



## Full wwPDB EM Validation Report ⓘ

Nov 3, 2022 – 09:53 AM EDT

PDB ID : 5URF  
EMDB ID : EMD-8598  
Title : The structure of human bocavirus 1  
Authors : Mietzsch, M.; Kailasan, S.; Garrison, J.; Ilyas, M.; Chipman, P.; Kandola, K.; Jansen, M.; Spear, J.; Sousa, D.; McKenna, R.; Soderlund-Venermo, M.; Baker, T.; Agbandje-McKenna, M.  
Deposited on : 2017-02-10  
Resolution : 2.90 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

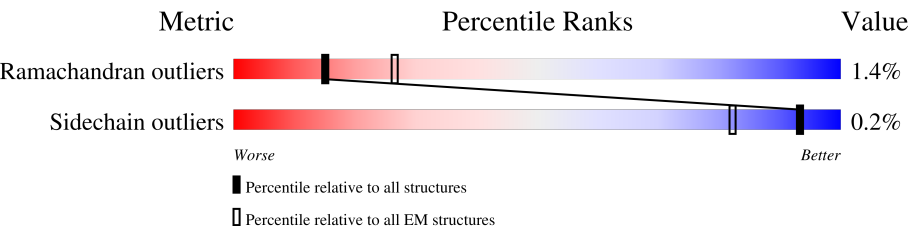
EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

# 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 2.90 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.



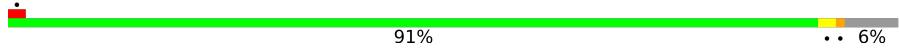
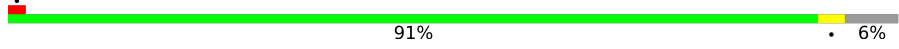
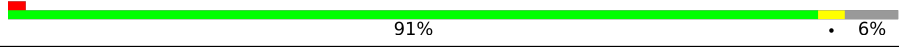
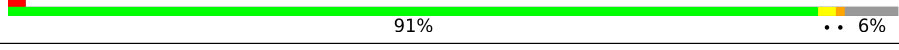
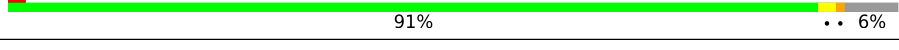
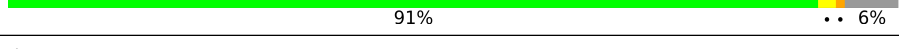
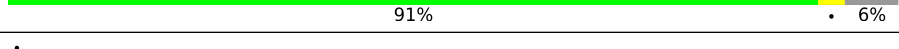
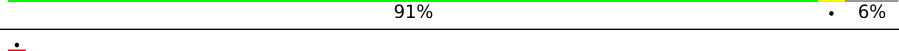
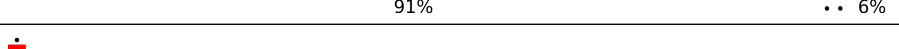
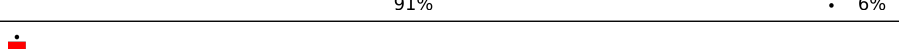
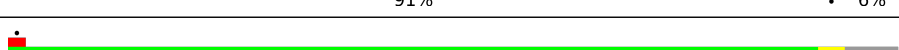
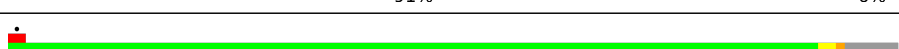
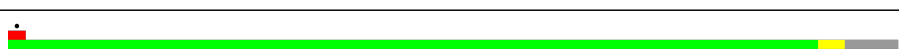
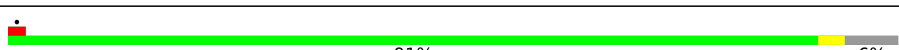
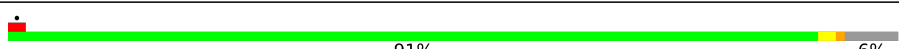

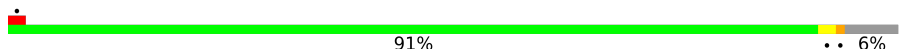
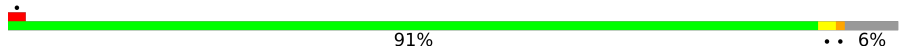
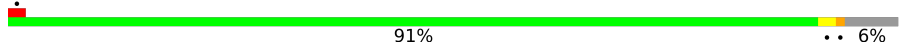

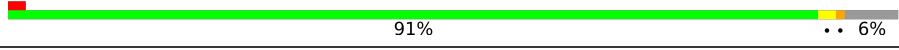
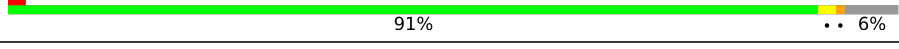
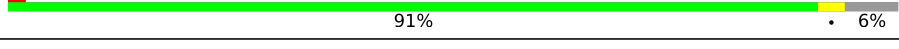


Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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  $\geq 3$ , 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.

Mol	Chain	Length	Quality of chain
1	1	542	<div><div></div><div>91%</div><div>6%</div></div>
1	2	542	<div><div></div><div>91%</div><div>6%</div></div>
1	3	542	<div><div></div><div>91%</div><div>6%</div></div>
1	4	542	<div><div></div><div>91%</div><div>6%</div></div>
1	5	542	<div><div></div><div>91%</div><div>6%</div></div>
1	6	542	<div><div></div><div>91%</div><div>6%</div></div>
1	7	542	<div><div></div><div>91%</div><div>6%</div></div>
1	8	542	<div><div></div><div>91%</div><div>6%</div></div>
1	A	542	<div><div></div><div>91%</div><div>6%</div></div>

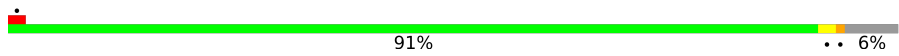
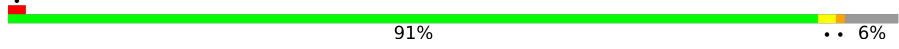
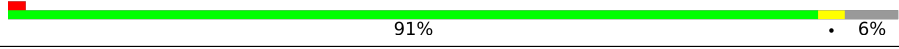
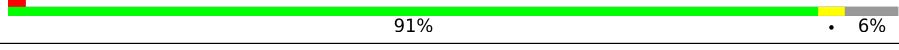
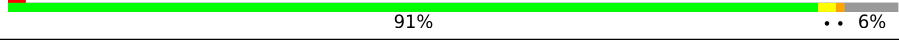
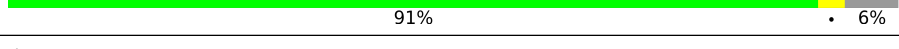
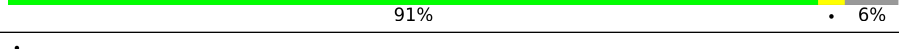
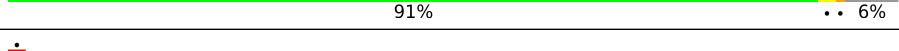
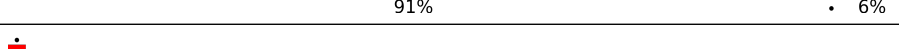
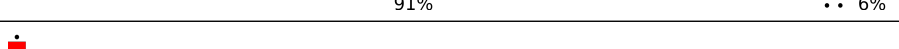
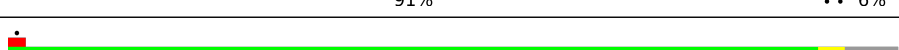
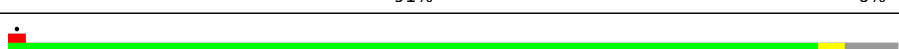
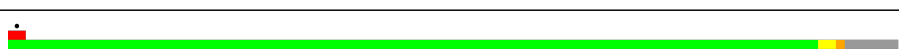
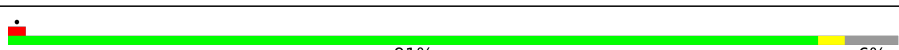
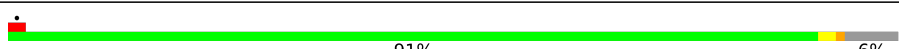

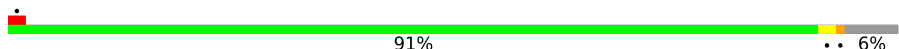
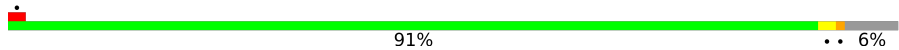
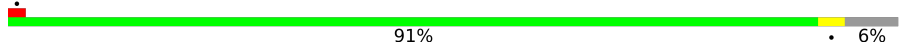

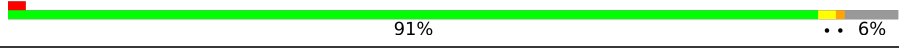
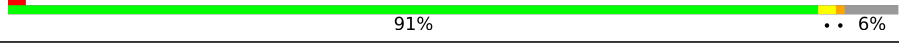
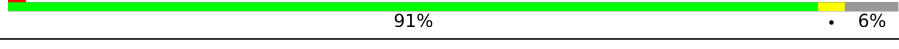


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Mol	Chain	Length	Quality of chain
1	B	542	
1	C	542	
1	D	542	
1	E	542	
1	F	542	
1	G	542	
1	H	542	
1	I	542	
1	J	542	
1	K	542	
1	L	542	
1	M	542	
1	N	542	
1	O	542	
1	P	542	
1	Q	542	
1	R	542	
1	S	542	
1	T	542	
1	U	542	
1	V	542	
1	W	542	
1	X	542	
1	Y	542	
1	Z	542	

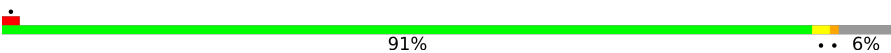
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Mol	Chain	Length	Quality of chain
1	a	542	
1	b	542	
1	c	542	
1	d	542	
1	e	542	
1	f	542	
1	g	542	
1	h	542	
1	i	542	
1	j	542	
1	k	542	
1	l	542	
1	m	542	
1	n	542	
1	o	542	
1	p	542	
1	q	542	
1	r	542	
1	s	542	
1	t	542	
1	u	542	
1	v	542	
1	w	542	
1	x	542	
1	y	542	

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Mol	Chain	Length	Quality of chain
1	z	542	 91% .. 6%

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 243720 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 viral protein 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	B	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	C	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	D	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	E	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	F	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	G	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	H	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	I	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	J	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	K	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	L	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	M	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	N	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	O	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	P	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	Q	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	R	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	S	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	T	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	U	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	V	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	W	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	X	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	Y	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	Z	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	1	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	2	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	3	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	4	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	5	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	6	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	a	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	b	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	c	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	d	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	e	510	Total 4062	C 2575	N 695	O 769	S 23	2	0
1	f	510	Total 4062	C 2575	N 695	O 769	S 23	2	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	g	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	h	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	i	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	j	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	k	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	l	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	m	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	n	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	o	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	p	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	q	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	r	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	s	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	t	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	u	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	v	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	w	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	x	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	y	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	z	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		
1	7	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		

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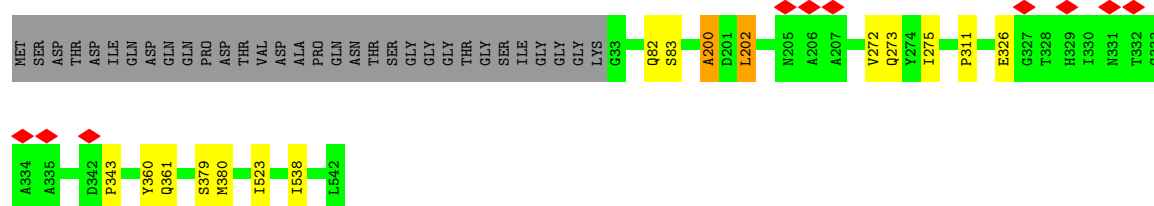
Mol	Chain	Residues	Atoms					AltConf	Trace
1	8	510	Total	C	N	O	S	2	0
			4062	2575	695	769	23		

### 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.

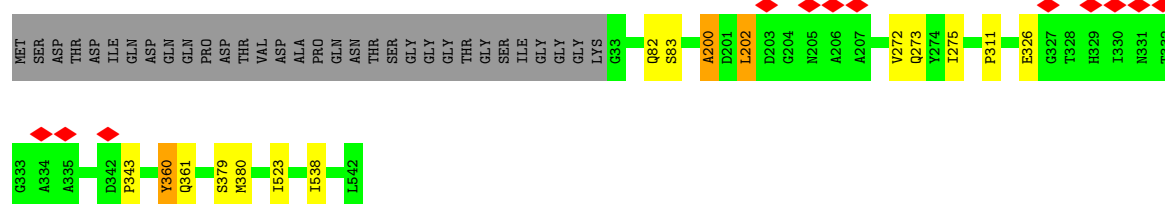
- Molecule 1: viral protein 3

Chain A: 



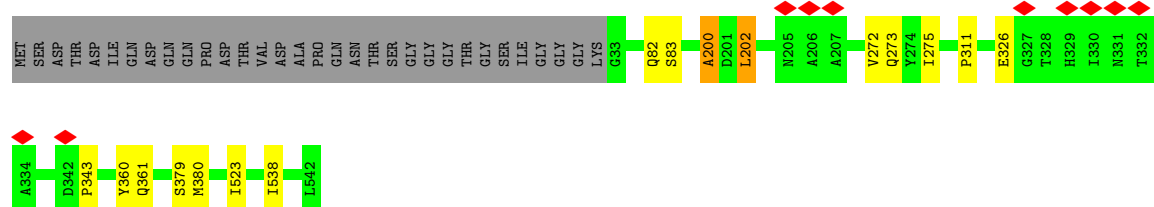
- Molecule 1: viral protein 3

Chain B: 




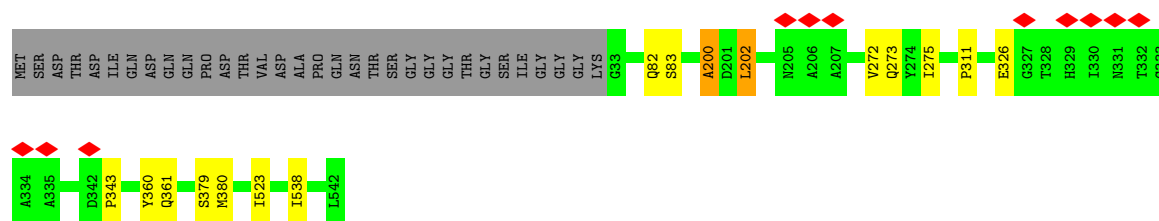
- Molecule 1: viral protein 3

Chain C: 



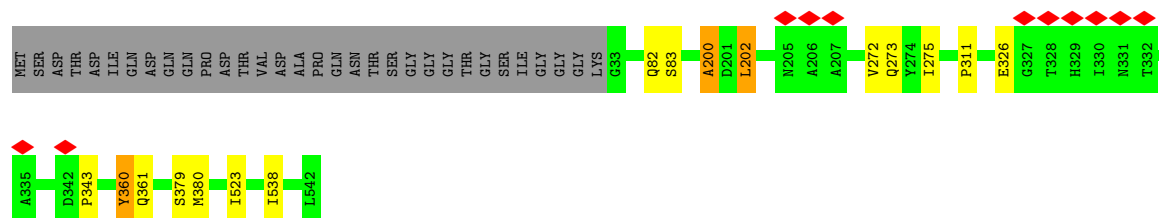
- Molecule 1: viral protein 3

Chain D: 



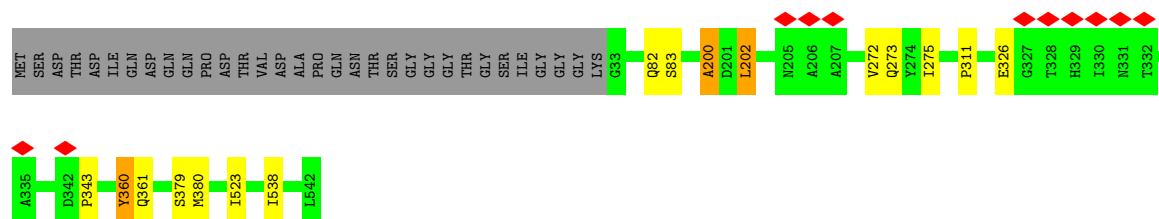
- Molecule 1: viral protein 3

Chain E: 91% .. 6%



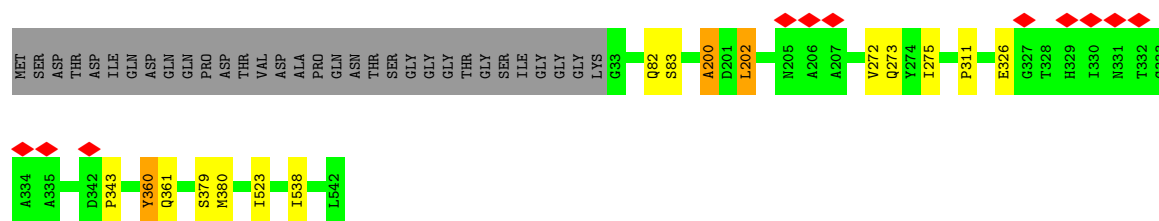
- Molecule 1: viral protein 3

Chain F: 91% .. 6%



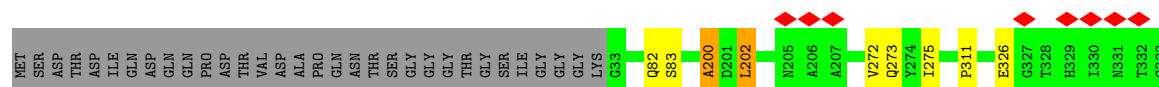
- Molecule 1: viral protein 3

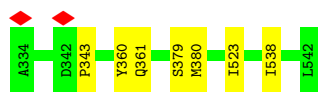
Chain G: 91% .. 6%



- Molecule 1: viral protein 3

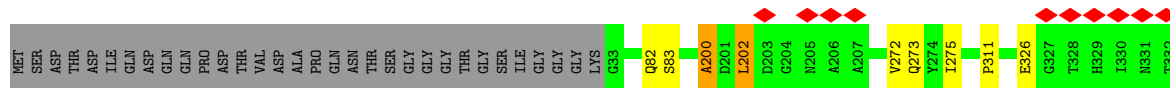
Chain H: 91% .. 6%





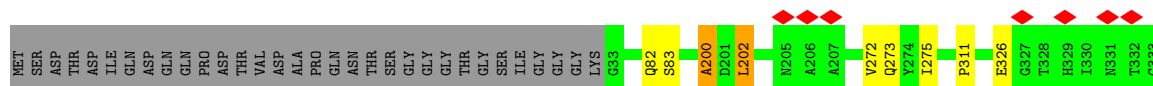
- Molecule 1: viral protein 3

Chain I: 91% 6%



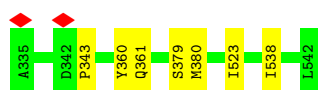
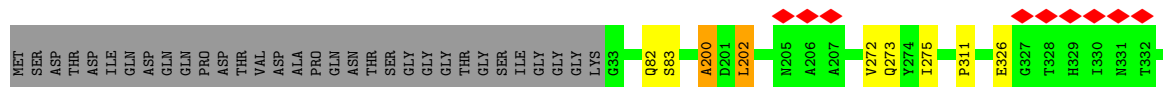
- Molecule 1: viral protein 3

Chain J: 91% 6%



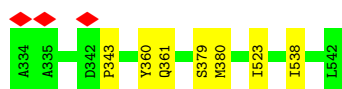
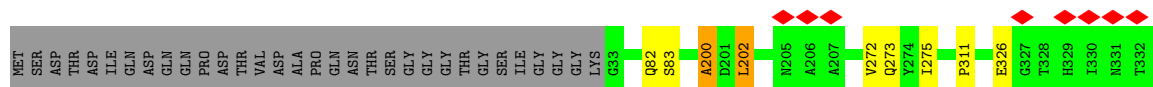
- Molecule 1: viral protein 3

Chain K: 91% 6%

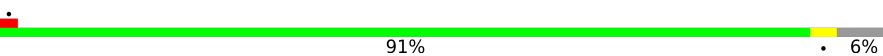


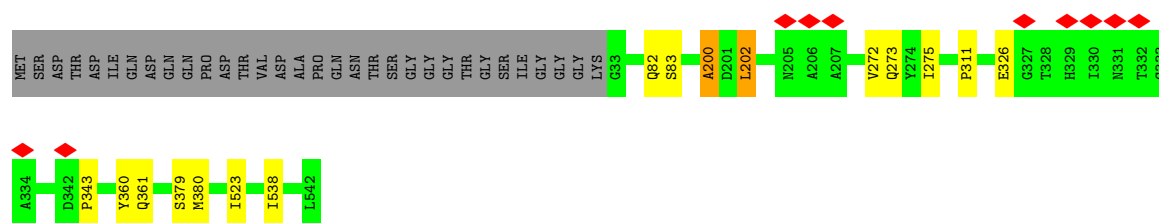
- Molecule 1: viral protein 3

Chain L: 91% 6%




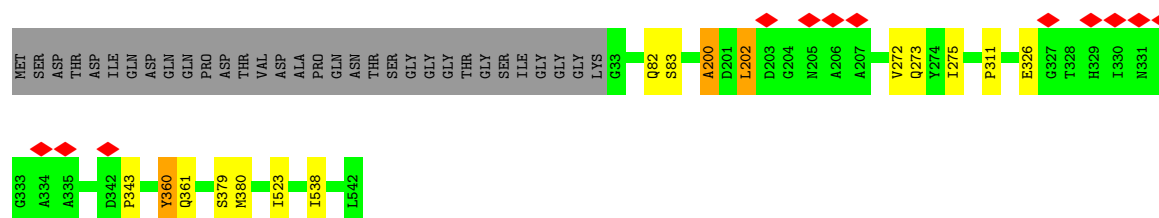
- Molecule 1: viral protein 3

Chain M:  91% 6%




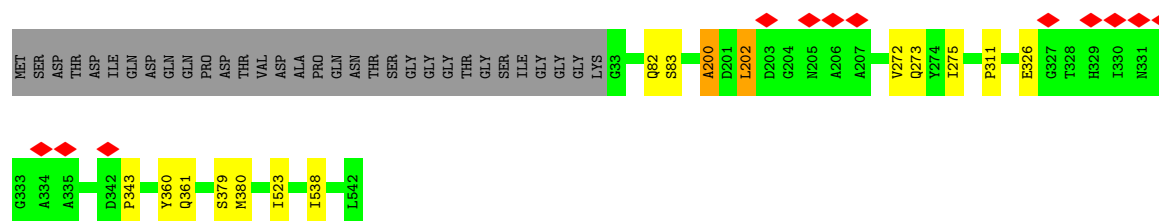
- Molecule 1: viral protein 3

Chain N:  91% 6%




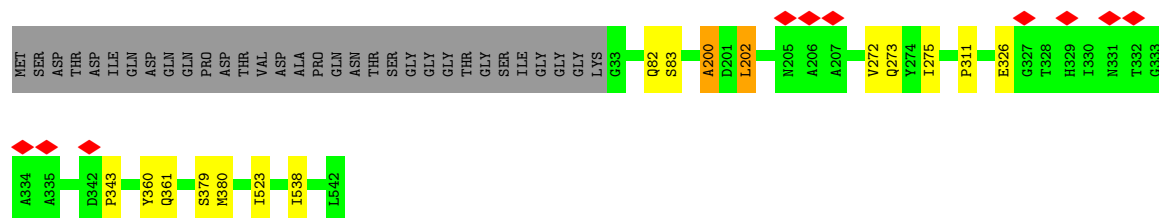
- Molecule 1: viral protein 3

Chain O:  91% 6%

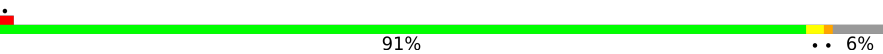


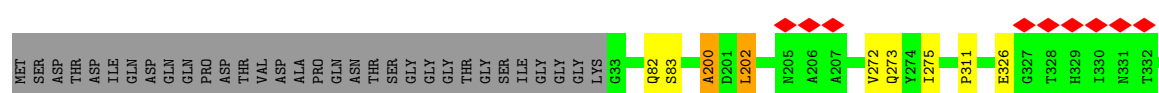
- Molecule 1: viral protein 3

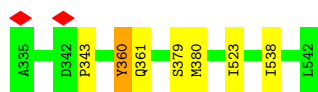
Chain P:  91% 6%



- Molecule 1: viral protein 3

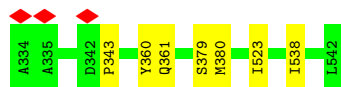
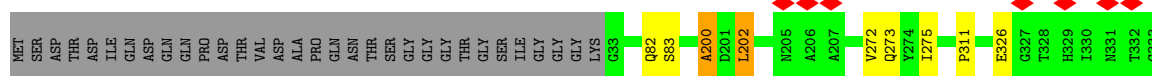
Chain Q:  91% 6%





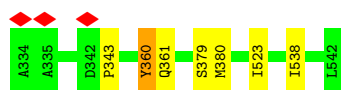
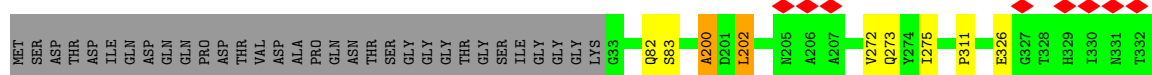
- Molecule 1: viral protein 3

Chain R: 91% 6%



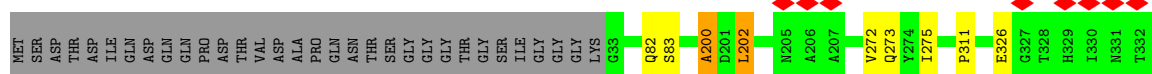
- Molecule 1: viral protein 3

Chain S: 91% 6%



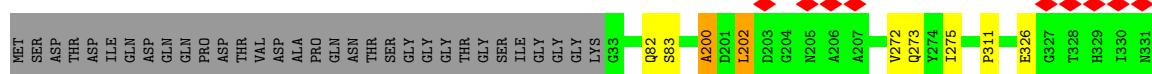
- Molecule 1: viral protein 3

Chain T: 91% 6%



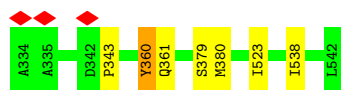
- Molecule 1: viral protein 3

Chain U: 91% 6%



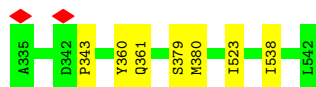
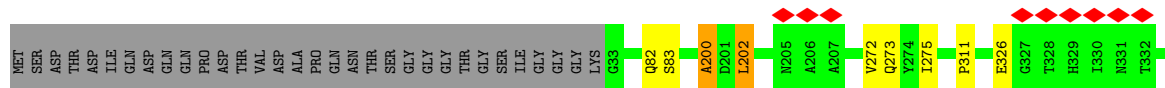
- Molecule 1: viral protein 3





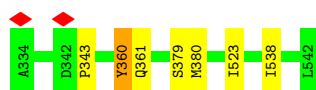
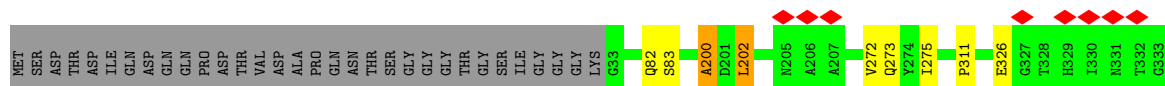
- Molecule 1: viral protein 3

Chain 1: 91% 6%



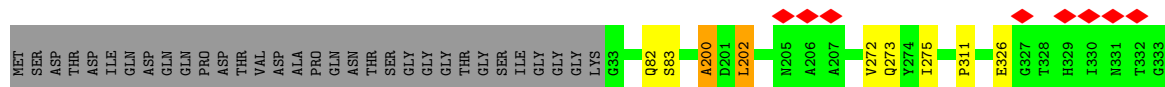
- Molecule 1: viral protein 3

Chain 2: 91% 6%



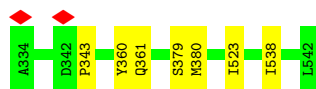
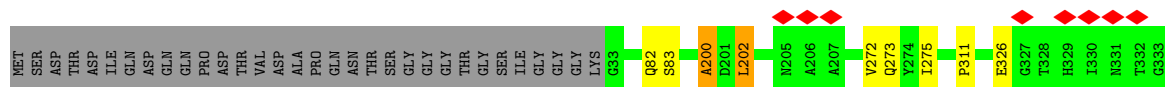
- Molecule 1: viral protein 3

Chain 3: 91% 6%




- Molecule 1: viral protein 3

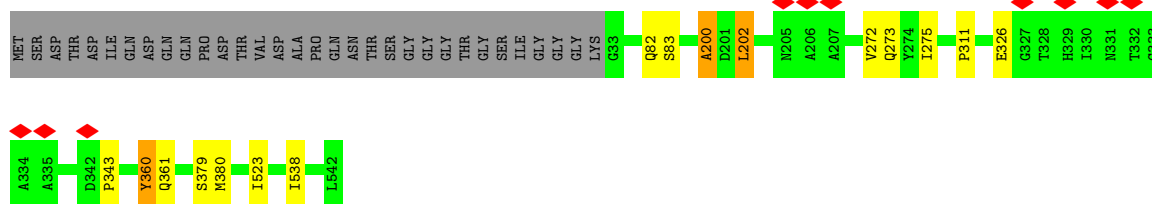
Chain 4: 91% 6%




- Molecule 1: viral protein 3

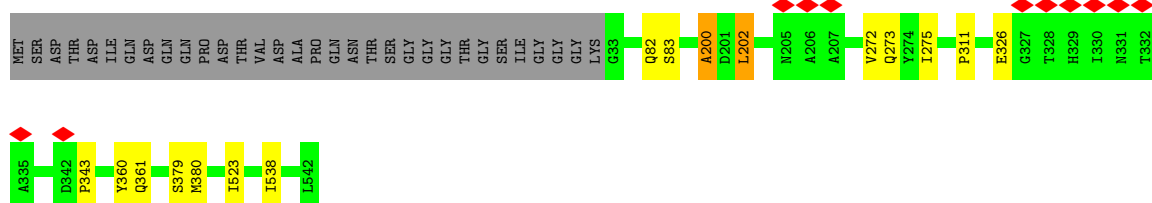


Chain 5:  91% .. 6%

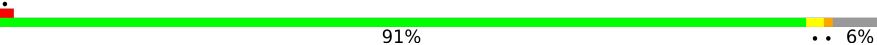


- Molecule 1: viral protein 3

Chain 6:  91% • 6%



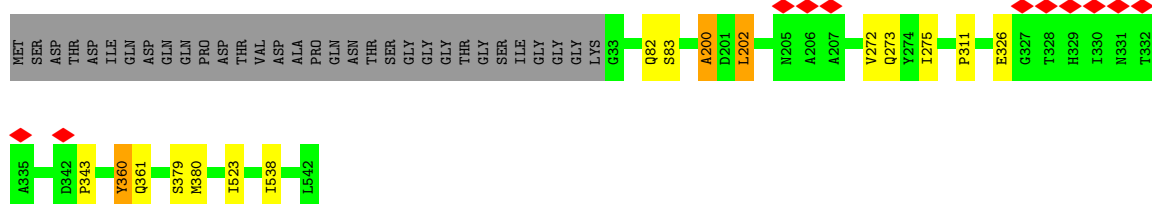
- Molecule 1: viral protein 3

Chain a:  91% .. 6%



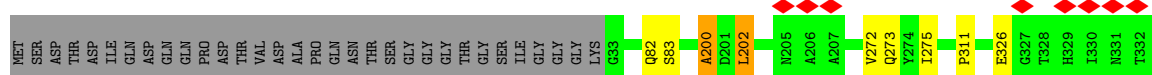
- Molecule 1: viral protein 3

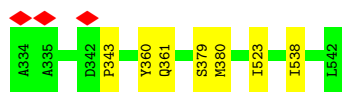
Chain b:  91% .. 6%



- Molecule 1: viral protein 3

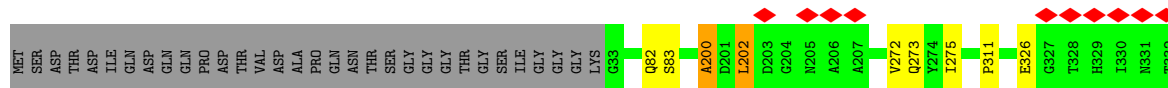
Chain c:  91% • 6%





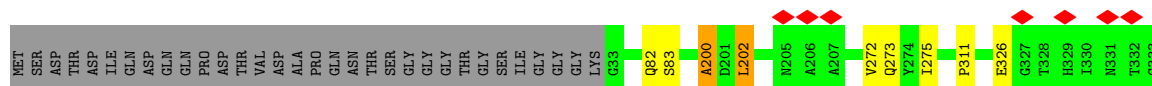
- Molecule 1: viral protein 3

Chain d: 91% 6%



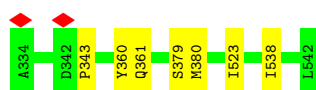
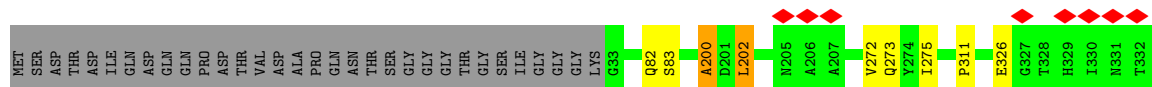
- Molecule 1: viral protein 3

Chain e: 91% 6%



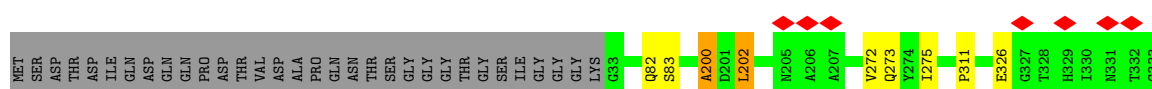
- Molecule 1: viral protein 3

Chain f: 91% 6%

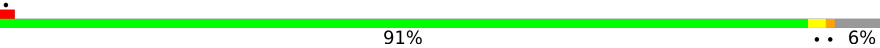


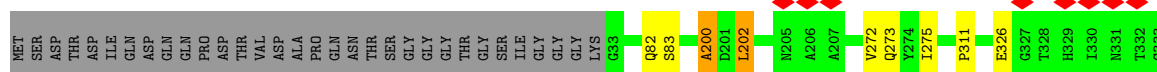
- Molecule 1: viral protein 3

Chain g: 91% 6%




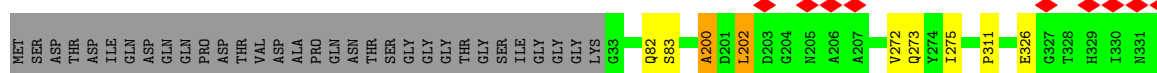
- Molecule 1: viral protein 3

Chain h:  91% .. 6%




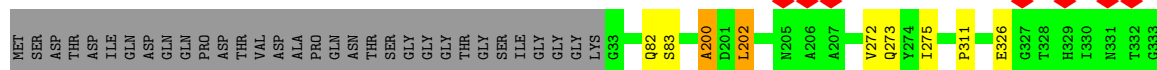
- Molecule 1: viral protein 3

Chain i:  91% • 6%




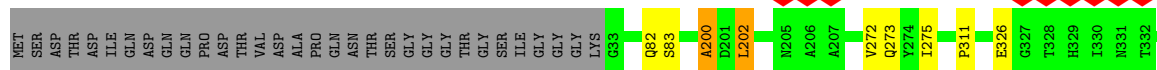
- Molecule 1: viral protein 3

Chain j:  91% .. 6%




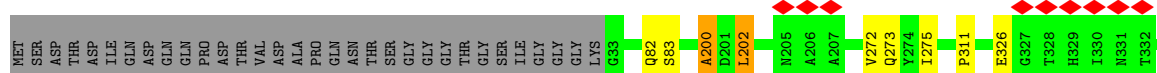
- Molecule 1: viral protein 3

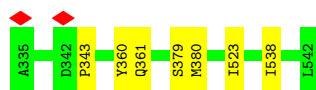
Chain k:  91% .. 6%



- Molecule 1: viral protein 3

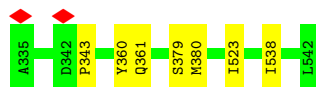
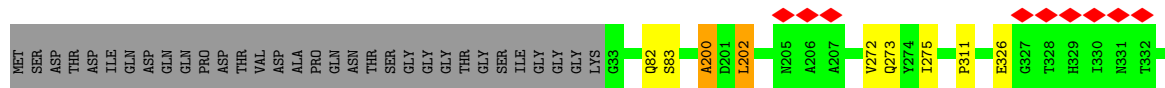
Chain l:  91% • 6%





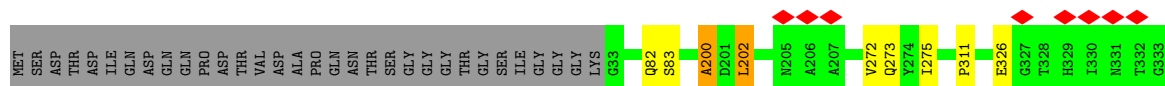
- Molecule 1: viral protein 3

Chain m: 91% 6%



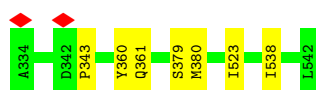
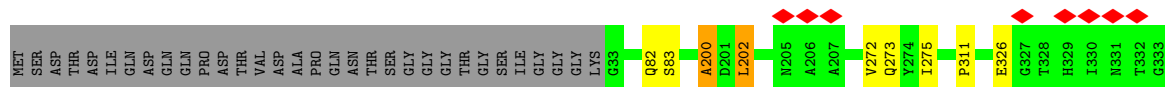
- Molecule 1: viral protein 3

Chain n: 91% 6%



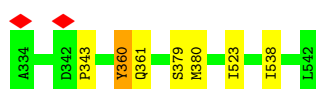
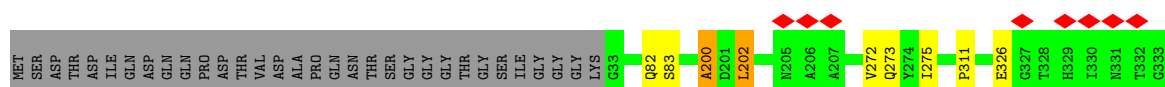
- Molecule 1: viral protein 3

Chain o: 91% 6%

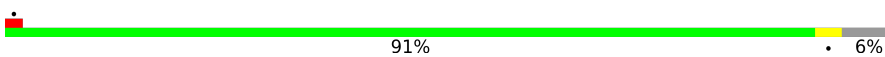


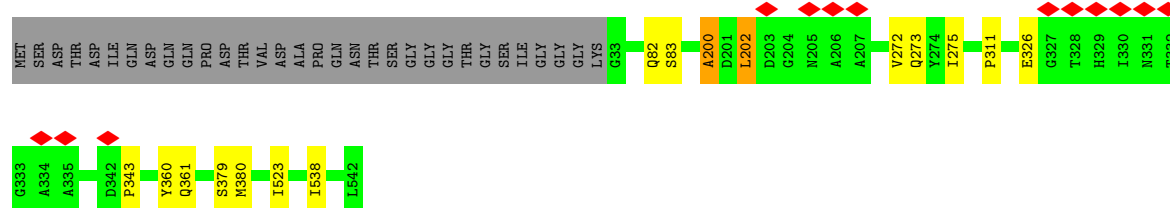
- Molecule 1: viral protein 3

Chain p: 91% 6%




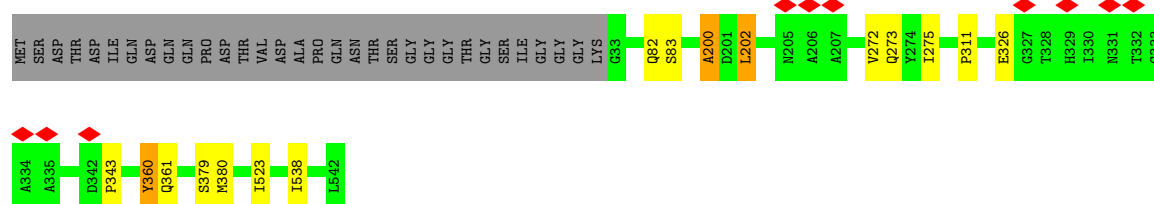
- Molecule 1: viral protein 3

Chain q:  91% 6%



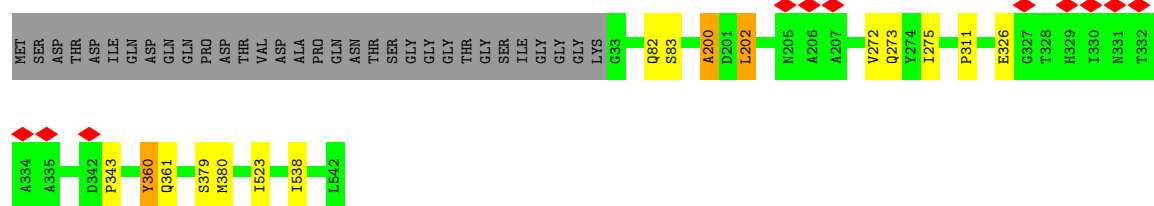
- Molecule 1: viral protein 3

Chain r:  91% 6%



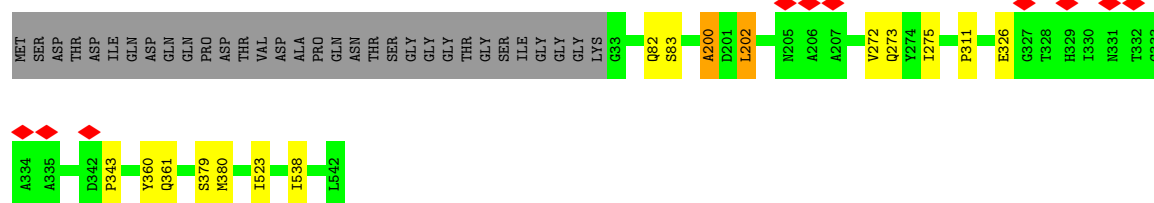
- Molecule 1: viral protein 3

Chain s:  91% 6%

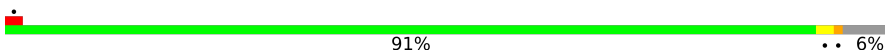


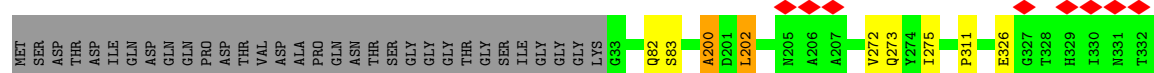
- Molecule 1: viral protein 3

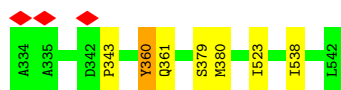
Chain t:  91% 6%



- Molecule 1: viral protein 3

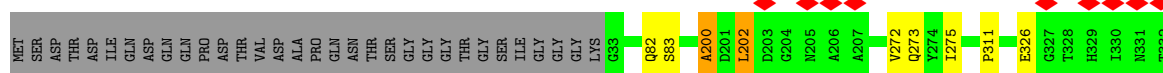
Chain u:  91% 6%





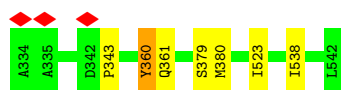
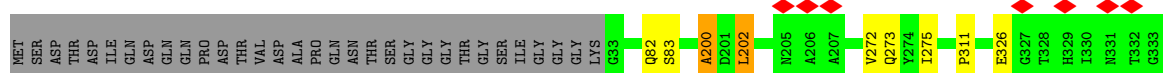
- Molecule 1: viral protein 3

Chain v: 91% .. 6%



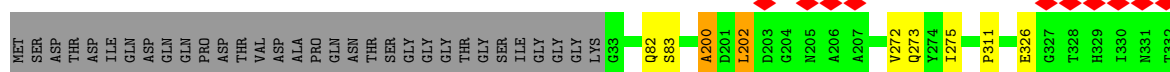
- Molecule 1: viral protein 3

Chain w: 91% .. 6%



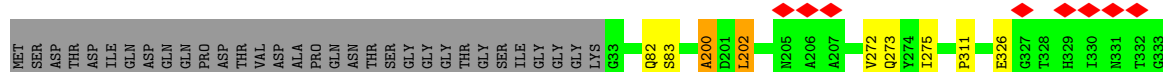
- Molecule 1: viral protein 3

Chain x: 91% . 6%



- Molecule 1: viral protein 3

Chain y: 91% .. 6%



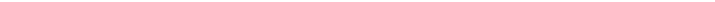
- Molecule 1: viral protein 3

Protein

Gene

Legend: Red (Cytoplasm), Green (Nucleus), Blue (Mitochondria), Grey (Unknown)

- Chain 7:  91% .. 6%

- Chain 8:  91% .. 6%

[illegible]

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	31064	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 ( $e^-/\text{\AA}^2$ )	63	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	DIRECT ELECTRON DE-20 (5k x 3k)	Depositor
Maximum map value	17.985	Depositor
Minimum map value	-8.903	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	1.0	Depositor
Map size (Å)	379.05, 379.05, 379.05	wwPDB
Map dimensions	399, 399, 399	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	Depositor



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	1	0.56	0/4192	0.76	3/5717 (0.1%)
1	2	0.56	0/4192	0.76	4/5717 (0.1%)
1	3	0.56	0/4192	0.76	4/5717 (0.1%)
1	4	0.56	0/4192	0.76	3/5717 (0.1%)
1	5	0.56	0/4192	0.76	4/5717 (0.1%)
1	6	0.56	0/4192	0.76	3/5717 (0.1%)
1	7	0.56	0/4192	0.76	4/5717 (0.1%)
1	8	0.56	0/4192	0.76	4/5717 (0.1%)
1	A	0.56	0/4192	0.76	3/5717 (0.1%)
1	B	0.56	0/4192	0.76	4/5717 (0.1%)
1	C	0.56	0/4192	0.76	3/5717 (0.1%)
1	D	0.56	0/4192	0.76	3/5717 (0.1%)
1	E	0.56	0/4192	0.76	4/5717 (0.1%)
1	F	0.56	0/4192	0.76	4/5717 (0.1%)
1	G	0.56	0/4192	0.76	4/5717 (0.1%)
1	H	0.56	0/4192	0.76	3/5717 (0.1%)
1	I	0.56	0/4192	0.76	3/5717 (0.1%)
1	J	0.56	0/4192	0.76	4/5717 (0.1%)
1	K	0.56	0/4192	0.76	3/5717 (0.1%)
1	L	0.56	0/4192	0.76	3/5717 (0.1%)
1	M	0.56	0/4192	0.76	3/5717 (0.1%)
1	N	0.56	0/4192	0.76	4/5717 (0.1%)
1	O	0.56	0/4192	0.76	3/5717 (0.1%)
1	P	0.56	0/4192	0.76	3/5717 (0.1%)
1	Q	0.56	0/4192	0.76	4/5717 (0.1%)
1	R	0.56	0/4192	0.76	3/5717 (0.1%)
1	S	0.56	0/4192	0.76	4/5717 (0.1%)
1	T	0.56	0/4192	0.76	4/5717 (0.1%)
1	U	0.56	0/4192	0.76	4/5717 (0.1%)
1	V	0.56	0/4192	0.76	4/5717 (0.1%)
1	W	0.56	0/4192	0.76	4/5717 (0.1%)
1	X	0.56	0/4192	0.76	4/5717 (0.1%)
1	Y	0.56	0/4192	0.76	3/5717 (0.1%)
1	Z	0.56	0/4192	0.76	4/5717 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	a	0.56	0/4192	0.76	4/5717 (0.1%)
1	b	0.56	0/4192	0.76	4/5717 (0.1%)
1	c	0.56	0/4192	0.76	3/5717 (0.1%)
1	d	0.56	0/4192	0.76	3/5717 (0.1%)
1	e	0.56	0/4192	0.76	4/5717 (0.1%)
1	f	0.56	0/4192	0.76	3/5717 (0.1%)
1	g	0.56	0/4192	0.76	3/5717 (0.1%)
1	h	0.56	0/4192	0.76	4/5717 (0.1%)
1	i	0.56	0/4192	0.76	3/5717 (0.1%)
1	j	0.56	0/4192	0.76	4/5717 (0.1%)
1	k	0.56	0/4192	0.76	4/5717 (0.1%)
1	l	0.56	0/4192	0.76	3/5717 (0.1%)
1	m	0.56	0/4192	0.76	3/5717 (0.1%)
1	n	0.56	0/4192	0.76	4/5717 (0.1%)
1	o	0.56	0/4192	0.76	3/5717 (0.1%)
1	p	0.56	0/4192	0.76	4/5717 (0.1%)
1	q	0.56	0/4192	0.76	3/5717 (0.1%)
1	r	0.56	0/4192	0.76	4/5717 (0.1%)
1	s	0.56	0/4192	0.76	4/5717 (0.1%)
1	t	0.56	0/4192	0.76	3/5717 (0.1%)
1	u	0.56	0/4192	0.76	4/5717 (0.1%)
1	v	0.56	0/4192	0.76	4/5717 (0.1%)
1	w	0.56	0/4192	0.76	4/5717 (0.1%)
1	x	0.56	0/4192	0.76	3/5717 (0.1%)
1	y	0.56	0/4192	0.76	4/5717 (0.1%)
1	z	0.56	0/4192	0.76	4/5717 (0.1%)
All	All	0.56	0/251520	0.76	214/343020 (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
1	1	0	7
1	2	0	7
1	3	0	7
1	4	0	7
1	5	0	7
1	6	0	7
1	7	0	7
1	8	0	7

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	7
1	B	0	7
1	C	0	7
1	D	0	7
1	E	0	7
1	F	0	7
1	G	0	7
1	H	0	7
1	I	0	7
1	J	0	7
1	K	0	7
1	L	0	7
1	M	0	7
1	N	0	7
1	O	0	7
1	P	0	7
1	Q	0	7
1	R	0	7
1	S	0	7
1	T	0	7
1	U	0	7
1	V	0	7
1	W	0	7
1	X	0	7
1	Y	0	7
1	Z	0	7
1	a	0	7
1	b	0	7
1	c	0	7
1	d	0	7
1	e	0	7
1	f	0	7
1	g	0	7
1	h	0	7
1	i	0	7
1	j	0	7
1	k	0	7
1	l	0	7
1	m	0	7
1	n	0	7
1	o	0	7
1	p	0	7

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	q	0	7
1	r	0	7
1	s	0	7
1	t	0	7
1	u	0	7
1	v	0	7
1	w	0	7
1	x	0	7
1	y	0	7
1	z	0	7
All	All	0	420

There are no bond length outliers.

All (214) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	K	202	LEU	CA-CB-CG	9.74	137.70	115.30
1	6	202	LEU	CA-CB-CG	9.74	137.70	115.30
1	a	202	LEU	CA-CB-CG	9.74	137.69	115.30
1	i	202	LEU	CA-CB-CG	9.74	137.69	115.30
1	u	202	LEU	CA-CB-CG	9.74	137.69	115.30
1	l	202	LEU	CA-CB-CG	9.73	137.69	115.30
1	s	202	LEU	CA-CB-CG	9.73	137.69	115.30
1	H	202	LEU	CA-CB-CG	9.73	137.69	115.30
1	Z	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	2	202	LEU	CA-CB-CG	9.73	137.69	115.30
1	n	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	y	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	l	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	P	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	R	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	5	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	r	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	D	202	LEU	CA-CB-CG	9.73	137.67	115.30
1	X	202	LEU	CA-CB-CG	9.73	137.67	115.30
1	d	202	LEU	CA-CB-CG	9.73	137.67	115.30
1	t	202	LEU	CA-CB-CG	9.73	137.68	115.30
1	o	202	LEU	CA-CB-CG	9.73	137.67	115.30
1	O	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	k	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	v	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	A	202	LEU	CA-CB-CG	9.72	137.66	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	I	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	G	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	J	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	N	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	U	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	V	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	S	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	Y	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	b	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	c	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	g	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	p	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	q	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	w	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	x	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	z	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	7	202	LEU	CA-CB-CG	9.72	137.67	115.30
1	8	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	j	202	LEU	CA-CB-CG	9.72	137.66	115.30
1	Q	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	3	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	f	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	h	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	B	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	E	202	LEU	CA-CB-CG	9.71	137.64	115.30
1	F	202	LEU	CA-CB-CG	9.71	137.63	115.30
1	L	202	LEU	CA-CB-CG	9.71	137.63	115.30
1	M	202	LEU	CA-CB-CG	9.71	137.63	115.30
1	W	202	LEU	CA-CB-CG	9.71	137.63	115.30
1	4	202	LEU	CA-CB-CG	9.71	137.63	115.30
1	T	202	LEU	CA-CB-CG	9.71	137.62	115.30
1	m	202	LEU	CA-CB-CG	9.70	137.62	115.30
1	e	202	LEU	CA-CB-CG	9.69	137.58	115.30
1	B	379	SER	C-N-CA	6.05	136.84	121.70
1	N	379	SER	C-N-CA	6.05	136.84	121.70
1	i	379	SER	C-N-CA	6.05	136.83	121.70
1	F	379	SER	C-N-CA	6.05	136.83	121.70
1	S	379	SER	C-N-CA	6.05	136.83	121.70
1	h	379	SER	C-N-CA	6.05	136.83	121.70
1	m	379	SER	C-N-CA	6.05	136.83	121.70
1	s	379	SER	C-N-CA	6.05	136.83	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	y	379	SER	C-N-CA	6.05	136.83	121.70
1	M	379	SER	C-N-CA	6.05	136.82	121.70
1	n	379	SER	C-N-CA	6.05	136.82	121.70
1	o	379	SER	C-N-CA	6.05	136.82	121.70
1	V	379	SER	C-N-CA	6.05	136.81	121.70
1	6	379	SER	C-N-CA	6.05	136.82	121.70
1	R	379	SER	C-N-CA	6.04	136.81	121.70
1	g	379	SER	C-N-CA	6.04	136.81	121.70
1	j	379	SER	C-N-CA	6.04	136.81	121.70
1	7	379	SER	C-N-CA	6.04	136.81	121.70
1	I	379	SER	C-N-CA	6.04	136.81	121.70
1	K	379	SER	C-N-CA	6.04	136.81	121.70
1	P	379	SER	C-N-CA	6.04	136.80	121.70
1	X	379	SER	C-N-CA	6.04	136.80	121.70
1	3	379	SER	C-N-CA	6.04	136.80	121.70
1	t	379	SER	C-N-CA	6.04	136.80	121.70
1	A	379	SER	C-N-CA	6.04	136.79	121.70
1	T	379	SER	C-N-CA	6.04	136.79	121.70
1	4	379	SER	C-N-CA	6.04	136.79	121.70
1	8	379	SER	C-N-CA	6.04	136.80	121.70
1	U	379	SER	C-N-CA	6.04	136.79	121.70
1	l	379	SER	C-N-CA	6.04	136.79	121.70
1	x	379	SER	C-N-CA	6.04	136.79	121.70
1	C	379	SER	C-N-CA	6.04	136.79	121.70
1	Q	379	SER	C-N-CA	6.04	136.79	121.70
1	k	379	SER	C-N-CA	6.04	136.79	121.70
1	v	379	SER	C-N-CA	6.04	136.79	121.70
1	z	379	SER	C-N-CA	6.04	136.79	121.70
1	D	379	SER	C-N-CA	6.03	136.78	121.70
1	E	379	SER	C-N-CA	6.03	136.77	121.70
1	b	379	SER	C-N-CA	6.03	136.77	121.70
1	e	379	SER	C-N-CA	6.03	136.78	121.70
1	u	379	SER	C-N-CA	6.03	136.78	121.70
1	w	379	SER	C-N-CA	6.03	136.78	121.70
1	G	379	SER	C-N-CA	6.03	136.77	121.70
1	r	379	SER	C-N-CA	6.03	136.77	121.70
1	c	379	SER	C-N-CA	6.03	136.76	121.70
1	p	379	SER	C-N-CA	6.03	136.76	121.70
1	W	379	SER	C-N-CA	6.02	136.76	121.70
1	Y	379	SER	C-N-CA	6.02	136.76	121.70
1	2	379	SER	C-N-CA	6.02	136.76	121.70
1	d	379	SER	C-N-CA	6.02	136.76	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	f	379	SER	C-N-CA	6.02	136.76	121.70
1	q	379	SER	C-N-CA	6.02	136.76	121.70
1	l	379	SER	C-N-CA	6.02	136.74	121.70
1	a	379	SER	C-N-CA	6.02	136.74	121.70
1	Z	379	SER	C-N-CA	6.01	136.74	121.70
1	5	379	SER	C-N-CA	6.01	136.74	121.70
1	H	379	SER	C-N-CA	6.01	136.73	121.70
1	O	379	SER	C-N-CA	6.01	136.73	121.70
1	L	379	SER	C-N-CA	6.01	136.72	121.70
1	J	379	SER	C-N-CA	6.01	136.72	121.70
1	K	200	ALA	C-N-CA	5.96	136.60	121.70
1	G	200	ALA	C-N-CA	5.96	136.59	121.70
1	c	200	ALA	C-N-CA	5.96	136.59	121.70
1	a	200	ALA	C-N-CA	5.95	136.58	121.70
1	N	200	ALA	C-N-CA	5.95	136.57	121.70
1	U	200	ALA	C-N-CA	5.95	136.57	121.70
1	y	200	ALA	C-N-CA	5.95	136.57	121.70
1	M	200	ALA	C-N-CA	5.95	136.57	121.70
1	d	200	ALA	C-N-CA	5.95	136.57	121.70
1	7	200	ALA	C-N-CA	5.95	136.57	121.70
1	l	200	ALA	C-N-CA	5.95	136.56	121.70
1	b	200	ALA	C-N-CA	5.95	136.56	121.70
1	u	200	ALA	C-N-CA	5.95	136.56	121.70
1	v	200	ALA	C-N-CA	5.95	136.56	121.70
1	s	200	ALA	C-N-CA	5.94	136.56	121.70
1	n	200	ALA	C-N-CA	5.94	136.56	121.70
1	E	200	ALA	C-N-CA	5.94	136.55	121.70
1	V	200	ALA	C-N-CA	5.94	136.55	121.70
1	T	200	ALA	C-N-CA	5.94	136.55	121.70
1	o	200	ALA	C-N-CA	5.94	136.55	121.70
1	B	200	ALA	C-N-CA	5.94	136.54	121.70
1	Q	200	ALA	C-N-CA	5.94	136.54	121.70
1	R	200	ALA	C-N-CA	5.94	136.54	121.70
1	5	200	ALA	C-N-CA	5.94	136.54	121.70
1	f	200	ALA	C-N-CA	5.94	136.54	121.70
1	i	200	ALA	C-N-CA	5.94	136.54	121.70
1	j	200	ALA	C-N-CA	5.94	136.54	121.70
1	w	200	ALA	C-N-CA	5.94	136.54	121.70
1	H	200	ALA	C-N-CA	5.94	136.54	121.70
1	I	200	ALA	C-N-CA	5.93	136.54	121.70
1	h	200	ALA	C-N-CA	5.93	136.54	121.70
1	8	200	ALA	C-N-CA	5.93	136.54	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	200	ALA	C-N-CA	5.93	136.53	121.70
1	W	200	ALA	C-N-CA	5.93	136.53	121.70
1	Y	200	ALA	C-N-CA	5.93	136.53	121.70
1	2	200	ALA	C-N-CA	5.93	136.53	121.70
1	4	200	ALA	C-N-CA	5.93	136.53	121.70
1	p	200	ALA	C-N-CA	5.93	136.53	121.70
1	e	200	ALA	C-N-CA	5.93	136.53	121.70
1	L	200	ALA	C-N-CA	5.93	136.52	121.70
1	X	200	ALA	C-N-CA	5.93	136.52	121.70
1	3	200	ALA	C-N-CA	5.93	136.52	121.70
1	O	200	ALA	C-N-CA	5.93	136.52	121.70
1	q	200	ALA	C-N-CA	5.93	136.52	121.70
1	x	200	ALA	C-N-CA	5.93	136.52	121.70
1	A	200	ALA	C-N-CA	5.93	136.51	121.70
1	l	200	ALA	C-N-CA	5.92	136.51	121.70
1	D	200	ALA	C-N-CA	5.92	136.50	121.70
1	S	200	ALA	C-N-CA	5.92	136.50	121.70
1	F	200	ALA	C-N-CA	5.92	136.50	121.70
1	Z	200	ALA	C-N-CA	5.92	136.50	121.70
1	k	200	ALA	C-N-CA	5.92	136.50	121.70
1	m	200	ALA	C-N-CA	5.92	136.50	121.70
1	r	200	ALA	C-N-CA	5.92	136.50	121.70
1	6	200	ALA	C-N-CA	5.92	136.49	121.70
1	P	200	ALA	C-N-CA	5.91	136.49	121.70
1	g	200	ALA	C-N-CA	5.91	136.49	121.70
1	t	200	ALA	C-N-CA	5.91	136.48	121.70
1	z	200	ALA	C-N-CA	5.91	136.48	121.70
1	J	200	ALA	C-N-CA	5.91	136.46	121.70
1	b	360	TYR	CB-CA-C	-5.03	100.33	110.40
1	B	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	W	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	2	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	7	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	U	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	r	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	v	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	Q	360	TYR	CB-CA-C	-5.02	100.36	110.40
1	Z	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	5	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	e	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	E	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	S	360	TYR	CB-CA-C	-5.01	100.38	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	a	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	k	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	s	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	G	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	X	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	3	360	TYR	CB-CA-C	-5.01	100.38	110.40
1	J	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	N	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	V	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	j	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	w	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	y	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	z	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	8	360	TYR	CB-CA-C	-5.01	100.39	110.40
1	F	360	TYR	CB-CA-C	-5.00	100.39	110.40
1	h	360	TYR	CB-CA-C	-5.00	100.39	110.40
1	u	360	TYR	CB-CA-C	-5.00	100.39	110.40
1	n	360	TYR	CB-CA-C	-5.00	100.40	110.40
1	p	360	TYR	CB-CA-C	-5.00	100.40	110.40

There are no chirality outliers.

All (420) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1	200	ALA	Peptide
1	1	273	GLN	Peptide
1	1	311	PRO	Peptide
1	1	326	GLU	Peptide
1	1	380	MET	Peptide
1	1	82	GLN	Peptide
1	1	83	SER	Peptide
1	2	200	ALA	Peptide
1	2	273	GLN	Peptide
1	2	311	PRO	Peptide
1	2	326	GLU	Peptide
1	2	380	MET	Peptide
1	2	82	GLN	Peptide
1	2	83	SER	Peptide
1	3	200	ALA	Peptide
1	3	273	GLN	Peptide
1	3	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	3	326	GLU	Peptide
1	3	380	MET	Peptide
1	3	82	GLN	Peptide
1	3	83	SER	Peptide
1	4	200	ALA	Peptide
1	4	273	GLN	Peptide
1	4	311	PRO	Peptide
1	4	326	GLU	Peptide
1	4	380	MET	Peptide
1	4	82	GLN	Peptide
1	4	83	SER	Peptide
1	5	200	ALA	Peptide
1	5	273	GLN	Peptide
1	5	311	PRO	Peptide
1	5	326	GLU	Peptide
1	5	380	MET	Peptide
1	5	82	GLN	Peptide
1	5	83	SER	Peptide
1	6	200	ALA	Peptide
1	6	273	GLN	Peptide
1	6	311	PRO	Peptide
1	6	326	GLU	Peptide
1	6	380	MET	Peptide
1	6	82	GLN	Peptide
1	6	83	SER	Peptide
1	7	200	ALA	Peptide
1	7	273	GLN	Peptide
1	7	311	PRO	Peptide
1	7	326	GLU	Peptide
1	7	380	MET	Peptide
1	7	82	GLN	Peptide
1	7	83	SER	Peptide
1	8	200	ALA	Peptide
1	8	273	GLN	Peptide
1	8	311	PRO	Peptide
1	8	326	GLU	Peptide
1	8	380	MET	Peptide
1	8	82	GLN	Peptide
1	8	83	SER	Peptide
1	A	200	ALA	Peptide
1	A	273	GLN	Peptide
1	A	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	A	326	GLU	Peptide
1	A	380	MET	Peptide
1	A	82	GLN	Peptide
1	A	83	SER	Peptide
1	B	200	ALA	Peptide
1	B	273	GLN	Peptide
1	B	311	PRO	Peptide
1	B	326	GLU	Peptide
1	B	380	MET	Peptide
1	B	82	GLN	Peptide
1	B	83	SER	Peptide
1	C	200	ALA	Peptide
1	C	273	GLN	Peptide
1	C	311	PRO	Peptide
1	C	326	GLU	Peptide
1	C	380	MET	Peptide
1	C	82	GLN	Peptide
1	C	83	SER	Peptide
1	D	200	ALA	Peptide
1	D	273	GLN	Peptide
1	D	311	PRO	Peptide
1	D	326	GLU	Peptide
1	D	380	MET	Peptide
1	D	82	GLN	Peptide
1	D	83	SER	Peptide
1	E	200	ALA	Peptide
1	E	273	GLN	Peptide
1	E	311	PRO	Peptide
1	E	326	GLU	Peptide
1	E	380	MET	Peptide
1	E	82	GLN	Peptide
1	E	83	SER	Peptide
1	F	200	ALA	Peptide
1	F	273	GLN	Peptide
1	F	311	PRO	Peptide
1	F	326	GLU	Peptide
1	F	380	MET	Peptide
1	F	82	GLN	Peptide
1	F	83	SER	Peptide
1	G	200	ALA	Peptide
1	G	273	GLN	Peptide
1	G	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	G	326	GLU	Peptide
1	G	380	MET	Peptide
1	G	82	GLN	Peptide
1	G	83	SER	Peptide
1	H	200	ALA	Peptide
1	H	273	GLN	Peptide
1	H	311	PRO	Peptide
1	H	326	GLU	Peptide
1	H	380	MET	Peptide
1	H	82	GLN	Peptide
1	H	83	SER	Peptide
1	I	200	ALA	Peptide
1	I	273	GLN	Peptide
1	I	311	PRO	Peptide
1	I	326	GLU	Peptide
1	I	380	MET	Peptide
1	I	82	GLN	Peptide
1	I	83	SER	Peptide
1	J	200	ALA	Peptide
1	J	273	GLN	Peptide
1	J	311	PRO	Peptide
1	J	326	GLU	Peptide
1	J	380	MET	Peptide
1	J	82	GLN	Peptide
1	J	83	SER	Peptide
1	K	200	ALA	Peptide
1	K	273	GLN	Peptide
1	K	311	PRO	Peptide
1	K	326	GLU	Peptide
1	K	380	MET	Peptide
1	K	82	GLN	Peptide
1	K	83	SER	Peptide
1	L	200	ALA	Peptide
1	L	273	GLN	Peptide
1	L	311	PRO	Peptide
1	L	326	GLU	Peptide
1	L	380	MET	Peptide
1	L	82	GLN	Peptide
1	L	83	SER	Peptide
1	M	200	ALA	Peptide
1	M	273	GLN	Peptide
1	M	311	PRO	Peptide

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>Group</b>
1	M	326	GLU	Peptide
1	M	380	MET	Peptide
1	M	82	GLN	Peptide
1	M	83	SER	Peptide
1	N	200	ALA	Peptide
1	N	273	GLN	Peptide
1	N	311	PRO	Peptide
1	N	326	GLU	Peptide
1	N	380	MET	Peptide
1	N	82	GLN	Peptide
1	N	83	SER	Peptide
1	O	200	ALA	Peptide
1	O	273	GLN	Peptide
1	O	311	PRO	Peptide
1	O	326	GLU	Peptide
1	O	380	MET	Peptide
1	O	82	GLN	Peptide
1	O	83	SER	Peptide
1	P	200	ALA	Peptide
1	P	273	GLN	Peptide
1	P	311	PRO	Peptide
1	P	326	GLU	Peptide
1	P	380	MET	Peptide
1	P	82	GLN	Peptide
1	P	83	SER	Peptide
1	Q	200	ALA	Peptide
1	Q	273	GLN	Peptide
1	Q	311	PRO	Peptide
1	Q	326	GLU	Peptide
1	Q	380	MET	Peptide
1	Q	82	GLN	Peptide
1	Q	83	SER	Peptide
1	R	200	ALA	Peptide
1	R	273	GLN	Peptide
1	R	311	PRO	Peptide
1	R	326	GLU	Peptide
1	R	380	MET	Peptide
1	R	82	GLN	Peptide
1	R	83	SER	Peptide
1	S	200	ALA	Peptide
1	S	273	GLN	Peptide
1	S	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	S	326	GLU	Peptide
1	S	380	MET	Peptide
1	S	82	GLN	Peptide
1	S	83	SER	Peptide
1	T	200	ALA	Peptide
1	T	273	GLN	Peptide
1	T	311	PRO	Peptide
1	T	326	GLU	Peptide
1	T	380	MET	Peptide
1	T	82	GLN	Peptide
1	T	83	SER	Peptide
1	U	200	ALA	Peptide
1	U	273	GLN	Peptide
1	U	311	PRO	Peptide
1	U	326	GLU	Peptide
1	U	380	MET	Peptide
1	U	82	GLN	Peptide
1	U	83	SER	Peptide
1	V	200	ALA	Peptide
1	V	273	GLN	Peptide
1	V	311	PRO	Peptide
1	V	326	GLU	Peptide
1	V	380	MET	Peptide
1	V	82	GLN	Peptide
1	V	83	SER	Peptide
1	W	200	ALA	Peptide
1	W	273	GLN	Peptide
1	W	311	PRO	Peptide
1	W	326	GLU	Peptide
1	W	380	MET	Peptide
1	W	82	GLN	Peptide
1	W	83	SER	Peptide
1	X	200	ALA	Peptide
1	X	273	GLN	Peptide
1	X	311	PRO	Peptide
1	X	326	GLU	Peptide
1	X	380	MET	Peptide
1	X	82	GLN	Peptide
1	X	83	SER	Peptide
1	Y	200	ALA	Peptide
1	Y	273	GLN	Peptide
1	Y	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	Y	326	GLU	Peptide
1	Y	380	MET	Peptide
1	Y	82	GLN	Peptide
1	Y	83	SER	Peptide
1	Z	200	ALA	Peptide
1	Z	273	GLN	Peptide
1	Z	311	PRO	Peptide
1	Z	326	GLU	Peptide
1	Z	380	MET	Peptide
1	Z	82	GLN	Peptide
1	Z	83	SER	Peptide
1	a	200	ALA	Peptide
1	a	273	GLN	Peptide
1	a	311	PRO	Peptide
1	a	326	GLU	Peptide
1	a	380	MET	Peptide
1	a	82	GLN	Peptide
1	a	83	SER	Peptide
1	b	200	ALA	Peptide
1	b	273	GLN	Peptide
1	b	311	PRO	Peptide
1	b	326	GLU	Peptide
1	b	380	MET	Peptide
1	b	82	GLN	Peptide
1	b	83	SER	Peptide
1	c	200	ALA	Peptide
1	c	273	GLN	Peptide
1	c	311	PRO	Peptide
1	c	326	GLU	Peptide
1	c	380	MET	Peptide
1	c	82	GLN	Peptide
1	c	83	SER	Peptide
1	d	200	ALA	Peptide
1	d	273	GLN	Peptide
1	d	311	PRO	Peptide
1	d	326	GLU	Peptide
1	d	380	MET	Peptide
1	d	82	GLN	Peptide
1	d	83	SER	Peptide
1	e	200	ALA	Peptide
1	e	273	GLN	Peptide
1	e	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	e	326	GLU	Peptide
1	e	380	MET	Peptide
1	e	82	GLN	Peptide
1	e	83	SER	Peptide
1	f	200	ALA	Peptide
1	f	273	GLN	Peptide
1	f	311	PRO	Peptide
1	f	326	GLU	Peptide
1	f	380	MET	Peptide
1	f	82	GLN	Peptide
1	f	83	SER	Peptide
1	g	200	ALA	Peptide
1	g	273	GLN	Peptide
1	g	311	PRO	Peptide
1	g	326	GLU	Peptide
1	g	380	MET	Peptide
1	g	82	GLN	Peptide
1	g	83	SER	Peptide
1	h	200	ALA	Peptide
1	h	273	GLN	Peptide
1	h	311	PRO	Peptide
1	h	326	GLU	Peptide
1	h	380	MET	Peptide
1	h	82	GLN	Peptide
1	h	83	SER	Peptide
1	i	200	ALA	Peptide
1	i	273	GLN	Peptide
1	i	311	PRO	Peptide
1	i	326	GLU	Peptide
1	i	380	MET	Peptide
1	i	82	GLN	Peptide
1	i	83	SER	Peptide
1	j	200	ALA	Peptide
1	j	273	GLN	Peptide
1	j	311	PRO	Peptide
1	j	326	GLU	Peptide
1	j	380	MET	Peptide
1	j	82	GLN	Peptide
1	j	83	SER	Peptide
1	k	200	ALA	Peptide
1	k	273	GLN	Peptide
1	k	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	k	326	GLU	Peptide
1	k	380	MET	Peptide
1	k	82	GLN	Peptide
1	k	83	SER	Peptide
1	l	200	ALA	Peptide
1	l	273	GLN	Peptide
1	l	311	PRO	Peptide
1	l	326	GLU	Peptide
1	l	380	MET	Peptide
1	l	82	GLN	Peptide
1	l	83	SER	Peptide
1	m	200	ALA	Peptide
1	m	273	GLN	Peptide
1	m	311	PRO	Peptide
1	m	326	GLU	Peptide
1	m	380	MET	Peptide
1	m	82	GLN	Peptide
1	m	83	SER	Peptide
1	n	200	ALA	Peptide
1	n	273	GLN	Peptide
1	n	311	PRO	Peptide
1	n	326	GLU	Peptide
1	n	380	MET	Peptide
1	n	82	GLN	Peptide
1	n	83	SER	Peptide
1	o	200	ALA	Peptide
1	o	273	GLN	Peptide
1	o	311	PRO	Peptide
1	o	326	GLU	Peptide
1	o	380	MET	Peptide
1	o	82	GLN	Peptide
1	o	83	SER	Peptide
1	p	200	ALA	Peptide
1	p	273	GLN	Peptide
1	p	311	PRO	Peptide
1	p	326	GLU	Peptide
1	p	380	MET	Peptide
1	p	82	GLN	Peptide
1	p	83	SER	Peptide
1	q	200	ALA	Peptide
1	q	273	GLN	Peptide
1	q	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	q	326	GLU	Peptide
1	q	380	MET	Peptide
1	q	82	GLN	Peptide
1	q	83	SER	Peptide
1	r	200	ALA	Peptide
1	r	273	GLN	Peptide
1	r	311	PRO	Peptide
1	r	326	GLU	Peptide
1	r	380	MET	Peptide
1	r	82	GLN	Peptide
1	r	83	SER	Peptide
1	s	200	ALA	Peptide
1	s	273	GLN	Peptide
1	s	311	PRO	Peptide
1	s	326	GLU	Peptide
1	s	380	MET	Peptide
1	s	82	GLN	Peptide
1	s	83	SER	Peptide
1	t	200	ALA	Peptide
1	t	273	GLN	Peptide
1	t	311	PRO	Peptide
1	t	326	GLU	Peptide
1	t	380	MET	Peptide
1	t	82	GLN	Peptide
1	t	83	SER	Peptide
1	u	200	ALA	Peptide
1	u	273	GLN	Peptide
1	u	311	PRO	Peptide
1	u	326	GLU	Peptide
1	u	380	MET	Peptide
1	u	82	GLN	Peptide
1	u	83	SER	Peptide
1	v	200	ALA	Peptide
1	v	273	GLN	Peptide
1	v	311	PRO	Peptide
1	v	326	GLU	Peptide
1	v	380	MET	Peptide
1	v	82	GLN	Peptide
1	v	83	SER	Peptide
1	w	200	ALA	Peptide
1	w	273	GLN	Peptide
1	w	311	PRO	Peptide

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Mol	Chain	Res	Type	Group
1	w	326	GLU	Peptide
1	w	380	MET	Peptide
1	w	82	GLN	Peptide
1	w	83	SER	Peptide
1	x	200	ALA	Peptide
1	x	273	GLN	Peptide
1	x	311	PRO	Peptide
1	x	326	GLU	Peptide
1	x	380	MET	Peptide
1	x	82	GLN	Peptide
1	x	83	SER	Peptide
1	y	200	ALA	Peptide
1	y	273	GLN	Peptide
1	y	311	PRO	Peptide
1	y	326	GLU	Peptide
1	y	380	MET	Peptide
1	y	82	GLN	Peptide
1	y	83	SER	Peptide
1	z	200	ALA	Peptide
1	z	273	GLN	Peptide
1	z	311	PRO	Peptide
1	z	326	GLU	Peptide
1	z	380	MET	Peptide
1	z	82	GLN	Peptide
1	z	83	SER	Peptide

## 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	Percentiles	
1	1	510/542 (94%)	438 (86%)	65 (13%)	7 (1%)	11	36
1	2	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	3	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	4	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	5	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	6	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	7	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	8	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	A	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	B	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	C	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	D	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	E	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	F	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	G	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	H	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	I	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	J	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	K	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	L	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	M	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	N	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	O	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	P	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	Q	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	R	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	S	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	T	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	U	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	V	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	W	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	X	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Y	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	Z	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	a	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	b	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	c	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	d	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	e	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	f	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	g	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	h	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	i	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	j	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	k	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	l	510/542 (94%)	438 (86%)	65 (13%)	7 (1%)	11	36
1	m	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	n	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	o	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	p	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	q	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	r	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	s	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	t	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	u	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	v	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	w	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	x	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	y	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
1	z	510/542 (94%)	437 (86%)	66 (13%)	7 (1%)	11	36
All	All	30600/32520 (94%)	26222 (86%)	3958 (13%)	420 (1%)	15	36

All (420) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	272	VAL
1	A	275	ILE
1	A	538	ILE
1	B	272	VAL
1	B	275	ILE
1	B	538	ILE
1	C	272	VAL
1	C	275	ILE
1	C	538	ILE
1	D	272	VAL
1	D	275	ILE
1	D	538	ILE
1	E	272	VAL
1	E	275	ILE
1	E	538	ILE
1	F	272	VAL
1	F	275	ILE
1	F	538	ILE
1	G	272	VAL
1	G	275	ILE
1	G	538	ILE
1	H	272	VAL
1	H	275	ILE
1	H	538	ILE
1	I	272	VAL
1	I	275	ILE
1	I	538	ILE
1	J	272	VAL
1	J	275	ILE
1	J	538	ILE
1	K	272	VAL
1	K	275	ILE
1	K	538	ILE
1	L	272	VAL
1	L	275	ILE
1	L	538	ILE
1	M	272	VAL
1	M	275	ILE
1	M	538	ILE
1	N	272	VAL
1	N	275	ILE
1	N	538	ILE
1	O	272	VAL

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Mol	Chain	Res	Type
1	O	275	ILE
1	O	538	ILE
1	P	272	VAL
1	P	275	ILE
1	P	538	ILE
1	Q	272	VAL
1	Q	275	ILE
1	Q	538	ILE
1	R	272	VAL
1	R	275	ILE
1	R	538	ILE
1	S	272	VAL
1	S	275	ILE
1	S	538	ILE
1	T	272	VAL
1	T	275	ILE
1	T	538	ILE
1	U	272	VAL
1	U	275	ILE
1	U	538	ILE
1	V	272	VAL
1	V	275	ILE
1	V	538	ILE
1	W	272	VAL
1	W	275	ILE
1	W	538	ILE
1	X	272	VAL
1	X	275	ILE
1	X	538	ILE
1	Y	272	VAL
1	Y	275	ILE
1	Y	538	ILE
1	Z	272	VAL
1	Z	275	ILE
1	Z	538	ILE
1	1	272	VAL
1	1	275	ILE
1	1	538	ILE
1	2	272	VAL
1	2	275	ILE
1	2	538	ILE
1	3	272	VAL

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Mol	Chain	Res	Type
1	3	275	ILE
1	3	538	ILE
1	4	272	VAL
1	4	275	ILE
1	4	538	ILE
1	5	272	VAL
1	5	275	ILE
1	5	538	ILE
1	6	272	VAL
1	6	275	ILE
1	6	538	ILE
1	a	272	VAL
1	a	275	ILE
1	a	538	ILE
1	b	272	VAL
1	b	275	ILE
1	b	538	ILE
1	c	272	VAL
1	c	275	ILE
1	c	538	ILE
1	d	272	VAL
1	d	275	ILE
1	d	538	ILE
1	e	272	VAL
1	e	275	ILE
1	e	538	ILE
1	f	272	VAL
1	f	275	ILE
1	f	538	ILE
1	g	272	VAL
1	g	275	ILE
1	g	538	ILE
1	h	272	VAL
1	h	275	ILE
1	h	538	ILE
1	i	272	VAL
1	i	275	ILE
1	i	538	ILE
1	j	272	VAL
1	j	275	ILE
1	j	538	ILE
1	k	272	VAL

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Mol	Chain	Res	Type
1	k	275	ILE
1	k	538	ILE
1	l	272	VAL
1	l	275	ILE
1	l	538	ILE
1	m	272	VAL
1	m	275	ILE
1	m	538	ILE
1	n	272	VAL
1	n	275	ILE
1	n	538	ILE
1	o	272	VAL
1	o	275	ILE
1	o	538	ILE
1	p	272	VAL
1	p	275	ILE
1	p	538	ILE
1	q	272	VAL
1	q	275	ILE
1	q	538	ILE
1	r	272	VAL
1	r	275	ILE
1	r	538	ILE
1	s	272	VAL
1	s	275	ILE
1	s	538	ILE
1	t	272	VAL
1	t	275	ILE
1	t	538	ILE
1	u	272	VAL
1	u	275	ILE
1	u	538	ILE
1	v	272	VAL
1	v	275	ILE
1	v	538	ILE
1	w	272	VAL
1	w	275	ILE
1	w	538	ILE
1	x	272	VAL
1	x	275	ILE
1	x	538	ILE
1	y	272	VAL

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Mol	Chain	Res	Type
1	y	275	ILE
1	y	538	ILE
1	z	272	VAL
1	z	275	ILE
1	z	538	ILE
1	7	272	VAL
1	7	275	ILE
1	7	538	ILE
1	8	272	VAL
1	8	275	ILE
1	8	538	ILE
1	A	361	GLN
1	B	361	GLN
1	C	361	GLN
1	D	361	GLN
1	E	361	GLN
1	F	361	GLN
1	G	361	GLN
1	H	361	GLN
1	I	361	GLN
1	J	361	GLN
1	K	361	GLN
1	L	361	GLN
1	M	361	GLN
1	N	361	GLN
1	O	361	GLN
1	P	361	GLN
1	Q	361	GLN
1	R	361	GLN
1	S	361	GLN
1	T	361	GLN
1	U	361	GLN
1	V	361	GLN
1	W	361	GLN
1	X	361	GLN
1	Y	361	GLN
1	Z	361	GLN
1	1	361	GLN
1	2	361	GLN
1	3	361	GLN
1	4	361	GLN
1	5	361	GLN

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Mol	Chain	Res	Type
1	6	361	GLN
1	a	361	GLN
1	b	361	GLN
1	c	361	GLN
1	d	361	GLN
1	e	361	GLN
1	f	361	GLN
1	g	361	GLN
1	h	361	GLN
1	i	361	GLN
1	j	361	GLN
1	k	361	GLN
1	l	361	GLN
1	m	361	GLN
1	n	361	GLN
1	o	361	GLN
1	p	361	GLN
1	q	361	GLN
1	r	361	GLN
1	s	361	GLN
1	t	361	GLN
1	u	361	GLN
1	v	361	GLN
1	w	361	GLN
1	x	361	GLN
1	y	361	GLN
1	z	361	GLN
1	7	361	GLN
1	8	361	GLN
1	A	343	PRO
1	B	343	PRO
1	C	343	PRO
1	D	343	PRO
1	E	343	PRO
1	F	343	PRO
1	G	343	PRO
1	H	343	PRO
1	I	343	PRO
1	J	343	PRO
1	K	343	PRO
1	L	343	PRO
1	M	343	PRO

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Mol	Chain	Res	Type
1	N	343	PRO
1	O	343	PRO
1	P	343	PRO
1	Q	343	PRO
1	R	343	PRO
1	S	343	PRO
1	T	343	PRO
1	U	343	PRO
1	V	343	PRO
1	W	343	PRO
1	X	343	PRO
1	Y	343	PRO
1	Z	343	PRO
1	1	343	PRO
1	2	343	PRO
1	3	343	PRO
1	4	343	PRO
1	5	343	PRO
1	6	343	PRO
1	a	343	PRO
1	b	343	PRO
1	c	343	PRO
1	d	343	PRO
1	e	343	PRO
1	f	343	PRO
1	g	343	PRO
1	h	343	PRO
1	i	343	PRO
1	j	343	PRO
1	k	343	PRO
1	l	343	PRO
1	m	343	PRO
1	n	343	PRO
1	o	343	PRO
1	p	343	PRO
1	q	343	PRO
1	r	343	PRO
1	s	343	PRO
1	t	343	PRO
1	u	343	PRO
1	v	343	PRO
1	w	343	PRO

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Mol	Chain	Res	Type
1	x	343	PRO
1	y	343	PRO
1	z	343	PRO
1	7	343	PRO
1	8	343	PRO
1	A	360	TYR
1	B	360	TYR
1	C	360	TYR
1	D	360	TYR
1	E	360	TYR
1	F	360	TYR
1	G	360	TYR
1	H	360	TYR
1	I	360	TYR
1	J	360	TYR
1	K	360	TYR
1	L	360	TYR
1	M	360	TYR
1	N	360	TYR
1	O	360	TYR
1	P	360	TYR
1	Q	360	TYR
1	R	360	TYR
1	S	360	TYR
1	T	360	TYR
1	U	360	TYR
1	V	360	TYR
1	W	360	TYR
1	X	360	TYR
1	Y	360	TYR
1	Z	360	TYR
1	1	360	TYR
1	2	360	TYR
1	3	360	TYR
1	4	360	TYR
1	5	360	TYR
1	6	360	TYR
1	a	360	TYR
1	b	360	TYR
1	c	360	TYR
1	d	360	TYR
1	e	360	TYR

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Mol	Chain	Res	Type
1	f	360	TYR
1	g	360	TYR
1	h	360	TYR
1	i	360	TYR
1	j	360	TYR
1	k	360	TYR
1	l	360	TYR
1	m	360	TYR
1	n	360	TYR
1	o	360	TYR
1	p	360	TYR
1	q	360	TYR
1	r	360	TYR
1	s	360	TYR
1	t	360	TYR
1	u	360	TYR
1	v	360	TYR
1	w	360	TYR
1	x	360	TYR
1	y	360	TYR
1	z	360	TYR
1	7	360	TYR
1	8	360	TYR
1	A	523	ILE
1	B	523	ILE
1	C	523	ILE
1	D	523	ILE
1	E	523	ILE
1	F	523	ILE
1	G	523	ILE
1	H	523	ILE
1	I	523	ILE
1	J	523	ILE
1	K	523	ILE
1	L	523	ILE
1	M	523	ILE
1	N	523	ILE
1	O	523	ILE
1	P	523	ILE
1	Q	523	ILE
1	R	523	ILE
1	S	523	ILE

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Mol	Chain	Res	Type
1	T	523	ILE
1	U	523	ILE
1	V	523	ILE
1	W	523	ILE
1	X	523	ILE
1	Y	523	ILE
1	Z	523	ILE
1	1	523	ILE
1	2	523	ILE
1	3	523	ILE
1	4	523	ILE
1	5	523	ILE
1	6	523	ILE
1	a	523	ILE
1	b	523	ILE
1	c	523	ILE
1	d	523	ILE
1	e	523	ILE
1	f	523	ILE
1	g	523	ILE
1	h	523	ILE
1	i	523	ILE
1	j	523	ILE
1	k	523	ILE
1	l	523	ILE
1	m	523	ILE
1	n	523	ILE
1	o	523	ILE
1	p	523	ILE
1	q	523	ILE
1	r	523	ILE
1	s	523	ILE
1	t	523	ILE
1	u	523	ILE
1	v	523	ILE
1	w	523	ILE
1	x	523	ILE
1	y	523	ILE
1	z	523	ILE
1	7	523	ILE
1	8	523	ILE

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	1	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	2	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	3	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	4	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	5	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	6	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	7	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	8	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	A	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	B	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	C	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	D	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	E	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	F	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	G	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	H	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	I	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	J	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	K	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	L	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	M	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	N	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	O	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	P	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	Q	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	R	443/465 (95%)	442 (100%)	1 (0%)	93	98

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	S	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	T	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	U	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	V	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	W	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	X	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	Y	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	Z	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	a	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	b	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	c	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	d	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	e	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	f	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	g	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	h	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	i	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	j	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	k	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	l	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	m	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	n	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	o	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	p	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	q	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	r	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	s	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	t	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	u	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	v	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	w	443/465 (95%)	442 (100%)	1 (0%)	93	98

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	x	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	y	443/465 (95%)	442 (100%)	1 (0%)	93	98
1	z	443/465 (95%)	442 (100%)	1 (0%)	93	98
All	All	26580/27900 (95%)	26520 (100%)	60 (0%)	93	98

All (60) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	202	LEU
1	B	202	LEU
1	C	202	LEU
1	D	202	LEU
1	E	202	LEU
1	F	202	LEU
1	G	202	LEU
1	H	202	LEU
1	I	202	LEU
1	J	202	LEU
1	K	202	LEU
1	L	202	LEU
1	M	202	LEU
1	N	202	LEU
1	O	202	LEU
1	P	202	LEU
1	Q	202	LEU
1	R	202	LEU
1	S	202	LEU
1	T	202	LEU
1	U	202	LEU
1	V	202	LEU
1	W	202	LEU
1	X	202	LEU
1	Y	202	LEU
1	Z	202	LEU
1	1	202	LEU
1	2	202	LEU
1	3	202	LEU
1	4	202	LEU
1	5	202	LEU
1	6	202	LEU
1	a	202	LEU

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Mol	Chain	Res	Type
1	b	202	LEU
1	c	202	LEU
1	d	202	LEU
1	e	202	LEU
1	f	202	LEU
1	g	202	LEU
1	h	202	LEU
1	i	202	LEU
1	j	202	LEU
1	k	202	LEU
1	l	202	LEU
1	m	202	LEU
1	n	202	LEU
1	o	202	LEU
1	p	202	LEU
1	q	202	LEU
1	r	202	LEU
1	s	202	LEU
1	t	202	LEU
1	u	202	LEU
1	v	202	LEU
1	w	202	LEU
1	x	202	LEU
1	y	202	LEU
1	z	202	LEU
1	7	202	LEU
1	8	202	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (943) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	58	ASN
1	A	67	GLN
1	A	68	ASN
1	A	105	HIS
1	A	109	GLN
1	A	197	ASN
1	A	205	ASN
1	A	230	HIS
1	A	244	ASN
1	A	251	ASN
1	A	395	ASN

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Mol	Chain	Res	Type
1	A	417	ASN
1	A	443	HIS
1	A	497	HIS
1	A	539	ASN
1	B	58	ASN
1	B	67	GLN
1	B	68	ASN
1	B	105	HIS
1	B	109	GLN
1	B	197	ASN
1	B	205	ASN
1	B	210	ASN
1	B	230	HIS
1	B	244	ASN
1	B	251	ASN
1	B	329	HIS
1	B	395	ASN
1	B	417	ASN
1	B	443	HIS
1	B	497	HIS
1	B	539	ASN
1	C	58	ASN
1	C	67	GLN
1	C	68	ASN
1	C	105	HIS
1	C	109	GLN
1	C	197	ASN
1	C	205	ASN
1	C	230	HIS
1	C	244	ASN
1	C	251	ASN
1	C	395	ASN
1	C	417	ASN
1	C	443	HIS
1	C	497	HIS
1	C	539	ASN
1	D	58	ASN
1	D	67	GLN
1	D	68	ASN
1	D	105	HIS
1	D	109	GLN
1	D	197	ASN

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Mol	Chain	Res	Type
1	D	205	ASN
1	D	230	HIS
1	D	244	ASN
1	D	251	ASN
1	D	395	ASN
1	D	417	ASN
1	D	443	HIS
1	D	497	HIS
1	D	539	ASN
1	E	58	ASN
1	E	67	GLN
1	E	68	ASN
1	E	105	HIS
1	E	109	GLN
1	E	197	ASN
1	E	210	ASN
1	E	230	HIS
1	E	244	ASN
1	E	251	ASN
1	E	395	ASN
1	E	417	ASN
1	E	443	HIS
1	E	497	HIS
1	E	539	ASN
1	F	58	ASN
1	F	67	GLN
1	F	68	ASN
1	F	105	HIS
1	F	109	GLN
1	F	197	ASN
1	F	205	ASN
1	F	230	HIS
1	F	244	ASN
1	F	251	ASN
1	F	395	ASN
1	F	417	ASN
1	F	443	HIS
1	F	497	HIS
1	F	539	ASN
1	G	58	ASN
1	G	67	GLN
1	G	68	ASN

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Mol	Chain	Res	Type
1	G	105	HIS
1	G	109	GLN
1	G	197	ASN
1	G	205	ASN
1	G	210	ASN
1	G	230	HIS
1	G	244	ASN
1	G	251	ASN
1	G	395	ASN
1	G	417	ASN
1	G	443	HIS
1	G	497	HIS
1	G	539	ASN
1	H	58	ASN
1	H	67	GLN
1	H	68	ASN
1	H	105	HIS
1	H	109	GLN
1	H	197	ASN
1	H	205	ASN
1	H	210	ASN
1	H	230	HIS
1	H	244	ASN
1	H	251	ASN
1	H	395	ASN
1	H	417	ASN
1	H	443	HIS
1	H	497	HIS
1	H	539	ASN
1	I	58	ASN
1	I	67	GLN
1	I	68	ASN
1	I	105	HIS
1	I	109	GLN
1	I	197	ASN
1	I	205	ASN
1	I	210	ASN
1	I	230	HIS
1	I	244	ASN
1	I	251	ASN
1	I	395	ASN
1	I	417	ASN

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Mol	Chain	Res	Type
1	I	443	HIS
1	I	497	HIS
1	I	539	ASN
1	J	58	ASN
1	J	67	GLN
1	J	68	ASN
1	J	105	HIS
1	J	109	GLN
1	J	197	ASN
1	J	205	ASN
1	J	230	HIS
1	J	244	ASN
1	J	251	ASN
1	J	329	HIS
1	J	395	ASN
1	J	417	ASN
1	J	443	HIS
1	J	497	HIS
1	J	539	ASN
1	K	58	ASN
1	K	67	GLN
1	K	68	ASN
1	K	105	HIS
1	K	109	GLN
1	K	197	ASN
1	K	205	ASN
1	K	230	HIS
1	K	244	ASN
1	K	251	ASN
1	K	395	ASN
1	K	417	ASN
1	K	443	HIS
1	K	497	HIS
1	K	539	ASN
1	L	58	ASN
1	L	67	GLN
1	L	68	ASN
1	L	105	HIS
1	L	109	GLN
1	L	197	ASN
1	L	205	ASN
1	L	210	ASN

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Mol	Chain	Res	Type
1	L	230	HIS
1	L	244	ASN
1	L	251	ASN
1	L	395	ASN
1	L	417	ASN
1	L	443	HIS
1	L	497	HIS
1	L	539	ASN
1	M	58	ASN
1	M	67	GLN
1	M	68	ASN
1	M	105	HIS
1	M	109	GLN
1	M	197	ASN
1	M	205	ASN
1	M	210	ASN
1	M	230	HIS
1	M	244	ASN
1	M	251	ASN
1	M	395	ASN
1	M	417	ASN
1	M	443	HIS
1	M	497	HIS
1	M	539	ASN
1	N	58	ASN
1	N	67	GLN
1	N	68	ASN
1	N	105	HIS
1	N	109	GLN
1	N	197	ASN
1	N	205	ASN
1	N	210	ASN
1	N	230	HIS
1	N	244	ASN
1	N	251	ASN
1	N	329	HIS
1	N	395	ASN
1	N	417	ASN
1	N	443	HIS
1	N	497	HIS
1	N	539	ASN
1	O	58	ASN

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Mol	Chain	Res	Type
1	O	67	GLN
1	O	68	ASN
1	O	105	HIS
1	O	109	GLN
1	O	197	ASN
1	O	205	ASN
1	O	210	ASN
1	O	230	HIS
1	O	244	ASN
1	O	251	ASN
1	O	329	HIS
1	O	395	ASN
1	O	417	ASN
1	O	443	HIS
1	O	497	HIS
1	O	539	ASN
1	P	58	ASN
1	P	67	GLN
1	P	68	ASN
1	P	105	HIS
1	P	109	GLN
1	P	197	ASN
1	P	205	ASN
1	P	230	HIS
1	P	244	ASN
1	P	251	ASN
1	P	395	ASN
1	P	417	ASN
1	P	443	HIS
1	P	497	HIS
1	P	539	ASN
1	Q	58	ASN
1	Q	67	GLN
1	Q	68	ASN
1	Q	105	HIS
1	Q	109	GLN
1	Q	197	ASN
1	Q	205	ASN
1	Q	210	ASN
1	Q	230	HIS
1	Q	244	ASN
1	Q	251	ASN

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Mol	Chain	Res	Type
1	Q	395	ASN
1	Q	417	ASN
1	Q	443	HIS
1	Q	497	HIS
1	Q	539	ASN
1	R	58	ASN
1	R	67	GLN
1	R	68	ASN
1	R	105	HIS
1	R	109	GLN
1	R	197	ASN
1	R	205	ASN
1	R	210	ASN
1	R	230	HIS
1	R	244	ASN
1	R	251	ASN
1	R	395	ASN
1	R	417	ASN
1	R	443	HIS
1	R	497	HIS
1	R	539	ASN
1	S	58	ASN
1	S	67	GLN
1	S	68	ASN
1	S	105	HIS
1	S	109	GLN
1	S	197	ASN
1	S	230	HIS
1	S	244	ASN
1	S	251	ASN
1	S	395	ASN
1	S	417	ASN
1	S	443	HIS
1	S	497	HIS
1	S	539	ASN
1	T	58	ASN
1	T	67	GLN
1	T	68	ASN
1	T	105	HIS
1	T	109	GLN
1	T	197	ASN
1	T	205	ASN

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Mol	Chain	Res	Type
1	T	210	ASN
1	T	230	HIS
1	T	244	ASN
1	T	251	ASN
1	T	395	ASN
1	T	417	ASN
1	T	443	HIS
1	T	497	HIS
1	T	539	ASN
1	U	58	ASN
1	U	67	GLN
1	U	68	ASN
1	U	105	HIS
1	U	109	GLN
1	U	197	ASN
1	U	205	ASN
1	U	230	HIS
1	U	244	ASN
1	U	251	ASN
1	U	395	ASN
1	U	417	ASN
1	U	443	HIS
1	U	497	HIS
1	U	539	ASN
1	V	58	ASN
1	V	67	GLN
1	V	68	ASN
1	V	105	HIS
1	V	109	GLN
1	V	197	ASN
1	V	205	ASN
1	V	230	HIS
1	V	244	ASN
1	V	251	ASN
1	V	395	ASN
1	V	417	ASN
1	V	443	HIS
1	V	497	HIS
1	V	539	ASN
1	W	58	ASN
1	W	67	GLN
1	W	68	ASN

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Mol	Chain	Res	Type
1	W	105	HIS
1	W	109	GLN
1	W	197	ASN
1	W	205	ASN
1	W	210	ASN
1	W	230	HIS
1	W	244	ASN
1	W	251	ASN
1	W	329	HIS
1	W	395	ASN
1	W	417	ASN
1	W	443	HIS
1	W	497	HIS
1	W	539	ASN
1	X	58	ASN
1	X	67	GLN
1	X	68	ASN
1	X	105	HIS
1	X	109	GLN
1	X	197	ASN
1	X	205	ASN
1	X	210	ASN
1	X	230	HIS
1	X	244	ASN
1	X	251	ASN
1	X	395	ASN
1	X	417	ASN
1	X	443	HIS
1	X	497	HIS
1	X	539	ASN
1	Y	58	ASN
1	Y	67	GLN
1	Y	68	ASN
1	Y	105	HIS
1	Y	109	GLN
1	Y	197	ASN
1	Y	205	ASN
1	Y	210	ASN
1	Y	230	HIS
1	Y	244	ASN
1	Y	251	ASN
1	Y	329	HIS

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Mol	Chain	Res	Type
1	Y	395	ASN
1	Y	417	ASN
1	Y	443	HIS
1	Y	497	HIS
1	Y	539	ASN
1	Z	58	ASN
1	Z	67	GLN
1	Z	68	ASN
1	Z	105	HIS
1	Z	109	GLN
1	Z	197	ASN
1	Z	205	ASN
1	Z	210	ASN
1	Z	230	HIS
1	Z	244	ASN
1	Z	251	ASN
1	Z	329	HIS
1	Z	395	ASN
1	Z	417	ASN
1	Z	443	HIS
1	Z	497	HIS
1	Z	539	ASN
1	1	58	ASN
1	1	67	GLN
1	1	68	ASN
1	1	105	HIS
1	1	109	GLN
1	1	197	ASN
1	1	205	ASN
1	1	230	HIS
1	1	244	ASN
1	1	251	ASN
1	1	395	ASN
1	1	417	ASN
1	1	443	HIS
1	1	497	HIS
1	1	539	ASN
1	2	58	ASN
1	2	67	GLN
1	2	68	ASN
1	2	105	HIS
1	2	109	GLN

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Mol	Chain	Res	Type
1	2	197	ASN
1	2	205	ASN
1	2	210	ASN
1	2	230	HIS
1	2	244	ASN
1	2	251	ASN
1	2	395	ASN
1	2	417	ASN
1	2	443	HIS
1	2	497	HIS
1	2	539	ASN
1	3	58	ASN
1	3	67	GLN
1	3	68	ASN
1	3	105	HIS
1	3	109	GLN
1	3	197	ASN
1	3	230	HIS
1	3	244	ASN
1	3	251	ASN
1	3	395	ASN
1	3	417	ASN
1	3	443	HIS
1	3	497	HIS
1	3	539	ASN
1	4	58	ASN
1	4	67	GLN
1	4	68	ASN
1	4	105	HIS
1	4	109	GLN
1	4	197	ASN
1	4	205	ASN
1	4	210	ASN
1	4	230	HIS
1	4	244	ASN
1	4	251	ASN
1	4	395	ASN
1	4	417	ASN
1	4	443	HIS
1	4	497	HIS
1	4	539	ASN
1	5	58	ASN

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Mol	Chain	Res	Type
1	5	67	GLN
1	5	68	ASN
1	5	105	HIS
1	5	109	GLN
1	5	197	ASN
1	5	205	ASN
1	5	230	HIS
1	5	244	ASN
1	5	251	ASN
1	5	329	HIS
1	5	395	ASN
1	5	417	ASN
1	5	443	HIS
1	5	497	HIS
1	5	539	ASN
1	6	58	ASN
1	6	67	GLN
1	6	68	ASN
1	6	105	HIS
1	6	109	GLN
1	6	197	ASN
1	6	205	ASN
1	6	230	HIS
1	6	244	ASN
1	6	251	ASN
1	6	329	HIS
1	6	395	ASN
1	6	417	ASN
1	6	443	HIS
1	6	497	HIS
1	6	539	ASN
1	a	58	ASN
1	a	67	GLN
1	a	68	ASN
1	a	105	HIS
1	a	109	GLN
1	a	197	ASN
1	a	205	ASN
1	a	230	HIS
1	a	244	ASN
1	a	251	ASN
1	a	395	ASN

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Mol	Chain	Res	Type
1	a	417	ASN
1	a	443	HIS
1	a	497	HIS
1	a	539	ASN
1	b	58	ASN
1	b	67	GLN
1	b	68	ASN
1	b	105	HIS
1	b	109	GLN
1	b	197	ASN
1	b	205	ASN
1	b	230	HIS
1	b	244	ASN
1	b	251	ASN
1	b	395	ASN
1	b	417	ASN
1	b	443	HIS
1	b	497	HIS
1	b	539	ASN
1	c	58	ASN
1	c	67	GLN
1	c	68	ASN
1	c	105	HIS
1	c	109	GLN
1	c	197	ASN
1	c	205	ASN
1	c	210	ASN
1	c	230	HIS
1	c	244	ASN
1	c	251	ASN
1	c	395	ASN
1	c	417	ASN
1	c	443	HIS
1	c	497	HIS
1	c	539	ASN
1	d	58	ASN
1	d	67	GLN
1	d	68	ASN
1	d	105	HIS
1	d	109	GLN
1	d	197	ASN
1	d	205	ASN

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Mol	Chain	Res	Type
1	d	210	ASN
1	d	230	HIS
1	d	244	ASN
1	d	251	ASN
1	d	329	HIS
1	d	395	ASN
1	d	417	ASN
1	d	443	HIS
1	d	497	HIS
1	d	539	ASN
1	e	58	ASN
1	e	67	GLN
1	e	68	ASN
1	e	105	HIS
1	e	109	GLN
1	e	197	ASN
1	e	205	ASN
1	e	230	HIS
1	e	244	ASN
1	e	251	ASN
1	e	395	ASN
1	e	417	ASN
1	e	443	HIS
1	e	497	HIS
1	e	539	ASN
1	f	58	ASN
1	f	67	GLN
1	f	68	ASN
1	f	105	HIS
1	f	109	GLN
1	f	197	ASN
1	f	205	ASN
1	f	230	HIS
1	f	244	ASN
1	f	251	ASN
1	f	395	ASN
1	f	417	ASN
1	f	443	HIS
1	f	497	HIS
1	f	539	ASN
1	g	58	ASN
1	g	67	GLN

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Mol	Chain	Res	Type
1	g	68	ASN
1	g	105	HIS
1	g	109	GLN
1	g	197	ASN
1	g	205	ASN
1	g	230	HIS
1	g	244	ASN
1	g	251	ASN
1	g	395	ASN
1	g	417	ASN
1	g	443	HIS
1	g	497	HIS
1	g	539	ASN
1	h	58	ASN
1	h	67	GLN
1	h	68	ASN
1	h	105	HIS
1	h	109	GLN
1	h	197	ASN
1	h	205	ASN
1	h	230	HIS
1	h	244	ASN
1	h	251	ASN
1	h	395	ASN
1	h	417	ASN
1	h	443	HIS
1	h	497	HIS
1	h	539	ASN
1	i	58	ASN
1	i	67	GLN
1	i	68	ASN
1	i	105	HIS
1	i	109	GLN
1	i	197	ASN
1	i	205	ASN
1	i	230	HIS
1	i	244	ASN
1	i	251	ASN
1	i	395	ASN
1	i	417	ASN
1	i	443	HIS
1	i	497	HIS

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Mol	Chain	Res	Type
1	i	539	ASN
1	j	58	ASN
1	j	67	GLN
1	j	68	ASN
1	j	105	HIS
1	j	109	GLN
1	j	197	ASN
1	j	205	ASN
1	j	210	ASN
1	j	230	HIS
1	j	244	ASN
1	j	251	ASN
1	j	395	ASN
1	j	417	ASN
1	j	443	HIS
1	j	497	HIS
1	j	539	ASN
1	k	58	ASN
1	k	67	GLN
1	k	68	ASN
1	k	105	HIS
1	k	109	GLN
1	k	197	ASN
1	k	205	ASN
1	k	230	HIS
1	k	244	ASN
1	k	251	ASN
1	k	329	HIS
1	k	395	ASN
1	k	417	ASN
1	k	443	HIS
1	k	497	HIS
1	k	539	ASN
1	l	58	ASN
1	l	67	GLN
1	l	68	ASN
1	l	105	HIS
1	l	109	GLN
1	l	197	ASN
1	l	210	ASN
1	l	230	HIS
1	l	244	ASN

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Mol	Chain	Res	Type
1	l	251	ASN
1	l	395	ASN
1	l	417	ASN
1	l	443	HIS
1	l	497	HIS
1	l	539	ASN
1	m	58	ASN
1	m	67	GLN
1	m	68	ASN
1	m	105	HIS
1	m	109	GLN
1	m	197	ASN
1	m	205	ASN
1	m	210	ASN
1	m	230	HIS
1	m	244	ASN
1	m	251	ASN
1	m	395	ASN
1	m	417	ASN
1	m	443	HIS
1	m	497	HIS
1	m	539	ASN
1	n	58	ASN
1	n	67	GLN
1	n	68	ASN
1	n	105	HIS
1	n	109	GLN
1	n	197	ASN
1	n	205	ASN
1	n	210	ASN
1	n	230	HIS
1	n	244	ASN
1	n	251	ASN
1	n	329	HIS
1	n	395	ASN
1	n	417	ASN
1	n	443	HIS
1	n	497	HIS
1	n	539	ASN
1	o	58	ASN
1	o	67	GLN
1	o	68	ASN

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Mol	Chain	Res	Type
1	o	105	HIS
1	o	109	GLN
1	o	197	ASN
1	o	205	ASN
1	o	210	ASN
1	o	230	HIS
1	o	244	ASN
1	o	251	ASN
1	o	329	HIS
1	o	395	ASN
1	o	417	ASN
1	o	443	HIS
1	o	497	HIS
1	o	539	ASN
1	p	58	ASN
1	p	67	GLN
1	p	68	ASN
1	p	105	HIS
1	p	109	GLN
1	p	197	ASN
1	p	205	ASN
1	p	210	ASN
1	p	230	HIS
1	p	244	ASN
1	p	251	ASN
1	p	395	ASN
1	p	417	ASN
1	p	443	HIS
1	p	497	HIS
1	p	539	ASN
1	q	58	ASN
1	q	67	GLN
1	q	68	ASN
1	q	105	HIS
1	q	109	GLN
1	q	197	ASN
1	q	205	ASN
1	q	230	HIS
1	q	244	ASN
1	q	251	ASN
1	q	395	ASN
1	q	417	ASN

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Mol	Chain	Res	Type
1	q	443	HIS
1	q	497	HIS
1	q	539	ASN
1	r	58	ASN
1	r	67	GLN
1	r	68	ASN
1	r	105	HIS
1	r	109	GLN
1	r	197	ASN
1	r	205	ASN
1	r	230	HIS
1	r	244	ASN
1	r	251	ASN
1	r	395	ASN
1	r	417	ASN
1	r	443	HIS
1	r	497	HIS
1	r	539	ASN
1	s	58	ASN
1	s	67	GLN
1	s	68	ASN
1	s	105	HIS
1	s	109	GLN
1	s	197	ASN
1	s	205	ASN
1	s	210	ASN
1	s	230	HIS
1	s	244	ASN
1	s	251	ASN
1	s	395	ASN
1	s	417	ASN
1	s	443	HIS
1	s	497	HIS
1	s	539	ASN
1	t	58	ASN
1	t	67	GLN
1	t	68	ASN
1	t	105	HIS
1	t	109	GLN
1	t	197	ASN
1	t	205	ASN
1	t	230	HIS

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Mol	Chain	Res	Type
1	t	244	ASN
1	t	251	ASN
1	t	395	ASN
1	t	417	ASN
1	t	443	HIS
1	t	497	HIS
1	t	539	ASN
1	u	58	ASN
1	u	67	GLN
1	u	68	ASN
1	u	105	HIS
1	u	109	GLN
1	u	197	ASN
1	u	205	ASN
1	u	210	ASN
1	u	230	HIS
1	u	244	ASN
1	u	251	ASN
1	u	329	HIS
1	u	395	ASN
1	u	417	ASN
1	u	443	HIS
1	u	497	HIS
1	u	539	ASN
1	v	58	ASN
1	v	67	GLN
1	v	68	ASN
1	v	105	HIS
1	v	109	GLN
1	v	197	ASN
1	v	205	ASN
1	v	230	HIS
1	v	244	ASN
1	v	251	ASN
1	v	395	ASN
1	v	417	ASN
1	v	443	HIS
1	v	497	HIS
1	v	539	ASN
1	w	58	ASN
1	w	67	GLN
1	w	68	ASN

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Mol	Chain	Res	Type
1	w	105	HIS
1	w	109	GLN
1	w	197	ASN
1	w	205	ASN
1	w	230	HIS
1	w	244	ASN
1	w	251	ASN
1	w	395	ASN
1	w	417	ASN
1	w	443	HIS
1	w	497	HIS
1	w	539	ASN
1	x	58	ASN
1	x	67	GLN
1	x	68	ASN
1	x	105	HIS
1	x	109	GLN
1	x	197	ASN
1	x	205	ASN
1	x	230	HIS
1	x	244	ASN
1	x	251	ASN
1	x	395	ASN
1	x	417	ASN
1	x	443	HIS
1	x	497	HIS
1	x	539	ASN
1	y	58	ASN
1	y	67	GLN
1	y	68	ASN
1	y	105	HIS
1	y	109	GLN
1	y	197	ASN
1	y	205	ASN
1	y	210	ASN
1	y	230	HIS
1	y	244	ASN
1	y	251	ASN
1	y	329	HIS
1	y	395	ASN
1	y	417	ASN
1	y	443	HIS

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Mol	Chain	Res	Type
1	y	497	HIS
1	y	539	ASN
1	z	58	ASN
1	z	67	GLN
1	z	68	ASN
1	z	105	HIS
1	z	109	GLN
1	z	197	ASN
1	z	205	ASN
1	z	210	ASN
1	z	230	HIS
1	z	244	ASN
1	z	251	ASN
1	z	395	ASN
1	z	417	ASN
1	z	443	HIS
1	z	497	HIS
1	z	539	ASN
1	7	58	ASN
1	7	67	GLN
1	7	68	ASN
1	7	105	HIS
1	7	109	GLN
1	7	197	ASN
1	7	205	ASN
1	7	230	HIS
1	7	244	ASN
1	7	251	ASN
1	7	329	HIS
1	7	395	ASN
1	7	417	ASN
1	7	443	HIS
1	7	497	HIS
1	7	539	ASN
1	8	58	ASN
1	8	67	GLN
1	8	68	ASN
1	8	105	HIS
1	8	109	GLN
1	8	197	ASN
1	8	205	ASN
1	8	230	HIS

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Mol	Chain	Res	Type
1	8	244	ASN
1	8	251	ASN
1	8	329	HIS
1	8	395	ASN
1	8	417	ASN
1	8	443	HIS
1	8	497	HIS
1	8	539	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.

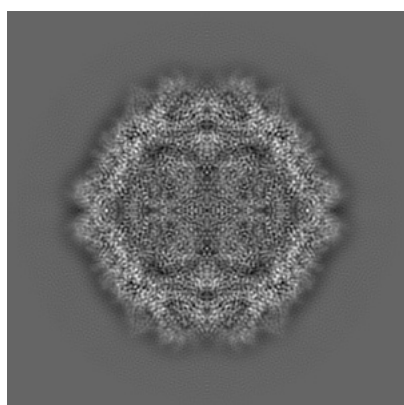
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8598. These allow visual inspection of the internal detail of the map and identification of artifacts.

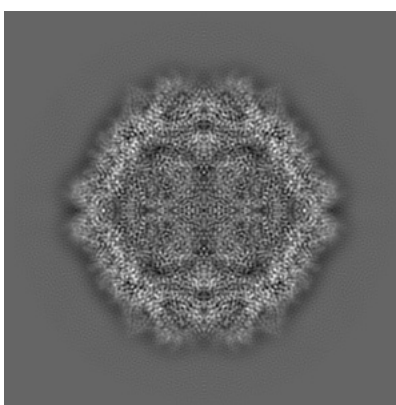
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

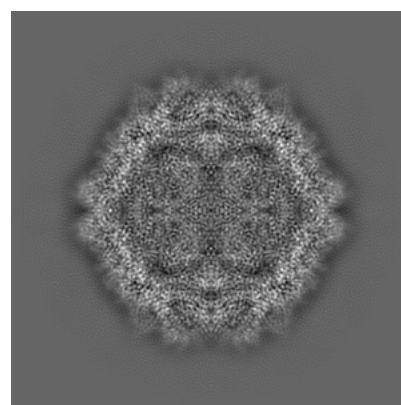
#### 6.1.1 Primary map



X



Y

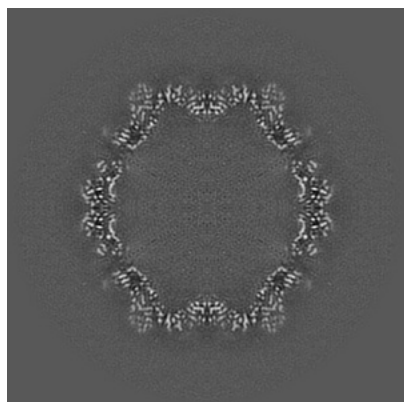


Z

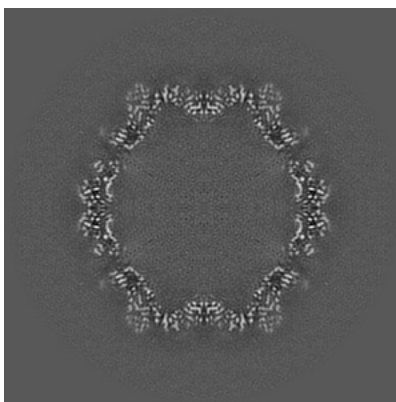
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

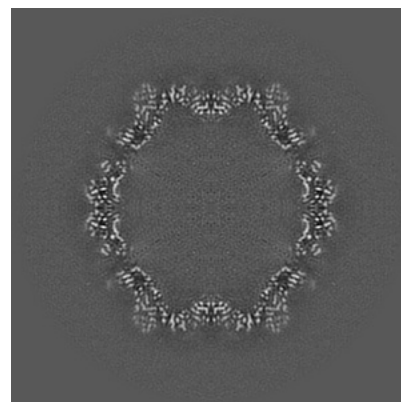
#### 6.2.1 Primary map



X Index: 199



Y Index: 199

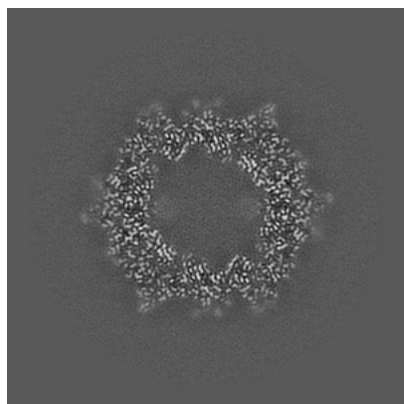


Z Index: 199

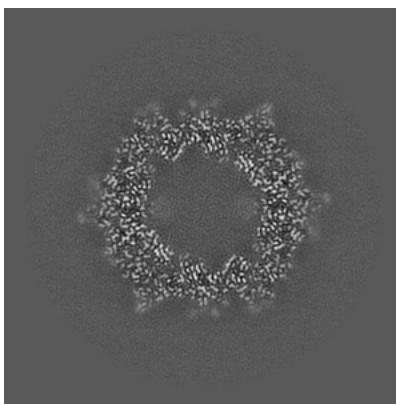
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

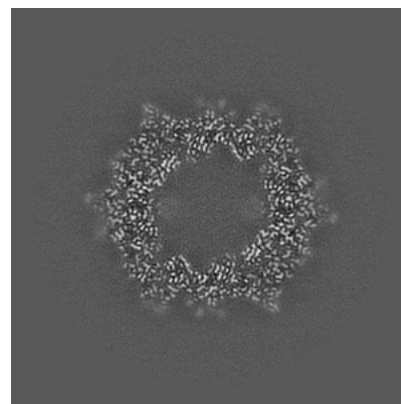
### 6.3.1 Primary map



X Index: 127



Y Index: 127

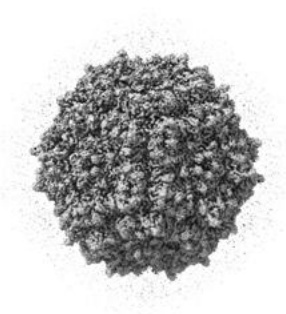


Z Index: 271

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 1.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

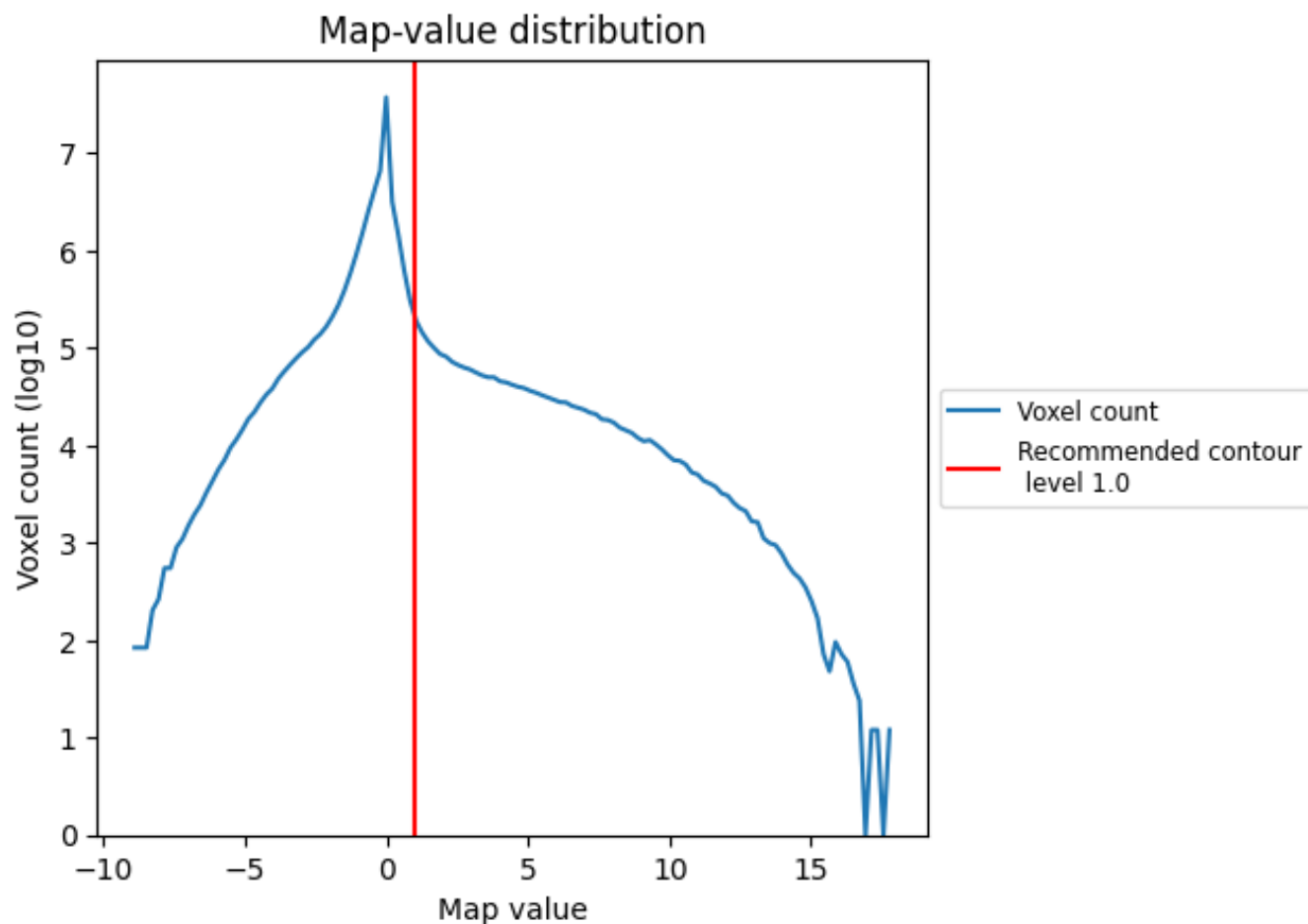
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

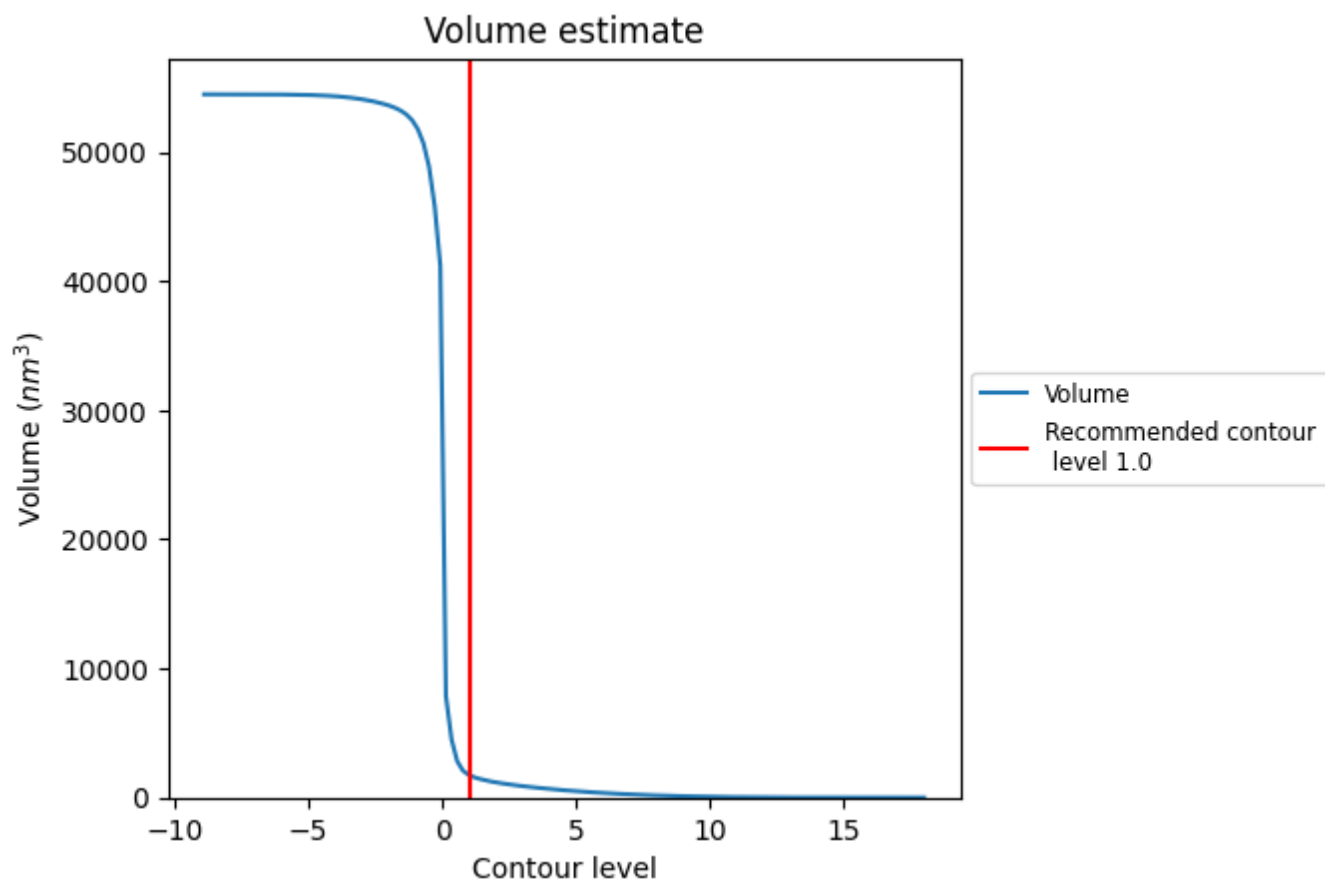
This section contains the results of statistical analysis of the map.

### 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.

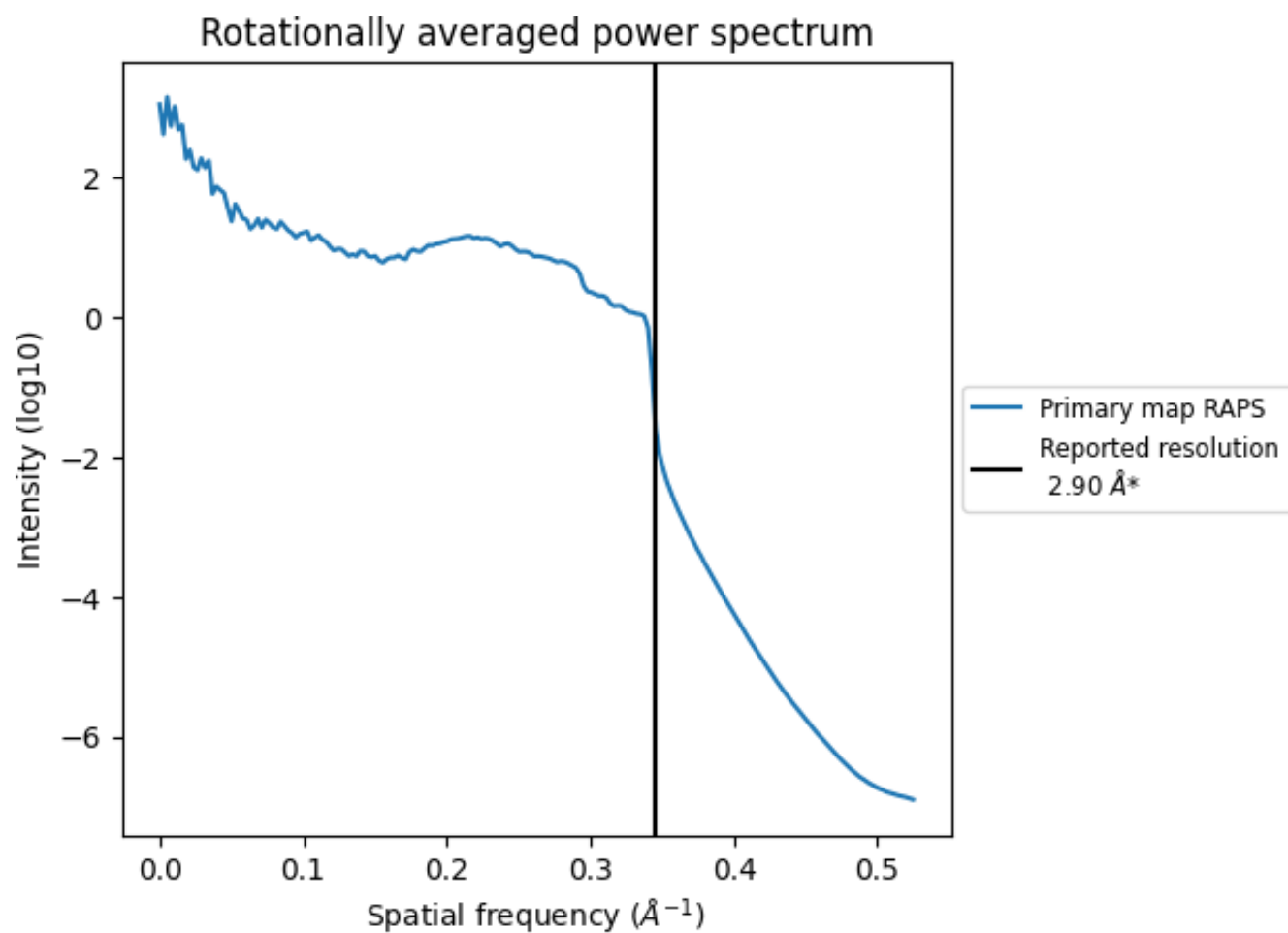
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1740  $\text{nm}^3$ ; this corresponds to an approximate mass of 1572 kDa.

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

### 7.3 Rotationally averaged power spectrum ⓘ



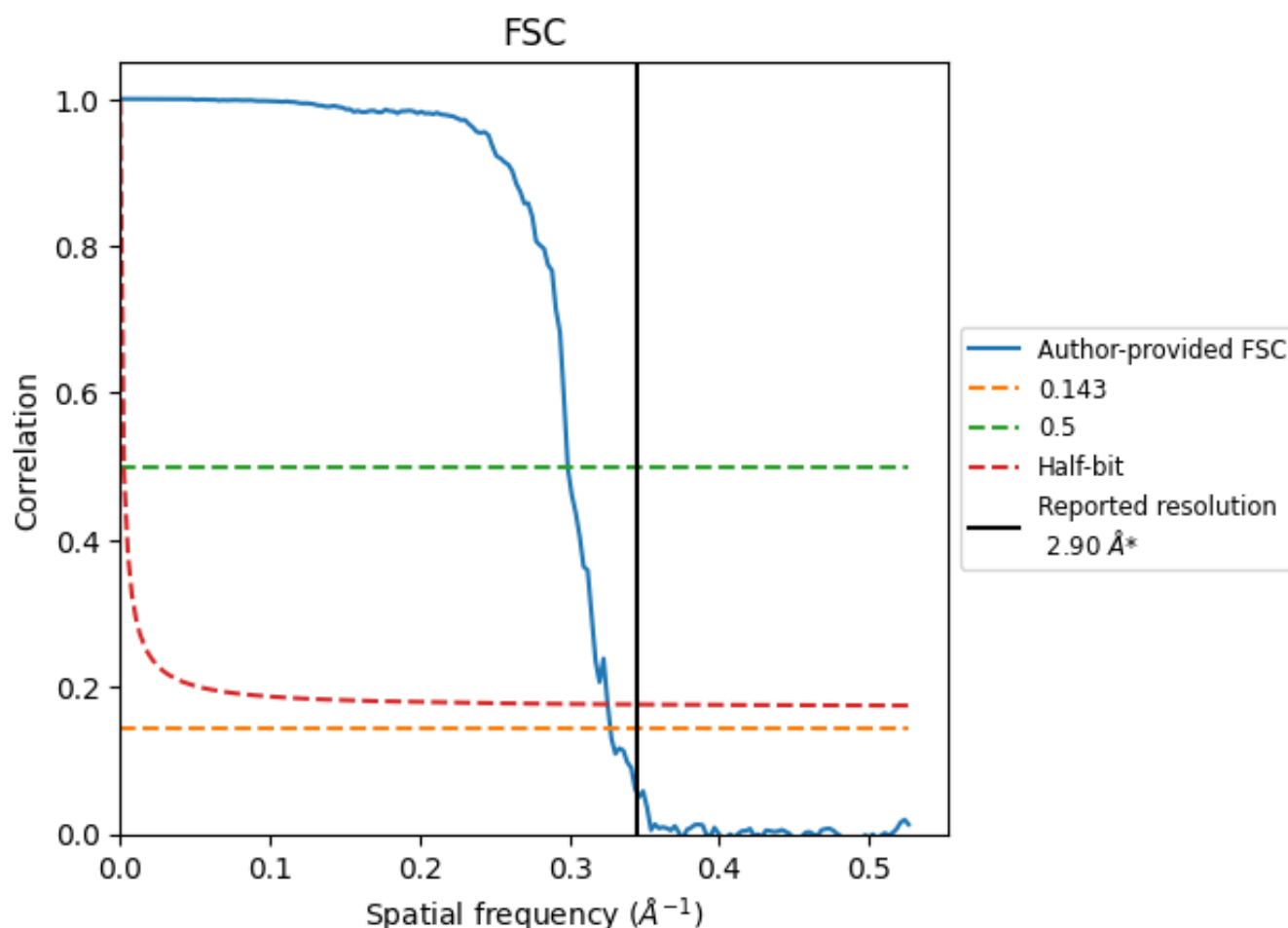
\*Reported resolution corresponds to spatial frequency of 0.345 Å<sup>-1</sup>



## 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 0.345 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

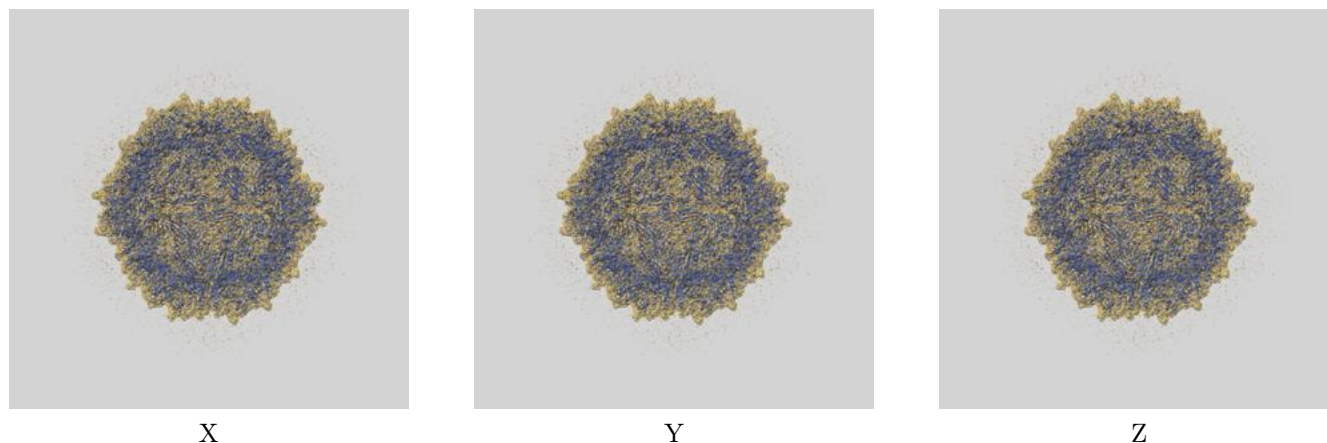
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	3.06	3.35	3.07
Unmasked-calculated*	-	-	-

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

## 9 Map-model fit [i](#)

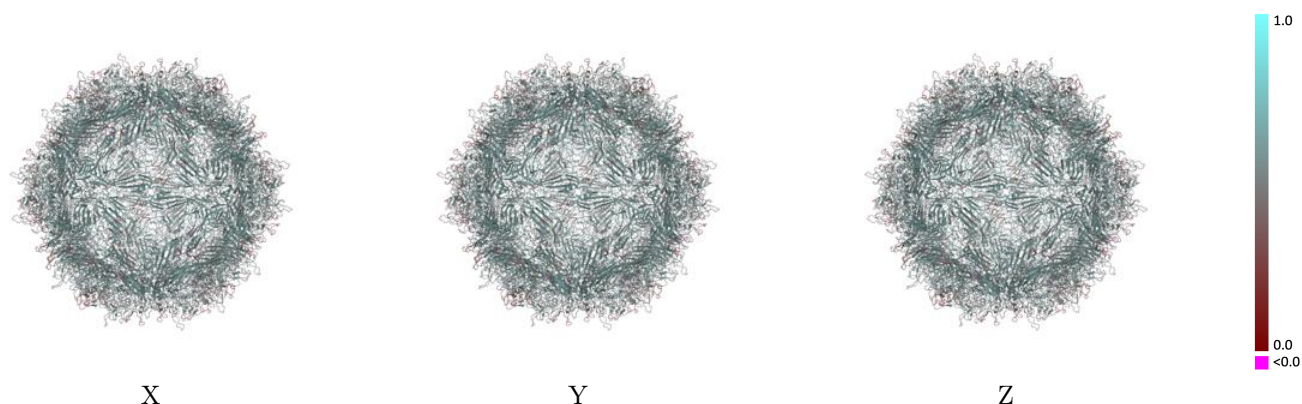
This section contains information regarding the fit between EMDB map EMD-8598 and PDB model 5URF. Per-residue inclusion information can be found in section 3 on page 10.

### 9.1 Map-model overlay [i](#)



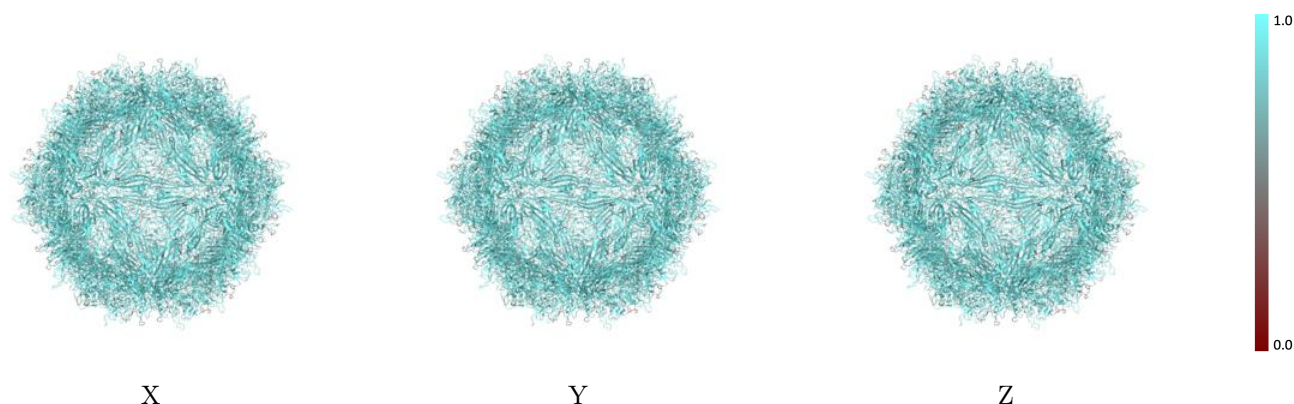
The images above show the 3D surface view of the map at the recommended contour level 1.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



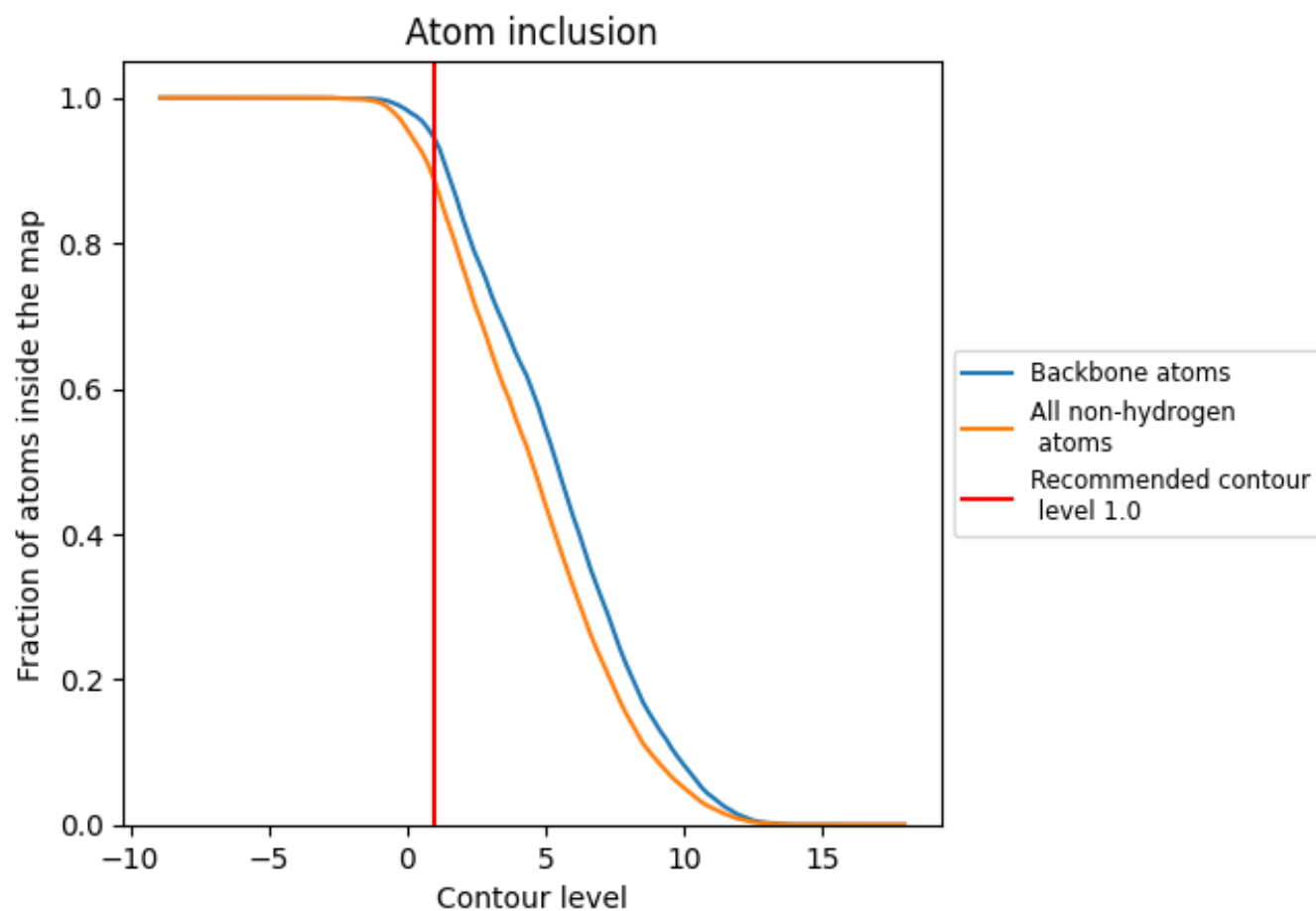
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (1.0).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 89% 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 (1.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8854	 0.5290
1	 0.8853	 0.5280
2	 0.8856	 0.5300
3	 0.8845	 0.5280
4	 0.8853	 0.5290
5	 0.8866	 0.5290
6	 0.8853	 0.5290
7	 0.8866	 0.5300
8	 0.8853	 0.5290
A	 0.8861	 0.5300
B	 0.8848	 0.5280
C	 0.8851	 0.5310
D	 0.8851	 0.5290
E	 0.8856	 0.5300
F	 0.8856	 0.5300
G	 0.8848	 0.5280
H	 0.8858	 0.5290
I	 0.8848	 0.5280
J	 0.8863	 0.5290
K	 0.8853	 0.5280
L	 0.8851	 0.5290
M	 0.8853	 0.5300
N	 0.8853	 0.5300
O	 0.8851	 0.5290
P	 0.8863	 0.5300
Q	 0.8851	 0.5310
R	 0.8866	 0.5290
S	 0.8851	 0.5290
T	 0.8853	 0.5300
U	 0.8848	 0.5290
V	 0.8845	 0.5280
W	 0.8848	 0.5300
X	 0.8856	 0.5280
Y	 0.8853	 0.5290
Z	 0.8851	 0.5280



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Chain	Atom inclusion	Q-score
a	 0.8856	 0.5280
b	 0.8853	 0.5290
c	 0.8848	 0.5280
d	 0.8848	 0.5270
e	 0.8866	 0.5280
f	 0.8856	 0.5290
g	 0.8863	 0.5310
h	 0.8848	 0.5280
i	 0.8848	 0.5290
j	 0.8868	 0.5300
k	 0.8853	 0.5290
l	 0.8853	 0.5290
m	 0.8853	 0.5290
n	 0.8851	 0.5300
o	 0.8856	 0.5290
p	 0.8853	 0.5290
q	 0.8845	 0.5280
r	 0.8868	 0.5270
s	 0.8851	 0.5280
t	 0.8863	 0.5290
u	 0.8851	 0.5280
v	 0.8851	 0.5290
w	 0.8858	 0.5300
x	 0.8845	 0.5290
y	 0.8851	 0.5290
z	 0.8845	 0.5280