



wwPDB EM Validation Summary Report ⓘ

Nov 7, 2022 – 04:09 AM EST

PDB ID : 6NHJ
EMDB ID : EMD-9366
Title : Atomic structures and deletion mutant reveal different capsid-binding patterns and functional significance of tegument protein pp150 in murine and human cytomegaloviruses with implications for therapeutic development
Authors : Liu, W.; Dai, X.H.; Jih, J.; Chan, K.; Trang, P.; Yu, X.K.; Balogun, R.; Mei, Y.; Liu, F.Y.; Zhou, Z.H.
Deposited on : 2018-12-22
Resolution : 5.00 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:

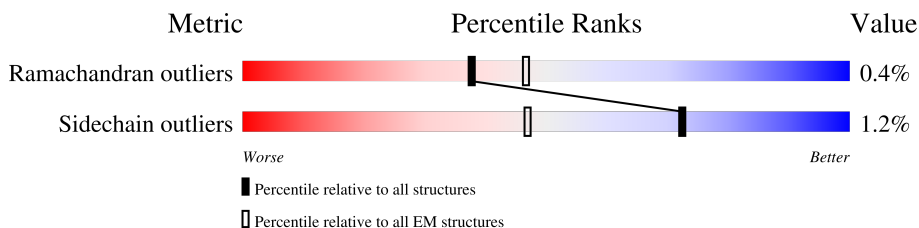
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)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

1 Overall quality at a glance

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

The reported resolution of this entry is 5.00 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.



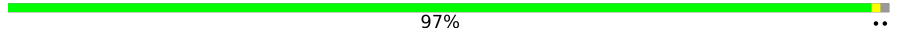
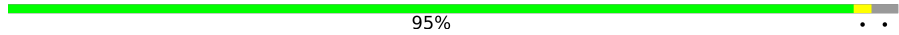
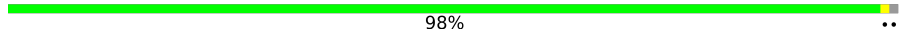
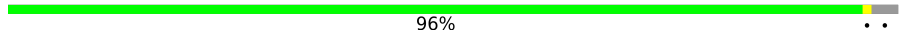
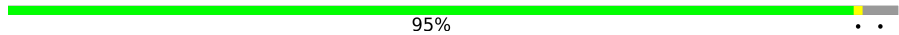




















Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	1353	98%
1	B	1353	96%
1	C	1353	95%
1	D	1353	96%
1	E	1353	98%
1	F	1353	96%
1	G	1353	98%
1	H	1353	98%
1	I	1353	97%
1	k	1353	94%






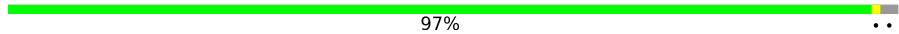
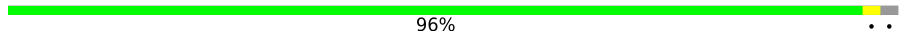
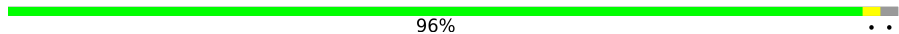
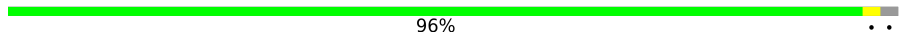











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Mol	Chain	Length	Quality of chain
1	l	1353	 97%
1	m	1353	 95%
1	n	1353	 98%
1	o	1353	 96%
1	p	1353	 95%
1	q	1353	 89% 10%
2	2	718	 23% 76%
2	3	718	 27% 72%
2	e	718	 23% 76%
2	f	718	 23% 76%
2	g	718	 23% 76%
2	h	718	 27% 72%
2	i	718	 27% 72%
2	j	718	 27% 72%
3	J	98	 60% 39%
3	K	98	 60% 40%
3	L	98	 60% 40%
3	M	98	 60% 40%
3	N	98	 59% 40%
3	O	98	 60% 40%
3	P	98	 59% 40%
3	Q	98	 60% 40%
3	R	98	 60% 40%
3	r	98	 59% 39%
3	s	98	 59% 40%

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Mol	Chain	Length	Quality of chain
3	t	98	 58% 40%
3	u	98	 60% 39%
3	v	98	 60% 39%
3	w	98	 60% 39%
3	x	98	 57% 42%
4	S	294	 97% ..
4	T	294	 96% ..
4	U	294	 96% ..
4	V	294	 96% ..
4	y	294	 83% 15%
5	l	311	 82% 17%
5	W	311	 89% 10%
5	X	311	 87% 11%
5	Y	311	 90% 9%
5	Z	311	 89% 10%
5	a	311	 85% 14%
5	b	311	 86% 13%
5	c	311	 87% 12%
5	d	311	 87% 12%
5	z	311	 88% 9%

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 218639 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 Major capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1335	10537	6666	1856	1962	53	0	0
1	B	1310	10351	6550	1822	1926	53	0	0
1	C	1310	10350	6551	1822	1924	53	0	0
1	D	1314	10375	6567	1826	1929	53	0	0
1	E	1330	10495	6635	1852	1955	53	0	0
1	F	1319	10407	6585	1831	1938	53	0	0
1	G	1341	10580	6692	1864	1971	53	0	0
1	H	1341	10580	6692	1864	1971	53	0	0
1	I	1321	10421	6593	1834	1941	53	0	0
1	k	1295	10209	6465	1795	1896	53	0	0
1	l	1336	10548	6673	1859	1963	53	0	0
1	m	1312	10364	6559	1824	1928	53	0	0
1	n	1335	10538	6663	1858	1964	53	0	0
1	o	1313	10368	6558	1828	1929	53	0	0
1	p	1301	10252	6477	1813	1910	52	0	0
1	q	1219	9621	6090	1690	1791	50	0	0

- Molecule 2 is a protein called Tegument protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	2	174	Total 1469	C 929	N 279	O 255	S 6	0	0
2	3	200	Total 1665	C 1052	N 314	O 291	S 8	0	0
2	e	174	Total 1469	C 929	N 279	O 255	S 6	0	0
2	h	200	Total 1665	C 1052	N 314	O 291	S 8	0	0
2	f	174	Total 1469	C 929	N 279	O 255	S 6	0	0
2	i	200	Total 1665	C 1052	N 314	O 291	S 8	0	0
2	g	174	Total 1469	C 929	N 279	O 255	S 6	0	0
2	j	200	Total 1665	C 1052	N 314	O 291	S 8	0	0

- Molecule 3 is a protein called Small capsomere-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	J	60	Total 471	C 300	N 83	O 83	S 5	0	0
3	K	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	L	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	M	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	N	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	O	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	P	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	Q	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	R	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	r	60	Total 471	C 300	N 83	O 83	S 5	0	0
3	s	59	Total 462	C 294	N 81	O 82	S 5	0	0
3	t	59	Total 462	C 294	N 81	O 82	S 5	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	u	60	Total	C	N	O	S	0	0
			471	300	83	83	5		
3	v	60	Total	C	N	O	S	0	0
			471	300	83	83	5		
3	w	60	Total	C	N	O	S	0	0
			471	300	83	83	5		
3	x	57	Total	C	N	O	S	0	0
			450	287	79	79	5		

- Molecule 4 is a protein called Minor capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	y	249	Total	C	N	O	S	0	0
			1977	1261	350	356	10		
4	S	289	Total	C	N	O	S	0	0
			2305	1470	406	416	13		
4	T	289	Total	C	N	O	S	0	0
			2305	1470	406	416	13		
4	U	289	Total	C	N	O	S	0	0
			2305	1470	406	416	13		
4	V	289	Total	C	N	O	S	0	0
			2305	1470	406	416	13		

- Molecule 5 is a protein called Triplex capsid protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	z	284	Total	C	N	O	S	0	0
			2224	1403	382	419	20		
5	W	281	Total	C	N	O	S	0	0
			2201	1390	378	414	19		
5	X	277	Total	C	N	O	S	0	0
			2166	1367	373	407	19		
5	Y	282	Total	C	N	O	S	0	0
			2209	1395	379	415	20		
5	Z	281	Total	C	N	O	S	0	0
			2201	1390	378	414	19		
5	1	257	Total	C	N	O	S	0	0
			2009	1268	350	374	17		
5	a	267	Total	C	N	O	S	0	0
			2085	1314	363	389	19		
5	b	270	Total	C	N	O	S	0	0
			2109	1330	366	394	19		

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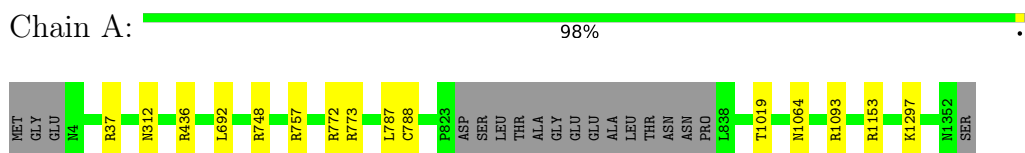
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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	c	274	Total	C	N	O	S	0	0
			2141	1349	371	401	20		
5	d	274	Total	C	N	O	S	0	0
			2140	1351	370	399	20		

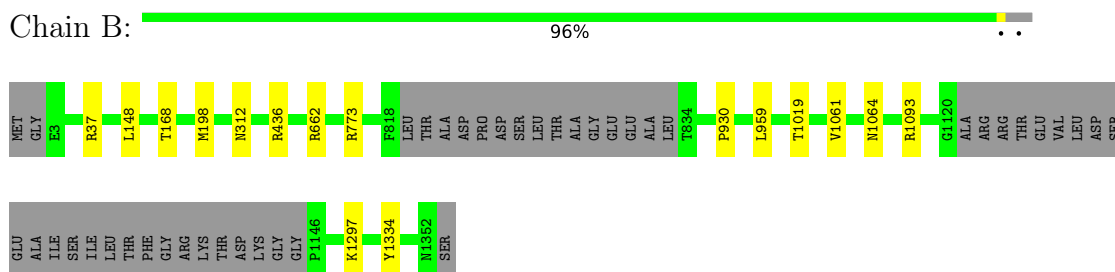
3 Residue-property plots [i](#)

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. 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. 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.

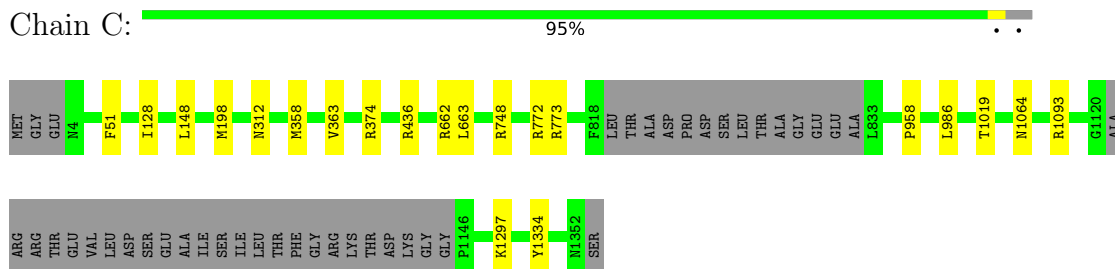
- Molecule 1: Major capsid protein



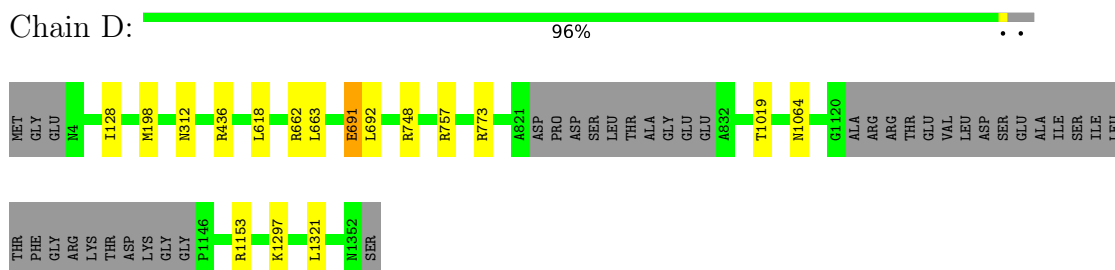
- Molecule 1: Major capsid protein



- Molecule 1: Major capsid protein

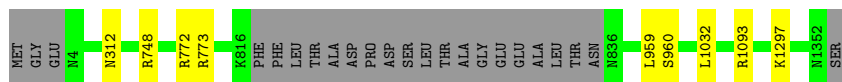


- Molecule 1: Major capsid protein



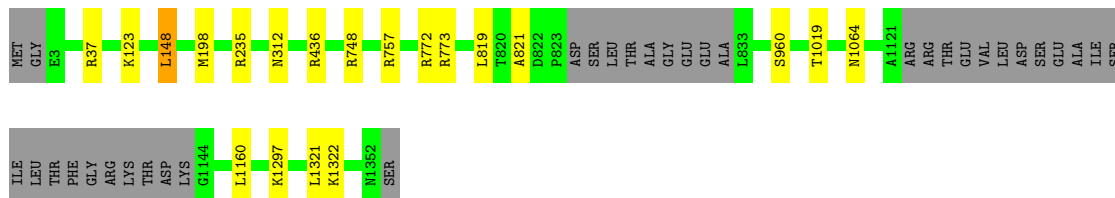
- Molecule 1: Major capsid protein

Chain E:  98%



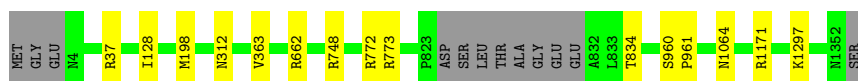
- Molecule 1: Major capsid protein

Chain F:  96%



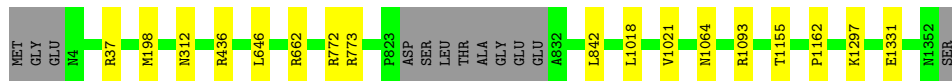
- Molecule 1: Major capsid protein

Chain G:  98%



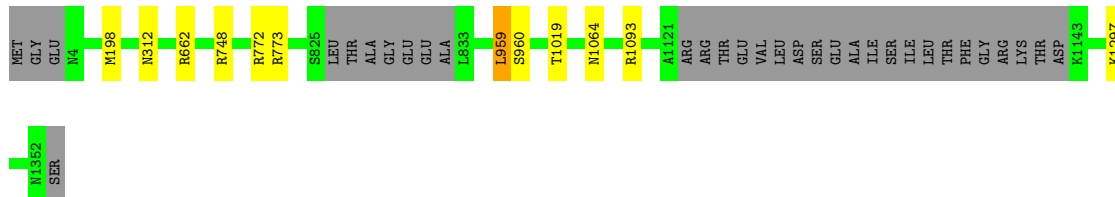
- Molecule 1: Major capsid protein

Chain H:  98%



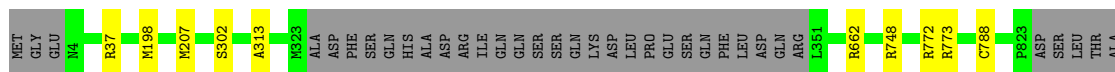
- Molecule 1: Major capsid protein

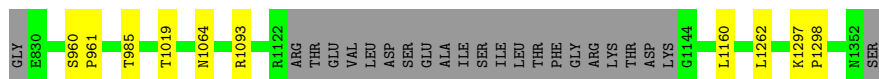
Chain I:  97%



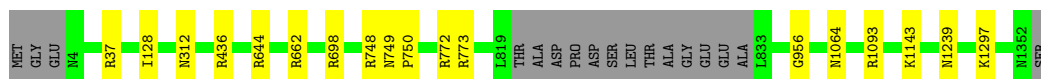
- Molecule 1: Major capsid protein

Chain k:  94%





• Molecule 1: Major capsid protein



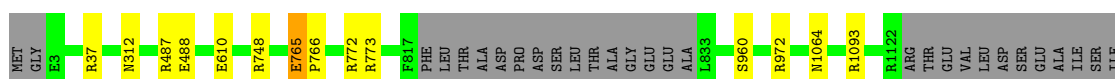
• Molecule 1: Major capsid protein



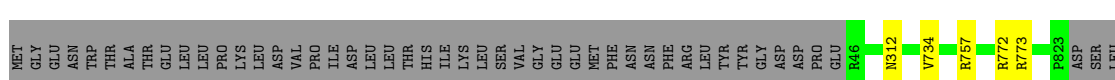
• Molecule 1: Major capsid protein



• Molecule 1: Major capsid protein

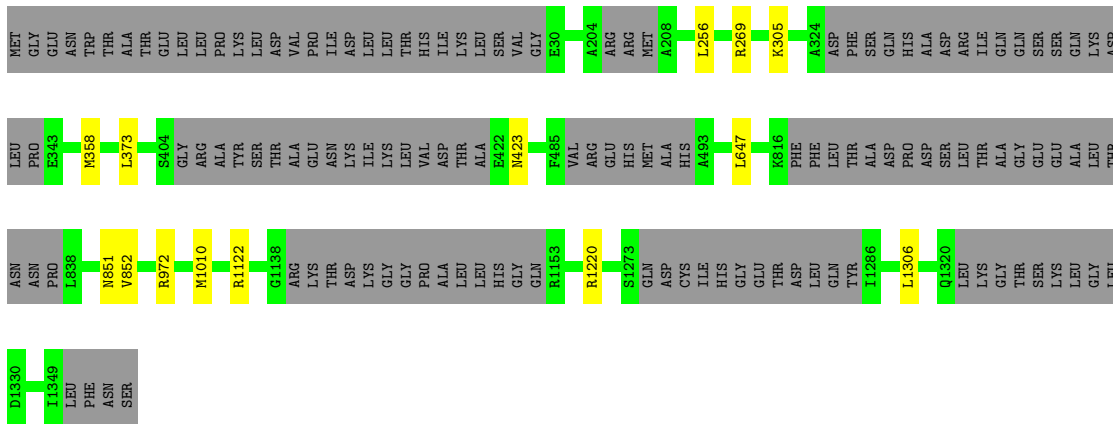


• Molecule 1: Major capsid protein



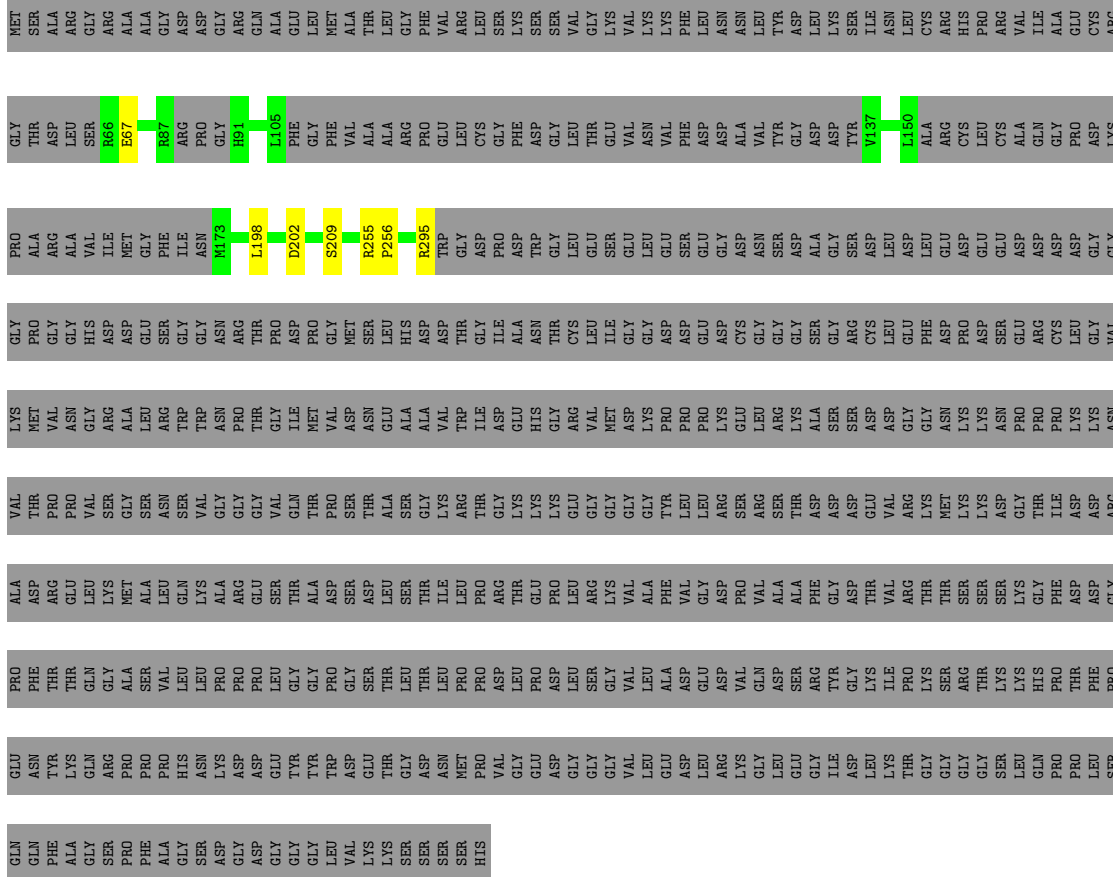
• Molecule 1: Major capsid protein

Chain q: 89% • 10%



• Molecule 2: Tegument protein

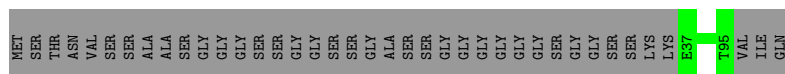
Chain 2: 23% • 76%



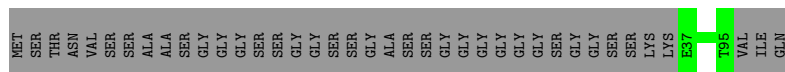
• Molecule 2: Tegument protein

Chain 3: 27% • 72%

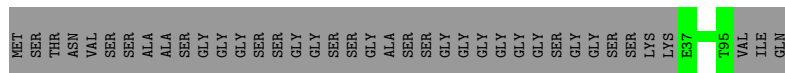
• Molecule 3: Small capsomere-interacting protein



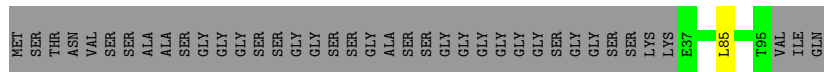
• Molecule 3: Small capsomere-interacting protein



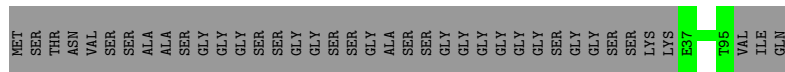
• Molecule 3: Small capsomere-interacting protein



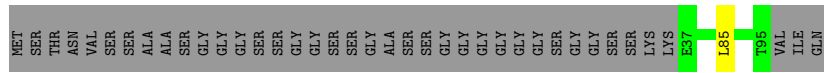
• Molecule 3: Small capsomere-interacting protein



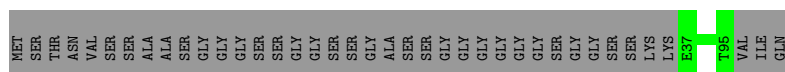
• Molecule 3: Small capsomere-interacting protein



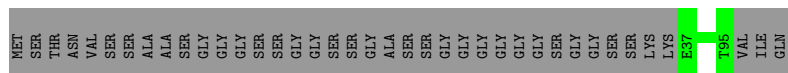
• Molecule 3: Small capsomere-interacting protein



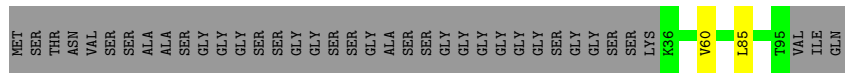
• Molecule 3: Small capsomere-interacting protein



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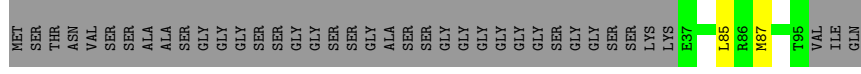
• Molecule 3: Small capsomere-interacting protein



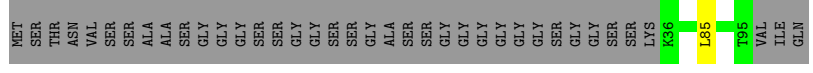
• Molecule 3: Small capsomere-interacting protein



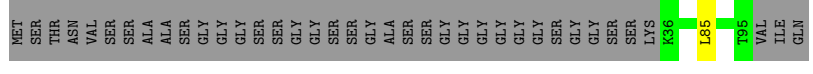
• Molecule 3: Small capsomere-interacting protein



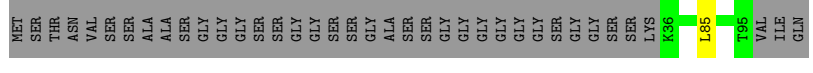
• Molecule 3: Small capsomere-interacting protein



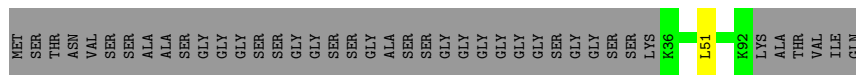
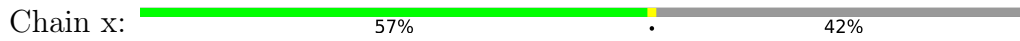
• Molecule 3: Small capsomere-interacting protein



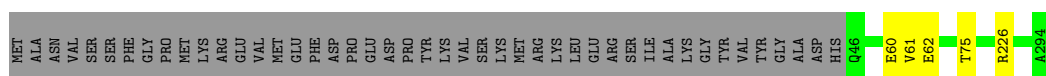
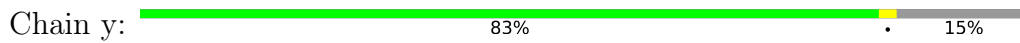
• Molecule 3: Small capsomere-interacting protein



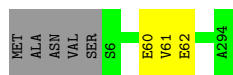
• Molecule 3: Small capsomere-interacting protein



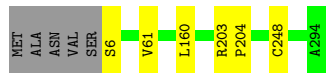
• Molecule 4: Minor capsid protein



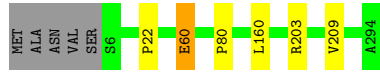
• Molecule 4: Minor capsid protein



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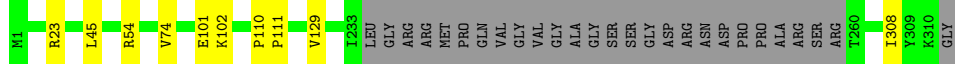
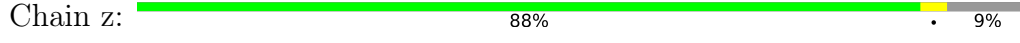
• Molecule 4: Minor capsid protein



• Molecule 4: Minor capsid protein

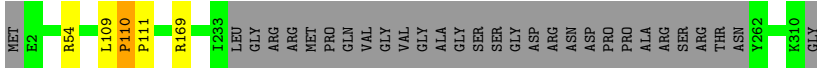


• Molecule 5: Triplex capsid protein 2



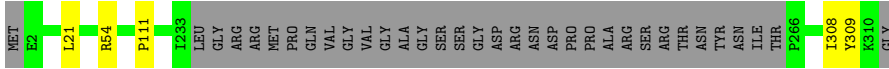
• Molecule 5: Triplex capsid protein 2

Chain W: 89% • 10%



- Molecule 5: Triplex capsid protein 2

Chain X: 87% • 11%



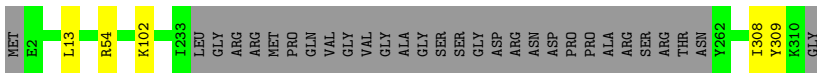
- Molecule 5: Triplex capsid protein 2

Chain Y: 90% • 9%



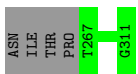
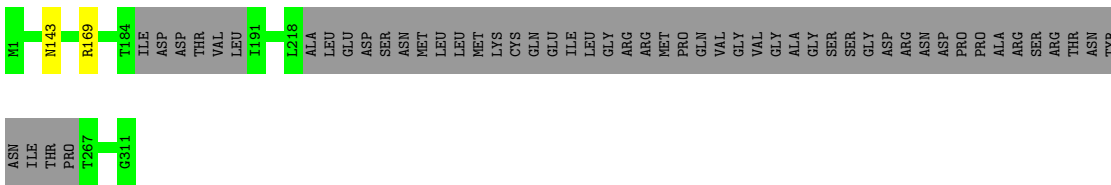
- Molecule 5: Triplex capsid protein 2

Chain Z: 89% • 10%



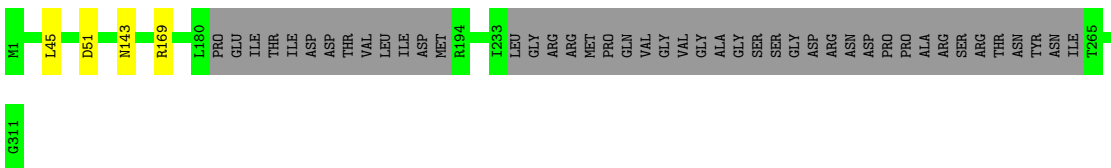
- Molecule 5: Triplex capsid protein 2

Chain 1: 82% • 17%



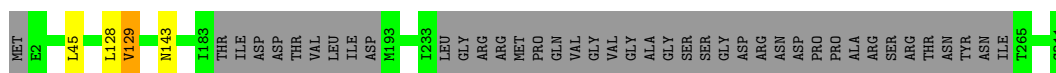
- Molecule 5: Triplex capsid protein 2

Chain a: 85% • 14%



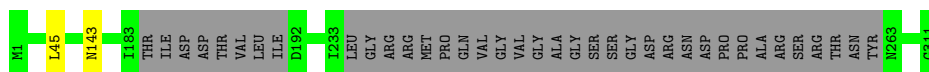
- Molecule 5: Triplex capsid protein 2

Chain b: 86% • 13%



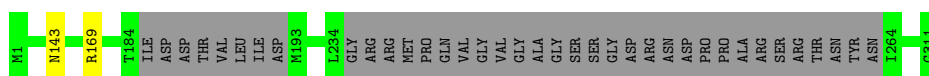
- Molecule 5: Triplex capsid protein 2

Chain c: 87% 12%



- Molecule 5: Triplex capsid protein 2

Chain d: 87% 12%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	47982	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 ($e^-/\text{\AA}^2$)	25	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	47000	Depositor
Image detector	AGFA SCIENTA FILM	Depositor

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.40	0/10779	0.63	0/14662
1	B	0.42	0/10591	0.63	0/14408
1	C	0.47	0/10590	0.66	0/14407
1	D	0.46	0/10615	0.66	0/14442
1	E	0.35	0/10735	0.61	0/14602
1	F	0.40	0/10648	0.63	0/14488
1	G	0.47	0/10823	0.67	0/14724
1	H	0.41	0/10823	0.64	0/14724
1	I	0.38	0/10662	0.62	0/14506
1	k	0.40	0/10445	0.64	0/14213
1	l	0.40	0/10790	0.65	2/14677 (0.0%)
1	m	0.41	0/10604	0.65	0/14426
1	n	0.36	0/10779	0.65	0/14662
1	o	0.39	0/10607	0.64	0/14430
1	p	0.38	0/10485	0.64	0/14261
1	q	0.35	0/9837	0.64	3/13377 (0.0%)
2	2	0.39	1/1493 (0.1%)	0.65	2/2016 (0.1%)
2	3	0.34	0/1696	0.59	0/2294
2	e	0.40	1/1493 (0.1%)	0.65	2/2016 (0.1%)
2	f	0.39	1/1493 (0.1%)	0.65	2/2016 (0.1%)
2	g	0.39	1/1493 (0.1%)	0.65	2/2016 (0.1%)
2	h	0.34	0/1696	0.59	0/2294
2	i	0.34	0/1696	0.59	0/2294
2	j	0.34	0/1696	0.59	0/2294
3	J	0.32	0/477	0.61	0/637
3	K	0.32	0/468	0.63	0/626
3	L	0.33	0/468	0.60	0/626
3	M	0.43	0/468	0.65	0/626
3	N	0.32	0/468	0.62	0/626
3	O	0.33	0/468	0.65	0/626
3	P	0.36	0/468	0.62	0/626
3	Q	0.33	0/468	0.60	0/626
3	R	0.33	0/468	0.65	0/626
3	r	0.33	0/477	0.68	0/637

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
3	s	0.32	0/468	0.63	0/626
3	t	0.33	0/468	0.63	0/626
3	u	0.32	0/477	0.62	0/637
3	v	0.32	0/477	0.62	0/637
3	w	0.34	0/477	0.68	0/637
3	x	0.34	0/456	0.70	1/609 (0.2%)
4	S	0.40	0/2357	0.63	0/3185
4	T	0.38	0/2357	0.66	4/3185 (0.1%)
4	U	0.37	0/2357	0.64	0/3185
4	V	0.36	0/2357	0.64	0/3185
4	y	0.42	0/2020	0.71	0/2735
5	l	0.34	0/2037	0.65	0/2761
5	W	0.32	0/2232	0.65	1/3031 (0.0%)
5	X	0.30	0/2196	0.60	0/2980
5	Y	0.34	0/2240	0.66	0/3041
5	Z	0.33	0/2232	0.64	0/3031
5	a	0.35	0/2113	0.62	0/2862
5	b	0.31	0/2138	0.60	0/2897
5	c	0.35	0/2170	0.62	0/2940
5	d	0.36	0/2169	0.61	0/2939
5	z	0.35	1/2255 (0.0%)	0.67	1/3062 (0.0%)
All	All	0.39	5/223320 (0.0%)	0.64	20/303322 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	T	0	2

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	e	209	SER	C-N	9.91	1.56	1.34
2	2	209	SER	C-N	9.90	1.56	1.34
2	g	209	SER	C-N	9.89	1.56	1.34
2	f	209	SER	C-N	9.88	1.56	1.34
5	z	129	VAL	C-N	-5.37	1.21	1.34

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	e	209	SER	O-C-N	-11.48	104.33	122.70
2	f	209	SER	O-C-N	-11.48	104.34	122.70
2	2	209	SER	O-C-N	-11.47	104.35	122.70
2	g	209	SER	O-C-N	-11.46	104.36	122.70
5	W	110	PRO	C-N-CD	-8.26	102.42	120.60

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	T	203	ARG	Peptide
4	T	248	CYS	Peptide

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 PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1331/1353 (98%)	1204 (90%)	126 (10%)	1 (0%)	51	86
1	B	1304/1353 (96%)	1209 (93%)	92 (7%)	3 (0%)	47	81
1	C	1304/1353 (96%)	1182 (91%)	119 (9%)	3 (0%)	47	81
1	D	1308/1353 (97%)	1184 (90%)	123 (9%)	1 (0%)	51	86
1	E	1326/1353 (98%)	1186 (89%)	138 (10%)	2 (0%)	47	81
1	F	1313/1353 (97%)	1216 (93%)	92 (7%)	5 (0%)	34	72
1	G	1337/1353 (99%)	1223 (92%)	112 (8%)	2 (0%)	51	86
1	H	1337/1353 (99%)	1193 (89%)	142 (11%)	2 (0%)	51	86
1	I	1315/1353 (97%)	1190 (90%)	123 (9%)	2 (0%)	47	81

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	k	1287/1353 (95%)	1164 (90%)	117 (9%)	6 (0%)	29	68
1	l	1332/1353 (98%)	1211 (91%)	120 (9%)	1 (0%)	51	86
1	m	1306/1353 (96%)	1175 (90%)	125 (10%)	6 (0%)	29	68
1	n	1331/1353 (98%)	1202 (90%)	128 (10%)	1 (0%)	51	86
1	o	1307/1353 (97%)	1173 (90%)	130 (10%)	4 (0%)	41	76
1	p	1297/1353 (96%)	1167 (90%)	127 (10%)	3 (0%)	47	81
1	q	1201/1353 (89%)	1058 (88%)	143 (12%)	0	100	100
2	2	166/718 (23%)	153 (92%)	9 (5%)	4 (2%)	6	35
2	3	194/718 (27%)	177 (91%)	13 (7%)	4 (2%)	7	38
2	e	166/718 (23%)	153 (92%)	10 (6%)	3 (2%)	8	41
2	f	166/718 (23%)	154 (93%)	9 (5%)	3 (2%)	8	41
2	g	166/718 (23%)	154 (93%)	9 (5%)	3 (2%)	8	41
2	h	194/718 (27%)	177 (91%)	13 (7%)	4 (2%)	7	38
2	i	194/718 (27%)	176 (91%)	14 (7%)	4 (2%)	7	38
2	j	194/718 (27%)	176 (91%)	14 (7%)	4 (2%)	7	38
3	J	58/98 (59%)	54 (93%)	4 (7%)	0	100	100
3	K	57/98 (58%)	55 (96%)	2 (4%)	0	100	100
3	L	57/98 (58%)	57 (100%)	0	0	100	100
3	M	57/98 (58%)	57 (100%)	0	0	100	100
3	N	57/98 (58%)	54 (95%)	3 (5%)	0	100	100
3	O	57/98 (58%)	56 (98%)	1 (2%)	0	100	100
3	P	57/98 (58%)	56 (98%)	1 (2%)	0	100	100
3	Q	57/98 (58%)	54 (95%)	3 (5%)	0	100	100
3	R	57/98 (58%)	56 (98%)	1 (2%)	0	100	100
3	r	58/98 (59%)	57 (98%)	1 (2%)	0	100	100
3	s	57/98 (58%)	55 (96%)	2 (4%)	0	100	100
3	t	57/98 (58%)	56 (98%)	1 (2%)	0	100	100
3	u	58/98 (59%)	54 (93%)	4 (7%)	0	100	100
3	v	58/98 (59%)	56 (97%)	2 (3%)	0	100	100
3	w	58/98 (59%)	56 (97%)	2 (3%)	0	100	100
3	x	55/98 (56%)	52 (94%)	3 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	S	287/294 (98%)	254 (88%)	30 (10%)	3 (1%)	15	54
4	T	287/294 (98%)	255 (89%)	30 (10%)	2 (1%)	22	62
4	U	287/294 (98%)	256 (89%)	28 (10%)	3 (1%)	15	54
4	V	287/294 (98%)	242 (84%)	40 (14%)	5 (2%)	9	43
4	y	247/294 (84%)	211 (85%)	33 (13%)	3 (1%)	13	50
5	1	251/311 (81%)	233 (93%)	17 (7%)	1 (0%)	34	72
5	W	277/311 (89%)	239 (86%)	36 (13%)	2 (1%)	22	62
5	X	273/311 (88%)	250 (92%)	21 (8%)	2 (1%)	22	62
5	Y	278/311 (89%)	251 (90%)	27 (10%)	0	100	100
5	Z	277/311 (89%)	253 (91%)	23 (8%)	1 (0%)	34	72
5	a	261/311 (84%)	241 (92%)	20 (8%)	0	100	100
5	b	264/311 (85%)	249 (94%)	14 (5%)	1 (0%)	34	72
5	c	268/311 (86%)	248 (92%)	20 (8%)	0	100	100
5	d	268/311 (86%)	253 (94%)	15 (6%)	0	100	100
5	z	280/311 (90%)	255 (91%)	23 (8%)	2 (1%)	22	62
All	All	27383/33540 (82%)	24832 (91%)	2455 (9%)	96 (0%)	38	72

5 of 96 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	692	LEU
1	E	960	SER
1	k	1262	LEU
1	l	750	PRO
1	m	148	LEU

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1142/1156 (99%)	1128 (99%)	14 (1%)	71	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	1123/1156 (97%)	1110 (99%)	13 (1%)	71	84
1	C	1123/1156 (97%)	1105 (98%)	18 (2%)	62	79
1	D	1125/1156 (97%)	1108 (98%)	17 (2%)	65	80
1	E	1138/1156 (98%)	1131 (99%)	7 (1%)	86	92
1	F	1128/1156 (98%)	1112 (99%)	16 (1%)	67	81
1	G	1147/1156 (99%)	1134 (99%)	13 (1%)	73	85
1	H	1147/1156 (99%)	1132 (99%)	15 (1%)	69	82
1	I	1130/1156 (98%)	1119 (99%)	11 (1%)	76	86
1	k	1105/1156 (96%)	1091 (99%)	14 (1%)	69	82
1	l	1144/1156 (99%)	1129 (99%)	15 (1%)	69	82
1	m	1124/1156 (97%)	1105 (98%)	19 (2%)	60	78
1	n	1143/1156 (99%)	1130 (99%)	13 (1%)	73	85
1	o	1124/1156 (97%)	1111 (99%)	13 (1%)	71	84
1	p	1110/1156 (96%)	1101 (99%)	9 (1%)	81	89
1	q	1042/1156 (90%)	1031 (99%)	11 (1%)	73	85
2	2	159/596 (27%)	157 (99%)	2 (1%)	69	82
2	3	177/596 (30%)	174 (98%)	3 (2%)	60	78
2	e	159/596 (27%)	157 (99%)	2 (1%)	69	82
2	f	159/596 (27%)	157 (99%)	2 (1%)	69	82
2	g	159/596 (27%)	157 (99%)	2 (1%)	69	82
2	h	177/596 (30%)	174 (98%)	3 (2%)	60	78
2	i	177/596 (30%)	174 (98%)	3 (2%)	60	78
2	j	177/596 (30%)	174 (98%)	3 (2%)	60	78
3	J	50/71 (70%)	49 (98%)	1 (2%)	55	73
3	K	49/71 (69%)	49 (100%)	0	100	100
3	L	49/71 (69%)	49 (100%)	0	100	100
3	M	49/71 (69%)	49 (100%)	0	100	100
3	N	49/71 (69%)	48 (98%)	1 (2%)	55	73
3	O	49/71 (69%)	49 (100%)	0	100	100
3	P	49/71 (69%)	48 (98%)	1 (2%)	55	73
3	Q	49/71 (69%)	49 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	R	49/71 (69%)	49 (100%)	0	100	100
3	r	50/71 (70%)	48 (96%)	2 (4%)	31	56
3	s	49/71 (69%)	48 (98%)	1 (2%)	55	73
3	t	49/71 (69%)	47 (96%)	2 (4%)	30	55
3	u	50/71 (70%)	49 (98%)	1 (2%)	55	73
3	v	50/71 (70%)	49 (98%)	1 (2%)	55	73
3	w	50/71 (70%)	49 (98%)	1 (2%)	55	73
3	x	48/71 (68%)	48 (100%)	0	100	100
4	S	251/255 (98%)	251 (100%)	0	100	100
4	T	251/255 (98%)	251 (100%)	0	100	100
4	U	251/255 (98%)	247 (98%)	4 (2%)	62	79
4	V	251/255 (98%)	248 (99%)	3 (1%)	71	84
4	y	216/255 (85%)	214 (99%)	2 (1%)	78	88
5	l	229/275 (83%)	228 (100%)	1 (0%)	91	94
5	W	253/275 (92%)	250 (99%)	3 (1%)	71	84
5	X	249/275 (90%)	246 (99%)	3 (1%)	71	84
5	Y	254/275 (92%)	253 (100%)	1 (0%)	91	94
5	Z	253/275 (92%)	249 (98%)	4 (2%)	62	79
5	a	238/275 (86%)	234 (98%)	4 (2%)	60	78
5	b	241/275 (88%)	237 (98%)	4 (2%)	60	78
5	c	245/275 (89%)	243 (99%)	2 (1%)	81	89
5	d	245/275 (89%)	243 (99%)	2 (1%)	81	89
5	z	256/275 (93%)	250 (98%)	6 (2%)	50	70
All	All	23810/28425 (84%)	23522 (99%)	288 (1%)	72	84

5 of 288 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	i	272	ASP
5	d	143	ASN
3	J	85	LEU
5	z	54	ARG
1	G	1297	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 406 such sidechains are listed below:

Mol	Chain	Res	Type
1	l	1333	HIS
1	o	77	HIS
5	b	78	GLN
1	m	312	ASN
1	m	1303	GLN

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 Map visualisation

This section contains visualisations of the EMDB entry EMD-9366. 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

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal surface views

This section was not generated.

6.5 Mask visualisation

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

7 Map analysis

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

7.1 Map-value distribution

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation

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

9 Map-model fit

This section was not generated.