



wwPDB EM Validation Summary Report ⓘ

Apr 15, 2026 – 01:07 AM UTC

PDB ID : 9ZD8 / pdb_00009zd8
EMDB ID : EMD-74057
Title : The cryo-EM structure of Pakpunavirus P7-1 baseplate in extended status
Authors : Li, F.; Cingolani, G.
Deposited on : 2025-11-25
Resolution : 3.60 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ 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:

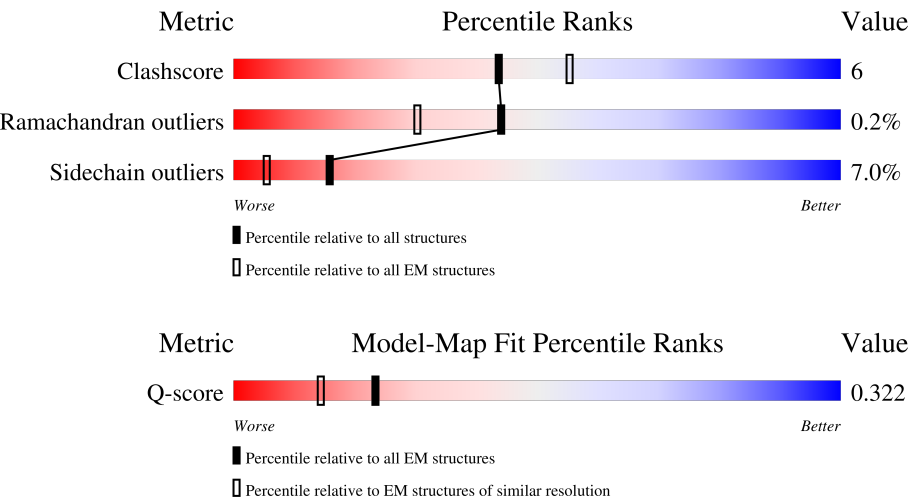
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 3.60 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	12797 (3.10 - 4.10)

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

Mol	Chain	Length	Quality of chain
1	0	487	
1	L	487	
1	M	487	
1	N	487	


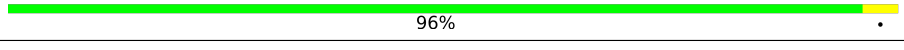
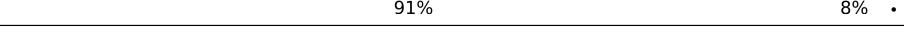
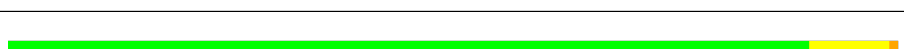
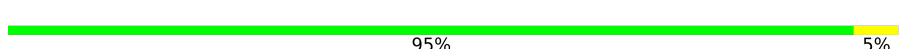
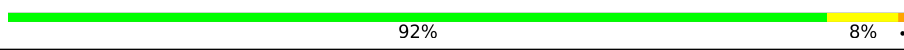

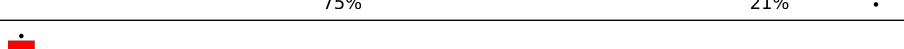



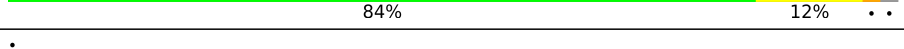

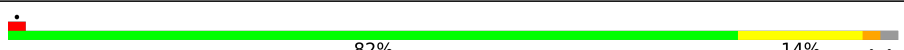


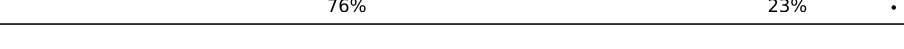







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Mol	Chain	Length	Quality of chain
1	V	487	
1	W	487	
1	X	487	
1	f	487	
1	g	487	
1	h	487	
1	o	487	
1	u	487	
2	l	243	
2	O	243	
2	Y	243	
2	i	243	
2	p	243	
2	v	243	
3	A	253	
3	B	253	
3	C	253	
3	D	253	
3	E	253	
3	F	253	
4	G	159	
4	Q	159	
4	a	159	
4	k	159	
4	q	159	

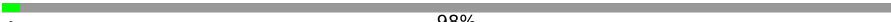
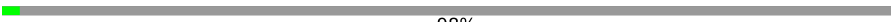







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Mol	Chain	Length	Quality of chain
4	w	159	
5	H	166	
5	R	166	
5	b	166	
5	l	166	
5	r	166	
5	x	166	
6	I	118	
6	S	118	
6	c	118	
6	m	118	
6	s	118	
6	y	118	
7	K	123	
7	U	123	
7	e	123	
7	n	123	
7	t	123	
7	z	123	
8	P	246	
8	Z	246	
8	j	246	
9	J	305	
9	T	305	
9	d	305	

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Mol	Chain	Length	Quality of chain
10	2	788	 98%
10	3	788	 98%
10	4	788	 98%
10	5	788	 98%
10	6	788	 98%
10	7	788	 98%
10	8	788	 96%
10	9	788	 96%
10	AA	788	 96%

2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 107757 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 gp88.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	L	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	M	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	N	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	V	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	W	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	X	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	f	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	g	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	h	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	o	486	Total 3681	C 2324	N 618	O 731	S 8	0	0
1	u	486	Total 3681	C 2324	N 618	O 731	S 8	0	0

- Molecule 2 is a protein called gp89.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	242	Total 1879	C 1201	N 315	O 362	S 1	0	0
2	O	242	Total 1879	C 1201	N 315	O 362	S 1	0	0
2	Y	242	Total 1879	C 1201	N 315	O 362	S 1	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	i	242	Total	C	N	O	S	0	0
			1879	1201	315	362	1		
2	p	242	Total	C	N	O	S	0	0
			1879	1201	315	362	1		
2	v	242	Total	C	N	O	S	0	0
			1879	1201	315	362	1		

- Molecule 3 is a protein called gp83.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		
3	B	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		
3	C	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		
3	D	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		
3	E	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		
3	F	237	Total	C	N	O	S	0	0
			1876	1174	323	376	3		

- Molecule 4 is a protein called gp79.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	G	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		
4	Q	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		
4	a	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		
4	k	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		
4	q	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		
4	w	158	Total	C	N	O	S	0	0
			1237	775	216	241	5		

- Molecule 5 is a protein called gp78.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		
5	R	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		
5	b	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		
5	l	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		
5	r	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		
5	x	166	Total	C	N	O	S	0	0
			1281	818	212	243	8		

- Molecule 6 is a protein called gp84.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	I	114	Total	C	N	O	S	0	0
			956	624	152	176	4		
6	S	114	Total	C	N	O	S	0	0
			956	624	152	176	4		
6	c	114	Total	C	N	O	S	0	0
			956	624	152	176	4		
6	m	114	Total	C	N	O	S	0	0
			956	624	152	176	4		
6	s	114	Total	C	N	O	S	0	0
			956	624	152	176	4		
6	y	114	Total	C	N	O	S	0	0
			956	624	152	176	4		

- Molecule 7 is a protein called gp87.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	K	120	Total	C	N	O	S	0	0
			979	628	163	183	5		
7	U	120	Total	C	N	O	S	0	0
			979	628	163	183	5		
7	e	120	Total	C	N	O	S	0	0
			979	628	163	183	5		
7	n	120	Total	C	N	O	S	0	0
			979	628	163	183	5		
7	t	120	Total	C	N	O	S	0	0
			979	628	163	183	5		
7	z	120	Total	C	N	O	S	0	0
			979	628	163	183	5		

- Molecule 8 is a protein called gp86.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	P	246	Total	C	N	O	S	0	0
			1874	1168	339	357	10		
8	Z	246	Total	C	N	O	S	0	0
			1874	1168	339	357	10		
8	j	246	Total	C	N	O	S	0	0
			1874	1168	339	357	10		

- Molecule 9 is a protein called gp85.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	304	Total	C	N	O	S	0	0
			2364	1463	415	475	11		
9	T	304	Total	C	N	O	S	0	0
			2364	1463	415	475	11		
9	d	304	Total	C	N	O	S	0	0
			2364	1463	415	475	11		

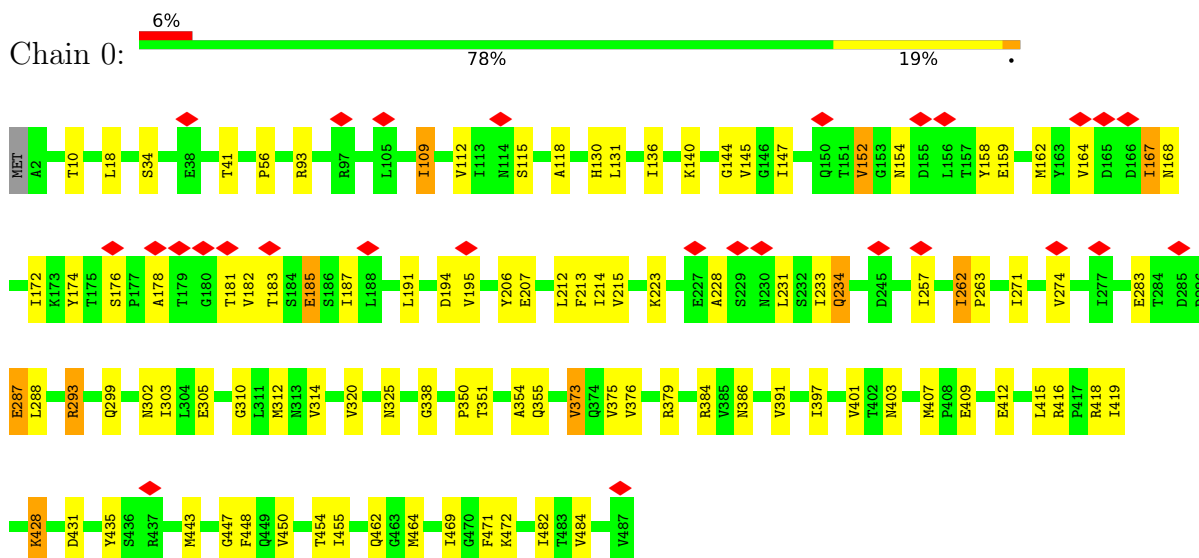
- Molecule 10 is a protein called gp88.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	4	19	Total	C	N	O		0	0
			143	85	27	31			
10	2	19	Total	C	N	O		0	0
			143	85	27	31			
10	3	19	Total	C	N	O		0	0
			143	85	27	31			
10	5	19	Total	C	N	O		0	0
			143	85	27	31			
10	6	19	Total	C	N	O		0	0
			143	85	27	31			
10	7	19	Total	C	N	O		0	0
			143	85	27	31			
10	8	32	Total	C	N	O	S	0	0
			255	152	45	57	1		
10	9	32	Total	C	N	O	S	0	0
			255	152	45	57	1		
10	AA	32	Total	C	N	O	S	0	0
			255	152	45	57	1		

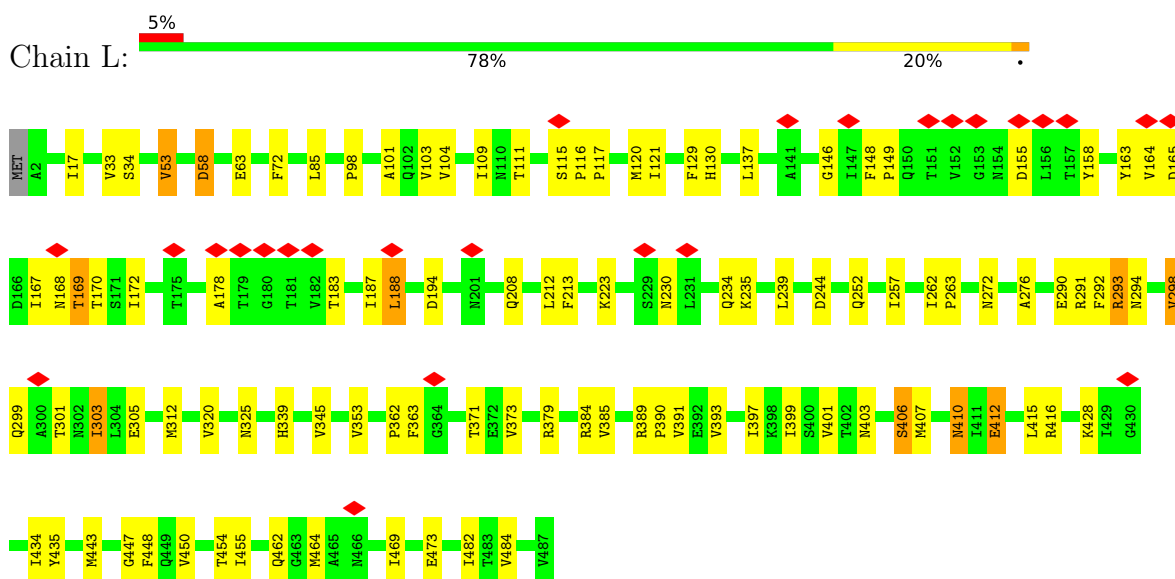
3 Residue-property plots

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.

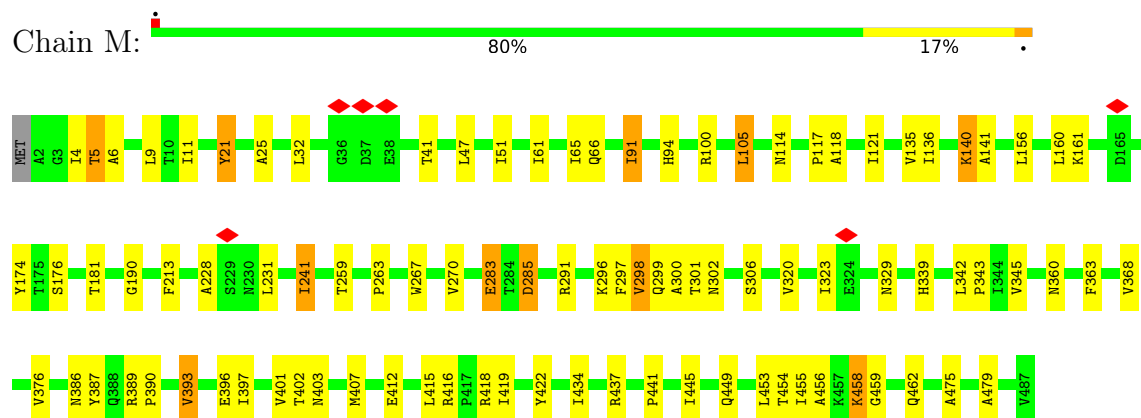
- Molecule 1: gp88



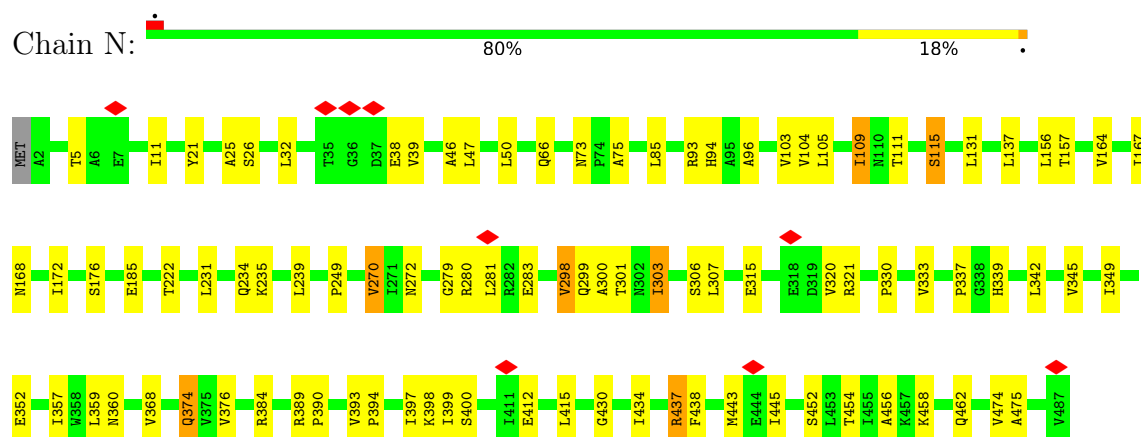
- Molecule 1: gp88



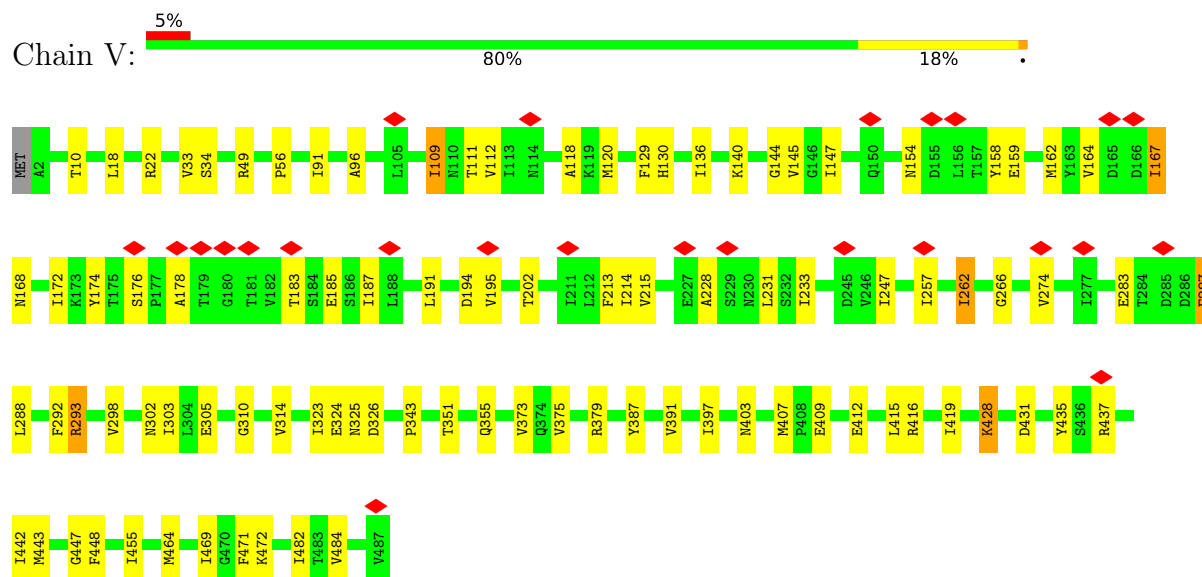
- Molecule 1: gp88



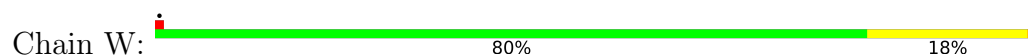
• Molecule 1: gp88

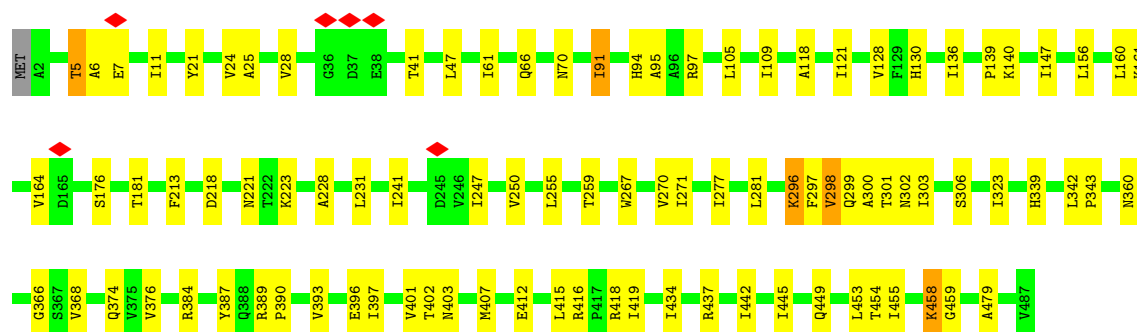


• Molecule 1: gp88

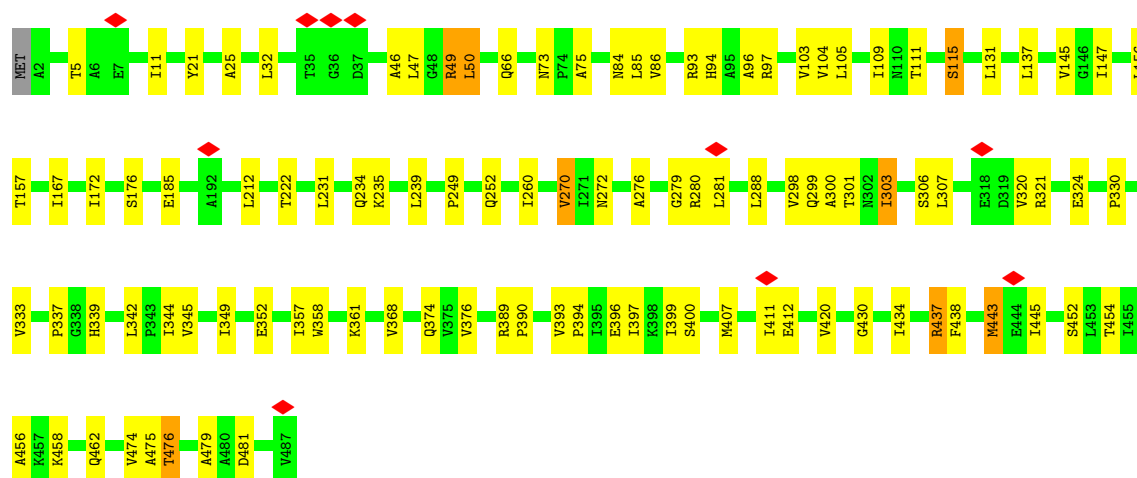
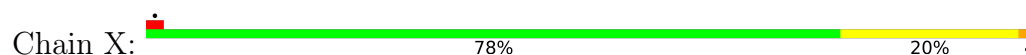


• Molecule 1: gp88

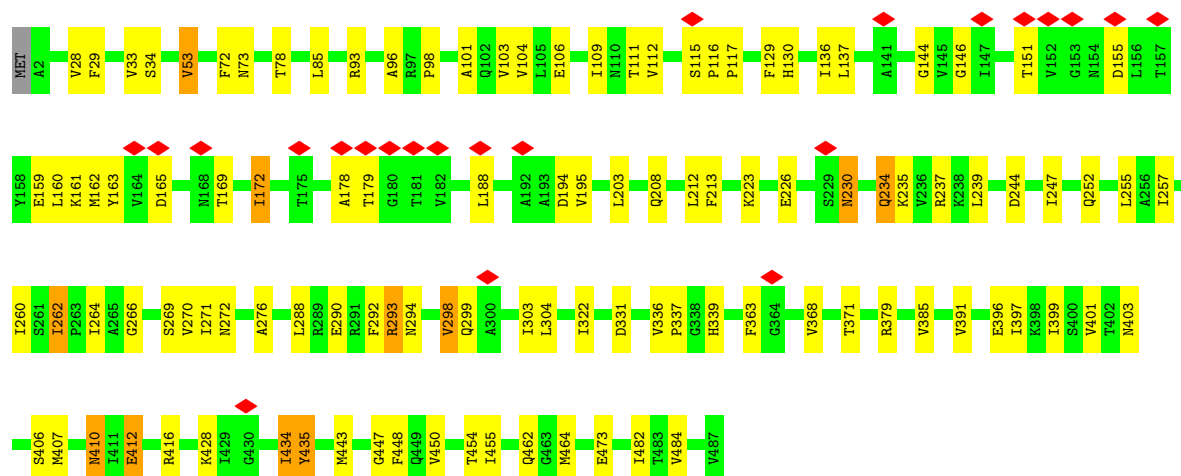
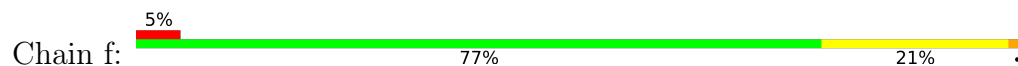




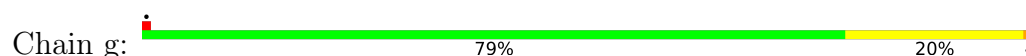
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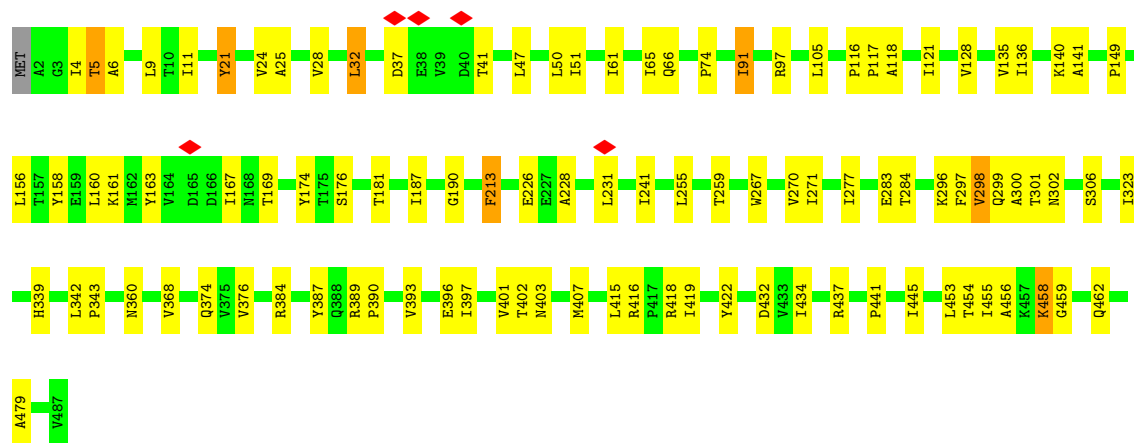


• Molecule 1: gp88



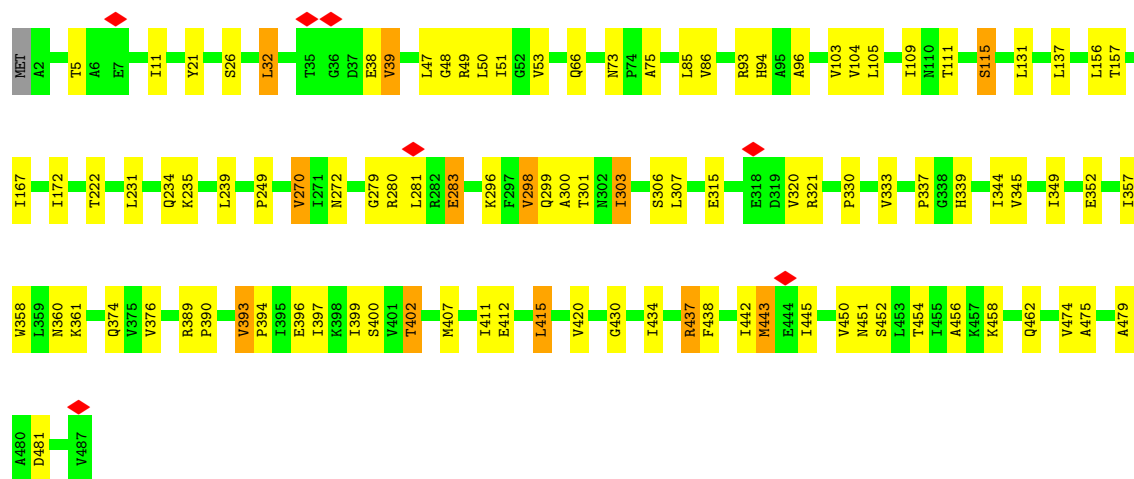
• Molecule 1: gp88





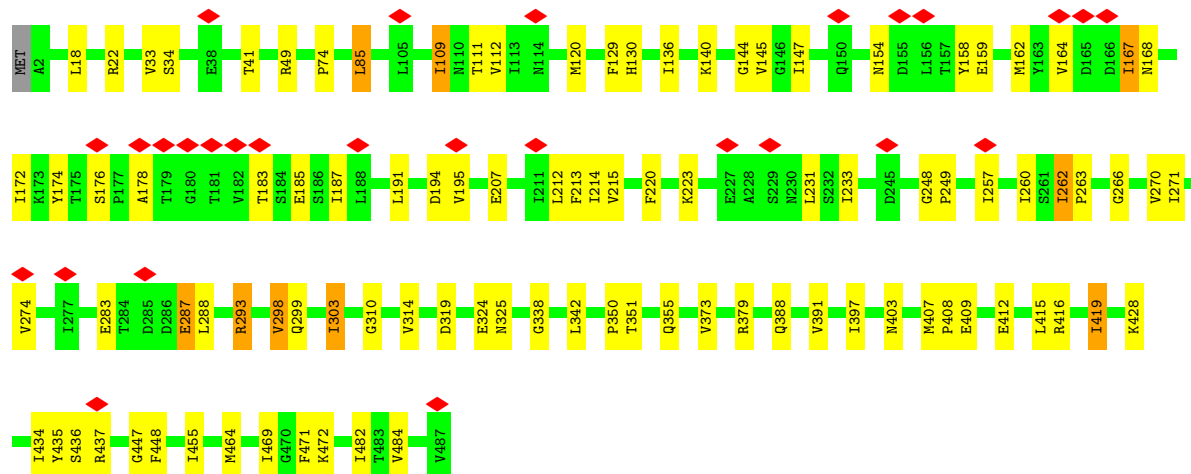
• Molecule 1: gp88

Chain h: 79% 18%

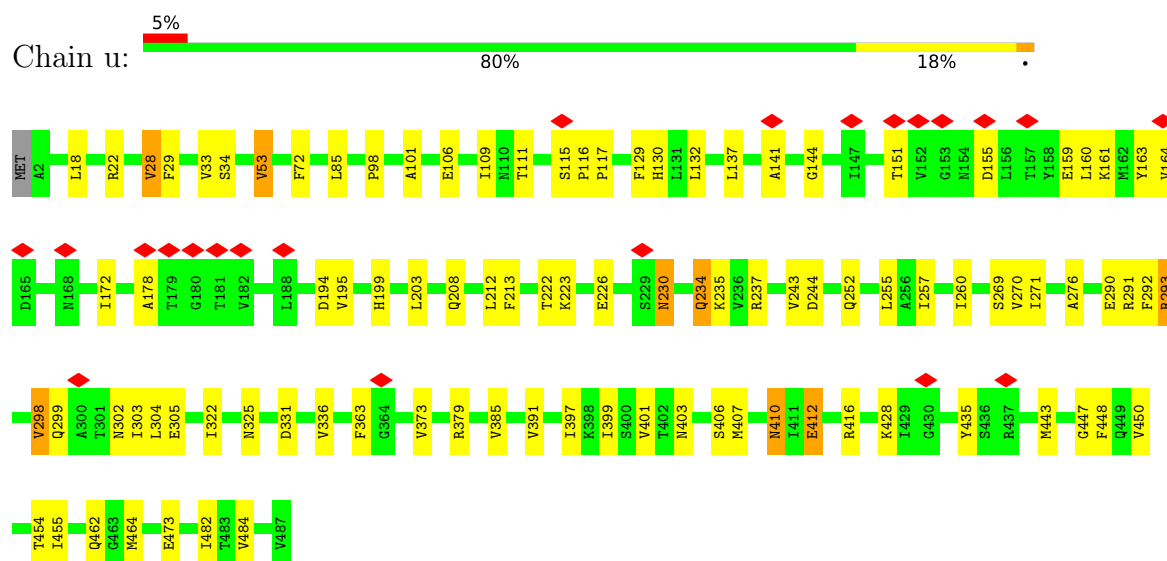


• Molecule 1: gp88

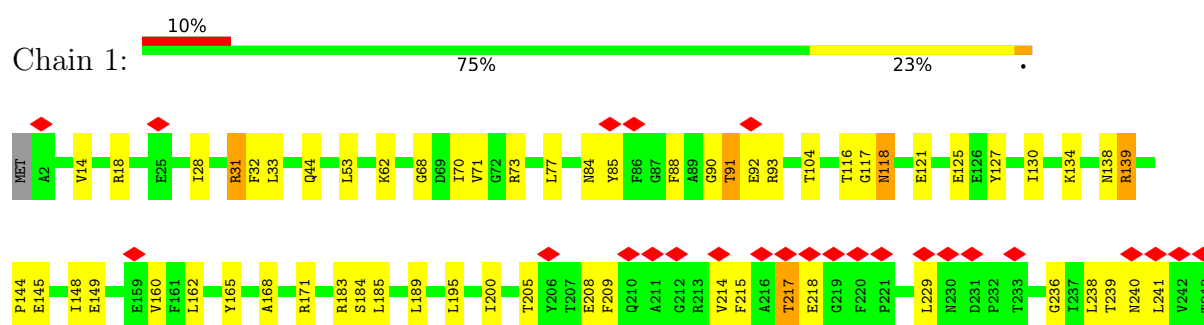
Chain o: 6% 79% 18%



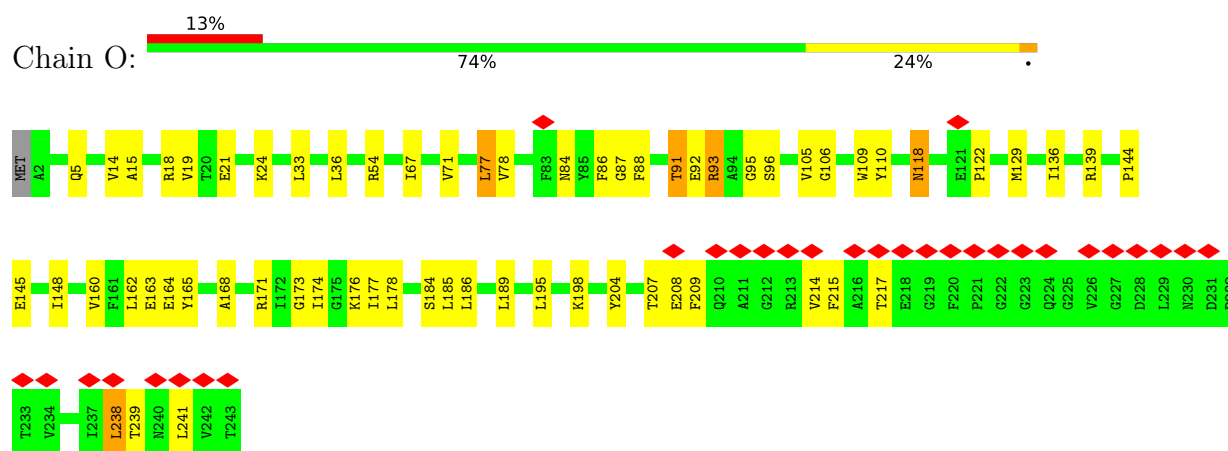
- Molecule 1: gp88



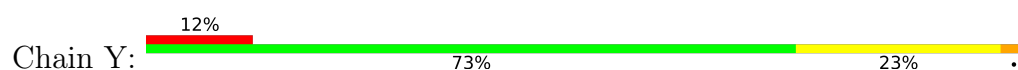
- Molecule 2: gp89

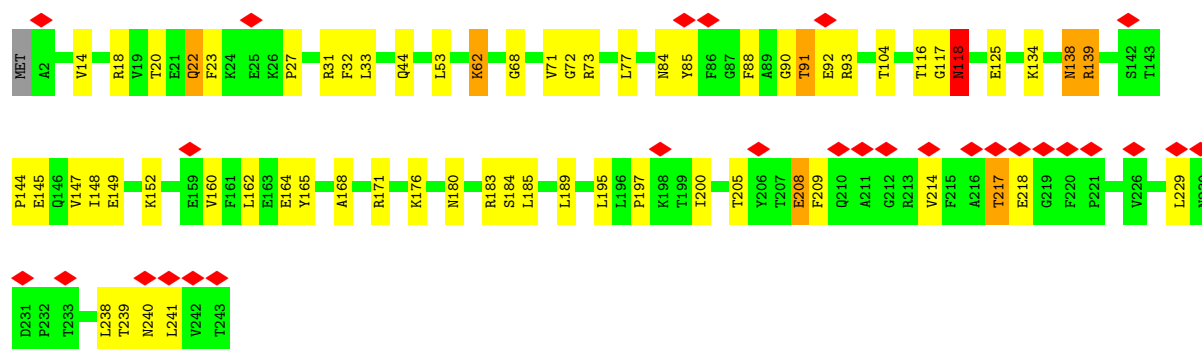


- Molecule 2: gp89

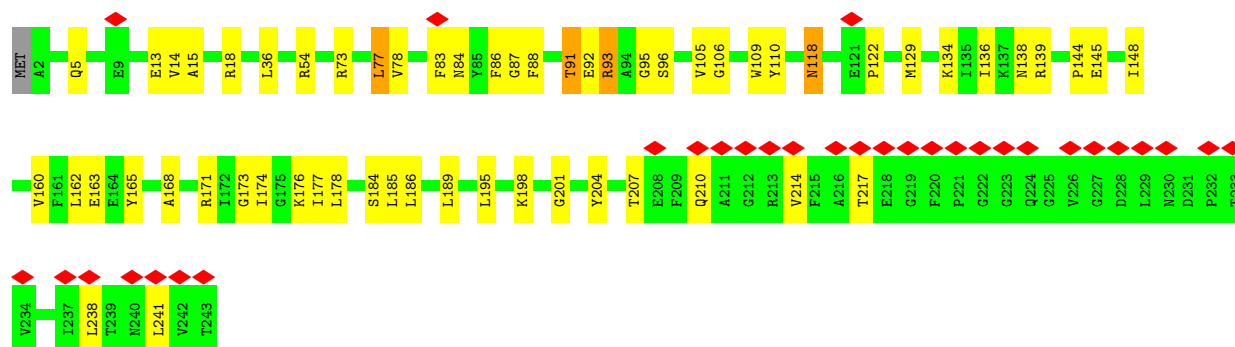
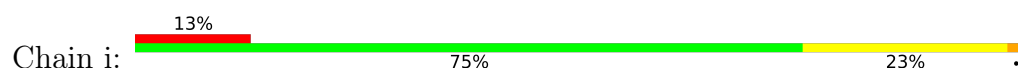


- Molecule 2: gp89

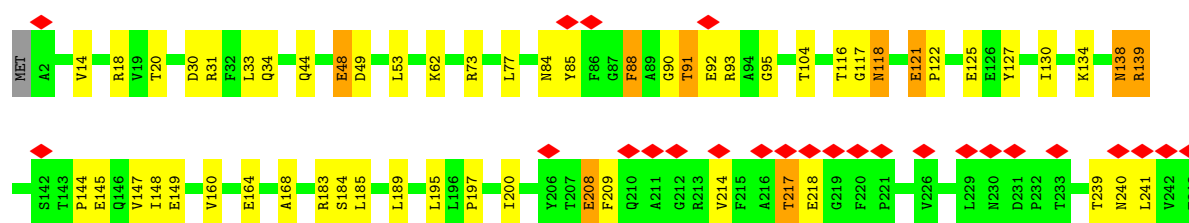
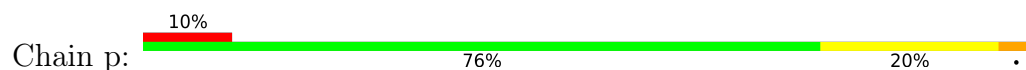




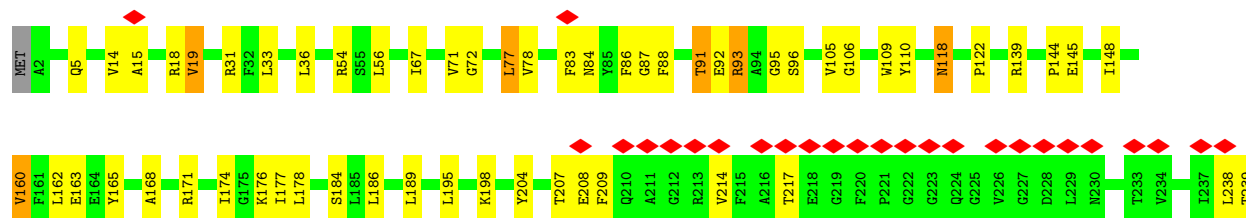
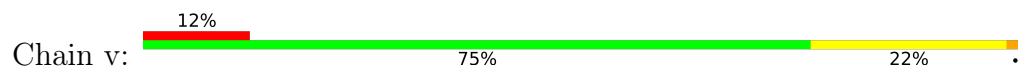
• Molecule 2: gp89

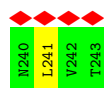


• Molecule 2: gp89



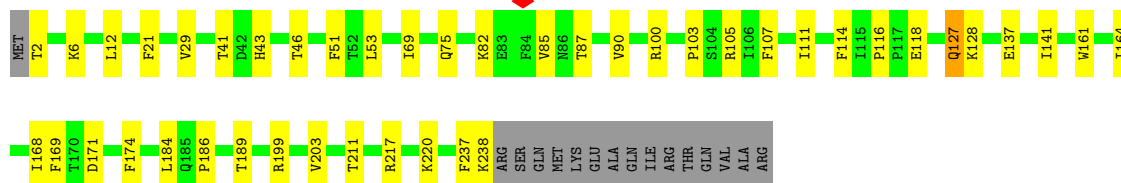
• Molecule 2: gp89





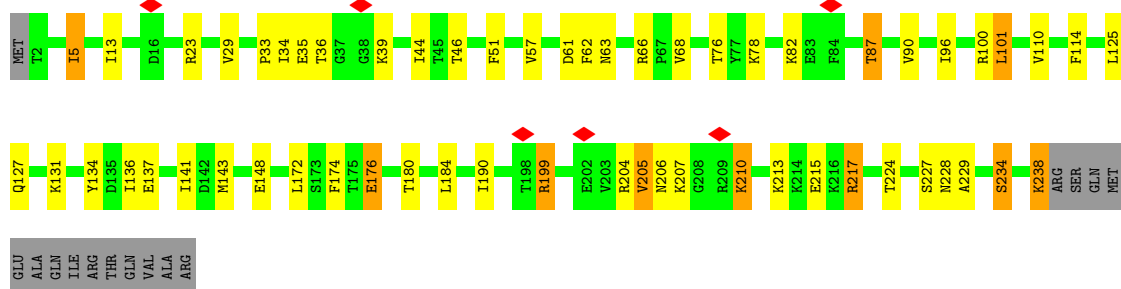
• Molecule 3: gp83

Chain A: 76% 17% 6%



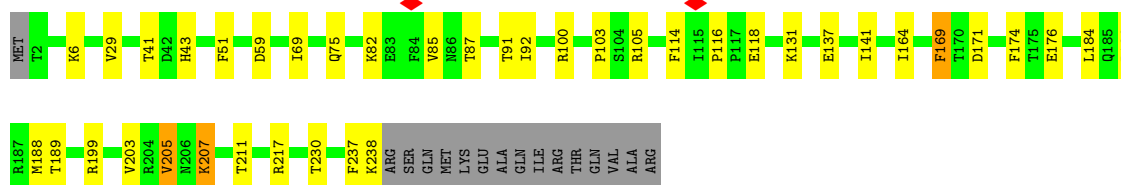
• Molecule 3: gp83

Chain B: 70% 19% 6%



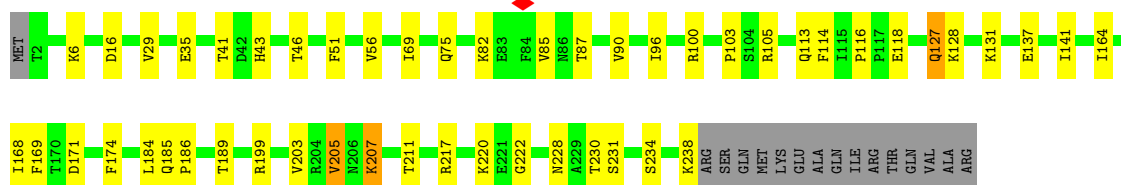
• Molecule 3: gp83

Chain C: 78% 15% 6%



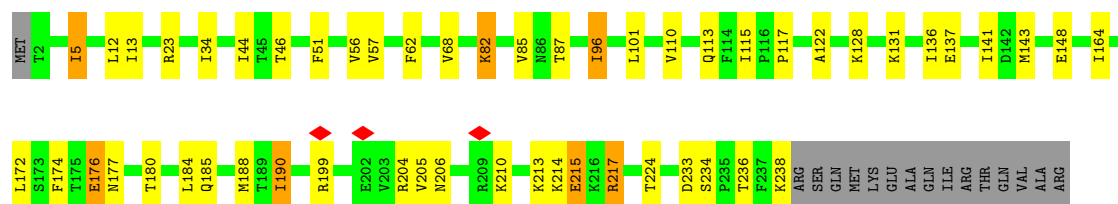
• Molecule 3: gp83

Chain D: 74% 19% 6%



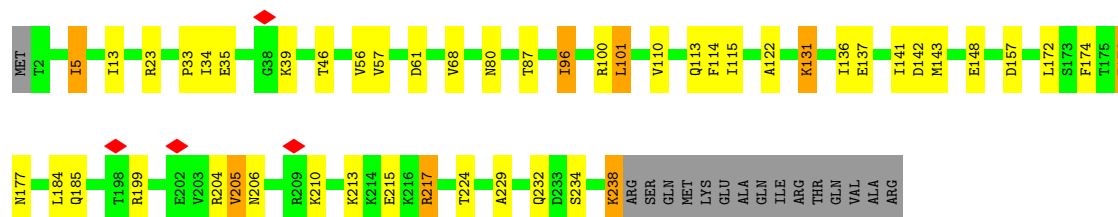
• Molecule 3: gp83

Chain E:  73% 18% 6%




• Molecule 3: gp83

Chain F:  74% 16% 6%




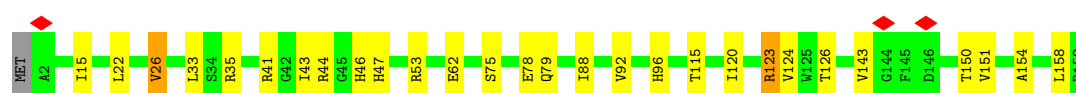
• Molecule 4: gp79

Chain G:  84% 14% ..




• Molecule 4: gp79

Chain Q:  82% 16% ..




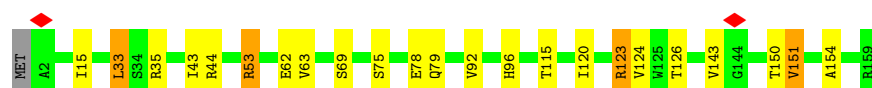
• Molecule 4: gp79

Chain a:  85% 13% ..




• Molecule 4: gp79


Chain k:  85% 12% ..



• Molecule 4: gp79

Chain q:  86% 11% ..

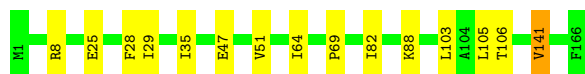
• Molecule 4: gp79

Chain w:  85% 11% ..


• Molecule 5: gp78

Chain H:  96% .


• Molecule 5: gp78

Chain R:  91% 8% .

• Molecule 5: gp78

Chain b:  90% 10%

• Molecule 5: gp78

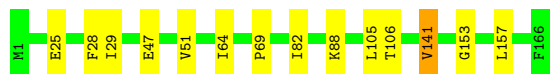
Chain l:  90% 9% .

• Molecule 5: gp78


Chain r:  95% 5%

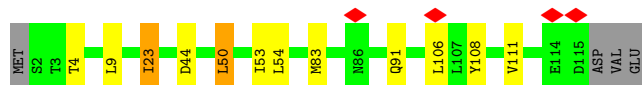
- Molecule 5: gp78

Chain x:  92% 8% .




- Molecule 6: gp84

Chain I:  86% 8% ..




- Molecule 6: gp84

Chain S:  75% 21% .




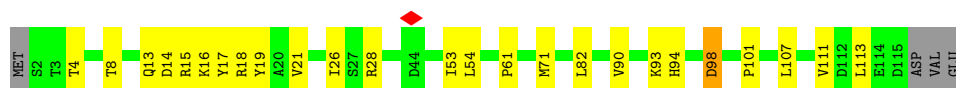
- Molecule 6: gp84

Chain c:  80% 16% ..




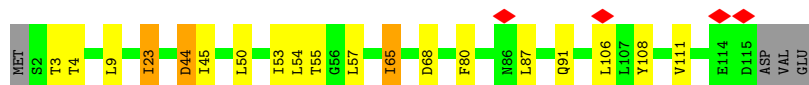
- Molecule 6: gp84

Chain m:  75% 20% ..



- Molecule 6: gp84

Chain s:  81% 14% ..



- Molecule 6: gp84

Chain y:  74% 21% ..



- Molecule 7: gp87

Chain K: 84% 12% ..



- Molecule 7: gp87

Chain U: 84% 14% .



- Molecule 7: gp87

Chain e: 81% 15% ..



- Molecule 7: gp87

Chain n: 82% 14% ..



- Molecule 7: gp87

Chain t: 85% 12% ..




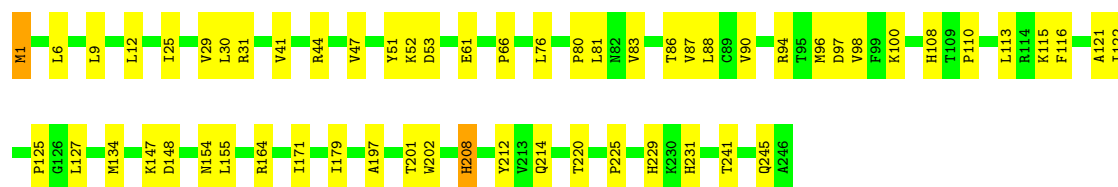
- Molecule 7: gp87

Chain z: 83% 15% .



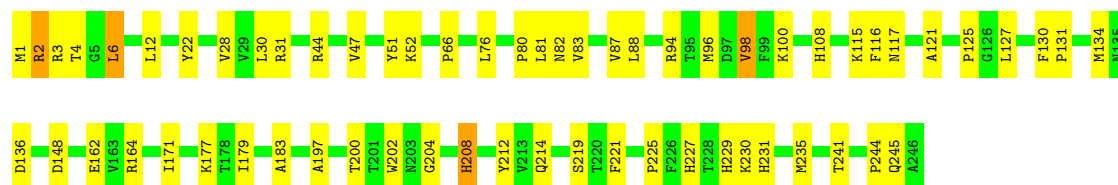
- Molecule 8: gp86

Chain P:  76% 23% .



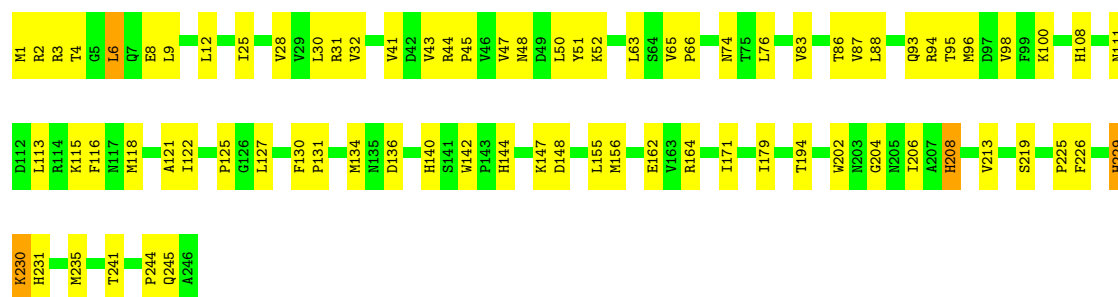
• Molecule 8: gp86

Chain Z:  75% 24% .



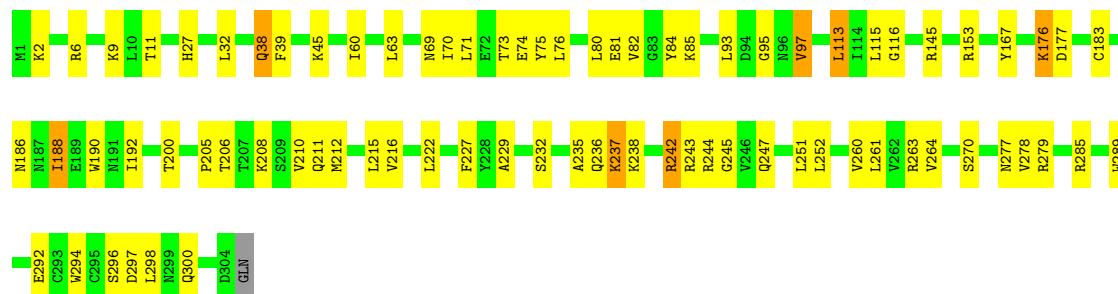
• Molecule 8: gp86

Chain j:  68% 30% .



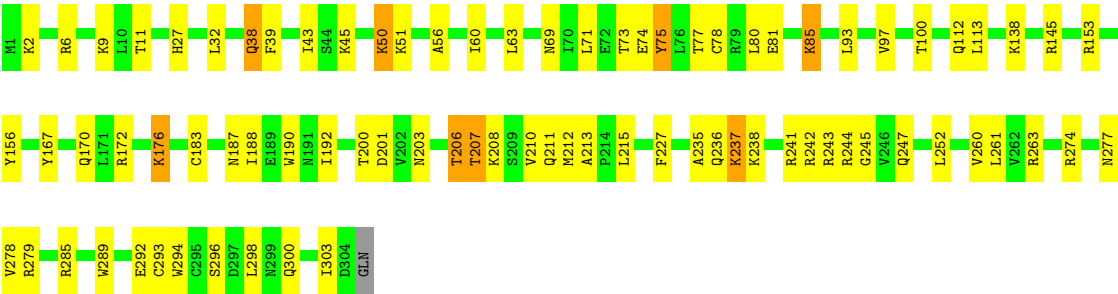
• Molecule 9: gp85

Chain J:  74% 24% .

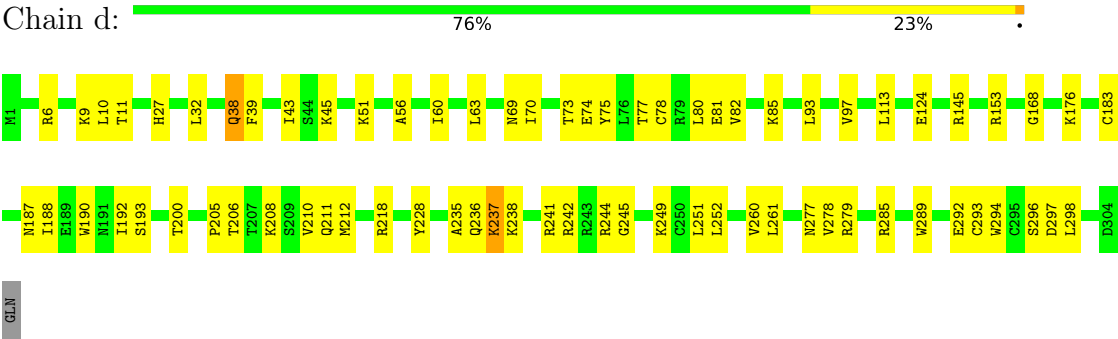


• Molecule 9: gp85

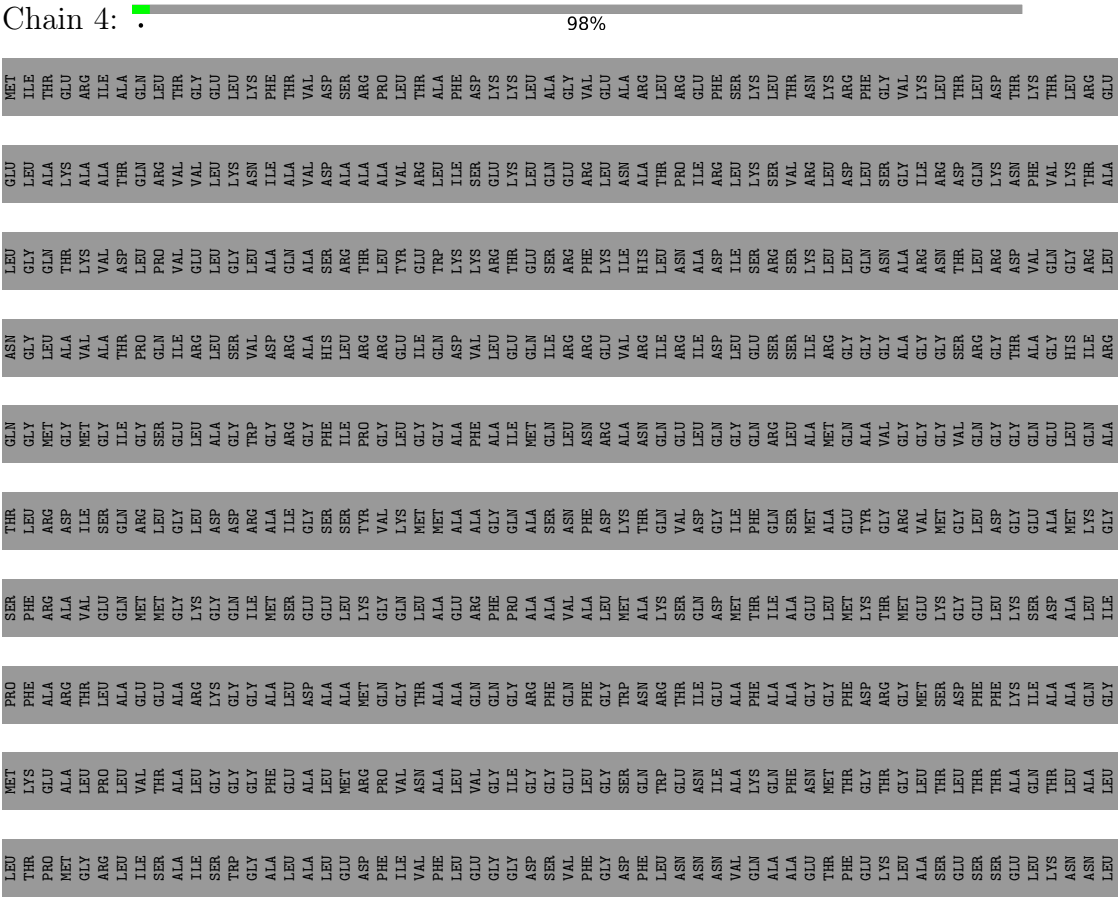
Chain T:  73% 24% .



• Molecule 9: gp85

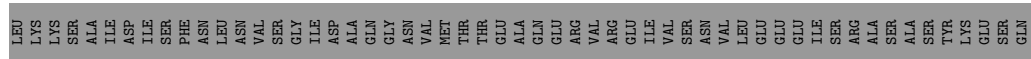


• Molecule 10: gp88





- Chain 2: 98%



- 

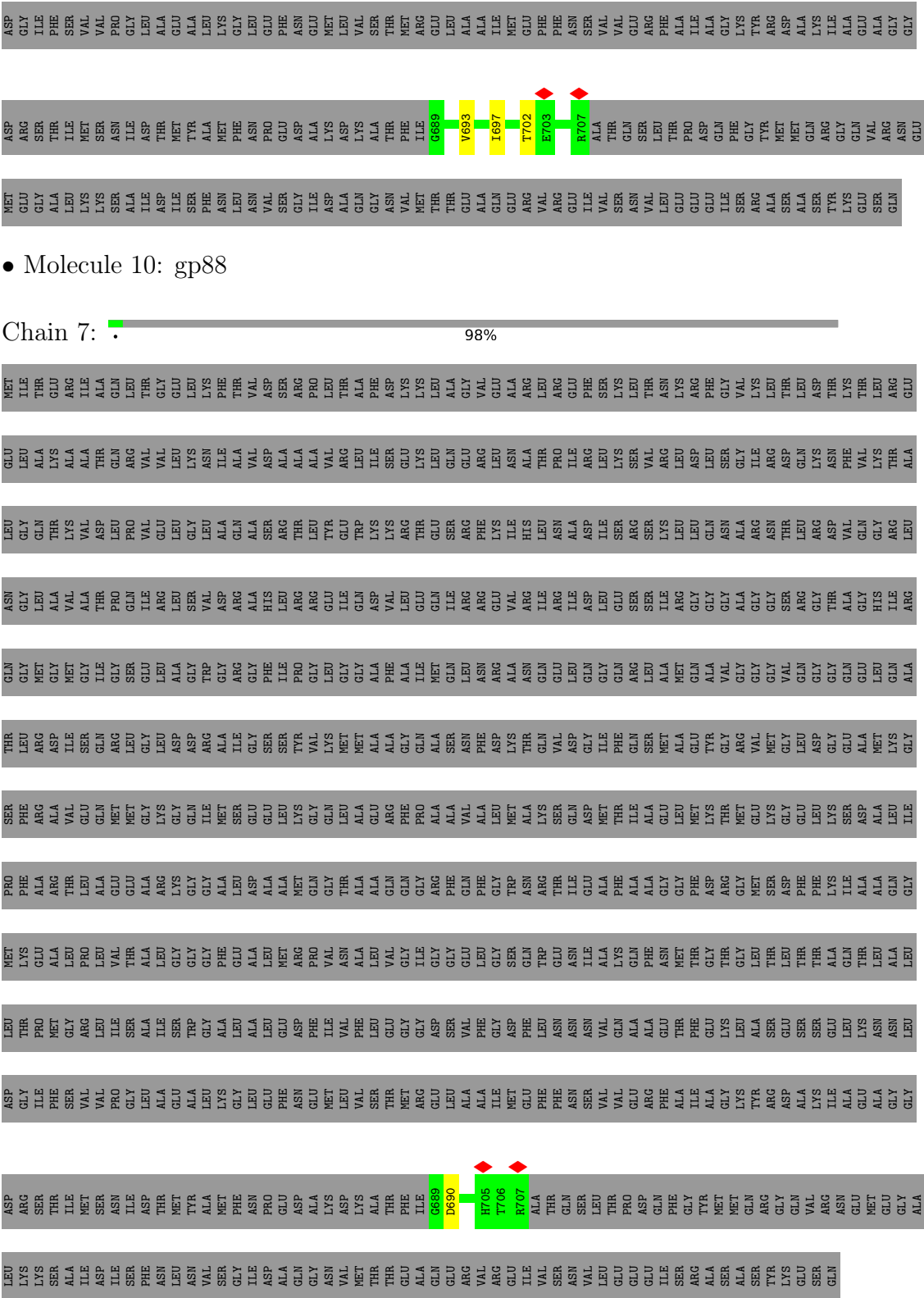
98%

[illegible]

- 98%

[illegible]





• Molecule 10: gp88

[illegible]

MET	GLN	ARG	GLY	GLN	VAL	ARG	ASN	GLU	MET	GLU	GLY	ALA	LEU	LYS	SER	ALA	ILE	ASP	ILE	SER	PHE	ASN	LEU	ASN	VAL	SER	GLY	ILE	ASP	ALA	GLN	GLY	ASN	VAL	M753	A757	V765	V768	L769	E772	A776	S783	Q784
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	10400	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.085	Depositor
Minimum map value	-0.045	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.016	Depositor
Map size (\AA)	697.344, 697.344, 697.344	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.362, 1.362, 1.362	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	O	0.12	0/3747	0.29	0/5117
1	L	0.12	0/3747	0.28	0/5117
1	M	0.12	0/3747	0.31	0/5117
1	N	0.11	0/3747	0.28	0/5117
1	V	0.12	0/3747	0.29	0/5117
1	W	0.12	0/3747	0.29	0/5117
1	X	0.11	0/3747	0.28	0/5117
1	f	0.12	0/3747	0.29	0/5117
1	g	0.12	0/3747	0.29	0/5117
1	h	0.11	0/3747	0.28	0/5117
1	o	0.12	0/3747	0.28	0/5117
1	u	0.12	0/3747	0.28	0/5117
2	1	0.13	0/1917	0.32	0/2598
2	O	0.12	0/1917	0.30	0/2598
2	Y	0.13	0/1917	0.31	0/2598
2	i	0.12	0/1917	0.30	0/2598
2	p	0.13	0/1917	0.31	0/2598
2	v	0.12	0/1917	0.30	0/2598
3	A	0.16	0/1910	0.31	0/2595
3	B	0.16	0/1910	0.31	0/2595
3	C	0.16	0/1910	0.32	0/2595
3	D	0.16	0/1910	0.31	0/2595
3	E	0.15	0/1910	0.31	0/2595
3	F	0.16	0/1910	0.31	0/2595
4	G	0.19	0/1261	0.29	0/1714
4	Q	0.19	0/1261	0.28	0/1714
4	a	0.19	0/1261	0.26	0/1714
4	k	0.19	0/1261	0.28	0/1714
4	q	0.19	0/1261	0.27	0/1714
4	w	0.19	0/1261	0.28	0/1714
5	H	0.19	0/1305	0.28	0/1767
5	R	0.20	0/1305	0.30	0/1767
5	b	0.19	0/1305	0.30	0/1767
5	l	0.20	0/1305	0.30	0/1767

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
5	r	0.19	0/1305	0.28	0/1767
5	x	0.19	0/1305	0.29	0/1767
6	I	0.13	0/984	0.27	0/1342
6	S	0.13	0/984	0.29	0/1342
6	c	0.13	0/984	0.29	0/1342
6	m	0.13	0/984	0.29	0/1342
6	s	0.13	0/984	0.27	0/1342
6	y	0.13	0/984	0.27	0/1342
7	K	0.15	0/1002	0.29	0/1360
7	U	0.15	0/1002	0.28	0/1360
7	e	0.15	0/1002	0.27	0/1360
7	n	0.14	0/1002	0.28	0/1360
7	t	0.15	0/1002	0.27	0/1360
7	z	0.14	0/1002	0.28	0/1360
8	P	0.11	0/1914	0.30	0/2606
8	Z	0.11	0/1914	0.28	0/2606
8	j	0.11	0/1914	0.31	0/2606
9	J	0.13	0/2397	0.32	0/3245
9	T	0.13	0/2397	0.33	0/3245
9	d	0.14	0/2397	0.33	0/3245
10	2	0.12	0/143	0.18	0/194
10	3	0.12	0/143	0.24	0/194
10	4	0.12	0/143	0.24	0/194
10	5	0.13	0/143	0.21	0/194
10	6	0.11	0/143	0.27	0/194
10	7	0.12	0/143	0.21	0/194
10	8	0.11	0/255	0.29	0/341
10	9	0.10	0/255	0.24	0/341
10	AA	0.10	0/255	0.28	0/341
All	All	0.14	0/109794	0.29	0/149400

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	3681	0	3678	56	0
1	L	3681	0	3678	58	0
1	M	3681	0	3678	54	0
1	N	3681	0	3678	55	0
1	V	3681	0	3678	54	0
1	W	3681	0	3678	60	0
1	X	3681	0	3678	61	0
1	f	3681	0	3678	63	0
1	g	3681	0	3678	57	0
1	h	3681	0	3678	62	0
1	o	3681	0	3678	58	0
1	u	3681	0	3678	54	0
2	l	1879	0	1856	37	0
2	O	1879	0	1856	47	0
2	Y	1879	0	1856	42	0
2	i	1879	0	1856	43	0
2	p	1879	0	1856	34	0
2	v	1879	0	1856	45	0
3	A	1876	0	1849	23	0
3	B	1876	0	1849	36	0
3	C	1876	0	1849	17	0
3	D	1876	0	1849	22	0
3	E	1876	0	1849	33	0
3	F	1876	0	1849	29	0
4	G	1237	0	1203	11	0
4	Q	1237	0	1203	11	0
4	a	1237	0	1203	12	0
4	k	1237	0	1203	13	0
4	q	1237	0	1203	12	0
4	w	1237	0	1203	13	0
5	H	1281	0	1297	2	0
5	R	1281	0	1297	5	0
5	b	1281	0	1297	6	0
5	l	1281	0	1297	6	0
5	r	1281	0	1297	3	0
5	x	1281	0	1297	5	0
6	I	956	0	915	7	0
6	S	956	0	915	12	0
6	c	956	0	915	10	0
6	m	956	0	915	15	0
6	s	956	0	915	12	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	y	956	0	915	14	0
7	K	979	0	969	12	0
7	U	979	0	969	12	0
7	e	979	0	969	12	0
7	n	979	0	969	11	0
7	t	979	0	969	10	0
7	z	979	0	969	9	0
8	P	1874	0	1857	50	0
8	Z	1874	0	1857	46	0
8	j	1874	0	1857	59	0
9	J	2364	0	2343	42	0
9	T	2364	0	2343	42	0
9	d	2364	0	2343	38	0
10	2	143	0	133	0	0
10	3	143	0	133	0	0
10	4	143	0	133	1	0
10	5	143	0	133	0	0
10	6	143	0	133	1	0
10	7	143	0	133	0	0
10	8	255	0	247	10	0
10	9	255	0	247	8	0
10	AA	255	0	247	8	0
All	All	107757	0	106809	1384	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

The worst 5 of 1384 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:W:299:GLN:H	2:Y:139:ARG:HH22	1.20	0.89
1:M:300:ALA:HB1	1:M:306:SER:HB2	1.63	0.81
2:1:139:ARG:HH22	1:g:299:GLN:H	1.26	0.81
1:M:437:ARG:HH21	1:f:443:MET:HE3	1.47	0.78
4:G:60:ARG:HG2	4:G:126:THR:HG22	1.65	0.77

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	484/487 (99%)	462 (96%)	22 (4%)	0	100	100
1	L	484/487 (99%)	465 (96%)	19 (4%)	0	100	100
1	M	484/487 (99%)	454 (94%)	29 (6%)	1 (0%)	43	72
1	N	484/487 (99%)	462 (96%)	20 (4%)	2 (0%)	30	61
1	V	484/487 (99%)	466 (96%)	18 (4%)	0	100	100
1	W	484/487 (99%)	461 (95%)	23 (5%)	0	100	100
1	X	484/487 (99%)	460 (95%)	23 (5%)	1 (0%)	43	72
1	f	484/487 (99%)	466 (96%)	18 (4%)	0	100	100
1	g	484/487 (99%)	463 (96%)	20 (4%)	1 (0%)	43	72
1	h	484/487 (99%)	463 (96%)	19 (4%)	2 (0%)	30	61
1	o	484/487 (99%)	466 (96%)	18 (4%)	0	100	100
1	u	484/487 (99%)	464 (96%)	20 (4%)	0	100	100
2	1	240/243 (99%)	218 (91%)	21 (9%)	1 (0%)	30	61
2	O	240/243 (99%)	217 (90%)	21 (9%)	2 (1%)	16	49
2	Y	240/243 (99%)	217 (90%)	22 (9%)	1 (0%)	30	61
2	i	240/243 (99%)	218 (91%)	20 (8%)	2 (1%)	16	49
2	p	240/243 (99%)	218 (91%)	21 (9%)	1 (0%)	30	61
2	v	240/243 (99%)	219 (91%)	19 (8%)	2 (1%)	16	49
3	A	235/253 (93%)	216 (92%)	19 (8%)	0	100	100
3	B	235/253 (93%)	212 (90%)	22 (9%)	1 (0%)	30	61
3	C	235/253 (93%)	212 (90%)	23 (10%)	0	100	100
3	D	235/253 (93%)	215 (92%)	20 (8%)	0	100	100
3	E	235/253 (93%)	211 (90%)	23 (10%)	1 (0%)	30	61
3	F	235/253 (93%)	214 (91%)	20 (8%)	1 (0%)	30	61
4	G	156/159 (98%)	149 (96%)	7 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	Q	156/159 (98%)	148 (95%)	8 (5%)	0	100	100
4	a	156/159 (98%)	149 (96%)	7 (4%)	0	100	100
4	k	156/159 (98%)	146 (94%)	10 (6%)	0	100	100
4	q	156/159 (98%)	150 (96%)	6 (4%)	0	100	100
4	w	156/159 (98%)	147 (94%)	9 (6%)	0	100	100
5	H	164/166 (99%)	158 (96%)	6 (4%)	0	100	100
5	R	164/166 (99%)	157 (96%)	7 (4%)	0	100	100
5	b	164/166 (99%)	159 (97%)	5 (3%)	0	100	100
5	l	164/166 (99%)	160 (98%)	4 (2%)	0	100	100
5	r	164/166 (99%)	159 (97%)	5 (3%)	0	100	100
5	x	164/166 (99%)	160 (98%)	4 (2%)	0	100	100
6	I	112/118 (95%)	107 (96%)	5 (4%)	0	100	100
6	S	112/118 (95%)	105 (94%)	7 (6%)	0	100	100
6	c	112/118 (95%)	107 (96%)	5 (4%)	0	100	100
6	m	112/118 (95%)	104 (93%)	8 (7%)	0	100	100
6	s	112/118 (95%)	110 (98%)	2 (2%)	0	100	100
6	y	112/118 (95%)	105 (94%)	7 (6%)	0	100	100
7	K	118/123 (96%)	109 (92%)	9 (8%)	0	100	100
7	U	118/123 (96%)	112 (95%)	6 (5%)	0	100	100
7	e	118/123 (96%)	110 (93%)	8 (7%)	0	100	100
7	n	118/123 (96%)	110 (93%)	8 (7%)	0	100	100
7	t	118/123 (96%)	112 (95%)	6 (5%)	0	100	100
7	z	118/123 (96%)	111 (94%)	7 (6%)	0	100	100
8	P	244/246 (99%)	226 (93%)	18 (7%)	0	100	100
8	Z	244/246 (99%)	224 (92%)	19 (8%)	1 (0%)	30	61
8	j	244/246 (99%)	226 (93%)	17 (7%)	1 (0%)	30	61
9	J	302/305 (99%)	270 (89%)	32 (11%)	0	100	100
9	T	302/305 (99%)	272 (90%)	30 (10%)	0	100	100
9	d	302/305 (99%)	270 (89%)	32 (11%)	0	100	100
10	2	17/788 (2%)	17 (100%)	0	0	100	100
10	3	17/788 (2%)	17 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	4	17/788 (2%)	17 (100%)	0	0	100	100
10	5	17/788 (2%)	17 (100%)	0	0	100	100
10	6	17/788 (2%)	17 (100%)	0	0	100	100
10	7	17/788 (2%)	17 (100%)	0	0	100	100
10	8	30/788 (4%)	29 (97%)	1 (3%)	0	100	100
10	9	30/788 (4%)	30 (100%)	0	0	100	100
10	AA	30/788 (4%)	30 (100%)	0	0	100	100
All	All	13788/20961 (66%)	12962 (94%)	805 (6%)	21 (0%)	44	72

5 of 21 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	1	118	ASN
1	M	285	ASP
2	O	118	ASN
2	Y	118	ASN
2	i	118	ASN

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	410/411 (100%)	370 (90%)	40 (10%)	7	31
1	L	410/411 (100%)	379 (92%)	31 (8%)	12	39
1	M	410/411 (100%)	387 (94%)	23 (6%)	19	47
1	N	410/411 (100%)	387 (94%)	23 (6%)	19	47
1	V	410/411 (100%)	376 (92%)	34 (8%)	10	35
1	W	410/411 (100%)	391 (95%)	19 (5%)	24	51
1	X	410/411 (100%)	386 (94%)	24 (6%)	18	45
1	f	410/411 (100%)	381 (93%)	29 (7%)	13	40
1	g	410/411 (100%)	387 (94%)	23 (6%)	19	47

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	h	410/411 (100%)	384 (94%)	26 (6%)	16	44
1	o	410/411 (100%)	379 (92%)	31 (8%)	12	39
1	u	410/411 (100%)	383 (93%)	27 (7%)	15	43
2	l	197/198 (100%)	179 (91%)	18 (9%)	9	33
2	O	197/198 (100%)	183 (93%)	14 (7%)	13	40
2	Y	197/198 (100%)	177 (90%)	20 (10%)	7	30
2	i	197/198 (100%)	184 (93%)	13 (7%)	15	43
2	p	197/198 (100%)	180 (91%)	17 (9%)	10	34
2	v	197/198 (100%)	181 (92%)	16 (8%)	11	36
3	A	212/226 (94%)	195 (92%)	17 (8%)	11	37
3	B	212/226 (94%)	194 (92%)	18 (8%)	10	35
3	C	212/226 (94%)	192 (91%)	20 (9%)	8	32
3	D	212/226 (94%)	189 (89%)	23 (11%)	6	28
3	E	212/226 (94%)	192 (91%)	20 (9%)	8	32
3	F	212/226 (94%)	192 (91%)	20 (9%)	8	32
4	G	138/139 (99%)	129 (94%)	9 (6%)	15	43
4	Q	138/139 (99%)	124 (90%)	14 (10%)	7	30
4	a	138/139 (99%)	128 (93%)	10 (7%)	13	40
4	k	138/139 (99%)	127 (92%)	11 (8%)	11	37
4	q	138/139 (99%)	129 (94%)	9 (6%)	15	43
4	w	138/139 (99%)	125 (91%)	13 (9%)	8	32
5	H	142/142 (100%)	137 (96%)	5 (4%)	32	57
5	R	142/142 (100%)	133 (94%)	9 (6%)	16	44
5	b	142/142 (100%)	134 (94%)	8 (6%)	19	47
5	l	142/142 (100%)	135 (95%)	7 (5%)	22	49
5	r	142/142 (100%)	136 (96%)	6 (4%)	26	53
5	x	142/142 (100%)	135 (95%)	7 (5%)	22	49
6	I	104/108 (96%)	101 (97%)	3 (3%)	37	60
6	S	104/108 (96%)	97 (93%)	7 (7%)	15	42
6	c	104/108 (96%)	98 (94%)	6 (6%)	18	46
6	m	104/108 (96%)	98 (94%)	6 (6%)	18	46

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	s	104/108 (96%)	99 (95%)	5 (5%)	23	50
6	y	104/108 (96%)	97 (93%)	7 (7%)	15	42
7	K	110/112 (98%)	104 (94%)	6 (6%)	19	47
7	U	110/112 (98%)	107 (97%)	3 (3%)	39	61
7	e	110/112 (98%)	104 (94%)	6 (6%)	19	47
7	n	110/112 (98%)	103 (94%)	7 (6%)	16	43
7	t	110/112 (98%)	106 (96%)	4 (4%)	31	56
7	z	110/112 (98%)	103 (94%)	7 (6%)	16	43
8	P	209/209 (100%)	202 (97%)	7 (3%)	33	58
8	Z	209/209 (100%)	192 (92%)	17 (8%)	11	36
8	j	209/209 (100%)	192 (92%)	17 (8%)	11	36
9	J	265/266 (100%)	245 (92%)	20 (8%)	12	39
9	T	265/266 (100%)	237 (89%)	28 (11%)	6	28
9	d	265/266 (100%)	246 (93%)	19 (7%)	13	40
10	2	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	3	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	4	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	5	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	6	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	7	15/620 (2%)	14 (93%)	1 (7%)	15	42
10	8	29/620 (5%)	28 (97%)	1 (3%)	32	57
10	9	29/620 (5%)	28 (97%)	1 (3%)	32	57
10	AA	29/620 (5%)	27 (93%)	2 (7%)	14	41
All	All	11937/17487 (68%)	11098 (93%)	839 (7%)	16	41

5 of 839 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	c	26	ILE
8	j	86	THR
9	T	201	ASP
1	f	78	THR
6	c	3	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 82 such sidechains are listed below:

Mol	Chain	Res	Type
7	n	31	GLN
4	w	152	GLN
1	o	329	ASN
6	s	51	ASN
9	J	62	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

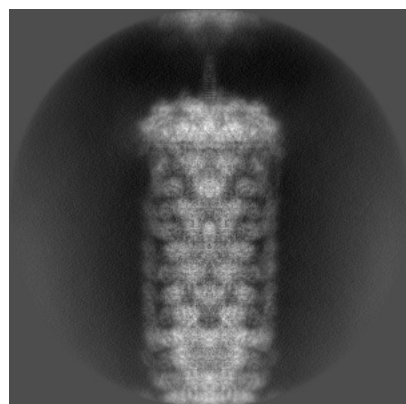
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-74057. These allow visual inspection of the internal detail of the map and identification of artifacts.

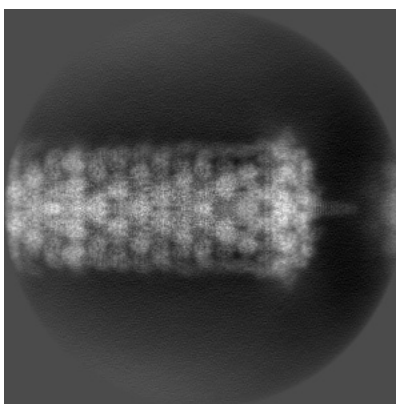
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

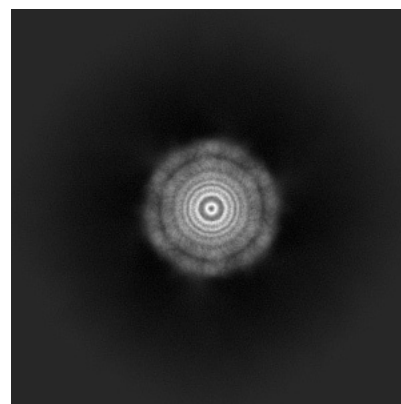
6.1.1 Primary map



X

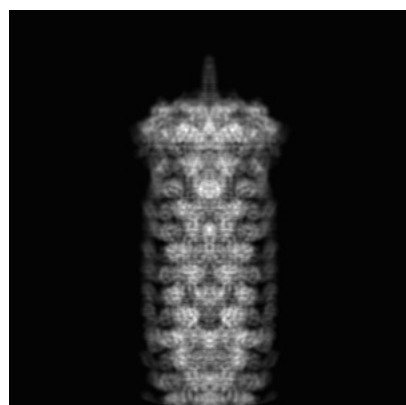


Y

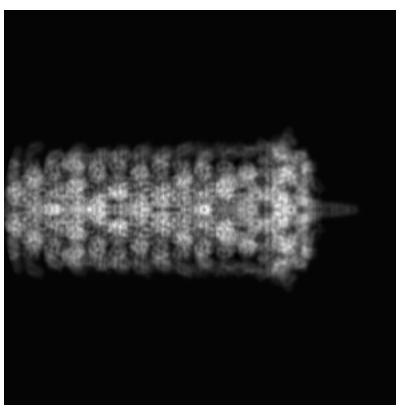


Z

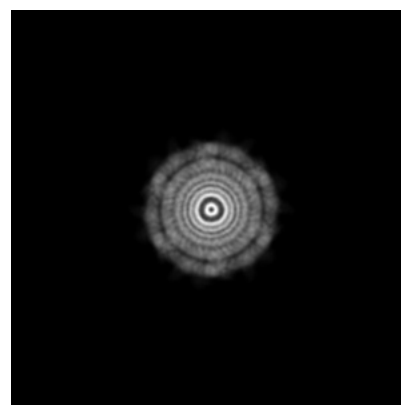
6.1.2 Raw map



X



Y

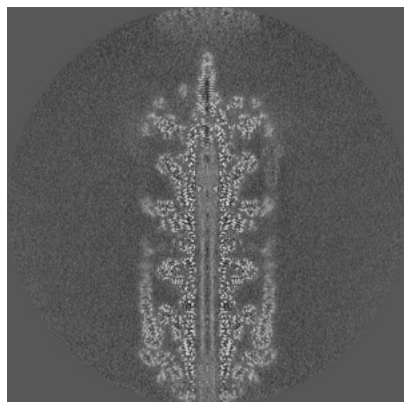


Z

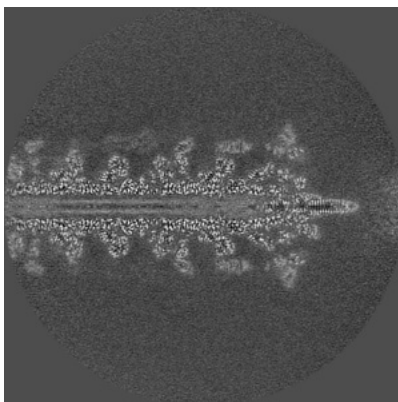
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

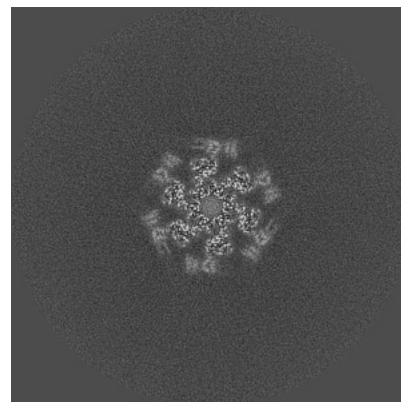
6.2.1 Primary map



X Index: 256

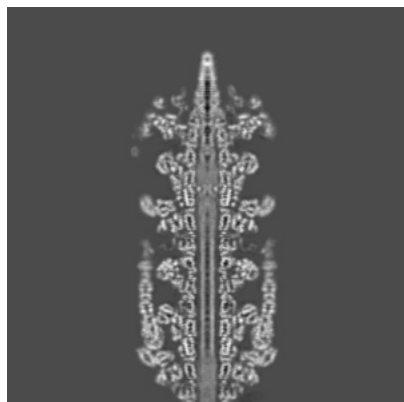


Y Index: 256

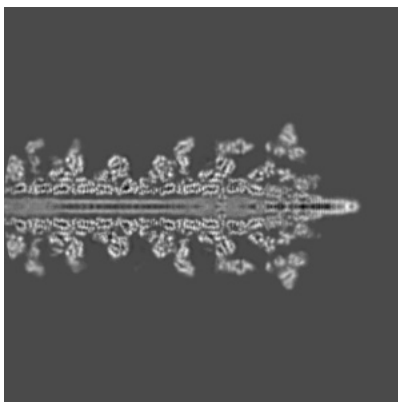


Z Index: 256

6.2.2 Raw map



X Index: 256



Y Index: 256

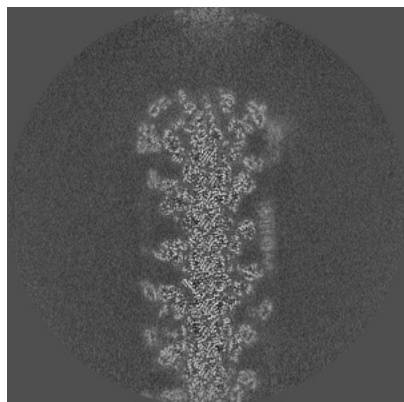


Z Index: 256

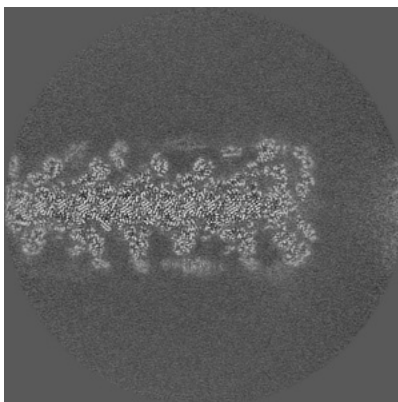
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

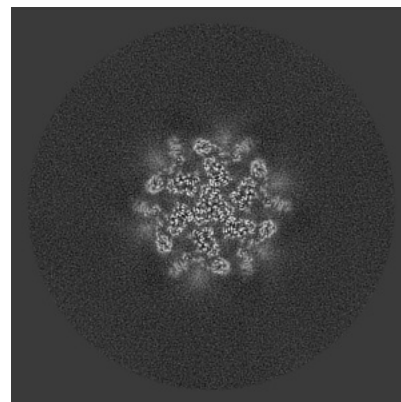
6.3.1 Primary map



X Index: 273

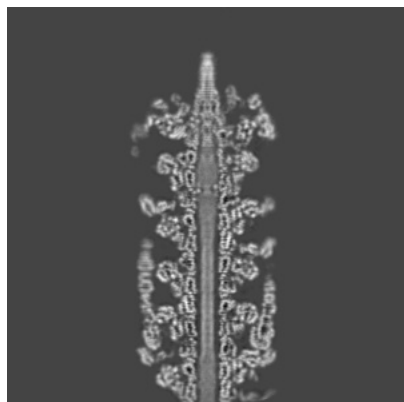


Y Index: 238

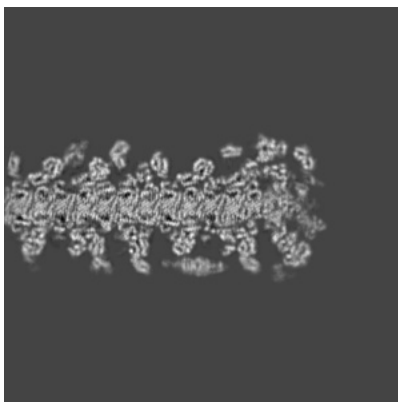


Z Index: 358

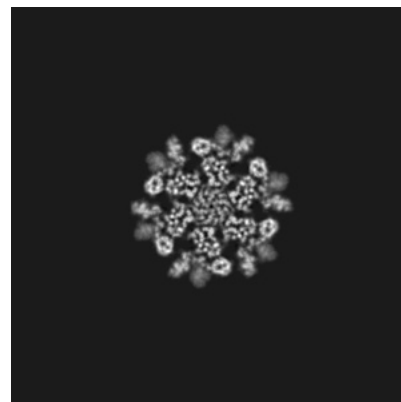
6.3.2 Raw map



X Index: 252



Y Index: 238

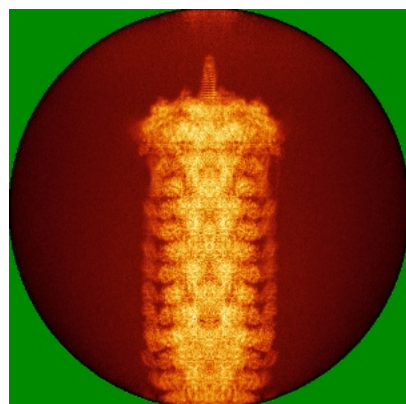


Z Index: 358

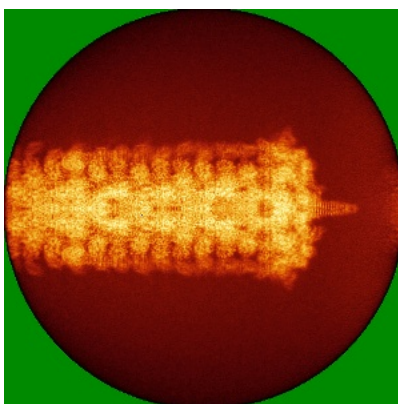
The images above show the largest variance slices of the map in three orthogonal directions.

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

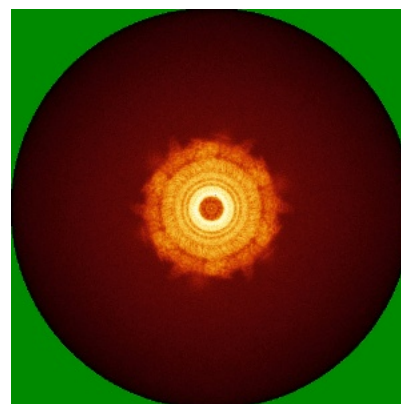
6.4.1 Primary map



X

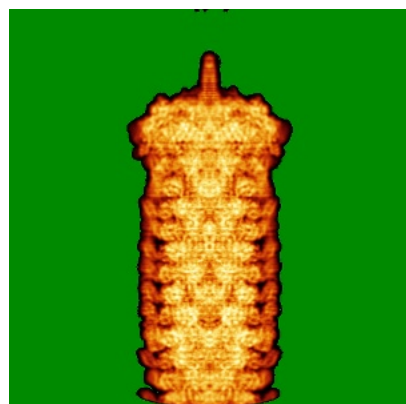


Y

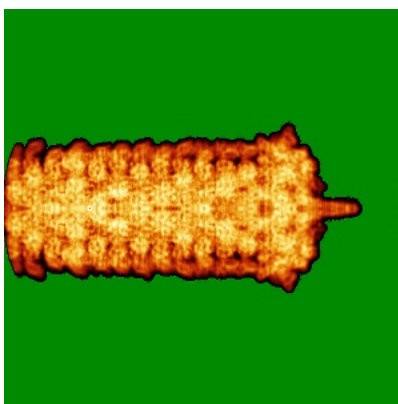


Z

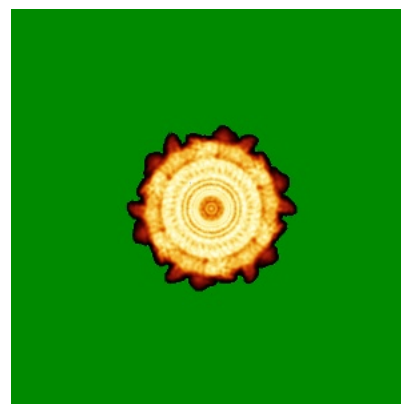
6.4.2 Raw map



X



Y

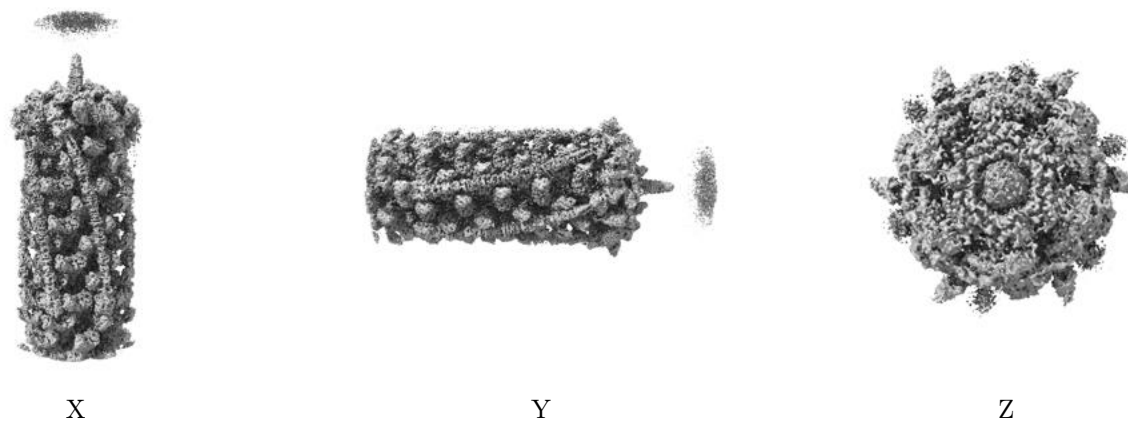


Z

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

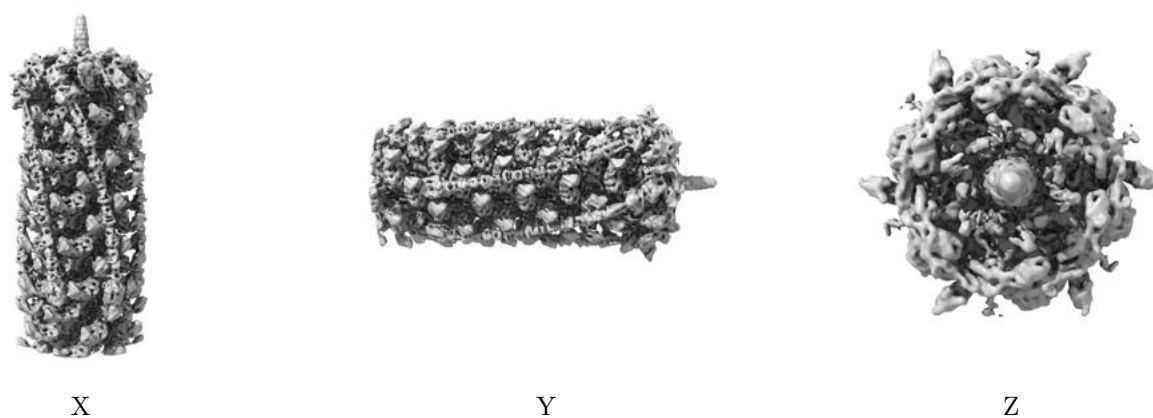
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.016. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

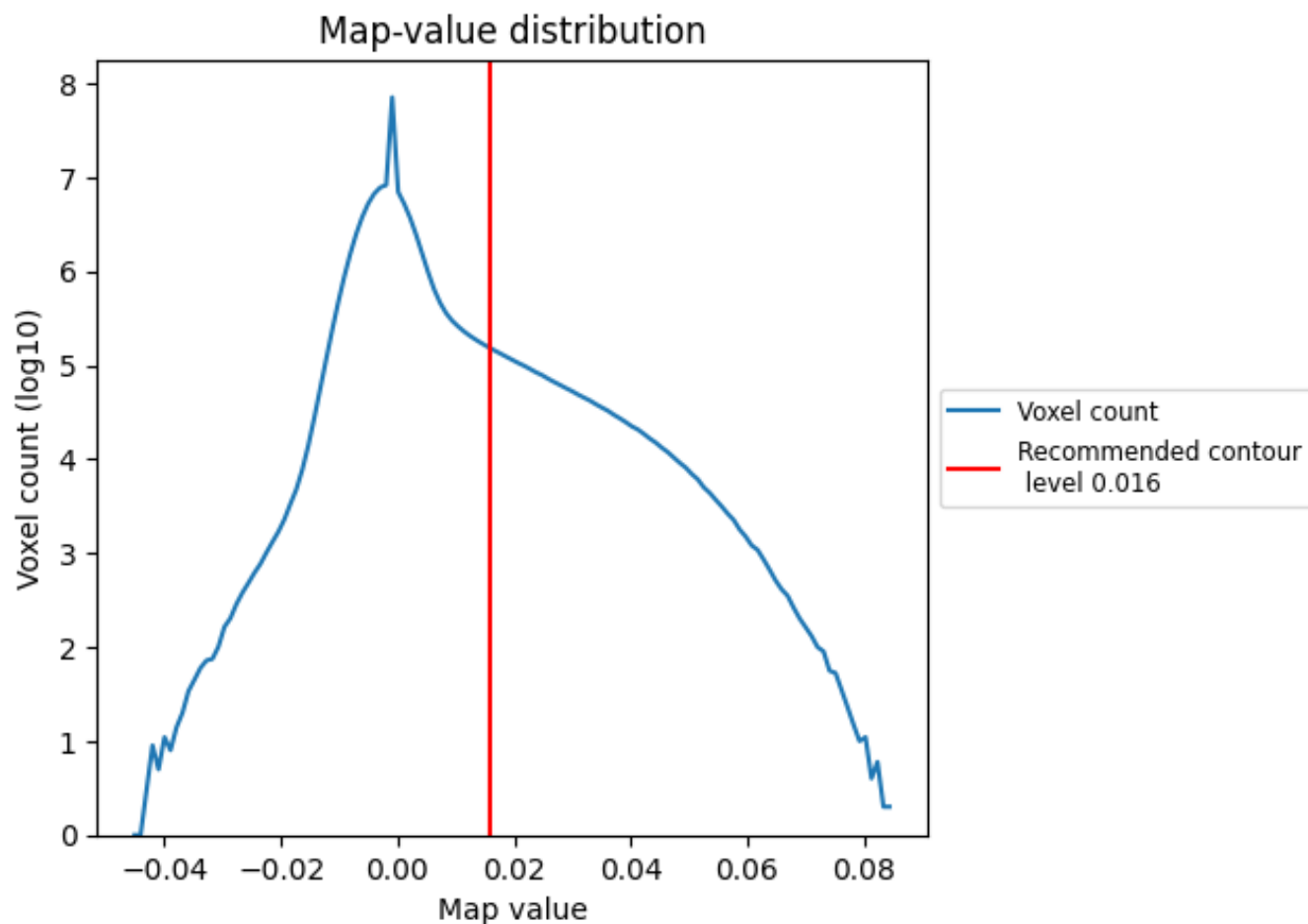
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

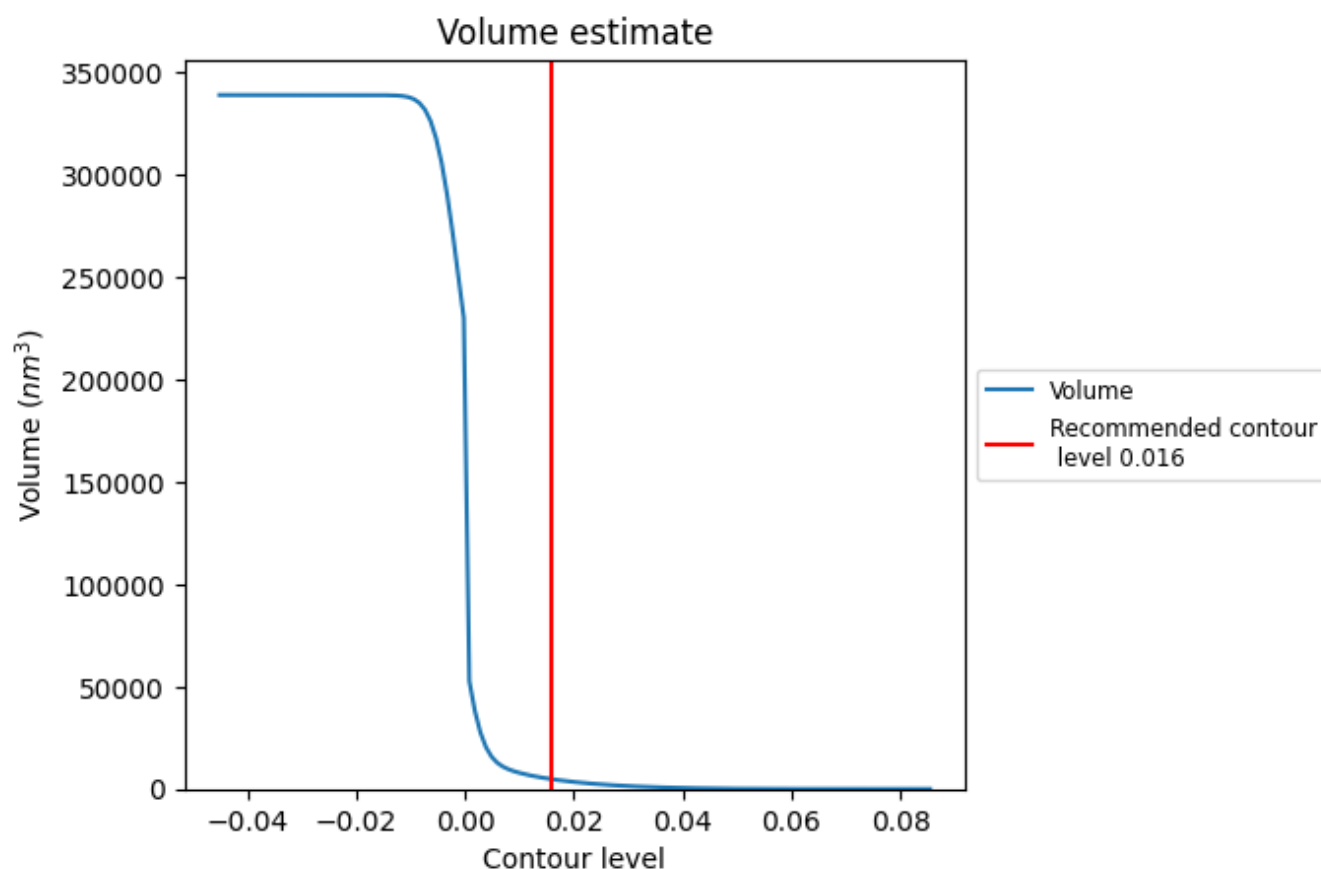
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

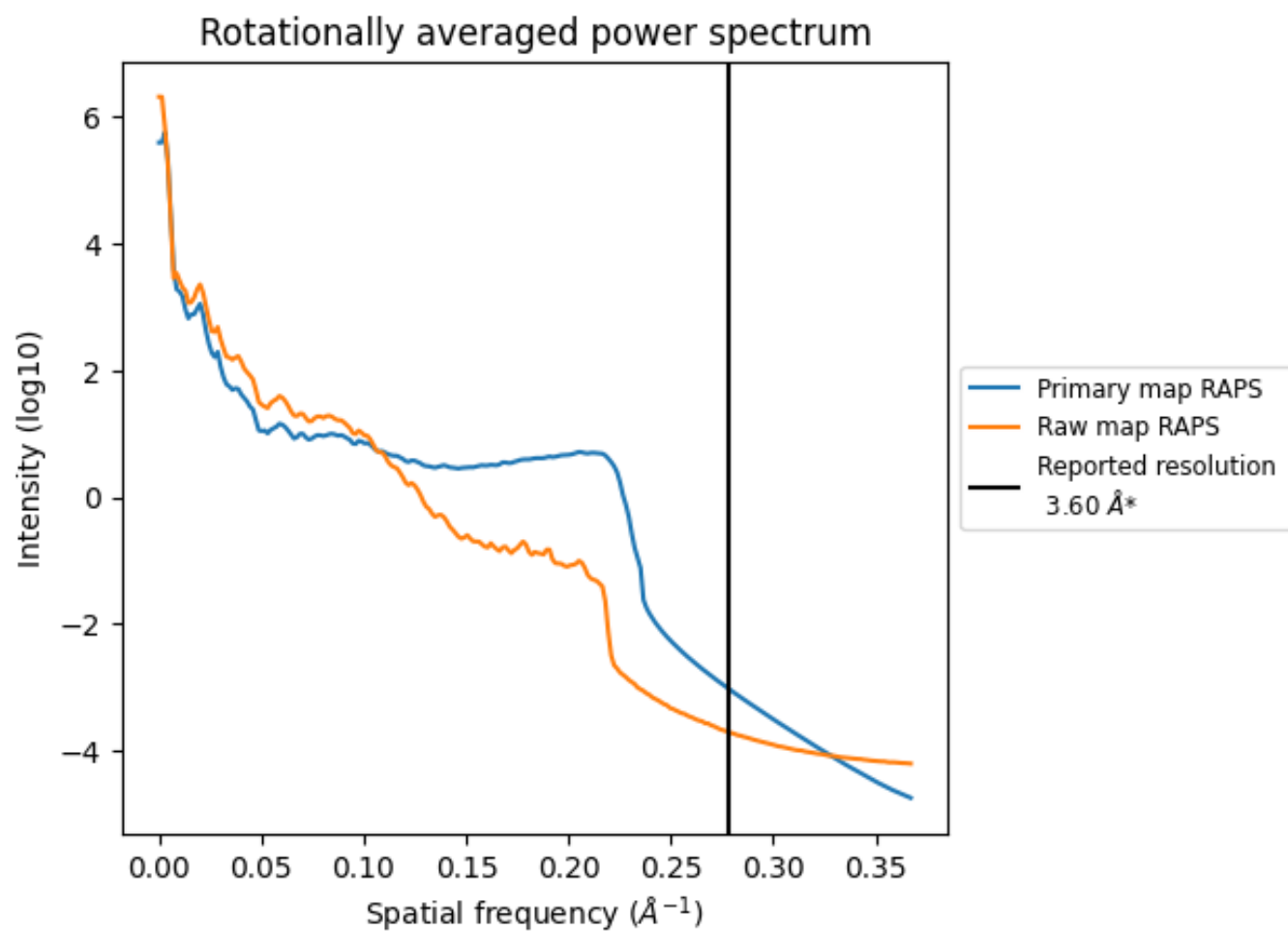
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 4755 nm³; this corresponds to an approximate mass of 4295 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

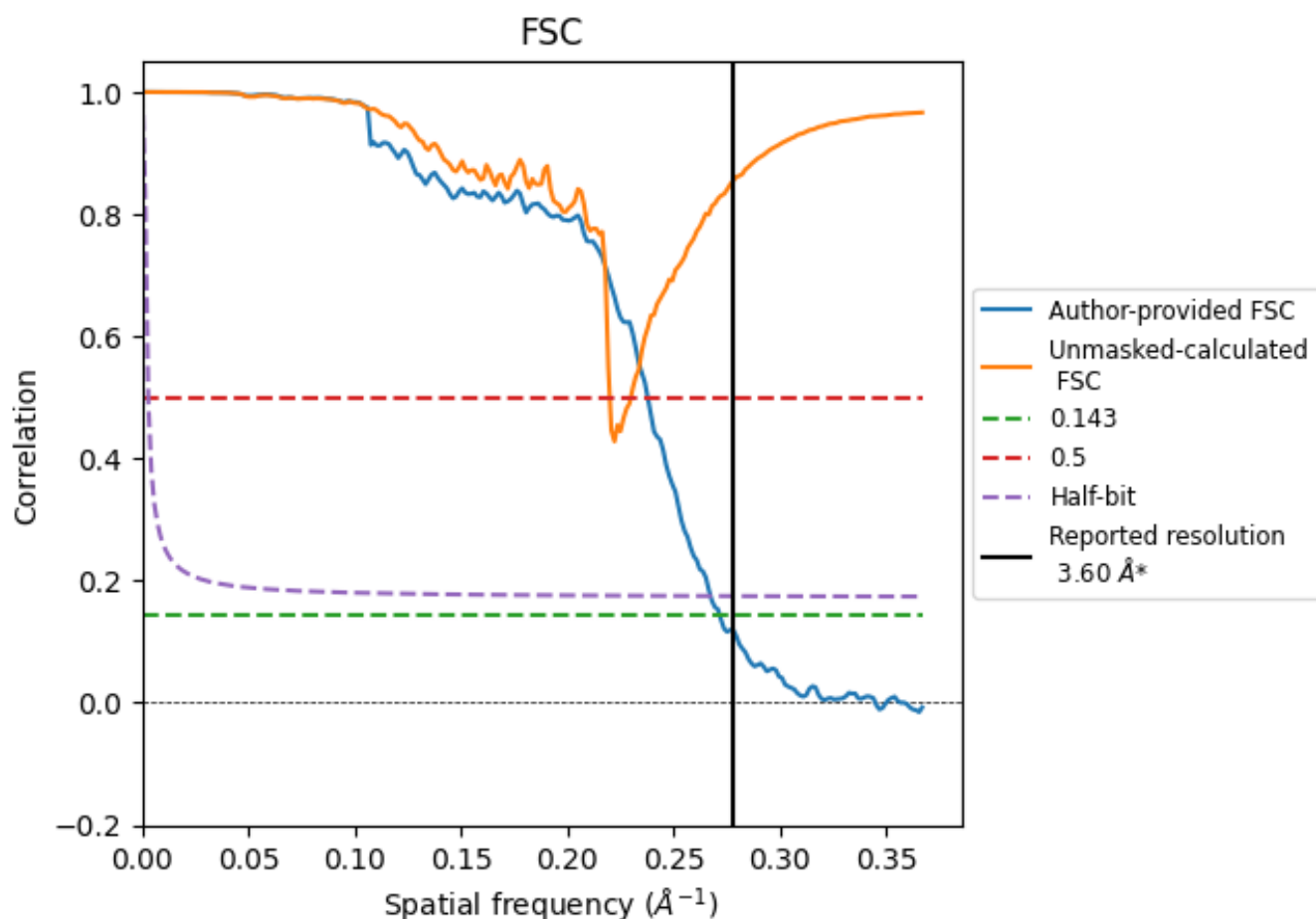


*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.278 \AA^{-1}

8.2 Resolution estimates [i](#)

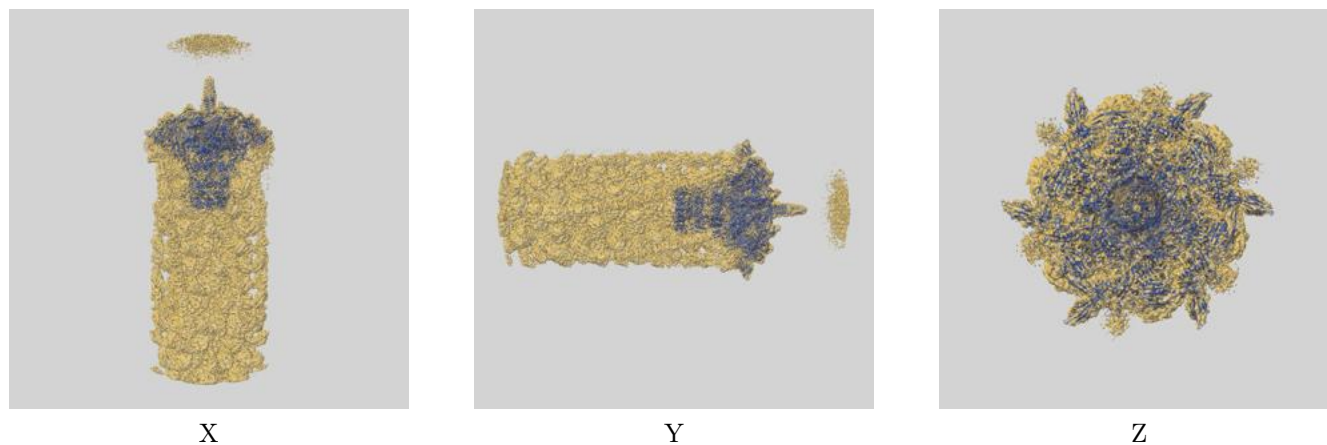
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.68	4.20	3.74
Unmasked-calculated*	-	4.54	-

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

9 Map-model fit [i](#)

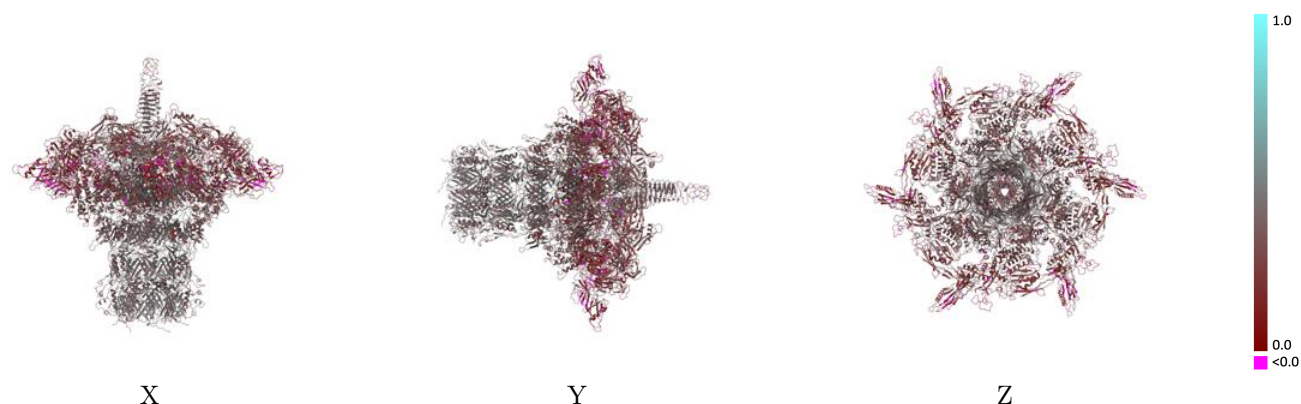
This section contains information regarding the fit between EMDB map EMD-74057 and PDB model 9ZD8. Per-residue inclusion information can be found in section [3](#) on page [10](#).

9.1 Map-model overlay [i](#)



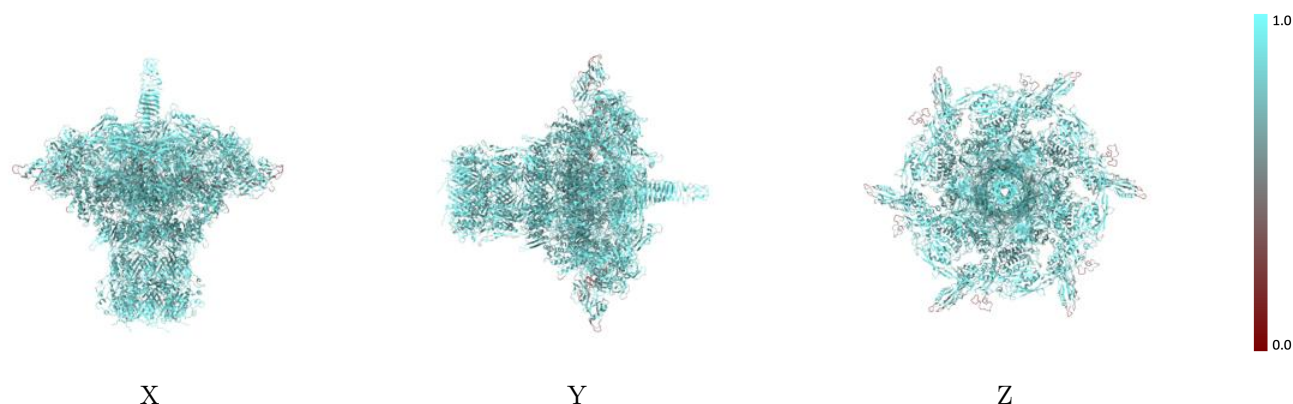
The images above show the 3D surface view of the map at the recommended contour level 0.016 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



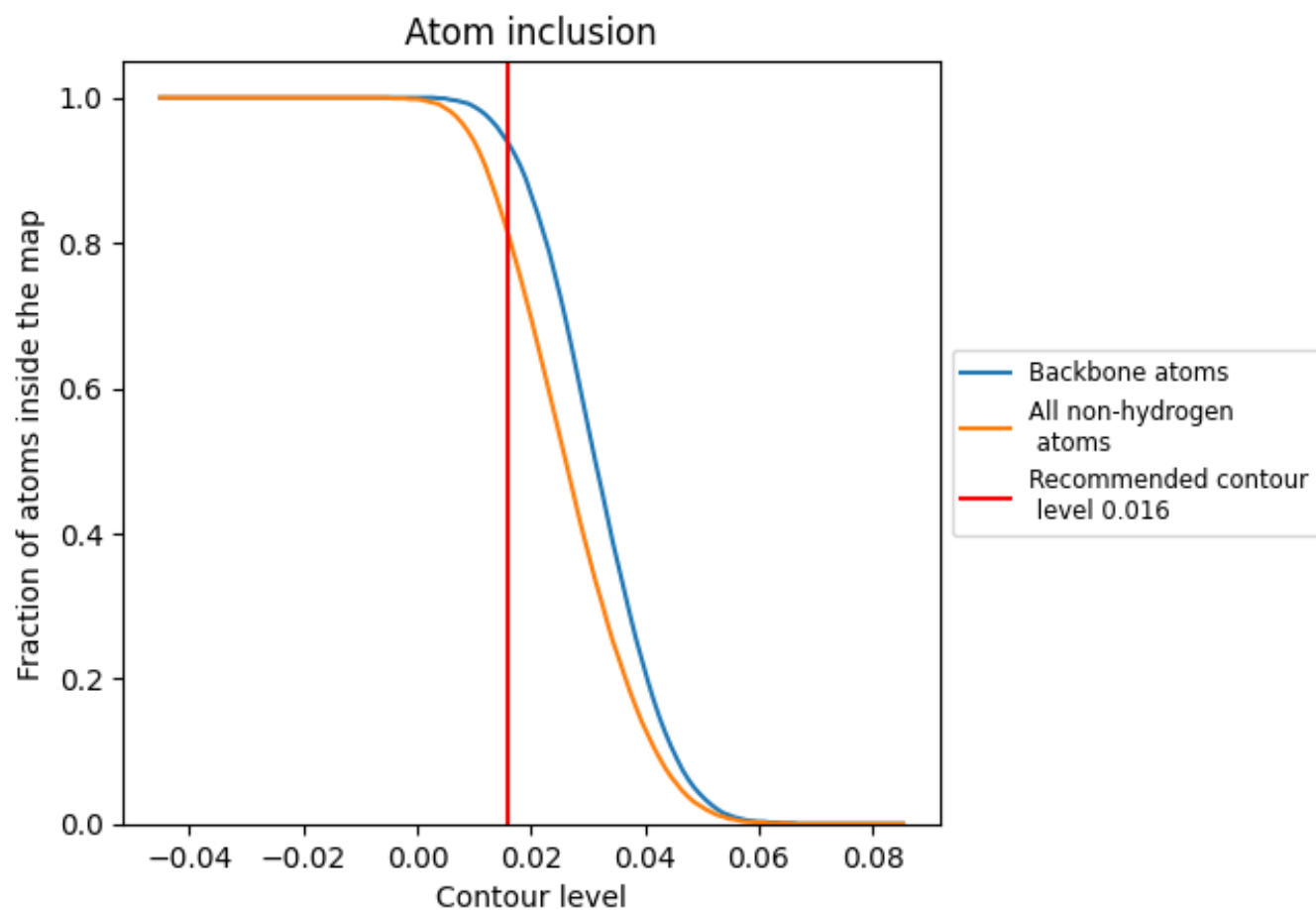
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.016).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 81% 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 (0.016) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8130	 0.3220
0	 0.7610	 0.2330
1	 0.7380	 0.2310
2	 0.7090	 0.3730
3	 0.7450	 0.3620
4	 0.7380	 0.3590
5	 0.7090	 0.3620
6	 0.7230	 0.3570
7	 0.7310	 0.3670
8	 0.8190	 0.3650
9	 0.8150	 0.3550
A	 0.8300	 0.3840
AA	 0.8100	 0.3660
B	 0.8170	 0.3790
C	 0.8260	 0.3800
D	 0.8280	 0.3830
E	 0.8190	 0.3810
F	 0.8170	 0.3770
G	 0.8480	 0.4170
H	 0.8600	 0.4240
I	 0.7820	 0.2820
J	 0.8620	 0.3740
K	 0.8190	 0.3660
L	 0.7720	 0.2330
M	 0.8560	 0.3400
N	 0.8240	 0.3080
O	 0.7150	 0.2290
P	 0.8880	 0.3600
Q	 0.8470	 0.4220
R	 0.8600	 0.4310
S	 0.8030	 0.3160
T	 0.8630	 0.3740
U	 0.8230	 0.3570
V	 0.7620	 0.2330
W	 0.8570	 0.3430



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Chain	Atom inclusion	Q-score
X	 0.8230	 0.3060
Y	 0.7320	 0.2290
Z	 0.8830	 0.3640
a	 0.8400	 0.4120
b	 0.8550	 0.4270
c	 0.7900	 0.2810
d	 0.8610	 0.3750
e	 0.8260	 0.3590
f	 0.7770	 0.2420
g	 0.8570	 0.3400
h	 0.8240	 0.3020
i	 0.7150	 0.2340
j	 0.8830	 0.3650
k	 0.8540	 0.4230
l	 0.8600	 0.4290
m	 0.8070	 0.3140
n	 0.8160	 0.3640
o	 0.7630	 0.2310
p	 0.7340	 0.2290
q	 0.8440	 0.4170
r	 0.8600	 0.4250
s	 0.7880	 0.2840
t	 0.8210	 0.3550
u	 0.7760	 0.2360
v	 0.7150	 0.2320
w	 0.8500	 0.4230
x	 0.8530	 0.4300
y	 0.8160	 0.3150
z	 0.8180	 0.3650