



Full wwPDB EM Validation Report ⓘ

Aug 17, 2026 – 04:44 PM JST

PDB ID : 24YW / pdb_000024yw
EMDB ID : EMD-69918
Title : Xanthomonas citri pv. glycines 50S subunit
Authors : Sengupta, S.; Anand, R.
Deposited on : 2026-03-25
Resolution : 3.00 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:

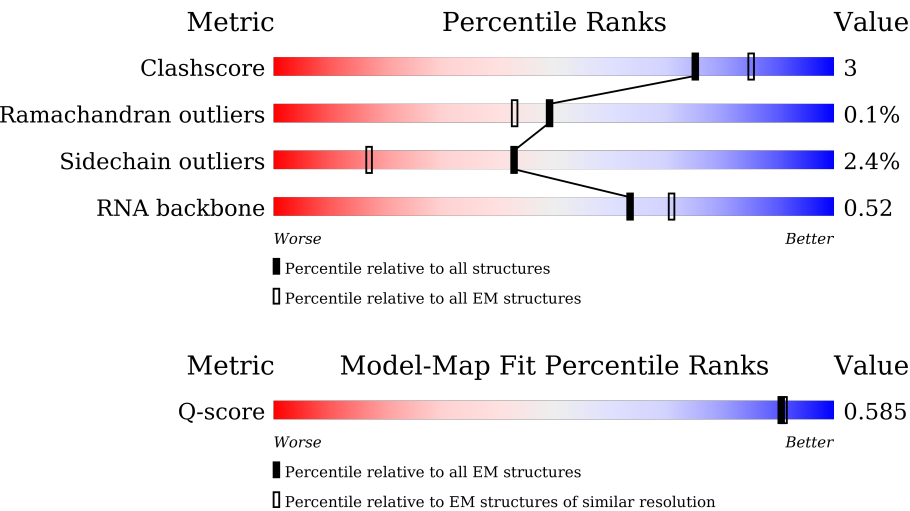
EMDB validation analysis : 0.0.1.dev133
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



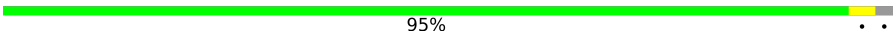
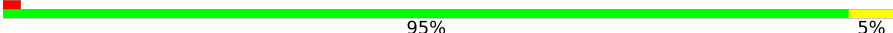
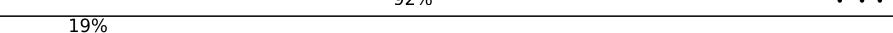
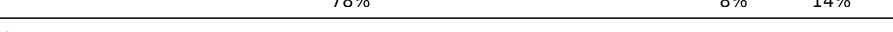
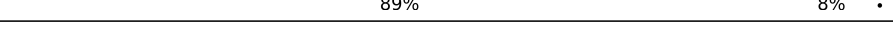
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	14081 (2.50 - 3.50)

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	2	64	
2	3	55	
3	4	46	

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Mol	Chain	Length	Quality of chain
4	5	65	
5	6	41	
6	A	2881	
7	B	121	
8	C	275	
9	D	216	
10	E	201	
11	G	175	
12	H	149	
13	J	142	
14	K	122	
15	L	147	
16	M	137	
17	N	127	
18	O	119	
19	P	135	
20	Q	119	
21	R	106	
22	S	111	
23	T	99	
24	U	105	
25	V	211	
26	W	86	
27	X	78	
28	Y	61	

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Mol	Chain	Length	Quality of chain
29	Z	63	83%6%11%

2 Entry composition

There are 29 unique types of molecules in this entry. The entry contains 86233 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 Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	2	54	Total	C	N	O	0	0
			426	259	90	77		

- Molecule 2 is a protein called Large ribosomal subunit protein bL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	3	51	Total	C	N	O	S	0	0
			413	260	76	72	5		

- Molecule 3 is a protein called Large ribosomal subunit protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	4	44	Total	C	N	O	S	0	0
			358	216	86	55	1		

- Molecule 4 is a protein called Large ribosomal subunit protein bL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	5	64	Total	C	N	O	S	0	0
			521	320	115	84	2		

- Molecule 5 is a protein called Large ribosomal subunit protein bL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	6	41	Total	C	N	O	S	0	0
			339	210	76	50	3		

- Molecule 6 is a RNA chain called RNA (2797-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
6	A	2797	Total	C	N	O	P	0	0
			60015	26777	11033	19408	2797		

- Molecule 7 is a RNA chain called RNA (117-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B	117	Total	C	N	O	P	0	0
			2505	1117	459	812	117		

- Molecule 8 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	C	274	Total	C	N	O	S	0	0
			2098	1302	429	362	5		

- Molecule 9 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	D	213	Total	C	N	O	S	0	0
			1585	990	301	290	4		

- Molecule 10 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	E	201	Total	C	N	O	S	0	0
			1531	965	278	284	4		

- Molecule 11 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	G	172	Total	C	N	O	S	0	0
			1263	806	223	232	2		

- Molecule 12 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	H	80	Total	C	N	O	S	0	0
			595	375	104	115	1		

- Molecule 13 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	J	141	Total	C	N	O	S	0	0
			1125	715	207	201	2		

- Molecule 14 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	K	122	Total	C	N	O	S	0	0
			947	598	176	168	5		

- Molecule 15 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	L	145	Total	C	N	O	S	0	0
			1059	658	208	191	2		

- Molecule 16 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	M	137	Total	C	N	O	S	0	0
			1090	689	209	187	5		

- Molecule 17 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	N	118	Total	C	N	O	S	0	0
			942	595	187	156	4		

- Molecule 18 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	O	116	Total	C	N	O	0	0
			879	544	178	157		

- Molecule 19 is a protein called Large ribosomal subunit protein bL19.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	P	116	Total	C	N	O	0	0
			910	572	172	166		

- Molecule 20 is a protein called Large ribosomal subunit protein bL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	Q	116	Total	C	N	O	S	0	0
			924	588	190	145	1		

- Molecule 21 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	R	103	Total	C	N	O	S	0	0
			802	501	155	143	3		

- Molecule 22 is a protein called Large ribosomal subunit protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	S	109	Total	C	N	O	S	0	0
			831	517	162	149	3		

- Molecule 23 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	T	91	Total	C	N	O		0	0
			724	452	138	134			

- Molecule 24 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	U	102	Total	C	N	O		0	0
			767	470	154	143			

- Molecule 25 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	V	189	Total	C	N	O	S	0	0
			1486	943	264	276	3		

- Molecule 26 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	W	73	Total	C	N	O		0	0
			548	344	107	97			

- Molecule 27 is a protein called Large ribosomal subunit protein bL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	X	75	Total	C	N	O	S	0	0
			615	375	135	104	1		

- Molecule 28 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Y	58	Total	C	N	O	S	0	0
			484	298	99	85	2		

- Molecule 29 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	Z	56	Total	C	N	O	0	0
			451	281	94	76		

3 Residue-property plots

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

- Molecule 1: Large ribosomal subunit protein bL32

Chain 2: 



- Molecule 2: Large ribosomal subunit protein bL33

Chain 3: 

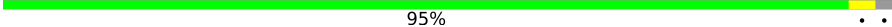


- Molecule 3: Large ribosomal subunit protein bL34

Chain 4: 

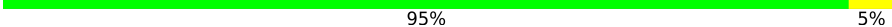


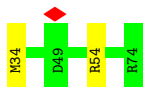
- Molecule 4: Large ribosomal subunit protein bL35

Chain 5: 



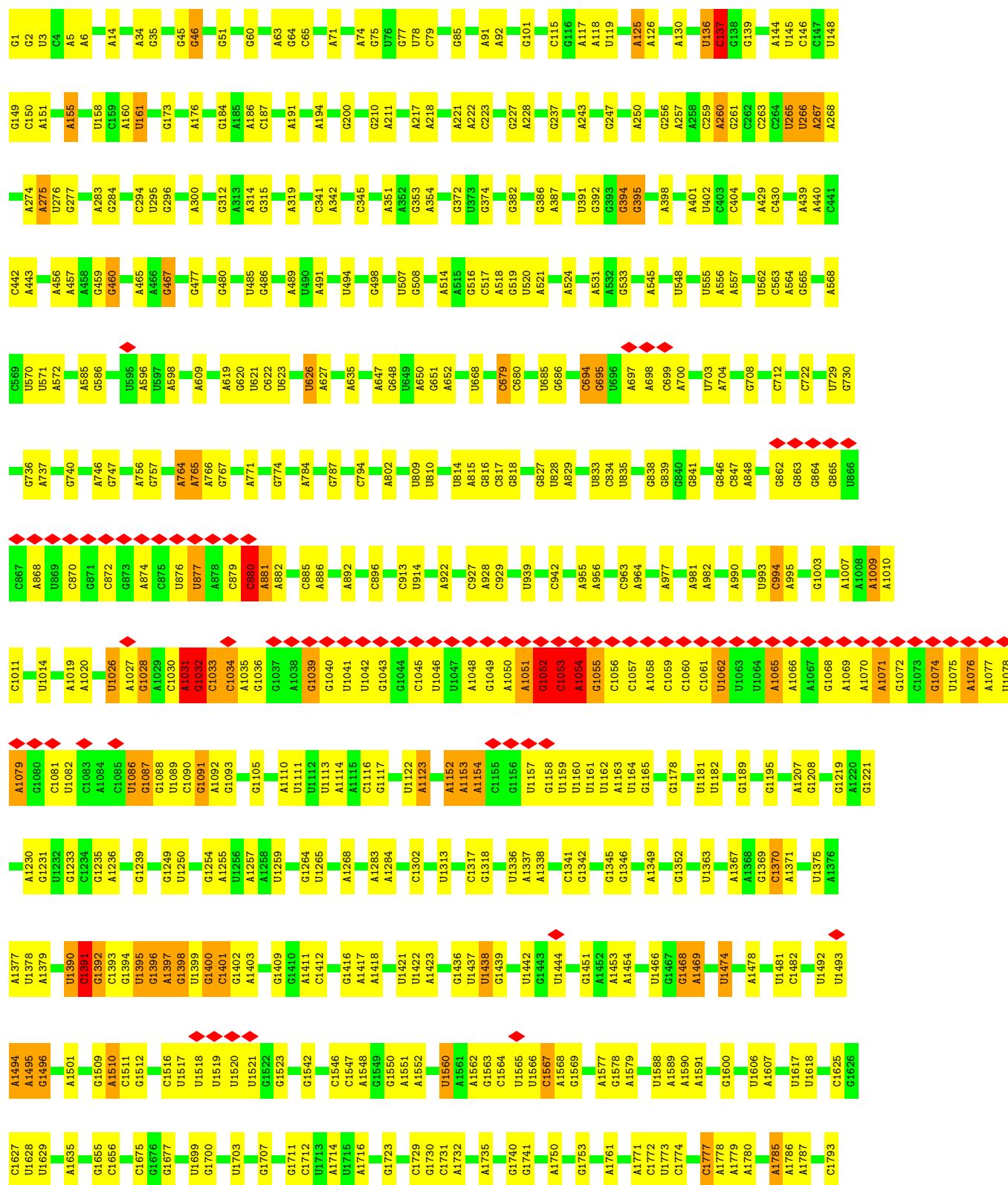
- Molecule 5: Large ribosomal subunit protein bL36

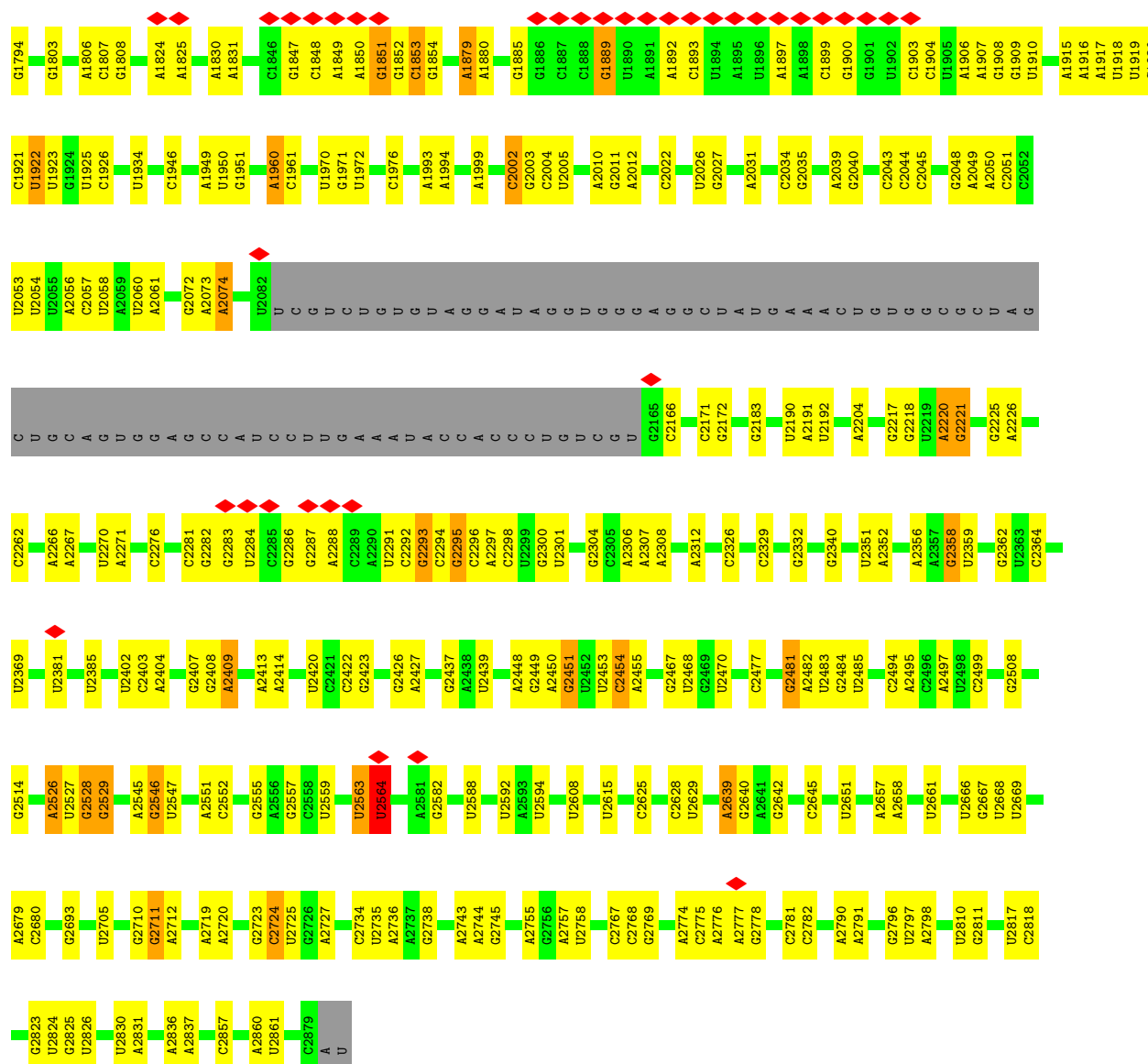
Chain 6: 



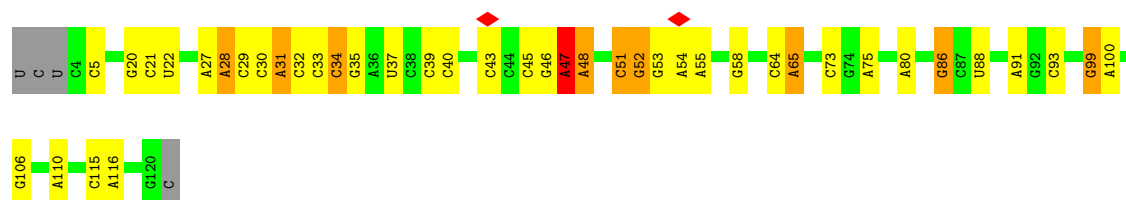
- Molecule 6: RNA (2797-MER)

Chain A:  70% 24%

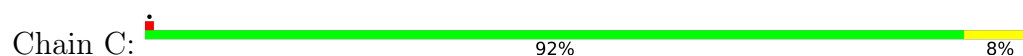




• Molecule 7: RNA (117-MER)



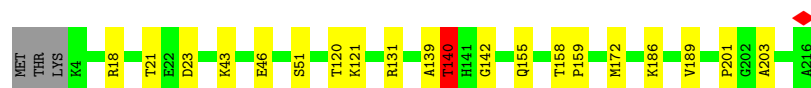
• Molecule 8: Large ribosomal subunit protein uL2





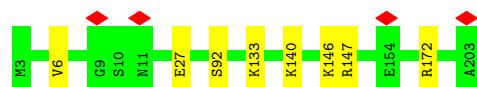
- Molecule 9: Large ribosomal subunit protein uL3

Chain D: 89% 9%



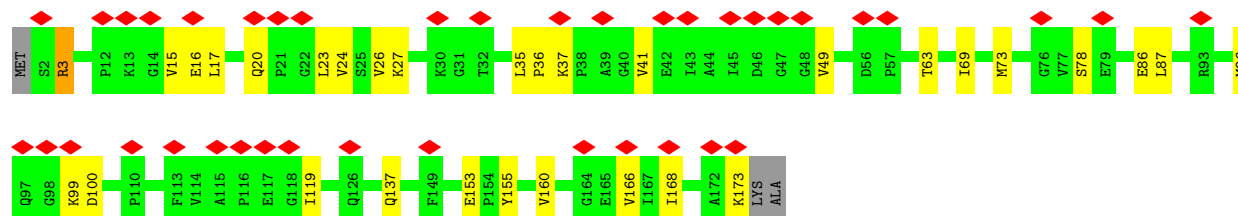
- Molecule 10: Large ribosomal subunit protein uL4

Chain E: 96%



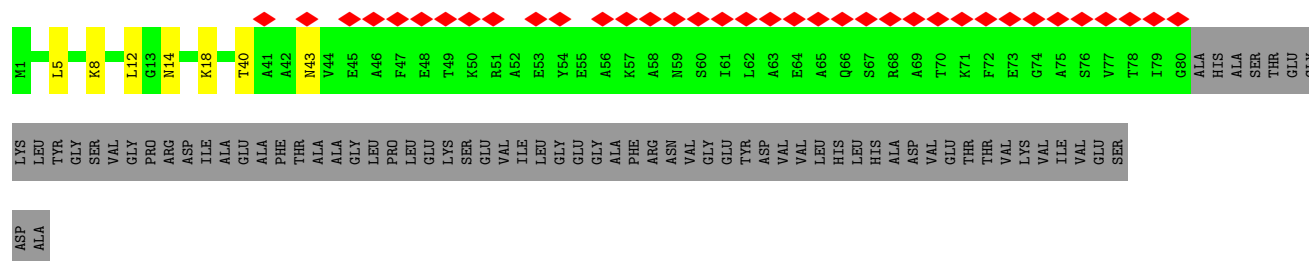
- Molecule 11: Large ribosomal subunit protein uL6

Chain G: 22% 81% 17%



- Molecule 12: Large ribosomal subunit protein bL9

Chain H: 24% 49% 5% 46%



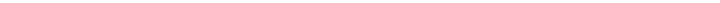
- Molecule 13: Large ribosomal subunit protein uL13

Chain J: 95%



- Molecule 14: Large ribosomal subunit protein uL14

Cluster	Number of Genes
M1	10
M20	20
K23	10
R49	140
G50	100
K51	100
T65	20
G68	10
I77	10
N88	10
I94	10
T103	10
R104	140
E105	10
S108	10
E109	10
K110	10
F111	10
M112	10
K113	10
I114	10
V115	10
L122	10

- Chain L:  93% 5% .

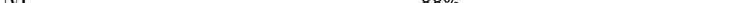
- Chain M:  88% 12%

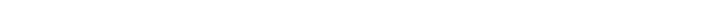
Figure 1 is a bar chart showing the number of nodes in the network for each node. The x-axis lists nodes from I1 to R137. The y-axis represents the number of nodes, ranging from 0 to 100. The bars are colored yellow, with some nodes (I1, I57, I60, I79, I136) highlighted in orange. Red diamonds are placed above nodes I1, I57, I60, I79, and I136.

- Chain N: 86% 7% 7%

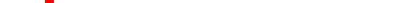
Diagram illustrating the sequence of amino acids in a protein, with specific residues highlighted in yellow and green blocks. The sequence is: M1, R2, H3, Q4, K5, T37, L38, P39, R63, R64, L65, R118, PRO, VAL, VAL, ALA, GLU, GLU, VAL, ALA, GLU. The residues are represented by colored blocks: M1, R2, H3, Q4, K5, T37, L38, P39, R63, R64, L65, R118, PRO, VAL, VAL, ALA, GLU, GLU, VAL, ALA, GLU. The blocks are colored yellow, green, or grey. Red diamonds are placed above the M1 and R2 blocks.

- Chain 0: 92% . . .

Sequence logo for the 10th position. The y-axis represents information content in bits, ranging from 0 to 1.5. The x-axis shows the amino acid sequence: MET, SER, ILE, N4, L23, Q40, V60, K75, D110, E114, F119. The N4 position shows a strong preference for Asparagine (N), while V60 shows a strong preference for Valine (V).

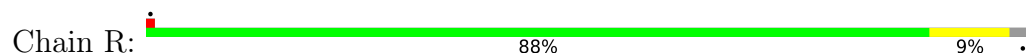
- Chain P: 

ALA	ALA	ALA	ARG	GLN	ALA	ALA	LYS	ALA	ALA	GLU	MET	SER	LYS	L4	A10	D11	Q18	R19	K20	L21	V32	K37	E38	G39	N40	R41	E42	K67	I68	S69	R76	V77	F78	I84	V88	E89	R92	K95	V96	G106	L107	E108	G109	K110	A111	A112	R113	L114	K115	E116	D117	L118	A119	ALA	ALA	ALA	GLN	ALA
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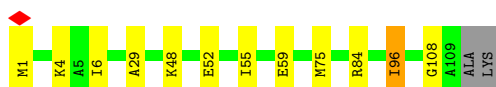
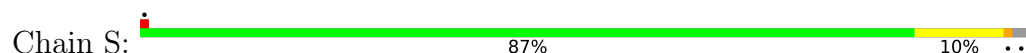
- Chain Q:  89% 8%



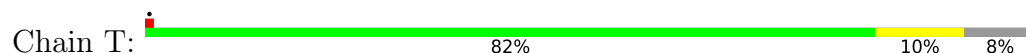
- Molecule 21: Large ribosomal subunit protein bL21



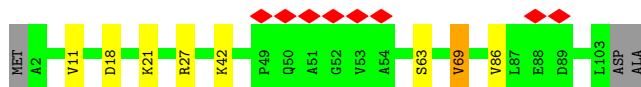
- Molecule 22: Large ribosomal subunit protein uL22



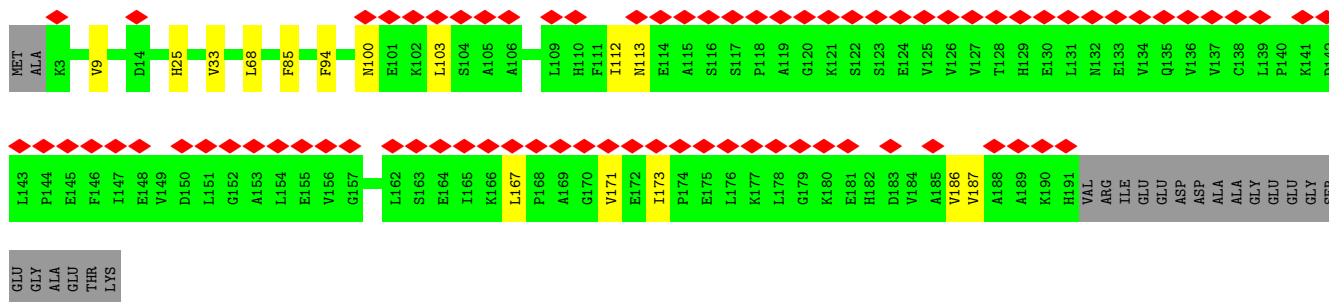
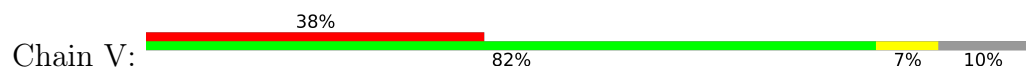
- Molecule 23: Large ribosomal subunit protein uL23



- Molecule 24: Large ribosomal subunit protein uL24



- Molecule 25: Large ribosomal subunit protein bL25



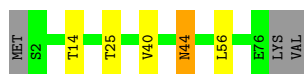
- Molecule 26: Large ribosomal subunit protein bL27

Chain W:  78% 7% 15%



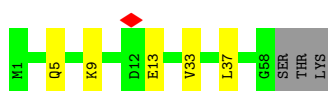
- Molecule 27: Large ribosomal subunit protein bL28

Chain X:  90% 5% . .



- Molecule 28: Large ribosomal subunit protein uL29

Chain Y:  87% 8% 5%



- Molecule 29: Large ribosomal subunit protein uL30

Chain Z:  83% 6% 11%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	252876	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	43	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	0.047	Depositor
Minimum map value	-0.018	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.00566	Depositor
Map size (Å)	340.0, 340.0, 340.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.85, 0.85, 0.85	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	2	0.14	0/433	0.36	0/581
2	3	0.11	0/420	0.36	0/555
3	4	0.09	0/361	0.25	0/474
4	5	0.09	0/528	0.26	0/699
5	6	0.09	0/342	0.27	0/449
6	A	0.18	2/67211 (0.0%)	0.35	31/104844 (0.0%)
7	B	0.31	2/2802 (0.1%)	0.43	3/4368 (0.1%)
8	C	0.11	0/2143	0.29	0/2889
9	D	0.13	0/1610	0.40	0/2165
10	E	0.10	0/1551	0.29	0/2088
11	G	0.12	0/1283	0.30	0/1735
12	H	0.09	0/602	0.28	0/812
13	J	0.10	0/1148	0.25	0/1550
14	K	0.11	0/958	0.28	0/1284
15	L	0.12	0/1069	0.35	0/1422
16	M	0.10	0/1112	0.30	1/1492 (0.1%)
17	N	0.11	0/958	0.29	0/1280
18	O	0.10	0/887	0.27	0/1185
19	P	0.10	0/920	0.29	0/1232
20	Q	0.13	0/936	0.27	0/1247
21	R	0.11	0/811	0.32	0/1081
22	S	0.11	0/836	0.30	0/1118
23	T	0.09	0/732	0.28	0/982
24	U	0.10	0/773	0.27	0/1036
25	V	0.11	0/1515	0.29	0/2054
26	W	0.16	0/557	0.31	0/747
27	X	0.13	0/624	0.33	0/837
28	Y	0.17	0/488	0.36	0/648
29	Z	0.09	0/454	0.24	0/608
All	All	0.17	4/94064 (0.0%)	0.35	35/141462 (0.0%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	B	47	A	P-O5'	9.31	1.73	1.59
7	B	47	A	O5'-C5'	7.76	1.54	1.42
6	A	1054	A	P-O5'	6.55	1.69	1.59
6	A	1054	A	O5'-C5'	6.46	1.52	1.42

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	626	U	O3'-P-O5'	14.61	125.92	104.00
6	A	1053	C	O3'-P-O5'	-13.66	83.51	104.00
6	A	457	A	P-O3'-C3'	10.73	136.30	120.20
6	A	221	A	P-O3'-C3'	9.79	134.88	120.20
7	B	47	A	C4'-C3'-O3'	9.75	124.03	109.40
6	A	1054	A	O3'-P-O5'	-9.70	89.45	104.00
6	A	1026	U	O3'-P-O5'	-9.43	89.85	104.00
6	A	1054	A	C2'-C3'-O3'	-8.97	100.25	113.70
6	A	260	A	C2'-C3'-O3'	8.31	121.96	109.50
6	A	1054	A	C4'-C3'-O3'	8.10	125.15	113.00
6	A	880	C	C3'-C2'-C1'	-7.79	93.51	101.30
6	A	1391	C	C4'-C3'-O3'	7.77	124.66	113.00
6	A	1026	U	C2'-C3'-O3'	-7.64	102.23	113.70
6	A	277	G	C4'-C3'-O3'	7.57	124.36	113.00
6	A	137	C	O3'-P-O5'	7.31	114.96	104.00
6	A	1053	C	C2'-C3'-O3'	6.99	124.18	113.70
6	A	277	G	O3'-P-O5'	6.85	114.28	104.00
6	A	1879	A	C2'-C3'-O3'	6.61	119.41	109.50
6	A	1397	A	O3'-P-O5'	6.46	113.70	104.00
6	A	260	A	O3'-P-O5'	-6.29	94.57	104.00
6	A	1031	A	O3'-P-O5'	6.16	113.25	104.00
7	B	47	A	P-O3'-C3'	6.12	129.38	120.20
6	A	1053	C	C4'-C3'-O3'	-5.92	104.11	113.00
6	A	626	U	C2'-C3'-O3'	5.90	122.55	113.70
6	A	1879	A	O3'-P-O5'	5.87	112.81	104.00
6	A	626	U	P-O3'-C3'	5.71	128.76	120.20
7	B	47	A	O3'-P-O5'	5.54	112.31	104.00
6	A	1031	A	P-O3'-C3'	5.38	128.26	120.20
6	A	2564	U	C4'-C3'-C2'	-5.34	97.26	102.60
16	M	59	LYS	CB-CA-C	-5.22	110.13	117.23
6	A	626	U	OP1-P-O3'	-5.19	92.43	108.00
6	A	1032	G	O3'-P-O5'	5.16	111.74	104.00
6	A	1052	G	P-O3'-C3'	5.15	127.93	120.20
6	A	2564	U	O4'-C4'-C3'	-5.14	98.86	104.00
6	A	1391	C	C4'-C3'-C2'	-5.03	97.57	102.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	426	0	434	5	0
2	3	413	0	433	5	0
3	4	358	0	389	2	0
4	5	521	0	562	1	0
5	6	339	0	381	2	0
6	A	60015	0	30203	286	0
7	B	2505	0	1268	17	0
8	C	2098	0	2162	14	0
9	D	1585	0	1616	12	0
10	E	1531	0	1590	5	0
11	G	1263	0	1347	13	0
12	H	595	0	614	4	0
13	J	1125	0	1164	3	0
14	K	947	0	1014	7	0
15	L	1059	0	1126	7	0
16	M	1090	0	1135	10	0
17	N	942	0	994	5	0
18	O	879	0	918	2	0
19	P	910	0	945	7	0
20	Q	924	0	1004	8	0
21	R	802	0	838	6	0
22	S	831	0	903	7	0
23	T	724	0	745	5	0
24	U	767	0	801	3	0
25	V	1486	0	1499	8	0
26	W	548	0	563	2	0
27	X	615	0	629	4	0
28	Y	484	0	517	3	0
29	Z	451	0	496	0	0
All	All	86233	0	56290	436	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 3.

All (436) 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)
6:A:1152:A:H2'	6:A:1153:A:C2	1.84	1.12
6:A:1152:A:H3'	6:A:1153:A:H2	1.14	1.06
6:A:1152:A:C2'	6:A:1153:A:C2	2.45	0.98
6:A:1152:A:C3'	6:A:1153:A:H2	1.81	0.92
6:A:1152:A:H3'	6:A:1153:A:C2	2.04	0.92
6:A:1152:A:C3'	6:A:1153:A:C2	2.53	0.92
6:A:2281:C:O2	6:A:2293:G:N2	2.12	0.83
6:A:1157:U:O4	15:L:12:ASP:OD2	1.97	0.82
6:A:2282:G:N2	6:A:2292:C:O2	2.13	0.82
6:A:1152:A:H2'	6:A:1153:A:N3	1.94	0.82
27:X:44:ASN:O	27:X:44:ASN:ND2	2.13	0.81
6:A:879:C:H2'	6:A:880:C:C6	2.16	0.80
7:B:80:A:H62	7:B:99:G:H21	1.31	0.76
6:A:1302:C:H5	6:A:1318:G:H1	1.34	0.76
6:A:1153:A:C2	6:A:1153:A:OP2	2.44	0.71
14:K:77:ILE:HG12	19:P:76:ARG:HD2	1.72	0.70
6:A:1011:C:H5	6:A:1105:G:H1	1.39	0.69
6:A:879:C:H2'	6:A:880:C:H6	1.58	0.68
9:D:155:GLN:HB2	9:D:159:PRO:HG2	1.76	0.68
6:A:1054:A:H3'	6:A:1055:G:H5''	1.76	0.67
9:D:21:THR:HG23	9:D:23:ASP:H	1.60	0.67
6:A:136:U:O2'	6:A:137:C:N3	2.27	0.67
6:A:1922:U:H5''	6:A:1922:U:H6	1.60	0.66
6:A:45:G:H5'	6:A:46:G:H5'	1.79	0.64
6:A:2011:G:H21	9:D:158:THR:HG23	1.63	0.64
21:R:58:VAL:HG22	21:R:100:ILE:HG22	1.79	0.63
6:A:740:G:HO2'	6:A:1960:A:H2	1.46	0.63
6:A:814:U:H2'	6:A:815:A:H8	1.64	0.62
6:A:838:G:H2'	6:A:839:G:C8	2.34	0.62
14:K:109:GLU:HA	14:K:112:MET:HG2	1.82	0.62
6:A:563:C:H2'	6:A:564:A:H8	1.65	0.62
17:N:2:ARG:HG3	17:N:3:HIS:N	2.14	0.62
6:A:150:C:H2'	6:A:151:A:C8	2.34	0.62
6:A:885:C:H2'	6:A:886:A:H8	1.65	0.62
7:B:22:U:H3	7:B:65:A:H62	1.47	0.61
19:P:92:ARG:HH21	19:P:116:GLU:HB2	1.65	0.61
11:G:69:ILE:O	11:G:73:MET:HG3	2.00	0.61
21:R:28:GLU:H	21:R:28:GLU:CD	2.09	0.60
25:V:33:VAL:HG22	25:V:94:PHE:HB2	1.83	0.60
6:A:764:A:H4'	6:A:765:A:H5''	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1494:A:H1'	6:A:1495:A:H5'	1.83	0.60
6:A:1417:A:H2'	6:A:1418:A:C8	2.36	0.60
20:Q:78:ARG:HG3	20:Q:78:ARG:HH11	1.65	0.60
6:A:2282:G:N1	6:A:2292:C:N3	2.45	0.60
8:C:107:PRO:HD2	8:C:110:LEU:HD22	1.84	0.60
9:D:121:LYS:HE3	9:D:203:ALA:HB2	1.84	0.59
6:A:1370:C:H2'	6:A:1371:A:H8	1.68	0.58
6:A:2563:U:H2'	6:A:2564:U:H5'	1.85	0.58
28:Y:9:LYS:HB3	28:Y:13:GLU:HG3	1.85	0.58
10:E:146:LYS:HG2	10:E:147:ARG:HG3	1.85	0.58
6:A:1367:A:N1	6:A:1391:C:C6	2.72	0.58
10:E:27:GLU:OE2	15:L:9:LYS:HG2	2.04	0.58
6:A:394:G:HO2'	6:A:395:G:H8	1.51	0.58
6:A:1416:G:H2'	6:A:1417:A:C8	2.39	0.57
9:D:158:THR:OG1	9:D:159:PRO:HD3	2.04	0.57
6:A:815:A:H2'	6:A:816:G:H8	1.70	0.57
6:A:2270:U:H2'	6:A:2271:A:C8	2.39	0.57
7:B:80:A:H62	7:B:99:G:N2	2.01	0.57
6:A:2481:G:H5''	6:A:2482:A:H5''	1.87	0.56
6:A:1922:U:H5''	6:A:1922:U:C6	2.41	0.56
11:G:24:VAL:HG23	11:G:37:LYS:HB2	1.88	0.56
8:C:71:LYS:HG3	8:C:74:ILE:HD12	1.86	0.56
6:A:1393:C:H2'	6:A:1394:G:H8	1.70	0.55
14:K:111:PHE:HB3	14:K:114:ILE:HG13	1.87	0.55
25:V:186:VAL:HG23	25:V:187:VAL:HG12	1.89	0.55
18:O:110:ASP:O	18:O:114:GLU:HG3	2.07	0.55
6:A:1153:A:N3	6:A:1153:A:OP2	2.40	0.55
6:A:2450:A:HO2'	6:A:2451:G:H8	1.54	0.55
19:P:32:VAL:HG13	19:P:88:VAL:HG22	1.89	0.55
6:A:265:U:H4'	6:A:266:U:H5''	1.87	0.54
6:A:1009:A:H2'	6:A:1010:A:C8	2.42	0.54
6:A:1921:C:H3'	6:A:1922:U:H5'	1.89	0.54
15:L:21:VAL:HG12	15:L:29:LEU:HG	1.90	0.54
6:A:2050:A:H2'	6:A:2051:C:C6	2.43	0.54
6:A:2293:G:H2'	6:A:2294:C:H6	1.73	0.54
6:A:1494:A:O2'	6:A:1495:A:H8	1.89	0.54
6:A:1034:C:H42	6:A:1089:U:H1'	1.73	0.54
6:A:563:C:H2'	6:A:564:A:C8	2.42	0.54
6:A:815:A:H2'	6:A:816:G:C8	2.43	0.54
6:A:1317:C:H2'	6:A:1318:G:H8	1.72	0.54
6:A:1395:U:H2'	6:A:1396:G:C8	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1398:G:H5''	6:A:1398:G:H8	1.73	0.53
26:W:37:ILE:HG22	26:W:38:VAL:HG23	1.90	0.53
6:A:1921:C:H3'	6:A:1922:U:C5'	2.38	0.53
6:A:2448:A:H4'	16:M:56:ARG:HD2	1.90	0.53
6:A:994:C:H2'	6:A:995:A:H8	1.74	0.53
6:A:1039:G:H22	6:A:1062:U:H4'	1.73	0.53
6:A:1785:A:H3'	6:A:1786:A:C8	2.43	0.53
6:A:885:C:H2'	6:A:886:A:C8	2.43	0.53
6:A:2790:A:H2'	6:A:2791:A:H8	1.73	0.53
6:A:877:U:H1'	6:A:879:C:H41	1.74	0.53
23:T:56:VAL:HG11	23:T:90:LEU:HD13	1.90	0.53
6:A:1031:A:H1'	6:A:1032:G:C8	2.44	0.52
6:A:1451:G:H1'	6:A:1510:A:N6	2.24	0.52
11:G:153:GLU:HG2	11:G:155:TYR:H	1.72	0.52
6:A:548:U:OP1	15:L:31:LYS:HE2	2.09	0.52
8:C:199:GLU:HG2	8:C:202:LEU:HD12	1.91	0.52
8:C:232:HIS:CD2	8:C:242:GLY:HA2	2.44	0.52
6:A:1337:A:H2'	6:A:1338:A:C8	2.44	0.52
6:A:2657:A:H2'	6:A:2658:A:C8	2.44	0.52
6:A:1777:C:H5	6:A:1794:G:H22	1.57	0.52
6:A:2767:C:H2'	6:A:2768:C:C6	2.45	0.52
6:A:2225:G:H2'	6:A:2226:A:C8	2.45	0.52
6:A:1345:G:H2'	6:A:1346:G:H8	1.73	0.52
7:B:34:C:H2'	7:B:35:G:C8	2.45	0.51
6:A:1264:G:H2'	6:A:1265:U:C6	2.45	0.51
16:M:79:ILE:HG23	16:M:80:GLU:HG3	1.93	0.51
6:A:2225:G:H2'	6:A:2226:A:H8	1.74	0.51
6:A:1161:U:H2'	6:A:1162:U:H6	1.74	0.51
6:A:2220:A:H2'	6:A:2221:G:C8	2.45	0.51
6:A:1398:G:H5''	6:A:1398:G:C8	2.46	0.51
6:A:1032:G:H5''	6:A:1033:C:OP2	2.10	0.51
6:A:1370:C:H2'	6:A:1371:A:C8	2.45	0.51
6:A:267:A:H2'	6:A:268:A:C8	2.45	0.51
6:A:1345:G:H2'	6:A:1346:G:C8	2.46	0.51
6:A:2026:U:H2'	6:A:2027:G:H8	1.76	0.51
6:A:2528:G:H2'	6:A:2529:G:H8	1.76	0.51
9:D:43:LYS:O	9:D:51:SER:HA	2.10	0.51
20:Q:4:VAL:HG12	20:Q:6:ARG:H	1.76	0.51
6:A:621:U:H2'	6:A:622:C:C6	2.47	0.50
6:A:1030:C:H42	6:A:1031:A:H62	1.59	0.50
6:A:1153:A:H2'	6:A:1154:A:O4'	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:N:1:MET:N	17:N:5:LYS:HB2	2.25	0.50
6:A:1703:U:C2	6:A:1711:G:N1	2.79	0.50
6:A:2494:C:H2'	6:A:2495:A:H8	1.76	0.50
6:A:5:A:H2'	6:A:6:A:C8	2.46	0.50
6:A:256:G:C2	6:A:257:A:C8	2.99	0.50
6:A:1010:A:H3'	6:A:1011:C:O2	2.12	0.50
12:H:8:LYS:HE2	12:H:14:ASN:HA	1.93	0.50
6:A:5:A:H2'	6:A:6:A:H8	1.76	0.50
7:B:47:A:O2'	7:B:48:A:H8	1.95	0.50
9:D:120:THR:HG22	9:D:201:PRO:HB3	1.93	0.50
6:A:274:A:H2'	6:A:275:A:C8	2.47	0.50
6:A:1703:U:O2	6:A:1711:G:N2	2.45	0.50
6:A:1779:A:H2'	6:A:1780:A:C8	2.46	0.50
25:V:112:ILE:HD12	25:V:113:ASN:HB2	1.94	0.50
2:3:9:ILE:HD12	2:3:51:GLU:HG3	1.94	0.49
6:A:1078:U:H3'	6:A:1079:A:C8	2.47	0.49
6:A:2293:G:H2'	6:A:2294:C:C6	2.47	0.49
1:2:51:LYS:NZ	1:2:51:LYS:HB3	2.26	0.49
6:A:981:A:H2'	6:A:982:A:C8	2.47	0.49
6:A:1341:C:H2'	6:A:1342:G:O4'	2.12	0.49
6:A:2270:U:H2'	6:A:2271:A:H8	1.76	0.49
22:S:84:ARG:HB2	22:S:96:ILE:HG12	1.93	0.49
6:A:155:A:N7	6:A:161:U:O4	2.46	0.49
3:4:39:THR:HG22	3:4:41:ASP:H	1.77	0.49
7:B:34:C:N3	7:B:53:G:N2	2.61	0.49
19:P:76:ARG:HG2	19:P:78:PHE:CZ	2.47	0.49
6:A:1393:C:H2'	6:A:1394:G:C8	2.48	0.49
6:A:2628:C:H2'	6:A:2629:U:H6	1.76	0.49
16:M:63:LYS:HD3	16:M:65:TRP:CZ2	2.48	0.49
6:A:1395:U:H2'	6:A:1396:G:H8	1.78	0.49
6:A:1417:A:H2'	6:A:1418:A:H8	1.75	0.49
21:R:49:LEU:HA	21:R:53:LEU:HD21	1.93	0.48
6:A:1152:A:C2'	6:A:1153:A:N3	2.67	0.48
6:A:1729:C:H2'	6:A:1730:G:C8	2.48	0.48
6:A:1122:U:H4'	6:A:1123:A:O4'	2.13	0.48
6:A:1337:A:H2'	6:A:1338:A:H8	1.77	0.48
6:A:2307:A:H2'	6:A:2308:A:C8	2.48	0.48
6:A:2724:C:H2'	6:A:2725:U:C6	2.48	0.48
7:B:86:G:H1	7:B:93:C:H5	1.62	0.48
7:B:73:C:H5	7:B:106:G:H22	1.62	0.48
11:G:17:LEU:HD23	11:G:26:VAL:HG22	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1:G:H2'	6:A:2:G:H8	1.79	0.48
6:A:2453:U:H5''	6:A:2454:C:H5	1.78	0.48
7:B:115:C:H2'	7:B:116:A:H8	1.79	0.48
11:G:41:VAL:HG13	11:G:63:THR:HG23	1.96	0.48
6:A:1052:G:O3'	6:A:1053:C:H3'	2.14	0.48
6:A:1367:A:N1	6:A:1391:C:C5	2.81	0.48
6:A:1390:U:O2'	6:A:1391:C:C5	2.61	0.48
8:C:232:HIS:CG	8:C:242:GLY:HA2	2.49	0.48
6:A:846:G:H2'	6:A:847:C:C6	2.49	0.47
6:A:1235:G:N2	20:Q:33:ARG:HB3	2.29	0.47
6:A:1830:A:H2'	6:A:1831:A:C8	2.49	0.47
6:A:2450:A:O2'	6:A:2451:G:H8	1.97	0.47
6:A:1703:U:O2	6:A:1711:G:C2	2.66	0.47
7:B:80:A:N6	7:B:99:G:H21	2.07	0.47
6:A:564:A:H2'	6:A:565:G:H8	1.79	0.47
14:K:65:THR:HG23	14:K:68:GLY:H	1.79	0.47
15:L:31:LYS:HD2	15:L:32:THR:HG23	1.95	0.47
6:A:1402:G:H21	6:A:1562:A:H62	1.62	0.47
25:V:167:LEU:HD11	25:V:173:ILE:HG13	1.96	0.47
6:A:833:U:H2'	6:A:834:C:C6	2.49	0.47
6:A:2043:C:H2'	6:A:2044:C:C6	2.49	0.47
14:K:88:ASN:HB3	14:K:94:ILE:HD11	1.97	0.47
6:A:186:A:H2'	6:A:187:C:C6	2.49	0.47
6:A:1546:C:H2'	6:A:1547:C:C6	2.50	0.47
14:K:103:THR:HG23	14:K:105:GLU:H	1.78	0.47
6:A:295:U:H2'	6:A:296:G:O4'	2.15	0.47
6:A:2628:C:H2'	6:A:2629:U:C6	2.49	0.47
6:A:2050:A:H2'	6:A:2051:C:H6	1.80	0.47
6:A:2824:U:H2'	6:A:2825:G:O4'	2.15	0.47
9:D:131:ARG:HA	9:D:172:MET:HE3	1.95	0.47
6:A:685:U:H2'	6:A:686:G:O4'	2.15	0.47
6:A:703:U:H2'	6:A:704:A:H8	1.80	0.47
6:A:802:A:H4'	6:A:818:G:H22	1.80	0.47
6:A:1026:U:H1'	6:A:1028:G:C4	2.50	0.47
6:A:1562:A:H2'	6:A:1563:G:C8	2.50	0.47
6:A:1703:U:N3	6:A:1711:G:N1	2.61	0.47
6:A:2306:A:H2'	6:A:2307:A:C8	2.50	0.47
6:A:1468:G:H2'	6:A:1469:A:H8	1.79	0.47
16:M:75:THR:HA	16:M:90:VAL:HA	1.95	0.47
6:A:1162:U:H2'	6:A:1163:A:H8	1.80	0.46
6:A:2043:C:H2'	6:A:2044:C:H6	1.79	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:15:GLN:O	1:2:16:ARG:HB3	2.14	0.46
6:A:1397:A:H5''	6:A:1398:G:OP2	2.16	0.46
6:A:1617:U:H2'	6:A:1618:U:C6	2.51	0.46
22:S:4:LYS:HD2	22:S:6:ILE:HD11	1.98	0.46
6:A:2657:A:H2'	6:A:2658:A:H8	1.79	0.46
24:U:11:VAL:HB	24:U:69:VAL:HG13	1.98	0.46
6:A:2526:A:H2'	6:A:2527:U:C6	2.51	0.46
21:R:54:LYS:HD2	21:R:54:LYS:O	2.15	0.46
6:A:1065:A:H2'	6:A:1086:U:O2	2.16	0.46
23:T:17:PRO:HD2	28:Y:33:VAL:HG11	1.97	0.46
2:3:37:MET:HE3	2:3:37:MET:HB3	1.85	0.46
6:A:1577:A:H2'	6:A:1578:G:C8	2.51	0.46
27:X:44:ASN:ND2	27:X:44:ASN:C	2.73	0.46
6:A:1072:G:C6	6:A:1074:G:H5''	2.50	0.45
6:A:1367:A:H2	6:A:1390:U:H1'	1.81	0.45
6:A:1453:A:H2'	6:A:1454:A:C8	2.51	0.45
6:A:833:U:H2'	6:A:834:C:H6	1.81	0.45
6:A:881:A:OP2	6:A:881:A:H8	1.99	0.45
25:V:9:VAL:HG23	25:V:68:LEU:HD13	1.98	0.45
6:A:562:U:H2'	6:A:563:C:C6	2.52	0.45
6:A:2351:U:H2'	6:A:2352:A:C8	2.51	0.45
16:M:37:THR:HG23	25:V:85:PHE:CE1	2.51	0.45
6:A:2294:C:C2	6:A:2295:G:C8	3.04	0.45
6:A:1925:U:H2'	6:A:1926:C:C6	2.52	0.45
7:B:73:C:H5	7:B:106:G:H1	1.63	0.45
8:C:173:THR:HG22	8:C:183:LYS:HG2	1.97	0.45
6:A:1391:C:H3'	6:A:1392:G:H5''	1.98	0.45
6:A:2002:C:H2'	6:A:2003:G:H8	1.82	0.45
6:A:2004:C:H2'	6:A:2005:U:C6	2.52	0.45
6:A:740:G:O2'	6:A:1960:A:H2	1.99	0.45
6:A:834:C:H2'	6:A:835:U:C6	2.52	0.45
6:A:1906:A:H2'	6:A:1907:A:C8	2.51	0.45
6:A:694:C:H3'	6:A:695:G:C8	2.51	0.45
5:6:54:ARG:HB3	5:6:54:ARG:NH1	2.32	0.44
6:A:620:G:H2'	6:A:621:U:C6	2.52	0.44
6:A:736:G:H2'	6:A:737:A:H8	1.82	0.44
6:A:1074:G:H2'	6:A:1075:U:C5	2.51	0.44
7:B:20:G:H2'	7:B:21:C:C6	2.52	0.44
13:J:98:GLU:O	13:J:102:GLU:HG3	2.18	0.44
28:Y:5:GLN:N	28:Y:5:GLN:OE1	2.50	0.44
6:A:2559:U:H4'	9:D:142:GLY:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1401:C:H5'	6:A:1569:G:H21	1.81	0.44
6:A:1803:G:H5''	8:C:241:GLN:HG3	1.99	0.44
6:A:1903:C:H2'	6:A:1904:C:C6	2.52	0.44
6:A:341:C:H2'	6:A:342:A:H8	1.82	0.44
6:A:1052:G:H2'	6:A:1071:A:H62	1.83	0.44
6:A:1422:U:H2'	6:A:1423:A:H8	1.82	0.44
6:A:1606:U:H2'	6:A:1607:A:O4'	2.17	0.44
7:B:45:C:H2'	7:B:47:A:N6	2.33	0.44
6:A:1:G:H2'	6:A:2:G:C8	2.53	0.44
6:A:64:G:H2'	6:A:65:C:C6	2.53	0.44
6:A:2053:U:H2'	6:A:2054:U:C6	2.52	0.44
6:A:2281:C:N3	6:A:2293:G:N1	2.51	0.44
6:A:2781:C:H2'	6:A:2782:C:C6	2.52	0.44
7:B:22:U:H3	7:B:65:A:N6	2.13	0.44
6:A:2639:A:H3'	6:A:2640:G:H8	1.83	0.44
23:T:67:LYS:HE3	23:T:67:LYS:HB3	1.75	0.44
6:A:115:C:O2'	6:A:125:A:N3	2.48	0.44
6:A:1152:A:C4	6:A:1153:A:N1	2.86	0.44
8:C:125:LYS:NZ	8:C:125:LYS:HB3	2.32	0.44
6:A:1052:G:O2'	6:A:1053:C:OP1	2.36	0.44
13:J:114:LEU:HG	13:J:118:MET:HE3	1.99	0.44
16:M:58:VAL:HG21	16:M:106:ILE:HD11	1.99	0.44
16:M:75:THR:HG22	16:M:90:VAL:HG12	2.00	0.44
6:A:148:U:H2'	6:A:149:G:C8	2.53	0.44
6:A:2049:A:H2'	6:A:2050:A:H8	1.83	0.44
6:A:1400:G:H22	6:A:1564:C:H5	1.64	0.43
6:A:1853:C:H3'	6:A:1854:G:H8	1.82	0.43
11:G:35:LEU:HD23	11:G:36:PRO:C	2.43	0.43
19:P:37:LYS:HE3	19:P:37:LYS:HB2	1.90	0.43
20:Q:6:ARG:HD2	20:Q:9:GLN:HB2	2.01	0.43
6:A:1154:A:C2	6:A:1159:U:O2	2.71	0.43
6:A:1889:G:H1'	6:A:1900:G:N2	2.32	0.43
6:A:647:A:H2'	6:A:648:G:H8	1.82	0.43
6:A:862:G:N2	6:A:880:C:C2	2.86	0.43
7:B:51:C:N4	7:B:52:G:O6	2.52	0.43
6:A:137:C:O2	6:A:137:C:H3'	2.18	0.43
6:A:2073:A:O2'	6:A:2074:A:H8	2.01	0.43
6:A:2639:A:H3'	6:A:2640:G:C8	2.53	0.43
17:N:37:THR:HG22	17:N:39:PRO:HD2	1.99	0.43
2:3:13:SER:HB2	2:3:49:TYR:CZ	2.54	0.43
2:3:25:LYS:HG2	2:3:26:ASN:N	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1438:U:H5''	17:N:63:ARG:HD2	2.00	0.43
6:A:1851:G:H2'	6:A:1852:G:C8	2.53	0.43
6:A:1851:G:H2'	6:A:1852:G:H8	1.83	0.43
6:A:1040:G:H8	6:A:1041:U:H2'	1.82	0.43
6:A:465:A:N3	6:A:467:G:H5''	2.34	0.43
6:A:621:U:H2'	6:A:622:C:H6	1.82	0.43
6:A:622:C:H2'	6:A:623:U:C6	2.54	0.43
6:A:1474:U:C5	8:C:74:ILE:HG12	2.54	0.43
6:A:2422:C:H2'	6:A:2423:G:H8	1.83	0.43
6:A:2817:U:H2'	6:A:2818:C:C6	2.53	0.43
8:C:187:GLU:OE1	8:C:187:GLU:N	2.50	0.43
12:H:12:LEU:HD23	12:H:12:LEU:HA	1.85	0.43
20:Q:112:LYS:HE2	20:Q:112:LYS:HB2	1.68	0.43
27:X:56:LEU:HD12	27:X:56:LEU:HA	1.87	0.43
1:2:15:GLN:C	1:2:17:ARG:H	2.25	0.43
6:A:78:U:H2'	6:A:79:C:C6	2.54	0.43
6:A:2836:A:H2'	6:A:2837:A:C8	2.53	0.43
11:G:87:LEU:HG	11:G:160:VAL:HG22	2.00	0.43
13:J:121:LYS:HE2	13:J:121:LYS:HB2	1.76	0.43
18:O:60:VAL:HA	18:O:75:LYS:HE2	2.00	0.43
1:2:9:THR:HG21	6:A:1999:A:H5'	2.01	0.43
6:A:294:C:H2'	6:A:295:U:C6	2.54	0.43
6:A:564:A:H2'	6:A:565:G:C8	2.54	0.43
8:C:94:LEU:HD11	8:C:104:ILE:HD13	2.01	0.43
9:D:46:GLU:CD	9:D:46:GLU:H	2.27	0.43
16:M:87:LYS:HB3	16:M:87:LYS:HE3	1.73	0.43
5:6:34:MET:HE2	5:6:34:MET:HB2	1.94	0.42
6:A:64:G:H2'	6:A:65:C:H6	1.84	0.42
6:A:265:U:OP2	6:A:354:A:H1'	2.19	0.42
6:A:267:A:H2'	6:A:268:A:H8	1.81	0.42
6:A:1026:U:H6	6:A:1026:U:H2'	1.56	0.42
6:A:1317:C:H2'	6:A:1318:G:C8	2.54	0.42
25:V:112:ILE:HD12	25:V:112:ILE:C	2.44	0.42
6:A:877:U:O2	6:A:879:C:N4	2.51	0.42
6:A:879:C:O2'	6:A:880:C:H5'	2.19	0.42
6:A:1494:A:HO2'	6:A:1495:A:H8	1.67	0.42
6:A:2049:A:H2'	6:A:2050:A:C8	2.55	0.42
6:A:2409:A:H2'	6:A:2409:A:N3	2.34	0.42
7:B:30:C:HO2'	7:B:31:A:H8	1.60	0.42
8:C:271:ARG:HH12	8:C:275:GLY:HA2	1.83	0.42
6:A:2057:C:H2'	6:A:2058:U:C6	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:E:172:ARG:HD3	10:E:172:ARG:HA	1.87	0.42
6:A:2296:C:H2'	6:A:2297:A:C8	2.55	0.42
6:A:2830:U:H2'	6:A:2831:A:C8	2.55	0.42
9:D:186:LYS:HB2	9:D:186:LYS:HE2	1.74	0.42
12:H:18:LYS:HB3	12:H:18:LYS:HE2	1.71	0.42
6:A:314:A:H2'	6:A:315:G:H8	1.85	0.42
6:A:2546:G:H2'	6:A:2547:U:C6	2.55	0.42
16:M:76:LYS:HE2	16:M:76:LYS:HB2	1.82	0.42
21:R:34:LYS:HE3	21:R:34:LYS:HB3	1.94	0.42
22:S:75:MET:HE3	22:S:75:MET:HB2	1.94	0.42
6:A:679:C:H2'	6:A:680:C:C6	2.54	0.42
6:A:1468:G:H2'	6:A:1469:A:C8	2.55	0.42
6:A:1567:C:O3'	6:A:1568:A:H8	2.03	0.42
6:A:2171:C:H2'	6:A:2172:G:H8	1.85	0.42
6:A:2451:G:O6	6:A:2454:C:H2'	2.19	0.42
6:A:2830:U:H2'	6:A:2831:A:H8	1.85	0.42
9:D:139:ALA:O	9:D:140:THR:HG23	2.20	0.42
21:R:24:LYS:HB3	21:R:24:LYS:HE3	1.80	0.42
22:S:1:MET:HE1	22:S:108:GLY:HA2	2.02	0.42
6:A:1050:A:H61	6:A:1076:A:H62	1.68	0.42
6:A:1051:A:H5'	6:A:1054:A:OP2	2.20	0.42
8:C:146:LEU:HD23	8:C:146:LEU:HA	1.87	0.42
6:A:2422:C:H2'	6:A:2423:G:C8	2.55	0.42
6:A:91:A:H8	6:A:92:A:C5	2.37	0.42
6:A:756:A:H2'	6:A:756:A:N3	2.35	0.42
6:A:1181:U:H2'	6:A:1182:U:C6	2.54	0.42
6:A:1993:A:H2'	6:A:1994:A:C8	2.55	0.42
6:A:2053:U:H2'	6:A:2054:U:H6	1.85	0.42
6:A:2666:U:H2'	6:A:2667:G:O4'	2.20	0.42
10:E:140:LYS:HE3	10:E:140:LYS:HA	2.01	0.42
6:A:145:U:H2'	6:A:146:C:C6	2.55	0.42
6:A:1207:A:H2'	6:A:1208:G:C8	2.55	0.42
6:A:1731:C:H2'	6:A:1732:A:C8	2.55	0.42
11:G:16:GLU:HG3	11:G:27:LYS:HB3	2.01	0.42
19:P:89:GLU:OE2	19:P:89:GLU:N	2.53	0.42
22:S:29:ALA:HB1	22:S:55:ILE:HD11	2.02	0.42
3:4:34:ARG:HG3	6:A:125:A:OP2	2.19	0.41
6:A:834:C:H2'	6:A:835:U:H6	1.85	0.41
6:A:1378:U:H2'	6:A:1379:A:O4'	2.19	0.41
22:S:1:MET:HE3	22:S:1:MET:O	2.19	0.41
11:G:20:GLN:HB3	11:G:23:LEU:HB3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:G:173:LYS:HD2	11:G:173:LYS:HA	1.84	0.41
2:3:50:LYS:HE2	2:3:50:LYS:HB2	1.91	0.41
6:A:184:G:OP2	27:X:14:THR:HG21	2.20	0.41
6:A:1086:U:H3'	6:A:1087:G:C8	2.55	0.41
6:A:1786:A:H2'	6:A:1787:A:C8	2.54	0.41
6:A:1807:C:H2'	6:A:1808:G:H8	1.84	0.41
20:Q:78:ARG:HG3	20:Q:78:ARG:NH1	2.34	0.41
6:A:571:U:H2'	6:A:572:A:H8	1.86	0.41
6:A:1019:A:H2'	6:A:1020:A:C8	2.55	0.41
6:A:2060:U:H2'	6:A:2061:A:H8	1.85	0.41
22:S:48:LYS:O	22:S:52:GLU:HG3	2.20	0.41
6:A:507:U:H2'	6:A:508:G:H8	1.86	0.41
6:A:2710:G:H2'	6:A:2711:G:C8	2.56	0.41
6:A:2738:G:H21	11:G:137:GLN:HE21	1.69	0.41
15:L:21:VAL:HB	15:L:33:ALA:HB1	2.02	0.41
6:A:77:G:H2'	6:A:78:U:C6	2.56	0.41
6:A:1773:U:H2'	6:A:1774:C:H6	1.86	0.41
15:L:119:LEU:HD23	15:L:119:LEU:HA	1.92	0.41
6:A:1416:G:H2'	6:A:1417:A:H8	1.85	0.41
6:A:2790:A:H2'	6:A:2791:A:C8	2.53	0.41
11:G:3:ARG:H	11:G:3:ARG:HG2	1.69	0.41
20:Q:76:TYR:O	20:Q:80:MET:HG2	2.20	0.41
1:2:4:GLN:HG2	1:2:6:SER:H	1.85	0.41
4:5:39:LYS:H	4:5:39:LYS:HG2	1.63	0.41
6:A:817:C:C2	6:A:818:G:C8	3.09	0.41
6:A:1028:G:N2	6:A:1091:G:C4	2.89	0.41
6:A:1451:G:H1'	6:A:1510:A:H61	1.84	0.41
10:E:133:LYS:HB3	10:E:133:LYS:HE3	1.87	0.41
24:U:18:ASP:HB3	24:U:21:LYS:HD3	2.03	0.41
25:V:167:LEU:HD22	25:V:171:VAL:HG13	2.03	0.41
6:A:341:C:H2'	6:A:342:A:C8	2.56	0.41
6:A:2679:A:H2'	6:A:2680:C:C6	2.56	0.41
11:G:96:MET:HE3	11:G:100:ASP:O	2.21	0.41
17:N:38:LEU:HB3	17:N:39:PRO:HD3	2.02	0.41
19:P:67:LYS:HE3	19:P:69:SER:HB2	2.03	0.41
6:A:485:U:H2'	6:A:486:G:O4'	2.21	0.41
6:A:2358:G:H2'	6:A:2359:U:O2	2.21	0.41
6:A:2467:G:H2'	6:A:2468:U:C6	2.56	0.41
6:A:2823:G:H2'	6:A:2824:U:C6	2.56	0.41
23:T:28:GLU:C	23:T:29:ILE:HD13	2.46	0.41
23:T:30:SER:HB2	23:T:32:GLN:HG3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1511:C:H2'	6:A:1512:G:O4'	2.21	0.40
6:A:2719:A:H2'	6:A:2720:A:C8	2.55	0.40
12:H:40:THR:HG23	12:H:43:ASN:H	1.85	0.40
26:W:19:LYS:HA	26:W:19:LYS:HD3	1.72	0.40
6:A:2:G:H2'	6:A:3:U:C6	2.57	0.40
6:A:401:A:H2'	6:A:402:U:C6	2.56	0.40
6:A:928:A:H2'	6:A:929:C:C6	2.56	0.40
6:A:1086:U:H3'	6:A:1087:G:H8	1.87	0.40
6:A:1495:A:O2'	6:A:1496:G:H8	2.03	0.40
6:A:1824:A:O2'	6:A:1825:A:H8	2.05	0.40
6:A:1925:U:H2'	6:A:1926:C:H6	1.86	0.40
6:A:2796:G:H2'	6:A:2798:A:N7	2.36	0.40
6:A:459:G:C2'	6:A:460:G:H5'	2.52	0.40
6:A:520:U:H2'	6:A:521:A:C8	2.57	0.40
6:A:736:G:H2'	6:A:737:A:C8	2.56	0.40
6:A:1160:U:H2'	6:A:1161:U:C6	2.56	0.40
6:A:2044:C:H2'	6:A:2045:C:H6	1.86	0.40
7:B:28:A:H2'	7:B:29:C:H6	1.86	0.40
6:A:1560:U:H5''	6:A:1560:U:H6	1.85	0.40
16:M:118:PHE:HD1	16:M:118:PHE:HA	1.80	0.40
20:Q:117:LEU:HD23	20:Q:117:LEU:HA	1.85	0.40
6:A:703:U:H2'	6:A:704:A:C8	2.56	0.40
6:A:1164:U:H2'	6:A:1165:G:C8	2.56	0.40
6:A:1771:A:H2'	6:A:1772:C:C6	2.57	0.40
8:C:25:HIS:CD2	8:C:27:GLY:H	2.39	0.40
14:K:23:LYS:HD3	14:K:23:LYS:HA	1.89	0.40
24:U:27:ARG:NH1	24:U:27:ARG:HB2	2.36	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	2	52/64 (81%)	48 (92%)	4 (8%)	0	100	100
2	3	49/55 (89%)	49 (100%)	0	0	100	100
3	4	42/46 (91%)	42 (100%)	0	0	100	100
4	5	62/65 (95%)	61 (98%)	0	1 (2%)	7	34
5	6	39/41 (95%)	39 (100%)	0	0	100	100
8	C	272/275 (99%)	263 (97%)	9 (3%)	0	100	100
9	D	211/216 (98%)	196 (93%)	14 (7%)	1 (0%)	24	60
10	E	199/201 (99%)	196 (98%)	3 (2%)	0	100	100
11	G	170/175 (97%)	169 (99%)	1 (1%)	0	100	100
12	H	78/149 (52%)	77 (99%)	1 (1%)	0	100	100
13	J	139/142 (98%)	136 (98%)	3 (2%)	0	100	100
14	K	120/122 (98%)	116 (97%)	4 (3%)	0	100	100
15	L	143/147 (97%)	138 (96%)	5 (4%)	0	100	100
16	M	135/137 (98%)	133 (98%)	2 (2%)	0	100	100
17	N	116/127 (91%)	110 (95%)	6 (5%)	0	100	100
18	O	114/119 (96%)	113 (99%)	1 (1%)	0	100	100
19	P	114/135 (84%)	113 (99%)	1 (1%)	0	100	100
20	Q	114/119 (96%)	109 (96%)	5 (4%)	0	100	100
21	R	101/106 (95%)	101 (100%)	0	0	100	100
22	S	107/111 (96%)	107 (100%)	0	0	100	100
23	T	89/99 (90%)	89 (100%)	0	0	100	100
24	U	100/105 (95%)	99 (99%)	1 (1%)	0	100	100
25	V	187/211 (89%)	186 (100%)	1 (0%)	0	100	100
26	W	71/86 (83%)	71 (100%)	0	0	100	100
27	X	73/78 (94%)	71 (97%)	2 (3%)	0	100	100
28	Y	56/61 (92%)	55 (98%)	1 (2%)	0	100	100
29	Z	54/63 (86%)	53 (98%)	1 (2%)	0	100	100
All	All	3007/3255 (92%)	2940 (98%)	65 (2%)	2 (0%)	49	80

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	D	140	THR
4	5	32	ILE

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	2	45/54 (83%)	42 (93%)	3 (7%)	15	46
2	3	45/48 (94%)	45 (100%)	0	100	100
3	4	34/35 (97%)	33 (97%)	1 (3%)	37	70
4	5	53/54 (98%)	53 (100%)	0	100	100
5	6	38/38 (100%)	38 (100%)	0	100	100
8	C	212/213 (100%)	210 (99%)	2 (1%)	70	85
9	D	159/162 (98%)	156 (98%)	3 (2%)	50	76
10	E	160/160 (100%)	158 (99%)	2 (1%)	61	81
11	G	134/136 (98%)	125 (93%)	9 (7%)	15	46
12	H	61/114 (54%)	60 (98%)	1 (2%)	55	79
13	J	120/121 (99%)	119 (99%)	1 (1%)	73	86
14	K	103/103 (100%)	101 (98%)	2 (2%)	50	76
15	L	101/103 (98%)	101 (100%)	0	100	100
16	M	111/111 (100%)	107 (96%)	4 (4%)	31	65
17	N	94/101 (93%)	93 (99%)	1 (1%)	65	83
18	O	83/86 (96%)	80 (96%)	3 (4%)	31	65
19	P	95/104 (91%)	94 (99%)	1 (1%)	65	83
20	Q	87/88 (99%)	86 (99%)	1 (1%)	65	83
21	R	81/84 (96%)	79 (98%)	2 (2%)	42	72
22	S	87/88 (99%)	85 (98%)	2 (2%)	44	74
23	T	78/84 (93%)	76 (97%)	2 (3%)	40	72
24	U	82/84 (98%)	78 (95%)	4 (5%)	22	56
25	V	163/178 (92%)	160 (98%)	3 (2%)	51	77
26	W	56/65 (86%)	53 (95%)	3 (5%)	20	53
27	X	65/68 (96%)	62 (95%)	3 (5%)	24	58
28	Y	53/56 (95%)	52 (98%)	1 (2%)	50	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
29	Z	51/57 (90%)	47 (92%)	4 (8%)	11	39
All	All	2451/2595 (94%)	2393 (98%)	58 (2%)	43	73

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	2	3	VAL
1	2	13	ARG
1	2	30	ASP
3	4	16	THR
8	C	36	SER
8	C	126	THR
9	D	18	ARG
9	D	140	THR
9	D	189	VAL
10	E	6	VAL
10	E	92	SER
11	G	3	ARG
11	G	15	VAL
11	G	49	VAL
11	G	78	SER
11	G	86	GLU
11	G	99	LYS
11	G	119	ILE
11	G	166	VAL
11	G	168	ILE
12	H	5	LEU
13	J	129	GLU
14	K	20	MET
14	K	115	VAL
16	M	5	LYS
16	M	79	ILE
16	M	107	GLU
16	M	137	ARG
17	N	65	LEU
18	O	23	LEU
18	O	40	GLN
18	O	60	VAL
19	P	84	ILE
20	Q	91	ASP
21	R	36	ASP
21	R	47	ILE

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Mol	Chain	Res	Type
22	S	59	GLU
22	S	96	ILE
23	T	19	VAL
23	T	40	GLU
24	U	42	LYS
24	U	63	SER
24	U	69	VAL
24	U	86	VAL
25	V	25	HIS
25	V	100	ASN
25	V	103	LEU
26	W	68	GLU
26	W	75	LYS
26	W	81	SER
27	X	25	THR
27	X	40	VAL
27	X	44	ASN
28	Y	37	LEU
29	Z	43	ARG
29	Z	64	LEU
29	Z	65	ASN
29	Z	89	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
4	5	7	ASN
5	6	66	ASN
8	C	25	HIS
10	E	32	GLN
10	E	48	GLN
11	G	59	GLN
13	J	67	ASN
13	J	130	HIS
14	K	3	GLN
14	K	91	GLN
15	L	6	ASN
17	N	11	ASN
18	O	6	ASN
18	O	40	GLN
19	P	5	ASN
19	P	16	GLN

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Mol	Chain	Res	Type
19	P	70	HIS
21	R	82	HIS
21	R	90	GLN
22	S	15	GLN
23	T	31	ASN
25	V	87	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
6	A	2795/2881 (97%)	501 (17%)	28 (1%)
7	B	116/121 (95%)	26 (22%)	3 (2%)
All	All	2911/3002 (96%)	527 (18%)	31 (1%)

All (527) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	A	14	A
6	A	34	A
6	A	35	G
6	A	46	G
6	A	51	G
6	A	60	G
6	A	63	A
6	A	71	A
6	A	74	A
6	A	75	G
6	A	85	G
6	A	101	G
6	A	117	A
6	A	118	A
6	A	119	U
6	A	125	A
6	A	126	A
6	A	130	A
6	A	136	U
6	A	137	C
6	A	139	G
6	A	144	A
6	A	155	A
6	A	158	U

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Mol	Chain	Res	Type
6	A	160	A
6	A	161	U
6	A	173	G
6	A	176	A
6	A	191	A
6	A	194	A
6	A	200	G
6	A	210	G
6	A	211	A
6	A	217	A
6	A	218	A
6	A	223	C
6	A	227	G
6	A	228	A
6	A	237	G
6	A	243	A
6	A	247	G
6	A	250	A
6	A	259	C
6	A	260	A
6	A	261	G
6	A	263	C
6	A	265	U
6	A	266	U
6	A	267	A
6	A	275	A
6	A	276	U
6	A	283	A
6	A	284	G
6	A	300	A
6	A	312	G
6	A	319	A
6	A	345	C
6	A	351	A
6	A	353	G
6	A	372	G
6	A	374	G
6	A	382	G
6	A	386	G
6	A	387	A
6	A	391	U
6	A	392	G

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Mol	Chain	Res	Type
6	A	394	G
6	A	395	G
6	A	398	A
6	A	404	C
6	A	430	C
6	A	440	A
6	A	442	C
6	A	443	A
6	A	456	A
6	A	460	G
6	A	467	G
6	A	477	G
6	A	480	G
6	A	489	A
6	A	491	A
6	A	494	U
6	A	498	G
6	A	514	A
6	A	516	G
6	A	517	C
6	A	518	A
6	A	519	G
6	A	524	A
6	A	531	A
6	A	533	G
6	A	545	A
6	A	555	U
6	A	556	A
6	A	557	A
6	A	568	A
6	A	570	U
6	A	585	A
6	A	586	G
6	A	596	A
6	A	598	A
6	A	609	A
6	A	619	A
6	A	626	U
6	A	627	A
6	A	635	A
6	A	650	A
6	A	651	G

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Mol	Chain	Res	Type
6	A	652	A
6	A	668	U
6	A	679	C
6	A	694	C
6	A	695	G
6	A	697	A
6	A	698	A
6	A	699	C
6	A	700	A
6	A	708	G
6	A	712	C
6	A	722	C
6	A	729	U
6	A	730	G
6	A	746	A
6	A	747	G
6	A	757	G
6	A	764	A
6	A	765	A
6	A	766	A
6	A	767	G
6	A	771	A
6	A	774	G
6	A	784	A
6	A	787	G
6	A	794	C
6	A	809	U
6	A	810	U
6	A	827	G
6	A	829	A
6	A	841	G
6	A	848	A
6	A	863	G
6	A	864	G
6	A	865	G
6	A	868	A
6	A	870	C
6	A	872	C
6	A	874	A
6	A	876	U
6	A	877	U
6	A	880	C

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Mol	Chain	Res	Type
6	A	881	A
6	A	882	A
6	A	892	A
6	A	896	C
6	A	913	C
6	A	914	U
6	A	922	A
6	A	927	C
6	A	939	U
6	A	942	C
6	A	955	A
6	A	956	A
6	A	963	C
6	A	964	A
6	A	977	A
6	A	990	A
6	A	993	U
6	A	994	C
6	A	1003	G
6	A	1007	A
6	A	1009	A
6	A	1014	U
6	A	1027	A
6	A	1028	G
6	A	1031	A
6	A	1032	G
6	A	1033	C
6	A	1034	C
6	A	1035	A
6	A	1036	G
6	A	1039	G
6	A	1042	U
6	A	1043	G
6	A	1045	C
6	A	1046	U
6	A	1048	A
6	A	1049	G
6	A	1051	A
6	A	1053	C
6	A	1054	A
6	A	1055	G
6	A	1056	C

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Mol	Chain	Res	Type
6	A	1057	C
6	A	1058	A
6	A	1059	C
6	A	1060	C
6	A	1061	C
6	A	1062	U
6	A	1065	A
6	A	1066	A
6	A	1068	G
6	A	1069	A
6	A	1070	A
6	A	1071	A
6	A	1074	G
6	A	1076	A
6	A	1077	A
6	A	1079	A
6	A	1081	C
6	A	1082	U
6	A	1086	U
6	A	1087	G
6	A	1088	G
6	A	1090	C
6	A	1091	G
6	A	1092	A
6	A	1093	G
6	A	1110	A
6	A	1111	U
6	A	1113	U
6	A	1114	A
6	A	1116	C
6	A	1117	G
6	A	1123	A
6	A	1152	A
6	A	1153	A
6	A	1154	A
6	A	1158	G
6	A	1178	G
6	A	1189	G
6	A	1195	G
6	A	1219	G
6	A	1221	G
6	A	1230	A

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Mol	Chain	Res	Type
6	A	1231	G
6	A	1233	G
6	A	1236	A
6	A	1239	G
6	A	1249	G
6	A	1250	U
6	A	1254	G
6	A	1255	A
6	A	1257	A
6	A	1259	U
6	A	1268	A
6	A	1283	A
6	A	1284	A
6	A	1313	U
6	A	1336	U
6	A	1349	A
6	A	1352	G
6	A	1363	U
6	A	1369	G
6	A	1370	C
6	A	1375	U
6	A	1377	A
6	A	1390	U
6	A	1391	C
6	A	1392	G
6	A	1395	U
6	A	1396	G
6	A	1398	G
6	A	1399	U
6	A	1400	G
6	A	1401	C
6	A	1403	A
6	A	1409	G
6	A	1411	A
6	A	1412	C
6	A	1421	U
6	A	1436	G
6	A	1437	U
6	A	1438	U
6	A	1439	G
6	A	1442	U
6	A	1444	U

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Mol	Chain	Res	Type
6	A	1466	U
6	A	1469	A
6	A	1478	A
6	A	1481	U
6	A	1482	C
6	A	1492	U
6	A	1493	U
6	A	1494	A
6	A	1495	A
6	A	1496	G
6	A	1501	A
6	A	1509	G
6	A	1510	A
6	A	1516	C
6	A	1517	U
6	A	1518	U
6	A	1519	U
6	A	1520	U
6	A	1521	U
6	A	1523	G
6	A	1542	G
6	A	1548	A
6	A	1550	G
6	A	1551	A
6	A	1552	A
6	A	1560	U
6	A	1565	U
6	A	1566	U
6	A	1567	C
6	A	1579	A
6	A	1588	U
6	A	1589	A
6	A	1590	A
6	A	1591	A
6	A	1600	G
6	A	1625	C
6	A	1627	C
6	A	1628	U
6	A	1629	U
6	A	1635	A
6	A	1655	G
6	A	1656	C

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Mol	Chain	Res	Type
6	A	1675	C
6	A	1677	G
6	A	1699	U
6	A	1700	G
6	A	1707	G
6	A	1712	C
6	A	1714	A
6	A	1716	A
6	A	1723	G
6	A	1735	A
6	A	1740	G
6	A	1741	G
6	A	1750	A
6	A	1753	G
6	A	1761	A
6	A	1777	C
6	A	1778	A
6	A	1785	A
6	A	1793	C
6	A	1806	A
6	A	1847	G
6	A	1848	C
6	A	1849	A
6	A	1850	A
6	A	1851	G
6	A	1853	C
6	A	1879	A
6	A	1880	A
6	A	1885	G
6	A	1889	G
6	A	1892	A
6	A	1893	C
6	A	1897	A
6	A	1899	C
6	A	1908	G
6	A	1910	U
6	A	1915	A
6	A	1916	A
6	A	1917	A
6	A	1918	U
6	A	1919	U
6	A	1920	C

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Mol	Chain	Res	Type
6	A	1922	U
6	A	1923	U
6	A	1934	U
6	A	1946	C
6	A	1949	A
6	A	1950	U
6	A	1951	G
6	A	1960	A
6	A	1961	C
6	A	1970	U
6	A	1971	G
6	A	1972	U
6	A	1976	C
6	A	2002	C
6	A	2010	A
6	A	2012	A
6	A	2022	C
6	A	2031	A
6	A	2034	C
6	A	2035	G
6	A	2039	A
6	A	2040	G
6	A	2048	G
6	A	2056	A
6	A	2072	G
6	A	2074	A
6	A	2166	C
6	A	2183	G
6	A	2190	U
6	A	2191	A
6	A	2192	U
6	A	2204	A
6	A	2217	G
6	A	2218	G
6	A	2221	G
6	A	2262	C
6	A	2266	A
6	A	2267	A
6	A	2276	C
6	A	2283	G
6	A	2284	U
6	A	2286	G

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Mol	Chain	Res	Type
6	A	2287	G
6	A	2288	A
6	A	2291	U
6	A	2293	G
6	A	2295	G
6	A	2298	C
6	A	2300	G
6	A	2301	U
6	A	2304	G
6	A	2312	A
6	A	2326	C
6	A	2329	C
6	A	2332	G
6	A	2340	G
6	A	2356	A
6	A	2358	G
6	A	2362	G
6	A	2364	C
6	A	2369	U
6	A	2381	U
6	A	2385	U
6	A	2402	U
6	A	2403	C
6	A	2404	A
6	A	2407	G
6	A	2408	G
6	A	2409	A
6	A	2413	A
6	A	2414	A
6	A	2420	U
6	A	2426	G
6	A	2427	A
6	A	2437	G
6	A	2439	U
6	A	2449	G
6	A	2451	G
6	A	2454	C
6	A	2455	A
6	A	2470	U
6	A	2477	C
6	A	2481	G
6	A	2483	U

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Mol	Chain	Res	Type
6	A	2484	G
6	A	2485	U
6	A	2497	A
6	A	2499	C
6	A	2508	G
6	A	2514	G
6	A	2526	A
6	A	2529	G
6	A	2545	A
6	A	2546	G
6	A	2551	A
6	A	2552	C
6	A	2555	G
6	A	2557	G
6	A	2563	U
6	A	2564	U
6	A	2582	G
6	A	2588	U
6	A	2592	U
6	A	2594	U
6	A	2608	U
6	A	2615	U
6	A	2625	C
6	A	2639	A
6	A	2642	G
6	A	2645	C
6	A	2651	U
6	A	2661	U
6	A	2668	U
6	A	2669	U
6	A	2693	G
6	A	2705	U
6	A	2711	G
6	A	2712	A
6	A	2724	C
6	A	2727	A
6	A	2734	C
6	A	2736	A
6	A	2743	A
6	A	2744	A
6	A	2745	G
6	A	2755	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
6	A	2757	A
6	A	2758	U
6	A	2769	G
6	A	2774	A
6	A	2775	C
6	A	2776	A
6	A	2777	A
6	A	2778	G
6	A	2797	U
6	A	2810	U
6	A	2811	G
6	A	2826	U
6	A	2857	C
6	A	2860	A
6	A	2861	U
7	B	5	C
7	B	27	A
7	B	28	A
7	B	31	A
7	B	32	C
7	B	33	C
7	B	34	C
7	B	37	U
7	B	39	C
7	B	40	C
7	B	43	C
7	B	46	G
7	B	47	A
7	B	48	A
7	B	51	C
7	B	54	A
7	B	55	A
7	B	58	G
7	B	64	C
7	B	65	A
7	B	75	A
7	B	86	G
7	B	88	U
7	B	91	A
7	B	100	A
7	B	110	A

All (31) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	A	34	A
6	A	222	A
6	A	259	C
6	A	429	A
6	A	439	A
6	A	556	A
6	A	765	A
6	A	828	U
6	A	880	C
6	A	1031	A
6	A	1052	G
6	A	1090	C
6	A	1390	U
6	A	1391	C
6	A	1398	G
6	A	1400	G
6	A	1468	G
6	A	1474	U
6	A	1879	A
6	A	1909	G
6	A	1922	U
6	A	1960	A
6	A	2220	A
6	A	2266	A
6	A	2528	G
6	A	2564	U
6	A	2723	G
6	A	2735	U
7	B	33	C
7	B	52	G
7	B	99	G

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 oligosaccharides 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.

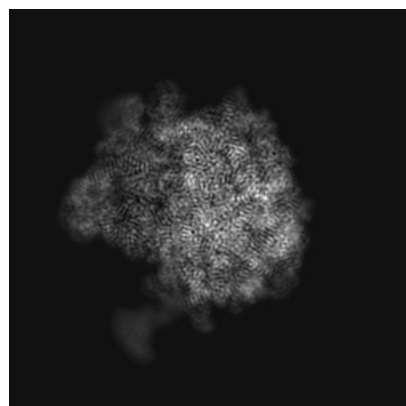
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-69918. These allow visual inspection of the internal detail of the map and identification of artifacts.

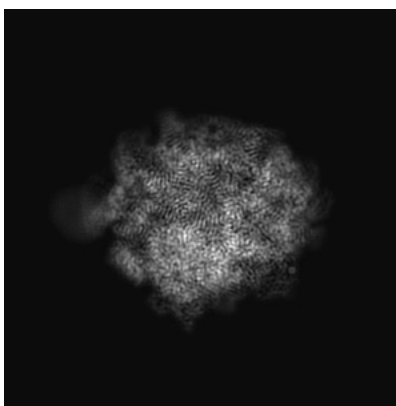
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

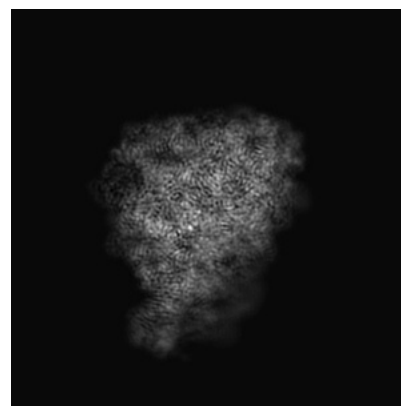
6.1.1 Primary map



X

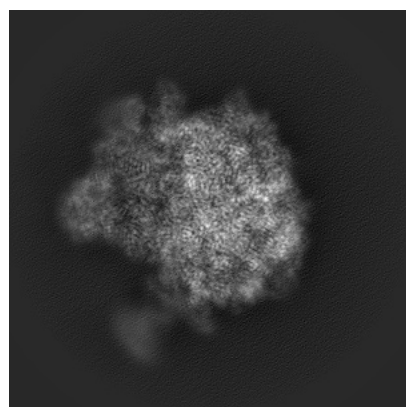


Y

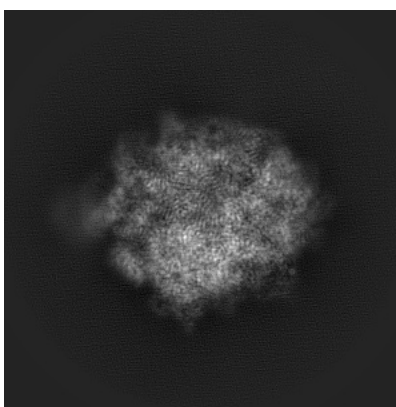


Z

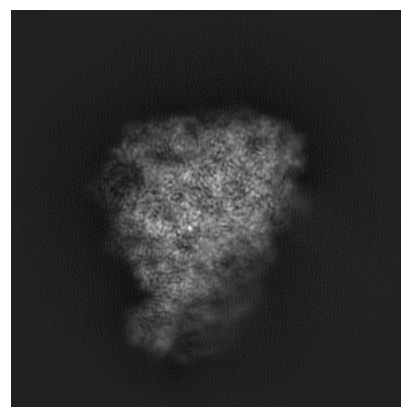
6.1.2 Raw map



X



Y

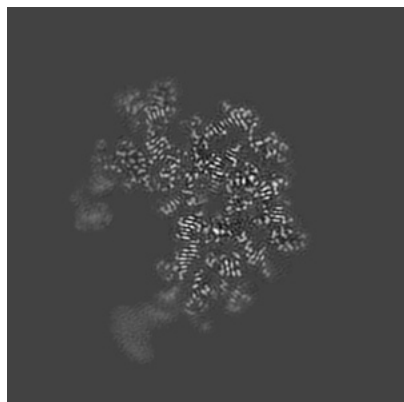


Z

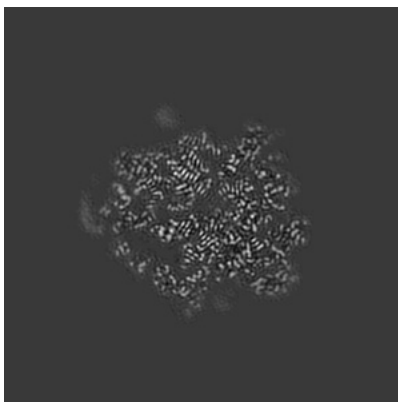
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

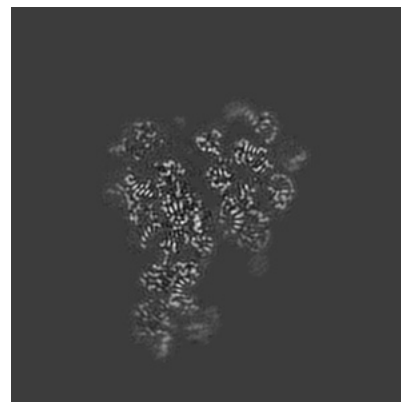
6.2.1 Primary map



X Index: 200

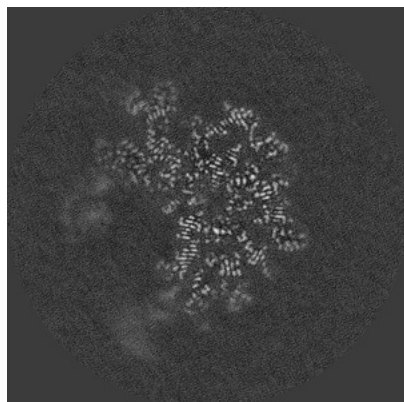


Y Index: 200

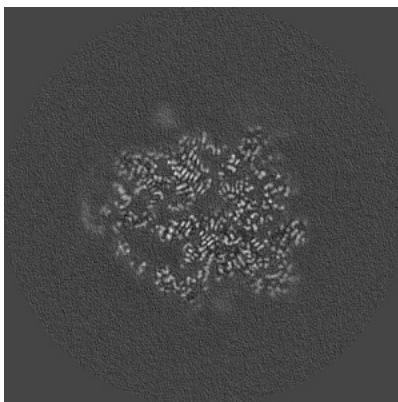


Z Index: 200

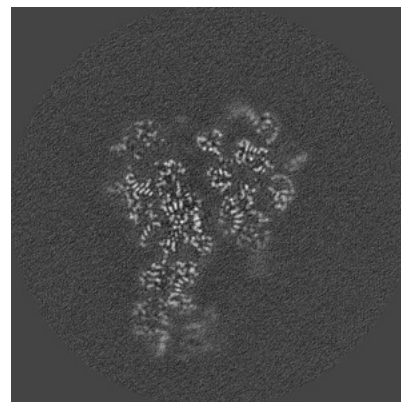
6.2.2 Raw map



X Index: 200



Y Index: 200

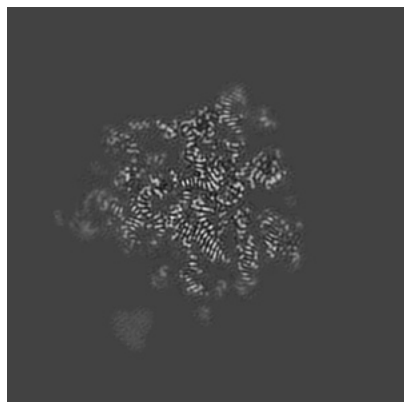


Z Index: 200

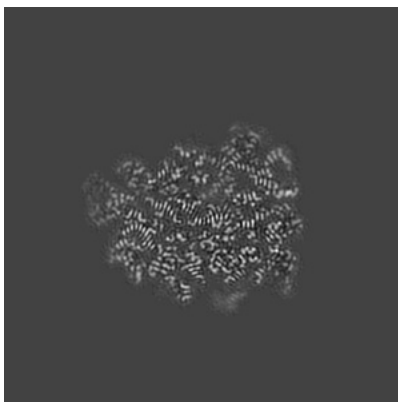
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

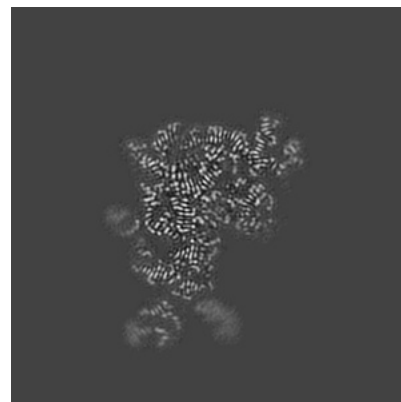
6.3.1 Primary map



X Index: 174

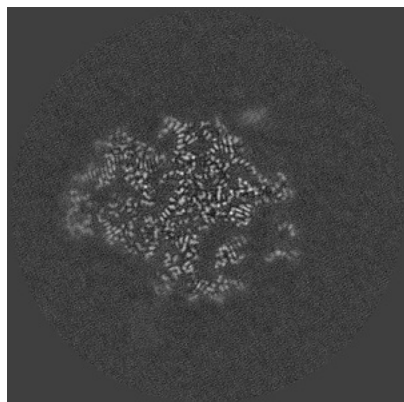


Y Index: 185

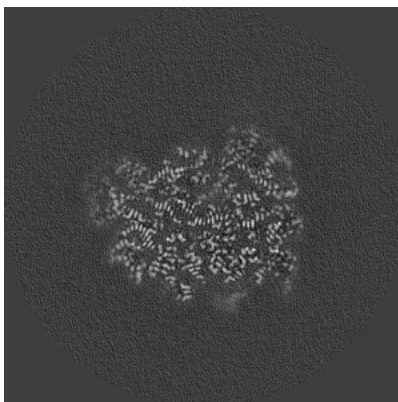


Z Index: 222

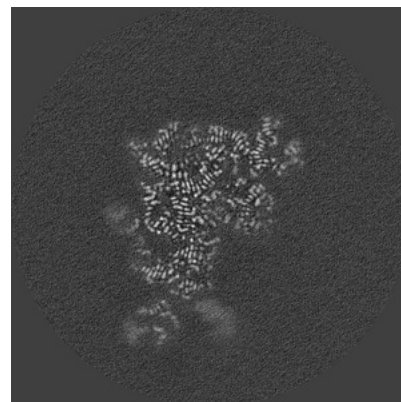
6.3.2 Raw map



X Index: 157



Y Index: 186

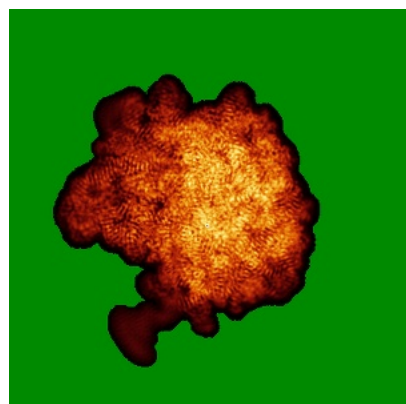


Z Index: 222

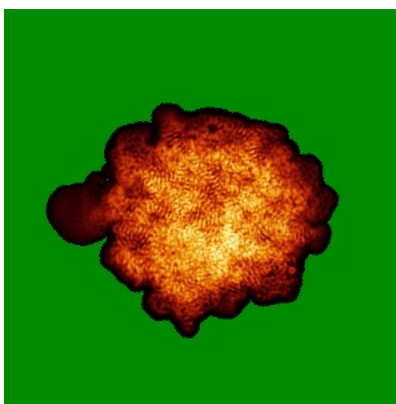
The images above show the largest variance slices of the map in three orthogonal directions.

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

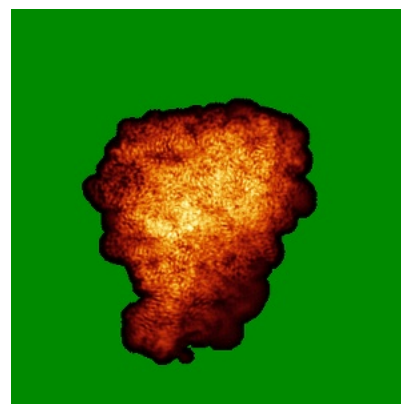
6.4.1 Primary map



X

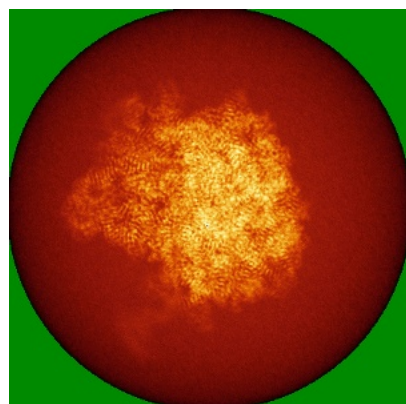


Y

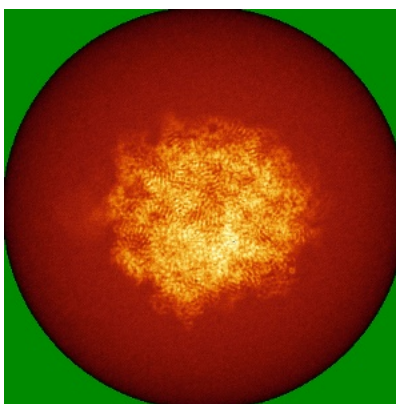


Z

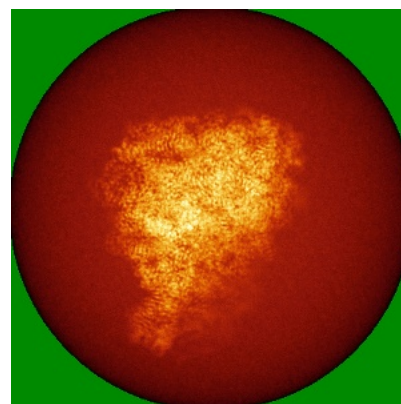
6.4.2 Raw map



X



Y

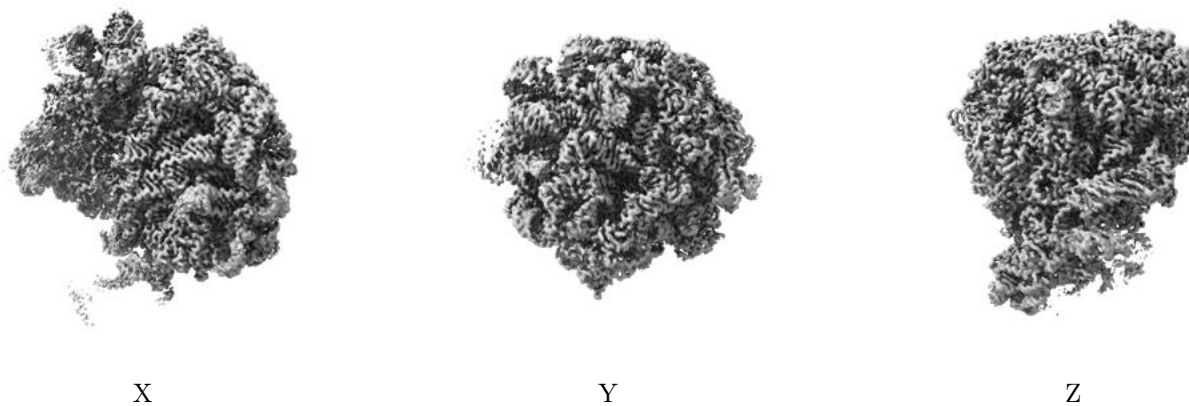


Z

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.

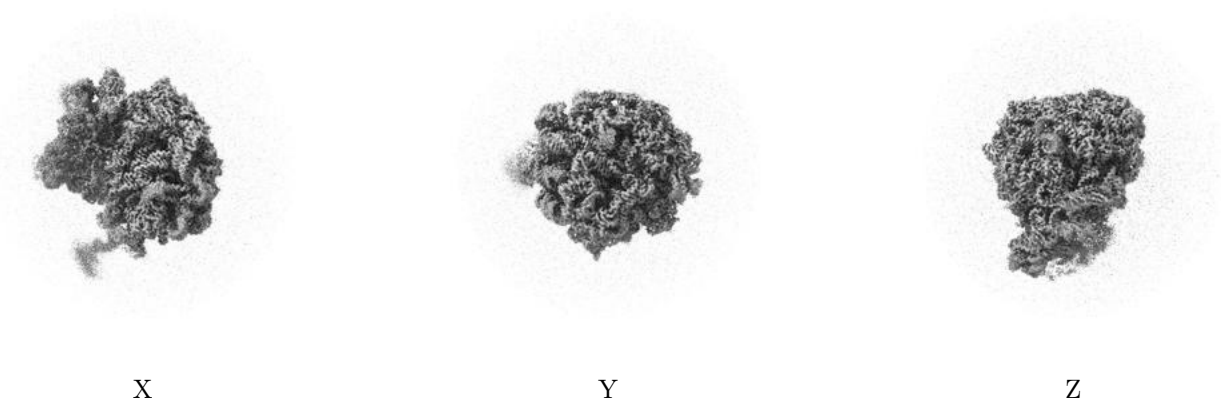
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.00566. 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.

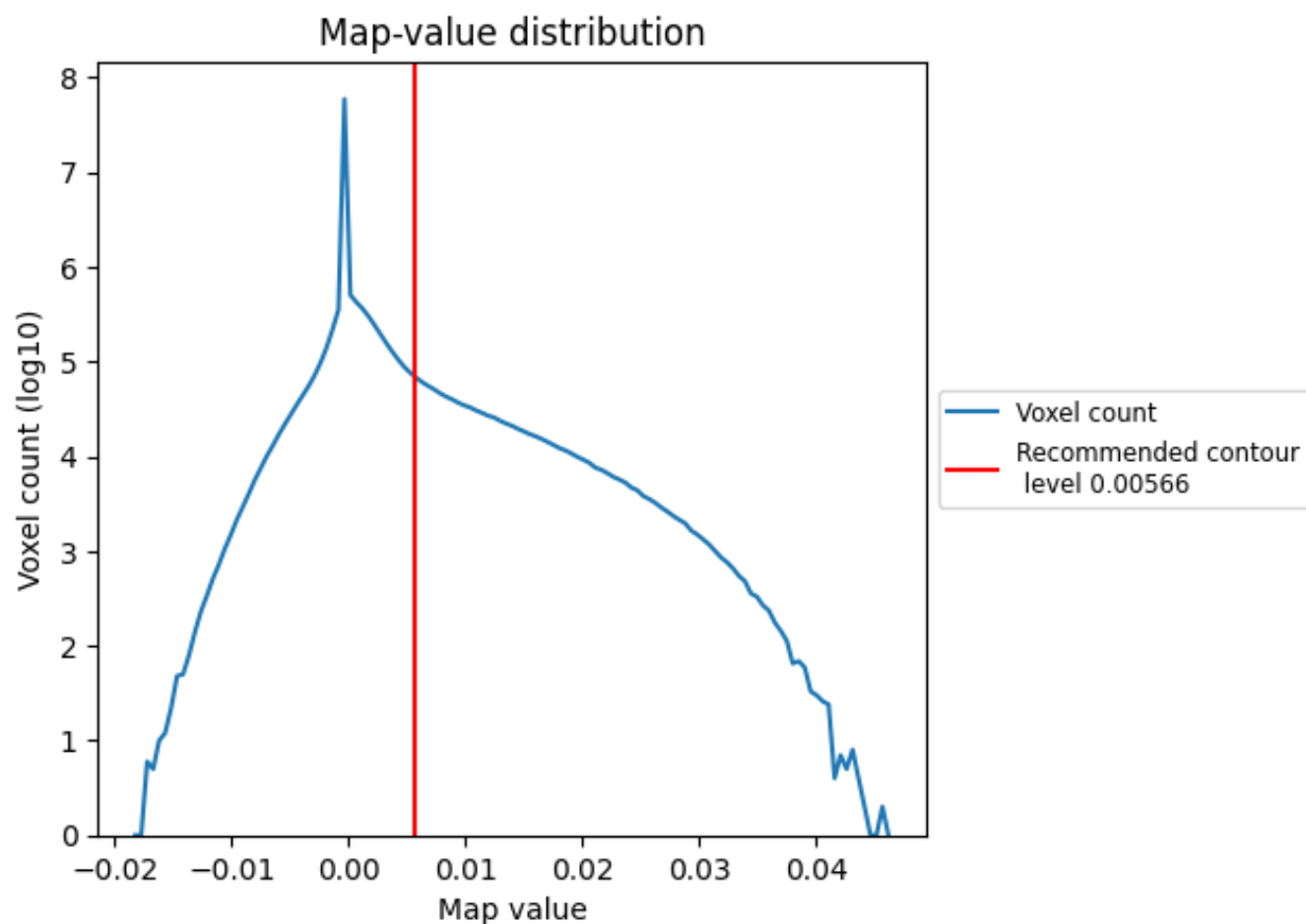
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

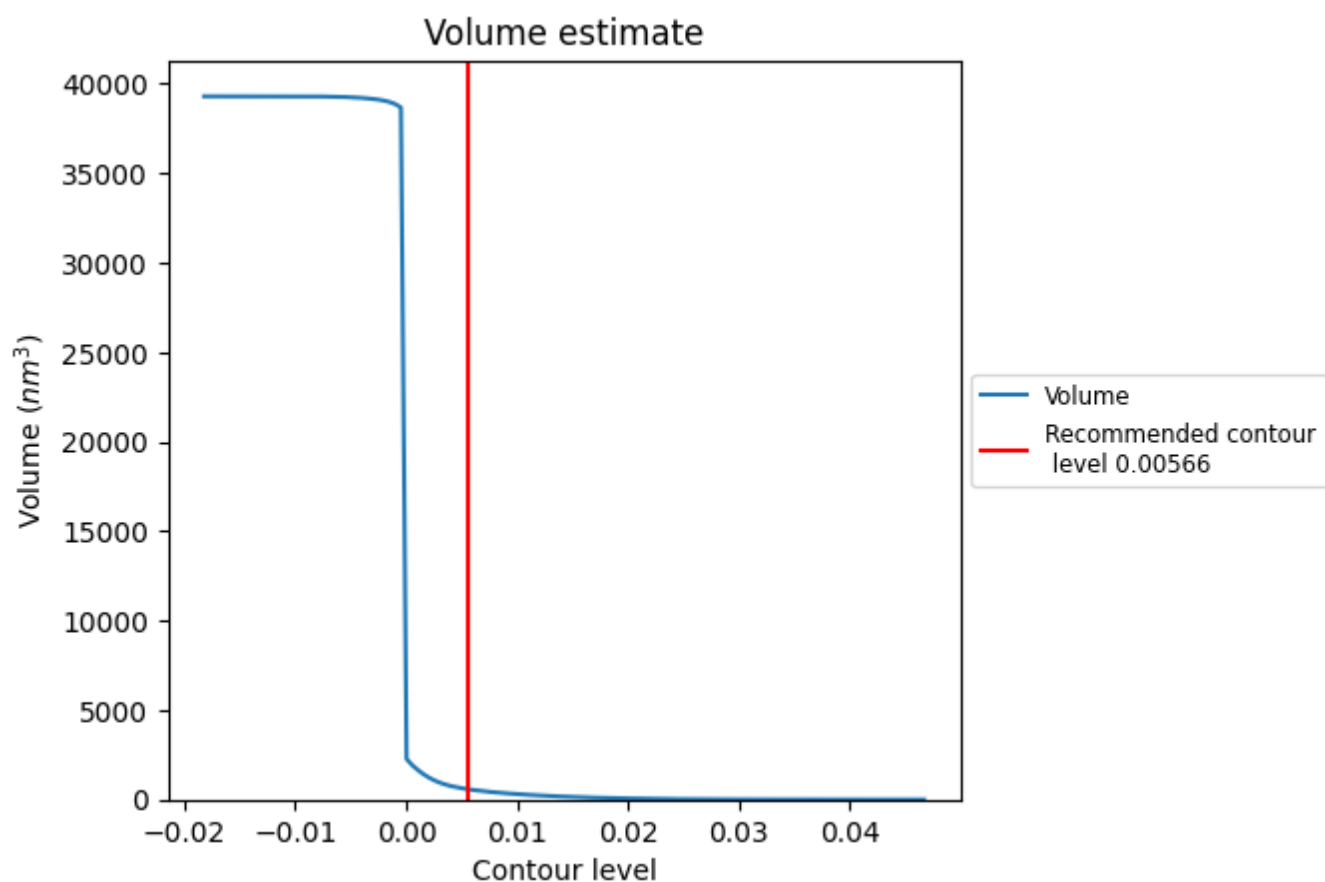
This section contains the results of statistical analysis of the map.

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.

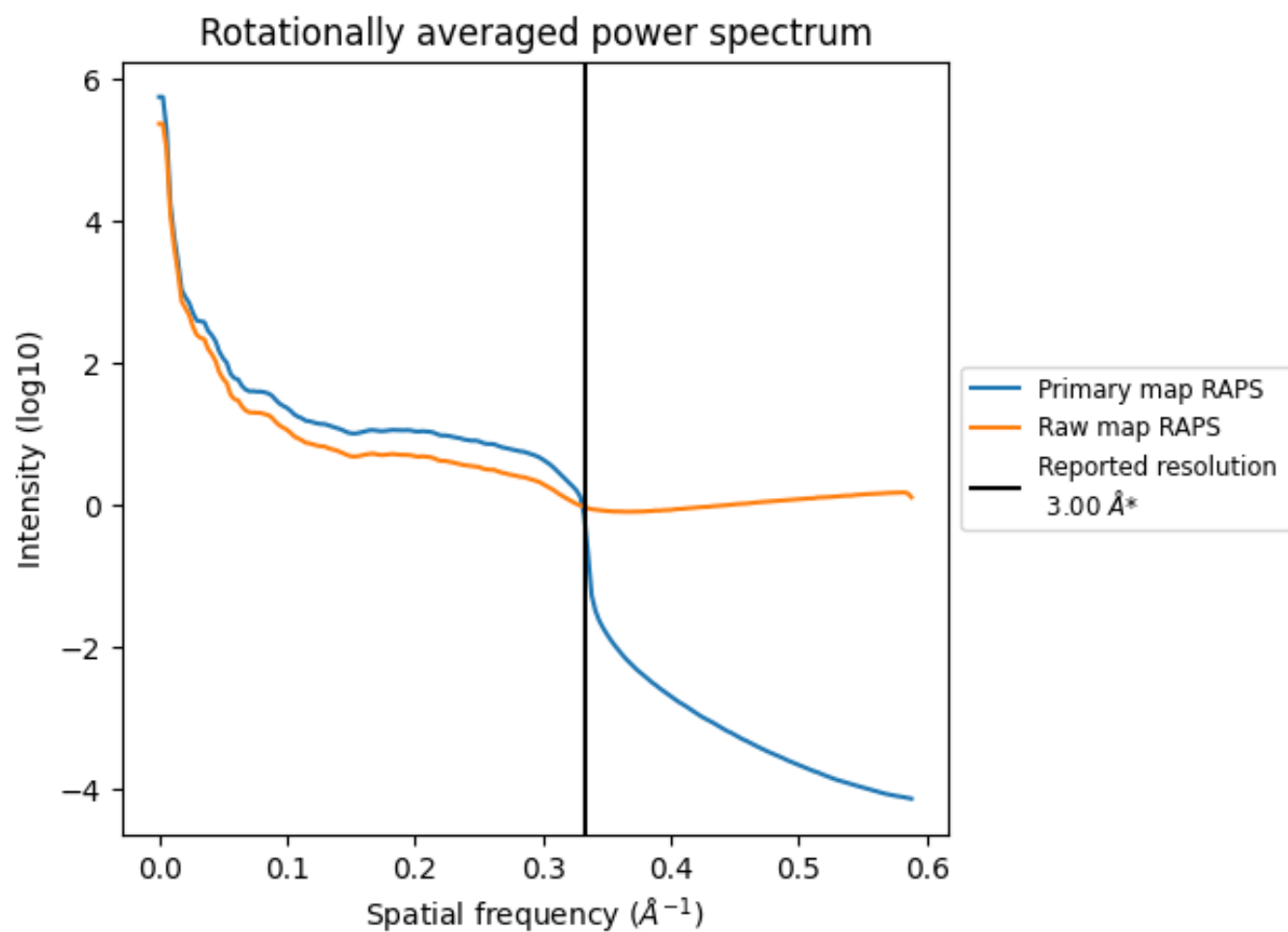
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 571 nm^3 ; this corresponds to an approximate mass of 516 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](#)

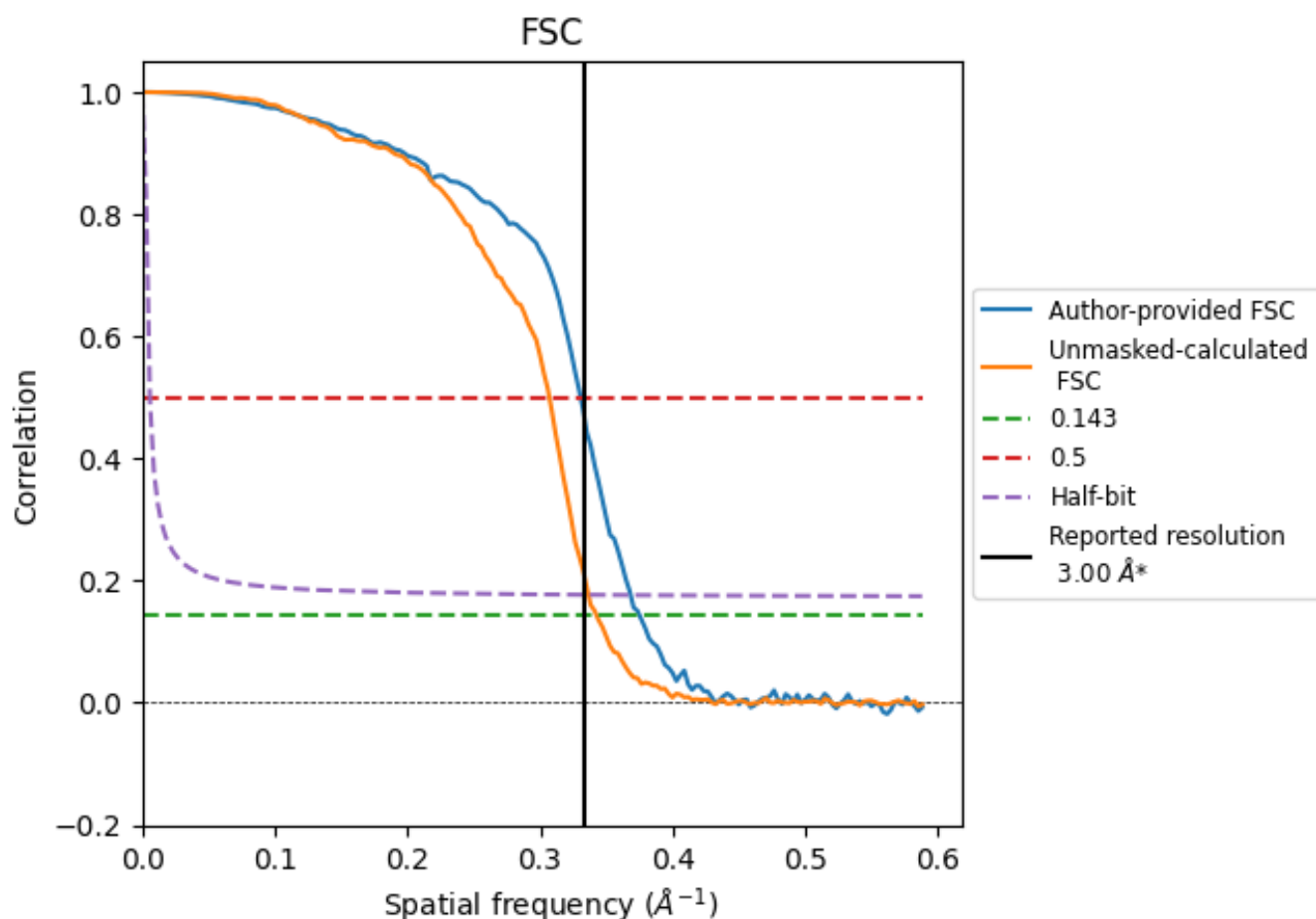


*Reported resolution corresponds to spatial frequency of 0.333 $\text{\AA}^{-1}$

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 0.333 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

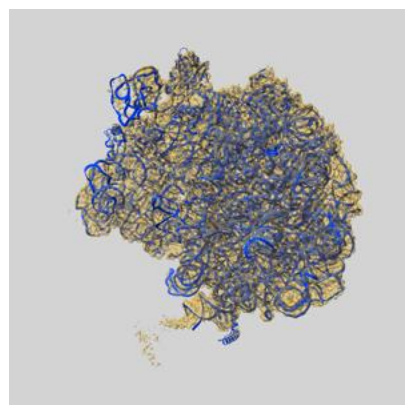
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	2.67	3.02	2.71
Unmasked-calculated*	2.92	3.26	2.97

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 2.67 differs from the reported value 3.0 by more than 10 %

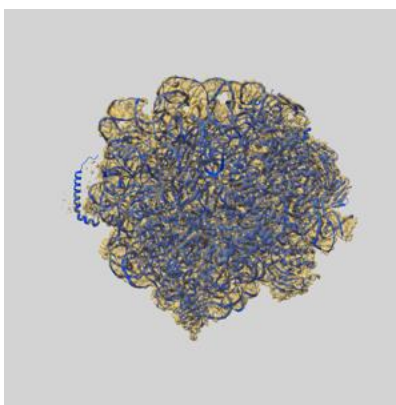
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-69918 and PDB model 24YW. Per-residue inclusion information can be found in [section 3](#) on [page 10](#).

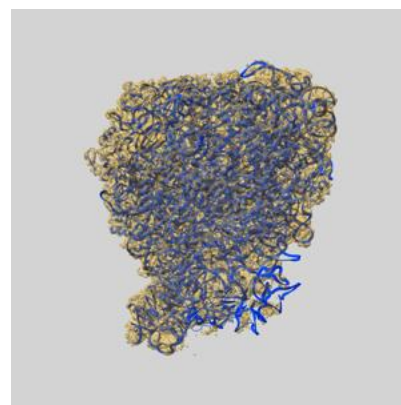
9.1 Map-model overlay [i](#)



X



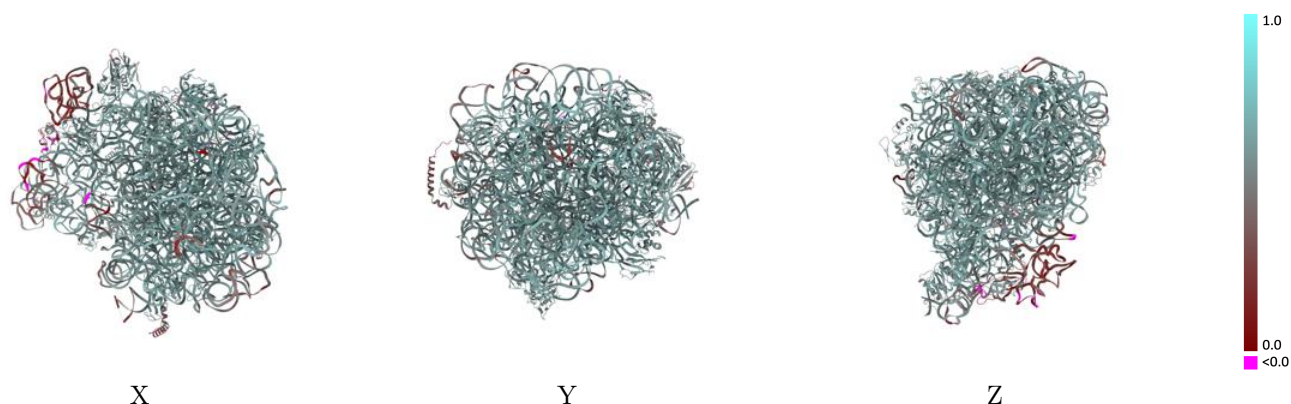
Y



Z

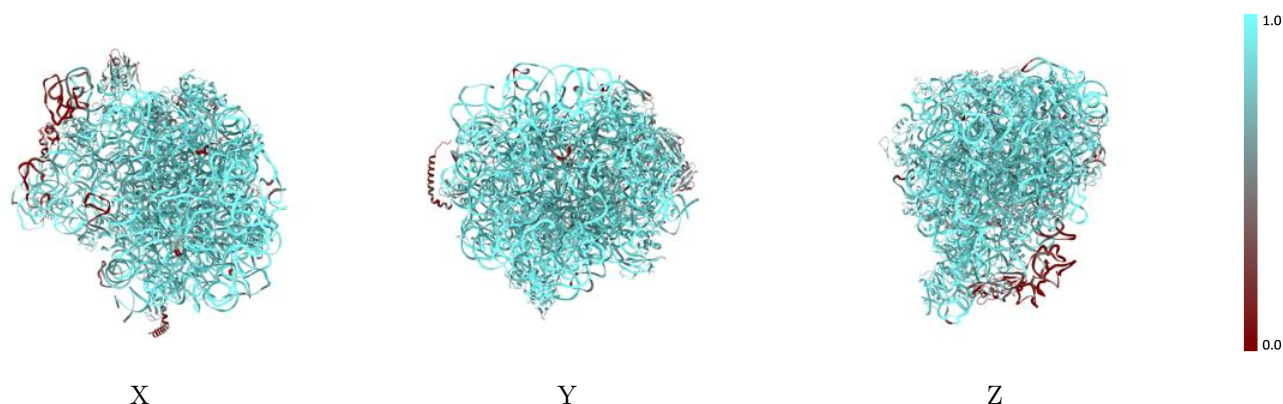
The images above show the 3D surface view of the map at the recommended contour level 0.00566 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



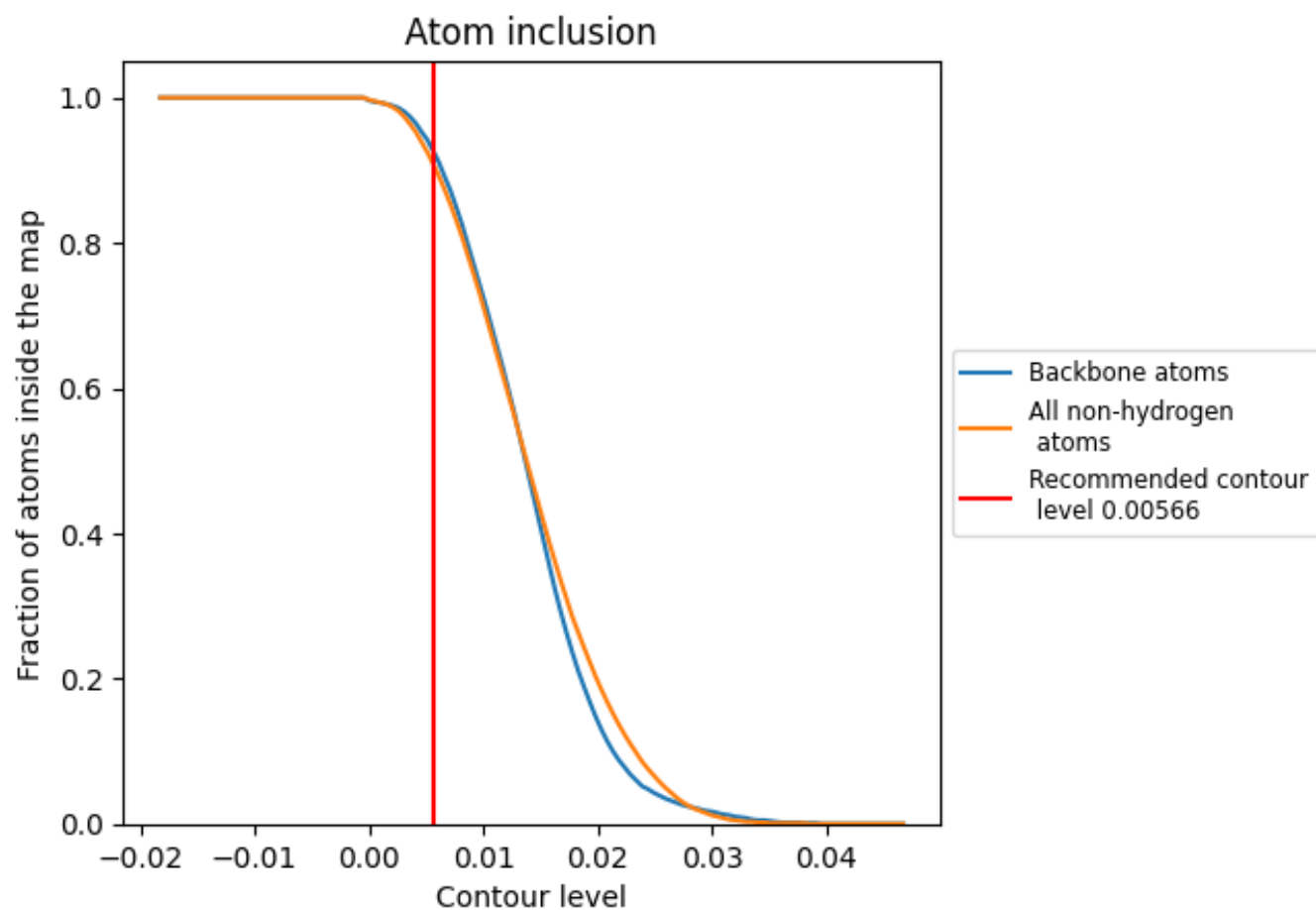
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.00566).

9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 91% 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 (0.00566) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9080	 0.5850
2	 0.9460	 0.6220
3	 0.8040	 0.5900
4	 0.9550	 0.6280
5	 0.9580	 0.6330
6	 0.8450	 0.5980
A	 0.9350	 0.5870
B	 0.9400	 0.5420
C	 0.9120	 0.6080
D	 0.9270	 0.6100
E	 0.8830	 0.5950
G	 0.5700	 0.5150
H	 0.4740	 0.4400
J	 0.9390	 0.6260
K	 0.7990	 0.5850
L	 0.8940	 0.5930
M	 0.8680	 0.5960
N	 0.9340	 0.6120
O	 0.8580	 0.5750
P	 0.6450	 0.5070
Q	 0.9600	 0.6170
R	 0.8940	 0.6070
S	 0.9030	 0.6150
T	 0.8770	 0.6000
U	 0.7940	 0.5760
V	 0.5450	 0.4750
W	 0.9550	 0.6250
X	 0.9200	 0.6060
Y	 0.8380	 0.5540
Z	 0.8960	 0.6090

