



## Full wwPDB EM Validation Report ⓘ

Mar 11, 2024 – 10:42 AM EDT

PDB ID : 6PVK  
EMDB ID : EMD-20491  
Title : Bacterial 45SRbgA ribosomal particle class A  
Authors : Ortega, J.; Seffouh, A.; Jain, N.; Jahagirdar, D.; Basu, K.; Razi, A.; Ni, X.;  
Guarne, A.; Britton, R.A.  
Deposited on : 2019-07-20  
Resolution : 3.40 Å(reported)  
Based on initial model : 3J9W

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

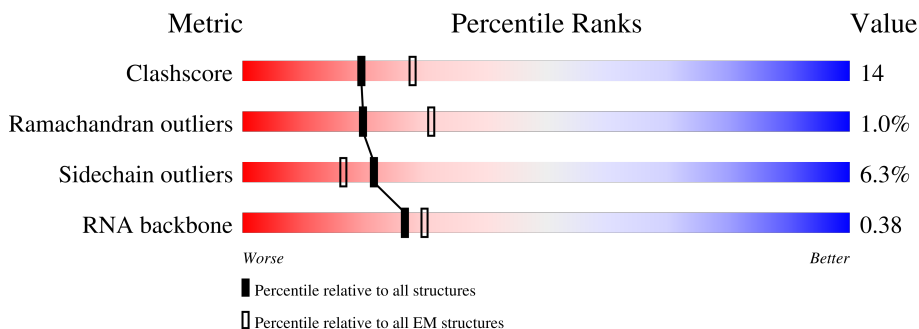
EMDB validation analysis : 0.0.1.dev70  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 3.40 Å.

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





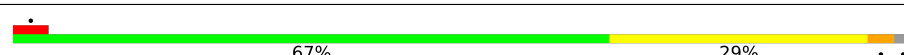
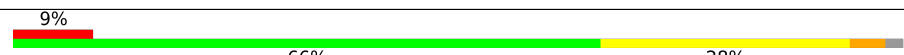
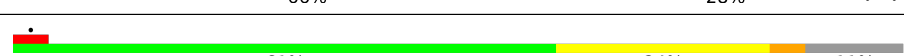
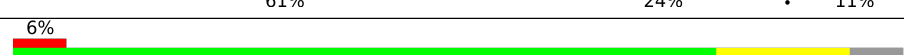




Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 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	2927	
2	C	277	
3	D	209	
4	E	207	
5	J	145	
6	K	122	
7	L	145	

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Mol	Chain	Length	Quality of chain
8	N	120	
9	P	115	
10	Q	118	
11	R	102	
12	S	113	
13	T	95	
14	U	103	
15	b	59	
16	Y	66	
17	d	44	

## 2 Entry composition [i](#)

There are 18 unique types of molecules in this entry. The entry contains 60554 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 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2169	46617	20797	8645	15006	2169	0	0

- Molecule 2 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	220	1680	1045	325	306	4	0	0

- Molecule 3 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	167	1264	799	221	241	3	0	0

- Molecule 4 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	183	1391	881	252	256	2	0	0

- Molecule 5 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	J	141	1119	708	205	201	5	0	0

- Molecule 6 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	K	116	886	551	167	165	3	0	0

- Molecule 7 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	L	97	716	443	137	136	0	0

- Molecule 8 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	N	119	953	583	186	180	4	0	0

- Molecule 9 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	P	98	799	515	150	134	0	0

- Molecule 10 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	Q	116	932	587	187	154	4	0	0

- Molecule 11 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	R	100	761	484	133	144	0	0

- Molecule 12 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	S	101	780	489	147	142	2	0	0

- Molecule 13 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	T	89	712	443	131	135	3	0	0

- Molecule 14 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	U	90	Total	C	N	O	S	0	0
			684	433	127	121	3		

- Molecule 15 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	b	52	Total	C	N	O	S	0	0
			414	254	84	69	7		

- Molecule 16 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Y	63	Total	C	N	O	S	0	0
			517	321	99	95	2		

- Molecule 17 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	d	39	Total	C	N	O	S	0	0
			327	198	80	48	1		

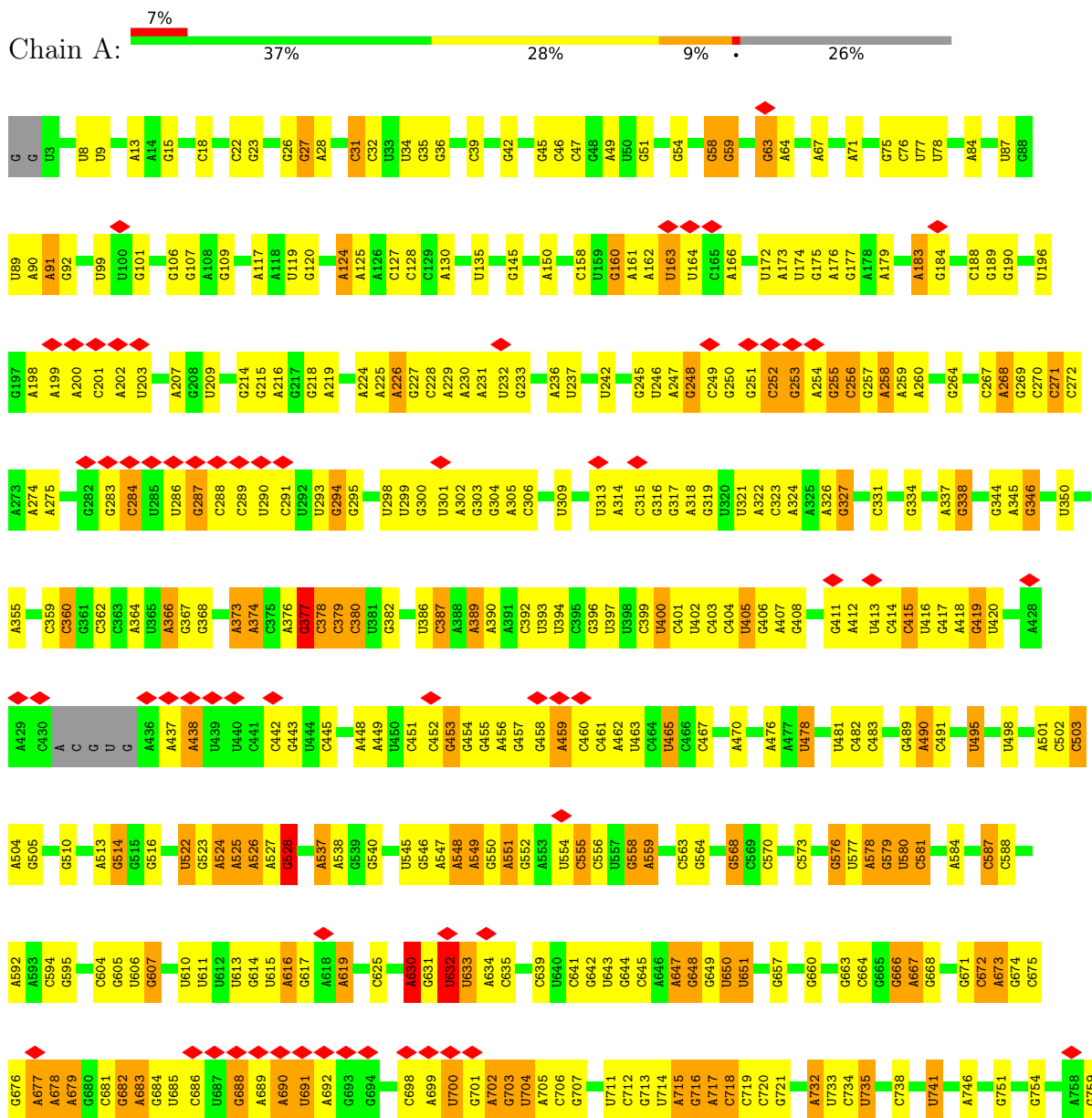
- Molecule 18 is water.

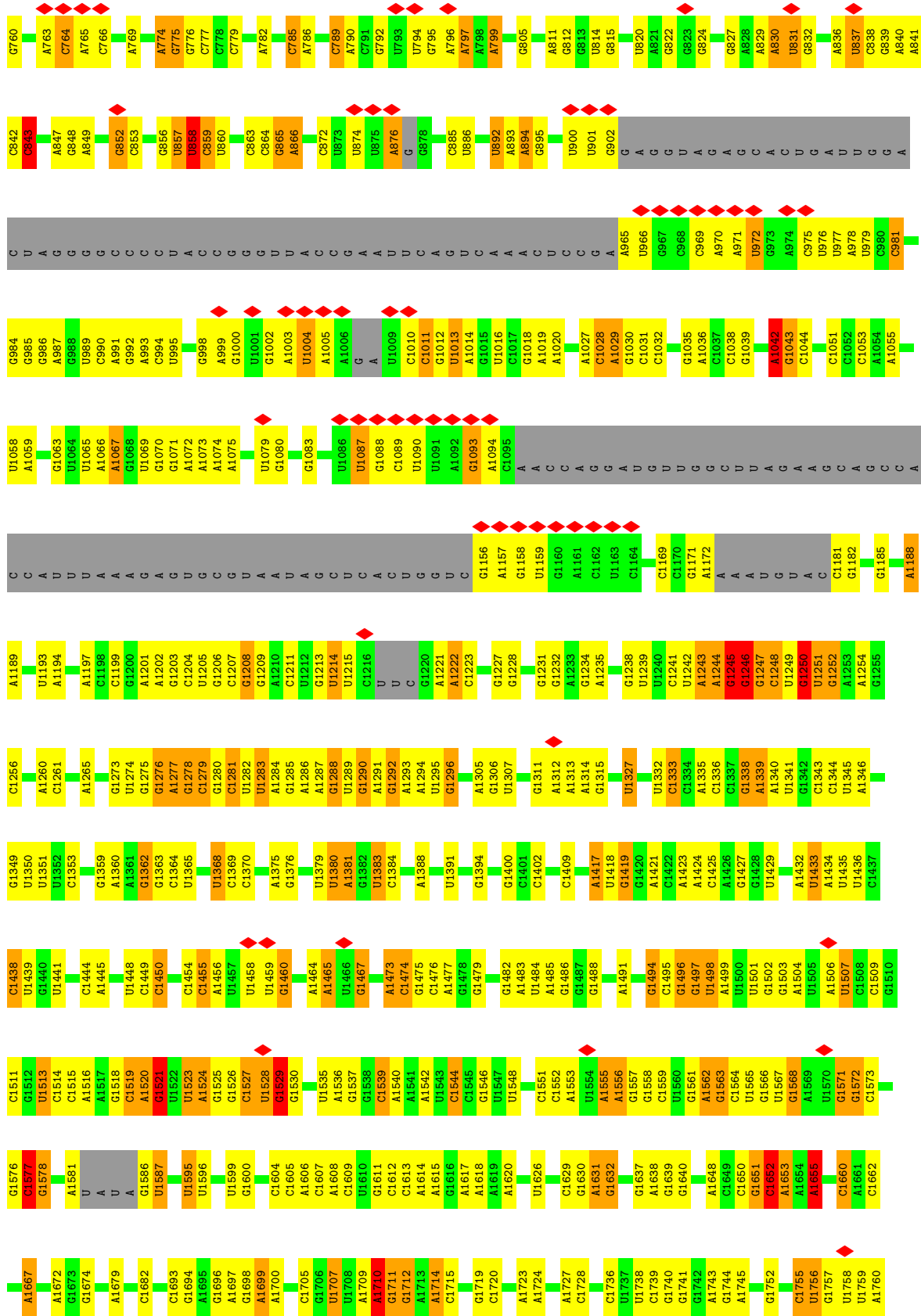
Mol	Chain	Residues	Atoms		AltConf
18	A	2	Total	O	0
			2	2	

### 3 Residue-property plots

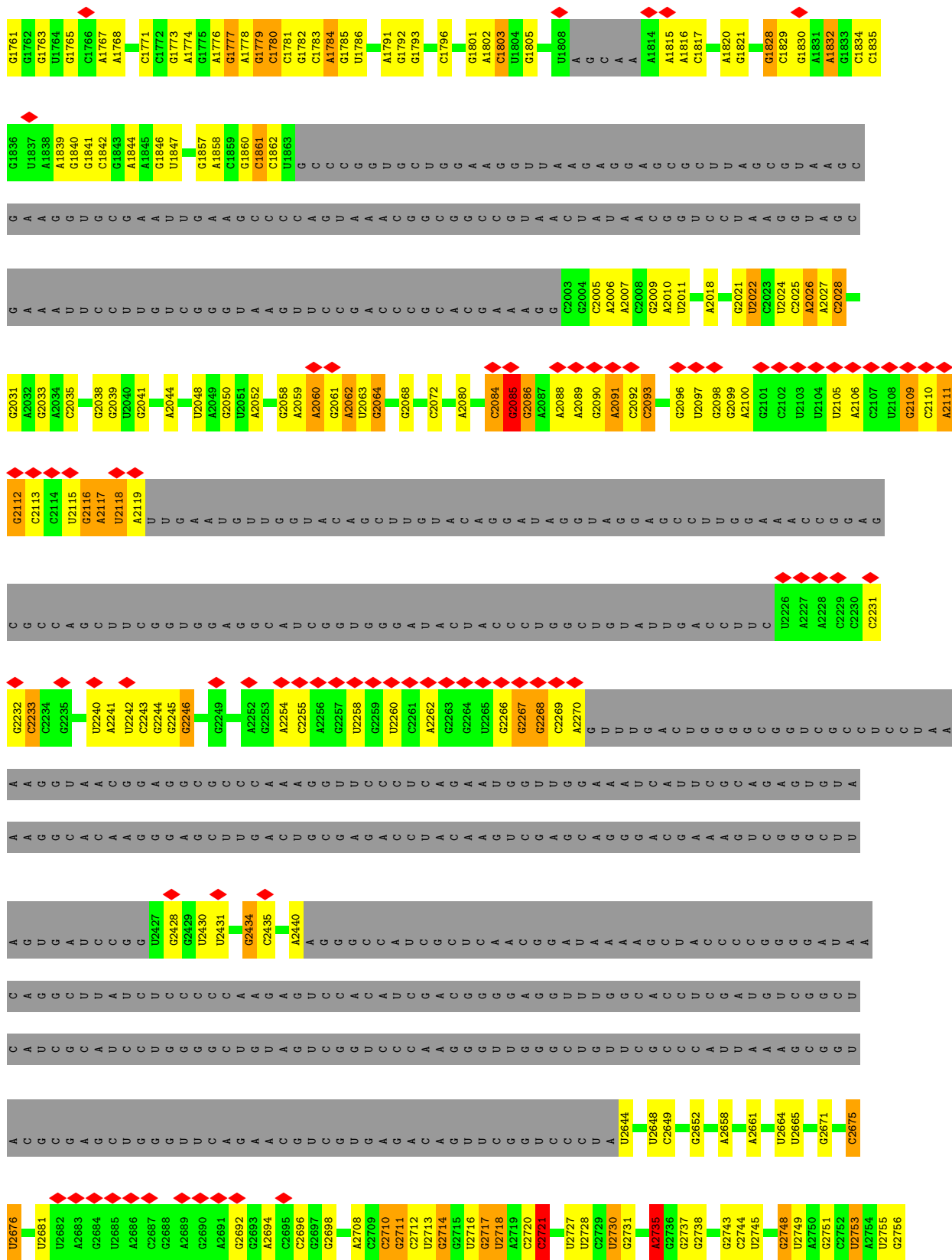
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 23S rRNA

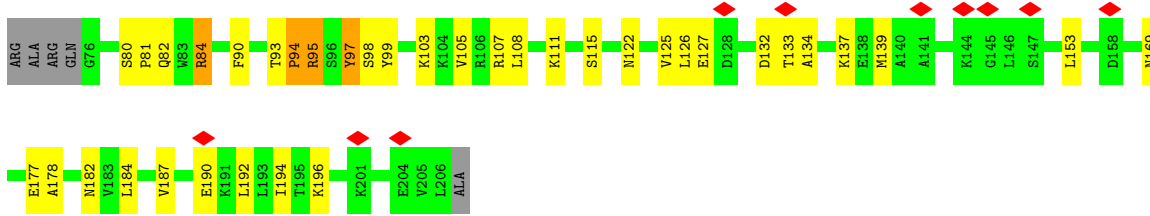




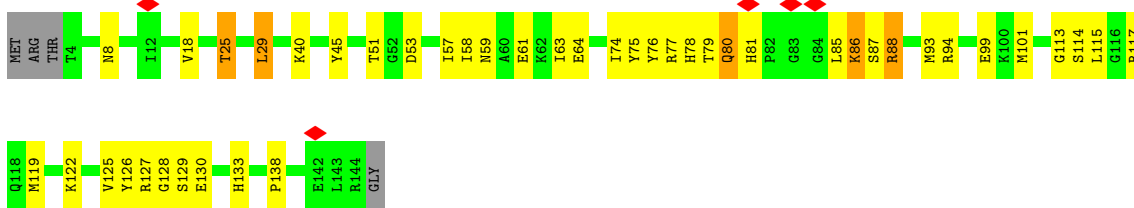




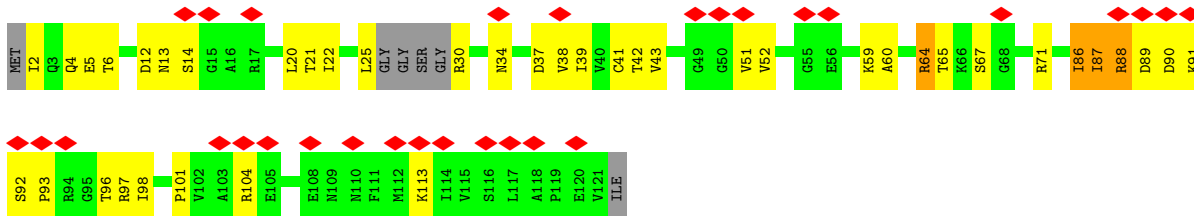




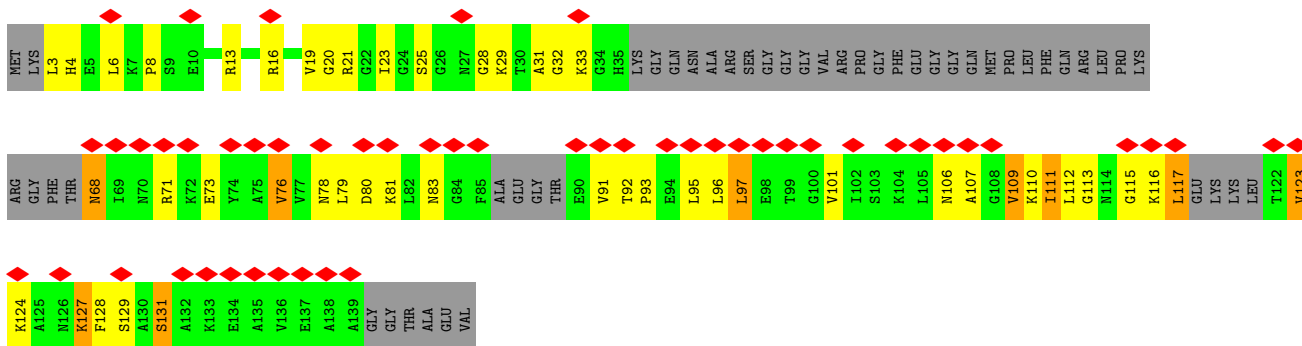
• Molecule 5: 50S ribosomal protein L13



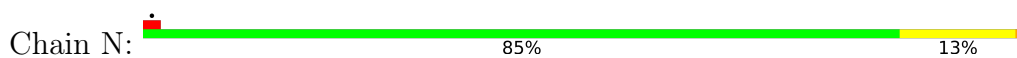
• Molecule 6: 50S ribosomal protein L14



• Molecule 7: 50S ribosomal protein L15

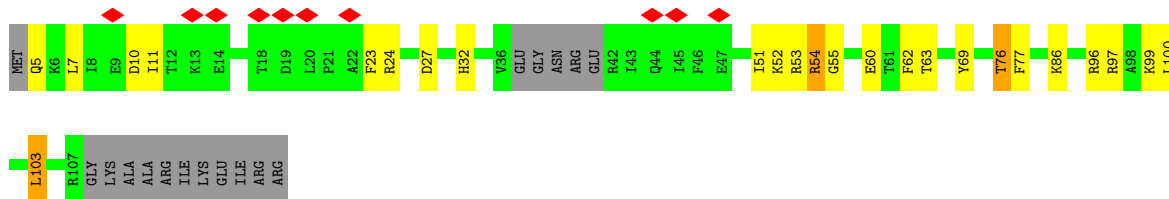


• Molecule 8: 50S ribosomal protein L17

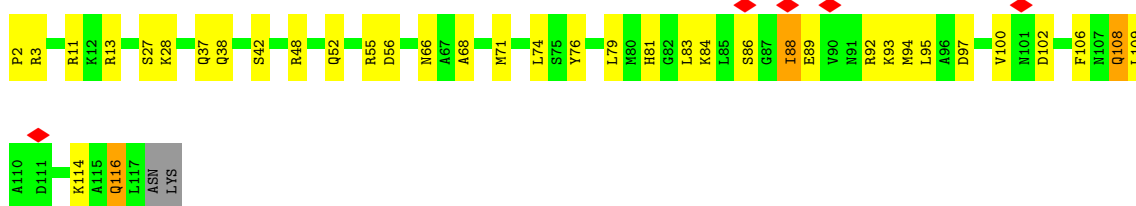




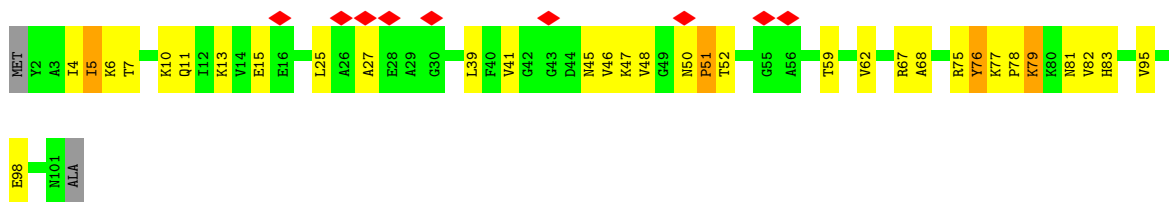
• Molecule 9: 50S ribosomal protein L19



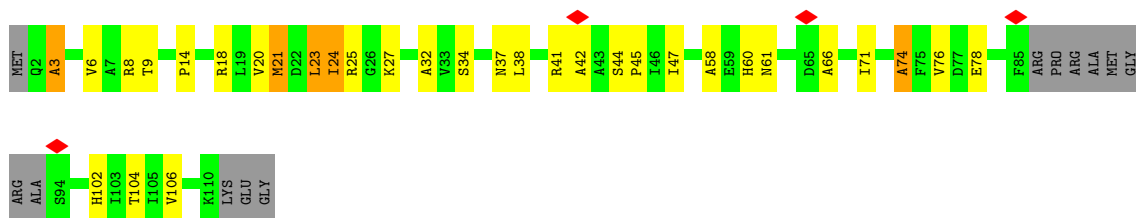
• Molecule 10: 50S ribosomal protein L20



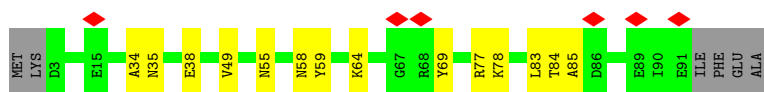
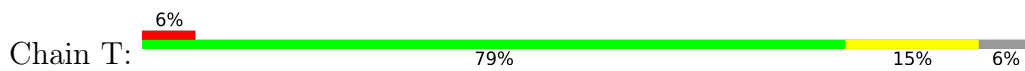
• Molecule 11: 50S ribosomal protein L21



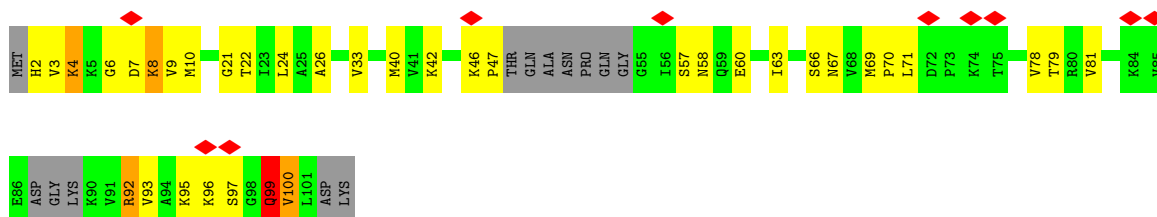
• Molecule 12: 50S ribosomal protein L22



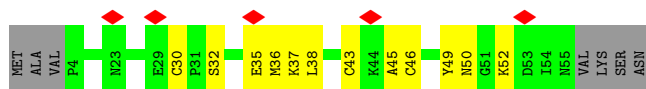
• Molecule 13: 50S ribosomal protein L23



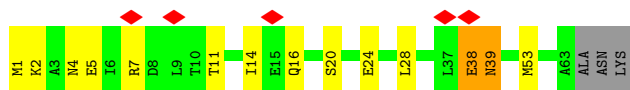
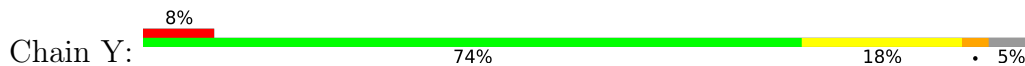
• Molecule 14: 50S ribosomal protein L24



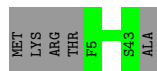
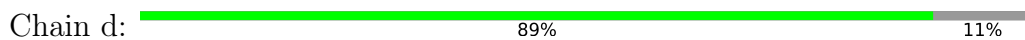
• Molecule 15: 50S ribosomal protein L32



• Molecule 16: 50S ribosomal protein L29



• Molecule 17: 50S ribosomal protein L34



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	574260	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 ( $e^-/\text{\AA}^2$ )	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.726	Depositor
Minimum map value	-0.450	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.017	Depositor
Recommended contour level	0.076	Depositor
Map size (Å)	360.52798, 360.52798, 360.52798	wwPDB
Map dimensions	336, 336, 336	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.073, 1.073, 1.073	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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	1.19	26/52217 (0.0%)	1.18	300/81440 (0.4%)
2	C	0.38	0/1705	0.53	0/2291
3	D	0.50	0/1276	0.65	1/1710 (0.1%)
4	E	0.40	0/1406	0.56	0/1896
5	J	0.53	0/1142	0.55	0/1537
6	K	0.41	0/892	0.56	0/1198
7	L	0.20	0/719	0.33	0/956
8	N	0.53	0/960	0.57	0/1284
9	P	0.46	0/811	0.70	2/1088 (0.2%)
10	Q	0.66	0/944	0.53	0/1255
11	R	0.51	0/772	0.60	0/1042
12	S	0.46	0/787	0.85	4/1060 (0.4%)
13	T	0.56	0/718	0.58	0/959
14	U	0.43	0/691	0.55	0/920
15	b	0.43	0/421	0.78	2/556 (0.4%)
16	Y	0.45	0/518	0.56	0/689
17	d	0.60	0/330	0.57	0/431
All	All	1.08	26/66309 (0.0%)	1.09	309/100312 (0.3%)

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	630	A	N9-C4	-7.11	1.33	1.37
1	A	183	A	N9-C4	-6.92	1.33	1.37
1	A	717	A	N9-C4	-6.36	1.34	1.37
1	A	2854	A	N9-C4	-5.86	1.34	1.37
1	A	1700	A	N9-C4	-5.85	1.34	1.37
1	A	717	A	C6-N1	-5.82	1.31	1.35
1	A	732	A	N7-C5	-5.81	1.35	1.39
1	A	1067	A	N9-C4	-5.77	1.34	1.37
1	A	1699	A	N9-C4	-5.50	1.34	1.37
1	A	2835	A	N9-C4	-5.46	1.34	1.37
1	A	2872	U	C2-N3	-5.39	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1294	A	N9-C4	-5.30	1.34	1.37
1	A	717	A	N3-C4	-5.26	1.31	1.34
1	A	1620	A	N9-C4	-5.22	1.34	1.37
1	A	2844	A	N9-C4	-5.18	1.34	1.37
1	A	1419	G	N7-C5	-5.17	1.36	1.39
1	A	1338	G	C5-C4	-5.17	1.34	1.38
1	A	2908	A	N9-C4	-5.16	1.34	1.37
1	A	1651	G	N7-C5	-5.14	1.36	1.39
1	A	2038	G	C5-C4	-5.13	1.34	1.38
1	A	625	C	N1-C6	-5.11	1.34	1.37
1	A	49	A	N9-C4	-5.11	1.34	1.37
1	A	559	A	N7-C5	-5.10	1.36	1.39
1	A	2751	G	N7-C5	-5.08	1.36	1.39
1	A	1710	A	N7-C5	-5.07	1.36	1.39
1	A	616	A	N9-C4	-5.00	1.34	1.37

All (309) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	b	45	ALA	CB-CA-C	-12.10	91.96	110.10
12	S	3	ALA	CB-CA-C	-11.62	92.67	110.10
3	D	84	ARG	CB-CA-C	-11.14	88.11	110.40
12	S	102	HIS	N-CA-C	-10.65	82.24	111.00
1	A	2909	U	N3-C2-O2	-10.64	114.75	122.20
1	A	1523	U	C2-N1-C1'	9.93	129.62	117.70
1	A	1368	U	N3-C2-O2	-9.88	115.29	122.20
1	A	2905	C	N1-C2-O2	9.73	124.74	118.90
1	A	1433	U	C2-N1-C1'	9.62	129.24	117.70
1	A	2022	U	N3-C2-O2	-9.35	115.66	122.20
1	A	1523	U	N1-C2-O2	9.18	129.22	122.80
1	A	1433	U	N1-C2-O2	9.13	129.19	122.80
1	A	2909	U	N1-C2-O2	9.07	129.15	122.80
12	S	102	HIS	CB-CA-C	8.98	128.35	110.40
1	A	463	U	N1-C2-O2	8.96	129.07	122.80
1	A	1523	U	N3-C2-O2	-8.92	115.96	122.20
1	A	2905	C	N3-C2-O2	-8.85	115.71	121.90
1	A	1069	U	N3-C2-O2	-8.80	116.04	122.20
1	A	981	C	N1-C2-O2	8.76	124.16	118.90
1	A	1246	G	O4'-C1'-N9	8.75	115.20	108.20
1	A	1433	U	N3-C2-O2	-8.63	116.16	122.20
1	A	1368	U	C2-N1-C1'	8.59	128.01	117.70
1	A	633	U	N3-C2-O2	-8.58	116.19	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	463	U	N3-C2-O2	-8.53	116.23	122.20
1	A	1368	U	N1-C2-O2	8.52	128.76	122.80
12	S	74	ALA	N-CA-C	-8.40	88.31	111.00
1	A	1069	U	N1-C2-O2	8.34	128.64	122.80
1	A	2022	U	N1-C2-O2	8.34	128.63	122.80
1	A	1032	C	N1-C2-O2	8.30	123.88	118.90
1	A	633	U	N1-C2-O2	8.26	128.58	122.80
1	A	732	A	N7-C8-N9	8.10	117.85	113.80
9	P	54	ARG	CB-CA-C	8.08	126.57	110.40
1	A	1181	C	N1-C2-O2	8.08	123.75	118.90
1	A	360	C	N1-C2-O2	7.75	123.55	118.90
1	A	842	C	N1-C2-O2	7.74	123.54	118.90
1	A	2816	C	N3-C2-O2	-7.74	116.48	121.90
1	A	981	C	N3-C2-O2	-7.72	116.50	121.90
1	A	2816	C	N1-C2-O2	7.70	123.52	118.90
1	A	842	C	N3-C2-O2	-7.68	116.52	121.90
1	A	2785	U	P-O3'-C3'	7.67	128.91	119.70
1	A	779	C	C6-N1-C2	-7.67	117.23	120.30
1	A	2905	C	C2-N1-C1'	7.66	127.23	118.80
1	A	478	U	N3-C2-O2	-7.62	116.87	122.20
1	A	482	C	C2-N1-C1'	7.49	127.04	118.80
1	A	2749	U	N3-C2-O2	-7.40	117.02	122.20
1	A	1032	C	N3-C2-O2	-7.39	116.73	121.90
1	A	2816	C	C6-N1-C2	-7.32	117.37	120.30
1	A	635	C	N1-C2-O2	7.28	123.27	118.90
1	A	1498	U	N1-C2-O2	7.27	127.89	122.80
1	A	2267	G	N3-C4-C5	-7.24	124.98	128.60
1	A	981	C	C2-N1-C1'	7.23	126.75	118.80
1	A	1529	G	C4-N9-C1'	7.20	135.87	126.50
1	A	1595	U	N1-C2-O2	7.17	127.82	122.80
1	A	1353	C	C6-N1-C2	-7.15	117.44	120.30
1	A	1595	U	N3-C2-O2	-7.12	117.21	122.20
1	A	2022	U	C2-N1-C1'	7.04	126.14	117.70
1	A	1245	G	O4'-C1'-N9	7.01	113.81	108.20
1	A	2267	G	C4-N9-C1'	7.01	135.62	126.50
1	A	414	C	N1-C2-O2	6.96	123.08	118.90
15	b	45	ALA	N-CA-C	6.94	129.75	111.00
1	A	392	C	N1-C2-O2	6.91	123.04	118.90
1	A	1433	U	C6-N1-C1'	-6.89	111.55	121.20
1	A	1327	U	C2-N1-C1'	6.89	125.97	117.70
1	A	1529	G	C6-C5-N7	-6.87	126.28	130.40
1	A	1491	A	C2-N3-C4	6.86	114.03	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	712	C	N1-C2-O2	6.85	123.01	118.90
1	A	732	A	C5-N7-C8	-6.83	100.48	103.90
1	A	1529	G	N3-C4-N9	6.82	130.09	126.00
1	A	2028	C	C6-N1-C2	-6.79	117.58	120.30
1	A	1169	C	N1-C2-O2	6.79	122.97	118.90
1	A	732	A	C8-N9-C4	-6.72	103.11	105.80
1	A	463	U	C2-N1-C1'	6.68	125.72	117.70
1	A	1523	U	C6-N1-C1'	-6.68	111.84	121.20
1	A	1539	C	N1-C2-O2	6.65	122.89	118.90
1	A	478	U	N1-C2-O2	6.64	127.44	122.80
1	A	1028	C	N3-C2-O2	-6.63	117.26	121.90
1	A	1089	C	C6-N1-C2	-6.63	117.65	120.30
1	A	1498	U	N3-C2-O2	-6.62	117.57	122.20
1	A	1245	G	P-O3'-C3'	6.61	127.63	119.70
1	A	392	C	N3-C2-O2	-6.59	117.28	121.90
1	A	1529	G	C4-C5-N7	6.57	113.43	110.80
1	A	2909	U	C2-N1-C1'	6.49	125.49	117.70
1	A	2710	C	N3-C4-C5	6.47	124.49	121.90
1	A	1529	G	C8-N9-C1'	-6.45	118.61	127.00
1	A	1779	G	C4-C5-N7	6.45	113.38	110.80
1	A	1246	G	C4-N9-C1'	6.39	134.81	126.50
1	A	1069	U	C2-N1-C1'	6.36	125.33	117.70
1	A	639	C	C6-N1-C2	-6.32	117.77	120.30
1	A	2730	U	C5-C6-N1	6.31	125.85	122.70
1	A	400	U	N1-C2-O2	6.29	127.20	122.80
9	P	54	ARG	N-CA-C	-6.28	94.04	111.00
1	A	892	U	C2-N1-C1'	6.27	125.22	117.70
1	A	1028	C	N1-C2-O2	6.27	122.66	118.90
1	A	1491	A	N1-C6-N6	-6.26	114.85	118.60
1	A	1779	G	N3-C4-N9	6.22	129.73	126.00
1	A	1223	C	C6-N1-C2	-6.22	117.81	120.30
1	A	1515	C	C2-N1-C1'	6.21	125.63	118.80
1	A	1651	G	C5-N7-C8	-6.21	101.20	104.30
1	A	831	U	N1-C2-O2	6.20	127.14	122.80
1	A	2721	C	N1-C2-O2	6.20	122.62	118.90
1	A	1485	A	O4'-C1'-N9	6.20	113.16	108.20
1	A	1712	G	C4-C5-N7	6.19	113.28	110.80
1	A	482	C	N1-C2-O2	6.17	122.60	118.90
1	A	1491	A	C5-C6-N1	6.17	120.78	117.70
1	A	389	A	P-O3'-C3'	6.16	127.09	119.70
1	A	732	A	C4-N9-C1'	6.16	137.38	126.30
1	A	1652	C	P-O3'-C3'	6.14	127.07	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1650	C	C6-N1-C2	-6.11	117.86	120.30
1	A	537	A	P-O3'-C3'	6.10	127.02	119.70
1	A	2816	C	C2-N1-C1'	6.07	125.48	118.80
1	A	1861	C	N1-C2-O2	6.07	122.54	118.90
1	A	716	G	C4-N9-C1'	6.06	134.38	126.50
1	A	124	A	P-O3'-C3'	6.06	126.97	119.70
1	A	2822	C	N1-C2-O2	6.06	122.54	118.90
1	A	1245	G	C4-N9-C1'	6.06	134.38	126.50
1	A	2675	C	N1-C2-O2	6.05	122.53	118.90
1	A	482	C	N3-C2-O2	-6.04	117.67	121.90
1	A	2267	G	N3-C4-N9	6.04	129.63	126.00
1	A	1327	U	N1-C2-O2	6.03	127.02	122.80
1	A	380	C	C6-N1-C2	-6.01	117.90	120.30
1	A	712	C	N3-C2-O2	-6.01	117.69	121.90
1	A	1353	C	C2-N1-C1'	5.99	125.38	118.80
1	A	1248	C	N1-C2-O2	5.97	122.48	118.90
1	A	892	U	N1-C2-O2	5.96	126.97	122.80
1	A	2085	G	C4-N9-C1'	5.95	134.24	126.50
1	A	327	G	N3-C4-N9	5.93	129.56	126.00
1	A	632	U	C6-N1-C2	-5.93	117.44	121.00
1	A	1181	C	N3-C2-O2	-5.93	117.75	121.90
1	A	1651	G	N7-C8-N9	5.93	116.06	113.10
1	A	1246	G	C8-N9-C1'	-5.93	119.30	127.00
1	A	1353	C	C5-C6-N1	5.91	123.96	121.00
1	A	1339	A	P-O3'-C3'	5.90	126.78	119.70
1	A	1712	G	O4'-C1'-N9	5.89	112.92	108.20
1	A	392	C	C2-N1-C1'	5.89	125.28	118.80
1	A	1711	G	N1-C6-O6	-5.89	116.37	119.90
1	A	1246	G	N3-C4-N9	5.87	129.53	126.00
1	A	1497	G	C4-N9-C1'	-5.86	118.88	126.50
1	A	1715	C	C6-N1-C2	-5.86	117.96	120.30
1	A	2751	G	C6-C5-N7	-5.86	126.89	130.40
1	A	2735	A	C5-C6-N6	-5.84	119.02	123.70
1	A	360	C	N3-C2-O2	-5.84	117.81	121.90
1	A	1343	C	C5-C6-N1	5.83	123.92	121.00
1	A	1497	G	N3-C4-C5	5.80	131.50	128.60
1	A	843	C	N1-C2-O2	5.79	122.37	118.90
1	A	576	G	N3-C4-N9	5.79	129.47	126.00
1	A	1245	G	C4-C5-N7	5.78	113.11	110.80
1	A	716	G	C8-N9-C1'	-5.77	119.50	127.00
1	A	1780	C	N1-C2-O2	5.76	122.36	118.90
1	A	419	G	P-O3'-C3'	5.73	126.58	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	160	G	P-O3'-C3'	5.70	126.54	119.70
1	A	401	C	C6-N1-C2	-5.70	118.02	120.30
1	A	1651	G	C4-C5-N7	5.70	113.08	110.80
1	A	1755	C	P-O3'-C3'	5.69	126.53	119.70
1	A	715	A	C4-C5-N7	5.68	113.54	110.70
1	A	1421	A	O4'-C1'-N9	5.68	112.75	108.20
1	A	1032	C	C2-N1-C1'	5.68	125.05	118.80
1	A	1527	C	P-O3'-C3'	5.67	126.51	119.70
1	A	2749	U	N1-C2-O2	5.66	126.76	122.80
1	A	1779	G	C6-C5-N7	-5.66	127.00	130.40
1	A	732	A	C4-C5-N7	5.66	113.53	110.70
1	A	1250	G	C2-N3-C4	-5.66	109.07	111.90
1	A	2267	G	P-O3'-C3'	5.65	126.48	119.70
1	A	2798	C	N1-C2-O2	5.62	122.27	118.90
1	A	1245	G	C6-C5-N7	-5.61	127.03	130.40
1	A	1368	U	C6-N1-C1'	-5.61	113.34	121.20
1	A	124	A	OP1-P-O3'	5.61	117.53	105.20
1	A	1707	U	C6-N1-C2	-5.60	117.64	121.00
1	A	1651	G	C6-C5-N7	-5.60	127.04	130.40
1	A	400	U	N3-C2-O2	-5.60	118.28	122.20
1	A	732	A	C6-C5-N7	-5.59	128.38	132.30
1	A	741	U	C5-C6-N1	5.59	125.50	122.70
1	A	892	U	N3-C2-O2	-5.58	118.29	122.20
1	A	89	U	N1-C2-O2	5.58	126.71	122.80
1	A	2905	C	C6-N1-C2	-5.57	118.07	120.30
1	A	1612	C	N1-C2-O2	5.57	122.24	118.90
1	A	715	A	N1-C2-N3	5.56	132.08	129.30
1	A	346	G	C6-C5-N7	-5.56	127.06	130.40
1	A	2717	G	C4-C5-N7	5.56	113.02	110.80
1	A	1203	G	C4-N9-C1'	5.55	133.72	126.50
1	A	1343	C	C5-C4-N4	-5.55	116.32	120.20
1	A	377	G	P-O3'-C3'	5.54	126.35	119.70
1	A	843	C	C6-N1-C2	-5.54	118.08	120.30
1	A	2735	A	N9-C4-C5	-5.54	103.59	105.80
1	A	89	U	N3-C2-O2	-5.53	118.33	122.20
1	A	1042	A	OP1-P-O3'	5.53	117.37	105.20
1	A	1181	C	C2-N1-C1'	5.53	124.88	118.80
1	A	1438	C	P-O3'-C3'	5.53	126.33	119.70
1	A	1714	A	C2-N3-C4	5.53	113.36	110.60
1	A	2753	U	N1-C2-O2	5.52	126.67	122.80
1	A	414	C	N3-C2-O2	-5.51	118.04	121.90
1	A	1714	A	C4-N9-C1'	5.50	136.20	126.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1539	C	N3-C2-O2	-5.50	118.05	121.90
1	A	1491	A	N1-C2-N3	-5.49	126.56	129.30
1	A	2676	U	N1-C2-O2	5.48	126.63	122.80
1	A	145	G	C4-N9-C1'	5.47	133.62	126.50
1	A	482	C	C6-N1-C2	-5.47	118.11	120.30
1	A	1450	C	N1-C2-O2	5.45	122.17	118.90
1	A	2710	C	C6-N1-C2	5.44	122.48	120.30
1	A	1327	U	N3-C2-O2	-5.44	118.39	122.20
1	A	2267	G	C8-N9-C1'	-5.43	119.94	127.00
1	A	1551	C	N1-C2-O2	5.42	122.15	118.90
1	A	1169	C	N3-C2-O2	-5.42	118.11	121.90
1	A	2775	U	C5-C6-N1	5.41	125.41	122.70
1	A	1835	C	N1-C2-O2	5.41	122.15	118.90
1	A	1803	C	C6-N1-C2	-5.41	118.14	120.30
1	A	782	A	C4-N9-C1'	5.40	136.02	126.30
1	A	858	U	C2-N1-C1'	5.39	124.17	117.70
1	A	2675	C	N3-C2-O2	-5.39	118.12	121.90
1	A	362	C	N1-C2-O2	5.39	122.13	118.90
1	A	1655	A	C5-N7-C8	-5.39	101.21	103.90
1	A	400	U	C5-C6-N1	5.38	125.39	122.70
1	A	414	C	C2-N1-C1'	5.38	124.72	118.80
1	A	1044	C	N1-C2-O2	5.36	122.12	118.90
1	A	1803	C	N1-C2-O2	5.36	122.11	118.90
1	A	1498	U	C2-N1-C1'	5.35	124.12	117.70
1	A	2268	G	N3-C4-C5	-5.35	125.93	128.60
1	A	1781	C	C6-N1-C2	-5.33	118.17	120.30
1	A	1044	C	C6-N1-C2	-5.32	118.17	120.30
1	A	1600	G	C5-N7-C8	-5.32	101.64	104.30
1	A	366	A	P-O3'-C3'	5.32	126.08	119.70
1	A	392	C	C6-N1-C2	-5.30	118.18	120.30
1	A	2800	C	C6-N1-C2	-5.30	118.18	120.30
1	A	715	A	C5-N7-C8	-5.29	101.25	103.90
1	A	2909	U	C6-N1-C2	-5.29	117.83	121.00
1	A	1577	C	N1-C2-O2	5.28	122.07	118.90
1	A	1707	U	N3-C2-O2	-5.28	118.51	122.20
1	A	858	U	N3-C2-O2	-5.28	118.51	122.20
1	A	2812	A	P-O3'-C3'	5.28	126.03	119.70
1	A	837	U	P-O3'-C3'	5.27	126.03	119.70
1	A	2803	C	C6-N1-C2	-5.27	118.19	120.30
1	A	779	C	O4'-C1'-N1	5.27	112.42	108.20
1	A	842	C	C2-N1-C1'	5.27	124.60	118.80
1	A	1805	G	C4-N9-C1'	5.27	133.35	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	401	C	C5-C6-N1	5.27	123.63	121.00
1	A	2644	U	C5-C6-N1	5.26	125.33	122.70
1	A	2801	C	N3-C2-O2	-5.26	118.22	121.90
1	A	865	G	C4-N9-C1'	5.26	133.34	126.50
1	A	2050	G	C4-N9-C1'	5.26	133.34	126.50
1	A	1600	G	O4'-C1'-N9	5.26	112.41	108.20
1	A	478	U	C2-N1-C1'	5.25	124.00	117.70
1	A	528	G	O4'-C1'-N9	5.25	112.40	108.20
1	A	1861	C	N3-C2-O2	-5.25	118.23	121.90
1	A	570	C	C6-N1-C2	-5.24	118.20	120.30
1	A	1600	G	C4-C5-N7	5.24	112.89	110.80
1	A	2676	U	N3-C2-O2	-5.24	118.54	122.20
1	A	718	C	OP2-P-O3'	5.22	116.68	105.20
1	A	865	G	C8-N9-C1'	-5.22	120.22	127.00
1	A	2085	G	C8-N9-C1'	-5.21	120.22	127.00
1	A	1044	C	N3-C2-O2	-5.21	118.25	121.90
1	A	1832	A	N7-C8-N9	5.21	116.41	113.80
1	A	2823	C	N1-C2-O2	5.20	122.02	118.90
1	A	1353	C	N1-C2-O2	5.20	122.02	118.90
1	A	2708	A	N1-C6-N6	-5.19	115.48	118.60
1	A	1511	C	N3-C2-O2	-5.19	118.27	121.90
1	A	1552	C	C5-C6-N1	5.19	123.59	121.00
1	A	1568	G	O4'-C1'-N9	5.19	112.35	108.20
1	A	1307	U	N3-C2-O2	-5.18	118.57	122.20
1	A	981	C	C6-N1-C2	-5.18	118.23	120.30
1	A	1705	C	C6-N1-C2	-5.18	118.23	120.30
1	A	886	U	N3-C2-O2	-5.17	118.58	122.20
1	A	77	U	N1-C2-O2	5.17	126.42	122.80
1	A	453	G	C4-N9-C1'	5.17	133.22	126.50
1	A	2905	C	C6-N1-C1'	-5.17	114.60	120.80
1	A	2813	U	C5-C6-N1	5.16	125.28	122.70
1	A	18	C	N3-C2-O2	-5.16	118.29	121.90
1	A	843	C	C5-C6-N1	5.16	123.58	121.00
1	A	226	A	N3-C4-N9	5.16	131.53	127.40
1	A	1353	C	N3-C2-O2	-5.15	118.29	121.90
1	A	31	C	C6-N1-C2	-5.15	118.24	120.30
1	A	1529	G	N9-C4-C5	-5.15	103.34	105.40
1	A	1835	C	N3-C2-O2	-5.14	118.30	121.90
1	A	2711	G	C4-C5-N7	5.14	112.86	110.80
1	A	734	C	N1-C2-O2	5.13	121.98	118.90
1	A	1245	G	C8-N9-C1'	-5.13	120.34	127.00
1	A	2897	G	C8-N9-C4	-5.12	104.35	106.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	377	G	OP1-P-O3'	5.11	116.45	105.20
1	A	1307	U	N1-C2-O2	5.11	126.38	122.80
1	A	405	U	P-O3'-C3'	5.11	125.83	119.70
1	A	359	C	N1-C2-O2	5.11	121.96	118.90
1	A	2644	U	C2-N1-C1'	5.10	123.82	117.70
1	A	1600	G	N7-C8-N9	5.10	115.65	113.10
1	A	1089	C	C5-C6-N1	5.09	123.55	121.00
1	A	1595	U	C2-N1-C1'	5.09	123.81	117.70
1	A	1784	A	P-O3'-C3'	5.09	125.81	119.70
1	A	362	C	N3-C2-O2	-5.09	118.34	121.90
1	A	2815	U	N3-C2-O2	-5.08	118.64	122.20
1	A	271	C	P-O3'-C3'	5.07	125.78	119.70
1	A	1248	C	C2-N1-C1'	5.07	124.38	118.80
1	A	1521	G	C4-C5-N7	5.06	112.82	110.80
1	A	587	C	N3-C2-O2	-5.06	118.36	121.90
1	A	1842	C	N3-C2-O2	-5.05	118.36	121.90
1	A	226	A	C2-N3-C4	5.05	113.12	110.60
1	A	1577	C	N3-C2-O2	-5.05	118.36	121.90
1	A	360	C	C5-C6-N1	5.04	123.52	121.00
1	A	1402	C	N1-C2-O2	5.04	121.92	118.90
1	A	415	C	C6-N1-C2	-5.03	118.29	120.30
1	A	415	C	N3-C2-O2	-5.03	118.38	121.90
1	A	1817	C	N1-C2-O2	5.03	121.92	118.90
1	A	522	U	N3-C2-O2	-5.03	118.68	122.20
1	A	1032	C	C6-N1-C2	-5.03	118.29	120.30
1	A	209	U	N3-C2-O2	-5.03	118.68	122.20
1	A	1246	G	C6-C5-N7	-5.02	127.39	130.40
1	A	1350	U	N3-C2-O2	-5.02	118.69	122.20
1	A	1612	C	N3-C2-O2	-5.02	118.39	121.90
1	A	633	U	C5-C4-O4	5.01	128.91	125.90
1	A	145	G	C8-N9-C1'	-5.01	120.48	127.00
1	A	1043	G	C4-N9-C1'	-5.01	119.99	126.50
1	A	1042	A	C2-N3-C4	5.01	113.10	110.60
1	A	716	G	OP2-P-O3'	5.01	116.21	105.20

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	A	46617	0	23452	514	0
2	C	1680	0	1751	68	0
3	D	1264	0	1326	92	0
4	E	1391	0	1479	136	0
5	J	1119	0	1159	56	0
6	K	886	0	939	32	0
7	L	716	0	742	132	0
8	N	953	0	983	14	0
9	P	799	0	856	42	0
10	Q	932	0	999	65	0
11	R	761	0	771	52	0
12	S	780	0	830	43	0
13	T	712	0	746	10	0
14	U	684	0	743	38	0
15	b	414	0	432	0	0
16	Y	517	0	557	9	0
17	d	327	0	360	0	0
18	A	2	0	0	0	0
All	All	60554	0	38125	1096	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 14.

All (1096) 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)
7:L:111:ILE:HG13	7:L:128:PHE:CE1	1.34	1.58
9:P:100:LEU:HB3	9:P:103:LEU:CD2	1.27	1.54
7:L:19:VAL:HG11	7:L:31:ALA:CB	1.40	1.50
7:L:19:VAL:CG1	7:L:31:ALA:CB	1.87	1.50
9:P:100:LEU:CB	9:P:103:LEU:HD21	1.04	1.49
1:A:2039:G:H5''	12:S:42:ALA:CB	1.43	1.45
2:C:137:VAL:CG1	2:C:165:LEU:O	1.63	1.44
1:A:999:A:N6	1:A:1011:C:H42	1.16	1.44
1:A:999:A:H61	1:A:1011:C:N4	1.17	1.43
1:A:523:G:N1	1:A:526:A:C8	1.85	1.42
7:L:19:VAL:CG1	7:L:31:ALA:HB1	1.43	1.41
1:A:2039:G:C5'	12:S:42:ALA:HB2	1.52	1.38
9:P:100:LEU:CB	9:P:103:LEU:CD2	1.81	1.38

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:45:ARG:NH1	4:E:97:TYR:CE2	1.94	1.36
14:U:4:LYS:HE2	14:U:92:ARG:NH1	1.39	1.33
7:L:111:ILE:CG1	7:L:128:PHE:HE1	1.42	1.31
1:A:523:G:C2	1:A:526:A:C8	2.19	1.31
2:C:137:VAL:HG13	2:C:165:LEU:O	1.11	1.28
5:J:78:HIS:CD2	5:J:85:LEU:HB3	1.69	1.28
9:P:100:LEU:O	9:P:103:LEU:HG	1.31	1.27
3:D:31:ALA:HB3	3:D:53:PHE:CE1	1.71	1.25
7:L:111:ILE:CG1	7:L:128:PHE:CE1	2.16	1.25
1:A:632:U:C5'	7:L:16:ARG:NH1	2.01	1.24
10:Q:88:ILE:CB	11:R:51:PRO:HD3	1.68	1.24
4:E:45:ARG:NH2	4:E:97:TYR:OH	1.69	1.23
1:A:523:G:N1	1:A:526:A:N7	1.86	1.22
1:A:523:G:C2	1:A:526:A:N7	2.05	1.22
14:U:4:LYS:CE	14:U:92:ARG:HH12	1.52	1.22
1:A:633:U:H4'	4:E:95:ARG:NH2	1.55	1.20
14:U:8:LYS:HD2	14:U:71:LEU:HD12	1.21	1.19
1:A:633:U:C5'	4:E:95:ARG:NH2	2.07	1.18
1:A:523:G:N2	1:A:526:A:C8	2.12	1.17
4:E:187:VAL:CG1	7:L:3:LEU:HB2	1.75	1.17
1:A:671:G:H2'	1:A:672:C:H5'	1.25	1.16
1:A:1244:A:H8	7:L:3:LEU:CD2	1.57	1.16
3:D:28:ILE:CD1	3:D:200:ILE:HD11	1.75	1.15
2:C:205:ILE:HG23	2:C:210:ARG:CB	1.76	1.15
3:D:28:ILE:HD11	3:D:200:ILE:HD11	1.19	1.14
3:D:49:ILE:HD13	3:D:91:TYR:CD1	1.81	1.13
1:A:672:C:O2	7:L:81:LYS:NZ	1.81	1.13
1:A:632:U:H5'	7:L:16:ARG:NH1	1.62	1.13
1:A:965:A:H61	1:A:999:A:P	1.71	1.12
7:L:19:VAL:CG1	7:L:31:ALA:HB2	1.69	1.12
14:U:79:THR:OG1	14:U:95:LYS:HB2	1.47	1.12
7:L:19:VAL:HG13	7:L:31:ALA:CB	1.77	1.12
1:A:999:A:N1	1:A:1011:C:N3	1.96	1.12
3:D:49:ILE:CD1	3:D:91:TYR:CG	2.32	1.12
10:Q:88:ILE:HB	11:R:51:PRO:CD	1.79	1.11
5:J:59:ASN:OD1	5:J:128:GLY:O	1.68	1.10
4:E:50:LYS:HD3	4:E:94:PRO:HD3	1.19	1.10
1:A:2039:G:C5'	12:S:42:ALA:CB	2.20	1.09
1:A:610:U:H5''	7:L:29:LYS:HE2	1.21	1.09
1:A:632:U:H5''	7:L:16:ARG:NH1	1.66	1.09
4:E:39:MET:HB2	4:E:99:TYR:OH	1.53	1.08

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1244:A:H8	7:L:3:LEU:HD23	1.17	1.08
2:C:205:ILE:HG23	2:C:210:ARG:HB3	1.27	1.08
5:J:78:HIS:HD2	5:J:85:LEU:HB3	0.92	1.08
3:D:31:ALA:CB	3:D:53:PHE:HE1	1.67	1.07
9:P:100:LEU:O	9:P:103:LEU:CG	2.03	1.07
2:C:78:VAL:HG22	2:C:94:ILE:HG12	1.37	1.07
4:E:6:LEU:CD1	4:E:196:LYS:HD3	1.84	1.06
3:D:49:ILE:HD11	3:D:91:TYR:CG	1.90	1.05
5:J:78:HIS:HD2	5:J:85:LEU:CB	1.68	1.05
7:L:80:ASP:OD1	7:L:115:GLY:HA3	1.57	1.05
9:P:100:LEU:HB2	9:P:103:LEU:CD2	1.66	1.05
3:D:108:VAL:CG1	3:D:202:VAL:HG13	1.86	1.05
1:A:633:U:C4'	4:E:95:ARG:NH2	2.19	1.04
9:P:100:LEU:HB3	9:P:103:LEU:HD23	1.08	1.04
4:E:39:MET:HB2	4:E:99:TYR:CZ	1.93	1.02
10:Q:108:GLN:HG2	11:R:45:ASN:OD1	1.57	1.02
14:U:9:VAL:HG23	14:U:70:PRO:HA	1.41	1.02
5:J:59:ASN:OD1	5:J:129:SER:HB2	1.58	1.02
1:A:965:A:N6	1:A:999:A:P	2.33	1.00
1:A:633:U:C5'	4:E:95:ARG:HH21	1.71	1.00
1:A:647:A:O2'	7:L:81:LYS:HE2	1.61	1.00
4:E:50:LYS:CD	4:E:94:PRO:HD3	1.91	0.99
4:E:6:LEU:HD21	4:E:126:LEU:C	1.81	0.99
1:A:523:G:N2	1:A:526:A:N9	2.10	0.99
11:R:77:LYS:HB3	11:R:78:PRO:HD2	1.43	0.99
1:A:683:A:N6	1:A:698:C:H1'	1.78	0.98
3:D:31:ALA:HB3	3:D:53:PHE:HE1	1.11	0.98
2:C:173:LEU:CB	2:C:183:MET:SD	2.51	0.98
1:A:965:A:N6	1:A:999:A:OP1	1.97	0.98
1:A:1013:U:H2'	1:A:1014:A:H8	1.27	0.98
1:A:2039:G:H5'	12:S:42:ALA:HB2	1.40	0.98
9:P:51:ILE:HD11	9:P:103:LEU:CD1	1.94	0.97
4:E:45:ARG:NH1	4:E:97:TYR:HE2	1.42	0.97
5:J:126:TYR:OH	5:J:133:HIS:NE2	1.92	0.97
1:A:671:G:C2'	1:A:672:C:H5'	1.93	0.97
1:A:1244:A:C8	7:L:3:LEU:CD2	2.46	0.97
10:Q:95:LEU:HD11	11:R:11:GLN:O	1.63	0.97
4:E:187:VAL:HG12	7:L:3:LEU:HB2	1.47	0.96
1:A:2039:G:H5''	12:S:42:ALA:HB1	1.45	0.96
5:J:58:ILE:HG23	5:J:129:SER:HA	1.47	0.96
14:U:4:LYS:CE	14:U:92:ARG:NH1	2.17	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:111:ILE:HB	7:L:128:PHE:CD1	2.01	0.96
1:A:999:A:C6	1:A:1011:C:N3	2.34	0.96
3:D:108:VAL:HG11	3:D:202:VAL:CG1	1.96	0.96
10:Q:88:ILE:CG2	11:R:51:PRO:HG3	1.96	0.95
3:D:108:VAL:CG1	3:D:202:VAL:CG1	2.45	0.95
4:E:39:MET:CB	4:E:99:TYR:OH	2.13	0.95
1:A:679:A:OP1	7:L:68:ASN:HB3	1.64	0.95
1:A:1238:G:C2	1:A:1290:G:C6	2.54	0.95
1:A:632:U:C5'	7:L:16:ARG:HH11	1.75	0.94
4:E:39:MET:CB	4:E:99:TYR:CZ	2.50	0.94
1:A:2039:G:OP1	12:S:42:ALA:CB	2.15	0.94
5:J:77:ARG:NH2	5:J:88:ARG:NH2	2.15	0.94
9:P:51:ILE:CD1	9:P:103:LEU:HD11	1.97	0.94
3:D:28:ILE:HD11	3:D:200:ILE:CD1	1.96	0.94
7:L:111:ILE:HB	7:L:128:PHE:HD1	1.29	0.94
1:A:633:U:H5''	4:E:95:ARG:NH2	1.83	0.94
1:A:2039:G:OP1	12:S:42:ALA:HB3	1.68	0.93
4:E:39:MET:CA	4:E:99:TYR:OH	2.15	0.93
10:Q:95:LEU:HD11	11:R:11:GLN:C	1.89	0.93
1:A:633:U:H5''	4:E:95:ARG:HH22	1.30	0.93
1:A:633:U:C4'	4:E:95:ARG:HH21	1.77	0.93
10:Q:88:ILE:HB	11:R:51:PRO:HD3	0.95	0.93
1:A:1526:G:H1	1:A:1558:G:H1	1.01	0.93
12:S:6:VAL:HG13	12:S:104:THR:HG22	1.48	0.92
1:A:523:G:H1	1:A:526:A:H8	0.97	0.92
6:K:92:SER:HB2	6:K:113:LYS:HD3	1.52	0.92
3:D:102:PHE:HD1	3:D:106:GLU:OE1	1.52	0.92
4:E:187:VAL:CG1	7:L:3:LEU:HD12	2.00	0.91
5:J:77:ARG:HH22	5:J:88:ARG:NH2	1.69	0.91
2:C:72:ASP:HA	2:C:118:SER:O	1.68	0.91
12:S:44:SER:H	12:S:45:PRO:HD2	1.36	0.91
1:A:720:C:H5''	4:E:81:PRO:HD2	1.53	0.91
7:L:79:LEU:HD22	7:L:113:GLY:HA2	1.52	0.90
12:S:44:SER:N	12:S:45:PRO:HD2	1.87	0.90
4:E:50:LYS:NZ	4:E:94:PRO:HG2	1.87	0.89
4:E:50:LYS:HD3	4:E:94:PRO:CD	2.01	0.89
2:C:137:VAL:HG12	2:C:165:LEU:O	1.71	0.89
2:C:205:ILE:O	2:C:210:ARG:HD3	1.72	0.89
10:Q:88:ILE:HG21	11:R:51:PRO:CG	2.01	0.89
9:P:51:ILE:HD11	9:P:103:LEU:HD12	1.55	0.89
14:U:8:LYS:HD2	14:U:71:LEU:CD1	2.02	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1244:A:C8	7:L:3:LEU:HD23	2.07	0.88
6:K:92:SER:HB2	6:K:113:LYS:CD	2.02	0.88
12:S:24:ILE:HD13	12:S:32:ALA:HB1	1.56	0.88
1:A:1250:G:C2	1:A:1277:A:C6	2.61	0.88
3:D:31:ALA:HB3	3:D:53:PHE:CD1	2.06	0.88
2:C:173:LEU:HB3	2:C:183:MET:SD	2.13	0.88
3:D:49:ILE:CD1	3:D:91:TYR:CD1	2.53	0.87
1:A:248:G:O6	1:A:256:C:N4	2.06	0.87
1:A:1238:G:N2	1:A:1290:G:C5	2.41	0.87
5:J:126:TYR:HH	5:J:133:HIS:CE1	1.93	0.87
2:C:53:HIS:HB2	2:C:217:ARG:O	1.74	0.87
1:A:523:G:C2	1:A:526:A:C5	2.63	0.86
3:D:5:ILE:CD1	3:D:102:PHE:HE2	1.87	0.86
4:E:187:VAL:HG11	7:L:3:LEU:HD12	1.56	0.86
10:Q:88:ILE:CG2	11:R:51:PRO:CD	2.53	0.86
1:A:611:U:P	7:L:29:LYS:HZ1	1.97	0.86
1:A:1013:U:O2'	1:A:1014:A:O4'	1.93	0.86
3:D:5:ILE:CD1	3:D:102:PHE:CE2	2.59	0.86
10:Q:88:ILE:CG2	11:R:51:PRO:CG	2.54	0.86
4:E:50:LYS:HZ1	4:E:94:PRO:HG2	1.40	0.85
11:R:39:LEU:HD23	11:R:48:VAL:HG21	1.56	0.85
12:S:6:VAL:HG22	12:S:104:THR:HG22	1.57	0.85
1:A:1013:U:H2'	1:A:1014:A:C8	2.11	0.85
7:L:111:ILE:CD1	7:L:128:PHE:HE1	1.89	0.85
10:Q:88:ILE:CG2	11:R:51:PRO:HD3	2.05	0.85
12:S:6:VAL:HG13	12:S:104:THR:CG2	2.06	0.85
1:A:965:A:N6	1:A:998:G:O3'	2.09	0.85
2:C:205:ILE:CG2	2:C:210:ARG:HB3	2.06	0.85
1:A:1250:G:N2	1:A:1277:A:C5	2.45	0.85
1:A:2671:G:OP2	5:J:86:LYS:NZ	2.09	0.84
10:Q:86:SER:HB2	10:Q:116:GLN:CG	2.08	0.84
1:A:611:U:P	7:L:29:LYS:NZ	2.50	0.84
4:E:45:ARG:CZ	4:E:97:TYR:CE2	2.60	0.84
10:Q:88:ILE:HG22	11:R:51:PRO:HG3	1.57	0.84
1:A:1578:G:N2	1:A:1587:U:OP2	2.11	0.84
3:D:185:LEU:HD11	9:P:11:ILE:HG21	1.59	0.84
2:C:205:ILE:CG2	2:C:210:ARG:CB	2.56	0.83
1:A:1555:A:H1'	1:A:1556:A:C8	2.13	0.83
1:A:682:G:H5''	7:L:129:SER:CB	2.09	0.83
1:A:1518:G:N2	1:A:1567:U:O2	2.11	0.83
4:E:6:LEU:HD11	4:E:196:LYS:HB2	1.58	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:Q:86:SER:HB2	10:Q:116:GLN:HB2	1.60	0.83
7:L:19:VAL:HG13	7:L:31:ALA:CA	2.08	0.82
4:E:34:PHE:CD1	7:L:6:LEU:HG	2.13	0.82
2:C:53:HIS:HA	2:C:217:ARG:HB3	1.61	0.82
3:D:185:LEU:HD11	9:P:11:ILE:CG2	2.10	0.82
1:A:1013:U:O2'	1:A:1014:A:C5'	2.28	0.82
1:A:1013:U:O2'	1:A:1014:A:H5'	1.80	0.81
1:A:633:U:H5'	4:E:95:ARG:HH21	1.45	0.81
2:C:78:VAL:HG22	2:C:94:ILE:CG1	2.10	0.81
4:E:34:PHE:HD1	7:L:6:LEU:HG	1.45	0.81
3:D:31:ALA:CB	3:D:53:PHE:CE1	2.50	0.81
2:C:173:LEU:HB2	2:C:183:MET:SD	2.20	0.81
4:E:7:TYR:HB3	4:E:126:LEU:HD23	1.61	0.81
8:N:91:TYR:OH	8:N:120:VAL:O	1.96	0.81
1:A:523:G:N2	1:A:526:A:C4	2.48	0.81
2:C:24:ILE:HD13	2:C:83:TYR:HB2	1.63	0.81
4:E:6:LEU:CD2	4:E:126:LEU:C	2.50	0.81
4:E:6:LEU:HD13	4:E:196:LYS:HD3	1.62	0.81
10:Q:95:LEU:HD13	11:R:4:ILE:HG23	1.62	0.81
3:D:33:ASN:HB2	3:D:97:VAL:HG13	1.60	0.81
10:Q:89:GLU:HB3	11:R:48:VAL:CG1	2.11	0.81
14:U:8:LYS:CA	14:U:22:THR:HG22	2.11	0.81
7:L:110:LYS:HG3	7:L:127:LYS:HB3	1.63	0.80
10:Q:89:GLU:HB3	11:R:48:VAL:HG13	1.63	0.80
3:D:185:LEU:CD1	9:P:11:ILE:HG21	2.12	0.80
4:E:45:ARG:CZ	4:E:97:TYR:OH	2.28	0.80
1:A:682:G:H5''	7:L:129:SER:HB3	1.63	0.80
4:E:7:TYR:HB2	4:E:125:VAL:O	1.82	0.80
1:A:1518:G:H1	1:A:1566:G:H1	1.27	0.80
7:L:111:ILE:HG13	7:L:128:PHE:CD1	2.12	0.79
3:D:3:LYS:N	3:D:204:SER:HG	1.80	0.79
4:E:187:VAL:HG11	7:L:3:LEU:HB2	1.64	0.79
5:J:77:ARG:NH2	5:J:88:ARG:HH21	1.81	0.79
10:Q:88:ILE:CB	11:R:51:PRO:CD	2.47	0.78
4:E:187:VAL:CG1	7:L:3:LEU:CD1	2.61	0.78
14:U:6:GLY:O	14:U:22:THR:HB	1.83	0.78
3:D:6:LEU:CD2	3:D:201:THR:HG22	2.13	0.78
1:A:632:U:H5'	7:L:16:ARG:HH11	1.36	0.78
3:D:28:ILE:CD1	3:D:200:ILE:CD1	2.59	0.78
1:A:720:C:C5'	4:E:81:PRO:HG2	2.14	0.78
4:E:45:ARG:CZ	4:E:97:TYR:HE2	1.97	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:683:A:N6	1:A:698:C:C1'	2.47	0.77
1:A:720:C:H5''	4:E:81:PRO:CD	2.15	0.77
3:D:102:PHE:CD1	3:D:106:GLU:OE1	2.38	0.77
10:Q:95:LEU:HD13	11:R:4:ILE:CG2	2.15	0.77
7:L:95:LEU:HD13	7:L:95:LEU:O	1.85	0.77
1:A:998:G:C5	1:A:1012:G:N2	2.53	0.77
3:D:49:ILE:CD1	3:D:91:TYR:CD2	2.68	0.77
4:E:187:VAL:HG12	7:L:3:LEU:CB	2.16	0.76
9:P:51:ILE:CD1	9:P:103:LEU:CD1	2.60	0.76
9:P:51:ILE:HG12	9:P:103:LEU:HD11	1.66	0.76
1:A:1455:C:O2	1:A:1632:G:N2	2.19	0.76
4:E:45:ARG:NH1	4:E:97:TYR:CZ	2.52	0.76
4:E:50:LYS:NZ	4:E:94:PRO:CG	2.48	0.76
10:Q:86:SER:HB2	10:Q:116:GLN:CB	2.15	0.76
1:A:633:U:H4'	4:E:95:ARG:HH21	1.39	0.76
5:J:29:LEU:HD23	5:J:63:ILE:HD11	1.68	0.75
10:Q:86:SER:HB2	10:Q:116:GLN:HG2	1.68	0.75
12:S:8:ARG:O	12:S:9:THR:HG22	1.86	0.75
1:A:1250:G:N2	1:A:1277:A:N7	2.35	0.75
4:E:6:LEU:HG	4:E:125:VAL:HG22	1.69	0.75
7:L:19:VAL:HG13	7:L:31:ALA:HA	1.68	0.75
1:A:645:C:N4	1:A:703:G:O6	2.19	0.74
1:A:1204:C:H2'	1:A:1205:U:C6	2.21	0.74
9:P:51:ILE:CG1	9:P:103:LEU:HD11	2.16	0.74
5:J:58:ILE:CG2	5:J:129:SER:HA	2.16	0.74
4:E:6:LEU:HD21	4:E:126:LEU:O	1.88	0.74
1:A:1244:A:H3'	1:A:1244:A:N3	2.03	0.74
7:L:3:LEU:HD23	7:L:3:LEU:O	1.87	0.74
5:J:29:LEU:O	5:J:29:LEU:HD12	1.86	0.74
6:K:25:LEU:HD12	6:K:38:VAL:HG13	1.69	0.74
12:S:6:VAL:CG1	12:S:104:THR:HG22	2.16	0.74
9:P:100:LEU:HB2	9:P:103:LEU:HD21	0.74	0.74
2:C:164:VAL:HA	2:C:174:VAL:HG13	1.68	0.73
10:Q:88:ILE:HG21	11:R:51:PRO:HG3	1.65	0.73
3:D:49:ILE:HD11	3:D:91:TYR:CB	2.18	0.73
4:E:187:VAL:CG1	7:L:3:LEU:CB	2.64	0.73
9:P:100:LEU:CA	9:P:103:LEU:HD21	2.13	0.73
3:D:107:ILE:O	3:D:205:ALA:HB2	1.88	0.73
1:A:1494:G:H1	1:A:1509:C:H42	1.36	0.73
14:U:9:VAL:HG23	14:U:70:PRO:CA	2.19	0.73
1:A:373:A:O4'	1:A:524:A:H1'	1.88	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:78:VAL:CG2	2:C:94:ILE:HG12	2.17	0.72
1:A:523:G:C6	1:A:526:A:N7	2.57	0.72
14:U:8:LYS:HA	14:U:22:THR:HG22	1.69	0.72
4:E:38:LEU:HD12	4:E:38:LEU:O	1.88	0.72
1:A:682:G:C5'	7:L:129:SER:HB2	2.18	0.72
1:A:1250:G:C2	1:A:1277:A:C5	2.77	0.72
5:J:59:ASN:OD1	5:J:129:SER:CB	2.35	0.72
1:A:998:G:C6	1:A:1012:G:C2	2.77	0.72
1:A:1455:C:N3	1:A:1632:G:N1	2.38	0.72
1:A:1238:G:C2	1:A:1290:G:C5	2.76	0.72
10:Q:97:ASP:O	10:Q:100:VAL:HG23	1.90	0.71
2:C:205:ILE:O	2:C:210:ARG:CD	2.38	0.71
10:Q:95:LEU:HD12	11:R:11:GLN:CB	2.20	0.71
4:E:39:MET:N	4:E:99:TYR:OH	2.23	0.71
12:S:44:SER:N	12:S:45:PRO:CD	2.53	0.71
2:C:170:LYS:O	2:C:186:SER:OG	2.09	0.70
1:A:632:U:H5'	7:L:16:ARG:HH12	1.53	0.70
1:A:999:A:N6	1:A:1011:C:C4	2.58	0.70
12:S:6:VAL:HG22	12:S:104:THR:CG2	2.19	0.70
11:R:77:LYS:HB3	11:R:78:PRO:CD	2.19	0.70
1:A:682:G:C5'	7:L:129:SER:CB	2.69	0.70
1:A:720:C:P	4:E:81:PRO:HG2	2.31	0.70
7:L:127:LYS:HE3	7:L:127:LYS:HA	1.74	0.70
3:D:107:ILE:HG22	3:D:205:ALA:CB	2.22	0.70
2:C:205:ILE:HG23	2:C:210:ARG:HB2	1.68	0.70
1:A:2900:A:HO2'	9:P:5:GLN:N	1.90	0.69
1:A:630:A:H62	1:A:1291:A:H2	1.38	0.69
10:Q:92:ARG:HG3	10:Q:94:MET:H	1.57	0.69
3:D:5:ILE:HD11	3:D:102:PHE:CE2	2.26	0.69
1:A:248:G:H4'	1:A:248:G:OP1	1.91	0.69
3:D:6:LEU:HD23	3:D:201:THR:HA	1.74	0.69
2:C:37:LEU:HD23	2:C:37:LEU:O	1.92	0.69
12:S:6:VAL:CG2	12:S:104:THR:HG22	2.22	0.69
6:K:12:ASP:OD2	6:K:86:ILE:HG13	1.94	0.68
6:K:59:LYS:O	6:K:87:ILE:HG13	1.93	0.68
7:L:83:ASN:OD1	7:L:117:LEU:HB3	1.93	0.68
12:S:44:SER:H	12:S:45:PRO:CD	2.05	0.68
1:A:999:A:N6	1:A:1011:C:N4	1.95	0.68
1:A:2039:G:H5''	12:S:42:ALA:HB3	1.68	0.68
1:A:633:U:H4'	4:E:95:ARG:CZ	2.21	0.68
1:A:1042:A:H4'	11:R:10:LYS:CB	2.24	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:111:ILE:CB	7:L:128:PHE:CE1	2.77	0.68
1:A:1496:G:H1	1:A:1507:U:H3	1.42	0.68
1:A:305:A:H62	1:A:411:G:H21	1.40	0.68
1:A:610:U:C5'	7:L:29:LYS:HE2	2.11	0.68
1:A:858:U:OP2	7:L:20:GLY:C	2.32	0.68
7:L:111:ILE:CB	7:L:128:PHE:CD1	2.76	0.68
2:C:124:ILE:HG22	2:C:124:ILE:O	1.95	0.67
7:L:19:VAL:HG12	7:L:31:ALA:HB2	1.68	0.67
10:Q:88:ILE:HG21	11:R:51:PRO:CD	2.22	0.67
1:A:1245:G:H5'	7:L:4:HIS:HE1	1.59	0.67
4:E:39:MET:HB2	4:E:99:TYR:CE2	2.30	0.67
1:A:738:C:OP1	2:C:217:ARG:NH2	2.27	0.67
1:A:1010:C:H6	1:A:1010:C:O5'	1.78	0.67
1:A:633:U:H5'	4:E:95:ARG:NH2	2.00	0.67
1:A:682:G:H5'	7:L:129:SER:HB2	1.77	0.67
1:A:1088:G:H1	1:A:1159:U:H3	1.43	0.67
3:D:28:ILE:HD12	3:D:200:ILE:HD11	1.77	0.67
2:C:173:LEU:HB2	2:C:183:MET:CE	2.24	0.66
1:A:268:A:H2'	1:A:269:G:H4'	1.77	0.66
1:A:704:U:O5'	1:A:704:U:H6	1.78	0.66
1:A:994:C:O5'	1:A:994:C:H6	1.78	0.66
1:A:1087:U:H2'	1:A:1088:G:H8	1.60	0.66
4:E:29:ASN:O	4:E:30:GLU:HB2	1.95	0.66
2:C:24:ILE:HG23	2:C:82:GLU:HA	1.76	0.66
2:C:205:ILE:CG2	2:C:210:ARG:HB2	2.23	0.66
1:A:683:A:C6	1:A:698:C:H1'	2.31	0.66
1:A:1002:G:O5'	1:A:1002:G:H8	1.79	0.66
1:A:249:C:O5'	1:A:249:C:H6	1.79	0.65
1:A:2735:A:O2'	8:N:60:ARG:NH1	2.29	0.65
14:U:79:THR:HG1	14:U:95:LYS:HB2	1.60	0.65
1:A:522:U:O4	1:A:526:A:N7	2.29	0.65
1:A:1093:G:O2'	1:A:1157:A:N6	2.28	0.65
4:E:45:ARG:CZ	4:E:97:TYR:CZ	2.80	0.65
1:A:1473:A:H4'	1:A:1474:C:O5'	1.96	0.65
2:C:207:LYS:HG3	2:C:209:GLY:H	1.61	0.65
1:A:2664:U:O2'	3:D:82:GLU:OE2	2.14	0.65
1:A:1820:A:N6	1:A:1857:G:O2'	2.30	0.65
4:E:187:VAL:HG12	7:L:3:LEU:CD1	2.26	0.65
1:A:254:A:O5'	1:A:254:A:H8	1.80	0.65
4:E:39:MET:CG	4:E:99:TYR:CZ	2.80	0.65
2:C:53:HIS:CA	2:C:217:ARG:HB3	2.27	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:213:TRP:HA	2:C:213:TRP:CE3	2.30	0.64
1:A:250:G:H3'	1:A:252:C:H1'	1.79	0.64
1:A:720:C:OP1	4:E:81:PRO:CG	2.46	0.64
1:A:578:A:H4'	1:A:579:G:C8	2.33	0.64
1:A:1238:G:H1'	1:A:1290:G:N2	2.13	0.64
1:A:611:U:OP2	7:L:29:LYS:NZ	2.30	0.64
3:D:107:ILE:O	3:D:205:ALA:CB	2.47	0.63
1:A:1618:A:OP1	2:C:61:GLN:NE2	2.31	0.63
7:L:23:ILE:HG23	11:R:81:ASN:HD22	1.63	0.63
1:A:671:G:C2'	1:A:672:C:C5'	2.74	0.63
3:D:31:ALA:HB2	3:D:53:PHE:HE1	1.62	0.63
7:L:79:LEU:HB2	7:L:112:LEU:O	1.97	0.63
1:A:1296:G:O2'	4:E:82:GLN:NE2	2.31	0.63
4:E:50:LYS:HZ2	4:E:94:PRO:CG	2.10	0.63
1:A:859:C:C6	7:L:21:ARG:O	2.52	0.63
4:E:29:ASN:O	4:E:30:GLU:CB	2.46	0.63
5:J:57:ILE:HB	5:J:125:VAL:HG12	1.79	0.63
1:A:1521:G:H22	1:A:1563:G:H1	1.47	0.63
5:J:78:HIS:CD2	5:J:85:LEU:CB	2.55	0.63
8:N:104:LEU:HD11	8:N:116:ILE:HG13	1.81	0.63
1:A:760:G:O2'	1:A:765:A:N6	2.31	0.62
1:A:1332:U:H2'	1:A:1333:C:C6	2.34	0.62
2:C:170:LYS:C	2:C:186:SER:OG	2.36	0.62
3:D:5:ILE:HD13	3:D:102:PHE:HE2	1.63	0.62
3:D:35:VAL:HG21	3:D:91:TYR:HD1	1.64	0.62
1:A:250:G:H2'	1:A:252:C:O2'	1.98	0.62
3:D:5:ILE:CG1	3:D:102:PHE:HE2	2.12	0.62
1:A:1285:G:H5''	7:L:13:ARG:HH12	1.63	0.62
8:N:22:THR:HG21	8:N:67:ARG:H	1.64	0.62
11:R:77:LYS:HG2	11:R:82:VAL:HG11	1.80	0.62
1:A:995:U:O5'	1:A:995:U:H6	1.82	0.62
5:J:77:ARG:NH2	5:J:88:ARG:CZ	2.63	0.62
1:A:249:C:O2	1:A:255:G:N2	2.32	0.62
1:A:1292:G:OP2	10:Q:13:ARG:NH2	2.33	0.62
1:A:1559:C:H6	1:A:1559:C:O5'	1.82	0.62
5:J:78:HIS:HD2	5:J:85:LEU:CA	2.12	0.62
2:C:72:ASP:CA	2:C:118:SER:O	2.46	0.62
1:A:1577:C:N4	1:A:1578:G:N3	2.48	0.62
5:J:76:TYR:CE1	5:J:87:SER:HB2	2.35	0.62
1:A:2058:G:N1	1:A:2062:A:OP2	2.33	0.61
3:D:49:ILE:HD11	3:D:91:TYR:CD2	2.34	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:29:ASN:HB2	4:E:33:VAL:HG23	1.82	0.61
1:A:682:G:H5''	7:L:129:SER:HB2	1.80	0.61
1:A:999:A:N1	1:A:1011:C:C2	2.66	0.61
1:A:2109:G:H1	1:A:2269:C:H42	1.48	0.61
7:L:97:LEU:HG	7:L:97:LEU:O	2.00	0.61
1:A:1204:C:C4	1:A:1205:U:O4	2.54	0.61
7:L:92:THR:HB	7:L:93:PRO:HD2	1.82	0.61
2:C:142:HIS:ND1	2:C:193:GLY:O	2.31	0.61
7:L:80:ASP:CG	7:L:115:GLY:HA3	2.20	0.61
10:Q:89:GLU:CB	11:R:48:VAL:HG11	2.30	0.61
6:K:92:SER:CB	6:K:113:LYS:HD3	2.28	0.61
4:E:6:LEU:CD2	4:E:127:GLU:N	2.64	0.61
5:J:61:GLU:O	5:J:94:ARG:NH2	2.34	0.61
3:D:5:ILE:HG12	3:D:102:PHE:CE2	2.36	0.61
1:A:720:C:OP1	4:E:81:PRO:HG2	2.00	0.60
7:L:91:VAL:HB	7:L:123:VAL:HG13	1.83	0.60
9:P:100:LEU:O	9:P:103:LEU:CD2	2.49	0.60
1:A:316:G:N1	1:A:404:C:N3	2.47	0.60
1:A:1199:C:OP1	10:Q:93:LYS:NZ	2.34	0.60
1:A:1783:C:OP1	9:P:97:ARG:NH1	2.34	0.60
14:U:4:LYS:HE2	14:U:92:ARG:HH12	0.59	0.60
1:A:1074:A:N6	1:A:1172:A:OP1	2.34	0.60
1:A:1454:C:H2'	1:A:1455:C:C6	2.36	0.60
1:A:2760:G:OP1	3:D:173:ASN:ND2	2.33	0.60
1:A:522:U:N3	1:A:526:A:N7	2.49	0.60
1:A:523:G:H22	1:A:526:A:C1'	2.13	0.60
7:L:79:LEU:HB3	7:L:115:GLY:H	1.67	0.60
1:A:647:A:HO2'	7:L:81:LYS:HE2	1.64	0.60
1:A:2882:G:N2	1:A:2885:A:OP2	2.35	0.60
3:D:49:ILE:HD13	3:D:91:TYR:CE1	2.33	0.60
4:E:7:TYR:CB	4:E:126:LEU:HD23	2.29	0.60
6:K:64:ARG:NH1	6:K:101:PRO:O	2.33	0.60
1:A:785:C:H42	1:A:805:G:H1	1.50	0.60
4:E:41:ARG:HH12	4:E:184:LEU:HD21	1.66	0.60
10:Q:86:SER:CB	10:Q:116:GLN:HB2	2.30	0.60
10:Q:88:ILE:HG22	10:Q:88:ILE:O	2.02	0.60
1:A:1213:G:O6	1:A:1222:A:N6	2.34	0.60
3:D:108:VAL:HG13	3:D:202:VAL:CG1	2.32	0.60
1:A:683:A:P	7:L:131:SER:OG	2.59	0.60
14:U:8:LYS:O	14:U:8:LYS:HG3	2.02	0.60
1:A:1476:C:O5'	1:A:1476:C:H6	1.85	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2710:C:OP2	3:D:115:LYS:NZ	2.32	0.60
1:A:63:G:H2'	1:A:64:A:H8	1.66	0.59
3:D:114:SER:OG	3:D:115:LYS:N	2.34	0.59
3:D:34:VAL:HG12	3:D:34:VAL:O	2.02	0.59
1:A:2028:C:O2	1:A:2716:U:O2'	2.20	0.59
1:A:2833:U:H2'	1:A:2834:A:H8	1.67	0.59
1:A:523:G:N2	1:A:526:A:C5	2.68	0.59
1:A:2737:G:O2'	8:N:18:ARG:NH1	2.32	0.59
7:L:111:ILE:CG1	7:L:128:PHE:CD1	2.81	0.59
5:J:29:LEU:HD12	5:J:29:LEU:C	2.22	0.59
1:A:1244:A:C8	7:L:3:LEU:HD22	2.37	0.59
2:C:213:TRP:HA	2:C:213:TRP:HE3	1.66	0.59
1:A:416:U:H5''	1:A:417:G:H5'	1.83	0.59
1:A:607:G:H21	10:Q:37:GLN:HE22	1.51	0.58
1:A:683:A:H61	1:A:698:C:C1'	2.15	0.58
4:E:122:ASN:ND2	4:E:190:GLU:O	2.36	0.58
10:Q:95:LEU:CD1	11:R:11:GLN:CB	2.81	0.58
1:A:641:C:H2'	1:A:642:G:H8	1.68	0.58
3:D:185:LEU:CD1	9:P:11:ILE:CG2	2.77	0.58
7:L:19:VAL:HG11	7:L:31:ALA:HB1	0.65	0.58
1:A:604:C:O2'	10:Q:48:ARG:NH1	2.35	0.58
1:A:1214:U:O4	1:A:1221:A:N6	2.36	0.58
1:A:1652:C:N4	1:A:1667:A:OP2	2.36	0.58
12:S:60:HIS:ND1	12:S:61:ASN:OD1	2.33	0.58
1:A:632:U:H5''	7:L:16:ARG:CZ	2.29	0.58
1:A:1518:G:O5'	1:A:1518:G:H8	1.85	0.58
4:E:39:MET:HG3	4:E:99:TYR:CE2	2.38	0.58
6:K:4:GLN:NE2	6:K:22:ILE:O	2.36	0.58
6:K:13:ASN:HD21	6:K:97:ARG:H	1.49	0.58
8:N:83:LEU:O	8:N:83:LEU:HG	2.03	0.58
1:A:2857:U:O2	1:A:2859:G:N1	2.37	0.58
3:D:108:VAL:HG11	3:D:202:VAL:HG11	1.84	0.58
14:U:63:ILE:HG22	14:U:67:ASN:HD22	1.66	0.58
1:A:364:A:N3	4:E:169:ASN:ND2	2.52	0.58
1:A:664:C:OP2	4:E:107:ARG:NH2	2.30	0.58
1:A:1038:C:OP1	11:R:75:ARG:NH1	2.37	0.58
1:A:1335:A:OP1	1:A:2738:G:O2'	2.20	0.57
5:J:74:ILE:HG23	5:J:88:ARG:O	2.04	0.57
5:J:99:GLU:OE2	5:J:125:VAL:O	2.21	0.57
1:A:377:G:N2	1:A:378:C:N3	2.52	0.57
1:A:2091:A:OP2	1:A:2093:C:N4	2.35	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:611:U:OP2	7:L:29:LYS:CE	2.53	0.57
5:J:79:THR:OG1	5:J:80:GLN:N	2.38	0.57
1:A:1273:G:C5	1:A:1274:U:C4	2.92	0.57
1:A:1765:G:N2	1:A:1768:A:OP2	2.37	0.57
1:A:1558:G:O5'	1:A:1558:G:H8	1.87	0.57
1:A:1238:G:N2	1:A:1290:G:C4	2.72	0.57
1:A:2039:G:P	12:S:42:ALA:HB2	2.44	0.57
3:D:27:VAL:HG23	3:D:27:VAL:O	2.05	0.57
4:E:39:MET:CA	4:E:99:TYR:CZ	2.86	0.57
3:D:5:ILE:HG12	3:D:102:PHE:HE2	1.69	0.57
3:D:55:ASP:HA	3:D:77:LYS:HA	1.87	0.57
12:S:34:SER:O	12:S:38:LEU:HD13	2.05	0.57
1:A:2111:A:H8	1:A:2266:G:H21	1.53	0.57
1:A:306:C:N3	1:A:411:G:N2	2.53	0.57
1:A:1093:G:N1	1:A:1157:A:OP2	2.36	0.57
3:D:21:ASP:OD1	3:D:21:ASP:N	2.38	0.57
5:J:53:ASP:N	5:J:53:ASP:OD1	2.36	0.57
11:R:25:LEU:HG	11:R:27:ALA:HB2	1.86	0.57
1:A:1238:G:N3	1:A:1290:G:C2	2.73	0.57
4:E:80:SER:HB2	4:E:81:PRO:CD	2.34	0.57
6:K:12:ASP:OD1	6:K:86:ILE:HG13	2.04	0.57
14:U:9:VAL:CG2	14:U:69:MET:O	2.52	0.57
1:A:1243:A:H4'	1:A:1243:A:OP1	2.05	0.56
1:A:1245:G:C5'	7:L:4:HIS:HE1	2.18	0.56
7:L:91:VAL:HG12	7:L:91:VAL:O	2.05	0.56
1:A:549:A:N3	1:A:551:A:O2'	2.38	0.56
1:A:611:U:OP2	7:L:29:LYS:HE3	2.05	0.56
1:A:827:G:H21	1:A:830:A:H62	1.53	0.56
1:A:984:G:H2'	1:A:985:G:H8	1.70	0.56
1:A:1288:G:OP1	10:Q:2:PRO:N	2.38	0.56
1:A:1288:G:H2'	10:Q:3:ARG:HA	1.86	0.56
7:L:79:LEU:HD22	7:L:113:GLY:CA	2.32	0.56
12:S:14:PRO:HG3	12:S:78:GLU:HG3	1.87	0.56
1:A:720:C:H5'	4:E:81:PRO:HG2	1.88	0.56
4:E:50:LYS:CE	4:E:94:PRO:CD	2.84	0.56
5:J:59:ASN:HA	5:J:128:GLY:O	2.05	0.56
9:P:51:ILE:HG22	9:P:52:LYS:HG3	1.87	0.56
1:A:860:U:H5	7:L:25:SER:HB3	1.70	0.56
5:J:76:TYR:CD1	5:J:87:SER:HB2	2.41	0.56
1:A:1256:C:OP1	10:Q:11:ARG:NH2	2.36	0.56
1:A:1847:U:OP2	2:C:156:ARG:NH1	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:38:LEU:HD22	7:L:13:ARG:HH22	1.71	0.56
14:U:2:HIS:HD2	14:U:81:VAL:HG21	1.71	0.56
1:A:1075:A:OP2	1:A:1171:G:N2	2.38	0.56
4:E:39:MET:HA	4:E:99:TYR:OH	2.00	0.56
11:R:5:ILE:HD12	11:R:5:ILE:H	1.71	0.56
1:A:1274:U:O5'	1:A:1274:U:H6	1.88	0.56
1:A:514:G:HO2'	1:A:843:C:HO2'	1.52	0.56
1:A:1614:A:OP1	2:C:210:ARG:NH1	2.29	0.56
4:E:40:GLN:OE1	4:E:184:LEU:HD22	2.05	0.56
5:J:29:LEU:CD2	5:J:63:ILE:HD11	2.36	0.56
12:S:24:ILE:HG23	12:S:32:ALA:HB1	1.88	0.56
6:K:12:ASP:CG	6:K:86:ILE:HG13	2.26	0.55
4:E:6:LEU:HD12	4:E:196:LYS:HD3	1.80	0.55
1:A:1013:U:O2'	1:A:1014:A:C4'	2.54	0.55
10:Q:95:LEU:CD1	11:R:11:GLN:O	2.48	0.55
12:S:23:LEU:O	12:S:27:LYS:HG3	2.07	0.55
1:A:438:A:H1'	1:A:459:A:H4'	1.87	0.55
1:A:2111:A:N6	1:A:2266:G:O2'	2.39	0.55
9:P:23:PHE:O	9:P:53:ARG:NH1	2.39	0.55
2:C:24:ILE:CD1	2:C:83:TYR:HB2	2.35	0.55
14:U:9:VAL:HG22	14:U:10:MET:N	2.22	0.55
1:A:1053:C:OP1	5:J:40:LYS:NZ	2.39	0.55
1:A:858:U:OP2	7:L:20:GLY:O	2.24	0.55
10:Q:71:MET:SD	10:Q:71:MET:N	2.79	0.55
1:A:1197:A:H4'	10:Q:81:HIS:CD2	2.41	0.55
1:A:1578:G:H22	1:A:1587:U:P	2.27	0.55
4:E:7:TYR:HB3	4:E:126:LEU:CD2	2.36	0.55
1:A:1285:G:H5''	7:L:13:ARG:NH1	2.21	0.55
1:A:1518:G:N2	1:A:1566:G:N2	2.55	0.55
2:C:167:LYS:HB3	2:C:172:VAL:HG13	1.87	0.55
1:A:581:C:O5'	1:A:581:C:H6	1.90	0.55
1:A:1518:G:N2	1:A:1566:G:H22	2.04	0.55
12:S:21:MET:HG2	12:S:74:ALA:HB1	1.88	0.55
1:A:675:C:H3'	1:A:675:C:H6	1.72	0.54
1:A:1238:G:N1	1:A:1290:G:C6	2.75	0.54
3:D:108:VAL:HG12	3:D:202:VAL:HG13	1.85	0.54
6:K:42:THR:OG1	6:K:43:VAL:N	2.39	0.54
1:A:2039:G:OP1	12:S:42:ALA:HB2	2.03	0.54
1:A:2665:U:HO2'	3:D:46:TYR:HH	1.54	0.54
2:C:205:ILE:O	2:C:210:ARG:NE	2.39	0.54
7:L:80:ASP:OD1	7:L:115:GLY:CA	2.45	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:U:69:MET:HG2	14:U:78:VAL:HG13	1.89	0.54
1:A:546:G:N1	1:A:549:A:OP2	2.38	0.54
1:A:720:C:H5''	4:E:81:PRO:HG2	1.89	0.54
16:Y:2:LYS:O	16:Y:7:ARG:NH1	2.40	0.54
16:Y:38:GLU:HG2	16:Y:39:ASN:H	1.72	0.54
1:A:859:C:C5	7:L:21:ARG:O	2.61	0.54
1:A:2895:C:H5''	8:N:61:GLN:OE1	2.08	0.54
4:E:80:SER:HB2	4:E:81:PRO:HD2	1.90	0.54
10:Q:89:GLU:HB3	11:R:48:VAL:HG11	1.87	0.54
1:A:619:A:OP2	1:A:2084:C:N4	2.37	0.54
1:A:1094:A:OP2	1:A:1156:G:N2	2.40	0.54
3:D:4:GLY:HA2	3:D:202:VAL:O	2.07	0.54
11:R:59:THR:OG1	11:R:98:GLU:O	2.26	0.54
1:A:522:U:C4	1:A:526:A:N7	2.75	0.54
1:A:579:G:N1	1:A:605:G:C2	2.76	0.54
1:A:720:C:H5''	4:E:81:PRO:CG	2.37	0.54
1:A:1244:A:H1'	7:L:3:LEU:HD22	1.90	0.54
1:A:1473:A:C4	1:A:1474:C:N4	2.75	0.54
1:A:257:G:O5'	1:A:257:G:H8	1.91	0.54
1:A:545:U:OP1	14:U:42:LYS:NZ	2.41	0.54
1:A:563:C:O2'	12:S:18:ARG:NH2	2.40	0.54
1:A:1460:G:O2'	1:A:1631:A:N6	2.41	0.54
4:E:50:LYS:CD	4:E:94:PRO:CD	2.74	0.54
4:E:50:LYS:CE	4:E:94:PRO:HD3	2.37	0.54
1:A:32:C:H5'	1:A:1278:G:OP1	2.08	0.54
5:J:85:LEU:O	5:J:85:LEU:HD12	2.08	0.54
6:K:5:GLU:HA	6:K:20:LEU:HD11	1.90	0.54
4:E:39:MET:HA	4:E:99:TYR:CZ	2.43	0.54
1:A:106:G:H2'	1:A:107:G:H8	1.73	0.53
3:D:3:LYS:O	3:D:204:SER:N	2.42	0.53
16:Y:5:GLU:HG2	16:Y:53:MET:HG2	1.90	0.53
1:A:1231:G:H2'	1:A:1232:G:H8	1.72	0.53
12:S:6:VAL:CB	12:S:104:THR:HG22	2.37	0.53
6:K:101:PRO:HD3	9:P:69:TYR:HB2	1.90	0.53
1:A:2874:G:O6	9:P:24:ARG:NH1	2.40	0.53
10:Q:108:GLN:HG2	11:R:45:ASN:CG	2.27	0.53
1:A:163:U:O2'	1:A:166:A:N6	2.41	0.53
1:A:224:A:H1'	1:A:236:A:H1'	1.90	0.53
1:A:673:A:H4'	1:A:673:A:OP2	2.09	0.53
1:A:2027:A:HO2'	1:A:2753:U:HO2'	1.51	0.53
1:A:1090:U:H4'	1:A:1157:A:H61	1.73	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:510:G:N2	1:A:513:A:OP2	2.41	0.53
1:A:677:A:H2'	1:A:677:A:N3	2.24	0.53
2:C:173:LEU:HD12	2:C:181:VAL:CG1	2.39	0.53
3:D:55:ASP:HB3	3:D:77:LYS:HD2	1.91	0.53
1:A:1246:G:H1'	1:A:1247:G:H5'	1.91	0.52
1:A:1250:G:N3	1:A:1277:A:N6	2.57	0.52
4:E:41:ARG:NH1	4:E:184:LEU:HD21	2.24	0.52
5:J:18:VAL:HG13	5:J:58:ILE:HD13	1.91	0.52
1:A:255:G:H2'	1:A:256:C:C5	2.43	0.52
3:D:16:PHE:HB3	3:D:22:LEU:HA	1.91	0.52
1:A:651:U:OP1	4:E:103:LYS:N	2.38	0.52
1:A:1207:C:H6	1:A:1207:C:O5'	1.93	0.52
4:E:39:MET:HA	4:E:99:TYR:CE1	2.45	0.52
4:E:132:ASP:OD1	4:E:132:ASP:N	2.41	0.52
7:L:110:LYS:NZ	7:L:127:LYS:HG3	2.24	0.52
1:A:1379:U:OP2	13:T:78:LYS:NZ	2.43	0.52
3:D:5:ILE:HD13	3:D:102:PHE:CE2	2.38	0.52
3:D:6:LEU:HD22	3:D:201:THR:HG22	1.89	0.52
1:A:1244:A:N3	1:A:1244:A:C3'	2.73	0.52
1:A:1783:C:N3	1:A:2745:U:O2'	2.42	0.52
11:R:6:LYS:HD2	11:R:6:LYS:O	2.09	0.52
1:A:643:U:H2'	1:A:644:G:H8	1.74	0.52
1:A:774:A:O2'	1:A:775:G:O4'	2.28	0.52
1:A:1238:G:N3	1:A:1290:G:N1	2.58	0.52
1:A:1243:A:H2'	1:A:1244:A:H5''	1.90	0.52
1:A:1279:C:H2'	1:A:1280:G:C8	2.45	0.52
1:A:1555:A:H1'	1:A:1556:A:H8	1.67	0.52
1:A:2111:A:H3'	1:A:2112:G:H8	1.75	0.52
3:D:18:GLU:OE2	3:D:19:ASN:ND2	2.43	0.52
9:P:27:ASP:N	9:P:27:ASP:OD1	2.42	0.52
1:A:998:G:C6	1:A:1012:G:N2	2.77	0.52
1:A:2810:A:H5''	1:A:2811:G:H5'	1.91	0.52
4:E:46:GLN:NE2	4:E:48:THR:OG1	2.40	0.52
1:A:32:C:C5'	1:A:1278:G:OP1	2.57	0.52
1:A:252:C:O2	1:A:252:C:H2'	2.08	0.52
1:A:303:G:H2'	1:A:304:G:H8	1.75	0.52
1:A:350:U:O2'	1:A:1251:U:OP1	2.26	0.52
14:U:8:LYS:CB	14:U:22:THR:HG22	2.39	0.52
16:Y:2:LYS:HD2	16:Y:7:ARG:HH12	1.74	0.52
1:A:611:U:P	7:L:29:LYS:HZ3	2.32	0.52
1:A:676:G:H22	1:A:678:A:H3'	1.75	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:R:48:VAL:O	11:R:48:VAL:HG22	2.09	0.52
1:A:673:A:C2	1:A:683:A:N7	2.78	0.52
3:D:35:VAL:HG21	3:D:91:TYR:CD1	2.43	0.52
4:E:6:LEU:CG	4:E:125:VAL:HG22	2.38	0.52
4:E:45:ARG:HH11	4:E:97:TYR:HE2	1.47	0.52
13:T:34:ALA:O	13:T:77:ARG:NH1	2.42	0.52
1:A:732:A:H8	1:A:735:U:H3	1.57	0.51
1:A:776:G:OP1	2:C:10:SER:OG	2.29	0.51
3:D:28:ILE:CD1	3:D:200:ILE:CG1	2.89	0.51
1:A:1088:G:N2	1:A:1159:U:O2	2.38	0.51
1:A:1275:G:O5'	1:A:1275:G:H8	1.92	0.51
3:D:107:ILE:C	3:D:205:ALA:HB2	2.30	0.51
6:K:71:ARG:HH22	6:K:104:ARG:HB3	1.73	0.51
10:Q:52:GLN:HA	10:Q:55:ARG:HG2	1.90	0.51
12:S:3:ALA:O	12:S:106:VAL:HA	2.11	0.51
16:Y:1:MET:SD	16:Y:4:ASN:ND2	2.83	0.51
1:A:318:A:H61	1:A:402:U:H3	1.58	0.51
1:A:2721:C:O2	1:A:2872:U:O2'	2.27	0.51
4:E:153:LEU:HB2	4:E:192:LEU:HA	1.93	0.51
10:Q:108:GLN:OE1	11:R:45:ASN:ND2	2.44	0.51
1:A:994:C:H2'	1:A:995:U:C6	2.45	0.51
1:A:579:G:C6	1:A:605:G:N2	2.78	0.51
1:A:1204:C:C4	1:A:1205:U:C4	2.97	0.51
1:A:2874:G:OP1	9:P:96:ARG:NH1	2.43	0.51
1:A:580:U:H2'	1:A:581:C:C6	2.46	0.51
1:A:859:C:H6	7:L:21:ARG:O	1.94	0.51
1:A:1475:G:O5'	1:A:1475:G:H8	1.94	0.51
1:A:1828:G:O6	2:C:178:SER:OG	2.27	0.51
3:D:185:LEU:HD13	9:P:11:ILE:HG21	1.91	0.51
6:K:96:THR:OG1	6:K:97:ARG:NH1	2.43	0.51
12:S:24:ILE:HG22	12:S:71:ILE:CD1	2.40	0.51
1:A:189:G:H2'	1:A:190:G:H8	1.75	0.51
1:A:1476:C:H2'	1:A:1477:A:C8	2.46	0.51
2:C:167:LYS:HB2	2:C:172:VAL:HG22	1.92	0.51
5:J:59:ASN:OD1	5:J:129:SER:CA	2.59	0.51
14:U:26:ALA:HA	14:U:33:VAL:HG12	1.92	0.51
1:A:237:U:H3	1:A:476:A:H61	1.58	0.51
1:A:547:A:N7	1:A:548:A:N6	2.59	0.51
1:A:610:U:OP1	7:L:29:LYS:HD2	2.11	0.51
1:A:1548:U:OP1	2:C:77:ARG:NH1	2.44	0.51
10:Q:116:GLN:OE1	10:Q:116:GLN:HA	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:R:62:VAL:HA	11:R:95:VAL:HG12	1.92	0.50
13:T:58:ASN:OD1	13:T:58:ASN:N	2.44	0.50
14:U:4:LYS:HE3	14:U:92:ARG:NH1	2.20	0.50
1:A:1285:G:C5'	7:L:13:ARG:HH12	2.23	0.50
3:D:107:ILE:HG22	3:D:205:ALA:HB2	1.93	0.50
10:Q:95:LEU:CD1	11:R:11:GLN:C	2.73	0.50
1:A:1523:U:H5''	1:A:1524:A:H8	1.76	0.50
1:A:2231:C:O2'	2:C:147:LYS:NZ	2.44	0.50
7:L:78:ASN:HB2	7:L:81:LYS:HG2	1.94	0.50
1:A:1245:G:H5'	7:L:4:HIS:CE1	2.44	0.50
1:A:648:G:H22	1:A:671:G:H1'	1.77	0.50
1:A:1231:G:OP1	7:L:32:GLY:HA2	2.11	0.50
1:A:2117:A:N6	1:A:2260:U:O4	2.44	0.50
4:E:84:ARG:O	4:E:84:ARG:HG2	2.11	0.50
3:D:5:ILE:CG1	3:D:102:PHE:CE2	2.92	0.50
3:D:107:ILE:HG23	3:D:173:ASN:HA	1.93	0.50
4:E:139:MET:SD	4:E:139:MET:N	2.85	0.50
5:J:8:ASN:OD1	5:J:8:ASN:N	2.45	0.50
8:N:110:ASP:N	8:N:110:ASP:OD1	2.41	0.50
1:A:286:U:H3'	1:A:287:G:H8	1.76	0.50
1:A:1473:A:C8	1:A:1474:C:N4	2.79	0.50
3:D:55:ASP:OD1	3:D:55:ASP:N	2.43	0.50
1:A:699:A:H5''	1:A:700:U:H2'	1.93	0.50
1:A:1846:G:OP1	2:C:87:ARG:NH2	2.36	0.50
4:E:93:THR:HB	4:E:94:PRO:HD2	1.93	0.50
10:Q:52:GLN:O	10:Q:56:ASP:N	2.45	0.50
12:S:3:ALA:HB2	12:S:58:ALA:HB2	1.94	0.50
1:A:1359:G:H21	1:A:1370:C:H41	1.59	0.49
4:E:41:ARG:O	4:E:45:ARG:HG3	2.12	0.49
1:A:1039:G:C2	1:A:1208:G:N3	2.81	0.49
1:A:1252:G:N3	1:A:1276:G:C2	2.81	0.49
1:A:1546:G:N2	2:C:98:ASP:O	2.42	0.49
5:J:63:ILE:O	5:J:94:ARG:NH1	2.45	0.49
14:U:9:VAL:HG22	14:U:69:MET:O	2.12	0.49
1:A:1065:U:H3	1:A:1188:A:H62	1.61	0.49
8:N:55:ASP:OD1	8:N:55:ASP:N	2.37	0.49
1:A:338:G:H1	1:A:387:C:H42	1.60	0.49
1:A:688:G:H22	1:A:690:A:H3'	1.78	0.49
1:A:644:G:N2	1:A:650:U:OP1	2.42	0.49
1:A:1711:G:H4'	6:K:6:THR:HG23	1.94	0.49
3:D:6:LEU:HD21	3:D:201:THR:HG22	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:34:VAL:HG12	3:D:36:LEU:HD23	1.95	0.49
1:A:885:C:H42	1:A:986:G:H1	1.58	0.49
13:T:35:ASN:HB2	13:T:38:GLU:HG3	1.95	0.49
1:A:683:A:OP2	7:L:131:SER:OG	2.28	0.49
1:A:1039:G:C4	1:A:1208:G:N2	2.81	0.49
1:A:1380:U:O2'	13:T:55:ASN:ND2	2.45	0.49
1:A:679:A:OP1	7:L:68:ASN:CB	2.50	0.49
1:A:1036:A:O2'	1:A:1038:C:OP2	2.26	0.49
3:D:49:ILE:HD12	3:D:91:TYR:CD2	2.46	0.49
4:E:38:LEU:CD2	7:L:13:ARG:HH22	2.25	0.49
5:J:25:THR:HA	5:J:64:GLU:O	2.13	0.49
16:Y:11:THR:HA	16:Y:14:ILE:HG12	1.95	0.49
4:E:6:LEU:HD23	4:E:7:TYR:H	1.78	0.48
11:R:13:LYS:NZ	11:R:15:GLU:OE2	2.42	0.48
10:Q:28:LYS:HD3	10:Q:38:GLN:HG3	1.95	0.48
1:A:617:G:N1	1:A:2060:A:OP2	2.46	0.48
1:A:2039:G:OP1	12:S:42:ALA:N	2.43	0.48
6:K:59:LYS:CD	6:K:89:ASP:OD1	2.61	0.48
8:N:8:ARG:HB3	8:N:12:GLN:HB2	1.94	0.48
1:A:814:U:H2'	1:A:815:G:H8	1.78	0.48
3:D:34:VAL:HG12	3:D:36:LEU:CD2	2.43	0.48
5:J:45:TYR:HA	5:J:51:THR:HG21	1.95	0.48
12:S:20:VAL:HG11	12:S:47:ILE:HD12	1.94	0.48
1:A:1288:G:C5'	10:Q:2:PRO:O	2.61	0.48
1:A:1242:U:H3'	1:A:1242:U:H6	1.77	0.48
1:A:1433:U:H4'	1:A:1648:A:H4'	1.95	0.48
2:C:37:LEU:HD13	2:C:62:TYR:HB2	1.95	0.48
3:D:35:VAL:HG13	3:D:49:ILE:HG23	1.96	0.48
13:T:84:THR:OG1	13:T:85:ALA:N	2.47	0.48
1:A:617:G:O2'	1:A:619:A:OP1	2.31	0.48
4:E:187:VAL:CB	7:L:3:LEU:HD12	2.42	0.48
11:R:5:ILE:HG22	11:R:7:THR:HG23	1.94	0.48
1:A:1204:C:H2'	1:A:1205:U:H6	1.76	0.48
1:A:1238:G:C4	1:A:1290:G:N1	2.82	0.48
1:A:1482:G:H21	1:A:1562:A:H8	1.60	0.48
1:A:2779:A:N3	1:A:2781:C:N4	2.62	0.48
1:A:26:G:N1	1:A:559:A:OP2	2.45	0.48
1:A:630:A:N7	1:A:1291:A:N1	2.61	0.48
1:A:673:A:H2'	7:L:76:VAL:HG11	1.96	0.48
1:A:1409:C:HO2'	1:A:1840:G:HO2'	1.61	0.48
8:N:57:HIS:CD2	8:N:61:GLN:HE22	2.32	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:U:57:SER:OG	14:U:58:ASN:N	2.47	0.48
1:A:632:U:H5''	7:L:16:ARG:HH11	1.50	0.47
1:A:1514:C:H42	1:A:1571:G:H1	1.62	0.47
14:U:9:VAL:N	14:U:21:GLY:O	2.44	0.47
1:A:645:C:N3	1:A:703:G:O6	2.47	0.47
1:A:1273:G:C6	1:A:1274:U:C4	3.02	0.47
4:E:182:ASN:OD1	4:E:182:ASN:N	2.45	0.47
5:J:126:TYR:CZ	5:J:133:HIS:NE2	2.79	0.47
1:A:505:G:O2'	1:A:516:G:O6	2.32	0.47
4:E:6:LEU:HD11	4:E:196:LYS:CB	2.38	0.47
7:L:110:LYS:HA	7:L:127:LYS:O	2.15	0.47
1:A:965:A:C6	1:A:999:A:OP1	2.65	0.47
1:A:1473:A:C1'	1:A:1474:C:C5	2.98	0.47
4:E:41:ARG:HD3	4:E:41:ARG:HA	1.54	0.47
1:A:528:G:H1	1:A:555:C:H42	1.62	0.47
1:A:1042:A:OP2	11:R:10:LYS:CB	2.63	0.47
1:A:1238:G:C2	1:A:1290:G:N1	2.83	0.47
2:C:173:LEU:O	2:C:173:LEU:HD23	2.14	0.47
7:L:91:VAL:CG1	7:L:123:VAL:HG13	2.44	0.47
1:A:374:A:H2	1:A:1250:G:H2'	1.80	0.47
1:A:688:G:N2	1:A:691:U:OP2	2.40	0.47
1:A:1558:G:H2'	1:A:1559:C:C6	2.49	0.47
4:E:34:PHE:CE1	7:L:6:LEU:HG	2.50	0.47
6:K:34:ASN:OD1	6:K:34:ASN:N	2.46	0.47
10:Q:68:ALA:O	10:Q:106:PHE:HE2	1.97	0.47
10:Q:84:LYS:O	10:Q:84:LYS:HG2	2.13	0.47
1:A:568:G:O2'	1:A:587:C:O2'	2.32	0.47
1:A:632:U:C5'	7:L:16:ARG:HH12	2.09	0.47
1:A:706:C:H5''	1:A:706:C:H6	1.80	0.47
1:A:1241:C:H6	1:A:1241:C:O5'	1.98	0.47
1:A:1288:G:H5''	10:Q:2:PRO:O	2.14	0.47
1:A:2880:U:H3	1:A:2887:A:H61	1.62	0.47
12:S:24:ILE:HG22	12:S:24:ILE:O	2.14	0.47
14:U:46:LYS:HD3	14:U:47:PRO:HD2	1.97	0.47
1:A:702:A:O2'	1:A:703:G:O4'	2.27	0.47
1:A:720:C:C5'	4:E:81:PRO:CG	2.89	0.47
1:A:993:A:H2'	1:A:994:C:C6	2.50	0.47
1:A:1557:G:O5'	1:A:1557:G:H8	1.97	0.47
7:L:109:VAL:O	7:L:109:VAL:HG13	2.15	0.47
1:A:495:U:O4'	4:E:84:ARG:NH2	2.48	0.47
1:A:1284:A:H4'	7:L:8:PRO:HD3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1362:G:H1	1:A:1370:C:H42	1.63	0.47
16:Y:24:GLU:O	16:Y:28:LEU:N	2.48	0.47
1:A:614:G:OP1	1:A:1018:G:O2'	2.30	0.46
1:A:1016:U:O2'	1:A:1031:C:OP2	2.31	0.46
1:A:1528:U:H4'	1:A:1529:G:H5'	1.96	0.46
1:A:2111:A:H3'	1:A:2112:G:C8	2.50	0.46
3:D:119:PHE:O	3:D:120:GLN:NE2	2.48	0.46
5:J:77:ARG:CZ	5:J:88:ARG:NE	2.78	0.46
9:P:52:LYS:HG2	9:P:99:LYS:HE3	1.97	0.46
9:P:100:LEU:O	9:P:103:LEU:CD1	2.61	0.46
1:A:2900:A:O2'	9:P:5:GLN:N	2.47	0.46
4:E:192:LEU:HB2	4:E:194:ILE:HD11	1.97	0.46
1:A:27:G:N2	1:A:558:G:H2'	2.30	0.46
1:A:2714:G:OP2	9:P:52:LYS:NZ	2.45	0.46
5:J:79:THR:HG23	5:J:81:HIS:H	1.79	0.46
1:A:250:G:C3'	1:A:252:C:H1'	2.44	0.46
10:Q:92:ARG:HD2	10:Q:93:LYS:H	1.80	0.46
14:U:8:LYS:CD	14:U:71:LEU:HD12	2.15	0.46
1:A:645:C:C4	1:A:703:G:O6	2.68	0.46
2:C:115:GLU:O	2:C:116:ILE:HG12	2.15	0.46
4:E:50:LYS:HD3	4:E:94:PRO:CG	2.46	0.46
5:J:59:ASN:CA	5:J:128:GLY:O	2.63	0.46
5:J:119:MET:HA	5:J:122:LYS:HZ2	1.81	0.46
1:A:1004:U:H2'	1:A:1004:U:O2	2.14	0.46
5:J:99:GLU:CD	5:J:125:VAL:O	2.53	0.46
5:J:114:SER:OG	5:J:115:LEU:N	2.48	0.46
7:L:19:VAL:CG1	7:L:31:ALA:CA	2.73	0.46
12:S:20:VAL:HG12	12:S:20:VAL:O	2.16	0.46
1:A:1365:U:O2'	1:A:2039:G:O2'	2.34	0.46
4:E:50:LYS:HZ2	4:E:94:PRO:HG3	1.79	0.46
7:L:33:LYS:HD3	7:L:33:LYS:HA	1.77	0.46
9:P:63:THR:O	9:P:63:THR:OG1	2.31	0.46
1:A:858:U:C4	1:A:1291:A:N6	2.84	0.46
1:A:1519:C:OP1	1:A:1519:C:H4'	2.16	0.46
1:A:1520:A:H3'	1:A:1521:G:H8	1.81	0.46
10:Q:89:GLU:HB2	11:R:48:VAL:HG11	1.97	0.46
1:A:615:U:O2'	1:A:617:G:OP2	2.27	0.46
1:A:1013:U:C2'	1:A:1014:A:C8	2.93	0.46
1:A:1036:A:N3	11:R:75:ARG:NH2	2.64	0.46
1:A:2118:U:O4	1:A:2258:U:N3	2.48	0.46
2:C:150:LYS:HD2	2:C:153:GLN:HE22	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:173:LEU:CA	2:C:183:MET:SD	3.04	0.46
7:L:116:LYS:HG3	7:L:116:LYS:O	2.16	0.46
8:N:57:HIS:CD2	8:N:61:GLN:NE2	2.84	0.46
1:A:673:A:H8	7:L:76:VAL:CG1	2.29	0.45
10:Q:42:SER:O	10:Q:42:SER:OG	2.33	0.45
1:A:172:U:H2'	1:A:173:A:H8	1.82	0.45
1:A:250:G:O5'	1:A:250:G:H8	1.99	0.45
1:A:417:G:O5'	1:A:470:A:N6	2.49	0.45
1:A:525:A:C2	1:A:527:A:C4	3.04	0.45
10:Q:92:ARG:HG3	10:Q:94:MET:HB3	1.98	0.45
1:A:852:G:N2	1:A:876:A:OP1	2.49	0.45
1:A:1335:A:H2'	1:A:1336:C:C6	2.51	0.45
1:A:1379:U:OP2	13:T:59:TYR:OH	2.33	0.45
5:J:126:TYR:OH	5:J:133:HIS:CE1	2.56	0.45
7:L:111:ILE:O	7:L:129:SER:OG	2.19	0.45
1:A:58:G:H2'	1:A:59:G:H8	1.80	0.45
1:A:1250:G:C2	1:A:1277:A:N6	2.83	0.45
1:A:1284:A:O5'	1:A:1284:A:H8	1.99	0.45
1:A:1555:A:C4	1:A:1556:A:N7	2.85	0.45
1:A:1801:G:O6	1:A:2007:A:N6	2.50	0.45
1:A:2718:U:P	1:A:2748:G:H1	2.39	0.45
4:E:105:VAL:HG12	4:E:105:VAL:O	2.16	0.45
6:K:87:ILE:HG22	6:K:93:PRO:HA	1.99	0.45
1:A:1010:C:H2'	1:A:1011:C:C5	2.52	0.45
1:A:1206:G:H2'	1:A:1207:C:C6	2.52	0.45
4:E:9:GLN:O	4:E:9:GLN:HG2	2.14	0.45
4:E:34:PHE:HD1	7:L:6:LEU:CG	2.22	0.45
6:K:14:SER:HB2	6:K:86:ILE:HD12	1.98	0.45
6:K:59:LYS:HD2	6:K:89:ASP:OD1	2.17	0.45
1:A:858:U:C6	1:A:1291:A:N7	2.85	0.45
1:A:1417:A:O2'	1:A:1419:G:N7	2.40	0.45
6:K:65:THR:HG22	6:K:67:SER:H	1.81	0.45
9:P:32:HIS:HB2	9:P:86:LYS:H	1.80	0.45
10:Q:114:LYS:HB2	10:Q:114:LYS:HE2	1.54	0.45
1:A:248:G:H3'	1:A:249:C:C6	2.51	0.45
1:A:1555:A:C1'	1:A:1556:A:C8	2.95	0.45
1:A:706:C:H2'	1:A:707:G:H8	1.81	0.45
1:A:2712:C:OP1	9:P:54:ARG:NH1	2.41	0.45
10:Q:108:GLN:CG	11:R:45:ASN:OD1	2.46	0.45
11:R:79:LYS:HA	11:R:79:LYS:HD3	1.44	0.45
1:A:503:C:H2'	13:T:69:TYR:HE1	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1249:U:N3	1:A:1278:G:C6	2.85	0.45
1:A:1520:A:H3'	1:A:1521:G:C8	2.52	0.45
2:C:72:ASP:CG	2:C:118:SER:O	2.56	0.45
3:D:8:ARG:HA	3:D:199:LEU:HA	1.97	0.45
7:L:19:VAL:HG13	7:L:31:ALA:HB2	1.63	0.45
10:Q:79:LEU:HG	10:Q:83:LEU:HD12	1.97	0.45
1:A:999:A:C2	1:A:1011:C:O2	2.70	0.44
1:A:1381:A:O2'	1:A:1383:U:OP2	2.33	0.44
1:A:259:A:H2'	1:A:260:A:C8	2.53	0.44
1:A:364:A:OP2	4:E:137:LYS:NZ	2.41	0.44
1:A:490:A:H61	4:E:41:ARG:HB3	1.81	0.44
2:C:69:ARG:HE	2:C:69:ARG:HB3	1.63	0.44
2:C:141:VAL:HG13	2:C:144:ILE:HD11	2.00	0.44
4:E:3:LYS:HB3	4:E:3:LYS:HE2	1.68	0.44
1:A:1653:A:O2'	1:A:1655:A:OP2	2.32	0.44
3:D:6:LEU:CD2	3:D:201:THR:CG2	2.92	0.44
1:A:526:A:H4'	1:A:527:A:OP1	2.16	0.44
1:A:675:C:C3'	1:A:675:C:C6	3.01	0.44
1:A:1039:G:C4	1:A:1208:G:C2	3.05	0.44
1:A:1562:A:HO2'	1:A:1604:C:HO2'	1.58	0.44
3:D:28:ILE:HD12	3:D:200:ILE:CG1	2.48	0.44
4:E:80:SER:CB	4:E:81:PRO:CD	2.95	0.44
5:J:29:LEU:CD2	5:J:63:ILE:CD1	2.95	0.44
5:J:75:TYR:N	5:J:88:ARG:O	2.51	0.44
1:A:403:C:H2'	1:A:404:C:C2	2.53	0.44
1:A:858:U:H2'	7:L:20:GLY:O	2.18	0.44
1:A:682:G:OP2	7:L:129:SER:HA	2.18	0.44
1:A:1565:U:H2'	1:A:1566:G:H8	1.82	0.44
1:A:1674:G:H1	1:A:1682:C:H42	1.65	0.44
2:C:173:LEU:HD12	2:C:181:VAL:HG11	2.00	0.44
4:E:29:ASN:CB	4:E:33:VAL:HG23	2.48	0.44
1:A:317:G:N2	1:A:404:C:O2	2.51	0.44
1:A:1473:A:C5	1:A:1474:C:N4	2.86	0.44
7:L:96:LEU:HD22	7:L:101:VAL:HB	1.99	0.44
12:S:24:ILE:HG22	12:S:71:ILE:HD13	1.98	0.44
16:Y:16:GLN:O	16:Y:20:SER:N	2.50	0.44
1:A:681:C:H6	1:A:681:C:H5''	1.83	0.44
1:A:760:G:N2	1:A:764:C:OP2	2.51	0.44
1:A:894:A:H62	1:A:979:U:H3	1.66	0.44
1:A:1284:A:O5'	1:A:1284:A:C8	2.71	0.44
14:U:9:VAL:HG22	14:U:10:MET:H	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:647:A:N1	1:A:671:G:O2'	2.46	0.43
1:A:2434:G:N3	1:A:2440:A:N6	2.66	0.43
3:D:88:MET:C	3:D:88:MET:CE	2.86	0.43
1:A:1765:G:O2'	1:A:1767:A:N7	2.43	0.43
2:C:212:ARG:HA	2:C:212:ARG:HD3	1.66	0.43
3:D:110:VAL:HG11	3:D:192:VAL:HG23	2.00	0.43
7:L:20:GLY:HA2	7:L:28:GLY:HA2	1.99	0.43
14:U:3:VAL:HG11	14:U:70:PRO:HD3	2.00	0.43
1:A:630:A:N6	1:A:1291:A:H2	2.12	0.43
1:A:1709:A:H3'	1:A:1710:A:H8	1.83	0.43
4:E:30:GLU:HB3	4:E:31:SER:H	1.73	0.43
9:P:76:THR:OG1	9:P:77:PHE:N	2.51	0.43
14:U:8:LYS:HA	14:U:21:GLY:O	2.18	0.43
5:J:78:HIS:CD2	5:J:85:LEU:CA	2.97	0.43
1:A:676:G:N2	1:A:678:A:H3'	2.32	0.43
1:A:2063:U:O2'	1:A:2064:G:O4'	2.36	0.43
4:E:42:ALA:O	4:E:45:ARG:HB2	2.19	0.43
9:P:55:GLY:HA2	9:P:60:GLU:HA	2.00	0.43
1:A:259:A:H2'	1:A:260:A:H8	1.83	0.43
1:A:1473:A:H1'	1:A:1474:C:C5	2.53	0.43
1:A:2035:C:O2'	1:A:2848:A:N3	2.51	0.43
5:J:18:VAL:HG23	5:J:138:PRO:HB2	2.00	0.43
6:K:21:THR:HA	6:K:41:CYS:HB3	1.99	0.43
16:Y:28:LEU:HD12	16:Y:28:LEU:HA	1.88	0.43
1:A:198:A:H61	1:A:201:C:H3'	1.82	0.43
1:A:666:G:H4'	1:A:667:A:H5'	2.00	0.43
1:A:1520:A:OP1	1:A:1520:A:H4'	2.18	0.43
4:E:41:ARG:NH2	4:E:44:LEU:HD23	2.34	0.43
9:P:32:HIS:CD2	9:P:86:LYS:HB2	2.53	0.43
10:Q:68:ALA:HB1	10:Q:106:PHE:CE2	2.53	0.43
1:A:27:G:H22	1:A:558:G:H2'	1.83	0.43
1:A:1205:U:H6	1:A:1205:U:O5'	2.02	0.43
1:A:1278:G:N2	1:A:1279:C:C2	2.87	0.43
14:U:9:VAL:HG23	14:U:69:MET:O	2.18	0.43
14:U:9:VAL:CG2	14:U:69:MET:C	2.87	0.43
1:A:751:G:O2'	1:A:774:A:N6	2.51	0.43
1:A:1359:G:C6	1:A:1368:U:H5''	2.54	0.43
1:A:1359:G:N2	1:A:1370:C:H41	2.17	0.43
7:L:117:LEU:H	7:L:117:LEU:HG	1.71	0.43
14:U:8:LYS:N	14:U:22:THR:HG22	2.33	0.43
4:E:187:VAL:HG12	7:L:3:LEU:HD13	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:192:LEU:HD12	4:E:194:ILE:HD11	2.00	0.43
9:P:10:ASP:OD1	9:P:10:ASP:N	2.52	0.43
1:A:293:U:H2'	1:A:294:G:C8	2.54	0.42
1:A:2233:C:H4'	2:C:150:LYS:HG3	2.01	0.42
1:A:2786:A:H3'	1:A:2787:A:H5''	2.01	0.42
4:E:177:GLU:OE2	4:E:178:ALA:N	2.49	0.42
5:J:113:GLY:O	5:J:117:ARG:NH1	2.52	0.42
5:J:125:VAL:O	5:J:125:VAL:HG23	2.19	0.42
7:L:110:LYS:HZ1	7:L:127:LYS:HG3	1.83	0.42
11:R:76:TYR:CD1	11:R:76:TYR:O	2.72	0.42
1:A:454:G:H2'	1:A:455:G:C8	2.54	0.42
1:A:797:A:O2'	1:A:799:A:OP1	2.35	0.42
1:A:1281:C:H3'	1:A:1281:C:O2	2.19	0.42
1:A:2039:G:P	12:S:42:ALA:CB	3.03	0.42
1:A:2245:G:HO2'	1:A:2246:G:H8	1.66	0.42
3:D:192:VAL:HG21	3:D:200:ILE:HD13	2.00	0.42
1:A:247:A:H1'	1:A:258:A:C6	2.54	0.42
1:A:2802:U:H2'	1:A:2803:C:H6	1.83	0.42
11:R:67:ARG:NH1	11:R:68:ALA:O	2.52	0.42
12:S:24:ILE:HG23	12:S:32:ALA:CB	2.49	0.42
1:A:643:U:H2'	1:A:644:G:C8	2.54	0.42
1:A:732:A:O2'	1:A:820:U:O4	2.28	0.42
1:A:1465:A:O2'	1:A:1467:G:N7	2.36	0.42
2:C:50:THR:OG1	2:C:51:VAL:N	2.53	0.42
3:D:108:VAL:HG13	3:D:202:VAL:HG13	1.88	0.42
6:K:87:ILE:HA	6:K:93:PRO:HA	2.02	0.42
6:K:96:THR:OG1	6:K:97:ARG:N	2.52	0.42
7:L:95:LEU:HD13	7:L:95:LEU:C	2.40	0.42
7:L:112:LEU:HA	7:L:129:SER:OG	2.18	0.42
7:L:127:LYS:HA	7:L:127:LYS:CE	2.35	0.42
1:A:1204:C:N3	1:A:1205:U:C4	2.88	0.42
1:A:1513:U:H3	1:A:1572:G:H1	1.68	0.42
3:D:33:ASN:O	3:D:96:GLU:HA	2.20	0.42
4:E:6:LEU:HD11	4:E:196:LYS:HD3	1.88	0.42
4:E:39:MET:CG	4:E:99:TYR:CE2	3.02	0.42
4:E:111:LYS:O	4:E:115:SER:OG	2.23	0.42
7:L:91:VAL:CB	7:L:123:VAL:HG13	2.48	0.42
10:Q:97:ASP:OD1	10:Q:100:VAL:HG21	2.19	0.42
1:A:796:A:O3'	1:A:1311:G:N2	2.49	0.42
2:C:83:TYR:CD1	2:C:83:TYR:C	2.92	0.42
2:C:124:ILE:CD1	2:C:136:PRO:HG3	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:J:93:MET:HG2	5:J:101:MET:HB2	2.00	0.42
1:A:491:C:O5'	4:E:49:HIS:NE2	2.53	0.42
1:A:720:C:OP1	4:E:81:PRO:HG3	2.19	0.42
2:C:72:ASP:OD2	2:C:119:GLY:HA2	2.19	0.42
6:K:87:ILE:HB	6:K:88:ARG:H	1.67	0.42
12:S:41:ARG:HB2	12:S:44:SER:HB2	2.01	0.42
1:A:319:G:O3'	1:A:323:C:N4	2.53	0.42
1:A:971:A:N6	1:A:972:U:O4	2.52	0.42
2:C:71:LYS:H	2:C:71:LYS:HG2	1.62	0.42
3:D:56:LYS:NZ	3:D:60:LEU:O	2.41	0.42
5:J:58:ILE:HG23	5:J:129:SER:CA	2.34	0.42
6:K:30:ARG:NH2	6:K:37:ASP:OD2	2.53	0.42
1:A:1029:A:N6	1:A:1030:G:O6	2.53	0.42
2:C:106:ALA:HB1	2:C:110:ILE:HD11	2.02	0.42
9:P:62:PHE:CE1	9:P:77:PHE:HB2	2.55	0.42
10:Q:79:LEU:HG	10:Q:83:LEU:CD1	2.50	0.42
14:U:40:MET:HA	14:U:60:GLU:HA	2.00	0.42
1:A:173:A:H2'	1:A:174:U:C6	2.55	0.42
1:A:399:C:H2'	1:A:400:U:H6	1.84	0.42
1:A:2776:G:N1	1:A:2785:U:OP1	2.35	0.42
2:C:77:ARG:N	2:C:95:ASN:O	2.50	0.42
5:J:29:LEU:HD23	5:J:63:ILE:CD1	2.44	0.42
6:K:2:ILE:HG23	6:K:6:THR:HG21	2.00	0.42
13:T:49:VAL:HG11	13:T:83:LEU:HD13	2.01	0.42
1:A:379:C:O2'	14:U:66:SER:O	2.36	0.41
1:A:457:G:N2	1:A:465:U:O2	2.53	0.41
1:A:789:C:H2'	1:A:790:A:C8	2.55	0.41
2:C:216:ILE:O	2:C:216:ILE:HG22	2.20	0.41
3:D:10:ILE:HD11	3:D:29:GLU:HG2	2.00	0.41
3:D:185:LEU:HD11	9:P:11:ILE:HG22	1.99	0.41
1:A:1444:C:H2'	1:A:1445:A:C8	2.55	0.41
7:L:111:ILE:CD1	7:L:128:PHE:CE1	2.80	0.41
14:U:24:LEU:HD23	14:U:24:LEU:HA	1.86	0.41
1:A:253:G:H8	1:A:253:G:O5'	2.03	0.41
1:A:759:G:H3'	1:A:760:G:H8	1.85	0.41
1:A:1011:C:H2'	1:A:1012:G:C8	2.55	0.41
12:S:18:ARG:NH1	12:S:76:VAL:O	2.54	0.41
1:A:1555:A:C4	1:A:1556:A:C8	3.07	0.41
1:A:2770:A:N6	1:A:2792:G:O2'	2.53	0.41
3:D:6:LEU:HD23	3:D:201:THR:CA	2.47	0.41
1:A:611:U:OP1	7:L:29:LYS:NZ	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:284:C:H42	1:A:288:C:H42	1.69	0.41
1:A:858:U:C5	1:A:1291:A:N7	2.88	0.41
1:A:1760:A:H62	1:A:1773:G:H21	1.68	0.41
1:A:2877:G:OP1	8:N:60:ARG:NH1	2.47	0.41
4:E:133:THR:OG1	4:E:134:ALA:N	2.51	0.41
6:K:12:ASP:HB3	6:K:98:ILE:HG22	2.03	0.41
1:A:455:G:H2'	1:A:456:A:C8	2.55	0.41
1:A:999:A:C2	1:A:1011:C:C2	3.08	0.41
1:A:1306:G:O2'	1:A:2041:G:O6	2.31	0.41
1:A:2116:G:O6	1:A:2262:A:N6	2.54	0.41
1:A:721:G:OP1	4:E:54:ARG:NH2	2.54	0.41
1:A:1283:U:H3'	1:A:1283:U:H6	1.83	0.41
1:A:1477:A:H8	1:A:1477:A:O5'	2.04	0.41
1:A:1660:C:OP2	1:A:1662:C:N4	2.35	0.41
1:A:2085:G:H3'	1:A:2086:G:H8	1.85	0.41
10:Q:74:LEU:HD11	10:Q:114:LYS:HD3	2.02	0.41
1:A:32:C:H5''	1:A:1278:G:OP1	2.21	0.41
1:A:1694:G:H21	8:N:110:ASP:HB2	1.85	0.41
3:D:88:MET:CE	3:D:88:MET:HA	2.51	0.41
6:K:39:ILE:N	6:K:60:ALA:O	2.47	0.41
7:L:71:ARG:NH1	7:L:73:GLU:OE2	2.54	0.41
7:L:78:ASN:HB2	7:L:81:LYS:CG	2.50	0.41
11:R:41:VAL:HG12	11:R:46:VAL:HB	2.03	0.41
11:R:50:ASN:HA	11:R:51:PRO:HD2	1.56	0.41
14:U:99:GLN:HB2	14:U:100:VAL:H	1.70	0.41
1:A:1516:A:H62	1:A:1568:G:H8	1.68	0.41
1:A:1586:G:H2'	1:A:1587:U:C6	2.56	0.41
1:A:857:U:O3'	7:L:20:GLY:CA	2.69	0.40
1:A:864:C:H2'	1:A:865:G:H8	1.86	0.40
1:A:2026:A:H2'	1:A:2027:A:H8	1.86	0.40
4:E:108:LEU:HD23	4:E:108:LEU:HA	1.91	0.40
1:A:866:A:OP2	1:A:1228:G:N2	2.40	0.40
1:A:1475:G:H2'	1:A:1476:C:C6	2.56	0.40
1:A:1741:G:N2	1:A:2006:A:O2'	2.52	0.40
11:R:6:LYS:HB3	11:R:6:LYS:HE3	1.56	0.40
13:T:64:LYS:HE2	13:T:64:LYS:HB3	1.97	0.40
1:A:90:A:H4'	1:A:91:A:O4'	2.21	0.40
1:A:188:C:H42	1:A:214:G:H1	1.69	0.40
1:A:642:G:C6	1:A:707:G:N1	2.89	0.40
1:A:1234:G:H2'	1:A:1235:A:H8	1.85	0.40
1:A:1542:A:H2'	1:A:1544:C:C4	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:26:THR:HG21	3:D:192:VAL:HG11	2.04	0.40
3:D:49:ILE:HD11	3:D:91:TYR:HB3	2.00	0.40
4:E:50:LYS:HE3	4:E:94:PRO:CD	2.51	0.40
5:J:99:GLU:OE1	5:J:125:VAL:O	2.39	0.40
1:A:610:U:O2'	1:A:856:G:OP2	2.39	0.40
1:A:642:G:C6	1:A:707:G:C6	3.09	0.40
1:A:2048:U:O3'	10:Q:27:SER:OG	2.32	0.40
3:D:5:ILE:HD11	3:D:102:PHE:CD2	2.57	0.40
4:E:184:LEU:HD12	4:E:184:LEU:HA	1.89	0.40
6:K:51:VAL:HG23	6:K:52:VAL:HG23	2.03	0.40
10:Q:66:ASN:HD22	10:Q:76:TYR:HB2	1.86	0.40
1:A:863:C:H42	1:A:1232:G:H1	1.70	0.40
1:A:902:G:N2	1:A:969:C:N3	2.68	0.40
1:A:1400:G:O2'	1:A:2244:G:O2'	2.37	0.40
1:A:1756:U:C2	1:A:1777:G:N2	2.89	0.40
4:E:187:VAL:HG11	7:L:3:LEU:CD1	2.31	0.40
12:S:20:VAL:CG1	12:S:47:ILE:HD12	2.52	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	C	218/277 (79%)	192 (88%)	26 (12%)	0	100	100
3	D	163/209 (78%)	141 (86%)	20 (12%)	2 (1%)	13	41
4	E	177/207 (86%)	152 (86%)	20 (11%)	5 (3%)	5	24
5	J	139/145 (96%)	124 (89%)	15 (11%)	0	100	100
6	K	112/122 (92%)	97 (87%)	15 (13%)	0	100	100
7	L	89/145 (61%)	75 (84%)	12 (14%)	2 (2%)	6	29
8	N	117/120 (98%)	107 (92%)	10 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	P	94/115 (82%)	84 (89%)	10 (11%)	0	100	100
10	Q	114/118 (97%)	107 (94%)	7 (6%)	0	100	100
11	R	98/102 (96%)	81 (83%)	14 (14%)	3 (3%)	4	23
12	S	97/113 (86%)	88 (91%)	8 (8%)	1 (1%)	15	46
13	T	87/95 (92%)	86 (99%)	1 (1%)	0	100	100
14	U	84/103 (82%)	71 (84%)	12 (14%)	1 (1%)	13	41
15	b	50/59 (85%)	43 (86%)	5 (10%)	2 (4%)	3	18
16	Y	61/66 (92%)	56 (92%)	3 (5%)	2 (3%)	4	22
17	d	37/44 (84%)	36 (97%)	1 (3%)	0	100	100
All	All	1737/2040 (85%)	1540 (89%)	179 (10%)	18 (1%)	20	46

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	E	30	GLU
11	R	47	LYS
11	R	51	PRO
4	E	90	PHE
7	L	107	ALA
15	b	50	ASN
4	E	94	PRO
11	R	52	THR
14	U	99	GLN
15	b	32	SER
16	Y	39	ASN
3	D	32	PRO
12	S	66	ALA
3	D	89	ASP
16	Y	38	GLU
4	E	4	VAL
7	L	109	VAL
4	E	23	VAL

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	177/225 (79%)	166 (94%)	11 (6%)	18	48
3	D	135/170 (79%)	127 (94%)	8 (6%)	19	49
4	E	152/170 (89%)	138 (91%)	14 (9%)	9	31
5	J	120/123 (98%)	113 (94%)	7 (6%)	20	50
6	K	98/101 (97%)	92 (94%)	6 (6%)	18	48
7	L	74/109 (68%)	64 (86%)	10 (14%)	4	14
8	N	99/100 (99%)	96 (97%)	3 (3%)	41	68
9	P	86/100 (86%)	83 (96%)	3 (4%)	36	65
10	Q	95/97 (98%)	90 (95%)	5 (5%)	22	52
11	R	78/84 (93%)	74 (95%)	4 (5%)	24	54
12	S	85/93 (91%)	80 (94%)	5 (6%)	19	49
13	T	79/85 (93%)	79 (100%)	0	100	100
14	U	77/87 (88%)	68 (88%)	9 (12%)	5	20
15	b	47/53 (89%)	38 (81%)	9 (19%)	1	4
16	Y	55/57 (96%)	55 (100%)	0	100	100
17	d	35/39 (90%)	35 (100%)	0	100	100
All	All	1492/1693 (88%)	1398 (94%)	94 (6%)	21	47

All (94) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	82	GLU
2	C	84	ASP
2	C	101	LYS
2	C	116	ILE
2	C	164	VAL
2	C	171	TYR
2	C	173	LEU
2	C	210	ARG
2	C	212	ARG
2	C	213	TRP
2	C	214	LYS
3	D	5	ILE
3	D	12	MET
3	D	13	THR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	29	GLU
3	D	83	LEU
3	D	88	MET
3	D	91	TYR
3	D	119	PHE
4	E	6	LEU
4	E	7	TYR
4	E	9	GLN
4	E	24	PHE
4	E	26	ILE
4	E	30	GLU
4	E	35	ASP
4	E	41	ARG
4	E	43	SER
4	E	44	LEU
4	E	84	ARG
4	E	95	ARG
4	E	97	TYR
4	E	98	SER
5	J	25	THR
5	J	29	LEU
5	J	80	GLN
5	J	86	LYS
5	J	88	ARG
5	J	127	ARG
5	J	130	GLU
6	K	64	ARG
6	K	86	ILE
6	K	87	ILE
6	K	88	ARG
6	K	90	ASP
6	K	91	LYS
7	L	68	ASN
7	L	76	VAL
7	L	97	LEU
7	L	106	ASN
7	L	111	ILE
7	L	117	LEU
7	L	123	VAL
7	L	124	LYS
7	L	127	LYS
7	L	131	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
8	N	9	THR
8	N	35	THR
8	N	83	LEU
9	P	7	LEU
9	P	76	THR
9	P	103	LEU
10	Q	88	ILE
10	Q	102	ASP
10	Q	108	GLN
10	Q	109	LEU
10	Q	116	GLN
11	R	5	ILE
11	R	76	TYR
11	R	79	LYS
11	R	83	HIS
12	S	21	MET
12	S	23	LEU
12	S	24	ILE
12	S	25	ARG
12	S	37	ASN
14	U	4	LYS
14	U	7	ASP
14	U	8	LYS
14	U	92	ARG
14	U	93	VAL
14	U	96	LYS
14	U	97	SER
14	U	99	GLN
14	U	100	VAL
15	b	30	CYS
15	b	35	GLU
15	b	36	MET
15	b	37	LYS
15	b	38	LEU
15	b	43	CYS
15	b	46	CYS
15	b	49	TYR
15	b	52	LYS

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

Mol	Chain	Res	Type
2	C	44	ASN
2	C	46	GLN
3	D	19	ASN
4	E	46	GLN
4	E	82	GLN
5	J	41	HIS
5	J	78	HIS
6	K	110	ASN
7	L	4	HIS
8	N	61	GLN
8	N	68	ASN
10	Q	37	GLN
10	Q	66	ASN
10	Q	81	HIS
10	Q	108	GLN
11	R	45	ASN
11	R	65	GLN
11	R	81	ASN
13	T	55	ASN
14	U	2	HIS
14	U	67	ASN
15	b	50	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2155/2927 (73%)	728 (33%)	35 (1%)

All (728) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	8	U
1	A	9	U
1	A	13	A
1	A	15	G
1	A	22	C
1	A	23	G
1	A	27	G
1	A	28	A
1	A	31	C
1	A	34	U
1	A	35	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	36	G
1	A	39	C
1	A	42	G
1	A	45	G
1	A	46	C
1	A	47	C
1	A	51	G
1	A	54	G
1	A	59	G
1	A	63	G
1	A	67	A
1	A	71	A
1	A	75	G
1	A	76	C
1	A	78	U
1	A	84	A
1	A	87	U
1	A	91	A
1	A	92	G
1	A	99	U
1	A	101	G
1	A	109	G
1	A	117	A
1	A	119	U
1	A	120	G
1	A	124	A
1	A	125	A
1	A	127	C
1	A	128	C
1	A	130	A
1	A	135	U
1	A	150	A
1	A	158	C
1	A	161	A
1	A	162	A
1	A	163	U
1	A	164	U
1	A	175	G
1	A	176	A
1	A	177	G
1	A	179	A
1	A	183	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	184	G
1	A	196	U
1	A	199	A
1	A	200	A
1	A	202	A
1	A	203	U
1	A	207	A
1	A	215	G
1	A	216	A
1	A	218	G
1	A	219	A
1	A	225	A
1	A	226	A
1	A	227	G
1	A	228	C
1	A	230	A
1	A	231	A
1	A	232	U
1	A	233	G
1	A	242	U
1	A	245	G
1	A	246	U
1	A	248	G
1	A	251	G
1	A	252	C
1	A	253	G
1	A	255	G
1	A	256	C
1	A	258	A
1	A	264	G
1	A	267	C
1	A	268	A
1	A	270	C
1	A	271	C
1	A	272	C
1	A	274	A
1	A	275	A
1	A	283	G
1	A	284	C
1	A	287	G
1	A	289	C
1	A	290	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	291	C
1	A	294	G
1	A	295	G
1	A	298	U
1	A	299	U
1	A	300	G
1	A	301	U
1	A	302	A
1	A	309	U
1	A	313	U
1	A	314	A
1	A	315	C
1	A	321	U
1	A	322	A
1	A	324	A
1	A	326	A
1	A	327	G
1	A	331	C
1	A	334	G
1	A	337	A
1	A	338	G
1	A	344	G
1	A	345	A
1	A	346	G
1	A	355	A
1	A	360	C
1	A	366	A
1	A	367	G
1	A	368	G
1	A	373	A
1	A	374	A
1	A	376	A
1	A	377	G
1	A	378	C
1	A	379	C
1	A	380	C
1	A	382	G
1	A	386	U
1	A	387	C
1	A	389	A
1	A	390	A
1	A	393	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	394	U
1	A	396	G
1	A	397	U
1	A	405	U
1	A	406	G
1	A	407	A
1	A	408	G
1	A	412	A
1	A	413	U
1	A	415	C
1	A	418	A
1	A	419	G
1	A	420	U
1	A	437	A
1	A	438	A
1	A	442	C
1	A	443	G
1	A	445	C
1	A	448	A
1	A	449	A
1	A	451	C
1	A	452	C
1	A	453	G
1	A	458	G
1	A	459	A
1	A	460	C
1	A	461	C
1	A	462	A
1	A	465	U
1	A	467	C
1	A	478	U
1	A	481	U
1	A	483	C
1	A	489	G
1	A	490	A
1	A	495	U
1	A	498	U
1	A	501	A
1	A	502	C
1	A	503	C
1	A	504	A
1	A	514	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	524	A
1	A	525	A
1	A	526	A
1	A	528	G
1	A	537	A
1	A	538	A
1	A	540	G
1	A	548	A
1	A	550	G
1	A	551	A
1	A	552	G
1	A	554	U
1	A	555	C
1	A	556	C
1	A	558	G
1	A	564	G
1	A	568	G
1	A	573	C
1	A	576	G
1	A	577	U
1	A	578	A
1	A	579	G
1	A	580	U
1	A	581	C
1	A	584	A
1	A	588	C
1	A	592	A
1	A	594	C
1	A	595	G
1	A	606	U
1	A	607	G
1	A	613	U
1	A	616	A
1	A	619	A
1	A	630	A
1	A	631	G
1	A	632	U
1	A	634	A
1	A	647	A
1	A	648	G
1	A	650	U
1	A	651	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	657	G
1	A	660	G
1	A	663	G
1	A	666	G
1	A	667	A
1	A	668	G
1	A	672	C
1	A	673	A
1	A	674	G
1	A	677	A
1	A	678	A
1	A	679	A
1	A	682	G
1	A	683	A
1	A	684	G
1	A	685	U
1	A	686	C
1	A	688	G
1	A	689	A
1	A	690	A
1	A	691	U
1	A	692	A
1	A	700	U
1	A	701	G
1	A	702	A
1	A	703	G
1	A	704	U
1	A	705	A
1	A	711	U
1	A	713	G
1	A	714	U
1	A	715	A
1	A	717	A
1	A	718	C
1	A	719	C
1	A	733	U
1	A	735	U
1	A	741	U
1	A	746	A
1	A	754	G
1	A	763	A
1	A	764	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	766	C
1	A	769	A
1	A	774	A
1	A	775	G
1	A	777	C
1	A	785	C
1	A	786	A
1	A	789	C
1	A	792	G
1	A	794	U
1	A	795	G
1	A	797	A
1	A	799	A
1	A	811	A
1	A	812	G
1	A	822	G
1	A	824	G
1	A	829	A
1	A	830	A
1	A	831	U
1	A	832	G
1	A	836	A
1	A	837	U
1	A	838	C
1	A	839	G
1	A	840	A
1	A	841	A
1	A	843	C
1	A	847	A
1	A	848	G
1	A	849	A
1	A	852	G
1	A	853	C
1	A	857	U
1	A	858	U
1	A	859	C
1	A	866	A
1	A	872	C
1	A	874	U
1	A	876	A
1	A	892	U
1	A	893	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	894	A
1	A	895	G
1	A	900	U
1	A	901	U
1	A	966	U
1	A	970	A
1	A	972	U
1	A	975	C
1	A	976	U
1	A	977	U
1	A	978	A
1	A	981	C
1	A	987	A
1	A	989	U
1	A	990	C
1	A	991	A
1	A	992	G
1	A	1000	G
1	A	1003	A
1	A	1004	U
1	A	1005	A
1	A	1011	C
1	A	1013	U
1	A	1019	A
1	A	1020	A
1	A	1027	A
1	A	1028	C
1	A	1029	A
1	A	1035	G
1	A	1042	A
1	A	1043	G
1	A	1051	C
1	A	1055	A
1	A	1058	U
1	A	1059	A
1	A	1063	G
1	A	1067	A
1	A	1070	G
1	A	1071	G
1	A	1072	A
1	A	1073	A
1	A	1079	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1080	G
1	A	1083	G
1	A	1087	U
1	A	1093	G
1	A	1158	G
1	A	1182	G
1	A	1185	G
1	A	1188	A
1	A	1189	A
1	A	1193	U
1	A	1194	A
1	A	1201	A
1	A	1202	A
1	A	1208	G
1	A	1209	G
1	A	1211	C
1	A	1214	U
1	A	1215	U
1	A	1222	A
1	A	1227	G
1	A	1239	U
1	A	1243	A
1	A	1244	A
1	A	1245	G
1	A	1246	G
1	A	1247	G
1	A	1248	C
1	A	1251	U
1	A	1252	G
1	A	1254	A
1	A	1260	A
1	A	1261	C
1	A	1265	A
1	A	1276	G
1	A	1277	A
1	A	1278	G
1	A	1279	C
1	A	1281	C
1	A	1282	U
1	A	1283	U
1	A	1286	A
1	A	1287	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1288	G
1	A	1289	U
1	A	1290	G
1	A	1292	G
1	A	1293	A
1	A	1295	U
1	A	1296	G
1	A	1305	A
1	A	1312	A
1	A	1313	A
1	A	1314	A
1	A	1315	G
1	A	1327	U
1	A	1333	C
1	A	1338	G
1	A	1339	A
1	A	1340	A
1	A	1341	U
1	A	1344	C
1	A	1345	U
1	A	1346	A
1	A	1349	G
1	A	1351	U
1	A	1360	A
1	A	1363	G
1	A	1364	C
1	A	1369	C
1	A	1375	A
1	A	1376	G
1	A	1380	U
1	A	1381	A
1	A	1383	U
1	A	1384	C
1	A	1388	A
1	A	1391	U
1	A	1394	G
1	A	1417	A
1	A	1418	U
1	A	1423	A
1	A	1424	A
1	A	1425	C
1	A	1427	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1429	U
1	A	1432	A
1	A	1434	A
1	A	1435	U
1	A	1436	U
1	A	1439	U
1	A	1441	U
1	A	1448	U
1	A	1449	C
1	A	1450	C
1	A	1455	C
1	A	1456	A
1	A	1458	U
1	A	1459	U
1	A	1460	G
1	A	1464	A
1	A	1465	A
1	A	1467	G
1	A	1473	A
1	A	1474	C
1	A	1479	G
1	A	1483	A
1	A	1484	U
1	A	1486	G
1	A	1488	G
1	A	1494	G
1	A	1495	C
1	A	1496	G
1	A	1497	G
1	A	1498	U
1	A	1499	A
1	A	1501	U
1	A	1502	G
1	A	1503	G
1	A	1504	A
1	A	1506	A
1	A	1507	U
1	A	1513	U
1	A	1519	C
1	A	1520	A
1	A	1521	G
1	A	1524	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1525	G
1	A	1528	U
1	A	1529	G
1	A	1530	G
1	A	1536	A
1	A	1537	G
1	A	1539	C
1	A	1540	A
1	A	1544	C
1	A	1553	A
1	A	1555	A
1	A	1556	A
1	A	1561	G
1	A	1562	A
1	A	1563	G
1	A	1564	C
1	A	1571	G
1	A	1572	G
1	A	1573	C
1	A	1576	G
1	A	1577	C
1	A	1578	G
1	A	1581	A
1	A	1587	U
1	A	1596	U
1	A	1599	U
1	A	1605	C
1	A	1606	A
1	A	1607	C
1	A	1608	A
1	A	1609	C
1	A	1611	G
1	A	1613	C
1	A	1615	A
1	A	1617	A
1	A	1626	U
1	A	1629	C
1	A	1631	A
1	A	1632	G
1	A	1637	G
1	A	1638	A
1	A	1639	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1640	G
1	A	1651	G
1	A	1652	C
1	A	1653	A
1	A	1655	A
1	A	1660	C
1	A	1667	A
1	A	1672	A
1	A	1679	A
1	A	1693	C
1	A	1696	G
1	A	1697	A
1	A	1698	G
1	A	1699	A
1	A	1707	U
1	A	1710	A
1	A	1712	G
1	A	1714	A
1	A	1719	G
1	A	1720	C
1	A	1723	A
1	A	1724	A
1	A	1727	A
1	A	1728	C
1	A	1736	C
1	A	1738	U
1	A	1739	C
1	A	1740	G
1	A	1743	A
1	A	1744	G
1	A	1745	A
1	A	1752	G
1	A	1756	U
1	A	1757	G
1	A	1758	U
1	A	1759	U
1	A	1761	G
1	A	1763	G
1	A	1771	C
1	A	1774	A
1	A	1776	A
1	A	1777	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	1778	A
1	A	1779	G
1	A	1780	C
1	A	1782	G
1	A	1785	G
1	A	1786	U
1	A	1791	A
1	A	1792	G
1	A	1793	G
1	A	1796	C
1	A	1802	A
1	A	1803	C
1	A	1815	A
1	A	1816	A
1	A	1821	G
1	A	1828	G
1	A	1829	C
1	A	1830	G
1	A	1832	A
1	A	1834	C
1	A	1839	A
1	A	1841	G
1	A	1844	A
1	A	1858	A
1	A	1860	G
1	A	1861	C
1	A	1862	C
1	A	2005	C
1	A	2009	G
1	A	2010	A
1	A	2011	U
1	A	2018	A
1	A	2021	G
1	A	2022	U
1	A	2024	U
1	A	2025	C
1	A	2026	A
1	A	2031	G
1	A	2033	G
1	A	2044	A
1	A	2052	A
1	A	2059	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	2060	A
1	A	2061	G
1	A	2062	A
1	A	2064	G
1	A	2068	G
1	A	2072	C
1	A	2080	A
1	A	2084	C
1	A	2085	G
1	A	2086	G
1	A	2088	A
1	A	2089	A
1	A	2090	G
1	A	2091	A
1	A	2092	C
1	A	2093	C
1	A	2096	G
1	A	2097	U
1	A	2098	G
1	A	2099	G
1	A	2100	A
1	A	2105	U
1	A	2106	A
1	A	2109	G
1	A	2110	C
1	A	2111	A
1	A	2112	G
1	A	2113	C
1	A	2115	U
1	A	2116	G
1	A	2117	A
1	A	2118	U
1	A	2119	A
1	A	2232	G
1	A	2233	C
1	A	2240	U
1	A	2241	A
1	A	2242	U
1	A	2243	C
1	A	2246	G
1	A	2254	A
1	A	2255	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	2267	G
1	A	2268	G
1	A	2270	A
1	A	2428	G
1	A	2430	U
1	A	2431	U
1	A	2434	G
1	A	2435	C
1	A	2648	U
1	A	2649	C
1	A	2652	G
1	A	2658	A
1	A	2661	A
1	A	2675	C
1	A	2676	U
1	A	2681	U
1	A	2692	G
1	A	2694	A
1	A	2696	C
1	A	2698	G
1	A	2711	G
1	A	2713	U
1	A	2714	G
1	A	2717	G
1	A	2718	U
1	A	2720	C
1	A	2721	C
1	A	2727	U
1	A	2728	U
1	A	2730	U
1	A	2731	G
1	A	2735	A
1	A	2743	G
1	A	2744	C
1	A	2748	G
1	A	2755	U
1	A	2756	G
1	A	2762	A
1	A	2764	G
1	A	2767	A
1	A	2768	U
1	A	2773	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	2775	U
1	A	2779	A
1	A	2780	G
1	A	2781	C
1	A	2784	C
1	A	2785	U
1	A	2786	A
1	A	2787	A
1	A	2794	A
1	A	2795	G
1	A	2796	C
1	A	2797	C
1	A	2798	C
1	A	2805	A
1	A	2807	A
1	A	2808	U
1	A	2813	U
1	A	2818	C
1	A	2820	U
1	A	2823	C
1	A	2825	C
1	A	2826	A
1	A	2828	G
1	A	2838	U
1	A	2843	G
1	A	2845	A
1	A	2851	A
1	A	2858	U
1	A	2859	G
1	A	2860	A
1	A	2862	A
1	A	2871	G
1	A	2874	G
1	A	2886	C
1	A	2889	A
1	A	2892	G
1	A	2896	U
1	A	2897	G
1	A	2899	C
1	A	2906	U
1	A	2908	A
1	A	2909	U

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Mol	Chain	Res	Type
1	A	2910	C
1	A	2911	G
1	A	2918	G

All (35) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	58	G
1	A	124	A
1	A	160	G
1	A	183	A
1	A	229	A
1	A	267	C
1	A	271	C
1	A	366	A
1	A	377	G
1	A	389	A
1	A	405	U
1	A	419	G
1	A	537	A
1	A	549	A
1	A	649	G
1	A	716	G
1	A	837	U
1	A	1066	A
1	A	1245	G
1	A	1250	G
1	A	1339	A
1	A	1362	G
1	A	1438	C
1	A	1455	C
1	A	1527	C
1	A	1535	U
1	A	1595	U
1	A	1630	G
1	A	1652	C
1	A	1755	C
1	A	1779	G
1	A	1784	A
1	A	2267	G
1	A	2785	U
1	A	2812	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 monosaccharides 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.

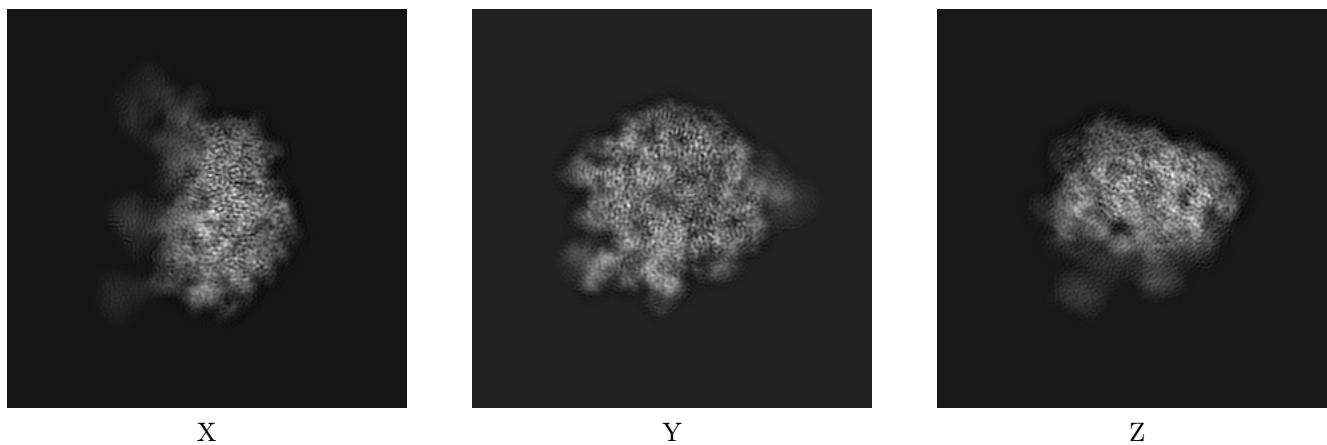
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20491. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

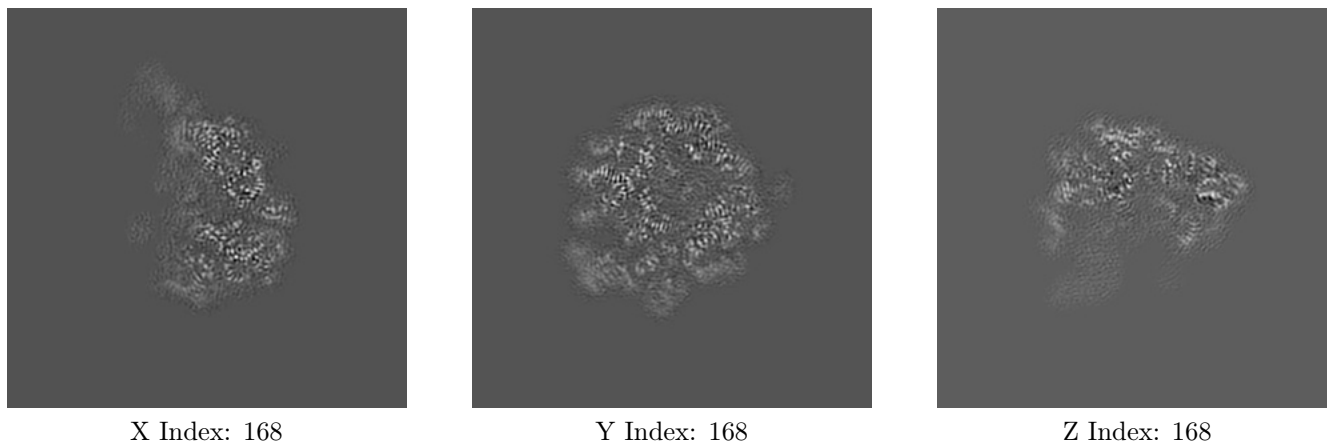
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

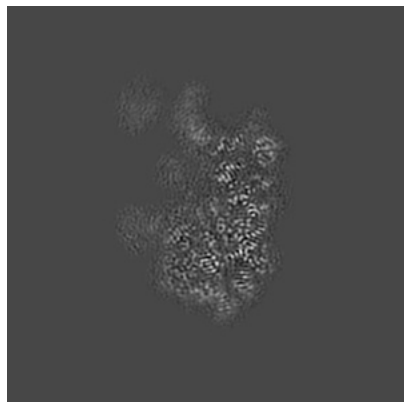
#### 6.2.1 Primary map



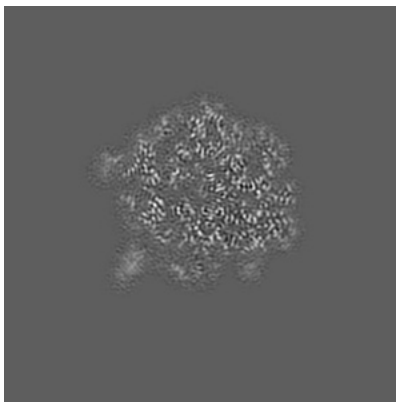
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

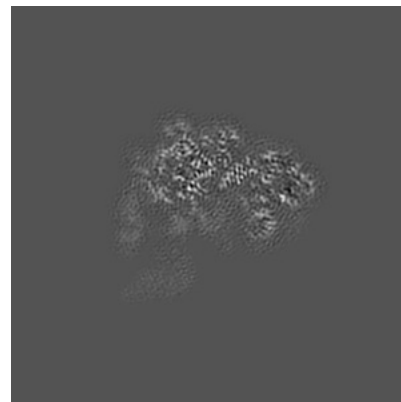
### 6.3.1 Primary map



X Index: 194



Y Index: 192

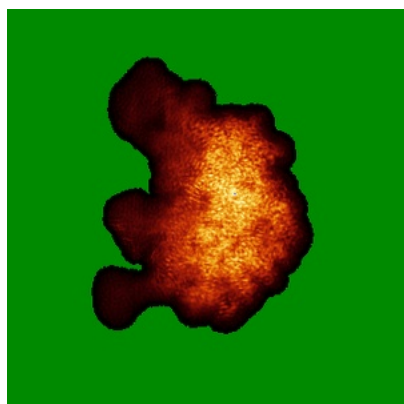


Z Index: 174

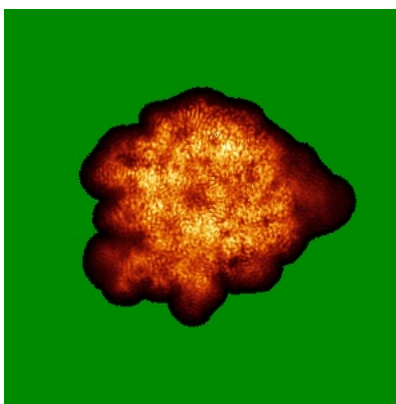
The images above show the largest variance slices of the map in three orthogonal directions.

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

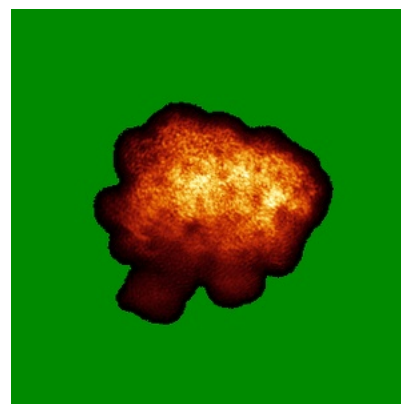
### 6.4.1 Primary map



X



Y

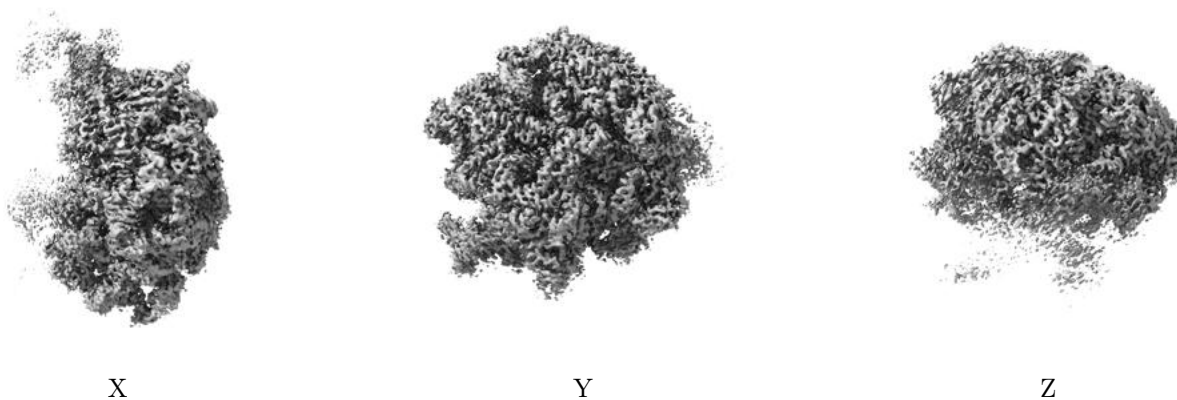


Z

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 0.076. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

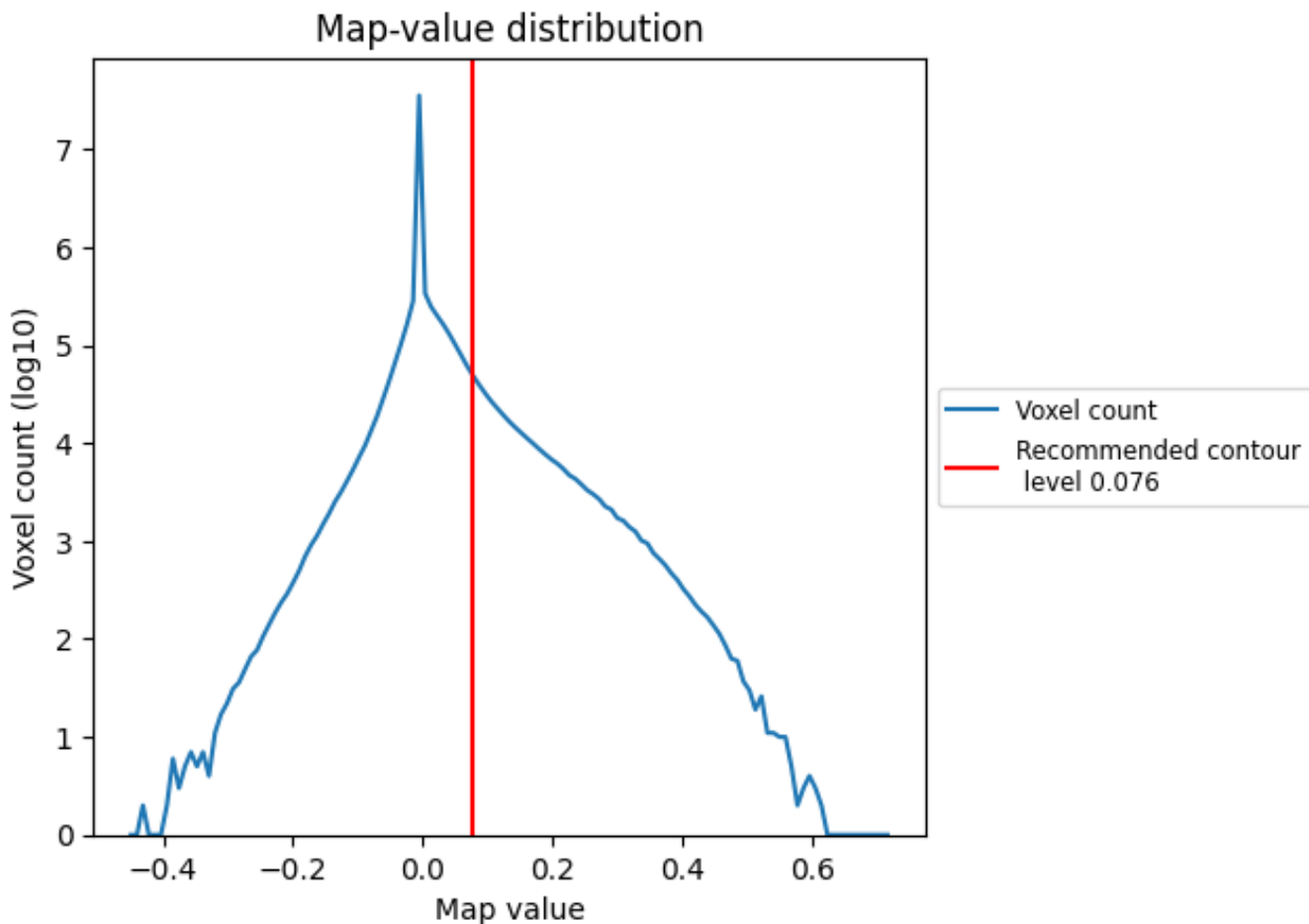
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

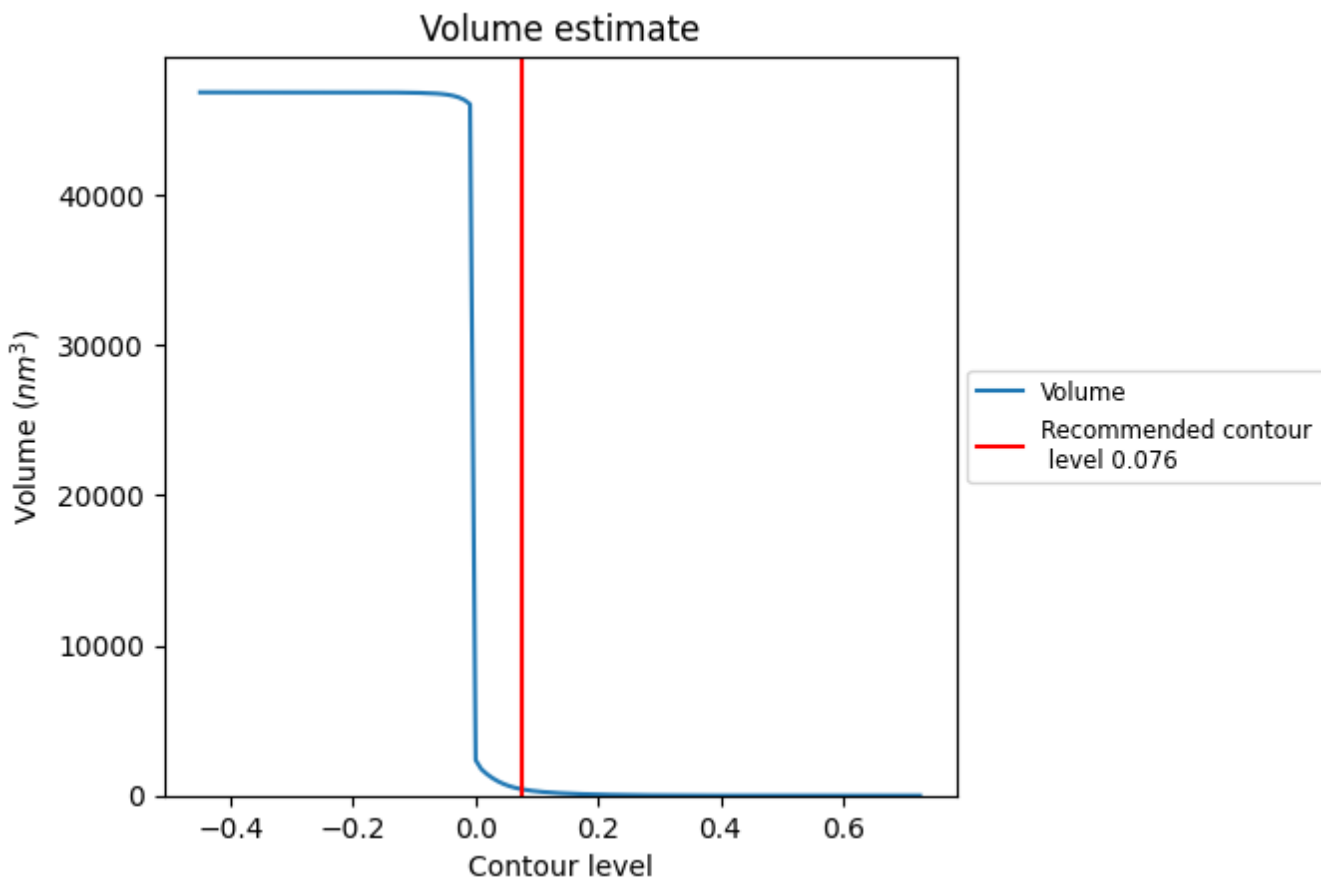
This section contains the results of statistical analysis of the map.

### 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](#)

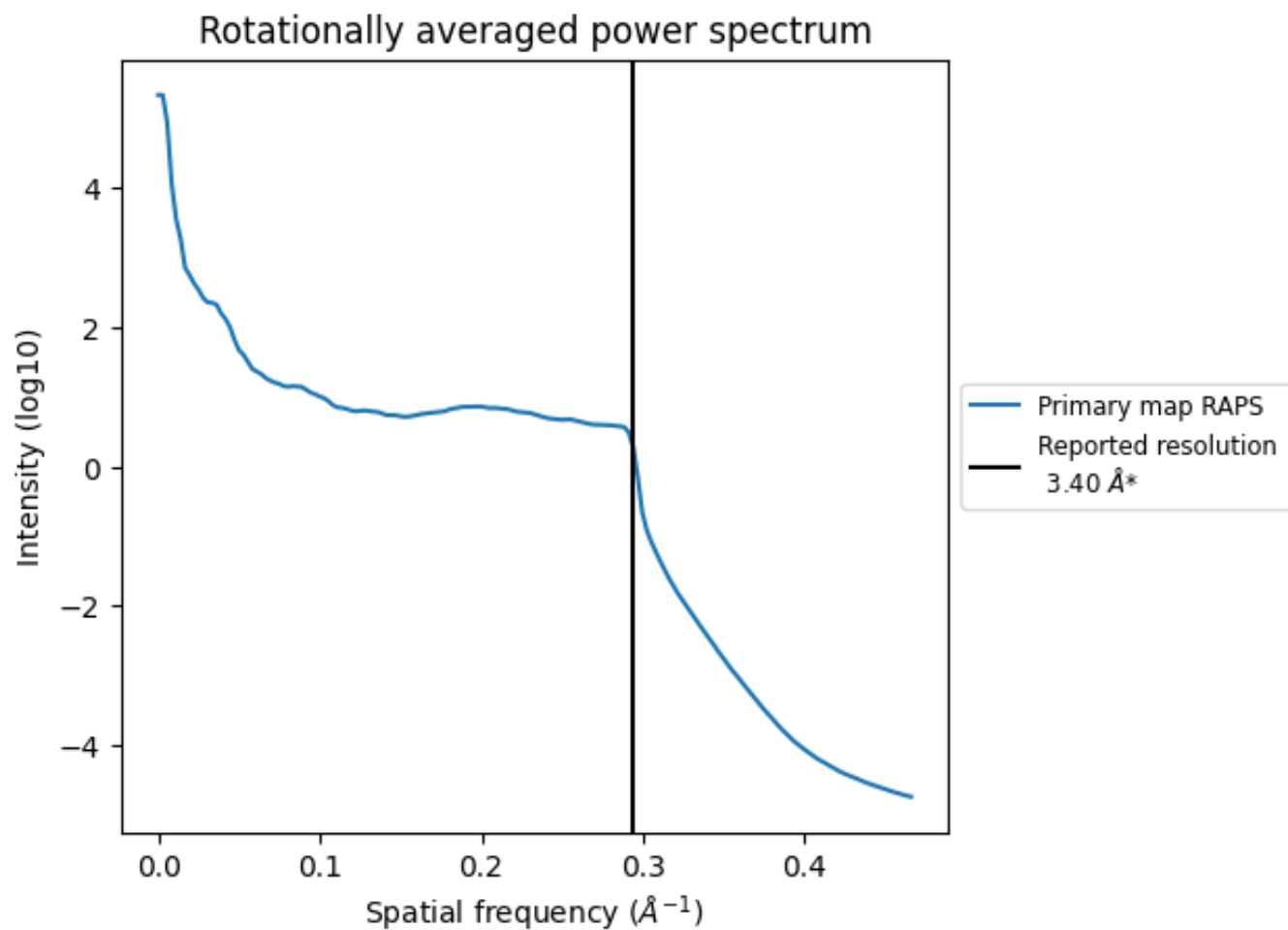


The volume at the recommended contour level is 420 nm<sup>3</sup>; this corresponds to an approximate mass of 380 kDa.

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](#)

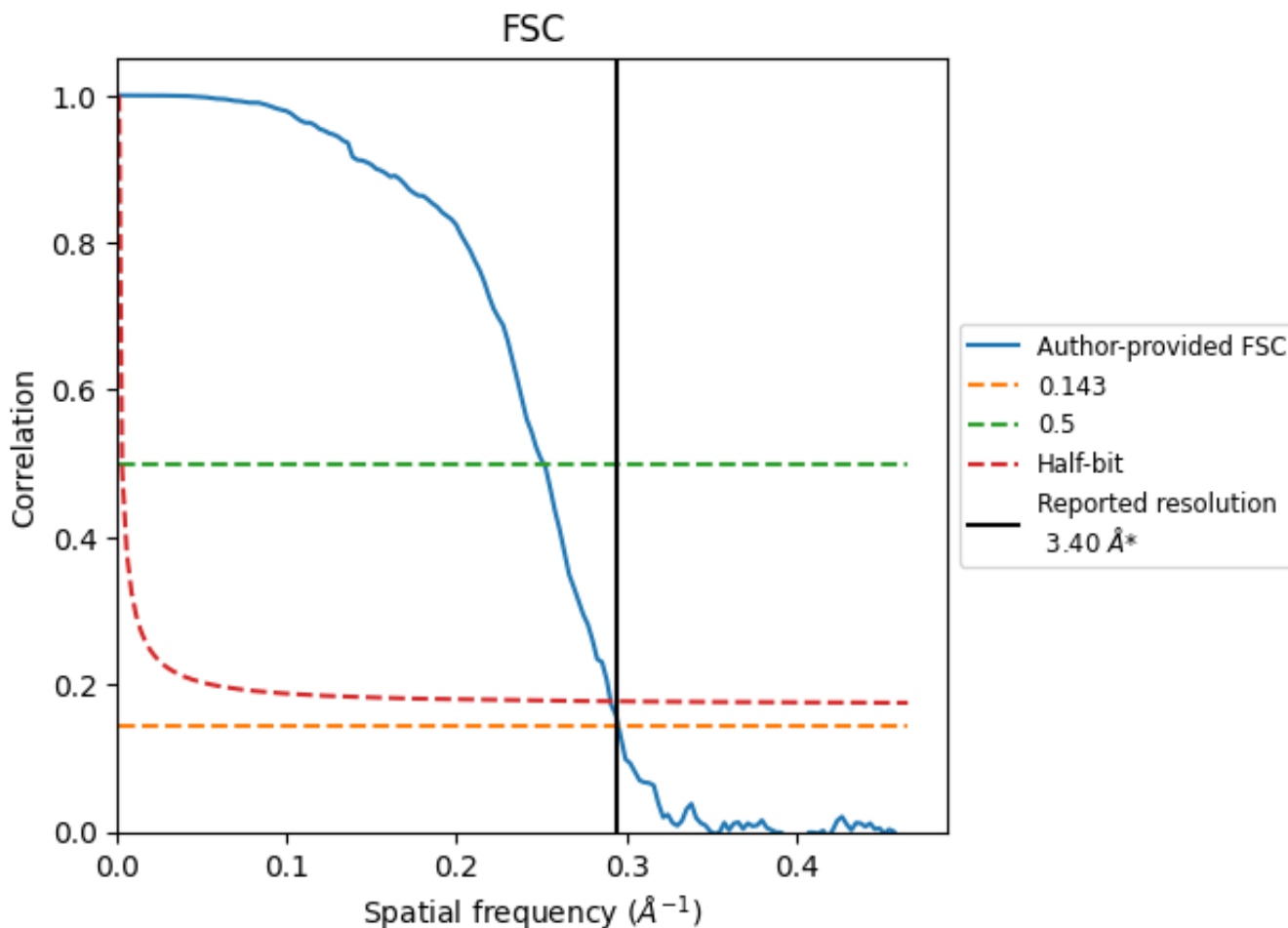


\*Reported resolution corresponds to spatial frequency of  $0.294 \text{\AA}^{-1}$

## 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 0.294 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

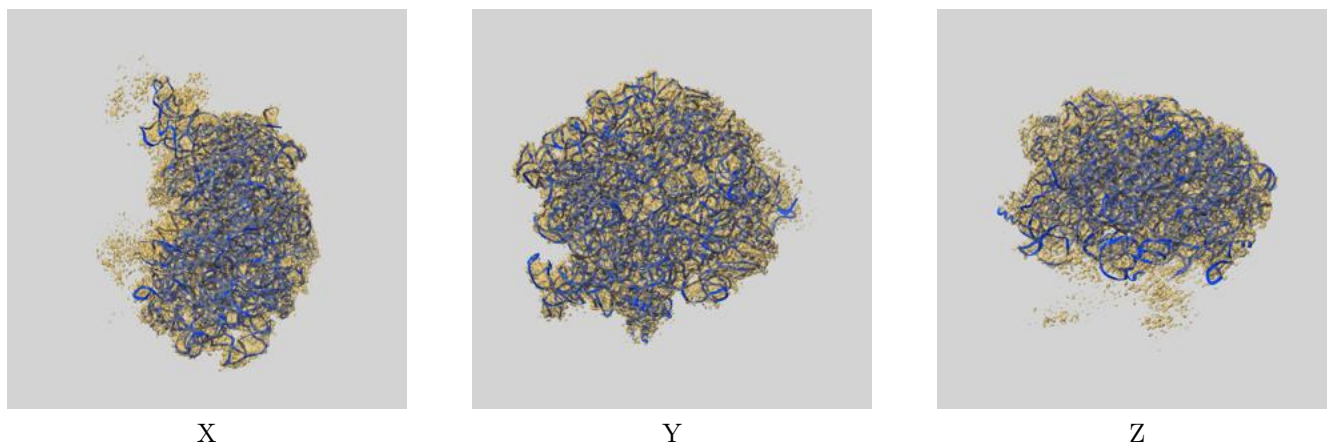
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.39	3.98	3.44
Unmasked-calculated*	-	-	-

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

## 9 Map-model fit [i](#)

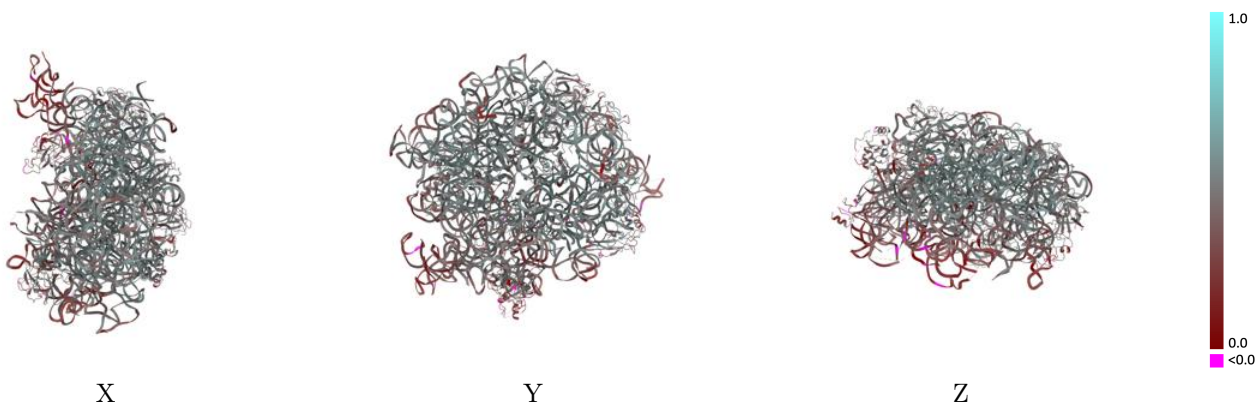
This section contains information regarding the fit between EMDB map EMD-20491 and PDB model 6PVK. Per-residue inclusion information can be found in section 3 on page 7.

### 9.1 Map-model overlay [i](#)



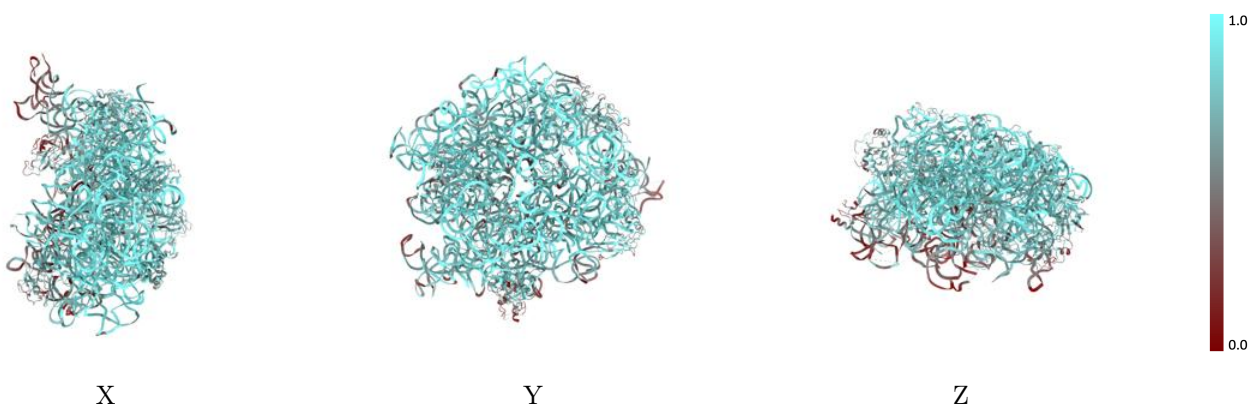
The images above show the 3D surface view of the map at the recommended contour level 0.076 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



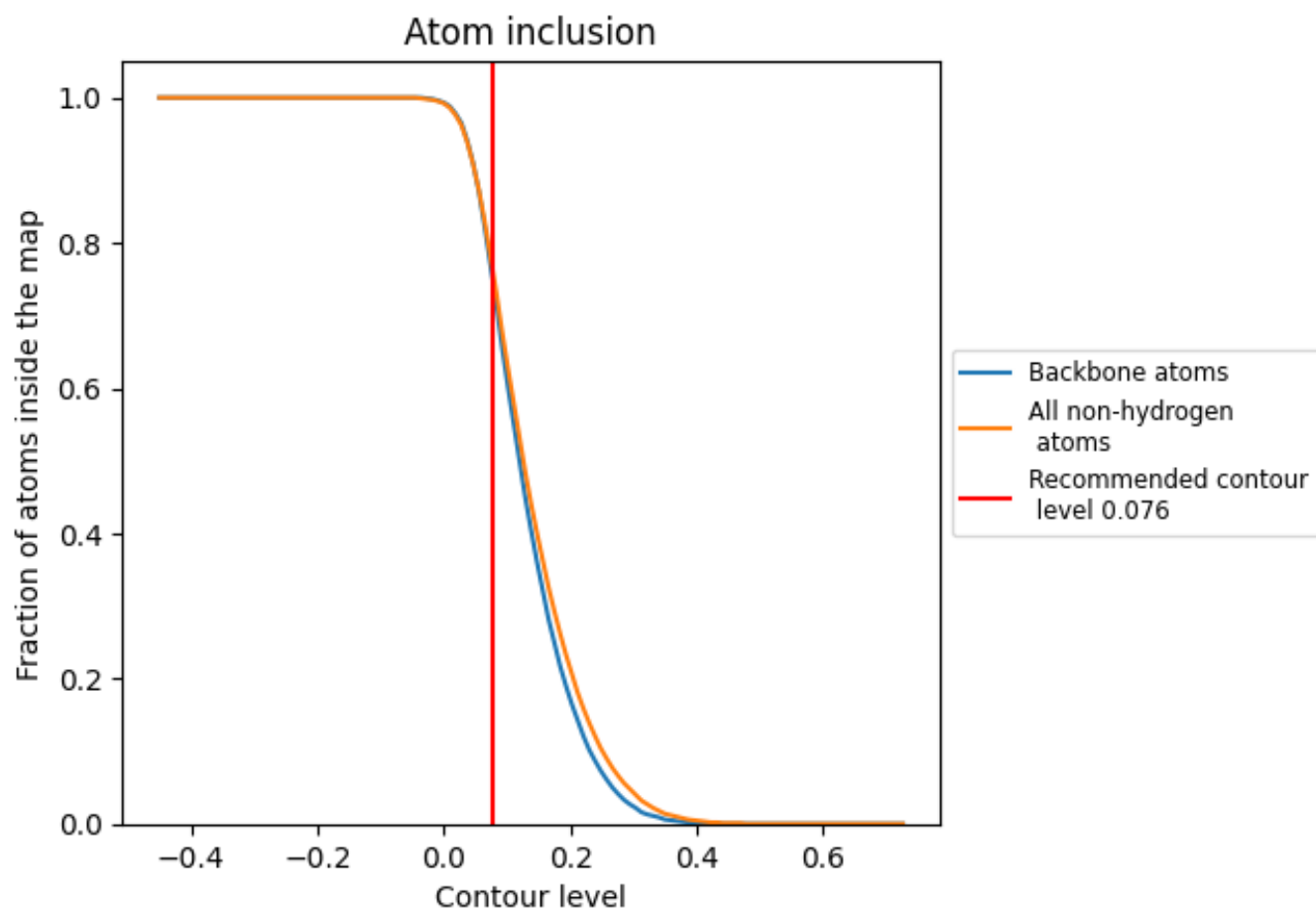
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.076).





































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 77% 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 (0.076) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7690	 0.4350
A	 0.7950	 0.4330
C	 0.6230	 0.4470
D	 0.7180	 0.4580
E	 0.6650	 0.3990
J	 0.7660	 0.4850
K	 0.5640	 0.3950
L	 0.3830	 0.2360
N	 0.8230	 0.5050
P	 0.6500	 0.4210
Q	 0.8080	 0.4940
R	 0.6980	 0.4460
S	 0.7770	 0.4980
T	 0.7420	 0.4820
U	 0.6840	 0.4220
Y	 0.6950	 0.4470
b	 0.7580	 0.4770
d	 0.8340	 0.5380

