



Full wwPDB EM Validation Report ⓘ

Mar 6, 2026 – 09:30 AM UTC

PDB ID : 9OP5 / pdb_00009op5
EMDB ID : EMD-70679
Title : Herpes simplex virus type 1 (HSV-1) B-capsid pUL6 portal protein, dodecameric complex
Authors : Crofut, E.H.; Kashyap, S.; Stevens, A.; Jih, J.; Liu, Y.-T.; Zhou, Z.H.
Deposited on : 2025-05-16
Resolution : 3.50 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.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

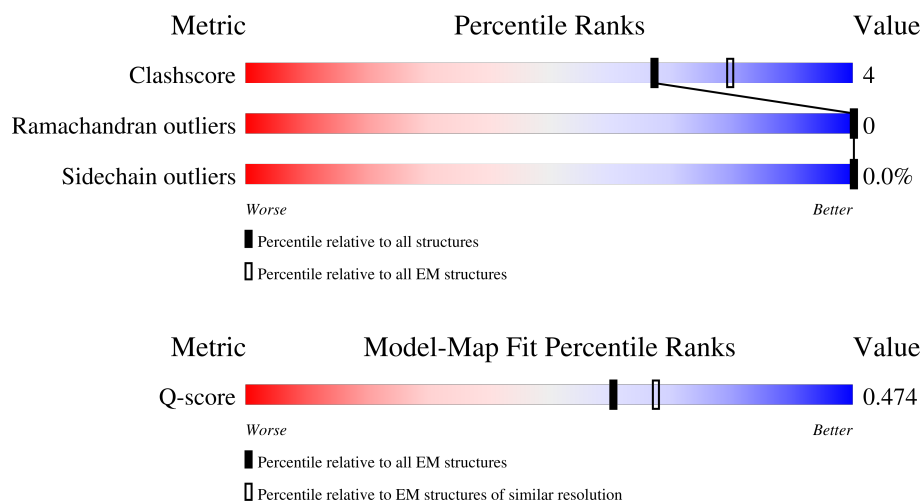
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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.



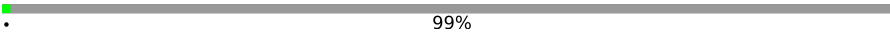
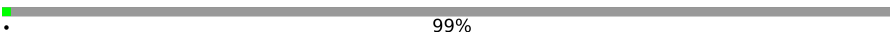
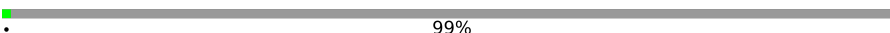
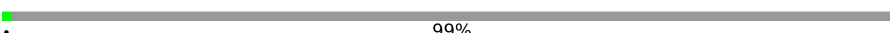
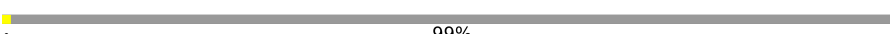
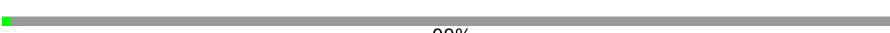
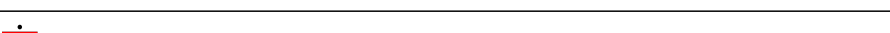
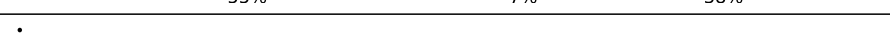
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	13950 (3.00 - 4.00)

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	635	99%
1	B	635	99%
1	C	635	99%
1	D	635	99%

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Mol	Chain	Length	Quality of chain
1	E	635	 99%
1	F	635	 99%
1	G	635	 99%
1	H	635	 99%
1	I	635	 99%
1	J	635	 99%
1	K	635	 99%
1	L	635	 99%
2	a	676	 56% 5% 38%
2	b	676	 56% 5% 38%
2	c	676	 55% 6% 38%
2	d	676	 54% 7% 38%
2	e	676	 56% 5% 38%
2	f	676	 56% 6% 38%
2	g	676	 55% 7% 38%
2	h	676	 55% 7% 38%
2	i	676	 55% 7% 38%
2	j	676	 56% 5% 38%
2	k	676	 56% 5% 38%
2	l	676	 56% 5% 38%

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 40476 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Capsid scaffolding protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	A	7	Total	C	N	O	0	0
			56	38	7	11		
1	B	7	Total	C	N	O	0	0
			56	38	7	11		
1	C	7	Total	C	N	O	0	0
			56	38	7	11		
1	D	7	Total	C	N	O	0	0
			56	38	7	11		
1	E	7	Total	C	N	O	0	0
			56	38	7	11		
1	F	7	Total	C	N	O	0	0
			56	38	7	11		
1	G	7	Total	C	N	O	0	0
			56	38	7	11		
1	H	7	Total	C	N	O	0	0
			56	38	7	11		
1	I	7	Total	C	N	O	0	0
			56	38	7	11		
1	J	7	Total	C	N	O	0	0
			56	38	7	11		
1	K	7	Total	C	N	O	0	0
			56	38	7	11		
1	L	7	Total	C	N	O	0	0
			56	38	7	11		

- Molecule 2 is a protein called Capsid portal protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	a	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	b	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	c	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		

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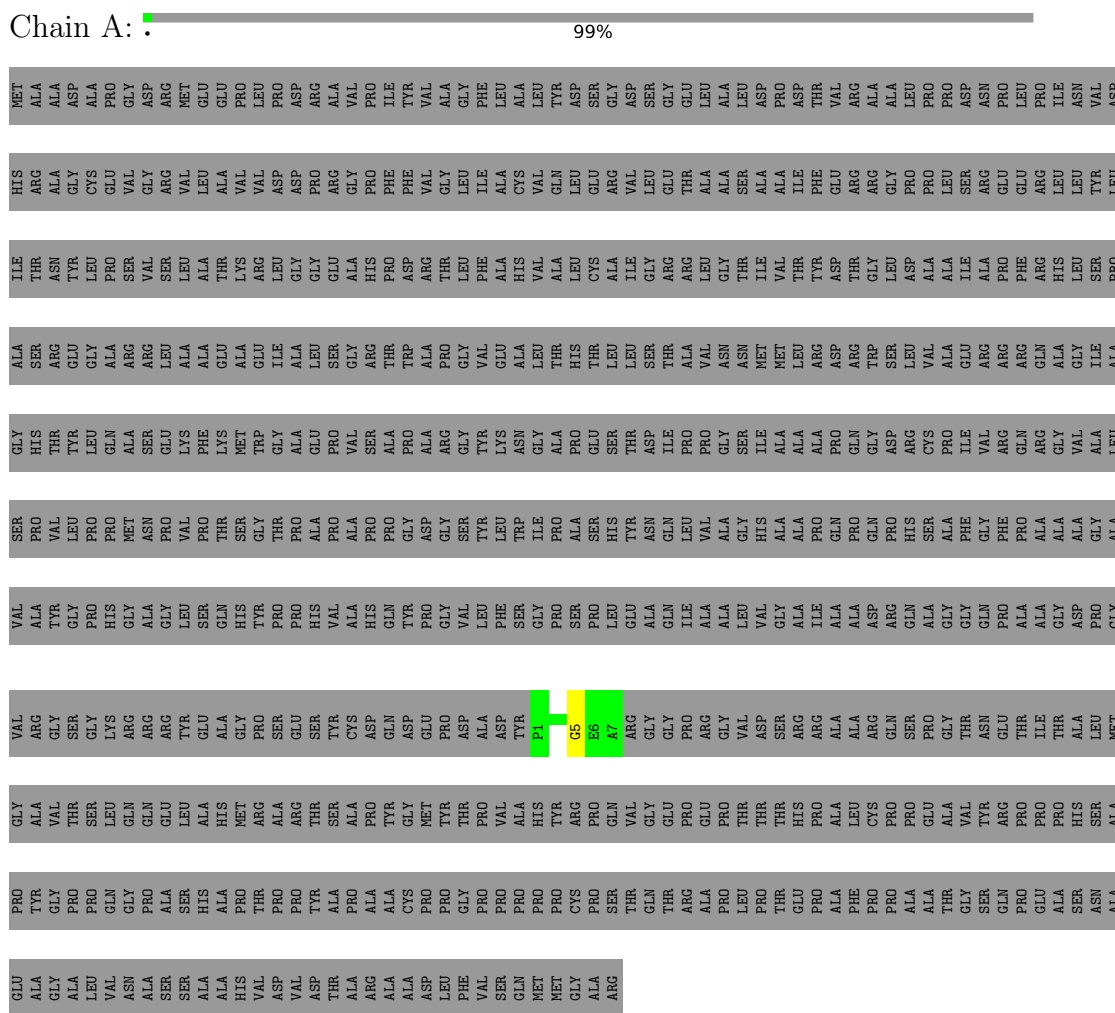
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Mol	Chain	Residues	Atoms					AltConf	Trace
2	d	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	e	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	f	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	g	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	h	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	i	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	j	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	k	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		
2	l	416	Total	C	N	O	S	0	0
			3317	2110	601	597	9		

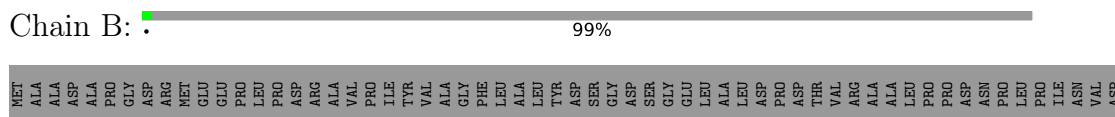
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Capsid scaffolding protein



- Molecule 1: Capsid scaffolding protein





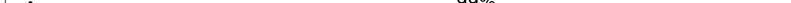
[illegible]

- Molecule 1: Capsid scaffolding protein

Chain D: 99%

[illegible]

- Molecule 1: Capsid scaffolding protein

Chain E:  99%

[illegible]

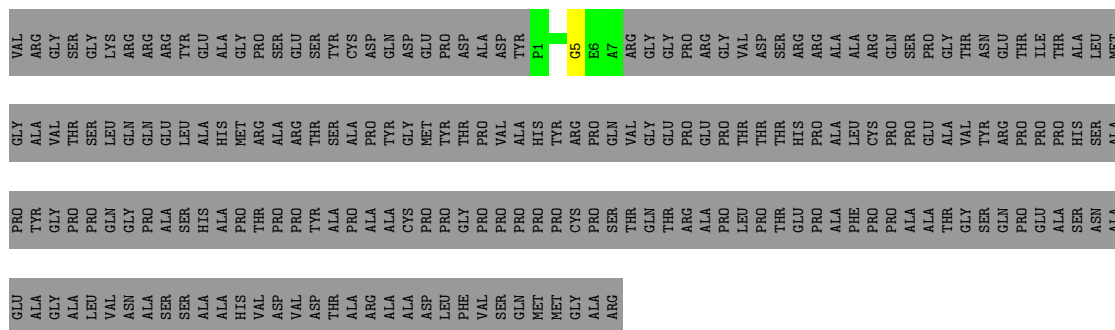
99%

[illegible]

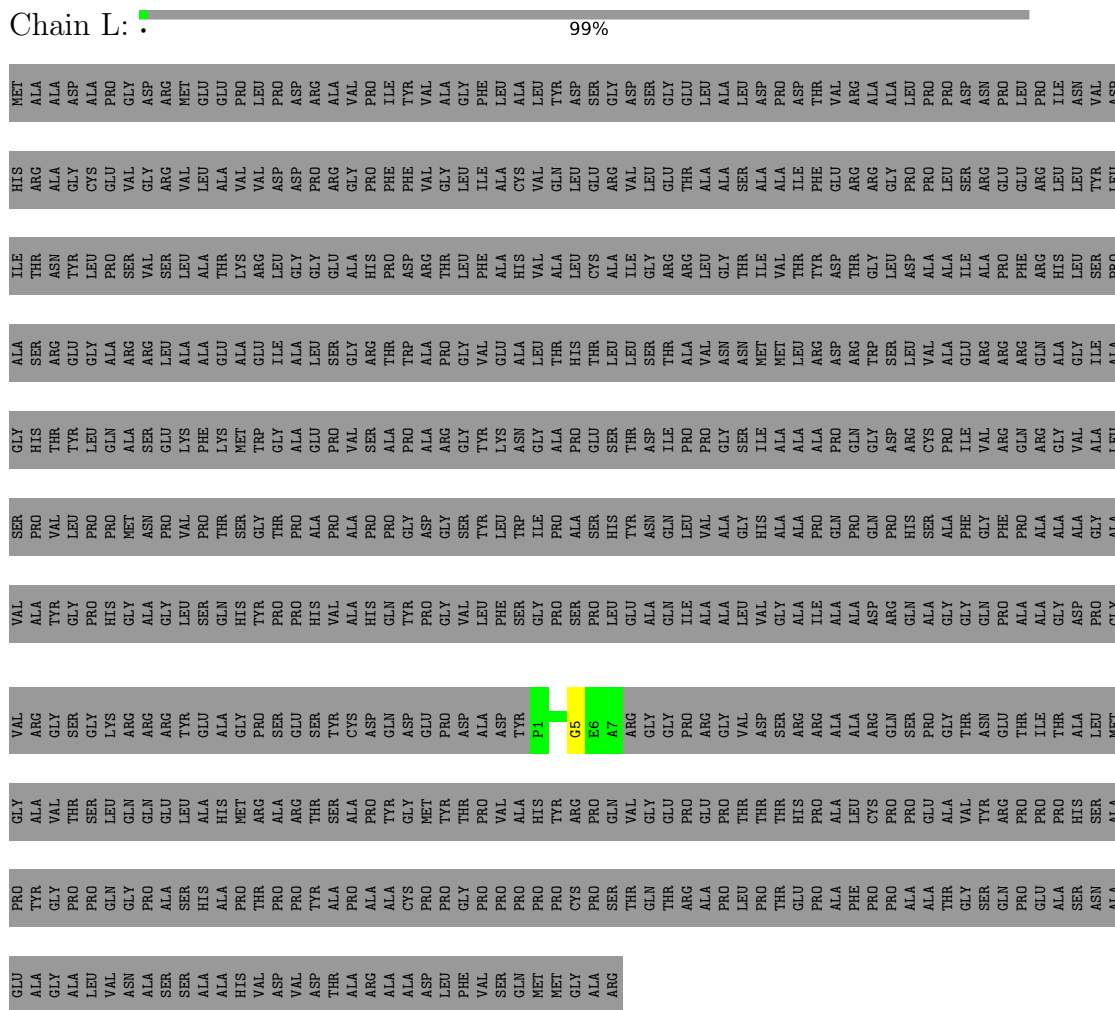
- Molecule 1: Capsid scaffolding protein

99%

VAL	SER	GLY	ALA	ILE	HIS	MET
VAL	PRO	HIS	SER	THR	ARG	MET
ALA	VAL	THR	ARG	ASN	ALA	ALA
TYR	LEU	TYR	GLU	TYR	GLY	ASP
PRO	PRO	LEU	GLY	LEU	CYS	ALA
HIS	PRO	GLN	ALA	HIS	PRO	PRO
GLY	MET	ALA	ARG	SER	VAL	GLY
ASN	ASN	SER	ARG	VAL	GLY	ASP
GLY	PRO	GLU	LEU	PRO	ARG	MET
LEU	VAL	PHE	ALA	LEU	LEU	GLU
SER	PRO	LYS	GLU	THR	ALA	GLY
THR	THR	MET	ALA	LYS	VAL	PRO
SER	GLY	THR	GLU	ARG	VAL	LEU
GLY	THR	GLY	ILE	LEU	ASP	PRO
PRO	PRO	ALA	ALA	GLY	ASP	ASP
ALA	ALA	GLU	LEU	GLY	PRO	ARG
HIS	ALA	PRO	SER	GLU	ARG	ALA
VAL	ALA	VAL	GLY	ALA	GLY	VAL
HIS	PRO	VAL	ARG	HIS	PRO	PRO
GLN	PRO	ALA	THR	ILE	PHE	TYR
TYR	GLY	PRO	TRP	ASP	PHE	TYR
PRO	ASP	ALA	ALA	ARG	VAL	VAL
GLY	GLY	ARG	PRO	THR	GLY	ALA
VAL	SER	GLY	GLY	LEU	LEU	GLY
LEU	TYR	LYS	VAL	PHE	ILE	PHE
PHE	LEU	TYR	GLU	ALA	ALA	LEU
SER	TRP	ASN	ALA	HIS	CYS	ALA
ILE	ILE	GLY	LEU	VAL	VAL	LEU
PRO	PRO	ALA	THR	ALA	GLN	TYR
SER	ALA	PRO	HIS	LEU	LEU	ASP
PRO	SER	GLU	THR	CYS	GLU	SER
GLY	HIS	SER	LEU	ALA	ARG	ASP
GLU	TYR	THR	LEU	ILE	VAL	ASP
ALA	ASN	ASP	SER	GLY	LEU	SER
GLN	GLN	ILE	THR	ARG	GLU	GLY
ILE	LEU	PRO	ALA	ARG	THR	GLU
ALA	VAL	PRO	VAL	LEU	ALA	LEU
ALA	ALA	GLY	ASN	GLY	ALA	ALA
LEU	GLY	SER	ASN	THR	SER	LEU
VAL	HIS	ILE	MET	ILE	ALA	ASP
GLY	ALA	ALA	MET	VAL	ALA	PRO
ILE	PRO	ALA	LEU	THR	ILE	ASP
ALA	GLN	PRO	ARG	TYR	PHE	THR
ALA	GLN	PRO	ASP	ARG	GLU	VAL
ASP	GLN	GLY	TRP	GLY	ARG	ALA
ARG	PRO	ASP	SER	LEU	GLY	ALA
GLN	HIS	ARG	LEU	LEU	PRO	LEU
GLY	SER	CYS	VAL	ALA	PRO	PRO
ALA	ALA	PRO	ALA	ALA	LEU	PRO
GLY	PHE	ILE	GLU	ILE	SER	ASP
GLN	GLY	VAL	ARG	PRO	ARG	ASN
PRO	PHE	ARG	ARG	PRO	GLU	PRO
ALA	PRO	GLN	ARG	PHE	GLU	LEU
ALA	ALA	GLY	GLN	ARG	LEU	ILE
GLY	ALA	GLY	ALA	HIS	LEU	ASN
ASP	ALA	VAL	GLY	LEU	LEU	ASN
PRO	GLY	ALA	ILE	SER	THR	ASP
TYR	ALA	THR	ALA	PRO	THR	VAL

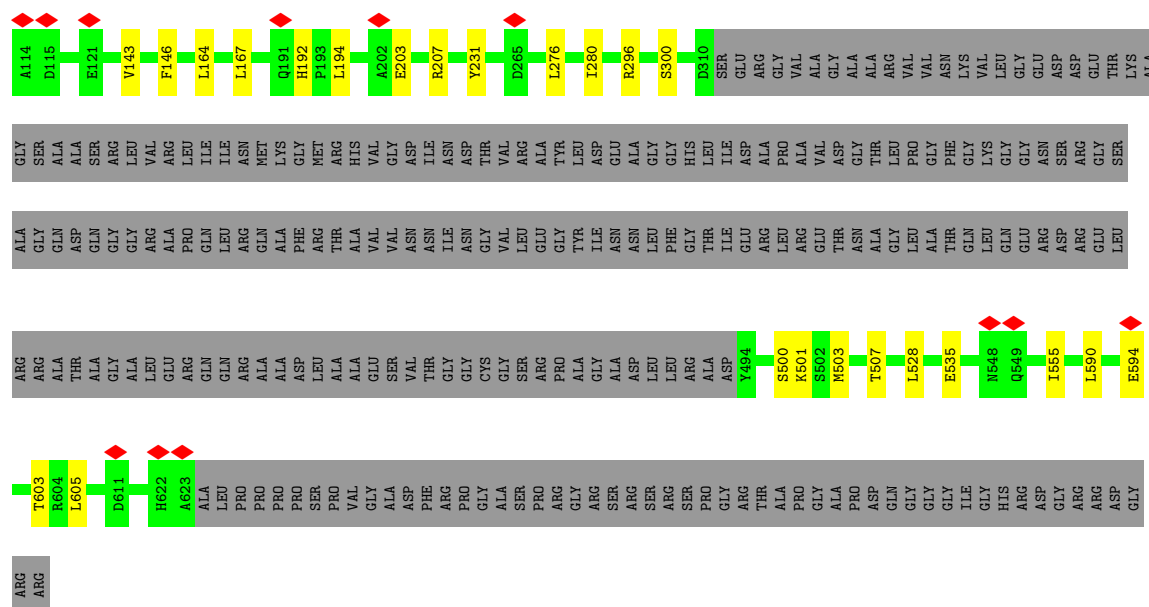


- Molecule 1: Capsid scaffolding protein

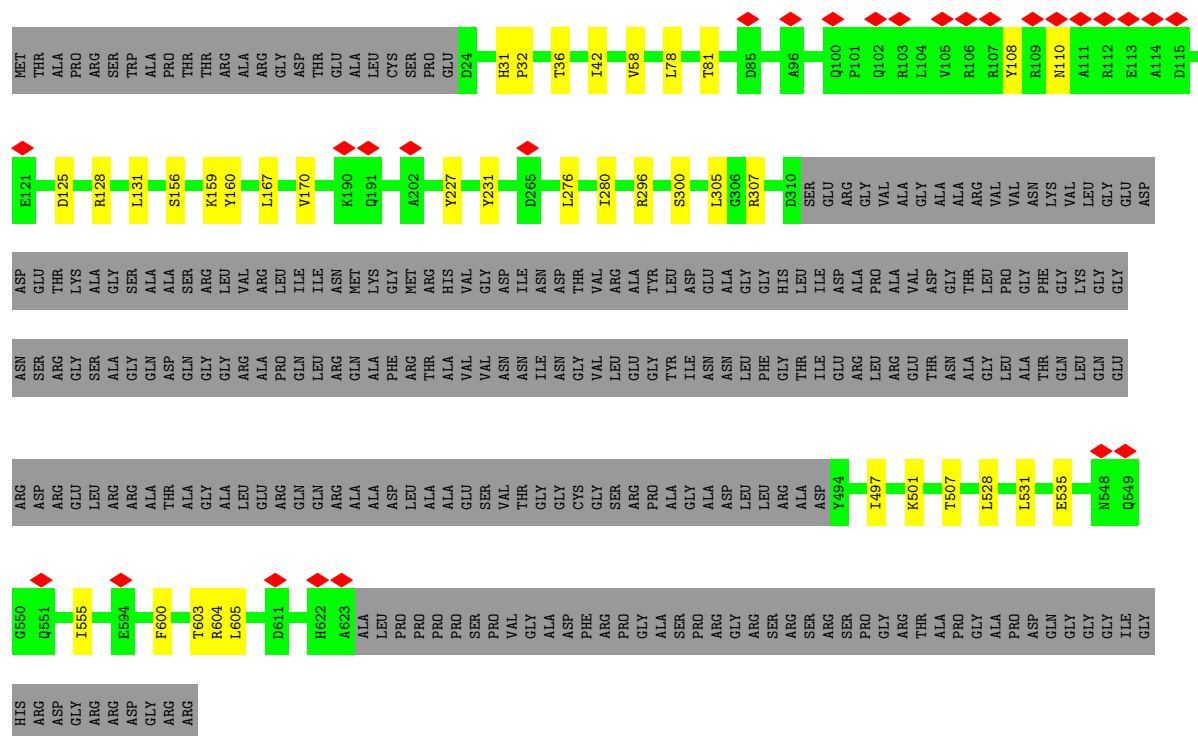


- Molecule 2: Capsid portal protein



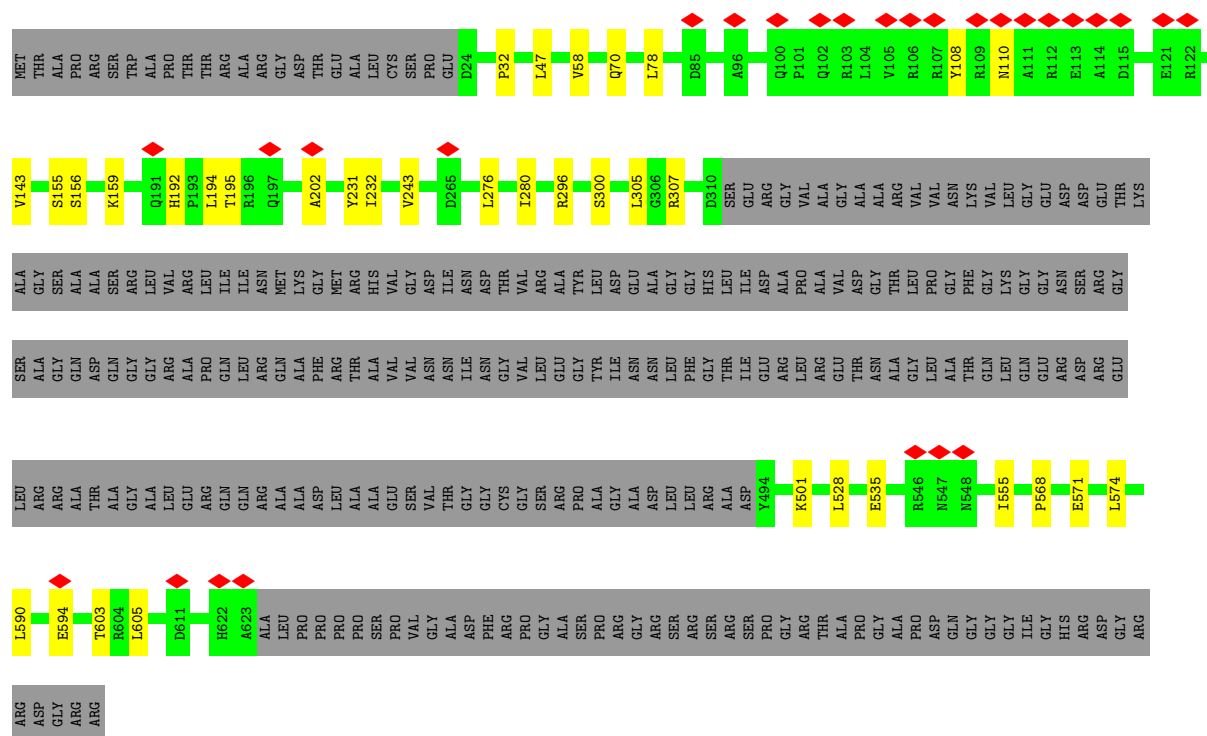


- Molecule 2: Capsid portal protein

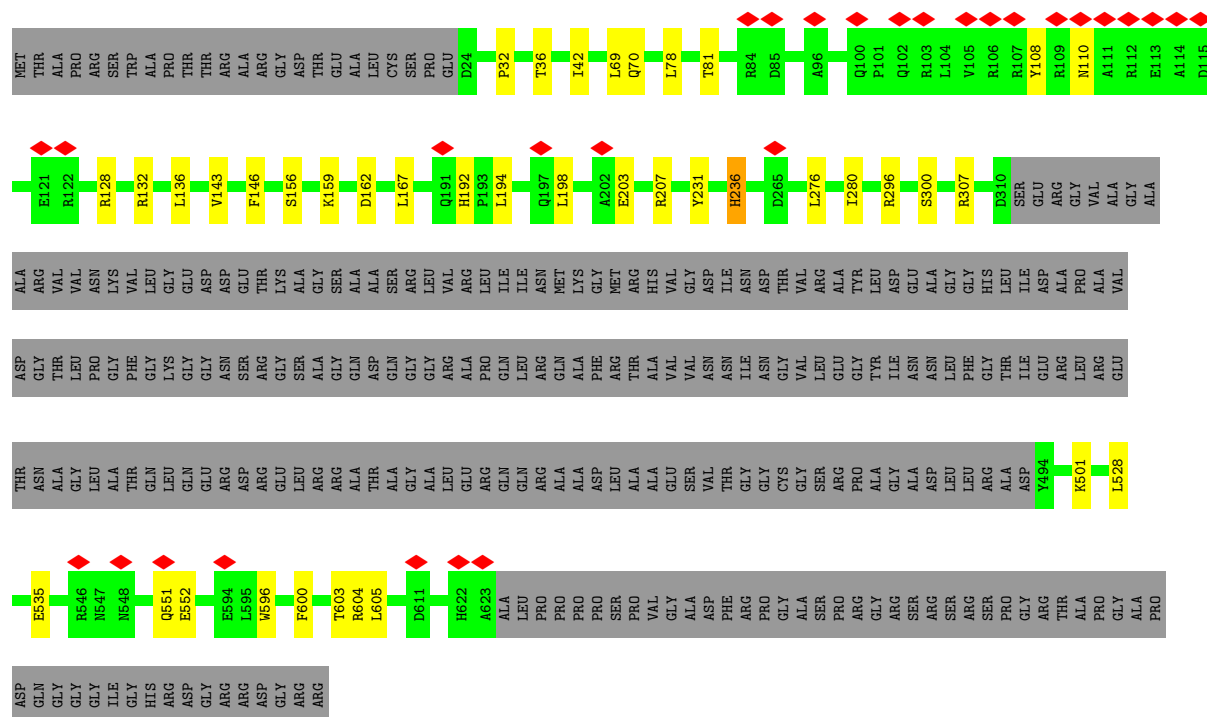


- Molecule 2: Capsid portal protein



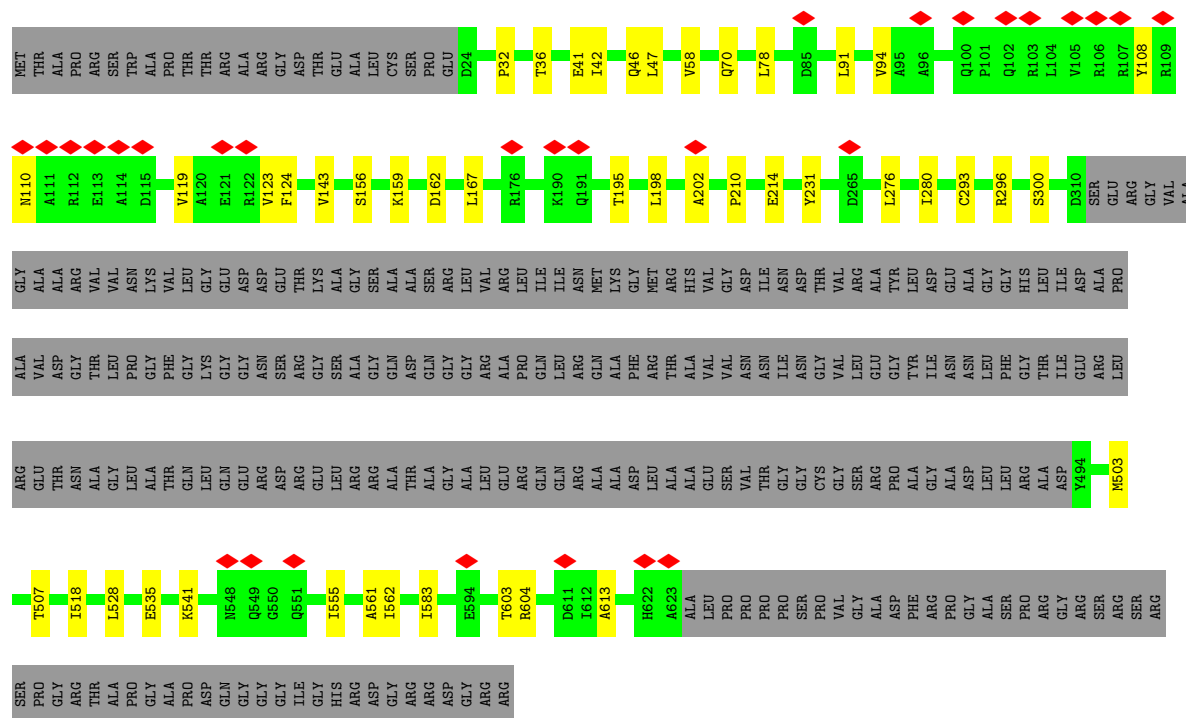


• Molecule 2: Capsid portal protein

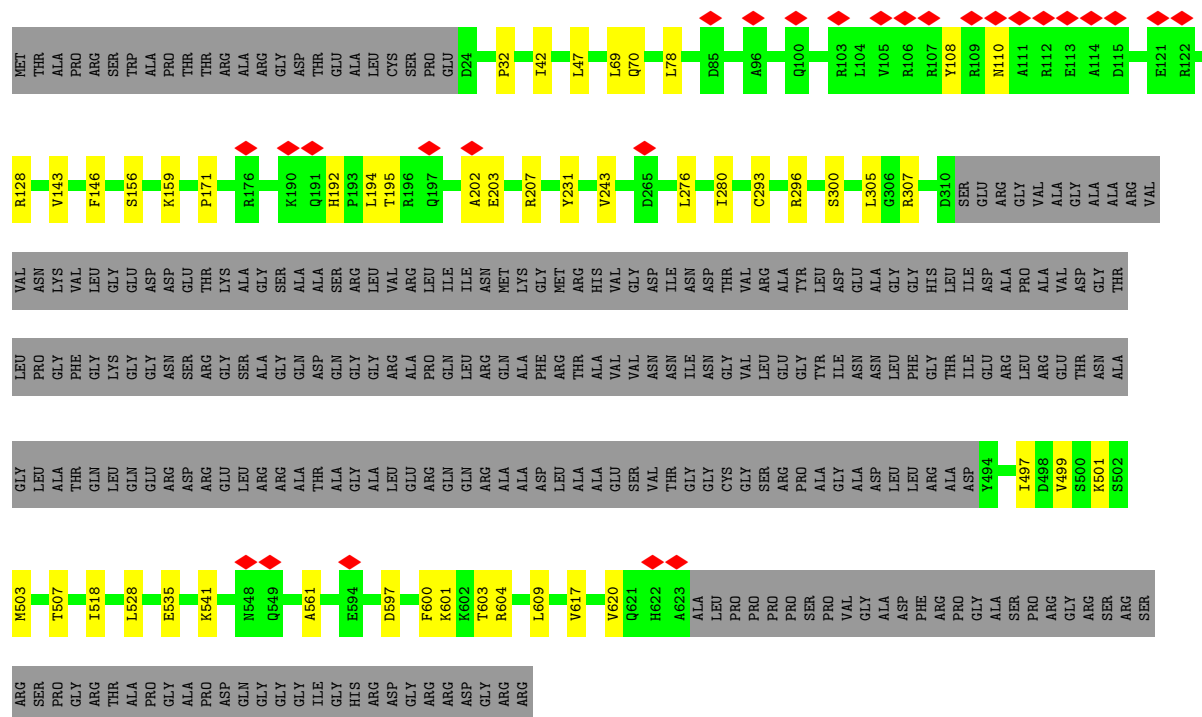


• Molecule 2: Capsid portal protein



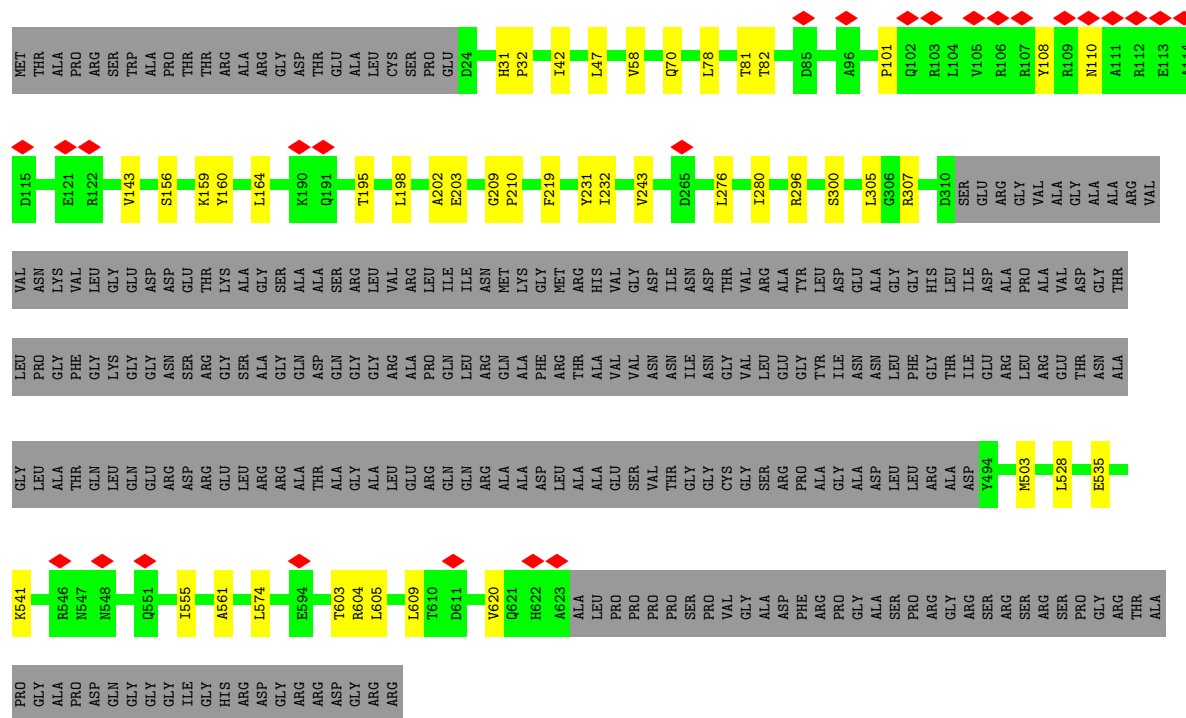


- Molecule 2: Capsid portal protein

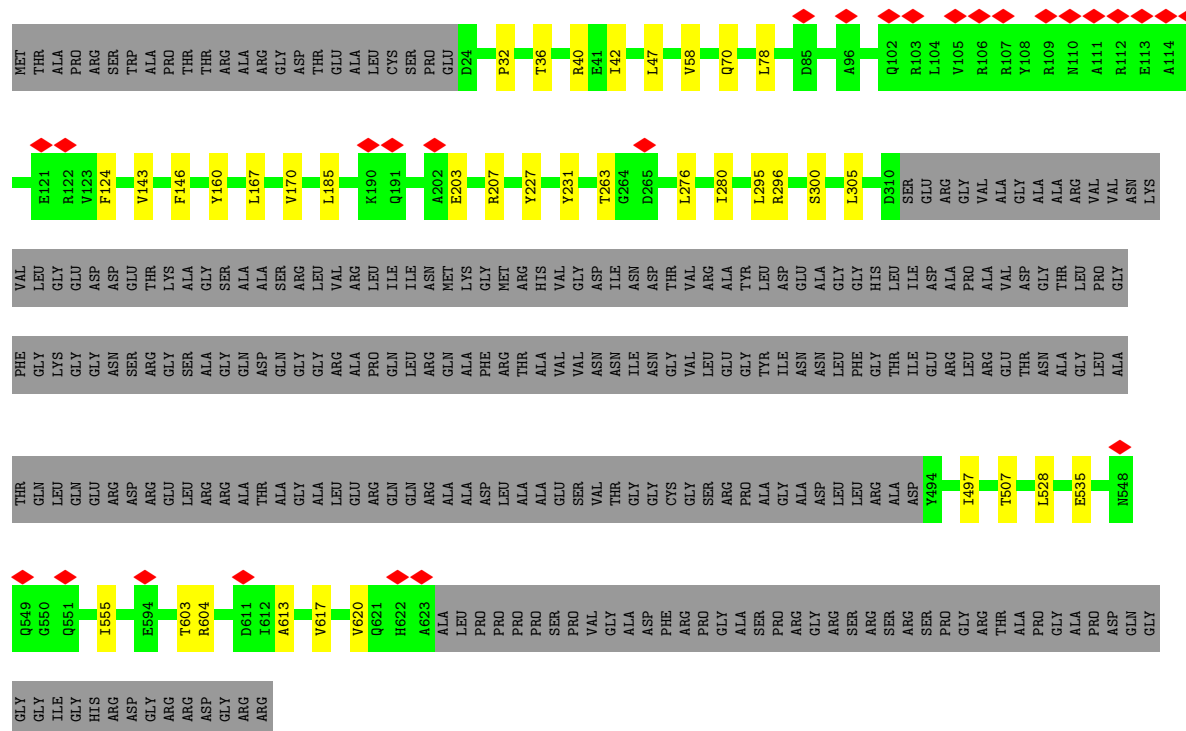


- Molecule 2: Capsid portal protein



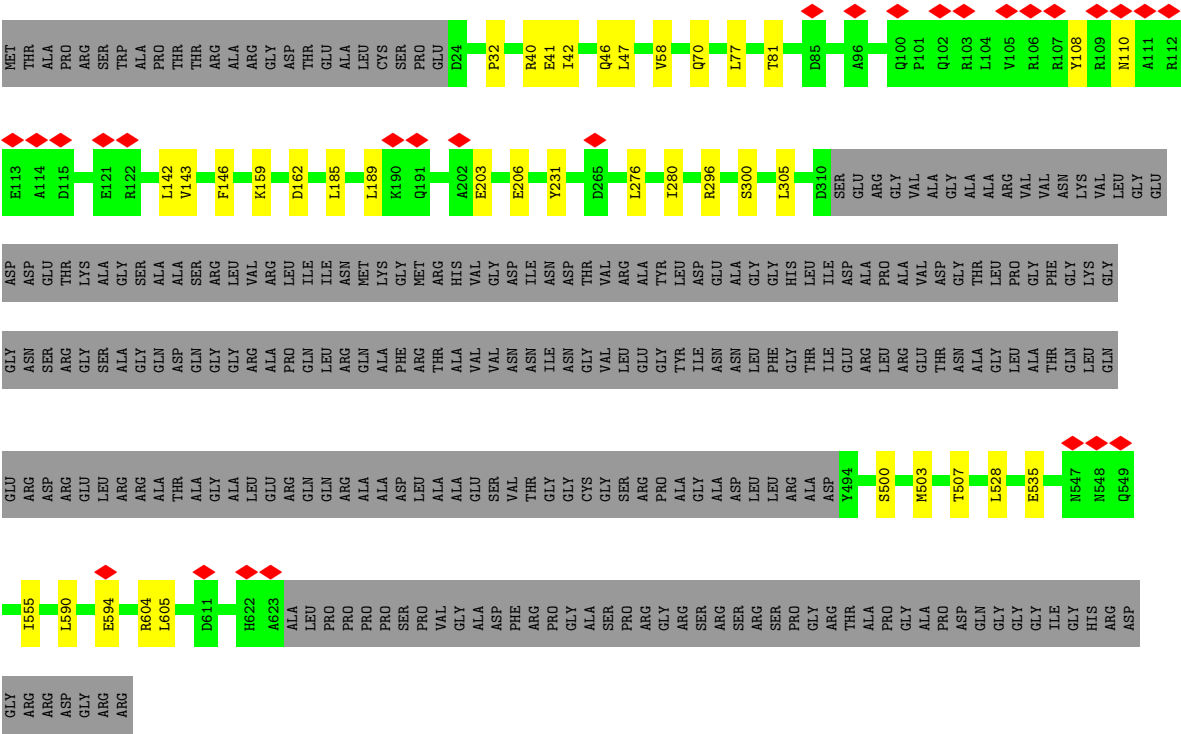


- Molecule 2: Capsid portal protein

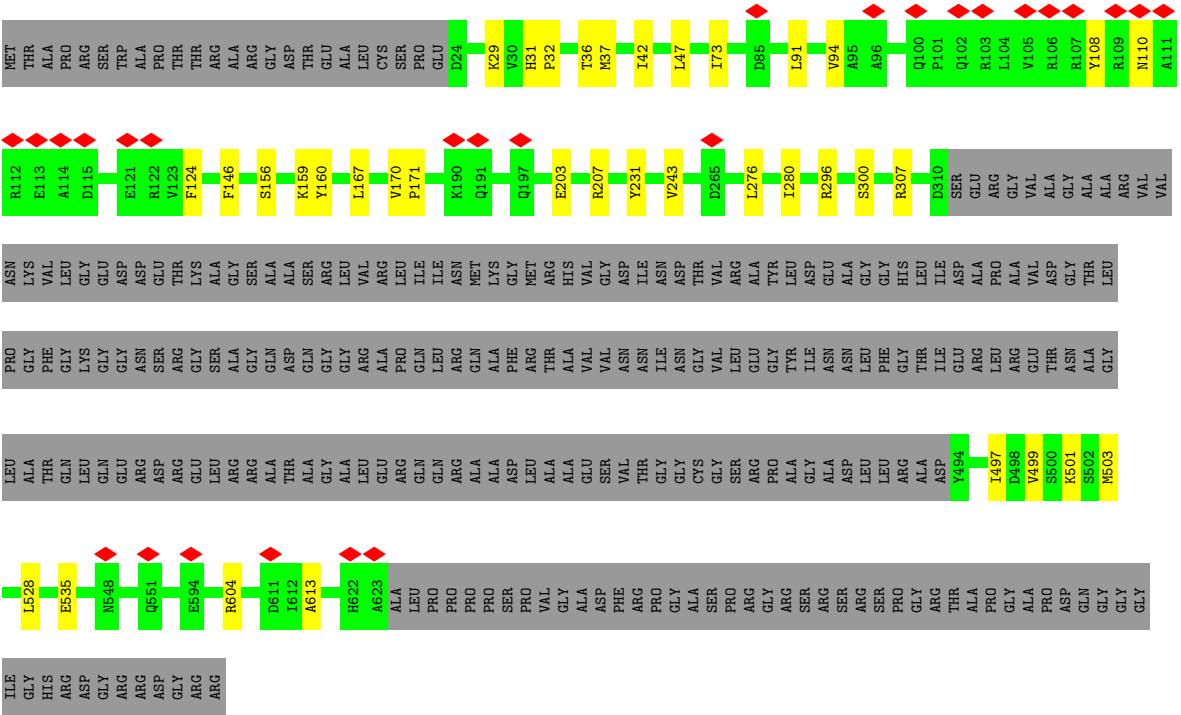


- Molecule 2: Capsid portal protein





• Molecule 2: Capsid portal protein



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C12	Depositor
Number of particles used	799092	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.012	Depositor
Minimum map value	-1.402	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.044	Depositor
Recommended contour level	0.187	Depositor
Map size (Å)	528.0, 528.0, 528.0	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	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	0.08	0/59	0.25	0/80
1	B	0.10	0/59	0.26	0/80
1	C	0.12	0/59	0.26	0/80
1	D	0.08	0/59	0.25	0/80
1	E	0.09	0/59	0.24	0/80
1	F	0.09	0/59	0.26	0/80
1	G	0.10	0/59	0.26	0/80
1	H	0.09	0/59	0.27	0/80
1	I	0.13	0/59	0.36	0/80
1	J	0.09	0/59	0.26	0/80
1	K	0.08	0/59	0.25	0/80
1	L	0.08	0/59	0.28	0/80
2	a	0.11	0/3401	0.28	0/4626
2	b	0.11	0/3401	0.27	0/4626
2	c	0.12	0/3401	0.29	0/4626
2	d	0.11	0/3401	0.28	0/4626
2	e	0.11	0/3401	0.28	0/4626
2	f	0.11	0/3401	0.28	0/4626
2	g	0.12	0/3401	0.29	0/4626
2	h	0.11	0/3401	0.28	0/4626
2	i	0.11	0/3401	0.29	0/4626
2	j	0.11	0/3401	0.29	0/4626
2	k	0.12	0/3401	0.30	0/4626
2	l	0.12	0/3401	0.28	0/4626
All	All	0.11	0/41520	0.28	0/56472

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	56	0	48	1	0
1	B	56	0	48	1	0
1	C	56	0	48	1	0
1	D	56	0	48	2	0
1	E	56	0	48	1	0
1	F	56	0	48	1	0
1	G	56	0	48	3	0
1	H	56	0	48	1	0
1	I	56	0	48	4	0
1	J	56	0	48	1	0
1	K	56	0	48	1	0
1	L	56	0	48	1	0
2	a	3317	0	3264	26	0
2	b	3317	0	3264	25	0
2	c	3317	0	3264	31	0
2	d	3317	0	3264	33	0
2	e	3317	0	3264	23	0
2	f	3317	0	3264	29	0
2	g	3317	0	3264	29	0
2	h	3317	0	3264	32	0
2	i	3317	0	3264	31	0
2	j	3317	0	3264	25	0
2	k	3317	0	3264	30	0
2	l	3317	0	3264	26	0
All	All	40476	0	39744	306	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (306) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:e:78:LEU:HD13	2:e:603:THR:HG21	1.64	0.79
2:a:500:SER:HB2	2:a:503:MET:HE2	1.65	0.77
2:g:503:MET:HE2	2:h:497:ILE:HD12	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:a:81:THR:HG21	2:a:605:LEU:HD13	1.73	0.70
2:d:499:VAL:HG13	2:d:501:LYS:HE3	1.75	0.69
2:g:503:MET:HE1	2:h:305:LEU:HD11	1.74	0.69
2:i:503:MET:HE3	2:j:305:LEU:HD11	1.74	0.69
2:h:503:MET:HE3	2:i:305:LEU:HD11	1.75	0.69
2:a:78:LEU:HD13	2:a:603:THR:HG21	1.76	0.68
2:e:232:ILE:HG12	2:e:243:VAL:HG12	1.76	0.68
2:h:499:VAL:HG13	2:h:501:LYS:HE3	1.76	0.67
2:k:500:SER:HB2	2:k:503:MET:HE2	1.76	0.67
2:f:551:GLN:HG2	2:f:552:GLU:HG3	1.77	0.66
2:b:307:ARG:HD3	2:b:501:LYS:HB2	1.76	0.66
2:f:203:GLU:HG2	2:f:207:ARG:HH12	1.61	0.66
2:a:203:GLU:HG2	2:a:207:ARG:HH12	1.60	0.66
1:L:5:GLY:HA3	2:k:604:ARG:HH22	1.60	0.65
2:f:81:THR:HG21	2:f:605:LEU:HD13	1.78	0.65
2:h:128:ARG:HG3	2:h:609:LEU:HD21	1.78	0.65
2:a:192:HIS:CE1	2:a:194:LEU:HD13	2.32	0.64
2:d:503:MET:HE3	2:e:305:LEU:HD11	1.80	0.64
2:k:81:THR:HG21	2:k:605:LEU:HD13	1.80	0.63
2:e:192:HIS:CE1	2:e:194:LEU:HD13	2.34	0.62
2:f:307:ARG:HG3	2:f:501:LYS:HG2	1.81	0.62
2:j:58:VAL:HG11	2:j:555:ILE:HG22	1.81	0.62
2:c:81:THR:HG21	2:c:605:LEU:HD13	1.82	0.62
2:g:36:THR:HG23	2:g:167:LEU:HD11	1.82	0.62
2:b:81:THR:HG21	2:b:605:LEU:HD13	1.82	0.61
2:d:500:SER:HB2	2:d:503:MET:HE2	1.83	0.61
2:d:507:THR:HG21	2:e:501:LYS:HG2	1.82	0.61
2:f:192:HIS:CD2	2:f:194:LEU:HB2	2.36	0.61
2:h:192:HIS:CE1	2:h:194:LEU:HD13	2.36	0.61
2:b:280:ILE:HG22	2:b:528:LEU:HD21	1.81	0.60
2:c:568:PRO:HA	2:c:571:GLU:HG2	1.82	0.60
2:j:203:GLU:HG2	2:j:207:ARG:HH12	1.65	0.60
2:g:507:THR:HG22	2:h:307:ARG:HA	1.82	0.60
2:k:32:PRO:HG2	2:k:231:TYR:CD1	2.37	0.60
2:i:232:ILE:HG12	2:i:243:VAL:HG12	1.84	0.59
2:c:78:LEU:HD13	2:c:603:THR:HG21	1.85	0.59
2:h:192:HIS:HE1	2:h:194:LEU:HD13	1.68	0.59
2:j:280:ILE:HG22	2:j:528:LEU:HD21	1.83	0.59
2:f:78:LEU:HD13	2:f:603:THR:HG21	1.85	0.58
1:B:5:GLY:HA3	2:l:604:ARG:HH22	1.69	0.58
2:a:36:THR:HG23	2:a:167:LEU:HD11	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:a:32:PRO:HG2	2:a:231:TYR:CD1	2.39	0.58
2:g:280:ILE:HG22	2:g:528:LEU:HD21	1.85	0.58
2:h:78:LEU:HD13	2:h:603:THR:HG21	1.86	0.58
2:k:507:THR:HG21	2:l:501:LYS:HG2	1.86	0.58
2:e:192:HIS:HE1	2:e:194:LEU:HD13	1.69	0.57
2:i:32:PRO:HG2	2:i:231:TYR:CD1	2.39	0.57
1:J:5:GLY:HA3	2:i:604:ARG:HH22	1.69	0.57
2:a:501:LYS:HD3	2:b:507:THR:HG22	1.87	0.57
2:f:280:ILE:HG22	2:f:528:LEU:HD11	1.87	0.57
2:h:280:ILE:HG22	2:h:528:LEU:HD21	1.86	0.56
2:f:32:PRO:HG2	2:f:231:TYR:CD1	2.40	0.56
2:a:503:MET:HE3	2:c:305:LEU:HD11	1.86	0.56
2:g:78:LEU:HD13	2:g:603:THR:HG21	1.86	0.56
2:i:541:LYS:HB2	2:i:561:ALA:HB2	1.88	0.56
2:g:32:PRO:HG2	2:g:231:TYR:CD1	2.41	0.56
2:h:32:PRO:HG2	2:h:231:TYR:CD1	2.41	0.56
2:b:36:THR:HG23	2:b:167:LEU:HD21	1.88	0.55
2:e:568:PRO:HA	2:e:571:GLU:HG2	1.87	0.55
2:j:32:PRO:HG2	2:j:231:TYR:CD1	2.41	0.55
2:d:280:ILE:HG22	2:d:528:LEU:HD21	1.89	0.55
2:e:276:LEU:HD11	2:e:535:GLU:HG2	1.88	0.55
2:c:203:GLU:HG2	2:c:207:ARG:HH12	1.72	0.55
2:c:32:PRO:HG2	2:c:231:TYR:CD1	2.43	0.54
2:j:32:PRO:HG2	2:j:231:TYR:HD1	1.72	0.54
2:l:32:PRO:HG2	2:l:231:TYR:CD1	2.42	0.54
2:d:36:THR:HG23	2:d:167:LEU:HD21	1.89	0.54
2:e:280:ILE:HG22	2:e:528:LEU:HD21	1.90	0.54
2:b:78:LEU:HD13	2:b:603:THR:HG21	1.90	0.54
2:i:219:PHE:HA	2:i:574:LEU:HD11	1.90	0.54
2:b:58:VAL:HG11	2:b:555:ILE:HG22	1.90	0.53
1:l:4:PRO:HB3	2:i:198:LEU:HD11	1.91	0.53
2:i:42:ILE:HD13	2:i:280:ILE:HD11	1.91	0.53
2:a:507:THR:HG21	2:c:501:LYS:HE2	1.89	0.53
2:a:42:ILE:HD13	2:a:280:ILE:HD11	1.89	0.53
2:h:203:GLU:HG2	2:h:207:ARG:HH12	1.73	0.53
1:l:5:GLY:HA3	2:h:604:ARG:HH12	1.74	0.52
2:f:32:PRO:HG2	2:f:231:TYR:HD1	1.74	0.52
2:i:78:LEU:HD21	2:i:603:THR:HG21	1.90	0.52
1:G:5:GLY:HA3	2:f:604:ARG:NH2	2.25	0.52
2:d:58:VAL:HG11	2:d:555:ILE:HG22	1.91	0.52
2:d:219:PHE:HA	2:d:574:LEU:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:l:280:ILE:HG22	2:l:528:LEU:HD21	1.91	0.52
2:l:499:VAL:HG13	2:l:501:LYS:HD2	1.91	0.52
2:k:32:PRO:HG2	2:k:231:TYR:HD1	1.75	0.51
2:b:125:ASP:HA	2:b:128:ARG:HG2	1.91	0.51
2:k:503:MET:SD	2:l:497:ILE:HG21	2.50	0.51
2:i:32:PRO:HG2	2:i:231:TYR:HD1	1.74	0.51
2:i:280:ILE:HG22	2:i:528:LEU:HD21	1.93	0.51
1:h:5:GLY:HA3	2:g:604:ARG:HH22	1.76	0.51
2:j:36:THR:HG23	2:j:167:LEU:HD11	1.93	0.51
2:d:32:PRO:HG2	2:d:231:TYR:CD1	2.46	0.51
1:e:5:GLY:HA3	2:d:604:ARG:HH12	1.76	0.50
1:a:5:GLY:HA3	2:b:604:ARG:NH2	2.26	0.50
2:g:58:VAL:HG11	2:g:555:ILE:HG22	1.92	0.50
1:i:3:TYR:HB2	1:i:6:GLU:OE1	2.11	0.50
2:c:32:PRO:HG2	2:c:231:TYR:HD1	1.76	0.50
2:c:58:VAL:HG11	2:c:555:ILE:HG22	1.94	0.50
2:h:507:THR:HG22	2:i:307:ARG:HA	1.94	0.50
2:c:280:ILE:HG22	2:c:528:LEU:HD21	1.94	0.49
2:i:81:THR:HG21	2:i:605:LEU:HD13	1.94	0.49
2:k:280:ILE:HG22	2:k:528:LEU:HD21	1.93	0.49
2:l:42:ILE:HD13	2:l:280:ILE:HD11	1.94	0.49
2:i:58:VAL:HG11	2:i:555:ILE:HG22	1.93	0.49
1:d:5:GLY:HA3	2:c:604:ARG:HH22	1.77	0.49
2:e:32:PRO:HG2	2:e:231:TYR:CD1	2.48	0.49
2:b:42:ILE:HD13	2:b:280:ILE:HD11	1.93	0.49
2:b:108:TYR:HB3	2:b:110:ASN:ND2	2.27	0.49
2:k:42:ILE:HD13	2:k:280:ILE:HD11	1.95	0.49
2:h:70:GLN:HG2	2:h:143:VAL:HG11	1.94	0.49
2:d:78:LEU:HD13	2:d:603:THR:HG21	1.93	0.49
1:k:5:GLY:HA3	2:j:604:ARG:HH22	1.78	0.48
2:e:108:TYR:HB3	2:e:110:ASN:ND2	2.28	0.48
2:k:108:TYR:HB3	2:k:110:ASN:ND2	2.27	0.48
2:f:296:ARG:NH1	2:g:300:SER:HB3	2.28	0.48
2:k:58:VAL:HG11	2:k:555:ILE:HG22	1.96	0.48
2:k:503:MET:SD	2:l:497:ILE:HD13	2.52	0.48
2:e:296:ARG:NH1	2:f:300:SER:HB3	2.28	0.48
2:f:42:ILE:HD13	2:f:280:ILE:HD11	1.95	0.48
2:g:42:ILE:HD13	2:g:280:ILE:HD11	1.96	0.48
2:g:108:TYR:HB3	2:g:110:ASN:ND2	2.29	0.48
2:i:296:ARG:NH1	2:j:300:SER:HB3	2.28	0.48
2:h:69:LEU:HD21	2:h:146:PHE:HB3	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:l:203:GLU:HG2	2:l:207:ARG:HH12	1.78	0.48
1:g:4:PRO:HB3	2:g:198:LEU:HD11	1.94	0.48
2:a:503:MET:SD	2:c:497:ILE:HD13	2.53	0.48
2:a:58:VAL:HG11	2:a:555:ILE:HG22	1.96	0.48
2:k:142:LEU:HD21	2:k:189:LEU:HD21	1.94	0.48
2:a:108:TYR:HB3	2:a:110:ASN:ND2	2.29	0.47
2:b:276:LEU:HD11	2:b:535:GLU:HG2	1.96	0.47
2:j:40:ARG:HD2	2:j:227:TYR:CD2	2.49	0.47
2:h:108:TYR:HB3	2:h:110:ASN:ND2	2.28	0.47
2:b:497:ILE:HD13	2:l:503:MET:SD	2.54	0.47
2:b:305:LEU:HD11	2:b:497:ILE:HD11	1.97	0.47
2:j:42:ILE:HD13	2:j:280:ILE:HD11	1.96	0.47
1:g:5:GLY:HA3	2:f:604:ARG:HH22	1.78	0.47
2:a:276:LEU:HD11	2:a:535:GLU:HG2	1.97	0.47
2:c:296:ARG:NH1	2:d:300:SER:HB3	2.30	0.47
2:g:276:LEU:HD11	2:g:535:GLU:HG2	1.97	0.47
2:l:36:THR:HG23	2:l:167:LEU:HD21	1.96	0.47
2:g:156:SER:OG	2:g:159:LYS:HE2	2.15	0.47
2:j:507:THR:HG21	2:k:305:LEU:HB3	1.96	0.47
2:i:280:ILE:HG22	2:i:528:LEU:HD11	1.96	0.47
2:h:296:ARG:NH1	2:i:300:SER:HB3	2.30	0.47
2:l:171:PRO:HB3	2:l:243:VAL:HG21	1.97	0.47
2:d:617:VAL:O	2:d:620:VAL:HG12	2.14	0.46
2:f:276:LEU:HD11	2:f:535:GLU:HG2	1.96	0.46
2:l:276:LEU:HD11	2:l:535:GLU:HG2	1.97	0.46
2:f:108:TYR:HB3	2:f:110:ASN:ND2	2.30	0.46
2:f:156:SER:OG	2:f:159:LYS:HE2	2.15	0.46
2:k:280:ILE:HG22	2:k:528:LEU:HD11	1.96	0.46
2:g:159:LYS:HA	2:g:162:ASP:OD2	2.16	0.46
2:k:70:GLN:HG2	2:k:143:VAL:HG11	1.96	0.46
2:h:42:ILE:HD13	2:h:280:ILE:HD11	1.98	0.46
2:h:47:LEU:O	2:h:47:LEU:HD12	2.16	0.46
2:h:541:LYS:HB2	2:h:561:ALA:HB2	1.96	0.46
2:k:507:THR:HG22	2:l:307:ARG:HA	1.98	0.46
2:l:108:TYR:HB3	2:l:110:ASN:ND2	2.30	0.46
2:l:156:SER:OG	2:l:159:LYS:HE2	2.15	0.46
2:d:507:THR:HG22	2:e:307:ARG:HA	1.98	0.46
2:f:69:LEU:HD21	2:f:146:PHE:HD2	1.81	0.46
2:d:108:TYR:HB3	2:d:110:ASN:ND2	2.31	0.46
2:f:36:THR:HG23	2:f:167:LEU:HD21	1.96	0.46
2:l:31:HIS:HB3	2:l:32:PRO:HD3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:l:47:LEU:HD12	2:l:47:LEU:O	2.16	0.46
2:g:70:GLN:HG2	2:g:143:VAL:HG11	1.98	0.45
2:i:82:THR:HG22	2:i:203:GLU:OE2	2.16	0.45
2:a:503:MET:SD	2:c:497:ILE:HG21	2.55	0.45
2:c:276:LEU:HD11	2:c:535:GLU:HG2	1.98	0.45
2:d:47:LEU:HD12	2:d:47:LEU:O	2.17	0.45
2:e:32:PRO:HG2	2:e:231:TYR:HD1	1.80	0.45
2:i:503:MET:HE1	2:j:497:ILE:HG21	1.97	0.45
2:a:73:ILE:HD11	2:a:146:PHE:HE2	1.81	0.45
2:b:156:SER:OG	2:b:159:LYS:HE2	2.17	0.45
2:f:600:PHE:CE1	2:f:605:LEU:HD23	2.52	0.45
2:i:276:LEU:HD11	2:i:535:GLU:HG2	1.98	0.45
2:g:32:PRO:HG2	2:g:231:TYR:HD1	1.80	0.45
2:g:47:LEU:HD12	2:g:47:LEU:O	2.17	0.45
2:g:91:LEU:HA	2:g:94:VAL:HG12	1.98	0.45
2:e:47:LEU:HD12	2:e:47:LEU:O	2.17	0.45
2:h:32:PRO:HG2	2:h:231:TYR:HD1	1.80	0.45
2:d:124:PHE:CE2	2:d:613:ALA:HB2	2.52	0.45
2:d:276:LEU:HD11	2:d:535:GLU:HG2	1.98	0.45
2:c:125:ASP:HA	2:c:128:ARG:HG2	1.97	0.45
2:k:159:LYS:HA	2:k:162:ASP:OD2	2.17	0.45
2:k:296:ARG:NH1	2:l:300:SER:HB3	2.32	0.45
2:a:296:ARG:NH1	2:c:300:SER:HB3	2.32	0.45
2:c:600:PHE:HE2	2:c:605:LEU:HD23	1.82	0.45
2:j:78:LEU:CD2	2:j:603:THR:HG21	2.47	0.45
2:f:236:HIS:HD1	2:f:236:HIS:C	2.25	0.44
2:k:590:LEU:HD13	2:k:594:GLU:HG3	1.99	0.44
2:c:108:TYR:HB3	2:c:110:ASN:ND2	2.31	0.44
2:j:276:LEU:HD11	2:j:535:GLU:HG2	1.98	0.44
2:d:296:ARG:NH1	2:e:300:SER:HB3	2.33	0.44
2:d:42:ILE:HD13	2:d:280:ILE:HD11	1.99	0.44
2:e:156:SER:OG	2:e:159:LYS:HE2	2.18	0.44
2:b:31:HIS:HB3	2:b:32:PRO:HD3	2.00	0.44
2:f:207:ARG:HB2	2:f:207:ARG:NH1	2.33	0.44
2:j:47:LEU:HD12	2:j:47:LEU:O	2.17	0.44
2:c:156:SER:OG	2:c:159:LYS:HE2	2.18	0.43
2:k:47:LEU:HD12	2:k:47:LEU:O	2.17	0.43
2:a:300:SER:HB3	2:b:296:ARG:NH1	2.33	0.43
2:h:171:PRO:HB3	2:h:243:VAL:HG21	2.00	0.43
2:j:70:GLN:HG2	2:j:143:VAL:HG11	2.00	0.43
2:c:125:ASP:O	2:c:128:ARG:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:d:32:PRO:HG2	2:d:231:TYR:CE1	2.53	0.43
2:l:73:ILE:HD11	2:l:146:PHE:HE2	1.84	0.43
2:e:155:SER:HB2	2:e:574:LEU:HD11	2.01	0.43
2:a:32:PRO:HG2	2:a:231:TYR:HD1	1.81	0.43
2:c:280:ILE:HG22	2:c:528:LEU:HD11	2.00	0.43
2:g:210:PRO:O	2:g:214:GLU:HG2	2.18	0.43
2:h:156:SER:OG	2:h:159:LYS:HE2	2.18	0.43
2:j:78:LEU:HD21	2:j:603:THR:HG21	1.99	0.43
2:g:541:LYS:HB2	2:g:561:ALA:HB2	1.98	0.43
2:l:160:TYR:HD1	2:l:170:VAL:HG11	1.83	0.43
2:c:31:HIS:HB3	2:c:32:PRO:HD3	2.01	0.43
2:d:156:SER:OG	2:d:159:LYS:HE2	2.18	0.43
2:j:296:ARG:NH1	2:k:300:SER:HB3	2.34	0.43
2:k:40:ARG:HD3	2:k:40:ARG:HA	1.79	0.43
2:f:70:GLN:HG2	2:f:143:VAL:HG11	2.00	0.43
2:j:263:THR:HG21	2:k:41:GLU:OE2	2.19	0.43
2:d:70:GLN:HG2	2:d:143:VAL:HG11	2.00	0.43
2:d:203:GLU:O	2:d:206:GLU:HG3	2.19	0.43
2:a:528:LEU:HD23	2:a:528:LEU:HA	1.93	0.43
2:f:236:HIS:C	2:f:236:HIS:ND1	2.76	0.43
1:I:5:GLY:HA3	2:h:604:ARG:HH22	1.84	0.42
2:b:300:SER:HB3	2:l:296:ARG:NH1	2.33	0.42
2:d:597:ASP:O	2:d:601:LYS:HG2	2.19	0.42
2:l:29:LYS:HE3	2:l:32:PRO:HB2	2.01	0.42
1:C:4:PRO:HB3	2:c:198:LEU:HD11	2.01	0.42
2:i:609:LEU:HD23	2:i:609:LEU:HA	1.89	0.42
2:j:124:PHE:CE1	2:j:613:ALA:HB2	2.54	0.42
2:k:203:GLU:O	2:k:206:GLU:HG3	2.19	0.42
2:l:37:MET:HE3	2:l:37:MET:HB3	1.85	0.42
2:a:590:LEU:HD23	2:a:594:GLU:HB3	2.02	0.42
2:c:499:VAL:HG13	2:c:501:LYS:HE3	2.01	0.42
2:d:545:HIS:CE1	2:d:589:ILE:HD11	2.54	0.42
2:f:128:ARG:HE	2:f:132:ARG:NH2	2.16	0.42
2:i:47:LEU:HD12	2:i:47:LEU:O	2.19	0.42
2:d:160:TYR:HD1	2:d:170:VAL:HG11	1.84	0.42
2:a:49:TYR:HD2	2:b:531:LEU:HD11	1.85	0.42
2:c:69:LEU:HD11	2:c:219:PHE:CZ	2.55	0.42
2:e:590:LEU:HD23	2:e:594:GLU:HB3	2.02	0.42
2:b:32:PRO:HG2	2:b:231:TYR:CD2	2.55	0.42
2:h:600:PHE:O	2:h:603:THR:HG22	2.20	0.42
2:g:296:ARG:NH1	2:h:300:SER:HB3	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:h:293:CYS:HB3	2:h:518:ILE:HD13	2.01	0.42
2:k:77:LEU:HD22	2:k:142:LEU:HD12	2.02	0.42
2:b:600:PHE:CE1	2:b:605:LEU:HD23	2.55	0.41
2:f:136:LEU:HD12	2:f:596:TRP:CD1	2.55	0.41
2:h:195:THR:O	2:h:202:ALA:HB2	2.20	0.41
2:j:146:PHE:CE1	2:j:185:LEU:HD11	2.55	0.41
2:b:131:LEU:HD12	2:b:131:LEU:HA	1.92	0.41
2:c:129:ASN:O	2:c:132:ARG:HG2	2.20	0.41
2:d:91:LEU:HA	2:d:94:VAL:HG12	2.02	0.41
2:d:280:ILE:HG22	2:d:528:LEU:HD11	2.02	0.41
2:b:160:TYR:HD1	2:b:170:VAL:HG11	1.85	0.41
2:i:101:PRO:HB3	2:i:620:VAL:HG23	2.02	0.41
2:i:156:SER:OG	2:i:159:LYS:HE2	2.19	0.41
2:a:192:HIS:HE1	2:a:194:LEU:HD13	1.80	0.41
2:e:195:THR:O	2:e:202:ALA:HB2	2.21	0.41
2:j:617:VAL:O	2:j:620:VAL:HG12	2.21	0.41
1:F:4:PRO:HB3	2:f:198:LEU:HD11	2.02	0.41
2:c:203:GLU:O	2:c:206:GLU:HG3	2.20	0.41
2:e:603:THR:HG23	2:e:605:LEU:H	1.86	0.41
2:g:562:ILE:HD11	2:g:583:ILE:O	2.21	0.41
2:i:195:THR:O	2:i:202:ALA:HB2	2.20	0.41
2:i:108:TYR:HB3	2:i:110:ASN:ND2	2.36	0.41
2:l:91:LEU:HA	2:l:94:VAL:HG12	2.02	0.41
2:a:70:GLN:HG2	2:a:143:VAL:HG11	2.03	0.41
2:b:31:HIS:HE1	2:b:227:TYR:O	2.04	0.41
2:b:307:ARG:HA	2:b:307:ARG:HD2	1.83	0.41
2:c:171:PRO:HB3	2:c:243:VAL:HG21	2.01	0.41
2:e:70:GLN:HG2	2:e:143:VAL:HG11	2.02	0.41
2:f:159:LYS:HA	2:f:162:ASP:OD2	2.21	0.41
2:f:192:HIS:HD2	2:f:194:LEU:HB2	1.82	0.41
2:g:41:GLU:HB3	2:g:46:GLN:HG3	2.02	0.41
2:g:119:VAL:O	2:g:123:VAL:HG23	2.21	0.41
2:i:209:GLY:N	2:i:210:PRO:HD2	2.36	0.41
2:k:146:PHE:CZ	2:k:185:LEU:HD11	2.56	0.41
2:k:276:LEU:HD11	2:k:535:GLU:HG2	2.02	0.41
1:D:4:PRO:HB3	2:d:198:LEU:HD11	2.03	0.41
2:g:195:THR:O	2:g:202:ALA:HB2	2.20	0.40
2:i:160:TYR:CZ	2:i:164:LEU:HD11	2.56	0.40
2:k:590:LEU:HD22	2:k:594:GLU:HG2	2.02	0.40
2:d:600:PHE:O	2:d:603:THR:HG22	2.21	0.40
2:h:597:ASP:O	2:h:601:LYS:HG2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:c:69:LEU:HD11	2:c:219:PHE:HZ	1.85	0.40
2:e:58:VAL:HG11	2:e:555:ILE:HG22	2.03	0.40
2:i:31:HIS:HB3	2:i:32:PRO:HD3	2.03	0.40
2:j:295:LEU:HD23	2:j:295:LEU:HA	1.90	0.40
2:l:124:PHE:CE1	2:l:613:ALA:HB2	2.56	0.40
2:a:164:LEU:HD23	2:a:164:LEU:HA	1.93	0.40
2:c:601:LYS:HA	2:c:606:GLN:HG3	2.03	0.40
2:d:31:HIS:HB3	2:d:32:PRO:HD3	2.02	0.40
2:g:293:CYS:HB3	2:g:518:ILE:HD13	2.02	0.40
2:h:276:LEU:HD11	2:h:535:GLU:HG2	2.02	0.40
2:i:70:GLN:HG2	2:i:143:VAL:HG11	2.04	0.40
2:j:160:TYR:HD1	2:j:170:VAL:HG11	1.86	0.40
2:k:41:GLU:OE1	2:k:46:GLN:HG3	2.20	0.40
2:d:155:SER:H	2:d:223:ARG:HA	1.86	0.40
2:g:124:PHE:CE1	2:g:613:ALA:HB2	2.56	0.40
2:h:617:VAL:O	2:h:620:VAL:HG12	2.21	0.40

There are no symmetry-related clashes.

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	5/635 (1%)	5 (100%)	0	0	100	100
1	B	5/635 (1%)	5 (100%)	0	0	100	100
1	C	5/635 (1%)	4 (80%)	1 (20%)	0	100	100
1	D	5/635 (1%)	5 (100%)	0	0	100	100
1	E	5/635 (1%)	5 (100%)	0	0	100	100
1	F	5/635 (1%)	5 (100%)	0	0	100	100
1	G	5/635 (1%)	5 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	5/635 (1%)	5 (100%)	0	0	100	100
1	I	5/635 (1%)	5 (100%)	0	0	100	100
1	J	5/635 (1%)	5 (100%)	0	0	100	100
1	K	5/635 (1%)	5 (100%)	0	0	100	100
1	L	5/635 (1%)	5 (100%)	0	0	100	100
2	a	412/676 (61%)	399 (97%)	13 (3%)	0	100	100
2	b	412/676 (61%)	403 (98%)	9 (2%)	0	100	100
2	c	412/676 (61%)	404 (98%)	8 (2%)	0	100	100
2	d	412/676 (61%)	403 (98%)	9 (2%)	0	100	100
2	e	412/676 (61%)	402 (98%)	10 (2%)	0	100	100
2	f	412/676 (61%)	400 (97%)	12 (3%)	0	100	100
2	g	412/676 (61%)	400 (97%)	12 (3%)	0	100	100
2	h	412/676 (61%)	402 (98%)	10 (2%)	0	100	100
2	i	412/676 (61%)	401 (97%)	11 (3%)	0	100	100
2	j	412/676 (61%)	400 (97%)	12 (3%)	0	100	100
2	k	412/676 (61%)	400 (97%)	12 (3%)	0	100	100
2	l	412/676 (61%)	402 (98%)	10 (2%)	0	100	100
All	All	5004/15732 (32%)	4875 (97%)	129 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	5/475 (1%)	5 (100%)	0	100	100
1	B	5/475 (1%)	5 (100%)	0	100	100
1	C	5/475 (1%)	5 (100%)	0	100	100
1	D	5/475 (1%)	5 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	5/475 (1%)	5 (100%)	0	100	100
1	F	5/475 (1%)	5 (100%)	0	100	100
1	G	5/475 (1%)	5 (100%)	0	100	100
1	H	5/475 (1%)	5 (100%)	0	100	100
1	I	5/475 (1%)	5 (100%)	0	100	100
1	J	5/475 (1%)	5 (100%)	0	100	100
1	K	5/475 (1%)	5 (100%)	0	100	100
1	L	5/475 (1%)	5 (100%)	0	100	100
2	a	347/534 (65%)	347 (100%)	0	100	100
2	b	347/534 (65%)	347 (100%)	0	100	100
2	c	347/534 (65%)	347 (100%)	0	100	100
2	d	347/534 (65%)	347 (100%)	0	100	100
2	e	347/534 (65%)	347 (100%)	0	100	100
2	f	347/534 (65%)	346 (100%)	1 (0%)	86	83
2	g	347/534 (65%)	347 (100%)	0	100	100
2	h	347/534 (65%)	347 (100%)	0	100	100
2	i	347/534 (65%)	347 (100%)	0	100	100
2	j	347/534 (65%)	347 (100%)	0	100	100
2	k	347/534 (65%)	347 (100%)	0	100	100
2	l	347/534 (65%)	347 (100%)	0	100	100
All	All	4224/12108 (35%)	4223 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	f	236	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
2	a	192	HIS
2	a	548	ASN
2	a	622	HIS
2	b	70	GLN

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Mol	Chain	Res	Type
2	b	110	ASN
2	b	548	ASN
2	c	110	ASN
2	c	129	ASN
2	c	548	ASN
2	c	622	HIS
2	d	70	GLN
2	d	110	ASN
2	d	548	ASN
2	d	622	HIS
2	e	192	HIS
2	e	236	HIS
2	e	291	HIS
2	e	548	ASN
2	e	622	HIS
2	f	75	HIS
2	f	548	ASN
2	f	622	HIS
2	g	110	ASN
2	g	236	HIS
2	g	548	ASN
2	g	622	HIS
2	h	110	ASN
2	h	192	HIS
2	h	548	ASN
2	h	622	HIS
2	i	46	GLN
2	i	548	ASN
2	j	235	ASN
2	j	548	ASN
2	j	622	HIS
2	k	110	ASN
2	k	548	ASN
2	k	622	HIS
2	l	75	HIS
2	l	110	ASN
2	l	235	ASN
2	l	548	ASN
2	l	622	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

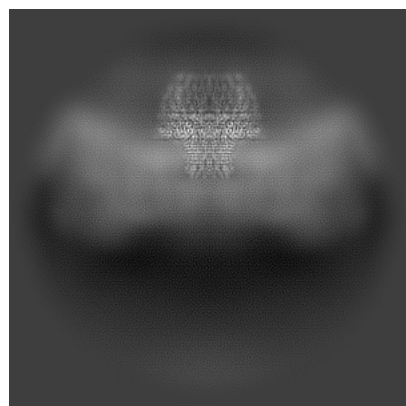
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-70679. These allow visual inspection of the internal detail of the map and identification of artifacts.

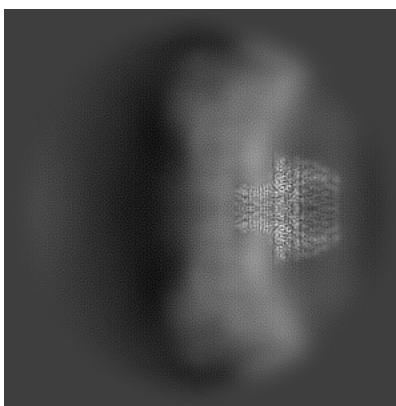
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

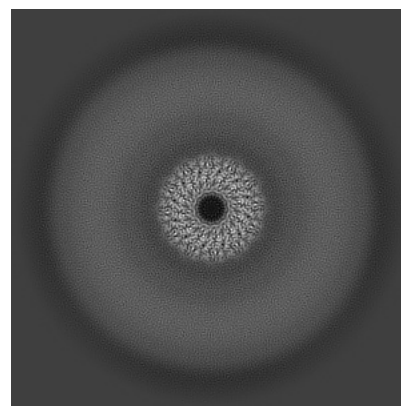
6.1.1 Primary map



X

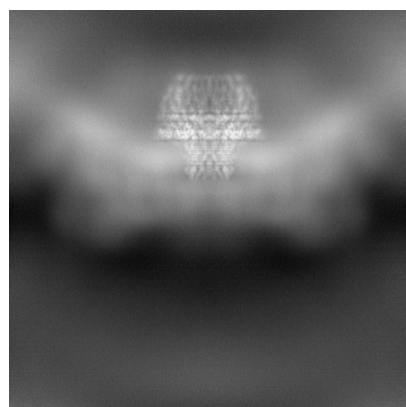


Y

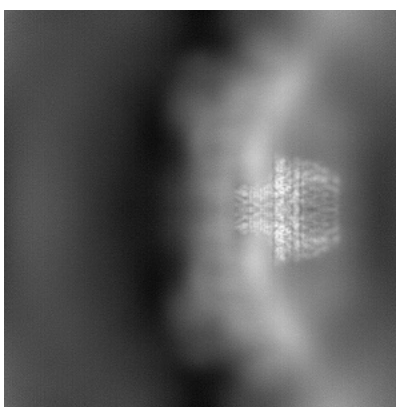


Z

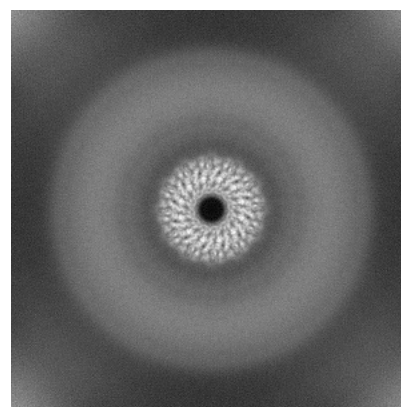
6.1.2 Raw map



X



Y

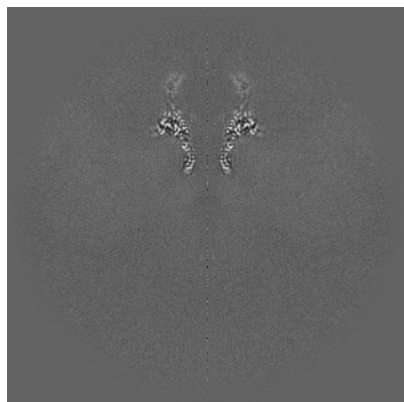


Z

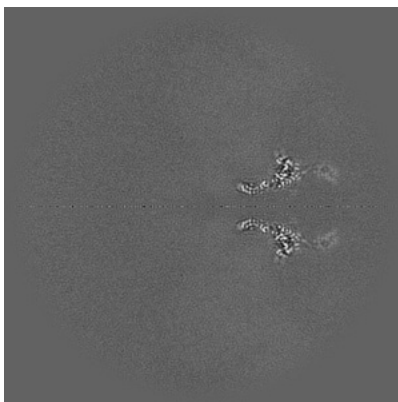
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

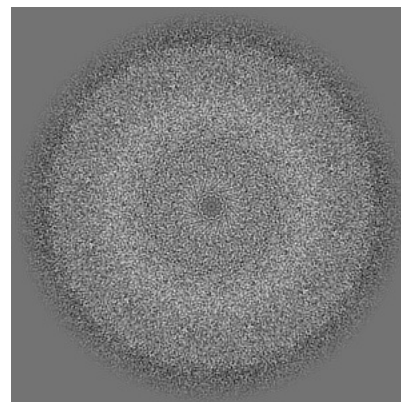
6.2.1 Primary map



X Index: 240

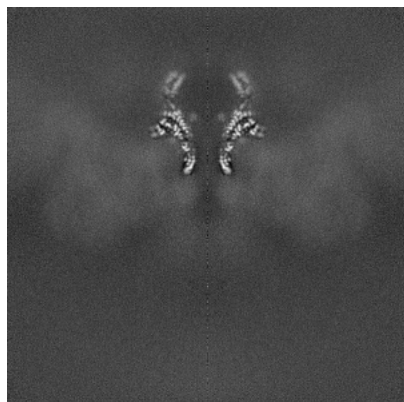


Y Index: 240

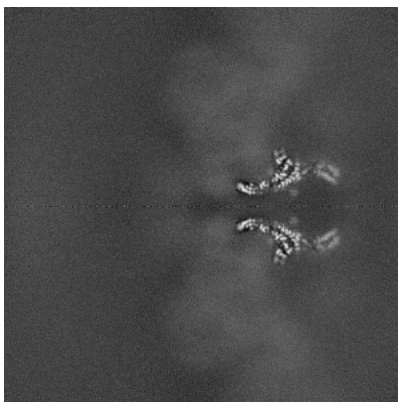


Z Index: 240

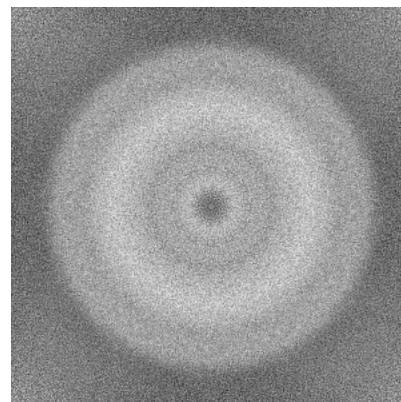
6.2.2 Raw map



X Index: 240



Y Index: 240

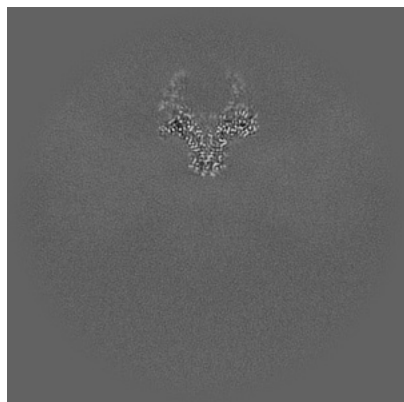


Z Index: 240

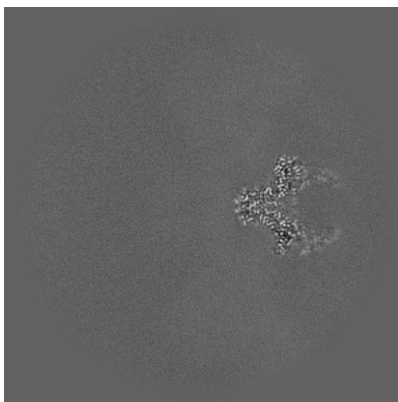
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

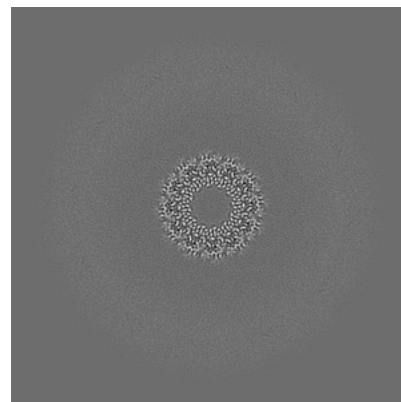
6.3.1 Primary map



X Index: 261

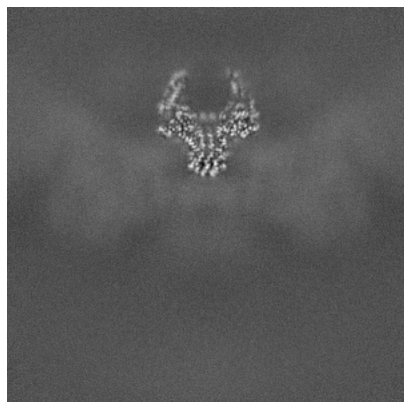


Y Index: 219

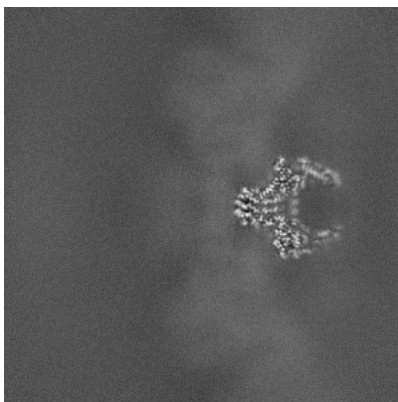


Z Index: 333

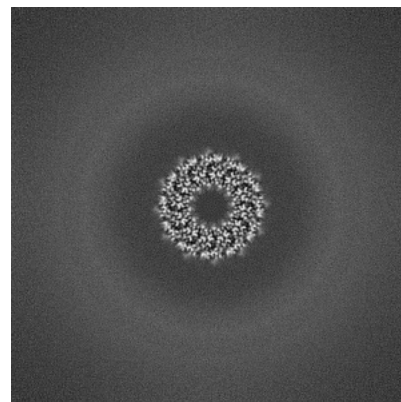
6.3.2 Raw map



X Index: 260



Y Index: 260

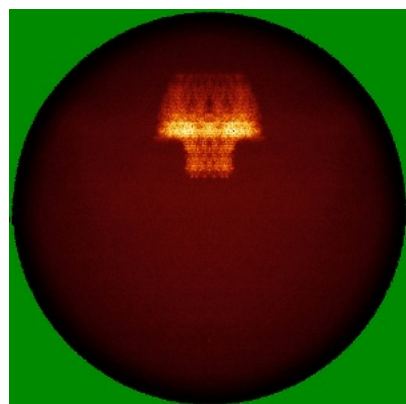


Z Index: 332

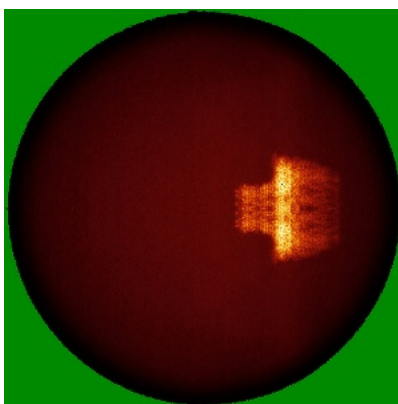
The images above show the largest variance slices of the map in three orthogonal directions.

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

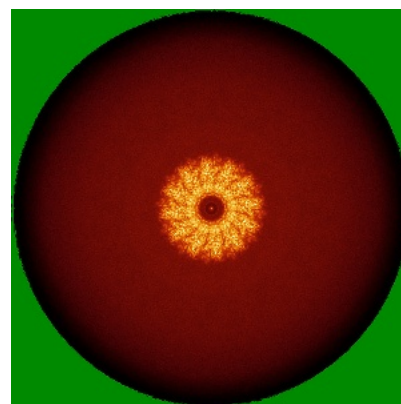
6.4.1 Primary map



X

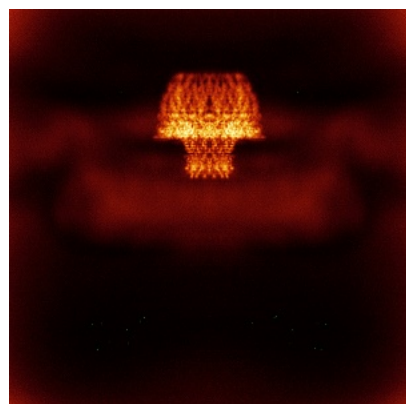


Y

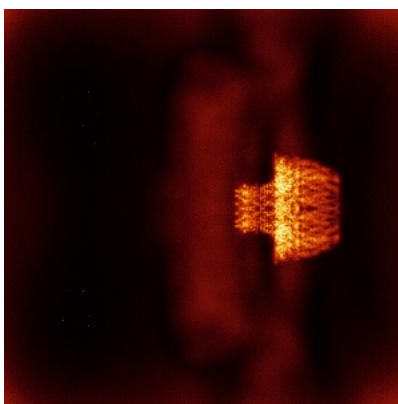


Z

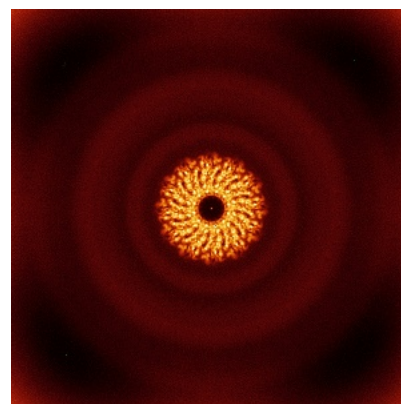
6.4.2 Raw map



X



Y

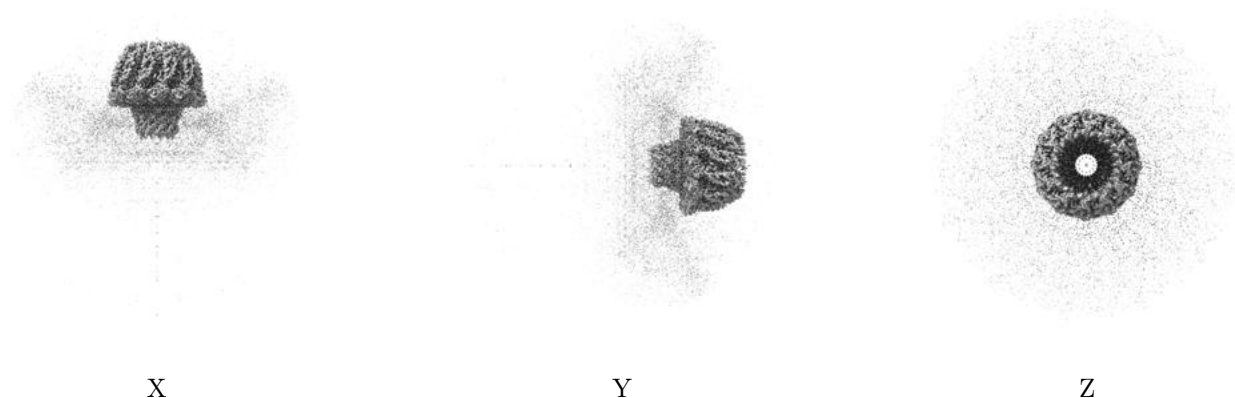


Z

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

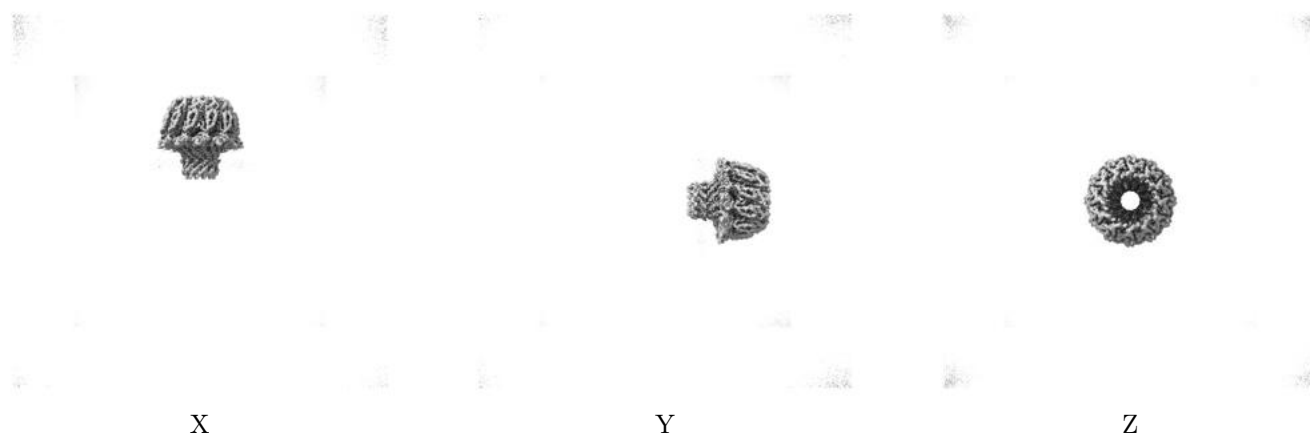
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.187. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

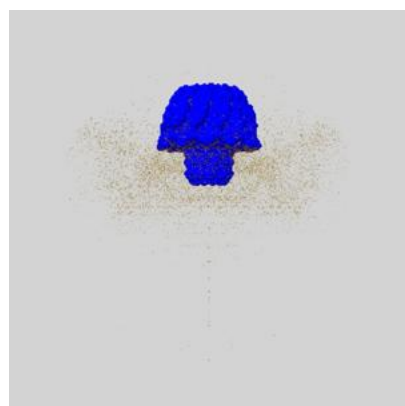
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

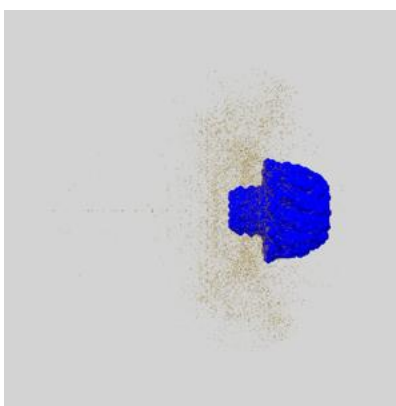
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

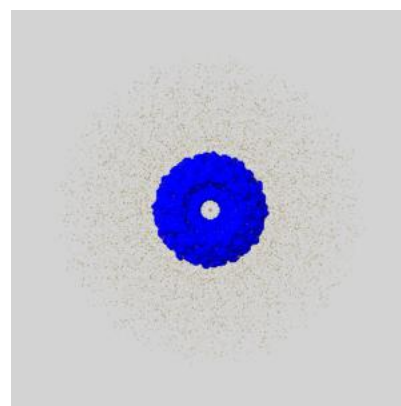
6.6.1 emd_70679_msk_1.map [i](#)



X



Y

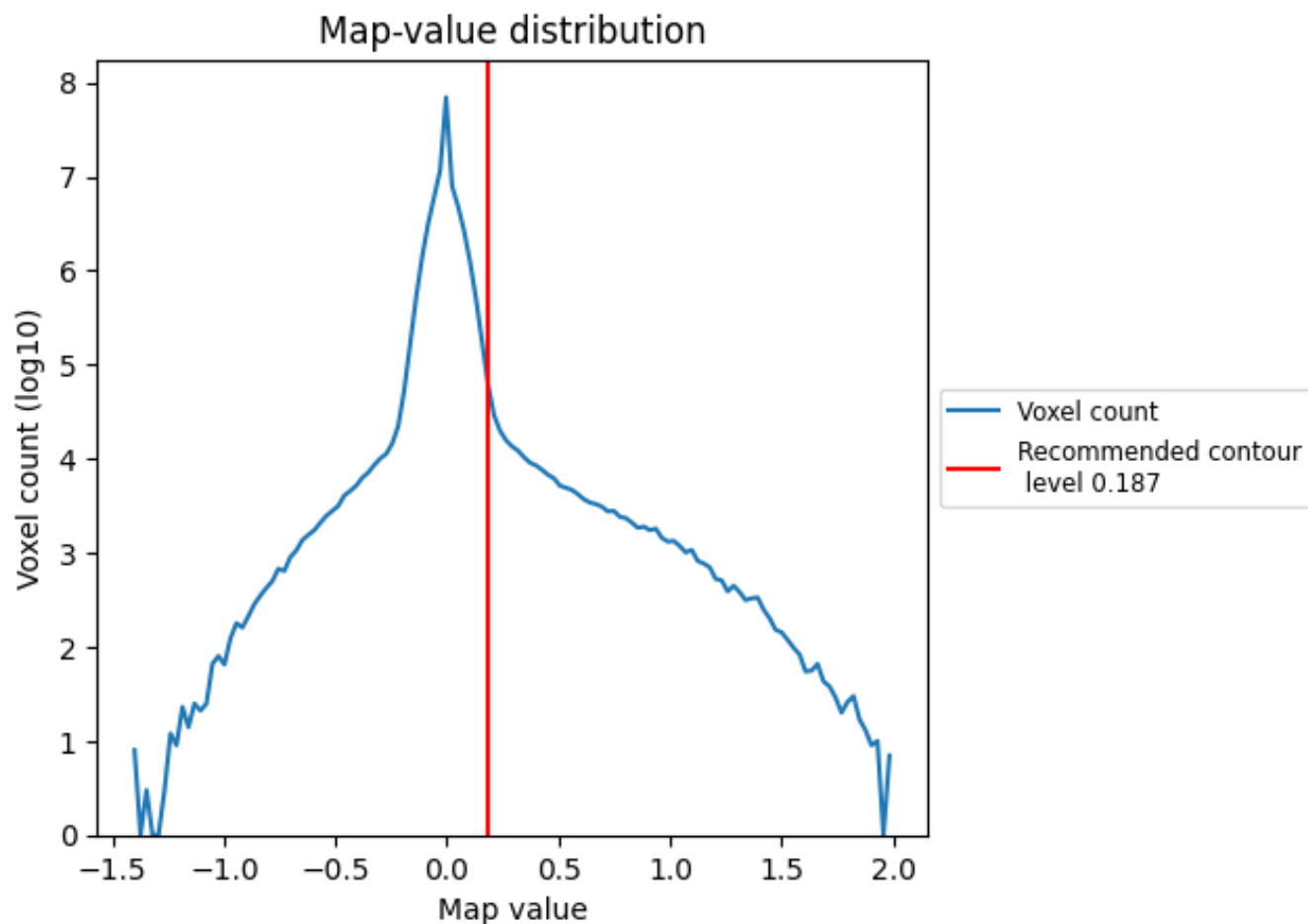


Z

7 Map analysis [i](#)

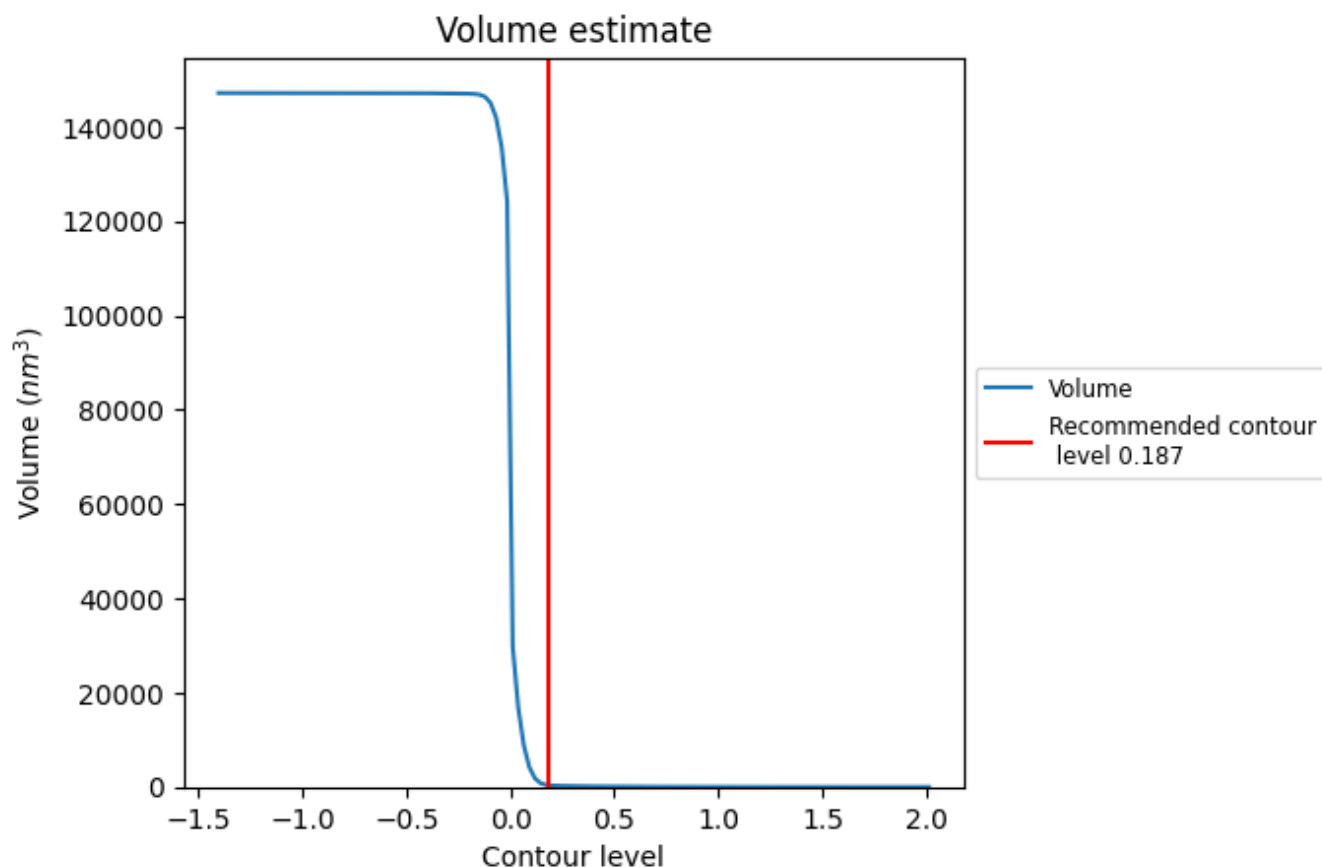
This section contains the results of statistical analysis of the map.

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.

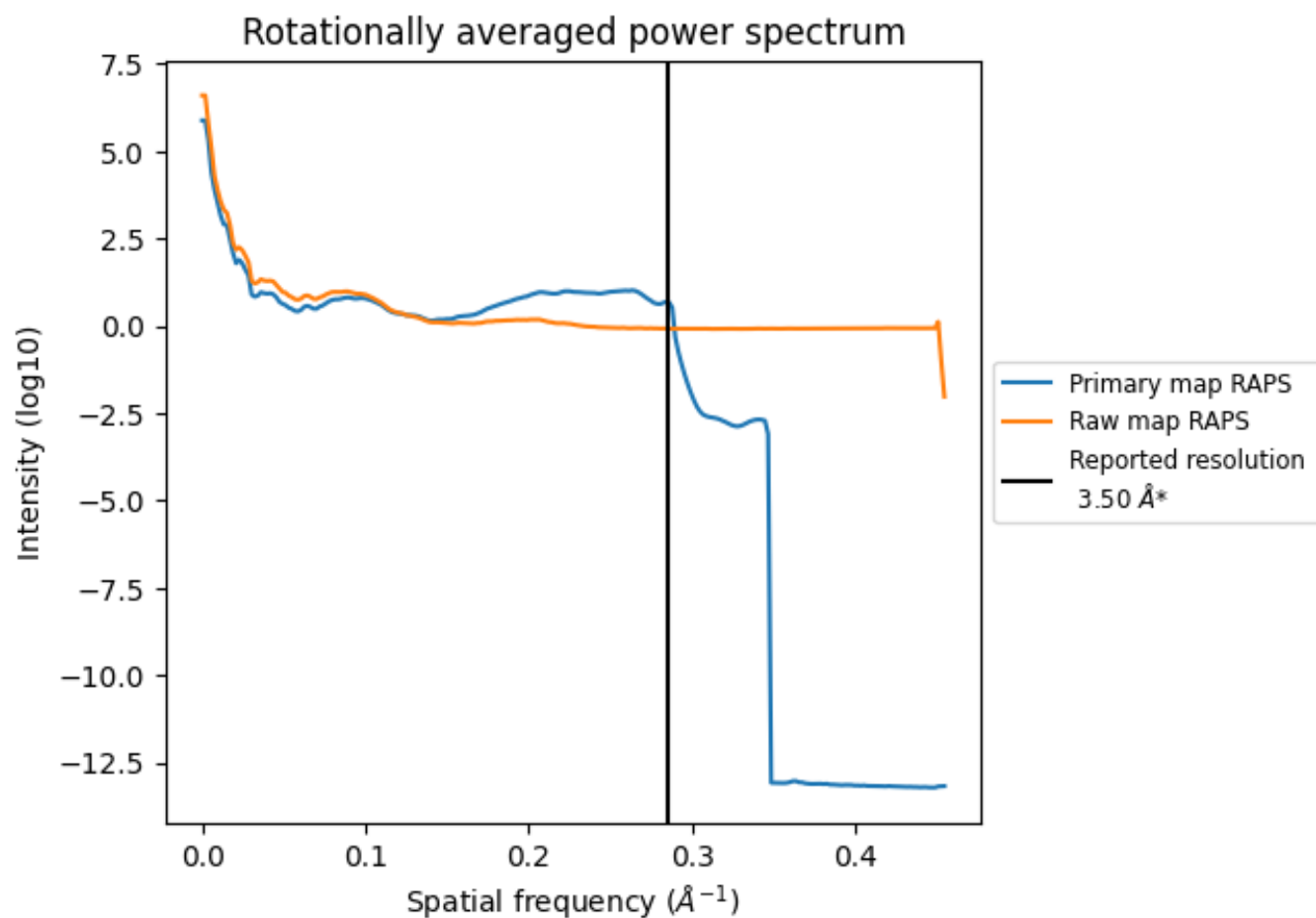
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 360 nm³; this corresponds to an approximate mass of 325 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 ⓘ

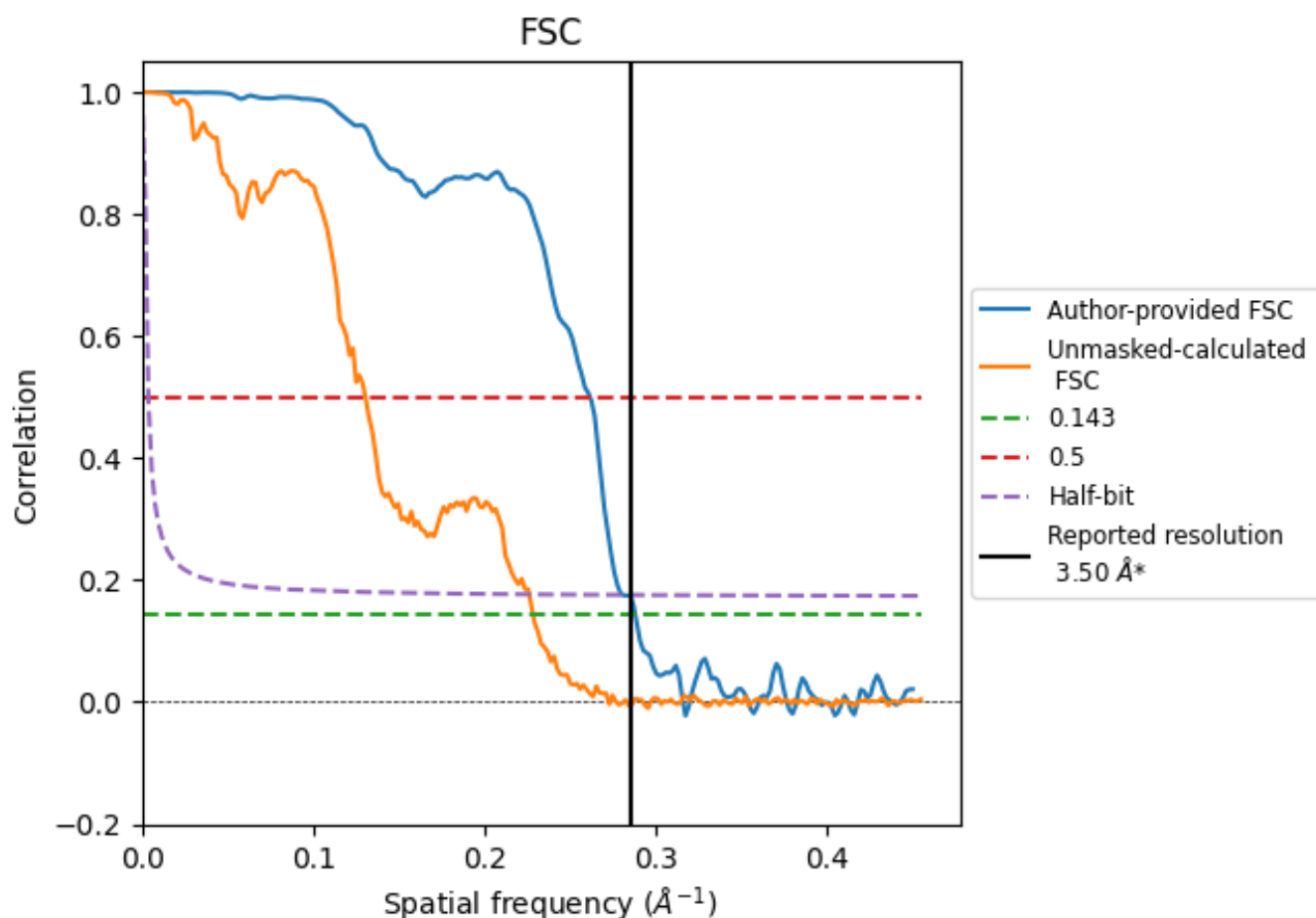


*Reported resolution corresponds to spatial frequency of 0.286 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.286 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

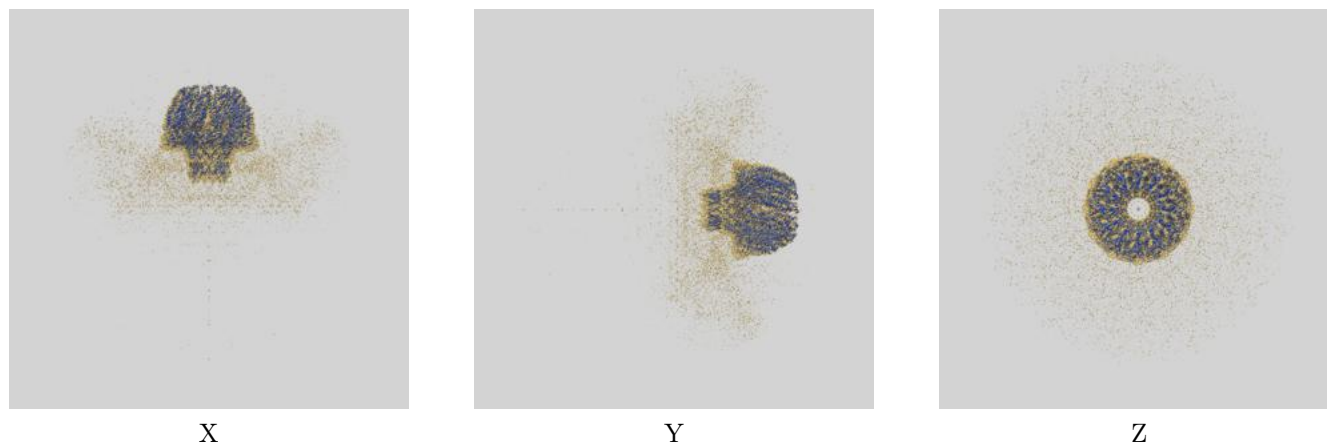
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.47	3.83	3.56
Unmasked-calculated*	4.38	7.67	4.43

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.38 differs from the reported value 3.5 by more than 10 %

9 Map-model fit [i](#)

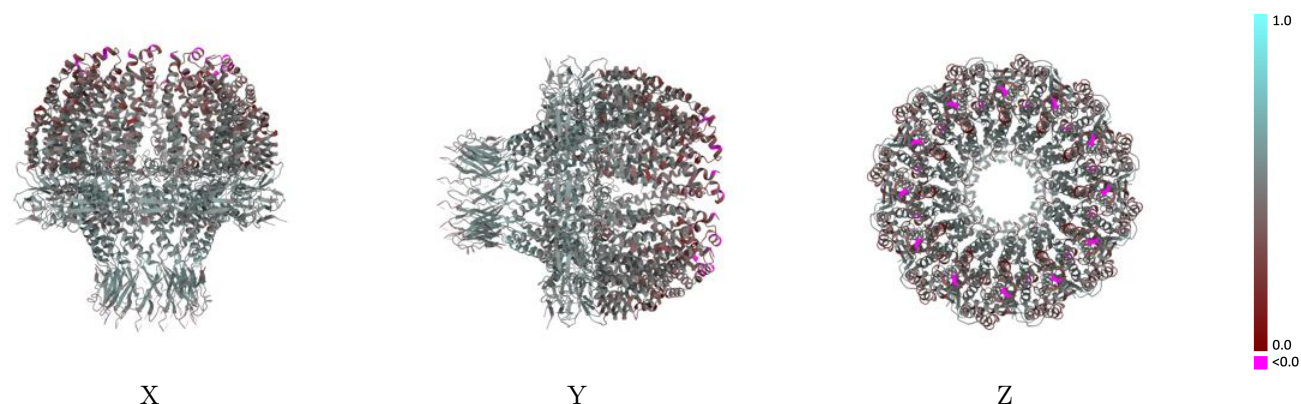
This section contains information regarding the fit between EMDB map EMD-70679 and PDB model 9OP5. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



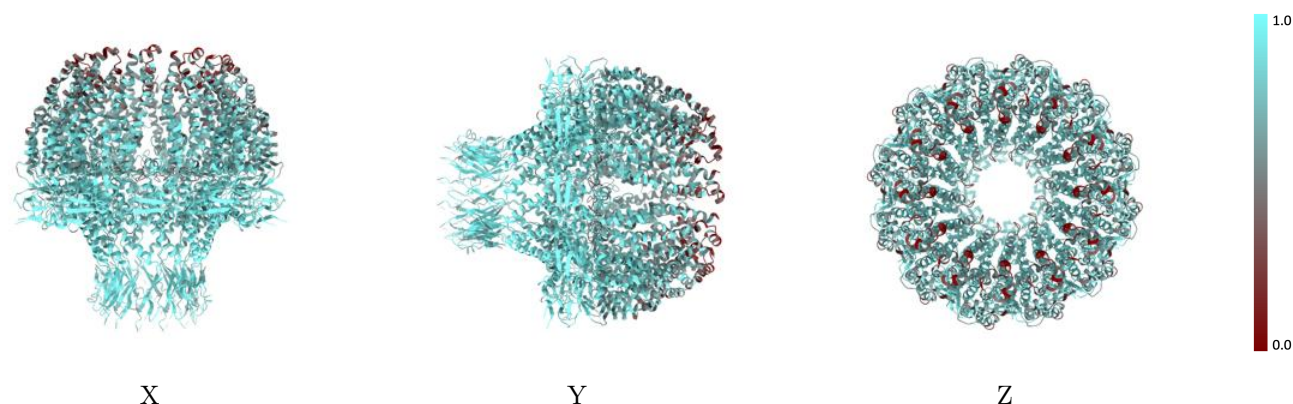
The images above show the 3D surface view of the map at the recommended contour level 0.187 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



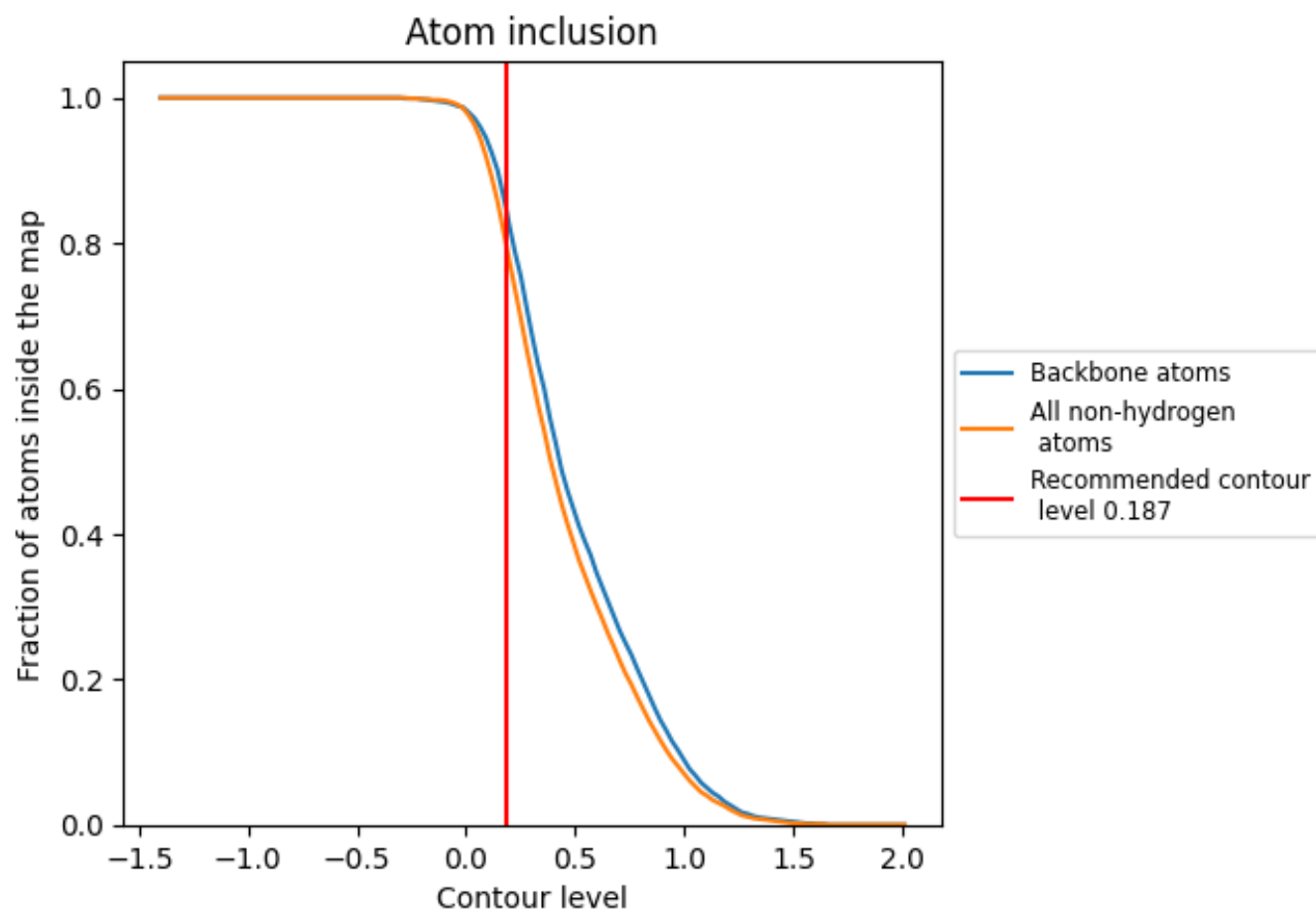
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.187).

9.4 Atom inclusion [i](#)



At the recommended contour level, 84% 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 (0.187) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7940	 0.4740
A	 0.6480	 0.4120
B	 0.6110	 0.4040
C	 0.7220	 0.4190
D	 0.6300	 0.4170
E	 0.6110	 0.4010
F	 0.6480	 0.4180
G	 0.6300	 0.4050
H	 0.6670	 0.4080
I	 0.6300	 0.4050
J	 0.6300	 0.4190
K	 0.6480	 0.4100
L	 0.6480	 0.3840
a	 0.7930	 0.4750
b	 0.7970	 0.4740
c	 0.8000	 0.4740
d	 0.7940	 0.4760
e	 0.7930	 0.4770
f	 0.7980	 0.4740
g	 0.7960	 0.4750
h	 0.7960	 0.4770
i	 0.7980	 0.4740
j	 0.7980	 0.4740
k	 0.7950	 0.4730
l	 0.7970	 0.4730

