Full wwPDB EM Validation Report

Aug 18, 2025 – 03:12 PM JST

PDB ID	:	8YDI / pdb_00008ydi
EMDB ID	:	EMD-39172
Title	:	E.coli transcription translation coupling complex in TTC-P state 1 (subclass 2) containing mRNA with 39-mer spacer, NusG, NusA, fMet-tRNA(iMet), Phe-tRNA(Phe), and viomycin
Authors	:	Zhang, J.; Lu, G.; Wang, C.; Lin, J.
Deposited on	:	2024-02-20
Resolution	:	4.60 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:

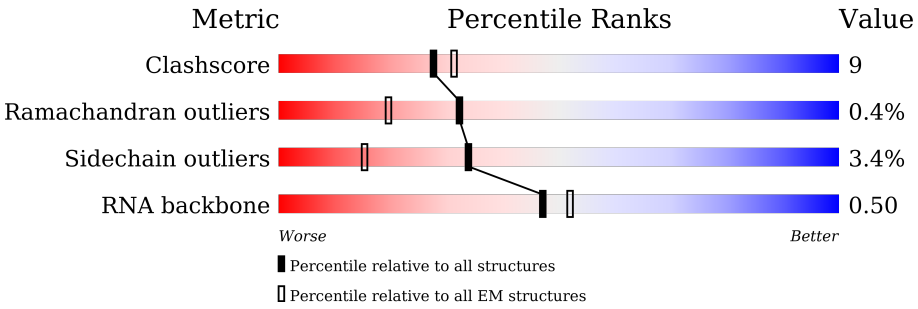
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	: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

1 Overall quality at a glance

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

The reported resolution of this entry is 4.60 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	7%, 81%, 13%, 6%
2	B	57	79%, 19%, ·
3	C	55	80%, 11%, 9%
4	D	46	76%, 24%
5	E	65	91%, 8%, ·
6	F	38	66%, 32%, ·
7	G	241	67%, 22%, ·, 10%

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

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Mol	Chain	Length	Quality of chain
33	i	142	11% 63% 35%
34	j	142	82% 18%
35	k	123	82% 17%
36	l	144	86% 13%
37	m	136	83% 17%
38	n	127	73% 21% 6%
39	o	117	79% 20%
40	p	115	85% 14%
41	q	118	83% 15%
42	r	103	73% 25%
43	s	110	85% 15%
44	t	100	76% 17% 7%
45	u	104	72% 26%
46	v	94	85% 14%
47	w	85	74% 14% 12%
48	x	78	74% 23%
49	y	63	76% 24%
50	z	59	76% 22%
51	1	2904	43% 51% 6%
52	2	120	76% 20%
53	3	1542	68% 29%
54	4	56	5% 27% 34% 38%
55	8	37	27% 43% 27%
56	9	37	49% 5% 46%
57	A1	329	29% 77% 15% 9%

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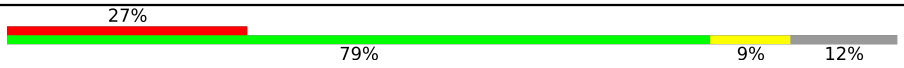
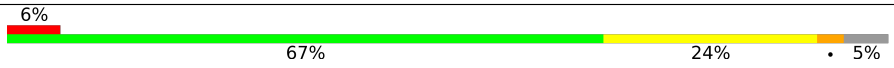
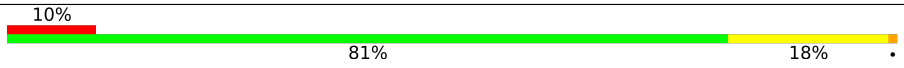
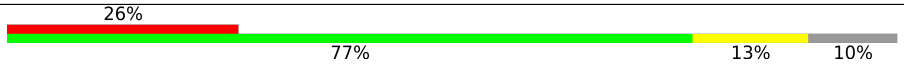
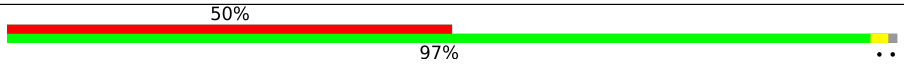
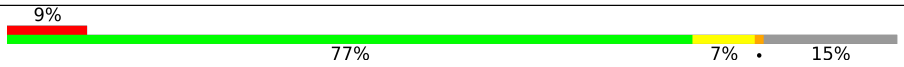
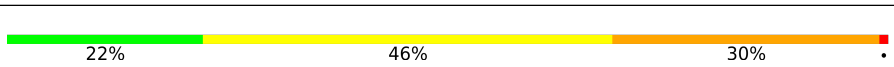
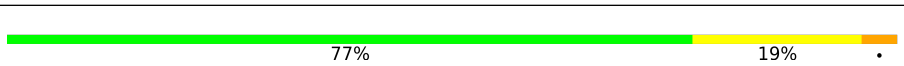
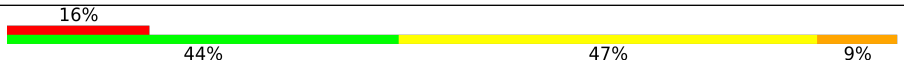
Mol	Chain	Length	Quality of chain
57	A2	329	
58	B1	1407	
59	B2	1342	
60	W0	91	
61	NA	495	
62	NG	181	
63	5	76	
64	6	77	
64	7	77	
65	h	6	

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 178130 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	35	Total	C	N	O	P	0	0
			729	326	105	263	35		

- 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		

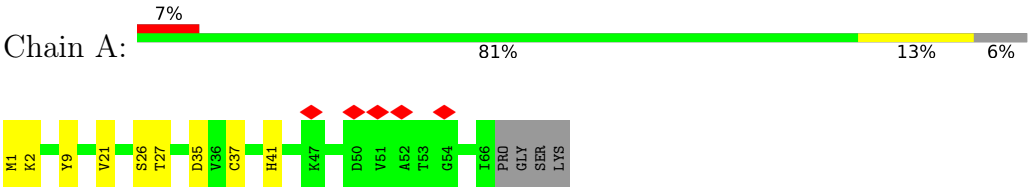
- Molecule 66 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

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

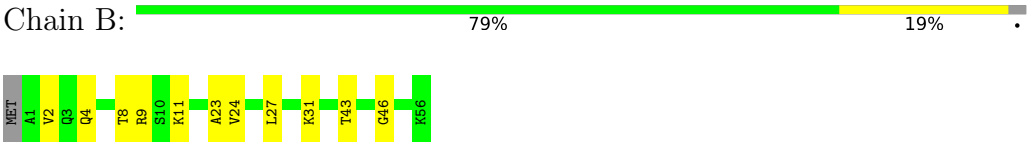
3 Residue-property plots (i)

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.

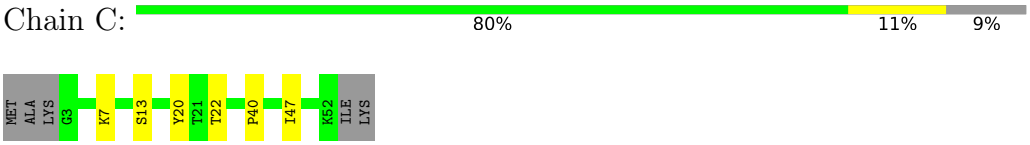
• Molecule 1: 50S ribosomal protein L31



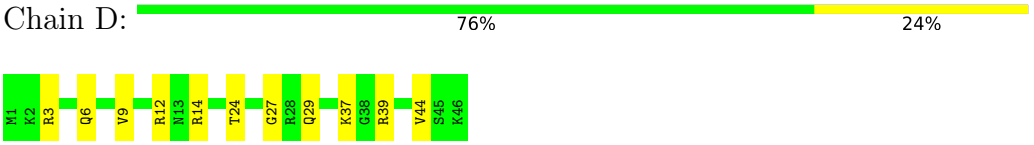
• Molecule 2: 50S ribosomal protein L32



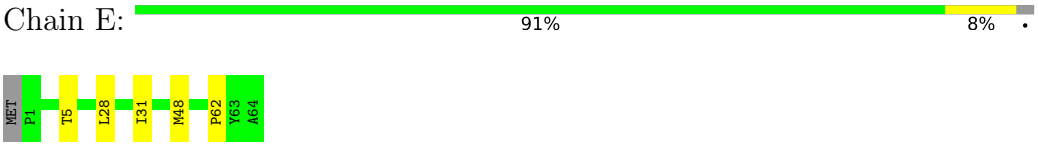
• Molecule 3: 50S ribosomal protein L33



• Molecule 4: 50S ribosomal protein L34



• Molecule 5: 50S ribosomal protein L35

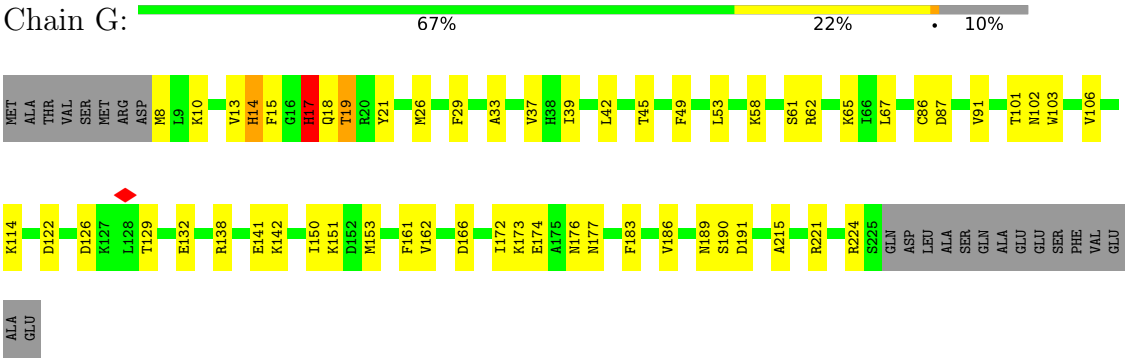


• Molecule 6: 50S ribosomal protein L36

Chain F:

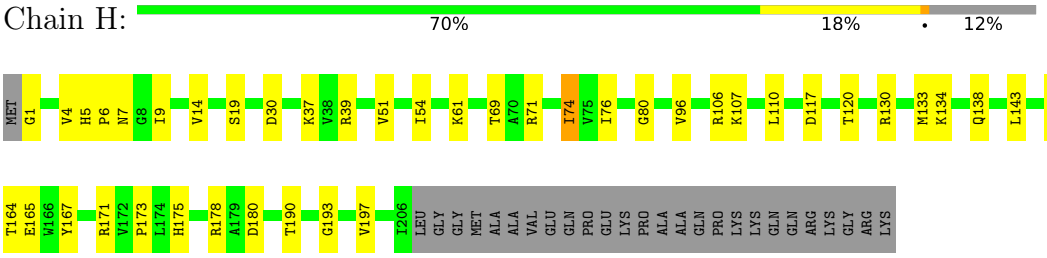
• Molecule 7: 30S ribosomal protein S2

Chain G:



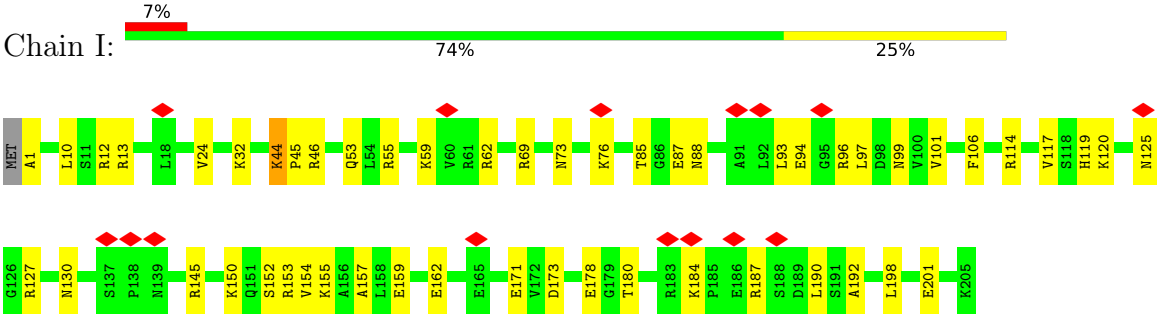
• Molecule 8: 30S ribosomal protein S3

Chain H:



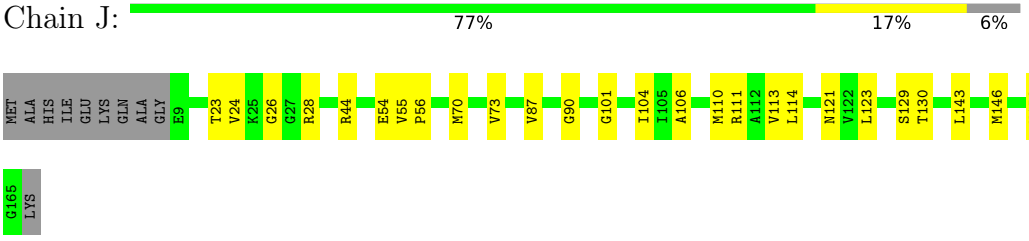
• Molecule 9: 30S ribosomal protein S4

Chain I:



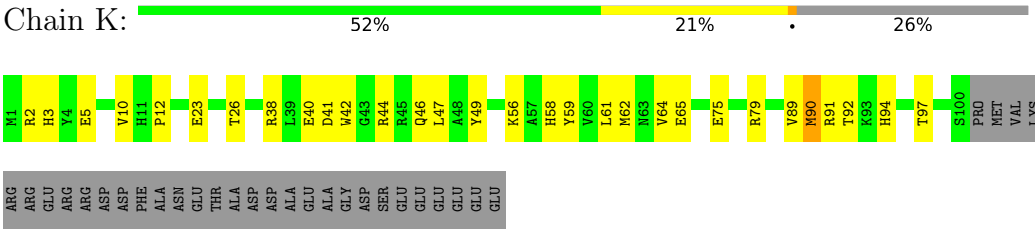
• Molecule 10: 30S ribosomal protein S5

Chain J:



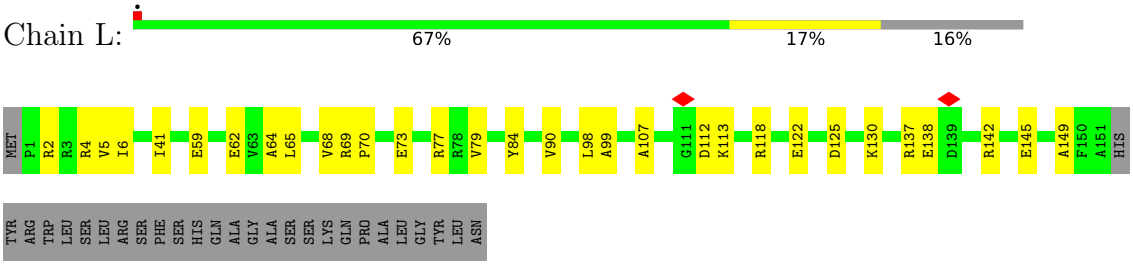
• Molecule 11: 30S ribosomal protein S6, fully modified isoform

Chain K:



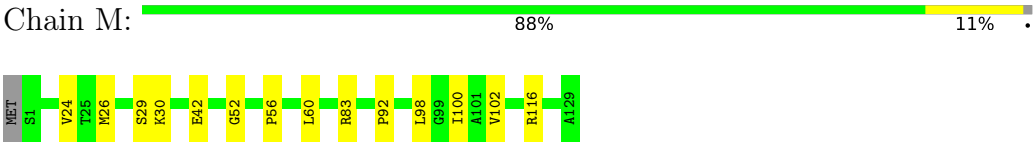
• Molecule 12: 30S ribosomal protein S7

Chain L:



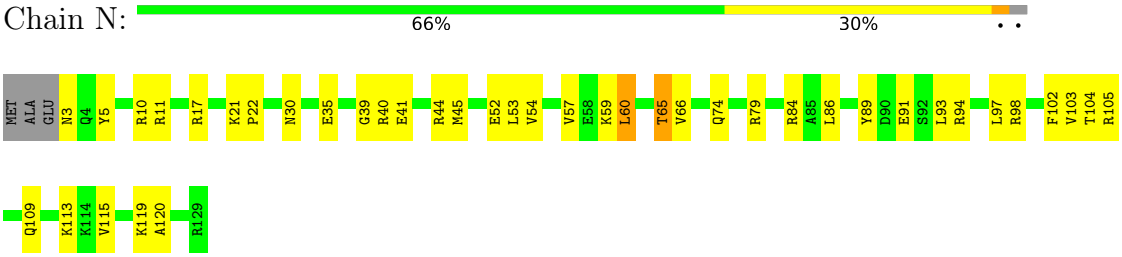
• Molecule 13: 30S ribosomal protein S8

Chain M:



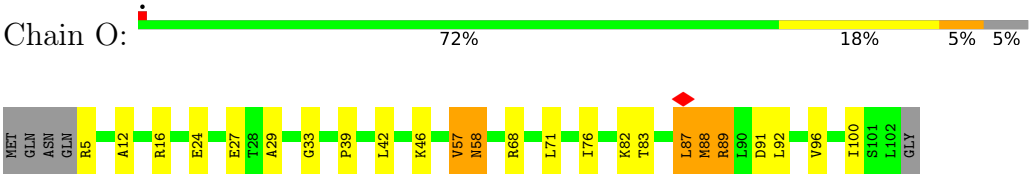
• Molecule 14: 30S ribosomal protein S9

Chain N:



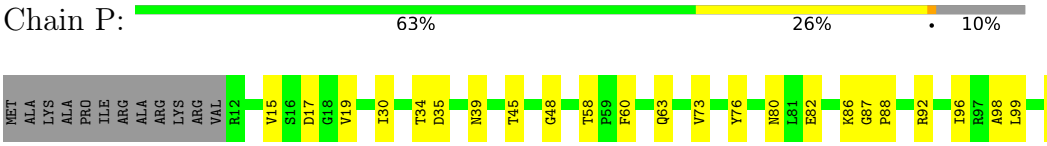
• Molecule 15: 30S ribosomal protein S10

Chain O:



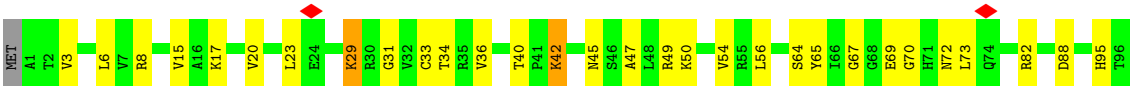
• Molecule 16: 30S ribosomal protein S11

Chain P:



• Molecule 17: 30S ribosomal protein S12

Chain Q:



• Molecule 18: 30S ribosomal protein S13

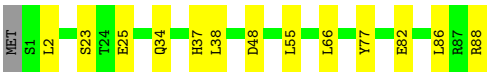
Chain R:

• Molecule 19: 30S ribosomal protein S14

Chain S:

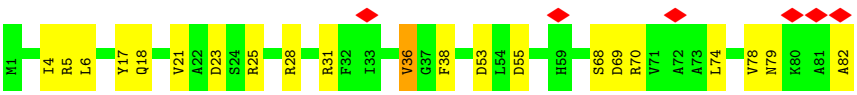
• Molecule 20: 30S ribosomal protein S15

Chain T:



• Molecule 21: 30S ribosomal protein S16

Chain U:

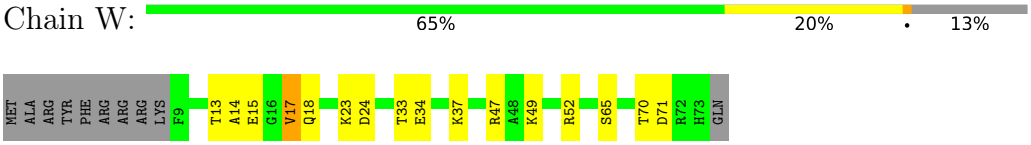


• Molecule 22: 30S ribosomal protein S17

Chain V:

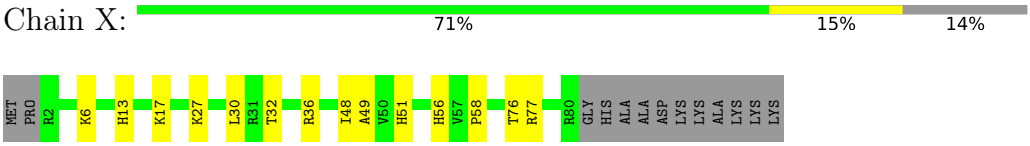
• Molecule 23: 30S ribosomal protein S18

Chain W:



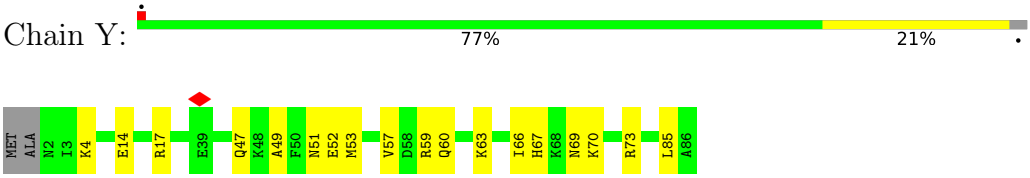
• Molecule 24: 30S ribosomal protein S19

Chain X:



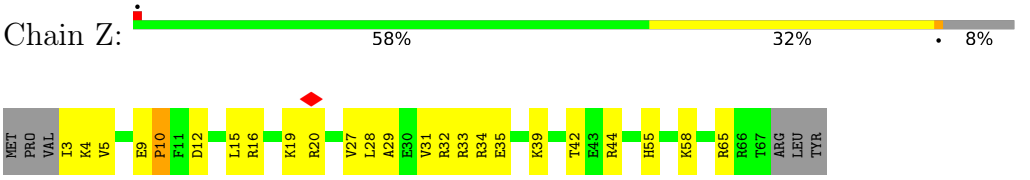
• Molecule 25: 30S ribosomal protein S20

Chain Y:



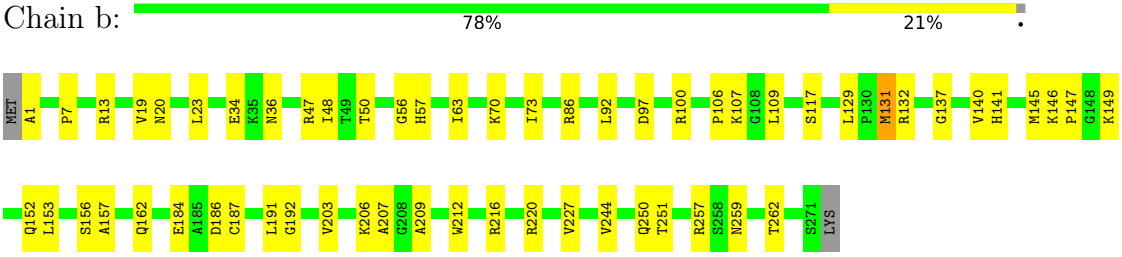
• Molecule 26: 30S ribosomal protein S21

Chain Z:



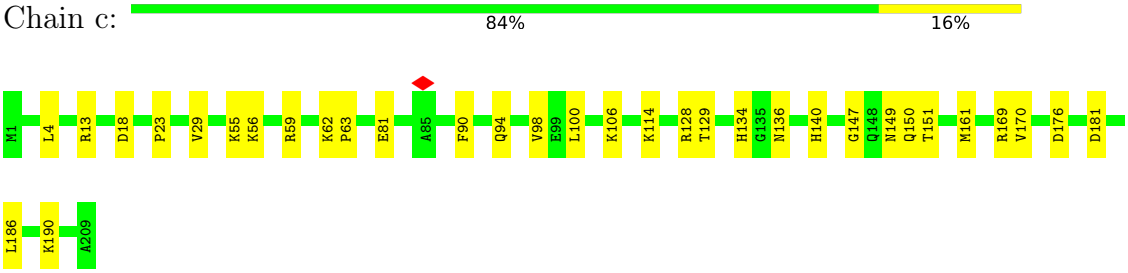
• Molecule 27: 50S ribosomal protein L2

Chain b:



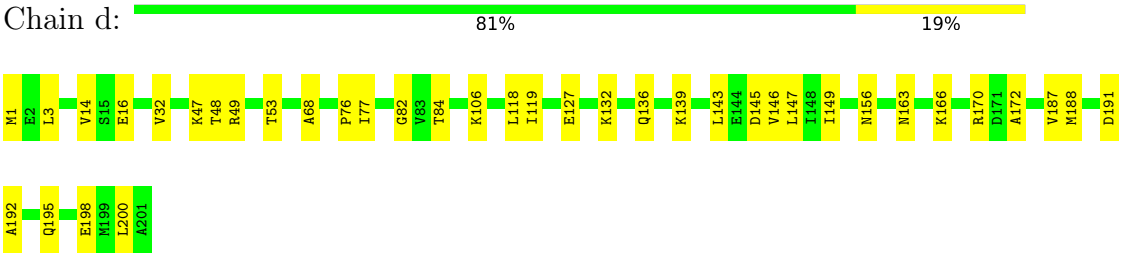
• Molecule 28: 50S ribosomal protein L3

Chain c:



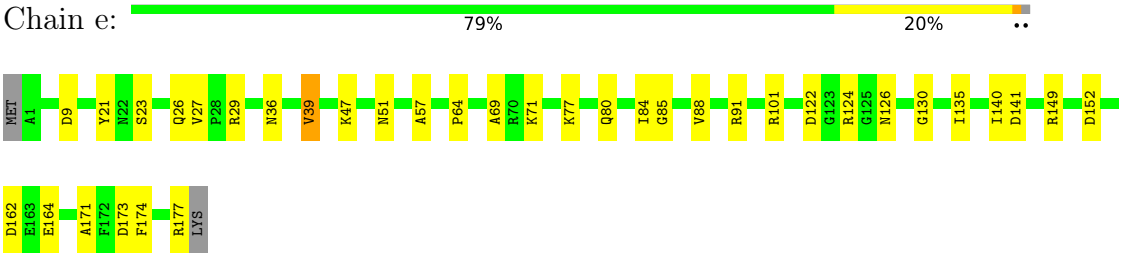
• Molecule 29: 50S ribosomal protein L4

Chain d:



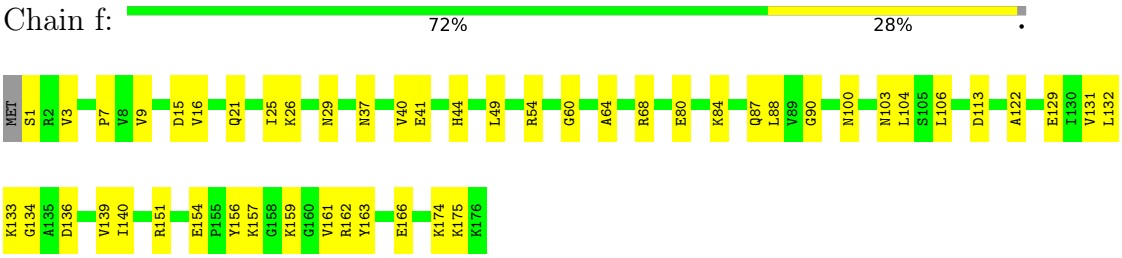
• Molecule 30: 50S ribosomal protein L5

Chain e:



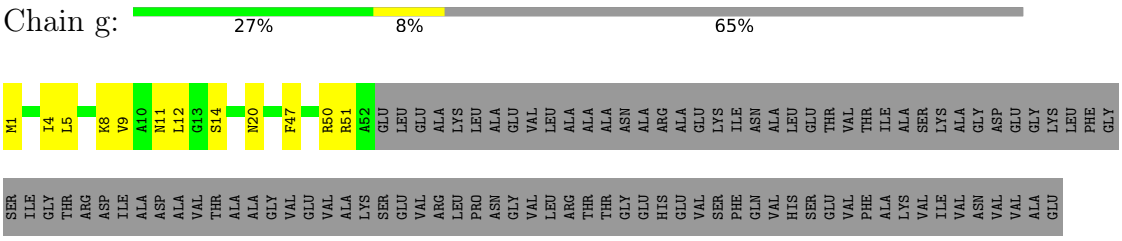
• Molecule 31: 50S ribosomal protein L6

Chain f:



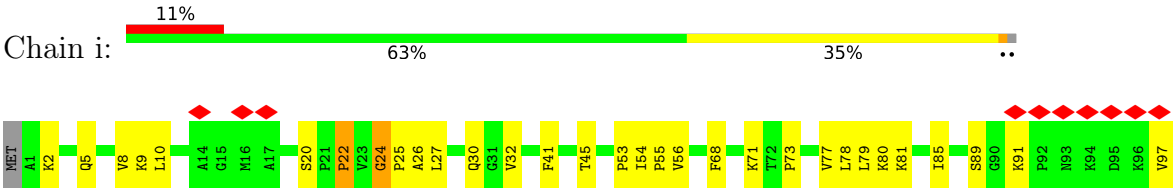
• Molecule 32: 50S ribosomal protein L9

Chain g:



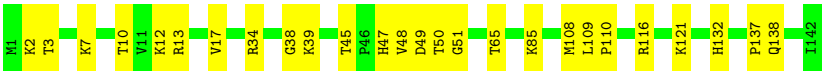
• Molecule 33: 50S ribosomal protein L11

Chain i:



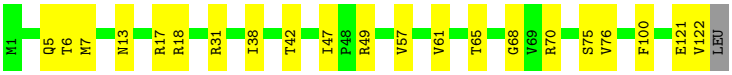
• Molecule 34: 50S ribosomal protein L13

Chain j:



• Molecule 35: 50S ribosomal protein L14

Chain k:



• Molecule 36: 50S ribosomal protein L15

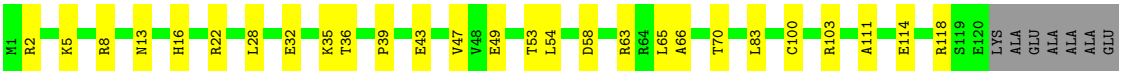
Chain l:

• Molecule 37: 50S ribosomal protein L16

Chain m:

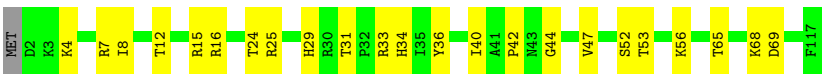
• Molecule 38: 50S ribosomal protein L17

Chain n:



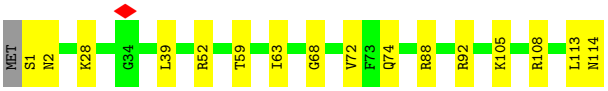
• Molecule 39: 50S ribosomal protein L18

Chain o:



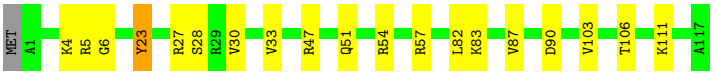
• Molecule 40: 50S ribosomal protein L19

Chain p:



• Molecule 41: 50S ribosomal protein L20

Chain q:

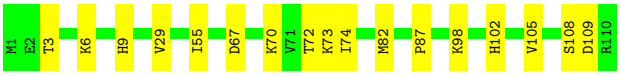


• Molecule 42: 50S ribosomal protein L21

Chain r:

• Molecule 43: 50S ribosomal protein L22

Chain s:

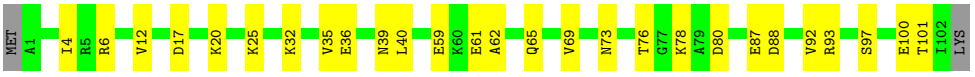


• Molecule 44: 50S ribosomal protein L23

Chain t:

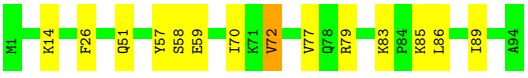
• Molecule 45: 50S ribosomal protein L24

Chain u:



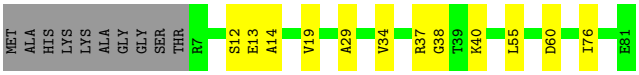
• Molecule 46: 50S ribosomal protein L25

Chain v:



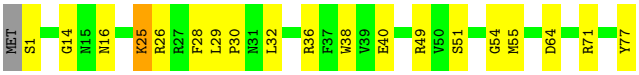
• Molecule 47: 50S ribosomal protein L27

Chain w:



• Molecule 48: 50S ribosomal protein L28

Chain x:

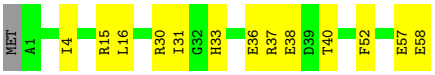


• Molecule 49: 50S ribosomal protein L29

Chain y:

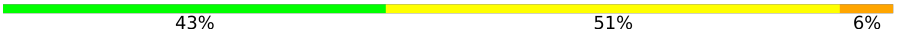
• Molecule 50: 50S ribosomal protein L30

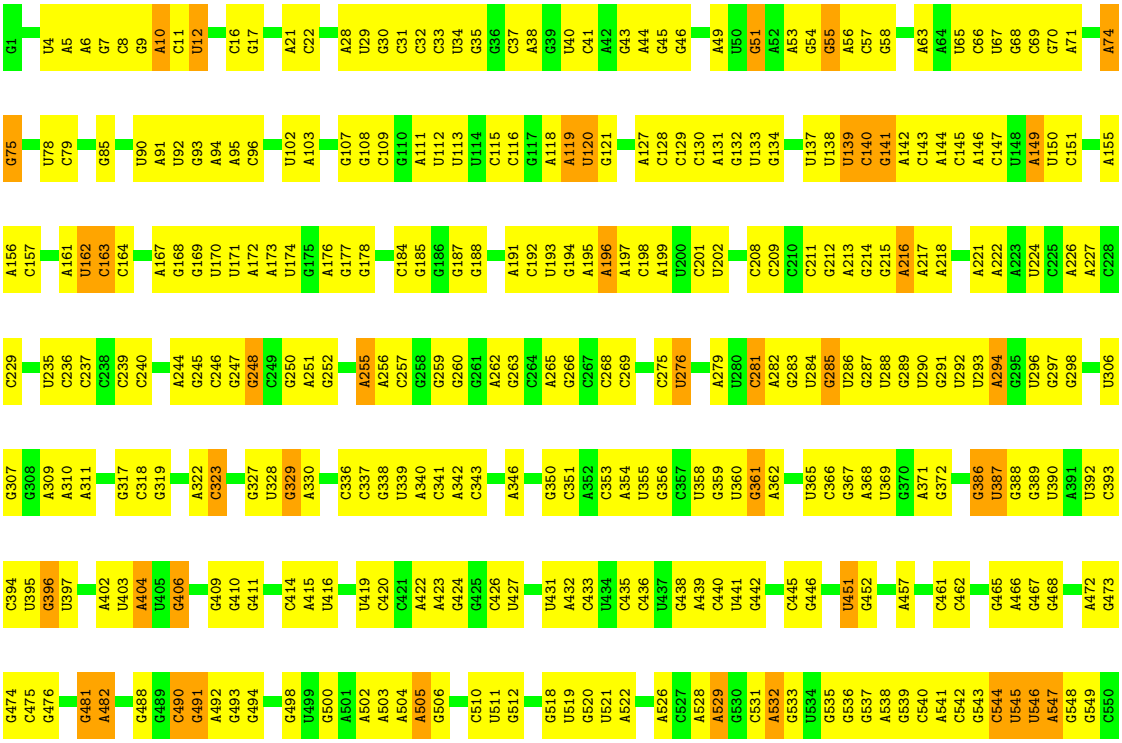
Chain z:

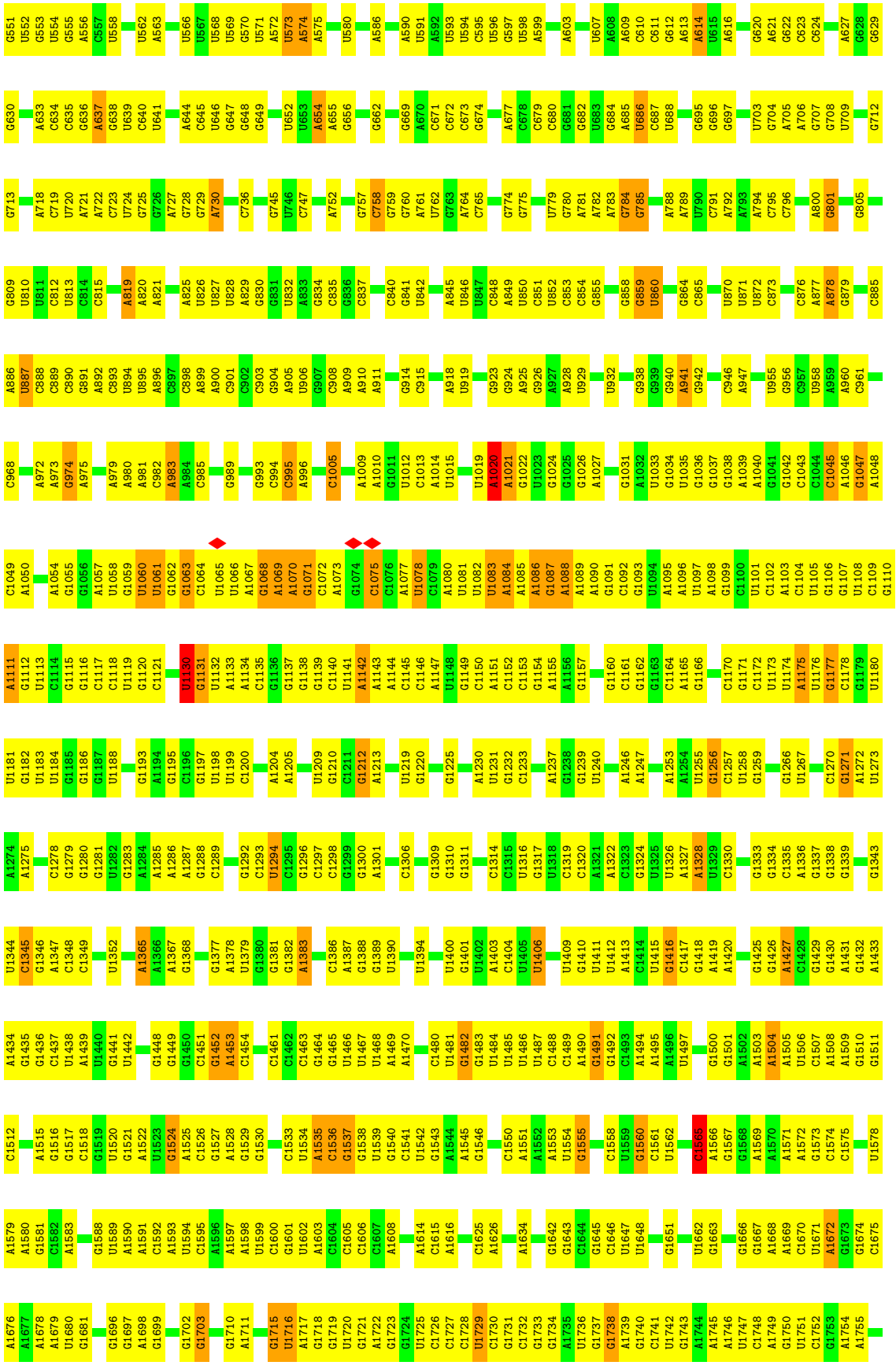


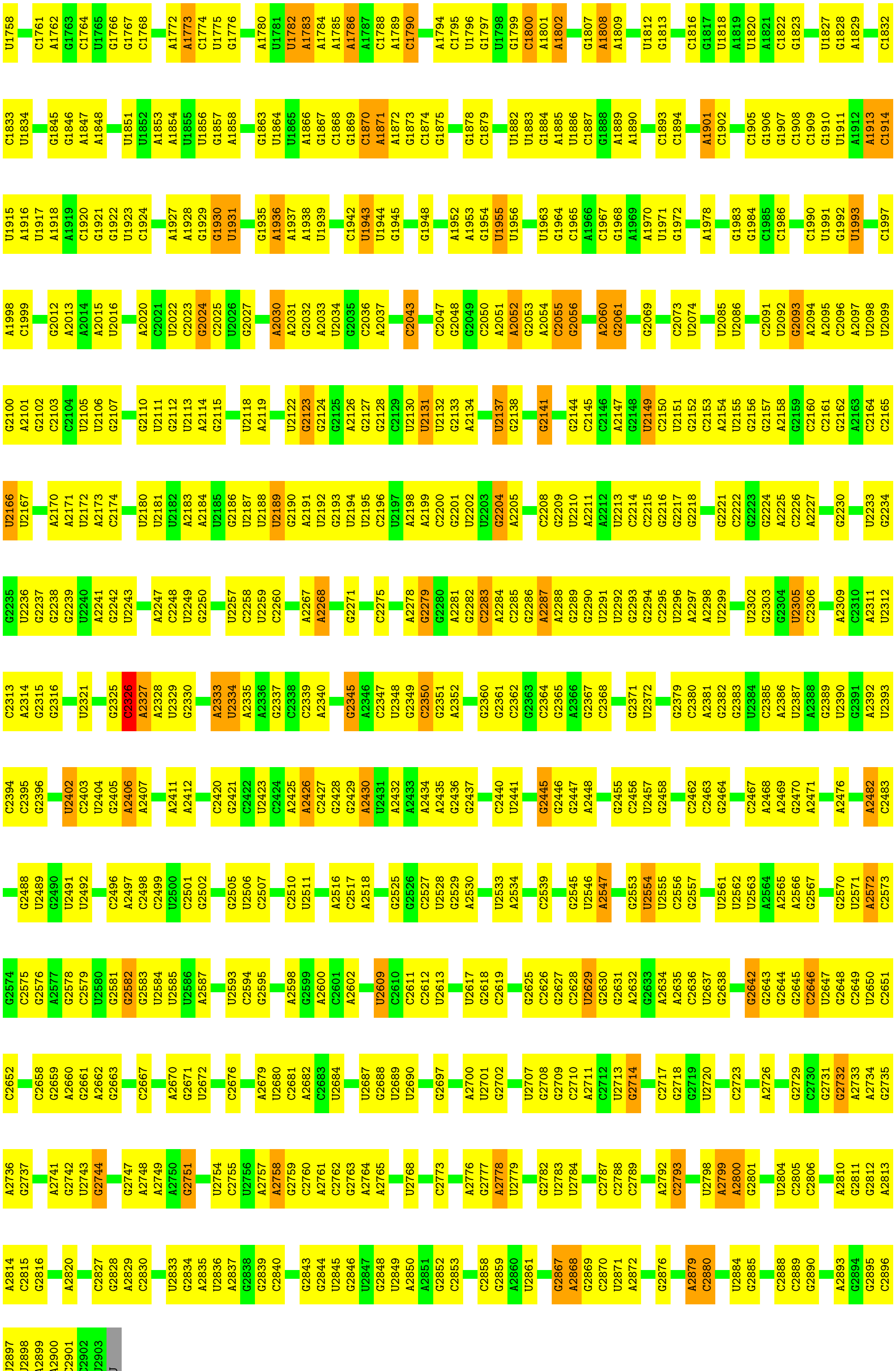
• Molecule 51: 23S rRNA

Chain 1:



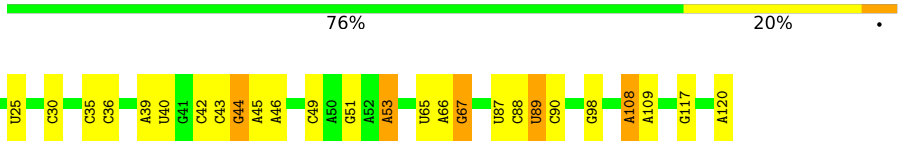





U1758 C1761 A1762 G1763 C1764 U1765 G1766 G1767 C1768 A1772 A1773 C1774 U1775 G1776 A1780 U1781 U1782 A1783 A1784 A1785 A1786 A1787 C1788 A1789 C1790 A1794 C1795 U1796 G1797 U1798 G1799 C1800 A1801 A1802 G1807 A1808 A1809 U1812 G1813 C1816 G1817 U1818 A1819 U1820 A1821 C1822 G1823 U1827 G1828 A1829 C1832
C1833 U1834 G1845 G1846 A1847 A1848 U1851 U1852 A1853 A1854 U1855 U1856 G1857 A1858 G1863 U1864 U1865 A1866 G1867 C1868 G1869 C1870 A1871 A1872 G1873 C1874 G1875 G1878 C1879 U1882 U1883 G1884 A1885 U1886 C1887 G1888 A1889 A1890 C1893 C1894 A1901 C1902 C1905 G1906 G1907 C1908 C1909 G1910 U1911 A1912 A1913 C1914
U1915 A1916 U1917 A1918 A1919 C1920 G1921 G1922 U1923 C1924 A1927 A1928 G1929 G1930 U1931 G1935 A1936 A1937 A1938 U1939 C1942 U1943 U1944 G1945 G1948 A1952 A1953 G1954 U1955 U1956 U1963 G1964 C1965 A1966 C1967 G1968 A1969 A1970 U1971 G1972 A1978 G1983 G1984 C1985 C1986 C1990 U1991 G1992 U1993 C1997
A1998 C1999 G2012 A2013 A2014 A2015 U2016 A2020 C2021 U2022 C2023 G2024 C2025 U2026 G2027 A2030 A2031 G2032 A2033 U2034 G2035 C2036 A2037 C2043 C2047 G2048 G2049 C2050 A2051 A2052 G2053 A2054 C2055 G2056 A2060 G2061 G2069 C2073 U2074 U2085 U2086 C2091 U2092 G2093 A2094 A2095 C2096 A2097 U2098 U2099
G2100 A2101 G2102 C2103 C2104 U2105 U2106 G2107 G2110 U2111 G2112 U2113 A2114 G2115 U2118 A2119 U2122 G2123 G2124 G2125 A2126 G2127 C2128 C2129 U2130 U2131 U2132 G2133 A2134 U2137 G2138 G2141 G2144 C2145 C2146 A2147 G2148 U2149 C2150 U2151 G2152 C2153 A2154 U2155 G2156 G2157 A2158 G2159 C2160 C2161 G2162 A2163 C2164 C2165
U2166 U2167 A2170 A2171 U2172 A2173 C2174 U2180 U2181 U2182 A2183 A2184 U2185 G2186 U2187 U2188 U2189 G2190 A2191 U2192 G2193 U2194 U2195 C2196 U2197 A2198 A2199 C2200 G2201 U2202 U2203 G2204 A2205 C2208 G2209 U2210 A2211 A2212 U2213 C2214 C2215 G2216 G2217 G2218 G2221 C2222 G2223 G2224 A2225 C2226 A2227 G2230 U2233 G2234
G2235 U2236 G2237 G2238 G2239 U2240 A2241 G2242 U2243 A2247 C2248 U2249 G2250 U2257 C2258 U2259 C2260 A2267 A2268 G2271 C2275 A2278 G2279 G2280 A2281 G2282 C2283 A2284 C2285 G2286 A2287 A2288 G2289 G2290 U2291 U2292 G2293 G2294 C2295 U2296 A2297 A2298 U2299 U2302 G2303 G2304 U2305 C2306 A2309 C2310 A2311 U2312
C2313 A2314 G2315 G2316 U2321 G2325 C2326 A2327 A2328 U2329 G2330 A2333 U2334 A2335 A2336 G2337 C2338 C2339 A2340 G2345 A2346 C2347 U2348 G2349 C2350 G2351 A2352 G2360 G2361 C2362 G2363 C2364 G2365 A2366 G2367 C2368 G2371 U2372 G2379 C2380 A2381 G2382 G2383 U2384 C2385 A2386 U2387 A2388 G2389 U2390 G2391 A2392 U2393
C2394 C2395 G2396 U2402 C2403 U2404 G2405 A2406 A2407 A2411 A2412 C2420 G2421 C2422 U2423 C2424 A2425 A2426 C2427 G2428 G2429 A2430 U2431 A2432 A2433 A2434 A2435 G2436 G2437 C2440 U2441 G2445 G2446 G2447 A2448 G2455 C2456 U2457 G2458 C2462 C2463 G2464 C2467 A2468 A2469 G2470 A2471 A2476 A2482 C2483
G2488 U2489 G2490 U2491 U2492 C2496 A2497 C2498 C2499 U2500 C2501 G2502 G2505 U2506 C2507 C2510 U2511 A2516 C2517 A2518 G2525 G2526 C2527 U2528 G2529 A2530 U2533 A2534 C2539 G2545 U2546 A2547 G2553 U2554 U2555 C2556 G2557 U2561 U2562 U2563 A2564 A2565 A2566 G2567 G2570 U2571 A2572 C2573
G2574 C2575 G2576 A2577 G2578 C2579 U2580 G2581 G2582 G2583 U2584 U2585 U2586 A2587 U2593 C2594 G2595 A2598 G2599 A2600 C2601 A2602 U2609 C2610 C2611 C2612 U2613 U2617 G2618 C2619 C2625 C2626 G2627 C2628 U2629 G2630 G2631 A2632 G2633 A2634 A2635 C2636 U2637 G2638 G2642 G2643 G2644 G2645 C2646 U2647 G2648 C2649 U2650 C2651
C2652 C2658 G2659 A2660 G2661 A2662 G2663 C2667 A2670 G2671 U2672 C2676 A2679 U2680 C2681 A2682 C2683 U2684 U2687 G2688 U2689 U2690 G2697 A2700 U2701 G2702 U2707 G2708 G2709 C2710 A2711 C2712 U2713 A2714 C2717 G2718 G2719 U2720 C2723 A2726 G2729 C2730 G2731 G2732 A2733 A2734 G2735
A2736 G2737 A2741 G2742 U2743 G2744 G2747 A2748 A2749 A2750 G2751 U2754 C2755 U2756 A2757 A2758 G2759 C2760 A2761 C2762 G2763 A2764 A2765 U2768 C2773 A2776 G2777 A2778 U2779 G2782 U2783 U2784 C2787 C2788 C2789 A2792 C2793 U2798 A2799 A2800 G2801 U2804 C2805 C2806 A2810 G2811 G2812 A2813
A2814 C2815 G2816 A2820 C2827 G2828 A2829 C2830 U2833 G2834 A2835 U2836 A2837 G2838 G2839 C2840 G2843 G2844 U2845 G2846 U2847 G2848 U2849 A2850 A2851 G2852 C2853 C2858 G2859 A2860 U2861 G2867 A2868 G2869 C2870 U2871 A2872 G2876 A2879 C2880 U2884 G2885 C2888 C2889 G2890 A2893 G2894 G2895 C2896
U2897 U2898 A2899 A2900 C2901 C2902 U2903 U

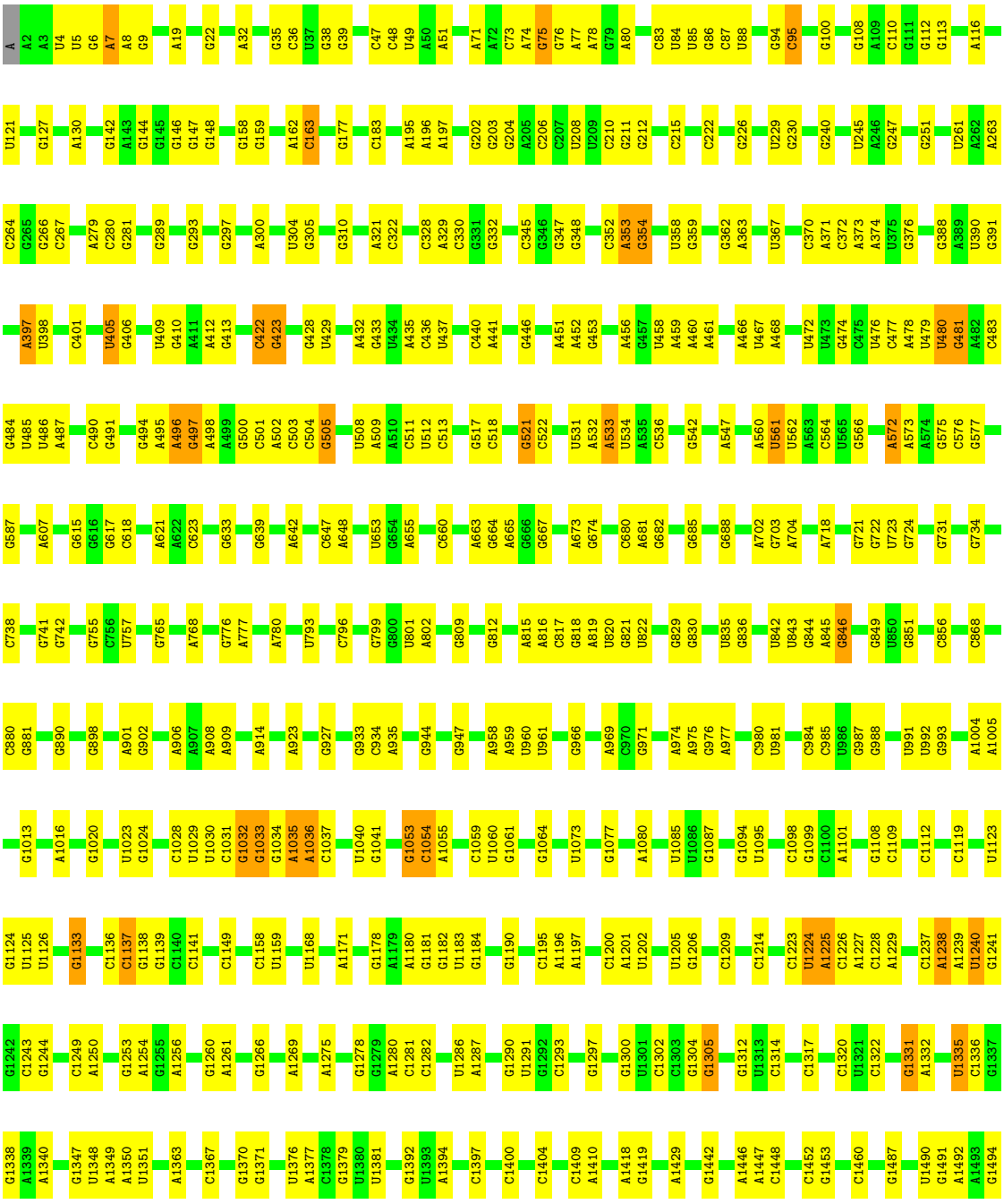
- Molecule 52: 5S rRNA

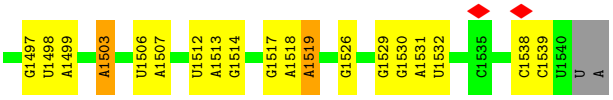
Chain 2:



- Molecule 53: 16S rRNA

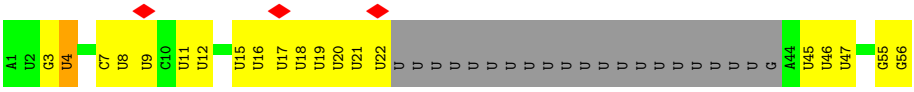
Chain 3:





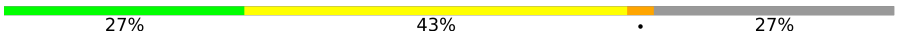
• Molecule 54: mRNA

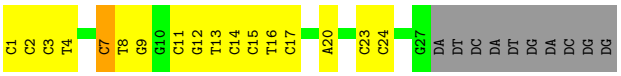
Chain 4:



• Molecule 55: templete DNA strand

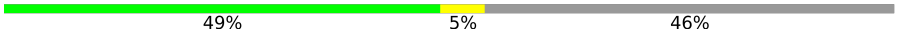
Chain 8:

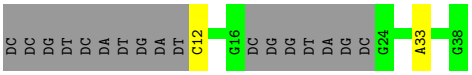




• Molecule 56: non-templete DNA strand

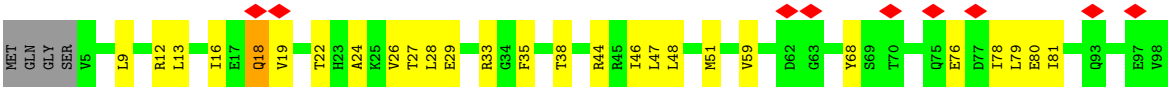
Chain 9:

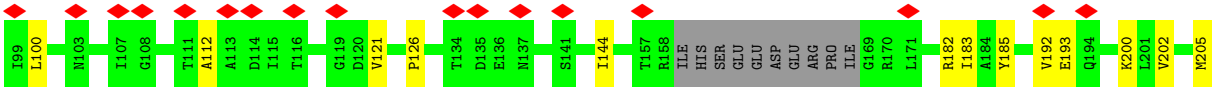


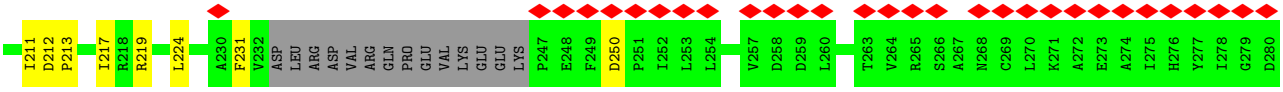


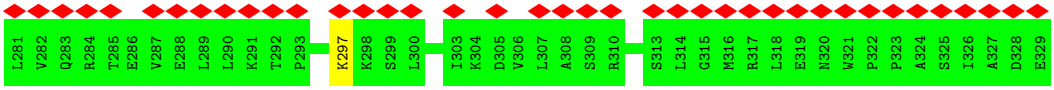
• Molecule 57: DNA-directed RNA polymerase subunit alpha

Chain A1:



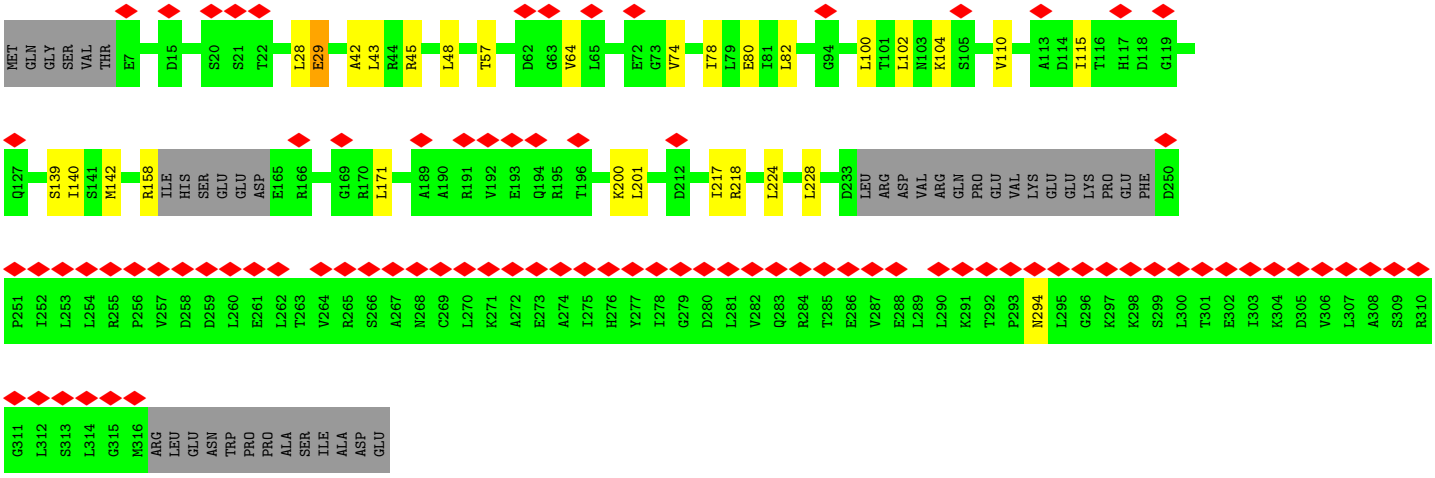






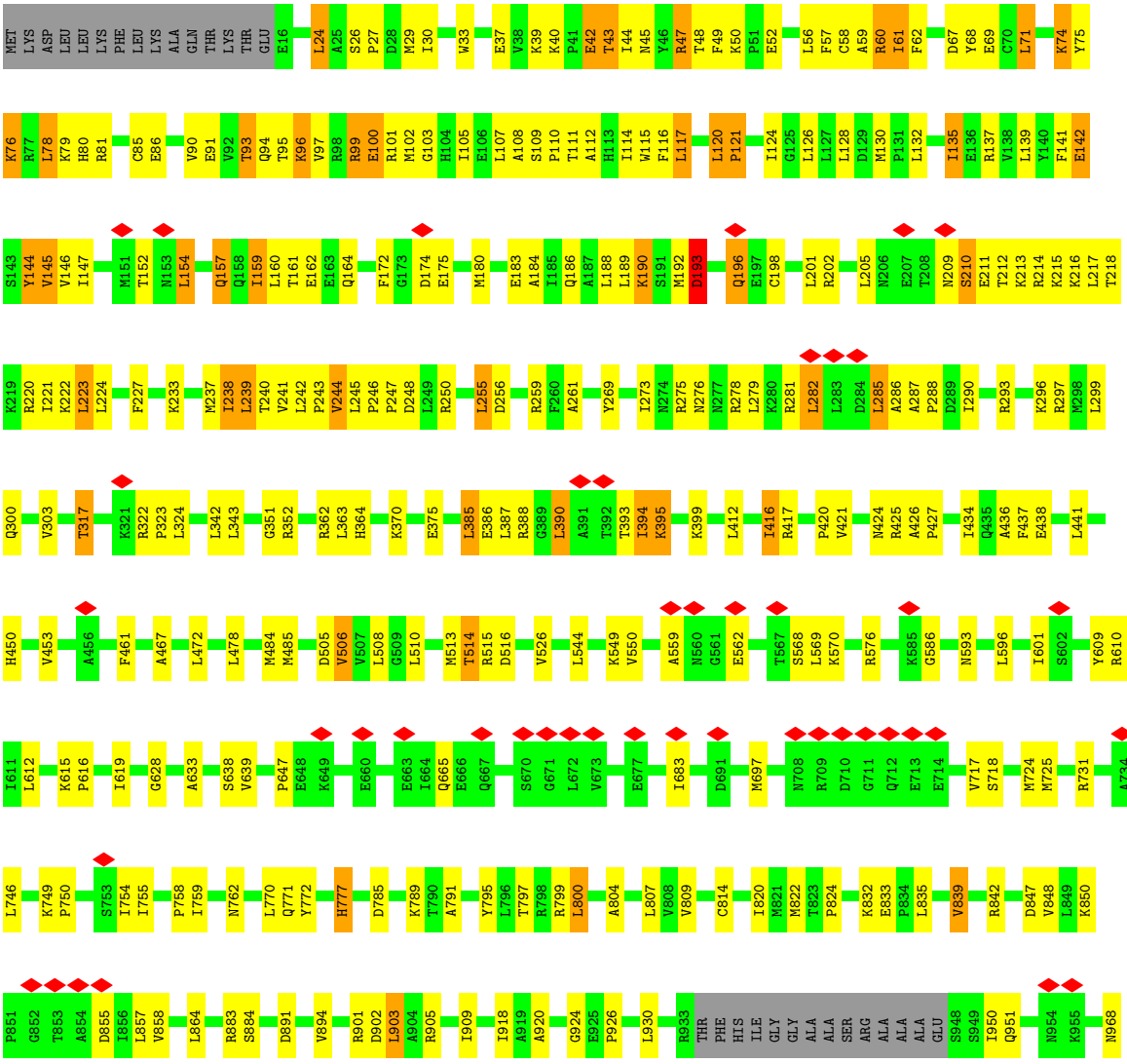
• Molecule 57: DNA-directed RNA polymerase subunit alpha

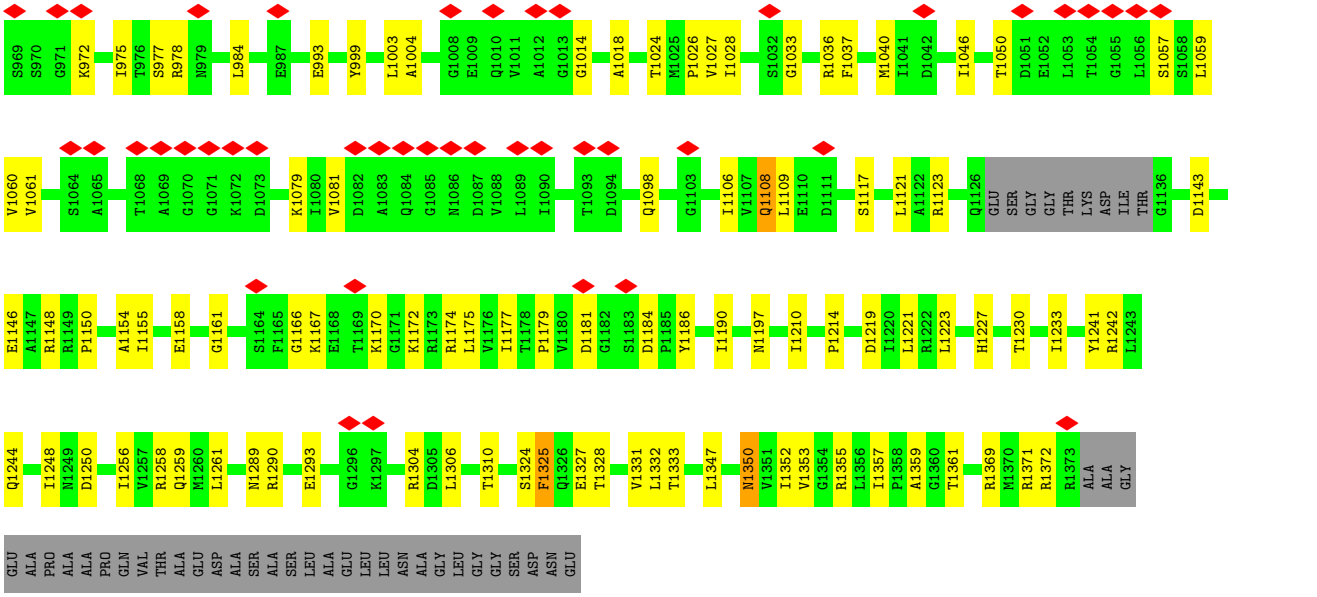
Chain A2:



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

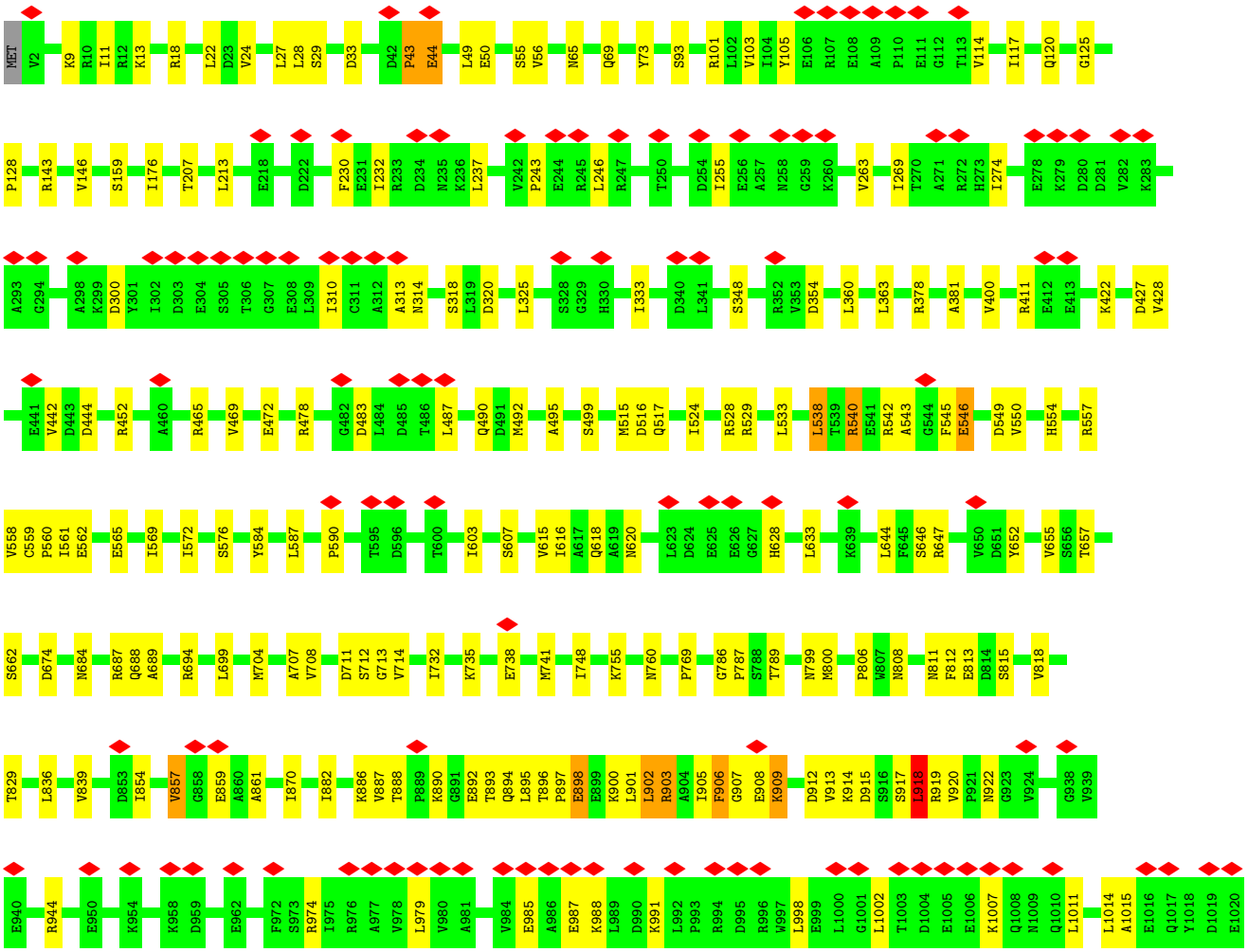
Chain B1:



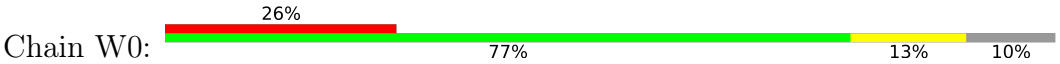


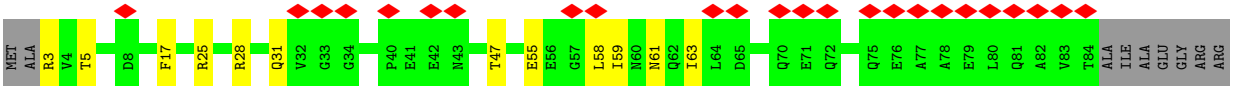
• Molecule 59: DNA-directed RNA polymerase subunit beta

Chain B2:

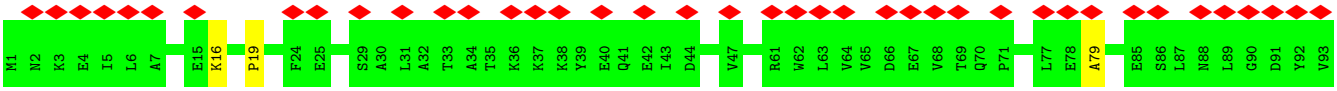


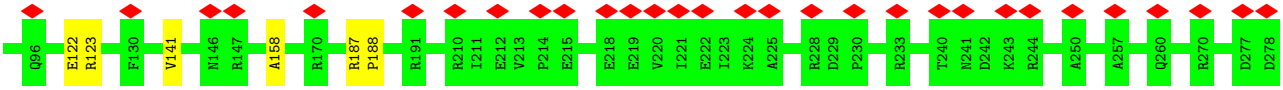
• Molecule 60: DNA-directed RNA polymerase subunit omega

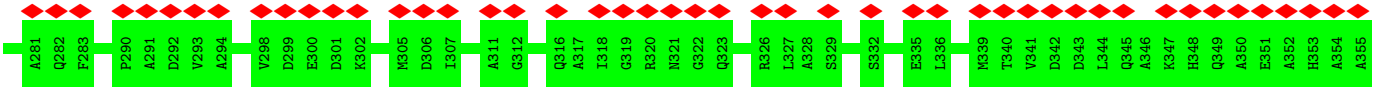


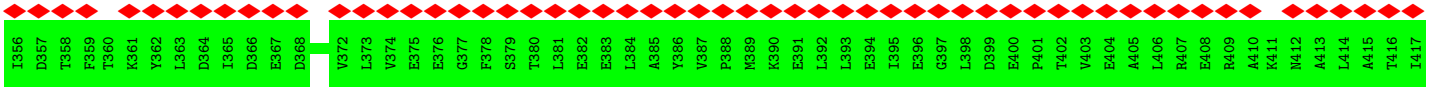


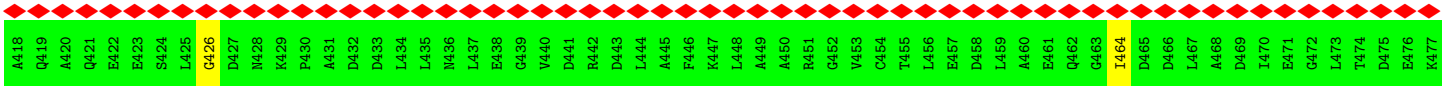
• Molecule 61: Transcription termination/antitermination protein NusA

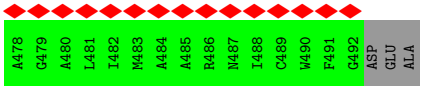




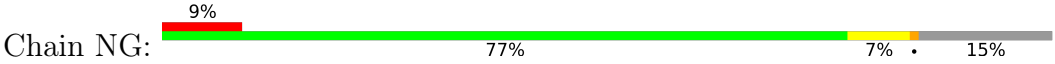


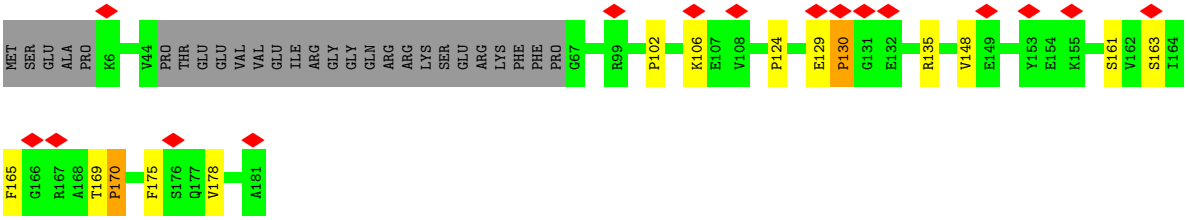




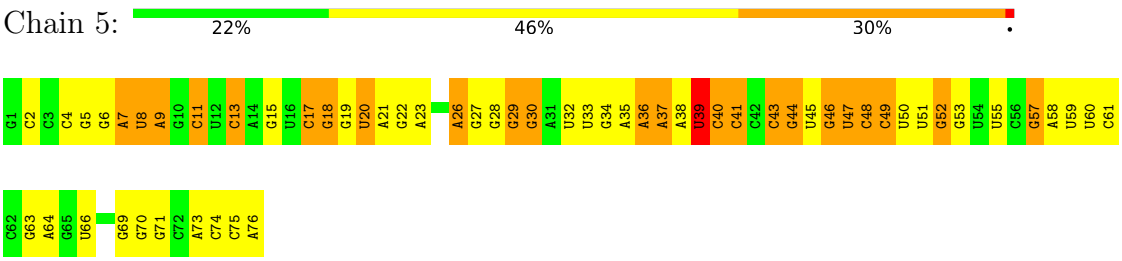


• Molecule 62: Transcription termination/antitermination protein NusG

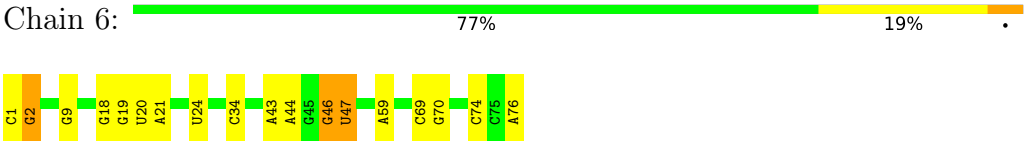




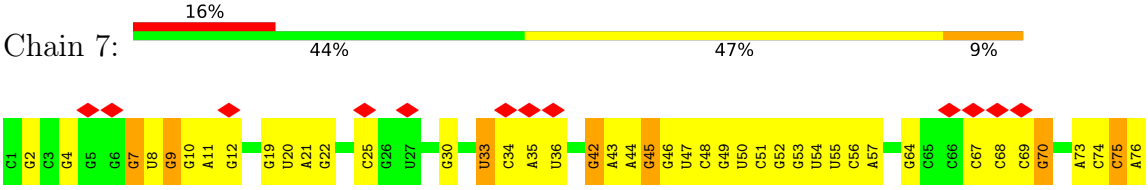
• Molecule 63: tRNA(Phe)



• Molecule 64: tRNA(fMet)



• Molecule 64: tRNA(fMet)



• Molecule 65: viomycin

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	35000	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	0.161	Depositor
Minimum map value	-0.071	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.012	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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: KBE, 5OH, UAL, 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	0.28	0/416	0.52	0/554
4	D	0.47	0/380	0.69	0/498
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	0.66	3/1602 (0.2%)
13	M	0.35	0/989	0.53	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	0.33	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	0.32	0/902	0.51	0/1209
40	p	0.41	0/929	0.62	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	0.63	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	0/808	0.65	0/1251
55	8	0.56	0/599	0.70	1/919 (0.1%)
56	9	0.49	0/468	0.53	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	1/14459 (0.0%)
60	W0	0.30	0/652	0.61	0/879
61	NA	0.84	0/2431	1.24	0/3385
62	NG	1.11	0/756	1.07	1/1048 (0.1%)
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	3.16	2/11 (18.2%)	0.74	0/13
All	All	0.48	8/191576 (0.0%)	0.62	65/282857 (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	-6.70	1.38	1.52
65	h	4	SER	CA-C	-6.18	1.40	1.52

Continued on next page...

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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	1108	GLN	CD-OE1	5.17	1.33	1.23
58	B1	424	ASN	CG-ND2	-5.14	1.22	1.33
58	B1	777	HIS	ND1-CE1	5.03	1.37	1.32
58	B1	450	HIS	CD2-NE2	-5.01	1.32	1.37
58	B1	665	GLN	CD-OE1	5.01	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	-9.00	104.56	113.20
41	q	33	VAL	N-CA-C	-8.81	104.72	112.12
12	L	64	ALA	N-CA-C	-7.67	105.09	114.75
51	1	1130	U	C2'-C3'-O3'	7.59	120.88	109.50
64	7	33	U	C2'-C3'-O3'	7.25	120.38	109.50
51	1	2326	C	C2'-C3'-O3'	7.22	120.33	109.50
58	B1	450	HIS	CB-CG-CD2	-6.59	122.63	131.20
51	1	761	A	C4'-C3'-O3'	-6.53	103.21	113.00
58	B1	61	ILE	CA-C-N	-6.45	113.90	121.64
58	B1	61	ILE	C-N-CA	-6.45	113.90	121.64
58	B1	777	HIS	CB-CG-CD2	-6.30	123.01	131.20
59	B2	906	PHE	CA-CB-CG	6.09	119.89	113.80
28	c	147	GLY	CA-C-N	-6.05	115.24	122.44
28	c	147	GLY	C-N-CA	-6.05	115.24	122.44
63	5	39	U	C3'-C2'-O2'	5.87	119.50	110.70
58	B1	450	HIS	CB-CG-ND1	5.73	131.29	122.70
51	1	1790	C	N1-C1'-C2'	5.64	120.45	112.00
51	1	2060	A	C2'-C3'-O3'	5.63	117.95	109.50
26	Z	35	GLU	CA-C-N	5.62	132.27	121.54
26	Z	35	GLU	C-N-CA	5.62	132.27	121.54
15	O	57	VAL	CA-C-N	5.60	132.23	121.54
15	O	57	VAL	C-N-CA	5.60	132.23	121.54
38	n	47	VAL	N-CA-C	-5.56	107.45	112.12
10	J	155	LYS	N-CA-C	-5.53	107.78	114.75
51	1	1451	C	N1-C1'-C2'	5.50	120.24	112.00
51	1	1905	C	C4'-C3'-O3'	-5.47	104.80	113.00
51	1	960	A	N9-C1'-C2'	5.47	120.20	112.00
51	1	1020	A	C2'-C3'-O3'	5.43	117.65	109.50
58	B1	777	HIS	CB-CG-ND1	5.41	130.81	122.70
51	1	1696	G	N9-C1'-C2'	5.40	120.11	112.00
55	8	7	DC	C2'-C3'-O3'	-5.33	103.50	111.50
51	1	1782	U	N1-C1'-C2'	5.30	119.96	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
33	i	24	GLY	N-CA-C	5.29	123.14	112.34
12	L	5	VAL	CA-C-N	5.29	127.79	120.49
12	L	5	VAL	C-N-CA	5.29	127.79	120.49
51	1	2428	G	N9-C1'-C2'	5.28	119.92	112.00
30	e	141	ASP	CA-C-N	5.26	131.59	121.54
30	e	141	ASP	C-N-CA	5.26	131.59	121.54
51	1	2055	C	N1-C1'-C2'	5.25	119.87	112.00
63	5	39	U	C4'-C3'-O3'	5.23	120.84	113.00
58	B1	27	PRO	N-CA-C	-5.22	106.23	113.81
34	j	110	PRO	N-CA-C	5.22	120.71	113.98
51	1	980	A	N9-C1'-C2'	5.19	119.79	112.00
63	5	57	G	C4'-C3'-O3'	5.19	117.18	109.40
51	1	2576	G	N9-C1'-C2'	5.18	119.77	112.00
21	U	78	VAL	CA-C-N	5.16	129.61	121.56
21	U	78	VAL	C-N-CA	5.16	129.61	121.56
51	1	2430	A	N9-C1'-C2'	5.14	119.71	112.00
62	NG	106	LYS	N-CA-C	-5.14	107.08	113.55
51	1	1565	C	N1-C1'-C2'	5.13	119.70	112.00
10	J	87	VAL	N-CA-C	5.13	116.02	109.30
51	1	1328	A	N9-C1'-C2'	5.13	119.70	112.00
18	R	3	ILE	CA-C-N	5.11	131.30	121.54
18	R	3	ILE	C-N-CA	5.11	131.30	121.54
23	W	14	ALA	N-CA-C	-5.11	106.14	112.93
51	1	2777	G	N9-C1'-C2'	5.08	119.62	112.00
17	Q	42	LYS	CA-C-N	5.08	129.59	121.62
17	Q	42	LYS	C-N-CA	5.08	129.59	121.62
33	i	71	LYS	CA-C-N	5.07	134.17	121.80
33	i	71	LYS	C-N-CA	5.07	134.17	121.80
51	1	1087	G	N9-C1'-C2'	5.04	119.56	112.00
48	x	25	LYS	N-CA-C	5.04	121.53	110.80
58	B1	61	ILE	CA-C-O	-5.03	115.72	120.95
51	1	972	A	N9-C1'-C2'	5.02	119.53	112.00
51	1	1672	A	N9-C1'-C2'	5.00	119.51	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	7	0
2	B	444	0	461	9	0
3	C	409	0	440	4	0
4	D	377	0	418	9	0
5	E	504	0	574	2	0
6	F	302	0	343	7	0
7	G	1704	0	1732	35	0
8	H	1624	0	1699	29	0
9	I	1643	0	1710	32	0
10	J	1156	0	1199	18	0
11	K	817	0	808	16	0
12	L	1181	0	1240	19	0
13	M	979	0	1034	9	0
14	N	1022	0	1070	24	0
15	O	786	0	828	14	0
16	P	869	0	878	22	0
17	Q	955	0	1019	32	0
18	R	883	0	944	18	0
19	S	805	0	847	9	0
20	T	714	0	737	6	0
21	U	649	0	666	16	0
22	V	648	0	691	9	0
23	W	535	0	552	9	0
24	X	637	0	665	9	0
25	Y	665	0	714	11	0
26	Z	544	0	579	11	0
27	b	2082	0	2157	46	0
28	c	1565	0	1616	29	0
29	d	1552	0	1619	28	0
30	e	1410	0	1447	23	0
31	f	1323	0	1374	33	0
32	g	400	0	423	6	0
33	i	1032	0	1088	42	0
34	j	1129	0	1162	22	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	19	0
39	o	892	0	923	16	0
40	p	917	0	965	16	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	18	0
43	s	857	0	922	11	0
44	t	738	0	807	9	0
45	u	779	0	834	14	0
46	v	753	0	780	9	0
47	w	575	0	592	8	0
48	x	625	0	655	12	0
49	y	509	0	543	11	0
50	z	449	0	491	9	0
51	1	62317	0	31346	1464	0
52	2	2568	0	1303	15	0
53	3	33012	0	16618	188	0
54	4	729	0	364	6	0
55	8	539	0	305	29	0
56	9	417	0	224	2	0
57	A1	2088	0	1895	25	0
57	A2	2029	0	1864	20	0
58	B1	10353	0	10548	322	0
59	B2	10546	0	10550	169	0
60	W0	650	0	658	10	0
61	NA	2432	0	1171	9	0
62	NG	758	0	334	9	0
63	5	1622	0	821	28	0
64	6	1640	0	837	7	0
64	7	1640	0	837	20	0
65	h	48	0	40	9	0
66	B1	1	0	0	0	0
All	All	178130	0	126632	2826	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 (2826) 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	1.08
51:1:275:C:H2’	51:1:276:U:H4’	1.37	1.07
51:1:1666:G:H2’	51:1:1667:G:H5’	1.41	1.03
51:1:2713:U:H3’	51:1:2714:G:H5’	1.41	1.02
51:1:1672:A:C2	51:1:2582:G:H5’	1.95	1.02
58:B1:111:THR:HG23	58:B1:300:GLN:CD	1.86	1.00

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:750:PRO:HB3	59:B2:549:ASP:OD2	1.60	1.00
51:1:1807:G:H2'	51:1:1808:A:H5'	1.44	0.99
51:1:1082:U:H3'	51:1:1083:U:H5"	1.41	0.99
40:p:52:ARG:NH2	51:1:2720:U:H5"	1.78	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	1.07	0.96
51:1:2156:G:H2'	51:1:2157:G:H5'	1.47	0.94
51:1:2713:U:H3'	51:1:2714:G:C5'	1.98	0.94
58:B1:68:TYR:O	58:B1:75:TYR:CE2	2.20	0.94
51:1:655:A:H4'	51:1:656:G:H5'	1.50	0.94
51:1:644:A:H2'	51:1:645:C:H5"	1.50	0.93
30:e:84:ILE:HD13	51:1:2312:U:H5'	1.51	0.93
17:Q:40:THR:HG21	65:h:6:5OH:OS	1.69	0.93
58:B1:202:ARG:HG2	58:B1:202:ARG:HH11	1.34	0.93
51:1:1102:C:H2'	51:1:1103:A:H8	1.35	0.91
30:e:130:GLY:HA3	51:1:2305:U:H5"	1.51	0.91
54:4:56:G:H21	58:B1:427:PRO:HD3	1.34	0.91
51:1:890:C:H2'	51:1:891:G:H5'	1.53	0.91
58:B1:68:TYR:C	58:B1:75:TYR:HE2	1.80	0.90
51:1:1702:G:H2'	51:1:1703:G:H5"	1.51	0.90
59:B2:854:ILE:HG21	59:B2:917:SER:HB3	1.54	0.89
51:1:1668:A:H4'	51:1:1669:A:H5'	1.54	0.89
51:1:1019:U:H3	51:1:1142:A:H62	1.17	0.89
14:N:3:ASN:N	14:N:5:TYR:HH	1.70	0.88
63:5:9:A:H2'	63:5:11:C:H41	1.38	0.88
58:B1:317:THR:HA	58:B1:323:PRO:HA	1.55	0.88
51:1:11:C:H2'	51:1:12:U:H5"	1.55	0.88
51:1:2097:A:H2'	51:1:2098:U:C6	2.08	0.88
51:1:1060:U:H4'	51:1:1061:U:H5"	1.55	0.87
2:B:8:THR:HB	51:1:2020:A:H5'	1.56	0.87
31:f:174:LYS:HG3	51:1:2529:G:H4'	1.56	0.87
61:NA:16:LYS:CB	61:NA:122:GLU:HA	2.04	0.87
51:1:1387:A:H5'	51:1:1469:A:H1'	1.58	0.86
51:1:2333:A:H5'	51:1:2334:U:H2'	1.57	0.85
40:p:52:ARG:HH21	51:1:2720:U:C5'	1.86	0.85
58:B1:68:TYR:HB3	58:B1:75:TYR:OH	1.76	0.85
58:B1:68:TYR:O	58:B1:75:TYR:HE2	1.58	0.85
51:1:1869:G:H3'	51:1:1870:C:H5'	1.57	0.85
58:B1:633:ALA:HB2	59:B2:808:ASN:H	1.41	0.84
51:1:2792:A:H2'	51:1:2793:C:H5"	1.59	0.84
17:Q:69:GLU:HG3	53:3:521:G:H4'	1.59	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:475:C:H4’	51:1:510:C:H5’	1.59	0.84
51:1:1175:A:H3’	51:1:1176:U:H5’	1.59	0.84
51:1:1666:G:C2’	51:1:1667:G:H5’	2.07	0.83
61:NA:16:LYS:CB	61:NA:122:GLU:CB	2.56	0.83
17:Q:42:LYS:HB3	53:3:1491:G:H5”	1.59	0.83
51:1:849:A:H2’	51:1:850:U:C6	2.14	0.83
51:1:2584:U:H2’	51:1:2585:U:H5’	1.58	0.82
58:B1:770:LEU:HD13	59:B2:618:GLN:HG3	1.61	0.82
51:1:757:G:H2’	51:1:758:C:H5’	1.61	0.82
58:B1:141:PHE:HE2	58:B1:296:LYS:HB2	1.44	0.82
51:1:1141:U:H4’	51:1:1142:A:O4’	1.80	0.81
33:i:119:ALA:HB2	51:1:1082:U:H5’	1.60	0.81
51:1:2360:G:H2’	51:1:2361:G:H5’	1.62	0.81
51:1:279:A:H61	51:1:361:G:H1’	1.46	0.81
58:B1:141:PHE:CE2	58:B1:296:LYS:HB2	2.15	0.81
51:1:2224:G:H4’	51:1:2226:C:C2	2.16	0.81
38:n:36:THR:HG22	51:1:1278:C:OP1	1.80	0.81
51:1:2799:A:H2’	51:1:2800:A:H5’	1.63	0.81
58:B1:111:THR:HG23	58:B1:300:GLN:OE1	1.81	0.81
3:C:40:PRO:HG3	51:1:2348:U:H4’	1.63	0.80
51:1:545:U:C2	51:1:546:U:H1’	2.16	0.80
51:1:1087:G:N2	51:1:1103:A:H1’	1.96	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
51:1:2112:G:H2’	51:1:2113:U:H5’	1.63	0.80
51:1:784:G:H5’	51:1:785:G:OP1	1.81	0.79
58:B1:144:TYR:HE1	58:B1:162:GLU:OE2	1.64	0.79
55:8:1:DC:H5”	58:B1:210:SER:OG	1.80	0.79
51:1:1071:G:O2’	51:1:1089:A:H2’	1.82	0.79
51:1:1775:U:H2’	51:1:1776:G:H5’	1.63	0.79
58:B1:37:GLU:O	58:B1:61:ILE:HD11	1.81	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	0.79
7:G:18:GLN:HG3	7:G:189:ASN:HB3	1.65	0.79
51:1:2130:U:H2’	51:1:2131:U:H5”	1.65	0.78
51:1:1536:C:H4’	51:1:1537:G:C2	2.18	0.78
51:1:2286:G:H4’	51:1:2287:A:O4’	1.83	0.78
51:1:2792:A:C3’	51:1:2793:C:H5”	2.14	0.78
33:i:55:PRO:HG3	51:1:1060:U:OP2	1.83	0.78
35:k:6:THR:HG22	51:1:1666:G:O2’	1.83	0.78
51:1:1297:C:OP1	51:1:2710:C:H4’	1.83	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:c:114:LYS:HB2	51:1:2680:U:OP1	1.84	0.77
51:1:1275:A:N6	51:1:1296:G:H4'	2.00	0.77
51:1:1702:G:C2'	51:1:1703:G:H5"	2.13	0.77
55:8:13:DT:H72	58:B1:791:ALA:HB2	1.66	0.77
51:1:1310:G:C2'	51:1:1311:G:H5'	2.14	0.77
51:1:2156:G:C2'	51:1:2157:G:H5'	2.14	0.77
51:1:275:C:H2'	51:1:276:U:C4'	2.14	0.77
51:1:310:A:O2'	51:1:311:A:H2'	1.84	0.77
51:1:1736:U:H2'	51:1:1737:G:O4'	1.85	0.77
51:1:2215:C:H2'	51:1:2216:G:C8	2.18	0.77
51:1:368:A:H2'	51:1:369:U:H5'	1.66	0.77
51:1:548:G:H2'	51:1:549:G:O4'	1.84	0.77
55:8:15:DC:H1'	58:B1:426:ALA:HB1	1.67	0.77
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
51:1:2097:A:H2'	51:1:2098:U:H6	1.50	0.75
58:B1:110:PRO:HG2	58:B1:183:GLU:HG3	1.69	0.75
51:1:2792:A:C2'	51:1:2793:C:H5"	2.16	0.75
58:B1:68:TYR:C	58:B1:75:TYR:CE2	2.65	0.75
58:B1:202:ARG:HG2	58:B1:202:ARG:NH1	1.99	0.75
51:1:958:U:H2'	52:2:89:U:O2	1.87	0.75
51:1:1555:G:H5'	51:1:1555:G:H8	1.51	0.75
51:1:1083:U:H2'	51:1:1085:A:OP2	1.87	0.75
51:1:1020:A:H5'	51:1:1021:A:C8	2.22	0.74
51:1:275:C:H3'	51:1:276:U:H5"	1.66	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
51:1:2432:A:H1'	64:7:75:C:O4'	1.86	0.74
51:1:1425:G:H2'	51:1:1426:G:C8	2.23	0.74
51:1:1061:U:H3'	51:1:1062:G:C5'	2.18	0.74
53:3:456:A:H61	53:3:476:U:H3	1.36	0.74
58:B1:107:LEU:HD11	58:B1:242:LEU:HB2	1.70	0.73
51:1:545:U:H2'	51:1:546:U:O4'	1.88	0.73
51:1:2611:C:O2	51:1:2611:C:H2'	1.86	0.73
51:1:481:G:H1'	51:1:506:G:N2	2.04	0.73
55:8:3:DC:C2'	55:8:4:DT:H72	2.19	0.73
51:1:322:A:H5'	51:1:340:A:C1'	2.19	0.73
51:1:1310:G:H2'	51:1:1311:G:H5'	1.69	0.73
51:1:1433:A:H2'	51:1:1434:A:O4'	1.89	0.73
51:1:1942:C:H3'	51:1:1943:U:H2'	1.70	0.73
51:1:2834:G:H2'	51:1:2879:A:H61	1.54	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
37:m:14:LYS:NZ	51:1:956:G:N7	2.35	0.73
58:B1:210:SER:HB3	58:B1:213:LYS:HB2	1.71	0.73
51:1:404:A:H1'	51:1:406:G:C4	2.23	0.73
51:1:1670:C:H2'	51:1:1671:U:H5'	1.70	0.72
64:7:50:U:H2'	64:7:51:C:C4	2.24	0.72
58:B1:211:GLU:HG2	58:B1:215:LYS:HE3	1.70	0.72
61:NA:16:LYS:CB	61:NA:122:GLU:CA	2.67	0.72
31:f:15:ASP:HB3	31:f:26:LYS:H	1.54	0.72
58:B1:282:LEU:HA	58:B1:286:ALA:HA	1.70	0.72
51:1:864:G:O2'	51:1:865:C:H5'	1.89	0.72
51:1:2036:C:H2'	51:1:2037:A:C8	2.23	0.72
51:1:1795:C:H2'	51:1:1796:U:O4'	1.90	0.72
51:1:2713:U:C3'	51:1:2714:G:C5'	2.67	0.72
58:B1:142:GLU:HG3	58:B1:142:GLU:O	1.89	0.72
58:B1:157:GLN:OE1	58:B1:157:GLN:HA	1.88	0.72
51:1:2671:G:H2'	51:1:2672:U:C6	2.25	0.72
17:Q:33:CYS:HA	17:Q:54:VAL:HG12	1.70	0.71
51:1:1872:A:H2'	51:1:1873:G:O4'	1.89	0.71
58:B1:1143:ASP:OD1	58:B1:1148:ARG:NH1	2.21	0.71
51:1:1858:A:H1'	51:1:1885:A:C2	2.26	0.71
53:3:452:A:H61	53:3:480:U:H3	1.37	0.71
55:8:3:DC:H2'	55:8:4:DT:H72	1.69	0.71
51:1:890:C:C2'	51:1:891:G:H5'	2.21	0.71
36:l:59:ARG:HD2	51:1:250:G:H4'	1.71	0.71
58:B1:105:ILE:HD12	58:B1:242:LEU:HD22	1.71	0.71
51:1:1441:G:H2'	51:1:1442:U:C6	2.25	0.71
51:1:633:A:H2'	51:1:634:C:H5'	1.72	0.71
51:1:394:C:H2'	51:1:395:U:O4'	1.90	0.71
58:B1:352:ARG:HD2	59:B2:1268:GLN:HE22	1.55	0.71
51:1:1102:C:H2'	51:1:1103:A:C8	2.22	0.70
53:3:663:A:H61	53:3:742:G:H1	1.39	0.70
51:1:1386:C:H2'	51:1:1387:A:H8	1.56	0.70
51:1:2151:U:H2'	51:1:2152:G:H8	1.56	0.70
51:1:2297:A:N1	51:1:2321:U:H5	1.89	0.70
58:B1:220:ARG:HG2	58:B1:220:ARG:HH11	1.54	0.70
51:1:612:G:H2'	51:1:614:A:C8	2.26	0.70
51:1:1983:G:O2'	51:1:1984:G:H5'	1.92	0.70
51:1:2267:A:H5"	51:1:2268:A:H5"	1.74	0.70
51:1:723:C:H2'	51:1:724:U:C6	2.27	0.70
51:1:1292:G:H2'	51:1:1293:C:C6	2.27	0.70
59:B2:65:ASN:HB3	59:B2:105:TYR:HB2	1.73	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
42:r:79:ARG:NH1	51:1:572:A:OP2	2.25	0.70
51:1:1019:U:H3	51:1:1142:A:N6	1.89	0.70
51:1:1670:C:C2'	51:1:1671:U:H5'	2.21	0.70
51:1:368:A:C2'	51:1:369:U:H5'	2.20	0.70
51:1:2151:U:H2'	51:1:2152:G:C8	2.27	0.70
58:B1:128:LEU:HD11	58:B1:189:LEU:HG	1.73	0.70
27:b:47:ARG:NH2	51:1:774:G:H5"	2.07	0.70
51:1:319:G:H1	51:1:323:C:H5	1.41	0.69
34:j:7:LYS:HG2	51:1:538:A:H4'	1.73	0.69
51:1:2114:A:H2	51:1:2167:U:H1'	1.58	0.69
51:1:419:U:H2'	51:1:420:C:C6	2.27	0.69
51:1:644:A:H2'	51:1:645:C:C5'	2.22	0.69
51:1:1337:G:H2'	51:1:1338:G:H8	1.58	0.69
51:1:322:A:H5'	51:1:340:A:H1'	1.73	0.69
51:1:1555:G:H5'	51:1:1555:G:C8	2.27	0.69
51:1:1889:A:H2'	51:1:1890:A:H8	1.58	0.69
65:h:4:SER:O	65:h:5:UAL:N1	2.26	0.69
51:1:282:A:H2'	51:1:283:G:H8	1.57	0.69
51:1:940:G:H2'	51:1:941:A:H5"	1.73	0.69
8:H:117:ASP:HA	8:H:120:THR:HG22	1.75	0.69
51:1:2092:U:H4'	51:1:2093:G:H5"	1.75	0.69
51:1:2626:C:O2'	51:1:2627:G:H5'	1.91	0.69
58:B1:93:THR:HB	58:B1:97:VAL:HG21	1.73	0.69
36:l:30:THR:HG22	51:1:810:U:O4	1.93	0.68
51:1:392:U:H2'	51:1:393:C:H6	1.58	0.68
52:2:65:U:H3'	52:2:108:A:H61	1.58	0.68
57:A2:294:ASN:HA	61:NA:464:ILE:H	1.57	0.68
50:z:38:GLU:OE2	51:1:928:A:H5'	1.94	0.68
51:1:849:A:H2'	51:1:850:U:H6	1.58	0.68
57:A1:297:LYS:CB	61:NA:79:ALA:HB1	2.22	0.68
51:1:894:U:H2'	51:1:895:U:O4'	1.93	0.68
51:1:1137:G:O2'	51:1:1138:G:H5'	1.92	0.68
51:1:2869:G:H2'	51:1:2870:C:C6	2.28	0.68
58:B1:832:LYS:C	58:B1:1242:ARG:HH12	2.01	0.68
51:1:1999:C:H5"	51:1:2723:C:O2'	1.94	0.68
51:1:2510:C:N4	51:1:2511:U:O4	2.27	0.68
51:1:402:A:H2'	51:1:403:U:H5'	1.74	0.68
51:1:528:A:C8	51:1:528:A:H3'	2.27	0.68
55:8:3:DC:C6	55:8:4:DT:H72	2.29	0.68
51:1:1702:G:C3'	51:1:1703:G:H5"	2.24	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2403:C:O2'	51:1:2404:U:H5'	1.92	0.68
58:B1:39:LYS:O	58:B1:273:ILE:CG2	2.41	0.68
51:1:419:U:H2'	51:1:420:C:H6	1.58	0.68
51:1:905:A:C2'	51:1:906:U:H5'	2.23	0.68
51:1:1063:G:H1	51:1:1075:C:H41	1.42	0.68
51:1:2758:A:H2'	51:1:2759:G:H5'	1.75	0.68
51:1:1061:U:H3'	51:1:1062:G:H5'	1.76	0.68
51:1:2747:G:O6	51:1:2755:C:H5"	1.93	0.68
48:x:16:ASN:ND2	48:x:26:ARG:HB3	2.09	0.67
58:B1:141:PHE:CD2	58:B1:293:ARG:O	2.47	0.67
51:1:1078:U:H2'	51:1:1088:A:OP1	1.94	0.67
51:1:1082:U:H3'	51:1:1083:U:C5'	2.22	0.67
9:I:73:ASN:HA	9:I:76:LYS:HB2	1.77	0.67
51:1:1432:G:O2'	51:1:1433:A:H5'	1.94	0.67
51:1:1438:U:O2'	51:1:1439:A:H5'	1.94	0.67
45:u:25:LYS:HD3	45:u:36:GLU:HB3	1.75	0.67
51:1:1270:C:H5"	51:1:1271:G:H5'	1.77	0.67
51:1:1889:A:H2'	51:1:1890:A:C8	2.29	0.67
51:1:466:A:H2'	51:1:467:G:H5'	1.76	0.67
51:1:2898:U:H2'	51:1:2899:A:C8	2.29	0.67
51:1:1484:U:H2'	51:1:1485:U:C6	2.30	0.67
51:1:1717:A:H2'	51:1:1718:G:H5'	1.77	0.67
53:3:437:U:H3	53:3:495:A:H62	1.42	0.67
58:B1:243:PRO:HG2	59:B2:1332:SER:O	1.93	0.67
63:5:47:U:H4'	63:5:48:C:H5'	1.75	0.67
36:l:39:LYS:NZ	51:1:942:G:OP2	2.28	0.67
51:1:2157:G:H2'	51:1:2158:A:H2	1.59	0.67
51:1:2278:A:C3'	51:1:2279:G:H5"	2.25	0.67
58:B1:1355:ARG:NH1	58:B1:1369:ARG:HH12	1.92	0.67
51:1:703:U:C2'	51:1:704:G:H5'	2.25	0.67
51:1:2595:G:N2	51:1:2598:A:OP2	2.23	0.67
51:1:246:C:H2'	51:1:247:G:H5'	1.76	0.67
51:1:673:C:H2'	51:1:674:G:H5'	1.77	0.67
51:1:905:A:H2'	51:1:906:U:H5'	1.77	0.67
51:1:1020:A:H1'	51:1:1021:A:OP2	1.95	0.67
51:1:2233:U:H2'	51:1:2234:G:H8	1.59	0.67
17:Q:109:ARG:HH21	17:Q:112:ALA:HB3	1.60	0.66
51:1:226:A:H2'	51:1:227:A:O4'	1.93	0.66
51:1:2221:G:O2'	51:1:2222:C:H5'	1.95	0.66
51:1:2555:U:H2'	51:1:2556:C:H5'	1.78	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)
58:B1:1037:PHE:HB3	58:B1:1040:MET:HB2	1.77	0.66
51:1:1733:G:O2'	51:1:1734:G:H5'	1.95	0.66
51:1:2233:U:H2'	51:1:2234:G:C8	2.30	0.66
51:1:112:U:H2'	51:1:113:U:H5'	1.76	0.66
51:1:707:G:O2'	51:1:708:G:H5'	1.94	0.66
58:B1:161:THR:HG22	58:B1:164:GLN:HB2	1.75	0.66
17:Q:40:THR:OG1	65:h:6:5OH:HR	1.96	0.66
51:1:414:C:H2'	51:1:415:A:C8	2.31	0.66
51:1:528:A:H3'	51:1:528:A:H8	1.59	0.66
59:B2:902:LEU:HG	59:B2:906:PHE:HB3	1.77	0.66
4:D:37:LYS:HD3	4:D:39:ARG:HD3	1.77	0.66
51:1:1176:U:H2'	51:1:1177:G:C8	2.29	0.66
51:1:2278:A:H3'	51:1:2279:G:H5"	1.78	0.66
51:1:2516:A:O2'	51:1:2517:C:H5'	1.95	0.66
51:1:2733:A:O2'	51:1:2734:A:H5'	1.96	0.66
58:B1:108:ALA:CB	58:B1:279:LEU:HD22	2.25	0.66
51:1:1098:A:H2'	51:1:1099:G:H5'	1.77	0.66
55:8:23:DC:H2"	55:8:24:DC:C5	2.30	0.66
28:c:4:LEU:HD23	28:c:29:VAL:HG11	1.77	0.66
55:8:13:DT:OP2	58:B1:791:ALA:HB1	1.95	0.66
33:i:27:LEU:HD22	33:i:32:VAL:HG21	1.78	0.66
51:1:1064:C:N4	51:1:1069:A:H5"	2.10	0.66
51:1:1270:C:H5"	51:1:1271:G:C5'	2.25	0.66
51:1:2625:G:H2'	51:1:2626:C:C6	2.30	0.66
51:1:2844:G:H2'	51:1:2845:U:C6	2.31	0.66
38:n:63:ARG:NE	51:1:1454:C:H5'	2.10	0.66
51:1:65:U:H2'	51:1:66:C:H6	1.59	0.66
51:1:644:A:C2'	51:1:645:C:H5"	2.22	0.66
51:1:1746:A:H2'	51:1:1747:U:C6	2.31	0.66
51:1:2013:A:H5"	51:1:2013:A:H8	1.59	0.66
58:B1:984:LEU:HB3	58:B1:993:GLU:HB2	1.77	0.66
51:1:521:U:H2'	51:1:522:A:C8	2.30	0.66
51:1:870:U:C2'	51:1:871:U:H5'	2.26	0.66
17:Q:47:ALA:HB3	17:Q:49:ARG:HE	1.60	0.65
51:1:1666:G:H2'	51:1:1667:G:C5'	2.24	0.65
51:1:1788:C:O2'	51:1:1789:A:H5'	1.96	0.65
43:s:6:LYS:HB2	51:1:494:G:H4'	1.78	0.65
51:1:635:C:H2'	51:1:636:G:C8	2.31	0.65
51:1:2052:A:O2'	51:1:2053:G:H5'	1.96	0.65
51:1:2193:G:H2'	51:1:2194:U:C6	2.32	0.65
51:1:359:G:O2'	51:1:360:U:H5'	1.97	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:461:PHE:HD2	59:B2:813:GLU:HB2	1.61	0.65
51:1:1572:A:O2'	51:1:1573:G:H5'	1.97	0.65
51:1:1796:U:H2'	51:1:1797:G:H8	1.61	0.65
51:1:2170:A:H2'	51:1:2171:A:O4'	1.97	0.65
51:1:2760:C:O2'	51:1:2761:A:H5'	1.96	0.65
7:G:67:LEU:HD12	7:G:153:MET:HE1	1.77	0.65
51:1:536:G:H2'	51:1:537:G:H5'	1.79	0.65
58:B1:141:PHE:HD2	58:B1:293:ARG:O	1.80	0.65
58:B1:975:ILE:HG22	58:B1:977:SER:H	1.62	0.65
51:1:488:G:N2	51:1:491:G:H5"	2.11	0.65
51:1:613:A:H5"	51:1:614:A:C8	2.32	0.65
51:1:1098:A:C2'	51:1:1099:G:H5'	2.27	0.65
58:B1:68:TYR:HB3	58:B1:75:TYR:CE2	2.32	0.65
16:P:19:VAL:HG22	16:P:82:GLU:HB2	1.79	0.65
28:c:149:ASN:HB3	51:1:2572:A:OP2	1.97	0.65
51:1:543:G:H2'	51:1:544:C:C5'	2.26	0.65
19:S:38:GLU:HA	19:S:41:TRP:HB3	1.79	0.65
27:b:227:VAL:HG11	51:1:784:G:C2	2.31	0.65
51:1:1857:G:H22	51:1:1884:G:H2'	1.62	0.65
51:1:2290:G:H2'	51:1:2291:U:C6	2.31	0.65
58:B1:108:ALA:HB3	58:B1:279:LEU:HD22	1.77	0.65
31:f:154:GLU:HG3	31:f:156:TYR:H	1.61	0.65
51:1:1853:A:H2'	51:1:1854:A:C8	2.32	0.65
51:1:2834:G:O2'	51:1:2835:A:H5'	1.97	0.65
53:3:85:U:H5"	53:3:86:G:H5'	1.78	0.64
55:8:3:DC:C2'	55:8:4:DT:C7	2.75	0.64
4:D:24:THR:HG23	4:D:27:GLY:H	1.61	0.64
58:B1:193:ASP:HB3	58:B1:196:GLN:HB2	1.78	0.64
51:1:2792:A:H3'	51:1:2793:C:H5"	1.80	0.64
27:b:106:PRO:HD2	27:b:109:LEU:HD22	1.79	0.64
58:B1:111:THR:CG2	58:B1:300:GLN:CD	2.67	0.64
58:B1:918:ILE:HG22	59:B2:1280:ALA:HB1	1.79	0.64
11:K:38:ARG:HE	11:K:97:THR:HA	1.62	0.64
51:1:256:A:O2'	51:1:257:C:H5'	1.98	0.64
51:1:306:U:H2'	51:1:307:G:O4'	1.98	0.64
59:B2:1282:GLY:HA3	60:W0:17:PHE:HE1	1.63	0.64
51:1:1766:G:O2'	51:1:1767:G:H5'	1.98	0.64
58:B1:978:ARG:HG2	58:B1:1197:ASN:HD21	1.61	0.64
59:B2:314:ASN:HD21	59:B2:348:SER:HA	1.62	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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:65:U:H2'	51:1:66:C:C6	2.33	0.64
51:1:201:C:O2'	51:1:202:U:H5'	1.97	0.64
51:1:703:U:H2'	51:1:704:G:H5'	1.78	0.64
51:1:2073:C:O2'	51:1:2074:U:H5'	1.98	0.64
58:B1:285:LEU:HD13	58:B1:285:LEU:H	1.62	0.64
12:L:59:GLU:HA	12:L:62:GLU:HB3	1.80	0.64
51:1:2112:G:C2'	51:1:2113:U:H5'	2.27	0.64
51:1:2404:U:O2'	51:1:2405:G:H5'	1.97	0.64
51:1:2811:G:O2'	51:1:2812:G:H5'	1.97	0.64
26:Z:32:ARG:HG2	26:Z:33:ARG:HG3	1.80	0.64
51:1:905:A:O2'	51:1:906:U:H5'	1.97	0.64
51:1:940:G:C3'	51:1:941:A:H5"	2.28	0.63
51:1:2114:A:N7	51:1:2115:G:H1'	2.12	0.63
51:1:2799:A:C2'	51:1:2800:A:H5'	2.27	0.63
51:1:317:G:H2'	51:1:318:C:H6	1.64	0.63
58:B1:245:LEU:HG	58:B1:246:PRO:HD2	1.80	0.63
26:Z:65:ARG:NH2	53:3:1087:G:N3	2.47	0.63
51:1:161:A:N7	51:1:162:U:H5	1.96	0.63
51:1:2469:A:H2'	51:1:2470:G:O4'	1.98	0.63
51:1:1161:C:H2'	51:1:1162:G:H8	1.61	0.63
51:1:1280:G:O2'	51:1:1281:G:H5'	1.99	0.63
51:1:1921:G:O2'	51:1:1922:G:H5'	1.98	0.63
51:1:1164:C:O2'	51:1:1165:A:H5'	1.99	0.63
51:1:2898:U:H2'	51:1:2899:A:H8	1.64	0.63
51:1:1181:U:H2'	51:1:1182:G:C8	2.33	0.63
51:1:1909:C:H2'	51:1:1910:G:H8	1.64	0.63
51:1:2636:C:H2'	51:1:2637:U:H6	1.64	0.63
51:1:815:C:C2	51:1:1193:G:N2	2.66	0.63
51:1:872:U:O2'	51:1:873:C:H5'	1.99	0.63
51:1:2314:A:H2'	51:1:2315:G:C8	2.33	0.63
16:P:87:GLY:H	16:P:113:THR:HG22	1.62	0.63
34:j:45:THR:HB	34:j:48:VAL:HG22	1.81	0.63
53:3:373:A:H61	53:3:391:G:H1'	1.64	0.63
9:I:152:SER:H	9:I:155:LYS:HD3	1.63	0.62
58:B1:162:GLU:HA	58:B1:162:GLU:OE1	1.97	0.62
7:G:173:LYS:O	7:G:177:ASN:ND2	2.32	0.62
51:1:212:G:O2'	51:1:213:A:H5'	1.99	0.62
55:8:3:DC:H2'	55:8:4:DT:C7	2.30	0.62
51:1:445:C:H2'	51:1:446:G:O4'	1.98	0.62
51:1:723:C:H2'	51:1:724:U:H6	1.64	0.62
51:1:1038:G:H2'	51:1:1039:A:C8	2.32	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1524:G:H2'	51:1:1525:A:H8	1.63	0.62
58:B1:144:TYR:CE1	58:B1:162:GLU:OE2	2.51	0.62
58:B1:1357:ILE:HD11	59:B2:1287:LEU:HD13	1.81	0.62
64:7:46:G:C2'	64:7:47:U:H5'	2.29	0.62
44:t:53:VAL:HG12	44:t:92:ASN:HD22	1.65	0.62
51:1:554:U:H2'	51:1:555:G:O4'	1.99	0.62
51:1:889:C:H2'	51:1:890:C:O4'	1.99	0.62
1:A:1:MET:HG2	52:2:43:C:H5"	1.82	0.62
51:1:1149:G:H2'	51:1:1150:C:C6	2.34	0.62
51:1:2637:U:H2'	51:1:2638:G:H5'	1.82	0.62
16:P:58:THR:HG22	16:P:60:PHE:H	1.65	0.62
51:1:37:C:O2'	51:1:38:A:H5'	1.99	0.62
51:1:1935:G:H1'	51:1:1964:G:N2	2.15	0.62
51:1:2092:U:H5	51:1:2199:A:H2	1.48	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
16:P:45:THR:HG23	16:P:48:GLY:H	1.65	0.62
51:1:236:C:H2'	51:1:237:C:H6	1.64	0.62
51:1:2298:A:H2'	51:1:2299:U:O4'	1.99	0.62
51:1:2734:A:H2'	51:1:2735:G:H5'	1.82	0.62
58:B1:201:LEU:HB2	58:B1:221:ILE:HD13	1.80	0.62
31:f:174:LYS:HG3	51:1:2529:G:C4'	2.29	0.62
51:1:161:A:H3'	51:1:162:U:H5"	1.81	0.62
51:1:2097:A:H2'	51:1:2098:U:O4'	2.00	0.62
57:A1:211:ILE:HG12	57:A1:219:ARG:HH12	1.65	0.62
58:B1:68:TYR:HB3	58:B1:75:TYR:CZ	2.35	0.62
51:1:1086:A:H5'	51:1:1103:A:H2	1.64	0.62
51:1:1448:G:H2'	51:1:1449:G:H8	1.64	0.62
51:1:1503:A:H3'	51:1:1504:A:H5"	1.81	0.62
59:B2:528:ARG:NH2	59:B2:576:SER:O	2.30	0.62
28:c:181:ASP:HB3	28:c:186:LEU:HB2	1.82	0.61
51:1:1680:U:H2'	51:1:1681:G:O4'	2.00	0.61
51:1:2345:G:N3	51:1:2381:A:H2'	2.15	0.61
58:B1:1355:ARG:NH1	58:B1:1369:ARG:NH1	2.47	0.61
7:G:15:PHE:HB2	7:G:39:ILE:HG23	1.82	0.61
51:1:322:A:H5'	51:1:340:A:O4'	2.00	0.61
51:1:941:A:H2'	51:1:942:G:O4'	2.00	0.61
28:c:114:LYS:HZ1	51:1:2723:C:P	2.23	0.61
33:i:135:MET:HE2	51:1:1062:G:H21	1.65	0.61
51:1:940:G:C2'	51:1:941:A:H5"	2.30	0.61
51:1:2404:U:H2'	51:1:2405:G:O4'	2.01	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:120:GLN:NE2	59:B2:490:GLN:OE1	2.32	0.61
51:1:1775:U:C2'	51:1:1776:G:H5'	2.30	0.61
55:8:13:DT:C7	58:B1:791:ALA:HB2	2.29	0.61
58:B1:223:LEU:HG	58:B1:223:LEU:O	2.00	0.61
34:j:132:HIS:CD2	51:1:7:G:H5'	2.35	0.61
45:u:87:GLU:HG2	45:u:92:VAL:HG21	1.82	0.61
51:1:590:A:O2'	51:1:591:U:H5'	2.00	0.61
58:B1:395:LYS:NZ	58:B1:399:LYS:HD3	2.15	0.61
22:V:30:HIS:HD2	22:V:33:TYR:H	1.48	0.61
51:1:1954:G:H1'	51:1:1956:U:O4	2.01	0.61
58:B1:633:ALA:HA	59:B2:806:PRO:O	2.01	0.61
30:e:9:ASP:OD1	30:e:9:ASP:N	2.34	0.61
58:B1:342:LEU:HD23	58:B1:1352:ILE:HG23	1.83	0.61
59:B2:55:SER:OG	59:B2:465:ARG:NH1	2.33	0.61
7:G:86:CYS:SG	7:G:87:ASP:N	2.74	0.61
51:1:1948:G:H21	53:3:1418:A:H2	1.49	0.61
58:B1:128:LEU:HA	58:B1:192:MET:HE1	1.81	0.61
4:D:3:ARG:O	4:D:6:GLN:NE2	2.33	0.61
34:j:39:LYS:HE3	51:1:1009:A:OP1	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
32:g:50:ARG:HH22	32:g:51:ARG:HH21	1.48	0.61
51:1:2812:G:H2'	51:1:2813:A:C8	2.36	0.61
55:8:1:DC:H2"	55:8:2:DC:C5	2.35	0.61
58:B1:154:LEU:HD21	58:B1:160:LEU:HD21	1.83	0.61
51:1:11:C:C2'	51:1:12:U:H5"	2.29	0.60
51:1:414:C:H2'	51:1:415:A:H8	1.63	0.60
51:1:558:U:H6	51:1:558:U:O5'	1.84	0.60
51:1:1110:G:HO2'	51:1:1111:A:H8	1.49	0.60
63:5:39:U:H2'	63:5:40:C:C6	2.36	0.60
37:m:17:ASN:O	37:m:38:ARG:NH1	2.34	0.60
39:o:4:LYS:HD3	39:o:7:ARG:HH21	1.65	0.60
51:1:1287:A:C5	51:1:1288:G:C6	2.89	0.60
51:1:1775:U:H2'	51:1:1776:G:C5'	2.29	0.60
51:1:2188:U:H2'	51:1:2189:U:O4'	2.01	0.60
53:3:1351:U:H3	53:3:1371:G:H1	1.49	0.60
51:1:1040:A:H2	51:1:1115:G:H22	1.48	0.60
51:1:1717:A:C2'	51:1:1718:G:H5'	2.31	0.60
51:1:2386:A:O2'	51:1:2387:U:H5'	2.01	0.60
51:1:435:C:H2'	51:1:436:C:H5'	1.82	0.60
51:1:2852:G:O2'	51:1:2853:C:H5'	2.01	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1161:GLY:HA3	58:B1:1179:PRO:HA	1.82	0.60
27:b:153:LEU:HD23	51:1:1799:G:C2	2.37	0.60
29:d:149:ILE:HG23	29:d:188:MET:HB3	1.83	0.60
51:1:198:C:H42	51:1:248:G:H1	1.49	0.60
21:U:70:ARG:HH22	53:3:451:A:H5'	1.66	0.60
51:1:2093:G:O2'	51:1:2094:A:H5'	2.01	0.60
51:1:2137:U:H2'	51:1:2138:G:H8	1.67	0.60
51:1:851:C:H2'	51:1:852:U:C6	2.36	0.60
51:1:1071:G:H1'	51:1:1089:A:C8	2.37	0.60
51:1:1198:U:H2'	51:1:1199:U:C6	2.37	0.60
51:1:1508:A:H2'	51:1:1509:A:O4'	2.01	0.60
51:1:2187:U:O2'	51:1:2188:U:H5'	2.02	0.60
53:3:1032:G:H21	53:3:1033:G:H4'	1.65	0.60
53:3:1133:G:H1	53:3:1141:C:H42	1.48	0.60
47:w:38:GLY:HA2	51:1:2330:G:H21	1.66	0.60
58:B1:951:GLN:NE2	58:B1:1014:GLY:O	2.35	0.60
18:R:102:LYS:HG2	18:R:103:THR:HG23	1.83	0.60
34:j:3:THR:N	51:1:995:C:N3	2.48	0.60
37:m:86:LYS:NZ	51:1:955:U:OP1	2.33	0.60
51:1:854:C:O2'	51:1:855:G:H5'	2.02	0.60
51:1:893:C:H2'	51:1:894:U:C6	2.36	0.60
51:1:1183:U:H2'	51:1:1184:U:C6	2.37	0.60
51:1:1670:C:H2'	51:1:1671:U:C5'	2.31	0.60
51:1:2804:U:H2'	51:1:2805:C:C6	2.36	0.60
59:B2:918:LEU:O	59:B2:918:LEU:HD23	2.02	0.60
51:1:841:G:O2'	51:1:842:U:H5'	2.02	0.60
51:1:1171:G:H2'	51:1:1172:C:O4'	2.02	0.60
51:1:1857:G:N2	51:1:1884:G:H2'	2.17	0.60
51:1:2327:A:H2'	51:1:2328:A:C8	2.35	0.60
51:1:2717:C:C4	51:1:2718:G:N7	2.70	0.60
51:1:2749:A:OP2	51:1:2751:G:H5"	2.02	0.60
55:8:11:DC:H2'	55:8:12:DG:C8	2.37	0.60
45:u:40:LEU:HD12	45:u:59:GLU:HG2	1.84	0.59
51:1:1553:A:HO2'	51:1:1554:U:H5	1.50	0.59
57:A1:112:ALA:HB3	57:A1:126:PRO:HA	1.83	0.59
58:B1:99:ARG:NH1	58:B1:99:ARG:HG3	2.17	0.59
58:B1:201:LEU:HD11	58:B1:220:ARG:HH11	1.67	0.59
51:1:1437:C:H2'	51:1:1438:U:C6	2.36	0.59
51:1:1538:G:H2'	51:1:1539:U:C6	2.37	0.59
29:d:68:ALA:HA	51:1:1255:U:C5	2.37	0.59
51:1:215:G:H4'	51:1:216:A:H4'	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
57:A1:38:THR:HB	57:A2:45:ARG:HD3	1.82	0.59
58:B1:412:LEU:HD22	58:B1:441:LEU:HD21	1.84	0.59
58:B1:770:LEU:HD13	59:B2:618:GLN:CG	2.30	0.59
9:I:69:ARG:NH1	53:3:401:C:OP2	2.36	0.59
51:1:2165:C:H2'	51:1:2166:U:C6	2.38	0.59
51:1:2643:G:H2'	51:1:2644:G:H5'	1.84	0.59
53:3:1040:U:H2'	53:3:1041:G:H8	1.67	0.59
14:N:40:ARG:NH2	14:N:41:GLU:OE2	2.34	0.59
29:d:77:ILE:HG23	51:1:1256:G:H21	1.68	0.59
30:e:51:ASN:OD1	30:e:149:ARG:NH1	2.34	0.59
51:1:283:G:H2'	51:1:284:U:H5'	1.83	0.59
59:B2:69:GLN:HE21	59:B2:101:ARG:HD2	1.67	0.59
59:B2:1072:ASN:ND2	59:B2:1111:GLN:OE1	2.35	0.59
51:1:1725:U:H2'	51:1:1726:C:C6	2.38	0.59
58:B1:926:PRO:HG2	58:B1:1248:ILE:HD11	1.84	0.59
6:F:14:CYS:SG	6:F:33:HIS:ND1	2.75	0.59
17:Q:40:THR:CG2	65:h:6:5OH:OS	2.48	0.59
29:d:77:ILE:CG2	51:1:1256:G:H21	2.14	0.59
47:w:40:LYS:HE3	51:1:2330:G:O2'	2.03	0.59
51:1:1026:G:H2'	51:1:1027:A:H8	1.67	0.59
51:1:2743:U:H3'	51:1:2744:G:H5"	1.84	0.59
51:1:2812:G:H2'	51:1:2813:A:H8	1.68	0.59
24:X:30:LEU:HB2	24:X:48:ILE:HG22	1.84	0.59
51:1:1042:G:H2'	51:1:1043:C:C6	2.37	0.59
51:1:2360:G:C2'	51:1:2361:G:H5'	2.31	0.59
53:3:422:C:O2'	53:3:423:G:N2	2.36	0.59
55:8:7:DC:H2"	55:8:8:DT:H71	1.84	0.59
22:V:11:VAL:HA	22:V:22:VAL:HA	1.83	0.59
42:r:4:VAL:HG22	42:r:40:MET:HG2	1.85	0.59
51:1:794:A:H2'	51:1:795:C:O4'	2.02	0.59
51:1:1337:G:H2'	51:1:1338:G:C8	2.38	0.59
51:1:2183:A:H2'	51:1:2184:A:C4	2.38	0.59
53:3:1490:U:H2'	53:3:1491:G:C8	2.37	0.59
14:N:17:ARG:HB2	14:N:65:THR:HG23	1.83	0.59
27:b:141:HIS:ND1	27:b:192:GLY:O	2.35	0.59
51:1:1469:A:H2'	51:1:1470:A:C8	2.38	0.59
51:1:246:C:C2'	51:1:247:G:H5'	2.33	0.58
51:1:528:A:C8	51:1:528:A:C3'	2.86	0.58
51:1:1463:C:H2'	51:1:1464:G:H8	1.68	0.58
51:1:1511:G:H2'	51:1:1512:C:C6	2.38	0.58
51:1:1524:G:H2'	51:1:1525:A:C8	2.38	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2533:U:H2'	51:1:2534:A:H5'	1.85	0.58
55:8:9:DG:H4'	58:B1:120:LEU:HG	1.84	0.58
33:i:25:PRO:HG2	51:1:1068:G:H21	1.68	0.58
53:3:148:G:H1'	53:3:1447:A:H1'	1.84	0.58
58:B1:438:GLU:HG3	58:B1:485:MET:HE1	1.85	0.58
25:Y:73:ARG:NH2	53:3:261:U:OP2	2.36	0.58
51:1:49:A:H5"	51:1:51:G:O4'	2.02	0.58
51:1:1098:A:H2'	51:1:1099:G:C5'	2.33	0.58
58:B1:725:MET:SD	59:B2:1101:LEU:HD23	2.42	0.58
59:B2:1142:ARG:NH1	59:B2:1161:LEU:O	2.36	0.58
23:W:49:LYS:HA	23:W:52:ARG:HH21	1.68	0.58
37:m:66:ARG:NH1	37:m:104:GLU:OE2	2.36	0.58
51:1:1077:A:C8	51:1:1078:U:H1'	2.37	0.58
51:1:1561:C:H2'	51:1:1562:U:C6	2.38	0.58
51:1:1773:A:C2'	51:1:1774:C:H5'	2.31	0.58
51:1:2789:C:H2'	51:1:2893:A:N7	2.18	0.58
58:B1:241:VAL:O	58:B1:241:VAL:HG12	2.04	0.58
9:I:201:GLU:O	53:3:8:A:N6	2.36	0.58
14:N:79:ARG:HH21	14:N:102:PHE:HA	1.67	0.58
51:1:2834:G:H2'	51:1:2879:A:N6	2.17	0.58
53:3:409:U:H3	53:3:433:G:H1	1.51	0.58
27:b:34:GLU:HG3	27:b:63:ILE:HD11	1.84	0.58
51:1:1845:G:O2'	51:1:1846:G:H5'	2.03	0.58
58:B1:97:VAL:HG11	58:B1:101:ARG:NH2	2.18	0.58
51:1:640:C:O2'	51:1:641:U:H5'	2.04	0.58
51:1:1893:C:H2'	51:1:1894:C:H5'	1.86	0.58
51:1:2153:C:H2'	51:1:2154:A:H5'	1.85	0.58
53:3:1125:U:H2'	53:3:1126:U:H2'	1.86	0.58
58:B1:514:THR:HG21	58:B1:596:LEU:HD12	1.84	0.58
58:B1:638:SER:OG	58:B1:639:VAL:N	2.36	0.58
27:b:157:ALA:O	51:1:1820:U:C2	2.56	0.58
51:1:621:A:H2'	51:1:622:G:H5'	1.86	0.58
51:1:1579:A:H2'	51:1:1580:A:C8	2.38	0.58
57:A2:82:LEU:HD11	57:A2:171:LEU:HD23	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
51:1:673:C:C2'	51:1:674:G:H5'	2.34	0.58
51:1:834:G:H2'	51:1:835:C:O4'	2.04	0.58
29:d:1:MET:HG2	29:d:16:GLU:HG2	1.86	0.58
51:1:1565:C:O2'	51:1:1566:A:H8	1.87	0.58
51:1:2215:C:H2'	51:1:2216:G:H8	1.65	0.58

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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	0.58
58:B1:370:LYS:HG2	58:B1:441:LEU:HD23	1.84	0.58
51:1:1333:G:O2'	51:1:1334:G:H5'	2.03	0.57
51:1:2636:C:H2'	51:1:2637:U:C6	2.39	0.57
51:1:2845:U:H2'	51:1:2846:G:H8	1.69	0.57
58:B1:99:ARG:CG	58:B1:99:ARG:HH11	2.17	0.57
58:B1:275:ARG:NH1	58:B1:278:ARG:NH1	2.51	0.57
58:B1:1046:ILE:HD12	58:B1:1059:LEU:HB3	1.86	0.57
38:n:22:ARG:HG3	38:n:70:THR:HA	1.86	0.57
51:1:32:C:H2'	51:1:33:C:C6	2.39	0.57
51:1:327:G:O2'	51:1:328:U:H5'	2.04	0.57
51:1:2186:G:O2'	51:1:2187:U:H5'	2.04	0.57
58:B1:510:LEU:HD22	58:B1:601:ILE:HD12	1.86	0.57
14:N:35:GLU:HA	14:N:39:GLY:HA3	1.85	0.57
15:O:46:LYS:HG2	15:O:68:ARG:HG2	1.84	0.57
30:e:47:LYS:O	30:e:51:ASN:ND2	2.37	0.57
38:n:63:ARG:CZ	51:1:1454:C:H5'	2.34	0.57
50:z:4:ILE:HD11	50:z:58:GLU:HG2	1.86	0.57
51:1:323:C:H3'	51:1:323:C:OP2	2.05	0.57
51:1:2899:A:O2'	51:1:2900:A:H5'	2.05	0.57
58:B1:161:THR:HG23	58:B1:164:GLN:H	1.67	0.57
1:A:26:SER:OG	1:A:27:THR:N	2.37	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
39:o:56:LYS:NZ	52:2:117:G:OP1	2.36	0.57
40:p:1:SER:OG	40:p:2:ASN:N	2.37	0.57
51:1:146:A:H2'	51:1:147:C:C6	2.39	0.57
51:1:635:C:H2'	51:1:636:G:H8	1.70	0.57
51:1:655:A:H4'	51:1:656:G:C5'	2.30	0.57
51:1:877:A:N1	51:1:899:A:H2'	2.20	0.57
51:1:2092:U:H4'	51:1:2093:G:C5'	2.34	0.57
51:1:2897:U:H2'	51:1:2898:U:C6	2.39	0.57
59:B2:13:LYS:HB2	59:B2:1180:MET:HE2	1.86	0.57
19:S:5:MET:HE1	53:3:981:U:H5"	1.86	0.57
34:j:116:ARG:NH2	51:1:529:A:OP2	2.32	0.57
51:1:2570:G:H2'	51:1:2571:U:H5'	1.85	0.57
28:c:55:LYS:NZ	28:c:59:ARG:O	2.36	0.57
31:f:151:ARG:HB3	31:f:161:VAL:HG23	1.86	0.57
39:o:25:ARG:NH1	52:2:8:C:O3'	2.37	0.57
51:1:1275:A:C6	51:1:1296:G:H4'	2.39	0.57
51:1:1526:C:H2'	51:1:1527:G:O4'	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:198:CYS:HA	58:B1:221:ILE:HD11	1.86	0.57
9:I:10:LEU:HD23	9:I:62:ARG:HB3	1.86	0.57
16:P:92:ARG:NH2	16:P:111:ASP:OD1	2.38	0.57
27:b:259:ASN:ND2	27:b:262:THR:OG1	2.38	0.57
31:f:174:LYS:HE2	51:1:2529:G:H4'	1.86	0.57
51:1:235:U:H2'	51:1:236:C:C6	2.39	0.57
51:1:593:U:H2'	51:1:594:U:C6	2.40	0.57
51:1:1108:U:H2'	51:1:1109:C:C2	2.40	0.57
51:1:1173:U:C5	51:1:1174:U:H1'	2.40	0.57
51:1:1400:U:O2'	51:1:1401:G:H5'	2.04	0.57
59:B2:707:ALA:O	59:B2:711:ASP:HB2	2.03	0.57
59:B2:839:VAL:HG12	59:B2:1049:ILE:HG12	1.87	0.57
7:G:114:LYS:HE3	7:G:151:LYS:HB2	1.85	0.57
38:n:54:LEU:HD23	38:n:66:ALA:HB2	1.86	0.57
41:q:30:VAL:HG13	51:1:580:U:O3'	2.04	0.57
58:B1:247:PRO:HA	58:B1:250:ARG:HG3	1.87	0.57
31:f:40:VAL:O	31:f:54:ARG:NH2	2.38	0.57
31:f:44:HIS:HA	31:f:49:LEU:HG	1.87	0.57
51:1:163:C:H2'	51:1:164:C:O4'	2.04	0.57
59:B2:1122:LYS:NZ	59:B2:1126:ASP:OD1	2.38	0.57
61:NA:123:ARG:HA	61:NA:158:ALA:HA	1.87	0.57
16:P:111:ASP:HB2	26:Z:16:ARG:HH22	1.68	0.56
25:Y:59:ARG:NH1	53:3:177:G:OP1	2.37	0.56
49:y:39:GLN:HG2	51:1:96:C:OP1	2.04	0.56
51:1:69:C:H2'	51:1:70:G:H8	1.70	0.56
51:1:287:G:H2'	51:1:288:U:C6	2.40	0.56
51:1:727:A:H2'	51:1:728:G:C8	2.40	0.56
51:1:1590:A:O2'	51:1:1591:A:H5'	2.05	0.56
58:B1:395:LYS:HZ2	58:B1:399:LYS:CD	2.17	0.56
10:J:54:GLU:HG2	10:J:56:PRO:HD2	1.86	0.56
28:c:18:ASP:N	28:c:18:ASP:OD1	2.36	0.56
51:1:366:C:O2'	51:1:367:G:H5'	2.04	0.56
51:1:1520:U:O2'	51:1:1521:G:H5'	2.05	0.56
57:A2:28:LEU:HB2	57:A2:201:LEU:HB3	1.86	0.56
58:B1:615:LYS:HG2	60:W0:5:THR:HG21	1.86	0.56
12:L:113:LYS:O	53:3:1239:A:O2'	2.22	0.56
19:S:26:LEU:HA	19:S:30:ILE:HD12	1.87	0.56
46:v:57:TYR:OH	46:v:79:ARG:NH2	2.38	0.56
51:1:78:U:H2'	51:1:79:C:C6	2.40	0.56
51:1:503:A:H4'	51:1:505:A:H5"	1.87	0.56
51:1:2457:U:O2'	51:1:2458:G:H5'	2.04	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:3:202:G:H21	53:3:466:A:H61	1.53	0.56
58:B1:102:MET:HG2	58:B1:246:PRO:HG3	1.87	0.56
58:B1:130:MET:HE2	58:B1:135:ILE:HG12	1.87	0.56
58:B1:352:ARG:HD2	59:B2:1268:GLN:HE21	1.68	0.56
58:B1:741:ALA:O	58:B1:762:ASN:ND2	2.38	0.56
39:o:52:SER:OG	39:o:53:THR:N	2.39	0.56
51:1:288:U:H2'	51:1:289:G:H8	1.71	0.56
51:1:1485:U:H2'	51:1:1486:U:C6	2.41	0.56
51:1:1528:A:H2'	51:1:1529:G:H5'	1.87	0.56
51:1:1678:A:H2'	51:1:1679:A:H5'	1.86	0.56
51:1:2395:C:H42	51:1:2421:G:H1	1.54	0.56
58:B1:37:GLU:O	58:B1:61:ILE:CD1	2.52	0.56
58:B1:42:GLU:HB3	58:B1:52:GLU:HG3	1.86	0.56
58:B1:160:LEU:HD22	58:B1:164:GLN:HB3	1.87	0.56
58:B1:1361:THR:HB	59:B2:1284:ALA:HB3	1.86	0.56
64:7:52:G:H2'	64:7:53:G:H8	1.69	0.56
10:J:44:ARG:NH2	10:J:70:MET:SD	2.78	0.56
51:1:359:G:C2'	51:1:360:U:H5'	2.36	0.56
51:1:1917:U:O2'	51:1:1918:A:H5'	2.06	0.56
53:3:49:U:H3	53:3:362:G:H1'	1.71	0.56
17:Q:8:ARG:NH2	53:3:880:C:OP1	2.36	0.56
45:u:36:GLU:HA	45:u:61:GLU:HG2	1.86	0.56
51:1:74:A:H4'	51:1:75:G:O5'	2.05	0.56
51:1:885:C:N4	51:1:886:A:H62	2.03	0.56
51:1:1319:C:O2'	51:1:1320:C:H5'	2.05	0.56
51:1:1597:A:H5"	51:1:1598:A:H5'	1.87	0.56
51:1:2584:U:C2'	51:1:2585:U:H5'	2.34	0.56
51:1:2626:C:H2'	51:1:2627:G:O4'	2.06	0.56
51:1:2662:A:H2'	51:1:2663:G:O4'	2.05	0.56
51:1:1097:U:H2'	51:1:1098:A:O4'	2.06	0.56
51:1:1182:G:H2'	51:1:1183:U:O4'	2.06	0.56
57:A1:29:GLU:HB3	57:A1:200:LYS:HG3	1.87	0.56
58:B1:395:LYS:HZ2	58:B1:399:LYS:HD3	1.71	0.56
7:G:58:LYS:O	7:G:62:ARG:NH1	2.38	0.56
8:H:39:ARG:NH1	8:H:54:ILE:O	2.39	0.56
12:L:4:ARG:HB3	12:L:6:ILE:HG23	1.88	0.56
28:c:134:HIS:CE1	51:1:1675:C:C4	2.94	0.56
51:1:1485:U:H2'	51:1:1486:U:H6	1.70	0.56
53:3:503:C:H2'	53:3:504:C:C6	2.41	0.56
58:B1:144:TYR:HE1	58:B1:162:GLU:CD	2.14	0.56
18:R:100:ARG:NH1	18:R:103:THR:OG1	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:S:52:ARG:O	19:S:58:ARG:NH1	2.39	0.56
26:Z:44:ARG:NH1	53:3:722:G:OP2	2.39	0.56
29:d:84:THR:HG21	51:1:586:A:H5'	1.87	0.56
35:k:76:VAL:H	40:p:72:VAL:HG22	1.71	0.56
46:v:83:LYS:HD3	46:v:85:LYS:HZ1	1.71	0.56
49:y:49:ASP:OD1	49:y:52:ARG:NH2	2.39	0.56
51:1:2533:U:C2'	51:1:2534:A:H5'	2.36	0.56
59:B2:818:VAL:HG22	59:B2:1096:ILE:HG12	1.87	0.56
4:D:9:VAL:HG22	51:1:1309:G:OP1	2.06	0.56
11:K:2:ARG:NH1	53:3:738:C:OP1	2.39	0.56
11:K:12:PRO:HB2	11:K:44:ARG:HH21	1.70	0.56
16:P:63:GLN:HG3	16:P:98:ALA:HB2	1.88	0.56
49:y:28:LEU:HA	49:y:31:GLN:HB2	1.88	0.56
51:1:133:U:O2'	51:1:134:G:H5'	2.06	0.56
51:1:296:U:H2'	51:1:297:G:C8	2.41	0.56
51:1:613:A:H2'	51:1:613:A:N3	2.21	0.56
51:1:780:G:H21	51:1:783:A:H62	1.54	0.56
51:1:1120:G:O2'	51:1:1121:C:H5'	2.05	0.56
51:1:1130:U:O2'	51:1:1131:G:OP1	2.20	0.56
51:1:1772:A:H5'	51:1:1773:A:OP2	2.06	0.56
53:3:1036:A:H2'	53:3:1037:C:H5'	1.88	0.56
59:B2:1142:ARG:NH2	59:B2:1166:ASP:OD1	2.38	0.56
51:1:184:C:H2'	51:1:185:G:C8	2.42	0.55
51:1:184:C:H2'	51:1:185:G:H8	1.70	0.55
51:1:1670:C:O5'	51:1:1670:C:H6	1.90	0.55
58:B1:508:LEU:HD22	59:B2:1101:LEU:HD21	1.88	0.55
27:b:216:ARG:NH2	51:1:781:A:OP1	2.38	0.55
35:k:65:THR:HG23	35:k:68:GLY:H	1.69	0.55
51:1:112:U:C2'	51:1:113:U:H5'	2.37	0.55
51:1:757:G:H2'	51:1:758:C:C5'	2.35	0.55
53:3:1040:U:H2'	53:3:1041:G:C8	2.42	0.55
58:B1:39:LYS:O	58:B1:273:ILE:HG21	2.06	0.55
59:B2:1070:HIS:NE2	59:B2:1114:GLU:OE1	2.36	0.55
63:5:38:A:C8	63:5:39:U:H1'	2.40	0.55
8:H:76:ILE:HD11	54:4:20:U:H4'	1.87	0.55
33:i:5:GLN:O	33:i:30:GLN:NE2	2.40	0.55
38:n:2:ARG:HA	38:n:5:LYS:HD3	1.88	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
51:1:358:U:H2'	51:1:359:G:C8	2.41	0.55
51:1:1410:G:H2'	51:1:1411:U:C6	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1506:U:H2'	51:1:1507:C:C6	2.41	0.55
53:3:159:G:N2	53:3:162:A:OP2	2.34	0.55
51:1:633:A:C2'	51:1:634:C:H5'	2.35	0.55
51:1:1697:G:H4'	51:1:1978:A:H5"	1.89	0.55
51:1:2236:U:H2'	51:1:2237:G:H5'	1.88	0.55
7:G:91:VAL:HG22	7:G:150:ILE:HD11	1.88	0.55
51:1:155:A:H2'	51:1:156:A:C8	2.41	0.55
51:1:543:G:H2'	51:1:544:C:O4'	2.05	0.55
51:1:1745:A:O2'	51:1:1746:A:H5'	2.07	0.55
51:1:2488:G:O2'	51:1:2489:U:H5'	2.07	0.55
51:1:2850:A:N1	51:1:2869:G:H4'	2.21	0.55
57:A2:29:GLU:HG3	57:A2:200:LYS:HG3	1.88	0.55
58:B1:804:ALA:HA	58:B1:1259:GLN:HG3	1.88	0.55
7:G:45:THR:O	7:G:49:PHE:N	2.35	0.55
51:1:720:U:H2'	51:1:721:A:C8	2.41	0.55
51:1:2845:U:H2'	51:1:2846:G:C8	2.42	0.55
58:B1:1167:LYS:HZ2	58:B1:1170:LYS:HB2	1.71	0.55
58:B1:1175:LEU:HD22	58:B1:1190:ILE:HD11	1.88	0.55
59:B2:103:VAL:HB	59:B2:114:VAL:HG11	1.89	0.55
59:B2:917:SER:O	59:B2:919:ARG:HG3	2.07	0.55
63:5:40:C:H2'	63:5:41:C:C6	2.41	0.55
51:1:461:C:H2'	51:1:462:C:C6	2.41	0.55
51:1:1541:C:O2'	51:1:1542:U:H5'	2.06	0.55
58:B1:799:ARG:HG2	58:B1:1325:PHE:HZ	1.72	0.55
19:S:84:ARG:NH2	53:3:1059:C:O3'	2.40	0.55
43:s:98:LYS:HD3	51:1:2012:G:OP1	2.06	0.55
51:1:1083:U:H2'	51:1:1084:A:H3'	1.89	0.55
51:1:1448:G:H2'	51:1:1449:G:C8	2.42	0.55
51:1:2195:U:O2'	51:1:2196:C:H5'	2.06	0.55
51:1:2510:C:C4	51:1:2511:U:C4	2.94	0.55
51:1:2545:G:O2'	51:1:2546:U:H5'	2.07	0.55
51:1:2637:U:C2'	51:1:2638:G:H5'	2.36	0.55
54:4:4:U:H3	63:5:36:A:H61	1.55	0.55
58:B1:145:VAL:HG23	58:B1:159:ILE:HG22	1.89	0.55
64:7:9:G:C2	64:7:45:G:O6	2.60	0.55
27:b:250:GLN:NE2	27:b:251:THR:O	2.37	0.55
30:e:23:SER:HB3	30:e:26:GLN:HB2	1.88	0.55
51:1:759:G:H2'	51:1:760:G:C8	2.41	0.55
51:1:1048:A:H2'	51:1:1049:C:H5'	1.88	0.55
51:1:1086:A:H5'	51:1:1103:A:C2	2.41	0.55
51:1:2217:G:O2'	51:1:2218:G:H5'	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:3:505:G:H5”	53:3:534:U:H2’	1.89	0.55
58:B1:800:LEU:HB3	58:B1:920:ALA:HB1	1.89	0.55
58:B1:833:GLU:HB2	58:B1:1242:ARG:NH1	2.22	0.55
12:L:73:GLU:HG2	12:L:90:VAL:HG22	1.89	0.55
33:i:10:LEU:HA	51:1:1061:U:C2	2.42	0.55
36:l:89:VAL:HG23	36:l:121:THR:HG23	1.88	0.55
49:y:19:LEU:O	49:y:23:ARG:N	2.35	0.55
51:1:128:C:H2’	51:1:129:C:H6	1.71	0.55
51:1:439:A:H2’	51:1:440:C:C6	2.42	0.55
51:1:1909:C:H2’	51:1:1910:G:C8	2.41	0.55
51:1:1913:A:N7	53:3:1494:G:H4’	2.22	0.55
16:P:86:LYS:HG3	16:P:114:PRO:HD3	1.89	0.54
51:1:296:U:H2’	51:1:297:G:H8	1.71	0.54
51:1:613:A:H5”	51:1:614:A:N7	2.22	0.54
51:1:825:A:O2’	51:1:826:U:H5’	2.07	0.54
51:1:877:A:C2’	51:1:878:A:H5”	2.37	0.54
51:1:1091:G:H2’	51:1:1092:C:C6	2.43	0.54
51:1:1511:G:H2’	51:1:1512:C:H6	1.73	0.54
51:1:1545:A:H2’	51:1:1546:G:O4’	2.07	0.54
51:1:2743:U:C3’	51:1:2744:G:H5”	2.37	0.54
53:3:830:G:H1	53:3:856:C:H42	1.53	0.54
58:B1:1166:GLY:HA3	58:B1:1174:ARG:HB2	1.88	0.54
25:Y:60:GLN:HA	25:Y:63:LYS:HB3	1.89	0.54
35:k:70:ARG:HG2	35:k:76:VAL:HG12	1.88	0.54
49:y:15:ASN:O	49:y:19:LEU:N	2.41	0.54
51:1:172:A:H2’	51:1:173:A:C8	2.40	0.54
51:1:543:G:H2’	51:1:544:C:C4’	2.37	0.54
51:1:1601:G:C2’	51:1:1602:U:H5’	2.37	0.54
51:1:2114:A:C2	51:1:2167:U:H1’	2.41	0.54
59:B2:811:ASN:HA	59:B2:815:SER:HB2	1.90	0.54
7:G:19:THR:HA	7:G:37:VAL:HA	1.88	0.54
10:J:23:THR:HA	10:J:28:ARG:HA	1.88	0.54
29:d:76:PRO:HA	29:d:82:GLY:HA3	1.90	0.54
51:1:340:A:H2’	51:1:341:C:O4’	2.06	0.54
51:1:392:U:H2’	51:1:393:C:C6	2.42	0.54
51:1:1748:C:H2’	51:1:1749:A:H8	1.73	0.54
57:A1:47:LEU:HD23	57:A1:51:MET:HG3	1.90	0.54
7:G:53:LEU:HD21	7:G:215:ALA:HB1	1.88	0.54
31:f:103:ASN:ND2	31:f:113:ASP:OD1	2.41	0.54
36:l:20:GLY:HA2	36:l:28:GLY:HA2	1.90	0.54
36:l:80:SER:HB3	36:l:114:GLY:HA3	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:z:15:ARG:HE	50:z:52:PHE:HE2	1.53	0.54
51:1:8:C:H2'	51:1:9:G:H8	1.73	0.54
51:1:53:A:H2'	51:1:54:G:H5'	1.89	0.54
51:1:143:C:H2'	51:1:144:A:H8	1.73	0.54
51:1:358:U:H2'	51:1:359:G:H8	1.72	0.54
51:1:2827:C:O2'	51:1:2828:G:H5'	2.07	0.54
58:B1:1155:ILE:HG13	58:B1:1210:ILE:HB	1.89	0.54
7:G:138:ARG:NH1	7:G:141:GLU:OE2	2.40	0.54
51:1:141:G:H3'	51:1:142:A:O4'	2.07	0.54
51:1:359:G:H2'	51:1:360:U:O4'	2.07	0.54
51:1:1297:C:H2'	51:1:1298:C:C6	2.43	0.54
51:1:1530:G:H22	51:1:1542:U:H1'	1.73	0.54
51:1:2114:A:C8	51:1:2115:G:H1'	2.42	0.54
58:B1:750:PRO:CB	59:B2:549:ASP:OD2	2.45	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:B2:1117:LEU:HD12	59:B2:1195:ILE:HG12	1.90	0.54
38:n:35:LYS:NZ	38:n:100:CYS:SG	2.81	0.54
60:W0:3:ARG:NH1	60:W0:55:GLU:OE2	2.40	0.54
8:H:71:ARG:HB3	8:H:74:ILE:HD13	1.89	0.54
51:1:1014:A:H2'	51:1:1015:U:C6	2.43	0.54
51:1:1068:G:N2	51:1:1096:A:H1'	2.23	0.54
51:1:2734:A:C2'	51:1:2735:G:H5'	2.38	0.54
53:3:959:A:HO2'	53:3:984:C:HO2'	1.53	0.54
57:A2:100:LEU:HD23	57:A2:115:ILE:HG21	1.89	0.54
58:B1:58:CYS:SG	58:B1:59:ALA:N	2.80	0.54
7:G:102:ASN:ND2	53:3:1073:U:O2	2.39	0.54
27:b:227:VAL:HG11	51:1:784:G:N1	2.23	0.54
51:1:21:A:O2'	51:1:22:C:H5'	2.08	0.54
51:1:2345:G:H5'	51:1:2347:C:H5'	1.89	0.54
58:B1:814:CYS:SG	58:B1:883:ARG:NH2	2.81	0.54
42:r:51:VAL:HG22	42:r:52:PRO:HD2	1.89	0.54
51:1:472:A:H2'	51:1:473:G:H5'	1.89	0.54
51:1:1063:G:N1	51:1:1075:C:N4	2.52	0.54
51:1:2091:C:H5	51:1:2092:U:HO2'	1.55	0.54
53:3:923:A:N6	53:3:1392:G:O6	2.40	0.54
53:3:1491:G:C6	65:h:2:DPP:HB3	2.42	0.54
57:A2:43:LEU:HD13	57:A2:217:ILE:HD11	1.90	0.54
58:B1:205:LEU:HG	58:B1:217:LEU:HB3	1.90	0.54
51:1:268:C:H2'	51:1:269:C:H6	1.73	0.54
51:1:402:A:C2'	51:1:403:U:H5'	2.38	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:752:A:H62	51:1:2609:U:H3	1.56	0.54
51:1:923:G:O2'	51:1:924:G:H5'	2.07	0.54
51:1:1111:A:H2'	51:1:1112:G:H4'	1.90	0.54
52:2:40:U:N3	52:2:44:G:OP2	2.40	0.54
64:7:11:A:H2'	64:7:12:G:H8	1.72	0.54
3:C:20:TYR:OH	51:1:2348:U:H5'	2.08	0.53
9:I:55:ARG:O	9:I:59:LYS:N	2.41	0.53
37:m:27:SER:H	37:m:66:ARG:HH12	1.54	0.53
39:o:69:ASP:N	39:o:69:ASP:OD1	2.36	0.53
51:1:1310:G:O2'	51:1:1311:G:H5'	2.06	0.53
51:1:1601:G:O2'	51:1:1602:U:H5'	2.08	0.53
51:1:2190:G:O2'	51:1:2191:A:H5'	2.08	0.53
58:B1:30:ILE:HG21	58:B1:241:VAL:O	2.08	0.53
7:G:126:ASP:OD1	7:G:126:ASP:N	2.41	0.53
25:Y:66:ILE:HG21	25:Y:70:LYS:HB3	1.90	0.53
41:q:90:ASP:OD1	41:q:90:ASP:N	2.37	0.53
51:1:57:C:H2'	51:1:58:G:O4'	2.08	0.53
51:1:973:A:H5'	51:1:1188:U:H1'	1.90	0.53
51:1:1005:C:H6	51:1:1005:C:O5'	1.90	0.53
51:1:1565:C:HO2'	51:1:1566:A:H8	1.53	0.53
51:1:2644:G:O2'	51:1:2645:G:H5'	2.09	0.53
64:7:25:C:H42	64:7:45:G:H22	1.56	0.53
25:Y:47:GLN:NE2	25:Y:51:ASN:OD1	2.40	0.53
40:p:105:LYS:O	40:p:108:ARG:NH2	2.42	0.53
48:x:29:LEU:HD12	51:1:2230:G:H5"	1.91	0.53
51:1:682:G:N2	51:1:796:C:O2	2.41	0.53
51:1:1288:G:C6	51:1:1327:A:C2	2.96	0.53
51:1:1389:G:O2'	51:1:1390:U:H5'	2.07	0.53
51:1:2297:A:N1	51:1:2321:U:C5	2.75	0.53
51:1:2742:G:O2'	51:1:2743:U:H5'	2.08	0.53
51:1:2850:A:C2	51:1:2869:G:H4'	2.44	0.53
58:B1:39:LYS:O	58:B1:273:ILE:HG23	2.08	0.53
59:B2:684:ASN:OD1	59:B2:687:ARG:NH2	2.41	0.53
12:L:77:ARG:NH2	53:3:1381:U:O2	2.41	0.53
23:W:52:ARG:NH2	53:3:835:U:OP1	2.42	0.53
30:e:21:TYR:OH	30:e:164:GLU:OE1	2.26	0.53
31:f:7:PRO:O	31:f:68:ARG:NH2	2.38	0.53
51:1:268:C:H2'	51:1:269:C:C6	2.44	0.53
51:1:894:U:O2'	51:1:895:U:H5'	2.09	0.53
51:1:925:A:O2'	51:1:926:G:H5'	2.08	0.53
51:1:1278:C:O2'	51:1:1279:G:H5'	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1528:A:C2'	51:1:1529:G:H5'	2.38	0.53
58:B1:68:TYR:CA	58:B1:75:TYR:HE2	2.22	0.53
58:B1:111:THR:HG22	58:B1:300:GLN:NE2	2.23	0.53
58:B1:746:LEU:HG	58:B1:758:PRO:HG3	1.90	0.53
58:B1:759:ILE:HG23	58:B1:771:GLN:HB3	1.89	0.53
59:B2:29:SER:O	59:B2:33:ASP:HB2	2.07	0.53
59:B2:985:GLU:HB3	59:B2:988:LYS:HB2	1.89	0.53
20:T:48:ASP:OD1	53:3:667:G:O2'	2.25	0.53
33:i:53:PRO:HD2	33:i:77:VAL:HG11	1.91	0.53
35:k:42:THR:HG22	35:k:57:VAL:HG12	1.91	0.53
42:r:75:VAL:HG23	42:r:86:GLN:HG2	1.90	0.53
51:1:481:G:H1'	51:1:506:G:H21	1.71	0.53
51:1:995:C:H6	51:1:995:C:H5'	1.74	0.53
51:1:1386:C:H2'	51:1:1387:A:C8	2.41	0.53
51:1:1856:U:H2'	51:1:1857:G:O4'	2.08	0.53
51:1:2631:G:O2'	51:1:2632:A:H5'	2.08	0.53
51:1:2758:A:H2'	51:1:2759:G:C5'	2.39	0.53
57:A1:100:LEU:HD21	57:A1:121:VAL:HG11	1.90	0.53
58:B1:209:ASN:HA	58:B1:214:ARG:HH21	1.74	0.53
63:5:38:A:H2'	63:5:39:U:H4'	1.91	0.53
1:A:35:ASP:OD1	18:R:2:ARG:NH1	2.42	0.53
10:J:104:ILE:O	10:J:111:ARG:NH1	2.41	0.53
13:M:92:PRO:O	13:M:116:ARG:NH2	2.42	0.53
44:t:54:GLU:HB3	44:t:88:LYS:HE3	1.90	0.53
51:1:44:A:O2'	51:1:45:G:H5'	2.08	0.53
51:1:279:A:N6	51:1:361:G:H1'	2.21	0.53
51:1:784:G:C5'	51:1:785:G:OP1	2.54	0.53
51:1:878:A:H2'	51:1:879:G:O4'	2.09	0.53
51:1:1530:G:N2	51:1:1542:U:H1'	2.23	0.53
51:1:1678:A:H2'	51:1:1679:A:C5'	2.38	0.53
51:1:2092:U:C5	51:1:2199:A:H2	2.26	0.53
17:Q:64:SER:OG	17:Q:65:TYR:N	2.41	0.53
34:j:2:LYS:HA	51:1:995:C:N3	2.23	0.53
51:1:53:A:C2'	51:1:54:G:H5'	2.39	0.53
51:1:176:A:O2'	51:1:177:G:H5'	2.08	0.53
51:1:543:G:C2'	51:1:544:C:H5"	2.37	0.53
51:1:876:C:H2'	51:1:877:A:O4'	2.08	0.53
51:1:2092:U:C5	51:1:2199:A:C2	2.97	0.53
51:1:2123:G:H2'	51:1:2124:G:H8	1.73	0.53
51:1:2290:G:H2'	51:1:2291:U:H6	1.74	0.53
53:3:1023:U:H2'	53:3:1024:G:C8	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
57:A1:16:ILE:HG23	57:A1:26:VAL:HG22	1.91	0.53
58:B1:785:ASP:O	58:B1:789:LYS:HB2	2.08	0.53
59:B2:243:PRO:HB2	59:B2:274:ILE:HG23	1.90	0.53
39:o:31:THR:HG23	39:o:34:HIS:H	1.73	0.53
51:1:2328:A:H8	51:1:2328:A:O5'	1.91	0.53
51:1:2425:A:H4'	51:1:2426:A:H5"	1.91	0.53
51:1:2762:C:C2'	51:1:2763:G:H5'	2.39	0.53
9:I:154:VAL:HA	9:I:157:ALA:HB3	1.91	0.53
14:N:115:VAL:HG23	53:3:1367:C:H5"	1.91	0.53
16:P:15:VAL:HG12	16:P:76:TYR:HB3	1.90	0.53
31:f:174:LYS:CG	51:1:2529:G:H4'	2.34	0.53
37:m:64:TRP:HB2	37:m:104:GLU:HB2	1.89	0.53
50:z:36:GLU:O	50:z:37:ARG:NH1	2.42	0.53
51:1:1599:U:H2'	51:1:1600:C:C6	2.43	0.53
51:1:1789:A:H2'	51:1:1790:C:O4'	2.09	0.53
51:1:2625:G:O2'	51:1:2626:C:H5'	2.09	0.53
58:B1:99:ARG:HG3	58:B1:99:ARG:HH11	1.73	0.53
21:U:69:ASP:OD1	21:U:69:ASP:N	2.38	0.53
29:d:76:PRO:HD2	51:1:673:C:H5"	1.89	0.53
39:o:40:ILE:HD12	39:o:44:GLY:HA2	1.91	0.53
51:1:441:U:O2'	51:1:442:G:H5'	2.08	0.53
51:1:723:C:O2'	51:1:724:U:H5'	2.09	0.53
51:1:2194:U:H2'	51:1:2195:U:C6	2.44	0.53
53:3:1244:G:H1	53:3:1293:C:H42	1.57	0.53
58:B1:215:LYS:HA	58:B1:218:THR:HG22	1.92	0.53
58:B1:850:LYS:HB2	58:B1:857:LEU:HB2	1.91	0.53
33:i:27:LEU:HD13	33:i:32:VAL:HG11	1.90	0.52
51:1:611:C:H2'	51:1:612:G:O4'	2.09	0.52
51:1:729:G:H5"	51:1:730:A:H5"	1.92	0.52
51:1:1409:U:H2'	51:1:1410:G:C8	2.44	0.52
51:1:1794:A:O2'	51:1:1795:C:H5'	2.10	0.52
51:1:2529:G:H5"	51:1:2530:A:H5"	1.91	0.52
7:G:61:SER:OG	7:G:62:ARG:NH1	2.42	0.52
17:Q:49:ARG:NH1	17:Q:88:ASP:OD2	2.42	0.52
26:Z:28:LEU:HA	26:Z:31:VAL:HG12	1.90	0.52
34:j:38:GLY:HA3	34:j:50:THR:HG23	1.90	0.52
51:1:213:A:O2'	51:1:214:G:H5'	2.09	0.52
51:1:341:C:O2'	51:1:342:A:H5'	2.08	0.52
51:1:1558:C:O4'	51:1:1560:G:C8	2.62	0.52
51:1:1560:G:H2'	51:1:1560:G:N3	2.24	0.52
51:1:1782:U:H2'	51:1:1783:A:H5"	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:3:203:G:N2	53:3:204:G:O6	2.43	0.52
53:3:458:U:H3	53:3:474:G:H1	1.56	0.52
53:3:1023:U:H2'	53:3:1024:G:H8	1.74	0.52
58:B1:112:ALA:HA	58:B1:238:ILE:HA	1.91	0.52
59:B2:628:HIS:HB3	59:B2:647:ARG:HH21	1.74	0.52
64:7:43:A:H2'	64:7:44:A:C8	2.44	0.52
9:I:12:ARG:NH1	9:I:32:LYS:O	2.42	0.52
42:r:4:VAL:HG12	42:r:13:ARG:HA	1.91	0.52
42:r:54:VAL:HG13	42:r:55:ASP:H	1.75	0.52
51:1:519:U:H2'	51:1:520:G:H8	1.75	0.52
51:1:2092:U:C4'	51:1:2093:G:H5"	2.37	0.52
51:1:2102:G:H2'	51:1:2103:C:O4'	2.09	0.52
51:1:2758:A:C2'	51:1:2759:G:H5'	2.40	0.52
59:B2:246:LEU:HB3	59:B2:269:ILE:HD13	1.91	0.52
8:H:30:ASP:OD1	8:H:30:ASP:N	2.41	0.52
8:H:107:LYS:HB3	8:H:110:LEU:HD23	1.92	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
28:c:23:PRO:HB3	51:1:2682:A:N3	2.24	0.52
47:w:55:LEU:HD12	47:w:76:ILE:HD12	1.90	0.52
51:1:368:A:H2'	51:1:369:U:C5'	2.39	0.52
51:1:1338:G:H2'	51:1:1339:G:H8	1.74	0.52
51:1:1722:A:H62	51:1:1738:G:H1'	1.74	0.52
51:1:1827:U:H2'	51:1:1828:G:H5'	1.90	0.52
51:1:1917:U:C2'	51:1:1918:A:H5'	2.39	0.52
51:1:2216:G:H2'	51:1:2217:G:H8	1.74	0.52
51:1:2617:U:H2'	51:1:2618:G:H5'	1.91	0.52
57:A1:205:MET:HE3	57:A1:213:PRO:HB3	1.91	0.52
33:i:25:PRO:HG2	51:1:1068:G:N2	2.24	0.52
51:1:215:G:C4'	51:1:216:A:H4'	2.39	0.52
51:1:1161:C:H2'	51:1:1162:G:C8	2.44	0.52
51:1:1175:A:H3'	51:1:1176:U:C5'	2.37	0.52
51:1:1662:U:H2'	51:1:1663:G:O4'	2.09	0.52
51:1:2707:U:H2'	51:1:2708:G:C8	2.44	0.52
57:A2:28:LEU:HD22	57:A2:201:LEU:HD23	1.91	0.52
59:B2:714:VAL:HB	59:B2:787:PRO:HD2	1.92	0.52
51:1:597:G:H2'	51:1:598:U:C6	2.45	0.52
51:1:820:A:O2'	51:1:821:A:H5'	2.08	0.52
51:1:870:U:O2'	51:1:871:U:H5'	2.10	0.52
51:1:1171:G:H2'	51:1:1172:C:C4'	2.38	0.52
51:1:2470:G:O2'	51:1:2471:A:H5'	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2747:G:O6	51:1:2754:U:H2'	2.09	0.52
7:G:14:HIS:HB3	7:G:42:LEU:HD21	1.91	0.52
27:b:92:LEU:HD11	27:b:100:ARG:HB3	1.91	0.52
30:e:162:ASP:OD1	30:e:162:ASP:N	2.37	0.52
51:1:140:C:H2'	51:1:141:G:H5'	1.90	0.52
51:1:1503:A:C3'	51:1:1504:A:H5"	2.40	0.52
51:1:1722:A:O2'	51:1:1723:G:H5'	2.10	0.52
51:1:2670:A:H2'	51:1:2671:G:H8	1.75	0.52
51:1:2731:G:H2'	51:1:2732:G:C8	2.45	0.52
57:A2:140:ILE:HD12	57:A2:142:MET:HE3	1.91	0.52
58:B1:975:ILE:HD11	58:B1:1003:LEU:HD11	1.91	0.52
59:B2:524:ILE:HG21	59:B2:708:VAL:HG13	1.92	0.52
1:A:9:TYR:OH	30:e:101:ARG:NH2	2.41	0.52
51:1:40:U:H2'	51:1:41:C:C6	2.43	0.52
51:1:1574:C:H2'	51:1:1575:C:H6	1.74	0.52
58:B1:832:LYS:HB3	58:B1:1242:ARG:NH1	2.24	0.52
8:H:133:MET:HE3	8:H:167:TYR:HB2	1.91	0.52
51:1:1534:U:H2'	51:1:1536:C:O4'	2.10	0.52
51:1:2204:G:H2'	51:1:2205:A:C8	2.44	0.52
51:1:2236:U:C2'	51:1:2237:G:H5'	2.39	0.52
53:3:460:A:H2'	53:3:461:A:H8	1.75	0.52
58:B1:78:LEU:O	58:B1:78:LEU:HD13	2.09	0.52
9:I:150:LYS:O	9:I:155:LYS:NZ	2.43	0.52
40:p:28:LYS:HB3	40:p:39:LEU:HD21	1.91	0.52
51:1:69:C:H2'	51:1:70:G:C8	2.46	0.52
51:1:386:G:H3'	51:1:387:U:H5"	1.92	0.52
51:1:1047:G:N2	51:1:1110:G:H2'	2.25	0.52
51:1:1507:C:H2'	51:1:1508:A:C4'	2.40	0.52
51:1:1910:G:H1	51:1:1920:C:H42	1.58	0.52
51:1:1923:U:H2'	51:1:1924:C:C6	2.45	0.52
58:B1:144:TYR:CE1	58:B1:162:GLU:CD	2.88	0.52
58:B1:683:ILE:HD12	58:B1:754:ILE:HG21	1.92	0.52
59:B2:125:GLY:HA2	59:B2:499:SER:HB2	1.92	0.52
10:J:123:LEU:HD12	53:3:7:A:H2'	1.92	0.51
10:J:152:VAL:HG21	13:M:98:LEU:HD13	1.91	0.51
15:O:24:GLU:HA	15:O:27:GLU:HB2	1.93	0.51
51:1:49:A:O5'	51:1:51:G:H5'	2.09	0.51
51:1:138:U:C5	51:1:139:U:H5	2.28	0.51
51:1:736:C:H42	51:1:760:G:H1	1.59	0.51
51:1:1542:U:O2'	51:1:1543:G:H5'	2.09	0.51
51:1:1878:G:O2'	51:1:1879:C:H5'	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2463:C:O2'	51:1:2464:G:H5'	2.10	0.51
58:B1:390:LEU:N	58:B1:390:LEU:CD1	2.73	0.51
2:B:43:THR:HG1	2:B:46:GLY:H	1.57	0.51
33:i:56:VAL:HB	33:i:68:PHE:HB2	1.92	0.51
34:j:10:THR:O	34:j:12:LYS:NZ	2.36	0.51
39:o:40:ILE:HG22	39:o:47:VAL:HG12	1.91	0.51
51:1:492:A:H2'	51:1:493:G:O4'	2.09	0.51
51:1:1678:A:C2'	51:1:1679:A:H5'	2.40	0.51
51:1:1930:G:C2'	51:1:1931:U:OP2	2.58	0.51
51:1:2651:C:O2'	51:1:2652:C:H5'	2.10	0.51
4:D:3:ARG:NH1	51:1:752:A:OP1	2.44	0.51
10:J:106:ALA:O	10:J:111:ARG:NH2	2.43	0.51
15:O:5:ARG:N	15:O:76:ILE:O	2.43	0.51
30:e:69:ALA:O	30:e:80:GLN:NE2	2.43	0.51
51:1:2776:A:C6	51:1:2782:G:H1'	2.45	0.51
53:3:1077:G:N2	53:3:1080:A:OP2	2.40	0.51
64:7:9:G:O4'	64:7:46:G:N3	2.43	0.51
8:H:130:ARG:NH2	8:H:165:GLU:OE1	2.43	0.51
43:s:109:ASP:OD1	43:s:109:ASP:N	2.42	0.51
46:v:77:VAL:HG23	46:v:89:ILE:HG12	1.92	0.51
53:3:816:A:OP1	53:3:1526:G:O2'	2.28	0.51
21:U:6:LEU:HD22	21:U:17:TYR:HB3	1.91	0.51
31:f:136:ASP:HB3	31:f:139:VAL:HG12	1.92	0.51
51:1:286:U:H2'	51:1:287:G:H8	1.75	0.51
51:1:291:G:O2'	51:1:292:U:H5'	2.11	0.51
51:1:1112:G:H2'	51:1:1113:U:O4'	2.10	0.51
51:1:2570:G:C2'	51:1:2571:U:H5'	2.40	0.51
51:1:2670:A:H2'	51:1:2671:G:C8	2.45	0.51
58:B1:412:LEU:HD23	58:B1:416:ILE:HG13	1.92	0.51
58:B1:437:PHE:HZ	58:B1:453:VAL:HG11	1.76	0.51
59:B2:893:THR:HB	59:B2:914:LYS:HA	1.92	0.51
64:6:1:C:H2'	64:6:2:G:H8	1.75	0.51
36:l:42:SER:HB2	51:1:672:C:H5	1.76	0.51
51:1:8:C:H2'	51:1:9:G:C8	2.45	0.51
51:1:1403:A:H2'	51:1:1404:C:C6	2.45	0.51
53:3:202:G:H1	53:3:215:C:H42	1.57	0.51
6:F:19:ARG:HB2	6:F:24:ARG:HD2	1.92	0.51
21:U:25:ARG:O	53:3:110:C:O2'	2.28	0.51
22:V:60:ILE:HA	22:V:74:LEU:HA	1.93	0.51
23:W:71:ASP:N	23:W:71:ASP:OD1	2.44	0.51
27:b:257:ARG:HH22	27:b:262:THR:HG1	1.56	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
35:k:75:SER:OG	40:p:72:VAL:O	2.26	0.51
37:m:38:ARG:HB3	37:m:98:PRO:HD3	1.92	0.51
51:1:355:U:H2'	51:1:356:G:C8	2.45	0.51
51:1:2013:A:H5"	51:1:2013:A:C8	2.44	0.51
59:B2:93:SER:HA	59:B2:128:PRO:HA	1.92	0.51
4:D:14:ARG:NH1	51:1:1377:G:O3'	2.44	0.51
14:N:89:TYR:HB3	14:N:93:LEU:HD21	1.92	0.51
17:Q:36:VAL:HG21	17:Q:73:LEU:HB3	1.91	0.51
33:i:126:ARG:HD2	51:1:1080:A:H4'	1.93	0.51
35:k:31:ARG:NH2	51:1:2676:C:OP2	2.43	0.51
44:t:65:GLY:N	44:t:79:ASP:OD1	2.43	0.51
51:1:1416:G:H2'	51:1:1417:C:C6	2.46	0.51
51:1:2618:G:H2'	51:1:2619:C:O4'	2.11	0.51
53:3:1178:G:N2	53:3:1181:G:OP2	2.43	0.51
64:6:43:A:H2'	64:6:44:A:C8	2.45	0.51
2:B:2:VAL:HG23	51:1:2015:A:C6	2.46	0.51
3:C:7:LYS:HD3	51:1:2420:C:H5"	1.93	0.51
29:d:191:ASP:O	29:d:195:GLN:NE2	2.44	0.51
51:1:251:A:H2'	51:1:252:G:O4'	2.10	0.51
51:1:386:G:H3'	51:1:387:U:C5'	2.41	0.51
51:1:439:A:H2'	51:1:440:C:H6	1.75	0.51
51:1:707:G:H2'	51:1:708:G:O4'	2.11	0.51
51:1:800:A:H4'	51:1:801:G:H3'	1.92	0.51
51:1:1415:U:H1'	51:1:1588:G:N2	2.26	0.51
51:1:1441:G:H2'	51:1:1442:U:H6	1.71	0.51
51:1:2105:U:N3	51:1:2184:A:C2	2.78	0.51
51:1:2555:U:O2	51:1:2555:U:O4'	2.29	0.51
58:B1:201:LEU:HD12	58:B1:224:LEU:HD12	1.92	0.51
59:B2:255:ILE:HB	59:B2:263:VAL:HB	1.93	0.51
8:H:175:HIS:ND1	53:3:1109:C:OP2	2.44	0.51
27:b:50:THR:HG23	51:1:1813:G:H21	1.76	0.51
51:1:1468:U:H2'	51:1:1522:A:N6	2.26	0.51
51:1:1528:A:H2'	51:1:1529:G:O4'	2.11	0.51
51:1:1717:A:H2'	51:1:1718:G:C5'	2.40	0.51
51:1:2052:A:C2'	51:1:2053:G:H5'	2.41	0.51
51:1:2285:C:O2'	51:1:2286:G:H5'	2.11	0.51
51:1:2611:C:O2	51:1:2611:C:C2'	2.58	0.51
51:1:2815:C:O2'	51:1:2816:G:H5'	2.11	0.51
59:B2:974:ARG:HD2	59:B2:1014:LEU:HD21	1.92	0.51
62:NG:161:SER:HA	62:NG:170:PRO:HA	1.92	0.51
15:O:39:PRO:HD2	53:3:1123:U:H4'	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:c:161:MET:HE1	51:1:2050:C:O2	2.11	0.50
53:3:1013:G:N2	53:3:1016:A:OP2	2.35	0.50
30:e:91:ARG:NH2	52:2:43:C:O2	2.36	0.50
51:1:155:A:H2'	51:1:156:A:H8	1.77	0.50
51:1:208:C:O5'	51:1:208:C:H6	1.93	0.50
51:1:282:A:H2'	51:1:283:G:C8	2.42	0.50
51:1:438:G:H2'	51:1:439:A:H8	1.76	0.50
51:1:630:G:H4'	51:1:640:C:H4'	1.93	0.50
51:1:724:U:O2'	51:1:725:G:H5'	2.11	0.50
51:1:928:A:O2'	51:1:929:U:H5'	2.10	0.50
58:B1:275:ARG:HH12	58:B1:278:ARG:NH1	2.09	0.50
58:B1:375:GLU:HG2	59:B2:1245:ALA:O	2.10	0.50
58:B1:395:LYS:NZ	58:B1:399:LYS:CD	2.74	0.50
12:L:65:LEU:O	12:L:69:ARG:N	2.43	0.50
27:b:207:ALA:HB2	51:1:1790:C:O2'	2.12	0.50
51:1:1293:C:H2'	51:1:1294:U:C6	2.46	0.50
51:1:2248:C:H2'	51:1:2249:U:H5'	1.93	0.50
51:1:2687:U:H2'	51:1:2688:G:O4'	2.11	0.50
58:B1:99:ARG:HA	58:B1:248:ASP:HB2	1.92	0.50
58:B1:421:VAL:O	58:B1:436:ALA:HA	2.12	0.50
58:B1:770:LEU:CD1	59:B2:618:GLN:HG3	2.37	0.50
59:B2:562:GLU:OE1	59:B2:662:SER:OG	2.28	0.50
10:J:23:THR:HG22	10:J:28:ARG:HB3	1.91	0.50
19:S:68:ARG:NH2	53:3:974:A:OP1	2.45	0.50
27:b:147:PRO:HG3	27:b:184:GLU:HG2	1.92	0.50
29:d:77:ILE:HG23	51:1:1256:G:N2	2.26	0.50
45:u:73:ASN:ND2	45:u:80:ASP:OD2	2.43	0.50
48:x:64:ASP:N	48:x:64:ASP:OD1	2.43	0.50
51:1:145:C:H2'	51:1:146:A:C8	2.46	0.50
51:1:246:C:H2'	51:1:247:G:C5'	2.40	0.50
51:1:521:U:H2'	51:1:522:A:H8	1.73	0.50
51:1:580:U:O5'	51:1:580:U:H6	1.94	0.50
51:1:891:G:H2'	51:1:892:A:C8	2.46	0.50
51:1:1270:C:H5"	51:1:1271:G:H5"	1.93	0.50
51:1:1539:U:H2'	51:1:1540:G:H8	1.76	0.50
51:1:1676:A:H8	51:1:1676:A:O5'	1.95	0.50
51:1:2348:U:O2'	51:1:2349:G:H5'	2.12	0.50
59:B2:232:ILE:HG12	59:B2:237:LEU:HG	1.94	0.50
8:H:4:VAL:HG21	8:H:9:ILE:HD13	1.93	0.50
15:O:29:ALA:O	15:O:33:GLY:N	2.42	0.50
28:c:176:ASP:OD1	28:c:176:ASP:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:n:49:GLU:O	38:n:53:THR:OG1	2.29	0.50
51:1:1754:A:C6	51:1:1755:A:C6	2.98	0.50
51:1:2593:U:O2'	51:1:2594:C:H5'	2.11	0.50
58:B1:972:LYS:HD2	58:B1:1004:ALA:HA	1.93	0.50
1:A:35:ASP:OD1	1:A:35:ASP:N	2.42	0.50
20:T:2:LEU:HD22	20:T:34:GLN:HB2	1.92	0.50
21:U:5:ARG:HB3	53:3:376:G:H5"	1.93	0.50
30:e:27:VAL:O	30:e:29:ARG:NH1	2.41	0.50
51:1:288:U:H2'	51:1:289:G:C8	2.47	0.50
51:1:1310:G:H2'	51:1:1311:G:C5'	2.38	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
51:1:2888: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
59:B2:400:VAL:HG11	59:B2:452:ARG:HD2	1.93	0.50
27:b:206:LYS:HD2	51:1:729:G:C8	2.46	0.50
51:1:905:A:H2'	51:1:906:U:C5'	2.40	0.50
51:1:1668:A:C4'	51:1:1669:A:H5'	2.36	0.50
58:B1:505:ASP:OD2	59:B2:812:PHE:HA	2.11	0.50
58:B1:1179:PRO:HD2	58:B1:1184:ASP:HA	1.93	0.50
64:7:9:G:C2	64:7:45:G:C6	3.00	0.50
11:K:41:ASP:OD1	11:K:58:HIS:NE2	2.39	0.50
28:c:13:ARG:NH2	40:p:74:GLN:OE1	2.43	0.50
51:1:539:G:O2'	51:1:540:C:H5'	2.12	0.50
51:1:644:A:H2'	51:1:645:C:C4'	2.42	0.50
51:1:757:G:C2'	51:1:758:C:H5'	2.38	0.50
51:1:886:A:C5	51:1:887:U:H1'	2.47	0.50
51:1:2250:G:H8	51:1:2250:G:O5'	1.95	0.50
64:7:9:G:O4'	64:7:46:G:C2	2.65	0.50
7:G:221:ARG:HG2	7:G:224:ARG:HH11	1.77	0.50
30:e:135:ILE:HG23	30:e:140:ILE:HD11	1.93	0.50
33:i:25:PRO:HG3	51:1:1095:A:C2	2.46	0.50
38:n:8:ARG:HH21	38:n:43:GLU:HG3	1.77	0.50
43:s:67:ASP:OD1	43:s:67:ASP:N	2.39	0.50
51:1:78:U:H2'	51:1:79:C:H6	1.77	0.50
51:1:840:C:O2'	51:1:841:G:H5'	2.12	0.50
51:1:898:C:H2'	51:1:899:A:O4'	2.12	0.50
51:1:1593:A:H2'	51:1:1594:U:C6	2.47	0.50
51:1:1614:A:H2'	51:1:1615:C:H5'	1.94	0.50
51:1:2302:U:O2'	51:1:2303:G:H5'	2.12	0.50
51:1:2525:G:N2	51:1:2539:C:C2	2.79	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:103:TRP:HA	7:G:106:VAL:HG12	1.93	0.49
15:O:42:LEU:HB3	15:O:71:LEU:HB2	1.94	0.49
27:b:137:GLY:O	27:b:162:GLN:NE2	2.45	0.49
51:1:131:A:H2'	51:1:132:G:H8	1.77	0.49
51:1:173:A:H2'	51:1:174:U:C6	2.47	0.49
51:1:262:A:H2'	51:1:263:G:O4'	2.12	0.49
51:1:488:G:H22	51:1:491:G:H5"	1.77	0.49
51:1:1084:A:O2'	51:1:1105:U:H4'	2.12	0.49
51:1:2286:G:H21	51:1:2287:A:N6	2.09	0.49
51:1:2533:U:H2'	51:1:2534:A:C5'	2.42	0.49
51:1:2670:A:O2'	51:1:2671:G:H5'	2.12	0.49
53:3:664:G:H22	53:3:741:G:H1	1.60	0.49
59:B2:411:ARG:NH2	59:B2:427:ASP:OD2	2.44	0.49
20:T:23:SER:OG	20:T:25:GLU:OE1	2.30	0.49
21:U:36:VAL:HG12	21:U:53:ASP:HB3	1.94	0.49
25:Y:53:MET:HE2	25:Y:57:VAL:HG21	1.94	0.49
31:f:41:GLU:HG2	31:f:54:ARG:HH21	1.78	0.49
33:i:25:PRO:HB3	51:1:1095:A:N1	2.27	0.49
33:i:110:GLN:HG2	33:i:121:ILE:HD13	1.94	0.49
34:j:2:LYS:HG2	51:1:995:C:N4	2.27	0.49
44:t:7:LEU:HD13	44:t:46:ALA:HA	1.94	0.49
51:1:16:C:H2'	51:1:17:G:H8	1.77	0.49
51:1:30:G:H2'	51:1:31:C:C6	2.47	0.49
51:1:286:U:H2'	51:1:287:G:C8	2.47	0.49
51:1:1061:U:H4'	51:1:1070:A:H1'	1.93	0.49
51:1:1388:G:O2'	51:1:1389:G:H5'	2.12	0.49
51:1:2092:U:H5	51:1:2199:A:C2	2.30	0.49
51:1:2257:U:O2'	51:1:2258:C:H5'	2.13	0.49
53:3:1538:C:O2'	53:3:1539:C:H5'	2.11	0.49
58:B1:902:ASP:HB3	58:B1:905:ARG:HB2	1.93	0.49
11:K:42:TRP:HB2	11:K:59:TYR:HB2	1.93	0.49
13:M:29:SER:OG	13:M:30:LYS:N	2.44	0.49
27:b:92:LEU:HD21	27:b:100:ARG:HD3	1.93	0.49
28:c:81:GLU:HG3	51:1:2636:C:O5'	2.13	0.49
51:1:197:A:H2	51:1:2434:A:N6	2.10	0.49
51:1:673:C:H2'	51:1:674:G:C5'	2.41	0.49
51:1:900:A:H2'	51:1:901:C:H5'	1.94	0.49
51:1:1087:G:H2'	51:1:1089:A:H5'	1.94	0.49
51:1:1144:A:H2'	51:1:1145:C:C6	2.47	0.49
55:8:3:DC:H2"	55:8:4:DT:C7	2.42	0.49
58:B1:124:ILE:HG23	58:B1:128:LEU:HD12	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:554:HIS:HD2	59:B2:558:VAL:HB	1.77	0.49
25:Y:59:ARG:O	25:Y:63:LYS:N	2.46	0.49
30:e:84:ILE:HD11	51:1:2311:A:H1'	1.94	0.49
51:1:2241:A:O2'	51:1:2242:G:H5'	2.12	0.49
51:1:2836:U:H2'	51:1:2837:A:C8	2.47	0.49
53:3:1137:C:H4'	53:3:1138:G:H5'	1.95	0.49
59:B2:529:ARG:HH11	59:B2:572:ILE:HG22	1.77	0.49
27:b:50:THR:HG23	51:1:1813:G:N2	2.27	0.49
27:b:70:LYS:O	27:b:117:SER:OG	2.30	0.49
27:b:146:LYS:HB2	27:b:149:LYS:HB2	1.93	0.49
28:c:56:LYS:NZ	51:1:2830:C:H5"	2.28	0.49
33:i:134:SER:OG	51:1:1062:G:N2	2.45	0.49
46:v:51:GLN:OE1	46:v:79:ARG:NH2	2.40	0.49
51:1:482:A:H1'	51:1:498:G:N2	2.27	0.49
51:1:940:G:H2'	51:1:941:A:C5'	2.41	0.49
51:1:2634:A:O2'	51:1:2635:A:H5'	2.12	0.49
58:B1:749:LYS:HB3	58:B1:755:ILE:HD11	1.94	0.49
59:B2:400:VAL:HG21	59:B2:452:ARG:HE	1.76	0.49
7:G:101:THR:HG23	7:G:174:GLU:HG3	1.95	0.49
11:K:46:GLN:HA	11:K:56:LYS:HB3	1.94	0.49
15:O:89:ARG:HH22	62:NG:165:PHE:H	1.60	0.49
51:1:187:G:C6	51:1:188:G:N7	2.80	0.49
51:1:1748:C:H2'	51:1:1749:A:C8	2.47	0.49
51:1:1916:A:H2'	51:1:1917:U:O4'	2.12	0.49
53:3:113:G:N3	53:3:353:A:O2'	2.42	0.49
53:3:481:G:O2'	53:3:483:C:N4	2.46	0.49
17:Q:97:VAL:HG12	17:Q:99:GLY:H	1.78	0.49
17:Q:120:ARG:HH12	53:3:500:G:H5'	1.77	0.49
27:b:56:GLY:HA2	27:b:212:TRP:HA	1.94	0.49
51:1:69:C:O2'	51:1:70:G:H5'	2.13	0.49
51:1:236:C:H2'	51:1:237:C:C6	2.46	0.49
51:1:355:U:H2'	51:1:356:G:H8	1.77	0.49
51:1:367:G:H2'	51:1:368:A:O4'	2.13	0.49
51:1:1796:U:H2'	51:1:1797:G:C8	2.45	0.49
51:1:2553:G:H22	63:5:75:C:H42	1.60	0.49
58:B1:102:MET:HG2	58:B1:246:PRO:HD3	1.94	0.49
58:B1:220:ARG:HG2	58:B1:220:ARG:NH1	2.25	0.49
58:B1:255:LEU:HD23	58:B1:261:ALA:HB2	1.95	0.49
59:B2:9:LYS:HG2	59:B2:1171:ARG:HH12	1.77	0.49
59:B2:18:ARG:HE	59:B2:620:ASN:HA	1.77	0.49
51:1:519:U:H2'	51:1:520:G:C8	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:898:C:C2’	51:1:899:A:H5’	2.43	0.49
51:1:1534:U:H4’	51:1:1535:A:N1	2.27	0.49
51:1:1668:A:N3	51:1:1670:C:N4	2.60	0.49
51:1:2734:A:H2’	51:1:2735:G:C5’	2.42	0.49
53:3:927:G:O2’	53:3:1503:A:N7	2.38	0.49
31:f:87:GLN:NE2	31:f:129:GLU:OE2	2.46	0.49
51:1:121:G:H4’	51:1:149:A:H5’	1.95	0.49
51:1:554:U:O2’	51:1:555:G:H5’	2.13	0.49
51:1:1400:U:H2’	51:1:1401:G:H8	1.78	0.49
51:1:2298:A:O2’	51:1:2299:U:H5’	2.12	0.49
51:1:2329:U:H2’	51:1:2330:G:H8	1.78	0.49
51:1:2843:G:O2’	51:1:2844:G:H5’	2.13	0.49
53:3:768:A:N3	53:3:1512:U:O2’	2.46	0.49
53:3:890:G:O2’	53:3:906:A:N6	2.46	0.49
55:8:13:DT:OP2	58:B1:791:ALA:CB	2.59	0.49
58:B1:145:VAL:HG12	58:B1:184:ALA:HB1	1.94	0.49
12:L:2:ARG:NH2	53:3:933:G:O6	2.46	0.49
42:r:71:LYS:HA	42:r:90:ARG:HG2	1.95	0.49
48:x:1:SER:O	48:x:49:ARG:NH1	2.46	0.49
51:1:92:U:H2’	51:1:93:G:H5’	1.95	0.49
51:1:609:A:H2’	51:1:610:C:O4’	2.11	0.49
51:1:841:G:C2	51:1:938:G:C2	3.01	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
51:1:1910:G:N2	51:1:1911:U:C2	2.81	0.49
51:1:2180:U:O2’	51:1:2181:U:H5’	2.13	0.49
51:1:2510:C:N4	51:1:2511:U:C4	2.81	0.49
51:1:2527:C:O2’	51:1:2528:U:H5’	2.13	0.49
57:A1:18:GLN:HA	57:A1:24:ALA:HA	1.94	0.49
58:B1:1371:ARG:HE	58:B1:1372:ARG:NH1	2.10	0.49
63:5:51:U:H2’	63:5:52:G:C8	2.48	0.49
9:I:153:ARG:NH2	53:3:435:A:N3	2.61	0.48
30:e:57:ALA:HB2	30:e:64:PRO:HD3	1.95	0.48
35:k:5:GLN:HE21	51:1:1668:A:H5”	1.78	0.48
40:p:59:THR:HG22	40:p:72:VAL:HG12	1.95	0.48
51:1:54:G:H2’	51:1:55:G:O4’	2.12	0.48
51:1:1111:A:H2’	51:1:1111:A:N3	2.28	0.48
51:1:1119:U:O2’	51:1:1120:G:H5’	2.13	0.48
51:1:2281:A:O2’	51:1:2282:G:H5’	2.13	0.48
55:8:14:DC:H2’	55:8:15:DC:C6	2.48	0.48
59:B2:533:LEU:HD13	59:B2:540:ARG:HH21	1.77	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:896:THR:HB	59:B2:897:PRO:HD3	1.95	0.48
6:F:27:CYS:HG	6:F:33:HIS:HD1	1.53	0.48
14:N:10:ARG:NH2	53:3:1119:C:OP2	2.46	0.48
31:f:163:TYR:HB2	31:f:166:GLU:HB2	1.95	0.48
33:i:79:LEU:HD13	33:i:132:ALA:HB2	1.94	0.48
33:i:85:ILE:HD12	33:i:97:VAL:HG12	1.95	0.48
48:x:71:ARG:NH2	48:x:77:TYR:OH	2.42	0.48
51:1:360:U:H2'	51:1:361:G:C1'	2.43	0.48
51:1:1537:G:H3'	51:1:1537:G:N3	2.28	0.48
51:1:1645:G:H5"	51:1:1646:C:H5'	1.94	0.48
51:1:1871:A:H2'	51:1:1872:A:O4'	2.13	0.48
51:1:2367:G:O2'	51:1:2368:C:H5'	2.13	0.48
53:3:401:C:O2'	53:3:621:A:N3	2.45	0.48
40:p:2:ASN:HD21	51:1:2876:G:H4'	1.79	0.48
41:q:103:VAL:HA	41:q:106:THR:HG22	1.94	0.48
46:v:79:ARG:HA	46:v:86:LEU:HA	1.94	0.48
51:1:2126:A:H5'	51:1:2127:G:O5'	2.13	0.48
51:1:2214:C:H2'	51:1:2215:C:O4'	2.14	0.48
53:3:898:G:N2	53:3:901:A:OP2	2.46	0.48
58:B1:1261:LEU:HD12	58:B1:1304:ARG:HH21	1.78	0.48
13:M:83:ARG:NH2	53:3:587:G:OP1	2.44	0.48
27:b:156:SER:OG	27:b:157:ALA:N	2.44	0.48
42:r:68:ARG:O	42:r:90:ARG:NH2	2.46	0.48
45:u:88:ASP:OD1	45:u:88:ASP:N	2.43	0.48
49:y:16:THR:O	49:y:20:ASN:ND2	2.46	0.48
51:1:118:A:H2'	51:1:120:U:O4	2.13	0.48
51:1:481:G:C2'	51:1:482:A:OP2	2.61	0.48
51:1:553:G:H2'	51:1:554:U:O4'	2.13	0.48
57:A1:100:LEU:HB2	57:A1:144:ILE:HG23	1.94	0.48
12:L:41:ILE:HD11	53:3:1240:U:H5'	1.94	0.48
14:N:44:ARG:HG2	14:N:45:MET:HE2	1.95	0.48
15:O:58:ASN:ND2	53:3:1061:G:O2'	2.45	0.48
17:Q:110:LYS:HG3	17:Q:121:PRO:HG3	1.94	0.48
31:f:122:ALA:HB2	31:f:132:LEU:HD23	1.94	0.48
37:m:74:THR:HG21	37:m:86:LYS:HG2	1.94	0.48
39:o:15:ARG:NH2	52:2:8:C:OP1	2.47	0.48
44:t:70:HIS:N	44:t:73:ARG:O	2.44	0.48
51:1:67:U:H2'	51:1:68:G:H8	1.77	0.48
51:1:572:A:H8	51:1:572:A:O5'	1.97	0.48
51:1:1077:A:H8	51:1:1078:U:H1'	1.77	0.48
51:1:1536:C:H5"	51:1:1537:G:C4	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1785:A:O2'	51:1:1786:A:H8	1.96	0.48
53:3:776:G:N2	53:3:802:A:OP2	2.39	0.48
53:3:1064:G:O2'	53:3:1190:G:N2	2.46	0.48
53:3:1223:C:H5'	53:3:1224:U:H5"	1.96	0.48
53:3:1266:G:N2	53:3:1269:A:OP2	2.29	0.48
58:B1:115:TRP:O	58:B1:1333:THR:HG21	2.13	0.48
58:B1:1347:LEU:HG	58:B1:1357:ILE:HG23	1.96	0.48
6:F:6:SER:O	6:F:6:SER:OG	2.31	0.48
26:Z:55:HIS:HA	26:Z:58:LYS:HD2	1.95	0.48
28:c:136:ASN:OD1	51:1:2579:C:O2'	2.32	0.48
51:1:415:A:H2'	51:1:416:U:C6	2.48	0.48
51:1:718:A:H2'	51:1:719:C:O4'	2.12	0.48
51:1:1257:C:O5'	51:1:1257:C:H6	1.97	0.48
51:1:1324:G:O2'	51:1:1326:U:OP2	2.29	0.48
53:3:880:C:H2'	53:3:881:G:H8	1.78	0.48
53:3:1531:A:O2'	53:3:1532:U:H5'	2.14	0.48
57:A1:182:ARG:O	57:A1:205:MET:HA	2.14	0.48
59:B2:363:LEU:HB3	59:B2:381:ALA:HB1	1.96	0.48
14:N:91:GLU:HA	14:N:94:ARG:HB2	1.94	0.48
17:Q:70:GLY:O	17:Q:107:LYS:NZ	2.44	0.48
17:Q:82:ARG:O	17:Q:95:HIS:N	2.47	0.48
21:U:18:GLN:HA	21:U:38:PHE:HA	1.95	0.48
51:1:107:G:O2'	51:1:108:G:H5'	2.14	0.48
51:1:129:C:H2'	51:1:130:C:H6	1.79	0.48
51:1:1437:C:H2'	51:1:1438:U:H6	1.78	0.48
51:1:2283:C:H2'	51:1:2284:A:O4'	2.11	0.48
51:1:2393:U:H2'	51:1:2394:C:H5'	1.94	0.48
51:1:2547:A:H61	51:1:2561:U:H3	1.62	0.48
59:B2:732:ILE:HD11	59:B2:769:PRO:HB3	1.95	0.48
14:N:86:LEU:HD12	14:N:97:LEU:HD11	1.95	0.48
16:P:96:ILE:HD13	16:P:109:ILE:HD13	1.94	0.48
29:d:143:LEU:HD13	29:d:146:VAL:HG11	1.94	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
51:1:473:G:O2'	51:1:474:G:H5'	2.14	0.48
51:1:1087:G:O6	51:1:1089:A:C2	2.67	0.48
51:1:1409:U:H2'	51:1:1410:G:H8	1.76	0.48
51:1:1465:G:HO2'	51:1:1466:U:H5'	1.79	0.48
51:1:1807:G:C2'	51:1:1808:A:H5'	2.29	0.48
51:1:2649:C:O2'	51:1:2650:U:H5'	2.13	0.48
55:8:14:DC:H2'	55:8:15:DC:H6	1.79	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:201:LEU:HD11	58:B1:220:ARG:HG2	1.95	0.48
45:u:39:ASN:HB3	45:u:62:ALA:HB3	1.95	0.48
51:1:706:A:H2'	51:1:707:G:H5'	1.95	0.48
51:1:1026:G:OP2	51:1:1134:A:H1'	2.13	0.48
51:1:1729:U:H5	51:1:1731:G:N2	2.12	0.48
51:1:2208:C:H2'	51:1:2209:G:C8	2.48	0.48
53:3:358:U:H2'	53:3:359:G:H8	1.78	0.48
58:B1:103:GLY:H	58:B1:244:VAL:HG22	1.79	0.48
58:B1:190:LYS:HB2	58:B1:190:LYS:HE3	1.41	0.48
59:B2:400:VAL:HG22	59:B2:584:TYR:HB3	1.96	0.48
7:G:129:THR:HB	7:G:132:GLU:HB2	1.96	0.48
51:1:476:G:H4'	51:1:502:A:N1	2.28	0.48
51:1:898:C:O2'	51:1:899:A:H5'	2.13	0.48
51:1:1387:A:C5'	51:1:1469:A:H1'	2.38	0.48
51:1:2050:C:N4	51:1:2051:A:C6	2.81	0.48
51:1:2895:G:H2'	51:1:2896:C:C6	2.49	0.48
53:3:19:A:O2'	53:3:572:A:N1	2.46	0.48
53:3:673:A:H2'	53:3:674:G:C8	2.49	0.48
53:3:780:A:N6	53:3:801:U:OP2	2.42	0.48
58:B1:395:LYS:NZ	58:B1:399:LYS:CE	2.77	0.48
58:B1:550:VAL:O	58:B1:569:LEU:HA	2.13	0.48
58:B1:968:ASN:HA	58:B1:1117:SER:HB2	1.96	0.48
59:B2:857:VAL:HG13	59:B2:919:ARG:HH21	1.78	0.48
64:7:50:U:H2'	64:7:51:C:C5	2.49	0.48
9:I:94:GLU:HG3	9:I:190:LEU:HD21	1.95	0.47
14:N:94:ARG:HG2	14:N:97:LEU:HD12	1.95	0.47
51:1:596:U:C2	51:1:662:G:N2	2.82	0.47
51:1:813:U:C2	51:1:1195:G:N2	2.82	0.47
51:1:1019:U:N3	51:1:1142:A:N6	2.57	0.47
51:1:1020:A:C1'	51:1:1021:A:OP2	2.61	0.47
51:1:1509:A:H2'	51:1:1510:G:C8	2.49	0.47
51:1:1742:U:O2'	51:1:1743:G:H5'	2.14	0.47
51:1:2016:U:O5'	51:1:2016:U:H6	1.97	0.47
58:B1:1146:GLU:OE2	58:B1:1310:THR:HG22	2.14	0.47
62:NG:161:SER:CA	62:NG:170:PRO:HA	2.43	0.47
65:h:6:5OH:N	65:h:6:5OH:CS	2.75	0.47
27:b:152:GLN:HB3	51:1:1818:U:N3	2.29	0.47
51:1:5:A:H2'	51:1:6:A:C8	2.49	0.47
51:1:852:U:H2'	51:1:853:C:C6	2.49	0.47
51:1:1117:C:H2'	51:1:1118:C:H6	1.78	0.47
51:1:1680:U:O2'	51:1:1681:G:H5'	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2286:G:H21	51:1:2287:A:H61	1.62	0.47
51:1:2362:C:O5'	51:1:2362:C:H6	1.97	0.47
52:2:51:G:H22	52:2:53:A:H62	1.61	0.47
16:P:34:THR:OG1	16:P:35:ASP:N	2.47	0.47
29:d:149:ILE:HD11	29:d:172:ALA:HA	1.96	0.47
51:1:214:G:O2'	51:1:215:G:H5'	2.14	0.47
51:1:435:C:C2'	51:1:436:C:H5'	2.44	0.47
51:1:1400:U:H2'	51:1:1401:G:C8	2.50	0.47
51:1:1464:G:H2'	51:1:1465:G:H8	1.78	0.47
59:B2:517:GLN:HB3	59:B2:760:ASN:H	1.79	0.47
59:B2:786:GLY:N	59:B2:789:THR:OG1	2.41	0.47
12:L:79:VAL:HB	12:L:84:TYR:HD2	1.80	0.47
12:L:112:ASP:HB2	12:L:118:ARG:HG2	1.96	0.47
28:c:190:LYS:HE2	51:1:2729:G:H4'	1.95	0.47
33:i:8:VAL:HG21	33:i:26:ALA:HB1	1.96	0.47
33:i:54:ILE:HD12	33:i:73:PRO:HD3	1.95	0.47
33:i:79:LEU:HD21	33:i:105:LEU:HD21	1.96	0.47
38:n:100:CYS:H	38:n:111:ALA:HA	1.79	0.47
47:w:19:VAL:HA	47:w:34:VAL:HG22	1.96	0.47
51:1:40:U:H2'	51:1:41:C:H6	1.78	0.47
51:1:143:C:H2'	51:1:144:A:C8	2.49	0.47
51:1:149:A:H2'	51:1:150:U:C6	2.49	0.47
51:1:820:A:H2'	51:1:821:A:O4'	2.14	0.47
51:1:1389:G:C2	51:1:1390:U:C2	3.02	0.47
51:1:1463:C:H2'	51:1:1464:G:C8	2.49	0.47
51:1:1464:G:H2'	51:1:1465:G:C8	2.49	0.47
51:1:2098:U:H2'	51:1:2099:U:O4'	2.14	0.47
51:1:2149:U:H2'	51:1:2150:C:C6	2.49	0.47
51:1:2828:G:O2'	51:1:2829:A:H5'	2.13	0.47
57:A2:102:LEU:HD12	57:A2:115:ILE:HG12	1.96	0.47
58:B1:1036:ARG:HE	58:B1:1081:VAL:HG11	1.79	0.47
59:B2:565:GLU:HA	59:B2:569:ILE:HG12	1.95	0.47
1:A:37:CYS:O	1:A:41:HIS:N	2.45	0.47
12:L:107:ALA:HA	12:L:122:GLU:HG3	1.95	0.47
20:T:38:LEU:HD22	20:T:55:LEU:HD13	1.96	0.47
29:d:48:THR:OG1	29:d:49:ARG:N	2.47	0.47
31:f:16:VAL:HA	31:f:25:ILE:HG12	1.96	0.47
33:i:20:SER:HA	33:i:24:GLY:HA3	1.95	0.47
36:l:129:LYS:HG2	51:1:636:G:OP1	2.14	0.47
49:y:15:ASN:OD1	49:y:16:THR:N	2.48	0.47
51:1:877:A:O2'	51:1:878:A:H5"	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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
51:1:2259:U:H2'	51:1:2260:C:O4'	2.15	0.47
51:1:2554:U:H2'	51:1:2555:U:O2	2.15	0.47
51:1:2899:A:H2'	51:1:2900:A:O4'	2.15	0.47
53:3:410:G:H21	53:3:432:A:H62	1.62	0.47
58:B1:29:MET:HG2	59:B2:1336:ASN:ND2	2.29	0.47
58:B1:633:ALA:HB2	59:B2:808:ASN:N	2.19	0.47
58:B1:809:VAL:HG21	58:B1:909:ILE:HG12	1.95	0.47
59:B2:836:LEU:HD13	59:B2:1054:LEU:HD13	1.95	0.47
59:B2:1314:GLN:HB2	60:W0:28:ARG:HH12	1.79	0.47
63:5:37:A:H3'	63:5:38:A:C8	2.49	0.47
9:I:171:GLU:HB3	9:I:180:THR:HG22	1.97	0.47
42:r:7:SER:OG	42:r:8:GLY:N	2.47	0.47
51:1:900:A:C2'	51:1:901:C:H5'	2.45	0.47
51:1:1219:U:O2'	51:1:1220:G:H5'	2.15	0.47
51:1:1267:U:H2'	51:1:1267:U:O2	2.14	0.47
51:1:1297:C:H2'	51:1:1298:C:H6	1.79	0.47
51:1:1491:G:H2'	51:1:1492:G:H8	1.80	0.47
51:1:2047:C:O5'	51:1:2047:C:H6	1.98	0.47
51:1:2155:U:H2'	51:1:2156:G:O4'	2.15	0.47
51:1:2298:A:C2'	51:1:2299:U:H5'	2.45	0.47
53:3:38:G:H22	53:3:397:A:H5'	1.78	0.47
58:B1:375:GLU:HB3	59:B2:1245:ALA:HB3	1.97	0.47
58:B1:891:ASP:OD2	58:B1:1290:ARG:NH2	2.47	0.47
63:5:29:G:H3'	63:5:30:G:C8	2.50	0.47
4:D:29:GLN:O	4:D:29:GLN:NE2	2.47	0.47
21:U:25:ARG:NH1	53:3:230:G:O2'	2.48	0.47
27:b:131:MET:HE2	27:b:187:CYS:HB2	1.96	0.47
31:f:100:ASN:OD1	31:f:100:ASN:N	2.47	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
34:j:65:THR:HG22	51:1:1141:U:OP2	2.15	0.47
36:l:39:LYS:HG2	51:1:832:U:OP1	2.15	0.47
47:w:29:ALA:N	47:w:60:ASP:OD1	2.48	0.47
48:x:38:TRP:NE1	48:x:40:GLU:OE1	2.41	0.47
51:1:156:A:H2'	51:1:157:C:C6	2.50	0.47
51:1:297:G:H2'	51:1:298:G:O4'	2.14	0.47
51:1:555:G:O2'	51:1:556:A:H8	1.96	0.47
51:1:708:G:H2'	51:1:709:U:C6	2.50	0.47
51:1:712:G:H2'	51:1:713:G:H5'	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1036:G:O2'	51:1:1037:G:H5'	2.15	0.47
51:1:1435:G:O2'	51:1:1436:G:H5'	2.15	0.47
51:1:2156:G:C3'	51:1:2157:G:H5'	2.44	0.47
51:1:2194:U:O2'	51:1:2195:U:H5'	2.15	0.47
51:1:2445:G:C6	51:1:2446:G:C6	3.02	0.47
51:1:2626:C:H2'	51:1:2627:G:H8	1.80	0.47
51:1:2679:A:O2'	51:1:2680:U:H5'	2.15	0.47
53:3:1305:G:N2	53:3:1331:G:H2'	2.29	0.47
63:5:50:U:H2'	63:5:51:U:C6	2.49	0.47
3:C:13:SER:OG	3:C:47:ILE:O	2.27	0.47
5:E:5:THR:HG22	5:E:62:PRO:HD2	1.97	0.47
12:L:149:ALA:HB1	16:P:58:THR:HG21	1.97	0.47
18:R:15:VAL:HG11	18:R:30:LYS:HG2	1.97	0.47
27:b:184:GLU:HG3	27:b:186:ASP:H	1.80	0.47
29:d:119:ILE:HB	29:d:187:VAL:HG12	1.96	0.47
31:f:87:GLN:HB3	31:f:162:ARG:HG3	1.97	0.47
45:u:6:ARG:HB2	51:1:85:G:P	2.55	0.47
51:1:762:U:N3	51:1:1431:A:OP1	2.47	0.47
51:1:854:C:H2'	51:1:855:G:H8	1.79	0.47
51:1:1090:A:C2	51:1:1102:C:H1'	2.50	0.47
51:1:1105:U:H2'	51:1:1106:G:H8	1.80	0.47
51:1:1873:G:O2'	51:1:1874:C:H5'	2.15	0.47
51:1:1874:C:H2'	51:1:1875:G:O4'	2.15	0.47
51:1:2295:C:O2'	51:1:2296:U:H5'	2.15	0.47
51:1:2563:U:H2'	51:1:2565:A:OP2	2.15	0.47
54:4:3:G:H1	64:6:34:C:H42	1.63	0.47
59:B2:898:GLU:H	59:B2:898:GLU:HG3	1.46	0.47
46:v:26:PHE:HE2	46:v:89:ILE:HG13	1.80	0.47
51:1:554:U:C2'	51:1:555:G:H5'	2.45	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
51:1:1141:U:H4'	51:1:1142:A:C1'	2.45	0.47
51:1:1702:G:H2'	51:1:1703:G:C5'	2.35	0.47
51:1:1768:C:H42	51:1:1984:G:H1	1.62	0.47
51:1:1927:A:H2'	51:1:1928:A:C8	2.50	0.47
53:3:517:G:N2	53:3:533:A:OP2	2.34	0.47
57:A2:294:ASN:HA	61:NA:464:ILE:N	2.28	0.47
59:B2:1286:THR:O	59:B2:1290:MET:HB2	2.14	0.47
11:K:10:VAL:HG23	11:K:58:HIS:HB3	1.97	0.47
12:L:142:ARG:HA	12:L:145:GLU:HG3	1.97	0.47
31:f:29:ASN:ND2	31:f:80:GLU:O	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:f:88:LEU:HD21	31:f:104:LEU:HD23	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
51:1:848:C:H2'	51:1:849:A:H8	1.80	0.47
51:1:859:G:C2'	51:1:860:U:OP2	2.62	0.47
51:1:1536:C:H5"	51:1:1537:G:C5	2.50	0.47
51:1:1922:G:H2'	51:1:1923:U:C6	2.50	0.47
51:1:1922:G:O2'	51:1:1923:U: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
53:3:512:U:H2'	53:3:513:C:C6	2.50	0.47
53:3:1225:A:H2'	53:3:1225:A:N3	2.29	0.47
58:B1:209:ASN:HA	58:B1:214:ARG:NH2	2.30	0.47
59:B2:689:ALA:HB2	59:B2:1233:LEU:HD23	1.97	0.47
64:7:48:C:H5"	64:7:50:U:OP1	2.15	0.47
8:H:171:ARG:HG2	8:H:173:PRO:HD3	1.96	0.46
9:I:159:GLU:HA	9:I:162:GLU:HB2	1.97	0.46
19:S:32:ASP:O	19:S:34:ASN:ND2	2.48	0.46
27:b:145:MET:HE1	51:1:1800:C:H2'	1.98	0.46
39:o:68:LYS:HE3	52:2:49:C:H5"	1.97	0.46
51:1:551:G:O2'	51:1:552:U:H5'	2.15	0.46
51:1:979:A:H2'	51:1:982:C:H42	1.80	0.46
51:1:1367:A:H3'	51:1:1368:G:O4'	2.15	0.46
51:1:1913:A:C8	53:3:1494:G:H4'	2.50	0.46
51:1:2180:U:H2'	51:1:2181:U:O4'	2.14	0.46
51:1:2455:G:C6	51:1:2456:C:N4	2.83	0.46
58:B1:352:ARG:HB2	59:B2:1268:GLN:NE2	2.30	0.46
58:B1:526:VAL:HG12	58:B1:549:LYS:HB2	1.96	0.46
58:B1:842:ARG:HH22	58:B1:1250:ASP:HB2	1.80	0.46
58:B1:1027:VAL:HB	58:B1:1121:LEU:HB2	1.95	0.46
58:B1:1167:LYS:NZ	58:B1:1170:LYS:HB2	2.30	0.46
58:B1:1361:THR:OG1	59:B2:1282:GLY:O	2.28	0.46
59:B2:28:LEU:HD21	59:B2:524:ILE:HG13	1.97	0.46
12:L:137:ARG:NH1	12:L:138:GLU:OE2	2.48	0.46
14:N:11:ARG:NH2	53:3:1347:G:O6	2.49	0.46
24:X:32:THR:OG1	24:X:49:ALA:O	2.31	0.46
26:Z:29:ALA:O	26:Z:32:ARG:NH1	2.49	0.46
51:1:275:C:C3'	51:1:276:U:H5"	2.40	0.46
51:1:283:G:C2'	51:1:284:U:H5'	2.45	0.46
51:1:686:U:H6	51:1:788:A:H61	1.61	0.46
51:1:1146:C:O2'	51:1:1147:A:H5'	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1209:U:O3'	51:1:1212:G:H5'	2.15	0.46
51:1:1480:C:H2'	51:1:1481:U:C6	2.49	0.46
53:3:617:G:H1	53:3:623:C:H42	1.63	0.46
58:B1:420:PRO:HA	58:B1:437:PHE:O	2.15	0.46
58:B1:1357:ILE:HD13	59:B2:1279:GLU:HG2	1.97	0.46
59:B2:103:VAL:HG12	59:B2:117:ILE:HG22	1.97	0.46
59:B2:230:PHE:HB2	59:B2:333:ILE:HB	1.98	0.46
31:f:90:GLY:HA2	31:f:159:LYS:HG2	1.98	0.46
48:x:14:GLY:HA3	48:x:28:PHE:HE1	1.81	0.46
51:1:93:G:O2'	51:1:94:A:H5'	2.16	0.46
51:1:555:G:HO2'	51:1:556:A:H8	1.61	0.46
51:1:1067:A:H2'	51:1:1068:G:C8	2.49	0.46
51:1:1517:G:O2'	51:1:1518:C:H5'	2.15	0.46
51:1:1528:A:H2'	51:1:1529:G:C5'	2.45	0.46
51:1:1851:U:OP1	64:7:4:G:H4'	2.15	0.46
51:1:2294:G:O2'	51:1:2295:C:H5'	2.15	0.46
51:1:2315:G:H2'	51:1:2316:G:H8	1.80	0.46
53:3:1035:A:H1'	53:3:1036:A:O5'	2.16	0.46
53:3:1200:C:H5"	53:3:1201:A:H3'	1.97	0.46
58:B1:385:LEU:HD23	58:B1:390:LEU:HB2	1.98	0.46
58:B1:833:GLU:N	58:B1:1242:ARG:HH12	2.12	0.46
58:B1:1219:ASP:O	58:B1:1223:LEU:HB2	2.15	0.46
59:B2:1311:GLY:O	60:W0:31:GLN:NE2	2.47	0.46
17:Q:70:GLY:O	17:Q:98:ARG:NH2	2.47	0.46
17:Q:72:ASN:HD21	17:Q:103:CYS:HA	1.81	0.46
33:i:115:ASP:OD2	51:1:1059:G:H4'	2.14	0.46
51:1:389:G:O2'	51:1:390:U:H5'	2.15	0.46
51:1:569:U:H1'	51:1:947:A:O4'	2.16	0.46
51:1:570:G:H5'	51:1:983:A:C2	2.51	0.46
51:1:1516:G:O2'	51:1:1517:G:H5'	2.15	0.46
51:1:1726:C:H2'	51:1:1727:C:C6	2.50	0.46
58:B1:128:LEU:HD21	58:B1:188:LEU:HB3	1.97	0.46
63:5:8:U:H2'	63:5:13:C:N4	2.30	0.46
20:T:37:HIS:HD2	20:T:38:LEU:HD12	1.80	0.46
31:f:1:SER:HA	51:1:2749:A:OP1	2.15	0.46
34:j:2:LYS:HA	51:1:995:C:C4	2.50	0.46
35:k:47:ILE:HG22	35:k:49:ARG:H	1.80	0.46
51:1:289:G:H2'	51:1:290:U:C6	2.50	0.46
51:1:438:G:O2'	51:1:439:A:H5'	2.16	0.46
51:1:2360:G:H2'	51:1:2361:G:C5'	2.40	0.46
51:1:2625:G:H2'	51:1:2626:C:H6	1.76	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:198:CYS:HA	58:B1:221:ILE:CD1	2.45	0.46
2:B:27:LEU:HD23	2:B:27:LEU:HA	1.84	0.46
28:c:170:VAL:HG21	51:1:2679:A:H5'	1.97	0.46
51:1:28:A:O2'	51:1:29:U:H5'	2.16	0.46
51:1:466:A:H2'	51:1:467:G:C5'	2.44	0.46
51:1:688:U:H5'	51:1:1780:A:C2	2.51	0.46
51:1:848:C:H2'	51:1:849:A:C8	2.51	0.46
51:1:1923:U:O2'	51:1:1924:C:H5'	2.16	0.46
51:1:2329:U:H2'	51:1:2330:G:C8	2.51	0.46
51:1:2743:U:H2'	51:1:2744:G:O4'	2.16	0.46
52:2:39:A:O2'	52:2:46:A:N1	2.47	0.46
57:A1:35:PHE:HA	57:A1:38:THR:HG22	1.97	0.46
57:A1:59:VAL:HG22	57:A1:144:ILE:HA	1.97	0.46
58:B1:1150:PRO:HG3	58:B1:1214:PRO:HB2	1.97	0.46
62:NG:135:ARG:O	62:NG:178:VAL:HA	2.16	0.46
10:J:73:VAL:HG11	10:J:143:LEU:HB3	1.98	0.46
11:K:5:GLU:HB2	11:K:90:MET:HB2	1.98	0.46
16:P:127:ARG:HB2	26:Z:34:ARG:HH22	1.81	0.46
17:Q:23:LEU:HD12	17:Q:29:LYS:HD2	1.97	0.46
18:R:7:ASN:HD22	18:R:20:SER:HB2	1.80	0.46
36:l:69:ARG:NH1	51:1:2406:A:C2	2.84	0.46
51:1:44:A:H2'	51:1:45:G:O4'	2.15	0.46
51:1:536:G:H2'	51:1:537:G:C5'	2.43	0.46
51:1:1344:U:H3'	51:1:1345:C:H5'	1.97	0.46
51:1:1572:A:H2'	51:1:1573:G:O4'	2.16	0.46
51:1:2247:A:H2'	51:1:2248:C:H6	1.81	0.46
51:1:2290:G:O2'	51:1:2291:U:H5'	2.16	0.46
51:1:2858:C:H2'	51:1:2859:G:O4'	2.15	0.46
55:8:20:DA:H4'	59:B2:143:ARG:NH1	2.31	0.46
58:B1:79:LYS:NZ	61:NA:141:VAL:CB	2.79	0.46
58:B1:109:SER:HB2	58:B1:296:LYS:HG2	1.98	0.46
59:B2:207:THR:OG1	59:B2:354:ASP:OD2	2.32	0.46
60:W0:25:ARG:NH1	60:W0:61:ASN:OD1	2.49	0.46
64:6:21:A:H62	64:6:47:U:H1'	1.81	0.46
11:K:75:GLU:O	11:K:79:ARG:N	2.47	0.46
15:O:100:ILE:O	62:NG:170:PRO:O	2.34	0.46
33:i:109:ALA:HA	33:i:112:LYS:HB2	1.98	0.46
51:1:1173:U:C6	51:1:1174:U:H1'	2.51	0.46
51:1:1381:G:H2'	51:1:1382:G:H5'	1.98	0.46
51:1:2496:C:H2'	51:1:2497:A:O4'	2.16	0.46
58:B1:141:PHE:HE2	58:B1:296:LYS:CB	2.23	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1221:LEU:HD22	58:B1:1306:LEU:HB2	1.96	0.46
8:H:152:VAL:HG12	8:H:197:VAL:HG22	1.98	0.46
17:Q:40:THR:HG21	65:h:6:5OH:HOS	1.79	0.46
18:R:97:ARG:HB2	18:R:99:GLN:HE22	1.81	0.46
28:c:4:LEU:HD11	28:c:100:LEU:HD21	1.98	0.46
35:k:70:ARG:NH1	51:1:2684:U:O4'	2.49	0.46
37:m:34:LYS:N	37:m:129:THR:O	2.47	0.46
39:o:29:HIS:HB3	39:o:36:TYR:HB2	1.98	0.46
43:s:72:THR:OG1	43:s:73:LYS:N	2.48	0.46
51:1:338:G:O2'	51:1:339:U:H5'	2.14	0.46
51:1:409:G:H2'	51:1:410:G:C8	2.51	0.46
51:1:595:C:C2	51:1:596:U:C5	3.04	0.46
51:1:637:A:C6	51:1:652:U:H4'	2.50	0.46
51:1:853:C:O2'	51:1:854:C:H5'	2.16	0.46
51:1:1287:A:O2'	51:1:1288:G:H5'	2.16	0.46
51:1:2581:G:H2'	51:1:2581:G:N3	2.30	0.46
51:1:2813:A:O2'	51:1:2814:A:H5'	2.15	0.46
53:3:459:A:H2'	53:3:460:A:C8	2.50	0.46
58:B1:395:LYS:HE3	58:B1:395:LYS:HB3	1.45	0.46
58:B1:1060:VAL:HG13	58:B1:1106:ILE:HG12	1.97	0.46
59:B2:735:LYS:HA	59:B2:748:ILE:HG22	1.97	0.46
63:5:26:A:H61	63:5:44:G:H22	1.64	0.46
9:I:114:ARG:HA	9:I:117:VAL:HG22	1.98	0.46
31:f:175:LYS:HD3	31:f:175:LYS:HA	1.70	0.46
51:1:438:G:H2'	51:1:439:A:C8	2.51	0.46
51:1:540:C:O2'	51:1:541:A:H5'	2.16	0.46
51:1:1087:G:H22	51:1:1103:A:H1'	1.75	0.46
51:1:1183:U:H2'	51:1:1184:U:H6	1.80	0.46
51:1:2030:A:N3	51:1:2499:C:H5"	2.31	0.46
55:8:1:DC:H2"	55:8:2:DC:C6	2.51	0.46
63:5:6:G:H2'	63:5:7:A:C8	2.51	0.46
9:I:173:ASP:HB3	9:I:178:GLU:HB3	1.98	0.45
19:S:58:ARG:HH21	53:3:980:C:H4'	1.81	0.45
29:d:132:LYS:HG2	29:d:136:GLN:HE22	1.81	0.45
51:1:239:C:H2'	51:1:240:C:O4'	2.16	0.45
51:1:342:A:H2'	51:1:343:C:O4'	2.16	0.45
51:1:360:U:H2'	51:1:361:G:H1'	1.99	0.45
51:1:607:U:O4	51:1:620:G:H5'	2.17	0.45
51:1:1117:C:H2'	51:1:1118:C:C6	2.50	0.45
51:1:1486:U:O2'	51:1:1487:U:H5'	2.14	0.45
51:1:1574:C:H2'	51:1:1575:C:C6	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1710:G:H2'	51:1:1711:A:C8	2.51	0.45
51:1:2141:G:H1	51:1:2151:U:H3	1.63	0.45
51:1:2528:U:O2'	51:1:2529:G:H3'	2.16	0.45
51:1:2636:C:O2'	51:1:2637:U:H5'	2.16	0.45
51:1:2642:G:O5'	51:1:2642:G:H8	1.98	0.45
51:1:2651:C:H2'	51:1:2652:C:H6	1.81	0.45
53:3:112:G:N2	53:3:354:G:O5'	2.49	0.45
58:B1:115:TRP:HB3	58:B1:1333:THR:CG2	2.46	0.45
58:B1:343:LEU:HD11	58:B1:1324:SER:HB3	1.98	0.45
59:B2:24:VAL:HG11	59:B2:704:MET:HE1	1.98	0.45
59:B2:712:SER:OG	59:B2:713:GLY:N	2.49	0.45
2:B:8:THR:OG1	2:B:9:ARG:N	2.49	0.45
2:B:31:LYS:HG2	51:1:2885:G:N2	2.31	0.45
6:F:33:HIS:O	6:F:34:LYS:C	2.59	0.45
9:I:93:LEU:O	9:I:99:ASN:ND2	2.39	0.45
11:K:3:HIS:HA	11:K:65:GLU:HA	1.97	0.45
28:c:151:THR:O	51:1:1130:U:C4	2.70	0.45
34:j:108:MET:CE	51:1:1138:G:H21	2.29	0.45
35:k:121:GLU:HG2	35:k:122:VAL:HG23	1.97	0.45
51:1:290:U:O2'	51:1:291:G:H5'	2.16	0.45
51:1:1034:G:C5	51:1:1035:U:C4	3.04	0.45
51:1:1412:U:H2'	51:1:1413:A:H8	1.81	0.45
51:1:1520:U:H2'	51:1:1521:G:O4'	2.16	0.45
51:1:1923:U:H5"	64:6:24:U:O2'	2.16	0.45
51:1:2101:A:H2'	51:1:2102:G:H8	1.81	0.45
51:1:2122:U:H2'	51:1:2123:G:O4'	2.16	0.45
51:1:2339:C:H2'	51:1:2340:A:H8	1.82	0.45
51:1:2844:G:H2'	51:1:2845:U:O4'	2.16	0.45
53:3:618:C:N4	53:3:621:A:OP2	2.49	0.45
57:A1:185:TYR:HA	57:A1:202:VAL:O	2.16	0.45
57:A2:80:GLU:HG3	59:B2:694:ARG:HH22	1.82	0.45
58:B1:108:ALA:HB1	58:B1:279:LEU:HD22	1.96	0.45
58:B1:484:MET:CE	59:B2:1278:LEU:HD21	2.47	0.45
59:B2:176:ILE:HD11	59:B2:428:VAL:HG21	1.98	0.45
59:B2:318:SER:OG	59:B2:320:ASP:OD1	2.31	0.45
63:5:22:G:H2'	63:5:23:A:C8	2.51	0.45
7:G:166:ASP:HB3	7:G:190:SER:HB2	1.99	0.45
23:W:33:THR:OG1	23:W:34:GLU:N	2.49	0.45
29:d:136:GLN:HA	29:d:139:LYS:HE2	1.99	0.45
33:i:112:LYS:HD2	33:i:128:ILE:HD12	1.97	0.45
51:1:6:A:H2'	51:1:7:G:C8	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:367:G:O2'	51:1:368:A:H5'	2.17	0.45
51:1:1140:C:H2'	51:1:1141:U:H5'	1.98	0.45
51:1:1766:G:C2'	51:1:1767:G:H5'	2.45	0.45
51:1:1863:G:H2'	51:1:1864:U:C6	2.51	0.45
51:1:2661:G:O2'	51:1:2662:A:H5'	2.16	0.45
53:3:1253:G:H2'	53:3:1254:A:C8	2.52	0.45
58:B1:43:THR:HG22	58:B1:57:PHE:HE1	1.80	0.45
58:B1:375:GLU:O	59:B2:1247:SER:HB3	2.16	0.45
59:B2:909:LYS:HD3	59:B2:909:LYS:HA	1.44	0.45
9:I:13:ARG:NH1	53:3:542:G:O3'	2.50	0.45
12:L:142:ARG:HH21	64:7:42:G:H4'	1.81	0.45
32:g:1:MET:HE3	32:g:1:MET:HB3	1.77	0.45
42:r:38:VAL:HG13	42:r:54:VAL:HG12	1.99	0.45
43:s:82:MET:HE1	51:1:1322:A:H5"	1.98	0.45
51:1:519:U:C2	51:1:520:G:C8	3.03	0.45
51:1:1049:C:C2'	51:1:1050:A:H5'	2.47	0.45
51:1:1210:G:P	51:1:1212:G:H5'	2.56	0.45
51:1:1488:C:H2'	51:1:1489:C:C6	2.51	0.45
51:1:1869:G:H3'	51:1:1870:C:C5'	2.38	0.45
51:1:1930:G:HO2'	51:1:1931:U:P	2.38	0.45
51:1:2085:U:O2'	51:1:2086:U:H5'	2.16	0.45
51:1:2350:C:H2'	51:1:2351:G:O4'	2.16	0.45
51:1:2648:G:C2	51:1:2649:C:C2	3.04	0.45
58:B1:68:TYR:HB3	58:B1:75:TYR:HE2	1.81	0.45
59:B2:905:ILE:HG23	59:B2:906:PHE:H	1.80	0.45
64:7:7:G:H3'	64:7:49:G:OP2	2.16	0.45
7:G:18:GLN:HG3	7:G:189:ASN:CB	2.41	0.45
14:N:40:ARG:NH2	53:3:1291:U:O3'	2.38	0.45
16:P:124:LYS:HB3	26:Z:34:ARG:HB3	1.98	0.45
22:V:11:VAL:HG13	22:V:58:VAL:HG21	1.98	0.45
34:j:85:LYS:NZ	51:1:2768:U:OP1	2.49	0.45
35:k:5:GLN:NE2	51:1:1668:A:H5"	2.31	0.45
48:x:30:PRO:HG2	48:x:32:LEU:HD11	1.98	0.45
51:1:707:G:C2'	51:1:708:G:H5'	2.47	0.45
51:1:1550:C:O2'	51:1:1551:A:H5'	2.17	0.45
51:1:2364:C:O2'	51:1:2365:G:H5'	2.17	0.45
51:1:2783:U:H2'	51:1:2784:U:C6	2.51	0.45
55:8:13:DT:C6	58:B1:791:ALA:HA	2.51	0.45
58:B1:282:LEU:HA	58:B1:282:LEU:HD12	1.79	0.45
58:B1:770:LEU:HD13	59:B2:618:GLN:CD	2.42	0.45
59:B2:557:ARG:NH2	59:B2:607:SER:O	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:1002:LEU:HD21	59:B2:1007:LYS:HB2	1.98	0.45
59:B2:1314:GLN:HA	60:W0:28:ARG:HH22	1.80	0.45
63:5:49:C:H2'	63:5:50:U:C6	2.52	0.45
4:D:12:ARG:NH1	51:1:465:G:OP1	2.49	0.45
7:G:65:LYS:HG2	7:G:153:MET:HG3	1.98	0.45
7:G:172:ILE:O	7:G:176:ASN:ND2	2.50	0.45
8:H:5:HIS:CE1	8:H:7:ASN:HB3	2.51	0.45
22:V:10:ARG:NE	22:V:55:GLY:O	2.48	0.45
31:f:133:LYS:NZ	31:f:134:GLY:O	2.44	0.45
33:i:135:MET:CE	51:1:1062:G:H21	2.30	0.45
37:m:96:ILE:HD13	37:m:96:ILE:HA	1.82	0.45
51:1:355:U:H6	51:1:355:U:O5'	1.99	0.45
51:1:1239:G:O2'	51:1:1240:U:H5'	2.17	0.45
51:1:2137:U:H2'	51:1:2138:G:C8	2.50	0.45
53:3:1376:U:H2'	53:3:1377:A:C8	2.52	0.45
58:B1:772:TYR:HE2	59:B2:561:ILE:HG21	1.80	0.45
59:B2:674:ASP:OD2	59:B2:1070:HIS:ND1	2.50	0.45
10:J:101:GLY:H	10:J:121:ASN:HB3	1.82	0.45
29:d:32:VAL:HG21	36:l:6:LEU:HD13	1.99	0.45
33:i:10:LEU:HD21	33:i:27:LEU:HD21	1.99	0.45
50:z:30:ARG:HG2	50:z:33:HIS:HB2	1.99	0.45
51:1:639:U:H2'	51:1:640:C:C6	2.52	0.45
51:1:654:A:N3	51:1:654:A:H5"	2.31	0.45
51:1:1140:C:C2'	51:1:1141:U:H5'	2.47	0.45
51:1:1952:A:H2'	51:1:1953:A:C8	2.51	0.45
51:1:2201:G:H2'	51:1:2202:U:O4'	2.17	0.45
51:1:2849:U:H4'	51:1:2868:A:C2	2.51	0.45
51:1:2889:C:O2'	51:1:2890:G:H5'	2.17	0.45
53:3:647:C:H2'	53:3:648:A:H8	1.81	0.45
57:A1:231:PHE:O	57:A2:218:ARG:NH1	2.49	0.45
58:B1:141:PHE:CE2	58:B1:296:LYS:CB	2.94	0.45
63:5:8:U:H2'	63:5:13:C:H41	1.81	0.45
64:6:46:G:H5"	64:6:47:U:OP2	2.17	0.45
19:S:44:VAL:O	19:S:48:GLN:NE2	2.50	0.45
27:b:1:ALA:N	27:b:19:VAL:O	2.41	0.45
47:w:37:ARG:HA	47:w:37:ARG:HD3	1.70	0.45
51:1:111:A:O2'	51:1:112:U:H5'	2.17	0.45
51:1:195:A:H3'	51:1:196:A:H4'	1.98	0.45
51:1:198:C:N4	51:1:248:G:H1	2.14	0.45
51:1:395:U:H2'	51:1:396:G:C8	2.52	0.45
51:1:1170:C:H2'	51:1:1171:G:C8	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1288:G:C5	51:1:1327:A:C2	3.04	0.45
51:1:1680:U:C2'	51:1:1681:G:H5'	2.47	0.45
51:1:1868:C:H2'	51:1:1869:G:C8	2.52	0.45
51:1:2204:G:H2'	51:1:2205:A:H8	1.81	0.45
51:1:2241:A:H2'	51:1:2242:G:H8	1.82	0.45
51:1:2312:U:O2'	51:1:2313:C:H5'	2.17	0.45
53:3:1498:U:H4'	53:3:1519:A:H2	1.82	0.45
58:B1:202:ARG:HH11	58:B1:202:ARG:CG	2.14	0.45
58:B1:926:PRO:HB2	58:B1:1241:TYR:HE1	1.82	0.45
9:I:120:LYS:HG2	9:I:130:ASN:HB3	1.98	0.45
14:N:104:THR:HG23	53:3:1180:A:H5'	1.99	0.45
16:P:35:ASP:OD1	16:P:39:ASN:N	2.50	0.45
31:f:106:LEU:O	31:f:151:ARG:NH2	2.38	0.45
40:p:92:ARG:H	40:p:92:ARG:HG2	1.60	0.45
51:1:167:A:H2'	51:1:168:G:O4'	2.16	0.45
51:1:432:A:O2'	51:1:433:C:H5'	2.17	0.45
51:1:1832:C:O5'	51:1:1832:C:H6	2.00	0.45
53:3:158:G:N2	53:3:163:C:O2	2.36	0.45
53:3:1200:C:O2'	53:3:1205:U:O4	2.34	0.45
57:A2:64:VAL:HG11	57:A2:78:ILE:HG21	1.97	0.45
58:B1:33:TRP:HZ2	59:B2:1336:ASN:OD1	2.00	0.45
58:B1:472:LEU:CD1	59:B2:1294:LYS:HG2	2.47	0.45
58:B1:1227:HIS:HA	58:B1:1230:THR:HG22	1.99	0.45
5:E:48:MET:HE3	5:E:48:MET:HB3	1.86	0.45
51:1:1020:A:C2	51:1:1141:U:C2	3.05	0.45
51:1:2047:C:O2'	51:1:2048:G:H5'	2.16	0.45
51:1:2658:C:H2'	51:1:2659:G:O4'	2.16	0.45
51:1:2741:A:H2'	51:1:2742:G:H5'	1.98	0.45
58:B1:75:TYR:CD2	58:B1:75:TYR:O	2.70	0.45
58:B1:201:LEU:CD1	58:B1:224:LEU:HD12	2.46	0.45
58:B1:287:ALA:HB1	58:B1:288:PRO:HD2	1.99	0.45
58:B1:847:ASP:N	58:B1:847:ASP:OD1	2.49	0.45
63:5:70:G:H2'	63:5:71:G:C8	2.51	0.45
65:h:2:DPP:NG	65:h:3:SER:N	2.65	0.45
2:B:4:GLN:HG3	51:1:2054:A:C2	2.52	0.44
44:t:34:VAL:HG21	44:t:43:ILE:HD11	1.99	0.44
49:y:6:LEU:HD13	49:y:56:LEU:HD22	1.98	0.44
51:1:893:C:H2'	51:1:894:U:O4'	2.17	0.44
51:1:1500:G:O2'	51:1:1501:G:H5'	2.17	0.44
51:1:1800:C:O2	51:1:1802:A:C8	2.70	0.44
51:1:1866:A:H2'	51:1:1867:G:O4'	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2717:C:N3	51:1:2718:G:N7	2.65	0.44
58:B1:76:LYS:NZ	58:B1:76:LYS:HB3	2.33	0.44
58:B1:161:THR:H	58:B1:164:GLN:HB2	1.82	0.44
58:B1:213:LYS:CA	58:B1:213:LYS:HE3	2.47	0.44
12:L:113:LYS:HB3	53:3:1297:G:H21	1.82	0.44
15:O:29:ALA:HB2	15:O:87:LEU:HD11	1.99	0.44
17:Q:45:ASN:ND2	17:Q:88:ASP:OD2	2.39	0.44
40:p:88:ARG:HH11	40:p:114:ASN:HD21	1.65	0.44
41:q:82:LEU:HD22	41:q:87:VAL:HB	1.98	0.44
51:1:107:G:H2'	51:1:108:G:H8	1.82	0.44
51:1:336:C:O2'	51:1:337:C:H5'	2.18	0.44
51:1:1199:U:H2'	51:1:1200:C:C6	2.52	0.44
51:1:1715:G:HO2'	51:1:1716:U:H6	1.61	0.44
51:1:2402:U:O2'	51:1:2403:C:H3'	2.17	0.44
51:1:2869:G:H2'	51:1:2870:C:O4'	2.17	0.44
53:3:477:C:H2'	53:3:478:A:C8	2.52	0.44
57:A1:212:ASP:OD1	57:A1:212:ASP:N	2.48	0.44
58:B1:62:PHE:N	58:B1:62:PHE:CD1	2.86	0.44
58:B1:67:ASP:OD1	58:B1:67:ASP:O	2.35	0.44
58:B1:388:ARG:HG2	58:B1:388:ARG:NH1	2.32	0.44
58:B1:1079:LYS:HD3	58:B1:1098:GLN:HB3	2.00	0.44
7:G:142:LYS:NZ	53:3:1098:C:OP1	2.49	0.44
8:H:5:HIS:HE1	8:H:7:ASN:HB3	1.82	0.44
10:J:28:ARG:NH2	53:3:1397:C:OP2	2.38	0.44
14:N:84:ARG:NH2	53:3:1119:C:OP1	2.48	0.44
16:P:17:ASP:OD1	16:P:17:ASP:N	2.44	0.44
30:e:122:ASP:OD2	30:e:126:ASN:ND2	2.42	0.44
33:i:9:LYS:HD2	51:1:1061:U:OP1	2.18	0.44
45:u:76:THR:HB	45:u:78:LYS:HE3	1.99	0.44
47:w:12:SER:OG	47:w:13:GLU:N	2.51	0.44
51:1:704:G:H1'	51:1:727:A:H62	1.83	0.44
51:1:720:U:H2'	51:1:721:A:H8	1.82	0.44
51:1:974:G:H1'	51:1:975:A:C8	2.53	0.44
51:1:1539:U:H2'	51:1:1540:G:C8	2.53	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
51:1:2626:C:H2'	51:1:2627:G:C8	2.51	0.44
53:3:142:G:O2'	53:3:196:A:N1	2.45	0.44
53:3:490:C:H2'	53:3:491:G:C8	2.53	0.44
57:A1:68:TYR:HE1	57:A1:79:LEU:HD13	1.82	0.44
58:B1:211:GLU:CG	58:B1:215:LYS:HE3	2.44	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1108:GLN:HG3	58:B1:1109:LEU:HD12	1.99	0.44
10:J:24:VAL:HG23	10:J:26:GLY:H	1.82	0.44
10:J:110:MET:HE3	10:J:110:MET:HB2	1.79	0.44
15:O:88:MET:HE3	15:O:88:MET:HB3	1.70	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
28:c:106:LYS:HA	28:c:176:ASP:HA	1.99	0.44
28:c:150:GLN:HE22	51:1:2032:G:H1'	1.82	0.44
45:u:17:ASP:HA	45:u:20:LYS:HE2	2.00	0.44
45:u:32:LYS:HG2	45:u:65:GLN:HA	1.99	0.44
51:1:30:G:H2'	51:1:31:C:O4'	2.16	0.44
51:1:1173:U:H5	51:1:1174:U:H1'	1.81	0.44
51:1:1280:G:C2'	51:1:1281:G:H5'	2.46	0.44
51:1:1452:G:H2'	51:1:1453:A:OP2	2.17	0.44
51:1:1507:C:H2'	51:1:1508:A:H4'	1.99	0.44
51:1:1882:U:O2'	51:1:1883:U:H5'	2.17	0.44
51:1:1893:C:C2'	51:1:1894:C:H5'	2.47	0.44
51:1:2411:A:H2'	51:1:2412:A:C8	2.53	0.44
51:1:2805:C:O2'	51:1:2806:C:H5'	2.18	0.44
52:2:66:A:H4'	52:2:67:G:C8	2.53	0.44
53:3:765:G:H1	53:3:812:G:HO2'	1.63	0.44
53:3:908:A:H2'	53:3:909:A:H8	1.83	0.44
57:A1:192:VAL:HG12	57:A1:193:GLU:H	1.83	0.44
58:B1:56:LEU:HD12	58:B1:56:LEU:HA	1.84	0.44
58:B1:128:LEU:CD2	58:B1:188:LEU:HB3	2.47	0.44
58:B1:395:LYS:NZ	58:B1:399:LYS:HE2	2.32	0.44
58:B1:731:ARG:HB3	59:B2:1105:SER:HB2	2.00	0.44
59:B2:11:ILE:HG22	59:B2:1172:LEU:HD11	1.99	0.44
63:5:69:G:H2'	63:5:70:G:C8	2.52	0.44
12:L:70:PRO:HG3	12:L:98:LEU:HD23	1.97	0.44
17:Q:114:SER:O	53:3:35:G:O2'	2.30	0.44
18:R:107:THR:OG1	53:3:947:G:O3'	2.35	0.44
31:f:132:LEU:HB3	31:f:140:ILE:HD11	1.99	0.44
51:1:150:U:H2'	51:1:151:C:C6	2.52	0.44
51:1:169:G:O2'	51:1:170:U:H5'	2.18	0.44
51:1:354:A:H2'	51:1:355:U:O4'	2.17	0.44
51:1:500:G:N2	51:1:502:A:H3'	2.32	0.44
51:1:940:G:H3'	51:1:941:A:H5"	1.97	0.44
51:1:1605:C:H2'	51:1:1606:C:H5'	1.98	0.44
51:1:1749:A:H2'	51:1:1750:G:H8	1.82	0.44
51:1:2880:C:O2	51:1:2880:C:H2'	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:478:LEU:HD21	60:W0:47:THR:HG23	1.99	0.44
58:B1:978:ARG:HD3	58:B1:999:TYR:H	1.83	0.44
59:B2:998:LEU:HG	59:B2:1011:LEU:HB3	1.99	0.44
4:D:12:ARG:HH12	51:1:465:G:P	2.41	0.44
7:G:26:MET:HE1	7:G:186:VAL:HB	1.99	0.44
7:G:33:ALA:HB3	7:G:37:VAL:HG12	1.99	0.44
14:N:74:GLN:OE1	53:3:1249:C:O2'	2.35	0.44
18:R:1:ALA:HB3	18:R:56:ARG:HH22	1.82	0.44
40:p:52:ARG:NH2	51:1:2720:U:OP1	2.50	0.44
41:q:47:ARG:NH2	41:q:51:GLN:OE1	2.51	0.44
51:1:350:G:H2'	51:1:351:C:O4'	2.18	0.44
51:1:696:G:H2'	51:1:697:G:O4'	2.18	0.44
51:1:854:C:H2'	51:1:855:G:C8	2.52	0.44
51:1:1232:G:H2'	51:1:1233:C:C6	2.53	0.44
51:1:1507:C:H2'	51:1:1508:A:O4'	2.18	0.44
51:1:1761:C:H2'	51:1:1762:A:O4'	2.18	0.44
58:B1:804:ALA:HB2	58:B1:1256:ILE:CD1	2.48	0.44
14:N:105:ARG:NH1	14:N:109:GLN:OE1	2.49	0.44
17:Q:72:ASN:OD1	17:Q:72:ASN:N	2.50	0.44
38:n:103:ARG:HH11	51:1:1287:A:H5'	1.83	0.44
42:r:19:THR:OG1	42:r:95:ASP:OD1	2.35	0.44
48:x:51:SER:OG	48:x:54:GLY:N	2.48	0.44
51:1:68:G:H2'	51:1:69:C:O4'	2.18	0.44
51:1:150:U:O2'	51:1:151:C:H5'	2.18	0.44
51:1:1465:G:O2'	51:1:1466:U:H5'	2.17	0.44
51:1:1536:C:H4'	51:1:1537:G:N1	2.32	0.44
51:1:1807:G:H2'	51:1:1808:A:C5'	2.30	0.44
58:B1:213:LYS:HE3	58:B1:213:LYS:HA	1.99	0.44
8:H:134:LYS:HB3	8:H:134:LYS:HE2	1.84	0.44
24:X:76:THR:OG1	24:X:77:ARG:N	2.51	0.44
25:Y:67:HIS:O	25:Y:69:ASN:ND2	2.51	0.44
33:i:131:THR:HB	51:1:1060:U:O4	2.18	0.44
42:r:48:LYS:HA	42:r:48:LYS:HD2	1.78	0.44
45:u:12:VAL:HA	45:u:69:VAL:HG12	1.99	0.44
48:x:1:SER:OG	51:1:1365:A:OP2	2.35	0.44
49:y:20:ASN:HA	49:y:23:ARG:HB2	1.99	0.44
51:1:131:A:H2'	51:1:132:G:C8	2.53	0.44
51:1:161:A:C5	51:1:162:U:H5	2.35	0.44
51:1:388:G:N7	51:1:390:U:H2'	2.33	0.44
51:1:402:A:H2'	51:1:403:U:C5'	2.44	0.44
51:1:473:G:C2'	51:1:474:G:H5'	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:819:A:H5'	51:1:973:A:N1	2.33	0.44
51:1:1010:A:H1'	51:1:1153:C:H1'	1.99	0.44
51:1:1670:C:O2'	51:1:1671:U:H5'	2.16	0.44
51:1:2226:C:C5	51:1:2227:A:N7	2.86	0.44
51:1:2314:A:H2'	51:1:2315:G:H8	1.78	0.44
53:3:1053:G:H4'	53:3:1054:C:H3'	2.00	0.44
58:B1:201:LEU:HD11	58:B1:220:ARG:NH1	2.32	0.44
58:B1:506:VAL:HG23	58:B1:628:GLY:HA3	1.99	0.44
58:B1:1026:PRO:HB2	58:B1:1028:ILE:HG23	2.00	0.44
59:B2:515:MET:HE2	59:B2:515:MET:HB3	1.82	0.44
59:B2:829:THR:HG23	59:B2:1059:ARG:HG2	2.00	0.44
59:B2:1157:GLN:HG3	59:B2:1159:VAL:HG13	2.00	0.44
63:5:63:G:H2'	63:5:64:A:C8	2.53	0.44
1:A:2:LYS:NZ	52:2:42:C:OP2	2.39	0.44
7:G:67:LEU:HD21	7:G:91:VAL:HG23	2.00	0.44
7:G:122:ASP:N	7:G:122:ASP:OD1	2.51	0.44
11:K:62:MET:HB3	11:K:64:VAL:HG13	1.98	0.44
18:R:16:ILE:O	18:R:19:THR:OG1	2.26	0.44
18:R:43:LYS:HB2	18:R:46:GLU:HG2	2.00	0.44
21:U:70:ARG:O	21:U:74:LEU:N	2.47	0.44
29:d:147:LEU:HD11	29:d:170:ARG:HG2	1.98	0.44
36:l:95:LEU:HD22	36:l:100:ILE:HD11	2.00	0.44
39:o:33:ARG:O	39:o:65:THR:OG1	2.28	0.44
51:1:208:C:O2'	51:1:209:C:H5'	2.18	0.44
51:1:255:A:H2'	51:1:256:A:O4'	2.18	0.44
51:1:518:G:O2'	51:1:519:U:H5'	2.18	0.44
51:1:1287:A:H3'	51:1:1288:G:N2	2.33	0.44
51:1:1672:A:N3	51:1:2582:G:H5'	2.27	0.44
51:1:1915:U:O2	51:1:1915:U:O4'	2.33	0.44
51:1:1998:A:O2'	51:1:1999:C:H5'	2.18	0.44
51:1:2285:C:C2'	51:1:2286:G:H5'	2.48	0.44
51:1:2671:G:C2	51:1:2672:U:C2	3.06	0.44
53:3:75:G:H2'	53:3:76:G:C8	2.53	0.44
53:3:146:G:N2	53:3:177:G:N7	2.66	0.44
53:3:162:A:C5	53:3:163:C:H1'	2.53	0.44
53:3:560:A:H5"	53:3:561:U:H5'	2.00	0.44
53:3:958:A:N3	53:3:985:C:O2'	2.48	0.44
55:8:16:DT:H2'	55:8:17:DC:C6	2.52	0.44
58:B1:362:ARG:HB2	58:B1:364:HIS:HD2	1.83	0.44
58:B1:434:ILE:HD11	59:B2:1274:GLU:HG3	2.00	0.44
59:B2:646:SER:OG	59:B2:647:ARG:N	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:76:ILE:HB	8:H:80:GLY:HA2	2.00	0.43
23:W:33:THR:HG22	23:W:37:LYS:H	1.83	0.43
27:b:153:LEU:HD23	51:1:1799:G:N2	2.33	0.43
34:j:34:ARG:NH2	34:j:39:LYS:O	2.51	0.43
42:r:1:MET:HE3	42:r:101:ILE:HB	1.99	0.43
51:1:293:U:H2'	51:1:294:A:H5"	1.99	0.43
51:1:684:G:C2	51:1:794:A:C2	3.06	0.43
51:1:1571:A:H2'	51:1:1572:A:C8	2.53	0.43
51:1:1625:C:H2'	51:1:1626:A:O4'	2.18	0.43
51:1:1710:G:O2'	51:1:1711:A:H5'	2.17	0.43
51:1:1741:C:O2'	51:1:1742:U:H5'	2.18	0.43
53:3:1513:A:H2'	53:3:1514:G:H8	1.83	0.43
58:B1:111:THR:CG2	58:B1:300:GLN:HA	2.48	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
58:B1:1024:THR:HG23	58:B1:1123:ARG:HA	2.00	0.43
59:B2:903:ARG:HD2	59:B2:903:ARG:HA	1.24	0.43
63:5:27:G:H1	63:5:43:C:H42	1.64	0.43
9:I:44:LYS:HA	9:I:44:LYS:HD2	1.55	0.43
9:I:85:THR:HA	9:I:88:ASN:HB2	2.00	0.43
14:N:98:ARG:HG2	14:N:103:VAL:HG21	2.00	0.43
14:N:119:LYS:NZ	53:3:1350:A:N7	2.64	0.43
21:U:31:ARG:HB2	53:3:310:G:H5"	2.00	0.43
27:b:48:ILE:HG12	51:1:779:U:OP2	2.18	0.43
30:e:71:LYS:HA	30:e:71:LYS:HD2	1.78	0.43
37:m:17:ASN:OD1	37:m:97:GLN:NE2	2.51	0.43
41:q:83:LYS:HE2	41:q:83:LYS:HB3	1.72	0.43
51:1:192:C:H2'	51:1:193:U:H5'	1.99	0.43
51:1:327:G:H2'	51:1:328:U:O4'	2.18	0.43
51:1:365:U:H2'	51:1:366:C:C6	2.53	0.43
51:1:623:C:O2'	51:1:624:C:H5'	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
51:1:1095:A:H3'	51:1:1096:A:H8	1.83	0.43
51:1:1383:A:H2	51:1:1406:U:H1'	1.83	0.43
51:1:1426:G:C6	51:1:1427:A:C6	3.06	0.43
51:1:1747:U:H2'	51:1:1748:C:C6	2.53	0.43
51:1:2643:G:C2'	51:1:2644:G:H5'	2.49	0.43
51:1:2836:U:H2'	51:1:2837:A:H8	1.81	0.43
53:3:1442:G:H1	53:3:1460:C:H42	1.66	0.43
58:B1:1033:GLY:HA3	58:B1:1081:VAL:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:1046:ILE:HG22	58:B1:1061:VAL:HA	2.00	0.43
62:NG:161:SER:CB	62:NG:170:PRO:HA	2.47	0.43
2:B:8:THR:HG23	2:B:11:LYS:H	1.82	0.43
9:I:125:ASN:HB2	9:I:127:ARG:HD3	2.01	0.43
17:Q:3:VAL:HA	17:Q:6:LEU:HD12	2.00	0.43
28:c:59:ARG:HA	28:c:59:ARG:HD3	1.83	0.43
28:c:62:LYS:NZ	51:1:2810:A:H5"	2.34	0.43
38:n:39:PRO:HG2	51:1:1651:G:H4'	2.00	0.43
38:n:65:LEU:HD11	51:1:2870:C:H5"	1.99	0.43
48:x:36:ARG:NH2	51:1:2200:C:OP2	2.52	0.43
51:1:30:G:O2'	51:1:31:C:H5'	2.17	0.43
51:1:545:U:O2	51:1:546:U:H1'	2.17	0.43
51:1:993:G:O2'	51:1:994:C:H5'	2.19	0.43
51:1:1565:C:C5	51:1:1567:G:C6	3.06	0.43
51:1:1751:U:H2'	51:1:1752:C:C6	2.54	0.43
51:1:1993:U:O2	51:1:1993:U:H2'	2.18	0.43
51:1:2660:A:H2'	51:1:2661:G:O4'	2.18	0.43
51:1:2700:A:O2'	51:1:2701:U:H5'	2.17	0.43
51:1:2839:G:O2'	51:1:2840:C:H5'	2.18	0.43
53:3:490:C:H2'	53:3:491:G:H8	1.84	0.43
53:3:501:C:H2'	53:3:502:A:C8	2.53	0.43
58:B1:515:ARG:NH2	58:B1:718:SER:O	2.48	0.43
59:B2:300:ASP:OD1	59:B2:313:ALA:N	2.51	0.43
2:B:4:GLN:NE2	51:1:2056:G:O2'	2.52	0.43
8:H:51:VAL:HA	8:H:69:THR:HG22	2.01	0.43
8:H:134:LYS:HG2	8:H:138:GLN:HE21	1.82	0.43
10:J:104:ILE:HD11	10:J:114:LEU:HD13	1.99	0.43
17:Q:113:ARG:NH1	53:3:36:C:O2'	2.51	0.43
23:W:47:ARG:HD3	23:W:47:ARG:HA	1.80	0.43
24:X:6:LYS:NZ	53:3:1314:C:OP1	2.52	0.43
25:Y:49:ALA:HA	25:Y:52:GLU:HG3	2.00	0.43
27:b:20:ASN:HB3	27:b:23:LEU:HD13	2.01	0.43
27:b:107:LYS:HE2	27:b:107:LYS:HB2	1.88	0.43
29:d:3:LEU:HD23	29:d:3:LEU:HA	1.88	0.43
29:d:68:ALA:HA	51:1:1255:U:C6	2.52	0.43
29:d:188:MET:HB2	29:d:192:ALA:HB3	1.99	0.43
33:i:129:GLU:HG3	33:i:139:VAL:HG21	2.00	0.43
35:k:38:ILE:HG22	35:k:61:VAL:HB	2.00	0.43
51:1:28:A:H2'	51:1:29:U:C6	2.53	0.43
51:1:622:G:HO2'	51:1:623:C:H5'	1.83	0.43
53:3:959:A:O2'	53:3:984:C:O2'	2.25	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
58:B1:96:LYS:NZ	59:B2:1298:VAL:HG11	2.34	0.43
58:B1:515:ARG:HH12	58:B1:724:MET:HG2	1.84	0.43
63:5:13:C:H42	63:5:46:G:N2	2.16	0.43
8:H:37:LYS:HA	8:H:37:LYS:HD3	1.81	0.43
11:K:38:ARG:HH11	11:K:61:LEU:HD21	1.83	0.43
11:K:47:LEU:HG	11:K:56:LYS:HA	2.01	0.43
17:Q:67:GLY:O	17:Q:98:ARG:NH1	2.52	0.43
39:o:40:ILE:HA	39:o:47:VAL:HA	2.00	0.43
43:s:74:ILE:HB	43:s:105:VAL:HG23	1.99	0.43
51:1:29:U:O5’	51:1:29:U:H6	2.01	0.43
51:1:163:C:O2’	51:1:164:C:H5’	2.17	0.43
51:1:864:G:C2’	51:1:865:C:H5’	2.48	0.43
51:1:1087:G:H5”	51:1:1088:A:OP2	2.18	0.43
51:1:1092:C:H2’	51:1:1093:G:O4’	2.18	0.43
51:1:1338:G:H2’	51:1:1339:G:C8	2.51	0.43
51:1:2236:U:H2’	51:1:2237:G:C5’	2.46	0.43
51:1:2713:U:C3’	51:1:2714:G:H5’	2.27	0.43
53:3:1253:G:H2’	53:3:1254:A:H8	1.83	0.43
58:B1:45:ASN:HD22	58:B1:48:THR:H	1.65	0.43
58:B1:245:LEU:CG	58:B1:246:PRO:HD2	2.48	0.43
10:J:146:MET:HE2	10:J:146:MET:HB3	1.76	0.43
13:M:24:VAL:HG23	13:M:60:LEU:HB2	2.00	0.43
16:P:115:ILE:HD12	16:P:116:PRO:HD2	1.99	0.43
22:V:44:HIS:HB3	22:V:70:LYS:HG2	1.99	0.43
34:j:47:HIS:CG	51:1:536:G:H21	2.37	0.43
42:r:80:ARG:HD3	51:1:566:U:O4	2.17	0.43
51:1:629:G:H2’	51:1:630:G:O4’	2.19	0.43
51:1:1306:C:H41	51:1:1606:C:H2’	1.84	0.43
51:1:1864:U:O5’	51:1:1864:U:H6	2.02	0.43
17:Q:31:GLY:HA2	17:Q:56:LEU:HA	2.01	0.43
18:R:28:ARG:HH21	18:R:62:PHE:HB2	1.84	0.43
25:Y:4:LYS:HA	25:Y:4:LYS:HD3	1.86	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
36:l:69:ARG:CZ	51:1:2406:A:N3	2.82	0.43
36:l:109:LYS:HE2	51:1:636:G:N7	2.34	0.43
51:1:43:G:H2’	51:1:44:A:C8	2.53	0.43
51:1:156:A:O2’	51:1:157:C:H5’	2.18	0.43
51:1:705:A:C2	51:1:727:A:H1’	2.54	0.43
51:1:1258:U:H2’	51:1:1259:G:C8	2.54	0.43
51:1:1487:U:H2’	51:1:1488:C:C6	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
53:3:422:C:H4'	53:3:423:G:C2	2.54	0.43
53:3:680:C:H2'	53:3:681:A:H8	1.84	0.43
55:8:2:DC:H6	55:8:2:DC:H2'	1.73	0.43
55:8:12:DG:OP1	58:B1:795:TYR:CE1	2.71	0.43
58:B1:107:LEU:HA	58:B1:276:ASN:ND2	2.33	0.43
58:B1:568:SER:HB3	58:B1:570:LYS:NZ	2.34	0.43
58:B1:1158:GLU:HA	58:B1:1223:LEU:HD21	1.99	0.43
10:J:110:MET:HA	10:J:113:VAL:HG12	2.01	0.43
11:K:49:TYR:H	23:W:65:SER:HG	1.66	0.43
13:M:52:GLY:HA3	13:M:56:PRO:HA	2.01	0.43
16:P:124:LYS:H	16:P:124:LYS:HG3	1.58	0.43
17:Q:50:LYS:HE2	17:Q:70:GLY:HA2	2.01	0.43
34:j:51:GLY:HA3	34:j:121:LYS:HE2	2.00	0.43
38:n:28:LEU:O	38:n:32:GLU:N	2.39	0.43
51:1:108:G:O2'	51:1:109:C:H5'	2.19	0.43
51:1:541:A:H2'	51:1:542:C:O4'	2.19	0.43
51:1:595:C:H2'	51:1:596:U:C6	2.54	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:N4	51:1:1606:C:H2'	2.34	0.43
51:1:2152:G:N3	51:1:2152:G:H2'	2.33	0.43
51:1:2462:C:H2'	51:1:2463:C:C6	2.53	0.43
51:1:2736:A:O2'	51:1:2737:G:H5'	2.19	0.43
53:3:987:G:H2'	53:3:988:G:H8	1.84	0.43
58:B1:59:ALA:HB1	58:B1:90:VAL:HG23	2.01	0.43
58:B1:513:MET:HG3	58:B1:544:LEU:HD11	2.01	0.43
58:B1:559:ALA:HB3	58:B1:562:GLU:HB3	2.01	0.43
59:B2:27:LEU:O	59:B2:528:ARG:NH1	2.43	0.43
63:5:17:C:H6	63:5:17:C:H2'	1.69	0.43
29:d:47:LYS:HE2	51:1:451:U:H4'	2.00	0.43
38:n:58:ASP:OD1	38:n:63:ARG:NH2	2.44	0.43
51:1:572:A:O5'	51:1:572:A:C8	2.72	0.43
51:1:648:G:H2'	51:1:649:G:H8	1.83	0.43
51:1:841:G:C2'	51:1:842:U:H5'	2.49	0.43
51:1:1054:A:H2'	51:1:1055:G:C8	2.54	0.43
51:1:1601:G:H2'	51:1:1602:U:H5'	2.01	0.43
51:1:2562:U:C2'	51:1:2563:U:H5'	2.49	0.43
51:1:2870:C:H2'	51:1:2871:U:H5'	2.01	0.43
53:3:1238:A:OP1	53:3:1335:U:O2'	2.35	0.43
58:B1:71:LEU:HD23	58:B1:71:LEU:HA	1.75	0.43
58:B1:375:GLU:HB3	59:B2:1245:ALA:CB	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
59:B2:811:ASN:ND2	59:B2:1098:LEU:O	2.51	0.43
59:B2:1275:VAL:HG13	59:B2:1287:LEU:HD11	2.01	0.43
59:B2:1313:HIS:CD2	60:W0:31:GLN:HE22	2.37	0.43
8:H:61:LYS:HE2	8:H:96:VAL:HG12	2.01	0.43
9:I:53:GLN:HA	9:I:198:LEU:HD12	2.01	0.43
27:b:86:ARG:HD3	27:b:86:ARG:HA	1.84	0.43
27:b:97:ASP:N	27:b:97:ASP:OD1	2.45	0.43
33:i:106:GLN:OE1	33:i:125:THR:OG1	2.31	0.43
34:j:47:HIS:CG	51:1:536:G:N2	2.87	0.43
51:1:467:G:O2'	51:1:468:G:H5'	2.19	0.43
51:1:528:A:C2	51:1:2043:C:H4'	2.53	0.43
51:1:2106:U:H2'	51:1:2107:G:O4'	2.18	0.43
51:1:2305:U:O2'	51:1:2306:C:H5'	2.19	0.43
51:1:2371:G:O2'	51:1:2372:U:H5'	2.19	0.43
51:1:2834:G:C2'	51:1:2835:A:H5'	2.49	0.43
53:3:460:A:H2'	53:3:461:A:C8	2.54	0.43
58:B1:111:THR:HG21	58:B1:303:VAL:HB	2.00	0.43
58:B1:1357:ILE:HG22	58:B1:1359:ALA:H	1.82	0.43
14:N:30:ASN:HD21	14:N:66:VAL:H	1.66	0.42
36:l:39:LYS:HZ3	51:1:942:G:P	2.40	0.42
40:p:113:LEU:HD13	40:p:113:LEU:HA	1.86	0.42
42:r:62:GLU:HG3	42:r:97:LYS:HB3	2.01	0.42
51:1:8:C:C2	51:1:9:G:C8	3.07	0.42
51:1:783:A:C8	51:1:783:A:H3'	2.54	0.42
51:1:2584:U:O5'	51:1:2584:U:H6	2.02	0.42
53:3:944:G:N1	53:3:1338:G:OP2	2.34	0.42
58:B1:24:LEU:HD21	58:B1:116:PHE:CE2	2.54	0.42
58:B1:141:PHE:CD2	58:B1:297:ARG:HB2	2.54	0.42
59:B2:538:LEU:HD13	59:B2:543:ALA:HB2	2.01	0.42
59:B2:1246:ARG:HH11	59:B2:1266:GLY:HA2	1.82	0.42
6:F:8:LYS:NZ	51:1:2467:C:OP1	2.37	0.42
18:R:87:GLY:O	18:R:91:ARG:N	2.52	0.42
27:b:244:VAL:HG12	27:b:250:GLN:HA	2.01	0.42
29:d:106:LYS:HG3	29:d:200:LEU:HD13	2.01	0.42
30:e:171:ALA:C	30:e:173:ASP:H	2.27	0.42
33:i:123:ALA:HB1	51:1:1081:U:H4'	2.00	0.42
51:1:12:U:O2	51:1:12:U:H2'	2.18	0.42
51:1:712:G:C2'	51:1:713:G:H5'	2.49	0.42
51:1:2216:G:H2'	51:1:2217:G:C8	2.54	0.42
53:3:1209:C:O2'	53:3:1214:C:N4	2.52	0.42
53:3:1348:U:H2'	53:3:1349:A:H8	1.84	0.42

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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	0.42
58:B1:102:MET:HG2	58:B1:246:PRO:CG	2.49	0.42
60:W0:58:LEU:HD12	60:W0:59:ILE:HG12	2.00	0.42
64:7:11:A:H2'	64:7:12:G:C8	2.52	0.42
8:H:106:ARG:HG2	8:H:107:LYS:HG3	2.01	0.42
9:I:101:VAL:HG22	9:I:106:PHE:HB2	2.01	0.42
24:X:51:HIS:HB2	24:X:56:HIS:CE1	2.55	0.42
27:b:206:LYS:HB2	51:1:729:G:C5	2.54	0.42
31:f:151:ARG:HD3	31:f:151:ARG:HA	1.88	0.42
33:i:127:SER:OG	51:1:1059:G:N2	2.51	0.42
49:y:11:VAL:HA	49:y:14:LEU:HB2	2.00	0.42
50:z:38:GLU:CD	51:1:928:A:H5'	2.43	0.42
51:1:281:C:H2'	51:1:282:A:C8	2.54	0.42
51:1:481:G:H2'	51:1:482:A:OP2	2.18	0.42
51:1:532:A:H2'	51:1:532:A:N3	2.34	0.42
51:1:871:U:H2'	51:1:872:U:C6	2.54	0.42
51:1:908:C:O2'	51:1:909:A:H5'	2.19	0.42
51:1:1049:C:H2'	51:1:1050:A:H5'	1.99	0.42
51:1:1230:A:H2'	51:1:1231:U:O4'	2.19	0.42
51:1:1520:U:C2'	51:1:1521:G:H5'	2.49	0.42
51:1:2098:U:C2'	51:1:2099:U:H5'	2.49	0.42
53:3:1243:C:H2'	53:3:1244:G:H8	1.84	0.42
57:A1:78:ILE:HA	57:A1:81:ILE:HG22	2.00	0.42
58:B1:79:LYS:HZ2	61:NA:141:VAL:CB	2.32	0.42
58:B1:244:VAL:HA	58:B1:269:TYR:OH	2.19	0.42
58:B1:894:VAL:HG22	58:B1:1258:ARG:HH11	1.83	0.42
59:B2:125:GLY:H	59:B2:495:ALA:HB1	1.84	0.42
59:B2:469:VAL:HA	59:B2:472:GLU:HG2	2.01	0.42
62:NG:135:ARG:O	62:NG:178:VAL:CA	2.68	0.42
7:G:162:VAL:N	7:G:183:PHE:O	2.38	0.42
18:R:91:ARG:HD2	51:1:888:C:OP1	2.18	0.42
27:b:7:PRO:HB3	27:b:13:ARG:HG3	2.00	0.42
34:j:13:ARG:NH1	34:j:49:ASP:O	2.41	0.42
34:j:109:LEU:HD23	34:j:109:LEU:HA	1.85	0.42
36:l:108:ALA:HB3	36:l:125:LEU:HG	2.01	0.42
37:m:69:PRO:HA	37:m:94:ALA:HB2	2.01	0.42
51:1:644:A:C3'	51:1:645:C:H5"	2.49	0.42
51:1:870:U:H2'	51:1:871:U:C5'	2.48	0.42
51:1:1983:G:HO2'	51:1:1984:G:H5'	1.83	0.42
51:1:2073:C:C2'	51:1:2074:U:H5'	2.49	0.42
51:1:2102:G:H1	51:1:2187:U:H3	1.66	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2701:U:H3'	51:1:2702:G:H5"	2.01	0.42
53:3:322:C:O2	53:3:332:G:N2	2.52	0.42
58:B1:58:CYS:SG	58:B1:60:ARG:HG2	2.59	0.42
58:B1:137:ARG:HA	58:B1:142:GLU:HG2	2.02	0.42
9:I:152:SER:HB3	53:3:436:C:H4'	2.00	0.42
21:U:4:ILE:HG12	21:U:21:VAL:HG22	2.00	0.42
29:d:127:GLU:O	29:d:156:ASN:ND2	2.51	0.42
51:1:90:U:H2'	51:1:91:A:C8	2.55	0.42
51:1:128:C:H2'	51:1:129:C:C6	2.53	0.42
51:1:431:U:O5'	51:1:431:U:H6	2.03	0.42
51:1:510:C:OP1	51:1:510:C:H3'	2.20	0.42
51:1:809:G:C6	51:1:810:U:C4	3.08	0.42
51:1:1020:A:O5'	51:1:1020:A:H8	2.02	0.42
51:1:1197:G:C2'	51:1:1198:U:H5'	2.50	0.42
51:1:1327:A:H2'	51:1:1328:A:H5'	2.01	0.42
51:1:1433:A:H2'	51:1:1434:A:C1'	2.49	0.42
51:1:1488:C:H2'	51:1:1489:C:H6	1.84	0.42
51:1:2091:C:H5	51:1:2092:U:O2'	2.02	0.42
51:1:2144:G:H1'	51:1:2147:A:N6	2.33	0.42
51:1:2812:G:O2'	51:1:2813:A:H5'	2.19	0.42
51:1:2852:G:H2'	51:1:2853:C:O4'	2.20	0.42
53:3:1531:A:C2'	53:3:1532:U:H5'	2.49	0.42
55:8:15:DC:H5'	59:B2:1269:ARG:HD3	2.01	0.42
58:B1:105:ILE:HD12	58:B1:242:LEU:CD2	2.44	0.42
58:B1:388:ARG:HG2	58:B1:388:ARG:HH11	1.84	0.42
58:B1:609:TYR:HD2	58:B1:610:ARG:NH1	2.17	0.42
58:B1:950:ILE:HB	58:B1:1018:ALA:HB3	2.01	0.42
59:B2:616:ILE:HG13	59:B2:652:TYR:HB2	2.01	0.42
62:NG:130:PRO:HA	62:NG:148:VAL:O	2.20	0.42
9:I:119:HIS:O	9:I:145:ARG:NH2	2.52	0.42
14:N:113:LYS:HA	14:N:120:ALA:HB2	2.01	0.42
18:R:11:HIS:HA	18:R:43:LYS:HD2	2.01	0.42
21:U:23:ASP:OD2	53:3:229:U:O2'	2.31	0.42
33:i:25:PRO:HG3	51:1:1095:A:N1	2.34	0.42
35:k:17:ARG:HD3	35:k:47:ILE:HD11	2.02	0.42
51:1:422:A:H2'	51:1:423:A:O4'	2.20	0.42
51:1:535:G:O2'	51:1:536:G:H5'	2.20	0.42
51:1:955:U:H2'	51:1:956:G:H5'	2.02	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
51:1:1739:A:H2'	51:1:1740:G:O4'	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1886:U:O2'	51:1:1887:C:H5'	2.20	0.42
51:1:1964:G:H4'	51:1:1965:C:OP2	2.19	0.42
51:1:2628:C:H3'	51:1:2629:U:H5'	2.01	0.42
58:B1:224:LEU:HD23	58:B1:224:LEU:HA	1.89	0.42
58:B1:839:VAL:HG12	58:B1:864:LEU:HD12	2.02	0.42
59:B2:557:ARG:HB3	59:B2:587:LEU:HD13	2.00	0.42
59:B2:741:MET:SD	59:B2:974:ARG:NH2	2.93	0.42
64:6:69:C:H2'	64:6:70:G:H8	1.83	0.42
9:I:1:ALA:N	53:3:405:U:O4	2.45	0.42
24:X:36:ARG:HB3	53:3:1320:C:N4	2.34	0.42
31:f:84:LYS:HD2	31:f:84:LYS:HA	1.87	0.42
51:1:1907:G:C5	51:1:1908:C:C4	3.07	0.42
51:1:1914:C:O2	51:1:1914:C:O4'	2.38	0.42
51:1:2024:G:H2'	51:1:2025:C:C6	2.54	0.42
53:3:297:G:N2	53:3:300:A:OP2	2.39	0.42
53:3:1513:A:H2'	53:3:1514:G:C8	2.55	0.42
54:4:55:G:H5'	59:B2:688:GLN:HE22	1.85	0.42
54:4:56:G:OP1	59:B2:1073:LYS:NZ	2.35	0.42
58:B1:434:ILE:HD11	59:B2:1274:GLU:CG	2.49	0.42
58:B1:586:GLY:HA3	58:B1:612:LEU:HD11	2.01	0.42
58:B1:616:PRO:HA	58:B1:619:ILE:HG22	2.02	0.42
58:B1:903:LEU:HD12	58:B1:903:LEU:HA	1.81	0.42
16:P:126:ARG:O	53:3:796:C:H5"	2.19	0.42
28:c:90:PHE:HD1	28:c:94:GLN:HG2	1.83	0.42
29:d:53:THR:HB	51:1:452:G:H8	1.85	0.42
44:t:68:LYS:HD3	44:t:68:LYS:HA	1.83	0.42
47:w:14:ALA:HB1	51:1:2271:G:OP1	2.19	0.42
49:y:30:MET:HE3	49:y:30:MET:HB3	1.83	0.42
51:1:4:U:O2'	51:1:5:A:H5'	2.20	0.42
51:1:552:U:O2'	51:1:553:G:H5'	2.20	0.42
51:1:673:C:O2'	51:1:674:G:H5'	2.19	0.42
51:1:758:C:H2'	51:1:759:G:H8	1.84	0.42
51:1:892:A:O2'	51:1:893:C:H5'	2.20	0.42
51:1:1034:G:C6	51:1:1035:U:N3	2.88	0.42
51:1:1204:A:H4'	51:1:1205:A:H5"	2.02	0.42
51:1:1246:A:H2'	51:1:1247:A:O4'	2.19	0.42
51:1:1343:G:N3	51:1:1343:G:H2'	2.35	0.42
51:1:1600:C:H2'	51:1:1601:G:C8	2.55	0.42
51:1:1901:A:C2	51:1:1902:C:C5	3.08	0.42
51:1:2292:U:H2'	51:1:2293:G:C8	2.55	0.42
51:1:2482:A:H2'	51:1:2483:C:C6	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2741:A:H2'	51:1:2742:G:C5'	2.50	0.42
51:1:2741:A:N6	51:1:2742:G:C2	2.88	0.42
53:3:757:U:OP1	53:3:822:U:O2'	2.36	0.42
53:3:1409:C:H2'	53:3:1410:A:C8	2.54	0.42
56:9:12:DC:H3'	58:B1:47:ARG:HH12	1.85	0.42
57:A1:76:GLU:HB3	57:A1:80:GLU:HB3	2.01	0.42
58:B1:820:ILE:HD11	58:B1:822:MET:HE2	2.02	0.42
58:B1:930:LEU:HA	58:B1:1244:GLN:HG3	2.02	0.42
59:B2:43:PRO:HB2	59:B2:44:GLU:H	1.71	0.42
59:B2:542:ARG:H	59:B2:542:ARG:HG2	1.70	0.42
38:n:16:HIS:CD2	51:1:1275:A:C2	3.07	0.42
43:s:87:PRO:HG3	51:1:1615:C:C6	2.54	0.42
44:t:40:LYS:HE3	44:t:60:THR:HG22	2.01	0.42
46:v:58:SER:OG	46:v:59:GLU:OE1	2.36	0.42
51:1:115:C:O2'	51:1:116:C:H5'	2.19	0.42
51:1:191:A:C2	51:1:192:C:C4	3.08	0.42
51:1:1314:C:H42	51:1:1338:G:H1	1.68	0.42
51:1:1589:U:H2'	51:1:1590:A:C8	2.55	0.42
51:1:1710:G:H2'	51:1:1711:A:H8	1.85	0.42
51:1:1931:U:C5	51:1:1968:G:N2	2.88	0.42
51:1:2156:G:H2'	51:1:2157:G:C5'	2.35	0.42
58:B1:144:TYR:CE1	58:B1:162:GLU:OE1	2.73	0.42
58:B1:242:LEU:C	58:B1:242:LEU:HD23	2.44	0.42
58:B1:352:ARG:CD	59:B2:1268:GLN:NE2	2.67	0.42
59:B2:50:GLU:HG2	59:B2:73:TYR:HE1	1.85	0.42
59:B2:546:GLU:H	59:B2:546:GLU:HG3	1.53	0.42
59:B2:998:LEU:HD21	59:B2:1015:ALA:HB2	2.02	0.42
8:H:1:GLY:HA2	53:3:1060:U:C5	2.54	0.42
23:W:23:LYS:HE2	23:W:23:LYS:HB2	1.82	0.42
28:c:128:ARG:HE	28:c:128:ARG:HB2	1.63	0.42
40:p:63:ILE:HA	40:p:68:GLY:HA2	2.01	0.42
51:1:56:A:H1'	51:1:127:A:C2	2.55	0.42
51:1:94:A:H2'	51:1:95:A:C8	2.54	0.42
51:1:196:A:N3	51:1:196:A:H2'	2.35	0.42
51:1:256:A:C2'	51:1:257:C:H5'	2.50	0.42
51:1:466:A:C2'	51:1:467:G:H5'	2.46	0.42
51:1:623:C:H2'	51:1:624:C:H6	1.85	0.42
51:1:903:C:H2'	51:1:904:G:H8	1.85	0.42
51:1:1316:U:O2'	51:1:1317:G:H5'	2.20	0.42
51:1:1335:C:H2'	51:1:1336:A:H8	1.84	0.42
51:1:1500:G:H2'	51:1:1501:G:H8	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2287:A:C4	51:1:2289:G:N7	2.87	0.42
51:1:2612:C:O5'	51:1:2612:C:H6	2.03	0.42
52:2:65:U:H3'	52:2:108:A:N6	2.30	0.42
53:3:73:C:H2'	53:3:74:A:C8	2.55	0.42
53:3:75:G:H1	53:3:95:C:H42	1.67	0.42
58:B1:144:TYR:N	58:B1:144:TYR:CD1	2.88	0.42
59:B2:22:LEU:HB3	59:B2:655:VAL:HG11	2.01	0.42
63:5:4:C:H2'	63:5:5:G:C8	2.55	0.42
7:G:17:HIS:C	7:G:19:THR:H	2.28	0.41
7:G:190:SER:OG	7:G:191:ASP:N	2.54	0.41
18:R:7:ASN:CG	18:R:9:PRO:HD2	2.45	0.41
18:R:89:ARG:HB2	18:R:96:VAL:HG22	2.01	0.41
42:r:49:ILE:HA	42:r:54:VAL:HG23	2.02	0.41
50:z:57:GLU:OE1	50:z:57:GLU:N	2.53	0.41
51:1:397:U:O5'	51:1:397:U:H6	2.03	0.41
51:1:598:U:H2'	51:1:599:A:C8	2.54	0.41
51:1:1213:A:C1'	51:1:1237:A:C2	3.03	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
51:1:2224:G:H4'	51:1:2226:C:N3	2.35	0.41
51:1:2583:G:H8	51:1:2583:G:O5'	2.03	0.41
51:1:2848:G:C2	51:1:2867:G:C4	3.08	0.41
53:3:440:C:H2'	53:3:441:A:H8	1.85	0.41
53:3:497:G:H2'	53:3:498:A:C8	2.55	0.41
57:A2:104:LYS:O	57:A2:139:SER:OG	2.36	0.41
59:B2:559:CYS:HA	59:B2:560:PRO:HD3	1.91	0.41
59:B2:755:LYS:HD2	59:B2:755:LYS:HA	1.86	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
15:O:12:ALA:HB2	15:O:96:VAL:HG13	2.03	0.41
26:Z:39:LYS:HA	26:Z:42:THR:HB	2.02	0.41
27:b:131:MET:H	27:b:131:MET:HG2	1.57	0.41
27:b:209:ALA:HA	27:b:212:TRP:CE2	2.55	0.41
33:i:91:LYS:HB2	33:i:91:LYS:HE3	1.72	0.41
41:q:23:TYR:HB3	41:q:27:ARG:HB2	2.02	0.41
43:s:9:HIS:H	43:s:102:HIS:CE1	2.38	0.41
51:1:127:A:H5"	51:1:128:C:O4'	2.21	0.41
51:1:197:A:H2	51:1:2434:A:H62	1.69	0.41
51:1:837:C:O5'	51:1:837:C:H6	2.02	0.41
51:1:1024:G:H21	51:1:1144:A:C4'	2.32	0.41
51:1:1070:A:H5'	51:1:1072:C:OP1	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1107:G:H2'	51:1:1108:U:O4'	2.20	0.41
51:1:1176:U:H2'	51:1:1177:G:N9	2.35	0.41
51:1:1336:A:H2'	51:1:1337:G:H8	1.85	0.41
51:1:2193:G:H2'	51:1:2194:U:H6	1.83	0.41
51:1:2389:G:H5"	51:1:2390:U:H5'	2.01	0.41
51:1:2743:U:H2'	51:1:2744:G:C4'	2.50	0.41
53:3:373:A:N1	53:3:391:G:O2'	2.49	0.41
53:3:842:U:H5"	53:3:846:G:C6	2.55	0.41
53:3:1124:G:H1	53:3:1149:C:H42	1.68	0.41
57:A2:48:LEU:HD23	57:A2:48:LEU:HA	1.86	0.41
58:B1:820:ILE:HG12	58:B1:884:SER:HB2	2.01	0.41
59:B2:590:PRO:HB2	59:B2:655:VAL:HG21	2.01	0.41
59:B2:800:MET:HB2	59:B2:800:MET:HE3	1.69	0.41
11:K:40:GLU:HB3	11:K:61:LEU:HB3	2.02	0.41
22:V:7:LEU:N	22:V:59:GLU:OE2	2.53	0.41
27:b:70:LYS:HD2	27:b:73:ILE:HD12	2.02	0.41
30:e:124:ARG:NH2	51:1:2315:G:N3	2.68	0.41
41:q:54:ARG:HD3	51:1:1155:A:H5"	2.01	0.41
42:r:24:LYS:HE2	42:r:24:LYS:HB3	1.89	0.41
46:v:14:LYS:HB2	52:2:98:G:H1	1.84	0.41
51:1:49:A:P	51:1:51:G:H5'	2.61	0.41
51:1:170:U:H2'	51:1:171:U:C6	2.55	0.41
51:1:1719:G:O2'	51:1:1720:U:H5'	2.20	0.41
51:1:2335:A:N7	51:1:2337:G:C5	2.88	0.41
51:1:2379:G:H2'	51:1:2380:C:C6	2.56	0.41
51:1:2697:G:C2	51:1:2711:A:C2	3.08	0.41
58:B1:68:TYR:O	58:B1:75:TYR:CD2	2.70	0.41
58:B1:279:LEU:HD13	58:B1:299:LEU:HD13	2.02	0.41
58:B1:797:THR:HG22	58:B1:924:GLY:HA3	2.01	0.41
59:B2:699:LEU:HG	59:B2:799:ASN:HD22	1.85	0.41
18:R:32:ILE:HG23	18:R:58:GLU:HB3	2.02	0.41
29:d:49:ARG:NH2	51:1:673:C:OP1	2.48	0.41
29:d:145:ASP:HA	29:d:166:LYS:HB3	2.02	0.41
32:g:11:ASN:ND2	51:1:2095:A:OP1	2.53	0.41
33:i:77:VAL:HA	33:i:80:LYS:HE2	2.02	0.41
38:n:114:GLU:OE1	38:n:118:ARG:NH1	2.50	0.41
42:r:81:LYS:NZ	51:1:568:U:O4	2.54	0.41
51:1:191:A:H2'	51:1:192:C:C6	2.56	0.41
51:1:722:A:H2'	51:1:723:C:C6	2.56	0.41
51:1:1917:U:H2'	51:1:1918:A:H5'	2.01	0.41
51:1:2160:C:H2'	51:1:2161:C:O4'	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2248:C:C2’	51:1:2249:U:H5’	2.49	0.41
51:1:2895:G:H2’	51:1:2896:C:H6	1.84	0.41
53:3:1005:A:OP2	53:3:1024:G:N2	2.48	0.41
53:3:1228:C:H2’	53:3:1229:A:C8	2.55	0.41
55:8:14:DC:C2	55:8:15:DC:C5	3.09	0.41
58:B1:243:PRO:HG2	59:B2:1332:SER:C	2.44	0.41
58:B1:515:ARG:HG2	58:B1:516:ASP:H	1.85	0.41
59:B2:870:ILE:HB	59:B2:944:ARG:HD3	2.02	0.41
20:T:66:LEU:HB3	20:T:77:TYR:HE1	1.84	0.41
23:W:24:ASP:OD1	23:W:24:ASP:N	2.53	0.41
35:k:7:MET:HE2	35:k:18:ARG:HD3	2.01	0.41
51:1:439:A:H2’	51:1:440:C:O4’	2.19	0.41
51:1:518:G:H2’	51:1:519:U:C6	2.55	0.41
51:1:543:G:C3’	51:1:544:C:H5”	2.51	0.41
51:1:573:U:O2’	51:1:574:A:H3’	2.20	0.41
51:1:630:G:N2	51:1:634:C:C4	2.88	0.41
51:1:724:U:H2’	51:1:725:G:C8	2.56	0.41
51:1:940:G:H2’	51:1:941:A:C4’	2.51	0.41
51:1:1410:G:H2’	51:1:1411:U:H6	1.85	0.41
51:1:1418:G:H1’	51:1:1581:G:N2	2.36	0.41
51:1:1782:U:C2’	51:1:1783:A:H5”	2.51	0.41
51:1:2467:C:N4	51:1:2468:A:C6	2.89	0.41
51:1:2757:A:H2’	51:1:2758:A:H5”	2.02	0.41
58:B1:239:LEU:N	58:B1:239:LEU:HD23	2.36	0.41
58:B1:385:LEU:CD2	58:B1:390:LEU:HB2	2.50	0.41
58:B1:647:PRO:HG3	58:B1:697:MET:HB3	2.01	0.41
6:F:30:GLU:HA	6:F:31:PRO:HD3	1.91	0.41
8:H:19:SER:HB2	8:H:39:ARG:HH21	1.85	0.41
8:H:110:LEU:HD21	8:H:143:LEU:HB3	2.02	0.41
9:I:24:VAL:HG22	53:3:409:U:H4’	2.02	0.41
21:U:68:SER:OG	21:U:69:ASP:N	2.53	0.41
22:V:11:VAL:HG23	22:V:55:GLY:H	1.85	0.41
28:c:4:LEU:HD21	28:c:98:VAL:HA	2.03	0.41
31:f:21:GLN:NE2	31:f:37:ASN:O	2.54	0.41
31:f:157:LYS:HD3	51:1:2658:C:H5”	2.02	0.41
50:z:31:ILE:HD11	51:1:989:G:P	2.61	0.41
51:1:849:A:H2’	51:1:850:U:C5	2.54	0.41
51:1:2411:A:O2’	51:1:2412:A:H5’	2.20	0.41
51:1:2600:A:H8	51:1:2600:A:O5’	2.03	0.41
58:B1:390:LEU:N	58:B1:390:LEU:HD13	2.35	0.41
7:G:173:LYS:HE3	7:G:173:LYS:HB2	1.76	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:5:HIS:HA	8:H:6:PRO:HD3	1.94	0.41
15:O:57:VAL:HG22	15:O:58:ASN:H	1.85	0.41
17:Q:98:ARG:HA	17:Q:103:CYS:HB2	2.02	0.41
24:X:27:LYS:HB3	24:X:27:LYS:HE2	1.77	0.41
26:Z:9:GLU:HB3	26:Z:10:PRO:HD3	2.03	0.41
28:c:169:ARG:O	51:1:2773:C:H4'	2.21	0.41
30:e:39:VAL:HG12	30:e:85:GLY:HA2	2.03	0.41
30:e:77:LYS:HE2	30:e:77:LYS:HB2	1.89	0.41
37:m:123:LYS:HE2	51:1:2467:C:O2	2.20	0.41
45:u:4:ILE:HD13	45:u:69:VAL:HG23	2.03	0.41
51:1:191:A:C6	51:1:192:C:N4	2.88	0.41
51:1:638:G:H2'	51:1:639:U:C6	2.55	0.41
51:1:1020:A:H5'	51:1:1021:A:N7	2.35	0.41
51:1:1045:C:H1'	51:1:1047:G:C2	2.56	0.41
51:1:1077:A:H3'	51:1:1078:U:H4'	2.02	0.41
51:1:1107:G:H2'	51:1:1108:U:C6	2.56	0.41
51:1:1160:G:C6	51:1:1161:C:C4	3.09	0.41
51:1:1416:G:H2'	51:1:1417:C:H6	1.82	0.41
51:1:1591:A:H2'	51:1:1592:C:C6	2.56	0.41
51:1:1721:G:H1'	51:1:1739:A:N6	2.35	0.41
51:1:1767:G:N2	51:1:1986:C:C2	2.89	0.41
51:1:1936:A:N6	51:1:1963:U:H3	2.17	0.41
51:1:1955:U:H5	51:1:2557:G:N2	2.19	0.41
51:1:1991:U:H2'	51:1:1992:G:H5'	2.02	0.41
53:3:146:G:H2'	53:3:147:G:C8	2.56	0.41
53:3:202:G:H2'	53:3:203:G:C8	2.55	0.41
53:3:685:G:N1	53:3:704:A:OP2	2.52	0.41
57:A1:224:LEU:HD23	57:A2:228:LEU:HD21	2.03	0.41
58:B1:109:SER:CB	58:B1:296:LYS:HG2	2.51	0.41
58:B1:111:THR:HG23	58:B1:300:GLN:HA	2.03	0.41
58:B1:201:LEU:CB	58:B1:221:ILE:HD13	2.47	0.41
58:B1:800:LEU:HD12	58:B1:800:LEU:HA	1.79	0.41
58:B1:1350:ASN:HA	58:B1:1353:VAL:HG12	2.02	0.41
59:B2:478:ARG:HD2	59:B2:492:MET:HA	2.02	0.41
63:5:9:A:H1'	63:5:45:U:H2'	2.01	0.41
8:H:178:ARG:NH1	53:3:1112:C:O2'	2.54	0.41
16:P:30:ILE:HG23	16:P:45:THR:HB	2.02	0.41
17:Q:29:LYS:HA	17:Q:29:LYS:HD3	1.65	0.41
27:b:36:ASN:OD1	27:b:36:ASN:N	2.54	0.41
33:i:41:PHE:O	33:i:45:THR:N	2.54	0.41
33:i:78:LEU:HA	33:i:81:LYS:HB3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:o:16:ARG:HD3	39:o:16:ARG:HA	1.84	0.41
43:s:70:LYS:N	43:s:108:SER:O	2.45	0.41
51:1:137:U:H3	51:1:142:A:H61	1.69	0.41
51:1:211:C:O2'	51:1:212:G:H5'	2.21	0.41
51:1:724:U:H2'	51:1:725:G:O4'	2.21	0.41
51:1:1150:C:C2	51:1:1151:A:C8	3.09	0.41
51:1:1239:G:H2'	51:1:1240:U:O4'	2.21	0.41
51:1:1412:U:H2'	51:1:1413:A:C8	2.56	0.41
51:1:1452:G:C2'	51:1:1453:A:OP2	2.68	0.41
58:B1:576:ARG:HD3	58:B1:593:ASN:HA	2.03	0.41
59:B2:524:ILE:HD12	59:B2:712:SER:HB2	2.02	0.41
59:B2:741:MET:HE3	59:B2:974:ARG:HH12	1.85	0.41
59:B2:903:ARG:NH1	59:B2:907:GLY:HA2	2.36	0.41
62:NG:175:PHE:O	62:NG:178:VAL:O	2.38	0.41
63:5:20:U:H6	63:5:20:U:H2'	1.72	0.41
7:G:161:PHE:HA	7:G:183:PHE:HB2	2.02	0.41
10:J:90:GLY:O	10:J:129:SER:OG	2.36	0.41
17:Q:110:LYS:HB2	17:Q:110:LYS:HE2	1.89	0.41
24:X:13:HIS:O	24:X:17:LYS:N	2.50	0.41
27:b:57:HIS:ND1	51:1:1567:G:H5'	2.35	0.41
30:e:36:ASN:HB3	30:e:152:ASP:HB3	2.03	0.41
33:i:100:ILE:HB	33:i:139:VAL:HG12	2.03	0.41
34:j:138:GLN:H	34:j:138:GLN:HG2	1.62	0.41
38:n:22:ARG:HH22	51:1:2709:G:H5'	1.86	0.41
39:o:24:THR:HB	39:o:42:PRO:HG3	2.03	0.41
41:q:57:ARG:NH1	51:1:1154:G:OP2	2.52	0.41
41:q:111:LYS:HD2	41:q:111:LYS:HA	1.81	0.41
43:s:29:VAL:HG21	43:s:55:ILE:HG21	2.03	0.41
45:u:6:ARG:N	51:1:85:G:OP1	2.52	0.41
51:1:79:C:O2	51:1:346:A:H2	2.03	0.41
51:1:244:A:H2'	51:1:245:G:O4'	2.20	0.41
51:1:259:G:O2'	51:1:260:G:H5'	2.20	0.41
51:1:426:C:O2'	51:1:427:U:H5'	2.21	0.41
51:1:481:G:H1'	51:1:506:G:H22	1.84	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
51:1:706: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
51:1:759:G:H2'	51:1:760:G:H8	1.83	0.41
51:1:859:G:HO2'	51:1:860:U:P	2.43	0.41
51:1:1048:A:C2'	51:1:1049:C:H5'	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:1063:G:N2	51:1:1075:C:H41	2.18	0.41
51:1:1092:C:O2'	51:1:1093:G:H5'	2.21	0.41
51:1:1283:G:H22	51:1:1286:A:P	2.44	0.41
51:1:1328:A:H2'	51:1:1330:C:C4	2.56	0.41
51:1:1333:G:C2'	51:1:1334:G:H5'	2.51	0.41
51:1:1334:G:C6	51:1:1335:C:C4	3.09	0.41
51:1:1467:U:C4	51:1:1468:U:C4	3.08	0.41
51:1:1594:U:O2'	51:1:1595:C:H5'	2.20	0.41
51:1:1599:U:H2'	51:1:1600:C:H6	1.85	0.41
51:1:1614:A:C8	51:1:1614:A:O5'	2.73	0.41
51:1:1750:G:H2'	51:1:1751:U:C6	2.56	0.41
51:1:1930:G:O2'	51:1:1931:U:P	2.79	0.41
51:1:2210:U:H6	51:1:2210:U:OP1	2.04	0.41
51:1:2293:G:O2'	51:1:2294:G:H5'	2.21	0.41
51:1:2646:C:H2'	51:1:2647:U:O4'	2.21	0.41
53:3:370:C:H2'	53:3:371:A:H8	1.86	0.41
53:3:1030:U:H5	53:3:1033:G:H1'	1.86	0.41
57:A1:211:ILE:HD12	57:A1:211:ILE:HA	1.93	0.41
57:A2:57:THR:HG23	57:A2:158:ARG:HH21	1.86	0.41
57:A2:104:LYS:HG2	57:A2:110:VAL:HG22	2.03	0.41
58:B1:68:TYR:CB	58:B1:75:TYR:HE2	2.34	0.41
58:B1:71:LEU:HB2	58:B1:90:VAL:HG11	2.03	0.41
58:B1:1050:THR:HG23	58:B1:1057:SER:HB3	2.02	0.41
59:B2:213:LEU:HD13	59:B2:422:LYS:HG2	2.03	0.41
59:B2:657:THR:HG21	59:B2:1188:ASP:HB2	2.03	0.41
59:B2:861:ALA:HB1	59:B2:882:ILE:HD13	2.02	0.41
59:B2:979:LEU:HD11	59:B2:1011:LEU:HD11	2.03	0.41
7:G:18:GLN:HB3	7:G:21:TYR:HB2	2.03	0.41
9:I:10:LEU:HG	9:I:62:ARG:HD2	2.03	0.41
10:J:156:ARG:HE	13:M:42:GLU:HG3	1.86	0.41
30:e:64:PRO:HA	30:e:88:VAL:HG22	2.03	0.41
34:j:17:VAL:HG13	34:j:137:PRO:HB2	2.03	0.41
48:x:55:MET:HE2	48:x:55:MET:HB3	1.91	0.41
51:1:518:G:C2	51:1:519:U:C2	3.08	0.41
51:1:688:U:O5'	51:1:688:U:H6	2.03	0.41
51:1:1279:G:H2'	51:1:1280:G:C8	2.56	0.41
51:1:1283:G:N2	51:1:1285:A:H3'	2.35	0.41
51:1:1482:G:H2'	51:1:1483:G:H8	1.85	0.41
51:1:1553:A:O2'	51:1:1554:U:H5	2.02	0.41
51:1:2098:U:H2'	51:1:2099:U:C5'	2.51	0.41
51:1:2105:U:C2	51:1:2184:A:H2	2.39	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:2326:C:H42	51:1:2389:G:H1	1.69	0.41
51:1:2393:U:C2'	51:1:2394:C:H5'	2.51	0.41
51:1:2776:A:C6	51:1:2778:A:C6	3.09	0.41
58:B1:108:ALA:HB2	58:B1:276:ASN:OD1	2.21	0.41
58:B1:394:ILE:O	58:B1:394:ILE:HG13	2.19	0.41
58:B1:395:LYS:HZ1	58:B1:399:LYS:CE	2.33	0.41
58:B1:848:VAL:HB	58:B1:858:VAL:HG22	2.02	0.41
59:B2:987:GLU:HG2	59:B2:991:LYS:HE3	2.03	0.41
8:H:14:VAL:HG11	8:H:180:ASP:HB3	2.03	0.40
9:I:184:LYS:HE2	9:I:184:LYS:HB2	1.86	0.40
12:L:125:ASP:HB2	12:L:130:LYS:HG3	2.03	0.40
13:M:26:MET:HE2	13:M:26:MET:HB3	1.96	0.40
18:R:10:ASP:HB3	18:R:45:SER:HB3	2.03	0.40
24:X:49:ALA:HA	24:X:58:PRO:HA	2.03	0.40
35:k:13:ASN:HB3	35:k:100:PHE:CZ	2.57	0.40
39:o:8:ILE:O	39:o:12:THR:OG1	2.33	0.40
51:1:284:U:H2'	51:1:285:G:C8	2.55	0.40
51:1:1116:G:O2'	51:1:1117:C:H5'	2.22	0.40
51:1:1430:G:O2'	51:1:1431:A:H5'	2.21	0.40
51:1:1722:A:H2'	51:1:1723:G:O4'	2.21	0.40
51:1:1822:C:H2'	51:1:1823:G:H8	1.85	0.40
51:1:2437:G:O4'	51:1:2598:A:C2	2.73	0.40
51:1:2575:C:H2'	51:1:2578:G:O6	2.21	0.40
51:1:2649:C:N3	51:1:2650:U:C4	2.89	0.40
51:1:2660:A:H2'	51:1:2661:G:C8	2.56	0.40
58:B1:26:SER:HB3	58:B1:29:MET:H	1.87	0.40
58:B1:777:HIS:CD2	59:B2:550:VAL:HG13	2.56	0.40
59:B2:444:ASP:OD1	59:B2:444:ASP:N	2.51	0.40
59:B2:738:GLU:HA	59:B2:741:MET:HE2	2.03	0.40
9:I:87:GLU:N	9:I:87:GLU:OE2	2.53	0.40
9:I:150:LYS:HD2	9:I:155:LYS:HD2	2.04	0.40
14:N:21:LYS:HE2	14:N:21:LYS:HB3	1.93	0.40
14:N:22:PRO:HA	14:N:60:LEU:HA	2.03	0.40
15:O:46:LYS:HE3	15:O:46:LYS:HB2	1.88	0.40
16:P:99:LEU:HA	16:P:102:ALA:HB3	2.03	0.40
21:U:55:ASP:OD1	21:U:55:ASP:N	2.38	0.40
29:d:163:ASN:HD21	51:1:322:A:P	2.45	0.40
32:g:1:MET:N	32:g:20:ASN:OD1	2.40	0.40
44:t:28:ASN:HD21	44:t:91:GLN:HB3	1.85	0.40
51:1:55:G:N2	51:1:116:C:C2	2.90	0.40
51:1:194:G:O6	51:1:195:A:C6	2.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:1:679:C:H2'	51:1:680:C:C6	2.56	0.40
51:1:1048:A:N6	51:1:1111:A:C8	2.89	0.40
51:1:1165:A:O2'	51:1:1166:G:H5'	2.21	0.40
51:1:1605:C:H2'	51:1:1606:C:C5'	2.51	0.40
51:1:1783:A:N1	51:1:2587:A:H2'	2.37	0.40
51:1:2061:G:H2'	51:1:2501:C:O2'	2.21	0.40
51:1:2106:U:H3'	51:1:2107:G:H8	1.86	0.40
51:1:2221:G:H2'	51:1:2222:C:C6	2.56	0.40
51:1:2648:G:O2'	51:1:2649:C:H5'	2.21	0.40
53:3:195:A:H2'	53:3:196:A:C8	2.56	0.40
53:3:1304:G:N1	53:3:1332:A:OP2	2.54	0.40
64:7:69:C:H2'	64:7:70:G:C8	2.56	0.40
8:H:156:LEU:H	8:H:156:LEU:HG	1.65	0.40
22:V:24:ILE:HG23	22:V:41:THR:HB	2.03	0.40
31:f:3:VAL:HG13	51:1:2751:G:H4'	2.02	0.40
31:f:60:GLY:O	31:f:64:ALA:N	2.53	0.40
33:i:89:SER:HB3	51:1:1063:G:O2'	2.20	0.40
50:z:37:ARG:HD3	50:z:37:ARG:HA	1.83	0.40
51:1:120:U:C2	51:1:149:A:C6	3.10	0.40
51:1:877:A:H2'	51:1:878:A:H5"	2.03	0.40
51:1:955:U:H2'	51:1:956:G:C5'	2.52	0.40
51:1:1152:C:H2'	51:1:1153:C:C6	2.55	0.40
51:1:1505:A:O2'	51:1:1506:U:H5'	2.19	0.40
51:1:1868:C:H2'	51:1:1869:G:H8	1.86	0.40
51:1:1948:G:N2	53:3:1418:A:H2	2.16	0.40
51:1:2098:U:H2'	51:1:2099:U:H5'	2.03	0.40
51:1:2680:U:O2'	51:1:2681:C:H5'	2.21	0.40
51:1:2788:C:H2'	51:1:2789:C:C6	2.56	0.40
51:1:2828:G:N1	51:1:2829:A:C5	2.90	0.40
51:1:2833:U:O2'	51:1:2834:G:H5'	2.22	0.40
53:3:146:G:H2'	53:3:147:G:H8	1.86	0.40
53:3:304:U:H2'	53:3:305:G:C8	2.56	0.40
57:A2:42:ALA:HB1	57:A2:224:LEU:HD11	2.03	0.40
58:B1:351:GLY:O	58:B1:467:ALA:HA	2.21	0.40
58:B1:1177:ILE:HD12	58:B1:1186:TYR:HE2	1.85	0.40
58:B1:1289:ASN:O	58:B1:1293:GLU:HB2	2.20	0.40
59:B2:886:LYS:HE2	59:B2:918:LEU:HD13	2.03	0.40
63:5:17:C:H2'	63:5:18:G:C8	2.56	0.40
64:7:10:G:OP1	64:7:46:G:H4'	2.21	0.40
8:H:190:THR:OG1	8:H:193:GLY:O	2.35	0.40
16:P:17:ASP:HB3	16:P:80:ASN:HD21	1.87	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
33:i:2:LYS:HA	33:i:2:LYS:HD3	1.89	0.40
38:n:83:LEU:HD23	38:n:83:LEU:HA	1.92	0.40
51:1:224:U:O4	51:1:420:C:H5'	2.21	0.40
51:1:359:G:H2'	51:1:360:U:C5'	2.51	0.40
51:1:914:G:H5'	51:1:915:C:OP2	2.22	0.40
51:1:924:G:O2'	51:1:925:A:H5'	2.21	0.40
51:1:1042:G:H2'	51:1:1043:C:H6	1.85	0.40
51:1:1346:G:O2'	51:1:1347:A:H5'	2.22	0.40
51:1:1430:G:H2'	51:1:1431:A:O4'	2.21	0.40
51:1:1494:A:C6	51:1:1495:A:C6	3.09	0.40
51:1:2585:U:O2	51:1:2585:U:O4'	2.39	0.40
51:1:2667:C:O5'	51:1:2667:C:H6	2.03	0.40
55:8:2:DC:C6	55:8:2:DC:H5'	2.56	0.40
57:A1:205:MET:HE1	57:A1:217:ILE:HG13	2.02	0.40
58:B1:74:LYS:HG3	58:B1:85:CYS:HB3	2.02	0.40
58:B1:1154:ALA:N	58:B1:1214:PRO:O	2.50	0.40
59:B2:22:LEU:HD22	59:B2:603:ILE:HG21	2.02	0.40
9:I:187:ARG:HH22	9:I:192:ALA:HA	1.86	0.40
46:v:70:ILE:HG22	46:v:72:VAL:HG22	2.03	0.40
51:1:10:A:C6	51:1:2800:A:C2	3.09	0.40
51:1:309:A:N3	51:1:329:G:O2'	2.53	0.40
51:1:570:G:O2'	51:1:571:U:H5'	2.22	0.40
51:1:1749:A:C4	51:1:1750:G:C8	3.10	0.40
51:1:1944:U:H3'	51:1:1945:G:H5'	2.03	0.40
51:1:2516:A:C2'	51:1:2517:C:H5'	2.51	0.40
56:9:33:DA:H5"	58:B1:121:PRO:HG3	2.04	0.40
57:A1:44:ARG:HA	57:A1:183:ILE:HD12	2.03	0.40
58:B1:139:LEU:HD23	58:B1:139:LEU:HA	1.89	0.40
58:B1:472:LEU:HD11	59:B2:1294:LYS:HG2	2.02	0.40
58:B1:515:ARG:HH21	58:B1:717:VAL:HG23	1.87	0.40
59:B2:159:SER:HB2	59:B2:442:VAL:HG11	2.04	0.40
59:B2:310:ILE:HG21	59:B2:325:LEU:HB3	2.03	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 20
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 24
7	G	216/241 (90%)	187 (87%)	27 (12%)	2 (1%)	14 51
8	H	204/233 (88%)	194 (95%)	10 (5%)	0	100 100
9	I	203/206 (98%)	172 (85%)	30 (15%)	1 (0%)	25 64
10	J	155/167 (93%)	138 (89%)	17 (11%)	0	100 100
11	K	98/135 (73%)	85 (87%)	13 (13%)	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 48
16	P	114/129 (88%)	100 (88%)	13 (11%)	1 (1%)	14 51
17	Q	121/124 (98%)	94 (78%)	27 (22%)	0	100 100
18	R	112/118 (95%)	99 (88%)	12 (11%)	1 (1%)	14 51
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 42
23	W	63/75 (84%)	56 (89%)	5 (8%)	2 (3%)	3 21
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%)	190 (92%)	17 (8%)	0	100 100
29	d	199/201 (99%)	186 (94%)	13 (6%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
30	e	175/179 (98%)	157 (90%)	18 (10%)	0	100 100
31	f	174/177 (98%)	158 (91%)	16 (9%)	0	100 100
32	g	50/149 (34%)	44 (88%)	5 (10%)	1 (2%)	6 32
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
42	r	101/103 (98%)	90 (89%)	10 (10%)	1 (1%)	13 48
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 48
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 42
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 72
57	A2	282/329 (86%)	271 (96%)	11 (4%)	0	100 100
58	B1	1329/1407 (94%)	1203 (90%)	122 (9%)	4 (0%)	37 72
59	B2	1338/1342 (100%)	1203 (90%)	131 (10%)	4 (0%)	37 72
60	W0	80/91 (88%)	77 (96%)	3 (4%)	0	100 100
61	NA	490/495 (99%)	469 (96%)	17 (4%)	4 (1%)	16 54
62	NG	150/181 (83%)	129 (86%)	14 (9%)	7 (5%)	2 17
65	h	2/6 (33%)	1 (50%)	1 (50%)	0	100 100
All	All	9586/10235 (94%)	8659 (90%)	888 (9%)	39 (0%)	32 68

All (39) 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
62	NG	124	PRO
62	NG	130	PRO
6	F	34	LYS
59	B2	43	PRO
59	B2	918	LEU
61	NA	19	PRO
62	NG	163	SER
57	A1	250	ASP
59	B2	888	THR
62	NG	129	GLU
2	B	23	ALA
7	G	19	THR
18	R	5	GLY
23	W	13	THR
32	g	12	LEU
41	q	23	TYR
58	B1	43	THR
58	B1	193	ASP
61	NA	426	GLY
7	G	17	HIS
15	O	58	ASN
22	V	50	ASN
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
16	P	88	PRO
59	B2	1317	PRO
2	B	24	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	59/62 (95%)	58 (98%)	1 (2%)	56 72
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 60
5	E	51/52 (98%)	49 (96%)	2 (4%)	27 49
6	F	34/34 (100%)	30 (88%)	4 (12%)	4 17
7	G	180/199 (90%)	174 (97%)	6 (3%)	33 54
8	H	170/190 (90%)	167 (98%)	3 (2%)	54 71
9	I	172/173 (99%)	168 (98%)	4 (2%)	45 64
10	J	119/126 (94%)	117 (98%)	2 (2%)	56 72
11	K	87/116 (75%)	82 (94%)	5 (6%)	17 39
12	L	124/147 (84%)	124 (100%)	0	100 100
13	M	104/105 (99%)	103 (99%)	1 (1%)	73 81
14	N	105/107 (98%)	98 (93%)	7 (7%)	13 34
15	O	86/90 (96%)	78 (91%)	8 (9%)	7 23
16	P	89/99 (90%)	86 (97%)	3 (3%)	32 53
17	Q	103/104 (99%)	98 (95%)	5 (5%)	21 42
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 49
21	U	65/65 (100%)	64 (98%)	1 (2%)	60 75
22	V	74/78 (95%)	72 (97%)	2 (3%)	40 59
23	W	56/65 (86%)	52 (93%)	4 (7%)	12 32
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 13

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
27	b	216/218 (99%)	212 (98%)	4 (2%)	52 69
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 31
33	i	109/110 (99%)	108 (99%)	1 (1%)	75 83
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 81
37	m	109/109 (100%)	103 (94%)	6 (6%)	18 40
38	n	100/103 (97%)	99 (99%)	1 (1%)	73 81
39	o	86/87 (99%)	86 (100%)	0	100 100
40	p	99/100 (99%)	99 (100%)	0	100 100
41	q	89/90 (99%)	86 (97%)	3 (3%)	32 53
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 43
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 47
57	A1	185/286 (65%)	174 (94%)	11 (6%)	16 38
57	A2	186/286 (65%)	184 (99%)	2 (1%)	70 80
58	B1	1110/1168 (95%)	1018 (92%)	92 (8%)	9 28
59	B2	1150/1157 (99%)	1116 (97%)	34 (3%)	36 56
60	W0	70/75 (93%)	69 (99%)	1 (1%)	62 75
65	h	2/2 (100%)	2 (100%)	0	100 100
All	All	7381/7914 (93%)	7131 (97%)	250 (3%)	34 53

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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
58	B1	44	ILE
58	B1	47	ARG
58	B1	49	PHE
58	B1	50	LYS
58	B1	60	ARG
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	86	GLU
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

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Mol	Chain	Res	Type
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
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	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

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Mol	Chain	Res	Type
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
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	895	LEU
59	B2	898	GLU
59	B2	900	LYS
59	B2	901	LEU
59	B2	902	LEU
59	B2	903	ARG
59	B2	908	GLU
59	B2	909	LYS
59	B2	912	ASP
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	33	ASN
1	A	61	ASN
2	B	4	GLN
3	C	25	ASN
3	C	44	GLN
4	D	16	HIS
7	G	14	HIS
7	G	119	GLN
7	G	121	GLN
8	H	7	ASN
8	H	68	HIS
8	H	99	GLN
8	H	122	GLN
8	H	138	GLN
8	H	139	ASN
9	I	151	GLN
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	37	ASN
13	M	66	GLN
14	N	4	GLN
14	N	30	ASN
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
26	Z	8	ASN

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Mol	Chain	Res	Type
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
29	d	41	GLN
29	d	62	GLN
29	d	90	GLN
29	d	92	HIS
29	d	94	GLN
29	d	165	HIS
30	e	4	HIS
30	e	80	GLN
31	f	47	ASN
31	f	87	GLN
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
35	k	93	GLN
36	l	4	ASN
36	l	99	ASN
36	l	104	GLN
37	m	13	HIS
38	n	13	ASN
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

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Mol	Chain	Res	Type
45	u	52	ASN
46	v	87	GLN
47	w	53	HIS
48	x	16	ASN
48	x	33	HIS
49	y	31	GLN
49	y	38	GLN
50	z	8	GLN
57	A1	66	HIS
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	688	GLN
59	B2	808	ASN
59	B2	1008	GLN
59	B2	1080	ASN
59	B2	1237	HIS
59	B2	1268	GLN
59	B2	1313	HIS
60	W0	7	GLN
60	W0	31	GLN
60	W0	62	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
51	1	2902/2904 (99%)	397 (13%)	16 (0%)
52	2	119/120 (99%)	17 (14%)	1 (0%)
53	3	1538/1542 (99%)	254 (16%)	5 (0%)
54	4	33/56 (58%)	16 (48%)	2 (6%)
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	4819/4852 (99%)	764 (15%)	33 (0%)

All (764) 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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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	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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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	1029	U
53	3	1031	C
53	3	1032	G
53	3	1033	G
53	3	1034	G
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

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Mol	Chain	Res	Type
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
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	1497	G
53	3	1499	A
53	3	1503	A

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Mol	Chain	Res	Type
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
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	45	U
54	4	46	U
54	4	47	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

Continued on next page...

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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	5OH	h	6	65	8,12,13	0.76	0	3,16,18	1.51	1 (33%)
65	KBE	h	1	65	8,8,9	0.60	0	7,8,10	1.20	1 (14%)
65	UAL	h	5	65	7,8,9	2.32	3 (42%)	5,9,11	2.90	2 (40%)

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	5OH	h	6	65	-	0/2/18/20	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
65	KBE	h	1	65	-	0/7/7/8	-
65	UAL	h	5	65	-	0/3/7/9	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
65	h	5	UAL	C1-N1	-4.90	1.32	1.40
65	h	5	UAL	C-CA	-2.91	1.40	1.45
65	h	5	UAL	CA-N	2.04	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	-5.27	115.66	125.60
65	h	5	UAL	O-C-CA	-3.22	121.30	125.39
65	h	6	5OH	CR-CB-CA	-2.36	110.06	112.61
65	h	1	KBE	CB-CA-C	-2.06	109.22	112.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 9 short contacts:

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

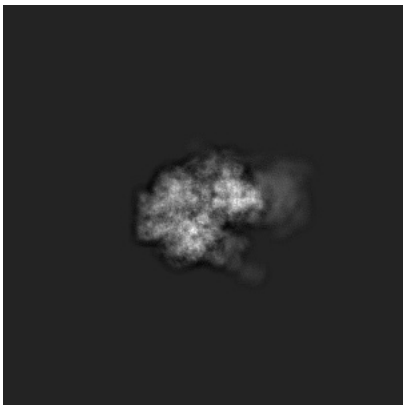
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-39172. These allow visual inspection of the internal detail of the map and identification of artifacts.

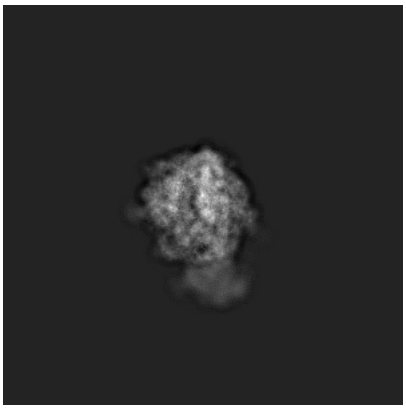
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

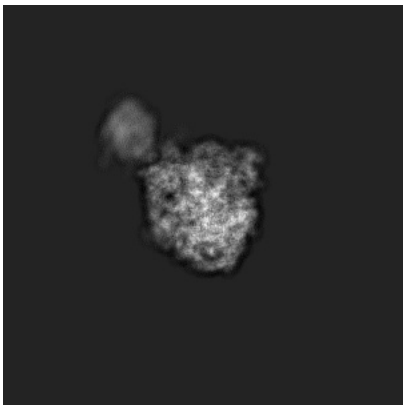
6.1.1 Primary map



X

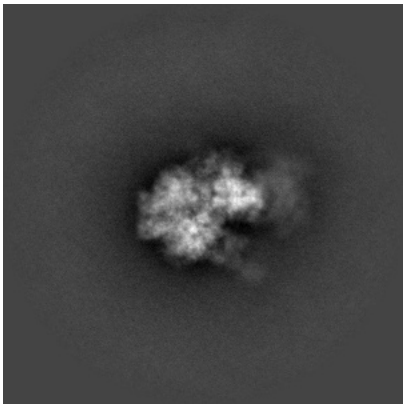


Y

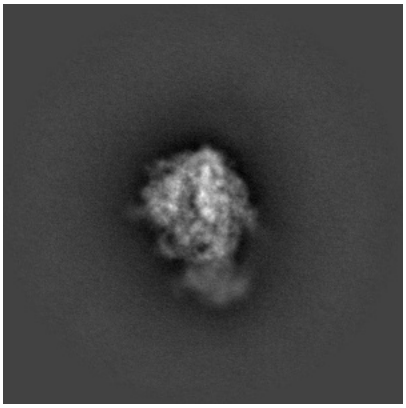


Z

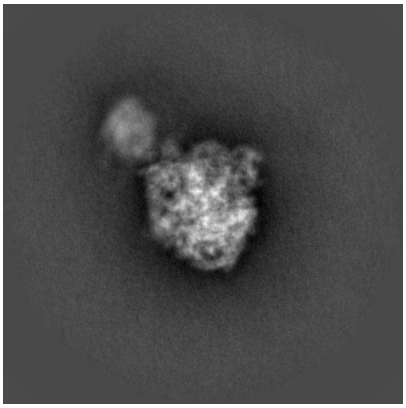
6.1.2 Raw map



X



Y

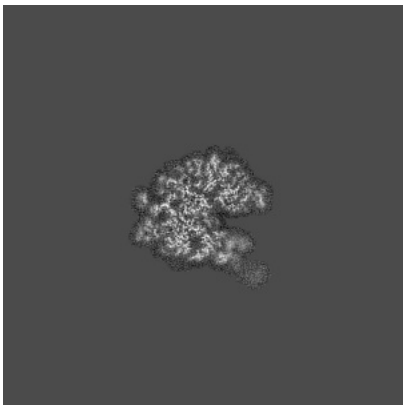


Z

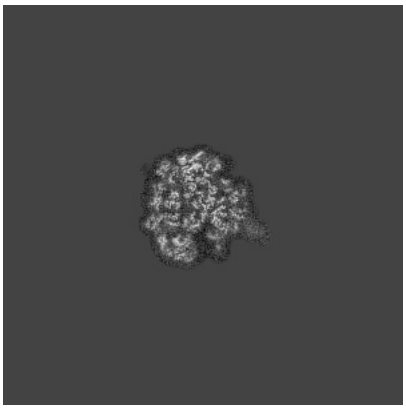
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

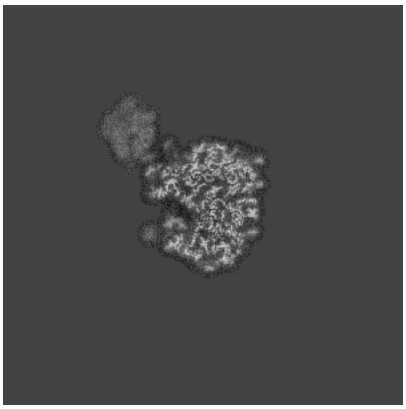
6.2.1 Primary map



X Index: 240

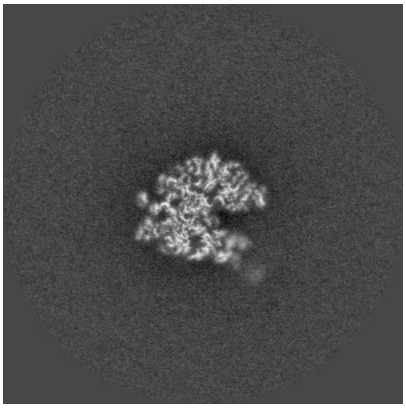


Y Index: 240

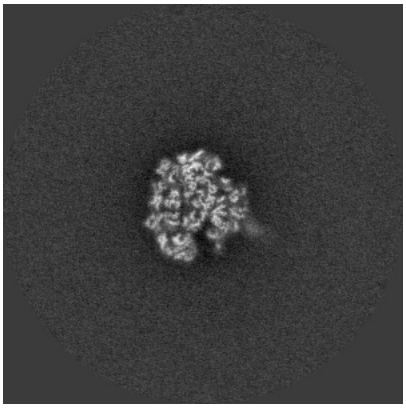


Z Index: 240

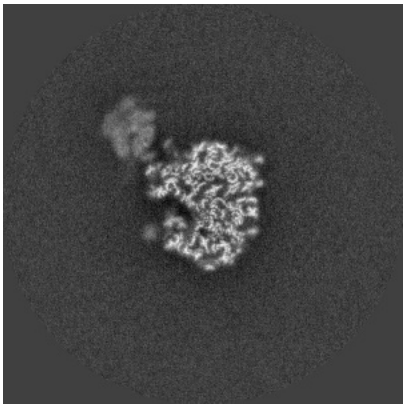
6.2.2 Raw map



X Index: 240



Y Index: 240

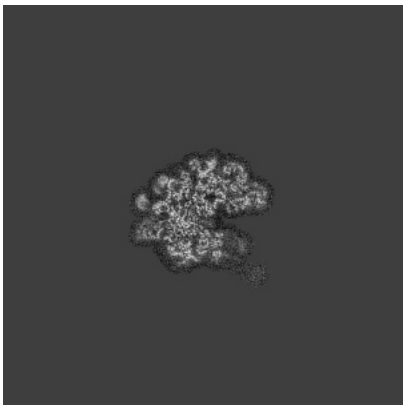


Z Index: 240

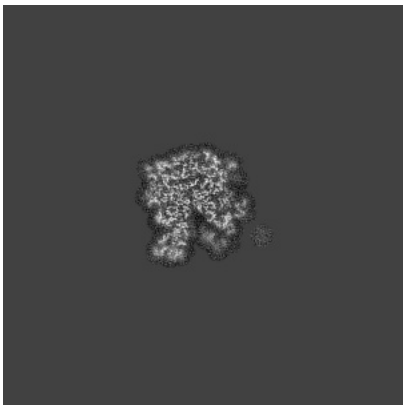
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

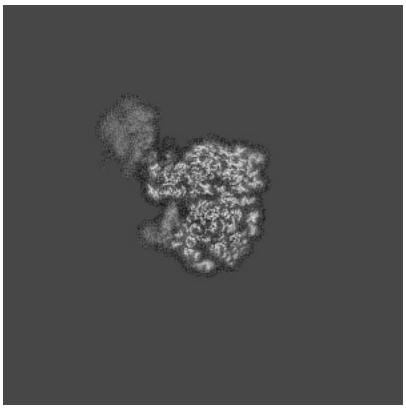
6.3.1 Primary map



X Index: 244

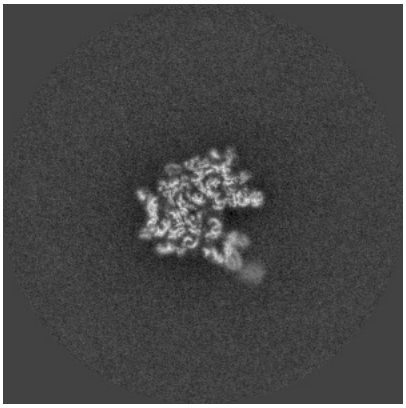


Y Index: 224

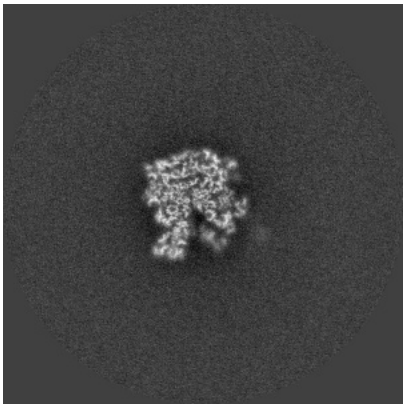


Z Index: 245

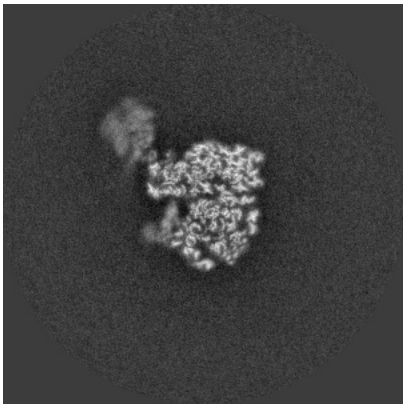
6.3.2 Raw map



X Index: 233



Y Index: 224

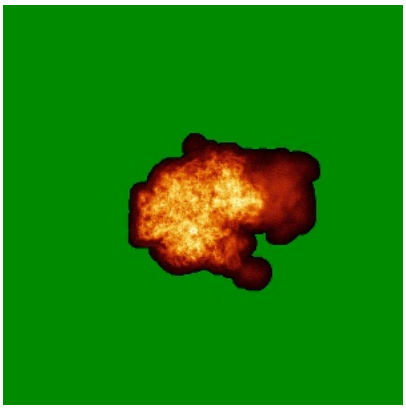


Z Index: 245

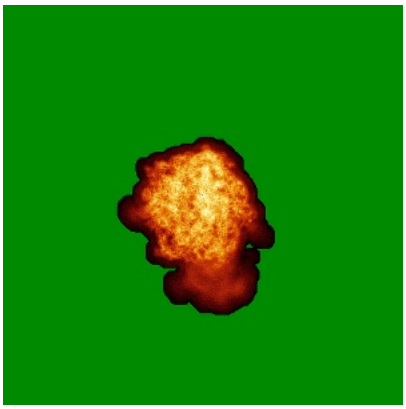
The images above show the largest variance slices of the map in three orthogonal directions.

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

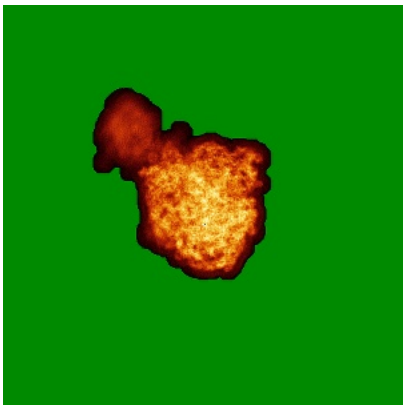
6.4.1 Primary map



X

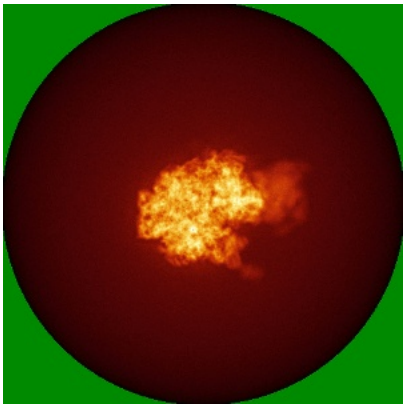


Y

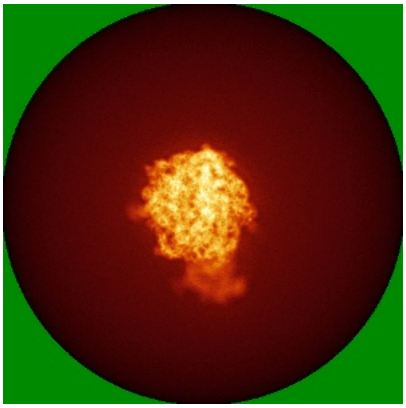


Z

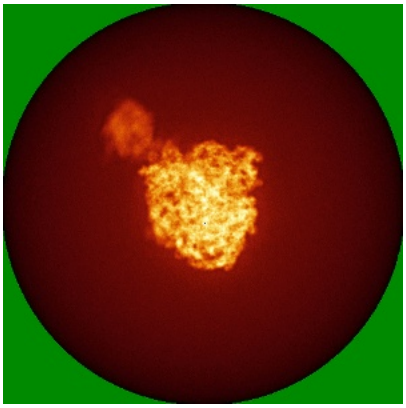
6.4.2 Raw map



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.

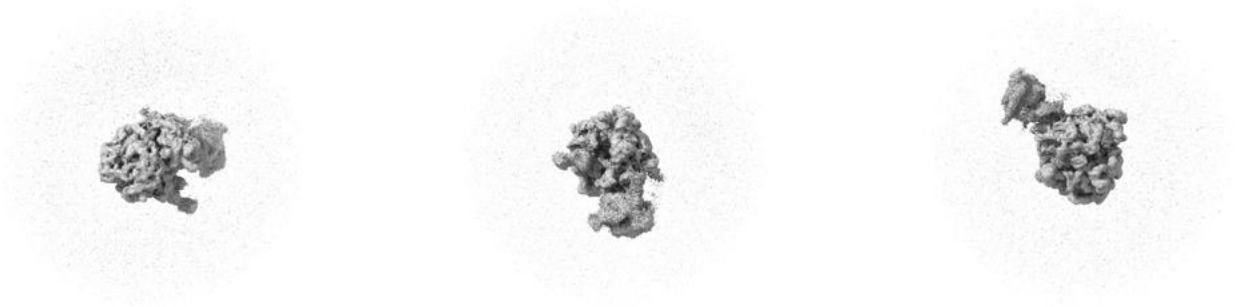
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.012. 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.

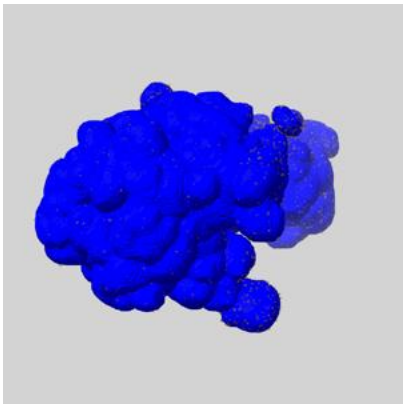
6.6 Mask visualisation (i)

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

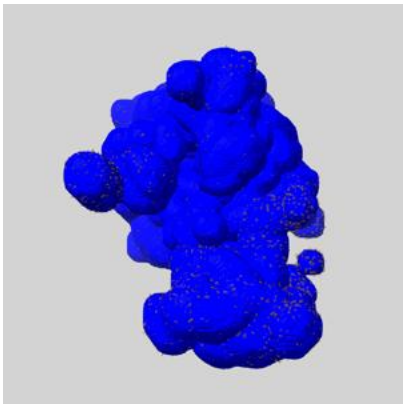
A mask typically either:

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

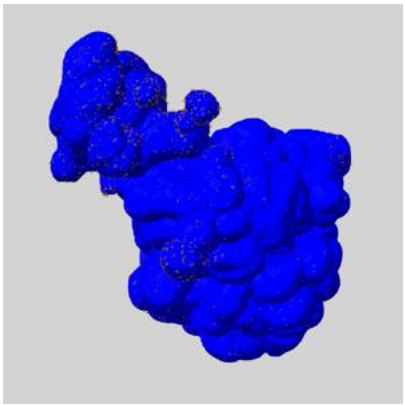
6.6.1 emd_39172_msk_1.map (i)



X



Y

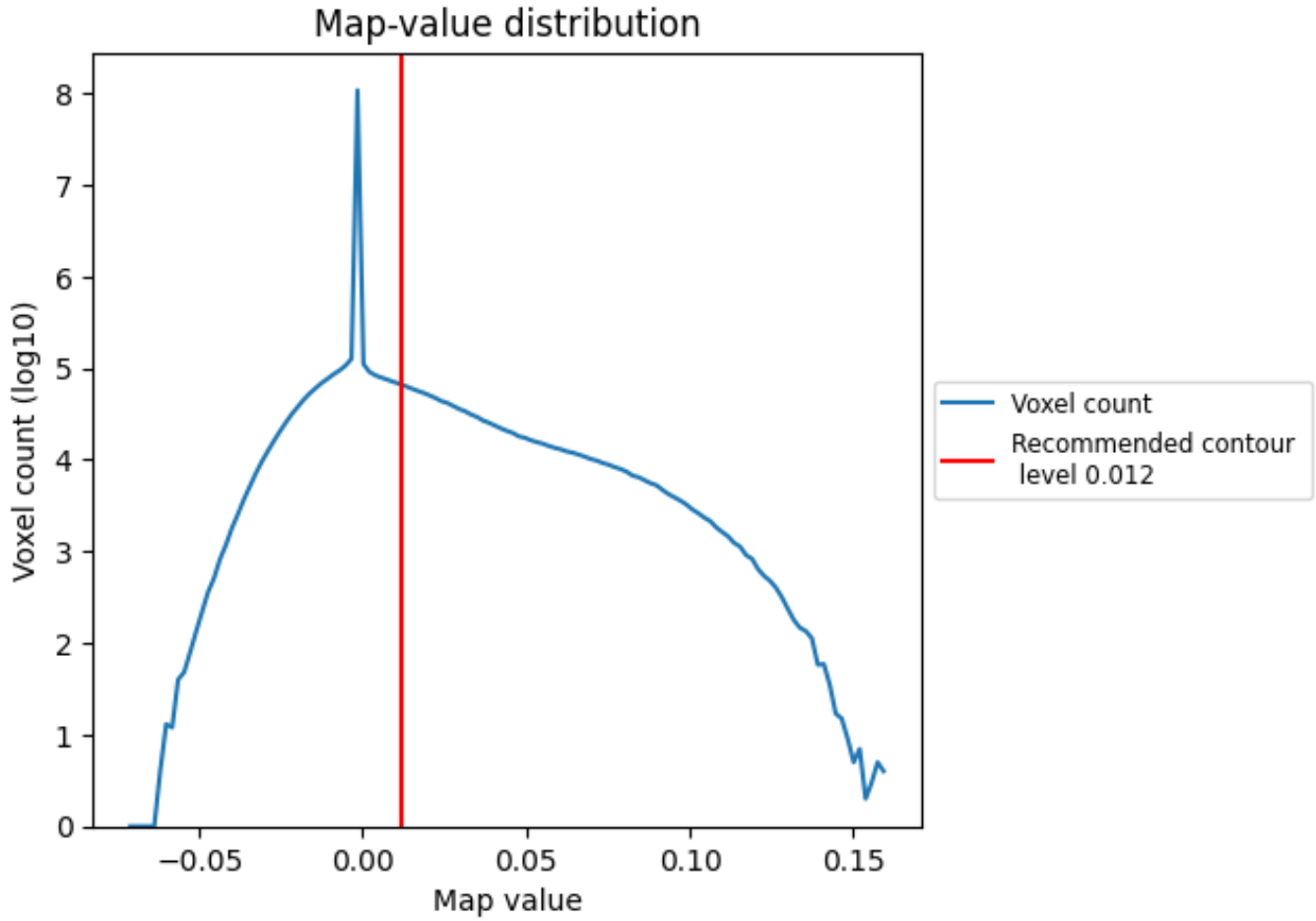


Z

7 Map analysis

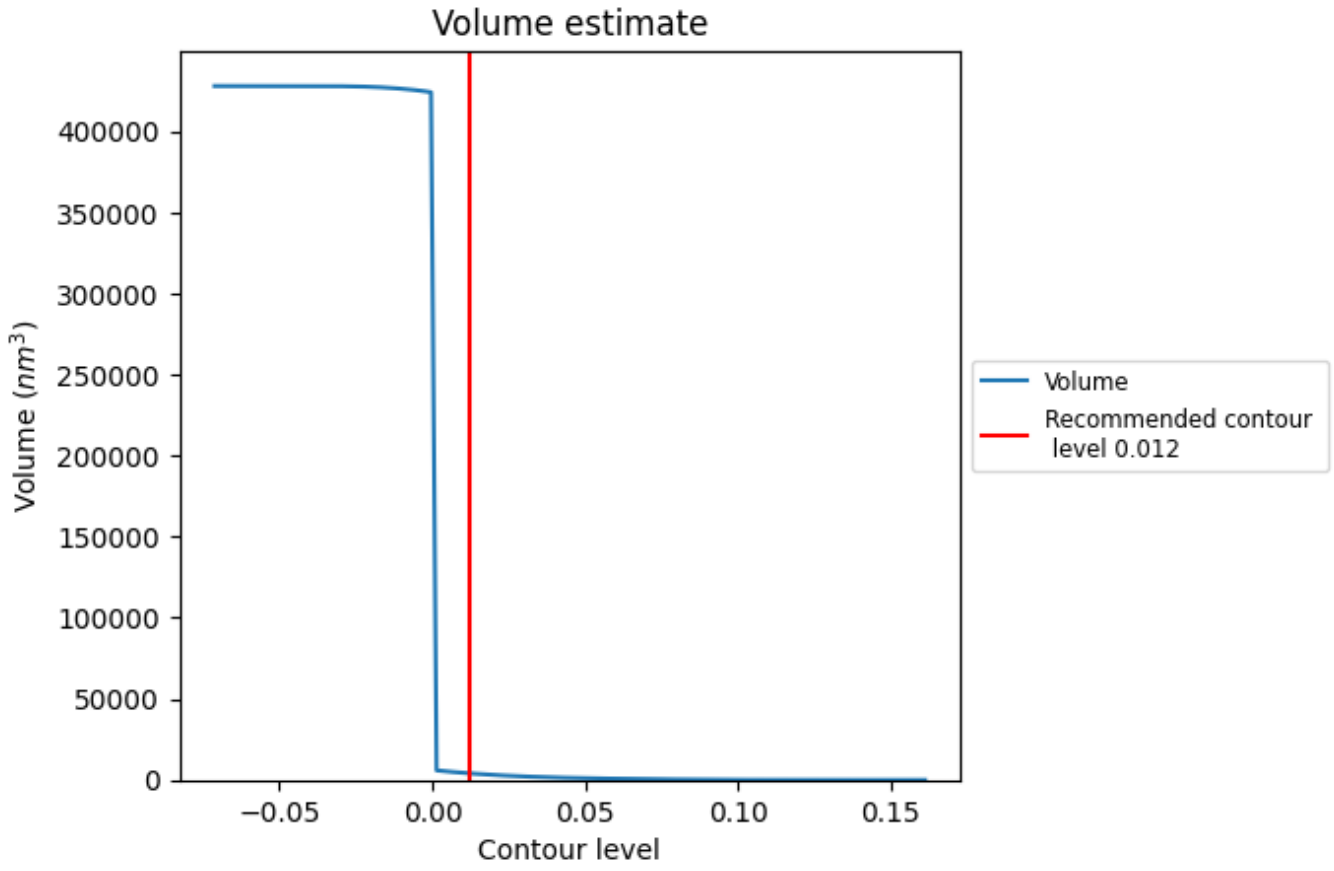
This section contains the results of statistical analysis of the map.

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.

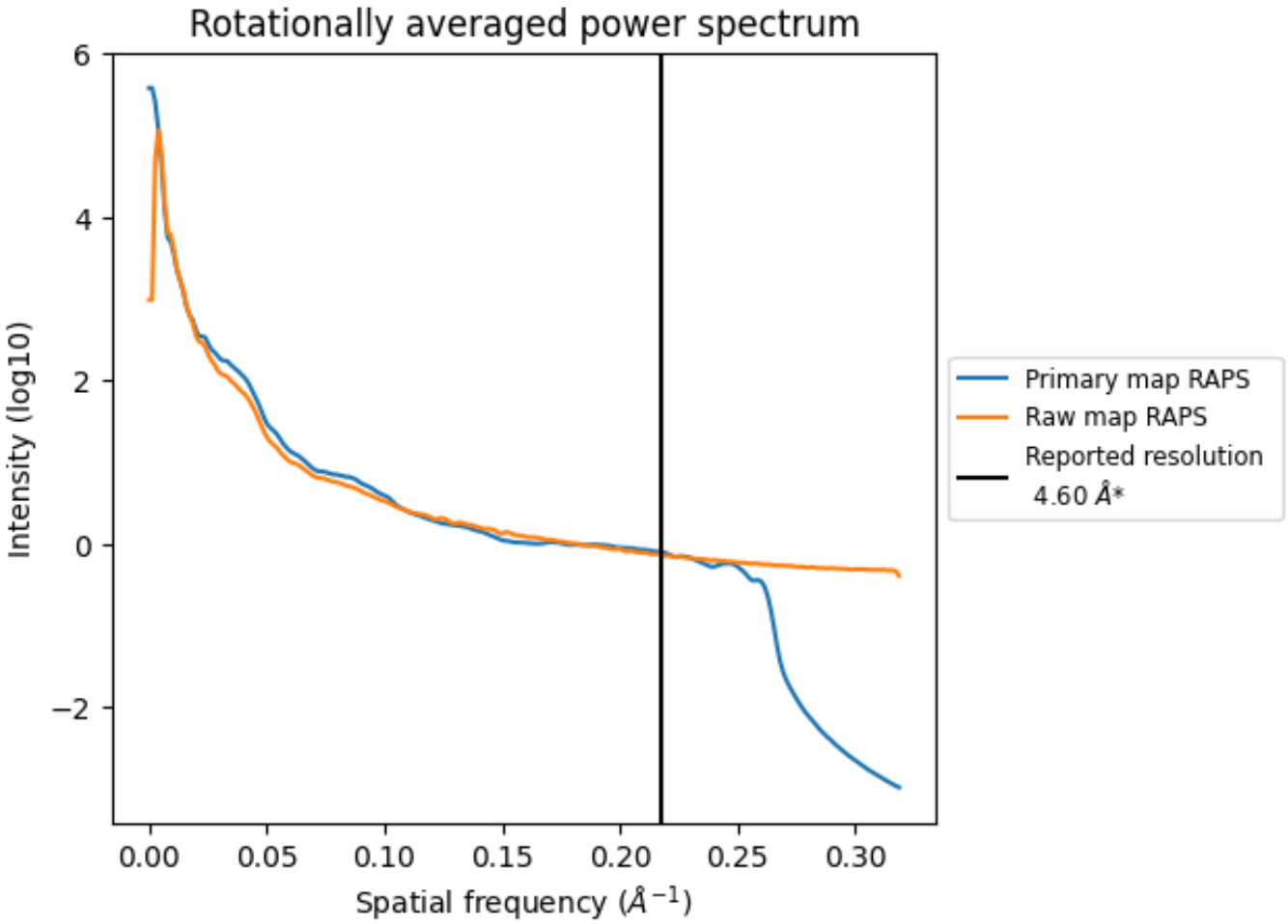
7.2 Volume estimate



The volume at the recommended contour level is 4127 nm^3; this corresponds to an approximate mass of 3728 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)

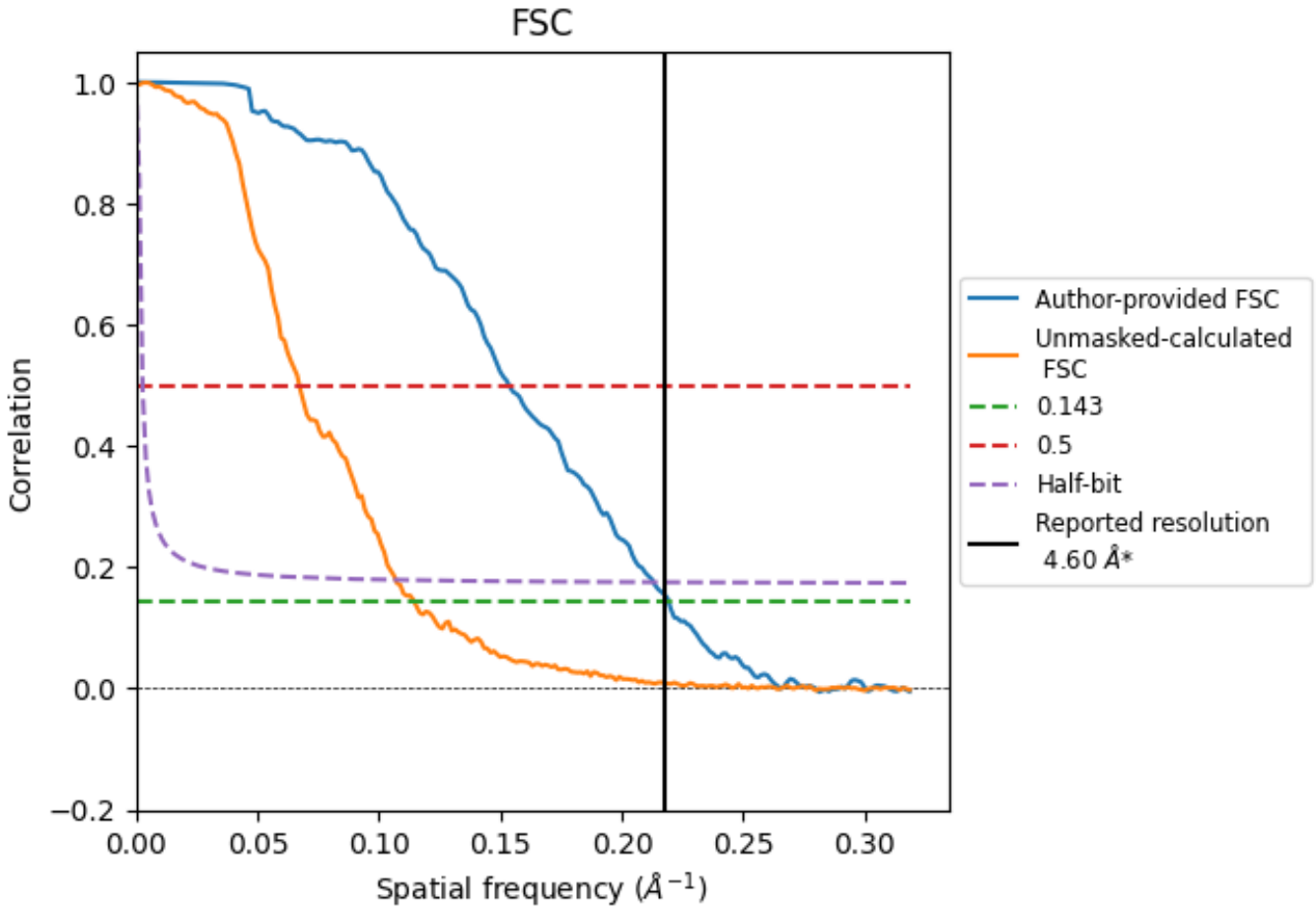


*Reported resolution corresponds to spatial frequency of 0.217 Å^{-1}

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 0.217 Å^{-1}

8.2 Resolution estimates (i)

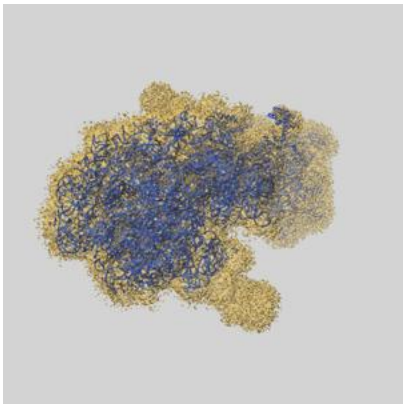
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.60	-	-
Author-provided FSC curve	4.56	6.51	4.69
Unmasked-calculated*	8.73	14.88	9.35

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 8.73 differs from the reported value 4.6 by more than 10 %

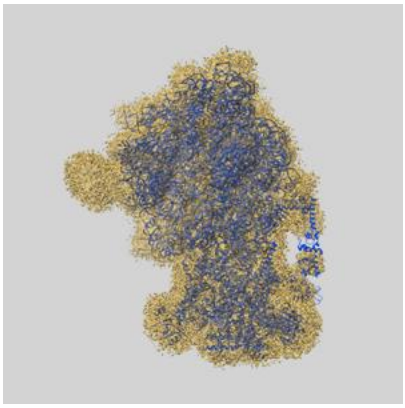
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-39172 and PDB model 8YDI. Per-residue inclusion information can be found in section 3 on page 16.

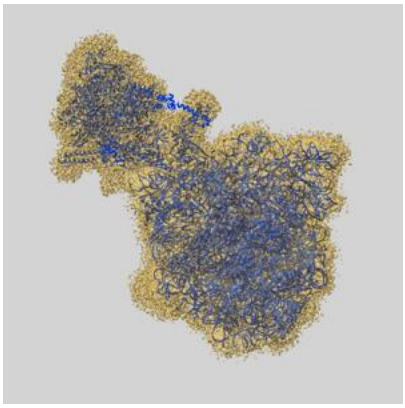
9.1 Map-model overlay



X



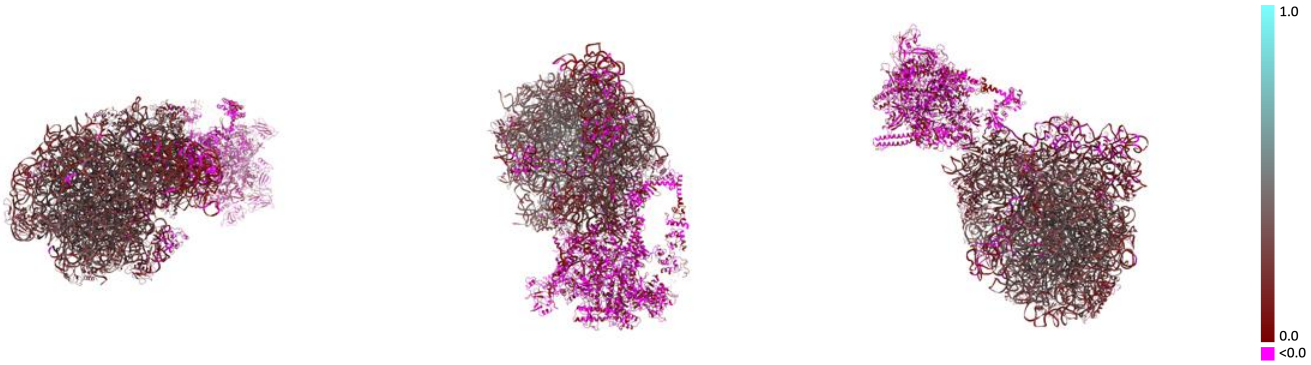
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.012 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.

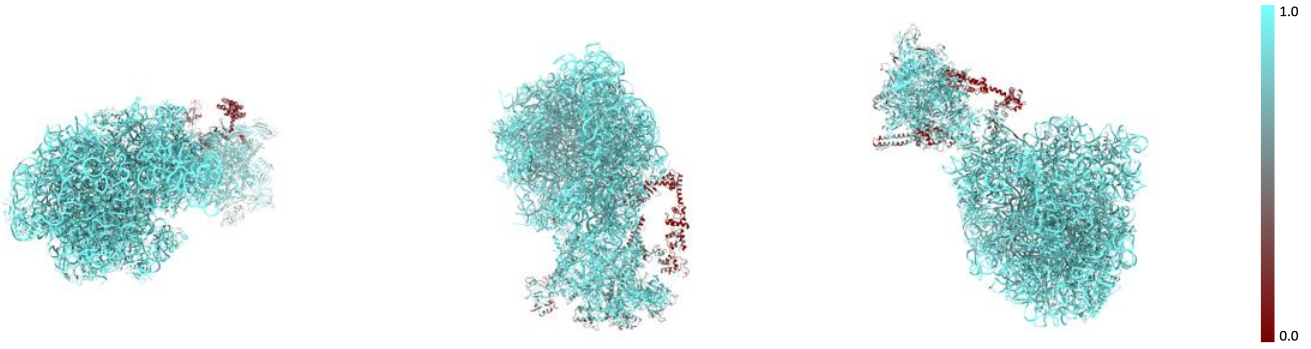
9.2 Q-score mapped to coordinate model (i)



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.

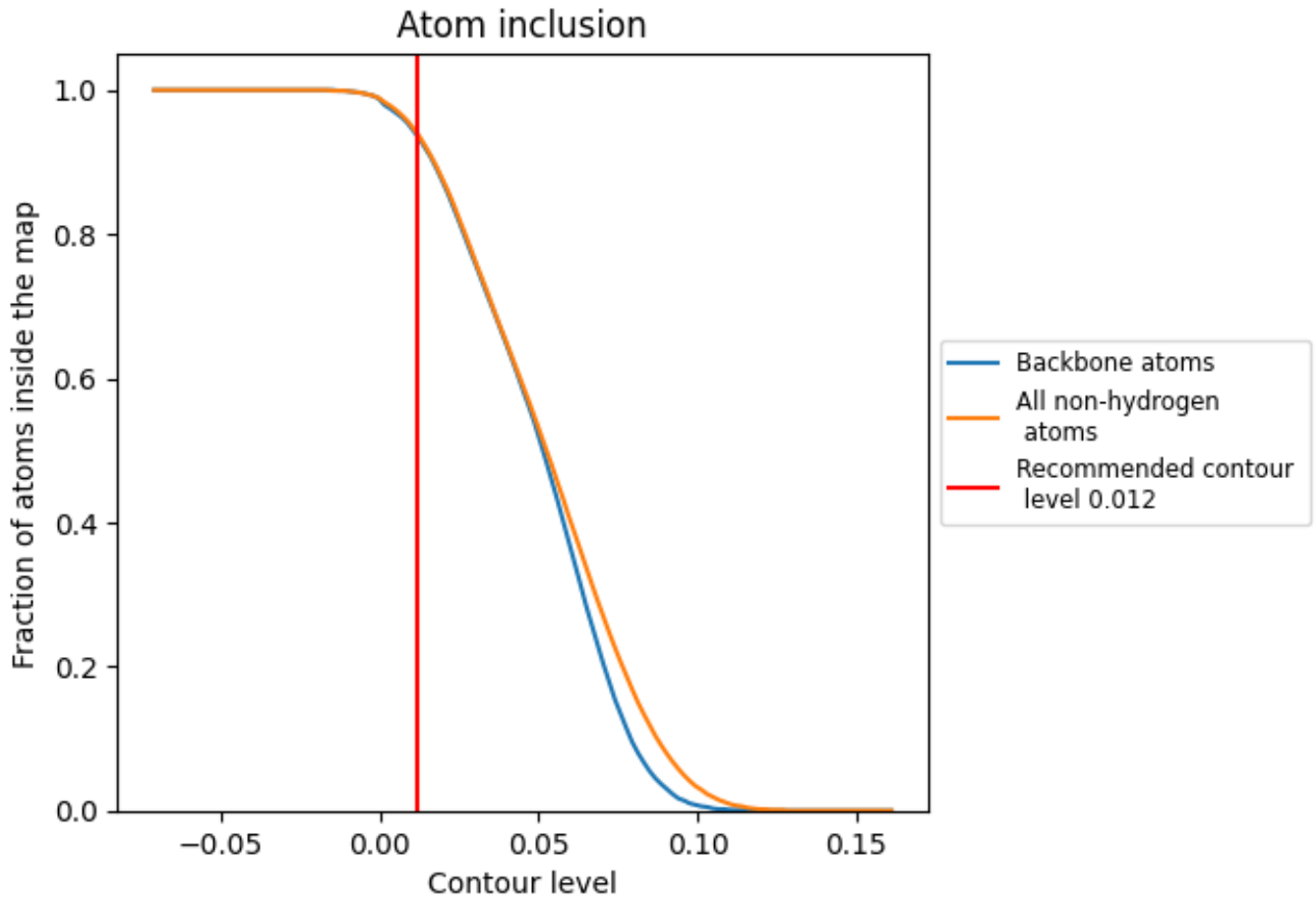
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.012).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 94% 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 (0.012) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9380	0.2250
1	0.9920	0.3080
2	0.9960	0.2630
3	0.9860	0.2470
4	0.8160	0.0330
5	0.9190	0.0940
6	0.9900	0.3120
7	0.7340	0.0600
8	0.9500	0.0360
9	0.9260	0.0410
A	0.8670	0.1360
A1	0.6580	0.0200
A2	0.6840	0.0220
B	0.9510	0.3070
B1	0.8600	0.0200
B2	0.8110	0.0200
C	0.9600	0.2970
D	0.9410	0.3440
E	0.9610	0.3560
F	0.9450	0.2510
G	0.9340	0.2080
H	0.9230	0.2590
I	0.8250	0.0490
J	0.9410	0.2720
K	0.9380	0.2180
L	0.9240	0.2040
M	0.9490	0.2780
N	0.9570	0.1880
NA	0.4720	-0.0140
NG	0.8710	0.0480
O	0.9130	0.1880
P	0.9520	0.2350
Q	0.8990	0.1910
R	0.9520	0.2130
S	0.9510	0.2190

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Chain	Atom inclusion	Q-score
T	0.9580	0.2540
U	0.8250	0.0870
V	0.9070	0.1540
W	0.9460	0.2290
W0	0.6370	0.0030
X	0.9570	0.1940
Y	0.9340	0.1700
Z	0.8200	0.1370
b	0.9550	0.3540
c	0.9470	0.2800
d	0.9560	0.2780
e	0.9530	0.2490
f	0.9510	0.1770
g	0.9590	0.2220
h	0.9380	0.2650
i	0.8550	0.0460
j	0.9590	0.2960
k	0.8950	0.2780
l	0.9640	0.3160
m	0.9260	0.3060
n	0.9570	0.2820
o	0.9730	0.2220
p	0.9210	0.2360
q	0.9580	0.3140
r	0.9640	0.3140
s	0.9380	0.3090
t	0.9330	0.1930
u	0.9640	0.2250
v	0.9590	0.2280
w	0.9520	0.3030
x	0.9580	0.3360
y	0.9560	0.1740
z	0.9610	0.3010