Full wwPDB EM Validation Report ⓘ

Nov 14, 2023 – 11:15 AM EST

PDB ID	:	8FLJ
EMDB ID	:	EMD-29280
Title	:	Cas1-Cas2/3 integrase and IHF bound to CRISPR leader, repeat and foreign DNA
Authors	:	Santiago-Frangos, A.; Henriques, W.S.; Wiegand, T.; Gauvin, C.; Buyukyoruk, M.; Neselu, K.; Eng, E.T.; Lander, G.C.; Wiedenheft, B.
Deposited on	:	2022-12-21
Resolution	:	3.48 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:

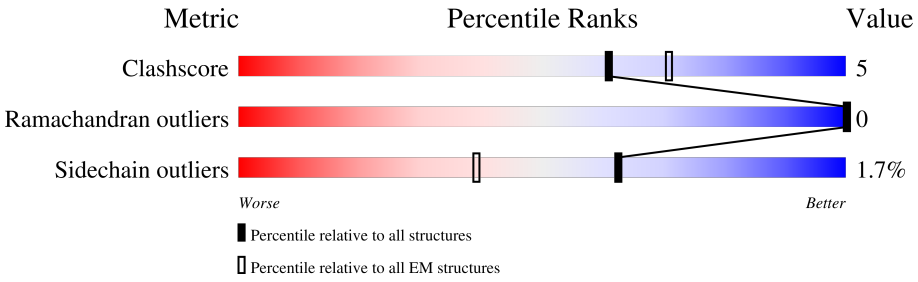
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 3.48 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	341	80% 11% 9%
1	B	341	78% 14% • 7%
1	C	341	79% 9% • 11%
1	D	341	82% 10% • 8%
2	E	102	9% 91% • 8%
2	G	102	36% 93% • •
3	F	96	7% 96% • •
3	H	96	40% 93% 5% •

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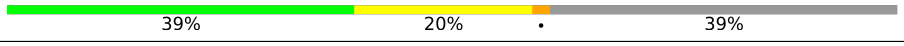
Mol	Chain	Length	Quality of chain
4	I	139	
5	J	171	
6	K	59	
7	L	27	
8	M	1076	
8	N	1076	

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 57091 atoms, of which 25297 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 CRISPR-associated endonuclease Cas1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	310	Total	C	H	N	O	S	0	0
			4834	1540	2388	454	446	6		
1	B	317	Total	C	H	N	O	S	0	0
			4940	1572	2442	462	458	6		
1	C	303	Total	C	H	N	O	S	0	0
			4162	1376	1967	407	406	6		
1	D	315	Total	C	H	N	O	S	0	0
			4920	1566	2434	460	454	6		

There are 68 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	MET	-	expression tag	UNP Q02ML7
A	-15	TRP	-	expression tag	UNP Q02ML7
A	-14	SER	-	expression tag	UNP Q02ML7
A	-13	HIS	-	expression tag	UNP Q02ML7
A	-12	PRO	-	expression tag	UNP Q02ML7
A	-11	GLN	-	expression tag	UNP Q02ML7
A	-10	PHE	-	expression tag	UNP Q02ML7
A	-9	GLU	-	expression tag	UNP Q02ML7
A	-8	LYS	-	expression tag	UNP Q02ML7
A	-7	GLU	-	expression tag	UNP Q02ML7
A	-6	ASN	-	expression tag	UNP Q02ML7
A	-5	LEU	-	expression tag	UNP Q02ML7
A	-4	TYR	-	expression tag	UNP Q02ML7
A	-3	PHE	-	expression tag	UNP Q02ML7
A	-2	GLN	-	expression tag	UNP Q02ML7
A	-1	GLY	-	expression tag	UNP Q02ML7
A	0	SER	-	expression tag	UNP Q02ML7
B	-16	MET	-	expression tag	UNP Q02ML7
B	-15	TRP	-	expression tag	UNP Q02ML7
B	-14	SER	-	expression tag	UNP Q02ML7
B	-13	HIS	-	expression tag	UNP Q02ML7
B	-12	PRO	-	expression tag	UNP Q02ML7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	GLN	-	expression tag	UNP Q02ML7
B	-10	PHE	-	expression tag	UNP Q02ML7
B	-9	GLU	-	expression tag	UNP Q02ML7
B	-8	LYS	-	expression tag	UNP Q02ML7
B	-7	GLU	-	expression tag	UNP Q02ML7
B	-6	ASN	-	expression tag	UNP Q02ML7
B	-5	LEU	-	expression tag	UNP Q02ML7
B	-4	TYR	-	expression tag	UNP Q02ML7
B	-3	PHE	-	expression tag	UNP Q02ML7
B	-2	GLN	-	expression tag	UNP Q02ML7
B	-1	GLY	-	expression tag	UNP Q02ML7
B	0	SER	-	expression tag	UNP Q02ML7
C	-16	MET	-	expression tag	UNP Q02ML7
C	-15	TRP	-	expression tag	UNP Q02ML7
C	-14	SER	-	expression tag	UNP Q02ML7
C	-13	HIS	-	expression tag	UNP Q02ML7
C	-12	PRO	-	expression tag	UNP Q02ML7
C	-11	GLN	-	expression tag	UNP Q02ML7
C	-10	PHE	-	expression tag	UNP Q02ML7
C	-9	GLU	-	expression tag	UNP Q02ML7
C	-8	LYS	-	expression tag	UNP Q02ML7
C	-7	GLU	-	expression tag	UNP Q02ML7
C	-6	ASN	-	expression tag	UNP Q02ML7
C	-5	LEU	-	expression tag	UNP Q02ML7
C	-4	TYR	-	expression tag	UNP Q02ML7
C	-3	PHE	-	expression tag	UNP Q02ML7
C	-2	GLN	-	expression tag	UNP Q02ML7
C	-1	GLY	-	expression tag	UNP Q02ML7
C	0	SER	-	expression tag	UNP Q02ML7
D	-16	MET	-	expression tag	UNP Q02ML7
D	-15	TRP	-	expression tag	UNP Q02ML7
D	-14	SER	-	expression tag	UNP Q02ML7
D	-13	HIS	-	expression tag	UNP Q02ML7
D	-12	PRO	-	expression tag	UNP Q02ML7
D	-11	GLN	-	expression tag	UNP Q02ML7
D	-10	PHE	-	expression tag	UNP Q02ML7
D	-9	GLU	-	expression tag	UNP Q02ML7
D	-8	LYS	-	expression tag	UNP Q02ML7
D	-7	GLU	-	expression tag	UNP Q02ML7
D	-6	ASN	-	expression tag	UNP Q02ML7
D	-5	LEU	-	expression tag	UNP Q02ML7
D	-4	TYR	-	expression tag	UNP Q02ML7

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-3	PHE	-	expression tag	UNP Q02ML7
D	-2	GLN	-	expression tag	UNP Q02ML7
D	-1	GLY	-	expression tag	UNP Q02ML7
D	0	SER	-	expression tag	UNP Q02ML7

- Molecule 2 is a protein called Integration host factor subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	94	Total	C	H	N	O	0	0
			680	276	216	94	94		
2	G	98	Total	C	H	N	O	0	0
			708	287	225	98	98		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	1	GLY	-	expression tag	UNP Q02NN5
E	2	PRO	-	expression tag	UNP Q02NN5
G	1	GLY	-	expression tag	UNP Q02NN5
G	2	PRO	-	expression tag	UNP Q02NN5

- Molecule 3 is a protein called Integration host factor subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	F	94	Total	C	H	N	O	0	0
			670	273	209	94	94		
3	H	94	Total	C	H	N	O	0	0
			670	273	209	94	94		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	1	GLY	-	expression tag	UNP Q02PW7
F	2	PRO	-	expression tag	UNP Q02PW7
H	1	GLY	-	expression tag	UNP Q02PW7
H	2	PRO	-	expression tag	UNP Q02PW7

- Molecule 4 is a DNA chain called CRISPR leader, sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	I	139	Total	C	H	N	O	P	0	0
			4419	1361	1564	535	820	139		

- Molecule 5 is a DNA chain called CRISPR leader and repeat, anti-sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	J	148	Total	C	H	N	O	P	0	0
			4709	1450	1678	533	900	148		

- Molecule 6 is a DNA chain called CRISPR repeat and prespacer, sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	K	36	Total	C	H	N	O	P	0	0
			1145	352	408	128	221	36		

- Molecule 7 is a DNA chain called Prespacer, anti-sense strand of DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	L	27	Total	C	H	N	O	P	0	0
			854	262	302	107	156	27		

- Molecule 8 is a protein called CRISPR-associated nuclease/helicase Cas3 subtype I-F/YPEST.

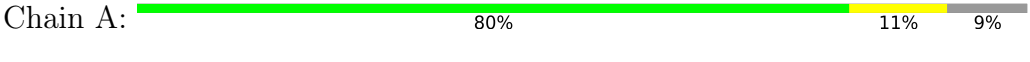
Mol	Chain	Residues	Atoms						AltConf	Trace
8	M	970	Total	C	H	N	O	S	0	0
			12232	4092	5636	1278	1205	21		
8	N	954	Total	C	H	N	O	S	0	0
			12148	4057	5619	1259	1192	21		

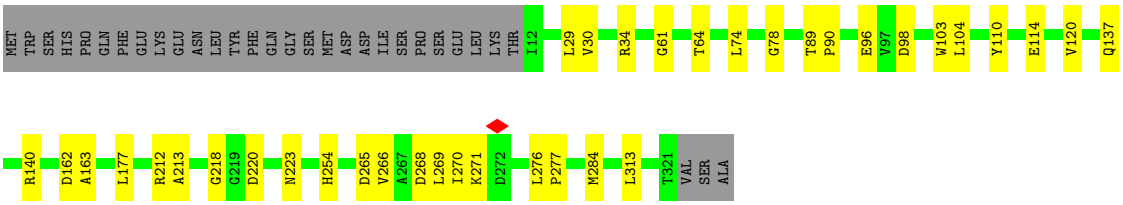
3 Residue-property plots (i)

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: CRISPR-associated endonuclease Cas1

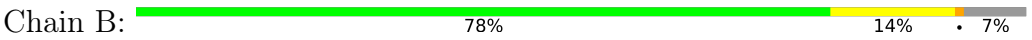
Chain A:

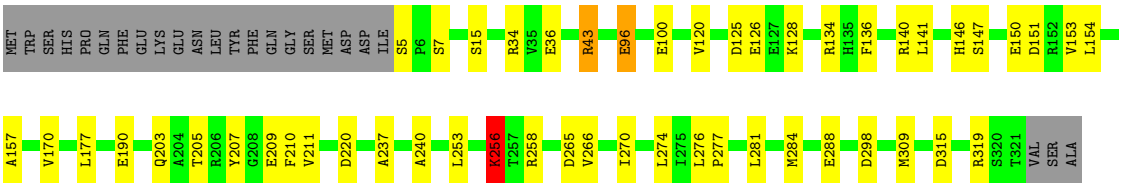




• Molecule 1: CRISPR-associated endonuclease Cas1

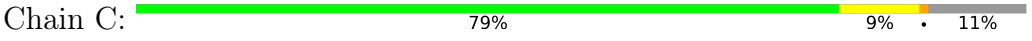
Chain B:

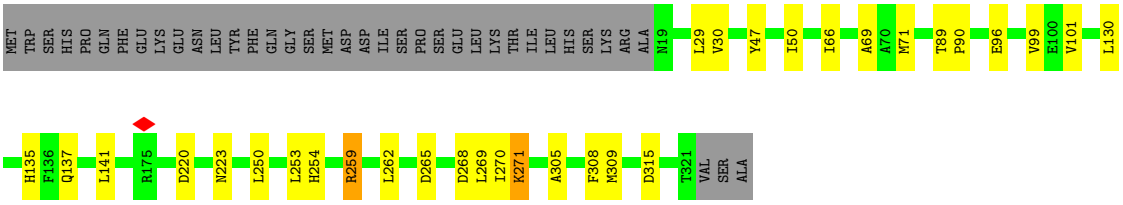




• Molecule 1: CRISPR-associated endonuclease Cas1

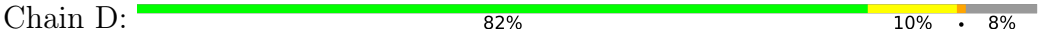
Chain C:

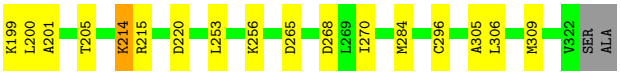




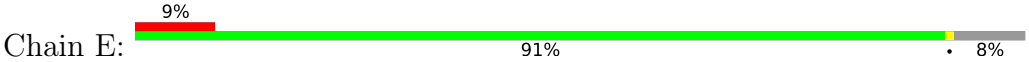
• Molecule 1: CRISPR-associated endonuclease Cas1

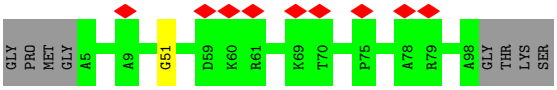
Chain D:



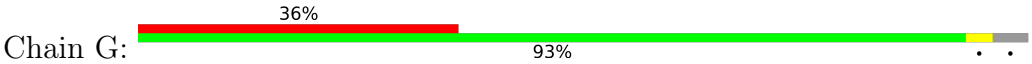


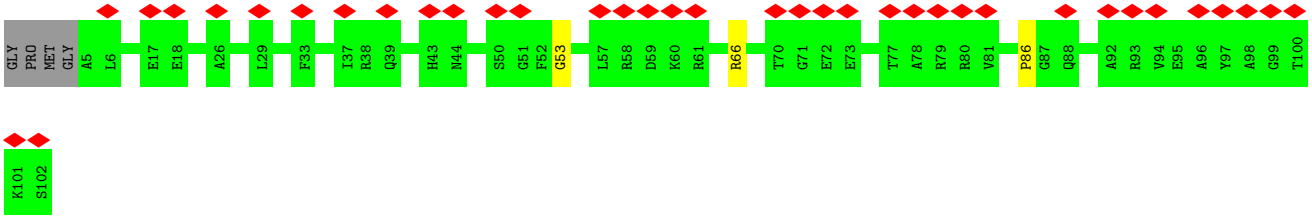
• Molecule 2: Integration host factor subunit alpha



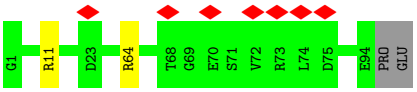


• Molecule 2: Integration host factor subunit alpha

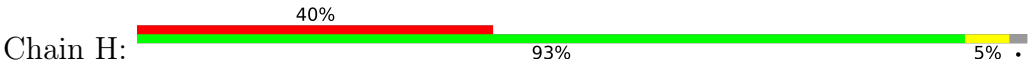


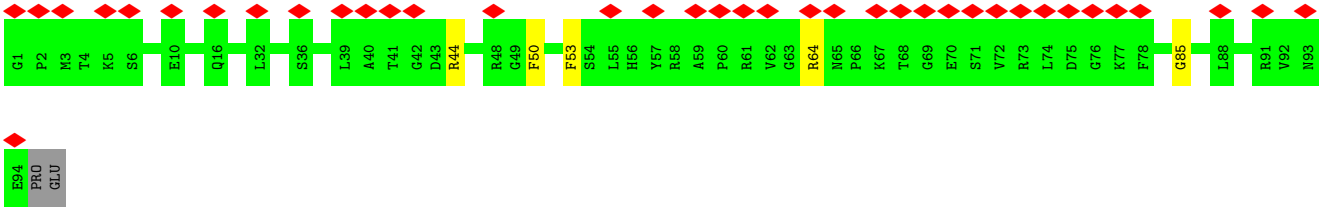


• Molecule 3: Integration host factor subunit beta

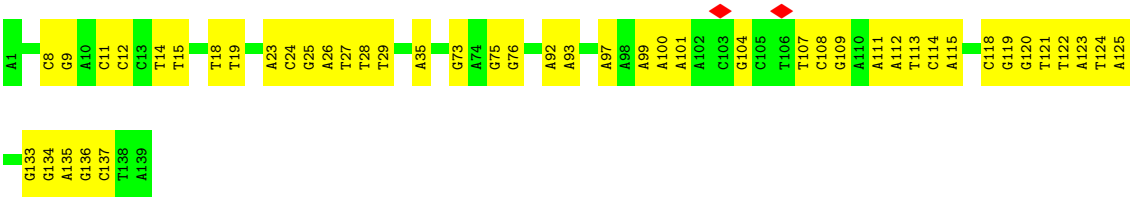


• Molecule 3: Integration host factor subunit beta



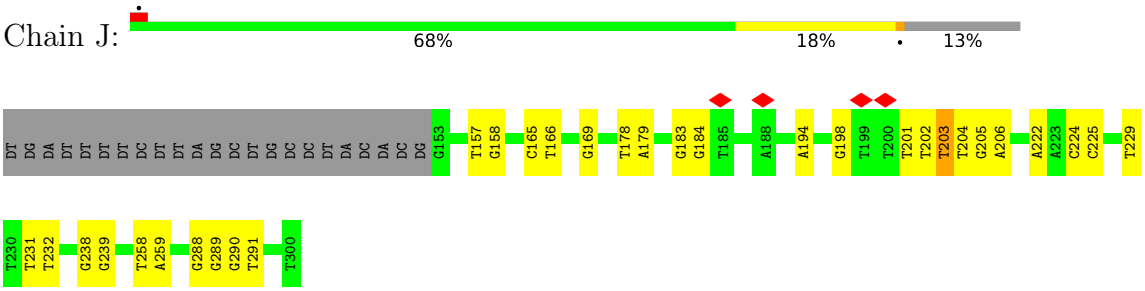


• Molecule 4: CRISPR leader, sense strand of DNA



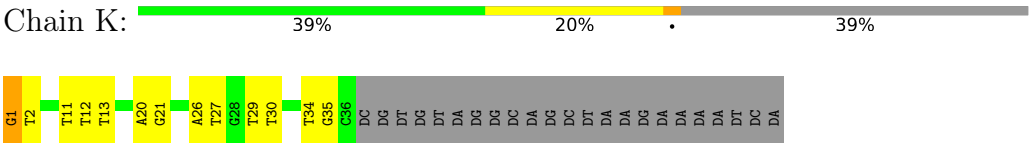
• Molecule 5: CRISPR leader and repeat, anti-sense strand of DNA

Chain J:



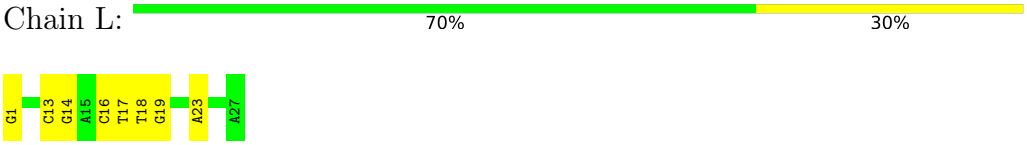
• Molecule 6: CRISPR repeat and prespacer, sense strand of DNA

Chain K:



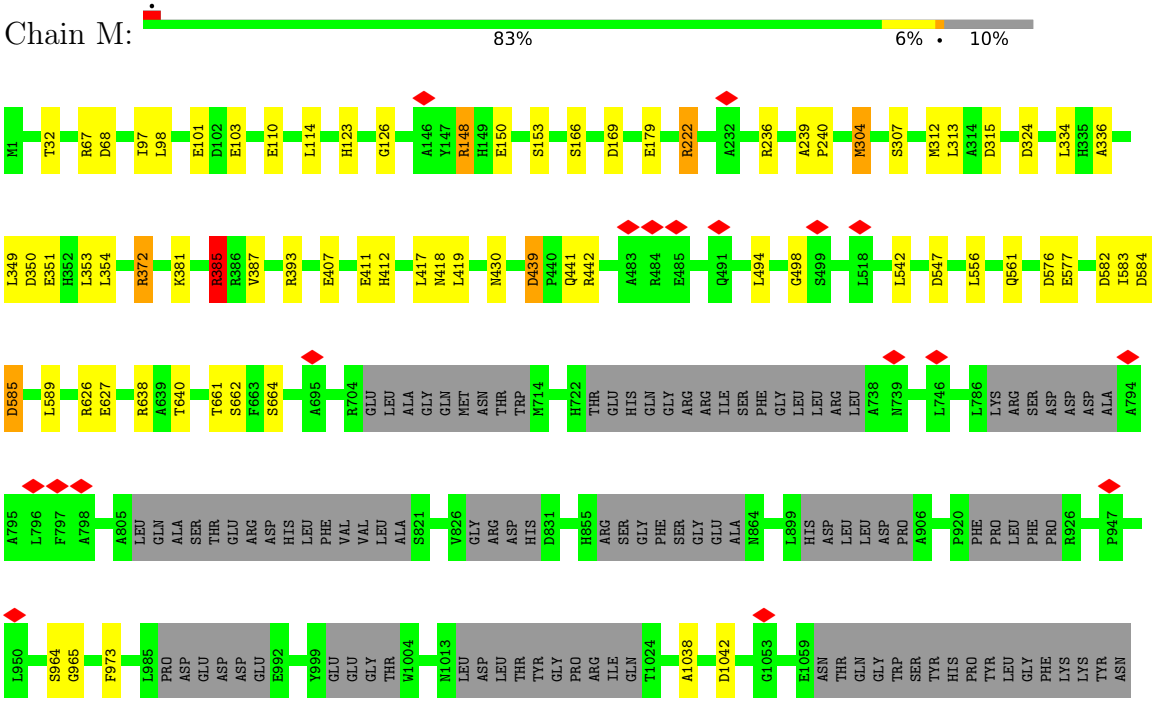
• Molecule 7: Prespacer, anti-sense strand of DNA

Chain L:



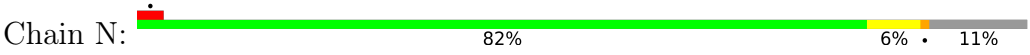
• Molecule 8: CRISPR-associated nuclease/helicase Cas3 subtype I-F/YPEST

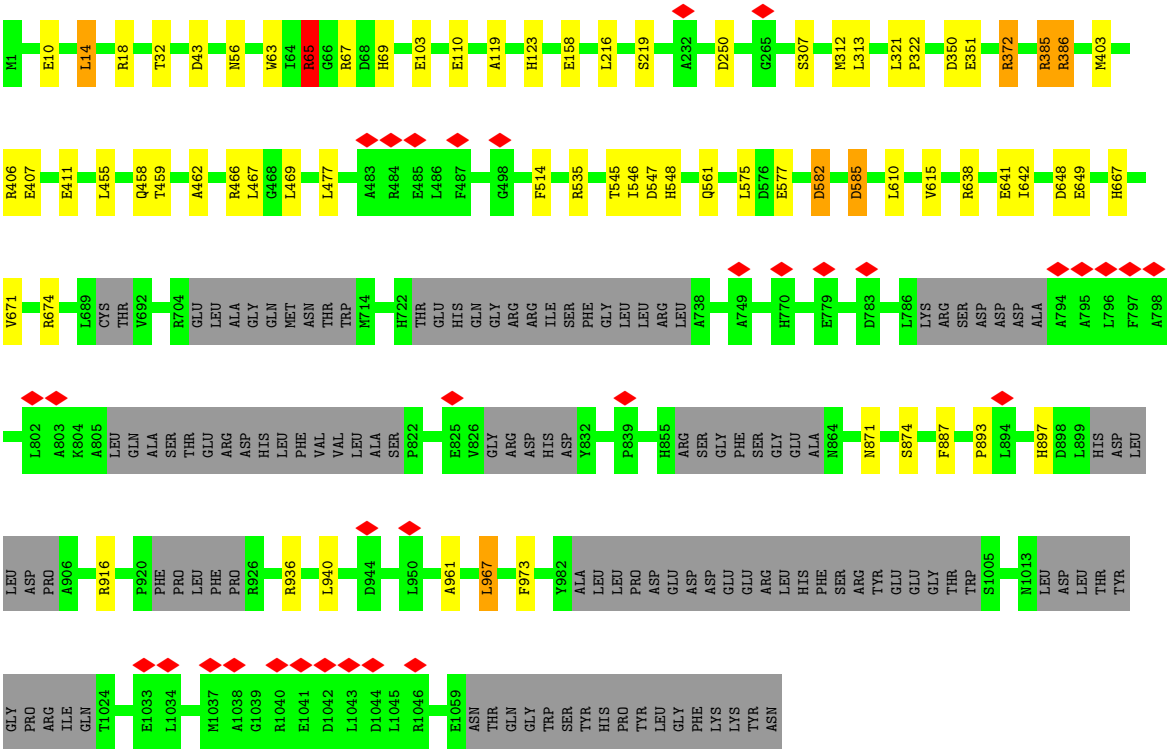
Chain M:



• Molecule 8: CRISPR-associated nuclease/helicase Cas3 subtype I-F/YPEST

Chain N:




M1 E10 L14 R18 T32 D43 N56 W63 I64 R65 G66 R67 D68 H69 E103 E110 A119 H123 E158 L216 S219 A232 D250 G265 S307 M312 L313 L321 P322 D350 E351 R372 R385 R386 M403
R406 E407 E411 L455 Q458 T459 A462 R466 L467 G468 L469 L477 A483 R484 E485 L486 F487 G498 F514 R535 T545 I546 D547 H548 Q561 L575 D576 E577 D582 D585 L610 V615 R638 E641 I642 D648 E649 H667
V671 R674 L689 CYS THR V692 R704 GLU LEU ALA GLY GLN MET ASN THR TRP M714 H722 THR GLU HIS GLN GLY ARG ARG ILE SER PHE GLY LEU LEU ARG LEU A738 A749 H770 E779 D783 L786 LYS ARG SER ASP ASP ASP ALA A794 A795 L796 F797 A798
L802 A803 K804 A805 LEU GLN ALA SER THR GLU ARG ASP HIS LEU PHE VAL VAL LEU ALA SER P822 E825 V826 GLY ARG ASP HIS ASP Y832 P839 H855 ARG SER GLY PHE SER GLY GLU ALA N864 N871 S874 F887 P893 L894 H897 D898 L899 HIS ASP LEU
LEU ASP PRO A906 R916 P920 PHE PRO LEU PHE PRO R926 R936 L940 D944 L950 A961 L967 F973 Y982 ALA LEU LEU PRO ASP GLU ASP ASP GLU GLU ARG LEU HIS PHE SER ARG TYR GLU GLU GLY THR TRP S1005 N1013 LEU ASP LEU THR TYR
GLY PRO ARG ILE GLN T1024 E1033 L1034 M1037 A1038 G1039 R1040 E1041 D1042 L1043 D1044 L1045 R1046 E1059 ASN THR GLN GLY TRP SER TYR HIS PRO TYR LEU GLY PHE LYS LYS TYR ASN

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	366794	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	69	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2100	Depositor
Magnification	46860	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	42.121	Depositor
Minimum map value	-22.553	Depositor
Average map value	0.001	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	4.6	Depositor
Map size (Å)	409.72803, 409.72803, 409.72803	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.067, 1.067, 1.067	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.32	0/2498	0.59	1/3384 (0.0%)
1	B	0.40	1/2551 (0.0%)	0.60	2/3456 (0.1%)
1	C	0.35	1/2239 (0.0%)	0.68	5/3052 (0.2%)
1	D	0.33	0/2538	0.65	2/3438 (0.1%)
2	E	0.25	0/463	0.50	0/643
2	G	0.26	0/482	0.47	0/669
3	F	0.28	0/460	0.47	0/637
3	H	0.27	0/460	0.48	0/637
4	I	0.55	0/3208	0.91	0/4948
5	J	0.56	0/3395	0.97	1/5239 (0.0%)
6	K	0.61	0/824	0.99	1/1270 (0.1%)
7	L	0.65	0/620	0.90	1/953 (0.1%)
8	M	0.31	1/6702 (0.0%)	0.62	9/9133 (0.1%)
8	N	0.31	0/6637	0.61	7/9041 (0.1%)
All	All	0.40	3/33077 (0.0%)	0.72	29/46500 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1
3	F	0	2
3	H	0	3
8	M	0	1
8	N	0	2
All	All	0	9

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	96	GLU	CG-CD	-10.04	1.36	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	130	LEU	CG-CD2	-7.59	1.23	1.51
8	M	148	ARG	CB-CG	-5.02	1.39	1.52

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	N	67	ARG	CG-CD-NE	13.36	139.86	111.80
8	M	148	ARG	CG-CD-NE	-12.45	85.67	111.80
1	C	130	LEU	CA-CB-CG	10.51	139.46	115.30
8	M	385	ARG	CA-CB-CG	9.12	133.47	113.40
1	C	130	LEU	CB-CG-CD2	-9.10	95.52	111.00
1	C	130	LEU	CB-CG-CD1	8.75	125.87	111.00
1	C	271	LYS	CG-CD-CE	7.88	135.55	111.90
8	N	967	LEU	CB-CG-CD2	7.34	123.48	111.00
8	M	385	ARG	CG-CD-NE	7.24	127.00	111.80
8	M	304	MET	CG-SD-CE	7.16	111.65	100.20
1	A	104	LEU	CA-CB-CG	7.09	131.62	115.30
7	L	1	DG	OP1-P-OP2	-7.00	109.10	119.60
6	K	1	DG	OP1-P-OP2	-6.86	109.31	119.60
1	D	199	LYS	CD-CE-NZ	6.79	127.33	111.70
1	C	271	LYS	CD-CE-NZ	6.46	126.57	111.70
8	M	304	MET	CB-CG-SD	6.24	131.13	112.40
8	N	897	HIS	CB-CA-C	6.01	122.41	110.40
1	D	256	LYS	CG-CD-CE	5.88	129.55	111.90
8	N	458	GLN	CB-CG-CD	5.82	126.73	111.60
8	N	967	LEU	CB-CG-CD1	5.74	120.76	111.00
8	N	893	PRO	CA-N-CD	-5.73	103.48	111.50
8	M	67	ARG	CG-CD-NE	5.57	123.49	111.80
8	M	385	ARG	CB-CA-C	5.50	121.40	110.40
5	J	203	DT	O4'-C1'-N1	5.33	111.73	108.00
8	M	148	ARG	CB-CG-CD	5.25	125.25	111.60
1	B	96	GLU	CA-CB-CG	5.19	124.82	113.40
8	M	148	ARG	NE-CZ-NH2	-5.10	117.75	120.30
1	B	256	LYS	CA-CB-CG	5.08	124.57	113.40
8	N	65	ARG	CG-CD-NE	5.08	122.46	111.80

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	259	ARG	Sidechain
3	F	11	ARG	Peptide

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Mol	Chain	Res	Type	Group
3	F	64	ARG	Peptide
3	H	44	ARG	Peptide
3	H	53	PHE	Peptide
3	H	64	ARG	Peptide
8	M	372	ARG	Sidechain
8	N	372	ARG	Sidechain
8	N	65	ARG	Sidechain

5.2 Too-close contacts (i)

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	2446	2388	2409	24	0
1	B	2498	2442	2463	35	0
1	C	2195	1967	1987	18	0
1	D	2486	2434	2455	25	0
2	E	464	216	216	1	0
2	G	483	225	225	2	0
3	F	461	209	209	0	0
3	H	461	209	209	1	0
4	I	2855	1564	1564	42	0
5	J	3031	1678	1678	24	0
6	K	737	408	409	9	0
7	L	552	302	302	7	0
8	M	6596	5636	5634	50	0
8	N	6529	5619	5618	45	0
All	All	31794	25297	25378	264	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 5.

All (264) 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:D:96:GLU:N	1:D:96:GLU:OE1	2.08	0.87
8:M:582:ASP:OD1	8:M:583:ILE:N	2.09	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:N:407:GLU:OE1	8:N:407:GLU:N	2.09	0.85
4:I:107:DT:O2	5:J:194:DA:N7	2.10	0.84
1:C:305:ALA:O	1:C:309:MET:HG3	1.78	0.83
1:A:212:ARG:NH1	1:A:213:ALA:O	2.13	0.81
1:D:270:ILE:HD11	1:D:305:ALA:HB1	1.62	0.81
8:N:372:ARG:O	8:N:372:ARG:NH1	2.13	0.81
1:D:66:ILE:HD13	1:D:71:MET:SD	2.21	0.80
1:B:237:ALA:HA	1:B:309:MET:SD	2.22	0.79
8:M:412:HIS:O	8:M:626:ARG:NE	2.14	0.79
1:B:126:GLU:OE1	1:B:126:GLU:N	2.20	0.73
8:M:372:ARG:HD2	8:M:372:ARG:O	1.89	0.72
1:A:114:GLU:OE1	1:A:114:GLU:N	2.23	0.70
8:M:411:GLU:O	8:M:638:ARG:NH1	2.27	0.68
8:M:148:ARG:HH22	8:M:222:ARG:CZ	2.06	0.67
8:M:148:ARG:HH12	8:M:222:ARG:HD3	1.60	0.67
8:N:514:PHE:O	8:N:535:ARG:NH2	2.28	0.65
1:C:268:ASP:HA	1:C:271:LYS:HD3	1.77	0.65
1:D:34:ARG:NH1	1:D:36:GLU:OE2	2.30	0.65
8:M:407:GLU:N	8:M:407:GLU:OE1	2.30	0.65
8:N:577:GLU:N	8:N:577:GLU:OE1	2.30	0.64
1:B:5:SER:OG	1:B:7:SER:O	2.14	0.64
8:M:166:SER:N	8:M:169:ASP:OD2	2.29	0.64
8:N:385:ARG:NH1	8:N:386:ARG:O	2.30	0.63
8:N:63:TRP:CH2	8:N:65:ARG:HD3	2.34	0.63
8:N:462:ALA:O	8:N:466:ARG:HG3	1.99	0.63
8:M:32:THR:HG21	8:N:32:THR:HG21	1.81	0.62
1:A:162:ASP:OD1	1:A:163:ALA:N	2.33	0.62
1:C:137:GLN:O	1:C:141:LEU:HD22	2.00	0.62
8:M:372:ARG:HG2	8:M:442:ARG:NH2	2.16	0.61
1:A:34:ARG:NE	8:N:110:GLU:OE2	2.28	0.60
1:B:270:ILE:HD11	1:B:274:LEU:HD12	1.83	0.60
1:D:148:TRP:HZ3	1:D:200:LEU:HD11	1.66	0.60
1:B:96:GLU:N	1:B:96:GLU:OE1	2.35	0.59
1:A:254:HIS:ND1	1:A:265:ASP:OD1	2.29	0.59
1:D:306:LEU:HA	1:D:309:MET:HE2	1.83	0.59
8:M:179:GLU:N	8:M:179:GLU:OE1	2.36	0.59
1:A:89:THR:OG1	1:A:90:PRO:HD3	2.03	0.58
1:A:220:ASP:OD1	1:A:220:ASP:N	2.36	0.58
8:N:350:ASP:OD1	8:N:351:GLU:N	2.36	0.58
1:B:266:VAL:CG1	1:B:309:MET:SD	2.92	0.58
8:N:648:ASP:OD2	8:N:674:ARG:NH1	2.33	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:253:LEU:N	1:B:265:ASP:OD2	2.35	0.57
8:M:150:GLU:OE1	8:M:150:GLU:N	2.32	0.57
1:D:253:LEU:N	1:D:265:ASP:OD2	2.37	0.57
8:M:584:ASP:N	8:M:584:ASP:OD1	2.38	0.57
8:N:403:MET:SD	8:N:406:ARG:NH1	2.78	0.57
8:N:219:SER:O	8:N:219:SER:OG	2.20	0.56
1:C:96:GLU:OE1	1:C:96:GLU:N	2.39	0.56
8:N:372:ARG:C	8:N:372:ARG:HH11	2.09	0.56
8:N:561:GLN:N	8:N:561:GLN:OE1	2.39	0.56
8:M:148:ARG:NH1	8:M:222:ARG:HD3	2.20	0.56
8:M:964:SER:OG	8:M:965:GLY:N	2.39	0.56
8:M:577:GLU:OE2	8:M:577:GLU:N	2.40	0.55
8:M:123:HIS:NE2	8:M:315:ASP:OD2	2.38	0.55
8:N:545:THR:OG1	8:N:547:ASP:HB2	2.07	0.55
1:D:205:THR:HG22	1:D:284:MET:HG3	1.88	0.55
1:B:240:ALA:CB	1:B:309:MET:SD	2.95	0.55
1:C:253:LEU:N	1:C:265:ASP:OD2	2.35	0.55
1:B:209:GLU:N	1:B:209:GLU:OE1	2.41	0.54
1:D:95:ASN:OD1	1:D:96:GLU:OE1	2.26	0.54
8:N:648:ASP:OD1	8:N:649:GLU:N	2.40	0.54
1:D:111:ARG:N	1:D:111:ARG:HD2	2.22	0.54
8:N:641:GLU:OE1	8:N:641:GLU:N	2.41	0.54
4:I:114:DC:H2'	4:I:115:DA:C8	2.44	0.53
4:I:135:DA:H2'	4:I:136:DG:C1'	2.38	0.53
1:C:254:HIS:ND1	1:C:265:ASP:OD1	2.38	0.53
8:M:336:ALA:HB2	8:M:349:LEU:HD13	1.91	0.53
4:I:111:DA:H2"	4:I:112:DA:H8	1.74	0.52
1:D:187:LEU:HA	1:D:190:GLU:HG3	1.92	0.52
8:M:1038:ALA:O	8:M:1042:ASP:N	2.43	0.52
1:B:205:THR:HG22	1:B:205:THR:O	2.10	0.52
8:M:350:ASP:O	8:M:354:LEU:HG	2.09	0.52
1:C:30:VAL:O	8:M:103:GLU:HB2	2.10	0.51
1:B:205:THR:HG22	1:B:284:MET:HG3	1.93	0.51
5:J:165:DC:H2'	5:J:166:DT:C6	2.45	0.51
1:D:51:PRO:O	1:D:55:THR:HG23	2.11	0.51
1:B:266:VAL:HG11	1:B:309:MET:SD	2.51	0.51
4:I:136:DG:H2"	4:I:137:DC:C6	2.46	0.51
8:N:321:LEU:HD12	8:N:322:PRO:HD2	1.92	0.51
3:H:50:PHE:O	3:H:85:GLY:N	2.34	0.51
8:N:961:ALA:HB1	8:N:967:LEU:HD23	1.93	0.51
1:B:288:GLU:HA	1:B:288:GLU:OE1	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:N:871:ASN:O	8:N:874:SER:N	2.42	0.50
1:D:214:LYS:HD2	1:D:214:LYS:O	2.12	0.50
1:B:34:ARG:NH1	1:B:36:GLU:OE2	2.44	0.50
4:I:134:DG:C2	4:I:135:DA:C5	3.00	0.50
8:N:667:HIS:O	8:N:671:VAL:HG23	2.11	0.50
7:L:18:DT:H4'	7:L:19:DG:OP1	2.11	0.50
1:A:74:LEU:O	1:A:78:GLY:N	2.45	0.50
6:K:1:DG:C8	6:K:2:DT:H72	2.47	0.50
1:B:125:ASP:HB3	1:B:128:LYS:HG3	1.93	0.50
1:D:98:ASP:OD1	1:D:215:ARG:NH2	2.44	0.50
4:I:11:DC:H4'	4:I:12:DC:OP1	2.12	0.50
1:B:141:LEU:HD12	1:B:170:VAL:HG13	1.93	0.49
8:M:110:GLU:O	8:M:114:LEU:HD22	2.12	0.49
8:N:547:ASP:OD1	8:N:973:PHE:HE2	1.95	0.49
1:A:103:TRP:O	1:B:256:LYS:HB3	2.12	0.49
8:N:582:ASP:OD1	8:N:582:ASP:C	2.50	0.49
1:B:146:HIS:ND1	1:B:150:GLU:OE1	2.43	0.49
1:B:240:ALA:HB3	1:B:309:MET:SD	2.52	0.49
1:B:266:VAL:HG13	1:B:309:MET:HG3	1.94	0.49
1:C:99:VAL:HG23	1:C:101:VAL:HG13	1.95	0.49
8:M:239:ALA:HB3	8:M:240:PRO:HD3	1.95	0.49
8:N:585:ASP:OD1	8:N:973:PHE:CD1	2.66	0.49
1:D:144:ILE:HD11	1:D:197:LEU:HD22	1.94	0.48
1:B:100:GLU:N	1:B:100:GLU:OE1	2.46	0.48
1:A:96:GLU:HA	1:A:96:GLU:OE2	2.14	0.48
4:I:133:DG:C2	4:I:134:DG:C4	3.01	0.48
5:J:290:DG:H2'	5:J:291:DT:H72	1.95	0.48
8:N:455:LEU:HD11	8:N:459:THR:HB	1.95	0.48
1:A:218:GLY:HA3	1:A:223:ASN:HD22	1.77	0.48
2:E:51:GLY:N	4:I:35:DA:OP1	2.46	0.48
4:I:75:DG:C2	4:I:76:DG:C5	3.02	0.48
8:M:148:ARG:HH22	8:M:222:ARG:NE	2.11	0.48
1:A:284:MET:SD	1:A:284:MET:C	2.92	0.48
1:D:92:PHE:CD1	1:D:93:SER:N	2.82	0.48
7:L:16:DC:C6	7:L:17:DT:H72	2.48	0.48
1:B:96:GLU:OE1	1:B:96:GLU:CA	2.59	0.48
1:B:298:ASP:OD2	8:N:69:HIS:NE2	2.40	0.48
1:A:120:VAL:HG21	1:B:120:VAL:CG2	2.43	0.48
4:I:97:DA:C2	5:J:205:DG:C2	3.02	0.48
1:A:266:VAL:O	1:A:269:LEU:HD12	2.13	0.48
4:I:104:DG:C2	5:J:198:DG:C2	3.02	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:J:288:DG:C2	5:J:289:DG:C5	3.03	0.47
8:M:68:ASP:O	8:M:68:ASP:OD2	2.32	0.47
8:M:418:ASN:ND2	8:M:430:ASN:OD1	2.45	0.47
1:B:151:ASP:OD1	1:B:153:VAL:N	2.47	0.47
1:C:269:LEU:O	1:C:270:ILE:HD13	2.14	0.47
1:D:200:LEU:HD12	1:D:201:ALA:N	2.29	0.47
1:D:214:LYS:HD2	1:D:215:ARG:HG2	1.95	0.47
1:D:220:ASP:OD1	1:D:220:ASP:C	2.53	0.47
8:M:494:LEU:O	8:M:498:GLY:N	2.48	0.47
8:N:940:LEU:O	8:N:940:LEU:HD12	2.15	0.47
1:C:66:ILE:HD13	1:C:71:MET:SD	2.55	0.47
4:I:27:DT:C6	4:I:28:DT:H72	2.50	0.47
1:C:269:LEU:HD21	1:C:308:PHE:CE2	2.50	0.47
4:I:113:DT:H4'	4:I:114:DC:OP2	2.14	0.47
8:M:324:ASP:N	8:M:351:GLU:OE2	2.44	0.47
8:M:661:THR:O	8:M:664:SER:OG	2.29	0.47
6:K:20:DA:H2'	6:K:21:DG:C8	2.50	0.46
4:I:122:DT:H1'	4:I:123:DA:C5	2.49	0.46
8:N:547:ASP:OD1	8:N:973:PHE:CE2	2.68	0.46
4:I:113:DT:H2"	4:I:114:DC:C6	2.51	0.46
8:M:126:GLY:N	8:M:153:SER:OG	2.42	0.46
1:A:212:ARG:NH2	6:K:26:DA:N7	2.63	0.46
2:G:66:ARG:O	4:I:115:DA:N3	2.49	0.46
4:I:11:DC:H2"	4:I:12:DC:O5'	2.16	0.46
4:I:107:DT:C2	5:J:194:DA:N7	2.83	0.46
4:I:133:DG:C2	5:J:169:DG:C2	3.03	0.46
1:A:30:VAL:O	8:N:103:GLU:HB2	2.16	0.46
4:I:108:DC:C2	4:I:109:DG:C5	3.04	0.46
1:D:100:GLU:OE1	1:D:100:GLU:N	2.49	0.46
1:D:268:ASP:OD1	1:D:268:ASP:N	2.48	0.45
8:N:642:ILE:N	8:N:642:ILE:HD12	2.32	0.45
8:N:216:LEU:HD11	8:N:307:SER:HB2	1.98	0.45
1:D:92:PHE:CD1	1:D:92:PHE:C	2.90	0.45
1:D:95:ASN:OD1	1:D:95:ASN:N	2.46	0.45
4:I:124:DT:O3'	4:I:125:DA:C8	2.70	0.45
8:M:97:ILE:HG22	8:M:98:LEU:N	2.31	0.45
8:N:641:GLU:HG2	8:N:641:GLU:O	2.17	0.45
7:L:18:DT:H2"	7:L:19:DG:O5'	2.17	0.45
5:J:203:DT:H2"	5:J:204:DT:H72	1.98	0.45
8:M:582:ASP:OD1	8:M:582:ASP:C	2.55	0.45
8:N:887:PHE:O	8:N:936:ARG:NH1	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:118:DC:H2'	4:I:119:DG:C8	2.52	0.45
4:I:135:DA:H2'	4:I:136:DG:O4'	2.16	0.45
8:M:304:MET:O	8:M:307:SER:OG	2.25	0.45
4:I:92:DA:H2"	4:I:93:DA:C8	2.52	0.45
4:I:111:DA:H2"	4:I:112:DA:C8	2.52	0.44
4:I:113:DT:H2"	4:I:114:DC:C5	2.52	0.44
8:M:585:ASP:OD1	8:M:973:PHE:CD1	2.70	0.44
6:K:27:DT:O2	6:K:27:DT:O4'	2.35	0.44
8:M:417:LEU:HB3	8:M:419:LEU:HD23	1.99	0.44
1:B:140:ARG:NH1	1:B:190:GLU:OE1	2.39	0.44
8:N:477:LEU:HD23	8:N:548:HIS:CG	2.53	0.44
1:A:120:VAL:HG21	1:B:120:VAL:HG21	1.98	0.44
8:N:14:LEU:HD21	8:N:18:ARG:CZ	2.48	0.44
8:M:349:LEU:O	8:M:353:LEU:HD23	2.18	0.44
4:I:8:DC:H2"	4:I:9:DG:C8	2.53	0.44
4:I:73:DG:N2	5:J:229:DT:O2	2.50	0.44
5:J:157:DT:H2"	5:J:158:DG:C8	2.52	0.44
8:N:312:MET:O	8:N:313:LEU:C	2.51	0.44
8:N:467:LEU:O	8:N:469:LEU:HD23	2.18	0.44
1:B:315:ASP:O	1:B:319:ARG:N	2.45	0.44
5:J:183:DG:C6	5:J:184:DG:C6	3.06	0.44
8:M:334:LEU:CB	8:M:349:LEU:HD23	2.48	0.44
1:A:276:LEU:HB3	1:A:277:PRO:HD3	1.99	0.43
5:J:203:DT:H2"	5:J:204:DT:C7	2.48	0.43
8:N:10:GLU:HB2	8:N:56:ASN:HB3	2.00	0.43
1:B:134:ARG:NH1	1:B:177:LEU:O	2.51	0.43
7:L:18:DT:C2'	7:L:19:DG:C8	3.01	0.43
8:M:627:GLU:HG3	8:M:640:THR:HG21	2.01	0.43
6:K:11:DT:H2'	6:K:12:DT:C7	2.49	0.43
6:K:29:DT:H2'	6:K:30:DT:H72	1.99	0.43
1:B:207:TYR:OH	1:B:220:ASP:OD2	2.30	0.43
1:B:276:LEU:HB3	1:B:277:PRO:HD3	2.01	0.43
7:L:17:DT:H2'	7:L:18:DT:H71	2.01	0.43
7:L:23:DA:H4'	7:L:23:DA:OP1	2.19	0.43
8:N:119:ALA:O	8:N:123:HIS:N	2.52	0.43
8:N:546:ILE:HD11	8:N:575:LEU:HD22	2.00	0.43
5:J:178:DT:O3'	5:J:179:DA:C8	2.71	0.43
5:J:203:DT:H1'	5:J:204:DT:C6	2.53	0.43
8:M:439:ASP:OD1	8:M:441:GLN:N	2.51	0.43
1:A:137:GLN:CB	1:A:177:LEU:HD21	2.49	0.43
1:D:187:LEU:O	1:D:190:GLU:OE2	2.37	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:43:ARG:NE	1:B:43:ARG:HA	2.34	0.43
1:A:61:GLY:O	1:A:64:THR:HG22	2.18	0.42
8:M:372:ARG:HG2	8:M:442:ARG:CZ	2.49	0.42
1:C:89:THR:HG23	1:C:90:PRO:HD3	2.01	0.42
1:A:266:VAL:HG22	1:A:313:LEU:HD11	2.02	0.42
7:L:13:DC:H2"	7:L:14:DG:C8	2.54	0.42
8:M:236:ARG:O	8:M:240:PRO:HD2	2.19	0.42
1:B:151:ASP:OD1	1:B:154:LEU:N	2.43	0.42
1:C:220:ASP:OD1	1:C:223:ASN:ND2	2.48	0.42
5:J:222:DA:OP1	8:M:393:ARG:HD3	2.19	0.42
4:I:99:DA:H2"	4:I:100:DA:C8	2.55	0.42
4:I:135:DA:H2'	4:I:136:DG:H1'	2.02	0.42
4:I:14:DT:H2'	4:I:15:DT:H72	2.02	0.42
5:J:258:DT:H2"	5:J:259:DA:C8	2.54	0.42
8:M:350:ASP:OD1	8:M:351:GLU:N	2.53	0.42
1:C:30:VAL:HG11	1:C:69:ALA:HB1	2.01	0.42
1:C:47:TYR:O	1:C:50:ILE:HG13	2.20	0.42
4:I:92:DA:H1'	4:I:93:DA:C8	2.55	0.42
8:M:101:GLU:OE1	8:M:372:ARG:NH1	2.45	0.42
1:B:157:ALA:HB1	1:B:281:LEU:HD21	2.02	0.41
1:C:250:LEU:O	1:C:262:LEU:HD12	2.20	0.41
8:N:411:GLU:O	8:N:638:ARG:NH1	2.53	0.41
1:D:111:ARG:N	1:D:111:ARG:CD	2.84	0.41
4:I:120:DG:C2'	4:I:121:DT:H72	2.51	0.41
5:J:231:DT:H4'	5:J:232:DT:OP1	2.20	0.41
8:M:387:VAL:HG11	8:M:393:ARG:HA	2.02	0.41
6:K:12:DT:C6	6:K:13:DT:H72	2.55	0.41
8:M:439:ASP:OD1	8:M:442:ARG:N	2.43	0.41
8:N:110:GLU:HA	8:N:110:GLU:OE1	2.20	0.41
8:N:610:LEU:HD13	8:N:615:VAL:HG12	2.02	0.41
1:A:140:ARG:HD2	1:A:268:ASP:OD1	2.20	0.41
4:I:108:DC:H1'	4:I:109:DG:C8	2.55	0.41
8:M:547:ASP:OD1	8:M:547:ASP:N	2.53	0.41
5:J:205:DG:C4	5:J:206:DA:C8	3.08	0.41
5:J:224:DC:C2	5:J:225:DC:C5	3.09	0.41
1:C:135:HIS:NE2	1:C:315:ASP:OD2	2.49	0.41
4:I:28:DT:C2'	4:I:29:DT:H71	2.51	0.41
4:I:101:DA:C2	5:J:201:DT:O2	2.73	0.41
4:I:26:DA:C2'	4:I:27:DT:H71	2.51	0.41
5:J:205:DG:H4'	5:J:206:DA:OP1	2.21	0.41
1:B:210:PHE:CG	1:B:211:VAL:N	2.90	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:53:GLY:HA3	2:G:86:PRO:HA	2.02	0.40
4:I:18:DT:H2'	4:I:19:DT:H72	2.03	0.40
8:M:312:MET:O	8:M:313:LEU:C	2.58	0.40
8:N:10:GLU:OE2	8:N:10:GLU:HA	2.21	0.40
6:K:11:DT:H2'	6:K:12:DT:H72	2.04	0.40
1:A:270:ILE:O	1:A:271:LYS:C	2.60	0.40
1:C:89:THR:CG2	1:C:90:PRO:HD3	2.50	0.40
5:J:201:DT:H2"	5:J:202:DT:C6	2.56	0.40
5:J:238:DG:H4'	5:J:239:DG:OP1	2.21	0.40
1:A:98:ASP:N	1:A:98:ASP:OD1	2.54	0.40
6:K:34:DT:N3	6:K:35:DG:O6	2.53	0.40
8:M:381:LYS:O	8:M:385:ARG:HB3	2.21	0.40
4:I:23:DA:C4	4:I:24:DC:C5	3.10	0.40
4:I:25:DG:C2	4:I:26:DA:C4	3.10	0.40
4:I:124:DT:H1'	4:I:125:DA:N7	2.36	0.40
8:M:222:ARG:HG2	8:M:556:LEU:O	2.22	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	A	308/341 (90%)	292 (95%)	16 (5%)	0	100	100
1	B	315/341 (92%)	297 (94%)	18 (6%)	0	100	100
1	C	301/341 (88%)	290 (96%)	11 (4%)	0	100	100
1	D	313/341 (92%)	300 (96%)	13 (4%)	0	100	100
2	E	92/102 (90%)	90 (98%)	2 (2%)	0	100	100
2	G	96/102 (94%)	94 (98%)	2 (2%)	0	100	100
3	F	92/96 (96%)	88 (96%)	4 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	H	92/96 (96%)	85 (92%)	7 (8%)	0	100	100
8	M	946/1076 (88%)	905 (96%)	41 (4%)	0	100	100
8	N	930/1076 (86%)	895 (96%)	35 (4%)	0	100	100
All	All	3485/3912 (89%)	3336 (96%)	149 (4%)	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	A	248/277 (90%)	246 (99%)	2 (1%)	81	92
1	B	255/277 (92%)	248 (97%)	7 (3%)	44	72
1	C	190/277 (69%)	188 (99%)	2 (1%)	73	88
1	D	253/277 (91%)	250 (99%)	3 (1%)	71	87
8	M	494/885 (56%)	485 (98%)	9 (2%)	59	81
8	N	498/885 (56%)	488 (98%)	10 (2%)	55	79
All	All	1938/2878 (67%)	1905 (98%)	33 (2%)	62	82

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	LEU
1	A	110	TYR
1	B	15	SER
1	B	43	ARG
1	B	136	PHE
1	B	147	SER
1	B	203	GLN
1	B	256	LYS
1	B	258	ARG
1	C	29	LEU

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Mol	Chain	Res	Type
1	C	259	ARG
1	D	95	ASN
1	D	214	LYS
1	D	296	CYS
8	M	222	ARG
8	M	385	ARG
8	M	439	ASP
8	M	542	LEU
8	M	561	GLN
8	M	576	ASP
8	M	585	ASP
8	M	589	LEU
8	M	662	SER
8	N	14	LEU
8	N	43	ASP
8	N	65	ARG
8	N	158	GLU
8	N	250	ASP
8	N	385	ARG
8	N	386	ARG
8	N	582	ASP
8	N	585	ASP
8	N	916	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

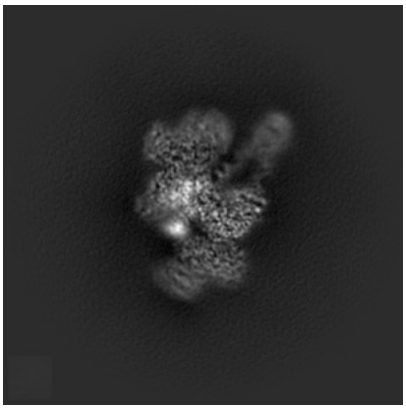
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-29280. These allow visual inspection of the internal detail of the map and identification of artifacts.

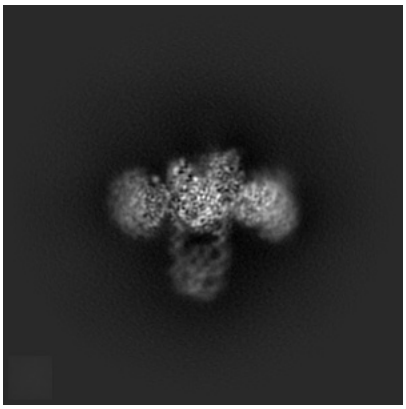
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

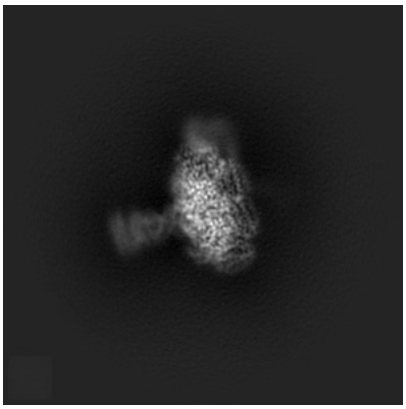
6.1.1 Primary map



X

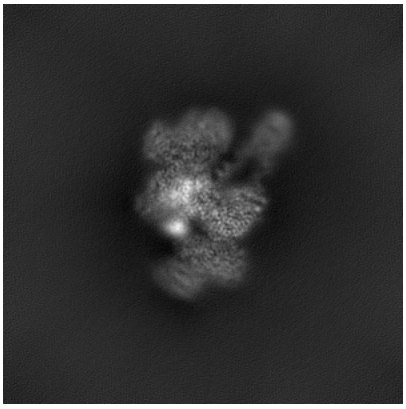


Y

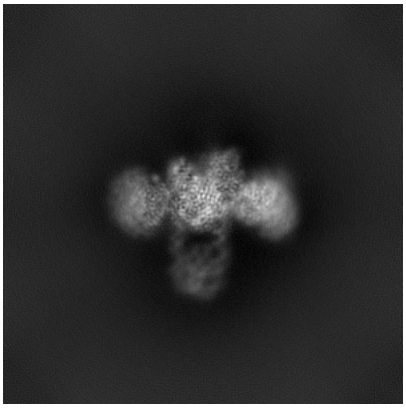


Z

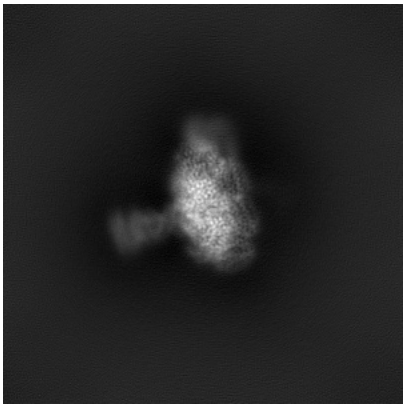
6.1.2 Raw map



X



Y

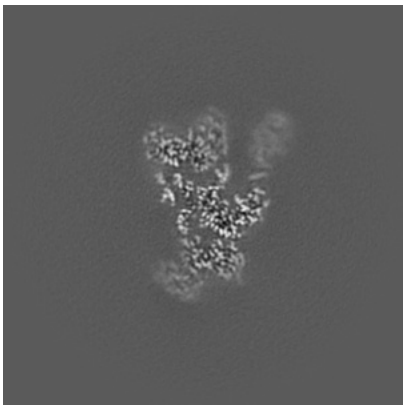


Z

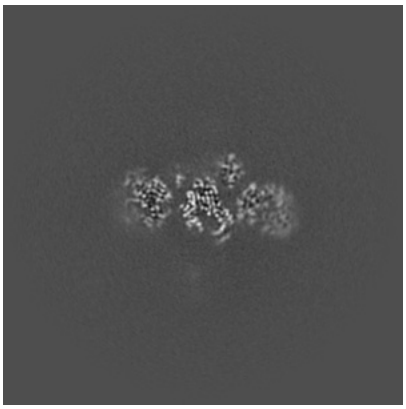
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

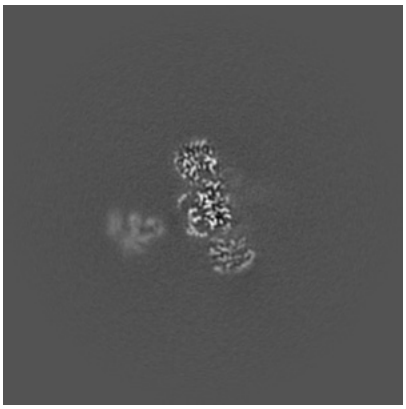
6.2.1 Primary map



X Index: 192

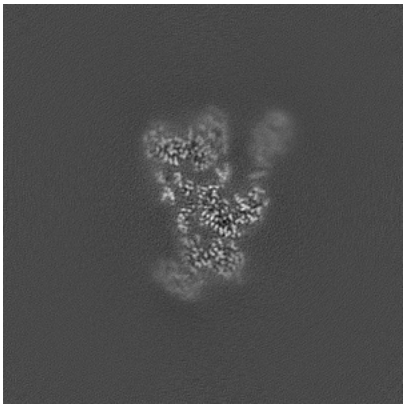


Y Index: 192

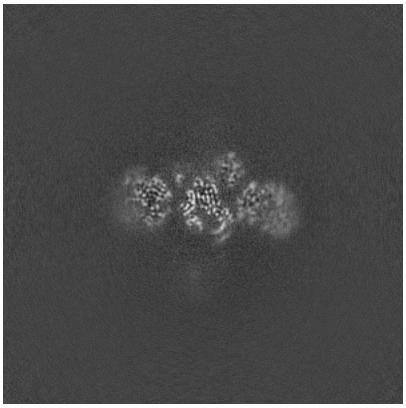


Z Index: 192

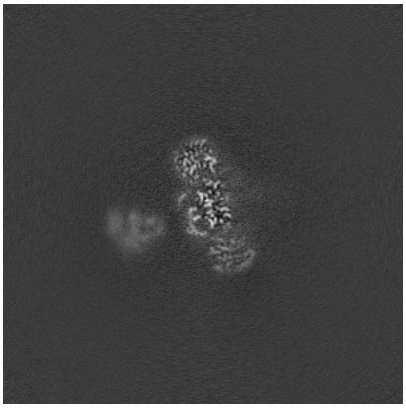
6.2.2 Raw map



X Index: 192



Y Index: 192

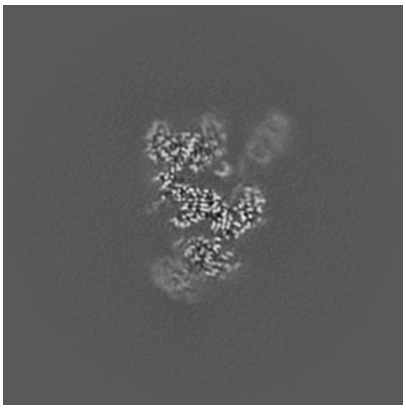


Z Index: 192

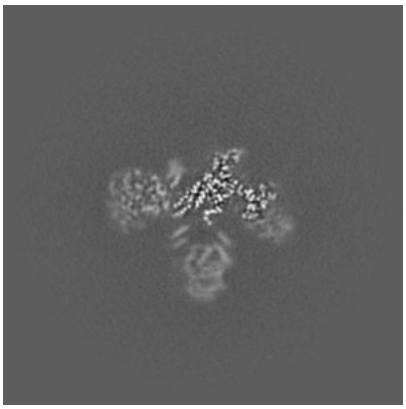
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



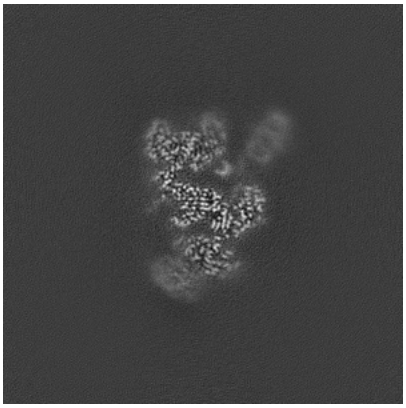
X Index: 198



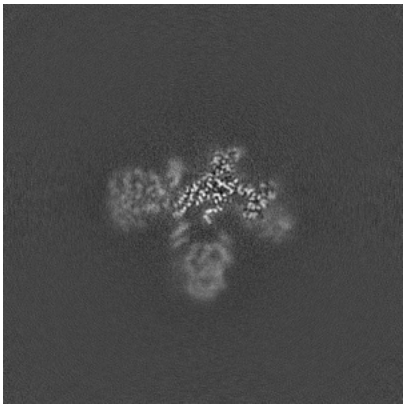
Y Index: 174

Z Index: 187

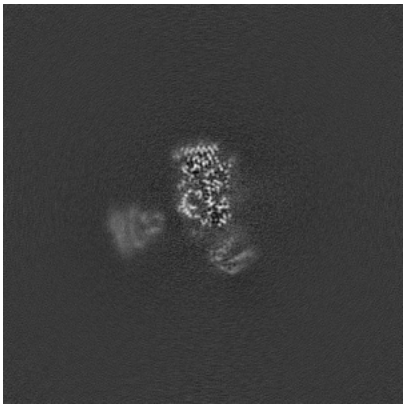
6.3.2 Raw map



X Index: 198



Y Index: 173

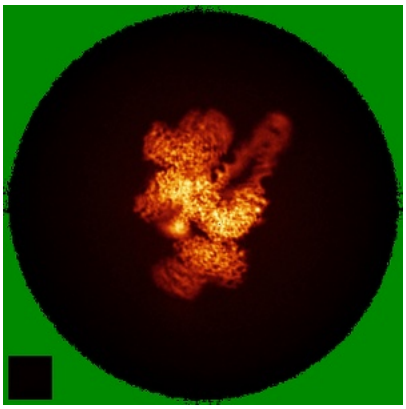


Z Index: 187

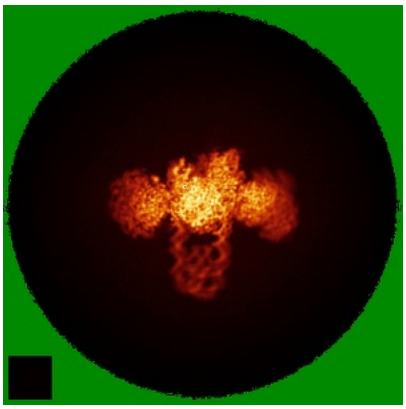
The images above show the largest variance slices of the map in three orthogonal directions.

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

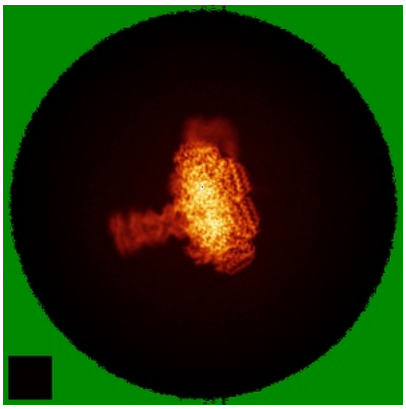
6.4.1 Primary map



X

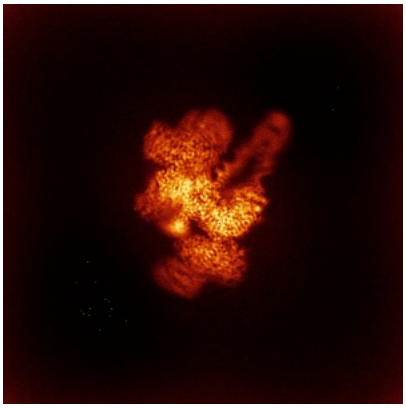


Y

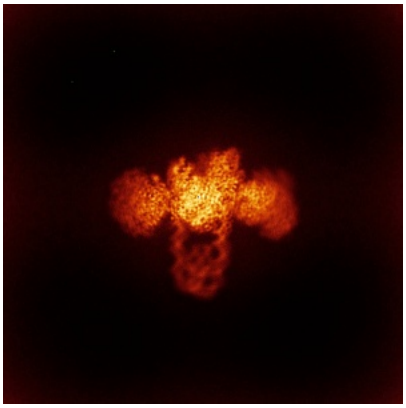


Z

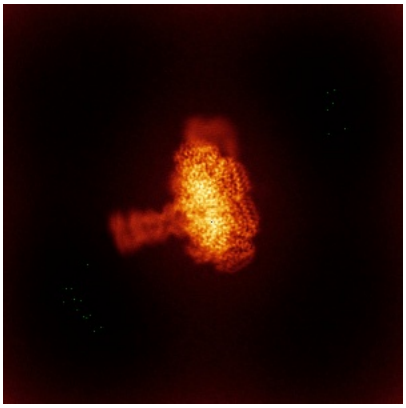
6.4.2 Raw map



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 4.6. 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.

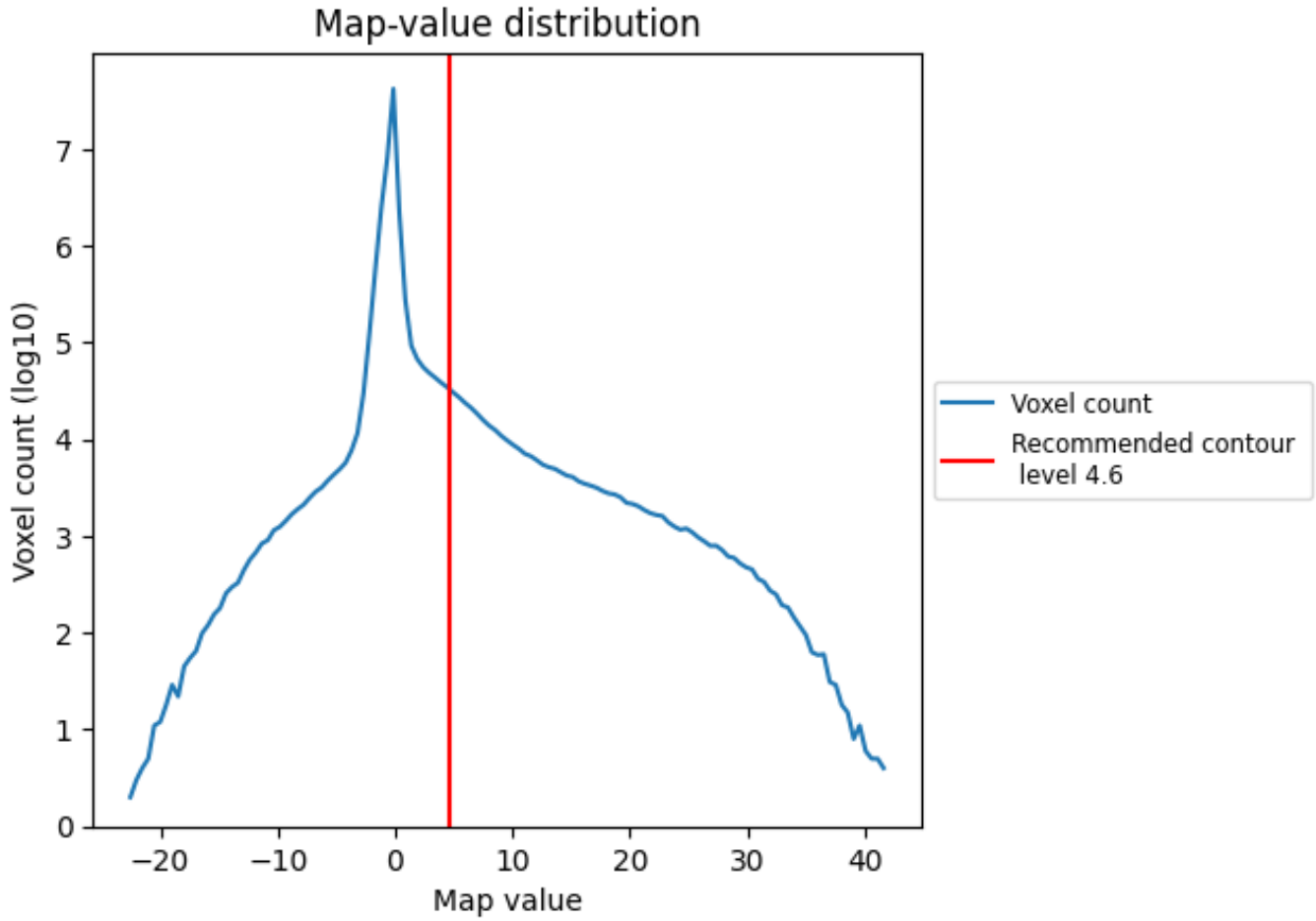
6.6 Mask visualisation (i)

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

7 Map analysis

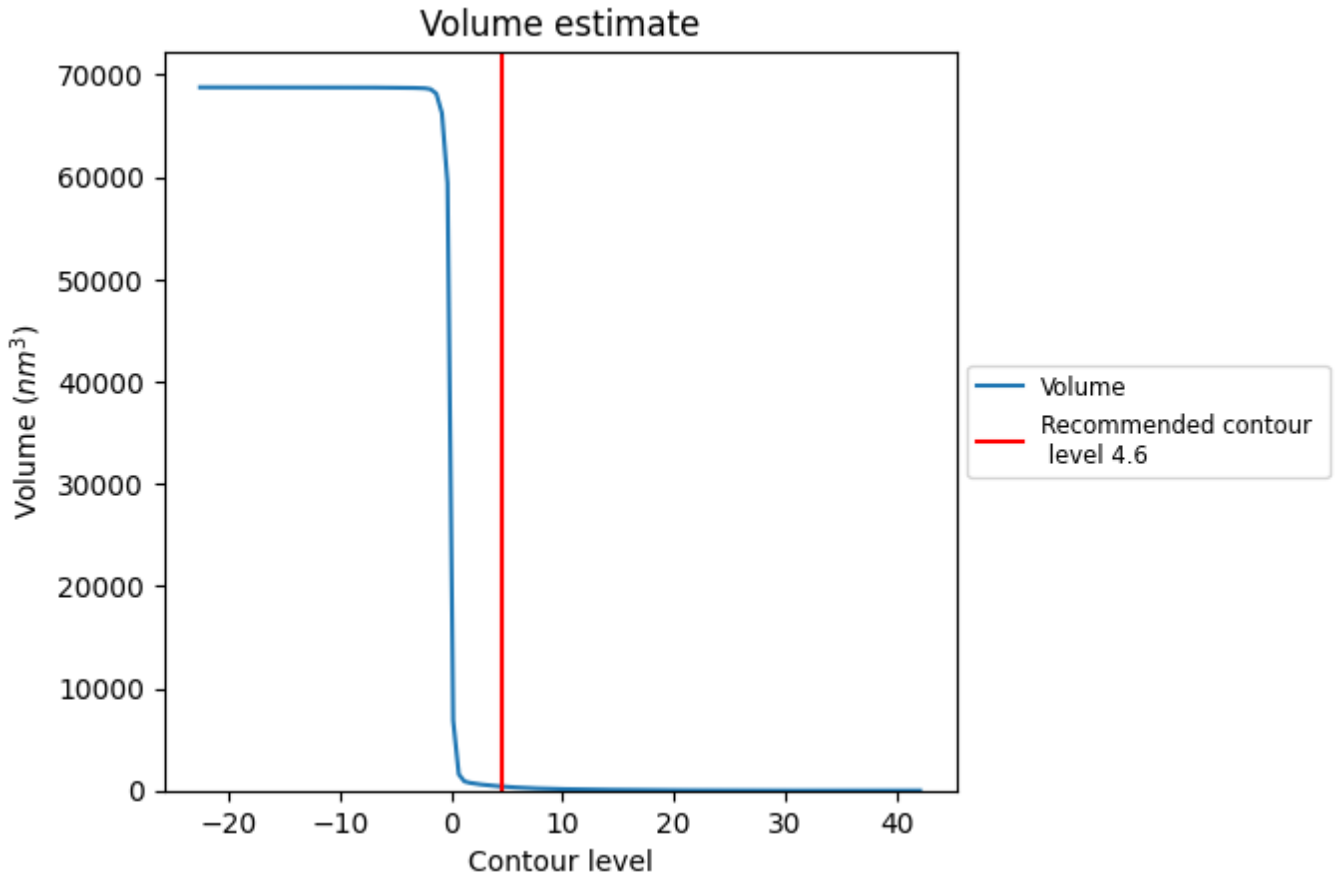
This section contains the results of statistical analysis of the map.

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.

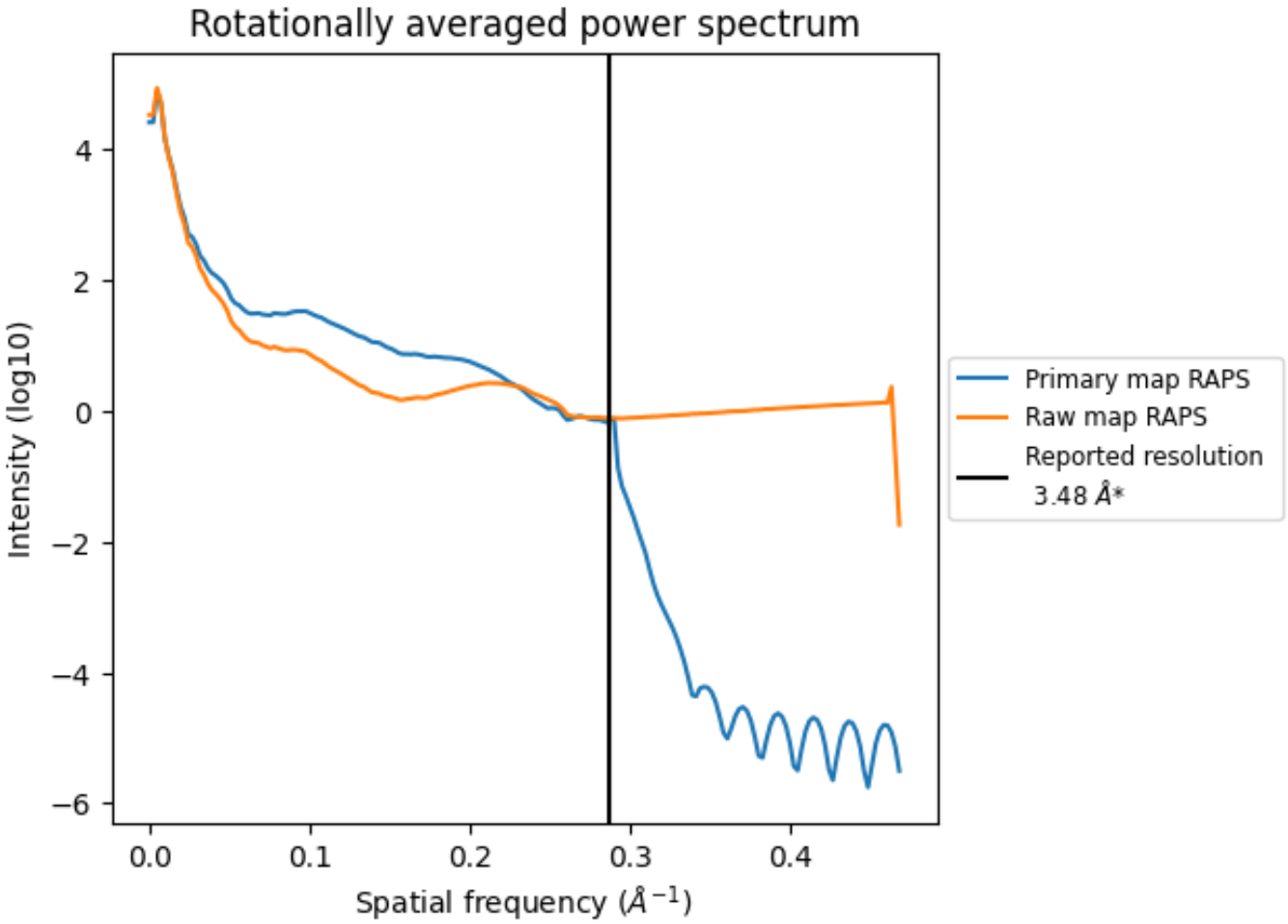
7.2 Volume estimate



The volume at the recommended contour level is 395 nm^3; this corresponds to an approximate mass of 357 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)

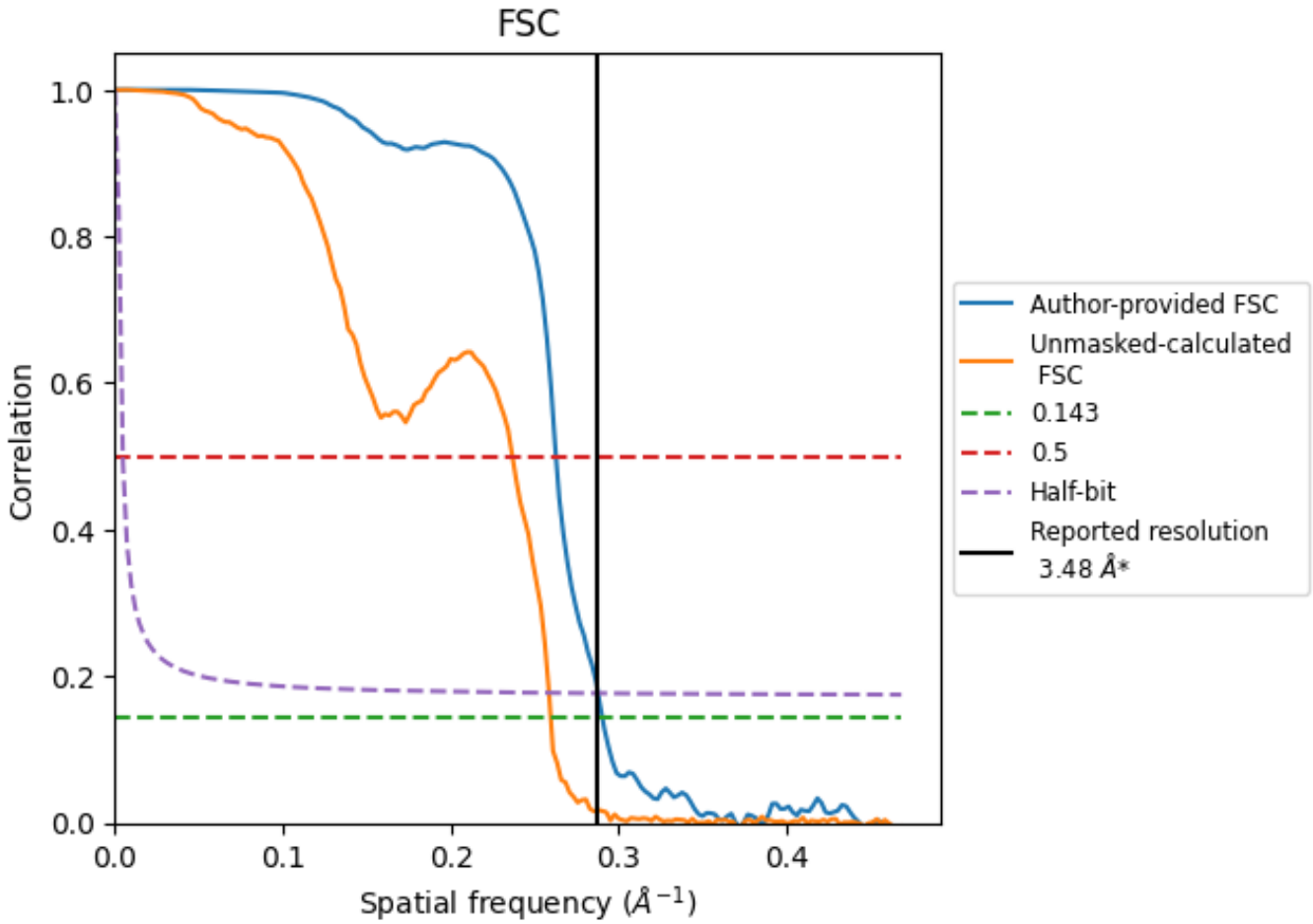


*Reported resolution corresponds to spatial frequency of 0.287 Å^{-1}

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 0.287 Å^{-1}

8.2 Resolution estimates (i)

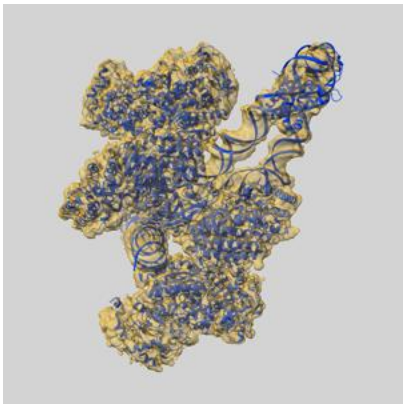
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.48	-	-
Author-provided FSC curve	3.44	3.81	3.47
Unmasked-calculated*	3.85	4.22	3.87

*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 3.85 differs from the reported value 3.48 by more than 10 %

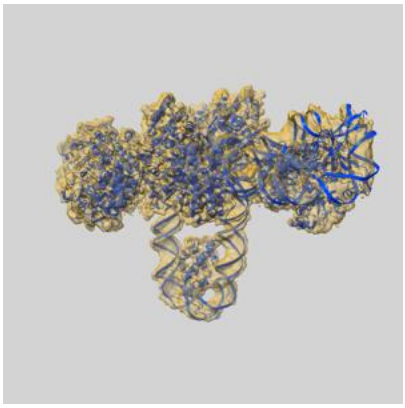
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-29280 and PDB model 8FLJ. Per-residue inclusion information can be found in section 3 on page 8.

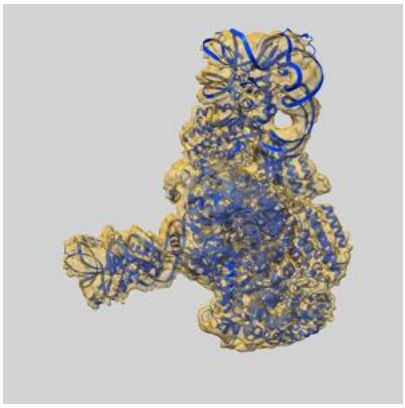
9.1 Map-model overlay



X



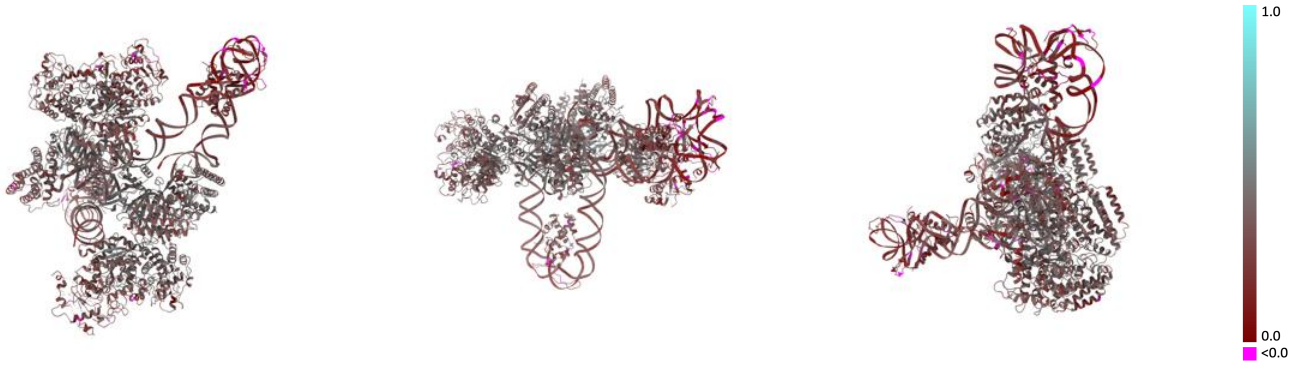
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 4.6 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.

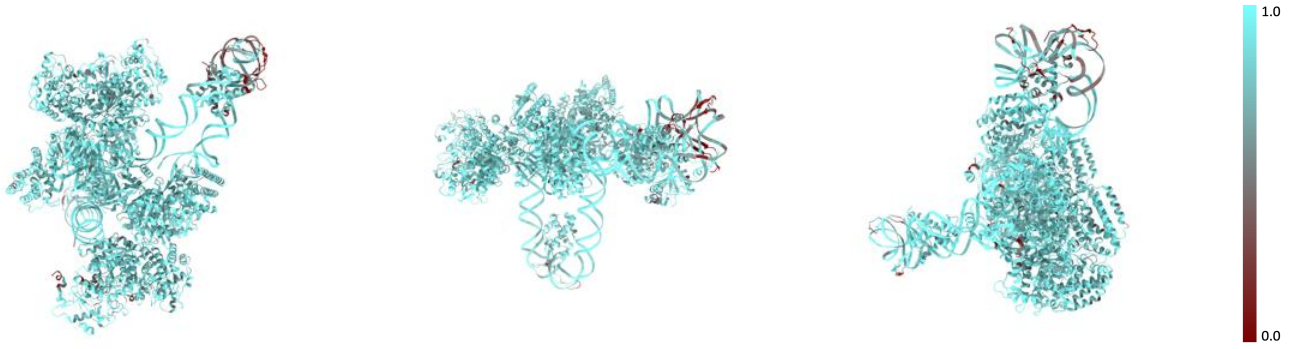
9.2 Q-score mapped to coordinate model (i)



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.

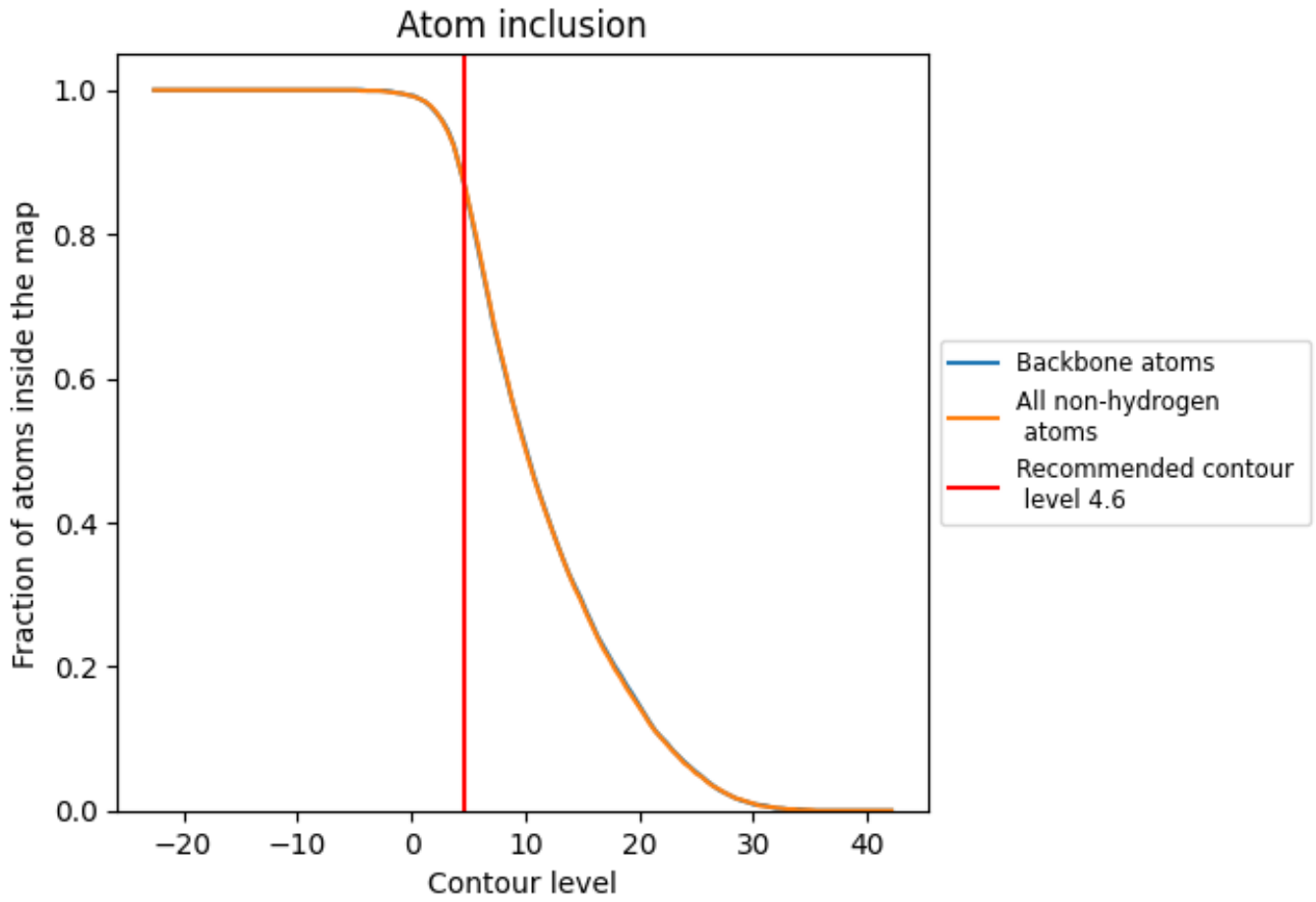
9.3 Atom inclusion mapped to coordinate model (i)



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 (4.6).

9.4 Atom inclusion (i)



At the recommended contour level, 87% of all backbone atoms, 87% 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 (4.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8730	0.3500
A	0.9080	0.4170
B	0.8980	0.4080
C	0.8900	0.3880
D	0.8930	0.3950
E	0.8430	0.2240
F	0.8680	0.2150
G	0.5670	0.1760
H	0.5770	0.1970
I	0.8850	0.2630
J	0.8740	0.2530
K	0.9470	0.3820
L	0.9660	0.4000
M	0.8860	0.3590
N	0.8750	0.3790