



Full wwPDB EM Validation Report ⓘ

Mar 10, 2026 – 03:05 AM UTC

PDB ID : 8CDV / pdb_00008cdv
EMDB ID : EMD-16596
Title : Rnase R bound to a 30S degradation intermediate (state II)
Authors : Paternoga, H.; Dimitrova-Paternoga, L.; Wilson, D.N.
Deposited on : 2023-02-01
Resolution : 4.73 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

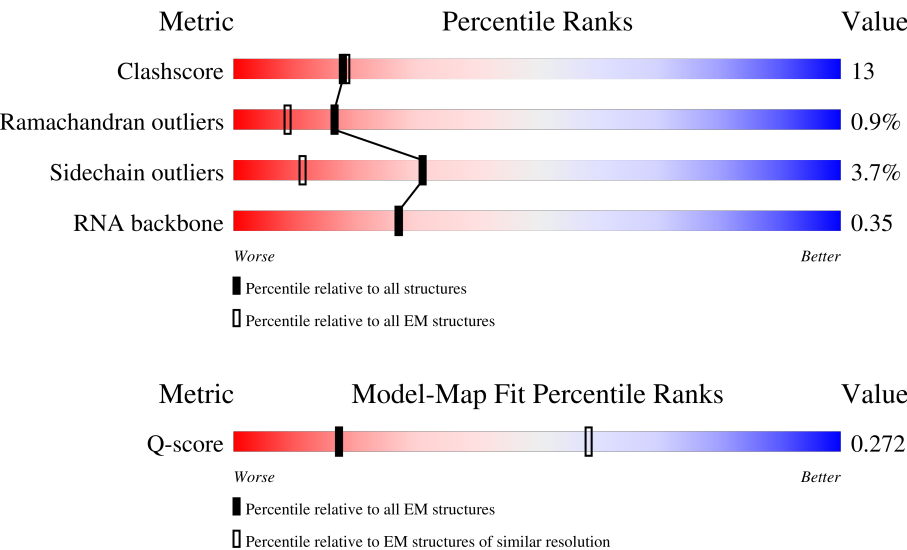
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance i

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

The reported resolution of this entry is 4.73 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	1643 (4.23 - 5.23)

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	1554	
2	B	11	
3	C	779	

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Mol	Chain	Length	Quality of chain
4	F	200	
5	G	166	
6	H	156	
7	I	132	
8	J	130	
9	K	102	
10	L	138	
11	M	121	
12	O	89	
13	P	90	
14	Q	87	
15	R	92	
16	S	88	
17	T	95	
18	U	79	
19	V	131	

2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 43593 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 RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1247	Total	C	N	O	P	0	0
			26755	11934	4917	8657	1247		

- Molecule 2 is a RNA chain called RNA Substrate.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	11	Total	C	N	O	P	0	0
			242	110	55	66	11		

- Molecule 3 is a protein called Ribonuclease R.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	457	Total	C	N	O	S	0	0
			3687	2316	629	724	18		

- Molecule 4 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	F	185	Total	C	N	O	S	0	0
			1490	942	276	270	2		

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	G	158	Total	C	N	O	S	0	0
			1170	736	216	216	2		

- Molecule 6 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	H	89	Total	C	N	O	S	0	0
			727	456	134	133	4		

- Molecule 7 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	I	131	Total	C	N	O	S	0	0
			1036	655	191	187	3		

- Molecule 8 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	J	102	Total	C	N	O	S	0	0
			776	481	150	145			

- Molecule 9 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	K	62	Total	C	N	O	S	0	0
			489	306	91	91	1		

- Molecule 10 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	136	Total	C	N	O	S	0	0
			1052	653	211	186	2		

- Molecule 11 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	M	108	Total	C	N	O	S	0	0
			868	534	176	158			

- Molecule 12 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	O	85	Total	C	N	O	S	0	0
			710	436	144	129	1		

- Molecule 13 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	P	88	Total	C	N	O	S	0	0
			695	441	128	124	2		

- Molecule 14 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	Q	84	Total	C	N	O	S	0	0
			691	435	128	126	2		

- Molecule 15 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	R	78	Total	C	N	O	S	0	0
			633	409	112	110	2		

- Molecule 16 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	S	83	Total	C	N	O	S	0	0
			637	390	130	116	1		

- Molecule 17 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	T	92	Total	C	N	O	S	0	0
			755	476	132	146	1		

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	U	64	Total	C	N	O	S	0	0
			518	332	96	88	2		

- Molecule 19 is a protein called 30S ribosomal protein S11.

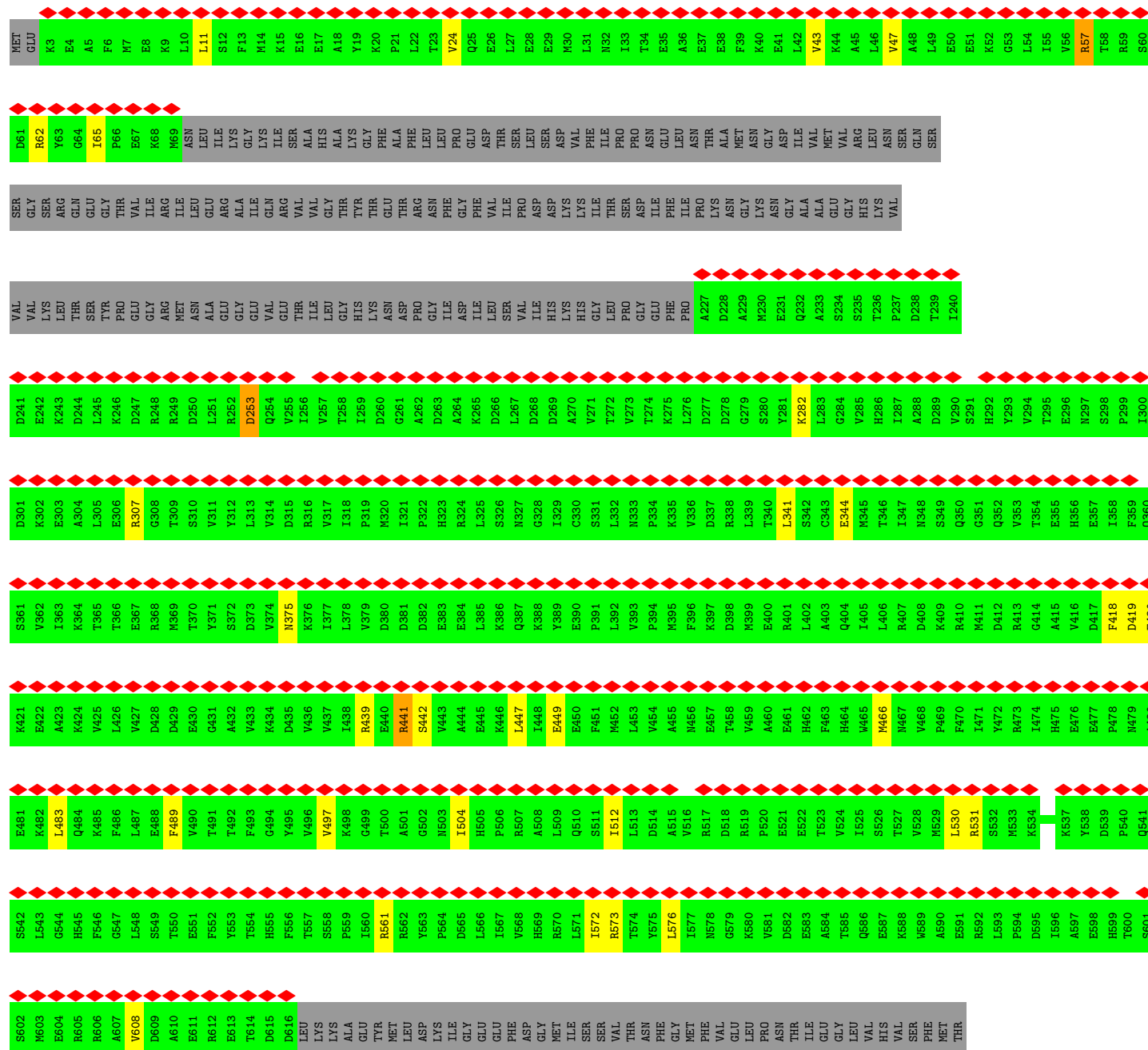
Mol	Chain	Residues	Atoms					AltConf	Trace
19	V	92	Total	C	N	O	S	0	0
			662	409	123	129	1		



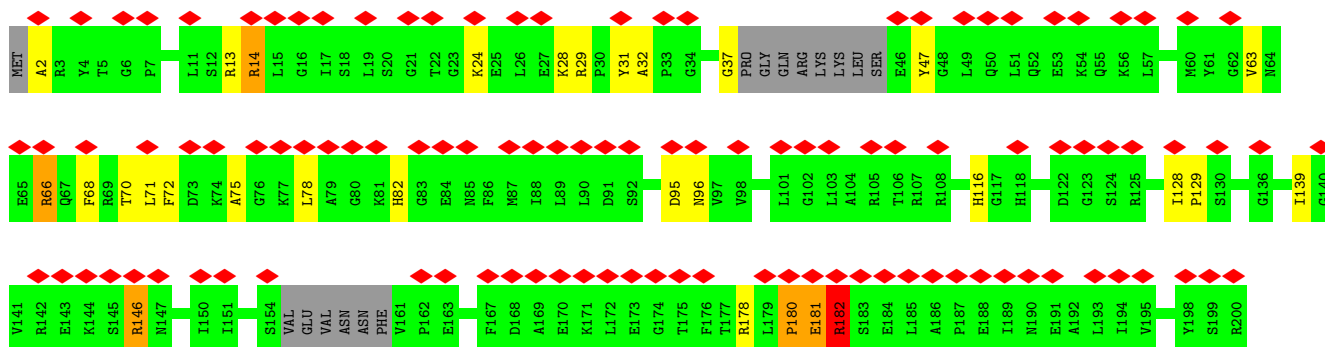
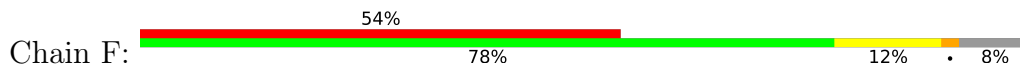
● Molecule 2: RNA Substrate



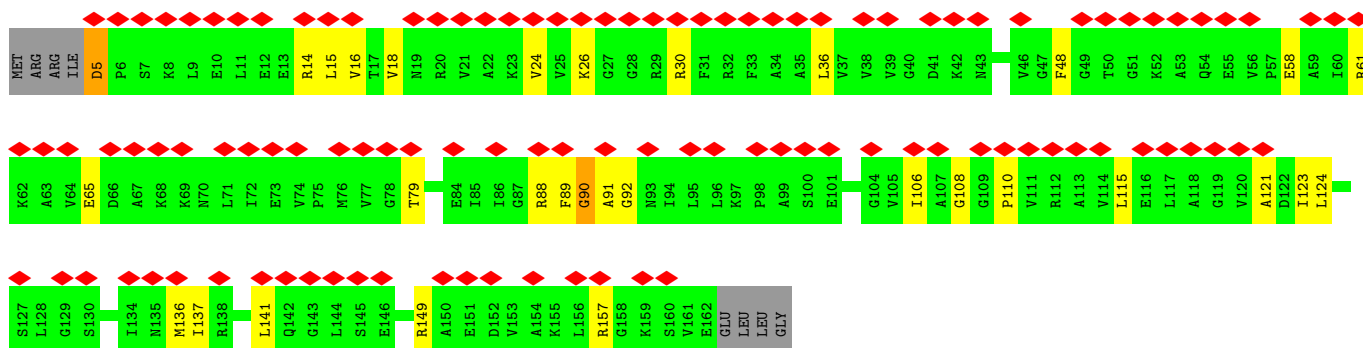
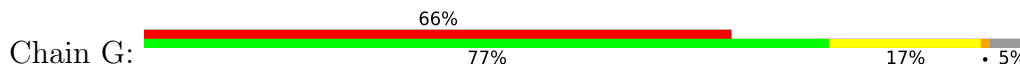
● Molecule 3: Ribonuclease R



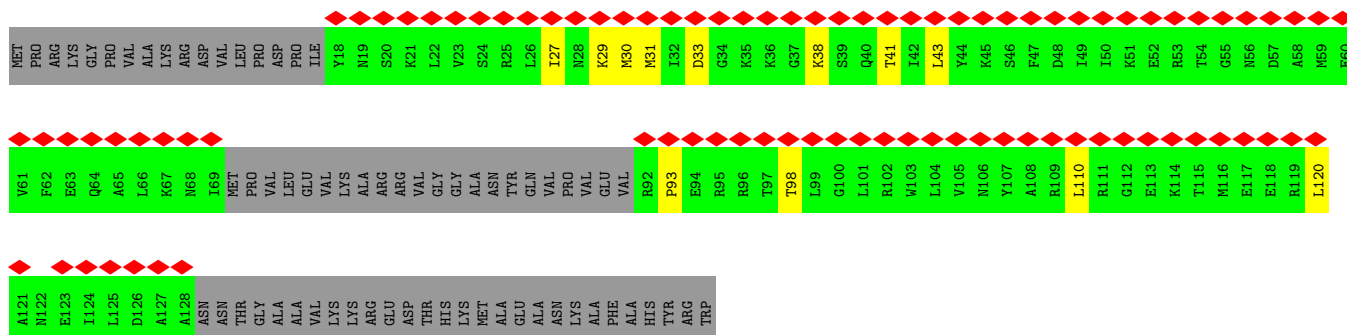
- Molecule 4: 30S ribosomal protein S4



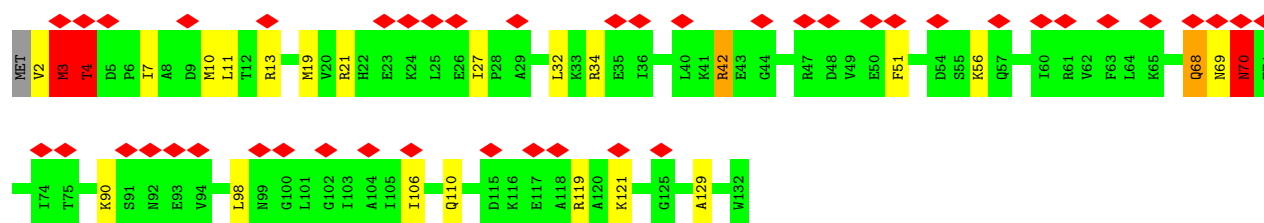
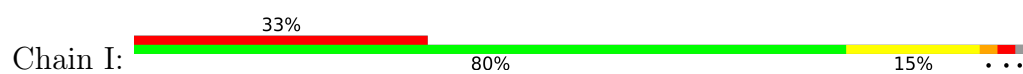
- Molecule 5: 30S ribosomal protein S5



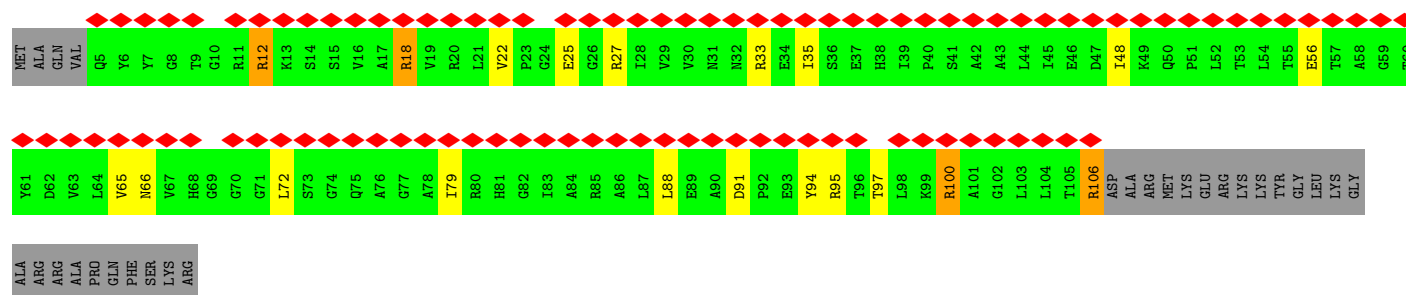
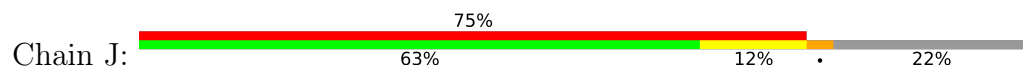
- Molecule 6: 30S ribosomal protein S7



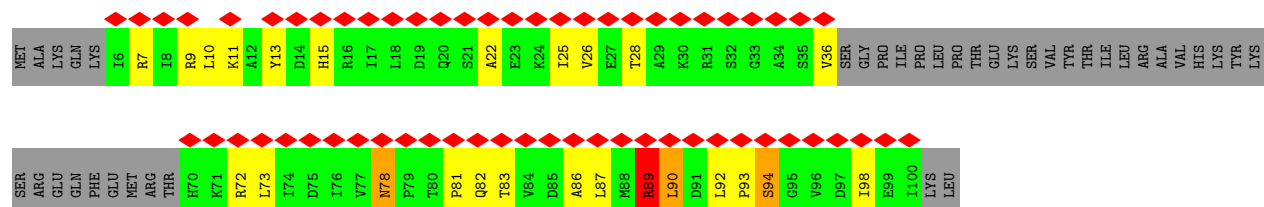
- Molecule 7: 30S ribosomal protein S8



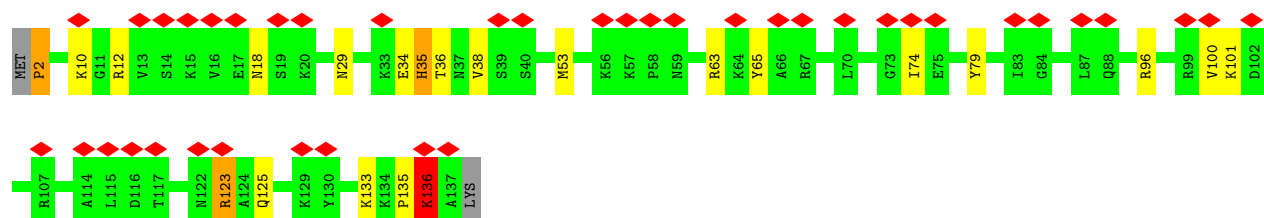
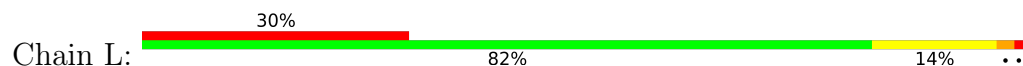
• Molecule 8: 30S ribosomal protein S9



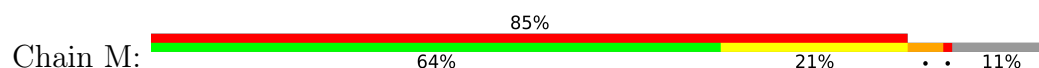
• Molecule 9: 30S ribosomal protein S10



• Molecule 10: 30S ribosomal protein S12

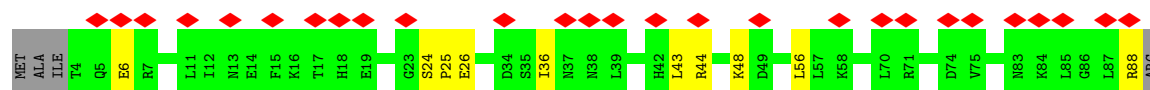
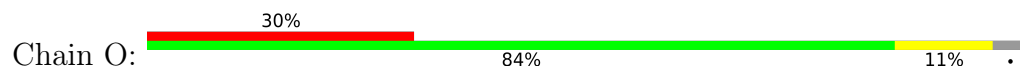


• Molecule 11: 30S ribosomal protein S13

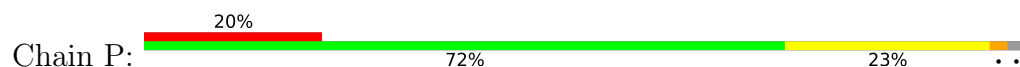




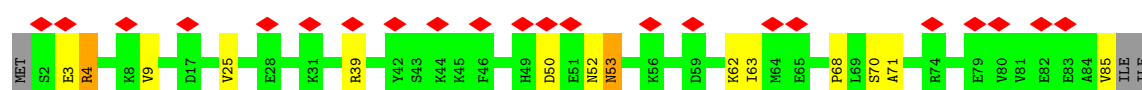
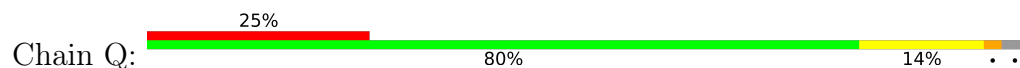
- Molecule 12: 30S ribosomal protein S15



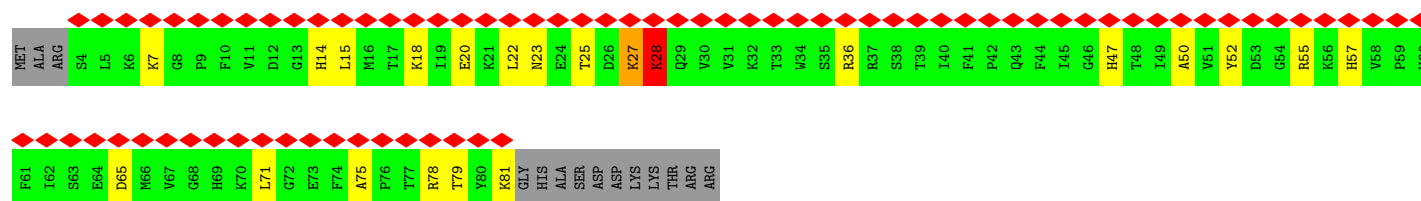
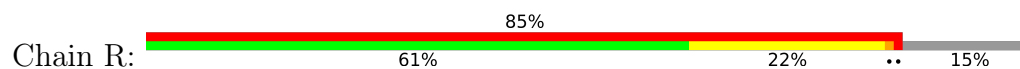
- Molecule 13: 30S ribosomal protein S16



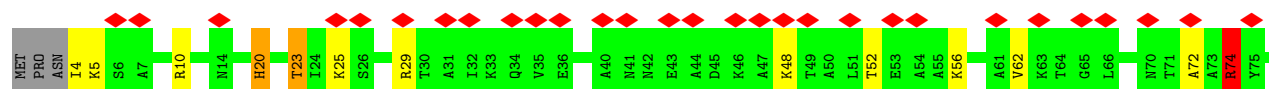
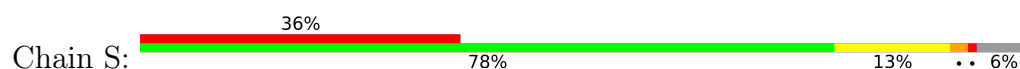
- Molecule 14: 30S ribosomal protein S17

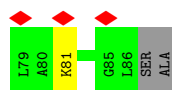


- Molecule 15: 30S ribosomal protein S19

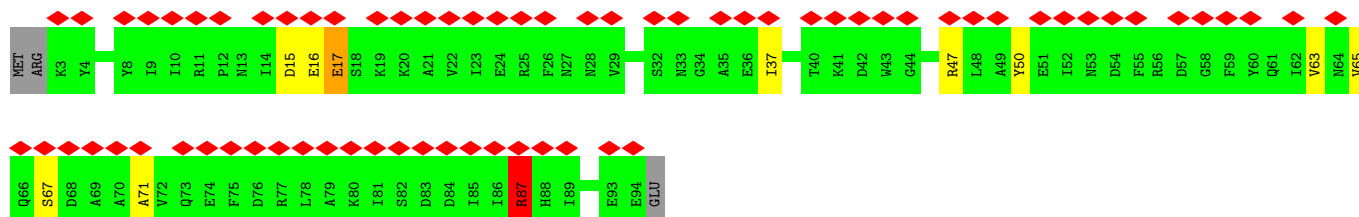
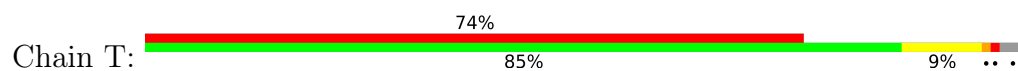


- Molecule 16: 30S ribosomal protein S20

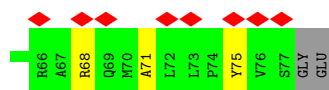
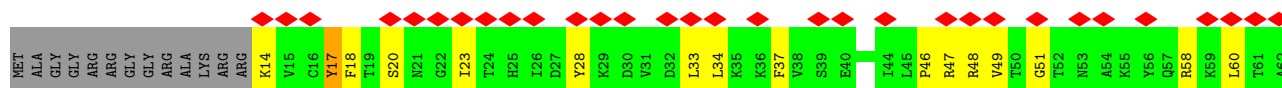




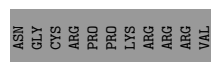
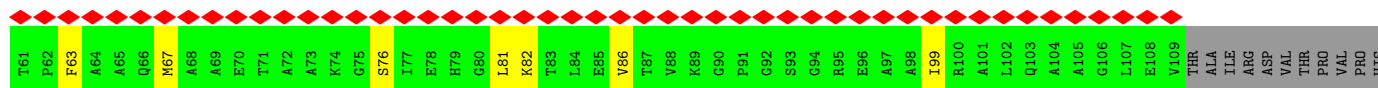
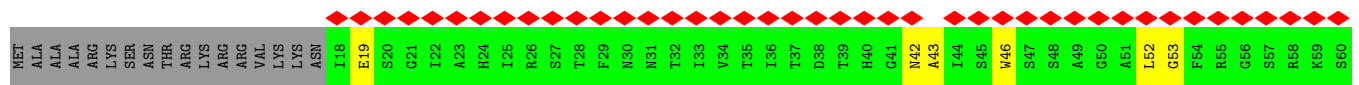
• Molecule 17: 30S ribosomal protein S6



• Molecule 18: 30S ribosomal protein S18



• Molecule 19: 30S ribosomal protein S11



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	4011	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 ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	900	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.052	Depositor
Minimum map value	-0.027	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0125	Depositor
Map size (Å)	307.2, 307.2, 307.2	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8, 0.8, 0.8	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.63	0/29955	0.88	6/46719 (0.0%)
2	B	0.70	0/274	1.05	0/425
3	C	0.61	0/3747	0.94	1/5058 (0.0%)
4	F	0.49	0/1517	0.93	0/2036
5	G	0.53	0/1182	1.01	0/1591
6	H	0.43	0/733	0.94	0/976
7	I	0.53	0/1048	1.04	5/1407 (0.4%)
8	J	0.47	0/786	0.92	0/1063
9	K	0.60	1/493 (0.2%)	1.04	2/664 (0.3%)
10	L	0.51	0/1069	0.95	1/1435 (0.1%)
11	M	0.47	0/873	0.99	0/1166
12	O	0.46	0/718	0.96	0/960
13	P	0.60	1/708 (0.1%)	1.06	3/950 (0.3%)
14	Q	0.48	0/699	0.91	0/933
15	R	0.49	0/649	0.96	0/872
16	S	0.53	0/639	1.22	6/852 (0.7%)
17	T	0.42	0/766	0.89	1/1031 (0.1%)
18	U	0.49	0/526	1.04	2/705 (0.3%)
19	V	0.52	0/671	0.86	0/906
All	All	0.60	2/47053 (0.0%)	0.91	27/69749 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
3	C	0	6
4	F	0	3
5	G	0	4
7	I	0	2
8	J	0	6
9	K	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
10	L	0	1
11	M	0	4
12	O	0	2
13	P	0	2
14	Q	0	2
15	R	0	2
16	S	0	3
17	T	0	1
18	U	0	2
All	All	0	42

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	P	13	LYS	C-O	-7.32	1.14	1.24
9	K	94	SER	C-O	-5.91	1.16	1.24

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	S	74	ARG	NE-CZ-NH1	-7.88	113.62	121.50
16	S	81	LYS	CB-CG-CD	7.38	128.27	111.30
9	K	94	SER	CA-C-O	-7.12	110.34	120.51
16	S	74	ARG	NE-CZ-NH2	7.03	125.53	119.20
1	A	1148	G	C2'-C3'-O3'	6.51	119.27	109.50
7	I	4	THR	N-CA-CB	6.43	121.36	110.49
7	I	3	MET	CA-C-N	6.32	133.62	121.54
7	I	3	MET	C-N-CA	6.32	133.62	121.54
7	I	3	MET	CA-C-O	-6.32	111.47	120.51
9	K	78	ASN	CA-CB-CG	6.13	118.73	112.60
7	I	42	ARG	NE-CZ-NH2	6.09	124.68	119.20
1	A	190	A	C2'-C3'-O3'	5.82	118.23	109.50
17	T	87	ARG	CG-CD-NE	5.82	124.80	112.00
13	P	88	GLN	N-CA-C	-5.78	102.08	111.04
13	P	13	LYS	CA-C-O	-5.72	112.33	120.51
1	A	444	C	C2'-C3'-O3'	5.69	118.04	109.50
18	U	17	TYR	CB-CG-CD2	5.67	129.31	120.80
18	U	17	TYR	OH-CZ-CE2	5.55	136.56	119.90
3	C	253	ASP	CA-CB-CG	5.42	118.03	112.60
10	L	2	PRO	CA-N-CD	-5.33	104.54	112.00
16	S	20	HIS	CB-CG-CD2	5.27	138.05	131.20
1	A	827	G	C2'-C3'-O3'	5.24	117.36	109.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	486	C	C2'-C3'-O3'	5.18	121.47	113.70
16	S	20	HIS	CB-CG-ND1	-5.16	114.97	122.70
13	P	88	GLN	N-CA-CB	5.14	117.40	110.10
1	A	113	G	C2'-C3'-O3'	5.13	117.20	109.50
16	S	56	LYS	CB-CA-C	-5.05	102.90	110.92

There are no chirality outliers.

All (42) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	307	ARG	Sidechain
3	C	439	ARG	Sidechain
3	C	441	ARG	Sidechain
3	C	57	ARG	Sidechain
3	C	573	ARG	Sidechain
3	C	62	ARG	Sidechain
4	F	14	ARG	Sidechain
4	F	146	ARG	Sidechain
4	F	182	ARG	Sidechain
5	G	14	ARG	Sidechain
5	G	149	ARG	Sidechain
5	G	5	ASP	Peptide
5	G	88	ARG	Sidechain
7	I	119	ARG	Sidechain
7	I	42	ARG	Sidechain
8	J	100	ARG	Sidechain
8	J	106	ARG	Sidechain
8	J	12	ARG	Sidechain
8	J	18	ARG	Sidechain
8	J	27	ARG	Sidechain
8	J	33	ARG	Sidechain
9	K	89	ARG	Sidechain
9	K	93	PRO	Peptide
10	L	123	ARG	Sidechain
11	M	109	ARG	Sidechain
11	M	11	ARG	Sidechain
11	M	27	ARG	Sidechain
11	M	98	ARG	Sidechain
12	O	44	ARG	Sidechain
12	O	88	ARG	Sidechain
13	P	71	ARG	Sidechain
13	P	9	ARG	Sidechain

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Mol	Chain	Res	Type	Group
14	Q	39	ARG	Sidechain
14	Q	4	ARG	Sidechain
15	R	28	LYS	Peptide
15	R	78	ARG	Sidechain
16	S	10	ARG	Sidechain
16	S	29	ARG	Sidechain
16	S	74	ARG	Sidechain
17	T	47	ARG	Sidechain
18	U	47	ARG	Sidechain
18	U	68	ARG	Sidechain

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	26755	0	13475	770	0
2	B	242	0	122	19	0
3	C	3687	0	3670	30	0
4	F	1490	0	1518	19	0
5	G	1170	0	1245	19	0
6	H	727	0	760	10	0
7	I	1036	0	1095	19	0
8	J	776	0	799	10	0
9	K	489	0	516	18	0
10	L	1052	0	1112	16	0
11	M	868	0	925	20	0
12	O	710	0	735	4	0
13	P	695	0	721	7	0
14	Q	691	0	728	6	0
15	R	633	0	649	14	0
16	S	637	0	696	8	0
17	T	755	0	746	8	0
18	U	518	0	555	14	0
19	V	662	0	666	14	0
All	All	43593	0	30733	951	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 13.

All (951) 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)
3:C:24:VAL:HG11	19:V:67:MET:HE3	1.45	0.98
1:A:70:G:H1	1:A:99:A:H61	1.07	0.98
1:A:458:G:H5'	1:A:459:A:H3'	1.50	0.92
13:P:41:ASN:HB3	13:P:48:GLU:HG3	1.53	0.91
1:A:224:U:H1'	1:A:475:A:N6	1.87	0.90
1:A:1296:A:H2'	1:A:1297:A:C8	2.07	0.90
1:A:1141:G:H1	1:A:1152:G:H21	1.18	0.89
1:A:906:U:C6	1:A:907:C:C5	2.62	0.87
1:A:683:G:H1	1:A:725:A:H61	1.18	0.87
1:A:474:A:O5'	1:A:474:A:H8	1.57	0.87
1:A:672:A:H61	1:A:751:G:H1	1.21	0.87
1:A:215:G:H2'	1:A:216:G:C8	2.09	0.86
1:A:94:A:OP1	1:A:95:U:H5	1.57	0.86
1:A:1198:U:O2'	1:A:1199:G:OP1	1.92	0.86
1:A:1168:U:H5''	1:A:1191:G:H1'	1.59	0.85
1:A:960:U:H3	1:A:1240:G:H1	1.25	0.84
1:A:13:G:N2	1:A:25:C:O2	2.10	0.84
1:A:1319:C:H2'	1:A:1320:A:H8	1.43	0.83
1:A:527:C:H4'	1:A:528:C:H5''	1.58	0.83
1:A:955:G:H1	1:A:1245:A:H61	1.26	0.83
1:A:682:G:N2	1:A:743:A:C5	2.47	0.82
1:A:242:C:O2'	1:A:243:C:H5'	1.80	0.82
1:A:698:C:H4'	1:A:714:G:H1'	1.61	0.81
1:A:64:U:OP1	1:A:393:U:O2'	1.97	0.81
1:A:222:G:C6	1:A:223:C:C4	2.69	0.81
1:A:495:U:H2'	1:A:496:A:H8	1.46	0.81
3:C:43:VAL:HG22	19:V:67:MET:HE1	1.62	0.80
1:A:222:G:C6	1:A:223:C:N4	2.50	0.80
1:A:253:U:C2	1:A:292:G:C2	2.68	0.80
1:A:775:A:H2'	1:A:776:A:H5'	1.63	0.79
1:A:13:G:N2	1:A:25:C:C2	2.48	0.79
1:A:365:G:O2'	1:A:366:U:H5'	1.82	0.78
1:A:955:G:H1	1:A:1245:A:N6	1.81	0.78
1:A:670:G:H2'	1:A:671:A:H4'	1.66	0.78
1:A:1024:A:H5''	15:R:14:HIS:CD2	2.18	0.78
1:A:64:U:H5''	1:A:393:U:O2'	1.83	0.77
1:A:105:G:H3'	1:A:106:G:H8	1.48	0.77
1:A:600:U:O2'	1:A:601:C:H5'	1.84	0.77
1:A:70:G:H1	1:A:99:A:N6	1.83	0.77
1:A:906:U:C6	1:A:907:C:H5	2.03	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:30:G:H2'	1:A:31:A:H8	1.49	0.76
1:A:244:G:C6	1:A:245:C:N3	2.54	0.76
11:M:96:PRO:HB3	11:M:100:GLN:HB2	1.67	0.76
1:A:328:G:H1	1:A:341:C:H42	1.32	0.76
1:A:775:A:C2'	1:A:776:A:H5'	2.16	0.75
1:A:1250:G:H2'	1:A:1251:G:H8	1.50	0.75
1:A:682:G:N2	1:A:743:A:C4	2.54	0.75
1:A:1314:G:H22	1:A:1340:G:H2'	1.52	0.75
16:S:62:VAL:CG2	16:S:72:ALA:HB2	2.16	0.75
1:A:673:G:H22	1:A:750:G:H1	1.35	0.74
1:A:698:C:H2'	1:A:699:G:C8	2.23	0.74
1:A:962:U:H5'	1:A:982:C:H41	1.52	0.74
1:A:693:U:H4'	19:V:42:ASN:HD22	1.53	0.74
1:A:290:A:C6	1:A:291:U:C2	2.76	0.74
3:C:420:PHE:CE2	3:C:530:LEU:HD11	2.24	0.73
3:C:43:VAL:HG22	19:V:67:MET:CE	2.17	0.73
1:A:74:A:H1'	1:A:95:U:N3	2.03	0.73
1:A:141:G:H2'	1:A:142:A:H8	1.54	0.73
1:A:215:G:H2'	1:A:216:G:H8	1.54	0.73
1:A:94:A:OP1	1:A:95:U:C5	2.40	0.73
1:A:224:U:H1'	1:A:475:A:H62	1.52	0.72
1:A:954:G:H1'	1:A:1348:A:H61	1.54	0.72
1:A:1039:U:H2'	1:A:1041:C:H1'	1.70	0.72
15:R:22:LEU:HD22	15:R:28:LYS:HB2	1.71	0.72
1:A:1009:C:H42	1:A:1051:G:H1	1.37	0.72
2:B:-1:A:O3'	2:B:0:A:C8	2.42	0.72
1:A:1170:C:N4	1:A:1184:G:H1	1.87	0.71
1:A:74:A:H1'	1:A:95:U:H3	1.55	0.71
1:A:523:C:H2'	1:A:524:G:H8	1.54	0.71
1:A:1194:G:O2'	1:A:1195:G:O4'	2.07	0.71
1:A:1139:C:H42	1:A:1152:G:H1	1.39	0.71
11:M:15:VAL:HG23	11:M:43:THR:O	1.90	0.71
1:A:1016:A:H61	1:A:1033:G:H2'	1.56	0.71
1:A:1172:G:H1	1:A:1182:C:H42	1.38	0.70
1:A:1125:U:H1'	1:A:1194:G:H1	1.56	0.70
1:A:1141:G:O5'	1:A:1141:G:H8	1.74	0.70
1:A:421:G:H21	1:A:436:G:H1'	1.57	0.70
1:A:1326:C:O5'	1:A:1326:C:H6	1.74	0.70
1:A:474:A:O5'	1:A:474:A:C8	2.42	0.70
8:J:65:VAL:HG11	8:J:79:ILE:HG12	1.73	0.70
1:A:851:U:H1'	1:A:855:G:H1	1.56	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:13:G:O2'	1:A:14:U:H5'	1.93	0.69
1:A:141:G:H1	1:A:229:C:H42	1.40	0.69
1:A:147:G:H1	1:A:173:A:H61	1.40	0.69
1:A:1037:C:H42	1:A:1044:G:H1	1.39	0.69
1:A:1250:G:H2'	1:A:1251:G:C8	2.27	0.69
1:A:1290:U:O4	9:K:9:ARG:NH1	2.27	0.68
1:A:265:G:O2'	1:A:266:A:O5'	2.12	0.68
1:A:1043:G:H2'	1:A:1044:G:C8	2.28	0.67
1:A:526:G:O2'	1:A:539:G:H4'	1.94	0.67
7:I:21:ARG:NH1	7:I:70:ASN:O	2.26	0.67
1:A:586:G:H4'	1:A:826:C:H5'	1.76	0.67
3:C:531:ARG:O	6:H:93:PRO:HG2	1.93	0.67
1:A:1001:U:H1'	1:A:1003:G:H1'	1.76	0.67
1:A:1134:G:H1'	1:A:1135:U:H5	1.60	0.66
1:A:33:G:H1	1:A:50:C:H5'	1.61	0.66
1:A:40:G:O2'	1:A:41:G:C5'	2.43	0.66
16:S:62:VAL:HG21	16:S:72:ALA:CB	2.25	0.66
1:A:121:C:O2	1:A:247:G:N2	2.27	0.65
1:A:217:C:H1'	1:A:475:A:H2	1.61	0.65
3:C:24:VAL:HG11	19:V:67:MET:CE	2.25	0.65
1:A:1038:C:H1'	1:A:1044:G:H22	1.62	0.65
1:A:1277:G:H2'	1:A:1278:A:C8	2.31	0.65
1:A:737:A:H2'	1:A:738:A:C8	2.32	0.64
1:A:1008:C:H3'	1:A:1009:C:O4'	1.97	0.64
1:A:957:G:H4'	1:A:1341:A:H2	1.61	0.64
1:A:1142:C:OP2	1:A:1142:C:H6	1.80	0.64
1:A:960:U:H2'	1:A:961:G:C8	2.33	0.64
1:A:995:C:H2'	1:A:996:A:C8	2.32	0.64
1:A:989:C:H1'	1:A:1326:C:H42	1.62	0.64
1:A:1278:A:H2	1:A:1321:G:H2'	1.63	0.64
18:U:17:TYR:CE2	18:U:33:LEU:HD11	2.32	0.64
1:A:955:G:H1'	1:A:1346:G:H1'	1.80	0.64
1:A:1170:C:H42	1:A:1184:G:H1	1.43	0.64
3:C:43:VAL:HG11	19:V:52:LEU:HB3	1.80	0.64
1:A:60:C:H2'	1:A:61:A:H8	1.62	0.64
1:A:822:U:H2'	1:A:823:A:H8	1.62	0.63
1:A:277:C:H2'	1:A:278:A:C8	2.33	0.63
1:A:989:C:N4	1:A:1370:G:H1	1.95	0.63
1:A:523:C:H2'	1:A:524:G:C8	2.32	0.63
1:A:269:U:OP2	16:S:74:ARG:NH2	2.28	0.63
1:A:869:C:O2'	1:A:870:A:H5'	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:U:H2'	1:A:96:G:C8	2.34	0.63
1:A:290:A:C6	1:A:291:U:O2	2.52	0.63
5:G:79:THR:HB	5:G:121:ALA:HB3	1.80	0.63
1:A:251:A:N6	1:A:289:G:O2'	2.32	0.62
1:A:1313:G:H2'	1:A:1314:G:C8	2.34	0.62
17:T:87:ARG:HG3	17:T:87:ARG:HH11	1.64	0.62
1:A:683:G:H1	1:A:725:A:N6	1.94	0.62
1:A:713:A:H3'	1:A:714:G:H8	1.65	0.62
1:A:1162:G:H2'	1:A:1163:G:C8	2.34	0.62
1:A:244:G:C2	1:A:245:C:O2	2.53	0.62
4:F:63:VAL:HG21	4:F:68:PHE:HD1	1.63	0.62
1:A:690:A:H61	1:A:718:U:H3	1.47	0.62
1:A:906:U:H6	1:A:907:C:H5	1.46	0.62
1:A:265:G:H2'	1:A:266:A:C8	2.35	0.62
4:F:66:ARG:HB3	4:F:66:ARG:HH21	1.63	0.62
1:A:957:G:H4'	1:A:1341:A:C2	2.35	0.62
1:A:1139:C:N4	1:A:1152:G:H1	1.97	0.62
1:A:1129:U:H2'	1:A:1130:C:C6	2.35	0.62
1:A:1314:G:N2	1:A:1340:G:H2'	2.14	0.62
1:A:672:A:N6	1:A:751:G:H1	1.94	0.61
1:A:144:U:H2'	1:A:145:G:H8	1.65	0.61
1:A:954:G:H1'	1:A:1348:A:N6	2.14	0.61
1:A:1156:C:H2'	1:A:1157:U:H4'	1.83	0.61
1:A:601:C:C4	1:A:602:U:C4	2.89	0.61
1:A:960:U:H2'	1:A:961:G:H8	1.64	0.61
1:A:527:C:H2'	1:A:539:G:C8	2.36	0.61
1:A:1182:C:H2'	1:A:1183:G:H4'	1.83	0.61
1:A:968:A:H1'	1:A:996:A:H5'	1.83	0.60
1:A:1378:C:H2'	1:A:1379:G:H8	1.66	0.60
1:A:474:A:H8	1:A:474:A:P	2.24	0.60
1:A:1130:C:N3	1:A:1163:G:N2	2.49	0.60
1:A:222:G:C2	1:A:223:C:C2	2.90	0.60
1:A:1141:G:H1	1:A:1152:G:N2	1.96	0.60
1:A:242:C:C2'	1:A:243:C:H5'	2.31	0.60
1:A:1018:U:H3	1:A:1031:A:H61	1.50	0.60
1:A:1316:U:H2'	1:A:1317:C:C6	2.37	0.60
8:J:35:ILE:HD11	8:J:48:ILE:HD13	1.82	0.60
11:M:96:PRO:HA	11:M:109:ARG:HG3	1.83	0.60
1:A:345:G:H2'	1:A:346:A:C8	2.37	0.59
1:A:1037:C:N4	1:A:1044:G:H1	2.00	0.59
1:A:903:C:H2'	1:A:904:G:C8	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:996:A:H1'	15:R:55:ARG:HA	1.84	0.59
1:A:1003:G:H2'	1:A:1005:C:H5	1.68	0.59
1:A:1008:C:H5'	1:A:1009:C:OP2	2.03	0.59
2:B:5:A:H2'	2:B:6:A:H5''	1.83	0.59
1:A:682:G:C2	1:A:743:A:C6	2.91	0.59
3:C:466:MET:HE1	3:C:576:LEU:HD21	1.84	0.59
11:M:40:SER:HB3	11:M:43:THR:HG23	1.84	0.59
10:L:123:ARG:HD2	10:L:125:GLN:O	2.03	0.58
1:A:477:A:H5'	1:A:478:G:C8	2.37	0.58
1:A:655:G:H3'	1:A:656:G:H8	1.68	0.58
1:A:689:C:H2'	1:A:690:A:C8	2.37	0.58
1:A:1120:A:H2'	1:A:1121:A:H8	1.68	0.58
1:A:531:C:H1'	1:A:545:C:H5''	1.84	0.58
1:A:1248:A:H62	1:A:1308:A:H62	1.52	0.58
15:R:36:ARG:NH2	15:R:75:ALA:O	2.36	0.58
1:A:290:A:C5	1:A:291:U:C2	2.92	0.58
1:A:589:C:H42	1:A:770:G:H1	1.50	0.58
1:A:1335:U:H2'	1:A:1336:G:H8	1.69	0.58
3:C:418:PHE:HB3	3:C:420:PHE:CE2	2.39	0.58
1:A:144:U:H3	1:A:176:G:H1	1.52	0.58
1:A:1172:G:H1	1:A:1182:C:N4	2.00	0.58
1:A:1317:C:H5'	11:M:109:ARG:HD3	1.86	0.58
17:T:63:VAL:HG12	17:T:65:VAL:HG13	1.86	0.58
1:A:120:A:H61	1:A:247:G:H1	1.50	0.58
1:A:224:U:H4'	1:A:473:G:H4'	1.85	0.58
1:A:708:C:H2'	1:A:709:G:C8	2.37	0.58
5:G:36:LEU:HD21	5:G:137:ILE:HD12	1.86	0.58
1:A:222:G:O6	1:A:223:C:N4	2.37	0.57
2:B:-1:A:O3'	2:B:0:A:N7	2.36	0.57
1:A:1296:A:C8	1:A:1297:A:N7	2.72	0.57
3:C:282:LYS:HE2	3:C:344:GLU:CD	2.29	0.57
1:A:1194:G:H2'	1:A:1195:G:C8	2.39	0.57
1:A:533:G:H2'	1:A:534:C:C6	2.39	0.57
1:A:580:U:O5'	1:A:580:U:H6	1.87	0.57
1:A:909:C:H2'	1:A:910:A:C8	2.39	0.57
1:A:1319:C:H2'	1:A:1320:A:C8	2.34	0.57
1:A:1329:C:H2'	1:A:1330:U:C6	2.40	0.57
1:A:317:G:H2'	1:A:318:G:H8	1.69	0.57
1:A:1151:G:H3'	1:A:1152:G:C8	2.38	0.57
1:A:722:G:H2'	1:A:723:G:C8	2.39	0.57
1:A:527:C:H5	1:A:539:G:O5'	1.88	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:686:U:H3	1:A:722:G:H1	1.53	0.57
1:A:1363:C:H2'	1:A:1364:G:C8	2.39	0.57
9:K:26:VAL:HG13	9:K:36:VAL:HG11	1.87	0.57
1:A:1231:G:H2'	1:A:1232:C:C6	2.39	0.57
1:A:1255:G:H1	1:A:1300:C:H42	1.52	0.57
1:A:27:C:H2'	1:A:28:A:C8	2.39	0.57
1:A:957:G:H5'	1:A:1342:A:H1'	1.87	0.57
1:A:513:C:H42	1:A:550:G:H1	1.53	0.56
1:A:244:G:C2	1:A:245:C:C2	2.93	0.56
1:A:267:G:H1	1:A:275:C:H42	1.52	0.56
1:A:458:G:H1	1:A:492:C:H42	1.52	0.56
1:A:972:C:H2'	1:A:973:G:C8	2.40	0.56
5:G:30:ARG:HH12	6:H:110:LEU:HD13	1.69	0.56
1:A:591:C:H41	1:A:767:G:H2'	1.71	0.56
1:A:1326:C:O5'	1:A:1326:C:C6	2.56	0.56
1:A:572:A:N3	1:A:572:A:H2'	2.20	0.56
1:A:1122:C:H3'	1:A:1124:C:H41	1.70	0.56
1:A:13:G:N1	1:A:25:C:N3	2.53	0.56
1:A:626:G:H1	1:A:632:C:H42	1.52	0.56
1:A:699:G:H2'	1:A:700:G:O4'	2.06	0.56
1:A:420:U:H2'	1:A:421:G:H4'	1.86	0.56
1:A:411:C:H5''	4:F:129:PRO:HD2	1.88	0.56
9:K:10:LEU:HD11	9:K:25:ILE:HD12	1.88	0.56
1:A:779:C:N3	1:A:780:G:N7	2.54	0.55
1:A:1313:G:H21	1:A:1342:A:H62	1.53	0.55
11:M:23:PHE:N	11:M:66:GLU:OE1	2.38	0.55
1:A:69:C:H2'	1:A:70:G:C8	2.42	0.55
1:A:685:A:H2	1:A:723:G:H1	1.54	0.55
18:U:37:PHE:CG	18:U:60:LEU:HD21	2.41	0.55
1:A:495:U:H2'	1:A:496:A:C8	2.35	0.55
1:A:906:U:C5	1:A:907:C:N4	2.74	0.55
1:A:1239:C:H2'	1:A:1240:G:C8	2.42	0.55
1:A:1360:U:H4'	6:H:33:ASP:HB3	1.87	0.55
1:A:23:G:H2'	1:A:24:G:C8	2.42	0.55
1:A:246:G:H2'	1:A:247:G:C8	2.41	0.55
1:A:1013:G:H22	1:A:1048:A:H1'	1.71	0.55
6:H:30:MET:HE1	6:H:43:LEU:HB2	1.88	0.55
1:A:327:G:H1	1:A:342:C:H42	1.54	0.55
1:A:527:C:C5	1:A:539:G:O5'	2.59	0.55
1:A:1271:A:H2'	1:A:1272:A:C8	2.41	0.55
1:A:40:G:O2'	1:A:41:G:H5'	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1153:G:H8	1:A:1154:C:H3'	1.71	0.55
5:G:48:PHE:CD1	5:G:141:LEU:CD1	2.90	0.55
1:A:157:G:H1	1:A:162:C:H42	1.54	0.55
1:A:1158:C:H5'	8:J:18:ARG:HH12	1.72	0.55
1:A:58:U:H2'	1:A:59:G:C8	2.41	0.55
1:A:602:U:H3	1:A:655:G:H1	1.54	0.55
1:A:775:A:H2'	1:A:776:A:C5'	2.35	0.55
1:A:1159:U:H2'	1:A:1160:A:C8	2.41	0.55
1:A:128:A:H2'	14:Q:4:ARG:HH22	1.71	0.55
1:A:504:A:H61	4:F:116:HIS:HE1	1.54	0.55
1:A:625:G:H1	1:A:633:C:H42	1.55	0.55
2:B:9:A:C4	3:C:561:ARG:NH2	2.70	0.55
1:A:999:U:H2'	1:A:1000:C:C6	2.42	0.54
1:A:1042:G:C2	1:A:1043:G:H1'	2.41	0.54
1:A:674:A:H62	1:A:733:G:H1	1.55	0.54
1:A:901:U:H2'	1:A:902:A:H8	1.72	0.54
1:A:967:U:H4'	15:R:79:THR:HB	1.88	0.54
1:A:225:A:H4'	1:A:478:G:N2	2.22	0.54
2:B:-1:A:H4'	2:B:0:A:C8	2.43	0.54
18:U:17:TYR:CE2	18:U:23:ILE:HD12	2.42	0.54
1:A:470:U:H3	1:A:480:G:H1	1.55	0.54
1:A:1324:U:O2'	1:A:1369:A:N3	2.40	0.54
1:A:1032:C:H2'	1:A:1033:G:O4'	2.08	0.54
1:A:217:C:H1'	1:A:475:A:C2	2.41	0.54
1:A:1139:C:N3	1:A:1152:G:N2	2.56	0.54
1:A:1308:A:H2'	1:A:1310:U:C6	2.43	0.54
1:A:113:G:H4'	1:A:114:A:O5'	2.08	0.54
1:A:224:U:C1'	1:A:475:A:N6	2.66	0.54
1:A:687:U:H2'	1:A:688:C:C6	2.43	0.54
16:S:62:VAL:HG21	16:S:72:ALA:HB2	1.83	0.54
1:A:510:C:H1'	1:A:558:C:H1'	1.89	0.54
1:A:986:G:N7	1:A:1371:C:N4	2.56	0.54
16:S:20:HIS:O	16:S:23:THR:HB	2.08	0.54
1:A:155:C:H42	1:A:164:G:H1	1.55	0.53
5:G:48:PHE:HD1	5:G:141:LEU:HD13	1.73	0.53
1:A:701:U:H1'	1:A:704:A:C8	2.43	0.53
1:A:374:C:H1'	1:A:403:C:O2	2.08	0.53
1:A:624:C:H42	1:A:634:G:H1	1.55	0.53
1:A:1157:U:H3'	1:A:1158:C:C6	2.43	0.53
1:A:153:U:H3	1:A:166:G:H1	1.56	0.53
1:A:330:C:H2'	1:A:331:U:C6	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:715:A:H3'	1:A:716:U:O4'	2.08	0.53
1:A:749:U:C2'	1:A:750:G:O5'	2.57	0.53
2:B:4:A:H3'	2:B:5:A:H8	1.73	0.53
1:A:494:G:H1'	1:A:495:U:H5	1.73	0.53
1:A:1008:C:OP1	1:A:1009:C:OP2	2.27	0.53
8:J:91:ASP:HB3	8:J:94:TYR:CD2	2.43	0.53
1:A:835:C:H4'	7:I:13:ARG:HG2	1.90	0.53
1:A:965:U:H2'	1:A:966:U:C6	2.44	0.53
1:A:145:G:H1	1:A:175:C:H42	1.56	0.53
1:A:301:A:H5'	1:A:619:G:C2	2.43	0.53
1:A:634:G:H2'	1:A:635:G:H8	1.73	0.53
1:A:840:U:H3	1:A:865:G:H1	1.56	0.53
1:A:1003:G:H2'	1:A:1005:C:C5	2.43	0.53
1:A:854:C:H3'	1:A:855:G:C8	2.44	0.53
7:I:10:MET:HG3	7:I:27:ILE:HD13	1.91	0.53
1:A:360:C:O2	1:A:363:C:N4	2.40	0.53
1:A:527:C:H4'	1:A:528:C:C5'	2.35	0.53
1:A:328:G:H1	1:A:341:C:N4	2.02	0.52
1:A:1179:A:H2'	1:A:1180:A:O4'	2.09	0.52
5:G:89:PHE:O	5:G:90:GLY:O	2.27	0.52
5:G:90:GLY:O	5:G:92:GLY:N	2.39	0.52
1:A:153:U:H2'	1:A:154:C:H5'	1.91	0.52
1:A:254:A:H62	1:A:289:G:H1'	1.74	0.52
1:A:779:C:O2'	1:A:909:C:N3	2.42	0.52
1:A:1133:A:H2'	1:A:1133:A:N3	2.25	0.52
1:A:1142:C:C2	1:A:1143:A:C5	2.97	0.52
1:A:1174:U:H3	1:A:1180:A:H62	1.55	0.52
7:I:11:LEU:HD11	7:I:129:ALA:HB2	1.92	0.52
8:J:91:ASP:HB3	8:J:94:TYR:CE2	2.44	0.52
17:T:87:ARG:HH11	17:T:87:ARG:CG	2.22	0.52
1:A:468:C:H2'	1:A:469:G:C8	2.44	0.52
1:A:1310:U:O2'	1:A:1311:U:H3'	2.10	0.52
5:G:115:LEU:HD13	5:G:123:ILE:HG21	1.91	0.52
1:A:906:U:H2'	1:A:907:C:C6	2.45	0.52
1:A:1216:C:H2'	1:A:1217:C:H4'	1.92	0.52
1:A:32:C:H42	1:A:562:G:H1	1.56	0.52
1:A:323:A:H4'	1:A:324:C:OP1	2.10	0.52
1:A:906:U:H5	1:A:907:C:H41	1.56	0.52
1:A:1136:U:C5	9:K:73:LEU:HD22	2.45	0.52
3:C:341:LEU:HD21	3:C:572:ILE:HG21	1.91	0.52
3:C:419:ASP:HA	3:C:441:ARG:NH2	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:994:C:H2'	1:A:995:C:C6	2.45	0.52
1:A:1142:C:OP2	1:A:1142:C:C6	2.61	0.52
1:A:1263:G:H2'	1:A:1264:G:C8	2.44	0.52
1:A:1299:U:H2'	1:A:1300:C:C6	2.44	0.52
1:A:163:C:H2'	1:A:164:G:C8	2.44	0.52
1:A:700:G:H22	1:A:704:A:H5''	1.75	0.52
1:A:857:C:H2'	1:A:858:C:C6	2.45	0.52
1:A:1342:A:H3'	1:A:1343:G:C8	2.45	0.52
3:C:466:MET:HE1	3:C:576:LEU:CD2	2.40	0.52
1:A:222:G:N1	1:A:223:C:C4	2.77	0.52
1:A:290:A:N6	1:A:291:U:O2	2.43	0.52
1:A:423:A:N6	1:A:436:G:H1	2.07	0.52
1:A:959:A:H1'	1:A:1373:U:N3	2.25	0.52
1:A:1127:G:H2'	1:A:1128:A:C8	2.45	0.52
1:A:1176:A:H2'	1:A:1178:A:C8	2.45	0.52
8:J:35:ILE:HD11	8:J:48:ILE:CD1	2.39	0.52
1:A:329:A:H61	1:A:340:G:H1	1.58	0.52
1:A:1297:A:H2'	1:A:1298:A:C8	2.45	0.52
1:A:906:U:O2'	1:A:907:C:H6	1.93	0.51
1:A:1249:U:H4'	6:H:38:LYS:HD2	1.90	0.51
5:G:110:PRO:HG2	5:G:136:MET:HE3	1.91	0.51
9:K:92:LEU:HD12	9:K:98:ILE:HG12	1.92	0.51
1:A:593:G:H1	1:A:766:U:H3	1.57	0.51
1:A:826:C:H4'	1:A:827:G:O5'	2.10	0.51
1:A:1191:G:H5'	1:A:1194:G:OP1	2.09	0.51
1:A:918:A:H2'	1:A:919:A:C8	2.45	0.51
1:A:1254:A:H2'	1:A:1255:G:C8	2.46	0.51
15:R:50:ALA:HB1	15:R:57:HIS:HB3	1.91	0.51
1:A:439:A:H3'	1:A:440:A:H8	1.76	0.51
1:A:511:C:H42	1:A:552:G:H1	1.58	0.51
9:K:86:ALA:O	9:K:90:LEU:HB2	2.10	0.51
1:A:390:A:H2'	1:A:391:A:C8	2.45	0.51
1:A:1375:C:H2'	1:A:1376:C:C6	2.44	0.51
1:A:497:C:H2'	1:A:498:C:C6	2.46	0.51
1:A:648:G:N3	1:A:648:G:H2'	2.25	0.51
1:A:771:A:H2'	1:A:772:G:C8	2.46	0.51
1:A:972:C:H2'	1:A:973:G:H8	1.76	0.51
1:A:1326:C:H2'	1:A:1327:A:C8	2.46	0.51
1:A:222:G:N1	1:A:223:C:N3	2.59	0.51
1:A:1235:C:H1'	1:A:1236:A:H8	1.74	0.51
1:A:225:A:H4'	1:A:478:G:H21	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:427:U:H3	1:A:432:G:H1	1.59	0.51
1:A:469:G:H1	1:A:481:C:H42	1.58	0.51
1:A:1142:C:N3	1:A:1143:A:N6	2.59	0.51
1:A:147:G:H1	1:A:173:A:N6	2.07	0.51
1:A:170:A:H2'	1:A:171:A:C8	2.46	0.51
1:A:825:A:H3'	1:A:827:G:OP1	2.11	0.51
1:A:451:U:H2'	1:A:452:A:C8	2.46	0.51
1:A:1342:A:H3'	1:A:1343:G:H8	1.76	0.51
1:A:1367:U:H2'	1:A:1368:C:O4'	2.10	0.51
1:A:163:C:H2'	1:A:164:G:H8	1.76	0.50
1:A:114:A:H61	1:A:321:A:H1'	1.77	0.50
1:A:1157:U:H3'	1:A:1158:C:H6	1.76	0.50
1:A:1199:G:H1	1:A:1202:G:H21	1.59	0.50
7:I:106:ILE:HD12	7:I:106:ILE:N	2.26	0.50
9:K:81:PRO:O	9:K:83:THR:N	2.44	0.50
1:A:475:A:H2'	1:A:477:A:H1'	1.93	0.50
1:A:1180:A:H2'	1:A:1181:C:C6	2.46	0.50
1:A:1195:G:C2	1:A:1196:G:H1'	2.46	0.50
1:A:634:G:H2'	1:A:635:G:C8	2.46	0.50
1:A:1029:G:H2'	1:A:1030:G:H5''	1.93	0.50
1:A:683:G:N2	1:A:725:A:N1	2.58	0.50
1:A:845:G:H1	1:A:860:U:H3	1.59	0.50
1:A:923:A:H1'	1:A:924:A:H1'	1.93	0.50
1:A:1160:A:H2'	1:A:1161:A:C8	2.45	0.50
1:A:1327:A:H2'	1:A:1328:A:H5''	1.93	0.50
1:A:1332:G:H2'	1:A:1333:A:C8	2.46	0.50
1:A:391:A:C5	1:A:392:G:H1'	2.46	0.50
1:A:714:G:C5	1:A:715:A:H1'	2.46	0.50
1:A:987:A:H1'	1:A:991:U:H3	1.76	0.50
1:A:998:G:H1'	1:A:1025:G:H1	1.77	0.50
1:A:244:G:N1	1:A:245:C:C2	2.80	0.50
1:A:455:G:H3'	1:A:494:G:N1	2.27	0.50
1:A:815:C:H2'	1:A:816:A:C8	2.47	0.50
1:A:928:A:H2'	1:A:929:A:C8	2.47	0.50
1:A:987:A:H4'	1:A:990:C:N4	2.26	0.50
1:A:1122:C:H2'	1:A:1123:C:C6	2.47	0.50
1:A:1146:C:H2'	1:A:1147:A:C8	2.47	0.50
1:A:1363:C:H2'	1:A:1364:G:H8	1.77	0.50
1:A:37:G:H1	1:A:558:C:H42	1.58	0.49
1:A:610:G:H1	1:A:646:U:H3	1.58	0.49
1:A:723:G:H2'	1:A:724:A:C8	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:778:G:H1	1:A:819:C:H42	1.59	0.49
1:A:1181:C:H2'	1:A:1182:C:C6	2.47	0.49
4:F:29:ARG:HB3	4:F:31:TYR:CZ	2.47	0.49
1:A:601:C:C4	1:A:602:U:O4	2.65	0.49
1:A:1232:C:C5	1:A:1233:U:H5	2.30	0.49
1:A:1278:A:C2	1:A:1321:G:H2'	2.47	0.49
1:A:11:G:H5'	5:G:108:GLY:HA3	1.93	0.49
1:A:745:U:H2'	1:A:746:C:C6	2.48	0.49
1:A:897:G:H1	1:A:920:C:H42	1.60	0.49
1:A:906:U:H2'	1:A:907:C:C5	2.47	0.49
2:B:5:A:H3'	2:B:6:A:C2	2.47	0.49
4:F:72:PHE:CZ	4:F:82:HIS:CE1	3.00	0.49
11:M:14:ARG:HD2	11:M:42:ASP:HA	1.94	0.49
1:A:64:U:H5''	1:A:393:U:C2'	2.42	0.49
1:A:156:G:H2'	1:A:157:G:H8	1.78	0.49
1:A:228:A:H2'	1:A:229:C:H5''	1.94	0.49
1:A:505:G:H2'	1:A:506:A:H8	1.77	0.49
1:A:922:C:H2'	1:A:923:A:C8	2.47	0.49
1:A:1315:A:H1'	1:A:1341:A:C2	2.47	0.49
1:A:655:G:H3'	1:A:656:G:C8	2.47	0.49
1:A:1277:G:H1'	1:A:1336:G:H5'	1.95	0.49
5:G:48:PHE:CD1	5:G:141:LEU:HD13	2.48	0.49
1:A:587:C:H2'	1:A:588:U:C6	2.47	0.49
1:A:739:G:H5'	1:A:825:A:H4'	1.94	0.49
1:A:224:U:H1'	1:A:475:A:H61	1.72	0.49
1:A:484:U:H2'	1:A:485:A:C8	2.48	0.49
14:Q:52:ASN:C	14:Q:53:ASN:HD22	2.20	0.49
1:A:548:A:H2'	1:A:549:G:C8	2.47	0.49
1:A:613:G:H2'	1:A:614:U:O4'	2.12	0.49
1:A:661:U:H1'	1:A:662:U:C6	2.47	0.49
19:V:19:GLU:HG3	19:V:82:LYS:HE2	1.94	0.49
1:A:430:C:O2'	1:A:431:G:N2	2.46	0.49
1:A:477:A:H5'	1:A:478:G:H8	1.78	0.49
1:A:673:G:OP1	18:U:58:ARG:NH1	2.45	0.49
1:A:1014:A:H1'	1:A:1046:G:H1	1.78	0.49
2:B:5:A:H3'	2:B:6:A:H2	1.77	0.49
1:A:37:G:H2'	1:A:38:C:C6	2.48	0.48
1:A:989:C:N3	1:A:1369:A:N6	2.61	0.48
1:A:1166:A:N7	1:A:1186:G:N2	2.61	0.48
5:G:15:LEU:HD11	5:G:18:VAL:CG2	2.43	0.48
1:A:123:U:H3	1:A:244:G:H1	1.61	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:693:U:H3	1:A:715:A:H61	1.61	0.48
1:A:973:G:H3'	1:A:974:A:C8	2.48	0.48
1:A:1309:G:O3'	1:A:1312:C:N4	2.46	0.48
1:A:110:G:H2'	1:A:111:G:H5'	1.95	0.48
1:A:466:G:H1	1:A:484:U:H3	1.60	0.48
1:A:584:G:H3'	1:A:826:C:N4	2.27	0.48
7:I:7:ILE:HD11	7:I:32:LEU:HD23	1.95	0.48
1:A:569:A:H5''	1:A:570:U:H3'	1.95	0.48
1:A:984:A:O3'	1:A:985:A:H3'	2.13	0.48
1:A:1276:C:N3	1:A:1336:G:H4'	2.29	0.48
1:A:1324:U:C5	15:R:7:LYS:HE3	2.48	0.48
3:C:57:ARG:NH1	19:V:63:PHE:CD2	2.82	0.48
1:A:206:A:H4'	16:S:52:THR:HG22	1.95	0.48
1:A:317:G:O2'	1:A:616:A:N1	2.47	0.48
1:A:336:C:H4'	1:A:337:A:H5''	1.96	0.48
1:A:1357:U:H2'	1:A:1357:U:O2	2.14	0.48
1:A:30:G:C4	1:A:31:A:C8	3.01	0.48
1:A:99:A:H5''	1:A:100:G:C8	2.49	0.48
1:A:141:G:N3	1:A:210:A:H2	2.11	0.48
1:A:224:U:H2'	1:A:225:A:C8	2.48	0.48
1:A:629:C:C2	4:F:128:ILE:HD13	2.48	0.48
1:A:712:G:H4'	1:A:713:A:H8	1.79	0.48
1:A:1163:G:H2'	1:A:1164:U:C6	2.49	0.48
1:A:1324:U:H5	15:R:7:LYS:HE3	1.78	0.48
1:A:1158:C:H5'	8:J:18:ARG:NH1	2.29	0.48
4:F:139:ILE:N	4:F:139:ILE:HD12	2.29	0.48
17:T:37:ILE:HG23	17:T:63:VAL:HG13	1.95	0.48
1:A:563:U:H2'	1:A:564:C:C6	2.49	0.48
1:A:1026:A:H3'	1:A:1027:U:C6	2.49	0.48
13:P:17:PHE:CZ	13:P:39:THR:HB	2.48	0.48
1:A:253:U:N1	1:A:292:G:N2	2.62	0.48
1:A:780:G:H2'	1:A:781:U:C6	2.48	0.48
1:A:961:G:H2'	1:A:962:U:C6	2.49	0.48
1:A:1140:A:N1	1:A:1154:C:H5'	2.28	0.48
1:A:1296:A:C5	1:A:1297:A:C6	3.02	0.48
1:A:1355:A:O3'	1:A:1356:G:H4'	2.14	0.48
7:I:68:GLN:O	7:I:69:ASN:C	2.56	0.48
1:A:317:G:H2'	1:A:318:G:C8	2.47	0.48
1:A:347:C:H2'	1:A:348:U:C6	2.49	0.48
1:A:1056:A:H5''	1:A:1057:G:N7	2.29	0.48
1:A:1166:A:H4'	1:A:1167:C:O5'	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:69:ASN:O	7:I:70:ASN:C	2.57	0.48
1:A:146:G:H2'	1:A:147:G:C8	2.49	0.47
1:A:340:G:H5'	1:A:340:G:H8	1.78	0.47
1:A:573:U:OP1	10:L:12:ARG:NE	2.31	0.47
1:A:1277:G:N3	1:A:1335:U:O2'	2.46	0.47
16:S:4:ILE:O	16:S:5:LYS:C	2.57	0.47
1:A:776:A:H2'	1:A:777:A:O4'	2.13	0.47
1:A:1141:G:N2	1:A:1154:C:OP1	2.47	0.47
1:A:1258:C:H2'	1:A:1259:A:H5''	1.95	0.47
4:F:66:ARG:HH21	4:F:66:ARG:CB	2.27	0.47
1:A:267:G:H1	1:A:275:C:N4	2.12	0.47
1:A:379:G:H1	1:A:398:C:H42	1.61	0.47
1:A:429:U:O2'	1:A:431:G:C5	2.64	0.47
1:A:696:A:H5''	19:V:46:TRP:CZ2	2.48	0.47
1:A:718:U:H2'	1:A:719:G:H4'	1.96	0.47
1:A:1038:C:H1'	1:A:1044:G:N2	2.27	0.47
1:A:1133:A:N1	1:A:1158:C:N4	2.55	0.47
1:A:302:C:H42	1:A:311:G:H1	1.61	0.47
1:A:717:G:H2'	1:A:718:U:C6	2.49	0.47
1:A:815:C:H2'	1:A:816:A:H8	1.79	0.47
1:A:968:A:H2'	1:A:969:A:C8	2.50	0.47
1:A:1278:A:N1	1:A:1322:U:H5'	2.30	0.47
1:A:1328:A:N6	1:A:1370:G:H1'	2.30	0.47
1:A:141:G:H1	1:A:229:C:N4	2.08	0.47
1:A:682:G:C2	1:A:743:A:C5	3.02	0.47
1:A:691:C:O2	1:A:717:G:N2	2.47	0.47
3:C:497:VAL:HG21	3:C:512:ILE:HD11	1.96	0.47
11:M:27:ARG:O	11:M:28:THR:C	2.58	0.47
18:U:17:TYR:CE2	18:U:33:LEU:CD1	2.97	0.47
1:A:64:U:H3	1:A:103:G:H1	1.61	0.47
1:A:531:C:H1'	1:A:545:C:C5'	2.44	0.47
1:A:843:U:C2	1:A:863:G:C2	3.03	0.47
2:B:3:A:H2'	2:B:4:A:O4'	2.15	0.47
6:H:29:LYS:HZ1	6:H:98:THR:HG23	1.80	0.47
10:L:36:THR:HG22	10:L:38:VAL:HG23	1.96	0.47
1:A:27:C:C5'	1:A:533:G:H1'	2.45	0.47
1:A:111:G:N3	1:A:361:A:O2'	2.47	0.47
1:A:156:G:H2'	1:A:157:G:C8	2.49	0.47
1:A:414:G:H2'	1:A:415:A:C8	2.49	0.47
1:A:663:G:H1	1:A:763:C:H5	1.63	0.47
1:A:965:U:H2'	1:A:966:U:H6	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1012:U:H2'	1:A:1013:G:C8	2.50	0.47
1:A:1229:G:H2'	1:A:1230:G:O4'	2.15	0.47
1:A:1315:A:H2'	1:A:1316:U:O4'	2.14	0.47
1:A:1365:G:H2'	1:A:1366:A:C8	2.49	0.47
5:G:61:ARG:NH1	5:G:65:GLU:OE1	2.48	0.47
1:A:120:A:N6	1:A:247:G:H1	2.13	0.47
1:A:189:A:H4'	1:A:190:A:OP1	2.14	0.47
1:A:1247:A:C4	1:A:1312:C:H4'	2.49	0.47
1:A:1305:C:H4'	1:A:1311:U:N3	2.29	0.47
4:F:95:ASP:OD1	4:F:96:ASN:N	2.48	0.47
10:L:135:PRO:O	10:L:136:LYS:C	2.58	0.47
1:A:74:A:C1'	1:A:95:U:H3	2.27	0.47
1:A:1261:A:H4'	1:A:1378:C:H4'	1.97	0.47
1:A:1369:A:H3'	1:A:1370:G:C8	2.50	0.47
3:C:420:PHE:CZ	3:C:530:LEU:HD11	2.50	0.47
3:C:483:LEU:HD21	3:C:504:ILE:HG21	1.96	0.47
10:L:29:ASN:HB3	10:L:34:GLU:HG3	1.96	0.47
12:O:24:SER:OG	12:O:26:GLU:OE2	2.33	0.47
1:A:869:C:H2'	1:A:870:A:C8	2.50	0.47
1:A:890:C:H2'	1:A:891:G:H8	1.79	0.47
1:A:1142:C:O2	1:A:1143:A:C5	2.68	0.47
1:A:1224:G:O2'	1:A:1225:A:O4'	2.31	0.47
1:A:276:U:H2'	1:A:277:C:C6	2.50	0.46
1:A:700:G:H2'	1:A:701:U:C6	2.49	0.46
1:A:113:G:H1'	1:A:114:A:N7	2.30	0.46
1:A:1155:A:H2'	1:A:1155:A:N3	2.30	0.46
1:A:1199:G:H1	1:A:1202:G:N2	2.12	0.46
1:A:1211:U:H6	1:A:1212:C:C5	2.32	0.46
4:F:13:ARG:O	4:F:14:ARG:C	2.58	0.46
1:A:107:A:H2'	1:A:334:G:N2	2.30	0.46
1:A:380:C:H4'	1:A:381:A:OP1	2.16	0.46
1:A:561:U:H5'	10:L:96:ARG:NH1	2.30	0.46
1:A:576:G:H2'	1:A:577:G:O4'	2.15	0.46
11:M:16:VAL:HG13	11:M:34:LEU:HD12	1.98	0.46
1:A:115:G:O5'	1:A:115:G:H8	1.98	0.46
1:A:212:G:N2	1:A:228:A:H1'	2.30	0.46
1:A:244:G:C6	1:A:245:C:C4	3.04	0.46
1:A:475:A:H8	1:A:475:A:H5''	1.81	0.46
1:A:832:G:O2'	7:I:2:VAL:HG13	2.15	0.46
1:A:840:U:OP1	11:M:92:ARG:NH1	2.48	0.46
1:A:915:U:H2'	1:A:916:G:O4'	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:961:G:N2	1:A:980:C:O2'	2.48	0.46
1:A:1004:A:C4	1:A:1225:A:H4'	2.50	0.46
1:A:1232:C:H5	1:A:1233:U:H5	1.63	0.46
5:G:16:VAL:HG21	5:G:137:ILE:HD11	1.98	0.46
6:H:29:LYS:NZ	6:H:98:THR:HG23	2.30	0.46
11:M:86:TYR:O	11:M:90:ARG:HG2	2.15	0.46
1:A:132:U:C2	1:A:238:G:N1	2.83	0.46
1:A:205:C:H2'	1:A:206:A:C8	2.51	0.46
1:A:254:A:N6	1:A:289:G:H1'	2.30	0.46
1:A:455:G:H3'	1:A:494:G:H1	1.80	0.46
1:A:691:C:H2'	1:A:692:G:H8	1.81	0.46
1:A:692:G:H1'	1:A:717:G:O2'	2.16	0.46
1:A:779:C:C4	1:A:780:G:N7	2.83	0.46
2:B:0:A:H62	3:C:489:PHE:HE1	1.63	0.46
4:F:75:ALA:HA	4:F:78:LEU:HD13	1.97	0.46
4:F:181:GLU:O	4:F:182:ARG:HB3	2.16	0.46
8:J:18:ARG:HH21	8:J:66:ASN:ND2	2.13	0.46
13:P:51:ILE:HD12	13:P:77:GLN:HG3	1.98	0.46
1:A:159:A:H1'	1:A:352:A:C5	2.50	0.46
1:A:919:A:H2'	1:A:920:C:O4'	2.16	0.46
1:A:15:U:H1'	1:A:924:A:H5''	1.97	0.46
1:A:220:C:H1'	1:A:221:G:C2	2.49	0.46
1:A:222:G:C5	1:A:223:C:C4	3.04	0.46
2:B:7:A:C4	2:B:8:A:C8	3.04	0.46
9:K:22:ALA:O	9:K:26:VAL:HG23	2.16	0.46
18:U:17:TYR:HD2	18:U:18:PHE:CD1	2.33	0.46
1:A:417:U:H2'	1:A:418:G:O4'	2.15	0.46
1:A:418:G:H2'	1:A:437:U:C5	2.51	0.46
1:A:525:U:O2'	1:A:528:C:N3	2.47	0.46
1:A:529:A:H61	1:A:542:A:H61	1.64	0.46
1:A:896:G:H1	1:A:921:U:H3	1.64	0.46
1:A:907:C:H2'	1:A:908:G:C8	2.51	0.46
1:A:1056:A:C2	1:A:1224:G:H4'	2.50	0.46
19:V:76:SER:HB3	19:V:81:LEU:HD13	1.97	0.46
1:A:159:A:H2'	1:A:160:A:O4'	2.16	0.46
1:A:468:C:H2'	1:A:469:G:H8	1.80	0.46
1:A:1259:A:H2	1:A:1362:G:H21	1.64	0.46
1:A:1270:A:N6	1:A:1283:A:O2'	2.49	0.46
18:U:46:PRO:O	18:U:49:VAL:HG12	2.16	0.46
1:A:456:A:H2	1:A:495:U:H3	1.63	0.46
1:A:763:C:H3'	1:A:764:G:H5'	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:974:A:H2'	1:A:979:A:H1'	1.97	0.46
1:A:1161:A:H4'	9:K:15:HIS:CE1	2.51	0.46
1:A:1178:A:H2'	1:A:1179:A:O4'	2.15	0.46
1:A:1265:C:H4'	1:A:1266:A:C5'	2.46	0.46
1:A:1302:G:H2'	1:A:1303:U:C6	2.52	0.46
10:L:79:TYR:CG	10:L:100:VAL:HG21	2.51	0.46
11:M:79:ARG:NH1	15:R:65:ASP:O	2.48	0.46
11:M:104:ASN:O	11:M:105:ASN:C	2.58	0.46
1:A:159:A:H1'	1:A:352:A:C4	2.51	0.45
1:A:366:U:H2'	1:A:367:A:C8	2.50	0.45
1:A:385:G:OP1	13:P:4:LYS:NZ	2.49	0.45
1:A:601:C:N4	1:A:602:U:O4	2.49	0.45
1:A:1160:A:O2'	9:K:72:ARG:NH2	2.49	0.45
1:A:1360:U:H2'	1:A:1361:C:O4'	2.16	0.45
18:U:14:LYS:HG2	18:U:51:GLY:HA3	1.97	0.45
1:A:684:A:H2'	1:A:685:A:C8	2.52	0.45
1:A:1158:C:H2'	1:A:1159:U:C6	2.52	0.45
1:A:1314:G:H1'	1:A:1341:A:H62	1.80	0.45
1:A:1354:U:H4'	1:A:1355:A:O5'	2.17	0.45
1:A:532:A:C2	10:L:101:LYS:HB3	2.51	0.45
1:A:596:G:H4'	7:I:4:THR:HA	1.99	0.45
1:A:721:A:N3	1:A:721:A:H2'	2.30	0.45
1:A:769:G:H3'	1:A:770:G:H8	1.81	0.45
1:A:910:A:H2'	1:A:911:A:C8	2.51	0.45
1:A:912:G:H2'	1:A:913:A:C8	2.51	0.45
1:A:1161:A:H4'	9:K:15:HIS:NE2	2.31	0.45
1:A:1198:U:O2'	1:A:1199:G:P	2.75	0.45
1:A:1285:G:N3	1:A:1291:C:O2'	2.50	0.45
1:A:1296:A:H2'	1:A:1297:A:H8	1.75	0.45
11:M:67:GLY:O	11:M:68:ASP:C	2.60	0.45
1:A:224:U:C1'	1:A:475:A:H62	2.25	0.45
1:A:904:G:H2'	1:A:905:G:O4'	2.16	0.45
1:A:1123:C:C4	1:A:1197:A:H1'	2.51	0.45
1:A:1227:C:H2'	1:A:1228:U:C6	2.51	0.45
1:A:1243:C:H1'	1:A:1373:U:C2	2.50	0.45
9:K:10:LEU:HD22	9:K:98:ILE:HG13	1.98	0.45
18:U:17:TYR:HD2	18:U:18:PHE:CE1	2.34	0.45
1:A:675:G:H1	1:A:749:U:H3	1.63	0.45
1:A:1296:A:H1'	1:A:1363:C:H5'	1.98	0.45
3:C:420:PHE:CE2	3:C:530:LEU:HD21	2.52	0.45
14:Q:25:VAL:HG21	14:Q:63:ILE:HG21	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1187:G:N2	1:A:1189:A:H3'	2.32	0.45
1:A:1236:A:H2'	1:A:1236:A:N3	2.31	0.45
9:K:7:ARG:HG3	9:K:73:LEU:HD11	1.97	0.45
1:A:1034:U:O2'	1:A:1035:C:H2'	2.17	0.45
1:A:1259:A:H61	1:A:1363:C:H4'	1.82	0.45
15:R:27:LYS:HD2	15:R:27:LYS:HA	1.65	0.45
1:A:122:G:C6	1:A:246:G:C6	3.05	0.45
1:A:459:A:H4'	1:A:460:A:O5'	2.17	0.45
1:A:1286:C:C3'	1:A:1287:C:H4'	2.47	0.45
1:A:1296:A:C2'	1:A:1297:A:O5'	2.65	0.45
2:B:7:A:O3'	3:C:449:GLU:HG3	2.17	0.45
7:I:110:GLN:HB3	7:I:121:LYS:NZ	2.32	0.45
1:A:204:A:H2'	1:A:205:C:C6	2.52	0.45
1:A:222:G:C5	1:A:223:C:C5	3.05	0.45
1:A:242:C:H4'	14:Q:68:PRO:HG3	1.97	0.45
1:A:1310:U:H2'	1:A:1312:C:C5	2.52	0.45
1:A:1331:C:H5''	11:M:99:GLY:HA3	1.98	0.45
1:A:56:C:H2'	1:A:360:C:H41	1.82	0.45
1:A:243:C:H2'	1:A:244:G:C8	2.51	0.45
1:A:649:A:H2'	1:A:650:A:C8	2.51	0.45
1:A:1379:G:N3	1:A:1379:G:H2'	2.32	0.45
6:H:27:ILE:HG13	6:H:43:LEU:HD13	1.99	0.45
10:L:35:HIS:CE1	10:L:74:ILE:HD11	2.52	0.45
1:A:412:G:N7	4:F:2:ALA:HA	2.33	0.44
1:A:601:C:N3	1:A:602:U:C4	2.85	0.44
1:A:956:A:H1'	1:A:1245:A:C2	2.51	0.44
1:A:963:G:N1	1:A:1236:A:N6	2.65	0.44
1:A:1141:G:H5''	1:A:1142:C:OP1	2.17	0.44
1:A:1214:U:H4'	1:A:1215:G:O5'	2.16	0.44
1:A:1219:C:H2'	1:A:1220:U:H4'	1.99	0.44
1:A:1307:C:H1'	1:A:1308:A:C6	2.52	0.44
1:A:1353:C:H4'	1:A:1357:U:O2	2.17	0.44
1:A:222:G:C2	1:A:223:C:N3	2.85	0.44
1:A:528:C:H2'	1:A:529:A:C8	2.52	0.44
1:A:1019:C:H2'	1:A:1020:C:C6	2.51	0.44
1:A:141:G:H1'	1:A:180:G:O6	2.16	0.44
1:A:548:A:H2'	1:A:549:G:H8	1.81	0.44
1:A:718:U:C2	1:A:719:G:H1'	2.52	0.44
1:A:1236:A:C5	1:A:1237:C:H1'	2.53	0.44
1:A:1263:G:H2'	1:A:1264:G:H8	1.81	0.44
9:K:83:THR:O	9:K:87:LEU:N	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:P:22:VAL:HG21	13:P:59:TRP:CD1	2.51	0.44
1:A:248:C:N4	1:A:294:G:H1	2.15	0.44
1:A:518:A:H5'	4:F:47:TYR:HD2	1.81	0.44
1:A:824:A:H5''	1:A:824:A:H8	1.82	0.44
10:L:79:TYR:HB2	10:L:100:VAL:HG21	2.00	0.44
11:M:27:ARG:HG2	11:M:31:GLN:HG3	1.99	0.44
1:A:407:G:H2'	1:A:408:C:C6	2.52	0.44
1:A:425:G:H1	1:A:434:U:H3	1.64	0.44
1:A:514:G:H5'	1:A:543:U:H2'	1.99	0.44
1:A:1123:C:H6	1:A:1124:C:H5	1.66	0.44
1:A:1284:A:N1	1:A:1292:C:H5'	2.33	0.44
1:A:1285:G:H2'	1:A:1286:C:C6	2.53	0.44
1:A:1378:C:H2'	1:A:1379:G:C8	2.50	0.44
3:C:43:VAL:CG2	19:V:67:MET:CE	2.94	0.44
1:A:466:G:N3	1:A:466:G:H2'	2.33	0.44
1:A:512:A:H2'	1:A:513:C:C6	2.53	0.44
1:A:1286:C:H1'	1:A:1291:C:C2	2.53	0.44
10:L:35:HIS:HE1	10:L:74:ILE:HD11	1.82	0.44
17:T:67:SER:HB2	17:T:71:ALA:HB3	1.99	0.44
1:A:113:G:H21	1:A:115:G:H1	1.66	0.44
1:A:253:U:C2	1:A:292:G:N1	2.86	0.44
1:A:581:A:N3	1:A:927:G:H1'	2.33	0.44
2:B:6:A:C4	2:B:6:A:C3'	3.01	0.44
15:R:23:ASN:OD1	15:R:47:HIS:HE1	2.00	0.44
1:A:819:C:H2'	1:A:820:C:O4'	2.17	0.44
1:A:822:U:H3'	1:A:825:A:H62	1.83	0.44
1:A:835:C:H5'	7:I:13:ARG:CZ	2.48	0.44
1:A:1030:G:H2'	1:A:1031:A:C8	2.52	0.44
3:C:375:ASN:HD21	3:C:442:SER:CB	2.31	0.44
5:G:15:LEU:HD11	5:G:18:VAL:HG23	2.00	0.44
15:R:22:LEU:HD22	15:R:28:LYS:CB	2.45	0.44
19:V:86:VAL:HG11	19:V:99:ILE:HG12	2.00	0.44
1:A:109:G:H2'	1:A:110:G:H8	1.83	0.43
1:A:327:G:H1	1:A:342:C:N4	2.16	0.43
1:A:689:C:N3	1:A:719:G:N2	2.65	0.43
1:A:719:G:C2	1:A:720:G:H1'	2.53	0.43
1:A:1231:G:OP2	1:A:1331:C:N4	2.51	0.43
13:P:41:ASN:HD22	13:P:48:GLU:CD	2.26	0.43
1:A:302:C:N4	1:A:311:G:H1	2.16	0.43
1:A:698:C:H5'	1:A:714:G:N3	2.33	0.43
1:A:731:G:N3	1:A:731:G:H2'	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1041:C:H4'	1:A:1042:G:C2	2.53	0.43
1:A:74:A:H2'	1:A:75:G:C8	2.53	0.43
1:A:1151:G:C2	1:A:1152:G:H1'	2.53	0.43
1:A:1369:A:H3'	1:A:1370:G:H8	1.83	0.43
4:F:180:PRO:O	4:F:181:GLU:CB	2.65	0.43
9:K:89:ARG:HA	9:K:89:ARG:HD3	1.84	0.43
1:A:216:G:H2'	1:A:217:C:C6	2.52	0.43
1:A:1365:G:H2'	1:A:1366:A:H8	1.82	0.43
9:K:28:THR:OG1	9:K:86:ALA:HB1	2.18	0.43
1:A:582:A:N3	1:A:893:C:O2'	2.51	0.43
1:A:892:C:H2'	1:A:893:C:C6	2.53	0.43
1:A:996:A:N3	15:R:52:TYR:OH	2.47	0.43
1:A:1008:C:H42	1:A:1052:U:H3	1.66	0.43
1:A:1119:C:H3'	1:A:1120:A:C8	2.53	0.43
1:A:1143:A:H2'	1:A:1144:U:O4'	2.18	0.43
1:A:1261:A:O5'	1:A:1261:A:H8	2.01	0.43
1:A:1282:U:H2'	1:A:1283:A:C8	2.54	0.43
17:T:15:ASP:OD2	17:T:17:GLU:HB3	2.17	0.43
1:A:144:U:H2'	1:A:145:G:C8	2.48	0.43
1:A:211:A:C6	1:A:229:C:H4'	2.54	0.43
1:A:1252:A:H2'	1:A:1252:A:N3	2.33	0.43
2:B:5:A:P	3:C:608:VAL:HG11	2.59	0.43
14:Q:9:VAL:HG11	14:Q:62:LYS:HE3	2.01	0.43
1:A:1015:C:OP1	1:A:1049:G:H1'	2.17	0.43
1:A:1039:U:H1'	1:A:1043:G:C2	2.54	0.43
1:A:1146:C:H5'	1:A:1146:C:H6	1.82	0.43
1:A:1157:U:O3'	8:J:18:ARG:HD3	2.19	0.43
1:A:1243:C:H2'	1:A:1244:U:C6	2.53	0.43
1:A:1286:C:O3'	1:A:1287:C:H4'	2.18	0.43
1:A:1355:A:N6	6:H:31:MET:HE1	2.34	0.43
1:A:906:U:C5	1:A:907:C:C5	3.05	0.43
1:A:985:A:H2	1:A:1375:C:H1'	1.84	0.43
1:A:1260:A:H2'	1:A:1261:A:C8	2.54	0.43
1:A:1264:G:H1	1:A:1291:C:H42	1.66	0.43
1:A:110:G:H2'	1:A:110:G:N3	2.34	0.43
1:A:387:C:O2'	1:A:388:G:H5'	2.19	0.43
1:A:776:A:O2'	1:A:777:A:H5'	2.19	0.43
1:A:995:C:H2'	1:A:996:A:H8	1.78	0.43
1:A:1053:G:H2'	1:A:1054:A:C8	2.54	0.43
1:A:1167:C:H3'	1:A:1190:G:N2	2.34	0.43
1:A:70:G:H1'	1:A:170:A:N3	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:364:A:N6	1:A:365:G:C4	2.87	0.43
1:A:744:C:H2'	1:A:745:U:C6	2.54	0.43
1:A:962:U:H2'	1:A:963:G:H4'	2.01	0.43
3:C:47:VAL:HG11	19:V:53:GLY:O	2.19	0.43
1:A:464:G:H2'	1:A:465:U:C6	2.54	0.42
1:A:822:U:H2'	1:A:823:A:C8	2.48	0.42
3:C:497:VAL:CG2	3:C:512:ILE:HD11	2.49	0.42
7:I:34:ARG:HG3	7:I:51:PHE:CE1	2.54	0.42
10:L:53:MET:HG3	10:L:65:TYR:CE1	2.54	0.42
12:O:43:LEU:HD12	12:O:56:LEU:HD22	2.00	0.42
1:A:265:G:H8	1:A:265:G:H5''	1.84	0.42
1:A:612:U:H2'	1:A:613:G:C8	2.54	0.42
1:A:746:C:H2'	1:A:747:U:C6	2.54	0.42
1:A:833:U:C1'	7:I:2:VAL:HG22	2.49	0.42
1:A:1056:A:H2'	1:A:1056:A:N3	2.33	0.42
10:L:79:TYR:CB	10:L:100:VAL:HG21	2.49	0.42
11:M:15:VAL:HG21	11:M:48:LEU:HD21	2.01	0.42
1:A:307:G:O5'	1:A:307:G:H8	2.01	0.42
1:A:389:A:H2'	1:A:390:A:C8	2.53	0.42
1:A:588:U:H2'	1:A:589:C:C6	2.54	0.42
1:A:691:C:H2'	1:A:692:G:C8	2.54	0.42
1:A:824:A:H4'	1:A:827:G:OP2	2.18	0.42
1:A:1219:C:H2'	1:A:1220:U:C4'	2.50	0.42
2:B:4:A:H5''	2:B:5:A:N7	2.34	0.42
1:A:473:G:N3	1:A:477:A:H2	2.17	0.42
1:A:511:C:N4	1:A:552:G:H1	2.17	0.42
1:A:718:U:H2'	1:A:719:G:C4'	2.49	0.42
3:C:419:ASP:HA	3:C:441:ARG:HH21	1.85	0.42
4:F:180:PRO:O	4:F:181:GLU:HG2	2.19	0.42
11:M:80:LEU:HD11	11:M:87:ARG:NH1	2.35	0.42
18:U:28:TYR:HA	18:U:34:LEU:HD11	2.01	0.42
1:A:10:A:H5'	5:G:106:ILE:HG22	2.01	0.42
1:A:232:A:H2'	1:A:233:C:O4'	2.19	0.42
1:A:474:A:H2'	1:A:475:A:O4'	2.19	0.42
1:A:987:A:H2'	1:A:988:A:H5''	2.00	0.42
1:A:1182:C:C2	1:A:1183:G:H1'	2.55	0.42
1:A:1304:U:H2'	1:A:1305:C:C6	2.54	0.42
1:A:119:C:H4'	1:A:120:A:OP1	2.18	0.42
1:A:251:A:H4'	1:A:252:U:H3'	2.02	0.42
1:A:473:G:O2'	1:A:475:A:N7	2.49	0.42
1:A:538:G:H4'	1:A:542:A:C5	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:643:C:H2'	1:A:644:A:C8	2.55	0.42
1:A:1039:U:H1'	1:A:1043:G:N2	2.33	0.42
1:A:1228:U:H2'	1:A:1229:G:H8	1.84	0.42
1:A:1312:C:H3'	1:A:1313:G:C8	2.54	0.42
1:A:1355:A:H2	1:A:1357:U:C6	2.37	0.42
1:A:381:A:H2'	1:A:381:A:N3	2.35	0.42
1:A:449:G:O6	1:A:502:C:N3	2.53	0.42
1:A:1228:U:H2'	1:A:1229:G:C8	2.55	0.42
1:A:1250:G:N2	1:A:1305:C:N3	2.67	0.42
1:A:1254:A:H2'	1:A:1255:G:H8	1.84	0.42
1:A:1338:G:O2'	11:M:24:GLY:HA2	2.20	0.42
14:Q:70:SER:O	14:Q:71:ALA:C	2.63	0.42
1:A:14:U:H3	1:A:24:G:H1	1.67	0.42
1:A:235:G:H2'	1:A:236:A:O4'	2.20	0.42
1:A:251:A:C2	1:A:253:U:H2'	2.55	0.42
1:A:531:C:H41	10:L:63:ARG:NH2	2.18	0.42
1:A:715:A:H5''	1:A:715:A:C8	2.54	0.42
1:A:989:C:N4	1:A:1370:G:N1	2.65	0.42
2:B:5:A:C2	2:B:6:A:H5'	2.55	0.42
17:T:37:ILE:HD13	17:T:65:VAL:HG12	2.01	0.42
1:A:216:G:N2	1:A:224:U:C2	2.87	0.42
1:A:417:U:H3	1:A:441:G:H1	1.68	0.42
1:A:615:G:H21	1:A:641:G:H5'	1.83	0.42
1:A:702:G:H2'	1:A:703:A:C8	2.55	0.42
1:A:708:C:H2'	1:A:709:G:H8	1.81	0.42
1:A:829:U:H4'	1:A:830:G:OP2	2.19	0.42
1:A:1056:A:H2	1:A:1224:G:H4'	1.85	0.42
12:O:36:ILE:HG23	12:O:56:LEU:HD11	2.02	0.42
1:A:9:G:H2'	5:G:124:LEU:HD22	2.01	0.41
1:A:474:A:C8	1:A:474:A:P	3.08	0.41
1:A:906:U:O2'	1:A:907:C:C6	2.68	0.41
2:B:-1:A:H4'	2:B:0:A:H8	1.84	0.41
1:A:249:G:H2'	1:A:250:C:C6	2.55	0.41
1:A:333:A:H2'	1:A:334:G:C8	2.55	0.41
1:A:446:G:O6	1:A:503:C:H2'	2.20	0.41
1:A:765:C:H4'	7:I:2:VAL:HG12	2.01	0.41
1:A:766:U:H2'	1:A:767:G:O4'	2.19	0.41
1:A:842:U:O2	1:A:863:G:N2	2.53	0.41
1:A:955:G:H2'	1:A:955:G:N3	2.35	0.41
1:A:1188:A:H2'	1:A:1189:A:C8	2.54	0.41
1:A:224:U:H2'	1:A:225:A:H8	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:475:A:C4	1:A:477:A:H1'	2.55	0.41
1:A:781:U:H2'	1:A:782:G:C8	2.56	0.41
1:A:906:U:C2'	1:A:907:C:C6	3.04	0.41
1:A:1370:G:N7	1:A:1371:C:N4	2.67	0.41
5:G:48:PHE:HD1	5:G:141:LEU:CD1	2.31	0.41
9:K:83:THR:O	9:K:87:LEU:HG	2.20	0.41
1:A:418:G:H2'	1:A:437:U:C4	2.55	0.41
1:A:844:A:OP1	18:U:58:ARG:NH2	2.54	0.41
1:A:854:C:O3'	18:U:20:SER:HA	2.21	0.41
1:A:992:U:H4'	1:A:993:A:O5'	2.20	0.41
1:A:1199:G:H2'	1:A:1199:G:N3	2.35	0.41
1:A:1215:G:N3	1:A:1215:G:H2'	2.35	0.41
1:A:602:U:H2'	1:A:603:U:C6	2.55	0.41
1:A:833:U:H1'	7:I:2:VAL:HG22	2.01	0.41
1:A:1006:A:C2	1:A:1056:A:H4'	2.56	0.41
1:A:1291:C:H2'	1:A:1292:C:C6	2.55	0.41
1:A:321:A:H2'	1:A:322:C:C6	2.55	0.41
1:A:749:U:H2'	1:A:750:G:O5'	2.20	0.41
2:B:4:A:H62	3:C:530:LEU:HD22	1.85	0.41
15:R:15:LEU:HD21	15:R:71:LEU:HD11	2.02	0.41
16:S:62:VAL:HG22	16:S:72:ALA:HB2	2.01	0.41
1:A:1056:A:H5''	1:A:1057:G:C8	2.56	0.41
1:A:1356:G:H2'	1:A:1359:A:N1	2.36	0.41
3:C:341:LEU:HD21	3:C:572:ILE:CG2	2.51	0.41
17:T:50:TYR:CZ	18:U:71:ALA:HB2	2.56	0.41
1:A:686:U:H2'	1:A:687:U:O4'	2.20	0.41
1:A:719:G:H2'	1:A:720:G:H8	1.86	0.41
1:A:952:G:H22	1:A:1350:U:H1'	1.85	0.41
1:A:1027:U:H2'	1:A:1028:A:H4'	2.03	0.41
1:A:1142:C:N3	1:A:1143:A:C6	2.88	0.41
10:L:53:MET:HG3	10:L:65:TYR:CD1	2.56	0.41
1:A:13:G:H1	1:A:25:C:N4	2.19	0.41
1:A:64:U:H2'	1:A:65:C:C6	2.55	0.41
1:A:292:G:H2'	1:A:293:C:C6	2.55	0.41
1:A:337:A:H8	1:A:337:A:H5'	1.86	0.41
1:A:365:G:O2'	1:A:366:U:C5'	2.63	0.41
1:A:414:G:H1	1:A:444:C:N4	2.18	0.41
1:A:599:U:H2'	1:A:600:U:C6	2.56	0.41
1:A:624:C:N4	1:A:634:G:H1	2.18	0.41
1:A:626:G:H1	1:A:632:C:N4	2.19	0.41
1:A:628:U:C2	4:F:128:ILE:HD12	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:691:C:H6	1:A:691:C:O5'	2.03	0.41
1:A:694:G:N2	1:A:713:A:OP1	2.54	0.41
1:A:744:C:H2'	1:A:745:U:H6	1.86	0.41
1:A:871:G:H4'	7:I:19:MET:HE3	2.02	0.41
1:A:900:G:N2	1:A:916:G:H2'	2.36	0.41
1:A:998:G:H4'	1:A:1024:A:H61	1.86	0.41
1:A:1003:G:N2	1:A:1056:A:O2'	2.53	0.41
1:A:1256:A:H2'	1:A:1257:A:O4'	2.20	0.41
1:A:54:U:H6	1:A:54:U:H5''	1.86	0.41
1:A:349:C:H2'	1:A:350:C:C6	2.56	0.41
1:A:719:G:H2'	1:A:720:G:C8	2.56	0.41
1:A:931:U:H4'	5:G:24:VAL:HB	2.03	0.41
1:A:1288:A:H1'	1:A:1291:C:N4	2.36	0.41
1:A:1354:U:O5'	1:A:1357:U:H1'	2.21	0.41
6:H:30:MET:SD	6:H:120:LEU:HD22	2.61	0.41
11:M:109:ARG:HA	11:M:109:ARG:HD2	1.76	0.41
12:O:25:PRO:O	12:O:26:GLU:C	2.64	0.41
13:P:5:ILE:HG22	13:P:70:VAL:HG11	2.02	0.41
1:A:107:A:C6	1:A:334:G:C6	3.10	0.40
1:A:122:G:C6	1:A:246:G:N1	2.89	0.40
1:A:458:G:H1	1:A:492:C:N4	2.19	0.40
1:A:694:G:H4'	19:V:43:ALA:O	2.21	0.40
1:A:1210:A:H5''	1:A:1214:U:H3	1.86	0.40
1:A:1376:C:H2'	1:A:1377:G:C8	2.55	0.40
2:B:3:A:C2	2:B:4:A:H1'	2.55	0.40
4:F:32:ALA:O	4:F:37:GLY:HA3	2.21	0.40
8:J:88:LEU:HD21	8:J:95:ARG:HA	2.04	0.40
1:A:161:A:C5	1:A:162:C:H1'	2.56	0.40
1:A:496:A:H3'	1:A:497:C:C6	2.57	0.40
1:A:504:A:H4'	1:A:505:G:O5'	2.22	0.40
1:A:625:G:H1	1:A:633:C:N4	2.20	0.40
1:A:1305:C:H4'	1:A:1311:U:C2	2.56	0.40
1:A:1313:G:N2	1:A:1342:A:H62	2.18	0.40
3:C:447:LEU:C	3:C:447:LEU:HD23	2.47	0.40
9:K:90:LEU:HD23	9:K:90:LEU:HA	1.89	0.40
10:L:63:ARG:CB	10:L:103:LEU:HD11	2.51	0.40
1:A:143:C:H2'	1:A:144:U:C6	2.57	0.40
1:A:484:U:H2'	1:A:485:A:H8	1.86	0.40
1:A:683:G:H4'	18:U:75:TYR:CE2	2.56	0.40
1:A:264:U:H2'	1:A:265:G:C8	2.56	0.40
1:A:582:A:H8	1:A:582:A:H5'	1.86	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:608:C:OP1	7:I:90:LYS:HD2	2.22	0.40
1:A:743:A:N3	1:A:743:A:H2'	2.37	0.40
1:A:832:G:N3	7:I:2:VAL:HG21	2.36	0.40
1:A:991:U:H2'	1:A:992:U:C5	2.57	0.40
1:A:1003:G:O2'	1:A:1222:A:N6	2.54	0.40
1:A:1332:G:H5'	1:A:1332:G:H8	1.86	0.40
1:A:105:G:H3'	1:A:106:G:C8	2.40	0.40
1:A:268:G:H2'	1:A:269:U:C6	2.57	0.40
1:A:1194:G:H2'	1:A:1195:G:H8	1.83	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	
3	C	453/779 (58%)	449 (99%)	4 (1%)	0	100	100
4	F	179/200 (90%)	167 (93%)	7 (4%)	5 (3%)	4	24
5	G	156/166 (94%)	150 (96%)	3 (2%)	3 (2%)	6	32
6	H	85/156 (54%)	85 (100%)	0	0	100	100
7	I	129/132 (98%)	122 (95%)	3 (2%)	4 (3%)	3	21
8	J	100/130 (77%)	96 (96%)	4 (4%)	0	100	100
9	K	58/102 (57%)	52 (90%)	4 (7%)	2 (3%)	3	20
10	L	134/138 (97%)	129 (96%)	4 (3%)	1 (1%)	18	55
11	M	106/121 (88%)	94 (89%)	11 (10%)	1 (1%)	14	49
12	O	83/89 (93%)	81 (98%)	2 (2%)	0	100	100
13	P	86/90 (96%)	82 (95%)	3 (4%)	1 (1%)	10	43
14	Q	82/87 (94%)	79 (96%)	3 (4%)	0	100	100
15	R	76/92 (83%)	72 (95%)	2 (3%)	2 (3%)	4	25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	S	81/88 (92%)	77 (95%)	4 (5%)	0	100	100
17	T	90/95 (95%)	85 (94%)	5 (6%)	0	100	100
18	U	62/79 (78%)	60 (97%)	2 (3%)	0	100	100
19	V	90/131 (69%)	89 (99%)	1 (1%)	0	100	100
All	All	2050/2675 (77%)	1969 (96%)	62 (3%)	19 (1%)	16	49

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	F	181	GLU
4	F	182	ARG
5	G	26	LYS
5	G	90	GLY
5	G	91	ALA
7	I	3	MET
9	K	94	SER
15	R	28	LYS
4	F	24	LYS
7	I	4	THR
7	I	70	ASN
9	K	82	GLN
10	L	136	LYS
4	F	28	LYS
7	I	56	LYS
4	F	180	PRO
11	M	96	PRO
13	P	13	LYS
15	R	25	THR

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	
3	C	411/692 (59%)	408 (99%)	3 (1%)	76	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	F	159/173 (92%)	154 (97%)	5 (3%)	35	56
5	G	123/130 (95%)	120 (98%)	3 (2%)	43	63
6	H	78/132 (59%)	77 (99%)	1 (1%)	61	72
7	I	111/112 (99%)	107 (96%)	4 (4%)	31	52
8	J	80/102 (78%)	72 (90%)	8 (10%)	7	24
9	K	55/92 (60%)	50 (91%)	5 (9%)	9	28
10	L	114/116 (98%)	108 (95%)	6 (5%)	20	42
11	M	94/104 (90%)	89 (95%)	5 (5%)	20	42
12	O	80/83 (96%)	78 (98%)	2 (2%)	42	62
13	P	74/76 (97%)	65 (88%)	9 (12%)	5	18
14	Q	77/80 (96%)	73 (95%)	4 (5%)	21	43
15	R	70/81 (86%)	66 (94%)	4 (6%)	18	41
16	S	66/70 (94%)	63 (96%)	3 (4%)	24	46
17	T	81/84 (96%)	78 (96%)	3 (4%)	30	51
18	U	56/64 (88%)	55 (98%)	1 (2%)	51	67
19	V	66/100 (66%)	66 (100%)	0	100	100
All	All	1795/2291 (78%)	1729 (96%)	66 (4%)	31	51

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	11	LEU
3	C	65	ILE
3	C	253	ASP
4	F	66	ARG
4	F	70	THR
4	F	71	LEU
4	F	146	ARG
4	F	178	ARG
5	G	5	ASP
5	G	58	GLU
5	G	157	ARG
6	H	41	THR
7	I	3	MET
7	I	68	GLN
7	I	70	ASN

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Mol	Chain	Res	Type
7	I	98	LEU
8	J	12	ARG
8	J	22	VAL
8	J	25	GLU
8	J	56	GLU
8	J	72	LEU
8	J	97	THR
8	J	100	ARG
8	J	106	ARG
9	K	11	LYS
9	K	13	TYR
9	K	78	ASN
9	K	89	ARG
9	K	90	LEU
10	L	2	PRO
10	L	10	LYS
10	L	18	ASN
10	L	35	HIS
10	L	133	LYS
10	L	136	LYS
11	M	16	VAL
11	M	28	THR
11	M	96	PRO
11	M	97	VAL
11	M	105	ASN
12	O	6	GLU
12	O	48	LYS
13	P	10	MET
13	P	24	ASP
13	P	35	GLU
13	P	43	VAL
13	P	45	LYS
13	P	48	GLU
13	P	53	GLU
13	P	54	GLU
13	P	62	THR
14	Q	3	GLU
14	Q	50	ASP
14	Q	53	ASN
14	Q	85	VAL
15	R	18	LYS
15	R	20	GLU

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Mol	Chain	Res	Type
15	R	27	LYS
15	R	81	LYS
16	S	23	THR
16	S	25	LYS
16	S	48	LYS
17	T	16	GLU
17	T	17	GLU
17	T	87	ARG
18	U	48	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	360	GLN
3	C	464	HIS
3	C	484	GLN
3	C	535	GLN
4	F	112	GLN
4	F	115	ASN
5	G	70	ASN
6	H	56	ASN
7	I	57	GLN
7	I	68	GLN
7	I	70	ASN
8	J	5	GLN
8	J	66	ASN
8	J	81	HIS
10	L	5	ASN
10	L	35	HIS
11	M	100	GLN
12	O	38	ASN
12	O	72	ASN
12	O	83	ASN
13	P	41	ASN
14	Q	53	ASN
15	R	29	GLN
15	R	43	GLN
15	R	47	HIS
17	T	64	ASN
19	V	42	ASN
19	V	103	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1243/1554 (79%)	433 (34%)	97 (7%)
2	B	10/11 (90%)	7 (70%)	2 (20%)
All	All	1253/1565 (80%)	440 (35%)	99 (7%)

All (440) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	9	G
1	A	10	A
1	A	11	G
1	A	12	A
1	A	32	C
1	A	33	G
1	A	34	A
1	A	41	G
1	A	49	C
1	A	50	C
1	A	51	U
1	A	52	A
1	A	53	A
1	A	67	A
1	A	70	G
1	A	74	A
1	A	98	U
1	A	100	G
1	A	105	G
1	A	114	A
1	A	118	A
1	A	119	C
1	A	120	A
1	A	125	G
1	A	128	A
1	A	129	A
1	A	132	U
1	A	140	A
1	A	143	C
1	A	144	U
1	A	148	A
1	A	150	A
1	A	152	C
1	A	153	U

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Mol	Chain	Res	Type
1	A	154	C
1	A	162	C
1	A	165	G
1	A	166	G
1	A	168	C
1	A	172	U
1	A	173	A
1	A	177	G
1	A	180	G
1	A	181	G
1	A	182	U
1	A	189	A
1	A	190	A
1	A	191	C
1	A	193	G
1	A	194	C
1	A	195	A
1	A	197	G
1	A	201	C
1	A	202	A
1	A	208	A
1	A	209	A
1	A	210	A
1	A	211	A
1	A	218	U
1	A	219	U
1	A	220	C
1	A	221	G
1	A	229	C
1	A	245	C
1	A	248	C
1	A	249	G
1	A	251	A
1	A	252	U
1	A	255	G
1	A	259	G
1	A	265	G
1	A	266	A
1	A	270	A
1	A	274	G
1	A	275	C
1	A	283	G

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Mol	Chain	Res	Type
1	A	287	A
1	A	288	C
1	A	289	G
1	A	297	G
1	A	313	G
1	A	314	A
1	A	323	A
1	A	324	C
1	A	331	U
1	A	336	C
1	A	337	A
1	A	338	C
1	A	340	G
1	A	352	A
1	A	353	C
1	A	354	G
1	A	355	G
1	A	359	G
1	A	360	C
1	A	362	G
1	A	373	U
1	A	375	U
1	A	377	C
1	A	380	C
1	A	400	G
1	A	405	A
1	A	406	C
1	A	414	G
1	A	419	A
1	A	420	U
1	A	421	G
1	A	424	G
1	A	428	U
1	A	429	U
1	A	430	C
1	A	431	G
1	A	432	G
1	A	437	U
1	A	439	A
1	A	445	U
1	A	447	U
1	A	456	A

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Mol	Chain	Res	Type
1	A	458	G
1	A	459	A
1	A	460	A
1	A	461	C
1	A	466	G
1	A	467	C
1	A	475	A
1	A	476	U
1	A	477	A
1	A	478	G
1	A	487	C
1	A	488	U
1	A	489	U
1	A	493	G
1	A	494	G
1	A	495	U
1	A	500	A
1	A	506	A
1	A	508	A
1	A	509	G
1	A	520	C
1	A	526	G
1	A	527	C
1	A	529	A
1	A	530	G
1	A	536	G
1	A	540	U
1	A	542	A
1	A	543	U
1	A	545	C
1	A	556	A
1	A	558	C
1	A	568	A
1	A	569	A
1	A	570	U
1	A	571	U
1	A	573	U
1	A	577	G
1	A	581	A
1	A	582	A
1	A	585	G
1	A	588	U

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Mol	Chain	Res	Type
1	A	590	G
1	A	591	C
1	A	597	G
1	A	603	U
1	A	604	A
1	A	605	A
1	A	627	C
1	A	628	U
1	A	641	G
1	A	642	U
1	A	643	C
1	A	648	G
1	A	651	A
1	A	655	G
1	A	656	G
1	A	659	A
1	A	661	U
1	A	662	U
1	A	663	G
1	A	667	G
1	A	668	C
1	A	669	A
1	A	671	A
1	A	672	A
1	A	674	A
1	A	675	G
1	A	684	A
1	A	693	U
1	A	694	G
1	A	695	U
1	A	696	A
1	A	697	G
1	A	698	C
1	A	702	G
1	A	704	A
1	A	707	G
1	A	708	C
1	A	711	A
1	A	712	G
1	A	713	A
1	A	714	G
1	A	715	A

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Mol	Chain	Res	Type
1	A	716	U
1	A	717	G
1	A	718	U
1	A	725	A
1	A	727	A
1	A	728	C
1	A	731	G
1	A	732	U
1	A	733	G
1	A	738	A
1	A	739	G
1	A	740	G
1	A	755	G
1	A	756	U
1	A	757	A
1	A	758	A
1	A	762	A
1	A	763	C
1	A	764	G
1	A	768	A
1	A	775	A
1	A	821	G
1	A	824	A
1	A	825	A
1	A	826	C
1	A	827	G
1	A	828	A
1	A	829	U
1	A	830	G
1	A	839	G
1	A	849	G
1	A	853	C
1	A	855	G
1	A	856	C
1	A	881	U
1	A	883	A
1	A	886	A
1	A	894	U
1	A	895	G
1	A	901	U
1	A	906	U
1	A	909	C

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Mol	Chain	Res	Type
1	A	923	A
1	A	924	A
1	A	931	U
1	A	932	G
1	A	953	U
1	A	954	G
1	A	956	A
1	A	958	C
1	A	962	U
1	A	963	G
1	A	966	U
1	A	970	U
1	A	971	U
1	A	972	C
1	A	975	A
1	A	976	G
1	A	977	C
1	A	978	A
1	A	979	A
1	A	980	C
1	A	981	G
1	A	982	C
1	A	983	G
1	A	984	A
1	A	985	A
1	A	986	G
1	A	987	A
1	A	988	A
1	A	992	U
1	A	993	A
1	A	994	C
1	A	996	A
1	A	999	U
1	A	1002	U
1	A	1003	G
1	A	1008	C
1	A	1009	C
1	A	1010	U
1	A	1012	U
1	A	1013	G
1	A	1014	A
1	A	1017	A

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Mol	Chain	Res	Type
1	A	1019	C
1	A	1022	A
1	A	1023	G
1	A	1024	A
1	A	1025	G
1	A	1027	U
1	A	1028	A
1	A	1030	G
1	A	1033	G
1	A	1034	U
1	A	1036	C
1	A	1039	U
1	A	1040	U
1	A	1041	C
1	A	1042	G
1	A	1043	G
1	A	1046	G
1	A	1047	C
1	A	1048	A
1	A	1051	G
1	A	1053	G
1	A	1054	A
1	A	1056	A
1	A	1057	G
1	A	1124	C
1	A	1125	U
1	A	1129	U
1	A	1134	G
1	A	1135	U
1	A	1137	G
1	A	1139	C
1	A	1140	A
1	A	1142	C
1	A	1145	U
1	A	1147	A
1	A	1148	G
1	A	1149	U
1	A	1150	U
1	A	1151	G
1	A	1152	G
1	A	1153	G
1	A	1154	C

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Mol	Chain	Res	Type
1	A	1155	A
1	A	1157	U
1	A	1161	A
1	A	1162	G
1	A	1163	G
1	A	1166	A
1	A	1167	C
1	A	1168	U
1	A	1169	G
1	A	1171	C
1	A	1172	G
1	A	1173	G
1	A	1176	A
1	A	1177	C
1	A	1178	A
1	A	1183	G
1	A	1190	G
1	A	1191	G
1	A	1193	G
1	A	1194	G
1	A	1197	A
1	A	1198	U
1	A	1199	G
1	A	1200	A
1	A	1202	G
1	A	1205	A
1	A	1206	A
1	A	1208	U
1	A	1209	C
1	A	1210	A
1	A	1211	U
1	A	1212	C
1	A	1213	A
1	A	1214	U
1	A	1215	G
1	A	1216	C
1	A	1221	U
1	A	1222	A
1	A	1223	U
1	A	1224	G
1	A	1225	A
1	A	1233	U

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Mol	Chain	Res	Type
1	A	1234	A
1	A	1235	C
1	A	1236	A
1	A	1237	C
1	A	1244	U
1	A	1245	A
1	A	1246	C
1	A	1247	A
1	A	1249	U
1	A	1250	G
1	A	1252	A
1	A	1253	C
1	A	1259	A
1	A	1265	C
1	A	1266	A
1	A	1267	G
1	A	1270	A
1	A	1271	A
1	A	1272	A
1	A	1273	C
1	A	1274	C
1	A	1279	G
1	A	1280	G
1	A	1282	U
1	A	1287	C
1	A	1288	A
1	A	1289	A
1	A	1291	C
1	A	1294	A
1	A	1295	C
1	A	1296	A
1	A	1297	A
1	A	1302	G
1	A	1304	U
1	A	1305	C
1	A	1307	C
1	A	1308	A
1	A	1309	G
1	A	1310	U
1	A	1311	U
1	A	1312	C
1	A	1313	G

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Mol	Chain	Res	Type
1	A	1321	G
1	A	1325	G
1	A	1326	C
1	A	1327	A
1	A	1328	A
1	A	1332	G
1	A	1340	G
1	A	1345	U
1	A	1347	G
1	A	1350	U
1	A	1352	G
1	A	1354	U
1	A	1355	A
1	A	1356	G
1	A	1357	U
1	A	1359	A
1	A	1362	G
1	A	1369	A
1	A	1371	C
1	A	1377	G
1	A	1379	G
2	B	0	A
2	B	1	A
2	B	3	A
2	B	5	A
2	B	6	A
2	B	7	A
2	B	9	A

All (99) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	9	G
1	A	10	A
1	A	66	G
1	A	113	G
1	A	128	A
1	A	189	A
1	A	190	A
1	A	193	G
1	A	207	U
1	A	209	A

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Mol	Chain	Res	Type
1	A	220	C
1	A	251	A
1	A	287	A
1	A	313	G
1	A	323	A
1	A	352	A
1	A	359	G
1	A	372	A
1	A	419	A
1	A	420	U
1	A	429	U
1	A	446	G
1	A	455	G
1	A	459	A
1	A	475	A
1	A	486	C
1	A	487	C
1	A	494	G
1	A	508	A
1	A	568	A
1	A	569	A
1	A	570	U
1	A	575	G
1	A	584	G
1	A	585	G
1	A	590	G
1	A	596	G
1	A	603	U
1	A	604	A
1	A	641	G
1	A	661	U
1	A	662	U
1	A	667	G
1	A	671	A
1	A	707	G
1	A	710	U
1	A	713	A
1	A	715	A
1	A	727	A
1	A	762	A
1	A	824	A
1	A	826	C

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Mol	Chain	Res	Type
1	A	827	G
1	A	828	A
1	A	848	G
1	A	855	G
1	A	894	U
1	A	899	A
1	A	952	G
1	A	965	U
1	A	970	U
1	A	976	G
1	A	977	C
1	A	992	U
1	A	1016	A
1	A	1018	U
1	A	1032	C
1	A	1041	C
1	A	1056	A
1	A	1134	G
1	A	1148	G
1	A	1151	G
1	A	1154	C
1	A	1157	U
1	A	1161	A
1	A	1162	G
1	A	1166	A
1	A	1170	C
1	A	1176	A
1	A	1198	U
1	A	1214	U
1	A	1223	U
1	A	1234	A
1	A	1235	C
1	A	1246	C
1	A	1252	A
1	A	1266	A
1	A	1271	A
1	A	1279	G
1	A	1294	A
1	A	1304	U
1	A	1307	C
1	A	1309	G
1	A	1310	U

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Mol	Chain	Res	Type
1	A	1311	U
1	A	1326	C
1	A	1354	U
2	B	0	A
2	B	6	A

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

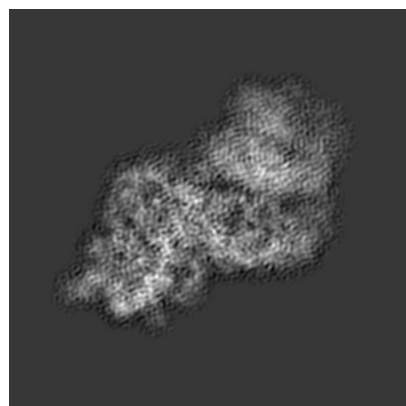
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16596. These allow visual inspection of the internal detail of the map and identification of artifacts.

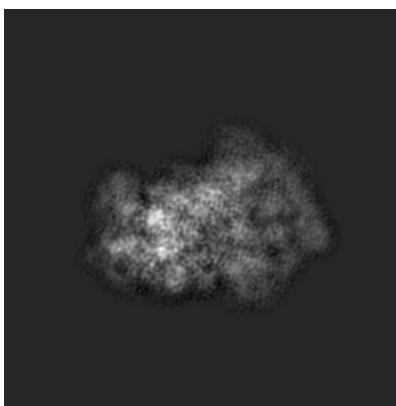
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

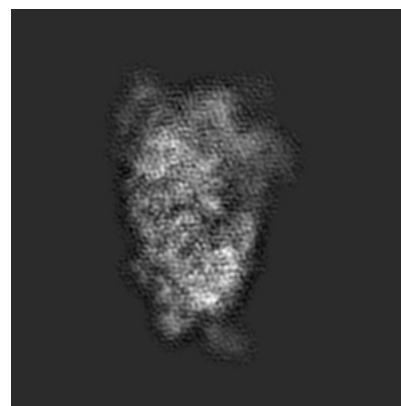
6.1.1 Primary map



X

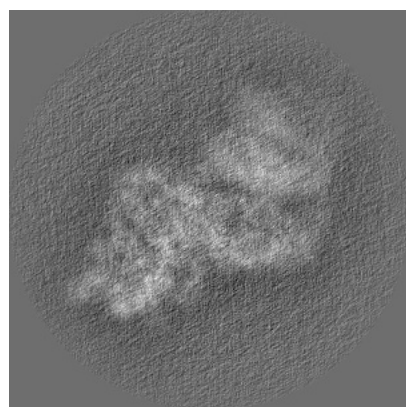


Y

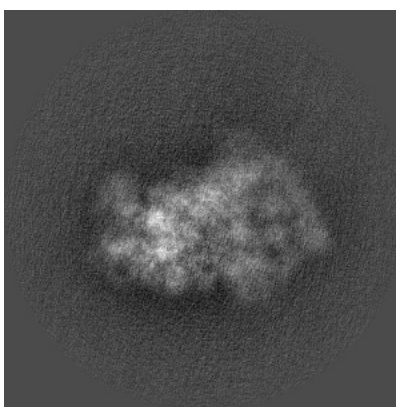


Z

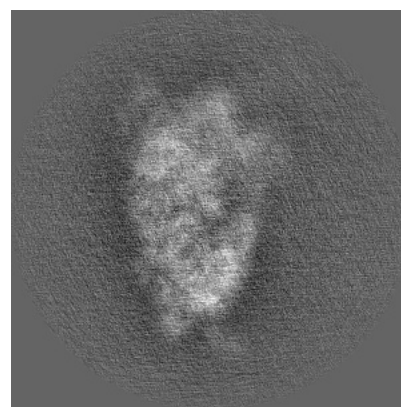
6.1.2 Raw map



X



Y

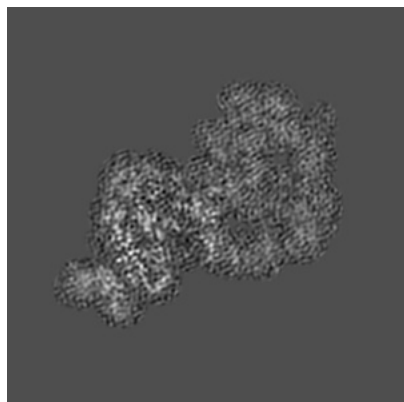


Z

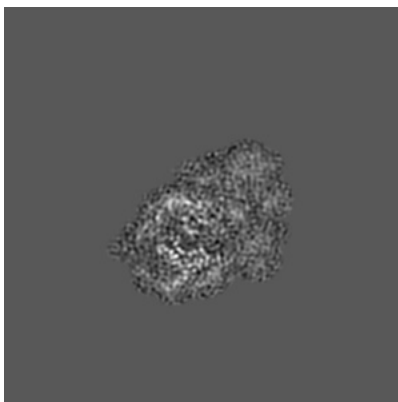
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

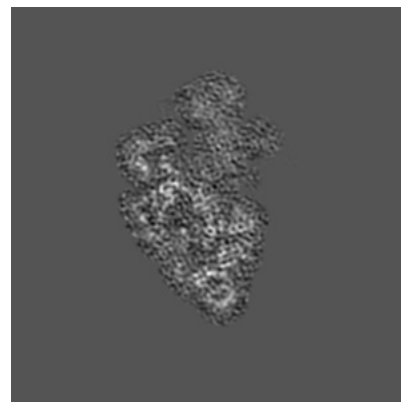
6.2.1 Primary map



X Index: 192

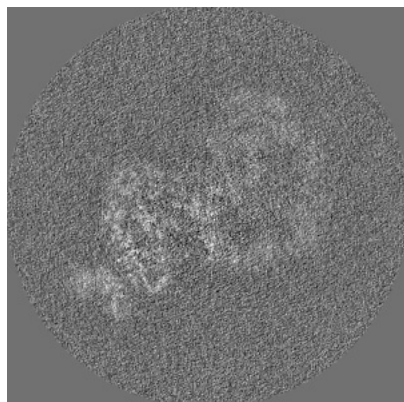


Y Index: 192

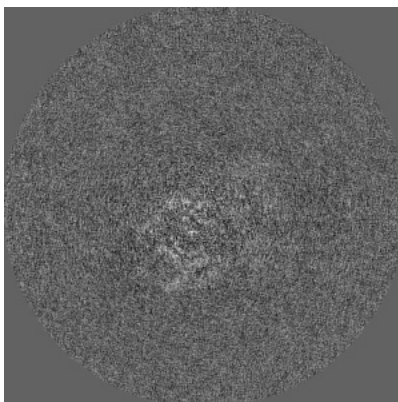


Z Index: 192

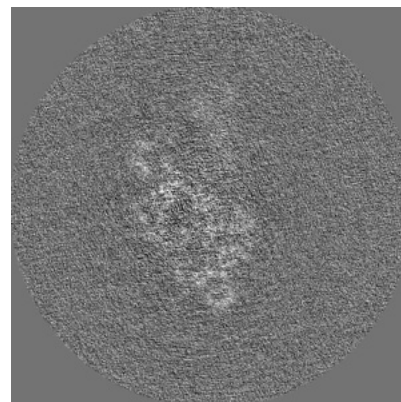
6.2.2 Raw map



X Index: 192



Y Index: 192

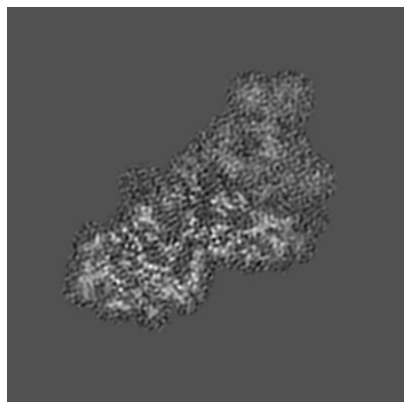


Z Index: 192

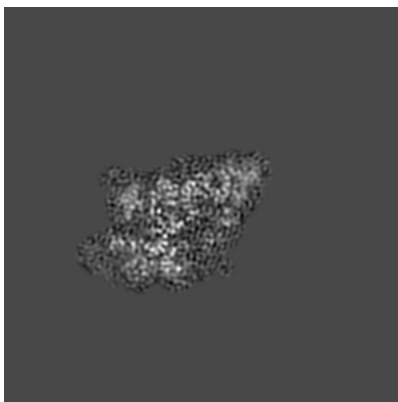
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

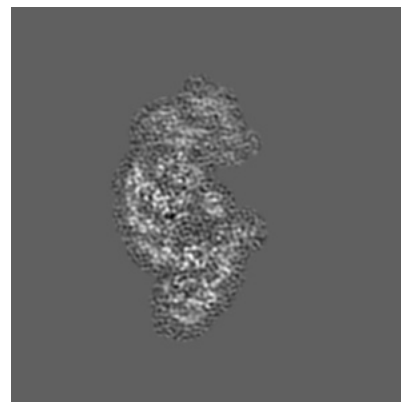
6.3.1 Primary map



X Index: 159

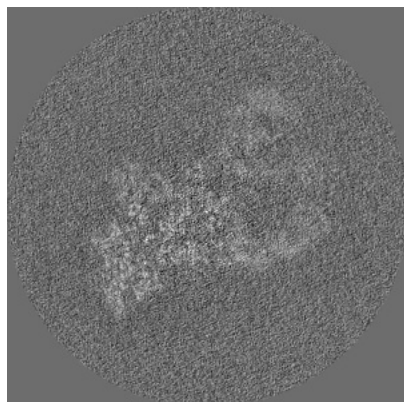


Y Index: 151

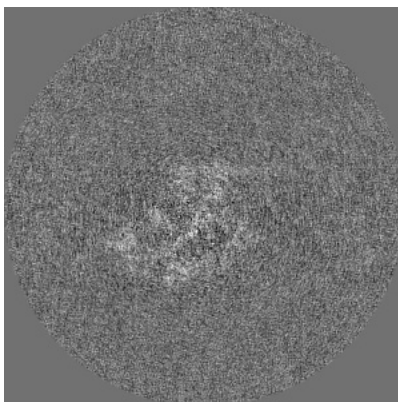


Z Index: 162

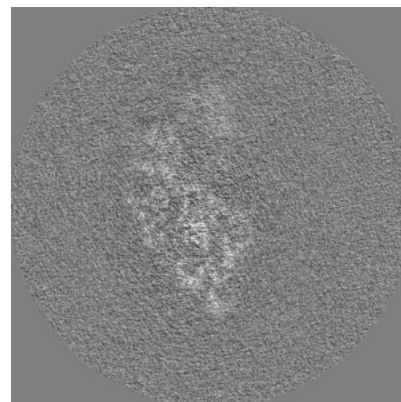
6.3.2 Raw map



X Index: 178



Y Index: 173

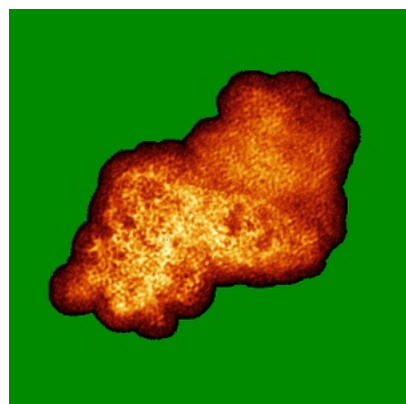


Z Index: 185

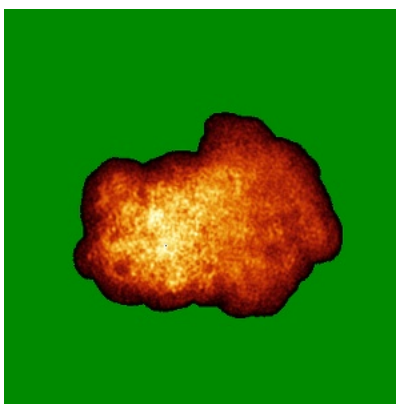
The images above show the largest variance slices of the map in three orthogonal directions.

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

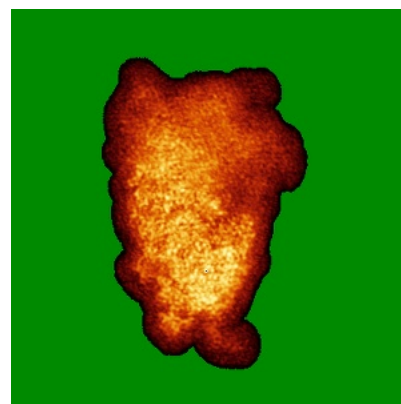
6.4.1 Primary map



X

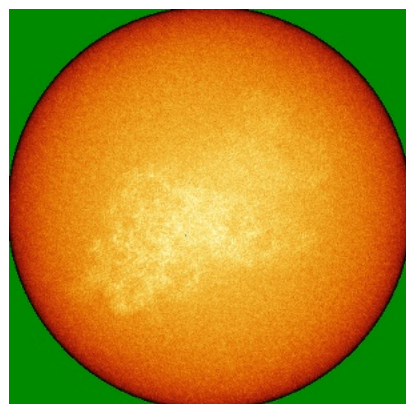


Y

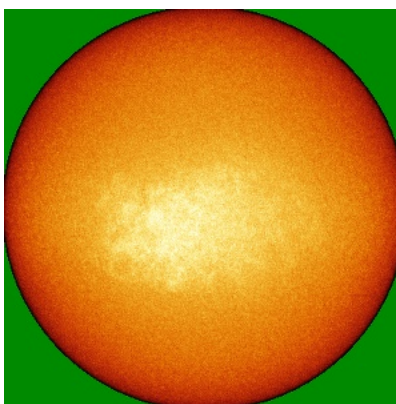


Z

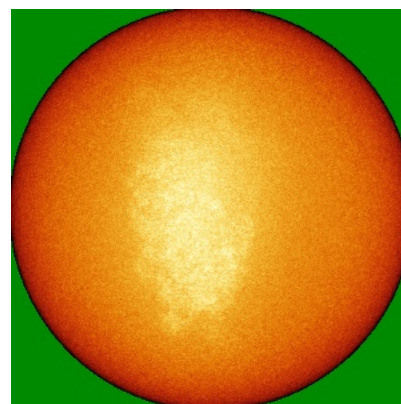
6.4.2 Raw map



X



Y

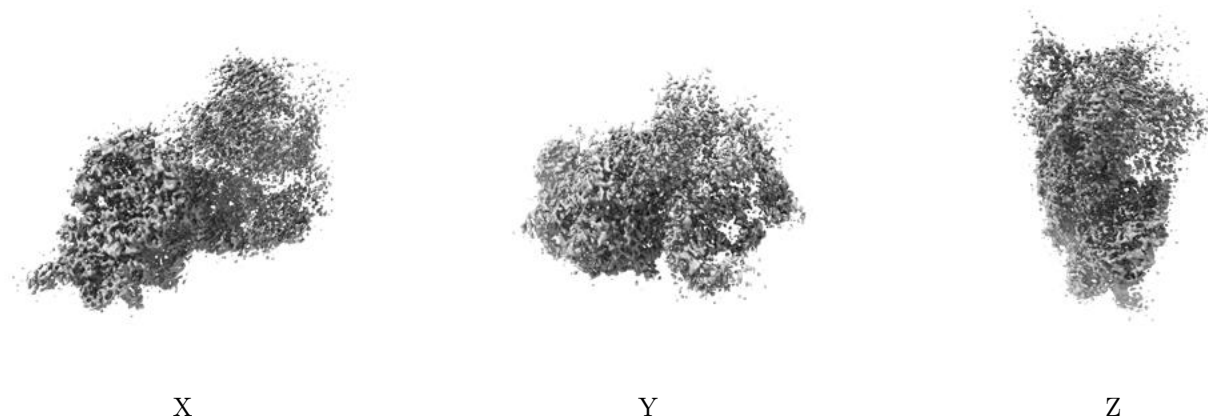


Z

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.

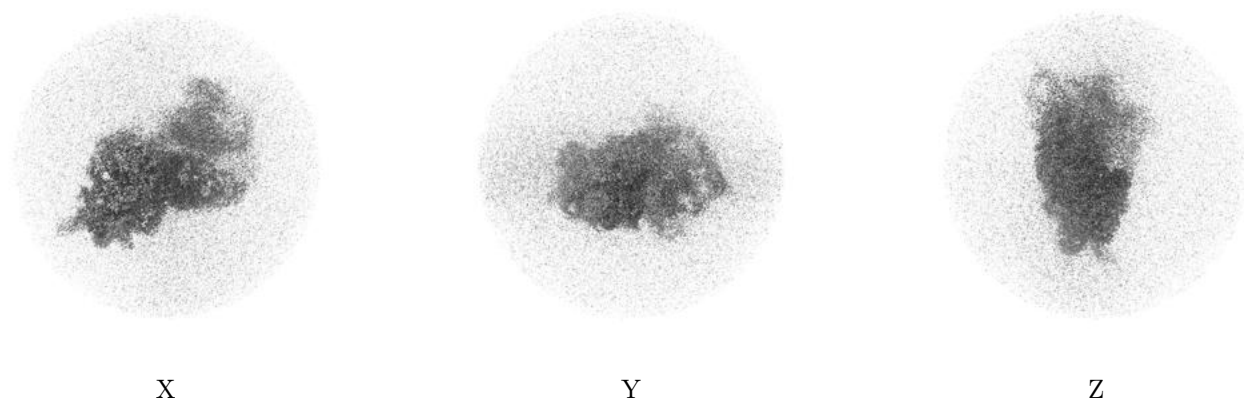
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0125. 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.

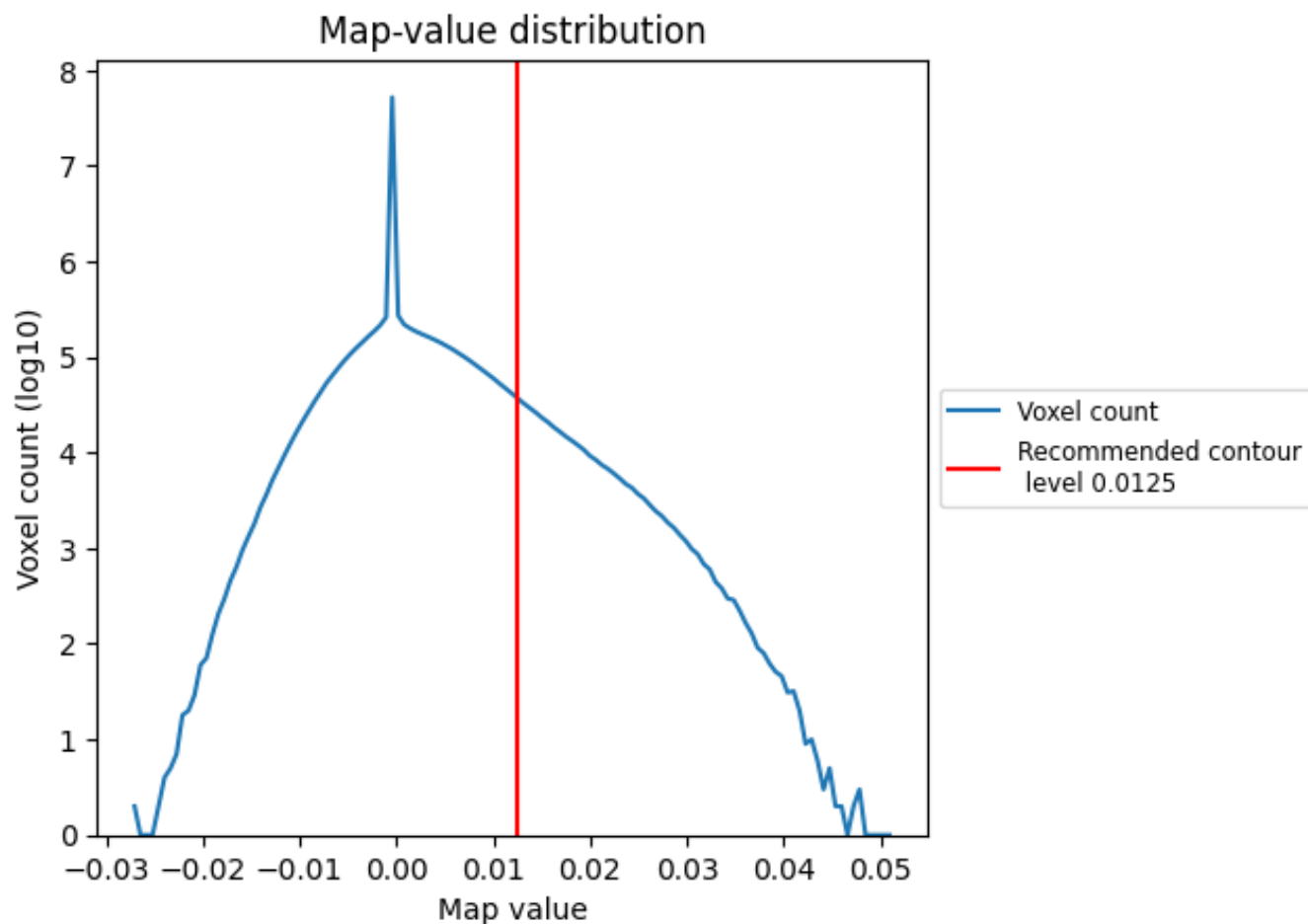
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

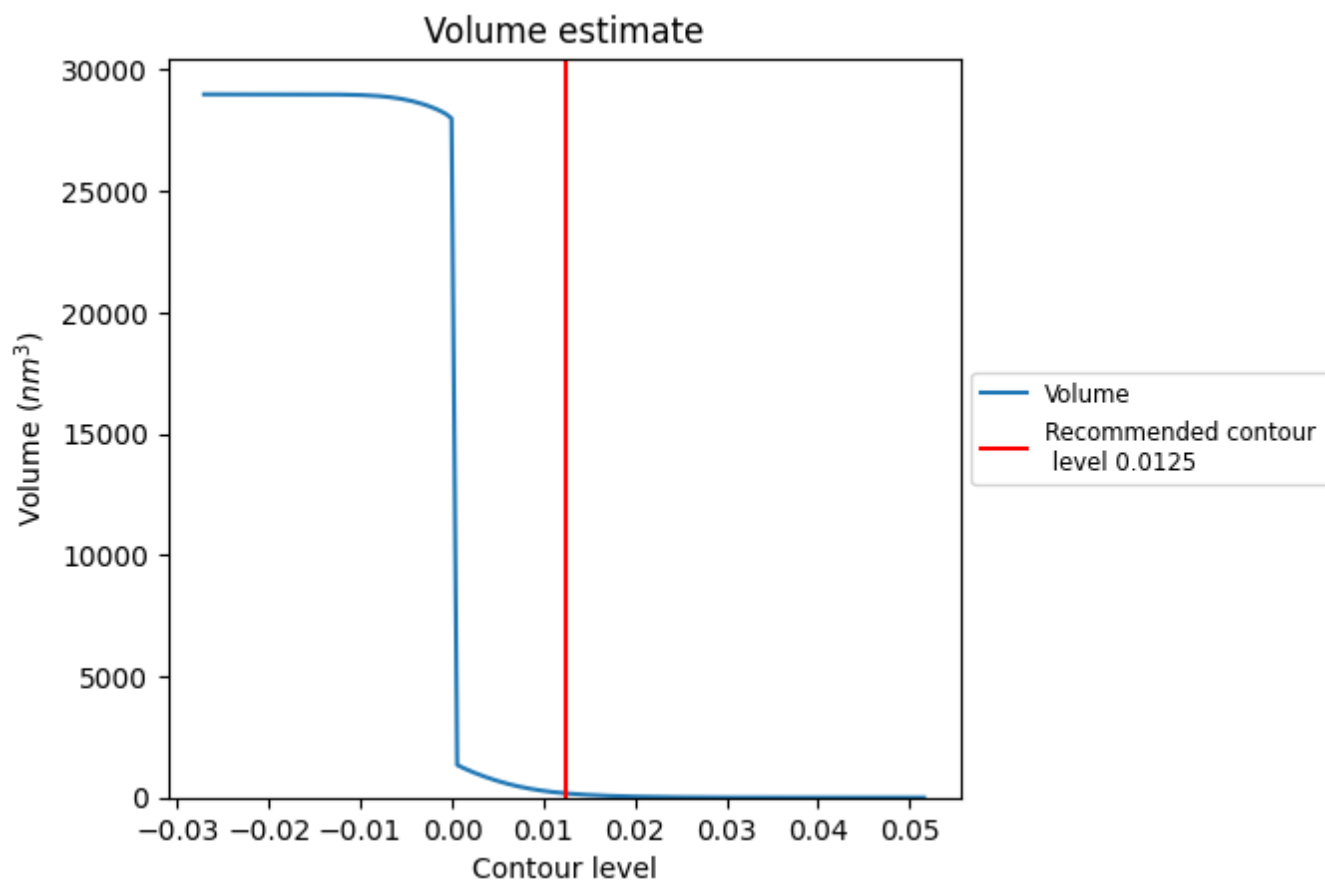
This section contains the results of statistical analysis of the map.

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.

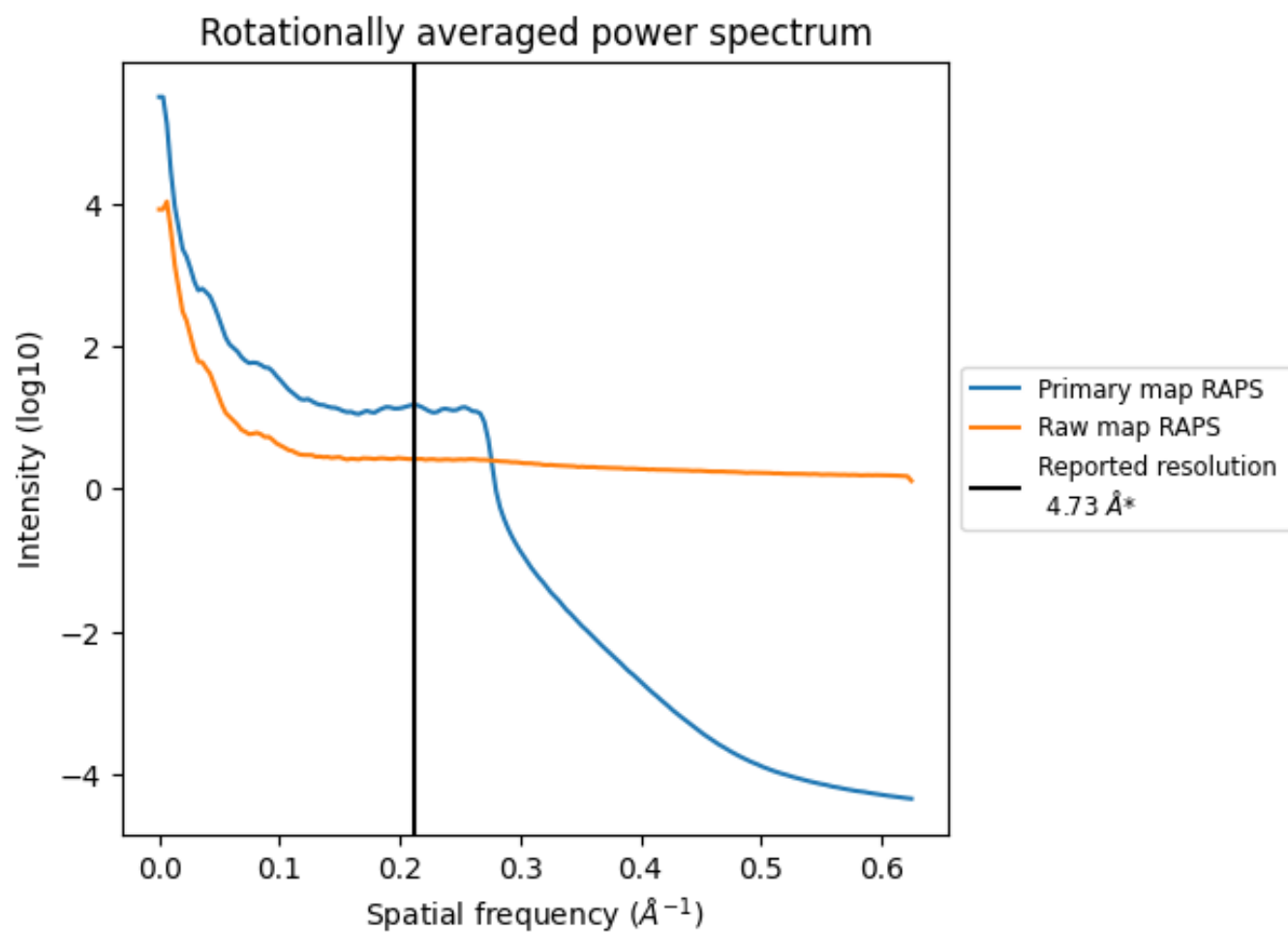
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 173 nm³; this corresponds to an approximate mass of 156 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

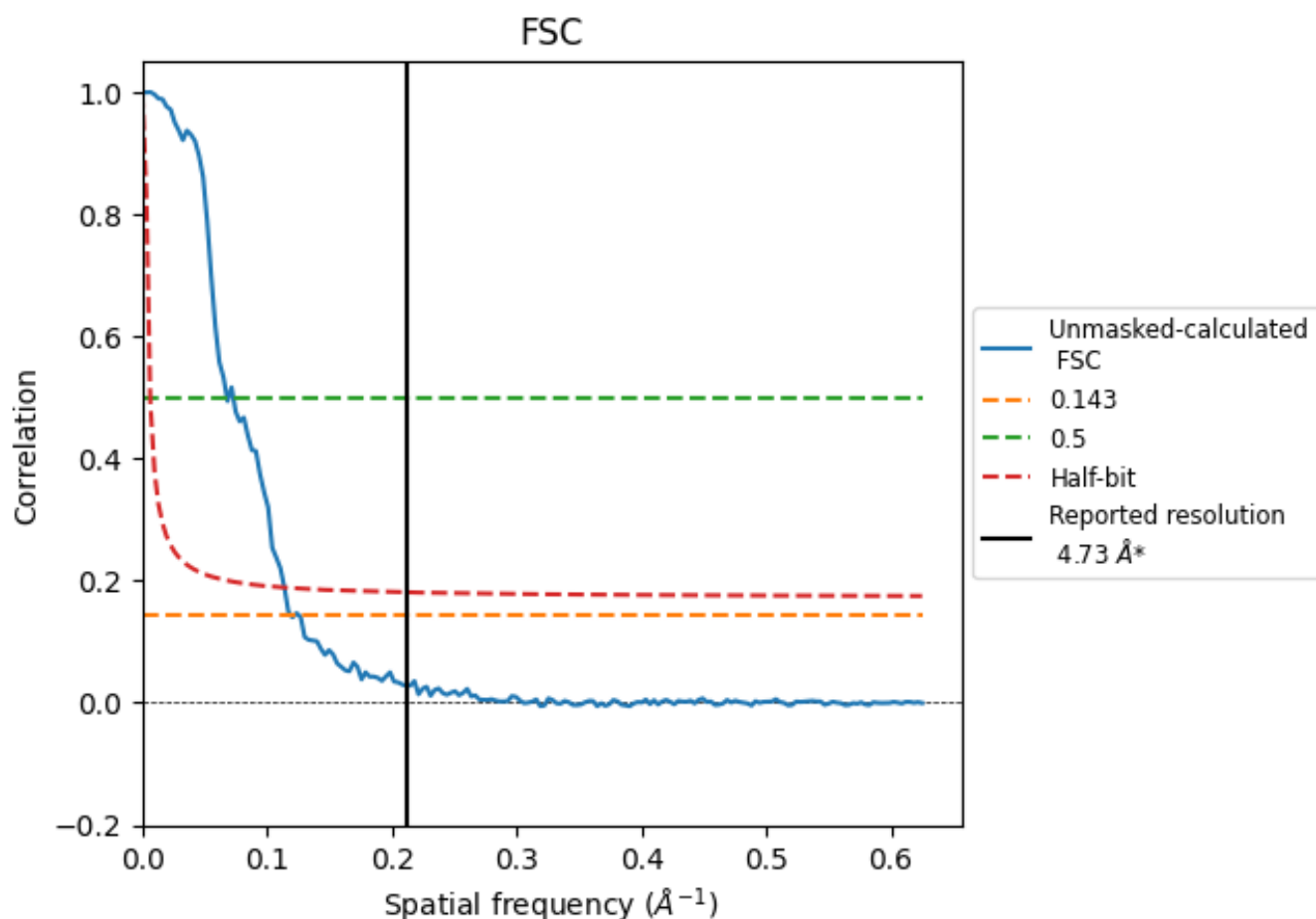


*Reported resolution corresponds to spatial frequency of 0.211 $\text{\AA}^{-1}$

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 0.211 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.73	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	8.39	14.75	8.77

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 8.39 differs from the reported value 4.73 by more than 10 %

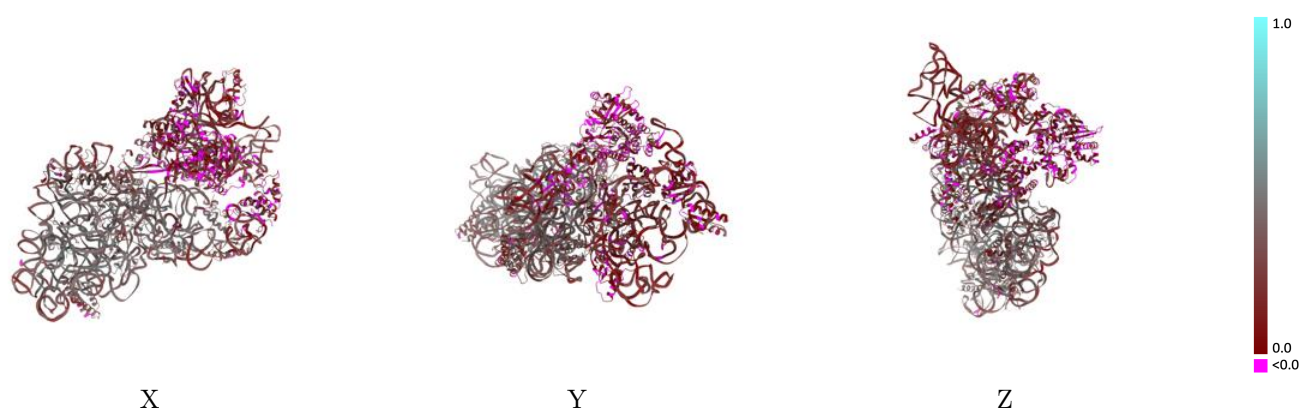
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-16596 and PDB model 8CDV. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)

This section was not generated.

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

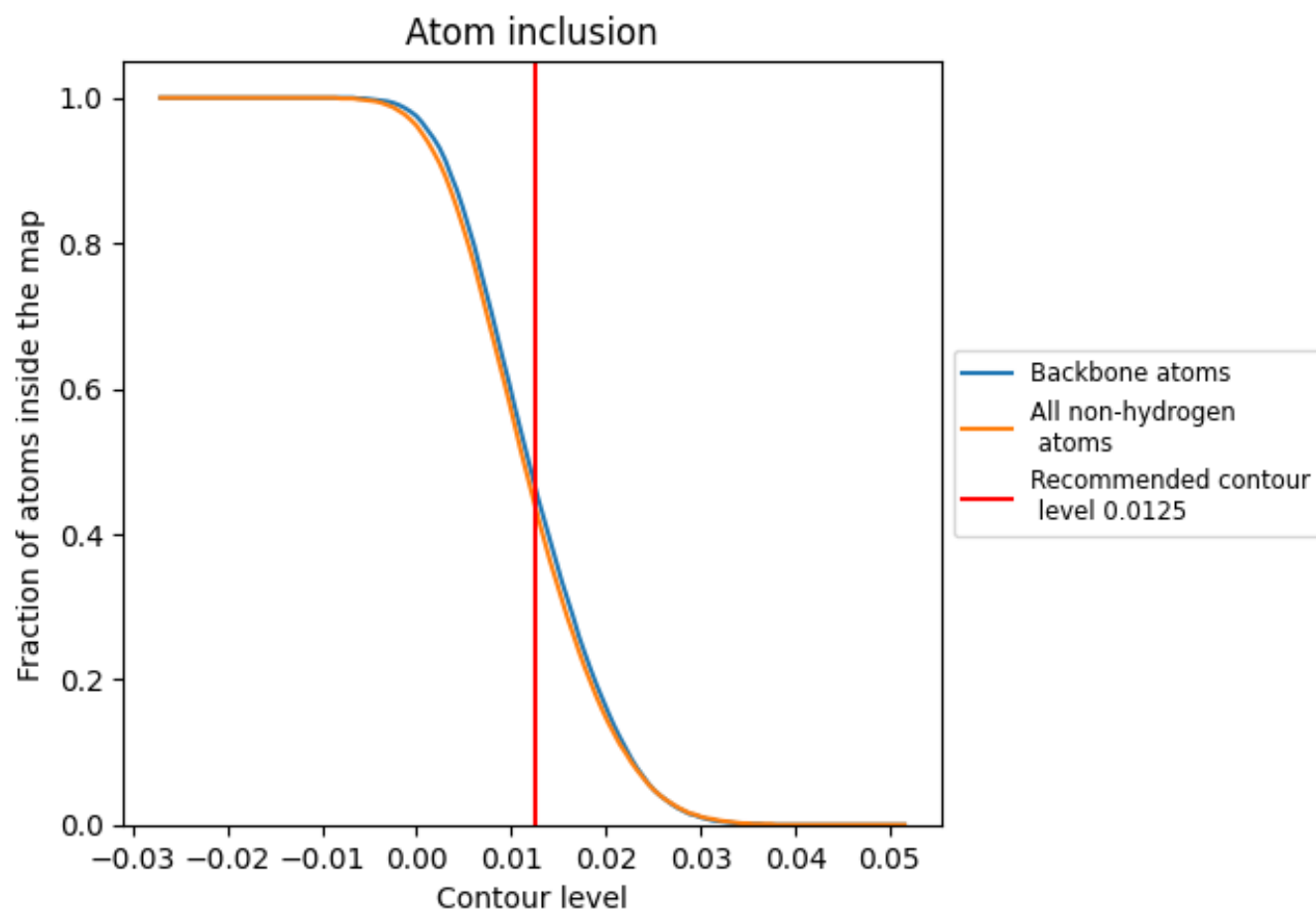


The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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

This section was not generated.

9.4 Atom inclusion [i](#)



At the recommended contour level, 47% of all backbone atoms, 44% 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 (0.0125) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4390	 0.2720
A	 0.5530	 0.3090
B	 0.0950	 0.1610
C	 0.0540	 0.0690
F	 0.3860	 0.2940
G	 0.2880	 0.2500
H	 0.0880	 0.1180
I	 0.4750	 0.3680
J	 0.0770	 0.1020
K	 0.0480	 0.1180
L	 0.5260	 0.3790
M	 0.0720	 0.1270
O	 0.5120	 0.3410
P	 0.5590	 0.3950
Q	 0.5070	 0.3860
R	 0.0590	 0.0790
S	 0.4730	 0.3120
T	 0.2840	 0.2430
U	 0.3370	 0.2770
V	 0.0690	 0.1010

