Full wwPDB EM Validation Report

Aug 4, 2025 – 08:54 PM JST

PDB ID	:	8Y5L / pdb_00008y5l
EMDB ID	:	EMD-38941
Title	:	E.coli transcription translation coupling complex in TTC-B state 1 (subclass1) containing mRNA with 30-mer spacer, NusG, NusA, fMet-tRNA(iMet), Phe-tRNA(Phe), and viomycin
Authors	:	Zhang, J.; Lu, G.; Wang, C.; Lin, J.
Deposited on	:	2024-01-31
Resolution	:	3.70 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 (i) 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 (i)) were used in the production of this report:

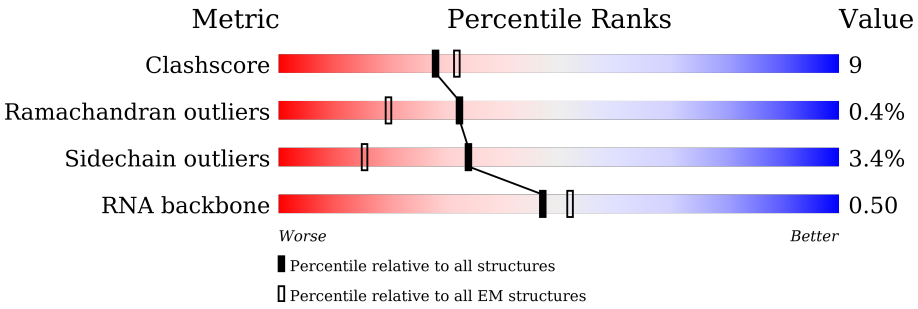
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	A	70	80% 14% 6%
2	B	57	79% 19%
3	C	55	84% 7% 9%
4	D	46	76% 22%
5	E	65	91% 6%
6	F	38	71% 26%
7	G	241	68% 21% 10%

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Mol	Chain	Length	Quality of chain
8	H	233	72% 16% 12%
9	I	206	72% 26%
10	J	167	77% 17% 6%
11	K	135	53% 21% 26%
12	L	179	68% 16% 16%
13	M	130	88% 11%
14	N	130	68% 29%
15	O	103	72% 18% 5% 5%
16	P	129	64% 26% 10%
17	Q	124	66% 32%
18	R	118	69% 27%
19	S	101	83% 16%
20	T	89	84% 15%
21	U	82	76% 23%
22	V	84	76% 19% 5%
23	W	75	69% 16% 13%
24	X	92	73% 13% 14%
25	Y	87	75% 23%
26	Z	71	56% 32% 8%
27	b	273	77% 22%
28	c	209	85% 15%
29	d	201	80% 20%
30	e	179	78% 21%
31	f	177	73% 27%
32	g	149	26% 9% 65%

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Mol	Chain	Length	Quality of chain
33	i	142	6% 64% 34%
34	j	142	85% 15%
35	k	123	82% 17%
36	l	144	86% 13%
37	m	136	83% 17%
38	n	127	76% 18% 6%
39	o	117	81% 18%
40	p	115	83% 16%
41	q	118	83% 15%
42	r	103	72% 26%
43	s	110	85% 15%
44	t	100	75% 18% 7%
45	u	104	72% 26%
46	v	94	85% 15%
47	w	85	73% 15% 12%
48	x	78	76% 22%
49	y	63	73% 27%
50	z	59	76% 22%
51	1	2904	42% 51% 6%
52	2	120	75% 21%
53	3	1542	68% 29%
54	4	47	30% 45% 23%
55	8	37	27% 43% 27%
56	9	37	51% 46%
57	A1	329	5% 78% 13% 9%

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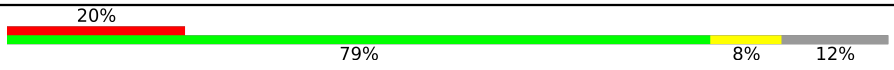
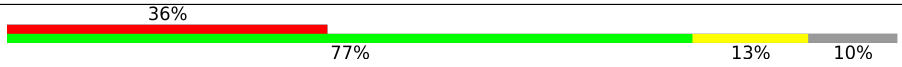
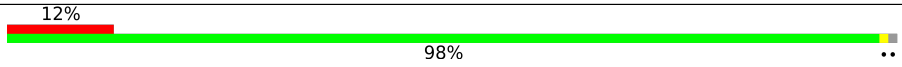
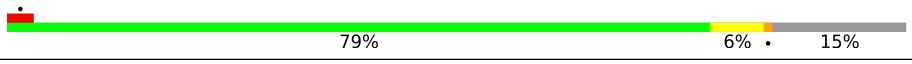
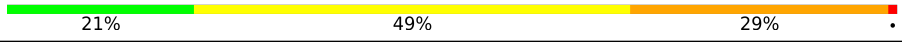
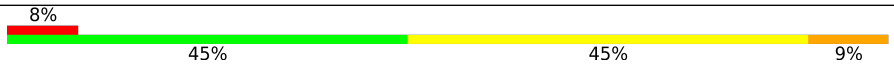
Mol	Chain	Length	Quality of chain
57	A2	329	
58	B1	1407	
59	B2	1342	
60	W0	91	
61	NA	495	
62	NG	181	
63	5	76	
64	6	77	
64	7	77	
65	h	6	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
65	5OH	h	6	-	-	X	-

2 Entry composition

There are 66 unique types of molecules in this entry. The entry contains 178150 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 L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	66	522	323	99	94	6	0	0

- Molecule 2 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	56	444	269	94	80	1	0	0

- Molecule 3 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	C	50	409	263	75	71	0	0

- Molecule 4 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	46	377	228	90	57	2	0	0

- Molecule 5 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	64	504	323	105	74	2	0	0

- Molecule 6 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	38	302	185	65	48	4	0	0

- Molecule 7 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	218	Total	C	N	O	S	0	0
			1704	1081	305	311	7		

- Molecule 8 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	206	Total	C	N	O	S	0	0
			1624	1028	305	288	3		

- Molecule 9 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 10 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	157	Total	C	N	O	S	0	0
			1156	719	218	213	6		

- Molecule 11 is a protein called 30S ribosomal protein S6, fully modified isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	100	Total	C	N	O	S	0	0
			817	515	148	148	6		

- Molecule 12 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

- Molecule 13 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 14 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 15 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

- Molecule 16 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	116	Total	C	N	O	S	0	0
			869	535	173	158	3		

- Molecule 17 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	123	Total	C	N	O	S	0	0
			955	590	196	165	4		

- Molecule 18 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	114	Total	C	N	O	S	0	0
			883	546	178	156	3		

- Molecule 19 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

- Molecule 20 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	88	Total	C	N	O	S	0	0
			714	439	144	130	1		

- Molecule 21 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 22 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 23 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	65	Total	C	N	O	S	0	0
			535	339	100	95	1		

- Molecule 24 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	79	Total	C	N	O	S	0	0
			637	408	120	107	2		

- Molecule 25 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 26 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	65	Total	C	N	O	S	0	0
			544	335	117	91	1		

- Molecule 27 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	b	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 28 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	c	209	Total	C	N	O	S	0	0
			1565	979	288	294	4		

- Molecule 29 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	d	201	Total	C	N	O	S	0	0
			1552	974	283	290	5		

- Molecule 30 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	e	177	Total	C	N	O	S	0	0
			1410	899	249	256	6		

- Molecule 31 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 32 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	g	52	Total	C	N	O	S	0	0
			400	256	73	70	1		

- Molecule 33 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	i	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 34 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	j	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 35 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	k	122	Total	C	N	O	S	0	0
			938	587	180	165	6		

- Molecule 36 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	l	143	Total	C	N	O	S	0	0
			1045	649	206	189	1		

- Molecule 37 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	m	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 38 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	n	120	Total	C	N	O	S	0	0
			960	593	196	166	5		

- Molecule 39 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	o	116	Total	C	N	O	0	0
			892	552	178	162		

- Molecule 40 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	p	114	Total	C	N	O	S	0	0
			917	574	179	163	1		

- Molecule 41 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	q	117	Total	C	N	O	0	0
			947	604	192	151		

- Molecule 42 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	r	103	Total	C	N	O	S	0	0
			816	516	153	145	2		

- Molecule 43 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	s	110	Total	C	N	O	S	0	0
			857	532	166	156	3		

- Molecule 44 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	t	93	Total	C	N	O	S	0	0
			738	466	139	131	2		

- Molecule 45 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
45	u	102	Total	C	N	O	0	0
			779	492	146	141		

- Molecule 46 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	v	94	Total	C	N	O	S	0	0
			753	479	137	134	3		

- Molecule 47 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	w	75	Total	C	N	O	S	0	0
			575	356	116	102	1		

- Molecule 48 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	x	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 49 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	y	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
50	z	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 51 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	1	2903	Total	C	N	O	P	0	0
			62317	27801	11468	20146	2902		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	747	C	U	conflict	GB 1929590828

- Molecule 52 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	2	120	Total	C	N	O	P	0	0
			2568	1145	471	833	119		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	120	A	U	conflict	GB NR_103249

- Molecule 53 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	3	1539	Total	C	N	O	P	0	0
			33012	14725	6052	10697	1538		

- Molecule 54 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	4	36	Total	C	N	O	P	0	0
			749	335	107	271	36		

- Molecule 55 is a DNA chain called templete DNA strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	8	27	Total	C	N	O	P	0	0
			539	257	88	167	27		

- Molecule 56 is a DNA chain called non-templete DNA strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	9	20	Total	C	N	O	P	0	0
			417	195	84	118	20		

- Molecule 57 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	A1	301	Total	C	N	O	S	0	0
			2088	1293	380	409	6		
57	A2	288	Total	C	N	O	S	0	0
			2029	1257	366	400	6		

- Molecule 58 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	B1	1335	Total	C	N	O	S	0	0
			10353	6509	1842	1955	47		

- Molecule 59 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	B2	1340	Total	C	N	O	S	0	0
			10546	6616	1839	2048	43		

- Molecule 60 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	W0	82	Total	C	N	O	S	0	0
			650	396	122	131	1		

- Molecule 61 is a protein called Transcription termination/antitermination protein NusA.

Mol	Chain	Residues	Atoms				AltConf	Trace
61	NA	492	Total	C	N	O	0	0
			2432	1448	492	492		

- Molecule 62 is a protein called Transcription termination/antitermination protein NusG.

Mol	Chain	Residues	Atoms				AltConf	Trace
62	NG	154	Total	C	N	O	0	0
			758	450	154	154		

- Molecule 63 is a RNA chain called tRNA(Phe).

Mol	Chain	Residues	Atoms					AltConf	Trace
63	5	76	Total	C	N	O	P	0	0
			1622	723	290	533	76		

- Molecule 64 is a RNA chain called tRNA(fMet).

Mol	Chain	Residues	Atoms					AltConf	Trace
64	6	77	Total	C	N	O	P	0	0
			1640	732	297	535	76		
64	7	77	Total	C	N	O	P	0	0
			1640	732	297	535	76		

- Molecule 65 is a protein (with D amino acids) called viomycin.

Mol	Chain	Residues	Atoms				AltConf	Trace
65	h	6	Total	C	N	O	0	0
			48	25	13	10		

- Molecule 66 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

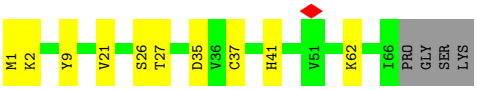
Mol	Chain	Residues	Atoms		AltConf
66	B1	1	Total	Mg	0
			1	1	

3 Residue-property plots (i)

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

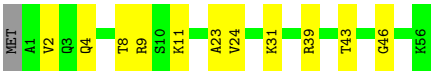
• Molecule 1: 50S ribosomal protein L31

Chain A:



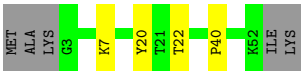
• Molecule 2: 50S ribosomal protein L32

Chain B:



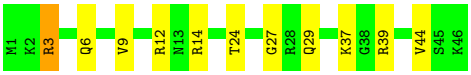
• Molecule 3: 50S ribosomal protein L33

Chain C:



• Molecule 4: 50S ribosomal protein L34

Chain D:

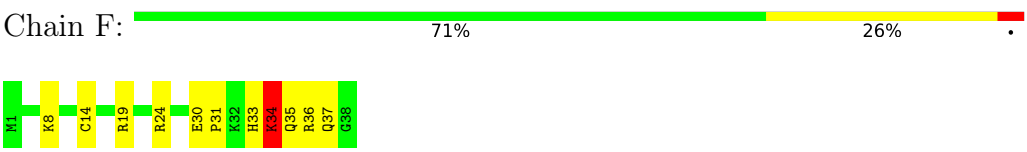


• Molecule 5: 50S ribosomal protein L35

Chain E:

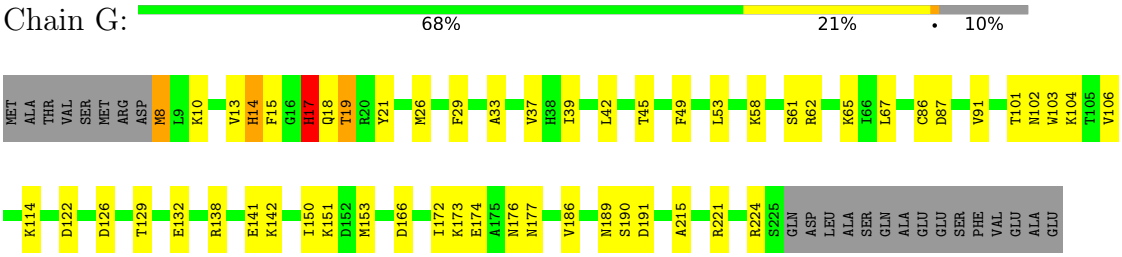
• Molecule 6: 50S ribosomal protein L36

Chain F:



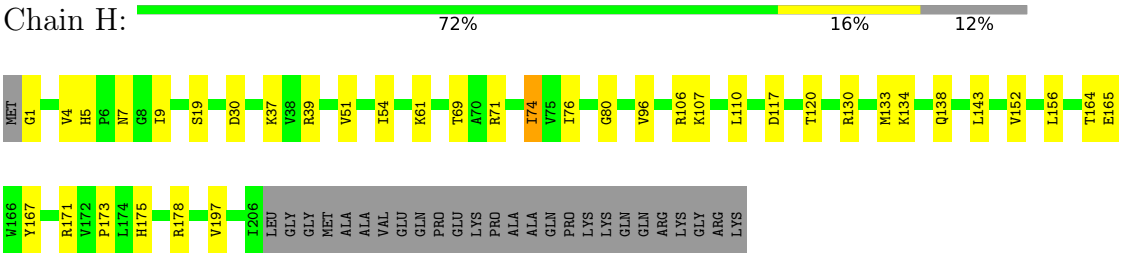
• Molecule 7: 30S ribosomal protein S2

Chain G:



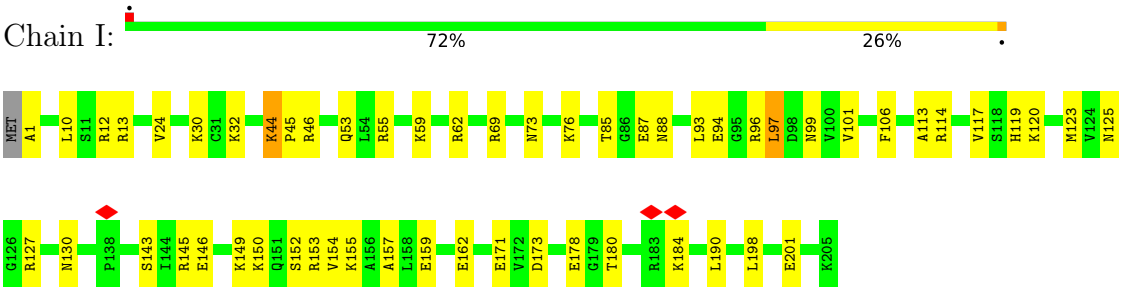
• Molecule 8: 30S ribosomal protein S3

Chain H:



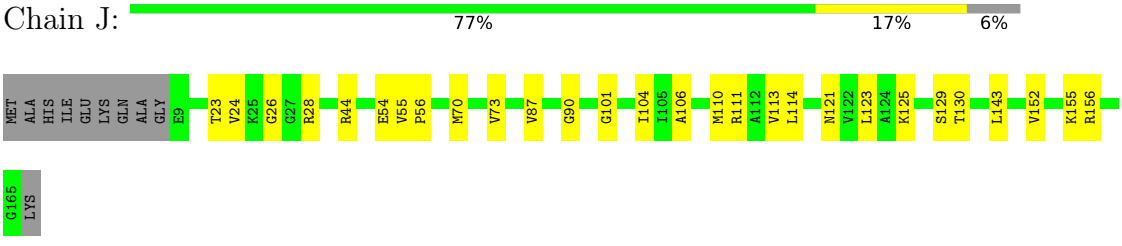
• Molecule 9: 30S ribosomal protein S4

Chain I:



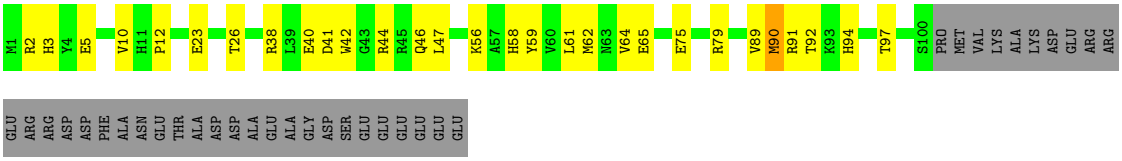
• Molecule 10: 30S ribosomal protein S5

Chain J:



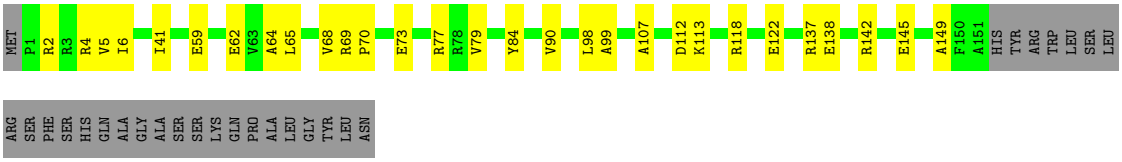
• Molecule 11: 30S ribosomal protein S6, fully modified isoform

Chain K:



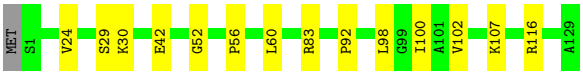
• Molecule 12: 30S ribosomal protein S7

Chain L:



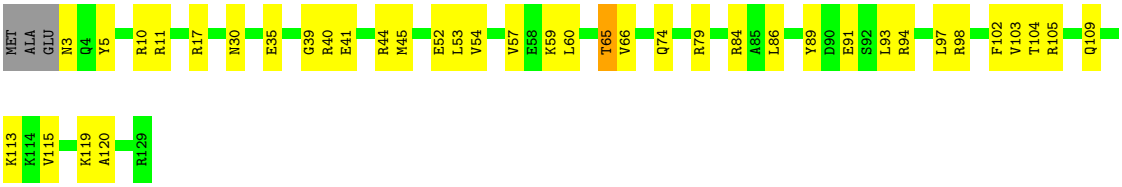
• Molecule 13: 30S ribosomal protein S8

Chain M:



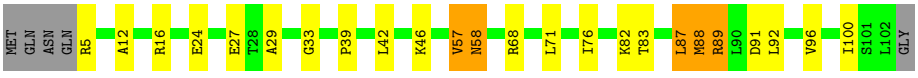
• Molecule 14: 30S ribosomal protein S9

Chain N:



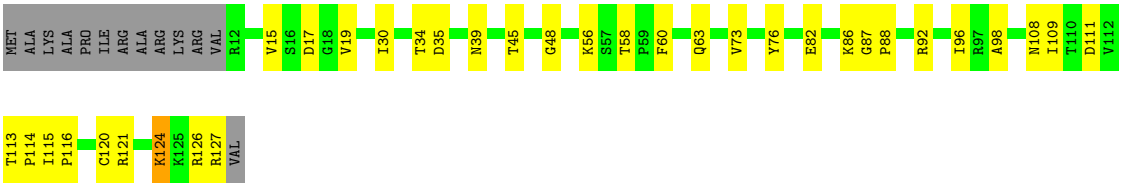
• Molecule 15: 30S ribosomal protein S10

Chain O:



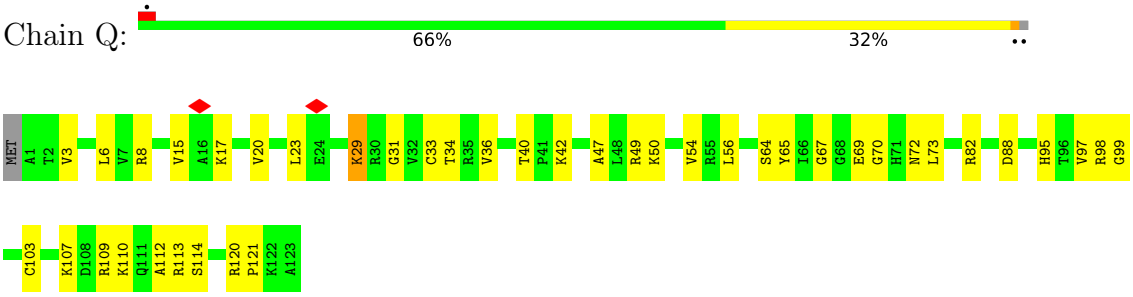
• Molecule 16: 30S ribosomal protein S11

Chain P:



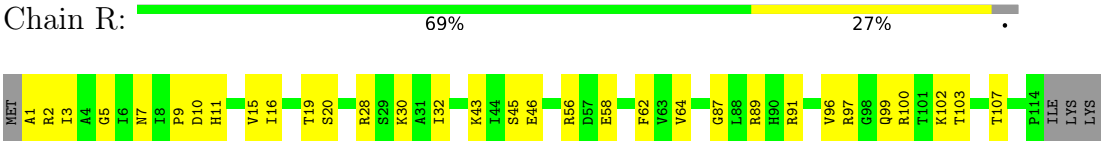
• Molecule 17: 30S ribosomal protein S12

Chain Q:



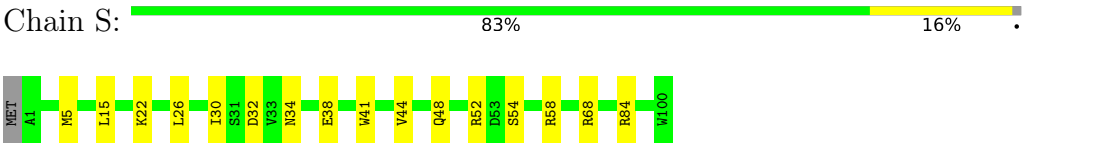
• Molecule 18: 30S ribosomal protein S13

Chain R:



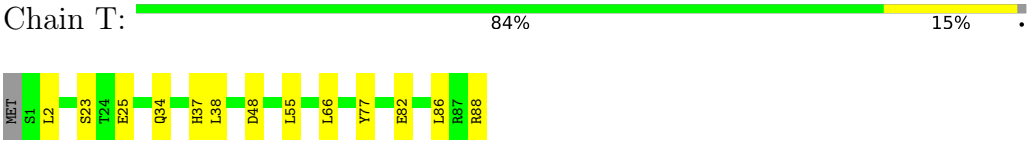
• Molecule 19: 30S ribosomal protein S14

Chain S:



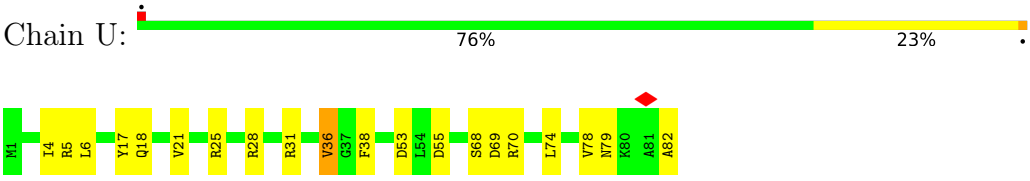
• Molecule 20: 30S ribosomal protein S15

Chain T:



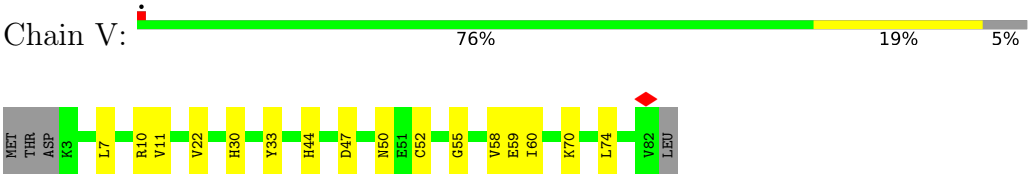
• Molecule 21: 30S ribosomal protein S16

Chain U:



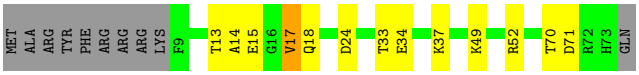
• Molecule 22: 30S ribosomal protein S17

Chain V:



• Molecule 23: 30S ribosomal protein S18

Chain W:

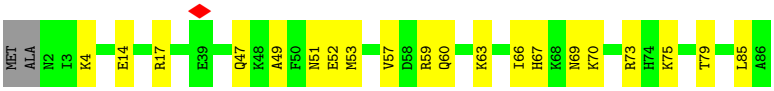


• Molecule 24: 30S ribosomal protein S19

Chain X:

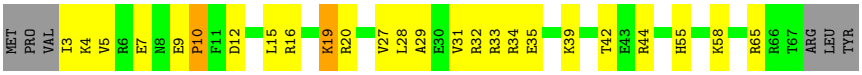
• Molecule 25: 30S ribosomal protein S20

Chain Y:



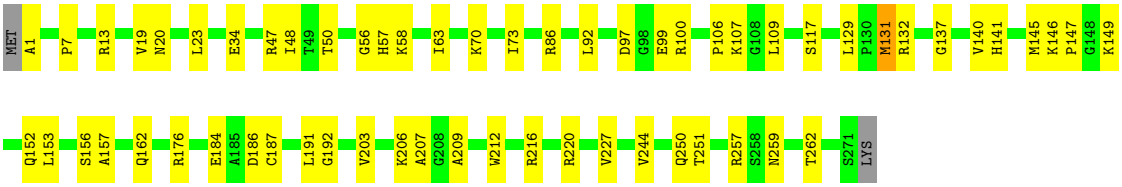
• Molecule 26: 30S ribosomal protein S21

Chain Z:



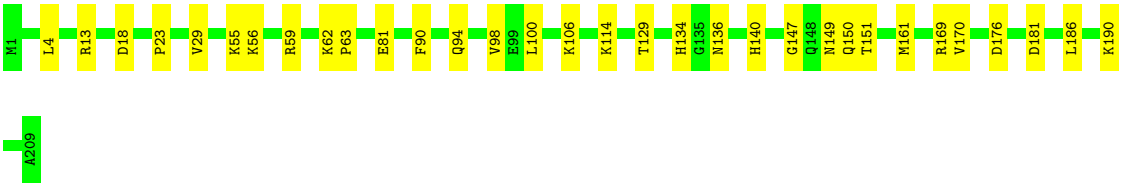
• Molecule 27: 50S ribosomal protein L2

Chain b:



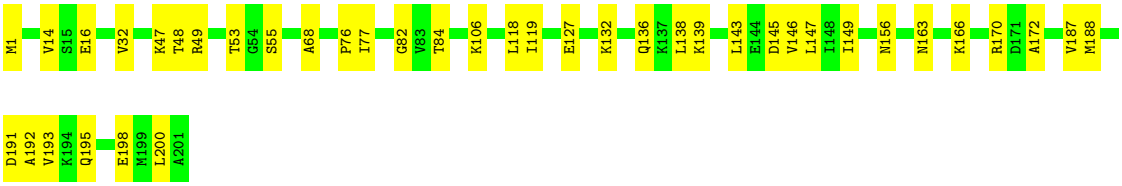
• Molecule 28: 50S ribosomal protein L3

Chain c:



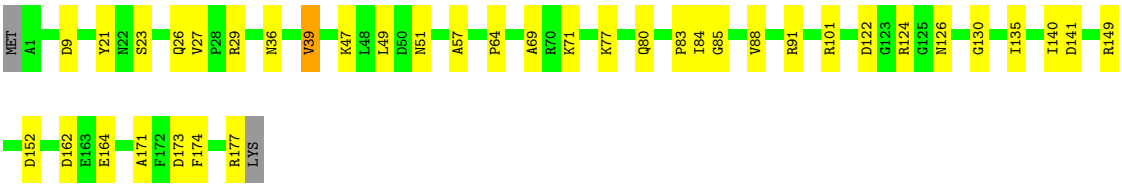
• Molecule 29: 50S ribosomal protein L4

Chain d:



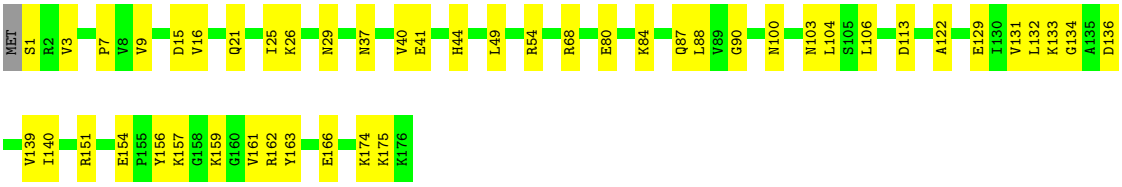
• Molecule 30: 50S ribosomal protein L5

Chain e:



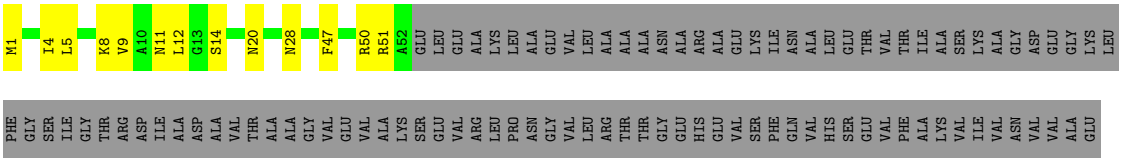
• Molecule 31: 50S ribosomal protein L6

Chain f:



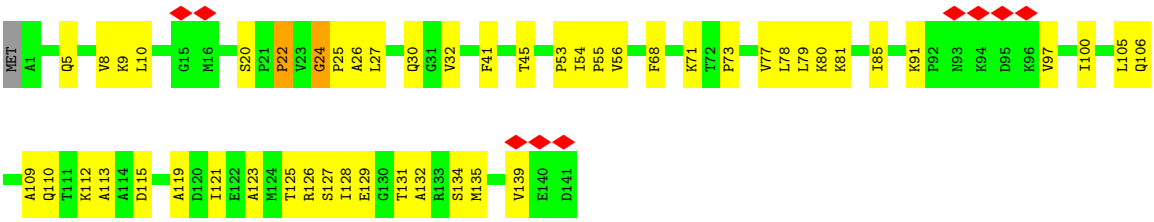
• Molecule 32: 50S ribosomal protein L9

Chain g:



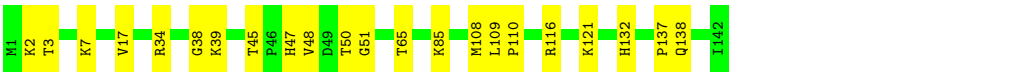
• Molecule 33: 50S ribosomal protein L11

Chain i:



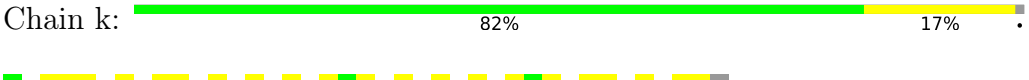
• Molecule 34: 50S ribosomal protein L13

Chain j:



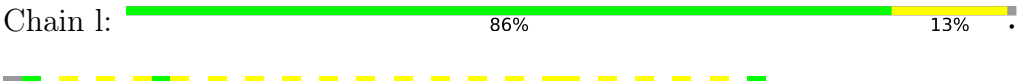
• Molecule 35: 50S ribosomal protein L14

Chain k:



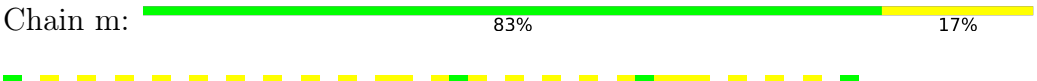
• Molecule 36: 50S ribosomal protein L15

Chain l:



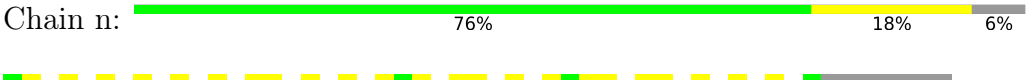
• Molecule 37: 50S ribosomal protein L16

Chain m:



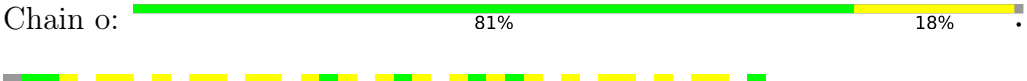
• Molecule 38: 50S ribosomal protein L17

Chain n:



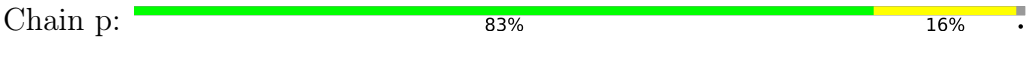
• Molecule 39: 50S ribosomal protein L18

Chain o:



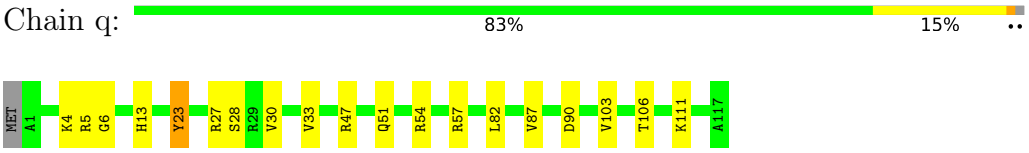
• Molecule 40: 50S ribosomal protein L19

Chain p:



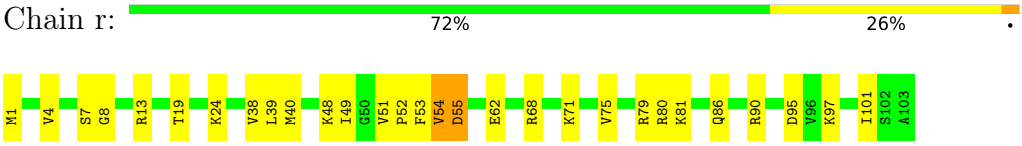
• Molecule 41: 50S ribosomal protein L20

Chain q:



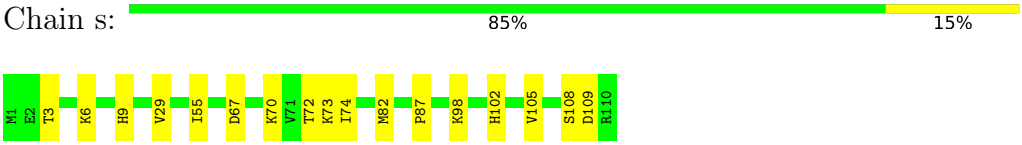
• Molecule 42: 50S ribosomal protein L21

Chain r:



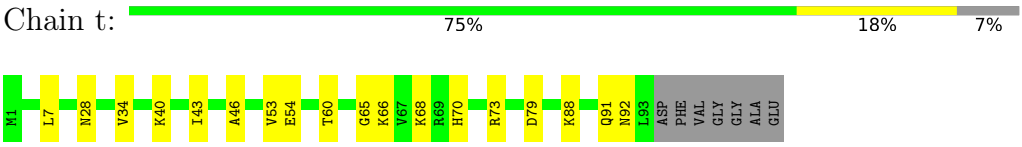
• Molecule 43: 50S ribosomal protein L22

Chain s:



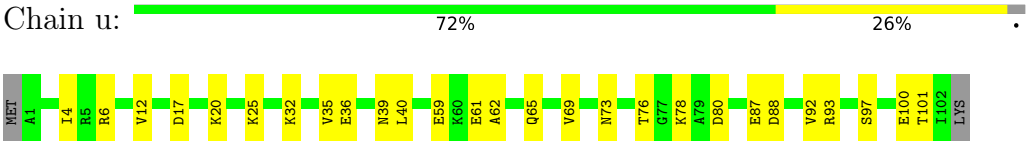
• Molecule 44: 50S ribosomal protein L23

Chain t:



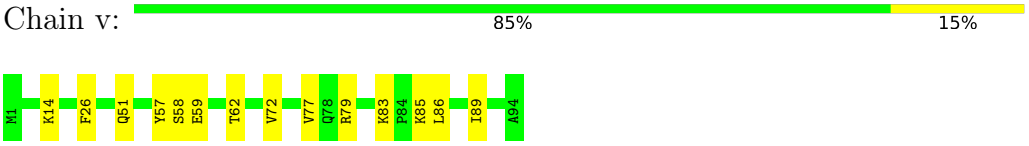
• Molecule 45: 50S ribosomal protein L24

Chain u:



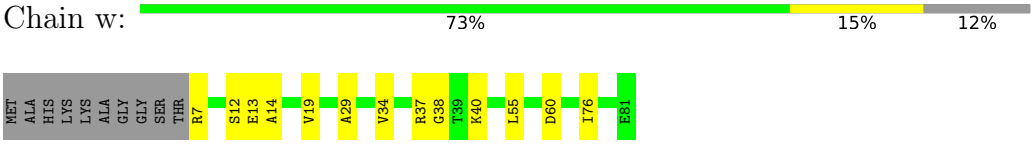
• Molecule 46: 50S ribosomal protein L25

Chain v:



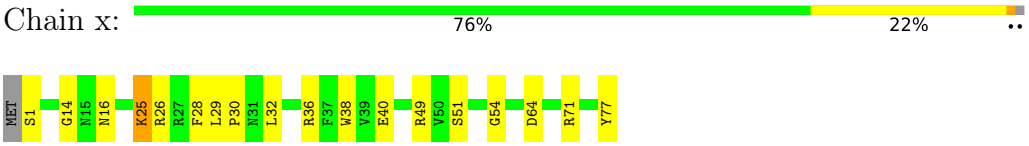
• Molecule 47: 50S ribosomal protein L27

Chain w:



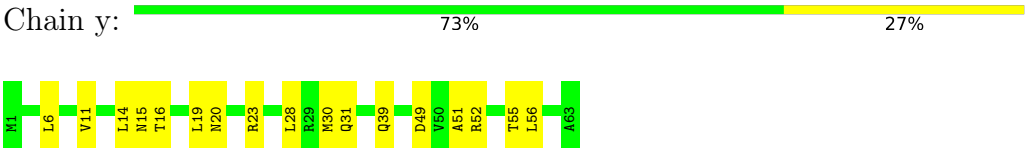
• Molecule 48: 50S ribosomal protein L28

Chain x:



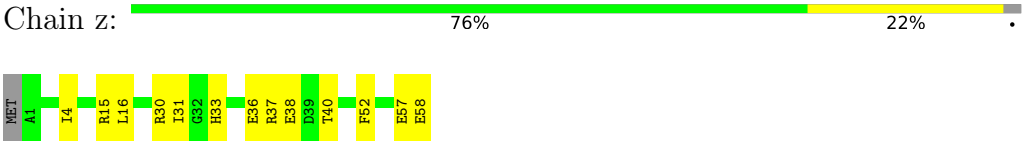
• Molecule 49: 50S ribosomal protein L29

Chain y:



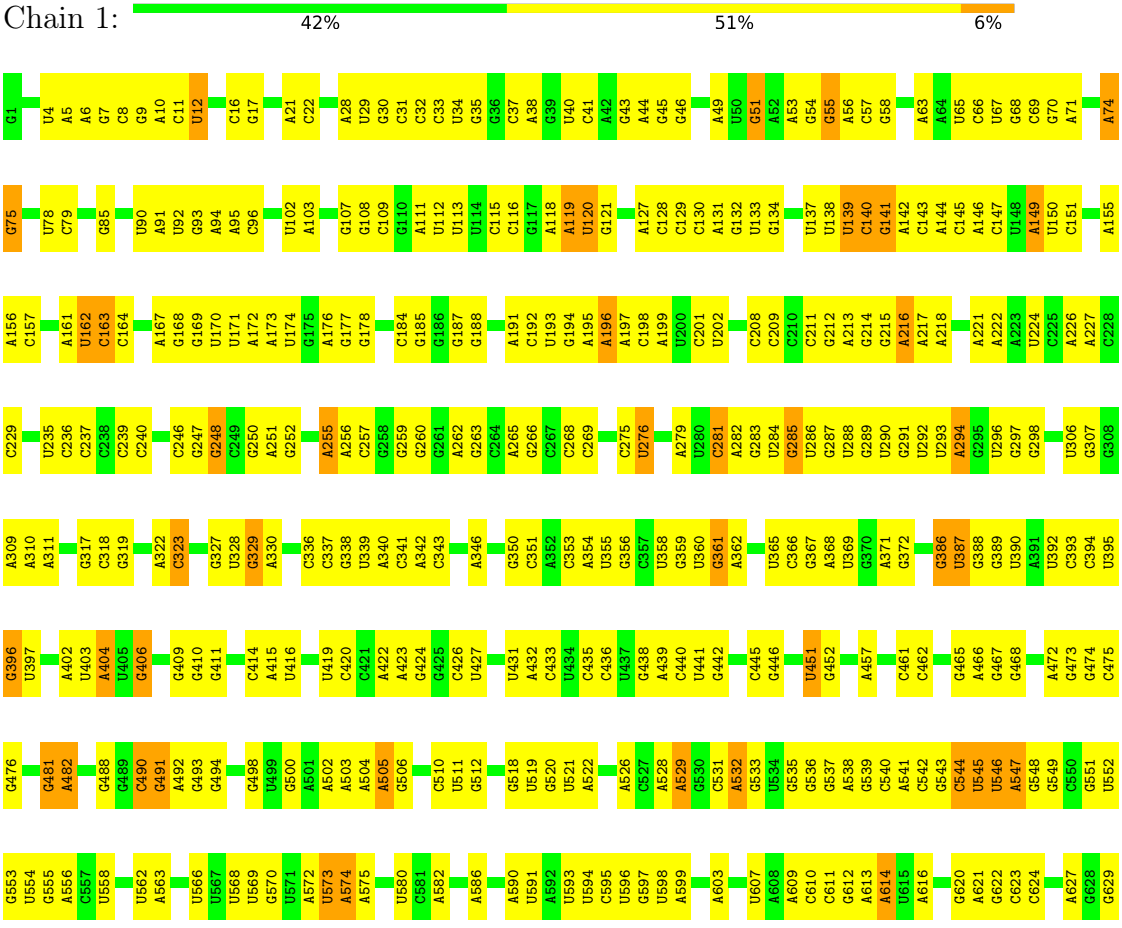
• Molecule 50: 50S ribosomal protein L30

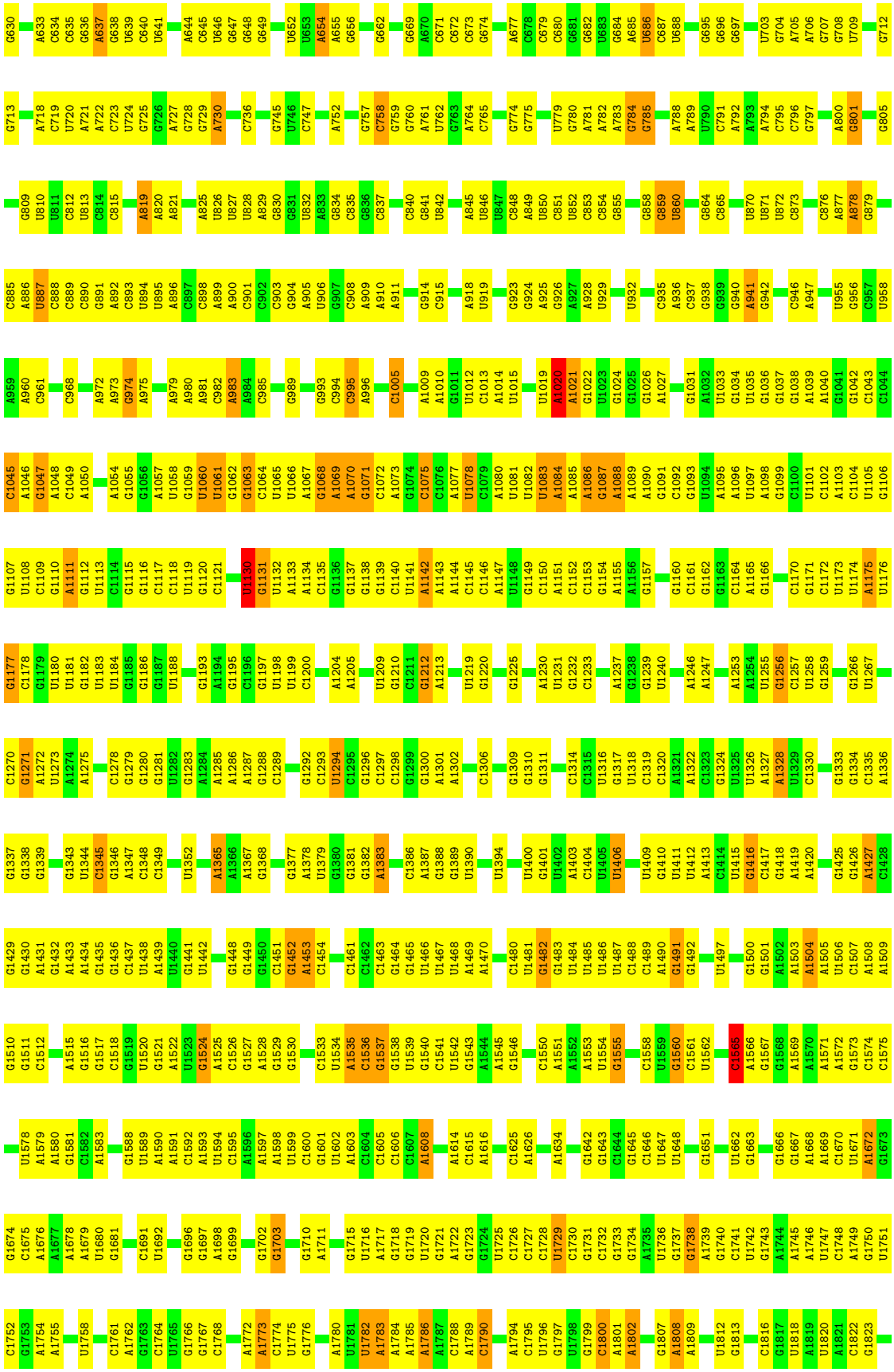
Chain z:

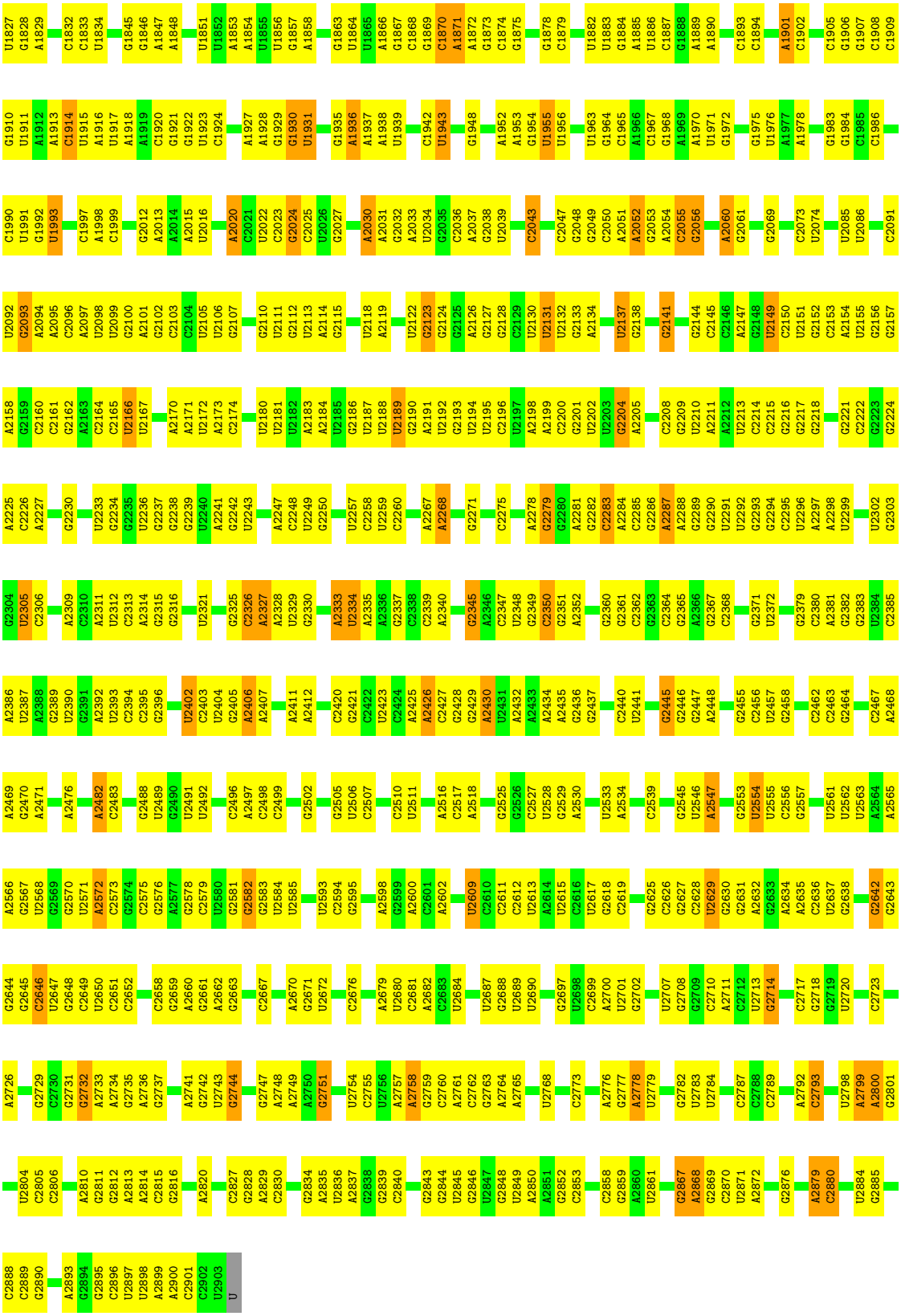


• Molecule 51: 23S rRNA

Chain 1:

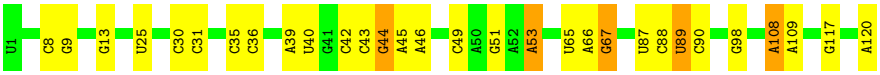






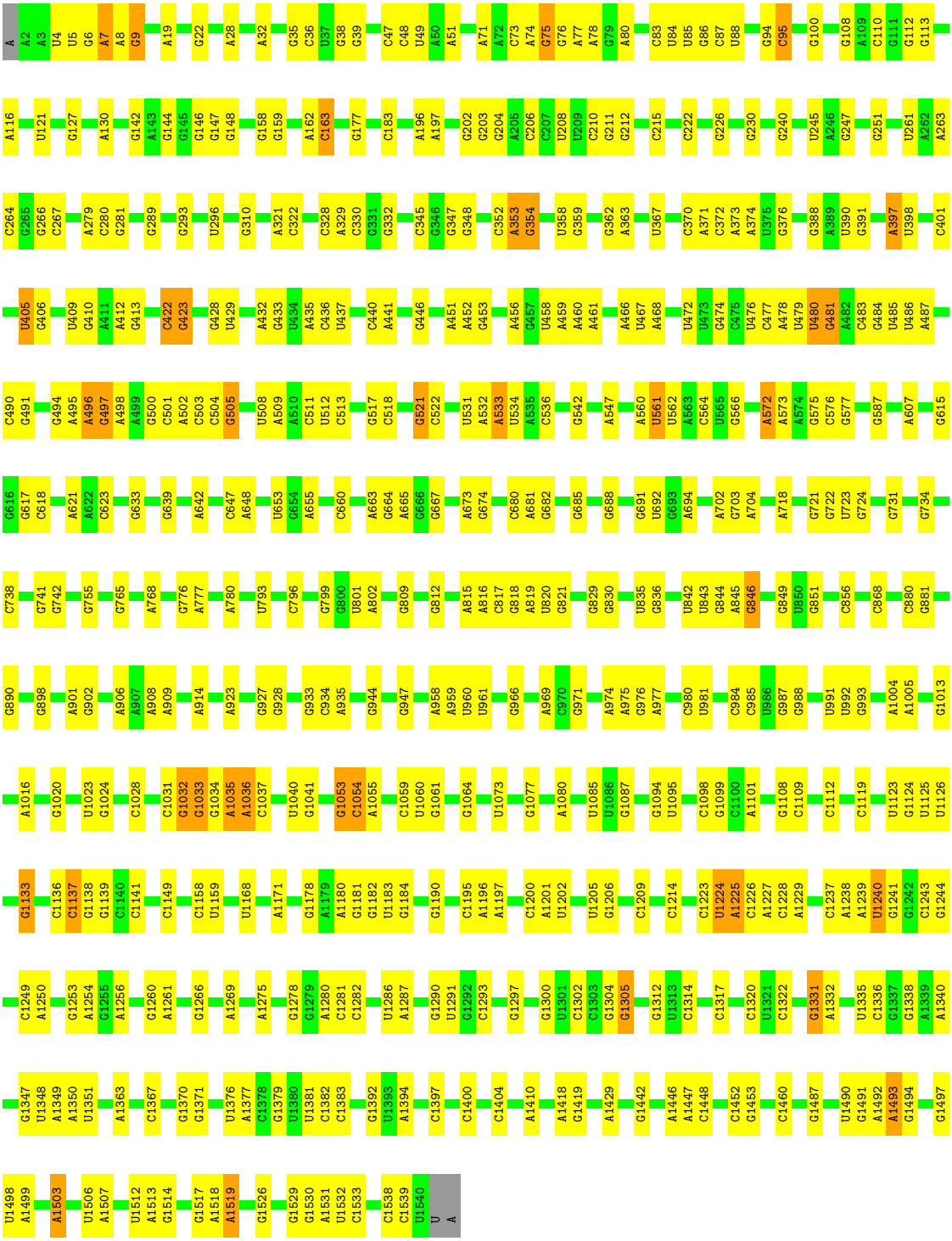
• Molecule 52: 5S rRNA

Chain 2: 75% 21% •



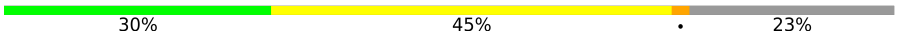
• Molecule 53: 16S rRNA

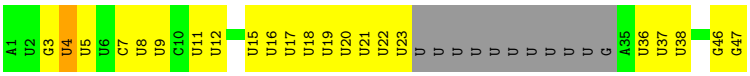
Chain 3:



• Molecule 54: mRNA

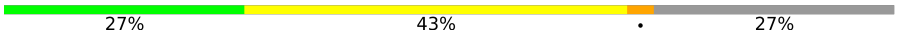
Chain 4:

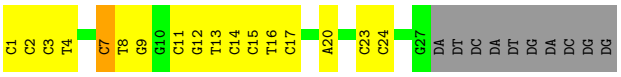




• Molecule 55: templete DNA strand

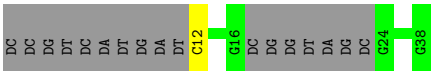
Chain 8:





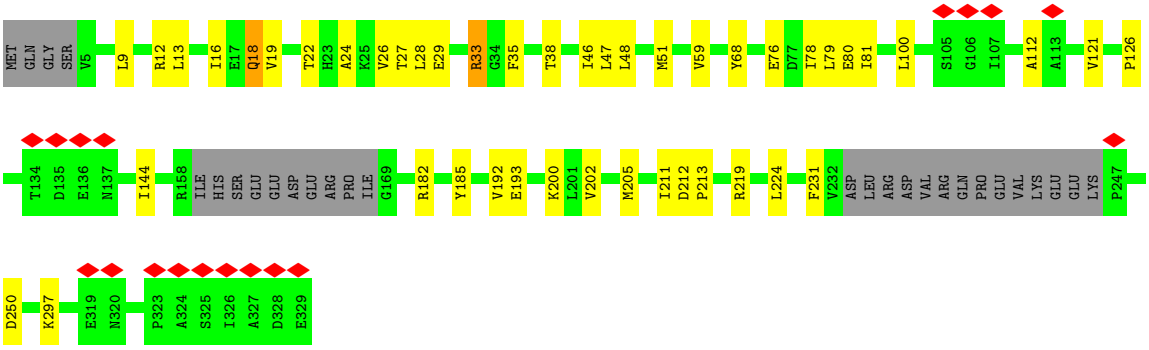
• Molecule 56: non-templete DNA strand

Chain 9:



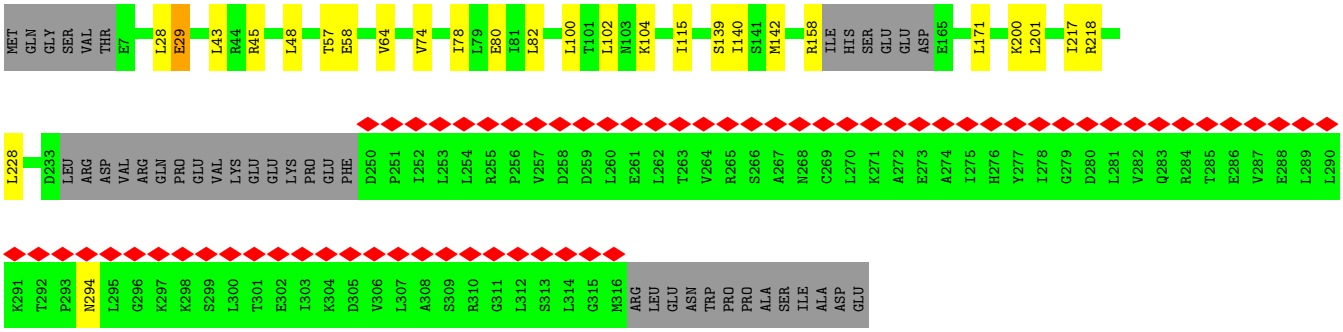
• Molecule 57: DNA-directed RNA polymerase subunit alpha

Chain A1:



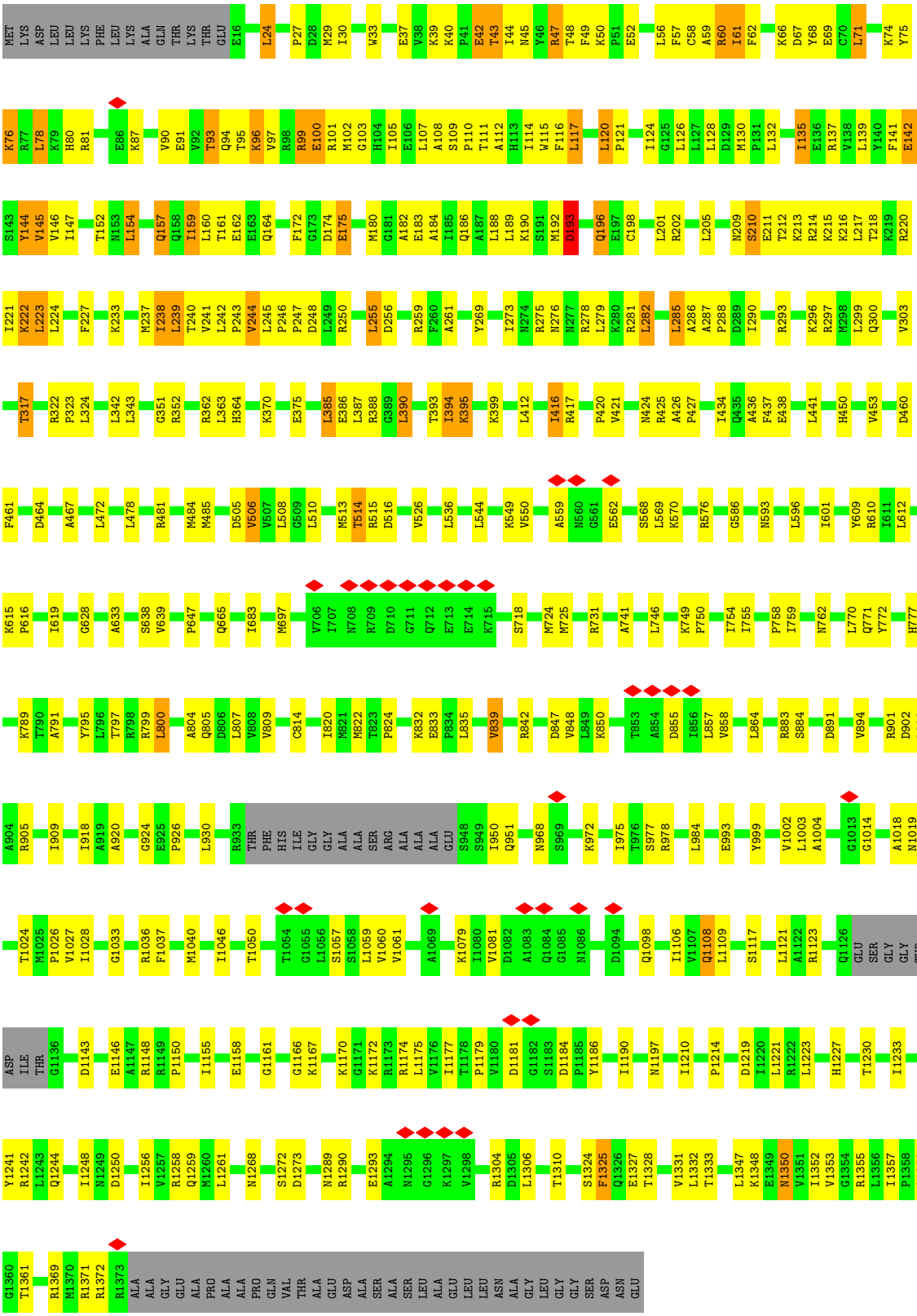
• Molecule 57: DNA-directed RNA polymerase subunit alpha

Chain A2:



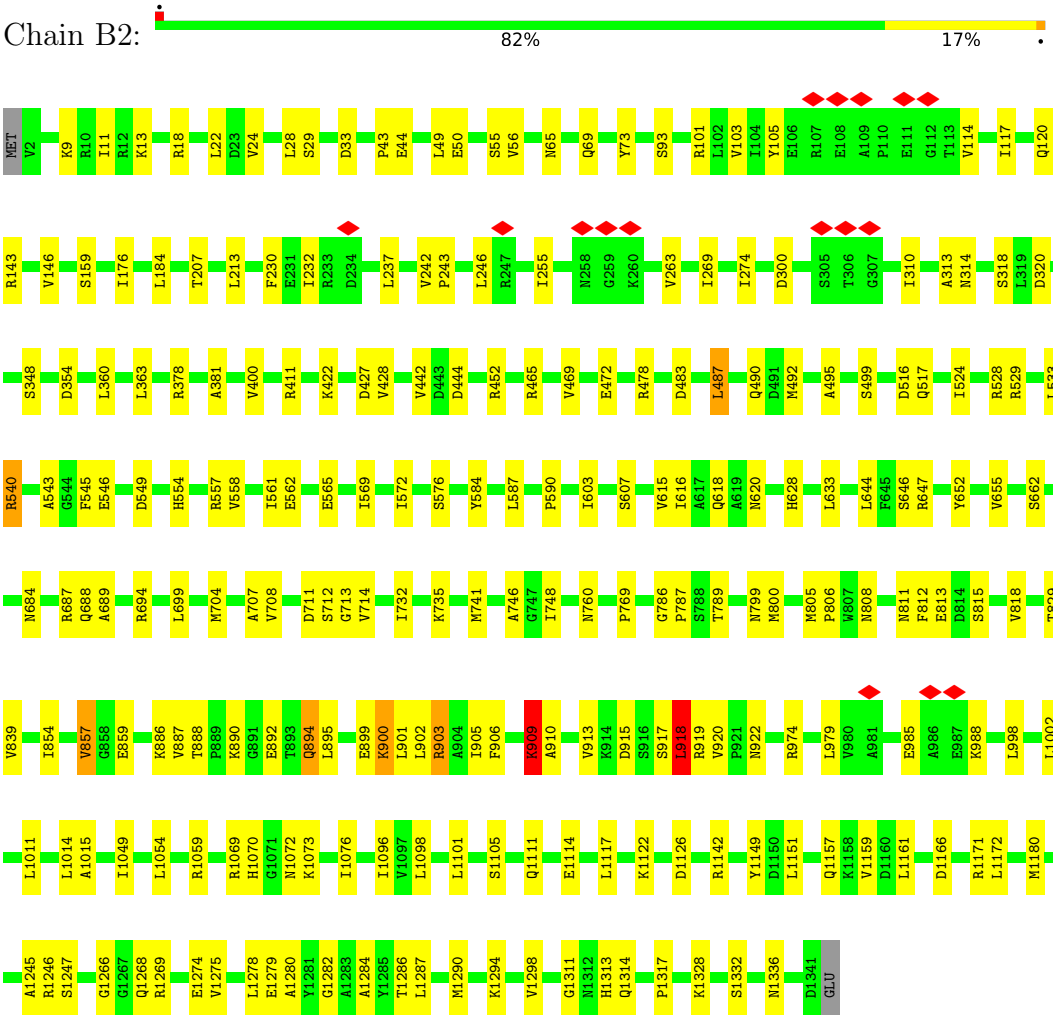
• Molecule 58: DNA-directed RNA polymerase subunit beta'

Chain B1:



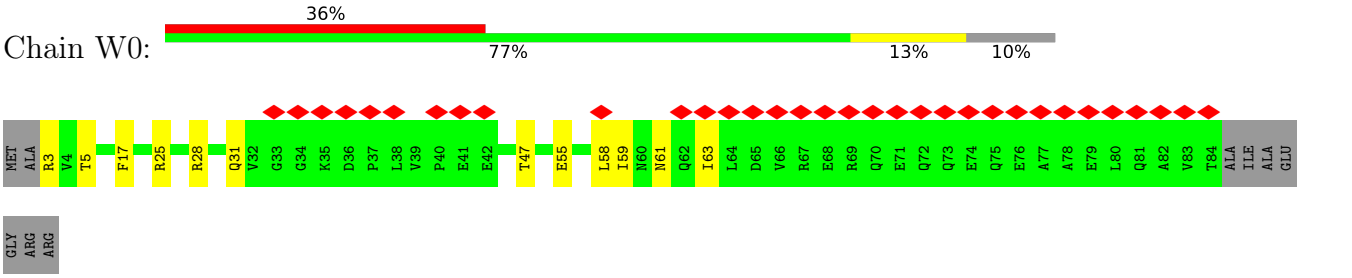
• Molecule 59: DNA-directed RNA polymerase subunit beta

Chain B2:



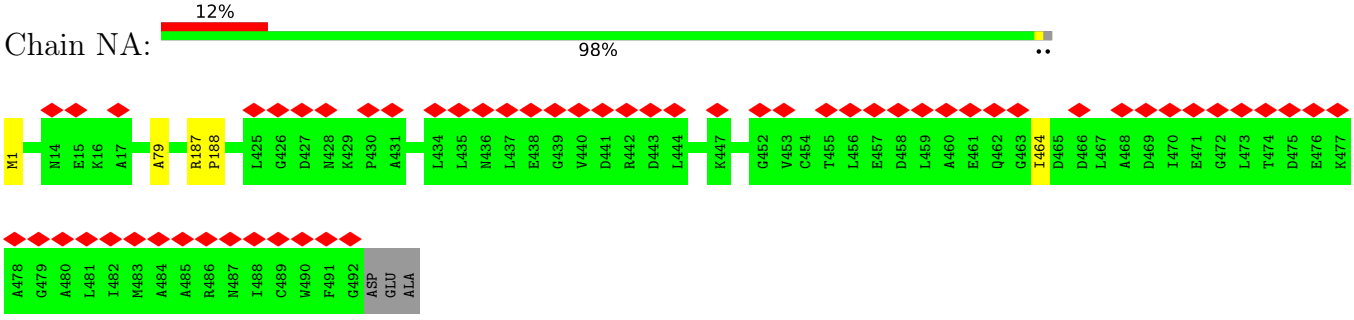
• Molecule 60: DNA-directed RNA polymerase subunit omega

Chain W0:



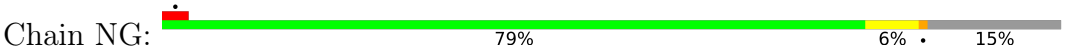
• Molecule 61: Transcription termination/antitermination protein NusA

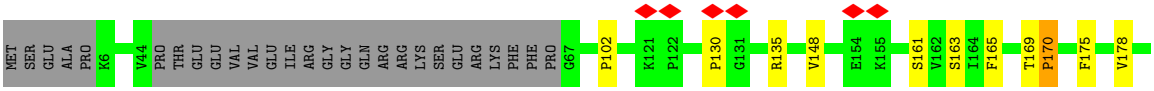
Chain NA:



• Molecule 62: Transcription termination/antitermination protein NusG

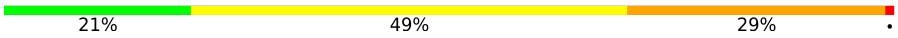
Chain NG:

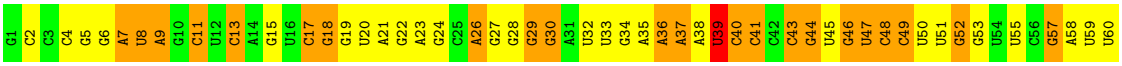


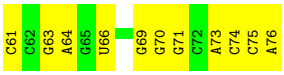


• Molecule 63: tRNA(Phe)

Chain 5:

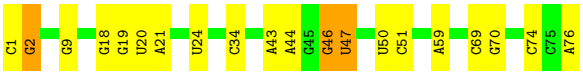






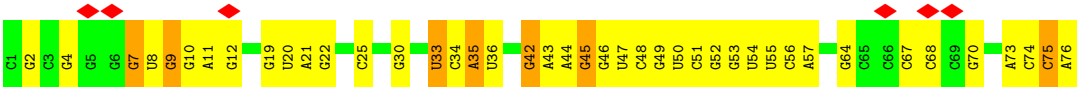
• Molecule 64: tRNA(fMet)

Chain 6:



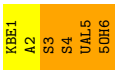
• Molecule 64: tRNA(fMet)

Chain 7:



• Molecule 65: viomycin

Chain h:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	23000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	47	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.089	Depositor
Minimum map value	-0.029	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.006	Depositor
Map size (Å)	753.60004, 753.60004, 753.60004	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.57, 1.57, 1.57	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: KBE, UAL, 5OH, DPP, MG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.26	0/531	0.54	0/709
2	B	0.40	0/450	0.60	0/599
3	C	0.27	0/416	0.52	0/554
4	D	0.47	0/380	0.76	2/498 (0.4%)
5	E	0.53	0/513	0.60	0/676
6	F	0.57	0/303	0.65	0/397
7	G	0.37	0/1735	0.64	0/2338
8	H	0.34	0/1651	0.55	0/2225
9	I	0.35	0/1665	0.71	0/2227
10	J	0.38	0/1169	0.68	2/1573 (0.1%)
11	K	0.46	0/835	0.77	0/1128
12	L	0.30	0/1195	0.67	3/1602 (0.2%)
13	M	0.35	0/989	0.52	0/1326
14	N	0.41	0/1034	0.77	0/1375
15	O	0.50	0/796	0.78	2/1077 (0.2%)
16	P	0.45	0/885	0.64	1/1195 (0.1%)
17	Q	0.50	0/969	0.86	2/1300 (0.2%)
18	R	0.33	0/892	0.73	2/1193 (0.2%)
19	S	0.32	0/817	0.61	0/1088
20	T	0.49	0/722	0.64	0/964
21	U	0.30	0/659	0.71	2/884 (0.2%)
22	V	0.44	0/657	0.71	0/881
23	W	0.54	0/544	0.74	1/731 (0.1%)
24	X	0.28	0/652	0.55	0/877
25	Y	0.28	0/671	0.52	0/888
26	Z	0.66	0/550	1.01	2/728 (0.3%)
27	b	0.49	0/2121	0.64	0/2852
28	c	0.42	0/1586	0.59	2/2134 (0.1%)
29	d	0.43	0/1571	0.62	0/2113
30	e	0.37	0/1434	0.60	2/1926 (0.1%)
31	f	0.29	0/1343	0.55	0/1816
32	g	0.32	0/405	0.75	0/544

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	i	0.31	0/1046	0.77	3/1410 (0.2%)
34	j	0.41	0/1152	0.55	1/1551 (0.1%)
35	k	0.45	0/947	0.66	0/1268
36	l	0.40	0/1054	0.63	0/1403
37	m	0.56	0/1093	0.74	0/1460
38	n	0.46	0/973	0.72	1/1301 (0.1%)
39	o	0.31	0/902	0.51	0/1209
40	p	0.41	0/929	0.61	0/1242
41	q	0.52	0/960	0.62	1/1278 (0.1%)
42	r	0.43	0/829	0.69	0/1107
43	s	0.43	0/864	0.58	0/1156
44	t	0.33	0/744	0.52	0/994
45	u	0.45	0/787	0.75	0/1051
46	v	0.34	0/766	0.51	0/1025
47	w	0.40	0/582	0.52	0/769
48	x	0.43	0/635	0.63	1/848 (0.1%)
49	y	0.29	0/510	0.64	0/677
50	z	0.41	0/453	0.53	0/605
51	1	0.51	0/69796	0.62	22/108888 (0.0%)
52	2	0.43	0/2872	0.46	0/4479
53	3	0.42	0/36963	0.43	0/57662
54	4	0.52	0/830	0.65	0/1285
55	8	0.56	0/599	0.70	1/919 (0.1%)
56	9	0.47	0/468	0.52	0/719
57	A1	0.55	0/2106	0.81	0/2868
57	A2	0.49	0/2048	0.76	0/2786
58	B1	0.57	6/10510 (0.1%)	0.75	8/14196 (0.1%)
59	B2	0.46	0/10714	0.67	0/14459
60	W0	0.30	0/652	0.61	0/879
61	NA	0.78	0/2431	1.22	0/3385
62	NG	1.13	0/756	1.06	0/1048
63	5	0.57	0/1812	0.86	3/2823 (0.1%)
64	6	0.40	0/1832	0.48	0/2855
64	7	0.39	0/1832	0.57	1/2855 (0.0%)
65	h	3.18	2/11 (18.2%)	0.75	0/13
All	All	0.48	8/191598 (0.0%)	0.62	65/282891 (0.0%)

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
65	h	3	SER	CA-C	-6.74	1.38	1.52
65	h	4	SER	CA-C	-6.15	1.40	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
58	B1	1350	ASN	CG-ND2	-5.28	1.22	1.33
58	B1	424	ASN	CG-ND2	-5.15	1.22	1.33
58	B1	1108	GLN	CD-OE1	5.13	1.33	1.23
58	B1	1268	ASN	CG-OD1	5.02	1.33	1.23
58	B1	777	HIS	ND1-CE1	5.01	1.37	1.32
58	B1	665	GLN	CD-OE1	5.00	1.33	1.23

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	P	73	VAL	N-CA-C	-9.03	104.53	113.20
41	q	33	VAL	N-CA-C	-8.76	104.76	112.12
12	L	64	ALA	N-CA-C	-7.69	105.06	114.75
51	1	1130	U	C2'-C3'-O3'	7.59	120.89	109.50
64	7	33	U	C2'-C3'-O3'	7.27	120.41	109.50
51	1	2326	C	C2'-C3'-O3'	7.21	120.31	109.50
58	B1	450	HIS	CB-CG-CD2	-6.58	122.64	131.20
51	1	761	A	C4'-C3'-O3'	-6.50	103.25	113.00
58	B1	61	ILE	CA-C-N	-6.38	113.99	121.64
58	B1	61	ILE	C-N-CA	-6.38	113.99	121.64
58	B1	777	HIS	CB-CG-CD2	-6.36	122.93	131.20
28	c	147	GLY	CA-C-N	-6.04	115.25	122.44
28	c	147	GLY	C-N-CA	-6.04	115.25	122.44
63	5	39	U	C3'-C2'-O2'	5.86	119.50	110.70
58	B1	450	HIS	CB-CG-ND1	5.71	131.27	122.70
51	1	2060	A	C2'-C3'-O3'	5.67	118.01	109.50
26	Z	35	GLU	CA-C-N	5.63	132.28	121.54
26	Z	35	GLU	C-N-CA	5.63	132.28	121.54
51	1	1790	C	N1-C1'-C2'	5.62	120.43	112.00
15	O	57	VAL	CA-C-N	5.59	132.22	121.54
15	O	57	VAL	C-N-CA	5.59	132.22	121.54
38	n	47	VAL	N-CA-C	-5.55	107.46	112.12
10	J	155	LYS	N-CA-C	-5.53	107.78	114.75
51	1	1451	C	N1-C1'-C2'	5.48	120.23	112.00
51	1	1905	C	C4'-C3'-O3'	-5.46	104.81	113.00
51	1	960	A	N9-C1'-C2'	5.45	120.18	112.00
58	B1	777	HIS	CB-CG-ND1	5.44	130.86	122.70
51	1	1696	G	N9-C1'-C2'	5.42	120.14	112.00
51	1	1020	A	C2'-C3'-O3'	5.41	117.62	109.50
4	D	3	ARG	CA-C-N	5.40	127.77	120.38
4	D	3	ARG	C-N-CA	5.40	127.77	120.38
55	8	7	DC	C2'-C3'-O3'	-5.37	103.44	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
33	i	24	GLY	N-CA-C	5.31	123.18	112.34
51	1	1782	U	N1-C1'-C2'	5.31	119.96	112.00
51	1	2428	G	N9-C1'-C2'	5.29	119.94	112.00
51	1	2055	C	N1-C1'-C2'	5.26	119.90	112.00
30	e	141	ASP	CA-C-N	5.25	131.57	121.54
30	e	141	ASP	C-N-CA	5.25	131.57	121.54
12	L	5	VAL	CA-C-N	5.25	127.74	120.49
12	L	5	VAL	C-N-CA	5.25	127.74	120.49
63	5	39	U	C4'-C3'-O3'	5.24	120.86	113.00
58	B1	27	PRO	N-CA-C	-5.24	106.22	113.81
51	1	980	A	N9-C1'-C2'	5.21	119.82	112.00
34	j	110	PRO	N-CA-C	5.20	120.69	113.98
51	1	2576	G	N9-C1'-C2'	5.19	119.79	112.00
63	5	57	G	C4'-C3'-O3'	5.18	117.17	109.40
21	U	78	VAL	CA-C-N	5.17	129.63	121.56
21	U	78	VAL	C-N-CA	5.17	129.63	121.56
51	1	2430	A	N9-C1'-C2'	5.16	119.73	112.00
51	1	1565	C	N1-C1'-C2'	5.15	119.72	112.00
51	1	1328	A	N9-C1'-C2'	5.14	119.71	112.00
10	J	87	VAL	N-CA-C	5.12	116.01	109.30
23	W	14	ALA	N-CA-C	-5.10	106.14	112.93
18	R	3	ILE	CA-C-N	5.10	131.29	121.54
18	R	3	ILE	C-N-CA	5.10	131.29	121.54
51	1	2777	G	N9-C1'-C2'	5.08	119.62	112.00
33	i	71	LYS	CA-C-N	5.08	134.19	121.80
33	i	71	LYS	C-N-CA	5.08	134.19	121.80
58	B1	61	ILE	CA-C-O	-5.07	115.67	120.95
17	Q	42	LYS	CA-C-N	5.07	129.58	121.62
17	Q	42	LYS	C-N-CA	5.07	129.58	121.62
51	1	1087	G	N9-C1'-C2'	5.06	119.58	112.00
48	x	25	LYS	N-CA-C	5.05	121.55	110.80
51	1	1672	A	N9-C1'-C2'	5.02	119.53	112.00
51	1	972	A	N9-C1'-C2'	5.02	119.52	112.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	522	0	524	8	0
2	B	444	0	461	9	0
3	C	409	0	440	3	0
4	D	377	0	418	9	0
5	E	504	0	574	3	0
6	F	302	0	343	5	0
7	G	1704	0	1732	35	0
8	H	1624	0	1699	25	0
9	I	1643	0	1710	37	0
10	J	1156	0	1199	18	0
11	K	817	0	808	15	0
12	L	1181	0	1240	18	0
13	M	979	0	1034	9	0
14	N	1022	0	1070	22	0
15	O	786	0	828	15	0
16	P	869	0	878	23	0
17	Q	955	0	1019	30	0
18	R	883	0	944	18	0
19	S	805	0	847	11	0
20	T	714	0	737	6	0
21	U	649	0	666	15	0
22	V	648	0	691	8	0
23	W	535	0	552	7	0
24	X	637	0	665	8	0
25	Y	665	0	714	12	0
26	Z	544	0	579	13	0
27	b	2082	0	2157	49	0
28	c	1565	0	1616	27	0
29	d	1552	0	1619	29	0
30	e	1410	0	1447	24	0
31	f	1323	0	1374	32	0
32	g	400	0	423	7	0
33	i	1032	0	1088	41	0
34	j	1129	0	1162	20	0
35	k	938	0	1012	16	0
36	l	1045	0	1117	16	0
37	m	1074	0	1157	13	0
38	n	960	0	1000	16	0
39	o	892	0	923	15	0
40	p	917	0	965	17	0
41	q	947	0	1022	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
42	r	816	0	839	19	0
43	s	857	0	922	11	0
44	t	738	0	807	10	0
45	u	779	0	834	13	0
46	v	753	0	780	9	0
47	w	575	0	592	9	0
48	x	625	0	655	11	0
49	y	509	0	543	13	0
50	z	449	0	491	9	0
51	1	62317	0	31346	1455	0
52	2	2568	0	1303	15	0
53	3	33012	0	16618	189	0
54	4	749	0	374	8	0
55	8	539	0	305	28	0
56	9	417	0	224	1	0
57	A1	2088	0	1895	24	0
57	A2	2029	0	1864	19	0
58	B1	10353	0	10548	325	0
59	B2	10546	0	10550	163	0
60	W0	650	0	658	10	0
61	NA	2432	0	1171	4	0
62	NG	758	0	334	10	0
63	5	1622	0	821	29	0
64	6	1640	0	837	8	0
64	7	1640	0	837	20	0
65	h	48	0	40	10	0
66	B1	1	0	0	0	0
All	All	178150	0	126642	2806	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 9.

All (2806) 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)
40:p:52:ARG:HH21	51:1:2720:U:H5”	0.95	1.09
51:1:275:C:H2’	51:1:276:U:H4’	1.37	1.06
51:1:2713:U:H3’	51:1:2714:G:H5’	1.41	1.03
51:1:1666:G:H2’	51:1:1667:G:H5’	1.41	1.02
51:1:1672:A:C2	51:1:2582:G:H5’	1.95	1.02
58:B1:750:PRO:HB3	59:B2:549:ASP:OD2	1.60	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:111:THR:HG23	58:B1:300:GLN:CD	1.86	1.01
51:1:1082:U:H3'	51:1:1083:U:H5"	1.41	0.99
51:1:1807:G:H2'	51:1:1808:A:H5'	1.44	0.99
40:p:52:ARG:NH2	51:1:2720:U:H5"	1.79	0.98
58:B1:352:ARG:HD2	59:B2:1268:GLN:NE2	1.79	0.97
51:1:1847:A:HO2'	51:1:1848:A:H8	1.06	0.95
58:B1:68:TYR:O	58:B1:75:TYR:CE2	2.20	0.94
51:1:2713:U:H3'	51:1:2714:G:C5'	1.98	0.94
51:1:644:A:H2'	51:1:645:C:H5"	1.50	0.94
30:e:130:GLY:HA3	51:1:2305:U:H5"	1.51	0.92
30:e:84:ILE:HD13	51:1:2312:U:H5'	1.51	0.92
51:1:2156:G:H2'	51:1:2157:G:H5'	1.47	0.92
51:1:655:A:H4'	51:1:656:G:H5'	1.50	0.92
51:1:1702:G:H2'	51:1:1703:G:H5"	1.51	0.92
51:1:1102:C:H2'	51:1:1103:A:H8	1.34	0.91
51:1:1019:U:H3	51:1:1142:A:H62	1.17	0.91
54:4:47:G:H21	58:B1:427:PRO:HD3	1.34	0.91
51:1:1668:A:H4'	51:1:1669:A:H5'	1.54	0.90
51:1:890:C:H2'	51:1:891:G:H5'	1.53	0.90
59:B2:854:ILE:HG21	59:B2:917:SER:HB3	1.54	0.89
51:1:2097:A:H2'	51:1:2098:U:C6	2.08	0.89
14:N:3:ASN:N	14:N:5:TYR:HH	1.70	0.89
58:B1:68:TYR:C	58:B1:75:TYR:HE2	1.80	0.88
51:1:1060:U:H4'	51:1:1061:U:H5"	1.55	0.88
58:B1:202:ARG:HG2	58:B1:202:ARG:HH11	1.35	0.88
58:B1:317:THR:HA	58:B1:323:PRO:HA	1.55	0.88
63:5:9:A:H2'	63:5:11:C:H41	1.38	0.88
31:f:174:LYS:HG3	51:1:2529:G:H4'	1.56	0.87
17:Q:40:THR:HG21	65:h:6:5OH:OS	1.75	0.87
51:1:1869:G:H3'	51:1:1870:C:H5'	1.57	0.86
51:1:11:C:H2'	51:1:12:U:H5"	1.55	0.86
51:1:2333:A:H5'	51:1:2334:U:H2'	1.57	0.86
51:1:1387:A:H5'	51:1:1469:A:H1'	1.58	0.85
58:B1:68:TYR:HB3	58:B1:75:TYR:OH	1.76	0.85
51:1:2792:A:H2'	51:1:2793:C:H5"	1.59	0.85
2:B:8:THR:HB	51:1:2020:A:H5'	1.56	0.85
40:p:52:ARG:HH21	51:1:2720:U:C5'	1.86	0.85
51:1:1175:A:H3'	51:1:1176:U:H5'	1.59	0.85
17:Q:69:GLU:HG3	53:3:521:G:H4'	1.59	0.84
51:1:475:C:H4'	51:1:510:C:H5'	1.59	0.84
58:B1:68:TYR:O	58:B1:75:TYR:HE2	1.58	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:633:ALA:HB2	59:B2:808:ASN:H	1.41	0.84
51:1:1666:G:C2’	51:1:1667:G:H5’	2.07	0.84
51:1:2584:U:H2’	51:1:2585:U:H5’	1.58	0.83
33:i:119:ALA:HB2	51:1:1082:U:H5’	1.60	0.82
51:1:1141:U:H4’	51:1:1142:A:O4’	1.80	0.82
51:1:849:A:H2’	51:1:850:U:C6	2.14	0.82
58:B1:141:PHE:HE2	58:B1:296:LYS:HB2	1.45	0.81
58:B1:770:LEU:HD13	59:B2:618:GLN:HG3	1.61	0.81
51:1:279:A:H61	51:1:361:G:H1’	1.46	0.81
55:8:1:DC:H5”	58:B1:210:SER:OG	1.80	0.81
3:C:40:PRO:HG3	51:1:2348:U:H4’	1.63	0.81
51:1:2224:G:H4’	51:1:2226:C:C2	2.16	0.81
51:1:2799:A:H2’	51:1:2800:A:H5’	1.63	0.81
51:1:2112:G:H2’	51:1:2113:U:H5’	1.63	0.81
51:1:545:U:C2	51:1:546:U:H1’	2.16	0.81
38:n:36:THR:HG22	51:1:1278:C:OP1	1.80	0.80
51:1:757:G:H2’	51:1:758:C:H5’	1.61	0.80
58:B1:111:THR:HG23	58:B1:300:GLN:OE1	1.81	0.80
51:1:2360:G:H2’	51:1:2361:G:H5’	1.62	0.80
58:B1:141:PHE:CE2	58:B1:296:LYS:HB2	2.16	0.80
58:B1:37:GLU:O	58:B1:61:ILE:HD11	1.81	0.80
51:1:1071:G:O2’	51:1:1089:A:H2’	1.82	0.80
51:1:1197:G:O2’	51:1:1198:U:H5’	1.81	0.80
64:7:46:G:H2’	64:7:47:U:H5’	1.64	0.80
51:1:784:G:H5’	51:1:785:G:OP1	1.81	0.80
51:1:1087:G:N2	51:1:1103:A:H1’	1.97	0.80
51:1:1775:U:H2’	51:1:1776:G:H5’	1.64	0.80
58:B1:144:TYR:HE1	58:B1:162:GLU:OE2	1.64	0.79
7:G:18:GLN:HG3	7:G:189:ASN:HB3	1.65	0.79
51:1:1064:C:H41	51:1:1069:A:H5”	1.47	0.79
58:B1:186:GLN:HG3	58:B1:238:ILE:HG13	1.65	0.78
33:i:55:PRO:HG3	51:1:1060:U:OP2	1.83	0.78
51:1:1536:C:H4’	51:1:1537:G:C2	2.18	0.78
51:1:2130:U:H2’	51:1:2131:U:H5”	1.65	0.78
51:1:275:C:H2’	51:1:276:U:C4’	2.14	0.78
51:1:1702:G:C2’	51:1:1703:G:H5”	2.13	0.78
51:1:2286:G:H4’	51:1:2287:A:O4’	1.83	0.78
51:1:1275:A:N6	51:1:1296:G:H4’	2.00	0.77
28:c:114:LYS:HB2	51:1:2680:U:OP1	1.84	0.77
51:1:2215:C:H2’	51:1:2216:G:C8	2.18	0.77
51:1:2156:G:C2’	51:1:2157:G:H5’	2.14	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2792:A:C3'	51:1:2793:C:H5"	2.14	0.77
55:8:15:DC:H1'	58:B1:426:ALA:HB1	1.67	0.77
51:1:368:A:H2'	51:1:369:U:H5'	1.66	0.77
51:1:1297:C:OP1	51:1:2710:C:H4'	1.82	0.77
51:1:275:C:H3'	51:1:276:U:H5"	1.66	0.76
35:k:6:THR:HG22	51:1:1666:G:O2'	1.83	0.76
51:1:1310:G:C2'	51:1:1311:G:H5'	2.14	0.76
51:1:1736:U:H2'	51:1:1737:G:O4'	1.85	0.76
51:1:1063:G:H1	51:1:1075:C:N4	1.83	0.76
51:1:1394:U:H4'	51:1:1603:A:H4'	1.66	0.76
51:1:548:G:H2'	51:1:549:G:O4'	1.84	0.76
58:B1:110:PRO:HG2	58:B1:183:GLU:HG3	1.68	0.76
55:8:13:DT:H72	58:B1:791:ALA:HB2	1.66	0.75
51:1:310:A:O2'	51:1:311:A:H2'	1.84	0.75
51:1:2792:A:C2'	51:1:2793:C:H5"	2.16	0.75
51:1:1020:A:H5'	51:1:1021:A:C8	2.22	0.75
51:1:958:U:H2'	52:2:89:U:O2	1.87	0.74
55:8:3:DC:H2'	55:8:4:DT:H72	1.69	0.74
51:1:2611:C:O2	51:1:2611:C:H2'	1.86	0.74
51:1:545:U:H2'	51:1:546:U:O4'	1.88	0.74
51:1:1083:U:H2'	51:1:1085:A:OP2	1.87	0.74
51:1:1425:G:H2'	51:1:1426:G:C8	2.23	0.74
51:1:2432:A:H1'	64:7:75:C:O4'	1.86	0.74
58:B1:1143:ASP:OD1	58:B1:1148:ARG:NH1	2.21	0.74
51:1:1670:C:H2'	51:1:1671:U:H5'	1.70	0.74
51:1:1773:A:H2'	51:1:1774:C:H5'	1.68	0.74
51:1:543:G:H2'	51:1:544:C:H5"	1.68	0.74
51:1:1061:U:H3'	51:1:1062:G:C5'	2.18	0.74
51:1:1310:G:H2'	51:1:1311:G:H5'	1.69	0.73
51:1:1555:G:H5'	51:1:1555:G:H8	1.51	0.73
53:3:456:A:H61	53:3:476:U:H3	1.36	0.73
51:1:322:A:H5'	51:1:340:A:C1'	2.19	0.73
51:1:2097:A:H2'	51:1:2098:U:H6	1.50	0.73
51:1:404:A:H1'	51:1:406:G:C4	2.23	0.73
58:B1:68:TYR:C	58:B1:75:TYR:CE2	2.65	0.73
51:1:481:G:H1'	51:1:506:G:N2	2.04	0.73
51:1:2036:C:H2'	51:1:2037:A:C8	2.23	0.73
31:f:15:ASP:HB3	31:f:26:LYS:H	1.54	0.73
55:8:3:DC:C2'	55:8:4:DT:H72	2.19	0.73
58:B1:107:LEU:HD11	58:B1:242:LEU:HB2	1.70	0.73
58:B1:211:GLU:HG2	58:B1:215:LYS:HE3	1.70	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2713:U:C3'	51:1:2714:G:C5'	2.67	0.72
64:7:50:U:H2'	64:7:51:C:C4	2.24	0.72
51:1:1942:C:H3'	51:1:1943:U:H2'	1.70	0.72
51:1:2834:G:H2'	51:1:2879:A:H61	1.54	0.72
58:B1:105:ILE:HD12	58:B1:242:LEU:HD22	1.71	0.72
17:Q:33:CYS:HA	17:Q:54:VAL:HG12	1.70	0.72
51:1:1433:A:H2'	51:1:1434:A:O4'	1.89	0.72
58:B1:220:ARG:HG2	58:B1:220:ARG:HH11	1.55	0.72
51:1:2671:G:H2'	51:1:2672:U:C6	2.25	0.72
53:3:452:A:H61	53:3:480:U:H3	1.37	0.72
58:B1:157:GLN:OE1	58:B1:157:GLN:HA	1.88	0.72
51:1:864:G:O2'	51:1:865:C:H5'	1.89	0.71
51:1:1441:G:H2'	51:1:1442:U:C6	2.25	0.71
51:1:1858:A:H1'	51:1:1885:A:C2	2.26	0.71
51:1:1795:C:H2'	51:1:1796:U:O4'	1.90	0.71
51:1:1872:A:H2'	51:1:1873:G:O4'	1.89	0.71
51:1:394:C:H2'	51:1:395:U:O4'	1.90	0.71
51:1:633:A:H2'	51:1:634:C:H5'	1.72	0.71
51:1:1386:C:H2'	51:1:1387:A:H8	1.56	0.71
58:B1:210:SER:HB3	58:B1:213:LYS:HB2	1.71	0.71
51:1:890:C:C2'	51:1:891:G:H5'	2.21	0.71
58:B1:202:ARG:HG2	58:B1:202:ARG:NH1	1.99	0.71
51:1:1019:U:H3	51:1:1142:A:N6	1.89	0.71
58:B1:282:LEU:HA	58:B1:286:ALA:HA	1.70	0.71
53:3:663:A:H61	53:3:742:G:H1	1.39	0.71
58:B1:93:THR:HB	58:B1:97:VAL:HG21	1.73	0.71
58:B1:128:LEU:HD11	58:B1:189:LEU:HG	1.73	0.71
51:1:2151:U:H2'	51:1:2152:G:H8	1.56	0.70
58:B1:142:GLU:HG3	58:B1:142:GLU:O	1.89	0.70
34:j:7:LYS:HG2	51:1:538:A:H4'	1.73	0.70
51:1:2297:A:N1	51:1:2321:U:H5	1.89	0.70
36:l:59:ARG:HD2	51:1:250:G:H4'	1.71	0.70
51:1:368:A:C2'	51:1:369:U:H5'	2.20	0.70
51:1:723:C:H2'	51:1:724:U:C6	2.27	0.70
51:1:1983:G:O2'	51:1:1984:G:H5'	1.91	0.70
59:B2:65:ASN:HB3	59:B2:105:TYR:HB2	1.73	0.70
58:B1:395:LYS:HZ2	58:B1:399:LYS:CD	2.05	0.70
51:1:612:G:H2'	51:1:614:A:C8	2.26	0.70
42:r:79:ARG:NH1	51:1:572:A:OP2	2.25	0.70
51:1:1670:C:C2'	51:1:1671:U:H5'	2.21	0.70
57:A2:294:ASN:HA	61:NA:464:ILE:H	1.57	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
65:h:6:5OH:N	65:h:6:5OH:HS	2.07	0.70
27:b:47:ARG:NH2	51:1:774:G:H5"	2.07	0.70
51:1:1555:G:H5'	51:1:1555:G:C8	2.27	0.70
57:A1:297:LYS:CB	61:NA:79:ALA:HB1	2.22	0.70
51:1:2151:U:H2'	51:1:2152:G:C8	2.27	0.69
51:1:1292:G:H2'	51:1:1293:C:C6	2.27	0.69
51:1:1889:A:H2'	51:1:1890:A:H8	1.58	0.69
51:1:2267:A:H5"	51:1:2268:A:H5"	1.74	0.69
51:1:2092:U:H4'	51:1:2093:G:H5"	1.75	0.69
36:l:30:THR:HG22	51:1:810:U:O4	1.93	0.69
51:1:322:A:H5'	51:1:340:A:H1'	1.73	0.69
51:1:528:A:C8	51:1:528:A:H3'	2.27	0.69
51:1:940:G:H2'	51:1:941:A:H5"	1.73	0.69
58:B1:39:LYS:O	58:B1:273:ILE:CG2	2.41	0.69
58:B1:832:LYS:C	58:B1:1242:ARG:HH12	2.01	0.69
51:1:419:U:H2'	51:1:420:C:C6	2.27	0.69
51:1:849:A:H2'	51:1:850:U:H6	1.58	0.69
51:1:905:A:C2'	51:1:906:U:H5'	2.23	0.69
51:1:2626:C:O2'	51:1:2627:G:H5'	1.91	0.69
65:h:4:SER:O	65:h:5:UAL:N1	2.26	0.69
51:1:1137:G:O2'	51:1:1138:G:H5'	1.92	0.69
51:1:282:A:H2'	51:1:283:G:H8	1.57	0.69
51:1:1102:C:H2'	51:1:1103:A:C8	2.22	0.69
51:1:392:U:H2'	51:1:393:C:H6	1.58	0.68
51:1:2747:G:O6	51:1:2755:C:H5"	1.93	0.68
51:1:319:G:H1	51:1:323:C:H5	1.41	0.68
51:1:2114:A:H2	51:1:2167:U:H1'	1.58	0.68
8:H:117:ASP:HA	8:H:120:THR:HG22	1.75	0.68
50:z:38:GLU:OE2	51:1:928:A:H5'	1.94	0.68
51:1:1337:G:H2'	51:1:1338:G:H8	1.58	0.68
51:1:226:A:H2'	51:1:227:A:O4'	1.93	0.68
51:1:419:U:H2'	51:1:420:C:H6	1.58	0.68
51:1:644:A:H2'	51:1:645:C:C5'	2.21	0.68
51:1:2403:C:O2'	51:1:2404:U:H5'	1.92	0.68
51:1:2869:G:H2'	51:1:2870:C:C6	2.28	0.68
55:8:3:DC:C6	55:8:4:DT:H72	2.29	0.68
58:B1:141:PHE:CD2	58:B1:293:ARG:O	2.47	0.68
51:1:1063:G:H1	51:1:1075:C:H41	1.42	0.68
51:1:1082:U:H3'	51:1:1083:U:C5'	2.22	0.68
51:1:2510:C:N4	51:1:2511:U:O4	2.27	0.68
51:1:2758:A:H2'	51:1:2759:G:H5'	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:243:PRO:HG2	59:B2:1332:SER:O	1.93	0.68
51:1:402:A:H2'	51:1:403:U:H5'	1.74	0.68
51:1:1999:C:H5"	51:1:2723:C:O2'	1.94	0.68
48:x:16:ASN:ND2	48:x:26:ARG:HB3	2.09	0.68
51:1:1078:U:H2'	51:1:1088:A:OP1	1.94	0.68
52:2:65:U:H3'	52:2:108:A:H61	1.58	0.68
51:1:1061:U:H3'	51:1:1062:G:H5'	1.76	0.68
51:1:894:U:H2'	51:1:895:U:O4'	1.93	0.67
58:B1:1355:ARG:NH1	58:B1:1369:ARG:HH12	1.92	0.67
63:5:47:U:H4'	63:5:48:C:H5'	1.75	0.67
9:I:73:ASN:HA	9:I:76:LYS:HB2	1.77	0.67
53:3:437:U:H3	53:3:495:A:H62	1.41	0.67
51:1:246:C:H2'	51:1:247:G:H5'	1.76	0.67
51:1:707:G:O2'	51:1:708:G:H5'	1.94	0.67
51:1:1484:U:H2'	51:1:1485:U:C6	2.30	0.67
51:1:1702:G:C3'	51:1:1703:G:H5"	2.24	0.67
51:1:1889:A:H2'	51:1:1890:A:C8	2.29	0.67
51:1:2157:G:H2'	51:1:2158:A:H2	1.59	0.67
58:B1:352:ARG:HD2	59:B2:1268:GLN:HE22	1.55	0.67
58:B1:984:LEU:HB3	58:B1:993:GLU:HB2	1.77	0.67
51:1:466:A:H2'	51:1:467:G:H5'	1.76	0.67
51:1:2013:A:H5"	51:1:2013:A:H8	1.59	0.67
51:1:2278:A:C3'	51:1:2279:G:H5"	2.25	0.67
4:D:37:LYS:HD3	4:D:39:ARG:HD3	1.77	0.67
51:1:1717:A:H2'	51:1:1718:G:H5'	1.77	0.67
51:1:2516:A:O2'	51:1:2517:C:H5'	1.95	0.67
51:1:2555:U:H2'	51:1:2556:C:H5'	1.77	0.67
58:B1:108:ALA:HB3	58:B1:279:LEU:HD22	1.77	0.67
36:l:39:LYS:NZ	51:1:942:G:OP2	2.28	0.67
37:m:14:LYS:NZ	51:1:956:G:N7	2.35	0.67
51:1:1432:G:O2'	51:1:1433:A:H5'	1.94	0.66
58:B1:108:ALA:CB	58:B1:279:LEU:HD22	2.25	0.66
58:B1:161:THR:HG22	58:B1:164:GLN:HB2	1.75	0.66
51:1:703:U:C2'	51:1:704:G:H5'	2.25	0.66
51:1:1176:U:H2'	51:1:1177:G:C8	2.29	0.66
51:1:2898:U:H2'	51:1:2899:A:C8	2.29	0.66
51:1:1438:U:O2'	51:1:1439:A:H5'	1.94	0.66
51:1:2233:U:H2'	51:1:2234:G:C8	2.30	0.66
51:1:521:U:H2'	51:1:522:A:C8	2.31	0.66
51:1:905:A:H2'	51:1:906:U:H5'	1.77	0.66
58:B1:117:LEU:HD12	58:B1:117:LEU:O	1.94	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:644:A:C2’	51:1:645:C:H5”	2.22	0.66
51:1:1270:C:H5”	51:1:1271:G:H5’	1.77	0.66
51:1:2625:G:H2’	51:1:2626:C:C6	2.30	0.66
51:1:2733:A:O2’	51:1:2734:A:H5’	1.96	0.66
55:8:13:DT:OP2	58:B1:791:ALA:HB1	1.95	0.66
51:1:1733:G:O2’	51:1:1734:G:H5’	1.95	0.66
58:B1:1037:PHE:HB3	58:B1:1040:MET:HB2	1.77	0.66
51:1:2844:G:H2’	51:1:2845:U:C6	2.31	0.66
17:Q:47:ALA:HB3	17:Q:49:ARG:HE	1.60	0.66
51:1:635:C:H2’	51:1:636:G:C8	2.31	0.66
51:1:1020:A:H1’	51:1:1021:A:OP2	1.95	0.66
51:1:2233:U:H2’	51:1:2234:G:H8	1.59	0.66
51:1:2760:C:O2’	51:1:2761:A:H5’	1.96	0.66
38:n:63:ARG:NE	51:1:1454:C:H5’	2.10	0.66
51:1:2595:G:N2	51:1:2598:A:OP2	2.23	0.66
17:Q:109:ARG:HH21	17:Q:112:ALA:HB3	1.60	0.66
28:c:4:LEU:HD23	28:c:29:VAL:HG11	1.77	0.66
51:1:1064:C:N4	51:1:1069:A:H5”	2.10	0.66
51:1:2278:A:H3’	51:1:2279:G:H5”	1.78	0.66
58:B1:193:ASP:HB3	58:B1:196:GLN:HB2	1.78	0.66
27:b:227:VAL:HG11	51:1:784:G:C2	2.31	0.65
33:i:27:LEU:HD22	33:i:32:VAL:HG21	1.78	0.65
51:1:870:U:C2’	51:1:871:U:H5’	2.26	0.65
51:1:2290:G:H2’	51:1:2291:U:C6	2.31	0.65
51:1:1746:A:H2’	51:1:1747:U:C6	2.31	0.65
51:1:2193:G:H2’	51:1:2194:U:C6	2.32	0.65
45:u:25:LYS:HD3	45:u:36:GLU:HB3	1.75	0.65
51:1:528:A:H3’	51:1:528:A:H8	1.59	0.65
51:1:673:C:H2’	51:1:674:G:H5’	1.77	0.65
51:1:1098:A:H2’	51:1:1099:G:H5’	1.77	0.65
51:1:1270:C:H5”	51:1:1271:G:C5’	2.25	0.65
51:1:2221:G:O2’	51:1:2222:C:H5’	1.95	0.65
55:8:23:DC:H2”	55:8:24:DC:C5	2.30	0.65
51:1:112:U:H2’	51:1:113:U:H5’	1.76	0.65
51:1:414:C:H2’	51:1:415:A:C8	2.31	0.65
51:1:488:G:N2	51:1:491:G:H5”	2.11	0.65
51:1:1098:A:C2’	51:1:1099:G:H5’	2.27	0.65
51:1:1788:C:O2’	51:1:1789:A:H5’	1.96	0.65
51:1:2052:A:O2’	51:1:2053:G:H5’	1.96	0.65
51:1:65:U:H2’	51:1:66:C:H6	1.59	0.65
51:1:536:G:H2’	51:1:537:G:H5’	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:68:TYR:HB3	58:B1:75:TYR:CE2	2.32	0.65
19:S:38:GLU:HA	19:S:41:TRP:HB3	1.79	0.65
51:1:1572:A:O2'	51:1:1573:G:H5'	1.97	0.65
58:B1:975:ILE:HG22	58:B1:977:SER:H	1.62	0.65
51:1:359:G:O2'	51:1:360:U:H5'	1.97	0.65
51:1:1796:U:H2'	51:1:1797:G:H8	1.61	0.65
58:B1:395:LYS:HZ2	58:B1:399:LYS:HD3	1.62	0.65
7:G:67:LEU:HD12	7:G:153:MET:HE1	1.77	0.65
51:1:543:G:H2'	51:1:544:C:C5'	2.26	0.65
51:1:613:A:H5"	51:1:614:A:C8	2.32	0.65
51:1:905:A:O2'	51:1:906:U:H5'	1.97	0.65
51:1:1853:A:H2'	51:1:1854:A:C8	2.32	0.65
51:1:2114:A:N7	51:1:2115:G:H1'	2.12	0.65
51:1:703:U:H2'	51:1:704:G:H5'	1.77	0.64
51:1:2170:A:H2'	51:1:2171:A:O4'	1.97	0.64
58:B1:111:THR:CG2	58:B1:300:GLN:CD	2.67	0.64
28:c:149:ASN:HB3	51:1:2572:A:OP2	1.97	0.64
58:B1:162:GLU:HA	58:B1:162:GLU:OE1	1.97	0.64
51:1:2112:G:C2'	51:1:2113:U:H5'	2.27	0.64
53:3:85:U:H5"	53:3:86:G:H5'	1.78	0.64
58:B1:978:ARG:HG2	58:B1:1197:ASN:HD21	1.61	0.64
51:1:201:C:O2'	51:1:202:U:H5'	1.97	0.64
51:1:2792:A:H3'	51:1:2793:C:H5"	1.80	0.64
51:1:2811:G:O2'	51:1:2812:G:H5'	1.97	0.64
31:f:154:GLU:HG3	31:f:156:TYR:H	1.61	0.64
58:B1:245:LEU:HG	58:B1:246:PRO:HD2	1.80	0.64
4:D:24:THR:HG23	4:D:27:GLY:H	1.61	0.64
12:L:59:GLU:HA	12:L:62:GLU:HB3	1.80	0.64
51:1:414:C:H2'	51:1:415:A:H8	1.63	0.64
51:1:622:G:O2'	51:1:623:C:H5'	1.98	0.64
51:1:870:U:H2'	51:1:871:U:H5'	1.79	0.64
51:1:1161:C:H2'	51:1:1162:G:H8	1.61	0.64
58:B1:141:PHE:HD2	58:B1:293:ARG:O	1.79	0.64
43:s:6:LYS:HB2	51:1:494:G:H4'	1.78	0.64
51:1:306:U:H2'	51:1:307:G:O4'	1.98	0.64
51:1:1666:G:H2'	51:1:1667:G:C5'	2.24	0.64
55:8:3:DC:C2'	55:8:4:DT:C7	2.75	0.64
51:1:256:A:O2'	51:1:257:C:H5'	1.98	0.64
51:1:1766:G:O2'	51:1:1767:G:H5'	1.98	0.64
51:1:940:G:C3'	51:1:941:A:H5"	2.28	0.64
51:1:2834:G:O2'	51:1:2835:A:H5'	1.97	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:19:VAL:HG22	16:P:82:GLU:HB2	1.79	0.64
58:B1:285:LEU:HD13	58:B1:285:LEU:H	1.62	0.64
58:B1:461:PHE:HD2	59:B2:813:GLU:HB2	1.61	0.64
9:I:152:SER:H	9:I:155:LYS:HD3	1.63	0.63
51:1:65:U:H2'	51:1:66:C:C6	2.33	0.63
51:1:2404:U:O2'	51:1:2405:G:H5'	1.97	0.63
51:1:2799:A:C2'	51:1:2800:A:H5'	2.27	0.63
58:B1:918:ILE:HG22	59:B2:1280:ALA:HB1	1.79	0.63
59:B2:314:ASN:HD21	59:B2:348:SER:HA	1.62	0.63
59:B2:528:ARG:NH2	59:B2:576:SER:O	2.30	0.63
51:1:212:G:O2'	51:1:213:A:H5'	1.99	0.63
51:1:1038:G:H2'	51:1:1039:A:C8	2.32	0.63
51:1:1857:G:H22	51:1:1884:G:H2'	1.62	0.63
16:P:87:GLY:H	16:P:113:THR:HG22	1.62	0.63
27:b:106:PRO:HD2	27:b:109:LEU:HD22	1.79	0.63
26:Z:32:ARG:HG2	26:Z:33:ARG:HG3	1.79	0.63
51:1:815:C:C2	51:1:1193:G:N2	2.66	0.63
51:1:1149:G:H2'	51:1:1150:C:C6	2.33	0.63
51:1:2073:C:O2'	51:1:2074:U:H5'	1.98	0.63
11:K:38:ARG:HE	11:K:97:THR:HA	1.62	0.63
17:Q:40:THR:OG1	65:h:6:5OH:HR	1.99	0.63
26:Z:65:ARG:NH2	53:3:1087:G:N3	2.47	0.63
51:1:2636:C:H2'	51:1:2637:U:H6	1.64	0.63
51:1:1181:U:H2'	51:1:1182:G:C8	2.33	0.63
51:1:2314:A:H2'	51:1:2315:G:C8	2.33	0.63
51:1:2469:A:H2'	51:1:2470:G:O4'	1.98	0.63
7:G:173:LYS:O	7:G:177:ASN:ND2	2.32	0.63
51:1:161:A:N7	51:1:162:U:H5	1.96	0.63
51:1:1164:C:O2'	51:1:1165:A:H5'	1.99	0.63
51:1:37:C:O2'	51:1:38:A:H5'	1.99	0.62
51:1:1280:G:O2'	51:1:1281:G:H5'	1.99	0.62
51:1:1524:G:H2'	51:1:1525:A:H8	1.63	0.62
53:3:373:A:H61	53:3:391:G:H1'	1.64	0.62
59:B2:1282:GLY:HA3	60:W0:17:PHE:HE1	1.63	0.62
51:1:1909:C:H2'	51:1:1910:G:H8	1.64	0.62
51:1:2898:U:H2'	51:1:2899:A:H8	1.64	0.62
58:B1:201:LEU:HB2	58:B1:221:ILE:HD13	1.81	0.62
51:1:445:C:H2'	51:1:446:G:O4'	1.98	0.62
51:1:872:U:O2'	51:1:873:C:H5'	1.99	0.62
51:1:1086:A:H5'	51:1:1103:A:H2	1.65	0.62
51:1:1935:G:H1'	51:1:1964:G:N2	2.15	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2298:A:H2'	51:1:2299:U:O4'	1.99	0.62
51:1:317:G:H2'	51:1:318:C:H6	1.64	0.62
51:1:554:U:H2'	51:1:555:G:O4'	1.99	0.62
51:1:590:A:O2'	51:1:591:U:H5'	2.00	0.62
51:1:1775:U:H2'	51:1:1776:G:C5'	2.29	0.62
53:3:959:A:HO2'	53:3:984:C:HO2'	1.47	0.62
51:1:1448:G:H2'	51:1:1449:G:H8	1.64	0.62
51:1:1921:G:O2'	51:1:1922:G:H5'	1.98	0.62
59:B2:55:SER:OG	59:B2:465:ARG:NH1	2.33	0.62
1:A:1:MET:HG2	52:2:43:C:H5"	1.82	0.62
22:V:30:HIS:HD2	22:V:33:TYR:H	1.48	0.62
51:1:940:G:C2'	51:1:941:A:H5"	2.30	0.62
51:1:2092:U:H5	51:1:2199:A:H2	1.48	0.62
51:1:2734:A:H2'	51:1:2735:G:H5'	1.82	0.62
16:P:58:THR:HG22	16:P:60:PHE:H	1.65	0.62
34:j:3:THR:N	51:1:995:C:N3	2.48	0.62
34:j:45:THR:HB	34:j:48:VAL:HG22	1.81	0.62
51:1:161:A:H3'	51:1:162:U:H5"	1.81	0.62
51:1:1680:U:H2'	51:1:1681:G:O4'	2.00	0.62
55:8:3:DC:H2'	55:8:4:DT:C7	2.30	0.62
55:8:13:DT:C7	58:B1:791:ALA:HB2	2.29	0.62
58:B1:144:TYR:CE1	58:B1:162:GLU:OE2	2.51	0.62
59:B2:120:GLN:NE2	59:B2:490:GLN:OE1	2.32	0.62
16:P:45:THR:HG23	16:P:48:GLY:H	1.65	0.62
44:t:53:VAL:HG12	44:t:92:ASN:HD22	1.65	0.62
51:1:2345:G:N3	51:1:2381:A:H2'	2.15	0.62
28:c:181:ASP:HB3	28:c:186:LEU:HB2	1.82	0.62
58:B1:100:GLU:HA	59:B2:1328:LYS:HE2	1.82	0.62
58:B1:111:THR:CG2	58:B1:300:GLN:NE2	2.63	0.62
30:e:9:ASP:N	30:e:9:ASP:OD1	2.34	0.61
45:u:87:GLU:HG2	45:u:92:VAL:HG21	1.82	0.61
51:1:11:C:C2'	51:1:12:U:H5"	2.29	0.61
51:1:941:A:H2'	51:1:942:G:O4'	2.00	0.61
51:1:1040:A:H2	51:1:1115:G:H22	1.48	0.61
7:G:15:PHE:HB2	7:G:39:ILE:HG23	1.82	0.61
51:1:2404:U:H2'	51:1:2405:G:O4'	2.00	0.61
57:A1:211:ILE:HG12	57:A1:219:ARG:HH12	1.65	0.61
58:B1:1357:ILE:HD11	59:B2:1287:LEU:HD13	1.81	0.61
34:j:132:HIS:CD2	51:1:7:G:H5'	2.35	0.61
51:1:435:C:H2'	51:1:436:C:H5'	1.82	0.61
53:3:1032:G:H21	53:3:1033:G:H4'	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2097:A:H2'	51:1:2098:U:O4'	2.00	0.61
55:8:1:DC:H2"	55:8:2:DC:C5	2.35	0.61
64:7:46:G:C2'	64:7:47:U:H5'	2.29	0.61
32:g:50:ARG:HH22	32:g:51:ARG:HH21	1.49	0.61
51:1:236:C:H2'	51:1:237:C:H6	1.64	0.61
58:B1:128:LEU:HA	58:B1:192:MET:HE1	1.81	0.61
51:1:1954:G:H1'	51:1:1956:U:O4	2.01	0.61
51:1:2637:U:H2'	51:1:2638:G:H5'	1.82	0.61
51:1:2852:G:O2'	51:1:2853:C:H5'	2.01	0.61
58:B1:1355:ARG:NH1	58:B1:1369:ARG:NH1	2.47	0.61
63:5:39:U:H2'	63:5:40:C:C6	2.36	0.61
47:w:38:GLY:HA2	51:1:2330:G:H21	1.66	0.61
51:1:723:C:H2'	51:1:724:U:H6	1.64	0.61
51:1:889:C:H2'	51:1:890:C:O4'	1.99	0.61
4:D:3:ARG:O	4:D:6:GLN:NE2	2.33	0.61
51:1:2188:U:H2'	51:1:2189:U:O4'	2.01	0.61
51:1:172:A:H2'	51:1:173:A:H8	1.66	0.61
51:1:547:A:H3'	51:1:547:A:N3	2.16	0.61
51:1:1503:A:H3'	51:1:1504:A:H5"	1.81	0.61
51:1:1508:A:H2'	51:1:1509:A:O4'	2.01	0.61
51:1:2327:A:H2'	51:1:2328:A:C8	2.35	0.61
58:B1:395:LYS:NZ	58:B1:399:LYS:HD3	2.15	0.61
14:N:40:ARG:NH2	14:N:41:GLU:OE2	2.34	0.61
29:d:149:ILE:HG23	29:d:188:MET:HB3	1.83	0.61
31:f:174:LYS:HG3	51:1:2529:G:C4'	2.29	0.61
51:1:198:C:H42	51:1:248:G:H1	1.49	0.61
58:B1:154:LEU:HD21	58:B1:160:LEU:HD21	1.83	0.61
17:Q:40:THR:HG21	65:h:6:5OH:HOS	1.66	0.60
34:j:39:LYS:HE3	51:1:1009:A:OP1	2.01	0.60
51:1:2093:G:O2'	51:1:2094:A:H5'	2.01	0.60
53:3:1133:G:H1	53:3:1141:C:H42	1.48	0.60
39:o:4:LYS:HD3	39:o:7:ARG:HH21	1.65	0.60
51:1:2804:U:H2'	51:1:2805:C:C6	2.36	0.60
51:1:2812:G:H2'	51:1:2813:A:C8	2.36	0.60
57:A1:38:THR:HB	57:A2:45:ARG:HD3	1.82	0.60
58:B1:1161:GLY:HA3	58:B1:1179:PRO:HA	1.82	0.60
37:m:17:ASN:O	37:m:38:ARG:NH1	2.34	0.60
51:1:322:A:H5'	51:1:340:A:O4'	2.00	0.60
51:1:558:U:H6	51:1:558:U:O5'	1.84	0.60
51:1:1717:A:C2'	51:1:1718:G:H5'	2.31	0.60
58:B1:223:LEU:HG	58:B1:223:LEU:O	2.00	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:b:153:LEU:HD23	51:1:1799:G:C2	2.37	0.60
51:1:283:G:H2'	51:1:284:U:H5'	1.83	0.60
51:1:851:C:H2'	51:1:852:U:C6	2.36	0.60
51:1:1553:A:HO2'	51:1:1554:U:H5	1.48	0.60
51:1:1857:G:N2	51:1:1884:G:H2'	2.17	0.60
58:B1:68:TYR:HB3	58:B1:75:TYR:CZ	2.35	0.60
51:1:1437:C:H2'	51:1:1438:U:C6	2.36	0.60
53:3:1040:U:H2'	53:3:1041:G:H8	1.67	0.60
58:B1:926:PRO:HG2	58:B1:1248:ILE:HD11	1.84	0.60
33:i:135:MET:HE2	51:1:1062:G:H21	1.65	0.60
51:1:1773:A:C2'	51:1:1774:C:H5'	2.31	0.60
53:3:1351:U:H3	53:3:1371:G:H1	1.49	0.60
51:1:893:C:H2'	51:1:894:U:C6	2.37	0.60
51:1:2386:A:O2'	51:1:2387:U:H5'	2.01	0.60
51:1:1287:A:C5	51:1:1288:G:C6	2.89	0.60
51:1:2215:C:H2'	51:1:2216:G:H8	1.65	0.60
55:8:7:DC:H2"	55:8:8:DT:H71	1.84	0.60
51:1:1538:G:H2'	51:1:1539:U:C6	2.37	0.60
58:B1:412:LEU:HD22	58:B1:441:LEU:HD21	1.84	0.60
58:B1:633:ALA:HA	59:B2:806:PRO:O	2.01	0.60
6:F:14:CYS:SG	6:F:33:HIS:ND1	2.75	0.60
29:d:77:ILE:CG2	51:1:1256:G:H21	2.14	0.60
37:m:86:LYS:NZ	51:1:955:U:OP1	2.33	0.60
51:1:1198:U:H2'	51:1:1199:U:C6	2.37	0.60
51:1:1775:U:C2'	51:1:1776:G:H5'	2.30	0.60
58:B1:951:GLN:NE2	58:B1:1014:GLY:O	2.35	0.60
29:d:68:ALA:HA	51:1:1255:U:C5	2.37	0.59
45:u:40:LEU:HD12	45:u:59:GLU:HG2	1.84	0.59
51:1:2187:U:O2'	51:1:2188:U:H5'	2.02	0.59
58:B1:370:LYS:HG2	58:B1:441:LEU:HD23	1.84	0.59
51:1:49:A:H5"	51:1:51:G:O4'	2.02	0.59
51:1:1071:G:H1'	51:1:1089:A:C8	2.37	0.59
51:1:1183:U:H2'	51:1:1184:U:C6	2.37	0.59
51:1:2137:U:H2'	51:1:2138:G:H8	1.67	0.59
51:1:2717:C:C4	51:1:2718:G:N7	2.70	0.59
51:1:2749:A:OP2	51:1:2751:G:H5"	2.02	0.59
57:A1:112:ALA:HB3	57:A1:126:PRO:HA	1.83	0.59
14:N:17:ARG:HB2	14:N:65:THR:HG23	1.83	0.59
18:R:102:LYS:HG2	18:R:103:THR:HG23	1.83	0.59
51:1:854:C:O2'	51:1:855:G:H5'	2.01	0.59
59:B2:1072:ASN:ND2	59:B2:1111:GLN:OE1	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:841:G:O2'	51:1:842:U:H5'	2.02	0.59
51:1:1171:G:H2'	51:1:1172:C:O4'	2.02	0.59
58:B1:161:THR:HG23	58:B1:164:GLN:H	1.68	0.59
59:B2:69:GLN:HE21	59:B2:101:ARG:HD2	1.67	0.59
29:d:77:ILE:HG23	51:1:1256:G:H21	1.68	0.59
42:r:4:VAL:HG22	42:r:40:MET:HG2	1.85	0.59
51:1:1026:G:H2'	51:1:1027:A:H8	1.67	0.59
51:1:1077:A:C8	51:1:1078:U:H1'	2.37	0.59
58:B1:342:LEU:HD23	58:B1:1352:ILE:HG23	1.83	0.59
27:b:34:GLU:HG3	27:b:63:ILE:HD11	1.84	0.59
58:B1:99:ARG:NH1	58:B1:99:ARG:HG3	2.17	0.59
59:B2:918:LEU:O	59:B2:918:LEU:HD23	2.02	0.59
2:B:43:THR:HG1	2:B:46:GLY:H	1.50	0.59
9:I:69:ARG:NH1	53:3:401:C:OP2	2.36	0.59
22:V:11:VAL:HA	22:V:22:VAL:HA	1.83	0.59
51:1:2091:C:H5	51:1:2092:U:HO2'	1.50	0.59
51:1:2165:C:H2'	51:1:2166:U:C6	2.38	0.59
30:e:51:ASN:OD1	30:e:149:ARG:NH1	2.34	0.59
51:1:794:A:H2'	51:1:795:C:O4'	2.02	0.59
51:1:1725:U:H2'	51:1:1726:C:C6	2.38	0.59
51:1:1845:G:O2'	51:1:1846:G:H5'	2.02	0.59
55:8:11:DC:H2'	55:8:12:DG:C8	2.37	0.59
51:1:215:G:H4'	51:1:216:A:H4'	1.84	0.59
51:1:1098:A:H2'	51:1:1099:G:C5'	2.33	0.59
51:1:2533:U:H2'	51:1:2534:A:H5'	1.85	0.59
51:1:2789:C:H2'	51:1:2893:A:N7	2.18	0.59
58:B1:275:ARG:NH1	58:B1:278:ARG:NH1	2.51	0.59
58:B1:638:SER:OG	58:B1:639:VAL:N	2.36	0.59
37:m:66:ARG:NH1	37:m:104:GLU:OE2	2.36	0.59
51:1:528:A:C8	51:1:528:A:C3'	2.86	0.59
51:1:2360:G:C2'	51:1:2361:G:H5'	2.31	0.59
58:B1:770:LEU:HD13	59:B2:618:GLN:CG	2.30	0.59
59:B2:1142:ARG:NH1	59:B2:1161:LEU:O	2.36	0.59
28:c:55:LYS:NZ	28:c:59:ARG:O	2.36	0.58
51:1:246:C:C2'	51:1:247:G:H5'	2.33	0.58
51:1:1524:G:H2'	51:1:1525:A:C8	2.38	0.58
51:1:1893:C:H2'	51:1:1894:C:H5'	1.85	0.58
53:3:148:G:H1'	53:3:1447:A:H1'	1.84	0.58
57:A2:28:LEU:HB2	57:A2:201:LEU:HB3	1.85	0.58
58:B1:514:THR:HG21	58:B1:596:LEU:HD12	1.84	0.58
23:W:49:LYS:HA	23:W:52:ARG:HH21	1.69	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1361:THR:HB	59:B2:1284:ALA:HB3	1.86	0.58
51:1:1469:A:H2'	51:1:1470:A:C8	2.38	0.58
51:1:1511:G:H2'	51:1:1512:C:C6	2.38	0.58
51:1:1579:A:H2'	51:1:1580:A:C8	2.38	0.58
51:1:1670:C:H2'	51:1:1671:U:C5'	2.31	0.58
51:1:2643:G:H2'	51:1:2644:G:H5'	1.84	0.58
58:B1:241:VAL:O	58:B1:241:VAL:HG12	2.04	0.58
47:w:40:LYS:HE3	51:1:2330:G:O2'	2.03	0.58
51:1:2743:U:H3'	51:1:2744:G:H5"	1.84	0.58
58:B1:725:MET:SD	59:B2:1101:LEU:HD23	2.42	0.58
21:U:70:ARG:HH22	53:3:451:A:H5'	1.66	0.58
24:X:30:LEU:HB2	24:X:48:ILE:HG22	1.84	0.58
27:b:141:HIS:ND1	27:b:192:GLY:O	2.35	0.58
27:b:157:ALA:O	51:1:1820:U:C2	2.56	0.58
51:1:1333:G:O2'	51:1:1334:G:H5'	2.03	0.58
51:1:2183:A:H2'	51:1:2184:A:C4	2.38	0.58
58:B1:615:LYS:HG2	60:W0:5:THR:HG21	1.85	0.58
59:B2:707:ALA:O	59:B2:711:ASP:HB2	2.03	0.58
51:1:834:G:H2'	51:1:835:C:O4'	2.04	0.58
51:1:1561:C:H2'	51:1:1562:U:C6	2.39	0.58
51:1:1565:C:O2'	51:1:1566:A:H8	1.87	0.58
51:1:2834:G:H2'	51:1:2879:A:N6	2.17	0.58
53:3:422:C:O2'	53:3:423:G:N2	2.36	0.58
55:8:9:DG:H4'	58:B1:120:LEU:HG	1.84	0.58
58:B1:201:LEU:HD11	58:B1:220:ARG:HH11	1.67	0.58
15:O:46:LYS:HG2	15:O:68:ARG:HG2	1.84	0.58
51:1:1463:C:H2'	51:1:1464:G:H8	1.68	0.58
14:N:79:ARG:HH21	14:N:102:PHE:HA	1.67	0.58
30:e:47:LYS:O	30:e:51:ASN:ND2	2.37	0.58
30:e:162:ASP:OD1	30:e:162:ASP:N	2.37	0.58
51:1:1042:G:H2'	51:1:1043:C:C6	2.37	0.58
51:1:2812:G:H2'	51:1:2813:A:H8	1.68	0.58
51:1:2897:U:H2'	51:1:2898:U:C6	2.39	0.58
58:B1:198:CYS:HA	58:B1:221:ILE:HD11	1.86	0.58
28:c:129:THR:OG1	28:c:140:HIS:O	2.22	0.58
33:i:22:PRO:HA	51:1:1067:A:O2'	2.04	0.58
38:n:22:ARG:HG3	38:n:70:THR:HA	1.86	0.58
51:1:2570:G:H2'	51:1:2571:U:H5'	1.85	0.58
58:B1:438:GLU:HG3	58:B1:485:MET:HE1	1.84	0.58
9:I:201:GLU:O	53:3:8:A:N6	2.36	0.58
14:N:35:GLU:HA	14:N:39:GLY:HA3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:d:1:MET:HG2	29:d:16:GLU:HG2	1.86	0.58
38:n:63:ARG:CZ	51:1:1454:C:H5'	2.34	0.58
39:o:56:LYS:NZ	52:2:117:G:OP1	2.36	0.58
41:q:30:VAL:HG13	51:1:580:U:O3'	2.04	0.58
50:z:4:ILE:HD11	50:z:58:GLU:HG2	1.86	0.58
51:1:1400:U:O2'	51:1:1401:G:H5'	2.04	0.58
51:1:2636:C:H2'	51:1:2637:U:C6	2.39	0.58
53:3:1125:U:H2'	53:3:1126:U:H2'	1.85	0.58
57:A2:82:LEU:HD11	57:A2:171:LEU:HD23	1.86	0.58
58:B1:97:VAL:HG11	58:B1:101:ARG:NH2	2.18	0.58
51:1:32:C:H2'	51:1:33:C:C6	2.39	0.57
51:1:146:A:H2'	51:1:147:C:C6	2.39	0.57
51:1:1337:G:H2'	51:1:1338:G:C8	2.38	0.57
51:1:2153:C:H2'	51:1:2154:A:H5'	1.85	0.57
9:I:10:LEU:HD23	9:I:62:ARG:HB3	1.86	0.57
27:b:220:ARG:NH1	51:1:1789:A:OP2	2.38	0.57
28:c:63:PRO:HG3	51:1:2787:C:H1'	1.85	0.57
33:i:25:PRO:HG2	51:1:1068:G:H21	1.68	0.57
51:1:235:U:H2'	51:1:236:C:C6	2.39	0.57
51:1:640:C:O2'	51:1:641:U:H5'	2.04	0.57
58:B1:99:ARG:CG	58:B1:99:ARG:HH11	2.17	0.57
7:G:114:LYS:HE3	7:G:151:LYS:HB2	1.86	0.57
16:P:111:ASP:HB2	26:Z:16:ARG:HH22	1.68	0.57
51:1:655:A:H4'	51:1:656:G:C5'	2.30	0.57
51:1:1275:A:C6	51:1:1296:G:H4'	2.40	0.57
51:1:2092:U:H4'	51:1:2093:G:C5'	2.34	0.57
51:1:2899:A:O2'	51:1:2900:A:H5'	2.04	0.57
25:Y:59:ARG:NH1	53:3:177:G:OP1	2.37	0.57
39:o:25:ARG:NH1	52:2:8:C:O3'	2.37	0.57
51:1:323:C:H3'	51:1:323:C:OP2	2.05	0.57
51:1:673:C:C2'	51:1:674:G:H5'	2.34	0.57
53:3:409:U:H3	53:3:433:G:H1	1.51	0.57
58:B1:510:LEU:HD22	58:B1:601:ILE:HD12	1.86	0.57
10:J:44:ARG:NH2	10:J:70:MET:SD	2.78	0.57
10:J:54:GLU:HG2	10:J:56:PRO:HD2	1.86	0.57
51:1:327:G:O2'	51:1:328:U:H5'	2.04	0.57
51:1:1173:U:C5	51:1:1174:U:H1'	2.40	0.57
19:S:5:MET:HE1	53:3:981:U:H5"	1.86	0.57
51:1:163:C:H2'	51:1:164:C:O4'	2.05	0.57
51:1:503:A:H4'	51:1:505:A:H5"	1.87	0.57
51:1:621:A:H2'	51:1:622:G:H5'	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2762:C:H2'	51:1:2763:G:H5'	1.86	0.57
58:B1:42:GLU:HB3	58:B1:52:GLU:HG3	1.86	0.57
27:b:259:ASN:ND2	27:b:262:THR:OG1	2.38	0.57
34:j:116:ARG:NH2	51:1:529:A:OP2	2.32	0.57
63:5:38:A:C8	63:5:39:U:H1'	2.40	0.57
51:1:1108:U:H2'	51:1:1109:C:C2	2.40	0.57
51:1:2186:G:O2'	51:1:2187:U:H5'	2.04	0.57
58:B1:247:PRO:HA	58:B1:250:ARG:HG3	1.87	0.57
16:P:92:ARG:NH2	16:P:111:ASP:OD1	2.38	0.57
31:f:44:HIS:HA	31:f:49:LEU:HG	1.87	0.57
40:p:1:SER:OG	40:p:2:ASN:N	2.37	0.57
51:1:287:G:H2'	51:1:288:U:C6	2.40	0.57
51:1:593:U:H2'	51:1:594:U:C6	2.40	0.57
51:1:877:A:N1	51:1:899:A:H2'	2.20	0.57
51:1:1526:C:H2'	51:1:1527:G:O4'	2.04	0.57
51:1:1528:A:H2'	51:1:1529:G:H5'	1.87	0.57
7:G:58:LYS:O	7:G:62:ARG:NH1	2.38	0.56
38:n:54:LEU:HD23	38:n:66:ALA:HB2	1.86	0.56
49:y:39:GLN:HG2	51:1:96:C:OP1	2.05	0.56
51:1:358:U:H2'	51:1:359:G:C8	2.41	0.56
51:1:1520:U:O2'	51:1:1521:G:H5'	2.05	0.56
51:1:1590:A:O2'	51:1:1591:A:H5'	2.05	0.56
51:1:1597:A:H5"	51:1:1598:A:H5'	1.87	0.56
51:1:2457:U:O2'	51:1:2458:G:H5'	2.04	0.56
51:1:2584:U:C2'	51:1:2585:U:H5'	2.34	0.56
51:1:2845:U:H2'	51:1:2846:G:H8	1.69	0.56
59:B2:1122:LYS:NZ	59:B2:1126:ASP:OD1	2.38	0.56
4:D:9:VAL:HG22	51:1:1309:G:OP1	2.06	0.56
27:b:250:GLN:NE2	27:b:251:THR:O	2.38	0.56
31:f:40:VAL:O	31:f:54:ARG:NH2	2.38	0.56
31:f:151:ARG:HB3	31:f:161:VAL:HG23	1.86	0.56
31:f:174:LYS:HE2	51:1:2529:G:H4'	1.86	0.56
51:1:543:G:H2'	51:1:544:C:O4'	2.05	0.56
51:1:635:C:H2'	51:1:636:G:H8	1.70	0.56
51:1:885:C:N4	51:1:886:A:H62	2.03	0.56
51:1:1130:U:O2'	51:1:1131:G:OP1	2.20	0.56
51:1:1485:U:H2'	51:1:1486:U:C6	2.41	0.56
51:1:1485:U:H2'	51:1:1486:U:H6	1.70	0.56
51:1:1917:U:O2'	51:1:1918:A:H5'	2.06	0.56
51:1:2662:A:H2'	51:1:2663:G:O4'	2.05	0.56
58:B1:130:MET:HE2	58:B1:135:ILE:HG12	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:160:LEU:HD22	58:B1:164:GLN:HB3	1.86	0.56
58:B1:750:PRO:CB	59:B2:549:ASP:OD2	2.45	0.56
58:B1:1046:ILE:HD12	58:B1:1059:LEU:HB3	1.86	0.56
8:H:76:ILE:HD11	54:4:20:U:H4'	1.87	0.56
45:u:36:GLU:HA	45:u:61:GLU:HG2	1.86	0.56
51:1:78:U:H2'	51:1:79:C:C6	2.40	0.56
51:1:288:U:H2'	51:1:289:G:H8	1.71	0.56
51:1:1319:C:O2'	51:1:1320:C:H5'	2.05	0.56
53:3:159:G:N2	53:3:162:A:OP2	2.34	0.56
53:3:830:G:H1	53:3:856:C:H42	1.53	0.56
51:1:727:A:H2'	51:1:728:G:C8	2.40	0.56
57:A1:29:GLU:HB3	57:A1:200:LYS:HG3	1.88	0.56
59:B2:818:VAL:HG22	59:B2:1096:ILE:HG12	1.87	0.56
59:B2:1142:ARG:NH2	59:B2:1166:ASP:OD1	2.38	0.56
11:K:2:ARG:NH1	53:3:738:C:OP1	2.39	0.56
18:R:100:ARG:NH1	18:R:103:THR:OG1	2.38	0.56
38:n:2:ARG:HA	38:n:5:LYS:HD3	1.88	0.56
49:y:49:ASP:OD1	49:y:52:ARG:NH2	2.39	0.56
51:1:296:U:H2'	51:1:297:G:C8	2.41	0.56
51:1:359:G:C2'	51:1:360:U:H5'	2.36	0.56
51:1:1410:G:H2'	51:1:1411:U:C6	2.41	0.56
53:3:927:G:O2'	53:3:1503:A:N7	2.38	0.56
11:K:12:PRO:HB2	11:K:44:ARG:HH21	1.70	0.56
46:v:57:TYR:OH	46:v:79:ARG:NH2	2.38	0.56
51:1:74:A:H4'	51:1:75:G:O5'	2.05	0.56
51:1:633:A:C2'	51:1:634:C:H5'	2.35	0.56
51:1:1097:U:H2'	51:1:1098:A:O4'	2.06	0.56
51:1:1120:G:O2'	51:1:1121:C:H5'	2.05	0.56
51:1:1182:G:H2'	51:1:1183:U:O4'	2.06	0.56
19:S:52:ARG:O	19:S:58:ARG:NH1	2.39	0.56
27:b:216:ARG:NH2	51:1:781:A:OP1	2.38	0.56
28:c:134:HIS:CE1	51:1:1675:C:C4	2.94	0.56
30:e:23:SER:HB3	30:e:26:GLN:HB2	1.88	0.56
50:z:15:ARG:HE	50:z:52:PHE:HE2	1.53	0.56
51:1:155:A:H2'	51:1:156:A:C8	2.41	0.56
51:1:720:U:H2'	51:1:721:A:C8	2.41	0.56
51:1:780:G:H21	51:1:783:A:H62	1.54	0.56
64:7:52:G:H2'	64:7:53:G:H8	1.69	0.56
29:d:84:THR:HG21	51:1:586:A:H5'	1.87	0.56
51:1:1441:G:H2'	51:1:1442:U:H6	1.71	0.56
51:1:2395:C:H42	51:1:2421:G:H1	1.54	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2510:C:C4	51:1:2511:U:C4	2.93	0.56
53:3:202:G:H21	53:3:466:A:H61	1.53	0.56
58:B1:1166:GLY:HA3	58:B1:1174:ARG:HB2	1.88	0.56
7:G:45:THR:O	7:G:49:PHE:N	2.35	0.56
19:S:26:LEU:HA	19:S:30:ILE:HD12	1.87	0.56
21:U:55:ASP:OD1	21:U:55:ASP:N	2.38	0.56
51:1:461:C:H2'	51:1:462:C:C6	2.41	0.56
51:1:1565:C:HO2'	51:1:1566:A:H8	1.52	0.56
51:1:1678:A:H2'	51:1:1679:A:H5'	1.86	0.56
51:1:2236:U:H2'	51:1:2237:G:H5'	1.88	0.56
51:1:2533:U:C2'	51:1:2534:A:H5'	2.36	0.56
58:B1:741:ALA:O	58:B1:762:ASN:ND2	2.38	0.56
59:B2:13:LYS:HB2	59:B2:1180:MET:HE2	1.86	0.56
16:P:63:GLN:HG3	16:P:98:ALA:HB2	1.88	0.55
26:Z:44:ARG:NH1	53:3:722:G:OP2	2.39	0.55
51:1:69:C:H2'	51:1:70:G:H8	1.70	0.55
51:1:1048:A:H2'	51:1:1049:C:H5'	1.88	0.55
51:1:2626:C:H2'	51:1:2627:G:O4'	2.06	0.55
51:1:2637:U:C2'	51:1:2638:G:H5'	2.36	0.55
7:G:91:VAL:HG22	7:G:150:ILE:HD11	1.88	0.55
36:l:89:VAL:HG23	36:l:121:THR:HG23	1.88	0.55
51:1:133:U:O2'	51:1:134:G:H5'	2.06	0.55
51:1:184:C:H2'	51:1:185:G:H8	1.70	0.55
51:1:759:G:H2'	51:1:760:G:C8	2.41	0.55
51:1:877:A:C2'	51:1:878:A:H5"	2.37	0.55
58:B1:37:GLU:O	58:B1:61:ILE:CD1	2.52	0.55
58:B1:39:LYS:O	58:B1:273:ILE:HG21	2.06	0.55
8:H:39:ARG:NH1	8:H:54:ILE:O	2.39	0.55
17:Q:8:ARG:NH2	53:3:880:C:OP1	2.36	0.55
35:k:65:THR:HG23	35:k:68:GLY:H	1.69	0.55
39:o:52:SER:OG	39:o:53:THR:N	2.39	0.55
49:y:28:LEU:HA	49:y:31:GLN:HB2	1.88	0.55
51:1:172:A:H2'	51:1:173:A:C8	2.40	0.55
51:1:366:C:O2'	51:1:367:G:H5'	2.04	0.55
51:1:613:A:H2'	51:1:613:A:N3	2.21	0.55
51:1:825:A:O2'	51:1:826:U:H5'	2.06	0.55
51:1:1909:C:H2'	51:1:1910:G:C8	2.41	0.55
51:1:2827:C:O2'	51:1:2828:G:H5'	2.07	0.55
53:3:503:C:H2'	53:3:504:C:C6	2.41	0.55
58:B1:1155:ILE:HG13	58:B1:1210:ILE:HB	1.89	0.55
59:B2:985:GLU:HB3	59:B2:988:LYS:HB2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
33:i:5:GLN:O	33:i:30:GLN:NE2	2.40	0.55
51:1:184:C:H2'	51:1:185:G:C8	2.41	0.55
51:1:543:G:H2'	51:1:544:C:C4'	2.37	0.55
51:1:1545:A:H2'	51:1:1546:G:O4'	2.07	0.55
51:1:1697:G:H4'	51:1:1978:A:H5"	1.88	0.55
51:1:2195:U:O2'	51:1:2196:C:H5'	2.06	0.55
63:5:40:C:H2'	63:5:41:C:C6	2.41	0.55
51:1:112:U:C2'	51:1:113:U:H5'	2.37	0.55
51:1:2488:G:O2'	51:1:2489:U:H5'	2.07	0.55
51:1:2845:U:H2'	51:1:2846:G:C8	2.42	0.55
53:3:1036:A:H2'	53:3:1037:C:H5'	1.88	0.55
33:i:10:LEU:HA	51:1:1061:U:C2	2.42	0.55
51:1:359:G:H2'	51:1:360:U:O4'	2.07	0.55
51:1:439:A:H2'	51:1:440:C:C6	2.42	0.55
51:1:1506:U:H2'	51:1:1507:C:C6	2.41	0.55
51:1:1670:C:O5'	51:1:1670:C:H6	1.90	0.55
51:1:2743:U:C3'	51:1:2744:G:H5"	2.37	0.55
58:B1:799:ARG:HG2	58:B1:1325:PHE:HZ	1.72	0.55
1:A:26:SER:OG	1:A:27:THR:N	2.37	0.55
25:Y:60:GLN:HA	25:Y:63:LYS:HB3	1.89	0.55
35:k:76:VAL:H	40:p:72:VAL:HG22	1.71	0.55
51:1:118:A:OP2	51:1:119:A:H5"	2.06	0.55
51:1:317:G:H2'	51:1:318:C:C6	2.42	0.55
51:1:1448:G:H2'	51:1:1449:G:C8	2.42	0.55
53:3:1040:U:H2'	53:3:1041:G:C8	2.42	0.55
58:B1:508:LEU:HD22	59:B2:1101:LEU:HD21	1.88	0.55
7:G:138:ARG:NH1	7:G:141:GLU:OE2	2.40	0.55
12:L:4:ARG:HB3	12:L:6:ILE:HG23	1.88	0.55
25:Y:73:ARG:NH2	53:3:261:U:OP2	2.36	0.55
37:m:27:SER:H	37:m:66:ARG:HH12	1.54	0.55
51:1:923:G:O2'	51:1:924:G:H5'	2.07	0.55
51:1:1541:C:O2'	51:1:1542:U:H5'	2.06	0.55
51:1:1745:A:O2'	51:1:1746:A:H5'	2.07	0.55
51:1:2345:G:H5'	51:1:2347:C:H5'	1.89	0.55
57:A2:29:GLU:HG3	57:A2:200:LYS:HG3	1.88	0.55
58:B1:145:VAL:HG23	58:B1:159:ILE:HG22	1.89	0.55
58:B1:804:ALA:HA	58:B1:1259:GLN:HG3	1.88	0.55
58:B1:1175:LEU:HD22	58:B1:1190:ILE:HD11	1.88	0.55
64:7:9:G:C2	64:7:45:G:O6	2.60	0.55
35:k:70:ARG:HG2	35:k:76:VAL:HG12	1.88	0.55
51:1:128:C:H2'	51:1:129:C:H6	1.70	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
54:4:4:U:H3	63:5:36:A:H61	1.55	0.55
58:B1:58:CYS:SG	58:B1:59:ALA:N	2.80	0.55
58:B1:102:MET:HG2	58:B1:246:PRO:HG3	1.87	0.55
58:B1:800:LEU:HB3	58:B1:920:ALA:HB1	1.89	0.55
43:s:98:LYS:HD3	51:1:2012:G:OP1	2.06	0.55
51:1:1091:G:H2'	51:1:1092:C:C6	2.42	0.55
53:3:49:U:H3	53:3:362:G:H1'	1.71	0.55
58:B1:144:TYR:HE1	58:B1:162:GLU:CD	2.14	0.55
58:B1:833:GLU:HB2	58:B1:1242:ARG:NH1	2.22	0.55
49:y:15:ASN:O	49:y:19:LEU:N	2.41	0.54
51:1:1086:A:H5'	51:1:1103:A:C2	2.41	0.54
51:1:1772:A:H5'	51:1:1773:A:OP2	2.06	0.54
52:2:40:U:N3	52:2:44:G:OP2	2.40	0.54
59:B2:360:LEU:HD13	59:B2:378:ARG:HH11	1.72	0.54
59:B2:633:LEU:HD13	59:B2:644:LEU:HD23	1.89	0.54
59:B2:839:VAL:HG12	59:B2:1049:ILE:HG12	1.87	0.54
59:B2:917:SER:O	59:B2:919:ARG:HG3	2.07	0.54
8:H:71:ARG:HB3	8:H:74:ILE:HD13	1.89	0.54
21:U:69:ASP:OD1	21:U:69:ASP:N	2.38	0.54
51:1:472:A:H2'	51:1:473:G:H5'	1.90	0.54
51:1:2114:A:C2	51:1:2167:U:H1'	2.41	0.54
51:1:2217:G:O2'	51:1:2218:G:H5'	2.07	0.54
28:c:18:ASP:N	28:c:18:ASP:OD1	2.36	0.54
51:1:392:U:H2'	51:1:393:C:C6	2.42	0.54
51:1:613:A:H5"	51:1:614:A:N7	2.22	0.54
51:1:1530:G:H22	51:1:1542:U:H1'	1.73	0.54
51:1:2297:A:N1	51:1:2321:U:C5	2.75	0.54
51:1:2545:G:O2'	51:1:2546:U:H5'	2.07	0.54
51:1:2734:A:C2'	51:1:2735:G:H5'	2.38	0.54
57:A1:47:LEU:HD23	57:A1:51:MET:HG3	1.90	0.54
59:B2:29:SER:O	59:B2:33:ASP:HB2	2.07	0.54
59:B2:103:VAL:HB	59:B2:114:VAL:HG11	1.89	0.54
59:B2:684:ASN:OD1	59:B2:687:ARG:NH2	2.41	0.54
7:G:53:LEU:HD21	7:G:215:ALA:HB1	1.88	0.54
12:L:113:LYS:O	53:3:1239:A:O2'	2.22	0.54
39:o:69:ASP:N	39:o:69:ASP:OD1	2.36	0.54
51:1:296:U:H2'	51:1:297:G:H8	1.71	0.54
51:1:784:G:C5'	51:1:785:G:OP1	2.54	0.54
51:1:1389:G:O2'	51:1:1390:U:H5'	2.07	0.54
51:1:1601:G:C2'	51:1:1602:U:H5'	2.37	0.54
51:1:2114:A:C8	51:1:2115:G:H1'	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2850:A:N1	51:1:2869:G:H4'	2.21	0.54
17:Q:64:SER:OG	17:Q:65:TYR:N	2.41	0.54
29:d:76:PRO:HA	29:d:82:GLY:HA3	1.90	0.54
29:d:76:PRO:HD2	51:1:673:C:H5"	1.89	0.54
51:1:1068:G:N2	51:1:1096:A:H1'	2.23	0.54
51:1:1511:G:H2'	51:1:1512:C:H6	1.73	0.54
51:1:1856:U:H2'	51:1:1857:G:O4'	2.08	0.54
64:7:11:A:H2'	64:7:12:G:H8	1.72	0.54
7:G:19:THR:HA	7:G:37:VAL:HA	1.88	0.54
37:m:64:TRP:HB2	37:m:104:GLU:HB2	1.89	0.54
41:q:90:ASP:N	41:q:90:ASP:OD1	2.37	0.54
49:y:19:LEU:O	49:y:23:ARG:N	2.35	0.54
51:1:340:A:H2'	51:1:341:C:O4'	2.06	0.54
51:1:682:G:N2	51:1:796:C:O2	2.41	0.54
51:1:757:G:H2'	51:1:758:C:C5'	2.35	0.54
51:1:1014:A:H2'	51:1:1015:U:C6	2.43	0.54
51:1:2092:U:C4'	51:1:2093:G:H5"	2.37	0.54
53:3:505:G:H5"	53:3:534:U:H2'	1.89	0.54
53:3:923:A:N6	53:3:1392:G:O6	2.40	0.54
58:B1:759:ILE:HG23	58:B1:771:GLN:HB3	1.89	0.54
42:r:51:VAL:HG22	42:r:52:PRO:HD2	1.89	0.54
51:1:2092:U:C5	51:1:2199:A:H2	2.26	0.54
7:G:102:ASN:ND2	53:3:1073:U:O2	2.39	0.54
10:J:23:THR:HA	10:J:28:ARG:HA	1.88	0.54
19:S:84:ARG:NH2	53:3:1059:C:O3'	2.40	0.54
30:e:21:TYR:OH	30:e:164:GLU:OE1	2.26	0.54
51:1:44:A:O2'	51:1:45:G:H5'	2.08	0.54
51:1:268:C:H2'	51:1:269:C:H6	1.73	0.54
51:1:1297:C:H2'	51:1:1298:C:C6	2.43	0.54
51:1:2190:G:O2'	51:1:2191:A:H5'	2.08	0.54
53:3:1023:U:H2'	53:3:1024:G:C8	2.43	0.54
58:B1:30:ILE:HG21	58:B1:241:VAL:O	2.08	0.54
58:B1:39:LYS:O	58:B1:273:ILE:HG23	2.08	0.54
60:W0:3:ARG:NH1	60:W0:55:GLU:OE2	2.40	0.54
16:P:15:VAL:HG12	16:P:76:TYR:HB3	1.90	0.54
36:l:20:GLY:HA2	36:l:28:GLY:HA2	1.90	0.54
51:1:141:G:H3'	51:1:142:A:O4'	2.07	0.54
51:1:1310:G:O2'	51:1:1311:G:H5'	2.06	0.54
51:1:1601:G:O2'	51:1:1602:U:H5'	2.08	0.54
58:B1:352:ARG:HD2	59:B2:1268:GLN:HE21	1.68	0.54
7:G:86:CYS:SG	7:G:87:ASP:N	2.74	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:o:40:ILE:HD12	39:o:44:GLY:HA2	1.90	0.54
51:1:21:A:O2'	51:1:22:C:H5'	2.08	0.54
51:1:1083:U:H2'	51:1:1084:A:H3'	1.89	0.54
51:1:1288:G:C6	51:1:1327:A:C2	2.96	0.54
51:1:1528:A:C2'	51:1:1529:G:H5'	2.38	0.54
53:3:158:G:N2	53:3:163:C:O2	2.36	0.54
57:A1:100:LEU:HD21	57:A1:121:VAL:HG11	1.90	0.54
57:A2:28:LEU:HD22	57:A2:201:LEU:HD23	1.90	0.54
58:B1:814:CYS:SG	58:B1:883:ARG:NH2	2.81	0.54
59:B2:811:ASN:HA	59:B2:815:SER:HB2	1.90	0.54
31:f:103:ASN:ND2	31:f:113:ASP:OD1	2.41	0.53
48:x:29:LEU:HD12	51:1:2230:G:H5"	1.90	0.53
51:1:53:A:H2'	51:1:54:G:H5'	1.89	0.53
51:1:402:A:C2'	51:1:403:U:H5'	2.38	0.53
51:1:1171:G:H2'	51:1:1172:C:C4'	2.38	0.53
51:1:1386:C:H2'	51:1:1387:A:C8	2.41	0.53
51:1:2850:A:C2	51:1:2869:G:H4'	2.44	0.53
57:A2:100:LEU:HD23	57:A2:115:ILE:HG21	1.89	0.53
58:B1:785:ASP:O	58:B1:789:LYS:HB2	2.08	0.53
12:L:73:GLU:HG2	12:L:90:VAL:HG22	1.89	0.53
25:Y:66:ILE:HG21	25:Y:70:LYS:HB3	1.91	0.53
34:j:2:LYS:HA	51:1:995:C:N3	2.23	0.53
34:j:38:GLY:HA3	34:j:50:THR:HG23	1.90	0.53
51:1:8:C:H2'	51:1:9:G:H8	1.73	0.53
51:1:876:C:H2'	51:1:877:A:O4'	2.08	0.53
51:1:1005:C:H6	51:1:1005:C:O5'	1.90	0.53
51:1:1063:G:N1	51:1:1075:C:N4	2.52	0.53
51:1:1111:A:H2'	51:1:1112:G:H4'	1.90	0.53
51:1:1748:C:H2'	51:1:1749:A:H8	1.73	0.53
51:1:2644:G:O2'	51:1:2645:G:H5'	2.09	0.53
57:A2:43:LEU:HD13	57:A2:217:ILE:HD11	1.90	0.53
59:B2:1070:HIS:NE2	59:B2:1114:GLU:OE1	2.36	0.53
1:A:35:ASP:OD1	18:R:2:ARG:NH1	2.42	0.53
9:I:154:VAL:HA	9:I:157:ALA:HB3	1.91	0.53
16:P:86:LYS:HG3	16:P:114:PRO:HD3	1.89	0.53
38:n:35:LYS:NZ	38:n:100:CYS:SG	2.81	0.53
44:t:54:GLU:HB3	44:t:88:LYS:HE3	1.90	0.53
51:1:140:C:H2'	51:1:141:G:H5'	1.90	0.53
51:1:820:A:O2'	51:1:821:A:H5'	2.08	0.53
51:1:1782:U:H2'	51:1:1783:A:H5"	1.90	0.53
51:1:2742:G:O2'	51:1:2743:U:H5'	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:99:ARG:HG3	58:B1:99:ARG:HH11	1.73	0.53
25:Y:47:GLN:NE2	25:Y:51:ASN:OD1	2.40	0.53
47:w:55:LEU:HD12	47:w:76:ILE:HD12	1.90	0.53
51:1:752:A:H62	51:1:2609:U:H3	1.56	0.53
51:1:2123:G:H2'	51:1:2124:G:H8	1.73	0.53
51:1:2631:G:O2'	51:1:2632:A:H5'	2.08	0.53
53:3:458:U:H3	53:3:474:G:H1	1.56	0.53
58:B1:633:ALA:HB2	59:B2:808:ASN:N	2.19	0.53
58:B1:770:LEU:CD1	59:B2:618:GLN:HG3	2.37	0.53
59:B2:1117:LEU:HD12	59:B2:1195:ILE:HG12	1.90	0.53
23:W:52:ARG:NH2	53:3:835:U:OP1	2.42	0.53
26:Z:28:LEU:HA	26:Z:31:VAL:HG12	1.90	0.53
51:1:973:A:H5'	51:1:1188:U:H1'	1.90	0.53
51:1:1175:A:H3'	51:1:1176:U:C5'	2.37	0.53
51:1:1278:C:O2'	51:1:1279:G:H5'	2.09	0.53
51:1:2092:U:C5	51:1:2199:A:C2	2.97	0.53
59:B2:243:PRO:HB2	59:B2:274:ILE:HG23	1.90	0.53
59:B2:786:GLY:N	59:B2:789:THR:OG1	2.41	0.53
9:I:55:ARG:O	9:I:59:LYS:N	2.41	0.53
12:L:77:ARG:NH2	53:3:1381:U:O2	2.41	0.53
36:l:80:SER:HB3	36:l:114:GLY:HA3	1.89	0.53
39:o:31:THR:HG23	39:o:34:HIS:H	1.73	0.53
51:1:53:A:C2'	51:1:54:G:H5'	2.39	0.53
51:1:143:C:H2'	51:1:144:A:H8	1.72	0.53
51:1:268:C:H2'	51:1:269:C:C6	2.44	0.53
51:1:1599:U:H2'	51:1:1600:C:C6	2.43	0.53
51:1:1948:G:H21	53:3:1418:A:H2	1.49	0.53
53:3:1491:G:C6	65:h:2:DPP:HB3	2.44	0.53
64:7:25:C:H42	64:7:45:G:H22	1.56	0.53
3:C:20:TYR:OH	51:1:2348:U:H5'	2.08	0.53
13:M:92:PRO:O	13:M:116:ARG:NH2	2.42	0.53
40:p:105:LYS:O	40:p:108:ARG:NH2	2.42	0.53
42:r:75:VAL:HG23	42:r:86:GLN:HG2	1.90	0.53
51:1:40:U:H2'	51:1:41:C:C6	2.43	0.53
51:1:279:A:N6	51:1:361:G:H1'	2.20	0.53
51:1:368:A:H2'	51:1:369:U:C5'	2.39	0.53
51:1:878:A:H2'	51:1:879:G:O4'	2.09	0.53
51:1:2328:A:H8	51:1:2328:A:O5'	1.91	0.53
59:B2:628:HIS:HB3	59:B2:647:ARG:HH21	1.74	0.53
10:J:104:ILE:O	10:J:111:ARG:NH1	2.41	0.53
51:1:358:U:H2'	51:1:359:G:H8	1.72	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1827:U:H2'	51:1:1828:G:H5'	1.90	0.53
57:A1:16:ILE:HG23	57:A1:26:VAL:HG22	1.91	0.53
7:G:61:SER:OG	7:G:62:ARG:NH1	2.42	0.53
14:N:115:VAL:HG23	53:3:1367:C:H5"	1.91	0.53
17:Q:49:ARG:NH1	17:Q:88:ASP:OD2	2.42	0.53
33:i:27:LEU:HD13	33:i:32:VAL:HG11	1.90	0.53
51:1:894:U:O2'	51:1:895:U:H5'	2.09	0.53
58:B1:111:THR:HG22	58:B1:300:GLN:NE2	2.23	0.53
58:B1:832:LYS:HB3	58:B1:1242:ARG:NH1	2.24	0.53
27:b:227:VAL:HG11	51:1:784:G:N1	2.23	0.53
42:r:4:VAL:HG12	42:r:13:ARG:HA	1.91	0.53
50:z:36:GLU:O	50:z:37:ARG:NH1	2.42	0.53
51:1:176:A:O2'	51:1:177:G:H5'	2.08	0.53
51:1:341:C:O2'	51:1:342:A:H5'	2.08	0.53
51:1:925:A:O2'	51:1:926:G:H5'	2.08	0.53
51:1:1161:C:H2'	51:1:1162:G:C8	2.44	0.53
51:1:1558:C:O4'	51:1:1560:G:C8	2.62	0.53
51:1:2707:U:H2'	51:1:2708:G:C8	2.44	0.53
51:1:2762:C:C2'	51:1:2763:G:H5'	2.39	0.53
63:5:38:A:H2'	63:5:39:U:H4'	1.91	0.53
1:A:9:TYR:OH	30:e:101:ARG:NH2	2.41	0.52
33:i:25:PRO:HG2	51:1:1068:G:N2	2.24	0.52
51:1:441:U:O2'	51:1:442:G:H5'	2.08	0.52
51:1:729:G:H5"	51:1:730:A:H5"	1.91	0.52
51:1:1409:U:H2'	51:1:1410:G:C8	2.44	0.52
51:1:1530:G:N2	51:1:1542:U:H1'	2.23	0.52
51:1:1678:A:H2'	51:1:1679:A:C5'	2.38	0.52
58:B1:68:TYR:CA	58:B1:75:TYR:HE2	2.22	0.52
64:7:43:A:H2'	64:7:44:A:C8	2.44	0.52
33:i:53:PRO:HD2	33:i:77:VAL:HG11	1.91	0.52
35:k:42:THR:HG22	35:k:57:VAL:HG12	1.91	0.52
35:k:75:SER:OG	40:p:72:VAL:O	2.26	0.52
51:1:519:U:H2'	51:1:520:G:H8	1.75	0.52
51:1:1794:A:O2'	51:1:1795:C:H5'	2.10	0.52
51:1:1917:U:C2'	51:1:1918:A:H5'	2.39	0.52
51:1:2013:A:H5"	51:1:2013:A:C8	2.44	0.52
51:1:2102:G:H2'	51:1:2103:C:O4'	2.09	0.52
51:1:2625:G:O2'	51:1:2626:C:H5'	2.09	0.52
58:B1:112:ALA:HA	58:B1:238:ILE:HA	1.91	0.52
58:B1:209:ASN:HA	58:B1:214:ARG:HH21	1.74	0.52
58:B1:975:ILE:HD11	58:B1:1003:LEU:HD11	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1560:G:H2'	51:1:1560:G:N3	2.24	0.52
51:1:2236:U:C2'	51:1:2237:G:H5'	2.39	0.52
51:1:2470:G:O2'	51:1:2471:A:H5'	2.10	0.52
53:3:1023:U:H2'	53:3:1024:G:H8	1.74	0.52
53:3:1244:G:H1	53:3:1293:C:H42	1.57	0.52
58:B1:78:LEU:O	58:B1:78:LEU:HD13	2.08	0.52
58:B1:215:LYS:HA	58:B1:218:THR:HG22	1.91	0.52
10:J:152:VAL:HG21	13:M:98:LEU:HD13	1.91	0.52
28:c:23:PRO:HB3	51:1:2682:A:N3	2.24	0.52
51:1:57:C:H2'	51:1:58:G:O4'	2.08	0.52
51:1:481:G:H1'	51:1:506:G:H21	1.71	0.52
51:1:723:C:O2'	51:1:724:U:H5'	2.09	0.52
51:1:1662:U:H2'	51:1:1663:G:O4'	2.09	0.52
51:1:2194:U:H2'	51:1:2195:U:C6	2.44	0.52
51:1:2204:G:H2'	51:1:2205:A:C8	2.44	0.52
51:1:2425:A:H4'	51:1:2426:A:H5"	1.91	0.52
58:B1:205:LEU:HG	58:B1:217:LEU:HB3	1.90	0.52
59:B2:246:LEU:HB3	59:B2:269:ILE:HD13	1.91	0.52
9:I:150:LYS:O	9:I:155:LYS:NZ	2.42	0.52
42:r:54:VAL:HG13	42:r:55:ASP:H	1.74	0.52
43:s:109:ASP:OD1	43:s:109:ASP:N	2.42	0.52
51:1:282:A:H2'	51:1:283:G:C8	2.42	0.52
51:1:611:C:H2'	51:1:612:G:O4'	2.09	0.52
51:1:2290:G:H2'	51:1:2291:U:H6	1.74	0.52
57:A1:205:MET:HE3	57:A1:213:PRO:HB3	1.91	0.52
17:Q:40:THR:CG2	65:h:6:5OH:OS	2.53	0.52
51:1:49:A:O5'	51:1:51:G:H5'	2.09	0.52
51:1:138:U:C5	51:1:139:U:H5	2.28	0.52
51:1:1338:G:H2'	51:1:1339:G:H8	1.74	0.52
51:1:2617:U:H2'	51:1:2618:G:H5'	1.91	0.52
51:1:2747:G:O6	51:1:2754:U:H2'	2.09	0.52
51:1:2776:A:C6	51:1:2782:G:H1'	2.45	0.52
53:3:203:G:N2	53:3:204:G:O6	2.43	0.52
57:A2:140:ILE:HD12	57:A2:142:MET:HE3	1.92	0.52
58:B1:850:LYS:HB2	58:B1:857:LEU:HB2	1.91	0.52
8:H:133:MET:HE3	8:H:167:TYR:HB2	1.91	0.52
11:K:23:GLU:HA	11:K:26:THR:HG22	1.90	0.52
27:b:257:ARG:NH2	27:b:262:THR:OG1	2.42	0.52
40:p:28:LYS:HB3	40:p:39:LEU:HD21	1.91	0.52
51:1:215:G:C4'	51:1:216:A:H4'	2.39	0.52
51:1:1789:A:H2'	51:1:1790:C:O4'	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1878:G:O2'	51:1:1879:C:H5'	2.09	0.52
51:1:2105:U:N3	51:1:2184:A:C2	2.78	0.52
51:1:2670:A:H2'	51:1:2671:G:H8	1.75	0.52
58:B1:390:LEU:N	58:B1:390:LEU:CD1	2.73	0.52
8:H:107:LYS:HB3	8:H:110:LEU:HD23	1.92	0.52
21:U:6:LEU:HD22	21:U:17:TYR:HB3	1.91	0.52
51:1:543:G:C2'	51:1:544:C:H5"	2.37	0.52
51:1:597:G:H2'	51:1:598:U:C6	2.45	0.52
51:1:757:G:C2'	51:1:758:C:H5'	2.38	0.52
51:1:1047:G:N2	51:1:1110:G:H2'	2.25	0.52
51:1:1503:A:C3'	51:1:1504:A:H5"	2.40	0.52
51:1:1507:C:H2'	51:1:1508:A:C4'	2.40	0.52
51:1:1574:C:H2'	51:1:1575:C:H6	1.74	0.52
59:B2:125:GLY:HA2	59:B2:499:SER:HB2	1.92	0.52
59:B2:714:VAL:HB	59:B2:787:PRO:HD2	1.92	0.52
10:J:106:ALA:O	10:J:111:ARG:NH2	2.43	0.52
30:e:91:ARG:NH2	52:2:43:C:O2	2.36	0.52
33:i:56:VAL:HB	33:i:68:PHE:HB2	1.92	0.52
51:1:995:C:H6	51:1:995:C:H5'	1.73	0.52
51:1:1534:U:H2'	51:1:1536:C:O4'	2.10	0.52
51:1:2216:G:H2'	51:1:2217:G:H8	1.74	0.52
51:1:2463:C:O2'	51:1:2464:G:H5'	2.10	0.52
53:3:1077:G:N2	53:3:1080:A:OP2	2.40	0.52
35:k:31:ARG:NH2	51:1:2676:C:OP2	2.43	0.52
51:1:8:C:H2'	51:1:9:G:C8	2.45	0.52
51:1:870:U:O2'	51:1:871:U:H5'	2.10	0.52
51:1:1542:U:O2'	51:1:1543:G:H5'	2.09	0.52
51:1:1930:G:C2'	51:1:1931:U:OP2	2.58	0.52
58:B1:746:LEU:HG	58:B1:758:PRO:HG3	1.90	0.52
7:G:14:HIS:HB3	7:G:42:LEU:HD21	1.91	0.51
46:v:77:VAL:HG23	46:v:89:ILE:HG12	1.92	0.51
51:1:213:A:O2'	51:1:214:G:H5'	2.09	0.51
51:1:891:G:H2'	51:1:892:A:C8	2.46	0.51
51:1:2651:C:O2'	51:1:2652:C:H5'	2.10	0.51
51:1:2731:G:H2'	51:1:2732:G:C8	2.45	0.51
53:3:113:G:N3	53:3:353:A:O2'	2.42	0.51
53:3:816:A:OP1	53:3:1526:G:O2'	2.28	0.51
15:O:5:ARG:N	15:O:76:ILE:O	2.43	0.51
51:1:286:U:H2'	51:1:287:G:H8	1.75	0.51
51:1:386:G:H3'	51:1:387:U:H5"	1.93	0.51
51:1:492:A:H2'	51:1:493:G:O4'	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1087:G:H22	51:1:1103:A:H1'	1.76	0.51
51:1:1112:G:H2'	51:1:1113:U:O4'	2.10	0.51
51:1:1403:A:H2'	51:1:1404:C:C6	2.45	0.51
51:1:2529:G:H5"	51:1:2530:A:H5"	1.91	0.51
58:B1:375:GLU:HG2	59:B2:1245:ALA:O	2.10	0.51
59:B2:524:ILE:HG21	59:B2:708:VAL:HG13	1.92	0.51
15:O:24:GLU:HA	15:O:27:GLU:HB2	1.93	0.51
15:O:29:ALA:O	15:O:33:GLY:N	2.42	0.51
23:W:71:ASP:N	23:W:71:ASP:OD1	2.44	0.51
27:b:92:LEU:HD11	27:b:100:ARG:HB3	1.91	0.51
30:e:27:VAL:O	30:e:29:ARG:NH1	2.41	0.51
46:v:83:LYS:HD3	46:v:85:LYS:HZ1	1.75	0.51
51:1:69:C:H2'	51:1:70:G:C8	2.46	0.51
51:1:291:G:O2'	51:1:292:U:H5'	2.11	0.51
51:1:2555:U:O2	51:1:2555:U:O4'	2.29	0.51
4:D:3:ARG:NH1	51:1:752:A:OP1	2.44	0.51
22:V:60:ILE:HA	22:V:74:LEU:HA	1.93	0.51
28:c:13:ARG:NH2	40:p:74:GLN:OE1	2.43	0.51
37:m:38:ARG:HB3	37:m:98:PRO:HD3	1.92	0.51
45:u:73:ASN:ND2	45:u:80:ASP:OD2	2.43	0.51
51:1:1923:U:H2'	51:1:1924:C:C6	2.46	0.51
53:3:202:G:H1	53:3:215:C:H42	1.57	0.51
64:6:1:C:H2'	64:6:2:G:H8	1.75	0.51
64:7:9:G:O4'	64:7:46:G:N3	2.42	0.51
51:1:246:C:H2'	51:1:247:G:C5'	2.40	0.51
51:1:355:U:H2'	51:1:356:G:C8	2.45	0.51
51:1:439:A:H2'	51:1:440:C:H6	1.75	0.51
51:1:1722:A:O2'	51:1:1723:G:H5'	2.10	0.51
51:1:2758:A:H2'	51:1:2759:G:C5'	2.39	0.51
2:B:2:VAL:HG23	51:1:2015:A:C6	2.46	0.51
8:H:130:ARG:NH2	8:H:165:GLU:OE1	2.43	0.51
8:H:175:HIS:ND1	53:3:1109:C:OP2	2.44	0.51
10:J:23:THR:HG22	10:J:28:ARG:HB3	1.91	0.51
14:N:89:TYR:HB3	14:N:93:LEU:HD21	1.92	0.51
51:1:724:U:O2'	51:1:725:G:H5'	2.11	0.51
51:1:736:C:H42	51:1:760:G:H1	1.58	0.51
51:1:1910:G:H1	51:1:1920:C:H42	1.58	0.51
51:1:2687:U:H2'	51:1:2688:G:O4'	2.11	0.51
58:B1:144:TYR:CE1	58:B1:162:GLU:CD	2.88	0.51
59:B2:400:VAL:HG21	59:B2:452:ARG:HE	1.76	0.51
12:L:65:LEU:O	12:L:69:ARG:N	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:f:136:ASP:HB3	31:f:139:VAL:HG12	1.92	0.51
46:v:51:GLN:OE1	46:v:79:ARG:NH2	2.40	0.51
51:1:2570:G:C2'	51:1:2571:U:H5'	2.40	0.51
58:B1:275:ARG:HH12	58:B1:278:ARG:NH1	2.09	0.51
58:B1:683:ILE:HD12	58:B1:754:ILE:HG21	1.92	0.51
6:F:19:ARG:HB2	6:F:24:ARG:HD2	1.92	0.51
15:O:39:PRO:HD2	53:3:1123:U:H4'	1.92	0.51
17:Q:36:VAL:HG21	17:Q:73:LEU:HB3	1.91	0.51
36:l:42:SER:HB2	51:1:672:C:H5	1.76	0.51
39:o:40:ILE:HG22	39:o:47:VAL:HG12	1.91	0.51
51:1:1415:U:H1'	51:1:1588:G:N2	2.26	0.51
51:1:1717:A:H2'	51:1:1718:G:C5'	2.40	0.51
51:1:1722:A:H62	51:1:1738:G:H1'	1.75	0.51
51:1:2670:A:H2'	51:1:2671:G:C8	2.45	0.51
58:B1:201:LEU:HD12	58:B1:224:LEU:HD12	1.92	0.51
33:i:25:PRO:HG3	51:1:1095:A:C2	2.46	0.51
51:1:145:C:H2'	51:1:146:A:C8	2.46	0.51
51:1:251:A:H2'	51:1:252:G:O4'	2.10	0.51
51:1:707:G:H2'	51:1:708:G:O4'	2.11	0.51
59:B2:93:SER:HA	59:B2:128:PRO:HA	1.93	0.51
48:x:64:ASP:OD1	48:x:64:ASP:N	2.43	0.51
51:1:673:C:H2'	51:1:674:G:C5'	2.41	0.51
51:1:800:A:H4'	51:1:801:G:H3'	1.92	0.51
51:1:928:A:O2'	51:1:929:U:H5'	2.10	0.51
51:1:2593:U:O2'	51:1:2594:C:H5'	2.11	0.51
10:J:123:LEU:HD12	53:3:7:A:H2'	1.92	0.50
21:U:25:ARG:O	53:3:110:C:O2'	2.28	0.50
27:b:156:SER:OG	27:b:157:ALA:N	2.44	0.50
30:e:69:ALA:O	30:e:80:GLN:NE2	2.43	0.50
31:f:7:PRO:O	31:f:68:ARG:NH2	2.38	0.50
51:1:2618:G:H2'	51:1:2619:C:O4'	2.11	0.50
53:3:1266:G:N2	53:3:1269:A:OP2	2.29	0.50
64:6:43:A:H2'	64:6:44:A:C8	2.45	0.50
4:D:14:ARG:NH1	51:1:1377:G:O3'	2.44	0.50
8:H:4:VAL:HG21	8:H:9:ILE:HD13	1.93	0.50
9:I:12:ARG:NH1	9:I:32:LYS:O	2.42	0.50
20:T:23:SER:OG	20:T:25:GLU:OE1	2.30	0.50
27:b:50:THR:HG23	51:1:1813:G:H21	1.76	0.50
27:b:207:ALA:HB2	51:1:1790:C:O2'	2.12	0.50
27:b:257:ARG:HH22	27:b:262:THR:HG1	1.57	0.50
31:f:174:LYS:CG	51:1:2529:G:H4'	2.34	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1678:A:C2'	51:1:1679:A:H5'	2.41	0.50
51:1:2285:C:O2'	51:1:2286:G:H5'	2.11	0.50
28:c:161:MET:HE1	51:1:2050:C:O2	2.11	0.50
33:i:134:SER:OG	51:1:1062:G:N2	2.45	0.50
44:t:65:GLY:N	44:t:79:ASP:OD1	2.43	0.50
51:1:438:G:H2'	51:1:439:A:H8	1.76	0.50
51:1:1310:G:H2'	51:1:1311:G:C5'	2.38	0.50
51:1:1754:A:C6	51:1:1755:A:C6	2.98	0.50
51:1:2052:A:C2'	51:1:2053:G:H5'	2.41	0.50
55:8:13:DT:OP2	58:B1:791:ALA:CB	2.59	0.50
59:B2:255:ILE:HB	59:B2:263:VAL:HB	1.92	0.50
59:B2:974:ARG:HD2	59:B2:1014:LEU:HD21	1.92	0.50
3:C:7:LYS:HD3	51:1:2420:C:H5"	1.93	0.50
7:G:103:TRP:HA	7:G:106:VAL:HG12	1.93	0.50
21:U:5:ARG:HB3	53:3:376:G:H5"	1.93	0.50
34:j:2:LYS:HG2	51:1:995:C:N4	2.27	0.50
51:1:208:C:O5'	51:1:208:C:H6	1.93	0.50
51:1:288:U:H2'	51:1:289:G:C8	2.47	0.50
51:1:580:U:O5'	51:1:580:U:H6	1.94	0.50
51:1:1468:U:H2'	51:1:1522:A:N6	2.26	0.50
51:1:2815:C:O2'	51:1:2816:G:H5'	2.11	0.50
53:3:460:A:H2'	53:3:461:A:H8	1.75	0.50
53:3:1178:G:N2	53:3:1181:G:OP2	2.43	0.50
58:B1:421:VAL:O	58:B1:436:ALA:HA	2.12	0.50
58:B1:437:PHE:HZ	58:B1:453:VAL:HG11	1.76	0.50
58:B1:972:LYS:HD2	58:B1:1004:ALA:HA	1.93	0.50
7:G:126:ASP:OD1	7:G:126:ASP:N	2.42	0.50
19:S:68:ARG:NH2	53:3:974:A:OP1	2.45	0.50
27:b:206:LYS:HD2	51:1:729:G:C8	2.46	0.50
51:1:1676:A:H8	51:1:1676:A:O5'	1.95	0.50
51:1:2302:U:O2'	51:1:2303:G:H5'	2.12	0.50
51:1:2611:C:O2	51:1:2611:C:C2'	2.58	0.50
58:B1:99:ARG:HA	58:B1:248:ASP:HB2	1.92	0.50
59:B2:232:ILE:HG12	59:B2:237:LEU:HG	1.94	0.50
62:NG:161:SER:HA	62:NG:170:PRO:HA	1.92	0.50
20:T:2:LEU:HD22	20:T:34:GLN:HB2	1.92	0.50
27:b:147:PRO:HG3	27:b:184:GLU:HG2	1.92	0.50
33:i:126:ARG:HD2	51:1:1080:A:H4'	1.93	0.50
51:1:197:A:H2	51:1:2434:A:N6	2.10	0.50
51:1:1539:U:H2'	51:1:1540:G:H8	1.76	0.50
51:1:2348:U:O2'	51:1:2349:G:H5'	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2888:C:H2'	51:1:2889:C:H6	1.77	0.50
53:3:494:G:H2'	53:3:496:A:H8	1.76	0.50
58:B1:412:LEU:HD23	58:B1:416:ILE:HG13	1.92	0.50
58:B1:749:LYS:HB3	58:B1:755:ILE:HD11	1.94	0.50
64:7:9:G:C2	64:7:45:G:C6	3.00	0.50
27:b:146:LYS:HB2	27:b:149:LYS:HB2	1.93	0.50
51:1:1087:G:H2'	51:1:1089:A:H5'	1.94	0.50
51:1:1270:C:H5"	51:1:1271:G:H5"	1.93	0.50
51:1:1528:A:H2'	51:1:1529:G:O4'	2.11	0.50
51:1:1593:A:H2'	51:1:1594:U:C6	2.47	0.50
51:1:1702:G:H2'	51:1:1703:G:C5'	2.35	0.50
51:1:2248:C:H2'	51:1:2249:U:H5'	1.93	0.50
51:1:2250:G:H8	51:1:2250:G:O5'	1.95	0.50
53:3:664:G:H22	53:3:741:G:H1	1.60	0.50
57:A1:18:GLN:HA	57:A1:24:ALA:HA	1.94	0.50
59:B2:9:LYS:HG2	59:B2:1171:ARG:HH12	1.77	0.50
15:O:42:LEU:HB3	15:O:71:LEU:HB2	1.94	0.50
51:1:355:U:H2'	51:1:356:G:H8	1.77	0.50
51:1:630:G:H4'	51:1:640:C:H4'	1.93	0.50
51:1:1416:G:H2'	51:1:1417:C:C6	2.46	0.50
51:1:2283:C:H2'	51:1:2284:A:O4'	2.11	0.50
51:1:2525:G:N2	51:1:2539:C:C2	2.79	0.50
51:1:2634:A:O2'	51:1:2635:A:H5'	2.12	0.50
51:1:2758:A:C2'	51:1:2759:G:H5'	2.40	0.50
58:B1:1179:PRO:HD2	58:B1:1184:ASP:HA	1.93	0.50
58:B1:1361:THR:OG1	59:B2:1282:GLY:O	2.28	0.50
27:b:92:LEU:HD21	27:b:100:ARG:HD3	1.93	0.50
44:t:7:LEU:HD13	44:t:46:ALA:HA	1.94	0.50
51:1:131:A:H2'	51:1:132:G:H8	1.77	0.50
51:1:386:G:H3'	51:1:387:U:C5'	2.41	0.50
51:1:539:G:O2'	51:1:540:C:H5'	2.12	0.50
51:1:898:C:H2'	51:1:899:A:O4'	2.12	0.50
51:1:1345:C:H6	51:1:1345:C:H5'	1.77	0.50
51:1:1348:C:C5	51:1:1349:C:C5	3.00	0.50
51:1:1748:C:H2'	51:1:1749:A:C8	2.47	0.50
51:1:2734:A:H2'	51:1:2735:G:C5'	2.42	0.50
51:1:2836:U:H2'	51:1:2837:A:C8	2.47	0.50
58:B1:902:ASP:HB3	58:B1:905:ARG:HB2	1.93	0.50
8:H:30:ASP:N	8:H:30:ASP:OD1	2.41	0.49
17:Q:120:ARG:HH12	53:3:500:G:H5'	1.77	0.49
27:b:50:THR:HG23	51:1:1813:G:N2	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:d:191:ASP:O	29:d:195:GLN:NE2	2.44	0.49
51:1:30:G:H2'	51:1:31:C:C6	2.47	0.49
51:1:1293:C:H2'	51:1:1294:U:C6	2.46	0.49
51:1:1387:A:C5'	51:1:1469:A:H1'	2.38	0.49
51:1:1916:A:H2'	51:1:1917:U:O4'	2.12	0.49
53:3:780:A:N6	53:3:801:U:OP2	2.42	0.49
53:3:1538:C:O2'	53:3:1539:C:H5'	2.11	0.49
64:7:9:G:O4'	64:7:46:G:C2	2.65	0.49
7:G:221:ARG:HG2	7:G:224:ARG:HH11	1.77	0.49
21:U:36:VAL:HG12	21:U:53:ASP:HB3	1.94	0.49
33:i:25:PRO:HB3	51:1:1095:A:N1	2.27	0.49
51:1:173:A:H2'	51:1:174:U:C6	2.47	0.49
51:1:482:A:H1'	51:1:498:G:N2	2.27	0.49
51:1:2257:U:O2'	51:1:2258:C:H5'	2.13	0.49
51:1:2670:A:O2'	51:1:2671:G:H5'	2.12	0.49
53:3:401:C:O2'	53:3:621:A:N3	2.45	0.49
53:3:1493:A:H2	63:5:36:A:H2	1.61	0.49
58:B1:145:VAL:HG12	58:B1:184:ALA:HB1	1.94	0.49
58:B1:505:ASP:OD2	59:B2:812:PHE:HA	2.11	0.49
59:B2:562:GLU:OE1	59:B2:662:SER:OG	2.28	0.49
27:b:137:GLY:O	27:b:162:GLN:NE2	2.45	0.49
28:c:56:LYS:NZ	51:1:2830:C:H5"	2.28	0.49
28:c:81:GLU:HG3	51:1:2636:C:O5'	2.13	0.49
30:e:135:ILE:HG23	30:e:140:ILE:HD11	1.93	0.49
51:1:187:G:C6	51:1:188:G:N7	2.80	0.49
51:1:262:A:H2'	51:1:263:G:O4'	2.12	0.49
51:1:900:A:H2'	51:1:901:C:H5'	1.94	0.49
51:1:1388:G:O2'	51:1:1389:G:H5'	2.12	0.49
51:1:1614:A:H2'	51:1:1615:C:H5'	1.94	0.49
51:1:2286:G:H21	51:1:2287:A:N6	2.09	0.49
51:1:2298:A:O2'	51:1:2299:U:H5'	2.12	0.49
59:B2:400:VAL:HG11	59:B2:452:ARG:HD2	1.93	0.49
15:O:89:ARG:HH22	62:NG:165:PHE:H	1.60	0.49
27:b:56:GLY:HA2	27:b:212:TRP:HA	1.94	0.49
31:f:41:GLU:HG2	31:f:54:ARG:HH21	1.77	0.49
31:f:87:GLN:NE2	31:f:129:GLU:OE2	2.45	0.49
51:1:519:U:H2'	51:1:520:G:C8	2.48	0.49
51:1:1061:U:H4'	51:1:1070:A:H1'	1.93	0.49
51:1:1144:A:H2'	51:1:1145:C:C6	2.47	0.49
51:1:1785:A:O2'	51:1:1786:A:H8	1.96	0.49
53:3:1064:G:O2'	53:3:1190:G:N2	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:8:3:DC:H2"	55:8:4:DT:C7	2.42	0.49
58:B1:220:ARG:HG2	58:B1:220:ARG:NH1	2.25	0.49
58:B1:1371:ARG:HE	58:B1:1372:ARG:NH1	2.10	0.49
11:K:46:GLN:HA	11:K:56:LYS:HB3	1.94	0.49
17:Q:70:GLY:O	17:Q:107:LYS:NZ	2.44	0.49
51:1:67:U:H2'	51:1:68:G:H8	1.77	0.49
51:1:521:U:H2'	51:1:522:A:H8	1.73	0.49
51:1:644:A:H2'	51:1:645:C:C4'	2.42	0.49
51:1:840:C:O2'	51:1:841:G:H5'	2.12	0.49
51:1:905:A:H2'	51:1:906:U:C5'	2.40	0.49
51:1:2533:U:H2'	51:1:2534:A:C5'	2.42	0.49
59:B2:836:LEU:HD13	59:B2:1054:LEU:HD13	1.95	0.49
11:K:42:TRP:HB2	11:K:59:TYR:HB2	1.93	0.49
12:L:2:ARG:NH2	53:3:933:G:O6	2.46	0.49
30:e:57:ALA:HB2	30:e:64:PRO:HD3	1.95	0.49
42:r:71:LYS:HA	42:r:90:ARG:HG2	1.95	0.49
51:1:69:C:O2'	51:1:70:G:H5'	2.13	0.49
51:1:155:A:H2'	51:1:156:A:H8	1.77	0.49
51:1:367:G:H2'	51:1:368:A:O4'	2.13	0.49
51:1:609:A:H2'	51:1:610:C:O4'	2.11	0.49
51:1:1796:U:H2'	51:1:1797:G:C8	2.45	0.49
51:1:2241:A:O2'	51:1:2242:G:H5'	2.12	0.49
58:B1:124:ILE:HG23	58:B1:128:LEU:HD12	1.94	0.49
59:B2:903:ARG:HB3	61:NA:1:MET:HA	1.95	0.49
9:I:93:LEU:O	9:I:99:ASN:ND2	2.39	0.49
27:b:70:LYS:O	27:b:117:SER:OG	2.30	0.49
44:t:70:HIS:N	44:t:73:ARG:O	2.44	0.49
48:x:1:SER:O	48:x:49:ARG:NH1	2.46	0.49
51:1:286:U:H2'	51:1:287:G:C8	2.47	0.49
51:1:898:C:C2'	51:1:899:A:H5'	2.43	0.49
51:1:898:C:O2'	51:1:899:A:H5'	2.13	0.49
51:1:1409:U:H2'	51:1:1410:G:H8	1.76	0.49
53:3:1137:C:H4'	53:3:1138:G:H5'	1.94	0.49
53:3:1490:U:H2'	53:3:1491:G:C8	2.47	0.49
63:5:51:U:H2'	63:5:52:G:C8	2.48	0.49
65:h:6:5OH:N	65:h:6:5OH:CS	2.75	0.49
1:A:35:ASP:OD1	1:A:35:ASP:N	2.42	0.49
25:Y:53:MET:HE2	25:Y:57:VAL:HG21	1.94	0.49
33:i:110:GLN:HG2	33:i:121:ILE:HD13	1.93	0.49
35:k:5:GLN:HE21	51:1:1668:A:H5"	1.78	0.49
51:1:1077:A:H8	51:1:1078:U:H1'	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1119:U:O2'	51:1:1120:G:H5'	2.13	0.49
51:1:2329:U:H2'	51:1:2330:G:H8	1.78	0.49
53:3:19:A:O2'	53:3:572:A:N1	2.46	0.49
53:3:890:G:O2'	53:3:906:A:N6	2.46	0.49
57:A1:100:LEU:HB2	57:A1:144:ILE:HG23	1.94	0.49
59:B2:529:ARG:HH11	59:B2:572:ILE:HG22	1.77	0.49
7:G:101:THR:HG23	7:G:174:GLU:HG3	1.95	0.49
25:Y:59:ARG:O	25:Y:63:LYS:N	2.46	0.49
38:n:8:ARG:HH21	38:n:43:GLU:HG3	1.77	0.49
38:n:49:GLU:O	38:n:53:THR:OG1	2.29	0.49
51:1:16:C:H2'	51:1:17:G:H8	1.77	0.49
51:1:236:C:H2'	51:1:237:C:C6	2.46	0.49
51:1:718:A:H2'	51:1:719:C:O4'	2.12	0.49
51:1:886:A:C5	51:1:887:U:H1'	2.47	0.49
59:B2:411:ARG:NH2	59:B2:427:ASP:OD2	2.44	0.49
59:B2:554:HIS:HD2	59:B2:558:VAL:HB	1.77	0.49
1:A:37:CYS:O	1:A:41:HIS:N	2.45	0.49
17:Q:97:VAL:HG12	17:Q:99:GLY:H	1.78	0.49
27:b:97:ASP:N	27:b:97:ASP:OD1	2.45	0.49
30:e:84:ILE:HD11	51:1:2311:A:H1'	1.94	0.49
51:1:275:C:C3'	51:1:276:U:H5"	2.40	0.49
51:1:554:U:O2'	51:1:555:G:H5'	2.13	0.49
51:1:706:A:H2'	51:1:707:G:H5'	1.95	0.49
51:1:1111:A:H2'	51:1:1111:A:N3	2.28	0.49
51:1:1266:G:O2'	51:1:2012:G:O6	2.25	0.49
51:1:1465:G:H2'	51:1:1466:U:O4'	2.13	0.49
51:1:1645:G:H5"	51:1:1646:C:H5'	1.94	0.49
51:1:2510:C:N4	51:1:2511:U:C4	2.81	0.49
13:M:29:SER:OG	13:M:30:LYS:N	2.44	0.48
16:P:96:ILE:HD13	16:P:109:ILE:HD13	1.94	0.48
26:Z:55:HIS:HA	26:Z:58:LYS:HD2	1.95	0.48
41:q:103:VAL:HA	41:q:106:THR:HG22	1.94	0.48
51:1:1117:C:H2'	51:1:1118:C:H6	1.78	0.48
51:1:1536:C:H5"	51:1:1537:G:C4	2.48	0.48
51:1:1668:A:N3	51:1:1670:C:N4	2.60	0.48
53:3:481:G:O2'	53:3:483:C:N4	2.46	0.48
59:B2:857:VAL:HG13	59:B2:919:ARG:HH21	1.78	0.48
12:L:41:ILE:HD11	53:3:1240:U:H5'	1.94	0.48
17:Q:110:LYS:HG3	17:Q:121:PRO:HG3	1.94	0.48
29:d:77:ILE:HG23	51:1:1256:G:N2	2.26	0.48
37:m:74:THR:HG21	37:m:86:LYS:HG2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
45:u:88:ASP:OD1	45:u:88:ASP:N	2.43	0.48
51:1:54:G:H2'	51:1:55:G:O4'	2.12	0.48
51:1:121:G:H4'	51:1:149:A:H5'	1.95	0.48
51:1:214:G:H2'	51:1:215:G:C8	2.48	0.48
51:1:217:A:H2'	51:1:218:A:O4'	2.13	0.48
51:1:360:U:H2'	51:1:361:G:C1'	2.44	0.48
51:1:1084:A:O2'	51:1:1105:U:H4'	2.12	0.48
51:1:1534:U:H4'	51:1:1535:A:N1	2.27	0.48
51:1:2281:A:O2'	51:1:2282:G:H5'	2.12	0.48
51:1:2367:G:O2'	51:1:2368:C:H5'	2.13	0.48
51:1:2553:G:H22	63:5:75:C:H42	1.60	0.48
51:1:2843:G:O2'	51:1:2844:G:H5'	2.13	0.48
53:3:776:G:N2	53:3:802:A:OP2	2.39	0.48
58:B1:115:TRP:O	58:B1:1333:THR:HG21	2.13	0.48
58:B1:550:VAL:O	58:B1:569:LEU:HA	2.13	0.48
21:U:18:GLN:HA	21:U:38:PHE:HA	1.95	0.48
24:X:32:THR:OG1	24:X:49:ALA:O	2.31	0.48
29:d:143:LEU:HD13	29:d:146:VAL:HG11	1.94	0.48
40:p:2:ASN:HD21	51:1:2876:G:H4'	1.79	0.48
49:y:16:THR:O	49:y:20:ASN:ND2	2.46	0.48
51:1:78:U:H2'	51:1:79:C:H6	1.77	0.48
51:1:481:G:C2'	51:1:482:A:OP2	2.61	0.48
51:1:1437:C:H2'	51:1:1438:U:H6	1.77	0.48
51:1:1729:U:H5	51:1:1731:G:N2	2.12	0.48
51:1:2527:C:O2'	51:1:2528:U:H5'	2.13	0.48
55:8:14:DC:H2'	55:8:15:DC:C6	2.48	0.48
9:I:94:GLU:HG3	9:I:190:LEU:HD21	1.95	0.48
51:1:118:A:H2'	51:1:120:U:O4	2.13	0.48
51:1:415:A:H2'	51:1:416:U:C6	2.49	0.48
51:1:553:G:H2'	51:1:554:U:O4'	2.13	0.48
51:1:1680:U:O2'	51:1:1681:G:H5'	2.13	0.48
51:1:1871:A:H2'	51:1:1872:A:O4'	2.13	0.48
51:1:2214:C:H2'	51:1:2215:C:O4'	2.14	0.48
51:1:2547:A:H61	51:1:2561:U:H3	1.62	0.48
53:3:673:A:H2'	53:3:674:G:C8	2.49	0.48
58:B1:1027:VAL:HB	58:B1:1121:LEU:HB2	1.95	0.48
31:f:163:TYR:HB2	31:f:166:GLU:HB2	1.95	0.48
33:i:85:ILE:HD12	33:i:97:VAL:HG12	1.95	0.48
51:1:92:U:H2'	51:1:93:G:H5'	1.95	0.48
51:1:820:A:H2'	51:1:821:A:O4'	2.14	0.48
51:1:841:G:C2	51:1:938:G:C2	3.01	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1537:G:H3'	51:1:1537:G:N3	2.28	0.48
51:1:1910:G:N2	51:1:1911:U:C2	2.81	0.48
51:1:2393:U:H2'	51:1:2394:C:H5'	1.94	0.48
53:3:898:G:N2	53:3:901:A:OP2	2.46	0.48
53:3:1223:C:H5'	53:3:1224:U:H5"	1.96	0.48
58:B1:102:MET:HG2	58:B1:246:PRO:HD3	1.94	0.48
58:B1:968:ASN:HA	58:B1:1117:SER:HB2	1.96	0.48
14:N:91:GLU:HA	14:N:94:ARG:HB2	1.94	0.48
38:n:100:CYS:H	38:n:111:ALA:HA	1.79	0.48
39:o:15:ARG:NH2	52:2:8:C:OP1	2.47	0.48
42:r:68:ARG:O	42:r:90:ARG:NH2	2.46	0.48
46:v:79:ARG:HA	46:v:86:LEU:HA	1.95	0.48
51:1:107:G:O2'	51:1:108:G:H5'	2.14	0.48
51:1:488:G:H22	51:1:491:G:H5"	1.77	0.48
51:1:1400:U:H2'	51:1:1401:G:H8	1.78	0.48
51:1:2180:U:O2'	51:1:2181:U:H5'	2.13	0.48
53:3:880:C:H2'	53:3:881:G:H8	1.78	0.48
53:3:928:G:O2'	53:3:1533:C:OP1	2.22	0.48
58:B1:141:PHE:HE2	58:B1:296:LYS:CB	2.23	0.48
59:B2:895:LEU:HD12	59:B2:899:GLU:HB3	1.95	0.48
9:I:153:ARG:NH2	53:3:435:A:N3	2.61	0.48
29:d:149:ILE:HD11	29:d:172:ALA:HA	1.96	0.48
51:1:129:C:H2'	51:1:130:C:H6	1.79	0.48
51:1:572:A:H8	51:1:572:A:O5'	1.97	0.48
51:1:596:U:C2	51:1:662:G:N2	2.82	0.48
51:1:1087:G:O6	51:1:1089:A:C2	2.67	0.48
51:1:1742:U:O2'	51:1:1743:G:H5'	2.14	0.48
58:B1:201:LEU:HD11	58:B1:220:ARG:HG2	1.95	0.48
31:f:122:ALA:HB2	31:f:132:LEU:HD23	1.94	0.48
45:u:39:ASN:HB3	45:u:62:ALA:HB3	1.95	0.48
55:8:14:DC:H2'	55:8:15:DC:H6	1.79	0.48
58:B1:809:VAL:HG21	58:B1:909:ILE:HG12	1.95	0.48
58:B1:1261:LEU:HD12	58:B1:1304:ARG:HH21	1.78	0.48
59:B2:533:LEU:HD13	59:B2:540:ARG:HH21	1.77	0.48
14:N:10:ARG:NH2	53:3:1119:C:OP2	2.46	0.48
51:1:2016:U:O5'	51:1:2016:U:H6	1.97	0.48
59:B2:18:ARG:HE	59:B2:620:ASN:HA	1.77	0.48
59:B2:732:ILE:HD11	59:B2:769:PRO:HB3	1.95	0.48
59:B2:1311:GLY:O	60:W0:31:GLN:NE2	2.47	0.48
14:N:86:LEU:HD12	14:N:97:LEU:HD11	1.95	0.48
28:c:136:ASN:OD1	51:1:2579:C:O2'	2.32	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
42:r:7:SER:OG	42:r:8:GLY:N	2.47	0.48
51:1:5:A:H2'	51:1:6:A:C8	2.49	0.48
51:1:40:U:H2'	51:1:41:C:H6	1.78	0.48
51:1:940:G:H2'	51:1:941:A:C5'	2.41	0.48
51:1:2050:C:N4	51:1:2051:A:C6	2.81	0.48
51:1:2126:A:H5'	51:1:2127:G:O5'	2.12	0.48
53:3:358:U:H2'	53:3:359:G:H8	1.78	0.48
4:D:29:GLN:O	4:D:29:GLN:NE2	2.47	0.47
14:N:40:ARG:NH2	53:3:1291:U:O3'	2.38	0.47
14:N:94:ARG:HG2	14:N:97:LEU:HD12	1.95	0.47
32:g:8:LYS:HD3	32:g:14:SER:HA	1.95	0.47
32:g:47:PHE:HA	32:g:51:ARG:HB2	1.96	0.47
36:l:129:LYS:HG2	51:1:636:G:OP1	2.14	0.47
47:w:19:VAL:HA	47:w:34:VAL:HG22	1.96	0.47
51:1:473:G:O2'	51:1:474:G:H5'	2.14	0.47
51:1:2098:U:H2'	51:1:2099:U:O4'	2.14	0.47
51:1:2156:G:C3'	51:1:2157:G:H5'	2.44	0.47
51:1:2208:C:H2'	51:1:2209:G:C8	2.48	0.47
53:3:1531:A:O2'	53:3:1532:U:H5'	2.14	0.47
58:B1:141:PHE:CE2	58:B1:296:LYS:CB	2.94	0.47
64:7:50:U:H2'	64:7:51:C:C5	2.49	0.47
10:J:110:MET:HE3	10:J:110:MET:HB2	1.79	0.47
17:Q:82:ARG:O	17:Q:95:HIS:N	2.47	0.47
27:b:131:MET:HE2	27:b:187:CYS:HB2	1.96	0.47
29:d:48:THR:OG1	29:d:49:ARG:N	2.47	0.47
51:1:466:A:H2'	51:1:467:G:C5'	2.44	0.47
51:1:476:G:H4'	51:1:502:A:N1	2.28	0.47
51:1:813:U:C2	51:1:1195:G:N2	2.82	0.47
51:1:1020:A:C1'	51:1:1021:A:OP2	2.61	0.47
51:1:1267:U:H2'	51:1:1267:U:O2	2.14	0.47
51:1:1807:G:H2'	51:1:1808:A:C5'	2.30	0.47
51:1:2286:G:H21	51:1:2287:A:H61	1.62	0.47
56:9:12:DC:H3'	58:B1:47:ARG:HH12	1.78	0.47
58:B1:526:VAL:HG12	58:B1:549:LYS:HB2	1.96	0.47
59:B2:565:GLU:HA	59:B2:569:ILE:HG12	1.95	0.47
14:N:44:ARG:HG2	14:N:45:MET:HE2	1.95	0.47
15:O:58:ASN:ND2	53:3:1061:G:O2'	2.45	0.47
17:Q:70:GLY:O	17:Q:98:ARG:NH2	2.47	0.47
33:i:79:LEU:HD13	33:i:132:ALA:HB2	1.94	0.47
51:1:762:U:N3	51:1:1431:A:OP1	2.47	0.47
51:1:1026:G:OP2	51:1:1134:A:H1'	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1464:G:H2'	51:1:1465:G:H8	1.78	0.47
51:1:2149:U:H2'	51:1:2150:C:C6	2.49	0.47
51:1:2362:C:O5'	51:1:2362:C:H6	1.97	0.47
51:1:2649:C:O2'	51:1:2650:U:H5'	2.13	0.47
51:1:2828:G:O2'	51:1:2829:A:H5'	2.13	0.47
52:2:51:G:H22	52:2:53:A:H62	1.61	0.47
53:3:617:G:H1	53:3:623:C:H42	1.63	0.47
58:B1:1146:GLU:OE2	58:B1:1310:THR:HG22	2.14	0.47
58:B1:1221:LEU:HD22	58:B1:1306:LEU:HB2	1.96	0.47
62:NG:161:SER:CA	62:NG:170:PRO:HA	2.43	0.47
63:5:37:A:H3'	63:5:38:A:C8	2.49	0.47
63:5:50:U:H2'	63:5:51:U:C6	2.49	0.47
11:K:41:ASP:OD1	11:K:58:HIS:NE2	2.39	0.47
13:M:83:ARG:NH2	53:3:587:G:OP1	2.44	0.47
28:c:190:LYS:HE2	51:1:2729:G:H4'	1.95	0.47
31:f:87:GLN:HB3	31:f:162:ARG:HG3	1.96	0.47
33:i:20:SER:HA	33:i:24:GLY:HA3	1.95	0.47
34:j:65:THR:HG22	51:1:1141:U:OP2	2.15	0.47
40:p:59:THR:HG22	40:p:72:VAL:HG12	1.95	0.47
51:1:214:G:O2'	51:1:215:G:H5'	2.14	0.47
51:1:297:G:H2'	51:1:298:G:O4'	2.14	0.47
51:1:555:G:HO2'	51:1:556:A:H8	1.60	0.47
51:1:1257:C:O5'	51:1:1257:C:H6	1.97	0.47
51:1:2047:C:O5'	51:1:2047:C:H6	1.98	0.47
51:1:2298:A:C2'	51:1:2299:U:H5'	2.45	0.47
51:1:2895:G:H2'	51:1:2896:C:C6	2.49	0.47
53:3:38:G:H22	53:3:397:A:H5'	1.78	0.47
58:B1:255:LEU:HD23	58:B1:261:ALA:HB2	1.95	0.47
58:B1:1060:VAL:HG13	58:B1:1106:ILE:HG12	1.97	0.47
59:B2:1314:GLN:HB2	60:W0:28:ARG:HH12	1.79	0.47
63:5:29:G:H3'	63:5:30:G:C8	2.50	0.47
33:i:8:VAL:HG21	33:i:26:ALA:HB1	1.96	0.47
47:w:29:ALA:N	47:w:60:ASP:OD1	2.48	0.47
51:1:555:G:O2'	51:1:556:A:H8	1.96	0.47
51:1:859:G:C2'	51:1:860:U:OP2	2.62	0.47
51:1:1491:G:H2'	51:1:1492:G:H8	1.80	0.47
51:1:1517:G:O2'	51:1:1518:C:H5'	2.15	0.47
51:1:2155:U:H2'	51:1:2156:G:O4'	2.15	0.47
51:1:2445:G:C6	51:1:2446:G:C6	3.02	0.47
51:1:2554:U:H2'	51:1:2555:U:O2	2.15	0.47
57:A2:294:ASN:HA	61:NA:464:ILE:N	2.28	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:29:MET:HG2	59:B2:1336:ASN:ND2	2.29	0.47
58:B1:1347:LEU:HG	58:B1:1357:ILE:HG23	1.96	0.47
59:B2:363:LEU:HB3	59:B2:381:ALA:HB1	1.96	0.47
59:B2:400:VAL:HG22	59:B2:584:TYR:HB3	1.96	0.47
10:J:28:ARG:NH2	53:3:1397:C:OP2	2.38	0.47
11:K:10:VAL:HG23	11:K:58:HIS:HB3	1.97	0.47
12:L:107:ALA:HA	12:L:122:GLU:HG3	1.95	0.47
18:R:15:VAL:HG11	18:R:30:LYS:HG2	1.97	0.47
27:b:152:GLN:HB3	51:1:1818:U:N3	2.29	0.47
31:f:88:LEU:HD21	31:f:104:LEU:HD23	1.97	0.47
51:1:156:A:H2'	51:1:157:C:C6	2.50	0.47
51:1:1141:U:H4'	51:1:1142:A:C1'	2.45	0.47
51:1:1297:C:H2'	51:1:1298:C:H6	1.79	0.47
51:1:2455:G:C6	51:1:2456:C:N4	2.83	0.47
9:I:159:GLU:HA	9:I:162:GLU:HB2	1.97	0.47
9:I:171:GLU:HB3	9:I:180:THR:HG22	1.97	0.47
12:L:112:ASP:HB2	12:L:118:ARG:HG2	1.96	0.47
12:L:149:ALA:HB1	16:P:58:THR:HG21	1.97	0.47
33:i:79:LEU:HD21	33:i:105:LEU:HD21	1.96	0.47
33:i:115:ASP:OD2	51:1:1059:G:H4'	2.14	0.47
34:j:2:LYS:HA	51:1:995:C:C4	2.50	0.47
49:y:15:ASN:OD1	49:y:16:THR:N	2.48	0.47
51:1:149:A:H2'	51:1:150:U:C6	2.49	0.47
51:1:338:G:O2'	51:1:339:U:H5'	2.14	0.47
51:1:708:G:H2'	51:1:709:U:C6	2.50	0.47
51:1:852:U:H2'	51:1:853:C:C6	2.49	0.47
51:1:1098:A:O2'	51:1:1099:G:H5'	2.15	0.47
51:1:1285:A:H2'	51:1:1286:A:H5'	1.96	0.47
51:1:1400:U:H2'	51:1:1401:G:C8	2.50	0.47
51:1:1463:C:H2'	51:1:1464:G:C8	2.49	0.47
51:1:1851:U:OP1	64:7:4:G:H4'	2.15	0.47
51:1:2194:U:O2'	51:1:2195:U:H5'	2.15	0.47
51:1:2563:U:H2'	51:1:2565:A:OP2	2.15	0.47
53:3:517:G:N2	53:3:533:A:OP2	2.34	0.47
53:3:1225:A:H2'	53:3:1225:A:N3	2.30	0.47
58:B1:395:LYS:NZ	58:B1:399:LYS:CE	2.77	0.47
58:B1:891:ASP:OD2	58:B1:1290:ARG:NH2	2.47	0.47
58:B1:1150:PRO:HG3	58:B1:1214:PRO:HB2	1.96	0.47
59:B2:103:VAL:HG12	59:B2:117:ILE:HG22	1.97	0.47
10:J:125:LYS:NZ	53:3:9:G:OP2	2.38	0.47
18:R:7:ASN:HD22	18:R:20:SER:HB2	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:U:25:ARG:NH1	53:3:230:G:O2'	2.48	0.47
36:l:39:LYS:HG2	51:1:832:U:OP1	2.15	0.47
39:o:68:LYS:HE3	52:2:49:C:H5"	1.97	0.47
51:1:30:G:C5	51:1:31:C:C4	3.03	0.47
51:1:538:A:O2'	51:1:539:G:H5'	2.14	0.47
51:1:551:G:O2'	51:1:552:U:H5'	2.15	0.47
51:1:686:U:H6	51:1:788:A:H61	1.61	0.47
51:1:1019:U:N3	51:1:1142:A:N6	2.57	0.47
51:1:1105:U:H2'	51:1:1106:G:H8	1.80	0.47
51:1:1435:G:O2'	51:1:1436:G:H5'	2.15	0.47
51:1:1464:G:H2'	51:1:1465:G:C8	2.49	0.47
51:1:1509:A:H2'	51:1:1510:G:C8	2.49	0.47
51:1:1922:G:H2'	51:1:1923:U:C6	2.50	0.47
51:1:2295:C:O2'	51:1:2296:U:H5'	2.15	0.47
51:1:2858:C:H2'	51:1:2859:G:O4'	2.15	0.47
53:3:410:G:H21	53:3:432:A:H62	1.62	0.47
53:3:1305:G:N2	53:3:1331:G:H2'	2.29	0.47
58:B1:352:ARG:HB2	59:B2:1268:GLN:NE2	2.30	0.47
58:B1:833:GLU:N	58:B1:1242:ARG:HH12	2.12	0.47
58:B1:1036:ARG:HE	58:B1:1081:VAL:HG11	1.79	0.47
59:B2:517:GLN:HB3	59:B2:760:ASN:H	1.79	0.47
7:G:129:THR:HB	7:G:132:GLU:HB2	1.96	0.47
16:P:34:THR:OG1	16:P:35:ASP:N	2.47	0.47
19:S:32:ASP:O	19:S:34:ASN:ND2	2.48	0.47
35:k:47:ILE:HG22	35:k:49:ARG:H	1.80	0.47
51:1:854:C:H2'	51:1:855:G:H8	1.79	0.47
51:1:979:A:H2'	51:1:982:C:H42	1.80	0.47
51:1:1067:A:H2'	51:1:1068:G:C8	2.49	0.47
51:1:1068:G:H2'	51:1:1069:A:H4'	1.96	0.47
51:1:1090:A:H61	51:1:1101:U:H3	1.62	0.47
51:1:1219:U:O2'	51:1:1220:G:H5'	2.15	0.47
51:1:2241:A:H2'	51:1:2242:G:C8	2.50	0.47
51:1:2395:C:H2'	51:1:2396:G:O4'	2.15	0.47
57:A1:59:VAL:HG22	57:A1:144:ILE:HA	1.97	0.47
57:A1:212:ASP:OD1	57:A1:212:ASP:N	2.48	0.47
57:A2:64:VAL:HG11	57:A2:78:ILE:HG21	1.97	0.47
58:B1:1219:ASP:O	58:B1:1223:LEU:HB2	2.15	0.47
59:B2:318:SER:OG	59:B2:320:ASP:OD1	2.31	0.47
59:B2:800:MET:HB2	59:B2:800:MET:HE3	1.69	0.47
59:B2:1286:THR:O	59:B2:1290:MET:HB2	2.14	0.47
64:7:48:C:H5"	64:7:50:U:OP1	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:5:THR:HG22	5:E:62:PRO:HD2	1.97	0.47
12:L:79:VAL:HB	12:L:84:TYR:HD2	1.80	0.47
29:d:119:ILE:HB	29:d:187:VAL:HG12	1.96	0.47
31:f:16:VAL:HA	31:f:25:ILE:HG12	1.96	0.47
33:i:54:ILE:HD12	33:i:73:PRO:HD3	1.95	0.47
51:1:283:G:C2'	51:1:284:U:H5'	2.45	0.47
51:1:877:A:O2'	51:1:878:A:H5"	2.14	0.47
51:1:1090:A:C2	51:1:1102:C:H1'	2.50	0.47
51:1:1516:G:O2'	51:1:1517:G:H5'	2.15	0.47
51:1:1927:A:H2'	51:1:1928:A:C8	2.50	0.47
51:1:2180:U:H2'	51:1:2181:U:O4'	2.14	0.47
54:4:3:G:H1	64:6:34:C:H42	1.63	0.47
57:A1:182:ARG:O	57:A1:205:MET:HA	2.14	0.47
57:A2:102:LEU:HD12	57:A2:115:ILE:HG12	1.96	0.47
58:B1:43:THR:HG22	58:B1:57:PHE:HE1	1.80	0.47
58:B1:375:GLU:HB3	59:B2:1245:ALA:HB3	1.97	0.47
45:u:6:ARG:HB2	51:1:85:G:P	2.55	0.46
51:1:44:A:H2'	51:1:45:G:O4'	2.15	0.46
51:1:570:G:H5'	51:1:983:A:C2	2.51	0.46
51:1:712:G:H2'	51:1:713:G:H5'	1.96	0.46
51:1:1036:G:O2'	51:1:1037:G:H5'	2.15	0.46
51:1:2899:A:H2'	51:1:2900:A:O4'	2.15	0.46
53:3:512:U:H2'	53:3:513:C:C6	2.50	0.46
59:B2:28:LEU:HD21	59:B2:524:ILE:HG13	1.98	0.46
59:B2:230:PHE:HB2	59:B2:333:ILE:HB	1.98	0.46
63:5:8:U:H2'	63:5:13:C:N4	2.30	0.46
11:K:3:HIS:HA	11:K:65:GLU:HA	1.97	0.46
17:Q:114:SER:O	53:3:35:G:O2'	2.30	0.46
20:T:38:LEU:HD22	20:T:55:LEU:HD13	1.96	0.46
27:b:145:MET:HE1	51:1:1800:C:H2'	1.98	0.46
31:f:90:GLY:HA2	31:f:159:LYS:HG2	1.98	0.46
51:1:389:G:O2'	51:1:390:U:H5'	2.15	0.46
51:1:554:U:C2'	51:1:555:G:H5'	2.46	0.46
51:1:900:A:C2'	51:1:901:C:H5'	2.45	0.46
51:1:1117:C:H2'	51:1:1118:C:C6	2.50	0.46
51:1:1209:U:O3'	51:1:1212:G:H5'	2.15	0.46
51:1:1389:G:C2	51:1:1390:U:C2	3.02	0.46
51:1:1480:C:H2'	51:1:1481:U:C6	2.49	0.46
51:1:2294:G:O2'	51:1:2295:C:H5'	2.15	0.46
57:A1:35:PHE:HA	57:A1:38:THR:HG22	1.98	0.46
58:B1:211:GLU:CG	58:B1:215:LYS:HE3	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1167:LYS:NZ	58:B1:1170:LYS:HB2	2.30	0.46
59:B2:689:ALA:HB2	59:B2:1233:LEU:HD23	1.97	0.46
26:Z:29:ALA:O	26:Z:32:ARG:NH1	2.49	0.46
51:1:93:G:O2'	51:1:94:A:H5'	2.16	0.46
51:1:848:C:H2'	51:1:849:A:C8	2.51	0.46
51:1:848:C:H2'	51:1:849:A:H8	1.80	0.46
51:1:853:C:O2'	51:1:854:C:H5'	2.16	0.46
51:1:1324:G:O2'	51:1:1326:U:OP2	2.29	0.46
51:1:1486:U:O2'	51:1:1487:U:H5'	2.14	0.46
51:1:1572:A:H2'	51:1:1573:G:O4'	2.16	0.46
51:1:1574:C:H2'	51:1:1575:C:C6	2.50	0.46
51:1:1807:G:C2'	51:1:1808:A:H5'	2.29	0.46
51:1:1874:C:H2'	51:1:1875:G:O4'	2.15	0.46
51:1:1922:G:O2'	51:1:1923:U:H5'	2.15	0.46
53:3:1035:A:H1'	53:3:1036:A:O5'	2.16	0.46
20:T:37:HIS:HD2	20:T:38:LEU:HD12	1.80	0.46
22:V:10:ARG:NE	22:V:55:GLY:O	2.48	0.46
29:d:132:LYS:HG2	29:d:136:GLN:HE22	1.81	0.46
51:1:438:G:O2'	51:1:439:A:H5'	2.16	0.46
51:1:1367:A:H3'	51:1:1368:G:O4'	2.15	0.46
51:1:1536:C:H5"	51:1:1537:G:C5	2.50	0.46
51:1:1873:G:O2'	51:1:1874:C:H5'	2.15	0.46
51:1:2247:A:H2'	51:1:2248:C:H6	1.81	0.46
51:1:2259:U:H2'	51:1:2260:C:O4'	2.15	0.46
51:1:2496:C:H2'	51:1:2497:A:O4'	2.16	0.46
51:1:2528:U:O2'	51:1:2529:G:H3'	2.16	0.46
51:1:2679:A:O2'	51:1:2680:U:H5'	2.15	0.46
51:1:2813:A:O2'	51:1:2814:A:H5'	2.15	0.46
52:2:39:A:O2'	52:2:46:A:N1	2.47	0.46
58:B1:1357:ILE:HD13	59:B2:1279:GLU:HG2	1.97	0.46
59:B2:735:LYS:HA	59:B2:748:ILE:HG22	1.97	0.46
31:f:29:ASN:ND2	31:f:80:GLU:O	2.48	0.46
32:g:28:ASN:ND2	51:1:2092:U:OP2	2.36	0.46
43:s:72:THR:OG1	43:s:73:LYS:N	2.48	0.46
46:v:26:PHE:HE2	46:v:89:ILE:HG13	1.80	0.46
51:1:143:C:H2'	51:1:144:A:C8	2.49	0.46
51:1:435:C:C2'	51:1:436:C:H5'	2.44	0.46
51:1:1034:G:C5	51:1:1035:U:C4	3.04	0.46
58:B1:343:LEU:HD11	58:B1:1324:SER:HB3	1.97	0.46
59:B2:487:LEU:HD22	59:B2:487:LEU:HA	1.77	0.46
7:G:8:MET:HE3	7:G:8:MET:HB3	1.84	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:Z:19:LYS:H	26:Z:19:LYS:HG3	1.53	0.46
27:b:184:GLU:HG3	27:b:186:ASP:H	1.80	0.46
28:c:4:LEU:HD11	28:c:100:LEU:HD21	1.98	0.46
51:1:595:C:C2	51:1:596:U:C5	3.04	0.46
51:1:1146:C:O2'	51:1:1147:A:H5'	2.15	0.46
51:1:1183:U:H2'	51:1:1184:U:H6	1.80	0.46
51:1:1528:A:H2'	51:1:1529:G:C5'	2.45	0.46
51:1:2625:G:H2'	51:1:2626:C:H6	1.76	0.46
51:1:2626:C:H2'	51:1:2627:G:H8	1.80	0.46
53:3:1200:C:H5"	53:3:1201:A:H3'	1.97	0.46
55:8:13:DT:C6	58:B1:791:ALA:HA	2.51	0.46
58:B1:385:LEU:HD23	58:B1:390:LEU:HB2	1.98	0.46
2:B:31:LYS:HG2	51:1:2885:G:N2	2.31	0.46
10:J:73:VAL:HG11	10:J:143:LEU:HB3	1.98	0.46
12:L:137:ARG:NH1	12:L:138:GLU:OE2	2.48	0.46
17:Q:72:ASN:HD21	17:Q:103:CYS:HA	1.81	0.46
27:b:1:ALA:N	27:b:19:VAL:O	2.41	0.46
51:1:688:U:H5'	51:1:1780:A:C2	2.51	0.46
51:1:1381:G:H2'	51:1:1382:G:H5'	1.98	0.46
51:1:1766:G:C2'	51:1:1767:G:H5'	2.45	0.46
51:1:2047:C:O2'	51:1:2048:G:H5'	2.16	0.46
51:1:2290:G:O2'	51:1:2291:U:H5'	2.16	0.46
51:1:2783:U:H2'	51:1:2784:U:C6	2.51	0.46
51:1:2836:U:H2'	51:1:2837:A:H8	1.81	0.46
53:3:459:A:H2'	53:3:460:A:C8	2.50	0.46
53:3:618:C:N4	53:3:621:A:OP2	2.49	0.46
58:B1:103:GLY:H	58:B1:244:VAL:HG22	1.79	0.46
58:B1:109:SER:HB2	58:B1:296:LYS:HG2	1.98	0.46
6:F:33:HIS:O	6:F:34:LYS:C	2.59	0.46
14:N:11:ARG:NH2	53:3:1347:G:O6	2.49	0.46
16:P:124:LYS:HB3	26:Z:34:ARG:HB3	1.98	0.46
16:P:127:ARG:HB2	26:Z:34:ARG:HH22	1.81	0.46
35:k:70:ARG:NH1	51:1:2684:U:O4'	2.49	0.46
48:x:14:GLY:HA3	48:x:28:PHE:HE1	1.81	0.46
51:1:1726:C:H2'	51:1:1727:C:C6	2.50	0.46
51:1:2743:U:H2'	51:1:2744:G:O4'	2.16	0.46
53:3:768:A:N3	53:3:1512:U:O2'	2.46	0.46
55:8:1:DC:H2"	55:8:2:DC:C6	2.51	0.46
58:B1:420:PRO:HA	58:B1:437:PHE:O	2.15	0.46
58:B1:842:ARG:HH22	58:B1:1250:ASP:HB2	1.80	0.46
4:D:12:ARG:NH1	51:1:465:G:OP1	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
30:e:122:ASP:OD2	30:e:126:ASN:ND2	2.42	0.46
35:k:5:GLN:NE2	51:1:1668:A:H5"	2.31	0.46
51:1:1344:U:H3'	51:1:1345:C:H5'	1.97	0.46
51:1:1520:U:H2'	51:1:1521:G:O4'	2.16	0.46
51:1:2101:A:H2'	51:1:2102:G:H8	1.81	0.46
53:3:373:A:N1	53:3:391:G:O2'	2.49	0.46
55:8:20:DA:H4'	59:B2:143:ARG:NH1	2.31	0.46
59:B2:207:THR:OG1	59:B2:354:ASP:OD2	2.32	0.46
59:B2:1002:LEU:HD21	59:B2:1007:LYS:HB2	1.98	0.46
63:5:26:A:H61	63:5:44:G:H22	1.64	0.46
64:6:21:A:H62	64:6:47:U:H1'	1.81	0.46
7:G:65:LYS:HG2	7:G:153:MET:HG3	1.98	0.46
8:H:171:ARG:HG2	8:H:173:PRO:HD3	1.96	0.46
11:K:5:GLU:HB2	11:K:90:MET:HB2	1.98	0.46
12:L:142:ARG:HA	12:L:145:GLU:HG3	1.97	0.46
23:W:33:THR:OG1	23:W:34:GLU:N	2.49	0.46
35:k:121:GLU:HG2	35:k:122:VAL:HG23	1.97	0.46
51:1:290:U:O2'	51:1:291:G:H5'	2.16	0.46
51:1:409:G:H2'	51:1:410:G:C8	2.51	0.46
51:1:1173:U:C6	51:1:1174:U:H1'	2.51	0.46
51:1:2350:C:H2'	51:1:2351:G:O4'	2.16	0.46
51:1:2581:G:H2'	51:1:2581:G:N3	2.30	0.46
51:1:2849:U:H4'	51:1:2868:A:C2	2.51	0.46
58:B1:115:TRP:HB3	58:B1:1333:THR:CG2	2.46	0.46
63:5:6:G:H2'	63:5:7:A:C8	2.51	0.46
8:H:152:VAL:HG12	8:H:197:VAL:HG22	1.98	0.45
18:R:97:ARG:HB2	18:R:99:GLN:HE22	1.81	0.45
33:i:109:ALA:HA	33:i:112:LYS:HB2	1.98	0.45
43:s:82:MET:HE1	51:1:1322:A:H5"	1.98	0.45
44:t:66:LYS:HB3	44:t:66:LYS:HE2	1.70	0.45
51:1:519:U:C2	51:1:520:G:C8	3.03	0.45
51:1:569:U:H1'	51:1:947:A:O4'	2.16	0.45
51:1:1550:C:O2'	51:1:1551:A:H5'	2.16	0.45
51:1:1768:C:H42	51:1:1984:G:H1	1.62	0.45
51:1:1923:U:O2'	51:1:1924:C:H5'	2.16	0.45
51:1:2085:U:O2'	51:1:2086:U:H5'	2.16	0.45
53:3:1383:C:H4'	64:7:35:A:H2	1.81	0.45
58:B1:209:ASN:HA	58:B1:214:ARG:NH2	2.30	0.45
58:B1:375:GLU:O	59:B2:1247:SER:HB3	2.16	0.45
62:NG:135:ARG:O	62:NG:178:VAL:HA	2.16	0.45
9:I:1:ALA:N	53:3:405:U:O4	2.45	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:44:LYS:HA	9:I:44:LYS:HD2	1.55	0.45
10:J:101:GLY:H	10:J:121:ASN:HB3	1.81	0.45
28:c:59:ARG:HA	28:c:59:ARG:HD3	1.83	0.45
48:x:30:PRO:HG2	48:x:32:LEU:HD11	1.98	0.45
51:1:6:A:H2'	51:1:7:G:C8	2.52	0.45
51:1:637:A:C6	51:1:652:U:H4'	2.50	0.45
51:1:1210:G:P	51:1:1212:G:H5'	2.56	0.45
51:1:1287:A:O2'	51:1:1288:G:H5'	2.16	0.45
51:1:1500:G:O2'	51:1:1501:G:H5'	2.17	0.45
51:1:1672:A:N3	51:1:2582:G:H5'	2.27	0.45
51:1:1915:U:O2	51:1:1915:U:O4'	2.34	0.45
51:1:1923:U:H5"	64:6:24:U:O2'	2.17	0.45
51:1:2329:U:H2'	51:1:2330:G:C8	2.51	0.45
51:1:2642:G:O5'	51:1:2642:G:H8	1.98	0.45
51:1:2844:G:H2'	51:1:2845:U:O4'	2.16	0.45
53:3:1410:A:C2	53:3:1491:G:C2	3.04	0.45
58:B1:108:ALA:HB1	58:B1:279:LEU:HD22	1.96	0.45
7:G:142:LYS:NZ	53:3:1098:C:OP1	2.49	0.45
8:H:5:HIS:CE1	8:H:7:ASN:HB3	2.51	0.45
15:O:100:ILE:O	62:NG:170:PRO:O	2.34	0.45
28:c:170:VAL:HG21	51:1:2679:A:H5'	1.97	0.45
34:j:109:LEU:HD23	34:j:109:LEU:HA	1.85	0.45
48:x:38:TRP:NE1	48:x:40:GLU:OE1	2.41	0.45
51:1:367:G:O2'	51:1:368:A:H5'	2.17	0.45
51:1:438:G:H2'	51:1:439:A:C8	2.51	0.45
51:1:607:U:O4	51:1:620:G:H5'	2.17	0.45
51:1:654:A:N3	51:1:654:A:H5"	2.31	0.45
51:1:1488:C:H2'	51:1:1489:C:C6	2.51	0.45
58:B1:68:TYR:HB3	58:B1:75:TYR:HE2	1.81	0.45
58:B1:128:LEU:HD21	58:B1:188:LEU:HB3	1.97	0.45
58:B1:201:LEU:HD11	58:B1:220:ARG:NH1	2.32	0.45
59:B2:674:ASP:OD2	59:B2:1070:HIS:ND1	2.50	0.45
64:6:46:G:H5"	64:6:47:U:OP2	2.17	0.45
7:G:18:GLN:HG3	7:G:189:ASN:CB	2.40	0.45
7:G:166:ASP:HB3	7:G:190:SER:HB2	1.98	0.45
19:S:58:ARG:HH21	53:3:980:C:H4'	1.81	0.45
22:V:11:VAL:HG13	22:V:58:VAL:HG21	1.98	0.45
31:f:1:SER:HA	51:1:2749:A:OP1	2.15	0.45
42:r:38:VAL:HG13	42:r:54:VAL:HG12	1.99	0.45
51:1:289:G:H2'	51:1:290:U:C6	2.50	0.45
51:1:342:A:H2'	51:1:343:C:O4'	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1049:C:C2’	51:1:1050:A:H5’	2.47	0.45
51:1:1140:C:C2’	51:1:1141:U:H5’	2.47	0.45
51:1:1863:G:H2’	51:1:1864:U:C6	2.51	0.45
51:1:1866:A:H2’	51:1:1867:G:O4’	2.16	0.45
51:1:1952:A:H2’	51:1:1953:A:C8	2.51	0.45
51:1:2658:C:H2’	51:1:2659:G:O4’	2.16	0.45
51:1:2661:G:O2’	51:1:2662:A:H5’	2.16	0.45
53:3:112:G:N2	53:3:354:G:O5’	2.49	0.45
59:B2:176:ILE:HD11	59:B2:428:VAL:HG21	1.98	0.45
63:5:22:G:H2’	63:5:23:A:C8	2.51	0.45
11:K:62:MET:HB3	11:K:64:VAL:HG13	1.98	0.45
16:P:19:VAL:O	16:P:34:THR:N	2.45	0.45
28:c:151:THR:O	51:1:1130:U:C4	2.70	0.45
31:f:100:ASN:OD1	31:f:100:ASN:N	2.47	0.45
33:i:10:LEU:HD21	33:i:27:LEU:HD21	1.99	0.45
51:1:28:A:O2’	51:1:29:U:H5’	2.16	0.45
51:1:239:C:H2’	51:1:240:C:O4’	2.16	0.45
51:1:355:U:H6	51:1:355:U:O5’	1.99	0.45
51:1:854:C:H2’	51:1:855:G:C8	2.52	0.45
51:1:1239:G:O2’	51:1:1240:U:H5’	2.17	0.45
51:1:1930:G:HO2’	51:1:1931:U:P	2.38	0.45
51:1:2122:U:H2’	51:1:2123:G:O4’	2.16	0.45
51:1:2315:G:H2’	51:1:2316:G:H8	1.80	0.45
51:1:2339:C:H2’	51:1:2340:A:H8	1.81	0.45
53:3:647:C:H2’	53:3:648:A:H8	1.81	0.45
58:B1:75:TYR:CD2	58:B1:75:TYR:O	2.70	0.45
59:B2:557:ARG:NH2	59:B2:607:SER:O	2.50	0.45
63:5:49:C:H2’	63:5:50:U:C6	2.52	0.45
64:7:7:G:H3’	64:7:49:G:OP2	2.16	0.45
7:G:172:ILE:O	7:G:176:ASN:ND2	2.50	0.45
9:I:114:ARG:HA	9:I:117:VAL:HG22	1.98	0.45
9:I:173:ASP:HB3	9:I:178:GLU:HB3	1.98	0.45
27:b:107:LYS:HE2	27:b:107:LYS:HB2	1.87	0.45
33:i:106:GLN:OE1	33:i:125:THR:OG1	2.31	0.45
36:l:69:ARG:NH1	51:1:2406:A:C2	2.84	0.45
37:m:34:LYS:N	37:m:129:THR:O	2.47	0.45
44:t:34:VAL:HG21	44:t:43:ILE:HD11	1.99	0.45
45:u:12:VAL:HA	45:u:69:VAL:HG12	1.99	0.45
51:1:167:A:H2’	51:1:168:G:O4’	2.16	0.45
51:1:2030:A:N3	51:1:2499:C:H5”	2.31	0.45
51:1:2360:G:H2’	51:1:2361:G:C5’	2.40	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:395:LYS:NZ	58:B1:399:LYS:HE2	2.32	0.45
58:B1:770:LEU:HD13	59:B2:618:GLN:CD	2.42	0.45
58:B1:1158:GLU:HA	58:B1:1223:LEU:HD21	1.99	0.45
59:B2:24:VAL:HG11	59:B2:704:MET:HE1	1.98	0.45
2:B:8:THR:OG1	2:B:9:ARG:N	2.49	0.45
7:G:26:MET:HE1	7:G:186:VAL:HB	1.99	0.45
9:I:13:ARG:NH1	53:3:542:G:O3'	2.50	0.45
17:Q:23:LEU:HD12	17:Q:29:LYS:HD2	1.97	0.45
29:d:32:VAL:HG21	36:l:6:LEU:HD13	1.99	0.45
39:o:29:HIS:HB3	39:o:36:TYR:HB2	1.98	0.45
42:r:48:LYS:HA	42:r:48:LYS:HD2	1.78	0.45
51:1:111:A:O2'	51:1:112:U:H5'	2.17	0.45
51:1:540:C:O2'	51:1:541:A:H5'	2.16	0.45
51:1:707:G:C2'	51:1:708:G:H5'	2.47	0.45
51:1:1338:G:H2'	51:1:1339:G:C8	2.51	0.45
51:1:1749:A:H2'	51:1:1750:G:H8	1.82	0.45
51:1:1832:C:O5'	51:1:1832:C:H6	2.00	0.45
51:1:2141:G:H1	51:1:2151:U:H3	1.63	0.45
51:1:2236:U:H2'	51:1:2237:G:C5'	2.46	0.45
51:1:2651:C:H2'	51:1:2652:C:H6	1.81	0.45
51:1:2717:C:N3	51:1:2718:G:N7	2.65	0.45
51:1:2741:A:H2'	51:1:2742:G:H5'	1.98	0.45
53:3:765:G:H1	53:3:812:G:HO2'	1.63	0.45
58:B1:198:CYS:HA	58:B1:221:ILE:CD1	2.45	0.45
16:P:35:ASP:OD1	16:P:39:ASN:N	2.50	0.45
21:U:70:ARG:O	21:U:74:LEU:N	2.47	0.45
29:d:136:GLN:HA	29:d:139:LYS:HE2	1.99	0.45
31:f:133:LYS:NZ	31:f:134:GLY:O	2.44	0.45
51:1:30:G:H2'	51:1:31:C:O4'	2.17	0.45
51:1:195:A:H3'	51:1:196:A:H4'	1.99	0.45
51:1:500:G:N2	51:1:502:A:H3'	2.32	0.45
51:1:639:U:H2'	51:1:640:C:C6	2.52	0.45
51:1:940:G:H3'	51:1:941:A:H5"	1.97	0.45
51:1:1020:A:C2	51:1:1141:U:C2	3.05	0.45
51:1:1170:C:H2'	51:1:1171:G:C8	2.51	0.45
51:1:2364:C:O2'	51:1:2365:G:H5'	2.17	0.45
51:1:2648:G:C2	51:1:2649:C:C2	3.04	0.45
51:1:2700:A:O2'	51:1:2701:U:H5'	2.17	0.45
51:1:2869:G:H2'	51:1:2870:C:O4'	2.17	0.45
51:1:2889:C:O2'	51:1:2890:G:H5'	2.17	0.45
53:3:1376:U:H2'	53:3:1377:A:C8	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:67:ASP:OD1	58:B1:67:ASP:O	2.35	0.45
58:B1:1357:ILE:HG22	58:B1:1359:ALA:H	1.82	0.45
59:B2:909:LYS:HD3	59:B2:909:LYS:HA	1.43	0.45
8:H:5:HIS:HE1	8:H:7:ASN:HB3	1.82	0.45
12:L:70:PRO:HG3	12:L:98:LEU:HD23	1.97	0.45
17:Q:72:ASN:OD1	17:Q:72:ASN:N	2.50	0.45
31:f:132:LEU:HB3	31:f:140:ILE:HD11	1.99	0.45
34:j:85:LYS:NZ	51:1:2768:U:OP1	2.49	0.45
34:j:108:MET:CE	51:1:1138:G:H21	2.29	0.45
40:p:52:ARG:NH2	51:1:2720:U:OP1	2.50	0.45
51:1:360:U:H2'	51:1:361:G:H1'	1.99	0.45
51:1:536:G:H2'	51:1:537:G:C5'	2.43	0.45
51:1:1280:G:C2'	51:1:1281:G:H5'	2.46	0.45
51:1:1710:G:O2'	51:1:1711:A:H5'	2.17	0.45
51:1:1800:C:O2	51:1:1802:A:C8	2.70	0.45
51:1:2626:C:H2'	51:1:2627:G:C8	2.51	0.45
57:A1:231:PHE:O	57:A2:218:ARG:NH1	2.49	0.45
58:B1:201:LEU:CD1	58:B1:224:LEU:HD12	2.47	0.45
58:B1:472:LEU:CD1	59:B2:1294:LYS:HG2	2.47	0.45
58:B1:478:LEU:HD21	60:W0:47:THR:HG23	1.99	0.45
58:B1:484:MET:CE	59:B2:1278:LEU:HD21	2.47	0.45
60:W0:25:ARG:NH1	60:W0:61:ASN:OD1	2.49	0.45
45:u:32:LYS:HG2	45:u:65:GLN:HA	1.99	0.45
48:x:51:SER:OG	48:x:54:GLY:N	2.48	0.45
51:1:545:U:O2	51:1:546:U:H1'	2.17	0.45
51:1:1173:U:H5	51:1:1174:U:H1'	1.81	0.45
51:1:1710:G:H2'	51:1:1711:A:C8	2.51	0.45
53:3:1493:A:N3	54:4:5:U:H1'	2.32	0.45
53:3:1498:U:H4'	53:3:1519:A:H2	1.82	0.45
58:B1:1227:HIS:HA	58:B1:1230:THR:HG22	1.99	0.45
59:B2:998:LEU:HG	59:B2:1011:LEU:HB3	1.99	0.45
9:I:120:LYS:HG2	9:I:130:ASN:HB3	1.99	0.44
12:L:142:ARG:HH21	64:7:42:G:H4'	1.81	0.44
16:P:56:LYS:NZ	53:3:691:G:O6	2.38	0.44
24:X:27:LYS:HE2	24:X:27:LYS:HB3	1.77	0.44
27:b:131:MET:H	27:b:131:MET:HG2	1.57	0.44
33:i:112:LYS:HD2	33:i:128:ILE:HD12	1.97	0.44
51:1:163:C:O2'	51:1:164:C:H5'	2.17	0.44
51:1:293:U:H2'	51:1:294:A:H5"	1.99	0.44
51:1:354:A:H2'	51:1:355:U:O4'	2.17	0.44
51:1:1539:U:H2'	51:1:1540:G:C8	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2880:C:O2	51:1:2880:C:H2'	2.17	0.44
53:3:1253:G:H2'	53:3:1254:A:C8	2.52	0.44
57:A2:80:GLU:HG3	59:B2:694:ARG:HH22	1.81	0.44
58:B1:71:LEU:HD23	58:B1:71:LEU:HA	1.75	0.44
58:B1:76:LYS:NZ	58:B1:76:LYS:HB3	2.32	0.44
58:B1:772:TYR:HE2	59:B2:561:ILE:HG21	1.80	0.44
59:B2:1314:GLN:HA	60:W0:28:ARG:HH22	1.80	0.44
63:5:70:G:H2'	63:5:71:G:C8	2.51	0.44
7:G:33:ALA:HB3	7:G:37:VAL:HG12	1.99	0.44
14:N:84:ARG:NH2	53:3:1119:C:OP1	2.48	0.44
33:i:135:MET:CE	51:1:1062:G:H21	2.30	0.44
40:p:88:ARG:HH11	40:p:114:ASN:HD21	1.66	0.44
42:r:19:THR:OG1	42:r:95:ASP:OD1	2.35	0.44
51:1:327:G:H2'	51:1:328:U:O4'	2.18	0.44
51:1:1507:C:H2'	51:1:1508:A:H4'	1.99	0.44
51:1:1893:C:C2'	51:1:1894:C:H5'	2.47	0.44
51:1:2201:G:H2'	51:1:2202:U:O4'	2.17	0.44
51:1:2805:C:O2'	51:1:2806:C:H5'	2.18	0.44
58:B1:62:PHE:CD1	58:B1:62:PHE:N	2.86	0.44
58:B1:175:GLU:H	58:B1:175:GLU:HG3	1.66	0.44
58:B1:213:LYS:CA	58:B1:213:LYS:HE3	2.47	0.44
58:B1:1167:LYS:HZ2	58:B1:1170:LYS:HB2	1.81	0.44
15:O:29:ALA:HB2	15:O:87:LEU:HD11	1.99	0.44
18:R:43:LYS:HB2	18:R:46:GLU:HG2	2.00	0.44
29:d:147:LEU:HD11	29:d:170:ARG:HG2	1.98	0.44
34:j:34:ARG:NH2	34:j:39:LYS:O	2.51	0.44
42:r:80:ARG:HD3	51:1:566:U:O4	2.17	0.44
45:u:17:ASP:HA	45:u:20:LYS:HE2	2.00	0.44
51:1:208:C:O2'	51:1:209:C:H5'	2.18	0.44
51:1:336:C:O2'	51:1:337:C:H5'	2.18	0.44
51:1:704:G:H1'	51:1:727:A:H62	1.83	0.44
51:1:974:G:H1'	51:1:975:A:C8	2.52	0.44
51:1:2204:G:H2'	51:1:2205:A:H8	1.81	0.44
51:1:2241:A:H2'	51:1:2242:G:H8	1.82	0.44
51:1:2402:U:O2'	51:1:2403:C:H3'	2.17	0.44
51:1:2636:C:O2'	51:1:2637:U:H5'	2.16	0.44
53:3:146:G:N2	53:3:177:G:N7	2.66	0.44
53:3:1200:C:O2'	53:3:1205:U:O4	2.35	0.44
58:B1:33:TRP:HZ2	59:B2:1336:ASN:OD1	2.00	0.44
58:B1:395:LYS:NZ	58:B1:399:LYS:CD	2.74	0.44
63:5:8:U:H2'	63:5:13:C:H41	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:c:150:GLN:HE22	51:1:2032:G:H1'	1.82	0.44
38:n:103:ARG:HH11	51:1:1287:A:H5'	1.82	0.44
49:y:20:ASN:HA	49:y:23:ARG:HB2	1.99	0.44
51:1:1140:C:H2'	51:1:1141:U:H5'	1.97	0.44
51:1:1232:G:H2'	51:1:1233:C:C6	2.53	0.44
51:1:1288:G:C5	51:1:1327:A:C2	3.04	0.44
51:1:1670:C:O2'	51:1:1671:U:H5'	2.16	0.44
51:1:1868:C:H2'	51:1:1869:G:C8	2.52	0.44
51:1:1882:U:O2'	51:1:1883:U:H5'	2.17	0.44
53:3:142:G:O2'	53:3:196:A:N1	2.45	0.44
54:4:47:G:O2'	58:B1:464:ASP:OD1	2.30	0.44
58:B1:515:ARG:NH2	58:B1:718:SER:O	2.48	0.44
58:B1:804:ALA:HB2	58:B1:1256:ILE:CD1	2.48	0.44
58:B1:926:PRO:HB2	58:B1:1241:TYR:HE1	1.82	0.44
2:B:4:GLN:HG3	51:1:2054:A:C2	2.52	0.44
8:H:134:LYS:HB3	8:H:134:LYS:HE2	1.84	0.44
12:L:113:LYS:HB3	53:3:1297:G:H21	1.82	0.44
22:V:44:HIS:HB3	22:V:70:LYS:HG2	1.99	0.44
33:i:9:LYS:HD2	51:1:1061:U:OP1	2.18	0.44
33:i:131:THR:HB	51:1:1060:U:O4	2.18	0.44
47:w:37:ARG:HA	47:w:37:ARG:HD3	1.70	0.44
49:y:6:LEU:HD13	49:y:56:LEU:HD22	1.98	0.44
51:1:29:U:O5'	51:1:29:U:H6	2.01	0.44
51:1:432:A:O2'	51:1:433:C:H5'	2.17	0.44
51:1:819:A:H5'	51:1:973:A:N1	2.33	0.44
51:1:1680:U:C2'	51:1:1681:G:H5'	2.47	0.44
51:1:1717:A:C2	51:1:1718:G:H1'	2.53	0.44
51:1:1922:G:H2'	51:1:1923:U:O4'	2.18	0.44
51:1:2411:A:H2'	51:1:2412:A:C8	2.53	0.44
53:3:1005:A:OP2	53:3:1024:G:N2	2.48	0.44
55:8:16:DT:H2'	55:8:17:DC:C6	2.52	0.44
58:B1:111:THR:HG21	58:B1:303:VAL:HB	2.00	0.44
58:B1:128:LEU:CD2	58:B1:188:LEU:HB3	2.47	0.44
59:B2:11:ILE:HG22	59:B2:1172:LEU:HD11	1.99	0.44
21:U:28:ARG:NH1	53:3:390:U:O2'	2.46	0.44
21:U:79:ASN:HB2	21:U:82:ALA:HB3	1.99	0.44
29:d:68:ALA:HA	51:1:1255:U:C6	2.52	0.44
51:1:169:G:O2'	51:1:170:U:H5'	2.18	0.44
51:1:395:U:H2'	51:1:396:G:C8	2.52	0.44
51:1:1199:U:H2'	51:1:1200:C:C6	2.52	0.44
51:1:1452:G:H2'	51:1:1453:A:OP2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1605:C:H2'	51:1:1606:C:H5'	1.98	0.44
51:1:1625:C:H2'	51:1:1626:A:O4'	2.18	0.44
53:3:490:C:H2'	53:3:491:G:C8	2.53	0.44
53:3:1013:G:N2	53:3:1016:A:OP2	2.35	0.44
57:A1:78:ILE:HA	57:A1:81:ILE:HG22	2.00	0.44
58:B1:161:THR:H	58:B1:164:GLN:HB2	1.82	0.44
58:B1:1108:GLN:HG3	58:B1:1109:LEU:HD12	1.99	0.44
62:NG:161:SER:CB	62:NG:170:PRO:HA	2.47	0.44
65:h:2:DPP:NG	65:h:3:SER:N	2.65	0.44
4:D:12:ARG:HH12	51:1:465:G:P	2.41	0.44
7:G:122:ASP:N	7:G:122:ASP:OD1	2.51	0.44
10:J:24:VAL:HG23	10:J:26:GLY:H	1.82	0.44
41:q:82:LEU:HD22	41:q:87:VAL:HB	1.98	0.44
51:1:131:A:H2'	51:1:132:G:C8	2.53	0.44
51:1:255:A:H2'	51:1:256:A:O4'	2.18	0.44
51:1:388:G:N7	51:1:390:U:H2'	2.33	0.44
51:1:518:G:O2'	51:1:519:U:H5'	2.18	0.44
51:1:696:G:H2'	51:1:697:G:O4'	2.18	0.44
51:1:1412:U:H2'	51:1:1413:A:H8	1.81	0.44
51:1:1465:G:O2'	51:1:1466:U:H5'	2.17	0.44
51:1:1507:C:H2'	51:1:1508:A:O4'	2.18	0.44
51:1:2226:C:C5	51:1:2227:A:N7	2.86	0.44
53:3:162:A:C5	53:3:163:C:H1'	2.53	0.44
58:B1:222:LYS:HA	58:B1:222:LYS:HD2	1.33	0.44
58:B1:287:ALA:HB1	58:B1:288:PRO:HD2	1.99	0.44
59:B2:1246:ARG:HH11	59:B2:1266:GLY:HA2	1.82	0.44
27:b:7:PRO:HB3	27:b:13:ARG:HG3	1.99	0.44
42:r:1:MET:HE3	42:r:101:ILE:HB	1.99	0.44
51:1:68:G:H2'	51:1:69:C:O4'	2.18	0.44
51:1:150:U:H2'	51:1:151:C:C6	2.52	0.44
51:1:473:G:C2'	51:1:474:G:H5'	2.48	0.44
51:1:893:C:H2'	51:1:894:U:O4'	2.17	0.44
52:2:66:A:H4'	52:2:67:G:C8	2.53	0.44
53:3:75:G:H2'	53:3:76:G:C8	2.53	0.44
53:3:477:C:H2'	53:3:478:A:C8	2.52	0.44
55:8:12:DG:OP1	58:B1:795:TYR:CE1	2.71	0.44
58:B1:56:LEU:HD12	58:B1:56:LEU:HA	1.84	0.44
58:B1:388:ARG:HG2	58:B1:388:ARG:NH1	2.32	0.44
58:B1:894:VAL:HG22	58:B1:1258:ARG:HH11	1.83	0.44
58:B1:978:ARG:HD3	58:B1:999:TYR:H	1.83	0.44
63:5:69:G:H2'	63:5:70:G:C8	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:67:LEU:HD21	7:G:91:VAL:HG23	2.00	0.44
9:I:85:THR:HA	9:I:88:ASN:HB2	2.00	0.44
10:J:104:ILE:HD11	10:J:114:LEU:HD13	1.99	0.44
14:N:119:LYS:NZ	53:3:1350:A:N7	2.64	0.44
36:l:95:LEU:HD22	36:l:100:ILE:HD11	2.00	0.44
42:r:24:LYS:HE2	42:r:24:LYS:HB3	1.89	0.44
47:w:7:ARG:HA	47:w:7:ARG:HD3	1.77	0.44
47:w:12:SER:OG	47:w:13:GLU:N	2.51	0.44
51:1:30:G:O2'	51:1:31:C:H5'	2.17	0.44
51:1:150:U:O2'	51:1:151:C:H5'	2.18	0.44
51:1:648:G:H2'	51:1:649:G:H8	1.83	0.44
51:1:1565:C:C5	51:1:1567:G:C6	3.06	0.44
51:1:2312:U:O2'	51:1:2313:C:H5'	2.17	0.44
51:1:2671:G:C2	51:1:2672:U:C2	3.06	0.44
58:B1:107:LEU:HA	58:B1:276:ASN:ND2	2.33	0.44
58:B1:1026:PRO:HB2	58:B1:1028:ILE:HG23	2.00	0.44
59:B2:829:THR:HG23	59:B2:1059:ARG:HG2	2.00	0.44
60:W0:58:LEU:HD12	60:W0:59:ILE:HG12	2.00	0.44
63:5:13:C:H42	63:5:46:G:N2	2.16	0.44
5:E:48:MET:HE3	5:E:48:MET:HB3	1.86	0.43
14:N:104:THR:HG23	53:3:1180:A:H5'	1.99	0.43
17:Q:3:VAL:HA	17:Q:6:LEU:HD12	2.01	0.43
28:c:106:LYS:HA	28:c:176:ASP:HA	1.99	0.43
33:i:123:ALA:HB1	51:1:1081:U:H4'	2.00	0.43
35:k:38:ILE:HG22	35:k:61:VAL:HB	2.00	0.43
38:n:65:LEU:HD11	51:1:2870:C:H5"	2.00	0.43
43:s:67:ASP:OD1	43:s:67:ASP:N	2.39	0.43
51:1:43:G:H2'	51:1:44:A:C8	2.53	0.43
51:1:684:G:C2	51:1:794:A:C2	3.06	0.43
51:1:1306:C:N4	51:1:1606:C:H2'	2.34	0.43
63:5:27:G:H1	63:5:43:C:H42	1.64	0.43
63:5:63:G:H2'	63:5:64:A:C8	2.53	0.43
2:B:4:GLN:NE2	51:1:2056:G:O2'	2.52	0.43
8:H:134:LYS:HG2	8:H:138:GLN:HE21	1.82	0.43
9:I:125:ASN:HB2	9:I:127:ARG:HD3	2.01	0.43
11:K:38:ARG:HH11	11:K:61:LEU:HD21	1.83	0.43
11:K:75:GLU:O	11:K:79:ARG:N	2.47	0.43
18:R:1:ALA:HB3	18:R:56:ARG:HH22	1.82	0.43
25:Y:67:HIS:O	25:Y:69:ASN:ND2	2.51	0.43
27:b:20:ASN:HB3	27:b:23:LEU:HD13	2.01	0.43
31:f:106:LEU:O	31:f:151:ARG:NH2	2.37	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:l:69:ARG:CZ	51:1:2406:A:N3	2.82	0.43
51:1:28:A:H2'	51:1:29:U:C6	2.53	0.43
51:1:1092:C:H2'	51:1:1093:G:O4'	2.18	0.43
51:1:1095:A:H3'	51:1:1096:A:H8	1.83	0.43
51:1:1536:C:H4'	51:1:1537:G:N1	2.32	0.43
51:1:1747:U:H2'	51:1:1748:C:C6	2.53	0.43
51:1:1998:A:O2'	51:1:1999:C:H5'	2.18	0.43
53:3:560:A:H5"	53:3:561:U:H5'	2.00	0.43
57:A1:185:TYR:HA	57:A1:202:VAL:O	2.16	0.43
58:B1:731:ARG:HB3	59:B2:1105:SER:HB2	2.00	0.43
59:B2:1275:VAL:HG13	59:B2:1287:LEU:HD11	2.01	0.43
10:J:110:MET:HA	10:J:113:VAL:HG12	2.01	0.43
13:M:24:VAL:HG23	13:M:60:LEU:HB2	2.00	0.43
29:d:188:MET:HB2	29:d:192:ALA:HB3	1.99	0.43
38:n:58:ASP:OD1	38:n:63:ARG:NH2	2.44	0.43
50:z:30:ARG:HG2	50:z:33:HIS:HB2	1.99	0.43
51:1:107:G:H2'	51:1:108:G:H8	1.82	0.43
51:1:402:A:H2'	51:1:403:U:C5'	2.44	0.43
51:1:870:U:H2'	51:1:871:U:C5'	2.48	0.43
51:1:1010:A:H1'	51:1:1153:C:H1'	2.00	0.43
51:1:1049:C:H2'	51:1:1050:A:H5'	1.99	0.43
51:1:2102:G:H1	51:1:2187:U:H3	1.66	0.43
51:1:2137:U:H2'	51:1:2138:G:C8	2.50	0.43
53:3:1053:G:H4'	53:3:1054:C:H3'	2.00	0.43
58:B1:375:GLU:HB3	59:B2:1245:ALA:CB	2.48	0.43
59:B2:646:SER:OG	59:B2:647:ARG:N	2.51	0.43
2:B:8:THR:HG23	2:B:11:LYS:H	1.82	0.43
16:P:115:ILE:HD12	16:P:116:PRO:HD2	1.99	0.43
24:X:76:THR:OG1	24:X:77:ARG:N	2.51	0.43
25:Y:14:GLU:OE1	25:Y:17:ARG:NH2	2.52	0.43
27:b:140:VAL:HG12	27:b:191:LEU:HD23	2.01	0.43
27:b:153:LEU:HD23	51:1:1799:G:N2	2.33	0.43
48:x:36:ARG:NH2	51:1:2200:C:OP2	2.52	0.43
51:1:993:G:O2'	51:1:994:C:H5'	2.19	0.43
51:1:2562:U:C2'	51:1:2563:U:H5'	2.49	0.43
58:B1:45:ASN:HD22	58:B1:48:THR:H	1.65	0.43
58:B1:105:ILE:HD12	58:B1:242:LEU:CD2	2.44	0.43
58:B1:515:ARG:HH12	58:B1:724:MET:HG2	1.84	0.43
58:B1:824:PRO:HD3	58:B1:835:LEU:HD12	2.00	0.43
58:B1:850:LYS:HB3	58:B1:855:ASP:HB2	2.00	0.43
59:B2:538:LEU:HD13	59:B2:543:ALA:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:894:GLN:H	59:B2:894:GLN:HG3	1.49	0.43
59:B2:900:LYS:HE3	59:B2:900:LYS:HB3	1.62	0.43
64:6:69:C:H2'	64:6:70:G:H8	1.83	0.43
14:N:98:ARG:HG2	14:N:103:VAL:HG21	2.01	0.43
17:Q:50:LYS:HE2	17:Q:70:GLY:HA2	2.01	0.43
18:R:28:ARG:HH21	18:R:62:PHE:HB2	1.84	0.43
18:R:91:ARG:HD2	51:1:888:C:OP1	2.18	0.43
24:X:6:LYS:NZ	53:3:1314:C:OP1	2.52	0.43
30:e:171:ALA:C	30:e:173:ASP:H	2.26	0.43
34:j:138:GLN:H	34:j:138:GLN:HG2	1.62	0.43
45:u:76:THR:HB	45:u:78:LYS:HE3	1.99	0.43
51:1:161:A:C5	51:1:162:U:H5	2.35	0.43
51:1:192:C:H2'	51:1:193:U:H5'	1.99	0.43
51:1:720:U:H2'	51:1:721:A:H8	1.82	0.43
51:1:1087:G:H5"	51:1:1088:A:OP2	2.18	0.43
51:1:1383:A:H2	51:1:1406:U:H1'	1.83	0.43
51:1:2371:G:O2'	51:1:2372:U:H5'	2.19	0.43
51:1:2643:G:C2'	51:1:2644:G:H5'	2.49	0.43
53:3:680:C:H2'	53:3:681:A:H8	1.84	0.43
53:3:908:A:H2'	53:3:909:A:H8	1.83	0.43
53:3:944:G:N1	53:3:1338:G:OP2	2.34	0.43
53:3:1491:G:N1	65:h:2:DPP:HB3	2.33	0.43
57:A1:68:TYR:HE1	57:A1:79:LEU:HD13	1.82	0.43
58:B1:96:LYS:NZ	59:B2:1298:VAL:HG11	2.34	0.43
58:B1:847:ASP:OD1	58:B1:847:ASP:N	2.49	0.43
59:B2:444:ASP:OD1	59:B2:444:ASP:N	2.51	0.43
64:7:11:A:H2'	64:7:12:G:C8	2.52	0.43
8:H:51:VAL:HA	8:H:69:THR:HG22	2.00	0.43
8:H:76:ILE:HB	8:H:80:GLY:HA2	2.00	0.43
11:K:47:LEU:HG	11:K:56:LYS:HA	2.01	0.43
14:N:74:GLN:OE1	53:3:1249:C:O2'	2.35	0.43
15:O:88:MET:HE3	15:O:88:MET:HB3	1.70	0.43
17:Q:67:GLY:O	17:Q:98:ARG:NH1	2.52	0.43
18:R:107:THR:OG1	53:3:947:G:O3'	2.35	0.43
51:1:467:G:O2'	51:1:468:G:H5'	2.19	0.43
51:1:541:A:H2'	51:1:542:C:O4'	2.19	0.43
51:1:841:G:C2'	51:1:842:U:H5'	2.49	0.43
51:1:1258:U:H2'	51:1:1259:G:C8	2.54	0.43
51:1:1571:A:H2'	51:1:1572:A:C8	2.54	0.43
51:1:2305:U:O2'	51:1:2306:C:H5'	2.19	0.43
51:1:2584:U:O5'	51:1:2584:U:H6	2.02	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:8:3:DC:N1	55:8:4:DT:H72	2.34	0.43
57:A1:211:ILE:HD12	57:A1:211:ILE:HA	1.92	0.43
58:B1:362:ARG:HB2	58:B1:364:HIS:HD2	1.83	0.43
58:B1:434:ILE:HD11	59:B2:1274:GLU:CG	2.49	0.43
58:B1:1079:LYS:HD3	58:B1:1098:GLN:HB3	1.99	0.43
59:B2:11:ILE:O	59:B2:1149:TYR:OH	2.27	0.43
59:B2:300:ASP:OD1	59:B2:313:ALA:N	2.51	0.43
59:B2:590:PRO:HB2	59:B2:655:VAL:HG21	2.01	0.43
13:M:52:GLY:HA3	13:M:56:PRO:HA	2.01	0.43
27:b:99:GLU:OE2	51:1:1491:G:O2'	2.33	0.43
27:b:244:VAL:HG12	27:b:250:GLN:HA	2.01	0.43
28:c:62:LYS:NZ	51:1:2810:A:H5"	2.34	0.43
34:j:47:HIS:CG	51:1:536:G:H21	2.37	0.43
51:1:350:G:H2'	51:1:351:C:O4'	2.18	0.43
51:1:648:G:H5"	51:1:2352:A:H5"	2.00	0.43
51:1:721:A:H2'	51:1:722:A:C8	2.53	0.43
51:1:1287:A:H3'	51:1:1288:G:N2	2.33	0.43
51:1:1601:G:H2'	51:1:1602:U:H5'	2.01	0.43
51:1:1761:C:H2'	51:1:1762:A:O4'	2.18	0.43
51:1:2285:C:C2'	51:1:2286:G:H5'	2.48	0.43
51:1:2736:A:O2'	51:1:2737:G:H5'	2.19	0.43
51:1:2834:G:C2'	51:1:2835:A:H5'	2.49	0.43
53:3:422:C:H4'	53:3:423:G:C2	2.54	0.43
53:3:1513:A:H2'	53:3:1514:G:H8	1.83	0.43
58:B1:58:CYS:SG	58:B1:60:ARG:HG2	2.59	0.43
58:B1:68:TYR:O	58:B1:75:TYR:CD2	2.70	0.43
58:B1:213:LYS:HE3	58:B1:213:LYS:HA	1.99	0.43
58:B1:395:LYS:HZ2	58:B1:399:LYS:CE	2.31	0.43
58:B1:513:MET:HG3	58:B1:544:LEU:HD11	2.01	0.43
58:B1:1046:ILE:HG22	58:B1:1061:VAL:HA	2.00	0.43
29:d:127:GLU:O	29:d:156:ASN:ND2	2.51	0.43
31:f:84:LYS:HA	31:f:84:LYS:HD2	1.87	0.43
36:l:109:LYS:HE2	51:1:636:G:N7	2.34	0.43
51:1:128:C:H2'	51:1:129:C:C6	2.53	0.43
51:1:1054:A:H2'	51:1:1055:G:C8	2.54	0.43
51:1:1739:A:H2'	51:1:1740:G:O4'	2.19	0.43
51:1:1741:C:O2'	51:1:1742:U:H5'	2.19	0.43
51:1:1869:G:H3'	51:1:1870:C:C5'	2.38	0.43
51:1:2144:G:H1'	51:1:2147:A:N6	2.34	0.43
51:1:2152:G:N3	51:1:2152:G:H2'	2.33	0.43
51:1:2870:C:H2'	51:1:2871:U:H5'	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:506:VAL:HG23	58:B1:628:GLY:HA3	1.99	0.43
58:B1:559:ALA:HB3	58:B1:562:GLU:HB3	2.01	0.43
58:B1:1033:GLY:HA3	58:B1:1081:VAL:O	2.18	0.43
17:Q:113:ARG:NH1	53:3:36:C:O2'	2.51	0.43
21:U:31:ARG:HB2	53:3:310:G:H5"	2.01	0.43
25:Y:49:ALA:HA	25:Y:52:GLU:HG3	2.00	0.43
31:f:151:ARG:HD3	31:f:151:ARG:HA	1.88	0.43
34:j:47:HIS:CG	51:1:536:G:N2	2.87	0.43
38:n:39:PRO:HG2	51:1:1651:G:H4'	2.00	0.43
43:s:74:ILE:HB	43:s:105:VAL:HG23	1.99	0.43
51:1:12:U:O2	51:1:12:U:H2'	2.18	0.43
51:1:572:A:O5'	51:1:572:A:C8	2.72	0.43
51:1:644:A:C3'	51:1:645:C:H5"	2.49	0.43
51:1:918:A:H2'	51:1:919:U:O4'	2.19	0.43
51:1:1172:C:H2'	51:1:1173:U:O4'	2.19	0.43
51:1:1306:C:H41	51:1:1606:C:H2'	1.84	0.43
51:1:1335:C:H2'	51:1:1336:A:H8	1.84	0.43
51:1:2462:C:H2'	51:1:2463:C:C6	2.53	0.43
58:B1:102:MET:HG2	58:B1:246:PRO:CG	2.49	0.43
58:B1:220:ARG:NH1	58:B1:220:ARG:CG	2.82	0.43
59:B2:909:LYS:HB3	59:B2:910:ALA:H	1.60	0.43
9:I:119:HIS:O	9:I:145:ARG:NH2	2.52	0.43
16:P:126:ARG:O	53:3:796:C:H5"	2.19	0.43
17:Q:31:GLY:HA2	17:Q:56:LEU:HA	2.01	0.43
18:R:89:ARG:HB2	18:R:96:VAL:HG22	2.01	0.43
27:b:48:ILE:HG12	51:1:779:U:OP2	2.18	0.43
27:b:86:ARG:HD3	27:b:86:ARG:HA	1.84	0.43
27:b:206:LYS:HB2	51:1:729:G:C5	2.54	0.43
33:i:127:SER:OG	51:1:1059:G:N2	2.51	0.43
37:m:17:ASN:OD1	37:m:97:GLN:NE2	2.51	0.43
41:q:47:ARG:NH2	41:q:51:GLN:OE1	2.51	0.43
42:r:62:GLU:HG3	42:r:97:LYS:HB3	2.01	0.43
48:x:1:SER:OG	51:1:1365:A:OP2	2.35	0.43
49:y:30:MET:HE3	49:y:30:MET:HB3	1.83	0.43
51:1:108:G:O2'	51:1:109:C:H5'	2.19	0.43
51:1:156:A:O2'	51:1:157:C:H5'	2.18	0.43
51:1:623:C:O2'	51:1:624:C:H5'	2.18	0.43
51:1:864:G:C2'	51:1:865:C:H5'	2.48	0.43
51:1:871:U:H2'	51:1:872:U:C6	2.54	0.43
51:1:1230:A:H2'	51:1:1231:U:O4'	2.19	0.43
51:1:1426:G:C6	51:1:1427:A:C6	3.06	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1433:A:H2'	51:1:1434:A:C1'	2.49	0.43
51:1:1907:G:C5	51:1:1908:C:C4	3.07	0.43
51:1:2024:G:H2'	51:1:2025:C:C6	2.54	0.43
51:1:2073:C:C2'	51:1:2074:U:H5'	2.49	0.43
53:3:1209:C:O2'	53:3:1214:C:N4	2.52	0.43
57:A1:33:ARG:HE	57:A1:33:ARG:HB3	1.56	0.43
57:A1:192:VAL:HG12	57:A1:193:GLU:H	1.83	0.43
58:B1:242:LEU:C	58:B1:242:LEU:HD23	2.44	0.43
58:B1:244:VAL:HA	58:B1:269:TYR:OH	2.19	0.43
58:B1:434:ILE:HD11	59:B2:1274:GLU:HG3	1.99	0.43
59:B2:22:LEU:HB3	59:B2:655:VAL:HG11	2.01	0.43
59:B2:616:ILE:HG13	59:B2:652:TYR:HB2	2.01	0.43
9:I:55:ARG:HA	9:I:55:ARG:HD3	1.88	0.42
9:I:152:SER:HB3	53:3:436:C:H4'	2.00	0.42
20:T:66:LEU:HB3	20:T:77:TYR:HE1	1.84	0.42
23:W:33:THR:HG22	23:W:37:LYS:H	1.83	0.42
32:g:1:MET:N	32:g:20:ASN:OD1	2.40	0.42
40:p:63:ILE:HA	40:p:68:GLY:HA2	2.01	0.42
41:q:111:LYS:HD2	41:q:111:LYS:HA	1.81	0.42
49:y:11:VAL:HA	49:y:14:LEU:HB2	2.00	0.42
50:z:37:ARG:HD3	50:z:37:ARG:HA	1.83	0.42
51:1:365:U:H2'	51:1:366:C:C6	2.53	0.42
51:1:528:A:C2	51:1:2043:C:H4'	2.53	0.42
51:1:783:A:C8	51:1:783:A:H3'	2.54	0.42
51:1:1246:A:H2'	51:1:1247:A:O4'	2.19	0.42
51:1:2812:G:O2'	51:1:2813:A:H5'	2.19	0.42
53:3:490:C:H2'	53:3:491:G:H8	1.84	0.42
53:3:501:C:H2'	53:3:502:A:C8	2.53	0.42
53:3:1442:G:H1	53:3:1460:C:H42	1.66	0.42
58:B1:111:THR:CG2	58:B1:300:GLN:HA	2.48	0.42
58:B1:141:PHE:CD2	58:B1:297:ARG:HB2	2.54	0.42
58:B1:395:LYS:HE3	58:B1:395:LYS:HB3	1.45	0.42
21:U:4:ILE:HG12	21:U:21:VAL:HG22	2.00	0.42
31:f:175:LYS:HD3	31:f:175:LYS:HA	1.70	0.42
33:i:91:LYS:HE3	33:i:91:LYS:HB2	1.72	0.42
33:i:129:GLU:HG3	33:i:139:VAL:HG21	2.00	0.42
34:j:51:GLY:HA3	34:j:121:LYS:HE2	2.00	0.42
41:q:54:ARG:HD3	51:1:1155:A:H5"	2.01	0.42
47:w:14:ALA:HB1	51:1:2271:G:OP1	2.19	0.42
49:y:19:LEU:HD23	49:y:19:LEU:HA	1.86	0.42
50:z:38:GLU:CD	51:1:928:A:H5'	2.43	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:94:A:H2'	51:1:95:A:C8	2.54	0.42
51:1:481:G:H2'	51:1:482:A:OP2	2.18	0.42
51:1:859:G:HO2'	51:1:860:U:P	2.42	0.42
51:1:2660:A:H2'	51:1:2661:G:O4'	2.18	0.42
58:B1:797:THR:HG22	58:B1:924:GLY:HA3	2.01	0.42
59:B2:678:ARG:HA	59:B2:678:ARG:HD3	1.84	0.42
59:B2:811:ASN:ND2	59:B2:1098:LEU:O	2.51	0.42
59:B2:1313:HIS:CD2	60:W0:31:GLN:HE22	2.37	0.42
8:H:1:GLY:HA2	53:3:1060:U:C5	2.54	0.42
8:H:106:ARG:HG2	8:H:107:LYS:HG3	2.01	0.42
24:X:36:ARG:HB3	53:3:1320:C:N4	2.34	0.42
26:Z:39:LYS:HA	26:Z:42:THR:HB	2.02	0.42
29:d:47:LYS:HE2	51:1:451:U:H4'	2.00	0.42
43:s:87:PRO:HG3	51:1:1615:C:C6	2.54	0.42
51:1:595:C:H2'	51:1:596:U:C6	2.54	0.42
51:1:712:G:C2'	51:1:713:G:H5'	2.49	0.42
51:1:955:U:H2'	51:1:956:G:H5'	2.02	0.42
51:1:1487:U:H2'	51:1:1488:C:C6	2.54	0.42
51:1:1751:U:H2'	51:1:1752:C:C6	2.54	0.42
51:1:1864:U:O5'	51:1:1864:U:H6	2.02	0.42
51:1:2106:U:H2'	51:1:2107:G:O4'	2.18	0.42
51:1:2314:A:H2'	51:1:2315:G:H8	1.78	0.42
51:1:2482:A:H2'	51:1:2483:C:C6	2.54	0.42
51:1:2741:A:N6	51:1:2742:G:C2	2.88	0.42
53:3:1531:A:C2'	53:3:1532:U:H5'	2.50	0.42
58:B1:243:PRO:HG2	59:B2:1332:SER:C	2.44	0.42
58:B1:385:LEU:CD2	58:B1:390:LEU:HB2	2.50	0.42
9:I:53:GLN:HA	9:I:198:LEU:HD12	2.01	0.42
29:d:53:THR:HB	51:1:452:G:H8	1.85	0.42
37:m:69:PRO:HA	37:m:94:ALA:HB2	2.01	0.42
48:x:71:ARG:NH2	48:x:77:TYR:OH	2.42	0.42
51:1:115:C:O2'	51:1:116:C:H5'	2.20	0.42
51:1:623:C:H2'	51:1:624:C:H6	1.85	0.42
51:1:758:C:H2'	51:1:759:G:H8	1.84	0.42
51:1:1316:U:O2'	51:1:1317:G:H5'	2.20	0.42
51:1:1500:G:H2'	51:1:1501:G:H8	1.84	0.42
51:1:1520:U:C2'	51:1:1521:G:H5'	2.49	0.42
51:1:2292:U:H2'	51:1:2293:G:C8	2.55	0.42
51:1:2839:G:O2'	51:1:2840:C:H5'	2.18	0.42
53:3:1348:U:H2'	53:3:1349:A:H8	1.84	0.42
58:B1:24:LEU:HD21	58:B1:116:PHE:CE2	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:568:SER:HB3	58:B1:570:LYS:NZ	2.34	0.42
59:B2:1157:GLN:HG3	59:B2:1159:VAL:HG13	2.00	0.42
14:N:113:LYS:HA	14:N:120:ALA:HB2	2.01	0.42
25:Y:4:LYS:HA	25:Y:4:LYS:HD3	1.86	0.42
36:l:108:ALA:HB3	36:l:125:LEU:HG	2.01	0.42
38:n:16:HIS:CD2	51:1:1275:A:C2	3.07	0.42
51:1:90:U:H2'	51:1:91:A:C8	2.55	0.42
51:1:629:G:H2'	51:1:630:G:O4'	2.19	0.42
51:1:705:A:C2	51:1:727:A:H1'	2.54	0.42
51:1:1914:C:O2	51:1:1914:C:O4'	2.38	0.42
51:1:2216:G:H2'	51:1:2217:G:C8	2.54	0.42
53:3:460:A:H2'	53:3:461:A:C8	2.54	0.42
58:B1:59:ALA:HB1	58:B1:90:VAL:HG23	2.01	0.42
2:B:39:ARG:HD2	2:B:39:ARG:HA	1.91	0.42
19:S:44:VAL:O	19:S:48:GLN:NE2	2.50	0.42
24:X:51:HIS:HB2	24:X:56:HIS:CE1	2.55	0.42
29:d:106:LYS:HG3	29:d:200:LEU:HD13	2.01	0.42
35:k:7:MET:HE2	35:k:18:ARG:HD3	2.01	0.42
35:k:17:ARG:HD3	35:k:47:ILE:HD11	2.02	0.42
46:v:62:THR:O	46:v:62:THR:OG1	2.35	0.42
51:1:8:C:C2	51:1:9:G:C8	3.07	0.42
51:1:837:C:O5'	51:1:837:C:H6	2.02	0.42
51:1:1901:A:C2	51:1:1902:C:C5	3.08	0.42
51:1:1917:U:H2'	51:1:1918:A:H5'	2.01	0.42
51:1:1931:U:C5	51:1:1968:G:N2	2.88	0.42
51:1:1983:G:HO2'	51:1:1984:G:H5'	1.83	0.42
51:1:2583:G:H8	51:1:2583:G:O5'	2.03	0.42
55:8:15:DC:H5'	59:B2:1269:ARG:HD3	2.01	0.42
57:A1:76:GLU:HB3	57:A1:80:GLU:HB3	2.01	0.42
58:B1:137:ARG:HA	58:B1:142:GLU:HG2	2.02	0.42
58:B1:394:ILE:O	58:B1:394:ILE:HG13	2.19	0.42
58:B1:950:ILE:HB	58:B1:1018:ALA:HB3	2.01	0.42
58:B1:1024:THR:HG23	58:B1:1123:ARG:HA	2.00	0.42
59:B2:1278:LEU:HA	59:B2:1278:LEU:HD23	1.86	0.42
8:H:61:LYS:HE2	8:H:96:VAL:HG12	2.01	0.42
11:K:40:GLU:HB3	11:K:61:LEU:HB3	2.02	0.42
28:c:90:PHE:HD1	28:c:94:GLN:HG2	1.83	0.42
37:m:123:LYS:HE2	51:1:2467:C:O2	2.20	0.42
46:v:14:LYS:HB2	52:2:98:G:H1	1.84	0.42
51:1:598:U:H2'	51:1:599:A:C8	2.54	0.42
51:1:892:A:O2'	51:1:893:C:H5'	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1197:G:C2’	51:1:1198:U:H5’	2.50	0.42
51:1:1204:A:H4’	51:1:1205:A:H5”	2.02	0.42
51:1:1327:A:H2’	51:1:1328:A:H5’	2.01	0.42
51:1:1336:A:H2’	51:1:1337:G:H8	1.85	0.42
51:1:1668:A:C4’	51:1:1669:A:H5’	2.36	0.42
51:1:1710:G:H2’	51:1:1711:A:H8	1.85	0.42
51:1:2852:G:H2’	51:1:2853:C:O4’	2.20	0.42
58:B1:245:LEU:CG	58:B1:246:PRO:HD2	2.48	0.42
58:B1:388:ARG:HG2	58:B1:388:ARG:HH11	1.84	0.42
58:B1:586:GLY:HA3	58:B1:612:LEU:HD11	2.01	0.42
58:B1:1289:ASN:O	58:B1:1293:GLU:HB2	2.20	0.42
59:B2:478:ARG:HD2	59:B2:492:MET:HA	2.02	0.42
59:B2:699:LEU:HG	59:B2:799:ASN:HD22	1.85	0.42
14:N:105:ARG:NH1	14:N:109:GLN:OE1	2.49	0.42
16:P:17:ASP:OD1	16:P:17:ASP:N	2.44	0.42
18:R:87:GLY:O	18:R:91:ARG:N	2.52	0.42
21:U:68:SER:OG	21:U:69:ASP:N	2.53	0.42
39:o:16:ARG:HD3	39:o:16:ARG:HA	1.84	0.42
51:1:4:U:O2’	51:1:5:A:H5’	2.20	0.42
51:1:191:A:C2	51:1:192:C:C4	3.08	0.42
51:1:256:A:C2’	51:1:257:C:H5’	2.50	0.42
51:1:439:A:H2’	51:1:440:C:O4’	2.19	0.42
51:1:1381:G:C2’	51:1:1382:G:H5’	2.49	0.42
51:1:1642:G:H2’	51:1:1643:G:O4’	2.19	0.42
51:1:2091:C:H5	51:1:2092:U:O2’	2.02	0.42
51:1:2287:A:C4	51:1:2289:G:N7	2.88	0.42
51:1:2713:U:C3’	51:1:2714:G:H5’	2.27	0.42
51:1:2741:A:H2’	51:1:2742:G:C5’	2.50	0.42
53:3:987:G:H2’	53:3:988:G:H8	1.84	0.42
58:B1:246:PRO:HA	58:B1:247:PRO:HD3	1.96	0.42
58:B1:820:ILE:HD11	58:B1:822:MET:HE2	2.02	0.42
59:B2:557:ARG:HB3	59:B2:587:LEU:HD13	2.00	0.42
62:NG:130:PRO:HA	62:NG:148:VAL:O	2.20	0.42
8:H:19:SER:HB2	8:H:39:ARG:HH21	1.85	0.42
28:c:134:HIS:HE1	51:1:1675:C:C4	2.38	0.42
32:g:11:ASN:ND2	51:1:2095:A:OP1	2.53	0.42
39:o:40:ILE:HA	39:o:47:VAL:HA	2.00	0.42
44:t:40:LYS:HE3	44:t:60:THR:HG22	2.01	0.42
51:1:1020:A:O5’	51:1:1020:A:H8	2.02	0.42
51:1:1048:A:C2’	51:1:1049:C:H5’	2.49	0.42
51:1:1505:A:O2’	51:1:1506:U:H5’	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1964:G:H4'	51:1:1965:C:OP2	2.19	0.42
51:1:1993:U:O2	51:1:1993:U:H2'	2.18	0.42
51:1:2098:U:C2'	51:1:2099:U:H5'	2.49	0.42
51:1:2160:C:H2'	51:1:2161:C:O4'	2.20	0.42
51:1:2895:G:H2'	51:1:2896:C:H6	1.84	0.42
53:3:1513:A:H2'	53:3:1514:G:C8	2.55	0.42
58:B1:279:LEU:HD13	58:B1:299:LEU:HD13	2.02	0.42
59:B2:998:LEU:HD21	59:B2:1015:ALA:HB2	2.02	0.42
62:NG:135:ARG:O	62:NG:178:VAL:CA	2.68	0.42
63:5:4:C:H2'	63:5:5:G:C8	2.55	0.42
8:H:110:LEU:HD21	8:H:143:LEU:HB3	2.02	0.42
13:M:107:LYS:HA	13:M:107:LYS:HD2	1.85	0.42
17:Q:98:ARG:HA	17:Q:103:CYS:HB2	2.02	0.42
18:R:32:ILE:HG23	18:R:58:GLU:HB3	2.02	0.42
27:b:176:ARG:HA	27:b:176:ARG:HD2	1.94	0.42
33:i:78:LEU:HA	33:i:81:LYS:HB3	2.02	0.42
43:s:9:HIS:H	43:s:102:HIS:CE1	2.38	0.42
50:z:57:GLU:OE1	50:z:57:GLU:N	2.53	0.42
51:1:196:A:N3	51:1:196:A:H2'	2.35	0.42
51:1:397:U:O5'	51:1:397:U:H6	2.03	0.42
51:1:673:C:O2'	51:1:674:G:H5'	2.19	0.42
51:1:908:C:O2'	51:1:909:A:H5'	2.20	0.42
51:1:1314:C:H42	51:1:1338:G:H1	1.68	0.42
51:1:1416:G:H2'	51:1:1417:C:H6	1.82	0.42
51:1:1488:C:H2'	51:1:1489:C:H6	1.84	0.42
51:1:1594:U:O2'	51:1:1595:C:H5'	2.20	0.42
51:1:1936:A:N6	51:1:1963:U:H3	2.17	0.42
51:1:2701:U:H3'	51:1:2702:G:H5"	2.01	0.42
51:1:2848:G:C2	51:1:2867:G:C4	3.08	0.42
53:3:73:C:H2'	53:3:74:A:C8	2.55	0.42
53:3:1253:G:H2'	53:3:1254:A:H8	1.83	0.42
58:B1:616:PRO:HA	58:B1:619:ILE:HG22	2.02	0.42
59:B2:469:VAL:HA	59:B2:472:GLU:HG2	2.01	0.42
59:B2:741:MET:SD	59:B2:974:ARG:NH2	2.93	0.42
9:I:101:VAL:HG22	9:I:106:PHE:HB2	2.01	0.41
12:L:68:VAL:HG23	12:L:99:ALA:HB1	2.02	0.41
13:M:42:GLU:HG2	13:M:100:ILE:HG21	2.02	0.41
43:s:70:LYS:N	43:s:108:SER:O	2.45	0.41
51:1:422:A:H2'	51:1:423:A:O4'	2.20	0.41
51:1:481:G:H1'	51:1:506:G:H22	1.84	0.41
51:1:552:U:O2'	51:1:553:G:H5'	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:573:U:O2'	51:1:574:A:H3'	2.20	0.41
51:1:638:G:H2'	51:1:639:U:C6	2.55	0.41
51:1:1719:G:O2'	51:1:1720:U:H5'	2.20	0.41
51:1:2612:C:O5'	51:1:2612:C:H6	2.03	0.41
51:1:2697:G:C2	51:1:2711:A:C2	3.08	0.41
53:3:75:G:H1	53:3:95:C:H42	1.67	0.41
53:3:497:G:H2'	53:3:498:A:C8	2.55	0.41
53:3:1243:C:H2'	53:3:1244:G:H8	1.84	0.41
53:3:1382:C:H2'	53:3:1383:C:H6	1.84	0.41
58:B1:390:LEU:N	58:B1:390:LEU:HD13	2.35	0.41
58:B1:609:TYR:HD2	58:B1:610:ARG:NH1	2.17	0.41
58:B1:820:ILE:HG12	58:B1:884:SER:HB2	2.01	0.41
59:B2:524:ILE:HD12	59:B2:712:SER:HB2	2.02	0.41
17:Q:29:LYS:HA	17:Q:29:LYS:HD3	1.65	0.41
18:R:11:HIS:HA	18:R:43:LYS:HD2	2.01	0.41
22:V:11:VAL:HG23	22:V:55:GLY:H	1.85	0.41
38:n:71:ARG:HE	38:n:71:ARG:HB3	1.68	0.41
51:1:191:A:H2'	51:1:192:C:C6	2.56	0.41
51:1:510:C:OP1	51:1:510:C:H3'	2.20	0.41
51:1:1024:G:H21	51:1:1144:A:C4'	2.33	0.41
51:1:1034:G:C6	51:1:1035:U:N3	2.88	0.41
51:1:1589:U:H2'	51:1:1590:A:C8	2.55	0.41
51:1:1721:G:H1'	51:1:1739:A:N6	2.35	0.41
51:1:1886:U:O2'	51:1:1887:C:H5'	2.20	0.41
51:1:2092:U:H5	51:1:2199:A:C2	2.30	0.41
51:1:2389:G:H5"	51:1:2390:U:H5'	2.01	0.41
53:3:28:A:O2'	53:3:296:U:OP1	2.33	0.41
53:3:842:U:H5"	53:3:846:G:C6	2.55	0.41
58:B1:282:LEU:HA	58:B1:282:LEU:HD12	1.79	0.41
58:B1:390:LEU:HD13	58:B1:390:LEU:H	1.85	0.41
58:B1:515:ARG:HG2	58:B1:516:ASP:H	1.85	0.41
59:B2:741:MET:HE3	59:B2:974:ARG:HH12	1.85	0.41
62:NG:175:PHE:O	62:NG:178:VAL:O	2.38	0.41
15:O:57:VAL:HG22	15:O:58:ASN:H	1.85	0.41
41:q:57:ARG:NH1	51:1:1154:G:OP2	2.52	0.41
44:t:68:LYS:HD3	44:t:68:LYS:HA	1.83	0.41
51:1:284:U:H2'	51:1:285:G:C8	2.55	0.41
51:1:518:G:C2	51:1:519:U:C2	3.08	0.41
51:1:535:G:O2'	51:1:536:G:H5'	2.20	0.41
51:1:809:G:C6	51:1:810:U:C4	3.08	0.41
51:1:1063:G:N2	51:1:1075:C:H41	2.18	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1343:G:N3	51:1:1343:G:H2'	2.35	0.41
51:1:1727:C:O2'	51:1:1728:C:H5'	2.20	0.41
51:1:1812:U:H5"	51:1:1812:U:H6	1.85	0.41
53:3:322:C:O2	53:3:332:G:N2	2.52	0.41
54:4:46:G:H5'	59:B2:688:GLN:HE22	1.85	0.41
58:B1:144:TYR:CE1	58:B1:162:GLU:OE1	2.73	0.41
58:B1:1177:ILE:HD12	58:B1:1186:TYR:HE2	1.85	0.41
58:B1:1350:ASN:HA	58:B1:1353:VAL:HG12	2.02	0.41
1:A:2:LYS:NZ	52:2:42:C:OP2	2.39	0.41
1:A:62:LYS:HE3	1:A:62:LYS:HB3	1.89	0.41
5:E:28:LEU:HD23	5:E:28:LEU:HA	1.83	0.41
6:F:8:LYS:NZ	51:1:2467:C:OP1	2.37	0.41
14:N:30:ASN:HD21	14:N:66:VAL:H	1.66	0.41
18:R:16:ILE:O	18:R:19:THR:OG1	2.26	0.41
33:i:25:PRO:HG3	51:1:1095:A:N1	2.34	0.41
51:1:137:U:H3	51:1:142:A:H61	1.69	0.41
51:1:198:C:N4	51:1:248:G:H1	2.14	0.41
51:1:849:A:H2'	51:1:850:U:C5	2.54	0.41
51:1:1045:C:H1'	51:1:1047:G:C2	2.56	0.41
51:1:1070:A:H5'	51:1:1072:C:OP1	2.20	0.41
51:1:1176:U:H2'	51:1:1177:G:N9	2.35	0.41
51:1:1213:A:C1'	51:1:1237:A:C2	3.03	0.41
51:1:1600:C:H2'	51:1:1601:G:C8	2.55	0.41
51:1:1750:G:H2'	51:1:1751:U:C6	2.56	0.41
51:1:2248:C:C2'	51:1:2249:U:H5'	2.49	0.41
53:3:370:C:H2'	53:3:371:A:H8	1.86	0.41
53:3:440:C:H2'	53:3:441:A:H8	1.85	0.41
58:B1:139:LEU:HD23	58:B1:139:LEU:HA	1.89	0.41
58:B1:239:LEU:HD23	58:B1:239:LEU:N	2.36	0.41
58:B1:576:ARG:HD3	58:B1:593:ASN:HA	2.03	0.41
58:B1:848:VAL:HB	58:B1:858:VAL:HG22	2.02	0.41
58:B1:1050:THR:HG23	58:B1:1057:SER:HB3	2.03	0.41
63:5:9:A:H1'	63:5:45:U:H2'	2.01	0.41
8:H:37:LYS:HD3	8:H:37:LYS:HA	1.81	0.41
8:H:178:ARG:NH1	53:3:1112:C:O2'	2.54	0.41
18:R:7:ASN:CG	18:R:9:PRO:HD2	2.45	0.41
23:W:52:ARG:HE	23:W:52:ARG:HB2	1.66	0.41
26:Z:9:GLU:HB3	26:Z:10:PRO:HD3	2.03	0.41
30:e:77:LYS:HE2	30:e:77:LYS:HB2	1.89	0.41
33:i:109:ALA:O	33:i:113:ALA:N	2.53	0.41
36:l:39:LYS:HZ3	51:1:942:G:P	2.42	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:q:13:HIS:ND1	51:1:582:A:OP1	2.45	0.41
50:z:31:ILE:HD11	51:1:989:G:P	2.61	0.41
51:1:127:A:H5"	51:1:128:C:O4'	2.21	0.41
51:1:281:C:H2'	51:1:282:A:C8	2.54	0.41
51:1:597:G:H2'	51:1:598:U:H6	1.85	0.41
51:1:724:U:H2'	51:1:725:G:C8	2.56	0.41
51:1:877:A:H2'	51:1:878:A:H5"	2.02	0.41
51:1:903:C:H2'	51:1:904:G:H8	1.86	0.41
51:1:1077:A:H3'	51:1:1078:U:H4'	2.02	0.41
51:1:1239:G:H2'	51:1:1240:U:O4'	2.21	0.41
51:1:1283:G:N2	51:1:1285:A:H3'	2.35	0.41
51:1:1553:A:O2'	51:1:1554:U:H5	2.02	0.41
51:1:2411:A:O2'	51:1:2412:A:H5'	2.20	0.41
51:1:2467:C:N4	51:1:2468:A:C6	2.89	0.41
53:3:1124:G:H1	53:3:1149:C:H42	1.68	0.41
55:8:14:DC:C2	55:8:15:DC:C5	3.09	0.41
58:B1:1002:VAL:N	58:B1:1019:ASN:O	2.45	0.41
59:B2:125:GLY:H	59:B2:495:ALA:HB1	1.84	0.41
22:V:7:LEU:N	22:V:59:GLU:OE2	2.53	0.41
29:d:145:ASP:HA	29:d:166:LYS:HB3	2.02	0.41
43:s:29:VAL:HG21	43:s:55:ILE:HG21	2.03	0.41
44:t:28:ASN:HD21	44:t:91:GLN:HB3	1.85	0.41
51:1:191:A:C6	51:1:192:C:N4	2.88	0.41
51:1:259:G:O2'	51:1:260:G:H5'	2.20	0.41
51:1:532:A:H2'	51:1:532:A:N3	2.34	0.41
51:1:630:G:N2	51:1:634:C:C4	2.88	0.41
51:1:1092:C:O2'	51:1:1093:G:H5'	2.21	0.41
51:1:1418:G:H1'	51:1:1581:G:N2	2.36	0.41
51:1:1452:G:C2'	51:1:1453:A:OP2	2.68	0.41
51:1:1614:A:C8	51:1:1614:A:O5'	2.73	0.41
51:1:1767:G:N2	51:1:1986:C:C2	2.89	0.41
51:1:2379:G:H2'	51:1:2380:C:C6	2.56	0.41
51:1:2628:C:H3'	51:1:2629:U:H5'	2.01	0.41
51:1:2743:U:H2'	51:1:2744:G:C4'	2.50	0.41
53:3:958:A:N3	53:3:985:C:O2'	2.48	0.41
57:A2:48:LEU:HA	57:A2:48:LEU:HD23	1.86	0.41
58:B1:472:LEU:HD11	59:B2:1294:LYS:HG2	2.02	0.41
58:B1:1272:SER:OG	58:B1:1273:ASP:N	2.53	0.41
59:B2:979:LEU:HD11	59:B2:1011:LEU:HD11	2.03	0.41
7:G:190:SER:OG	7:G:191:ASP:N	2.53	0.41
9:I:24:VAL:HG22	53:3:409:U:H4'	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:101:VAL:HG13	9:I:113:ALA:HB1	2.03	0.41
15:O:12:ALA:HB2	15:O:96:VAL:HG13	2.03	0.41
15:O:89:ARG:NH2	62:NG:165:PHE:H	2.18	0.41
16:P:30:ILE:HG23	16:P:45:THR:HB	2.02	0.41
24:X:49:ALA:HA	24:X:58:PRO:HA	2.03	0.41
25:Y:75:LYS:O	25:Y:79:THR:OG1	2.34	0.41
27:b:57:HIS:ND1	51:1:1567:G:H5'	2.35	0.41
33:i:100:ILE:HB	33:i:139:VAL:HG12	2.03	0.41
39:o:8:ILE:O	39:o:12:THR:OG1	2.33	0.41
41:q:23:TYR:HB3	41:q:27:ARG:HB2	2.02	0.41
45:u:4:ILE:HD13	45:u:69:VAL:HG23	2.03	0.41
46:v:58:SER:OG	46:v:59:GLU:OE1	2.36	0.41
51:1:79:C:O2	51:1:346:A:H2	2.03	0.41
51:1:235:U:H2'	51:1:236:C:H6	1.86	0.41
51:1:543:G:C3'	51:1:544:C:H5"	2.51	0.41
51:1:759:G:H2'	51:1:760:G:H8	1.83	0.41
51:1:924:G:O2'	51:1:925:A:H5'	2.21	0.41
51:1:1822:C:H2'	51:1:1823:G:H8	1.85	0.41
51:1:1868:C:H2'	51:1:1869:G:H8	1.86	0.41
51:1:2335:A:N7	51:1:2337:G:C5	2.88	0.41
51:1:2660:A:H2'	51:1:2661:G:C8	2.56	0.41
53:3:692:U:O2'	53:3:694:A:N7	2.39	0.41
57:A2:104:LYS:O	57:A2:139:SER:OG	2.36	0.41
58:B1:109:SER:HA	58:B1:110:PRO:HD3	1.96	0.41
58:B1:109:SER:CB	58:B1:296:LYS:HG2	2.51	0.41
59:B2:746:ALA:O	59:B2:974:ARG:NH2	2.45	0.41
59:B2:1069:ARG:NH2	59:B2:1114:GLU:OE2	2.44	0.41
16:P:124:LYS:H	16:P:124:LYS:HG3	1.58	0.41
29:d:55:SER:OG	51:1:797:G:OP1	2.28	0.41
30:e:124:ARG:NH2	51:1:2315:G:N3	2.68	0.41
51:1:170:U:H2'	51:1:171:U:C6	2.55	0.41
51:1:197:A:H2	51:1:2434:A:H62	1.69	0.41
51:1:431:U:O5'	51:1:431:U:H6	2.03	0.41
51:1:688:U:H6	51:1:688:U:O5'	2.03	0.41
51:1:722:A:H2'	51:1:723:C:C6	2.56	0.41
51:1:724:U:H2'	51:1:725:G:O4'	2.21	0.41
51:1:940:G:H2'	51:1:941:A:C4'	2.51	0.41
51:1:1048:A:N6	51:1:1111:A:C8	2.89	0.41
51:1:1150:C:C2	51:1:1151:A:C8	3.09	0.41
51:1:1328:A:H2'	51:1:1330:C:C4	2.56	0.41
51:1:1334:G:C6	51:1:1335:C:C4	3.09	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1467:U:C4	51:1:1468:U:C4	3.08	0.41
51:1:1955:U:H5	51:1:2557:G:N2	2.19	0.41
51:1:2098:U:H2'	51:1:2099:U:H5'	2.03	0.41
51:1:2437:G:O4'	51:1:2598:A:C2	2.73	0.41
51:1:2615:U:O2	51:1:2615:U:H2'	2.20	0.41
53:3:146:G:H2'	53:3:147:G:C8	2.56	0.41
58:B1:930:LEU:HA	58:B1:1244:GLN:HG3	2.02	0.41
59:B2:805:MET:HE3	59:B2:805:MET:HB2	1.86	0.41
9:I:87:GLU:N	9:I:87:GLU:OE2	2.53	0.41
19:S:15:LEU:HB3	19:S:54:SER:HB3	2.02	0.41
27:b:58:LYS:HB2	27:b:58:LYS:HE3	1.87	0.41
30:e:39:VAL:HG12	30:e:85:GLY:HA2	2.03	0.41
30:e:71:LYS:HA	30:e:71:LYS:HD2	1.78	0.41
31:f:21:GLN:NE2	31:f:37:ASN:O	2.54	0.41
33:i:41:PHE:O	33:i:45:THR:N	2.54	0.41
33:i:77:VAL:HA	33:i:80:LYS:HE2	2.02	0.41
42:r:4:VAL:HG23	42:r:39:LEU:HB2	2.03	0.41
51:1:224:U:O4	51:1:420:C:H5'	2.21	0.41
51:1:309:A:N3	51:1:329:G:O2'	2.53	0.41
51:1:490:C:O2'	51:1:491:G:P	2.79	0.41
51:1:511:U:H2'	51:1:512:G:H5'	2.03	0.41
51:1:518:G:H2'	51:1:519:U:C6	2.55	0.41
51:1:679:C:H2'	51:1:680:C:C6	2.56	0.41
51:1:706:A:H2'	51:1:707:G:C5'	2.51	0.41
51:1:724:U:C4	51:1:725:G:C6	3.08	0.41
51:1:914:G:H5'	51:1:915:C:OP2	2.21	0.41
51:1:1038:G:H2'	51:1:1039:A:H8	1.83	0.41
51:1:1165:A:O2'	51:1:1166:G:H5'	2.21	0.41
51:1:1412:U:H2'	51:1:1413:A:C8	2.56	0.41
51:1:1482:G:H2'	51:1:1483:G:H8	1.85	0.41
51:1:1722:A:N6	51:1:1738:G:H1'	2.36	0.41
51:1:1930:G:O2'	51:1:1931:U:P	2.79	0.41
51:1:2038:G:H2'	51:1:2039:U:O4'	2.21	0.41
51:1:2106:U:H3'	51:1:2107:G:H8	1.86	0.41
51:1:2194:U:H2'	51:1:2195:U:H6	1.84	0.41
51:1:2221:G:H2'	51:1:2222:C:C6	2.56	0.41
51:1:2575:C:H2'	51:1:2578:G:O6	2.21	0.41
51:1:2600:A:H8	51:1:2600:A:O5'	2.03	0.41
51:1:2646:C:H2'	51:1:2647:U:O4'	2.21	0.41
53:3:146:G:H2'	53:3:147:G:H8	1.86	0.41
53:3:202:G:H2'	53:3:203:G:C8	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:3:1228:C:H2'	53:3:1229:A:C8	2.55	0.41
53:3:1493:A:H2	63:5:36:A:C2	2.37	0.41
54:4:47:G:OP1	59:B2:1073:LYS:NZ	2.35	0.41
58:B1:108:ALA:HB2	58:B1:276:ASN:OD1	2.21	0.41
58:B1:351:GLY:O	58:B1:467:ALA:HA	2.21	0.41
58:B1:839:VAL:HG12	58:B1:864:LEU:HD12	2.02	0.41
58:B1:1106:ILE:O	58:B1:1123:ARG:N	2.45	0.41
59:B2:50:GLU:HG2	59:B2:73:TYR:HE1	1.85	0.41
59:B2:242:VAL:HA	59:B2:243:PRO:HD3	1.93	0.41
59:B2:310:ILE:HG21	59:B2:325:LEU:HB3	2.02	0.41
7:G:18:GLN:HB3	7:G:21:TYR:HB2	2.03	0.41
7:G:173:LYS:HE3	7:G:173:LYS:HB2	1.76	0.41
23:W:24:ASP:OD1	23:W:24:ASP:N	2.53	0.41
27:b:47:ARG:HH21	51:1:774:G:H5"	1.86	0.41
39:o:24:THR:HB	39:o:42:PRO:HG3	2.02	0.41
42:r:49:ILE:HA	42:r:54:VAL:HG23	2.02	0.41
42:r:81:LYS:NZ	51:1:568:U:O4	2.54	0.41
51:1:49:A:P	51:1:51:G:H5'	2.61	0.41
51:1:1020:A:H5'	51:1:1021:A:N7	2.34	0.41
51:1:1107:G:H2'	51:1:1108:U:C6	2.56	0.41
51:1:1152:C:H2'	51:1:1153:C:C6	2.55	0.41
51:1:1160:G:C6	51:1:1161:C:C4	3.09	0.41
51:1:1283:G:H22	51:1:1286:A:P	2.44	0.41
51:1:2568:U:H6	51:1:2568:U:O5'	2.04	0.41
53:3:987:G:H2'	53:3:988:G:C8	2.56	0.41
53:3:1490:U:H2'	53:3:1491:G:C1'	2.51	0.41
58:B1:201:LEU:HD23	58:B1:201:LEU:HA	1.92	0.41
6:F:30:GLU:HA	6:F:31:PRO:HD3	1.91	0.40
9:I:10:LEU:HG	9:I:62:ARG:HD2	2.03	0.40
10:J:90:GLY:O	10:J:129:SER:OG	2.36	0.40
15:O:46:LYS:HE3	15:O:46:LYS:HB2	1.88	0.40
18:R:10:ASP:HB3	18:R:45:SER:HB3	2.03	0.40
28:c:4:LEU:HD21	28:c:98:VAL:HA	2.02	0.40
30:e:36:ASN:HB3	30:e:152:ASP:HB3	2.03	0.40
51:1:1107:G:H2'	51:1:1108:U:O4'	2.20	0.40
51:1:1317:G:H2'	51:1:1318:U:C6	2.56	0.40
51:1:1991:U:H2'	51:1:1992:G:H5'	2.02	0.40
51:1:2105:U:C2	51:1:2184:A:H2	2.39	0.40
51:1:2293:G:O2'	51:1:2294:G:H5'	2.21	0.40
51:1:2393:U:C2'	51:1:2394:C:H5'	2.51	0.40
51:1:2649:C:N3	51:1:2650:U:C4	2.89	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2667:C:O5'	51:1:2667:C:H6	2.03	0.40
7:G:17:HIS:C	7:G:19:THR:H	2.28	0.40
16:P:108:ASN:HA	26:Z:7:GLU:HG2	2.03	0.40
27:b:209:ALA:HA	27:b:212:TRP:CE2	2.55	0.40
29:d:163:ASN:HD21	51:1:322:A:P	2.44	0.40
31:f:3:VAL:HG13	51:1:2751:G:H4'	2.02	0.40
40:p:25:VAL:HG23	40:p:85:VAL:HA	2.04	0.40
40:p:113:LEU:HD13	40:p:113:LEU:HA	1.86	0.40
51:1:426:C:O2'	51:1:427:U:H5'	2.21	0.40
51:1:674:G:C8	51:1:674:G:H3'	2.56	0.40
51:1:1116:G:O2'	51:1:1117:C:H5'	2.22	0.40
51:1:1279:G:H2'	51:1:1280:G:C8	2.56	0.40
51:1:1430:G:O2'	51:1:1431:A:H5'	2.21	0.40
51:1:1469:A:H2'	51:1:1470:A:H8	1.83	0.40
51:1:1591:A:H2'	51:1:1592:C:C6	2.56	0.40
51:1:2647:U:O2'	51:1:2648:G:H5'	2.22	0.40
51:1:2680:U:O2'	51:1:2681:C:H5'	2.21	0.40
58:B1:144:TYR:N	58:B1:144:TYR:CD1	2.88	0.40
58:B1:201:LEU:CB	58:B1:221:ILE:HD13	2.47	0.40
58:B1:647:PRO:HG3	58:B1:697:MET:HB3	2.01	0.40
58:B1:1361:THR:N	59:B2:1282:GLY:O	2.53	0.40
59:B2:213:LEU:HD13	59:B2:422:LYS:HG2	2.03	0.40
59:B2:712:SER:OG	59:B2:713:GLY:N	2.49	0.40
59:B2:886:LYS:HE2	59:B2:918:LEU:HD13	2.03	0.40
64:7:10:G:OP1	64:7:46:G:H4'	2.21	0.40
7:G:104:LYS:HE2	7:G:104:LYS:HB2	1.92	0.40
9:I:30:LYS:HA	9:I:30:LYS:HD3	1.81	0.40
10:J:156:ARG:HE	13:M:42:GLU:HG3	1.87	0.40
20:T:48:ASP:OD1	53:3:667:G:O2'	2.25	0.40
29:d:138:LEU:HG	29:d:143:LEU:HD12	2.03	0.40
29:d:188:MET:HG3	29:d:193:VAL:HG13	2.03	0.40
34:j:17:VAL:HG13	34:j:137:PRO:HB2	2.03	0.40
37:m:96:ILE:HD13	37:m:96:ILE:HA	1.82	0.40
51:1:211:C:O2'	51:1:212:G:H5'	2.21	0.40
51:1:1346:G:O2'	51:1:1347:A:H5'	2.22	0.40
51:1:2208:C:O2'	51:1:2209:G:H5'	2.21	0.40
51:1:2210:U:H6	51:1:2210:U:OP1	2.04	0.40
52:2:31:C:H2'	52:2:53:A:H61	1.87	0.40
53:3:1304:G:N1	53:3:1332:A:OP2	2.54	0.40
55:8:2:DC:C6	55:8:2:DC:H5'	2.56	0.40
58:B1:71:LEU:HB2	58:B1:90:VAL:HG11	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:182:ALA:HB1	58:B1:238:ILE:CG2	2.52	0.40
59:B2:22:LEU:HD22	59:B2:603:ILE:HG21	2.02	0.40
59:B2:159:SER:HB2	59:B2:442:VAL:HG11	2.04	0.40
59:B2:176:ILE:HD12	59:B2:184:LEU:HD23	2.03	0.40
9:I:123:MET:HB2	9:I:143:SER:HB3	2.04	0.40
9:I:150:LYS:HD2	9:I:155:LYS:HD2	2.04	0.40
17:Q:110:LYS:HE2	17:Q:110:LYS:HB2	1.89	0.40
19:S:22:LYS:HE2	19:S:22:LYS:HB2	1.87	0.40
30:e:64:PRO:HA	30:e:88:VAL:HG22	2.03	0.40
31:f:157:LYS:HD3	51:1:2658:C:H5"	2.02	0.40
32:g:1:MET:HE3	32:g:1:MET:HB3	1.77	0.40
40:p:92:ARG:H	40:p:92:ARG:HG2	1.60	0.40
49:y:51:ALA:O	49:y:55:THR:OG1	2.37	0.40
51:1:56:A:H1'	51:1:127:A:C2	2.55	0.40
51:1:120:U:C2	51:1:149:A:C6	3.10	0.40
51:1:194:G:O6	51:1:195:A:C6	2.75	0.40
51:1:1605:C:H2'	51:1:1606:C:C5'	2.51	0.40
51:1:1827:U:C2'	51:1:1828:G:H5'	2.51	0.40
51:1:1975:G:H2'	51:1:1976:U:H5'	2.04	0.40
51:1:2049:G:O2'	51:1:2050:C:H5'	2.21	0.40
51:1:2278:A:C2'	51:1:2279:G:H5"	2.51	0.40
51:1:2757:A:H2'	51:1:2758:A:H5"	2.02	0.40
51:1:2776:A:C6	51:1:2778:A:C6	3.09	0.40
53:3:685:G:N1	53:3:704:A:OP2	2.52	0.40
57:A2:57:THR:HG23	57:A2:158:ARG:HH21	1.86	0.40
58:B1:68:TYR:CB	58:B1:75:TYR:HE2	2.34	0.40
63:5:17:C:H2'	63:5:18:G:C8	2.56	0.40
63:5:23:A:H2'	63:5:24:G:C8	2.56	0.40
9:I:97:LEU:C	9:I:99:ASN:N	2.78	0.40
9:I:146:GLU:HA	9:I:149:LYS:HZ3	1.85	0.40
9:I:184:LYS:HB2	9:I:184:LYS:HE2	1.86	0.40
27:b:70:LYS:HD2	27:b:73:ILE:HD12	2.02	0.40
28:c:169:ARG:O	51:1:2773:C:H4'	2.21	0.40
30:e:49:LEU:HD22	30:e:83:PRO:HB2	2.04	0.40
35:k:13:ASN:HB3	35:k:100:PHE:CZ	2.57	0.40
51:1:55:G:N2	51:1:116:C:C2	2.90	0.40
51:1:359:G:H2'	51:1:360:U:C5'	2.51	0.40
51:1:935:C:H2'	51:1:936:A:C8	2.56	0.40
51:1:937:C:H2'	51:1:938:G:C8	2.57	0.40
51:1:1160:G:C2	51:1:1161:C:C2	3.10	0.40
51:1:1302:A:H5'	51:1:1608:A:OP1	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1691:C:O2'	51:1:1692:U:H5'	2.22	0.40
51:1:2098:U:H2'	51:1:2099:U:C5'	2.51	0.40
51:1:2648:G:O2'	51:1:2649:C:H5'	2.21	0.40
51:1:2699:C:O2'	51:1:2700:A:H5'	2.22	0.40
57:A1:224:LEU:HD23	57:A2:228:LEU:HD21	2.03	0.40
57:A2:57:THR:HG22	57:A2:58:GLU:HG3	2.04	0.40
58:B1:111:THR:HG23	58:B1:300:GLN:HA	2.03	0.40
58:B1:282:LEU:CA	58:B1:286:ALA:HA	2.45	0.40
58:B1:438:GLU:OE2	58:B1:481:ARG:NH1	2.42	0.40
58:B1:536:LEU:HD23	58:B1:536:LEU:HA	1.91	0.40
58:B1:805:GLN:NE2	58:B1:1348:LYS:HB2	2.37	0.40
64:6:50:U:H2'	64:6:51:C:H6	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	64/70 (91%)	59 (92%)	5 (8%)	0	100 100
2	B	54/57 (95%)	48 (89%)	4 (7%)	2 (4%)	2 24
3	C	48/55 (87%)	41 (85%)	7 (15%)	0	100 100
4	D	44/46 (96%)	42 (96%)	2 (4%)	0	100 100
5	E	62/65 (95%)	57 (92%)	5 (8%)	0	100 100
6	F	36/38 (95%)	32 (89%)	3 (8%)	1 (3%)	4 28
7	G	216/241 (90%)	187 (87%)	27 (12%)	2 (1%)	14 47
8	H	204/233 (88%)	194 (95%)	10 (5%)	0	100 100
9	I	203/206 (98%)	172 (85%)	30 (15%)	1 (0%)	25 57
10	J	155/167 (93%)	138 (89%)	17 (11%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
11	K	98/135 (73%)	84 (86%)	14 (14%)	0	100	100
12	L	149/179 (83%)	130 (87%)	19 (13%)	0	100	100
13	M	127/130 (98%)	118 (93%)	9 (7%)	0	100	100
14	N	125/130 (96%)	104 (83%)	21 (17%)	0	100	100
15	O	96/103 (93%)	87 (91%)	8 (8%)	1 (1%)	13	44
16	P	114/129 (88%)	100 (88%)	13 (11%)	1 (1%)	14	47
17	Q	121/124 (98%)	94 (78%)	27 (22%)	0	100	100
18	R	112/118 (95%)	98 (88%)	13 (12%)	1 (1%)	14	47
19	S	98/101 (97%)	83 (85%)	15 (15%)	0	100	100
20	T	86/89 (97%)	75 (87%)	11 (13%)	0	100	100
21	U	80/82 (98%)	69 (86%)	11 (14%)	0	100	100
22	V	78/84 (93%)	69 (88%)	8 (10%)	1 (1%)	10	40
23	W	63/75 (84%)	56 (89%)	5 (8%)	2 (3%)	3	27
24	X	77/92 (84%)	71 (92%)	6 (8%)	0	100	100
25	Y	83/87 (95%)	78 (94%)	5 (6%)	0	100	100
26	Z	63/71 (89%)	44 (70%)	18 (29%)	1 (2%)	8	37
27	b	269/273 (98%)	244 (91%)	25 (9%)	0	100	100
28	c	207/209 (99%)	189 (91%)	18 (9%)	0	100	100
29	d	199/201 (99%)	186 (94%)	13 (6%)	0	100	100
30	e	175/179 (98%)	157 (90%)	18 (10%)	0	100	100
31	f	174/177 (98%)	159 (91%)	15 (9%)	0	100	100
32	g	50/149 (34%)	44 (88%)	5 (10%)	1 (2%)	6	34
33	i	139/142 (98%)	116 (84%)	23 (16%)	0	100	100
34	j	140/142 (99%)	128 (91%)	12 (9%)	0	100	100
35	k	120/123 (98%)	106 (88%)	14 (12%)	0	100	100
36	l	141/144 (98%)	129 (92%)	12 (8%)	0	100	100
37	m	134/136 (98%)	128 (96%)	6 (4%)	0	100	100
38	n	118/127 (93%)	103 (87%)	15 (13%)	0	100	100
39	o	114/117 (97%)	109 (96%)	5 (4%)	0	100	100
40	p	112/115 (97%)	103 (92%)	9 (8%)	0	100	100
41	q	115/118 (98%)	110 (96%)	3 (3%)	2 (2%)	7	36

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
42	r	101/103 (98%)	90 (89%)	10 (10%)	1 (1%)	13 44
43	s	108/110 (98%)	101 (94%)	7 (6%)	0	100 100
44	t	91/100 (91%)	82 (90%)	9 (10%)	0	100 100
45	u	100/104 (96%)	84 (84%)	15 (15%)	1 (1%)	13 44
46	v	92/94 (98%)	87 (95%)	5 (5%)	0	100 100
47	w	73/85 (86%)	67 (92%)	6 (8%)	0	100 100
48	x	75/78 (96%)	72 (96%)	2 (3%)	1 (1%)	10 40
49	y	61/63 (97%)	55 (90%)	6 (10%)	0	100 100
50	z	56/59 (95%)	52 (93%)	4 (7%)	0	100 100
57	A1	295/329 (90%)	273 (92%)	21 (7%)	1 (0%)	37 67
57	A2	282/329 (86%)	271 (96%)	11 (4%)	0	100 100
58	B1	1329/1407 (94%)	1203 (90%)	122 (9%)	4 (0%)	37 67
59	B2	1338/1342 (100%)	1204 (90%)	129 (10%)	5 (0%)	30 62
60	W0	80/91 (88%)	77 (96%)	3 (4%)	0	100 100
61	NA	490/495 (99%)	474 (97%)	14 (3%)	2 (0%)	30 62
62	NG	150/181 (83%)	136 (91%)	10 (7%)	4 (3%)	4 29
65	h	2/6 (33%)	1 (50%)	1 (50%)	0	100 100
All	All	9586/10235 (94%)	8670 (90%)	881 (9%)	35 (0%)	32 62

All (35) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
42	r	54	VAL
48	x	25	LYS
58	B1	121	PRO
61	NA	187	ARG
61	NA	188	PRO
62	NG	102	PRO
6	F	34	LYS
59	B2	43	PRO
59	B2	918	LEU
62	NG	163	SER
57	A1	250	ASP
59	B2	888	THR
2	B	23	ALA
7	G	19	THR

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Mol	Chain	Res	Type
18	R	5	GLY
32	g	12	LEU
41	q	23	TYR
58	B1	43	THR
58	B1	193	ASP
59	B2	909	LYS
7	G	17	HIS
15	O	58	ASN
22	V	50	ASN
23	W	13	THR
45	u	97	SER
58	B1	1325	PHE
9	I	45	PRO
23	W	17	VAL
62	NG	169	THR
62	NG	170	PRO
26	Z	10	PRO
41	q	6	GLY
59	B2	1317	PRO
2	B	24	VAL
16	P	88	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	A	59/62 (95%)	58 (98%)	1 (2%)	56 73
2	B	47/48 (98%)	47 (100%)	0	100 100
3	C	45/49 (92%)	44 (98%)	1 (2%)	47 65
4	D	38/38 (100%)	37 (97%)	1 (3%)	41 61
5	E	51/52 (98%)	49 (96%)	2 (4%)	27 53
6	F	34/34 (100%)	30 (88%)	4 (12%)	4 21
7	G	180/199 (90%)	174 (97%)	6 (3%)	33 57
8	H	170/190 (90%)	167 (98%)	3 (2%)	54 71

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
9	I	172/173 (99%)	168 (98%)	4 (2%)	45 64
10	J	119/126 (94%)	117 (98%)	2 (2%)	56 73
11	K	87/116 (75%)	82 (94%)	5 (6%)	17 45
12	L	124/147 (84%)	124 (100%)	0	100 100
13	M	104/105 (99%)	103 (99%)	1 (1%)	73 82
14	N	105/107 (98%)	98 (93%)	7 (7%)	13 40
15	O	86/90 (96%)	78 (91%)	8 (9%)	7 30
16	P	89/99 (90%)	86 (97%)	3 (3%)	32 56
17	Q	103/104 (99%)	98 (95%)	5 (5%)	21 47
18	R	92/96 (96%)	91 (99%)	1 (1%)	70 80
19	S	83/84 (99%)	83 (100%)	0	100 100
20	T	76/77 (99%)	73 (96%)	3 (4%)	27 53
21	U	65/65 (100%)	64 (98%)	1 (2%)	60 75
22	V	74/78 (95%)	72 (97%)	2 (3%)	40 61
23	W	56/65 (86%)	52 (93%)	4 (7%)	12 39
24	X	70/79 (89%)	70 (100%)	0	100 100
25	Y	65/66 (98%)	64 (98%)	1 (2%)	60 75
26	Z	55/61 (90%)	47 (86%)	8 (14%)	2 16
27	b	216/218 (99%)	212 (98%)	4 (2%)	52 70
28	c	164/164 (100%)	164 (100%)	0	100 100
29	d	165/165 (100%)	162 (98%)	3 (2%)	54 71
30	e	148/150 (99%)	145 (98%)	3 (2%)	50 68
31	f	137/138 (99%)	135 (98%)	2 (2%)	60 75
32	g	41/114 (36%)	38 (93%)	3 (7%)	11 38
33	i	109/110 (99%)	108 (99%)	1 (1%)	75 84
34	j	116/116 (100%)	116 (100%)	0	100 100
35	k	103/104 (99%)	103 (100%)	0	100 100
36	l	102/103 (99%)	101 (99%)	1 (1%)	73 82
37	m	109/109 (100%)	103 (94%)	6 (6%)	18 45
38	n	100/103 (97%)	99 (99%)	1 (1%)	73 82
39	o	86/87 (99%)	86 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
40	p	99/100 (99%)	99 (100%)	0	100 100
41	q	89/90 (99%)	86 (97%)	3 (3%)	32 56
42	r	84/84 (100%)	82 (98%)	2 (2%)	44 63
43	s	93/93 (100%)	92 (99%)	1 (1%)	70 80
44	t	80/84 (95%)	80 (100%)	0	100 100
45	u	83/85 (98%)	79 (95%)	4 (5%)	21 48
46	v	78/78 (100%)	77 (99%)	1 (1%)	65 77
47	w	57/63 (90%)	57 (100%)	0	100 100
48	x	67/68 (98%)	67 (100%)	0	100 100
49	y	55/55 (100%)	55 (100%)	0	100 100
50	z	48/49 (98%)	46 (96%)	2 (4%)	25 51
57	A1	185/286 (65%)	174 (94%)	11 (6%)	16 44
57	A2	186/286 (65%)	184 (99%)	2 (1%)	70 80
58	B1	1110/1168 (95%)	1016 (92%)	94 (8%)	8 33
59	B2	1150/1157 (99%)	1118 (97%)	32 (3%)	38 60
60	W0	70/75 (93%)	69 (99%)	1 (1%)	62 76
65	h	2/2 (100%)	2 (100%)	0	100 100
All	All	7381/7914 (93%)	7131 (97%)	250 (3%)	34 56

All (250) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	VAL
3	C	22	THR
4	D	44	VAL
5	E	28	LEU
5	E	31	ILE
6	F	34	LYS
6	F	35	GLN
6	F	36	ARG
6	F	37	GLN
7	G	8	MET
7	G	10	LYS
7	G	13	VAL
7	G	14	HIS
7	G	17	HIS

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Mol	Chain	Res	Type
7	G	29	PHE
8	H	74	ILE
8	H	156	LEU
8	H	164	THR
9	I	44	LYS
9	I	46	ARG
9	I	96	ARG
9	I	97	LEU
10	J	55	VAL
10	J	130	THR
11	K	89	VAL
11	K	90	MET
11	K	91	ARG
11	K	92	THR
11	K	94	HIS
13	M	102	VAL
14	N	52	GLU
14	N	53	LEU
14	N	54	VAL
14	N	57	VAL
14	N	59	LYS
14	N	60	LEU
14	N	65	THR
15	O	16	ARG
15	O	82	LYS
15	O	83	THR
15	O	87	LEU
15	O	88	MET
15	O	89	ARG
15	O	91	ASP
15	O	92	LEU
16	P	120	CYS
16	P	121	ARG
16	P	124	LYS
17	Q	15	VAL
17	Q	17	LYS
17	Q	20	VAL
17	Q	29	LYS
17	Q	34	THR
18	R	64	VAL
20	T	82	GLU
20	T	86	LEU

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Mol	Chain	Res	Type
20	T	88	ARG
21	U	36	VAL
22	V	47	ASP
22	V	52	CYS
23	W	15	GLU
23	W	17	VAL
23	W	18	GLN
23	W	70	THR
25	Y	85	LEU
26	Z	3	ILE
26	Z	4	LYS
26	Z	5	VAL
26	Z	12	ASP
26	Z	15	LEU
26	Z	19	LYS
26	Z	20	ARG
26	Z	27	VAL
27	b	129	LEU
27	b	131	MET
27	b	132	ARG
27	b	203	VAL
29	d	14	VAL
29	d	118	LEU
29	d	198	GLU
30	e	39	VAL
30	e	174	PHE
30	e	177	ARG
31	f	9	VAL
31	f	131	VAL
32	g	4	ILE
32	g	5	LEU
32	g	9	VAL
33	i	22	PRO
36	l	85	VAL
37	m	44	ARG
37	m	47	GLU
37	m	50	ARG
37	m	55	ARG
37	m	58	LYS
37	m	59	ARG
38	n	13	ASN
41	q	4	LYS

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Mol	Chain	Res	Type
41	q	5	ARG
41	q	28	SER
42	r	53	PHE
42	r	55	ASP
43	s	3	THR
45	u	35	VAL
45	u	93	ARG
45	u	100	GLU
45	u	101	THR
46	v	72	VAL
50	z	16	LEU
50	z	40	THR
57	A1	9	LEU
57	A1	12	ARG
57	A1	13	LEU
57	A1	18	GLN
57	A1	19	VAL
57	A1	22	THR
57	A1	27	THR
57	A1	28	LEU
57	A1	33	ARG
57	A1	46	ILE
57	A1	48	LEU
57	A2	29	GLU
57	A2	74	VAL
58	B1	24	LEU
58	B1	40	LYS
58	B1	42	GLU
58	B1	44	ILE
58	B1	47	ARG
58	B1	49	PHE
58	B1	50	LYS
58	B1	60	ARG
58	B1	66	LYS
58	B1	69	GLU
58	B1	71	LEU
58	B1	74	LYS
58	B1	76	LYS
58	B1	78	LEU
58	B1	80	HIS
58	B1	81	ARG
58	B1	87	LYS

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Mol	Chain	Res	Type
58	B1	91	GLU
58	B1	93	THR
58	B1	94	GLN
58	B1	95	THR
58	B1	96	LYS
58	B1	99	ARG
58	B1	100	GLU
58	B1	114	ILE
58	B1	117	LEU
58	B1	120	LEU
58	B1	126	LEU
58	B1	132	LEU
58	B1	135	ILE
58	B1	142	GLU
58	B1	144	TYR
58	B1	145	VAL
58	B1	146	VAL
58	B1	147	ILE
58	B1	152	THR
58	B1	154	LEU
58	B1	157	GLN
58	B1	159	ILE
58	B1	172	PHE
58	B1	174	ASP
58	B1	175	GLU
58	B1	180	MET
58	B1	190	LYS
58	B1	193	ASP
58	B1	196	GLN
58	B1	210	SER
58	B1	212	THR
58	B1	216	LYS
58	B1	222	LYS
58	B1	223	LEU
58	B1	227	PHE
58	B1	233	LYS
58	B1	237	MET
58	B1	238	ILE
58	B1	239	LEU
58	B1	240	THR
58	B1	244	VAL
58	B1	255	LEU

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Mol	Chain	Res	Type
58	B1	256	ASP
58	B1	259	ARG
58	B1	281	ARG
58	B1	282	LEU
58	B1	285	LEU
58	B1	290	ILE
58	B1	317	THR
58	B1	322	ARG
58	B1	324	LEU
58	B1	363	LEU
58	B1	385	LEU
58	B1	386	GLU
58	B1	387	LEU
58	B1	390	LEU
58	B1	393	THR
58	B1	394	ILE
58	B1	395	LYS
58	B1	416	ILE
58	B1	417	ARG
58	B1	425	ARG
58	B1	460	ASP
58	B1	506	VAL
58	B1	514	THR
58	B1	800	LEU
58	B1	807	LEU
58	B1	839	VAL
58	B1	901	ARG
58	B1	903	LEU
58	B1	1172	LYS
58	B1	1181	ASP
58	B1	1233	ILE
58	B1	1327	GLU
58	B1	1328	THR
58	B1	1331	VAL
58	B1	1332	LEU
59	B2	44	GLU
59	B2	49	LEU
59	B2	56	VAL
59	B2	146	VAL
59	B2	483	ASP
59	B2	487	LEU
59	B2	516	ASP

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Mol	Chain	Res	Type
59	B2	538	LEU
59	B2	540	ARG
59	B2	545	PHE
59	B2	546	GLU
59	B2	615	VAL
59	B2	857	VAL
59	B2	859	GLU
59	B2	887	VAL
59	B2	890	LYS
59	B2	892	GLU
59	B2	894	GLN
59	B2	900	LYS
59	B2	901	LEU
59	B2	902	LEU
59	B2	903	ARG
59	B2	905	ILE
59	B2	906	PHE
59	B2	909	LYS
59	B2	913	VAL
59	B2	915	ASP
59	B2	918	LEU
59	B2	920	VAL
59	B2	922	ASN
59	B2	1076	ILE
59	B2	1151	LEU
60	W0	63	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (125) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	ASN
1	A	61	ASN
2	B	4	GLN
3	C	44	GLN
4	D	16	HIS
6	F	37	GLN
7	G	14	HIS
7	G	108	GLN
7	G	119	GLN
7	G	121	GLN
8	H	7	ASN
8	H	68	HIS

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Mol	Chain	Res	Type
8	H	99	GLN
8	H	122	GLN
8	H	138	GLN
8	H	139	ASN
9	I	197	HIS
10	J	76	ASN
10	J	121	ASN
12	L	85	GLN
12	L	121	ASN
12	L	147	ASN
13	M	3	GLN
13	M	37	ASN
13	M	66	GLN
14	N	4	GLN
14	N	30	ASN
14	N	74	GLN
15	O	20	GLN
15	O	35	GLN
15	O	58	ASN
16	P	80	ASN
17	Q	4	ASN
17	Q	71	HIS
18	R	7	ASN
18	R	99	GLN
19	S	59	GLN
20	T	19	ASN
20	T	39	GLN
22	V	30	HIS
24	X	68	HIS
25	Y	2	ASN
25	Y	77	ASN
25	Y	83	ASN
26	Z	8	ASN
27	b	24	HIS
27	b	69	ASN
27	b	89	ASN
27	b	142	ASN
27	b	259	ASN
28	c	49	GLN
28	c	134	HIS
28	c	150	GLN
28	c	164	GLN

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Mol	Chain	Res	Type
28	c	173	GLN
29	d	41	GLN
29	d	62	GLN
29	d	90	GLN
29	d	94	GLN
29	d	165	HIS
30	e	4	HIS
30	e	80	GLN
31	f	47	ASN
32	g	2	GLN
33	i	29	GLN
33	i	30	GLN
34	j	58	ASN
34	j	135	GLN
35	k	3	GLN
35	k	5	GLN
36	l	4	ASN
36	l	104	GLN
37	m	13	HIS
40	p	2	ASN
40	p	114	ASN
41	q	55	GLN
41	q	58	GLN
42	r	18	GLN
42	r	82	HIS
43	s	7	HIS
44	t	28	ASN
44	t	59	ASN
44	t	92	ASN
45	u	52	ASN
45	u	68	ASN
46	v	75	GLN
46	v	87	GLN
47	w	53	HIS
48	x	16	ASN
48	x	33	HIS
49	y	31	GLN
49	y	38	GLN
49	y	41	HIS
49	y	45	GLN
50	z	8	GLN
57	A1	66	HIS

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Mol	Chain	Res	Type
57	A1	84	ASN
57	A1	117	HIS
57	A1	128	HIS
57	A1	227	GLN
57	A2	23	HIS
57	A2	227	GLN
58	B1	45	ASN
58	B1	364	HIS
58	B1	424	ASN
58	B1	469	HIS
58	B1	805	GLN
58	B1	865	HIS
58	B1	1195	GLN
58	B1	1238	GLN
58	B1	1259	GLN
59	B2	69	GLN
59	B2	314	ASN
59	B2	330	HIS
59	B2	343	HIS
59	B2	518	ASN
59	B2	554	HIS
59	B2	580	GLN
59	B2	688	GLN
59	B2	808	ASN
59	B2	1237	HIS
59	B2	1268	GLN
59	B2	1313	HIS
60	W0	7	GLN
60	W0	31	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
51	1	2902/2904 (99%)	398 (13%)	16 (0%)
52	2	119/120 (99%)	17 (14%)	1 (0%)
53	3	1538/1542 (99%)	255 (16%)	5 (0%)
54	4	34/47 (72%)	17 (50%)	2 (5%)
63	5	75/76 (98%)	43 (57%)	7 (9%)
64	6	76/77 (98%)	10 (13%)	0
64	7	76/77 (98%)	27 (35%)	2 (2%)
All	All	4820/4843 (99%)	767 (15%)	33 (0%)

All (767) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
51	1	10	A
51	1	12	U
51	1	34	U
51	1	35	G
51	1	46	G
51	1	51	G
51	1	55	G
51	1	63	A
51	1	71	A
51	1	74	A
51	1	75	G
51	1	102	U
51	1	103	A
51	1	119	A
51	1	120	U
51	1	139	U
51	1	140	C
51	1	141	G
51	1	149	A
51	1	162	U
51	1	163	C
51	1	178	G
51	1	196	A
51	1	199	A
51	1	216	A
51	1	221	A
51	1	222	A
51	1	229	C
51	1	248	G
51	1	255	A
51	1	265	A
51	1	266	G
51	1	276	U
51	1	281	C
51	1	285	G
51	1	294	A
51	1	323	C
51	1	329	G
51	1	330	A
51	1	353	C
51	1	361	G
51	1	362	A

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Mol	Chain	Res	Type
51	1	371	A
51	1	372	G
51	1	386	G
51	1	387	U
51	1	396	G
51	1	404	A
51	1	406	G
51	1	411	G
51	1	424	G
51	1	451	U
51	1	457	A
51	1	481	G
51	1	482	A
51	1	491	G
51	1	504	A
51	1	505	A
51	1	526	A
51	1	529	A
51	1	531	C
51	1	532	A
51	1	533	G
51	1	544	C
51	1	545	U
51	1	546	U
51	1	547	A
51	1	562	U
51	1	563	A
51	1	573	U
51	1	574	A
51	1	575	A
51	1	603	A
51	1	614	A
51	1	616	A
51	1	627	A
51	1	637	A
51	1	646	U
51	1	647	G
51	1	654	A
51	1	669	G
51	1	671	C
51	1	677	A
51	1	686	U

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Mol	Chain	Res	Type
51	1	687	C
51	1	695	G
51	1	730	A
51	1	745	G
51	1	747	C
51	1	758	C
51	1	764	A
51	1	765	C
51	1	775	G
51	1	782	A
51	1	784	G
51	1	785	G
51	1	789	A
51	1	791	C
51	1	792	A
51	1	801	G
51	1	805	G
51	1	812	C
51	1	819	A
51	1	827	U
51	1	828	U
51	1	829	A
51	1	830	G
51	1	845	A
51	1	846	U
51	1	858	G
51	1	860	U
51	1	878	A
51	1	887	U
51	1	896	A
51	1	910	A
51	1	911	A
51	1	932	U
51	1	941	A
51	1	946	C
51	1	961	C
51	1	968	C
51	1	974	G
51	1	981	A
51	1	983	A
51	1	985	C
51	1	995	C

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Mol	Chain	Res	Type
51	1	996	A
51	1	1005	C
51	1	1012	U
51	1	1013	C
51	1	1021	A
51	1	1022	G
51	1	1031	G
51	1	1033	U
51	1	1045	C
51	1	1046	A
51	1	1047	G
51	1	1057	A
51	1	1058	U
51	1	1060	U
51	1	1061	U
51	1	1063	G
51	1	1065	U
51	1	1066	U
51	1	1068	G
51	1	1069	A
51	1	1070	A
51	1	1071	G
51	1	1073	A
51	1	1075	C
51	1	1078	U
51	1	1083	U
51	1	1084	A
51	1	1086	A
51	1	1088	A
51	1	1104	C
51	1	1111	A
51	1	1131	G
51	1	1132	U
51	1	1133	A
51	1	1135	C
51	1	1139	G
51	1	1142	A
51	1	1143	A
51	1	1157	G
51	1	1175	A
51	1	1177	G
51	1	1178	C

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Mol	Chain	Res	Type
51	1	1180	U
51	1	1186	G
51	1	1212	G
51	1	1225	G
51	1	1253	A
51	1	1256	G
51	1	1271	G
51	1	1272	A
51	1	1273	U
51	1	1289	C
51	1	1294	U
51	1	1300	G
51	1	1301	A
51	1	1345	C
51	1	1352	U
51	1	1365	A
51	1	1378	A
51	1	1379	U
51	1	1383	A
51	1	1406	U
51	1	1416	G
51	1	1419	A
51	1	1420	A
51	1	1427	A
51	1	1429	G
51	1	1452	G
51	1	1453	A
51	1	1461	C
51	1	1482	G
51	1	1490	A
51	1	1491	G
51	1	1497	U
51	1	1504	A
51	1	1515	A
51	1	1524	G
51	1	1533	C
51	1	1535	A
51	1	1536	C
51	1	1537	G
51	1	1555	G
51	1	1560	G
51	1	1565	C

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Mol	Chain	Res	Type
51	1	1569	A
51	1	1578	U
51	1	1583	A
51	1	1608	A
51	1	1616	A
51	1	1634	A
51	1	1647	U
51	1	1648	U
51	1	1674	G
51	1	1698	A
51	1	1699	G
51	1	1703	G
51	1	1715	G
51	1	1716	U
51	1	1729	U
51	1	1730	C
51	1	1732	C
51	1	1738	G
51	1	1758	U
51	1	1764	C
51	1	1773	A
51	1	1783	A
51	1	1784	A
51	1	1786	A
51	1	1800	C
51	1	1801	A
51	1	1802	A
51	1	1808	A
51	1	1809	A
51	1	1816	C
51	1	1829	A
51	1	1833	C
51	1	1834	U
51	1	1870	C
51	1	1871	A
51	1	1901	A
51	1	1906	G
51	1	1913	A
51	1	1914	C
51	1	1929	G
51	1	1931	U
51	1	1936	A

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Mol	Chain	Res	Type
51	1	1937	A
51	1	1938	A
51	1	1939	U
51	1	1943	U
51	1	1955	U
51	1	1967	C
51	1	1970	A
51	1	1971	U
51	1	1972	G
51	1	1990	C
51	1	1993	U
51	1	1997	C
51	1	2020	A
51	1	2022	U
51	1	2023	C
51	1	2024	G
51	1	2027	G
51	1	2030	A
51	1	2031	A
51	1	2033	A
51	1	2034	U
51	1	2043	C
51	1	2052	A
51	1	2055	C
51	1	2056	G
51	1	2060	A
51	1	2061	G
51	1	2069	G
51	1	2093	G
51	1	2096	C
51	1	2100	G
51	1	2110	G
51	1	2111	U
51	1	2118	U
51	1	2119	A
51	1	2123	G
51	1	2128	G
51	1	2131	U
51	1	2132	U
51	1	2133	G
51	1	2134	A
51	1	2137	U

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Mol	Chain	Res	Type
51	1	2141	G
51	1	2145	C
51	1	2149	U
51	1	2162	G
51	1	2164	C
51	1	2166	U
51	1	2172	U
51	1	2173	A
51	1	2174	C
51	1	2189	U
51	1	2192	U
51	1	2198	A
51	1	2204	G
51	1	2211	A
51	1	2213	U
51	1	2225	A
51	1	2238	G
51	1	2239	G
51	1	2243	U
51	1	2268	A
51	1	2275	C
51	1	2279	G
51	1	2283	C
51	1	2287	A
51	1	2288	A
51	1	2305	U
51	1	2309	A
51	1	2325	G
51	1	2326	C
51	1	2327	A
51	1	2333	A
51	1	2334	U
51	1	2345	G
51	1	2350	C
51	1	2382	G
51	1	2383	G
51	1	2385	C
51	1	2392	A
51	1	2402	U
51	1	2406	A
51	1	2407	A
51	1	2423	U

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Mol	Chain	Res	Type
51	1	2426	A
51	1	2427	C
51	1	2429	G
51	1	2430	A
51	1	2435	A
51	1	2436	G
51	1	2440	C
51	1	2441	U
51	1	2445	G
51	1	2447	G
51	1	2448	A
51	1	2476	A
51	1	2482	A
51	1	2491	U
51	1	2492	U
51	1	2498	C
51	1	2502	G
51	1	2505	G
51	1	2506	U
51	1	2507	C
51	1	2518	A
51	1	2547	A
51	1	2554	U
51	1	2566	A
51	1	2567	G
51	1	2572	A
51	1	2573	C
51	1	2582	G
51	1	2602	A
51	1	2609	U
51	1	2613	U
51	1	2629	U
51	1	2630	G
51	1	2642	G
51	1	2646	C
51	1	2689	U
51	1	2690	U
51	1	2714	G
51	1	2726	A
51	1	2732	G
51	1	2744	G
51	1	2748	A

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Mol	Chain	Res	Type
51	1	2751	G
51	1	2758	A
51	1	2764	A
51	1	2765	A
51	1	2778	A
51	1	2779	U
51	1	2793	C
51	1	2798	U
51	1	2799	A
51	1	2800	A
51	1	2801	G
51	1	2820	A
51	1	2861	U
51	1	2867	G
51	1	2868	A
51	1	2872	A
51	1	2879	A
51	1	2880	C
51	1	2884	U
51	1	2901	C
52	2	9	G
52	2	13	G
52	2	25	U
52	2	30	C
52	2	35	C
52	2	36	C
52	2	44	G
52	2	45	A
52	2	53	A
52	2	67	G
52	2	87	U
52	2	88	C
52	2	89	U
52	2	90	C
52	2	108	A
52	2	109	A
52	2	120	A
53	3	4	U
53	3	5	U
53	3	6	G
53	3	7	A
53	3	9	G

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Mol	Chain	Res	Type
53	3	22	G
53	3	32	A
53	3	39	G
53	3	47	C
53	3	48	C
53	3	51	A
53	3	71	A
53	3	75	G
53	3	77	A
53	3	78	A
53	3	80	A
53	3	83	C
53	3	84	U
53	3	87	C
53	3	88	U
53	3	94	G
53	3	95	C
53	3	100	G
53	3	108	G
53	3	116	A
53	3	121	U
53	3	127	G
53	3	130	A
53	3	144	G
53	3	163	C
53	3	183	C
53	3	197	A
53	3	206	C
53	3	208	U
53	3	210	C
53	3	211	G
53	3	212	G
53	3	222	C
53	3	226	G
53	3	240	G
53	3	245	U
53	3	247	G
53	3	251	G
53	3	263	A
53	3	264	C
53	3	266	G
53	3	267	C

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Mol	Chain	Res	Type
53	3	279	A
53	3	280	C
53	3	281	G
53	3	289	G
53	3	293	G
53	3	321	A
53	3	328	C
53	3	329	A
53	3	330	C
53	3	345	C
53	3	347	G
53	3	348	G
53	3	352	C
53	3	353	A
53	3	354	G
53	3	363	A
53	3	367	U
53	3	372	C
53	3	374	A
53	3	388	G
53	3	397	A
53	3	398	U
53	3	405	U
53	3	406	G
53	3	412	A
53	3	413	G
53	3	422	C
53	3	423	G
53	3	428	G
53	3	429	U
53	3	446	G
53	3	453	G
53	3	467	U
53	3	468	A
53	3	472	U
53	3	479	U
53	3	480	U
53	3	481	G
53	3	484	G
53	3	485	U
53	3	486	U
53	3	487	A

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Mol	Chain	Res	Type
53	3	496	A
53	3	497	G
53	3	505	G
53	3	508	U
53	3	509	A
53	3	511	C
53	3	518	C
53	3	521	G
53	3	522	C
53	3	531	U
53	3	532	A
53	3	533	A
53	3	536	C
53	3	547	A
53	3	561	U
53	3	562	U
53	3	564	C
53	3	566	G
53	3	572	A
53	3	573	A
53	3	575	G
53	3	576	C
53	3	577	G
53	3	607	A
53	3	615	G
53	3	633	G
53	3	639	G
53	3	642	A
53	3	653	U
53	3	655	A
53	3	660	C
53	3	665	A
53	3	682	G
53	3	688	G
53	3	702	A
53	3	703	G
53	3	718	A
53	3	721	G
53	3	723	U
53	3	724	G
53	3	731	G
53	3	734	G

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Mol	Chain	Res	Type
53	3	755	G
53	3	777	A
53	3	793	U
53	3	799	G
53	3	809	G
53	3	815	A
53	3	817	C
53	3	818	G
53	3	819	A
53	3	820	U
53	3	821	G
53	3	829	G
53	3	836	G
53	3	843	U
53	3	844	G
53	3	845	A
53	3	846	G
53	3	849	G
53	3	851	G
53	3	868	C
53	3	902	G
53	3	914	A
53	3	934	C
53	3	935	A
53	3	960	U
53	3	961	U
53	3	966	G
53	3	969	A
53	3	971	G
53	3	975	A
53	3	976	G
53	3	977	A
53	3	991	U
53	3	992	U
53	3	993	G
53	3	1004	A
53	3	1020	G
53	3	1028	C
53	3	1031	C
53	3	1032	G
53	3	1033	G
53	3	1034	G

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Mol	Chain	Res	Type
53	3	1036	A
53	3	1053	G
53	3	1054	C
53	3	1055	A
53	3	1085	U
53	3	1094	G
53	3	1095	U
53	3	1099	G
53	3	1101	A
53	3	1108	G
53	3	1133	G
53	3	1136	C
53	3	1137	C
53	3	1139	G
53	3	1158	C
53	3	1159	U
53	3	1168	U
53	3	1171	A
53	3	1182	G
53	3	1183	U
53	3	1184	G
53	3	1195	C
53	3	1196	A
53	3	1197	A
53	3	1202	U
53	3	1206	G
53	3	1224	U
53	3	1225	A
53	3	1226	C
53	3	1227	A
53	3	1237	C
53	3	1238	A
53	3	1240	U
53	3	1241	G
53	3	1250	A
53	3	1256	A
53	3	1260	G
53	3	1261	A
53	3	1275	A
53	3	1278	G
53	3	1280	A
53	3	1281	C

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Mol	Chain	Res	Type
53	3	1282	C
53	3	1286	U
53	3	1287	A
53	3	1290	G
53	3	1300	G
53	3	1302	C
53	3	1305	G
53	3	1312	G
53	3	1317	C
53	3	1322	C
53	3	1331	G
53	3	1335	U
53	3	1336	C
53	3	1340	A
53	3	1363	A
53	3	1370	G
53	3	1379	G
53	3	1394	A
53	3	1400	C
53	3	1404	C
53	3	1419	G
53	3	1429	A
53	3	1446	A
53	3	1448	C
53	3	1452	C
53	3	1453	G
53	3	1487	G
53	3	1492	A
53	3	1493	A
53	3	1494	G
53	3	1497	G
53	3	1499	A
53	3	1503	A
53	3	1506	U
53	3	1507	A
53	3	1517	G
53	3	1518	A
53	3	1519	A
53	3	1529	G
53	3	1530	G
54	4	4	U
54	4	7	C

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Mol	Chain	Res	Type
54	4	8	U
54	4	9	U
54	4	11	U
54	4	12	U
54	4	15	U
54	4	16	U
54	4	17	U
54	4	18	U
54	4	19	U
54	4	21	U
54	4	22	U
54	4	23	U
54	4	36	U
54	4	37	U
54	4	38	U
63	5	2	C
63	5	7	A
63	5	8	U
63	5	9	A
63	5	11	C
63	5	13	C
63	5	15	G
63	5	17	C
63	5	18	G
63	5	19	G
63	5	20	U
63	5	21	A
63	5	26	A
63	5	28	G
63	5	29	G
63	5	30	G
63	5	32	U
63	5	33	U
63	5	34	G
63	5	35	A
63	5	36	A
63	5	37	A
63	5	39	U
63	5	40	C
63	5	41	C
63	5	43	C
63	5	44	G

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Mol	Chain	Res	Type
63	5	46	G
63	5	47	U
63	5	48	C
63	5	49	C
63	5	52	G
63	5	53	G
63	5	55	U
63	5	57	G
63	5	58	A
63	5	59	U
63	5	60	U
63	5	61	C
63	5	66	U
63	5	73	A
63	5	74	C
63	5	76	A
64	6	2	G
64	6	9	G
64	6	18	G
64	6	19	G
64	6	20	U
64	6	46	G
64	6	47	U
64	6	59	A
64	6	74	C
64	6	76	A
64	7	2	G
64	7	7	G
64	7	8	U
64	7	9	G
64	7	19	G
64	7	20	U
64	7	21	A
64	7	22	G
64	7	30	G
64	7	33	U
64	7	34	C
64	7	35	A
64	7	36	U
64	7	42	G
64	7	45	G
64	7	54	U

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Mol	Chain	Res	Type
64	7	55	U
64	7	56	C
64	7	57	A
64	7	64	G
64	7	67	C
64	7	68	C
64	7	70	G
64	7	73	A
64	7	74	C
64	7	75	C
64	7	76	A

All (33) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
51	1	481	G
51	1	490	C
51	1	685	A
51	1	764	A
51	1	784	G
51	1	827	U
51	1	859	G
51	1	1020	A
51	1	1130	U
51	1	1715	G
51	1	1783	A
51	1	1801	A
51	1	1930	G
51	1	2275	C
51	1	2326	C
51	1	2732	G
52	2	88	C
53	3	4	U
53	3	1035	A
53	3	1139	G
53	3	1224	U
53	3	1492	A
54	4	11	U
54	4	16	U
63	5	7	A
63	5	29	G
63	5	32	U

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Mol	Chain	Res	Type
63	5	39	U
63	5	48	C
63	5	57	G
63	5	60	U
64	7	33	U
64	7	56	C

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

4 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	$\#\|Z\| > 2$
65	DPP	h	2	65	3,5,6	0.56	0	1,5,7	0.08	0
65	UAL	h	5	65	7,8,9	2.30	3 (42%)	5,9,11	2.92	2 (40%)
65	KBE	h	1	65	8,8,9	0.61	0	7,8,10	1.20	1 (14%)
65	5OH	h	6	65	8,12,13	0.76	0	3,16,18	1.52	1 (33%)

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
65	DPP	h	2	65	-	0/2/4/6	-
65	UAL	h	5	65	-	0/3/7/9	-
65	KBE	h	1	65	-	0/7/7/8	-
65	5OH	h	6	65	-	0/2/18/20	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
65	h	5	UAL	C1-N1	-4.86	1.32	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
65	h	5	UAL	C-CA	-2.89	1.40	1.45
65	h	5	UAL	CA-N	2.02	1.40	1.35

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
65	h	5	UAL	CA-CB-N1	-5.30	115.59	125.60
65	h	5	UAL	O-C-CA	-3.23	121.28	125.39
65	h	6	5OH	CR-CB-CA	-2.38	110.04	112.61
65	h	1	KBE	CB-CA-C	-2.07	109.22	112.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
65	h	2	DPP	3	0
65	h	5	UAL	1	0
65	h	6	5OH	6	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

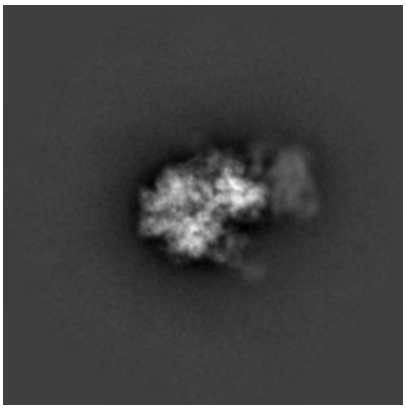
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-38941. These allow visual inspection of the internal detail of the map and identification of artifacts.

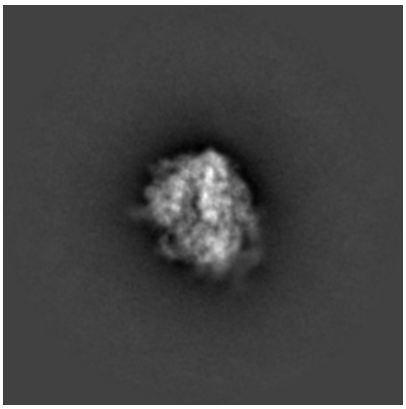
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

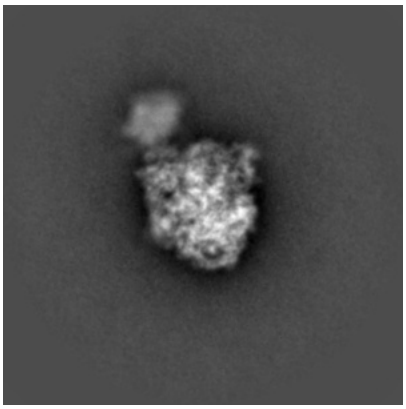
6.1.1 Primary map



X

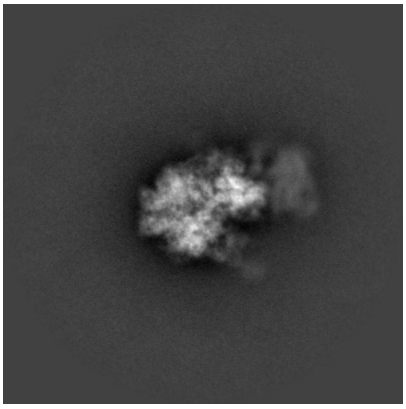


Y

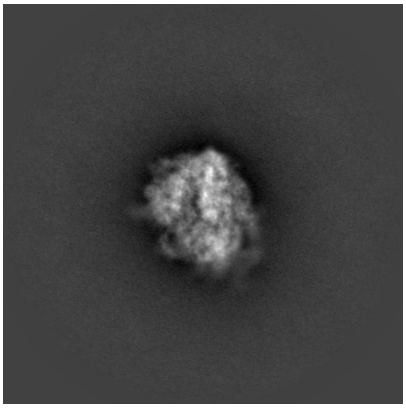


Z

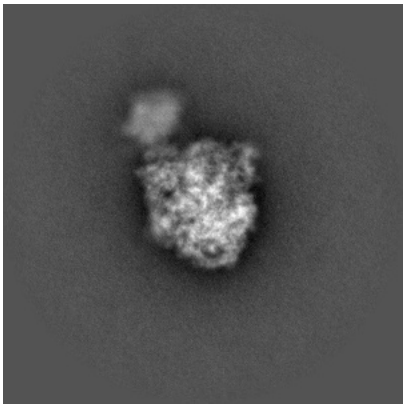
6.1.2 Raw map



X



Y

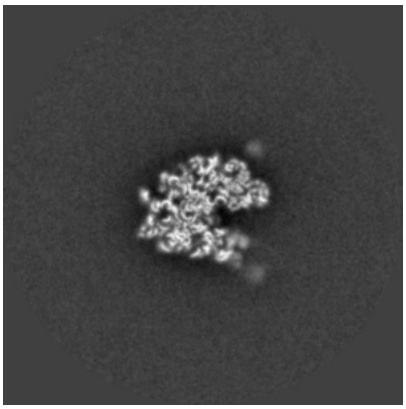


Z

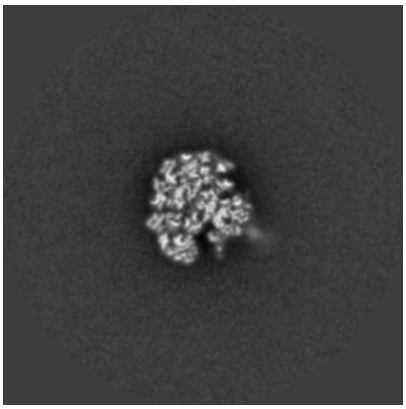
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

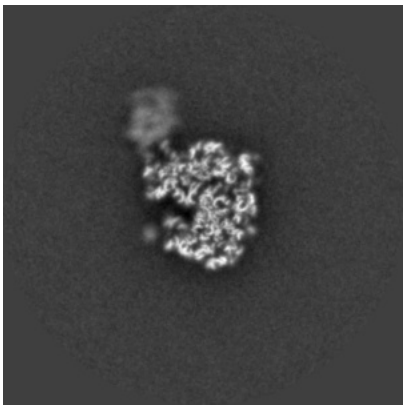
6.2.1 Primary map



X Index: 240

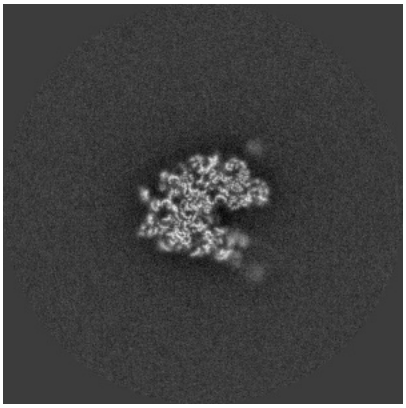


Y Index: 240

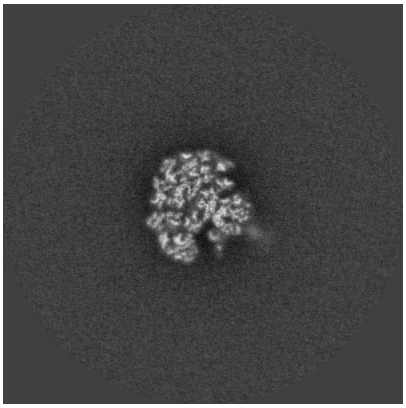


Z Index: 240

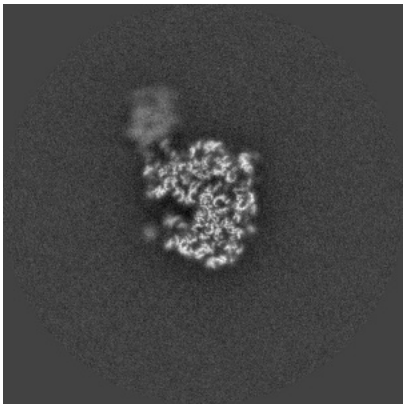
6.2.2 Raw map



X Index: 240



Y Index: 240

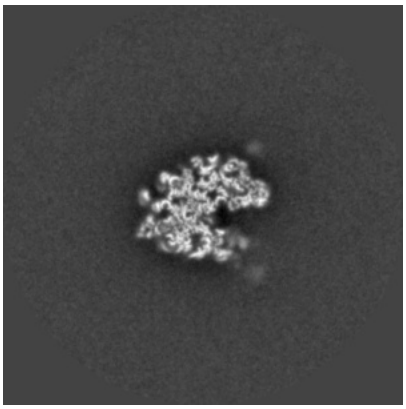


Z Index: 240

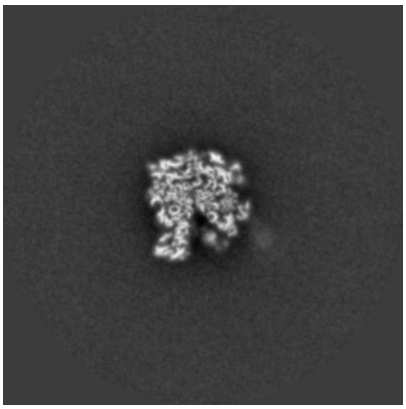
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

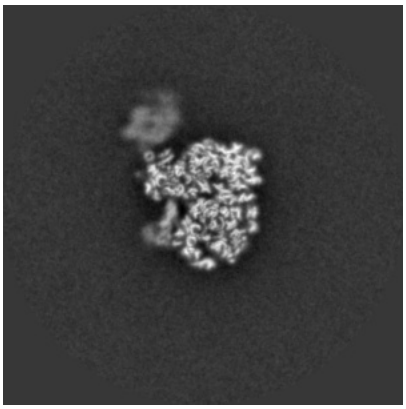
6.3.1 Primary map



X Index: 242

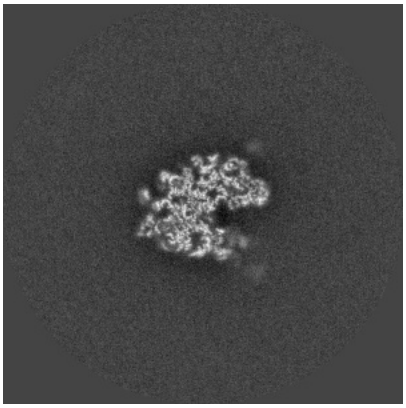


Y Index: 226

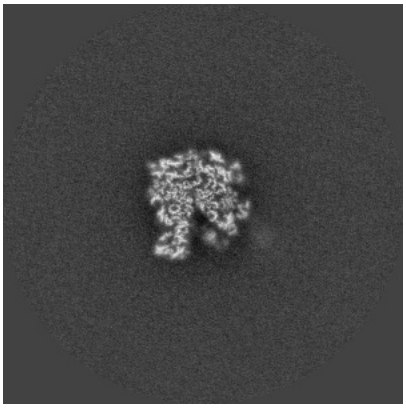


Z Index: 249

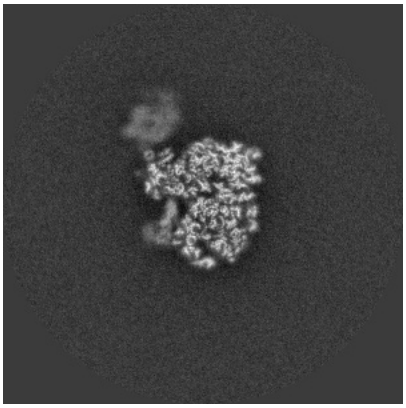
6.3.2 Raw map



X Index: 242



Y Index: 226

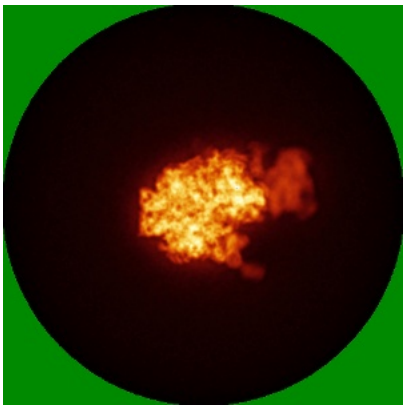


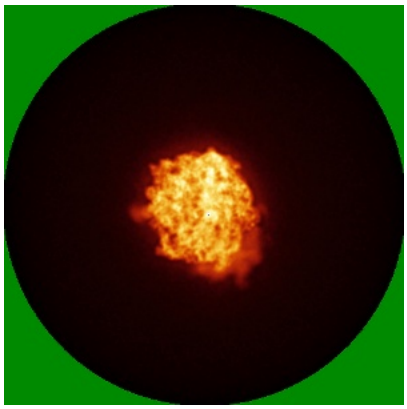
Z Index: 249

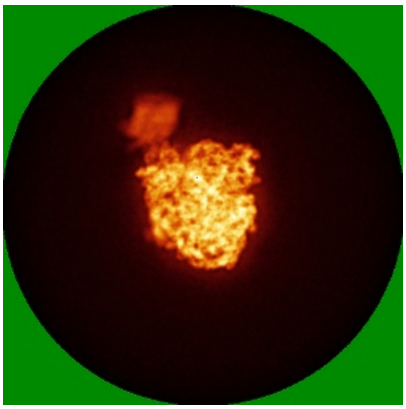
The images above show the largest variance slices of the map in three orthogonal directions.

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

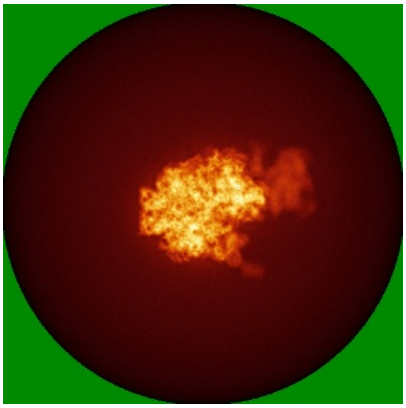
6.4.1 Primary map

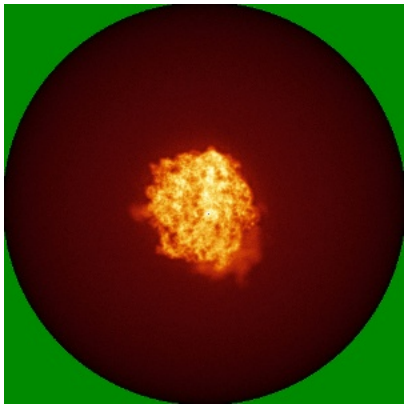

X

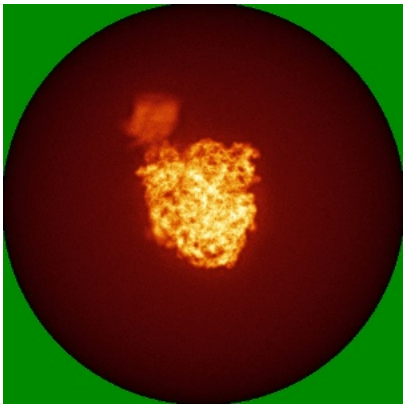

Y


Z

6.4.2 Raw map


X


Y


Z

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

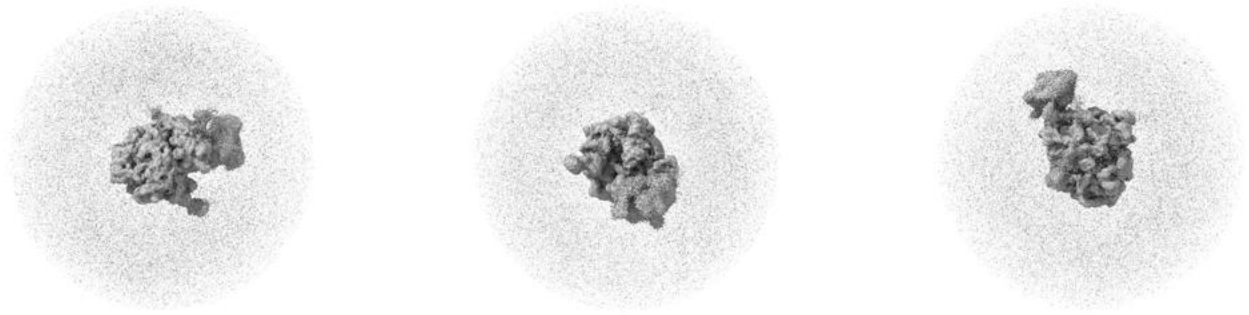
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.006. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

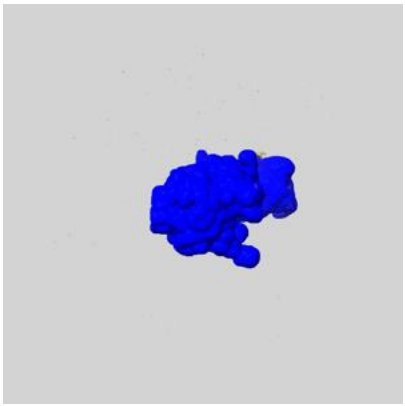
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

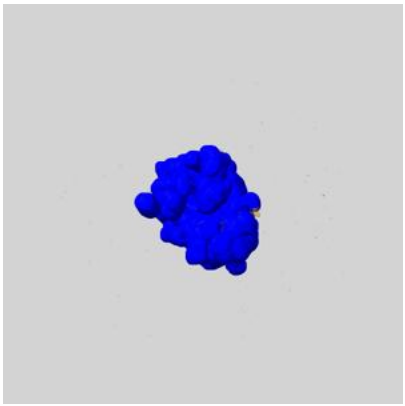
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

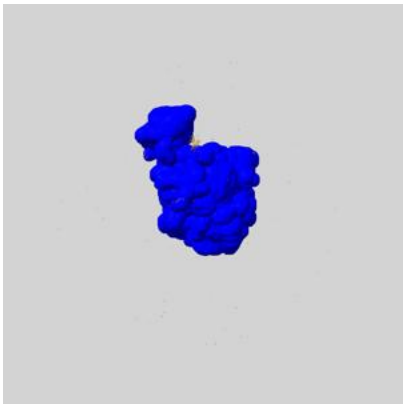
6.6.1 emd_38941_msk_1.map



X



Y

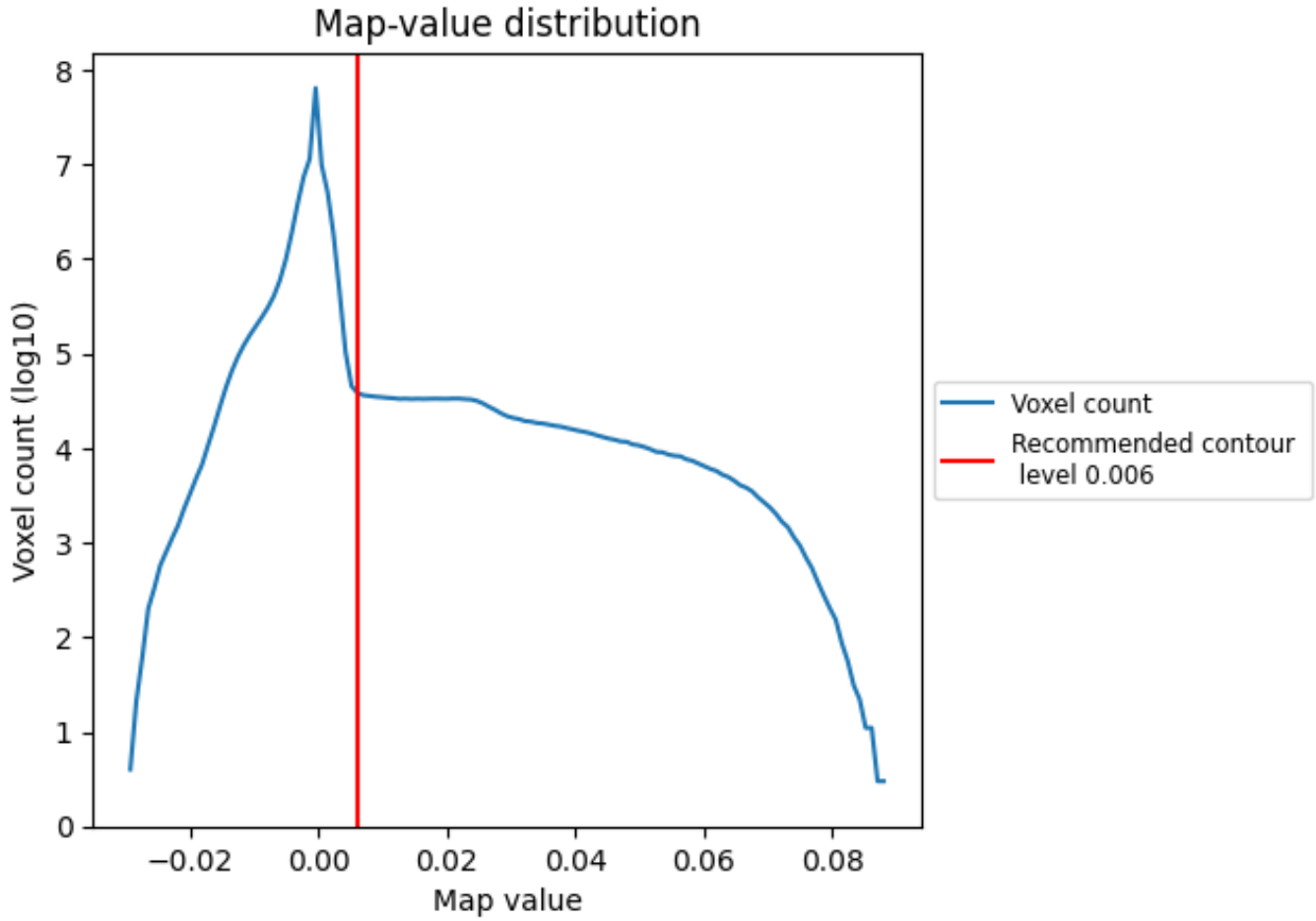


Z

7 Map analysis

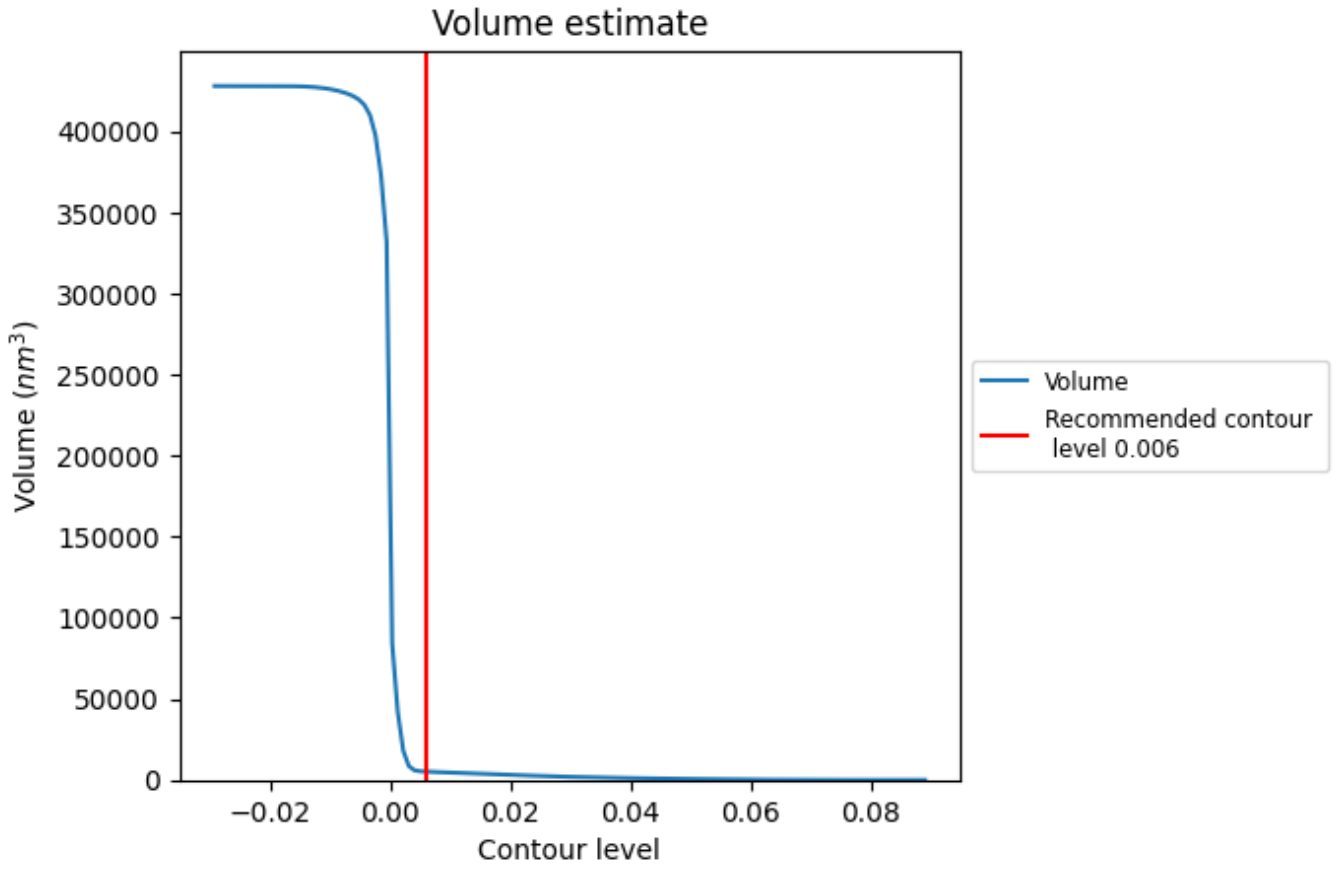
This section contains the results of statistical analysis of the map.

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.

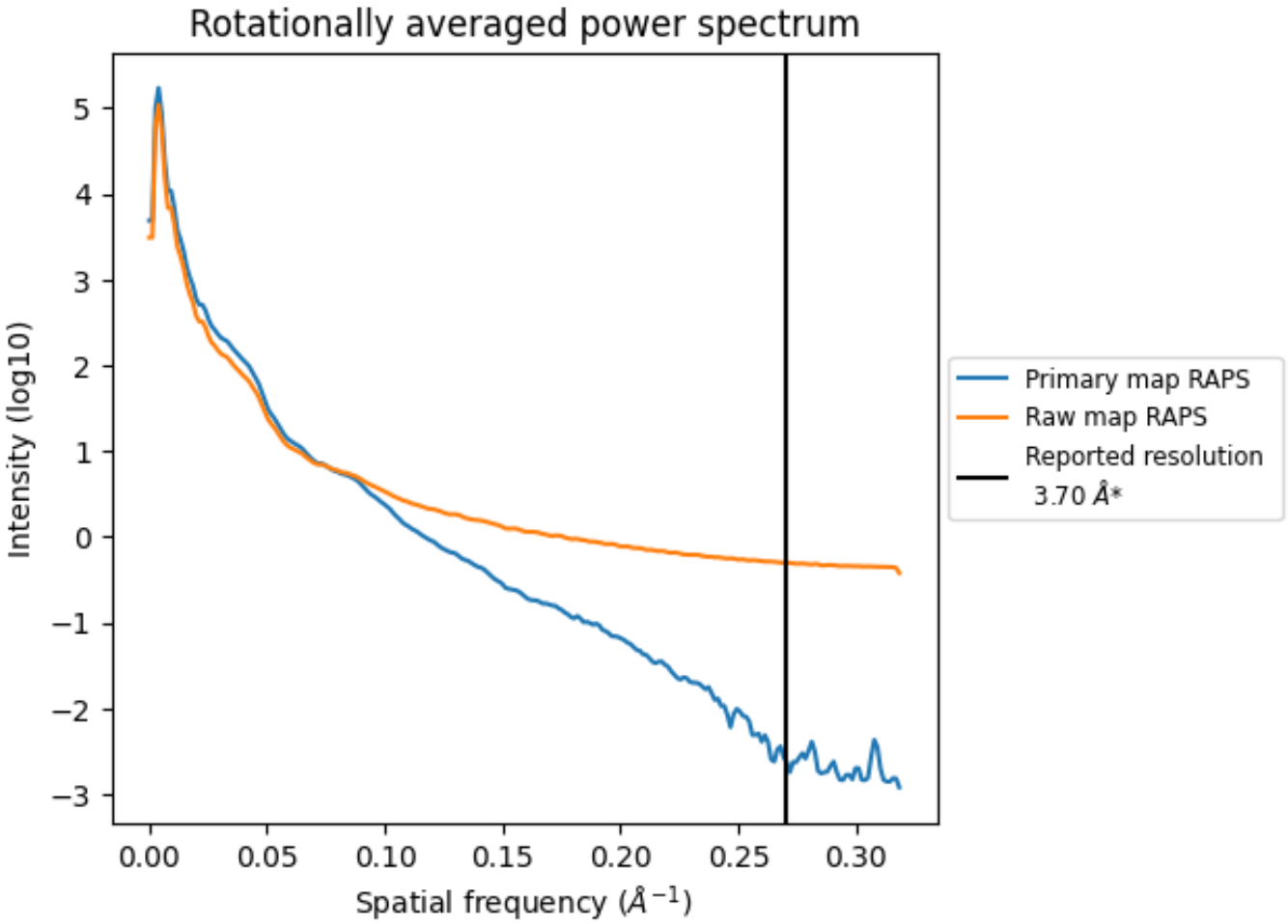
7.2 Volume estimate



The volume at the recommended contour level is 5140 nm^3; this corresponds to an approximate mass of 4643 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)

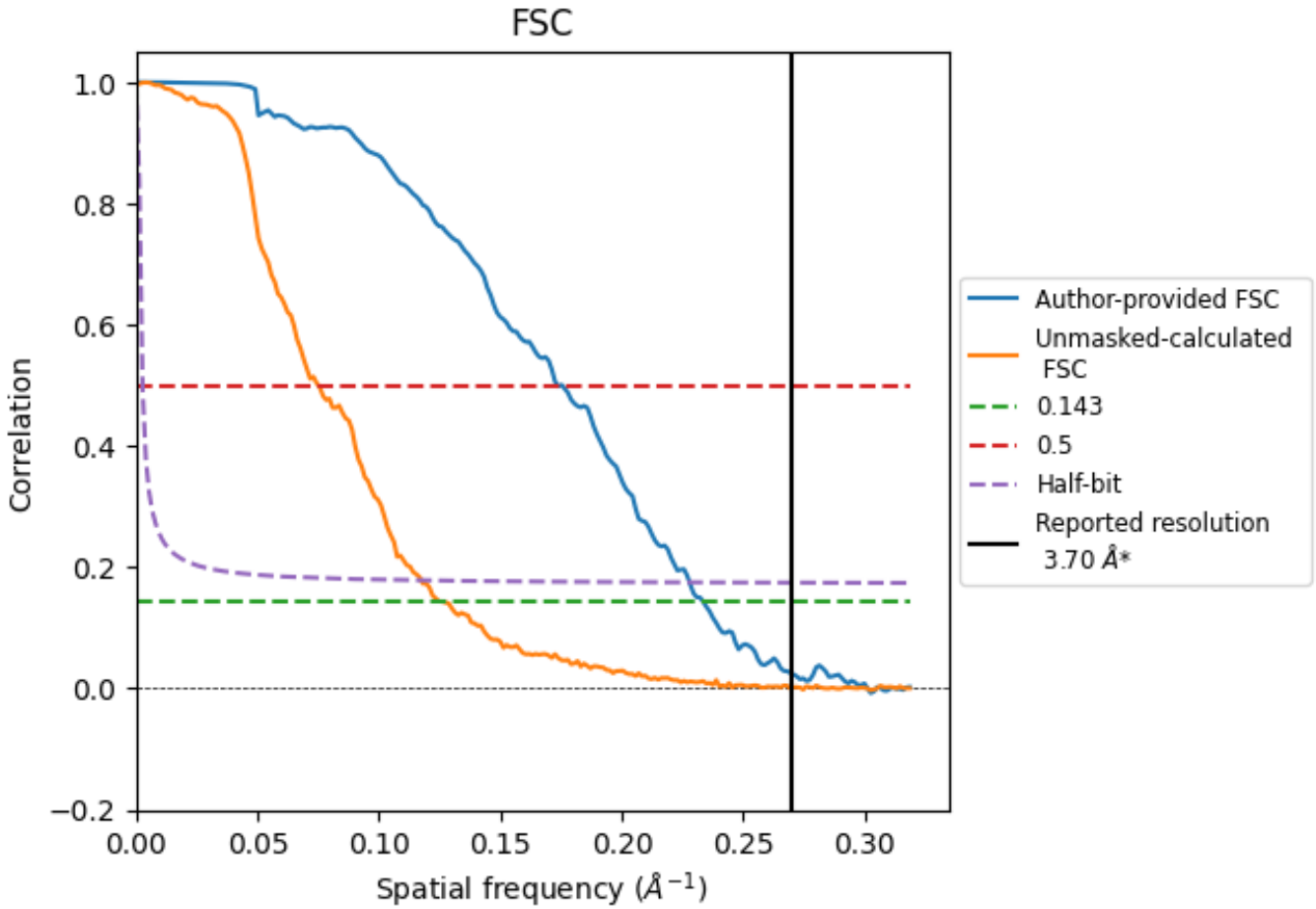


*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	4.28	5.76	4.39
Unmasked-calculated*	7.92	13.33	8.52

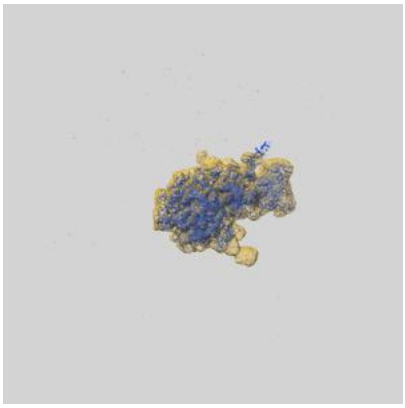
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 4.28 differs from the reported value 3.7 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.92 differs from the reported value 3.7 by more than 10 %

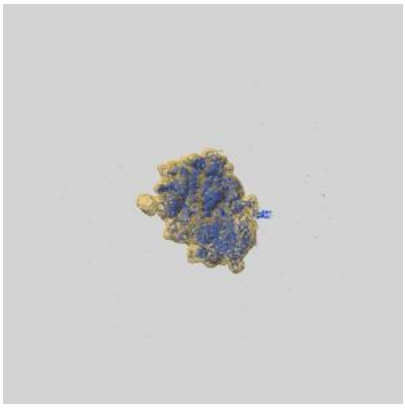
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-38941 and PDB model 8Y5L. Per-residue inclusion information can be found in section 3 on page 16.

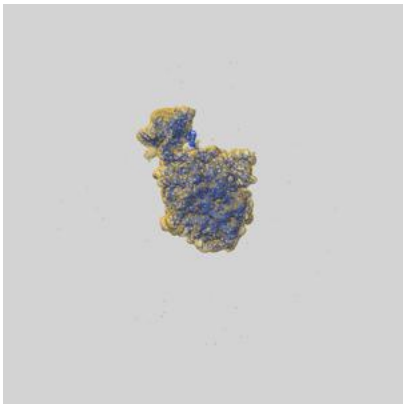
9.1 Map-model overlay



X



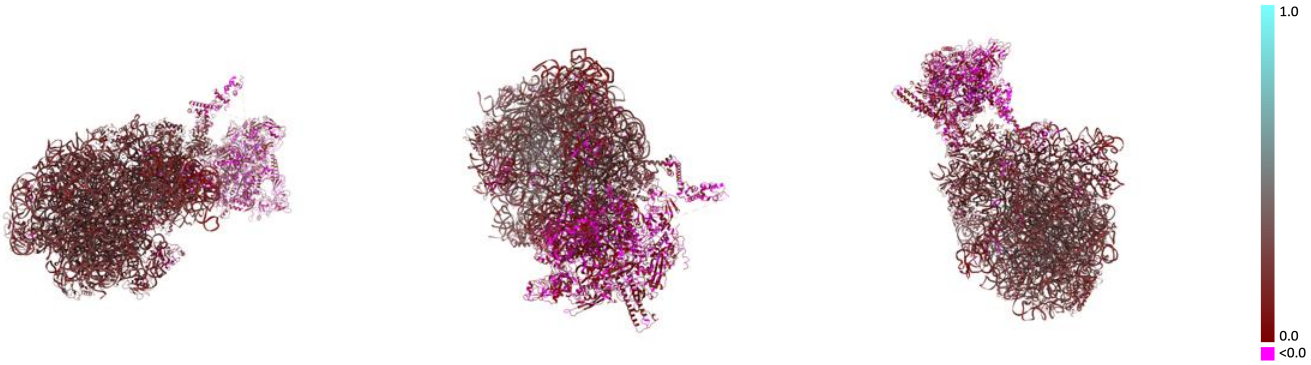
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.006 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.

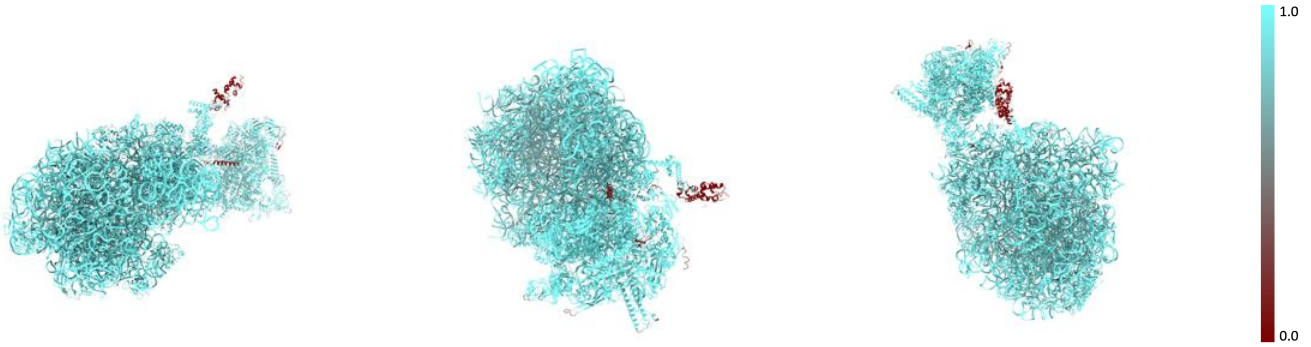
9.2 Q-score mapped to coordinate model (i)



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.

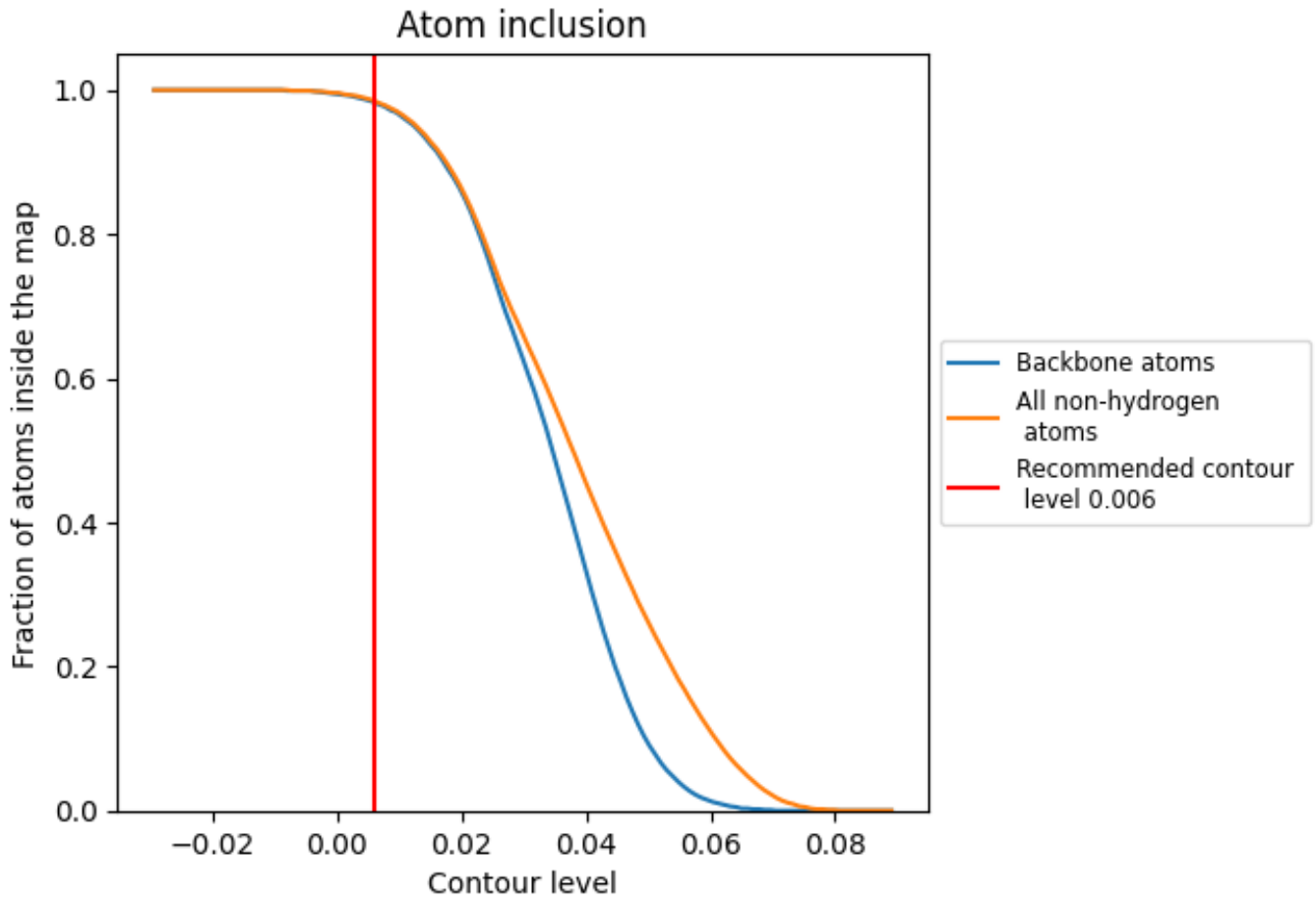
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.006).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 98% 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 (0.006) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9850	0.1860
1	0.9990	0.2390
2	1.0000	0.2210
3	0.9990	0.2150
4	0.9720	0.0810
5	0.9750	0.1340
6	0.9980	0.2420
7	0.8370	0.0840
8	1.0000	0.0720
9	1.0000	0.0730
A	0.9790	0.1550
A1	0.9340	0.0400
A2	0.8340	0.0570
B	0.9980	0.2030
B1	0.9650	0.0450
B2	0.9780	0.0560
C	0.9750	0.1900
D	0.9830	0.1800
E	0.9980	0.1920
F	0.9900	0.1490
G	0.9880	0.1770
H	0.9790	0.1970
I	0.9590	0.0850
J	0.9940	0.2040
K	0.9940	0.1880
L	0.9920	0.1810
M	0.9850	0.1960
N	0.9990	0.1550
NA	0.8780	0.1540
NG	0.9510	0.0880
O	0.9990	0.1400
P	0.9960	0.1960
Q	0.9620	0.1720
R	0.9970	0.1680
S	0.9960	0.1570

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
T	0.9910	0.1640
U	0.9570	0.1090
V	0.9640	0.1480
W	0.9940	0.1650
W0	0.5580	0.0150
X	0.9920	0.1550
Y	0.9770	0.1560
Z	0.9520	0.1400
b	0.9900	0.2240
c	0.9880	0.1850
d	0.9950	0.2110
e	0.9930	0.1860
f	0.9920	0.1810
g	0.9980	0.1850
h	1.0000	0.1560
i	0.9100	0.0660
j	0.9960	0.2020
k	0.9810	0.2040
l	0.9990	0.1970
m	0.9860	0.2070
n	1.0000	0.1800
o	1.0000	0.1780
p	0.9820	0.1940
q	0.9960	0.1790
r	0.9960	0.2170
s	0.9900	0.2040
t	0.9850	0.1690
u	0.9940	0.1700
v	0.9990	0.1790
w	0.9930	0.1710
x	0.9950	0.1990
y	1.0000	0.1610
z	0.9980	0.1980