

wwPDB EM Validation Summary Report (i)

Jul 8, 2024 – 04:06 pm BST

PDB ID	:	7PHM
EMDB ID	:	EMD-13420
Title	:	Cryo-EM structure of Mycobacterium tuberculosis encapsulin
Authors	:	Woodward, J.D.
Deposited on	:	2021-08-17
Resolution	:	2.20 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org* A user guide is available at https://www.wwpdb.org/validation/2017/EMValidationReportHelp with specific help available everywhere you see the (i) 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 (1)) were used in the production of this report:

:	0.0.1. dev 92
:	4.02b-467
:	20191225.v01 (using entries in the PDB archive December 25th 2019)
:	1.9.13
:	Engh & Huber (2001)
:	Parkinson et al. (1996)
:	2.37.1
	::

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.20 Å.

Ramachandran outliers

Sidechain outliers

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	Percentile Ranks	Value
Ramachandran outliers		0
Sidechain outliers		0
Worse		Better
Percentile relat	ive to all structures	
Percentile relat	ive to all EM structures	
Metric	Whole archive	EM structures
Methe	$(\# { m Entries})$	$(\# { m Entries})$

154571

154315

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 $\geq=3, 2, 1$ 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.

4023

3826

Mol	Chain	Length	Quality of chain
1	0	270	98% •
	0	210	
1	1	270	98%
1	2	270	98% •
			•
1	3	270	98% •
1	4	270	98% •
1	5	270	98% •
1	6	270	98% •
1	7	270	98% •
1	А	270	98% •



Mol	Chain	Length	Quality of chain
1	В	270	98%
1	С	270	98%
1	D	270	98%
1	Е	270	98% •
1	F	270	98% •
1	G	270	98% •
1	Н	270	98% •
1	Ι	270	98% •
1	J	270	98%
1	K	270	98%
1	L	270	98% .
1	М	270	98% .
1	Ν	270	98%
1	О	270	98%
1	Р	270	98%
1	Q	270	98%
1	R	270	98%
1	S	270	98%
1	Т	270	98% •
1	U	270	98%
1	V	270	98%
1	W	270	98% •
1	Х	270	98% .
1	Y	270	98% •
1	Z	270	98%
			Continued on next page



Mol	Chain	Length	Quality of chain
1	a	270	98%
1	b	270	98%
1	с	270	98%
1	d	270	98% •
1	е	270	98%
1	f	270	98%
1	g	270	98%
1	h	270	98%
1	i	270	•
1		270	•
1	j k		98% •
		270	98% •
1	1	270	98% •
1	m	270	98% ·
1	n	270	98% •
1	0	270	98% •
1	р	270	98% .
1	q	270	98% •
1	r	270	98% .
1	S	270	98% •
1	\mathbf{t}	270	98% •
1	u	270	98%
1	V	270	98%
1	W	270	98%
1	х	270	98%
1	У	270	98% .



Mol	Chain	Length	Quality of chain
1	\mathbf{Z}	270	98%



2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 121560 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.

Mol	Chain	Residues		Ate	oms			AltConf	Trace
1	Z	964	Total	С	Ν	0	S	0	0
1	L	264	2026	1273	353	399	1	0	0
1	٨	964	Total	С	Ν	0	S	0	0
1	А	264	2026	1273	353	399	1	0	0
1	р	964	Total	С	Ν	0	S	0	0
1	В	264	2026	1273	353	399	1	0	0
1	C	964	Total	С	Ν	0	S	0	0
1	\mathbf{C}	264	2026	1273	353	399	1	0	0
1	D	964	Total	С	Ν	0	S	0	0
1	D	264	2026	1273	353	399	1	0	0
1	E	964	Total	С	Ν	0	S	0	0
1	Ε	264	2026	1273	353	399	1	0	0
1	F	964	Total	С	Ν	0	S	0	0
1	\mathbf{F}	264	2026	1273	353	399	1	0	0
1	C	964	Total	С	Ν	0	S	0	0
1	G	264	2026	1273	353	399	1	0	
1	ττ	964	Total	С	Ν	0	S	0	0
1	Η	264	2026	1273	353	399	1	0	
1	Ι	264	Total	С	Ν	0	S	0	0
1	1	264	2026	1273	353	399	1	0	0
1	т	964	Total	С	Ν	0	S	0	0
1	J	264	2026	1273	353	399	1	0	0
1	IZ.	964	Total	С	Ν	0	S	0	0
1	Κ	264	2026	1273	353	399	1	0	0
1	т	964	Total	С	Ν	0	S	0	0
1	L	264	2026	1273	353	399	1	0	0
1	М	964	Total	С	Ν	0	S	0	0
1	М	264	2026	1273	353	399	1	0	0
1	N	0.04	Total	С	Ν	0	S	0	0
1	Ν	264	2026	1273	353	399	1	0	0
1	0	264	Total	С	Ν	0	S	0	0
1	Ο	264	2026	1273	353	399	1	0	0
1	D	264	Total	С	Ν	0	S	0	0
1	Р	264	2026	1273	353	399	1	0	0

• Molecule 1 is a protein called 29 kDa antigen CFP29.



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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Mol	Chain	Residues	5	At	oms			AltConf	Trace	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1	0	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Q	264	2026	1273	353	399	1	0	0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	л	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		К	204	2026	1273	353	399	1	0	0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	C	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		S	204	2026	1273	353	399	1	0	0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	т	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	1	204	2026	1273	353	399	1	0	0	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1	TT	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	U	204	2026	1273	353	399	1	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	V	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	V	204	2026	1273	353	399	1	0	0	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1	117	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	VV	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	v	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Λ	204	2026	1273	353	399	1	0	0	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	V	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	ľ	204	2026	1273	353	399	1	0		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	_	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		а	264	2026	1273	353	399	1			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	1_	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		d	204	2026	1273	353	399	1			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	-	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		С	204	2026	1273	353	399	1	0		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	J	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	a	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	-	964	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	е	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	ſ	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		1	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	<i>c</i> r	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		g	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	h	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	11	204	2026	1273	353	399	1	0	0	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	:	264	Total	С	Ν	0	S	0	0	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		1	204	2026	1273	353	399	1		U	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	;	264	Total	С	Ν	Ο	S	Ο	Ο	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		J	204	2026	1273	353	399	1		U	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	1-	264	Total	С	Ν	Ο	S	0	0	
1 2 264 200 0 0 0 0 0 0 0 0		К	204	2026	1273	353	399	1		0	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1	1	264	Total	С	Ν	Ο	S	Ο	Ο	
		1	204	2026	1273	353	399	1		U	



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Mol	Chain	Residues	5	Ate	oms			AltConf	Trace	
1		964	Total	С	Ν	0	S	0	0	
1	m	264	2026	1273	353	399	1	0	0	
1		004	Total	С	Ν	0	S	0	0	
1	n	264	2026	1273	353	399	1	0	0	
1		0.04	Total	С	Ν	0	S	0	0	
1	О	264	2026	1273	353	399	1	0	0	
1		264	Total	С	Ν	0	S	0	0	
1	р	264	2026	1273	353	399	1	0	0	
1		264	Total	С	Ν	0	S	0	0	
1	q	264	2026	1273	353	399	1	0	0	
1		264	Total	С	Ν	0	S	0	0	
1	r	264	2026	1273	353	399	1	0	0	
1	G	264	Total	С	Ν	0	S	0	0	
1	s	204	2026	1273	353	399	1	0	0	
1	t	264	Total	С	Ν	0	S	0	0	
1	U	204	2026	1273	353	399	1	0	0	
1		264	Total	С	Ν	0	S	0	0	
1	u	204	2026	1273	353	399	1	0		
1		264	Total	С	Ν	0	S	0	0	
1	V	204	2026	1273	353	399	1	0		
1		264	Total	С	Ν	0	S	0	0	
1	W	204	2026	1273	353	399	1			
1		264	Total	С	Ν	0	S	0	0	
1	х	204	2026	1273	353	399	1	0		
1	17	264	Total	С	Ν	0	S	0	0	
1	У	204	2026	1273	353	399	1	0	0	
1	7	264	Total	С	Ν	0	S	0	0	
1	Z	204	2026	1273	353	399	1	0	0	
1	0	264	Total	С	Ν	0	S	0	0	
1	0	204	2026	1273	353	399	1	0	0	
1	1	264	Total	С	Ν	0	S	0	0	
T	T	204	2026	1273	353	399	1	0	0	
1	2	264	Total	С	Ν	0	S	0	0	
T	2	204	2026	1273	353	399	1	0	0	
1	3	264	Total	С	Ν	0	S	0	0	
1	J	204	2026	1273	353	399	1	0	0	
1	4	264	Total	С	Ν	0	S	0	0	
1	т т	204	2026	1273	353	399	1	0	U	
1	5	264	Total	С	Ν	0	S	0	0	
1		204	2026	1273	353	399	1	0	0	
			Total	С	Ν	0	S			
1	6	264	Total 2026	1273	353	0	D	0	0	



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Mol	Chain	Residues	Atoms					AltConf	Trace
1	7	264	Total 2026	C 1273	N 353	O 399	S 1	0	0

There are 300 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Z	266	HIS	_	expression tag	UNP I6WZG6
Z	267	HIS	-	expression tag	UNP I6WZG6
Z	268	HIS	_	expression tag	UNP I6WZG6
Z	269	HIS	-	expression tag	UNP I6WZG6
Z	270	HIS	-	expression tag	UNP I6WZG6
А	266	HIS	-	expression tag	UNP I6WZG6
А	267	HIS	-	expression tag	UNP I6WZG6
А	268	HIS	-	expression tag	UNP I6WZG6
А	269	HIS	-	expression tag	UNP I6WZG6
А	270	HIS	-	expression tag	UNP I6WZG6
В	266	HIS	-	expression tag	UNP I6WZG6
В	267	HIS	-	expression tag	UNP I6WZG6
В	268	HIS	-	expression tag	UNP I6WZG6
В	269	HIS	-	expression tag	UNP I6WZG6
В	270	HIS	-	expression tag	UNP I6WZG6
С	266	HIS	-	expression tag	UNP I6WZG6
С	267	HIS	-	expression tag	UNP I6WZG6
С	268	HIS	-	expression tag	UNP I6WZG6
С	269	HIS	-	expression tag	UNP I6WZG6
С	270	HIS	-	expression tag	UNP I6WZG6
D	266	HIS	-	expression tag	UNP I6WZG6
D	267	HIS	-	expression tag	UNP I6WZG6
D	268	HIS	-	expression tag	UNP I6WZG6
D	269	HIS	-	expression tag	UNP I6WZG6
D	270	HIS	-	expression tag	UNP I6WZG6
E	266	HIS	-	expression tag	UNP I6WZG6
Е	267	HIS	-	expression tag	UNP I6WZG6
Е	268	HIS	-	expression tag	UNP I6WZG6
Е	269	HIS	-	expression tag	UNP I6WZG6
Е	270	HIS	-	expression tag	UNP I6WZG6
F	266	HIS	-	expression tag	UNP I6WZG6
F	267	HIS	-	expression tag	UNP I6WZG6
F	268	HIS	-	expression tag	UNP I6WZG6
F	269	HIS	-	expression tag	UNP I6WZG6
F	270	HIS	-	expression tag	UNP I6WZG6
G	266	HIS	-	expression tag	UNP I6WZG6



Chain	Residue	vious page Modelled	Actual	Comment	Reference
G	267	HIS	-	expression tag	UNP I6WZG6
G	268	HIS	_	expression tag	UNP I6WZG6
G	269	HIS	_	expression tag	UNP I6WZG6
G	270	HIS	_	expression tag	UNP I6WZG6
H	266	HIS	_	expression tag	UNP I6WZG6
H	267	HIS		expression tag	UNP I6WZG6
H	268	HIS	_	expression tag	UNP I6WZG6
H	269	HIS	_	expression tag	UNP I6WZG6
 H	203	HIS	_	expression tag	UNP I6WZG6
I	266	HIS	_	expression tag	UNP I6WZG6
 I	267	HIS	-	expression tag	UNP I6WZG6
I	268	HIS	-	expression tag	UNP I6WZG6
I	269	HIS	-		UNP I6WZG6
I	209	HIS	-	expression tag	UNP I6WZG6
		HIS	-	expression tag	
J 	266		-	expression tag	UNP I6WZG6
J	267	HIS	-	expression tag	UNP I6WZG6
J	268	HIS	-	expression tag	UNP I6WZG6
J	269	HIS	-	expression tag	UNP I6WZG6
J	270	HIS	-	expression tag	UNP I6WZG6
K	266	HIS	-	expression tag	UNP I6WZG6
K	267	HIS	-	expression tag	UNP I6WZG6
K	268	HIS	-	expression tag	UNP I6WZG6
K	269	HIS	-	expression tag	UNP I6WZG6
Κ	270	HIS	-	expression tag	UNP I6WZG6
L	266	HIS	-	expression tag	UNP I6WZG6
L	267	HIS	-	expression tag	UNP I6WZG6
L	268	HIS	-	expression tag	UNP I6WZG6
L	269	HIS	-	expression tag	UNP I6WZG6
L	270	HIS	-	expression tag	UNP I6WZG6
М	266	HIS	-	expression tag	UNP I6WZG6
М	267	HIS	-	expression tag	UNP I6WZG6
М	268	HIS	-	expression tag	UNP I6WZG6
М	269	HIS	-	expression tag	UNP I6WZG6
М	270	HIS	-	expression tag	UNP I6WZG6
Ν	266	HIS	-	expression tag	UNP I6WZG6
Ν	267	HIS	-	expression tag	UNP I6WZG6
Ν	268	HIS	-	expression tag	UNP I6WZG6
Ν	269	HIS	-	expression tag	UNP I6WZG6
Ν	270	HIS	-	expression tag	UNP I6WZG6
0	266	HIS	-	expression tag	UNP I6WZG6
0	267	HIS	-	expression tag	UNP I6WZG6
Ο	268	HIS	-	expression tag	UNP I6WZG6
	1	1	1	0	1



Chain	Residue	vious page Modelled	Actual	Comment	Reference
0	269	HIS	-	expression tag	UNP I6WZG6
0	270	HIS	_	expression tag	UNP I6WZG6
Р	266	HIS	-	expression tag	UNP I6WZG6
Р	267	HIS	-	expression tag	UNP I6WZG6
Р	268	HIS	-	expression tag	UNP I6WZG6
Р	269	HIS	-	expression tag	UNP I6WZG6
Р	270	HIS	-	expression tag	UNP I6WZG6
Q	266	HIS	-	expression tag	UNP I6WZG6
Q	267	HIS	-	expression tag	UNP I6WZG6
Q	268	HIS	-	expression tag	UNP I6WZG6
Q	269	HIS	-	expression tag	UNP I6WZG6
Q	270	HIS	-	expression tag	UNP I6WZG6
R	266	HIS	-	expression tag	UNP I6WZG6
R	267	HIS	-	expression tag	UNP I6WZG6
R	268	HIS	-	expression tag	UNP I6WZG6
R	269	HIS	-	expression tag	UNP I6WZG6
R	270	HIS	-	expression tag	UNP I6WZG6
S	266	HIS	_	expression tag	UNP I6WZG6
S	267	HIS	_	expression tag	UNP I6WZG6
S	268	HIS	-	expression tag	UNP I6WZG6
S	269	HIS	-	expression tag	UNP I6WZG6
S	270	HIS	-	expression tag	UNP I6WZG6
Т	266	HIS	-	expression tag	UNP I6WZG6
Т	267	HIS	-	expression tag	UNP I6WZG6
Т	268	HIS	-	expression tag	UNP I6WZG6
Т	269	HIS	-	expression tag	UNP I6WZG6
Т	270	HIS	-	expression tag	UNP I6WZG6
U	266	HIS	-	expression tag	UNP I6WZG6
U	267	HIS	-	expression tag	UNP I6WZG6
U	268	HIS	-	expression tag	UNP I6WZG6
U	269	HIS	-	expression tag	UNP I6WZG6
U	270	HIS	-	expression tag	UNP I6WZG6
V	266	HIS	-	expression tag	UNP I6WZG6
V	267	HIS	-	expression tag	UNP I6WZG6
V	268	HIS	-	expression tag	UNP I6WZG6
V	269	HIS	-	expression tag	UNP I6WZG6
V	270	HIS	-	expression tag	UNP I6WZG6
W	266	HIS	-	expression tag	UNP I6WZG6
W	267	HIS	-	expression tag	UNP I6WZG6
W	268	HIS	-	expression tag	UNP I6WZG6
W	269	HIS	-	expression tag	UNP I6WZG6
W	270	HIS	-	expression tag	UNP I6WZG6



ChainResidueModelledActualCommentReferenceX266HISexpression tagUNP 16WZG6X267HISexpression tagUNP 16WZG6X268HISexpression tagUNP 16WZG6X269HISexpression tagUNP 16WZG6Y266HISexpression tagUNP 16WZG6Y266HISexpression tagUNP 16WZG6Y268HISexpression tagUNP 16WZG6Y268HISexpression tagUNP 16WZG6Y269HISexpression tagUNP 16WZG6A267HISexpression tagUNP 16WZG6a266HISexpression tagUNP 16WZG6a267HISexpression tagUNP 16WZG6a268HISexpression tagUNP 16WZG6b266HISexpression tagUNP 16WZG6b266HISexpression tagUNP 16WZG6b267HISexpression tagUNP 16WZG6c266HISexpression tagUNP 16WZG6b267HISexpression tagUNP 16WZG6c266HISexpression tagUNP 16WZG6c266HISexpression tagUNP 16WZG6c <th></th> <th></th> <th>vious page</th> <th>A</th> <th>C · · ·</th> <th></th>			vious page	A	C · · ·	
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c270HIS-expression tagUNP I6WZG6d266HIS-expression tagUNP I6WZG6d267HIS-expression tagUNP I6WZG6d268HIS-expression tagUNP I6WZG6d269HIS-expression tagUNP I6WZG6d269HIS-expression tagUNP I6WZG6d270HIS-expression tagUNP I6WZG6e266HIS-expression tagUNP I6WZG6e267HIS-expression tagUNP I6WZG6e268HIS-expression tagUNP I6WZG6e269HIS-expression tagUNP I6WZG6e260HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f266HIS	с	268	HIS	-	expression tag	UNP I6WZG6
d 266 HIS-expression tagUNP I6WZG6d 267 HIS-expression tagUNP I6WZG6d 268 HIS-expression tagUNP I6WZG6d 269 HIS-expression tagUNP I6WZG6d 269 HIS-expression tagUNP I6WZG6d 270 HIS-expression tagUNP I6WZG6e 266 HIS-expression tagUNP I6WZG6e 266 HIS-expression tagUNP I6WZG6e 267 HIS-expression tagUNP I6WZG6e 269 HIS-expression tagUNP I6WZG6e 266 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6f 267 HIS-expression tagUNP I6WZG6f 269 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6	с	269	HIS	-	expression tag	UNP I6WZG6
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d268HIS-expression tagUNP I6WZG6d269HIS-expression tagUNP I6WZG6d270HIS-expression tagUNP I6WZG6e266HIS-expression tagUNP I6WZG6e267HIS-expression tagUNP I6WZG6e268HIS-expression tagUNP I6WZG6e269HIS-expression tagUNP I6WZG6e269HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	d	266	HIS	-	expression tag	UNP I6WZG6
d 269 HIS-expression tagUNP I6WZG6d 270 HIS-expression tagUNP I6WZG6e 266 HIS-expression tagUNP I6WZG6e 267 HIS-expression tagUNP I6WZG6e 268 HIS-expression tagUNP I6WZG6e 269 HIS-expression tagUNP I6WZG6e 269 HIS-expression tagUNP I6WZG6e 270 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6f 268 HIS-expression tagUNP I6WZG6f 268 HIS-expression tagUNP I6WZG6f 269 HIS-expression tagUNP I6WZG6f 269 HIS-expression tagUNP I6WZG6f 270 HIS-expression tagUNP I6WZG6f 270 HIS-expression tagUNP I6WZG6f 270 HIS-expression tagUNP I6WZG6g 266 HIS-expression tagUNP I6WZG6g 266 HIS-expression tagUNP I6WZG6	d	267	HIS	-	expression tag	UNP I6WZG6
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e 268 HIS-expression tagUNP I6WZG6e 269 HIS-expression tagUNP I6WZG6e 270 HIS-expression tagUNP I6WZG6f 266 HIS-expression tagUNP I6WZG6f 267 HIS-expression tagUNP I6WZG6f 268 HIS-expression tagUNP I6WZG6f 268 HIS-expression tagUNP I6WZG6f 269 HIS-expression tagUNP I6WZG6f 270 HIS-expression tagUNP I6WZG6g 266 HIS-expression tagUNP I6WZG6g 266 HIS-expression tagUNP I6WZG6	е	266	HIS	-	expression tag	UNP I6WZG6
e269HIS-expression tagUNP I6WZG6e270HIS-expression tagUNP I6WZG6f266HIS-expression tagUNP I6WZG6f267HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	е	267	HIS	-	expression tag	UNP I6WZG6
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f266HIS-expression tagUNP I6WZG6f267HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	е	269	HIS	-	expression tag	UNP I6WZG6
f267HIS-expression tagUNP I6WZG6f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	е	270	HIS	-	expression tag	UNP I6WZG6
f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	f	266	HIS	-	expression tag	UNP I6WZG6
f268HIS-expression tagUNP I6WZG6f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	f	267	HIS	-	expression tag	UNP I6WZG6
f269HIS-expression tagUNP I6WZG6f270HIS-expression tagUNP I6WZG6g266HIS-expression tagUNP I6WZG6	f	268	HIS	-		UNP I6WZG6
g 266 HIS - expression tag UNP I6WZG6	f	269	HIS	-	expression tag	UNP I6WZG6
g 266 HIS - expression tag UNP I6WZG6	f	270	HIS	-	expression tag	UNP I6WZG6
	g	266	HIS	-		UNP I6WZG6
	g	267	HIS	-	expression tag	UNP I6WZG6



Continu	ed from pre	vious page			
Chain	Residue	Modelled	Actual	Comment	Reference
g	268	HIS	-	expression tag	UNP I6WZG6
g	269	HIS	-	expression tag	UNP I6WZG6
g	270	HIS	-	expression tag	UNP I6WZG6
h	266	HIS	-	expression tag	UNP I6WZG6
h	267	HIS	-	expression tag	UNP I6WZG6
h	268	HIS	-	expression tag	UNP I6WZG6
h	269	HIS	-	expression tag	UNP I6WZG6
h	270	HIS	-	expression tag	UNP I6WZG6
i	266	HIS	-	expression tag	UNP I6WZG6
i	267	HIS	-	expression tag	UNP I6WZG6
i	268	HIS	-	expression tag	UNP I6WZG6
i	269	HIS	-	expression tag	UNP I6WZG6
i	270	HIS	-	expression tag	UNP I6WZG6
j	266	HIS	-	expression tag	UNP I6WZG6
j	267	HIS	-	expression tag	UNP I6WZG6
j	268	HIS	-	expression tag	UNP I6WZG6
j	269	HIS	-	expression tag	UNP I6WZG6
j	270	HIS	-	expression tag	UNP I6WZG6
k	266	HIS	-	expression tag	UNP I6WZG6
k	267	HIS	-	expression tag	UNP I6WZG6
k	268	HIS	-	expression tag	UNP I6WZG6
k	269	HIS	-	expression tag	UNP I6WZG6
k	270	HIS	-	expression tag	UNP I6WZG6
1	266	HIS	-	expression tag	UNP I6WZG6
1	267	HIS	-	expression tag	UNP I6WZG6
1	268	HIS	-	expression tag	UNP I6WZG6
1	269	HIS	-	expression tag	UNP I6WZG6
1	270	HIS	-	expression tag	UNP I6WZG6
m	266	HIS	-	expression tag	UNP I6WZG6
m	267	HIS	-	expression tag	UNP I6WZG6
m	268	HIS	-	expression tag	UNP I6WZG6
m	269	HIS	-	expression tag	UNP I6WZG6
m	270	HIS	-	expression tag	UNP I6WZG6
n	266	HIS	-	expression tag	UNP I6WZG6
n	267	HIS	-	expression tag	UNP I6WZG6
n	268	HIS	-	expression tag	UNP I6WZG6
n	269	HIS	-	expression tag	UNP I6WZG6
n	270	HIS	-	expression tag	UNP I6WZG6
0	266	HIS	-	expression tag	UNP I6WZG6
0	267	HIS	-	expression tag	UNP I6WZG6
0	268	HIS	-	expression tag	UNP I6WZG6
0	269	HIS	-	expression tag	UNP I6WZG6



	• -	vious page		a	
Chain	Residue	Modelled	Actual	Comment	Reference
0	270	HIS	-	expression tag	UNP I6WZG6
р	266	HIS	-	expression tag	UNP I6WZG6
р	267	HIS	-	expression tag	UNP I6WZG6
р	268	HIS	-	expression tag	UNP I6WZG6
р	269	HIS	-	expression tag	UNP I6WZG6
р	270	HIS	-	expression tag	UNP I6WZG6
q	266	HIS	-	expression tag	UNP I6WZG6
q	267	HIS	-	expression tag	UNP I6WZG6
q	268	HIS	-	expression tag	UNP I6WZG6
q	269	HIS	-	expression tag	UNP I6WZG6
q	270	HIS	-	expression tag	UNP I6WZG6
r	266	HIS	-	expression tag	UNP I6WZG6
r	267	HIS	-	expression tag	UNP I6WZG6
r	268	HIS	-	expression tag	UNP I6WZG6
r	269	HIS	-	expression tag	UNP I6WZG6
r	270	HIS	-	expression tag	UNP I6WZG6
s	266	HIS	-	expression tag	UNP I6WZG6
S	267	HIS	-	expression tag	UNP I6WZG6
S	268	HIS	-	expression tag	UNP I6WZG6
S	269	HIS	-	expression tag	UNP I6WZG6
s	270	HIS	-	expression tag	UNP I6WZG6
t	266	HIS	-	expression tag	UNP I6WZG6
t	267	HIS	-	expression tag	UNP I6WZG6
t	268	HIS	-	expression tag	UNP I6WZG6
t	269	HIS	-	expression tag	UNP I6WZG6
t	270	HIS	-	expression tag	UNP I6WZG6
u	266	HIS	-	expression tag	UNP I6WZG6
u	267	HIS	-	expression tag	UNP I6WZG6
u	268	HIS	-	expression tag	UNP I6WZG6
u	269	HIS	-	expression tag	UNP I6WZG6
u	270	HIS	-	expression tag	UNP I6WZG6
V	266	HIS	-	expression tag	UNP I6WZG6
V	267	HIS	-	expression tag	UNP I6WZG6
V	268	HIS	-	expression tag	UNP I6WZG6
V	269	HIS	-	expression tag	UNP I6WZG6
V	270	HIS	-	expression tag	UNP I6WZG6
W	266	HIS	-	expression tag	UNP I6WZG6
W	267	HIS	-	expression tag	UNP I6WZG6
W	268	HIS	-	expression tag	UNP I6WZG6
W	269	HIS	-	expression tag	UNP I6WZG6
W	270	HIS	-	expression tag	UNP I6WZG6
X	266	HIS	-	expression tag	UNP I6WZG6
	1	1	1		1



Chain	Residue	vious page Modelled	Actual	Comment	Reference
х	267	HIS	-	expression tag	UNP I6WZG6
х	268	HIS	-	expression tag	UNP I6WZG6
х	269	HIS	-	expression tag	UNP I6WZG6
х	270	HIS	-	expression tag	UNP I6WZG6
У	266	HIS	-	expression tag	UNP I6WZG6
У	267	HIS	-	expression tag	UNP I6WZG6
У	268	HIS	-	expression tag	UNP I6WZG6
У	269	HIS	-	expression tag	UNP I6WZG6
У	270	HIS	-	expression tag	UNP I6WZG6
Z	266	HIS	-	expression tag	UNP I6WZG6
Z	267	HIS	-	expression tag	UNP I6WZG6
Z	268	HIS	-	expression tag	UNP I6WZG6
Z	269	HIS	-	expression tag	UNP I6WZG6
Z	270	HIS	-	expression tag	UNP I6WZG6
0	266	HIS	-	expression tag	UNP I6WZG6
0	267	HIS	-	expression tag	UNP I6WZG6
0	268	HIS	-	expression tag	UNP I6WZG6
0	269	HIS	_	expression tag	UNP I6WZG6
0	270	HIS	_	expression tag	UNP I6WZG6
1	266	HIS	-	expression tag	UNP I6WZG6
1	267	HIS	-	expression tag	UNP I6WZG6
1	268	HIS	-	expression tag	UNP I6WZG6
1	269	HIS	-	expression tag	UNP I6WZG6
1	270	HIS	-	expression tag	UNP I6WZG6
2	266	HIS	-	expression tag	UNP I6WZG6
2	267	HIS	-	expression tag	UNP I6WZG6
2	268	HIS	-	expression tag	UNP I6WZG6
2	269	HIS	-	expression tag	UNP I6WZG6
2	270	HIS	-	expression tag	UNP I6WZG6
3	266	HIS	-	expression tag	UNP I6WZG6
3	267	HIS	-	expression tag	UNP I6WZG6
3	268	HIS	-	expression tag	UNP I6WZG6
3	269	HIS	-	expression tag	UNP I6WZG6
3	270	HIS	-	expression tag	UNP I6WZG6
4	266	HIS	-	expression tag	UNP I6WZG6
4	267	HIS	-	expression tag	UNP I6WZG6
4	268	HIS	-	expression tag	UNP I6WZG6
4	269	HIS	-	expression tag	UNP I6WZG6
4	270	HIS	-	expression tag	UNP I6WZG6
5	266	HIS	-	expression tag	UNP I6WZG6
5	267	HIS	-	expression tag	UNP I6WZG6
5	268	HIS	-	expression tag	UNP I6WZG6



Chain	Residue	Modelled	Actual	Comment	Reference
5	269	HIS	-	expression tag	UNP I6WZG6
5	270	HIS	-	expression tag	UNP I6WZG6
6	266	HIS	-	expression tag	UNP I6WZG6
6	267	HIS	-	expression tag	UNP I6WZG6
6	268	HIS	-	expression tag	UNP I6WZG6
6	269	HIS	-	expression tag	UNP I6WZG6
6	270	HIS	-	expression tag	UNP I6WZG6
7	266	HIS	-	expression tag	UNP I6WZG6
7	267	HIS	-	expression tag	UNP I6WZG6
7	268	HIS	-	expression tag	UNP I6WZG6
7	269	HIS	-	expression tag	UNP I6WZG6
7	270	HIS	-	expression tag	UNP I6WZG6



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: 29 kDa antigen CFP29





• Molecule 1: 29 kDa antigen CFP29	
Chain E:	98% .
MET N2 E144 E144 D166 M200 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain F:	98% •
MET N2 E144 R147 H1466 H155 H155 H155 H155 H155 H155 H155 H1	
• Molecule 1: 29 kDa antigen CFP29	
Chain G:	98% .
MET N2 E144 E144 C166 H15 H15 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain H:	98% •
MET M2 E144 D166 H15 H15 H15 H15 H15 H15 H15	
• Molecule 1: 29 kDa antigen CFP29	
Chain I:	98% .
MET N2 E144 E145 H197 H155 H155 H155 H155 H155 H155 H155 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain J:	98% .
MET N2 E144 E147 H265 H200 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain K:	98% .





 \bullet Molecule 1: 29 kDa antigen CFP29

Chain L:	98% .
MET N2 E144 D145 H155 H155 H155 H155 H155 H155 H155 H	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain M:	98% .
MET N2 E144 E144 B166 H265 H126 H125 H125 H125 H125 H125 H125 H125 H125	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain N:	98% •
MET N2 E144 H15 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain O:	98% •
MET N2 144 146 HIS HIS HIS HIS	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain P:	98% •
MET N2 E144 E144 E144 A197 H158 H158 H158 H158 H158 H158 H158 H158	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain Q:	98% •
MET N2 D145 H135 H155 H155 H155 H155 H155 H155 H15	

• Molecule 1: 29 kDa antigen CFP29



Chain R:	98% •
MET N2 E144 C188 H158 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain S:	98% .
MET N2 E144 D166 H137 H135 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain T:	98% •
MET M2 B1 44 D1 66 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain U:	98% •
MET N2 E144 D166 H1S H1S H1S H1S H1S H1S	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain V:	98% •
MET N2 E144 B166 H125 H125 H125 H125 H125 H125 H125 H125	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain W:	98% •
MET N2 E144 P166 H166 H15 H15 H15 H15 H15 H15 H15 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain X:	98% •
MET N2 E144 H265 H155 H155 H155 H155 H155 H155 H155 H1	

W O R L D W I D E PROTEIN DATA BANK

98% .
98% •
98% .
98% .
98% .
98% •
98% •





 \bullet Molecule 1: 29 kDa antigen CFP29



WORLDWIDE PROTEIN DATA BANK

Chain m:	98% .
MET N2 E1 44 E1 44 M1 97 H1 5 H1 5 H1 5 H1 5 H1 5 H1 5 H1 5 H1 5	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain n:	98% •
MET M2 E1444 C188 H25 H15 H15 H15 H15 H15 H15	
• Molecule 1: 29 kDa antigen CFP29	
Chain o:	98% •
MET M2 E144 D166 H1S H1S H1S H1S H1S H1S	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain p:	98% •
MET N2 E144 E144 H197 H155 H155 H155 H155 H155 H155 H155 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain q:	98% •
MET NZ E144 D145 H155 H155 H155 H155 H155 H155 H155 H	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain r:	98% .
MET N2 E144 G166 H15 H15 H15 H15 H15 H15 H15 H15	
• Molecule 1: 29 kDa antigen CFP29	
Chain s:	98% •





 \bullet Molecule 1: 29 kDa antigen CFP29

Chain t:	98% .
MET N2 E144 E144 H15 H15 H15 H15 H15 H15 H15	
• Molecule 1: 29 kDa antigen CFP29	
Chain u:	98% •
MET N2 E144 D145 D146 H135 H135 H135 H135 H135 H135 H135 H135	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain v:	98% •
ма на на на на на на на на на н	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain w:	98%
Chain w:	98% .
	98% .
MET N2 E144 D166 H166 H155 H155 H155 H155 H155 H155 H	98% •
• Molecule 1: 29 kDa antigen CFP29	
• Molecule 1: 29 kDa antigen CFP29	
• Molecule 1: 29 kDa antigen CFP29 Chain x:	
• Molecule 1: 29 kDa antigen CFP29 Chain x: • Molecule 1: 29 kDa antigen CFP29 • • • • • • • • • • • • • • • • • • •	98%



Chain z:	98% •
MET N2 EI 44 D1 66 H2 65 H12 65 H12 65 H12 65 H12 8 H12 8 H12 8 H13 H13 H13	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 0:	98% .
MET N2 E144 D166 HIS HIS HIS HIS HIS	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 1:	98% .
MET M2 M2 E1 44 D1 45 H1S H1S H1S H1S H1S H1S	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 2:	98% .
MET M2 E144 D145 H155 H155 H155 H155 H155 H155 H155 H	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 3:	98% .
MET N2 E144 D145 H165 H155 H155 H155 H155 H155 H155 H15	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 4:	98% .
MET NZ E144 E144 HIS HIS HIS HIS HIS HIS	
\bullet Molecule 1: 29 kDa antigen CFP29	
Chain 5:	98% •
MET N2 E144 A197 H265 H125 H155 H155 H155 H155 H155 H155 H15	



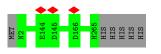
•

 \bullet Molecule 1: 29 kDa antigen CFP29

Chain 6: 98% • • Molecule 1: 29 kDa antigen CFP29

Chain 7:

98%





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	1000000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{\AA}^2)$	45	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 $(6k \ge 4k)$	Depositor
Maximum map value	0.188	Depositor
Minimum map value	-0.108	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.038	Depositor
Map size (Å)	457.91998, 457.91998, 457.91998	wwPDB
Map dimensions	432, 432, 432	wwPDB
Map angles $(^{\circ})$	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	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	l angles
	Unam	RMSZ	# Z > 5	RMSZ	# Z > 5
1	0	0.45	0/2066	0.57	0/2818
1	1	0.45	0/2066	0.57	0/2818
1	2	0.45	0/2066	0.57	0/2818
1	3	0.45	0/2066	0.57	0/2818
1	4	0.45	0/2066	0.57	0/2818
1	5	0.45	0/2066	0.57	0/2818
1	6	0.44	0/2066	0.57	0/2818
1	7	0.45	0/2066	0.57	0/2818
1	А	0.45	0/2066	0.57	0/2818
1	В	0.45	0/2066	0.57	0/2818
1	С	0.45	0/2066	0.57	0/2818
1	D	0.45	0/2066	0.57	0/2818
1	Е	0.45	0/2066	0.57	0/2818
1	F	0.45	0/2066	0.57	0/2818
1	G	0.45	0/2066	0.57	0/2818
1	Н	0.45	0/2066	0.57	0/2818
1	Ι	0.45	0/2066	0.57	0/2818
1	J	0.45	0/2066	0.57	0/2818
1	Κ	0.44	0/2066	0.57	0/2818
1	L	0.45	0/2066	0.57	0/2818
1	М	0.45	0/2066	0.57	0/2818
1	Ν	0.45	0/2066	0.57	0/2818
1	0	0.45	0/2066	0.57	0/2818
1	Р	0.45	0/2066	0.57	0/2818
1	Q	0.45	0/2066	0.57	0/2818
1	R	0.45	0/2066	0.57	0/2818
1	S	0.44	0/2066	0.57	0/2818
1	Т	0.45	0/2066	0.57	0/2818
1	U	0.45	0/2066	0.57	0/2818
1	V	0.45	0/2066	0.57	0/2818
1	W	0.45	0/2066	0.57	0/2818
1	Х	0.45	0/2066	0.57	0/2818
1	Y	0.44	0/2066	0.57	0/2818
1	Z	0.45	0/2066	0.57	0/2818



Mol	Chain	Bond	lengths	Bond	l angles
IVI01	Chain	RMSZ	# Z > 5	RMSZ	# Z > 5
1	a	0.45	0/2066	0.57	0/2818
1	b	0.45	0/2066	0.57	0/2818
1	с	0.45	0/2066	0.57	0/2818
1	d	0.45	0/2066	0.57	0/2818
1	е	0.45	0/2066	0.57	0/2818
1	f	0.45	0/2066	0.57	0/2818
1	g	0.45	0/2066	0.57	0/2818
1	h	0.45	0/2066	0.57	0/2818
1	i	0.45	0/2066	0.57	0/2818
1	j	0.45	0/2066	0.57	0/2818
1	k	0.45	0/2066	0.57	0/2818
1	1	0.45	0/2066	0.57	0/2818
1	m	0.45	0/2066	0.57	0/2818
1	n	0.44	0/2066	0.57	0/2818
1	0	0.45	0/2066	0.57	0/2818
1	р	0.45	0/2066	0.57	0/2818
1	q	0.44	0/2066	0.57	0/2818
1	r	0.45	0/2066	0.57	0/2818
1	s	0.45	0/2066	0.57	0/2818
1	t	0.45	0/2066	0.57	0/2818
1	u	0.44	0/2066	0.57	0/2818
1	V	0.45	0/2066	0.57	0/2818
1	W	0.44	0/2066	0.57	0/2818
1	Х	0.45	0/2066	0.57	0/2818
1	у	0.45	0/2066	0.57	0/2818
1	Z	0.45	0/2066	0.57	0/2818
All	All	0.45	0/123960	0.57	0/169080

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 (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.



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	Perce	ntiles
1	0	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	1	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	2	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	3	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	4	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	5	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	6	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	7	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	А	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	В	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	С	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	D	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Ε	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	F	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	G	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Н	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Ι	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	J	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	K	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	L	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	М	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Ν	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	О	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Р	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1	Q	262/270~(97%)	258 (98%)	4 (2%)	0	100	100



$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 262/270 \ (97\%) \\ \hline 262/270 \ (97\%) \\ \hline$	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$\begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \end{array}$	0 0 0 0 0 0 0 0 0 0	 100 	1000 1000 1000 1000 1000 1000 1000 1000 1000
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$ \begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ \end{array} $	0 0 0 0 0 0 0	 100 100 100 100 100 100 100 100 100 	100 100 100 100 100
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$ \begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ \end{array} $	0 0 0 0 0 0	100 100 100 100 100	100 100 100 100
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$ \begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \end{array} $	0 0 0 0 0	100 100 100 100	100 100 100
1 W 1 X 1 Y 1 Z 1 a 1 b 1 b 1 c 1 d 1 c 1 d 1 g 1 f 1 h 1 i 1 j	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$ \begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ \end{array} $	0 0 0 0	100 100 100	100 100
1 X 1 Y 1 Z 1 a 1 b 1 b 1 c 1 d 1 e 1 f 1 f 1 g 1 h 1 j	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%) 258 (98%)	$ \begin{array}{c} 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \\ 4 (2\%) \end{array} $	0 0 0	100 100	100
1 Y 1 Z 1 a 1 b 1 b 1 c 1 d 1 d 1 f 1 f 1 g 1 h 1 i 1 j	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%) 258 (98%) 258 (98%)	4 (2%) 4 (2%)	0	100	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%) 258 (98%)	4 (2%)	0		100
$\begin{array}{c cccccc} 1 & a & \\ \hline 1 & b & \\ \hline 1 & c & \\ \hline 1 & c & \\ \hline 1 & d & \\ \hline 1 & e & \\ \hline 1 & e & \\ \hline 1 & f & \\ \hline 1 & g & \\ \hline 1 & h & \\ \hline 1 & i & \\ \hline 1 & j & \\ \end{array}$	262/270 (97%) 262/270 (97%) 262/270 (97%) 262/270 (97%)	258 (98%)	. ,		100	
1 b 1 c 1 d 1 d 1 e 1 f 1 g 1 h 1 i 1 j	262/270 (97%) 262/270 (97%) 262/270 (97%)	. ,	4 (2%)	0	100	100
1 c 1 d 1 e 1 f 1 f 1 g 1 h 1 i 1 j	262/270 (97%)	258 (98%)		0	100	100
1 d 1 e 1 f 1 f 1 g 1 h 1 i 1 j	, , ,		4 (2%)	0	100	100
1 e 1 f 1 g 1 h 1 i 1 j	262/270 (07%)	258 (98%)	4 (2%)	0	100	100
1 f 1 g 1 h 1 i 1 j	202/210(31/0)	258 (98%)	4 (2%)	0	100	100
1 g 1 h 1 i 1 j	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 h 1 i 1 j	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 i 1 j	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 j	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 k	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 l	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 m	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 n	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 o	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 p	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 q	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 r	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 s	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 t	262/270~(97%)	258 (98%)	4 (2%)	0	100	100
1 u		258 (98%)	4 (2%)	0	100	100
1 v	262/270 (97%)	258 (98%)	4 (2%)	0	100	100



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	W	262/270~(97%)	258~(98%)	4 (2%)	0	100 100
1	х	262/270~(97%)	258~(98%)	4 (2%)	0	100 100
1	У	262/270~(97%)	258~(98%)	4 (2%)	0	100 100
1	Z	262/270~(97%)	258~(98%)	4 (2%)	0	100 100
All	All	15720/16200~(97%)	15480 (98%)	240 (2%)	0	100 100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent side chain 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	0	217/223~(97%)	217~(100%)	0	100 100
1	1	217/223~(97%)	217~(100%)	0	100 100
1	2	217/223~(97%)	217~(100%)	0	100 100
1	3	217/223~(97%)	217~(100%)	0	100 100
1	4	217/223~(97%)	217 (100%)	0	100 100
1	5	217/223~(97%)	217~(100%)	0	100 100
1	6	217/223~(97%)	217 (100%)	0	100 100
1	7	217/223~(97%)	217~(100%)	0	100 100
1	А	217/223~(97%)	217~(100%)	0	100 100
1	В	217/223~(97%)	217~(100%)	0	100 100
1	С	217/223~(97%)	217 (100%)	0	100 100
1	D	217/223~(97%)	217~(100%)	0	100 100
1	Ε	217/223~(97%)	217 (100%)	0	100 100
1	F	217/223~(97%)	217 (100%)	0	100 100
1	G	217/223~(97%)	217 (100%)	0	100 100
1	Н	217/223~(97%)	217 (100%)	0	100 100
1	Ι	217/223~(97%)	217 (100%)	0	100 100



Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Perce	ntiles
1	J	217/223~(97%)	217 (100%)	0	100	100
1	Κ	217/223~(97%)	217 (100%)	0	100	100
1	L	217/223~(97%)	217 (100%)	0	100	100
1	М	217/223~(97%)	217 (100%)	0	100	100
1	Ν	217/223~(97%)	217 (100%)	0	100	100
1	Ο	217/223~(97%)	217 (100%)	0	100	100
1	Р	217/223~(97%)	217 (100%)	0	100	100
1	Q	217/223~(97%)	217 (100%)	0	100	100
1	R	217/223~(97%)	217 (100%)	0	100	100
1	S	217/223~(97%)	217 (100%)	0	100	100
1	Т	217/223~(97%)	217 (100%)	0	100	100
1	U	217/223~(97%)	217 (100%)	0	100	100
1	V	217/223~(97%)	217 (100%)	0	100	100
1	W	217/223~(97%)	217 (100%)	0	100	100
1	Х	217/223~(97%)	217 (100%)	0	100	100
1	Y	217/223~(97%)	217 (100%)	0	100	100
1	Ζ	217/223~(97%)	217 (100%)	0	100	100
1	a	217/223~(97%)	217 (100%)	0	100	100
1	b	217/223~(97%)	217 (100%)	0	100	100
1	с	217/223~(97%)	217 (100%)	0	100	100
1	d	217/223~(97%)	217 (100%)	0	100	100
1	е	217/223~(97%)	217 (100%)	0	100	100
1	f	217/223~(97%)	217 (100%)	0	100	100
1	g	217/223~(97%)	217 (100%)	0	100	100
1	h	217/223~(97%)	217 (100%)	0	100	100
1	i	217/223~(97%)	217 (100%)	0	100	100
1	j	217/223~(97%)	217 (100%)	0	100	100
1	k	217/223~(97%)	217 (100%)	0	100	100
1	1	217/223~(97%)	217 (100%)	0	100	100
1	m	217/223~(97%)	217 (100%)	0	100	100
1	n	217/223~(97%)	217 (100%)	0	100	100



Mol	Chain	Analysed	Rotameric	Outliers	Perce	ntiles
1	0	217/223~(97%)	217~(100%)	0	100	100
1	р	217/223~(97%)	217~(100%)	0	100	100
1	q	217/223~(97%)	217~(100%)	0	100	100
1	r	217/223~(97%)	217~(100%)	0	100	100
1	\mathbf{S}	217/223~(97%)	217~(100%)	0	100	100
1	\mathbf{t}	217/223~(97%)	217~(100%)	0	100	100
1	u	217/223~(97%)	217~(100%)	0	100	100
1	v	217/223~(97%)	217~(100%)	0	100	100
1	W	217/223~(97%)	217~(100%)	0	100	100
1	х	217/223~(97%)	217~(100%)	0	100	100
1	у	217/223~(97%)	217 (100%)	0	100	100
1	Z	217/223~(97%)	217 (100%)	0	100	100
All	All	13020/13380~(97%)	13020 (100%)	0	100	100

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

Sometimes side chains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 60 such side chains are listed below:

Mol	Chain	Res	Type
1	с	137	ASN
1	3	137	ASN
1	j	137	ASN
1	2	137	ASN
1	7	137	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.



5.6 Ligand geometry (i)

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.



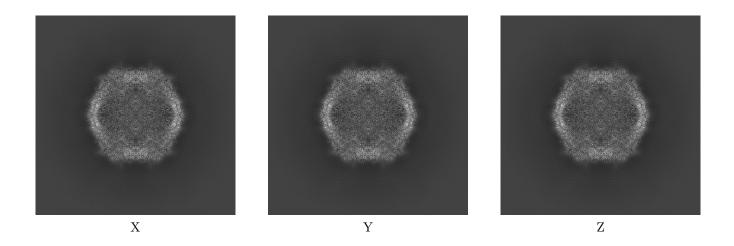
Map visualisation (i) 6

This section contains visualisations of the EMDB entry EMD-13420. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

Orthogonal projections (i) 6.1

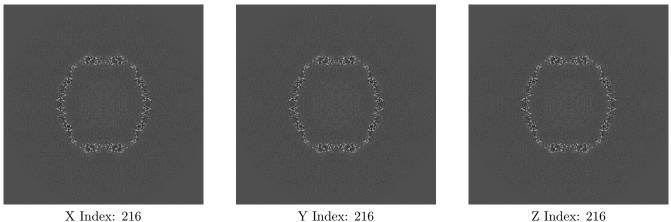
6.1.1Primary map



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

6.2Central slices (i)

6.2.1Primary map



X Index: 216



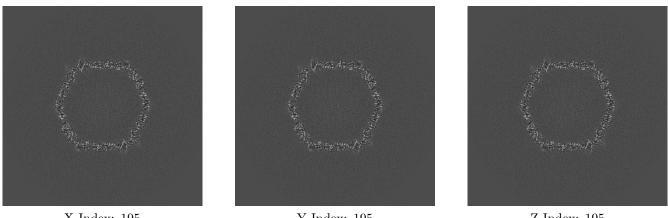


Z Index: 216

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

Largest variance slices (i) 6.3

6.3.1Primary map



X Index: 195

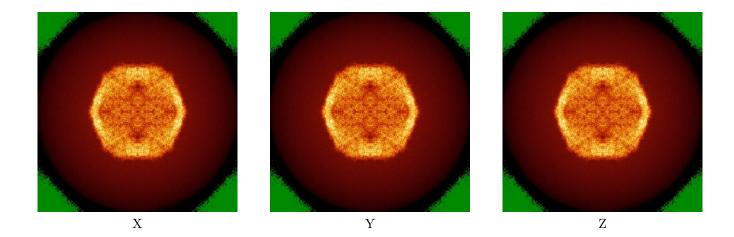
Y Index: 195

Z Index: 195

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

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

6.4.1**Primary** map



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



6.5 Orthogonal surface views (i)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.038. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation (i)

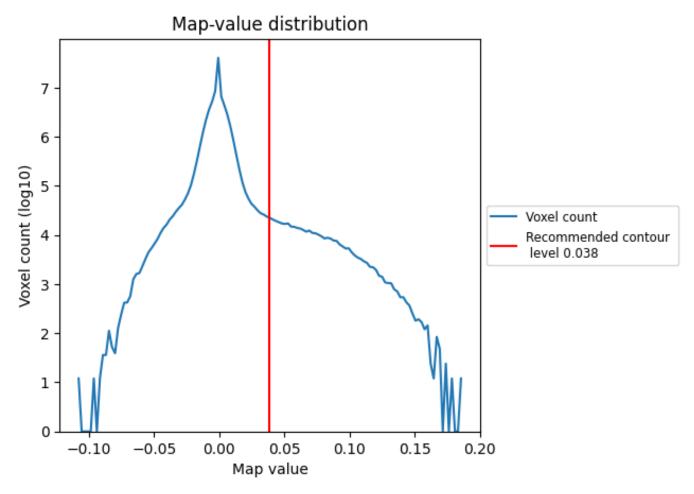
This section was not generated. No masks/segmentation were deposited.



7 Map analysis (i)

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

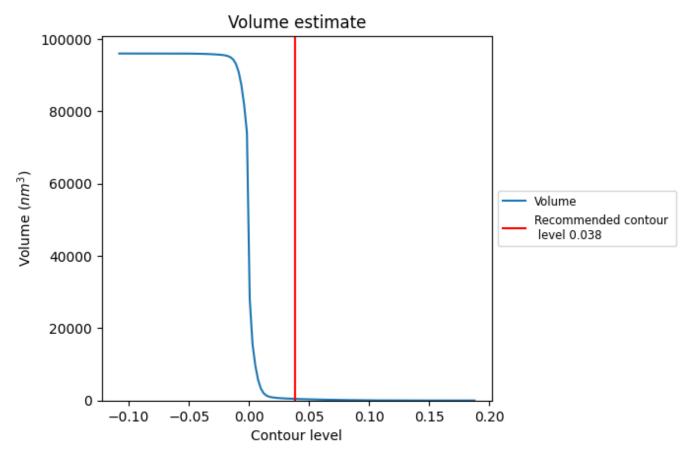
7.1 Map-value distribution (i)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.



7.2 Volume estimate (i)

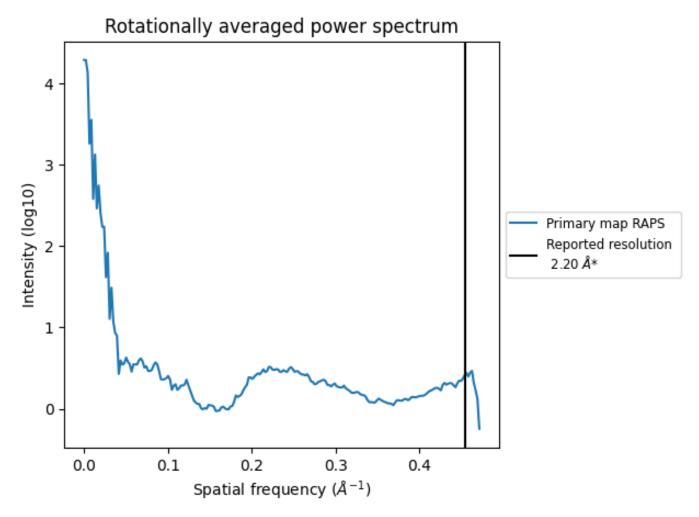


The volume at the recommended contour level is 447 $\rm nm^3;$ this corresponds to an approximate mass of 404 kDa.

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)



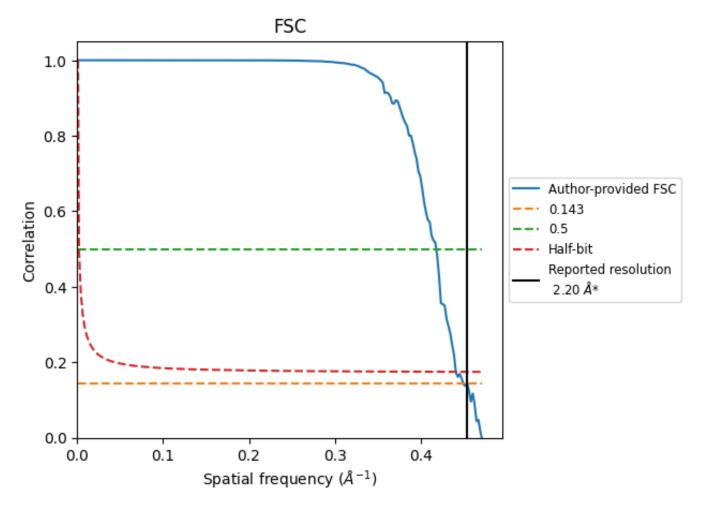
*Reported resolution corresponds to spatial frequency of 0.455 $\mathrm{\AA^{-1}}$



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 0.455 \AA^{-1}



8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
Resolution estimate (A)	0.143	0.5	Half-bit
Reported by author	2.20	-	-
Author-provided FSC curve	2.22	2.39	2.27
Unmasked-calculated*	-	-	-

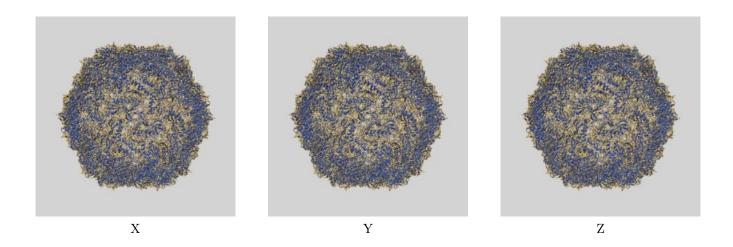
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.



9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-13420 and PDB model 7PHM. Per-residue inclusion information can be found in section 3 on page 17.

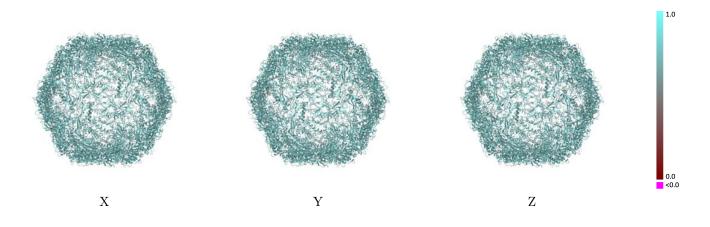
9.1 Map-model overlay (i)



The images above show the 3D surface view of the map at the recommended contour level 0.038 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.

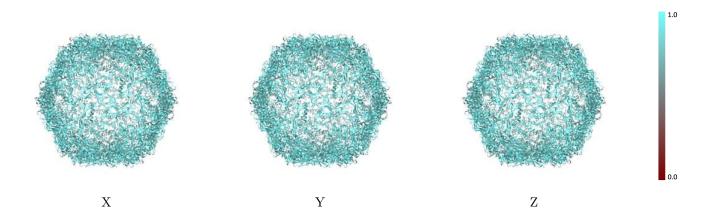


9.2 Q-score mapped to coordinate model (i)



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

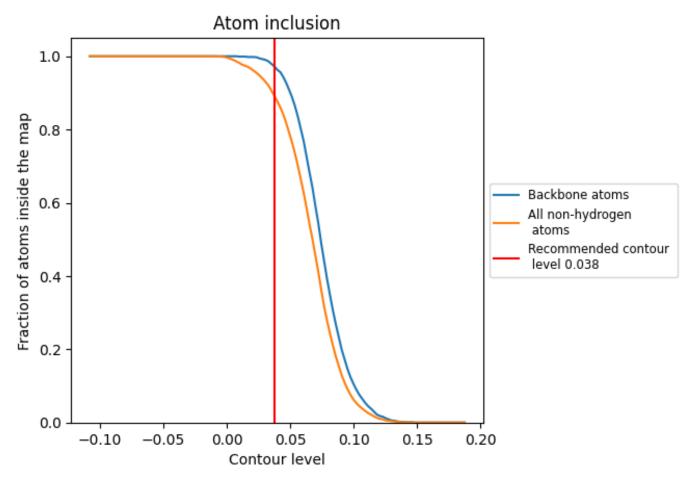
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.038).



9.4 Atom inclusion (i)



At the recommended contour level, 97% of all backbone atoms, 89% of all non-hydrogen atoms, are inside the map.



1.0

0.0 <0.0

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.038) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8900	0.7220
0	0.8880	0.7210
1	0.8920	0.7240
2	0.8870	0.7230
3	0.8860	0.7220
4	0.8890	0.7190
5	0.8910	0.7250
6	0.8910	0.7220
7	0.8900	0.7230
А	0.8910	0.7230
В	0.8870	0.7240
С	0.8890	0.7210
D	0.8910	0.7220
Е	0.8910	0.7240
F	0.8910	0.7230
G	0.8880	0.7210
Н	0.8900	0.7250
Ι	0.8870	0.7220
J	0.8910	0.7230
Κ	0.8870	0.7220
L	0.8910	0.7240
М	0.8910	0.7240
Ν	0.8880	0.7210
О	0.8900	0.7220
Р	0.8910	0.7230
Q	0.8870	0.7240
R	0.8890	0.7190
S	0.8910	0.7230
Т	0.8870	0.7190
U	0.8920	0.7220
V	0.8900	0.7230
W	0.8880	0.7240
Х	0.8900	0.7230
Y	0.8870	0.7230
Z	0.8900	0.7230

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Chain	Atom inclusion	Q-score
a	0.8900	0.7210
b	0.8900	0.7220
с	0.8910	0.7200
d	0.8920	0.7240
e	0.8910	0.7240
f	0.8900	0.7210
g	0.8910	0.7210
h	0.8930	0.7230
i	0.8880	0.7240
j	0.8910	0.7210
k	0.8870	0.7220
1	0.8920	0.7250
m	0.8910	0.7250
n	0.8880	0.7210
0	0.8910	0.7240
р	0.8910	0.7230
q	0.8870	0.7230
r	0.8880	0.7200
s	0.8910	0.7200
t	0.8880	0.7190
u	0.8910	0.7230
V	0.8910	0.7220
W	0.8870	0.7220
X	0.8900	0.7240
у	0.8900	0.7230
Z	0.8910	0.7220

