



Full wwPDB EM Validation Report ⓘ

Nov 8, 2022 – 05:05 PM JST

PDB ID : 5ZZ8
EMDB ID : EMD-6976
Title : Structure of the Herpes simplex virus type 2 C-capsid with capsid-vertex-specific component
Authors : Wang, J.L.; Yuan, S.; Zhu, D.J.; Tang, H.; Wang, N.; Chen, W.Y.; Gao, Q.; Li, Y.H.; Wang, J.Z.; Liu, H.R.; Zhang, X.Z.; Rao, Z.H.; Wang, X.X.
Deposited on : 2018-05-31
Resolution : 3.75 Å(reported)

This is a Full wwPDB EM Validation 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:

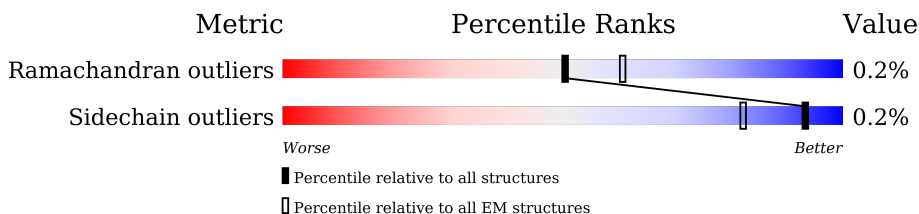
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

1 Overall quality at a glance

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

The reported resolution of this entry is 3.75 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 $\leq 5\%$. 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	1	466	
1	Q	466	
1	T	466	
1	W	466	
1	w	466	
2	2	318	
2	3	318	
2	R	318	
2	S	318	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	U	318	18% 88% 10%
2	V	318	13% 95% 10%
2	X	318	89% 10%
2	Y	318	96% 10%
2	x	318	18% 89% 10%
2	y	318	15% 95% 10%
3	A	1374	5% 91% 8%
3	B	1374	98% 10%
3	C	1374	98% 10%
3	D	1374	98% 10%
3	E	1374	98% 10%
3	F	1374	99% 10%
3	G	1374	5% 96% 10%
3	H	1374	99% 10%
3	I	1374	98% 10%
3	J	1374	99% 10%
3	K	1374	99% 10%
3	L	1374	98% 10%
3	M	1374	99% 10%
3	N	1374	27% 98% 10%
3	O	1374	23% 99% 10%
3	P	1374	99% 10%
4	b	112	79% 90% 10%
4	c	112	79% 90% 10%
4	d	112	78% 90% 10%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	e	112	79% 90% 10%
4	f	112	79% 90% 10%
4	g	112	79% 90% 10%
4	h	112	71% 89% 10%
4	i	112	71% 90% 10%
4	j	112	70% 89% 10%
4	k	112	70% 89% 10%
4	l	112	72% 90% 10%
4	m	112	71% 90% 10%
4	n	112	79% 89% 10%
4	o	112	77% 89% 10%
4	p	112	74% 89% 10%
5	q	702	15% 78% 21%
6	r	585	16% 84%
6	s	585	14% 86%
7	t	3122	98%
7	u	3122	98%

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 218714 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 VP19C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	Q	350	2589	1620	493	461	15	0	0
1	T	350	2595	1623	496	461	15	0	0
1	W	350	2577	1613	490	459	15	0	0
1	1	350	2589	1620	493	461	15	0	0
1	w	350	2595	1623	496	461	15	0	0

- Molecule 2 is a protein called VP23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	R	286	2102	1343	374	379	6	0	0
2	S	308	2337	1484	413	429	11	0	0
2	U	286	2102	1343	374	379	6	0	0
2	V	308	2337	1484	413	429	11	0	0
2	X	286	2102	1343	374	379	6	0	0
2	Y	308	2337	1484	413	429	11	0	0
2	3	286	2102	1343	374	379	6	0	0
2	2	308	2334	1481	413	429	11	0	0
2	x	286	2102	1343	374	379	6	0	0
2	y	308	2328	1478	410	429	11	0	0

- Molecule 3 is a protein called Major capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	I	1362	Total	C	N	O	S	0	0
			10418	6584	1873	1905	56		
3	J	1364	Total	C	N	O	S	0	0
			10408	6582	1863	1907	56		
3	K	1364	Total	C	N	O	S	0	0
			10414	6585	1866	1907	56		
3	L	1362	Total	C	N	O	S	0	0
			10422	6586	1873	1907	56		
3	M	1366	Total	C	N	O	S	0	0
			10449	6603	1877	1913	56		
3	A	1259	Total	C	N	O	S	0	0
			9646	6107	1725	1762	52		
3	H	1362	Total	C	N	O	S	0	0
			10416	6583	1873	1905	55		
3	N	1362	Total	C	N	O	S	0	0
			10397	6574	1868	1899	56		
3	O	1366	Total	C	N	O	S	0	0
			10417	6585	1877	1899	56		
3	P	1364	Total	C	N	O	S	0	0
			10407	6582	1866	1903	56		
3	B	1357	Total	C	N	O	S	0	0
			10349	6542	1854	1897	56		
3	C	1356	Total	C	N	O	S	0	0
			10355	6545	1857	1897	56		
3	D	1364	Total	C	N	O	S	0	0
			10413	6583	1872	1902	56		
3	E	1362	Total	C	N	O	S	0	0
			10405	6578	1870	1901	56		
3	F	1362	Total	C	N	O	S	0	0
			10392	6571	1862	1903	56		
3	G	1346	Total	C	N	O	S	0	0
			10261	6487	1845	1874	55		

- Molecule 4 is a protein called VP26.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	h	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	i	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	j	101	Total	C	N	O	S	0	0
			773	489	143	138	3		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					AltConf	Trace
4	k	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	l	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	m	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	n	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	o	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	p	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	b	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	c	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	d	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	e	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	f	101	Total	C	N	O	S	0	0
			773	489	143	138	3		
4	g	101	Total	C	N	O	S	0	0
			773	489	143	138	3		

- Molecule 5 is a protein called UL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	q	554	Total	C	N	O	S	0	0
			4241	2700	774	749	18		

- Molecule 6 is a protein called UL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	r	94	Total	C	N	O	S	0	0
			764	490	136	136	2		
6	s	80	Total	C	N	O	S	0	0
			651	413	123	114	1		

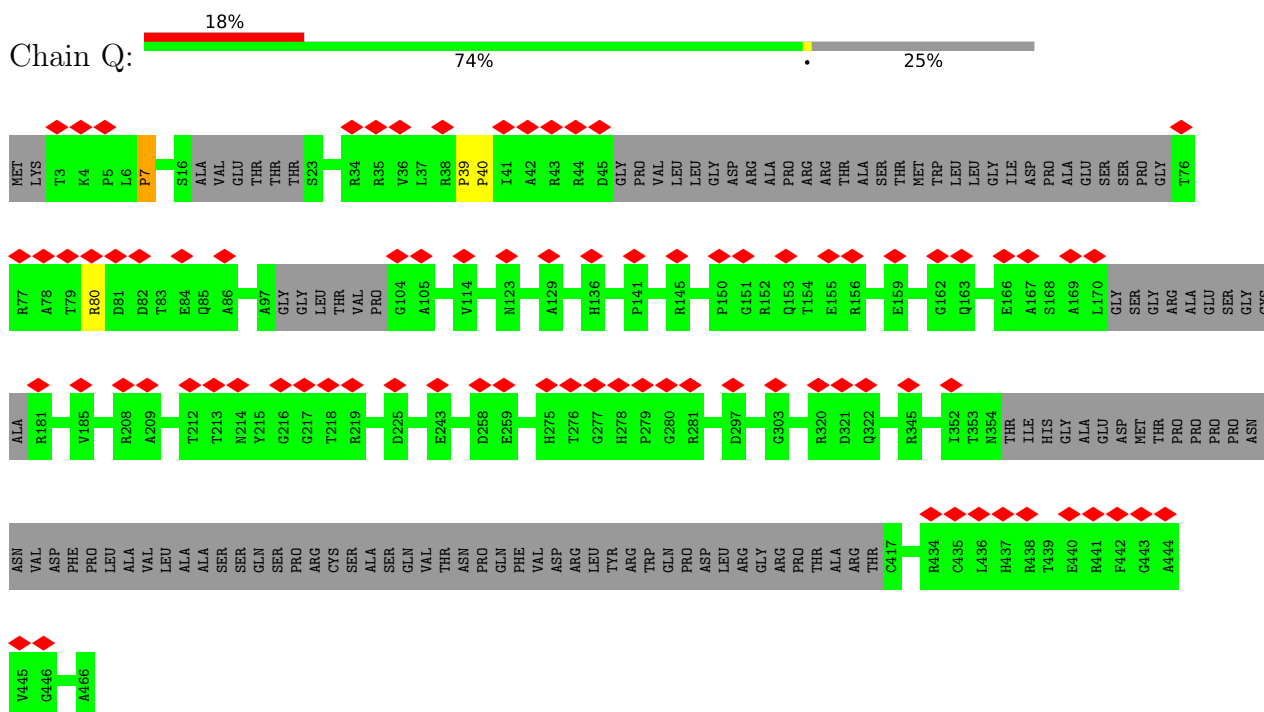
- Molecule 7 is a protein called UL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	t	47	Total	C	N	O	S	0	0
			383	234	87	60	2		
7	u	47	Total	C	N	O	S	0	0
			383	234	87	60	2		

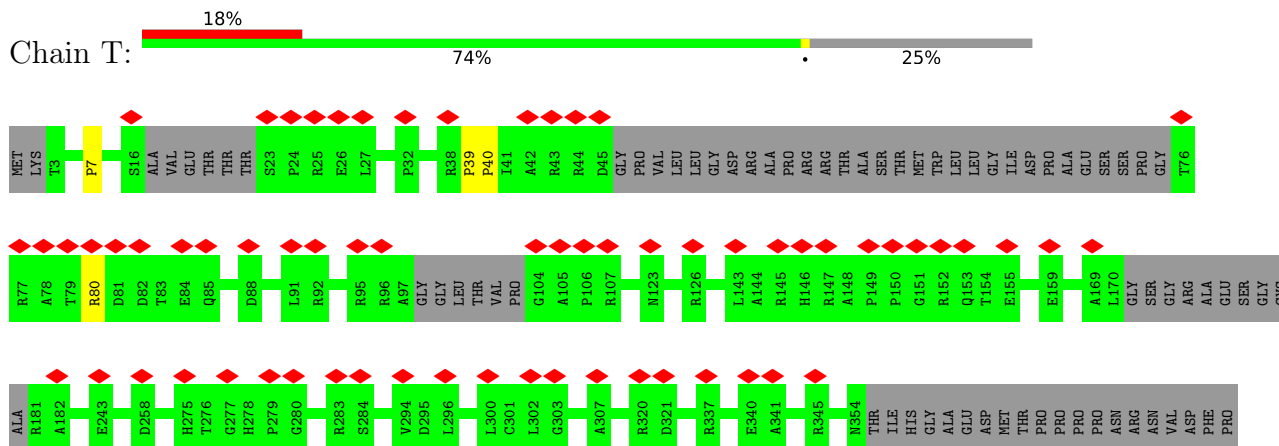
3 Residue-property plots

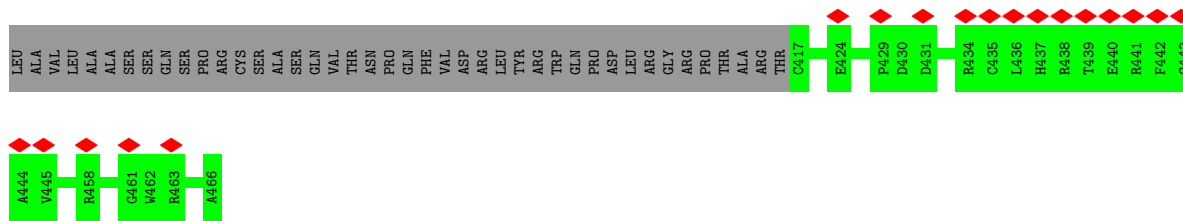
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: VP19C

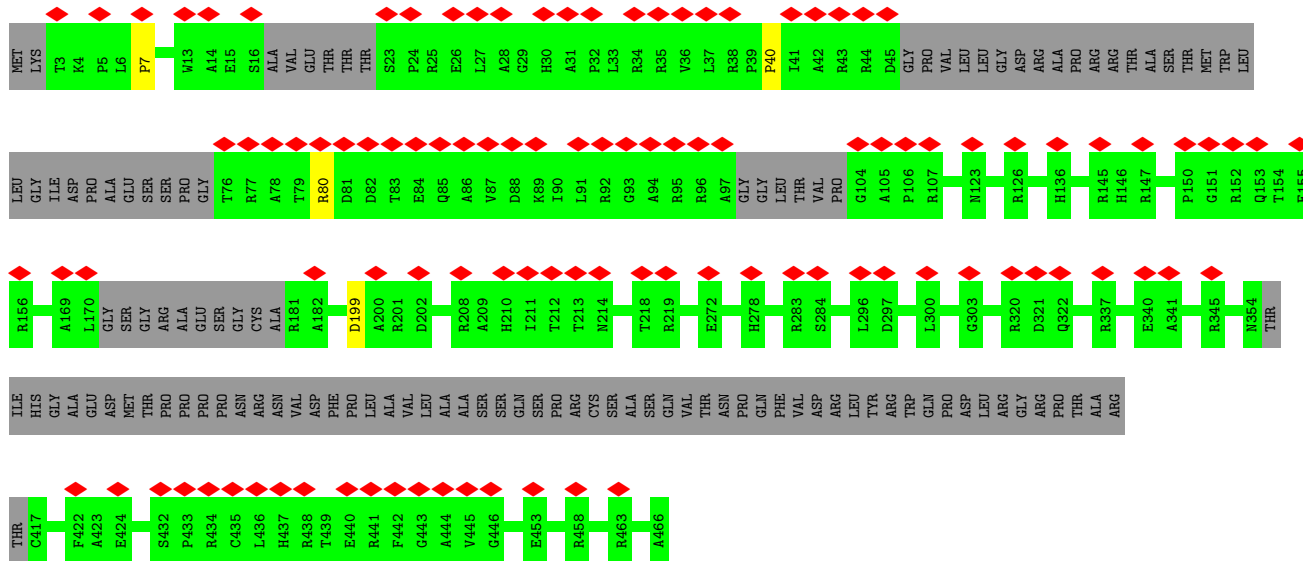
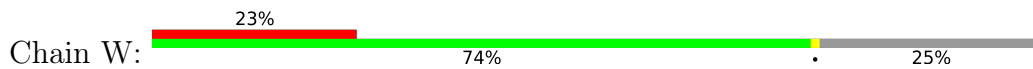


- Molecule 1: VP19C

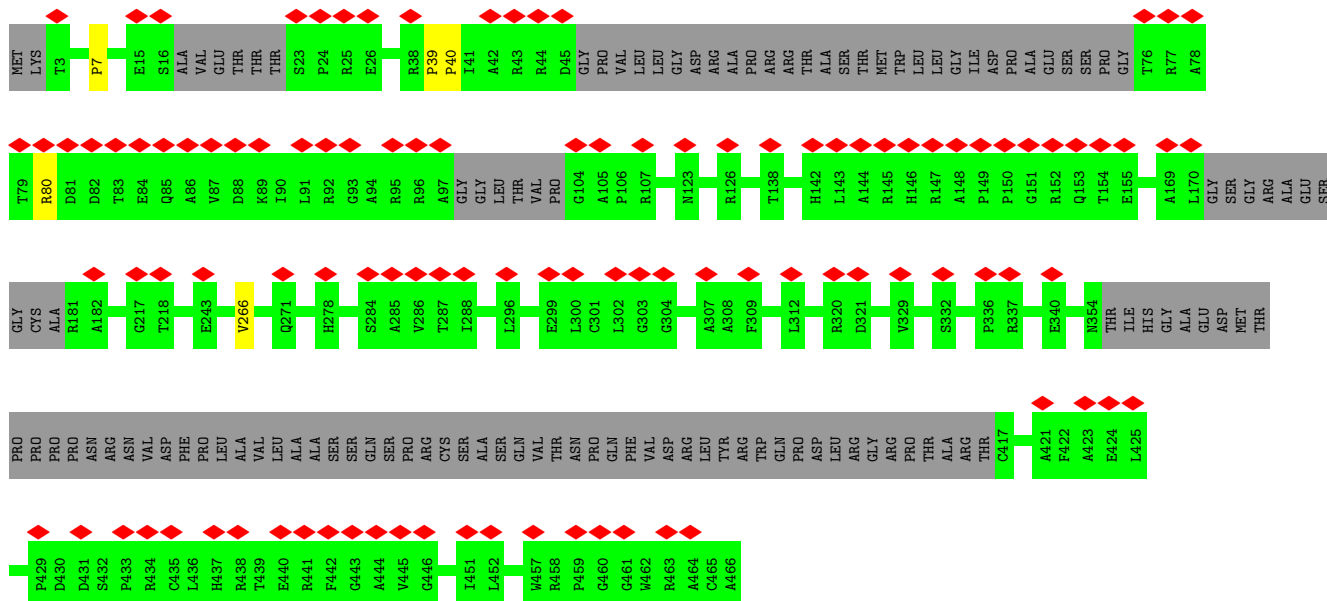
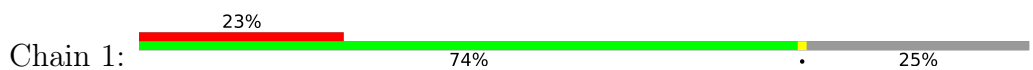




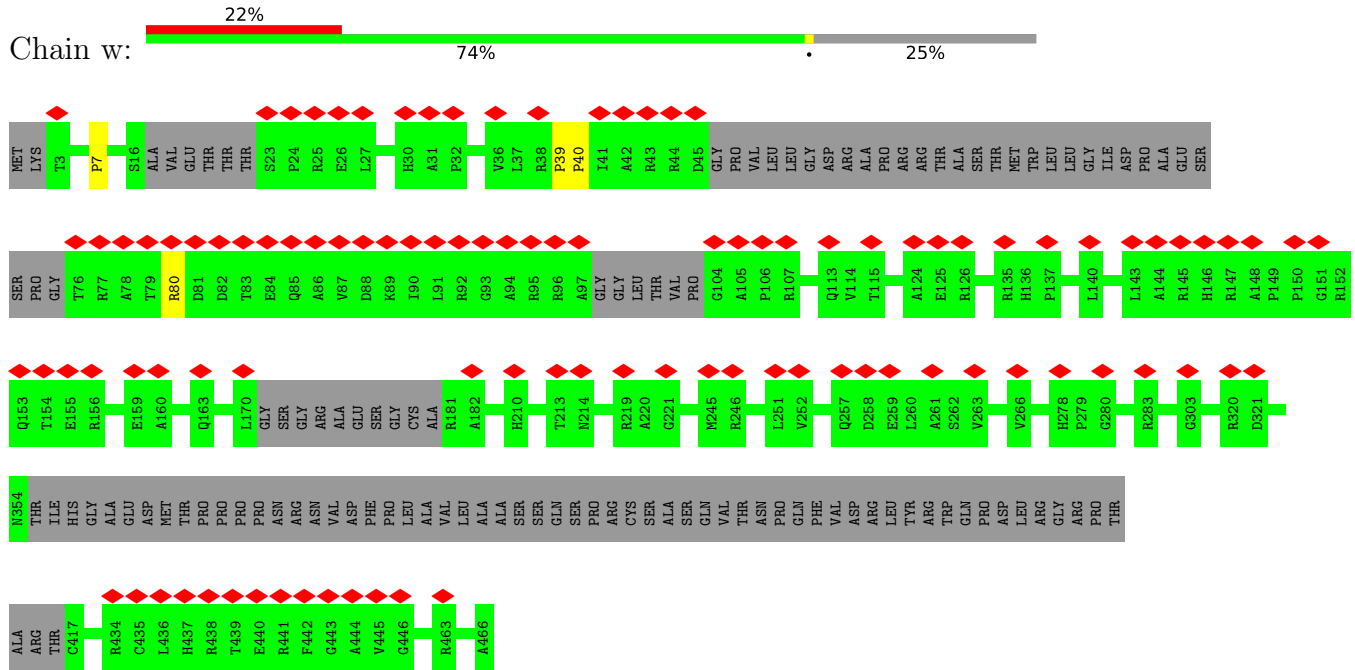
• Molecule 1: VP19C



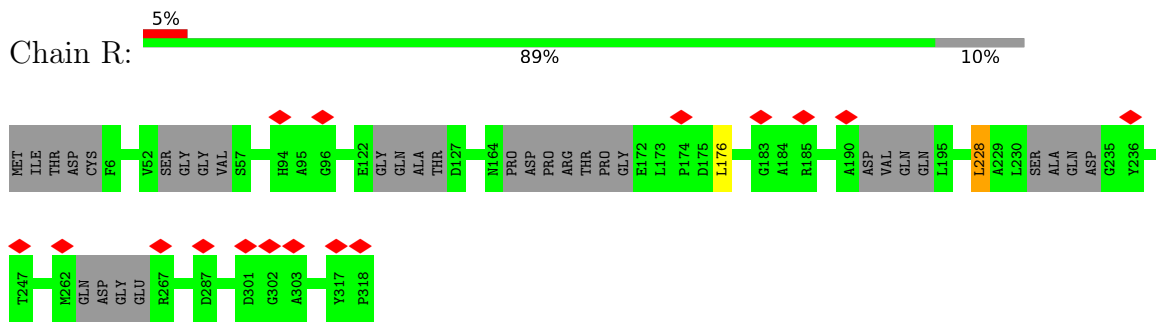
• Molecule 1: VP19C



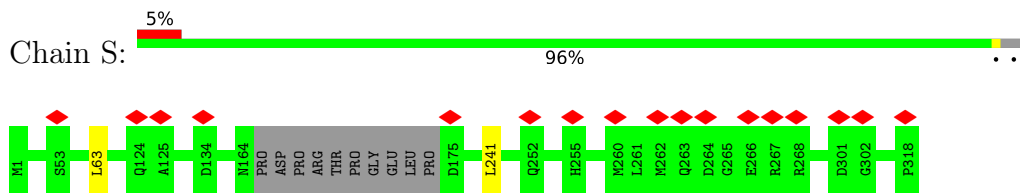
• Molecule 1: VP19C



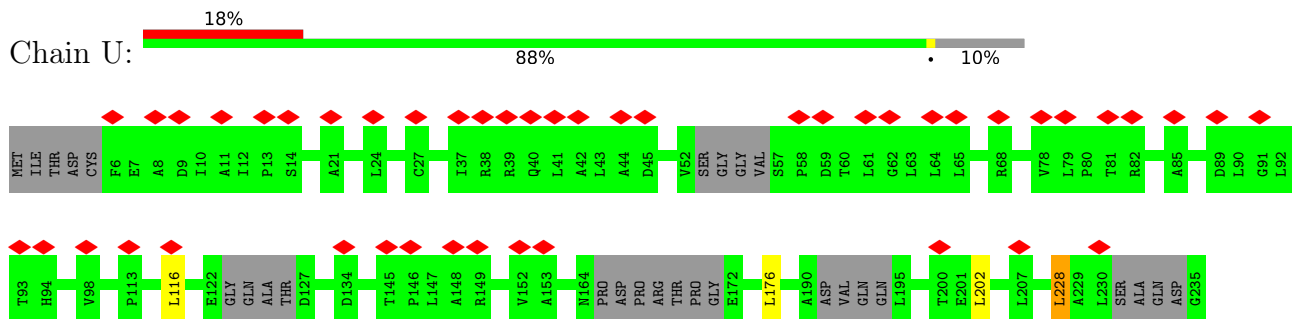
• Molecule 2: VP23

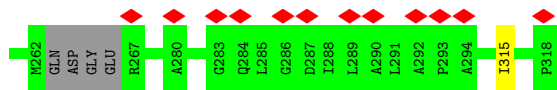


• Molecule 2: VP23

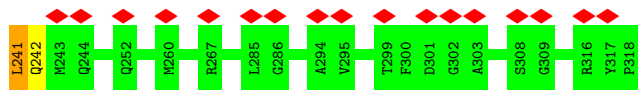
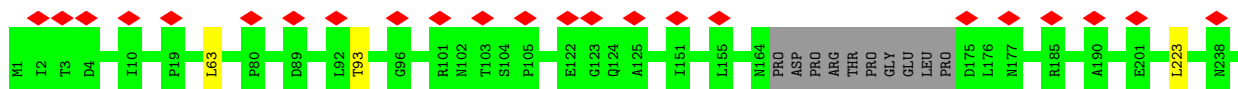


• Molecule 2: VP23

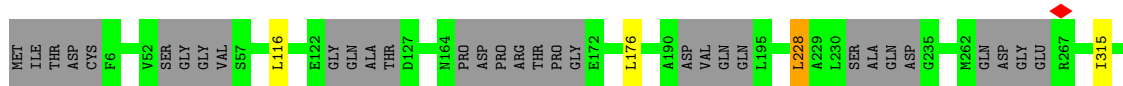
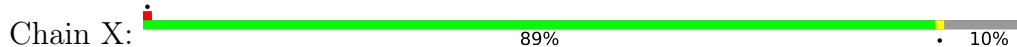




• Molecule 2: VP23



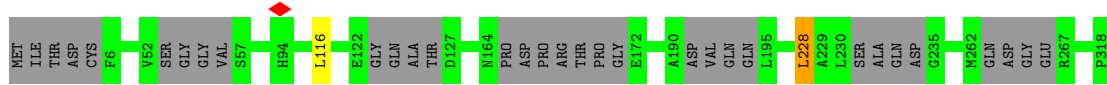
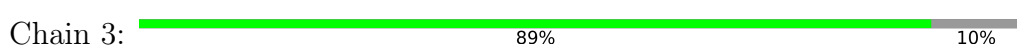
• Molecule 2: VP23



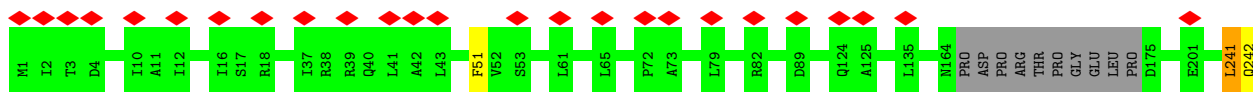
• Molecule 2: VP23

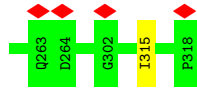


• Molecule 2: VP23

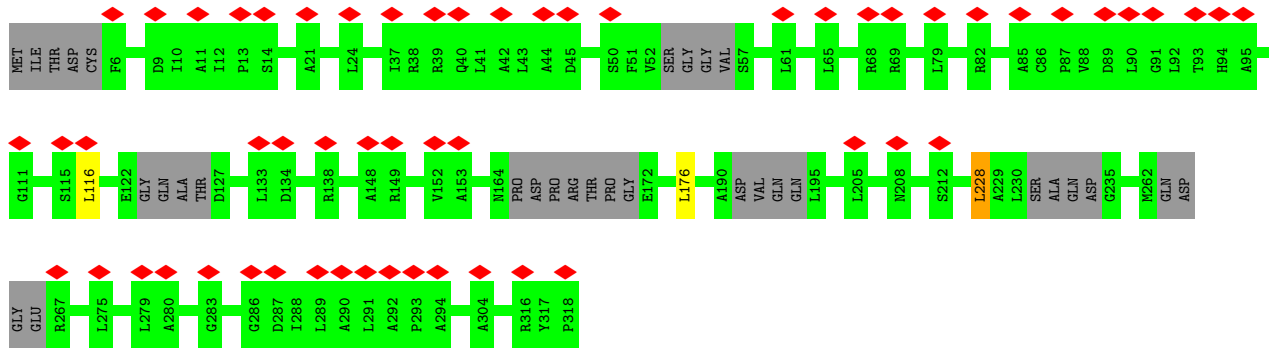
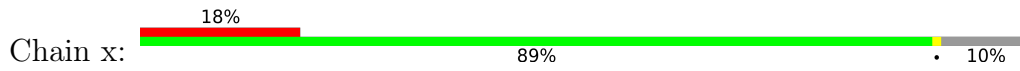


• Molecule 2: VP23

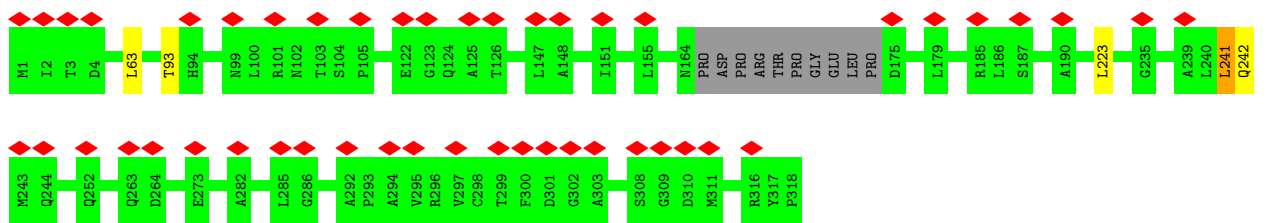




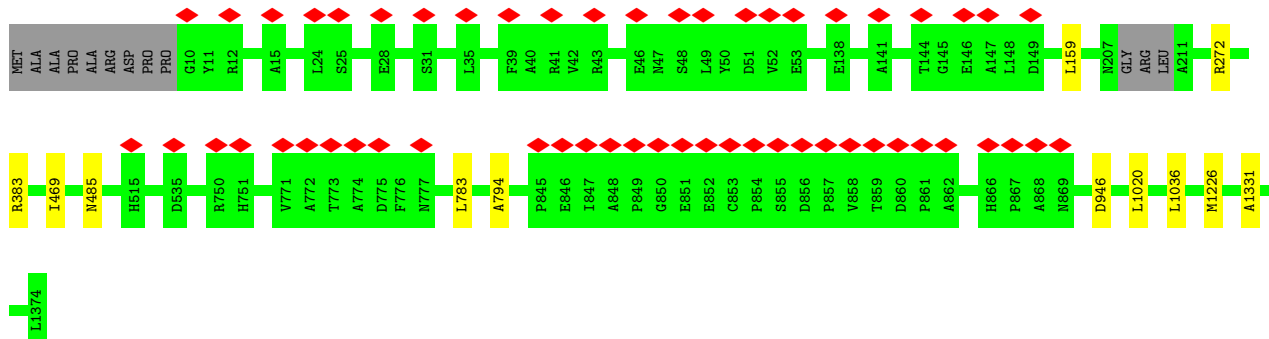
• Molecule 2: VP23



• Molecule 2: VP23

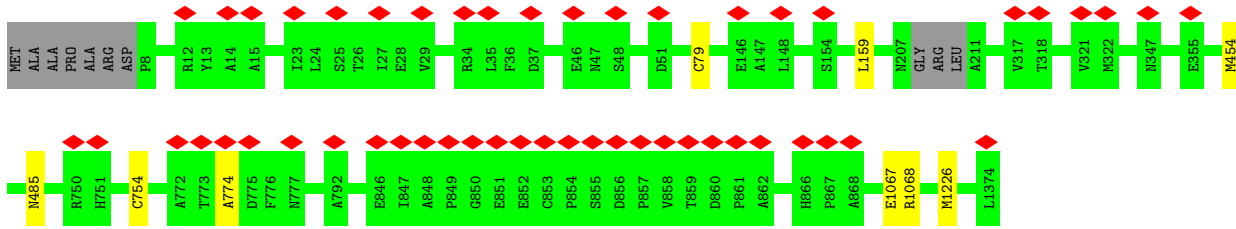


• Molecule 3: Major capsid protein

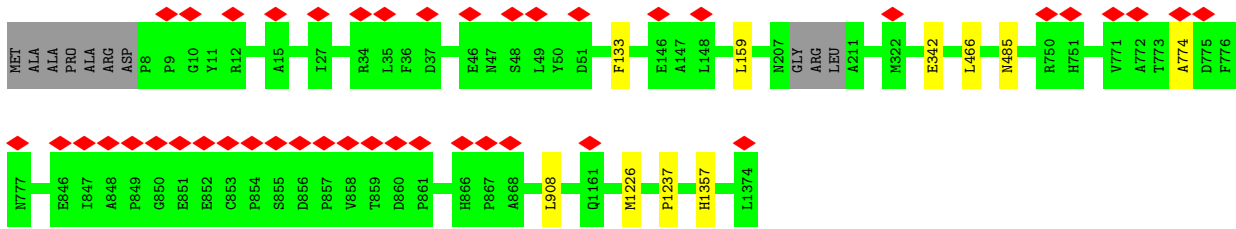


• Molecule 3: Major capsid protein

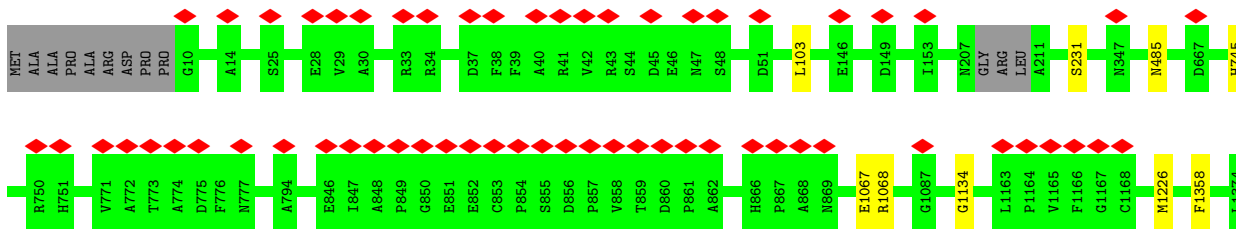




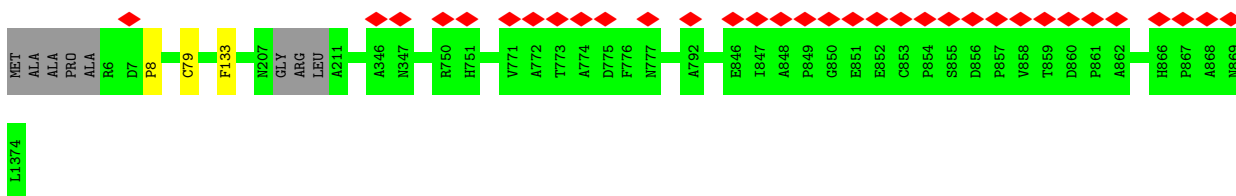
• Molecule 3: Major capsid protein



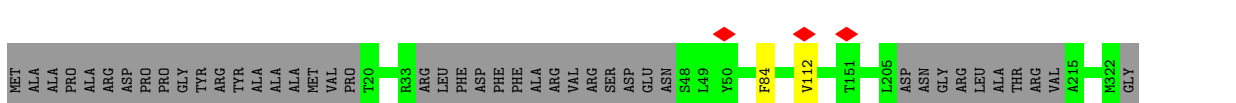
• Molecule 3: Major capsid protein

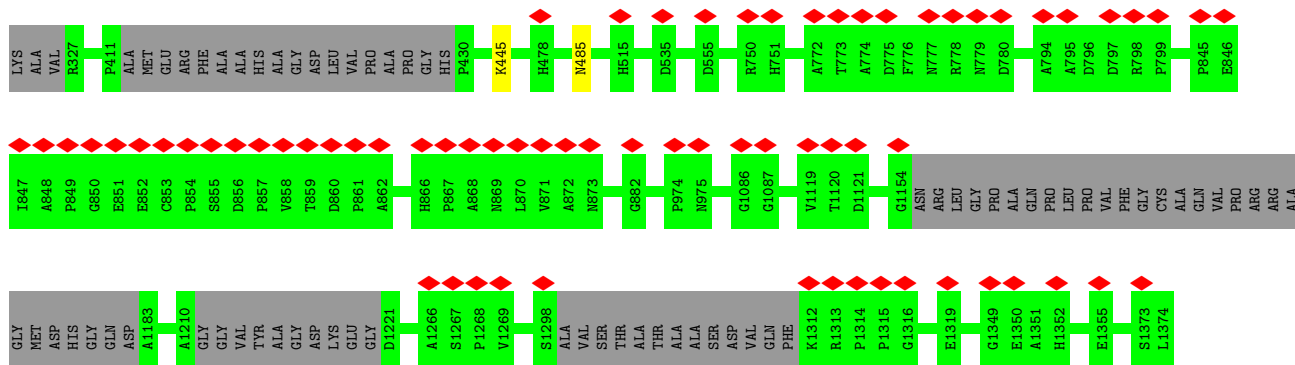


• Molecule 3: Major capsid protein

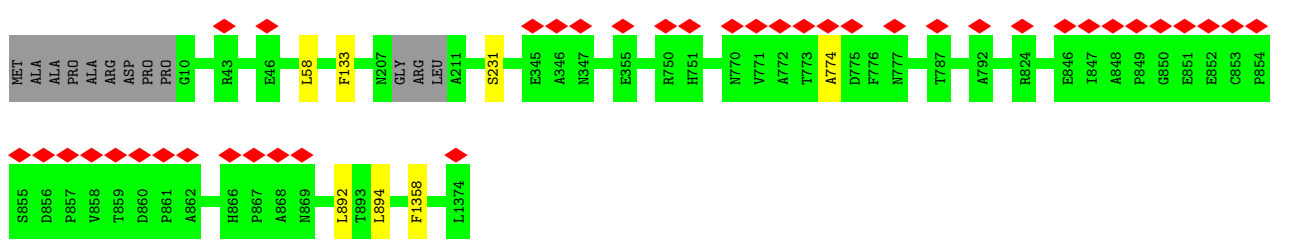


• Molecule 3: Major capsid protein

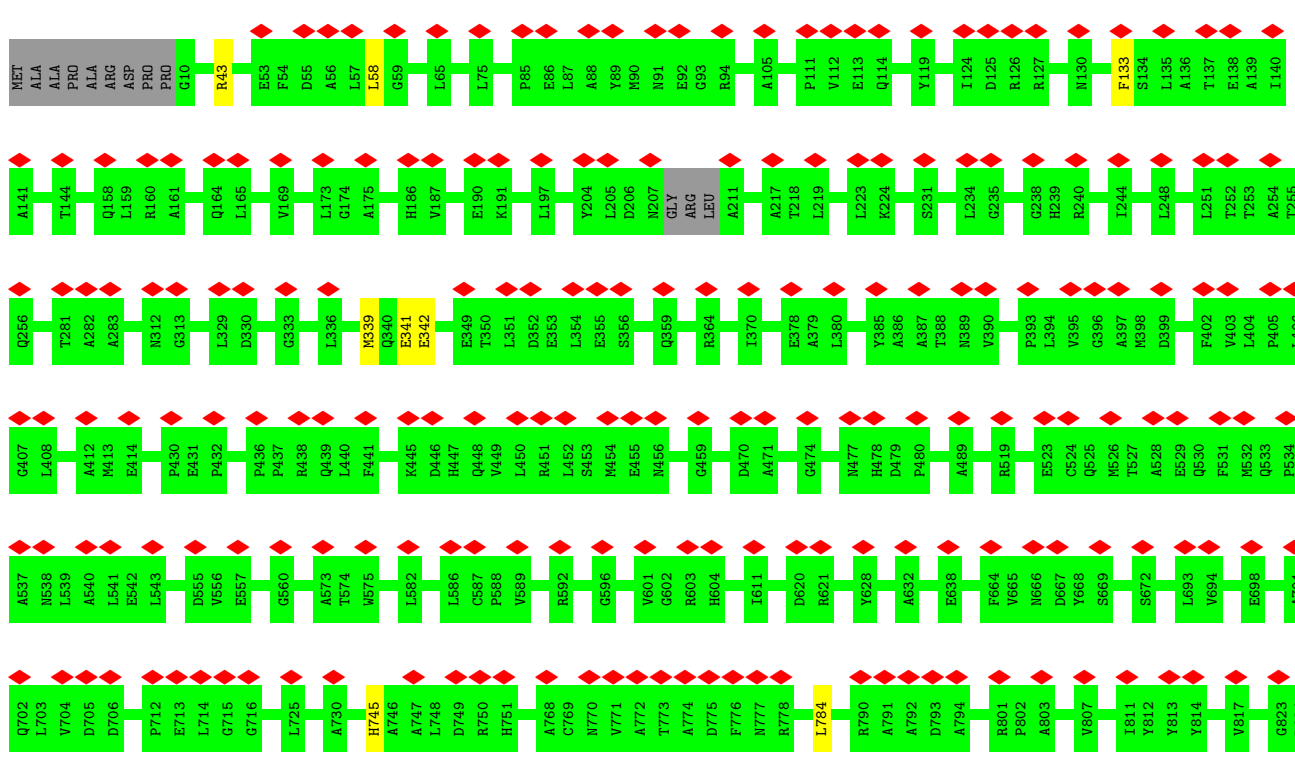




• Molecule 3: Major capsid protein



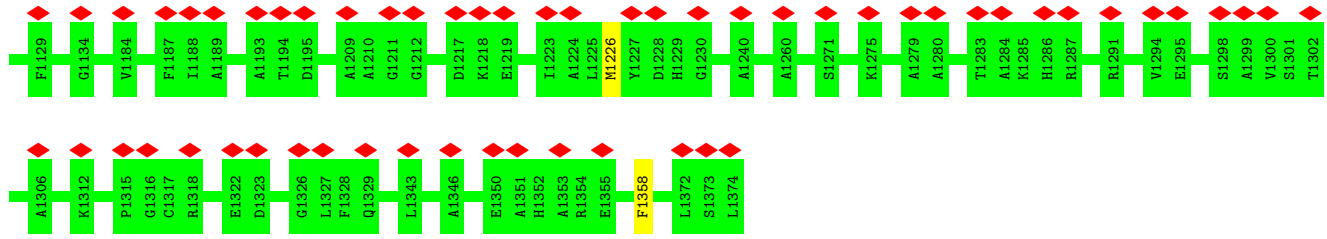
• Molecule 3: Major capsid protein



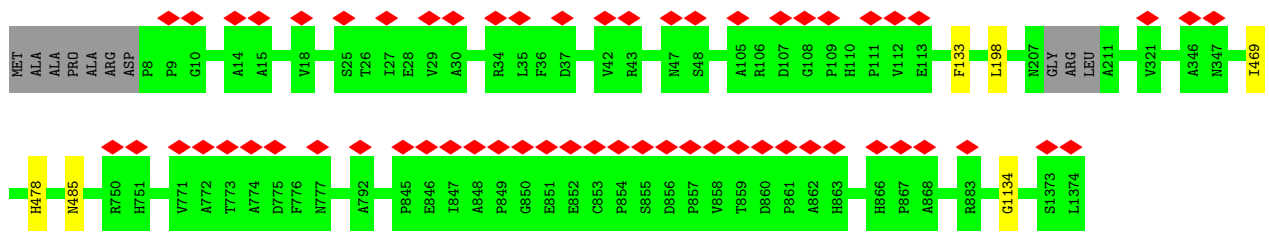


• Molecule 3: Major capsid protein

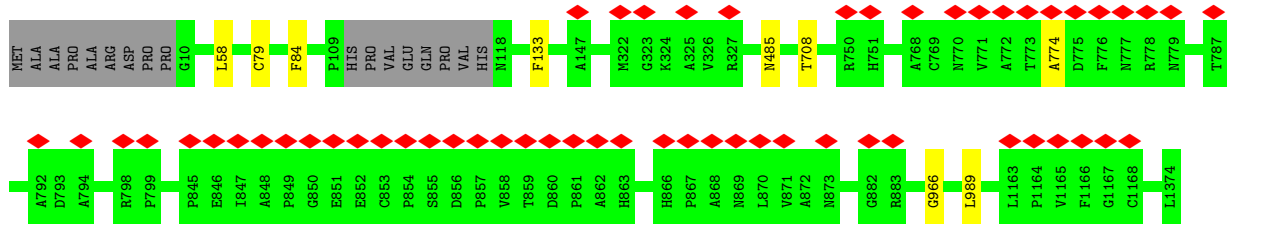




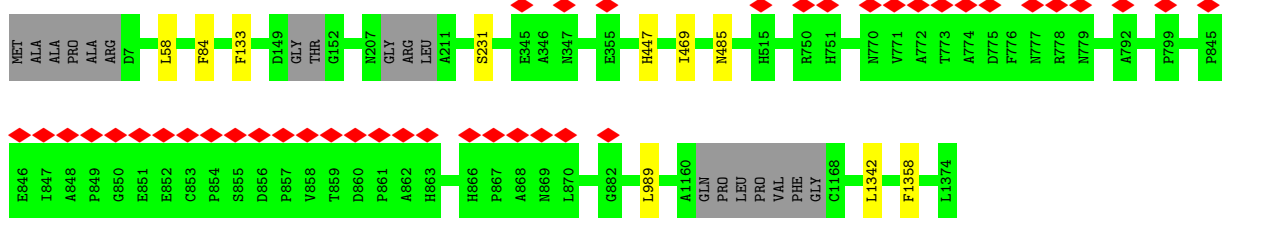
• Molecule 3: Major capsid protein



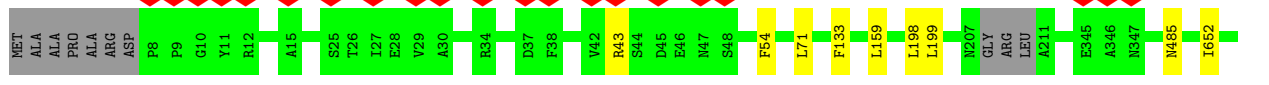
• Molecule 3: Major capsid protein

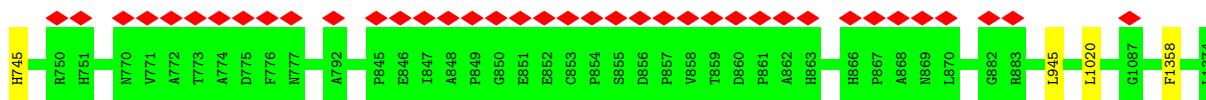


• Molecule 3: Major capsid protein

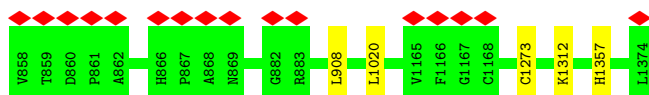


• Molecule 3: Major capsid protein

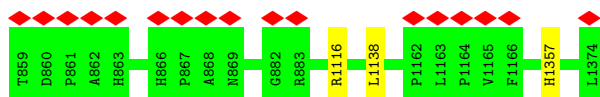
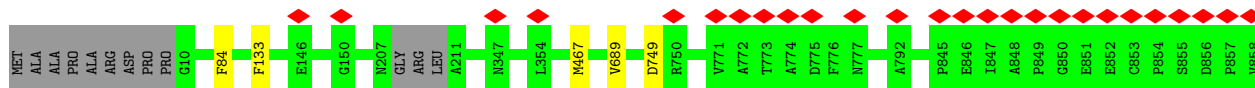




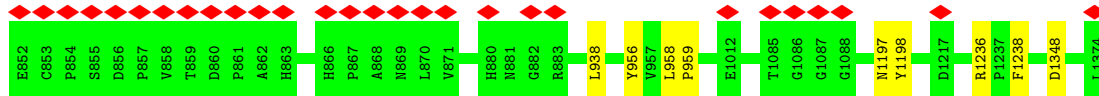
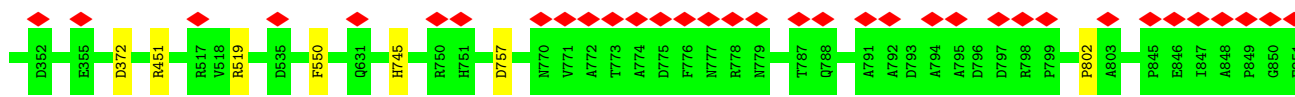
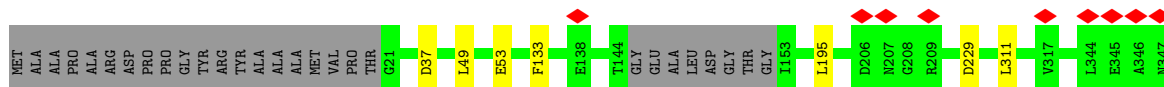
• Molecule 3: Major capsid protein



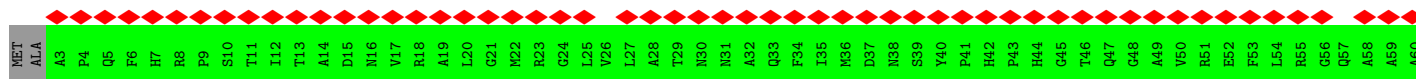
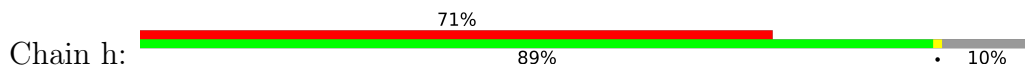
• Molecule 3: Major capsid protein



• Molecule 3: Major capsid protein

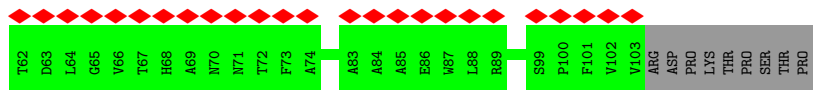
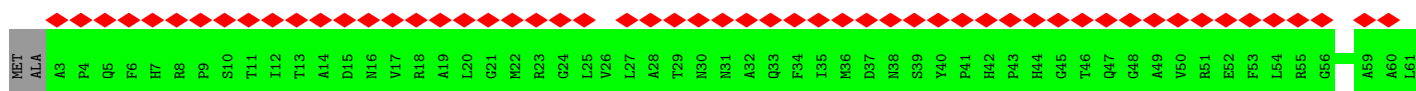
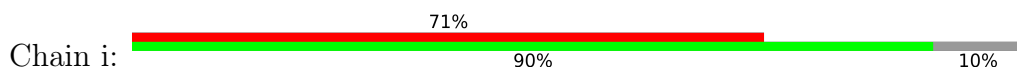


• Molecule 4: VP26

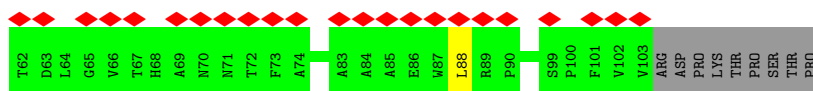
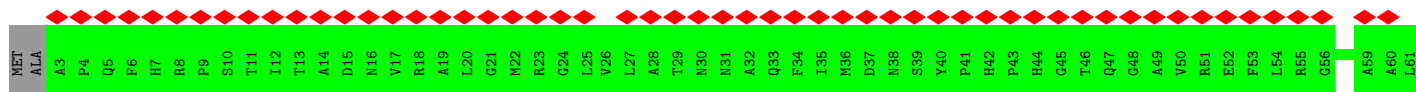
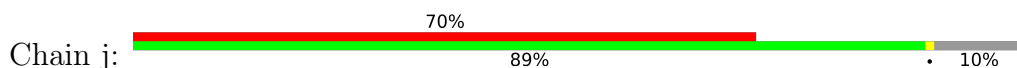




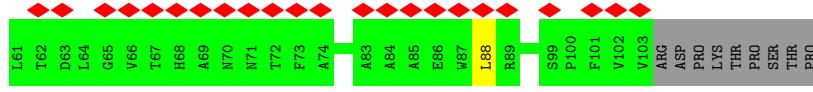
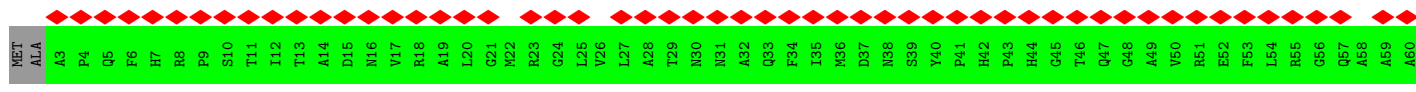
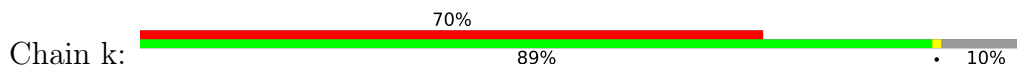
• Molecule 4: VP26



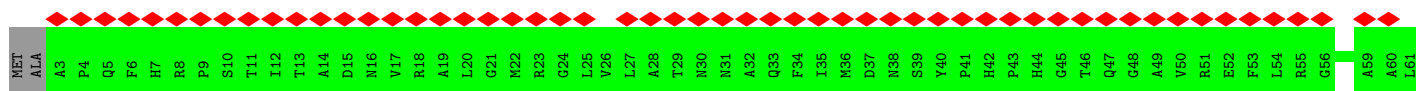
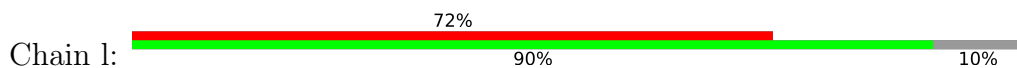
• Molecule 4: VP26



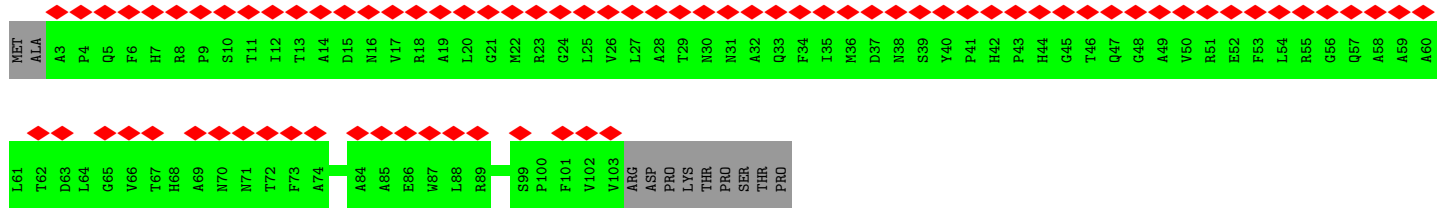
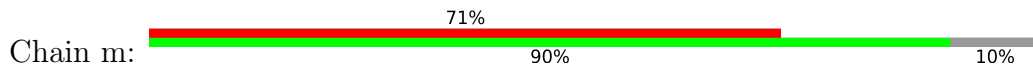
• Molecule 4: VP26



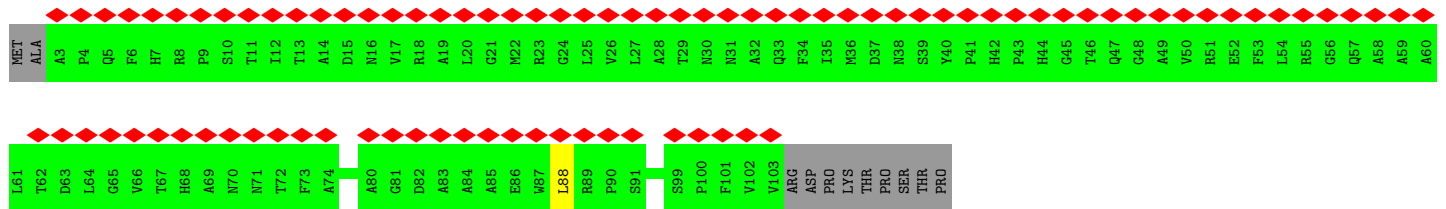
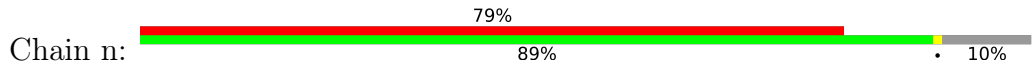
• Molecule 4: VP26



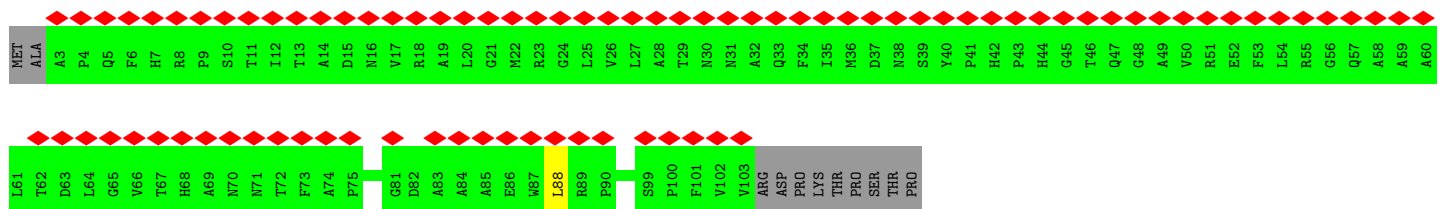
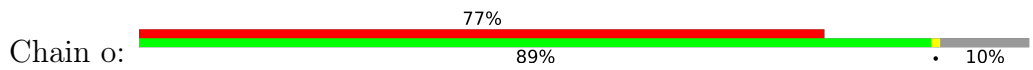
• Molecule 4: VP26



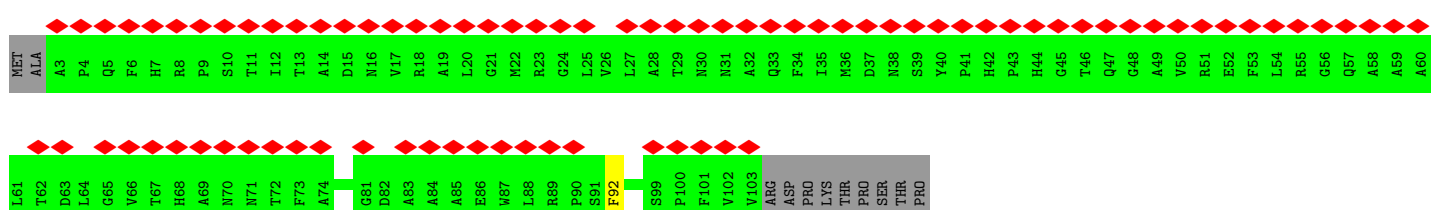
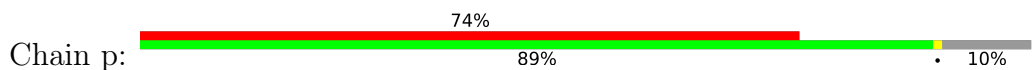
• Molecule 4: VP26



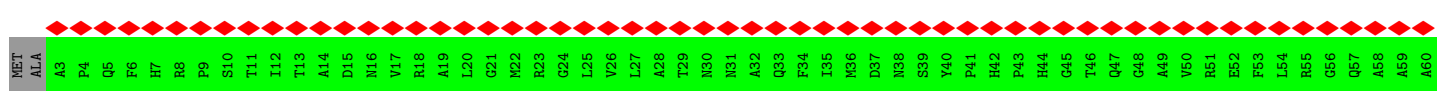
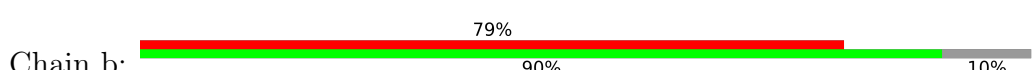
• Molecule 4: VP26

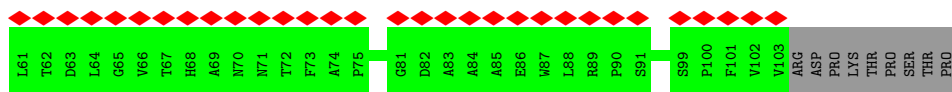


• Molecule 4: VP26

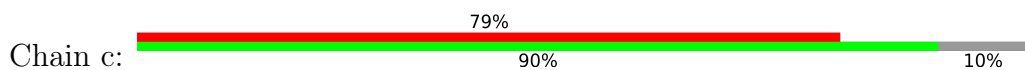


• Molecule 4: VP26

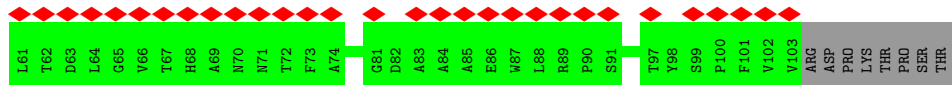
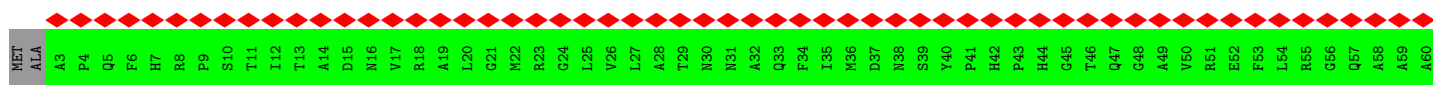




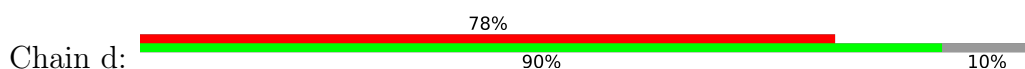
• Molecule 4: VP26



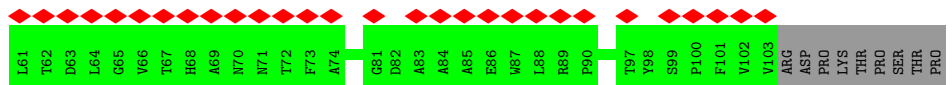
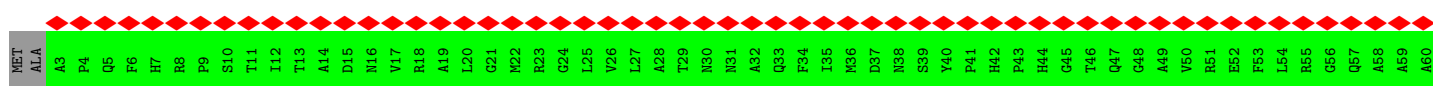
Chain c:



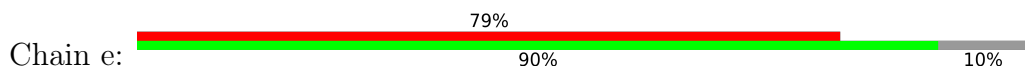
• Molecule 4: VP26



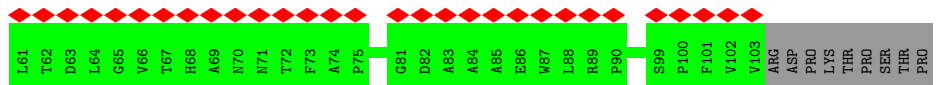
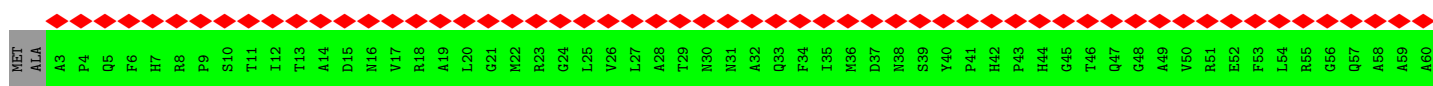
Chain d:



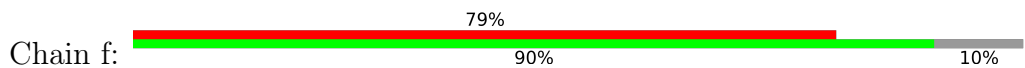
• Molecule 4: VP26



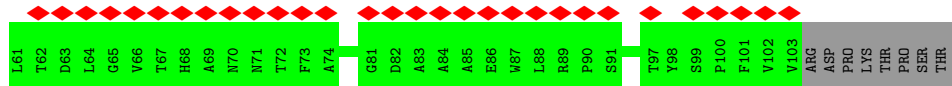
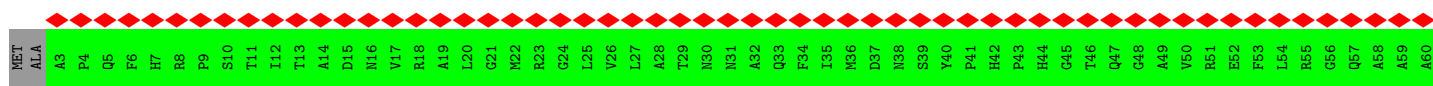
Chain e:



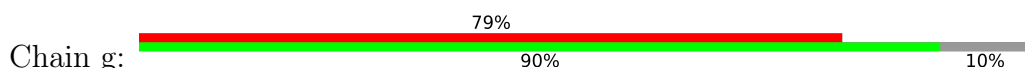
• Molecule 4: VP26



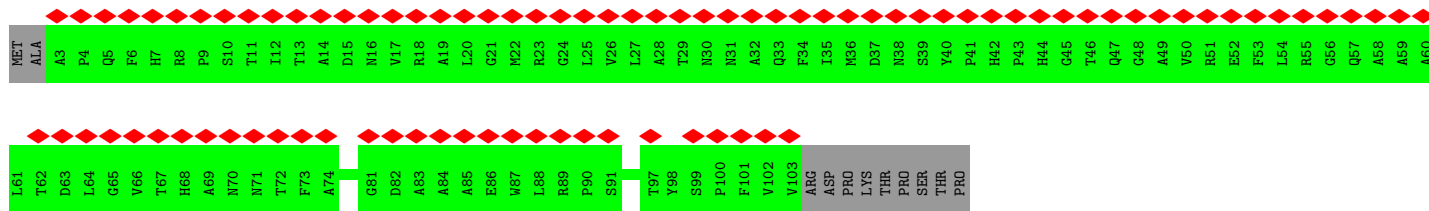
Chain f:



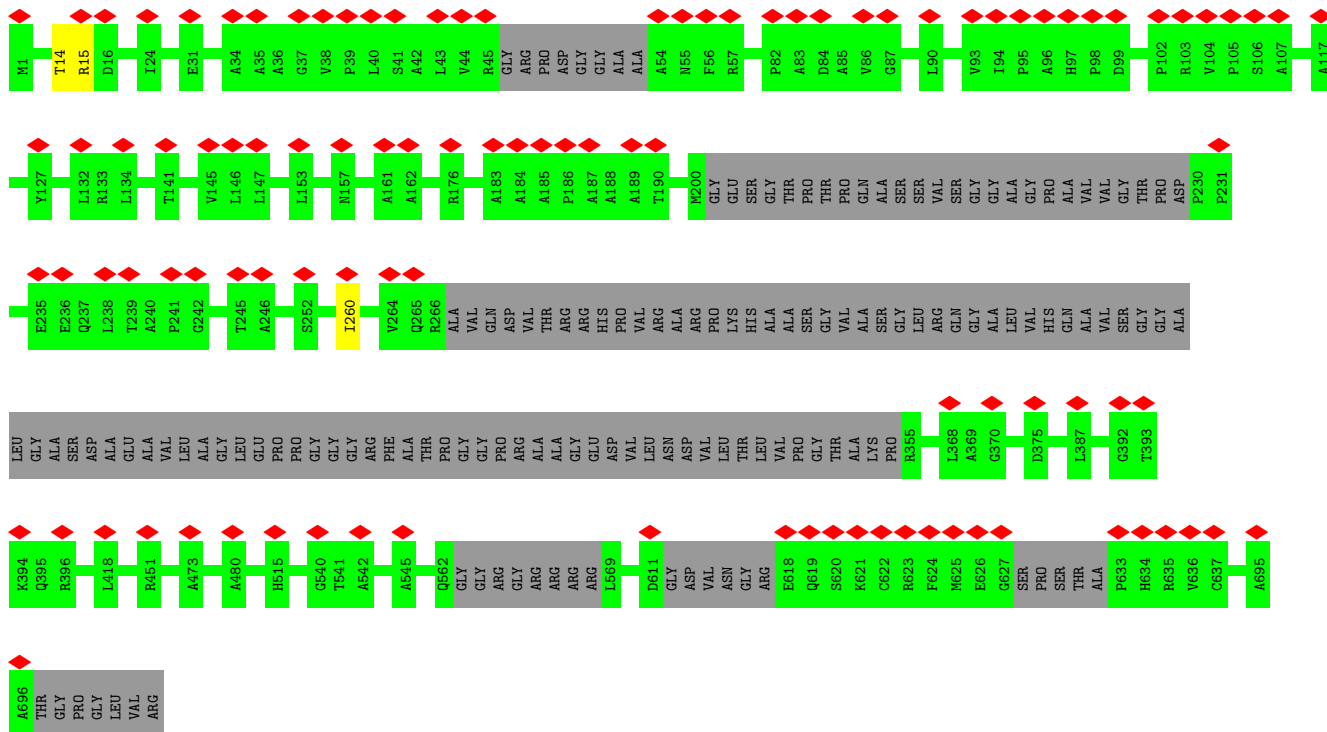
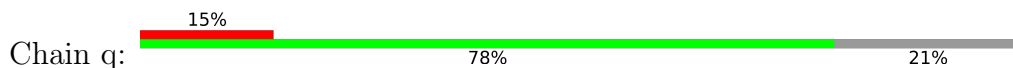
• Molecule 4: VP26



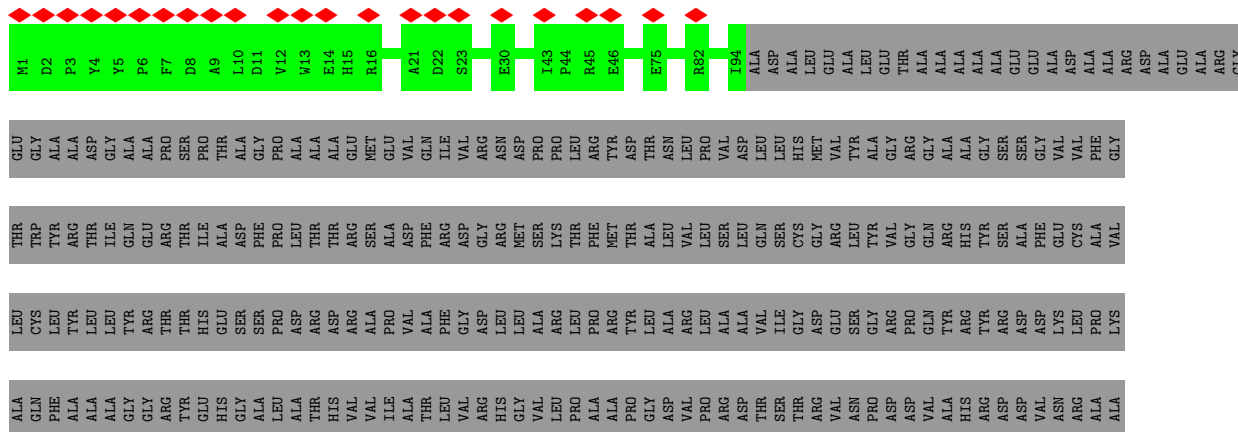
Chain g:



• Molecule 5: UL17



• Molecule 6: UL25



THR
LEU
HIS
ILE
SER
SER
ASP
GLU
HIS
SER
ASP
ALA
ASP
SER
LEU
ARG
PHE
SER
ASP
SER
ASP
THR
GLU
ALA
LEU
ASP
PRO
LEU
PRO
PRO
GLU
PRO
HIS
LEU
PRO
PRO
ALA
ASP
GLU
PRO
GLY
PRO
LEU
ALA
ALA
ASP
HIS
LEU
GLN
SER
PRO
HIS
SER
GLN
PHE
GLY
PRO

LEU
PRO
VAL
GLN
ALA
ASN
ALA
VAL
LEU
SER
ARG
ARG
TYR
VAL
R3076
S3076
I3077
L3121
GLY



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	56901	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	30	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	16.874	Depositor
Minimum map value	-9.664	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.739	Depositor
Recommended contour level	1.0	Depositor
Map size (\AA)	1656.0, 1656.0, 1656.0	wwPDB
Map dimensions	1200, 1200, 1200	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.38, 1.38, 1.38	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	1	0.42	0/2641	0.58	1/3594 (0.0%)
1	Q	0.34	0/2641	0.54	1/3594 (0.0%)
1	T	0.34	0/2647	0.56	1/3601 (0.0%)
1	W	0.34	0/2629	0.55	1/3579 (0.0%)
1	w	0.31	0/2647	0.53	1/3601 (0.0%)
2	2	0.52	0/2374	0.68	0/3247
2	3	0.48	0/2134	0.68	1/2921 (0.0%)
2	R	0.33	0/2134	0.61	2/2921 (0.1%)
2	S	0.33	0/2377	0.59	1/3251 (0.0%)
2	U	0.37	0/2134	0.65	3/2921 (0.1%)
2	V	0.35	0/2377	0.61	2/3251 (0.1%)
2	X	0.43	0/2134	0.67	2/2921 (0.1%)
2	Y	0.42	0/2377	0.63	1/3251 (0.0%)
2	x	0.35	0/2134	0.62	2/2921 (0.1%)
2	y	0.35	0/2368	0.59	2/3240 (0.1%)
3	A	0.46	1/9879 (0.0%)	0.54	0/13481
3	B	0.72	2/10603 (0.0%)	0.66	2/14473 (0.0%)
3	C	0.72	1/10610 (0.0%)	0.67	3/14483 (0.0%)
3	D	0.71	0/10672	0.69	8/14569 (0.1%)
3	E	0.73	2/10663 (0.0%)	0.71	3/14556 (0.0%)
3	F	0.71	1/10649 (0.0%)	0.69	1/14539 (0.0%)
3	G	0.41	0/10514	0.64	9/14356 (0.1%)
3	H	0.55	0/10674	0.62	3/14570 (0.0%)
3	I	0.58	1/10676 (0.0%)	0.64	5/14572 (0.0%)
3	J	0.58	0/10668	0.63	1/14567 (0.0%)
3	K	0.57	0/10674	0.63	3/14574 (0.0%)
3	L	0.59	1/10680 (0.0%)	0.62	1/14577 (0.0%)
3	M	0.53	0/10709	0.61	0/14619
3	N	0.54	0/10654	0.60	1/14544 (0.0%)
3	O	0.53	1/10676 (0.0%)	0.59	0/14577
3	P	0.61	3/10667 (0.0%)	0.63	1/14565 (0.0%)
4	b	0.31	0/795	0.48	0/1084
4	c	0.31	0/795	0.48	0/1084
4	d	0.31	0/795	0.48	0/1084

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
4	e	0.31	0/795	0.48	0/1084
4	f	0.31	0/795	0.48	0/1084
4	g	0.31	0/795	0.48	0/1084
4	h	0.29	0/795	0.52	0/1084
4	i	0.30	0/795	0.51	0/1084
4	j	0.29	0/795	0.53	1/1084 (0.1%)
4	k	0.29	0/795	0.52	1/1084 (0.1%)
4	l	0.31	0/795	0.54	0/1084
4	m	0.30	0/795	0.55	0/1084
4	n	0.28	0/795	0.50	1/1084 (0.1%)
4	o	0.29	0/795	0.51	1/1084 (0.1%)
4	p	0.30	0/795	0.51	0/1084
5	q	0.32	0/4350	0.48	0/5934
6	r	0.27	0/786	0.43	0/1074
6	s	0.30	0/667	0.44	0/908
7	t	0.23	0/385	0.38	0/514
7	u	0.26	0/385	0.40	0/514
All	All	0.55	13/223914 (0.0%)	0.62	66/305640 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	1	0	2
1	Q	0	3
1	T	0	2
1	W	0	2
1	w	0	2
2	2	0	1
2	S	0	1
2	U	0	1
2	V	0	1
2	X	0	1
2	Y	0	1
2	y	0	1
3	A	0	1
3	B	0	3
3	C	0	3
3	D	0	2
3	E	0	3

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
3	F	0	4
3	G	0	1
3	H	0	1
3	I	0	4
3	J	0	3
3	K	0	3
3	L	0	2
3	M	0	2
3	N	0	5
3	O	0	1
3	P	0	2
4	h	0	1
4	p	0	1
5	q	0	2
All	All	0	62

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	485	ASN	C-N	-21.55	0.93	1.34
3	C	485	ASN	C-N	-19.15	0.97	1.34
3	P	485	ASN	C-N	-18.89	0.98	1.34
3	L	485	ASN	C-N	-18.76	0.98	1.34
3	F	1116	ARG	C-N	-9.69	1.11	1.34
3	E	1312	LYS	C-N	-7.76	1.16	1.34
3	A	485	ASN	C-N	-6.54	1.21	1.34
3	O	255	THR	C-N	-5.71	1.21	1.34
3	I	1331	ALA	C-N	-5.61	1.21	1.34
3	B	708	THR	C-N	-5.54	1.21	1.34
3	P	1134	GLY	C-N	-5.39	1.21	1.34
3	E	1273	CYS	CB-SG	-5.12	1.73	1.81
3	P	478	HIS	C-N	-5.05	1.22	1.34

All (66) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	R	228	LEU	CA-CB-CG	9.51	137.16	115.30
3	D	43	ARG	N-CA-C	-8.90	86.97	111.00
3	K	1237	PRO	CA-N-CD	-8.51	99.59	111.50
2	U	228	LEU	CA-CB-CG	8.46	134.76	115.30
3	G	802	PRO	CA-N-CD	-8.27	99.93	111.50
2	3	228	LEU	CA-CB-CG	8.20	134.17	115.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	x	228	LEU	CA-CB-CG	8.10	133.93	115.30
2	X	228	LEU	CA-CB-CG	8.01	133.73	115.30
3	D	198	LEU	CB-CG-CD2	-7.76	97.81	111.00
3	B	58	LEU	CA-CB-CG	-6.87	99.50	115.30
2	Y	63	LEU	CA-CB-CG	6.87	131.10	115.30
3	I	159	LEU	CA-CB-CG	-6.65	100.00	115.30
2	V	63	LEU	CA-CB-CG	6.61	130.49	115.30
3	J	159	LEU	CA-CB-CG	-6.55	100.24	115.30
3	I	1331	ALA	C-N-CA	-6.37	105.77	121.70
3	N	58	LEU	CA-CB-CG	-6.35	100.69	115.30
2	R	176	LEU	CA-CB-CG	6.30	129.78	115.30
3	G	1236	ARG	N-CA-C	-6.21	94.24	111.00
2	y	63	LEU	CA-CB-CG	6.14	129.42	115.30
1	T	39	PRO	C-N-CD	-6.08	107.22	120.60
3	H	894	LEU	CA-CB-CG	6.08	129.27	115.30
2	X	176	LEU	CA-CB-CG	6.07	129.25	115.30
3	G	311	LEU	CA-CB-CG	5.97	129.02	115.30
3	H	892	LEU	CA-CB-CG	-5.93	101.65	115.30
3	H	58	LEU	CA-CB-CG	-5.88	101.77	115.30
3	C	58	LEU	CA-CB-CG	-5.83	101.89	115.30
2	S	63	LEU	CA-CB-CG	5.82	128.68	115.30
1	w	39	PRO	C-N-CD	-5.82	107.80	120.60
3	D	71	LEU	CA-CB-CG	-5.80	101.96	115.30
3	I	1020	LEU	CB-CG-CD2	-5.79	101.17	111.00
2	U	176	LEU	CA-CB-CG	5.76	128.55	115.30
1	W	199	ASP	N-CA-C	5.73	126.47	111.00
3	D	485	ASN	N-CA-C	-5.72	95.56	111.00
3	D	199	LEU	CA-CB-CG	-5.60	102.43	115.30
3	E	159	LEU	CA-CB-CG	-5.58	102.46	115.30
3	C	989	LEU	CA-CB-CG	-5.58	102.46	115.30
1	1	39	PRO	C-N-CD	-5.55	108.38	120.60
3	D	945	LEU	CA-CB-CG	-5.55	102.54	115.30
3	C	1342	LEU	CB-CG-CD2	-5.51	101.63	111.00
3	D	159	LEU	CA-CB-CG	-5.50	102.64	115.30
3	G	195	LEU	CA-CB-CG	5.50	127.95	115.30
2	V	223	LEU	CA-CB-CG	5.49	127.94	115.30
3	P	198	LEU	CB-CG-CD2	-5.48	101.68	111.00
3	K	466	LEU	CA-CB-CG	5.47	127.88	115.30
3	K	159	LEU	CA-CB-CG	-5.45	102.77	115.30
3	D	1020	LEU	CB-CG-CD2	-5.43	101.77	111.00
3	G	958	LEU	C-N-CD	5.41	139.76	128.40
3	B	989	LEU	CA-CB-CG	-5.39	102.89	115.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	1020	LEU	CB-CG-CD2	-5.38	101.86	111.00
4	o	88	LEU	CA-CB-CG	5.38	127.67	115.30
2	y	223	LEU	CA-CB-CG	5.32	127.53	115.30
4	j	88	LEU	CA-CB-CG	5.27	127.43	115.30
2	x	176	LEU	CA-CB-CG	5.25	127.37	115.30
3	G	757	ASP	CB-CG-OD2	5.24	123.02	118.30
3	F	467	MET	CA-CB-CG	-5.23	104.41	113.30
3	E	58	LEU	CA-CB-CG	-5.22	103.29	115.30
3	G	1348	ASP	CB-CG-OD2	5.20	122.98	118.30
3	L	1134	GLY	C-N-CA	-5.19	108.72	121.70
3	G	229	ASP	CB-CG-OD2	5.18	122.97	118.30
4	k	88	LEU	CA-CB-CG	5.17	127.20	115.30
3	G	372	ASP	CB-CG-OD2	5.13	122.91	118.30
4	n	88	LEU	CA-CB-CG	5.11	127.04	115.30
3	I	783	LEU	CA-CB-CG	-5.08	103.63	115.30
1	Q	39	PRO	C-N-CD	-5.06	109.47	120.60
3	I	1036	LEU	CA-CB-CG	-5.04	103.70	115.30
2	U	202	LEU	CA-CB-CG	5.02	126.84	115.30

There are no chirality outliers.

All (62) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1	40	PRO	Peptide
1	1	80	ARG	Peptide
2	2	241	LEU	Peptide
3	A	112	VAL	Peptide
3	B	133	PHE	Peptide
3	B	79	CYS	Peptide
3	B	966	GLY	Peptide
3	C	133	PHE	Peptide
3	C	447	HIS	Peptide
3	C	469	ILE	Peptide
3	D	133	PHE	Peptide
3	D	54	PHE	Peptide
3	E	133	PHE	Peptide
3	E	1357	HIS	Peptide
3	E	908	LEU	Peptide
3	F	1138	LEU	Peptide
3	F	133	PHE	Peptide
3	F	1357	HIS	Peptide
3	F	749	ASP	Peptide

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
3	G	133	PHE	Peptide
3	H	133	PHE	Peptide
3	I	1357	HIS	Peptide
3	I	469	ILE	Peptide
3	I	794	ALA	Peptide
3	I	946	ASP	Peptide
3	J	1067	GLU	Peptide
3	J	754	CYS	Peptide
3	J	79	CYS	Peptide
3	K	133	PHE	Peptide
3	K	1357	HIS	Peptide
3	K	908	LEU	Peptide
3	L	103	LEU	Peptide
3	L	1067	GLU	Peptide
3	M	133	PHE	Peptide
3	M	79	CYS	Peptide
3	N	133	PHE	Peptide
3	N	341	GLU	Peptide
3	N	342	GLU	Peptide
3	N	43	ARG	Peptide
3	N	784	LEU	Peptide
3	O	133	PHE	Peptide
3	P	133	PHE	Peptide
3	P	469	ILE	Peptide
1	Q	40	PRO	Peptide
1	Q	7	PRO	Peptide
1	Q	80	ARG	Peptide
2	S	241	LEU	Peptide
1	T	40	PRO	Peptide
1	T	80	ARG	Peptide
2	U	315	ILE	Peptide
2	V	241	LEU	Peptide
1	W	40	PRO	Peptide
1	W	80	ARG	Peptide
2	X	315	ILE	Peptide
2	Y	241	LEU	Peptide
4	h	94	LEU	Peptide
4	p	92	PHE	Peptide
5	q	14	THR	Peptide
5	q	260	ILE	Peptide
1	w	40	PRO	Peptide
1	w	80	ARG	Peptide

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
2	y	241	LEU	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	1	338/466 (72%)	314 (93%)	23 (7%)	1 (0%)	41	74
1	Q	338/466 (72%)	315 (93%)	22 (6%)	1 (0%)	41	74
1	T	338/466 (72%)	311 (92%)	26 (8%)	1 (0%)	41	74
1	W	338/466 (72%)	312 (92%)	25 (7%)	1 (0%)	41	74
1	w	338/466 (72%)	314 (93%)	23 (7%)	1 (0%)	41	74
2	2	304/318 (96%)	279 (92%)	23 (8%)	2 (1%)	22	59
2	3	272/318 (86%)	254 (93%)	18 (7%)	0	100	100
2	R	272/318 (86%)	252 (93%)	20 (7%)	0	100	100
2	S	304/318 (96%)	278 (91%)	26 (9%)	0	100	100
2	U	272/318 (86%)	248 (91%)	24 (9%)	0	100	100
2	V	304/318 (96%)	280 (92%)	22 (7%)	2 (1%)	22	59
2	X	272/318 (86%)	254 (93%)	18 (7%)	0	100	100
2	Y	304/318 (96%)	280 (92%)	23 (8%)	1 (0%)	41	74
2	x	272/318 (86%)	253 (93%)	19 (7%)	0	100	100
2	y	304/318 (96%)	282 (93%)	20 (7%)	2 (1%)	22	59
3	A	1243/1374 (90%)	1163 (94%)	79 (6%)	1 (0%)	51	83
3	B	1353/1374 (98%)	1264 (93%)	88 (6%)	1 (0%)	51	83

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	1348/1374 (98%)	1247 (92%)	99 (7%)	2 (0%)	51	83
3	D	1360/1374 (99%)	1262 (93%)	96 (7%)	2 (0%)	51	83
3	E	1358/1374 (99%)	1243 (92%)	112 (8%)	3 (0%)	47	78
3	F	1358/1374 (99%)	1254 (92%)	103 (8%)	1 (0%)	51	83
3	G	1342/1374 (98%)	1251 (93%)	89 (7%)	2 (0%)	51	83
3	H	1358/1374 (99%)	1254 (92%)	101 (7%)	3 (0%)	47	78
3	I	1358/1374 (99%)	1232 (91%)	122 (9%)	4 (0%)	41	74
3	J	1360/1374 (99%)	1246 (92%)	110 (8%)	4 (0%)	41	74
3	K	1360/1374 (99%)	1241 (91%)	115 (8%)	4 (0%)	41	74
3	L	1358/1374 (99%)	1245 (92%)	109 (8%)	4 (0%)	41	74
3	M	1362/1374 (99%)	1244 (91%)	117 (9%)	1 (0%)	51	83
3	N	1358/1374 (99%)	1240 (91%)	116 (8%)	2 (0%)	51	83
3	O	1362/1374 (99%)	1250 (92%)	108 (8%)	4 (0%)	41	74
3	P	1360/1374 (99%)	1231 (90%)	129 (10%)	0	100	100
4	b	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	c	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	d	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	e	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	f	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	g	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	h	99/112 (88%)	97 (98%)	2 (2%)	0	100	100
4	i	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	j	99/112 (88%)	94 (95%)	5 (5%)	0	100	100
4	k	99/112 (88%)	98 (99%)	1 (1%)	0	100	100
4	l	99/112 (88%)	96 (97%)	3 (3%)	0	100	100
4	m	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
4	n	99/112 (88%)	96 (97%)	3 (3%)	0	100	100
4	o	99/112 (88%)	97 (98%)	2 (2%)	0	100	100
4	p	99/112 (88%)	95 (96%)	4 (4%)	0	100	100
5	q	540/702 (77%)	515 (95%)	24 (4%)	1 (0%)	47	78
6	r	92/585 (16%)	84 (91%)	8 (9%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	s	78/585 (13%)	73 (94%)	5 (6%)	0	100	100
7	t	45/3122 (1%)	43 (96%)	2 (4%)	0	100	100
7	u	45/3122 (1%)	43 (96%)	2 (4%)	0	100	100
All	All	28453/37290 (76%)	26284 (92%)	2118 (7%)	51 (0%)	50	78

All (51) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	1	7	PRO
1	w	7	PRO
3	I	485	ASN
1	Q	7	PRO
1	T	7	PRO
2	V	242	GLN
1	W	7	PRO
2	Y	242	GLN
2	2	242	GLN
3	G	1198	TYR
2	V	241	LEU
3	I	383	ARG
3	J	1226	MET
3	K	342	GLU
3	L	1358	PHE
3	H	774	ALA
3	H	1358	PHE
3	N	1226	MET
3	N	1358	PHE
3	O	774	ALA
3	O	1358	PHE
3	C	231	SER
3	C	1358	PHE
3	E	342	GLU
3	G	959	PRO
2	y	242	GLN
3	J	485	ASN
3	J	774	ALA
3	J	1068	ARG
3	K	774	ALA
3	K	1226	MET
3	L	231	SER
3	L	1068	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	A	445	LYS
3	O	231	SER
3	O	1226	MET
3	B	774	ALA
3	D	1358	PHE
5	q	15	ARG
3	E	231	SER
2	2	241	LEU
2	y	241	LEU
3	I	1226	MET
3	L	1226	MET
3	H	231	SER
3	E	321	VAL
3	M	8	PRO
3	I	272	ARG
3	D	652	ILE
3	K	485	ASN
3	F	689	VAL

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	1	246/365 (67%)	245 (100%)	1 (0%)	91	95
1	Q	246/365 (67%)	246 (100%)	0	100	100
1	T	247/365 (68%)	247 (100%)	0	100	100
1	W	243/365 (67%)	243 (100%)	0	100	100
1	w	247/365 (68%)	247 (100%)	0	100	100
2	2	254/264 (96%)	252 (99%)	2 (1%)	81	89
2	3	214/264 (81%)	212 (99%)	2 (1%)	78	88
2	R	214/264 (81%)	213 (100%)	1 (0%)	88	94
2	S	255/264 (97%)	255 (100%)	0	100	100
2	U	214/264 (81%)	212 (99%)	2 (1%)	78	88

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	V	255/264 (97%)	254 (100%)	1 (0%)	91	95
2	X	214/264 (81%)	212 (99%)	2 (1%)	78	88
2	Y	255/264 (97%)	255 (100%)	0	100	100
2	x	214/264 (81%)	212 (99%)	2 (1%)	78	88
2	y	253/264 (96%)	252 (100%)	1 (0%)	91	95
3	A	997/1080 (92%)	996 (100%)	1 (0%)	93	98
3	B	1060/1080 (98%)	1059 (100%)	1 (0%)	93	98
3	C	1063/1080 (98%)	1062 (100%)	1 (0%)	93	98
3	D	1069/1080 (99%)	1068 (100%)	1 (0%)	93	98
3	E	1068/1080 (99%)	1068 (100%)	0	100	100
3	F	1066/1080 (99%)	1065 (100%)	1 (0%)	93	98
3	G	1053/1080 (98%)	1042 (99%)	11 (1%)	76	86
3	H	1070/1080 (99%)	1070 (100%)	0	100	100
3	I	1071/1080 (99%)	1071 (100%)	0	100	100
3	J	1069/1080 (99%)	1068 (100%)	1 (0%)	93	98
3	K	1070/1080 (99%)	1070 (100%)	0	100	100
3	L	1072/1080 (99%)	1071 (100%)	1 (0%)	93	98
3	M	1075/1080 (100%)	1075 (100%)	0	100	100
3	N	1066/1080 (99%)	1064 (100%)	2 (0%)	93	97
3	O	1067/1080 (99%)	1067 (100%)	0	100	100
3	P	1068/1080 (99%)	1068 (100%)	0	100	100
4	b	78/88 (89%)	78 (100%)	0	100	100
4	c	78/88 (89%)	78 (100%)	0	100	100
4	d	78/88 (89%)	78 (100%)	0	100	100
4	e	78/88 (89%)	78 (100%)	0	100	100
4	f	78/88 (89%)	78 (100%)	0	100	100
4	g	78/88 (89%)	78 (100%)	0	100	100
4	h	78/88 (89%)	78 (100%)	0	100	100
4	i	78/88 (89%)	78 (100%)	0	100	100
4	j	78/88 (89%)	78 (100%)	0	100	100
4	k	78/88 (89%)	78 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	l	78/88 (89%)	78 (100%)	0	100	100
4	m	78/88 (89%)	78 (100%)	0	100	100
4	n	78/88 (89%)	78 (100%)	0	100	100
4	o	78/88 (89%)	78 (100%)	0	100	100
4	p	78/88 (89%)	78 (100%)	0	100	100
5	q	427/529 (81%)	427 (100%)	0	100	100
6	r	77/450 (17%)	77 (100%)	0	100	100
6	s	65/450 (14%)	65 (100%)	0	100	100
7	t	41/2370 (2%)	41 (100%)	0	100	100
7	u	41/2370 (2%)	41 (100%)	0	100	100
All	All	22396/29234 (77%)	22362 (100%)	34 (0%)	93	97

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	R	228	LEU
2	U	116	LEU
2	U	228	LEU
2	V	93	THR
2	X	116	LEU
2	X	228	LEU
1	1	266	VAL
2	3	116	LEU
2	3	228	LEU
2	2	51	PHE
2	2	315	ILE
2	x	116	LEU
2	x	228	LEU
2	y	93	THR
3	J	454	MET
3	L	745	HIS
3	A	84	PHE
3	N	339	MET
3	N	745	HIS
3	B	84	PHE
3	C	84	PHE
3	D	745	HIS
3	F	84	PHE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	G	37	ASP
3	G	49	LEU
3	G	53	GLU
3	G	451	ARG
3	G	519	ARG
3	G	550	PHE
3	G	745	HIS
3	G	938	LEU
3	G	956	TYR
3	G	1197	ASN
3	G	1238	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (473) such sidechains are listed below:

Mol	Chain	Res	Type
1	Q	109	HIS
1	Q	121	GLN
1	Q	136	HIS
2	R	25	GLN
2	R	182	ASN
2	S	164	ASN
2	S	199	ASN
1	T	121	GLN
1	T	136	HIS
1	T	210	HIS
2	U	25	GLN
2	V	124	GLN
2	V	199	ASN
2	X	25	GLN
2	X	40	GLN
2	X	48	HIS
2	X	99	ASN
2	Y	193	GLN
2	Y	199	ASN
2	Y	238	ASN
1	1	121	GLN
2	3	25	GLN
2	3	40	GLN
2	3	99	ASN
2	2	164	ASN
1	w	121	GLN
2	y	164	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	y	193	GLN
2	y	199	ASN
3	I	63	ASN
3	I	114	GLN
3	I	163	GLN
3	I	186	HIS
3	I	266	HIS
3	I	335	HIS
3	I	429	HIS
3	I	448	GLN
3	I	456	ASN
3	I	463	HIS
3	I	478	HIS
3	I	485	ASN
3	I	515	HIS
3	I	579	ASN
3	I	719	GLN
3	I	785	HIS
3	I	863	HIS
3	I	880	HIS
3	I	895	GLN
3	I	899	HIS
3	I	943	GLN
3	I	969	HIS
3	I	1004	GLN
3	I	1008	GLN
3	I	1045	HIS
3	I	1083	HIS
3	J	63	ASN
3	J	163	GLN
3	J	266	HIS
3	J	429	HIS
3	J	456	ASN
3	J	478	HIS
3	J	485	ASN
3	J	507	ASN
3	J	515	HIS
3	J	604	HIS
3	J	639	HIS
3	J	696	HIS
3	J	723	ASN
3	J	724	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	J	788	GLN
3	J	800	HIS
3	J	863	HIS
3	J	899	HIS
3	J	972	ASN
3	J	986	HIS
3	J	1004	GLN
3	J	1039	GLN
3	J	1045	HIS
3	J	1128	ASN
3	J	1243	ASN
3	K	63	ASN
3	K	114	GLN
3	K	410	ASN
3	K	429	HIS
3	K	439	GLN
3	K	456	ASN
3	K	478	HIS
3	K	485	ASN
3	K	515	HIS
3	K	604	HIS
3	K	724	HIS
3	K	863	HIS
3	K	961	HIS
3	K	969	HIS
3	K	972	ASN
3	K	1004	GLN
3	K	1008	GLN
3	K	1045	HIS
3	K	1181	GLN
3	K	1264	ASN
3	L	47	ASN
3	L	163	GLN
3	L	186	HIS
3	L	266	HIS
3	L	335	HIS
3	L	429	HIS
3	L	456	ASN
3	L	515	HIS
3	L	604	HIS
3	L	724	HIS
3	L	745	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L	840	GLN
3	L	863	HIS
3	L	880	HIS
3	L	881	ASN
3	L	895	GLN
3	L	899	HIS
3	L	947	HIS
3	L	969	HIS
3	L	972	ASN
3	L	1004	GLN
3	L	1128	ASN
3	L	1155	ASN
3	M	47	ASN
3	M	63	ASN
3	M	156	HIS
3	M	158	GLN
3	M	164	GLN
3	M	266	HIS
3	M	335	HIS
3	M	429	HIS
3	M	447	HIS
3	M	456	ASN
3	M	478	HIS
3	M	485	ASN
3	M	515	HIS
3	M	604	HIS
3	M	724	HIS
3	M	840	GLN
3	M	866	HIS
3	M	876	ASN
3	M	899	HIS
3	M	961	HIS
3	M	972	ASN
3	M	1004	GLN
3	M	1008	GLN
3	M	1045	HIS
3	M	1127	GLN
3	M	1128	ASN
3	M	1155	ASN
3	A	100	HIS
3	A	186	HIS
3	A	266	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	A	410	ASN
3	A	439	GLN
3	A	447	HIS
3	A	456	ASN
3	A	463	HIS
3	A	515	HIS
3	A	581	ASN
3	A	604	HIS
3	A	717	GLN
3	A	724	HIS
3	A	751	HIS
3	A	788	GLN
3	A	863	HIS
3	A	880	HIS
3	A	881	ASN
3	A	899	HIS
3	A	934	HIS
3	A	961	HIS
3	A	969	HIS
3	A	972	ASN
3	A	1004	GLN
3	A	1008	GLN
3	A	1018	ASN
3	A	1045	HIS
3	A	1264	ASN
3	H	47	ASN
3	H	63	ASN
3	H	96	GLN
3	H	163	GLN
3	H	266	HIS
3	H	429	HIS
3	H	456	ASN
3	H	478	HIS
3	H	485	ASN
3	H	604	HIS
3	H	631	GLN
3	H	696	HIS
3	H	723	ASN
3	H	724	HIS
3	H	751	HIS
3	H	788	GLN
3	H	840	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	H	869	ASN
3	H	899	HIS
3	H	972	ASN
3	H	1004	GLN
3	H	1018	ASN
3	H	1090	ASN
3	H	1128	ASN
3	H	1141	ASN
3	H	1155	ASN
3	H	1181	GLN
4	h	44	HIS
4	h	71	ASN
4	i	33	GLN
4	i	44	HIS
4	i	68	HIS
4	j	30	ASN
4	k	68	HIS
4	k	71	ASN
4	l	7	HIS
4	l	33	GLN
4	l	68	HIS
4	m	44	HIS
4	m	68	HIS
4	m	71	ASN
4	n	68	HIS
4	o	68	HIS
4	o	71	ASN
4	p	44	HIS
4	p	68	HIS
3	N	47	ASN
3	N	96	GLN
3	N	163	GLN
3	N	266	HIS
3	N	429	HIS
3	N	439	GLN
3	N	448	GLN
3	N	463	HIS
3	N	485	ASN
3	N	515	HIS
3	N	581	ASN
3	N	639	HIS
3	N	724	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	N	785	HIS
3	N	786	ASN
3	N	899	HIS
3	N	961	HIS
3	N	972	ASN
3	N	1004	GLN
3	N	1045	HIS
3	N	1083	HIS
3	N	1243	ASN
3	N	1262	HIS
3	N	1264	ASN
3	O	63	ASN
3	O	96	GLN
3	O	266	HIS
3	O	335	HIS
3	O	429	HIS
3	O	456	ASN
3	O	478	HIS
3	O	485	ASN
3	O	515	HIS
3	O	604	HIS
3	O	639	HIS
3	O	723	ASN
3	O	745	HIS
3	O	788	GLN
3	O	863	HIS
3	O	880	HIS
3	O	899	HIS
3	O	943	GLN
3	O	947	HIS
3	O	969	HIS
3	O	1004	GLN
3	O	1008	GLN
3	O	1018	ASN
3	O	1045	HIS
3	O	1083	HIS
3	O	1128	ASN
3	O	1155	ASN
3	P	110	HIS
3	P	429	HIS
3	P	456	ASN
3	P	478	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	P	485	ASN
3	P	515	HIS
3	P	604	HIS
3	P	631	GLN
3	P	717	GLN
3	P	719	GLN
3	P	723	ASN
3	P	724	HIS
3	P	751	HIS
3	P	786	ASN
3	P	788	GLN
3	P	869	ASN
3	P	899	HIS
3	P	951	ASN
3	P	969	HIS
3	P	1009	HIS
3	P	1045	HIS
3	P	1128	ASN
3	P	1155	ASN
3	P	1181	GLN
3	P	1360	GLN
3	B	163	GLN
3	B	429	HIS
3	B	456	ASN
3	B	478	HIS
3	B	525	GLN
3	B	604	HIS
3	B	719	GLN
3	B	723	ASN
3	B	788	GLN
3	B	863	HIS
3	B	866	HIS
3	B	895	GLN
3	B	899	HIS
3	B	943	GLN
3	B	947	HIS
3	B	969	HIS
3	B	972	ASN
3	B	986	HIS
3	B	1004	GLN
3	B	1008	GLN
3	B	1018	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	B	1045	HIS
3	B	1083	HIS
3	B	1128	ASN
3	B	1181	GLN
3	B	1262	HIS
3	C	266	HIS
3	C	429	HIS
3	C	439	GLN
3	C	456	ASN
3	C	478	HIS
3	C	485	ASN
3	C	515	HIS
3	C	604	HIS
3	C	723	ASN
3	C	785	HIS
3	C	786	ASN
3	C	841	ASN
3	C	869	ASN
3	C	880	HIS
3	C	899	HIS
3	C	934	HIS
3	C	1004	GLN
3	C	1008	GLN
3	C	1045	HIS
3	C	1077	GLN
3	C	1083	HIS
3	C	1128	ASN
3	D	63	ASN
3	D	96	GLN
3	D	110	HIS
3	D	118	ASN
3	D	156	HIS
3	D	163	GLN
3	D	429	HIS
3	D	485	ASN
3	D	581	ASN
3	D	604	HIS
3	D	639	HIS
3	D	650	GLN
3	D	717	GLN
3	D	723	ASN
3	D	788	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	D	863	HIS
3	D	869	ASN
3	D	880	HIS
3	D	899	HIS
3	D	934	HIS
3	D	961	HIS
3	D	969	HIS
3	D	972	ASN
3	D	1004	GLN
3	D	1009	HIS
3	D	1018	ASN
3	D	1181	GLN
5	q	61	GLN
5	q	65	HIS
5	q	173	HIS
5	q	195	HIS
5	q	389	HIS
5	q	548	HIS
5	q	619	GLN
3	E	63	ASN
3	E	163	GLN
3	E	266	HIS
3	E	429	HIS
3	E	448	GLN
3	E	478	HIS
3	E	485	ASN
3	E	515	HIS
3	E	579	ASN
3	E	604	HIS
3	E	639	HIS
3	E	717	GLN
3	E	719	GLN
3	E	723	ASN
3	E	724	HIS
3	E	788	GLN
3	E	863	HIS
3	E	899	HIS
3	E	934	HIS
3	E	947	HIS
3	E	961	HIS
3	E	969	HIS
3	E	1004	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	E	1008	GLN
3	E	1039	GLN
3	E	1045	HIS
3	E	1127	GLN
3	E	1181	GLN
3	E	1243	ASN
6	r	93	HIS
3	F	110	HIS
3	F	266	HIS
3	F	429	HIS
3	F	448	GLN
3	F	485	ASN
3	F	515	HIS
3	F	581	ASN
3	F	604	HIS
3	F	639	HIS
3	F	650	GLN
3	F	719	GLN
3	F	761	HIS
3	F	785	HIS
3	F	788	GLN
3	F	863	HIS
3	F	899	HIS
3	F	900	ASN
3	F	934	HIS
3	F	947	HIS
3	F	961	HIS
3	F	969	HIS
3	F	1004	GLN
3	F	1008	GLN
3	F	1045	HIS
3	F	1128	ASN
3	F	1262	HIS
6	s	90	GLN
3	G	32	HIS
3	G	114	GLN
3	G	118	ASN
3	G	183	GLN
3	G	266	HIS
3	G	429	HIS
3	G	456	ASN
3	G	658	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	G	717	GLN
3	G	723	ASN
3	G	724	HIS
3	G	777	ASN
3	G	863	HIS
3	G	866	HIS
3	G	934	HIS
3	G	969	HIS
3	G	1004	GLN
3	G	1039	GLN
3	G	1045	HIS
3	G	1117	ASN
3	G	1128	ASN
3	G	1262	HIS
7	t	3093	GLN
4	b	44	HIS
4	b	68	HIS
4	c	44	HIS
4	c	57	GLN
4	c	68	HIS
4	d	44	HIS
4	e	44	HIS
4	e	68	HIS
4	f	44	HIS
4	g	44	HIS
7	u	3095	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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
3	E	1
3	F	1
3	L	1
3	P	1
3	C	1
3	B	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	1312:LYS	C	1313:ARG	N	1.16
1	F	1116:ARG	C	1117:ASN	N	1.11
1	L	485:ASN	C	486:PRO	N	0.98
1	P	485:ASN	C	486:PRO	N	0.98
1	C	485:ASN	C	486:PRO	N	0.97
1	B	485:ASN	C	486:PRO	N	0.93

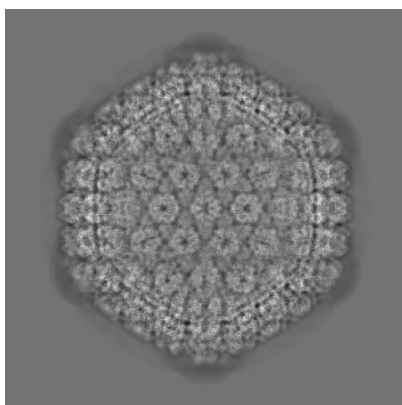
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6976. These allow visual inspection of the internal detail of the map and identification of artifacts.

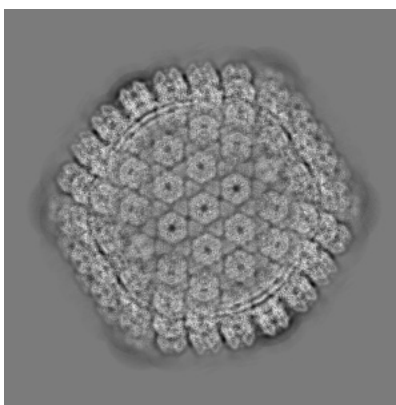
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

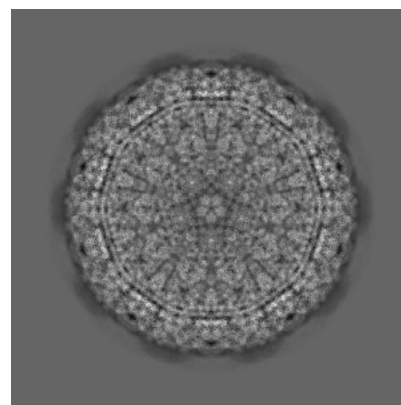
6.1.1 Primary map



X



Y



Z

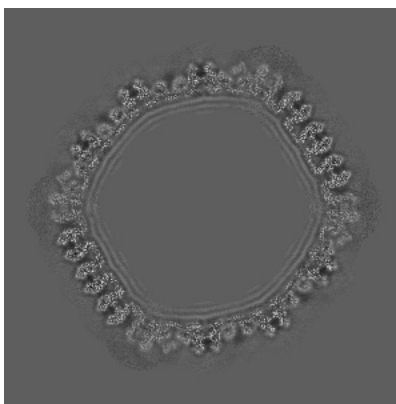
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

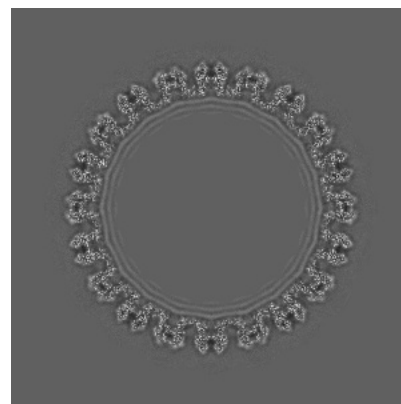
6.2.1 Primary map



X Index: 600



Y Index: 600

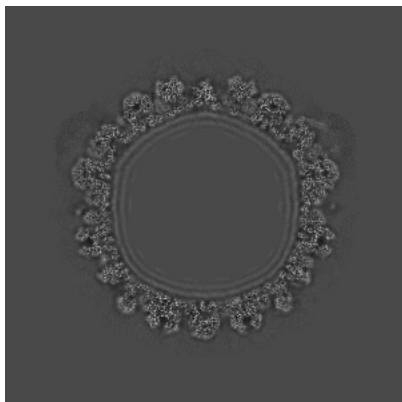


Z Index: 600

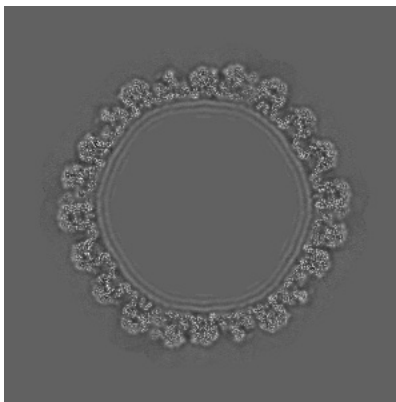
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

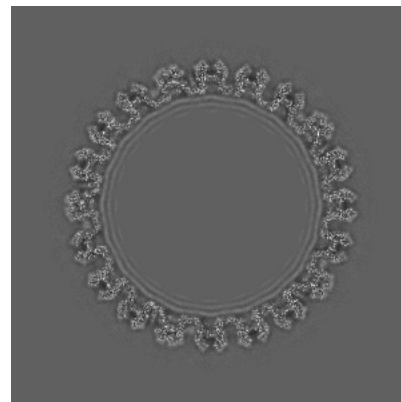
6.3.1 Primary map



X Index: 775



Y Index: 502



Z Index: 595

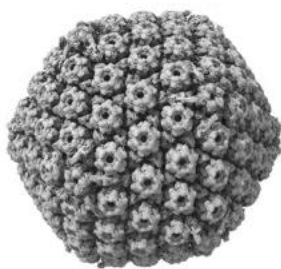
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

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

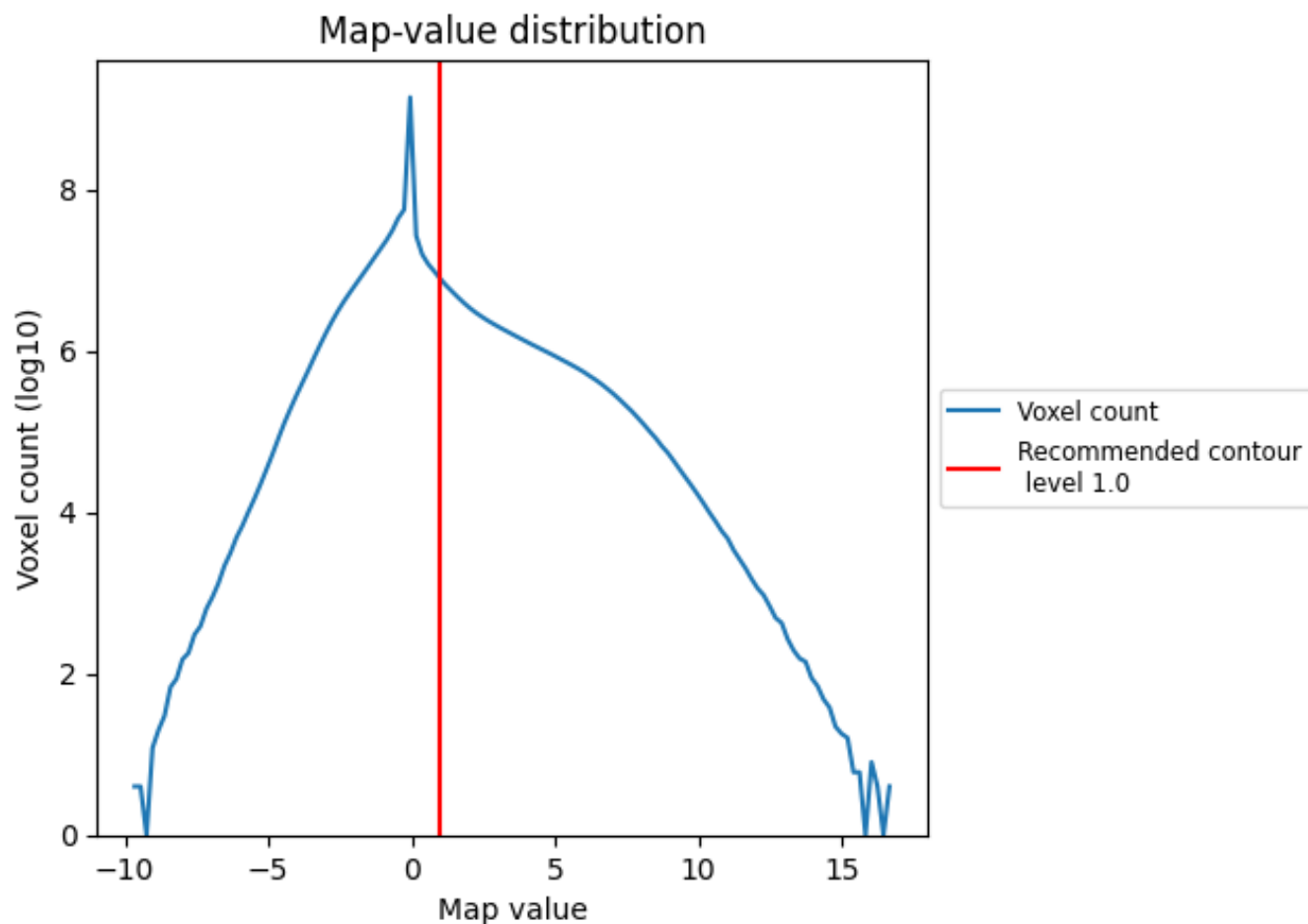
6.5 Mask visualisation

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

7 Map analysis [i](#)

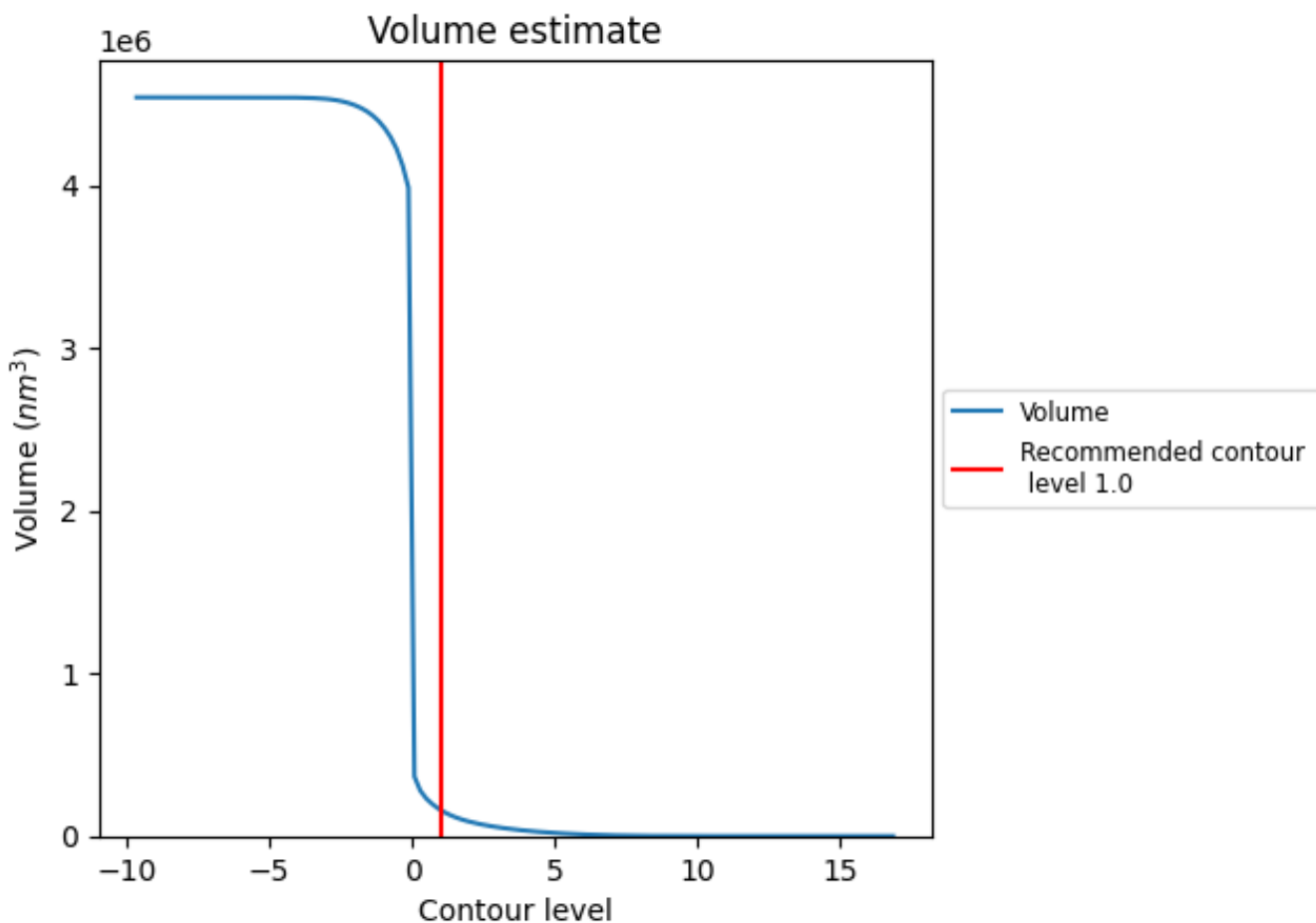
This section contains the results of statistical analysis of the map.

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.

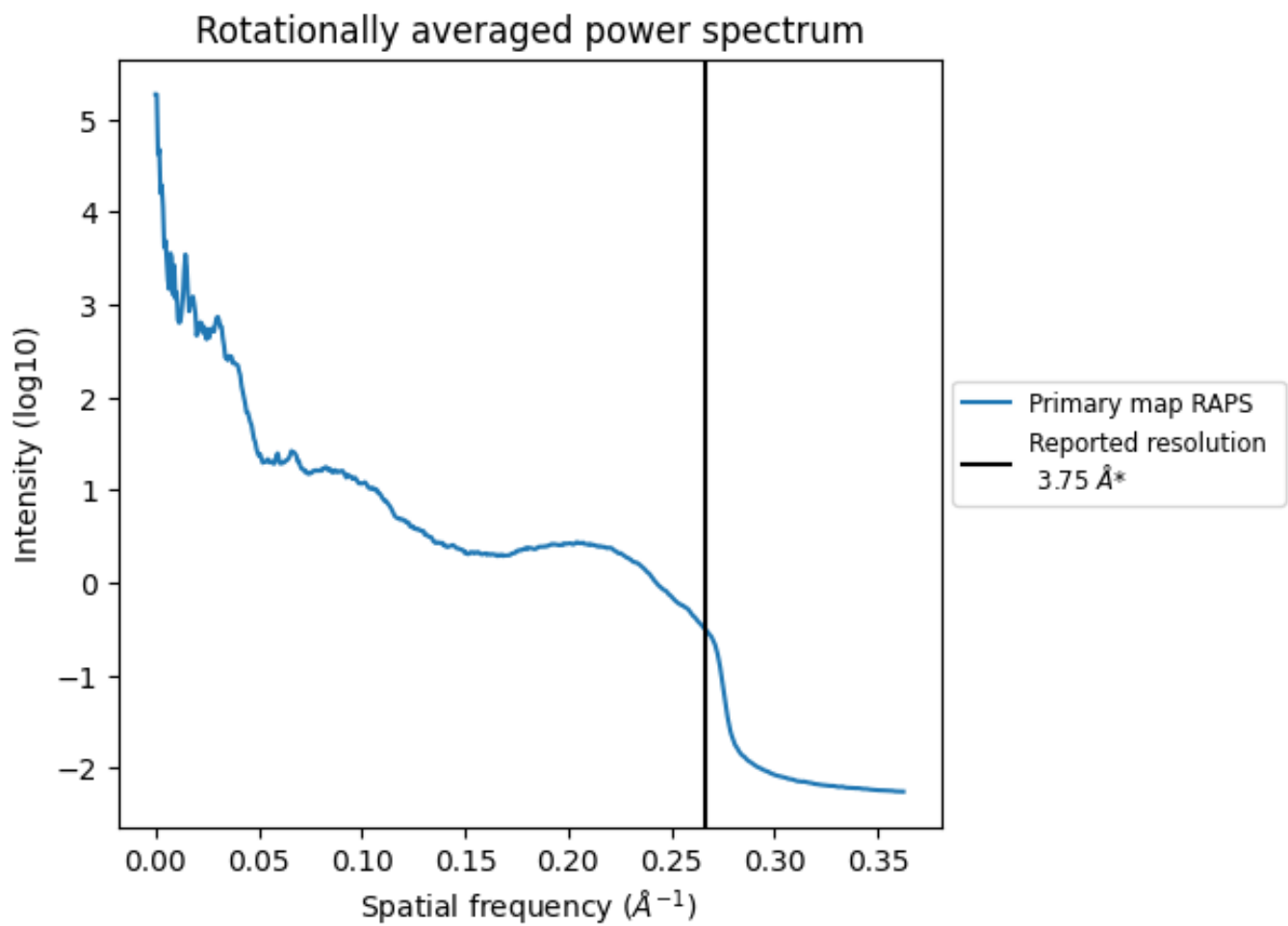
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 160951 nm^3 ; this corresponds to an approximate mass of 145391 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 0.267 Å⁻¹

8 Fourier-Shell correlation

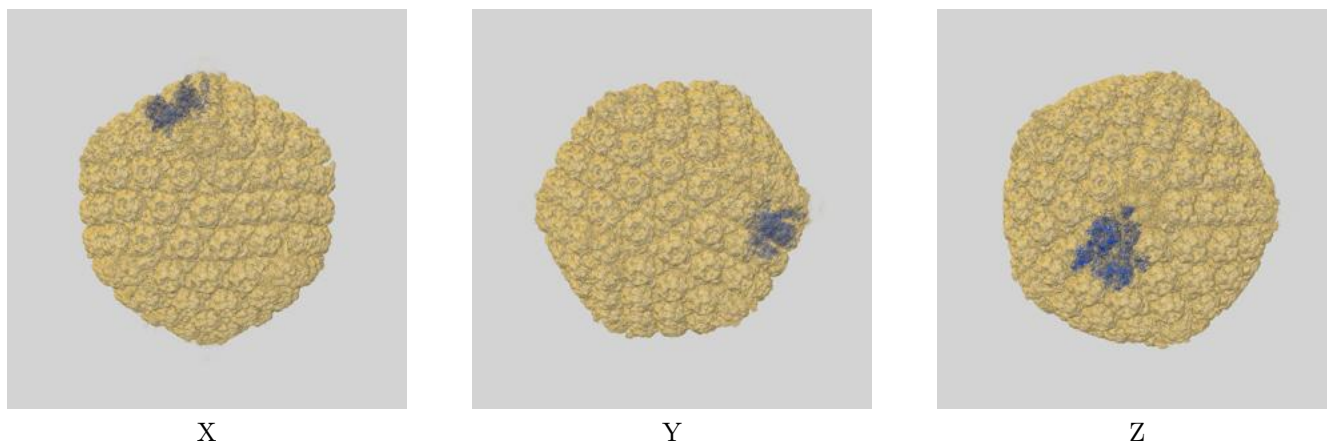
This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

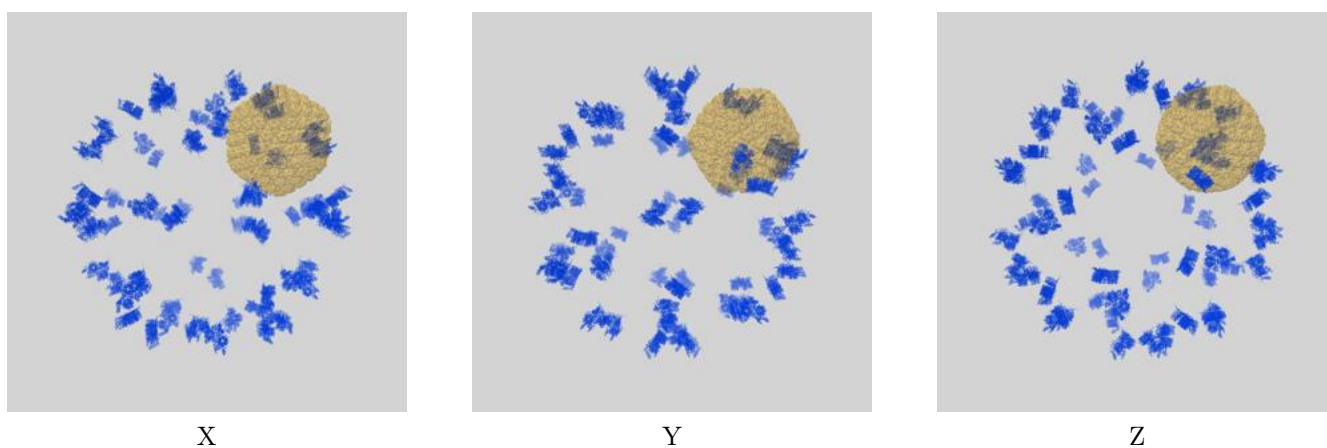
This section contains information regarding the fit between EMDB map EMD-6976 and PDB model 5ZZ8. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlays

9.1.1 Map-model overlay [i](#)

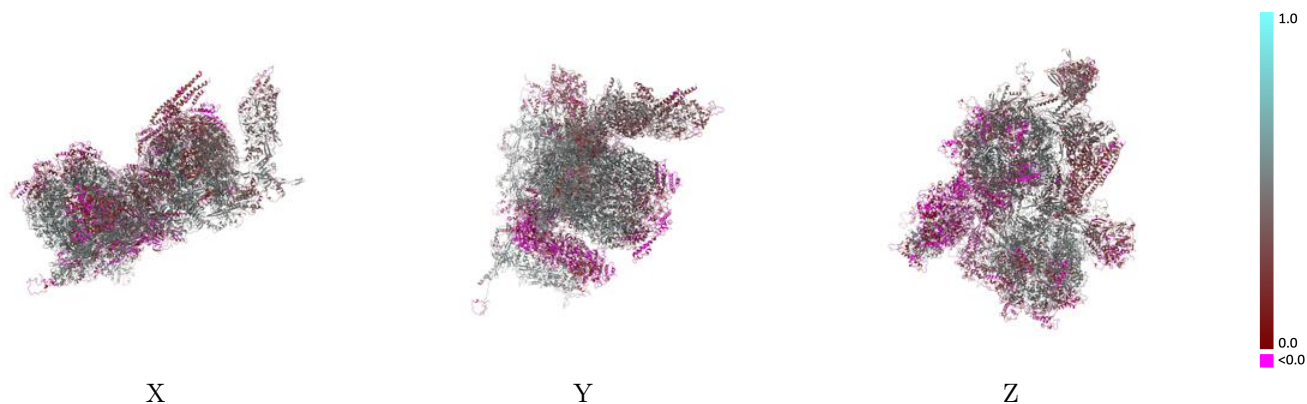


9.1.2 Map-model assembly overlay [i](#)



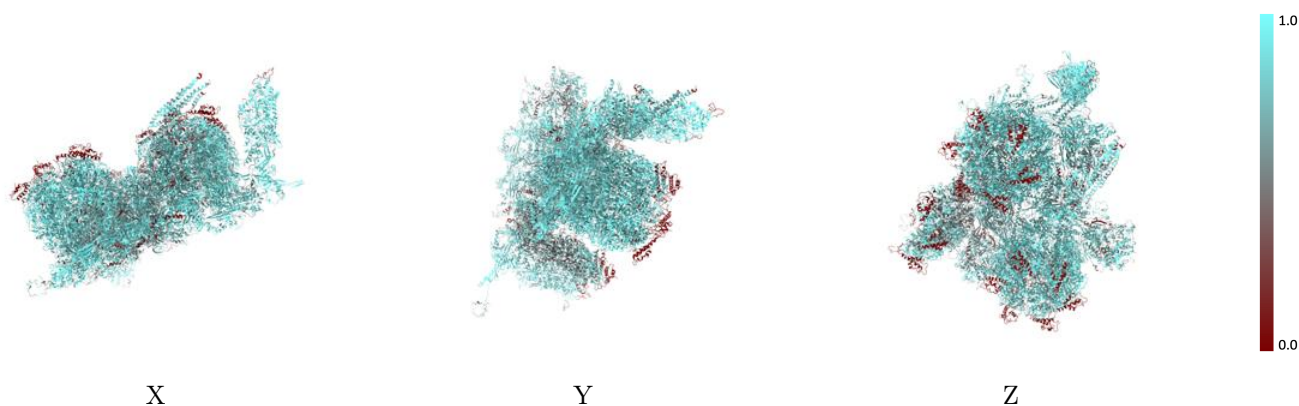
The images above show the 3D surface view of the map at the recommended contour level 1.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



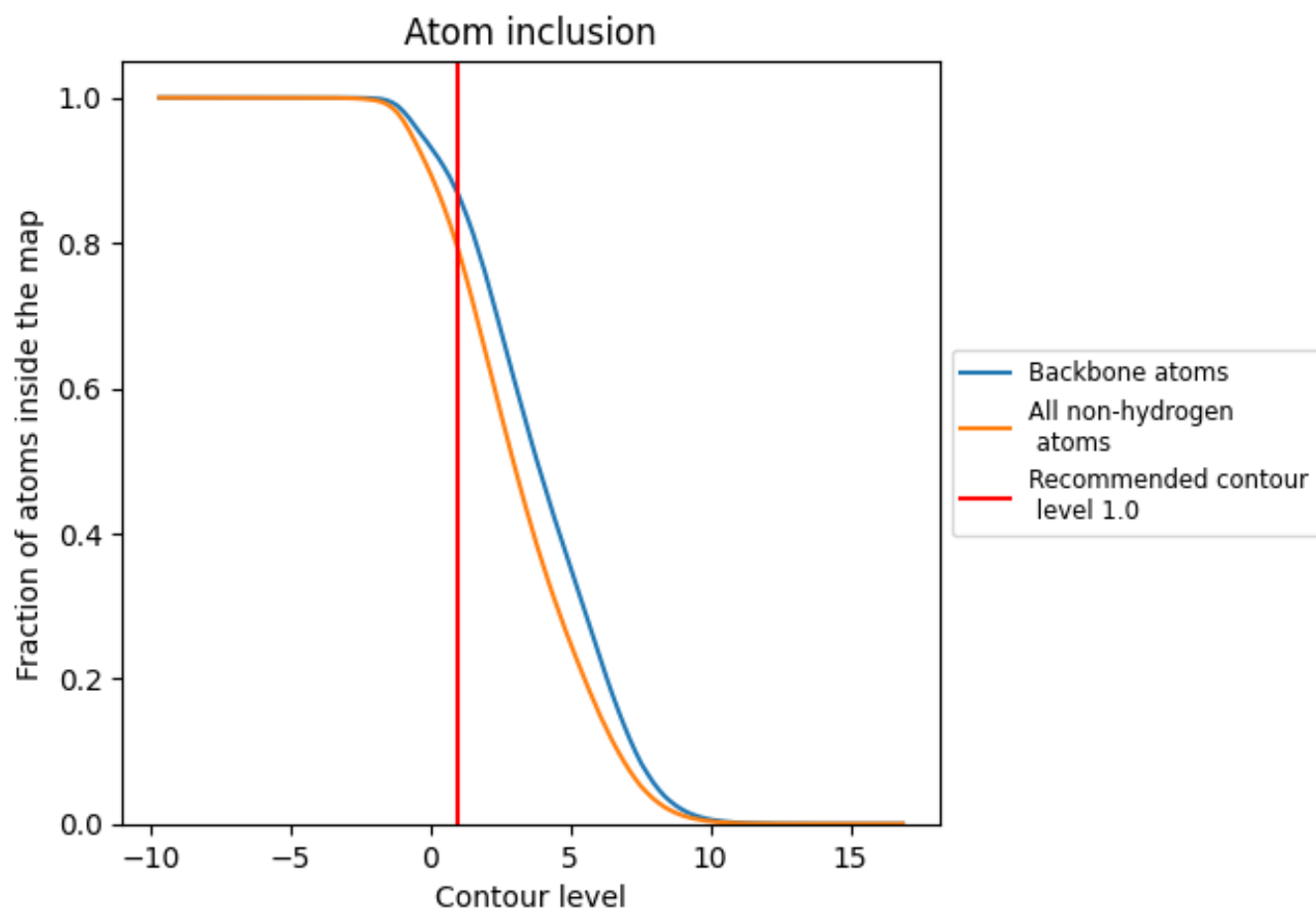
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (1.0).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 87% of all backbone atoms, 79% 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 (1.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7909	 0.3500
1	 0.6181	 0.1710
2	 0.7909	 0.3110
3	 0.8980	 0.4270
A	 0.8459	 0.3780
B	 0.8810	 0.4450
C	 0.9042	 0.4570
D	 0.8836	 0.4460
E	 0.8840	 0.4510
F	 0.8989	 0.4480
G	 0.8304	 0.3650
H	 0.8950	 0.4480
I	 0.8938	 0.4440
J	 0.8922	 0.4470
K	 0.8891	 0.4450
L	 0.8838	 0.4400
M	 0.9029	 0.4530
N	 0.6142	 0.0620
O	 0.6474	 0.0930
P	 0.8938	 0.4520
Q	 0.6396	 0.2530
R	 0.8023	 0.3460
S	 0.8047	 0.3830
T	 0.6453	 0.2260
U	 0.7135	 0.1450
V	 0.6880	 0.1630
W	 0.5998	 0.2500
X	 0.8970	 0.4290
Y	 0.8289	 0.3740
b	 0.1177	 0.0060
c	 0.1336	 -0.0140
d	 0.1376	 -0.0000
e	 0.1310	 -0.0240
f	 0.1310	 -0.0100
g	 0.1204	 0.0070



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
h	0.1918	0.0870
i	0.2090	0.0920
j	0.2249	0.1070
k	0.2090	0.0860
l	0.1944	0.1280
m	0.2196	0.1180
n	0.1429	-0.0060
o	0.1574	0.0230
p	0.1786	0.1130
q	0.6838	0.2560
r	0.6536	0.1910
s	0.6773	0.2030
t	0.7300	0.2140
u	0.8595	0.2120
w	0.6044	0.1840
x	0.6979	0.1760
y	0.7183	0.2490