wwPDB EM Validation Summary Report ⓘ

Oct 14, 2024 – 12:59 AM EDT

PDB ID	:	8FQC
EMDB ID	:	EMD-29383
Title	:	Structure of baseplate with receptor binding complex of Agrobacterium phage Milano
Authors	:	Sonani, R.R.; Leiman, P.G.; Wang, F.; Kreutzberger, M.A.B.; Sebastian, A.; Esteves, N.C.; Kelly, R.J.; Scharf, B.; Egelman, E.H.
Deposited on	:	2023-01-05
Resolution	:	3.20 Å(reported)

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

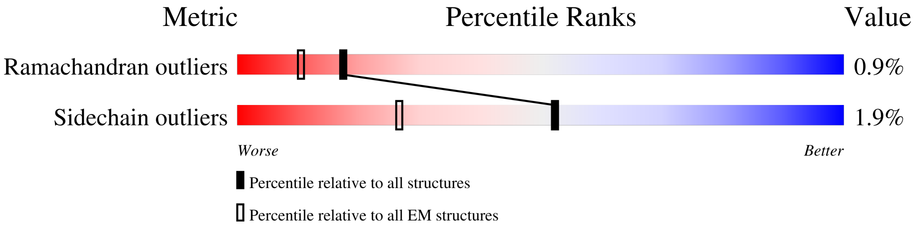
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	: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

1 Overall quality at a glance ⓘ

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

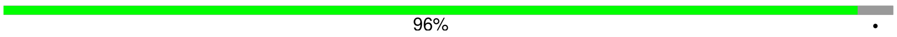
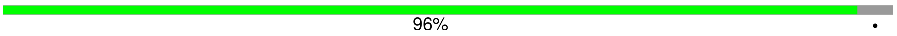
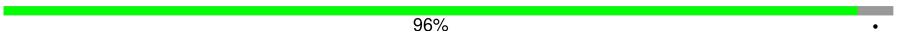
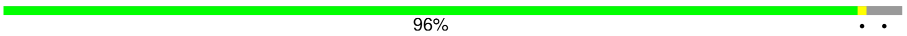
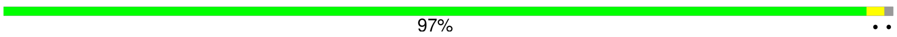
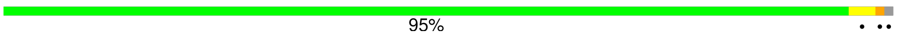
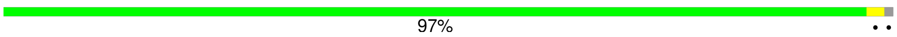
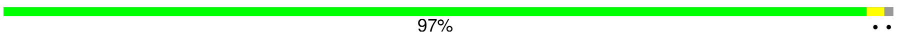
The reported resolution of this entry is 3.20 Å.

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	C1	457	
2	E1	136	
2	a1	136	
2	f1	136	
2	g1	136	
3	F1	396	
3	G1	396	
3	h1	396	
3	i1	396	

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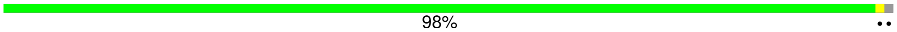
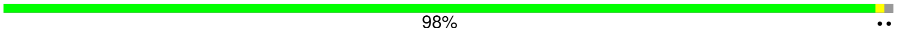
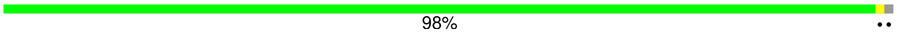
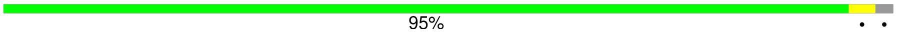
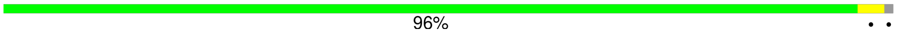
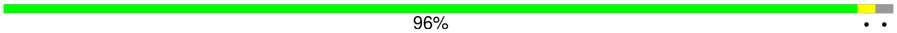
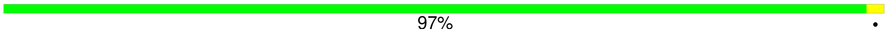
Mol	Chain	Length	Quality of chain
4	H1	178	 98%
4	j1	178	 98%
5	I1	503	 98%
5	K1	503	 95%
5	k1	503	 96%
5	m1	503	 96%
6	J1	286	 93% 6%
6	l1	286	 97%
7	P1	587	 27% 72%
7	Q1	587	 28% 71%
7	R1	587	 29% 71%
7	r1	587	 27% 72%
7	s1	587	 29% 71%
7	t1	587	 29% 71%
8	S1	300	 39% 60%
8	T1	300	 39% 60%
8	V1	300	 39% 60%
8	W1	300	 40% 60%
8	X1	300	 40% 60%
8	Y1	300	 40% 60%
8	u1	300	 39% 60%
8	v1	300	 39% 60%
8	w1	300	 40% 60%
8	x1	300	 39% 60%
8	y1	300	 40% 60%

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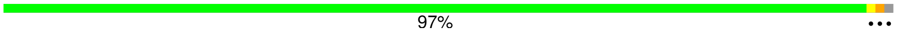
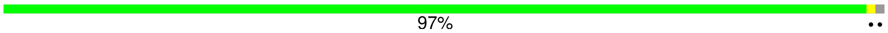
Mol	Chain	Length	Quality of chain
8	z1	300	
9	U1	398	
9	e1	398	
10	A	188	

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 66089 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 Baseplate hub protein, gp26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C1	326	2551	1610	434	500	7	0	0

- Molecule 2 is a protein called Tail-tube, gp21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E1	131	995	617	165	206	7	0	0
2	a1	131	995	617	165	206	7	0	0
2	f1	131	995	617	165	206	7	0	0
2	g1	131	995	617	165	206	7	0	0

- Molecule 3 is a protein called Baseplate Wedge 2 protein, gp29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	F1	393	3016	1900	515	580	21	0	0
3	G1	393	3016	1900	515	580	21	0	0
3	h1	393	3016	1900	515	580	21	0	0
3	i1	393	3016	1900	515	580	21	0	0

- Molecule 4 is a protein called Baseplate wedge 1, gp28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	H1	176	1334	817	244	264	9	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	j1	176	Total 1334	C 817	N 244	O 264	S 9	0	0

- Molecule 5 is a protein called Tail sheath protein, gp20.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I1	498	Total 3739	C 2342	N 633	O 742	S 22	0	0
5	K1	494	Total 3706	C 2322	N 628	O 735	S 21	0	0
5	k1	498	Total 3739	C 2342	N 633	O 742	S 22	0	0
5	m1	494	Total 3706	C 2322	N 628	O 735	S 21	0	0

- Molecule 6 is a protein called Baseplate Wedge 3 protein, gp30.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J1	285	Total 2185	C 1390	N 355	O 420	S 20	0	0
6	l1	285	Total 2185	C 1390	N 355	O 420	S 20	0	0

- Molecule 7 is a protein called Tail Spike protein, gp124.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	P1	162	Total 1227	C 782	N 194	O 248	S 3	0	0
7	Q1	173	Total 1308	C 835	N 210	O 260	S 3	0	0
7	R1	173	Total 1308	C 835	N 210	O 260	S 3	0	0
7	r1	162	Total 1227	C 782	N 194	O 248	S 3	0	0
7	s1	173	Total 1308	C 835	N 210	O 260	S 3	0	0
7	t1	173	Total 1308	C 835	N 210	O 260	S 3	0	0

- Molecule 8 is a protein called Short Tail Fibers, gp31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	S1	119	878	545	150	174	9	0	0
8	T1	119	878	545	150	174	9	0	0
8	V1	119	878	545	150	174	9	0	0
8	W1	119	878	545	150	174	9	0	0
8	X1	119	878	545	150	174	9	0	0
8	Y1	119	878	545	150	174	9	0	0
8	v1	119	878	545	150	174	9	0	0
8	w1	119	878	545	150	174	9	0	0
8	x1	119	878	545	150	174	9	0	0
8	y1	119	878	545	150	174	9	0	0
8	u1	119	878	545	150	174	9	0	0
8	z1	119	878	545	150	174	9	0	0

- Molecule 9 is a protein called Baseplate Centerpiece, gp25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	U1	394	3027	1910	522	590	5	0	0
9	e1	394	3027	1910	522	590	5	0	0

- Molecule 10 is a protein called Baseplate Central Spike, gp27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	A	168	1289	799	223	264	3	0	0

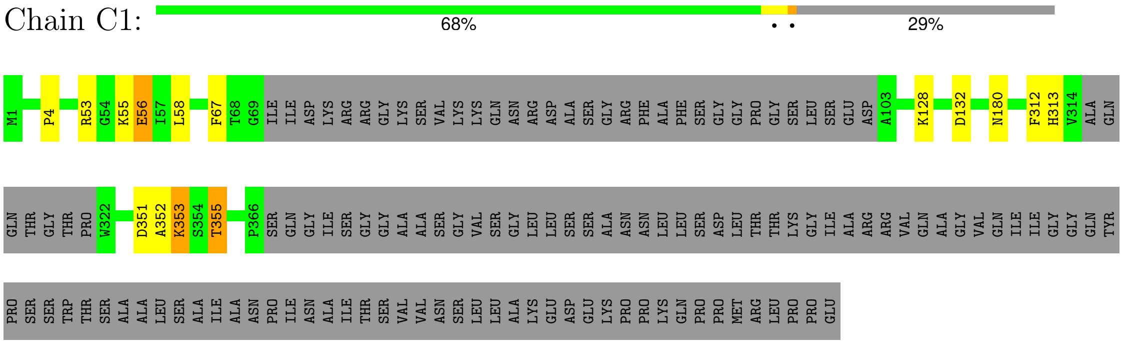
- Molecule 11 is FE (III) ION (three-letter code: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Fe	
11	A	1	1	1	0

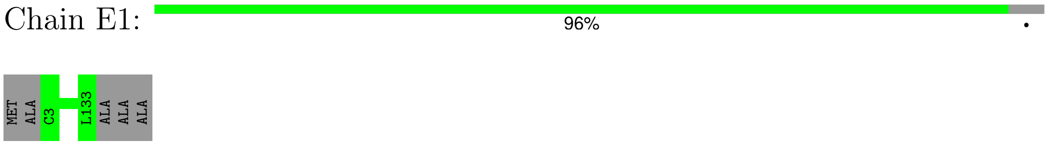
3 Residue-property plots ⓘ

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.

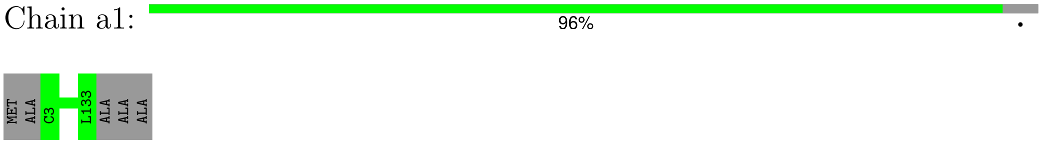
- Molecule 1: Baseplate hub protein, gp26



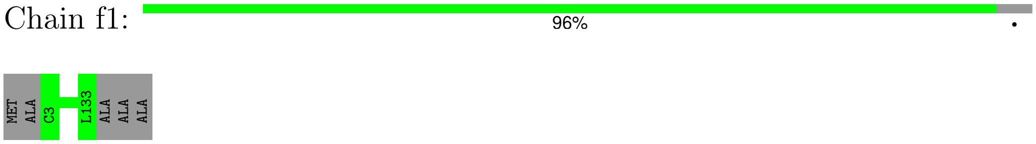
- Molecule 2: Tail-tube, gp21



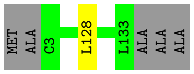
- Molecule 2: Tail-tube, gp21



- Molecule 2: Tail-tube, gp21

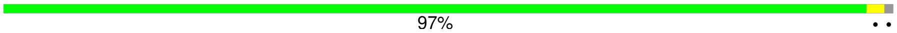


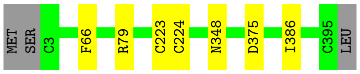
- Molecule 2: Tail-tube, gp21



- Molecule 3: Baseplate Wedge 2 protein, gp29

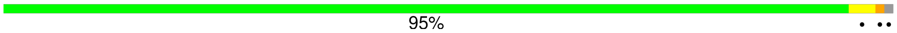
Chain F1:

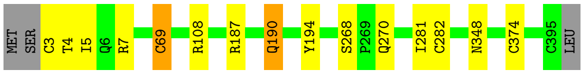




- Molecule 3: Baseplate Wedge 2 protein, gp29

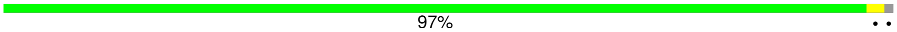
Chain G1:

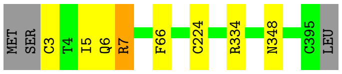




- Molecule 3: Baseplate Wedge 2 protein, gp29

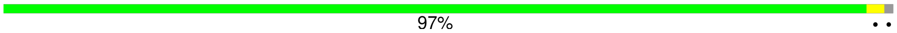
Chain h1:

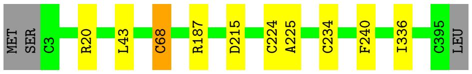




- Molecule 3: Baseplate Wedge 2 protein, gp29

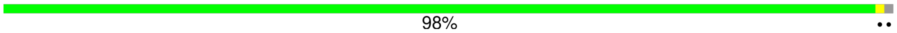
Chain i1:

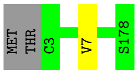




- Molecule 4: Baseplate wedge 1, gp28

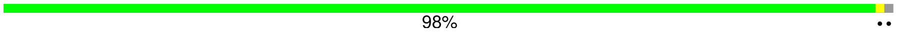
Chain H1:

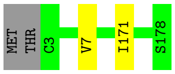




- Molecule 4: Baseplate wedge 1, gp28

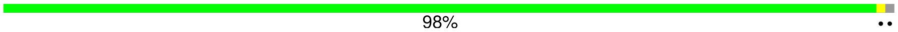
Chain j1:

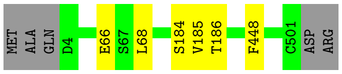




- Molecule 5: Tail sheath protein, gp20

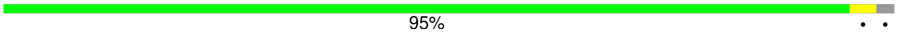
Chain I1:

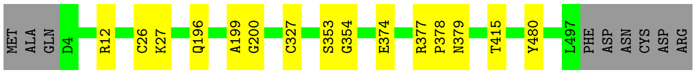




- Molecule 5: Tail sheath protein, gp20

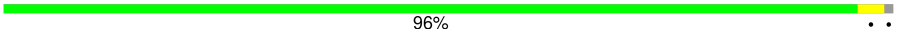
Chain K1:

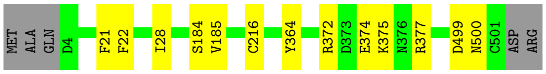




- Molecule 5: Tail sheath protein, gp20

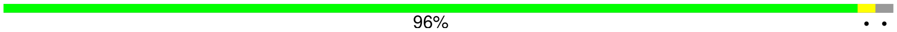
Chain k1:

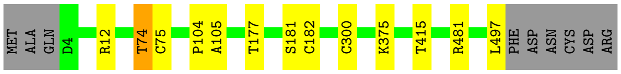




- Molecule 5: Tail sheath protein, gp20

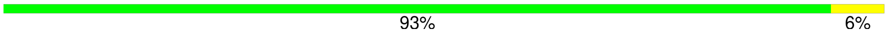
Chain m1:

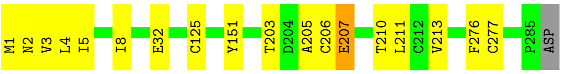




- Molecule 6: Baseplate Wedge 3 protein, gp30

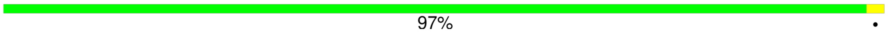
Chain J1:

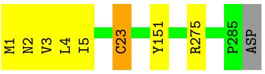




- Molecule 6: Baseplate Wedge 3 protein, gp30

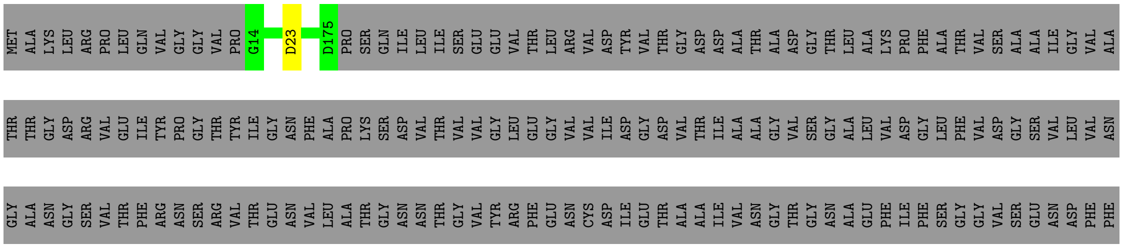
Chain l1:

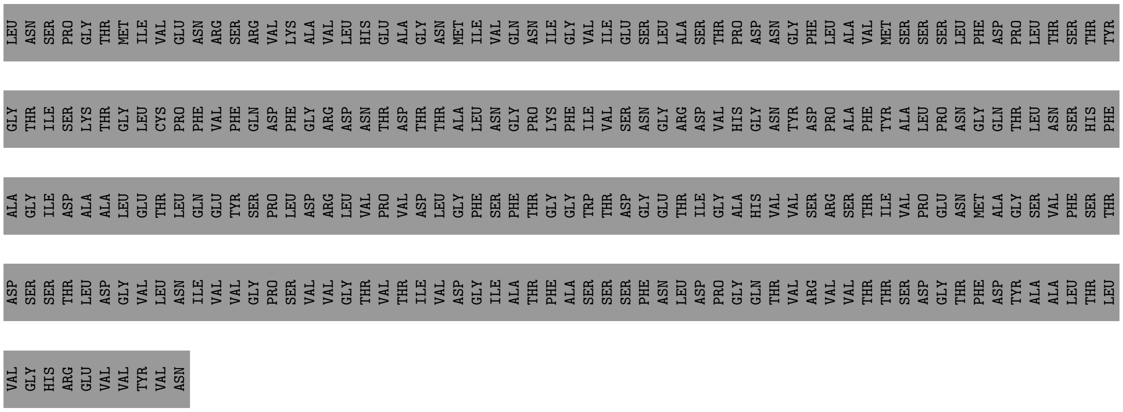




- Molecule 7: Tail Spike protein, gp124

Chain P1:





LEU ASN SER PRO GLY THR MET ILE VAL GLU ASN ARG SER ARG VAL LYS ALA VAL LEU HIS GLU ALA GLY ASN MET ILE VAL GLN ASN ILE GLY VAL ILE GLU SER LEU ALA SER THR PRO ASP ASN GLY PHE LEU ALA VAL MET SER SER SER LEU PHE ASP PRO LEU THR SER THR TYR

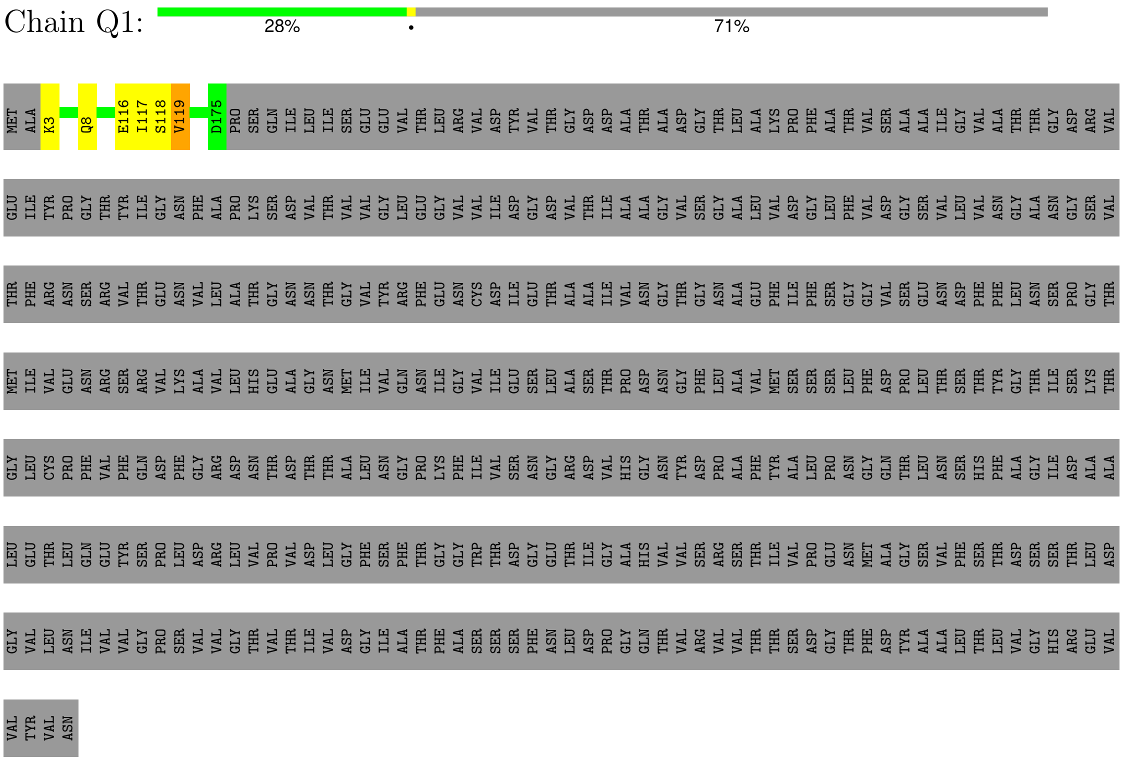
GLY THR ILE SER LYS THR GLY LEU CYS PRO PHE VAL PHE GLN ASP PHE GLY ARG ASP ASN THR ASP THR THR ALA LEU ASN GLY PRO LYS PHE ILE VAL SER ASN GLY ARG ASP VAL HIS GLY ASN TYR ASP PRO ALA PHE TYR ALA LEU PRO ASN GLY GLN THR LEU ASN SER HIS PHE

ALA GLY ILE ASP ALA ALA LEU GLU THR LEU GLN GLU TYR SER PRO LEU ASP ARG LEU VAL PRO VAL ASP LEU GLY PHE SER PHE THR GLY GLY TRP THR ASP GLY GLU THR ILE GLY ALA HIS VAL VAL SER ARG SER THR ILE VAL PRO GLU ASN MET ALA GLY SER VAL PHE SER THR

ASP SER SER THR LEU ASP GLY VAL LEU ASN ILE VAL VAL GLY PRO SER VAL VAL GLY THR VAL THR ILE VAL ASP GLY ILE ALA THR PHE ALA SER SER SER PHE ASN LEU ASP PRO GLY GLN THR VAL ARG VAL VAL THR THR SER ASP GLY THR PHE ASP TYR ALA ALA LEU THR LEU

VAL GLY HIS ARG GLU VAL VAL TYR VAL ASN

- Molecule 7: Tail Spike protein, gp124



Chain Q1:

MET ALA K3 Q8 E116 I117 S118 V119 D175 PRO SER GLN ILE LEU ILE SER GLU GLU VAL THR LEU ARG VAL ASP TYR VAL THR GLY ASP ASP ALA THR ALA ASP GLY THR LEU ALA LYS PRO PHE ALA THR VAL SER ALA ALA ILE GLY VAL ALA THR THR GLY ASP ARG VAL

GLU ILE TYR PRO GLY THR TYR ILE GLY ASN PHE ALA PRO LYS SER ASP VAL THR VAL VAL GLY LEU GLU GLY VAL VAL ILE ASP GLY ASP VAL THR ILE ALA ALA GLY VAL SER GLY ALA LEU VAL ASP GLY LEU PHE VAL ASP GLY SER VAL LEU VAL ASN GLY ALA ASN GLY SER VAL

THR PHE ARG ASN SER ARG VAL THR GLU ASN VAL LEU ALA THR GLY ASN ASN THR GLY VAL TYR ARG PHE GLU ASN CYS ASP ILE GLU THR ALA ALA ILE VAL ASN GLY THR GLY ASN ALA GLU PHE ILE PHE SER GLY GLY VAL SER GLU ASN ASP PHE PHE LEU ASN SER PRO GLY THR

MET ILE VAL GLU ASN ARG SER ARG VAL LYS ALA VAL LEU HIS GLU ALA GLY ASN MET ILE VAL GLN ASN ILE GLY VAL ILE GLU SER LEU ALA SER THR PRO ASP ASN GLY PHE LEU ALA VAL MET SER SER SER LEU PHE ASP PRO LEU THR SER THR TYR GLY THR ILE SER LYS THR

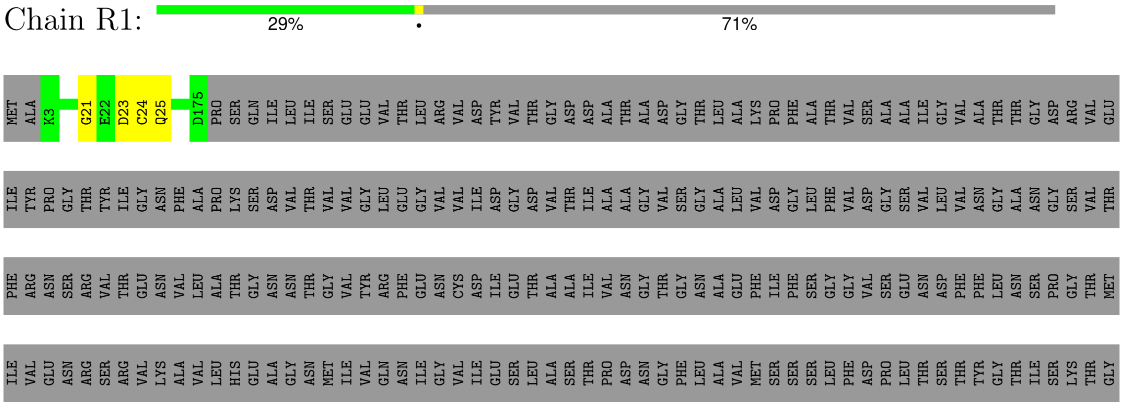
GLY LEU CYS PRO PHE VAL PHE GLN ASP PHE GLY ARG ASP ASN THR ASP THR THR ALA LEU ASN GLY PRO LYS PHE ILE VAL SER ASN GLY ARG ASP VAL HIS GLY ASN TYR ASP PRO ALA PHE TYR ALA LEU PRO ASN GLY GLN THR LEU ASN SER HIS PHE ALA GLY ILE ASP ALA ALA

LEU GLU THR LEU GLN GLU TYR SER PRO LEU ASP ARG LEU VAL PRO VAL ASP LEU GLY PHE SER PHE THR GLY GLY TRP THR ASP GLY GLU THR ILE GLY ALA HIS VAL VAL SER ARG SER THR ILE VAL PRO GLU ASN MET ALA GLY SER VAL PHE SER THR ASP SER SER THR LEU ASP

GLY VAL LEU ASN ILE VAL VAL GLY PRO SER VAL VAL GLY THR VAL THR ILE VAL ASP GLY ILE ALA THR PHE ALA SER SER SER PHE ASN LEU ASP PRO GLY GLN THR VAL ARG VAL VAL THR THR SER ASP GLY THR PHE ASP TYR ALA ALA LEU THR LEU VAL GLY HIS ARG GLU VAL

VAL TYR VAL ASN

- Molecule 7: Tail Spike protein, gp124



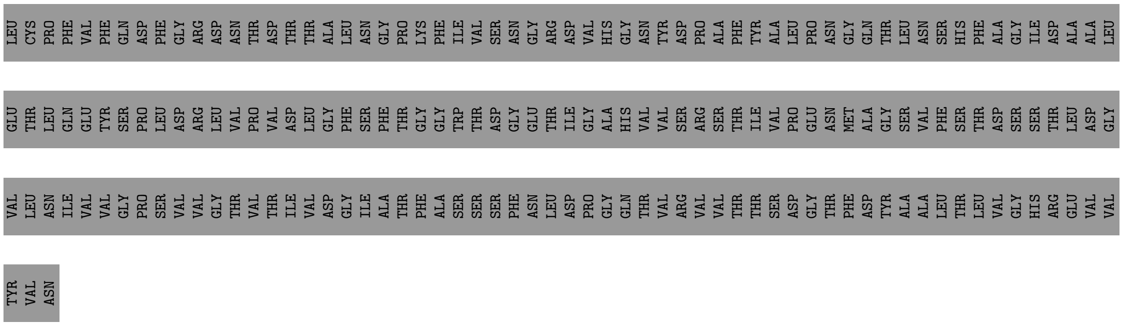
Chain R1:

MET ALA K3 G21 E22 D23 C24 Q25 D175 PRO SER GLN ILE LEU ILE SER GLU GLU VAL THR LEU ARG VAL ASP TYR VAL THR GLY ASP ASP ALA THR ALA ASP GLY THR LEU ALA LYS PRO PHE ALA THR VAL SER ALA ALA ILE GLY VAL ALA THR THR GLY ASP ARG VAL GLU

ILE TYR PRO GLY THR TYR ILE GLY ASN PHE ALA PRO LYS SER ASP VAL THR VAL VAL GLY LEU GLU GLY VAL VAL ILE ASP GLY ASP VAL THR ILE ALA ALA GLY VAL SER GLY ALA LEU VAL ASP GLY LEU PHE VAL ASP GLY SER VAL LEU VAL ASN GLY ALA ASN GLY SER VAL THR

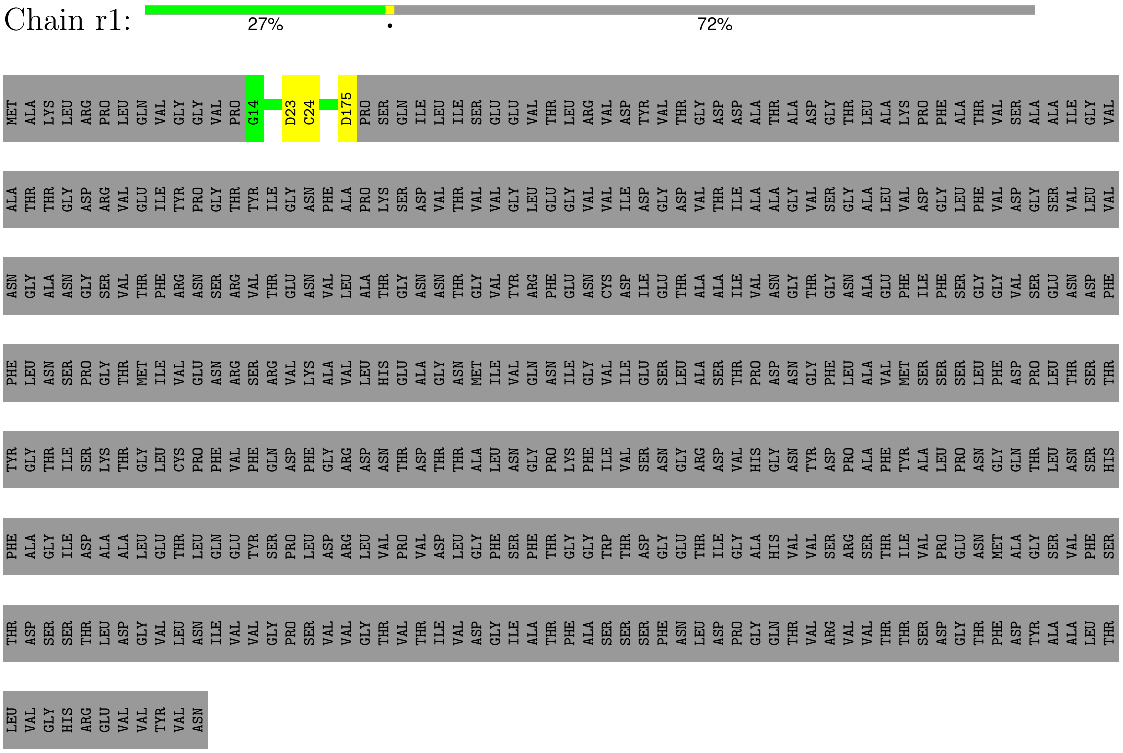
PHE ARG ASN SER ARG VAL THR GLU ASN VAL LEU ALA THR GLY ASN ASN THR GLY VAL TYR ARG PHE GLU ASN CYS ASP ILE GLU THR ALA ALA ILE VAL ASN GLY THR GLY ASN ALA GLU PHE ILE PHE SER GLY GLY VAL SER GLU ASN ASP PHE PHE LEU ASN SER PRO GLY THR MET

ILE VAL GLU ASN ARG SER ARG VAL LYS ALA VAL LEU HIS GLU ALA GLY ASN MET ILE VAL GLN ASN ILE GLY VAL ILE GLU SER LEU ALA SER THR PRO ASP ASN GLY PHE LEU ALA VAL MET SER SER SER LEU PHE ASP PRO LEU THR SER THR TYR GLY THR ILE SER LYS THR GLY



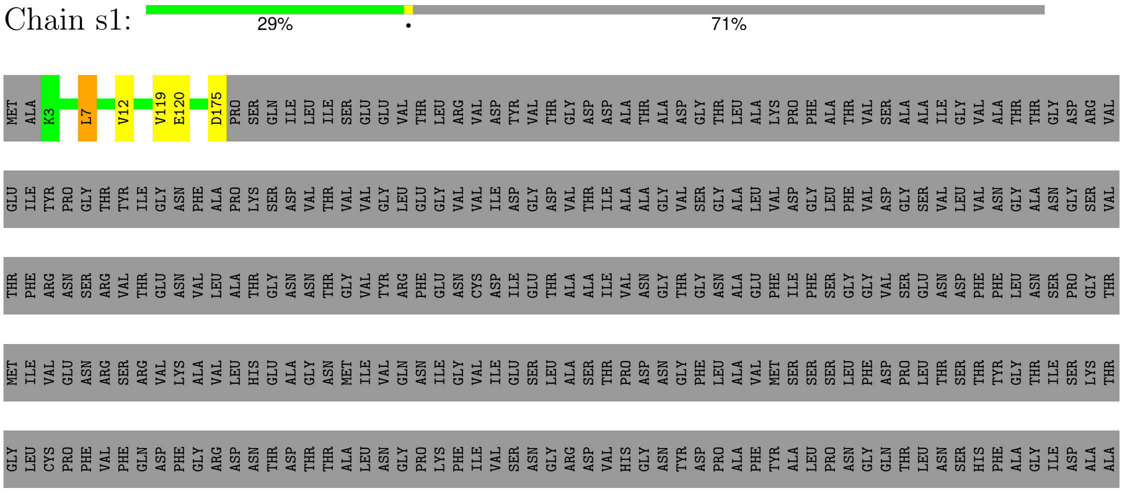
- Molecule 7: Tail Spike protein, gp124

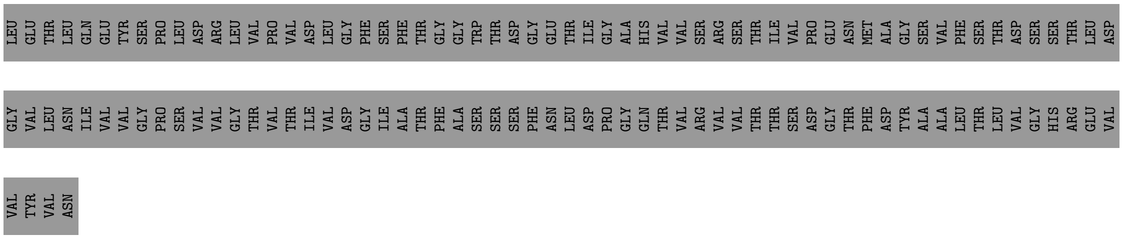
Chain r1:



- Molecule 7: Tail Spike protein, gp124

Chain s1:





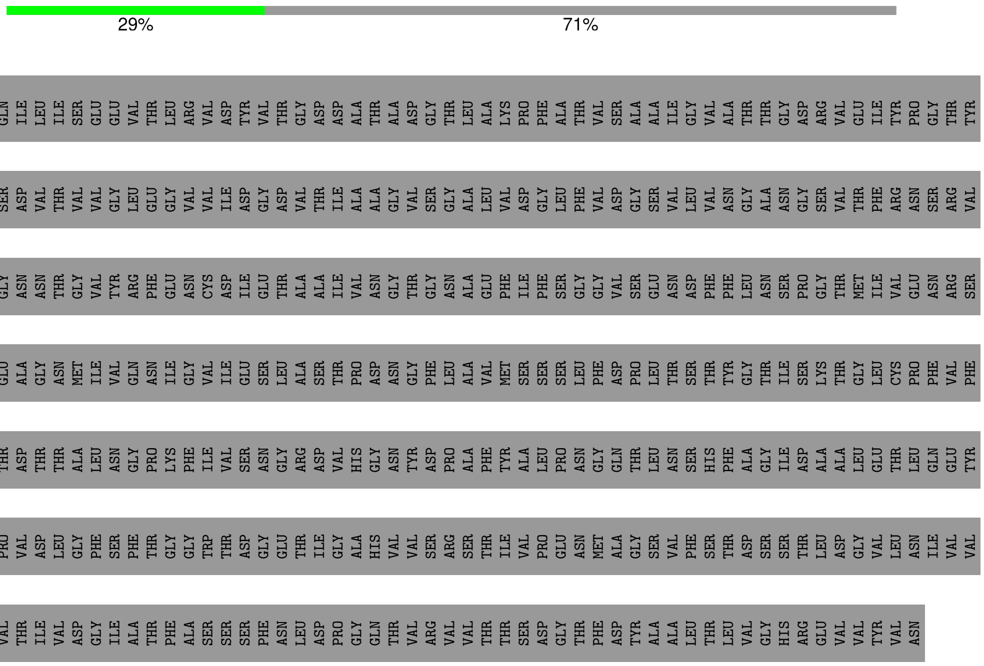
LEU GLU THR LEU GLN GLU TYR SER PRO LEU ASP ARG LEU VAL PRO VAL ASP LEU GLY PHE SER PHE THR GLY GLY TRP THR ASP GLY GLU THR ILE GLY ALA HIS VAL VAL SER ARG SER THR ILE VAL PRO GLU ASN MET ALA GLY SER VAL PHE SER THR ASP SER SER THR LEU ASP

GLY VAL LEU ASN ILE VAL VAL GLY PRO SER VAL VAL GLY THR VAL THR ILE VAL ASP GLY ILE ALA THR PHE ALA SER SER SER PHE ASN LEU ASP PRO GLY GLN THR VAL ARG VAL VAL THR THR SER ASP GLY THR PHE ASP TYR ALA ALA LEU THR LEU VAL GLY HIS ARG GLU VAL

VAL TYR VAL ASN

- Molecule 7: Tail Spike protein, gp124

Chain t1:



MET ALA K3 D175 PRO SER GLN ILE LEU ILE SER GLU GLU VAL THR LEU ARG VAL ASP TYR VAL THR GLY ASP ASP ALA THR ALA ASP GLY THR LEU ALA LYS PRO PHE ALA THR VAL SER ALA ALA ILE GLY VAL ALA THR THR GLY ASP ARG VAL GLU ILE TYR PRO GLY THR TYR

ILE GLY ASN PHE ALA PRO LYS SER ASP VAL THR VAL VAL GLY LEU GLU GLY VAL VAL ILE ASP GLY ASP VAL THR ILE ALA ALA GLY VAL SER GLY ALA LEU VAL ASP GLY LEU PHE VAL ASP GLY SER VAL LEU VAL ASN GLY ALA ASN GLY SER VAL THR PHE ARG ASN SER ARG VAL

THR GLU ASN VAL LEU ALA THR GLY ASN ASN THR GLY VAL TYR ARG PHE GLU ASN CYS ASP ILE GLU THR ALA ALA ILE VAL ASN GLY THR GLY ASN ALA GLU PHE ILE PHE SER GLY GLY VAL SER GLU ASN ASP PHE PHE LEU ASN SER PRO GLY THR MET ILE VAL GLU ASN ARG SER

ARG VAL LYS ALA VAL LEU HIS GLU ALA GLY ASN MET ILE VAL GLN ASN ILE GLY VAL ILE GLU SER LEU ALA SER THR PRO ASP ASN GLY PHE LEU ALA VAL MET SER SER SER LEU PHE ASP PRO LEU THR SER THR TYR GLY THR ILE SER LYS THR GLY LEU CYS PRO PHE VAL PHE

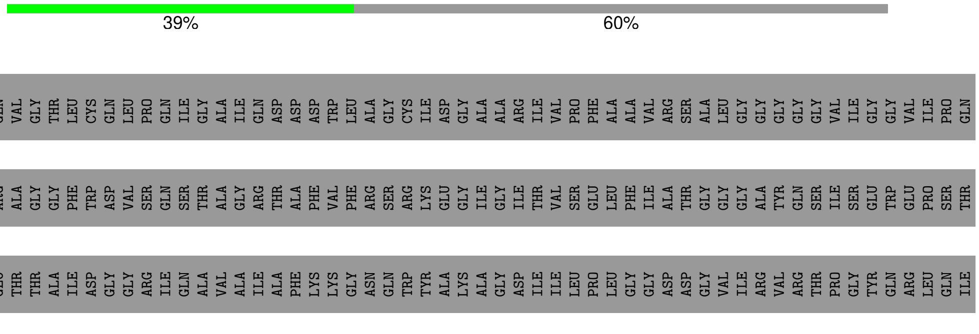
GLN ASP PHE GLY ARG ASP ASN THR ASP THR THR ALA LEU ASN GLY PRO LYS PHE ILE VAL SER ASN GLY ARG ASP VAL HIS GLY ASN TYR ASP PRO ALA PHE TYR ALA LEU PRO ASN GLY GLN THR LEU ASN SER HIS PHE ALA GLY ILE ASP ALA ALA LEU GLU THR LEU GLN GLU TYR

SER PRO LEU ASP ARG LEU VAL PRO VAL ASP LEU GLY PHE SER PHE THR GLY GLY TRP THR ASP GLY GLU THR ILE GLY ALA HIS VAL VAL SER ARG SER THR ILE VAL PRO GLU ASN MET ALA GLY SER VAL PHE SER THR ASP SER SER THR LEU ASP GLY VAL LEU ASN ILE VAL VAL

GLY PRO SER VAL VAL GLY THR VAL THR ILE VAL ASP GLY ILE ALA THR PHE ALA SER SER SER PHE ASN LEU ASP PRO GLY GLN THR VAL ARG VAL VAL THR THR SER ASP GLY THR PHE ASP TYR ALA ALA LEU THR LEU VAL GLY HIS ARG GLU VAL VAL TYR VAL ASN

- Molecule 8: Short Tail Fibers, gp31

Chain S1:



MET ALA G3 C12 G121 GLN VAL GLY THR LEU CYS GLN LEU PRO GLN ILE GLY ALA ILE GLN ASP ASP TRP LEU ALA GLY CYS ILE ASP GLY ALA ALA ARG ILE VAL PRO PHE ALA ALA VAL ARG SER ALA LEU GLY GLY GLY GLY GLY VAL ILE GLY GLY VAL ILE PRO GLN

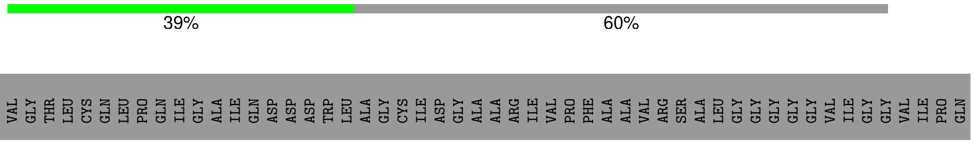
ASN GLN LEU PHE ASP SER TRP ARG ALA GLY GLY PHE TRP ASP VAL SER GLN SER THR ALA GLY ARG THR ALA PHE VAL PHE ARG SER ARG LYS GLU GLY ILE GLY ILE THR VAL SER GLU LEU PHE ILE ALA THR GLY GLY GLY ALA TYR GLN SER ILE SER GLU TRP GLU PRO SER THR

PHE ALA TYR VAL PRO THR GLY GLU THR THR ALA ILE ASP GLY GLY ARG ILE GLN ALA VAL ALA ILE ALA PHE LYS LYS GLY ASN GLN TRP TYR ALA LYS ALA GLY ASP ILE ILE LEU PRO LEU GLY GLY ASP ASP GLY VAL ILE ARG VAL ARG THR PRO GLY TYR GLN ARG LEU GLN ILE

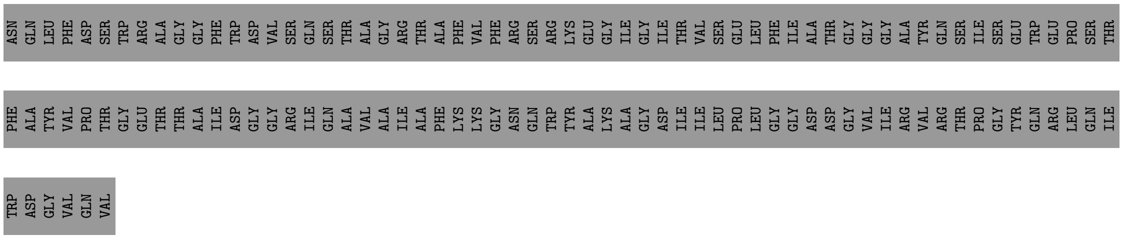
TRP ASP GLY VAL GLN VAL

- Molecule 8: Short Tail Fibers, gp31

Chain T1:

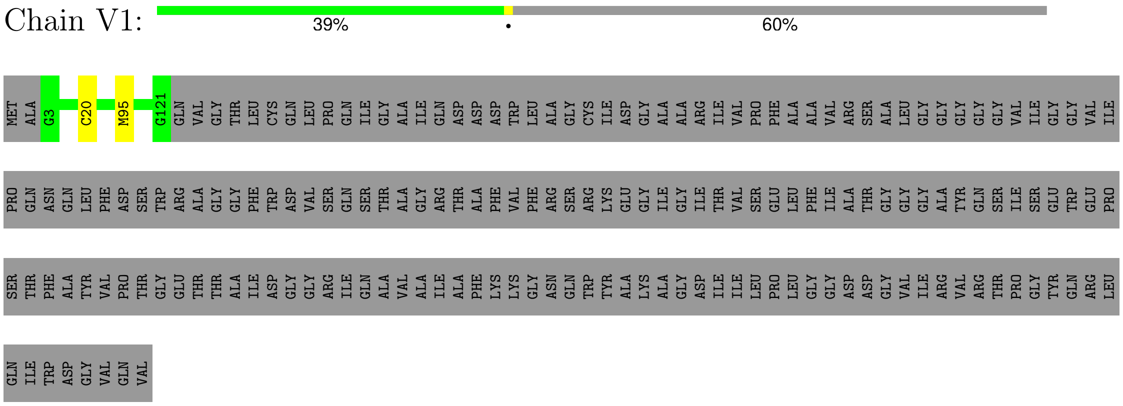


MET ALA G3 I83 G121 GLN VAL GLY THR LEU CYS GLN LEU PRO GLN ILE GLY ALA ILE GLN ASP ASP TRP LEU ALA GLY CYS ILE ASP GLY ALA ALA ARG ILE VAL PRO PHE ALA ALA VAL ARG SER ALA LEU GLY GLY GLY GLY GLY VAL ILE GLY GLY VAL ILE PRO GLN



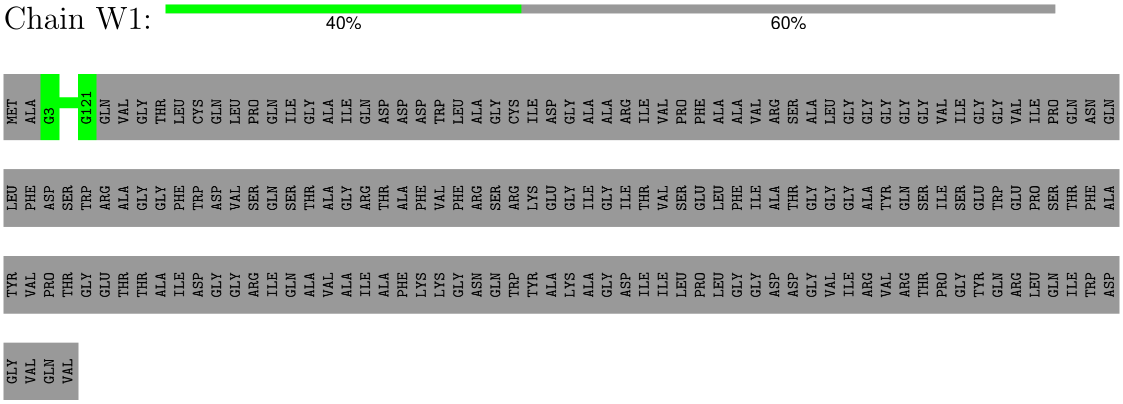
- Molecule 8: Short Tail Fibers, gp31

Chain V1:



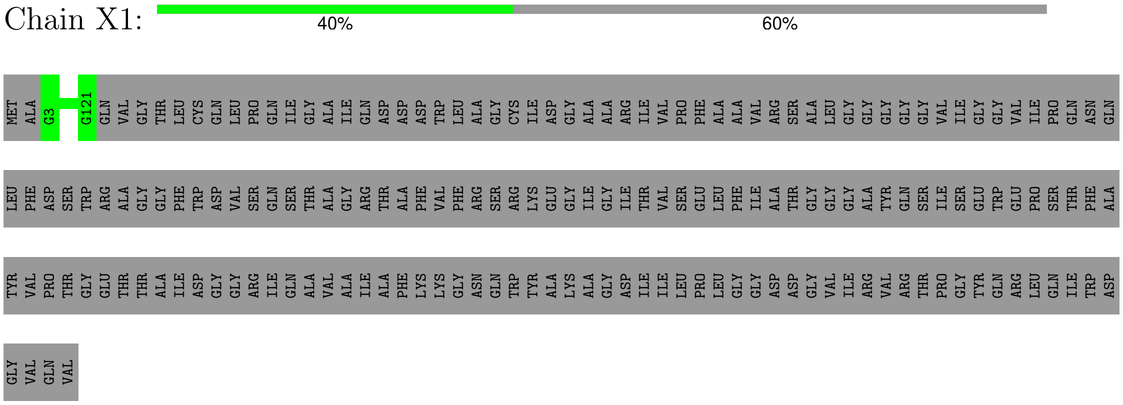
- Molecule 8: Short Tail Fibers, gp31

Chain W1:



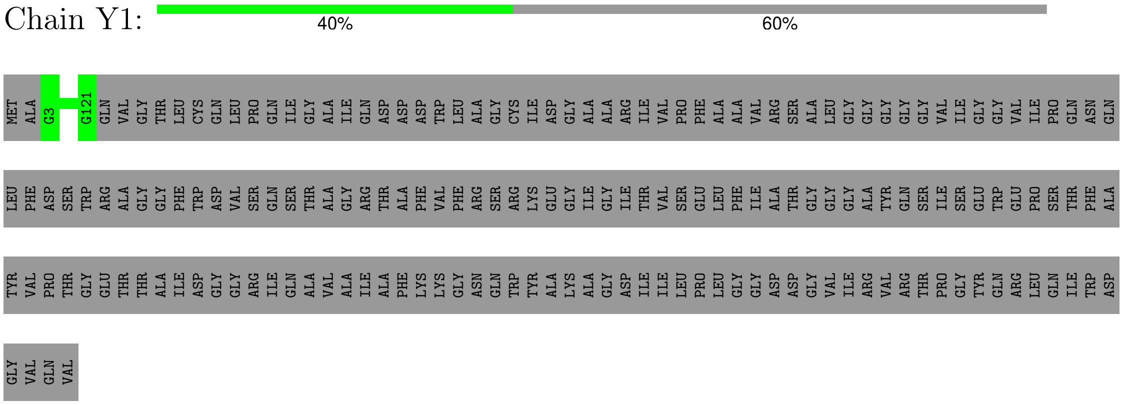
- Molecule 8: Short Tail Fibers, gp31

Chain X1:



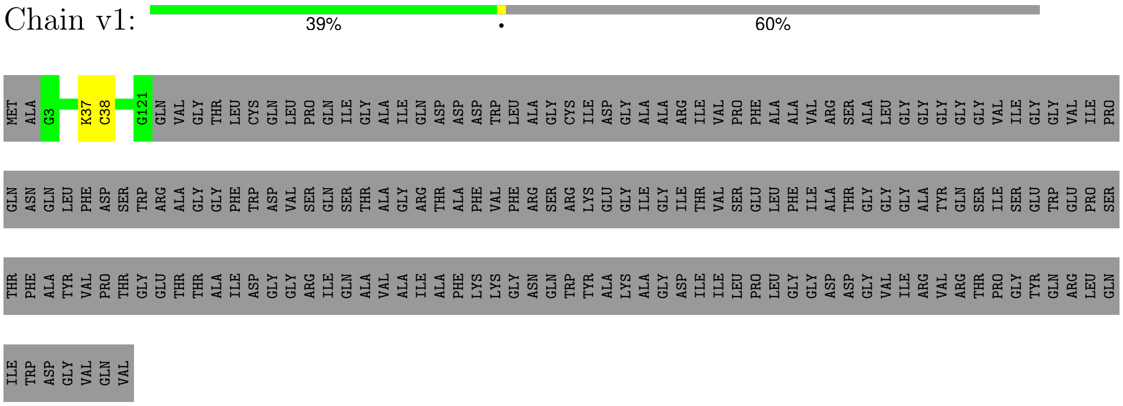
- Molecule 8: Short Tail Fibers, gp31

Chain Y1:



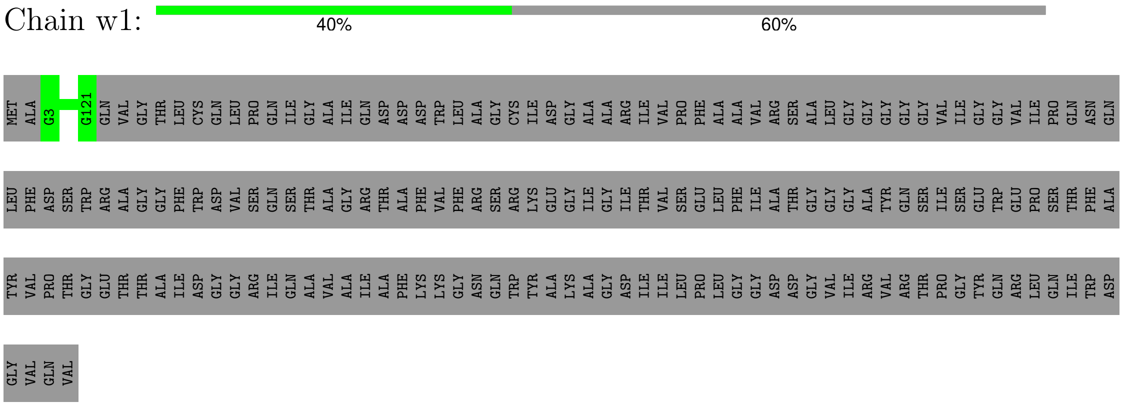
- Molecule 8: Short Tail Fibers, gp31

Chain v1:



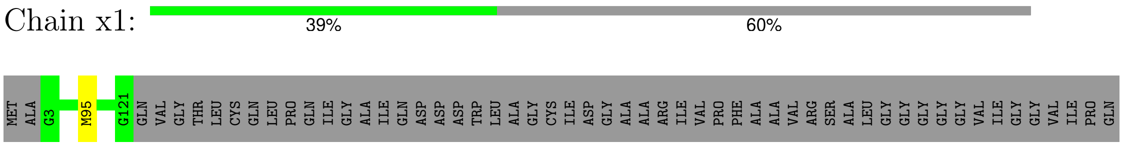
- Molecule 8: Short Tail Fibers, gp31

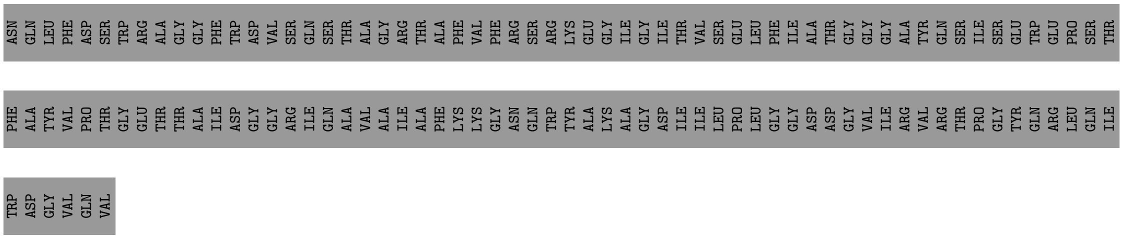
Chain w1:



- Molecule 8: Short Tail Fibers, gp31

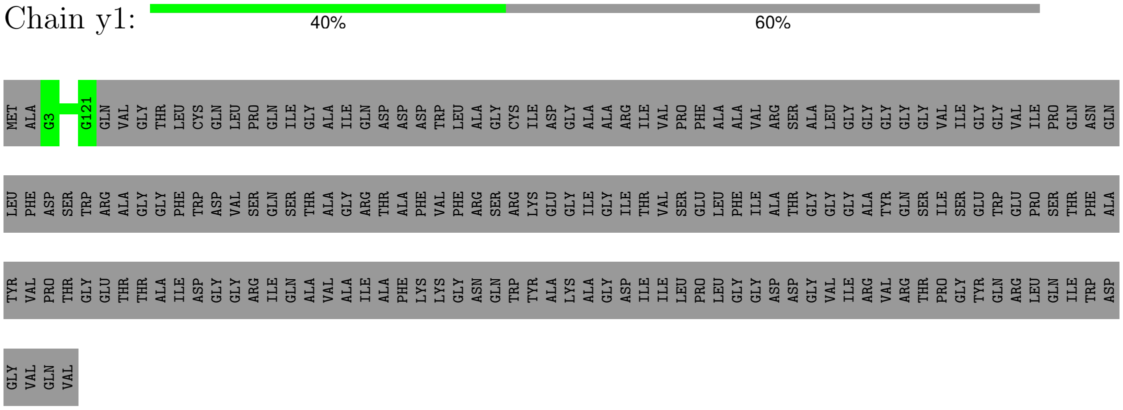
Chain x1:





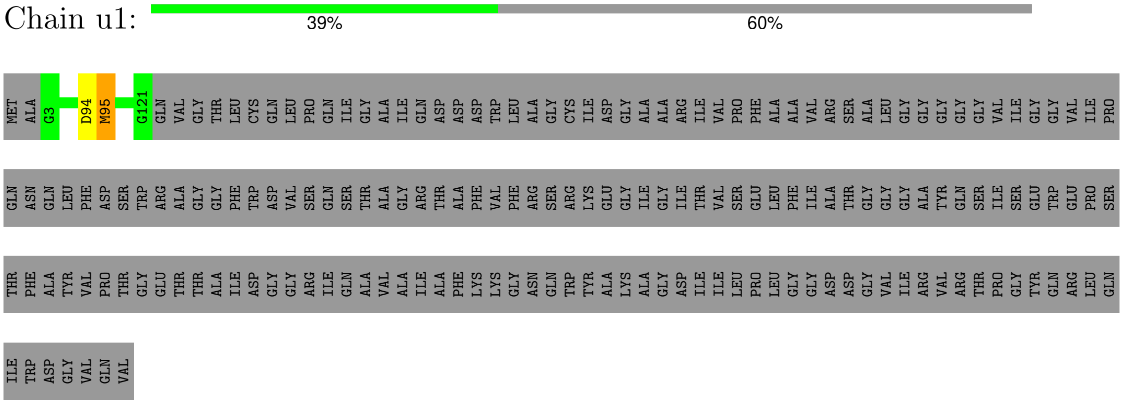
- Molecule 8: Short Tail Fibers, gp31

Chain y1:



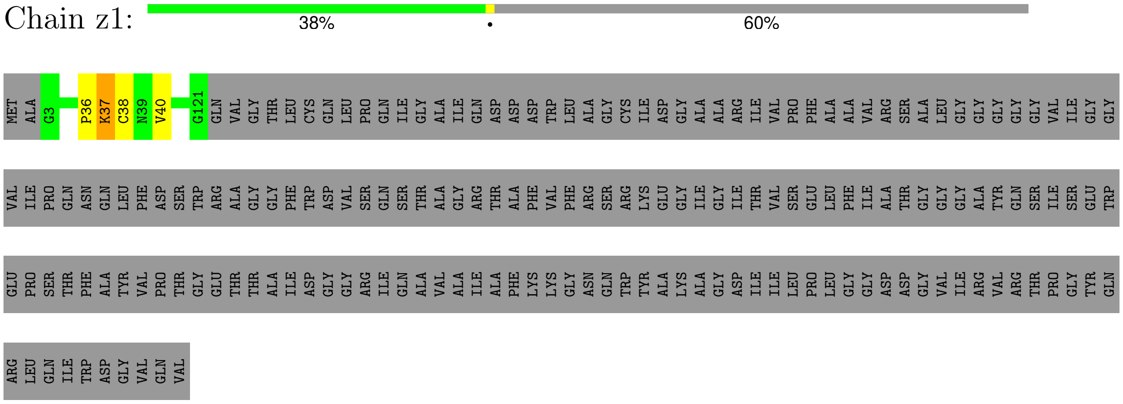
- Molecule 8: Short Tail Fibers, gp31

Chain u1:



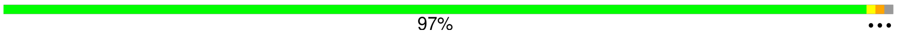
- Molecule 8: Short Tail Fibers, gp31

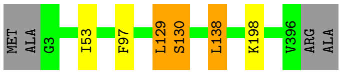
Chain z1:



- Molecule 9: Baseplate Centerpiece, gp25

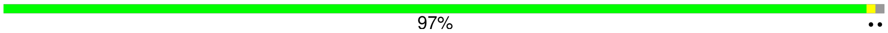
Chain U1:

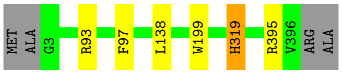




- Molecule 9: Baseplate Centerpiece, gp25

Chain e1:





- Molecule 10: Baseplate Central Spike, gp27

Chain A:

4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14856	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.478	Depositor
Minimum map value	-0.780	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.045	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	624.24005, 624.24005, 624.24005	wwPDB
Map dimensions	578, 578, 578	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: FE

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	C1	0.38	0/2598	0.57	0/3525
2	E1	0.46	0/1011	0.52	0/1382
2	a1	0.40	0/1011	0.52	0/1382
2	f1	0.38	0/1011	0.51	0/1382
2	g1	0.41	0/1011	0.52	0/1382
3	F1	0.42	0/3085	0.49	0/4207
3	G1	0.47	0/3085	0.55	0/4207
3	h1	0.42	0/3085	0.48	0/4207
3	i1	0.46	0/3085	0.54	0/4207
4	H1	0.37	0/1353	0.51	0/1831
4	j1	0.37	0/1353	0.51	0/1831
5	I1	0.41	0/3815	0.53	0/5211
5	K1	0.38	0/3781	0.51	0/5165
5	k1	0.42	0/3815	0.52	0/5211
5	m1	0.37	0/3781	0.50	0/5165
6	J1	0.44	0/2237	0.53	0/3063
6	l1	0.41	0/2237	0.50	0/3063
7	P1	0.33	0/1269	0.45	0/1755
7	Q1	0.35	0/1352	0.50	0/1868
7	R1	0.30	0/1352	0.47	0/1868
7	r1	0.33	0/1269	0.45	0/1755
7	s1	0.36	0/1352	0.46	0/1868
7	t1	0.32	0/1352	0.47	0/1868
8	S1	0.29	0/892	0.46	0/1217
8	T1	0.28	0/892	0.46	0/1217
8	V1	0.28	0/892	0.49	0/1217
8	W1	0.32	0/892	0.44	0/1217
8	X1	0.30	0/892	0.46	0/1217
8	Y1	0.29	0/892	0.45	0/1217
8	u1	0.31	0/892	0.48	0/1217
8	v1	0.30	0/892	0.47	0/1217
8	w1	0.28	0/892	0.45	0/1217

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
8	x1	0.28	0/892	0.49	0/1217
8	y1	0.31	0/892	0.45	0/1217
8	z1	0.31	0/892	0.44	0/1217
9	U1	0.44	0/3093	0.49	0/4214
9	e1	0.44	0/3093	0.50	1/4214 (0.0%)
10	A	0.62	0/1320	0.91	3/1791 (0.2%)
All	All	0.40	0/67510	0.51	4/92226 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	e1	138	LEU	CA-CB-CG	5.73	128.49	115.30
10	A	116	ILE	N-CA-C	-5.73	95.53	111.00
10	A	181	ASP	CB-CG-OD2	5.18	122.96	118.30
10	A	72	GLY	N-CA-C	-5.14	100.25	113.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

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	C1	320/457 (70%)	247 (77%)	65 (20%)	8 (2%)	4	28
2	E1	129/136 (95%)	117 (91%)	12 (9%)	0	100	100
2	a1	129/136 (95%)	117 (91%)	12 (9%)	0	100	100

Continued on next page...

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	f1	129/136 (95%)	118 (92%)	11 (8%)	0	100	100
2	g1	129/136 (95%)	118 (92%)	10 (8%)	1 (1%)	16	51
3	F1	391/396 (99%)	371 (95%)	19 (5%)	1 (0%)	37	69
3	G1	391/396 (99%)	366 (94%)	21 (5%)	4 (1%)	13	47
3	h1	391/396 (99%)	378 (97%)	10 (3%)	3 (1%)	16	51
3	i1	391/396 (99%)	363 (93%)	26 (7%)	2 (0%)	25	60
4	H1	174/178 (98%)	149 (86%)	24 (14%)	1 (1%)	22	57
4	j1	174/178 (98%)	145 (83%)	27 (16%)	2 (1%)	12	44
5	I1	496/503 (99%)	439 (88%)	56 (11%)	1 (0%)	44	75
5	K1	492/503 (98%)	421 (86%)	64 (13%)	7 (1%)	9	40
5	k1	496/503 (99%)	441 (89%)	53 (11%)	2 (0%)	30	64
5	m1	492/503 (98%)	404 (82%)	80 (16%)	8 (2%)	8	37
6	J1	283/286 (99%)	258 (91%)	20 (7%)	5 (2%)	7	35
6	l1	283/286 (99%)	253 (89%)	27 (10%)	3 (1%)	12	44
7	P1	160/587 (27%)	146 (91%)	13 (8%)	1 (1%)	22	57
7	Q1	171/587 (29%)	155 (91%)	12 (7%)	4 (2%)	5	29
7	R1	171/587 (29%)	158 (92%)	12 (7%)	1 (1%)	22	57
7	r1	160/587 (27%)	147 (92%)	12 (8%)	1 (1%)	22	57
7	s1	171/587 (29%)	158 (92%)	10 (6%)	3 (2%)	7	35
7	t1	171/587 (29%)	156 (91%)	15 (9%)	0	100	100
8	S1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	T1	117/300 (39%)	112 (96%)	4 (3%)	1 (1%)	14	49
8	V1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	W1	117/300 (39%)	109 (93%)	8 (7%)	0	100	100
8	X1	117/300 (39%)	107 (92%)	10 (8%)	0	100	100
8	Y1	117/300 (39%)	111 (95%)	6 (5%)	0	100	100
8	u1	117/300 (39%)	110 (94%)	6 (5%)	1 (1%)	14	49
8	v1	117/300 (39%)	107 (92%)	10 (8%)	0	100	100
8	w1	117/300 (39%)	114 (97%)	3 (3%)	0	100	100
8	x1	117/300 (39%)	105 (90%)	12 (10%)	0	100	100
8	y1	117/300 (39%)	110 (94%)	7 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	z1	117/300 (39%)	108 (92%)	7 (6%)	2 (2%)	7	36
9	U1	392/398 (98%)	368 (94%)	21 (5%)	3 (1%)	16	51
9	e1	392/398 (98%)	361 (92%)	30 (8%)	1 (0%)	37	69
10	A	166/188 (88%)	142 (86%)	13 (8%)	11 (7%)	1	7
All	All	8648/13631 (63%)	7807 (90%)	764 (9%)	77 (1%)	17	49

5 of 77 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	F1	375	ASP
6	J1	2	ASN
5	K1	378	PRO
7	Q1	117	ILE
7	Q1	119	VAL

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	C1	281/383 (73%)	271 (96%)	10 (4%)	30	62
2	E1	115/116 (99%)	115 (100%)	0	100	100
2	a1	115/116 (99%)	115 (100%)	0	100	100
2	f1	115/116 (99%)	115 (100%)	0	100	100
2	g1	115/116 (99%)	115 (100%)	0	100	100
3	F1	330/333 (99%)	324 (98%)	6 (2%)	54	77
3	G1	330/333 (99%)	317 (96%)	13 (4%)	27	60
3	h1	330/333 (99%)	324 (98%)	6 (2%)	54	77
3	i1	330/333 (99%)	321 (97%)	9 (3%)	40	69
4	H1	145/147 (99%)	145 (100%)	0	100	100
4	j1	145/147 (99%)	145 (100%)	0	100	100
5	I1	404/408 (99%)	399 (99%)	5 (1%)	67	85

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	K1	400/408 (98%)	392 (98%)	8 (2%)	50	75
5	k1	404/408 (99%)	393 (97%)	11 (3%)	40	69
5	m1	400/408 (98%)	394 (98%)	6 (2%)	60	81
6	J1	245/247 (99%)	231 (94%)	14 (6%)	17	50
6	l1	245/247 (99%)	239 (98%)	6 (2%)	44	71
7	P1	129/473 (27%)	129 (100%)	0	100	100
7	Q1	138/473 (29%)	135 (98%)	3 (2%)	47	73
7	R1	138/473 (29%)	135 (98%)	3 (2%)	47	73
7	r1	129/473 (27%)	127 (98%)	2 (2%)	58	79
7	s1	138/473 (29%)	135 (98%)	3 (2%)	47	73
7	t1	138/473 (29%)	137 (99%)	1 (1%)	81	92
8	S1	97/229 (42%)	96 (99%)	1 (1%)	73	87
8	T1	97/229 (42%)	97 (100%)	0	100	100
8	V1	97/229 (42%)	95 (98%)	2 (2%)	48	74
8	W1	97/229 (42%)	97 (100%)	0	100	100
8	X1	97/229 (42%)	97 (100%)	0	100	100
8	Y1	97/229 (42%)	97 (100%)	0	100	100
8	u1	97/229 (42%)	95 (98%)	2 (2%)	48	74
8	v1	97/229 (42%)	95 (98%)	2 (2%)	48	74
8	w1	97/229 (42%)	97 (100%)	0	100	100
8	x1	97/229 (42%)	96 (99%)	1 (1%)	73	87
8	y1	97/229 (42%)	97 (100%)	0	100	100
8	z1	97/229 (42%)	94 (97%)	3 (3%)	35	66
9	U1	314/316 (99%)	308 (98%)	6 (2%)	52	76
9	e1	314/316 (99%)	309 (98%)	5 (2%)	58	79
10	A	143/162 (88%)	134 (94%)	9 (6%)	15	46
All	All	7194/10979 (66%)	7057 (98%)	137 (2%)	52	76

5 of 137 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	r1	175	ASP
7	t1	175	ASP

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Mol	Chain	Res	Type
10	A	38	LYS
5	K1	12	ARG
6	J1	277	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 112 such sidechains are listed below:

Mol	Chain	Res	Type
2	a1	84	GLN
10	A	28	HIS
3	i1	355	ASN
8	z1	117	ASN
8	x1	17	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)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

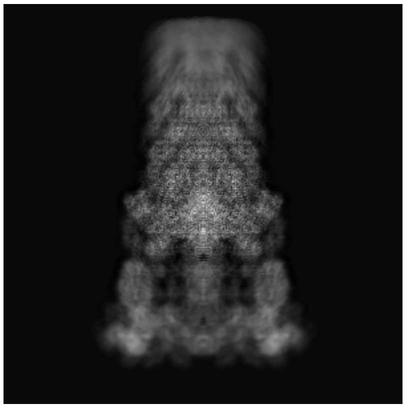
6 Map visualisation

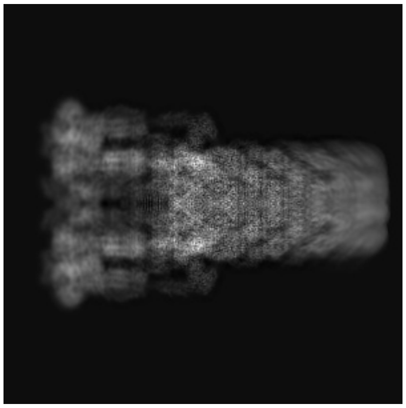
This section contains visualisations of the EMDB entry EMD-29383. These allow visual inspection of the internal detail of the map and identification of artifacts.

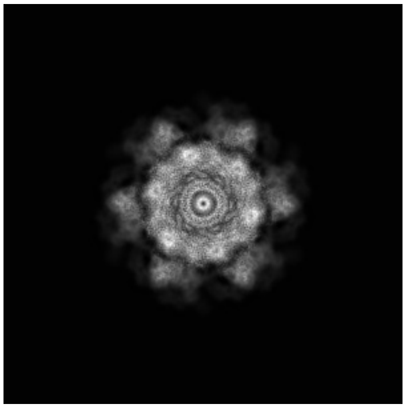
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

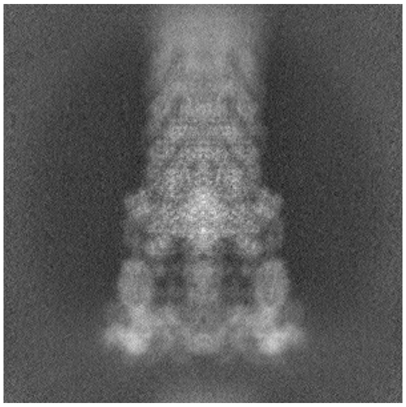
6.1.1 Primary map

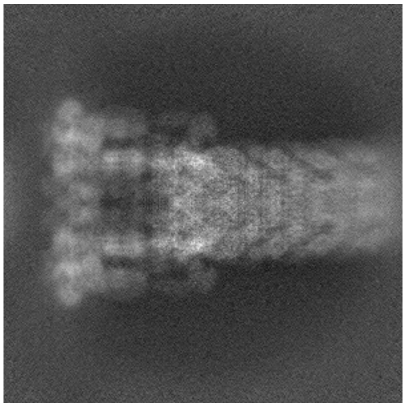

X

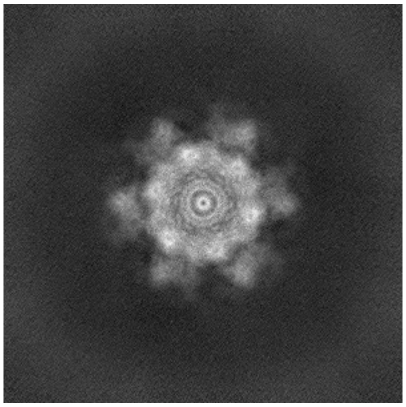

Y


Z

6.1.2 Raw map


X

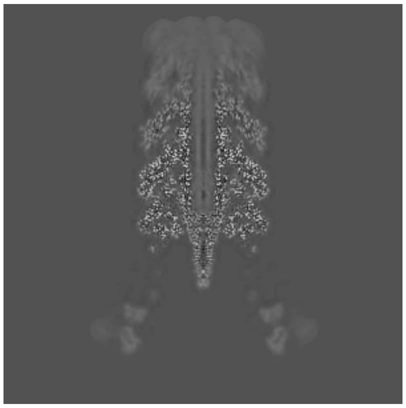

Y


Z

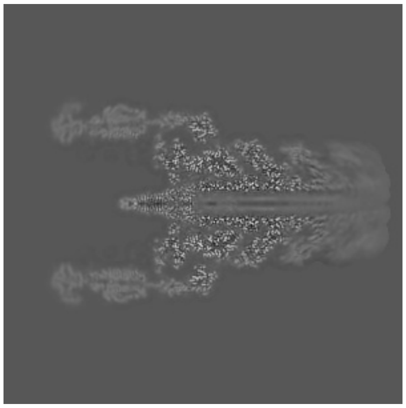
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

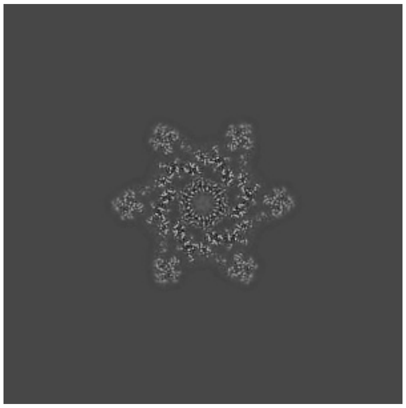
6.2.1 Primary map



X Index: 289

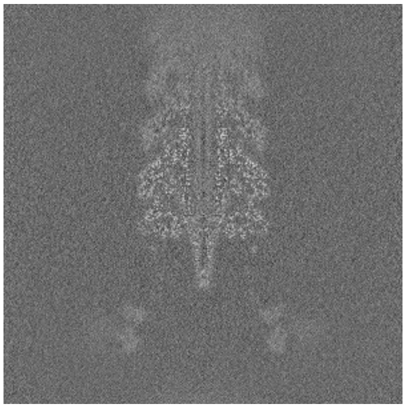


Y Index: 289

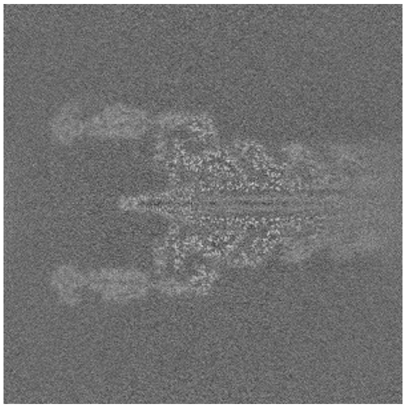


Z Index: 289

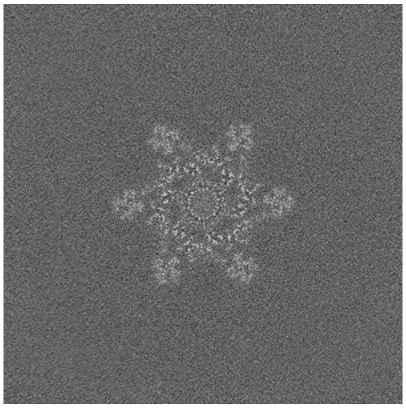
6.2.2 Raw map



X Index: 289



Y Index: 289

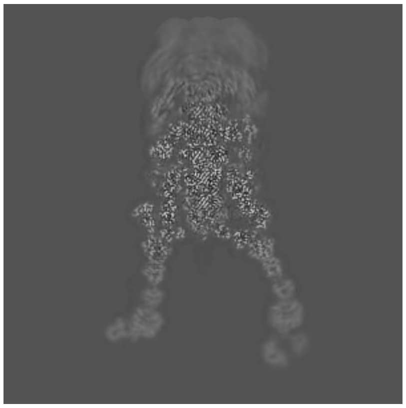


Z Index: 289

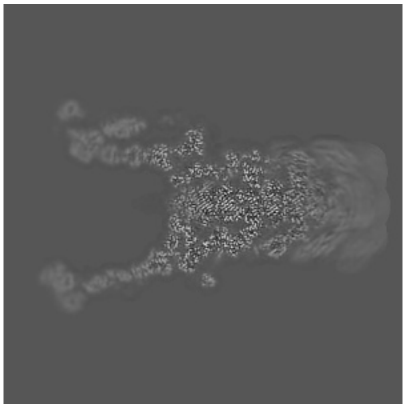
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

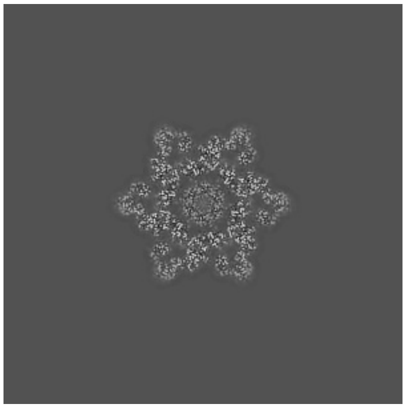
6.3.1 Primary map



X Index: 310

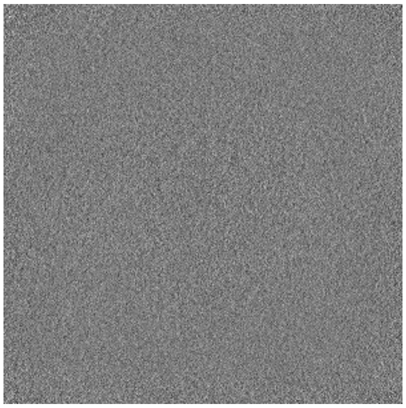


Y Index: 268

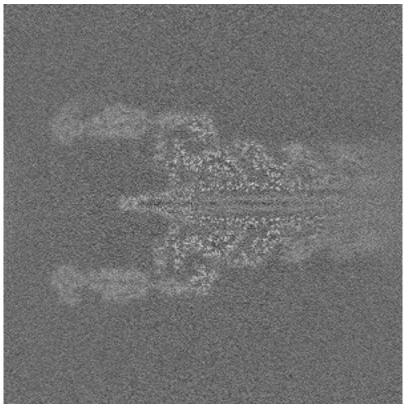


Z Index: 276

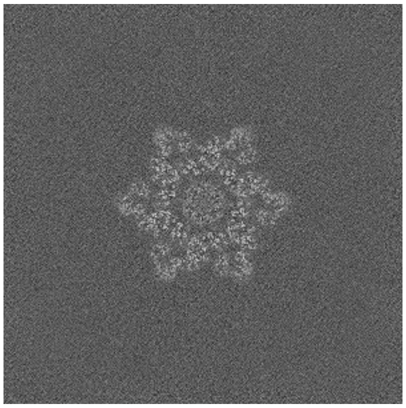
6.3.2 Raw map



X Index: 0



Y Index: 289

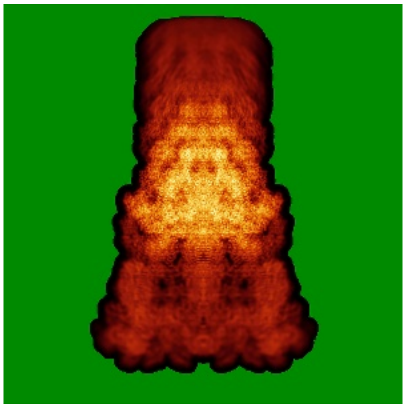


Z Index: 276

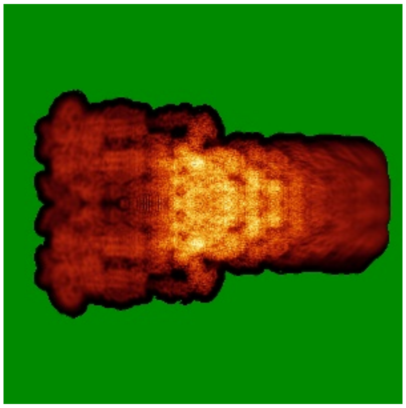
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color)

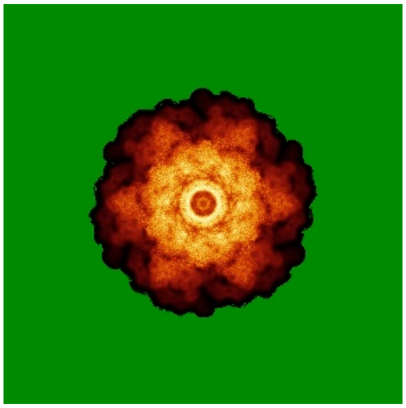
6.4.1 Primary map



X

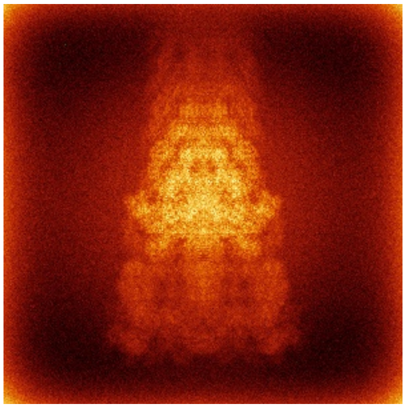


Y

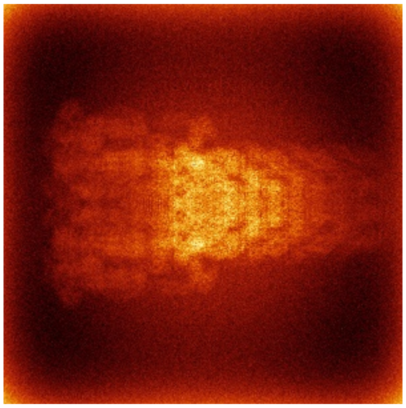


Z

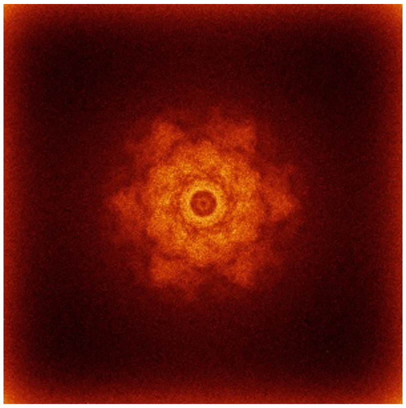
6.4.2 Raw map



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

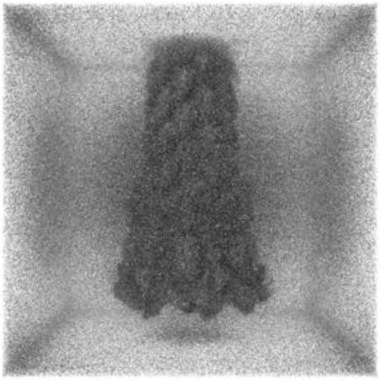
X

Y

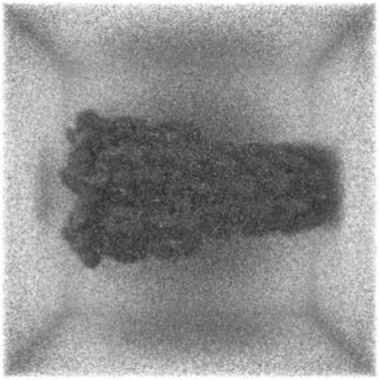
Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

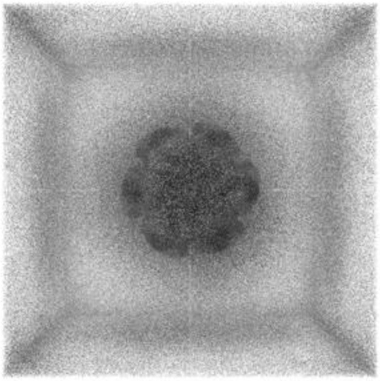
6.5.2 Raw map



X



Y



Z

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

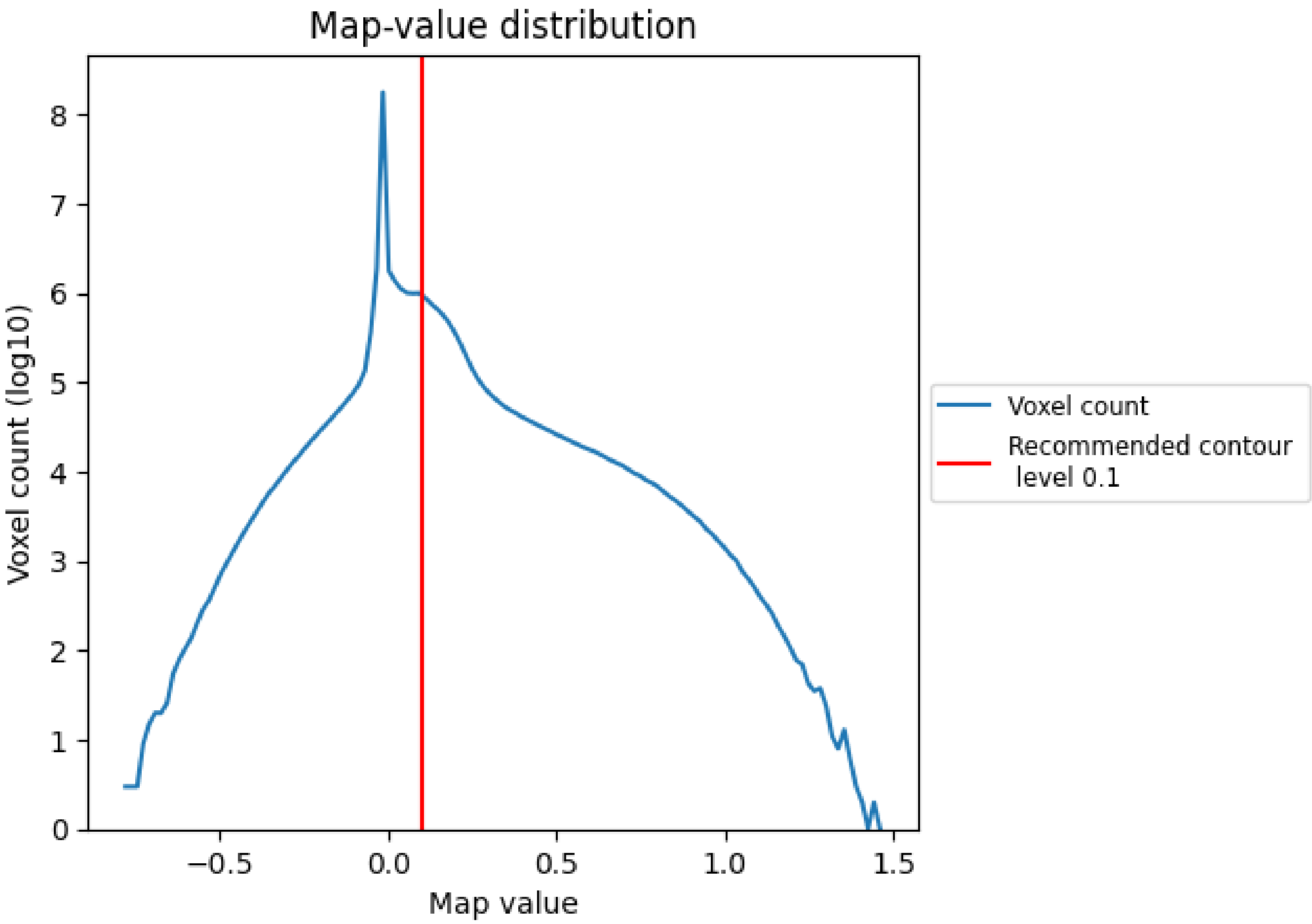
6.6 Mask visualisation (i)

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

7 Map analysis ⓘ

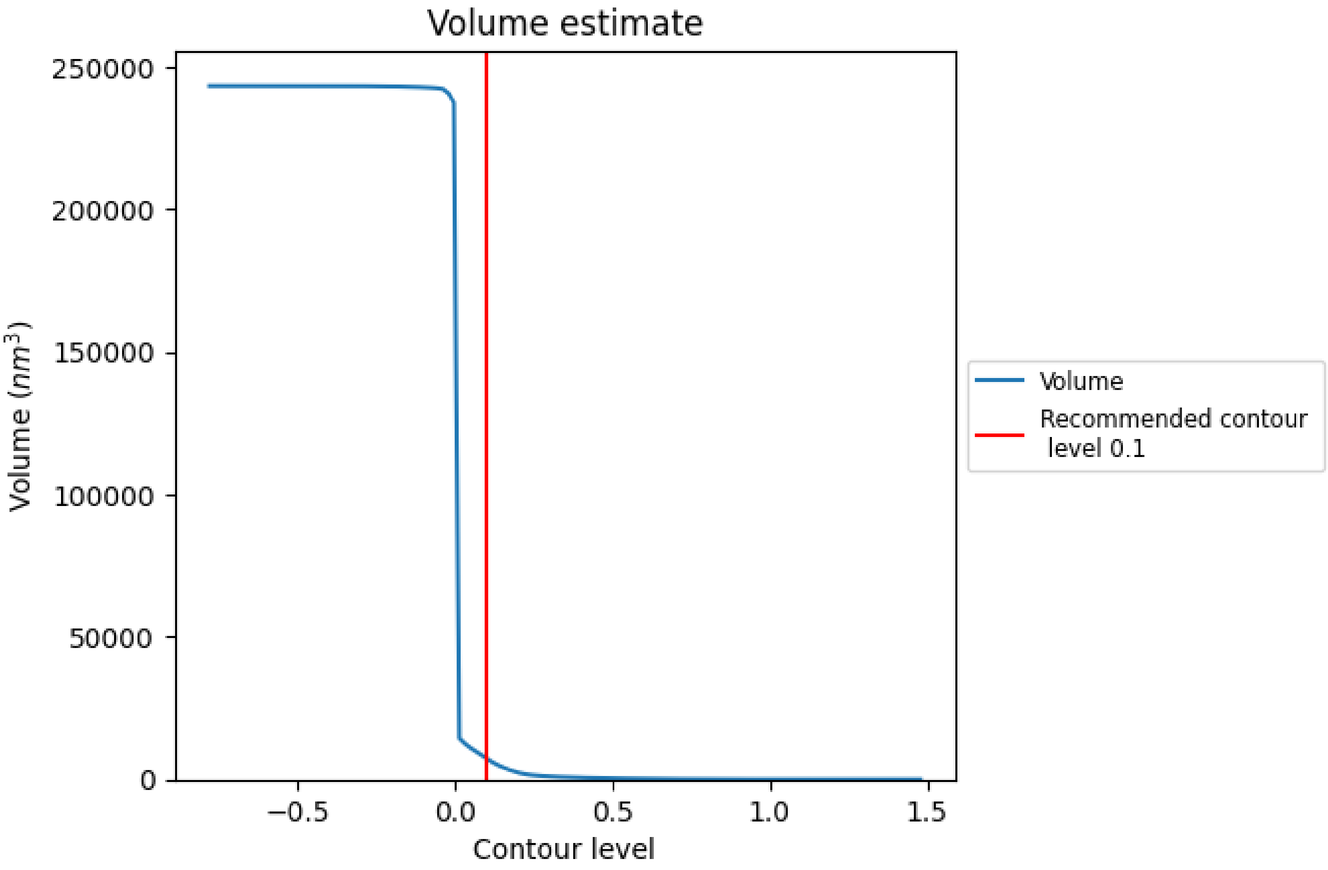
This section contains the results of statistical analysis of the map.

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.

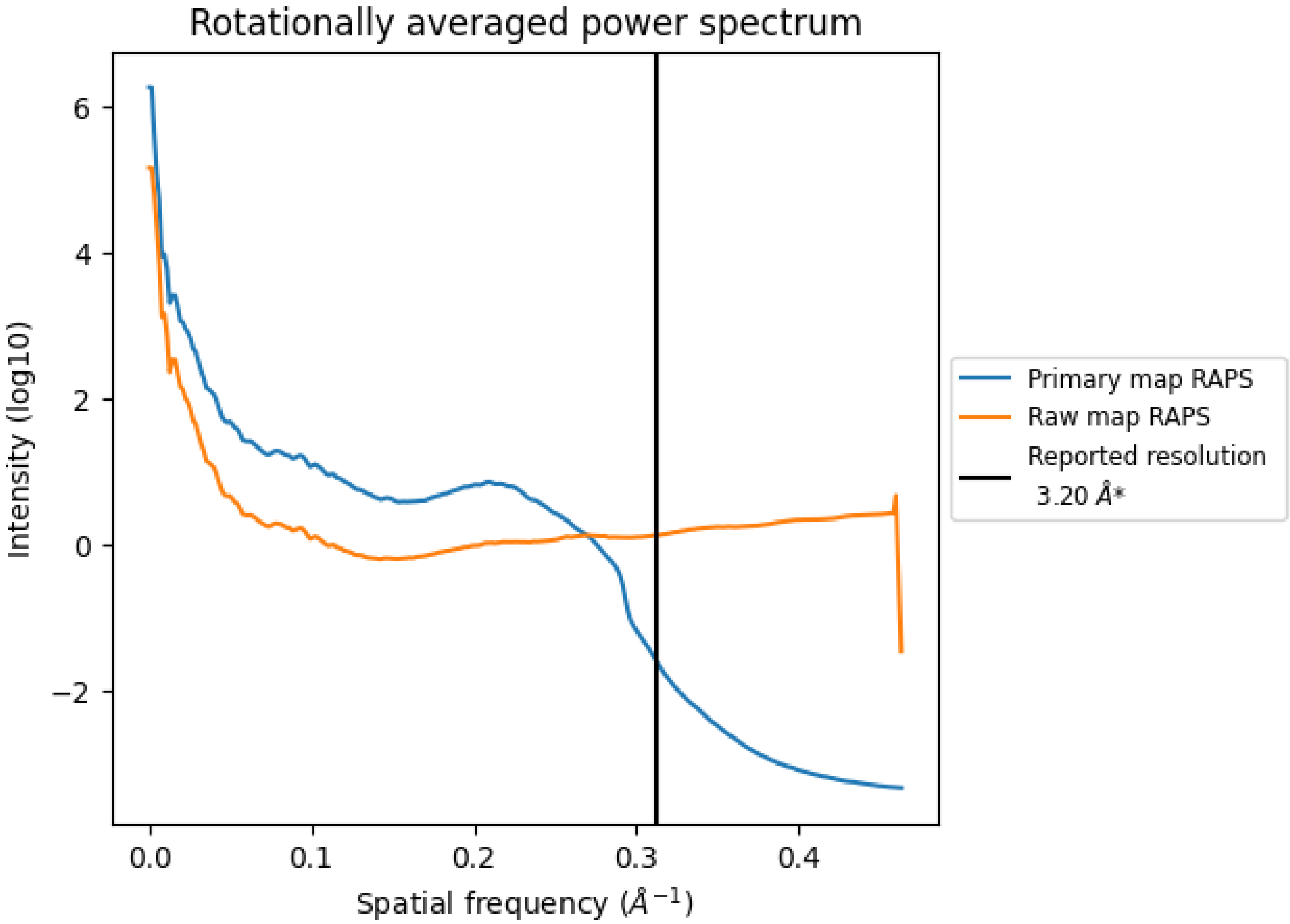
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 7391 nm^3; this corresponds to an approximate mass of 6676 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 ⓘ

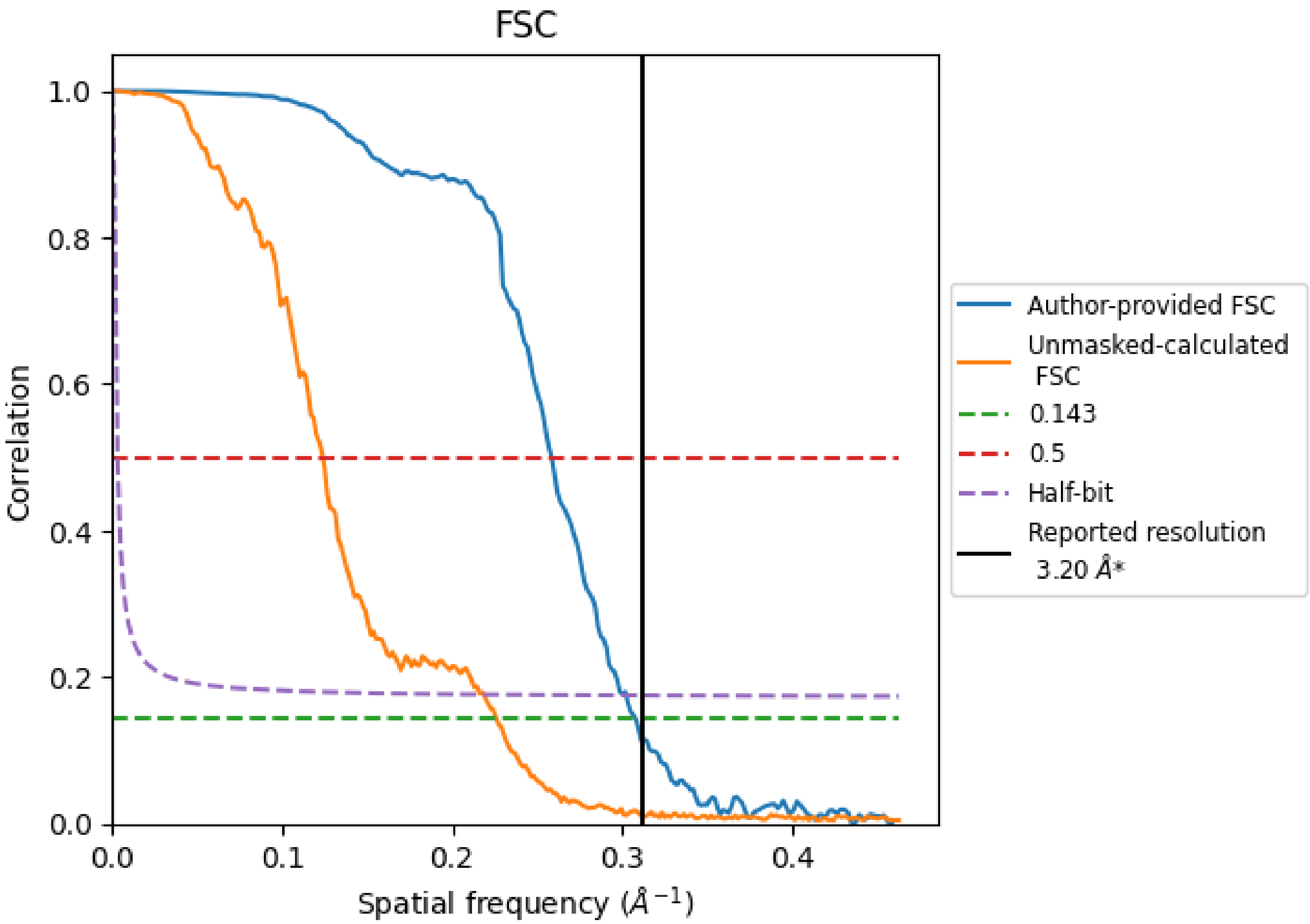


*Reported resolution corresponds to spatial frequency of 0.312 $Å^{-1}$

8 Fourier-Shell correlation ⓘ

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

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.312 $\AA^{-1}$

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.25	3.87	3.31
Unmasked-calculated*	4.42	8.07	4.58

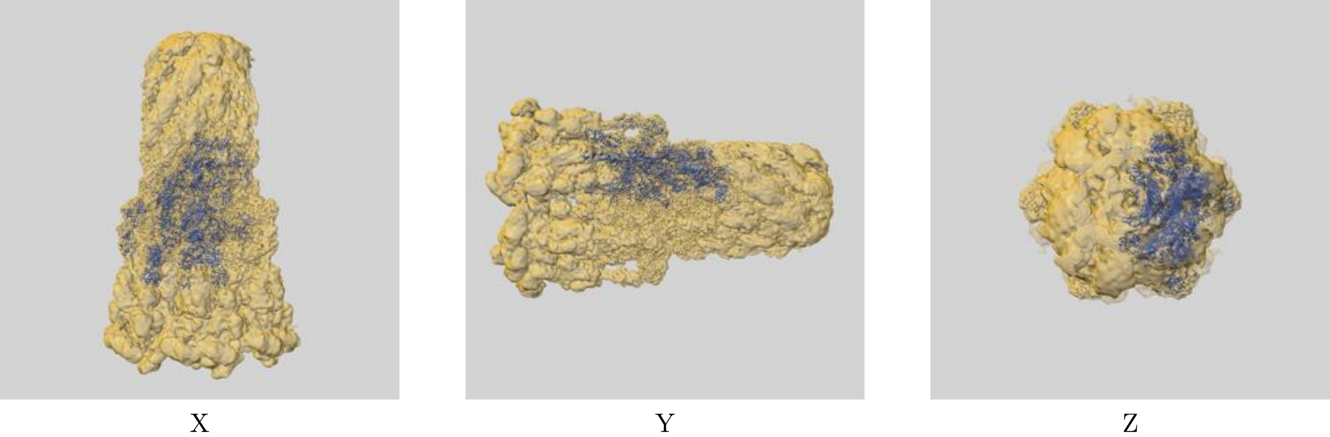
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.42 differs from the reported value 3.2 by more than 10 %

9 Map-model fit ⓘ

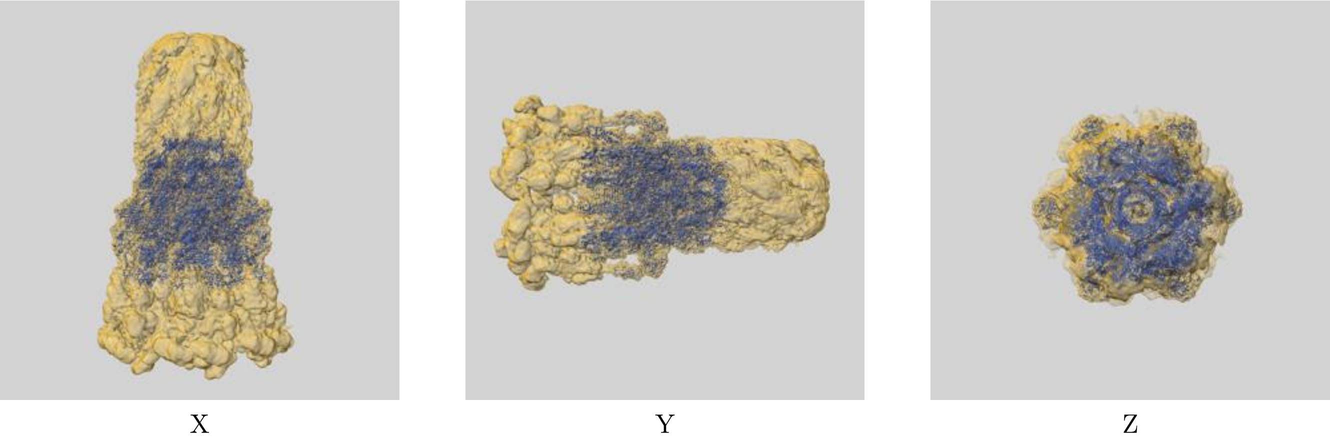
This section contains information regarding the fit between EMDB map EMD-29383 and PDB model 8FQC. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlays

9.1.1 Map-model overlay ⓘ

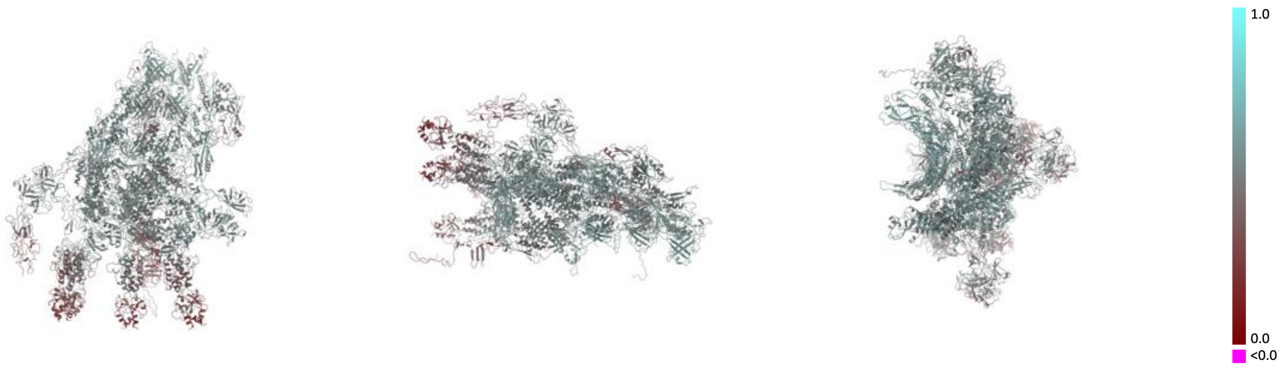


9.1.2 Map-model assembly overlay ⓘ



The images above show the 3D surface view of the map at the recommended contour level 0.1 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.

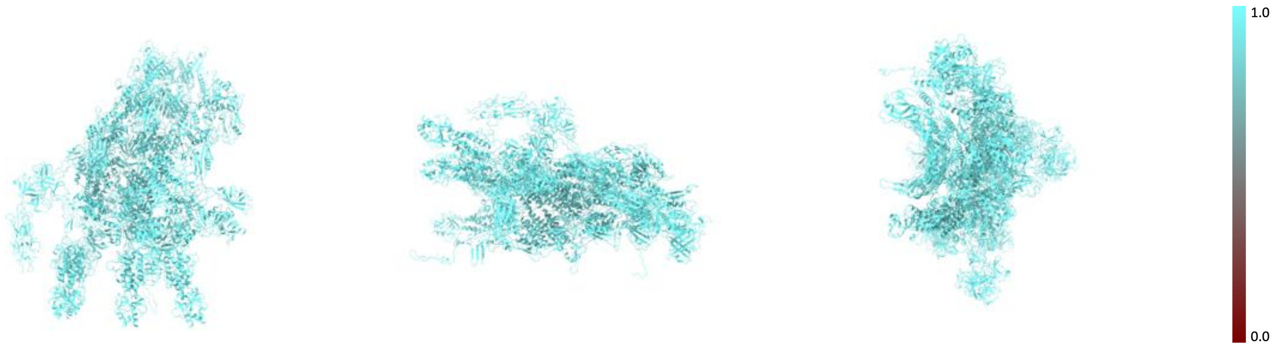
9.2 Q-score mapped to coordinate model ⓘ



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.

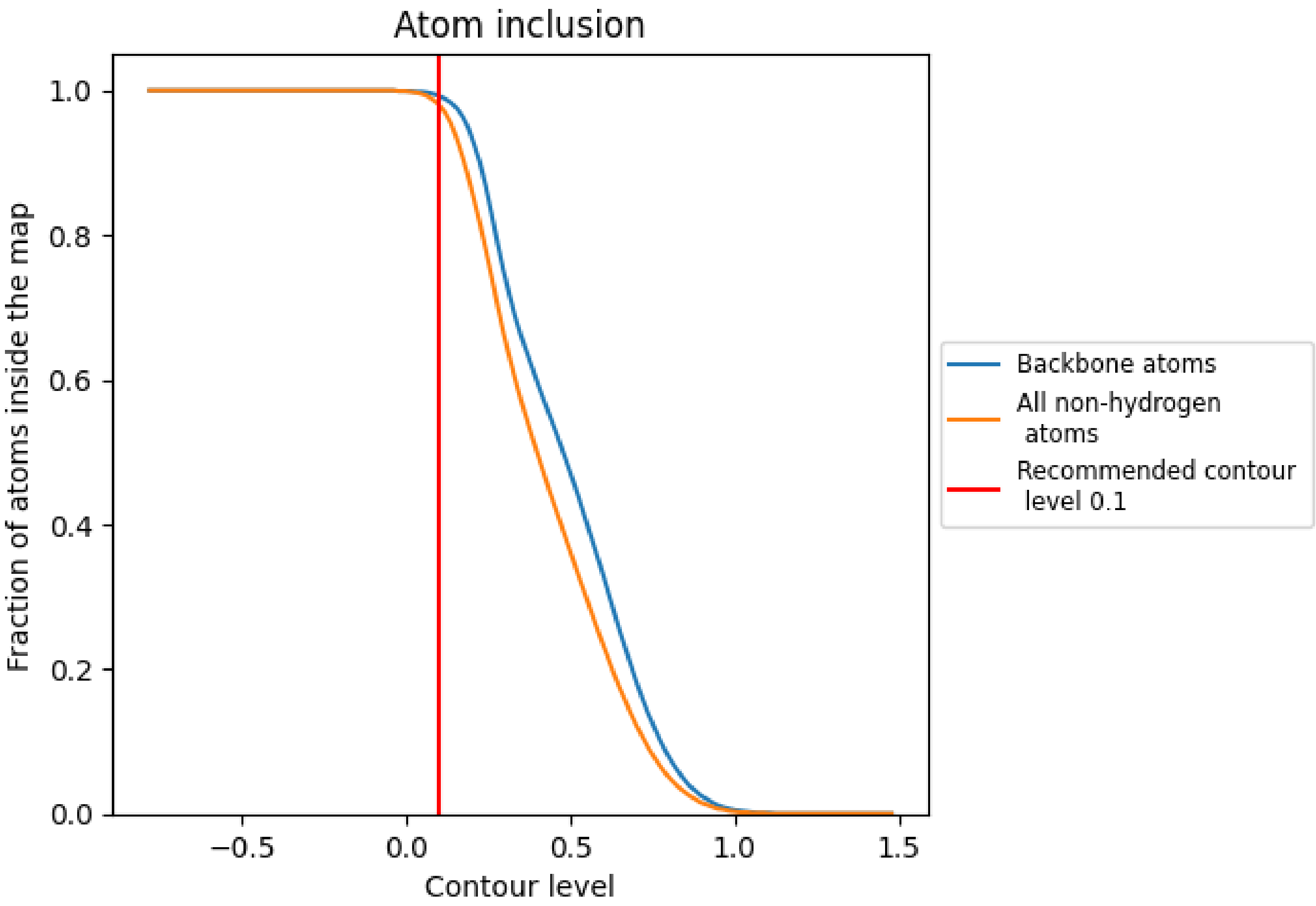
9.3 Atom inclusion mapped to coordinate model ⓘ



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 (0.1).

9.4 Atom inclusion ⓘ



At the recommended contour level, 99% of all backbone atoms, 98% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9810	0.4980
A	0.9070	0.3820
C1	0.9400	0.4770
E1	0.9870	0.5640
F1	0.9840	0.5370
G1	0.9880	0.5390
H1	0.9770	0.5290
I1	0.9860	0.5410
J1	0.9880	0.5400
K1	0.9790	0.4980
P1	0.9880	0.4520
Q1	0.9890	0.4560
R1	0.9820	0.4260
S1	0.9780	0.3790
T1	0.9900	0.3780
U1	0.9780	0.5470
V1	0.9820	0.3670
W1	0.9910	0.4300
X1	0.9860	0.4260
Y1	0.9900	0.4110
a1	0.9840	0.5560
e1	0.9790	0.5530
f1	0.9910	0.5590
g1	0.9820	0.5630
h1	0.9840	0.5390
i1	0.9860	0.5380
j1	0.9780	0.5300
k1	0.9890	0.5440
l1	0.9840	0.5380
m1	0.9800	0.5010
r1	0.9860	0.4470
s1	0.9890	0.4560
t1	0.9870	0.4320
u1	0.9830	0.4140
v1	0.9760	0.3780

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Chain	Atom inclusion	Q-score
w1	🟦 0.9820	🟫 0.3860
x1	🟦 0.9680	🟫 0.3610
y1	🟦 0.9850	🟫 0.4160
z1	🟦 0.9780	🟫 0.4070