



wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 16, 2020 – 02:41 PM BST

PDB ID : 4V86
Title : Structure-function Analysis of Receptor-binding in Adeno-Associated Virus Serotype 6 (AAV-6)
Authors : Xie, Q.
Deposited on : 2011-09-13
Resolution : 3.00 Å(reported)

This is a wwPDB X-ray Structure 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/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Xtrriage (Phenix) : 1.13
EDS : 2.14.3.dev2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.14.3.dev2

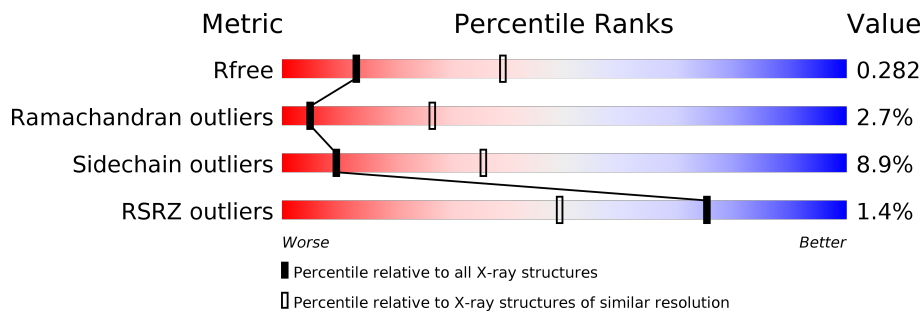
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	520	 2% 89% 11%
1	1	520	 % 89% 11%
1	2	520	 3% 90% 10%
1	3	520	 2% 90% 10%
1	4	520	 % 90% 10%
1	5	520	 % 89% 10%
1	6	520	 2% 90% 10%

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Mol	Chain	Length	Quality of chain	
1	7	520	% 89%	11%
1	A	520	% 89%	11%
1	B	520	2% 89%	11%
1	C	520	2% 89%	11%
1	D	520	2% 89%	11%
1	E	520	% 90%	10%
1	F	520	2% 90%	10%
1	G	520	2% 90%	10%
1	H	520	2% 89%	11%
1	I	520	2% 89%	11%
1	J	520	% 89%	11%
1	K	520	% 90%	10%
1	L	520	% 90%	10%
1	M	520	% 90%	10%
1	N	520	% 90%	10%
1	O	520	% 89%	11%
1	P	520	% 90%	10%
1	Q	520	2% 90%	10%
1	R	520	% 88%	12%
1	S	520	% 90%	10%
1	T	520	% 90%	10%
1	U	520	2% 89%	11%
1	V	520	% 89%	11%
1	W	520	2% 89%	11%
1	X	520	2% 90%	10%

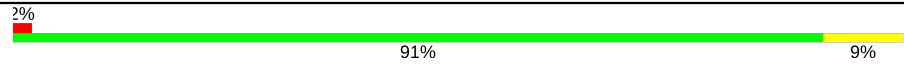
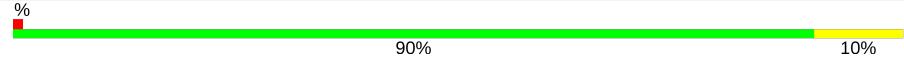
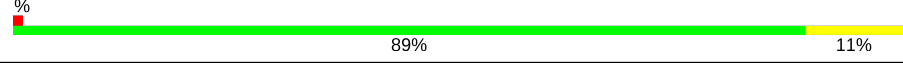
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Mol	Chain	Length	Quality of chain
1	Y	520	2% 90% 10%
1	Z	520	2% 90% 10%
1	a	520	% 90% 10%
1	b	520	% 90% 10%
1	c	520	% 89% 11%
1	d	520	2% 90% 10%
1	e	520	% 89% 11%
1	f	520	% 90% 10%
1	g	520	% 89% 11%
1	h	520	% 91% 9%
1	i	520	% 89% 11%
1	j	520	% 90% 10%
1	k	520	% 88% 12%
1	l	520	% 90% 10%
1	m	520	% 90% 10%
1	n	520	% 89% 10%
1	o	520	% 90% 10%
1	p	520	2% 90% 10%
1	q	520	% 88% 12%
1	r	520	% 89% 11%
1	s	520	% 90% 10%
1	t	520	% 90% 10%
1	u	520	2% 90% 10%
1	v	520	% 89% 11%
1	w	520	2% 89% 11%

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Mol	Chain	Length	Quality of chain
1	x	520	 2% 91% 9%
1	y	520	 % 90% 10%
1	z	520	 % 89% 11%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 247260 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	520	4121	2607	712	786	16	0	0	0
1	B	520	4121	2607	712	786	16	0	0	0
1	C	520	4121	2607	712	786	16	0	0	0
1	D	520	4121	2607	712	786	16	0	0	0
1	E	520	4121	2607	712	786	16	0	0	0
1	F	520	4121	2607	712	786	16	0	0	0
1	G	520	4121	2607	712	786	16	0	0	0
1	H	520	4121	2607	712	786	16	0	0	0
1	I	520	4121	2607	712	786	16	0	0	0
1	J	520	4121	2607	712	786	16	0	0	0
1	K	520	4121	2607	712	786	16	0	0	0
1	L	520	4121	2607	712	786	16	0	0	0
1	M	520	4121	2607	712	786	16	0	0	0
1	N	520	4121	2607	712	786	16	0	0	0
1	O	520	4121	2607	712	786	16	0	0	0
1	P	520	4121	2607	712	786	16	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	R	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	S	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	T	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	U	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	V	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	W	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	X	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	Y	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	Z	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	a	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	b	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	c	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	d	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	e	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	f	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	g	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	h	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	i	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	j	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	k	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	l	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	m	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	n	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	o	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	p	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	q	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	r	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	s	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	t	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	u	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	v	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	w	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	x	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	y	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	z	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	0	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	1	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	2	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	3	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	4	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0
1	5	520	Total 4121	C 2607	N 712	O 786	S 16	0	0	0

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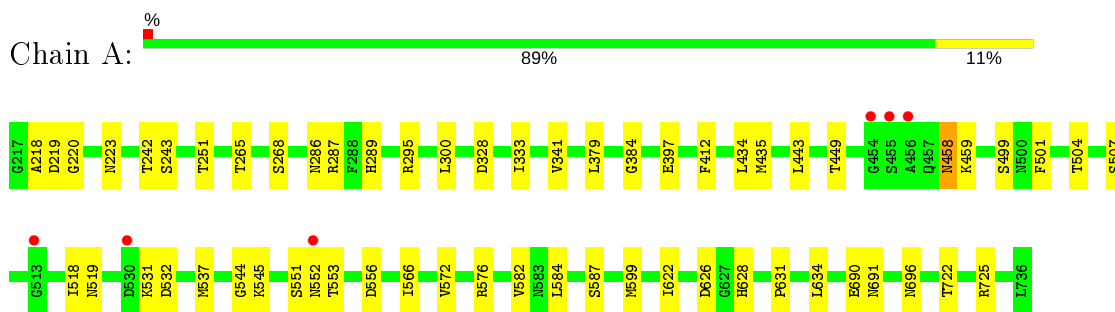
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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	6	520	Total	C	N	O	S	0	0	0
			4121	2607	712	786	16			
1	7	520	Total	C	N	O	S	0	0	0
			4121	2607	712	786	16			

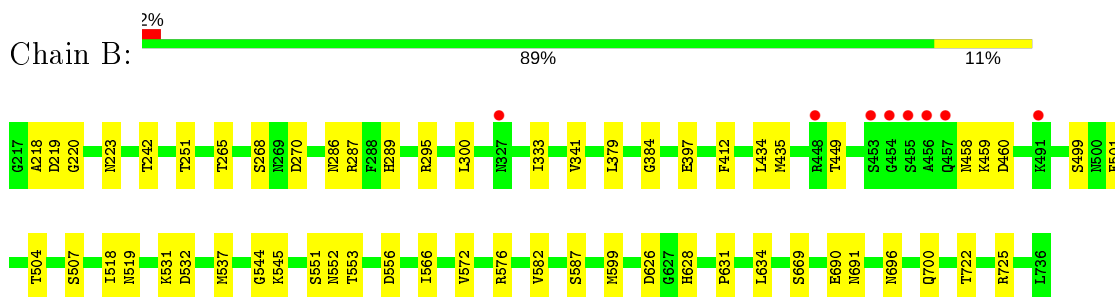
3 Residue-property plots [i](#)

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 electron 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 dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

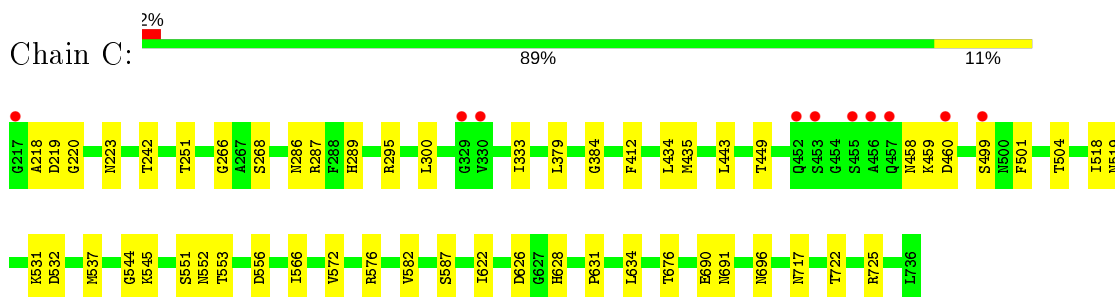
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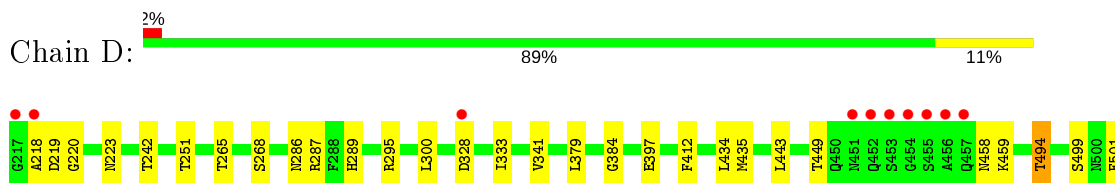
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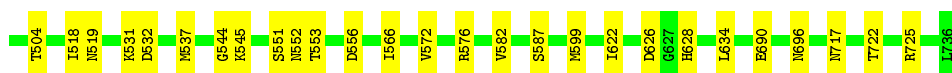


- Molecule 1: Capsid protein VP1

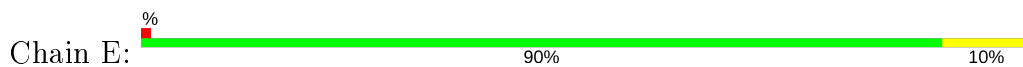


- Molecule 1: Capsid protein VP1

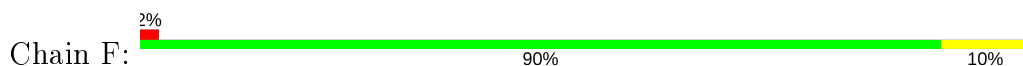




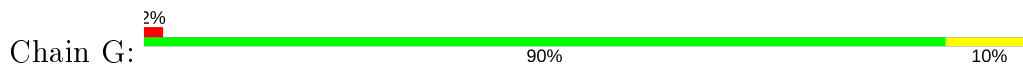
• Molecule 1: Capsid protein VP1



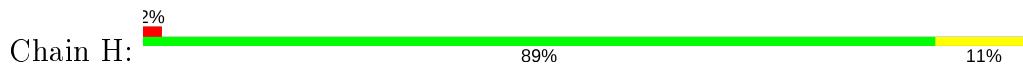
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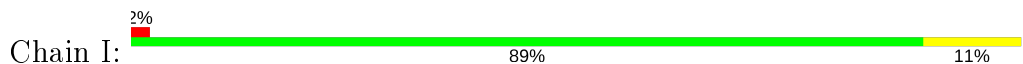
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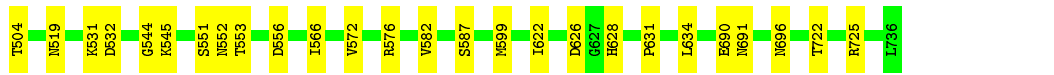
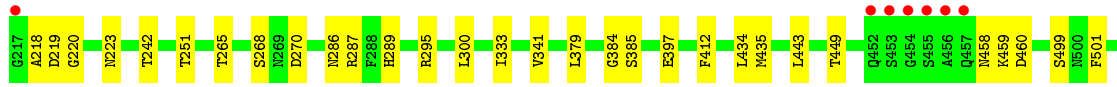
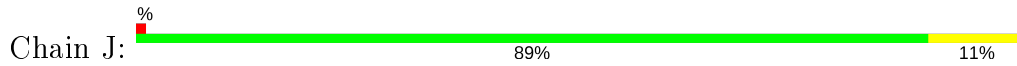


• Molecule 1: Capsid protein VP1





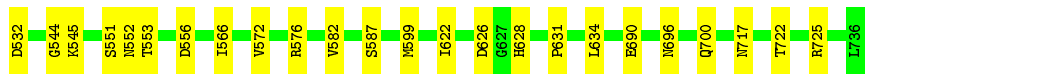
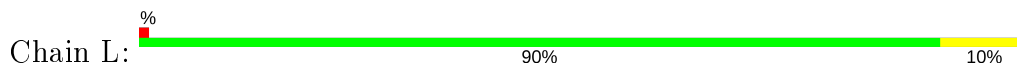
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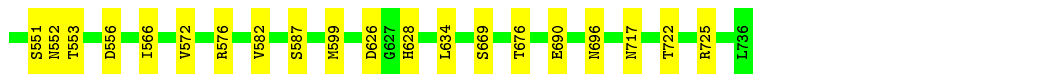
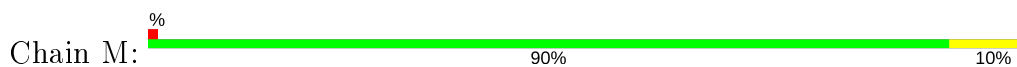
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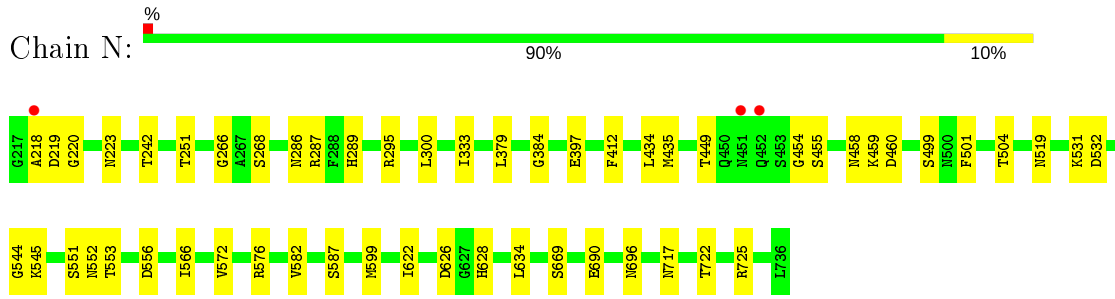
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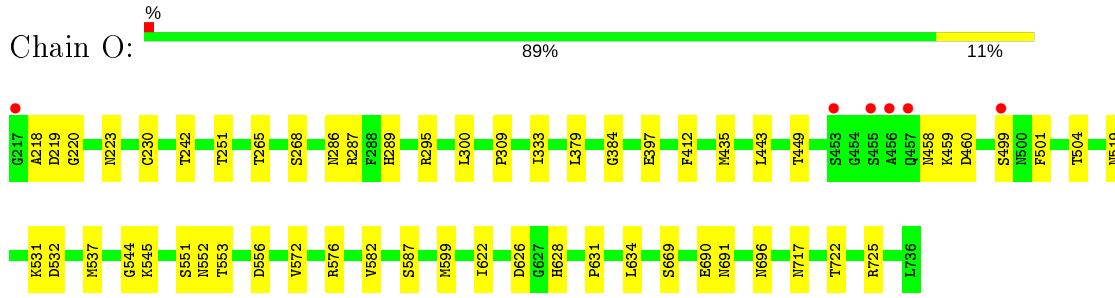
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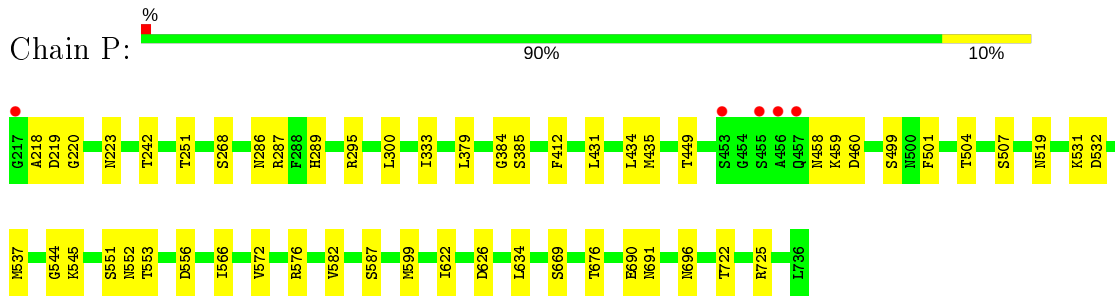
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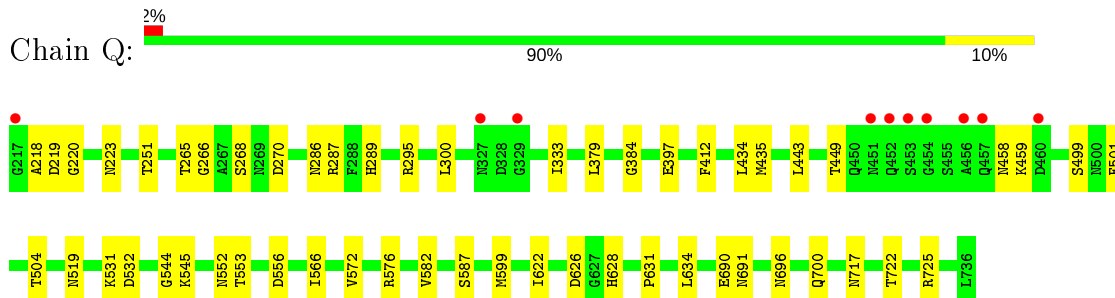
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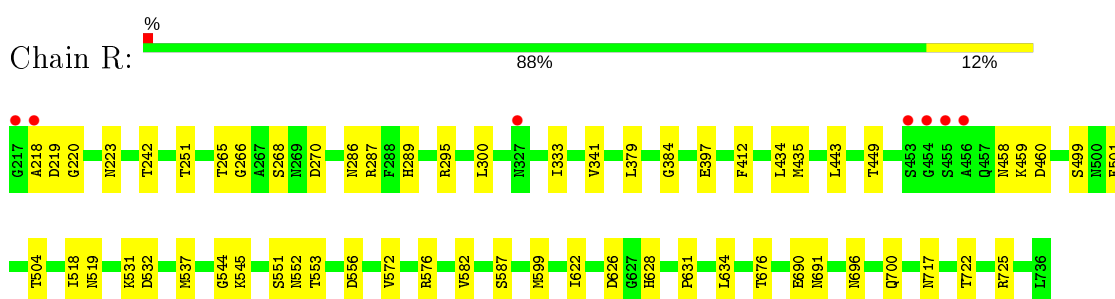
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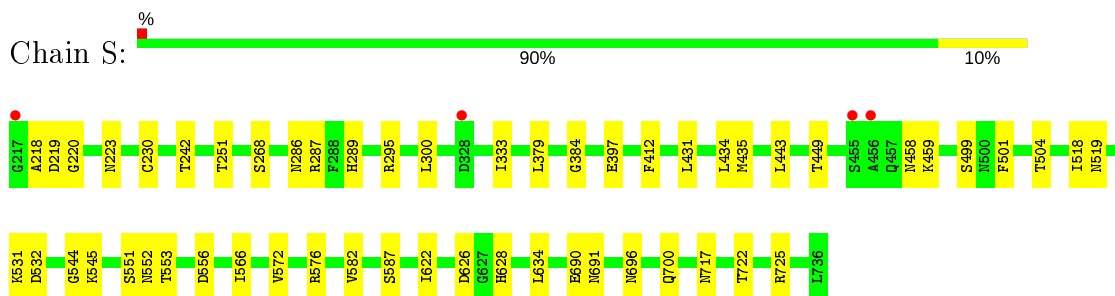
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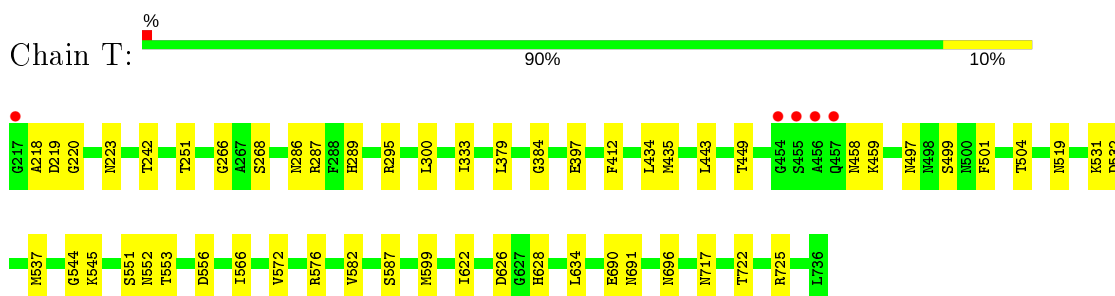
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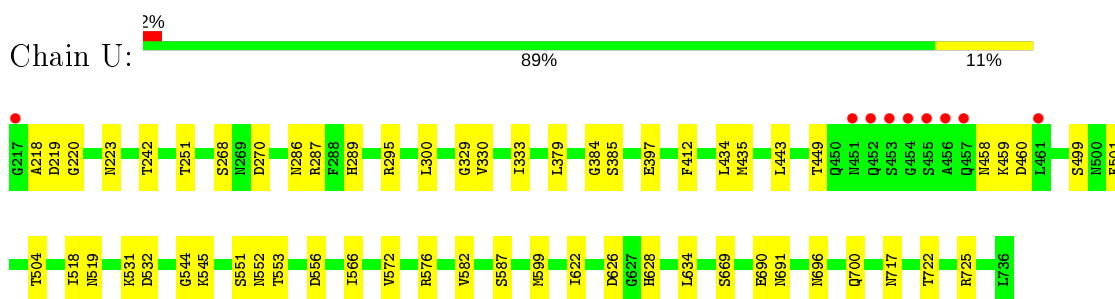
- Molecule 1: Capsid protein VP1



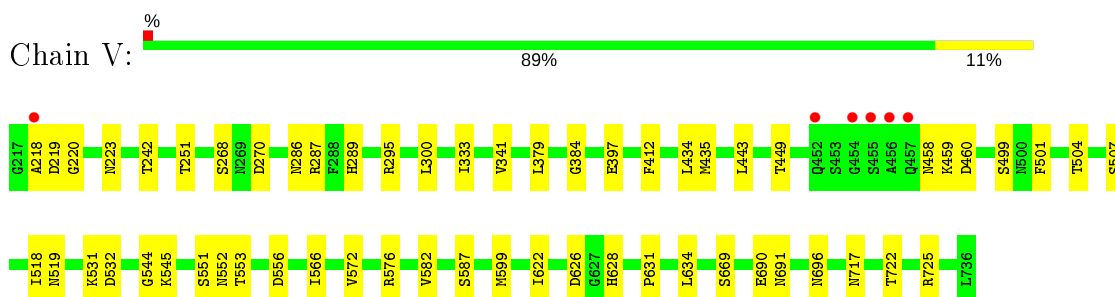
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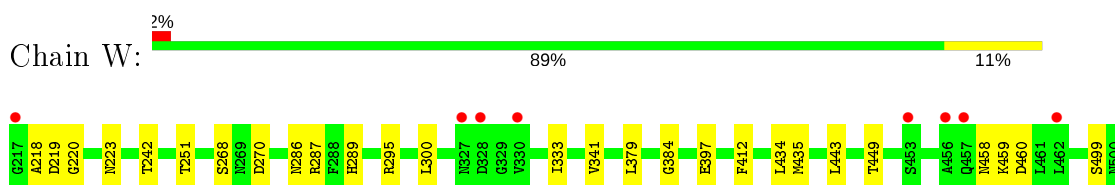
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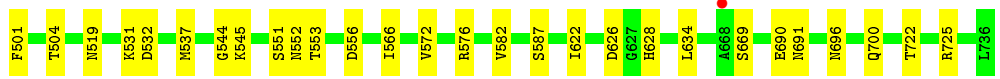


- Molecule 1: Capsid protein VP1

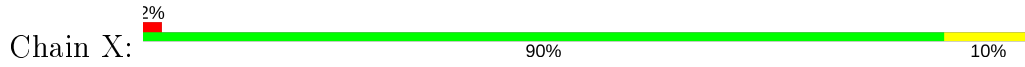


- Molecule 1: Capsid protein VP1

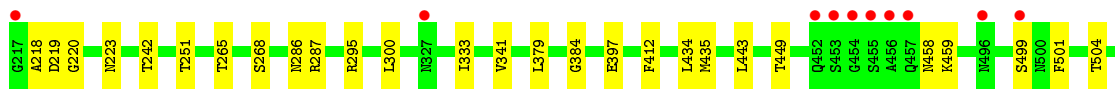




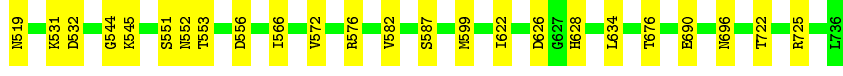
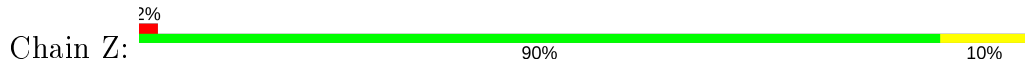
• Molecule 1: Capsid protein VP1



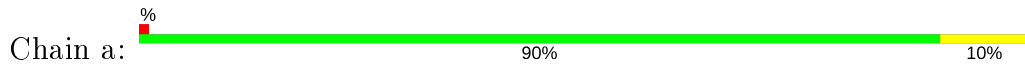
• Molecule 1: Capsid protein VP1



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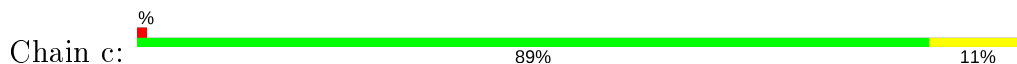


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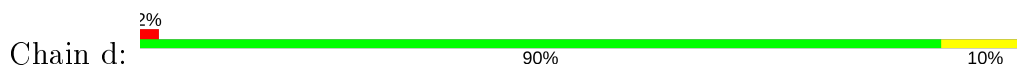




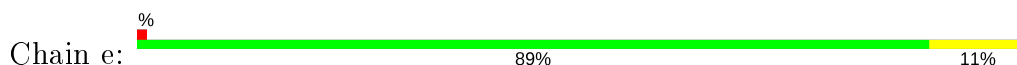
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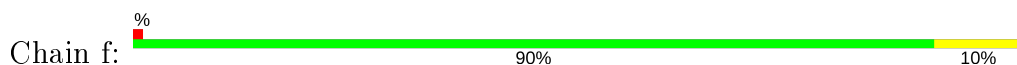
• Molecule 1: Capsid protein VP1



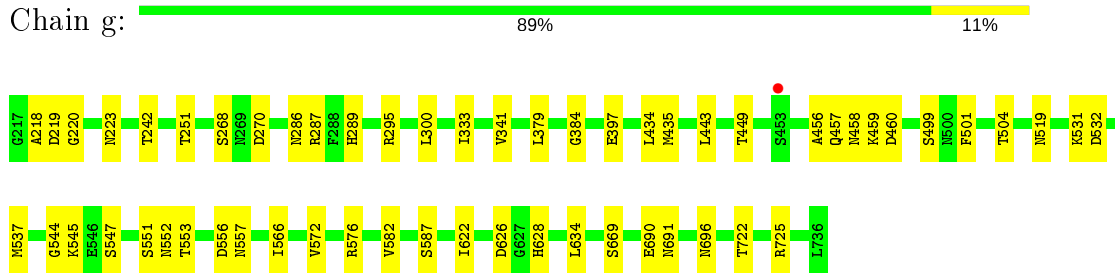
• Molecule 1: Capsid protein VP1



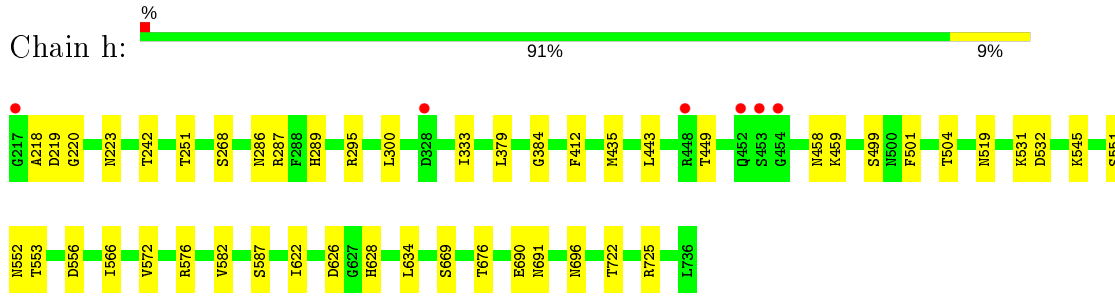
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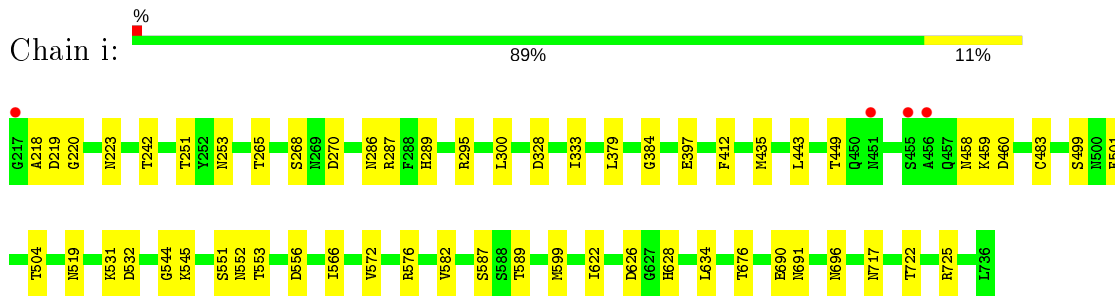
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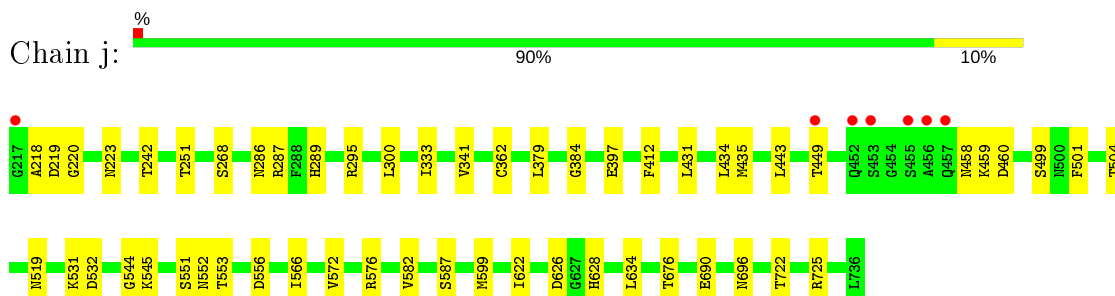
• Molecule 1: Capsid protein VP1



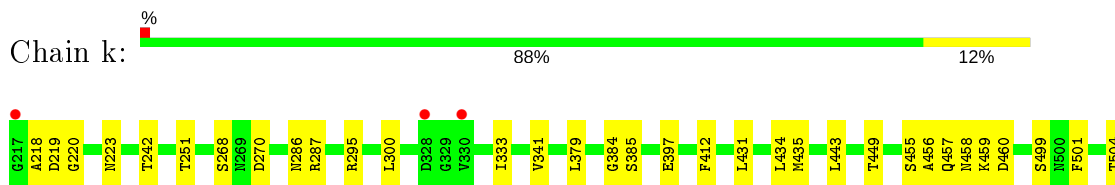
• Molecule 1: Capsid protein VP1

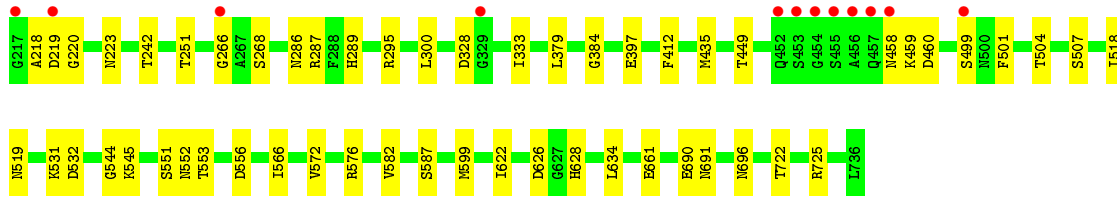


• Molecule 1: Capsid protein VP1

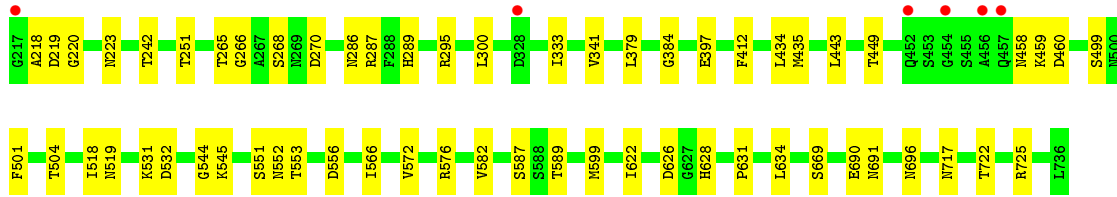
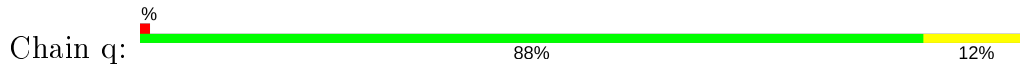


• Molecule 1: Capsid protein VP1

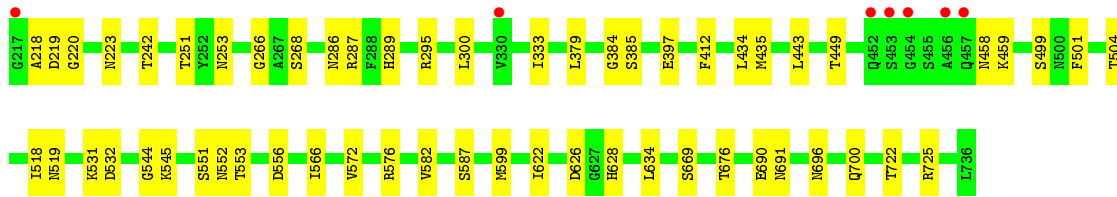
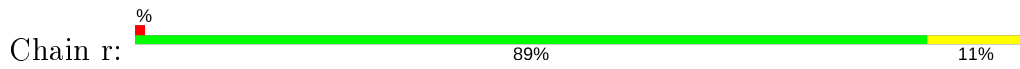




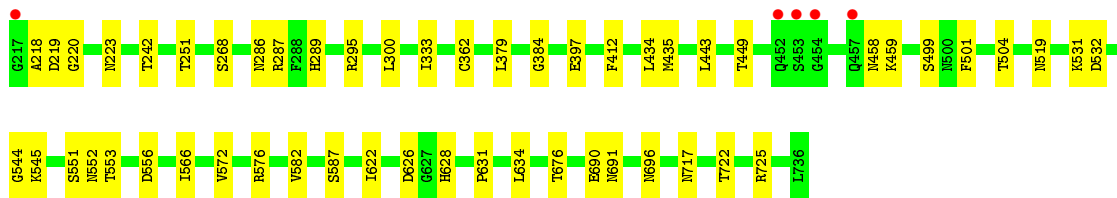
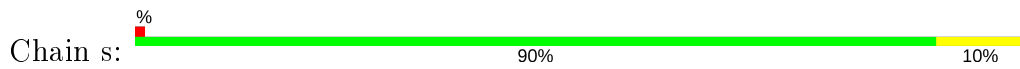
● Molecule 1: Capsid protein VP1



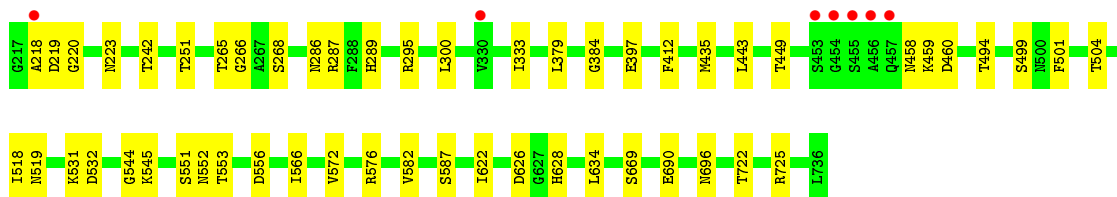
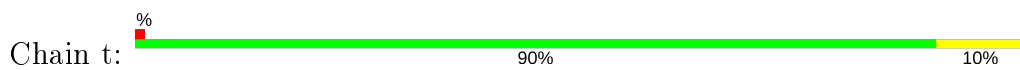
● Molecule 1: Capsid protein VP1



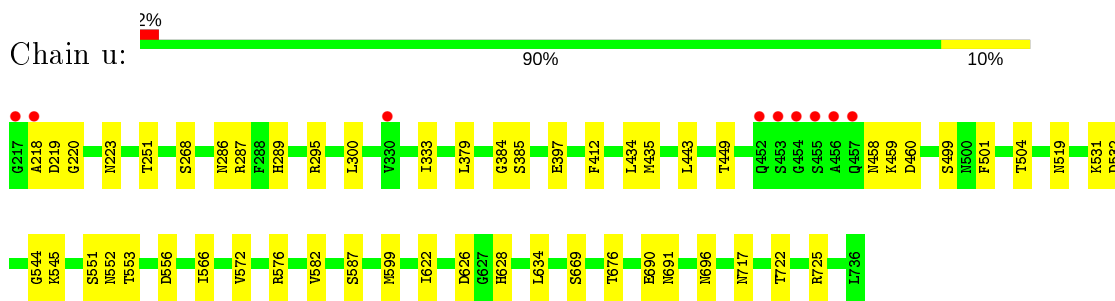
● Molecule 1: Capsid protein VP1



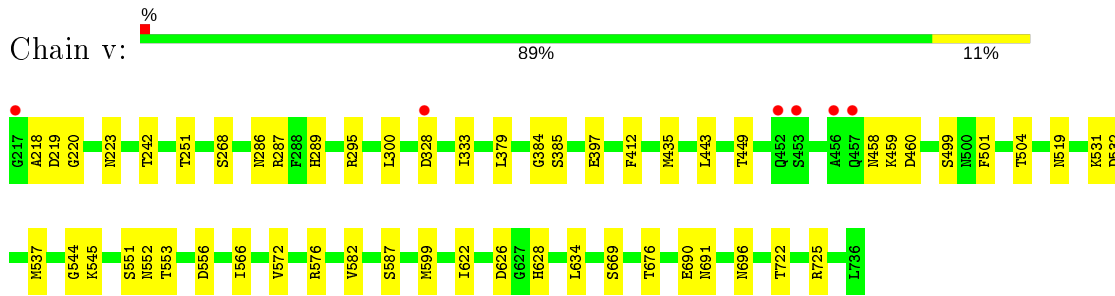
● Molecule 1: Capsid protein VP1



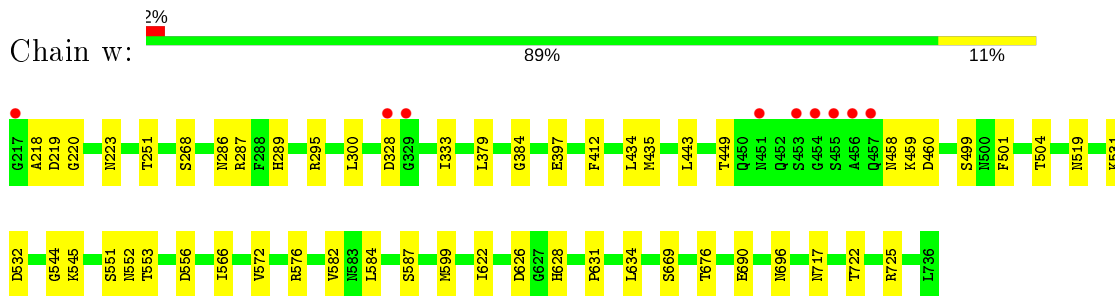
● Molecule 1: Capsid protein VP1



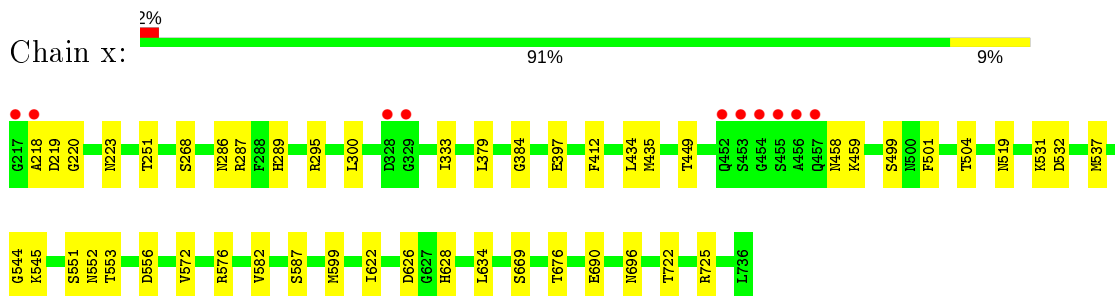
• Molecule 1: Capsid protein VP1



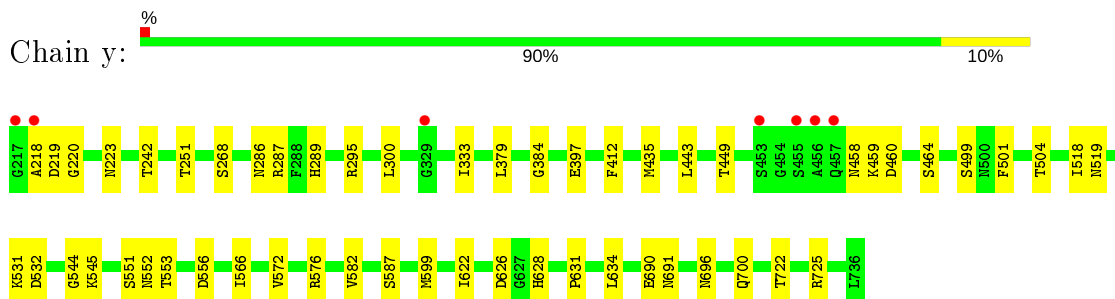
• Molecule 1: Capsid protein VP1



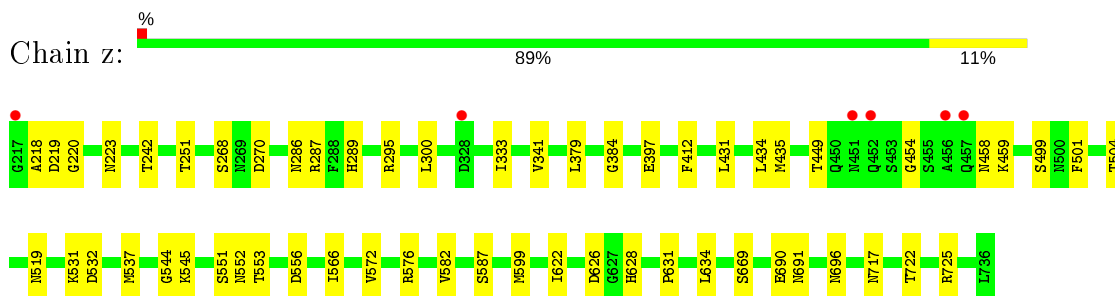
• Molecule 1: Capsid protein VP1



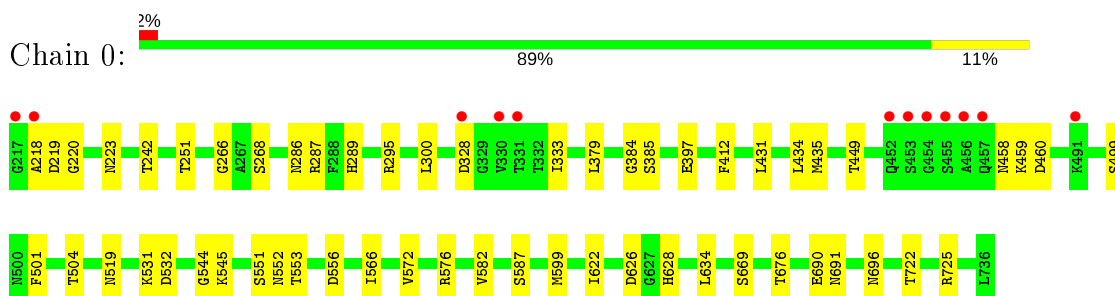
• Molecule 1: Capsid protein VP1



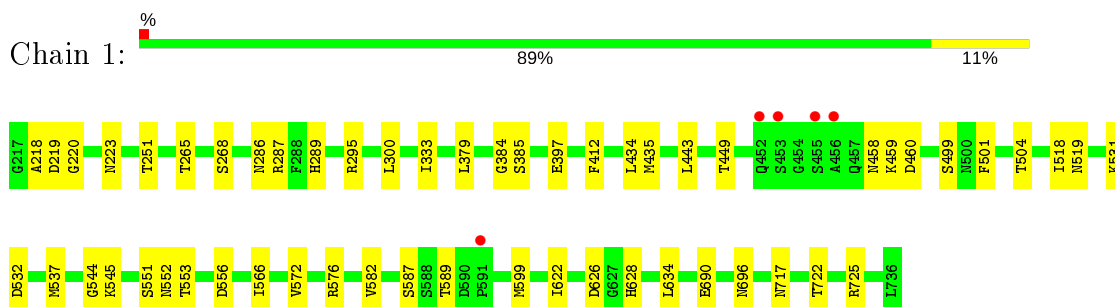
- Molecule 1: Capsid protein VP1



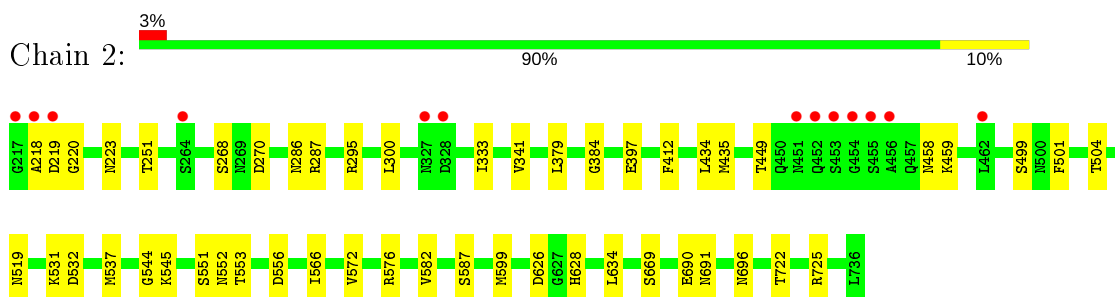
- Molecule 1: Capsid protein VP1



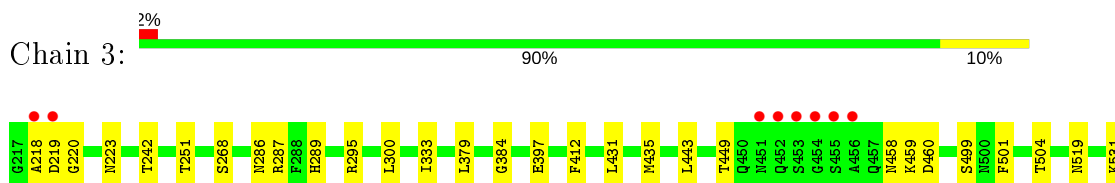
- Molecule 1: Capsid protein VP1

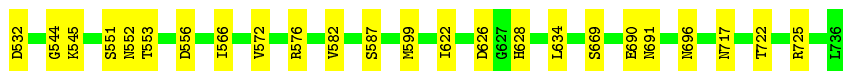


- Molecule 1: Capsid protein VP1

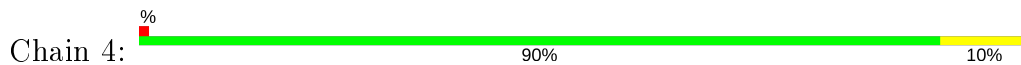


- Molecule 1: Capsid protein VP1

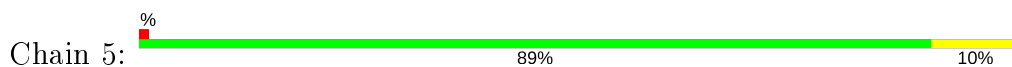




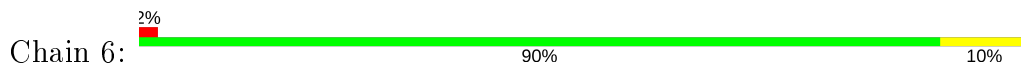
• Molecule 1: Capsid protein VP1



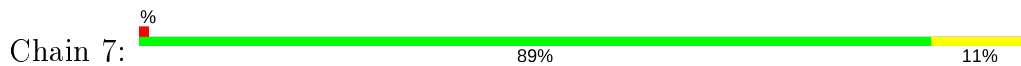
• Molecule 1: Capsid protein VP1



• Molecule 1: Capsid protein VP1



• Molecule 1: Capsid protein VP1



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	354.79Å 363.90Å 371.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.21 – 3.00 49.21 – 3.00	Depositor EDS
% Data completeness (in resolution range)	35.1 (49.21-3.00) 35.1 (49.21-3.00)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	0.12	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.09 (at 3.01Å)	Xtriage
Refinement program	PHENIX 1.7.1_743	Depositor
R, R_{free}	0.251 , 0.286 0.247 , 0.282	Depositor DCC
R_{free} test set	3268 reflections (0.98%)	wwPDB-VP
Wilson B-factor (Å ²)	55.4	Xtriage
Anisotropy	0.389	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 23.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.019 for -h,l,k 0.009 for -l,-k,-h 0.023 for k,h,-l 0.008 for k,l,h 0.008 for l,h,k	Xtriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	247260	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.25% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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	0.60	0/4247	0.63	0/5790
1	1	0.63	0/4247	0.62	0/5790
1	2	0.56	0/4247	0.62	0/5790
1	3	0.55	0/4247	0.61	0/5790
1	4	0.54	0/4247	0.60	0/5790
1	5	0.59	0/4247	0.61	0/5790
1	6	0.62	0/4247	0.62	0/5790
1	7	0.55	0/4247	0.61	0/5790
1	A	0.68	0/4247	0.65	0/5790
1	B	0.66	0/4247	0.63	0/5790
1	C	0.58	0/4247	0.62	0/5790
1	D	0.60	2/4247 (0.0%)	0.63	2/5790 (0.0%)
1	E	0.65	0/4247	0.64	0/5790
1	F	0.62	0/4247	0.64	0/5790
1	G	0.58	0/4247	0.60	0/5790
1	H	0.56	0/4247	0.61	0/5790
1	I	0.65	0/4247	0.64	0/5790
1	J	0.70	0/4247	0.65	0/5790
1	K	0.58	0/4247	0.61	0/5790
1	L	0.55	0/4247	0.60	0/5790
1	M	0.55	0/4247	0.59	0/5790
1	N	0.57	0/4247	0.60	0/5790
1	O	0.56	1/4247 (0.0%)	0.60	0/5790
1	P	0.57	0/4247	0.62	0/5790
1	Q	0.56	0/4247	0.62	0/5790
1	R	0.56	0/4247	0.61	0/5790
1	S	0.63	1/4247 (0.0%)	0.62	0/5790
1	T	0.61	0/4247	0.61	0/5790
1	U	0.62	0/4247	0.63	0/5790
1	V	0.62	0/4247	0.62	0/5790
1	W	0.69	0/4247	0.64	0/5790
1	X	0.69	0/4247	0.65	0/5790
1	Y	0.64	0/4247	0.64	0/5790
1	Z	0.59	0/4247	0.62	0/5790

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	a	0.55	0/4247	0.61	0/5790
1	b	0.57	0/4247	0.60	0/5790
1	c	0.54	0/4247	0.62	0/5790
1	d	0.55	0/4247	0.61	0/5790
1	e	0.57	0/4247	0.61	0/5790
1	f	0.52	0/4247	0.60	0/5790
1	g	0.60	0/4247	0.62	0/5790
1	h	0.59	0/4247	0.61	0/5790
1	i	0.55	1/4247 (0.0%)	0.60	0/5790
1	j	0.58	1/4247 (0.0%)	0.61	0/5790
1	k	0.59	0/4247	0.61	0/5790
1	l	0.59	0/4247	0.60	0/5790
1	m	0.66	0/4247	0.63	0/5790
1	n	0.63	1/4247 (0.0%)	0.62	0/5790
1	o	0.53	0/4247	0.60	0/5790
1	p	0.58	0/4247	0.61	0/5790
1	q	0.55	0/4247	0.61	0/5790
1	r	0.55	0/4247	0.60	0/5790
1	s	0.55	1/4247 (0.0%)	0.61	0/5790
1	t	0.55	0/4247	0.60	0/5790
1	u	0.54	0/4247	0.59	0/5790
1	v	0.55	0/4247	0.60	0/5790
1	w	0.56	0/4247	0.61	0/5790
1	x	0.55	0/4247	0.60	0/5790
1	y	0.56	0/4247	0.61	0/5790
1	z	0.56	0/4247	0.61	0/5790
All	All	0.59	8/254820 (0.0%)	0.62	2/347400 (0.0%)

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	j	362	CYS	CB-SG	-6.32	1.71	1.82
1	s	362	CYS	CB-SG	-6.18	1.71	1.82
1	S	230	CYS	CB-SG	-6.04	1.72	1.82
1	n	483	CYS	CB-SG	-5.67	1.72	1.81
1	D	494	THR	CB-CG2	5.50	1.70	1.52

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	494	THR	CA-CB-CG2	-5.89	104.15	112.40
1	D	494	THR	CB-CA-C	-5.82	95.88	111.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

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 X-ray entries followed by that with respect to entries of similar resolution.

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	518/520 (100%)	466 (90%)	36 (7%)	16 (3%)	4	23
1	1	518/520 (100%)	462 (89%)	41 (8%)	15 (3%)	4	24
1	2	518/520 (100%)	463 (89%)	43 (8%)	12 (2%)	6	30
1	3	518/520 (100%)	459 (89%)	46 (9%)	13 (2%)	5	28
1	4	518/520 (100%)	466 (90%)	39 (8%)	13 (2%)	5	28
1	5	518/520 (100%)	471 (91%)	34 (7%)	13 (2%)	5	28
1	6	518/520 (100%)	464 (90%)	42 (8%)	12 (2%)	6	30
1	7	518/520 (100%)	469 (90%)	34 (7%)	15 (3%)	4	24
1	A	518/520 (100%)	460 (89%)	43 (8%)	15 (3%)	4	24
1	B	518/520 (100%)	464 (90%)	39 (8%)	15 (3%)	4	24
1	C	518/520 (100%)	463 (89%)	39 (8%)	16 (3%)	4	23
1	D	518/520 (100%)	464 (90%)	40 (8%)	14 (3%)	5	26
1	E	518/520 (100%)	463 (89%)	41 (8%)	14 (3%)	5	26
1	F	518/520 (100%)	462 (89%)	42 (8%)	14 (3%)	5	26
1	G	518/520 (100%)	465 (90%)	39 (8%)	14 (3%)	5	26
1	H	518/520 (100%)	462 (89%)	41 (8%)	15 (3%)	4	24
1	I	518/520 (100%)	469 (90%)	34 (7%)	15 (3%)	4	24
1	J	518/520 (100%)	464 (90%)	39 (8%)	15 (3%)	4	24

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	518/520 (100%)	466 (90%)	39 (8%)	13 (2%)	5	28
1	L	518/520 (100%)	469 (90%)	34 (7%)	15 (3%)	4	24
1	M	518/520 (100%)	467 (90%)	38 (7%)	13 (2%)	5	28
1	N	518/520 (100%)	466 (90%)	38 (7%)	14 (3%)	5	26
1	O	518/520 (100%)	465 (90%)	39 (8%)	14 (3%)	5	26
1	P	518/520 (100%)	466 (90%)	38 (7%)	14 (3%)	5	26
1	Q	518/520 (100%)	465 (90%)	39 (8%)	14 (3%)	5	26
1	R	518/520 (100%)	463 (89%)	39 (8%)	16 (3%)	4	23
1	S	518/520 (100%)	463 (89%)	42 (8%)	13 (2%)	5	28
1	T	518/520 (100%)	471 (91%)	34 (7%)	13 (2%)	5	28
1	U	518/520 (100%)	471 (91%)	31 (6%)	16 (3%)	4	23
1	V	518/520 (100%)	464 (90%)	39 (8%)	15 (3%)	4	24
1	W	518/520 (100%)	463 (89%)	42 (8%)	13 (2%)	5	28
1	X	518/520 (100%)	461 (89%)	43 (8%)	14 (3%)	5	26
1	Y	518/520 (100%)	461 (89%)	44 (8%)	13 (2%)	5	28
1	Z	518/520 (100%)	462 (89%)	44 (8%)	12 (2%)	6	30
1	a	518/520 (100%)	466 (90%)	39 (8%)	13 (2%)	5	28
1	b	518/520 (100%)	467 (90%)	39 (8%)	12 (2%)	6	30
1	c	518/520 (100%)	465 (90%)	41 (8%)	12 (2%)	6	30
1	d	518/520 (100%)	465 (90%)	40 (8%)	13 (2%)	5	28
1	e	518/520 (100%)	471 (91%)	34 (7%)	13 (2%)	5	28
1	f	518/520 (100%)	466 (90%)	36 (7%)	16 (3%)	4	23
1	g	518/520 (100%)	467 (90%)	38 (7%)	13 (2%)	5	28
1	h	518/520 (100%)	463 (89%)	44 (8%)	11 (2%)	7	33
1	i	518/520 (100%)	466 (90%)	37 (7%)	15 (3%)	4	24
1	j	518/520 (100%)	467 (90%)	38 (7%)	13 (2%)	5	28
1	k	518/520 (100%)	465 (90%)	37 (7%)	16 (3%)	4	23
1	l	518/520 (100%)	468 (90%)	38 (7%)	12 (2%)	6	30
1	m	518/520 (100%)	468 (90%)	37 (7%)	13 (2%)	5	28
1	n	518/520 (100%)	469 (90%)	36 (7%)	13 (2%)	5	28
1	o	518/520 (100%)	464 (90%)	40 (8%)	14 (3%)	5	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	p	518/520 (100%)	463 (89%)	39 (8%)	16 (3%)	4	23
1	q	518/520 (100%)	464 (90%)	38 (7%)	16 (3%)	4	23
1	r	518/520 (100%)	464 (90%)	38 (7%)	16 (3%)	4	23
1	s	518/520 (100%)	465 (90%)	40 (8%)	13 (2%)	5	28
1	t	518/520 (100%)	463 (89%)	40 (8%)	15 (3%)	4	24
1	u	518/520 (100%)	467 (90%)	37 (7%)	14 (3%)	5	26
1	v	518/520 (100%)	469 (90%)	34 (7%)	15 (3%)	4	24
1	w	518/520 (100%)	465 (90%)	38 (7%)	15 (3%)	4	24
1	x	518/520 (100%)	465 (90%)	41 (8%)	12 (2%)	6	30
1	y	518/520 (100%)	468 (90%)	35 (7%)	15 (3%)	4	24
1	z	518/520 (100%)	466 (90%)	39 (8%)	13 (2%)	5	28
All	All	31080/31200 (100%)	27915 (90%)	2328 (8%)	837 (3%)	5	26

5 of 837 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	459	LYS
1	A	519	ASN
1	A	531	LYS
1	A	545	LYS
1	B	459	LYS

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 X-ray entries followed by that with respect to entries of similar resolution.

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	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	1	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	2	452/452 (100%)	414 (92%)	38 (8%)	11	38
1	3	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	4	452/452 (100%)	413 (91%)	39 (9%)	10	37

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	5	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	6	452/452 (100%)	414 (92%)	38 (8%)	11	38
1	7	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	A	452/452 (100%)	408 (90%)	44 (10%)	8	31
1	B	452/452 (100%)	409 (90%)	43 (10%)	8	32
1	C	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	D	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	E	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	F	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	G	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	H	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	I	452/452 (100%)	410 (91%)	42 (9%)	9	33
1	J	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	K	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	L	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	M	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	N	452/452 (100%)	414 (92%)	38 (8%)	11	38
1	O	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	P	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	Q	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	R	452/452 (100%)	408 (90%)	44 (10%)	8	31
1	S	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	T	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	U	452/452 (100%)	410 (91%)	42 (9%)	9	33
1	V	452/452 (100%)	409 (90%)	43 (10%)	8	32
1	W	452/452 (100%)	410 (91%)	42 (9%)	9	33
1	X	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	Y	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	Z	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	a	452/452 (100%)	414 (92%)	38 (8%)	11	38
1	b	452/452 (100%)	410 (91%)	42 (9%)	9	33

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	c	452/452 (100%)	408 (90%)	44 (10%)	8	31
1	d	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	e	452/452 (100%)	410 (91%)	42 (9%)	9	33
1	f	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	g	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	h	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	i	452/452 (100%)	410 (91%)	42 (9%)	9	33
1	j	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	k	452/452 (100%)	408 (90%)	44 (10%)	8	31
1	l	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	m	452/452 (100%)	414 (92%)	38 (8%)	11	38
1	n	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	o	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	p	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	q	452/452 (100%)	408 (90%)	44 (10%)	8	31
1	r	452/452 (100%)	411 (91%)	41 (9%)	9	34
1	s	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	t	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	u	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	v	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	w	452/452 (100%)	412 (91%)	40 (9%)	10	36
1	x	452/452 (100%)	415 (92%)	37 (8%)	11	39
1	y	452/452 (100%)	413 (91%)	39 (9%)	10	37
1	z	452/452 (100%)	409 (90%)	43 (10%)	8	32
All	All	27120/27120 (100%)	24715 (91%)	2405 (9%)	9	35

5 of 2405 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	b	219	ASP
1	h	458	ASN
1	3	443	LEU
1	b	626	ASP
1	e	333	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 1634 such sidechains are listed below:

Mol	Chain	Res	Type
1	b	427	HIS
1	h	624	HIS
1	3	458	ASN
1	c	302	ASN
1	e	512	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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data i

6.1 Protein, DNA and RNA chains i

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	0	520/520 (100%)	-0.46	12 (2%) 60 31	45, 60, 92, 141	0
1	1	520/520 (100%)	-0.43	5 (0%) 82 59	44, 61, 91, 139	0
1	2	520/520 (100%)	-0.43	13 (2%) 57 29	46, 60, 93, 141	0
1	3	520/520 (100%)	-0.50	8 (1%) 73 46	43, 59, 91, 138	0
1	4	520/520 (100%)	-0.62	7 (1%) 77 51	44, 59, 92, 140	0
1	5	520/520 (100%)	-0.52	7 (1%) 77 51	43, 57, 90, 138	0
1	6	520/520 (100%)	-0.47	8 (1%) 73 46	42, 57, 90, 139	0
1	7	520/520 (100%)	-0.58	3 (0%) 89 72	42, 58, 90, 138	0
1	A	520/520 (100%)	-0.30	6 (1%) 79 54	45, 61, 92, 139	0
1	B	520/520 (100%)	-0.44	8 (1%) 73 46	46, 61, 93, 139	0
1	C	520/520 (100%)	-0.43	10 (1%) 66 37	45, 60, 92, 140	0
1	D	520/520 (100%)	-0.43	10 (1%) 66 37	44, 61, 92, 139	0
1	E	520/520 (100%)	-0.45	4 (0%) 86 65	46, 61, 93, 139	0
1	F	520/520 (100%)	-0.36	11 (2%) 63 34	45, 61, 93, 138	0
1	G	520/520 (100%)	-0.51	8 (1%) 73 46	46, 60, 91, 140	0
1	H	520/520 (100%)	-0.47	12 (2%) 60 31	43, 60, 92, 137	0
1	I	520/520 (100%)	-0.39	8 (1%) 73 46	45, 61, 92, 139	0
1	J	520/520 (100%)	-0.34	7 (1%) 77 51	45, 62, 92, 141	0
1	K	520/520 (100%)	-0.52	7 (1%) 77 51	43, 57, 91, 139	0
1	L	520/520 (100%)	-0.57	6 (1%) 79 54	42, 58, 90, 141	0
1	M	520/520 (100%)	-0.52	5 (0%) 82 59	43, 58, 90, 138	0
1	N	520/520 (100%)	-0.59	3 (0%) 89 72	42, 58, 90, 138	0
1	O	520/520 (100%)	-0.53	6 (1%) 79 54	42, 58, 91, 141	0
1	P	520/520 (100%)	-0.53	5 (0%) 82 59	43, 58, 90, 141	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	Q	520/520 (100%)	-0.46	10 (1%) 66 37	42, 59, 91, 138	0
1	R	520/520 (100%)	-0.52	7 (1%) 77 51	43, 58, 91, 139	0
1	S	520/520 (100%)	-0.53	4 (0%) 86 65	41, 57, 88, 141	0
1	T	520/520 (100%)	-0.50	5 (0%) 82 59	42, 57, 90, 140	0
1	U	520/520 (100%)	-0.47	9 (1%) 70 41	45, 60, 91, 139	0
1	V	520/520 (100%)	-0.42	6 (1%) 79 54	45, 61, 92, 140	0
1	W	520/520 (100%)	-0.36	9 (1%) 70 41	46, 61, 93, 139	0
1	X	520/520 (100%)	-0.34	12 (2%) 60 31	44, 61, 93, 141	0
1	Y	520/520 (100%)	-0.40	11 (2%) 63 34	45, 61, 92, 139	0
1	Z	520/520 (100%)	-0.46	10 (1%) 66 37	44, 60, 91, 140	0
1	a	520/520 (100%)	-0.48	7 (1%) 77 51	44, 59, 92, 139	0
1	b	520/520 (100%)	-0.56	6 (1%) 79 54	42, 58, 90, 137	0
1	c	520/520 (100%)	-0.56	7 (1%) 77 51	44, 59, 90, 141	0
1	d	520/520 (100%)	-0.51	10 (1%) 66 37	45, 60, 91, 141	0
1	e	520/520 (100%)	-0.54	6 (1%) 79 54	43, 58, 89, 141	0
1	f	520/520 (100%)	-0.52	6 (1%) 79 54	45, 59, 92, 141	0
1	g	520/520 (100%)	-0.51	1 (0%) 95 87	46, 60, 92, 134	0
1	h	520/520 (100%)	-0.49	6 (1%) 79 54	45, 60, 91, 140	0
1	i	520/520 (100%)	-0.56	4 (0%) 86 65	43, 59, 90, 138	0
1	j	520/520 (100%)	-0.53	7 (1%) 77 51	43, 58, 90, 139	0
1	k	520/520 (100%)	-0.54	3 (0%) 89 72	41, 58, 90, 135	0
1	l	520/520 (100%)	-0.55	1 (0%) 95 87	42, 57, 90, 138	0
1	m	520/520 (100%)	-0.56	7 (1%) 77 51	42, 57, 89, 138	0
1	n	520/520 (100%)	-0.51	5 (0%) 82 59	42, 57, 90, 139	0
1	o	520/520 (100%)	-0.54	5 (0%) 82 59	45, 60, 92, 139	0
1	p	520/520 (100%)	-0.44	12 (2%) 60 31	46, 60, 91, 139	0
1	q	520/520 (100%)	-0.50	6 (1%) 79 54	45, 60, 92, 139	0
1	r	520/520 (100%)	-0.57	7 (1%) 77 51	43, 58, 90, 138	0
1	s	520/520 (100%)	-0.53	5 (0%) 82 59	43, 59, 91, 139	0
1	t	520/520 (100%)	-0.53	7 (1%) 77 51	43, 59, 91, 140	0
1	u	520/520 (100%)	-0.50	9 (1%) 70 41	43, 58, 90, 140	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	v	520/520 (100%)	-0.54	6 (1%) 79 54	42, 59, 90, 141	0
1	w	520/520 (100%)	-0.47	9 (1%) 70 41	43, 60, 92, 141	0
1	x	520/520 (100%)	-0.48	10 (1%) 66 37	44, 60, 92, 140	0
1	y	520/520 (100%)	-0.54	7 (1%) 77 51	43, 59, 90, 139	0
1	z	520/520 (100%)	-0.45	6 (1%) 79 54	45, 59, 91, 141	0
All	All	31200/31200 (100%)	-0.49	427 (1%) 75 49	41, 59, 91, 141	0

The worst 5 of 427 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	x	217	GLY	7.6
1	2	217	GLY	6.3
1	T	217	GLY	5.5
1	P	453	SER	5.5
1	u	217	GLY	5.2

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.