



## wwPDB EM Validation Summary Report ⓘ

Nov 8, 2022 – 03:29 PM JST

PDB ID : 5ZVT  
EMDB ID : EMD-6969  
Title : Structure of RNA polymerase complex and genome within a dsRNA virus provides insights into the mechanisms of transcription and assembly  
Authors : Liu, H.; Fang, Q.; Cheng, L.  
Deposited on : 2018-05-12  
Resolution : 3.30 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

---

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

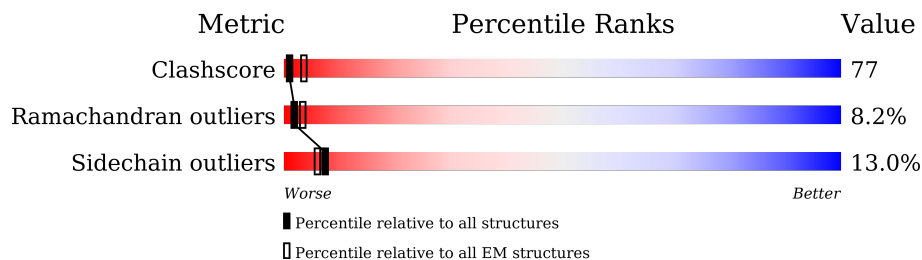
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

# 1 Overall quality at a glance

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

The reported resolution of this entry is 3.30 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	b	276	 8% 28% .. 69%
1	d	276	 2% 28% . 69%
1	f	276	 5% 27% . 69%
1	h	276	 6% 28% . 69%
1	j	276	 5% 28% . 69%
1	l	276	 6% 28% . 69%
1	n	276	 2% 28% . 69%
1	p	276	 8% 28% . 69%

*Continued on next page...*

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	r	276	7% 28% 69%
1	t	276	12% 28% 69%
2	A	42	38% 33% 50% 12% ..
2	C	42	33% 21% 60% 14% ..
2	E	42	31% 21% 57% 17% ..
2	G	42	33% 38% 48% 10% ..
2	I	42	36% 21% 60% 14% ..
2	K	42	33% 21% 57% 17% ..
2	M	42	36% 38% 50% 7% ..
2	O	42	31% 21% 60% 14% ..
2	Q	42	36% 19% 60% 17% ..
2	S	42	26% 38% 48% 10% ..
3	B	606	42% 28% 54% 15% .
3	D	606	32% 23% 59% 15% .
3	F	606	31% 24% 58% 16% .
3	H	606	35% 24% 59% 16% .
3	J	606	36% 23% 59% 16% .
3	L	606	35% 24% 58% 16% .
3	N	606	36% 23% 58% 17% .
3	P	606	33% 23% 59% 16% .
3	R	606	35% 24% 58% 16% .
3	T	606	33% 23% 58% 17% .
4	U	412	9% 27% 61% 12% .
4	V	412	6% 61% 34% 5%
5	W	1299	22% 33% 58% 9% .

Continued on next page...

*Continued from previous page...*

Mol	Chain	Length	Quality of chain
6	X	1214	
6	Y	1214	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
7	MYR	A	101	-	-	X	-
7	MYR	C	101	-	-	X	-
7	MYR	E	101	-	-	X	-
7	MYR	G	101	-	-	X	-
7	MYR	I	101	-	-	X	-
7	MYR	K	101	-	-	X	-
7	MYR	M	101	-	-	X	-
7	MYR	O	101	-	-	X	-
7	MYR	Q	101	-	-	X	-
7	MYR	S	101	-	-	X	-

## 2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 87645 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 Outer capsid VP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	l	86	666	411	125	124	6	0	0
1	b	86	666	411	125	124	6	0	0
1	f	86	666	411	125	124	6	0	0
1	d	86	666	411	125	124	6	0	0
1	h	86	666	411	125	124	6	0	0
1	j	86	666	411	125	124	6	0	0
1	n	86	666	411	125	124	6	0	0
1	p	86	666	411	125	124	6	0	0
1	r	86	666	411	125	124	6	0	0
1	t	86	666	411	125	124	6	0	0

- Molecule 2 is a protein called N-terminus of outer capsid protein VP5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	41	291	177	48	65	1	0	0
2	C	41	291	177	48	65	1	0	0
2	E	41	291	177	48	65	1	0	0
2	G	41	284	174	46	63	1	0	0
2	I	41	291	177	48	65	1	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Residues	Atoms					AltConf	Trace
2	K	41	Total	C	N	O	S	0	0
			291	177	48	65	1		
2	M	41	Total	C	N	O	S	0	0
			284	174	46	63	1		
2	O	41	Total	C	N	O	S	0	0
			291	177	48	65	1		
2	Q	41	Total	C	N	O	S	0	0
			291	177	48	65	1		
2	S	41	Total	C	N	O	S	0	0
			284	174	46	63	1		

- Molecule 3 is a protein called C-terminus of outer capsid protein VP5.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	B	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	D	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	F	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	H	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	J	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	L	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	N	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	P	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	R	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		
3	T	604	Total	C	N	O	S	0	0
			4508	2858	761	872	17		

- Molecule 4 is a protein called Core protein VP6.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	U	411	Total	C	N	O	S	0	0
			3138	2008	544	571	15		
4	V	411	Total	C	N	O	S	0	0
			3138	2008	544	571	15		

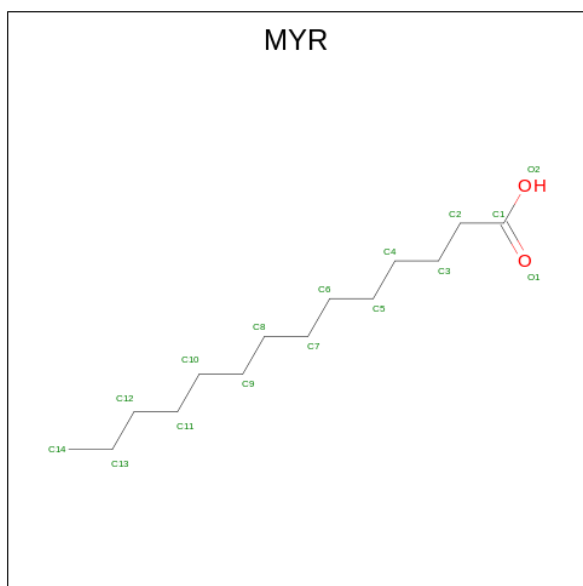
- Molecule 5 is a protein called VP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	W	1284	9882	6335	1681	1839	27	0	0

- Molecule 6 is a protein called VP3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	X	1018	7873	5033	1347	1447	46	0	0
6	Y	1154	8835	5604	1525	1656	50	0	0

- Molecule 7 is MYRISTIC ACID (three-letter code: MYR) (formula:  $C_{14}H_{28}O_2$ ).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
7	A	1	15	14	1	0
7	C	1	15	14	1	0
7	E	1	15	14	1	0
7	G	1	15	14	1	0
7	I	1	15	14	1	0
7	K	1	15	14	1	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
7	M	1	15	14	1	0
7	O	1	15	14	1	0
7	Q	1	15	14	1	0
7	S	1	15	14	1	0



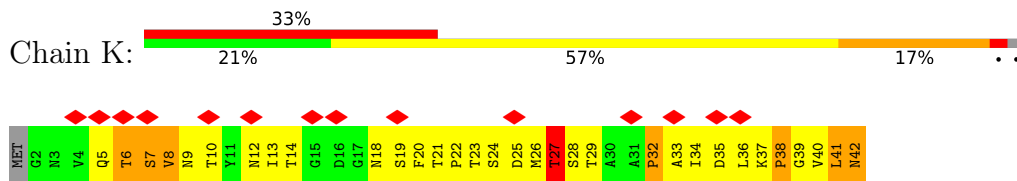




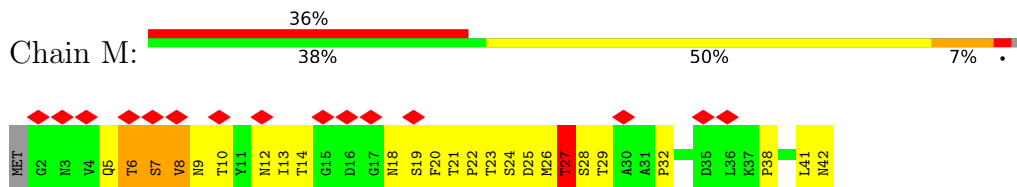




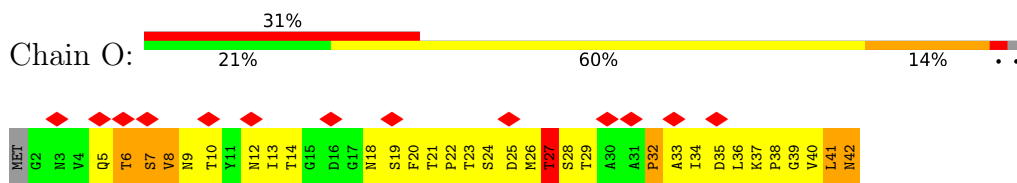
• Molecule 2: N-terminus of outer capsid protein VP5



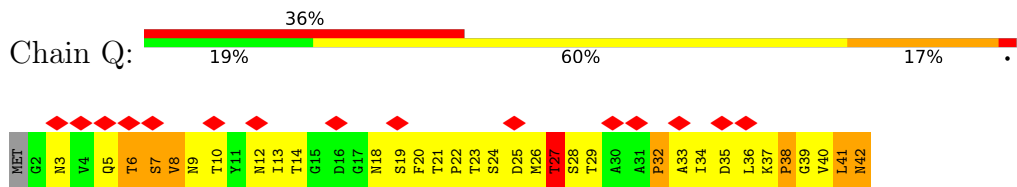
• Molecule 2: N-terminus of outer capsid protein VP5



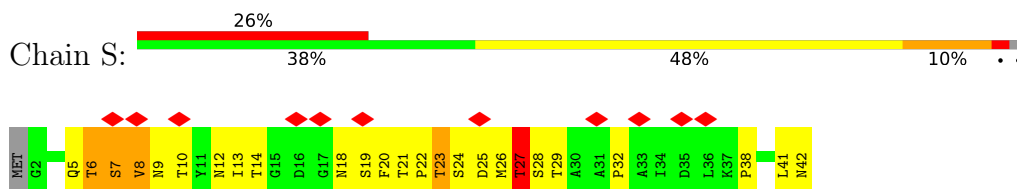
• Molecule 2: N-terminus of outer capsid protein VP5



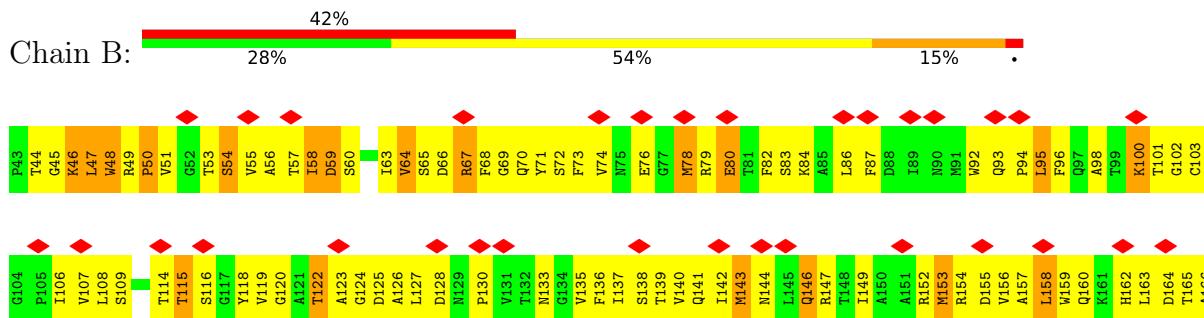
• Molecule 2: N-terminus of outer capsid protein VP5

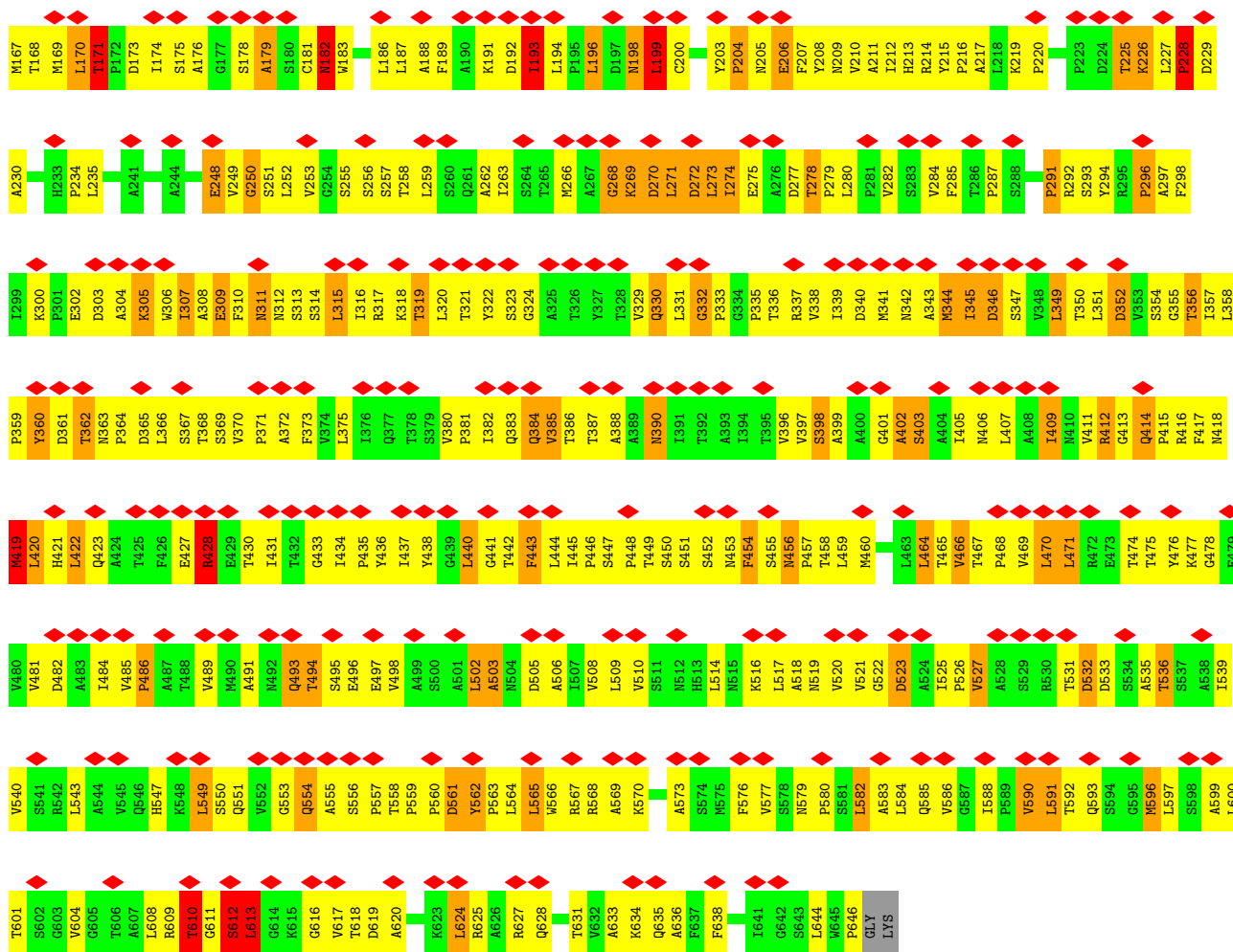


• Molecule 2: N-terminus of outer capsid protein VP5

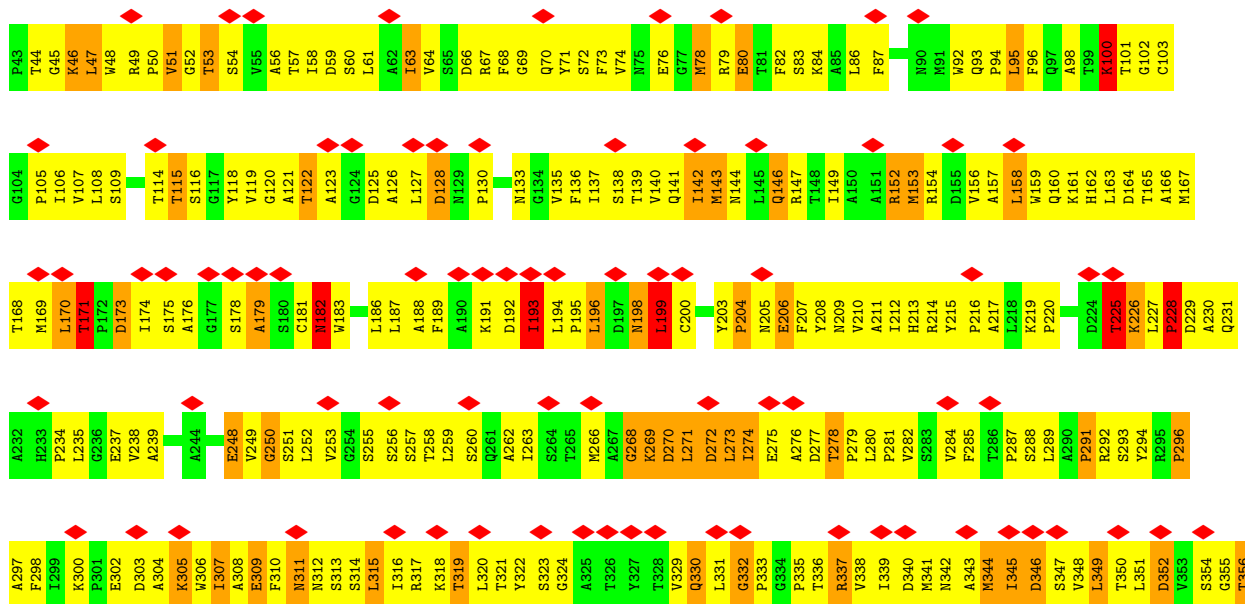


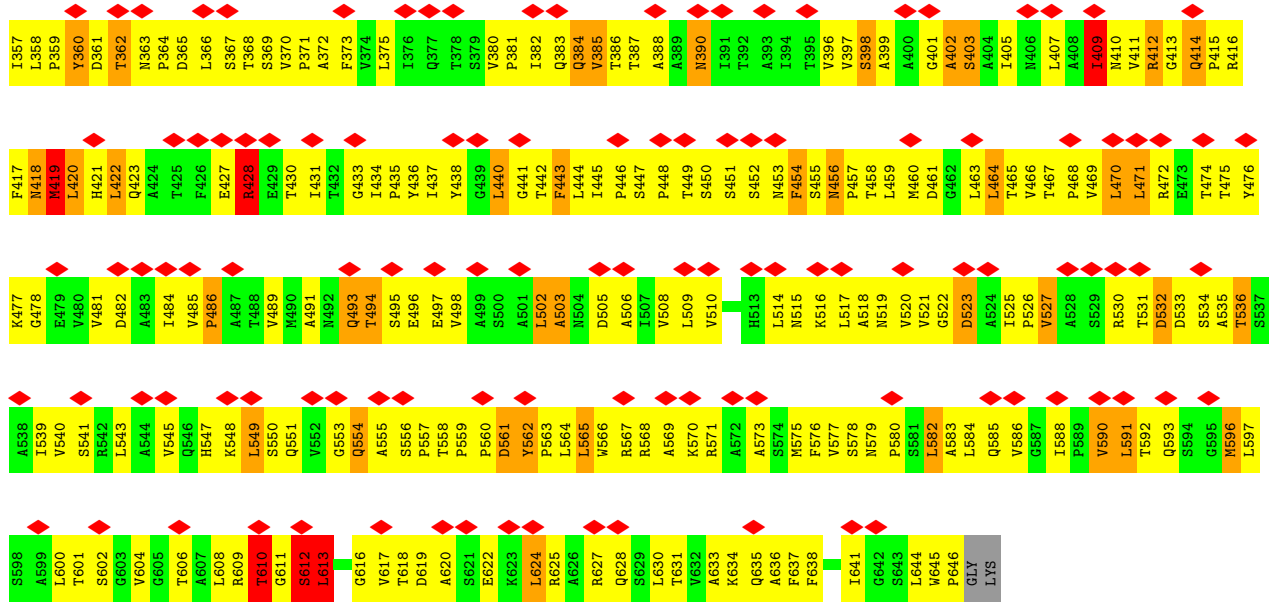
• Molecule 3: C-terminus of outer capsid protein VP5



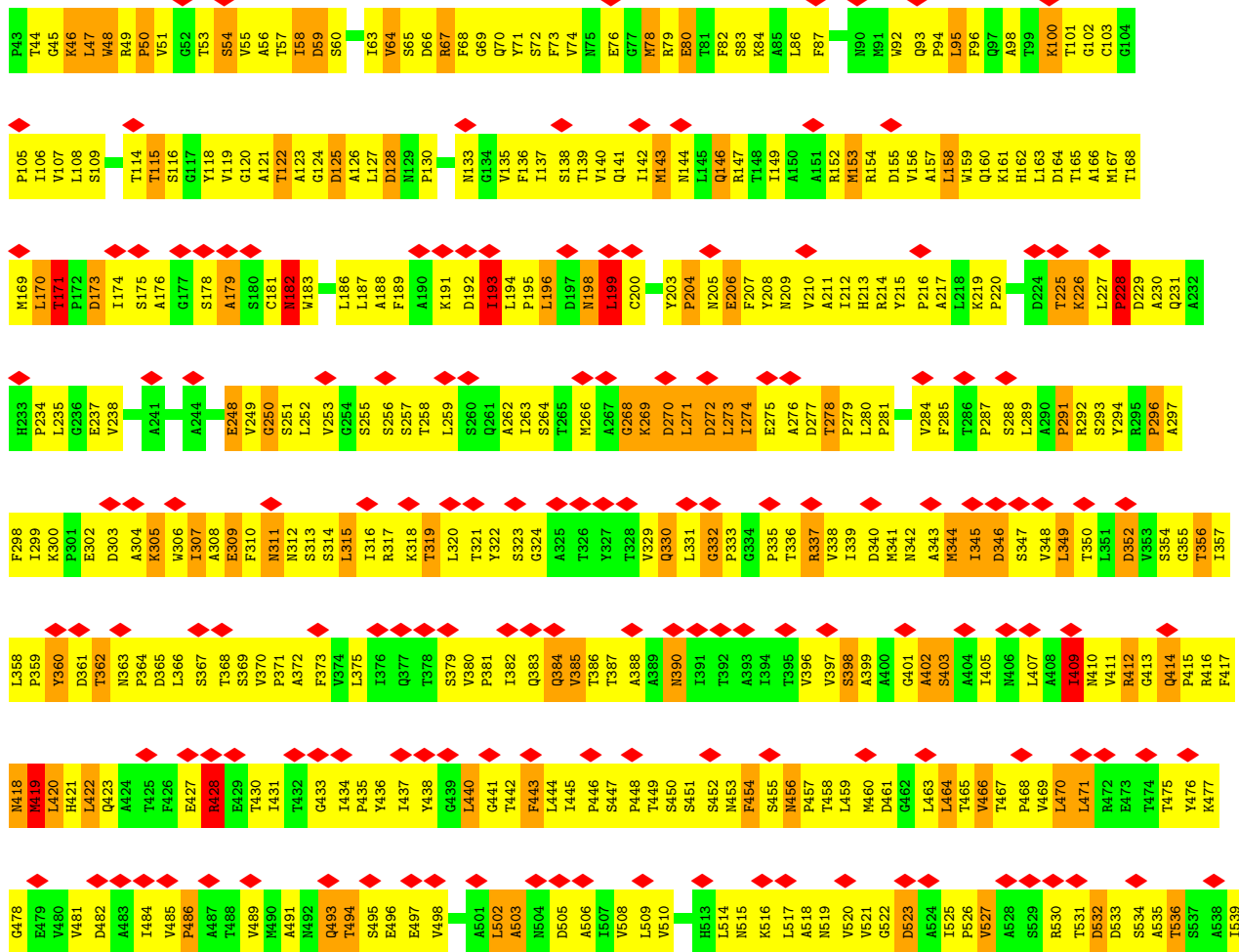


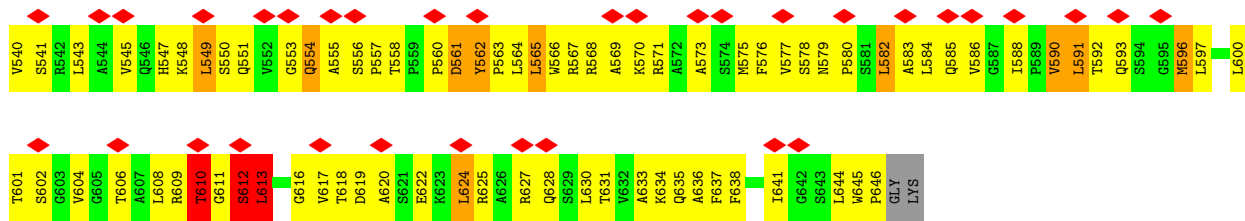
• Molecule 3: C-terminus of outer capsid protein VP5



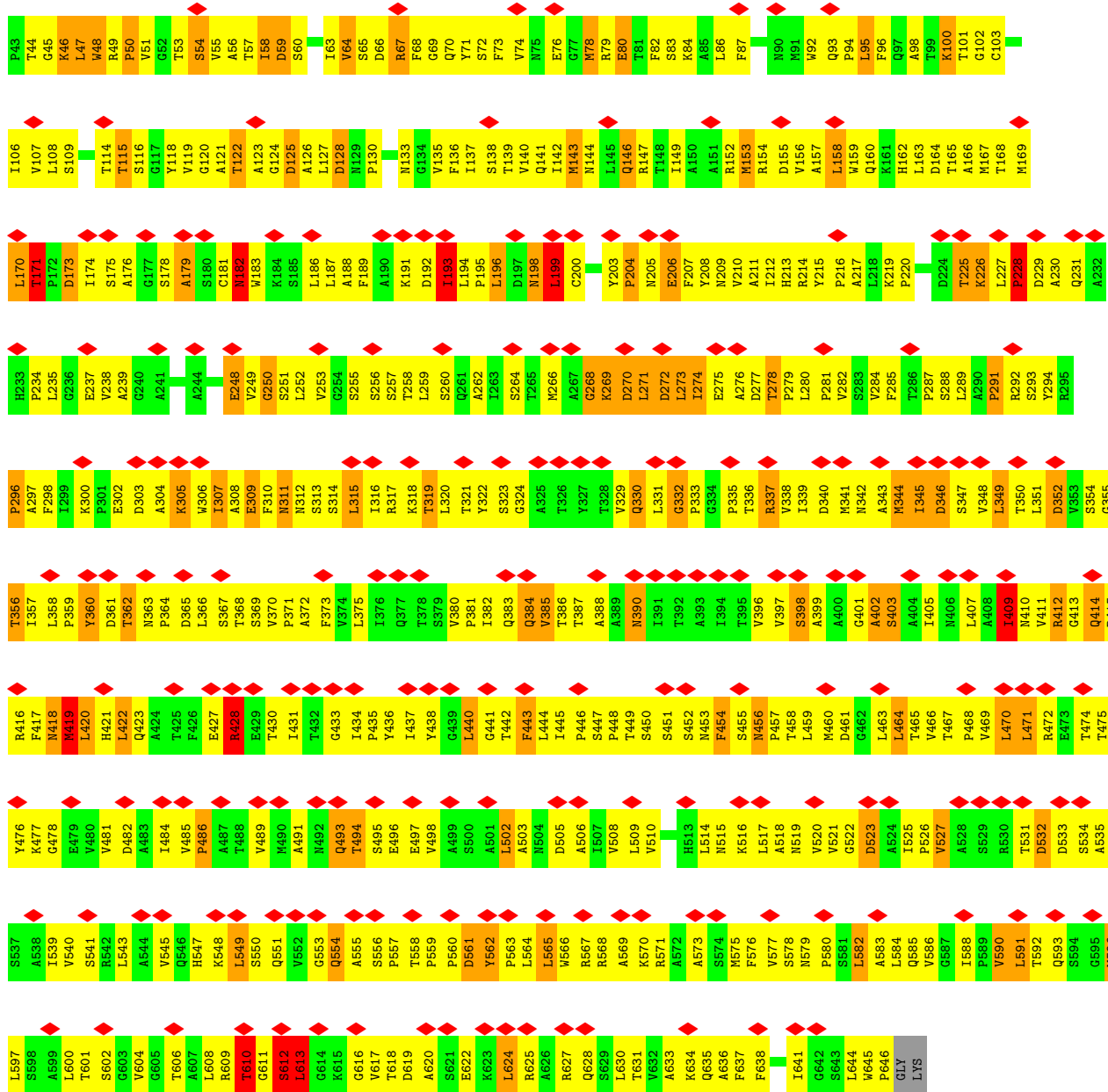


• Molecule 3: C-terminus of outer capsid protein VP5



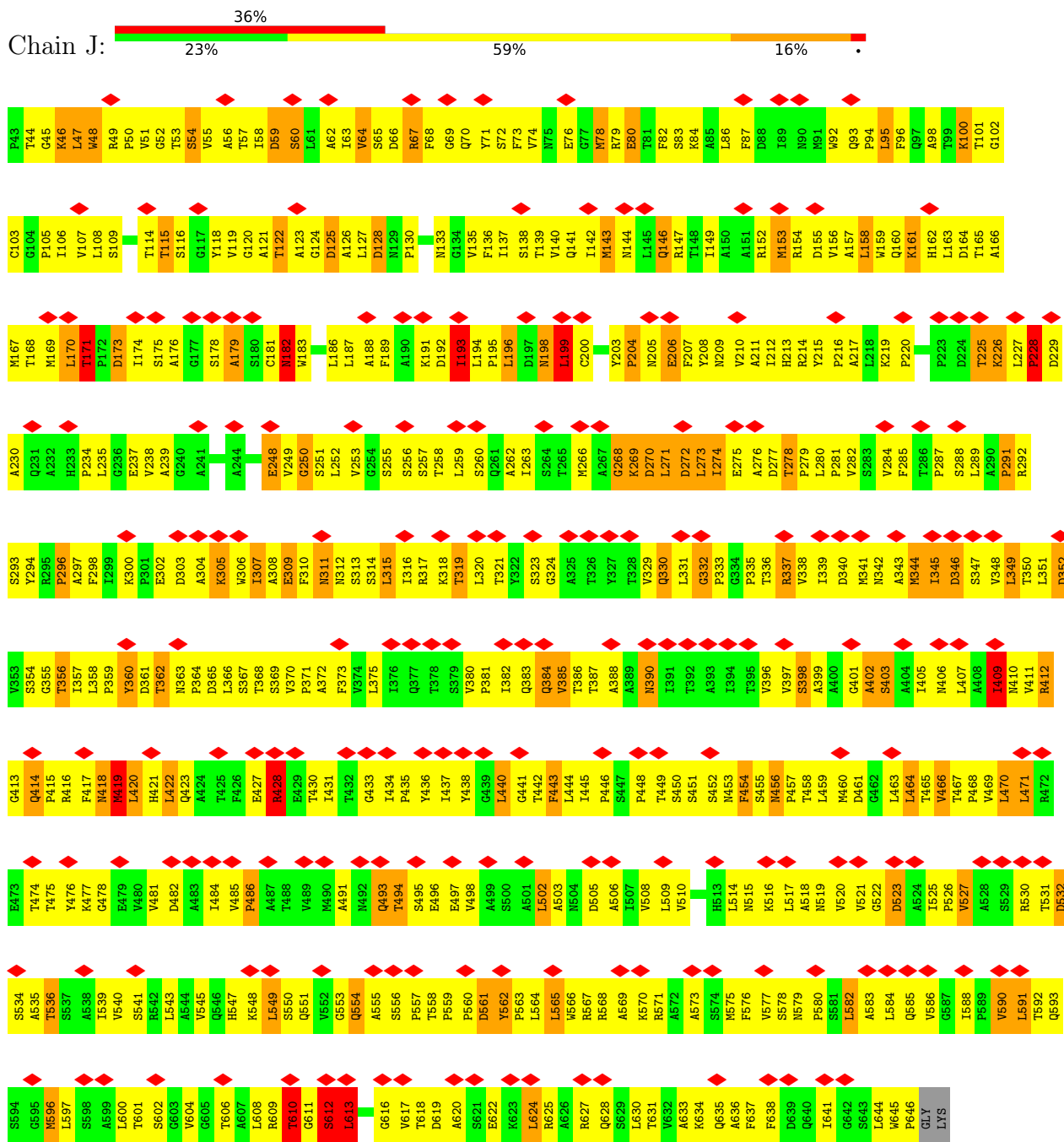


• Molecule 3: C-terminus of outer capsid protein VP5

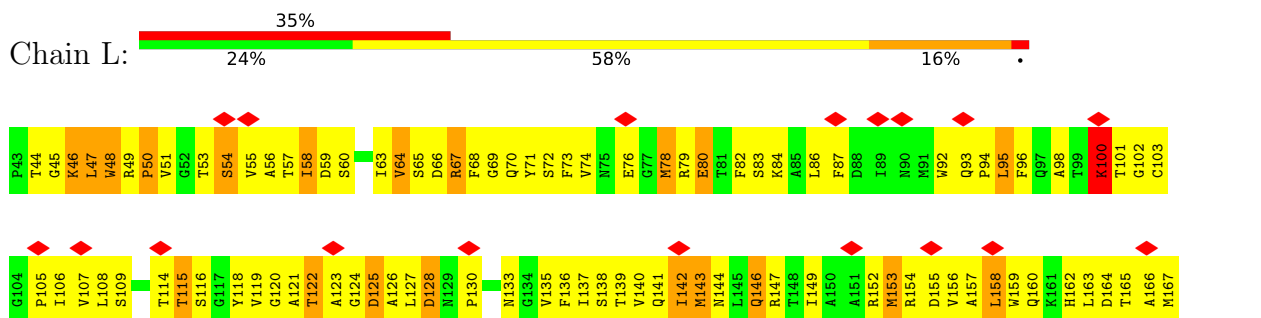


• Molecule 3: C-terminus of outer capsid protein VP5

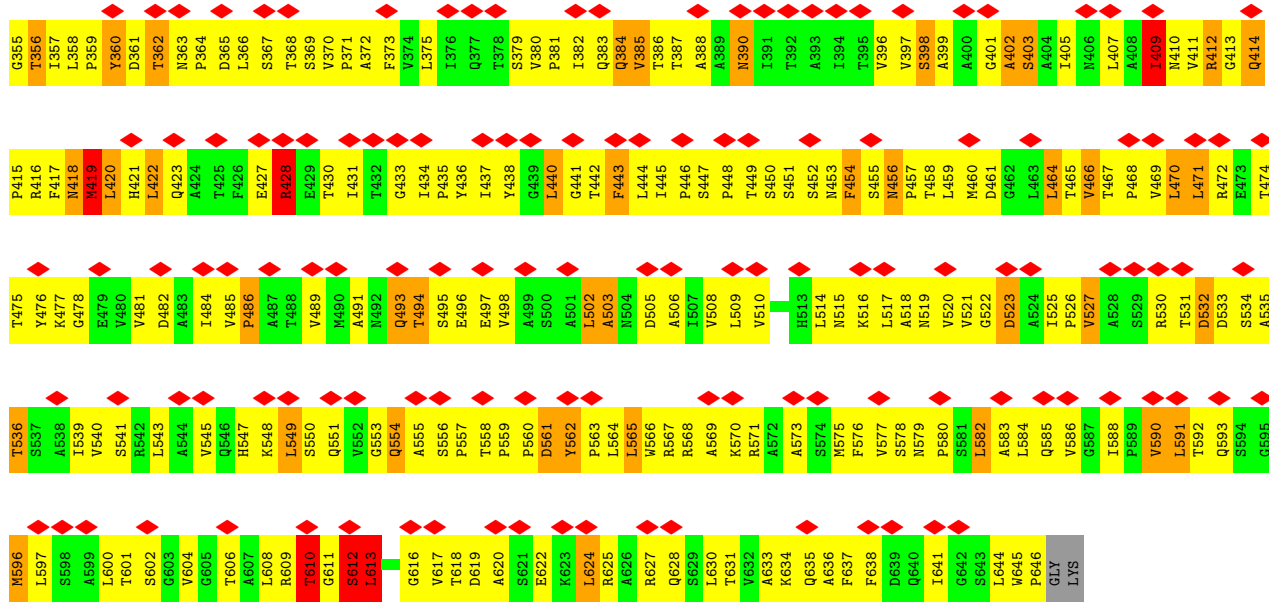




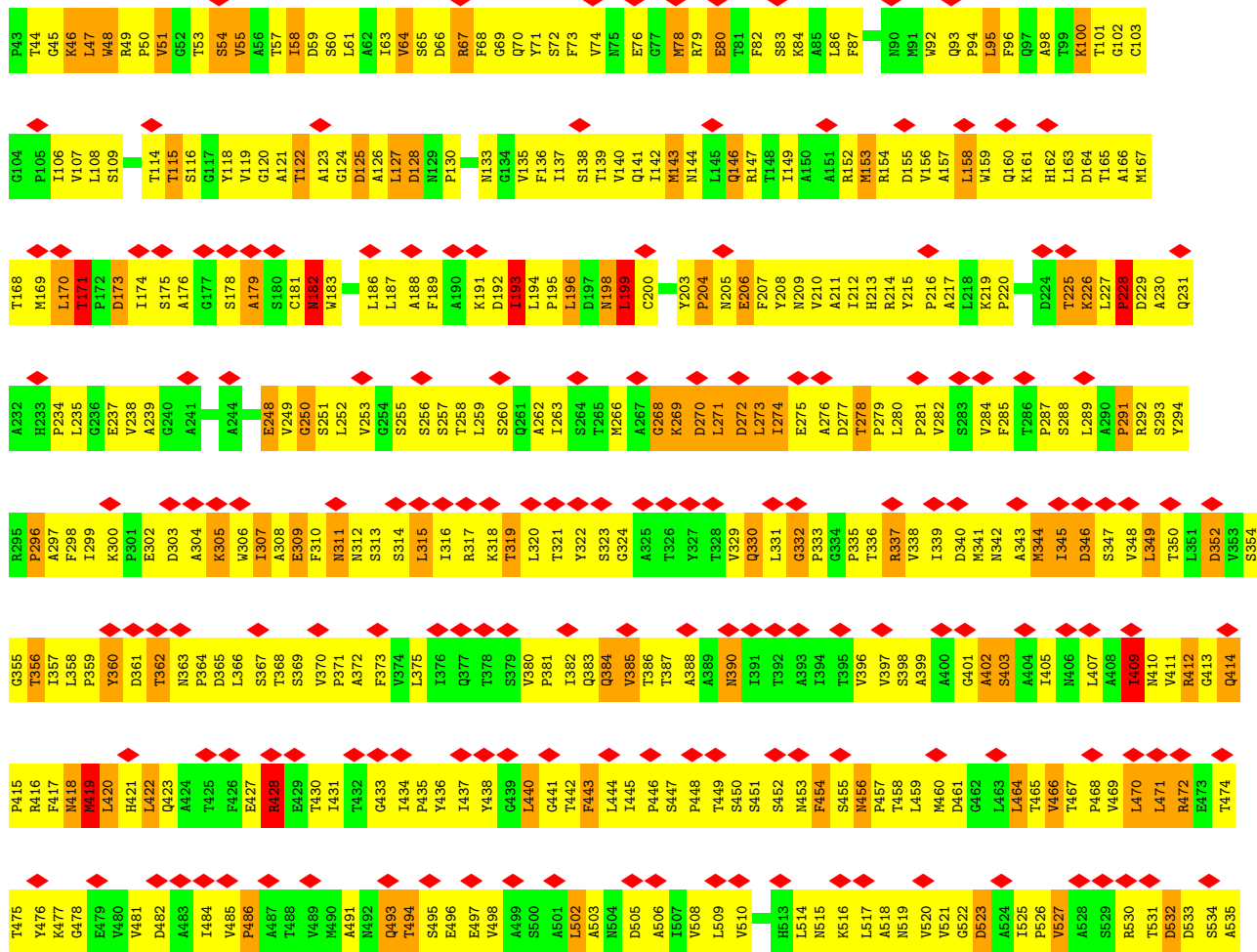
• Molecule 3: C-terminus of outer capsid protein VP5

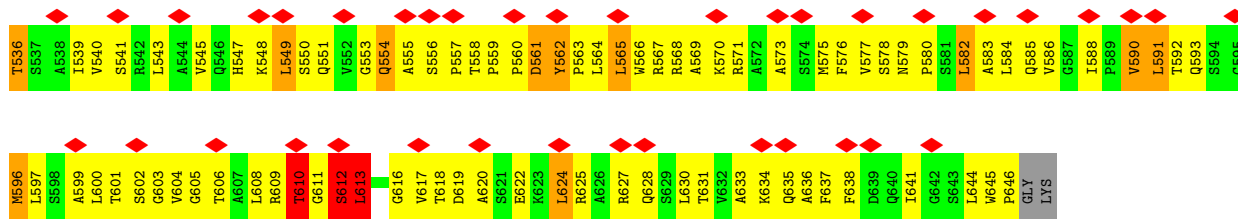




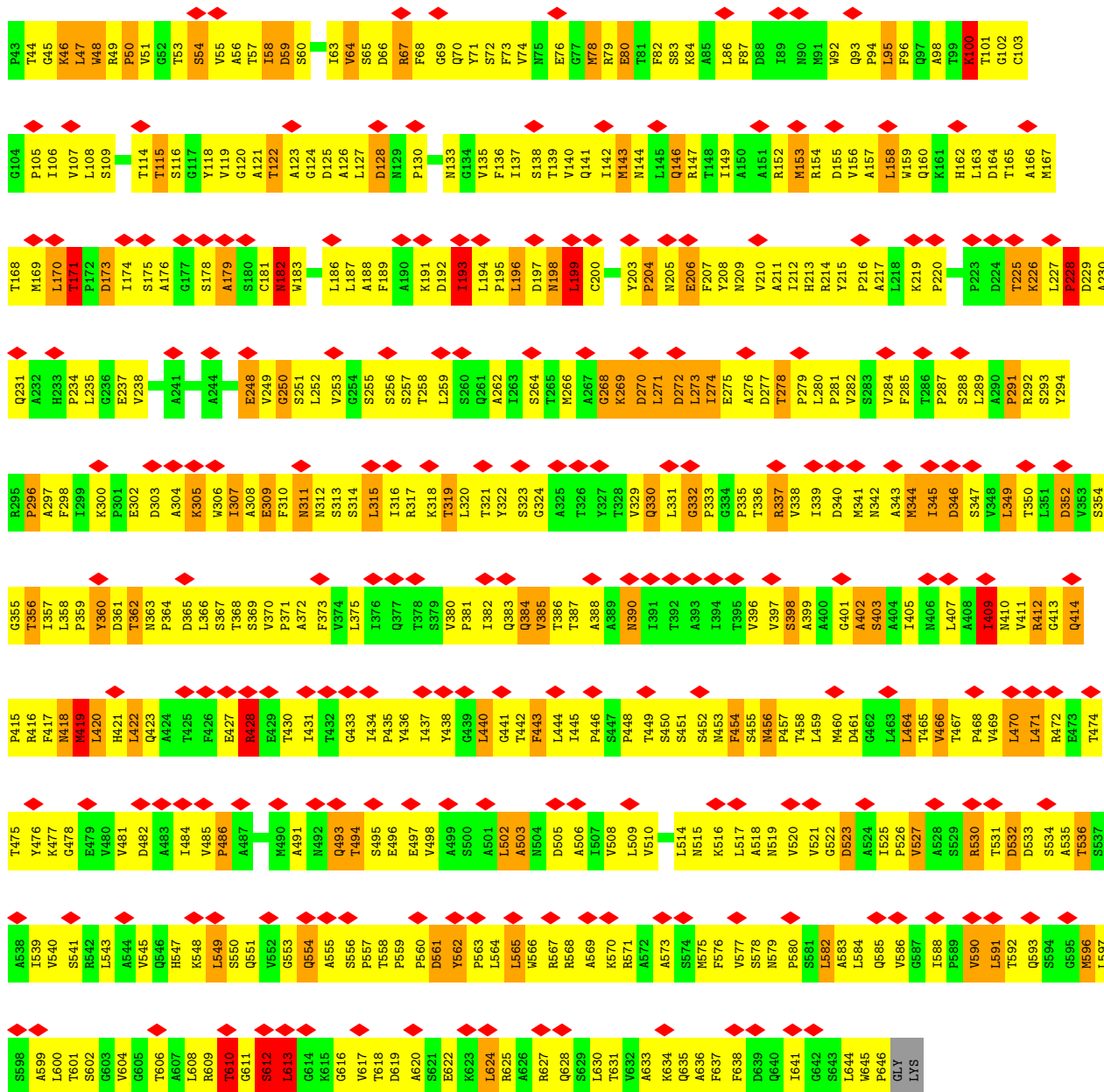


● Molecule 3: C-terminus of outer capsid protein VP5

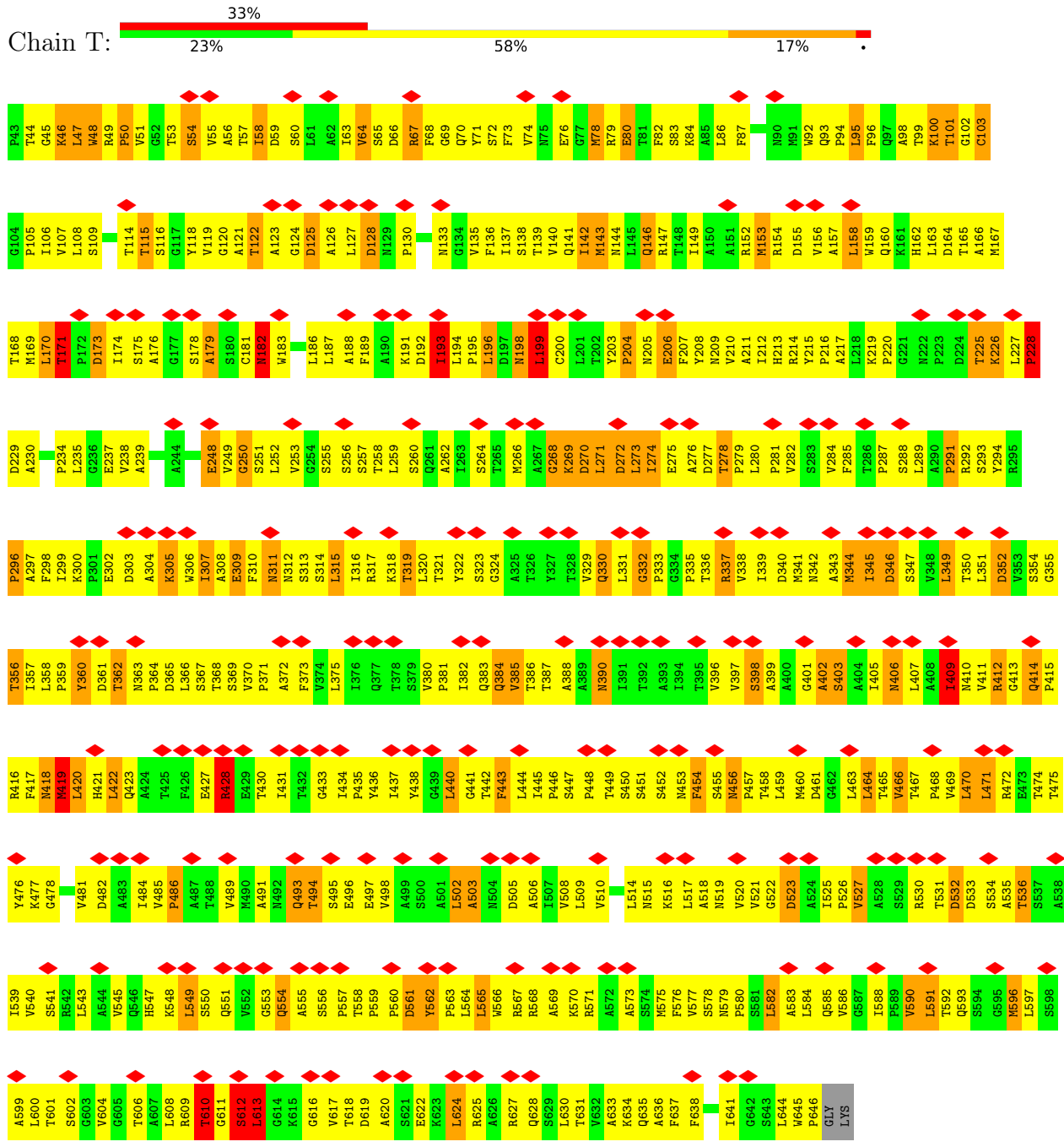




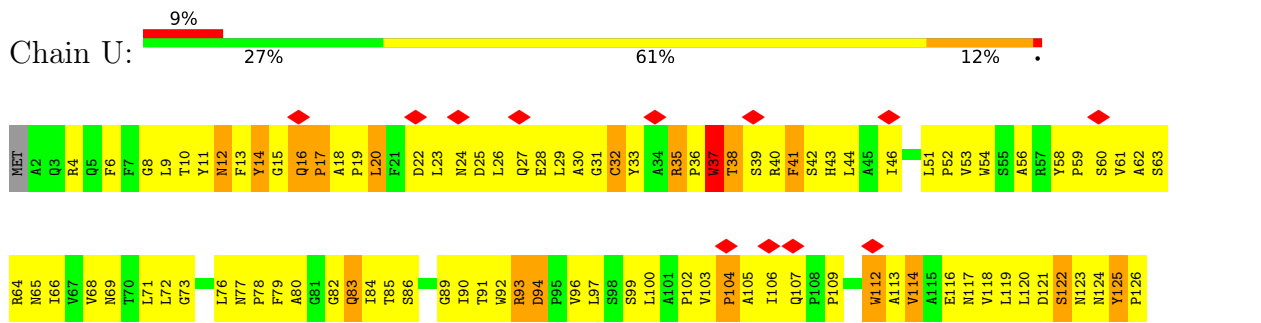
• Molecule 3: C-terminus of outer capsid protein VP5

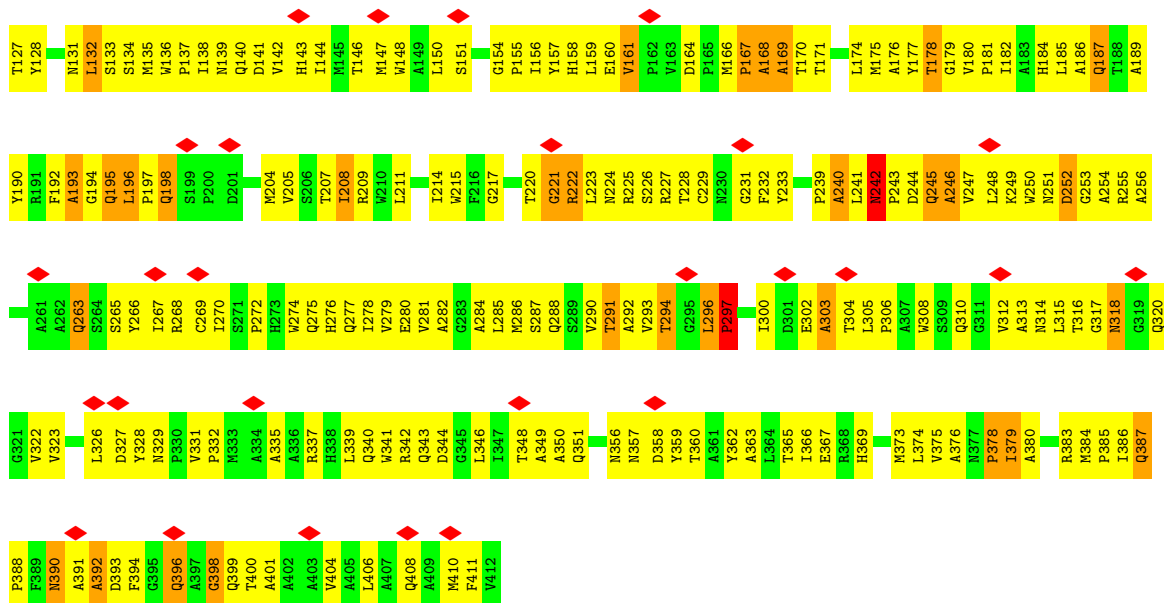


• Molecule 3: C-terminus of outer capsid protein VP5

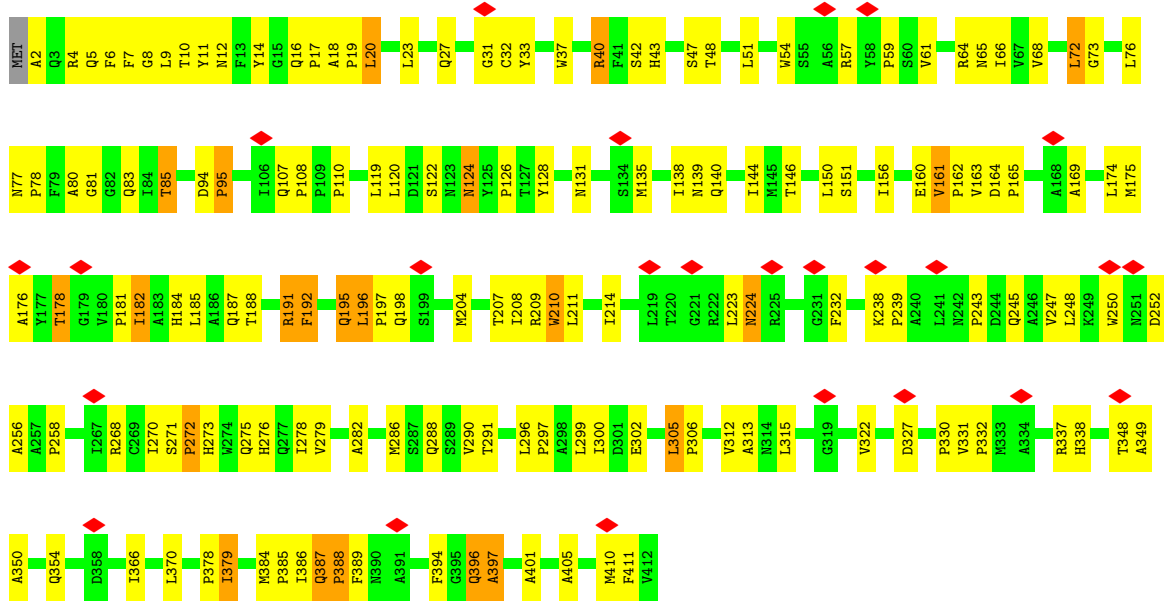


• Molecule 4: Core protein VP6

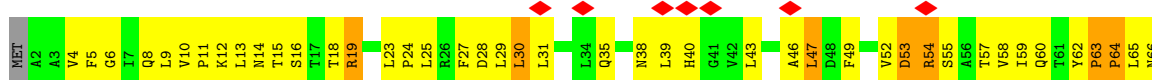


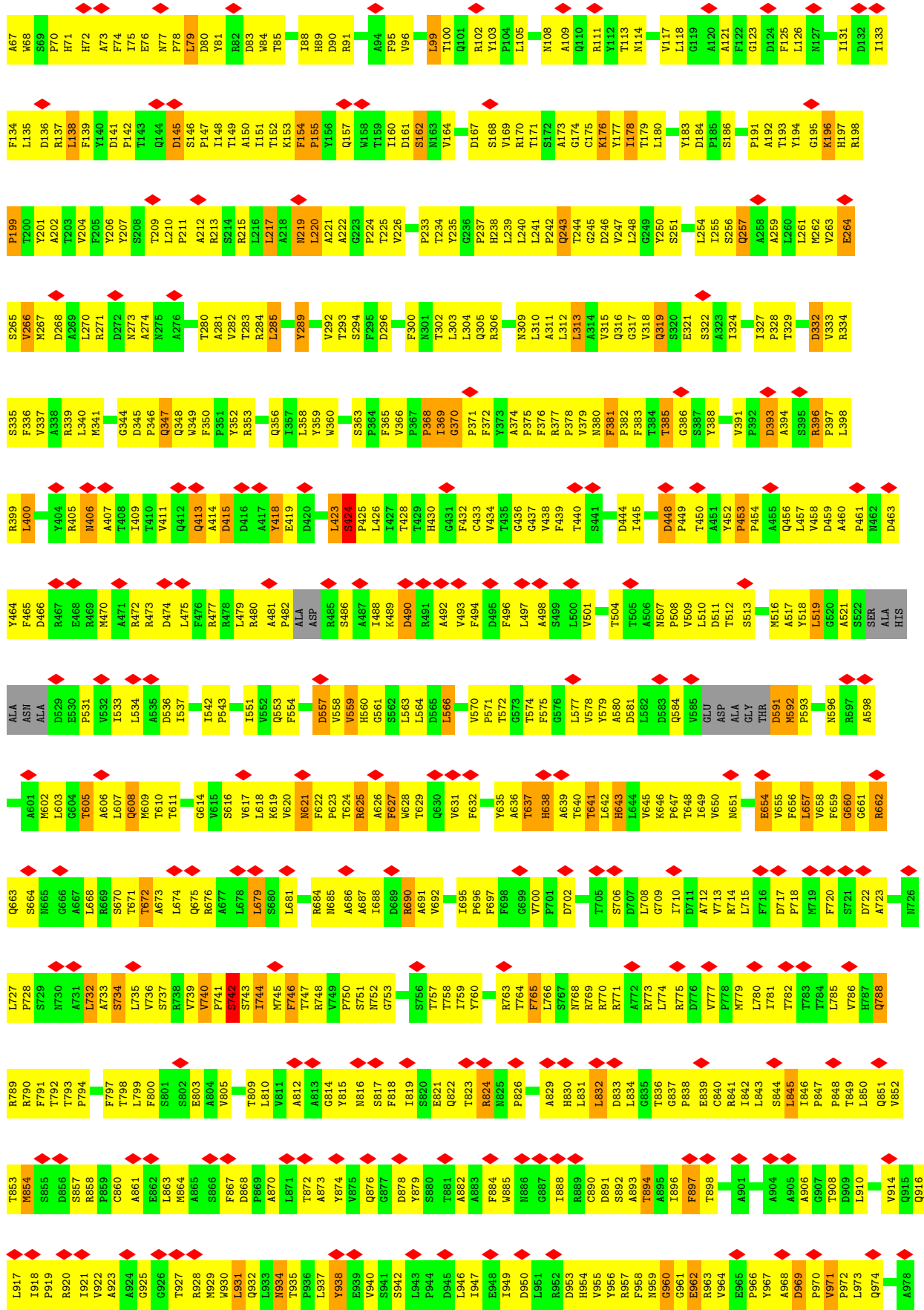


• Molecule 4: Core protein VP6



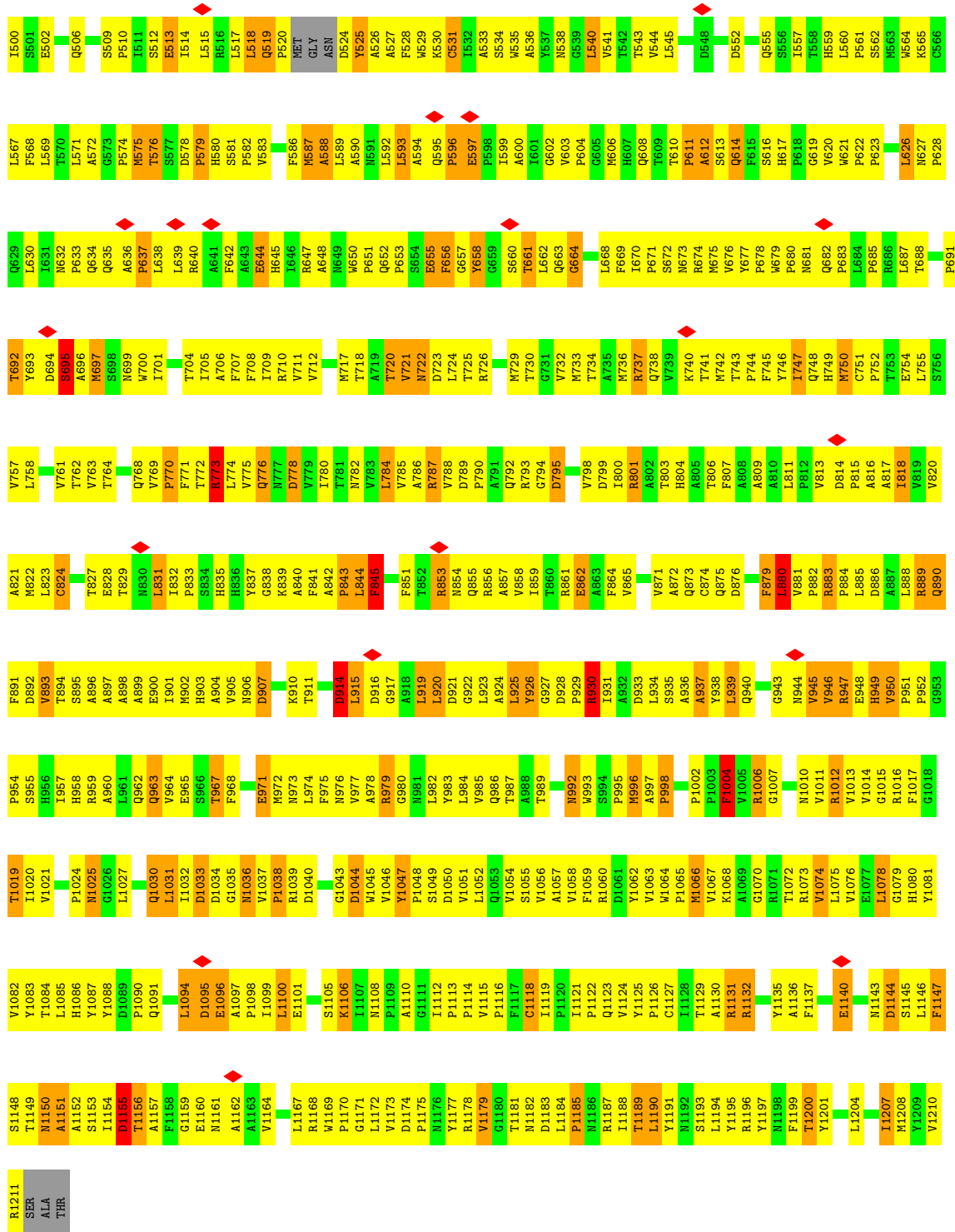
• Molecule 5: VP1



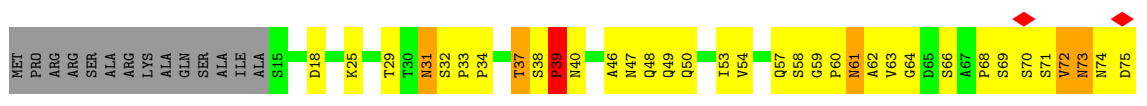


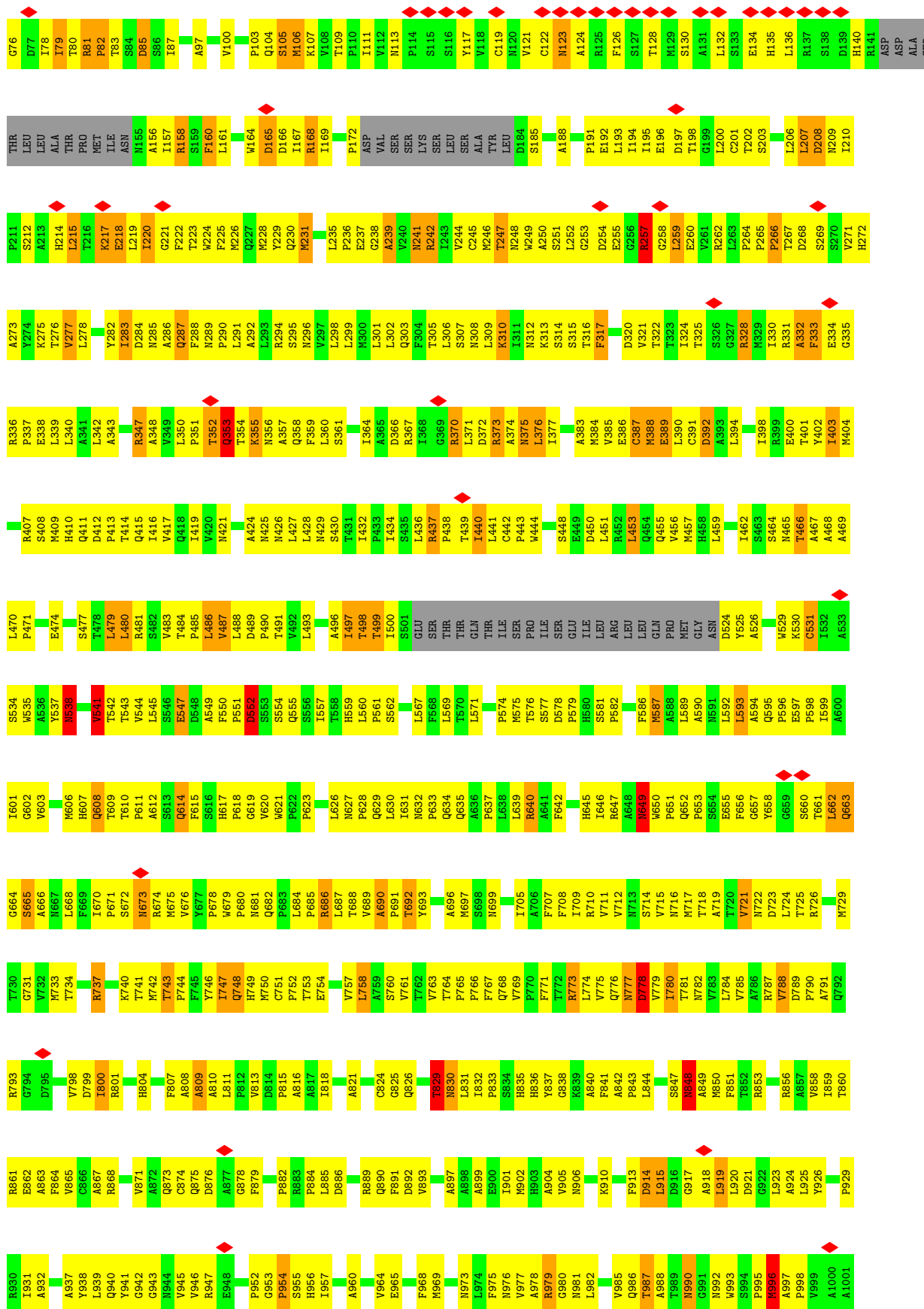






• Molecule 6: VP3







## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	41000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	25	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	134.413	Depositor
Minimum map value	-88.945	Depositor
Average map value	0.680	Depositor
Map value standard deviation	8.761	Depositor
Recommended contour level	9.0	Depositor
Map size (Å)	838.8, 838.8, 838.8	wwPDB
Map dimensions	900, 900, 900	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.932, 0.932, 0.932	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: MYR

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	b	0.83	2/678 (0.3%)	1.10	3/922 (0.3%)
1	d	0.43	0/678	0.78	0/922
1	f	0.42	0/678	0.92	4/922 (0.4%)
1	h	0.43	0/678	0.76	0/922
1	j	0.43	0/678	0.76	0/922
1	l	0.40	0/678	0.83	2/922 (0.2%)
1	n	0.41	0/678	0.75	0/922
1	p	0.42	0/678	0.74	0/922
1	r	0.41	0/678	0.76	0/922
1	t	0.42	0/678	0.71	0/922
2	A	0.60	0/295	1.00	0/405
2	C	0.60	0/295	1.00	0/405
2	E	0.60	0/295	0.99	0/405
2	G	0.60	0/286	0.95	0/391
2	I	0.60	0/295	1.00	0/405
2	K	0.60	0/295	0.99	0/405
2	M	0.60	0/286	0.95	0/391
2	O	0.60	0/295	0.99	0/405
2	Q	0.60	0/295	0.99	0/405
2	S	0.60	0/286	0.95	0/391
3	B	0.52	0/4601	0.80	0/6295
3	D	0.51	0/4601	0.80	1/6295 (0.0%)
3	F	0.52	0/4601	0.80	0/6295
3	H	0.52	0/4601	0.80	0/6295
3	J	0.51	0/4601	0.80	0/6295
3	L	0.52	0/4601	0.80	0/6295
3	N	0.52	0/4601	0.80	0/6295
3	P	0.51	0/4601	0.80	0/6295
3	R	0.52	0/4601	0.80	0/6295
3	T	0.52	0/4601	0.80	0/6295
4	U	0.33	0/3233	0.55	0/4443
4	V	0.31	0/3233	0.49	0/4443

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
5	W	0.32	0/10148	0.60	0/13935
6	X	0.53	0/8078	0.75	2/11071 (0.0%)
6	Y	0.38	0/9056	0.66	2/12412 (0.0%)
All	All	0.47	2/89461 (0.0%)	0.75	14/122482 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	b	0	4
1	d	0	3
1	f	0	2
1	h	0	2
1	j	0	2
1	l	0	2
1	n	0	3
1	p	0	3
1	r	0	2
1	t	0	2
3	B	0	1
3	D	0	1
3	F	0	1
3	H	0	1
3	J	0	1
3	L	0	1
3	N	0	1
3	P	0	1
3	R	0	1
3	T	0	1
6	X	0	3
6	Y	0	2
All	All	0	40

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	b	74	GLN	C-N	17.97	1.68	1.34
1	b	73	ARG	C-N	5.02	1.45	1.34

The worst 5 of 14 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	b	73	ARG	O-C-N	-19.95	90.78	122.70
1	b	73	ARG	CA-C-N	10.04	139.28	117.20
1	f	75	PRO	N-CA-CB	-6.70	95.23	102.60
1	b	74	GLN	O-C-N	-6.47	108.81	121.10
1	l	18	ALA	C-N-CA	6.35	137.58	121.70

There are no chirality outliers.

5 of 40 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	b	43	CYS	Peptide
1	b	73	ARG	Mainchain,Peptide
1	b	75	PRO	Peptide
1	l	43	CYS	Peptide
1	l	75	PRO	Peptide

## 5.2 Too-close contacts [i](#)

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	b	666	0	660	0	0
1	d	666	0	660	0	0
1	f	666	0	657	0	0
1	h	666	0	655	0	0
1	j	666	0	659	0	0
1	l	666	0	656	0	0
1	n	666	0	658	0	0
1	p	666	0	659	0	0
1	r	666	0	657	0	0
1	t	666	0	659	0	0
2	A	291	0	277	54	0
2	C	291	0	277	78	0
2	E	291	0	277	77	0
2	G	284	0	267	56	0
2	I	291	0	277	81	0
2	K	291	0	277	78	0
2	M	284	0	267	57	0
2	O	291	0	277	76	0

*Continued on next page...*

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	Q	291	0	277	85	0
2	S	284	0	267	58	0
3	B	4508	0	4555	645	0
3	D	4508	0	4554	904	0
3	F	4508	0	4554	874	0
3	H	4508	0	4554	865	0
3	J	4508	0	4553	890	0
3	L	4508	0	4555	874	0
3	N	4508	0	4555	889	0
3	P	4508	0	4555	899	0
3	R	4508	0	4554	883	0
3	T	4508	0	4555	883	0
4	U	3138	0	3061	444	0
4	V	3138	0	3061	174	0
5	W	9882	0	9821	1051	0
6	X	7873	0	7851	1242	0
6	Y	8835	0	8748	1054	0
7	A	15	0	27	27	0
7	C	15	0	27	33	0
7	E	15	0	27	27	0
7	G	15	0	27	29	0
7	I	15	0	27	29	0
7	K	15	0	27	27	0
7	M	15	0	27	26	0
7	O	15	0	27	28	0
7	Q	15	0	27	27	0
7	S	15	0	27	30	0
All	All	87645	0	87676	11633	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 77.

The worst 5 of 11633 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)
4:U:32:CYS:HB3	6:X:958:HIS:CE1	1.55	1.38
6:X:464:SER:HB2	6:Y:500:ILE:CG2	1.52	1.38
3:R:628:GLN:NE2	5:W:870:ALA:HA	1.41	1.35
3:D:469:VAL:HG21	3:F:575:MET:CE	1.59	1.33
3:F:469:VAL:HG21	3:H:575:MET:CE	1.59	1.33



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	b	84/276 (30%)	70 (83%)	9 (11%)	5 (6%)	1	10
1	d	84/276 (30%)	70 (83%)	11 (13%)	3 (4%)	3	20
1	f	84/276 (30%)	68 (81%)	12 (14%)	4 (5%)	2	14
1	h	84/276 (30%)	71 (84%)	10 (12%)	3 (4%)	3	20
1	j	84/276 (30%)	72 (86%)	9 (11%)	3 (4%)	3	20
1	l	84/276 (30%)	70 (83%)	13 (16%)	1 (1%)	13	42
1	n	84/276 (30%)	69 (82%)	12 (14%)	3 (4%)	3	20
1	p	84/276 (30%)	74 (88%)	7 (8%)	3 (4%)	3	20
1	r	84/276 (30%)	71 (84%)	11 (13%)	2 (2%)	6	28
1	t	84/276 (30%)	72 (86%)	10 (12%)	2 (2%)	6	28
2	A	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	C	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	E	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	G	37/42 (88%)	24 (65%)	8 (22%)	5 (14%)	0	1
2	I	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	K	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	M	37/42 (88%)	24 (65%)	8 (22%)	5 (14%)	0	1
2	O	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	Q	39/42 (93%)	25 (64%)	9 (23%)	5 (13%)	0	1
2	S	37/42 (88%)	24 (65%)	8 (22%)	5 (14%)	0	1
3	B	602/606 (99%)	407 (68%)	134 (22%)	61 (10%)	0	3
3	D	602/606 (99%)	416 (69%)	129 (21%)	57 (10%)	0	4

*Continued on next page...*

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	F	602/606 (99%)	408 (68%)	133 (22%)	61 (10%)	0	3
3	H	602/606 (99%)	409 (68%)	132 (22%)	61 (10%)	0	3
3	J	602/606 (99%)	411 (68%)	132 (22%)	59 (10%)	0	3
3	L	602/606 (99%)	409 (68%)	132 (22%)	61 (10%)	0	3
3	N	602/606 (99%)	408 (68%)	133 (22%)	61 (10%)	0	3
3	P	602/606 (99%)	410 (68%)	132 (22%)	60 (10%)	0	3
3	R	602/606 (99%)	406 (67%)	135 (22%)	61 (10%)	0	3
3	T	602/606 (99%)	406 (67%)	135 (22%)	61 (10%)	0	3
4	U	409/412 (99%)	283 (69%)	81 (20%)	45 (11%)	0	2
4	V	409/412 (99%)	330 (81%)	60 (15%)	19 (5%)	2	15
5	W	1276/1299 (98%)	1063 (83%)	173 (14%)	40 (3%)	4	23
6	X	1012/1214 (83%)	714 (71%)	219 (22%)	79 (8%)	1	6
6	Y	1146/1214 (94%)	860 (75%)	204 (18%)	82 (7%)	1	7
All	All	11496/13791 (83%)	8294 (72%)	2255 (20%)	947 (8%)	2	5

5 of 947 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	l	19	ALA
1	b	62	VAL
1	b	75	PRO
1	f	75	PRO
1	d	22	LEU

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	b	72/228 (32%)	67 (93%)	5 (7%)	15	44
1	d	72/228 (32%)	68 (94%)	4 (6%)	21	52
1	f	72/228 (32%)	67 (93%)	5 (7%)	15	44

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	h	72/228 (32%)	66 (92%)	6 (8%)	11	36
1	j	72/228 (32%)	67 (93%)	5 (7%)	15	44
1	l	72/228 (32%)	66 (92%)	6 (8%)	11	36
1	n	72/228 (32%)	68 (94%)	4 (6%)	21	52
1	p	72/228 (32%)	68 (94%)	4 (6%)	21	52
1	r	72/228 (32%)	66 (92%)	6 (8%)	11	36
1	t	72/228 (32%)	68 (94%)	4 (6%)	21	52
2	A	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	C	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	E	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	G	32/35 (91%)	25 (78%)	7 (22%)	1	3
2	I	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	K	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	M	32/35 (91%)	25 (78%)	7 (22%)	1	3
2	O	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	Q	34/35 (97%)	27 (79%)	7 (21%)	1	4
2	S	32/35 (91%)	25 (78%)	7 (22%)	1	3
3	B	499/501 (100%)	425 (85%)	74 (15%)	3	13
3	D	499/501 (100%)	425 (85%)	74 (15%)	3	13
3	F	499/501 (100%)	426 (85%)	73 (15%)	3	14
3	H	499/501 (100%)	426 (85%)	73 (15%)	3	14
3	J	499/501 (100%)	423 (85%)	76 (15%)	3	13
3	L	499/501 (100%)	425 (85%)	74 (15%)	3	13
3	N	499/501 (100%)	423 (85%)	76 (15%)	3	13
3	P	499/501 (100%)	423 (85%)	76 (15%)	3	13
3	R	499/501 (100%)	425 (85%)	74 (15%)	3	13
3	T	499/501 (100%)	423 (85%)	76 (15%)	3	13
4	U	325/326 (100%)	305 (94%)	20 (6%)	18	47
4	V	325/326 (100%)	305 (94%)	20 (6%)	18	47
5	W	1082/1092 (99%)	977 (90%)	105 (10%)	8	29
6	X	869/1030 (84%)	736 (85%)	133 (15%)	2	12

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	Y	976/1030 (95%)	864 (88%)	112 (12%)	5	22
All	All	9621/11444 (84%)	8366 (87%)	1255 (13%)	7	17

5 of 1255 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	W	264	GLU
6	Y	39	PRO
5	W	519	LEU
5	W	262	MET
6	X	376	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 375 such sidechains are listed below:

Mol	Chain	Res	Type
4	U	3	GLN
5	W	596	ASN
4	U	124	ASN
4	V	88	GLN
5	W	1151	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

10 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	MYR	I	101	2	14,14,15	0.46	0	13,13,15	0.55	0
7	MYR	C	101	2	14,14,15	0.46	0	13,13,15	0.55	0
7	MYR	E	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	K	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	Q	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	M	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	S	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	G	101	2	14,14,15	0.46	0	13,13,15	0.55	0
7	MYR	O	101	2	14,14,15	0.46	0	13,13,15	0.56	0
7	MYR	A	101	2	14,14,15	0.46	0	13,13,15	0.56	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	MYR	I	101	2	-	8/11/12/13	-
7	MYR	C	101	2	-	8/11/12/13	-
7	MYR	E	101	2	-	8/11/12/13	-
7	MYR	K	101	2	-	8/11/12/13	-
7	MYR	Q	101	2	-	8/11/12/13	-
7	MYR	M	101	2	-	8/11/12/13	-
7	MYR	S	101	2	-	8/11/12/13	-
7	MYR	G	101	2	-	8/11/12/13	-
7	MYR	O	101	2	-	8/11/12/13	-
7	MYR	A	101	2	-	8/11/12/13	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 80 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	C	101	MYR	C3-C4-C5-C6
7	G	101	MYR	C3-C4-C5-C6
7	O	101	MYR	C3-C4-C5-C6
7	A	101	MYR	C3-C4-C5-C6
7	E	101	MYR	C3-C4-C5-C6

There are no ring outliers.

10 monomers are involved in 283 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	I	101	MYR	29	0
7	C	101	MYR	33	0
7	E	101	MYR	27	0
7	K	101	MYR	27	0
7	Q	101	MYR	27	0
7	M	101	MYR	26	0
7	S	101	MYR	30	0
7	G	101	MYR	29	0
7	O	101	MYR	28	0
7	A	101	MYR	27	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	b	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	b	74:GLN	C	75:PRO	N	1.68

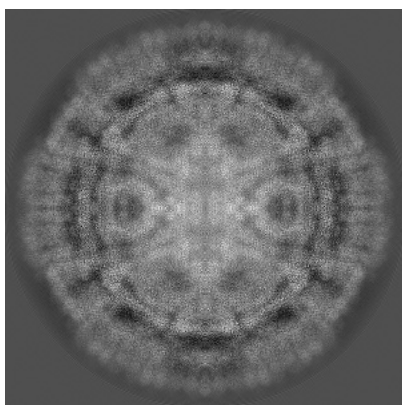
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6969. These allow visual inspection of the internal detail of the map and identification of artifacts.

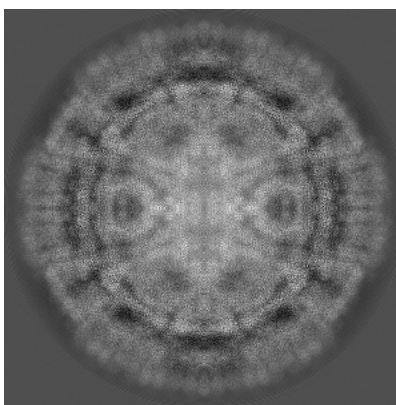
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

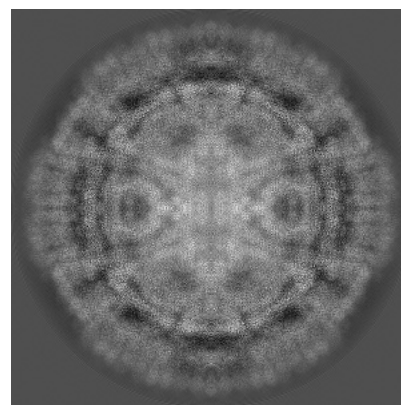
#### 6.1.1 Primary map



X



Y

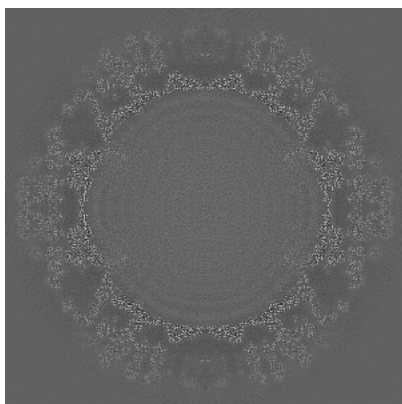


Z

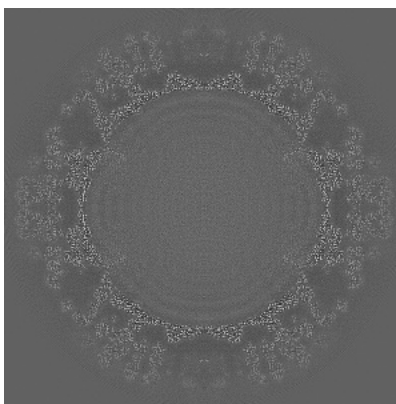
The images above show the map projected in three orthogonal directions.

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

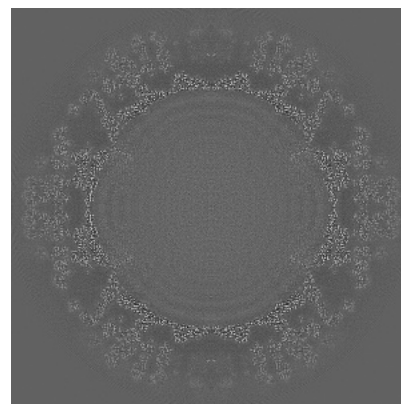
#### 6.2.1 Primary map



X Index: 450



Y Index: 450

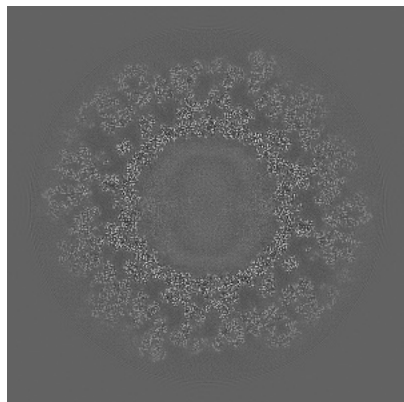


Z Index: 450

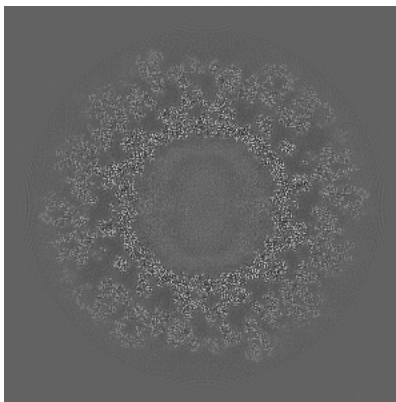
The images above show central slices of the map in three orthogonal directions.

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

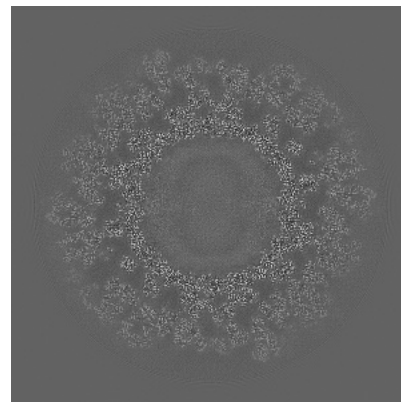
### 6.3.1 Primary map



X Index: 241



Y Index: 659



Z Index: 659

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

## 6.4 Orthogonal surface views [i](#)

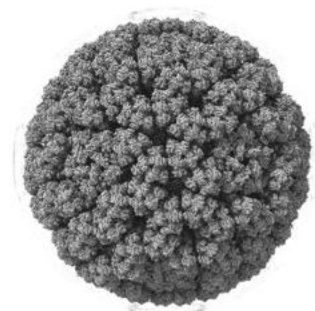
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 9.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.



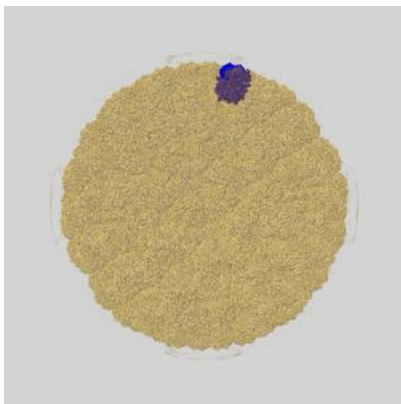
## 6.5 Mask visualisation [i](#)

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

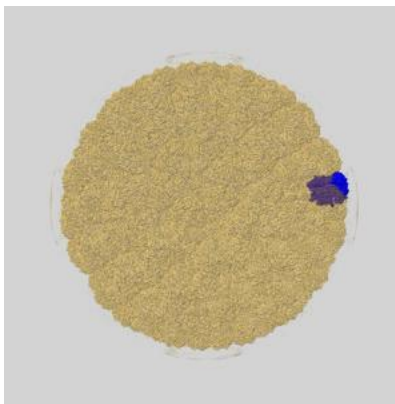
A mask typically either:

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

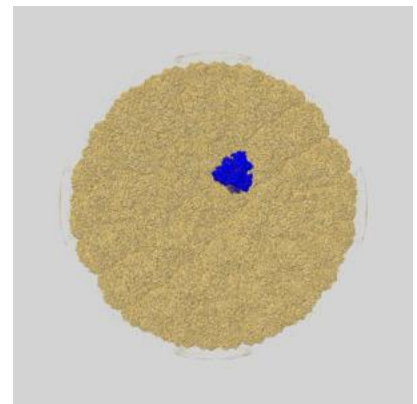
### 6.5.1 emd\_6969\_msk\_1.map [i](#)



X



Y

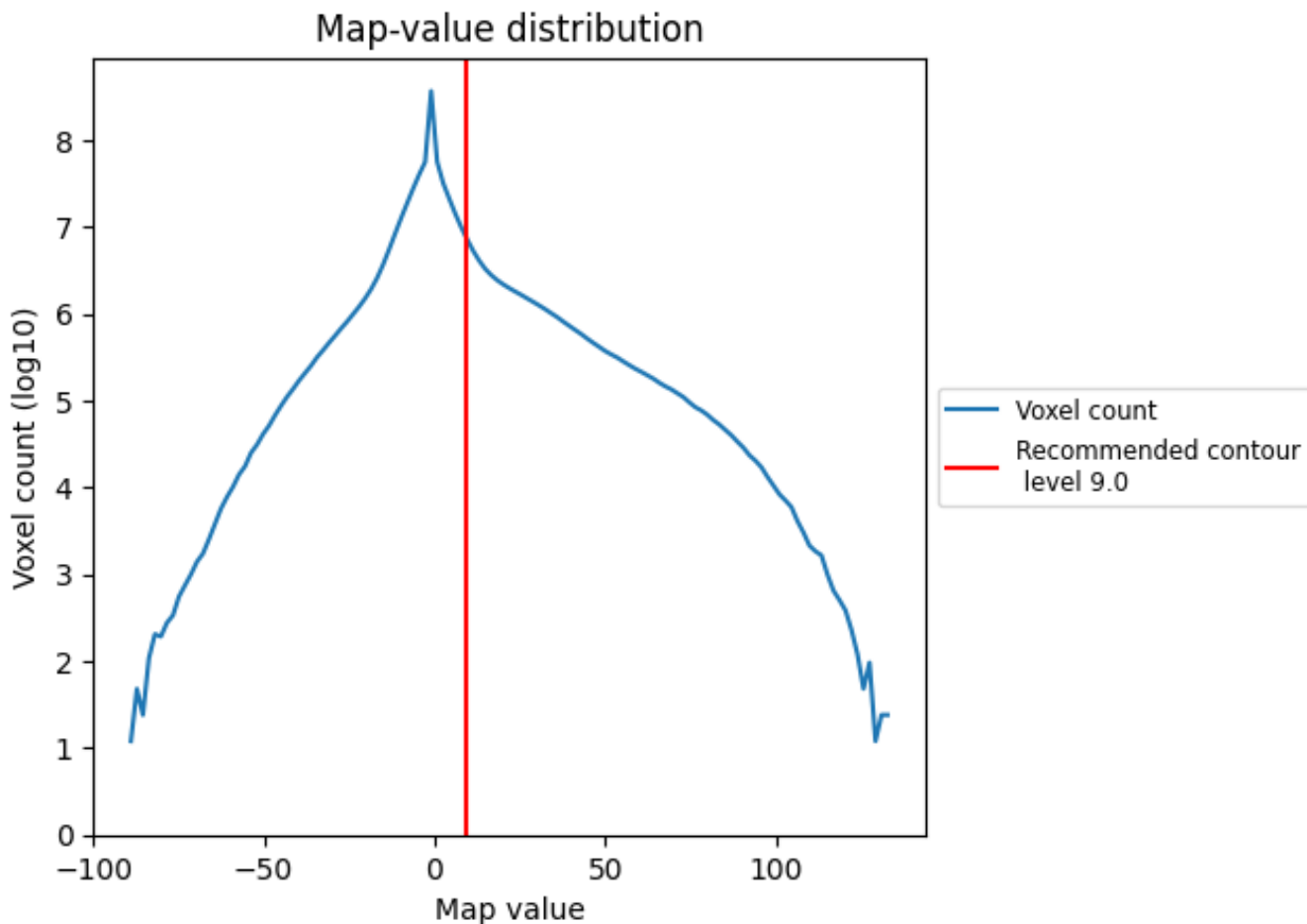


Z

## 7 Map analysis [i](#)

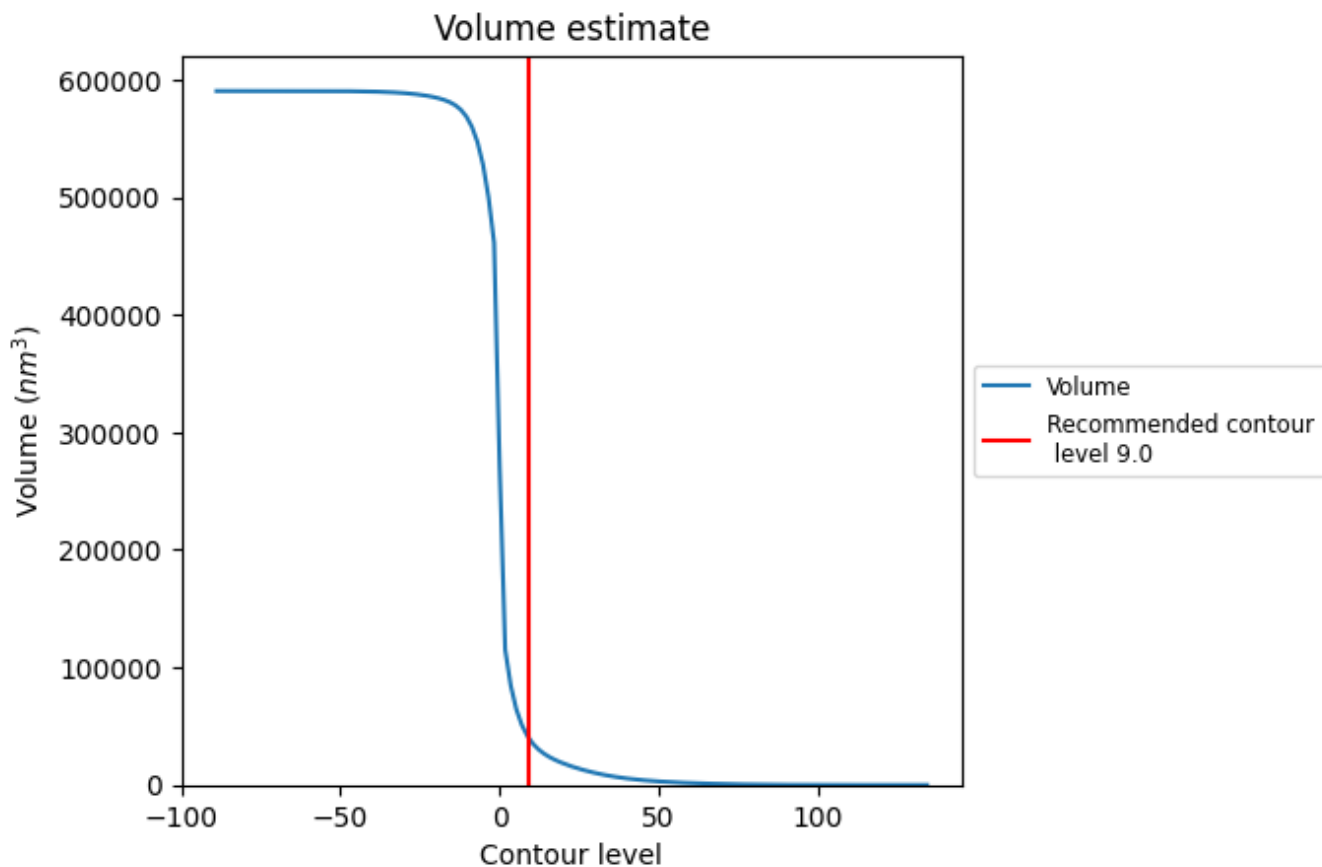
This section contains the results of statistical analysis of the map.

### 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.

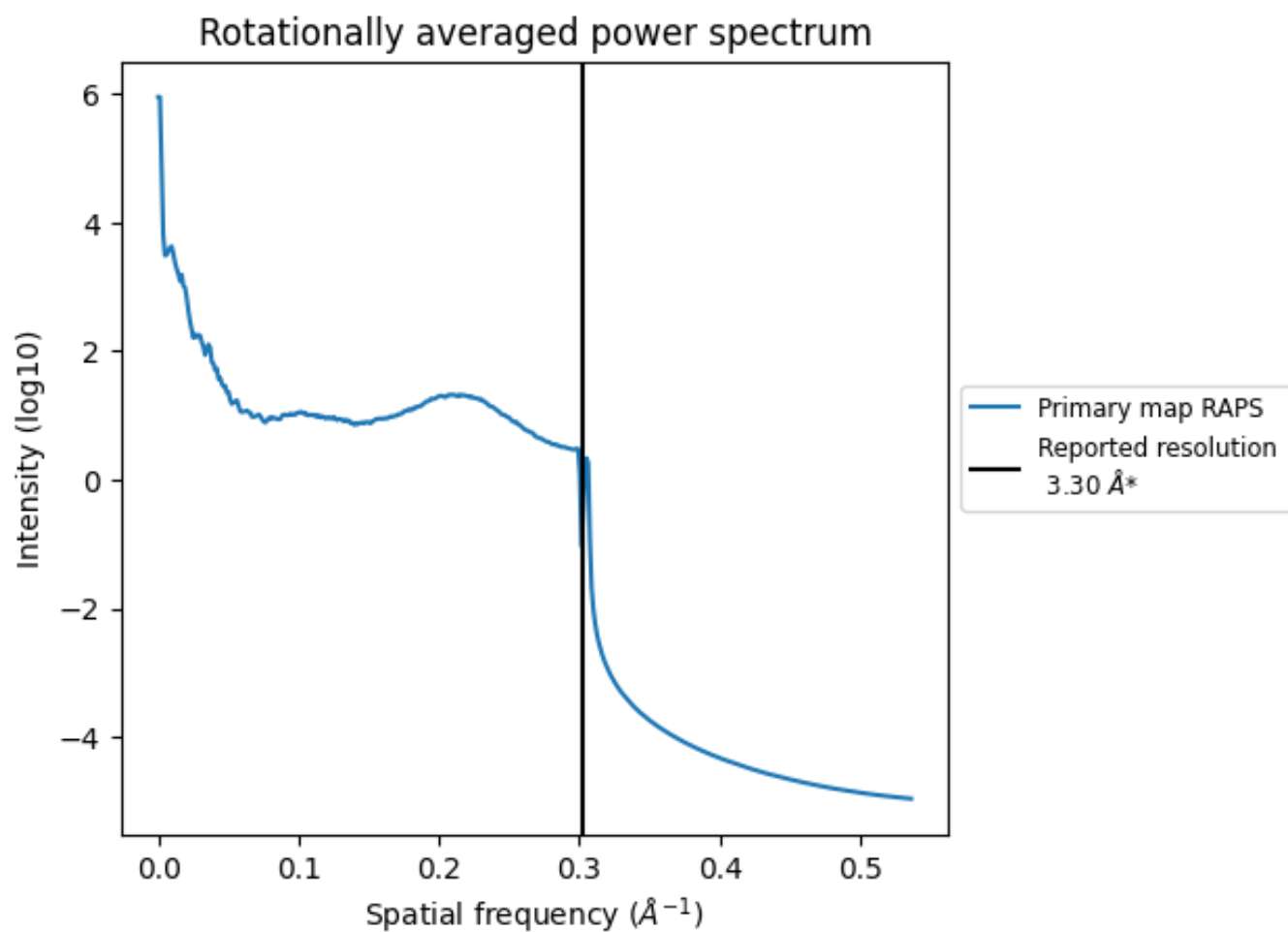
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 40818 nm<sup>3</sup>; this corresponds to an approximate mass of 36872 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 [i](#)



\*Reported resolution corresponds to spatial frequency of  $0.303 \text{\AA}^{-1}$

## 8 Fourier-Shell correlation

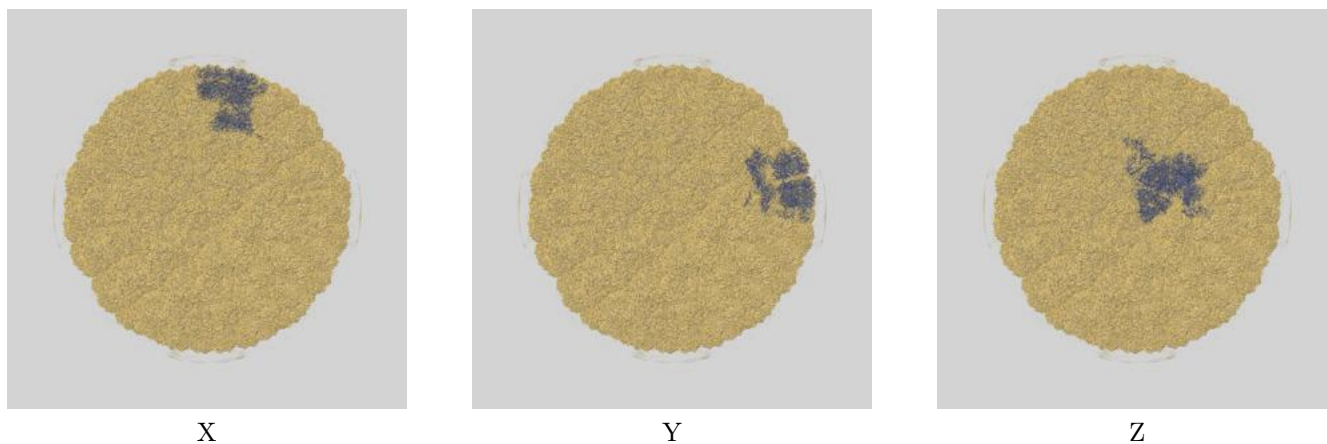
This section was not generated. No FSC curve or half-maps provided.

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

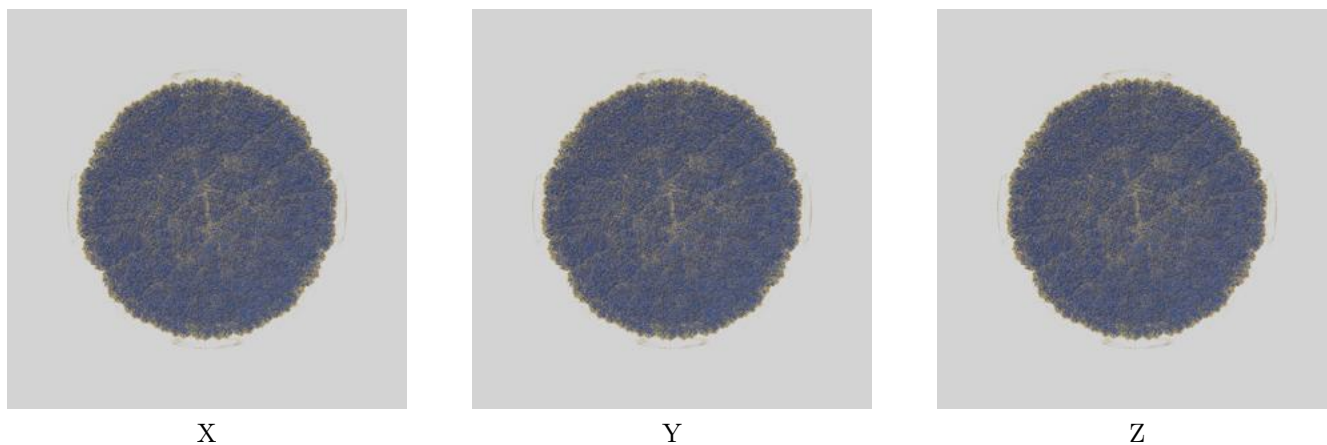
This section contains information regarding the fit between EMDB map EMD-6969 and PDB model 5ZVT. Per-residue inclusion information can be found in section 3 on page 9.

### 9.1 Map-model overlays

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

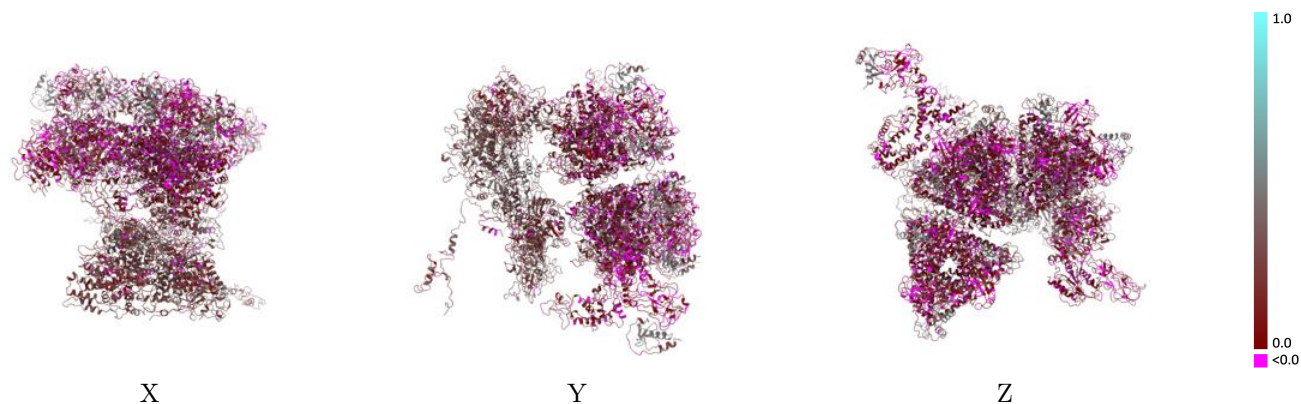


#### 9.1.2 Map-model assembly overlay [i](#)



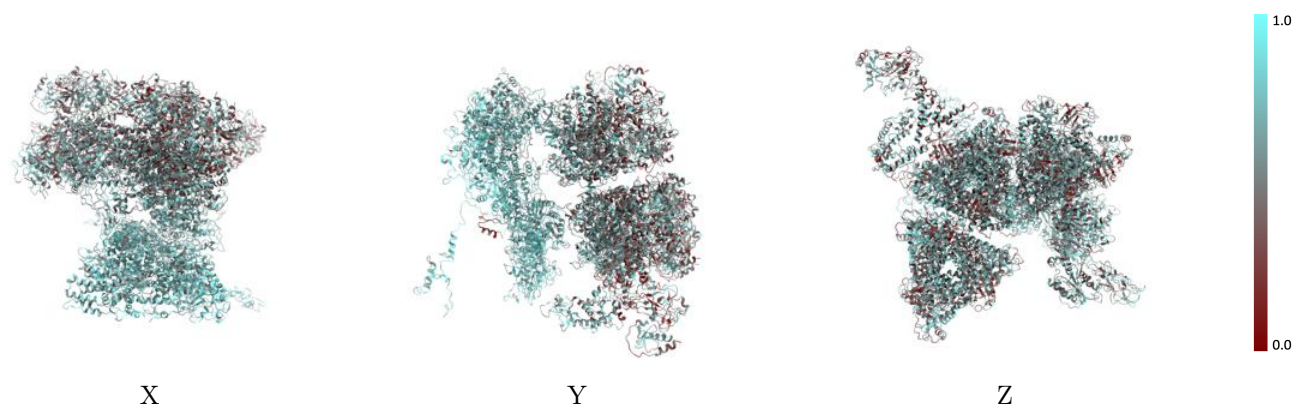
The images above show the 3D surface view of the map at the recommended contour level 9.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



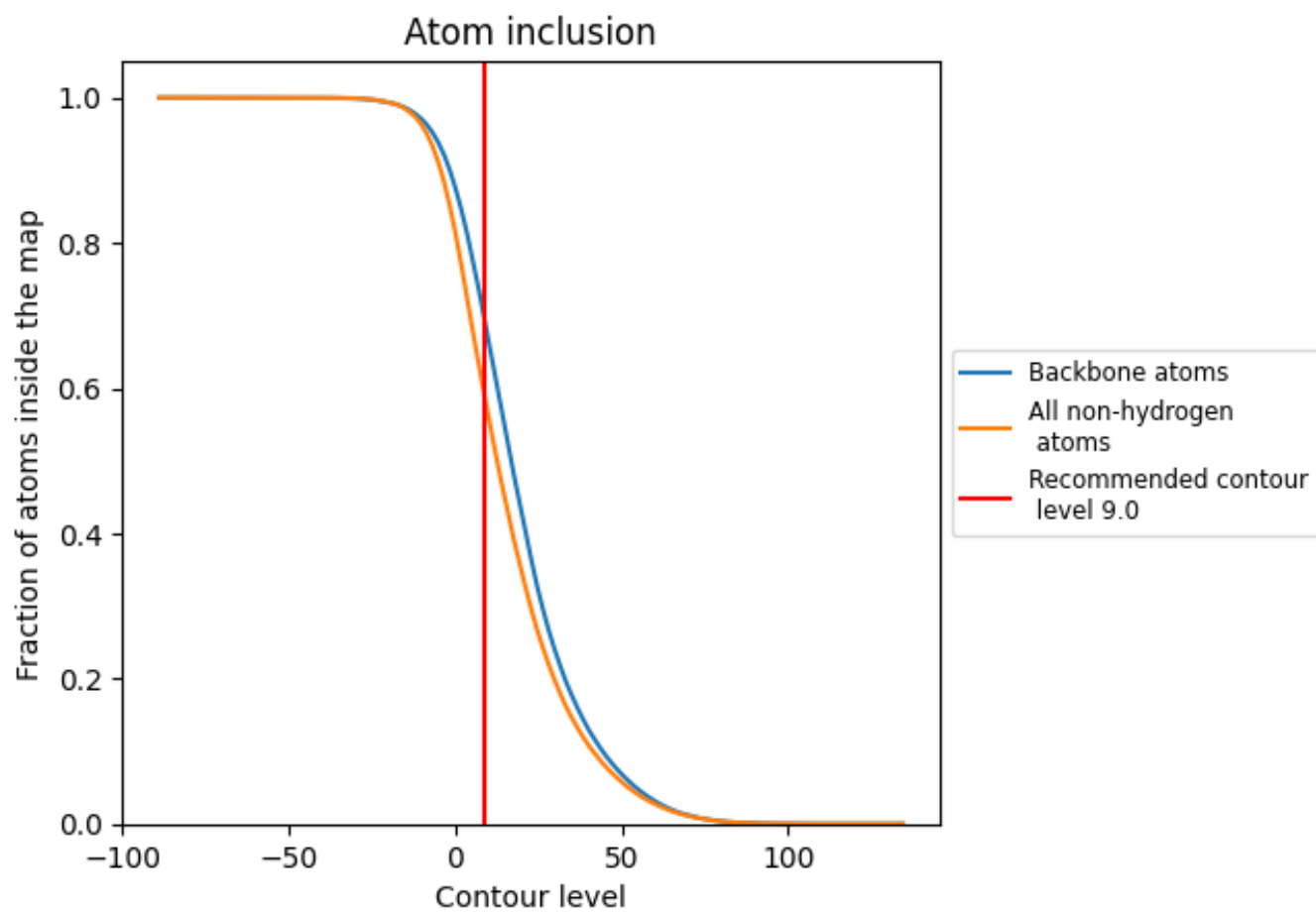
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (9.0).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 69% of all backbone atoms, 58% 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 (9.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5825	0.1950
A	0.5016	0.1370
B	0.4820	0.1040
C	0.5180	0.1540
D	0.5203	0.1290
E	0.5180	0.1500
F	0.5268	0.1390
G	0.5302	0.1670
H	0.5221	0.1340
I	0.5049	0.1360
J	0.5115	0.1220
K	0.5279	0.1550
L	0.5070	0.1240
M	0.4799	0.1230
N	0.5110	0.1200
O	0.5344	0.1600
P	0.5196	0.1270
Q	0.5213	0.1220
R	0.5068	0.1210
S	0.5604	0.1760
T	0.5236	0.1310
U	0.6806	0.2370
V	0.7021	0.2490
W	0.5820	0.1600
X	0.7512	0.3170
Y	0.7450	0.3150
b	0.5455	0.3850
d	0.6163	0.3980
f	0.5963	0.4170
h	0.5809	0.4070
j	0.5809	0.4010
l	0.5639	0.3930
n	0.6379	0.4120
p	0.5378	0.4020
r	0.5670	0.4080
t	0.4407	0.3620

