Full wwPDB EM Validation Report ⓘ

Jul 14, 2025 – 12:37 PM EDT

PDB ID	:	9COK / pdb_00009cok
EMDB ID	:	EMD-45782
Title	:	Cryo-EM structure of the Nipah virus (Malaysia Strain) L:P complex
Authors	:	Chen, Z.H.; Liang, B.
Deposited on	:	2024-07-16
Resolution	:	2.92 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:

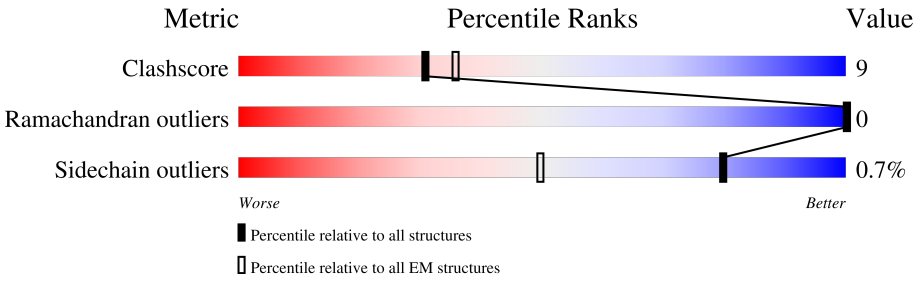
EMDB validation analysis	:	0.0.1.dev118
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.92 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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 <=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	B	759	94%
1	C	759	6% 92%
1	D	759	6% 94%
1	E	759	95%
1	F	759	98%
1	G	759	6% 91%
2	A	2270	44% 11% 45%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 12206 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 Phosphoprotein.

Mol	Chain	Residues	Atoms	AltConf	Trace
1	B	48	Total C N O S 370 235 63 69 3	0	0
1	D	48	Total C N O S 380 241 66 70 3	0	0
1	C	58	Total C N O S 452 284 83 82 3	0	0
1	E	41	Total C N O S 319 203 53 60 3	0	0
1	F	17	Total C N O 136 88 23 25	0	0
1	G	71	Total C N O S 573 354 96 122 1	0	0

There are 300 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-49	MET	-	expression tag	UNP Q9IK91
B	-48	LYS	-	expression tag	UNP Q9IK91
B	-47	SER	-	expression tag	UNP Q9IK91
B	-46	SER	-	expression tag	UNP Q9IK91
B	-45	TRP	-	expression tag	UNP Q9IK91
B	-44	SER	-	expression tag	UNP Q9IK91
B	-43	HIS	-	expression tag	UNP Q9IK91
B	-42	PRO	-	expression tag	UNP Q9IK91
B	-41	GLN	-	expression tag	UNP Q9IK91
B	-40	PHE	-	expression tag	UNP Q9IK91
B	-39	GLU	-	expression tag	UNP Q9IK91
B	-38	LYS	-	expression tag	UNP Q9IK91
B	-37	GLY	-	expression tag	UNP Q9IK91
B	-36	ALA	-	expression tag	UNP Q9IK91
B	-35	MET	-	expression tag	UNP Q9IK91
B	-34	THR	-	expression tag	UNP Q9IK91
B	-33	GLY	-	expression tag	UNP Q9IK91
B	-32	TRP	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-31	SER	-	expression tag	UNP Q9IK91
B	-30	HIS	-	expression tag	UNP Q9IK91
B	-29	PRO	-	expression tag	UNP Q9IK91
B	-28	GLN	-	expression tag	UNP Q9IK91
B	-27	PHE	-	expression tag	UNP Q9IK91
B	-26	GLU	-	expression tag	UNP Q9IK91
B	-25	LYS	-	expression tag	UNP Q9IK91
B	-24	GLY	-	expression tag	UNP Q9IK91
B	-23	SER	-	expression tag	UNP Q9IK91
B	-22	SER	-	expression tag	UNP Q9IK91
B	-21	ALA	-	expression tag	UNP Q9IK91
B	-20	SER	-	expression tag	UNP Q9IK91
B	-19	TRP	-	expression tag	UNP Q9IK91
B	-18	SER	-	expression tag	UNP Q9IK91
B	-17	HIS	-	expression tag	UNP Q9IK91
B	-16	PRO	-	expression tag	UNP Q9IK91
B	-15	GLN	-	expression tag	UNP Q9IK91
B	-14	PHE	-	expression tag	UNP Q9IK91
B	-13	GLU	-	expression tag	UNP Q9IK91
B	-12	LYS	-	expression tag	UNP Q9IK91
B	-11	GLY	-	expression tag	UNP Q9IK91
B	-10	ALA	-	expression tag	UNP Q9IK91
B	-9	GLU	-	expression tag	UNP Q9IK91
B	-8	ASN	-	expression tag	UNP Q9IK91
B	-7	LEU	-	expression tag	UNP Q9IK91
B	-6	TYR	-	expression tag	UNP Q9IK91
B	-5	PHE	-	expression tag	UNP Q9IK91
B	-4	GLN	-	expression tag	UNP Q9IK91
B	-3	SER	-	expression tag	UNP Q9IK91
B	-2	ASN	-	expression tag	UNP Q9IK91
B	-1	GLY	-	expression tag	UNP Q9IK91
B	0	SER	-	expression tag	UNP Q9IK91
D	-49	MET	-	expression tag	UNP Q9IK91
D	-48	LYS	-	expression tag	UNP Q9IK91
D	-47	SER	-	expression tag	UNP Q9IK91
D	-46	SER	-	expression tag	UNP Q9IK91
D	-45	TRP	-	expression tag	UNP Q9IK91
D	-44	SER	-	expression tag	UNP Q9IK91
D	-43	HIS	-	expression tag	UNP Q9IK91
D	-42	PRO	-	expression tag	UNP Q9IK91
D	-41	GLN	-	expression tag	UNP Q9IK91
D	-40	PHE	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-39	GLU	-	expression tag	UNP Q9IK91
D	-38	LYS	-	expression tag	UNP Q9IK91
D	-37	GLY	-	expression tag	UNP Q9IK91
D	-36	ALA	-	expression tag	UNP Q9IK91
D	-35	MET	-	expression tag	UNP Q9IK91
D	-34	THR	-	expression tag	UNP Q9IK91
D	-33	GLY	-	expression tag	UNP Q9IK91
D	-32	TRP	-	expression tag	UNP Q9IK91
D	-31	SER	-	expression tag	UNP Q9IK91
D	-30	HIS	-	expression tag	UNP Q9IK91
D	-29	PRO	-	expression tag	UNP Q9IK91
D	-28	GLN	-	expression tag	UNP Q9IK91
D	-27	PHE	-	expression tag	UNP Q9IK91
D	-26	GLU	-	expression tag	UNP Q9IK91
D	-25	LYS	-	expression tag	UNP Q9IK91
D	-24	GLY	-	expression tag	UNP Q9IK91
D	-23	SER	-	expression tag	UNP Q9IK91
D	-22	SER	-	expression tag	UNP Q9IK91
D	-21	ALA	-	expression tag	UNP Q9IK91
D	-20	SER	-	expression tag	UNP Q9IK91
D	-19	TRP	-	expression tag	UNP Q9IK91
D	-18	SER	-	expression tag	UNP Q9IK91
D	-17	HIS	-	expression tag	UNP Q9IK91
D	-16	PRO	-	expression tag	UNP Q9IK91
D	-15	GLN	-	expression tag	UNP Q9IK91
D	-14	PHE	-	expression tag	UNP Q9IK91
D	-13	GLU	-	expression tag	UNP Q9IK91
D	-12	LYS	-	expression tag	UNP Q9IK91
D	-11	GLY	-	expression tag	UNP Q9IK91
D	-10	ALA	-	expression tag	UNP Q9IK91
D	-9	GLU	-	expression tag	UNP Q9IK91
D	-8	ASN	-	expression tag	UNP Q9IK91
D	-7	LEU	-	expression tag	UNP Q9IK91
D	-6	TYR	-	expression tag	UNP Q9IK91
D	-5	PHE	-	expression tag	UNP Q9IK91
D	-4	GLN	-	expression tag	UNP Q9IK91
D	-3	SER	-	expression tag	UNP Q9IK91
D	-2	ASN	-	expression tag	UNP Q9IK91
D	-1	GLY	-	expression tag	UNP Q9IK91
D	0	SER	-	expression tag	UNP Q9IK91
C	-49	MET	-	expression tag	UNP Q9IK91
C	-48	LYS	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-47	SER	-	expression tag	UNP Q9IK91
C	-46	SER	-	expression tag	UNP Q9IK91
C	-45	TRP	-	expression tag	UNP Q9IK91
C	-44	SER	-	expression tag	UNP Q9IK91
C	-43	HIS	-	expression tag	UNP Q9IK91
C	-42	PRO	-	expression tag	UNP Q9IK91
C	-41	GLN	-	expression tag	UNP Q9IK91
C	-40	PHE	-	expression tag	UNP Q9IK91
C	-39	GLU	-	expression tag	UNP Q9IK91
C	-38	LYS	-	expression tag	UNP Q9IK91
C	-37	GLY	-	expression tag	UNP Q9IK91
C	-36	ALA	-	expression tag	UNP Q9IK91
C	-35	MET	-	expression tag	UNP Q9IK91
C	-34	THR	-	expression tag	UNP Q9IK91
C	-33	GLY	-	expression tag	UNP Q9IK91
C	-32	TRP	-	expression tag	UNP Q9IK91
C	-31	SER	-	expression tag	UNP Q9IK91
C	-30	HIS	-	expression tag	UNP Q9IK91
C	-29	PRO	-	expression tag	UNP Q9IK91
C	-28	GLN	-	expression tag	UNP Q9IK91
C	-27	PHE	-	expression tag	UNP Q9IK91
C	-26	GLU	-	expression tag	UNP Q9IK91
C	-25	LYS	-	expression tag	UNP Q9IK91
C	-24	GLY	-	expression tag	UNP Q9IK91
C	-23	SER	-	expression tag	UNP Q9IK91
C	-22	SER	-	expression tag	UNP Q9IK91
C	-21	ALA	-	expression tag	UNP Q9IK91
C	-20	SER	-	expression tag	UNP Q9IK91
C	-19	TRP	-	expression tag	UNP Q9IK91
C	-18	SER	-	expression tag	UNP Q9IK91
C	-17	HIS	-	expression tag	UNP Q9IK91
C	-16	PRO	-	expression tag	UNP Q9IK91
C	-15	GLN	-	expression tag	UNP Q9IK91
C	-14	PHE	-	expression tag	UNP Q9IK91
C	-13	GLU	-	expression tag	UNP Q9IK91
C	-12	LYS	-	expression tag	UNP Q9IK91
C	-11	GLY	-	expression tag	UNP Q9IK91
C	-10	ALA	-	expression tag	UNP Q9IK91
C	-9	GLU	-	expression tag	UNP Q9IK91
C	-8	ASN	-	expression tag	UNP Q9IK91
C	-7	LEU	-	expression tag	UNP Q9IK91
C	-6	TYR	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-5	PHE	-	expression tag	UNP Q9IK91
C	-4	GLN	-	expression tag	UNP Q9IK91
C	-3	SER	-	expression tag	UNP Q9IK91
C	-2	ASN	-	expression tag	UNP Q9IK91
C	-1	GLY	-	expression tag	UNP Q9IK91
C	0	SER	-	expression tag	UNP Q9IK91
E	-49	MET	-	expression tag	UNP Q9IK91
E	-48	LYS	-	expression tag	UNP Q9IK91
E	-47	SER	-	expression tag	UNP Q9IK91
E	-46	SER	-	expression tag	UNP Q9IK91
E	-45	TRP	-	expression tag	UNP Q9IK91
E	-44	SER	-	expression tag	UNP Q9IK91
E	-43	HIS	-	expression tag	UNP Q9IK91
E	-42	PRO	-	expression tag	UNP Q9IK91
E	-41	GLN	-	expression tag	UNP Q9IK91
E	-40	PHE	-	expression tag	UNP Q9IK91
E	-39	GLU	-	expression tag	UNP Q9IK91
E	-38	LYS	-	expression tag	UNP Q9IK91
E	-37	GLY	-	expression tag	UNP Q9IK91
E	-36	ALA	-	expression tag	UNP Q9IK91
E	-35	MET	-	expression tag	UNP Q9IK91
E	-34	THR	-	expression tag	UNP Q9IK91
E	-33	GLY	-	expression tag	UNP Q9IK91
E	-32	TRP	-	expression tag	UNP Q9IK91
E	-31	SER	-	expression tag	UNP Q9IK91
E	-30	HIS	-	expression tag	UNP Q9IK91
E	-29	PRO	-	expression tag	UNP Q9IK91
E	-28	GLN	-	expression tag	UNP Q9IK91
E	-27	PHE	-	expression tag	UNP Q9IK91
E	-26	GLU	-	expression tag	UNP Q9IK91
E	-25	LYS	-	expression tag	UNP Q9IK91
E	-24	GLY	-	expression tag	UNP Q9IK91
E	-23	SER	-	expression tag	UNP Q9IK91
E	-22	SER	-	expression tag	UNP Q9IK91
E	-21	ALA	-	expression tag	UNP Q9IK91
E	-20	SER	-	expression tag	UNP Q9IK91
E	-19	TRP	-	expression tag	UNP Q9IK91
E	-18	SER	-	expression tag	UNP Q9IK91
E	-17	HIS	-	expression tag	UNP Q9IK91
E	-16	PRO	-	expression tag	UNP Q9IK91
E	-15	GLN	-	expression tag	UNP Q9IK91
E	-14	PHE	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-13	GLU	-	expression tag	UNP Q9IK91
E	-12	LYS	-	expression tag	UNP Q9IK91
E	-11	GLY	-	expression tag	UNP Q9IK91
E	-10	ALA	-	expression tag	UNP Q9IK91
E	-9	GLU	-	expression tag	UNP Q9IK91
E	-8	ASN	-	expression tag	UNP Q9IK91
E	-7	LEU	-	expression tag	UNP Q9IK91
E	-6	TYR	-	expression tag	UNP Q9IK91
E	-5	PHE	-	expression tag	UNP Q9IK91
E	-4	GLN	-	expression tag	UNP Q9IK91
E	-3	SER	-	expression tag	UNP Q9IK91
E	-2	ASN	-	expression tag	UNP Q9IK91
E	-1	GLY	-	expression tag	UNP Q9IK91
E	0	SER	-	expression tag	UNP Q9IK91
F	-49	MET	-	expression tag	UNP Q9IK91
F	-48	LYS	-	expression tag	UNP Q9IK91
F	-47	SER	-	expression tag	UNP Q9IK91
F	-46	SER	-	expression tag	UNP Q9IK91
F	-45	TRP	-	expression tag	UNP Q9IK91
F	-44	SER	-	expression tag	UNP Q9IK91
F	-43	HIS	-	expression tag	UNP Q9IK91
F	-42	PRO	-	expression tag	UNP Q9IK91
F	-41	GLN	-	expression tag	UNP Q9IK91
F	-40	PHE	-	expression tag	UNP Q9IK91
F	-39	GLU	-	expression tag	UNP Q9IK91
F	-38	LYS	-	expression tag	UNP Q9IK91
F	-37	GLY	-	expression tag	UNP Q9IK91
F	-36	ALA	-	expression tag	UNP Q9IK91
F	-35	MET	-	expression tag	UNP Q9IK91
F	-34	THR	-	expression tag	UNP Q9IK91
F	-33	GLY	-	expression tag	UNP Q9IK91
F	-32	TRP	-	expression tag	UNP Q9IK91
F	-31	SER	-	expression tag	UNP Q9IK91
F	-30	HIS	-	expression tag	UNP Q9IK91
F	-29	PRO	-	expression tag	UNP Q9IK91
F	-28	GLN	-	expression tag	UNP Q9IK91
F	-27	PHE	-	expression tag	UNP Q9IK91
F	-26	GLU	-	expression tag	UNP Q9IK91
F	-25	LYS	-	expression tag	UNP Q9IK91
F	-24	GLY	-	expression tag	UNP Q9IK91
F	-23	SER	-	expression tag	UNP Q9IK91
F	-22	SER	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-21	ALA	-	expression tag	UNP Q9IK91
F	-20	SER	-	expression tag	UNP Q9IK91
F	-19	TRP	-	expression tag	UNP Q9IK91
F	-18	SER	-	expression tag	UNP Q9IK91
F	-17	HIS	-	expression tag	UNP Q9IK91
F	-16	PRO	-	expression tag	UNP Q9IK91
F	-15	GLN	-	expression tag	UNP Q9IK91
F	-14	PHE	-	expression tag	UNP Q9IK91
F	-13	GLU	-	expression tag	UNP Q9IK91
F	-12	LYS	-	expression tag	UNP Q9IK91
F	-11	GLY	-	expression tag	UNP Q9IK91
F	-10	ALA	-	expression tag	UNP Q9IK91
F	-9	GLU	-	expression tag	UNP Q9IK91
F	-8	ASN	-	expression tag	UNP Q9IK91
F	-7	LEU	-	expression tag	UNP Q9IK91
F	-6	TYR	-	expression tag	UNP Q9IK91
F	-5	PHE	-	expression tag	UNP Q9IK91
F	-4	GLN	-	expression tag	UNP Q9IK91
F	-3	SER	-	expression tag	UNP Q9IK91
F	-2	ASN	-	expression tag	UNP Q9IK91
F	-1	GLY	-	expression tag	UNP Q9IK91
F	0	SER	-	expression tag	UNP Q9IK91
G	-49	MET	-	expression tag	UNP Q9IK91
G	-48	LYS	-	expression tag	UNP Q9IK91
G	-47	SER	-	expression tag	UNP Q9IK91
G	-46	SER	-	expression tag	UNP Q9IK91
G	-45	TRP	-	expression tag	UNP Q9IK91
G	-44	SER	-	expression tag	UNP Q9IK91
G	-43	HIS	-	expression tag	UNP Q9IK91
G	-42	PRO	-	expression tag	UNP Q9IK91
G	-41	GLN	-	expression tag	UNP Q9IK91
G	-40	PHE	-	expression tag	UNP Q9IK91
G	-39	GLU	-	expression tag	UNP Q9IK91
G	-38	LYS	-	expression tag	UNP Q9IK91
G	-37	GLY	-	expression tag	UNP Q9IK91
G	-36	ALA	-	expression tag	UNP Q9IK91
G	-35	MET	-	expression tag	UNP Q9IK91
G	-34	THR	-	expression tag	UNP Q9IK91
G	-33	GLY	-	expression tag	UNP Q9IK91
G	-32	TRP	-	expression tag	UNP Q9IK91
G	-31	SER	-	expression tag	UNP Q9IK91
G	-30	HIS	-	expression tag	UNP Q9IK91

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Chain	Residue	Modelled	Actual	Comment	Reference
G	-29	PRO	-	expression tag	UNP Q9IK91
G	-28	GLN	-	expression tag	UNP Q9IK91
G	-27	PHE	-	expression tag	UNP Q9IK91
G	-26	GLU	-	expression tag	UNP Q9IK91
G	-25	LYS	-	expression tag	UNP Q9IK91
G	-24	GLY	-	expression tag	UNP Q9IK91
G	-23	SER	-	expression tag	UNP Q9IK91
G	-22	SER	-	expression tag	UNP Q9IK91
G	-21	ALA	-	expression tag	UNP Q9IK91
G	-20	SER	-	expression tag	UNP Q9IK91
G	-19	TRP	-	expression tag	UNP Q9IK91
G	-18	SER	-	expression tag	UNP Q9IK91
G	-17	HIS	-	expression tag	UNP Q9IK91
G	-16	PRO	-	expression tag	UNP Q9IK91
G	-15	GLN	-	expression tag	UNP Q9IK91
G	-14	PHE	-	expression tag	UNP Q9IK91
G	-13	GLU	-	expression tag	UNP Q9IK91
G	-12	LYS	-	expression tag	UNP Q9IK91
G	-11	GLY	-	expression tag	UNP Q9IK91
G	-10	ALA	-	expression tag	UNP Q9IK91
G	-9	GLU	-	expression tag	UNP Q9IK91
G	-8	ASN	-	expression tag	UNP Q9IK91
G	-7	LEU	-	expression tag	UNP Q9IK91
G	-6	TYR	-	expression tag	UNP Q9IK91
G	-5	PHE	-	expression tag	UNP Q9IK91
G	-4	GLN	-	expression tag	UNP Q9IK91
G	-3	SER	-	expression tag	UNP Q9IK91
G	-2	ASN	-	expression tag	UNP Q9IK91
G	-1	GLY	-	expression tag	UNP Q9IK91
G	0	SER	-	expression tag	UNP Q9IK91

- Molecule 2 is a protein called RNA-directed RNA polymerase L.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	1241	Total	C	N	O	S	0	0
			9976	6360	1704	1845	67		

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-25	MET	-	expression tag	UNP Q997F0
A	-24	LYS	-	expression tag	UNP Q997F0

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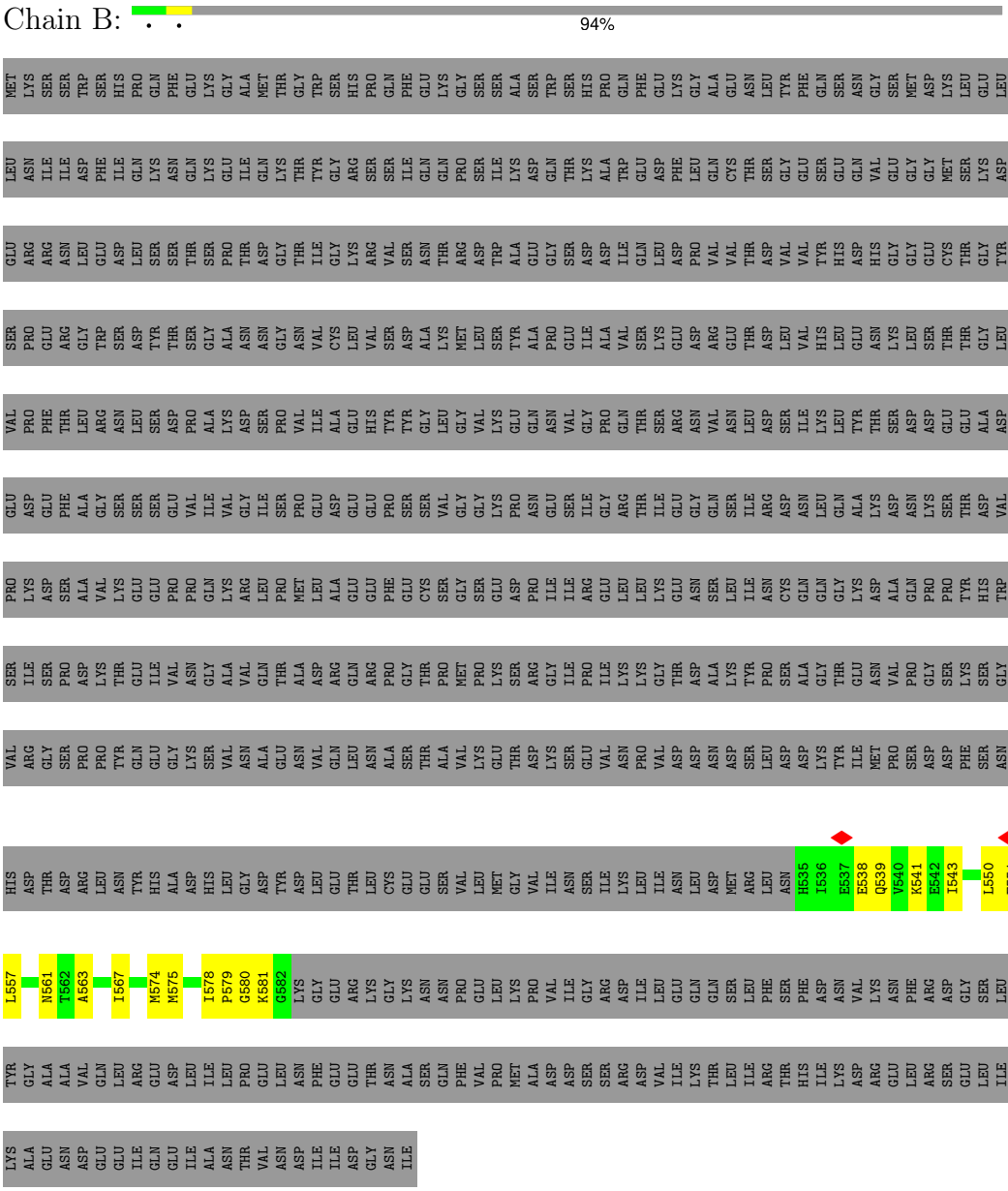
Chain	Residue	Modelled	Actual	Comment	Reference
A	-23	SER	-	expression tag	UNP Q997F0
A	-22	SER	-	expression tag	UNP Q997F0
A	-21	HIS	-	expression tag	UNP Q997F0
A	-20	HIS	-	expression tag	UNP Q997F0
A	-19	HIS	-	expression tag	UNP Q997F0
A	-18	HIS	-	expression tag	UNP Q997F0
A	-17	HIS	-	expression tag	UNP Q997F0
A	-16	HIS	-	expression tag	UNP Q997F0
A	-15	HIS	-	expression tag	UNP Q997F0
A	-14	HIS	-	expression tag	UNP Q997F0
A	-13	HIS	-	expression tag	UNP Q997F0
A	-12	HIS	-	expression tag	UNP Q997F0
A	-11	GLY	-	expression tag	UNP Q997F0
A	-10	SER	-	expression tag	UNP Q997F0
A	-9	SER	-	expression tag	UNP Q997F0
A	-8	GLU	-	expression tag	UNP Q997F0
A	-7	ASN	-	expression tag	UNP Q997F0
A	-6	LEU	-	expression tag	UNP Q997F0
A	-5	TYR	-	expression tag	UNP Q997F0
A	-4	PHE	-	expression tag	UNP Q997F0
A	-3	GLN	-	expression tag	UNP Q997F0
A	-2	SER	-	expression tag	UNP Q997F0
A	-1	GLY	-	expression tag	UNP Q997F0
A	0	SER	-	expression tag	UNP Q997F0

3 Residue-property plots (i)

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

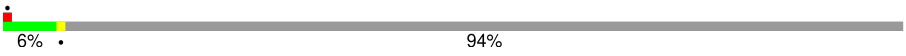
- Molecule 1: Phosphoprotein

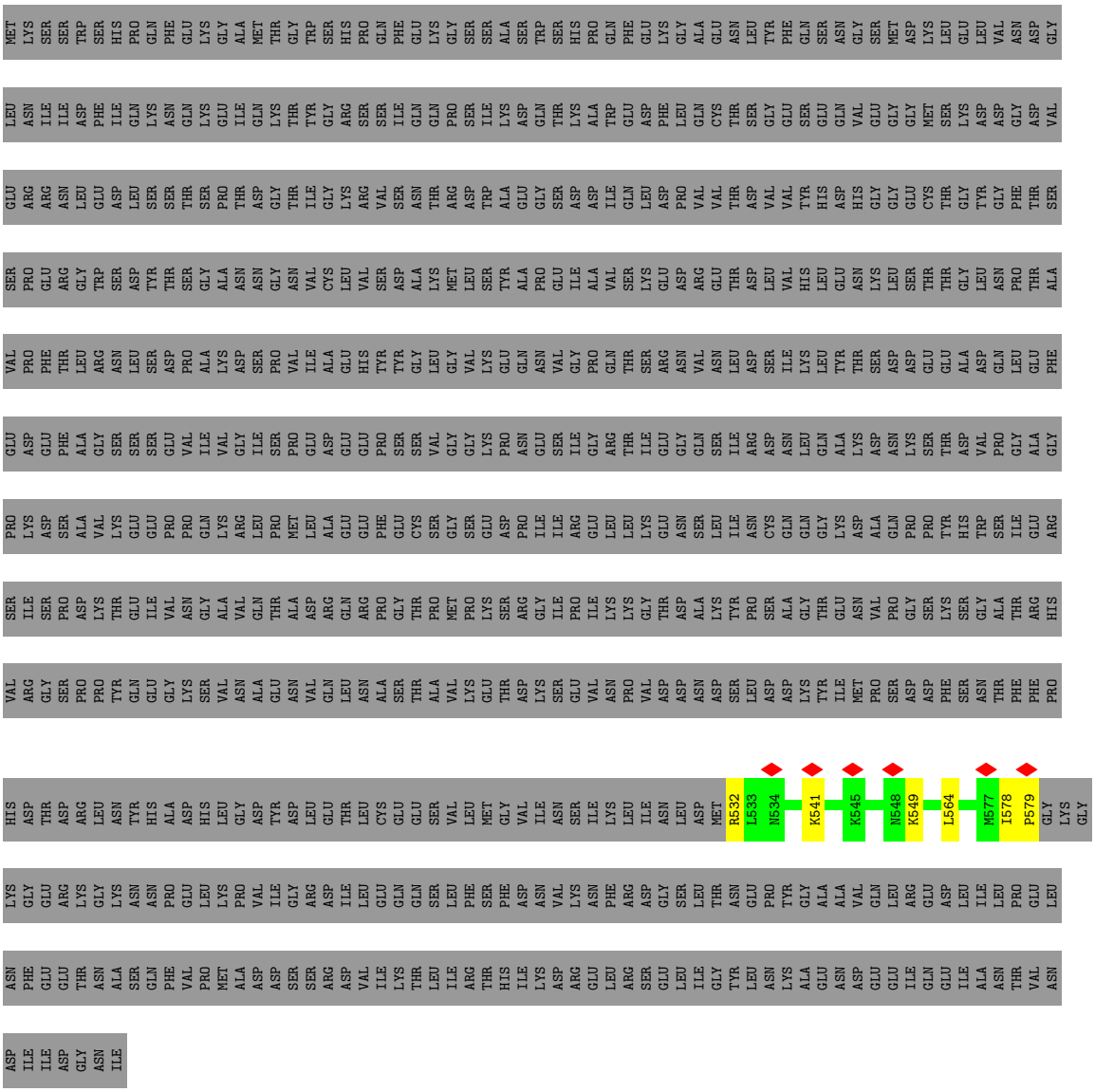
Chain B:



• Molecule 1: Phosphoprotein

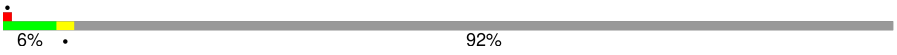
Chain D:

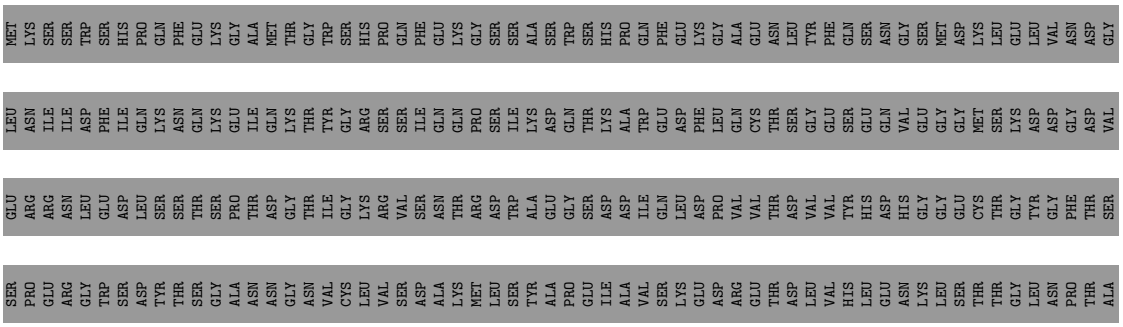


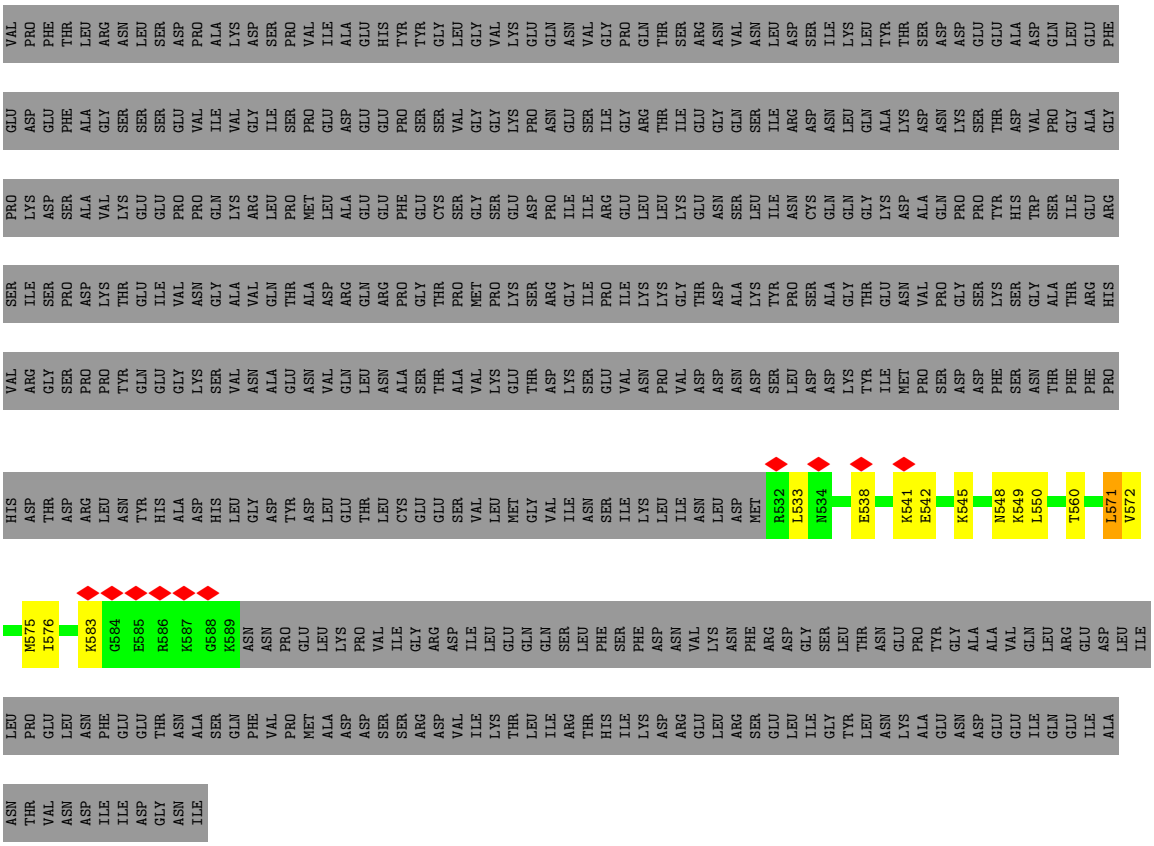


• Molecule 1: Phosphoprotein

Chain C:

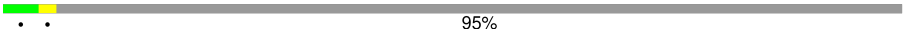


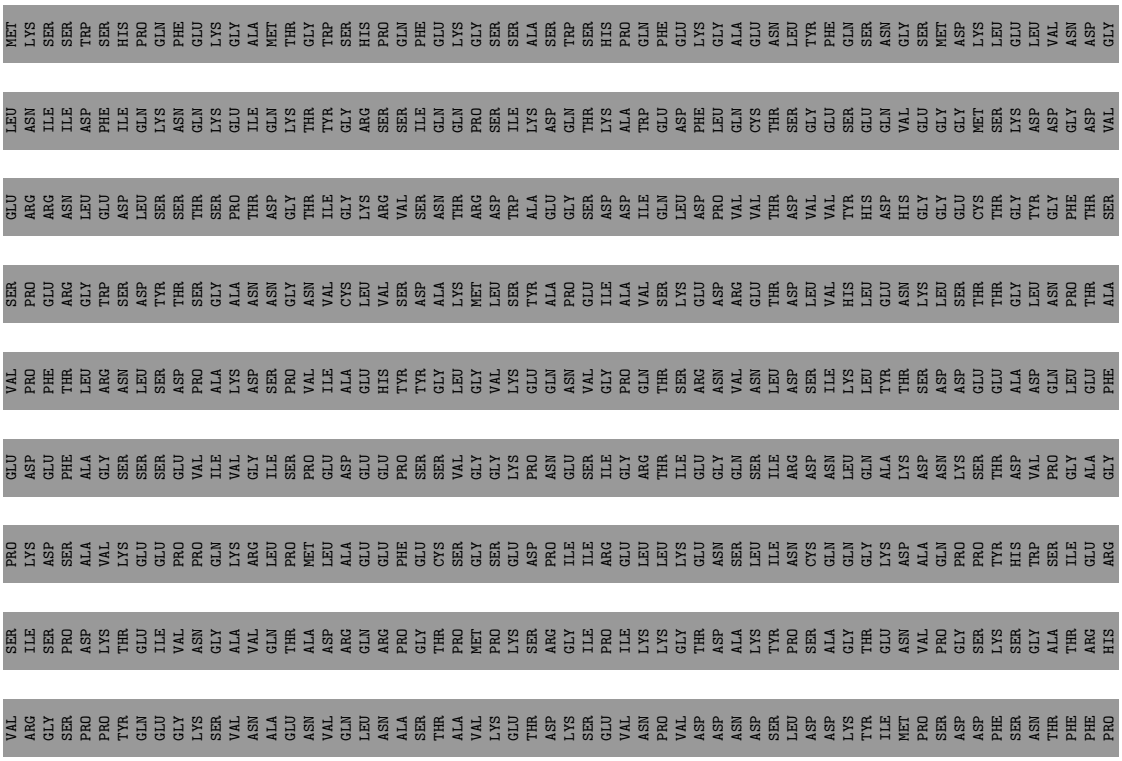


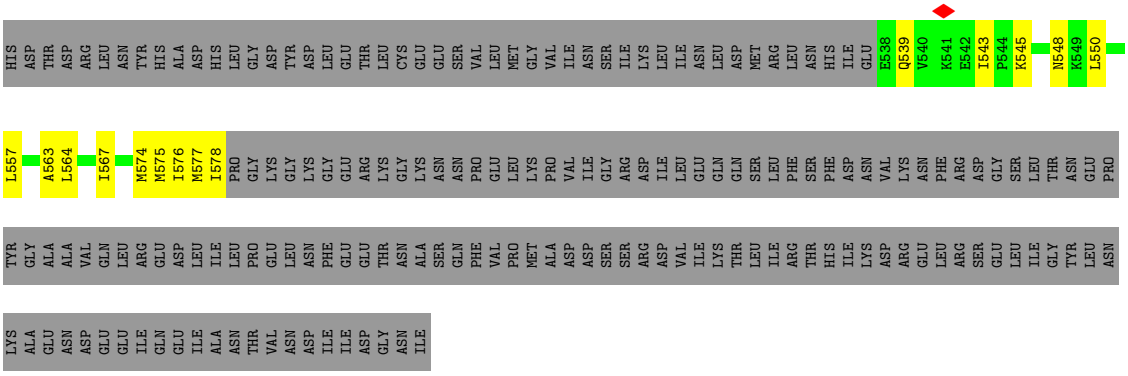


• Molecule 1: Phosphoprotein

Chain E:

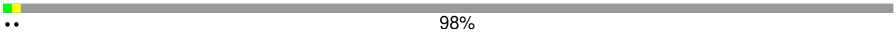


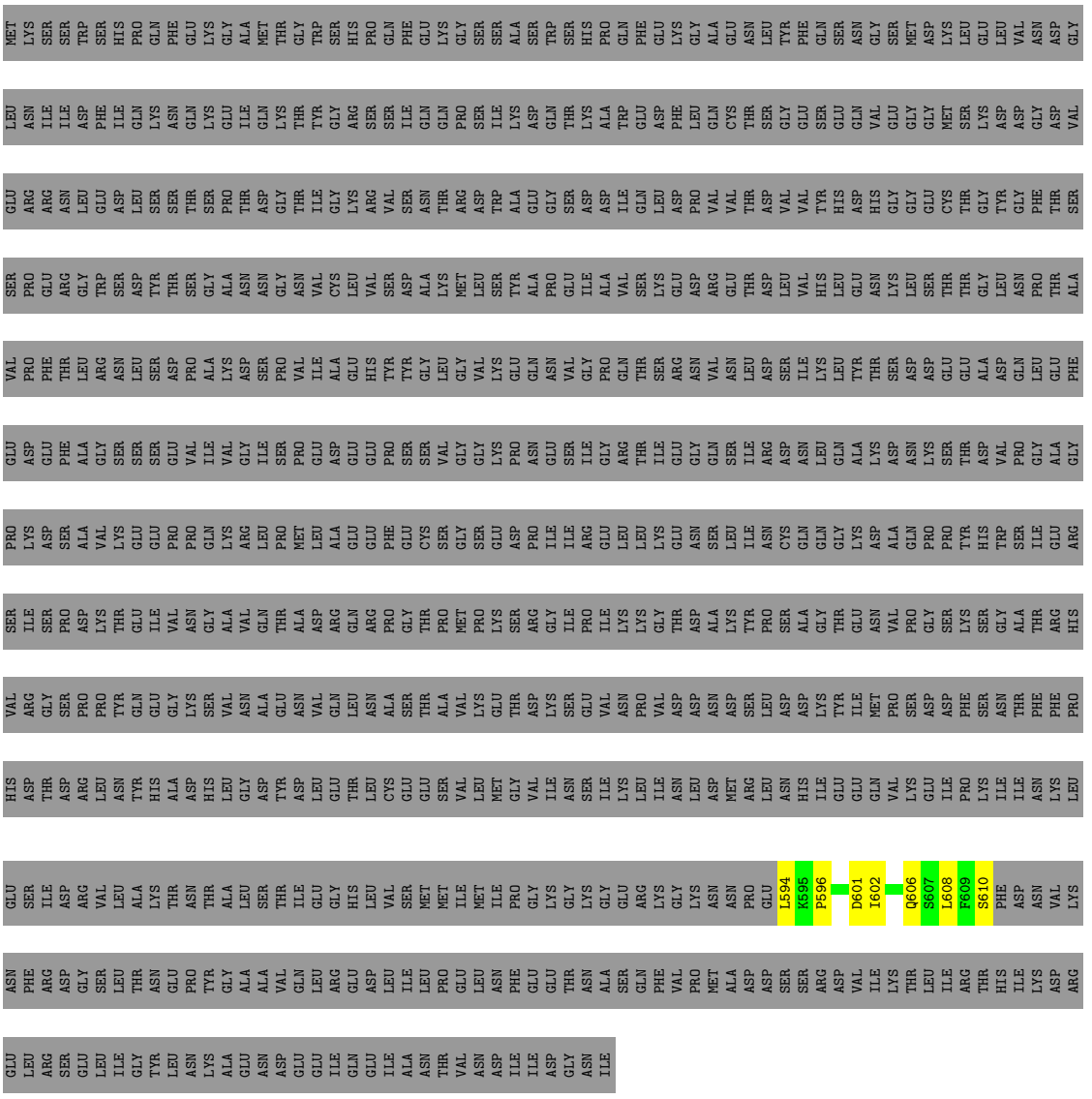




• Molecule 1: Phosphoprotein

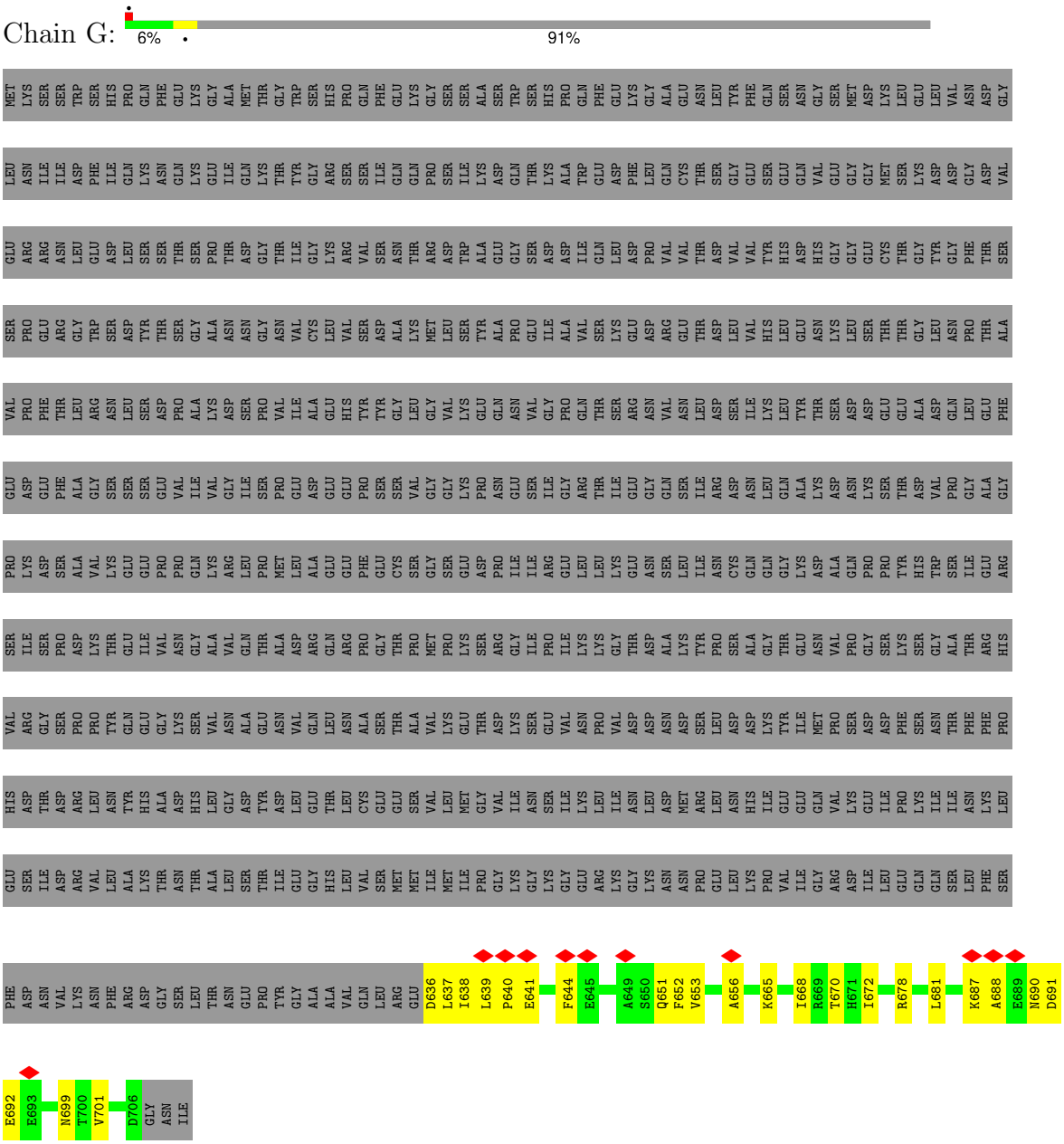
Chain F:





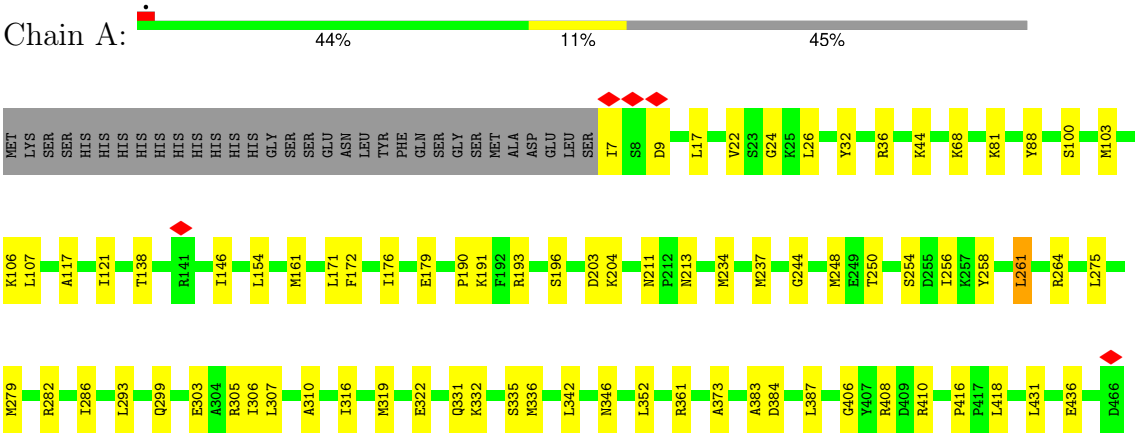
• Molecule 1: Phosphoprotein

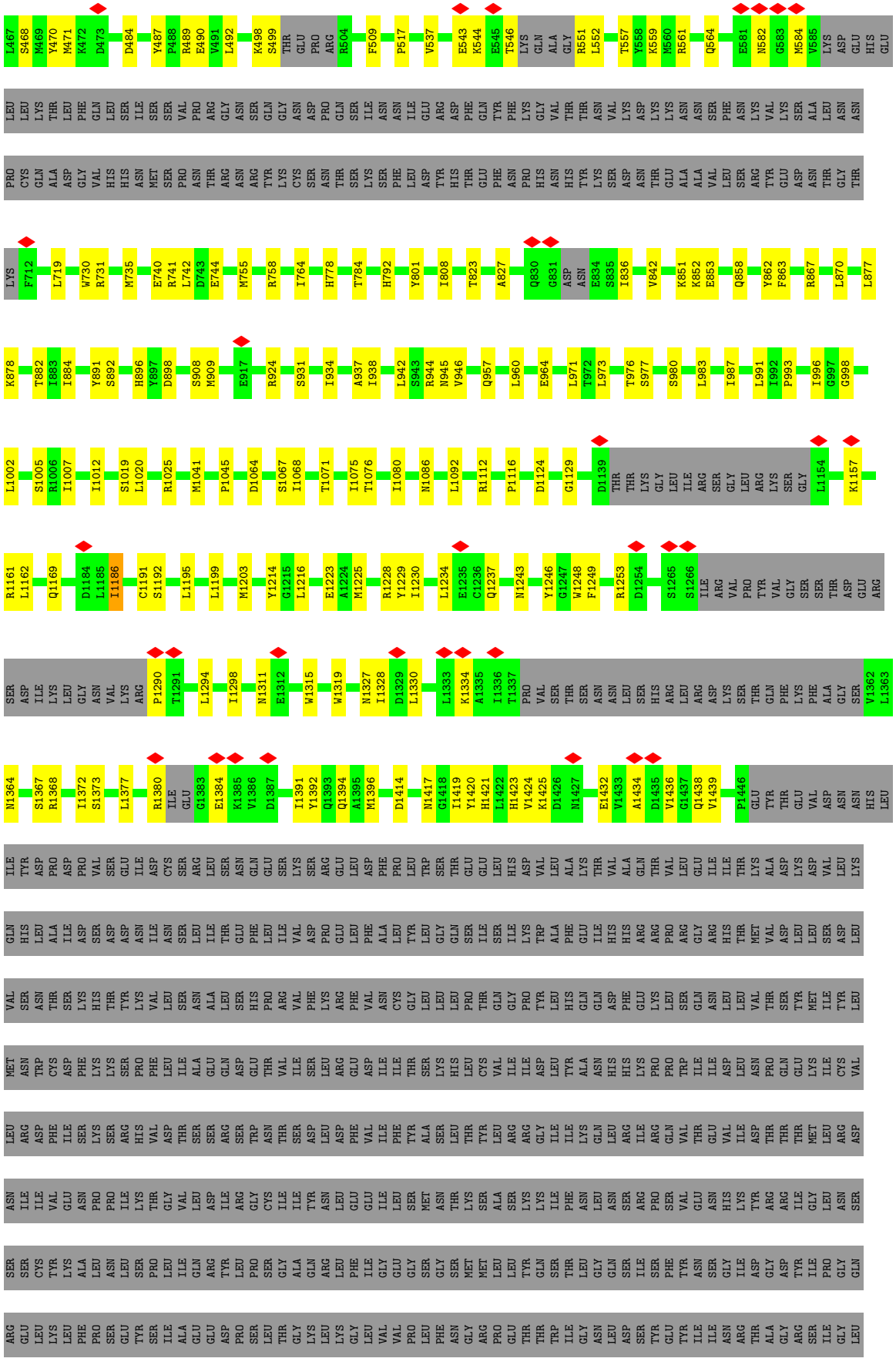
Chain G:

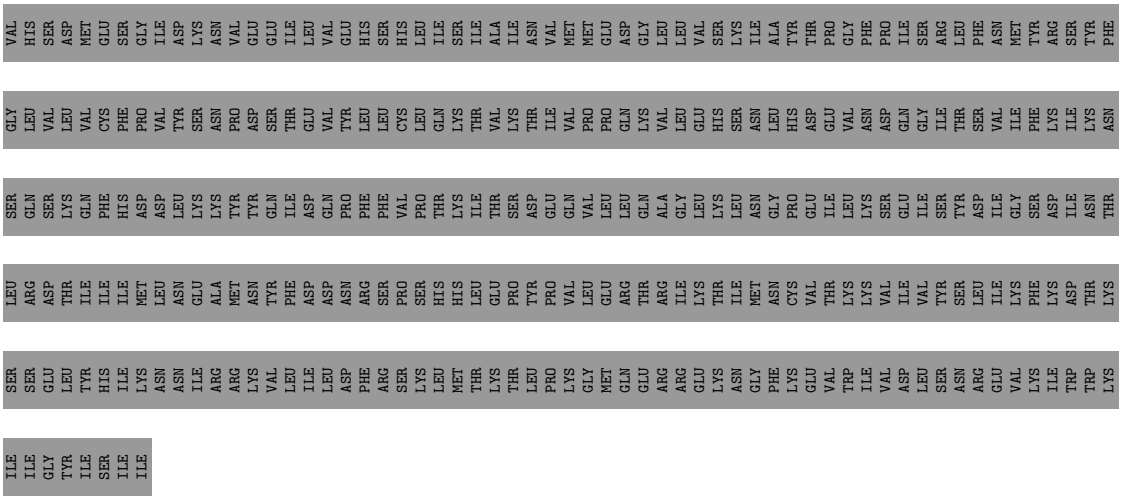


• Molecule 2: RNA-directed RNA polymerase L

Chain A:






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

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	258905	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 ($e^-/Å^2$)	55	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.546	Depositor
Minimum map value	-2.199	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.067	Depositor
Recommended contour level	0.405	Depositor
Map size (Å)	388.32, 388.32, 388.32	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.809, 0.809, 0.809	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	B	0.11	0/373	0.26	0/500
1	C	0.11	0/455	0.24	0/605
1	D	0.11	0/383	0.21	0/515
1	E	0.10	0/320	0.23	0/429
1	F	0.07	0/137	0.25	0/183
1	G	0.14	0/578	0.46	0/782
2	A	0.10	0/10177	0.26	0/13752
All	All	0.10	0/12423	0.27	0/16766

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	B	370	0	400	17	0
1	C	452	0	494	13	0
1	D	380	0	411	7	0
1	E	319	0	350	13	0
1	F	136	0	144	12	0
1	G	573	0	559	21	0
2	A	9976	0	9994	159	0
All	All	12206	0	12352	213	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 9.

All (213) 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)
1:G:637:LEU:HD13	1:G:639:LEU:HG	1.67	0.77
2:A:1249:PHE:HB2	2:A:1420:TYR:HB3	1.72	0.71
2:A:121:ILE:HG21	2:A:987:ILE:HG21	1.72	0.70
2:A:909:MET:HE1	2:A:934:ILE:HD13	1.73	0.70
1:B:579:PRO:HG2	1:F:602:ILE:HD11	1.74	0.70
2:A:7:ILE:HG13	2:A:9:ASP:H	1.57	0.70
2:A:1421:HIS:HB3	2:A:1423:HIS:HE1	1.58	0.68
1:G:651:GLN:HG3	1:G:652:PHE:H	1.59	0.67
2:A:26:LEU:HD22	2:A:234:MET:HE1	1.75	0.66
2:A:983:LEU:O	2:A:987:ILE:HD12	1.95	0.66
2:A:316:ILE:HD11	2:A:342:LEU:HD11	1.78	0.66
2:A:1243:ASN:ND2	2:A:1424:VAL:O	2.27	0.65
2:A:299:GLN:NE2	2:A:307:LEU:O	2.31	0.64
2:A:755:MET:HE1	2:A:801:TYR:HB3	1.79	0.64
2:A:1391:ILE:HB	2:A:1394:GLN:HB2	1.79	0.64
2:A:305:ARG:NH2	1:G:699:ASN:OD1	2.32	0.63
2:A:1421:HIS:HB3	2:A:1423:HIS:CE1	2.34	0.63
2:A:741:ARG:NE	2:A:744:GLU:OE2	2.27	0.62
2:A:1223:GLU:O	2:A:1425:LYS:NZ	2.31	0.62
2:A:584:MET:HE1	2:A:827:ALA:HB3	1.82	0.62
2:A:103:MET:HE3	2:A:203:ASP:HB2	1.80	0.61
2:A:468:SER:HA	2:A:471:MET:HG3	1.82	0.61
2:A:1068:ILE:HG12	2:A:1162:LEU:HA	1.83	0.61
1:F:608:LEU:H	1:F:608:LEU:HD23	1.64	0.61
2:A:1414:ASP:OD2	2:A:1414:ASP:N	2.34	0.61
2:A:1290:PRO:HA	2:A:1294:LEU:HB3	1.83	0.60
1:G:690:ASN:HD21	1:G:692:GLU:HB2	1.67	0.60
2:A:719:LEU:HD11	2:A:863:PHE:HB2	1.85	0.59
2:A:1112:ARG:NH1	2:A:1438:GLN:O	2.35	0.58
2:A:244:GLY:O	2:A:248:MET:HG3	2.04	0.58
2:A:190:PRO:HA	2:A:193:ARG:HH12	1.68	0.58
2:A:993:PRO:HD2	2:A:996:ILE:HD11	1.84	0.58
2:A:987:ILE:HG23	2:A:991:LEU:HD13	1.85	0.58
1:B:557:LEU:HG	1:E:557:LEU:HD21	1.84	0.58
2:A:924:ARG:NH1	2:A:998:GLY:O	2.36	0.57
1:G:638:ILE:HG13	1:G:640:PRO:HD3	1.86	0.57
2:A:17:LEU:HD22	2:A:237:MET:HB2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:431:LEU:HD22	2:A:436:GLU:HB3	1.85	0.57
1:B:550:LEU:HD11	1:C:550:LEU:HD22	1.86	0.57
2:A:878:LYS:HA	2:A:878:LYS:HE2	1.87	0.57
1:F:610:SER:HB3	1:G:638:ILE:HG22	1.87	0.57
2:A:1064:ASP:O	2:A:1169:GLN:NE2	2.36	0.56
2:A:842:VAL:HG21	2:A:851:LYS:HG2	1.86	0.56
1:C:583:LYS:NZ	2:A:744:GLU:OE1	2.39	0.56
2:A:973:LEU:O	2:A:977:SER:OG	2.23	0.56
1:D:532:ARG:HH11	1:C:533:LEU:HB3	1.71	0.55
2:A:1192:SER:OG	2:A:1223:GLU:OE1	2.24	0.55
2:A:1364:ASN:OD1	2:A:1367:SER:OG	2.24	0.55
2:A:36:ARG:NH2	2:A:81:LYS:O	2.40	0.55
2:A:867:ARG:HH22	1:G:644:PHE:HB2	1.72	0.55
2:A:719:LEU:HG	2:A:884:ILE:HG12	1.90	0.54
2:A:275:LEU:O	2:A:279:MET:HB2	2.08	0.53
2:A:1092:LEU:H	2:A:1092:LEU:HD23	1.73	0.53
2:A:1020:LEU:HD13	2:A:1195:LEU:HB3	1.90	0.53
2:A:384:ASP:N	2:A:384:ASP:OD1	2.39	0.53
1:G:687:LYS:HG3	1:G:688:ALA:H	1.74	0.53
2:A:22:VAL:HG12	2:A:24:GLY:H	1.74	0.53
2:A:1071:THR:O	2:A:1075:ILE:HG23	2.07	0.53
2:A:1157:LYS:O	2:A:1161:ARG:NH2	2.42	0.53
2:A:32:TYR:OH	2:A:490:GLU:O	2.26	0.52
2:A:1392:TYR:O	2:A:1396:MET:HG2	2.10	0.52
2:A:154:LEU:HD21	2:A:946:VAL:HA	1.91	0.52
2:A:758:ARG:O	2:A:758:ARG:NH1	2.42	0.52
2:A:909:MET:HE3	2:A:942:LEU:HD22	1.91	0.52
1:B:567:ILE:HD13	1:E:567:ILE:HG22	1.92	0.52
2:A:1067:SER:O	2:A:1071:THR:HG23	2.09	0.52
2:A:1380:ARG:NH1	2:A:1384:GLU:O	2.43	0.52
1:E:575:MET:HE2	1:F:596:PRO:HG3	1.92	0.52
1:F:610:SER:O	1:G:636:ASP:N	2.43	0.52
1:D:564:LEU:HD23	1:E:563:ALA:HB3	1.92	0.51
2:A:1005:SER:HB2	2:A:1012:ILE:HD12	1.91	0.51
1:E:574:MET:HG3	1:F:596:PRO:HB3	1.92	0.51
1:B:551:GLU:OE2	1:C:549:LYS:NZ	2.34	0.51
2:A:908:SER:HB2	2:A:937:ALA:HB2	1.93	0.51
2:A:827:ALA:HB2	2:A:836:ILE:HG23	1.92	0.51
2:A:898:ASP:O	2:A:1368:ARG:NH1	2.44	0.51
1:C:572:VAL:O	1:C:576:ILE:HG23	2.11	0.51
2:A:509:PHE:O	2:A:1086:ASN:ND2	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:545:LYS:HA	1:E:548:ASN:HD21	1.76	0.50
2:A:487:TYR:HB2	2:A:492:LEU:HD11	1.91	0.50
2:A:286:ILE:HD12	2:A:319:MET:HE3	1.93	0.50
2:A:1112:ARG:HG3	2:A:1439:VAL:HG12	1.94	0.50
2:A:261:LEU:HD13	2:A:352:LEU:HD22	1.93	0.50
2:A:138:THR:HG23	2:A:1229:TYR:H	1.77	0.49
2:A:484:ASP:OD2	2:A:778:HIS:ND1	2.36	0.49
2:A:1246:TYR:HB3	2:A:1423:HIS:CG	2.46	0.49
1:C:545:LYS:HA	1:C:548:ASN:ND2	2.27	0.49
2:A:1294:LEU:O	2:A:1298:ILE:HG13	2.12	0.49
1:D:541:LYS:HA	1:E:539:GLN:HE22	1.77	0.49
1:B:561:ASN:OD1	1:C:560:THR:OG1	2.21	0.49
1:B:563:ALA:O	1:B:567:ILE:HG13	2.13	0.49
1:B:578:ILE:HD11	2:A:387:LEU:HD11	1.95	0.48
2:A:561:ARG:NH1	2:A:564:GLN:OE1	2.46	0.48
2:A:1246:TYR:HB3	2:A:1423:HIS:CD2	2.47	0.48
2:A:498:LYS:NZ	2:A:499:SER:O	2.39	0.48
2:A:68:LYS:HD2	2:A:196:SER:HB3	1.96	0.48
2:A:742:LEU:HD11	2:A:808:ILE:HD11	1.96	0.48
2:A:331:GLN:OE1	2:A:335:SER:OG	2.32	0.48
2:A:342:LEU:O	2:A:346:ASN:HB2	2.13	0.48
2:A:1041:MET:HE2	2:A:1186:ILE:HG12	1.96	0.48
1:G:640:PRO:HD2	1:G:641:GLU:OE2	2.13	0.48
2:A:146:ILE:HG23	2:A:256:ILE:HD12	1.94	0.47
1:B:551:GLU:O	1:B:555:ARG:HG3	2.14	0.47
2:A:250:THR:O	2:A:254:SER:OG	2.30	0.47
2:A:258:TYR:HA	2:A:352:LEU:HD21	1.96	0.47
2:A:938:ILE:HA	2:A:942:LEU:HB3	1.96	0.47
2:A:1228:ARG:HE	2:A:1237:GLN:HG2	1.80	0.47
2:A:1319:TRP:CG	2:A:1330:LEU:HG	2.49	0.47
1:G:687:LYS:HG3	1:G:688:ALA:N	2.29	0.47
2:A:755:MET:HE3	2:A:755:MET:HB2	1.81	0.47
1:B:550:LEU:HD22	1:E:550:LEU:HD11	1.97	0.47
2:A:106:LYS:NZ	2:A:964:GLU:O	2.42	0.47
2:A:489:ARG:NH1	2:A:492:LEU:O	2.48	0.47
2:A:88:TYR:OH	2:A:237:MET:SD	2.63	0.46
1:F:594:LEU:HD23	1:F:594:LEU:HA	1.82	0.46
1:B:538:GLU:HA	1:B:541:LYS:HD2	1.97	0.46
1:D:578:ILE:HD13	1:E:576:ILE:HG23	1.97	0.46
2:A:973:LEU:HD13	2:A:977:SER:OG	2.16	0.46
2:A:1230:ILE:HG13	2:A:1419:ILE:HB	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:668:ILE:HD13	1:G:681:LEU:HB3	1.98	0.46
1:G:651:GLN:C	1:G:653:VAL:H	2.24	0.46
2:A:161:MET:HE2	2:A:957:GLN:HE22	1.80	0.46
2:A:1248:TRP:CE3	2:A:1373:SER:HB3	2.50	0.45
1:E:545:LYS:HA	1:E:548:ASN:ND2	2.32	0.45
1:B:574:MET:HG3	1:B:575:MET:N	2.31	0.45
2:A:117:ALA:HB2	2:A:983:LEU:HD22	1.99	0.45
2:A:416:PRO:O	2:A:418:LEU:N	2.48	0.45
2:A:546:THR:OG1	2:A:551:ARG:NH1	2.50	0.45
2:A:346:ASN:ND2	1:G:670:THR:OG1	2.38	0.45
1:G:656:ALA:N	1:G:691:ASP:OD1	2.42	0.45
1:G:672:ILE:O	1:G:678:ARG:NH1	2.49	0.45
1:D:549:LYS:HB3	1:C:550:LEU:HD12	1.98	0.45
2:A:1327:ASN:C	2:A:1328:ILE:HD12	2.42	0.45
2:A:537:VAL:HG13	2:A:764:ILE:HG12	1.99	0.45
1:G:681:LEU:HD22	1:G:701:VAL:HG12	1.99	0.44
2:A:878:LYS:O	2:A:882:THR:OG1	2.34	0.44
2:A:1253:ARG:HH11	2:A:1253:ARG:HG3	1.81	0.44
2:A:1076:THR:O	2:A:1080:ILE:HG12	2.18	0.44
2:A:1364:ASN:ND2	2:A:1368:ARG:HB3	2.33	0.44
2:A:543:GLU:OE1	2:A:544:LYS:NZ	2.51	0.44
2:A:1311:ASN:O	2:A:1315:TRP:HB2	2.18	0.44
2:A:191:LYS:HE3	2:A:191:LYS:HB3	1.80	0.44
2:A:730:TRP:CE3	2:A:735:MET:HG2	2.53	0.44
2:A:993:PRO:HB2	2:A:1019:SER:HB3	2.00	0.44
2:A:1234:LEU:H	2:A:1234:LEU:HD23	1.83	0.44
2:A:193:ARG:HB2	2:A:193:ARG:NH1	2.33	0.43
2:A:1253:ARG:HD3	2:A:1417:ASN:OD1	2.17	0.43
2:A:211:ASN:C	2:A:211:ASN:OD1	2.61	0.43
1:G:665:LYS:HB2	1:G:665:LYS:HE3	1.80	0.43
1:C:571:LEU:O	1:C:575:MET:HG3	2.18	0.43
2:A:361:ARG:HH21	2:A:544:LYS:HE2	1.83	0.43
2:A:1041:MET:HA	2:A:1199:LEU:HD13	2.01	0.43
2:A:1432:GLU:OE1	2:A:1434:ALA:N	2.51	0.43
1:B:552:SER:O	1:B:556:VAL:HG23	2.19	0.43
2:A:891:TYR:HB3	2:A:896:HIS:CD2	2.54	0.43
2:A:1248:TRP:HE3	2:A:1373:SER:HB3	1.84	0.43
2:A:44:LYS:HB2	2:A:44:LYS:HE2	1.65	0.43
2:A:858:GLN:NE2	2:A:858:GLN:HA	2.32	0.43
2:A:107:LEU:HG	2:A:171:LEU:HD22	2.00	0.42
2:A:336:MET:HE3	2:A:336:MET:HB3	1.78	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:945:ASN:OD1	2:A:945:ASN:N	2.52	0.42
2:A:931:SER:HB3	2:A:1002:LEU:HB2	2.00	0.42
2:A:299:GLN:HE22	2:A:310:ALA:HB3	1.85	0.42
1:F:610:SER:N	1:G:636:ASP:O	2.27	0.42
2:A:758:ARG:HA	2:A:758:ARG:HH11	1.84	0.42
2:A:892:SER:O	2:A:892:SER:OG	2.34	0.42
1:D:579:PRO:HG3	1:F:606:GLN:HG3	2.02	0.42
2:A:823:THR:HG21	2:A:862:TYR:HB2	2.02	0.42
2:A:470:TYR:OH	2:A:517:PRO:HB3	2.20	0.42
2:A:211:ASN:OD1	2:A:213:ASN:N	2.49	0.42
2:A:1045:PRO:HB3	2:A:1203:MET:HA	2.02	0.42
2:A:1377:LEU:HD23	2:A:1377:LEU:HA	1.86	0.42
1:E:577:MET:HA	1:F:594:LEU:HB2	2.01	0.42
1:G:668:ILE:HD11	1:G:701:VAL:HG11	2.02	0.42
2:A:293:LEU:HD23	2:A:293:LEU:HA	1.90	0.42
2:A:406:GLY:C	2:A:408:ARG:H	2.28	0.42
1:D:564:LEU:HD21	1:E:564:LEU:HG	2.01	0.42
2:A:944:ARG:HB3	2:A:1007:ILE:HD12	2.02	0.42
2:A:282:ARG:NH2	2:A:322:GLU:OE2	2.43	0.41
2:A:410:ARG:HE	2:A:410:ARG:HB3	1.67	0.41
1:B:543:ILE:HG21	1:C:542:GLU:HB2	2.01	0.41
1:G:651:GLN:HB3	1:G:653:VAL:HG13	2.01	0.41
1:C:538:GLU:HA	1:C:541:LYS:HD3	2.02	0.41
2:A:1225:MET:SD	2:A:1424:VAL:HG12	2.60	0.41
2:A:559:LYS:HB2	2:A:559:LYS:HE3	1.88	0.41
2:A:100:SER:OG	2:A:203:ASP:OD2	2.37	0.41
2:A:172:PHE:O	2:A:176:ILE:HG12	2.20	0.41
2:A:960:LEU:HD23	2:A:960:LEU:HA	1.88	0.41
1:C:575:MET:HE2	1:C:575:MET:HB3	1.94	0.41
2:A:303:GLU:HB3	2:A:852:LYS:HG3	2.03	0.41
2:A:1025:ARG:HE	2:A:1025:ARG:HB2	1.74	0.41
2:A:976:THR:O	2:A:980:SER:OG	2.33	0.41
2:A:264:ARG:NH2	2:A:346:ASN:O	2.53	0.41
2:A:1253:ARG:HG3	2:A:1253:ARG:NH1	2.36	0.41
1:B:539:GLN:NE2	1:E:543:ILE:HB	2.35	0.41
1:B:580:GLY:O	1:B:581:LYS:HD3	2.21	0.41
2:A:582:ASN:OD1	2:A:582:ASN:N	2.53	0.41
2:A:784:THR:O	2:A:792:HIS:NE2	2.54	0.41
2:A:971:LEU:HD23	2:A:971:LEU:HA	1.85	0.41
2:A:1116:PRO:HG2	2:A:1216:LEU:HD11	2.02	0.41
2:A:383:ALA:O	2:A:731:ARG:NH2	2.46	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1334:LYS:HE2	2:A:1334:LYS:HB2	1.80	0.41
2:A:870:LEU:HD12	2:A:877:LEU:HD13	2.02	0.40
2:A:1214:TYR:CE2	2:A:1436:VAL:HB	2.56	0.40
2:A:1124:ASP:O	2:A:1129:GLY:HA3	2.21	0.40
1:F:601:ASP:OD1	1:F:601:ASP:N	2.46	0.40
1:B:574:MET:SD	1:F:596:PRO:HB2	2.60	0.40
2:A:204:LYS:HD3	2:A:204:LYS:HA	1.92	0.40
2:A:332:LYS:O	2:A:336:MET:HG3	2.22	0.40
2:A:373:ALA:HB1	2:A:552:LEU:HD21	2.03	0.40
2:A:1191:CYS:SG	2:A:1192:SER:N	2.95	0.40
1:C:576:ILE:HD12	2:A:740:GLU:HG2	2.04	0.40
2:A:561:ARG:HA	2:A:561:ARG:HD3	1.83	0.40

There are no symmetry-related clashes.

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	B	46/759 (6%)	45 (98%)	1 (2%)	0	100	100
1	C	56/759 (7%)	55 (98%)	1 (2%)	0	100	100
1	D	46/759 (6%)	44 (96%)	2 (4%)	0	100	100
1	E	39/759 (5%)	39 (100%)	0	0	100	100
1	F	15/759 (2%)	14 (93%)	1 (7%)	0	100	100
1	G	69/759 (9%)	56 (81%)	13 (19%)	0	100	100
2	A	1223/2270 (54%)	1195 (98%)	28 (2%)	0	100	100
All	All	1494/6824 (22%)	1448 (97%)	46 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	B	43/667 (6%)	43 (100%)	0	100 100
1	C	51/667 (8%)	50 (98%)	1 (2%)	50 78
1	D	45/667 (7%)	45 (100%)	0	100 100
1	E	38/667 (6%)	37 (97%)	1 (3%)	41 72
1	F	16/667 (2%)	16 (100%)	0	100 100
1	G	66/667 (10%)	66 (100%)	0	100 100
2	A	1109/2070 (54%)	1102 (99%)	7 (1%)	84 94
All	All	1368/6072 (22%)	1359 (99%)	9 (1%)	80 93

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	571	LEU
2	A	179	GLU
2	A	261	LEU
2	A	306	ILE
2	A	557	THR
2	A	853	GLU
2	A	1186	ILE
2	A	1372	ILE
1	E	578	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	55	HIS
2	A	130	GLN
2	A	1042	ASN
2	A	1086	ASN
2	A	1125	ASN
1	E	539	GLN

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Mol	Chain	Res	Type
1	G	643	ASN
1	G	690	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no 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.

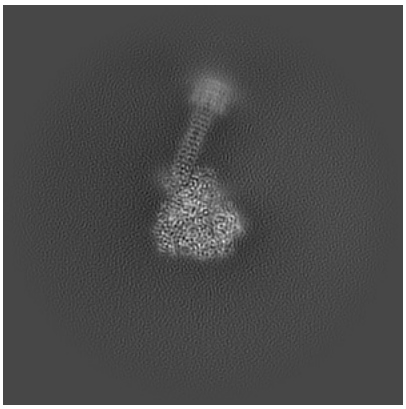
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-45782. These allow visual inspection of the internal detail of the map and identification of artifacts.

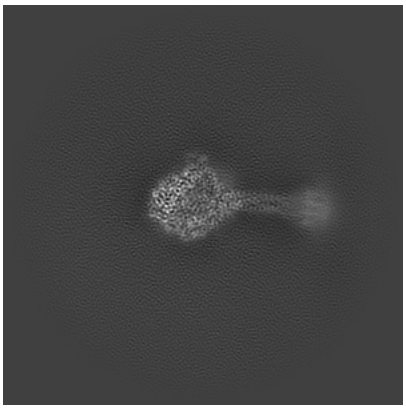
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

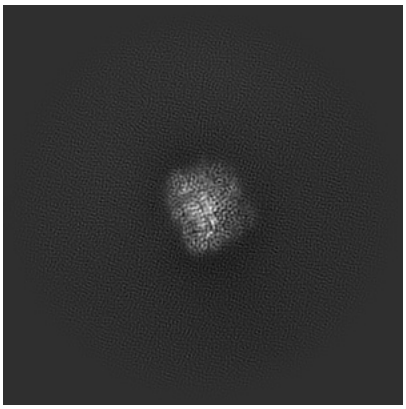
6.1.1 Primary map



X

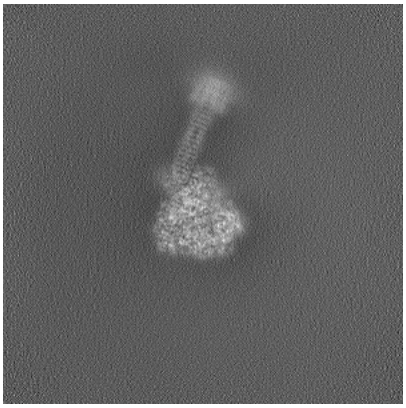


Y

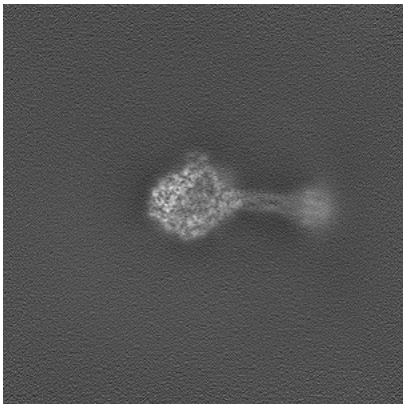


Z

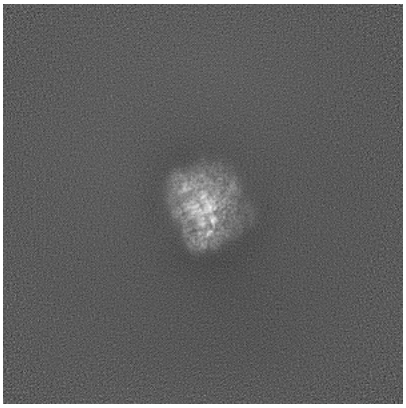
6.1.2 Raw map



X



Y

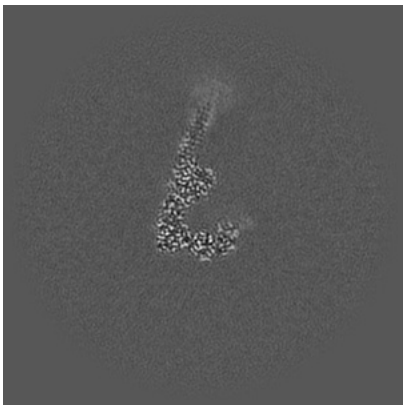


Z

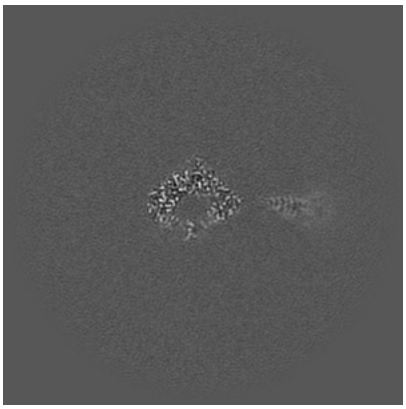
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

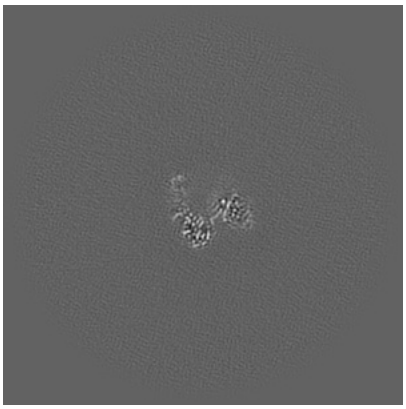
6.2.1 Primary map



X Index: 240

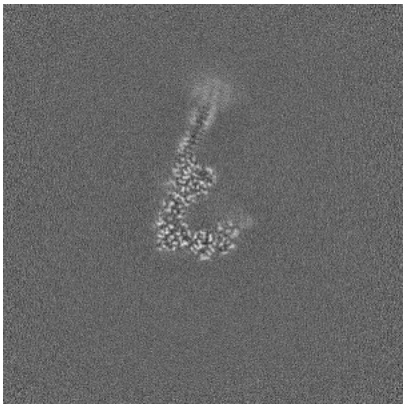


Y Index: 240

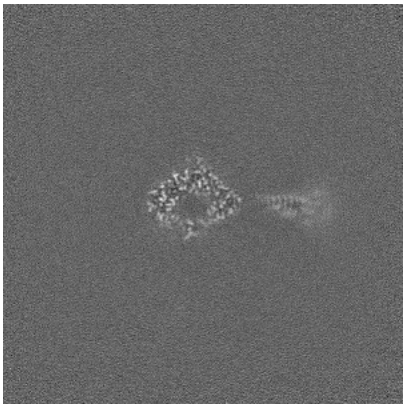


Z Index: 240

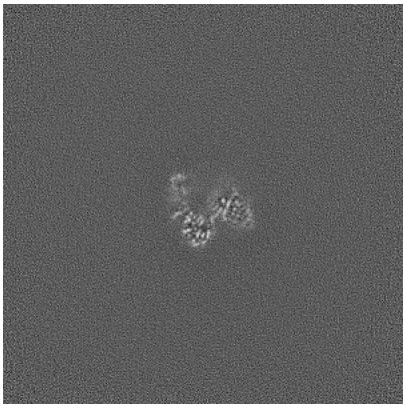
6.2.2 Raw map



X Index: 240



Y Index: 240

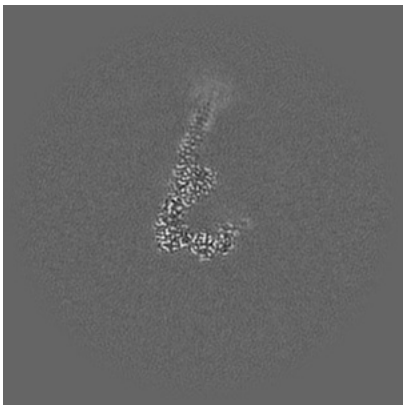


Z Index: 240

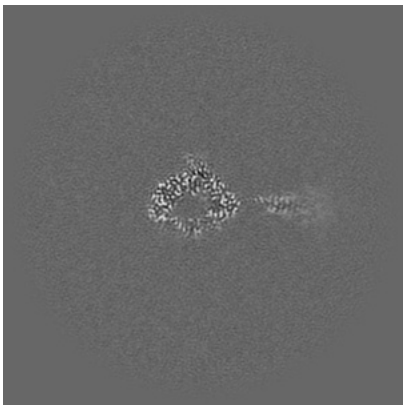
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

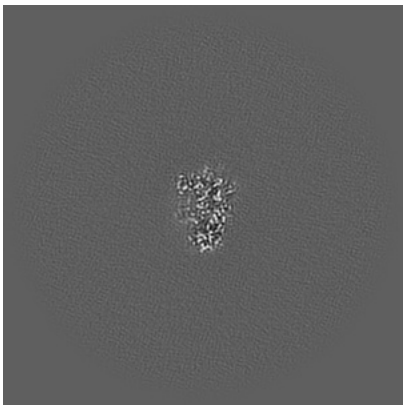
6.3.1 Primary map



X Index: 239

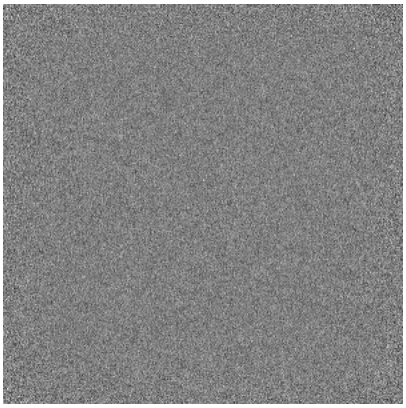


Y Index: 236

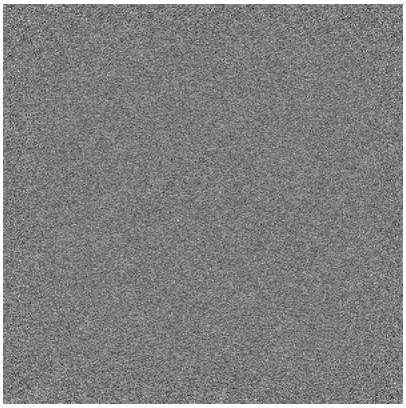


Z Index: 201

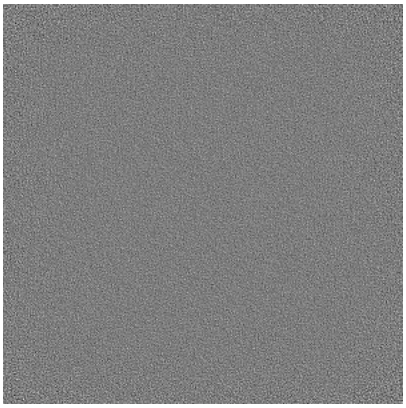
6.3.2 Raw map



X Index: 0



Y Index: 0

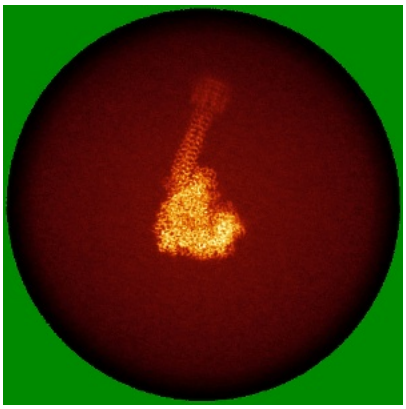


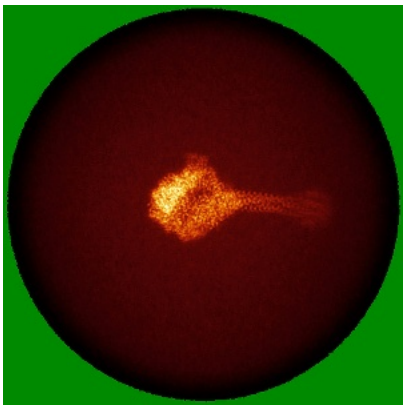
Z Index: 0

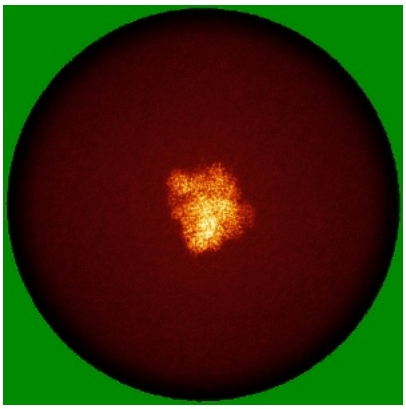
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

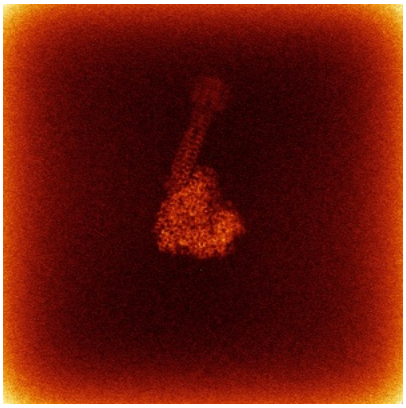
6.4.1 Primary map

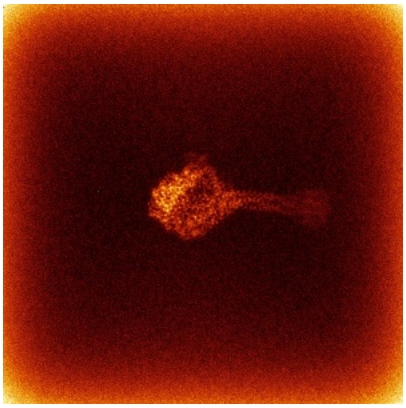

X

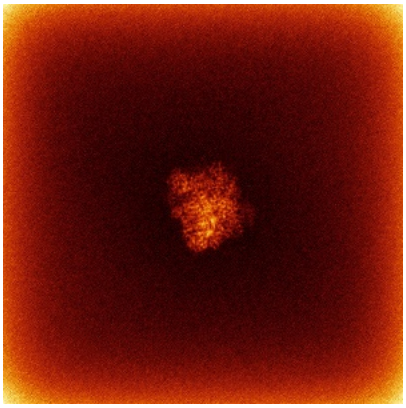

Y


Z

6.4.2 Raw map


X

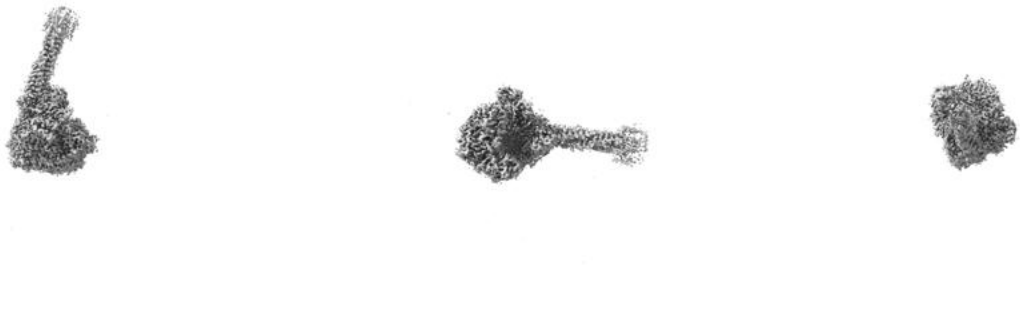

Y


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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.405. 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

X Y Z

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.

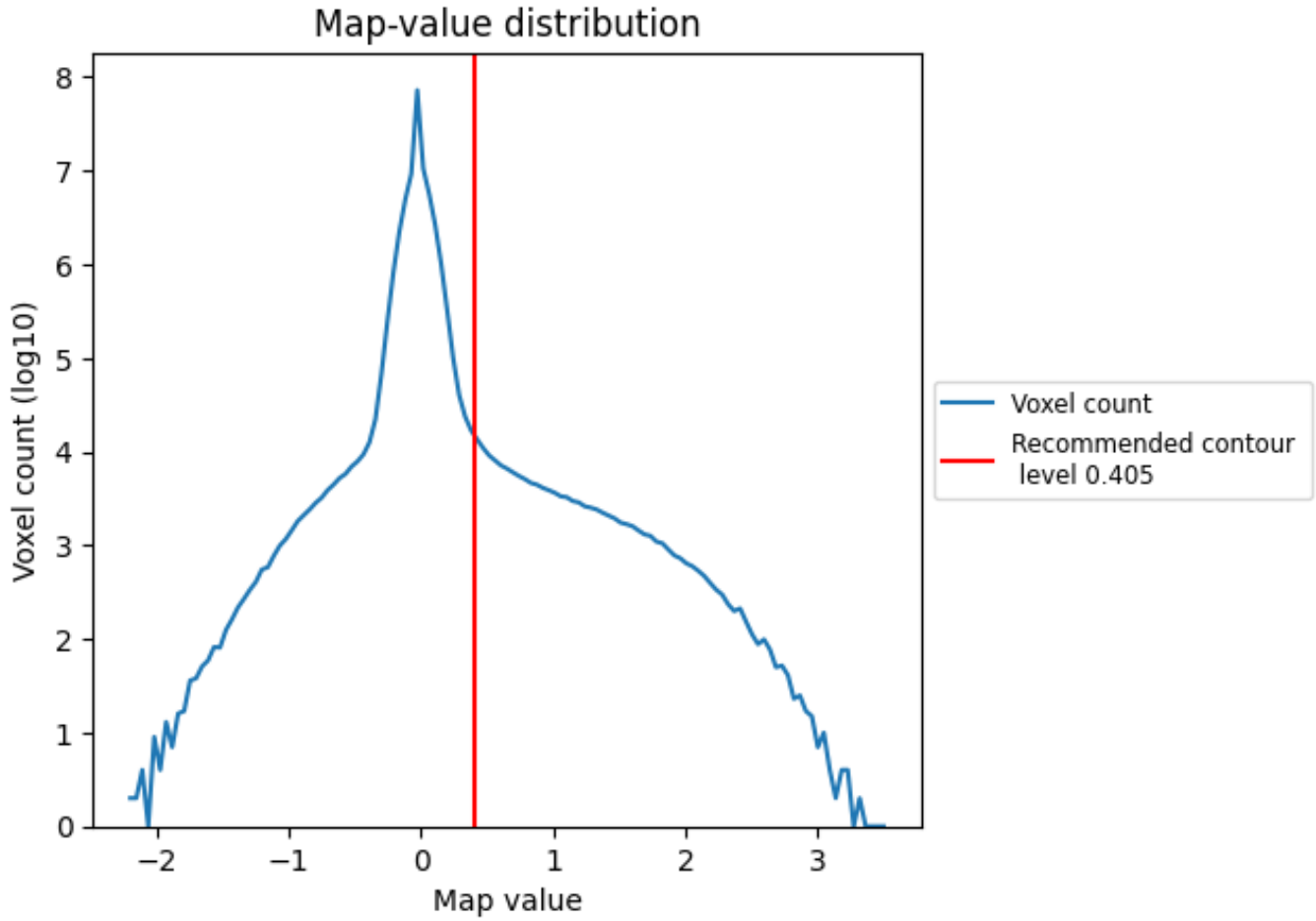
6.6 Mask visualisation (i)

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

7 Map analysis

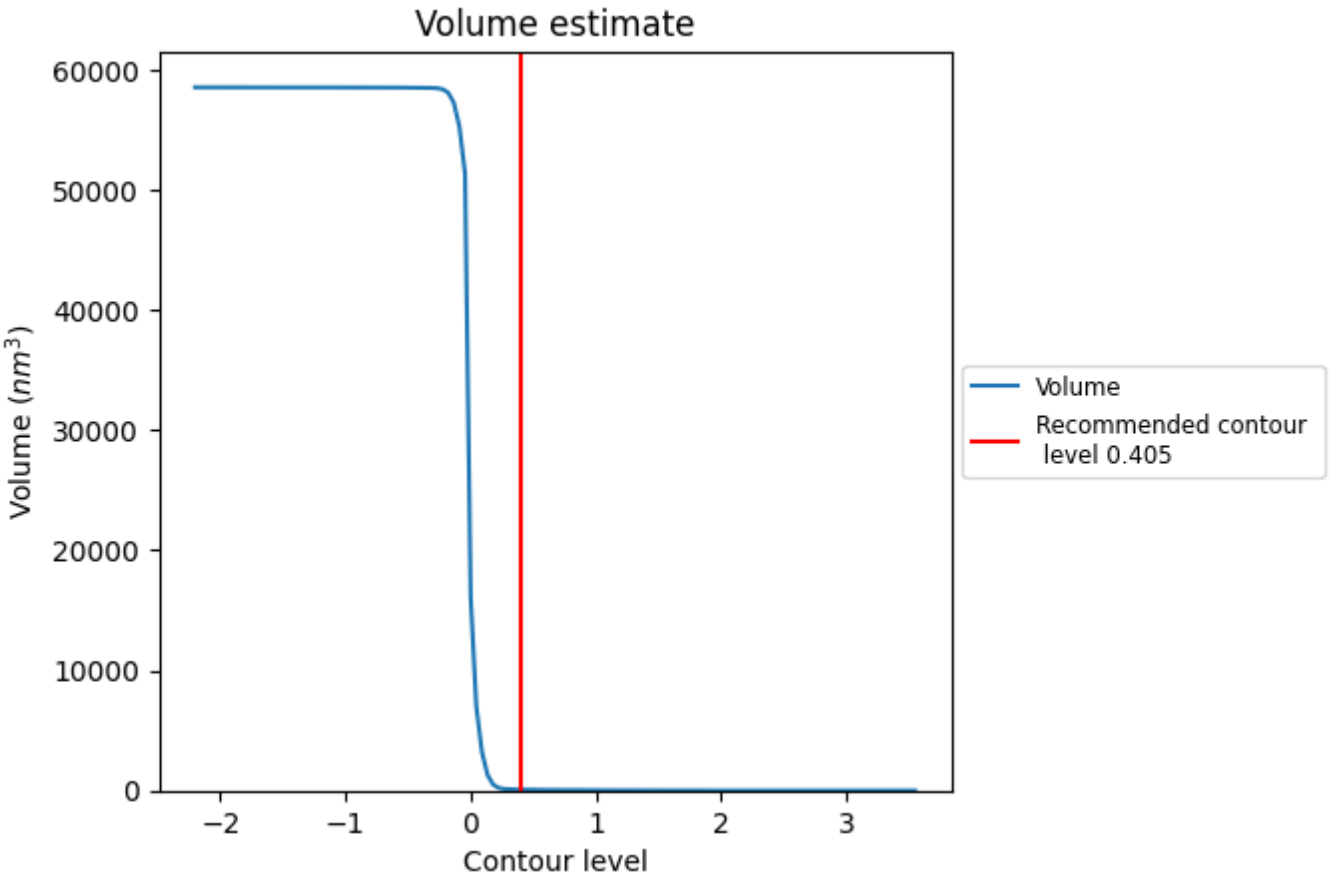
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

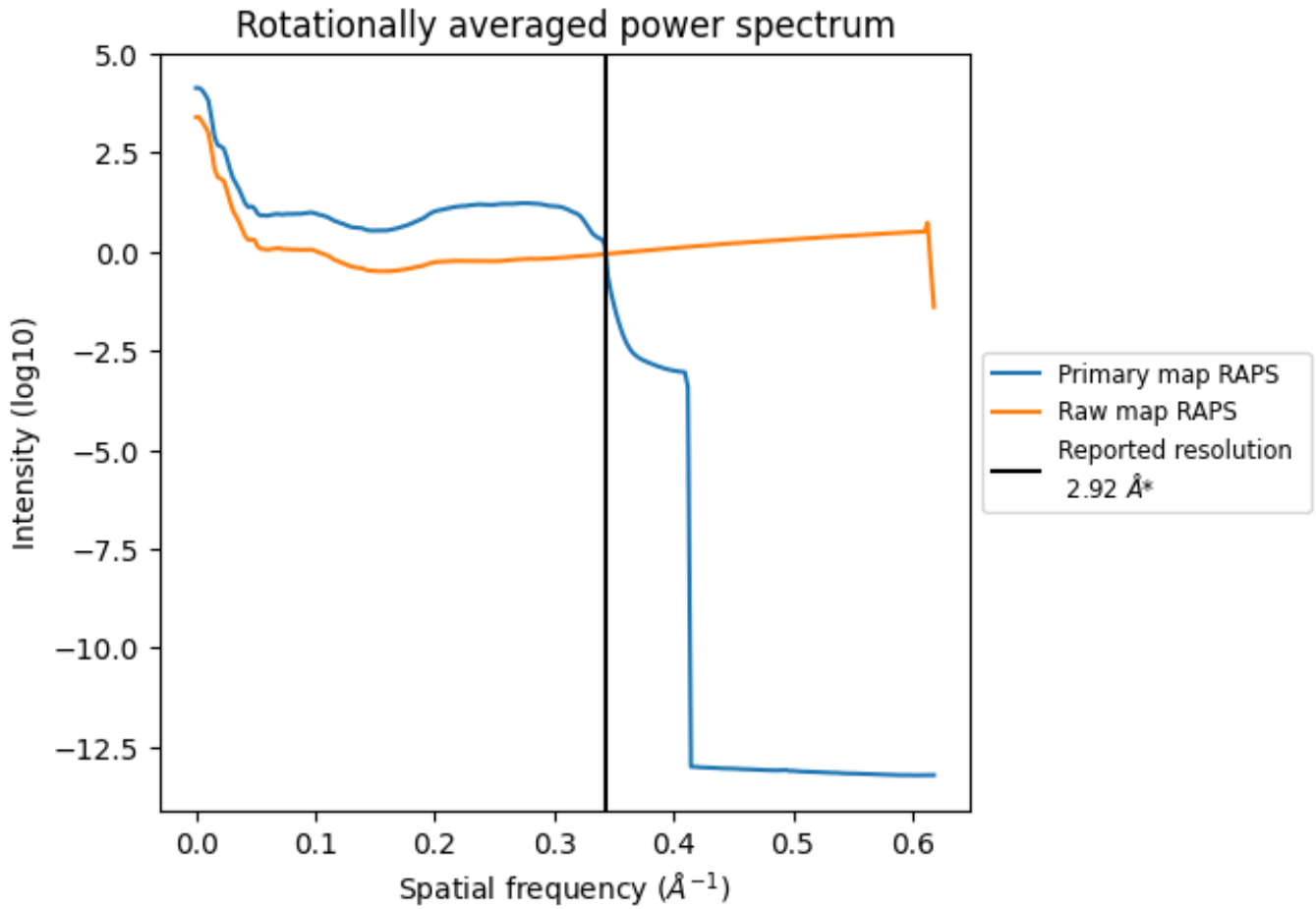
7.2 Volume estimate (i)



The volume at the recommended contour level is 76 nm^3; this corresponds to an approximate mass of 69 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)

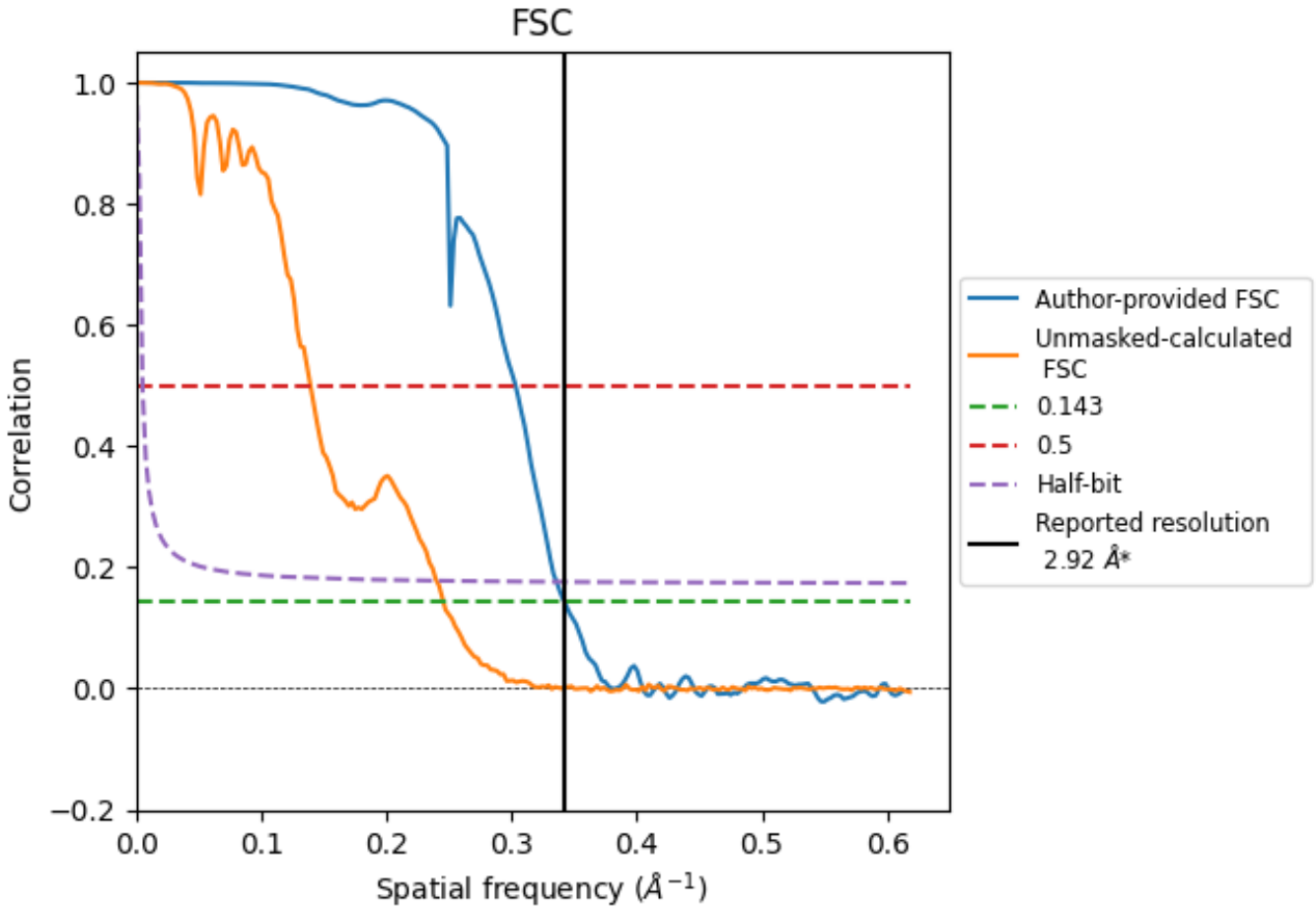


*Reported resolution corresponds to spatial frequency of 0.342 $Å^{-1}$

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.342 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.92	-	-
Author-provided FSC curve	2.92	3.30	2.98
Unmasked-calculated*	4.07	7.18	4.17

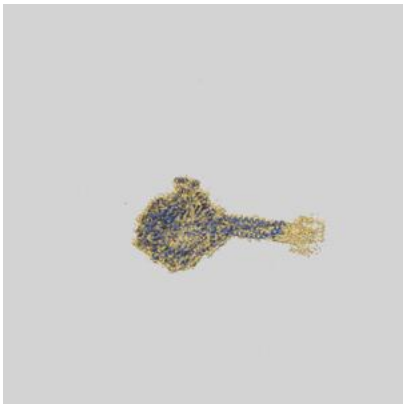
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.07 differs from the reported value 2.92 by more than 10 %

9 Map-model fit

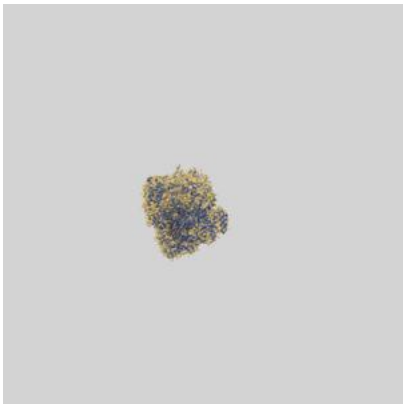
This section contains information regarding the fit between EMDB map EMD-45782 and PDB model 9COK. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay

X



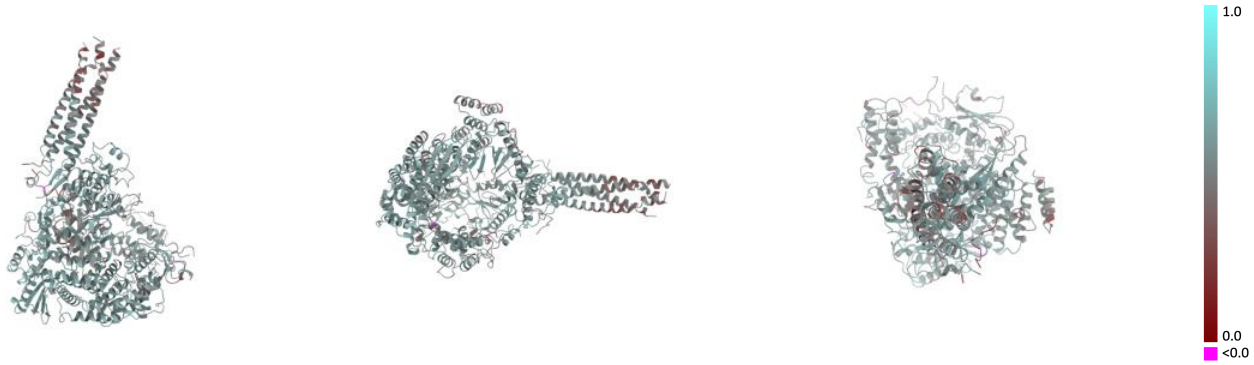
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.405 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.

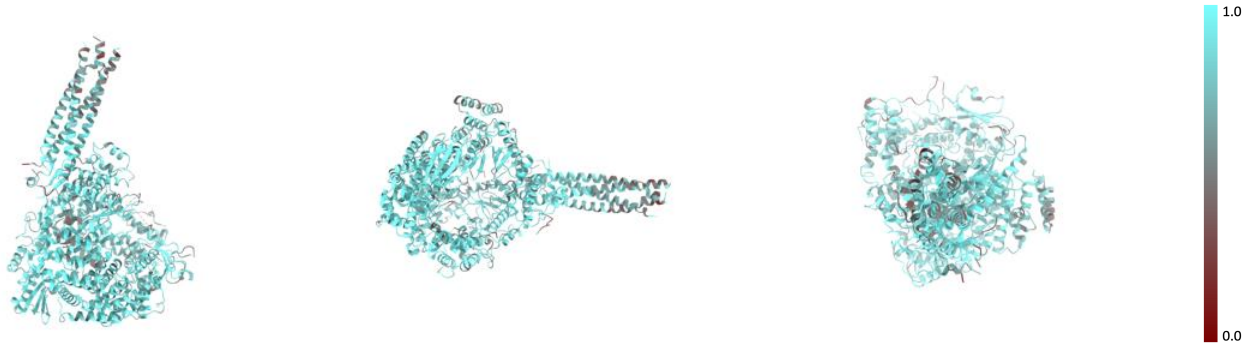
9.2 Q-score mapped to coordinate model (i)



X Y Z

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.

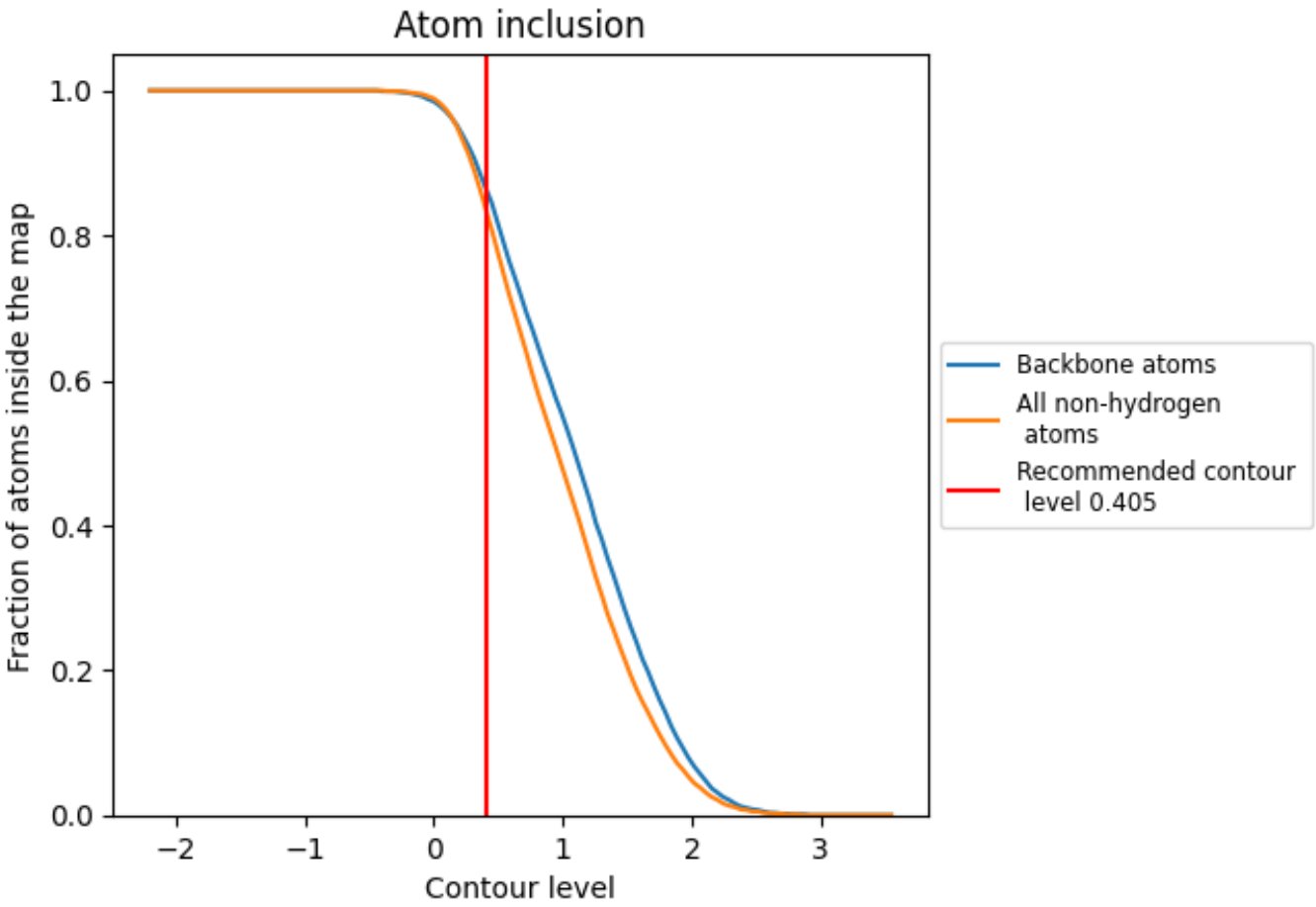
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.405).

9.4 Atom inclusion (i)



At the recommended contour level, 86% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.405) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8350	0.5450
A	0.8650	0.5610
B	0.7800	0.4950
C	0.6910	0.4860
D	0.6620	0.4610
E	0.7540	0.5090
F	0.7760	0.5420
G	0.6420	0.4250