Full wwPDB EM Validation Report

Sep 17, 2026 – 03:08 AM EDT

PDB ID	:	7UVX / pdb_00007uvx
EMDB ID	:	EMD-26819
Title	:	A. baumannii 70S ribosome-Streptothricin-F complex
Authors	:	Morgan, C.E.; Yu, E.W.
Deposited on	:	2022-05-02
Resolution	:	2.35 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

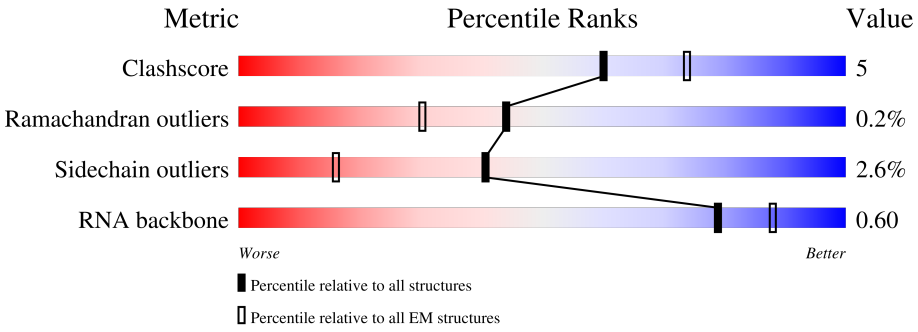
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

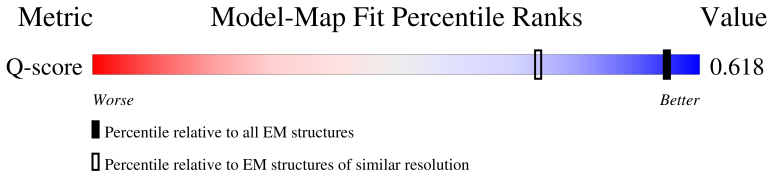
1 Overall quality at a glance

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

The reported resolution of this entry is 2.35 Å.

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





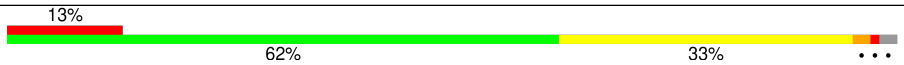
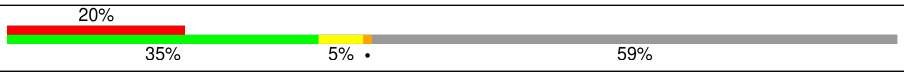
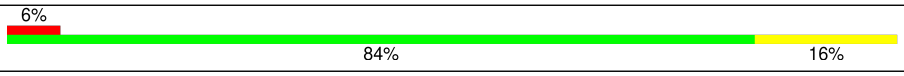
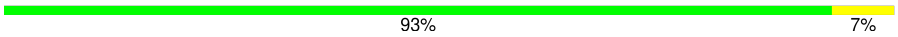
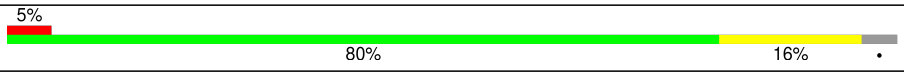
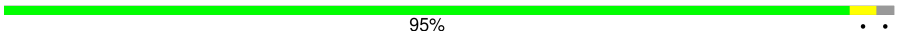
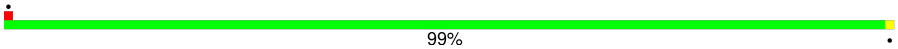
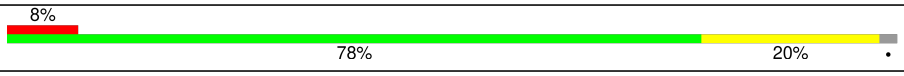
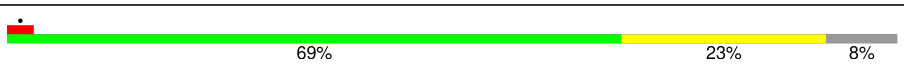
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	4607 (1.85 - 2.85)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	51	76% 24%
2	1	44	95% 5%
3	2	64	94% 5%

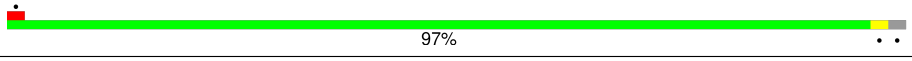
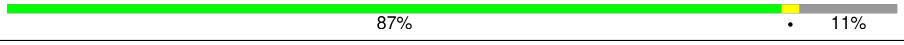
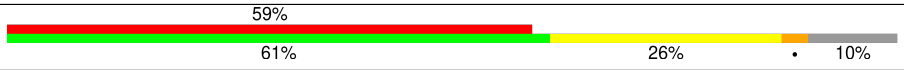
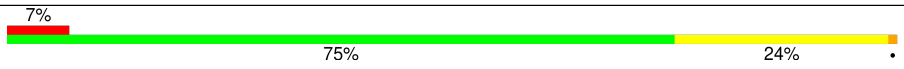
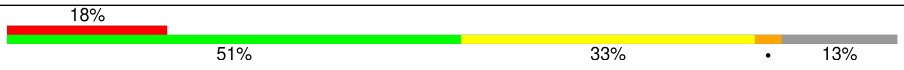
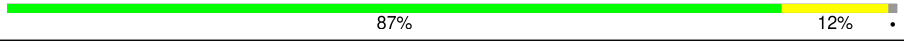
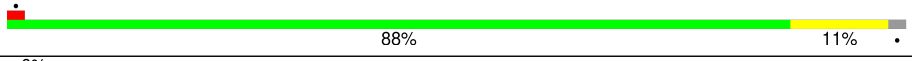
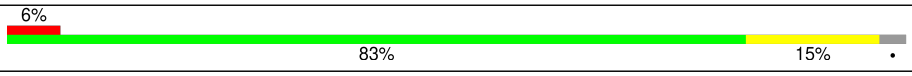
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Mol	Chain	Length	Quality of chain
4	3	38	
5	A	2918	
6	B	115	
7	C	274	
8	D	212	
9	E	200	
10	F	178	
11	G	177	
12	H	148	
13	I	142	
14	J	122	
15	K	146	
16	L	137	
17	M	125	
18	N	116	
19	O	122	
20	P	119	
21	Q	103	
22	R	109	
23	S	106	
24	T	105	
25	U	98	
26	V	85	
27	W	78	
28	X	65	

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Mol	Chain	Length	Quality of chain
29	Y	58	
30	Z	61	
31	a	1544	
32	b	250	
33	c	250	
34	d	208	
35	e	165	
36	f	127	
37	g	156	
38	h	131	
39	i	128	
40	j	103	
41	k	128	
42	l	124	
43	m	118	
44	n	101	
45	o	89	
46	p	101	
47	q	85	
48	r	75	
49	s	91	
50	t	88	
51	u	71	

2 Entry composition

There are 53 unique types of molecules in this entry. The entry contains 136470 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	51	Total	C	N	O	S	0	0
			427	274	77	73	3		

- Molecule 2 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	44	Total	C	N	O	S	0	0
			363	222	85	54	2		

- Molecule 3 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	63	Total	C	N	O	S	0	0
			509	319	110	76	4		

- Molecule 4 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	38	Total	C	N	O	S	0	0
			295	179	64	48	4		

- Molecule 5 is a RNA chain called 23s ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	A	2715	Total	C	N	O	P	0	0
			58247	25999	10665	18868	2715		

- Molecule 6 is a RNA chain called 5s ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	B	115	Total	C	N	O	P	0	0
			2450	1095	440	800	115		

- Molecule 7 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	C	271	Total	C	N	O	S	0	0
			2106	1297	436	365	8		

- Molecule 8 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	D	211	Total	C	N	O	S	0	0
			1572	972	297	300	3		

- Molecule 9 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	E	200	Total	C	N	O	S	0	0
			1516	952	281	278	5		

- Molecule 10 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	F	174	Total	C	N	O	S	0	0
			1370	871	243	248	8		

- Molecule 11 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	G	174	Total	C	N	O	S	0	0
			1318	832	236	249	1		

- Molecule 12 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	H	60	Total	C	N	O	S	0	0
			458	287	84	86	1		

- Molecule 13 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	I	142	Total	C	N	O	S	0	0
			1125	718	200	203	4		

- Molecule 14 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	J	122	Total	C	N	O	S	0	0
			946	592	180	169	5		

- Molecule 15 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	K	144	Total	C	N	O	0	0
			1071	663	213	195		

- Molecule 16 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	L	137	Total	C	N	O	S	0	0
			1087	687	210	185	5		

- Molecule 17 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	M	119	Total	C	N	O	S	0	0
			942	590	186	163	3		

- Molecule 18 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	N	115	Total	C	N	O	S	0	0
			865	532	175	157	1		

- Molecule 19 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	O	117	Total	C	N	O	0	0
			919	578	177	164		

- Molecule 20 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	P	117	Total	C	N	O	S	0	0
			934	589	197	146	2		

- Molecule 21 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Q	103	Total 807	C 506	N 155	O 143	S 3	0	0

- Molecule 22 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	R	109	Total 826	C 514	N 158	O 150	S 4	0	0

- Molecule 23 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	S	91	Total 710	C 452	N 128	O 129	S 1	0	0

- Molecule 24 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	T	103	Total 766	C 476	N 142	O 148	0	0

- Molecule 25 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	U	97	Total 760	C 477	N 143	O 139	S 1	0	0

- Molecule 26 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	V	76	Total 577	C 358	N 111	O 106	S 2	0	0

- Molecule 27 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	W	78	Total 640	C 400	N 131	O 106	S 3	0	0

- Molecule 28 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	X	60	Total	C	N	O	S	0	0
			486	302	93	90	1		

- Molecule 29 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Y	57	Total	C	N	O	S	0	0
			455	281	87	84	3		

- Molecule 30 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Z	54	Total	C	N	O	S	0	0
			447	265	100	81	1		

- Molecule 31 is a RNA chain called 16s Ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	a	1528	Total	C	N	O	P	0	0
			32782	14631	5994	10630	1527		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	1007	U	C	conflict	GB 1211343212
a	1034	C	U	conflict	GB 1211343212

- Molecule 32 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	b	225	Total	C	N	O	S	0	0
			1769	1110	328	325	6		

- Molecule 33 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	c	215	Total	C	N	O	S	0	0
			1690	1065	318	299	8		

- Molecule 34 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	d	207	Total	C	N	O	S	0	0
			1631	1017	313	299	2		

- Molecule 35 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	e	155	Total	C	N	O	S	0	0
			1129	700	217	207	5		

- Molecule 36 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	f	104	Total	C	N	O	S	0	0
			867	546	158	159	4		

- Molecule 37 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	g	136	Total	C	N	O	S	0	0
			1073	671	201	194	7		

- Molecule 38 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	h	130	Total	C	N	O	S	0	0
			985	615	177	187	6		

- Molecule 39 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	i	126	Total	C	N	O	S	0	0
			991	618	197	175	1		

- Molecule 40 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	j	100	Total	C	N	O	S	0	0
			801	500	150	148	3		

- Molecule 41 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	k	117	Total	C	N	O	S	0	0
			862	535	167	159	1		

- Molecule 42 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	l	122	Total	C	N	O	S	0	0
			945	580	193	167	5		

- Molecule 43 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	m	115	Total	C	N	O	S	0	0
			903	558	184	158	3		

- Molecule 44 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	n	100	Total	C	N	O	S	0	0
			792	493	158	137	4		

- Molecule 45 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	o	88	Total	C	N	O	S	0	0
			705	434	144	126	1		

- Molecule 46 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	p	82	Total	C	N	O	S	0	0
			644	403	128	112	1		

- Molecule 47 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	q	79	Total	C	N	O	S	0	0
			621	390	116	114	1		

- Molecule 48 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	r	52	Total	C	N	O	0	0
			426	273	74	79		

- Molecule 49 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	s	82	Total	C	N	O	S	0	0
			646	412	125	107	2		

- Molecule 50 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	t	86	Total	C	N	O	S	0	0
			663	409	139	113	2		

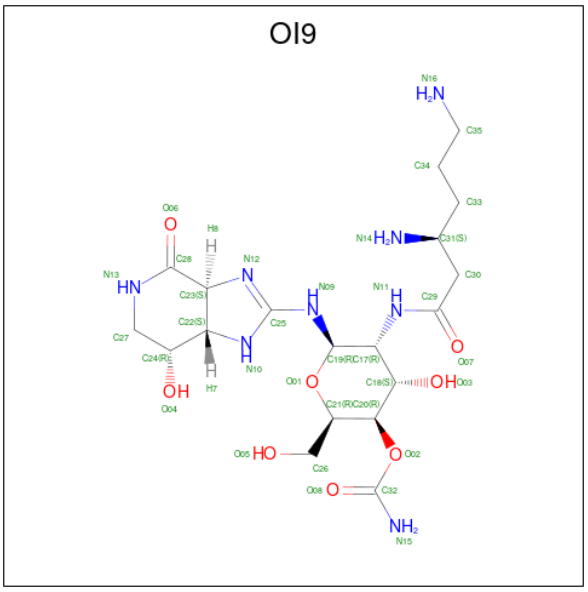
- Molecule 51 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	u	62	Total	C	N	O	S	0	0
			515	322	104	88	1		

- Molecule 52 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
52	3	1	Total	Zn	0
			1	1	

- Molecule 53 is Streptothricin F (CCD ID: OI9) (formula: $C_{19}H_{34}N_8O_8$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
53	W	1	Total	C	N	O	0
			35	19	8	8	

3 Residue-property plots (i)

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

• Molecule 1: 50S ribosomal protein L33

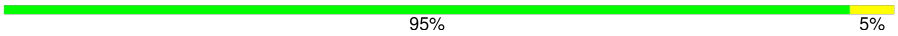
Chain 0:

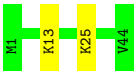




• Molecule 2: 50S ribosomal protein L34

Chain 1:

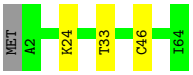




• Molecule 3: 50S ribosomal protein L35

Chain 2:

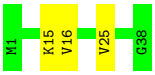




• Molecule 4: 50S ribosomal protein L36

Chain 3:



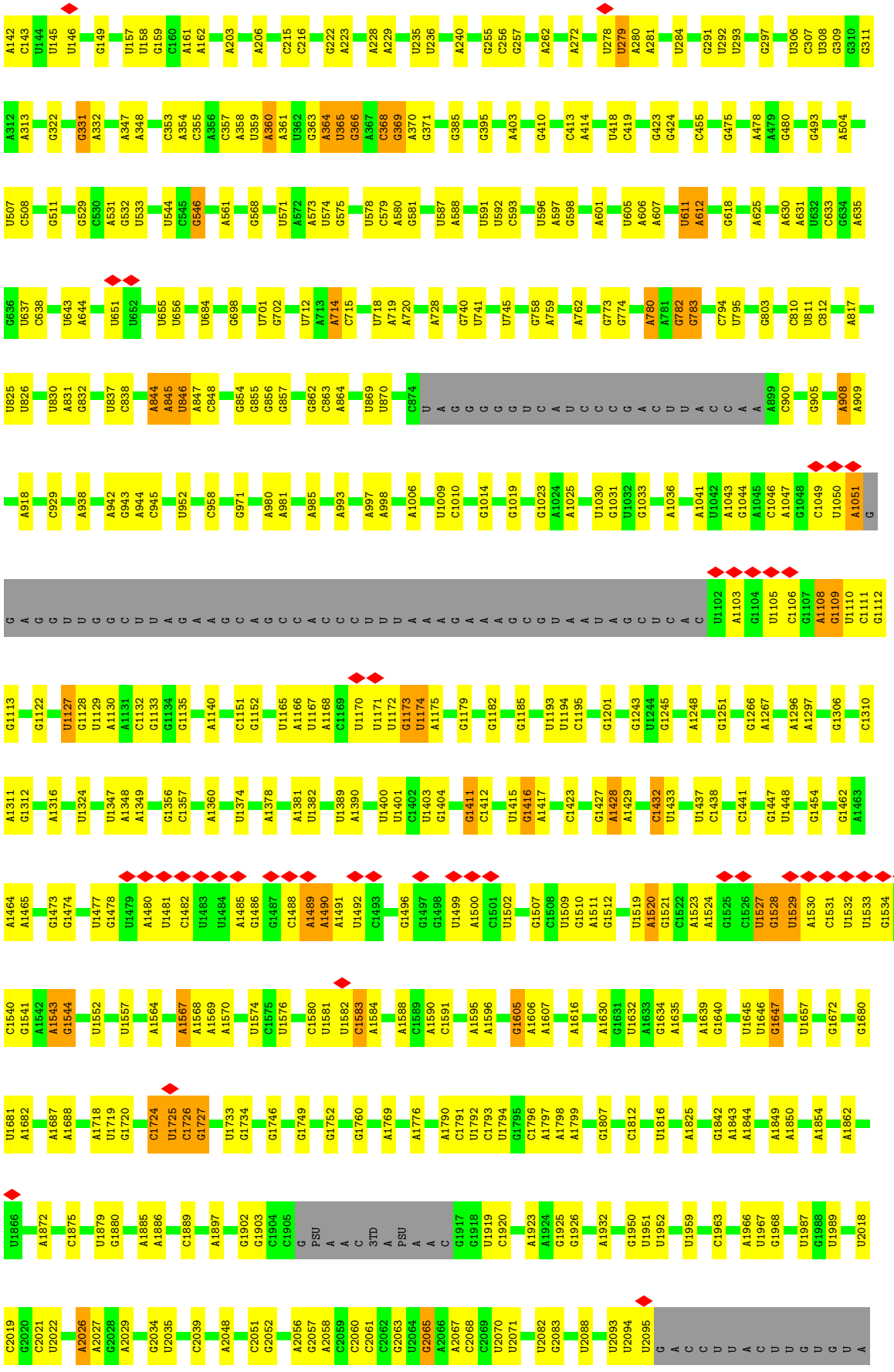


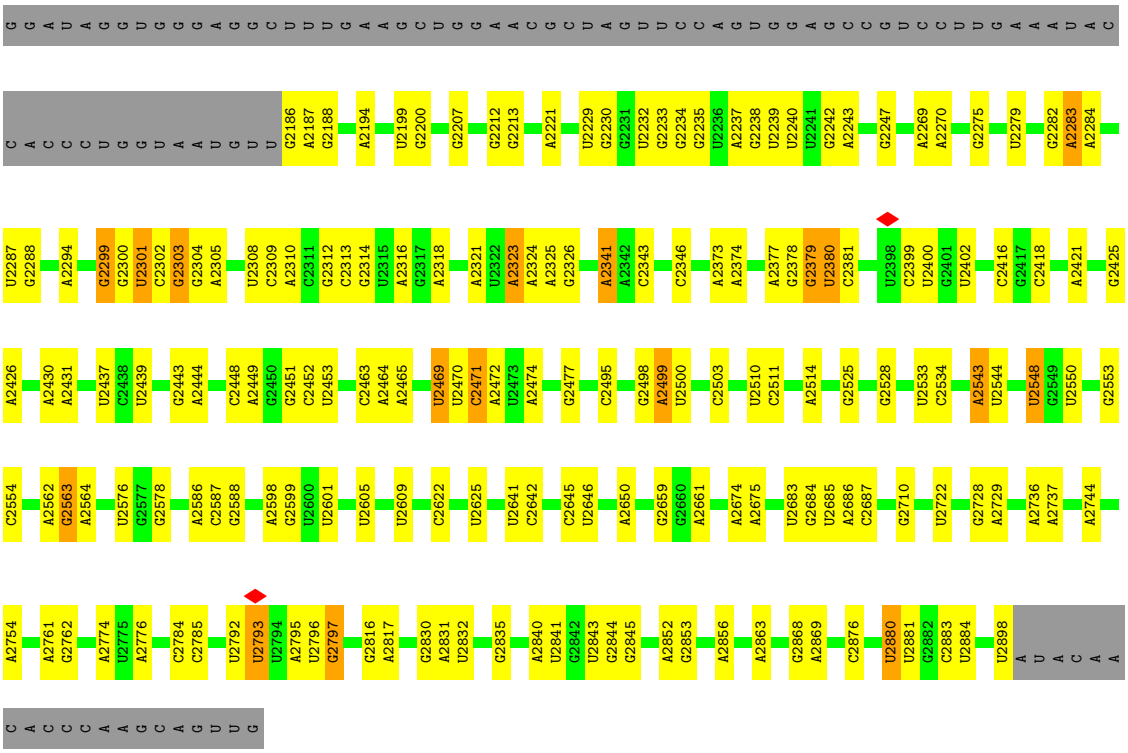
• Molecule 5: 23s ribosomal RNA

Chain A:





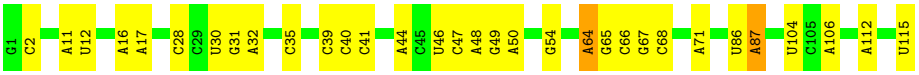




• Molecule 6: 5s ribosomal RNA

Chain B:

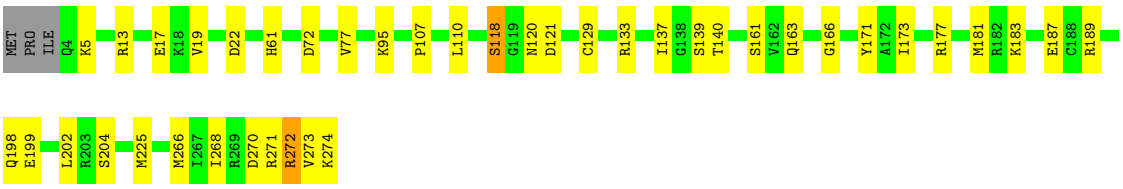




• Molecule 7: 50S ribosomal protein L2

Chain C:

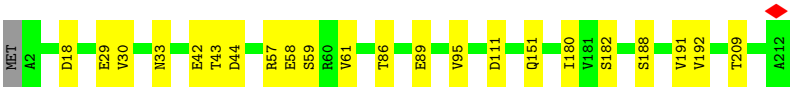




• Molecule 8: 50S ribosomal protein L3

Chain D:

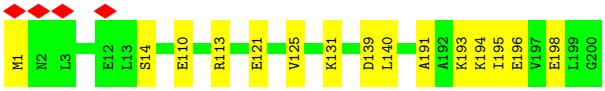




• Molecule 9: 50S ribosomal protein L4

Chain E:

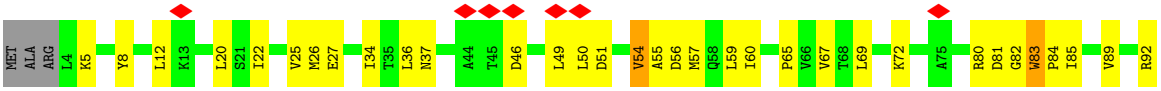


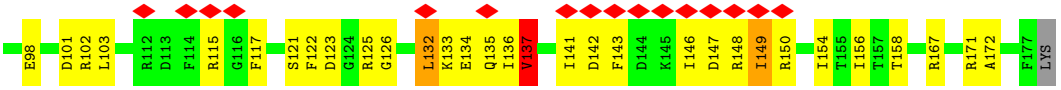


• Molecule 10: 50S ribosomal protein L5

Chain F:



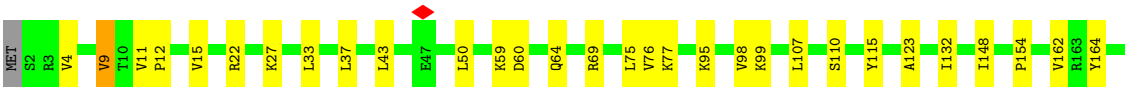


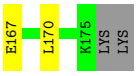


• Molecule 11: 50S ribosomal protein L6

Chain G:



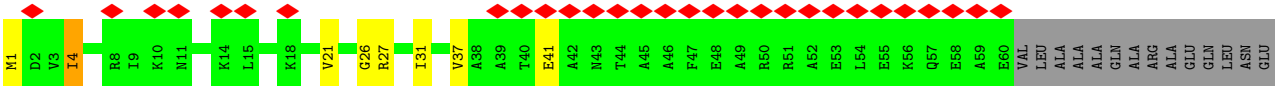




• Molecule 12: 50S ribosomal protein L9

Chain H:



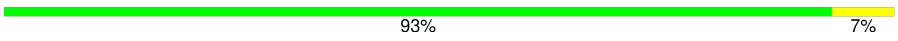






• Molecule 13: 50S ribosomal protein L13

Chain I:

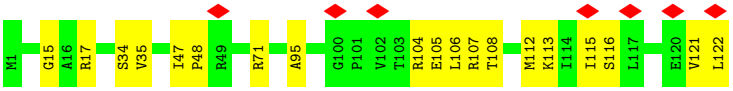




• Molecule 14: 50S ribosomal protein L14

Chain J:

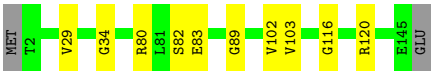




• Molecule 15: 50S ribosomal protein L15

Chain K:





• Molecule 16: 50S ribosomal protein L16

Chain L:





• Molecule 17: 50S ribosomal protein L17

Chain M:

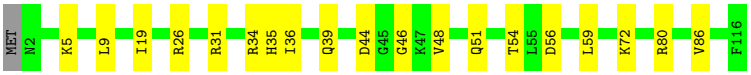




• Molecule 18: 50S ribosomal protein L18

Chain N:

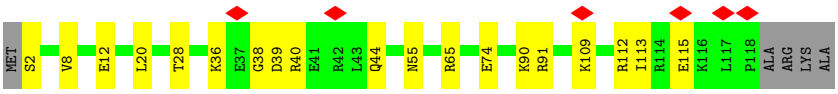




• Molecule 19: 50S ribosomal protein L19

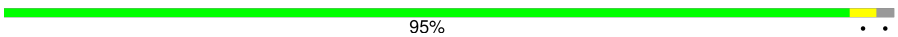
Chain O:





• Molecule 20: 50S ribosomal protein L20

Chain P:

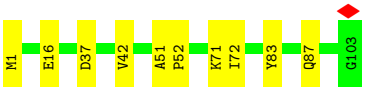




• Molecule 21: 50S ribosomal protein L21

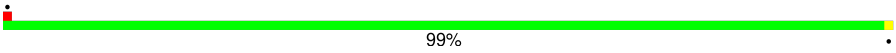
Chain Q:





• Molecule 22: 50S ribosomal protein L22

Chain R:

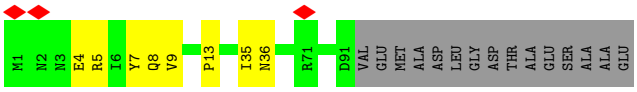




• Molecule 23: 50S ribosomal protein L23

Chain S:

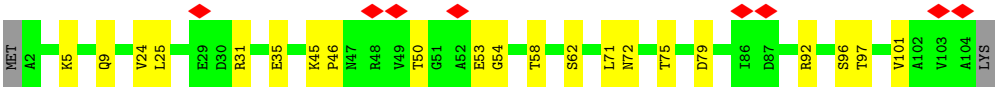




• Molecule 24: 50S ribosomal protein L24

Chain T:

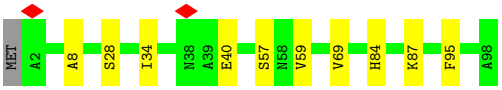




• Molecule 25: 50S ribosomal protein L25

Chain U:

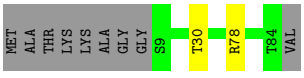




• Molecule 26: 50S ribosomal protein L27

Chain V:

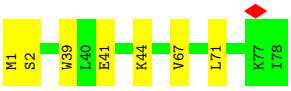




• Molecule 27: 50S ribosomal protein L28

Chain W:

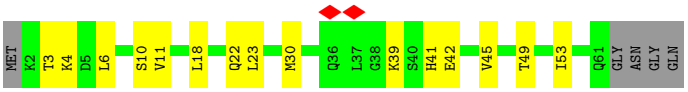




• Molecule 28: 50S ribosomal protein L29

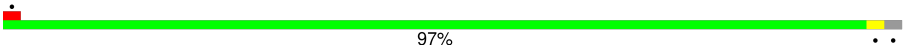
Chain X:

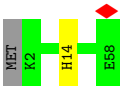




• Molecule 29: 50S ribosomal protein L30

Chain Y:

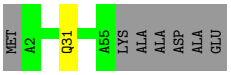




• Molecule 30: 50S ribosomal protein L32

Chain Z:

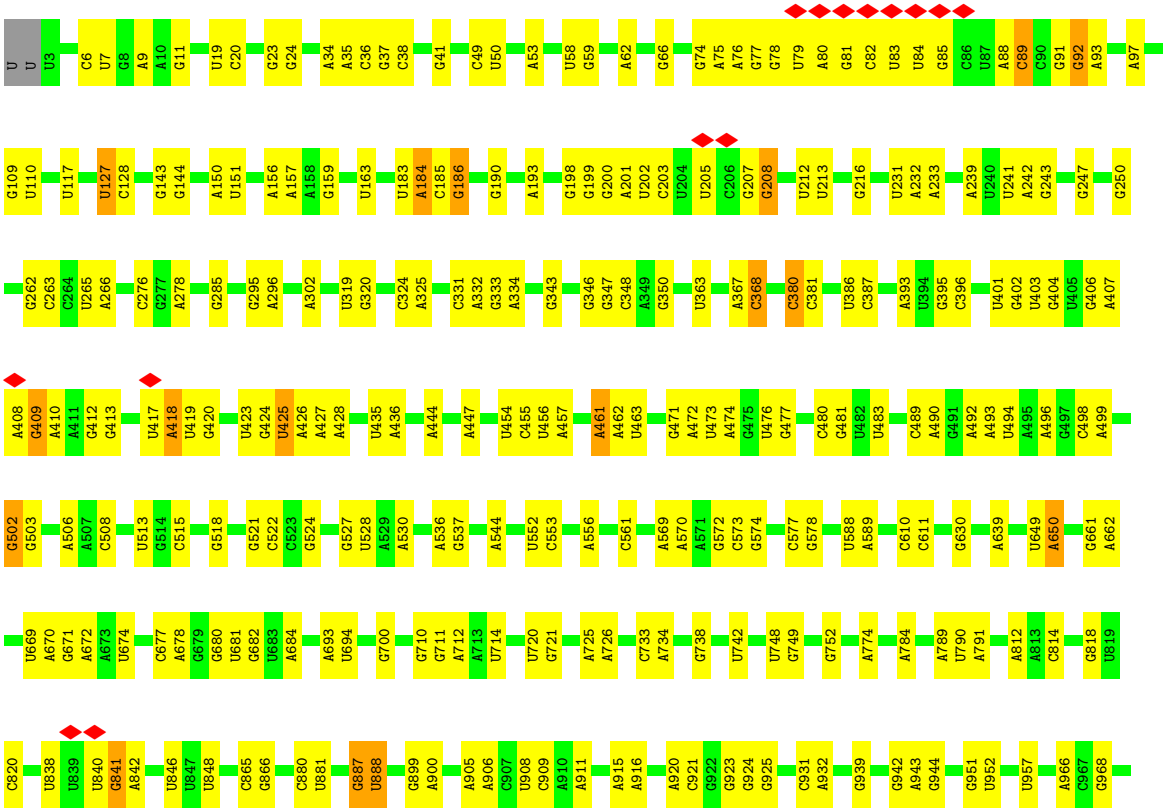


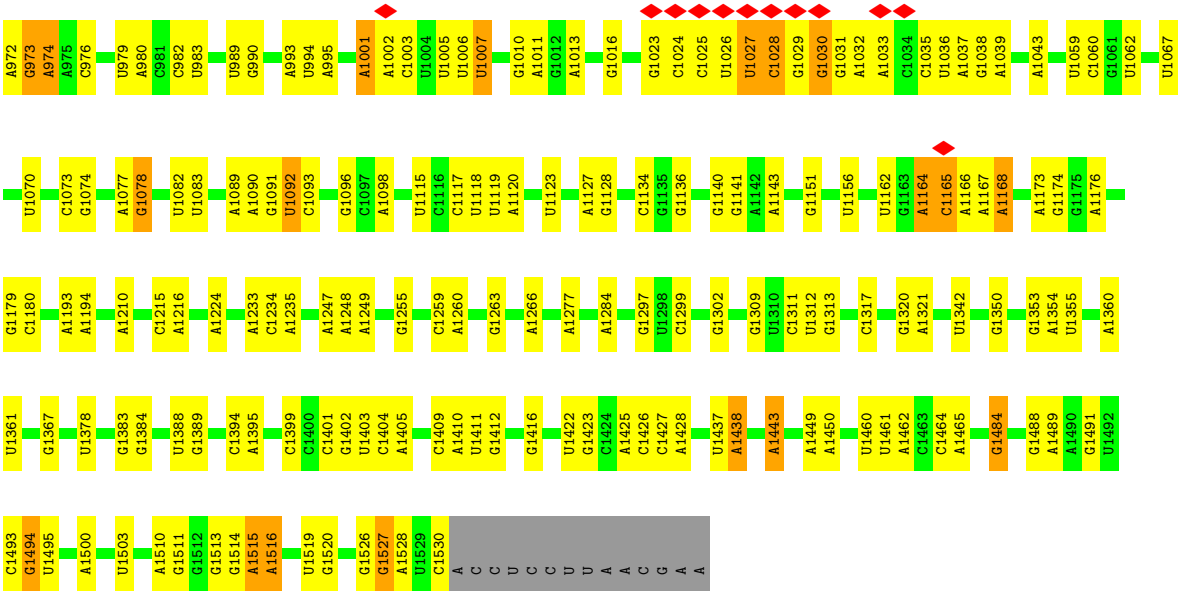


• Molecule 31: 16s Ribosomal RNA

Chain a:



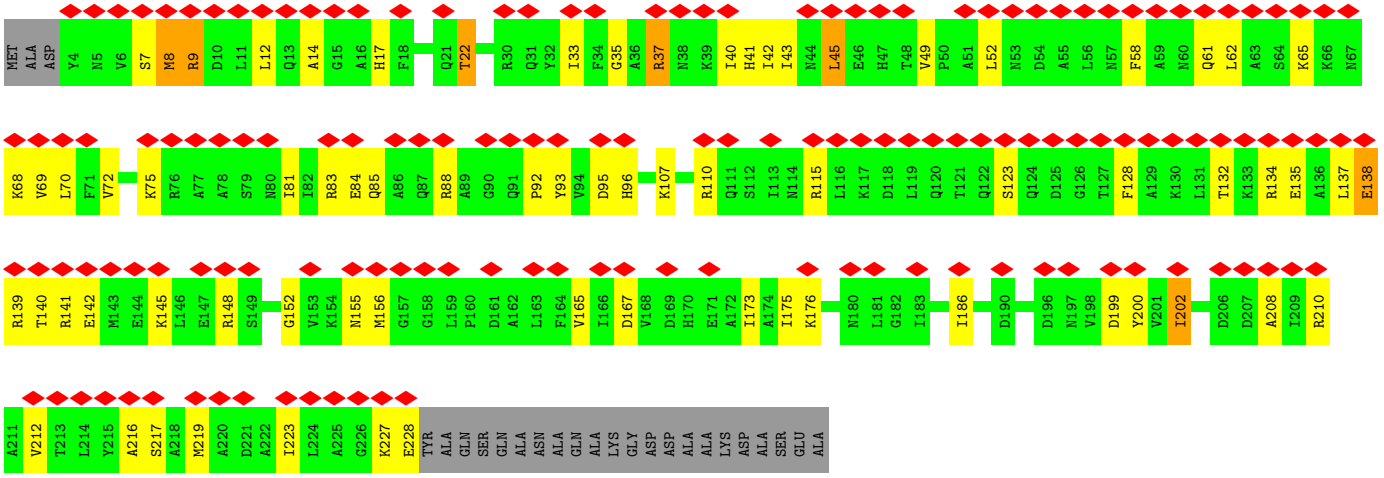




• Molecule 32: 30S ribosomal protein S2

Chain b:

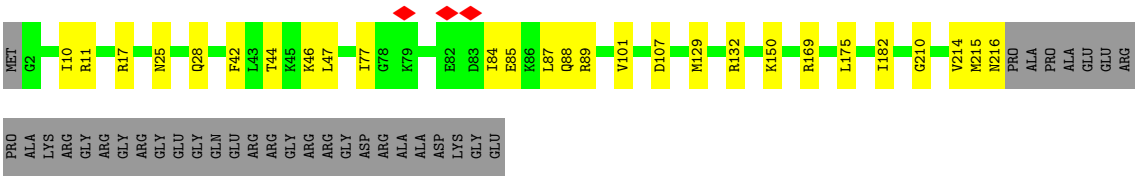




• Molecule 33: 30S ribosomal protein S3

Chain c:

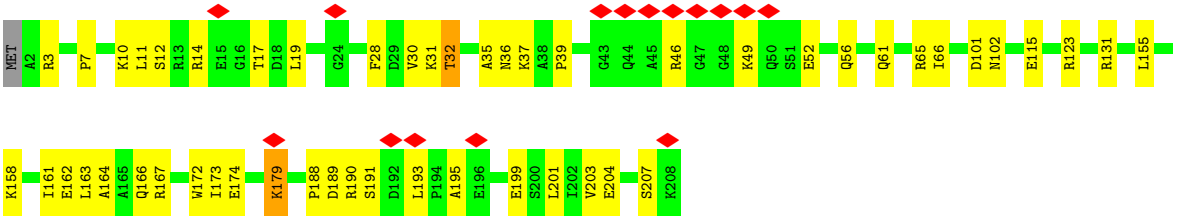




• Molecule 34: 30S ribosomal protein S4

Chain d:

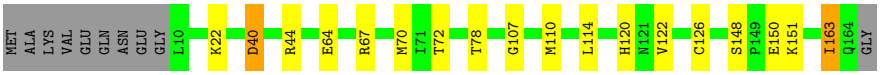




• Molecule 35: 30S ribosomal protein S5

Chain e:

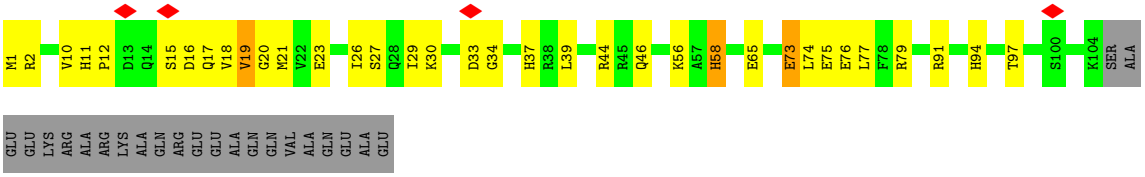




• Molecule 36: 30S ribosomal protein S6

Chain f:

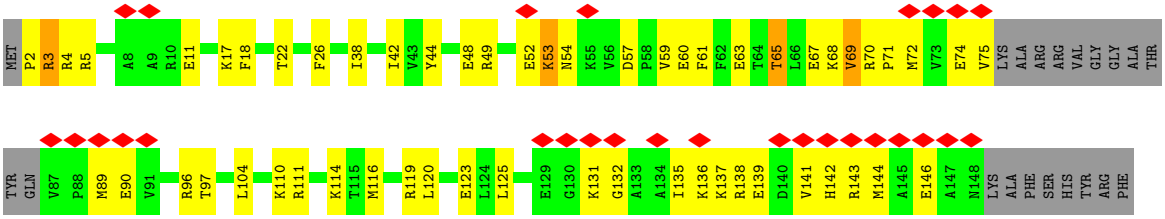




• Molecule 37: 30S ribosomal protein S7

Chain g:





• Molecule 38: 30S ribosomal protein S8

Chain h:

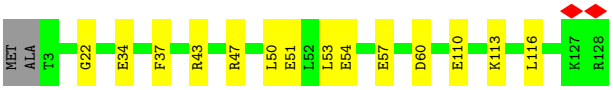




• Molecule 39: 30S ribosomal protein S9

Chain i:

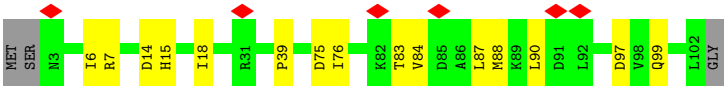




• Molecule 40: 30S ribosomal protein S10

Chain j:





• Molecule 41: 30S ribosomal protein S11

Chain k:

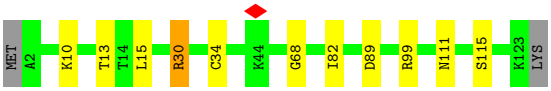




• Molecule 42: 30S ribosomal protein S12

Chain l:

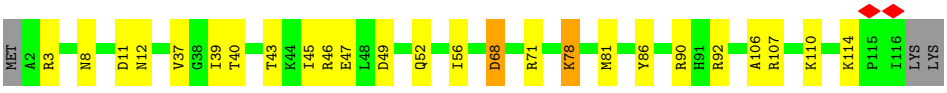




• Molecule 43: 30S ribosomal protein S13

Chain m:

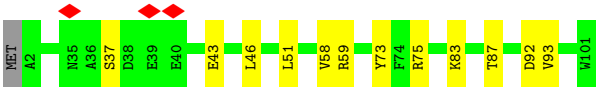




• Molecule 44: 30S ribosomal protein S14

Chain n:





• Molecule 45: 30S ribosomal protein S15

Chain o:

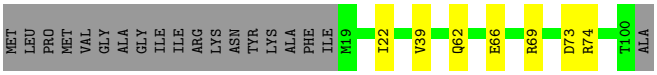




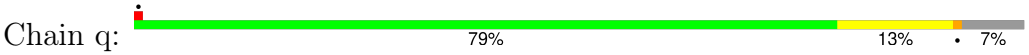
• Molecule 46: 30S ribosomal protein S16

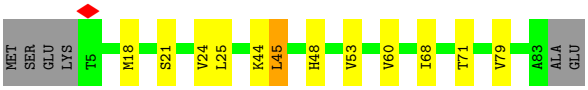
Chain p:





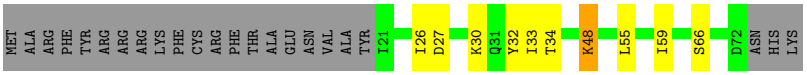
• Molecule 47: 30S ribosomal protein S17





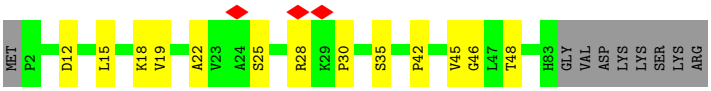
• Molecule 48: 30S ribosomal protein S18



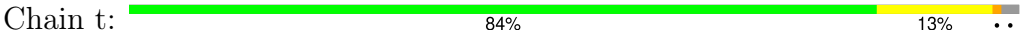


• Molecule 49: 30S ribosomal protein S19





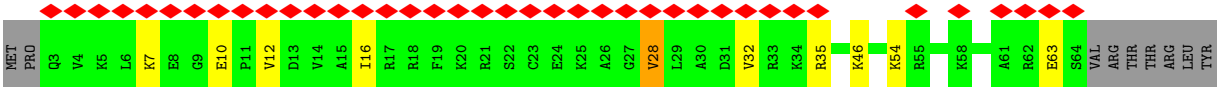
• Molecule 50: 30S ribosomal protein S20





• Molecule 51: 30S ribosomal protein S21





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	135858	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.427	Depositor
Minimum map value	0.000	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	434.176, 434.176, 434.176	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.848, 0.848, 0.848	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 6MZ, 5MU, MA6, PSU, ZN, 2MA, OMU, 7MG, UR3, 4OC, OMG, 2MG, 5MC, OI9

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	0	0.16	0/434	0.37	0/573
2	1	0.14	0/367	0.36	0/481
3	2	0.16	0/515	0.39	0/678
4	3	0.16	0/296	0.37	0/389
5	A	0.17	0/64939	0.30	1/101284 (0.0%)
6	B	0.14	0/2739	0.28	0/4266
7	C	0.18	0/2146	0.44	0/2880
8	D	0.17	0/1590	0.38	0/2142
9	E	0.16	0/1537	0.36	0/2073
10	F	0.17	0/1390	0.47	0/1863
11	G	0.16	0/1337	0.38	0/1807
12	H	0.14	0/461	0.44	0/616
13	I	0.17	0/1151	0.37	0/1551
14	J	0.20	0/956	0.47	0/1286
15	K	0.16	0/1079	0.37	0/1439
16	L	0.16	0/1104	0.38	0/1475
17	M	0.17	0/956	0.38	0/1282
18	N	0.17	0/873	0.41	0/1167
19	O	0.18	0/931	0.40	0/1249
20	P	0.19	0/947	0.36	0/1262
21	Q	0.17	0/818	0.39	0/1094
22	R	0.15	0/831	0.32	0/1113
23	S	0.15	0/716	0.36	0/957
24	T	0.15	0/770	0.40	0/1034
25	U	0.15	0/770	0.38	0/1036
26	V	0.15	0/585	0.33	0/783
27	W	0.19	0/650	0.41	0/866
28	X	0.17	0/487	0.49	0/646
29	Y	0.15	0/460	0.28	0/614
30	Z	0.16	0/453	0.36	0/604
31	a	0.15	0/36476	0.27	0/56895
32	b	0.21	0/1799	0.55	1/2429 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	c	0.15	0/1714	0.39	0/2304
34	d	0.15	0/1653	0.42	0/2213
35	e	0.15	0/1141	0.37	0/1537
36	f	0.20	0/882	0.56	0/1189
37	g	0.19	0/1087	0.50	1/1456 (0.1%)
38	h	0.15	0/993	0.34	0/1331
39	i	0.17	0/1002	0.39	0/1339
40	j	0.19	0/811	0.51	0/1096
41	k	0.15	0/878	0.39	0/1189
42	l	0.16	0/958	0.41	0/1284
43	m	0.14	0/913	0.43	0/1226
44	n	0.15	0/803	0.32	0/1071
45	o	0.16	0/715	0.35	0/958
46	p	0.16	0/655	0.38	0/879
47	q	0.15	0/628	0.38	0/847
48	r	0.15	0/432	0.38	0/583
49	s	0.17	0/664	0.36	0/897
50	t	0.18	0/669	0.30	0/892
51	u	0.11	0/520	0.29	0/686
All	All	0.16	0/147681	0.32	3/220811 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
21	Q	0	1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
32	b	9	ARG	CA-CB-CG	5.46	125.02	114.10
37	g	53	LYS	CB-CG-CD	5.31	123.51	111.30
5	A	1127	U	C2'-C3'-O3'	5.16	117.24	109.50

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
21	Q	51	ALA	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	427	0	462	10	0
2	1	363	0	401	2	0
3	2	509	0	566	2	0
4	3	295	0	326	1	0
5	A	58247	0	29291	293	0
6	B	2450	0	1241	17	0
7	C	2106	0	2170	29	0
8	D	1572	0	1610	13	0
9	E	1516	0	1569	8	0
10	F	1370	0	1420	45	0
11	G	1318	0	1373	19	0
12	H	458	0	480	5	0
13	I	1125	0	1148	6	0
14	J	946	0	1007	15	0
15	K	1071	0	1141	5	0
16	L	1087	0	1162	6	0
17	M	942	0	987	5	0
18	N	865	0	905	9	0
19	O	919	0	973	18	0
20	P	934	0	997	4	0
21	Q	807	0	842	5	0
22	R	826	0	894	0	0
23	S	710	0	768	6	0
24	T	766	0	816	10	0
25	U	760	0	783	5	0
26	V	577	0	580	1	0
27	W	640	0	679	4	0
28	X	486	0	528	10	0
29	Y	455	0	476	2	0
30	Z	447	0	435	1	0
31	a	32782	0	16508	211	0
32	b	1769	0	1787	55	0
33	c	1690	0	1774	17	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
34	d	1631	0	1691	36	0
35	e	1129	0	1174	12	0
36	f	867	0	868	25	0
37	g	1073	0	1118	44	0
38	h	985	0	1047	9	0
39	i	991	0	1048	11	0
40	j	801	0	832	14	0
41	k	862	0	877	14	0
42	l	945	0	998	4	0
43	m	903	0	962	16	0
44	n	792	0	833	7	0
45	o	705	0	712	9	0
46	p	644	0	655	5	0
47	q	621	0	665	6	0
48	r	426	0	447	7	0
49	s	646	0	663	8	0
50	t	663	0	715	7	0
51	u	515	0	557	9	0
52	3	1	0	0	0	0
53	W	35	0	0	0	0
All	All	136470	0	91961	1016	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (1016) 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)
31:a:75:A:N6	31:a:92:G:H1	1.57	1.03
5:A:2093:U:H3	5:A:2188:G:H1	1.03	0.98
31:a:74:G:H1	31:a:93:A:H61	1.05	0.97
5:A:2300:G:H22	5:A:2308:U:H3	1.13	0.96
5:A:2840:A:HO2'	19:O:2:SER:N	1.72	0.87
5:A:1036:A:H61	5:A:1113:G:H1	1.20	0.86
14:J:47:ILE:HD12	14:J:48:PRO:HD2	1.58	0.86
31:a:74:G:H1	31:a:93:A:N6	1.76	0.83
11:G:43:LEU:HD11	11:G:50:LEU:HD22	1.61	0.83
43:m:11:ASP:HA	43:m:45:ILE:HD11	1.61	0.80
11:G:22:ARG:HH21	11:G:37:LEU:HD23	1.48	0.78
5:A:1903:G:H1	5:A:1919:U:H3	1.28	0.77
14:J:122:LEU:HA	19:O:44:GLN:HE22	1.49	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:F:83:TRP:CD1	10:F:84:PRO:HD2	2.20	0.77
36:f:46:GLN:OE1	36:f:56:LYS:NZ	2.18	0.77
5:A:2095:U:H3	5:A:2186:G:H1	1.31	0.77
5:A:2093:U:O2	5:A:2188:G:N2	2.17	0.76
16:L:57:ARG:NH1	16:L:116:GLU:OE2	2.20	0.75
24:T:25:LEU:HD21	24:T:35:GLU:HG3	1.67	0.75
31:a:1007:U:H3	31:a:1016:G:H1	1.36	0.74
34:d:35:ALA:O	34:d:36:ASN:ND2	2.21	0.74
31:a:75:A:H61	31:a:92:G:H1	0.80	0.73
5:A:322:G:N7	9:E:131:LYS:NZ	2.37	0.73
7:C:199:GLU:N	7:C:199:GLU:OE1	2.22	0.72
31:a:1162:U:H3	31:a:1168:A:H61	1.38	0.72
19:O:39:ASP:H	19:O:40:ARG:NH1	1.87	0.72
3:2:24:LYS:NZ	3:2:46:CYS:SG	2.62	0.72
38:h:114:ASP:OD2	38:h:118:ARG:NH2	2.22	0.72
14:J:104:ARG:NH1	14:J:122:LEU:OXT	2.23	0.71
7:C:17:GLU:HB2	7:C:204:SER:H	1.56	0.71
31:a:489:C:H2'	31:a:490:A:C8	2.24	0.71
31:a:841:G:H1'	31:a:842:A:C8	2.25	0.71
32:b:186:ILE:HG22	32:b:200:TYR:HB2	1.72	0.71
5:A:52:G:H5"	5:A:53:G:H5'	1.73	0.70
10:F:20:LEU:HB2	10:F:22:ILE:HD11	1.73	0.70
31:a:1036:U:H2'	31:a:1037:A:H8	1.57	0.69
9:E:110:GLU:OE1	9:E:113:ARG:NH1	2.25	0.69
34:d:61:GLN:OE1	34:d:65:ARG:NH1	2.24	0.69
46:p:73:ASP:OD1	46:p:74:ARG:N	2.26	0.69
10:F:8:TYR:HA	10:F:12:LEU:HD23	1.73	0.69
5:A:1794:U:OP2	7:C:271:ARG:NH2	2.26	0.69
33:c:85:GLU:OE1	33:c:89:ARG:NH1	2.26	0.68
5:A:1521:G:H1	5:A:1544:G:H22	1.40	0.68
28:X:45:VAL:O	28:X:49:THR:HG23	1.93	0.68
5:A:1036:A:N6	5:A:1113:G:H1	1.91	0.68
10:F:26:MET:HE3	10:F:26:MET:HA	1.75	0.68
5:A:1749:G:N2	5:A:1752:G:OP2	2.25	0.68
37:g:90:GLU:OE2	37:g:96:ARG:NH2	2.27	0.68
19:O:39:ASP:OD1	19:O:40:ARG:NH1	2.26	0.67
28:X:39:LYS:NZ	28:X:42:GLU:OE1	2.26	0.67
31:a:714:U:H4'	41:k:118:ASN:HD22	1.58	0.67
11:G:11:VAL:HG13	11:G:15:VAL:HG13	1.75	0.67
5:A:1044:G:O2'	5:A:1108:A:N6	2.25	0.67
41:k:83:VAL:HB	41:k:109:ILE:HG22	1.77	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:O:36:LYS:HZ1	19:O:38:GLY:C	2.03	0.66
10:F:101:ASP:OD1	10:F:102:ARG:N	2.29	0.66
19:O:112:ARG:NH1	31:a:1460:U:OP1	2.29	0.66
35:e:64:GLU:OE1	35:e:67:ARG:NH2	2.29	0.66
37:g:138:ARG:O	37:g:142:HIS:ND1	2.26	0.66
32:b:58:PHE:O	32:b:62:LEU:HD23	1.96	0.66
31:a:409:G:N2	31:a:425:U:OP2	2.18	0.65
5:A:2308:U:H5'	10:F:85:ILE:HD11	1.79	0.65
10:F:136:ILE:HG13	10:F:137:VAL:HG13	1.79	0.65
8:D:86:THR:HG22	8:D:89:GLU:HG3	1.79	0.65
19:O:91:ARG:NH2	19:O:113:ILE:O	2.30	0.64
32:b:138:GLU:O	32:b:141:ARG:N	2.29	0.64
5:A:1583:C:H3'	5:A:1584:A:H8	1.62	0.64
14:J:107:ARG:CZ	14:J:115:ILE:HG13	2.27	0.64
5:A:2465:A:N6	5:A:2477:G:O2'	2.30	0.63
31:a:207:G:O2'	31:a:208:G:O4'	2.16	0.63
36:f:19:VAL:O	36:f:23:GLU:HG3	1.99	0.63
11:G:9:VAL:HG22	11:G:50:LEU:HB2	1.81	0.63
40:j:88:MET:HE2	40:j:88:MET:H	1.63	0.63
18:N:19:ILE:HG21	18:N:26:ARG:HG3	1.80	0.63
34:d:52:GLU:O	34:d:56:GLN:HG3	1.98	0.63
34:d:174:GLU:OE1	34:d:174:GLU:N	2.32	0.63
37:g:70:ARG:NH1	37:g:97:THR:OG1	2.32	0.63
5:A:2294:A:H61	5:A:2314:G:H1	1.47	0.63
36:f:15:SER:OG	36:f:44:ARG:NH1	2.23	0.63
35:e:148:SER:OG	35:e:150:GLU:OE1	2.17	0.63
35:e:148:SER:HB3	35:e:151:LYS:HZ3	1.63	0.62
5:A:2324:A:H2'	5:A:2325:A:C8	2.35	0.62
15:K:89:GLY:O	15:K:120:ARG:NH2	2.33	0.62
32:b:37:ARG:H	32:b:42:ILE:HD13	1.64	0.62
10:F:135:GLN:HE21	10:F:146:ILE:HD12	1.65	0.62
31:a:424:G:H5"	34:d:10:LYS:HD2	1.82	0.62
31:a:471:G:H2'	31:a:472:A:C8	2.34	0.62
36:f:75:GLU:OE1	36:f:79:ARG:NH2	2.33	0.62
28:X:41:HIS:O	28:X:45:VAL:HG13	2.00	0.62
37:g:138:ARG:HE	37:g:142:HIS:HE1	1.48	0.62
10:F:55:ALA:O	10:F:59:LEU:HD22	1.99	0.62
31:a:1089:A:OP2	37:g:4:ARG:NH1	2.32	0.62
5:A:2287:U:H2'	5:A:2288:G:C8	2.35	0.62
12:H:41:GLU:OE1	12:H:41:GLU:N	2.33	0.62
35:e:150:GLU:OE1	35:e:150:GLU:N	2.23	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:198:G:H21	31:a:462:A:H61	1.48	0.61
5:A:2095:U:O2	5:A:2186:G:N2	2.30	0.61
5:A:1726:C:H4'	5:A:1727:G:H5'	1.81	0.61
46:p:66:GLU:OE2	46:p:69:ARG:NH2	2.21	0.61
5:A:533:U:O2'	20:P:49:ASP:OD2	2.14	0.61
10:F:57:MET:HB2	10:F:65:PRO:HG3	1.81	0.61
25:U:28:SER:O	25:U:28:SER:OG	2.19	0.61
33:c:77:ILE:HD13	33:c:84:ILE:HG21	1.83	0.61
1:0:6:ARG:NH1	1:0:49:LYS:O	2.33	0.60
31:a:423:U:OP2	31:a:424:G:O2'	2.17	0.60
5:A:1174:U:O4	5:A:1175:A:N6	2.34	0.60
31:a:403:U:O2'	34:d:115:GLU:OE1	2.19	0.60
31:a:670:A:H2'	31:a:671:G:C8	2.36	0.60
32:b:85:GLN:NE2	32:b:217:SER:OG	2.34	0.60
14:J:122:LEU:HA	19:O:44:GLN:NE2	2.17	0.60
5:A:854:G:H2'	5:A:855:G:C8	2.37	0.60
31:a:74:G:N2	31:a:93:A:N1	2.42	0.60
31:a:710:G:H2'	31:a:711:G:C8	2.36	0.60
31:a:820:C:HO2'	38:h:2:SER:N	1.99	0.60
31:a:143:G:H2'	31:a:144:G:C8	2.36	0.60
5:A:1792:U:H2'	5:A:1793:C:C6	2.36	0.60
47:q:18:MET:HE3	47:q:21:SER:HB2	1.82	0.60
31:a:650:A:OP1	38:h:57:LYS:NZ	2.31	0.60
39:i:34:GLU:CD	39:i:34:GLU:H	2.09	0.60
9:E:139:ASP:OD1	9:E:140:LEU:N	2.35	0.59
5:A:368:C:H4'	5:A:369:G:O5'	2.01	0.59
41:k:16:SER:HB3	41:k:79:LYS:HE3	1.85	0.59
7:C:133:ARG:NH1	7:C:187:GLU:OE1	2.35	0.59
5:A:714:A:OP1	45:o:88:ARG:NH2	2.36	0.59
6:B:47:C:H2'	6:B:48:A:H8	1.67	0.59
28:X:49:THR:O	28:X:53:ILE:HG13	2.02	0.59
5:A:2048:A:H4'	8:D:151:GLN:O	2.02	0.59
31:a:943:A:H2'	31:a:944:G:C8	2.38	0.59
10:F:98:GLU:O	10:F:102:ARG:HG2	2.03	0.59
20:P:12:ARG:HG2	20:P:12:ARG:HH11	1.67	0.59
19:O:8:VAL:O	19:O:12:GLU:HG3	2.02	0.59
5:A:1041:A:O2'	5:A:1108:A:N6	2.34	0.58
31:a:1001:A:H2'	31:a:1002:A:O4'	2.03	0.58
36:f:17:GLN:O	36:f:21:MET:HG2	2.04	0.58
31:a:499:A:OP1	42:l:115:SER:OG	2.20	0.58
41:k:97:ARG:HH11	51:u:16:ILE:HD13	1.69	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
49:s:22:ALA:O	49:s:25:SER:C	2.47	0.58
31:a:456:U:H2'	31:a:457:A:H8	1.68	0.58
31:a:1026:U:H2'	31:a:1028:C:H1'	1.85	0.58
5:A:2060:C:H2'	5:A:2061:C:C6	2.39	0.57
36:f:15:SER:HA	36:f:18:VAL:HG13	1.85	0.57
44:n:43:GLU:HA	44:n:46:LEU:HD12	1.86	0.57
27:W:1:MET:O	27:W:2:SER:OG	2.16	0.57
31:a:733:C:H2'	31:a:734:A:H8	1.68	0.57
5:A:985:A:N7	29:Y:14:HIS:NE2	2.47	0.57
10:F:12:LEU:HD12	10:F:172:ALA:HB1	1.87	0.57
49:s:22:ALA:O	49:s:25:SER:O	2.22	0.57
27:W:39:TRP:NE1	27:W:41:GLU:OE2	2.28	0.57
45:o:76:GLU:CD	45:o:76:GLU:H	2.12	0.57
7:C:118:SER:HB3	7:C:129:CYS:HB3	1.86	0.57
10:F:167:ARG:O	10:F:171:ARG:HG2	2.05	0.57
34:d:61:GLN:HB3	34:d:65:ARG:NH1	2.20	0.57
31:a:1074:G:N2	31:a:1077:A:OP2	2.36	0.57
33:c:46:LYS:HG2	33:c:47:LEU:HD23	1.87	0.57
10:F:115:ARG:NH1	10:F:117:PHE:O	2.38	0.57
10:F:123:ASP:O	10:F:125:ARG:NH2	2.37	0.56
37:g:59:VAL:O	37:g:63:GLU:HG2	2.04	0.56
31:a:498:C:H2'	31:a:499:A:H8	1.70	0.56
31:a:905:A:H2'	31:a:906:A:H8	1.69	0.56
46:p:22:ILE:HG12	46:p:39:VAL:HG22	1.87	0.56
5:A:2300:G:N2	5:A:2308:U:H3	1.95	0.56
6:B:64:A:H61	6:B:104:U:H2'	1.71	0.56
7:C:198:GLN:H	7:C:198:GLN:CD	2.12	0.56
11:G:33:LEU:HD13	11:G:75:LEU:HD22	1.87	0.56
14:J:106:LEU:HB2	14:J:107:ARG:HH12	1.70	0.56
36:f:29:ILE:HD11	36:f:74:LEU:HD11	1.88	0.56
32:b:138:GLU:HA	32:b:141:ARG:HG2	1.88	0.56
5:A:2067:A:H2'	5:A:2068:C:C6	2.41	0.56
39:i:113:LYS:HB2	39:i:116:LEU:HD12	1.88	0.56
24:T:45:LYS:HD3	24:T:46:PRO:HD2	1.88	0.56
31:a:1409:C:H2'	31:a:1410:A:C8	2.41	0.56
32:b:68:LYS:NZ	32:b:92:PRO:HD2	2.21	0.56
48:r:26:ILE:O	48:r:30:LYS:HD3	2.06	0.56
11:G:4:VAL:O	11:G:69:ARG:HD2	2.06	0.55
1:0:4:LYS:HB3	1:0:50:ILE:HD13	1.87	0.55
5:A:1416:G:O2'	5:A:1489:A:N6	2.39	0.55
31:a:231:U:H2'	31:a:232:A:H8	1.69	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:733:C:H2'	31:a:734:A:C8	2.41	0.55
49:s:28:ARG:NH1	49:s:46:GLY:O	2.39	0.55
31:a:1073:C:OP1	32:b:176:LYS:NZ	2.40	0.55
45:o:64:ARG:NH1	45:o:68:ASP:OD1	2.39	0.55
37:g:89:MET:SD	37:g:90:GLU:N	2.79	0.55
5:A:347:A:H1'	5:A:348:A:H2	1.71	0.55
37:g:65:THR:O	37:g:69:VAL:HG23	2.06	0.55
48:r:26:ILE:HD12	48:r:27:ASP:N	2.22	0.55
7:C:181:MET:HE1	7:C:268:ILE:HB	1.88	0.55
19:O:90:LYS:NZ	19:O:90:LYS:HB3	2.22	0.55
32:b:61:GLN:HB3	32:b:65:LYS:HZ1	1.72	0.55
32:b:123:SER:HA	32:b:128:PHE:HE2	1.72	0.55
37:g:53:LYS:HE2	37:g:125:LEU:HD13	1.89	0.55
43:m:86:TYR:O	43:m:90:ARG:HG2	2.07	0.55
5:A:2313:C:H2'	5:A:2314:G:C8	2.41	0.54
31:a:473:U:H2'	31:a:474:A:H8	1.72	0.54
36:f:11:HIS:ND1	36:f:12:PRO:HD2	2.22	0.54
5:A:1919:U:H2'	5:A:1920:C:C6	2.41	0.54
5:A:2269:A:H2'	5:A:2270:A:C8	2.43	0.54
31:a:1263:G:N2	31:a:1266:A:OP2	2.35	0.54
37:g:26:PHE:HE2	37:g:120:LEU:HD21	1.71	0.54
37:g:135:ILE:O	37:g:139:GLU:HG2	2.07	0.54
5:A:1527:U:H3'	5:A:1528:G:H8	1.72	0.54
31:a:1093:C:O2	31:a:1167:A:O2'	2.25	0.54
1:0:6:ARG:HG3	1:0:50:ILE:HA	1.88	0.54
5:A:578:U:H2'	5:A:579:C:C6	2.42	0.54
5:A:1792:U:H2'	5:A:1793:C:H6	1.71	0.54
32:b:81:ILE:O	32:b:85:GLN:HG2	2.07	0.54
37:g:49:ARG:O	37:g:52:GLU:HG3	2.07	0.54
5:A:579:C:H2'	5:A:580:A:C8	2.43	0.54
5:A:2543:A:H2'	5:A:2544:U:C6	2.43	0.54
9:E:121:GLU:CD	9:E:121:GLU:H	2.16	0.54
31:a:1353:G:H2'	31:a:1354:A:C8	2.43	0.54
33:c:25:ASN:HD21	33:c:28:GLN:HG3	1.73	0.54
31:a:536:A:H2'	31:a:537:G:C8	2.43	0.54
31:a:1320:G:H2'	31:a:1321:A:C8	2.43	0.54
31:a:711:G:H2'	31:a:712:A:C8	2.43	0.54
32:b:8:MET:HB3	32:b:49:VAL:HG11	1.90	0.54
35:e:110:MET:HE2	35:e:126:CYS:SG	2.48	0.54
36:f:26:ILE:O	36:f:30:LYS:HG2	2.07	0.53
45:o:7:ASP:OD1	45:o:7:ASP:N	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:71:G:H2'	5:A:72:C:C6	2.44	0.53
24:T:79:ASP:OD2	24:T:96:SER:OG	2.25	0.53
39:i:37:PHE:O	39:i:43:ARG:NH1	2.40	0.53
39:i:54:GLU:HA	39:i:54:GLU:OE1	2.08	0.53
43:m:40:THR:OG1	43:m:43:THR:OG1	2.25	0.53
45:o:4:THR:OG1	45:o:5:ASN:N	2.39	0.53
48:r:33:ILE:HD11	48:r:59:ILE:HD13	1.89	0.53
5:A:1724:C:O2'	5:A:1725:U:H5'	2.08	0.53
10:F:50:LEU:O	10:F:54:VAL:HG13	2.08	0.53
32:b:68:LYS:HZ3	32:b:92:PRO:HD2	1.74	0.53
34:d:172:TRP:CE2	34:d:188:PRO:HG3	2.43	0.53
31:a:498:C:H2'	31:a:499:A:C8	2.44	0.53
5:A:157:U:H2'	5:A:158:U:C6	2.43	0.53
36:f:1:MET:HE2	36:f:65:GLU:HG2	1.90	0.53
5:A:71:G:H2'	5:A:72:C:H6	1.72	0.53
6:B:16:A:H2'	6:B:17:A:C8	2.44	0.53
17:M:35:LYS:HG3	17:M:112:TYR:CE1	2.44	0.53
31:a:1215:C:H2'	31:a:1216:A:C8	2.44	0.53
32:b:8:MET:HG3	32:b:9:ARG:NH2	2.24	0.53
7:C:270:ASP:OD1	7:C:274:LYS:HB3	2.09	0.53
5:A:284:U:H3	5:A:360:A:H62	1.57	0.53
5:A:1306:G:OP2	5:A:1306:G:N2	2.30	0.53
7:C:17:GLU:HB2	7:C:204:SER:N	2.23	0.53
24:T:46:PRO:HB3	24:T:54:GLY:H	1.74	0.53
31:a:1011:A:OP2	49:s:18:LYS:NZ	2.42	0.53
35:e:107:GLY:H	35:e:110:MET:HE3	1.74	0.53
5:A:280:A:H2'	5:A:281:A:C8	2.44	0.53
7:C:107:PRO:HD2	7:C:110:LEU:HD22	1.91	0.53
10:F:136:ILE:O	10:F:137:VAL:HG22	2.09	0.53
16:L:112:ASP:OD1	16:L:113:LEU:N	2.42	0.53
31:a:19:U:H2'	31:a:20:C:C6	2.44	0.53
37:g:71:PRO:O	37:g:96:ARG:HD3	2.08	0.53
5:A:1403:U:H2'	5:A:1404:G:C8	2.44	0.53
31:a:572:G:O2'	31:a:818:G:OP2	2.24	0.53
5:A:413:C:H2'	5:A:414:A:C8	2.44	0.52
5:A:1182:G:H5'	21:Q:83:TYR:CE1	2.43	0.52
5:A:1403:U:H2'	5:A:1404:G:H8	1.74	0.52
5:A:101:U:H2'	5:A:102:A:C8	2.43	0.52
5:A:1885:A:H2'	5:A:1886:A:C8	2.44	0.52
31:a:401:U:OP2	34:d:3:ARG:NH1	2.33	0.52
31:a:1437:U:H2'	31:a:1438:A:C4	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:578:U:H2'	5:A:579:C:H6	1.75	0.52
5:A:1473:G:O6	5:A:1510:G:N2	2.42	0.52
31:a:250:G:OP1	47:q:71:THR:OG1	2.26	0.52
34:d:167:ARG:H	34:d:167:ARG:HD3	1.73	0.52
31:a:536:A:H2'	31:a:537:G:H8	1.74	0.52
40:j:84:VAL:HG12	40:j:88:MET:HE1	1.91	0.52
5:A:413:C:H2'	5:A:414:A:H8	1.74	0.52
5:A:1356:G:H2'	5:A:1357:C:C6	2.45	0.52
31:a:476:U:H2'	31:a:477:G:C8	2.44	0.52
5:A:279:U:H3	5:A:366:G:H22	1.57	0.52
32:b:45:LEU:O	32:b:49:VAL:HG13	2.08	0.52
33:c:150:LYS:HG3	33:c:169:ARG:HB2	1.91	0.52
5:A:9:G:H2'	5:A:10:U:C6	2.45	0.52
5:A:353:C:H2'	5:A:354:A:H8	1.75	0.52
5:A:591:U:H2'	5:A:592:U:C6	2.44	0.52
5:A:2325:A:H2'	5:A:2326:G:C8	2.43	0.52
37:g:137:LYS:O	37:g:141:VAL:HG23	2.10	0.52
5:A:158:U:H2'	5:A:159:G:H8	1.74	0.52
5:A:611:U:H5'	5:A:612:A:C8	2.45	0.52
5:A:830:U:H2'	5:A:831:A:C8	2.44	0.51
31:a:1388:U:H2'	31:a:1389:G:C8	2.45	0.51
5:A:34:G:N2	5:A:511:G:H1'	2.25	0.51
5:A:364:A:H4'	5:A:365:U:O5'	2.09	0.51
5:A:308:U:H2'	5:A:309:G:O4'	2.10	0.51
5:A:1849:A:H2'	5:A:1850:A:C8	2.45	0.51
5:A:1854:A:H61	5:A:1880:G:H1'	1.74	0.51
31:a:1247:A:H2'	31:a:1248:A:C8	2.45	0.51
32:b:123:SER:HA	32:b:128:PHE:CE2	2.45	0.51
39:i:47:ARG:O	39:i:51:GLU:HG3	2.11	0.51
45:o:40:GLN:HA	45:o:40:GLN:OE1	2.10	0.51
5:A:1166:A:H2'	5:A:1167:U:C6	2.45	0.51
5:A:1428:A:H2'	5:A:1429:A:C8	2.45	0.51
5:A:2082:U:H2'	5:A:2083:G:C8	2.46	0.51
8:D:30:VAL:O	8:D:188:SER:OG	2.18	0.51
31:a:1002:A:C5	31:a:1003:C:H1'	2.46	0.51
41:k:20:ALA:HB3	41:k:83:VAL:HG22	1.93	0.51
41:k:51:PHE:O	41:k:56:LYS:HG3	2.11	0.51
1:0:21:LYS:HE2	1:0:26:MET:HB3	1.92	0.51
5:A:2294:A:N1	5:A:2314:G:N2	2.54	0.51
37:g:111:ARG:HD2	37:g:123:GLU:HB2	1.92	0.51
5:A:67:G:O2'	5:A:69:U:OP2	2.27	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:671:G:H2'	31:a:672:A:H8	1.76	0.51
5:A:9:G:H2'	5:A:10:U:H6	1.75	0.51
5:A:1798:A:H2'	5:A:1799:A:C8	2.46	0.51
5:A:2553:G:H2'	5:A:2554:C:C6	2.46	0.51
45:o:7:ASP:O	45:o:11:ILE:HG13	2.11	0.51
5:A:1193:U:H2'	5:A:1194:U:C6	2.46	0.51
5:A:2373:A:H2'	5:A:2374:A:C8	2.45	0.51
10:F:81:ASP:OD1	10:F:82:GLY:N	2.44	0.51
32:b:142:GLU:HA	32:b:145:LYS:HG2	1.93	0.51
33:c:216:ASN:ND2	40:j:14:ASP:OD2	2.42	0.51
34:d:155:LEU:HA	34:d:158:LYS:HG2	1.93	0.51
31:a:649:U:O4	31:a:749:G:O2'	2.22	0.51
5:A:358:A:H2'	5:A:359:U:C6	2.47	0.50
10:F:46:ASP:OD2	10:F:49:LEU:N	2.43	0.50
5:A:161:A:H2'	5:A:162:A:C8	2.46	0.50
31:a:994:U:H2'	31:a:995:A:H8	1.76	0.50
31:a:1248:A:H2'	31:a:1249:A:C8	2.47	0.50
5:A:2242:G:H2'	5:A:2243:A:C8	2.46	0.50
34:d:28:PHE:O	34:d:32:THR:HG22	2.11	0.50
37:g:74:GLU:HG2	37:g:75:VAL:HG23	1.94	0.50
49:s:15:LEU:O	49:s:19:VAL:HG12	2.11	0.50
5:A:2586:A:H2'	5:A:2587:C:H6	1.76	0.50
31:a:677:C:H2'	31:a:678:A:H8	1.77	0.50
31:a:920:A:H2'	31:a:921:C:C6	2.47	0.50
32:b:96:HIS:ND1	32:b:148:ARG:O	2.45	0.50
32:b:132:THR:HG22	32:b:135:GLU:CD	2.37	0.50
36:f:12:PRO:HA	36:f:15:SER:OG	2.12	0.50
6:B:16:A:H2'	6:B:17:A:H8	1.76	0.50
7:C:198:GLN:NE2	7:C:199:GLU:OE1	2.45	0.50
32:b:219:MET:HA	32:b:219:MET:HE2	1.94	0.50
37:g:135:ILE:HB	37:g:136:LYS:HZ2	1.76	0.50
38:h:87:TYR:CE1	38:h:125:GLU:HG3	2.46	0.50
5:A:1634:G:H2'	5:A:1635:A:C8	2.47	0.49
5:A:2063:G:H1	5:A:2439:U:H3	1.59	0.49
5:A:2323:A:H2'	5:A:2324:A:C8	2.47	0.49
31:a:231:U:H2'	31:a:232:A:C8	2.46	0.49
31:a:472:A:H2'	31:a:473:U:C6	2.47	0.49
31:a:1038:G:H2'	31:a:1039:A:C8	2.47	0.49
40:j:6:ILE:HB	40:j:76:ILE:HB	1.93	0.49
5:A:579:C:H2'	5:A:580:A:H8	1.75	0.49
5:A:1529:U:H3	5:A:1536:G:H1	1.60	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:1568:A:H2'	5:A:1569:A:C8	2.47	0.49
14:J:104:ARG:NH2	14:J:121:VAL:HG13	2.27	0.49
31:a:1422:U:H2'	31:a:1423:G:H8	1.76	0.49
37:g:38:ILE:O	37:g:42:ILE:HG13	2.12	0.49
40:j:15:HIS:HA	40:j:18:ILE:HG22	1.94	0.49
5:A:1428:A:H2'	5:A:1429:A:H8	1.78	0.49
5:A:2674:A:H2'	5:A:2675:A:C8	2.47	0.49
41:k:110:THR:OG1	41:k:111:ASP:N	2.44	0.49
43:m:12:ASN:OD1	43:m:46:ARG:NH1	2.45	0.49
5:A:2301:U:H2'	5:A:2302:C:C6	2.47	0.49
18:N:59:LEU:HD11	18:N:72:LYS:HE2	1.94	0.49
31:a:1313:G:H4'	44:n:58:VAL:HG11	1.93	0.49
14:J:17:ARG:HG2	14:J:17:ARG:HH11	1.77	0.49
23:S:13:PRO:HD3	28:X:30:MET:HE3	1.94	0.49
5:A:741:U:O2'	5:A:1657:U:OP1	2.31	0.49
5:A:1590:A:H2'	5:A:1591:C:C6	2.48	0.49
32:b:107:LYS:HA	32:b:110:ARG:HD3	1.94	0.49
37:g:57:ASP:HB3	37:g:60:GLU:HG2	1.94	0.49
48:r:26:ILE:HD12	48:r:27:ASP:H	1.76	0.49
5:A:1816:U:OP1	7:C:177:ARG:NH2	2.46	0.49
6:B:87:A:H2'	6:B:87:A:N3	2.27	0.49
10:F:56:ASP:O	10:F:60:ILE:HD12	2.12	0.49
31:a:1383:G:H2'	31:a:1384:G:H8	1.77	0.49
32:b:17:HIS:HB2	32:b:42:ILE:HG23	1.93	0.49
33:c:210:GLY:O	33:c:214:VAL:HG23	2.12	0.49
37:g:2:PRO:O	37:g:3:ARG:HB2	2.11	0.49
5:A:1185:G:H5'	15:K:34:GLY:HA2	1.95	0.49
7:C:199:GLU:HB3	7:C:202:LEU:HD12	1.94	0.49
24:T:46:PRO:HB3	24:T:53:GLU:HA	1.94	0.49
32:b:110:ARG:HG2	32:b:110:ARG:HH11	1.78	0.49
34:d:162:GLU:O	34:d:166:GLN:NE2	2.46	0.49
34:d:172:TRP:CD1	34:d:173:ILE:HG13	2.48	0.49
5:A:1165:U:H2'	5:A:1166:A:H8	1.77	0.49
5:A:2835:G:O2'	17:M:49:GLU:OE2	2.27	0.49
27:W:67:VAL:O	27:W:71:LEU:HG	2.12	0.49
36:f:29:ILE:HG22	36:f:34:GLY:HA3	1.95	0.49
5:A:830:U:H2'	5:A:831:A:H8	1.77	0.49
5:A:1417:A:H61	5:A:1574:U:H3	1.61	0.49
32:b:95:ASP:OD1	32:b:96:HIS:N	2.46	0.49
5:A:2060:C:H2'	5:A:2061:C:H6	1.77	0.48
28:X:18:LEU:O	28:X:22:GLN:HG3	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:456:U:H2'	31:a:457:A:C8	2.48	0.48
5:A:1111:C:H2'	5:A:1112:G:C8	2.48	0.48
11:G:115:TYR:CD2	11:G:148:ILE:HD11	2.48	0.48
21:Q:1:MET:HA	21:Q:42:VAL:O	2.13	0.48
31:a:78:G:H2'	31:a:79:U:C6	2.47	0.48
37:g:17:LYS:HG2	37:g:18:PHE:CD1	2.48	0.48
5:A:831:A:H2'	5:A:832:G:C8	2.49	0.48
31:a:489:C:H2'	31:a:490:A:H8	1.73	0.48
32:b:72:VAL:HG23	32:b:165:VAL:HA	1.95	0.48
38:h:43:GLU:OE2	38:h:43:GLU:HA	2.13	0.48
5:A:637:U:H2'	5:A:638:C:C6	2.48	0.48
5:A:311:G:N3	5:A:331:G:O2'	2.45	0.48
19:O:91:ARG:HH12	19:O:115:GLU:HB2	1.78	0.48
32:b:75:LYS:HD2	32:b:167:ASP:HB2	1.95	0.48
37:g:53:LYS:HE3	37:g:54:ASN:OD1	2.13	0.48
37:g:61:PHE:O	37:g:65:THR:OG1	2.31	0.48
41:k:88:PRO:HG3	51:u:32:VAL:HG11	1.96	0.48
13:I:75:TYR:CE1	13:I:86:GLU:HG3	2.49	0.48
16:L:33:ALA:HB2	16:L:105:GLU:HG2	1.94	0.48
32:b:93:TYR:CZ	32:b:152:GLY:HA2	2.48	0.48
5:A:605:U:C5	5:A:618:G:C5	3.02	0.48
5:A:1567:A:OP1	7:C:61:HIS:NE2	2.32	0.48
8:D:18:ASP:N	8:D:18:ASP:OD1	2.46	0.48
10:F:67:VAL:CG2	10:F:84:PRO:HB3	2.44	0.48
31:a:295:G:H2'	31:a:296:A:C8	2.48	0.48
31:a:1027:U:H3'	31:a:1028:C:H4'	1.95	0.48
31:a:1461:U:H2'	31:a:1462:A:H8	1.79	0.48
5:A:2239:U:H2'	5:A:2240:U:C6	2.49	0.48
31:a:1425:A:H2'	31:a:1426:C:C6	2.49	0.48
47:q:60:VAL:HG12	47:q:79:VAL:HG22	1.95	0.48
10:F:34:ILE:HG12	10:F:156:ILE:HG13	1.95	0.48
31:a:144:G:O2'	31:a:1443:A:N3	2.45	0.48
5:A:363:G:OP2	5:A:364:A:O2'	2.26	0.48
34:d:158:LYS:O	34:d:161:ILE:HG12	2.14	0.48
1:0:6:ARG:HG3	1:0:6:ARG:HH11	1.78	0.47
5:A:811:U:H2'	5:A:812:C:H6	1.79	0.47
5:A:1135:G:H21	13:I:108:MET:HE2	1.79	0.47
28:X:39:LYS:HB3	28:X:41:HIS:CE1	2.48	0.47
31:a:661:G:H22	31:a:738:G:H1	1.61	0.47
33:c:17:ARG:HD3	33:c:216:ASN:OD1	2.14	0.47
34:d:7:PRO:HG2	34:d:10:LYS:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
37:g:132:GLY:H	37:g:136:LYS:NZ	2.12	0.47
5:A:1311:A:H2'	5:A:1312:G:H8	1.79	0.47
31:a:725:A:H2'	31:a:726:A:C8	2.49	0.47
37:g:67:GLU:OE2	37:g:68:LYS:NZ	2.47	0.47
5:A:34:G:H22	5:A:511:G:H1'	1.79	0.47
5:A:1381:A:H2'	5:A:1382:U:C6	2.49	0.47
5:A:2510:U:H2'	5:A:2511:C:H6	1.79	0.47
7:C:173:ILE:HG23	7:C:181:MET:SD	2.53	0.47
31:a:976:C:O2	44:n:59:ARG:NH1	2.47	0.47
41:k:29:THR:HG21	41:k:62:ALA:HB2	1.97	0.47
5:A:1647:G:O2'	17:M:106:ASP:OD2	2.30	0.47
7:C:120:ASN:OD1	7:C:120:ASN:N	2.47	0.47
8:D:42:GLU:H	8:D:42:GLU:CD	2.22	0.47
10:F:27:GLU:N	10:F:27:GLU:OE1	2.46	0.47
31:a:156:A:H2'	31:a:157:A:O4'	2.14	0.47
36:f:15:SER:HB3	36:f:44:ARG:HH22	1.78	0.47
5:A:1790:A:H2'	5:A:1791:C:C6	2.50	0.47
19:O:39:ASP:OD1	19:O:39:ASP:N	2.47	0.47
31:a:552:U:H2'	31:a:553:C:C6	2.50	0.47
33:c:42:PHE:CZ	33:c:46:LYS:HE3	2.50	0.47
5:A:568:G:H2'	5:A:2026:6MZ:N7	2.30	0.47
5:A:2242:G:H2'	5:A:2243:A:H8	1.78	0.47
5:A:2299:G:O2'	10:F:121:SER:O	2.33	0.47
31:a:905:A:H2'	31:a:906:A:C8	2.49	0.47
31:a:1411:U:H2'	31:a:1412:G:H8	1.80	0.47
32:b:52:LEU:HD13	32:b:202:ILE:HD13	1.95	0.47
46:p:62:GLN:OE1	46:p:62:GLN:HA	2.15	0.47
10:F:67:VAL:HG21	10:F:84:PRO:HB3	1.97	0.47
31:a:1311:C:H2'	31:a:1312:U:C6	2.50	0.47
5:A:606:A:H2'	5:A:607:A:C8	2.50	0.47
5:A:780:A:N1	7:C:225:MET:HE2	2.30	0.47
6:B:12:U:OP2	6:B:68:C:O2'	2.33	0.47
8:D:182:SER:HB3	8:D:191:VAL:HB	1.95	0.47
10:F:115:ARG:HD2	10:F:115:ARG:HA	1.72	0.47
10:F:141:ILE:HD12	10:F:142:ASP:H	1.80	0.47
10:F:147:ASP:OD1	10:F:148:ARG:N	2.42	0.47
31:a:75:A:N1	31:a:92:G:N2	2.49	0.47
32:b:96:HIS:HB3	32:b:148:ARG:NH1	2.30	0.47
37:g:44:TYR:O	37:g:48:GLU:HG2	2.14	0.47
5:A:2469:U:H2'	5:A:2469:U:O2	2.15	0.47
5:A:2510:U:H2'	5:A:2511:C:C6	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:E:14:SER:OG	9:E:196:GLU:OE1	2.21	0.47
31:a:242:A:C2	31:a:278:A:C5	3.03	0.47
31:a:412:G:H2'	31:a:413:G:H8	1.80	0.47
47:q:25:LEU:HD12	47:q:44:LYS:HG2	1.97	0.47
5:A:418:U:H2'	5:A:419:C:C6	2.50	0.47
5:A:1790:A:H2'	5:A:1791:C:H6	1.79	0.47
5:A:2309:C:O4'	10:F:37:ASN:ND2	2.48	0.47
5:A:2645:C:H2'	5:A:2646:U:H6	1.80	0.47
7:C:72:ASP:OD2	7:C:189:ARG:NH2	2.47	0.47
21:Q:37:ASP:OD1	21:Q:37:ASP:N	2.45	0.47
23:S:4:GLU:O	23:S:8:GLN:HG2	2.15	0.47
31:a:1140:G:H2'	31:a:1141:G:H8	1.80	0.47
3:2:33:THR:OG1	5:A:2416:C:OP1	2.25	0.46
5:A:856:G:OP1	26:V:78:ARG:NH1	2.47	0.46
5:A:2470:U:H5"	5:A:2471:C:H5	1.80	0.46
6:B:87:A:OP2	16:L:39:ARG:NE	2.38	0.46
31:a:403:U:H2'	31:a:404:G:C8	2.50	0.46
5:A:1432:C:HO2'	5:A:1512:G:HO2'	1.63	0.46
10:F:126:GLY:O	10:F:158:THR:OG1	2.25	0.46
31:a:610:C:H2'	31:a:611:C:C6	2.49	0.46
31:a:920:A:H2'	31:a:921:C:H6	1.79	0.46
5:A:596:U:H2'	5:A:597:A:C8	2.50	0.46
5:A:1135:G:N2	13:I:108:MET:HE2	2.29	0.46
5:A:1478:G:N2	5:A:1502:U:H1'	2.31	0.46
31:a:265:U:H2'	31:a:266:A:C8	2.50	0.46
32:b:61:GLN:O	32:b:65:LYS:HG2	2.15	0.46
34:d:123:ARG:HH21	34:d:131:ARG:HB2	1.79	0.46
5:A:158:U:H2'	5:A:159:G:C8	2.51	0.46
5:A:1110:U:H2'	5:A:1111:C:C6	2.50	0.46
5:A:2586:A:H2'	5:A:2587:C:C6	2.51	0.46
17:M:72:ASN:HB3	17:M:75:THR:HB	1.97	0.46
31:a:681:U:H2'	31:a:682:G:O4'	2.16	0.46
31:a:1118:U:H2'	31:a:1119:U:C6	2.50	0.46
31:a:1162:U:H3	31:a:1168:A:N6	2.08	0.46
32:b:135:GLU:O	32:b:139:ARG:HG2	2.16	0.46
4:3:16:VAL:HG22	4:3:25:VAL:HG22	1.96	0.46
5:A:718:U:H2'	5:A:719:A:C8	2.51	0.46
5:A:782:G:H5'	5:A:783:G:OP1	2.16	0.46
5:A:2533:U:H2'	5:A:2534:C:C6	2.50	0.46
7:C:272:ARG:HA	7:C:272:ARG:NE	2.31	0.46
10:F:136:ILE:HD13	10:F:143:PHE:CE1	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:417:U:C3’	31:a:418:A:H5”	2.46	0.46
31:a:887:G:H4’	31:a:888:U:O5’	2.15	0.46
32:b:84:GLU:O	32:b:88:ARG:HG3	2.15	0.46
41:k:46:SER:HB3	41:k:61:ALA:HB1	1.97	0.46
5:A:596:U:H2’	5:A:597:A:H8	1.81	0.46
5:A:1033:G:OP1	11:G:59:LYS:NZ	2.49	0.46
5:A:1036:A:N1	5:A:1113:G:N2	2.49	0.46
5:A:2843:U:H2’	5:A:2844:G:O4’	2.15	0.46
31:a:127:U:H2’	31:a:128:C:C6	2.51	0.46
31:a:473:U:H2’	31:a:474:A:C8	2.49	0.46
32:b:199:ASP:OD1	32:b:199:ASP:N	2.49	0.46
35:e:78:THR:HB	35:e:120:HIS:HB2	1.97	0.46
42:l:68:GLY:O	42:l:99:ARG:NH1	2.48	0.46
50:t:24:LEU:HD22	50:t:61:MET:SD	2.55	0.46
5:A:84:U:H2’	5:A:85:C:C6	2.51	0.46
5:A:1437:U:H2’	5:A:1438:C:C6	2.50	0.46
5:A:2587:C:H2’	5:A:2588:G:H8	1.81	0.46
18:N:31:ARG:HG3	18:N:36:ILE:HD12	1.97	0.46
32:b:7:SER:O	32:b:8:MET:HB3	2.15	0.46
34:d:36:ASN:HA	34:d:46:ARG:HD3	1.97	0.46
38:h:46:ILE:HD12	38:h:62:ILE:HG23	1.96	0.46
5:A:291:G:H2’	5:A:292:U:C6	2.51	0.46
5:A:2792:U:O2’	5:A:2793:U:H5”	2.15	0.46
5:A:2853:G:N2	5:A:2856:A:OP2	2.36	0.46
27:W:41:GLU:O	27:W:44:LYS:HD3	2.16	0.46
31:a:58:U:H2’	31:a:59:G:H8	1.81	0.46
31:a:386:U:H2’	31:a:387:C:C6	2.51	0.46
31:a:943:A:H2’	31:a:944:G:H8	1.80	0.46
31:a:1402:G:H2’	31:a:1403:U:H6	1.81	0.46
36:f:26:ILE:HD11	36:f:39:LEU:HD12	1.97	0.46
43:m:107:ARG:HA	43:m:107:ARG:HD3	1.66	0.46
5:A:2683:U:H2’	5:A:2684:G:O4’	2.16	0.46
14:J:15:GLY:O	14:J:47:ILE:HG22	2.16	0.46
24:T:31:ARG:HB3	24:T:62:SER:HB2	1.98	0.46
31:a:973:G:OP2	31:a:1355:U:O2’	2.33	0.46
32:b:83:ARG:HA	32:b:83:ARG:NE	2.31	0.46
34:d:101:ASP:OD1	34:d:102:ASN:N	2.48	0.46
5:A:347:A:H1’	5:A:348:A:C2	2.50	0.46
5:A:844:A:H4’	5:A:845:A:O5’	2.16	0.46
31:a:58:U:H2’	31:a:59:G:C8	2.50	0.46
31:a:333:G:H2’	31:a:334:A:C8	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:b:68:LYS:NZ	32:b:69:VAL:O	2.42	0.46
34:d:179:LYS:HE2	34:d:179:LYS:HB2	1.75	0.46
36:f:34:GLY:HA2	36:f:65:GLU:O	2.15	0.46
49:s:12:ASP:OD2	49:s:35:SER:OG	2.30	0.46
5:A:354:A:H2'	5:A:355:C:C6	2.52	0.45
5:A:846:U:H2'	5:A:847:A:H8	1.80	0.45
5:A:2463:C:H2'	5:A:2464:A:O4'	2.15	0.45
5:A:2880:U:H2'	5:A:2881:U:C6	2.51	0.45
6:B:47:C:H2'	6:B:48:A:C8	2.50	0.45
7:C:171:TYR:HE1	7:C:266:MET:HE1	1.81	0.45
20:P:22:LYS:HB2	20:P:22:LYS:HE2	1.58	0.45
31:a:395:G:H2'	31:a:396:C:C6	2.50	0.45
37:g:68:LYS:O	37:g:138:ARG:NH1	2.50	0.45
5:A:1842:G:H2'	5:A:1843:A:C8	2.51	0.45
31:a:380:C:H2'	31:a:381:C:H6	1.81	0.45
31:a:1010:G:N2	31:a:1013:A:OP2	2.31	0.45
31:a:1120:A:O2'	40:j:39:PRO:O	2.33	0.45
32:b:208:ALA:O	32:b:212:VAL:HG12	2.15	0.45
37:g:65:THR:HA	37:g:68:LYS:HE2	1.98	0.45
43:m:68:ASP:OD1	43:m:68:ASP:N	2.48	0.45
5:A:1464:A:H2'	5:A:1465:A:C8	2.52	0.45
7:C:22:ASP:OD1	7:C:22:ASP:N	2.50	0.45
37:g:116:MET:HA	37:g:119:ARG:HE	1.80	0.45
46:p:74:ARG:HD2	46:p:74:ARG:HA	1.78	0.45
50:t:33:LYS:HE3	50:t:33:LYS:HB2	1.69	0.45
5:A:701:U:H2'	5:A:702:G:O4'	2.16	0.45
12:H:4:ILE:HD12	12:H:4:ILE:O	2.16	0.45
17:M:32:GLU:HG2	17:M:115:LEU:HD12	1.97	0.45
31:a:1011:A:C2	31:a:1216:A:H1'	2.52	0.45
31:a:1035:C:H2'	31:a:1036:U:C6	2.51	0.45
5:A:811:U:H2'	5:A:812:C:C6	2.51	0.45
5:A:862:G:H2'	5:A:863:C:C6	2.52	0.45
5:A:1605:G:N3	5:A:1605:G:H2'	2.31	0.45
5:A:1687:A:H2'	5:A:1688:A:H8	1.81	0.45
5:A:2187:A:H2'	5:A:2188:G:C8	2.52	0.45
6:B:46:U:H2'	6:B:47:C:C6	2.51	0.45
50:t:27:MET:HE2	50:t:27:MET:HB2	1.87	0.45
5:A:719:A:H2'	5:A:720:A:C8	2.51	0.45
7:C:271:ARG:O	7:C:272:ARG:HB2	2.17	0.45
31:a:408:A:H3'	31:a:409:G:H5'	1.98	0.45
31:a:1464:C:H2'	31:a:1465:A:C8	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:d:172:TRP:CZ2	34:d:188:PRO:HG3	2.52	0.45
36:f:27:SER:O	36:f:30:LYS:N	2.50	0.45
51:u:28:VAL:O	51:u:32:VAL:HG23	2.16	0.45
5:A:1049:C:H2'	5:A:1050:U:C6	2.51	0.45
31:a:184:A:O4'	50:t:84:LYS:NZ	2.50	0.45
31:a:367:A:H2'	31:a:368:C:O4'	2.17	0.45
32:b:8:MET:HG3	32:b:9:ARG:HH21	1.81	0.45
33:c:107:ASP:OD1	33:c:107:ASP:N	2.47	0.45
34:d:199:GLU:O	34:d:203:VAL:HG23	2.16	0.45
39:i:57:GLU:OE1	39:i:57:GLU:HA	2.16	0.45
40:j:84:VAL:O	40:j:88:MET:HE2	2.16	0.45
5:A:1046:C:C2	5:A:1047:A:C8	3.05	0.45
5:A:1297:A:OP2	5:A:1605:G:O2'	2.30	0.45
12:H:26:GLY:O	12:H:31:ILE:HG12	2.17	0.45
31:a:78:G:H2'	31:a:79:U:H6	1.82	0.45
36:f:73:GLU:HA	36:f:76:GLU:HG3	1.99	0.45
37:g:74:GLU:OE1	37:g:74:GLU:N	2.48	0.45
43:m:49:ASP:HB2	43:m:52:GLN:HG3	1.98	0.45
5:A:637:U:H2'	5:A:638:C:H6	1.80	0.45
5:A:1400:U:H2'	5:A:1401:U:C6	2.52	0.45
5:A:2070:U:H2'	5:A:2071:U:C6	2.52	0.45
5:A:2237:A:H2'	5:A:2238:G:C8	2.51	0.45
11:G:164:TYR:HB2	11:G:167:GLU:HB2	1.99	0.45
14:J:95:ALA:O	14:J:113:LYS:NZ	2.48	0.45
31:a:1059:U:H2'	31:a:1060:C:C6	2.52	0.45
40:j:83:THR:O	40:j:87:LEU:HG	2.17	0.45
5:A:1193:U:H2'	5:A:1194:U:H6	1.82	0.45
5:A:2324:A:H2'	5:A:2325:A:H8	1.77	0.45
6:B:41:C:O2	10:F:92:ARG:NH1	2.48	0.45
18:N:5:LYS:O	18:N:9:LEU:HD23	2.16	0.45
31:a:207:G:O2'	31:a:208:G:O5'	2.34	0.45
31:a:693:A:H2'	31:a:694:U:H6	1.82	0.45
5:A:145:U:H2'	5:A:146:U:C6	2.51	0.44
5:A:1108:A:C8	5:A:1109:G:H1'	2.52	0.44
5:A:1687:A:H2'	5:A:1688:A:C8	2.52	0.44
5:A:2736:A:H2'	5:A:2737:A:C8	2.52	0.44
7:C:140:THR:HG23	7:C:161:SER:HB2	1.99	0.44
31:a:199:G:O2'	31:a:200:G:H8	1.99	0.44
31:a:908:U:H2'	31:a:909:C:C6	2.52	0.44
31:a:1427:C:H2'	31:a:1428:A:C8	2.52	0.44
33:c:175:LEU:HD23	33:c:182:ILE:HD13	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:m:106:ALA:HB3	43:m:110:LYS:HD3	1.98	0.44
51:u:35:ARG:HA	51:u:35:ARG:HD3	1.86	0.44
5:A:592:U:H2'	5:A:593:C:C6	2.53	0.44
5:A:655:U:H2'	5:A:656:U:C6	2.53	0.44
5:A:1416:G:H1'	5:A:1489:A:H61	1.82	0.44
5:A:1480:A:H2'	5:A:1481:U:C6	2.53	0.44
5:A:2232:U:H2'	5:A:2233:G:O4'	2.18	0.44
5:A:2587:C:H2'	5:A:2588:G:C8	2.52	0.44
31:a:202:U:H2'	31:a:203:C:C6	2.52	0.44
32:b:14:ALA:HA	32:b:210:ARG:NE	2.32	0.44
32:b:68:LYS:HZ1	32:b:92:PRO:HG2	1.82	0.44
41:k:109:ILE:C	41:k:109:ILE:HD12	2.43	0.44
5:A:1311:A:H2'	5:A:1312:G:C8	2.52	0.44
5:A:1481:U:H2'	5:A:1482:C:C6	2.52	0.44
10:F:122:PHE:CE2	10:F:167:ARG:HG3	2.53	0.44
19:O:39:ASP:H	19:O:40:ARG:HH12	1.61	0.44
31:a:200:G:H2'	31:a:201:A:H8	1.82	0.44
37:g:110:LYS:HE2	37:g:110:LYS:HB2	1.90	0.44
38:h:106:SER:HB2	38:h:127:ILE:HD11	2.00	0.44
5:A:546:G:N3	5:A:546:G:H2'	2.33	0.44
5:A:1165:U:H2'	5:A:1166:A:C8	2.53	0.44
5:A:1680:G:H2'	5:A:1681:U:C6	2.53	0.44
28:X:3:THR:HA	28:X:6:LEU:HB2	1.98	0.44
31:a:1127:A:H2'	31:a:1128:G:H8	1.82	0.44
31:a:1527:G:H2'	31:a:1528:A:C8	2.52	0.44
37:g:132:GLY:O	37:g:136:LYS:HG2	2.18	0.44
5:A:2212:G:H2'	5:A:2213:G:H8	1.82	0.44
14:J:71:ARG:NH1	14:J:105:GLU:OE2	2.51	0.44
31:a:417:U:H4'	31:a:418:A:OP2	2.17	0.44
31:a:427:A:C4	31:a:428:A:C8	3.06	0.44
31:a:1038:G:H2'	31:a:1039:A:H8	1.83	0.44
31:a:1464:C:H2'	31:a:1465:A:H8	1.83	0.44
32:b:227:LYS:NZ	32:b:228:GLU:OE1	2.32	0.44
40:j:15:HIS:O	40:j:18:ILE:HG22	2.17	0.44
5:A:2282:G:H4'	5:A:2283:A:O4'	2.16	0.44
5:A:2448:C:H2'	5:A:2449:A:C8	2.53	0.44
10:F:36:LEU:HD12	10:F:154:ILE:HG13	1.98	0.44
11:G:154:PRO:HD3	11:G:162:VAL:O	2.17	0.44
28:X:10:SER:OG	28:X:11:VAL:N	2.51	0.44
31:a:669:U:H2'	31:a:670:A:C8	2.53	0.44
5:A:2312:G:H2'	5:A:2313:C:C6	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:502:G:H2'	31:a:503:G:H8	1.83	0.44
32:b:22:THR:HG22	32:b:41:HIS:CE1	2.53	0.44
5:A:1172:U:H2'	5:A:1173:G:N3	2.33	0.44
20:P:78:ARG:HA	20:P:78:ARG:HD3	1.61	0.44
24:T:72:ASN:HB3	24:T:75:THR:HG22	2.00	0.44
31:a:403:U:H2'	31:a:404:G:H8	1.83	0.44
31:a:406:G:OP2	34:d:31:LYS:NZ	2.49	0.44
32:b:138:GLU:O	32:b:139:ARG:C	2.60	0.44
39:i:22:GLY:HA3	39:i:60:ASP:OD2	2.17	0.44
5:A:758:G:H2'	5:A:759:A:O4'	2.18	0.44
5:A:908:A:H2'	5:A:909:A:C8	2.53	0.44
5:A:1427:G:H2'	5:A:1428:A:C8	2.53	0.44
31:a:190:G:H4'	50:t:59:ASP:HB3	2.00	0.44
31:a:502:G:H2'	31:a:503:G:C8	2.53	0.44
31:a:748:U:H2'	31:a:749:G:O4'	2.17	0.44
31:a:1092:U:H2'	31:a:1093:C:C6	2.51	0.44
5:A:1166:A:H2'	5:A:1167:U:H6	1.80	0.43
5:A:2784:C:H2'	5:A:2785:C:C6	2.53	0.43
10:F:51:ASP:O	10:F:54:VAL:HG22	2.18	0.43
40:j:88:MET:HE2	40:j:88:MET:N	2.31	0.43
5:A:2034:G:H2'	5:A:2035:U:O4'	2.18	0.43
31:a:588:U:H2'	31:a:589:A:C8	2.53	0.43
5:A:846:U:H2'	5:A:847:A:C8	2.52	0.43
5:A:1481:U:H2'	5:A:1482:C:H6	1.82	0.43
5:A:2302:C:H3'	5:A:2303:G:H5"	2.00	0.43
10:F:80:ARG:HG2	10:F:81:ASP:H	1.82	0.43
10:F:149:ILE:HD12	10:F:149:ILE:HA	1.84	0.43
14:J:107:ARG:HA	14:J:107:ARG:NE	2.33	0.43
31:a:36:C:H2'	31:a:37:G:H8	1.84	0.43
31:a:865:C:H2'	31:a:866:G:O4'	2.18	0.43
31:a:915:A:H2'	31:a:916:A:C8	2.53	0.43
31:a:942:G:C2	31:a:943:A:C8	3.07	0.43
31:a:1005:U:H2'	31:a:1006:U:C6	2.53	0.43
31:a:1259:C:H2'	31:a:1260:A:H8	1.83	0.43
31:a:1527:G:O6	51:u:46:LYS:NZ	2.46	0.43
32:b:138:GLU:O	32:b:142:GLU:OE1	2.36	0.43
32:b:155:ASN:OD1	32:b:155:ASN:N	2.51	0.43
44:n:87:THR:HG22	44:n:93:VAL:HG23	1.99	0.43
48:r:48:LYS:HD2	48:r:48:LYS:HA	1.81	0.43
50:t:39:ILE:HD11	50:t:83:VAL:HA	2.00	0.43
5:A:1718:A:H2'	5:A:1719:U:O4'	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:2792:U:H1'	5:A:2793:U:C5	2.54	0.43
11:G:60:ASP:O	11:G:64:GLN:HG2	2.19	0.43
13:I:41:LYS:HD2	13:I:50:THR:HG22	2.00	0.43
18:N:56:ASP:OD2	18:N:80:ARG:NH2	2.44	0.43
23:S:5:ARG:O	23:S:9:VAL:HG23	2.18	0.43
25:U:8:ALA:HB3	25:U:69:VAL:HG22	1.99	0.43
31:a:1401:C:H2'	31:a:1402:G:C8	2.53	0.43
37:g:142:HIS:O	37:g:146:GLU:HG2	2.18	0.43
5:A:475:G:N1	5:A:478:A:OP2	2.47	0.43
31:a:461:A:H8	31:a:461:A:OP1	2.02	0.43
31:a:588:U:H2'	31:a:589:A:H8	1.82	0.43
32:b:165:VAL:HG21	32:b:175:ILE:HD11	2.00	0.43
38:h:43:GLU:HG3	38:h:102:ILE:HD13	1.99	0.43
5:A:2341:A:N3	5:A:2377:A:H2'	2.33	0.43
7:C:181:MET:CE	7:C:268:ILE:HB	2.49	0.43
9:E:191:ALA:O	9:E:195:ILE:HG13	2.19	0.43
14:J:108:THR:O	14:J:112:MET:HE2	2.19	0.43
15:K:82:SER:HB3	15:K:116:GLY:HA3	2.01	0.43
31:a:200:G:C4	31:a:201:A:C8	3.06	0.43
39:i:53:LEU:HD23	39:i:53:LEU:HA	1.83	0.43
43:m:114:LYS:HB2	43:m:114:LYS:HE2	1.83	0.43
5:A:161:A:H2'	5:A:162:A:H8	1.83	0.43
5:A:1411:G:H2'	5:A:1412:C:C6	2.54	0.43
5:A:1523:A:H2'	5:A:1524:A:C8	2.53	0.43
5:A:1569:A:H2'	5:A:1570:A:C8	2.54	0.43
5:A:2563:G:H2'	5:A:2564:A:C8	2.53	0.43
6:B:30:U:H2'	6:B:31:G:C8	2.54	0.43
6:B:112:A:H4'	18:N:51:GLN:NE2	2.33	0.43
11:G:98:VAL:O	11:G:99:LYS:HE2	2.18	0.43
16:L:39:ARG:HB3	16:L:99:PRO:HD3	2.01	0.43
19:O:109:LYS:HD2	19:O:112:ARG:NH2	2.34	0.43
23:S:4:GLU:H	23:S:4:GLU:CD	2.25	0.43
30:Z:31:GLN:OE1	30:Z:31:GLN:HA	2.18	0.43
31:a:521:G:H2'	31:a:522:C:C6	2.53	0.43
34:d:19:LEU:HD22	34:d:66:ILE:HG23	2.00	0.43
34:d:204:GLU:HA	34:d:207:SER:OG	2.17	0.43
5:A:2548:OMU:H6	5:A:2548:OMU:O5'	2.19	0.43
31:a:1510:A:H2'	31:a:1511:G:C8	2.53	0.43
32:b:132:THR:HG23	32:b:134:ARG:H	1.83	0.43
36:f:2:ARG:HD3	36:f:91:ARG:NH2	2.33	0.43
51:u:54:LYS:HE3	51:u:54:LYS:HB2	1.86	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:84:U:H2'	5:A:85:C:H6	1.83	0.43
5:A:631:A:O2'	5:A:2400:U:OP1	2.33	0.43
5:A:1194:U:H2'	5:A:1195:C:H6	1.84	0.43
5:A:2533:U:H2'	5:A:2534:C:H6	1.84	0.43
8:D:111:ASP:OD1	8:D:209:THR:HA	2.17	0.43
31:a:577:C:H2'	31:a:578:G:O4'	2.19	0.43
31:a:1089:A:P	37:g:5:ARG:HH12	2.42	0.43
31:a:1173:A:H2'	31:a:1174:G:C8	2.53	0.43
43:m:37:VAL:HG23	43:m:39:ILE:HD12	2.01	0.43
43:m:81:MET:O	43:m:92:ARG:NH2	2.39	0.43
44:n:83:LYS:HA	44:n:83:LYS:HD3	1.69	0.43
1:0:5:ILE:HD12	1:0:47:GLU:HG3	2.01	0.43
1:0:24:ARG:HB3	1:0:24:ARG:NH1	2.34	0.43
6:B:49:G:H2'	6:B:50:A:C8	2.53	0.43
31:a:37:G:H2'	31:a:38:C:C6	2.54	0.43
31:a:212:U:H2'	31:a:213:U:C6	2.54	0.43
31:a:925:G:O2'	31:a:1530:C:OP1	2.37	0.43
43:m:52:GLN:O	43:m:56:ILE:HG13	2.18	0.43
45:o:74:ASP:HB3	45:o:77:ARG:HD3	2.01	0.43
47:q:45:LEU:HD12	47:q:45:LEU:HA	1.86	0.43
49:s:30:PRO:HA	49:s:48:THR:O	2.19	0.43
5:A:1879:U:H2'	5:A:1880:G:O4'	2.18	0.42
6:B:64:A:N6	6:B:104:U:H2'	2.34	0.42
18:N:44:ASP:OD1	18:N:46:GLY:N	2.50	0.42
25:U:84:HIS:CE1	25:U:87:LYS:HD3	2.54	0.42
31:a:185:C:H4'	31:a:186:G:O5'	2.18	0.42
31:a:380:C:H2'	31:a:381:C:C6	2.54	0.42
5:A:698:G:O2'	5:A:1630:A:N3	2.48	0.42
5:A:2247:OMG:HM23	5:A:2247:OMG:H1'	1.79	0.42
5:A:2309:C:H2'	5:A:2310:A:H8	1.84	0.42
6:B:66:C:H2'	6:B:67:G:O4'	2.19	0.42
8:D:180:ILE:HD13	8:D:192:VAL:HG12	2.00	0.42
21:Q:1:MET:HB3	21:Q:16:GLU:OE1	2.18	0.42
31:a:23:G:H2'	31:a:24:G:C8	2.54	0.42
31:a:1023:G:N3	31:a:1023:G:H2'	2.34	0.42
34:d:14:ARG:HE	34:d:14:ARG:HB2	1.72	0.42
37:g:69:VAL:HG21	37:g:104:LEU:HD21	2.00	0.42
1:0:24:ARG:HB3	1:0:24:ARG:CZ	2.49	0.42
5:A:2528:G:N2	5:A:2659:G:O2'	2.52	0.42
5:A:2645:C:H2'	5:A:2646:U:C6	2.54	0.42
10:F:72:LYS:HE2	10:F:72:LYS:HB3	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:F:143:PHE:HB2	43:m:71:ARG:HH12	1.85	0.42
15:K:80:ARG:HB2	15:K:83:GLU:OE1	2.20	0.42
31:a:993:A:H2'	31:a:994:U:C6	2.55	0.42
31:a:1078:G:OP1	35:e:22:LYS:HB2	2.19	0.42
32:b:141:ARG:O	32:b:145:LYS:HG2	2.19	0.42
32:b:142:GLU:HA	32:b:145:LYS:CG	2.49	0.42
1:0:34:LYS:HB2	1:0:45:PHE:CD1	2.54	0.42
5:A:1356:G:H2'	5:A:1357:C:H6	1.83	0.42
5:A:2021:C:H2'	5:A:2022:U:C6	2.54	0.42
7:C:121:ASP:OD1	7:C:121:ASP:N	2.36	0.42
9:E:194:LYS:HB3	9:E:194:LYS:HE3	1.68	0.42
31:a:88:A:H2'	31:a:89:C:C6	2.55	0.42
31:a:899:G:H2'	31:a:900:A:H8	1.84	0.42
5:A:740:G:H2'	5:A:741:U:C6	2.55	0.42
24:T:92:ARG:HH21	24:T:101:VAL:HG11	1.85	0.42
31:a:35:A:H2'	31:a:36:C:H6	1.84	0.42
31:a:331:C:H2'	31:a:332:A:H8	1.84	0.42
40:j:90:LEU:HD12	40:j:90:LEU:HA	1.82	0.42
5:A:869:U:H2'	5:A:870:U:C6	2.54	0.42
5:A:2093:U:H2'	5:A:2094:U:C6	2.55	0.42
14:J:17:ARG:HG2	14:J:17:ARG:NH1	2.34	0.42
31:a:677:C:H2'	31:a:678:A:C8	2.55	0.42
31:a:1024:C:H2'	31:a:1025:C:C6	2.55	0.42
33:c:10:ILE:HG23	33:c:11:ARG:HG3	2.01	0.42
43:m:3:ARG:HE	43:m:3:ARG:HB3	1.65	0.42
5:A:142:A:H2'	5:A:143:C:C6	2.55	0.42
5:A:1108:A:O2'	5:A:1109:G:O4'	2.36	0.42
5:A:1499:U:H2'	5:A:1500:A:C8	2.54	0.42
10:F:133:LYS:HD3	10:F:133:LYS:HA	1.79	0.42
5:A:847:A:H2'	5:A:848:C:C6	2.55	0.42
5:A:1639:A:H2'	5:A:1640:G:O4'	2.19	0.42
5:A:1733:U:H3'	5:A:1734:G:C8	2.55	0.42
11:G:77:LYS:HA	11:G:77:LYS:HD2	1.79	0.42
21:Q:71:LYS:HG3	21:Q:72:ILE:N	2.34	0.42
31:a:982:C:H2'	31:a:983:U:C6	2.55	0.42
31:a:1404:C:C2	31:a:1405:A:C8	3.07	0.42
5:A:19:U:O2	5:A:2622:C:H4'	2.20	0.42
5:A:1437:U:H2'	5:A:1438:C:H6	1.85	0.42
5:A:1595:A:H5"	5:A:1596:A:H5'	2.02	0.42
5:A:2088:U:OP2	12:H:27:ARG:NH1	2.53	0.42
5:A:2795:A:H2'	5:A:2797:G:OP2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:D:33:ASN:N	8:D:33:ASN:HD22	2.15	0.42
14:J:34:SER:OG	14:J:35:VAL:N	2.52	0.42
24:T:5:LYS:HD3	24:T:92:ARG:HH12	1.85	0.42
31:a:1083:U:H3	31:a:1096:G:H22	1.68	0.42
33:c:129:MET:HE1	33:c:132:ARG:HH21	1.84	0.42
34:d:190:ARG:HH22	34:d:195:ALA:HA	1.84	0.42
36:f:37:HIS:HB3	36:f:97:THR:HG22	2.02	0.42
43:m:78:LYS:HD2	43:m:78:LYS:HA	1.91	0.42
48:r:32:TYR:CD2	48:r:55:LEU:HD21	2.54	0.42
5:A:1310:C:H2'	5:A:1311:A:H8	1.85	0.42
5:A:1348:A:H2'	5:A:1349:A:C8	2.55	0.42
5:A:2229:U:H2'	5:A:2230:G:C8	2.54	0.42
31:a:183:U:OP1	50:t:77:SER:OG	2.38	0.42
32:b:70:LEU:HD13	32:b:156:MET:HE1	2.02	0.42
35:e:70:MET:HE3	35:e:70:MET:HB3	1.87	0.42
39:i:50:LEU:HD23	39:i:50:LEU:HA	1.91	0.42
2:1:25:LYS:HE3	2:1:25:LYS:HB3	1.60	0.41
5:A:2451:G:H2'	5:A:2452:C:C6	2.54	0.41
7:C:5:LYS:HD2	7:C:5:LYS:HA	1.85	0.41
7:C:137:ILE:HD13	7:C:166:GLY:HA2	2.02	0.41
11:G:123:ALA:HA	11:G:132:ILE:O	2.20	0.41
34:d:49:LYS:HE2	34:d:49:LYS:HB2	1.54	0.41
35:e:163:ILE:HD12	35:e:163:ILE:HA	1.77	0.41
37:g:72:MET:HE2	37:g:72:MET:HB2	1.79	0.41
42:l:30:ARG:HD3	42:l:30:ARG:HA	1.81	0.41
45:o:53:ARG:O	45:o:57:ILE:HG12	2.19	0.41
5:A:292:U:H2'	5:A:293:U:C6	2.55	0.41
5:A:1496:G:H5"	7:C:95:LYS:HZ3	1.85	0.41
5:A:1523:A:N7	5:A:1541:G:N2	2.68	0.41
8:D:57:ARG:O	8:D:61:VAL:HG23	2.20	0.41
10:F:65:PRO:HA	10:F:89:VAL:HG22	2.02	0.41
10:F:123:ASP:OD1	10:F:123:ASP:N	2.53	0.41
10:F:132:LEU:C	10:F:133:LYS:HE2	2.44	0.41
31:a:232:A:H2'	31:a:233:A:C8	2.55	0.41
31:a:435:U:C2	31:a:436:A:C8	3.07	0.41
31:a:742:U:OP1	31:a:848:U:O2'	2.35	0.41
37:g:135:ILE:HB	37:g:136:LYS:NZ	2.34	0.41
5:A:1474:G:C2	5:A:1509:U:O2	2.73	0.41
10:F:36:LEU:CD1	10:F:154:ILE:HG13	2.50	0.41
19:O:109:LYS:HD2	19:O:112:ARG:HH21	1.85	0.41
31:a:979:U:H4'	31:a:980:A:O4'	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:1030:G:H2'	31:a:1031:G:O4'	2.20	0.41
31:a:1123:U:P	40:j:7:ARG:HH22	2.42	0.41
36:f:2:ARG:HH11	36:f:91:ARG:NH2	2.18	0.41
36:f:18:VAL:HG11	36:f:58:HIS:ND1	2.36	0.41
47:q:48:HIS:HB2	47:q:68:ILE:HD13	2.02	0.41
5:A:306:U:H2'	5:A:307:C:C6	2.55	0.41
5:A:597:A:H2'	5:A:598:G:H8	1.86	0.41
5:A:997:A:H2'	5:A:998:A:C8	2.56	0.41
5:A:1490:A:H2'	5:A:1491:A:C8	2.55	0.41
6:B:11:A:N1	6:B:67:G:O2'	2.50	0.41
23:S:35:ILE:HG23	23:S:36:ASN:OD1	2.20	0.41
31:a:319:U:H2'	31:a:320:G:O4'	2.20	0.41
31:a:951:G:H2'	31:a:952:U:C6	2.55	0.41
31:a:1024:C:H2'	31:a:1025:C:H6	1.85	0.41
32:b:58:PHE:CE1	32:b:62:LEU:HD21	2.56	0.41
32:b:85:GLN:HG3	32:b:216:ALA:CB	2.50	0.41
32:b:115:ARG:O	32:b:115:ARG:HD3	2.19	0.41
35:e:114:LEU:HD13	35:e:122:VAL:HG11	2.02	0.41
5:A:157:U:H2'	5:A:158:U:H6	1.84	0.41
5:A:630:A:H2'	5:A:631:A:C8	2.55	0.41
5:A:794:C:H2'	5:A:795:U:C6	2.55	0.41
5:A:1006:A:N3	5:A:1151:C:O2'	2.50	0.41
5:A:1193:U:C2	5:A:1194:U:C5	3.08	0.41
5:A:1681:U:H2'	5:A:1682:A:C8	2.56	0.41
5:A:2026:6MZ:H2	5:A:2495:C:H5"	2.01	0.41
8:D:42:GLU:OE1	8:D:42:GLU:N	2.53	0.41
12:H:1:MET:N	12:H:21:VAL:O	2.40	0.41
15:K:102:VAL:HG23	15:K:103:VAL:HG23	2.03	0.41
31:a:1117:C:H2'	31:a:1118:U:H6	1.85	0.41
33:c:87:LEU:HD23	33:c:87:LEU:HA	1.80	0.41
34:d:14:ARG:HH21	34:d:39:PRO:HD2	1.85	0.41
36:f:20:GLY:HA2	36:f:23:GLU:OE1	2.19	0.41
36:f:77:LEU:HD23	36:f:77:LEU:HA	1.92	0.41
5:A:91:A:C2	5:A:110:A:C5	3.09	0.41
5:A:574:U:H2'	5:A:575:G:C8	2.54	0.41
5:A:1171:U:H2'	5:A:1172:U:O4'	2.20	0.41
5:A:2641:U:H4'	5:A:2728:G:O2'	2.20	0.41
7:C:183:LYS:CG	7:C:268:ILE:HD11	2.51	0.41
11:G:15:VAL:HA	11:G:27:LYS:O	2.19	0.41
13:I:31:GLU:HG2	13:I:142:ILE:HB	2.03	0.41
31:a:454:U:H2'	31:a:455:C:C6	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:1410:A:H2	31:a:1484:G:H22	1.66	0.41
34:d:11:LEU:HD23	34:d:65:ARG:HE	1.86	0.41
34:d:164:ALA:HA	34:d:167:ARG:NE	2.35	0.41
36:f:15:SER:CB	36:f:44:ARG:HH22	2.34	0.41
37:g:11:GLU:CD	37:g:11:GLU:H	2.20	0.41
5:A:2840:A:O2'	19:O:2:SER:N	2.44	0.41
11:G:170:LEU:HD23	11:G:170:LEU:HA	1.82	0.41
18:N:34:ARG:HB3	18:N:35:HIS:CD2	2.56	0.41
23:S:7:TYR:HE1	28:X:23:LEU:HD23	1.86	0.41
25:U:34:ILE:HG12	25:U:95:PHE:HB2	2.02	0.41
31:a:1493:C:H2'	31:a:1494:G:O4'	2.20	0.41
31:a:1513:G:H2'	31:a:1515:MA6:OP2	2.20	0.41
41:k:24:ALA:HB1	41:k:89:GLY:HA3	2.01	0.41
41:k:100:GLY:HA3	51:u:12:VAL:HG21	2.03	0.41
41:k:115:ILE:HD11	51:u:28:VAL:HG12	2.02	0.41
49:s:42:PRO:O	49:s:45:VAL:HG23	2.20	0.41
5:A:1050:U:O4	5:A:1051:A:N6	2.54	0.41
11:G:95:LYS:HE3	11:G:95:LYS:HB2	1.96	0.41
31:a:79:U:H2'	31:a:80:A:H8	1.85	0.41
33:c:215:MET:HE2	33:c:215:MET:HB2	1.88	0.41
34:d:163:LEU:HA	34:d:166:GLN:OE1	2.21	0.41
37:g:70:ARG:O	37:g:138:ARG:NH1	2.54	0.41
37:g:114:LYS:HA	37:g:114:LYS:HD3	1.88	0.41
37:g:131:LYS:HE3	37:g:131:LYS:HB2	1.89	0.41
40:j:99:GLN:OE1	40:j:99:GLN:HA	2.21	0.41
2:1:13:LYS:HD2	2:1:13:LYS:HA	1.89	0.41
5:A:985:A:H62	29:Y:14:HIS:CE1	2.39	0.41
5:A:1151:C:H2'	5:A:1152:G:O4'	2.20	0.41
5:A:1543:A:H3'	5:A:1544:G:C8	2.56	0.41
5:A:2212:G:H2'	5:A:2213:G:C8	2.55	0.41
5:A:2379:G:O2'	5:A:2380:U:OP1	2.32	0.41
6:B:46:U:P	18:N:31:ARG:HH22	2.42	0.41
8:D:111:ASP:OD1	8:D:111:ASP:N	2.54	0.41
31:a:200:G:H2'	31:a:201:A:C8	2.56	0.41
31:a:232:A:H2'	31:a:233:A:H8	1.86	0.41
31:a:1488:G:H2'	31:a:1489:A:C8	2.54	0.41
34:d:7:PRO:HB2	34:d:10:LYS:HG2	2.02	0.41
34:d:201:LEU:HA	34:d:204:GLU:OE1	2.21	0.41
35:e:40:ASP:OD1	35:e:44:ARG:HB2	2.20	0.41
37:g:132:GLY:O	37:g:136:LYS:NZ	2.41	0.41
42:l:89:ASP:OD1	42:l:89:ASP:C	2.64	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:m:3:ARG:HG2	43:m:8:ASN:OD1	2.19	0.41
44:n:73:TYR:CE2	44:n:75:ARG:HA	2.56	0.41
44:n:87:THR:HG23	44:n:92:ASP:HB2	2.02	0.41
5:A:215:C:H2'	5:A:216:C:H6	1.86	0.41
5:A:944:A:H2'	5:A:945:C:C6	2.57	0.41
5:A:2470:U:H5"	5:A:2471:C:C5	2.56	0.41
11:G:33:LEU:HD23	11:G:33:LEU:HA	1.95	0.41
19:O:65:ARG:NH1	19:O:74:GLU:OE2	2.50	0.41
31:a:79:U:H2'	31:a:80:A:C8	2.55	0.41
31:a:150:A:H2'	31:a:151:U:H6	1.86	0.41
31:a:150:A:H2'	31:a:151:U:C6	2.56	0.41
31:a:974:A:O2'	31:a:976:C:OP2	2.38	0.41
31:a:1311:C:H2'	31:a:1312:U:H6	1.86	0.41
31:a:1519:U:H2'	31:a:1520:G:H8	1.86	0.41
32:b:137:LEU:O	32:b:140:THR:OG1	2.34	0.41
38:h:91:ASP:OD1	38:h:91:ASP:N	2.38	0.41
1:0:30:MET:HE1	5:A:2282:G:C5	2.56	0.40
5:A:1389:U:H2'	5:A:1390:A:O4'	2.20	0.40
5:A:2379:G:HO2'	5:A:2380:U:P	2.41	0.40
25:U:40:GLU:OE2	25:U:40:GLU:HA	2.21	0.40
31:a:200:G:C8	31:a:461:A:N1	2.88	0.40
31:a:674:U:H3	31:a:710:G:H22	1.69	0.40
31:a:1141:G:N2	31:a:1143:A:H62	2.19	0.40
31:a:1164:A:H1'	31:a:1165:C:H2'	2.02	0.40
37:g:139:GLU:O	37:g:143:ARG:HG3	2.21	0.40
5:A:981:A:N3	5:A:981:A:H2'	2.36	0.40
5:A:1025:A:N6	5:A:1122:G:H2'	2.35	0.40
5:A:1520:A:H2'	5:A:1521:G:C8	2.56	0.40
5:A:2841:U:H5"	19:O:55:ASN:O	2.21	0.40
31:a:109:G:H2'	31:a:110:U:C6	2.56	0.40
31:a:1089:A:OP2	37:g:5:ARG:NH2	2.48	0.40
40:j:7:ARG:HG2	40:j:75:ASP:OD1	2.21	0.40
5:A:1172:U:H2'	5:A:1173:G:C2	2.56	0.40
5:A:2883:C:H2'	5:A:2884:U:C6	2.56	0.40
10:F:49:LEU:O	10:F:150:ARG:NH1	2.54	0.40
24:T:5:LYS:HD3	24:T:92:ARG:NH1	2.36	0.40
31:a:346:G:H2'	31:a:347:G:C8	2.56	0.40
31:a:1233:A:H2'	31:a:1234:C:C6	2.56	0.40
48:r:33:ILE:HG22	48:r:34:THR:O	2.21	0.40
5:A:1843:A:H2	5:A:1889:C:H42	1.69	0.40
8:D:43:THR:HG23	8:D:44:ASP:OD2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:E:1:MET:HE3	9:E:1:MET:HB3	1.86	0.40
11:G:50:LEU:HD23	11:G:50:LEU:HA	1.93	0.40
16:L:57:ARG:HA	16:L:57:ARG:HD3	1.72	0.40
31:a:880:C:O2'	31:a:881:U:H5'	2.22	0.40
31:a:1115:U:H1'	31:a:1176:A:C5	2.57	0.40
32:b:33:ILE:O	32:b:35:GLY:N	2.54	0.40
33:c:10:ILE:HD12	33:c:10:ILE:HA	1.92	0.40
36:f:44:ARG:HA	36:f:44:ARG:HD3	1.87	0.40
5:A:580:A:H2'	5:A:581:G:C8	2.57	0.40
5:A:587:U:H2'	5:A:588:A:C8	2.57	0.40
5:A:837:U:H2'	5:A:838:C:C6	2.56	0.40
5:A:1950:G:O2'	5:A:1952:U:O4	2.31	0.40
13:I:88:ASN:OD1	13:I:91:LYS:HG3	2.22	0.40
33:c:88:GLN:HG2	33:c:101:VAL:HG23	2.03	0.40
34:d:37:LYS:HE2	34:d:37:LYS:HB3	1.95	0.40
34:d:189:ASP:OD2	34:d:191:SER:OG	2.40	0.40
39:i:34:GLU:HA	39:i:43:ARG:HH11	1.87	0.40
39:i:110:GLU:OE2	39:i:113:LYS:NZ	2.43	0.40
51:u:7:LYS:N	51:u:10:GLU:OE1	2.45	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	49/51 (96%)	49 (100%)	0	0	100	100
2	1	42/44 (96%)	42 (100%)	0	0	100	100
3	2	61/64 (95%)	60 (98%)	1 (2%)	0	100	100
4	3	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
7	C	269/274 (98%)	263 (98%)	5 (2%)	1 (0%)	30	34

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	D	209/212 (99%)	201 (96%)	8 (4%)	0	100	100
9	E	198/200 (99%)	197 (100%)	1 (0%)	0	100	100
10	F	172/178 (97%)	152 (88%)	17 (10%)	3 (2%)	7	6
11	G	172/177 (97%)	167 (97%)	4 (2%)	1 (1%)	21	24
12	H	58/148 (39%)	57 (98%)	1 (2%)	0	100	100
13	I	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
14	J	120/122 (98%)	115 (96%)	5 (4%)	0	100	100
15	K	142/146 (97%)	139 (98%)	3 (2%)	0	100	100
16	L	135/137 (98%)	132 (98%)	2 (2%)	1 (1%)	18	20
17	M	117/125 (94%)	116 (99%)	1 (1%)	0	100	100
18	N	113/116 (97%)	112 (99%)	1 (1%)	0	100	100
19	O	115/122 (94%)	114 (99%)	1 (1%)	0	100	100
20	P	115/119 (97%)	114 (99%)	1 (1%)	0	100	100
21	Q	101/103 (98%)	98 (97%)	2 (2%)	1 (1%)	12	12
22	R	107/109 (98%)	107 (100%)	0	0	100	100
23	S	89/106 (84%)	88 (99%)	1 (1%)	0	100	100
24	T	101/105 (96%)	99 (98%)	2 (2%)	0	100	100
25	U	95/98 (97%)	93 (98%)	2 (2%)	0	100	100
26	V	74/85 (87%)	73 (99%)	1 (1%)	0	100	100
27	W	76/78 (97%)	74 (97%)	2 (3%)	0	100	100
28	X	58/65 (89%)	57 (98%)	1 (2%)	0	100	100
29	Y	55/58 (95%)	55 (100%)	0	0	100	100
30	Z	52/61 (85%)	51 (98%)	1 (2%)	0	100	100
32	b	223/250 (89%)	208 (93%)	14 (6%)	1 (0%)	30	34
33	c	213/250 (85%)	208 (98%)	5 (2%)	0	100	100
34	d	205/208 (99%)	202 (98%)	3 (2%)	0	100	100
35	e	153/165 (93%)	153 (100%)	0	0	100	100
36	f	102/127 (80%)	100 (98%)	0	2 (2%)	6	4
37	g	132/156 (85%)	128 (97%)	3 (2%)	1 (1%)	16	17
38	h	128/131 (98%)	123 (96%)	5 (4%)	0	100	100
39	i	124/128 (97%)	120 (97%)	4 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
40	j	98/103 (95%)	94 (96%)	4 (4%)	0	100	100
41	k	115/128 (90%)	111 (96%)	4 (4%)	0	100	100
42	l	120/124 (97%)	115 (96%)	5 (4%)	0	100	100
43	m	113/118 (96%)	109 (96%)	4 (4%)	0	100	100
44	n	98/101 (97%)	95 (97%)	3 (3%)	0	100	100
45	o	86/89 (97%)	85 (99%)	1 (1%)	0	100	100
46	p	80/101 (79%)	80 (100%)	0	0	100	100
47	q	77/85 (91%)	76 (99%)	1 (1%)	0	100	100
48	r	50/75 (67%)	50 (100%)	0	0	100	100
49	s	80/91 (88%)	78 (98%)	2 (2%)	0	100	100
50	t	84/88 (96%)	84 (100%)	0	0	100	100
51	u	60/71 (84%)	59 (98%)	1 (2%)	0	100	100
All	All	5412/5872 (92%)	5275 (98%)	126 (2%)	11 (0%)	44	52

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	C	272	ARG
32	b	8	MET
36	f	33	ASP
36	f	94	HIS
37	g	3	ARG
10	F	137	VAL
10	F	5	LYS
11	G	12	PRO
10	F	134	GLU
16	L	79	LEU
21	Q	52	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	47/47 (100%)	47 (100%)	0	100	100
2	1	36/36 (100%)	36 (100%)	0	100	100
3	2	52/53 (98%)	52 (100%)	0	100	100
4	3	33/33 (100%)	32 (97%)	1 (3%)	36	48
7	C	217/220 (99%)	210 (97%)	7 (3%)	34	46
8	D	166/167 (99%)	162 (98%)	4 (2%)	43	57
9	E	155/155 (100%)	152 (98%)	3 (2%)	50	65
10	F	144/147 (98%)	136 (94%)	8 (6%)	19	23
11	G	139/142 (98%)	135 (97%)	4 (3%)	37	49
12	H	45/112 (40%)	43 (96%)	2 (4%)	25	33
13	I	118/118 (100%)	117 (99%)	1 (1%)	73	84
14	J	103/103 (100%)	102 (99%)	1 (1%)	68	81
15	K	106/108 (98%)	105 (99%)	1 (1%)	70	82
16	L	113/113 (100%)	113 (100%)	0	100	100
17	M	96/101 (95%)	95 (99%)	1 (1%)	68	81
18	N	84/85 (99%)	80 (95%)	4 (5%)	23	29
19	O	99/102 (97%)	97 (98%)	2 (2%)	48	63
20	P	85/86 (99%)	85 (100%)	0	100	100
21	Q	84/84 (100%)	83 (99%)	1 (1%)	63	77
22	R	88/88 (100%)	87 (99%)	1 (1%)	65	79
23	S	77/87 (88%)	77 (100%)	0	100	100
24	T	83/85 (98%)	77 (93%)	6 (7%)	13	14
25	U	79/80 (99%)	77 (98%)	2 (2%)	42	55
26	V	59/64 (92%)	58 (98%)	1 (2%)	53	68
27	W	70/70 (100%)	70 (100%)	0	100	100
28	X	53/56 (95%)	52 (98%)	1 (2%)	50	65
29	Y	53/54 (98%)	53 (100%)	0	100	100
30	Z	46/50 (92%)	46 (100%)	0	100	100
32	b	185/200 (92%)	175 (95%)	10 (5%)	20	24
33	c	175/198 (88%)	174 (99%)	1 (1%)	78	87
34	d	170/171 (99%)	164 (96%)	6 (4%)	32	42
35	e	113/120 (94%)	110 (97%)	3 (3%)	39	52

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
36	f	94/111 (85%)	89 (95%)	5 (5%)	20 25
37	g	113/128 (88%)	109 (96%)	4 (4%)	32 42
38	h	108/109 (99%)	105 (97%)	3 (3%)	38 51
39	i	99/100 (99%)	99 (100%)	0	100 100
40	j	89/91 (98%)	88 (99%)	1 (1%)	65 79
41	k	88/98 (90%)	82 (93%)	6 (7%)	14 16
42	l	104/106 (98%)	97 (93%)	7 (7%)	15 17
43	m	95/98 (97%)	92 (97%)	3 (3%)	34 46
44	n	81/82 (99%)	79 (98%)	2 (2%)	42 55
45	o	71/72 (99%)	69 (97%)	2 (3%)	38 51
46	p	63/77 (82%)	63 (100%)	0	100 100
47	q	71/76 (93%)	68 (96%)	3 (4%)	26 35
48	r	46/66 (70%)	44 (96%)	2 (4%)	26 34
49	s	70/78 (90%)	70 (100%)	0	100 100
50	t	65/67 (97%)	61 (94%)	4 (6%)	16 19
51	u	53/62 (86%)	51 (96%)	2 (4%)	29 39
All	All	4483/4756 (94%)	4368 (97%)	115 (3%)	41 54

All (115) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	3	15	LYS
7	C	13	ARG
7	C	19	VAL
7	C	77	VAL
7	C	118	SER
7	C	139	SER
7	C	163	GLN
7	C	273	VAL
8	D	29	GLU
8	D	58	GLU
8	D	59	SER
8	D	95	VAL
9	E	125	VAL
9	E	193	LYS
9	E	198	GLU

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Mol	Chain	Res	Type
10	F	25	VAL
10	F	54	VAL
10	F	69	LEU
10	F	83	TRP
10	F	103	LEU
10	F	132	LEU
10	F	137	VAL
10	F	149	ILE
11	G	9	VAL
11	G	76	VAL
11	G	107	LEU
11	G	110	SER
12	H	4	ILE
12	H	37	VAL
13	I	78	THR
14	J	116	SER
15	K	29	VAL
17	M	116	VAL
18	N	39	GLN
18	N	48	VAL
18	N	54	THR
18	N	86	VAL
19	O	20	LEU
19	O	28	THR
21	Q	87	GLN
22	R	109	VAL
24	T	9	GLN
24	T	24	VAL
24	T	50	THR
24	T	58	THR
24	T	71	LEU
24	T	97	THR
25	U	57	SER
25	U	59	VAL
26	V	30	THR
28	X	4	LYS
32	b	12	LEU
32	b	22	THR
32	b	37	ARG
32	b	40	ILE
32	b	43	ILE
32	b	45	LEU

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Mol	Chain	Res	Type
32	b	138	GLU
32	b	173	ILE
32	b	202	ILE
32	b	223	ILE
33	c	44	THR
34	d	12	SER
34	d	17	THR
34	d	30	VAL
34	d	32	THR
34	d	179	LYS
34	d	193	LEU
35	e	40	ASP
35	e	72	THR
35	e	163	ILE
36	f	10	VAL
36	f	16	ASP
36	f	19	VAL
36	f	58	HIS
36	f	73	GLU
37	g	22	THR
37	g	65	THR
37	g	69	VAL
37	g	144	MET
38	h	10	MET
38	h	29	SER
38	h	107	THR
40	j	97	ASP
41	k	25	SER
41	k	29	THR
41	k	45	THR
41	k	54	SER
41	k	110	THR
41	k	128	VAL
42	l	10	LYS
42	l	13	THR
42	l	15	LEU
42	l	30	ARG
42	l	34	CYS
42	l	82	ILE
42	l	111	ASN
43	m	47	GLU
43	m	68	ASP

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Mol	Chain	Res	Type
43	m	78	LYS
44	n	37	SER
44	n	51	LEU
45	o	4	THR
45	o	7	ASP
47	q	24	VAL
47	q	45	LEU
47	q	53	VAL
48	r	48	LYS
48	r	66	SER
50	t	23	SER
50	t	49	GLU
50	t	77	SER
50	t	79	LEU
51	u	28	VAL
51	u	63	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (50) such sidechains are listed below:

Mol	Chain	Res	Type
7	C	53	HIS
7	C	260	ASN
8	D	63	ASN
8	D	65	GLN
8	D	108	GLN
8	D	133	GLN
8	D	143	HIS
8	D	151	GLN
9	E	40	GLN
9	E	165	HIS
10	F	63	GLN
10	F	135	GLN
11	G	64	GLN
11	G	73	ASN
11	G	104	ASN
11	G	111	HIS
14	J	59	ASN
15	K	101	ASN
16	L	85	ASN
18	N	2	ASN
19	O	9	GLN
19	O	44	GLN

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Mol	Chain	Res	Type
19	O	59	ASN
20	P	11	HIS
21	Q	6	GLN
21	Q	87	GLN
22	R	31	HIS
22	R	62	ASN
26	V	50	ASN
27	W	17	ASN
27	W	35	HIS
28	X	44	GLN
33	c	25	ASN
33	c	88	GLN
34	d	36	ASN
34	d	102	ASN
34	d	177	HIS
38	h	53	GLN
41	k	117	HIS
41	k	118	ASN
44	n	33	ASN
45	o	20	ASN
45	o	48	HIS
46	p	81	GLN
47	q	51	ASN
49	s	14	HIS
49	s	56	ASN
50	t	3	ASN
50	t	80	ASN
51	u	43	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
31	a	1527/1544 (98%)	185 (12%)	0
5	A	2710/2918 (92%)	330 (12%)	14 (0%)
6	B	114/115 (99%)	14 (12%)	1 (0%)
All	All	4351/4577 (95%)	529 (12%)	15 (0%)

All (529) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
5	A	13	A

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Mol	Chain	Res	Type
5	A	22	G
5	A	41	U
5	A	42	G
5	A	53	G
5	A	58	G
5	A	67	G
5	A	68	A
5	A	70	A
5	A	78	A
5	A	81	A
5	A	82	G
5	A	99	A
5	A	104	C
5	A	109	G
5	A	125	A
5	A	126	A
5	A	127	U
5	A	138	A
5	A	149	G
5	A	203	A
5	A	206	A
5	A	222	G
5	A	223	A
5	A	228	A
5	A	229	A
5	A	235	U
5	A	236	U
5	A	240	A
5	A	255	G
5	A	257	G
5	A	262	A
5	A	272	A
5	A	278	U
5	A	279	U
5	A	297	G
5	A	313	A
5	A	331	G
5	A	332	A
5	A	357	C
5	A	360	A
5	A	361	A
5	A	365	U

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Mol	Chain	Res	Type
5	A	366	G
5	A	369	G
5	A	370	A
5	A	371	G
5	A	385	G
5	A	395	G
5	A	403	A
5	A	410	G
5	A	423	G
5	A	455	C
5	A	480	G
5	A	493	G
5	A	504	A
5	A	508	C
5	A	529	G
5	A	531	A
5	A	532	G
5	A	544	U
5	A	546	G
5	A	561	A
5	A	571	U
5	A	573	A
5	A	601	A
5	A	611	U
5	A	612	A
5	A	625	A
5	A	633	C
5	A	635	A
5	A	643	U
5	A	644	A
5	A	651	U
5	A	684	U
5	A	712	U
5	A	714	A
5	A	715	C
5	A	728	A
5	A	745	U
5	A	762	A
5	A	773	G
5	A	774	G
5	A	780	A
5	A	782	G

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Mol	Chain	Res	Type
5	A	783	G
5	A	803	G
5	A	810	C
5	A	817	A
5	A	825	U
5	A	826	U
5	A	845	A
5	A	846	U
5	A	857	G
5	A	864	A
5	A	900	C
5	A	905	G
5	A	908	A
5	A	918	A
5	A	929	C
5	A	938	A
5	A	942	A
5	A	943	G
5	A	958	C
5	A	971	G
5	A	980	A
5	A	993	A
5	A	1009	U
5	A	1010	C
5	A	1014	G
5	A	1019	G
5	A	1023	G
5	A	1030	U
5	A	1031	G
5	A	1043	A
5	A	1051	A
5	A	1103	A
5	A	1105	U
5	A	1106	C
5	A	1108	A
5	A	1109	G
5	A	1128	G
5	A	1129	U
5	A	1130	A
5	A	1132	C
5	A	1133	G
5	A	1140	A

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Mol	Chain	Res	Type
5	A	1168	A
5	A	1170	U
5	A	1173	G
5	A	1174	U
5	A	1201	G
5	A	1243	G
5	A	1245	G
5	A	1248	A
5	A	1251	G
5	A	1266	G
5	A	1267	A
5	A	1296	A
5	A	1316	A
5	A	1324	U
5	A	1347	U
5	A	1360	A
5	A	1374	U
5	A	1378	A
5	A	1411	G
5	A	1415	U
5	A	1416	G
5	A	1423	C
5	A	1428	A
5	A	1432	C
5	A	1433	U
5	A	1441	C
5	A	1447	G
5	A	1448	U
5	A	1454	G
5	A	1462	G
5	A	1477	U
5	A	1485	A
5	A	1486	G
5	A	1488	C
5	A	1489	A
5	A	1490	A
5	A	1492	U
5	A	1507	G
5	A	1511	A
5	A	1519	U
5	A	1520	A
5	A	1527	U

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Mol	Chain	Res	Type
5	A	1528	G
5	A	1529	U
5	A	1530	A
5	A	1531	C
5	A	1532	U
5	A	1533	U
5	A	1534	G
5	A	1538	A
5	A	1539	G
5	A	1540	C
5	A	1543	A
5	A	1544	G
5	A	1552	U
5	A	1557	U
5	A	1564	A
5	A	1567	A
5	A	1576	U
5	A	1580	C
5	A	1581	U
5	A	1582	U
5	A	1583	C
5	A	1588	A
5	A	1605	G
5	A	1606	A
5	A	1607	A
5	A	1616	A
5	A	1632	U
5	A	1645	U
5	A	1646	U
5	A	1647	G
5	A	1672	G
5	A	1720	G
5	A	1724	C
5	A	1725	U
5	A	1726	C
5	A	1727	G
5	A	1746	G
5	A	1760	G
5	A	1769	A
5	A	1776	A
5	A	1796	C
5	A	1797	A

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Mol	Chain	Res	Type
5	A	1807	G
5	A	1812	C
5	A	1825	A
5	A	1844	A
5	A	1862	A
5	A	1872	A
5	A	1875	C
5	A	1897	A
5	A	1902	G
5	A	1923	A
5	A	1925	G
5	A	1926	G
5	A	1932	A
5	A	1951	U
5	A	1959	U
5	A	1963	C
5	A	1966	A
5	A	1967	U
5	A	1968	G
5	A	1987	U
5	A	1989	U
5	A	2018	U
5	A	2019	C
5	A	2027	A
5	A	2029	A
5	A	2039	C
5	A	2051	C
5	A	2052	G
5	A	2056	A
5	A	2057	G
5	A	2058	A
5	A	2065	7MG
5	A	2194	A
5	A	2199	U
5	A	2200	G
5	A	2207	G
5	A	2221	A
5	A	2234	G
5	A	2235	G
5	A	2275	G
5	A	2279	U
5	A	2283	A

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Mol	Chain	Res	Type
5	A	2284	A
5	A	2299	G
5	A	2301	U
5	A	2303	G
5	A	2304	G
5	A	2305	A
5	A	2316	A
5	A	2318	A
5	A	2321	A
5	A	2323	A
5	A	2341	A
5	A	2343	C
5	A	2346	C
5	A	2378	G
5	A	2379	G
5	A	2380	U
5	A	2381	C
5	A	2399	C
5	A	2402	U
5	A	2418	C
5	A	2421	A
5	A	2425	G
5	A	2426	A
5	A	2430	A
5	A	2431	A
5	A	2437	U
5	A	2444	A
5	A	2469	U
5	A	2471	C
5	A	2472	A
5	A	2474	A
5	A	2498	G
5	A	2499	2MA
5	A	2503	C
5	A	2514	A
5	A	2525	G
5	A	2543	A
5	A	2550	U
5	A	2562	A
5	A	2563	G
5	A	2578	G
5	A	2598	A

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Mol	Chain	Res	Type
5	A	2599	G
5	A	2605	U
5	A	2609	U
5	A	2625	U
5	A	2642	C
5	A	2650	A
5	A	2661	A
5	A	2685	U
5	A	2686	A
5	A	2687	C
5	A	2710	G
5	A	2722	U
5	A	2729	A
5	A	2744	A
5	A	2754	A
5	A	2761	A
5	A	2762	G
5	A	2774	A
5	A	2776	A
5	A	2793	U
5	A	2796	U
5	A	2797	G
5	A	2816	G
5	A	2817	A
5	A	2830	G
5	A	2831	A
5	A	2832	U
5	A	2845	G
5	A	2852	A
5	A	2863	A
5	A	2868	G
5	A	2869	A
5	A	2876	C
5	A	2880	U
5	A	2898	U
6	B	2	C
6	B	28	C
6	B	32	A
6	B	35	C
6	B	39	C
6	B	40	C
6	B	44	A

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Mol	Chain	Res	Type
6	B	54	G
6	B	64	A
6	B	65	G
6	B	71	A
6	B	87	A
6	B	106	A
6	B	115	U
31	a	6	C
31	a	7	U
31	a	9	A
31	a	11	G
31	a	34	A
31	a	41	G
31	a	49	C
31	a	50	U
31	a	53	A
31	a	62	A
31	a	66	G
31	a	76	A
31	a	77	G
31	a	81	G
31	a	82	C
31	a	83	U
31	a	84	U
31	a	85	G
31	a	89	C
31	a	91	G
31	a	92	G
31	a	97	A
31	a	117	U
31	a	127	U
31	a	159	G
31	a	163	U
31	a	184	A
31	a	186	G
31	a	193	A
31	a	205	U
31	a	208	G
31	a	216	G
31	a	239	A
31	a	241	U
31	a	243	G

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Mol	Chain	Res	Type
31	a	247	G
31	a	262	G
31	a	263	C
31	a	276	C
31	a	285	G
31	a	302	A
31	a	324	C
31	a	325	A
31	a	343	G
31	a	348	C
31	a	350	G
31	a	363	U
31	a	368	C
31	a	380	C
31	a	393	A
31	a	402	G
31	a	407	A
31	a	409	G
31	a	410	A
31	a	418	A
31	a	419	U
31	a	420	G
31	a	425	U
31	a	426	A
31	a	444	A
31	a	447	A
31	a	461	A
31	a	463	U
31	a	480	C
31	a	481	G
31	a	483	U
31	a	492	A
31	a	493	A
31	a	494	U
31	a	496	A
31	a	502	G
31	a	506	A
31	a	508	C
31	a	515	C
31	a	518	G
31	a	527	G
31	a	528	U

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Mol	Chain	Res	Type
31	a	530	A
31	a	544	A
31	a	556	A
31	a	561	C
31	a	569	A
31	a	570	A
31	a	573	C
31	a	574	G
31	a	630	G
31	a	639	A
31	a	650	A
31	a	662	A
31	a	680	G
31	a	684	A
31	a	700	G
31	a	720	U
31	a	721	G
31	a	752	G
31	a	774	A
31	a	784	A
31	a	789	A
31	a	790	U
31	a	791	A
31	a	812	A
31	a	814	C
31	a	838	U
31	a	840	U
31	a	841	G
31	a	846	U
31	a	887	G
31	a	888	U
31	a	911	A
31	a	923	G
31	a	924	G
31	a	931	C
31	a	932	A
31	a	939	G
31	a	957	U
31	a	966	A
31	a	968	G
31	a	972	A
31	a	973	G

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Mol	Chain	Res	Type
31	a	974	A
31	a	989	U
31	a	990	G
31	a	1001	A
31	a	1007	U
31	a	1027	U
31	a	1028	C
31	a	1029	G
31	a	1030	G
31	a	1032	A
31	a	1033	A
31	a	1043	A
31	a	1062	U
31	a	1067	U
31	a	1070	U
31	a	1078	G
31	a	1082	U
31	a	1090	A
31	a	1091	G
31	a	1092	U
31	a	1098	A
31	a	1134	C
31	a	1136	G
31	a	1151	G
31	a	1156	U
31	a	1164	A
31	a	1165	C
31	a	1166	A
31	a	1168	A
31	a	1179	G
31	a	1180	C
31	a	1193	A
31	a	1194	A
31	a	1210	A
31	a	1224	A
31	a	1235	A
31	a	1255	G
31	a	1277	A
31	a	1284	A
31	a	1297	G
31	a	1299	C
31	a	1302	G

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Mol	Chain	Res	Type
31	a	1309	G
31	a	1317	C
31	a	1342	U
31	a	1350	G
31	a	1360	A
31	a	1361	U
31	a	1367	G
31	a	1378	U
31	a	1394	C
31	a	1395	A
31	a	1416	G
31	a	1438	A
31	a	1443	A
31	a	1449	A
31	a	1450	A
31	a	1484	G
31	a	1491	G
31	a	1494	G
31	a	1500	A
31	a	1503	U
31	a	1514	G
31	a	1516	MA6
31	a	1526	G
31	a	1527	G

All (15) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
5	A	41	U
5	A	256	C
5	A	364	A
5	A	365	U
5	A	368	C
5	A	424	G
5	A	507	U
5	A	782	G
5	A	844	A
5	A	1127	U
5	A	1173	G
5	A	1179	G
5	A	2379	G
5	A	2443	G

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Mol	Chain	Res	Type
6	B	86	U

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

21 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
31	2MG	a	1204	31	23,26,27	0.46	0	33,38,41	0.52	0
31	2MG	a	963	31	23,26,27	0.45	0	33,38,41	0.51	0
5	PSU	A	2576	5	18,21,22	1.12	2 (11%)	21,30,33	2.02	6 (28%)
5	2MA	A	2499	5	22,25,26	3.94	9 (40%)	32,37,40	2.63	11 (34%)
5	PSU	A	2500	5	18,21,22	1.12	1 (5%)	21,30,33	1.91	4 (19%)
5	5MU	A	1935	5	19,22,23	0.48	0	27,32,35	0.49	0
31	5MC	a	964	31	19,22,23	0.52	0	26,32,35	0.56	0
5	OMU	A	2548	5	19,22,23	3.02	8 (42%)	25,31,34	1.82	5 (20%)
5	PSU	A	2601	5	18,21,22	1.08	1 (5%)	21,30,33	1.94	4 (19%)
31	4OC	a	1399	31	20,23,24	3.14	8 (40%)	25,32,35	0.89	1 (4%)
31	7MG	a	524	31	23,26,27	1.11	1 (4%)	27,39,42	0.88	2 (7%)
5	2MG	A	2441	5	23,26,27	0.51	0	33,38,41	0.44	0
31	MA6	a	1516	31	23,26,27	1.40	4 (17%)	33,38,41	3.25	12 (36%)
31	UR3	a	1495	31	19,22,23	2.91	7 (36%)	26,32,35	1.60	3 (11%)
5	OMG	A	2247	5	23,26,27	0.48	0	32,38,41	0.45	0
5	PSU	A	952	5	18,21,22	1.05	1 (5%)	21,30,33	1.97	4 (19%)
31	MA6	a	1515	31	23,26,27	1.40	4 (17%)	33,38,41	3.21	12 (36%)
5	PSU	A	2453	5	18,21,22	1.08	1 (5%)	21,30,33	1.98	5 (23%)
5	7MG	A	2065	5	23,26,27	1.05	1 (4%)	27,39,42	0.91	2 (7%)
5	6MZ	A	2026	5	22,25,26	2.51	4 (18%)	29,36,39	3.31	10 (34%)
31	PSU	a	513	31	18,21,22	1.12	1 (5%)	21,30,33	1.94	5 (23%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral

centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
31	2MG	a	1204	31	-	0/9/27/28	0/3/3/3
31	2MG	a	963	31	-	0/9/27/28	0/3/3/3
5	PSU	A	2576	5	-	0/7/25/26	0/2/2/2
5	2MA	A	2499	5	-	2/7/25/26	0/3/3/3
5	PSU	A	2500	5	-	2/7/25/26	0/2/2/2
5	5MU	A	1935	5	-	0/7/25/26	0/2/2/2
31	5MC	a	964	31	-	0/7/25/26	0/2/2/2
5	OMU	A	2548	5	-	0/9/27/28	0/2/2/2
5	PSU	A	2601	5	-	0/7/25/26	0/2/2/2
31	4OC	a	1399	31	-	1/9/29/30	0/2/2/2
31	7MG	a	524	31	-	1/7/37/38	0/3/3/3
5	2MG	A	2441	5	-	2/9/27/28	0/3/3/3
31	MA6	a	1516	31	-	0/11/29/30	0/3/3/3
31	UR3	a	1495	31	-	0/7/25/26	0/2/2/2
5	OMG	A	2247	5	-	1/9/27/28	0/3/3/3
5	PSU	A	952	5	-	0/7/25/26	0/2/2/2
31	MA6	a	1515	31	-	0/11/29/30	0/3/3/3
5	PSU	A	2453	5	-	0/7/25/26	0/2/2/2
5	7MG	A	2065	5	-	0/7/37/38	0/3/3/3
5	6MZ	A	2026	5	-	2/9/27/28	0/3/3/3
31	PSU	a	513	31	-	0/7/25/26	0/2/2/2

All (53) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	2499	2MA	C4-N3	11.96	1.49	1.34
5	A	2026	6MZ	C6-N6	10.04	1.45	1.34
5	A	2499	2MA	C2-N3	7.25	1.46	1.34
31	a	1495	UR3	C2-N1	7.14	1.48	1.38
5	A	2499	2MA	C6-N1	7.05	1.44	1.35
31	a	1399	4OC	C4-N3	6.95	1.44	1.32
5	A	2548	OMU	C2-N1	6.94	1.49	1.38
31	a	1495	UR3	C6-C5	6.76	1.50	1.35
5	A	2548	OMU	C2-N3	6.70	1.49	1.38
31	a	1399	4OC	C6-C5	6.23	1.49	1.35
31	a	1399	4OC	C2-N3	6.20	1.48	1.36
5	A	2499	2MA	C2-N1	5.99	1.44	1.34
5	A	2548	OMU	C6-C5	5.65	1.48	1.35
31	a	1495	UR3	C2-N3	5.60	1.50	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
31	a	1399	4OC	C4-N4	4.67	1.45	1.36
5	A	2499	2MA	C5-C6	4.65	1.53	1.41
31	a	524	7MG	C5-N7	4.63	1.41	1.35
5	A	2065	7MG	C5-N7	4.32	1.41	1.35
31	a	1399	4OC	C2-N1	4.21	1.48	1.40
5	A	2548	OMU	C4-N3	4.15	1.45	1.38
31	a	1516	MA6	C6-N6	3.90	1.47	1.36
31	a	1515	MA6	C6-N6	3.88	1.47	1.36
5	A	2500	PSU	C6-C5	3.66	1.39	1.35
31	a	513	PSU	C6-C5	3.65	1.39	1.35
31	a	1399	4OC	C5-C4	3.56	1.48	1.41
5	A	2576	PSU	C6-C5	3.49	1.39	1.35
5	A	2601	PSU	C6-C5	3.48	1.39	1.35
5	A	2499	2MA	C6-N6	-3.46	1.25	1.34
5	A	2453	PSU	C6-C5	3.41	1.39	1.35
31	a	1495	UR3	C6-N1	3.38	1.46	1.38
5	A	952	PSU	C6-C5	3.27	1.38	1.35
31	a	1399	4OC	C6-N1	3.22	1.45	1.38
5	A	2026	6MZ	C5-N7	-3.19	1.33	1.39
5	A	2548	OMU	O4-C4	-3.05	1.18	1.24
5	A	2026	6MZ	C5-C4	-3.02	1.33	1.39
31	a	1515	MA6	C5-C4	-2.93	1.33	1.39
31	a	1516	MA6	C5-C4	-2.92	1.33	1.39
5	A	2548	OMU	C6-N1	2.83	1.44	1.38
31	a	1399	4OC	O2-C2	-2.76	1.18	1.23
5	A	2548	OMU	O2-C2	-2.64	1.18	1.23
5	A	2499	2MA	C5-N7	-2.57	1.34	1.39
31	a	1495	UR3	C4-N3	2.54	1.45	1.40
5	A	2026	6MZ	C8-N9	-2.49	1.33	1.37
5	A	2499	2MA	C4-N9	-2.48	1.32	1.37
31	a	1515	MA6	C5-N7	-2.43	1.34	1.39
31	a	1516	MA6	C5-N7	-2.37	1.34	1.39
5	A	2548	OMU	C5-C4	2.35	1.48	1.43
31	a	1495	UR3	C5-C4	2.28	1.49	1.43
31	a	1515	MA6	C8-N9	-2.27	1.33	1.37
5	A	2499	2MA	C8-N7	2.25	1.36	1.31
31	a	1516	MA6	C8-N9	-2.21	1.33	1.37
5	A	2576	PSU	O4'-C1'	-2.06	1.41	1.43
31	a	1495	UR3	O2-C2	-2.00	1.18	1.22

All (86) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
31	a	1516	MA6	N1-C6-N6	-11.76	102.53	116.86
31	a	1515	MA6	N1-C6-N6	-11.57	102.76	116.86
5	A	2026	6MZ	C4-N9-C1'	-9.05	105.47	126.63
5	A	2026	6MZ	C1'-N9-C8	9.01	147.08	127.09
31	a	1516	MA6	C5-C6-N6	7.92	137.87	125.33
31	a	1515	MA6	C5-C6-N6	7.65	137.44	125.33
5	A	2499	2MA	C1'-N9-C8	-6.91	111.75	127.09
5	A	2499	2MA	N9-C8-N7	-5.96	105.48	113.94
5	A	2026	6MZ	C5-C4-N3	-5.92	118.57	126.72
5	A	2548	OMU	C4-N3-C2	-5.68	119.56	126.61
31	a	1516	MA6	N1-C2-N3	-5.63	120.06	128.58
31	a	1515	MA6	N1-C2-N3	-5.63	120.06	128.58
31	a	1495	UR3	C4-N3-C2	-5.56	120.11	124.58
5	A	2499	2MA	C4-N9-C8	5.18	111.17	105.74
5	A	2026	6MZ	N1-C2-N3	-5.15	120.79	128.58
5	A	2499	2MA	C5-C4-N3	-5.12	121.79	127.18
5	A	2576	PSU	N1-C2-N3	5.05	120.49	115.17
5	A	2453	PSU	N1-C2-N3	5.04	120.48	115.17
5	A	952	PSU	N1-C2-N3	4.98	120.42	115.17
5	A	952	PSU	C4-N3-C2	-4.96	119.54	126.37
5	A	2026	6MZ	C4-C5-C6	4.94	120.88	116.78
5	A	2601	PSU	N1-C2-N3	4.92	120.36	115.17
5	A	2601	PSU	C4-N3-C2	-4.91	119.61	126.37
31	a	513	PSU	N1-C2-N3	4.88	120.32	115.17
5	A	2453	PSU	C4-N3-C2	-4.87	119.67	126.37
5	A	2500	PSU	N1-C2-N3	4.83	120.26	115.17
5	A	2500	PSU	C4-N3-C2	-4.81	119.75	126.37
31	a	1515	MA6	C5-C4-N3	-4.79	120.13	126.72
31	a	513	PSU	C4-N3-C2	-4.71	119.88	126.37
5	A	2576	PSU	C4-N3-C2	-4.71	119.89	126.37
31	a	1516	MA6	C5-C4-N3	-4.67	120.28	126.72
5	A	2499	2MA	C4-N9-C1'	4.46	137.07	126.63
31	a	1516	MA6	N9-C8-N7	-4.34	107.78	113.94
31	a	1515	MA6	N9-C8-N7	-4.31	107.82	113.94
5	A	2026	6MZ	N3-C4-N9	3.97	133.92	127.17
31	a	1515	MA6	C4-C5-C6	3.97	120.01	115.91
5	A	2548	OMU	N3-C2-N1	3.93	120.00	114.89
31	a	1516	MA6	C4-C5-C6	3.92	119.96	115.91
31	a	1495	UR3	C5-C4-N3	3.78	120.02	115.04
5	A	2499	2MA	N3-C4-N9	3.75	131.75	126.99
5	A	2548	OMU	C5-C4-N3	3.72	120.01	114.80
5	A	2026	6MZ	N9-C8-N7	-3.61	108.81	113.94
5	A	2026	6MZ	C2-N3-C4	3.49	120.36	111.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
31	a	1516	MA6	C2-N1-C6	3.47	120.31	111.83
31	a	1515	MA6	C2-N1-C6	3.39	120.11	111.83
5	A	2499	2MA	N3-C2-N1	-3.38	119.81	125.77
5	A	2499	2MA	C5-N7-C8	3.36	108.72	103.45
31	a	1515	MA6	C2-N3-C4	3.30	119.89	111.83
31	a	1516	MA6	C2-N3-C4	3.26	119.79	111.83
31	a	1515	MA6	N3-C4-N9	3.04	132.33	127.17
5	A	2453	PSU	O2-C2-N1	-2.98	119.72	122.79
31	a	1516	MA6	N3-C4-N9	2.91	132.11	127.17
5	A	2548	OMU	O4-C4-C5	-2.86	120.22	125.16
31	a	1516	MA6	C5-N7-C8	2.86	107.95	103.45
5	A	952	PSU	O2-C2-N1	-2.85	119.84	122.79
31	a	1515	MA6	C5-N7-C8	2.83	107.90	103.45
5	A	2500	PSU	O2-C2-N1	-2.82	119.88	122.79
31	a	513	PSU	O2-C2-N1	-2.77	119.93	122.79
5	A	2576	PSU	O2-C2-N1	-2.74	119.96	122.79
5	A	2576	PSU	C6-N1-C2	-2.73	120.16	122.69
5	A	2026	6MZ	C5-N7-C8	2.73	107.74	103.45
31	a	513	PSU	C6-N1-C2	-2.66	120.22	122.69
31	a	1515	MA6	C4-N9-C8	2.64	108.51	105.74
31	a	1516	MA6	C4-N9-C8	2.64	108.50	105.74
5	A	2576	PSU	O4'-C1'-C2'	2.60	108.75	105.15
5	A	2453	PSU	C6-N1-C2	-2.57	120.31	122.69
5	A	952	PSU	C6-N1-C2	-2.53	120.35	122.69
5	A	2499	2MA	CM2-C2-N1	2.50	120.87	117.13
5	A	2601	PSU	O2-C2-N1	-2.45	120.26	122.79
5	A	2500	PSU	C6-N1-C2	-2.44	120.42	122.69
5	A	2601	PSU	C6-N1-C2	-2.41	120.45	122.69
31	a	524	7MG	C4-C5-N7	2.38	108.19	105.38
5	A	2065	7MG	C5-C4-N9	2.38	109.38	106.33
5	A	2026	6MZ	C5-C6-N1	2.34	120.67	118.15
5	A	2065	7MG	C4-C5-N7	2.34	108.14	105.38
31	a	513	PSU	O4'-C1'-C2'	2.30	108.34	105.15
5	A	2548	OMU	O2-C2-N1	-2.30	119.81	122.80
5	A	2576	PSU	C6-C5-C4	2.27	119.71	118.17
31	a	1399	4OC	C6-C5-C4	2.24	119.70	117.00
31	a	524	7MG	C5-C4-N9	2.23	109.19	106.33
5	A	2499	2MA	N6-C6-N1	2.18	119.97	117.03
5	A	2453	PSU	O4'-C1'-C2'	2.13	108.10	105.15
5	A	2499	2MA	C4-C5-N7	-2.12	108.16	110.58
31	a	1516	MA6	C4-C5-N7	-2.12	108.16	110.58
31	a	1495	UR3	C6-N1-C2	-2.12	120.07	121.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
31	a	1515	MA6	C4-C5-N7	-2.06	108.23	110.58

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2499	2MA	O4'-C4'-C5'-O5'
5	A	2499	2MA	C3'-C4'-C5'-O5'
5	A	2026	6MZ	O4'-C4'-C5'-O5'
5	A	2026	6MZ	C3'-C4'-C5'-O5'
5	A	2441	2MG	C3'-C4'-C5'-O5'
5	A	2500	PSU	O4'-C4'-C5'-O5'
31	a	1399	4OC	O4'-C4'-C5'-O5'
5	A	2247	OMG	C1'-C2'-O2'-CM2
31	a	524	7MG	C3'-C4'-C5'-O5'
5	A	2441	2MG	O4'-C4'-C5'-O5'
5	A	2500	PSU	C3'-C4'-C5'-O5'

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2548	OMU	1	0
5	A	2247	OMG	1	0
31	a	1515	MA6	1	0
5	A	2026	6MZ	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
53	OI9	W	101	-	36,37,37	1.43	6 (16%)	37,52,52	1.53	4 (10%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
53	OI9	W	101	-	-	4/22/67/67	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	W	101	OI9	C28-N13	4.06	1.40	1.33
53	W	101	OI9	C27-C24	3.40	1.55	1.52
53	W	101	OI9	C27-N13	3.21	1.49	1.46
53	W	101	OI9	C24-C22	-3.02	1.50	1.53
53	W	101	OI9	C29-N11	2.33	1.39	1.34
53	W	101	OI9	C32-N15	2.30	1.37	1.33

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
53	W	101	OI9	C24-C27-N13	6.63	116.59	109.83
53	W	101	OI9	C30-C29-N11	-3.03	112.11	116.25
53	W	101	OI9	C22-N10-C25	-2.59	107.84	112.17
53	W	101	OI9	O06-C28-N13	2.50	125.80	122.41

There are no chirality outliers.

All (4) torsion outliers are listed below:

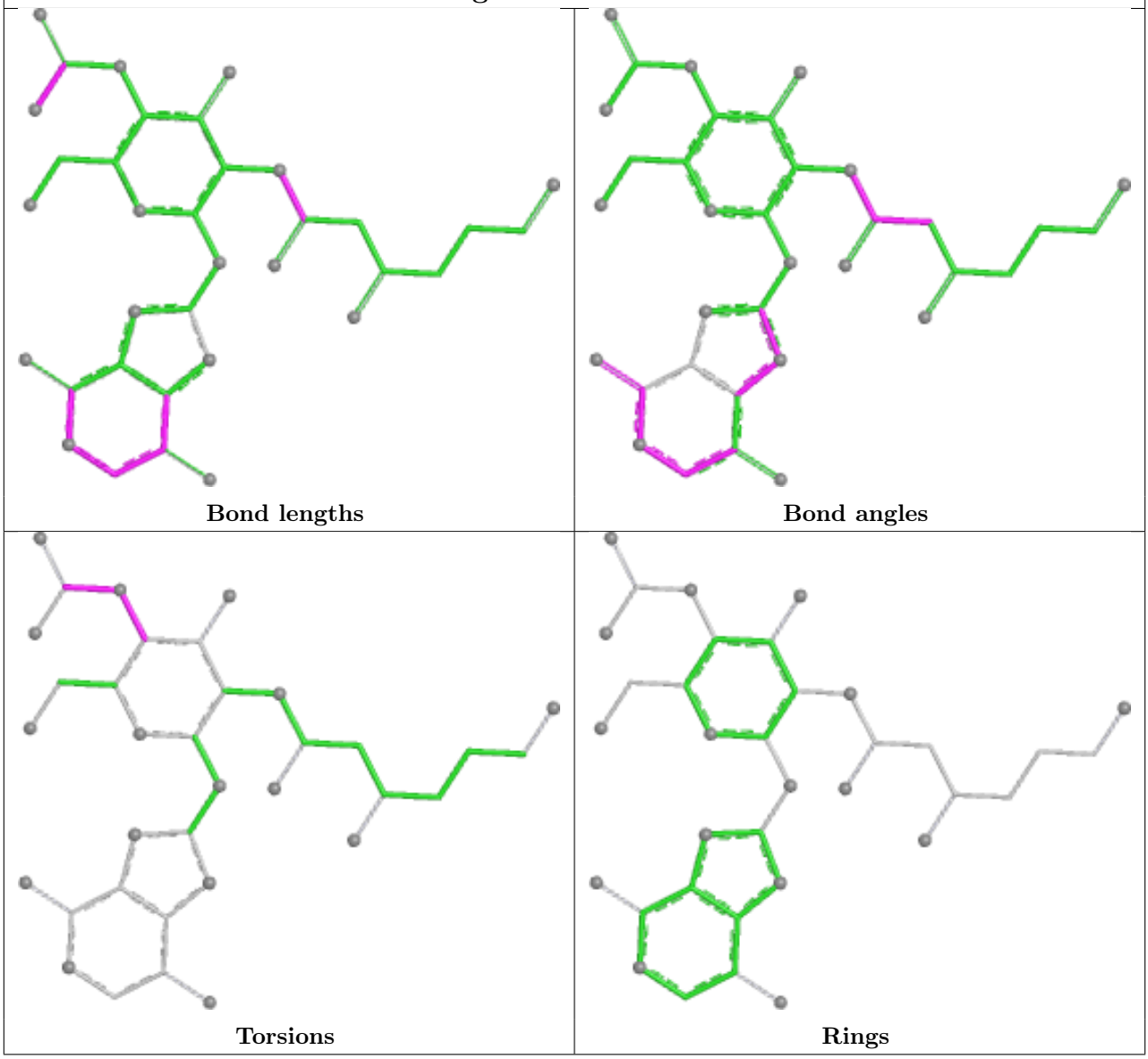
Mol	Chain	Res	Type	Atoms
53	W	101	OI9	C18-C20-O02-C32
53	W	101	OI9	C21-C20-O02-C32
53	W	101	OI9	N15-C32-O02-C20
53	W	101	OI9	O08-C32-O02-C20

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand OI9 W 101



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.

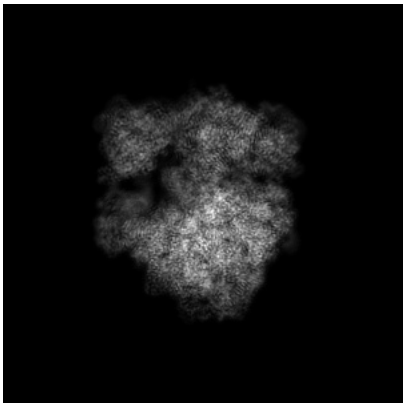
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-26819. These allow visual inspection of the internal detail of the map and identification of artifacts.

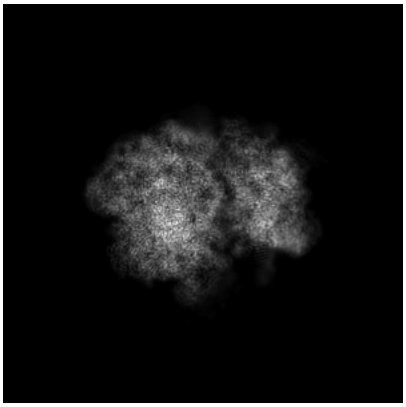
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

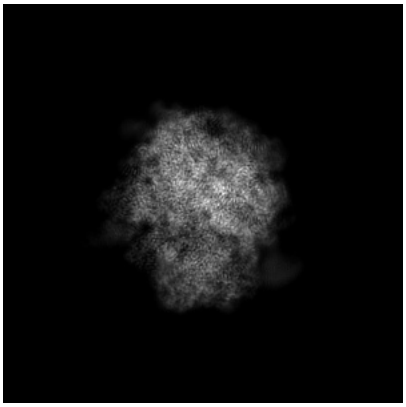
6.1.1 Primary map



X



Y



Z

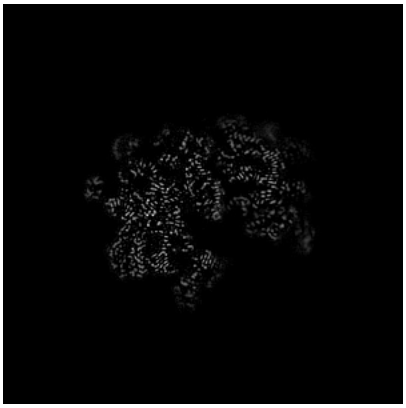
The images above show the map projected in three orthogonal directions.

6.2 Central slices

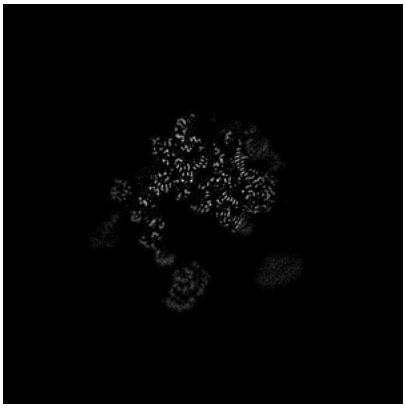
6.2.1 Primary map



X Index: 256



Y Index: 256

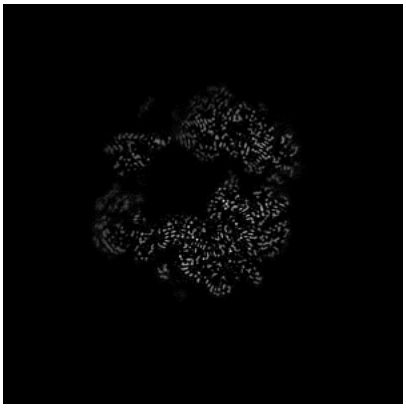


Z Index: 256

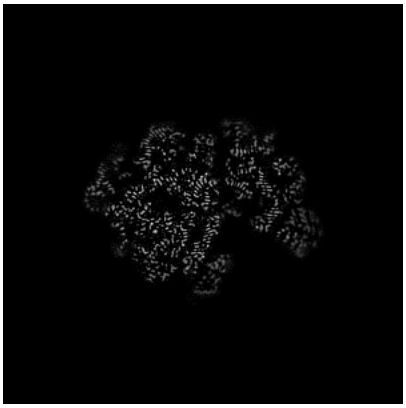
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

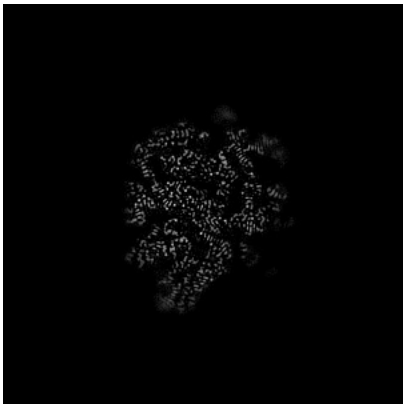
6.3.1 Primary map



X Index: 229



Y Index: 276

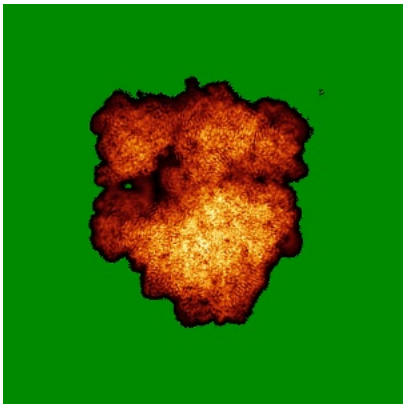


Z Index: 208

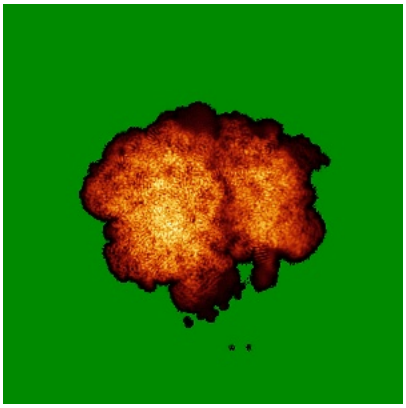
The images above show the largest variance slices of the map in three orthogonal directions.

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

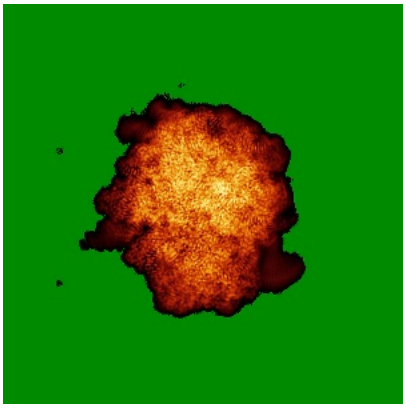
6.4.1 Primary map



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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

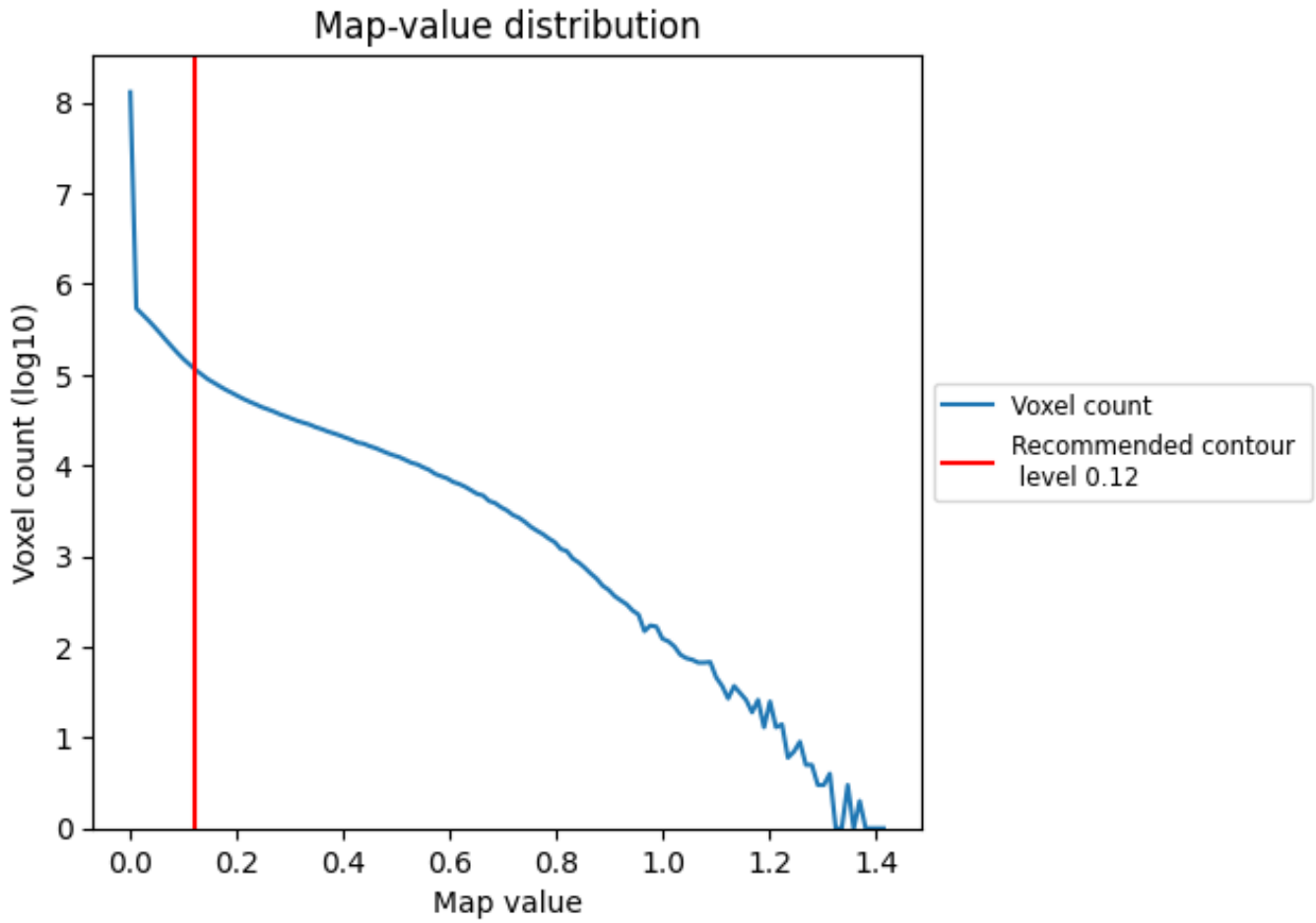
6.6 Mask visualisation (i)

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

7 Map analysis

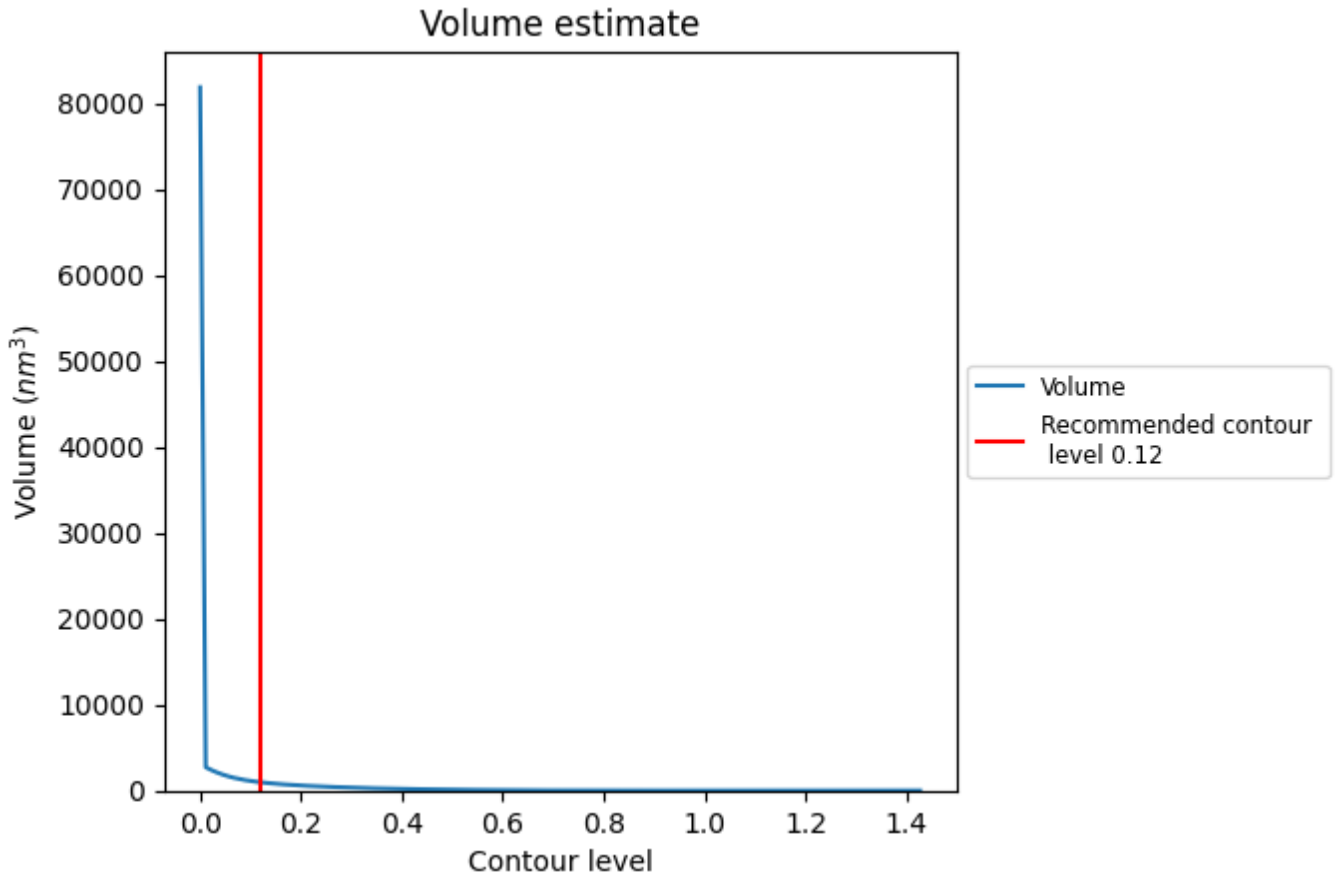
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

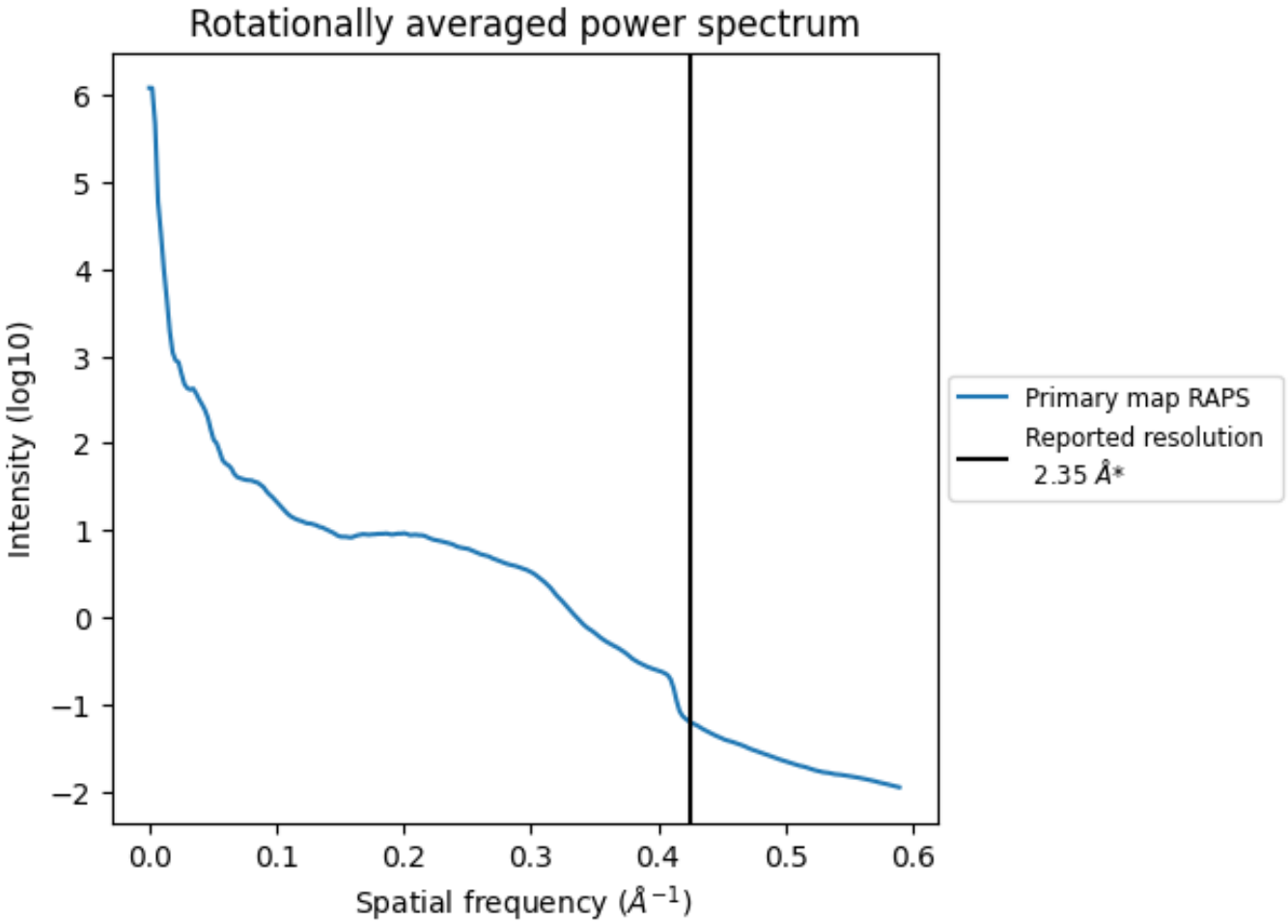
7.2 Volume estimate



The volume at the recommended contour level is 963 nm^3; this corresponds to an approximate mass of 870 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 0.426 Å^{-1}

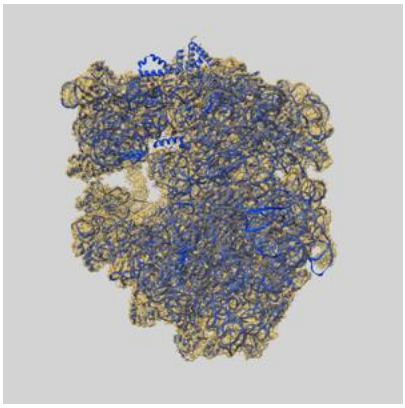
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

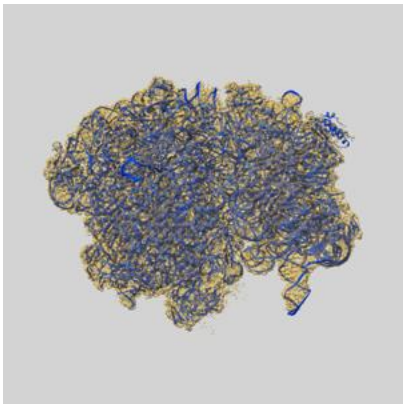
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-26819 and PDB model 7UVX. Per-residue inclusion information can be found in section 3 on page 14.

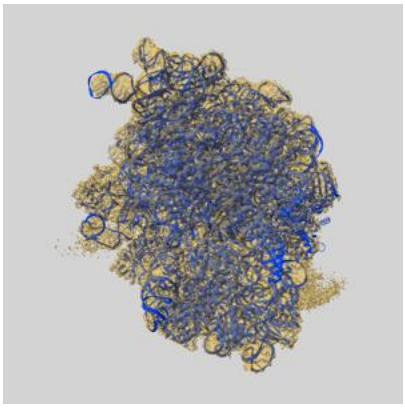
9.1 Map-model overlay



X



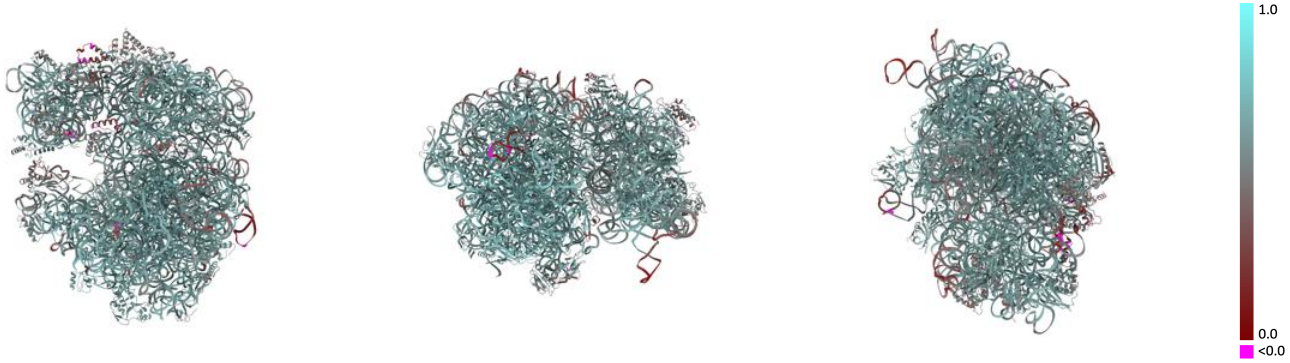
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

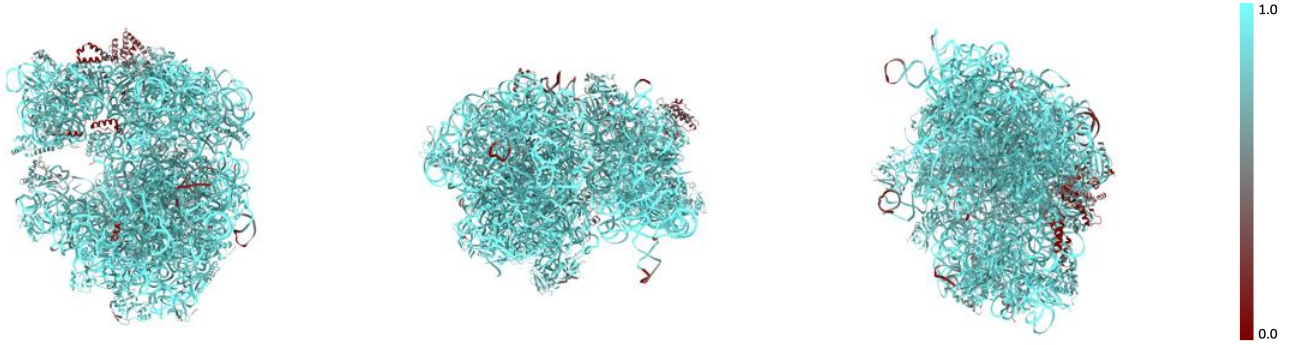
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

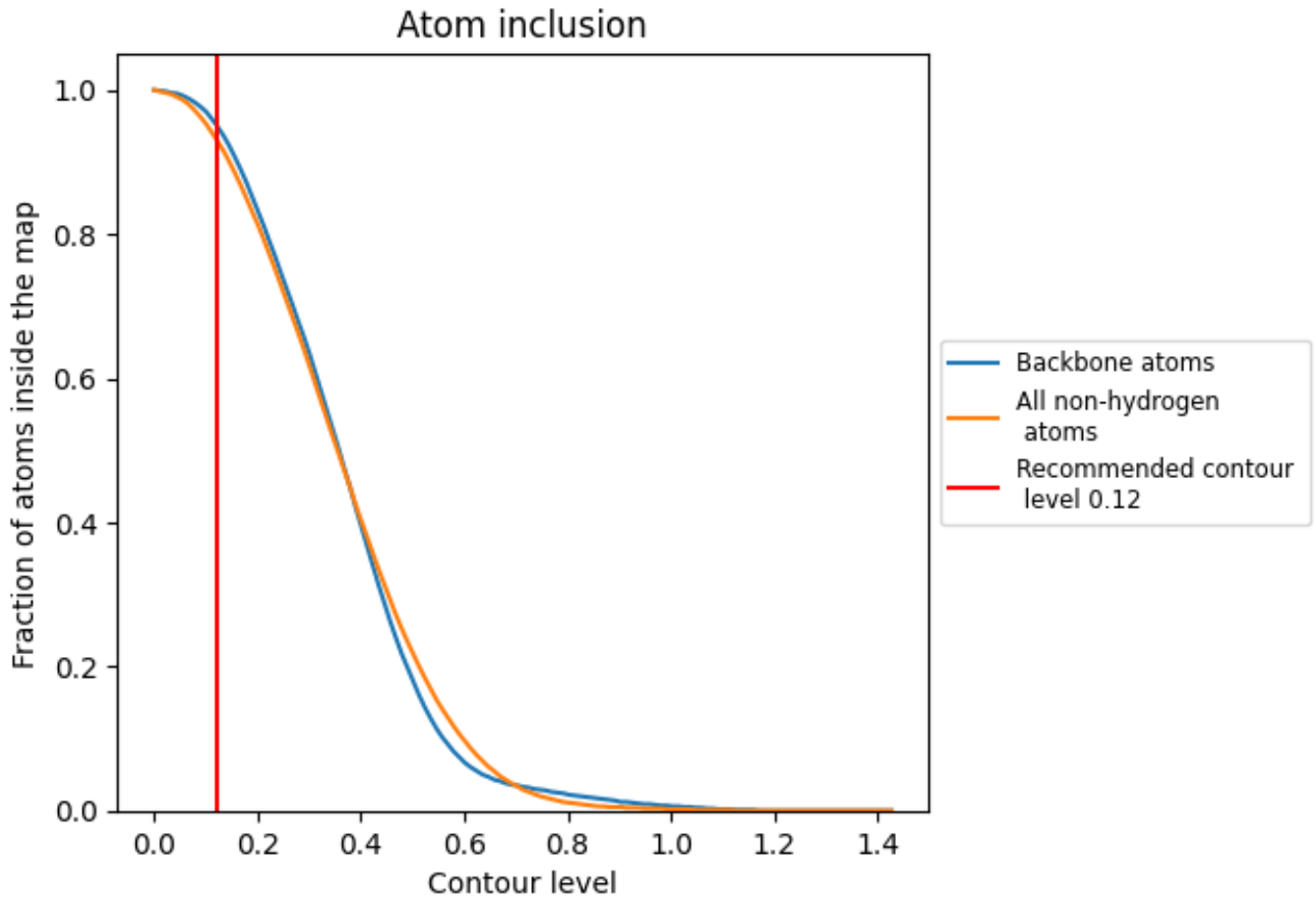
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.12).

9.4 Atom inclusion (i)



At the recommended contour level, 95% of all backbone atoms, 93% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9320	0.6180
0	0.9090	0.6520
1	0.9680	0.7010
2	0.9920	0.7030
3	0.9650	0.6650
A	0.9700	0.6430
B	0.9820	0.5840
C	0.9480	0.6700
D	0.9590	0.6840
E	0.9130	0.6540
F	0.6590	0.4210
G	0.8460	0.5650
H	0.4360	0.4290
I	0.9560	0.6790
J	0.8430	0.6020
K	0.9640	0.6800
L	0.9440	0.6680
M	0.9820	0.6930
N	0.9190	0.5840
O	0.8780	0.6230
P	0.9890	0.6960
Q	0.9580	0.6650
R	0.9520	0.6770
S	0.8650	0.6220
T	0.8410	0.5890
U	0.9110	0.6320
V	0.9770	0.6940
W	0.9310	0.6610
X	0.8110	0.5470
Y	0.9460	0.6720
Z	0.9410	0.6810
a	0.9620	0.5970
b	0.3140	0.4450
c	0.8570	0.5880
d	0.7560	0.5070



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Chain	Atom inclusion	Q-score
e	0.9270	0.6180
f	0.7710	0.5220
g	0.6230	0.4640
h	0.9450	0.6330
i	0.8970	0.6070
j	0.8200	0.5800
k	0.7790	0.5290
l	0.8580	0.6080
m	0.9000	0.5970
n	0.8950	0.6150
o	0.9390	0.6190
p	0.9530	0.6370
q	0.8930	0.5980
r	0.9030	0.6030
s	0.9290	0.6110
t	0.9390	0.6130
u	0.3030	0.4060