



Full wwPDB EM Validation Report ⓘ

May 19, 2024 – 11:24 am BST

PDB ID : 6RNY
EMDB ID : EMD-4960
Title : PFV intasome - nucleosome strand transfer complex
Authors : Pye, V.E.; Renault, L.; Maskell, D.P.; Cherepanov, P.; Costa, A.
Deposited on : 2019-05-09
Resolution : 3.90 Å(reported)
Based on initial models : 3OS0, 3UTB

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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

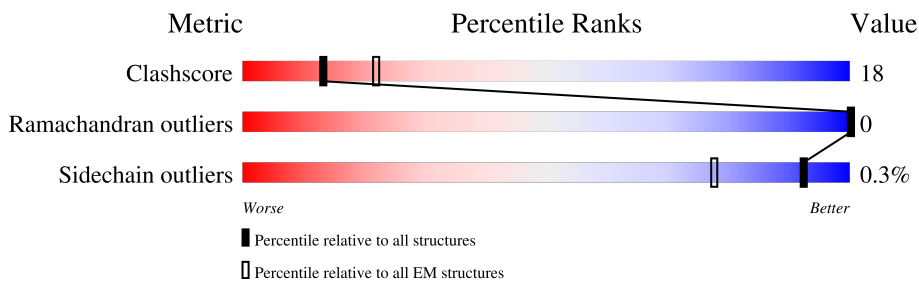
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.90 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	136	
1	E	136	
2	B	103	
2	F	103	
3	C	130	
3	G	130	
4	D	126	
4	H	126	

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Mol	Chain	Length	Quality of chain
5	K	395	
5	L	395	
5	O	395	
5	P	395	
6	I	128	
7	U	108	
8	T	33	
9	J	53	
10	M	19	
10	Q	19	

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 21145 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 Histone H3.3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	97	796	501	155	138	2	0	0
1	E	97	796	501	155	138	2	0	0

- Molecule 2 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	83	662	418	129	114	1	0	0
2	F	83	662	418	129	114	1	0	0

- Molecule 3 is a protein called Histone H2A type 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	C	110	846	535	166	145	0	0
3	G	110	846	535	166	145	0	0

- Molecule 4 is a protein called Histone H2B type 1-C/E/F/G/I.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	94	735	461	132	140	2	0	0
4	H	94	735	461	132	140	2	0	0

- Molecule 5 is a protein called Integrase.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	K	338	Total	C	N	O	S	0	0
			2686	1719	479	484	4		
5	L	141	Total	C	N	O	S	0	0
			1120	739	180	200	1		
5	O	338	Total	C	N	O	S	0	0
			2686	1719	479	484	4		
5	P	157	Total	C	N	O	S	0	0
			1246	817	204	224	1		

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	-2	GLY	-	expression tag	UNP P14350
K	-1	PRO	-	expression tag	UNP P14350
K	0	GLY	-	expression tag	UNP P14350
K	1	CYS	-	expression tag	UNP P14350
K	2	ASN	-	expression tag	UNP P14350
K	217	SER	GLY	variant	UNP P14350
K	218	GLY	SER	variant	UNP P14350
L	-2	GLY	-	expression tag	UNP P14350
L	-1	PRO	-	expression tag	UNP P14350
L	0	GLY	-	expression tag	UNP P14350
L	1	CYS	-	expression tag	UNP P14350
L	2	ASN	-	expression tag	UNP P14350
L	217	SER	GLY	variant	UNP P14350
L	218	GLY	SER	variant	UNP P14350
O	-2	GLY	-	expression tag	UNP P14350
O	-1	PRO	-	expression tag	UNP P14350
O	0	GLY	-	expression tag	UNP P14350
O	1	CYS	-	expression tag	UNP P14350
O	2	ASN	-	expression tag	UNP P14350
O	217	SER	GLY	variant	UNP P14350
O	218	GLY	SER	variant	UNP P14350
P	-2	GLY	-	expression tag	UNP P14350
P	-1	PRO	-	expression tag	UNP P14350
P	0	GLY	-	expression tag	UNP P14350
P	1	CYS	-	expression tag	UNP P14350
P	2	ASN	-	expression tag	UNP P14350
P	217	SER	GLY	variant	UNP P14350
P	218	GLY	SER	variant	UNP P14350

- Molecule 6 is a DNA chain called DNA (128-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	I	128	2602	1242	471	761	128	0	0

- Molecule 7 is a DNA chain called DNA (108-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	U	108	2233	1062	411	652	108	0	0

- Molecule 8 is a DNA chain called DNA (33-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	T	33	671	321	123	195	32	0	0

- Molecule 9 is a DNA chain called DNA (53-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
9	J	53	1089	519	204	314	52	0	0

- Molecule 10 is a DNA chain called DNA (5'-D(*AP*TP*TP*GP*TP*CP*AP*TP*GP*GP*AP*AP*TP*TP*TP*CP*GP*C)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
10	Q	18	366	177	63	109	17	0	0
10	M	18	366	177	63	109	17	0	0

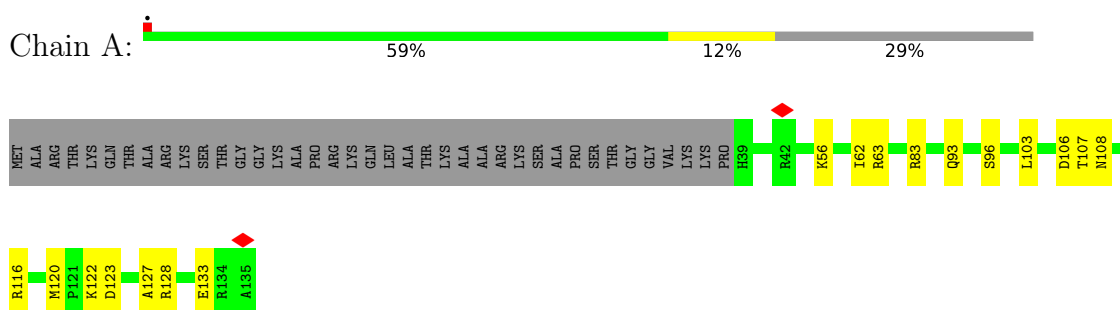
- Molecule 11 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
11	K	1	Total	Mg	0
			1	1	
11	O	1	Total	Mg	0
			1	1	

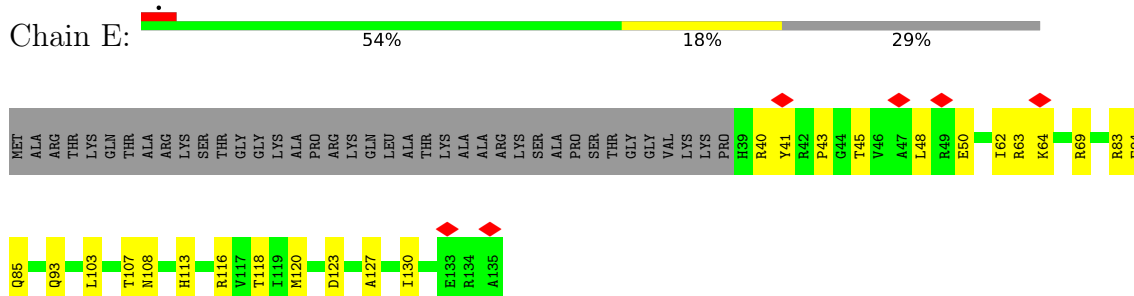
3 Residue-property plots [i](#)

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.

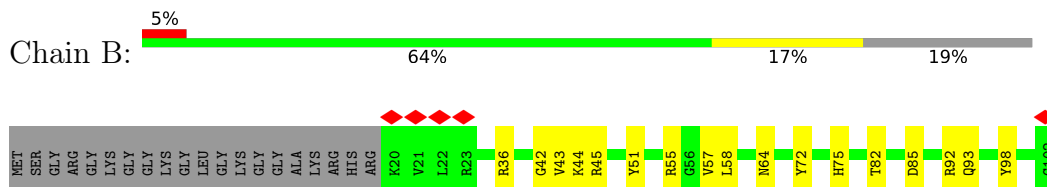
- Molecule 1: Histone H3.3



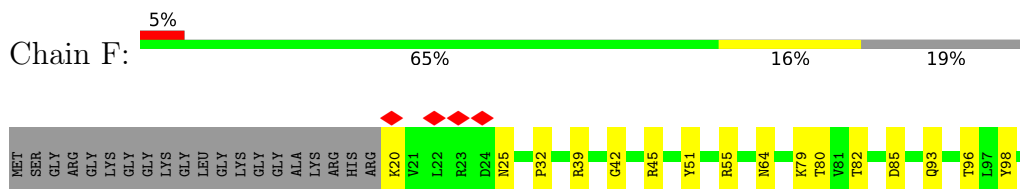
- Molecule 1: Histone H3.3



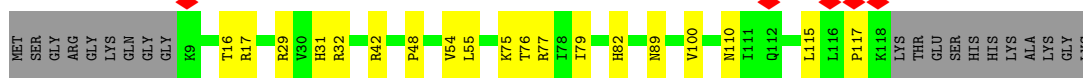
- Molecule 2: Histone H4



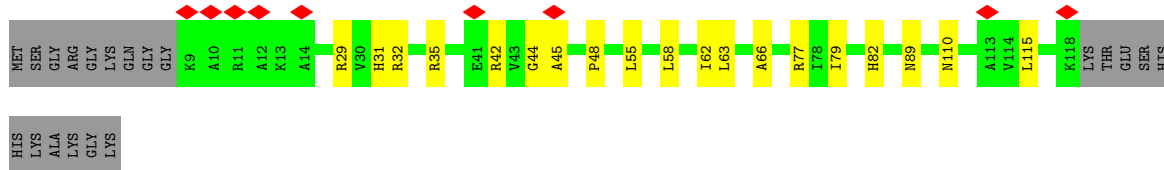
- Molecule 2: Histone H4



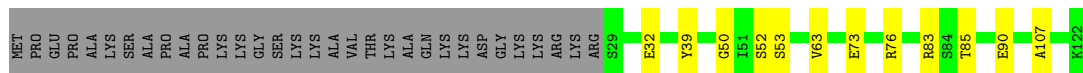
- Molecule 3: Histone H2A type 1



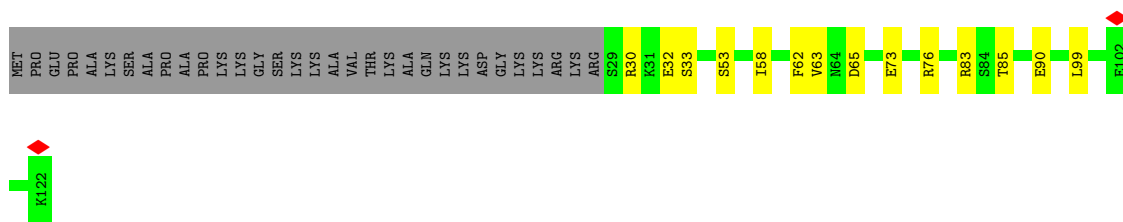
- Molecule 3: Histone H2A type 1



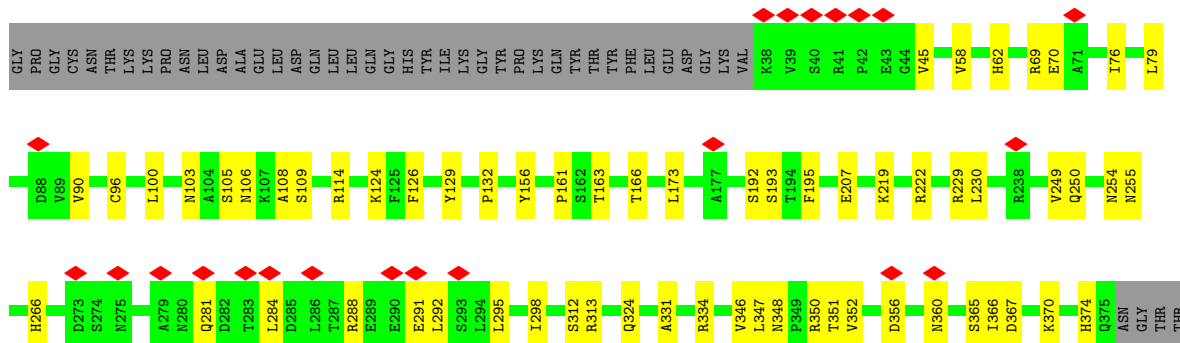
- Molecule 4: Histone H2B type 1-C/E/F/G/I



- Molecule 4: Histone H2B type 1-C/E/F/G/I

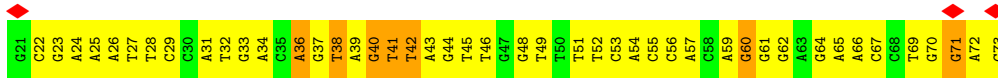


- Molecule 5: Integrase

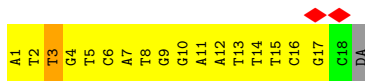




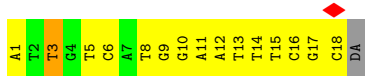
- Molecule 9: DNA (53-MER)



- Molecule 10: DNA (5'-D(*AP*TP*TP*GP*TP*CP*AP*TP*GP*GP*AP*AP*TP*TP*TP*C P*GP*C)-3')



- Molecule 10: DNA (5'-D(*AP*TP*TP*GP*TP*CP*AP*TP*GP*GP*AP*AP*TP*TP*TP*C P*GP*C)-3')



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	177155	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 ($e^-/\text{\AA}^2$)	56	Depositor
Minimum defocus (nm)	1.5	Depositor
Maximum defocus (nm)	3.5	Depositor
Magnification	59000	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.659	Depositor
Minimum map value	-0.332	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.07	Depositor
Map size (\AA)	266.63998, 266.63998, 266.63998	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.111, 1.111, 1.111	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MG

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	0.40	0/807	0.54	0/1081
1	E	0.40	0/807	0.54	0/1081
2	B	0.45	0/669	0.56	0/894
2	F	0.45	0/669	0.56	0/894
3	C	0.45	0/856	0.59	0/1153
3	G	0.45	0/856	0.58	0/1153
4	D	0.46	0/746	0.57	0/1001
4	H	0.45	0/746	0.57	0/1001
5	K	0.39	0/2758	0.56	0/3764
5	L	0.29	0/1152	0.47	0/1572
5	O	0.39	0/2758	0.56	0/3764
5	P	0.31	0/1282	0.50	0/1748
6	I	1.23	15/2916 (0.5%)	1.26	12/4491 (0.3%)
7	U	1.19	5/2507 (0.2%)	1.46	10/3873 (0.3%)
8	T	1.21	1/752 (0.1%)	1.16	1/1158 (0.1%)
9	J	1.24	1/1223 (0.1%)	1.20	7/1887 (0.4%)
10	M	1.12	1/409 (0.2%)	1.11	0/630
10	Q	1.11	1/409 (0.2%)	1.12	0/630
All	All	0.80	24/22322 (0.1%)	0.92	30/31775 (0.1%)

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	U	-61	DT	O3'-P	8.29	1.71	1.61
7	U	-60	DG	O3'-P	-8.02	1.51	1.61
9	J	38	DT	C3'-O3'	-7.41	1.34	1.44
6	I	-24	DC	C3'-O3'	-7.11	1.34	1.44
6	I	-11	DC	O3'-P	7.09	1.69	1.61
6	I	-35	DT	C3'-O3'	-6.48	1.35	1.44
6	I	-27	DA	C3'-O3'	-6.14	1.35	1.44
6	I	21	DT	C3'-O3'	-6.10	1.36	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	I	20	DA	O3'-P	5.98	1.68	1.61
6	I	54	DT	C3'-O3'	-5.93	1.36	1.44
8	T	-57	DT	C3'-O3'	-5.91	1.36	1.44
6	I	37	DC	C3'-O3'	-5.90	1.36	1.44
6	I	-4	DT	C3'-O3'	-5.75	1.36	1.44
7	U	-47	DT	C3'-O3'	-5.68	1.36	1.44
10	M	3	DT	C3'-O3'	-5.67	1.36	1.44
6	I	-5	DC	C3'-O3'	-5.62	1.36	1.44
10	Q	3	DT	C3'-O3'	-5.56	1.36	1.44
6	I	-32	DC	C3'-O3'	-5.54	1.36	1.44
6	I	-28	DG	C3'-O3'	-5.51	1.36	1.44
6	I	39	DT	C3'-O3'	-5.47	1.36	1.44
6	I	19	DA	O3'-P	-5.44	1.54	1.61
6	I	-24	DC	N1-C6	-5.39	1.33	1.37
7	U	-18	DC	C3'-O3'	-5.18	1.37	1.44
7	U	25	DT	C3'-O3'	-5.05	1.37	1.44

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	U	-18	DC	O5'-P-OP1	-28.95	75.96	110.70
7	U	-18	DC	OP1-P-OP2	-25.58	81.22	119.60
7	U	-18	DC	O5'-P-OP2	16.50	130.50	110.70
7	U	-19	DT	OP1-P-O3'	14.55	137.22	105.20
7	U	-19	DT	OP2-P-O3'	-13.90	74.61	105.20
6	I	-31	DC	OP1-P-O3'	-11.16	80.64	105.20
7	U	-33	DG	OP1-P-O3'	-10.83	81.37	105.20
7	U	-33	DG	OP2-P-O3'	-9.90	83.41	105.20
6	I	8	DG	O5'-P-OP1	-8.42	98.12	105.70
6	I	-27	DA	O4'-C1'-N9	8.15	113.71	108.00
6	I	-31	DC	OP2-P-O3'	-8.14	87.29	105.20
6	I	-25	DA	O4'-C1'-N9	7.51	113.26	108.00
6	I	-25	DA	OP1-P-O3'	7.18	121.00	105.20
7	U	-32	DG	OP1-P-OP2	7.15	130.32	119.60
9	J	60	DG	O5'-P-OP1	-6.98	99.42	105.70
7	U	-55	DA	O4'-C1'-N9	6.87	112.81	108.00
6	I	-30	DA	OP1-P-OP2	6.35	129.12	119.60
9	J	41	DT	O4'-C1'-N1	6.21	112.34	108.00
6	I	7	DT	O4'-C1'-N1	5.58	111.91	108.00
6	I	-46	DA	O4'-C1'-N9	-5.51	104.14	108.00
7	U	-19	DT	O3'-P-O5'	-5.48	93.59	104.00
8	T	-54	DT	O4'-C1'-N1	5.46	111.82	108.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	J	36	DA	C1'-O4'-C4'	-5.39	104.70	110.10
6	I	5	DA	OP1-P-O3'	5.39	117.05	105.20
6	I	-35	DT	N3-C4-O4	5.25	123.05	119.90
9	J	36	DA	O5'-P-OP1	5.24	116.98	110.70
9	J	71	DG	P-O3'-C3'	5.22	125.96	119.70
9	J	42	DT	O4'-C1'-N1	5.15	111.60	108.00
9	J	40	DG	OP1-P-O3'	5.14	116.52	105.20
6	I	23	DT	O4'-C1'-N1	5.05	111.54	108.00

There are no chirality outliers.

There are no planarity outliers.

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	796	0	832	21	0
1	E	796	0	832	31	0
2	B	662	0	709	14	0
2	F	662	0	709	35	0
3	C	846	0	915	33	0
3	G	846	0	915	19	0
4	D	735	0	756	18	0
4	H	735	0	756	11	0
5	K	2686	0	2747	51	0
5	L	1120	0	1144	11	0
5	O	2686	0	2747	51	0
5	P	1246	0	1263	11	0
6	I	2602	0	1440	208	0
7	U	2233	0	1219	201	0
8	T	671	0	372	55	0
9	J	1089	0	598	75	0
10	M	366	0	207	25	0
10	Q	366	0	207	30	0
11	K	1	0	0	0	0
11	O	1	0	0	0	0
All	All	21145	0	18368	707	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 18.

All (707) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:45:ARG:NH2	6:I:7:DT:H4'	1.28	1.48
2:F:45:ARG:CZ	6:I:7:DT:H4'	1.48	1.40
2:F:45:ARG:NH2	6:I:7:DT:C4'	1.91	1.33
9:J:51:DT:C6	9:J:52:DT:H72	1.71	1.24
2:F:45:ARG:NH1	6:I:8:DG:H5'	1.53	1.22
5:O:106:ASN:ND2	10:M:8:DT:O2	1.74	1.19
1:E:118:THR:OG1	7:U:-3:DG:OP1	1.65	1.14
3:G:77:ARG:HH21	6:I:59:DA:H5'	1.16	1.11
6:I:29:DC:C6	6:I:30:DT:H72	1.91	1.05
1:E:63:ARG:HB3	6:I:18:DG:OP1	1.55	1.05
5:K:106:ASN:ND2	10:Q:8:DT:O2	1.91	1.03
7:U:0:DT:C6	7:U:1:DT:H72	1.93	1.03
1:E:83:ARG:HH11	6:I:27:DG:H5'	1.18	1.03
5:K:348:ASN:ND2	10:M:3:DT:O2	1.92	1.01
5:K:313:ARG:HG2	6:I:-46:DA:H4'	1.44	0.99
6:I:47:DA:C2	7:U:-46:DG:N2	2.29	0.99
3:C:29:ARG:NH1	9:J:51:DT:OP1	1.97	0.96
1:E:43:PRO:HB3	6:I:8:DG:H4'	1.45	0.96
1:E:45:THR:HG21	9:J:72:DA:OP1	1.66	0.95
2:F:45:ARG:NE	6:I:7:DT:H4'	1.83	0.94
2:F:45:ARG:CZ	6:I:7:DT:C4'	2.37	0.93
2:F:45:ARG:HH12	6:I:8:DG:H5'	1.34	0.92
7:U:-48:DC:H4'	7:U:-47:DT:H5'	1.48	0.92
3:C:75:LYS:HZ2	9:J:60:DG:H3'	1.33	0.92
2:F:45:ARG:HH21	6:I:7:DT:C4'	1.75	0.92
2:F:32:PRO:HB2	7:U:-13:DT:OP2	1.71	0.90
1:E:63:ARG:CZ	6:I:17:DG:H5''	2.01	0.89
3:C:16:THR:HG21	9:J:49:DT:H5''	1.54	0.89
3:C:77:ARG:HD2	8:T:-56:DG:H5''	1.55	0.88
9:J:48:DG:H2''	9:J:49:DT:C7	2.03	0.88
6:I:-5:DC:H2''	6:I:-4:DT:H71	1.57	0.87
3:C:17:ARG:HE	8:T:-45:DA:P	1.98	0.86
5:O:347:LEU:HD21	10:Q:1:DA:H8	1.44	0.83
2:F:45:ARG:HH21	6:I:7:DT:H4'	1.28	0.83
1:E:84:PHE:N	7:U:-23:DA:OP1	2.10	0.83
7:U:-30:DA:H2''	7:U:-29:DG:C8	2.13	0.82
9:J:51:DT:C6	9:J:52:DT:C7	2.59	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:O:348:ASN:ND2	10:Q:3:DT:O2	2.11	0.82
2:F:45:ARG:NH2	6:I:7:DT:O4'	2.11	0.82
7:U:30:DT:C2	7:U:31:DG:C8	2.67	0.82
2:F:20:LYS:HE2	7:U:-22:DT:OP1	1.80	0.81
2:F:45:ARG:NH1	6:I:8:DG:C5'	2.40	0.81
2:F:45:ARG:HH11	6:I:8:DG:H5'	1.46	0.81
9:J:48:DG:C2'	9:J:49:DT:H72	2.10	0.80
3:G:77:ARG:NH2	6:I:59:DA:H5'	1.96	0.80
7:U:-30:DA:H2''	7:U:-29:DG:H8	1.44	0.80
3:C:77:ARG:HH11	8:T:-56:DG:C5'	1.95	0.79
7:U:-15:DA:H2''	7:U:-14:DG:C8	2.17	0.79
3:C:77:ARG:NH1	8:T:-56:DG:H5'	1.96	0.79
7:U:31:DG:C4	7:U:32:DG:N7	2.51	0.79
1:A:83:ARG:HH11	7:U:27:DT:C4'	1.97	0.78
7:U:-55:DA:C2	7:U:-54:DA:C5	2.72	0.77
4:D:53:SER:HB2	8:T:-56:DG:OP2	1.85	0.76
6:I:-6:DC:H2''	6:I:-5:DC:C5	2.21	0.76
7:U:-41:DG:C8	7:U:-40:DT:C7	2.68	0.76
7:U:-29:DG:H2''	7:U:-28:DT:H71	1.67	0.76
4:D:53:SER:H	8:T:-56:DG:P	2.08	0.76
6:I:-25:DA:H4'	6:I:-24:DC:OP1	1.83	0.76
6:I:39:DT:H2''	6:I:40:DA:C8	2.20	0.76
9:J:48:DG:H2''	9:J:49:DT:H72	1.67	0.76
8:T:-56:DG:H2''	8:T:-55:DG:C8	2.21	0.76
6:I:29:DC:N1	6:I:30:DT:H72	2.01	0.75
2:B:36:ARG:NH2	6:I:-13:DA:OP1	2.20	0.75
4:D:52:SER:HB2	8:T:-56:DG:OP1	1.87	0.74
6:I:-41:DA:H3'	6:I:-40:DC:H5'	1.70	0.74
7:U:-40:DT:H2''	7:U:-39:DA:C8	2.22	0.74
7:U:30:DT:C4	7:U:31:DG:N7	2.55	0.74
6:I:-32:DC:C2	6:I:-31:DC:C5	2.75	0.74
7:U:-48:DC:H1'	7:U:-47:DT:C6	2.22	0.73
6:I:-5:DC:H2''	6:I:-4:DT:C7	2.18	0.73
7:U:31:DG:C2	7:U:32:DG:C5	2.76	0.73
1:A:63:ARG:HB3	7:U:18:DA:OP1	1.88	0.73
1:A:83:ARG:NH1	7:U:27:DT:C4'	2.52	0.72
7:U:-41:DG:C8	7:U:-40:DT:H73	2.25	0.72
6:I:-45:DT:O4	10:Q:6:DC:N4	2.22	0.72
1:A:83:ARG:HH11	7:U:27:DT:C5'	2.03	0.71
7:U:1:DT:C2	7:U:2:DC:C5	2.79	0.71
6:I:35:DC:N4	7:U:-36:DT:O4	2.23	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:57:DA:H2''	6:I:58:DT:H72	1.71	0.71
6:I:-24:DC:N4	7:U:23:DT:O4	2.24	0.70
9:J:65:DA:C2	9:J:66:DA:C2	2.80	0.70
4:D:53:SER:N	8:T:-56:DG:OP1	2.23	0.70
7:U:-2:DC:H2''	7:U:-1:DA:C8	2.26	0.70
7:U:31:DG:C4	7:U:32:DG:C8	2.79	0.70
7:U:31:DG:N3	7:U:32:DG:C8	2.60	0.69
9:J:33:DG:H2''	9:J:34:DA:C8	2.28	0.69
6:I:36:DA:C2	7:U:-35:DG:N2	2.61	0.68
9:J:72:DA:H1'	9:J:73:DC:H5'	1.75	0.68
3:C:77:ARG:HH11	8:T:-56:DG:H5'	1.55	0.68
5:K:313:ARG:HG2	6:I:-46:DA:C4'	2.23	0.68
6:I:44:DG:H2''	6:I:43:DA:C8	2.29	0.68
9:J:32:DT:H2''	9:J:33:DG:C8	2.29	0.67
7:U:-41:DG:C8	7:U:-40:DT:H71	2.30	0.67
3:C:77:ARG:HH11	8:T:-56:DG:C4'	2.08	0.67
9:J:36:DA:H4'	9:J:36:DA:OP1	1.95	0.67
1:E:83:ARG:NH1	6:I:27:DG:H5'	2.01	0.66
6:I:38:DC:C2'	6:I:39:DT:H71	2.25	0.66
3:C:17:ARG:NE	8:T:-45:DA:OP2	2.28	0.66
5:K:347:LEU:HD21	10:M:1:DA:H8	1.60	0.65
7:U:2:DC:H2''	7:U:3:DA:H8	1.61	0.65
7:U:25:DT:H2''	7:U:26:DT:C6	2.32	0.65
2:F:45:ARG:NH1	6:I:8:DG:OP1	2.30	0.65
6:I:46:DC:N4	7:U:-47:DT:O4	2.30	0.65
7:U:30:DT:N3	7:U:31:DG:N7	2.44	0.65
8:T:-51:DA:H2''	8:T:-50:DA:C8	2.33	0.65
7:U:-17:DC:H2''	7:U:-16:DT:H71	1.78	0.64
10:M:9:DG:H2''	10:M:10:DG:C8	2.32	0.64
1:E:108:ASN:ND2	2:F:42:GLY:O	2.30	0.64
6:I:-15:DC:H2''	6:I:-14:DC:C5	2.32	0.64
7:U:-42:DG:H2''	7:U:-41:DG:C8	2.33	0.64
7:U:-4:DT:H2''	7:U:-3:DG:C8	2.33	0.64
9:J:32:DT:O4	10:M:6:DC:N4	2.30	0.64
2:F:45:ARG:HH11	6:I:8:DG:C5'	2.06	0.64
6:I:-23:DA:C2	7:U:24:DG:N2	2.65	0.64
7:U:2:DC:H2''	7:U:3:DA:C8	2.33	0.64
9:J:71:DG:H4'	9:J:72:DA:OP1	1.98	0.64
5:O:313:ARG:HG2	9:J:31:DA:H4'	1.79	0.64
5:O:347:LEU:HD21	10:Q:1:DA:C8	2.31	0.64
7:U:-57:DT:H2''	7:U:-56:DC:C6	2.32	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:63:ARG:CZ	6:I:17:DG:C5'	2.76	0.63
7:U:-65:DT:H2''	7:U:-64:DG:OP2	1.97	0.63
6:I:-38:DA:H8	6:I:-38:DA:H5''	1.63	0.63
7:U:-17:DC:H2''	7:U:-16:DT:C6	2.33	0.63
3:G:42:ARG:HH11	7:U:-35:DG:H4'	1.63	0.63
2:B:45:ARG:HG3	7:U:8:DC:OP1	1.98	0.63
5:O:259:PRO:HG2	10:Q:8:DT:C7	2.28	0.63
6:I:-50:DT:H2''	6:I:-49:DT:C7	2.28	0.63
9:J:52:DT:C2	9:J:53:DC:C4	2.86	0.63
3:C:17:ARG:NE	8:T:-45:DA:P	2.70	0.63
6:I:-33:DC:C2	6:I:-32:DC:C5	2.87	0.63
10:Q:9:DG:H2''	10:Q:10:DG:C8	2.33	0.62
1:A:106:ASP:HB3	1:E:130:ILE:HG23	1.80	0.62
7:U:17:DG:H2''	7:U:18:DA:H8	1.63	0.62
5:O:114:ARG:HH12	10:Q:5:DT:H6	1.45	0.62
2:F:20:LYS:CE	7:U:-22:DT:OP1	2.48	0.62
7:U:-39:DA:H2''	7:U:-38:DG:H8	1.64	0.62
7:U:-47:DT:H2''	7:U:-46:DG:C8	2.34	0.62
7:U:-17:DC:H2''	7:U:-16:DT:C5	2.34	0.62
7:U:18:DA:H2''	7:U:19:DA:C8	2.35	0.62
6:I:-26:DA:H2''	6:I:-25:DA:O4'	2.00	0.61
2:F:64:ASN:O	2:F:93:GLN:NE2	2.34	0.61
3:G:42:ARG:HH11	7:U:-35:DG:C4'	2.14	0.61
2:B:64:ASN:O	2:B:93:GLN:NE2	2.34	0.61
6:I:-21:DG:H2''	6:I:-20:DT:OP2	2.00	0.61
7:U:-56:DC:H2''	7:U:-55:DA:H8	1.66	0.61
7:U:-49:DC:H2''	7:U:-48:DC:C6	2.34	0.61
2:F:45:ARG:CZ	6:I:7:DT:O3'	2.47	0.61
7:U:4:DA:C2	7:U:5:DG:C2	2.89	0.61
3:C:77:ARG:NH1	8:T:-56:DG:C5'	2.60	0.61
2:F:32:PRO:CB	7:U:-13:DT:OP2	2.48	0.61
10:Q:6:DC:C2	10:Q:7:DA:C6	2.88	0.61
6:I:48:DG:H2''	6:I:49:DG:C8	2.37	0.60
7:U:-49:DC:H2''	7:U:-48:DC:C5	2.35	0.60
9:J:51:DT:C5	9:J:52:DT:H72	2.32	0.60
1:A:116:ARG:NH1	1:A:120:MET:SD	2.75	0.60
1:E:116:ARG:NH1	1:E:120:MET:SD	2.75	0.60
5:K:114:ARG:HH12	10:M:5:DT:H2'	1.66	0.60
6:I:-55:DC:H2''	6:I:-54:DG:H8	1.67	0.60
1:A:83:ARG:HH11	7:U:27:DT:H4'	1.67	0.60
5:K:129:TYR:HH	5:K:166:THR:HG1	1.50	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:U:22:DC:H1'	7:U:23:DT:H5'	1.84	0.60
2:F:20:LYS:CD	7:U:-22:DT:OP1	2.51	0.59
6:I:57:DA:H2''	6:I:58:DT:C7	2.33	0.59
9:J:42:DT:H2''	9:J:43:DA:C8	2.37	0.59
10:M:16:DC:H1'	10:M:17:DG:C8	2.37	0.59
3:C:32:ARG:NH2	4:D:32:GLU:OE1	2.36	0.59
4:D:53:SER:N	8:T:-56:DG:P	2.75	0.59
7:U:-44:DA:H2''	7:U:-43:DT:H71	1.84	0.59
3:G:35:ARG:HD3	6:I:39:DT:OP1	2.03	0.59
2:F:79:LYS:H	6:I:28:DA:P	2.25	0.59
7:U:17:DG:H2''	7:U:18:DA:C8	2.38	0.59
8:T:-68:DG:H2''	8:T:-67:DG:OP2	2.02	0.59
7:U:-17:DC:H2''	7:U:-16:DT:C7	2.33	0.58
7:U:-29:DG:H2''	7:U:-28:DT:C7	2.34	0.58
7:U:-39:DA:H2''	7:U:-38:DG:C8	2.38	0.58
8:T:-50:DA:H2''	8:T:-49:DA:C8	2.39	0.58
1:E:41:TYR:HD2	6:I:10:DC:OP1	1.87	0.58
5:L:222:ARG:NH2	5:L:258:SER:OG	2.36	0.58
7:U:32:DG:N3	7:U:33:DG:C8	2.72	0.58
5:K:124:LYS:NZ	5:K:207:GLU:OE1	2.37	0.57
5:O:124:LYS:NZ	5:O:207:GLU:OE1	2.37	0.57
7:U:-38:DG:H2''	7:U:-37:DG:C8	2.39	0.57
7:U:-27:DC:C2	7:U:-26:DC:C5	2.93	0.57
6:I:5:DA:H4'	6:I:6:DT:OP1	2.04	0.57
7:U:-55:DA:C2	7:U:-54:DA:C6	2.92	0.57
7:U:29:DC:C6	7:U:30:DT:C4	2.92	0.57
8:T:-55:DG:C4	8:T:-54:DT:C5	2.92	0.57
6:I:-50:DT:C2'	6:I:-49:DT:H72	2.34	0.57
8:T:-62:DC:C2	8:T:-61:DC:C4	2.92	0.57
6:I:25:DT:H2''	6:I:26:DG:C8	2.40	0.57
7:U:-41:DG:N7	7:U:-40:DT:H73	2.18	0.57
9:J:52:DT:C2	9:J:53:DC:C5	2.93	0.57
6:I:60:DC:H2''	6:I:61:DA:C8	2.39	0.57
9:J:51:DT:H6	9:J:52:DT:H72	1.57	0.57
5:O:281:GLN:HA	5:O:284:LEU:HD13	1.86	0.57
6:I:29:DC:H2''	6:I:30:DT:H73	1.86	0.57
6:I:-53:DA:H2''	6:I:-52:DA:H8	1.70	0.57
6:I:17:DG:H2''	6:I:18:DG:C8	2.40	0.57
6:I:-5:DC:H2''	6:I:-4:DT:C5	2.40	0.56
7:U:-34:DG:H2''	7:U:-33:DG:C8	2.40	0.56
1:A:108:ASN:ND2	2:B:42:GLY:O	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:66:DC:H2''	6:I:67:DA:C8	2.40	0.56
1:A:62:ILE:O	1:A:93:GLN:NE2	2.37	0.56
1:E:62:ILE:O	1:E:93:GLN:NE2	2.37	0.56
7:U:25:DT:C6	7:U:26:DT:H72	2.39	0.56
9:J:27:DT:C2	9:J:28:DT:C5	2.93	0.56
9:J:40:DG:H2''	9:J:41:DT:OP1	2.02	0.56
5:K:281:GLN:HA	5:K:284:LEU:HD13	1.86	0.56
6:I:-24:DC:C4	6:I:-23:DA:C6	2.94	0.56
2:B:72:TYR:OH	4:D:73:GLU:OE2	2.23	0.56
6:I:-24:DC:H2''	6:I:-23:DA:C8	2.40	0.56
7:U:23:DT:H2''	7:U:24:DG:C8	2.40	0.56
4:H:30:ARG:NH1	7:U:-45:DA:H5'	2.21	0.56
6:I:47:DA:C2	7:U:-46:DG:C2	2.93	0.56
7:U:-8:DC:H2''	7:U:-7:DA:C8	2.40	0.56
6:I:58:DT:H2''	6:I:59:DA:C8	2.41	0.56
8:T:-46:DA:H2''	8:T:-45:DA:H8	1.71	0.56
3:C:17:ARG:CZ	8:T:-45:DA:OP2	2.54	0.55
9:J:44:DG:C8	9:J:45:DT:H72	2.41	0.55
5:K:331:ALA:HB3	5:K:334:ARG:HG3	1.88	0.55
6:I:-1:DA:H2''	6:I:0:DA:C8	2.42	0.55
7:U:-55:DA:C2	7:U:-54:DA:C4	2.94	0.55
7:U:7:DC:H2''	7:U:8:DC:C5	2.41	0.55
7:U:31:DG:C2	7:U:32:DG:C4	2.95	0.55
1:A:83:ARG:NH1	7:U:27:DT:O4'	2.40	0.55
5:K:219:LYS:HG2	10:M:6:DC:OP1	2.06	0.55
7:U:28:DC:H2''	7:U:29:DC:C6	2.41	0.55
8:T:-46:DA:H2''	8:T:-45:DA:C8	2.41	0.55
5:K:90:VAL:HG13	5:K:374:HIS:HB3	1.88	0.55
7:U:-55:DA:N3	7:U:-54:DA:C5	2.74	0.55
7:U:-12:DA:H2''	7:U:-11:DA:OP2	2.06	0.55
2:B:92:ARG:NH1	4:D:73:GLU:OE1	2.39	0.55
6:I:-24:DC:C4	6:I:-23:DA:N6	2.74	0.55
6:I:-55:DC:H2''	6:I:-54:DG:C8	2.41	0.55
7:U:-59:DT:H2''	7:U:-58:DA:N7	2.22	0.55
3:C:77:ARG:HD3	8:T:-56:DG:H4'	1.88	0.55
9:J:70:DG:H4'	9:J:71:DG:OP1	2.05	0.55
5:K:350:ARG:NH2	5:K:367:ASP:OD2	2.40	0.55
5:O:90:VAL:HG13	5:O:374:HIS:HB3	1.88	0.55
6:I:47:DA:N3	7:U:-46:DG:N2	2.54	0.55
6:I:49:DG:H2''	6:I:50:DT:H71	1.88	0.55
3:C:76:THR:N	9:J:60:DG:OP1	2.29	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:-32:DC:C2	6:I:-31:DC:C6	2.95	0.54
7:U:-36:DT:H2''	7:U:-35:DG:C8	2.41	0.54
5:P:238:ARG:HH12	5:P:245:LEU:HD12	1.73	0.54
10:M:11:DA:C2	10:M:12:DA:C4	2.94	0.54
5:K:312:SER:OG	6:I:-46:DA:H5''	2.07	0.54
5:O:350:ARG:NH2	5:O:367:ASP:OD2	2.40	0.54
6:I:-53:DA:C2	6:I:-52:DA:C4	2.94	0.54
7:U:-28:DT:H2''	7:U:-27:DC:C6	2.43	0.54
1:A:108:ASN:HB2	2:B:43:VAL:HG22	1.88	0.54
3:G:58:LEU:HD11	4:H:99:LEU:HD11	1.90	0.54
6:I:38:DC:H2''	6:I:39:DT:H71	1.88	0.54
7:U:-57:DT:H2''	7:U:-56:DC:C5	2.42	0.54
6:I:-36:DC:H2''	6:I:-35:DT:OP2	2.06	0.54
5:K:250:GLN:HG3	5:L:175:SER:HB3	1.90	0.54
10:M:12:DA:C2	10:M:13:DT:C2	2.96	0.54
3:C:117:PRO:HD3	1:E:48:LEU:HD22	1.89	0.54
5:O:219:LYS:HG2	10:Q:6:DC:OP1	2.07	0.54
6:I:53:DC:H2''	6:I:54:DT:OP2	2.08	0.54
6:I:4:DA:H2''	6:I:5:DA:C8	2.43	0.53
5:O:331:ALA:HB3	5:O:334:ARG:HG3	1.88	0.53
4:D:39:TYR:OH	8:T:-55:DG:OP2	2.07	0.53
6:I:-27:DA:H2''	6:I:-26:DA:C8	2.43	0.53
10:M:14:DT:C6	10:M:15:DT:H72	2.43	0.53
5:L:231:LEU:HD23	5:L:234:LEU:HD12	1.90	0.53
6:I:17:DG:O6	7:U:-18:DC:N4	2.41	0.53
7:U:-51:DT:H2''	7:U:-50:DA:C8	2.44	0.53
8:T:-54:DT:H2''	8:T:-53:DG:C8	2.44	0.53
3:C:77:ARG:HD2	8:T:-56:DG:C5'	2.35	0.53
6:I:-1:DA:H2''	6:I:0:DA:H8	1.73	0.53
7:U:-8:DC:C2	7:U:-7:DA:C5	2.97	0.53
9:J:42:DT:C4	9:J:43:DA:N6	2.77	0.53
5:K:288:ARG:HA	5:K:291:GLU:HG2	1.91	0.53
5:K:295:LEU:HD23	5:L:271:GLY:HA3	1.91	0.53
7:U:-56:DC:H2''	7:U:-55:DA:C8	2.44	0.53
5:K:124:LYS:HE3	5:K:126:PHE:HE1	1.74	0.53
7:U:-43:DT:H2''	7:U:-42:DG:C8	2.44	0.53
5:O:124:LYS:HE3	5:O:126:PHE:HE1	1.74	0.53
5:O:105:SER:HB2	5:O:370:LYS:HB2	1.90	0.53
6:I:-54:DG:H2''	6:I:-53:DA:H8	1.74	0.53
6:I:13:DA:C2	6:I:14:DC:C2	2.97	0.53
8:T:-47:DC:H2''	8:T:-46:DA:N7	2.24	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:-24:DC:N3	6:I:-23:DA:C6	2.78	0.52
7:U:1:DT:C2	7:U:2:DC:C4	2.96	0.52
10:Q:16:DC:H1'	10:Q:17:DG:C8	2.44	0.52
5:L:147:ASP:HB3	5:L:151:GLY:H	1.75	0.52
6:I:29:DC:H2''	6:I:30:DT:C7	2.39	0.52
6:I:59:DA:H2''	6:I:60:DC:C6	2.44	0.52
3:G:29:ARG:NH1	4:H:33:SER:O	2.43	0.52
5:K:103:ASN:HD22	5:O:229:ARG:HH11	1.57	0.52
5:K:105:SER:HB2	5:K:370:LYS:HB2	1.90	0.52
7:U:3:DA:H2''	7:U:4:DA:H8	1.74	0.52
3:C:75:LYS:NZ	9:J:61:DG:OP2	2.42	0.52
4:D:73:GLU:OE1	4:D:76:ARG:NH2	2.43	0.52
6:I:19:DA:H2''	6:I:20:DA:C8	2.45	0.52
9:J:56:DC:H2''	9:J:57:DA:N7	2.23	0.52
6:I:3:DC:H2''	6:I:4:DA:C8	2.44	0.52
7:U:32:DG:C4	7:U:33:DG:C8	2.97	0.52
5:O:259:PRO:HG2	10:Q:8:DT:H71	1.92	0.52
5:O:288:ARG:HA	5:O:291:GLU:HG2	1.91	0.52
7:U:-48:DC:H1'	7:U:-47:DT:N1	2.25	0.52
9:J:53:DC:H2''	9:J:54:DA:C8	2.45	0.52
1:E:63:ARG:NH1	6:I:17:DG:C5'	2.73	0.51
4:H:53:SER:HB2	7:U:-55:DA:OP2	2.10	0.51
5:P:153:THR:O	5:P:250:GLN:NE2	2.42	0.51
6:I:37:DC:H2''	6:I:38:DC:C5	2.45	0.51
10:Q:12:DA:C8	10:Q:13:DT:H72	2.45	0.51
7:U:-39:DA:C2	7:U:-38:DG:C5	2.98	0.51
7:U:-10:DG:H2''	7:U:-9:DA:OP2	2.11	0.51
7:U:2:DC:C2	7:U:3:DA:N7	2.78	0.51
2:F:45:ARG:NH1	6:I:8:DG:P	2.84	0.51
5:O:100:LEU:HB3	5:O:324:GLN:HE22	1.75	0.51
5:O:250:GLN:O	5:O:254:ASN:ND2	2.43	0.51
6:I:-38:DA:H5''	6:I:-38:DA:C8	2.45	0.51
10:Q:14:DT:C6	10:Q:15:DT:H72	2.46	0.51
1:A:83:ARG:NH1	7:U:27:DT:H4'	2.22	0.51
1:E:83:ARG:HD3	6:I:27:DG:H5''	1.93	0.51
5:K:100:LEU:HB3	5:K:324:GLN:HE22	1.75	0.51
7:U:-13:DT:C4	7:U:-12:DA:C6	2.99	0.51
4:H:73:GLU:OE1	4:H:76:ARG:NH2	2.43	0.51
6:I:50:DT:C4	6:I:51:DA:C6	2.99	0.51
6:I:69:DC:C2	6:I:70:DC:C5	2.98	0.51
7:U:0:DT:H2''	7:U:1:DT:C7	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:T:-57:DT:O4	9:J:56:DC:N4	2.44	0.51
6:I:-27:DA:C4	6:I:-26:DA:C5	2.99	0.51
6:I:-23:DA:H1'	6:I:-22:DG:H5'	1.93	0.51
6:I:46:DC:H2''	6:I:47:DA:C8	2.46	0.51
7:U:0:DT:C2'	7:U:1:DT:C7	2.89	0.51
6:I:1:DT:H2''	6:I:2:DG:C8	2.46	0.50
8:T:-42:DA:H1'	8:T:-41:DA:H5'	1.93	0.50
2:F:82:THR:N	2:F:85:ASP:OD2	2.42	0.50
6:I:-13:DA:H2''	6:I:-12:DG:H8	1.76	0.50
7:U:-32:DG:H2''	7:U:-31:DA:C8	2.46	0.50
7:U:-28:DT:H2''	7:U:-27:DC:H6	1.75	0.50
6:I:-27:DA:C2	6:I:-26:DA:C2	3.00	0.50
7:U:-39:DA:C4	7:U:-38:DG:N7	2.80	0.50
3:G:44:GLY:HA2	6:I:38:DC:O5'	2.11	0.50
5:L:238:ARG:HE	5:L:242:TRP:HA	1.77	0.50
7:U:-66:DG:H1'	7:U:-65:DT:H5'	1.94	0.50
5:L:238:ARG:HB3	5:L:241:LYS:HB2	1.94	0.50
6:I:-26:DA:C5	6:I:-25:DA:C6	2.99	0.50
6:I:49:DG:C2'	6:I:50:DT:H71	2.42	0.50
7:U:-46:DG:H2''	7:U:-45:DA:C8	2.47	0.50
3:C:29:ARG:CZ	9:J:51:DT:OP1	2.57	0.50
7:U:0:DT:C6	7:U:1:DT:C7	2.82	0.50
8:T:-67:DG:C8	8:T:-66:DT:H72	2.47	0.50
9:J:27:DT:C6	9:J:28:DT:H72	2.46	0.50
9:J:42:DT:H2''	9:J:43:DA:H8	1.77	0.50
2:B:82:THR:N	2:B:85:ASP:OD2	2.42	0.50
6:I:52:DA:H2''	6:I:53:DC:C6	2.47	0.50
7:U:0:DT:C2'	7:U:1:DT:H72	2.42	0.50
6:I:-50:DT:H2''	6:I:-49:DT:H73	1.92	0.50
7:U:32:DG:C2	7:U:33:DG:C4	3.00	0.50
9:J:48:DG:H2'	9:J:49:DT:H72	1.92	0.50
9:J:61:DG:H2''	9:J:62:DG:C8	2.46	0.50
5:K:114:ARG:HH12	10:M:5:DT:H6	1.59	0.49
7:U:0:DT:H2''	7:U:1:DT:C6	2.47	0.49
6:I:-54:DG:C2	6:I:-53:DA:C5	3.00	0.49
8:T:-48:DC:H2''	8:T:-47:DC:C5	2.47	0.49
6:I:-27:DA:C6	6:I:-26:DA:C6	2.99	0.49
7:U:-24:DA:H2''	7:U:-23:DA:C8	2.47	0.49
7:U:25:DT:H2''	7:U:26:DT:H6	1.76	0.49
1:A:83:ARG:HH21	6:I:-24:DC:H4'	1.76	0.49
6:I:34:DC:H2''	6:I:35:DC:C5	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:U:-40:DT:H2''	7:U:-39:DA:H8	1.74	0.49
9:J:70:DG:N2	9:J:71:DG:C2	2.79	0.49
2:F:45:ARG:NH1	6:I:7:DT:O3'	2.45	0.49
6:I:-28:DG:H2''	6:I:-27:DA:H8	1.78	0.49
5:K:229:ARG:HH11	5:O:103:ASN:HD22	1.59	0.49
9:J:22:DC:H2''	9:J:23:DG:C8	2.47	0.49
6:I:-19:DT:H2''	6:I:-18:DT:H71	1.93	0.49
5:P:182:ILE:HG13	5:P:204:ILE:HG21	1.95	0.49
7:U:4:DA:H2	7:U:5:DG:C2	2.29	0.49
10:M:11:DA:C2	10:M:12:DA:C5	3.01	0.49
5:K:45:VAL:O	5:O:281:GLN:NE2	2.46	0.48
8:T:-58:DG:N2	9:J:59:DA:C2	2.81	0.48
9:J:37:DG:H2''	9:J:38:DT:H5'	1.94	0.48
3:C:55:LEU:HD22	4:D:63:VAL:HG13	1.95	0.48
3:G:32:ARG:NH2	4:H:32:GLU:OE1	2.46	0.48
5:K:255:ASN:OD1	5:K:266:HIS:ND1	2.47	0.48
6:I:-54:DG:H2''	6:I:-53:DA:C8	2.49	0.48
3:C:17:ARG:NH2	8:T:-45:DA:OP2	2.46	0.48
5:O:69:ARG:NE	5:O:70:GLU:OE2	2.46	0.48
6:I:15:DT:H2''	6:I:16:DA:C8	2.48	0.48
2:B:51:TYR:HB3	2:B:55:ARG:HH12	1.79	0.48
4:D:83:ARG:NH2	4:D:90:GLU:OE2	2.46	0.48
5:K:250:GLN:O	5:K:254:ASN:ND2	2.43	0.48
5:O:346:VAL:HG22	5:O:352:VAL:HG12	1.96	0.48
7:U:4:DA:H2''	7:U:5:DG:N7	2.28	0.48
5:P:267:GLN:HG2	5:P:273:ASP:HA	1.94	0.48
7:U:-22:DT:H2''	7:U:-21:DA:C8	2.49	0.48
7:U:12:DC:C6	7:U:13:DT:H72	2.48	0.48
8:T:-71:DC:H2''	8:T:-70:DC:C6	2.48	0.48
4:H:83:ARG:NH2	4:H:90:GLU:OE2	2.46	0.48
5:K:62:HIS:NE2	5:K:96:CYS:SG	2.71	0.48
9:J:39:DA:O5'	9:J:39:DA:H8	1.97	0.48
2:B:44:LYS:HD3	3:G:115:LEU:HB3	1.96	0.48
6:I:-50:DT:C2'	6:I:-49:DT:C7	2.91	0.48
7:U:-40:DT:H2''	7:U:-39:DA:N7	2.29	0.48
7:U:-21:DA:H2''	7:U:-20:DT:OP2	2.13	0.48
5:O:255:ASN:OD1	5:O:266:HIS:ND1	2.47	0.48
6:I:-24:DC:C2	6:I:-23:DA:C5	3.01	0.48
7:U:-30:DA:C2'	7:U:-29:DG:C8	2.91	0.48
9:J:51:DT:C6	9:J:52:DT:C5	3.02	0.48
9:J:65:DA:C2	9:J:66:DA:N1	2.82	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:51:TYR:HB3	2:F:55:ARG:HH12	1.79	0.47
6:I:-22:DG:H1'	6:I:-21:DG:H5'	1.96	0.47
5:K:69:ARG:NE	5:K:70:GLU:OE2	2.46	0.47
3:C:77:ARG:CD	8:T:-56:DG:H4'	2.44	0.47
5:K:346:VAL:HG22	5:K:352:VAL:HG12	1.96	0.47
5:O:129:TYR:HH	5:O:166:THR:HG1	1.50	0.47
6:I:21:DT:H2''	6:I:22:DA:C8	2.49	0.47
7:U:-39:DA:N3	7:U:-38:DG:C5	2.83	0.47
8:T:-63:DT:H2''	8:T:-62:DC:C6	2.49	0.47
8:T:-55:DG:C8	8:T:-54:DT:C7	2.98	0.47
9:J:64:DG:C6	9:J:65:DA:C6	3.02	0.47
7:U:-41:DG:C2'	7:U:-40:DT:H71	2.44	0.47
3:G:45:ALA:H	6:I:38:DC:P	2.37	0.47
5:O:250:GLN:HG3	5:P:175:SER:HB3	1.96	0.47
7:U:-44:DA:C2'	7:U:-43:DT:H71	2.44	0.47
7:U:1:DT:H2''	7:U:2:DC:C6	2.49	0.47
2:B:75:HIS:HE2	4:D:90:GLU:HG2	1.79	0.47
1:E:85:GLN:HG2	7:U:-24:DA:OP1	2.14	0.47
5:K:156:TYR:HE2	5:K:173:LEU:HD22	1.80	0.47
6:I:39:DT:H2''	6:I:40:DA:H8	1.75	0.47
7:U:27:DT:H2''	7:U:28:DC:C6	2.50	0.47
2:B:98:TYR:OH	4:H:65:ASP:OD2	2.30	0.47
5:O:214:PRO:HB2	6:I:-41:DA:N3	2.30	0.47
7:U:31:DG:C5	7:U:32:DG:N7	2.83	0.47
5:O:62:HIS:NE2	5:O:96:CYS:SG	2.71	0.47
3:C:54:VAL:HG13	4:D:107:ALA:HB1	1.97	0.47
3:C:115:LEU:HD11	1:E:108:ASN:HD21	1.80	0.47
1:E:84:PHE:O	7:U:-24:DA:H3'	2.15	0.47
3:G:55:LEU:HD22	4:H:63:VAL:HG13	1.97	0.47
6:I:-13:DA:C2	6:I:-12:DG:C4	3.03	0.47
8:T:-55:DG:C8	8:T:-54:DT:H71	2.50	0.47
2:F:80:THR:N	6:I:28:DA:OP1	2.48	0.46
8:T:-51:DA:H2''	8:T:-50:DA:H8	1.77	0.46
3:G:29:ARG:NH2	6:I:49:DG:OP1	2.39	0.46
5:K:192:SER:HB3	6:I:-33:DC:H4'	1.97	0.46
7:U:-55:DA:C4	7:U:-54:DA:N7	2.83	0.46
9:J:27:DT:C2	9:J:28:DT:C4	3.04	0.46
1:A:122:LYS:HG3	1:E:113:HIS:HE1	1.80	0.46
7:U:30:DT:C2	7:U:31:DG:N7	2.83	0.46
6:I:-34:DT:C4	6:I:-33:DC:N4	2.84	0.46
7:U:-5:DT:H2''	7:U:-4:DT:C6	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:45:ARG:CZ	6:I:8:DG:OP1	2.58	0.46
6:I:-26:DA:C6	6:I:-25:DA:C6	3.03	0.46
6:I:36:DA:H2	7:U:-35:DG:N2	2.11	0.46
7:U:5:DG:H2''	7:U:6:DG:C8	2.51	0.46
7:U:31:DG:N1	7:U:32:DG:C6	2.84	0.46
3:C:29:ARG:NH2	9:J:51:DT:OP1	2.49	0.46
1:E:64:LYS:N	6:I:18:DG:OP1	2.42	0.46
5:K:292:LEU:HD11	5:L:268:LEU:HD23	1.98	0.46
10:Q:5:DT:H2''	10:Q:6:DC:C6	2.50	0.46
10:Q:14:DT:C2	10:Q:15:DT:C5	3.04	0.46
1:E:83:ARG:HD3	6:I:27:DG:C5'	2.46	0.46
3:G:62:ILE:O	3:G:66:ALA:N	2.46	0.46
3:C:42:ARG:HB2	4:D:85:THR:HA	1.98	0.46
6:I:-13:DA:H2''	6:I:-12:DG:C8	2.50	0.46
7:U:-39:DA:C2	7:U:-38:DG:C6	3.03	0.46
9:J:54:DA:C4	9:J:55:DC:C5	3.02	0.46
5:O:114:ARG:NH2	10:Q:5:DT:C7	2.79	0.46
5:O:156:TYR:HE2	5:O:173:LEU:HD22	1.80	0.46
6:I:-38:DA:C2	9:J:39:DA:C2	3.04	0.46
6:I:37:DC:C2	6:I:38:DC:C4	3.04	0.46
7:U:32:DG:C2	7:U:33:DG:C8	3.03	0.46
8:T:-50:DA:H2''	8:T:-49:DA:H8	1.81	0.46
4:H:85:THR:OG1	7:U:-34:DG:OP1	2.21	0.45
7:U:-59:DT:H2''	7:U:-58:DA:C8	2.51	0.45
7:U:11:DG:H1'	7:U:12:DC:H5'	1.97	0.45
5:K:347:LEU:HD21	10:M:1:DA:C8	2.47	0.45
6:I:-53:DA:C6	6:I:-52:DA:C6	3.04	0.45
7:U:32:DG:C2	7:U:33:DG:C5	3.05	0.45
10:Q:7:DA:C8	10:Q:8:DT:C7	3.00	0.45
5:O:225:SER:HB2	6:I:-42:DC:O4'	2.16	0.45
5:O:230:LEU:HD23	5:O:249:VAL:HG22	1.98	0.45
8:T:-46:DA:H1'	8:T:-45:DA:C8	2.51	0.45
3:C:31:HIS:CG	3:C:48:PRO:HG3	2.52	0.45
1:E:123:ASP:O	1:E:127:ALA:N	2.49	0.45
5:K:230:LEU:HD23	5:K:249:VAL:HG22	1.98	0.45
6:I:-45:DT:H2''	6:I:-44:DG:C8	2.51	0.45
6:I:59:DA:H2''	6:I:60:DC:C5	2.52	0.45
7:U:29:DC:H1'	7:U:30:DT:C6	2.50	0.45
1:E:63:ARG:HD2	6:I:17:DG:H4'	1.97	0.45
7:U:31:DG:H2''	7:U:32:DG:OP2	2.17	0.45
8:T:-49:DA:H2''	8:T:-48:DC:C6	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:53:SER:CB	8:T:-56:DG:OP2	2.62	0.45
6:I:55:DT:H2''	6:I:56:DG:H8	1.81	0.45
10:M:10:DG:C2	10:M:11:DA:C4	3.05	0.45
5:K:313:ARG:CG	6:I:-46:DA:C4'	2.94	0.45
10:M:17:DG:C8	10:M:17:DG:H5'	2.52	0.45
6:I:-53:DA:C4	6:I:-52:DA:N7	2.85	0.45
7:U:28:DC:O3'	7:U:29:DC:H2'	2.16	0.45
5:K:108:ALA:HA	6:I:-44:DG:OP1	2.17	0.45
6:I:-50:DT:C6	6:I:-49:DT:H72	2.52	0.45
6:I:-32:DC:N3	6:I:-31:DC:C4	2.85	0.45
7:U:-16:DT:H2''	7:U:-15:DA:C8	2.52	0.45
7:U:-7:DA:H2''	7:U:-6:DA:C8	2.52	0.45
1:E:40:ARG:NH1	6:I:10:DC:H5'	2.31	0.45
1:E:69:ARG:HE	2:F:25:ASN:ND2	2.15	0.45
2:F:20:LYS:HD3	7:U:-22:DT:OP1	2.17	0.44
3:G:44:GLY:HA2	6:I:38:DC:C5'	2.47	0.44
5:O:350:ARG:HD2	5:O:366:ILE:HD11	1.99	0.44
7:U:-35:DG:H2''	7:U:-34:DG:C8	2.52	0.44
8:T:-70:DC:H2''	8:T:-69:DA:C8	2.51	0.44
6:I:-26:DA:C2	6:I:-25:DA:C2	3.05	0.44
7:U:-28:DT:O2	7:U:-27:DC:O4'	2.35	0.44
7:U:2:DC:C2	7:U:3:DA:C5	3.05	0.44
7:U:26:DT:H2''	7:U:27:DT:C6	2.52	0.44
9:J:37:DG:H2''	9:J:38:DT:C5'	2.48	0.44
1:A:128:ARG:HH11	2:B:57:VAL:HG22	1.82	0.44
3:G:31:HIS:CG	3:G:48:PRO:HG3	2.52	0.44
3:G:79:ILE:H	3:G:82:HIS:HD2	1.64	0.44
7:U:-68:DC:H2''	7:U:-67:DT:C6	2.52	0.44
7:U:3:DA:H2''	7:U:4:DA:C8	2.51	0.44
9:J:44:DG:C2'	9:J:45:DT:H72	2.48	0.44
5:K:350:ARG:HD2	5:K:366:ILE:HD11	1.99	0.44
5:O:129:TYR:OH	5:O:166:THR:OG1	2.26	0.44
7:U:28:DC:H2''	7:U:29:DC:H6	1.81	0.44
3:C:79:ILE:H	3:C:82:HIS:HD2	1.64	0.44
5:K:313:ARG:CG	6:I:-46:DA:H4'	2.31	0.44
6:I:-33:DC:C2	6:I:-32:DC:C6	3.05	0.44
6:I:-8:DG:H2''	6:I:-7:DG:C8	2.52	0.44
6:I:55:DT:H2''	6:I:56:DG:C8	2.52	0.44
8:T:-56:DG:H2''	8:T:-55:DG:N7	2.32	0.44
8:T:-47:DC:H2''	8:T:-46:DA:C8	2.53	0.44
9:J:45:DT:H2''	9:J:46:DT:H72	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:3:DC:H2''	6:I:4:DA:N7	2.32	0.44
6:I:13:DA:C5	6:I:14:DC:C4	3.06	0.44
6:I:69:DC:H2''	6:I:70:DC:C6	2.53	0.44
7:U:1:DT:N1	7:U:2:DC:C5	2.85	0.44
9:J:22:DC:H2''	9:J:23:DG:H8	1.83	0.44
5:O:365:SER:OG	5:O:366:ILE:N	2.50	0.44
6:I:68:DG:H2''	6:I:69:DC:C6	2.53	0.44
7:U:-45:DA:H4'	7:U:-44:DA:OP1	2.16	0.44
8:T:-58:DG:H2''	8:T:-57:DT:H71	1.99	0.44
5:O:295:LEU:HA	5:O:298:ILE:HD12	2.00	0.44
7:U:-24:DA:H2''	7:U:-23:DA:H8	1.83	0.44
5:K:365:SER:OG	5:K:366:ILE:N	2.50	0.44
7:U:-14:DG:H4'	7:U:-13:DT:OP1	2.18	0.44
9:J:27:DT:H2''	9:J:28:DT:C7	2.47	0.44
9:J:33:DG:C5	9:J:34:DA:N6	2.85	0.44
10:Q:15:DT:C4	10:Q:16:DC:N4	2.86	0.44
10:M:11:DA:C4	10:M:12:DA:C5	3.06	0.44
6:I:5:DA:N3	6:I:6:DT:C2	2.86	0.43
5:L:155:LEU:HD12	5:L:250:GLN:HB2	2.00	0.43
5:O:163:THR:HG23	5:O:195:PHE:HB2	2.00	0.43
6:I:38:DC:H2'	6:I:39:DT:H71	1.97	0.43
7:U:14:DG:N2	7:U:15:DG:N2	2.66	0.43
5:K:163:THR:HG23	5:K:195:PHE:HB2	2.00	0.43
6:I:-49:DT:C2	6:I:-48:DC:C5	3.07	0.43
9:J:23:DG:H2''	9:J:24:DA:C8	2.53	0.43
9:J:53:DC:H2''	9:J:54:DA:H8	1.82	0.43
10:Q:12:DA:C2	10:Q:13:DT:C2	3.06	0.43
6:I:-27:DA:C2	6:I:-26:DA:C4	3.07	0.43
6:I:18:DG:H2''	6:I:19:DA:C8	2.53	0.43
4:D:52:SER:CB	8:T:-56:DG:OP1	2.61	0.43
5:O:58:VAL:HG13	5:O:76:ILE:HD11	2.01	0.43
6:I:-43:DA:C5	6:I:-42:DC:N4	2.87	0.43
6:I:-32:DC:H2''	6:I:-31:DC:H6	1.82	0.43
6:I:-30:DA:H2''	6:I:-29:DG:C8	2.54	0.43
6:I:29:DC:C2	6:I:30:DT:C5	3.06	0.43
7:U:29:DC:C5	7:U:30:DT:O4	2.71	0.43
9:J:28:DT:C2	9:J:29:DC:C5	3.07	0.43
9:J:48:DG:H2''	9:J:49:DT:C5	2.51	0.43
7:U:-42:DG:H2''	7:U:-41:DG:H8	1.80	0.43
10:Q:10:DG:C2	10:Q:11:DA:C4	3.06	0.43
1:A:83:ARG:HH11	7:U:27:DT:H5'	1.81	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:K:161:PRO:O	6:I:-34:DT:H4'	2.18	0.43
8:T:-55:DG:H2''	8:T:-54:DT:OP2	2.18	0.43
9:J:26:DA:C4	9:J:27:DT:C6	3.07	0.43
10:M:14:DT:C2	10:M:15:DT:C5	3.07	0.43
1:E:50:GLU:OE1	2:F:39:ARG:NE	2.48	0.43
5:K:79:LEU:HD13	5:O:278:PHE:HA	2.01	0.43
7:U:14:DG:C2	7:U:15:DG:C2	3.07	0.43
5:K:58:VAL:HG13	5:K:76:ILE:HD11	2.01	0.43
6:I:35:DC:C2	6:I:36:DA:C6	3.06	0.43
5:K:193:SER:N	6:I:-32:DC:OP1	2.41	0.43
6:I:-13:DA:C4	6:I:-12:DG:N7	2.87	0.43
6:I:65:DA:C2	7:U:-64:DG:C2	3.07	0.43
7:U:-45:DA:H2''	7:U:-44:DA:C8	2.53	0.43
7:U:-41:DG:H2''	7:U:-40:DT:OP2	2.19	0.43
4:D:50:GLY:HA3	8:T:-55:DG:OP1	2.19	0.42
1:E:85:GLN:HA	7:U:-24:DA:O5'	2.19	0.42
7:U:30:DT:N1	7:U:31:DG:C8	2.87	0.42
3:G:44:GLY:HA2	6:I:38:DC:H5''	2.01	0.42
5:K:356:ASP:HB2	5:K:360:ASN:HB3	2.01	0.42
6:I:-54:DG:C4	6:I:-53:DA:N7	2.86	0.42
6:I:-53:DA:C4	6:I:-52:DA:C8	3.07	0.42
6:I:38:DC:C2	6:I:39:DT:C5	3.06	0.42
6:I:64:DC:H2''	6:I:65:DA:OP2	2.19	0.42
8:T:-61:DC:H2''	8:T:-60:DC:C6	2.53	0.42
7:U:32:DG:N2	7:U:33:DG:C4	2.87	0.42
9:J:44:DG:H2''	9:J:45:DT:C7	2.49	0.42
1:A:96:SER:HB2	2:B:58:LEU:HD11	2.00	0.42
3:C:75:LYS:NZ	9:J:60:DG:H3'	2.17	0.42
6:I:-49:DT:C2	6:I:-48:DC:C6	3.08	0.42
1:A:123:ASP:O	1:A:127:ALA:N	2.49	0.42
1:E:63:ARG:NH2	6:I:17:DG:H5''	2.33	0.42
4:H:58:ILE:O	4:H:62:PHE:N	2.48	0.42
7:U:1:DT:H2''	7:U:2:DC:H6	1.84	0.42
7:U:25:DT:H2''	7:U:26:DT:C7	2.49	0.42
5:O:251:LEU:HD21	5:P:178:ILE:HD11	2.01	0.42
6:I:-56:DG:H2''	6:I:-55:DC:C5	2.55	0.42
7:U:-56:DC:C2	7:U:-55:DA:N7	2.87	0.42
10:M:11:DA:N3	10:M:12:DA:C4	2.88	0.42
1:A:56:LYS:NZ	7:U:-65:DT:OP1	2.53	0.42
1:E:103:LEU:O	1:E:107:THR:N	2.53	0.42
5:K:295:LEU:HA	5:K:298:ILE:HD12	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:U:-39:DA:C4	7:U:-38:DG:C5	3.08	0.42
6:I:-37:DC:H2''	6:I:-36:DC:H6	1.85	0.42
5:O:109:SER:OG	5:O:366:ILE:O	2.38	0.42
5:O:113:LEU:N	10:Q:4:DG:OP1	2.49	0.42
5:O:114:ARG:HH12	10:Q:5:DT:H2'	1.85	0.42
5:P:255:ASN:HA	5:P:264:THR:HB	2.01	0.42
7:U:-56:DC:C2	7:U:-55:DA:C5	3.08	0.42
8:T:-46:DA:C1'	8:T:-45:DA:C8	3.02	0.42
6:I:-19:DT:H2''	6:I:-18:DT:C6	2.55	0.42
7:U:-41:DG:C4	7:U:-40:DT:C5	3.08	0.42
7:U:24:DG:C2'	7:U:25:DT:H71	2.50	0.42
9:J:27:DT:C2'	9:J:28:DT:H72	2.50	0.42
6:I:-34:DT:H2''	6:I:-33:DC:OP2	2.19	0.41
6:I:36:DA:H2''	6:I:37:DC:C5	2.54	0.41
7:U:-26:DC:H2''	7:U:-25:DA:C8	2.54	0.41
9:J:66:DA:H2''	9:J:67:DC:C6	2.55	0.41
9:J:70:DG:C2	9:J:71:DG:C6	3.08	0.41
10:M:10:DG:C2'	10:M:11:DA:H8	2.32	0.41
1:A:103:LEU:O	1:A:107:THR:N	2.53	0.41
10:M:10:DG:O5'	10:M:10:DG:H8	2.02	0.41
10:M:15:DT:C4	10:M:16:DC:N4	2.87	0.41
6:I:22:DA:H2''	6:I:23:DT:OP2	2.21	0.41
6:I:38:DC:C6	6:I:39:DT:C7	3.03	0.41
7:U:-27:DC:H2''	7:U:-26:DC:C6	2.55	0.41
7:U:16:DT:H2''	7:U:17:DG:C8	2.55	0.41
7:U:29:DC:H2''	7:U:30:DT:H72	2.01	0.41
9:J:41:DT:H2''	9:J:42:DT:H71	2.02	0.41
6:I:-43:DA:C4	6:I:-42:DC:C4	3.09	0.41
6:I:-6:DC:H2''	6:I:-5:DC:C6	2.55	0.41
6:I:50:DT:O4	6:I:51:DA:N6	2.53	0.41
7:U:-41:DG:N9	7:U:-40:DT:H71	2.34	0.41
7:U:-40:DT:C2'	7:U:-39:DA:C8	2.99	0.41
1:A:128:ARG:NH2	1:A:133:GLU:O	2.53	0.41
2:F:45:ARG:CZ	6:I:7:DT:C3'	2.97	0.41
6:I:29:DC:C2'	6:I:30:DT:C7	2.98	0.41
7:U:30:DT:H2''	7:U:31:DG:H5'	2.03	0.41
10:Q:1:DA:H2''	10:Q:2:DT:H72	2.02	0.41
5:K:348:ASN:OD1	5:K:351:THR:N	2.53	0.41
6:I:-33:DC:N3	6:I:-32:DC:C5	2.89	0.41
6:I:42:DC:H2''	6:I:43:DA:C8	2.56	0.41
7:U:-55:DA:N3	7:U:-54:DA:C8	2.88	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:J:37:DG:C2'	9:J:38:DT:H5'	2.51	0.41
10:M:11:DA:N3	10:M:12:DA:C5	2.89	0.41
3:C:29:ARG:HH22	9:J:51:DT:P	2.44	0.41
3:C:100:VAL:HG11	2:F:98:TYR:CE2	2.55	0.41
5:K:292:LEU:HD22	5:L:271:GLY:HA2	2.01	0.41
5:L:231:LEU:HD21	5:L:253:LEU:HD11	2.02	0.41
5:O:141:TYR:CD2	5:O:161:PRO:HD3	2.56	0.41
5:O:356:ASP:HB2	5:O:360:ASN:HB3	2.01	0.41
7:U:0:DT:H2''	7:U:1:DT:H6	1.85	0.41
9:J:23:DG:H2''	9:J:24:DA:H8	1.86	0.41
9:J:24:DA:H2''	9:J:25:DA:C8	2.55	0.41
9:J:65:DA:H2''	9:J:66:DA:C8	2.56	0.41
6:I:-39:DT:H6	6:I:-39:DT:H5''	1.85	0.41
6:I:-19:DT:C2'	6:I:-18:DT:H71	2.50	0.41
6:I:35:DC:H2''	6:I:36:DA:C8	2.56	0.41
9:J:69:DT:H2''	9:J:70:DG:C8	2.56	0.41
10:Q:10:DG:O5'	10:Q:10:DG:H8	2.03	0.41
3:G:63:LEU:HA	3:G:66:ALA:HB3	2.03	0.41
6:I:41:DC:H6	6:I:41:DC:H2'	1.67	0.41
7:U:-43:DT:C2	7:U:-42:DG:C5	3.09	0.41
9:J:45:DT:H2''	9:J:46:DT:C5	2.55	0.41
5:K:132:PRO:HG2	9:J:38:DT:H4'	2.03	0.41
6:I:-25:DA:H2''	6:I:-24:DC:C5	2.56	0.41
6:I:5:DA:C2	6:I:6:DT:O2	2.74	0.41
8:T:-55:DG:C2	8:T:-54:DT:C2	3.08	0.41
5:O:114:ARG:HH22	10:Q:5:DT:C7	2.35	0.40
5:P:134:PRO:HB2	5:P:239:PRO:HA	2.02	0.40
6:I:-13:DA:C2	6:I:-12:DG:C5	3.09	0.40
7:U:6:DG:H2''	7:U:7:DC:C6	2.56	0.40
7:U:17:DG:C4	7:U:18:DA:C5	3.08	0.40
10:Q:15:DT:C4	10:Q:16:DC:C4	3.09	0.40
10:Q:17:DG:C8	10:Q:17:DG:H5'	2.56	0.40
5:K:109:SER:OG	5:K:366:ILE:O	2.38	0.40
5:K:222:ARG:HG2	10:M:6:DC:C5'	2.51	0.40
6:I:-28:DG:H2''	6:I:-27:DA:C8	2.55	0.40
6:I:-5:DC:H2''	6:I:-4:DT:C6	2.56	0.40
7:U:-48:DC:O2	7:U:-47:DT:C2	2.74	0.40
7:U:-41:DG:N9	7:U:-40:DT:C7	2.85	0.40
5:O:295:LEU:HD23	5:P:271:GLY:HA3	2.03	0.40
6:I:-25:DA:N6	7:U:24:DG:O6	2.54	0.40
6:I:-3:DT:C2	6:I:-2:DG:C5	3.09	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:I:60:DC:C4	6:I:61:DA:N6	2.90	0.40
7:U:-33:DG:H2''	7:U:-32:DG:C8	2.56	0.40
10:Q:7:DA:C8	10:Q:8:DT:H73	2.56	0.40
10:Q:11:DA:C2	10:Q:12:DA:C4	3.09	0.40
5:O:192:SER:HB3	9:J:44:DG:H5''	2.04	0.40
5:O:292:LEU:HD22	5:P:271:GLY:HA2	2.03	0.40
7:U:27:DT:C4	7:U:28:DC:N4	2.90	0.40
7:U:31:DG:N1	7:U:32:DG:C5	2.89	0.40
8:T:-70:DC:H2''	8:T:-69:DA:N7	2.36	0.40
3:C:100:VAL:HG22	2:F:96:THR:HB	2.02	0.40
5:O:348:ASN:OD1	5:O:351:THR:N	2.53	0.40
5:P:134:PRO:HA	5:P:135:PRO:HD3	1.90	0.40
7:U:0:DT:C2	7:U:1:DT:C5	3.10	0.40
10:M:17:DG:H2''	10:M:18:DC:C6	2.57	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	95/136 (70%)	92 (97%)	3 (3%)	0	100	100
1	E	95/136 (70%)	92 (97%)	3 (3%)	0	100	100
2	B	81/103 (79%)	80 (99%)	1 (1%)	0	100	100
2	F	81/103 (79%)	80 (99%)	1 (1%)	0	100	100
3	C	108/130 (83%)	105 (97%)	3 (3%)	0	100	100
3	G	108/130 (83%)	105 (97%)	3 (3%)	0	100	100
4	D	92/126 (73%)	85 (92%)	7 (8%)	0	100	100
4	H	92/126 (73%)	85 (92%)	7 (8%)	0	100	100
5	K	336/395 (85%)	311 (93%)	25 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	L	137/395 (35%)	132 (96%)	5 (4%)	0	100	100
5	O	336/395 (85%)	311 (93%)	25 (7%)	0	100	100
5	P	153/395 (39%)	145 (95%)	8 (5%)	0	100	100
All	All	1714/2570 (67%)	1623 (95%)	91 (5%)	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	82/110 (74%)	82 (100%)	0	100	100
1	E	82/110 (74%)	82 (100%)	0	100	100
2	B	68/79 (86%)	68 (100%)	0	100	100
2	F	68/79 (86%)	68 (100%)	0	100	100
3	C	85/99 (86%)	83 (98%)	2 (2%)	49	69
3	G	85/99 (86%)	83 (98%)	2 (2%)	49	69
4	D	81/106 (76%)	81 (100%)	0	100	100
4	H	81/106 (76%)	81 (100%)	0	100	100
5	K	305/354 (86%)	305 (100%)	0	100	100
5	L	125/354 (35%)	125 (100%)	0	100	100
5	O	305/354 (86%)	305 (100%)	0	100	100
5	P	139/354 (39%)	138 (99%)	1 (1%)	84	90
All	All	1506/2204 (68%)	1501 (100%)	5 (0%)	92	95

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	89	ASN
3	C	110	ASN

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Mol	Chain	Res	Type
3	G	89	ASN
3	G	110	ASN
5	P	117	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	82	HIS
3	C	89	ASN
3	C	110	ASN
2	F	25	ASN
3	G	82	HIS
3	G	89	ASN
3	G	110	ASN
5	K	60	GLN
5	K	280	ASN
5	K	324	GLN
5	O	280	ASN
5	O	324	GLN
5	P	254	ASN
5	P	275	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

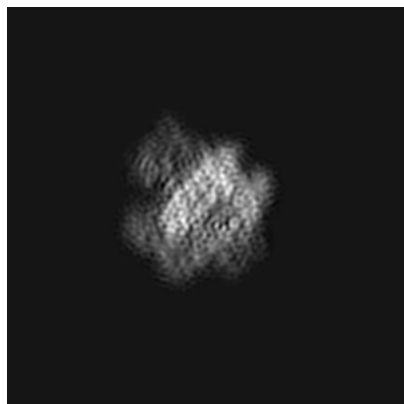
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-4960. These allow visual inspection of the internal detail of the map and identification of artifacts.

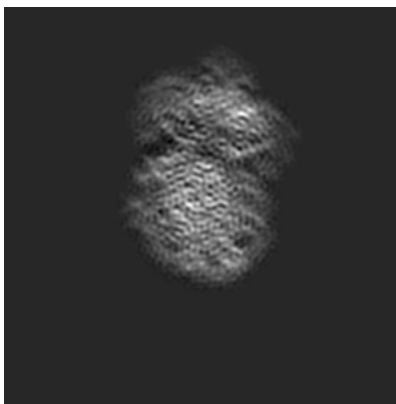
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

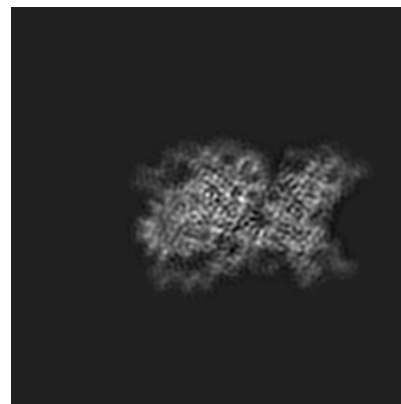
6.1.1 Primary map



X

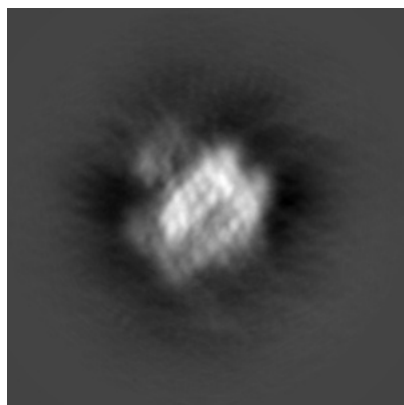


Y

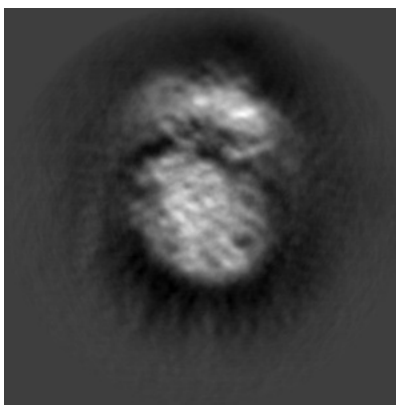


Z

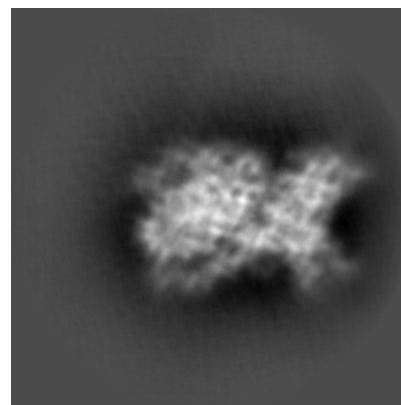
6.1.2 Raw map



X



Y

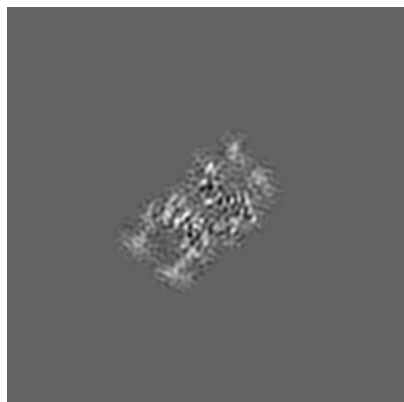


Z

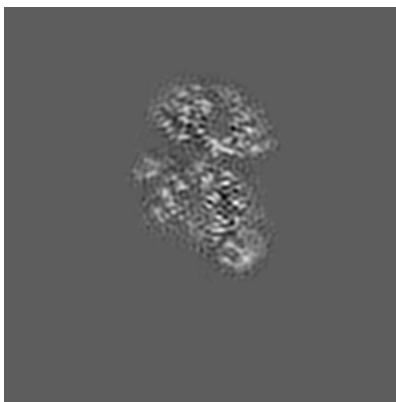
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

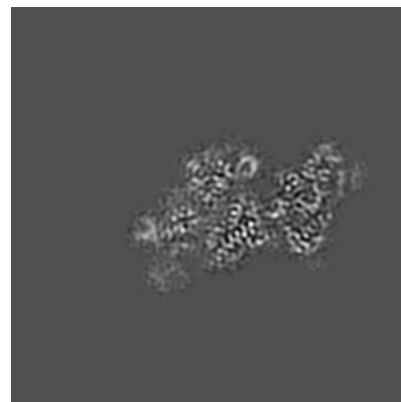
6.2.1 Primary map



X Index: 120

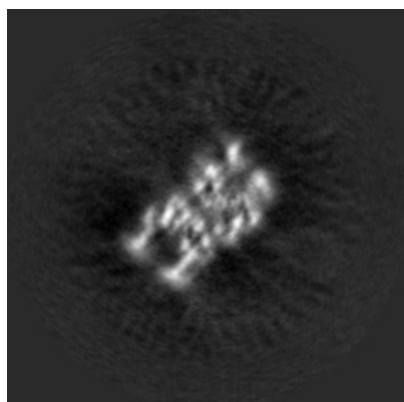


Y Index: 120

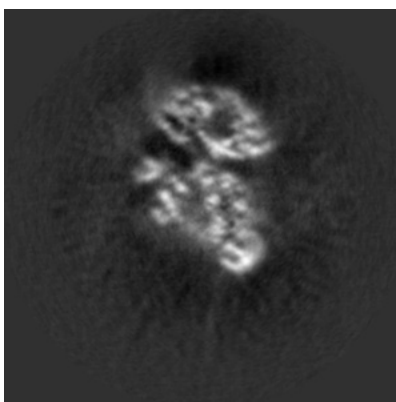


Z Index: 120

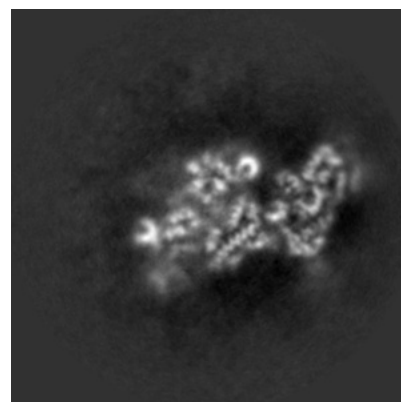
6.2.2 Raw map



X Index: 120



Y Index: 120

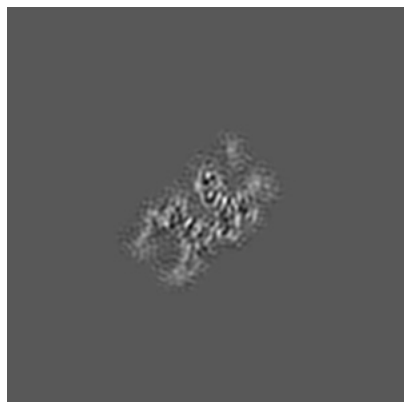


Z Index: 120

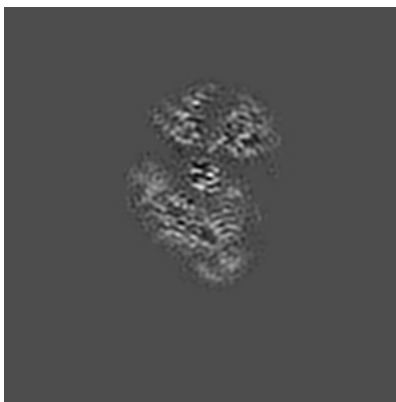
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

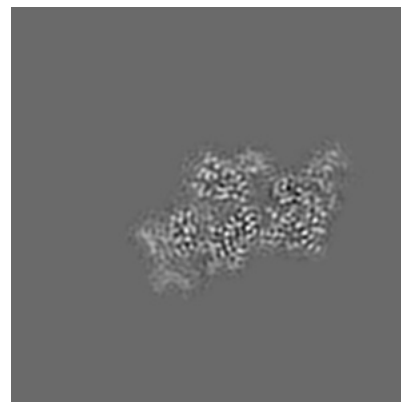
6.3.1 Primary map



X Index: 122

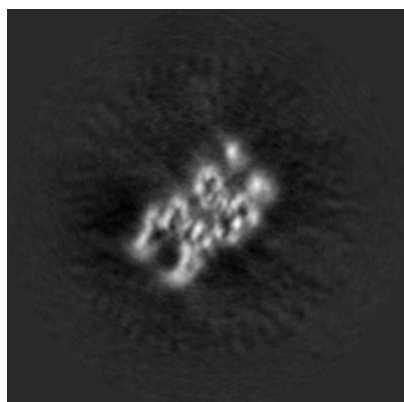


Y Index: 112

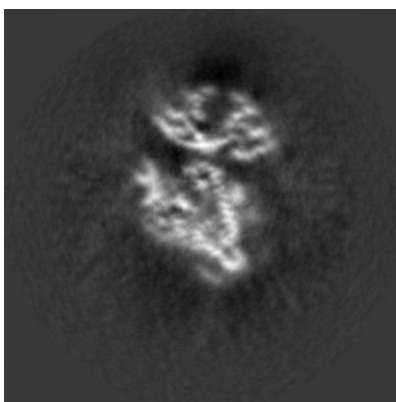


Z Index: 114

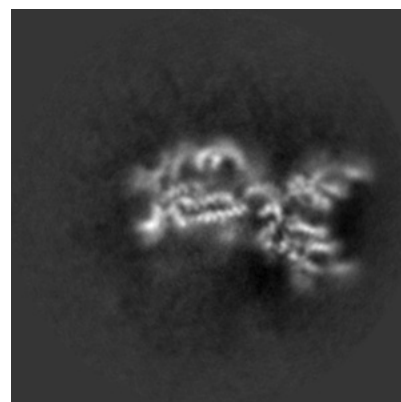
6.3.2 Raw map



X Index: 122



Y Index: 114

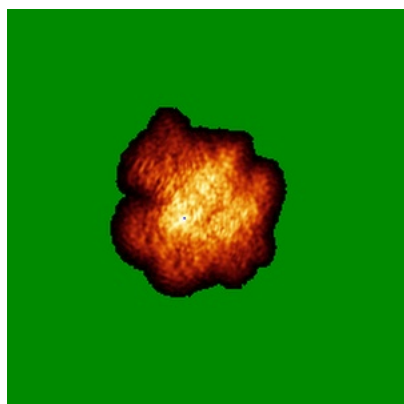


Z Index: 133

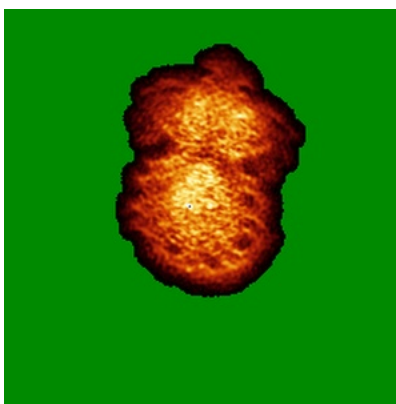
The images above show the largest variance slices of the map in three orthogonal directions.

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

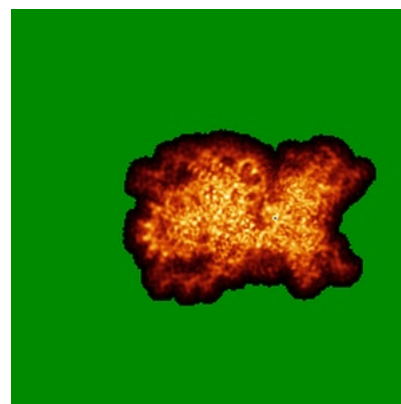
6.4.1 Primary map



X

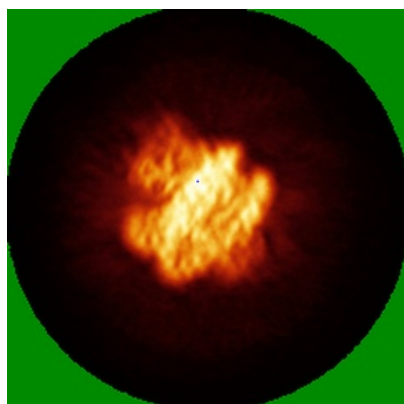


Y

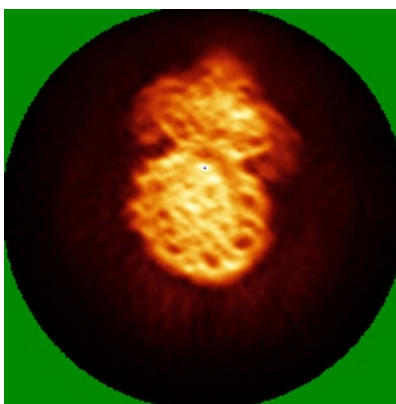


Z

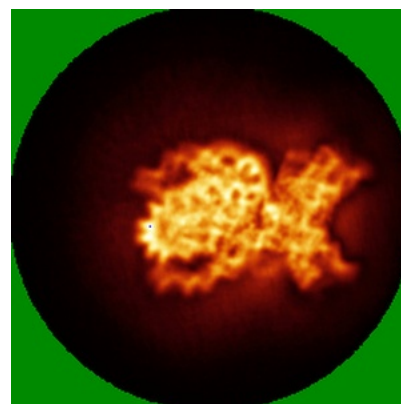
6.4.2 Raw map



X



Y

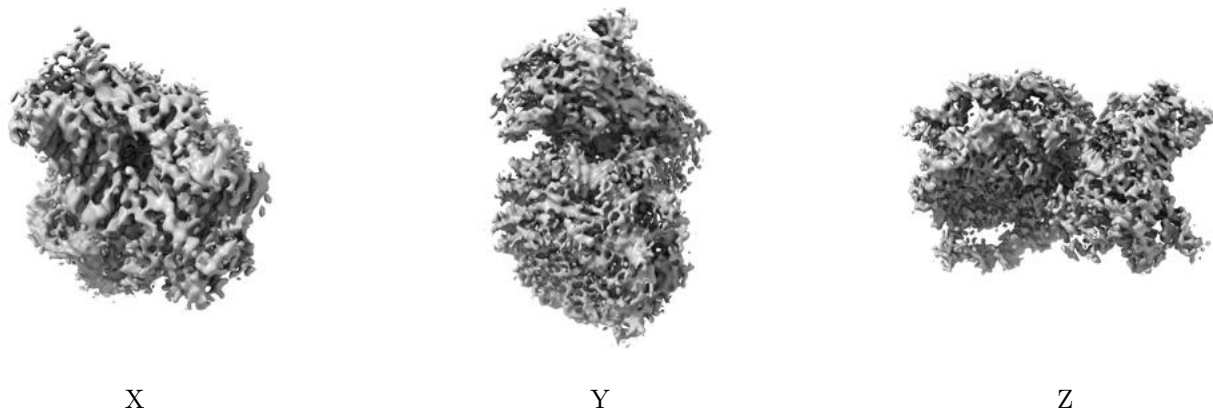


Z

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

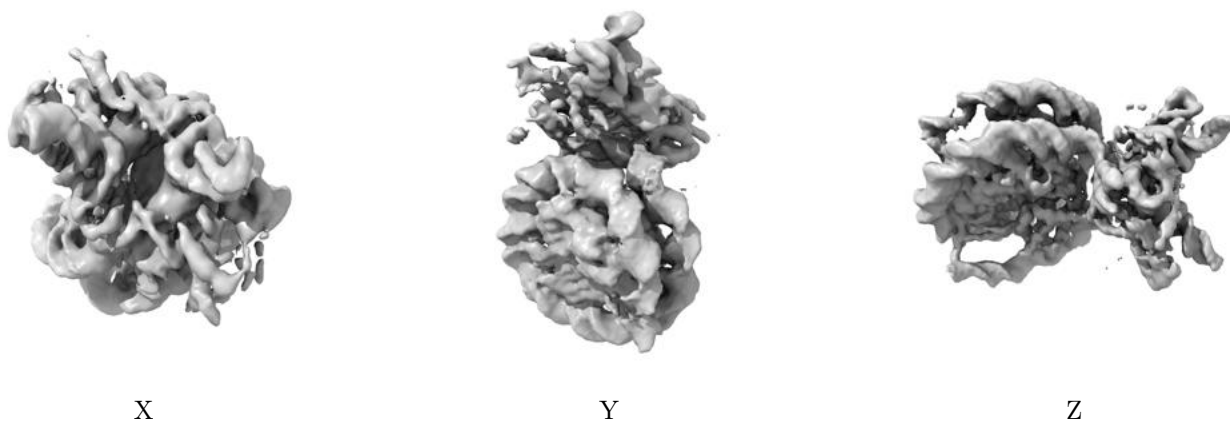
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.07. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

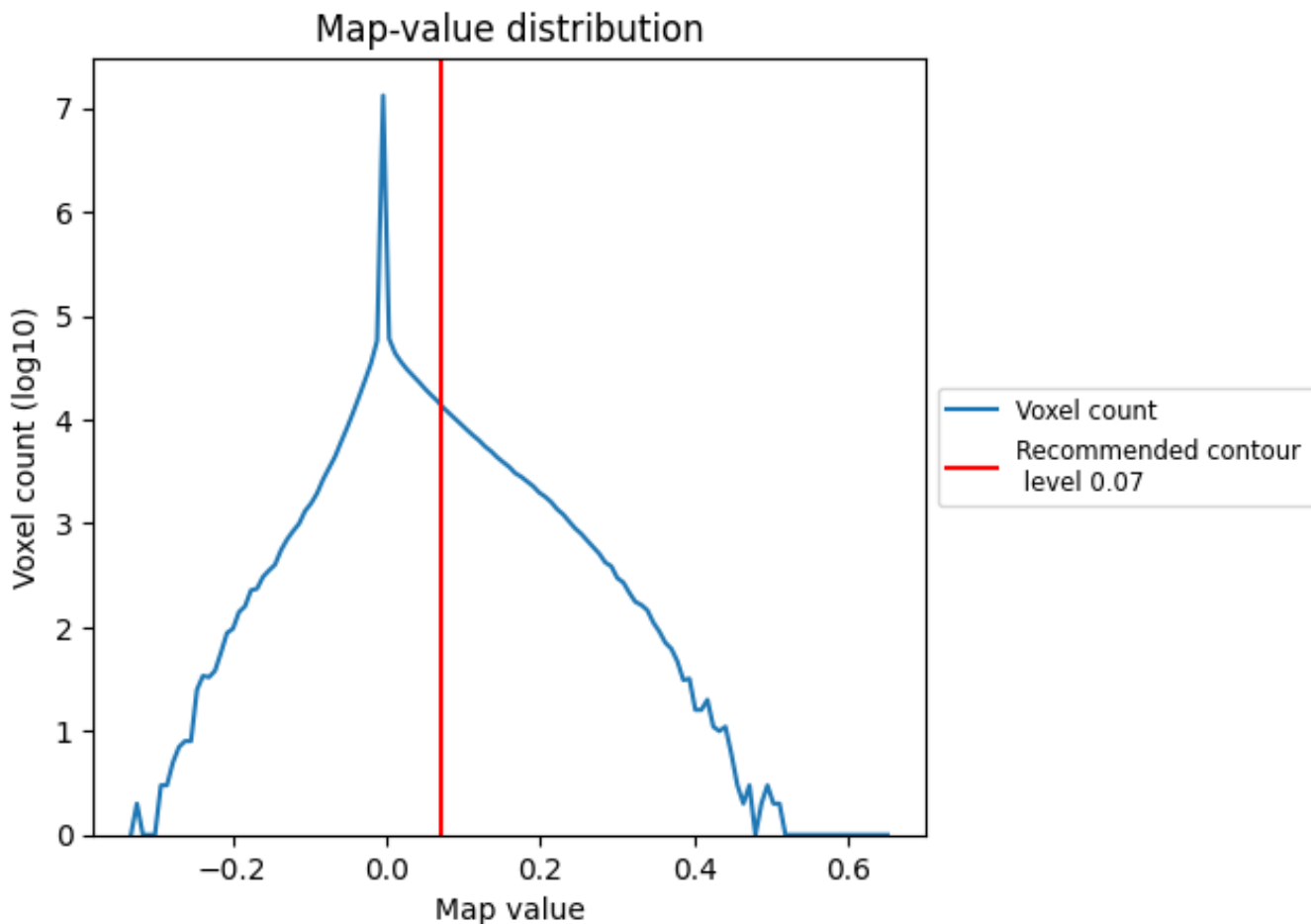
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

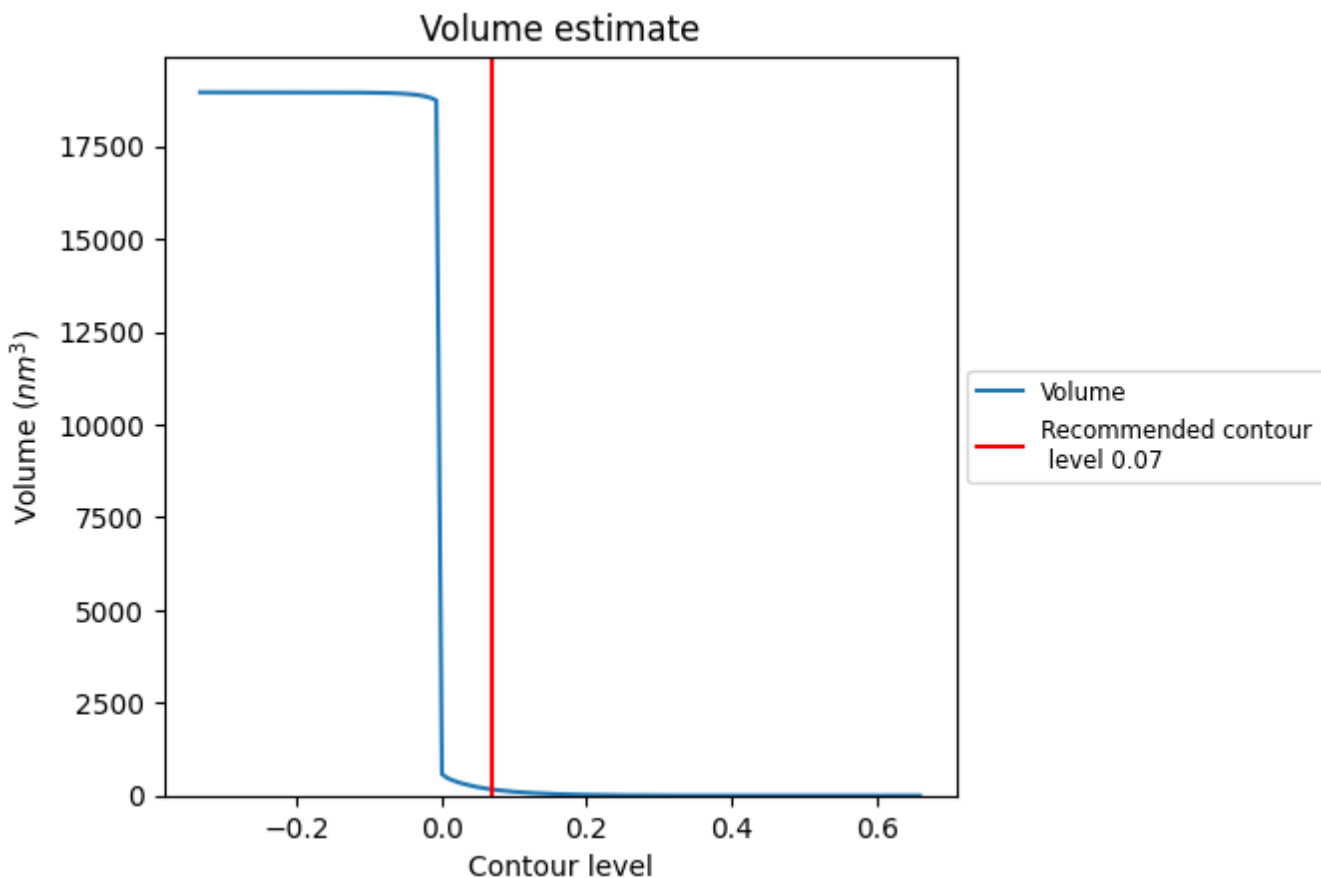
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

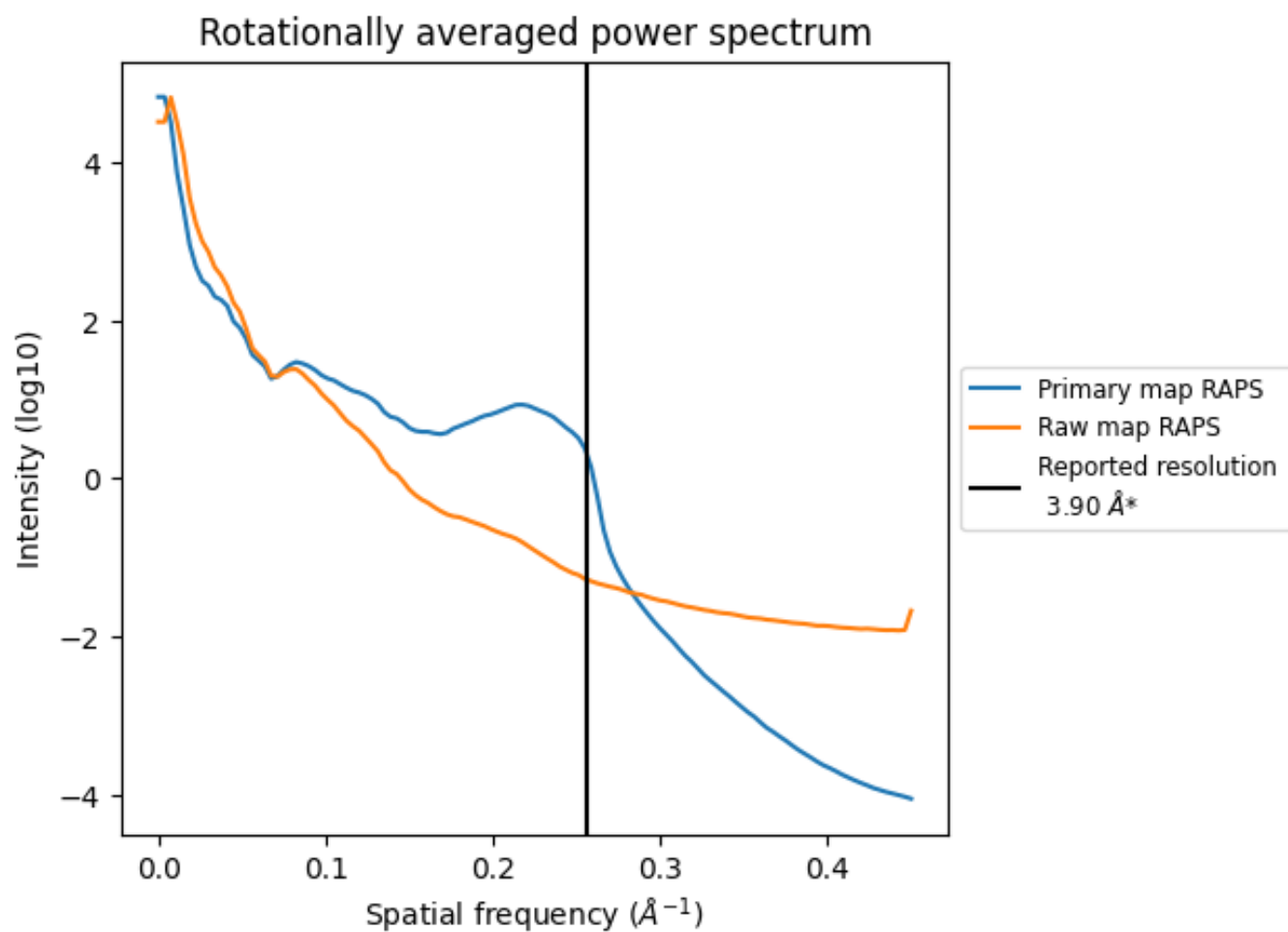
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 165 nm³; this corresponds to an approximate mass of 149 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

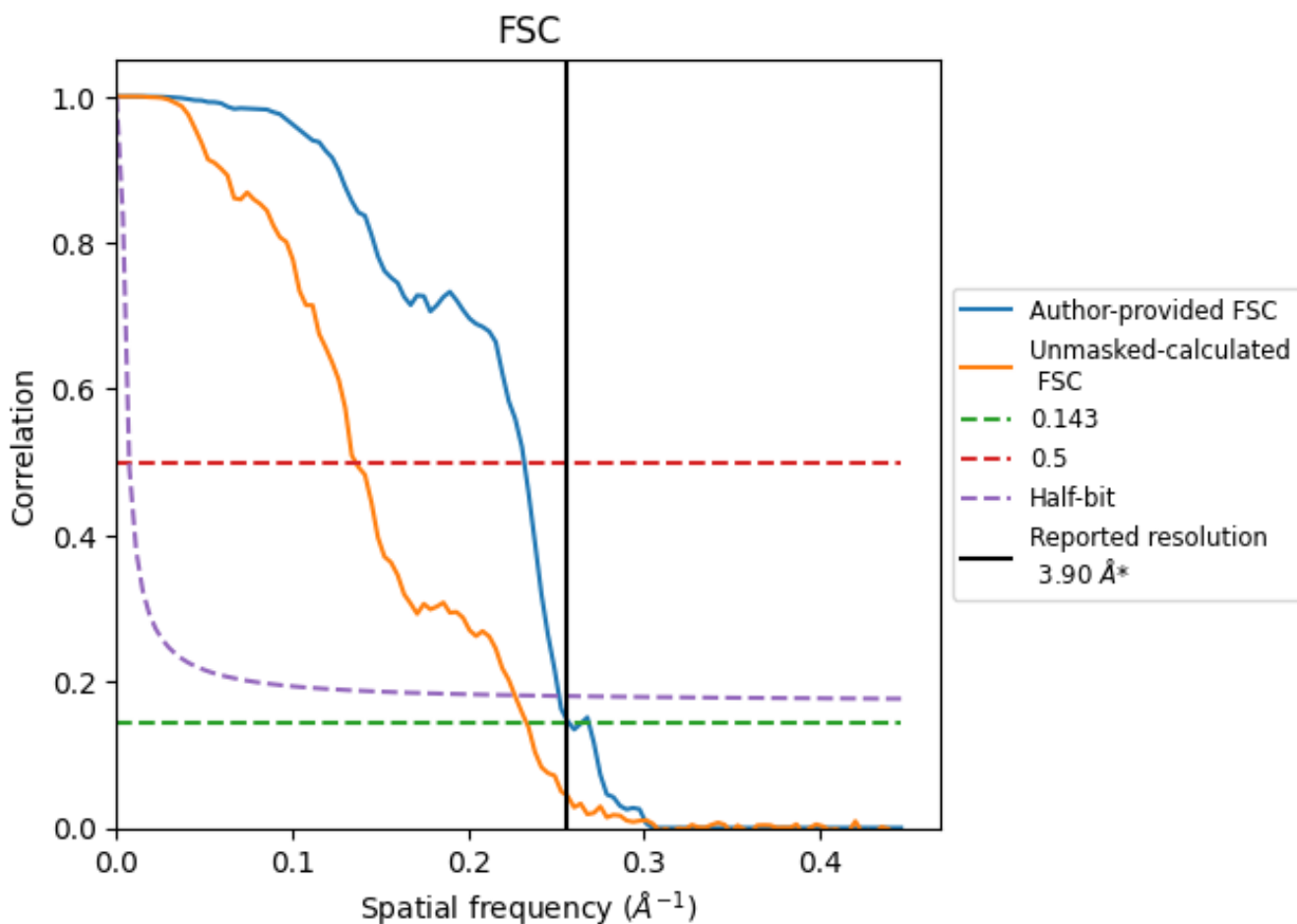


*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

8.2 Resolution estimates [i](#)

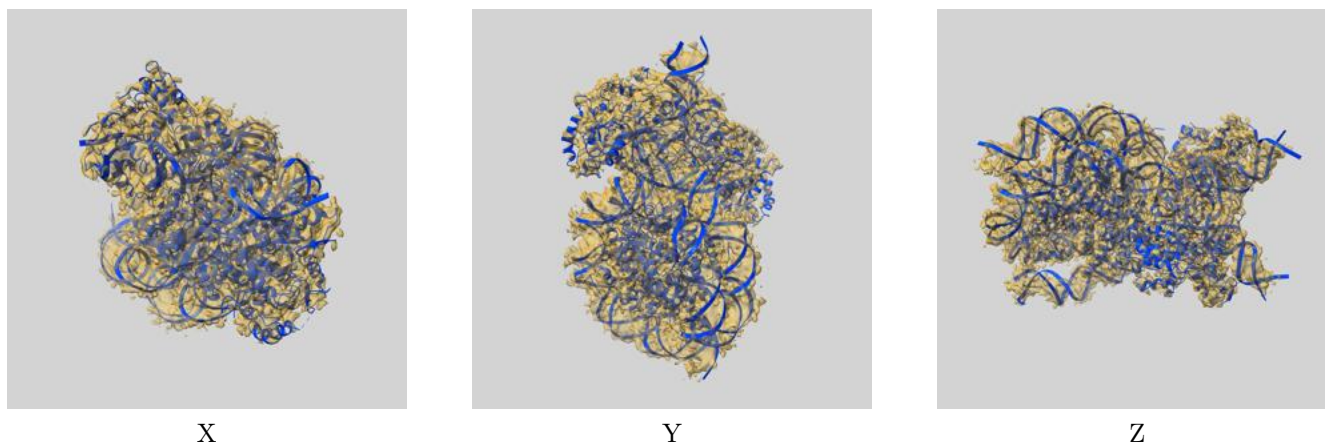
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	3.88	4.31	3.97
Unmasked-calculated*	4.28	7.35	4.41

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

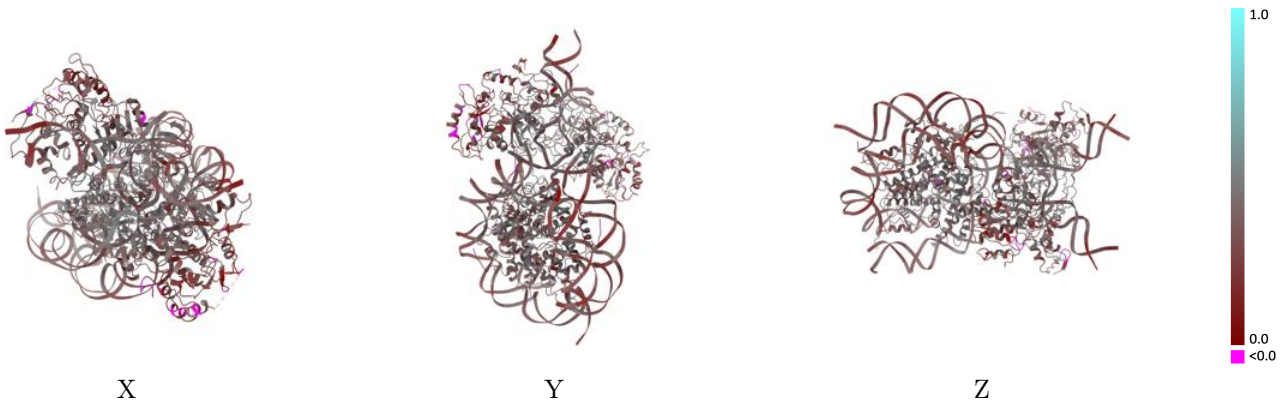
This section contains information regarding the fit between EMDB map EMD-4960 and PDB model 6RNY. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



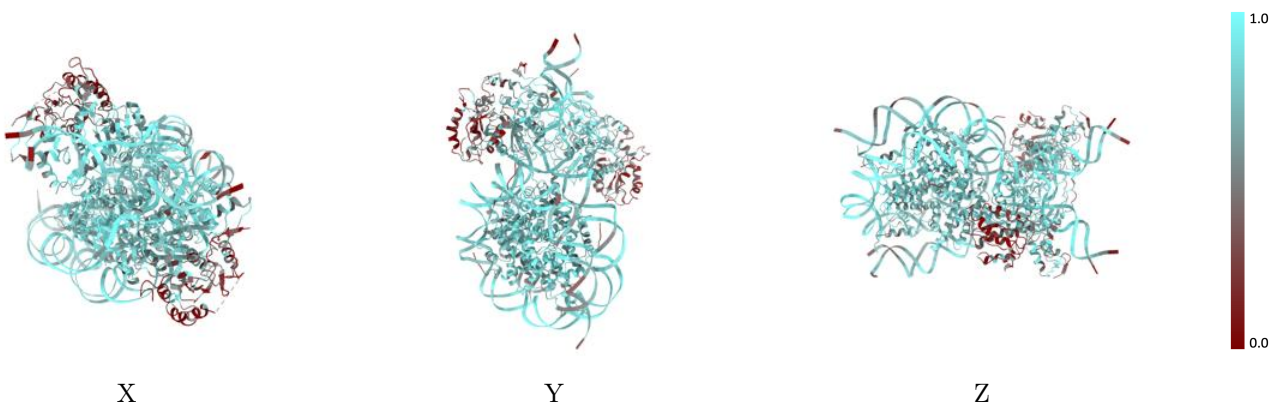
The images above show the 3D surface view of the map at the recommended contour level 0.07 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



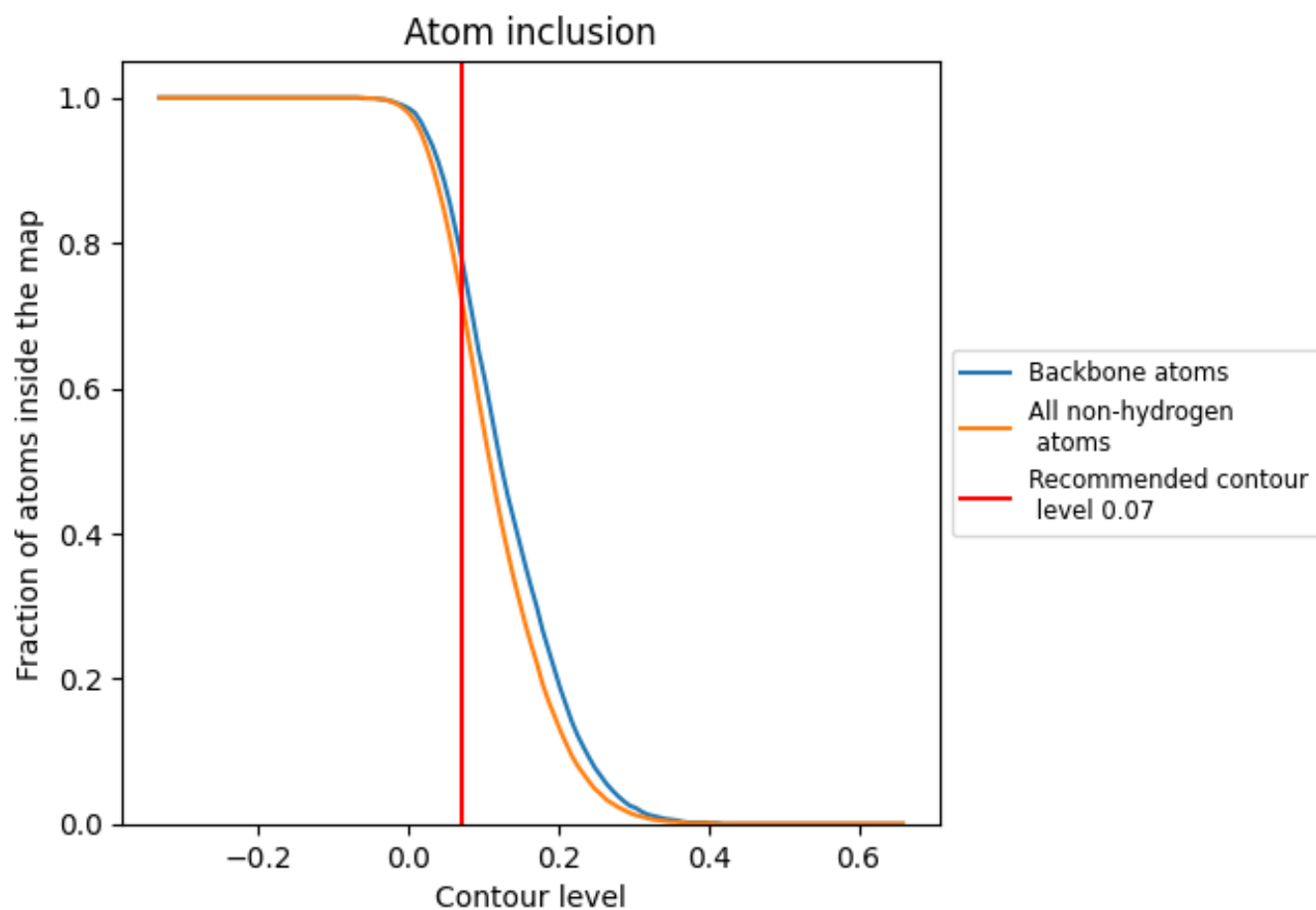
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.07).







































9.4 Atom inclusion [i](#)



At the recommended contour level, 78% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.07) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7270	 0.3490
A	 0.8000	 0.3830
B	 0.8130	 0.3980
C	 0.7930	 0.4100
D	 0.8040	 0.4080
E	 0.7710	 0.3710
F	 0.7860	 0.3730
G	 0.7930	 0.3750
H	 0.7830	 0.3880
I	 0.8190	 0.3060
J	 0.7920	 0.3470
K	 0.7500	 0.3850
L	 0.2420	 0.2610
M	 0.7870	 0.3520
O	 0.7290	 0.3880
P	 0.3280	 0.2390
Q	 0.7700	 0.3830
T	 0.7910	 0.3360
U	 0.8100	 0.3090

