



wwPDB EM Validation Summary Report ⓘ

May 19, 2025 – 09:35 AM EDT

PDB ID : 6CBE / pdb_00006cbe
EMDB ID : EMD-7452
Title : Atomic structure of a rationally engineered gene delivery vector, AAV2.5
Authors : Burg, M.; Rosebrough, C.; Drouin, L.; Bennett, A.; Mietzsch, M.; Chipman, P.; McKenna, R.; Sousa, D.; Potter, M.; Byrne, B.; Kozyreva, O.G.; Samulski, R.J.; Agbandje-McKenna, M.
Deposited on : 2018-02-02
Resolution : 2.78 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.dev118
MolProbity : 4-5-2 with Phenix2.0rc1
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) : 2.43.1

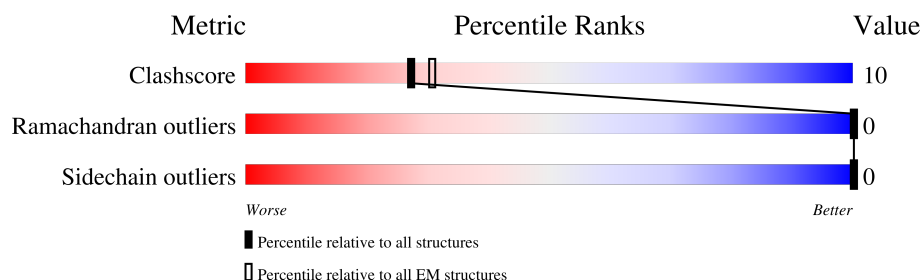
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.78 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	210492	15764
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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	736	24% 55% 15% 30%
1	1	736	24% 55% 15% 30%
1	2	736	23% 55% 15% 30%
1	3	736	24% 54% 16% 30%
1	4	736	26% 55% 16% 30%
1	5	736	24% 55% 16% 30%
1	6	736	25% 55% 15% 30%
1	7	736	25% 55% 15% 30%

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Mol	Chain	Length	Quality of chain
1	A	736	24% 56% 15% 30%
1	B	736	26% 55% 15% 30%
1	C	736	24% 55% 15% 30%
1	D	736	25% 55% 15% 30%
1	E	736	23% 55% 15% 30%
1	F	736	23% 55% 16% 30%
1	G	736	25% 55% 15% 30%
1	H	736	25% 55% 16% 30%
1	I	736	24% 55% 15% 30%
1	J	736	26% 55% 15% 30%
1	K	736	24% 55% 15% 30%
1	L	736	26% 55% 16% 30%
1	M	736	25% 55% 15% 30%
1	N	736	24% 55% 15% 30%
1	O	736	26% 55% 15% 30%
1	P	736	24% 55% 16% 30%
1	Q	736	23% 55% 15% 30%
1	R	736	24% 55% 15% 30%
1	S	736	25% 55% 15% 30%
1	T	736	25% 55% 15% 30%
1	U	736	24% 55% 15% 30%
1	V	736	26% 55% 16% 30%
1	W	736	24% 55% 15% 30%
1	X	736	26% 55% 15% 30%
1	Y	736	24% 56% 15% 30%

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Mol	Chain	Length	Quality of chain
1	Z	736	23% 55% 16% 30%
1	a	736	25% 55% 15% 30%
1	b	736	24% 55% 15% 30%
1	c	736	23% 55% 16% 30%
1	d	736	23% 54% 16% 30%
1	e	736	23% 55% 15% 30%
1	f	736	24% 55% 15% 30%
1	g	736	26% 55% 15% 30%
1	h	736	25% 55% 15% 30%
1	i	736	23% 55% 16% 30%
1	j	736	23% 55% 16% 30%
1	k	736	25% 55% 15% 30%
1	l	736	24% 55% 15% 30%
1	m	736	24% 55% 16% 30%
1	n	736	26% 54% 16% 30%
1	o	736	26% 55% 15% 30%
1	p	736	26% 55% 15% 30%
1	q	736	24% 55% 16% 30%
1	r	736	25% 55% 15% 30%
1	s	736	24% 55% 15% 30%
1	t	736	25% 55% 15% 30%
1	u	736	24% 55% 16% 30%
1	v	736	24% 55% 16% 30%
1	w	736	23% 55% 15% 30%
1	x	736	23% 55% 16% 30%

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Mol	Chain	Length	Quality of chain
1	y	736	24% 54% 16% 30%
1	z	736	24% 55% 16% 30%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 248520 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 Capsid protein VP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	B	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	C	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	D	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	E	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	F	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	G	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	H	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	I	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	J	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	K	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	L	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	M	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	N	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	O	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	P	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		
1	Q	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	R	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	S	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	T	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	U	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	V	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	W	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	X	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	Y	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	Z	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	0	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	1	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	2	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	3	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	4	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	5	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	a	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	b	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	c	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	d	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	e	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	f	518	Total 4142	C 2606	N 723	O 800	S 13	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	g	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	h	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	i	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	j	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	k	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	l	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	m	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	n	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	o	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	p	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	q	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	r	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	s	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	t	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	u	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	v	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	w	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	x	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	y	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	z	518	Total 4142	C 2606	N 723	O 800	S 13	0	0
1	6	518	Total 4142	C 2606	N 723	O 800	S 13	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	7	518	Total	C	N	O	S	0	0
			4142	2606	723	800	13		

There are 300 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	263	ALA	GLN	conflict	UNP P03135
A	265	THR	-	insertion	UNP P03135
A	706	ALA	ASN	conflict	UNP P03135
A	709	ALA	VAL	conflict	UNP P03135
A	717	ASN	THR	conflict	UNP P03135
B	263	ALA	GLN	conflict	UNP P03135
B	265	THR	-	insertion	UNP P03135
B	706	ALA	ASN	conflict	UNP P03135
B	709	ALA	VAL	conflict	UNP P03135
B	717	ASN	THR	conflict	UNP P03135
C	263	ALA	GLN	conflict	UNP P03135
C	265	THR	-	insertion	UNP P03135
C	706	ALA	ASN	conflict	UNP P03135
C	709	ALA	VAL	conflict	UNP P03135
C	717	ASN	THR	conflict	UNP P03135
D	263	ALA	GLN	conflict	UNP P03135
D	265	THR	-	insertion	UNP P03135
D	706	ALA	ASN	conflict	UNP P03135
D	709	ALA	VAL	conflict	UNP P03135
D	717	ASN	THR	conflict	UNP P03135
E	263	ALA	GLN	conflict	UNP P03135
E	265	THR	-	insertion	UNP P03135
E	706	ALA	ASN	conflict	UNP P03135
E	709	ALA	VAL	conflict	UNP P03135
E	717	ASN	THR	conflict	UNP P03135
F	263	ALA	GLN	conflict	UNP P03135
F	265	THR	-	insertion	UNP P03135
F	706	ALA	ASN	conflict	UNP P03135
F	709	ALA	VAL	conflict	UNP P03135
F	717	ASN	THR	conflict	UNP P03135
G	263	ALA	GLN	conflict	UNP P03135
G	265	THR	-	insertion	UNP P03135
G	706	ALA	ASN	conflict	UNP P03135
G	709	ALA	VAL	conflict	UNP P03135
G	717	ASN	THR	conflict	UNP P03135
H	263	ALA	GLN	conflict	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
H	265	THR	-	insertion	UNP P03135
H	706	ALA	ASN	conflict	UNP P03135
H	709	ALA	VAL	conflict	UNP P03135
H	717	ASN	THR	conflict	UNP P03135
I	263	ALA	GLN	conflict	UNP P03135
I	265	THR	-	insertion	UNP P03135
I	706	ALA	ASN	conflict	UNP P03135
I	709	ALA	VAL	conflict	UNP P03135
I	717	ASN	THR	conflict	UNP P03135
J	263	ALA	GLN	conflict	UNP P03135
J	265	THR	-	insertion	UNP P03135
J	706	ALA	ASN	conflict	UNP P03135
J	709	ALA	VAL	conflict	UNP P03135
J	717	ASN	THR	conflict	UNP P03135
K	263	ALA	GLN	conflict	UNP P03135
K	265	THR	-	insertion	UNP P03135
K	706	ALA	ASN	conflict	UNP P03135
K	709	ALA	VAL	conflict	UNP P03135
K	717	ASN	THR	conflict	UNP P03135
L	263	ALA	GLN	conflict	UNP P03135
L	265	THR	-	insertion	UNP P03135
L	706	ALA	ASN	conflict	UNP P03135
L	709	ALA	VAL	conflict	UNP P03135
L	717	ASN	THR	conflict	UNP P03135
M	263	ALA	GLN	conflict	UNP P03135
M	265	THR	-	insertion	UNP P03135
M	706	ALA	ASN	conflict	UNP P03135
M	709	ALA	VAL	conflict	UNP P03135
M	717	ASN	THR	conflict	UNP P03135
N	263	ALA	GLN	conflict	UNP P03135
N	265	THR	-	insertion	UNP P03135
N	706	ALA	ASN	conflict	UNP P03135
N	709	ALA	VAL	conflict	UNP P03135
N	717	ASN	THR	conflict	UNP P03135
O	263	ALA	GLN	conflict	UNP P03135
O	265	THR	-	insertion	UNP P03135
O	706	ALA	ASN	conflict	UNP P03135
O	709	ALA	VAL	conflict	UNP P03135
O	717	ASN	THR	conflict	UNP P03135
P	263	ALA	GLN	conflict	UNP P03135
P	265	THR	-	insertion	UNP P03135
P	706	ALA	ASN	conflict	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
P	709	ALA	VAL	conflict	UNP P03135
P	717	ASN	THR	conflict	UNP P03135
Q	263	ALA	GLN	conflict	UNP P03135
Q	265	THR	-	insertion	UNP P03135
Q	706	ALA	ASN	conflict	UNP P03135
Q	709	ALA	VAL	conflict	UNP P03135
Q	717	ASN	THR	conflict	UNP P03135
R	263	ALA	GLN	conflict	UNP P03135
R	265	THR	-	insertion	UNP P03135
R	706	ALA	ASN	conflict	UNP P03135
R	709	ALA	VAL	conflict	UNP P03135
R	717	ASN	THR	conflict	UNP P03135
S	263	ALA	GLN	conflict	UNP P03135
S	265	THR	-	insertion	UNP P03135
S	706	ALA	ASN	conflict	UNP P03135
S	709	ALA	VAL	conflict	UNP P03135
S	717	ASN	THR	conflict	UNP P03135
T	263	ALA	GLN	conflict	UNP P03135
T	265	THR	-	insertion	UNP P03135
T	706	ALA	ASN	conflict	UNP P03135
T	709	ALA	VAL	conflict	UNP P03135
T	717	ASN	THR	conflict	UNP P03135
U	263	ALA	GLN	conflict	UNP P03135
U	265	THR	-	insertion	UNP P03135
U	706	ALA	ASN	conflict	UNP P03135
U	709	ALA	VAL	conflict	UNP P03135
U	717	ASN	THR	conflict	UNP P03135
V	263	ALA	GLN	conflict	UNP P03135
V	265	THR	-	insertion	UNP P03135
V	706	ALA	ASN	conflict	UNP P03135
V	709	ALA	VAL	conflict	UNP P03135
V	717	ASN	THR	conflict	UNP P03135
W	263	ALA	GLN	conflict	UNP P03135
W	265	THR	-	insertion	UNP P03135
W	706	ALA	ASN	conflict	UNP P03135
W	709	ALA	VAL	conflict	UNP P03135
W	717	ASN	THR	conflict	UNP P03135
X	263	ALA	GLN	conflict	UNP P03135
X	265	THR	-	insertion	UNP P03135
X	706	ALA	ASN	conflict	UNP P03135
X	709	ALA	VAL	conflict	UNP P03135
X	717	ASN	THR	conflict	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
Y	263	ALA	GLN	conflict	UNP P03135
Y	265	THR	-	insertion	UNP P03135
Y	706	ALA	ASN	conflict	UNP P03135
Y	709	ALA	VAL	conflict	UNP P03135
Y	717	ASN	THR	conflict	UNP P03135
Z	263	ALA	GLN	conflict	UNP P03135
Z	265	THR	-	insertion	UNP P03135
Z	706	ALA	ASN	conflict	UNP P03135
Z	709	ALA	VAL	conflict	UNP P03135
Z	717	ASN	THR	conflict	UNP P03135
0	263	ALA	GLN	conflict	UNP P03135
0	265	THR	-	insertion	UNP P03135
0	706	ALA	ASN	conflict	UNP P03135
0	709	ALA	VAL	conflict	UNP P03135
0	717	ASN	THR	conflict	UNP P03135
1	263	ALA	GLN	conflict	UNP P03135
1	265	THR	-	insertion	UNP P03135
1	706	ALA	ASN	conflict	UNP P03135
1	709	ALA	VAL	conflict	UNP P03135
1	717	ASN	THR	conflict	UNP P03135
2	263	ALA	GLN	conflict	UNP P03135
2	265	THR	-	insertion	UNP P03135
2	706	ALA	ASN	conflict	UNP P03135
2	709	ALA	VAL	conflict	UNP P03135
2	717	ASN	THR	conflict	UNP P03135
3	263	ALA	GLN	conflict	UNP P03135
3	265	THR	-	insertion	UNP P03135
3	706	ALA	ASN	conflict	UNP P03135
3	709	ALA	VAL	conflict	UNP P03135
3	717	ASN	THR	conflict	UNP P03135
4	263	ALA	GLN	conflict	UNP P03135
4	265	THR	-	insertion	UNP P03135
4	706	ALA	ASN	conflict	UNP P03135
4	709	ALA	VAL	conflict	UNP P03135
4	717	ASN	THR	conflict	UNP P03135
5	263	ALA	GLN	conflict	UNP P03135
5	265	THR	-	insertion	UNP P03135
5	706	ALA	ASN	conflict	UNP P03135
5	709	ALA	VAL	conflict	UNP P03135
5	717	ASN	THR	conflict	UNP P03135
a	263	ALA	GLN	conflict	UNP P03135
a	265	THR	-	insertion	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
a	706	ALA	ASN	conflict	UNP P03135
a	709	ALA	VAL	conflict	UNP P03135
a	717	ASN	THR	conflict	UNP P03135
b	263	ALA	GLN	conflict	UNP P03135
b	265	THR	-	insertion	UNP P03135
b	706	ALA	ASN	conflict	UNP P03135
b	709	ALA	VAL	conflict	UNP P03135
b	717	ASN	THR	conflict	UNP P03135
c	263	ALA	GLN	conflict	UNP P03135
c	265	THR	-	insertion	UNP P03135
c	706	ALA	ASN	conflict	UNP P03135
c	709	ALA	VAL	conflict	UNP P03135
c	717	ASN	THR	conflict	UNP P03135
d	263	ALA	GLN	conflict	UNP P03135
d	265	THR	-	insertion	UNP P03135
d	706	ALA	ASN	conflict	UNP P03135
d	709	ALA	VAL	conflict	UNP P03135
d	717	ASN	THR	conflict	UNP P03135
e	263	ALA	GLN	conflict	UNP P03135
e	265	THR	-	insertion	UNP P03135
e	706	ALA	ASN	conflict	UNP P03135
e	709	ALA	VAL	conflict	UNP P03135
e	717	ASN	THR	conflict	UNP P03135
f	263	ALA	GLN	conflict	UNP P03135
f	265	THR	-	insertion	UNP P03135
f	706	ALA	ASN	conflict	UNP P03135
f	709	ALA	VAL	conflict	UNP P03135
f	717	ASN	THR	conflict	UNP P03135
g	263	ALA	GLN	conflict	UNP P03135
g	265	THR	-	insertion	UNP P03135
g	706	ALA	ASN	conflict	UNP P03135
g	709	ALA	VAL	conflict	UNP P03135
g	717	ASN	THR	conflict	UNP P03135
h	263	ALA	GLN	conflict	UNP P03135
h	265	THR	-	insertion	UNP P03135
h	706	ALA	ASN	conflict	UNP P03135
h	709	ALA	VAL	conflict	UNP P03135
h	717	ASN	THR	conflict	UNP P03135
i	263	ALA	GLN	conflict	UNP P03135
i	265	THR	-	insertion	UNP P03135
i	706	ALA	ASN	conflict	UNP P03135
i	709	ALA	VAL	conflict	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
i	717	ASN	THR	conflict	UNP P03135
j	263	ALA	GLN	conflict	UNP P03135
j	265	THR	-	insertion	UNP P03135
j	706	ALA	ASN	conflict	UNP P03135
j	709	ALA	VAL	conflict	UNP P03135
j	717	ASN	THR	conflict	UNP P03135
k	263	ALA	GLN	conflict	UNP P03135
k	265	THR	-	insertion	UNP P03135
k	706	ALA	ASN	conflict	UNP P03135
k	709	ALA	VAL	conflict	UNP P03135
k	717	ASN	THR	conflict	UNP P03135
l	263	ALA	GLN	conflict	UNP P03135
l	265	THR	-	insertion	UNP P03135
l	706	ALA	ASN	conflict	UNP P03135
l	709	ALA	VAL	conflict	UNP P03135
l	717	ASN	THR	conflict	UNP P03135
m	263	ALA	GLN	conflict	UNP P03135
m	265	THR	-	insertion	UNP P03135
m	706	ALA	ASN	conflict	UNP P03135
m	709	ALA	VAL	conflict	UNP P03135
m	717	ASN	THR	conflict	UNP P03135
n	263	ALA	GLN	conflict	UNP P03135
n	265	THR	-	insertion	UNP P03135
n	706	ALA	ASN	conflict	UNP P03135
n	709	ALA	VAL	conflict	UNP P03135
n	717	ASN	THR	conflict	UNP P03135
o	263	ALA	GLN	conflict	UNP P03135
o	265	THR	-	insertion	UNP P03135
o	706	ALA	ASN	conflict	UNP P03135
o	709	ALA	VAL	conflict	UNP P03135
o	717	ASN	THR	conflict	UNP P03135
p	263	ALA	GLN	conflict	UNP P03135
p	265	THR	-	insertion	UNP P03135
p	706	ALA	ASN	conflict	UNP P03135
p	709	ALA	VAL	conflict	UNP P03135
p	717	ASN	THR	conflict	UNP P03135
q	263	ALA	GLN	conflict	UNP P03135
q	265	THR	-	insertion	UNP P03135
q	706	ALA	ASN	conflict	UNP P03135
q	709	ALA	VAL	conflict	UNP P03135
q	717	ASN	THR	conflict	UNP P03135
r	263	ALA	GLN	conflict	UNP P03135

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Chain	Residue	Modelled	Actual	Comment	Reference
r	265	THR	-	insertion	UNP P03135
r	706	ALA	ASN	conflict	UNP P03135
r	709	ALA	VAL	conflict	UNP P03135
r	717	ASN	THR	conflict	UNP P03135
s	263	ALA	GLN	conflict	UNP P03135
s	265	THR	-	insertion	UNP P03135
s	706	ALA	ASN	conflict	UNP P03135
s	709	ALA	VAL	conflict	UNP P03135
s	717	ASN	THR	conflict	UNP P03135
t	263	ALA	GLN	conflict	UNP P03135
t	265	THR	-	insertion	UNP P03135
t	706	ALA	ASN	conflict	UNP P03135
t	709	ALA	VAL	conflict	UNP P03135
t	717	ASN	THR	conflict	UNP P03135
u	263	ALA	GLN	conflict	UNP P03135
u	265	THR	-	insertion	UNP P03135
u	706	ALA	ASN	conflict	UNP P03135
u	709	ALA	VAL	conflict	UNP P03135
u	717	ASN	THR	conflict	UNP P03135
v	263	ALA	GLN	conflict	UNP P03135
v	265	THR	-	insertion	UNP P03135
v	706	ALA	ASN	conflict	UNP P03135
v	709	ALA	VAL	conflict	UNP P03135
v	717	ASN	THR	conflict	UNP P03135
w	263	ALA	GLN	conflict	UNP P03135
w	265	THR	-	insertion	UNP P03135
w	706	ALA	ASN	conflict	UNP P03135
w	709	ALA	VAL	conflict	UNP P03135
w	717	ASN	THR	conflict	UNP P03135
x	263	ALA	GLN	conflict	UNP P03135
x	265	THR	-	insertion	UNP P03135
x	706	ALA	ASN	conflict	UNP P03135
x	709	ALA	VAL	conflict	UNP P03135
x	717	ASN	THR	conflict	UNP P03135
y	263	ALA	GLN	conflict	UNP P03135
y	265	THR	-	insertion	UNP P03135
y	706	ALA	ASN	conflict	UNP P03135
y	709	ALA	VAL	conflict	UNP P03135
y	717	ASN	THR	conflict	UNP P03135
z	263	ALA	GLN	conflict	UNP P03135
z	265	THR	-	insertion	UNP P03135
z	706	ALA	ASN	conflict	UNP P03135

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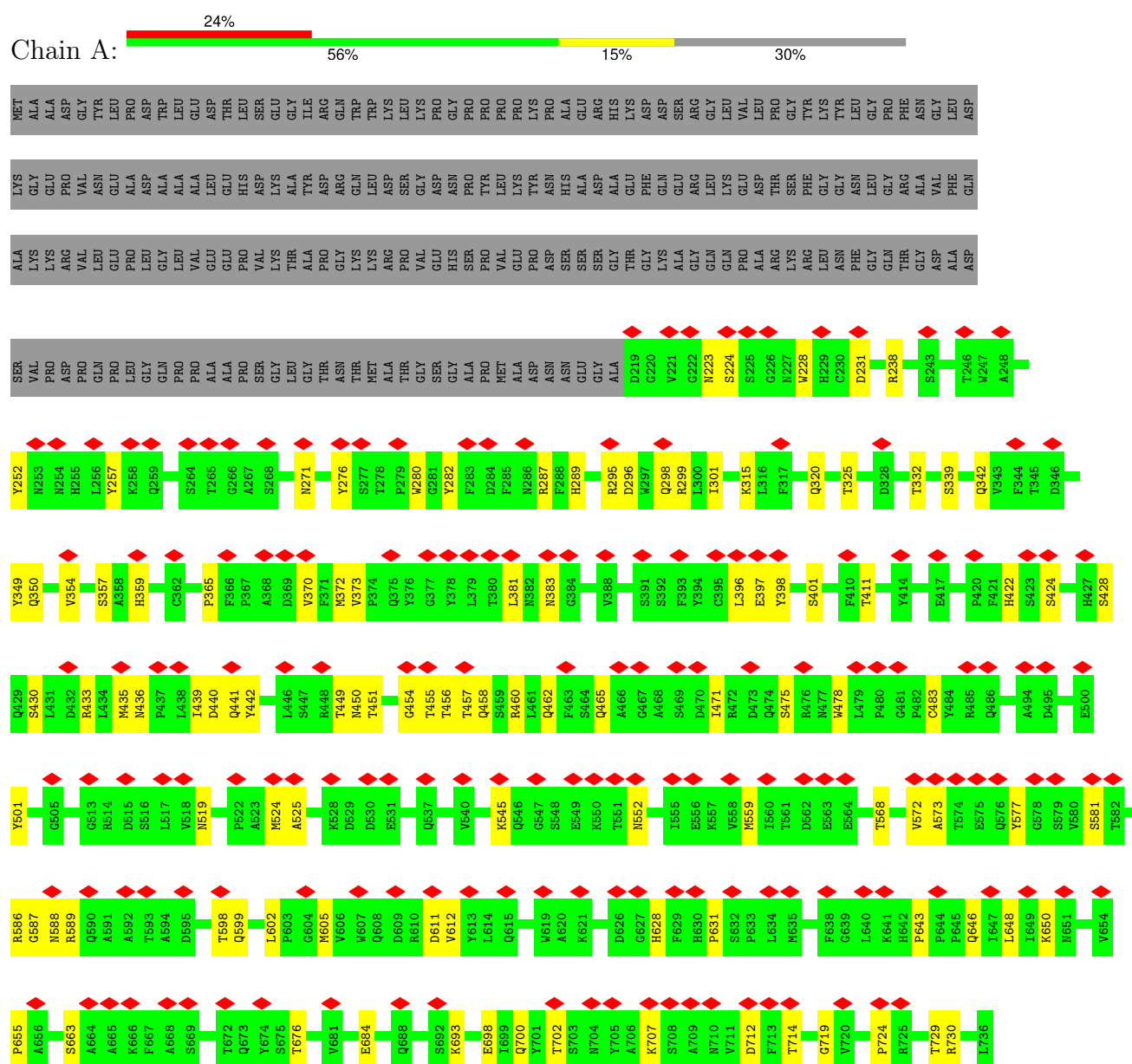
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Chain	Residue	Modelled	Actual	Comment	Reference
z	709	ALA	VAL	conflict	UNP P03135
z	717	ASN	THR	conflict	UNP P03135
6	263	ALA	GLN	conflict	UNP P03135
6	265	THR	-	insertion	UNP P03135
6	706	ALA	ASN	conflict	UNP P03135
6	709	ALA	VAL	conflict	UNP P03135
6	717	ASN	THR	conflict	UNP P03135
7	263	ALA	GLN	conflict	UNP P03135
7	265	THR	-	insertion	UNP P03135
7	706	ALA	ASN	conflict	UNP P03135
7	709	ALA	VAL	conflict	UNP P03135
7	717	ASN	THR	conflict	UNP P03135

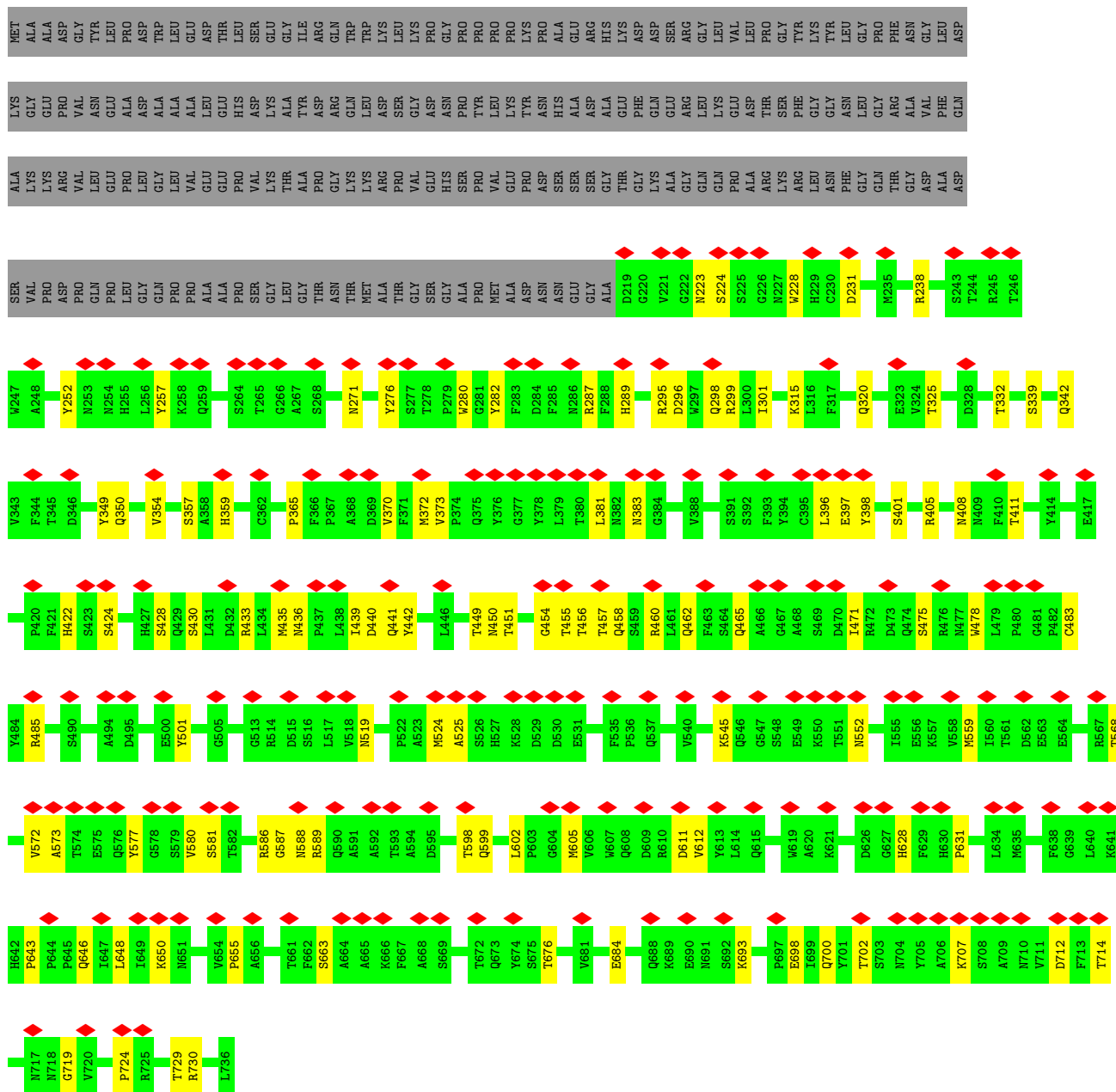
3 Residue-property plots

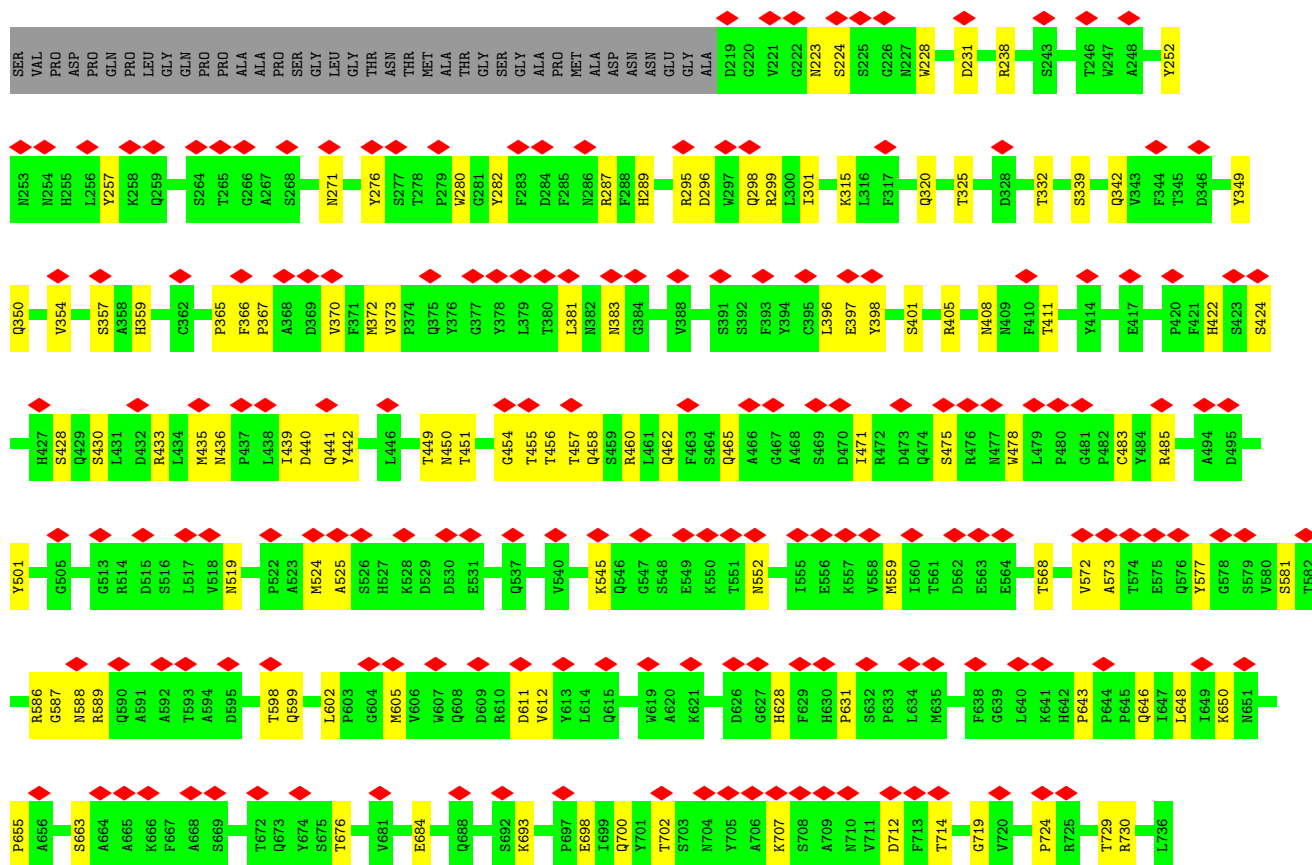
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Capsid protein VP1

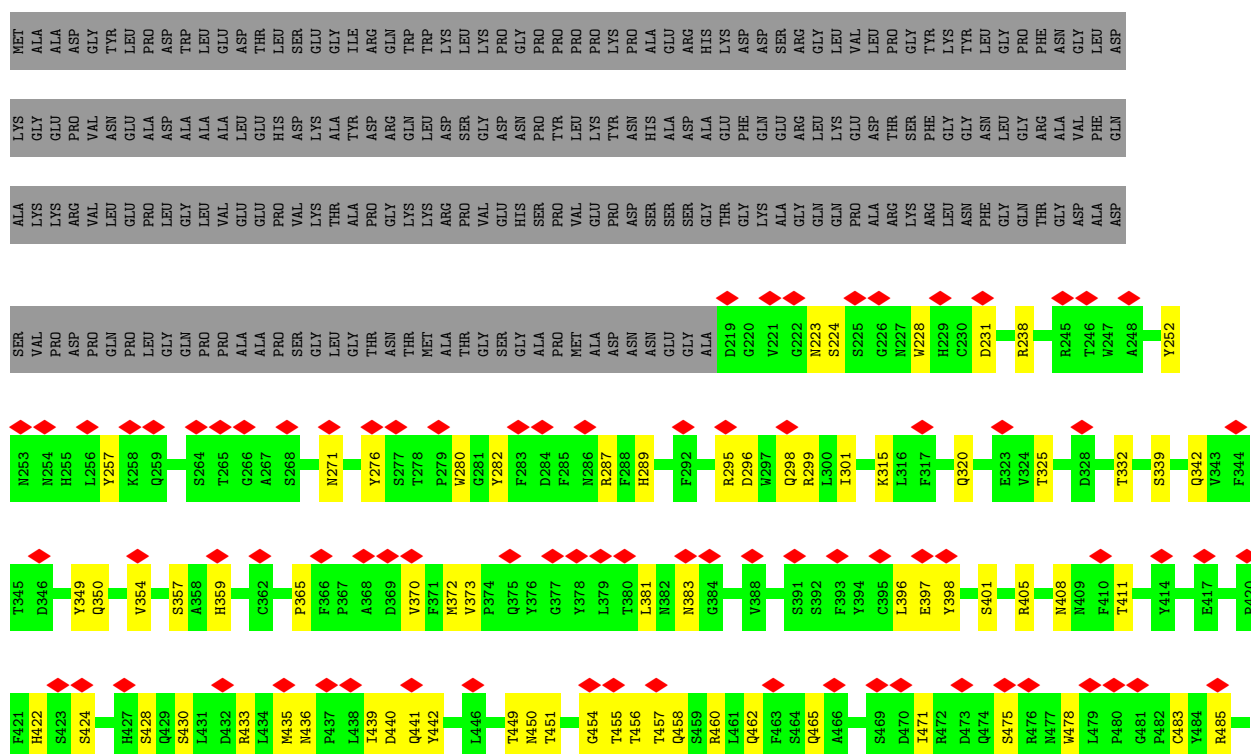


• Molecule 1: Capsid protein VP1

[illegible]

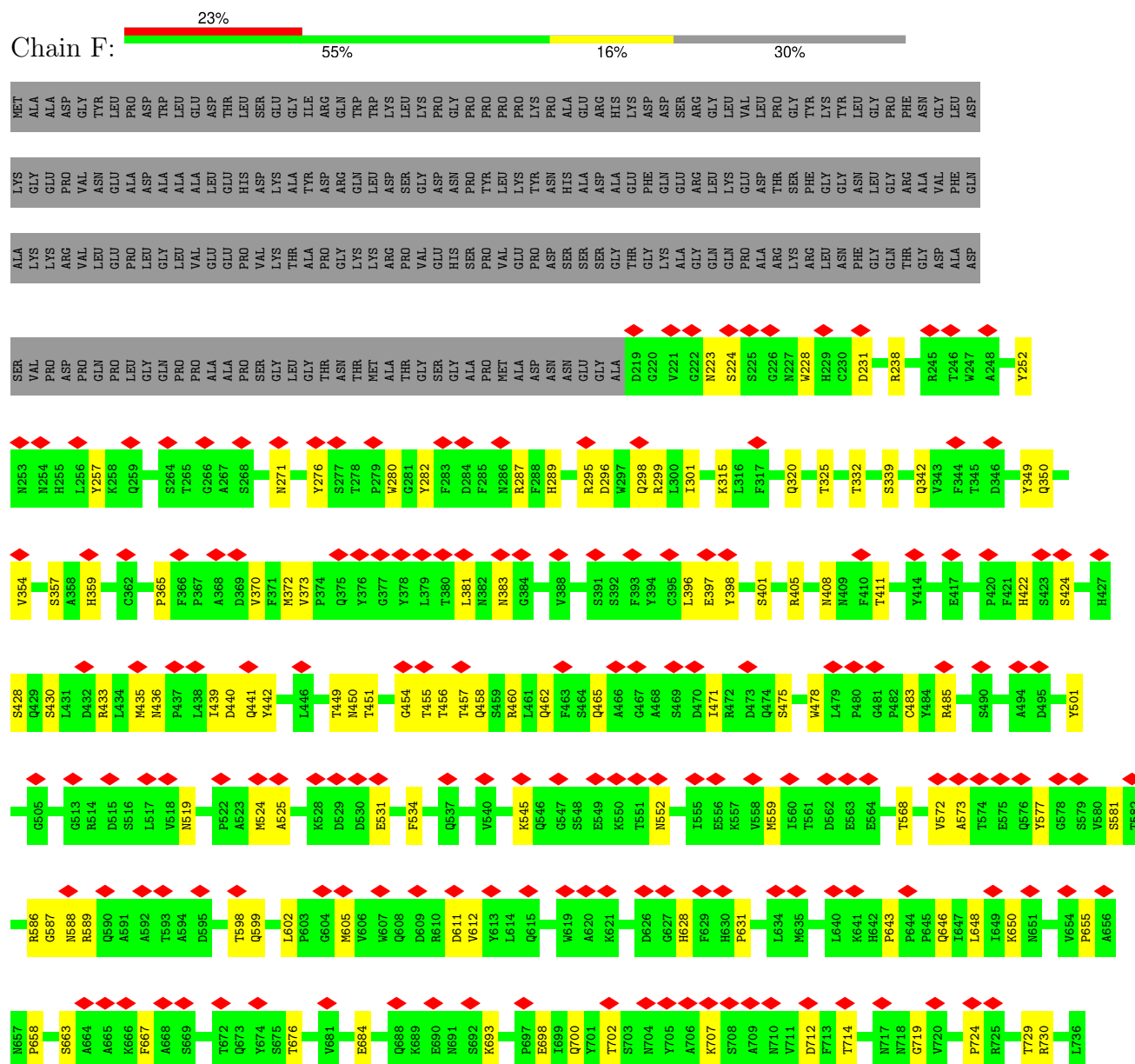


• Molecule 1: Capsid protein VP1



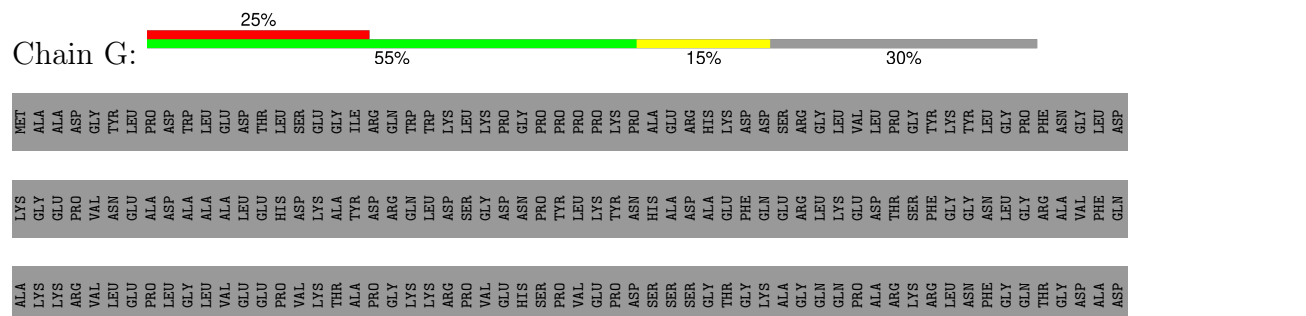
• Molecule 1: Capsid protein VP1

Chain F:

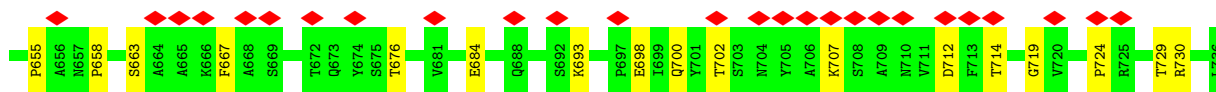


• Molecule 1: Capsid protein VP1

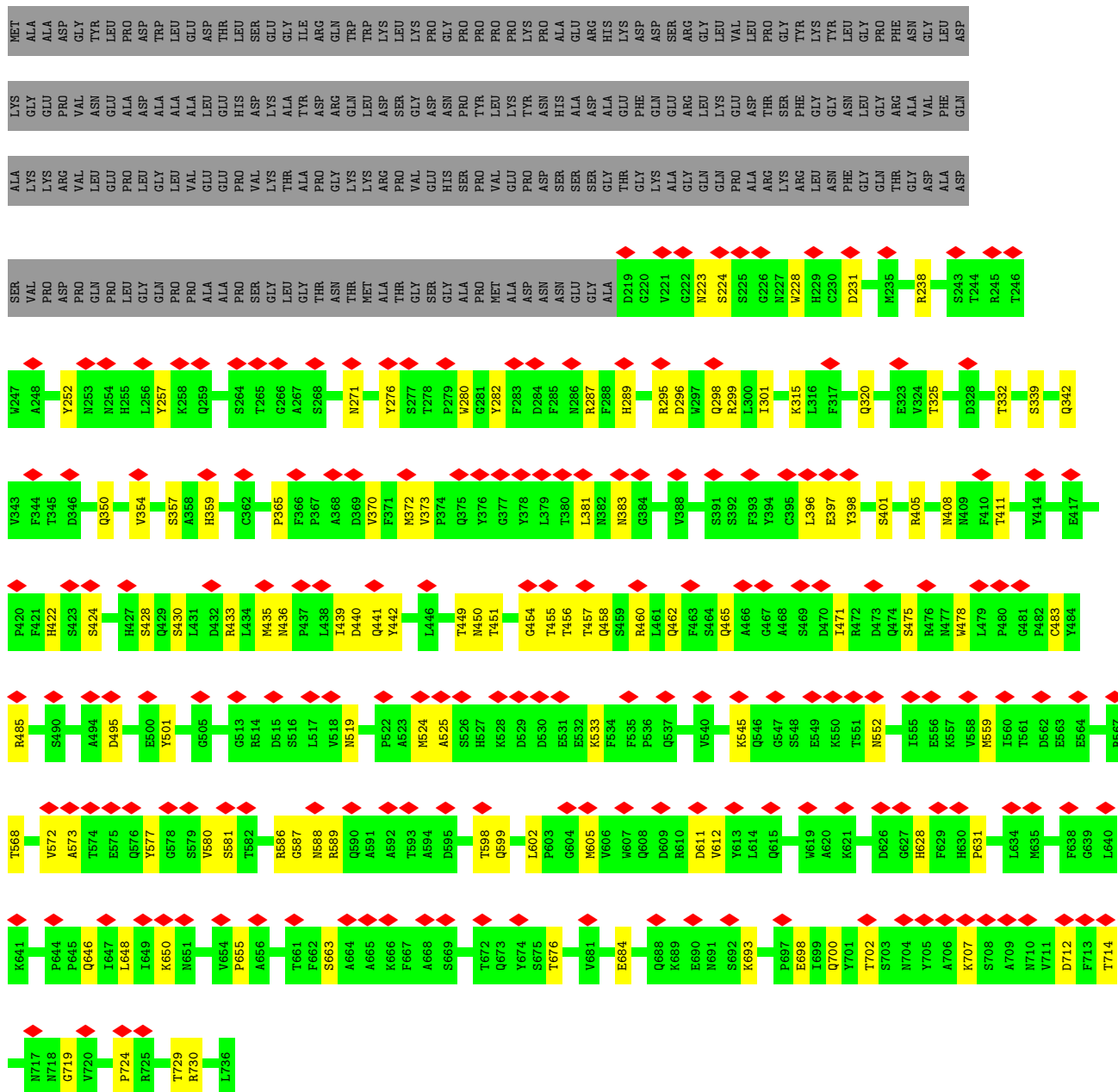
Chain G:



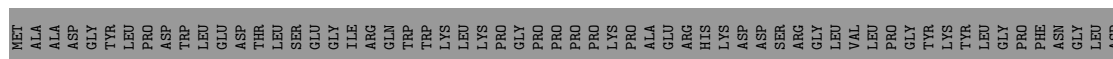


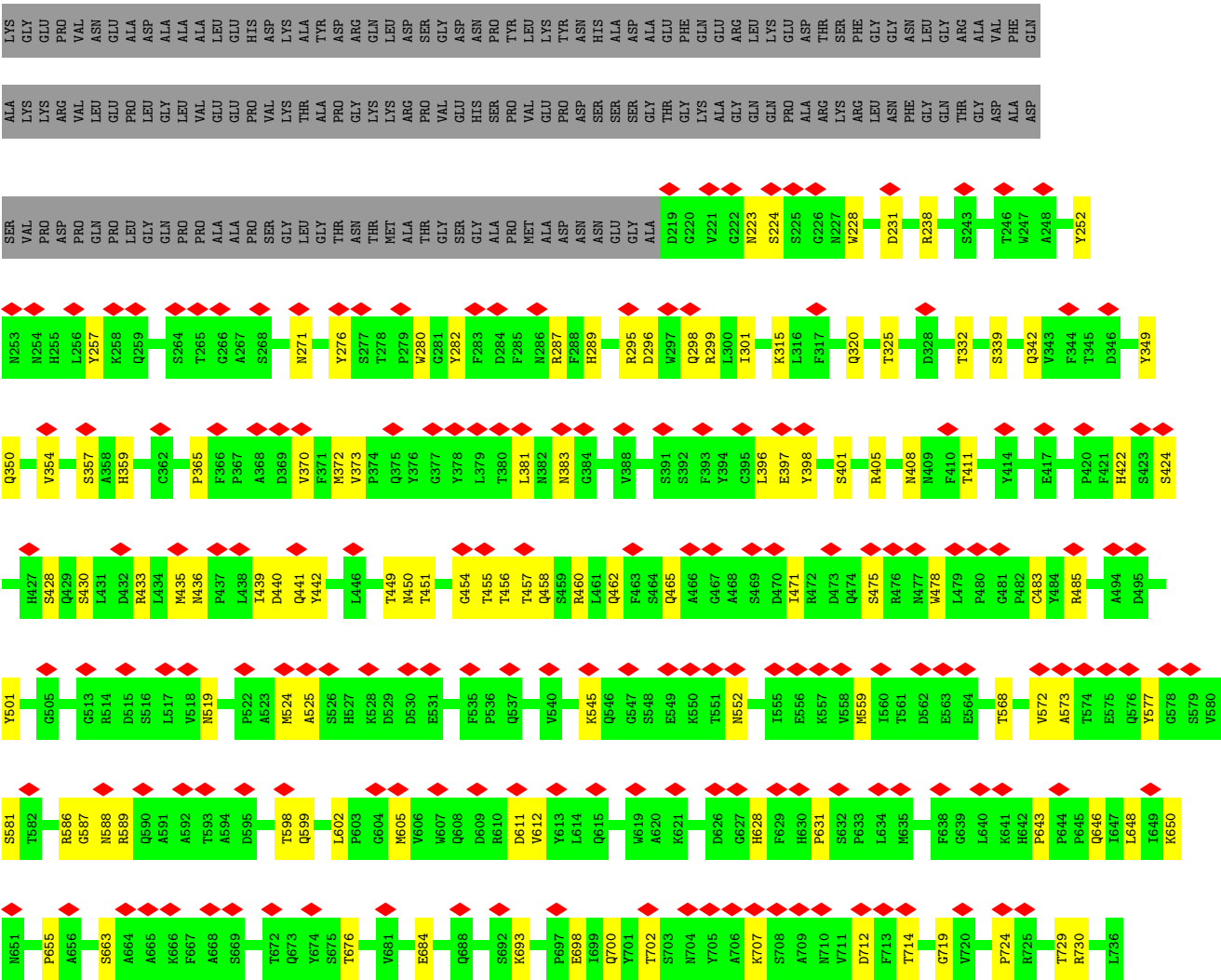


- Molecule 1: Capsid protein VP1

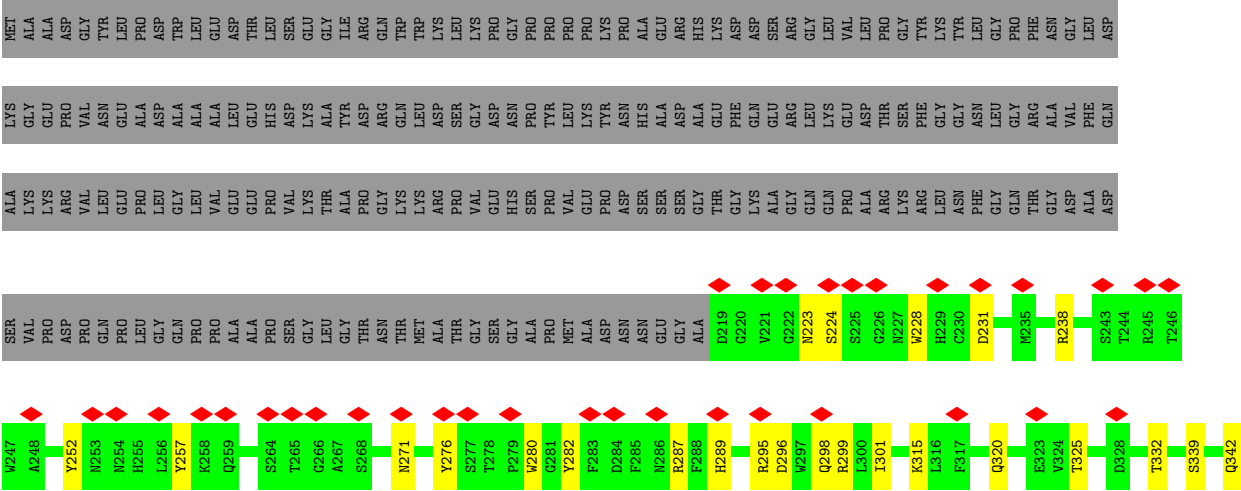


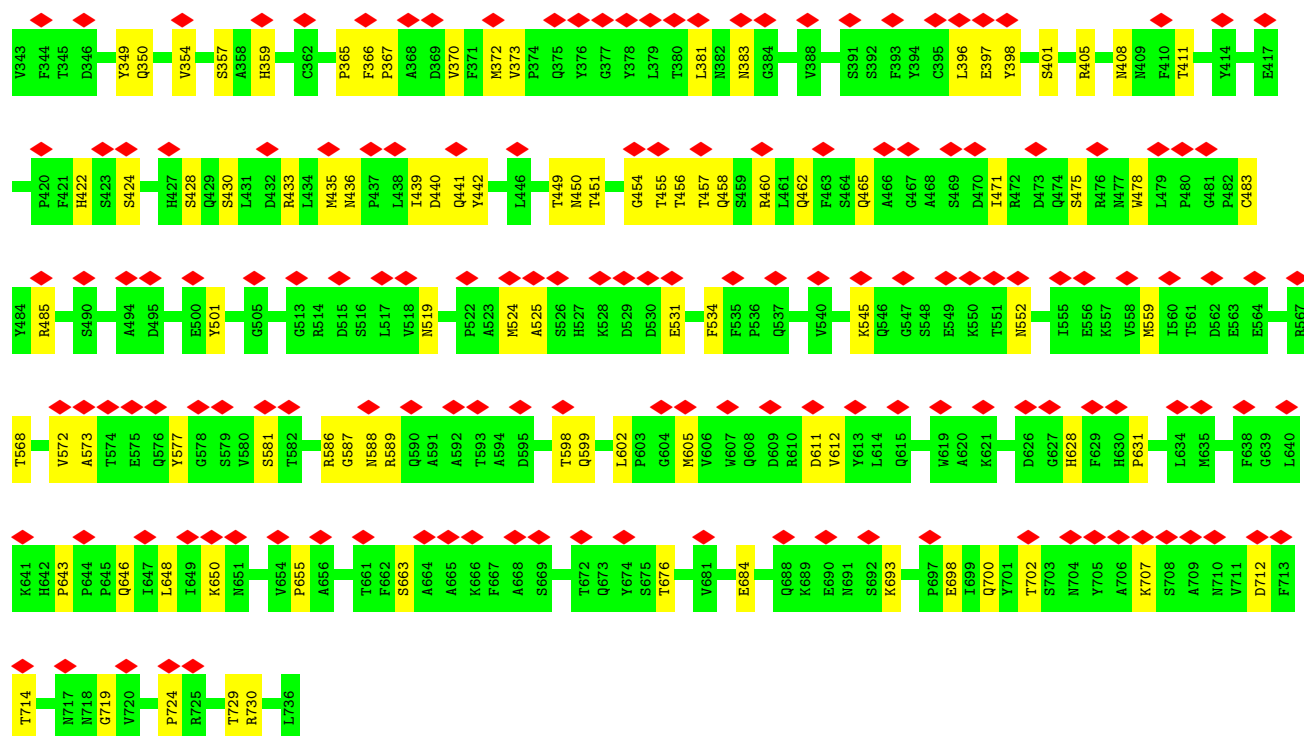
- Molecule 1: Capsid protein VP1



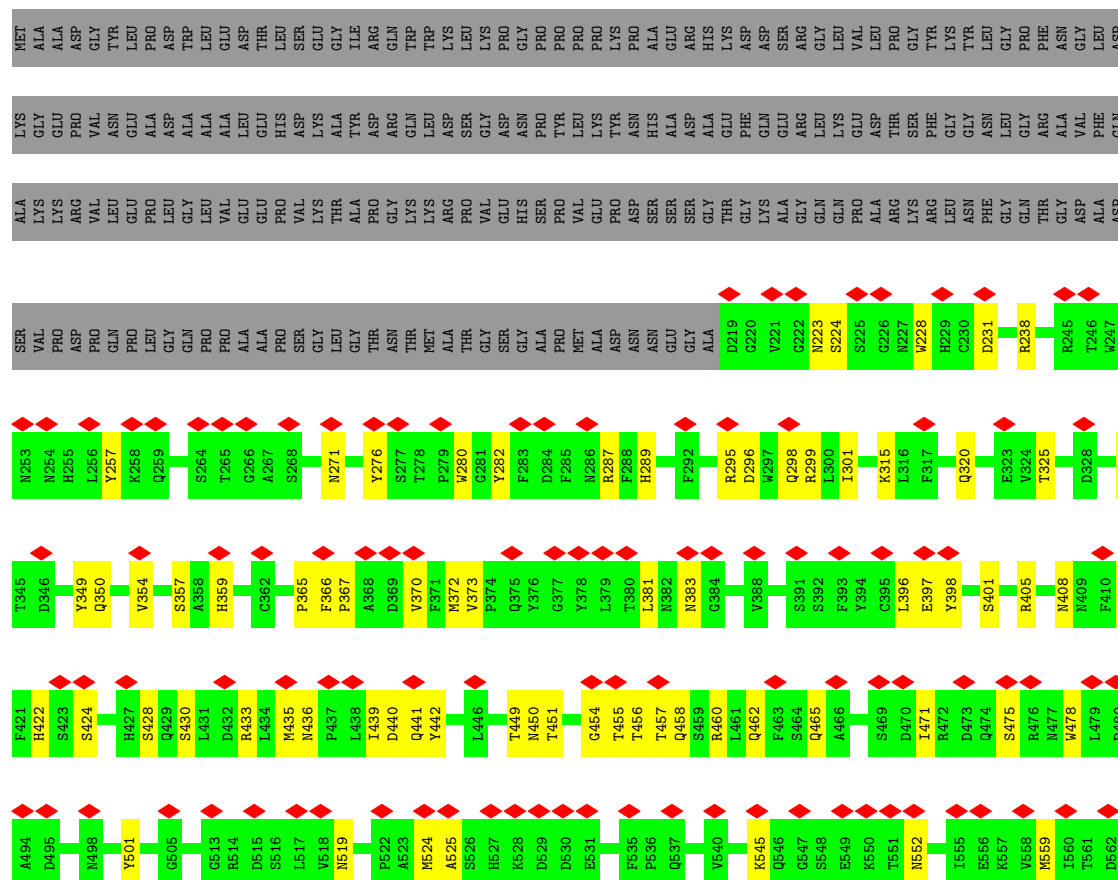


● Molecule 1: Capsid protein VP1





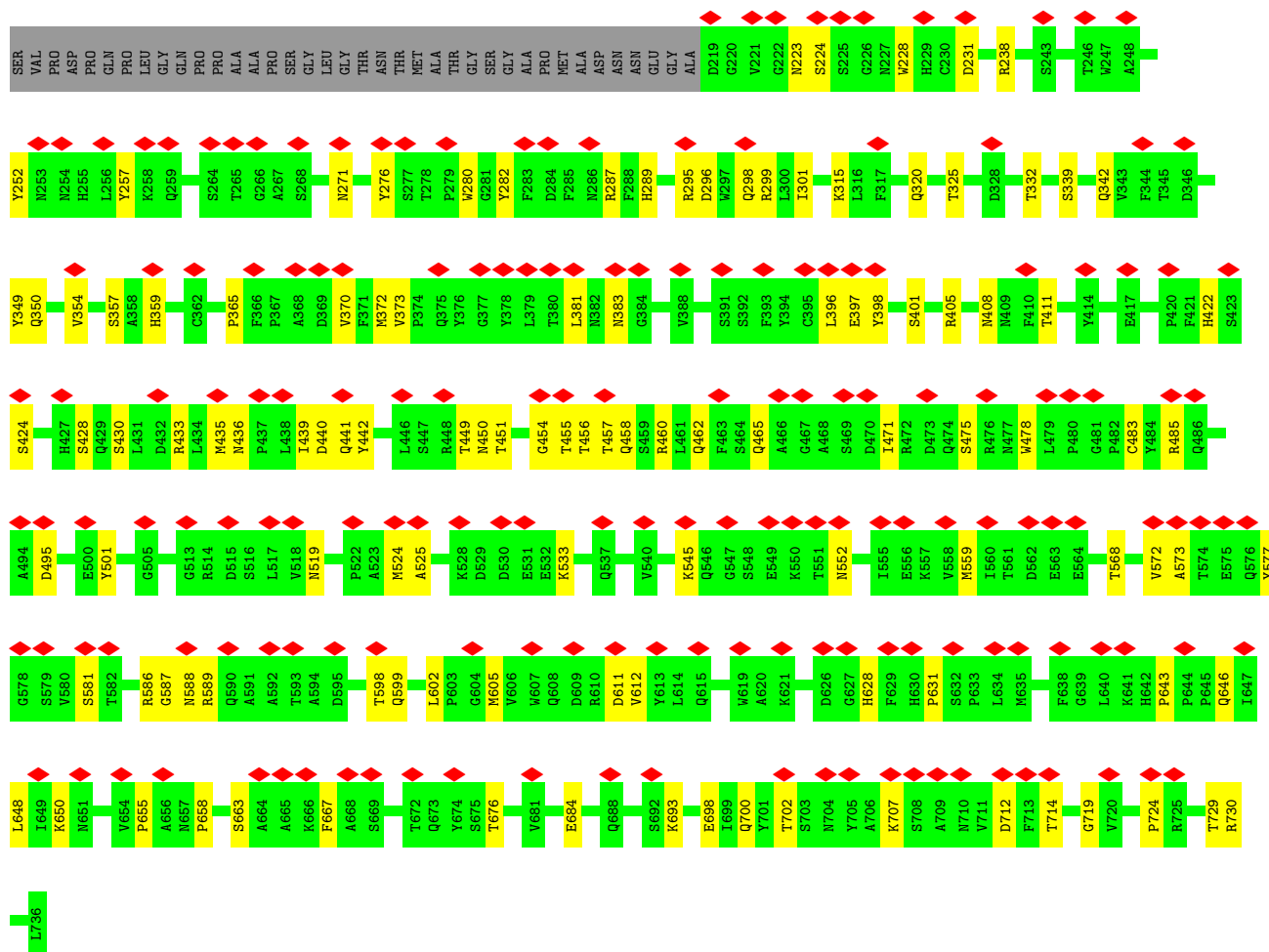
• Molecule 1: Capsid protein VP1



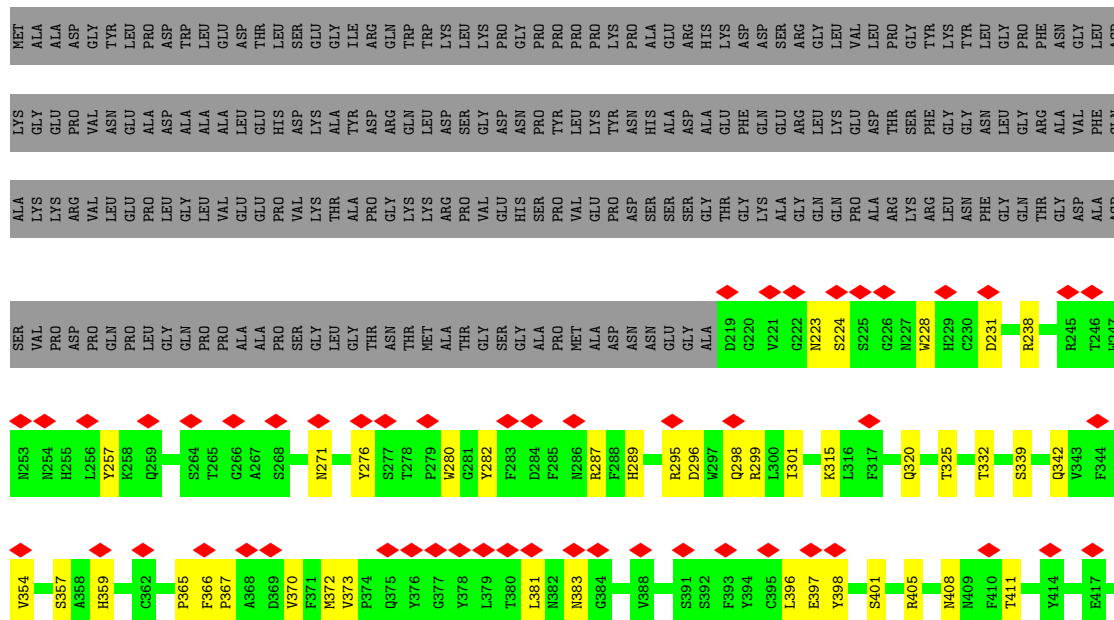


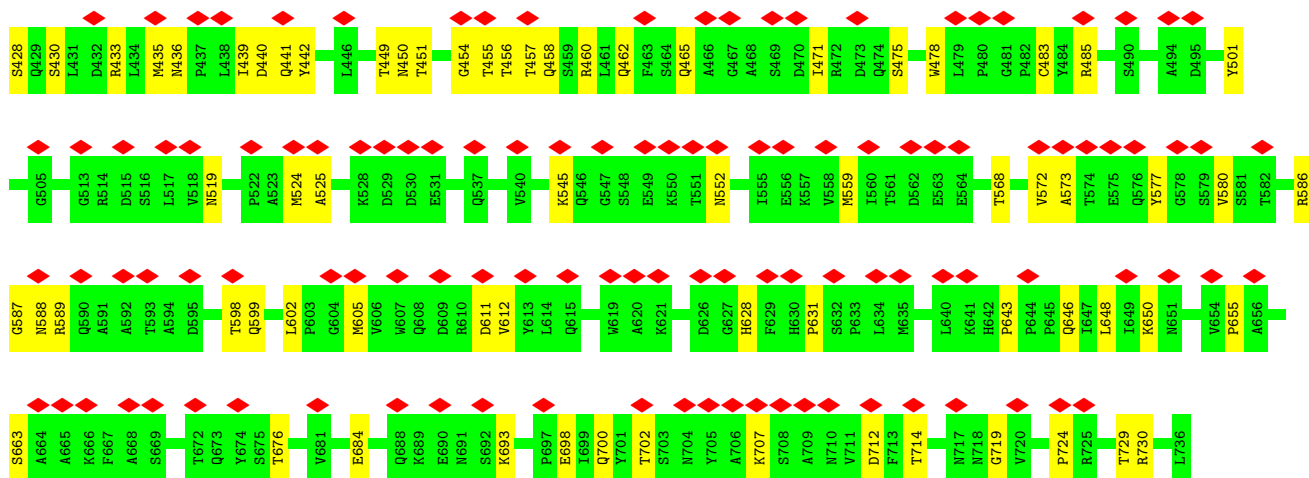
- Molecule 1: Capsid protein VP1



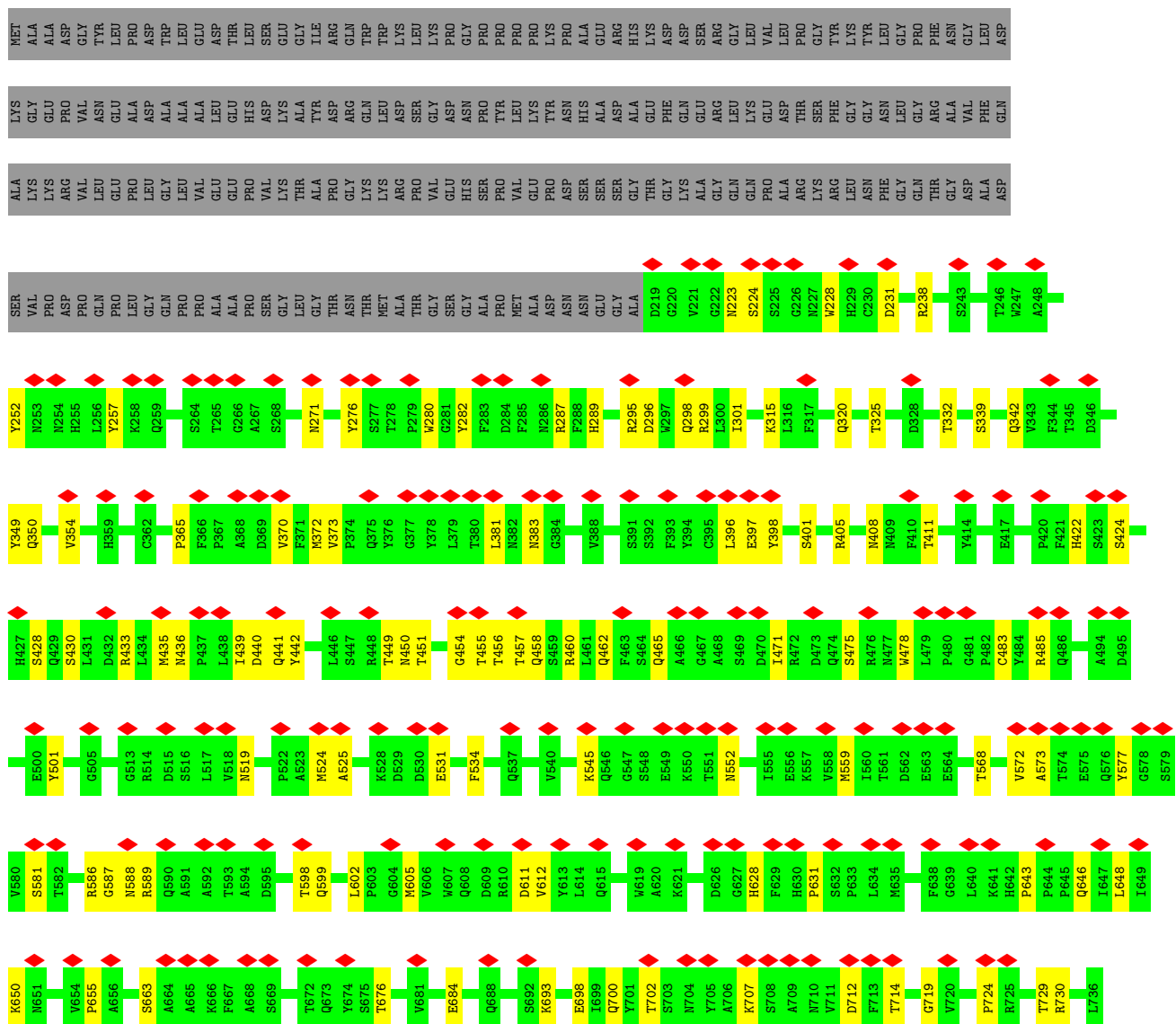


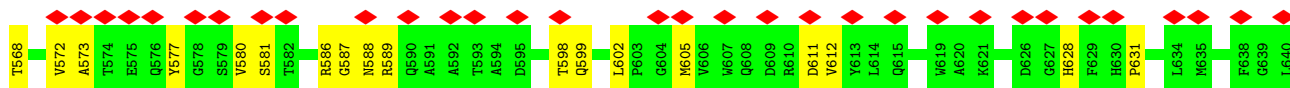
• Molecule 1: Capsid protein VP1

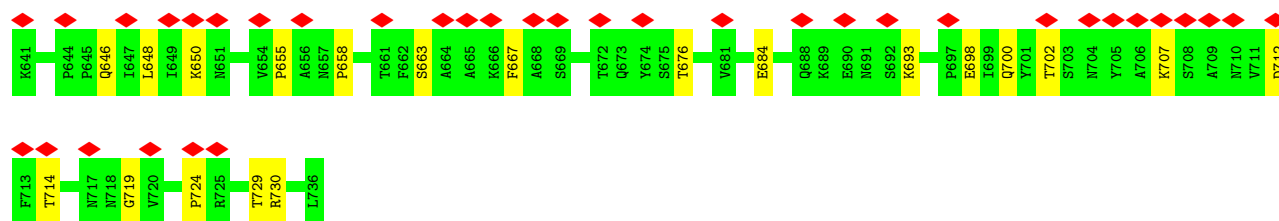




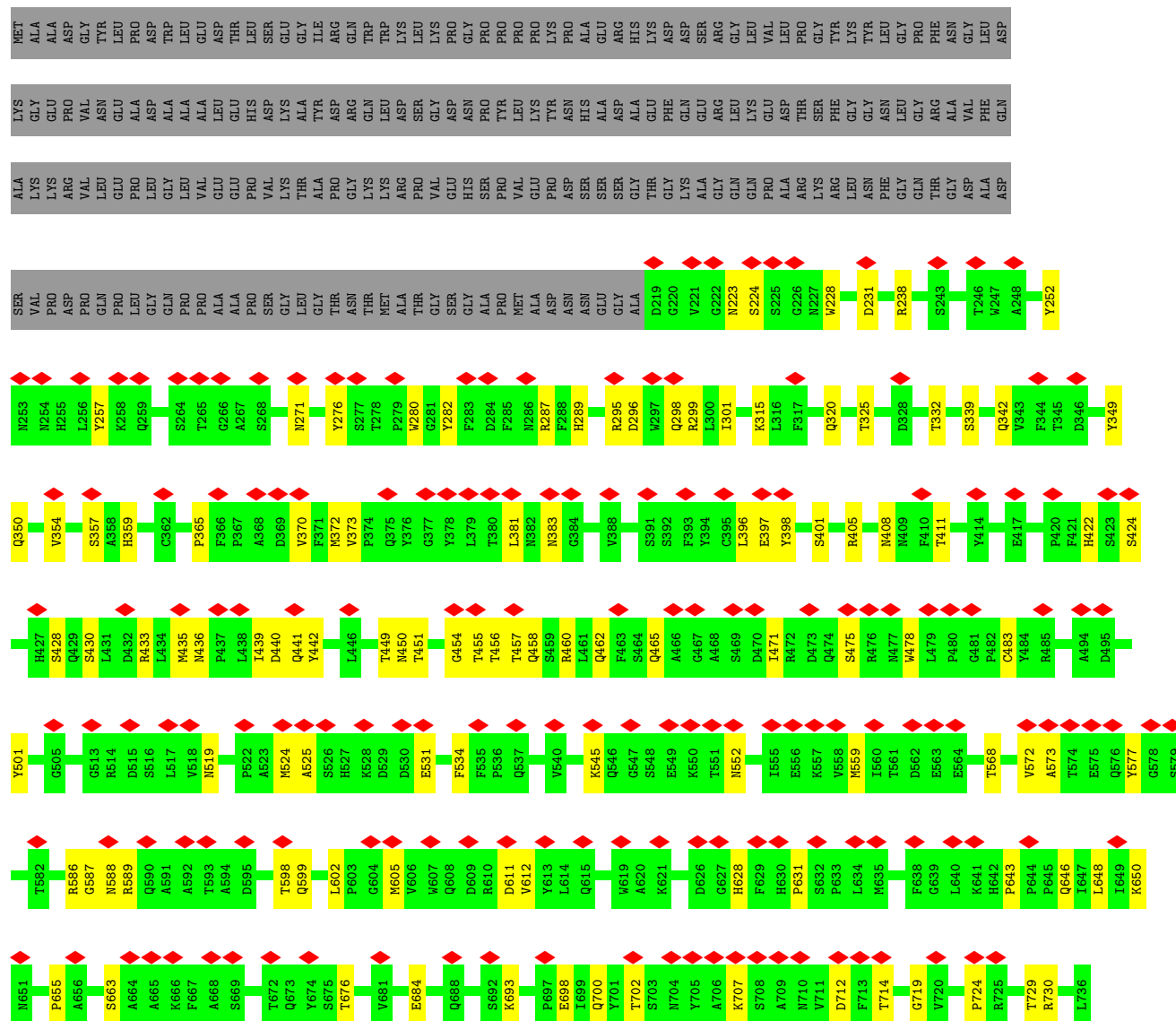
• Molecule 1: Capsid protein VP1



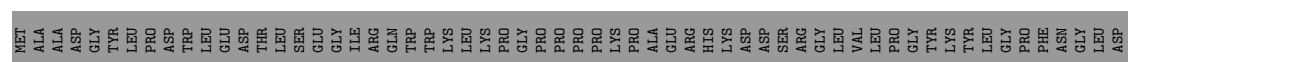


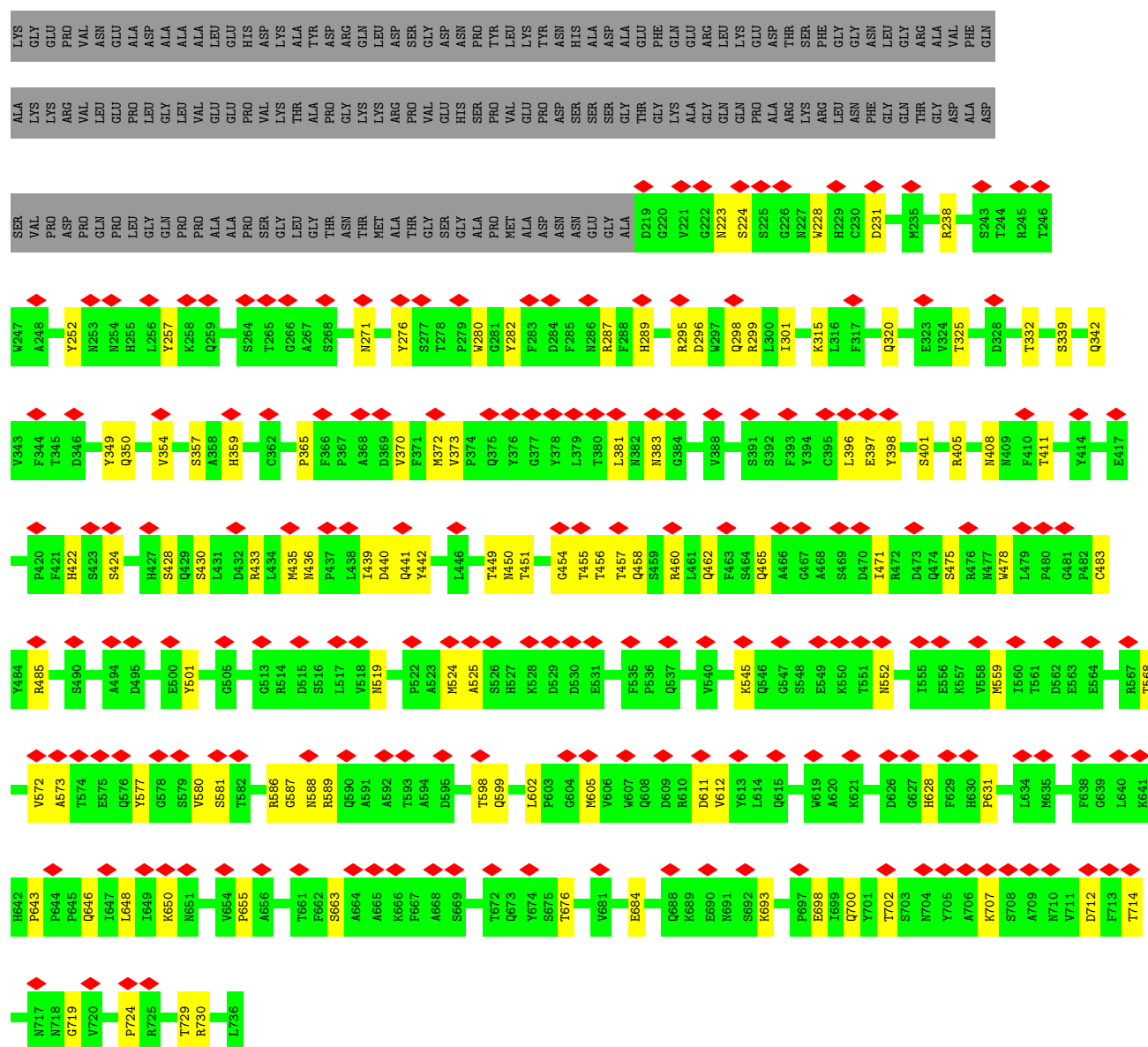


• Molecule 1: Capsid protein VP1

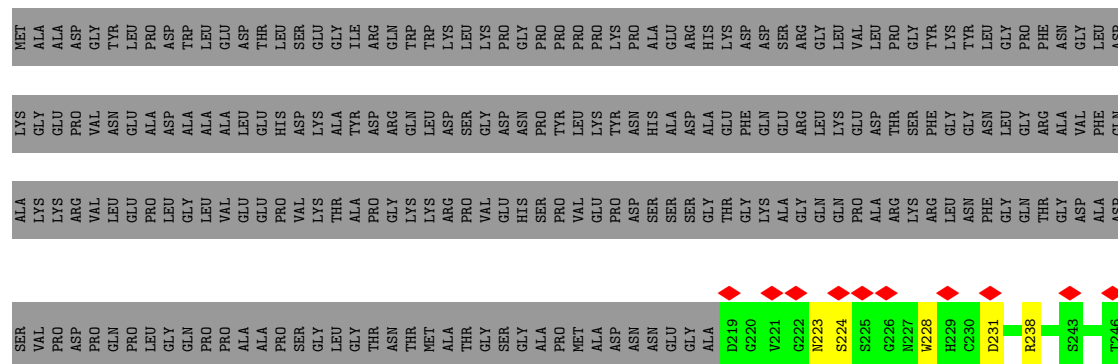


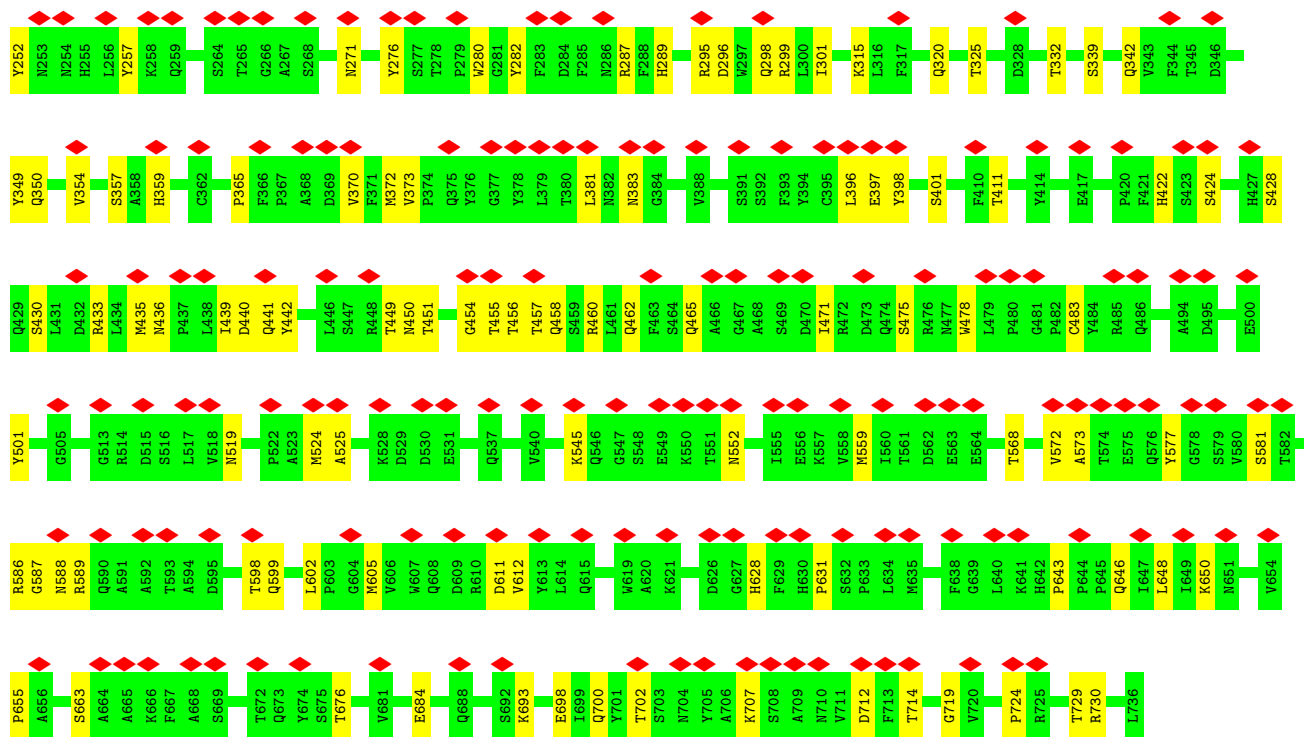
• Molecule 1: Capsid protein VP1



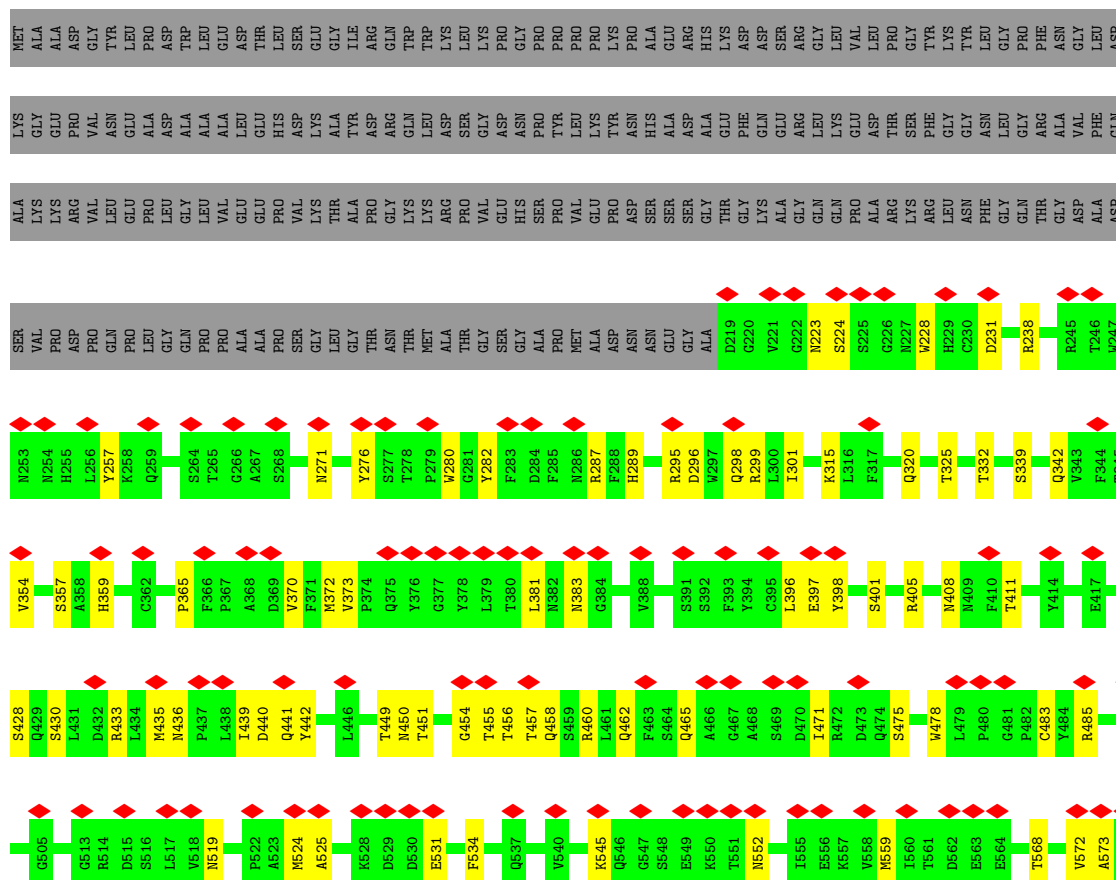


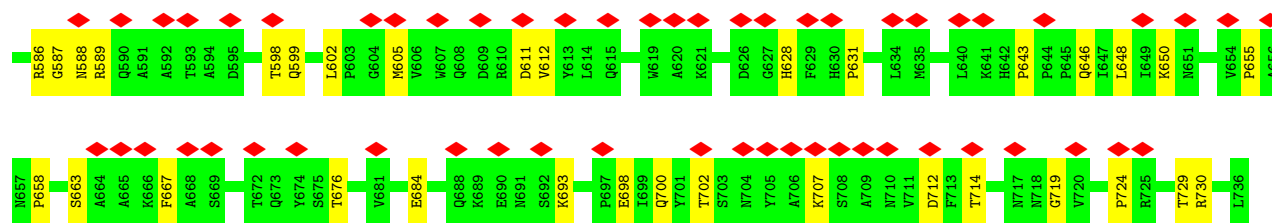
• Molecule 1: Capsid protein VP1



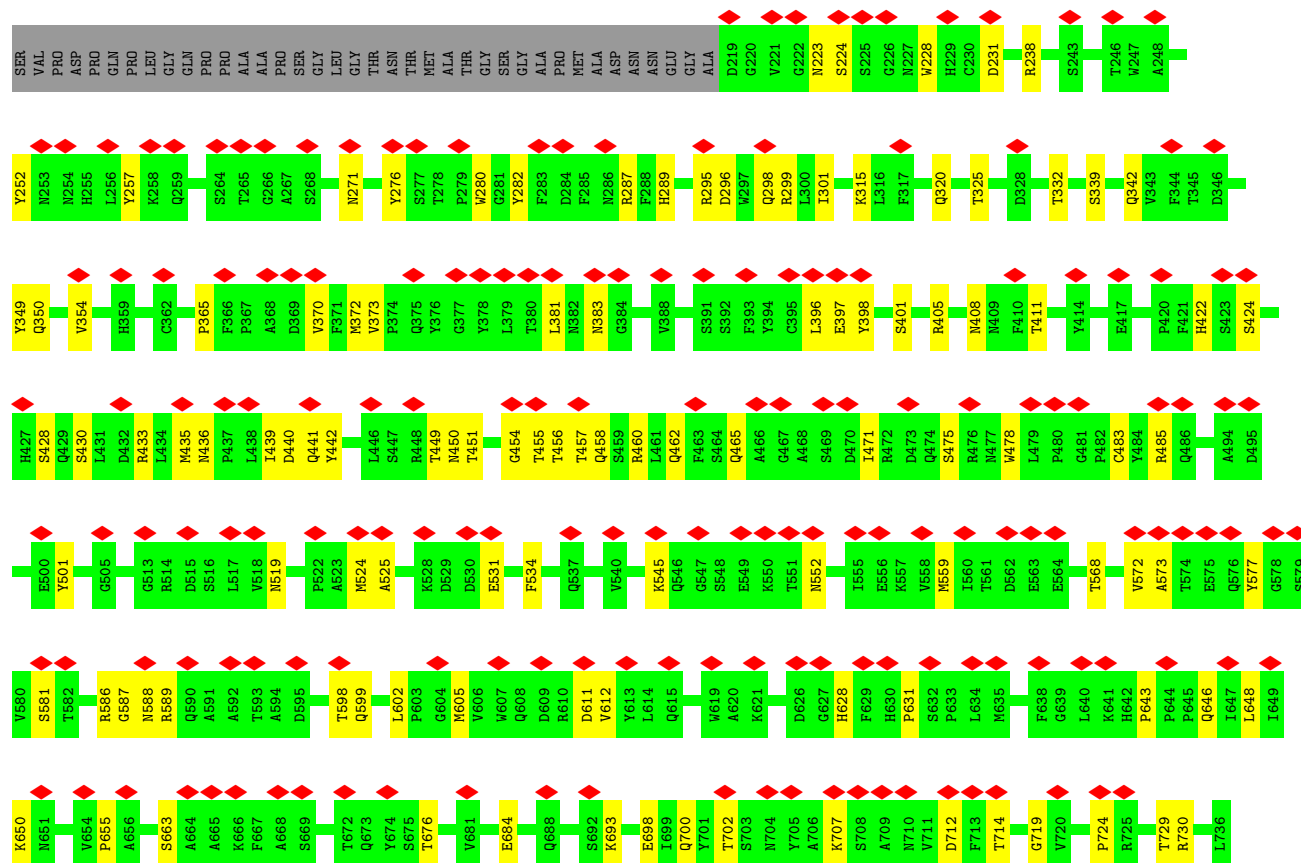
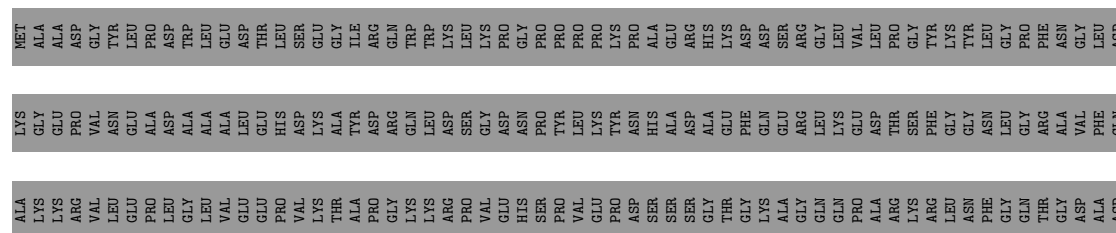


• Molecule 1: Capsid protein VP1

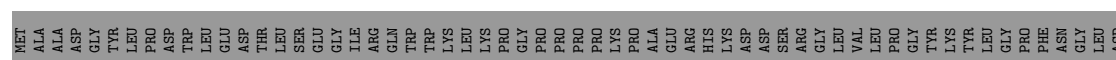


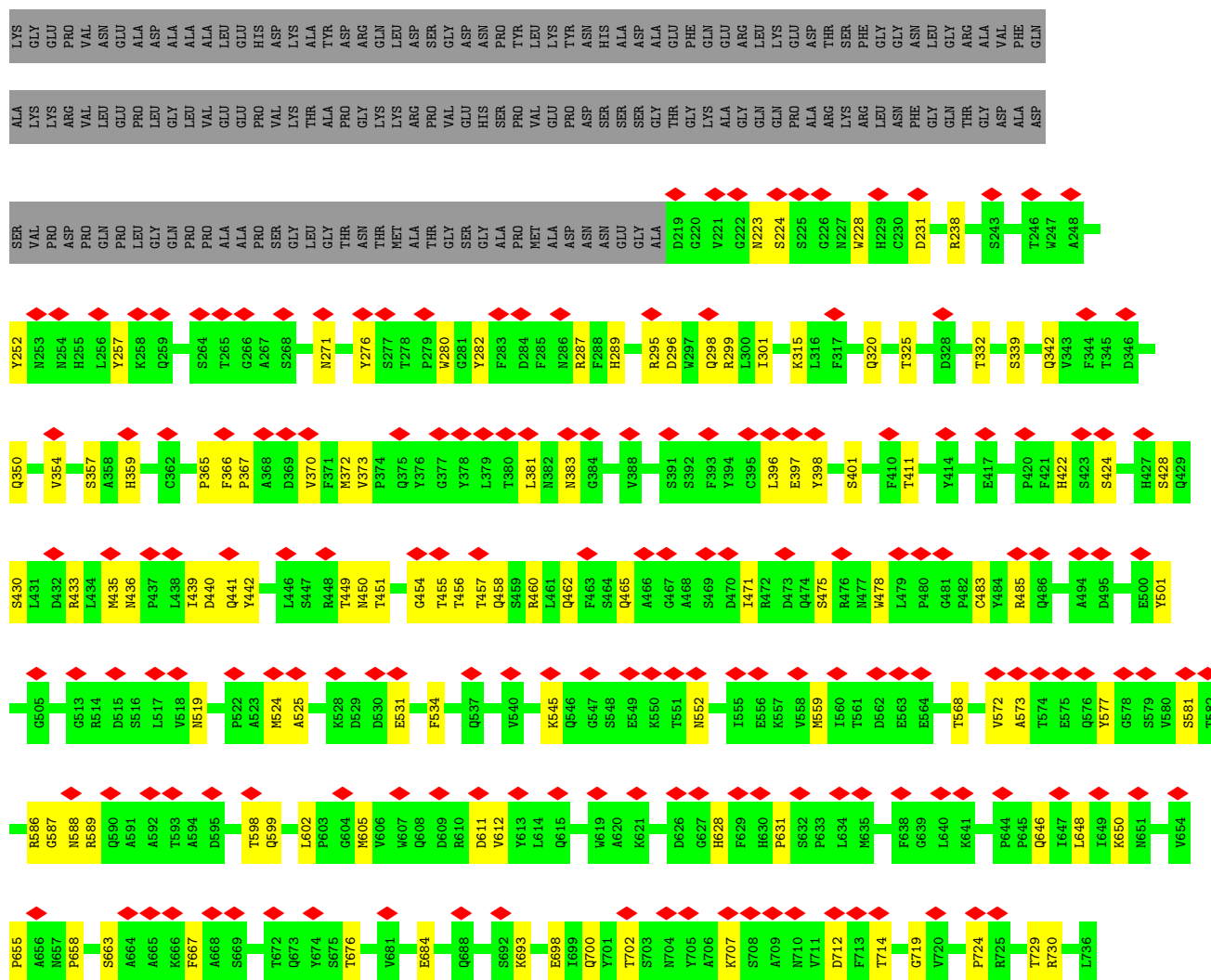


• Molecule 1: Capsid protein VP1

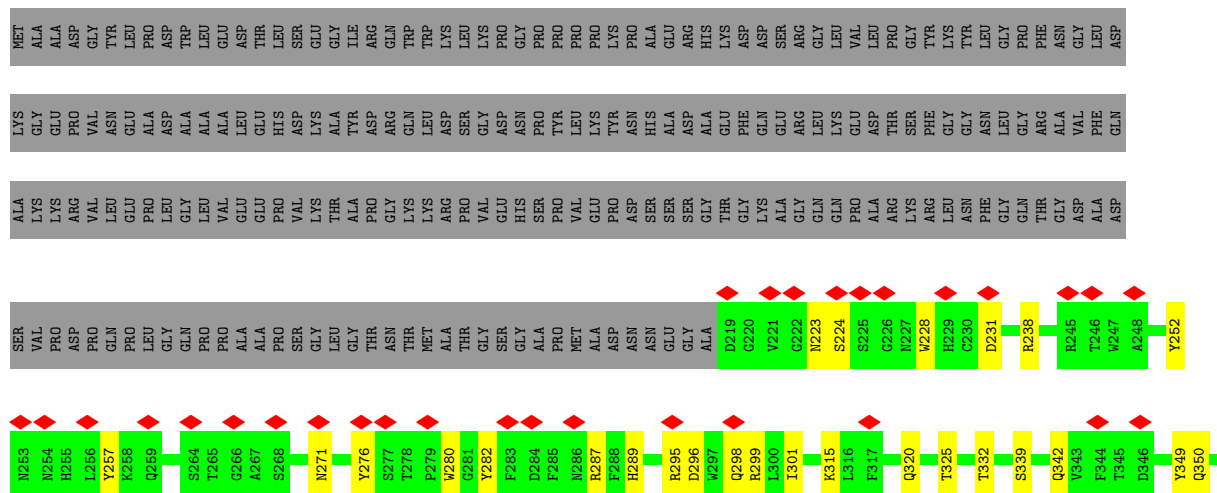


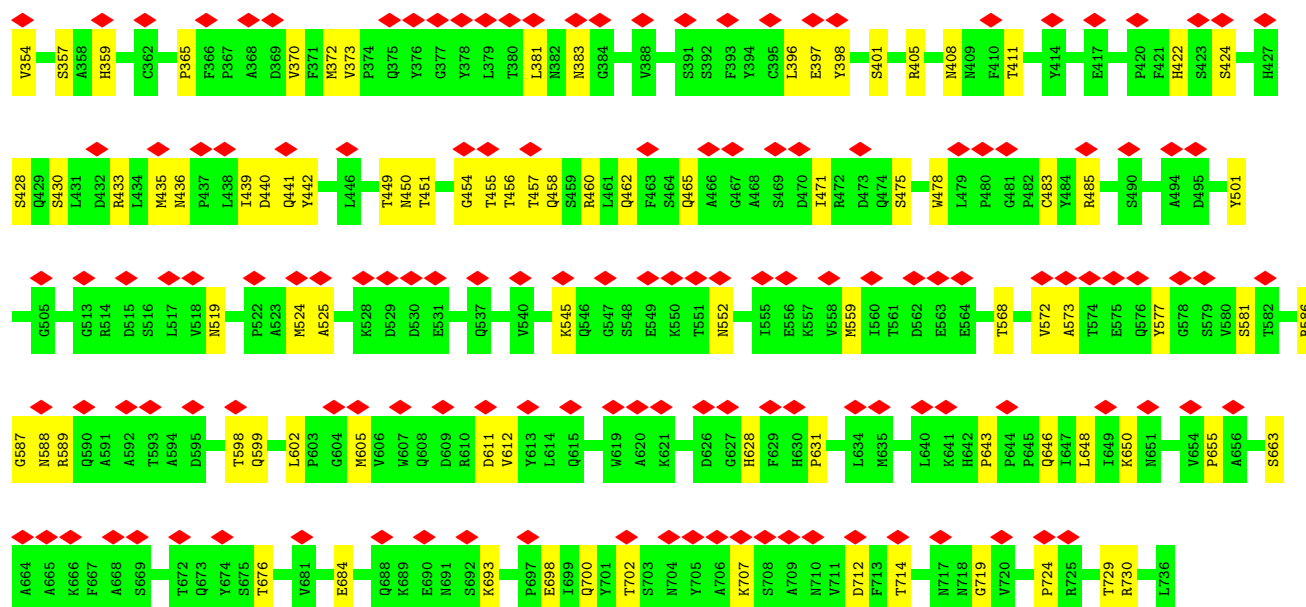
• Molecule 1: Capsid protein VP1



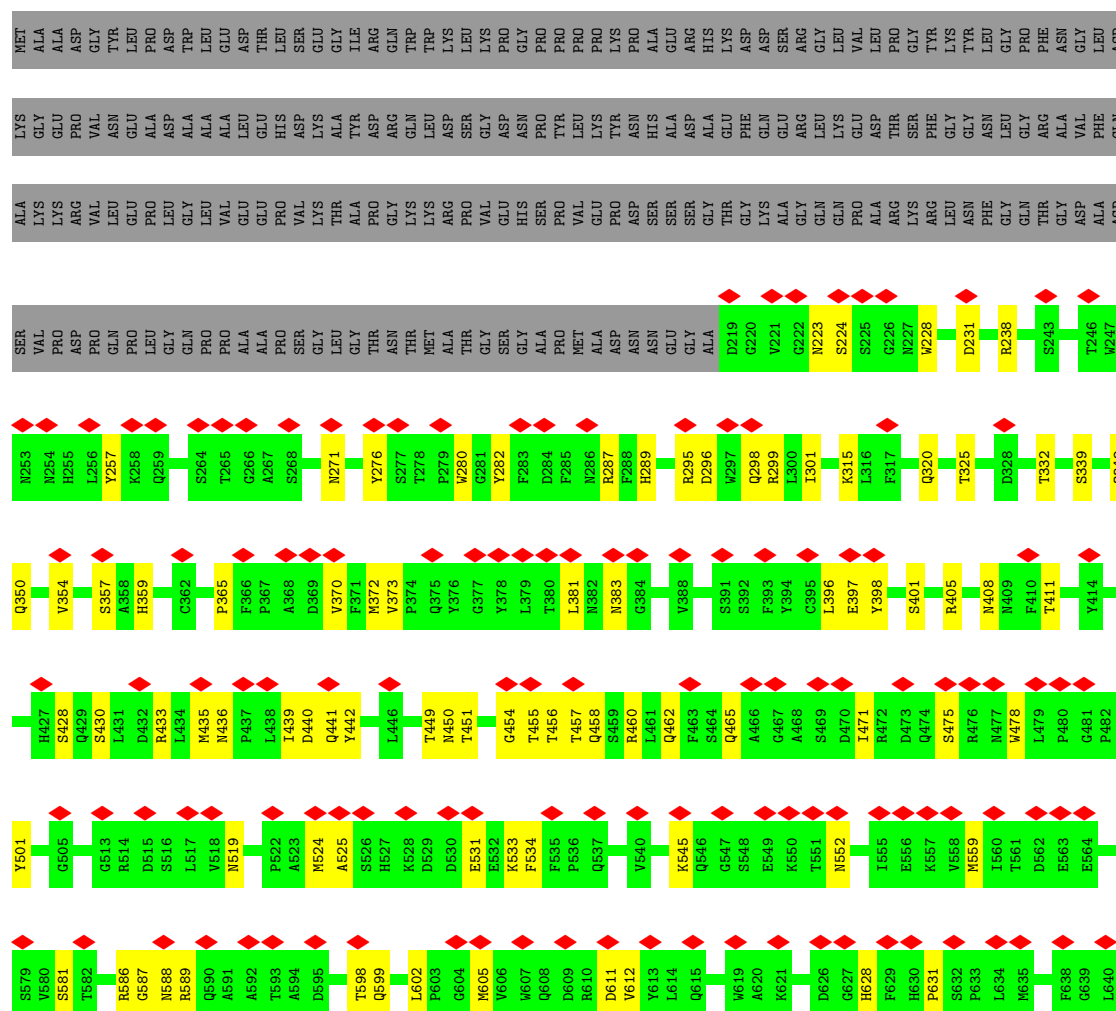


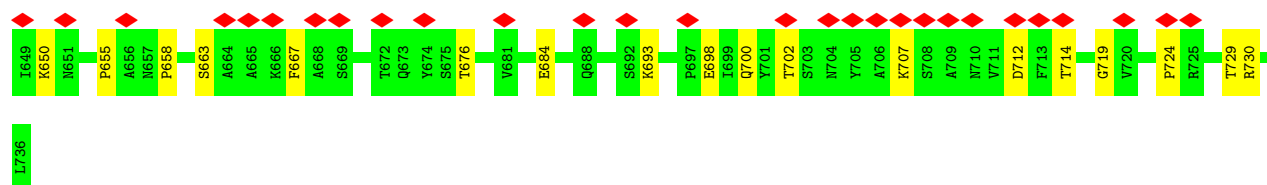
• Molecule 1: Capsid protein VP1



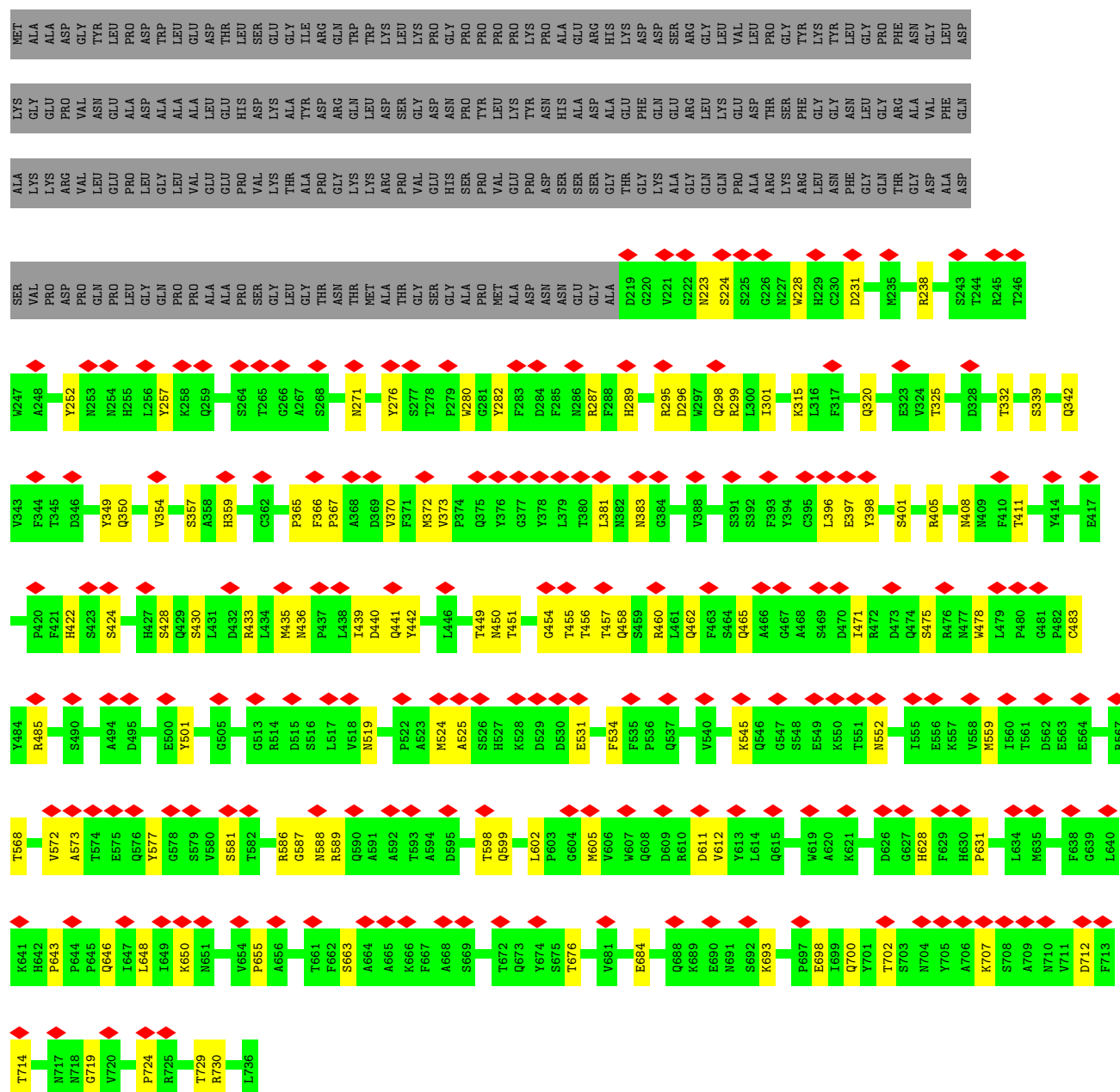


• Molecule 1: Capsid protein VP1





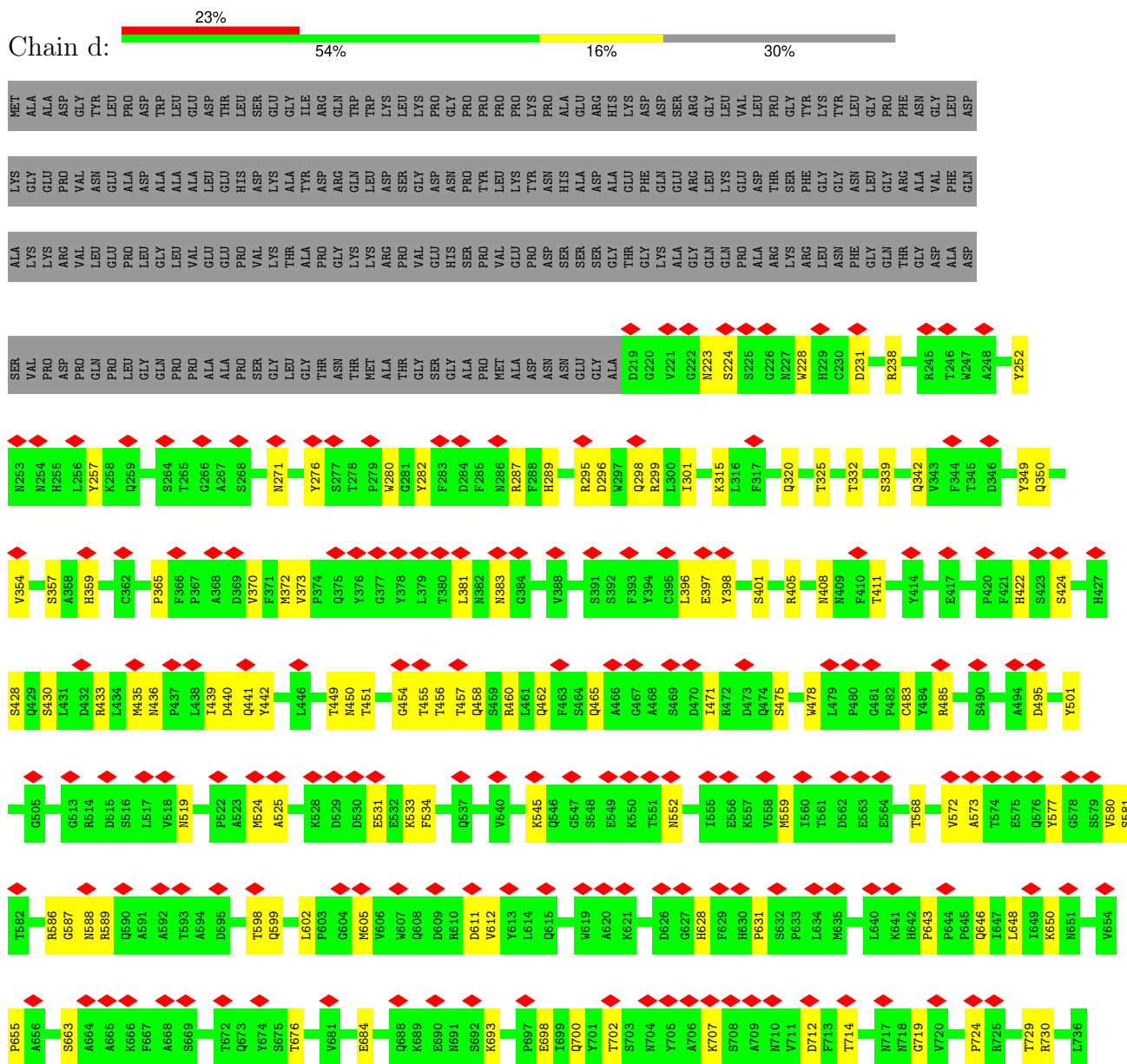
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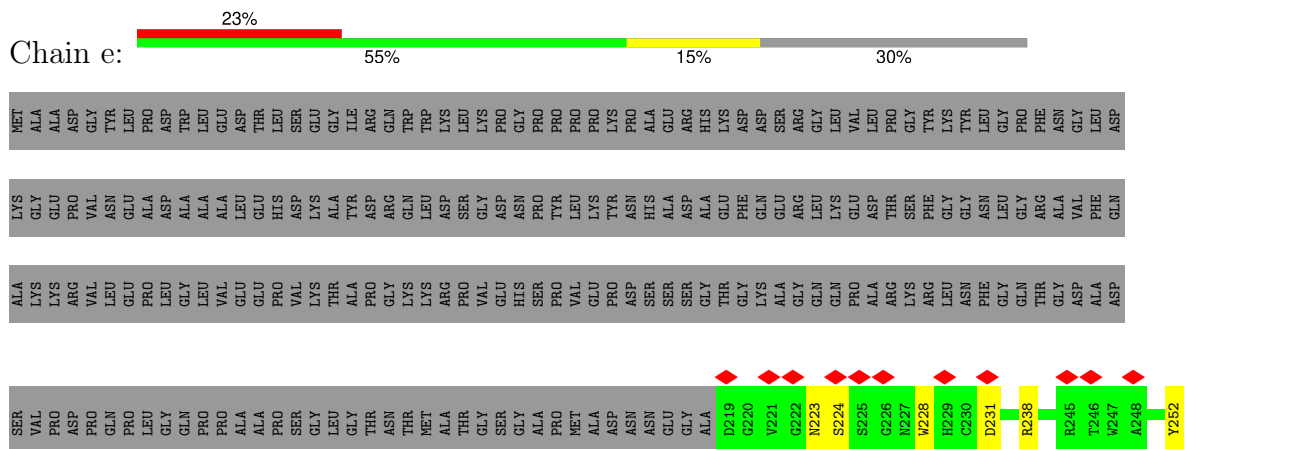
• Molecule 1: Capsid protein VP1

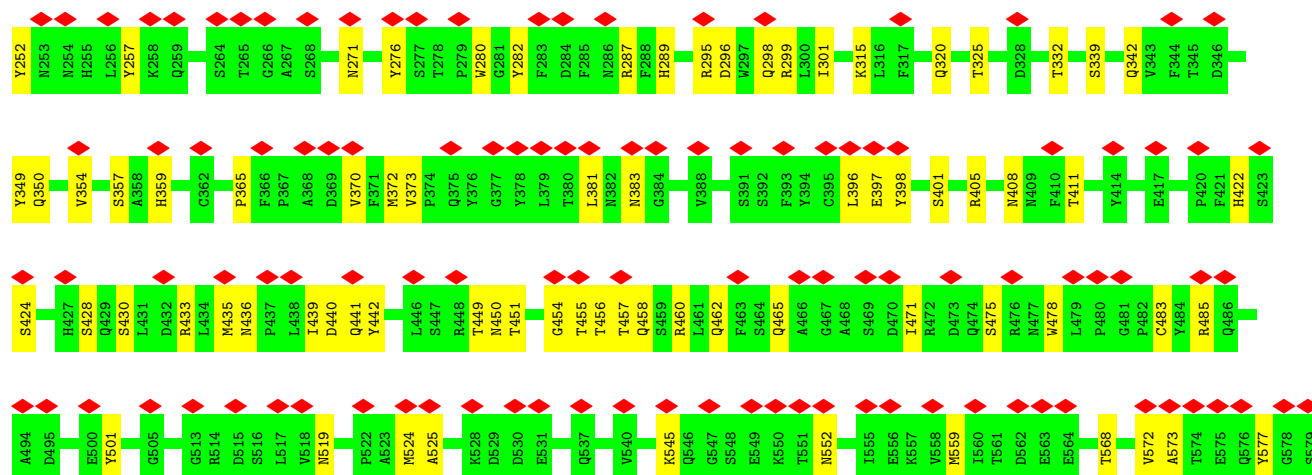


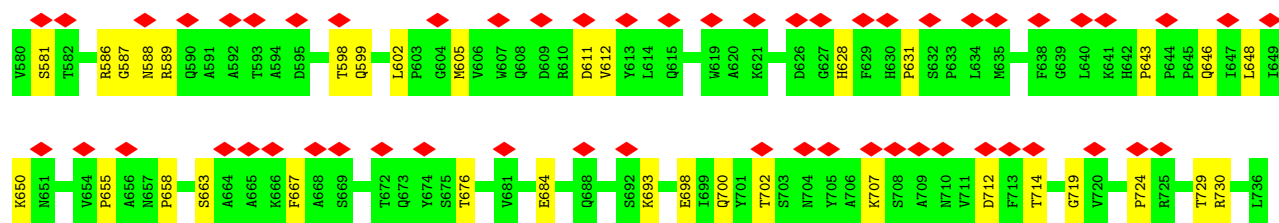




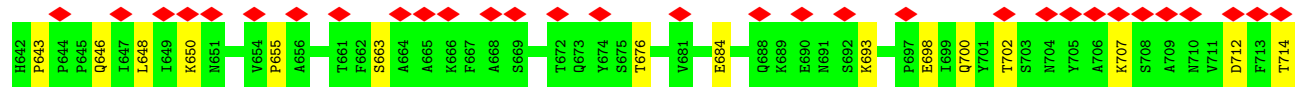
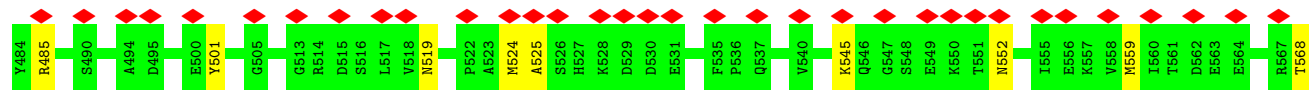
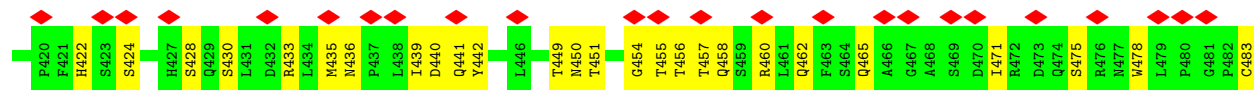
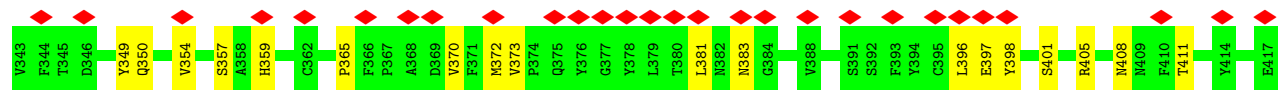
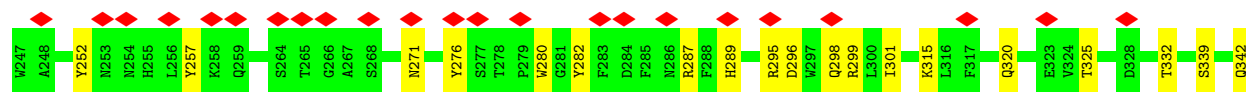
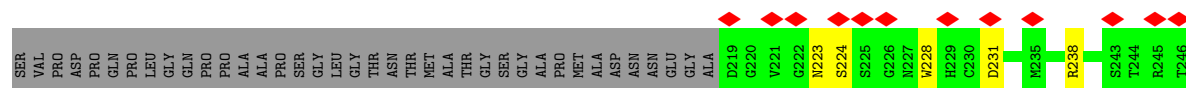
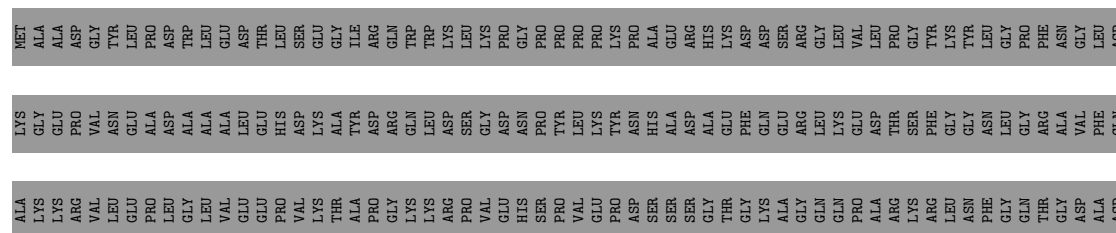
- Molecule 1: Capsid protein VP1







• Molecule 1: Capsid protein VP1



• Molecule 1: Capsid protein VP1

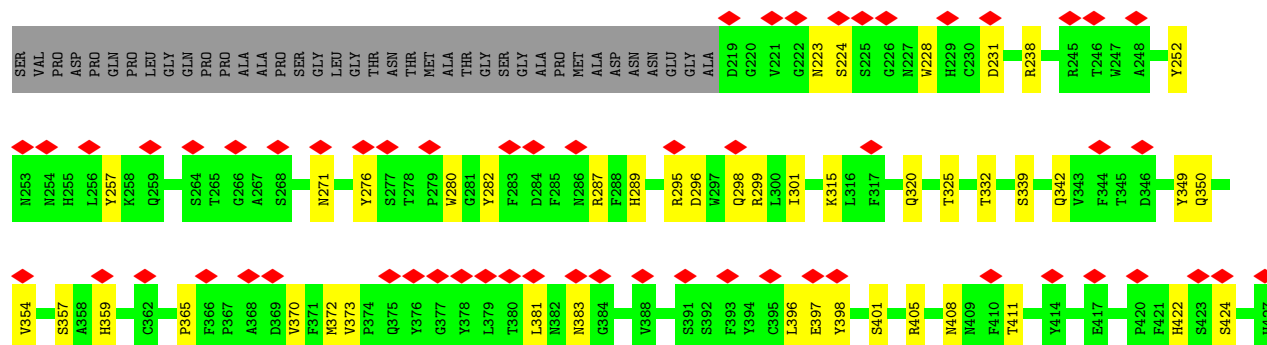
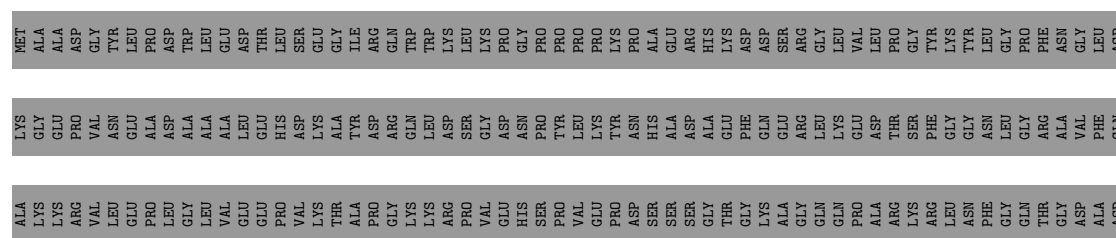


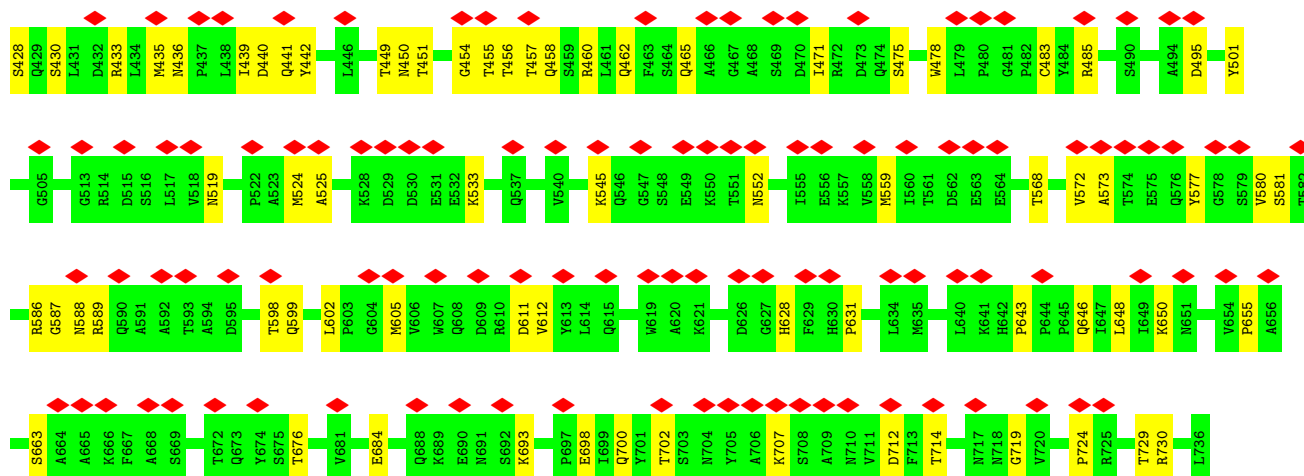
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ASP	PRO	ASP	ARG	PRO	Y252	T345	S423	A494	T574	P645	G719
GLY	ASN	VAL	VAL	GLN	N253	D346	S424	D495	E575	Q646	N720
LEU	GLU	LEU	GLU	PRO	N254	Q349	H427	E500	Q676	T647	P724
PRO	LEU	PRO	PRO	LEU	H255	Y350	S428	Y501	Q678	T649	R725
ASP	ALA	GLY	PRO	GLY	L256	V354	Q429	G505	S579	K650	T729
TRP	ALA	TRP	GLN	LEU	Y257	S357	S430	G513	V580	N651	R730
LEU	ALA	LEU	VAL	PRO	K258	A358	L431	R514	S581	V654	L736
GLU	ALA	GLU	GLU	ALA	Q259	H359	D432	R515	T582	P655	
THR	GLU	THR	GLU	ALA	S264	C362	R433	R516	G586	A656	
SER	HIS	SER	PRO	PRO	T265	G366	M435	R517	G587	T661	
GLY	LYS	GLY	VAL	GLY	G266	P365	M436	S518	N588	F662	
ILE	ALA	ILE	THR	GLY	A267	F366	L438	L517	R589	S663	
ARG	TYR	ARG	ALA	THR	S268	P367	T439	V518	Q590	A664	
TRP	ASP	TRP	PRO	ASN	N271	A368	Q441	N519	A592	A665	
LYS	LEU	LYS	GLY	THR	Y276	D369	Y442	P522	T593	K666	
LEU	GLY	LEU	THR	ALA	T277	V370	L446	A523	A594	F667	
PRO	ASP	PRO	VAL	THR	T278	F371	T449	A524	D595	S669	
ASN	GLY	ASN	GLU	GLY	T279	M372	M450	A525	T598	Q672	
PRO	ASP	PRO	GLY	SER	W280	V373	T451	H527	Q599	T673	
PRO	TYR	PRO	SER	ALA	G281	Q375	T455	K528	L602	Q674	
PRO	LEU	PRO	VAL	VAL	Y282	Y376	T456	D529	P603	T675	
LYS	GLY	LYS	GLU	GLU	F283	G377	T457	D530	G604	S675	
TYR	LYS	TYR	PRO	GLY	F284	L378	Q458	E531	M605	T676	
ALA	ASP	ALA	ASN	GLY	F285	T380	Q459	F534	V606	V681	
GLU	ALA	GLU	ASN	GLY	N286	F288	S459	F535	Q607	E684	
SER	ASP	SER	SER	ALA	R287	H289	R460	F536	Q608	Q688	
HIS	ALA	HIS	GLY	THR	F288	N382	L461	Q537	D611	K689	
LYS	GLU	LYS	THR	ALA	D219	N383	Q462	V540	V612	E690	
ASP	PHE	ASP	GLY	LYS	G220	G384	F463	K545	V613	S692	
ASP	GLN	ASP	ALA	LYS	V221	S391	S464	Q546	L614	Q693	
SER	GLU	SER	GLN	GLY	G222	S392	Q465	G547	Q615	T702	
ARG	LEU	ARG	GLN	LEU	N223	F393	A466	S548	Q619	G627	
LEU	VAL	LEU	PRO	VAL	S224	Y394	A468	E549	A620	H628	
VAL	GLU	VAL	ARG	ALA	G225	L301	A469	K550	K621	F629	
LEU	ASP	LEU	THR	ALA	G226	I301	S469	T551	V621	A705	
PRO	THR	PRO	SER	THR	N227	K315	D470	N552	G631	K707	
GLY	PHE	GLY	LEU	ARG	W228	L316	R472	Q556	D626	S708	
TYR	GLY	TYR	ASN	LEU	H229	F317	D473	E557	G627	A709	
LYS	GLY	LYS	PHE	PHE	C230	Y398	Q474	E558	H628	N710	
LEU	ASN	LEU	GLY	GLY	D231	Q320	S475	V559	G631	F713	
PRO	GLY	PRO	GLN	THR	M235	Q320	R476	I560	L634	D712	
PHE	ARG	PHE	THR	THR	R238	E323	N408	T561	N635	F713	
ASN	ALA	ASN	GLY	GLY	T325	V324	N477	D562	K641	T714	
GLY	VAL	GLY	ASP	ASP	D328	T325	R478	E564	L640		
ALA	PHE	ALA	GLY	ASP	T332	Y414	Y479	R567	K642		
LEU	GLN	LEU	PHE	ASP	S339	E417	L480	T568			
ASP	GLN	ASP	ALA	ASP	Q342	P420	G481				
							C483				
							Y484				
							R485				

● Molecule 1: Capsid protein VP1

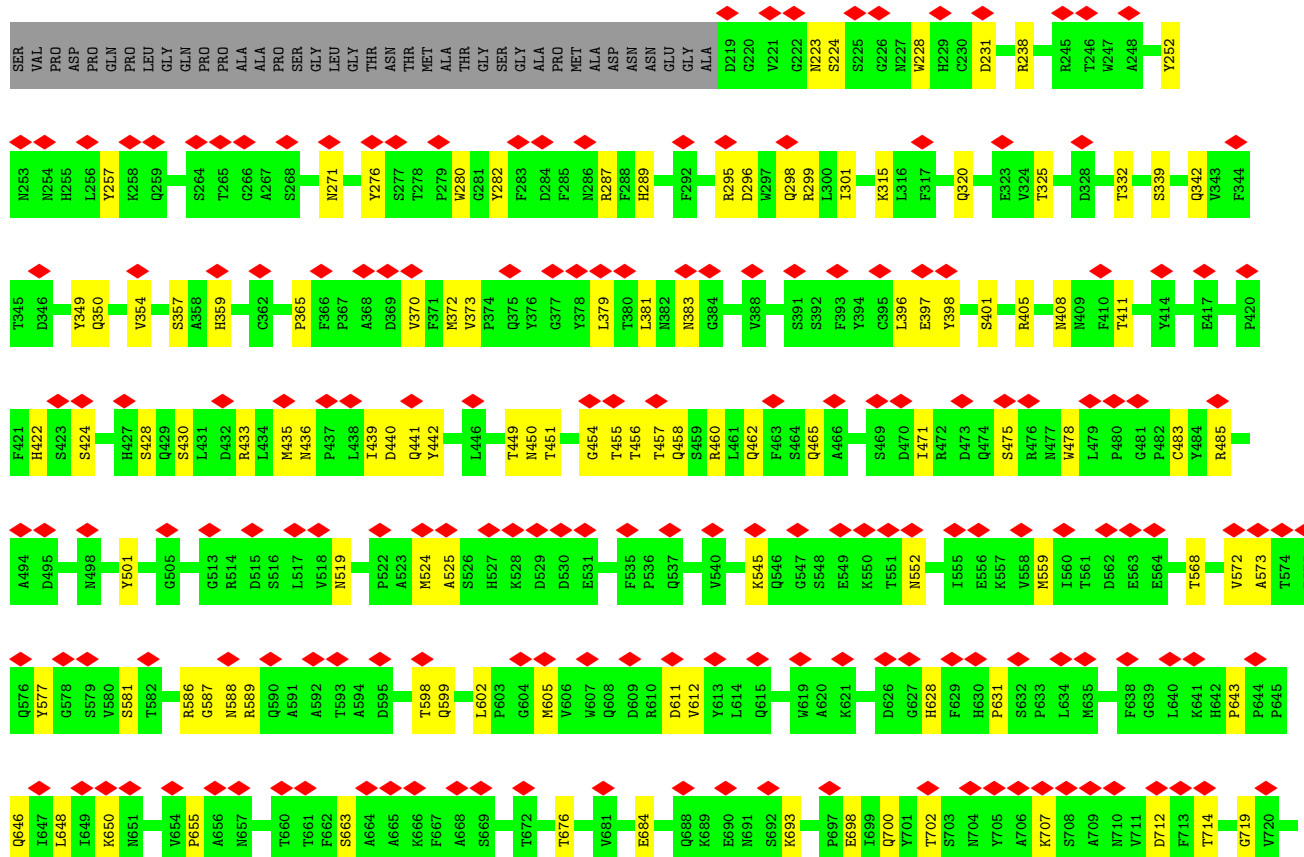
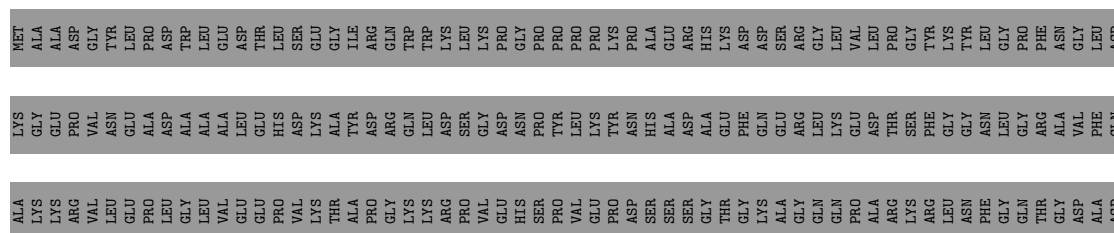


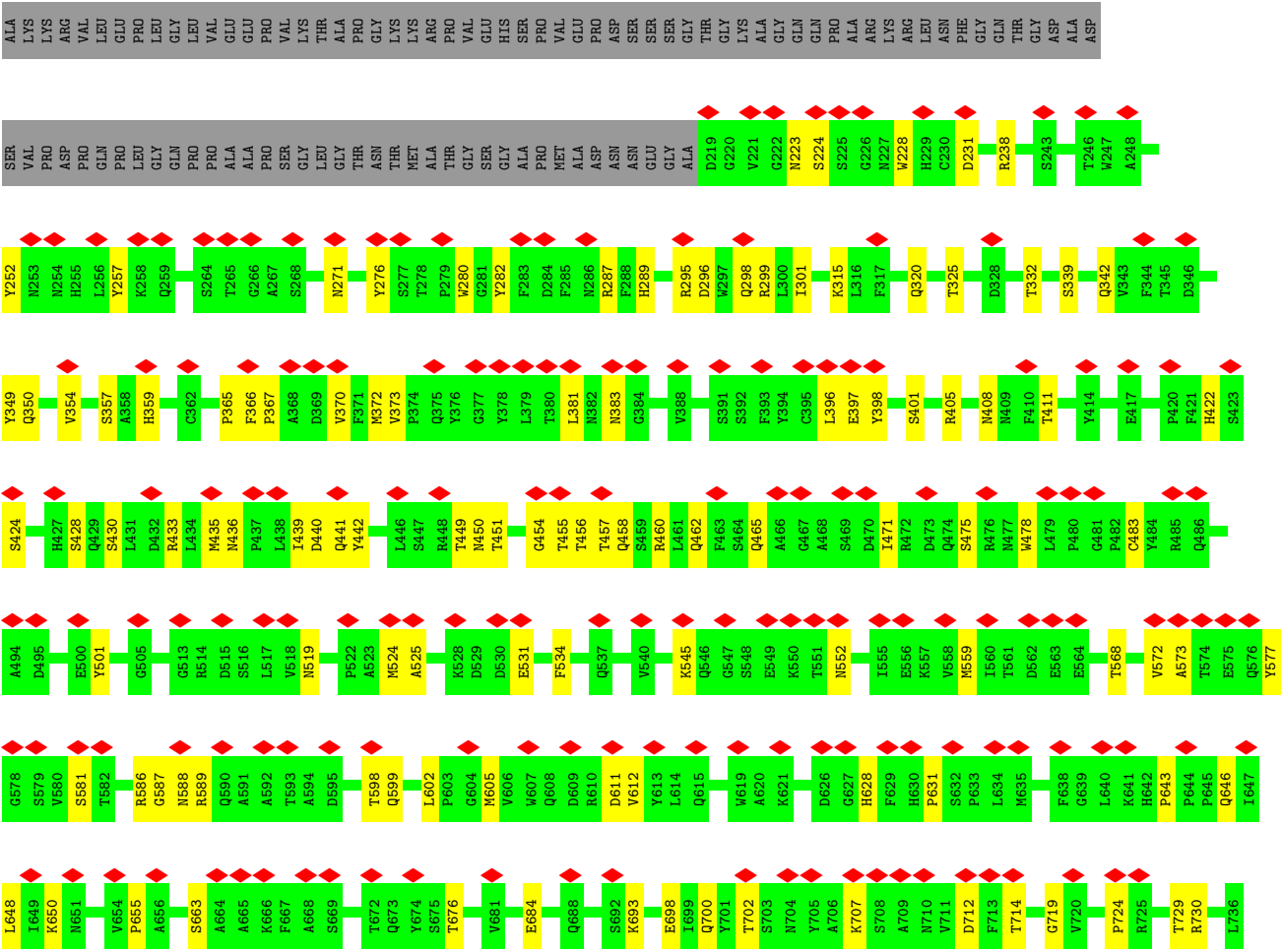
MET	LYS	ALA	LYS	SER	P643	M717
ALA	GLY	ALA	LYS	VAL	P644	M718
ASP	PRO	ASP	ARG	VAL	P645	G719
TYR	ASN	VAL	VAL	LEU	Q646	N720
LEU	GLU	GLU	LEU	GLU	T647	P724
PRO	ALA	PRO	VAL	PRO	L648	R725
ASP	ASP	LEU	VAL	LEU	K650	T729
TRP	ALA	TRP	VAL	GLU	N651	R730
LEU	ALA	LEU	VAL	GLU	V654	L736
GLU	GLU	GLU	GLU	GLU	P655	
THR	GLU	THR	PRO	PRO	A656	
SER	HIS	SER	VAL	VAL	T661	
GLY	LYS	GLY	VAL	VAL	F662	
ILE	ALA	ILE	THR	THR	S663	
ARG	ASP	ARG	PRO	PRO	A664	
GLN	ASP	GLN	GLY	GLY	A665	
TRP	LEU	TRP	LYS	LYS	K666	
LYS	LEU	LYS	LYS	LYS	F667	
ASP	ASP	ASP	ARG	ARG	A668	
LEU	SER	LEU	VAL	VAL	S669	
LYS	GLY	LYS	GLU	GLU	T672	
PRO	ASN	PRO	HIS	HIS	Q673	
GLY	ASN	GLY	SER	SER	T674	
PRO	TYR	PRO	PRO	PRO	S675	
PRO	LEU	PRO	VAL	VAL	T676	
PRO	LYS	PRO	GLU	GLU	V681	
LYS	TYR	LYS	PRO	PRO	E684	
ASN	ASN	ASN	SER	SER	Q688	
ALA	GLU	ALA	SER	SER	K689	
GLU	ALA	GLU	ALA	ALA	E690	
ARG	LEU	ARG	GLN	GLN	N691	
GLY	LEU	GLY	GLN	GLN	S692	
LEU	VAL	LEU	PRO	PRO	P697	
VAL	GLU	VAL	ARG	ARG	E698	
ASP	ASP	ASP	LYS	LYS	I699	
HIS	ALA	HIS	LEU	LEU	Q700	
LYS	PHE	LYS	PHE	PHE	Y701	
ASP	GLN	ASP	GLY	GLY	T702	
ASP	GLN	ASP	LEU	LEU	S703	
SER	GLU	SER	GLY	GLY	N704	
ARG	LEU	ARG	PRO	PRO	A705	
GLY	THR	GLY	THR	THR	T706	
LEU	SER	LEU	GLY	GLY	K707	
TYR	PHE	TYR	LEU	LEU	S708	
LYS	GLY	LYS	ASN	ASN	A709	
LEU	ASN	LEU	GLY	GLY	N710	
PRO	GLY	PRO	GLN	GLN	F711	
PHE	ARG	PHE	THR	THR	D712	
ASN	ALA	ASN	GLY	GLY	F713	
GLY	VAL	GLY	ASP	ASP	K641	
LEU	PHE	LEU	ALA	ALA	T714	
ASP	GLN	ASP	ASP	ASP		



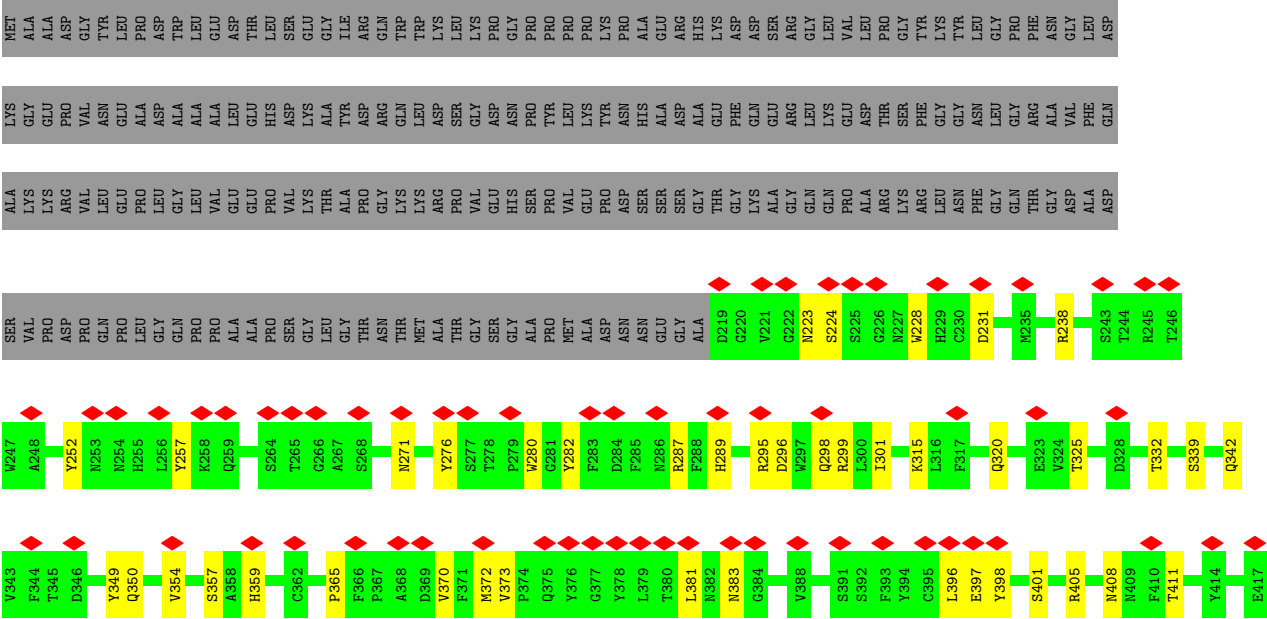


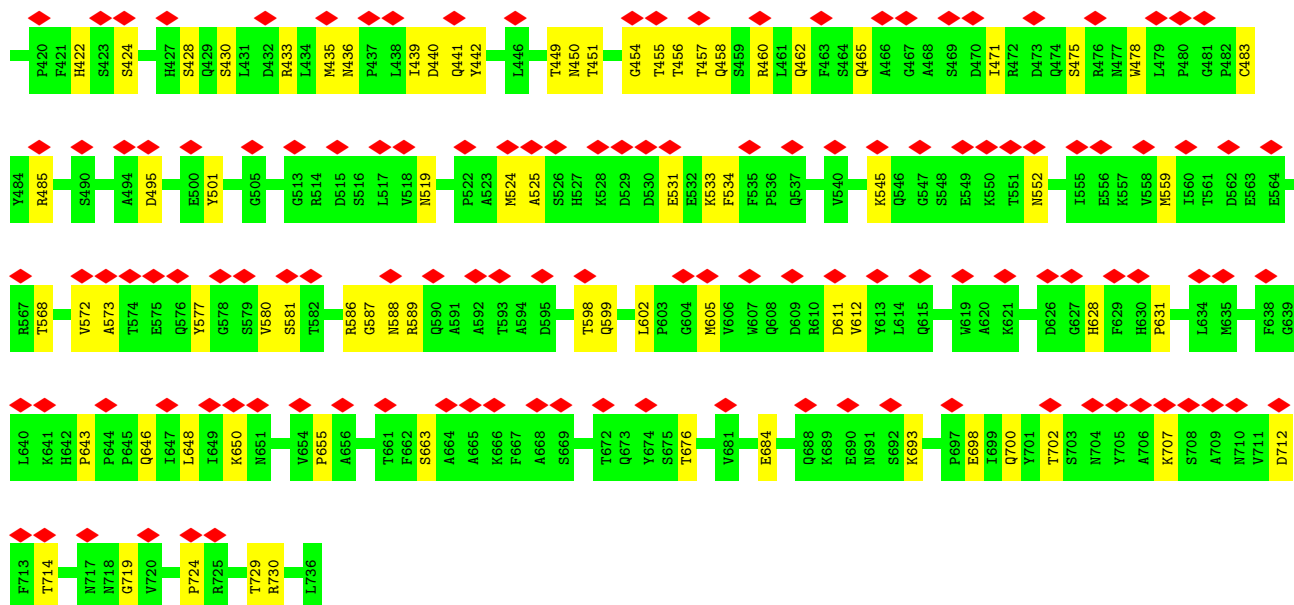
• Molecule 1: Capsid protein VP1



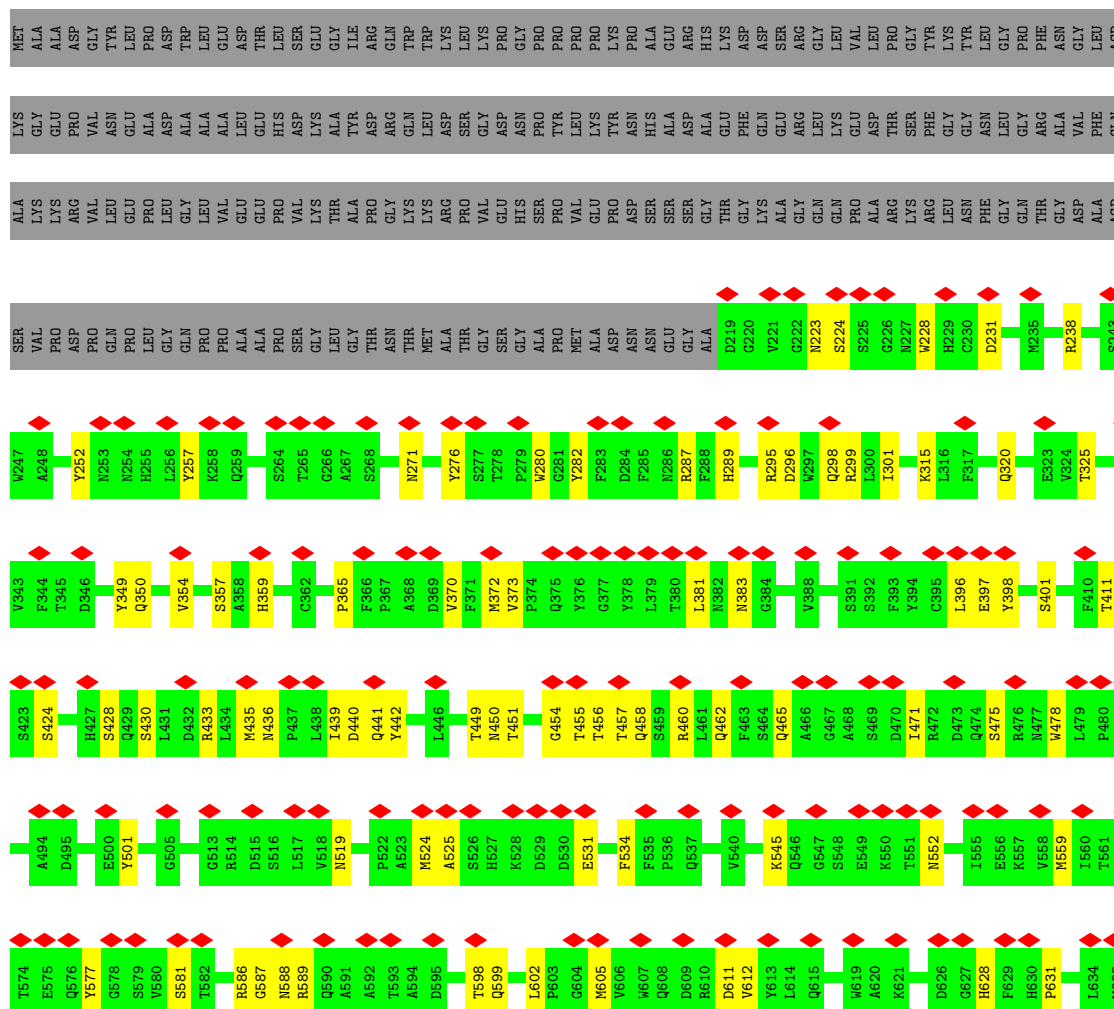


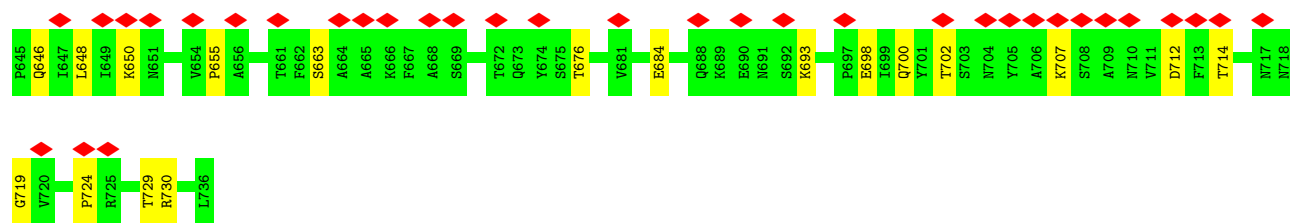
• Molecule 1: Capsid protein VP1



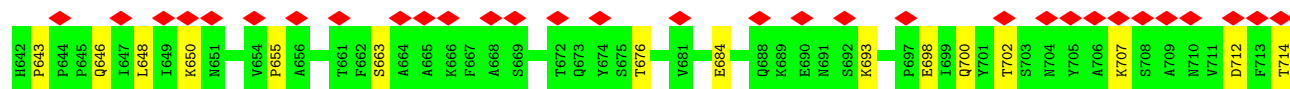
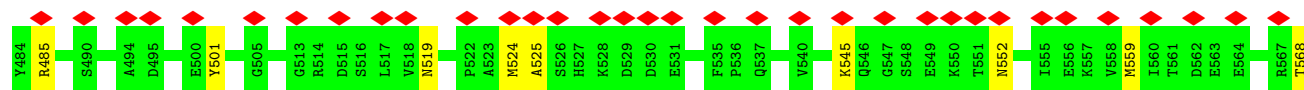
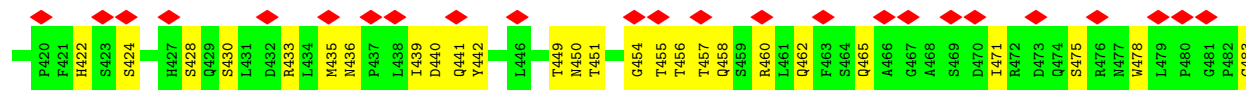
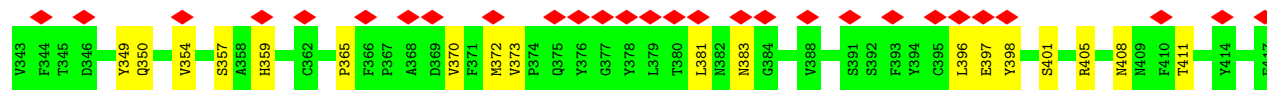
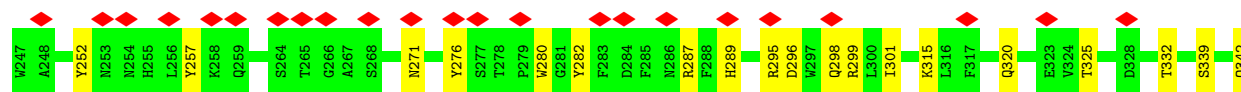
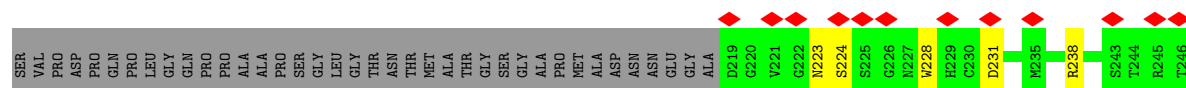
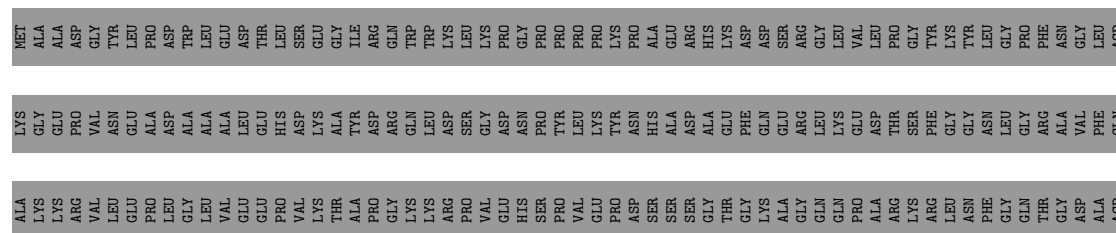


• Molecule 1: Capsid protein VP1

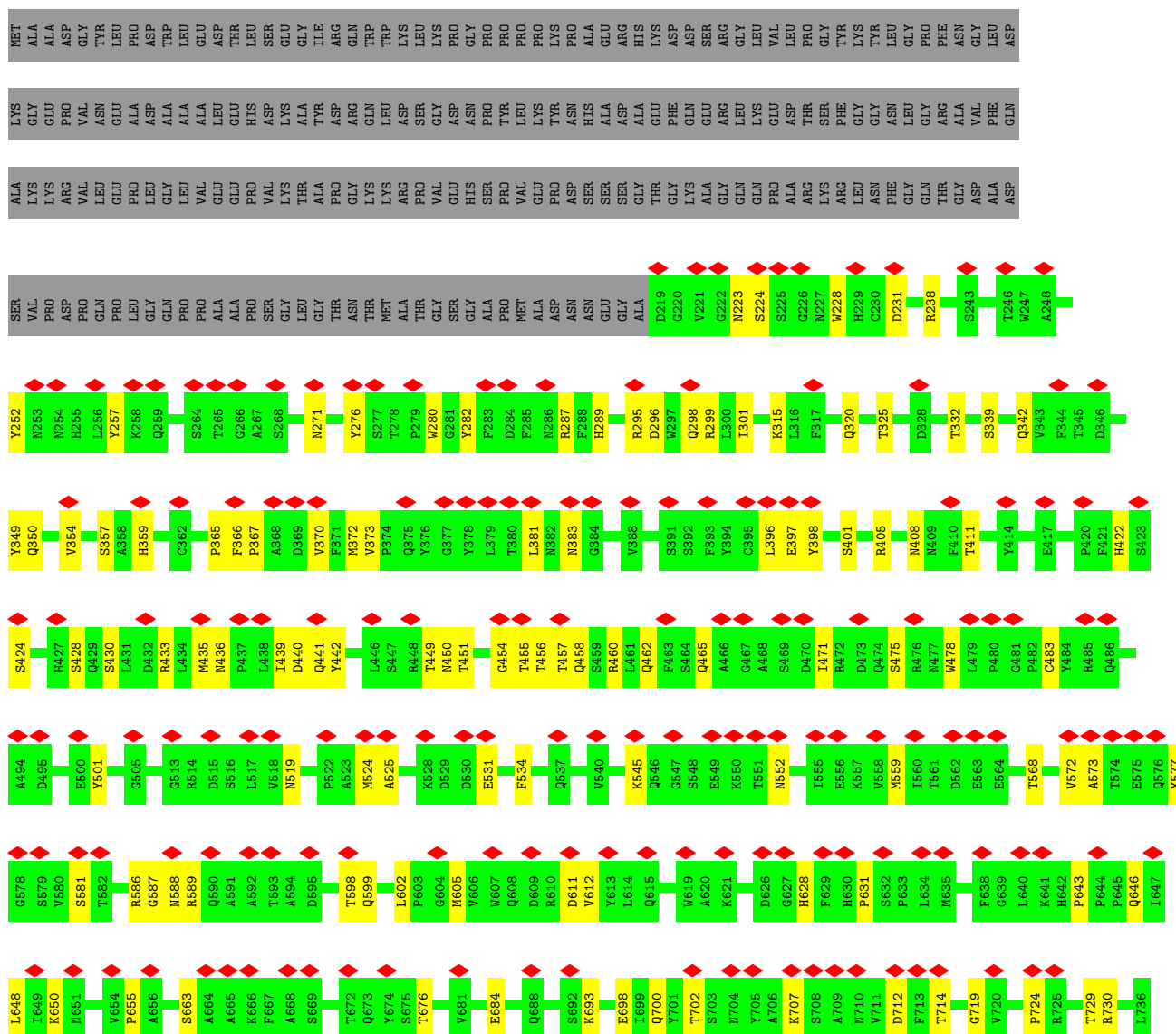




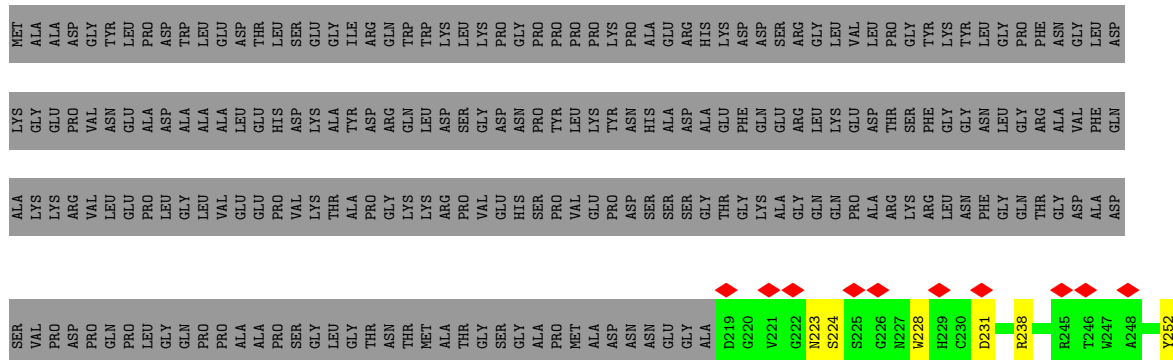
• Molecule 1: Capsid protein VP1

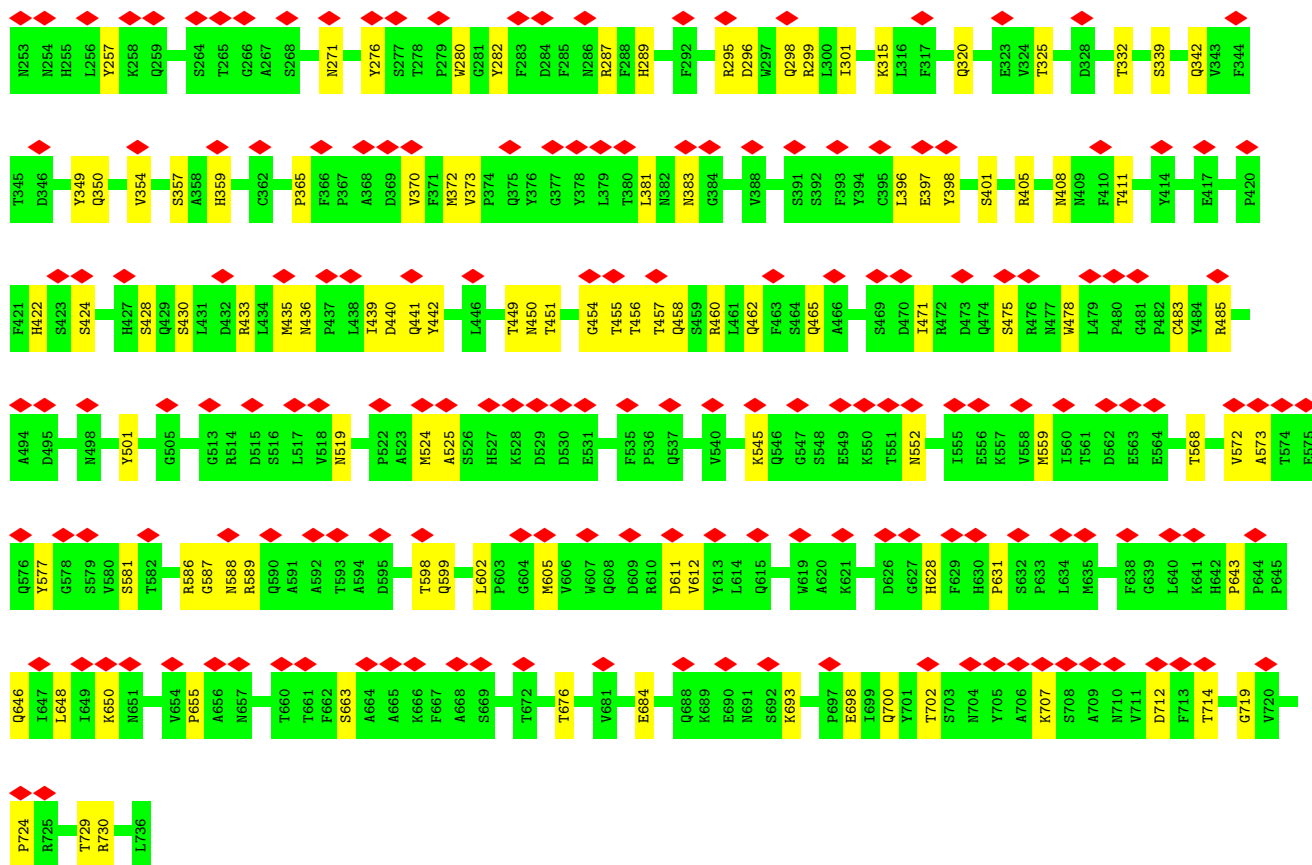


• Molecule 1: Capsid protein VP1

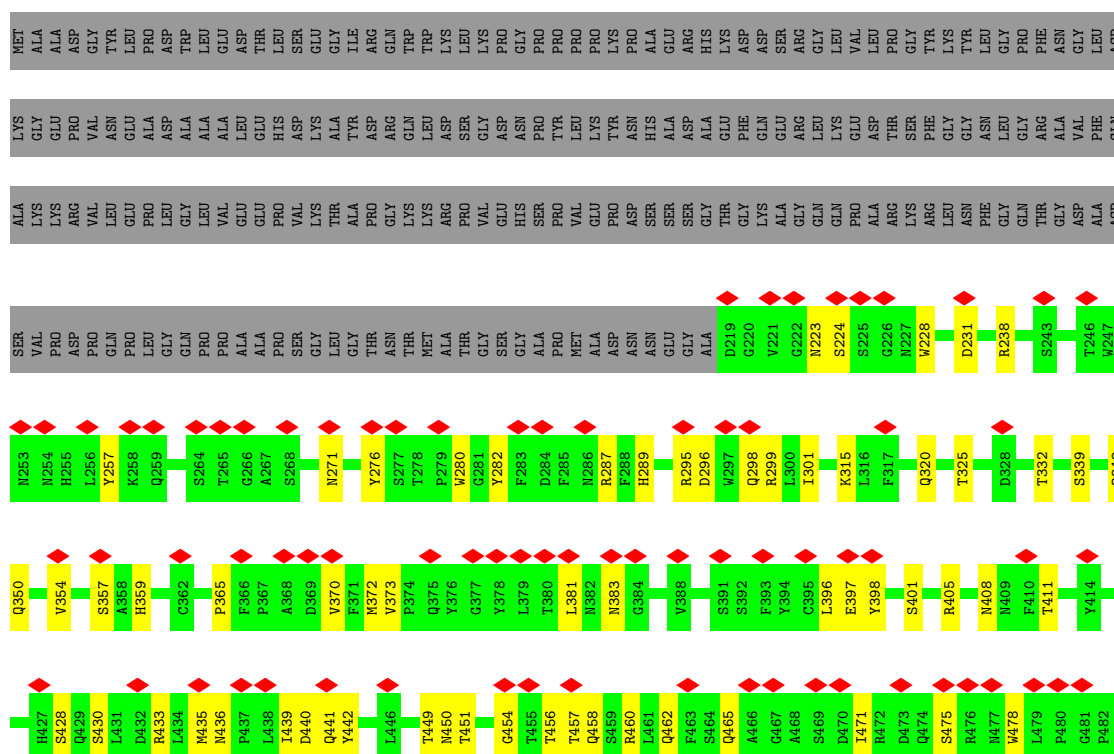


• Molecule 1: Capsid protein VP1





• Molecule 1: Capsid protein VP1

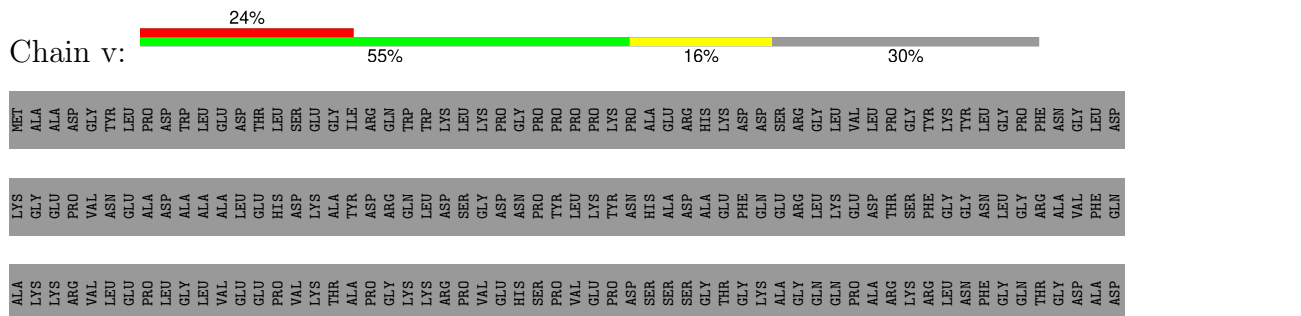


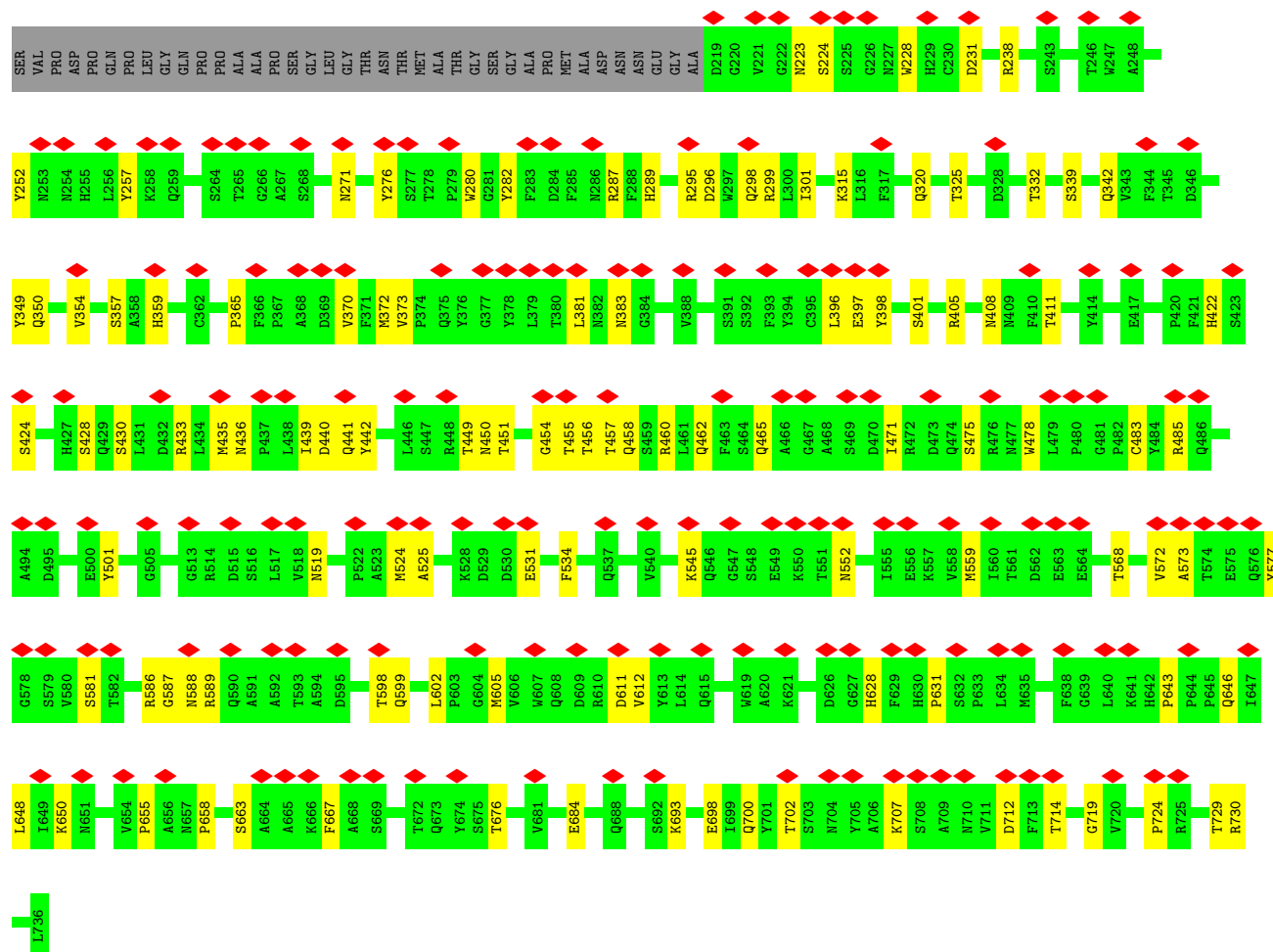


Chain u:

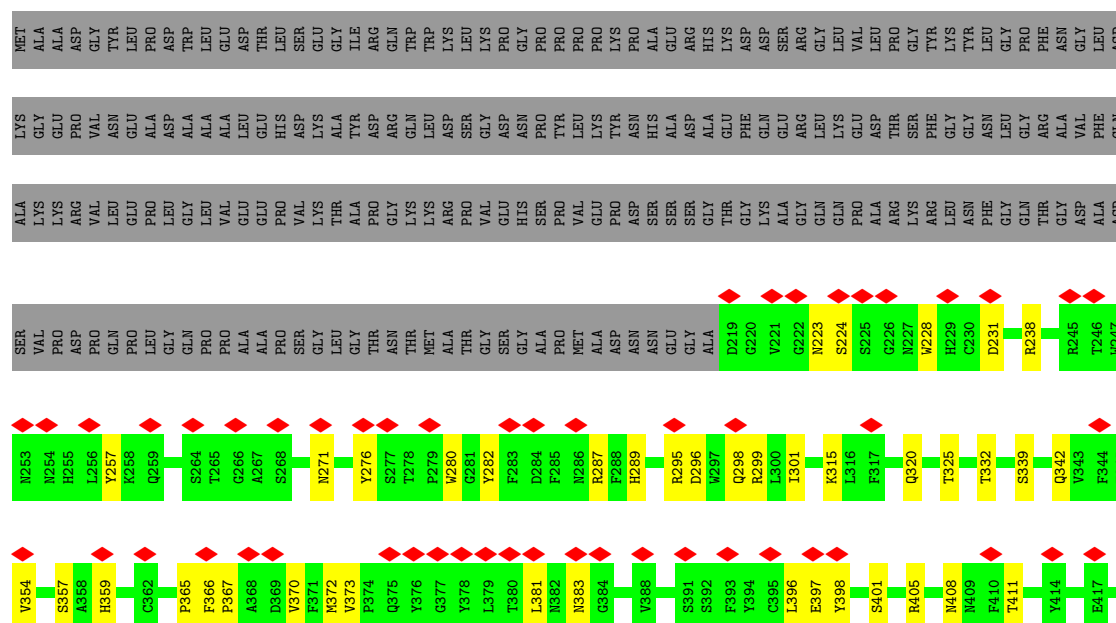


Chain v:

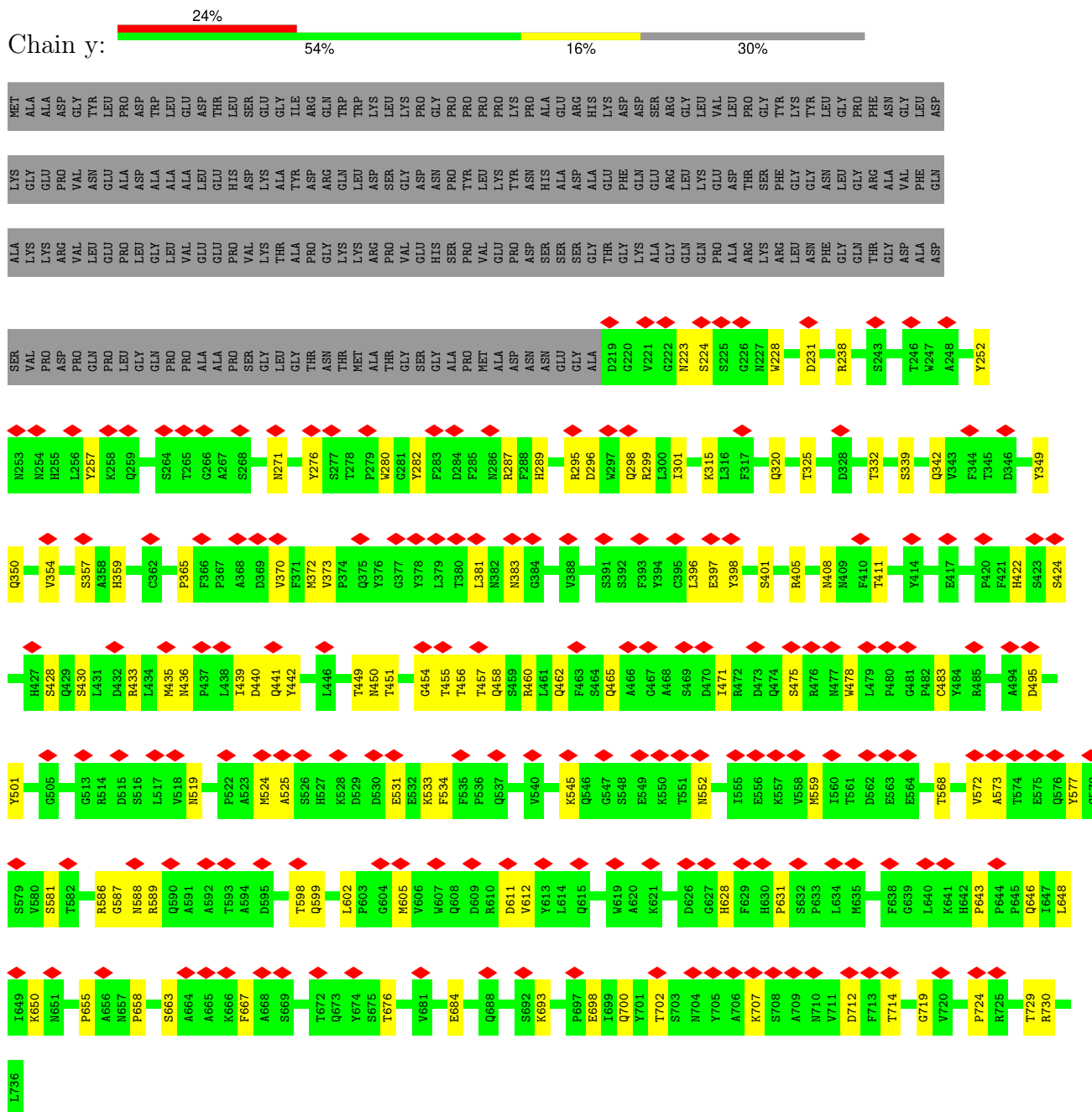




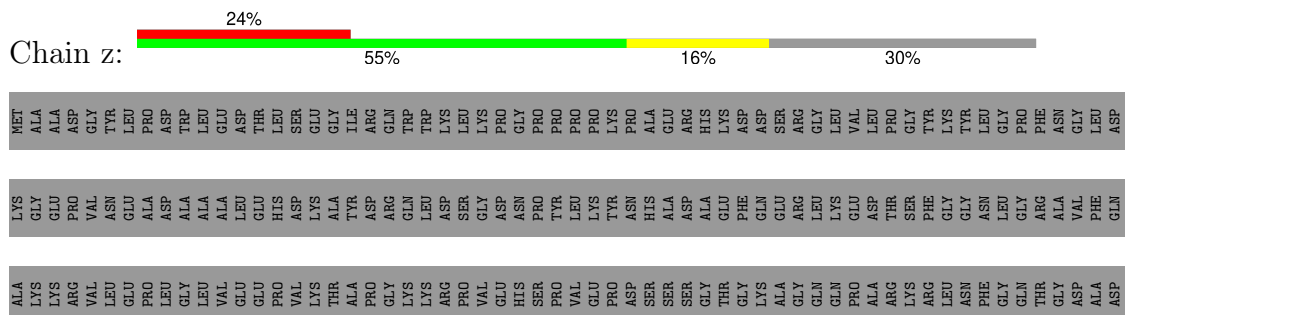
• Molecule 1: Capsid protein VP1

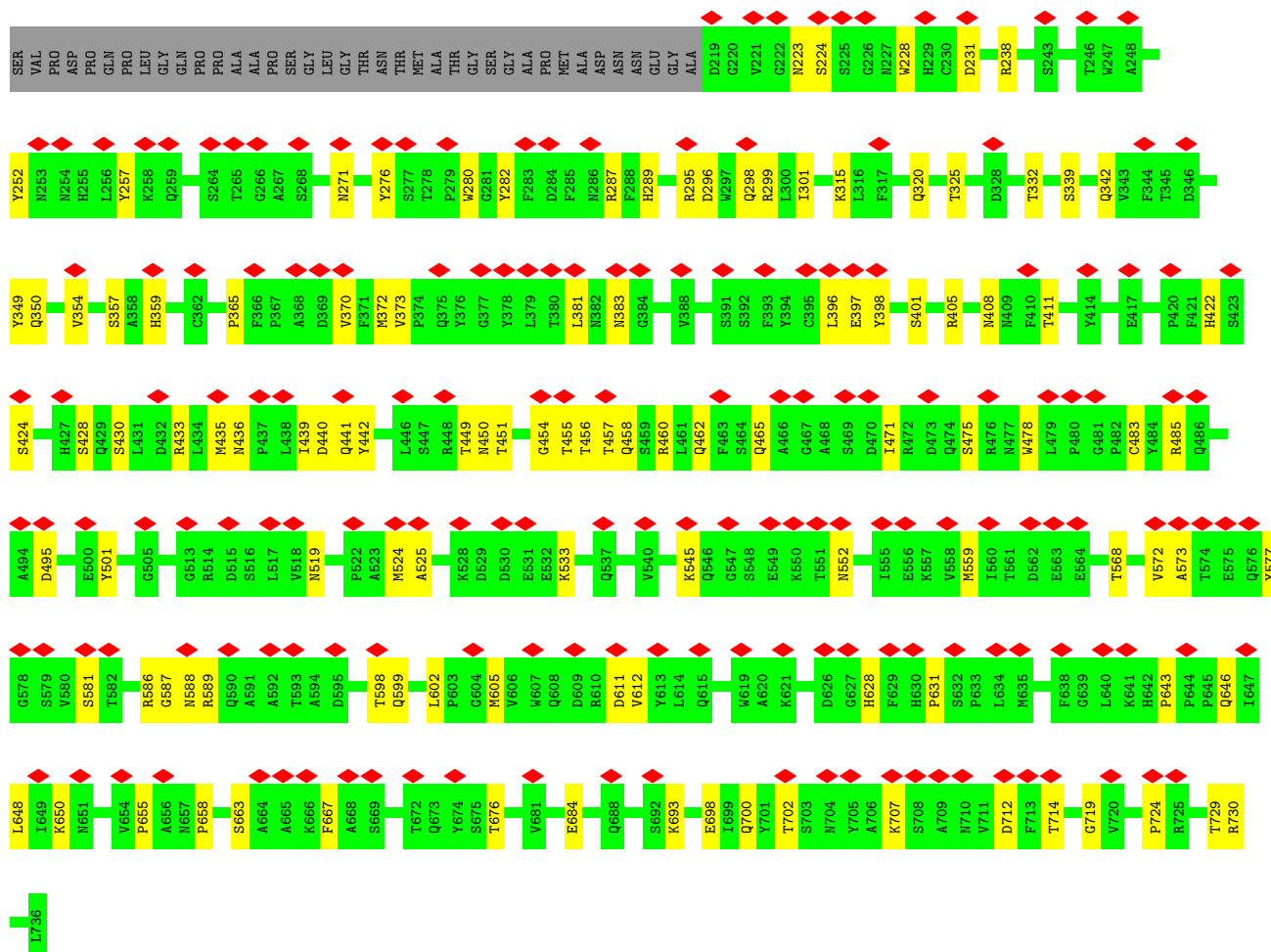


- Molecule 1: Capsid protein VP1

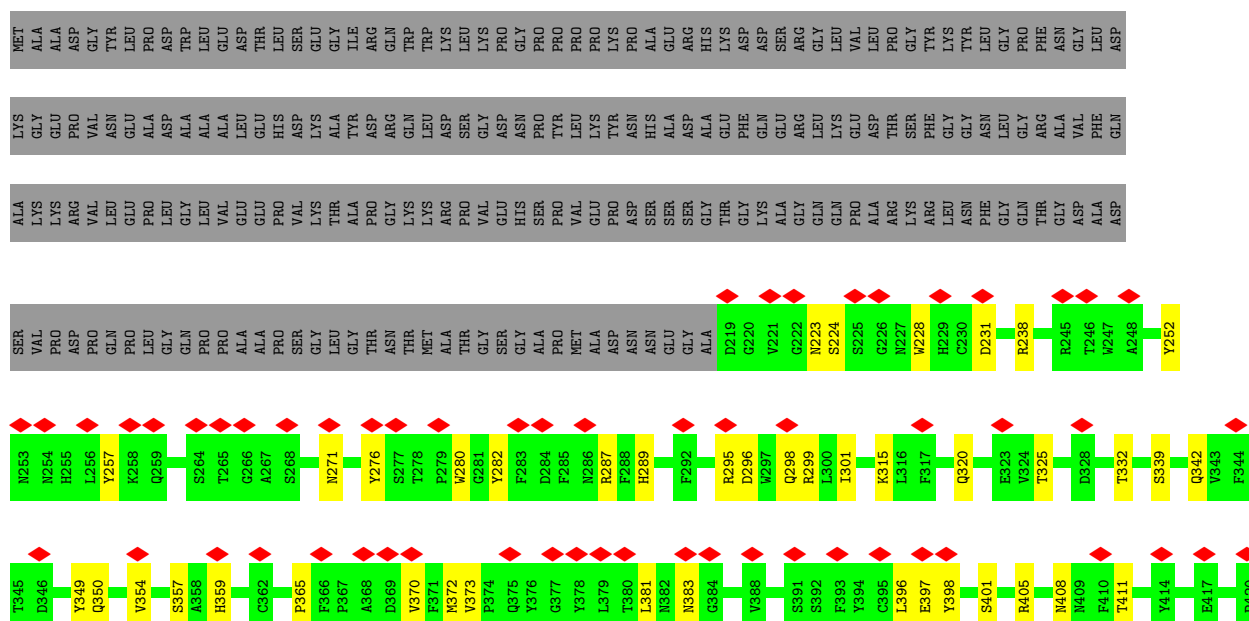


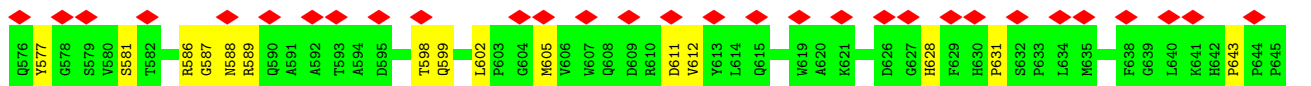
- Molecule 1: Capsid protein VP1

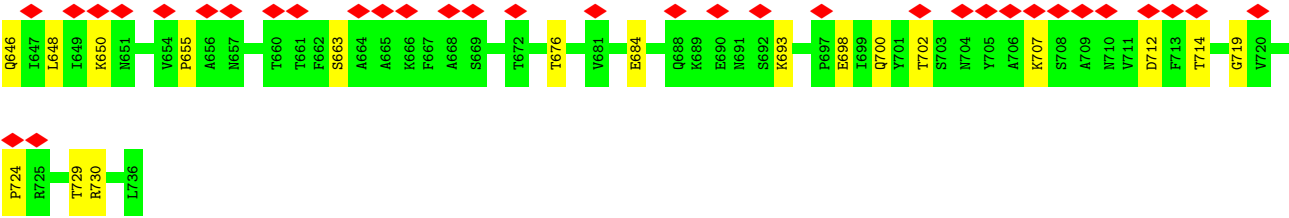




• Molecule 1: Capsid protein VP1







4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	24618	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 ($e^-/\text{\AA}^2$)	2	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	DIRECT ELECTRON DE-20 (5k x 3k)	Depositor
Maximum map value	16.777	Depositor
Minimum map value	-8.740	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	1	Depositor
Map size (Å)	379.05, 379.05, 379.05	wwPDB
Map dimensions	399, 399, 399	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	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	0	0.44	0/4265	0.50	0/5814
1	1	0.44	0/4265	0.50	0/5814
1	2	0.44	0/4265	0.50	0/5814
1	3	0.44	0/4265	0.50	0/5814
1	4	0.44	0/4265	0.50	0/5814
1	5	0.44	0/4265	0.50	0/5814
1	6	0.44	0/4265	0.50	0/5814
1	7	0.44	0/4265	0.50	0/5814
1	A	0.44	0/4265	0.50	0/5814
1	B	0.44	0/4265	0.50	0/5814
1	C	0.44	0/4265	0.50	0/5814
1	D	0.44	0/4265	0.50	0/5814
1	E	0.44	0/4265	0.50	0/5814
1	F	0.44	0/4265	0.50	0/5814
1	G	0.44	0/4265	0.50	0/5814
1	H	0.44	0/4265	0.50	0/5814
1	I	0.44	0/4265	0.50	0/5814
1	J	0.44	0/4265	0.50	0/5814
1	K	0.44	0/4265	0.50	0/5814
1	L	0.44	0/4265	0.50	0/5814
1	M	0.44	0/4265	0.50	0/5814
1	N	0.44	0/4265	0.50	0/5814
1	O	0.44	0/4265	0.50	0/5814
1	P	0.44	0/4265	0.50	0/5814
1	Q	0.44	0/4265	0.50	0/5814
1	R	0.44	0/4265	0.50	0/5814
1	S	0.44	0/4265	0.50	0/5814
1	T	0.44	0/4265	0.50	0/5814
1	U	0.44	0/4265	0.50	0/5814
1	V	0.44	0/4265	0.50	0/5814
1	W	0.44	0/4265	0.50	0/5814
1	X	0.44	0/4265	0.50	0/5814
1	Y	0.44	0/4265	0.50	0/5814
1	Z	0.44	0/4265	0.50	0/5814

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	a	0.44	0/4265	0.50	0/5814
1	b	0.44	0/4265	0.50	0/5814
1	c	0.44	0/4265	0.50	0/5814
1	d	0.44	0/4265	0.50	0/5814
1	e	0.44	0/4265	0.50	0/5814
1	f	0.44	0/4265	0.50	0/5814
1	g	0.44	0/4265	0.50	0/5814
1	h	0.44	0/4265	0.50	0/5814
1	i	0.44	0/4265	0.50	0/5814
1	j	0.44	0/4265	0.50	0/5814
1	k	0.44	0/4265	0.50	0/5814
1	l	0.44	0/4265	0.50	0/5814
1	m	0.44	0/4265	0.50	0/5814
1	n	0.44	0/4265	0.50	0/5814
1	o	0.44	0/4265	0.50	0/5814
1	p	0.44	0/4265	0.50	0/5814
1	q	0.44	0/4265	0.50	0/5814
1	r	0.44	0/4265	0.50	0/5814
1	s	0.44	0/4265	0.50	0/5814
1	t	0.44	0/4265	0.50	0/5814
1	u	0.44	0/4265	0.50	0/5814
1	v	0.44	0/4265	0.50	0/5814
1	w	0.44	0/4265	0.50	0/5814
1	x	0.44	0/4265	0.50	0/5814
1	y	0.44	0/4265	0.50	0/5814
1	z	0.44	0/4265	0.50	0/5814
All	All	0.44	0/255900	0.50	0/348840

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	0	0	1
1	1	0	1
1	2	0	1
1	3	0	1
1	4	0	1
1	5	0	1
1	6	0	1
1	7	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	B	0	1
1	C	0	1
1	D	0	1
1	E	0	1
1	F	0	1
1	G	0	1
1	H	0	1
1	I	0	1
1	J	0	1
1	K	0	1
1	L	0	1
1	M	0	1
1	N	0	1
1	O	0	1
1	P	0	1
1	Q	0	1
1	R	0	1
1	S	0	1
1	T	0	1
1	U	0	1
1	V	0	1
1	W	0	1
1	X	0	1
1	Y	0	1
1	Z	0	1
1	a	0	1
1	b	0	1
1	c	0	1
1	d	0	1
1	e	0	1
1	f	0	1
1	g	0	1
1	h	0	1
1	i	0	1
1	j	0	1
1	k	0	1
1	l	0	1
1	m	0	1
1	n	0	1
1	o	0	1
1	p	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	q	0	1
1	r	0	1
1	s	0	1
1	t	0	1
1	u	0	1
1	v	0	1
1	w	0	1
1	x	0	1
1	y	0	1
1	z	0	1
All	All	0	60

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 60 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	587	GLY	Peptide
1	B	587	GLY	Peptide
1	C	587	GLY	Peptide
1	D	587	GLY	Peptide
1	E	587	GLY	Peptide

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	4142	0	3894	101	0
1	1	4142	0	3894	102	0
1	2	4142	0	3894	102	0
1	3	4142	0	3894	102	0
1	4	4142	0	3894	104	0
1	5	4142	0	3894	103	0
1	6	4142	0	3894	101	0
1	7	4142	0	3894	100	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4142	0	3894	100	0
1	B	4142	0	3894	103	0
1	C	4142	0	3894	102	0
1	D	4142	0	3894	102	0
1	E	4142	0	3894	103	0
1	F	4142	0	3894	103	0
1	G	4142	0	3894	100	0
1	H	4142	0	3894	102	0
1	I	4142	0	3894	100	0
1	J	4142	0	3894	103	0
1	K	4142	0	3894	101	0
1	L	4142	0	3894	104	0
1	M	4142	0	3894	102	0
1	N	4142	0	3894	102	0
1	O	4142	0	3894	101	0
1	P	4142	0	3894	103	0
1	Q	4142	0	3894	102	0
1	R	4142	0	3894	101	0
1	S	4142	0	3894	101	0
1	T	4142	0	3894	100	0
1	U	4142	0	3894	102	0
1	V	4142	0	3894	104	0
1	W	4142	0	3894	100	0
1	X	4142	0	3894	103	0
1	Y	4142	0	3894	99	0
1	Z	4142	0	3894	103	0
1	a	4142	0	3894	101	0
1	b	4142	0	3894	102	0
1	c	4142	0	3894	103	0
1	d	4142	0	3894	105	0
1	e	4142	0	3894	102	0
1	f	4142	0	3894	103	0
1	g	4142	0	3894	102	0
1	h	4142	0	3894	103	0
1	i	4142	0	3894	103	0
1	j	4142	0	3894	104	0
1	k	4142	0	3894	102	0
1	l	4142	0	3894	101	0
1	m	4142	0	3894	103	0
1	n	4142	0	3894	105	0
1	o	4142	0	3894	102	0
1	p	4142	0	3894	102	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	q	4142	0	3894	102	0
1	r	4142	0	3894	101	0
1	s	4142	0	3894	100	0
1	t	4142	0	3894	102	0
1	u	4142	0	3894	103	0
1	v	4142	0	3894	103	0
1	w	4142	0	3894	103	0
1	x	4142	0	3894	104	0
1	y	4142	0	3894	102	0
1	z	4142	0	3894	104	0
All	All	248520	0	233640	4623	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 10.

The worst 5 of 4623 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:R:430:SER:HA	1:R:568:THR:HG23	1.58	0.86
1:O:430:SER:HA	1:O:568:THR:HG23	1.58	0.86
1:D:430:SER:HA	1:D:568:THR:HG23	1.58	0.86
1:t:430:SER:HA	1:t:568:THR:HG23	1.58	0.86
1:I:430:SER:HA	1:I:568:THR:HG23	1.58	0.86

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	0	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	1	516/736 (70%)	506 (98%)	10 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	2	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	3	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	4	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	5	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	6	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	7	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	A	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	B	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	C	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	D	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	E	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	F	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	G	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	H	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	I	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	J	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	K	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	L	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	M	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	N	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	O	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	P	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	Q	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	R	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	S	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	T	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	U	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	V	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	W	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	X	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	Y	516/736 (70%)	507 (98%)	9 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Z	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	a	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	b	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	c	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	d	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	e	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	f	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	g	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	h	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	i	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	j	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	k	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	l	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	m	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	n	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	o	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	p	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	q	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	r	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	s	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	t	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	u	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	v	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	w	516/736 (70%)	507 (98%)	9 (2%)	0	100	100
1	x	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	y	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
1	z	516/736 (70%)	506 (98%)	10 (2%)	0	100	100
All	All	30960/44160 (70%)	30384 (98%)	576 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	457/628 (73%)	457 (100%)	0	100	100
1	1	457/628 (73%)	457 (100%)	0	100	100
1	2	457/628 (73%)	457 (100%)	0	100	100
1	3	457/628 (73%)	457 (100%)	0	100	100
1	4	457/628 (73%)	457 (100%)	0	100	100
1	5	457/628 (73%)	457 (100%)	0	100	100
1	6	457/628 (73%)	457 (100%)	0	100	100
1	7	457/628 (73%)	457 (100%)	0	100	100
1	A	457/628 (73%)	457 (100%)	0	100	100
1	B	457/628 (73%)	457 (100%)	0	100	100
1	C	457/628 (73%)	457 (100%)	0	100	100
1	D	457/628 (73%)	457 (100%)	0	100	100
1	E	457/628 (73%)	457 (100%)	0	100	100
1	F	457/628 (73%)	457 (100%)	0	100	100
1	G	457/628 (73%)	457 (100%)	0	100	100
1	H	457/628 (73%)	457 (100%)	0	100	100
1	I	457/628 (73%)	457 (100%)	0	100	100
1	J	457/628 (73%)	457 (100%)	0	100	100
1	K	457/628 (73%)	457 (100%)	0	100	100
1	L	457/628 (73%)	457 (100%)	0	100	100
1	M	457/628 (73%)	457 (100%)	0	100	100
1	N	457/628 (73%)	457 (100%)	0	100	100
1	O	457/628 (73%)	457 (100%)	0	100	100
1	P	457/628 (73%)	457 (100%)	0	100	100
1	Q	457/628 (73%)	457 (100%)	0	100	100
1	R	457/628 (73%)	457 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	S	457/628 (73%)	457 (100%)	0	100	100
1	T	457/628 (73%)	457 (100%)	0	100	100
1	U	457/628 (73%)	457 (100%)	0	100	100
1	V	457/628 (73%)	457 (100%)	0	100	100
1	W	457/628 (73%)	457 (100%)	0	100	100
1	X	457/628 (73%)	457 (100%)	0	100	100
1	Y	457/628 (73%)	457 (100%)	0	100	100
1	Z	457/628 (73%)	457 (100%)	0	100	100
1	a	457/628 (73%)	457 (100%)	0	100	100
1	b	457/628 (73%)	457 (100%)	0	100	100
1	c	457/628 (73%)	457 (100%)	0	100	100
1	d	457/628 (73%)	457 (100%)	0	100	100
1	e	457/628 (73%)	457 (100%)	0	100	100
1	f	457/628 (73%)	457 (100%)	0	100	100
1	g	457/628 (73%)	457 (100%)	0	100	100
1	h	457/628 (73%)	457 (100%)	0	100	100
1	i	457/628 (73%)	457 (100%)	0	100	100
1	j	457/628 (73%)	457 (100%)	0	100	100
1	k	457/628 (73%)	457 (100%)	0	100	100
1	l	457/628 (73%)	457 (100%)	0	100	100
1	m	457/628 (73%)	457 (100%)	0	100	100
1	n	457/628 (73%)	457 (100%)	0	100	100
1	o	457/628 (73%)	457 (100%)	0	100	100
1	p	457/628 (73%)	457 (100%)	0	100	100
1	q	457/628 (73%)	457 (100%)	0	100	100
1	r	457/628 (73%)	457 (100%)	0	100	100
1	s	457/628 (73%)	457 (100%)	0	100	100
1	t	457/628 (73%)	457 (100%)	0	100	100
1	u	457/628 (73%)	457 (100%)	0	100	100
1	v	457/628 (73%)	457 (100%)	0	100	100
1	w	457/628 (73%)	457 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	x	457/628 (73%)	457 (100%)	0	100	100
1	y	457/628 (73%)	457 (100%)	0	100	100
1	z	457/628 (73%)	457 (100%)	0	100	100
All	All	27420/37680 (73%)	27420 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 1028 such sidechains are listed below:

Mol	Chain	Res	Type
1	w	462	GLN
1	x	628	HIS
1	w	458	GLN
1	W	465	GLN
1	V	718	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

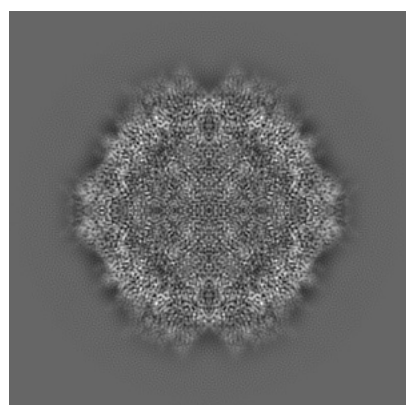
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-7452. These allow visual inspection of the internal detail of the map and identification of artifacts.

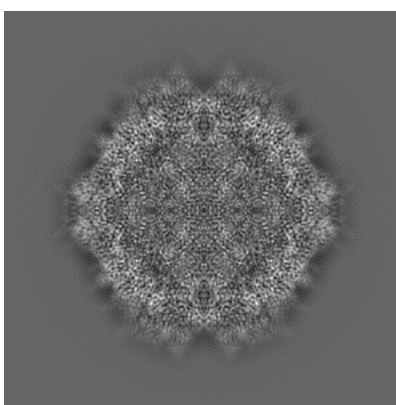
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

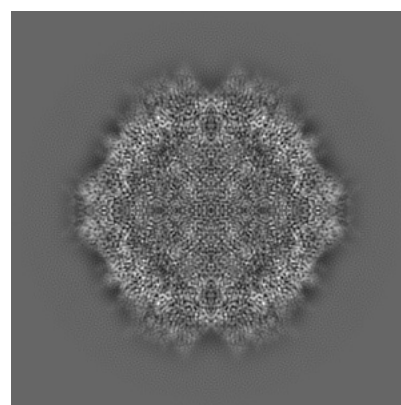
6.1.1 Primary map



X



Y

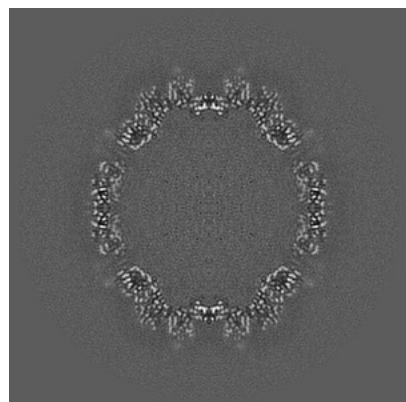


Z

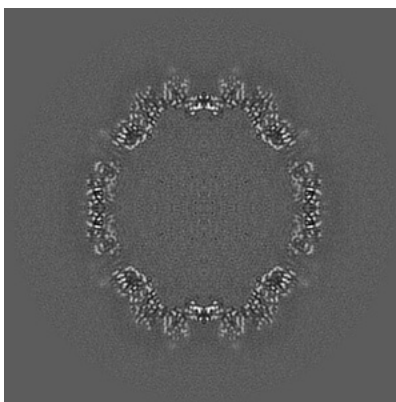
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

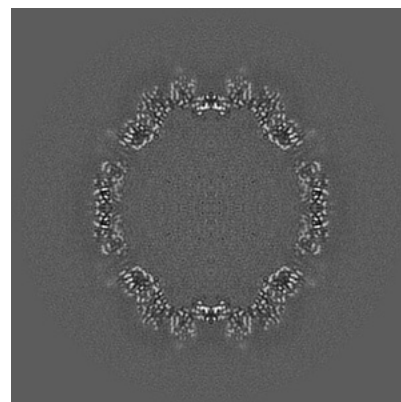
6.2.1 Primary map



X Index: 199



Y Index: 199

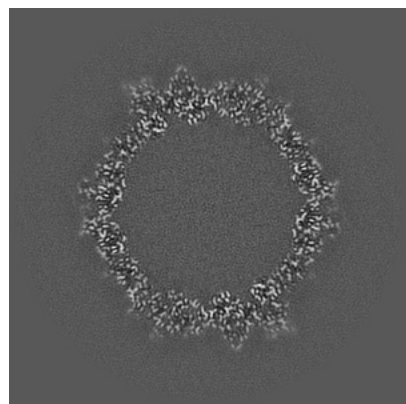


Z Index: 199

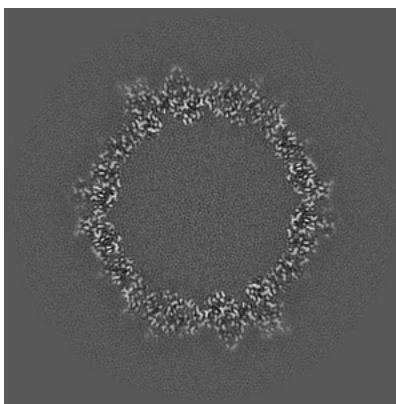
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

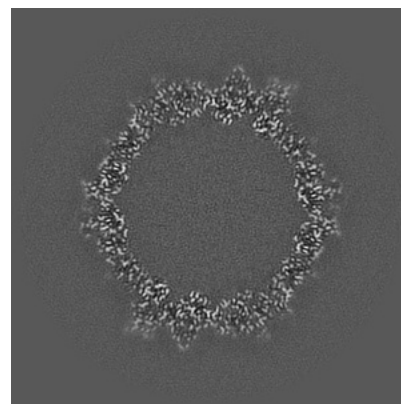
6.3.1 Primary map



X Index: 214



Y Index: 214

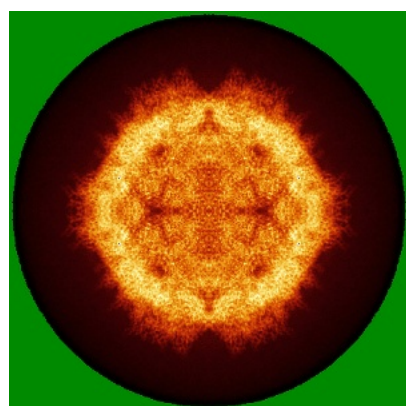


Z Index: 184

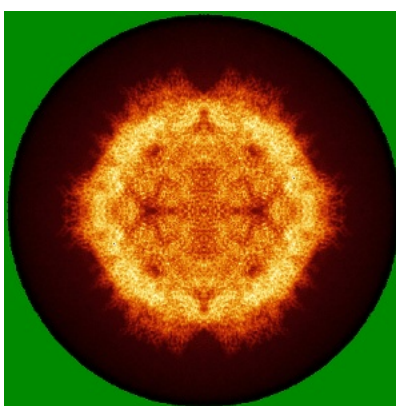
The images above show the largest variance slices of the map in three orthogonal directions.

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

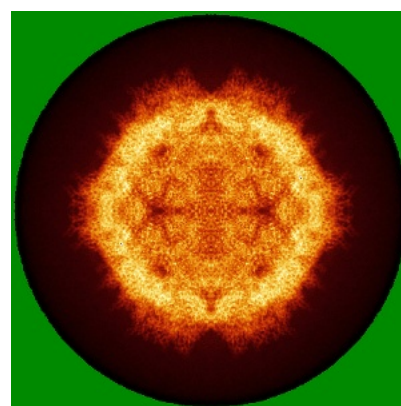
6.4.1 Primary map



X



Y

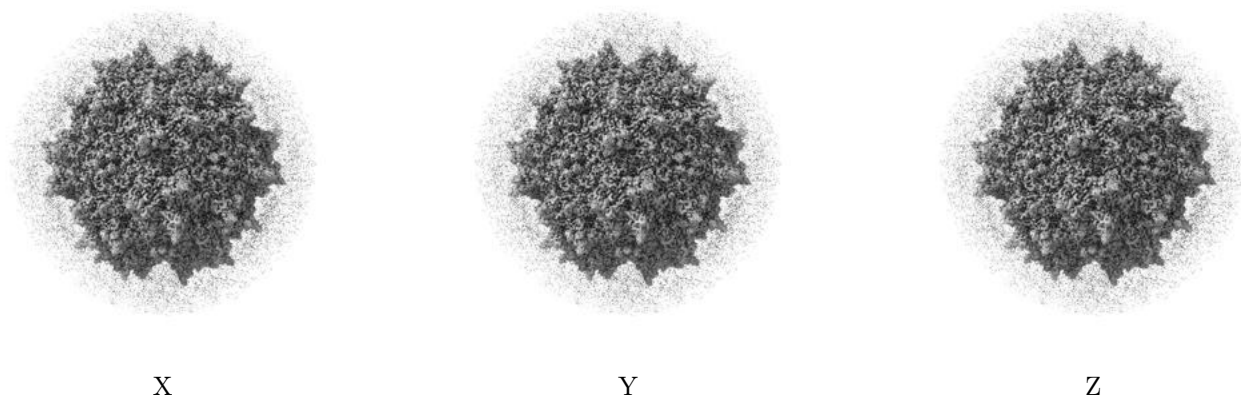


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 1.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

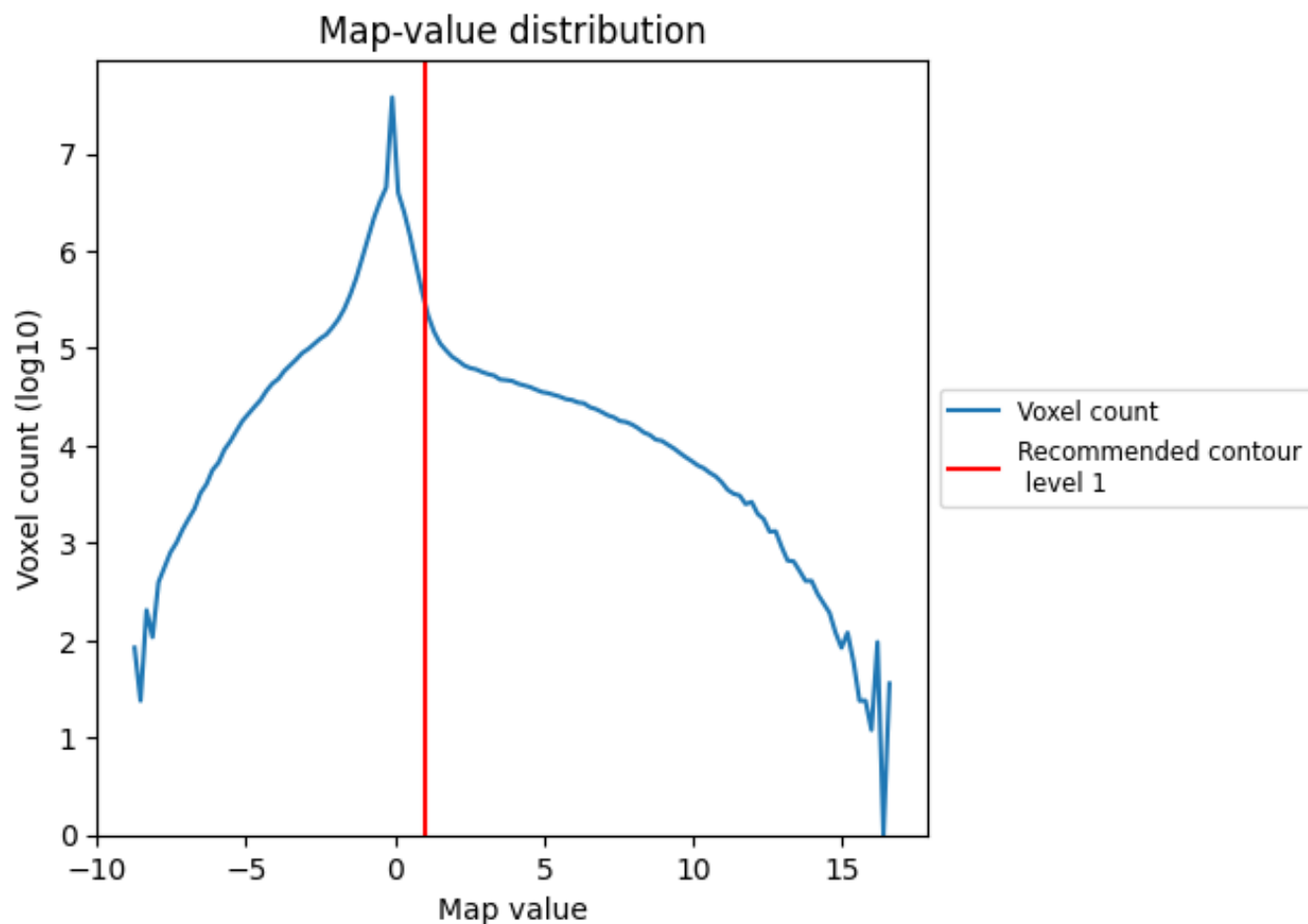
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

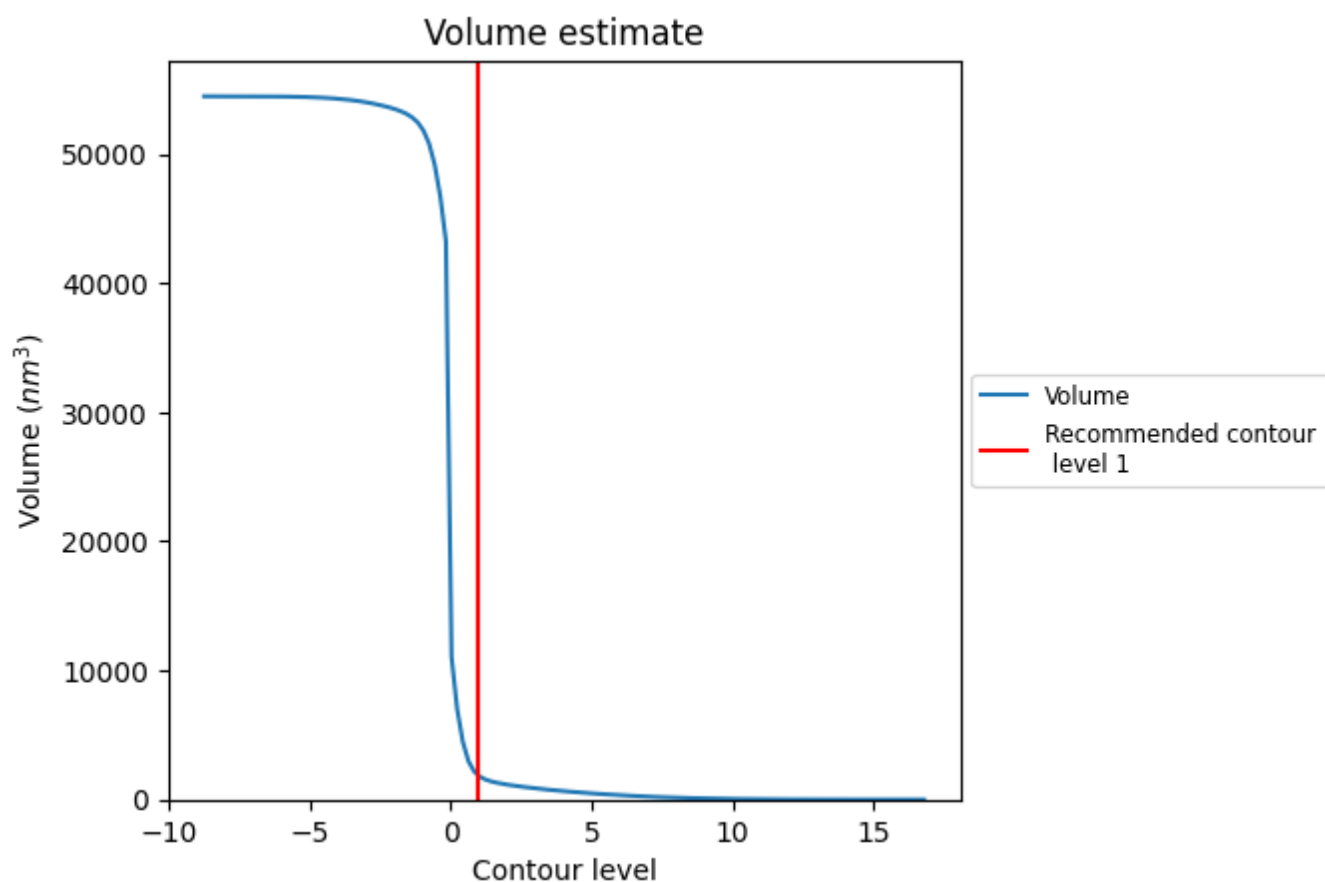
This section contains the results of statistical analysis of the map.

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.

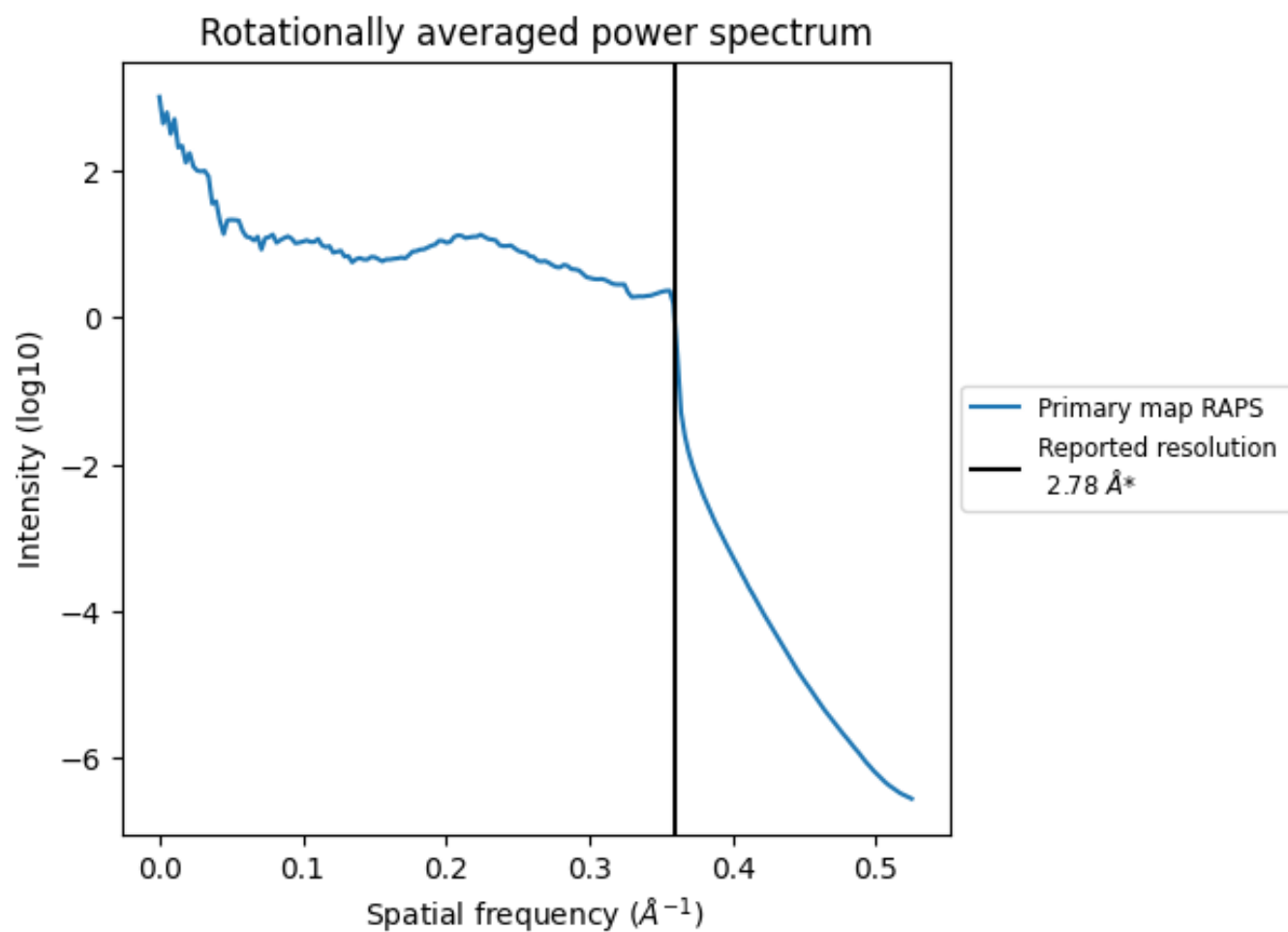
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1837 nm³; this corresponds to an approximate mass of 1660 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 0.360 Å⁻¹

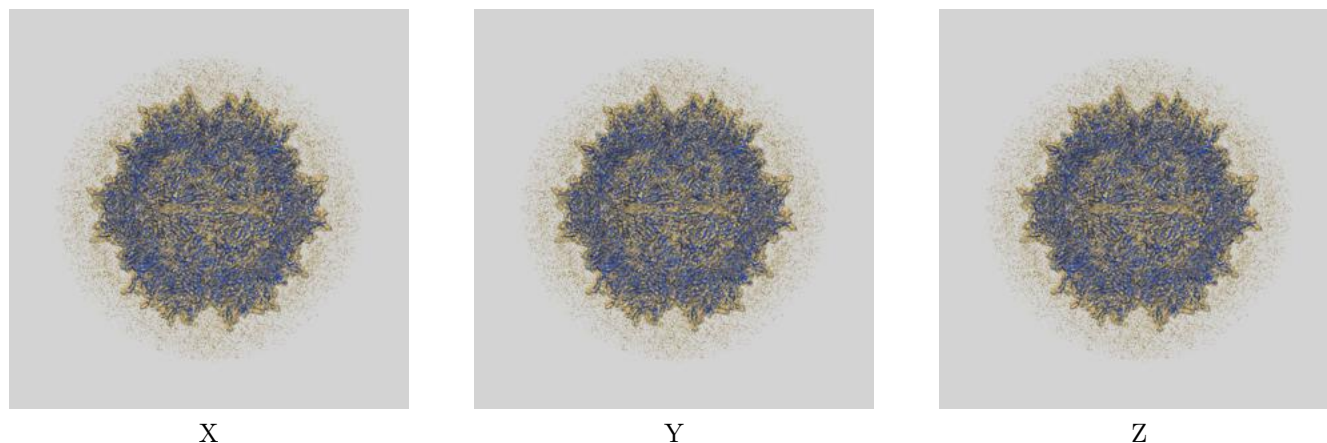
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

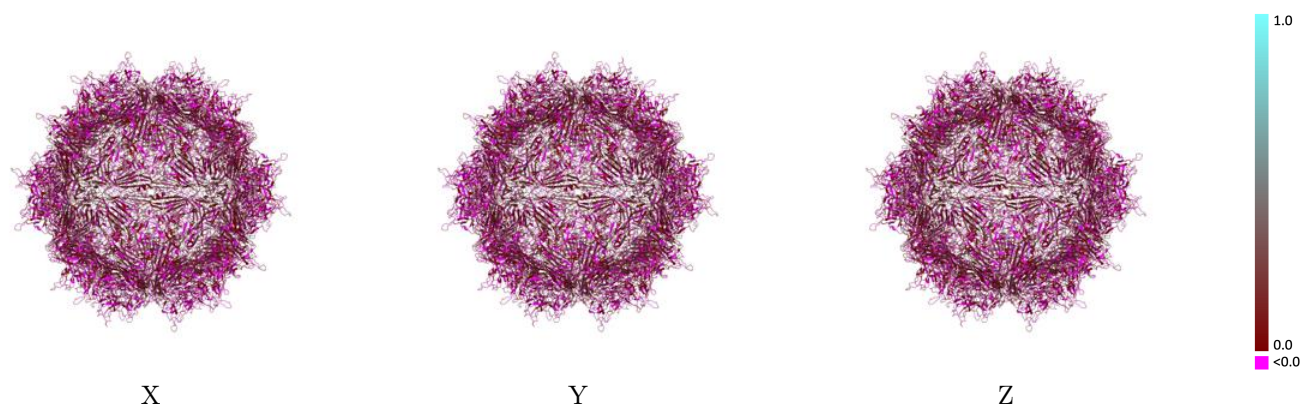
This section contains information regarding the fit between EMDB map EMD-7452 and PDB model 6CBE. Per-residue inclusion information can be found in section 3 on page 17.

9.1 Map-model overlay [i](#)



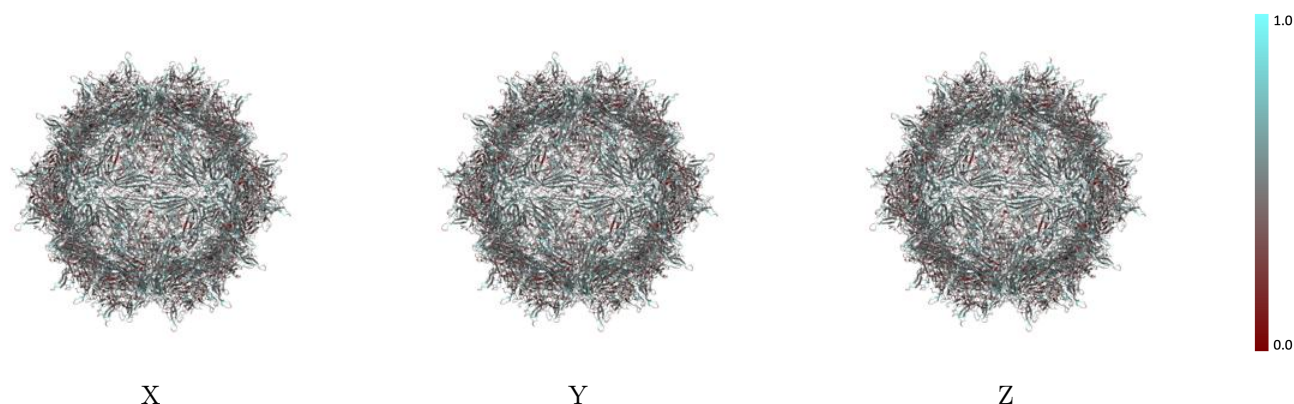
The images above show the 3D surface view of the map at the recommended contour level 1.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



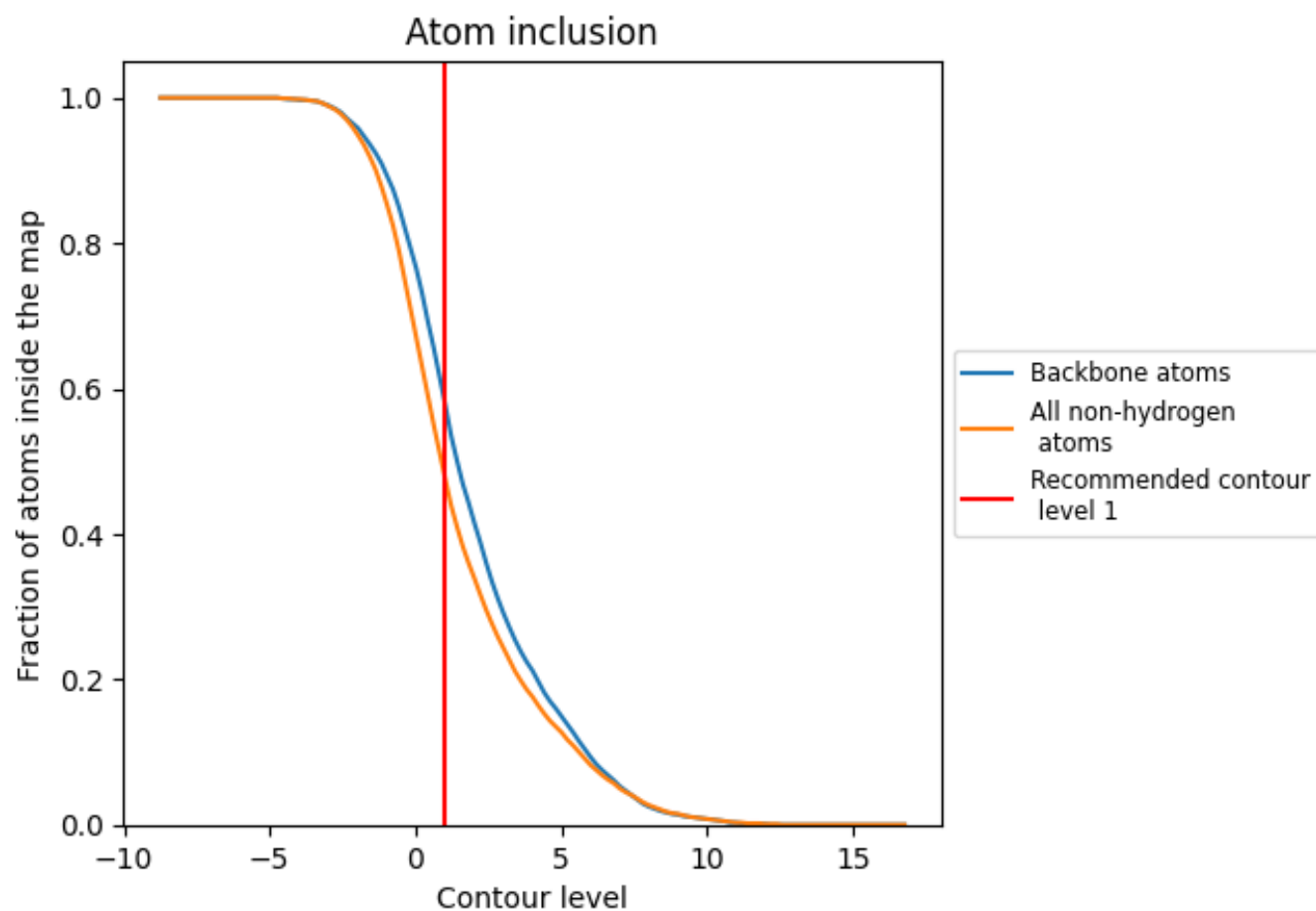
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (1).

9.4 Atom inclusion [i](#)



At the recommended contour level, 58% of all backbone atoms, 48% 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 (1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4800	0.0960
0	0.4810	0.0980
1	0.4810	0.0960
2	0.4840	0.1060
3	0.4820	0.1020
4	0.4770	0.0940
5	0.4830	0.0820
6	0.4780	0.0990
7	0.4780	0.0970
A	0.4810	0.0930
B	0.4770	0.0910
C	0.4830	0.0880
D	0.4780	0.0870
E	0.4830	0.0890
F	0.4840	0.0970
G	0.4780	0.1000
H	0.4780	0.1000
I	0.4820	0.0970
J	0.4770	0.0990
K	0.4820	0.0990
L	0.4760	0.0930
M	0.4780	0.0940
N	0.4820	0.0970
O	0.4760	0.1040
P	0.4810	0.0920
Q	0.4830	0.0980
R	0.4810	0.1000
S	0.4780	0.1010
T	0.4780	0.1000
U	0.4820	0.1020
V	0.4770	0.1000
W	0.4820	0.1000
X	0.4760	0.0920
Y	0.4810	0.0950
Z	0.4840	0.0980



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Chain	Atom inclusion	Q-score
a	 0.4780	 0.0790
b	 0.4810	 0.0850
c	 0.4840	 0.0940
d	 0.4840	 0.0950
e	 0.4830	 0.0890
f	 0.4810	 0.1000
g	 0.4770	 0.1080
h	 0.4760	 0.1070
i	 0.4830	 0.1020
j	 0.4840	 0.1050
k	 0.4780	 0.1040
l	 0.4820	 0.1050
m	 0.4810	 0.1070
n	 0.4760	 0.0960
o	 0.4760	 0.0870
p	 0.4770	 0.0900
q	 0.4810	 0.0910
r	 0.4780	 0.0980
s	 0.4820	 0.0950
t	 0.4780	 0.0780
u	 0.4820	 0.0780
v	 0.4810	 0.0830
w	 0.4830	 0.0950
x	 0.4830	 0.0900
y	 0.4820	 0.0960
z	 0.4810	 0.0980