



Full wwPDB EM Validation Report ⓘ

Nov 16, 2022 – 07:14 AM JST

PDB ID : 6LGL
EMDB ID : EMD-0880
Title : The atomic structure of varicella-zoster virus A-capsid
Authors : Zheng, Q.; Li, S.
Deposited on : 2019-12-05
Resolution : 4.40 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:

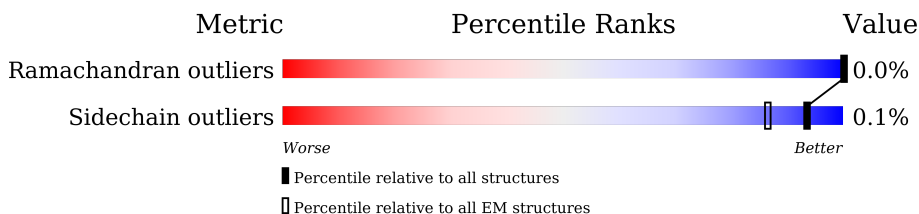
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 4.40 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	A	1396	97%
1	B	1396	97%
1	C	1396	5% 97%
1	E	1396	5% 97%
1	F	1396	6% 97%
1	G	1396	6% 92% 7%
1	M	1396	5% 97%
1	N	1396	97%
1	O	1396	97%

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Mol	Chain	Length	Quality of chain	
1	P	1396		
1	Q	1396		
1	R	1396		
1	S	1396		
1	T	1396		
1	U	1396		
1	z	1396		
2	D	235		
2	H	235		
2	I	235		
2	J	235		
2	K	235		
2	L	235		
2	V	235		
2	W	235		
2	X	235		
2	Y	235		
2	Z	235		
2	a	235		
2	b	235		
2	c	235		
2	d	235		
3	e	483		
3	f	483		
3	g	483		

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Mol	Chain	Length	Quality of chain
3	h	483	 6% 70% 30%
3	i	483	 7% 73% 27%
4	j	316	 23% 76% 24%
4	k	316	 9% 91% 9%
4	l	316	 7% 83% 17%
4	m	316	 8% 87% 13%
4	n	316	 9% 87% 13%
4	o	316	 28% 82% 18%
4	p	316	 9% 95% 5%
4	q	316	 5% 80% 20%
4	r	316	 8% 95% 5%
4	s	316	 7% 96% 5%

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 208346 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	1354	10592	6695	1880	1949	68	0	0
1	M	1353	10582	6690	1876	1948	68	0	0
1	N	1353	10582	6690	1876	1948	68	0	0
1	O	1355	10600	6701	1881	1950	68	0	0
1	P	1355	10600	6701	1881	1950	68	0	0
1	Q	1354	10592	6695	1880	1949	68	0	0
1	R	1353	10582	6690	1876	1948	68	0	0
1	S	1355	10600	6701	1881	1950	68	0	0
1	T	1354	10592	6695	1880	1949	68	0	0
1	U	1331	10422	6590	1847	1919	66	0	0
1	B	1355	10600	6701	1881	1950	68	0	0
1	C	1354	10592	6695	1880	1949	68	0	0
1	E	1353	10582	6689	1877	1948	68	0	0
1	F	1354	10592	6695	1880	1949	68	0	0
1	G	1295	10133	6401	1804	1863	65	0	0
1	z	607	4709	2970	830	878	31	0	0

- Molecule 2 is a protein called Small capsomere-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	V	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	W	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	X	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	Y	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	Z	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	a	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	b	99	Total	C	N	O	S	0	0
			754	475	142	135	2		
2	c	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	d	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	H	99	Total	C	N	O	S	0	0
			754	475	142	135	2		
2	I	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	J	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	K	100	Total	C	N	O	S	0	0
			765	481	146	136	2		
2	L	100	Total	C	N	O	S	0	0
			765	481	146	136	2		

- Molecule 3 is a protein called Triplex capsid protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	e	275	Total	C	N	O	S	0	0
			2194	1394	392	393	15		
3	f	351	Total	C	N	O	S	0	0
			2768	1746	499	507	16		
3	g	307	Total	C	N	O	S	0	0
			2419	1526	434	444	15		
3	h	340	Total	C	N	O	S	0	0
			2688	1695	485	492	16		
3	i	353	Total	C	N	O	S	0	0
			2789	1760	501	512	16		

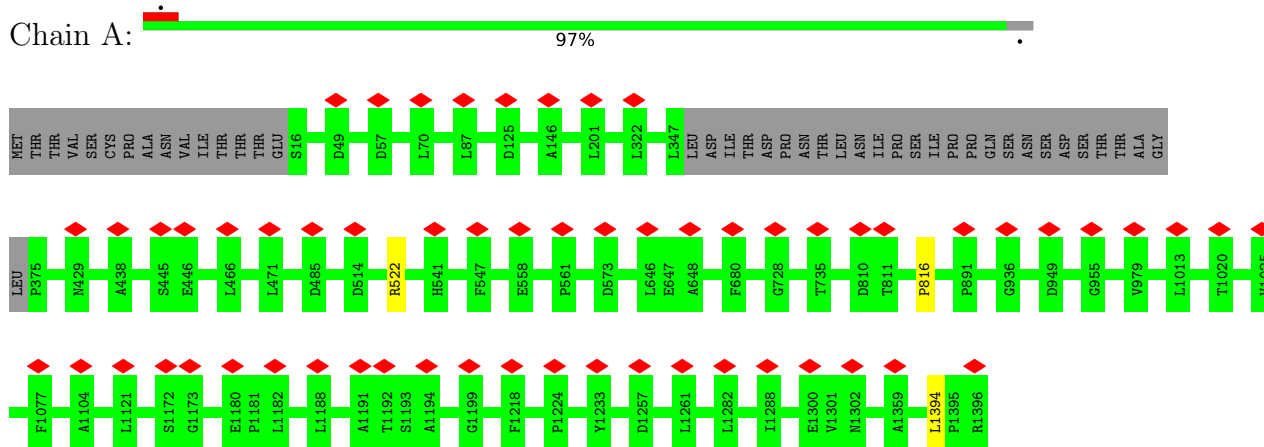
- Molecule 4 is a protein called Triplex capsid protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	j	241	Total	C	N	O	S	0	0
			1837	1180	310	337	10		
4	o	258	Total	C	N	O	S	0	0
			1969	1259	334	366	10		
4	k	289	Total	C	N	O	S	0	0
			2199	1401	378	410	10		
4	p	301	Total	C	N	O	S	0	0
			2307	1470	400	424	13		
4	l	262	Total	C	N	O	S	0	0
			2005	1283	341	371	10		
4	q	254	Total	C	N	O	S	0	0
			1937	1235	330	362	10		
4	m	276	Total	C	N	O	S	0	0
			2105	1346	361	388	10		
4	r	301	Total	C	N	O	S	0	0
			2307	1469	400	426	12		
4	n	276	Total	C	N	O	S	0	0
			2105	1346	361	388	10		
4	s	302	Total	C	N	O	S	0	0
			2312	1472	401	427	12		

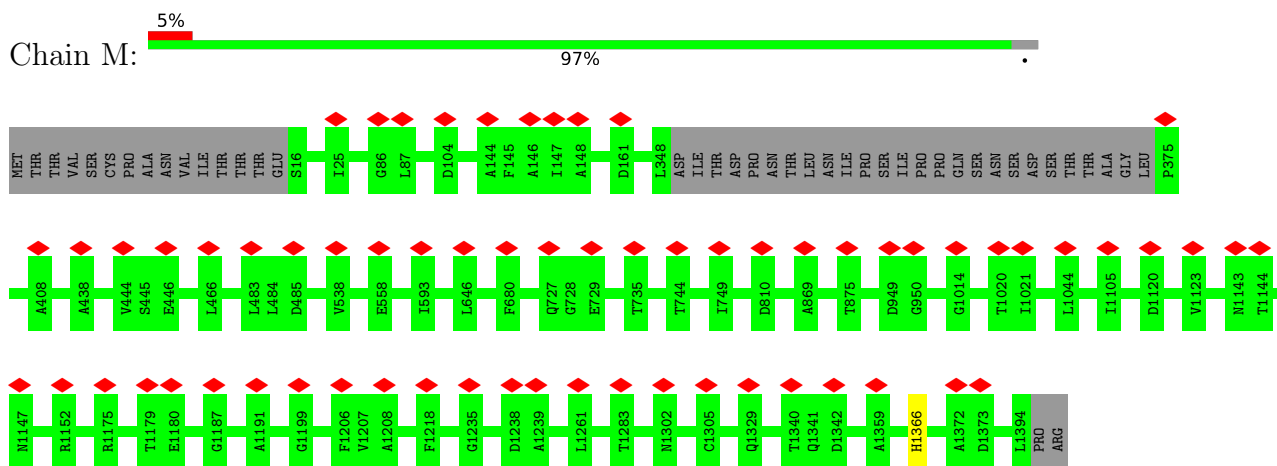
3 Residue-property plots

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.

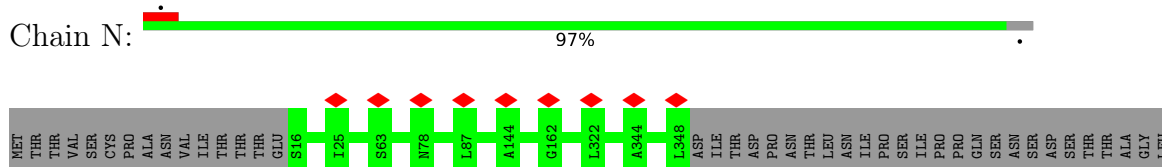
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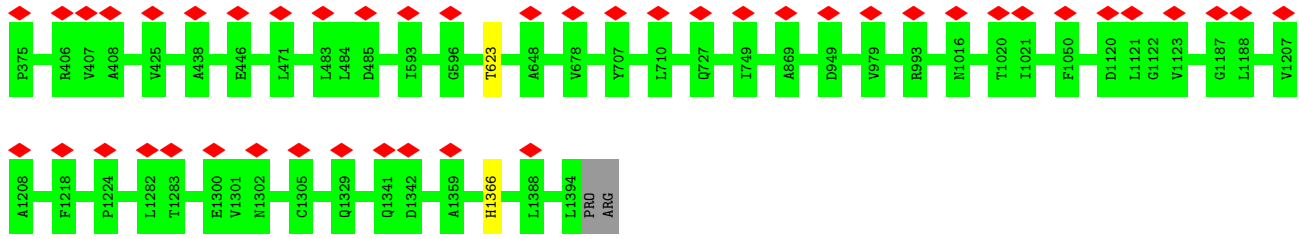


- Molecule 1: Major capsid protein

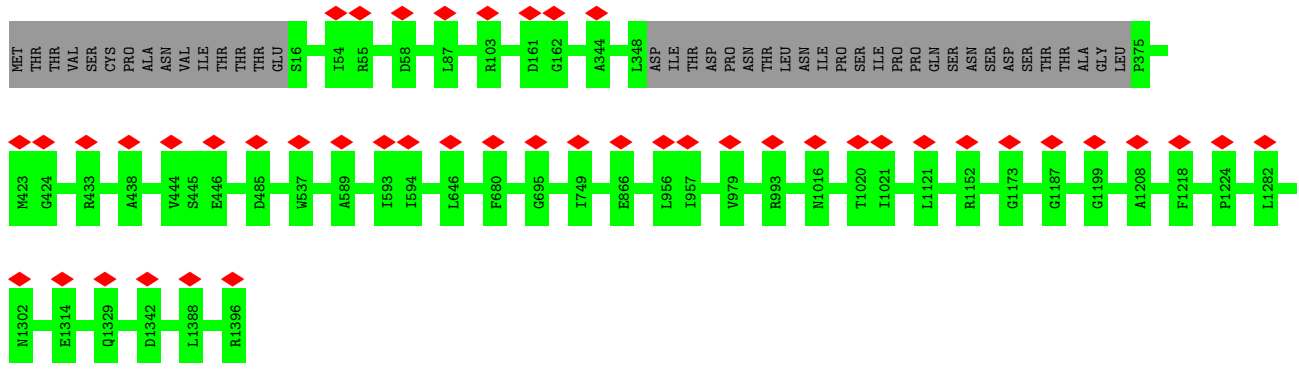


- Molecule 1: Major capsid protein

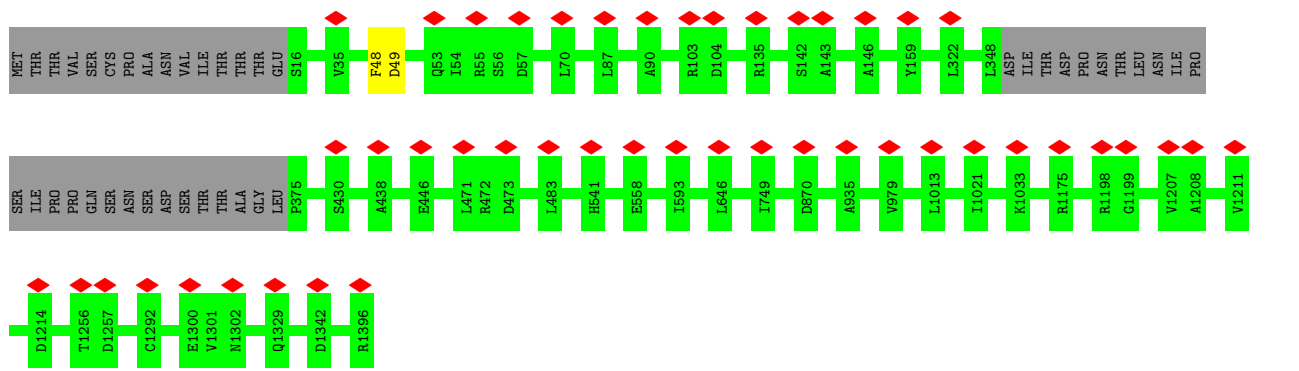




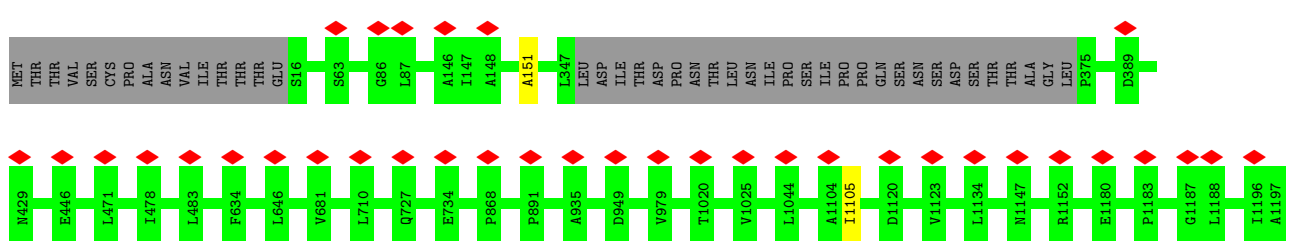
• Molecule 1: Major capsid protein

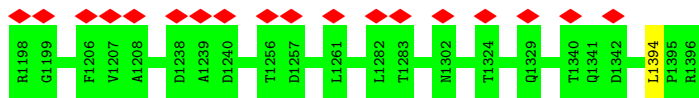


• Molecule 1: Major capsid protein

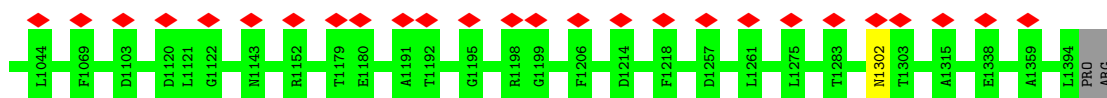
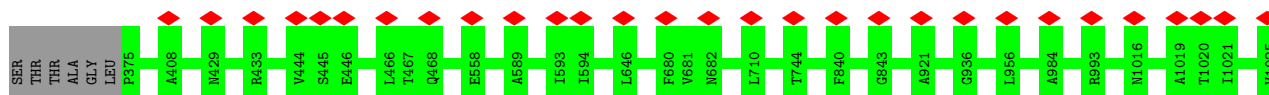
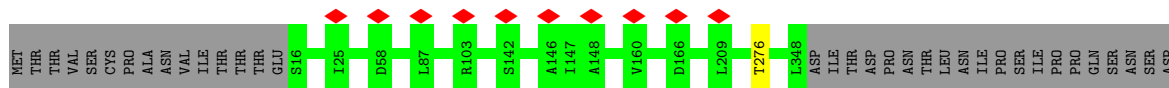


• Molecule 1: Major capsid protein

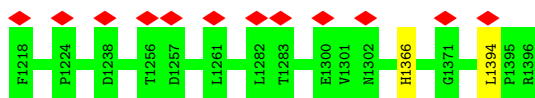
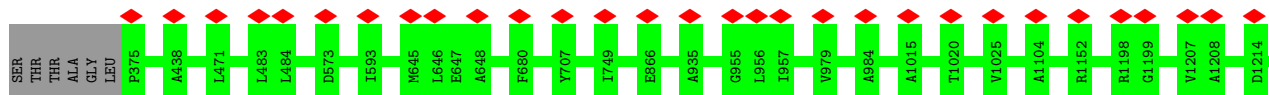
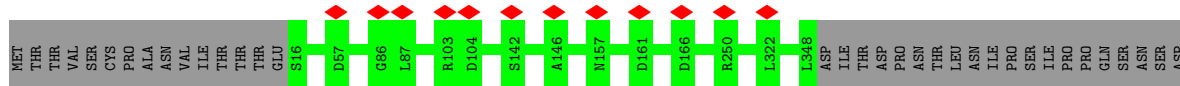




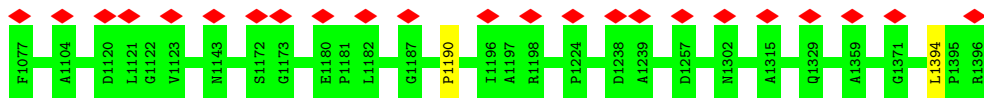
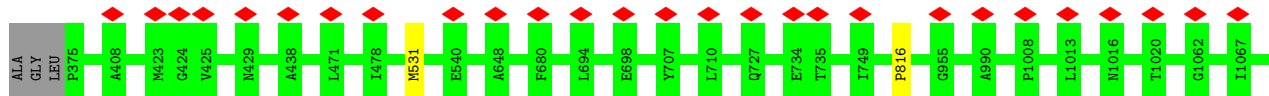
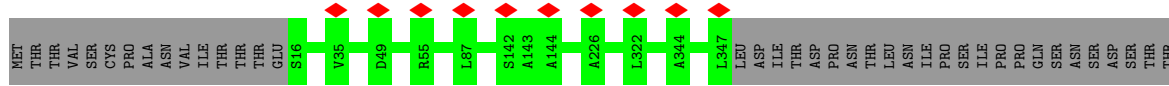
• Molecule 1: Major capsid protein

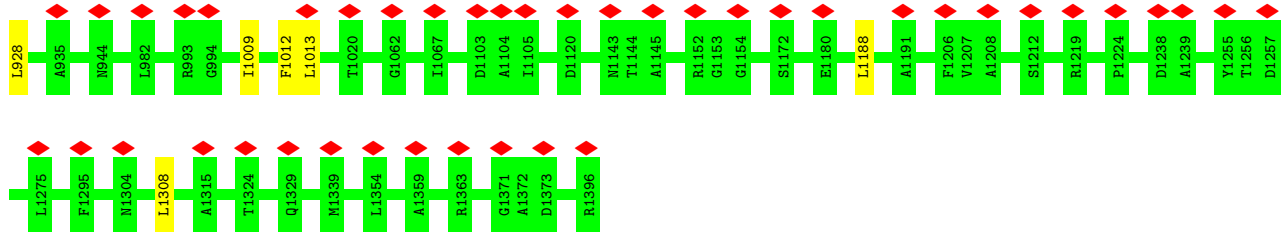


• Molecule 1: Major capsid protein

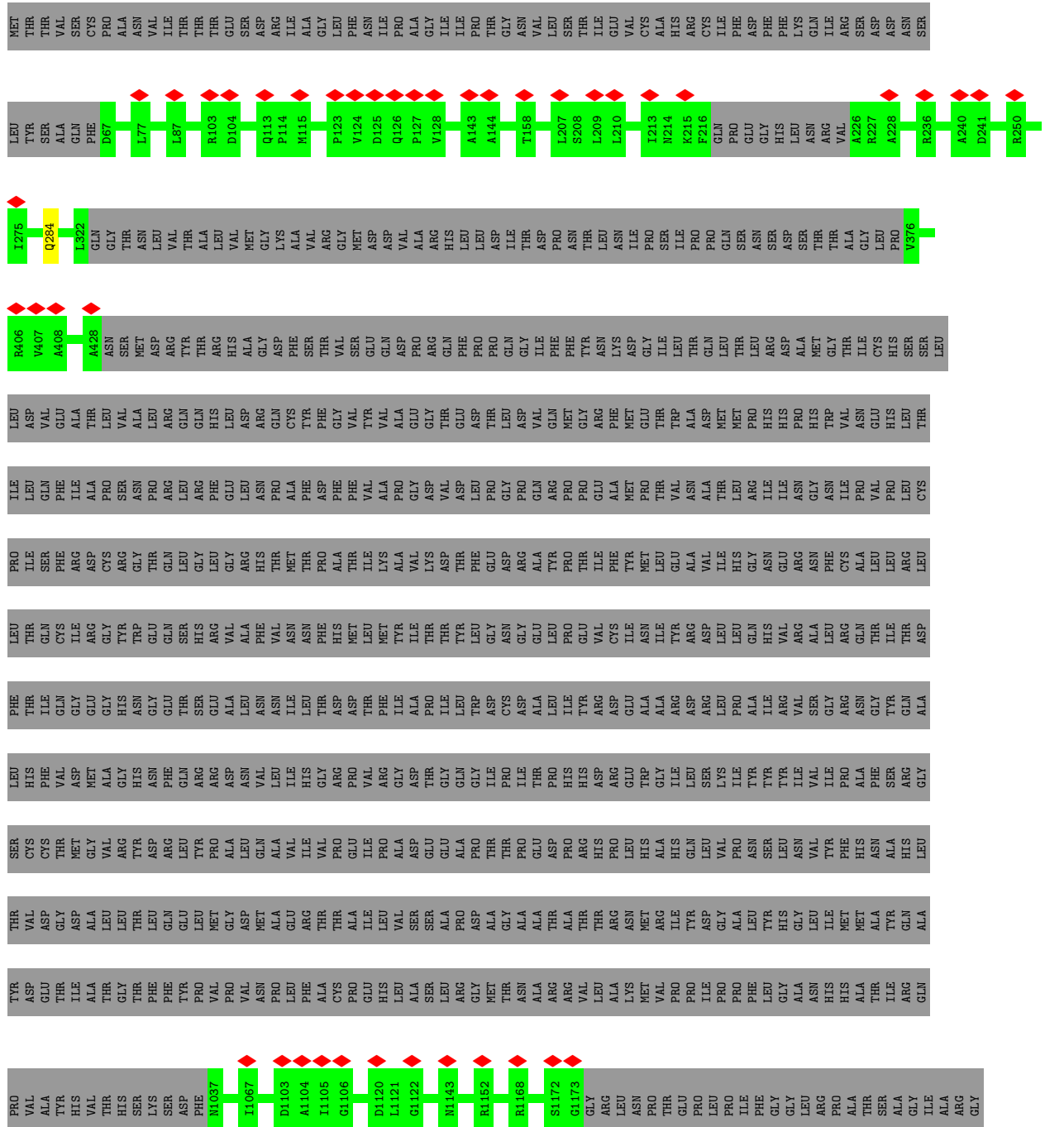


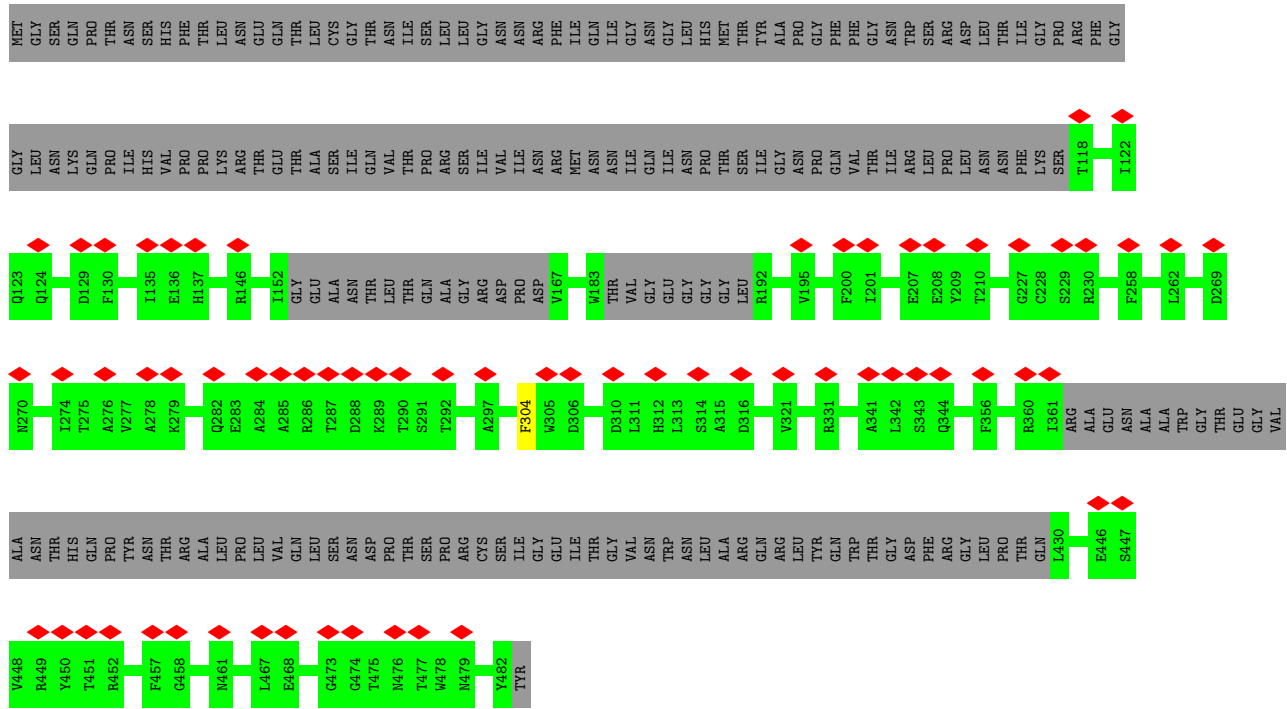
• Molecule 1: Major capsid protein



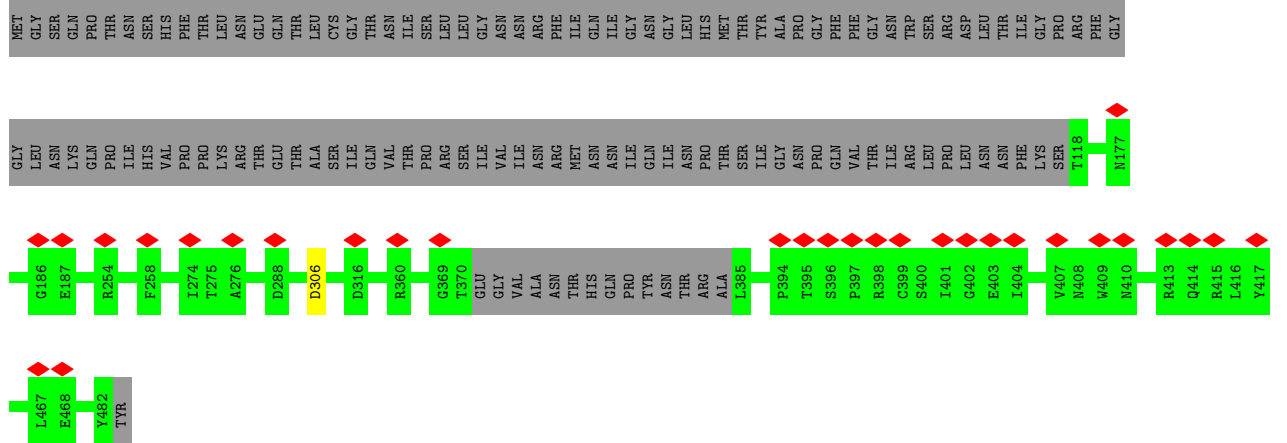
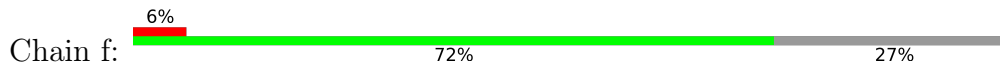


• Molecule 1: Major capsid protein

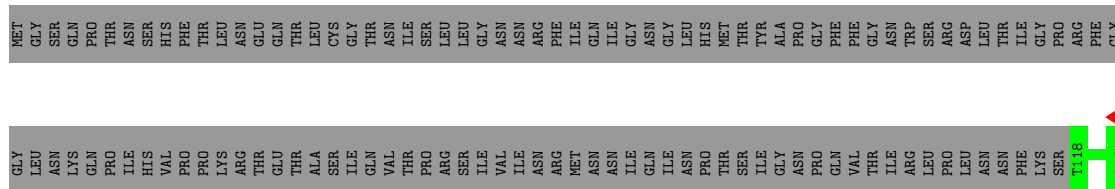


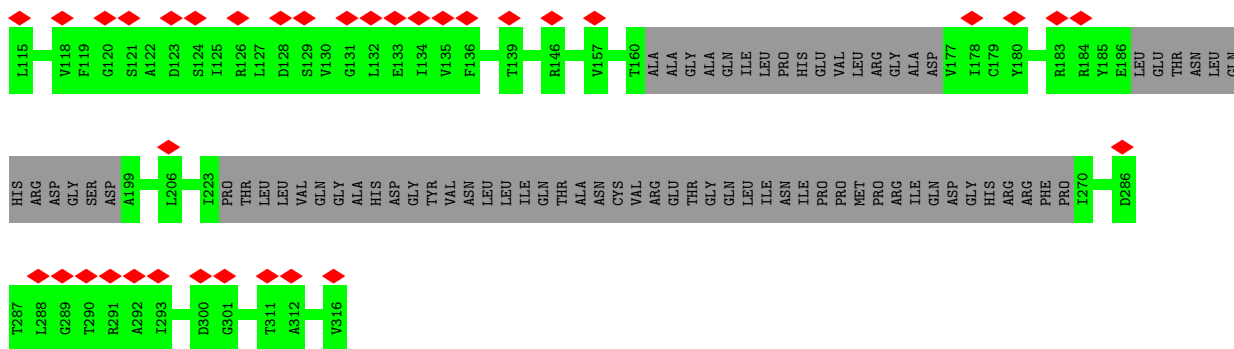


• Molecule 3: Triplex capsid protein 1

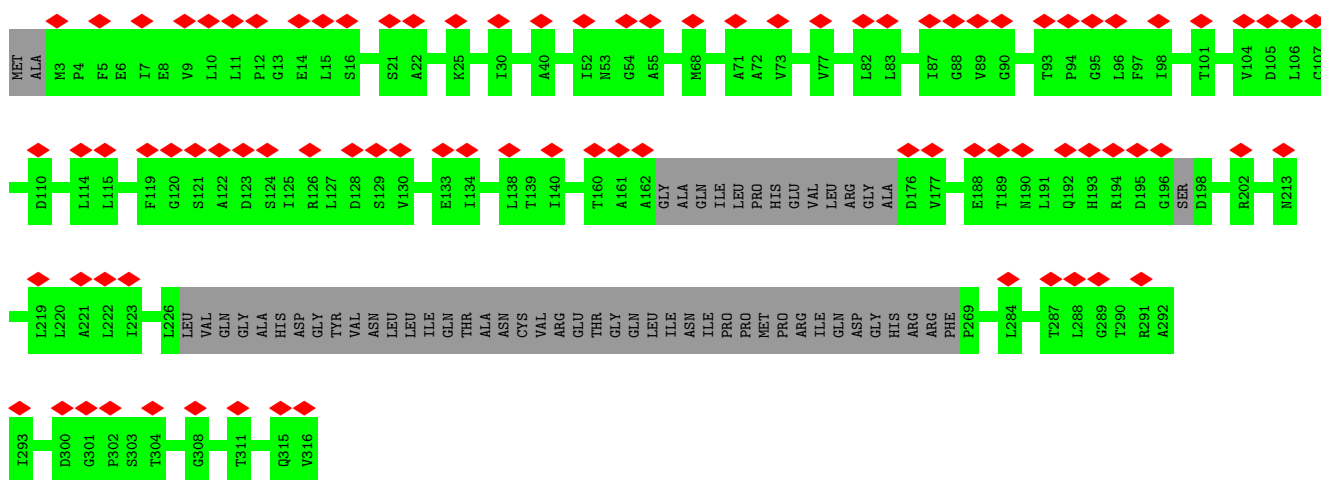
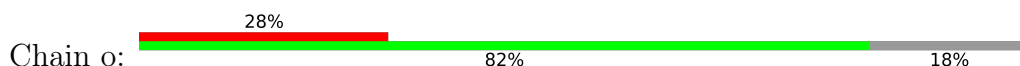


• Molecule 3: Triplex capsid protein 1

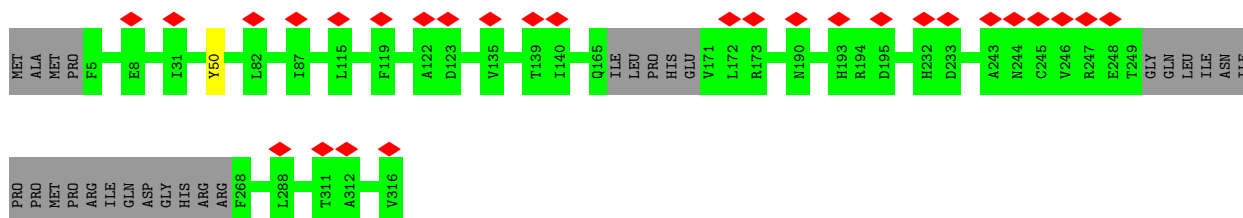




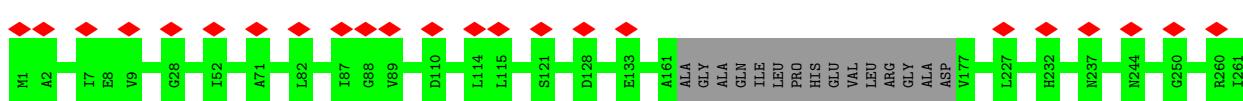
• Molecule 4: Triplex capsid protein 2

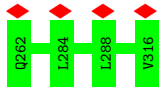


• Molecule 4: Triplex capsid protein 2

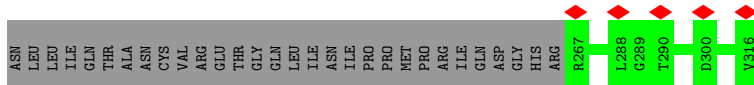
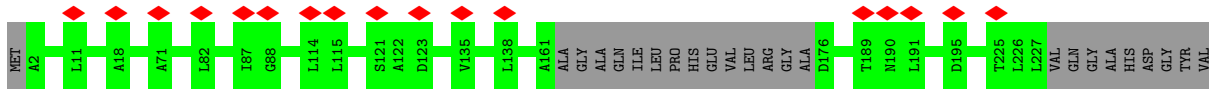
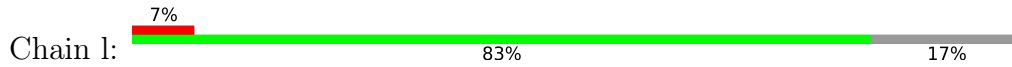


• Molecule 4: Triplex capsid protein 2

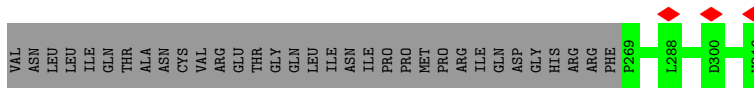
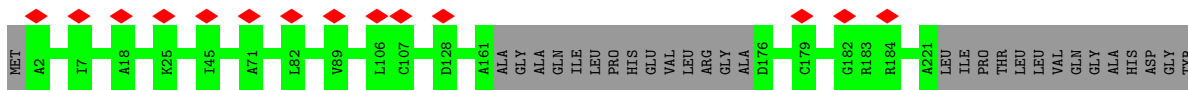
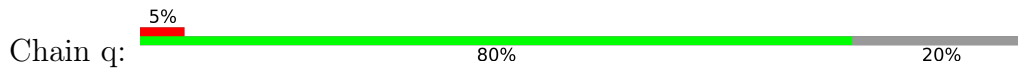




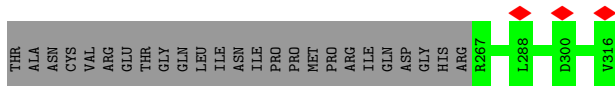
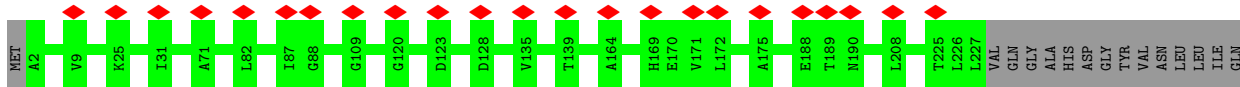
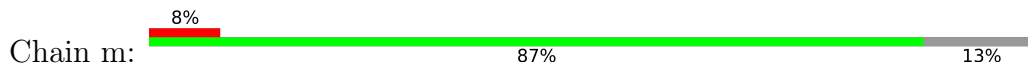
- Molecule 4: Triplex capsid protein 2



- Molecule 4: Triplex capsid protein 2



- Molecule 4: Triplex capsid protein 2



- Molecule 4: Triplex capsid protein 2



- Molecule 4: Triplex capsid protein 2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	22983	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	56	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	22.144	Depositor
Minimum map value	-13.588	Depositor
Average map value	-0.009	Depositor
Map value standard deviation	1.978	Depositor
Recommended contour level	3.0	Depositor
Map size (\AA)	1672.9601, 1672.9601, 1672.9601	wwPDB
Map dimensions	1280, 1280, 1280	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.307, 1.307, 1.307	Depositor

5 Model quality i

5.1 Standard geometry i

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	0.33	0/10846	0.47	0/14767
1	B	0.28	0/10854	0.46	0/14778
1	C	0.30	0/10846	0.47	0/14767
1	E	0.29	0/10834	0.47	0/14748
1	F	0.27	0/10846	0.51	1/14767 (0.0%)
1	G	0.28	0/10377	0.51	4/14130 (0.0%)
1	M	0.34	0/10835	0.47	0/14752
1	N	0.32	0/10835	0.47	0/14752
1	O	0.33	0/10854	0.47	0/14778
1	P	0.33	0/10854	0.47	0/14778
1	Q	0.34	0/10846	0.48	1/14767 (0.0%)
1	R	0.31	0/10835	0.47	0/14752
1	S	0.32	0/10854	0.46	0/14778
1	T	0.34	1/10846 (0.0%)	0.47	2/14767 (0.0%)
1	U	0.28	0/10675	0.49	0/14536
1	z	0.27	0/4800	0.51	1/6517 (0.0%)
2	D	0.27	0/782	0.50	1/1069 (0.1%)
2	H	0.25	0/771	0.50	1/1055 (0.1%)
2	I	0.27	0/782	0.48	0/1069
2	J	0.27	0/782	0.51	0/1069
2	K	0.27	0/782	0.54	1/1069 (0.1%)
2	L	0.27	0/782	0.52	0/1069
2	V	0.25	0/782	0.47	0/1069
2	W	0.26	0/782	0.48	1/1069 (0.1%)
2	X	0.26	0/782	0.50	0/1069
2	Y	0.25	0/782	0.45	0/1069
2	Z	0.27	0/782	0.50	1/1069 (0.1%)
2	a	0.27	0/782	0.49	1/1069 (0.1%)
2	b	0.27	0/771	0.46	0/1055
2	c	0.26	0/782	0.50	0/1069
2	d	0.29	0/782	0.50	0/1069
3	e	0.27	0/2240	0.47	0/3034
3	f	0.31	0/2829	0.47	0/3843
3	g	0.28	0/2470	0.46	0/3350

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
3	h	0.30	0/2746	0.47	0/3726
3	i	0.33	0/2851	0.46	0/3873
4	j	0.26	0/1868	0.48	0/2542
4	k	0.30	0/2236	0.46	0/3046
4	l	0.29	0/2041	0.46	0/2780
4	m	0.30	0/2144	0.48	0/2922
4	n	0.32	0/2144	0.48	0/2922
4	o	0.26	0/2003	0.49	0/2727
4	p	0.29	0/2350	0.47	0/3202
4	q	0.28	0/1971	0.45	0/2683
4	r	0.29	0/2350	0.47	0/3203
4	s	0.31	0/2355	0.46	0/3210
All	All	0.31	1/213143 (0.0%)	0.48	15/290204 (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	A	0	1
1	C	0	1
1	E	0	1
1	F	0	1
1	G	0	1
1	M	0	1
1	N	0	1
1	Q	0	1
1	S	0	2
1	T	0	2
4	k	0	1
All	All	0	13

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	T	1190	PRO	N-CD	12.18	1.65	1.47

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	1190	PRO	CA-N-CD	-6.39	102.55	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	1188	LEU	CA-CB-CG	5.91	128.89	115.30
1	T	1190	PRO	N-CA-CB	5.81	110.28	103.30
2	K	92	LEU	CA-CB-CG	5.67	128.34	115.30
1	G	894	LEU	CA-CB-CG	5.64	128.27	115.30
1	G	1308	LEU	CA-CB-CG	5.64	128.26	115.30
2	a	92	LEU	CA-CB-CG	5.60	128.18	115.30
1	G	699	LEU	CA-CB-CG	5.36	127.63	115.30
2	D	92	LEU	CA-CB-CG	5.28	127.45	115.30
1	Q	151	ALA	N-CA-CB	5.16	117.33	110.10
2	H	92	LEU	CA-CB-CG	5.15	127.15	115.30
2	Z	92	LEU	CA-CB-CG	5.13	127.09	115.30
2	W	92	LEU	CA-CB-CG	5.12	127.08	115.30
1	F	1285	ALA	C-N-CA	5.12	134.51	121.70
1	z	284	GLN	N-CA-CB	-5.11	101.40	110.60

There are no chirality outliers.

All (13) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1394	LEU	Mainchain
1	C	1394	LEU	Mainchain
1	E	1394	LEU	Mainchain
1	F	1394	LEU	Mainchain
1	G	646	LEU	Peptide
1	M	1366	HIS	Peptide
1	N	1366	HIS	Peptide
1	Q	1394	LEU	Mainchain
1	S	1366	HIS	Peptide
1	S	1394	LEU	Mainchain
1	T	1394	LEU	Mainchain
1	T	531	MET	Peptide
4	k	50	TYR	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

5.3.1 Protein backbone

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	1350/1396 (97%)	1243 (92%)	106 (8%)	1 (0%)	51	85
1	B	1351/1396 (97%)	1236 (92%)	115 (8%)	0	100	100
1	C	1350/1396 (97%)	1226 (91%)	124 (9%)	0	100	100
1	E	1347/1396 (96%)	1214 (90%)	133 (10%)	0	100	100
1	F	1350/1396 (97%)	1189 (88%)	161 (12%)	0	100	100
1	G	1291/1396 (92%)	1118 (87%)	173 (13%)	0	100	100
1	M	1349/1396 (97%)	1237 (92%)	112 (8%)	0	100	100
1	N	1349/1396 (97%)	1239 (92%)	110 (8%)	0	100	100
1	O	1351/1396 (97%)	1255 (93%)	96 (7%)	0	100	100
1	P	1351/1396 (97%)	1254 (93%)	96 (7%)	1 (0%)	51	85
1	Q	1350/1396 (97%)	1232 (91%)	117 (9%)	1 (0%)	51	85
1	R	1349/1396 (97%)	1220 (90%)	128 (10%)	1 (0%)	51	85
1	S	1351/1396 (97%)	1236 (92%)	115 (8%)	0	100	100
1	T	1350/1396 (97%)	1216 (90%)	133 (10%)	1 (0%)	51	85
1	U	1327/1396 (95%)	1184 (89%)	141 (11%)	2 (0%)	47	81
1	z	595/1396 (43%)	521 (88%)	74 (12%)	0	100	100
2	D	98/235 (42%)	82 (84%)	16 (16%)	0	100	100
2	H	97/235 (41%)	82 (84%)	15 (16%)	0	100	100
2	I	98/235 (42%)	79 (81%)	19 (19%)	0	100	100
2	J	98/235 (42%)	82 (84%)	16 (16%)	0	100	100
2	K	98/235 (42%)	82 (84%)	16 (16%)	0	100	100
2	L	98/235 (42%)	82 (84%)	16 (16%)	0	100	100
2	V	98/235 (42%)	78 (80%)	20 (20%)	0	100	100
2	W	98/235 (42%)	84 (86%)	14 (14%)	0	100	100
2	X	98/235 (42%)	87 (89%)	11 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	Y	98/235 (42%)	85 (87%)	13 (13%)	0	100	100
2	Z	98/235 (42%)	81 (83%)	17 (17%)	0	100	100
2	a	98/235 (42%)	79 (81%)	19 (19%)	0	100	100
2	b	97/235 (41%)	84 (87%)	13 (13%)	0	100	100
2	c	98/235 (42%)	81 (83%)	16 (16%)	1 (1%)	15	54
2	d	98/235 (42%)	81 (83%)	17 (17%)	0	100	100
3	e	267/483 (55%)	253 (95%)	14 (5%)	0	100	100
3	f	347/483 (72%)	319 (92%)	28 (8%)	0	100	100
3	g	303/483 (63%)	283 (93%)	20 (7%)	0	100	100
3	h	334/483 (69%)	310 (93%)	24 (7%)	0	100	100
3	i	349/483 (72%)	319 (91%)	30 (9%)	0	100	100
4	j	233/316 (74%)	220 (94%)	13 (6%)	0	100	100
4	k	283/316 (90%)	250 (88%)	33 (12%)	0	100	100
4	l	256/316 (81%)	228 (89%)	28 (11%)	0	100	100
4	m	272/316 (86%)	246 (90%)	26 (10%)	0	100	100
4	n	272/316 (86%)	247 (91%)	25 (9%)	0	100	100
4	o	250/316 (79%)	226 (90%)	24 (10%)	0	100	100
4	p	297/316 (94%)	289 (97%)	8 (3%)	0	100	100
4	q	248/316 (78%)	227 (92%)	21 (8%)	0	100	100
4	r	297/316 (94%)	278 (94%)	19 (6%)	0	100	100
4	s	298/316 (94%)	283 (95%)	15 (5%)	0	100	100
All	All	26535/31436 (84%)	24027 (90%)	2500 (9%)	8 (0%)	100	100

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	P	48	PHE
1	U	49	ASP
2	c	17	THR
1	U	50	PHE
1	R	1302	ASN
1	Q	1105	ILE
1	A	816	PRO
1	T	816	PRO

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	1143/1182 (97%)	1142 (100%)	1 (0%)	93	97
1	B	1144/1182 (97%)	1144 (100%)	0	100	100
1	C	1143/1182 (97%)	1142 (100%)	1 (0%)	93	97
1	E	1142/1182 (97%)	1141 (100%)	1 (0%)	93	97
1	F	1143/1182 (97%)	1142 (100%)	1 (0%)	93	97
1	G	1092/1182 (92%)	1086 (100%)	6 (0%)	88	93
1	M	1142/1182 (97%)	1142 (100%)	0	100	100
1	N	1142/1182 (97%)	1141 (100%)	1 (0%)	93	97
1	O	1144/1182 (97%)	1144 (100%)	0	100	100
1	P	1144/1182 (97%)	1143 (100%)	1 (0%)	93	97
1	Q	1143/1182 (97%)	1143 (100%)	0	100	100
1	R	1142/1182 (97%)	1141 (100%)	1 (0%)	93	97
1	S	1144/1182 (97%)	1144 (100%)	0	100	100
1	T	1143/1182 (97%)	1143 (100%)	0	100	100
1	U	1125/1182 (95%)	1124 (100%)	1 (0%)	93	97
1	z	511/1182 (43%)	510 (100%)	1 (0%)	93	96
2	D	79/189 (42%)	79 (100%)	0	100	100
2	H	78/189 (41%)	78 (100%)	0	100	100
2	I	79/189 (42%)	78 (99%)	1 (1%)	69	82
2	J	79/189 (42%)	79 (100%)	0	100	100
2	K	79/189 (42%)	79 (100%)	0	100	100
2	L	79/189 (42%)	79 (100%)	0	100	100
2	V	79/189 (42%)	79 (100%)	0	100	100
2	W	79/189 (42%)	79 (100%)	0	100	100
2	X	79/189 (42%)	79 (100%)	0	100	100
2	Y	79/189 (42%)	79 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	Z	79/189 (42%)	79 (100%)	0	100	100
2	a	79/189 (42%)	79 (100%)	0	100	100
2	b	78/189 (41%)	78 (100%)	0	100	100
2	c	79/189 (42%)	79 (100%)	0	100	100
2	d	79/189 (42%)	79 (100%)	0	100	100
3	e	235/410 (57%)	234 (100%)	1 (0%)	91	94
3	f	294/410 (72%)	293 (100%)	1 (0%)	92	95
3	g	256/410 (62%)	256 (100%)	0	100	100
3	h	285/410 (70%)	285 (100%)	0	100	100
3	i	296/410 (72%)	295 (100%)	1 (0%)	92	95
4	j	205/267 (77%)	205 (100%)	0	100	100
4	k	243/267 (91%)	243 (100%)	0	100	100
4	l	224/267 (84%)	224 (100%)	0	100	100
4	m	233/267 (87%)	233 (100%)	0	100	100
4	n	233/267 (87%)	233 (100%)	0	100	100
4	o	220/267 (82%)	220 (100%)	0	100	100
4	p	257/267 (96%)	257 (100%)	0	100	100
4	q	216/267 (81%)	216 (100%)	0	100	100
4	r	257/267 (96%)	257 (100%)	0	100	100
4	s	257/267 (96%)	257 (100%)	0	100	100
All	All	22481/26467 (85%)	22462 (100%)	19 (0%)	93	97

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	522	ARG
1	N	623	THR
1	P	49	ASP
1	R	276	THR
1	U	573	ASP
1	C	1396	ARG
2	I	93	ARG
1	E	406	ARG
1	F	242	MET
1	G	510	GLU

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Mol	Chain	Res	Type
1	G	778	ARG
1	G	928	LEU
1	G	1009	ILE
1	G	1012	PHE
1	G	1013	LEU
3	e	304	PHE
3	f	306	ASP
3	i	293	ARG
1	z	1237	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (392) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	108	GLN
1	A	113	GLN
1	A	122	HIS
1	A	130	ASN
1	A	180	ASN
1	A	214	ASN
1	A	305	GLN
1	A	451	GLN
1	A	455	GLN
1	A	480	HIS
1	A	496	GLN
1	A	578	GLN
1	A	595	ASN
1	A	620	HIS
1	A	682	ASN
1	A	712	GLN
1	A	732	ASN
1	A	740	ASN
1	A	803	HIS
1	A	1031	HIS
1	A	1161	ASN
1	A	1216	GLN
1	A	1302	ASN
1	A	1306	ASN
1	A	1341	GLN
2	D	15	ASN
1	M	108	GLN
1	M	122	HIS
1	M	176	GLN

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Mol	Chain	Res	Type
1	M	180	ASN
1	M	480	HIS
1	M	534	HIS
1	M	595	ASN
1	M	620	HIS
1	M	732	ASN
1	M	885	HIS
1	M	892	ASN
1	M	962	GLN
1	M	988	HIS
1	M	1304	ASN
1	M	1306	ASN
2	V	15	ASN
2	V	72	HIS
1	N	108	GLN
1	N	113	GLN
1	N	122	HIS
1	N	130	ASN
1	N	157	ASN
1	N	180	ASN
1	N	214	ASN
1	N	414	ASN
1	N	578	GLN
1	N	595	ASN
1	N	620	HIS
1	N	719	GLN
1	N	740	ASN
1	N	860	GLN
1	N	885	HIS
1	N	914	GLN
1	N	954	HIS
1	N	988	HIS
1	N	1016	ASN
1	N	1031	HIS
1	N	1037	ASN
1	N	1058	GLN
1	N	1081	GLN
1	N	1250	GLN
1	O	108	GLN
1	O	180	ASN
1	O	214	ASN
1	O	323	GLN

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Mol	Chain	Res	Type
1	O	455	GLN
1	O	480	HIS
1	O	595	ASN
1	O	620	HIS
1	O	732	ASN
1	O	885	HIS
1	O	954	HIS
1	O	988	HIS
1	O	1031	HIS
1	O	1100	HIS
1	O	1159	HIS
1	O	1304	ASN
1	O	1306	ASN
1	P	108	GLN
1	P	175	GLN
1	P	180	ASN
1	P	214	ASN
1	P	427	GLN
1	P	480	HIS
1	P	539	ASN
1	P	578	GLN
1	P	595	ASN
1	P	620	HIS
1	P	653	ASN
1	P	676	HIS
1	P	795	GLN
1	P	885	HIS
1	P	887	HIS
1	P	895	ASN
1	P	954	HIS
1	P	997	ASN
1	P	1081	GLN
2	Y	71	ASN
1	Q	108	GLN
1	Q	113	GLN
1	Q	130	ASN
1	Q	180	ASN
1	Q	195	GLN
1	Q	284	GLN
1	Q	305	GLN
1	Q	346	HIS
1	Q	480	HIS

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Mol	Chain	Res	Type
1	Q	620	HIS
1	Q	732	ASN
1	Q	785	HIS
1	Q	792	HIS
1	Q	803	HIS
1	Q	882	HIS
1	Q	1037	ASN
1	Q	1058	GLN
1	Q	1109	ASN
1	Q	1376	HIS
2	Z	72	HIS
1	R	24	ASN
1	R	65	GLN
1	R	112	GLN
1	R	113	GLN
1	R	130	ASN
1	R	175	GLN
1	R	180	ASN
1	R	429	ASN
1	R	451	GLN
1	R	480	HIS
1	R	595	ASN
1	R	620	HIS
1	R	712	GLN
1	R	740	ASN
1	R	793	ASN
1	R	900	ASN
1	R	1016	ASN
1	R	1018	HIS
1	R	1064	HIS
1	R	1081	GLN
1	R	1177	ASN
1	R	1321	GLN
1	R	1376	HIS
1	S	44	HIS
1	S	175	GLN
1	S	180	ASN
1	S	427	GLN
1	S	455	GLN
1	S	480	HIS
1	S	588	ASN
1	S	595	ASN

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Mol	Chain	Res	Type
1	S	885	HIS
1	S	902	HIS
1	S	914	GLN
1	S	954	HIS
1	S	962	GLN
1	S	988	HIS
1	S	1109	ASN
1	S	1304	ASN
1	S	1306	ASN
1	T	108	GLN
1	T	129	HIS
1	T	180	ASN
1	T	305	GLN
1	T	437	HIS
1	T	455	GLN
1	T	480	HIS
1	T	578	GLN
1	T	595	ASN
1	T	620	HIS
1	T	719	GLN
1	T	803	HIS
1	T	860	GLN
1	T	882	HIS
1	T	900	ASN
1	T	954	HIS
1	T	1017	HIS
1	T	1031	HIS
1	T	1064	HIS
1	T	1081	GLN
1	T	1159	HIS
1	T	1177	ASN
2	c	72	HIS
2	c	73	ASN
2	c	103	ASN
1	U	122	HIS
1	U	195	GLN
1	U	284	GLN
1	U	501	GLN
1	U	519	GLN
1	U	620	HIS
1	U	656	ASN
1	U	696	ASN

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Mol	Chain	Res	Type
1	U	821	HIS
1	U	887	HIS
1	U	895	ASN
1	U	899	HIS
1	U	954	HIS
1	U	980	ASN
1	U	1037	ASN
1	U	1057	HIS
1	U	1058	GLN
1	U	1064	HIS
1	U	1216	GLN
1	U	1302	ASN
1	U	1376	HIS
1	B	113	GLN
1	B	130	ASN
1	B	175	GLN
1	B	217	GLN
1	B	326	ASN
1	B	546	GLN
1	B	597	ASN
1	B	685	HIS
1	B	882	HIS
1	B	1023	GLN
1	B	1028	HIS
1	B	1147	ASN
1	B	1267	GLN
1	B	1281	ASN
1	B	1304	ASN
1	B	1306	ASN
1	C	108	GLN
1	C	113	GLN
1	C	130	ASN
1	C	180	ASN
1	C	284	GLN
1	C	429	ASN
1	C	455	GLN
1	C	480	HIS
1	C	539	ASN
1	C	552	ASN
1	C	588	ASN
1	C	595	ASN
1	C	597	ASN

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Mol	Chain	Res	Type
1	C	732	ASN
1	C	795	GLN
1	C	799	ASN
1	C	803	HIS
1	C	860	GLN
1	C	895	ASN
1	C	902	HIS
1	C	954	HIS
1	C	962	GLN
1	C	1017	HIS
1	C	1031	HIS
1	C	1102	HIS
1	C	1159	HIS
1	C	1177	ASN
1	C	1306	ASN
1	C	1376	HIS
1	E	53	GLN
1	E	108	GLN
1	E	112	GLN
1	E	180	ASN
1	E	195	GLN
1	E	248	HIS
1	E	305	GLN
1	E	414	ASN
1	E	437	HIS
1	E	447	GLN
1	E	451	GLN
1	E	455	GLN
1	E	480	HIS
1	E	501	GLN
1	E	597	ASN
1	E	620	HIS
1	E	653	ASN
1	E	685	HIS
1	E	741	ASN
1	E	785	HIS
1	E	799	ASN
1	E	803	HIS
1	E	900	ASN
1	E	962	GLN
1	E	1037	ASN
1	E	1102	HIS

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Mol	Chain	Res	Type
1	E	1200	GLN
1	E	1341	GLN
2	J	37	ASN
1	F	75	ASN
1	F	217	GLN
1	F	301	GLN
1	F	451	GLN
1	F	480	HIS
1	F	519	GLN
1	F	620	HIS
1	F	666	GLN
1	F	719	GLN
1	F	731	HIS
1	F	732	ASN
1	F	740	ASN
1	F	885	HIS
1	F	899	HIS
1	F	900	ASN
1	F	954	HIS
1	F	1016	ASN
1	F	1031	HIS
1	F	1147	ASN
1	F	1159	HIS
1	F	1281	ASN
1	F	1302	ASN
1	F	1341	GLN
1	G	108	GLN
1	G	180	ASN
1	G	495	GLN
1	G	560	ASN
1	G	676	HIS
1	G	713	HIS
1	G	719	GLN
1	G	731	HIS
1	G	944	ASN
1	G	980	ASN
1	G	1028	HIS
1	G	1057	HIS
1	G	1064	HIS
1	G	1114	GLN
1	G	1146	GLN
1	G	1348	GLN

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Mol	Chain	Res	Type
3	e	123	GLN
3	e	124	GLN
3	e	137	HIS
3	e	247	GLN
3	e	298	ASN
3	e	348	GLN
4	j	100	ASN
4	j	108	ASN
4	j	315	GLN
4	o	181	ASN
3	f	137	HIS
3	f	332	GLN
3	f	339	HIS
3	f	344	GLN
3	f	408	ASN
3	f	418	GLN
4	k	24	GLN
4	k	38	HIS
4	k	181	ASN
4	k	190	ASN
4	k	207	ASN
4	p	181	ASN
4	p	244	ASN
4	p	315	GLN
3	g	120	GLN
3	g	156	ASN
3	g	247	GLN
3	g	270	ASN
3	g	273	ASN
3	g	348	GLN
3	g	429	GLN
3	g	461	ASN
4	l	38	HIS
4	l	53	ASN
4	l	99	GLN
4	l	192	GLN
4	q	85	HIS
4	q	181	ASN
4	q	192	GLN
4	q	213	ASN
3	h	124	GLN
3	h	137	HIS

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Mol	Chain	Res	Type
3	h	247	GLN
3	h	392	ASN
3	h	461	ASN
4	m	24	GLN
4	m	165	GLN
4	r	99	GLN
4	r	207	ASN
4	r	213	ASN
4	r	265	HIS
3	i	332	GLN
3	i	348	GLN
3	i	408	ASN
3	i	418	GLN
3	i	461	ASN
4	n	53	ASN
4	n	99	GLN
4	n	315	GLN
4	s	38	HIS
4	s	192	GLN
4	s	213	ASN
4	s	251	GLN
4	s	254	ASN
4	s	315	GLN
1	z	267	GLN
1	z	1074	GLN
1	z	1081	GLN
1	z	1341	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.

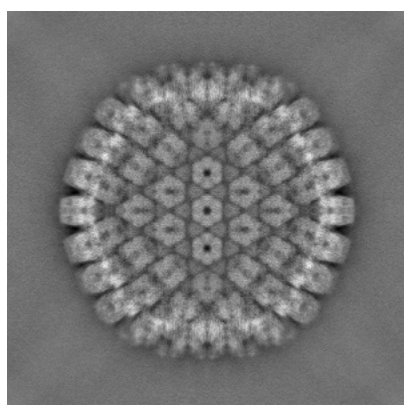
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0880. These allow visual inspection of the internal detail of the map and identification of artifacts.

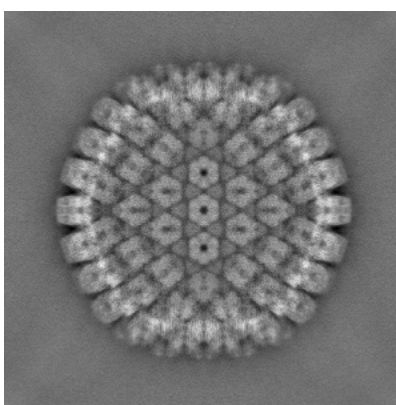
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

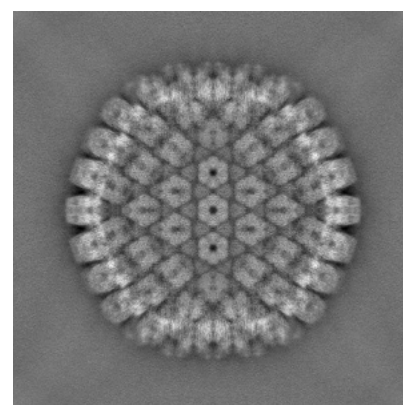
6.1.1 Primary map



X



Y

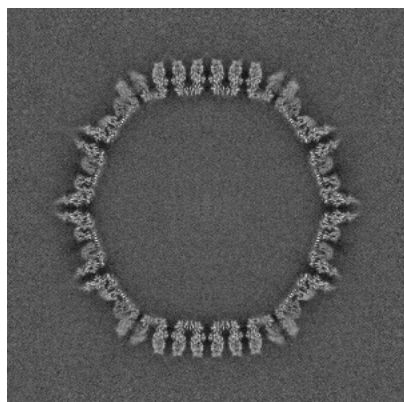


Z

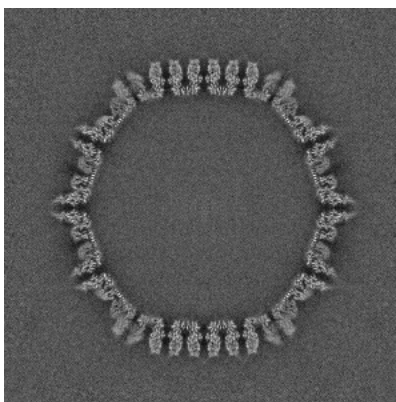
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

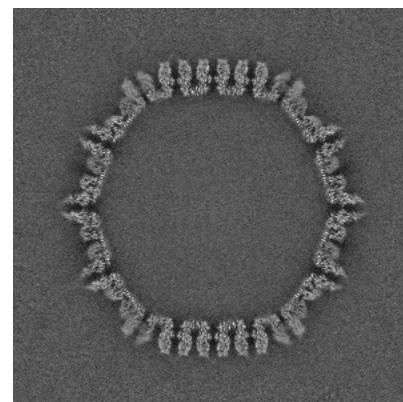
6.2.1 Primary map



X Index: 640



Y Index: 640

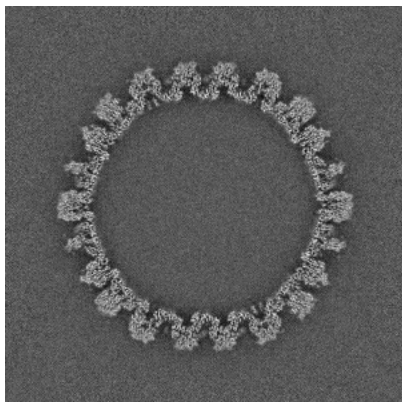


Z Index: 640

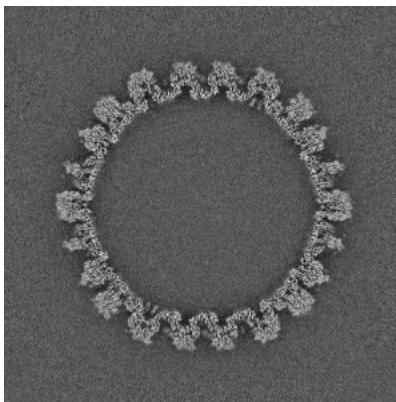
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

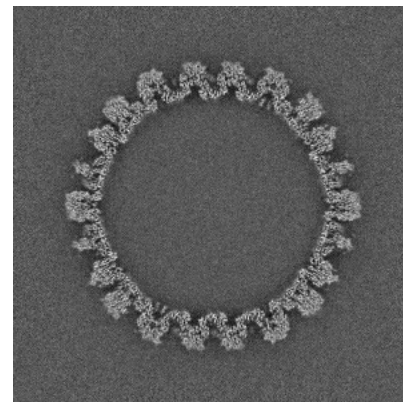
6.3.1 Primary map



X Index: 537



Y Index: 743

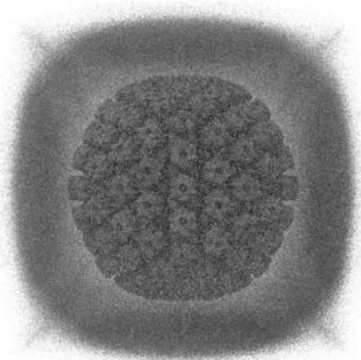


Z Index: 742

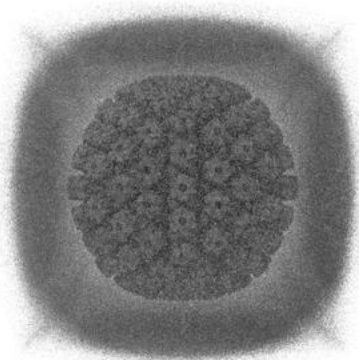
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

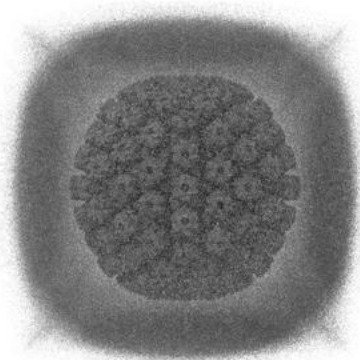
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 3.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

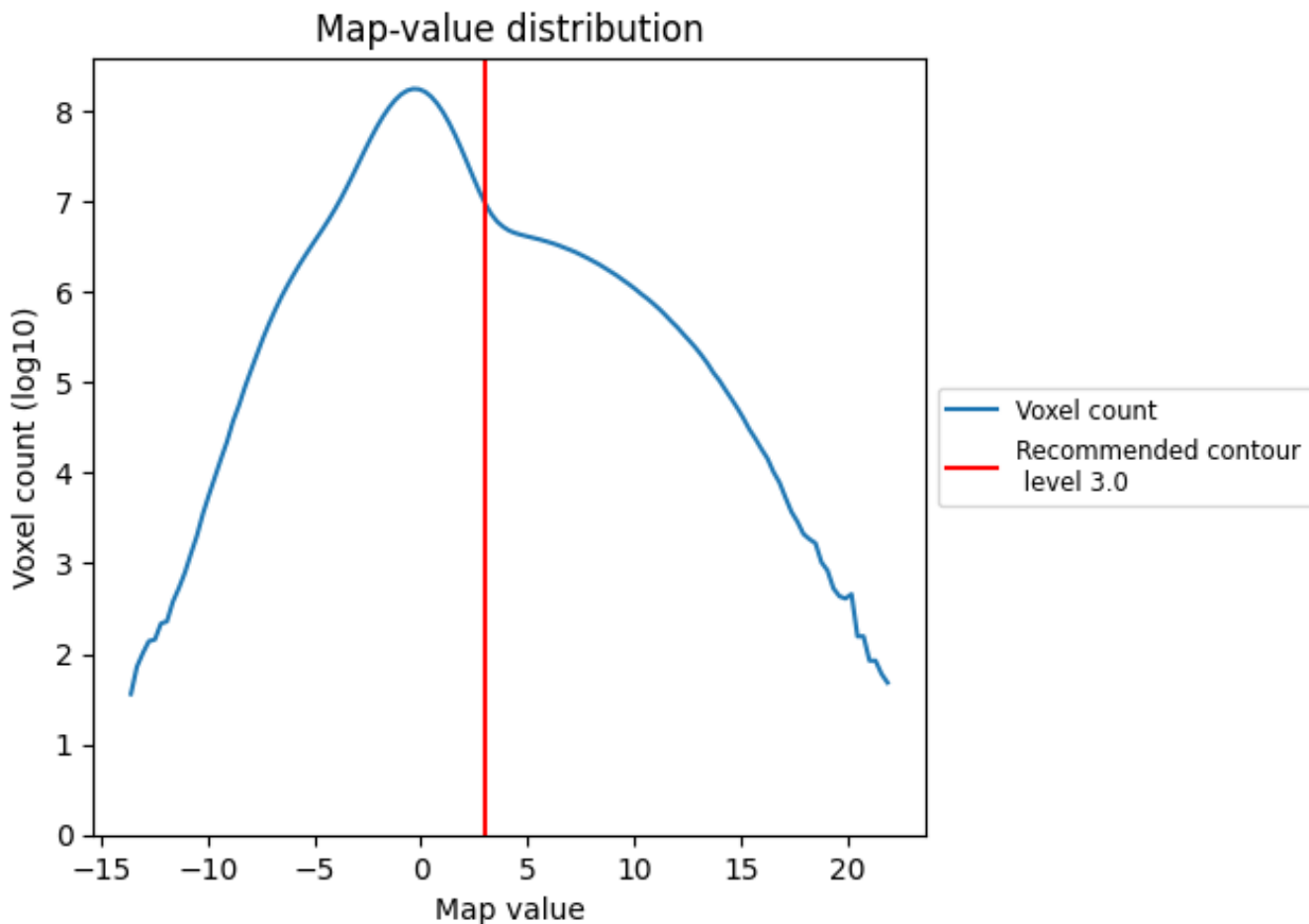
6.5 Mask visualisation

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

7 Map analysis [i](#)

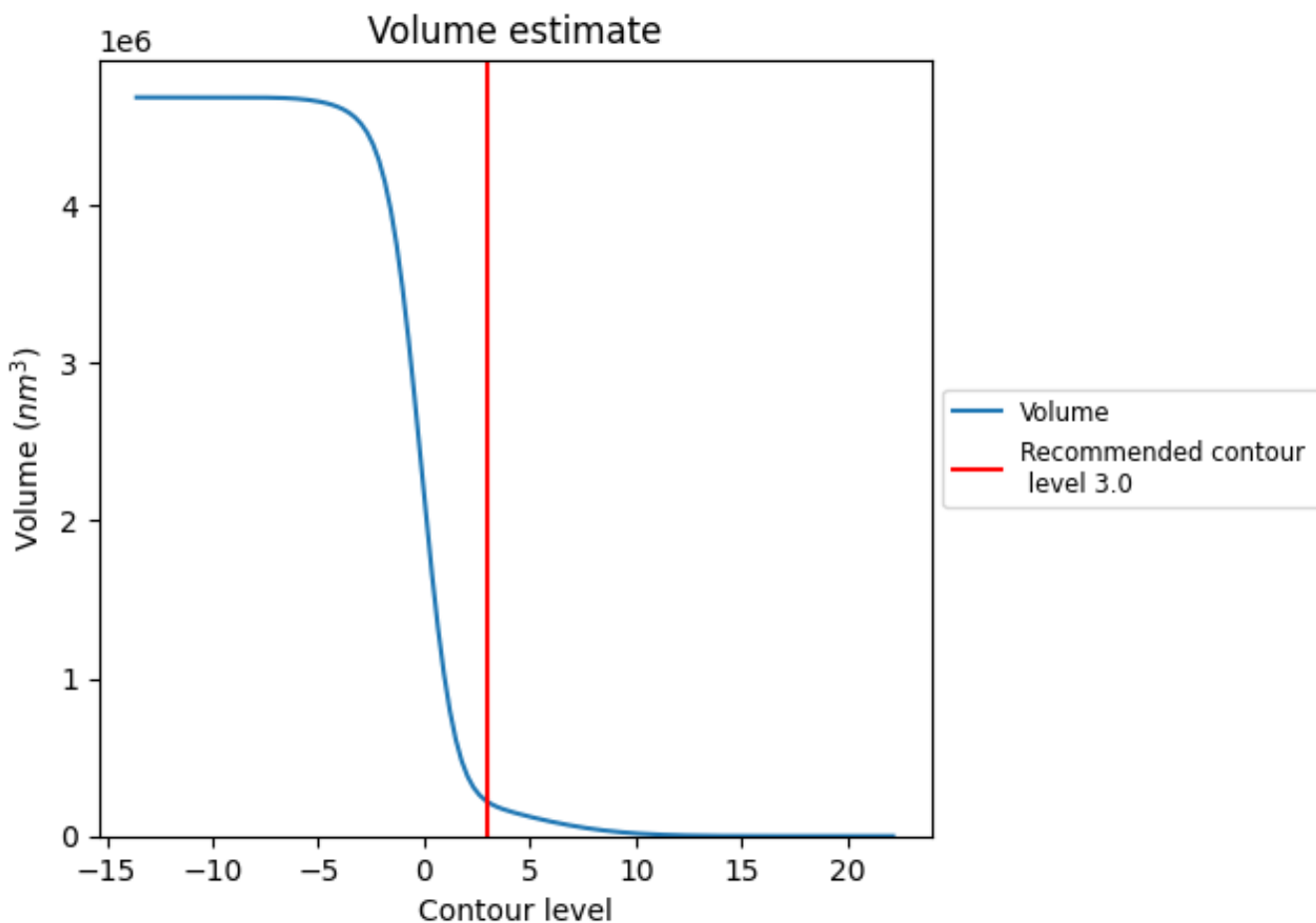
This section contains the results of statistical analysis of the map.

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.

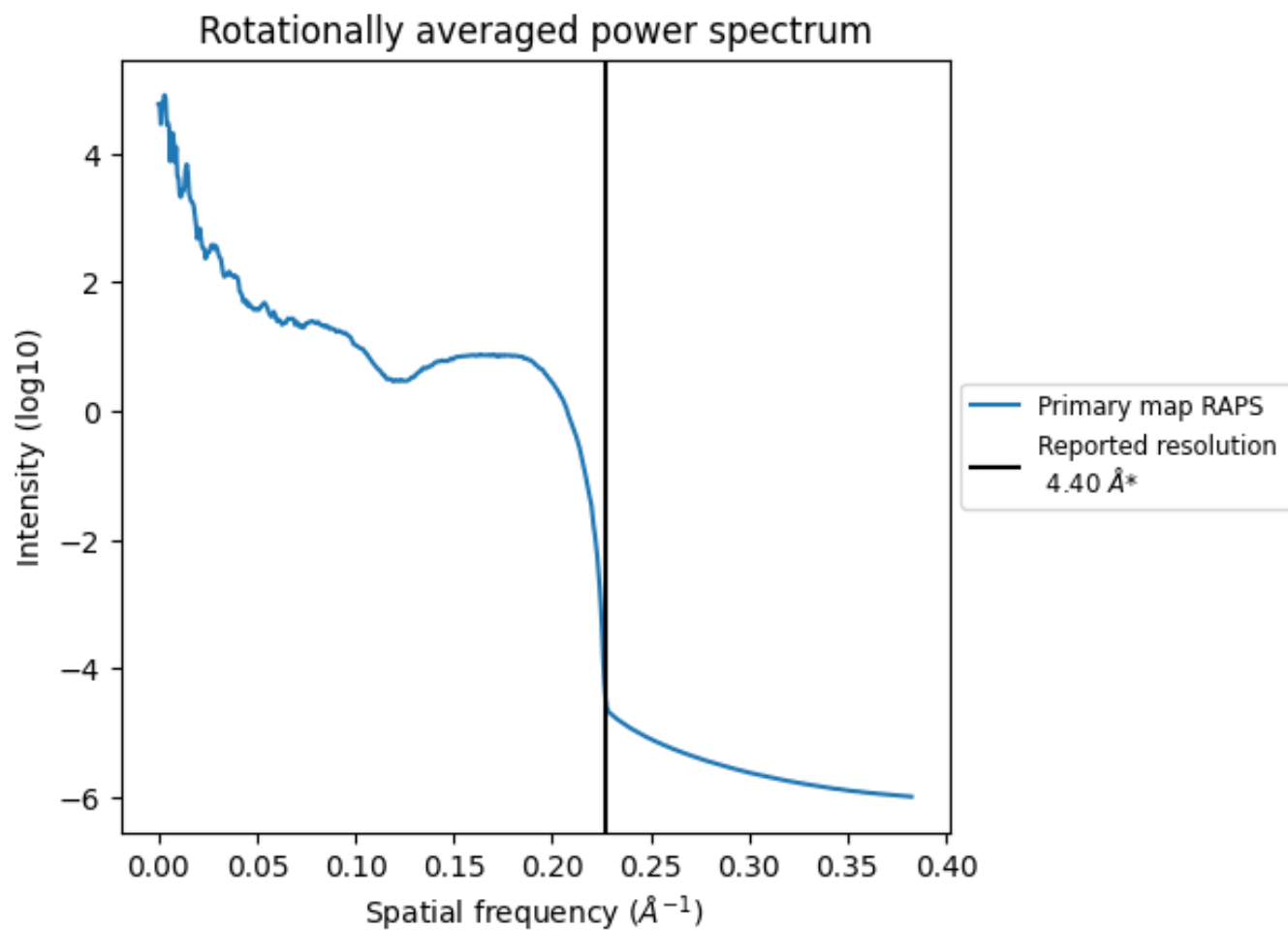
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 217083 nm³; this corresponds to an approximate mass of 196097 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 0.227\AA^{-1}

8 Fourier-Shell correlation

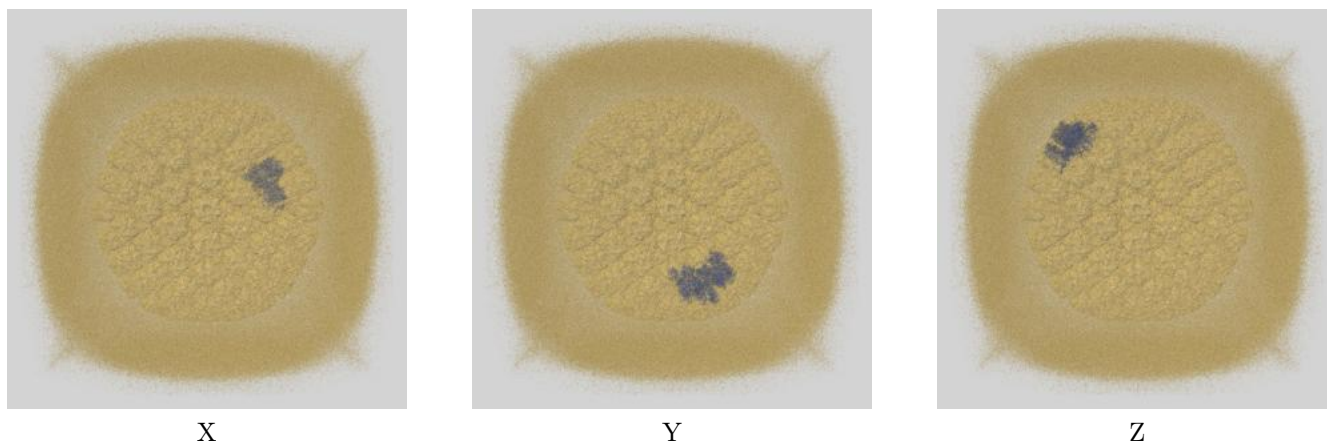
This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

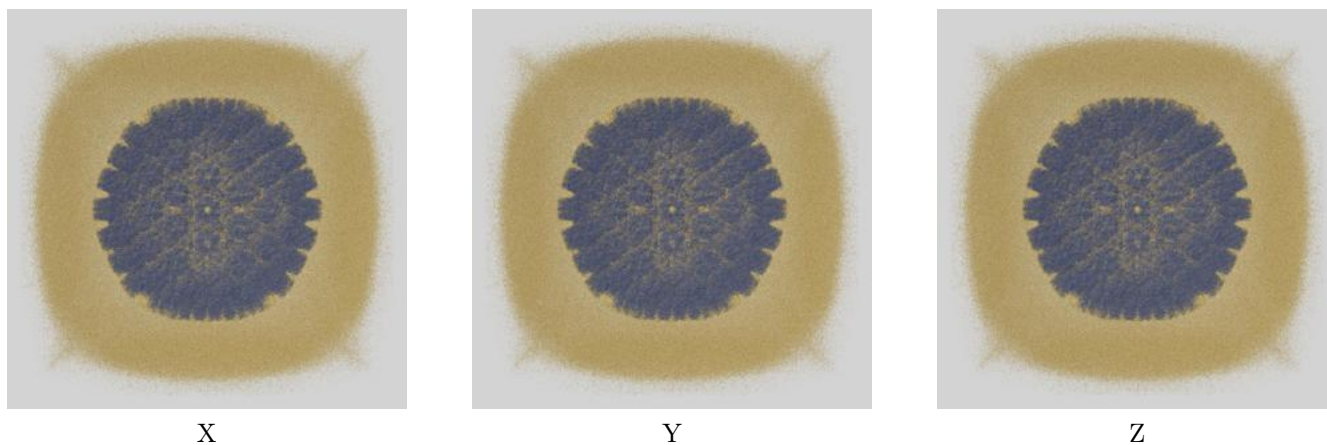
This section contains information regarding the fit between EMDB map EMD-0880 and PDB model 6LGL. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlays

9.1.1 Map-model overlay [i](#)

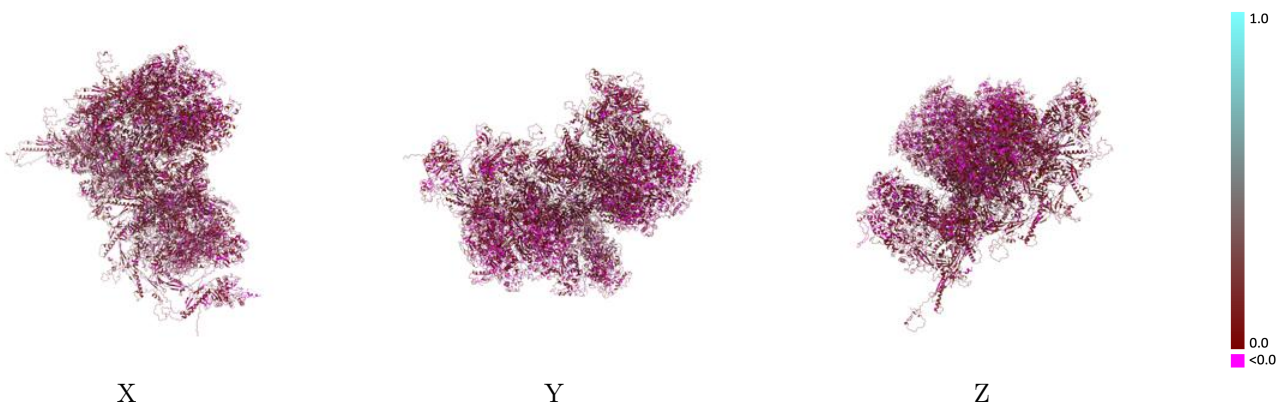


9.1.2 Map-model assembly overlay [i](#)



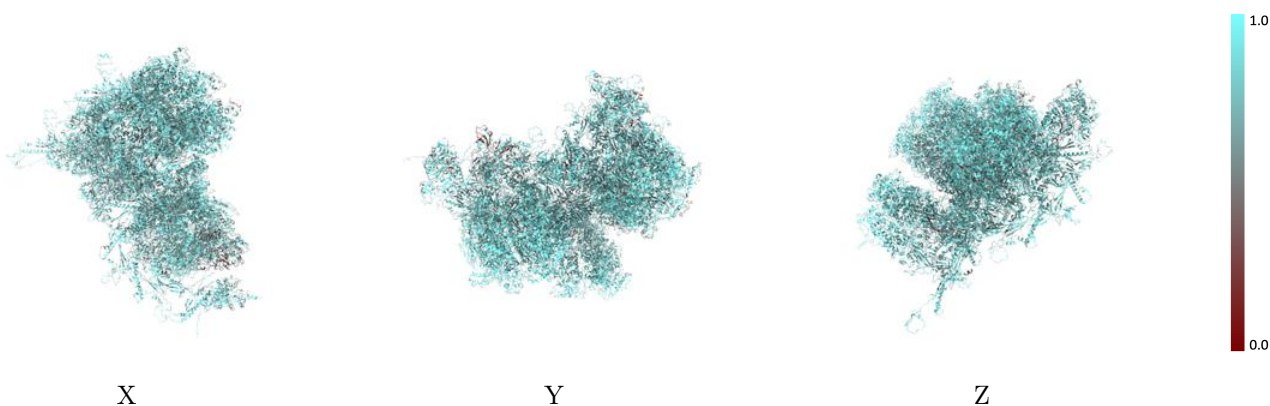
The images above show the 3D surface view of the map at the recommended contour level 3.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



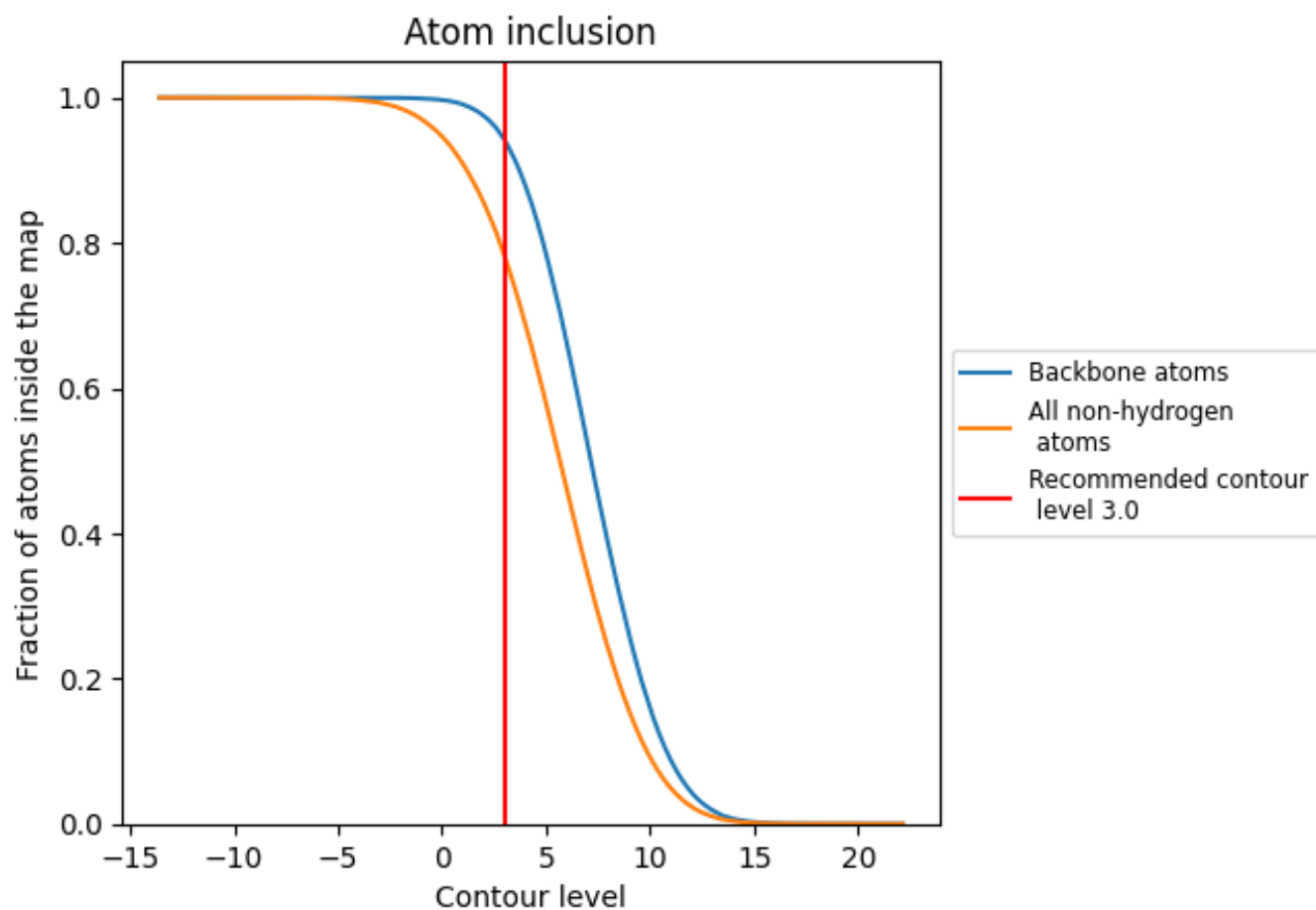
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (3.0).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 78% 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 (3.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7819	 0.1140
A	 0.7865	 0.1250
B	 0.8086	 0.1040
C	 0.7990	 0.1140
D	 0.7716	 0.0790
E	 0.7852	 0.1150
F	 0.7949	 0.1040
G	 0.8007	 0.0950
H	 0.8988	 0.0650
I	 0.8932	 0.0840
J	 0.8743	 0.0690
K	 0.8784	 0.0920
L	 0.8581	 0.0630
M	 0.7876	 0.1210
N	 0.8058	 0.1210
O	 0.7979	 0.1170
P	 0.8042	 0.1140
Q	 0.7940	 0.1200
R	 0.7906	 0.1220
S	 0.7978	 0.1220
T	 0.7950	 0.1230
U	 0.7986	 0.1000
V	 0.7230	 0.0870
W	 0.7459	 0.0560
X	 0.7419	 0.0480
Y	 0.7635	 0.0730
Z	 0.7689	 0.0600
a	 0.8568	 0.0910
b	 0.8646	 0.0990
c	 0.8608	 0.0560
d	 0.9095	 0.0780
e	 0.5730	 0.1210
f	 0.7441	 0.1350
g	 0.7843	 0.1210
h	 0.7459	 0.1330



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Chain	Atom inclusion	Q-score
i	 0.7316	 0.1340
j	 0.5381	 0.1020
k	 0.7165	 0.1360
l	 0.7547	 0.1290
m	 0.7266	 0.1400
n	 0.7266	 0.1370
o	 0.5267	 0.1070
p	 0.7371	 0.1420
q	 0.7641	 0.1310
r	 0.7265	 0.1320
s	 0.7355	 0.1410
z	 0.7261	 0.0980