



wwPDB EM Validation Summary Report ⓘ

Apr 27, 2026 – 10:28 PM JST

PDB ID : 9WT1 / pdb_00009wt1
EMDB ID : EMD-66213
Title : CryoEM structure of cap module in the contracted AlgoCIS
Authors : Xu, J.; Ericson, C.F.; Toenshoff, E.R.; Pilhofer, M.
Deposited on : 2025-09-15
Resolution : 3.20 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ 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:

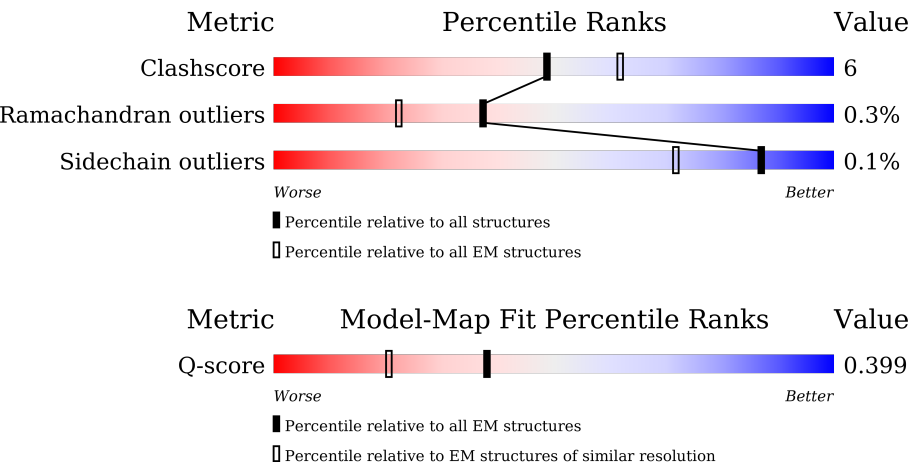
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & 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 3.20 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	15020 (2.70 - 3.70)

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	A	196	<div><div>83%</div><div><div></div><div></div><div></div><div></div></div><div>11% . .</div></div>
1	B	196	<div><div>84%</div><div><div></div><div></div><div></div><div></div></div><div>11% . .</div></div>
1	C	196	<div><div>82%</div><div><div></div><div></div><div></div><div></div></div><div>11% . .</div></div>
1	D	196	<div><div>83%</div><div><div></div><div></div><div></div><div></div></div><div>10% . .</div></div>

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Mol	Chain	Length	Quality of chain
1	E	196	84%
1	F	196	82% 83% 11%
2	1A	692	36% 91% 8%
2	1B	692	34% 92% 8%
2	1C	692	36% 91% 8%
2	1D	692	36% 91% 8%
2	1E	692	34% 91% 8%
2	1F	692	36% 92% 8%
2	2A	692	30% 95% .
2	2B	692	29% 95% .
2	2C	692	31% 95% .
2	2D	692	30% 95% .
2	2E	692	29% 95% .
2	2F	692	31% 95% .
3	1a	142	58% 86% 13% .
3	1b	142	58% 86% 13% .
3	1c	142	60% 86% 13% .
3	1d	142	58% 86% 13% .
3	1e	142	58% 86% 13% .
3	1f	142	61% 86% 13% .
3	2a	142	55% 82% 15% ..
3	2b	142	56% 83% 15% ..
3	2c	142	54% 82% 15% ..
3	2d	142	55% 82% 15% ..
3	2e	142	56% 83% 15% ..

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Mol	Chain	Length	Quality of chain
3	2f	142	<div><div></div><div>54%</div><div></div><div>82%</div><div></div><div>15%</div><div>..</div></div>

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 80766 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 Pvc16 N-terminal domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		
1	B	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		
1	C	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		
1	D	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		
1	E	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		
1	F	188	Total	C	N	O	S	0	0
			1523	969	253	294	7		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	82	ASN	LEU	conflict	UNP A3HTC4
B	82	ASN	LEU	conflict	UNP A3HTC4
C	82	ASN	LEU	conflict	UNP A3HTC4
D	82	ASN	LEU	conflict	UNP A3HTC4
E	82	ASN	LEU	conflict	UNP A3HTC4
F	82	ASN	LEU	conflict	UNP A3HTC4

- Molecule 2 is a protein called Putative phage tail sheath protein FI.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1A	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2A	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	1B	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2B	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	1C	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2C	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	1D	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2D	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	1E	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2E	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	1F	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		
2	2F	689	Total	C	N	O	S	0	0
			4824	3033	832	947	12		

- Molecule 3 is a protein called Phage tail protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	1a	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	2a	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	1b	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	2b	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	1c	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	2c	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	1d	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	2d	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	1e	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	2e	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		
3	1f	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		

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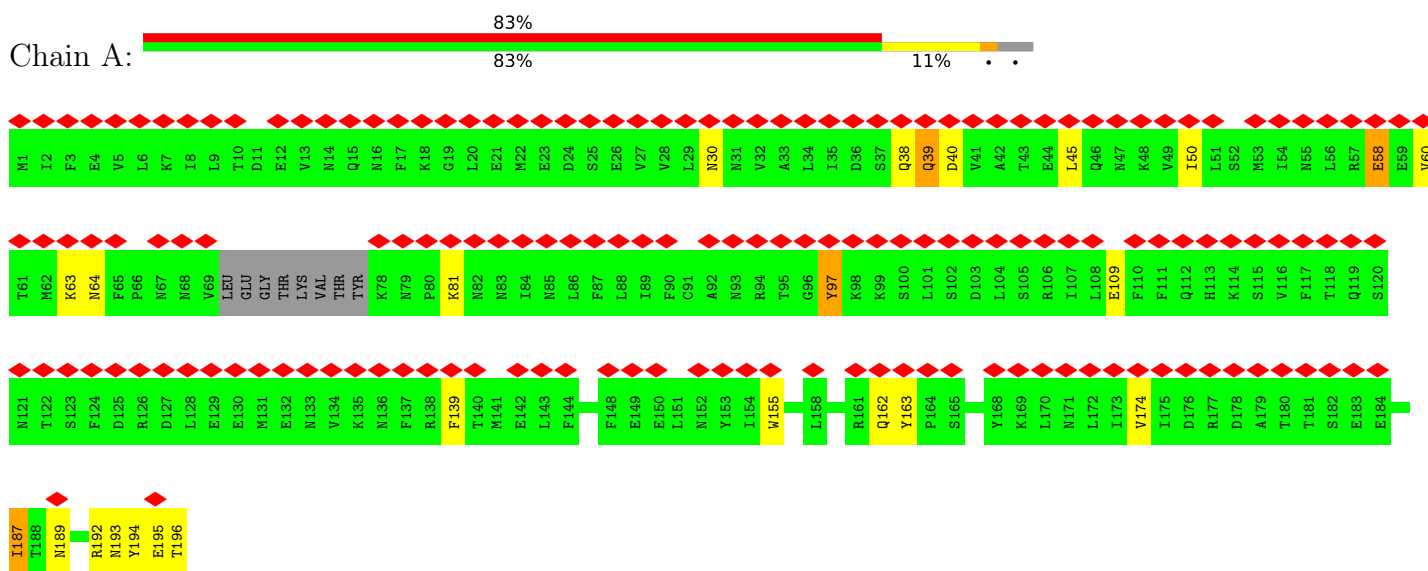
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Mol	Chain	Residues	Atoms					AltConf	Trace
3	2f	141	Total	C	N	O	S	0	0
			1145	731	190	221	3		

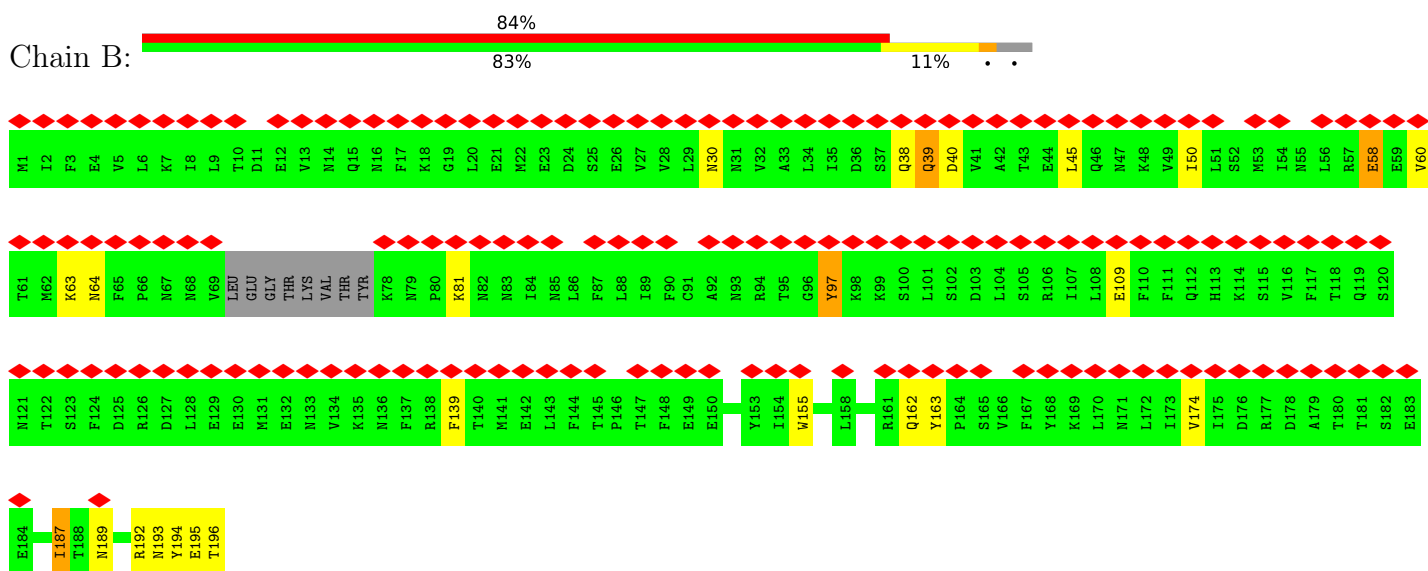
3 Residue-property plots

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.

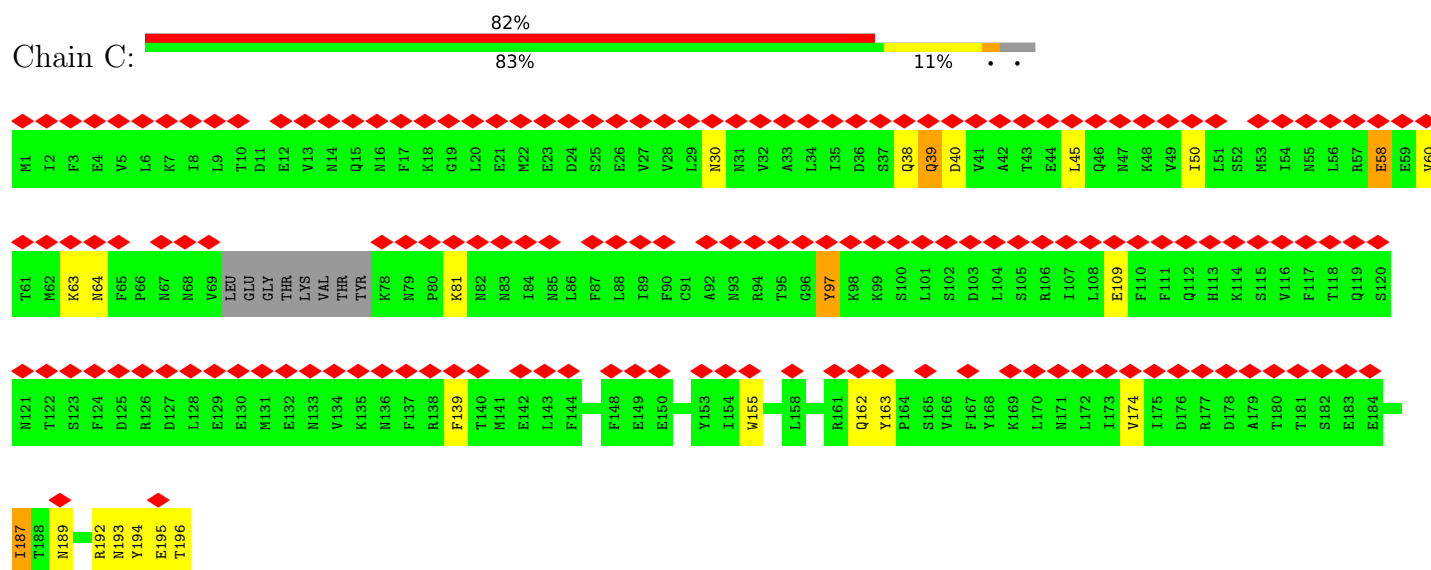
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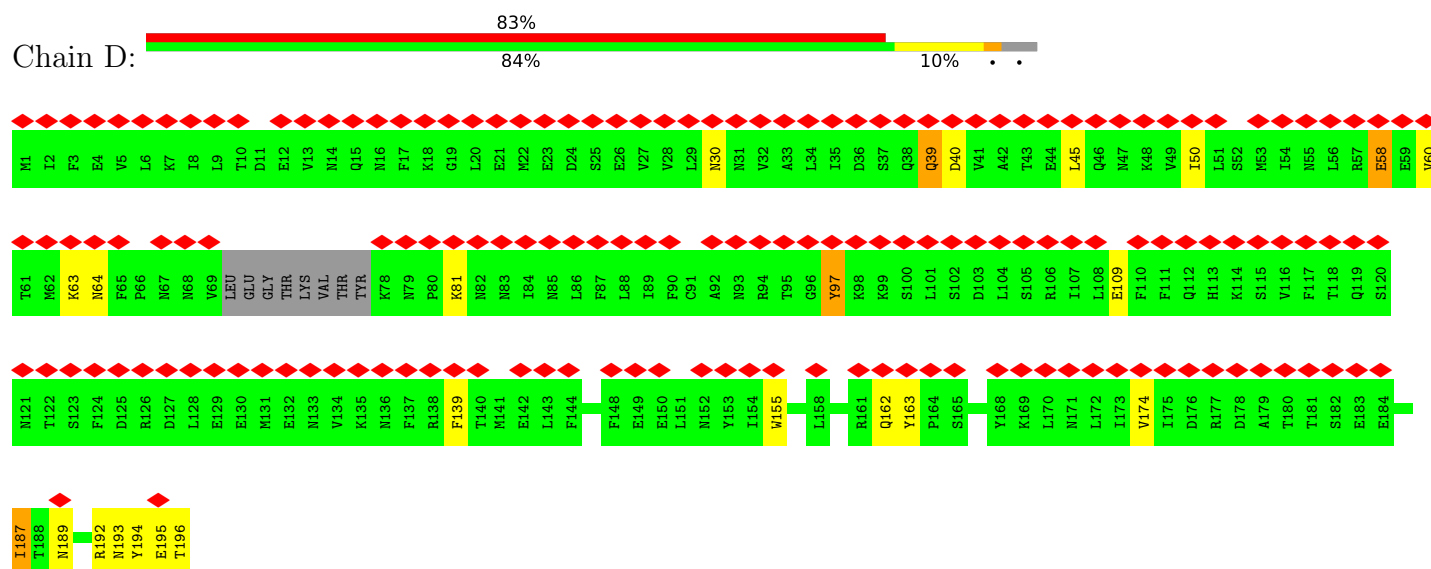
- Molecule 1: Pvc16 N-terminal domain-containing protein



- Molecule 1: Pvc16 N-terminal domain-containing protein

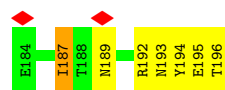


- Molecule 1: Pvc16 N-terminal domain-containing protein

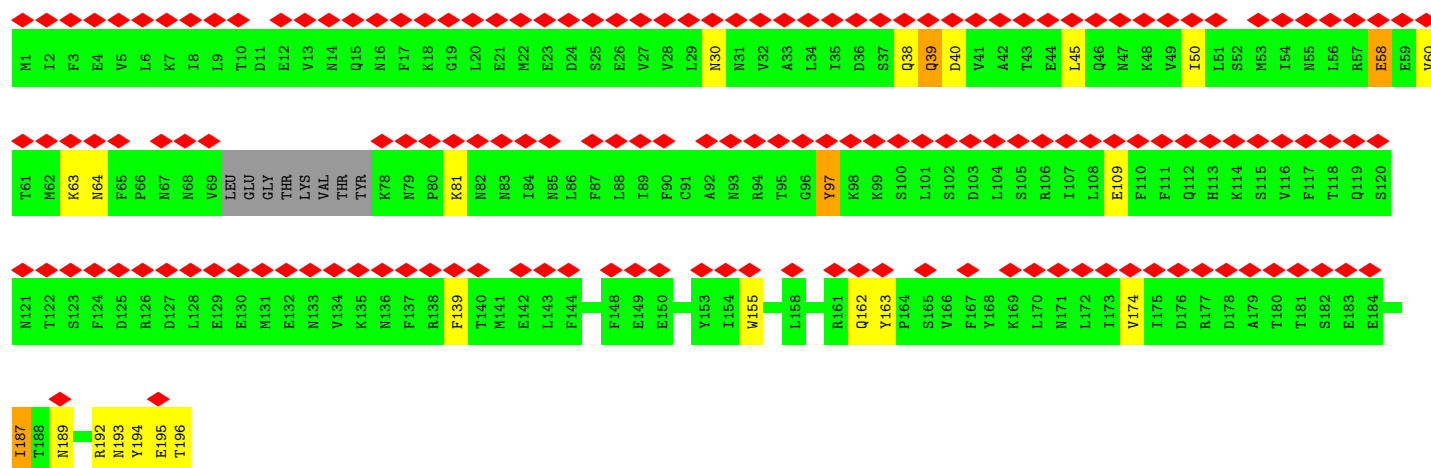
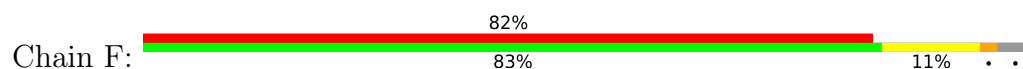


- Molecule 1: Pvc16 N-terminal domain-containing protein

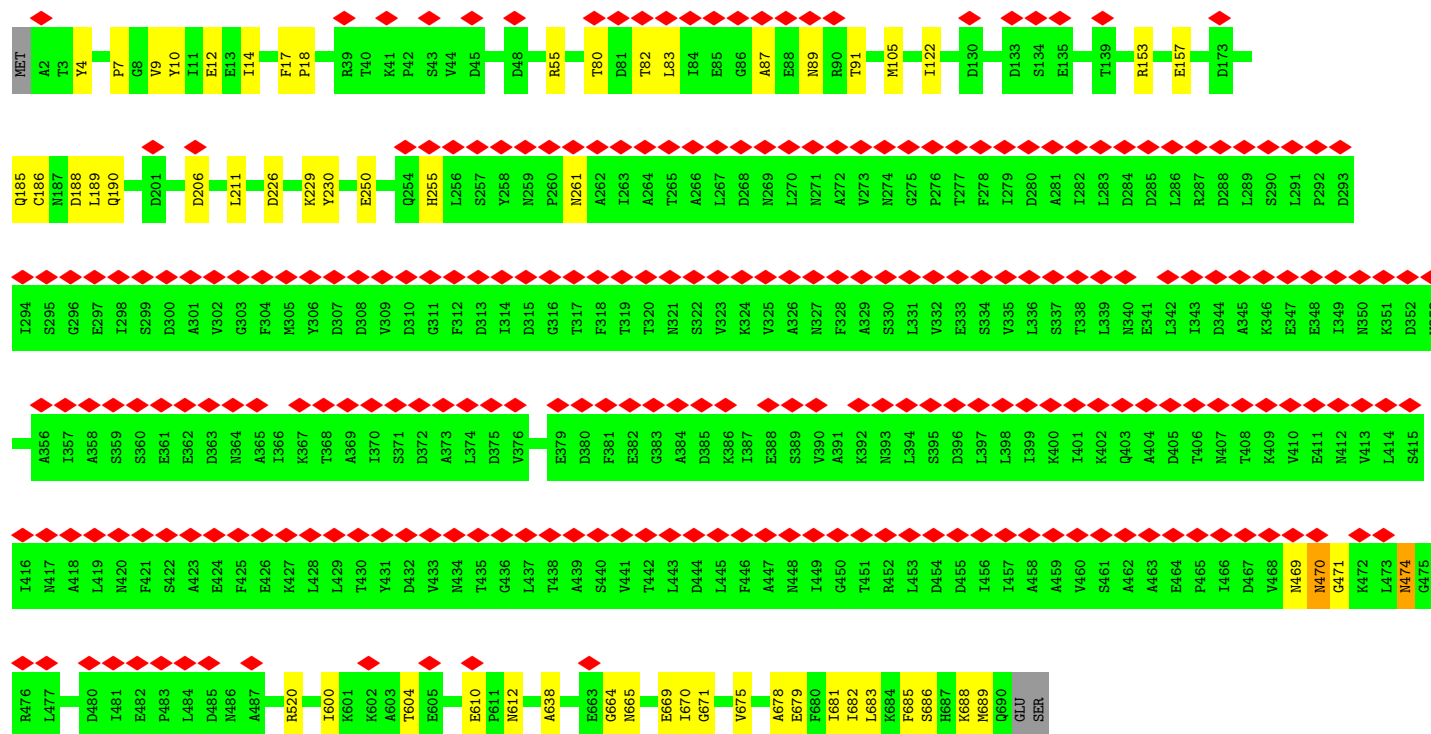
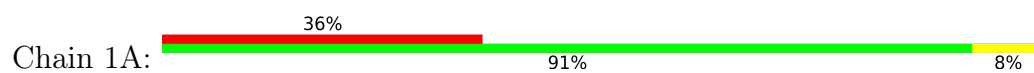




- Molecule 1: Pvc16 N-terminal domain-containing protein



- Molecule 2: Putative phage tail sheath protein FI

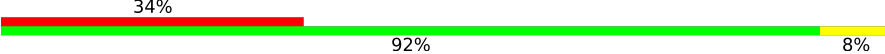


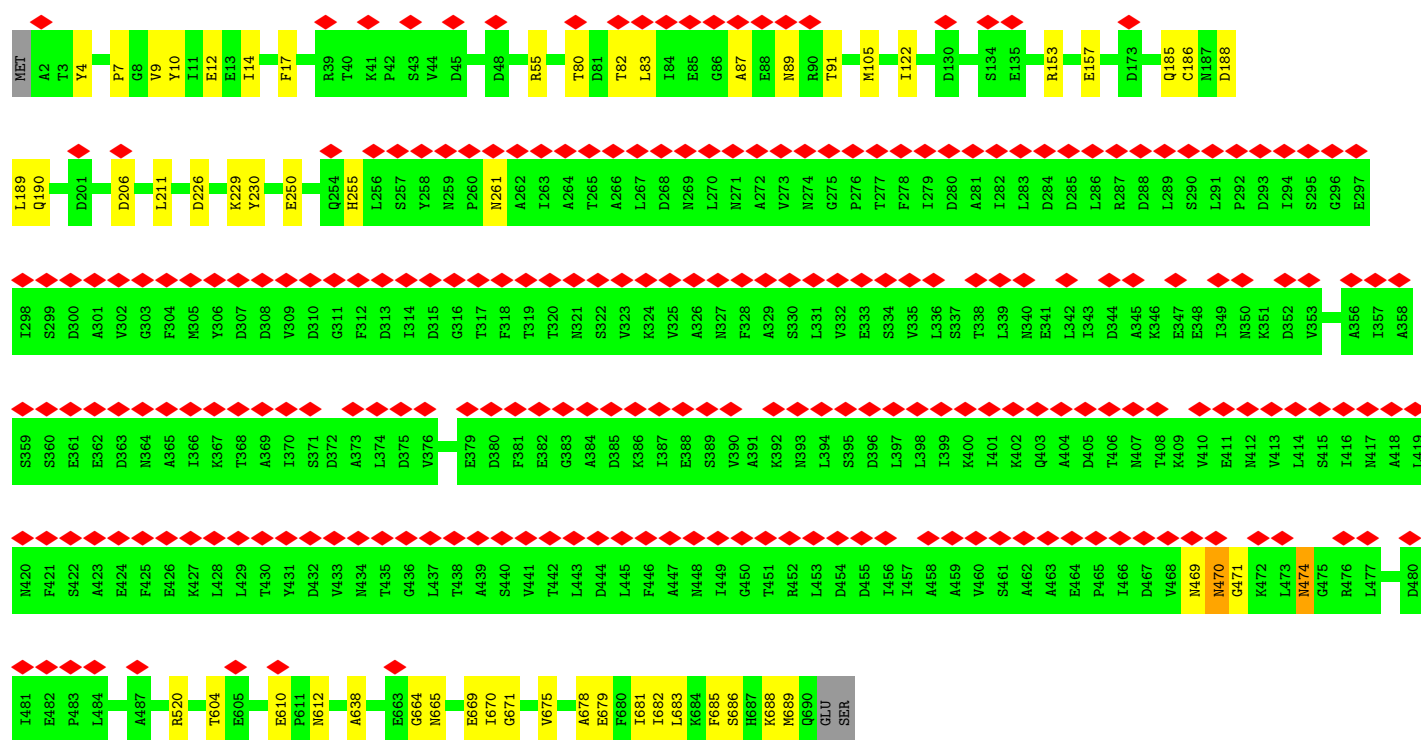
- Molecule 2: Putative phage tail sheath protein FI

Chain 2A: 

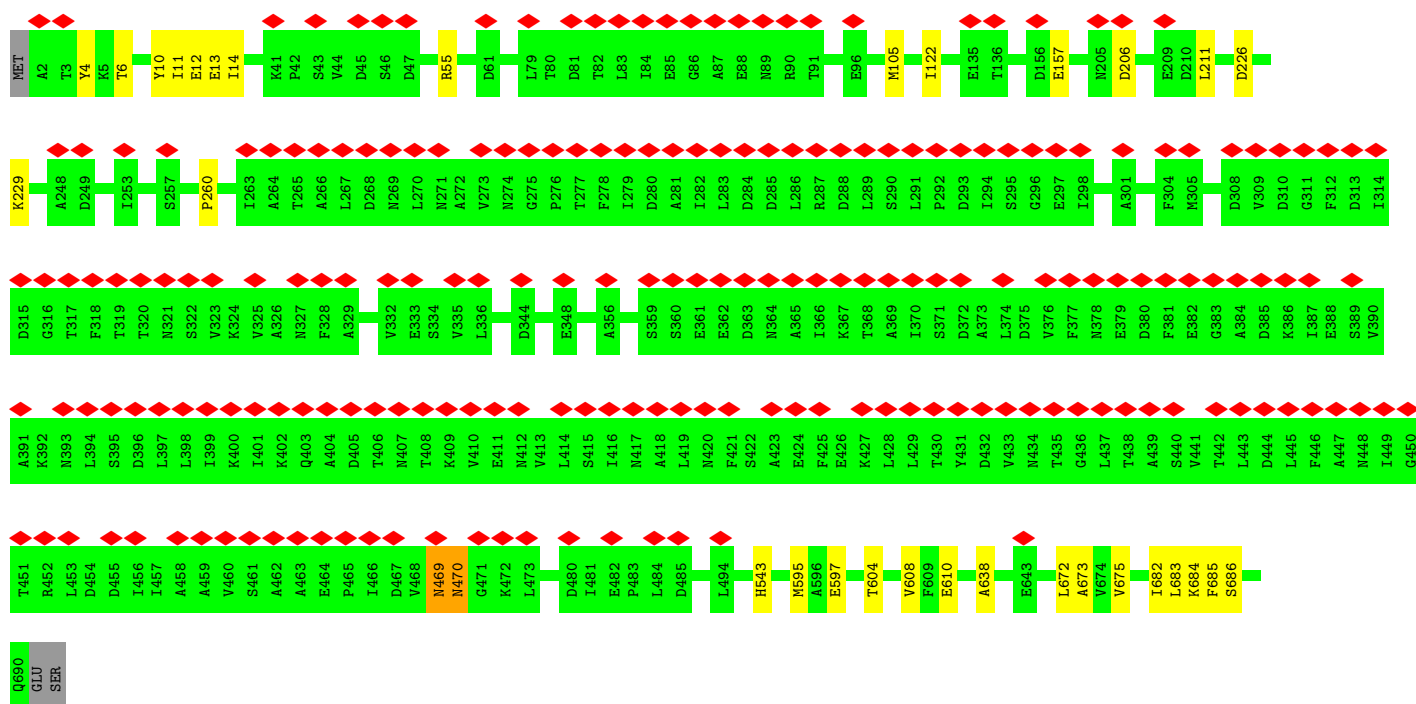


- Molecule 2: Putative phage tail sheath protein FI

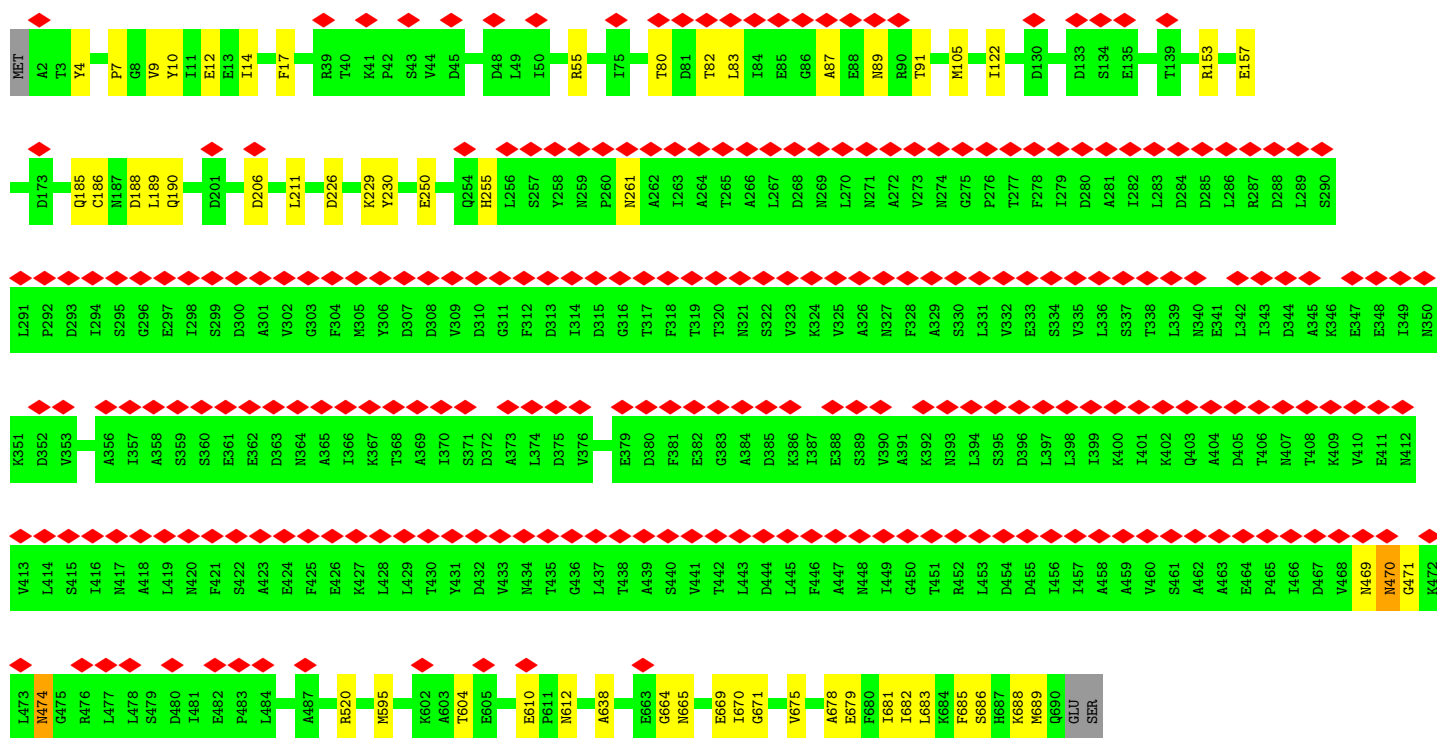
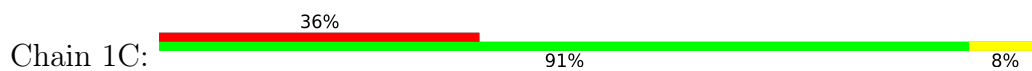
Chain 1B: 



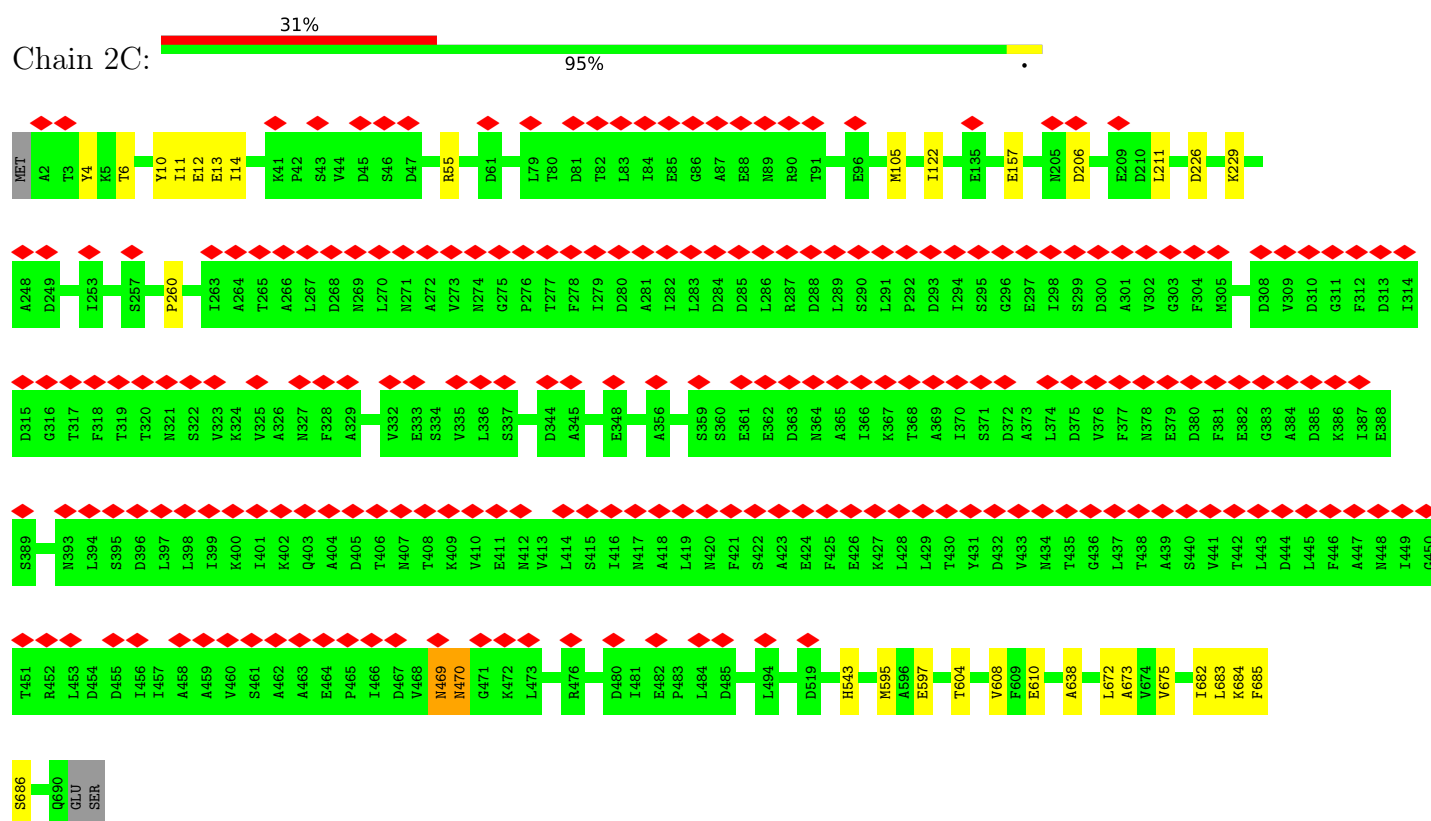
- Molecule 2: Putative phage tail sheath protein FI



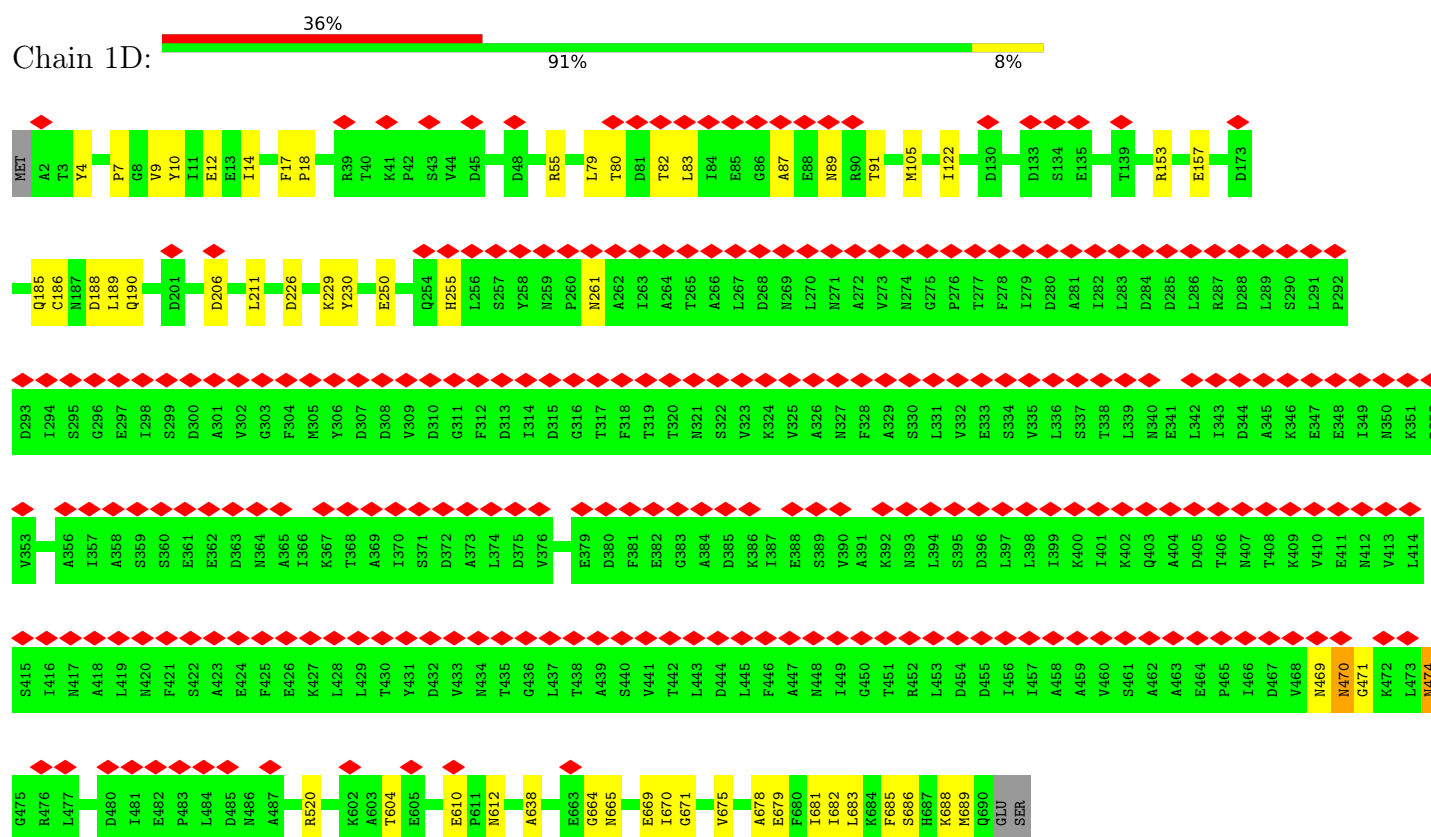
- Molecule 2: Putative phage tail sheath protein FI



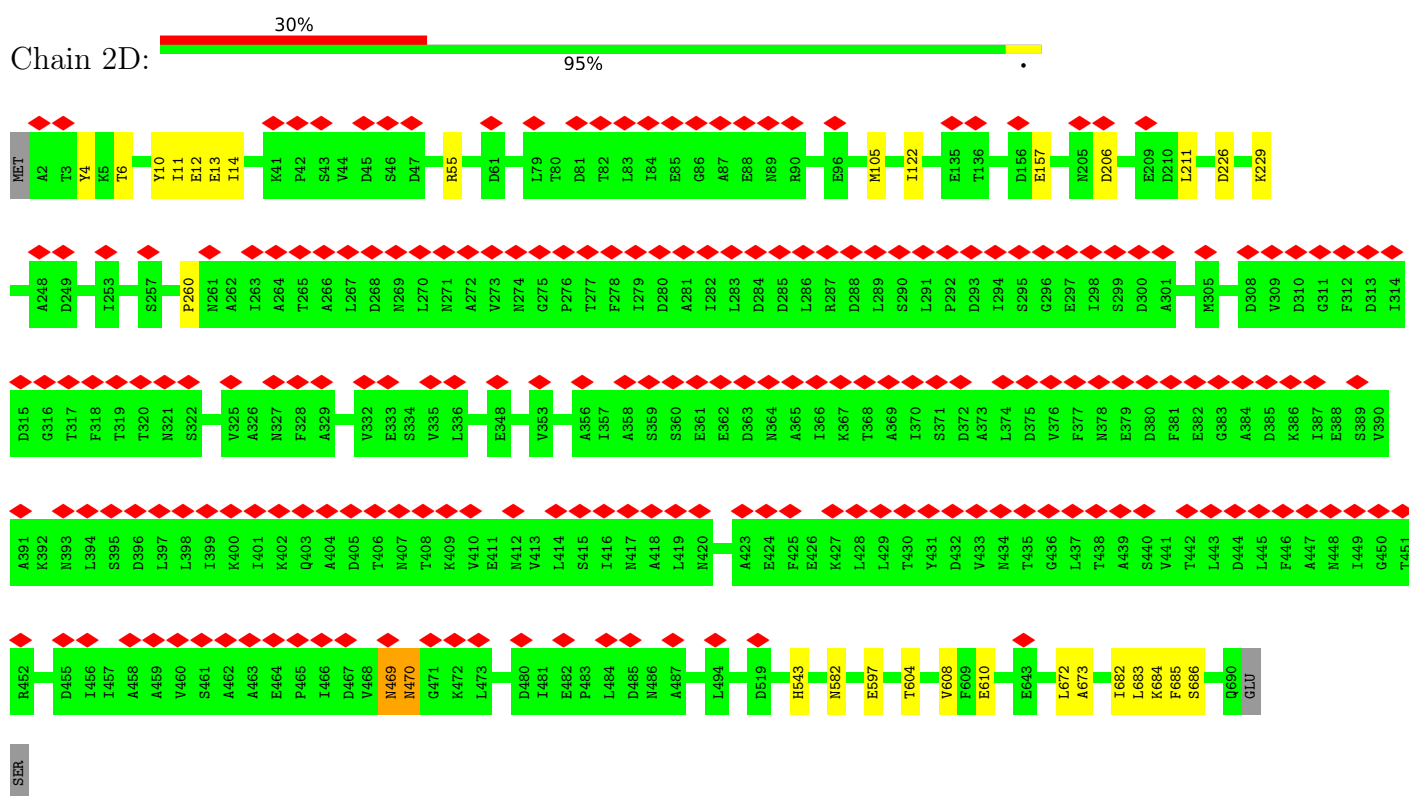
- Molecule 2: Putative phage tail sheath protein FI



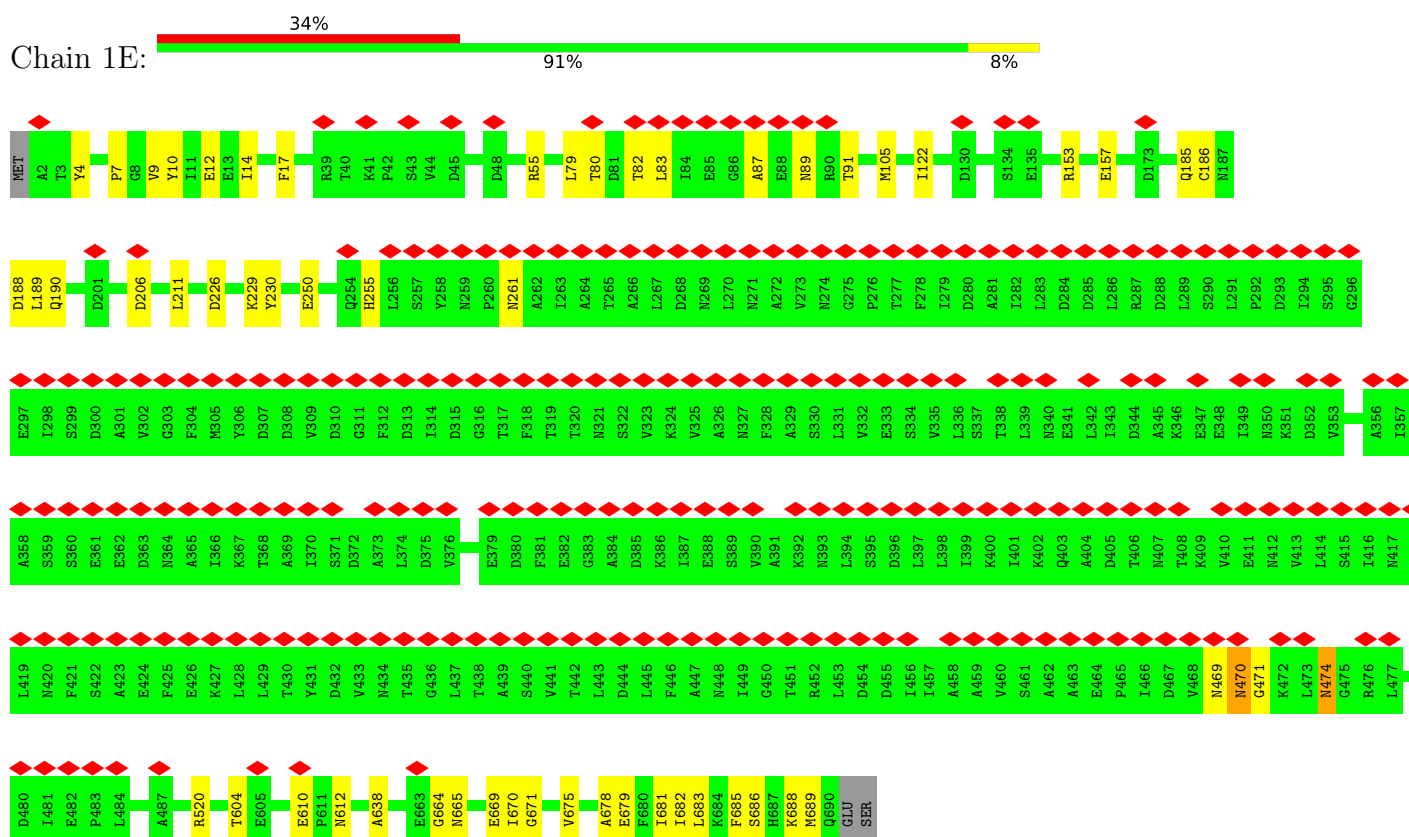
- Molecule 2: Putative phage tail sheath protein FI



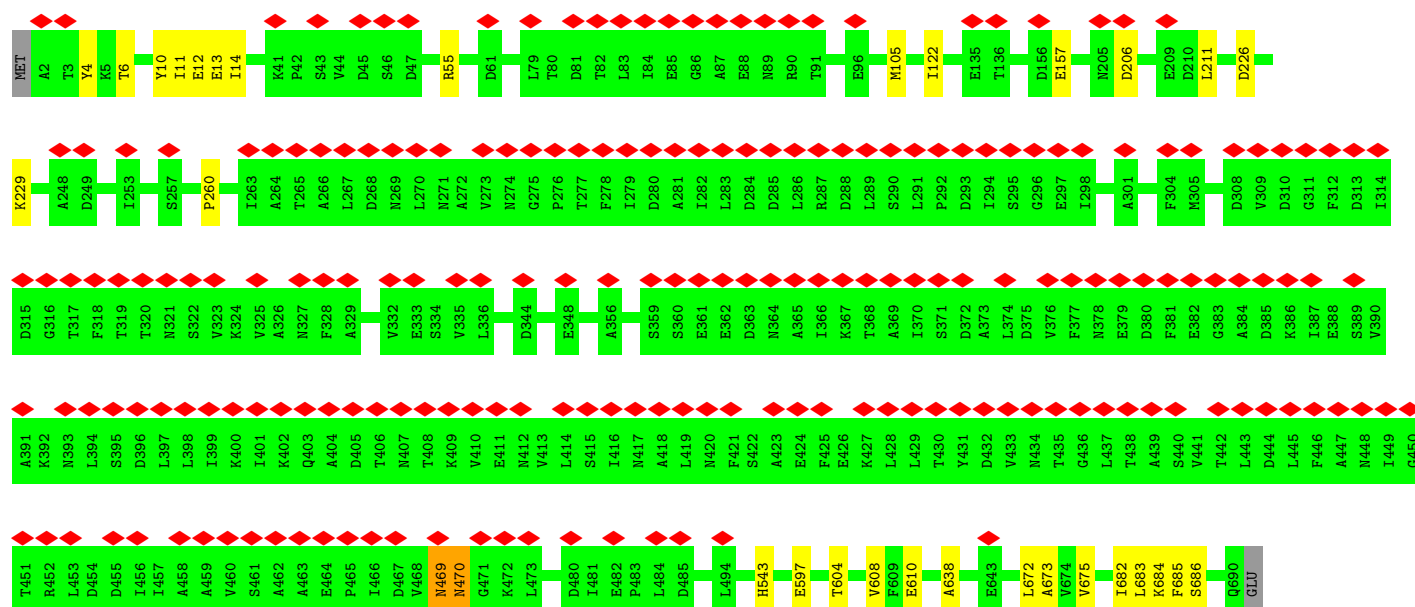
- Molecule 2: Putative phage tail sheath protein FI



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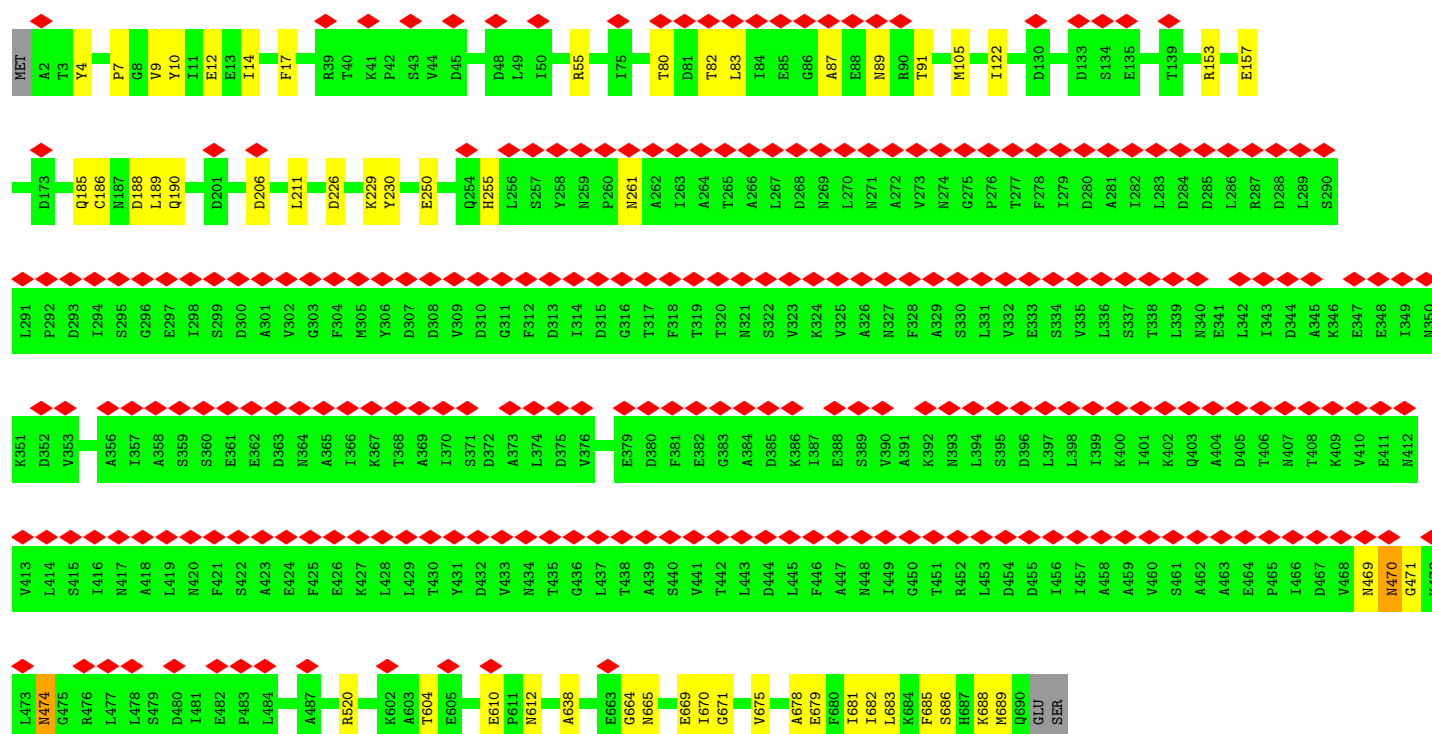


• Molecule 2: Putative phage tail sheath protein FI

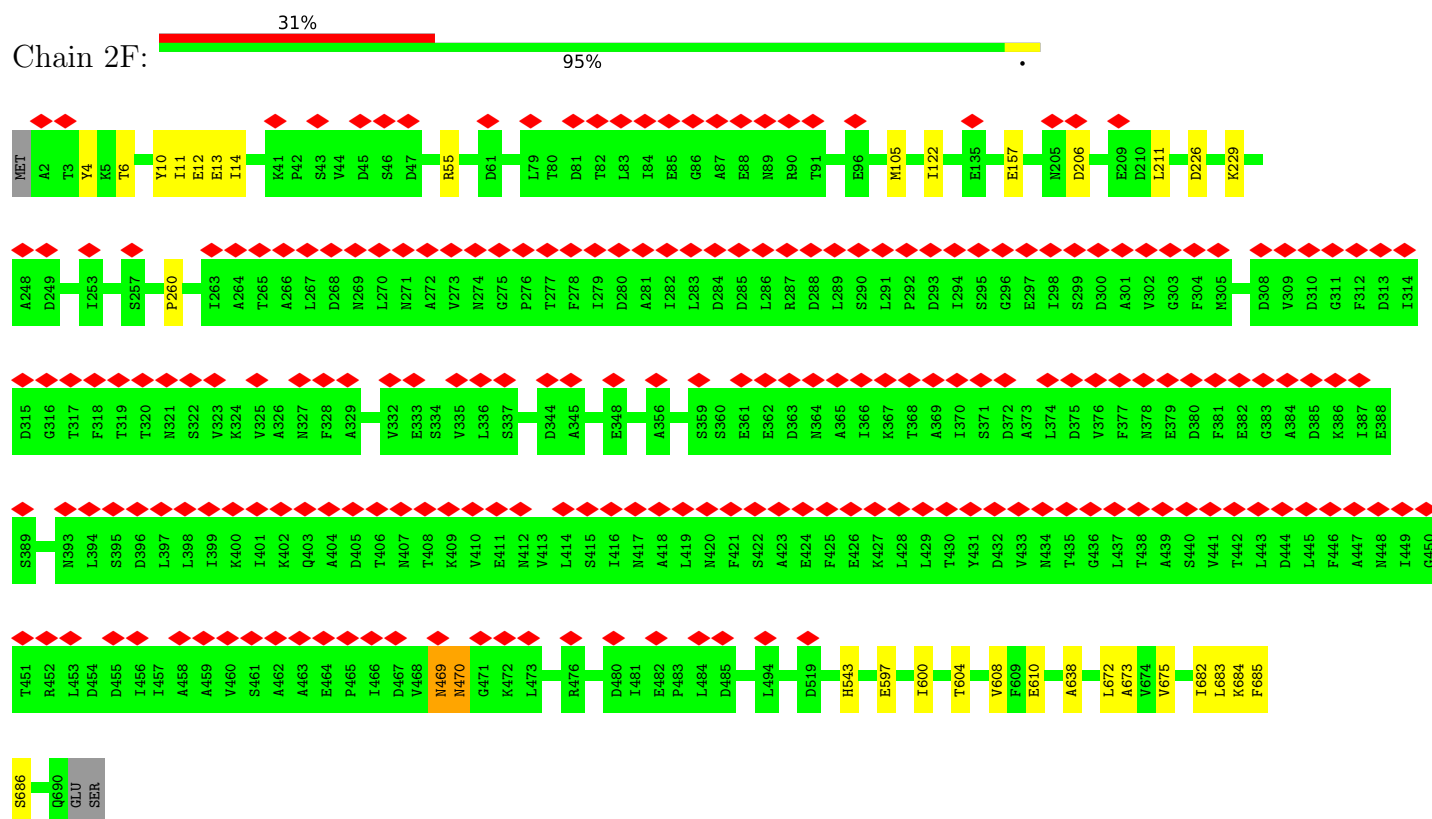


SER

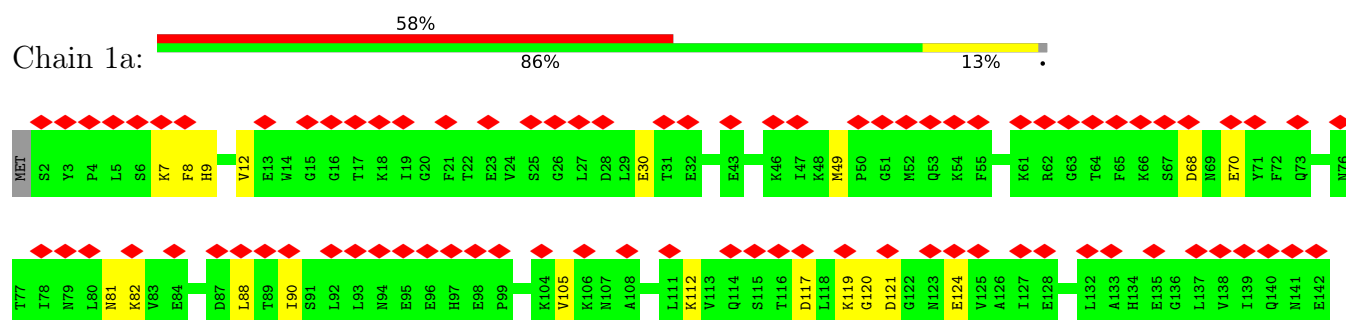
• Molecule 2: Putative phage tail sheath protein FI



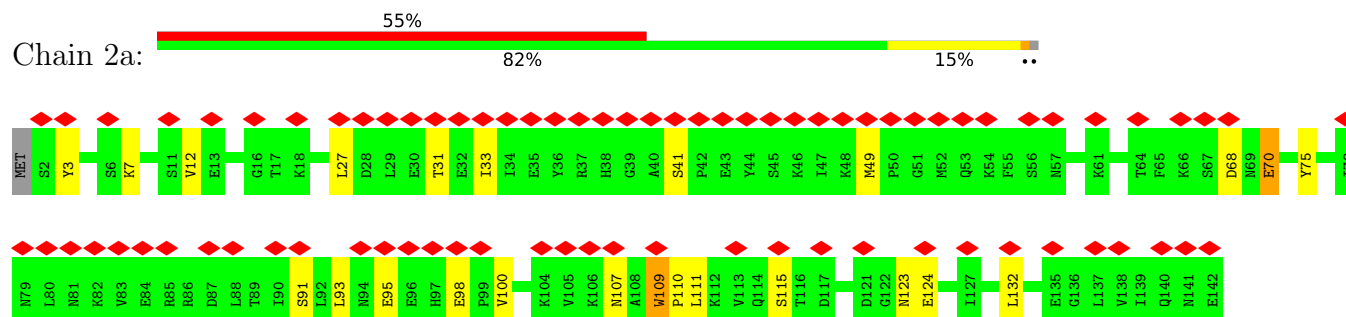
• Molecule 2: Putative phage tail sheath protein FI



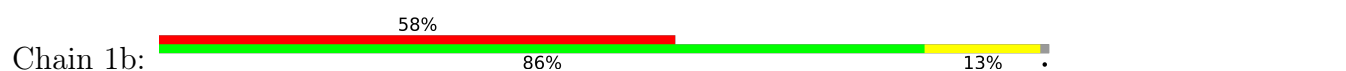
• Molecule 3: Phage tail protein

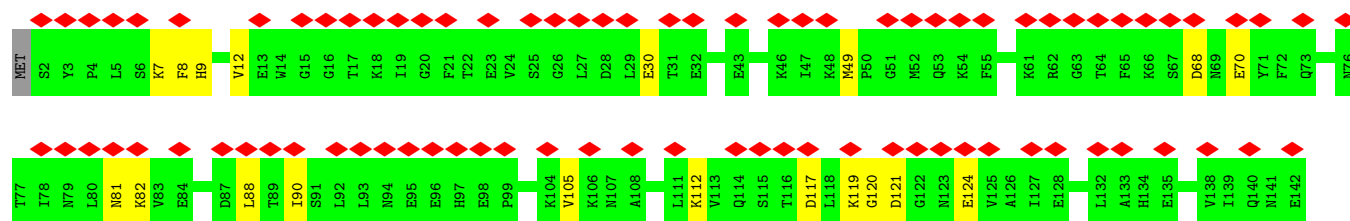


• Molecule 3: Phage tail protein

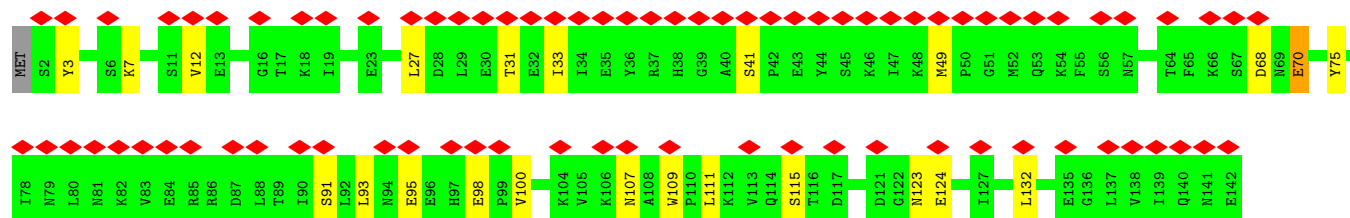
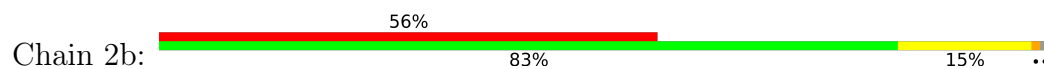


• Molecule 3: Phage tail protein

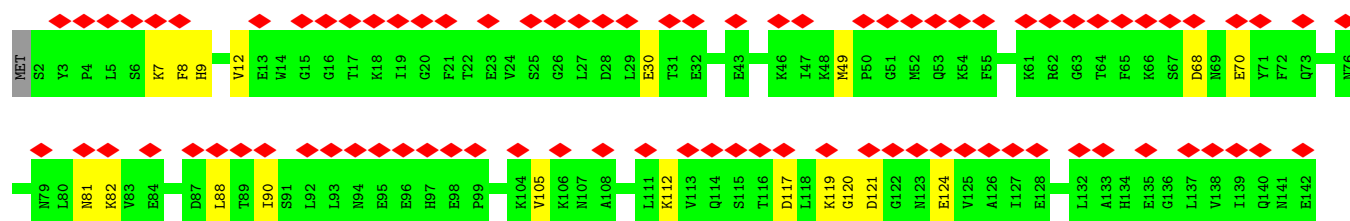
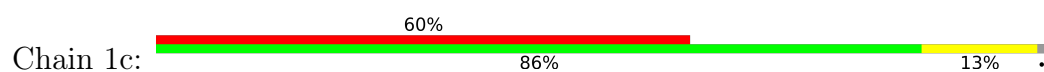




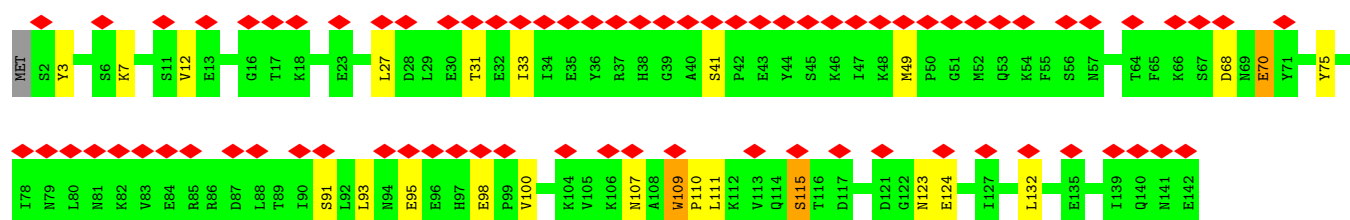
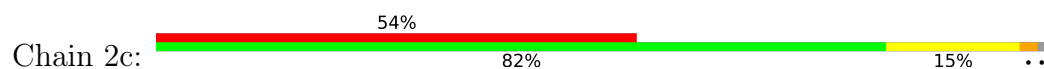
• Molecule 3: Phage tail protein



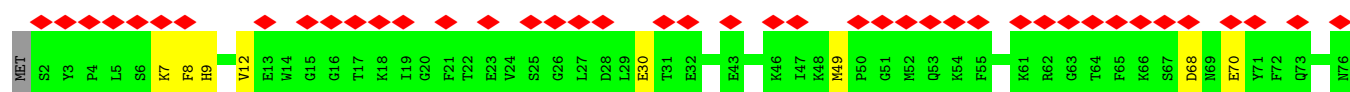
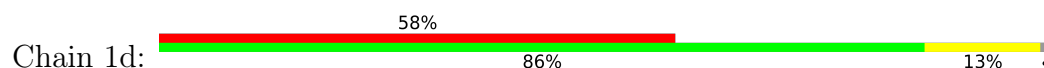
• Molecule 3: Phage tail protein

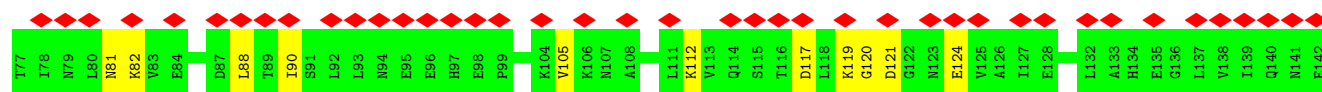


• Molecule 3: Phage tail protein

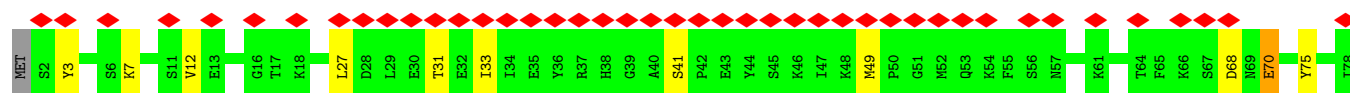
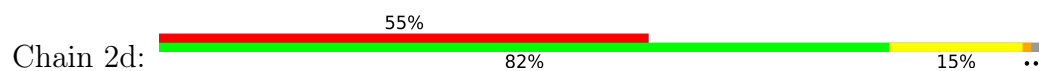


• Molecule 3: Phage tail protein

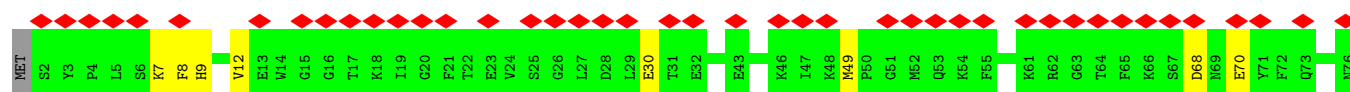
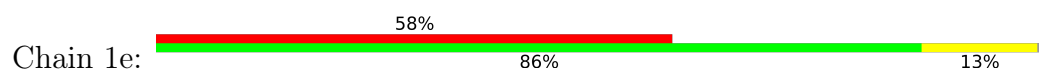




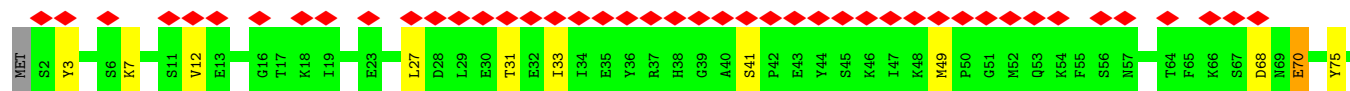
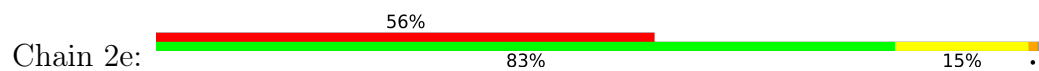
- Molecule 3: Phage tail protein



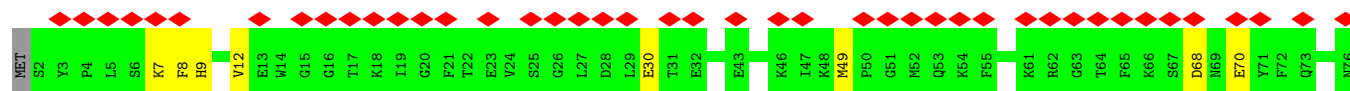
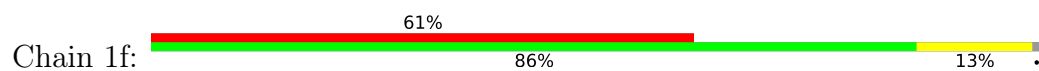
- Molecule 3: Phage tail protein



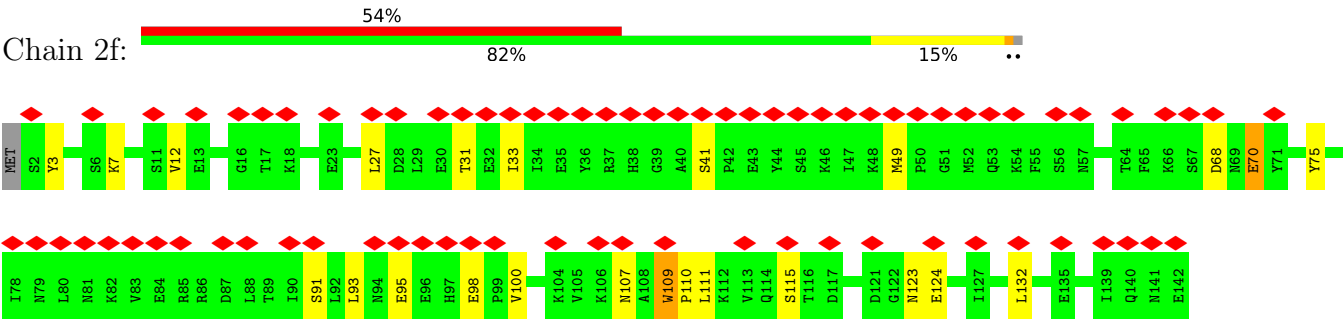
- Molecule 3: Phage tail protein



- Molecule 3: Phage tail protein



- Molecule 3: Phage tail protein



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C6	Depositor
Number of particles used	12926	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 ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.116	Depositor
Minimum map value	-0.088	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	396.0, 396.0, 396.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	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	A	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
1	B	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
1	C	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
1	D	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
1	E	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
1	F	0.79	3/1548 (0.2%)	1.06	3/2090 (0.1%)
2	1A	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	1B	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	1C	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	1D	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	1E	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	1F	0.49	2/4914 (0.0%)	0.84	3/6727 (0.0%)
2	2A	0.44	1/4914 (0.0%)	0.78	0/6727
2	2B	0.44	1/4914 (0.0%)	0.78	0/6727
2	2C	0.44	1/4914 (0.0%)	0.78	0/6727
2	2D	0.44	1/4914 (0.0%)	0.78	0/6727
2	2E	0.44	1/4914 (0.0%)	0.78	0/6727
2	2F	0.44	1/4914 (0.0%)	0.78	0/6727
3	1a	0.37	0/1172	0.61	0/1584
3	1b	0.37	0/1172	0.61	0/1584
3	1c	0.37	0/1172	0.61	0/1584
3	1d	0.37	0/1172	0.61	0/1584
3	1e	0.37	0/1172	0.61	0/1584
3	1f	0.37	0/1172	0.61	0/1584
3	2a	0.90	0/1172	1.31	17/1584 (1.1%)
3	2b	0.90	0/1172	1.31	17/1584 (1.1%)
3	2c	0.90	0/1172	1.31	19/1584 (1.2%)
3	2d	0.90	0/1172	1.31	17/1584 (1.1%)
3	2e	0.90	0/1172	1.31	16/1584 (1.0%)
3	2f	0.90	0/1172	1.31	17/1584 (1.1%)
All	All	0.55	36/82320 (0.0%)	0.88	139/112272 (0.1%)

The worst 5 of 36 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	97	TYR	CZ-OH	-10.31	1.16	1.38
1	D	97	TYR	CZ-OH	-10.31	1.16	1.38
1	C	97	TYR	CZ-OH	-10.31	1.16	1.38
1	F	97	TYR	CZ-OH	-10.31	1.16	1.38
1	B	97	TYR	CZ-OH	-10.31	1.16	1.38

The worst 5 of 139 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2f	109	TRP	CA-C-N	9.62	131.87	119.84
3	2f	109	TRP	C-N-CA	9.62	131.87	119.84
3	2a	109	TRP	CA-C-N	9.61	131.85	119.84
3	2a	109	TRP	C-N-CA	9.61	131.85	119.84
3	2d	109	TRP	CA-C-N	9.61	131.85	119.84

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	A	1523	0	1484	63	0
1	B	1523	0	1484	62	0
1	C	1523	0	1484	62	0
1	D	1523	0	1484	61	0
1	E	1523	0	1484	63	0
1	F	1523	0	1484	64	0
2	1A	4824	0	4183	78	0
2	1B	4824	0	4183	76	0
2	1C	4824	0	4183	75	0
2	1D	4824	0	4183	75	0
2	1E	4824	0	4183	75	0
2	1F	4824	0	4183	76	0
2	2A	4824	0	4183	38	0
2	2B	4824	0	4183	38	0
2	2C	4824	0	4183	38	0
2	2D	4824	0	4183	37	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	2E	4824	0	4183	37	0
2	2F	4824	0	4183	38	0
3	1a	1145	0	1118	29	0
3	1b	1145	0	1118	29	0
3	1c	1145	0	1118	29	0
3	1d	1145	0	1118	29	0
3	1e	1145	0	1118	28	0
3	1f	1145	0	1118	29	0
3	2a	1145	0	1118	24	0
3	2b	1145	0	1118	23	0
3	2c	1145	0	1118	24	0
3	2d	1145	0	1118	24	0
3	2e	1145	0	1118	24	0
3	2f	1145	0	1118	24	0
All	All	80766	0	72516	883	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 883 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)
2:2E:608:VAL:O	2:1F:678:ALA:O	1.58	1.22
2:2A:608:VAL:O	2:1B:678:ALA:O	1.58	1.21
2:2C:608:VAL:O	2:1D:678:ALA:O	1.58	1.21
2:2B:608:VAL:O	2:1C:678:ALA:O	1.58	1.21
2:1A:678:ALA:O	2:2F:608:VAL:O	1.58	1.21

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	184/196 (94%)	180 (98%)	4 (2%)	0	100	100
1	B	184/196 (94%)	181 (98%)	3 (2%)	0	100	100
1	C	184/196 (94%)	180 (98%)	4 (2%)	0	100	100
1	D	184/196 (94%)	180 (98%)	4 (2%)	0	100	100
1	E	184/196 (94%)	180 (98%)	4 (2%)	0	100	100
1	F	184/196 (94%)	181 (98%)	3 (2%)	0	100	100
2	1A	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	1B	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	1C	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	1D	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	1E	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	1F	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2A	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2B	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2C	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2D	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2E	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
2	2F	687/692 (99%)	670 (98%)	14 (2%)	3 (0%)	30	62
3	1a	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	1b	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	1c	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	1d	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	1e	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	1f	139/142 (98%)	135 (97%)	4 (3%)	0	100	100
3	2a	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
3	2b	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
3	2c	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
3	2d	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
3	2e	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
3	2f	139/142 (98%)	137 (99%)	2 (1%)	0	100	100
All	All	11016/11184 (98%)	10754 (98%)	226 (2%)	36 (0%)	37	68

5 of 36 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	1E	261	ASN
2	1A	261	ASN
2	1A	469	ASN
2	1B	261	ASN
2	1B	469	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	A	171/185 (92%)	170 (99%)	1 (1%)	78	84
1	B	171/185 (92%)	170 (99%)	1 (1%)	78	84
1	C	171/185 (92%)	170 (99%)	1 (1%)	78	84
1	D	171/185 (92%)	170 (99%)	1 (1%)	78	84
1	E	171/185 (92%)	170 (99%)	1 (1%)	78	84
1	F	171/185 (92%)	170 (99%)	1 (1%)	78	84
2	1A	414/593 (70%)	414 (100%)	0	100	100
2	1B	414/593 (70%)	414 (100%)	0	100	100
2	1C	414/593 (70%)	414 (100%)	0	100	100
2	1D	414/593 (70%)	414 (100%)	0	100	100
2	1E	414/593 (70%)	414 (100%)	0	100	100
2	1F	414/593 (70%)	414 (100%)	0	100	100
2	2A	414/593 (70%)	414 (100%)	0	100	100
2	2B	414/593 (70%)	414 (100%)	0	100	100
2	2C	414/593 (70%)	414 (100%)	0	100	100
2	2D	414/593 (70%)	414 (100%)	0	100	100
2	2E	414/593 (70%)	414 (100%)	0	100	100
2	2F	414/593 (70%)	414 (100%)	0	100	100
3	1a	127/128 (99%)	127 (100%)	0	100	100
3	1b	127/128 (99%)	127 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	1c	127/128 (99%)	127 (100%)	0	100	100
3	1d	127/128 (99%)	127 (100%)	0	100	100
3	1e	127/128 (99%)	127 (100%)	0	100	100
3	1f	127/128 (99%)	127 (100%)	0	100	100
3	2a	127/128 (99%)	127 (100%)	0	100	100
3	2b	127/128 (99%)	127 (100%)	0	100	100
3	2c	127/128 (99%)	127 (100%)	0	100	100
3	2d	127/128 (99%)	127 (100%)	0	100	100
3	2e	127/128 (99%)	127 (100%)	0	100	100
3	2f	127/128 (99%)	127 (100%)	0	100	100
All	All	7518/9762 (77%)	7512 (100%)	6 (0%)	87	91

5 of 6 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	187	ILE
1	E	187	ILE
1	F	187	ILE
1	B	187	ILE
1	A	187	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 124 such sidechains are listed below:

Mol	Chain	Res	Type
2	2C	245	GLN
2	1F	254	GLN
2	1D	486	ASN
2	1F	245	GLN
2	2F	469	ASN

5.3.3 RNA ⓘ

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.

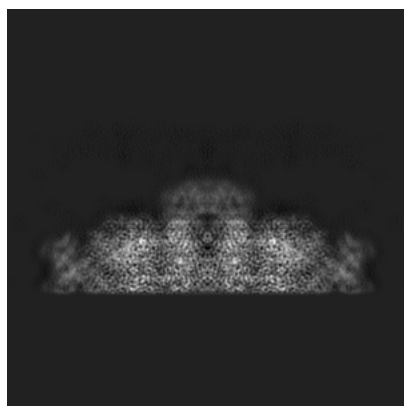
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-66213. These allow visual inspection of the internal detail of the map and identification of artifacts.

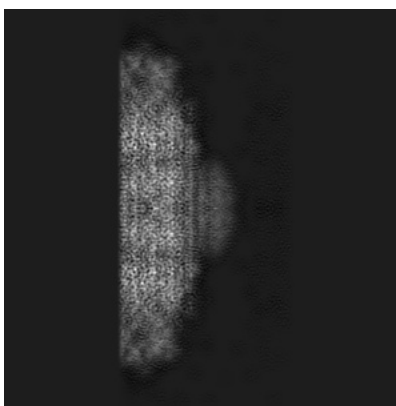
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

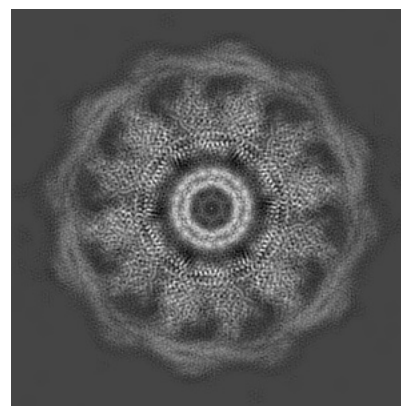
6.1.1 Primary map



X

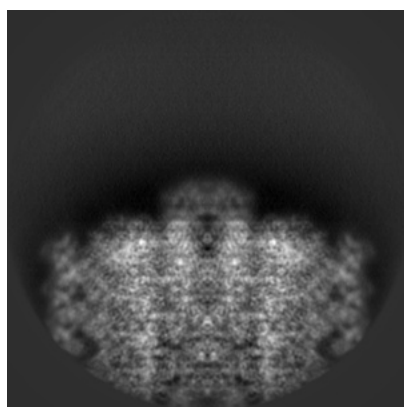


Y

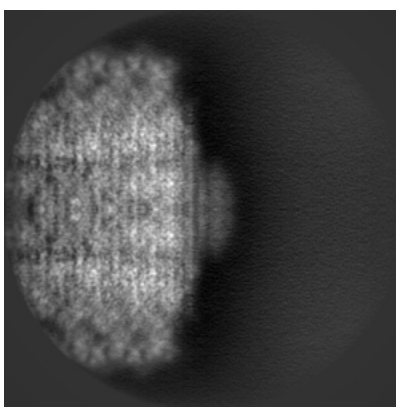


Z

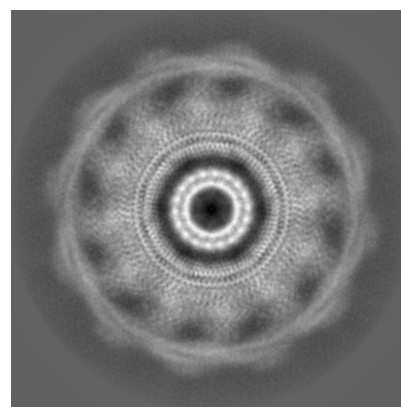
6.1.2 Raw map



X



Y

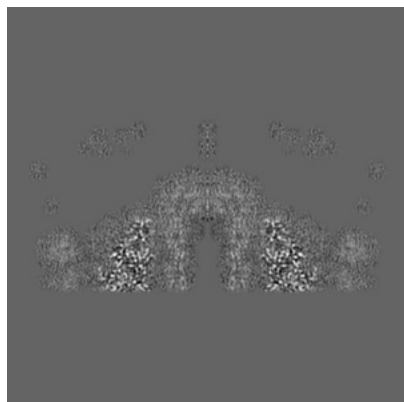


Z

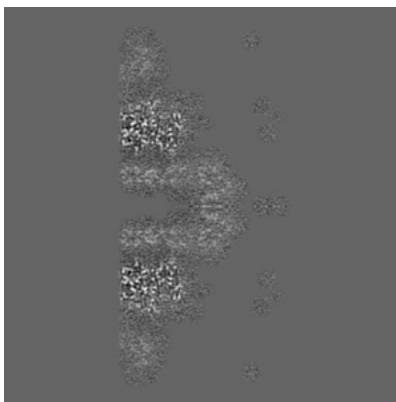
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

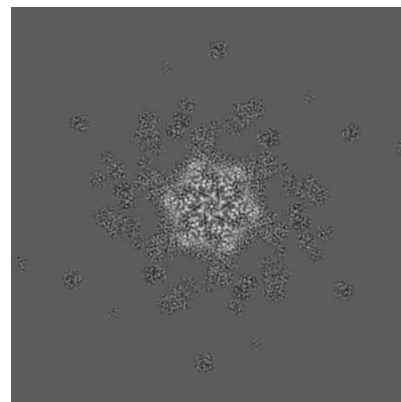
6.2.1 Primary map



X Index: 180

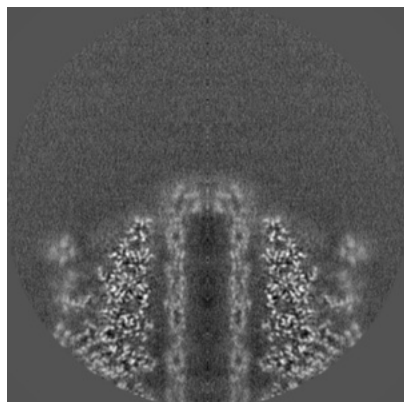


Y Index: 180

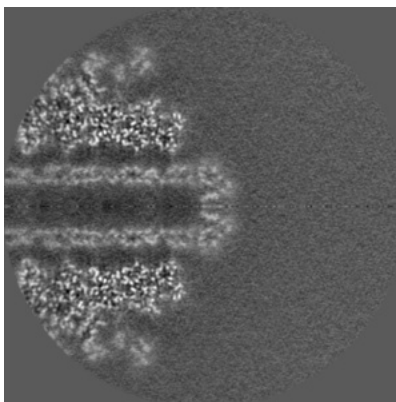


Z Index: 180

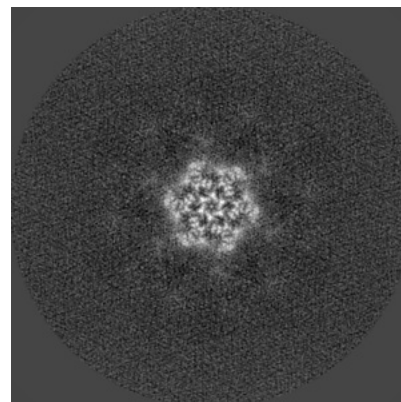
6.2.2 Raw map



X Index: 180



Y Index: 180

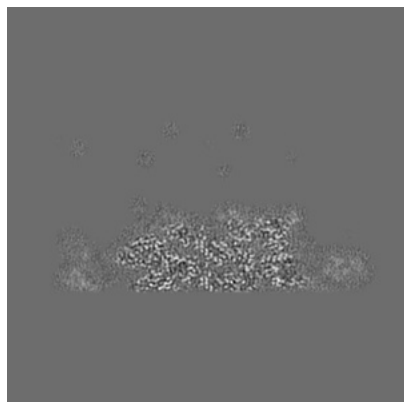


Z Index: 180

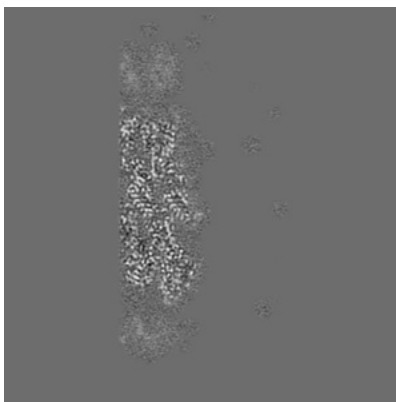
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

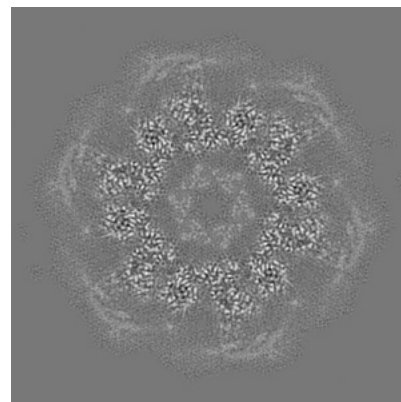
6.3.1 Primary map



X Index: 123

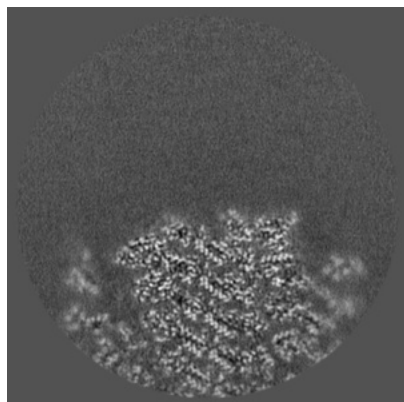


Y Index: 237

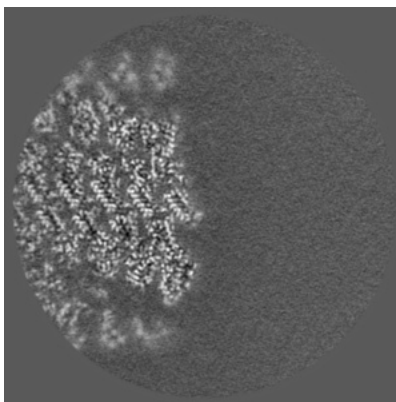


Z Index: 131

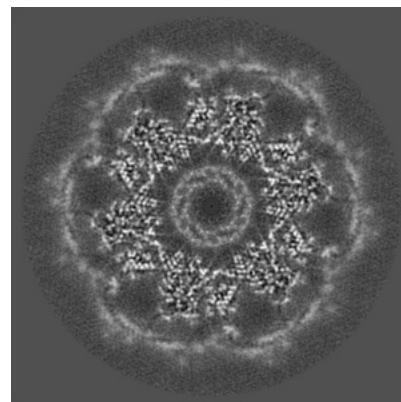
6.3.2 Raw map



X Index: 123



Y Index: 237

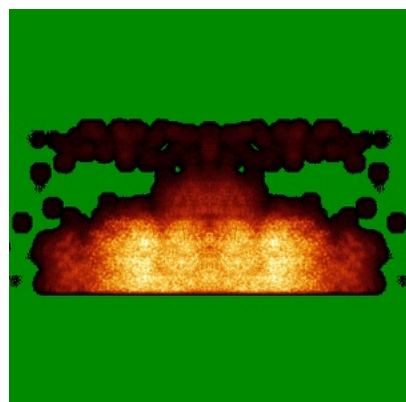


Z Index: 118

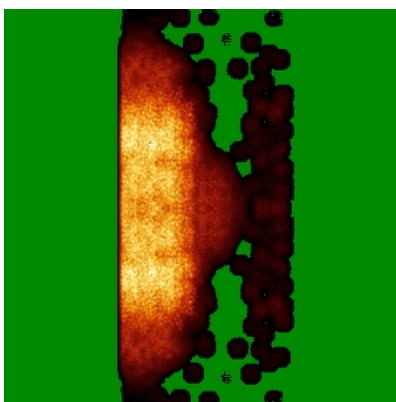
The images above show the largest variance slices of the map in three orthogonal directions.

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

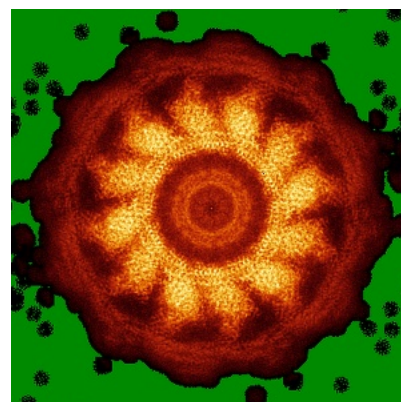
6.4.1 Primary map



X

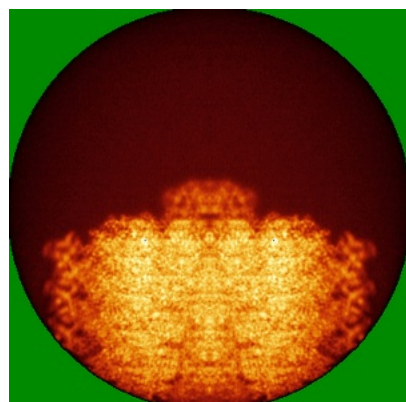


Y

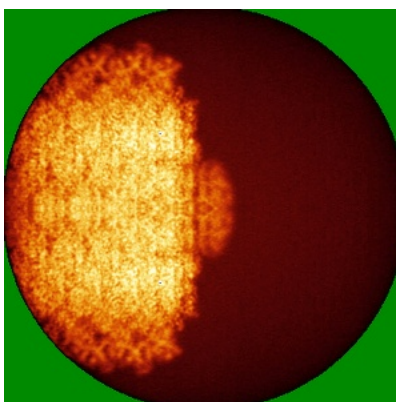


Z

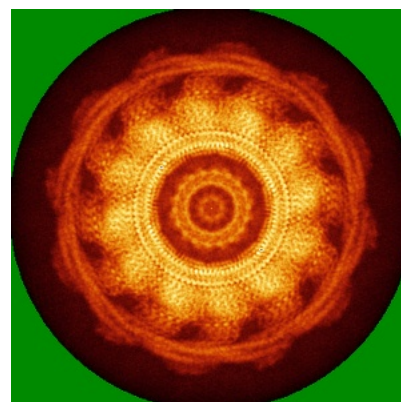
6.4.2 Raw map



X



Y

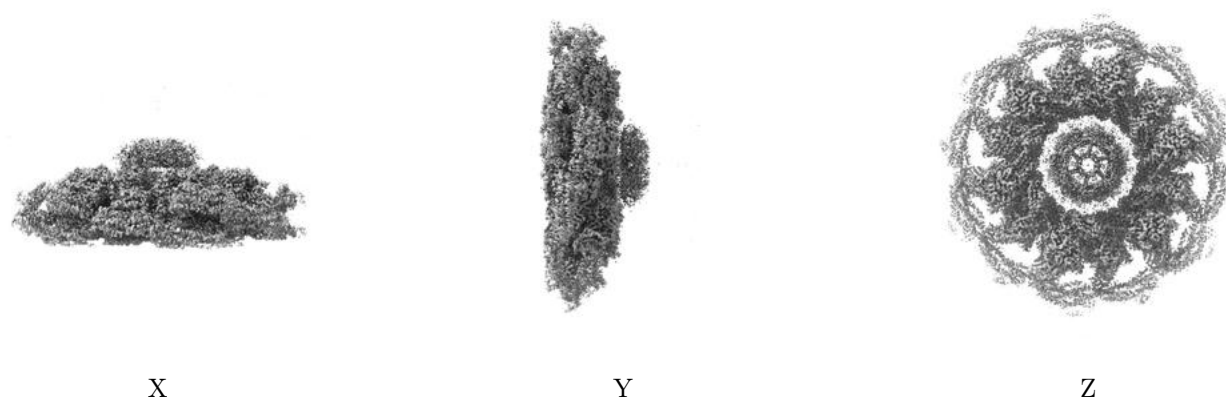


Z

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.

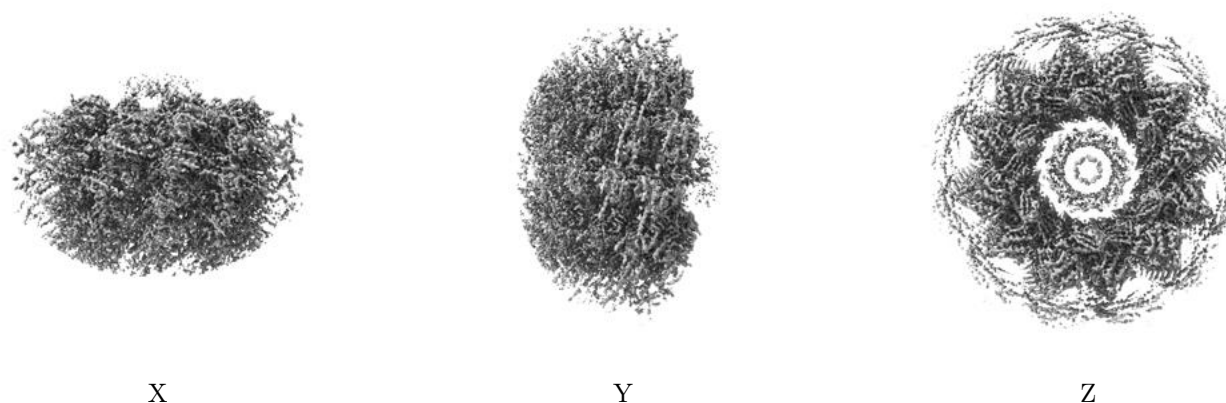
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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.

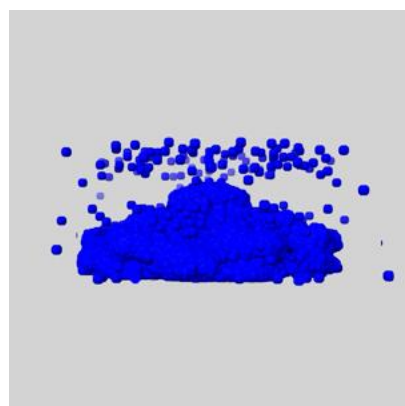
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

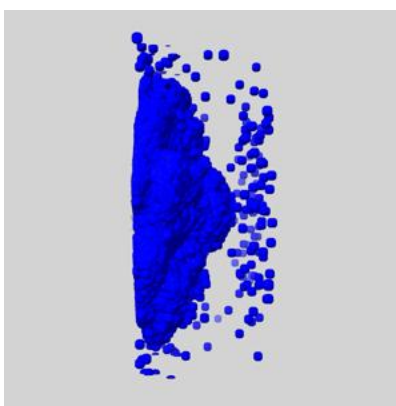
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

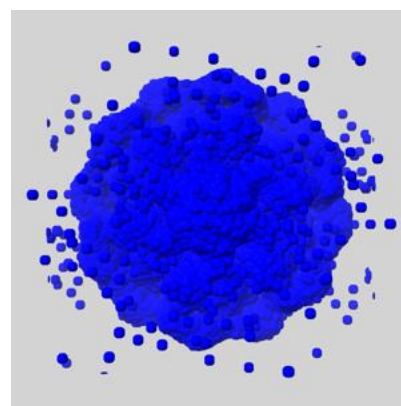
6.6.1 emd_66213_msk_1.map [i](#)



X



Y

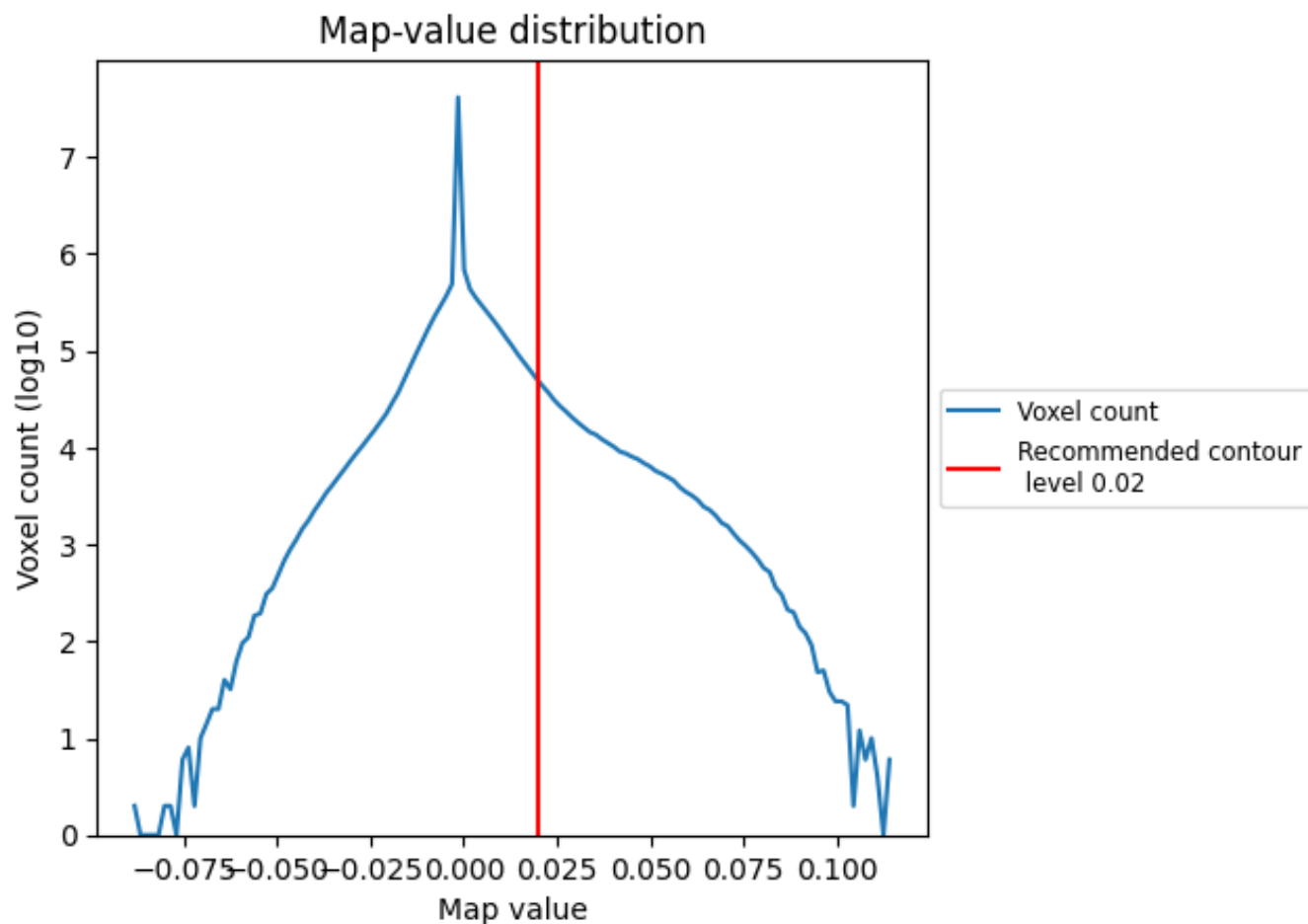


Z

7 Map analysis [i](#)

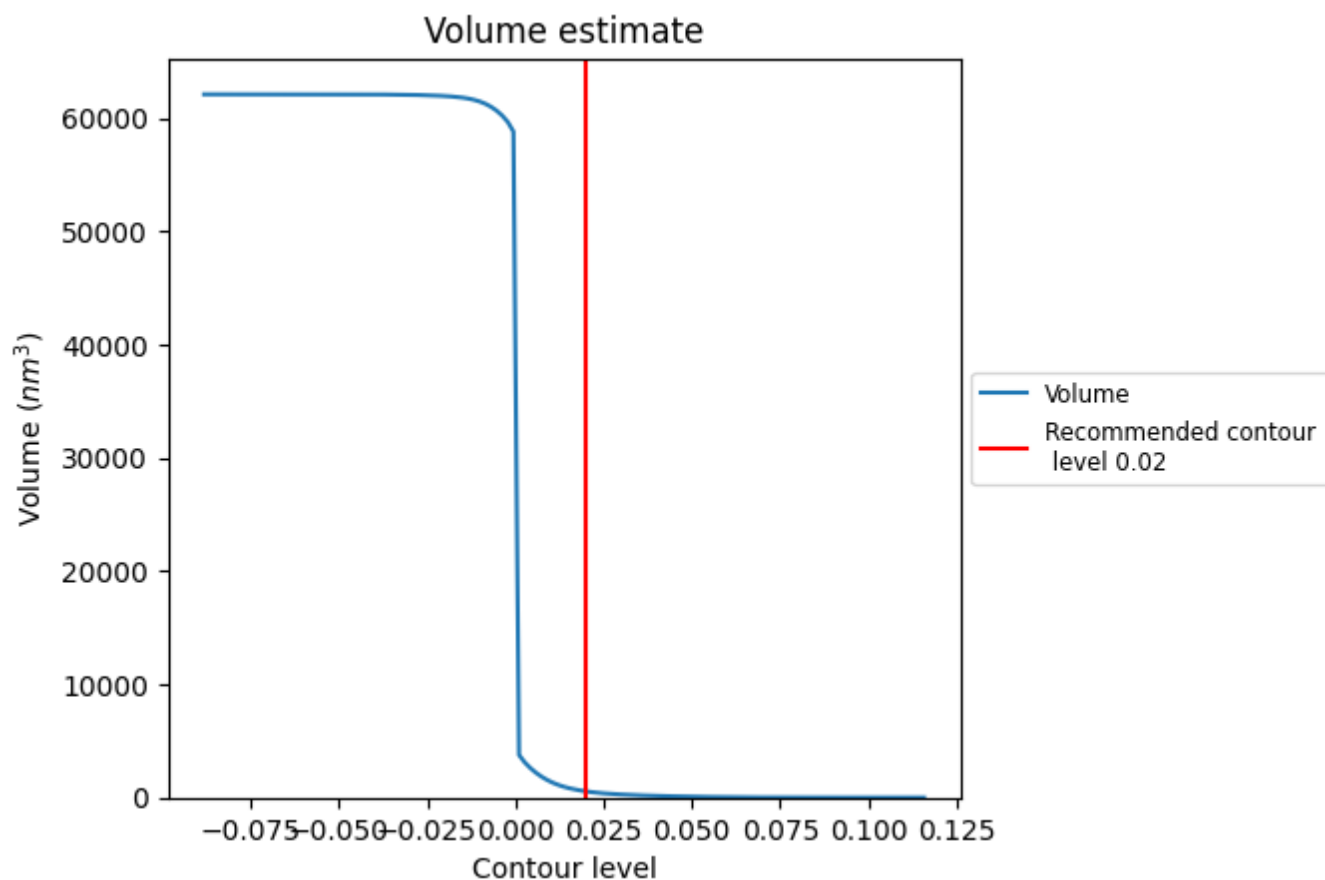
This section contains the results of statistical analysis of the map.

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.

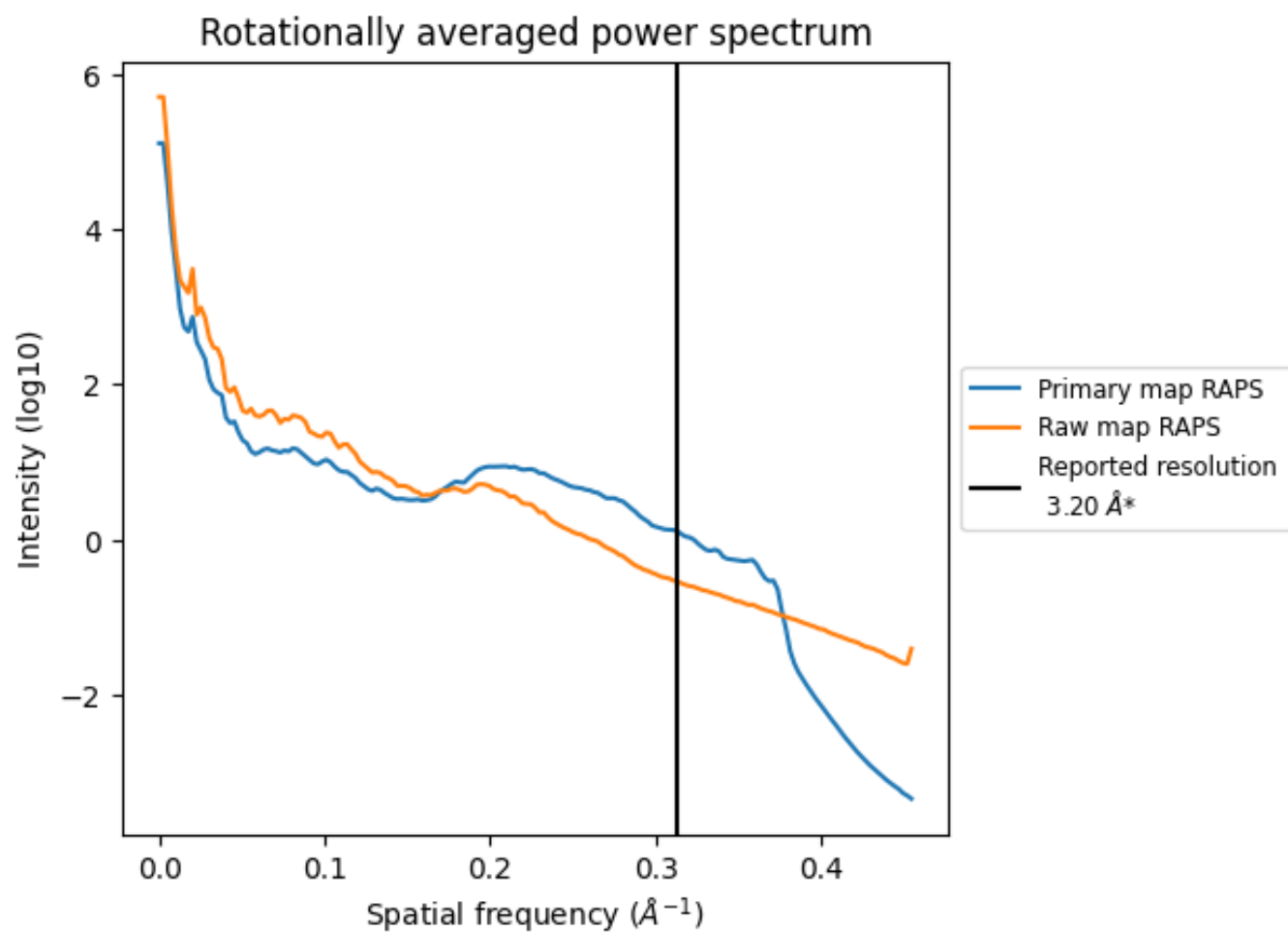
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 546 nm³; this corresponds to an approximate mass of 493 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 ⓘ

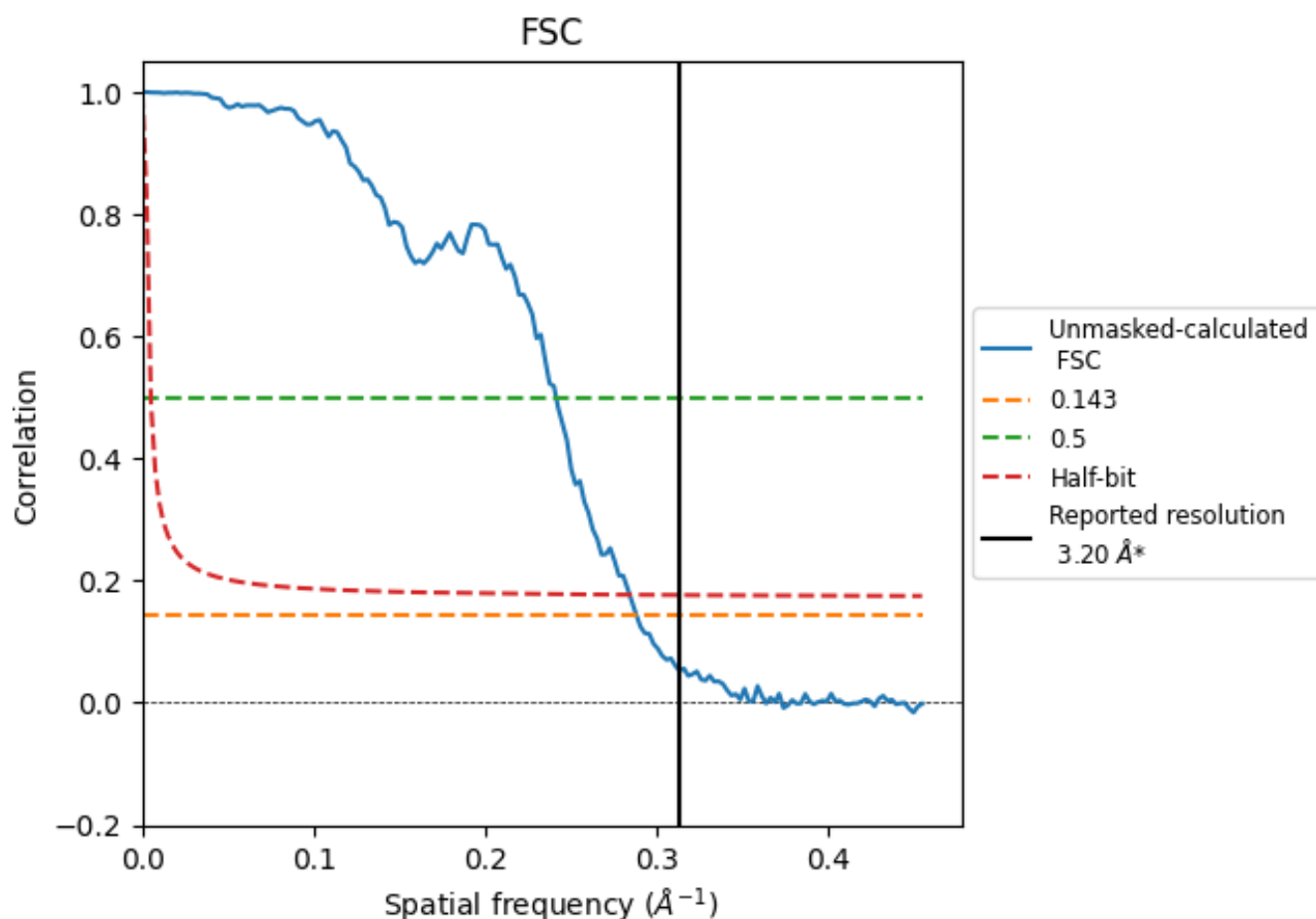


*Reported resolution corresponds to spatial frequency of 0.312 Å⁻¹

8 Fourier-Shell correlation [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 0.312 \AA^{-1}

8.2 Resolution estimates [i](#)

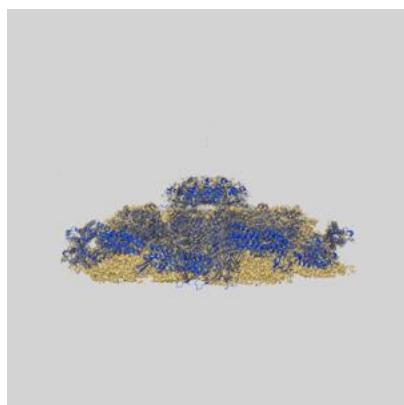
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.47	4.15	3.52

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

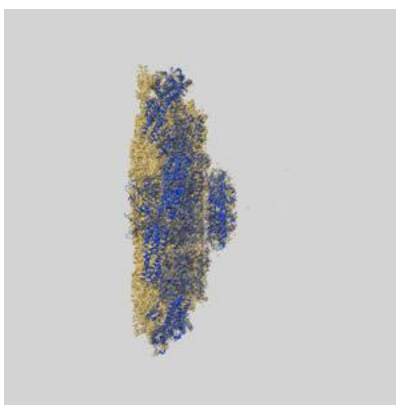
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-66213 and PDB model 9WT1. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

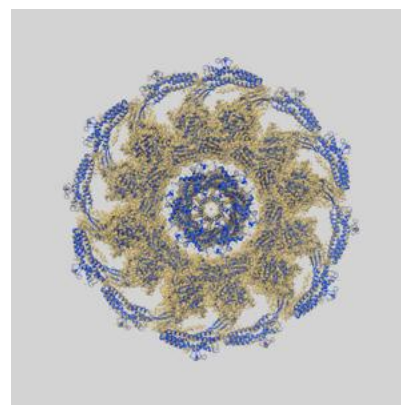
9.1 Map-model overlay [i](#)



X



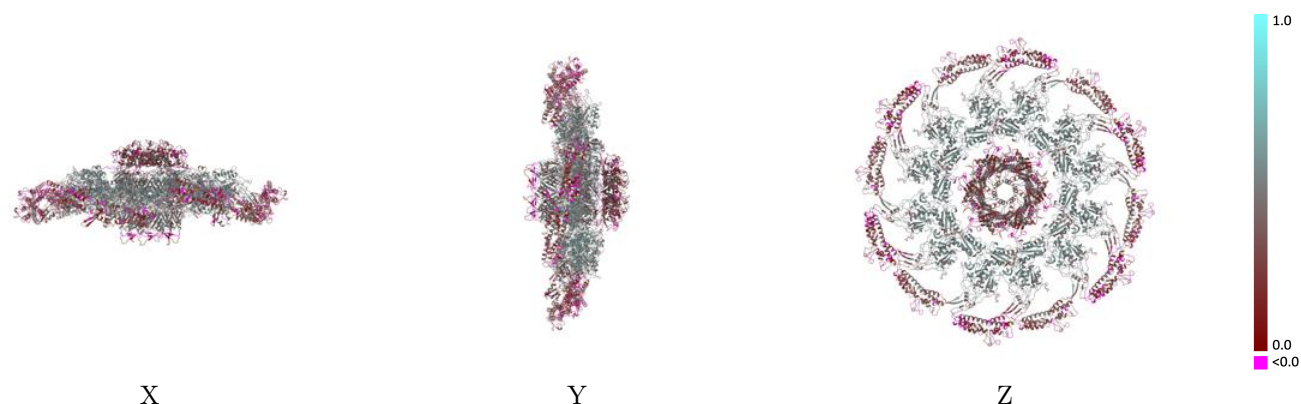
Y



Z

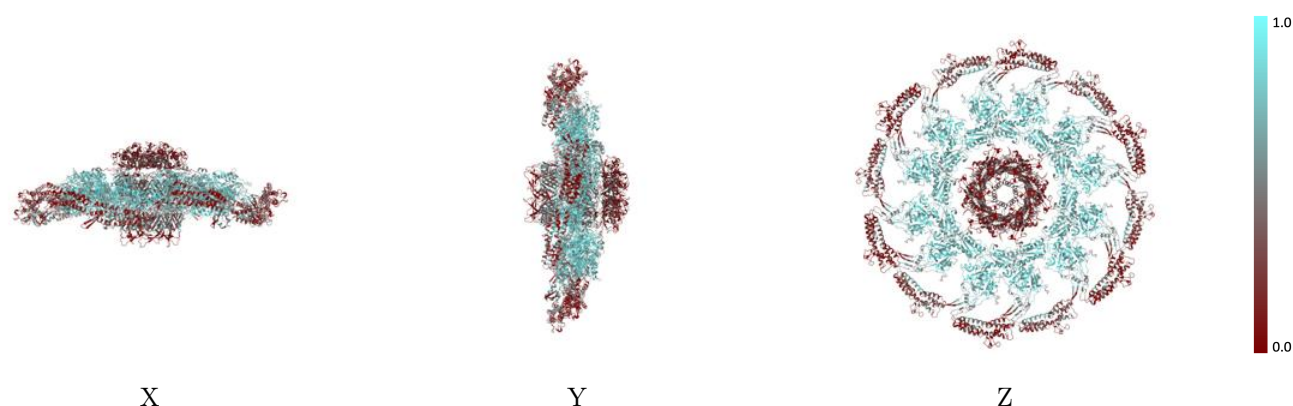
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



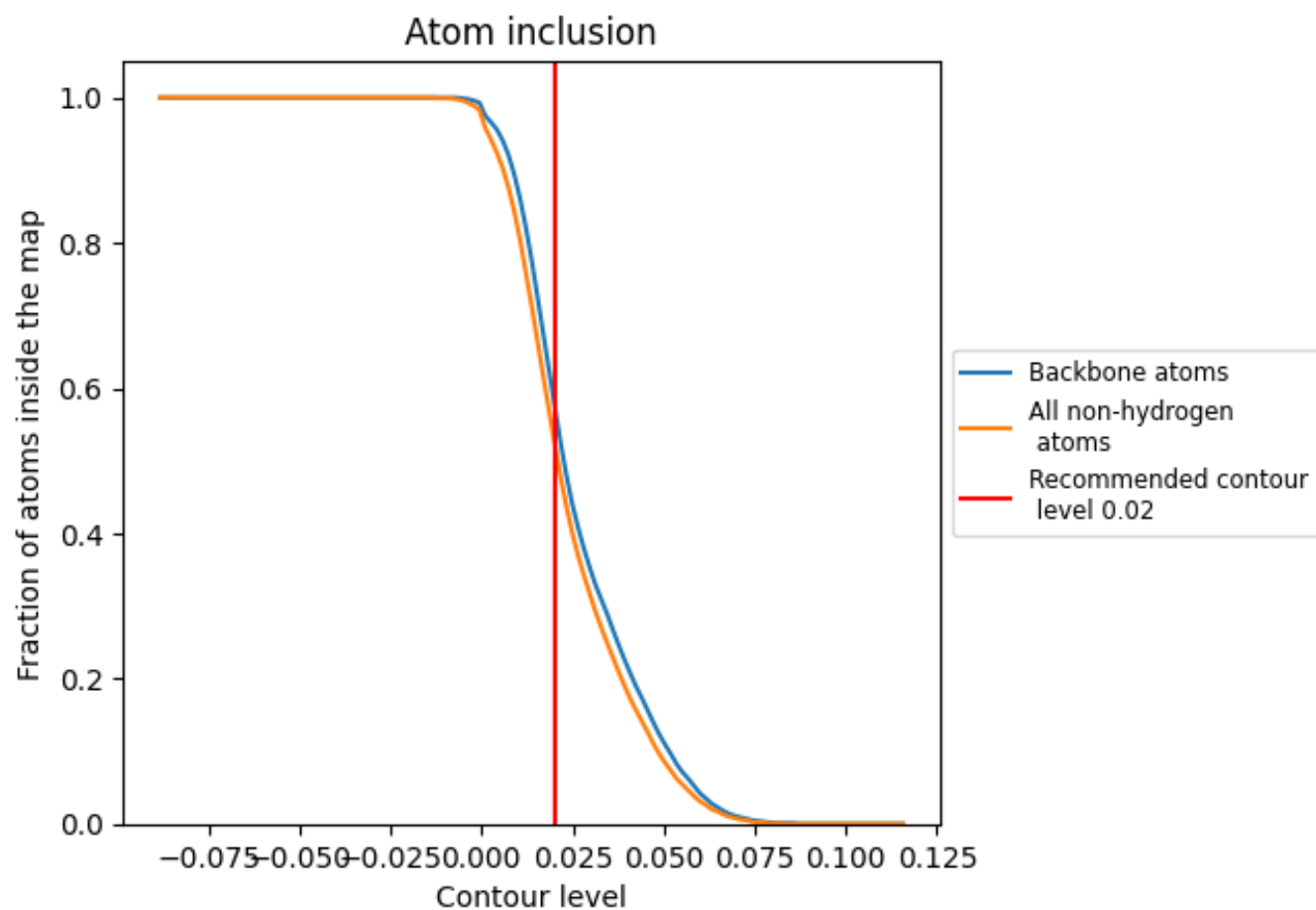
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).































































9.4 Atom inclusion [i](#)



At the recommended contour level, 58% of all backbone atoms, 52% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5250	 0.3990
1A	 0.5940	 0.4150
1B	 0.6030	 0.4170
1C	 0.5950	 0.4160
1D	 0.5950	 0.4160
1E	 0.6020	 0.4180
1F	 0.5950	 0.4160
1a	 0.3490	 0.3980
1b	 0.3540	 0.3970
1c	 0.3420	 0.3970
1d	 0.3480	 0.3960
1e	 0.3550	 0.3950
1f	 0.3410	 0.3980
2A	 0.6410	 0.4400
2B	 0.6470	 0.4420
2C	 0.6400	 0.4400
2D	 0.6410	 0.4410
2E	 0.6470	 0.4420
2F	 0.6400	 0.4390
2a	 0.3420	 0.3530
2b	 0.3460	 0.3530
2c	 0.3400	 0.3500
2d	 0.3420	 0.3520
2e	 0.3460	 0.3530
2f	 0.3410	 0.3520
A	 0.1950	 0.2460
B	 0.1950	 0.2470
C	 0.2000	 0.2450
D	 0.1950	 0.2440
E	 0.1950	 0.2460
F	 0.2010	 0.2470

