Full wwPDB EM Validation Report ⓘ

Oct 15, 2024 – 08:02 AM JST

PDB ID	:	8HIF
EMDB ID	:	EMD-34815
Title	:	One asymmetric unit of Singapore grouper iridovirus capsid
Authors	:	Zhao, Z.N.; Liu, C.C.; Zhu, D.J.; Qi, J.X.; Zhang, X.Z.; Gao, G.F.
Deposited on	:	2022-11-20
Resolution	:	3.50 Å(reported)

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

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

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

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

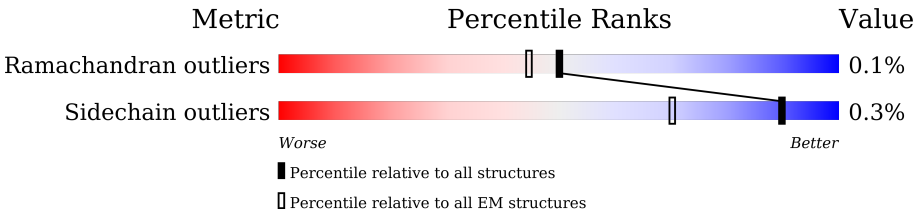
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.50 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	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	A1	463	99%
1	A2	463	99%
1	A3	463	99%
1	B1	463	98%
1	B2	463	99%
1	B3	463	99%
1	C1	463	99%
1	C2	463	100%
1	C3	463	99%

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Mol	Chain	Length	Quality of chain
1	D1	463	99%
1	D2	463	99%
1	D3	463	99%
1	E1	463	100%
1	E2	463	100%
1	E3	463	99%
1	F1	463	99%
1	F2	463	98%
1	F3	463	100%
1	G1	463	99%
1	G2	463	99%
1	G3	463	100%
1	H1	463	98%
1	H2	463	99%
1	H3	463	99%
1	I1	463	99%
1	I2	463	99%
1	I3	463	99%
1	J1	463	98%
1	J2	463	100%
1	J3	463	100%
1	K1	463	100%
1	K2	463	100%
1	K3	463	100%
1	L1	463	98%

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Mol	Chain	Length	Quality of chain
1	L2	463	99%
1	L3	463	100%
1	M1	463	100%
1	M2	463	100%
1	M3	463	98%
1	N1	463	99%
1	N2	463	99%
1	N3	463	100%
1	O1	463	98%
1	O2	463	100%
1	O3	463	100%
1	P1	463	99%
1	P2	463	100%
1	P3	463	99%
1	Q1	463	99%
1	Q2	463	100%
1	Q3	463	98%
1	R1	463	100%
1	R2	463	98%
1	R3	463	99%
1	S1	463	100%
1	S2	463	99%
1	S3	463	100%
1	T1	463	100%
1	T2	463	99%

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Mol	Chain	Length	Quality of chain
1	T3	463	100%
1	U1	463	99%
1	U2	463	100%
1	U3	463	100%
1	V1	463	100%
1	V2	463	99%
1	V3	463	99%
1	W1	463	100%
1	W2	463	100%
1	W3	463	100%
1	X1	463	100%
1	X2	463	100%
1	X3	463	100%
1	Y1	463	99%
1	Y2	463	98%
1	Y3	463	99%
1	Z1	463	98%
1	Z2	463	100%
1	Z3	463	100%
1	a1	463	100%
1	a2	463	100%
1	a3	463	100%
1	b1	463	100%
1	b2	463	100%
1	b3	463	99%

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Mol	Chain	Length	Quality of chain
1	c1	463	99%
1	c2	463	100%
1	c3	463	99%
1	d1	463	99%
1	d2	463	99%
1	d3	463	100%
1	e1	463	98%
1	e2	463	100%
1	e3	463	99%
1	f1	463	98%
1	f2	463	100%
1	f3	463	100%
1	g1	463	99%
1	g2	463	100%
1	g3	463	100%
1	h1	463	98%
1	h2	463	99%
1	h3	463	100%
1	j1	463	99%
1	j2	463	100%
1	j3	463	100%
1	k1	463	100%
1	k2	463	99%
1	k3	463	100%
1	m1	463	99%

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Mol	Chain	Length	Quality of chain
1	m2	463	99%
1	m3	463	100%
1	n1	463	100%
1	n2	463	100%
1	n3	463	99%
1	p1	463	100%
1	p2	463	100%
1	p3	463	99%
1	q1	463	100%
1	q2	463	100%
1	q3	463	100%
1	r1	463	99%
1	r2	463	100%
1	r3	463	99%
2	s1	170	56% 44%
2	s2	170	9% 45% 55%
2	s3	170	56% 42%
2	s4	170	6% 58% 41%
2	s5	170	6% 55% 45%
2	s6	170	5% 55% 45%
2	t1	170	5% 57% 42%
2	t2	170	55% 44%
2	t3	170	56% 43%
2	t4	170	53% 45%
2	t5	170	6% 44% 56%

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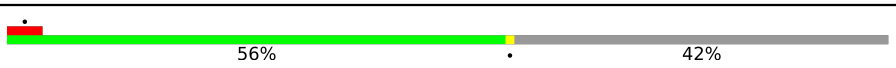
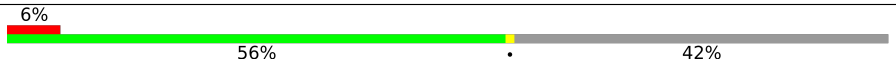
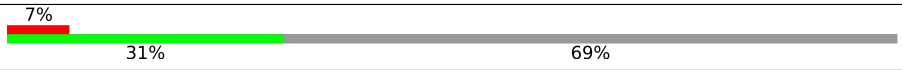
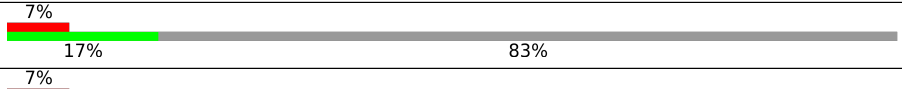
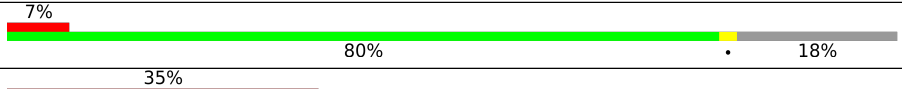
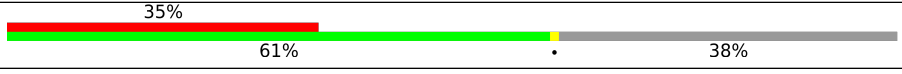
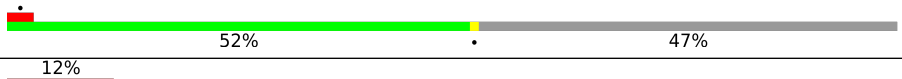
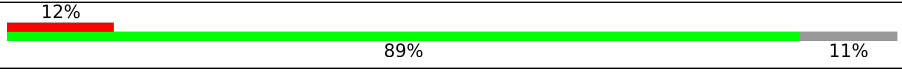
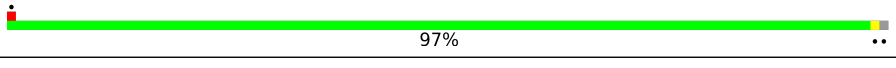
Mol	Chain	Length	Quality of chain
2	t6	170	
2	t7	170	
2	y7	170	
2	y8	170	
3	y1	461	
3	y2	461	
4	y4	506	
5	y5	146	
6	y6	103	
7	y3	141	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 450820 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 Major capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A1	461	Total	C	N	O	S	0	0
			3516	2225	597	671	23		
1	A2	459	Total	C	N	O	S	0	0
			3504	2220	595	667	22		
1	A3	458	Total	C	N	O	S	0	0
			3497	2216	594	665	22		
1	B1	454	Total	C	N	O	S	0	0
			3480	2206	593	659	22		
1	B2	459	Total	C	N	O	S	0	0
			3510	2223	598	667	22		
1	B3	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	C1	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	C2	462	Total	C	N	O	S	0	0
			3521	2229	598	672	22		
1	C3	458	Total	C	N	O	S	0	0
			3503	2219	597	665	22		
1	D1	458	Total	C	N	O	S	0	0
			3497	2216	594	665	22		
1	D2	461	Total	C	N	O	S	0	0
			3517	2227	597	670	23		
1	D3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	E1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	E2	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	E3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	F1	461	Total	C	N	O	S	0	0
			3504	2220	594	668	22		
1	F2	455	Total	C	N	O	S	0	0
			3480	2205	591	662	22		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	F3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	G1	461	Total	C	N	O	S	0	0
			3517	2227	597	670	23		
1	G2	461	Total	C	N	O	S	0	0
			3514	2226	596	669	23		
1	G3	462	Total	C	N	O	S	0	0
			3527	2233	600	671	23		
1	H1	457	Total	C	N	O	S	0	0
			3495	2213	596	664	22		
1	H2	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	H3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	I1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	I2	459	Total	C	N	O	S	0	0
			3510	2223	598	667	22		
1	I3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	J1	457	Total	C	N	O	S	0	0
			3489	2210	593	664	22		
1	J3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	K1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	K2	462	Total	C	N	O	S	0	0
			3528	2233	601	671	23		
1	K3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	L1	458	Total	C	N	O	S	0	0
			3503	2219	597	665	22		
1	L2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	L3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	M1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	M2	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	M3	455	Total	C	N	O	S	0	0
			3484	2209	591	662	22		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	N1	458	Total	C	N	O	S	0	0
			3503	2219	597	665	22		
1	N2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	N3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	O1	456	Total	C	N	O	S	0	0
			3491	2211	595	663	22		
1	O2	462	Total	C	N	O	S	0	0
			3526	2232	601	670	23		
1	O3	462	Total	C	N	O	S	0	0
			3520	2229	598	670	23		
1	P1	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	P2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	P3	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	Q1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	Q2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	Q3	457	Total	C	N	O	S	0	0
			3495	2215	596	662	22		
1	R1	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	R2	454	Total	C	N	O	S	0	0
			3482	2206	593	661	22		
1	R3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	S1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	S2	457	Total	C	N	O	S	0	0
			3499	2217	596	664	22		
1	S3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	T1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	T2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	T3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	U1	460	Total	C	N	O	S	0	0
			3515	2224	599	669	23		
1	U2	461	Total	C	N	O	S	0	0
			3517	2227	597	670	23		
1	U3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	V1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	V2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	V3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	W1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	W2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	W3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	X1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	X2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	X3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	Y1	461	Total	C	N	O	S	0	0
			3520	2229	600	668	23		
1	Y2	455	Total	C	N	O	S	0	0
			3490	2212	594	662	22		
1	Y3	461	Total	C	N	O	S	0	0
			3519	2228	600	668	23		
1	Z1	456	Total	C	N	O	S	0	0
			3494	2214	595	663	22		
1	Z2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	Z3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	a1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	a2	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	a3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	b1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	b2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	b3	461	Total	C	N	O	S	0	0
			3523	2230	600	670	23		
1	d1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	d2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	d3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	e1	456	Total	C	N	O	S	0	0
			3488	2211	592	663	22		
1	e2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	e3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	f1	456	Total	C	N	O	S	0	0
			3488	2211	592	663	22		
1	f2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	f3	462	Total	C	N	O	S	0	0
			3520	2230	595	672	23		
1	g1	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	g2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	g3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	h1	456	Total	C	N	O	S	0	0
			3464	2199	585	658	22		
1	h2	460	Total	C	N	O	S	0	0
			3517	2227	599	669	22		
1	h3	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	j1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	j2	461	Total	C	N	O	S	0	0
			3511	2224	594	670	23		
1	j3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	k1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	k2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	k3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	m1	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	m2	462	Total	C	N	O	S	0	0
			3524	2231	598	672	23		
1	m3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	n1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	n2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	n3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	p1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	p2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	p3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	r1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	r2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	r3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	J2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	c1	462	Total	C	N	O	S	0	0
			3520	2229	598	670	23		
1	c2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	c3	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	q1	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		
1	q2	462	Total	C	N	O	S	0	0
			3530	2234	601	672	23		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	q3	462	Total	C	N	O	S	0	0
			3520	2229	598	670	23		

- Molecule 2 is a protein called VP38.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	s1	95	Total	C	N	O	S	0	0
			692	421	127	137	7		
2	s2	76	Total	C	N	O	S	0	0
			573	351	104	114	4		
2	s3	98	Total	C	N	O	S	0	0
			739	453	136	143	7		
2	s4	100	Total	C	N	O	S	0	0
			738	453	132	147	6		
2	s5	94	Total	C	N	O	S	0	0
			700	426	129	139	6		
2	s6	94	Total	C	N	O	S	0	0
			692	422	126	138	6		
2	t1	98	Total	C	N	O	S	0	0
			725	442	133	143	7		
2	t2	96	Total	C	N	O	S	0	0
			715	436	132	140	7		
2	t3	97	Total	C	N	O	S	0	0
			722	444	131	141	6		
2	t4	93	Total	C	N	O	S	0	0
			666	406	121	134	5		
2	t5	74	Total	C	N	O	S	0	0
			554	340	102	110	2		
2	t6	98	Total	C	N	O	S	0	0
			727	444	134	142	7		
2	t7	98	Total	C	N	O	S	0	0
			739	453	136	143	7		
2	y7	53	Total	C	N	O	S	0	0
			400	247	74	77	2		
2	y8	49	Total	C	N	O	S	0	0
			355	218	64	71	2		

- Molecule 3 is a protein called VP137.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	y2	379	Total	C	N	O	S	0	0
			2716	1690	500	511	15		

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	y1	80	Total	C	N	O	S	0	0
			552	345	94	111	2		

- Molecule 4 is a protein called VP88.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	y4	312	Total	C	N	O	S	0	0
			2399	1516	404	472	7		

- Molecule 5 is a protein called VP59.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	y5	78	Total	C	N	O	S	0	0
			631	391	119	116	5		

- Molecule 6 is a protein called VP139.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	y6	92	Total	C	N	O	S	0	0
			694	441	127	118	8		

- Molecule 7 is a protein called Penton protein (VP14).

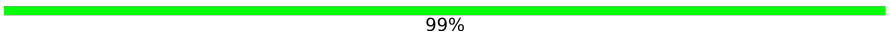
Mol	Chain	Residues	Atoms					AltConf	Trace
7	y3	139	Total	C	N	O	S	0	0
			1062	671	189	196	6		

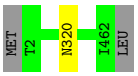
3 Residue-property plots (i)

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: Major capsid protein

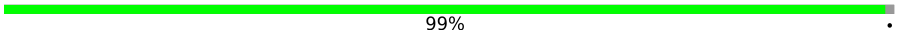
Chain A1:

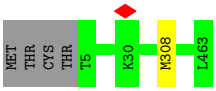




• Molecule 1: Major capsid protein

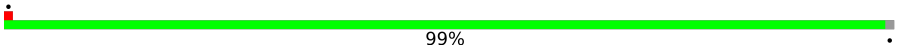
Chain A2:

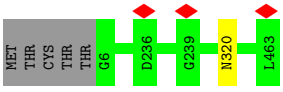




• Molecule 1: Major capsid protein

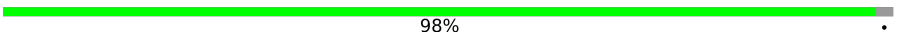
Chain A3:

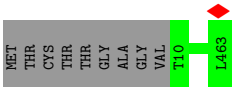




• Molecule 1: Major capsid protein

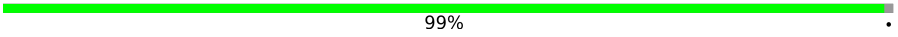
Chain B1:

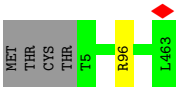




• Molecule 1: Major capsid protein

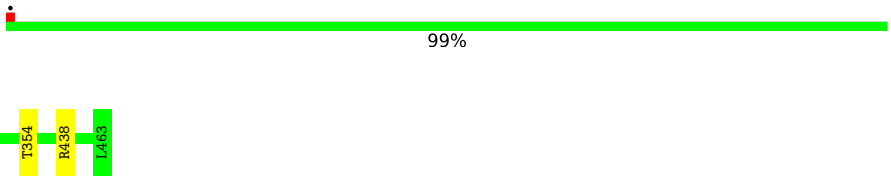
Chain B2:





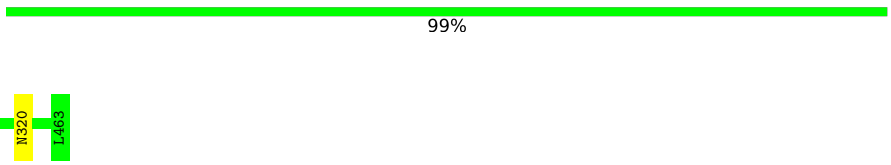
• Molecule 1: Major capsid protein

Chain B3:



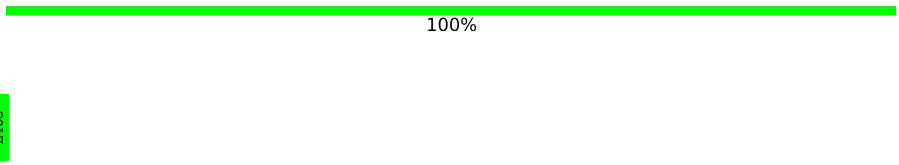
• Molecule 1: Major capsid protein

Chain C1:



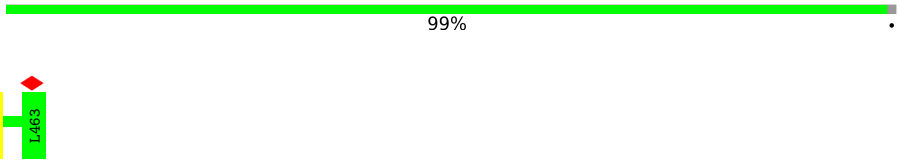
• Molecule 1: Major capsid protein

Chain C2:



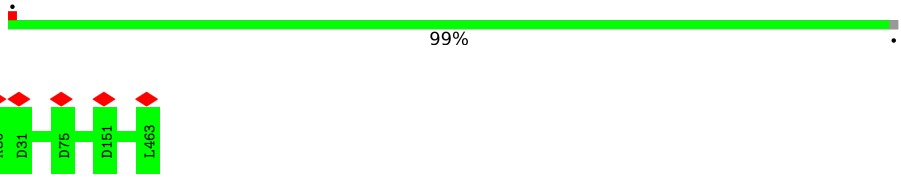
• Molecule 1: Major capsid protein

Chain C3:



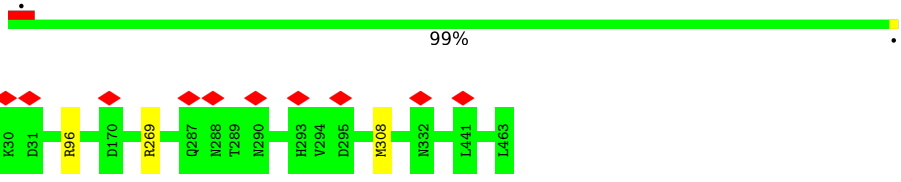
• Molecule 1: Major capsid protein

Chain D1:



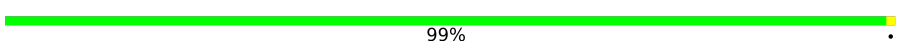
• Molecule 1: Major capsid protein

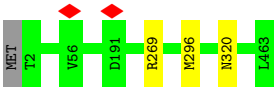
Chain D2:



• Molecule 1: Major capsid protein

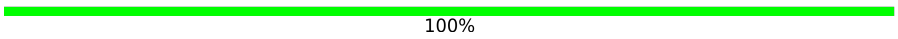
Chain D3:

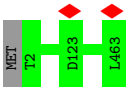




• Molecule 1: Major capsid protein

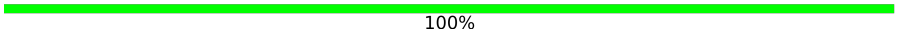
Chain E1:

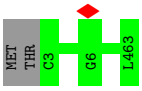




• Molecule 1: Major capsid protein

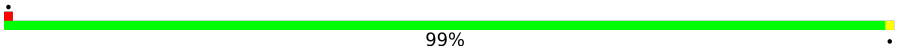
Chain E2:

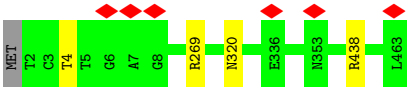




• Molecule 1: Major capsid protein

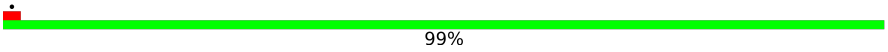
Chain E3:

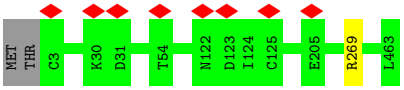




• Molecule 1: Major capsid protein

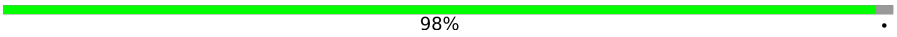
Chain F1:

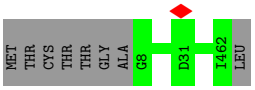




• Molecule 1: Major capsid protein

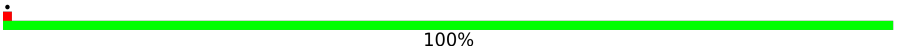
Chain F2:

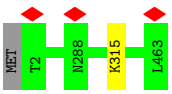




• Molecule 1: Major capsid protein

Chain F3:



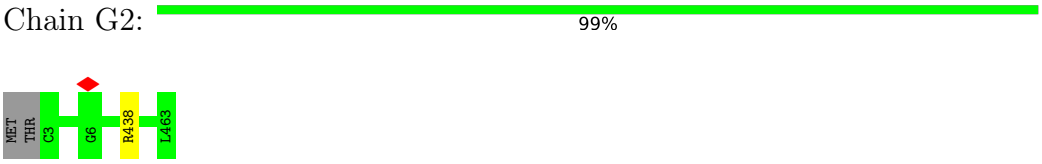


• Molecule 1: Major capsid protein

Chain G1:

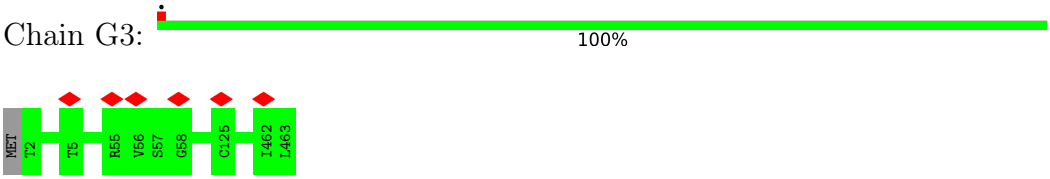
• Molecule 1: Major capsid protein

Chain G2:



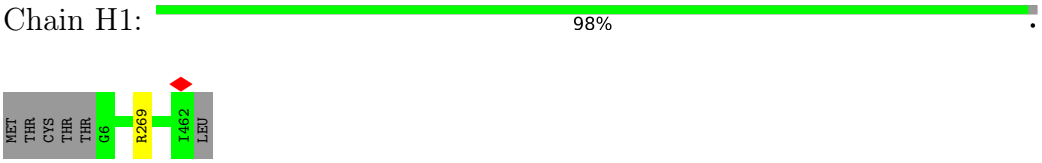
• Molecule 1: Major capsid protein

Chain G3:



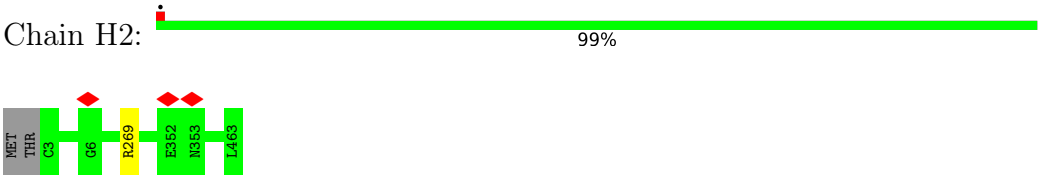
• Molecule 1: Major capsid protein

Chain H1:



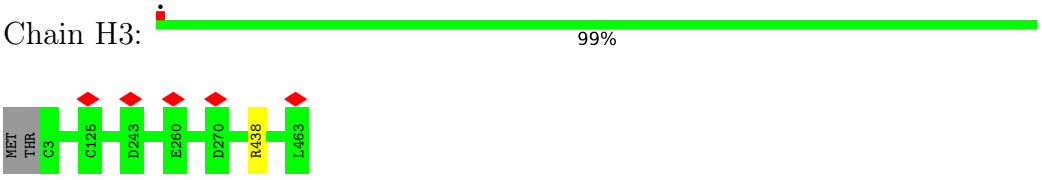
• Molecule 1: Major capsid protein

Chain H2:



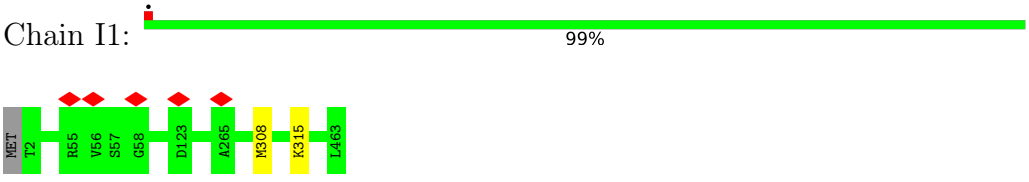
• Molecule 1: Major capsid protein

Chain H3:



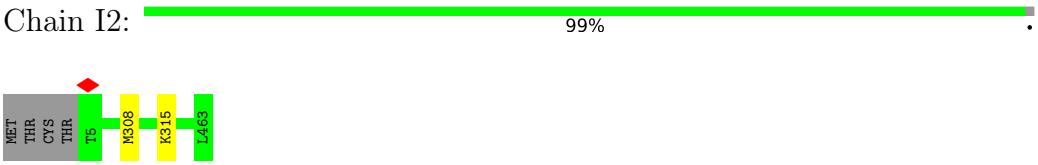
• Molecule 1: Major capsid protein

Chain I1:



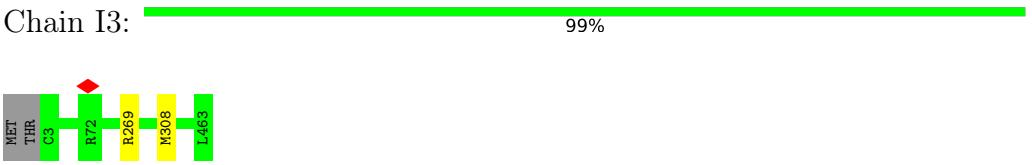
• Molecule 1: Major capsid protein

Chain I2:



• Molecule 1: Major capsid protein

Chain I3:

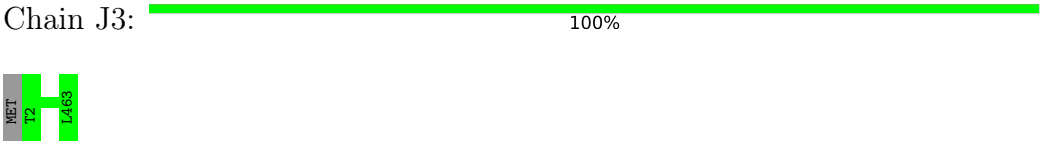


• Molecule 1: Major capsid protein

Chain J1:

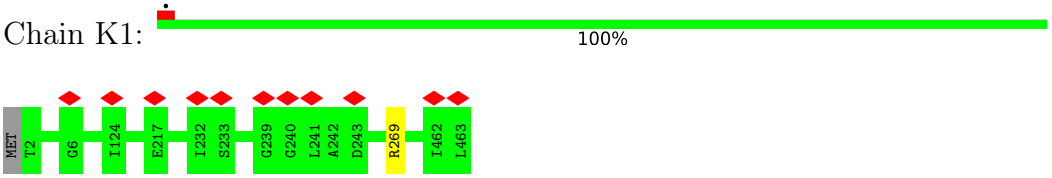
• Molecule 1: Major capsid protein

Chain J3:



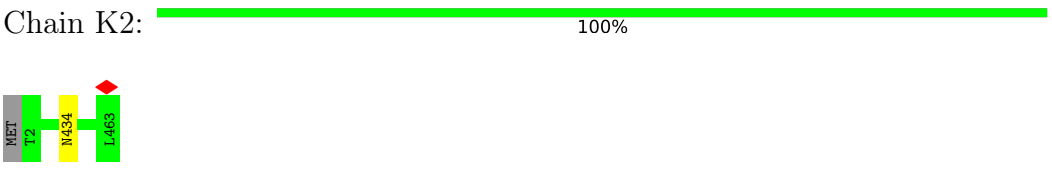
• Molecule 1: Major capsid protein

Chain K1:



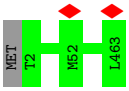
• Molecule 1: Major capsid protein

Chain K2:



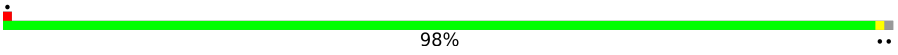
• Molecule 1: Major capsid protein

Chain K3:



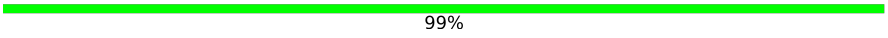
• Molecule 1: Major capsid protein

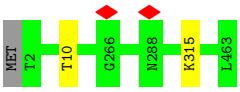
Chain L1:



• Molecule 1: Major capsid protein

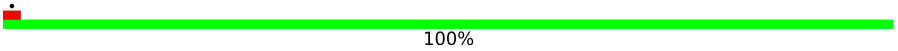
Chain L2:

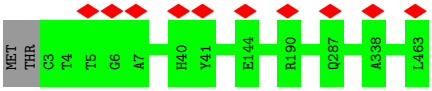




• Molecule 1: Major capsid protein

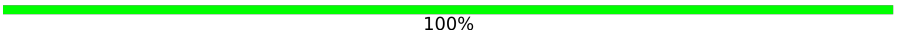
Chain L3:

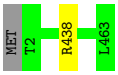




• Molecule 1: Major capsid protein

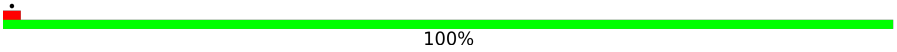
Chain M1:

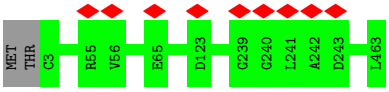




• Molecule 1: Major capsid protein

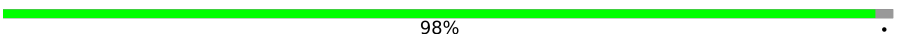
Chain M2:

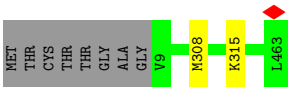




• Molecule 1: Major capsid protein

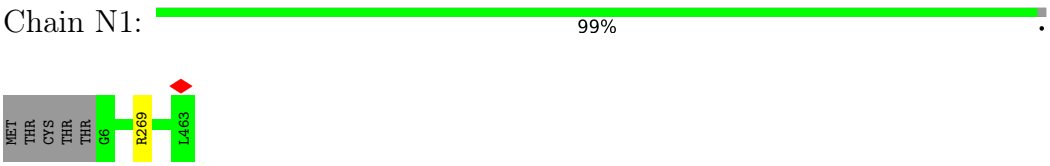
Chain M3:





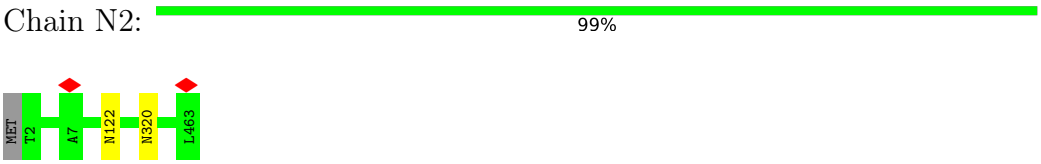
• Molecule 1: Major capsid protein

Chain N1:



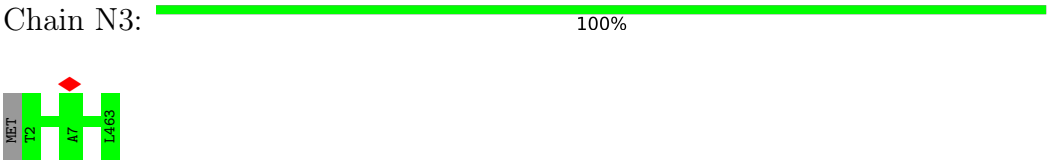
• Molecule 1: Major capsid protein

Chain N2:



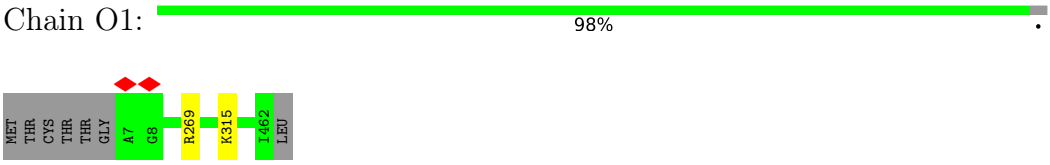
• Molecule 1: Major capsid protein

Chain N3:



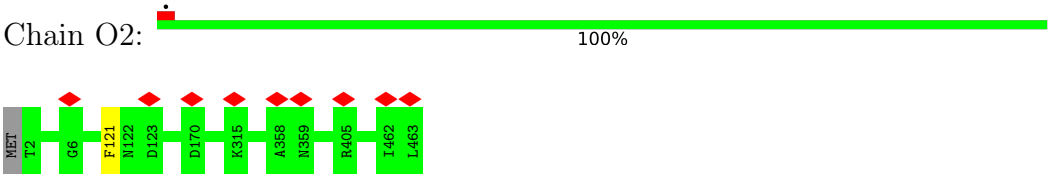
• Molecule 1: Major capsid protein

Chain O1:



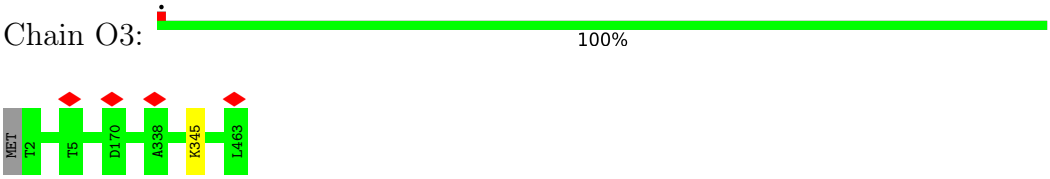
• Molecule 1: Major capsid protein

Chain O2:



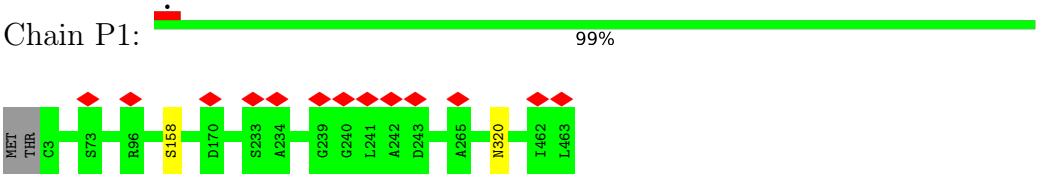
• Molecule 1: Major capsid protein

Chain O3:



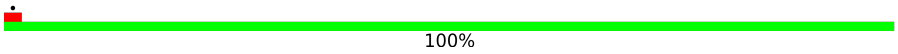
• Molecule 1: Major capsid protein

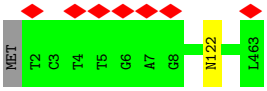
Chain P1:



• Molecule 1: Major capsid protein

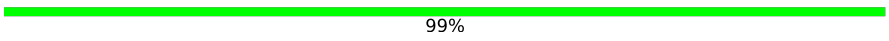
Chain P2:





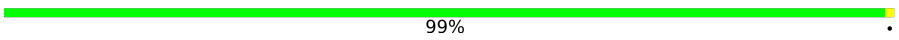
• Molecule 1: Major capsid protein

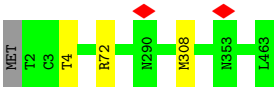
Chain P3:



• Molecule 1: Major capsid protein

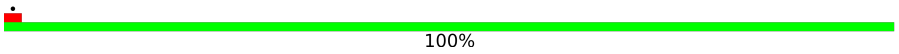
Chain Q1:

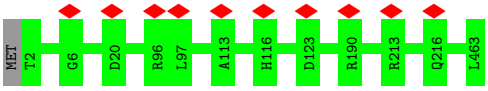




• Molecule 1: Major capsid protein

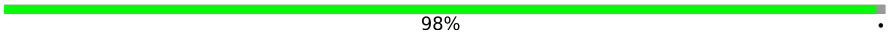
Chain Q2:

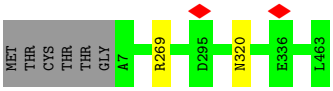




• Molecule 1: Major capsid protein

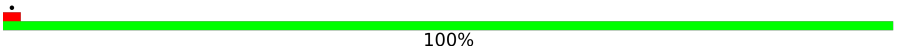
Chain Q3:

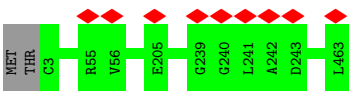




• Molecule 1: Major capsid protein

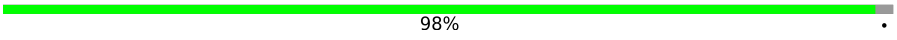
Chain R1:

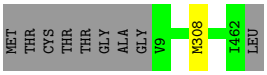




• Molecule 1: Major capsid protein

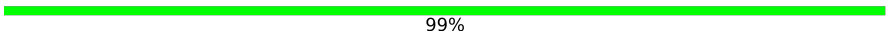
Chain R2:

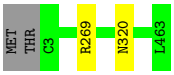




• Molecule 1: Major capsid protein

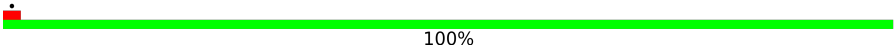
Chain R3:

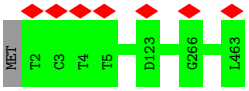




• Molecule 1: Major capsid protein

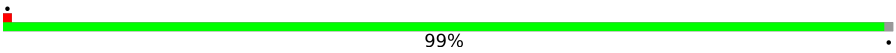
Chain S1:

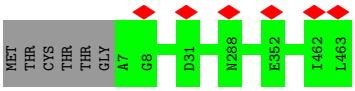




• Molecule 1: Major capsid protein

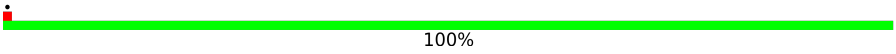
Chain S2:

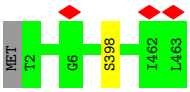




• Molecule 1: Major capsid protein

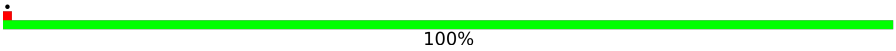
Chain S3:

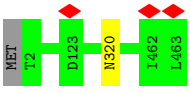




• Molecule 1: Major capsid protein

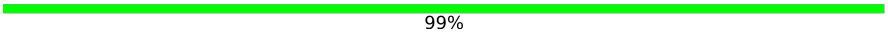
Chain T1:

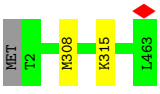




• Molecule 1: Major capsid protein

Chain T2:



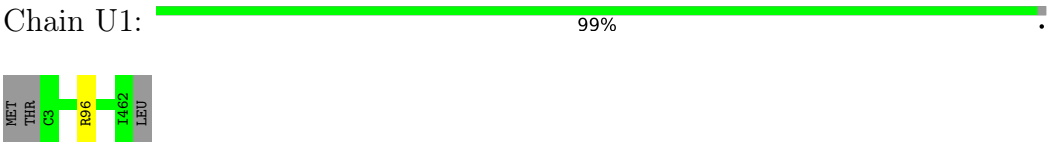


• Molecule 1: Major capsid protein

Chain T3:

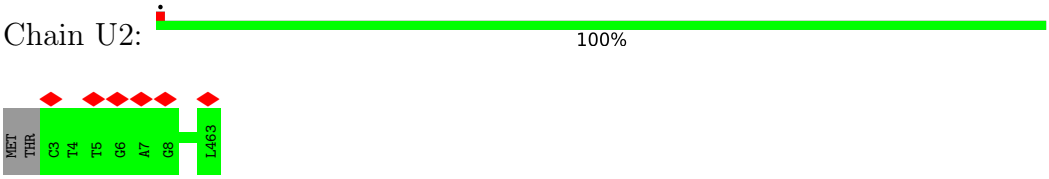
• Molecule 1: Major capsid protein

Chain U1:



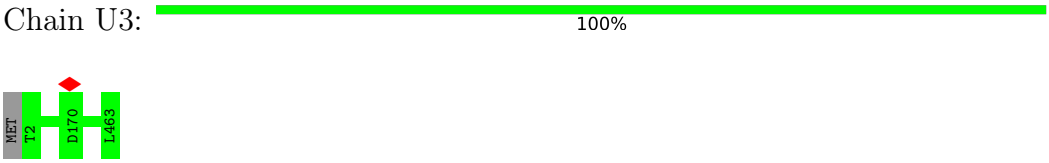
• Molecule 1: Major capsid protein

Chain U2:



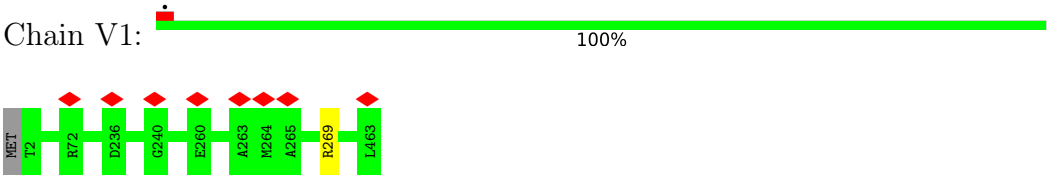
• Molecule 1: Major capsid protein

Chain U3:



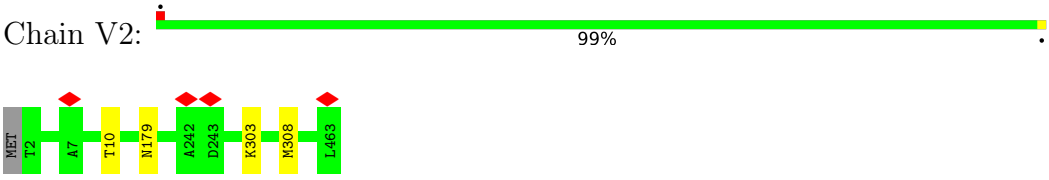
• Molecule 1: Major capsid protein

Chain V1:



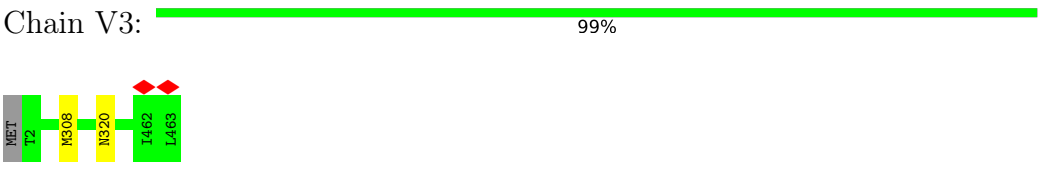
• Molecule 1: Major capsid protein

Chain V2:



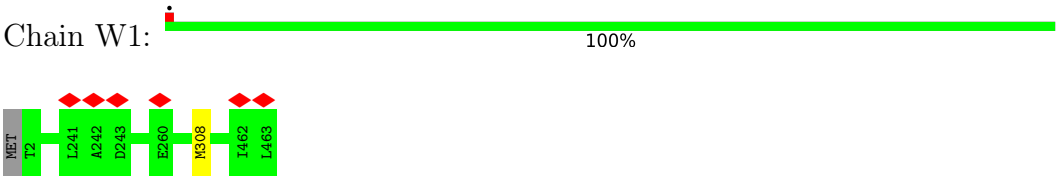
• Molecule 1: Major capsid protein

Chain V3:



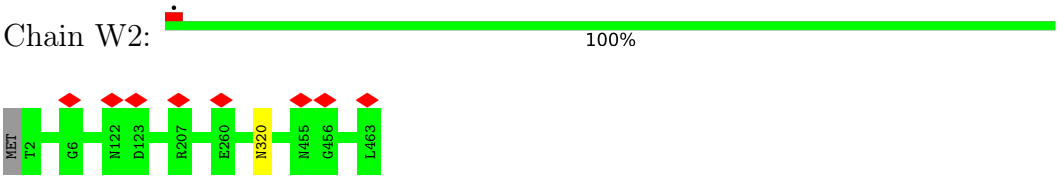
• Molecule 1: Major capsid protein

Chain W1:



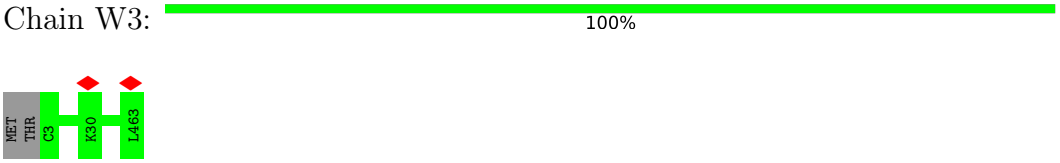
• Molecule 1: Major capsid protein

Chain W2:



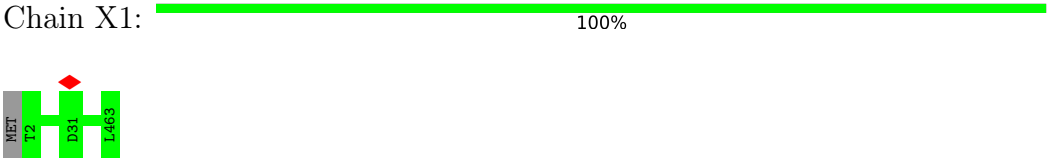
• Molecule 1: Major capsid protein

Chain W3:



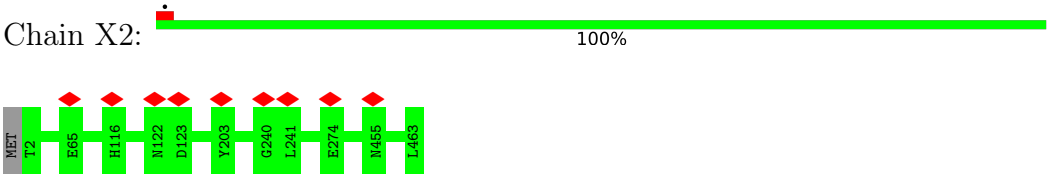
• Molecule 1: Major capsid protein

Chain X1:



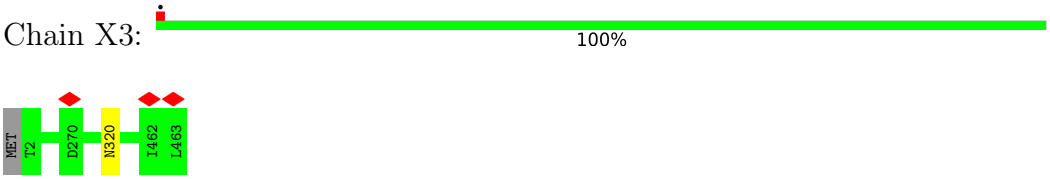
• Molecule 1: Major capsid protein

Chain X2:



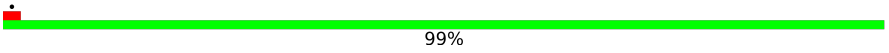
• Molecule 1: Major capsid protein

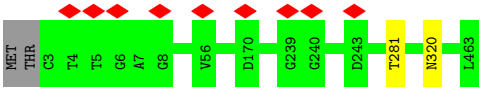
Chain X3:



• Molecule 1: Major capsid protein

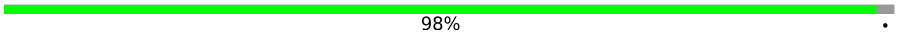
Chain Y1:

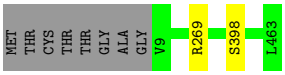




• Molecule 1: Major capsid protein

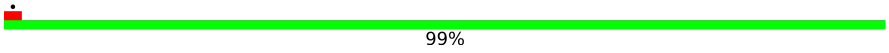
Chain Y2:

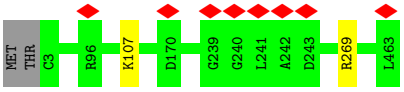




• Molecule 1: Major capsid protein

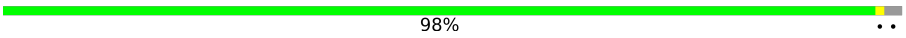
Chain Y3:

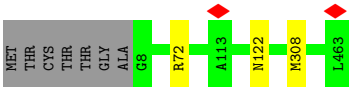




• Molecule 1: Major capsid protein

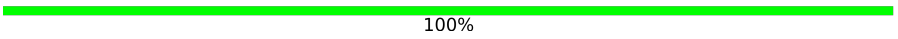
Chain Z1:

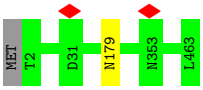




• Molecule 1: Major capsid protein

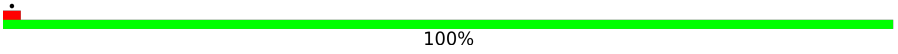
Chain Z2:

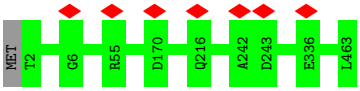




• Molecule 1: Major capsid protein

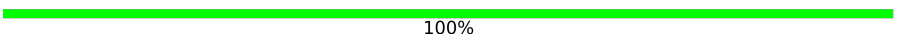
Chain Z3:

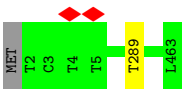




• Molecule 1: Major capsid protein

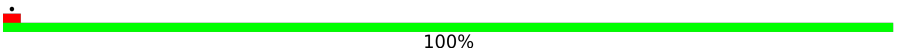
Chain a1:

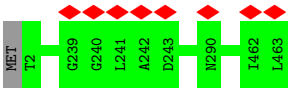




• Molecule 1: Major capsid protein

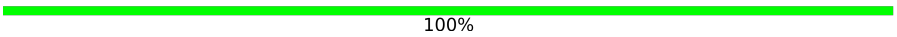
Chain a2:





• Molecule 1: Major capsid protein

Chain a3:

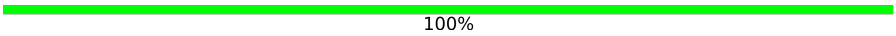


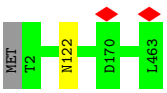
• Molecule 1: Major capsid protein

Chain b1:

• Molecule 1: Major capsid protein

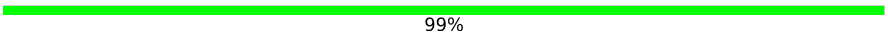
Chain b2:

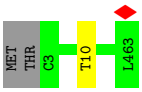




• Molecule 1: Major capsid protein

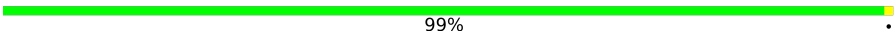
Chain b3:

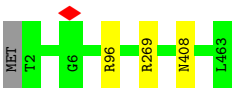




• Molecule 1: Major capsid protein

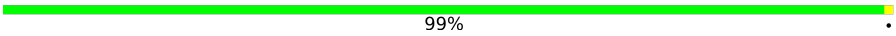
Chain d1:

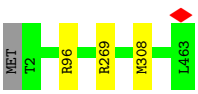




• Molecule 1: Major capsid protein

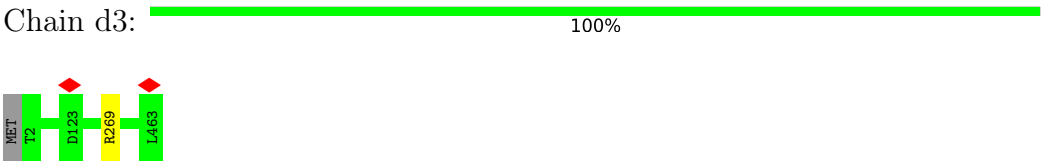
Chain d2:





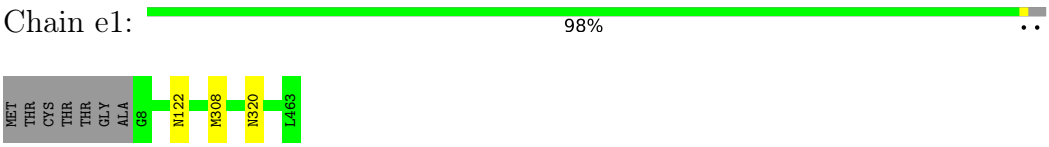
• Molecule 1: Major capsid protein

Chain d3:



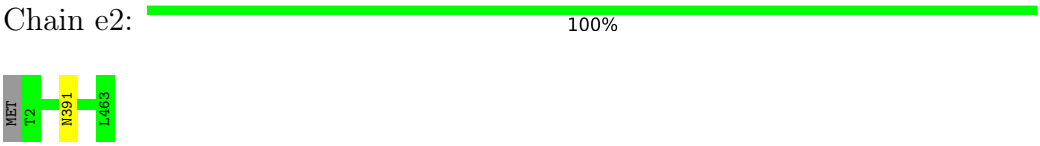
• Molecule 1: Major capsid protein

Chain e1:



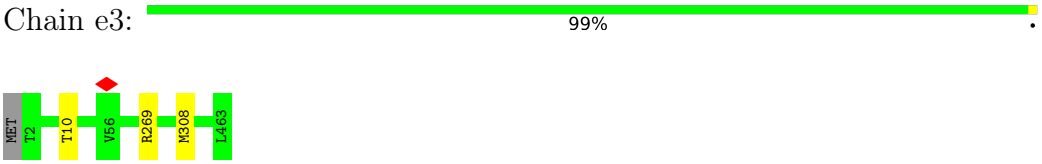
• Molecule 1: Major capsid protein

Chain e2:



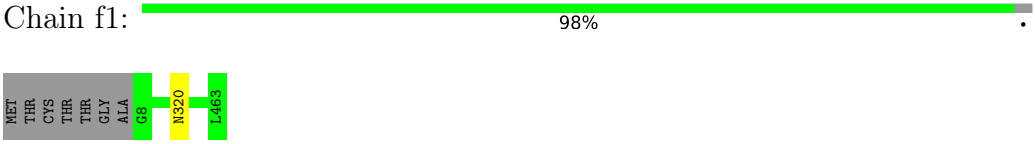
• Molecule 1: Major capsid protein

Chain e3:



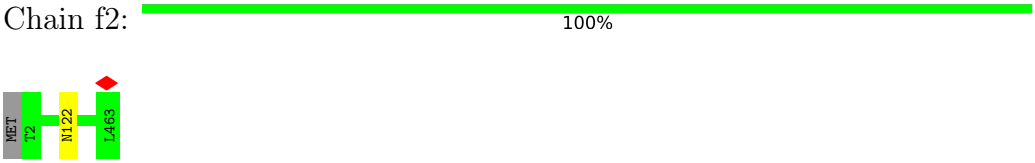
• Molecule 1: Major capsid protein

Chain f1:



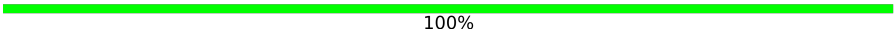
• Molecule 1: Major capsid protein

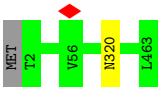
Chain f2:



• Molecule 1: Major capsid protein

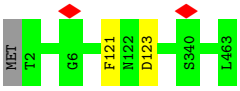
Chain f3:





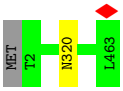
• Molecule 1: Major capsid protein

Chain g1:



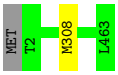
• Molecule 1: Major capsid protein

Chain g2:



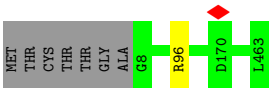
• Molecule 1: Major capsid protein

Chain g3:



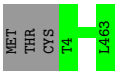
• Molecule 1: Major capsid protein

Chain h1:



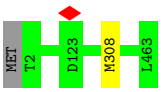
• Molecule 1: Major capsid protein

Chain h2:



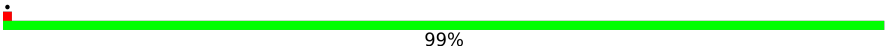
• Molecule 1: Major capsid protein

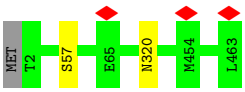
Chain h3:



• Molecule 1: Major capsid protein

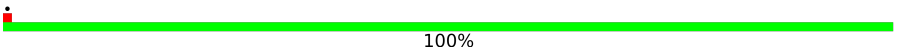
Chain j1:

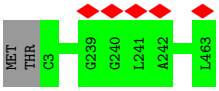




• Molecule 1: Major capsid protein

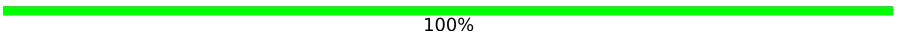
Chain j2:





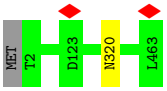
• Molecule 1: Major capsid protein

Chain j3:



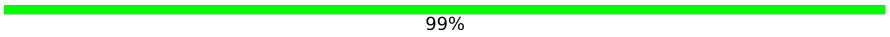
• Molecule 1: Major capsid protein

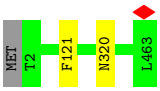
Chain k1:



• Molecule 1: Major capsid protein

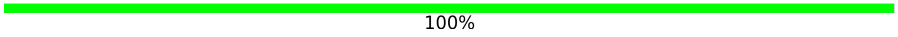
Chain k2:

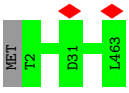




• Molecule 1: Major capsid protein

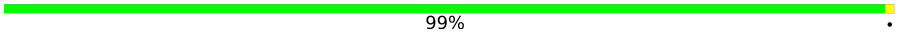
Chain k3:

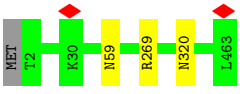




• Molecule 1: Major capsid protein

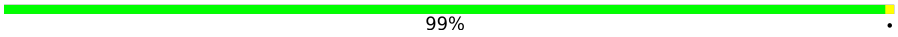
Chain m1:

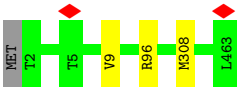




• Molecule 1: Major capsid protein

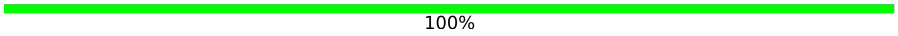
Chain m2:

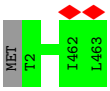




• Molecule 1: Major capsid protein

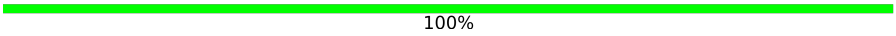
Chain m3:

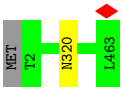




• Molecule 1: Major capsid protein

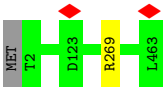
Chain n1:





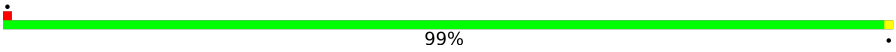
• Molecule 1: Major capsid protein

Chain n2:



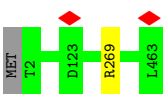
• Molecule 1: Major capsid protein

Chain n3:



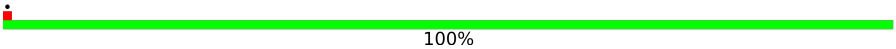
• Molecule 1: Major capsid protein

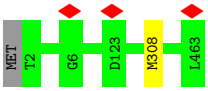
Chain p1:



• Molecule 1: Major capsid protein

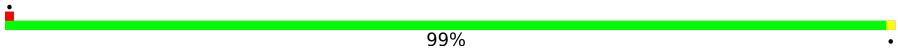
Chain p2:

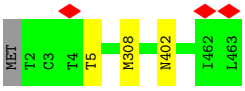




• Molecule 1: Major capsid protein

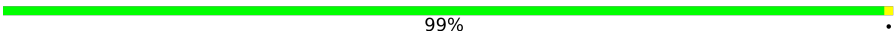
Chain p3:

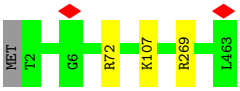




• Molecule 1: Major capsid protein

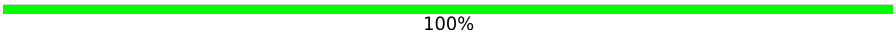
Chain r1:





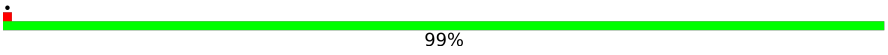
• Molecule 1: Major capsid protein

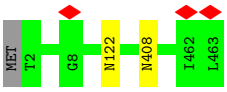
Chain r2:



• Molecule 1: Major capsid protein

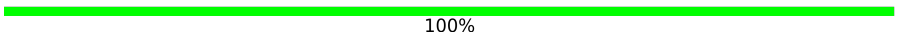
Chain r3:





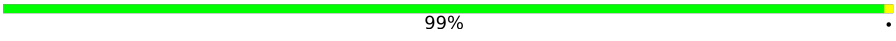
• Molecule 1: Major capsid protein

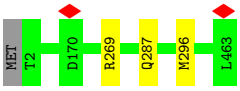
Chain J2:



• Molecule 1: Major capsid protein

Chain c1:



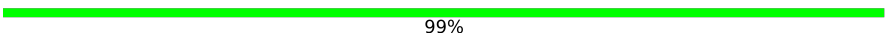


• Molecule 1: Major capsid protein

Chain c2:

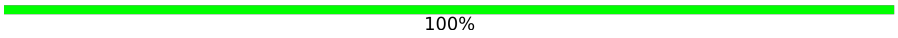
• Molecule 1: Major capsid protein

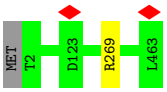
Chain c3:



• Molecule 1: Major capsid protein

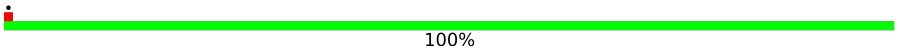
Chain q1:

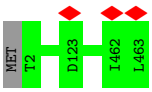




• Molecule 1: Major capsid protein

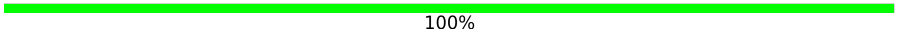
Chain q2:

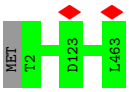




• Molecule 1: Major capsid protein

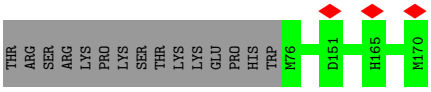
Chain q3:





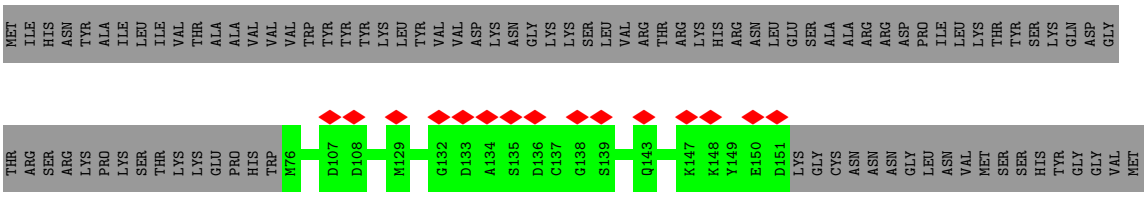
• Molecule 2: VP38

Chain s1:



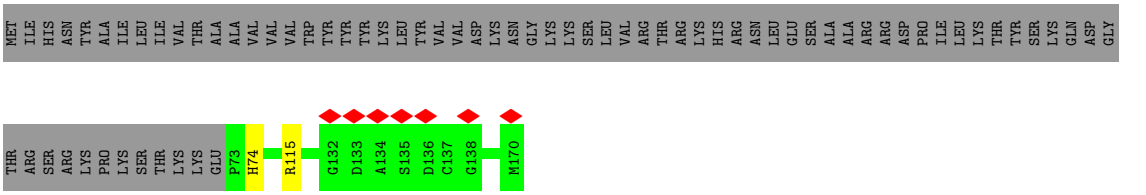
• Molecule 2: VP38

Chain s2:



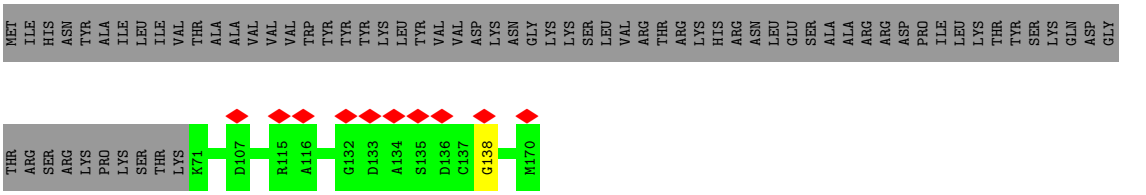
• Molecule 2: VP38

Chain s3:



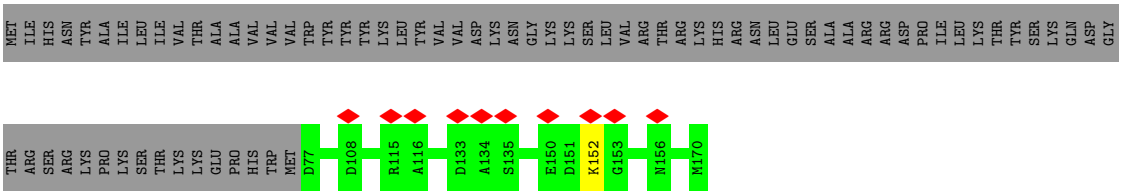
• Molecule 2: VP38

Chain s4:



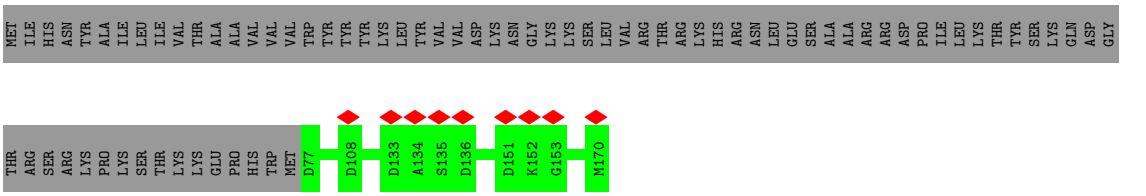
• Molecule 2: VP38

Chain s5:



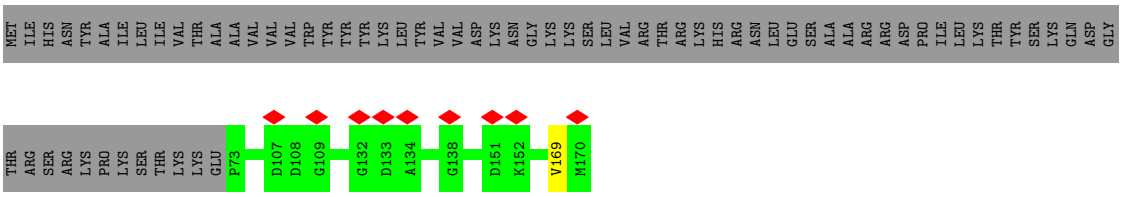
• Molecule 2: VP38

Chain s6:

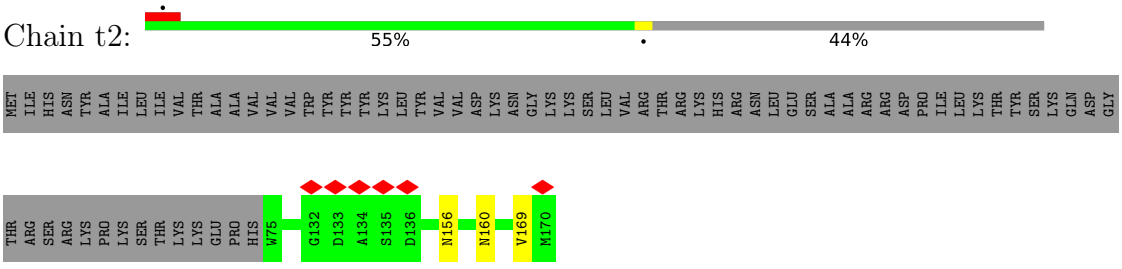


• Molecule 2: VP38

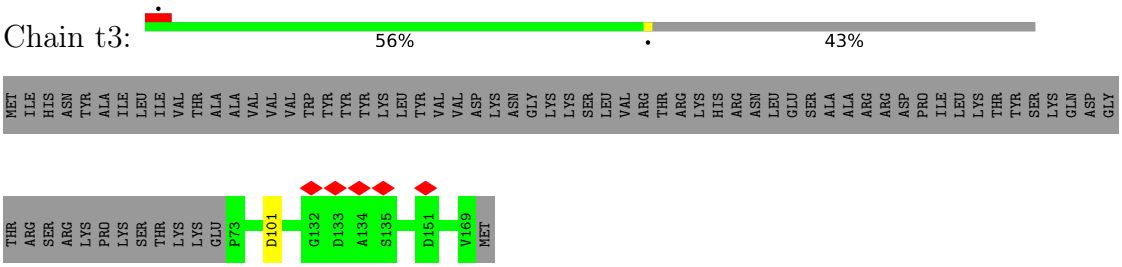
Chain t1:



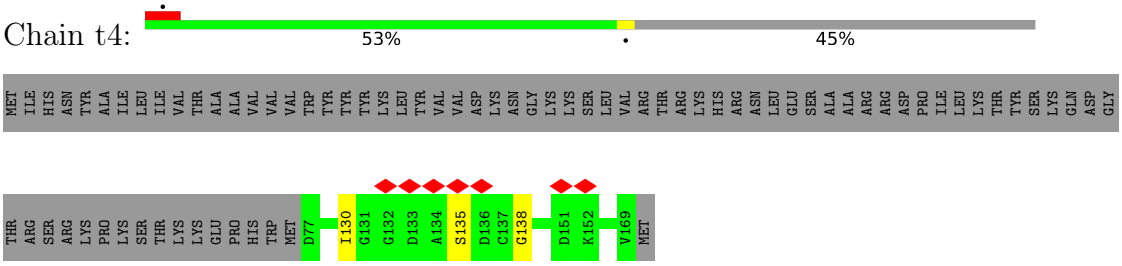
• Molecule 2: VP38



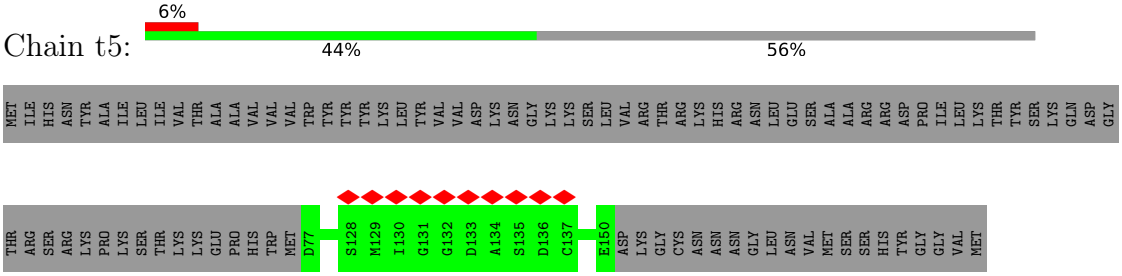
• Molecule 2: VP38



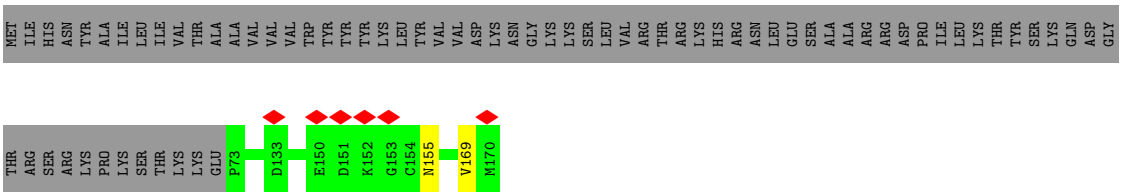
• Molecule 2: VP38



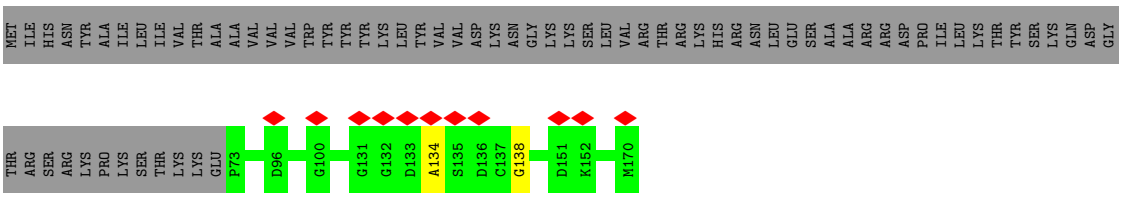
• Molecule 2: VP38



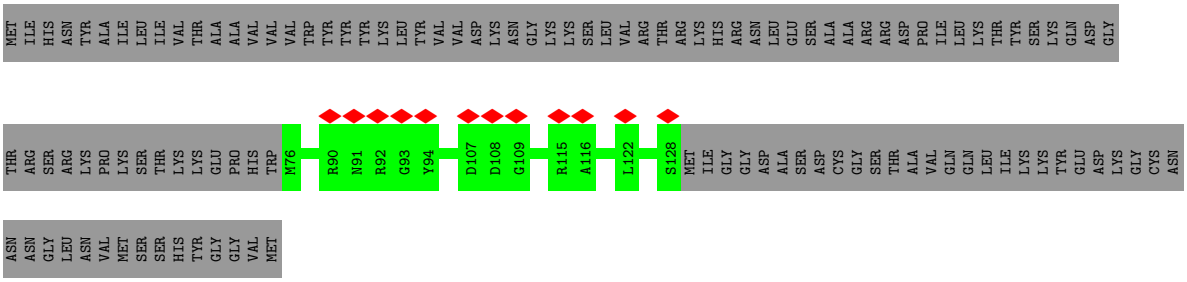
• Molecule 2: VP38



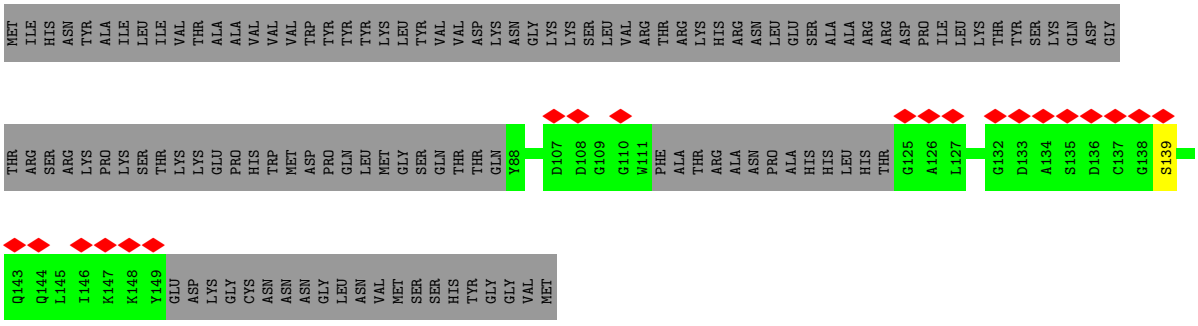
• Molecule 2: VP38



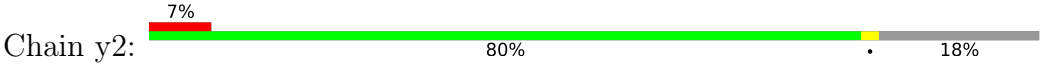
• Molecule 2: VP38

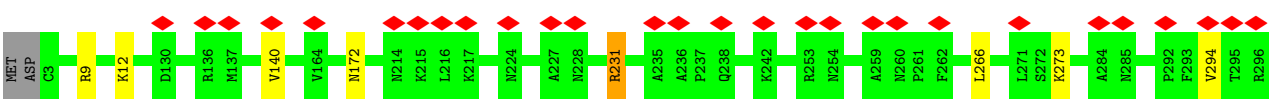


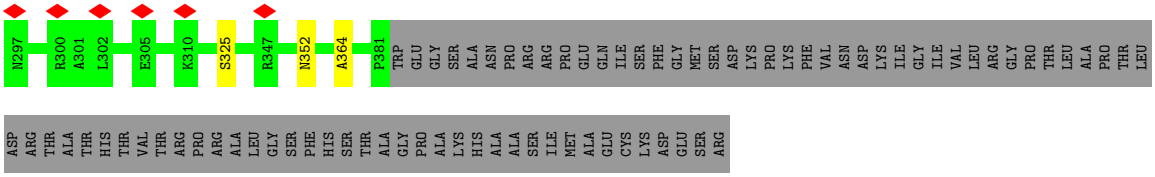
• Molecule 2: VP38



• Molecule 3: VP137

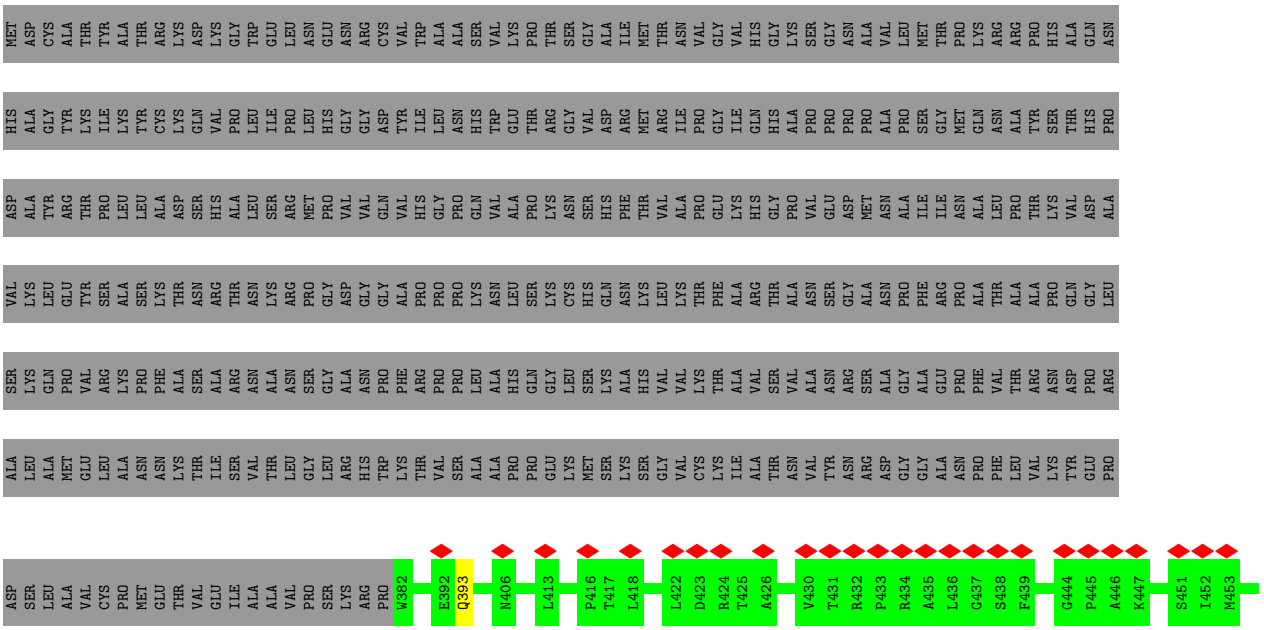


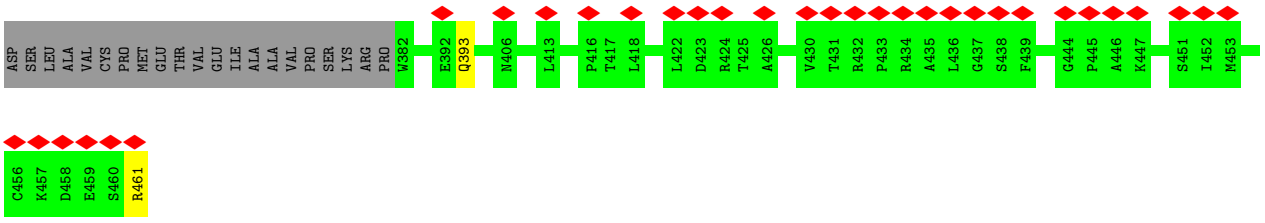




• Molecule 3: VP137

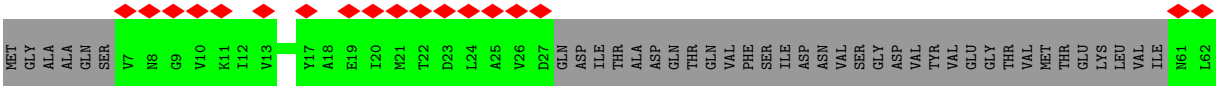
Chain y1:

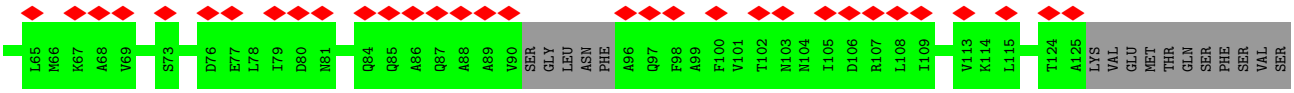


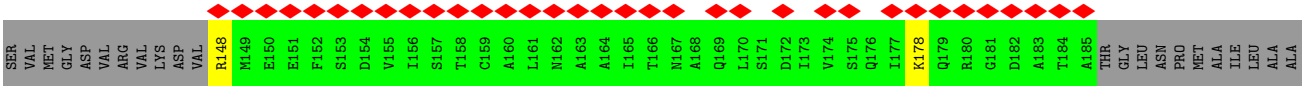


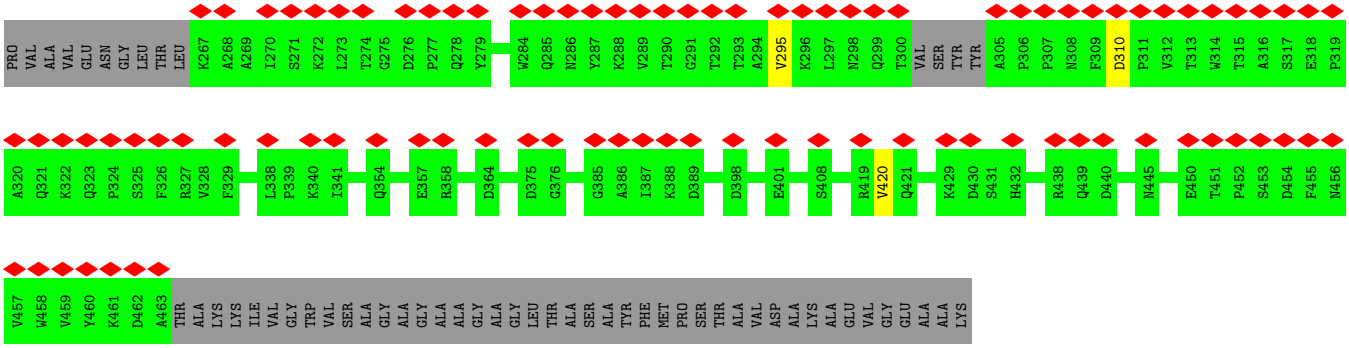
• Molecule 4: VP88

Chain y4:



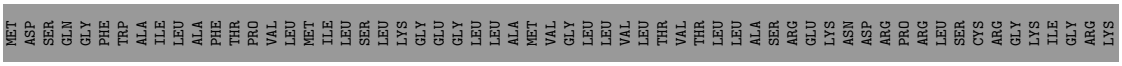


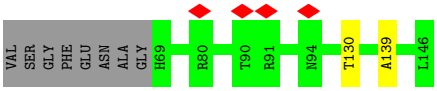




• Molecule 5: VP59

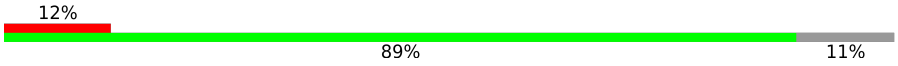
Chain y5:

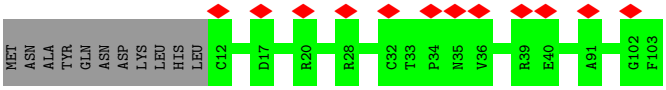




• Molecule 6: VP139

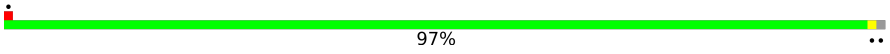
Chain y6:

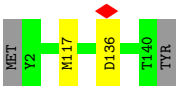




• Molecule 7: Penton protein (VP14)

Chain y3:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	37161	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.105	Depositor
Minimum map value	-0.071	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	1106.0, 1079.4, 796.6	wwPDB
Map dimensions	790, 771, 569	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.4, 1.4, 1.4	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A1	0.25	0/3599	0.48	0/4917
1	A2	0.25	0/3587	0.48	0/4900
1	A3	0.26	0/3580	0.49	0/4890
1	B1	0.25	0/3563	0.49	0/4866
1	B2	0.25	0/3593	0.49	0/4907
1	B3	0.25	0/3607	0.48	0/4928
1	C1	0.25	0/3606	0.48	0/4925
1	C2	0.25	0/3604	0.49	0/4925
1	C3	0.25	0/3586	0.49	0/4897
1	D1	0.25	0/3580	0.49	0/4890
1	D2	0.25	0/3600	0.48	0/4918
1	D3	0.25	0/3613	0.48	0/4935
1	E1	0.25	0/3613	0.48	0/4935
1	E2	0.25	0/3606	0.48	0/4925
1	E3	0.25	0/3613	0.49	0/4935
1	F1	0.25	0/3587	0.50	0/4903
1	F2	0.25	0/3563	0.49	0/4867
1	F3	0.25	0/3613	0.49	0/4935
1	G1	0.25	0/3600	0.48	0/4918
1	G2	0.25	0/3597	0.48	0/4914
1	G3	0.25	0/3610	0.49	0/4931
1	H1	0.25	0/3578	0.49	0/4886
1	H2	0.25	0/3606	0.48	0/4925
1	H3	0.25	0/3606	0.48	0/4925
1	I1	0.25	0/3613	0.49	0/4935
1	I2	0.25	0/3593	0.48	0/4907
1	I3	0.25	0/3606	0.48	0/4925
1	J1	0.25	0/3572	0.48	0/4879
1	J2	0.25	0/3613	0.48	0/4935
1	J3	0.25	0/3613	0.48	0/4935
1	K1	0.25	0/3613	0.49	0/4935
1	K2	0.25	0/3611	0.49	0/4932
1	K3	0.25	0/3613	0.49	0/4935
1	L1	0.25	0/3586	0.48	0/4897

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
1	L2	0.25	0/3613	0.49	0/4935
1	L3	0.25	0/3606	0.48	0/4925
1	M1	0.25	0/3613	0.49	0/4935
1	M2	0.25	0/3606	0.48	0/4925
1	M3	0.25	0/3567	0.48	0/4873
1	N1	0.25	0/3586	0.48	0/4897
1	N2	0.26	0/3613	0.49	0/4935
1	N3	0.25	0/3613	0.49	0/4935
1	O1	0.25	0/3574	0.49	0/4881
1	O2	0.25	0/3609	0.49	0/4930
1	O3	0.25	0/3603	0.49	0/4923
1	P1	0.25	0/3606	0.49	0/4925
1	P2	0.25	0/3613	0.49	0/4935
1	P3	0.25	0/3607	0.49	0/4928
1	Q1	0.25	0/3613	0.48	0/4935
1	Q2	0.25	0/3613	0.48	0/4935
1	Q3	0.25	0/3578	0.48	0/4887
1	R1	0.25	0/3606	0.49	0/4925
1	R2	0.25	0/3565	0.49	0/4869
1	R3	0.25	0/3606	0.48	0/4925
1	S1	0.25	0/3613	0.48	0/4935
1	S2	0.25	0/3582	0.48	0/4892
1	S3	0.25	0/3613	0.49	0/4935
1	T1	0.25	0/3613	0.48	0/4935
1	T2	0.25	0/3613	0.48	0/4935
1	T3	0.25	0/3613	0.49	0/4935
1	U1	0.25	0/3598	0.48	0/4914
1	U2	0.26	0/3600	0.48	0/4918
1	U3	0.25	0/3613	0.48	0/4935
1	V1	0.25	0/3613	0.49	0/4935
1	V2	0.25	0/3613	0.48	0/4935
1	V3	0.25	0/3613	0.48	0/4935
1	W1	0.25	0/3613	0.49	0/4935
1	W2	0.25	0/3613	0.49	0/4935
1	W3	0.25	0/3606	0.48	0/4925
1	X1	0.25	0/3613	0.49	0/4935
1	X2	0.25	0/3613	0.48	0/4935
1	X3	0.25	0/3613	0.48	0/4935
1	Y1	0.25	0/3603	0.49	0/4921
1	Y2	0.25	0/3573	0.49	0/4880
1	Y3	0.25	0/3602	0.49	0/4920
1	Z1	0.25	0/3577	0.47	0/4885
1	Z2	0.25	0/3613	0.48	0/4935

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
1	Z3	0.25	0/3613	0.48	0/4935
1	a1	0.25	0/3613	0.49	0/4935
1	a2	0.25	0/3607	0.49	0/4928
1	a3	0.25	0/3613	0.48	0/4935
1	b1	0.25	0/3613	0.49	0/4935
1	b2	0.25	0/3613	0.48	0/4935
1	b3	0.25	0/3606	0.49	0/4925
1	c1	0.26	0/3603	0.48	0/4923
1	c2	0.25	0/3613	0.49	0/4935
1	c3	0.26	0/3613	0.49	0/4935
1	d1	0.25	0/3613	0.49	0/4935
1	d2	0.25	0/3613	0.48	0/4935
1	d3	0.25	0/3613	0.48	0/4935
1	e1	0.26	0/3571	0.48	0/4878
1	e2	0.25	0/3613	0.49	0/4935
1	e3	0.25	0/3613	0.49	0/4935
1	f1	0.25	0/3571	0.48	0/4878
1	f2	0.26	0/3613	0.49	0/4935
1	f3	0.25	0/3603	0.49	0/4923
1	g1	0.26	0/3607	0.48	0/4928
1	g2	0.25	0/3613	0.49	0/4935
1	g3	0.25	0/3613	0.48	0/4935
1	h1	0.25	0/3547	0.48	0/4848
1	h2	0.25	0/3600	0.48	0/4917
1	h3	0.25	0/3607	0.48	0/4928
1	j1	0.25	0/3613	0.49	0/4935
1	j2	0.26	0/3594	0.49	0/4911
1	j3	0.25	0/3613	0.48	0/4935
1	k1	0.25	0/3613	0.48	0/4935
1	k2	0.25	0/3613	0.49	0/4935
1	k3	0.25	0/3613	0.49	0/4935
1	m1	0.26	0/3607	0.49	0/4928
1	m2	0.25	0/3607	0.48	0/4928
1	m3	0.25	0/3613	0.49	0/4935
1	n1	0.25	0/3613	0.48	0/4935
1	n2	0.26	0/3613	0.50	0/4935
1	n3	0.25	0/3613	0.49	0/4935
1	p1	0.25	0/3613	0.49	0/4935
1	p2	0.25	0/3613	0.49	0/4935
1	p3	0.25	0/3613	0.50	0/4935
1	q1	0.25	0/3613	0.48	0/4935
1	q2	0.25	0/3613	0.49	0/4935
1	q3	0.25	0/3603	0.48	0/4923

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
1	r1	0.25	0/3613	0.48	0/4935
1	r2	0.25	0/3613	0.48	0/4935
1	r3	0.25	0/3613	0.48	0/4935
2	s1	0.25	0/706	0.50	0/955
2	s2	0.24	0/586	0.54	0/794
2	s3	0.24	0/758	0.52	0/1026
2	s4	0.24	0/757	0.53	0/1029
2	s5	0.25	0/715	0.55	0/967
2	s6	0.25	0/706	0.51	0/955
2	t1	0.24	0/741	0.51	0/1002
2	t2	0.25	0/731	0.54	0/989
2	t3	0.25	0/741	0.51	0/1005
2	t4	0.25	0/680	0.51	0/923
2	t5	0.24	0/567	0.48	0/770
2	t6	0.25	0/744	0.50	0/1007
2	t7	0.26	0/758	0.54	0/1026
2	y7	0.24	0/412	0.53	0/562
2	y8	0.24	0/360	0.49	0/484
3	y1	0.25	0/565	0.52	0/775
3	y2	0.28	0/2785	0.55	0/3820
4	y4	0.25	0/2448	0.55	0/3346
5	y5	0.25	0/649	0.52	0/881
6	y6	0.24	0/710	0.53	0/963
7	y3	0.25	0/1096	0.49	0/1495
All	All	0.25	0/461453	0.49	0/630210

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A1	459/463 (99%)	443 (96%)	16 (4%)	0	100	100
1	A2	457/463 (99%)	435 (95%)	22 (5%)	0	100	100
1	A3	456/463 (98%)	431 (94%)	25 (6%)	0	100	100
1	B1	452/463 (98%)	435 (96%)	17 (4%)	0	100	100
1	B2	457/463 (99%)	435 (95%)	22 (5%)	0	100	100
1	B3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	C1	459/463 (99%)	439 (96%)	20 (4%)	0	100	100
1	C2	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	C3	456/463 (98%)	437 (96%)	19 (4%)	0	100	100
1	D1	456/463 (98%)	434 (95%)	22 (5%)	0	100	100
1	D2	459/463 (99%)	439 (96%)	20 (4%)	0	100	100
1	D3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	E1	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	E2	459/463 (99%)	437 (95%)	22 (5%)	0	100	100
1	E3	460/463 (99%)	438 (95%)	21 (5%)	1 (0%)	44	75
1	F1	459/463 (99%)	440 (96%)	19 (4%)	0	100	100
1	F2	453/463 (98%)	437 (96%)	16 (4%)	0	100	100
1	F3	460/463 (99%)	437 (95%)	23 (5%)	0	100	100
1	G1	459/463 (99%)	441 (96%)	18 (4%)	0	100	100
1	G2	459/463 (99%)	442 (96%)	17 (4%)	0	100	100
1	G3	460/463 (99%)	438 (95%)	22 (5%)	0	100	100
1	H1	455/463 (98%)	441 (97%)	14 (3%)	0	100	100
1	H2	459/463 (99%)	440 (96%)	19 (4%)	0	100	100
1	H3	459/463 (99%)	433 (94%)	26 (6%)	0	100	100
1	I1	460/463 (99%)	438 (95%)	22 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	I2	457/463 (99%)	439 (96%)	18 (4%)	0	100	100
1	I3	459/463 (99%)	441 (96%)	18 (4%)	0	100	100
1	J1	455/463 (98%)	437 (96%)	18 (4%)	0	100	100
1	J2	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	J3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	K1	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	K2	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	K3	460/463 (99%)	432 (94%)	28 (6%)	0	100	100
1	L1	456/463 (98%)	437 (96%)	18 (4%)	1 (0%)	44	75
1	L2	460/463 (99%)	439 (95%)	20 (4%)	1 (0%)	44	75
1	L3	459/463 (99%)	438 (95%)	21 (5%)	0	100	100
1	M1	460/463 (99%)	444 (96%)	16 (4%)	0	100	100
1	M2	459/463 (99%)	439 (96%)	20 (4%)	0	100	100
1	M3	453/463 (98%)	433 (96%)	20 (4%)	0	100	100
1	N1	456/463 (98%)	440 (96%)	16 (4%)	0	100	100
1	N2	460/463 (99%)	445 (97%)	14 (3%)	1 (0%)	44	75
1	N3	460/463 (99%)	438 (95%)	22 (5%)	0	100	100
1	O1	454/463 (98%)	437 (96%)	17 (4%)	0	100	100
1	O2	460/463 (99%)	445 (97%)	15 (3%)	0	100	100
1	O3	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	P1	459/463 (99%)	440 (96%)	18 (4%)	1 (0%)	44	75
1	P2	460/463 (99%)	443 (96%)	16 (4%)	1 (0%)	44	75
1	P3	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	Q1	460/463 (99%)	436 (95%)	23 (5%)	1 (0%)	44	75
1	Q2	460/463 (99%)	444 (96%)	16 (4%)	0	100	100
1	Q3	455/463 (98%)	437 (96%)	18 (4%)	0	100	100
1	R1	459/463 (99%)	442 (96%)	17 (4%)	0	100	100
1	R2	452/463 (98%)	433 (96%)	19 (4%)	0	100	100
1	R3	459/463 (99%)	440 (96%)	19 (4%)	0	100	100
1	S1	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	S2	455/463 (98%)	439 (96%)	16 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	S3	460/463 (99%)	436 (95%)	24 (5%)	0	100	100
1	T1	460/463 (99%)	444 (96%)	16 (4%)	0	100	100
1	T2	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	T3	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	U1	458/463 (99%)	436 (95%)	22 (5%)	0	100	100
1	U2	459/463 (99%)	437 (95%)	22 (5%)	0	100	100
1	U3	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	V1	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	V2	460/463 (99%)	436 (95%)	23 (5%)	1 (0%)	44	75
1	V3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	W1	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	W2	460/463 (99%)	436 (95%)	24 (5%)	0	100	100
1	W3	459/463 (99%)	440 (96%)	19 (4%)	0	100	100
1	X1	460/463 (99%)	446 (97%)	14 (3%)	0	100	100
1	X2	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	X3	460/463 (99%)	438 (95%)	22 (5%)	0	100	100
1	Y1	459/463 (99%)	440 (96%)	19 (4%)	0	100	100
1	Y2	453/463 (98%)	432 (95%)	21 (5%)	0	100	100
1	Y3	459/463 (99%)	441 (96%)	18 (4%)	0	100	100
1	Z1	454/463 (98%)	440 (97%)	13 (3%)	1 (0%)	44	75
1	Z2	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	Z3	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	a1	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	a2	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	a3	460/463 (99%)	445 (97%)	15 (3%)	0	100	100
1	b1	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	b2	460/463 (99%)	442 (96%)	17 (4%)	1 (0%)	44	75
1	b3	459/463 (99%)	440 (96%)	18 (4%)	1 (0%)	44	75
1	c1	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	c2	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	c3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	d1	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	d2	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	d3	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	e1	454/463 (98%)	426 (94%)	28 (6%)	0	100	100
1	e2	460/463 (99%)	437 (95%)	23 (5%)	0	100	100
1	e3	460/463 (99%)	434 (94%)	25 (5%)	1 (0%)	44	75
1	f1	454/463 (98%)	426 (94%)	28 (6%)	0	100	100
1	f2	460/463 (99%)	433 (94%)	26 (6%)	1 (0%)	44	75
1	f3	460/463 (99%)	433 (94%)	27 (6%)	0	100	100
1	g1	460/463 (99%)	438 (95%)	22 (5%)	0	100	100
1	g2	460/463 (99%)	435 (95%)	25 (5%)	0	100	100
1	g3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	h1	454/463 (98%)	430 (95%)	24 (5%)	0	100	100
1	h2	458/463 (99%)	434 (95%)	24 (5%)	0	100	100
1	h3	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	j1	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	j2	459/463 (99%)	439 (96%)	20 (4%)	0	100	100
1	j3	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	k1	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	k2	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
1	k3	460/463 (99%)	437 (95%)	23 (5%)	0	100	100
1	m1	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	m2	460/463 (99%)	438 (95%)	21 (5%)	1 (0%)	44	75
1	m3	460/463 (99%)	441 (96%)	19 (4%)	0	100	100
1	n1	460/463 (99%)	442 (96%)	18 (4%)	0	100	100
1	n2	460/463 (99%)	436 (95%)	24 (5%)	0	100	100
1	n3	460/463 (99%)	436 (95%)	22 (5%)	2 (0%)	30	64
1	p1	460/463 (99%)	432 (94%)	28 (6%)	0	100	100
1	p2	460/463 (99%)	436 (95%)	24 (5%)	0	100	100
1	p3	460/463 (99%)	436 (95%)	23 (5%)	1 (0%)	44	75
1	q1	460/463 (99%)	437 (95%)	23 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	q2	460/463 (99%)	438 (95%)	22 (5%)	0	100	100
1	q3	460/463 (99%)	439 (95%)	21 (5%)	0	100	100
1	r1	460/463 (99%)	437 (95%)	23 (5%)	0	100	100
1	r2	460/463 (99%)	443 (96%)	17 (4%)	0	100	100
1	r3	460/463 (99%)	440 (96%)	20 (4%)	0	100	100
2	s1	93/170 (55%)	87 (94%)	6 (6%)	0	100	100
2	s2	74/170 (44%)	67 (90%)	7 (10%)	0	100	100
2	s3	96/170 (56%)	87 (91%)	9 (9%)	0	100	100
2	s4	98/170 (58%)	87 (89%)	10 (10%)	1 (1%)	13	46
2	s5	92/170 (54%)	81 (88%)	11 (12%)	0	100	100
2	s6	92/170 (54%)	86 (94%)	6 (6%)	0	100	100
2	t1	96/170 (56%)	80 (83%)	15 (16%)	1 (1%)	13	46
2	t2	94/170 (55%)	83 (88%)	9 (10%)	2 (2%)	5	32
2	t3	95/170 (56%)	86 (90%)	9 (10%)	0	100	100
2	t4	91/170 (54%)	80 (88%)	8 (9%)	3 (3%)	3	25
2	t5	72/170 (42%)	65 (90%)	7 (10%)	0	100	100
2	t6	96/170 (56%)	87 (91%)	8 (8%)	1 (1%)	13	46
2	t7	96/170 (56%)	82 (85%)	12 (12%)	2 (2%)	5	32
2	y7	51/170 (30%)	47 (92%)	4 (8%)	0	100	100
2	y8	45/170 (26%)	40 (89%)	4 (9%)	1 (2%)	5	31
3	y1	78/461 (17%)	60 (77%)	17 (22%)	1 (1%)	10	41
3	y2	377/461 (82%)	302 (80%)	67 (18%)	8 (2%)	5	32
4	y4	300/506 (59%)	251 (84%)	46 (15%)	3 (1%)	13	46
5	y5	76/146 (52%)	59 (78%)	15 (20%)	2 (3%)	4	28
6	y6	90/103 (87%)	80 (89%)	10 (11%)	0	100	100
7	y3	137/141 (97%)	112 (82%)	24 (18%)	1 (1%)	19	53
All	All	58778/61317 (96%)	55972 (95%)	2763 (5%)	43 (0%)	50	79

All (43) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L2	10	THR
1	b3	10	THR

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Mol	Chain	Res	Type
1	e3	10	THR
1	m2	9	VAL
2	t7	134	ALA
3	y2	140	VAL
5	y5	130	THR
2	y8	139	SER
7	y3	136	ASP
1	E3	4	THR
2	t4	130	ILE
2	t7	138	GLY
3	y2	231	ARG
3	y2	266	LEU
3	y2	325	SER
4	y4	295	VAL
1	L1	122	ASN
1	P1	158	SER
1	P2	122	ASN
1	V2	10	THR
1	Z1	122	ASN
1	f2	122	ASN
1	p3	5	THR
3	y2	172	ASN
4	y4	310	ASP
1	N2	122	ASN
1	b2	122	ASN
1	n3	3	CYS
3	y2	12	LYS
3	y2	364	ALA
5	y5	139	ALA
1	Q1	4	THR
3	y1	393	GLN
1	n3	122	ASN
2	t2	160	ASN
2	t4	135	SER
2	t2	169	VAL
2	s4	138	GLY
2	t4	138	GLY
2	t6	169	VAL
3	y2	294	VAL
2	t1	169	VAL
4	y4	420	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A1	383/389 (98%)	382 (100%)	1 (0%)	91 96
1	A2	381/389 (98%)	380 (100%)	1 (0%)	91 96
1	A3	380/389 (98%)	379 (100%)	1 (0%)	91 96
1	B1	379/389 (97%)	379 (100%)	0	100 100
1	B2	382/389 (98%)	381 (100%)	1 (0%)	91 96
1	B3	384/389 (99%)	382 (100%)	2 (0%)	86 93
1	C1	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	C2	383/389 (98%)	382 (100%)	1 (0%)	91 96
1	C3	381/389 (98%)	380 (100%)	1 (0%)	91 96
1	D1	380/389 (98%)	380 (100%)	0	100 100
1	D2	383/389 (98%)	380 (99%)	3 (1%)	79 88
1	D3	385/389 (99%)	382 (99%)	3 (1%)	79 88
1	E1	385/389 (99%)	385 (100%)	0	100 100
1	E2	384/389 (99%)	384 (100%)	0	100 100
1	E3	385/389 (99%)	382 (99%)	3 (1%)	79 88
1	F1	380/389 (98%)	379 (100%)	1 (0%)	91 96
1	F2	379/389 (97%)	379 (100%)	0	100 100
1	F3	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	G1	383/389 (98%)	381 (100%)	2 (0%)	86 93
1	G2	382/389 (98%)	381 (100%)	1 (0%)	91 96
1	G3	384/389 (99%)	384 (100%)	0	100 100
1	H1	380/389 (98%)	379 (100%)	1 (0%)	91 96
1	H2	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	H3	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	I1	385/389 (99%)	383 (100%)	2 (0%)	86 93
1	I2	382/389 (98%)	380 (100%)	2 (0%)	86 93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	I3	384/389 (99%)	382 (100%)	2 (0%)	86 93
1	J1	379/389 (97%)	378 (100%)	1 (0%)	91 96
1	J2	385/389 (99%)	385 (100%)	0	100 100
1	J3	385/389 (99%)	385 (100%)	0	100 100
1	K1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	K2	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	K3	385/389 (99%)	385 (100%)	0	100 100
1	L1	381/389 (98%)	379 (100%)	2 (0%)	86 93
1	L2	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	L3	384/389 (99%)	384 (100%)	0	100 100
1	M1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	M2	384/389 (99%)	384 (100%)	0	100 100
1	M3	380/389 (98%)	378 (100%)	2 (0%)	86 93
1	N1	381/389 (98%)	380 (100%)	1 (0%)	91 96
1	N2	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	N3	385/389 (99%)	385 (100%)	0	100 100
1	O1	380/389 (98%)	378 (100%)	2 (0%)	86 93
1	O2	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	O3	383/389 (98%)	382 (100%)	1 (0%)	91 96
1	P1	384/389 (99%)	383 (100%)	1 (0%)	91 96
1	P2	385/389 (99%)	385 (100%)	0	100 100
1	P3	384/389 (99%)	382 (100%)	2 (0%)	86 93
1	Q1	385/389 (99%)	383 (100%)	2 (0%)	86 93
1	Q2	385/389 (99%)	385 (100%)	0	100 100
1	Q3	380/389 (98%)	378 (100%)	2 (0%)	86 93
1	R1	384/389 (99%)	384 (100%)	0	100 100
1	R2	380/389 (98%)	379 (100%)	1 (0%)	91 96
1	R3	384/389 (99%)	382 (100%)	2 (0%)	86 93
1	S1	385/389 (99%)	385 (100%)	0	100 100
1	S2	381/389 (98%)	381 (100%)	0	100 100
1	S3	385/389 (99%)	384 (100%)	1 (0%)	91 96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	T1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	T2	385/389 (99%)	383 (100%)	2 (0%)	86 93
1	T3	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	U1	383/389 (98%)	382 (100%)	1 (0%)	91 96
1	U2	383/389 (98%)	383 (100%)	0	100 100
1	U3	385/389 (99%)	385 (100%)	0	100 100
1	V1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	V2	385/389 (99%)	382 (99%)	3 (1%)	79 88
1	V3	385/389 (99%)	383 (100%)	2 (0%)	86 93
1	W1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	W2	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	W3	384/389 (99%)	384 (100%)	0	100 100
1	X1	385/389 (99%)	385 (100%)	0	100 100
1	X2	385/389 (99%)	385 (100%)	0	100 100
1	X3	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	Y1	383/389 (98%)	381 (100%)	2 (0%)	86 93
1	Y2	381/389 (98%)	379 (100%)	2 (0%)	86 93
1	Y3	383/389 (98%)	381 (100%)	2 (0%)	86 93
1	Z1	381/389 (98%)	379 (100%)	2 (0%)	86 93
1	Z2	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	Z3	385/389 (99%)	385 (100%)	0	100 100
1	a1	385/389 (99%)	384 (100%)	1 (0%)	91 96
1	a2	384/389 (99%)	384 (100%)	0	100 100
1	a3	385/389 (99%)	385 (100%)	0	100 100
1	b1	385/389 (99%)	385 (100%)	0	100 100
1	b2	385/389 (99%)	385 (100%)	0	100 100
1	b3	384/389 (99%)	384 (100%)	0	100 100
1	c1	383/389 (98%)	380 (99%)	3 (1%)	79 88
1	c2	385/389 (99%)	385 (100%)	0	100 100
1	c3	385/389 (99%)	383 (100%)	2 (0%)	86 93
1	d1	385/389 (99%)	382 (99%)	3 (1%)	79 88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	d2	385/389 (99%)	382 (99%)	3 (1%)	79	88
1	d3	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	e1	380/389 (98%)	377 (99%)	3 (1%)	79	88
1	e2	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	e3	385/389 (99%)	383 (100%)	2 (0%)	86	93
1	f1	380/389 (98%)	379 (100%)	1 (0%)	91	96
1	f2	385/389 (99%)	385 (100%)	0	100	100
1	f3	383/389 (98%)	382 (100%)	1 (0%)	91	96
1	g1	384/389 (99%)	382 (100%)	2 (0%)	86	93
1	g2	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	g3	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	h1	374/389 (96%)	373 (100%)	1 (0%)	91	96
1	h2	383/389 (98%)	383 (100%)	0	100	100
1	h3	384/389 (99%)	383 (100%)	1 (0%)	91	96
1	j1	385/389 (99%)	383 (100%)	2 (0%)	86	93
1	j2	382/389 (98%)	382 (100%)	0	100	100
1	j3	385/389 (99%)	385 (100%)	0	100	100
1	k1	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	k2	385/389 (99%)	383 (100%)	2 (0%)	86	93
1	k3	385/389 (99%)	385 (100%)	0	100	100
1	m1	384/389 (99%)	381 (99%)	3 (1%)	79	88
1	m2	384/389 (99%)	382 (100%)	2 (0%)	86	93
1	m3	385/389 (99%)	385 (100%)	0	100	100
1	n1	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	n2	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	n3	385/389 (99%)	382 (99%)	3 (1%)	79	88
1	p1	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	p2	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	p3	385/389 (99%)	383 (100%)	2 (0%)	86	93
1	q1	385/389 (99%)	384 (100%)	1 (0%)	91	96
1	q2	385/389 (99%)	385 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	q3	383/389 (98%)	383 (100%)	0	100 100
1	r1	385/389 (99%)	382 (99%)	3 (1%)	79 88
1	r2	385/389 (99%)	385 (100%)	0	100 100
1	r3	385/389 (99%)	383 (100%)	2 (0%)	86 93
2	s1	72/143 (50%)	72 (100%)	0	100 100
2	s2	60/143 (42%)	60 (100%)	0	100 100
2	s3	78/143 (54%)	76 (97%)	2 (3%)	41 66
2	s4	76/143 (53%)	76 (100%)	0	100 100
2	s5	74/143 (52%)	73 (99%)	1 (1%)	62 79
2	s6	72/143 (50%)	72 (100%)	0	100 100
2	t1	76/143 (53%)	76 (100%)	0	100 100
2	t2	75/143 (52%)	74 (99%)	1 (1%)	65 81
2	t3	75/143 (52%)	74 (99%)	1 (1%)	65 81
2	t4	68/143 (48%)	68 (100%)	0	100 100
2	t5	57/143 (40%)	57 (100%)	0	100 100
2	t6	76/143 (53%)	75 (99%)	1 (1%)	65 81
2	t7	78/143 (54%)	78 (100%)	0	100 100
2	y7	41/143 (29%)	41 (100%)	0	100 100
2	y8	36/143 (25%)	36 (100%)	0	100 100
3	y1	54/374 (14%)	53 (98%)	1 (2%)	52 73
3	y2	277/374 (74%)	273 (99%)	4 (1%)	62 79
4	y4	257/406 (63%)	255 (99%)	2 (1%)	79 88
5	y5	67/122 (55%)	67 (100%)	0	100 100
6	y6	71/82 (87%)	71 (100%)	0	100 100
7	y3	114/123 (93%)	113 (99%)	1 (1%)	75 86
All	All	49042/51473 (95%)	48895 (100%)	147 (0%)	90 96

All (147) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A1	320	ASN
1	A2	308	MET
1	A3	320	ASN

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Mol	Chain	Res	Type
1	B2	96	ARG
1	B3	354	THR
1	B3	438	ARG
1	C1	320	ASN
1	C2	269	ARG
1	C3	96	ARG
1	D2	96	ARG
1	D2	269	ARG
1	D2	308	MET
1	D3	269	ARG
1	D3	296	MET
1	D3	320	ASN
1	E3	269	ARG
1	E3	320	ASN
1	E3	438	ARG
1	F1	269	ARG
1	F3	315	LYS
1	G1	269	ARG
1	G1	315	LYS
1	G2	438	ARG
1	H1	269	ARG
1	H2	269	ARG
1	H3	438	ARG
1	I1	308	MET
1	I1	315	LYS
1	I2	308	MET
1	I2	315	LYS
1	I3	269	ARG
1	I3	308	MET
1	J1	269	ARG
1	K1	269	ARG
1	K2	434	ASN
1	L1	308	MET
1	L1	398	SER
1	L2	315	LYS
1	M1	438	ARG
1	M3	308	MET
1	M3	315	LYS
1	N1	269	ARG
1	N2	320	ASN
1	O1	269	ARG
1	O1	315	LYS

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Mol	Chain	Res	Type
1	O2	121	PHE
1	O3	345	LYS
1	P1	320	ASN
1	P3	269	ARG
1	P3	408	ASN
1	Q1	72	ARG
1	Q1	308	MET
1	Q3	269	ARG
1	Q3	320	ASN
1	R2	308	MET
1	R3	269	ARG
1	R3	320	ASN
1	S3	398	SER
1	T1	320	ASN
1	T2	308	MET
1	T2	315	LYS
1	T3	121	PHE
1	U1	96	ARG
1	V1	269	ARG
1	V2	179	ASN
1	V2	303	LYS
1	V2	308	MET
1	V3	308	MET
1	V3	320	ASN
1	W1	308	MET
1	W2	320	ASN
1	X3	320	ASN
1	Y1	281	THR
1	Y1	320	ASN
1	Y2	269	ARG
1	Y2	398	SER
1	Y3	107	LYS
1	Y3	269	ARG
1	Z1	72	ARG
1	Z1	308	MET
1	Z2	179	ASN
1	a1	289	THR
1	d1	96	ARG
1	d1	269	ARG
1	d1	408	ASN
1	d2	96	ARG
1	d2	269	ARG

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Mol	Chain	Res	Type
1	d2	308	MET
1	d3	269	ARG
1	e1	122	ASN
1	e1	308	MET
1	e1	320	ASN
1	e2	391	ASN
1	e3	269	ARG
1	e3	308	MET
1	f1	320	ASN
1	f3	320	ASN
1	g1	121	PHE
1	g1	123	ASP
1	g2	320	ASN
1	g3	308	MET
1	h1	96	ARG
1	h3	308	MET
1	j1	57	SER
1	j1	320	ASN
1	k1	320	ASN
1	k2	121	PHE
1	k2	320	ASN
1	m1	59	ASN
1	m1	269	ARG
1	m1	320	ASN
1	m2	96	ARG
1	m2	308	MET
1	n1	320	ASN
1	n2	269	ARG
1	n3	96	ARG
1	n3	320	ASN
1	n3	398	SER
1	p1	269	ARG
1	p2	308	MET
1	p3	308	MET
1	p3	402	ASN
1	r1	72	ARG
1	r1	107	LYS
1	r1	269	ARG
1	r3	122	ASN
1	r3	408	ASN
2	s3	74	HIS
2	s3	115	ARG

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Mol	Chain	Res	Type
2	s5	152	LYS
2	t2	156	ASN
2	t3	101	ASP
2	t6	155	ASN
3	y2	9	ARG
3	y2	231	ARG
3	y2	273	LYS
3	y2	352	ASN
4	y4	148	ARG
4	y4	178	LYS
3	y1	461	ARG
7	y3	117	MET
1	c1	269	ARG
1	c1	287	GLN
1	c1	296	MET
1	c3	269	ARG
1	c3	288	ASN
1	q1	269	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (151) such sidechains are listed below:

Mol	Chain	Res	Type
1	B1	277	GLN
1	C3	116	HIS
1	D1	369	GLN
1	D1	449	ASN
1	D2	434	ASN
1	E1	447	ASN
1	E3	402	ASN
1	F1	449	ASN
1	F2	111	HIS
1	F2	156	ASN
1	F3	156	ASN
1	F3	320	ASN
1	G1	332	ASN
1	G1	449	ASN
1	G3	448	HIS
1	H1	300	HIS
1	H1	449	ASN
1	H2	122	ASN
1	H2	320	ASN
1	H3	275	GLN

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Mol	Chain	Res	Type
1	H3	300	HIS
1	H3	449	ASN
1	I1	447	ASN
1	I2	320	ASN
1	I3	447	ASN
1	J1	353	ASN
1	J3	204	ASN
1	K2	434	ASN
1	K2	447	ASN
1	L2	275	GLN
1	L2	320	ASN
1	L3	320	ASN
1	M3	275	GLN
1	N1	287	GLN
1	N3	320	ASN
1	N3	449	ASN
1	O2	127	GLN
1	O3	293	HIS
1	O3	320	ASN
1	P1	128	GLN
1	P1	320	ASN
1	P2	277	GLN
1	P3	162	ASN
1	P3	275	GLN
1	Q1	122	ASN
1	Q2	275	GLN
1	Q2	320	ASN
1	Q2	449	ASN
1	R2	128	GLN
1	R2	275	GLN
1	R2	449	ASN
1	R3	111	HIS
1	R3	320	ASN
1	R3	447	ASN
1	S1	449	ASN
1	S2	64	GLN
1	S2	122	ASN
1	S3	277	GLN
1	S3	282	HIS
1	T1	116	HIS
1	T1	204	ASN
1	T3	447	ASN

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Mol	Chain	Res	Type
1	U1	156	ASN
1	U2	449	ASN
1	V1	320	ASN
1	V2	64	GLN
1	V2	127	GLN
1	V2	179	ASN
1	V3	434	ASN
1	W1	128	GLN
1	W3	320	ASN
1	W3	447	ASN
1	X1	320	ASN
1	X2	275	GLN
1	X2	277	GLN
1	X2	447	ASN
1	Y2	275	GLN
1	Y2	277	GLN
1	Y2	293	HIS
1	Y2	449	ASN
1	Y3	275	GLN
1	Y3	277	GLN
1	Z1	156	ASN
1	Z3	275	GLN
1	a2	320	ASN
1	b1	122	ASN
1	b2	122	ASN
1	b2	277	GLN
1	b3	447	ASN
1	d2	287	GLN
1	d2	402	ASN
1	e2	391	ASN
1	e3	320	ASN
1	f2	320	ASN
1	f3	275	GLN
1	f3	320	ASN
1	f3	449	ASN
1	g1	162	ASN
1	g2	320	ASN
1	g3	277	GLN
1	g3	287	GLN
1	g3	447	ASN
1	h1	64	GLN
1	h2	447	ASN

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Mol	Chain	Res	Type
1	h3	320	ASN
1	j1	320	ASN
1	j2	275	GLN
1	j2	282	HIS
1	k1	447	ASN
1	k2	64	GLN
1	k2	320	ASN
1	k3	128	GLN
1	k3	277	GLN
1	m2	64	GLN
1	m2	447	ASN
1	m3	122	ASN
1	m3	204	ASN
1	m3	275	GLN
1	m3	277	GLN
1	m3	434	ASN
1	m3	449	ASN
1	n1	275	GLN
1	n2	275	GLN
1	n3	282	HIS
1	n3	447	ASN
1	p2	64	GLN
1	p2	434	ASN
1	p3	320	ASN
1	p3	402	ASN
1	p3	434	ASN
1	r1	447	ASN
1	r2	122	ASN
1	r2	156	ASN
1	r2	320	ASN
1	r2	434	ASN
1	r3	64	GLN
1	r3	156	ASN
1	r3	275	GLN
2	s1	143	GLN
2	t1	79	GLN
2	t6	79	GLN
2	t7	79	GLN
3	y2	71	GLN
1	c1	277	GLN
1	c2	275	GLN
1	c3	275	GLN

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Mol	Chain	Res	Type
1	c3	449	ASN
1	q2	275	GLN
1	q2	320	ASN
1	q3	275	GLN
1	q3	287	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

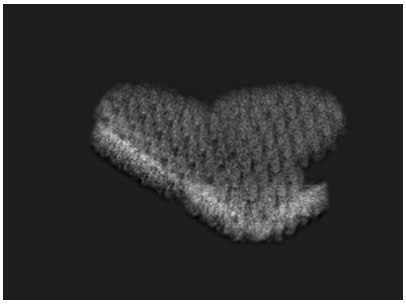
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-34815. These allow visual inspection of the internal detail of the map and identification of artifacts.

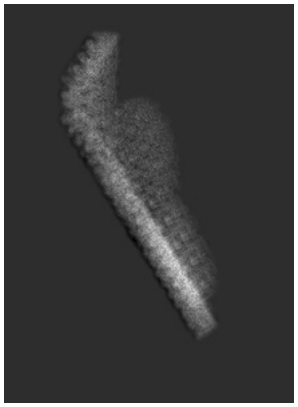
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

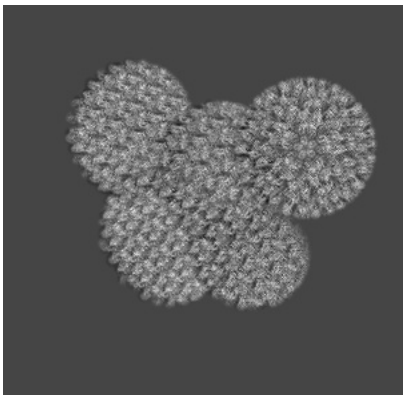
6.1.1 Primary map



X



Y

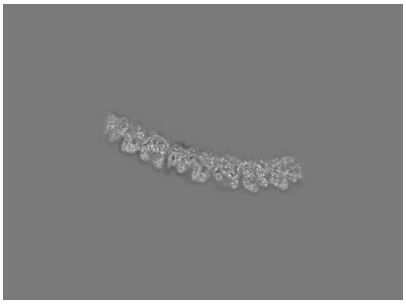


Z

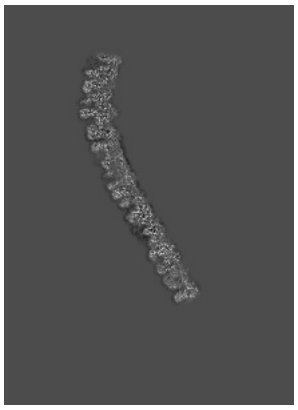
The images above show the map projected in three orthogonal directions.

6.2 Central slices

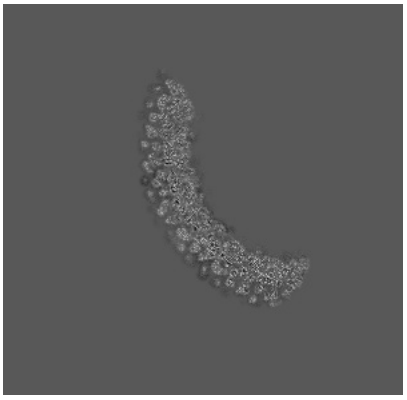
6.2.1 Primary map



X Index: 395



Y Index: 385

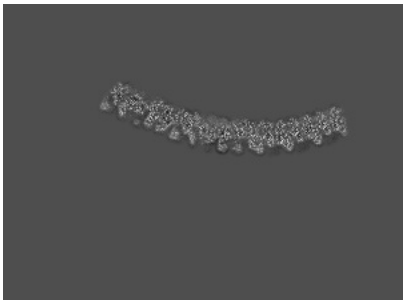


Z Index: 284

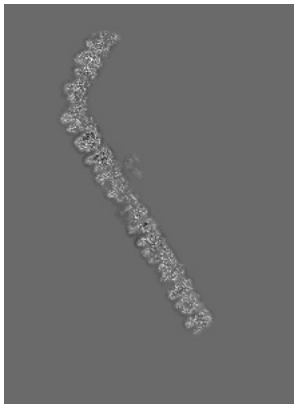
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

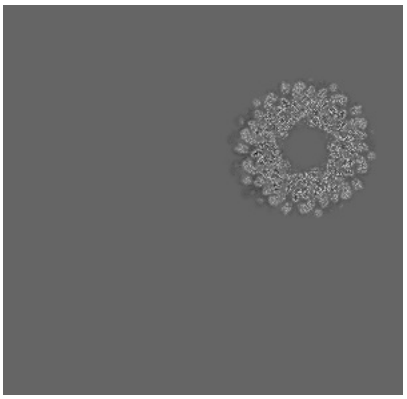
6.3.1 Primary map



X Index: 277



Y Index: 460

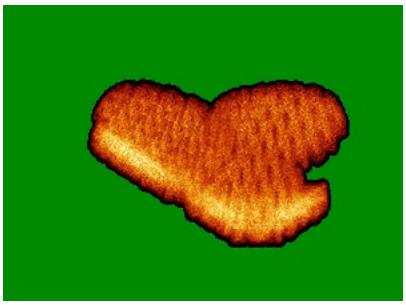


Z Index: 172

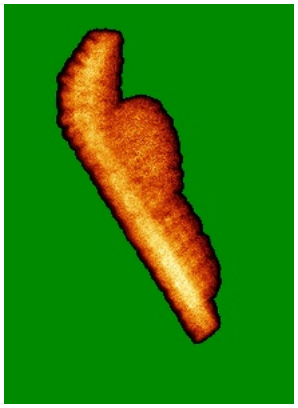
The images above show the largest variance slices of the map in three orthogonal directions.

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

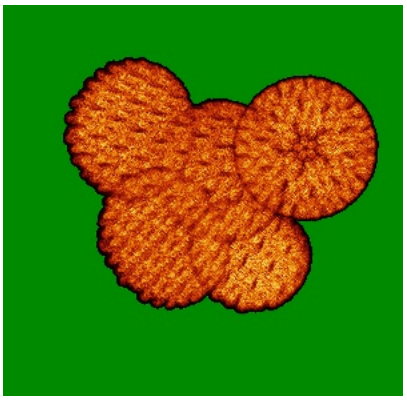
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

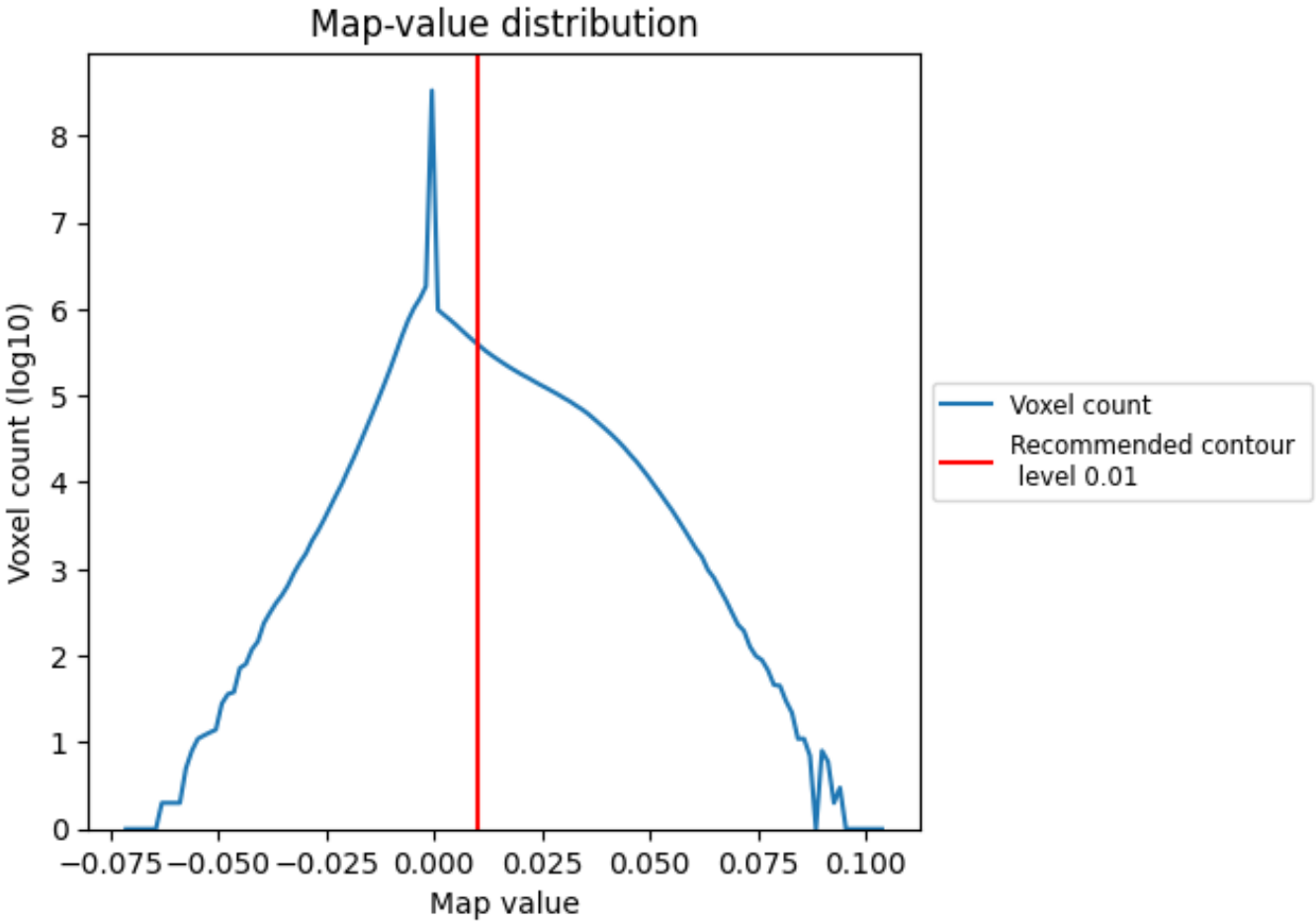
6.6 Mask visualisation (i)

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

7 Map analysis

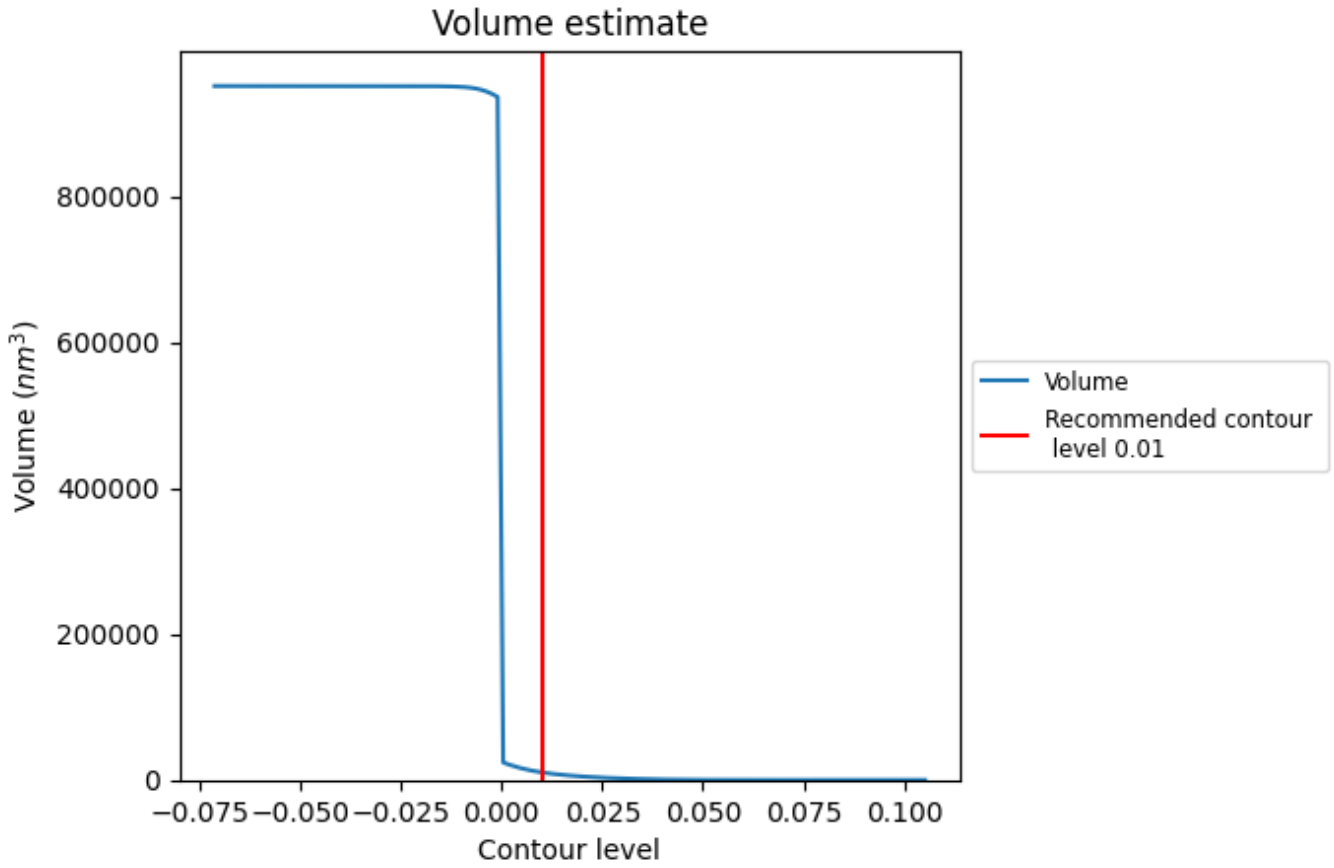
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

7.2 Volume estimate



The volume at the recommended contour level is 10363 nm^3; this corresponds to an approximate mass of 9361 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

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

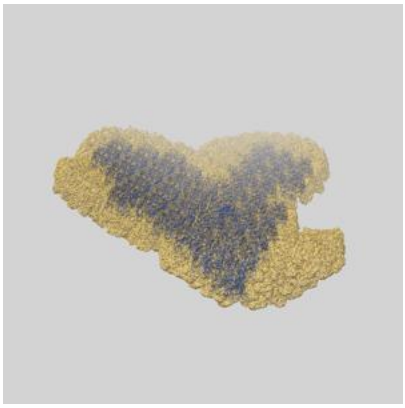
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

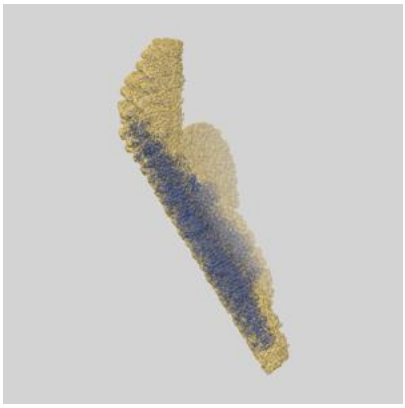
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-34815 and PDB model 8HIF. Per-residue inclusion information can be found in section 3 on page 17.

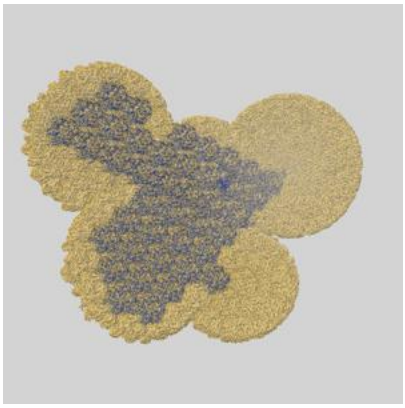
9.1 Map-model overlay



X



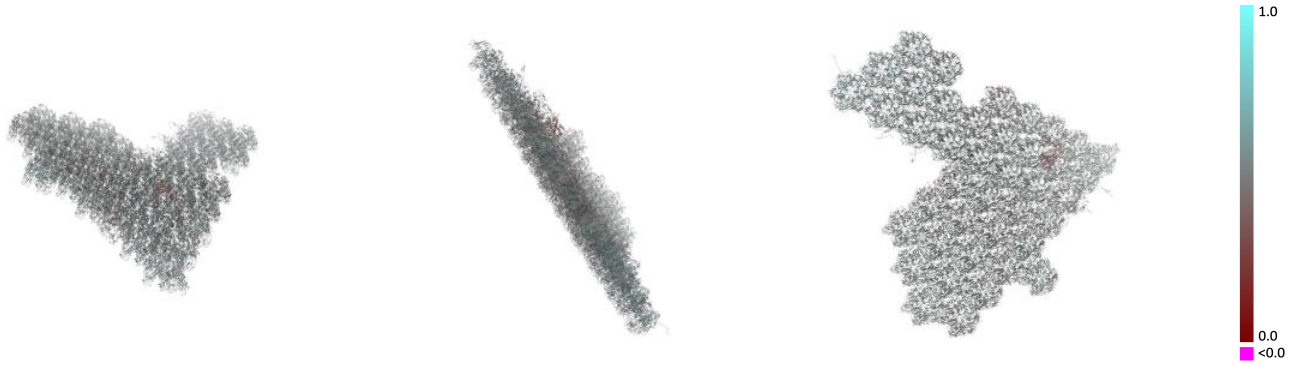
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

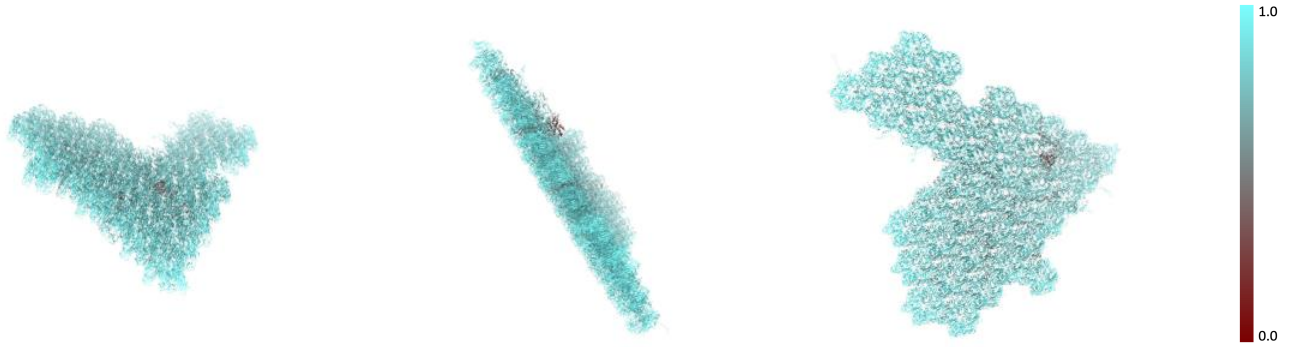
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

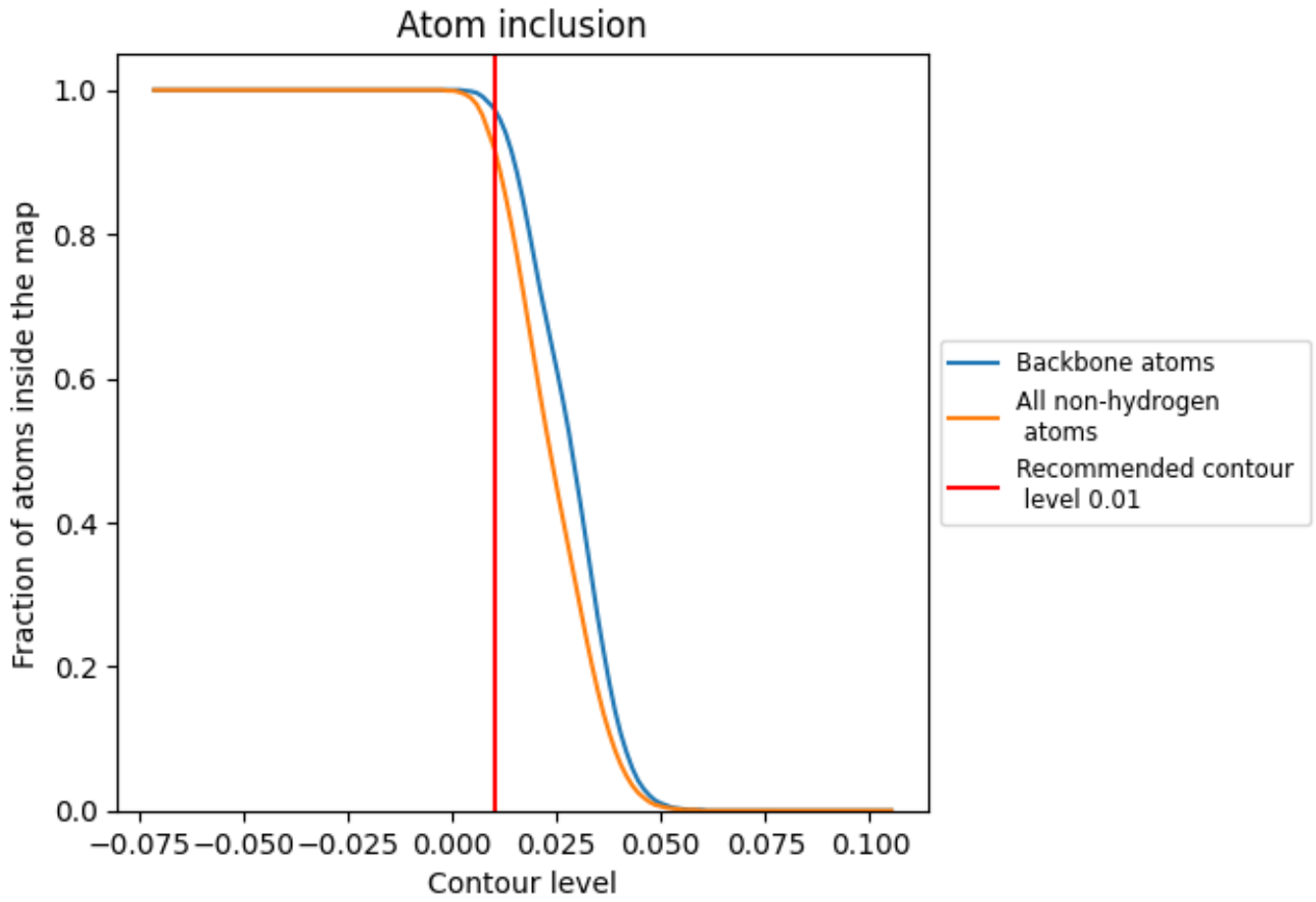
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9200	0.4910
A1	0.9510	0.4990
A2	0.9330	0.5050
A3	0.9030	0.5040
B1	0.9420	0.4980
B2	0.9380	0.5030
B3	0.9400	0.4980
C1	0.9310	0.5010
C2	0.9270	0.4930
C3	0.9320	0.4940
D1	0.8910	0.4810
D2	0.8670	0.4710
D3	0.8900	0.4750
E1	0.8960	0.4880
E2	0.9310	0.4960
E3	0.9000	0.4840
F1	0.8830	0.4800
F2	0.9310	0.4920
F3	0.9110	0.4870
G1	0.9320	0.4910
G2	0.9330	0.4870
G3	0.9150	0.4870
H1	0.9310	0.5050
H2	0.9340	0.4960
H3	0.9010	0.4990
I1	0.9270	0.4990
I2	0.9290	0.4950
I3	0.9350	0.4970
J1	0.9580	0.4950
J2	0.9500	0.4830
J3	0.9520	0.4880
K1	0.8760	0.4790
K2	0.9500	0.4790
K3	0.9300	0.4830
L1	0.9250	0.4770

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Chain	Atom inclusion	Q-score
L2	0.8980	0.4830
L3	0.9050	0.4910
M1	0.9420	0.5040
M2	0.9330	0.5080
M3	0.9460	0.5120
N1	0.9430	0.5050
N2	0.9430	0.5080
N3	0.9410	0.4980
O1	0.9210	0.4790
O2	0.8770	0.4690
O3	0.8880	0.4540
P1	0.8690	0.4800
P2	0.9280	0.4870
P3	0.9250	0.4780
Q1	0.9270	0.5090
Q2	0.8490	0.4900
Q3	0.9020	0.4950
R1	0.9050	0.4900
R2	0.9470	0.4880
R3	0.9460	0.4920
S1	0.9160	0.4770
S2	0.9050	0.4660
S3	0.9200	0.4800
T1	0.9300	0.4850
T2	0.9450	0.4860
T3	0.9400	0.4820
U1	0.9420	0.5110
U2	0.9320	0.5050
U3	0.9280	0.4920
V1	0.9100	0.4790
V2	0.9150	0.4800
V3	0.9460	0.4970
W1	0.8860	0.4860
W2	0.9070	0.4920
W3	0.9260	0.4960
X1	0.9420	0.4890
X2	0.8850	0.4830
X3	0.9150	0.4850
Y1	0.8950	0.4810
Y2	0.9270	0.4830
Y3	0.8950	0.4730
Z1	0.9060	0.4930

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Chain	Atom inclusion	Q-score
Z2	0.9290	0.4940
Z3	0.8860	0.4930
a1	0.9380	0.5030
a2	0.8850	0.4930
a3	0.9460	0.5020
b1	0.9430	0.4900
b2	0.9420	0.4940
b3	0.9440	0.4980
c1	0.9480	0.4990
c2	0.9520	0.5010
c3	0.9490	0.5030
d1	0.9460	0.5110
d2	0.9480	0.5110
d3	0.9450	0.5090
e1	0.9480	0.5050
e2	0.9440	0.5080
e3	0.9440	0.5090
f1	0.9440	0.5140
f2	0.9460	0.5130
f3	0.9470	0.5110
g1	0.9500	0.5120
g2	0.9510	0.5150
g3	0.9500	0.5140
h1	0.9500	0.5140
h2	0.9510	0.5110
h3	0.9500	0.5080
j1	0.9090	0.4750
j2	0.9130	0.4800
j3	0.9610	0.4890
k1	0.9400	0.4980
k2	0.9440	0.4970
k3	0.9370	0.4980
m1	0.9530	0.4880
m2	0.9580	0.4910
m3	0.9500	0.4950
n1	0.9400	0.4990
n2	0.9380	0.4980
n3	0.9370	0.4950
p1	0.9280	0.4950
p2	0.9350	0.4970
p3	0.9390	0.4940
q1	0.9340	0.4910

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Chain	Atom inclusion	Q-score
q2	0.9460	0.4880
q3	0.9460	0.4800
r1	0.9380	0.4940
r2	0.9380	0.4960
r3	0.9340	0.4890
s1	0.8940	0.4920
s2	0.7290	0.4320
s3	0.8660	0.4740
s4	0.8320	0.4630
s5	0.7850	0.4510
s6	0.7830	0.4420
t1	0.8060	0.4590
t2	0.8350	0.4890
t3	0.8930	0.4900
t4	0.8240	0.4540
t5	0.7400	0.4380
t6	0.8500	0.4820
t7	0.8110	0.4550
y1	0.5060	0.3730
y2	0.7730	0.4460
y3	0.9580	0.4640
y4	0.3770	0.3480
y5	0.8430	0.4920
y6	0.7190	0.4310
y7	0.6520	0.4470
y8	0.5400	0.4210