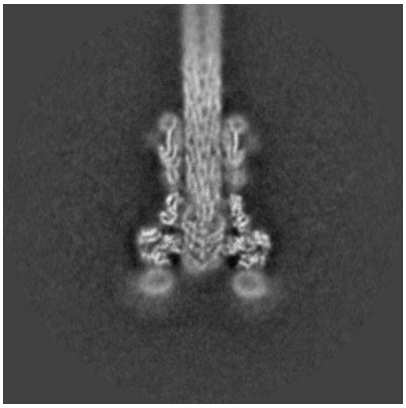


Y Index: 233

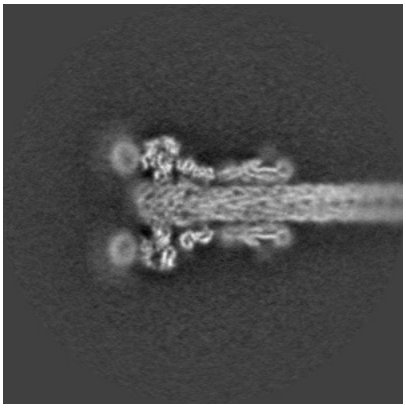


Z Index: 195

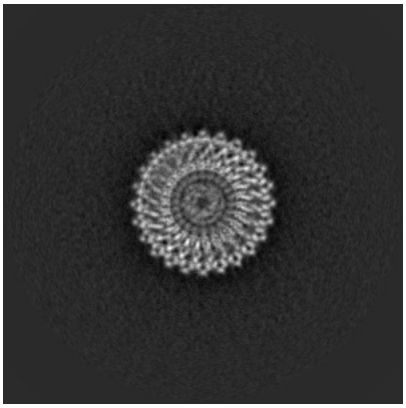
6.3.2 Raw map



X Index: 251



Y Index: 229



Z Index: 195

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

X Y Z

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.

6.5 Mask visualisation

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

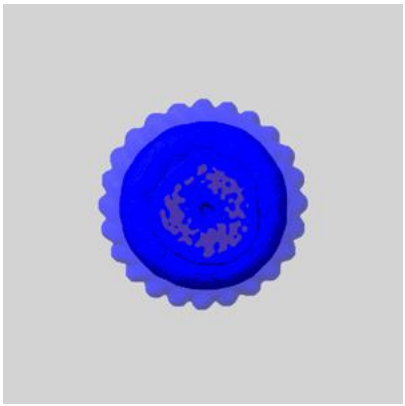
A mask typically either:

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

6.5.1 emd_10046_msk_1.map

X

Y

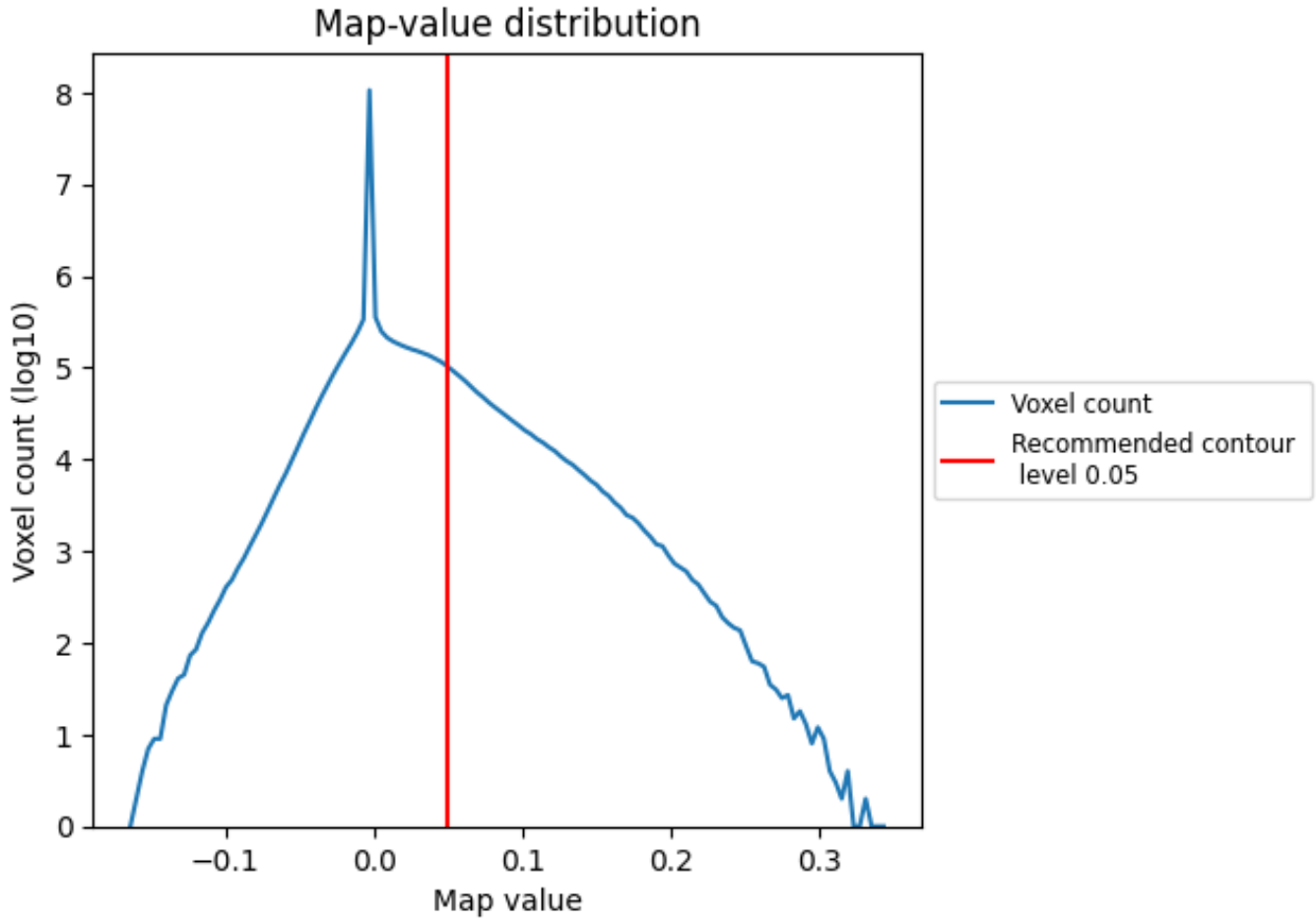


Z

7 Map analysis

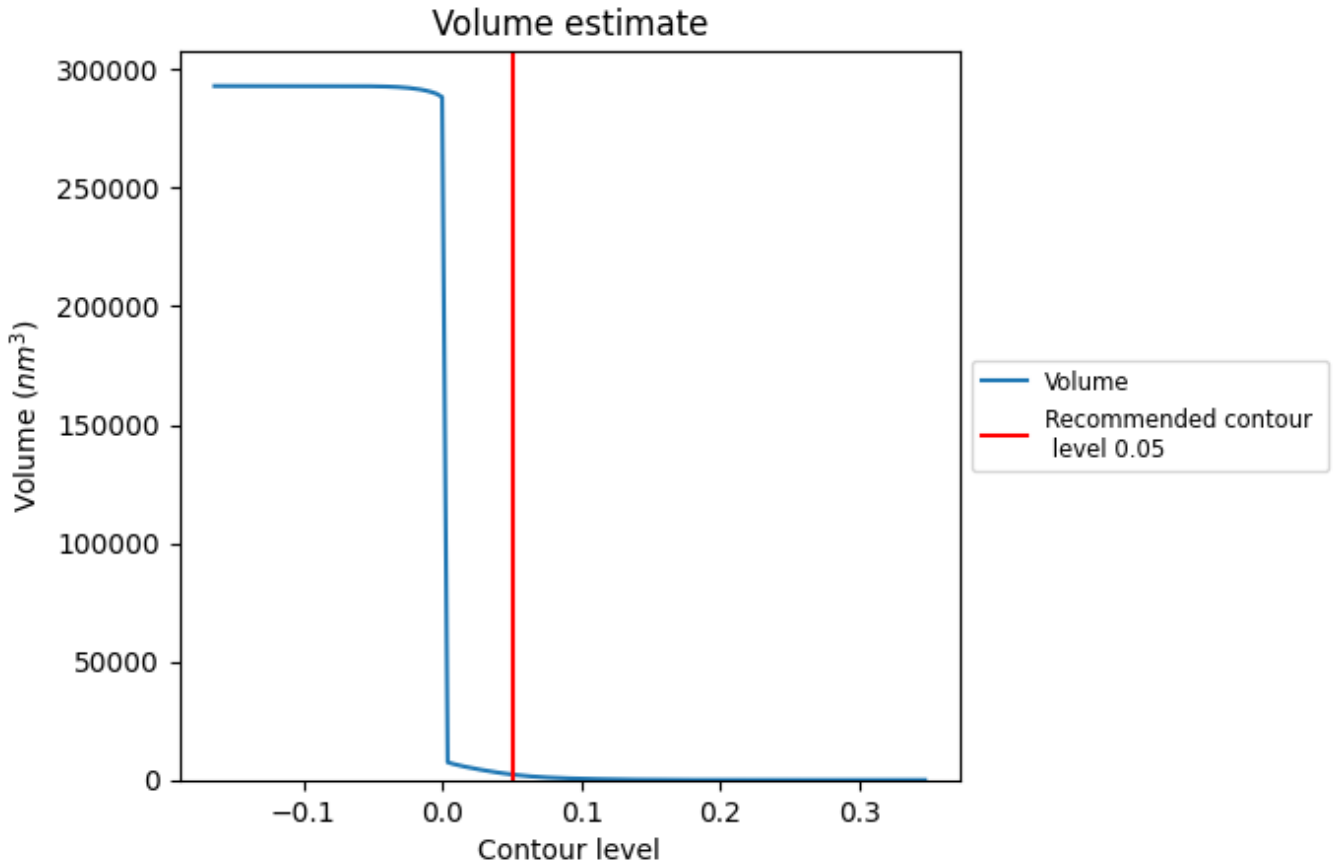
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

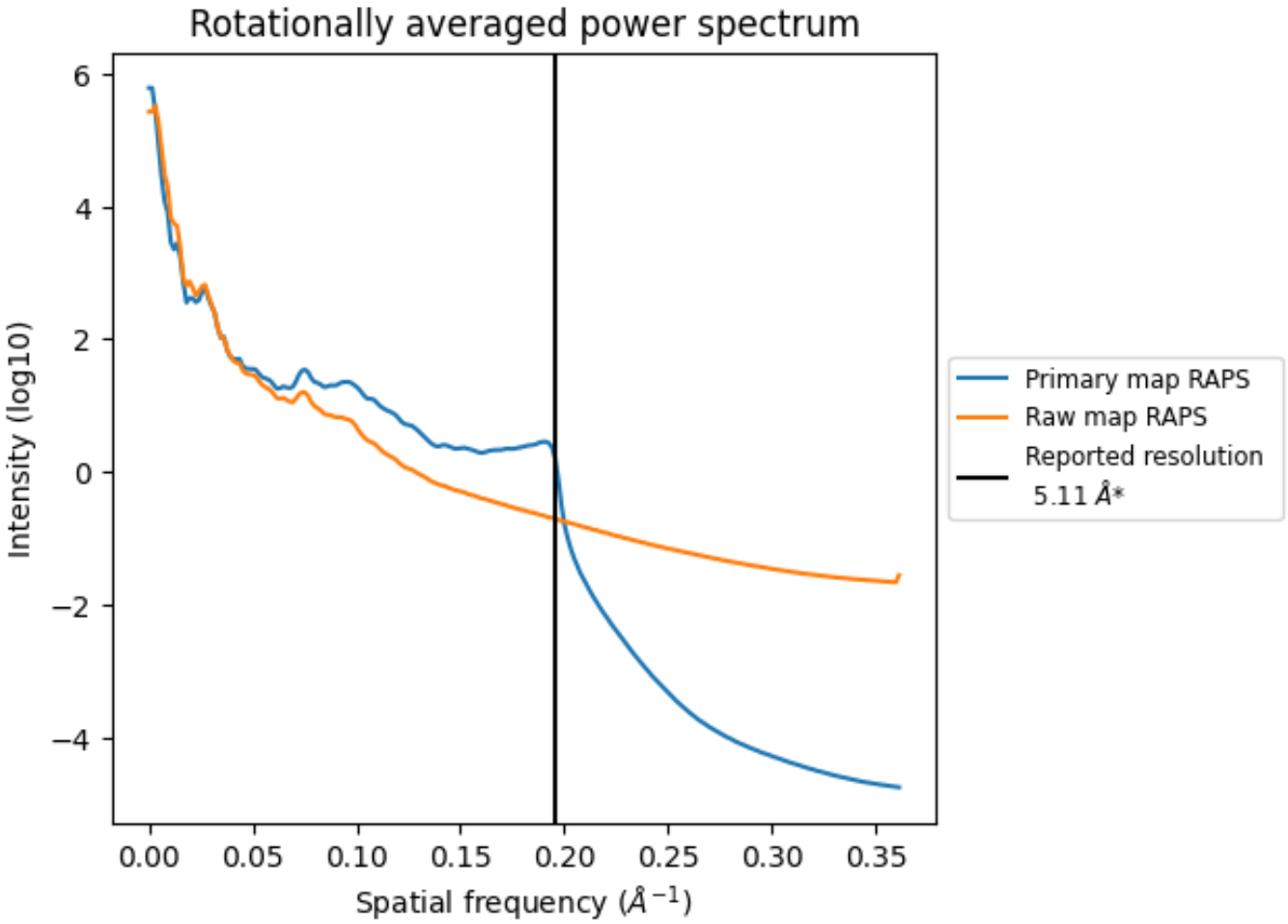
7.2 Volume estimate



The volume at the recommended contour level is 2307 nm^3; this corresponds to an approximate mass of 2084 kDa.

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

7.3 Rotationally averaged power spectrum (i)

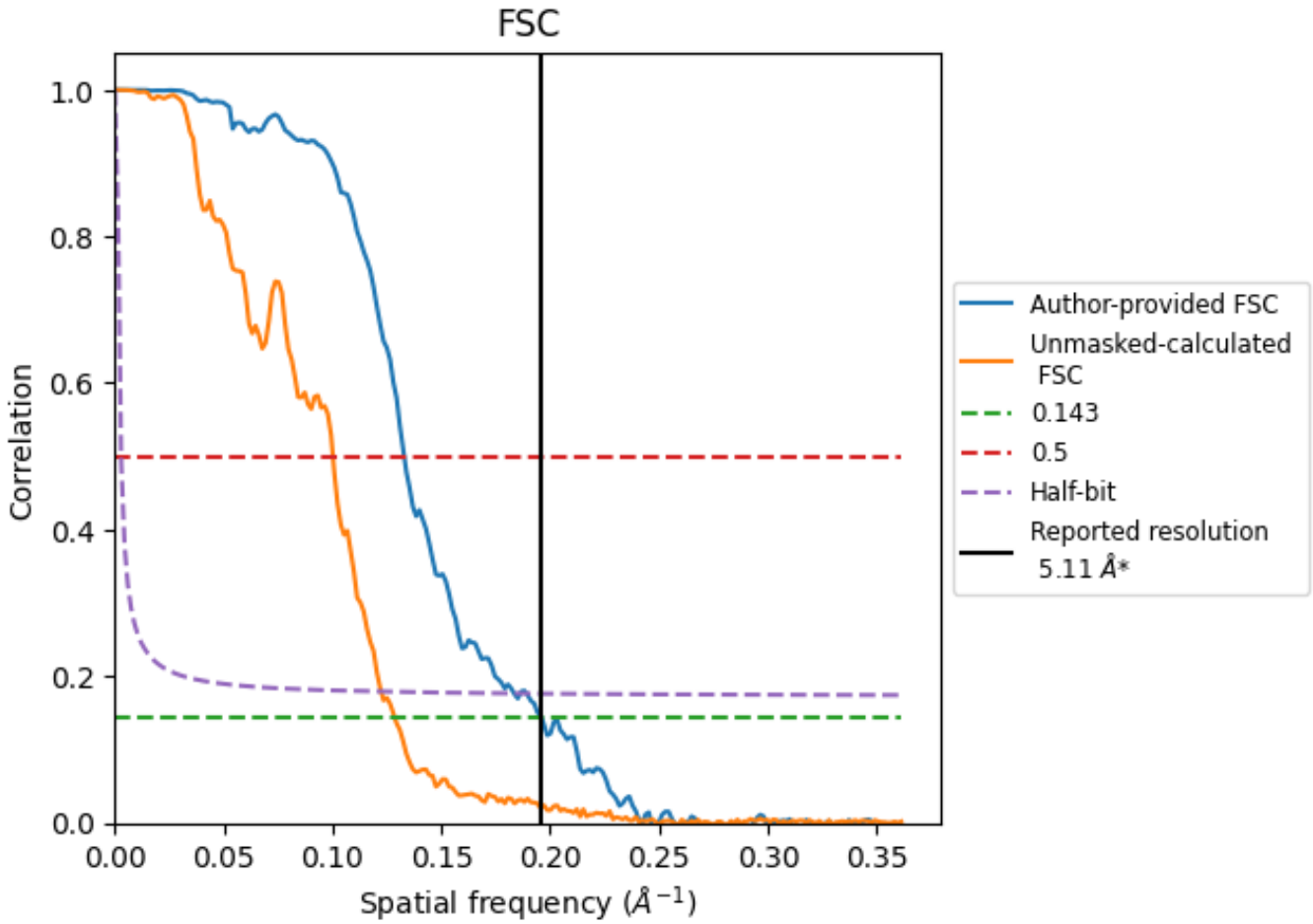


*Reported resolution corresponds to spatial frequency of 0.196 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.196 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	5.11	-	-
Author-provided FSC curve	5.10	7.52	5.45
Unmasked-calculated*	7.77	9.98	8.17

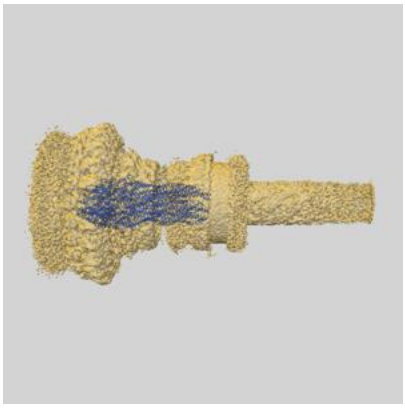
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.77 differs from the reported value 5.11 by more than 10 %

9 Map-model fit

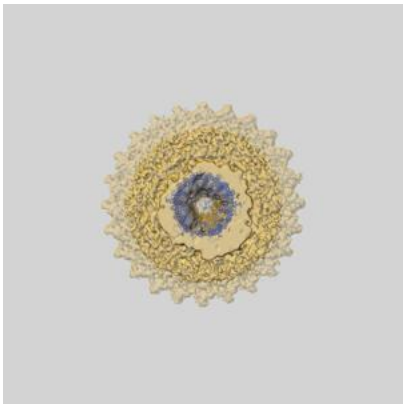
This section contains information regarding the fit between EMDB map EMD-10046 and PDB model 6RWY. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay

X



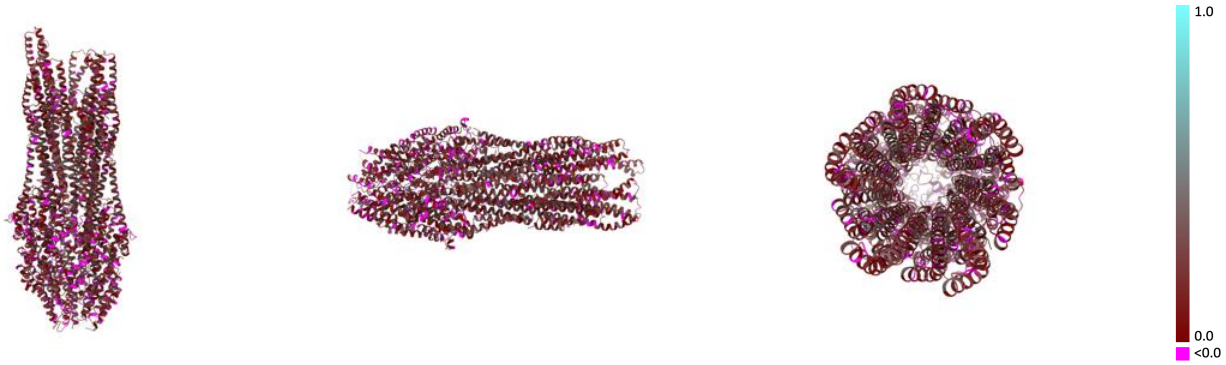
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.05 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.

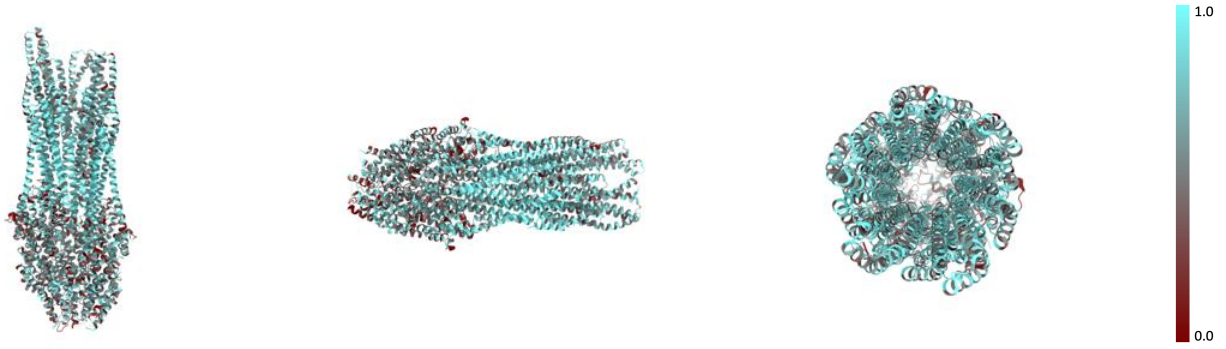
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

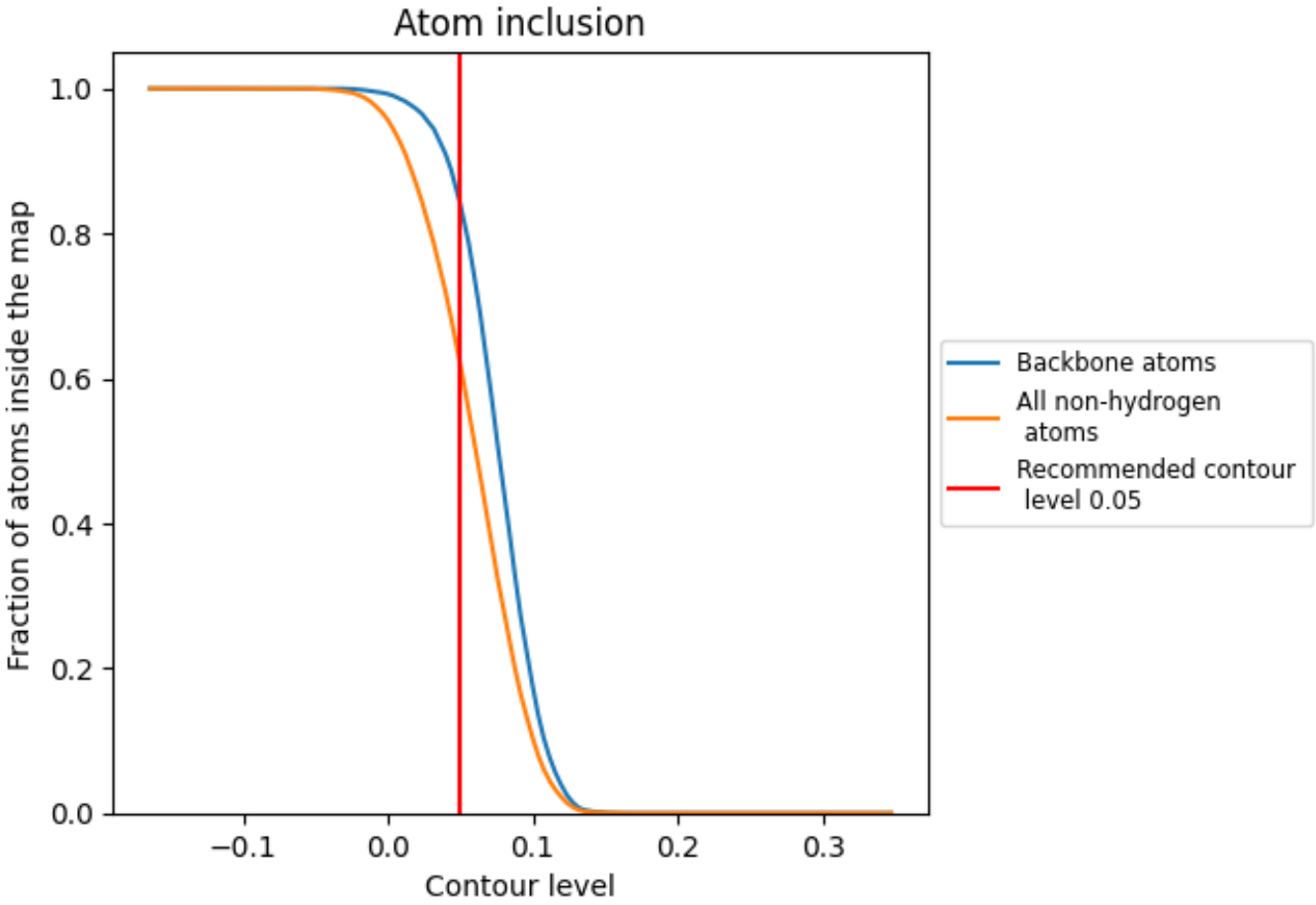
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.05).

9.4 Atom inclusion (i)



At the recommended contour level, 84% of all backbone atoms, 62% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6184	0.1540
A	0.7932	0.2250
B	0.8384	0.2130
C	0.8548	0.2290
D	0.8575	0.2210
E	0.8411	0.2180
F	0.8575	0.2160
G	0.8814	0.2140
H	0.8847	0.2360
I	0.8983	0.2260
J	0.8780	0.2280
K	0.9288	0.2560
L	0.6631	0.1660
M	0.6720	0.1520
N	0.7057	0.1690
O	0.6897	0.1740
P	0.6631	0.1480
Q	0.7004	0.1750
R	0.6241	0.1430
S	0.6543	0.1600
T	0.6613	0.1570
U	0.6117	0.1440
V	0.6631	0.1600
a	0.5382	0.1200
b	0.5018	0.1240
c	0.5400	0.1440
d	0.5597	0.1300
e	0.5333	0.1490
f	0.5284	0.1180
g	0.5410	0.1580
h	0.4331	0.0970
i	0.5009	0.1400
j	0.5124	0.1480
k	0.5516	0.1410