Full wwPDB EM Validation Report

Sep 23, 2025 – 11:48 pm BST

PDB ID	:	6GXO / pdb_00006gxo
EMDB ID	:	EMD-0082
Title	:	Cryo-EM structure of a rotated E. coli 70S ribosome in complex with RF3-GDPCP, RF1(GAQ) and P/E-tRNA (State IV)
Authors	:	Graf, M.; Huter, P.; Maracci, C.; Peterek, M.; Rodnina, M.V.; Wilson, D.N.
Deposited on	:	2018-06-27
Resolution	:	3.90 Å(reported)

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

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

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

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

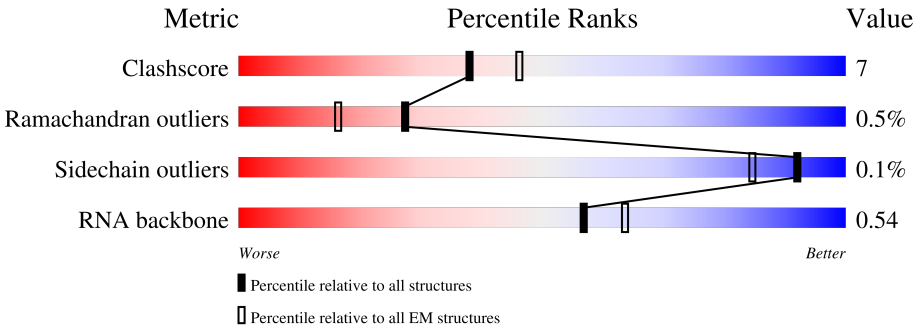
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

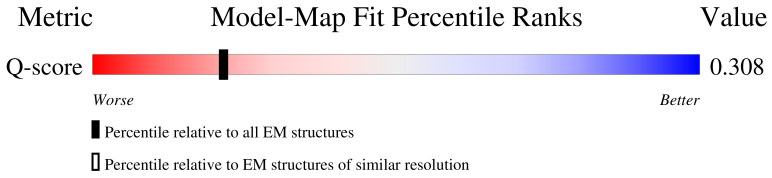
1 Overall quality at a glance

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

The reported resolution of this entry is 3.90 Å.

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





Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	8855 (3.40 - 4.40)

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	2903	6% 64% 31% ·
2	B	120	5% 65% 33% ·
3	C	271	36% 84% 16%

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Mol	Chain	Length	Quality of chain
4	D	209	36% 86% 14%
5	E	201	43% 87% 13%
6	F	177	65% 84% 16%
7	G	176	40% 92% 7%
8	H	149	82% 83% 17%
9	I	141	100% 87% 13%
10	J	142	37% 88% 12%
11	K	122	46% 77% 23%
12	L	143	35% 83% 17%
13	M	136	46% 84% 15%
14	N	120	28% 83% 17%
15	O	116	29% 89% 11%
16	P	114	46% 85% 15%
17	Q	117	32% 87% 13%
18	R	103	39% 83% 17%
19	S	110	40% 89% 11%
20	T	93	39% 77% 23%
21	U	102	33% 84% 16%
22	V	94	23% 88% 12%
23	W	75	35% 95% 5%
24	X	77	47% 87% 13%
25	Y	63	19% 84% 16%
26	Z	58	38% 84% 16%
27	0	56	45% 82% 18%
28	1	50	38% 90% 10%

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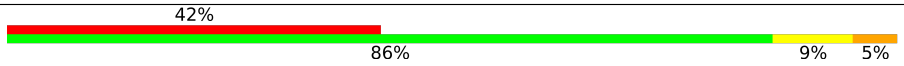
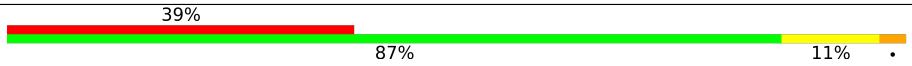
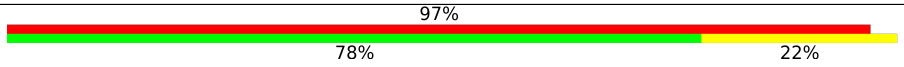
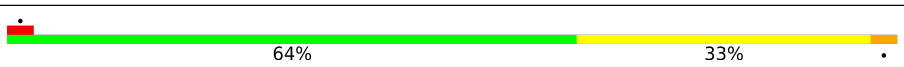
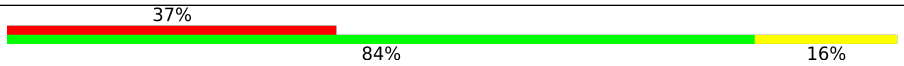
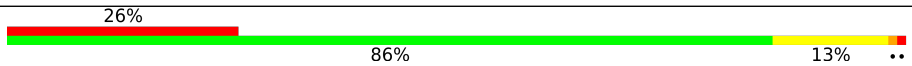
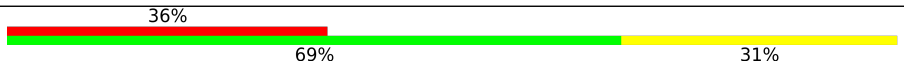
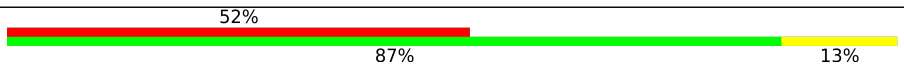
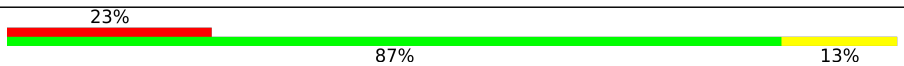
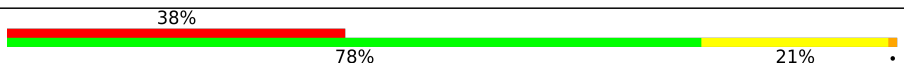
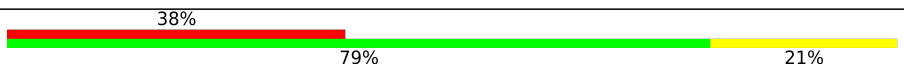
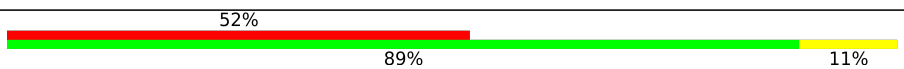
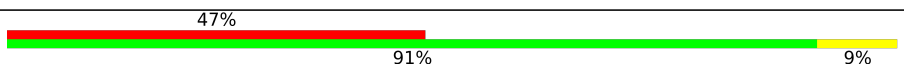
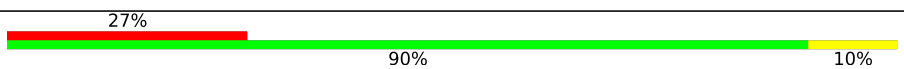
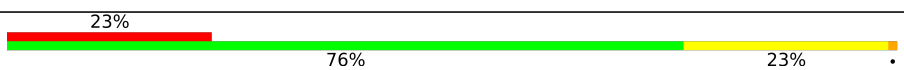
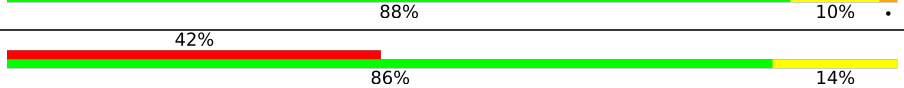
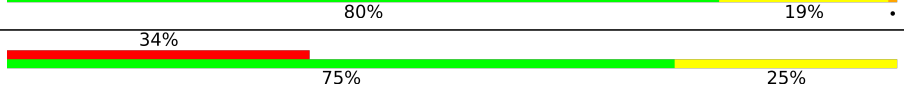
Mol	Chain	Length	Quality of chain
29	2	46	
30	3	64	
31	4	38	
32	5	131	
33	7	7	
34	a	1539	
35	b	218	
36	c	206	
37	d	205	
38	e	157	
39	f	100	
40	g	151	
41	h	129	
42	i	127	
43	j	98	
44	k	116	
45	l	123	
46	m	114	
47	n	101	
48	o	88	
49	p	82	
50	q	80	
51	r	65	
52	s	79	
53	t	85	

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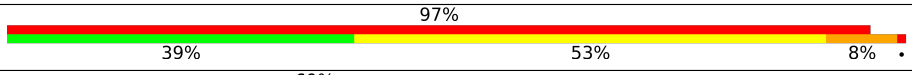
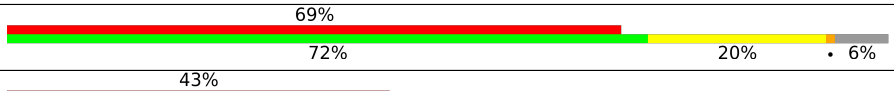
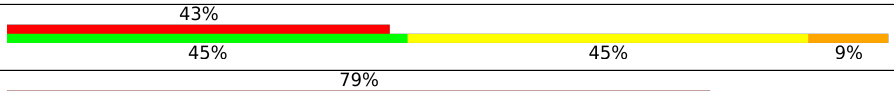
Mol	Chain	Length	Quality of chain
54	u	65	
55	v	248	
56	w	529	
57	x	77	
58	z	14	

2 Entry composition (i)

There are 59 unique types of molecules in this entry. The entry contains 151479 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2900	62262	27774	11460	20128	2900	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	747	C	U	conflict	GB 1036415628
A	1847	G	A	conflict	GB 1036415628

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	120	2572	1145	471	836	120	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	120	A	-	expression tag	GB 1373146531

- Molecule 3 is a protein called 50S ribosomal protein L2.

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

- Molecule 4 is a protein called 50S ribosomal protein L3.

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

- Molecule 5 is a protein called 50S ribosomal protein L4.

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

- Molecule 6 is a protein called 50S ribosomal protein L5.

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

- Molecule 7 is a protein called 50S ribosomal protein L6.

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

- Molecule 8 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	149	Total	C	N	O	S	0	0
			1111	699	197	214	1		

- Molecule 9 is a protein called 50S ribosomal protein L11.

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

- Molecule 10 is a protein called 50S ribosomal protein L13.

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

- Molecule 11 is a protein called 50S ribosomal protein L14.

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

- Molecule 12 is a protein called 50S ribosomal protein L15.

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

- Molecule 13 is a protein called 50S ribosomal protein L16.

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

- Molecule 14 is a protein called 50S ribosomal protein L17.

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

- Molecule 15 is a protein called 50S ribosomal protein L18.

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

- Molecule 16 is a protein called 50S ribosomal protein L19.

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

- Molecule 17 is a protein called 50S ribosomal protein L20.

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

- Molecule 18 is a protein called 50S ribosomal protein L21.

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

- Molecule 19 is a protein called 50S ribosomal protein L22.

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

- Molecule 20 is a protein called 50S ribosomal protein L23.

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

- Molecule 21 is a protein called 50S ribosomal protein L24.

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

- Molecule 22 is a protein called 50S ribosomal protein L25.

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

- Molecule 23 is a protein called 50S ribosomal protein L27.

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

- Molecule 24 is a protein called 50S ribosomal protein L28.

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

- Molecule 25 is a protein called 50S ribosomal protein L29.

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

- Molecule 26 is a protein called 50S ribosomal protein L30.

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

- Molecule 27 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	0	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 28 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	1	50	Total	C	N	O	0	0
			409	263	75	71		

- Molecule 29 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	2	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 30 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	3	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 31 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	4	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 32 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	5	131	Total	C	N	O	S	0	0
			988	625	175	183	5		

- Molecule 33 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	7	7	Total	C	N	O	P	0	0
			151	68	29	47	7		

- Molecule 34 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	a	1539	Total	C	N	O	P	0	0
			33016	14725	6052	10700	1539		

- Molecule 35 is a protein called 30S ribosomal protein S2.

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

- Molecule 36 is a protein called 30S ribosomal protein S3.

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

- Molecule 37 is a protein called 30S ribosomal protein S4.

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

- Molecule 38 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	e	157	Total	C	N	O	S	0	0
			1141	709	218	208	6		

- Molecule 39 is a protein called 30S ribosomal protein S6.

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

- Molecule 40 is a protein called 30S ribosomal protein S7.

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

- Molecule 41 is a protein called 30S ribosomal protein S8.

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

- Molecule 42 is a protein called 30S ribosomal protein S9.

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

- Molecule 43 is a protein called 30S ribosomal protein S10.

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

- Molecule 44 is a protein called 30S ribosomal protein S11.

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

- Molecule 45 is a protein called 30S ribosomal protein S12.

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

- Molecule 46 is a protein called 30S ribosomal protein S13.

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

- Molecule 47 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	n	101	Total	C	N	O	S	0	0
			799	498	165	133	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n	35	ALA	-	insertion	UNP P0AG59

- Molecule 48 is a protein called 30S ribosomal protein S15.

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

- Molecule 49 is a protein called 30S ribosomal protein S16.

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

- Molecule 50 is a protein called 30S ribosomal protein S17.

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

- Molecule 51 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
51	r	65	Total	C	N	O	0	0
			504	317	96	91		

- Molecule 52 is a protein called 30S ribosomal protein S19.

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

- Molecule 53 is a protein called 30S ribosomal protein S20.

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

- Molecule 54 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	u	65	Total	C	N	O	S	0	0
			495	307	100	87	1		

- Molecule 55 is a protein called Peptide chain release factor RF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	v	248	Total	C	N	O	S	0	0
			1932	1180	368	375	9		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
v	167	CYS	SER	conflict	UNP P0A7I0
v	234	ALA	GLY	conflict	UNP P0A7I0

- Molecule 56 is a protein called Peptide chain release factor RF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	w	498	Total	C	N	O	S	0	0
			3938	2495	679	744	20		

- Molecule 57 is a RNA chain called fMet-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	x	77	Total	C	N	O	P	0	0
			1639	732	297	534	76		

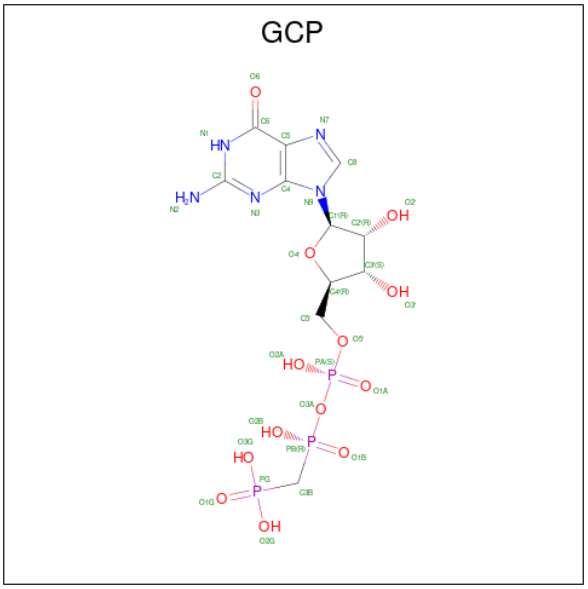
- Molecule 58 is a protein called Apidaecin.

Mol	Chain	Residues	Atoms				AltConf	Trace
58	z	14	Total	C	N	O	0	0
			120	80	25	15		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
z	10	ARG	GLN	conflict	UNP Q8WSY8

- Molecule 59 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$).



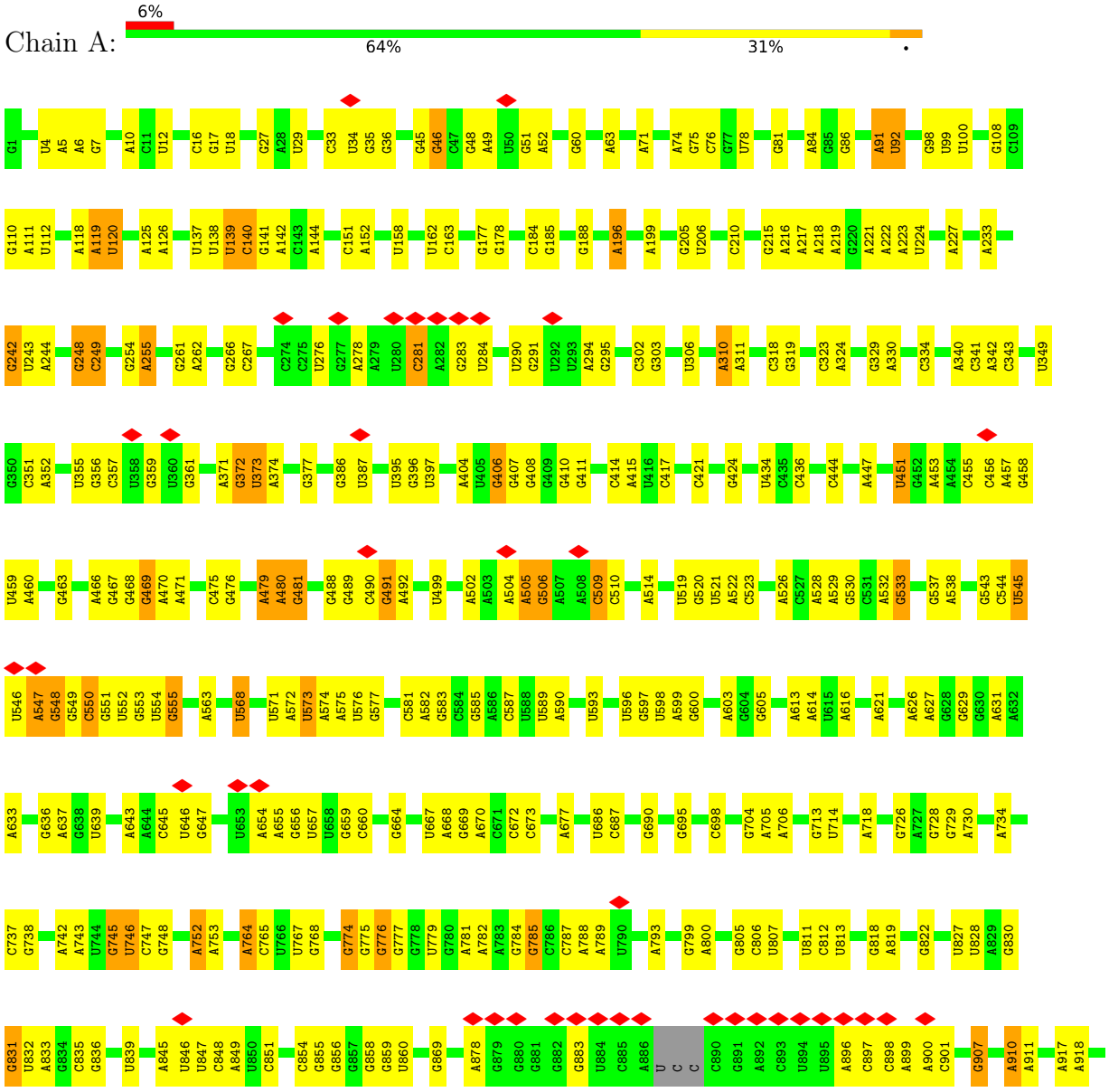
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
59	w	1	32	11	5	13	3	0

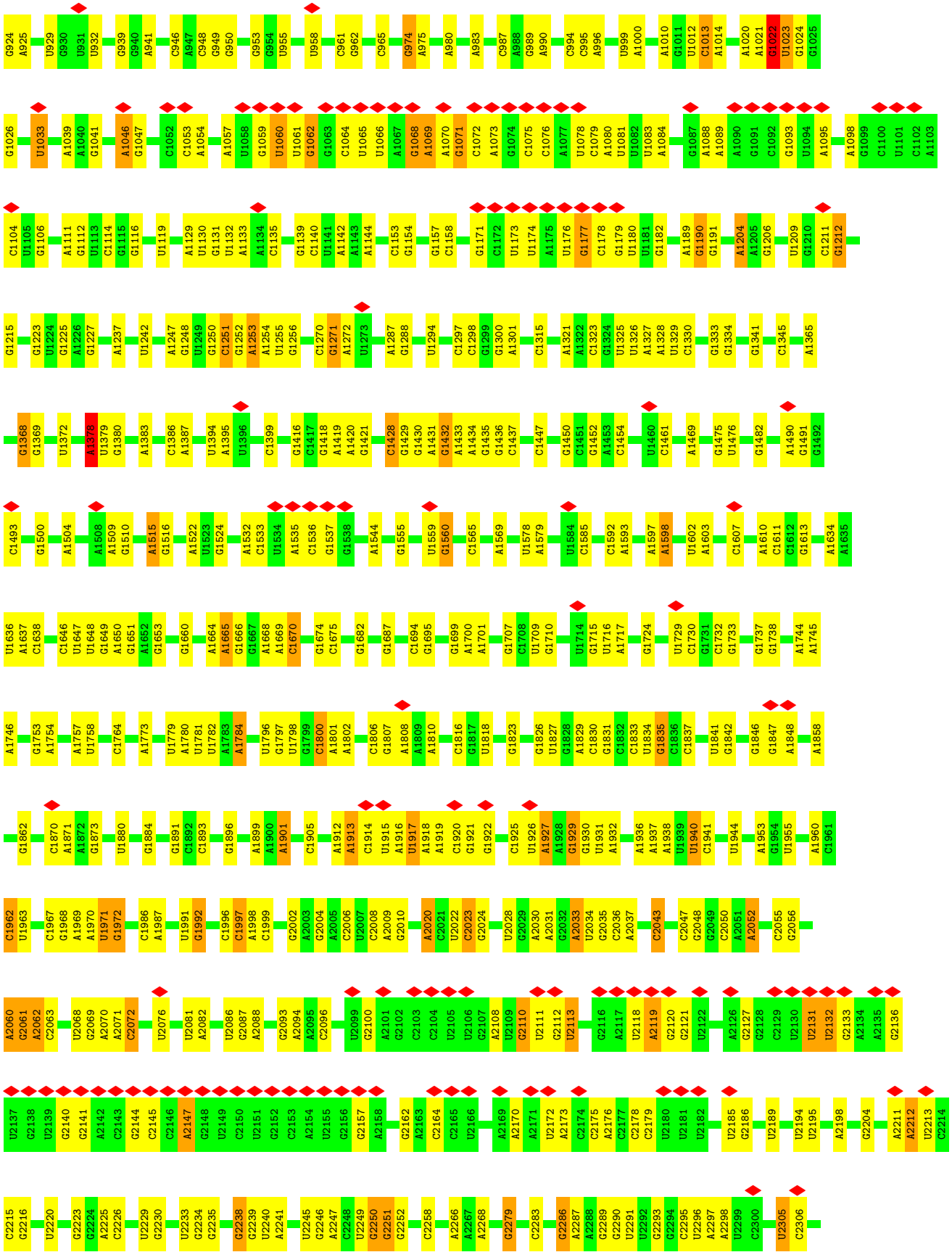
3 Residue-property plots (i)

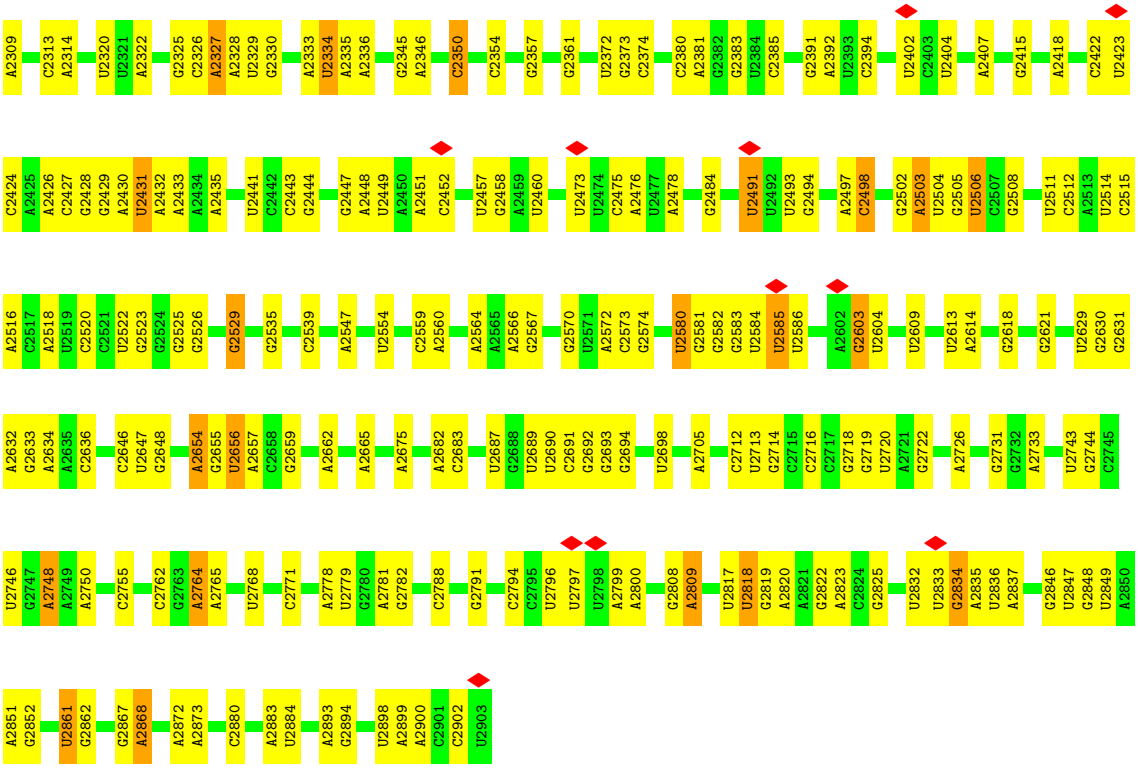
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

Chain A:

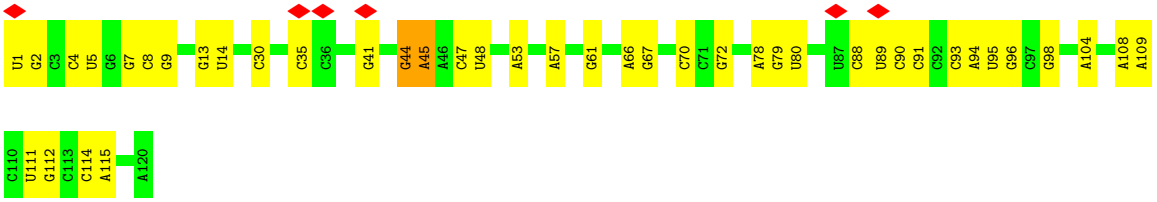






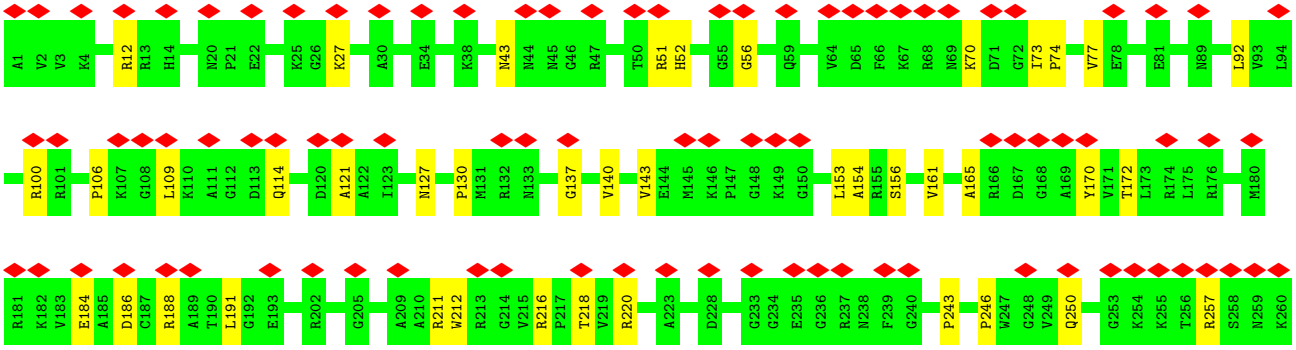
• Molecule 2: 5S ribosomal RNA

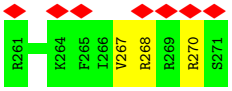
Chain B:



• Molecule 3: 50S ribosomal protein L2

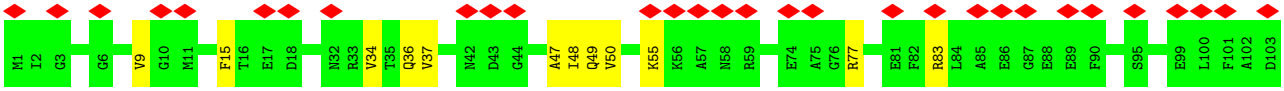
Chain C:

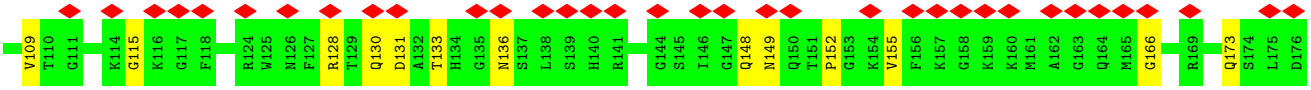




• Molecule 4: 50S ribosomal protein L3

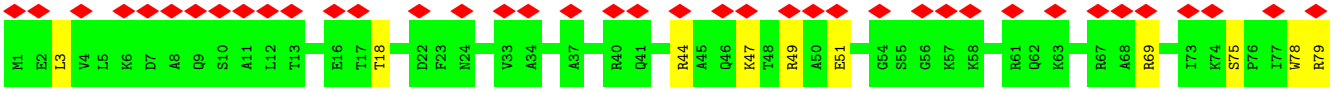
Chain D:

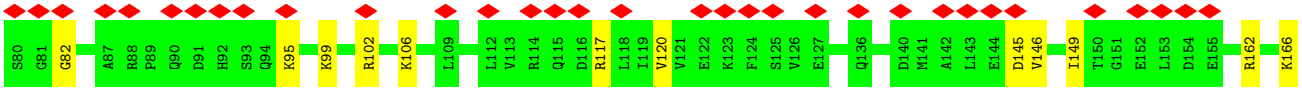


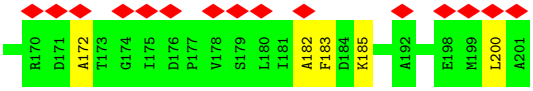


• Molecule 5: 50S ribosomal protein L4

Chain E:

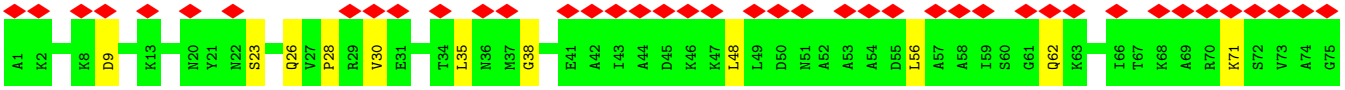


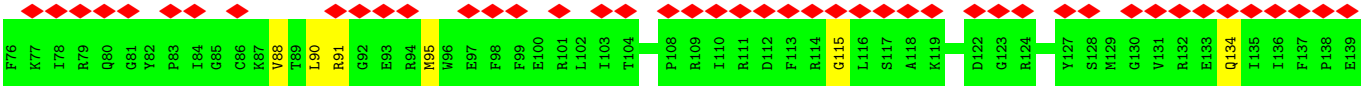


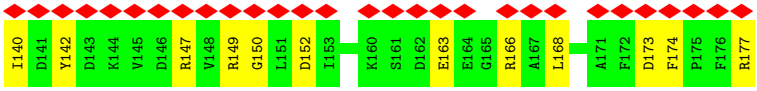


• Molecule 6: 50S ribosomal protein L5

Chain F:

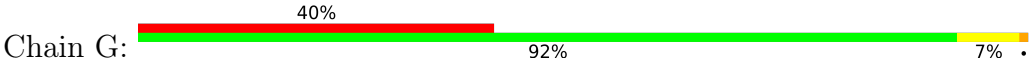


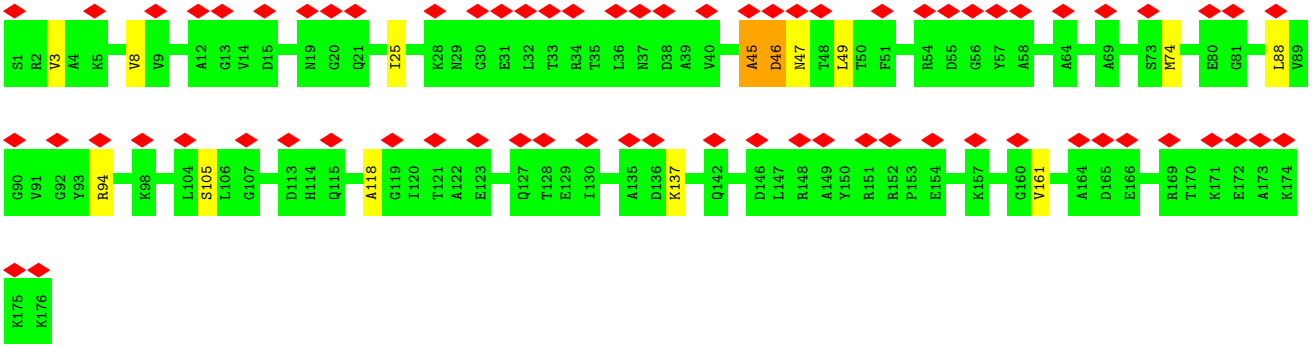




• Molecule 7: 50S ribosomal protein L6

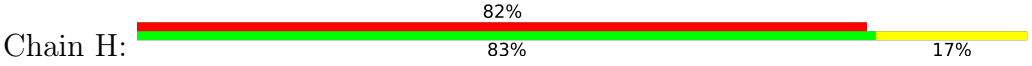
Chain G:

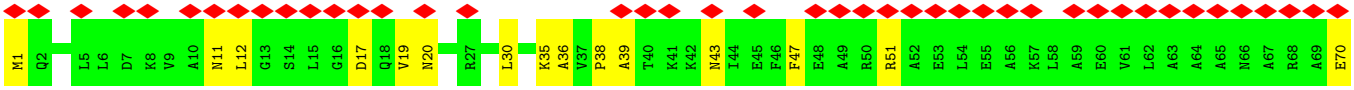


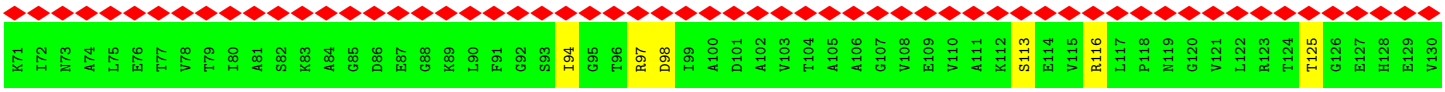


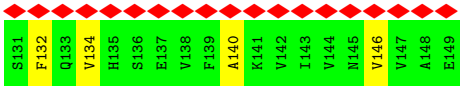
• Molecule 8: 50S ribosomal protein L9

Chain H:



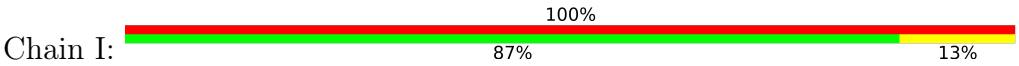


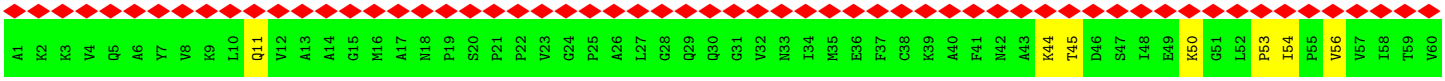


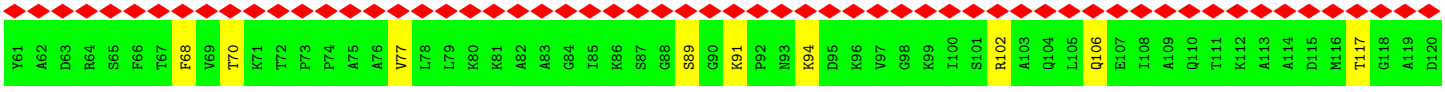


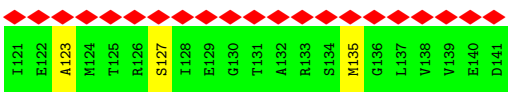
• Molecule 9: 50S ribosomal protein L11

Chain I:



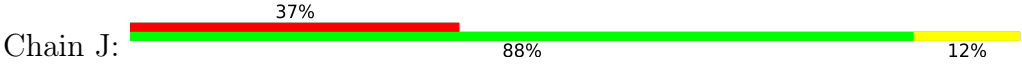


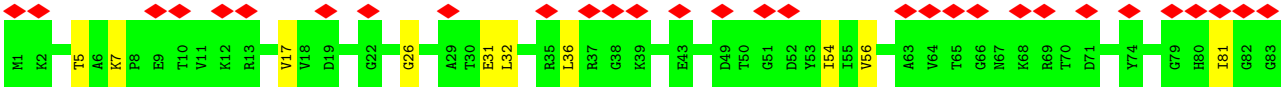


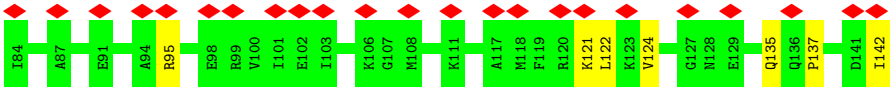


• Molecule 10: 50S ribosomal protein L13

Chain J:

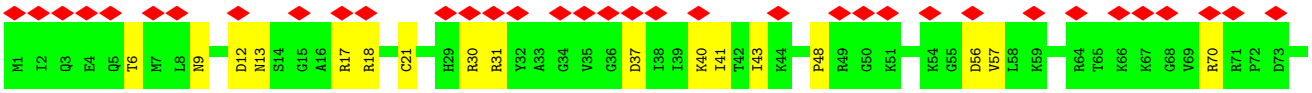


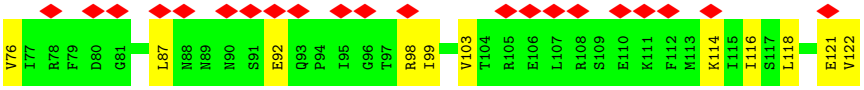




• Molecule 11: 50S ribosomal protein L14

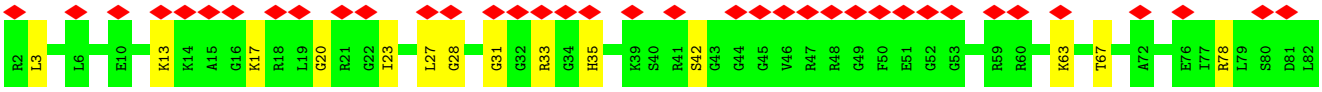
Chain K:

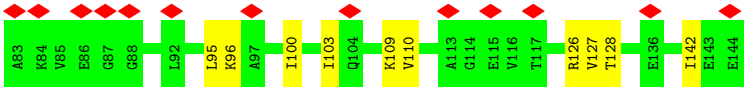




• Molecule 12: 50S ribosomal protein L15

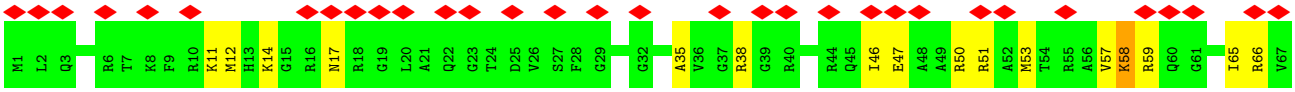
Chain L:

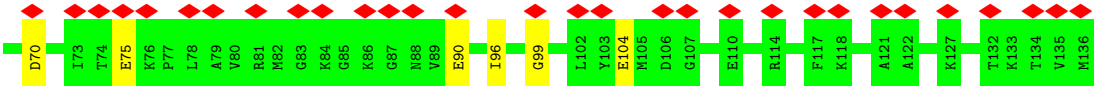




• Molecule 13: 50S ribosomal protein L16

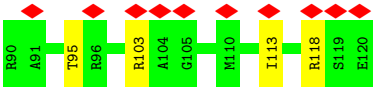
Chain M:





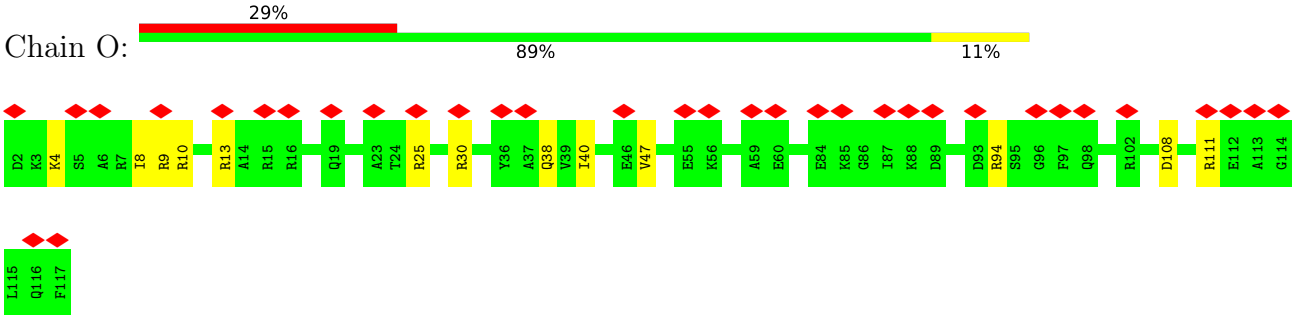
• Molecule 14: 50S ribosomal protein L17

Chain N:



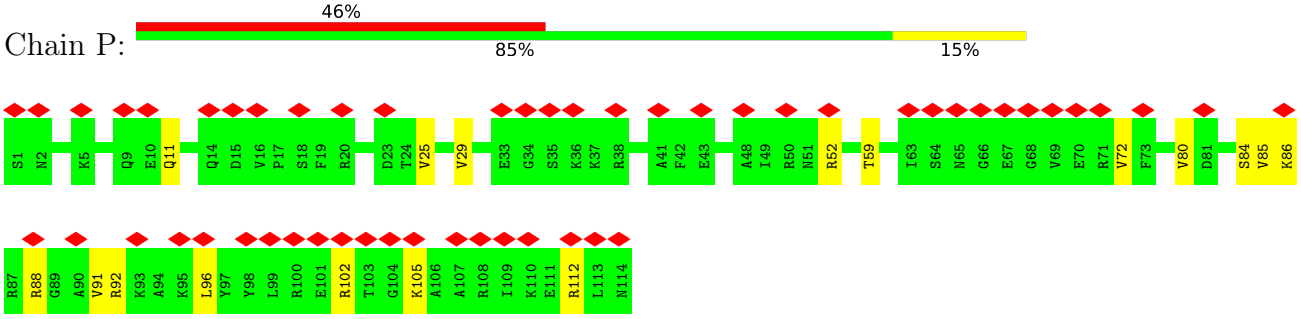
• Molecule 15: 50S ribosomal protein L18

Chain O:



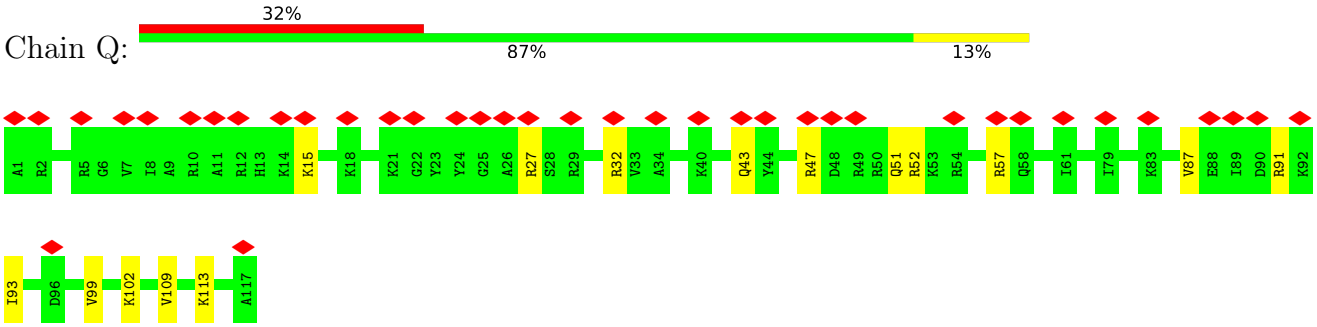
• Molecule 16: 50S ribosomal protein L19

Chain P:



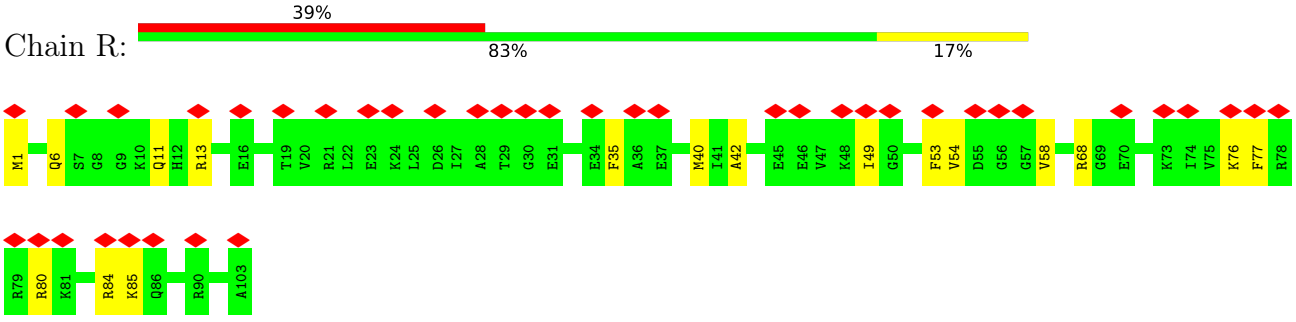
• Molecule 17: 50S ribosomal protein L20

Chain Q:



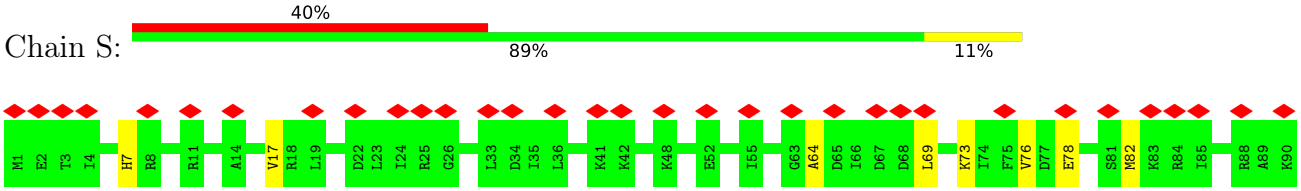
• Molecule 18: 50S ribosomal protein L21

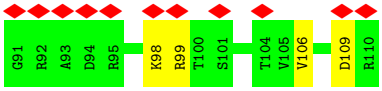
Chain R:



• Molecule 19: 50S ribosomal protein L22

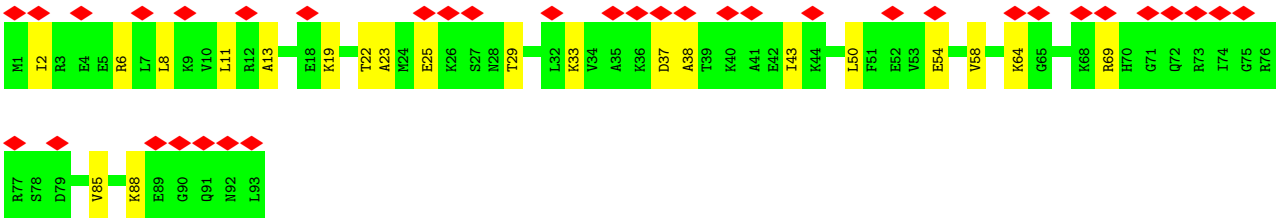
Chain S:





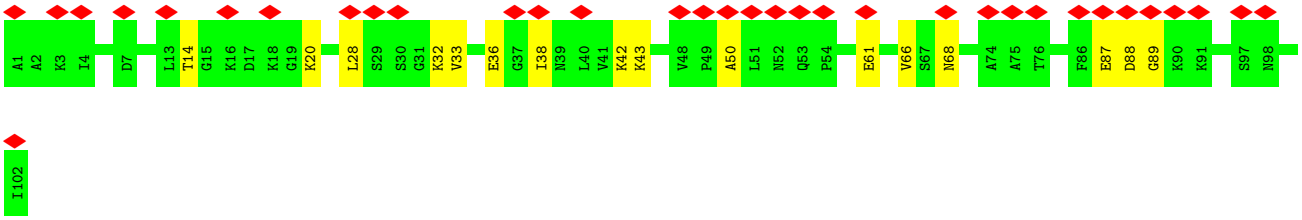
• Molecule 20: 50S ribosomal protein L23

Chain T:



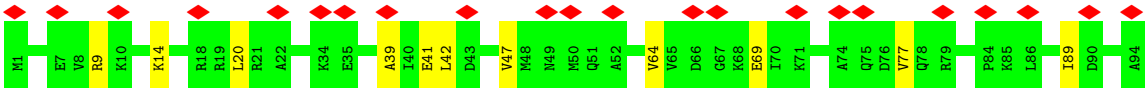
• Molecule 21: 50S ribosomal protein L24

Chain U:



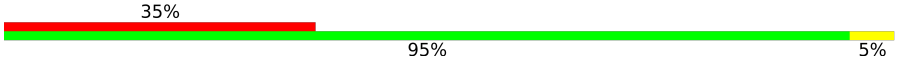
• Molecule 22: 50S ribosomal protein L25

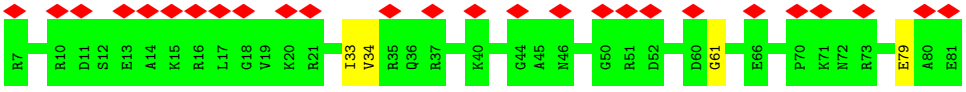
Chain V:



• Molecule 23: 50S ribosomal protein L27

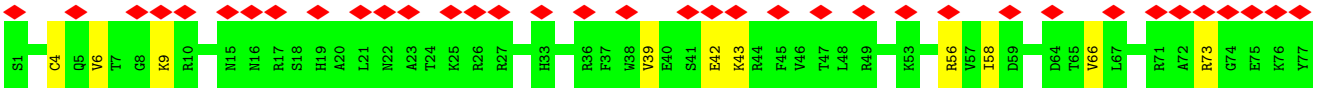
Chain W:





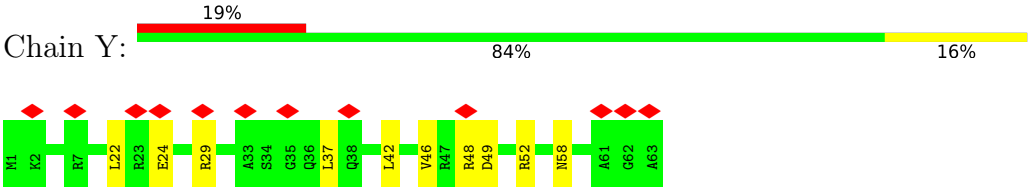
• Molecule 24: 50S ribosomal protein L28

Chain X:



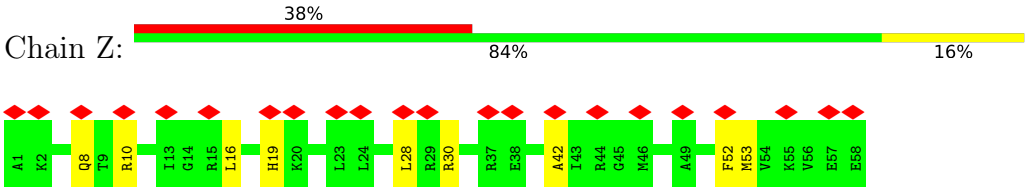
• Molecule 25: 50S ribosomal protein L29

Chain Y:



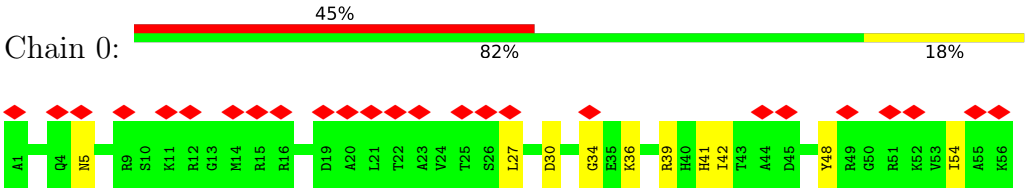
• Molecule 26: 50S ribosomal protein L30

Chain Z:



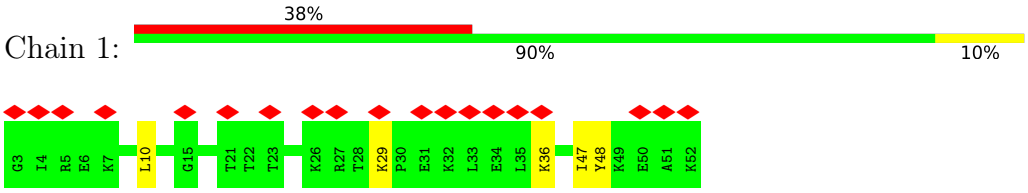
• Molecule 27: 50S ribosomal protein L32

Chain 0:



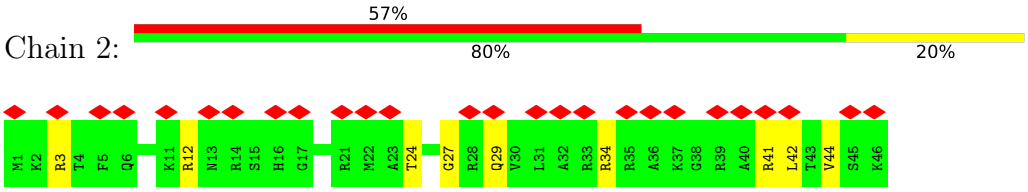
• Molecule 28: 50S ribosomal protein L33

Chain 1:



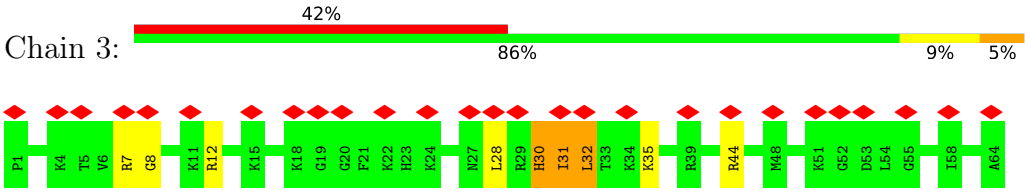
• Molecule 29: 50S ribosomal protein L34

Chain 2:



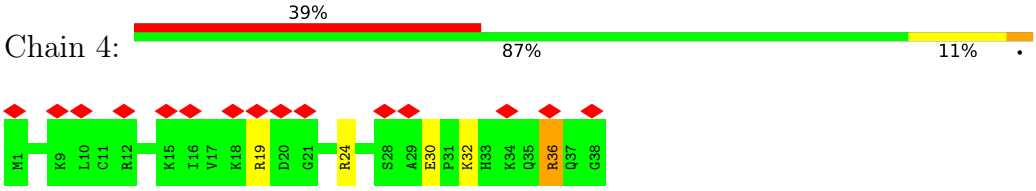
• Molecule 30: 50S ribosomal protein L35

Chain 3:



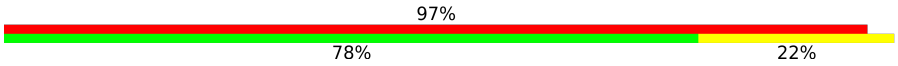
• Molecule 31: 50S ribosomal protein L36

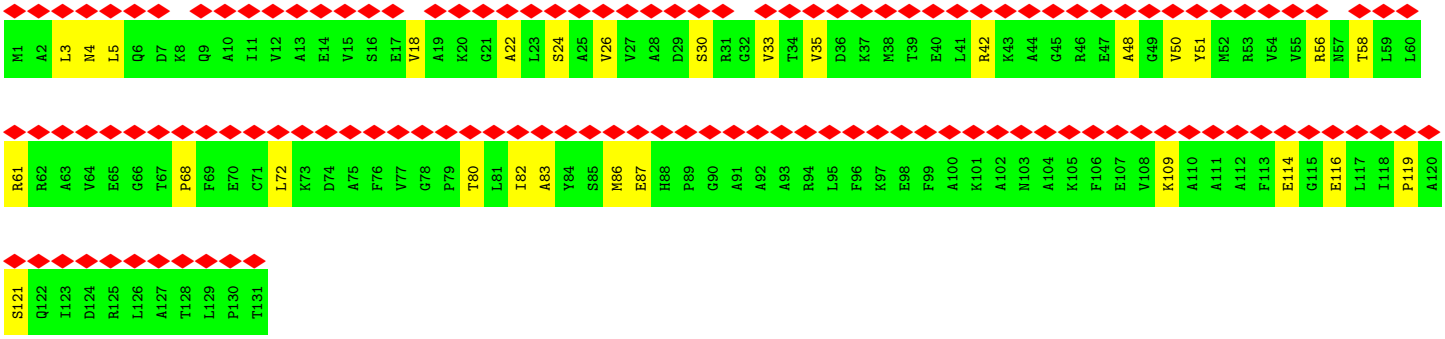
Chain 4:



• Molecule 32: 50S ribosomal protein L10

Chain 5:



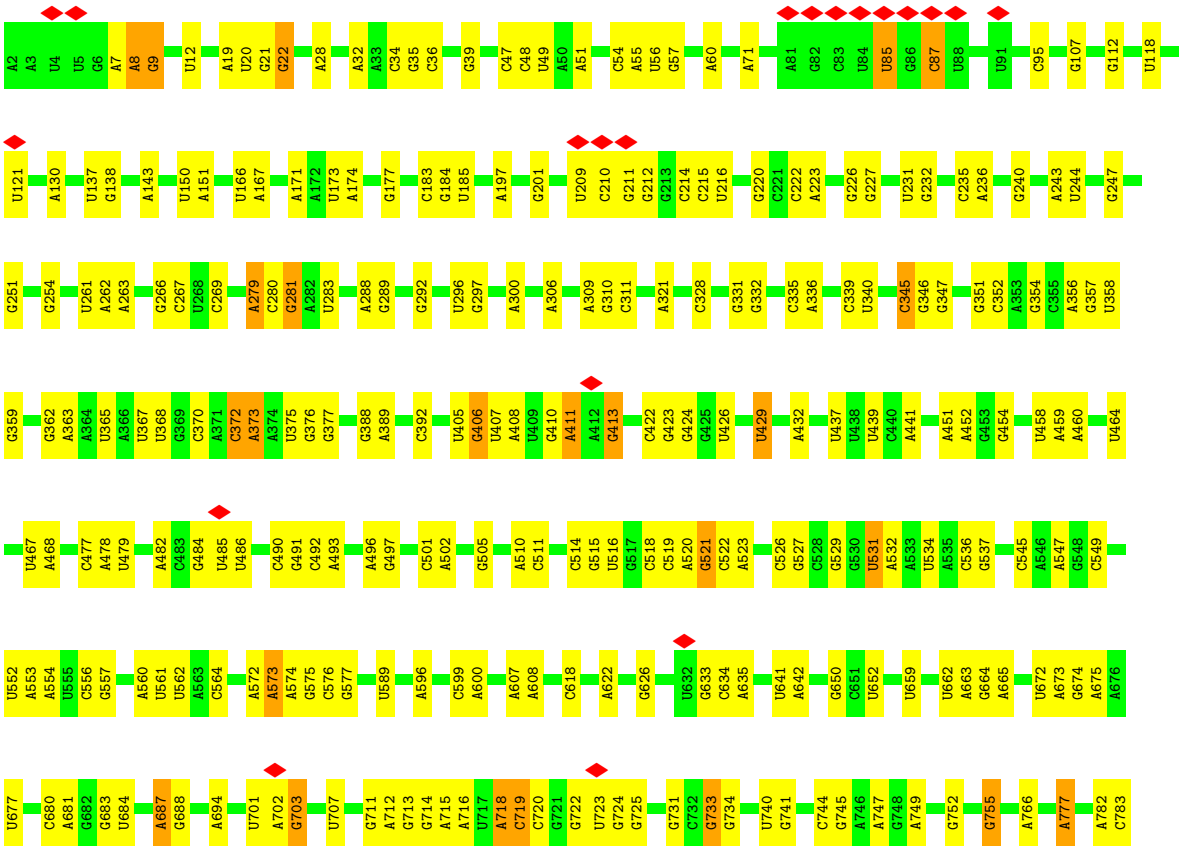


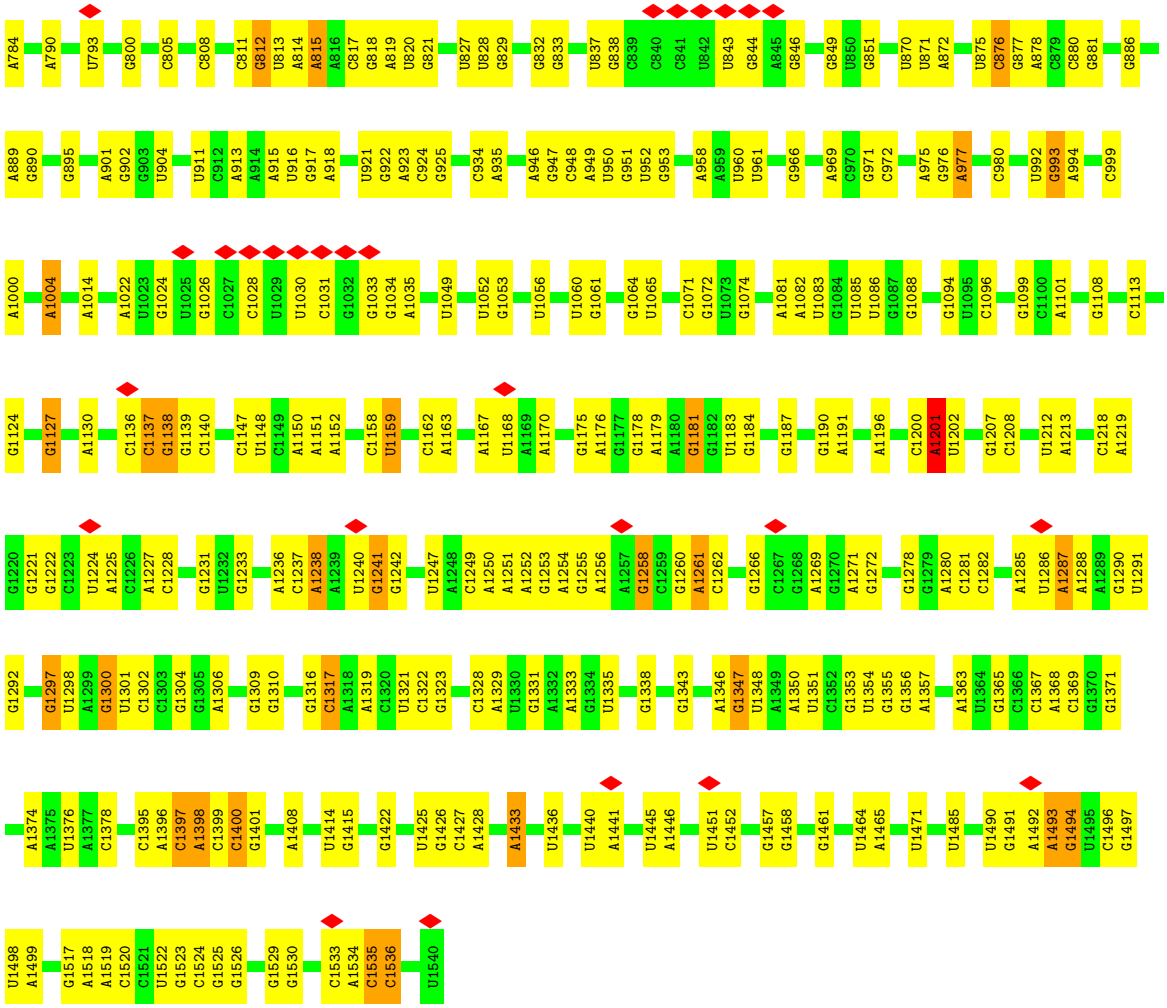
• Molecule 33: mRNA

Chain 7:

• Molecule 34: 16S ribosomal RNA

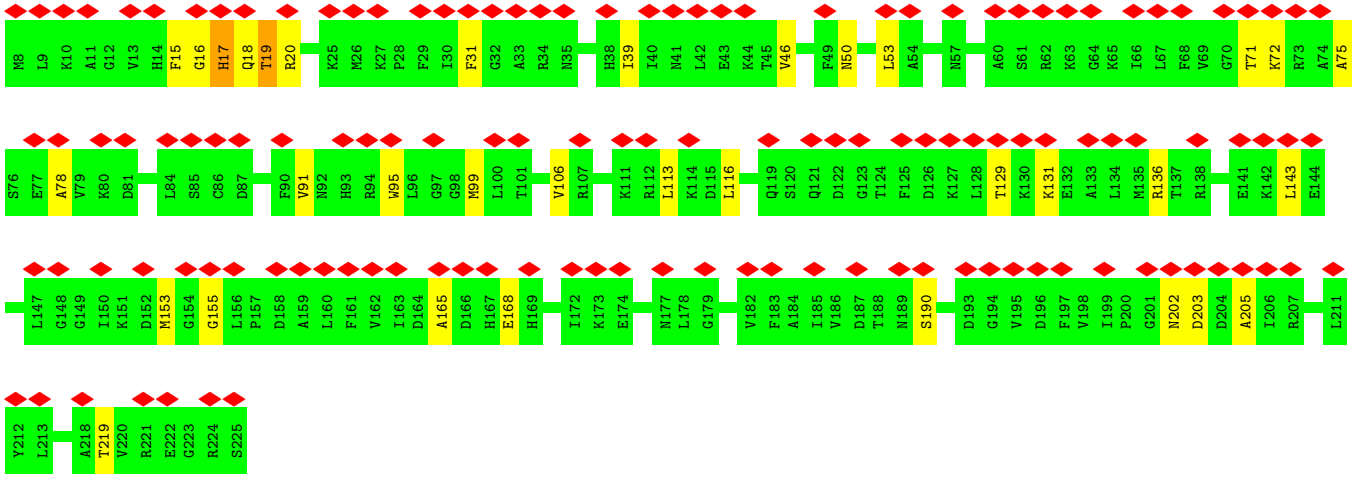
Chain a:





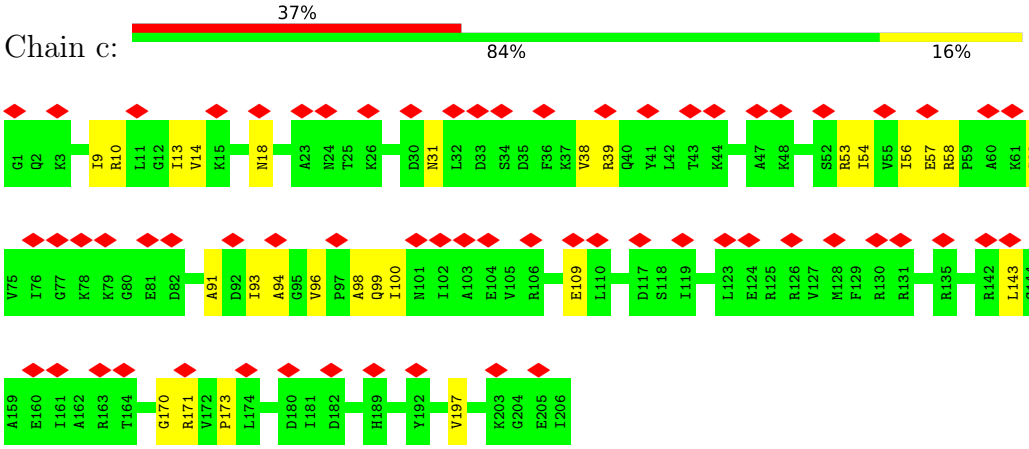
• Molecule 35: 30S ribosomal protein S2

Chain b:



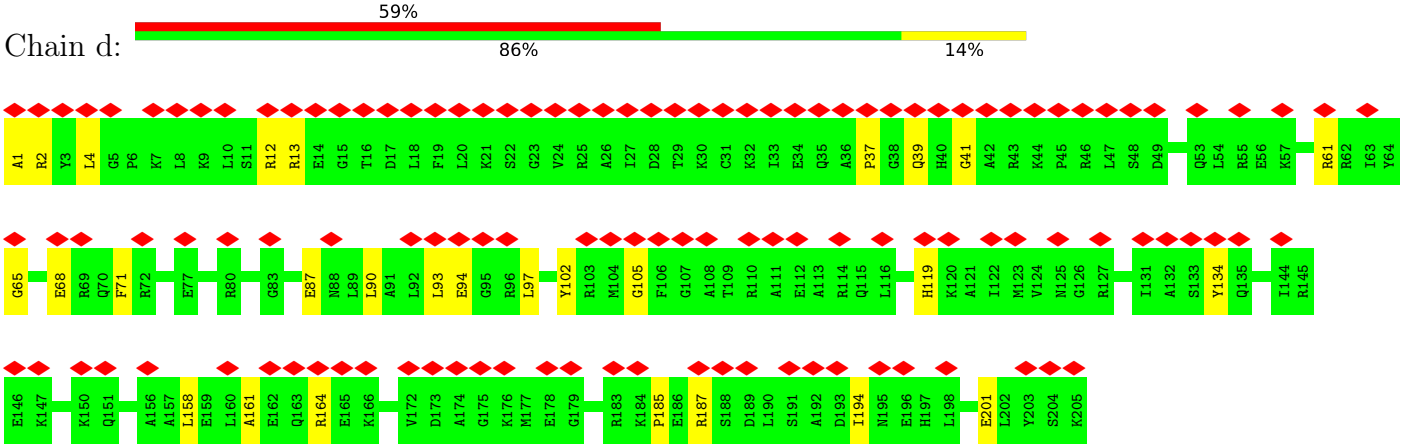
• Molecule 36: 30S ribosomal protein S3

Chain c:



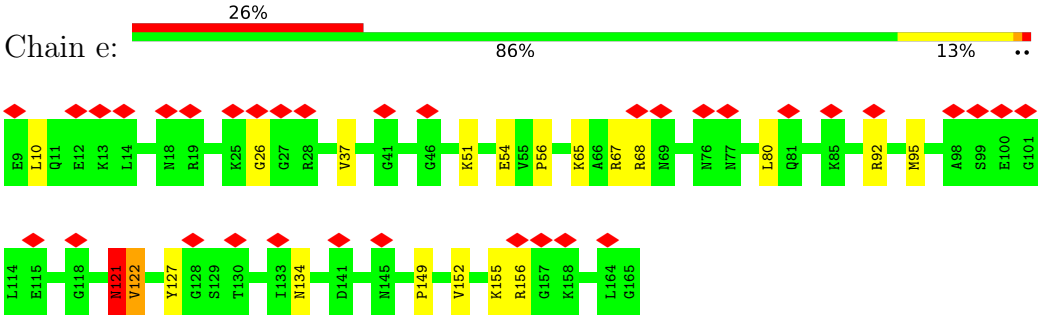
• Molecule 37: 30S ribosomal protein S4

Chain d:



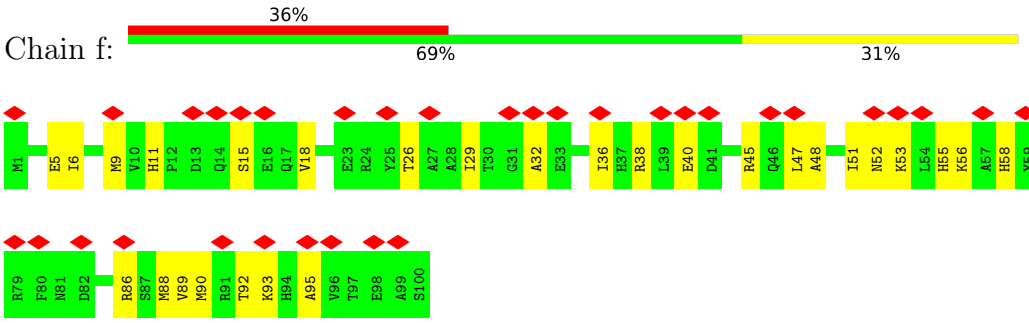
• Molecule 38: 30S ribosomal protein S5

Chain e:



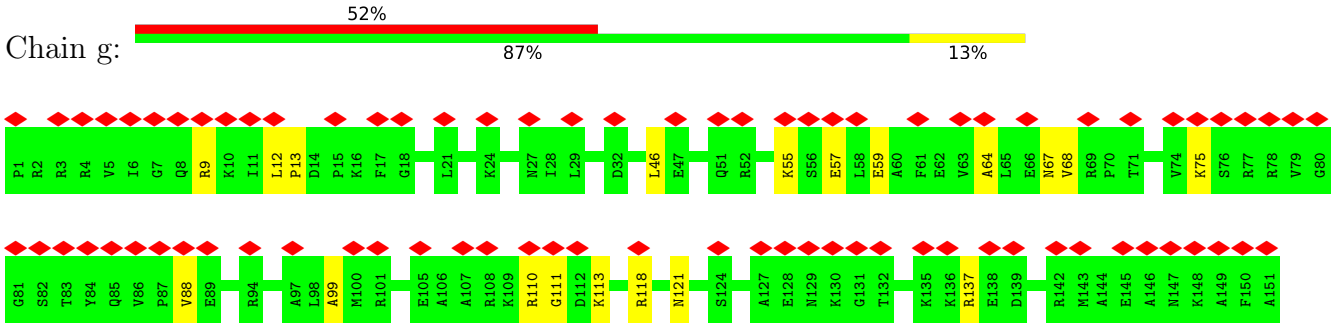
• Molecule 39: 30S ribosomal protein S6

Chain f:



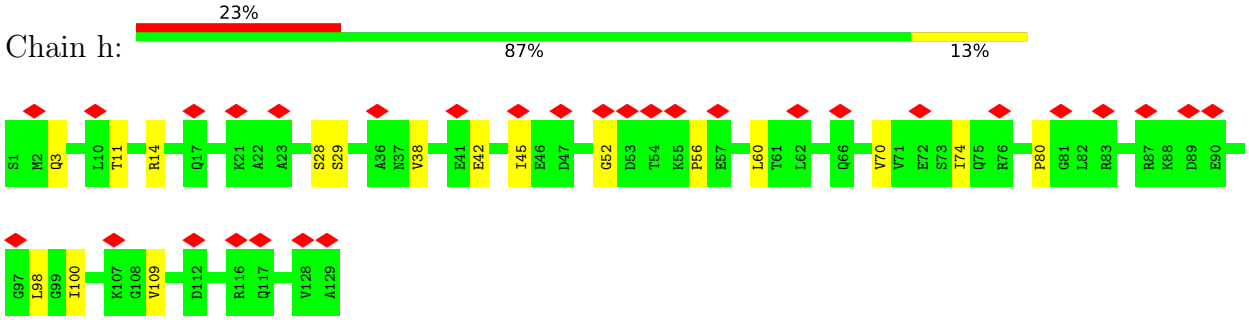
• Molecule 40: 30S ribosomal protein S7

Chain g:



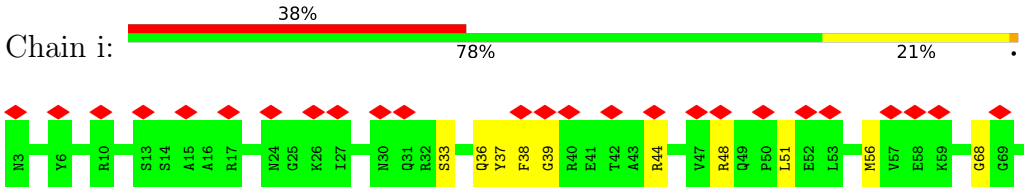
• Molecule 41: 30S ribosomal protein S8

Chain h:



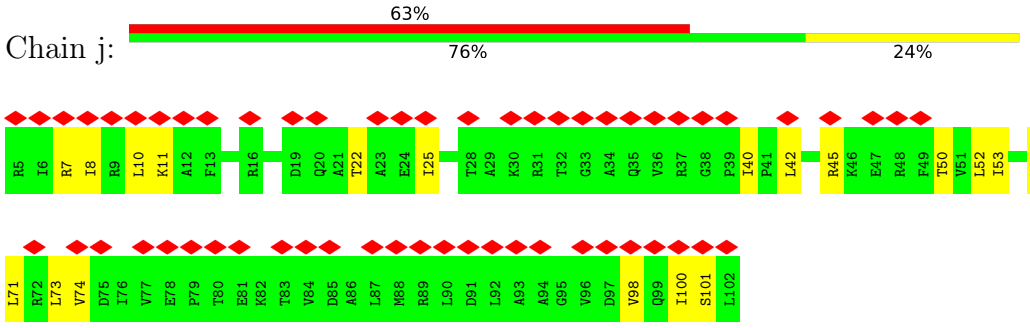
• Molecule 42: 30S ribosomal protein S9

Chain i:



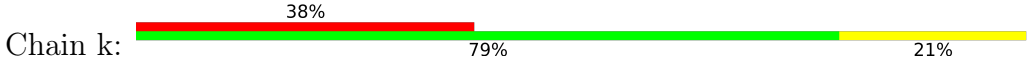
• Molecule 43: 30S ribosomal protein S10

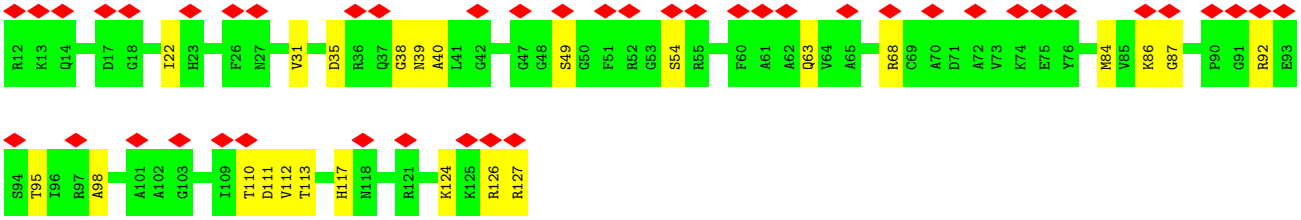
Chain j:



• Molecule 44: 30S ribosomal protein S11

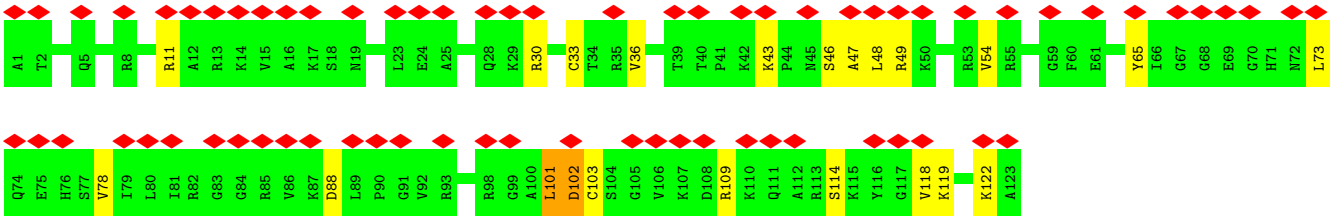
Chain k:





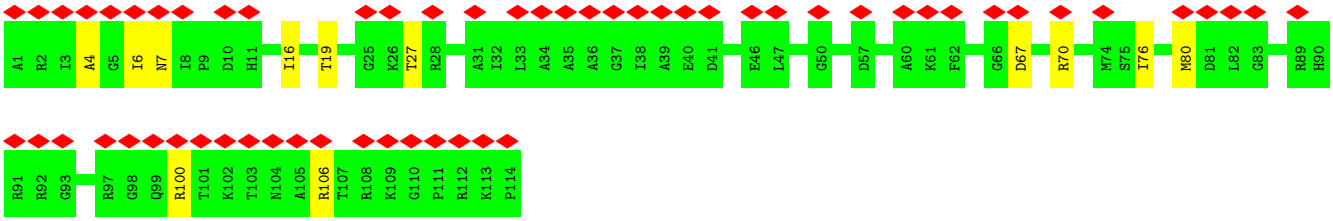
• Molecule 45: 30S ribosomal protein S12

Chain l:



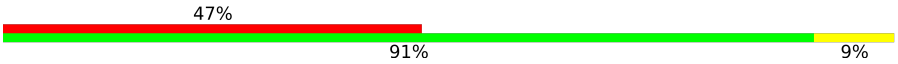
• Molecule 46: 30S ribosomal protein S13

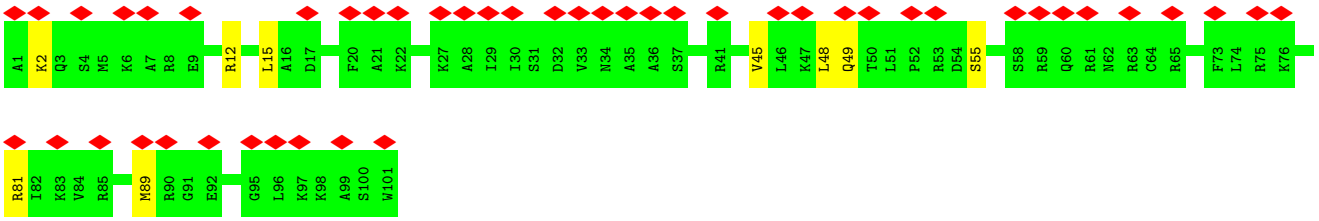
Chain m:



• Molecule 47: 30S ribosomal protein S14

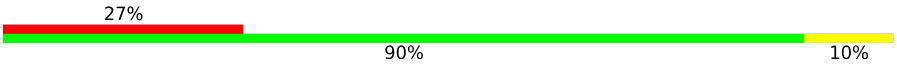
Chain n:

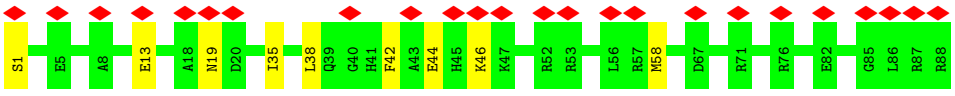




• Molecule 48: 30S ribosomal protein S15

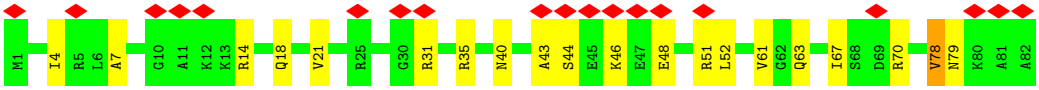
Chain o:





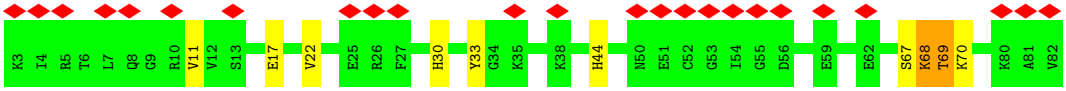
• Molecule 49: 30S ribosomal protein S16

Chain p:



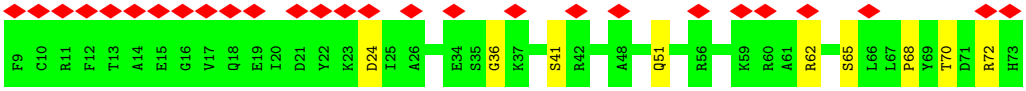
• Molecule 50: 30S ribosomal protein S17

Chain q:



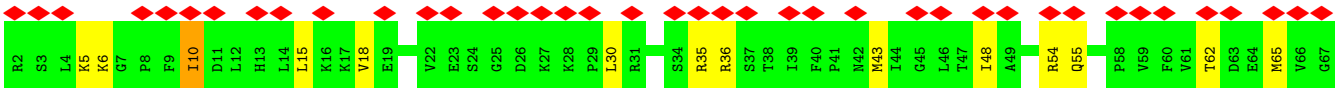
• Molecule 51: 30S ribosomal protein S18

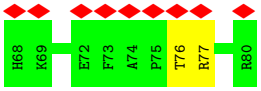
Chain r:



• Molecule 52: 30S ribosomal protein S19

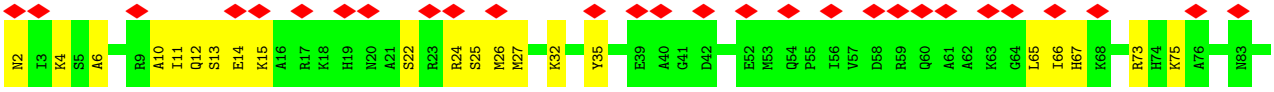
Chain s:





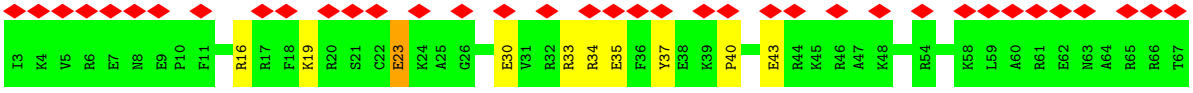
• Molecule 53: 30S ribosomal protein S20

Chain t:



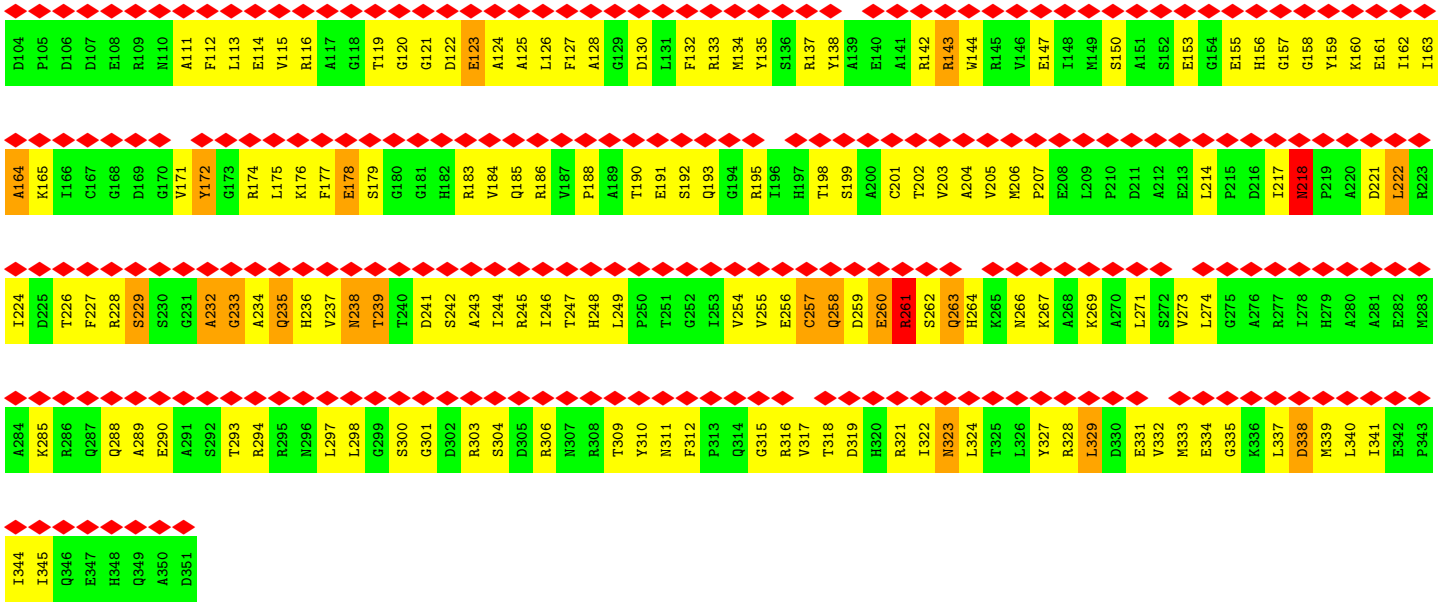
• Molecule 54: 30S ribosomal protein S21

Chain u:



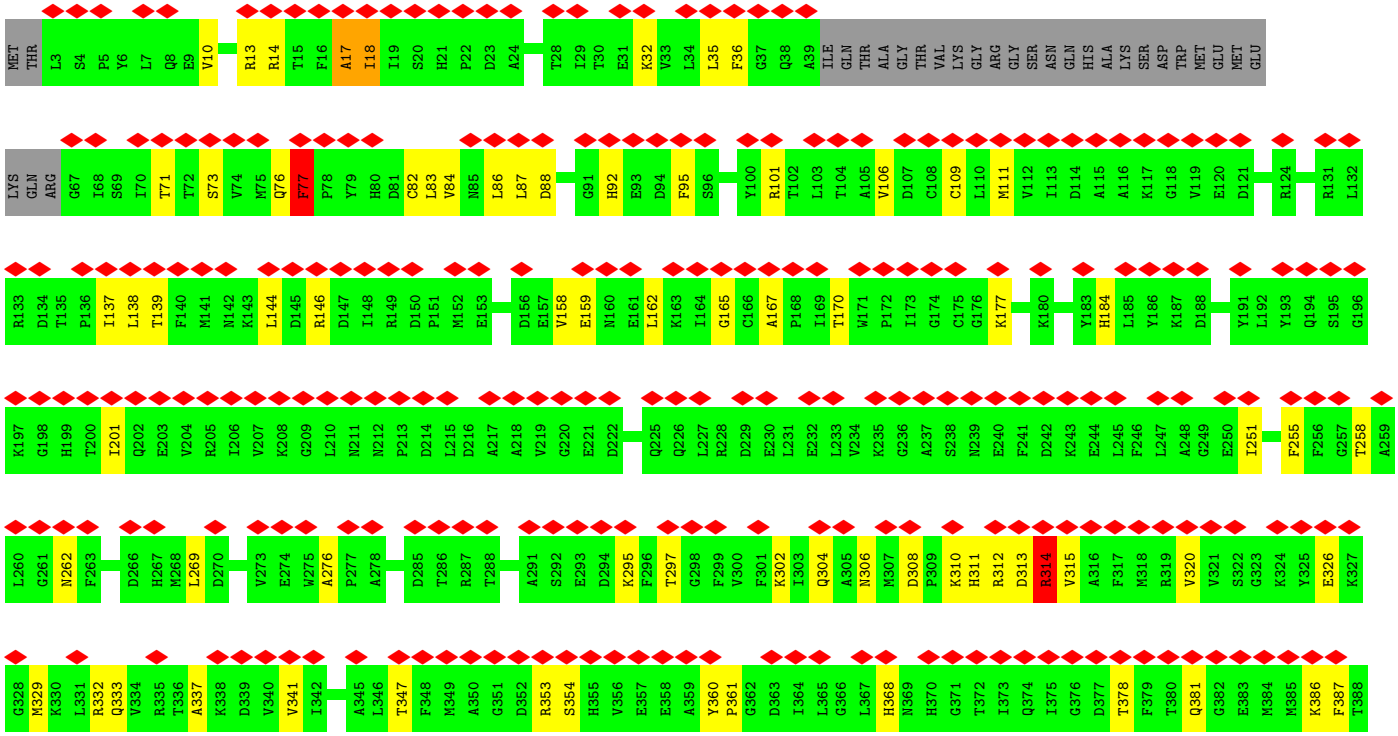
• Molecule 55: Peptide chain release factor RF1

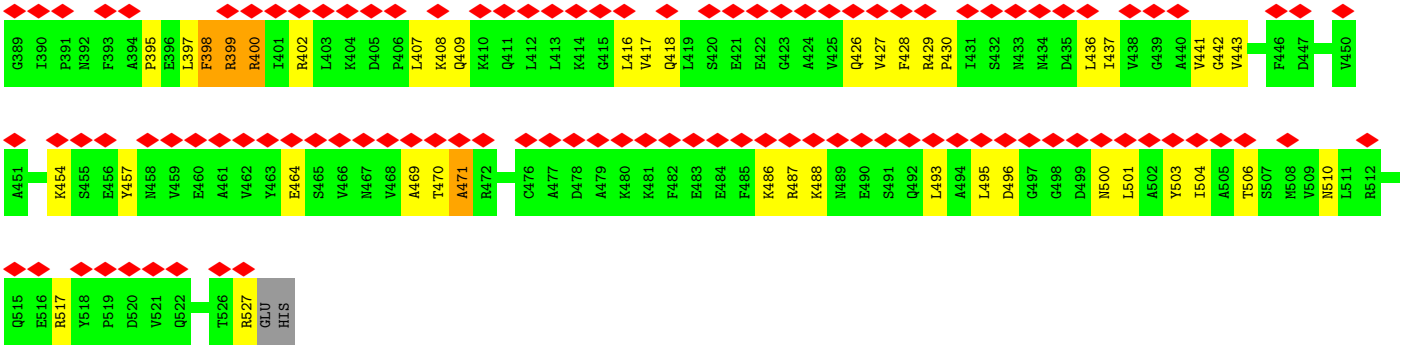
Chain v:



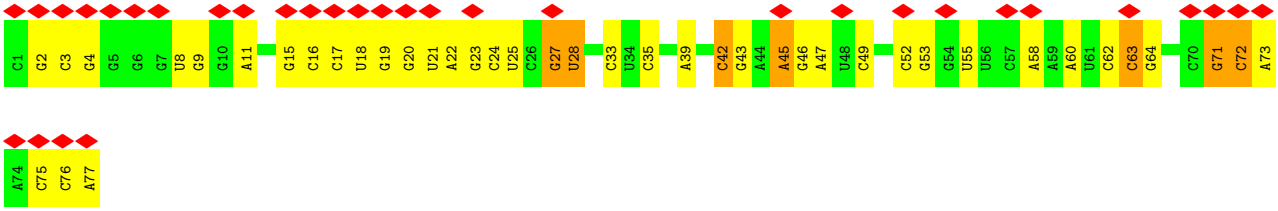
• Molecule 56: Peptide chain release factor RF3

Chain w:

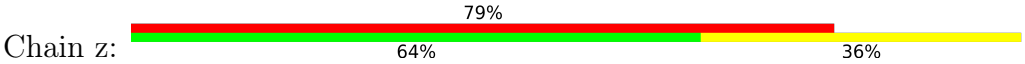


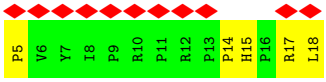


• Molecule 57: fMet-tRNA



• Molecule 58: Apidaecin





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	46814	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	45.9	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.118	Depositor
Minimum map value	-0.046	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.035	Depositor
Map size (Å)	381.96, 381.96, 381.96	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.061, 1.061, 1.061	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: GCP

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	0.15	0/69729	0.33	3/108768 (0.0%)
2	B	0.18	0/2876	0.38	0/4483
3	C	0.19	0/2121	0.52	0/2852
4	D	0.20	0/1586	0.52	0/2134
5	E	0.19	0/1571	0.51	0/2113
6	F	0.22	0/1434	0.62	0/1926
7	G	0.21	0/1343	0.57	2/1816 (0.1%)
8	H	0.19	0/1122	0.51	0/1515
9	I	0.25	0/1046	0.59	0/1410
10	J	0.17	0/1152	0.46	0/1551
11	K	0.22	0/947	0.60	0/1268
12	L	0.23	0/1054	0.69	4/1403 (0.3%)
13	M	0.24	0/1093	0.71	3/1460 (0.2%)
14	N	0.24	0/973	0.65	0/1301
15	O	0.20	0/902	0.50	0/1209
16	P	0.20	0/929	0.52	0/1242
17	Q	0.20	0/960	0.50	0/1278
18	R	0.20	0/829	0.52	0/1107
19	S	0.21	0/864	0.58	0/1156
20	T	0.19	0/744	0.56	0/994
21	U	0.27	0/787	0.72	4/1051 (0.4%)
22	V	0.19	0/766	0.50	0/1025
23	W	0.17	0/582	0.46	0/769
24	X	0.17	0/635	0.46	0/848
25	Y	0.16	0/510	0.50	0/677
26	Z	0.18	0/453	0.42	0/605
27	0	0.18	0/450	0.51	0/599
28	1	0.20	0/416	0.55	0/554
29	2	0.17	0/380	0.46	0/498
30	3	0.25	0/513	0.67	2/676 (0.3%)
31	4	0.23	0/303	0.65	2/397 (0.5%)
32	5	0.28	0/1001	0.80	2/1350 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	7	0.38	0/169	0.71	0/261
34	a	0.15	0/36967	0.31	3/57666 (0.0%)
35	b	0.25	0/1735	0.66	1/2338 (0.0%)
36	c	0.20	0/1651	0.53	0/2225
37	d	0.22	0/1665	0.66	0/2227
38	e	0.24	0/1154	0.72	2/1554 (0.1%)
39	f	0.36	0/835	0.84	0/1128
40	g	0.23	0/1195	0.64	1/1602 (0.1%)
41	h	0.21	0/989	0.61	0/1326
42	i	0.24	0/1034	0.75	0/1375
43	j	0.28	0/796	0.76	0/1077
44	k	0.22	0/885	0.58	0/1195
45	l	0.27	0/969	0.72	0/1300
46	m	0.25	0/892	0.63	0/1193
47	n	0.20	0/811	0.57	0/1081
48	o	0.21	0/722	0.64	3/964 (0.3%)
49	p	0.22	0/659	0.63	3/884 (0.3%)
50	q	0.30	0/657	0.77	2/881 (0.2%)
51	r	0.21	0/511	0.69	0/689
52	s	0.20	0/652	0.57	0/877
53	t	0.25	0/671	0.64	0/888
54	u	0.35	0/500	0.99	6/668 (0.9%)
55	v	0.71	1/1962 (0.1%)	1.30	22/2643 (0.8%)
56	w	0.26	0/4011	0.83	20/5421 (0.4%)
57	x	0.21	0/1831	0.50	0/2853
58	z	2.02	1/127 (0.8%)	1.94	3/175 (1.7%)
All	All	0.20	2/164121 (0.0%)	0.46	88/244526 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
5	E	0	1
6	F	0	2
7	G	0	3
13	M	0	1
18	R	0	1
21	U	0	1
30	3	0	1
32	5	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
35	b	0	2
38	e	0	1
39	f	0	2
42	i	0	2
45	l	0	1
46	m	0	1
49	p	0	1
50	q	0	2
54	u	0	1
56	w	0	1
All	All	0	25

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
55	v	257	CYS	C-N	25.33	1.69	1.33
58	z	5	PRO	C-N	22.68	1.60	1.33

All (88) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	v	257	CYS	O-C-N	-36.37	77.11	122.21
56	w	399	ARG	N-CA-C	23.78	136.52	111.07
58	z	5	PRO	CA-C-N	-15.15	99.22	121.65
58	z	5	PRO	C-N-CA	-15.15	99.22	121.65
56	w	470	THR	N-CA-C	14.10	131.76	108.49
55	v	172	TYR	N-CA-C	11.80	124.15	111.28
58	z	5	PRO	O-C-N	11.43	141.28	123.00
55	v	233	GLY	N-CA-C	10.15	129.32	115.32
56	w	399	ARG	CB-CA-C	-9.49	95.97	110.88
56	w	17	ALA	N-CA-C	9.20	121.07	111.14
55	v	178	GLU	N-CA-C	9.03	121.12	111.28
55	v	257	CYS	CA-C-N	-8.46	105.38	121.54
55	v	257	CYS	C-N-CA	-8.46	105.38	121.54
55	v	260	GLU	N-CA-C	8.29	120.70	108.60
55	v	120	GLY	N-CA-C	8.18	126.24	115.36
13	M	96	ILE	CA-C-N	7.80	133.51	121.03
13	M	96	ILE	C-N-CA	7.80	133.51	121.03
40	g	64	ALA	N-CA-C	-7.77	104.97	114.75
55	v	238	ASN	N-CA-C	7.62	119.37	111.14
55	v	153	GLU	N-CA-C	7.53	120.47	110.53
56	w	77	PHE	N-CA-C	7.48	126.35	109.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	v	232	ALA	N-CA-C	7.07	118.92	108.60
55	v	160	LYS	N-CA-C	7.03	118.73	111.14
56	w	469	ALA	CA-C-N	-6.94	113.74	123.03
56	w	469	ALA	C-N-CA	-6.94	113.74	123.03
7	G	45	ALA	CA-C-N	6.81	134.54	121.54
7	G	45	ALA	C-N-CA	6.81	134.54	121.54
50	q	68	LYS	CA-C-N	6.79	134.51	121.54
50	q	68	LYS	C-N-CA	6.79	134.51	121.54
54	u	23	GLU	CA-C-N	6.74	130.93	120.82
54	u	23	GLU	C-N-CA	6.74	130.93	120.82
56	w	313	ASP	CA-C-N	6.71	134.35	121.54
56	w	313	ASP	C-N-CA	6.71	134.35	121.54
55	v	235	GLN	N-CA-C	-6.63	104.06	111.28
56	w	471	ALA	N-CA-C	6.61	123.77	113.72
55	v	263	GLN	N-CA-C	6.55	121.27	113.28
55	v	239	THR	N-CA-C	6.50	118.45	111.36
35	b	19	THR	N-CA-C	6.45	116.58	108.45
56	w	314	ARG	CA-C-N	6.44	133.56	121.97
56	w	314	ARG	C-N-CA	6.44	133.56	121.97
55	v	155	GLU	N-CA-C	6.32	118.16	111.28
55	v	218	ASN	CA-C-N	6.25	125.99	119.05
55	v	218	ASN	C-N-CA	6.25	125.99	119.05
38	e	121	ASN	CA-C-N	6.23	133.18	121.97
38	e	121	ASN	C-N-CA	6.23	133.18	121.97
21	U	87	GLU	CA-C-N	6.07	130.36	121.31
21	U	87	GLU	C-N-CA	6.07	130.36	121.31
56	w	503	TYR	CA-C-N	6.07	132.90	121.97
56	w	503	TYR	C-N-CA	6.07	132.90	121.97
56	w	18	ILE	N-CA-C	5.94	121.70	109.34
56	w	398	PHE	CA-C-N	5.92	128.14	120.44
56	w	398	PHE	C-N-CA	5.92	128.14	120.44
54	u	30	GLU	N-CA-C	-5.87	107.35	114.75
54	u	35	GLU	CA-C-N	5.87	132.76	121.54
54	u	35	GLU	C-N-CA	5.87	132.76	121.54
13	M	53	MET	N-CA-C	-5.83	107.97	114.62
54	u	34	ARG	N-CA-C	5.70	117.58	110.91
56	w	17	ALA	CA-C-N	5.68	132.20	121.97
56	w	17	ALA	C-N-CA	5.68	132.20	121.97
12	L	35	HIS	CA-C-N	5.62	129.09	120.82
12	L	35	HIS	C-N-CA	5.62	129.09	120.82
55	v	123	GLU	N-CA-C	-5.60	105.18	111.28
48	o	13	GLU	N-CA-C	-5.55	108.29	114.62

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
55	v	164	ALA	N-CA-C	5.48	117.40	109.07
30	3	30	HIS	CA-C-N	5.32	131.54	121.97
30	3	30	HIS	C-N-CA	5.32	131.54	121.97
48	o	44	GLU	CA-C-N	5.30	131.66	121.54
48	o	44	GLU	C-N-CA	5.30	131.66	121.54
56	w	304	GLN	N-CA-C	5.29	117.12	110.24
55	v	132	PHE	N-CA-C	-5.28	105.60	111.36
49	p	78	VAL	CA-C-N	5.25	129.14	121.31
49	p	78	VAL	C-N-CA	5.25	129.14	121.31
1	A	1378	A	P-O3'-C3'	5.25	128.07	120.20
1	A	752	A	P-O3'-C3'	5.16	127.94	120.20
32	5	50	VAL	CA-C-N	5.13	127.88	120.38
32	5	50	VAL	C-N-CA	5.13	127.88	120.38
12	L	110	VAL	CA-C-N	5.09	127.51	120.49
12	L	110	VAL	C-N-CA	5.09	127.51	120.49
34	a	1201	A	P-O3'-C3'	5.08	127.83	120.20
1	A	1022	G	P-O3'-C3'	5.07	127.81	120.20
34	a	1297	G	P-O3'-C3'	5.05	127.77	120.20
34	a	1397	C	C2'-C3'-O3'	5.04	117.06	109.50
21	U	50	ALA	CA-C-N	5.03	127.33	120.54
21	U	50	ALA	C-N-CA	5.03	127.33	120.54
49	p	79	ASN	N-CA-C	5.01	117.37	110.35
55	v	261	ARG	N-CA-C	5.01	121.47	110.80
31	4	36	ARG	CA-C-N	5.00	131.09	121.54
31	4	36	ARG	C-N-CA	5.00	131.09	121.54

There are no chirality outliers.

All (25) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
30	3	30	HIS	Peptide
32	5	80	THR	Peptide
5	E	82	GLY	Peptide
6	F	173	ASP	Peptide
6	F	174	PHE	Peptide
7	G	118	ALA	Peptide
7	G	45	ALA	Peptide
7	G	46	ASP	Peptide
13	M	57	VAL	Peptide
18	R	53	PHE	Peptide
21	U	88	ASP	Peptide
35	b	15	PHE	Peptide

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Mol	Chain	Res	Type	Group
35	b	16	GLY	Peptide
38	e	121	ASN	Peptide
39	f	52	ASN	Peptide
39	f	95	ALA	Peptide
42	i	56	MET	Peptide
42	i	90	ASP	Peptide
45	l	101	LEU	Peptide
46	m	4	ALA	Peptide
49	p	44	SER	Peptide
50	q	67	SER	Peptide
50	q	68	LYS	Peptide
54	u	23	GLU	Peptide
56	w	314	ARG	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	62262	0	31318	515	0
2	B	2572	0	1302	19	0
3	C	2082	0	2157	30	0
4	D	1565	0	1616	18	0
5	E	1552	0	1619	18	0
6	F	1410	0	1447	20	0
7	G	1323	0	1374	6	0
8	H	1111	0	1148	15	0
9	I	1032	0	1088	11	0
10	J	1129	0	1162	12	0
11	K	938	0	1012	18	0
12	L	1045	0	1117	16	0
13	M	1074	0	1157	11	0
14	N	960	0	1000	16	0
15	O	892	0	923	10	0
16	P	917	0	965	13	0
17	Q	947	0	1022	12	0
18	R	816	0	839	12	0
19	S	857	0	922	7	0
20	T	738	0	807	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	U	779	0	834	7	0
22	V	753	0	780	6	0
23	W	575	0	592	3	0
24	X	625	0	655	9	0
25	Y	509	0	543	8	0
26	Z	449	0	491	6	0
27	0	444	0	461	7	0
28	1	409	0	440	3	0
29	2	377	0	418	7	0
30	3	504	0	574	6	0
31	4	302	0	343	3	0
32	5	988	0	1025	15	0
33	7	151	0	76	18	0
34	a	33016	0	16615	376	0
35	b	1704	0	1732	20	0
36	c	1624	0	1699	30	0
37	d	1643	0	1710	21	0
38	e	1141	0	1170	14	0
39	f	817	0	808	18	0
40	g	1181	0	1240	10	0
41	h	979	0	1034	14	0
42	i	1022	0	1070	20	0
43	j	786	0	828	20	0
44	k	869	0	878	18	0
45	l	955	0	1019	31	0
46	m	883	0	944	9	0
47	n	799	0	841	7	0
48	o	714	0	737	5	0
49	p	649	0	666	13	0
50	q	648	0	691	7	0
51	r	504	0	502	8	0
52	s	637	0	665	11	0
53	t	665	0	714	13	0
54	u	495	0	486	4	0
55	v	1932	0	1881	440	0
56	w	3938	0	3929	125	0
57	x	1639	0	837	19	0
58	z	120	0	128	19	0
59	w	32	0	13	0	0
All	All	151479	0	104064	1769	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 7.

All (1769) 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)
55:v:317:VAL:HG23	55:v:329:LEU:CD2	1.28	1.58
55:v:111:ALA:CB	55:v:175:LEU:HD12	1.34	1.58
55:v:316:ARG:HB3	55:v:327:TYR:CD1	1.34	1.57
55:v:111:ALA:CB	55:v:175:LEU:CD1	1.84	1.56
55:v:113:LEU:HD21	55:v:175:LEU:CD2	1.30	1.55
55:v:113:LEU:CD2	55:v:175:LEU:HD22	1.36	1.53
34:a:1492:A:C2	55:v:303:ARG:NH1	1.76	1.48
55:v:172:TYR:CE2	55:v:176:LYS:HE3	0.98	1.48
55:v:257:CYS:C	55:v:258:GLN:N	1.69	1.48
55:v:172:TYR:CE2	55:v:176:LYS:CE	1.94	1.46
55:v:172:TYR:CZ	55:v:176:LYS:HE3	1.53	1.44
55:v:317:VAL:CG2	55:v:329:LEU:CD2	1.97	1.43
1:A:2583:G:N2	55:v:238:ASN:HD21	1.21	1.37
56:w:399:ARG:O	56:w:400:ARG:HG2	1.25	1.34
55:v:328:ARG:HD3	55:v:331:GLU:CD	1.50	1.34
55:v:111:ALA:HB1	55:v:175:LEU:CD1	1.47	1.33
55:v:137:ARG:NH1	55:v:334:GLU:HG2	1.42	1.31
55:v:126:LEU:HD12	55:v:157:GLY:O	1.20	1.29
55:v:328:ARG:HD3	55:v:331:GLU:OE2	1.12	1.26
55:v:332:VAL:HA	55:v:337:LEU:CD2	1.65	1.26
55:v:147:GLU:OE1	55:v:165:LYS:CB	1.83	1.25
55:v:172:TYR:CE1	55:v:176:LYS:HG3	1.70	1.25
55:v:172:TYR:CZ	55:v:176:LYS:CE	2.14	1.24
45:l:102:ASP:OD2	56:w:409:GLN:NE2	1.69	1.24
55:v:332:VAL:HG22	55:v:337:LEU:CD2	1.66	1.24
55:v:322:ILE:CD1	55:v:344:ILE:HA	1.67	1.23
55:v:319:ASP:O	55:v:323:ASN:HB3	1.06	1.23
55:v:221:ASP:O	55:v:249:LEU:HG	1.38	1.22
55:v:123:GLU:OE1	55:v:188:PRO:HB3	1.38	1.21
34:a:1492:A:N3	55:v:303:ARG:NH1	1.88	1.20
55:v:126:LEU:CD1	55:v:157:GLY:O	1.87	1.20
1:A:2583:G:N2	55:v:238:ASN:ND2	1.86	1.20
55:v:228:ARG:HA	55:v:241:ASP:CA	1.71	1.19
55:v:144:TRP:CZ3	55:v:171:VAL:HG22	1.77	1.19
55:v:175:LEU:O	55:v:205:VAL:HG21	1.42	1.18
55:v:337:LEU:O	55:v:339:MET:N	1.74	1.16
45:l:78:VAL:HG21	56:w:407:LEU:CD2	1.74	1.16
55:v:316:ARG:CB	55:v:327:TYR:CD1	2.26	1.16
55:v:317:VAL:CG2	55:v:329:LEU:HD23	1.66	1.16
55:v:331:GLU:O	55:v:335:GLY:O	1.61	1.15

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:123:GLU:CD	55:v:188:PRO:HB3	1.72	1.14
55:v:147:GLU:OE1	55:v:165:LYS:HB2	0.99	1.14
34:a:966:G:N2	57:x:35:C:H5'	1.63	1.14
55:v:111:ALA:HB3	55:v:175:LEU:HD11	1.24	1.13
1:A:2584:U:O3'	55:v:233:GLY:HA2	1.49	1.13
55:v:150:SER:OG	55:v:163:ILE:HB	1.49	1.12
55:v:332:VAL:CA	55:v:337:LEU:HD21	1.78	1.12
55:v:328:ARG:CD	55:v:331:GLU:OE2	1.95	1.12
55:v:332:VAL:HG13	55:v:337:LEU:HD21	1.32	1.12
55:v:227:PHE:CE1	55:v:258:GLN:HG2	1.83	1.11
55:v:257:CYS:C	55:v:259:ASP:N	2.09	1.11
55:v:116:ARG:NE	55:v:161:GLU:CB	2.13	1.11
55:v:228:ARG:CA	55:v:241:ASP:HA	1.78	1.11
55:v:322:ILE:HD12	55:v:344:ILE:HA	1.19	1.11
1:A:2493:U:O2'	55:v:263:GLN:NE2	1.83	1.11
1:A:2063:C:H5'	58:z:18:LEU:HD22	1.32	1.10
55:v:319:ASP:O	55:v:323:ASN:CB	1.98	1.10
55:v:332:VAL:CG1	55:v:337:LEU:HD21	1.81	1.10
1:A:1920:C:H5'	34:a:1517:G:N1	1.66	1.10
1:A:2657:A:P	56:w:146:ARG:HH12	1.74	1.10
1:A:1913:A:N7	34:a:1494:G:C8	2.19	1.09
1:A:2583:G:H21	55:v:238:ASN:ND2	1.46	1.09
1:A:2657:A:P	56:w:146:ARG:NH1	2.25	1.09
55:v:247:THR:HG22	55:v:254:VAL:HG22	1.09	1.09
55:v:221:ASP:O	55:v:249:LEU:CG	2.01	1.09
1:A:2584:U:H5"	55:v:232:ALA:HB1	1.09	1.08
55:v:127:PHE:CG	55:v:184:VAL:HG22	1.88	1.08
55:v:175:LEU:O	55:v:205:VAL:CG2	2.00	1.08
56:w:399:ARG:O	56:w:400:ARG:CG	2.00	1.08
55:v:111:ALA:HB3	55:v:175:LEU:CD1	1.70	1.07
55:v:111:ALA:HB2	55:v:175:LEU:HD12	1.31	1.07
55:v:332:VAL:CG2	55:v:337:LEU:HD22	1.84	1.07
1:A:2584:U:H5"	55:v:232:ALA:CB	1.85	1.06
45:l:122:LYS:HE2	56:w:486:LYS:HB3	1.37	1.06
55:v:111:ALA:HB1	55:v:175:LEU:HD13	1.36	1.06
55:v:147:GLU:CD	55:v:165:LYS:HB2	1.81	1.06
55:v:202:THR:HB	55:v:298:LEU:HD22	1.10	1.06
55:v:257:CYS:O	55:v:258:GLN:N	1.86	1.06
55:v:116:ARG:HD2	55:v:161:GLU:HA	1.34	1.06
55:v:332:VAL:CA	55:v:337:LEU:CD2	2.34	1.06
55:v:332:VAL:CG2	55:v:337:LEU:CD2	2.34	1.06

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:218:ASN:O	55:v:222:LEU:CD2	2.04	1.05
55:v:246:ILE:HG21	55:v:274:LEU:HD11	1.38	1.05
55:v:288:GLN:C	55:v:289:ALA:N	2.14	1.05
55:v:112:PHE:CE1	55:v:165:LYS:HG2	1.91	1.05
55:v:134:MET:SD	55:v:332:VAL:O	2.13	1.05
42:i:129:ARG:NH1	57:x:33:C:OP2	1.90	1.05
1:A:1913:A:C8	34:a:1494:G:C8	2.45	1.04
55:v:234:ALA:HB3	55:v:237:VAL:HG23	1.06	1.04
55:v:248:HIS:NE2	55:v:274:LEU:HD22	1.73	1.04
55:v:243:ALA:HB2	55:v:258:GLN:HG2	1.35	1.04
55:v:332:VAL:HA	55:v:337:LEU:HD21	1.30	1.04
55:v:317:VAL:HG23	55:v:329:LEU:HD23	1.04	1.03
34:a:1492:A:H61	45:l:46:SER:HB2	1.23	1.03
55:v:317:VAL:HG23	55:v:329:LEU:HD21	1.12	1.03
55:v:332:VAL:CB	55:v:337:LEU:HD21	1.87	1.03
55:v:332:VAL:HG22	55:v:337:LEU:HD22	1.03	1.02
55:v:247:THR:HG22	55:v:254:VAL:CG2	1.90	1.01
34:a:55:A:C8	56:w:310:LYS:CB	2.43	1.01
45:l:78:VAL:HG21	56:w:407:LEU:HD23	1.01	1.01
55:v:142:ARG:HH12	55:v:174:ARG:NH2	1.59	1.00
55:v:172:TYR:CZ	55:v:176:LYS:CG	2.45	1.00
55:v:172:TYR:OH	55:v:176:LYS:HE2	1.60	1.00
55:v:332:VAL:HA	55:v:337:LEU:HD23	1.39	0.99
55:v:332:VAL:CB	55:v:337:LEU:CD2	2.40	0.99
1:A:306:U:H3	1:A:310:A:H62	1.06	0.99
55:v:116:ARG:NE	55:v:161:GLU:HB3	1.76	0.99
55:v:144:TRP:CZ3	55:v:171:VAL:CG2	2.46	0.99
55:v:227:PHE:HE2	55:v:245:ARG:HG3	1.28	0.99
55:v:332:VAL:HG13	55:v:337:LEU:CD2	1.93	0.98
55:v:222:LEU:HD23	55:v:222:LEU:H	1.29	0.98
55:v:175:LEU:C	55:v:205:VAL:HG21	1.89	0.98
34:a:1238:A:N6	34:a:1301:U:H3	1.62	0.97
55:v:328:ARG:CD	55:v:331:GLU:CD	2.34	0.97
55:v:224:ILE:HG21	55:v:244:ILE:HG22	1.46	0.97
55:v:234:ALA:CB	55:v:237:VAL:HG23	1.93	0.97
34:a:55:A:C8	56:w:310:LYS:HG3	1.99	0.97
55:v:172:TYR:CE1	55:v:176:LYS:CG	2.46	0.97
1:A:2584:U:C5'	55:v:232:ALA:HB1	1.95	0.97
34:a:531:U:H5	55:v:316:ARG:NH2	1.61	0.97
1:A:2656:U:O3'	56:w:146:ARG:NH1	1.99	0.96
55:v:317:VAL:CG2	55:v:329:LEU:HD21	1.80	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:221:ASP:HA	55:v:249:LEU:HD12	1.48	0.95
55:v:144:TRP:CE3	55:v:171:VAL:HG22	2.00	0.95
55:v:316:ARG:HA	55:v:327:TYR:HA	1.48	0.95
36:c:38:VAL:HG12	36:c:93:ILE:CD1	1.96	0.95
45:l:102:ASP:CG	56:w:409:GLN:HE22	1.74	0.95
55:v:137:ARG:NH1	55:v:334:GLU:CG	2.30	0.94
1:A:593:U:H3	1:A:664:G:H1	1.14	0.94
55:v:116:ARG:NE	55:v:161:GLU:HB2	1.80	0.94
34:a:531:U:C5	55:v:316:ARG:NH2	2.34	0.93
55:v:315:GLY:O	55:v:327:TYR:O	1.86	0.93
1:A:2452:C:H4'	55:v:239:THR:HG21	1.48	0.93
34:a:55:A:N9	56:w:310:LYS:HB2	1.83	0.93
55:v:116:ARG:CD	55:v:161:GLU:HB2	1.99	0.93
1:A:1476:U:H3	1:A:1515:A:H62	0.99	0.92
55:v:257:CYS:C	55:v:259:ASP:H	1.75	0.92
1:A:2584:U:O3'	55:v:233:GLY:CA	2.17	0.92
56:w:17:ALA:HB2	56:w:106:VAL:HG21	1.51	0.92
55:v:227:PHE:HE1	55:v:258:GLN:HG2	1.25	0.92
45:l:78:VAL:CG2	56:w:407:LEU:HD23	1.97	0.92
1:A:1920:C:H5'	34:a:1517:G:H1	1.29	0.91
55:v:122:ASP:OD1	55:v:126:LEU:HD13	1.71	0.91
55:v:202:THR:HB	55:v:298:LEU:CD2	2.00	0.91
55:v:172:TYR:CZ	55:v:176:LYS:HG3	2.06	0.90
55:v:243:ALA:CB	55:v:258:GLN:HG2	2.00	0.90
34:a:1492:A:H2	55:v:303:ARG:NH1	1.32	0.90
34:a:1492:A:C2	55:v:303:ARG:HD2	2.07	0.90
1:A:545:U:H3	1:A:548:G:H1	0.99	0.90
55:v:227:PHE:CE2	55:v:245:ARG:HG3	2.07	0.90
55:v:244:ILE:HD13	55:v:266:ASN:HB2	1.52	0.90
1:A:745:G:N7	1:A:746:U:C4	2.40	0.90
34:a:1445:U:H3	34:a:1457:G:H1	1.13	0.89
34:a:362:G:OP2	56:w:408:LYS:HE3	1.71	0.89
55:v:322:ILE:HD13	55:v:344:ILE:HA	1.53	0.89
55:v:135:TYR:CE1	55:v:178:GLU:OE2	2.26	0.88
34:a:55:A:C8	56:w:310:LYS:HB2	2.09	0.88
55:v:137:ARG:HH11	55:v:334:GLU:HG2	1.12	0.88
1:A:2028:U:H3	1:A:2033:A:H62	1.15	0.88
1:A:1920:C:O5'	34:a:1517:G:N2	2.07	0.88
1:A:2457:U:H5	1:A:2494:G:H1	0.90	0.88
34:a:454:G:H1	34:a:478:A:H61	1.21	0.88
55:v:134:MET:SD	55:v:333:MET:HA	2.13	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:966:G:C2	57:x:35:C:H5'	2.07	0.87
55:v:175:LEU:CA	55:v:205:VAL:HG21	2.04	0.87
55:v:227:PHE:CE1	55:v:258:GLN:CG	2.57	0.87
34:a:1074:G:H1	34:a:1083:U:H3	1.22	0.87
1:A:1915:U:OP1	55:v:116:ARG:NH2	2.08	0.87
55:v:179:SER:HA	55:v:203:VAL:O	1.74	0.87
45:l:30:ARG:HH22	56:w:408:LYS:NZ	1.72	0.86
55:v:218:ASN:O	55:v:222:LEU:HD21	1.75	0.86
36:c:63:ILE:HG23	36:c:98:ALA:HB2	1.57	0.86
34:a:1357:A:H61	34:a:1365:G:H1	1.22	0.86
55:v:185:GLN:OE1	55:v:311:ASN:OD1	1.92	0.86
55:v:263:GLN:HE22	55:v:264:HIS:CD2	1.93	0.86
34:a:55:A:C8	56:w:310:LYS:CG	2.59	0.86
34:a:54:C:O2	56:w:310:LYS:HE2	1.75	0.86
1:A:2508:G:H5'	55:v:228:ARG:NH1	1.91	0.86
34:a:358:U:O2	56:w:310:LYS:NZ	2.08	0.86
55:v:172:TYR:HE2	55:v:176:LYS:HE3	1.03	0.86
55:v:247:THR:CG2	55:v:254:VAL:HG22	2.00	0.86
34:a:54:C:O2	56:w:310:LYS:CE	2.24	0.85
55:v:227:PHE:O	55:v:241:ASP:HB2	1.76	0.85
1:A:1920:C:O5'	34:a:1517:G:C2	2.30	0.85
55:v:172:TYR:OH	55:v:176:LYS:CE	2.20	0.85
55:v:261:ARG:HG2	55:v:261:ARG:HH11	1.39	0.85
55:v:116:ARG:HD2	55:v:161:GLU:CA	2.06	0.85
55:v:175:LEU:C	55:v:205:VAL:CB	2.49	0.85
1:A:2584:U:H4'	55:v:233:GLY:H	1.40	0.85
55:v:224:ILE:CG2	55:v:244:ILE:HG22	2.07	0.84
36:c:63:ILE:CG2	36:c:98:ALA:HB2	2.07	0.84
55:v:159:TYR:CD2	55:v:162:ILE:HD11	2.11	0.84
33:7:19:G:O6	57:x:35:C:N4	2.11	0.84
34:a:1492:A:C2	55:v:303:ARG:CZ	2.60	0.84
55:v:159:TYR:CG	55:v:162:ILE:HD11	2.12	0.84
55:v:175:LEU:O	55:v:205:VAL:CB	2.25	0.83
1:A:2583:G:H22	55:v:238:ASN:ND2	1.76	0.83
55:v:123:GLU:CD	55:v:188:PRO:CB	2.51	0.83
55:v:315:GLY:O	55:v:327:TYR:HB3	1.78	0.83
55:v:113:LEU:HD23	55:v:175:LEU:HD22	1.54	0.83
55:v:257:CYS:C	55:v:258:GLN:CA	2.51	0.83
1:A:1920:C:C5'	34:a:1517:G:N1	2.41	0.83
55:v:322:ILE:HB	55:v:344:ILE:HG12	1.60	0.83
55:v:137:ARG:HH11	55:v:334:GLU:CG	1.91	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:55:A:H8	56:w:310:LYS:HG3	1.43	0.82
55:v:142:ARG:HH12	55:v:174:ARG:HH22	1.24	0.82
55:v:150:SER:OG	55:v:163:ILE:CB	2.27	0.82
55:v:234:ALA:HB3	55:v:237:VAL:CG2	2.01	0.82
34:a:368:U:H5	56:w:368:HIS:CG	1.98	0.82
55:v:134:MET:SD	55:v:332:VAL:C	2.62	0.82
36:c:38:VAL:HG12	36:c:93:ILE:HD11	1.61	0.82
45:l:122:LYS:CE	56:w:486:LYS:HB3	2.10	0.82
55:v:116:ARG:CD	55:v:161:GLU:CB	2.58	0.81
55:v:111:ALA:HB1	55:v:175:LEU:HD12	1.19	0.81
55:v:116:ARG:HE	55:v:161:GLU:HB3	1.46	0.81
55:v:138:TYR:CE1	55:v:337:LEU:HB2	2.16	0.81
1:A:2457:U:H5	1:A:2494:G:N1	1.75	0.81
34:a:1492:A:N6	45:l:46:SER:HB2	1.95	0.80
55:v:332:VAL:CG1	55:v:337:LEU:CD2	2.54	0.80
55:v:127:PHE:CD2	55:v:184:VAL:HG22	2.16	0.80
34:a:1304:G:H21	34:a:1333:A:H62	1.29	0.80
1:A:2475:C:H42	1:A:2529:G:N2	1.80	0.80
34:a:966:G:H21	57:x:35:C:H5'	1.46	0.80
55:v:322:ILE:HD12	55:v:344:ILE:CA	2.06	0.80
36:c:63:ILE:HG23	36:c:98:ALA:CB	2.11	0.79
55:v:222:LEU:HD12	55:v:246:ILE:CG2	2.11	0.79
55:v:175:LEU:HA	55:v:205:VAL:HG21	1.64	0.79
1:A:745:G:N7	1:A:746:U:N3	2.30	0.79
55:v:246:ILE:O	55:v:254:VAL:HA	1.81	0.79
34:a:531:U:H5	55:v:316:ARG:HH22	0.88	0.79
1:A:2584:U:O3'	55:v:233:GLY:N	2.16	0.78
1:A:2063:C:C5'	58:z:18:LEU:HD22	2.13	0.78
55:v:175:LEU:C	55:v:205:VAL:CG2	2.54	0.78
55:v:144:TRP:HZ3	55:v:171:VAL:CG2	1.96	0.78
34:a:1397:C:H2'	55:v:195:ARG:NH2	2.00	0.77
1:A:1932:A:H62	1:A:1968:G:H21	1.33	0.77
1:A:1913:A:N7	34:a:1494:G:N7	2.32	0.77
34:a:1415:G:H1	34:a:1485:U:H3	1.30	0.76
1:A:2508:G:N1	1:A:2580:U:O4	2.18	0.76
55:v:123:GLU:OE1	55:v:188:PRO:CB	2.27	0.76
56:w:398:PHE:CZ	56:w:443:VAL:HA	2.19	0.76
55:v:123:GLU:OE2	55:v:188:PRO:HB3	1.85	0.76
55:v:227:PHE:HE1	55:v:258:GLN:CG	1.93	0.76
34:a:1238:A:H62	34:a:1301:U:H3	0.80	0.75
55:v:244:ILE:CD1	55:v:266:ASN:HB2	2.15	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:113:LEU:CD2	55:v:175:LEU:CD2	2.21	0.74
1:A:2656:U:H5”	56:w:146:ARG:CZ	2.18	0.74
23:W:61:GLY:HA3	23:W:79:GLU:O	1.87	0.74
55:v:227:PHE:CZ	55:v:258:GLN:HG2	2.22	0.74
1:A:2475:C:H42	1:A:2529:G:H22	1.34	0.74
1:A:2584:U:C5’	55:v:232:ALA:CB	2.60	0.74
1:A:2063:C:H1’	58:z:18:LEU:C	2.13	0.74
55:v:185:GLN:CD	55:v:311:ASN:OD1	2.29	0.74
1:A:2583:G:H21	55:v:238:ASN:HD21	0.77	0.74
55:v:315:GLY:O	55:v:327:TYR:CA	2.35	0.74
1:A:2451:A:H2	55:v:235:GLN:NE2	1.86	0.73
45:l:78:VAL:CG2	56:w:407:LEU:CD2	2.60	0.73
55:v:259:ASP:HB3	55:v:266:ASN:OD1	1.88	0.73
1:A:2585:U:P	55:v:233:GLY:HA2	2.28	0.73
55:v:227:PHE:C	55:v:241:ASP:HB2	2.13	0.73
34:a:55:A:C4	56:w:310:LYS:HB2	2.24	0.73
1:A:1920:C:C5’	34:a:1517:G:H1	2.01	0.73
34:a:368:U:C5	56:w:368:HIS:HB3	2.24	0.73
55:v:316:ARG:HB3	55:v:327:TYR:HD1	0.95	0.73
55:v:244:ILE:HD13	55:v:266:ASN:CB	2.18	0.72
55:v:311:ASN:HD22	55:v:316:ARG:NE	1.87	0.72
1:A:306:U:H3	1:A:310:A:N6	1.86	0.72
34:a:370:C:H5”	56:w:341:VAL:HG11	1.70	0.72
55:v:257:CYS:CA	55:v:258:GLN:N	2.53	0.72
55:v:317:VAL:HG21	55:v:329:LEU:HD23	1.70	0.72
55:v:317:VAL:HG22	55:v:329:LEU:CD2	2.13	0.72
34:a:1492:A:H2	55:v:303:ARG:CZ	2.01	0.72
34:a:368:U:H5	56:w:368:HIS:CB	2.03	0.72
55:v:244:ILE:HG21	55:v:267:LYS:CG	2.20	0.72
55:v:227:PHE:CE1	55:v:258:GLN:NE2	2.58	0.72
55:v:138:TYR:HE1	55:v:337:LEU:HB2	1.55	0.71
55:v:263:GLN:NE2	55:v:264:HIS:CD2	2.57	0.71
34:a:1492:A:C2	55:v:303:ARG:CD	2.73	0.71
34:a:1492:A:H2	55:v:303:ARG:CD	2.02	0.71
55:v:142:ARG:O	55:v:143:ARG:HB2	1.90	0.71
55:v:172:TYR:CZ	55:v:176:LYS:CD	2.72	0.71
55:v:112:PHE:HE1	55:v:165:LYS:HE2	1.53	0.71
55:v:316:ARG:HD2	55:v:316:ARG:O	1.90	0.71
55:v:257:CYS:C	55:v:258:GLN:C	2.57	0.71
1:A:600:G:H1	1:A:657:U:H3	1.37	0.71
33:7:21:A:HO2’	34:a:1492:A:C2’	2.03	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:228:ARG:HA	55:v:241:ASP:HA	0.83	0.71
55:v:175:LEU:O	55:v:205:VAL:HB	1.91	0.71
34:a:292:G:H21	34:a:608:A:H61	1.38	0.71
55:v:116:ARG:CD	55:v:161:GLU:HA	2.16	0.70
55:v:123:GLU:OE2	55:v:188:PRO:CB	2.39	0.70
1:A:2061:G:H22	58:z:17:ARG:CB	2.04	0.70
55:v:127:PHE:CG	55:v:184:VAL:CG2	2.73	0.70
55:v:324:LEU:CD1	55:v:339:MET:O	2.39	0.70
1:A:2584:U:C4'	55:v:233:GLY:H	2.03	0.70
55:v:127:PHE:HE1	55:v:312:PHE:HE2	1.39	0.70
55:v:175:LEU:CA	55:v:205:VAL:CG2	2.67	0.70
55:v:316:ARG:CB	55:v:327:TYR:HD1	1.82	0.70
1:A:1919:A:H2'	34:a:1517:G:H21	1.55	0.70
11:K:17:ARG:HH12	34:a:1471:U:H5"	1.57	0.70
1:A:2508:G:C4'	55:v:228:ARG:HH12	2.05	0.69
55:v:227:PHE:CZ	55:v:258:GLN:CG	2.74	0.69
34:a:886:G:H1	34:a:911:U:H3	1.40	0.69
55:v:315:GLY:O	55:v:327:TYR:C	2.35	0.69
55:v:142:ARG:NH1	55:v:174:ARG:HH22	1.90	0.69
55:v:245:ARG:HG2	55:v:256:GLU:HG2	1.73	0.69
36:c:38:VAL:HG12	36:c:93:ILE:CG1	2.21	0.69
1:A:2508:G:H5'	55:v:228:ARG:HH12	1.58	0.69
1:A:1920:C:C5'	34:a:1517:G:C2	2.76	0.69
33:7:17:A:O2'	34:a:1498:U:OP2	2.11	0.69
33:7:19:G:O6	34:a:1400:C:H5'	1.93	0.69
1:A:955:U:C5	1:A:962:G:N1	2.58	0.68
55:v:113:LEU:HD21	55:v:175:LEU:HD21	1.63	0.68
55:v:122:ASP:OD1	55:v:126:LEU:CD1	2.41	0.68
55:v:184:VAL:O	55:v:198:THR:HA	1.93	0.68
1:A:1476:U:H3	1:A:1515:A:N6	1.83	0.68
34:a:1397:C:H2'	55:v:195:ARG:HH22	1.57	0.68
55:v:113:LEU:HD21	55:v:175:LEU:HD22	0.69	0.68
33:7:19:G:C6	34:a:1400:C:H5'	2.28	0.68
34:a:1492:A:N3	55:v:303:ARG:CZ	2.56	0.68
55:v:218:ASN:O	55:v:222:LEU:HD22	1.93	0.68
1:A:2457:U:O4	1:A:2494:G:O6	2.12	0.68
55:v:244:ILE:HD11	55:v:263:GLN:HA	1.76	0.68
55:v:172:TYR:CD1	55:v:176:LYS:HG3	2.28	0.68
34:a:368:U:H5	56:w:368:HIS:HB3	1.57	0.67
55:v:228:ARG:O	55:v:242:SER:N	2.26	0.67
1:A:2451:A:H2	55:v:235:GLN:HE22	1.42	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
44:k:87:GLY:H	44:k:113:THR:HG22	1.59	0.67
55:v:179:SER:CB	55:v:297:LEU:HD22	2.25	0.67
1:A:2475:C:N4	1:A:2529:G:H22	1.92	0.67
55:v:235:GLN:NE2	58:z:17:ARG:C	2.52	0.67
16:P:59:THR:HG22	16:P:72:VAL:HG12	1.77	0.67
55:v:244:ILE:HG12	55:v:263:GLN:HB2	1.76	0.67
55:v:315:GLY:O	55:v:327:TYR:CB	2.41	0.67
1:A:1912:A:N7	1:A:1917:U:O4	2.27	0.67
36:c:38:VAL:HG12	36:c:93:ILE:HG13	1.76	0.67
55:v:144:TRP:HZ3	55:v:171:VAL:HG23	1.58	0.67
1:A:1433:A:H61	1:A:1560:G:H1	1.41	0.67
55:v:235:GLN:NE2	58:z:17:ARG:O	2.28	0.67
2:B:78:A:H62	2:B:98:G:H21	1.41	0.66
33:7:21:A:C2'	34:a:1492:A:HO2'	2.04	0.66
34:a:362:G:OP2	56:w:408:LYS:CE	2.41	0.66
6:F:62:GLN:HE22	6:F:90:LEU:HB3	1.61	0.66
49:p:4:ILE:HG12	49:p:21:VAL:HG22	1.78	0.66
56:w:399:ARG:O	56:w:400:ARG:CB	2.41	0.66
39:f:6:ILE:HG12	39:f:89:VAL:HG22	1.77	0.66
55:v:301:GLY:H	55:v:306:ARG:HH12	1.42	0.66
55:v:147:GLU:O	55:v:164:ALA:HB1	1.95	0.66
1:A:2654:A:OP2	56:w:177:LYS:NZ	2.26	0.66
40:g:111:GLY:HA2	40:g:118:ARG:HD3	1.78	0.66
55:v:226:THR:HB	55:v:241:ASP:OD2	1.96	0.66
34:a:150:U:H3	34:a:171:A:H62	1.44	0.65
55:v:159:TYR:CB	55:v:162:ILE:HD11	2.26	0.65
55:v:222:LEU:CD2	55:v:222:LEU:H	2.06	0.65
56:w:306:ASN:HD21	56:w:353:ARG:HH12	1.43	0.65
56:w:395:PRO:HD2	56:w:471:ALA:HB1	1.78	0.65
1:A:2493:U:C2'	55:v:263:GLN:HE21	2.08	0.65
55:v:224:ILE:HA	55:v:245:ARG:O	1.97	0.65
39:f:5:GLU:HB2	39:f:90:MET:HB2	1.77	0.65
55:v:134:MET:CE	55:v:332:VAL:O	2.44	0.65
55:v:332:VAL:CA	55:v:337:LEU:HD23	2.14	0.65
55:v:221:ASP:O	55:v:249:LEU:CB	2.44	0.65
12:L:109:LYS:HD2	12:L:126:ARG:HH11	1.62	0.65
55:v:137:ARG:CD	55:v:334:GLU:HA	2.27	0.65
55:v:316:ARG:HD2	55:v:316:ARG:C	2.21	0.64
16:P:105:LYS:NZ	34:a:1464:U:OP1	2.27	0.64
1:A:2508:G:C6	1:A:2580:U:O4	2.51	0.64
35:b:31:PHE:HB2	35:b:39:ILE:HB	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:127:PHE:CD1	55:v:184:VAL:HG22	2.33	0.64
34:a:454:G:H1	34:a:478:A:N6	1.93	0.64
39:f:45:ARG:O	39:f:56:LYS:HA	1.96	0.64
1:A:459:U:H3	1:A:470:A:H62	1.47	0.64
1:A:955:U:H5	1:A:962:G:H1	1.44	0.64
1:A:2508:G:O6	1:A:2580:U:O4	2.16	0.64
5:E:146:VAL:HG12	5:E:185:LYS:HB2	1.80	0.64
33:7:18:U:H6	33:7:18:U:H5"	1.63	0.64
55:v:112:PHE:CE1	55:v:165:LYS:HE2	2.33	0.64
55:v:159:TYR:HB2	55:v:162:ILE:HD11	1.80	0.63
56:w:395:PRO:O	56:w:471:ALA:HB2	1.98	0.63
1:A:78:U:H3	1:A:108:G:H1	1.45	0.63
34:a:664:G:H22	34:a:741:G:H1	1.44	0.63
34:a:659:U:H3	34:a:747:A:H61	1.46	0.63
55:v:114:GLU:HG2	55:v:163:ILE:HG23	1.80	0.63
55:v:116:ARG:CZ	55:v:161:GLU:CB	2.75	0.63
55:v:206:MET:SD	55:v:297:LEU:HD11	2.38	0.63
5:E:18:THR:HA	5:E:106:LYS:HE3	1.81	0.63
14:N:28:LEU:HD23	14:N:48:VAL:HG21	1.81	0.63
56:w:399:ARG:HH12	56:w:402:ARG:HD3	1.63	0.63
34:a:673:A:H4'	39:f:86:ARG:HH21	1.63	0.63
52:s:54:ARG:HG3	52:s:55:GLN:HG2	1.81	0.63
55:v:112:PHE:CD1	55:v:165:LYS:HG2	2.31	0.63
55:v:222:LEU:HD12	55:v:246:ILE:HG21	1.80	0.63
34:a:1357:A:N6	34:a:1365:G:H1	1.94	0.63
1:A:2514:U:H5"	10:J:81:ILE:HD11	1.80	0.63
55:v:172:TYR:CZ	55:v:176:LYS:HG2	2.33	0.63
1:A:955:U:H5	1:A:962:G:N1	1.97	0.62
1:A:1039:A:H2	1:A:1116:G:H1	1.42	0.62
34:a:368:U:O4	56:w:368:HIS:ND1	2.32	0.62
1:A:1905:C:H4'	1:A:1929:G:H21	1.64	0.62
52:s:5:LYS:HG3	52:s:6:LYS:HG2	1.81	0.62
55:v:135:TYR:HE1	55:v:178:GLU:OE2	1.80	0.62
36:c:91:ALA:HA	36:c:94:ALA:HB3	1.81	0.62
45:l:30:ARG:HH22	56:w:408:LYS:HZ2	1.45	0.62
55:v:142:ARG:HH12	55:v:174:ARG:CZ	2.12	0.62
50:q:30:HIS:HD2	50:q:33:TYR:H	1.47	0.62
55:v:257:CYS:O	55:v:258:GLN:CA	2.47	0.62
55:v:290:GLU:O	55:v:294:ARG:HG3	1.99	0.62
55:v:316:ARG:HB3	55:v:327:TYR:CE1	2.22	0.62
55:v:179:SER:HB3	55:v:297:LEU:HD22	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
45:l:30:ARG:HH22	56:w:408:LYS:HZ1	1.45	0.62
1:A:1687:G:H21	1:A:1701:A:H62	1.47	0.62
1:A:2061:G:N2	58:z:17:ARG:HB2	2.15	0.62
35:b:165:ALA:HB3	35:b:190:SER:HB3	1.81	0.62
55:v:317:VAL:CG2	55:v:329:LEU:HD22	2.22	0.62
1:A:244:A:H62	1:A:254:G:H21	1.47	0.62
1:A:2063:C:O4'	58:z:18:LEU:HA	2.00	0.62
55:v:112:PHE:CE1	55:v:165:LYS:CG	2.79	0.62
1:A:1418:G:N2	1:A:1579:A:N7	2.48	0.61
1:A:1798:U:H5"	3:C:257:ARG:HB2	1.82	0.61
3:C:143:VAL:HB	3:C:153:LEU:HB2	1.82	0.61
55:v:228:ARG:C	55:v:242:SER:H	2.07	0.61
1:A:1046:A:H62	32:5:4:ASN:HD21	1.47	0.61
1:A:1060:U:H5'	1:A:1062:G:H5'	1.83	0.61
1:A:1920:C:C4'	34:a:1517:G:H22	2.13	0.61
55:v:177:PHE:CE2	55:v:345:ILE:HG12	2.36	0.61
34:a:55:A:C8	56:w:310:LYS:HB3	2.33	0.61
1:A:1154:G:OP2	17:Q:57:ARG:NH1	2.34	0.61
1:A:1666:G:H4'	11:K:6:THR:HG23	1.83	0.61
34:a:1441:A:H62	34:a:1461:G:H21	1.47	0.61
55:v:134:MET:HE1	55:v:332:VAL:C	2.22	0.61
33:7:21:A:H4'	34:a:1492:A:O2'	2.01	0.61
34:a:335:C:H2'	34:a:336:A:H8	1.65	0.61
43:j:42:LEU:HD11	43:j:73:LEU:HG	1.82	0.61
33:7:18:U:C6	33:7:18:U:C5'	2.83	0.61
1:A:2514:U:H3	1:A:2570:G:H1	1.48	0.61
34:a:522:C:H41	45:l:49:ARG:HH22	1.49	0.61
1:A:2508:G:C5'	55:v:228:ARG:HH12	2.13	0.60
1:A:2656:U:O2	1:A:2665:A:N7	2.34	0.60
22:V:64:VAL:HG22	22:V:69:GLU:HG2	1.83	0.60
1:A:955:U:O4	1:A:962:G:O6	2.20	0.60
1:A:488:G:H22	1:A:491:G:H5"	1.66	0.60
56:w:398:PHE:CE2	56:w:442:GLY:O	2.54	0.60
57:x:53:G:H1	57:x:63:C:H42	1.49	0.60
1:A:281:C:H42	1:A:359:G:H1	1.49	0.60
1:A:1081:U:H4'	9:I:123:ALA:HB1	1.83	0.60
1:A:2063:C:C1'	58:z:18:LEU:HA	2.31	0.60
55:v:175:LEU:HA	55:v:205:VAL:CG2	2.31	0.60
1:A:2508:G:C5'	55:v:228:ARG:NH1	2.63	0.60
3:C:51:ARG:HH22	3:C:246:PRO:HG2	1.67	0.60
55:v:134:MET:SD	55:v:333:MET:CA	2.89	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:337:LEU:C	55:v:339:MET:H	2.08	0.60
19:S:82:MET:HB2	19:S:98:LYS:HB2	1.84	0.60
30:3:32:LEU:HD23	30:3:35:LYS:HD2	1.84	0.60
37:d:94:GLU:HG2	37:d:185:PRO:HG2	1.83	0.60
1:A:629:G:N3	1:A:639:U:O2'	2.33	0.60
1:A:2062:A:H62	1:A:2503:A:H62	1.49	0.60
4:D:34:VAL:HA	4:D:50:VAL:HG12	1.84	0.60
55:v:221:ASP:O	55:v:249:LEU:CD1	2.49	0.60
1:A:818:G:H21	1:A:1189:A:H62	1.47	0.60
11:K:40:LYS:HE3	11:K:57:VAL:HG12	1.84	0.60
32:5:58:THR:HG21	32:5:82:ILE:H	1.67	0.60
39:f:32:ALA:HB2	39:f:70:VAL:HG11	1.83	0.60
55:v:112:PHE:HE1	55:v:165:LYS:HG2	1.60	0.60
55:v:227:PHE:CE2	55:v:243:ALA:C	2.80	0.60
55:v:316:ARG:CB	55:v:327:TYR:CE1	2.84	0.60
1:A:1252:G:N2	17:Q:32:ARG:O	2.35	0.60
6:F:134:GLN:NE2	6:F:149:ARG:O	2.35	0.60
34:a:684:U:H1'	44:k:39:ASN:HB2	1.83	0.60
57:x:27:G:H22	57:x:45:A:H61	1.50	0.60
36:c:99:GLN:OE1	36:c:99:GLN:N	2.34	0.59
56:w:144:LEU:HB2	56:w:258:THR:HB	1.83	0.59
56:w:417:VAL:HG21	56:w:429:ARG:HH21	1.67	0.59
1:A:2061:G:H22	58:z:17:ARG:HB3	1.65	0.59
45:l:30:ARG:NH2	56:w:408:LYS:HZ1	1.99	0.59
55:v:126:LEU:HD12	55:v:157:GLY:C	2.17	0.59
55:v:185:GLN:O	55:v:186:ARG:HG3	2.02	0.59
44:k:111:ASP:O	51:r:72:ARG:NH2	2.36	0.59
55:v:116:ARG:CZ	55:v:161:GLU:HB2	2.31	0.59
55:v:285:LYS:O	55:v:289:ALA:N	2.35	0.59
8:H:39:ALA:HA	8:H:43:ASN:HB2	1.85	0.59
34:a:1440:U:H3	34:a:1461:G:H1	1.51	0.59
1:A:839:U:H3	1:A:939:G:H1	1.50	0.59
55:v:221:ASP:CA	55:v:249:LEU:HD12	2.28	0.59
1:A:1862:G:H1	1:A:1880:U:H3	1.49	0.59
34:a:672:U:H3	34:a:734:G:H1	1.48	0.59
40:g:75:LYS:HE3	40:g:88:VAL:HG11	1.85	0.59
44:k:84:MET:SD	44:k:110:THR:OG1	2.61	0.59
55:v:122:ASP:OD2	55:v:156:HIS:HB2	2.01	0.59
56:w:32:LYS:HD2	56:w:262:ASN:HA	1.84	0.59
2:B:78:A:H62	2:B:98:G:N2	2.00	0.59
5:E:117:ARG:NH2	5:E:183:PHE:O	2.36	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:538:A:H4'	10:J:7:LYS:HG2	1.85	0.59
1:A:2296:U:OP2	15:O:9:ARG:NH2	2.36	0.59
1:A:2656:U:C3'	56:w:146:ARG:HH12	2.15	0.59
34:a:966:G:C2	57:x:35:C:C5'	2.83	0.59
1:A:1093:G:H21	1:A:1098:A:H62	1.51	0.59
1:A:1500:G:H4'	3:C:100:ARG:HH12	1.68	0.59
1:A:2584:U:C3'	55:v:233:GLY:H	2.16	0.59
55:v:116:ARG:CZ	55:v:161:GLU:HB3	2.32	0.59
34:a:1367:C:H4'	43:j:50:THR:HG21	1.85	0.58
55:v:337:LEU:O	55:v:338:ASP:C	2.45	0.58
34:a:368:U:C5	56:w:368:HIS:CG	2.85	0.58
34:a:958:A:N6	52:s:76:THR:O	2.36	0.58
55:v:185:GLN:NE2	55:v:311:ASN:OD1	2.36	0.58
55:v:244:ILE:HG21	55:v:267:LYS:HG3	1.84	0.58
55:v:126:LEU:HD11	55:v:157:GLY:O	1.93	0.58
12:L:23:ILE:HD13	18:R:84:ARG:HH22	1.68	0.58
55:v:261:ARG:HH11	55:v:261:ARG:CG	2.11	0.58
34:a:766:A:OP2	34:a:812:G:N2	2.37	0.58
55:v:127:PHE:CD1	55:v:184:VAL:HG13	2.38	0.58
55:v:322:ILE:O	55:v:322:ILE:HG22	2.03	0.58
55:v:324:LEU:HD11	55:v:339:MET:O	2.04	0.58
56:w:398:PHE:HZ	56:w:443:VAL:HA	1.65	0.58
1:A:196:A:H61	1:A:831:G:H21	1.52	0.58
55:v:177:PHE:O	55:v:321:ARG:NH2	2.35	0.58
55:v:191:GLU:HG2	55:v:193:GLN:H	1.69	0.58
22:V:42:LEU:HD13	22:V:47:VAL:HG21	1.85	0.58
42:i:48:ARG:HA	42:i:51:LEU:HD12	1.84	0.58
1:A:2185:U:H2'	1:A:2186:G:H8	1.69	0.58
26:Z:8:GLN:HB2	26:Z:28:LEU:HD13	1.86	0.58
34:a:674:G:O6	34:a:716:A:N1	2.36	0.58
34:a:951:G:OP2	46:m:100:ARG:NH2	2.37	0.58
37:d:61:ARG:NH1	37:d:68:GLU:OE1	2.37	0.58
9:I:11:GLN:NE2	9:I:54:ILE:O	2.37	0.57
56:w:295:LYS:HG2	56:w:381:GLN:HB2	1.85	0.57
43:j:7:ARG:HB3	43:j:101:SER:HB2	1.85	0.57
1:A:1920:C:H4'	34:a:1517:G:H22	1.69	0.57
1:A:2061:G:H22	58:z:17:ARG:HB2	1.68	0.57
1:A:514:A:N3	1:A:581:C:O2'	2.37	0.57
1:A:636:G:N7	12:L:109:LYS:NZ	2.52	0.57
1:A:745:G:O6	1:A:746:U:C5	2.58	0.57
1:A:2094:A:O3'	8:H:11:ASN:ND2	2.38	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
55:v:244:ILE:HG21	55:v:267:LYS:HG2	1.85	0.57
1:A:1476:U:O4	1:A:1515:A:N7	2.38	0.57
32:5:3:LEU:HD12	32:5:5:LEU:H	1.68	0.57
34:a:311:C:OP1	49:p:31:ARG:NH1	2.38	0.57
43:j:8:ILE:HG12	43:j:100:ILE:HG22	1.85	0.57
56:w:488:LYS:HE2	56:w:517:ARG:HH21	1.68	0.57
1:A:306:U:O4	1:A:310:A:N7	2.37	0.57
3:C:92:LEU:HD11	3:C:100:ARG:HB3	1.86	0.57
55:v:137:ARG:HD2	55:v:334:GLU:HA	1.87	0.57
1:A:318:C:H2'	1:A:319:G:H8	1.70	0.57
4:D:15:PHE:H	16:P:11:GLN:HE22	1.52	0.57
29:2:24:THR:HG23	29:2:27:GLY:H	1.69	0.57
55:v:150:SER:OG	55:v:163:ILE:CA	2.53	0.57
1:A:2515:C:H2'	1:A:2516:A:H8	1.70	0.57
2:B:48:U:OP2	15:O:30:ARG:NH2	2.38	0.57
23:W:33:ILE:HG22	23:W:34:VAL:HG23	1.87	0.57
33:7:18:U:OP1	34:a:1498:U:O2'	2.16	0.57
45:l:109:ARG:HB2	45:l:118:VAL:HG21	1.86	0.57
1:A:962:G:O2'	1:A:2250:G:N2	2.38	0.57
27:0:30:ASP:HB3	27:0:34:GLY:H	1.70	0.57
34:a:1304:G:N2	34:a:1333:A:H62	1.98	0.57
35:b:17:HIS:HE1	35:b:202:ASN:HA	1.68	0.57
55:v:137:ARG:HD3	55:v:334:GLU:HA	1.86	0.57
34:a:55:A:C2	56:w:311:HIS:HB2	2.40	0.56
34:a:505:G:H5'	34:a:534:U:H2'	1.85	0.56
34:a:1347:G:N2	34:a:1374:A:OP2	2.34	0.56
36:c:63:ILE:HG21	36:c:94:ALA:HB1	1.87	0.56
40:g:46:LEU:HD23	40:g:57:GLU:HB3	1.87	0.56
49:p:18:GLN:HE22	49:p:35:ARG:HH21	1.51	0.56
55:v:134:MET:CE	55:v:332:VAL:C	2.77	0.56
55:v:222:LEU:HA	55:v:247:THR:O	2.05	0.56
1:A:1986:C:H2'	1:A:1987:A:H8	1.71	0.56
1:A:2493:U:H1'	55:v:263:GLN:NE2	2.19	0.56
18:R:35:PHE:O	18:R:58:VAL:HA	2.05	0.56
24:X:6:VAL:HG21	24:X:58:ILE:HD11	1.87	0.56
36:c:38:VAL:CG1	36:c:93:ILE:HG13	2.35	0.56
36:c:152:VAL:HG12	36:c:197:VAL:HG22	1.87	0.56
55:v:116:ARG:CZ	55:v:161:GLU:OE2	2.53	0.56
1:A:605:G:H1'	1:A:657:U:H1'	1.88	0.56
2:B:72:G:H21	2:B:104:A:H62	1.53	0.56
33:7:21:A:O2'	55:v:303:ARG:NH2	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:683:G:H1	34:a:707:U:H3	1.52	0.56
36:c:62:SER:HA	36:c:96:VAL:HG21	1.87	0.56
52:s:30:LEU:HB2	52:s:48:ILE:HG22	1.86	0.56
55:v:127:PHE:HE1	55:v:312:PHE:CE2	2.22	0.56
55:v:319:ASP:HB2	55:v:323:ASN:HA	1.86	0.56
55:v:328:ARG:NE	55:v:331:GLU:OE2	2.39	0.56
1:A:1798:U:OP2	3:C:270:ARG:NH2	2.39	0.56
4:D:179:ARG:HB3	4:D:188:LEU:HD12	1.87	0.56
34:a:1238:A:N7	34:a:1301:U:O4	2.39	0.56
44:k:92:ARG:NH2	44:k:111:ASP:OD1	2.39	0.56
45:l:30:ARG:NH2	56:w:408:LYS:NZ	2.48	0.56
55:v:289:ALA:O	55:v:293:THR:HG23	2.05	0.56
20:T:23:ALA:HB1	20:T:29:THR:HB	1.87	0.56
55:v:244:ILE:CD1	55:v:266:ASN:CB	2.82	0.56
1:A:1754:A:O2'	16:P:102:ARG:NH2	2.38	0.56
24:X:39:VAL:HG12	24:X:42:GLU:H	1.70	0.56
48:o:38:LEU:HD23	48:o:42:PHE:HE2	1.71	0.56
34:a:950:U:H3	34:a:1231:G:H1	1.51	0.56
34:a:1200:C:H5"	34:a:1201:A:H3'	1.87	0.56
36:c:39:ARG:HG3	36:c:54:ILE:HD11	1.88	0.56
55:v:255:VAL:CG2	55:v:274:LEU:HD23	2.36	0.56
56:w:92:HIS:HB2	56:w:95:PHE:HB2	1.88	0.56
34:a:1493:A:N6	55:v:300:SER:O	2.35	0.56
55:v:147:GLU:CD	55:v:165:LYS:CB	2.58	0.56
55:v:257:CYS:N	55:v:258:GLN:N	2.54	0.56
1:A:1173:U:O2'	1:A:1177:G:N2	2.39	0.56
1:A:1223:G:OP1	18:R:68:ARG:NH2	2.39	0.56
1:A:1920:C:C5'	34:a:1517:G:N2	2.69	0.56
37:d:37:PRO:HD2	37:d:41:GLY:HA3	1.88	0.56
57:x:42:C:H2'	57:x:43:G:H8	1.71	0.56
1:A:1992:G:N2	1:A:1996:C:O2'	2.36	0.55
55:v:142:ARG:O	55:v:143:ARG:CB	2.53	0.55
1:A:605:G:N3	1:A:657:U:O2'	2.38	0.55
1:A:605:G:OP1	5:E:99:LYS:NZ	2.40	0.55
1:A:2692:G:H1'	1:A:2847:U:H1'	1.88	0.55
2:B:79:G:N7	22:V:14:LYS:NZ	2.53	0.55
5:E:102:ARG:NH1	5:E:200:LEU:O	2.39	0.55
6:F:23:SER:HB3	6:F:26:GLN:HG3	1.87	0.55
15:O:40:ILE:HG12	15:O:47:VAL:HG12	1.88	0.55
37:d:97:LEU:HB2	37:d:134:TYR:HB3	1.87	0.55
1:A:2657:A:OP1	56:w:146:ARG:NH1	2.39	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2720:U:OP1	16:P:52:ARG:NH2	2.40	0.55
7:G:88:LEU:HG	7:G:161:VAL:HG22	1.87	0.55
34:a:675:A:H1'	44:k:117:HIS:HD2	1.70	0.55
55:v:147:GLU:OE1	55:v:165:LYS:CG	2.53	0.55
55:v:244:ILE:CG1	55:v:263:GLN:HB2	2.36	0.55
1:A:1932:A:H62	1:A:1968:G:N2	2.02	0.55
34:a:441:A:H61	34:a:493:A:H61	1.54	0.55
1:A:144:A:H4'	20:T:2:ILE:HD11	1.89	0.55
1:A:647:G:N2	1:A:2350:C:O2'	2.40	0.55
1:A:907:G:N2	13:M:70:ASP:OD2	2.40	0.55
1:A:2893:A:H5"	1:A:2894:G:H5'	1.88	0.55
55:v:119:THR:O	55:v:124:ALA:HB2	2.06	0.55
1:A:2028:U:O4	1:A:2033:A:N7	2.39	0.55
1:A:2229:U:H2'	1:A:2230:G:H8	1.71	0.55
24:X:4:CYS:HB3	24:X:9:LYS:H	1.72	0.55
34:a:895:G:H1	34:a:904:U:H3	1.55	0.55
56:w:158:VAL:HG13	56:w:162:LEU:HD12	1.89	0.55
55:v:135:TYR:CZ	55:v:178:GLU:OE2	2.60	0.55
56:w:14:ARG:NH1	56:w:82:CYS:SG	2.80	0.55
1:A:2508:G:C4'	55:v:228:ARG:NH1	2.70	0.55
34:a:370:C:C5'	56:w:341:VAL:HG21	2.37	0.55
49:p:7:ALA:HB3	49:p:18:GLN:HB2	1.89	0.55
55:v:206:MET:SD	55:v:297:LEU:CD1	2.95	0.55
1:A:1204:A:N6	1:A:1242:U:O4	2.40	0.55
1:A:2291:U:H1'	1:A:2374:C:H1'	1.89	0.55
1:A:2861:U:H2'	1:A:2862:G:H8	1.72	0.55
14:N:43:GLU:OE2	14:N:46:ARG:NH2	2.40	0.55
24:X:58:ILE:HG12	24:X:66:VAL:HG21	1.89	0.55
55:v:150:SER:OG	55:v:163:ILE:O	2.21	0.55
1:A:585:G:H21	1:A:1254:A:H62	1.55	0.55
1:A:1428:C:OP2	3:C:27:LYS:NZ	2.40	0.55
39:f:38:ARG:NH2	39:f:40:GLU:OE1	2.39	0.55
55:v:262:SER:O	55:v:266:ASN:ND2	2.39	0.55
11:K:30:ARG:NH2	11:K:37:ASP:OD2	2.39	0.54
38:e:92:ARG:HB2	38:e:127:TYR:HB2	1.89	0.54
42:i:33:SER:H	42:i:36:GLN:HE21	1.54	0.54
1:A:460:A:H62	1:A:469:G:H21	1.54	0.54
1:A:475:C:H4'	1:A:510:C:H5'	1.88	0.54
1:A:2523:G:HO2'	1:A:2764:A:HO2'	1.56	0.54
1:A:2748:A:H5'	7:G:3:VAL:HG21	1.89	0.54
24:X:39:VAL:O	24:X:43:LYS:N	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
46:m:76:ILE:HG22	46:m:80:MET:HE2	1.89	0.54
1:A:2320:U:O2'	1:A:2322:A:N6	2.40	0.54
11:K:43:ILE:HD12	11:K:56:ASP:HB2	1.90	0.54
1:A:2028:U:H3	1:A:2033:A:N6	1.94	0.54
1:A:2451:A:C2	55:v:235:GLN:NE2	2.73	0.54
55:v:224:ILE:HG23	55:v:244:ILE:O	2.07	0.54
55:v:244:ILE:HD11	55:v:263:GLN:CA	2.37	0.54
1:A:2394:C:H5"	12:L:63:LYS:HE3	1.90	0.54
34:a:1254:A:OP2	43:j:45:ARG:NH2	2.41	0.54
34:a:1306:A:N6	34:a:1331:G:O2'	2.40	0.54
55:v:260:GLU:O	55:v:262:SER:N	2.39	0.54
1:A:444:C:OP2	5:E:44:ARG:NH2	2.41	0.54
1:A:550:C:H2'	1:A:551:G:H8	1.73	0.54
1:A:589:U:H2'	1:A:590:A:H8	1.73	0.54
11:K:98:ARG:NH2	34:a:340:U:O4	2.40	0.54
34:a:626:G:O2'	49:p:51:ARG:NH1	2.40	0.54
1:A:1153:C:OP1	17:Q:91:ARG:NH2	2.40	0.54
2:B:30:C:H1'	2:B:57:A:H61	1.71	0.54
3:C:70:LYS:HB3	3:C:73:ILE:HD12	1.90	0.54
7:G:94:ARG:HB2	7:G:105:SER:HB2	1.90	0.54
34:a:292:G:N2	34:a:608:A:H61	2.05	0.54
55:v:190:THR:HG22	55:v:190:THR:O	2.07	0.54
55:v:227:PHE:HE1	55:v:258:GLN:CD	2.15	0.54
20:T:8:LEU:HA	20:T:50:LEU:HD21	1.89	0.54
34:a:1222:G:OP1	52:s:77:ARG:NH1	2.41	0.54
34:a:1297:G:N2	40:g:113:LYS:O	2.40	0.54
34:a:1368:A:OP1	43:j:64:GLN:NE2	2.39	0.54
42:i:112:ARG:NH2	43:j:64:GLN:OE1	2.41	0.54
32:5:22:ALA:HB3	32:5:87:GLU:HB2	1.88	0.54
34:a:8:A:N6	37:d:201:GLU:O	2.41	0.54
1:A:587:C:O2	12:L:33:ARG:NH1	2.41	0.54
15:O:108:ASP:OD1	15:O:111:ARG:NH1	2.40	0.54
55:v:261:ARG:HG2	55:v:261:ARG:NH1	2.17	0.54
34:a:518:C:P	55:v:183:ARG:HH22	2.31	0.53
34:a:966:G:C2	57:x:35:C:C4'	2.91	0.53
34:a:1317:C:O2	52:s:36:ARG:NH2	2.35	0.53
34:a:1492:A:H8	45:l:43:LYS:HG3	1.72	0.53
36:c:171:ARG:HG2	36:c:173:PRO:HD3	1.90	0.53
56:w:506:THR:OG1	56:w:510:ASN:ND2	2.40	0.53
1:A:538:A:N6	1:A:555:G:O2'	2.41	0.53
41:h:42:GLU:HG2	41:h:100:ILE:HG12	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:698:C:HO2'	1:A:734:A:H61	1.54	0.53
1:A:1779:U:OP2	1:A:1784:A:N6	2.42	0.53
1:A:1916:A:N1	34:a:1408:A:O2'	2.41	0.53
1:A:2110:G:N1	1:A:2120:G:N7	2.57	0.53
1:A:2659:G:N2	1:A:2662:A:OP2	2.41	0.53
6:F:142:TYR:HB3	46:m:70:ARG:HH21	1.72	0.53
27:0:27:LEU:HD23	27:0:36:LYS:HB3	1.91	0.53
3:C:165:ALA:HB3	3:C:172:THR:HB	1.90	0.53
34:a:20:U:O2'	34:a:573:A:N6	2.42	0.53
34:a:292:G:H21	34:a:608:A:N6	2.05	0.53
34:a:422:C:O2'	34:a:423:G:N2	2.41	0.53
34:a:1237:C:O2'	34:a:1300:G:N2	2.41	0.53
55:v:150:SER:HG	55:v:163:ILE:C	2.15	0.53
1:A:533:G:O5'	17:Q:27:ARG:NH1	2.42	0.53
1:A:994:C:OP1	17:Q:52:ARG:NH2	2.41	0.53
1:A:1753:G:H5"	16:P:92:ARG:HD3	1.90	0.53
4:D:148:GLN:HB2	4:D:152:PRO:HG2	1.91	0.53
34:a:406:G:H5'	37:d:4:LEU:HD22	1.90	0.53
36:c:91:ALA:HA	36:c:94:ALA:CB	2.37	0.53
41:h:28:SER:HB3	41:h:56:PRO:HB2	1.90	0.53
55:v:147:GLU:OE1	55:v:165:LYS:HD2	2.07	0.53
55:v:227:PHE:CD2	55:v:243:ALA:O	2.61	0.53
1:A:210:C:OP1	29:2:29:GLN:NE2	2.42	0.53
1:A:1668:A:N3	1:A:1670:C:N4	2.57	0.53
34:a:1187:G:H5'	42:i:114:LYS:HE3	1.90	0.53
34:a:1309:G:O6	34:a:1329:A:N6	2.41	0.53
42:i:122:ARG:NH1	42:i:123:ARG:O	2.42	0.53
55:v:185:GLN:OE1	55:v:311:ASN:HA	2.07	0.53
1:A:2020:A:N7	27:0:5:ASN:ND2	2.57	0.53
1:A:2584:U:H4'	55:v:233:GLY:N	2.16	0.53
13:M:75:GLU:HB3	13:M:90:GLU:HG3	1.91	0.53
26:Z:10:ARG:HB2	26:Z:53:MET:HB2	1.90	0.53
34:a:54:C:O2	56:w:310:LYS:NZ	2.40	0.53
34:a:261:U:OP2	53:t:73:ARG:NH2	2.41	0.53
34:a:357:G:O2'	56:w:311:HIS:CD2	2.62	0.53
34:a:1086:U:H3	34:a:1099:G:H1	1.56	0.53
34:a:1088:G:H21	34:a:1167:A:H61	1.57	0.53
55:v:122:ASP:HA	55:v:125:ALA:HB3	1.91	0.53
21:U:36:GLU:HA	21:U:61:GLU:HG2	1.90	0.53
38:e:80:LEU:HD13	38:e:122:VAL:HG21	1.91	0.53
53:t:11:ILE:O	53:t:14:GLU:HB2	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
56:w:101:ARG:HH21	56:w:302:LYS:HG3	1.74	0.53
1:A:523:C:O2	1:A:554:U:O2'	2.27	0.53
1:A:2657:A:P	56:w:146:ARG:HH11	2.26	0.53
11:K:48:PRO:HG3	34:a:1422:G:H5'	1.90	0.53
56:w:14:ARG:HB2	56:w:84:VAL:HG22	1.91	0.53
1:A:2306:C:N4	6:F:38:GLY:O	2.41	0.53
1:A:2746:U:H5"	7:G:137:LYS:HE2	1.90	0.53
34:a:321:A:H61	34:a:332:G:H1	1.57	0.53
44:k:126:ARG:HB3	54:u:33:ARG:HE	1.74	0.53
45:l:122:LYS:CE	56:w:486:LYS:CB	2.86	0.53
55:v:204:ALA:HB1	55:v:297:LEU:HD13	1.90	0.53
55:v:290:GLU:O	55:v:293:THR:OG1	2.21	0.53
55:v:311:ASN:HB2	55:v:316:ARG:HD2	1.90	0.53
1:A:177:G:H3'	1:A:178:G:H8	1.73	0.52
34:a:552:U:H2'	34:a:553:A:H8	1.75	0.52
34:a:1250:A:H4'	42:i:68:GLY:HA2	1.91	0.52
37:d:102:TYR:O	37:d:164:ARG:NH1	2.40	0.52
55:v:172:TYR:CD1	55:v:172:TYR:O	2.62	0.52
1:A:576:U:H2'	1:A:577:G:C8	2.45	0.52
8:H:1:MET:N	8:H:20:ASN:OD1	2.42	0.52
32:5:26:VAL:HG21	32:5:114:GLU:HG2	1.91	0.52
34:a:373:A:O2'	34:a:451:A:N7	2.41	0.52
34:a:1316:G:N1	34:a:1319:A:OP2	2.42	0.52
41:h:14:ARG:NH2	41:h:74:ILE:O	2.41	0.52
1:A:463:G:N2	1:A:466:A:OP2	2.34	0.52
1:A:1818:U:H5'	3:C:156:SER:HB2	1.91	0.52
1:A:1899:A:H4'	1:A:1901:A:H5"	1.91	0.52
3:C:106:PRO:HD2	3:C:109:LEU:HD22	1.92	0.52
8:H:47:PHE:HA	8:H:51:ARG:HB2	1.90	0.52
34:a:966:G:N3	57:x:35:C:H4'	2.24	0.52
53:t:22:SER:O	53:t:25:SER:HB3	2.09	0.52
55:v:228:ARG:HA	55:v:241:ASP:CB	2.37	0.52
1:A:1846:G:H5"	34:a:702:A:N6	2.24	0.52
1:A:1913:A:H8	34:a:1494:G:C8	2.21	0.52
22:V:9:ARG:HD3	22:V:39:ALA:HB1	1.91	0.52
38:e:54:GLU:HG2	38:e:56:PRO:HD2	1.91	0.52
55:v:172:TYR:CE2	55:v:207:PRO:HB3	2.44	0.52
55:v:224:ILE:HG12	55:v:246:ILE:HG12	1.91	0.52
1:A:1450:G:H21	1:A:1452:G:H1	1.56	0.52
17:Q:43:GLN:HE21	18:R:77:PHE:HB3	1.74	0.52
34:a:216:U:H4'	34:a:464:U:H4'	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:514:C:H2'	34:a:515:G:H8	1.74	0.52
34:a:837:U:H2'	34:a:838:G:H8	1.73	0.52
34:a:1458:G:H5'	53:t:26:MET:HB3	1.92	0.52
1:A:585:G:H21	1:A:1254:A:N6	2.08	0.52
1:A:1613:G:H4'	29:2:3:ARG:HE	1.74	0.52
1:A:2110:G:N2	1:A:2179:C:O2	2.43	0.52
20:T:38:ALA:HB1	20:T:43:ILE:HD11	1.90	0.52
36:c:57:GLU:OE1	36:c:64:ARG:NH2	2.37	0.52
1:A:76:C:OP1	25:Y:48:ARG:NH1	2.43	0.52
34:a:335:C:O2'	34:a:1433:A:N3	2.36	0.52
34:a:1222:G:OP2	34:a:1322:C:N4	2.39	0.52
35:b:53:LEU:HB3	35:b:219:THR:HG21	1.92	0.52
47:n:15:LEU:HD23	47:n:55:SER:HB3	1.92	0.52
1:A:45:G:H5"	1:A:46:G:H5'	1.92	0.52
1:A:111:A:O2'	25:Y:58:ASN:ND2	2.42	0.52
1:A:451:U:O2	1:A:453:A:N6	2.42	0.52
3:C:137:GLY:HA3	34:a:712:A:H5'	1.91	0.52
4:D:131:ASP:O	4:D:136:ASN:ND2	2.40	0.52
34:a:1049:U:H2'	47:n:2:LYS:HD3	1.91	0.52
55:v:134:MET:HE1	55:v:337:LEU:HD21	1.85	0.52
1:A:958:U:OP2	13:M:14:LYS:NZ	2.42	0.52
1:A:1270:C:H5"	1:A:1271:G:H5'	1.92	0.52
12:L:17:LYS:HE3	12:L:27:LEU:HD22	1.92	0.52
34:a:827:U:H2'	34:a:870:U:H3	1.75	0.52
1:A:835:C:H2'	1:A:836:G:H8	1.74	0.51
1:A:2023:C:H2'	1:A:2024:G:H8	1.74	0.51
3:C:184:GLU:HG3	3:C:186:ASP:H	1.75	0.51
10:J:56:VAL:HB	10:J:124:VAL:HG12	1.91	0.51
42:i:39:GLY:HA2	42:i:44:ARG:HB2	1.92	0.51
52:s:10:ILE:HD13	52:s:15:LEU:HB2	1.90	0.51
1:A:924:G:H2'	1:A:925:A:H8	1.74	0.51
1:A:1800:C:N4	1:A:1818:U:O2'	2.43	0.51
1:A:2768:U:O2'	10:J:95:ARG:NH2	2.43	0.51
2:B:5:U:OP1	2:B:61:G:O2'	2.28	0.51
6:F:163:GLU:OE1	6:F:166:ARG:NH1	2.43	0.51
8:H:30:LEU:HB3	8:H:36:ALA:HB3	1.91	0.51
55:v:222:LEU:HD23	55:v:222:LEU:N	2.09	0.51
14:N:44:LEU:HD23	14:N:113:ILE:HD13	1.92	0.51
20:T:13:ALA:HB3	20:T:33:LYS:HD3	1.92	0.51
34:a:725:G:OP1	34:a:833:G:N2	2.43	0.51
55:v:311:ASN:ND2	55:v:316:ARG:NE	2.55	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:119:A:H4'	1:A:120:U:H5'	1.92	0.51
1:A:407:G:H2'	1:A:408:G:H8	1.76	0.51
1:A:1013:C:H2'	1:A:1014:A:H8	1.74	0.51
1:A:1953:A:O2'	1:A:2559:C:O2	2.28	0.51
1:A:2113:U:O4	1:A:2119:A:N6	2.44	0.51
55:v:116:ARG:HD3	55:v:161:GLU:HB2	1.88	0.51
1:A:2081:U:H2'	1:A:2082:A:H8	1.75	0.51
1:A:2585:U:P	55:v:233:GLY:CA	2.97	0.51
34:a:1492:A:N3	34:a:1492:A:H2'	2.26	0.51
55:v:172:TYR:HE2	55:v:176:LYS:CE	1.74	0.51
1:A:2848:G:O2'	1:A:2868:A:N6	2.43	0.51
34:a:368:U:O4	56:w:368:HIS:CE1	2.64	0.51
34:a:740:U:OP1	48:o:1:SER:N	2.43	0.51
34:a:808:C:H5"	48:o:46:LYS:HD2	1.93	0.51
55:v:227:PHE:CE1	55:v:258:GLN:CD	2.89	0.51
55:v:328:ARG:HH11	55:v:331:GLU:CD	2.19	0.51
56:w:333:GLN:O	56:w:337:ALA:HA	2.10	0.51
1:A:2422:C:O4'	57:x:77:A:N6	2.44	0.51
8:H:38:PRO:O	8:H:43:ASN:ND2	2.41	0.51
36:c:13:ILE:HG22	36:c:14:VAL:HG23	1.91	0.51
53:t:4:LYS:HG3	53:t:6:ALA:H	1.76	0.51
1:A:99:U:H5"	1:A:100:U:H5'	1.91	0.51
1:A:698:C:O2'	1:A:734:A:N6	2.35	0.51
1:A:2656:U:N3	1:A:2665:A:C8	2.72	0.51
1:A:2743:U:OP2	1:A:2755:C:N4	2.43	0.51
34:a:143:A:H2	34:a:220:G:H1	1.59	0.51
34:a:755:G:H21	41:h:3:GLN:HE22	1.59	0.51
36:c:63:ILE:HG22	36:c:98:ALA:HB2	1.89	0.51
39:f:15:SER:HA	39:f:18:VAL:HG23	1.93	0.51
51:r:36:GLY:O	51:r:62:ARG:NH2	2.42	0.51
1:A:112:U:H5'	25:Y:58:ASN:HD21	1.76	0.51
1:A:574:A:N6	1:A:2034:U:OP1	2.41	0.51
1:A:1724:G:O6	1:A:1737:G:N2	2.43	0.51
10:J:17:VAL:HG23	10:J:137:PRO:HB2	1.93	0.51
35:b:116:LEU:HG	35:b:136:ARG:HH21	1.76	0.51
40:g:68:VAL:HG23	40:g:99:ALA:HB1	1.91	0.51
1:A:1068:G:N2	1:A:1095:A:O2'	2.36	0.51
1:A:2008:C:H2'	1:A:2009:A:H8	1.75	0.51
43:j:40:ILE:HB	43:j:73:LEU:HB2	1.92	0.51
55:v:130:ASP:O	55:v:133:ARG:HB2	2.10	0.51
55:v:257:CYS:SG	55:v:269:LYS:HG3	2.51	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
56:w:430:PRO:HD2	56:w:436:LEU:HD23	1.93	0.51
21:U:33:VAL:HG13	21:U:66:VAL:HG22	1.93	0.50
32:5:68:PRO:HA	32:5:72:LEU:HG	1.93	0.50
35:b:71:THR:OG1	35:b:168:GLU:OE2	2.24	0.50
53:t:10:ALA:O	53:t:13:SER:OG	2.28	0.50
1:A:227:A:H61	1:A:410:G:H21	1.59	0.50
1:A:629:G:H1'	1:A:639:U:H1'	1.92	0.50
34:a:1228:C:OP1	46:m:106:ARG:NH1	2.38	0.50
34:a:1376:U:O4	40:g:9:ARG:NH1	2.43	0.50
55:v:144:TRP:CE3	55:v:171:VAL:CG2	2.84	0.50
1:A:291:G:H1	1:A:349:U:H3	1.59	0.50
1:A:660:C:O2'	12:L:13:LYS:NZ	2.44	0.50
3:C:77:VAL:HG21	3:C:109:LEU:HD11	1.92	0.50
13:M:66:ARG:NH1	13:M:104:GLU:OE2	2.44	0.50
34:a:405:U:O4	37:d:1:ALA:N	2.43	0.50
34:a:673:A:H2'	34:a:674:G:H8	1.76	0.50
35:b:153:MET:HG2	35:b:155:GLY:H	1.76	0.50
42:i:91:GLU:OE2	42:i:94:ARG:NH1	2.44	0.50
42:i:113:LYS:HA	42:i:120:ALA:HB2	1.93	0.50
45:l:122:LYS:HG2	56:w:487:ARG:HG2	1.93	0.50
1:A:2693:G:H2'	1:A:2694:G:H8	1.75	0.50
34:a:231:U:H2'	34:a:232:G:H8	1.76	0.50
55:v:227:PHE:HZ	55:v:258:GLN:HG3	1.77	0.50
56:w:326:GLU:HB2	56:w:329:MET:HB2	1.93	0.50
1:A:242:G:N2	1:A:255:A:OP2	2.44	0.50
11:K:12:ASP:HB3	11:K:99:ILE:HG12	1.93	0.50
19:S:73:LYS:HB2	19:S:106:VAL:HB	1.92	0.50
34:a:687:A:N6	34:a:703:G:O2'	2.44	0.50
34:a:744:C:H2'	34:a:745:G:H8	1.76	0.50
35:b:91:VAL:HG11	35:b:95:TRP:HD1	1.77	0.50
1:A:505:A:HO2'	1:A:509:C:HO2'	1.59	0.50
1:A:673:C:OP1	5:E:49:ARG:NH2	2.43	0.50
1:A:1069:A:N7	1:A:1073:A:N6	2.60	0.50
13:M:35:ALA:O	13:M:99:GLY:N	2.44	0.50
34:a:545:C:OP1	37:d:61:ARG:NH1	2.33	0.50
42:i:89:TYR:HB3	42:i:93:LEU:HD12	1.94	0.50
55:v:147:GLU:OE1	55:v:165:LYS:CD	2.59	0.50
1:A:537:G:H4'	10:J:5:THR:HG21	1.92	0.50
1:A:2291:U:O2'	1:A:2374:C:O2	2.30	0.50
1:A:2656:U:C2	1:A:2665:A:N7	2.80	0.50
2:B:7:G:O2'	15:O:38:GLN:NE2	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:4:30:GLU:HG3	31:4:32:LYS:H	1.76	0.50
34:a:684:U:O2'	44:k:40:ALA:O	2.30	0.50
34:a:1159:U:OP1	35:b:131:LYS:NZ	2.42	0.50
1:A:481:G:O2'	1:A:506:G:N2	2.45	0.50
1:A:1323:C:OP1	19:S:98:LYS:NZ	2.43	0.50
1:A:1807:G:N2	1:A:1810:A:OP2	2.44	0.50
1:A:1919:A:H2'	34:a:1517:G:N2	2.25	0.50
1:A:2692:G:N3	1:A:2847:U:O2'	2.42	0.50
34:a:1247:U:H3	34:a:1290:G:H1	1.59	0.50
34:a:1249:C:O2'	42:i:74:GLN:NE2	2.45	0.50
34:a:1523:G:OP1	44:k:124:LYS:NZ	2.43	0.50
55:v:172:TYR:CE2	55:v:176:LYS:CD	2.88	0.50
1:A:1022:G:N2	1:A:1023:U:O4	2.44	0.50
1:A:1602:U:OP2	20:T:64:LYS:NZ	2.45	0.50
1:A:2788:C:O2'	1:A:2809:A:N3	2.41	0.50
34:a:492:C:H2'	34:a:493:A:C8	2.47	0.50
38:e:10:LEU:HD22	38:e:67:ARG:HH22	1.76	0.50
49:p:40:ASN:HB3	49:p:43:ALA:HB2	1.93	0.50
8:H:94:ILE:HG23	8:H:98:ASP:HB2	1.94	0.49
12:L:20:GLY:H	12:L:28:GLY:HA2	1.76	0.49
34:a:358:U:H2'	34:a:359:G:H8	1.77	0.49
34:a:673:A:H2'	34:a:674:G:C8	2.47	0.49
55:v:122:ASP:OD2	55:v:156:HIS:N	2.44	0.49
56:w:14:ARG:HD3	56:w:276:ALA:HB3	1.94	0.49
1:A:139:U:O2'	1:A:140:C:O2	2.30	0.49
1:A:776:G:H22	1:A:2072:C:H5'	1.75	0.49
1:A:2002:G:OP2	14:N:9:GLN:NE2	2.45	0.49
3:C:140:VAL:HG12	3:C:191:LEU:HD23	1.93	0.49
55:v:172:TYR:OH	55:v:176:LYS:HG2	2.12	0.49
1:A:573:U:OP2	18:R:80:ARG:NH2	2.45	0.49
5:E:75:SER:HB3	5:E:78:TRP:HD1	1.77	0.49
55:v:128:ALA:HB2	55:v:201:CYS:SG	2.52	0.49
55:v:227:PHE:C	55:v:241:ASP:CB	2.84	0.49
55:v:332:VAL:HG22	55:v:337:LEU:HD23	1.77	0.49
56:w:332:ARG:NH1	56:w:381:GLN:O	2.45	0.49
56:w:398:PHE:HE2	56:w:442:GLY:O	1.94	0.49
1:A:377:G:H1	1:A:397:U:H3	1.60	0.49
1:A:746:U:H5"	1:A:748:G:O4'	2.11	0.49
1:A:2647:U:H2'	1:A:2648:G:H8	1.77	0.49
20:T:6:ARG:NH2	20:T:37:ASP:OD2	2.45	0.49
34:a:1414:U:H2'	34:a:1415:G:H8	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:1464:U:H2'	34:a:1465:A:H8	1.78	0.49
1:A:537:G:H22	1:A:555:G:H2'	1.77	0.49
1:A:764:A:N3	3:C:211:ARG:NH1	2.61	0.49
17:Q:87:VAL:HG13	18:R:49:ILE:HD11	1.95	0.49
34:a:980:C:O3'	47:n:12:ARG:NH2	2.45	0.49
55:v:228:ARG:O	55:v:229:SER:OG	2.23	0.49
56:w:167:ALA:HB2	56:w:251:ILE:HD11	1.95	0.49
56:w:395:PRO:HA	56:w:441:VAL:HA	1.94	0.49
1:A:631:A:N3	1:A:2415:G:O2'	2.41	0.49
1:A:1378:A:O2'	1:A:1380:G:OP2	2.30	0.49
25:Y:49:ASP:OD1	25:Y:52:ARG:NH2	2.45	0.49
34:a:1096:C:O2	34:a:1170:A:O2'	2.31	0.49
56:w:13:ARG:HH21	56:w:360:TYR:HB2	1.77	0.49
1:A:745:G:C8	1:A:746:U:N3	2.79	0.49
1:A:1682:G:OP2	1:A:1699:G:N2	2.45	0.49
1:A:2076:U:OP2	1:A:2238:G:N2	2.45	0.49
16:P:25:VAL:HG22	16:P:85:VAL:HG22	1.93	0.49
16:P:84:SER:OG	16:P:86:LYS:NZ	2.46	0.49
18:R:40:MET:HE3	18:R:42:ALA:HB2	1.94	0.49
34:a:185:U:O2	53:t:75:LYS:NZ	2.45	0.49
34:a:437:U:HO2'	37:d:119:HIS:HD1	1.61	0.49
34:a:1175:G:H2'	34:a:1176:A:H8	1.78	0.49
55:v:116:ARG:NH1	55:v:161:GLU:OE2	2.46	0.49
56:w:111:MET:HB2	56:w:139:THR:HG22	1.93	0.49
1:A:848:C:H2'	1:A:849:A:H8	1.78	0.49
1:A:1080:A:H1'	9:I:127:SER:HA	1.94	0.49
1:A:2286:G:H3'	28:1:29:LYS:HE2	1.94	0.49
34:a:1222:G:H5"	52:s:77:ARG:HH11	1.78	0.49
36:c:9:ILE:HG23	36:c:10:ARG:HG3	1.94	0.49
55:v:122:ASP:OD2	55:v:156:HIS:CD2	2.66	0.49
55:v:228:ARG:O	55:v:229:SER:CB	2.60	0.49
1:A:774:G:N2	1:A:787:C:O2'	2.45	0.49
2:B:95:U:H2'	2:B:96:G:H8	1.78	0.49
34:a:1397:C:H6	55:v:195:ARG:HH22	1.61	0.49
36:c:65:VAL:HB	36:c:100:ILE:HG22	1.95	0.49
44:k:22:ILE:HG12	44:k:31:VAL:HG22	1.95	0.49
55:v:328:ARG:HB3	55:v:331:GLU:HG3	1.95	0.49
34:a:722:G:H1	34:a:733:G:H1	1.60	0.49
44:k:49:SER:HA	44:k:68:ARG:HH11	1.77	0.49
54:u:16:ARG:HH21	54:u:19:LYS:HG2	1.77	0.49
55:v:123:GLU:OE2	55:v:123:GLU:HA	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
56:w:496:ASP:HB2	56:w:500:ASN:HB2	1.95	0.49
1:A:659:G:O2'	5:E:95:LYS:O	2.31	0.48
1:A:1447:C:O2'	1:A:1544:A:N3	2.39	0.48
1:A:2258:C:O2'	1:A:2427:C:OP2	2.30	0.48
1:A:2305:U:N3	6:F:150:GLY:O	2.45	0.48
22:V:20:LEU:HD11	22:V:41:GLU:HG3	1.95	0.48
31:4:19:ARG:HD2	31:4:24:ARG:HD2	1.95	0.48
34:a:150:U:H2'	34:a:151:A:H8	1.77	0.48
34:a:235:C:H2'	34:a:236:A:H8	1.76	0.48
34:a:262:A:H5'	53:t:67:HIS:HB3	1.95	0.48
34:a:1004:A:H3'	34:a:1024:G:H22	1.78	0.48
55:v:222:LEU:CD2	55:v:222:LEU:N	2.73	0.48
1:A:471:A:OP1	5:E:79:ARG:NH1	2.42	0.48
1:A:781:A:OP1	3:C:216:ARG:NH2	2.42	0.48
1:A:2293:G:OP1	15:O:94:ARG:NH1	2.46	0.48
2:B:114:C:H2'	2:B:115:A:H8	1.77	0.48
32:5:33:VAL:HG12	32:5:35:VAL:H	1.78	0.48
54:u:16:ARG:HB2	54:u:19:LYS:HD3	1.96	0.48
55:v:316:ARG:C	55:v:316:ARG:CD	2.85	0.48
1:A:590:A:H61	1:A:667:U:H3	1.61	0.48
1:A:1936:A:OP2	1:A:1962:C:N4	2.40	0.48
33:7:18:U:H6	33:7:18:U:C5'	2.22	0.48
34:a:28:A:O2'	34:a:296:U:OP1	2.31	0.48
34:a:55:A:N7	56:w:310:LYS:HB3	2.29	0.48
55:v:123:GLU:OE2	55:v:188:PRO:HB2	2.14	0.48
1:A:1288:G:OP2	1:A:1288:G:N2	2.42	0.48
34:a:972:C:H1'	43:j:57:VAL:HG23	1.96	0.48
34:a:1071:C:H2'	34:a:1072:G:H8	1.79	0.48
34:a:1251:A:N3	34:a:1369:C:O2'	2.40	0.48
39:f:9:MET:HA	39:f:58:HIS:O	2.13	0.48
55:v:174:ARG:HD2	55:v:341:ILE:HG21	1.94	0.48
56:w:416:LEU:HB3	56:w:427:VAL:HG21	1.94	0.48
1:A:2508:G:H5'	55:v:228:ARG:CZ	2.43	0.48
40:g:67:ASN:O	40:g:137:ARG:NE	2.44	0.48
1:A:290:U:H2'	1:A:291:G:H8	1.79	0.48
1:A:355:U:H2'	1:A:356:G:H8	1.79	0.48
1:A:911:A:N6	13:M:11:LYS:O	2.37	0.48
4:D:36:GLN:OE1	4:D:49:GLN:NE2	2.46	0.48
18:R:76:LYS:HB2	18:R:85:LYS:HB3	1.95	0.48
29:2:12:ARG:HE	29:2:44:VAL:HG21	1.78	0.48
34:a:297:G:N2	34:a:300:A:OP2	2.39	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:876:C:H2'	34:a:877:G:H8	1.78	0.48
47:n:45:VAL:O	47:n:49:GLN:NE2	2.47	0.48
55:v:112:PHE:HE1	55:v:165:LYS:CE	2.22	0.48
1:A:48:G:N2	1:A:177:G:OP2	2.45	0.48
5:E:3:LEU:HD13	5:E:120:VAL:HG21	1.95	0.48
10:J:36:LEU:HD22	10:J:121:LYS:HB2	1.94	0.48
33:7:17:A:C3'	33:7:18:U:H5"	2.44	0.48
34:a:309:A:H2'	34:a:310:G:H8	1.78	0.48
38:e:37:VAL:HG11	38:e:113:VAL:HG23	1.96	0.48
55:v:185:GLN:O	55:v:186:ARG:CG	2.62	0.48
56:w:35:LEU:HB3	56:w:201:ILE:HD11	1.95	0.48
1:A:177:G:OP2	1:A:177:G:N2	2.36	0.48
1:A:1129:A:O2'	1:A:2515:C:O2	2.30	0.48
9:I:45:THR:HG22	9:I:50:LYS:HG2	1.94	0.48
26:Z:16:LEU:HB2	26:Z:19:HIS:HD2	1.78	0.48
34:a:1124:G:O2'	34:a:1127:G:O6	2.32	0.48
55:v:122:ASP:OD2	55:v:156:HIS:CB	2.61	0.48
9:I:102:ARG:NH1	9:I:106:GLN:OE1	2.47	0.48
20:T:8:LEU:HD11	25:Y:22:LEU:HD12	1.96	0.48
34:a:715:A:OP1	34:a:805:C:O2'	2.30	0.48
34:a:1266:G:N2	34:a:1269:A:OP2	2.39	0.48
8:H:132:PHE:H	8:H:140:ALA:HB3	1.78	0.48
17:Q:93:ILE:HG23	18:R:13:ARG:HB2	1.96	0.48
34:a:309:A:O2'	34:a:607:A:N1	2.42	0.48
34:a:531:U:H5	55:v:316:ARG:CZ	2.22	0.48
55:v:227:PHE:CZ	55:v:258:GLN:HG3	2.49	0.48
1:A:244:A:OP2	30:3:7:ARG:NH1	2.44	0.47
1:A:302:C:H2'	1:A:303:G:H8	1.79	0.47
1:A:519:U:H2'	1:A:520:G:H8	1.79	0.47
1:A:582:A:H2'	1:A:583:G:H8	1.79	0.47
1:A:745:G:H2'	1:A:746:U:H5'	1.95	0.47
1:A:2539:C:O2'	31:4:36:ARG:NH1	2.42	0.47
3:C:243:PRO:O	3:C:250:GLN:NE2	2.46	0.47
34:a:634:C:H2'	34:a:635:A:H8	1.79	0.47
34:a:749:A:O2'	48:o:19:ASN:OD1	2.31	0.47
34:a:811:C:H4'	34:a:901:A:H61	1.79	0.47
55:v:135:TYR:OH	55:v:178:GLU:CD	2.57	0.47
55:v:172:TYR:CE1	55:v:176:LYS:HG2	2.46	0.47
1:A:283:G:H1	1:A:357:C:H42	1.61	0.47
1:A:1469:A:OP2	1:A:1522:A:N6	2.47	0.47
9:I:44:LYS:HG2	9:I:70:THR:HG21	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:677:U:O2	34:a:777:A:O2'	2.29	0.47
34:a:766:A:N6	34:a:813:U:C2	2.82	0.47
34:a:1397:C:C6	55:v:195:ARG:NH2	2.82	0.47
56:w:17:ALA:H	56:w:106:VAL:HG11	1.79	0.47
56:w:36:PHE:HB3	56:w:269:LEU:HD11	1.96	0.47
1:A:793:A:OP2	1:A:2071:A:O2'	2.29	0.47
1:A:1830:C:H2'	1:A:1831:G:H8	1.79	0.47
1:A:2233:U:H2'	1:A:2234:G:H8	1.77	0.47
1:A:2452:C:O2	58:z:17:ARG:NH2	2.44	0.47
34:a:405:U:OP2	37:d:2:ARG:NH1	2.45	0.47
55:v:235:GLN:HE21	58:z:18:LEU:C	2.22	0.47
55:v:316:ARG:HG2	55:v:327:TYR:CE1	2.49	0.47
34:a:1178:G:N2	34:a:1181:G:OP2	2.45	0.47
44:k:63:GLN:HG3	44:k:98:ALA:HB2	1.96	0.47
56:w:159:GLU:HG2	56:w:165:GLY:HA2	1.96	0.47
1:A:1432:G:H2'	1:A:1433:A:H8	1.80	0.47
1:A:2618:G:H21	4:D:155:VAL:HG21	1.79	0.47
1:A:2822:G:O2'	1:A:2825:G:N1	2.40	0.47
18:R:1:MET:N	18:R:42:ALA:O	2.40	0.47
32:5:30:SER:HB3	32:5:109:LYS:HD2	1.97	0.47
36:c:99:GLN:N	36:c:99:GLN:CD	2.73	0.47
55:v:261:ARG:CG	55:v:261:ARG:NH1	2.72	0.47
1:A:713:G:H21	1:A:718:A:H62	1.61	0.47
1:A:806:C:O2	1:A:2444:G:O2'	2.33	0.47
1:A:1024:G:HO2'	1:A:1144:A:HO2'	1.61	0.47
1:A:2345:G:H4'	1:A:2346:A:H3'	1.96	0.47
2:B:1:U:H2'	2:B:2:G:H8	1.79	0.47
6:F:28:PRO:HB2	6:F:168:LEU:HD22	1.96	0.47
11:K:9:ASN:OD1	11:K:18:ARG:NH1	2.47	0.47
34:a:531:U:C5	55:v:316:ARG:CZ	2.97	0.47
34:a:1524:C:H2'	34:a:1525:G:H8	1.80	0.47
43:j:52:LEU:HB2	47:n:81:ARG:HD2	1.96	0.47
1:A:728:G:H4'	3:C:12:ARG:HD3	1.97	0.47
1:A:807:U:O2'	1:A:2060:A:N1	2.43	0.47
7:G:8:VAL:HB	7:G:49:LEU:HB2	1.97	0.47
34:a:227:G:N2	49:p:63:GLN:O	2.45	0.47
36:c:109:GLU:HB2	36:c:143:LEU:HD13	1.97	0.47
55:v:127:PHE:HZ	55:v:310:TYR:CD2	2.33	0.47
1:A:340:A:O2'	5:E:162:ARG:NH1	2.45	0.47
1:A:672:C:OP2	12:L:42:SER:OG	2.30	0.47
1:A:1827:U:OP2	3:C:220:ARG:NH1	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:154:ALA:HB2	3:C:161:VAL:HG23	1.96	0.47
17:Q:99:VAL:O	17:Q:102:LYS:NZ	2.47	0.47
21:U:14:THR:OG1	21:U:68:ASN:ND2	2.46	0.47
29:2:34:ARG:NH2	29:2:41:ARG:O	2.48	0.47
35:b:19:THR:OG1	35:b:20:ARG:N	2.40	0.47
36:c:38:VAL:CG1	36:c:93:ILE:CD1	2.83	0.47
37:d:87:GLU:HG3	37:d:187:ARG:HB2	1.97	0.47
22:V:77:VAL:HG23	22:V:89:ILE:HG12	1.96	0.47
34:a:745:G:OP1	34:a:851:G:O2'	2.31	0.47
34:a:1252:A:H61	34:a:1285:A:H61	1.63	0.47
40:g:12:LEU:HD12	40:g:13:PRO:HD2	1.97	0.47
42:i:37:TYR:HD2	42:i:38:PHE:HD1	1.63	0.47
55:v:142:ARG:HH22	55:v:174:ARG:HH22	1.63	0.47
55:v:319:ASP:O	55:v:323:ASN:CA	2.62	0.47
55:v:332:VAL:HG21	55:v:340:LEU:HD11	1.97	0.47
2:B:8:C:O2'	15:O:25:ARG:NH1	2.47	0.47
8:H:17:ASP:HB3	8:H:19:VAL:HG23	1.97	0.47
34:a:952:U:H2'	34:a:953:G:H8	1.79	0.47
36:c:31:ASN:OD1	36:c:58:ARG:NH2	2.48	0.47
54:u:40:PRO:HA	54:u:43:GLU:HG2	1.96	0.47
55:v:147:GLU:HG3	55:v:165:LYS:O	2.15	0.47
3:C:267:VAL:HG12	3:C:268:ARG:HG2	1.97	0.46
11:K:121:GLU:HG2	11:K:122:VAL:HG23	1.97	0.46
33:7:21:A:O3'	34:a:1492:A:H1'	2.15	0.46
34:a:321:A:H4'	34:a:1436:U:H5'	1.97	0.46
55:v:337:LEU:C	55:v:339:MET:N	2.55	0.46
56:w:395:PRO:CD	56:w:471:ALA:HB1	2.43	0.46
1:A:29:U:O2	1:A:1215:G:O2'	2.34	0.46
1:A:849:A:H61	1:A:929:U:H3	1.63	0.46
1:A:1333:G:H2'	1:A:1334:G:H8	1.81	0.46
1:A:1806:C:H1'	3:C:43:ASN:HD21	1.80	0.46
1:A:2052:A:O2'	4:D:149:ASN:O	2.34	0.46
1:A:2245:U:H5"	1:A:2246:G:H5'	1.95	0.46
3:C:130:PRO:HA	3:C:188:ARG:HA	1.98	0.46
34:a:521:G:O2'	34:a:536:C:O2'	2.28	0.46
34:a:711:G:H2'	34:a:712:A:H8	1.79	0.46
34:a:875:U:O2'	41:h:14:ARG:NH1	2.43	0.46
34:a:1081:A:OP2	38:e:51:LYS:NZ	2.47	0.46
35:b:202:ASN:HD22	35:b:203:ASP:H	1.62	0.46
37:d:90:LEU:HD23	37:d:93:LEU:HD12	1.98	0.46
39:f:48:ALA:H	51:r:65:SER:HG	1.61	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
45:l:78:VAL:CG2	56:w:407:LEU:HD21	2.43	0.46
49:p:61:VAL:HG22	49:p:67:ILE:HD11	1.97	0.46
55:v:137:ARG:CZ	55:v:334:GLU:HG2	2.33	0.46
56:w:138:LEU:HD22	56:w:255:PHE:HE2	1.81	0.46
1:A:91:A:O2'	1:A:92:U:O4'	2.33	0.46
34:a:261:U:H3	34:a:263:A:H3'	1.81	0.46
34:a:714:G:H2'	34:a:715:A:C8	2.51	0.46
34:a:782:A:H62	34:a:800:G:H21	1.64	0.46
34:a:1338:G:N2	57:x:43:G:O4'	2.49	0.46
35:b:99:MET:HA	35:b:106:VAL:HG21	1.96	0.46
56:w:426:GLN:OE1	56:w:527:ARG:NH2	2.49	0.46
56:w:428:PHE:HB2	56:w:437:ILE:HB	1.98	0.46
1:A:767:U:H2'	1:A:768:G:H8	1.80	0.46
1:A:779:U:O2	1:A:785:G:O6	2.34	0.46
8:H:70:GLU:HB2	8:H:134:VAL:HG21	1.98	0.46
14:N:28:LEU:HD13	14:N:34:ILE:HG12	1.96	0.46
34:a:357:G:O2'	56:w:311:HIS:HD2	1.97	0.46
34:a:1291:U:H2'	34:a:1292:G:C8	2.50	0.46
35:b:75:ALA:O	35:b:78:ALA:HB3	2.15	0.46
56:w:314:ARG:NH1	56:w:418:GLN:O	2.48	0.46
56:w:493:LEU:HD23	56:w:501:LEU:HD13	1.97	0.46
1:A:1071:G:N2	1:A:1089:A:O2'	2.44	0.46
1:A:1429:G:H2'	1:A:1430:G:H8	1.79	0.46
1:A:1432:G:H2'	1:A:1433:A:C8	2.51	0.46
27:0:42:ILE:HG22	27:0:48:TYR:HB2	1.98	0.46
34:a:1060:U:H2'	34:a:1061:G:H8	1.80	0.46
42:i:115:VAL:HG21	43:j:62:ARG:HB2	1.97	0.46
1:A:918:A:N3	2:B:80:U:O2'	2.42	0.46
1:A:2060:A:H62	5:E:69:ARG:HH22	1.63	0.46
1:A:2851:A:O2'	14:N:64:ARG:NH2	2.49	0.46
34:a:1179:A:H4'	42:i:104:THR:HA	1.97	0.46
35:b:202:ASN:HD22	35:b:203:ASP:N	2.14	0.46
36:c:54:ILE:HD12	36:c:56:ILE:HD11	1.96	0.46
56:w:398:PHE:CZ	56:w:442:GLY:O	2.69	0.46
57:x:71:G:O2'	57:x:72:C:O4'	2.34	0.46
1:A:2654:A:P	56:w:177:LYS:HZ3	2.37	0.46
10:J:36:LEU:HD11	10:J:122:LEU:HD13	1.98	0.46
33:7:22:A:H62	55:v:198:THR:HG23	1.79	0.46
34:a:880:C:H2'	34:a:881:G:H8	1.80	0.46
34:a:946:A:H2'	34:a:947:G:C8	2.51	0.46
34:a:1218:C:H2'	34:a:1219:A:C8	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:1522:U:H5”	44:k:127:ARG:HH22	1.81	0.46
36:c:18:ASN:OD1	36:c:53:ARG:NH2	2.48	0.46
44:k:86:LYS:HB2	44:k:112:VAL:HG23	1.96	0.46
55:v:178:GLU:O	55:v:179:SER:C	2.59	0.46
1:A:16:C:H2’	1:A:17:G:H8	1.78	0.46
4:D:55:LYS:HE2	4:D:77:ARG:HA	1.98	0.46
34:a:875:U:O2	41:h:11:THR:OG1	2.34	0.46
34:a:1162:C:H2’	34:a:1163:A:H8	1.81	0.46
34:a:1261:A:H5”	34:a:1262:C:H5	1.80	0.46
43:j:52:LEU:HD23	43:j:62:ARG:HG2	1.97	0.46
46:m:16:ILE:O	46:m:19:THR:OG1	2.31	0.46
1:A:351:C:H2’	1:A:352:A:H8	1.81	0.46
1:A:1254:A:H5”	1:A:1255:U:H5”	1.98	0.46
2:B:111:U:H2’	2:B:112:G:H8	1.81	0.46
34:a:458:U:H2’	34:a:459:A:H8	1.81	0.46
34:a:783:C:H2’	34:a:784:A:H8	1.80	0.46
34:a:1081:A:H2’	34:a:1082:A:H8	1.81	0.46
39:f:51:ILE:HD13	39:f:86:ARG:HH12	1.81	0.46
55:v:328:ARG:NH1	55:v:331:GLU:OE2	2.48	0.46
1:A:1386:C:H2’	1:A:1387:A:C8	2.51	0.46
1:A:1636:U:H2’	1:A:1637:A:H8	1.81	0.46
1:A:2086:U:H2’	1:A:2087:G:C8	2.51	0.46
1:A:2493:U:C1’	55:v:263:GLN:HE21	2.29	0.46
2:B:44:G:H1’	2:B:47:C:H42	1.82	0.46
34:a:376:G:H2’	34:a:377:G:H8	1.80	0.46
34:a:531:U:C6	55:v:316:ARG:NH2	2.76	0.46
45:l:47:ALA:HB3	45:l:49:ARG:HE	1.81	0.46
50:q:11:VAL:HG22	50:q:22:VAL:HG22	1.97	0.46
55:v:135:TYR:CZ	55:v:178:GLU:CD	2.94	0.46
1:A:577:G:O2’	1:A:1254:A:OP1	2.33	0.45
1:A:1046:A:H4’	32:5:61:ARG:HB3	1.98	0.45
1:A:1997:C:H2’	1:A:1998:A:H8	1.82	0.45
19:S:69:LEU:HA	19:S:109:ASP:HA	1.98	0.45
34:a:375:U:H5”	49:p:70:ARG:HG3	1.97	0.45
34:a:589:U:H3	34:a:650:G:H1	1.65	0.45
34:a:1350:A:OP1	42:i:118:ARG:NH2	2.50	0.45
1:A:581:C:H2’	1:A:582:A:C8	2.51	0.45
1:A:2086:U:H2’	1:A:2087:G:H8	1.81	0.45
34:a:9:G:H5’	38:e:107:GLY:HA3	1.98	0.45
34:a:368:U:C5	56:w:368:HIS:ND1	2.85	0.45
34:a:589:U:H5”	41:h:29:SER:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1368:G:H2'	1:A:1369:G:H8	1.81	0.45
1:A:1387:A:H5'	1:A:1469:A:H1'	1.97	0.45
1:A:2525:G:H2'	1:A:2526:G:H8	1.81	0.45
34:a:201:G:H1	34:a:216:U:H3	1.64	0.45
34:a:345:C:O2'	34:a:346:G:N2	2.49	0.45
55:v:255:VAL:HG23	55:v:274:LEU:HD23	1.97	0.45
55:v:315:GLY:O	55:v:327:TYR:HA	2.16	0.45
1:A:581:C:H2'	1:A:582:A:H8	1.81	0.45
4:D:37:VAL:HG22	4:D:48:ILE:HG22	1.99	0.45
4:D:109:VAL:HG22	4:D:203:VAL:HG22	1.98	0.45
19:S:78:GLU:OE1	19:S:99:ARG:NH2	2.49	0.45
34:a:923:A:O2'	34:a:1399:C:OP2	2.35	0.45
34:a:1425:U:H2'	34:a:1426:G:H8	1.81	0.45
39:f:6:ILE:HB	39:f:62:MET:HB2	1.98	0.45
55:v:328:ARG:CZ	55:v:331:GLU:OE2	2.64	0.45
56:w:399:ARG:CD	56:w:464:GLU:H	2.29	0.45
1:A:244:A:H5"	12:L:67:THR:HG21	1.99	0.45
1:A:1334:G:H5"	20:T:69:ARG:HH22	1.81	0.45
1:A:2313:C:H2'	1:A:2314:A:C8	2.52	0.45
5:E:75:SER:HB3	5:E:78:TRP:CD1	2.51	0.45
12:L:96:LYS:HE3	12:L:103:ILE:HA	1.99	0.45
32:5:18:VAL:HA	32:5:86:MET:HE2	1.99	0.45
34:a:331:G:O2'	53:t:2:ASN:ND2	2.49	0.45
34:a:370:C:H5"	56:w:341:VAL:HG21	1.98	0.45
34:a:531:U:C5	55:v:316:ARG:NH1	2.85	0.45
34:a:1427:C:H2'	34:a:1428:A:H8	1.82	0.45
36:c:63:ILE:HG23	36:c:98:ALA:HB1	1.96	0.45
39:f:11:HIS:O	39:f:15:SER:N	2.50	0.45
55:v:175:LEU:C	55:v:205:VAL:HB	2.34	0.45
55:v:217:ILE:HG21	55:v:271:LEU:HD22	1.98	0.45
56:w:308:ASP:OD1	56:w:308:ASP:N	2.50	0.45
1:A:466:A:OP1	29:2:34:ARG:NH1	2.48	0.45
1:A:2223:G:OP1	3:C:170:TYR:OH	2.32	0.45
1:A:2771:C:O2'	4:D:173:GLN:NE2	2.45	0.45
6:F:91:ARG:HA	6:F:95:MET:HB3	1.99	0.45
19:S:17:VAL:HG12	19:S:76:VAL:HG21	1.99	0.45
34:a:222:C:H2'	34:a:223:A:H8	1.82	0.45
34:a:599:C:H2'	34:a:600:A:H8	1.81	0.45
34:a:680:C:H2'	34:a:681:A:H8	1.82	0.45
34:a:1398:A:N6	38:e:26:GLY:O	2.50	0.45
56:w:333:GLN:O	56:w:337:ALA:CA	2.65	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:C:O2	1:A:447:A:N6	2.50	0.45
1:A:917:A:H5"	1:A:2268:A:H61	1.82	0.45
1:A:1509:A:H2'	1:A:1510:G:C8	2.52	0.45
1:A:2458:G:O2'	1:A:2460:U:O4	2.34	0.45
25:Y:37:LEU:HD11	25:Y:42:LEU:HD12	1.98	0.45
33:7:21:A:C4'	34:a:1492:A:O2'	2.65	0.45
34:a:652:U:O4	34:a:752:G:O2'	2.30	0.45
34:a:745:G:H5"	34:a:851:G:H1'	1.98	0.45
37:d:158:LEU:O	37:d:161:ALA:HB3	2.17	0.45
55:v:116:ARG:CD	55:v:161:GLU:CA	2.76	0.45
1:A:813:U:OP1	18:R:84:ARG:NH1	2.50	0.45
20:T:11:LEU:O	25:Y:29:ARG:NH1	2.50	0.45
26:Z:10:ARG:NH2	26:Z:52:PHE:O	2.50	0.45
33:7:17:A:C5	33:7:18:U:C5	3.05	0.45
38:e:149:PRO:HA	38:e:152:VAL:HG22	1.97	0.45
39:f:26:THR:HA	39:f:29:ILE:HB	1.98	0.45
56:w:397:LEU:HG	56:w:471:ALA:HA	1.99	0.45
1:A:1912:A:O2'	34:a:1494:G:H1'	2.17	0.45
5:E:182:ALA:HB2	12:L:3:LEU:HD22	1.97	0.45
34:a:501:C:H2'	34:a:502:A:C8	2.52	0.45
39:f:6:ILE:HA	39:f:88:MET:O	2.17	0.45
45:l:33:CYS:HA	45:l:54:VAL:HA	1.99	0.45
51:r:41:SER:HB3	51:r:51:GLN:HE21	1.82	0.45
55:v:316:ARG:CA	55:v:327:TYR:HA	2.34	0.45
1:A:2431:U:O2'	1:A:2433:A:N7	2.42	0.44
4:D:9:VAL:HA	4:D:197:THR:HG23	1.99	0.44
34:a:490:C:H2'	34:a:491:G:H8	1.82	0.44
1:A:459:U:O4	1:A:470:A:N7	2.50	0.44
1:A:2144:G:H1'	1:A:2147:A:H61	1.82	0.44
14:N:45:ARG:HG2	14:N:95:THR:HG21	1.98	0.44
34:a:22:G:N2	34:a:913:A:O2'	2.51	0.44
34:a:56:U:H2'	34:a:57:G:H8	1.82	0.44
34:a:553:A:H2'	34:a:554:A:H8	1.82	0.44
40:g:110:ARG:HH12	40:g:121:ASN:HB3	1.82	0.44
41:h:52:GLY:HA3	41:h:56:PRO:HA	1.99	0.44
56:w:329:MET:HE3	56:w:381:GLN:HE21	1.82	0.44
1:A:302:C:H2'	1:A:303:G:C8	2.53	0.44
1:A:737:C:N4	1:A:738:G:O6	2.51	0.44
1:A:2818:U:H2'	1:A:2819:G:C8	2.52	0.44
6:F:9:ASP:OD1	6:F:9:ASP:N	2.48	0.44
8:H:30:LEU:HA	8:H:35:LYS:HB2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:87:LEU:HD13	11:K:92:GLU:HB3	1.99	0.44
34:a:562:U:H1'	45:l:11:ARG:HD2	1.98	0.44
53:t:24:ARG:HB2	53:t:65:LEU:HD21	1.99	0.44
1:A:1041:G:H1	1:A:1114:C:H42	1.66	0.44
9:I:89:SER:HB3	9:I:135:MET:HA	1.99	0.44
14:N:38:LEU:HG	14:N:42:LYS:HE2	1.99	0.44
34:a:477:C:H2'	34:a:478:A:C8	2.52	0.44
34:a:950:U:OP2	46:m:100:ARG:NE	2.42	0.44
36:c:147:GLY:HA2	36:c:170:GLY:HA3	1.99	0.44
55:v:222:LEU:HD12	55:v:246:ILE:HG23	1.97	0.44
1:A:18:U:O2'	1:A:554:U:OP1	2.35	0.44
1:A:605:G:O2'	1:A:657:U:O2	2.33	0.44
1:A:1287:A:OP2	14:N:103:ARG:NH1	2.46	0.44
6:F:147:ARG:HG3	6:F:149:ARG:H	1.82	0.44
14:N:42:LYS:HA	14:N:45:ARG:HE	1.83	0.44
32:5:119:PRO:HG2	32:5:121:SER:HB2	2.00	0.44
34:a:254:G:N2	50:q:17:GLU:OE1	2.41	0.44
34:a:1221:G:OP1	52:s:35:ARG:NH1	2.51	0.44
37:d:13:ARG:HA	37:d:37:PRO:HB3	1.98	0.44
48:o:35:ILE:HG13	48:o:58:MET:HE2	1.99	0.44
52:s:62:THR:H	52:s:65:MET:HE3	1.83	0.44
56:w:399:ARG:HE	56:w:464:GLU:HB2	1.83	0.44
1:A:476:G:O2'	1:A:502:A:N6	2.46	0.44
1:A:1431:A:H2'	1:A:1432:G:H8	1.81	0.44
1:A:2298:A:H5"	6:F:71:LYS:HD3	1.99	0.44
1:A:2443:C:H2'	1:A:2444:G:C8	2.52	0.44
11:K:76:VAL:H	16:P:72:VAL:HG22	1.82	0.44
34:a:279:A:H5"	34:a:281:G:H5'	1.99	0.44
34:a:977:A:N6	34:a:1224:U:O4'	2.50	0.44
37:d:187:ARG:NH2	37:d:194:ILE:O	2.50	0.44
55:v:184:VAL:HB	55:v:199:SER:OG	2.18	0.44
55:v:221:ASP:O	55:v:249:LEU:HB2	2.18	0.44
56:w:306:ASN:ND2	56:w:312:ARG:O	2.42	0.44
1:A:910:A:H62	13:M:12:MET:HA	1.82	0.44
1:A:1796:U:H2'	1:A:1797:G:C8	2.53	0.44
1:A:2070:A:H2'	1:A:2071:A:H8	1.82	0.44
1:A:2683:C:O2	11:K:70:ARG:NH2	2.50	0.44
1:A:2883:A:OP1	27:0:48:TYR:OH	2.36	0.44
32:5:24:SER:HB2	32:5:116:GLU:HG3	1.99	0.44
34:a:674:G:H2'	34:a:675:A:H8	1.82	0.44
41:h:45:ILE:HG21	41:h:60:LEU:HD22	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:j:8:ILE:HB	43:j:74:VAL:HB	1.99	0.44
1:A:589:U:H2'	1:A:590:A:C8	2.52	0.44
1:A:2719:G:H4'	1:A:2846:G:H4'	1.99	0.44
1:A:2898:U:H2'	1:A:2899:A:C8	2.53	0.44
6:F:30:VAL:HG13	6:F:95:MET:HE1	2.00	0.44
30:3:8:GLY:O	30:3:12:ARG:NH2	2.48	0.44
34:a:372:C:H42	34:a:389:A:H62	1.66	0.44
34:a:878:A:H5'	41:h:80:PRO:HG2	2.00	0.44
34:a:1064:G:O2'	34:a:1190:G:N2	2.51	0.44
34:a:1255:G:O2'	34:a:1258:G:N3	2.42	0.44
55:v:115:VAL:HG22	55:v:203:VAL:HG22	2.00	0.44
1:A:2047:C:H2'	1:A:2048:G:H8	1.83	0.44
1:A:2899:A:H2'	1:A:2900:A:C8	2.53	0.44
5:E:145:ASP:HA	5:E:166:LYS:HB3	2.00	0.44
6:F:115:GLY:HA3	6:F:177:ARG:HB2	1.98	0.44
34:a:243:A:N6	34:a:281:G:N3	2.66	0.44
34:a:895:G:O6	34:a:904:U:O4	2.36	0.44
34:a:1249:C:H4'	42:i:74:GLN:HE22	1.82	0.44
34:a:1287:A:H2	34:a:1353:G:H1'	1.82	0.44
35:b:202:ASN:HD21	35:b:205:ALA:H	1.65	0.44
39:f:92:THR:OG1	39:f:93:LYS:N	2.51	0.44
51:r:70:THR:HG23	51:r:72:ARG:H	1.83	0.44
56:w:333:GLN:O	56:w:337:ALA:N	2.50	0.44
1:A:2246:G:H2'	1:A:2247:A:H8	1.83	0.43
1:A:2279:G:HO2'	1:A:2327:A:HO2'	1.54	0.43
3:C:56:GLY:HA2	3:C:212:TRP:HA	2.00	0.43
8:H:125:THR:HG23	8:H:146:VAL:HG12	1.99	0.43
24:X:6:VAL:HA	24:X:73:ARG:HH22	1.81	0.43
24:X:39:VAL:O	24:X:43:LYS:CA	2.66	0.43
25:Y:24:GLU:HB3	25:Y:46:VAL:HG21	1.99	0.43
32:5:48:ALA:HB3	32:5:51:TYR:HE1	1.82	0.43
53:t:27:MET:HE1	53:t:66:ILE:HD11	2.00	0.43
56:w:347:THR:OG1	56:w:354:SER:OG	2.35	0.43
1:A:224:U:OP2	1:A:408:G:N2	2.43	0.43
1:A:552:U:H2'	1:A:553:G:H8	1.83	0.43
1:A:2372:U:H2'	1:A:2373:G:H8	1.82	0.43
1:A:2491:U:H4'	1:A:2570:G:H5'	2.00	0.43
34:a:243:A:H4'	34:a:244:U:H3'	2.00	0.43
34:a:429:U:OP1	37:d:12:ARG:NH2	2.51	0.43
56:w:77:PHE:HE2	56:w:86:LEU:HG	1.82	0.43
1:A:787:C:H5"	1:A:788:A:H5'	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2522:U:O2'	1:A:2647:U:OP1	2.33	0.43
2:B:93:C:H2'	2:B:94:A:H8	1.83	0.43
9:I:91:LYS:HG3	9:I:94:LYS:HE2	2.00	0.43
13:M:17:ASN:O	13:M:38:ARG:NH1	2.47	0.43
20:T:58:VAL:HG22	20:T:85:VAL:HG13	2.01	0.43
34:a:1113:C:H4'	36:c:13:ILE:HG12	2.01	0.43
34:a:1356:G:H2'	34:a:1357:A:C8	2.53	0.43
56:w:429:ARG:O	56:w:495:LEU:N	2.52	0.43
1:A:598:U:H2'	1:A:599:A:H8	1.82	0.43
1:A:1638:C:O2	1:A:2698:U:O2'	2.36	0.43
1:A:1796:U:H3	1:A:1823:G:H1	1.66	0.43
1:A:2220:U:H4'	8:H:97:ARG:HH21	1.84	0.43
8:H:113:SER:O	8:H:116:ARG:NH1	2.45	0.43
13:M:47:GLU:OE2	13:M:51:ARG:NE	2.51	0.43
34:a:618:C:H1'	49:p:14:ARG:HH12	1.84	0.43
34:a:1060:U:H5"	43:j:53:ILE:HG12	2.01	0.43
34:a:1150:A:H2'	34:a:1151:A:C8	2.53	0.43
50:q:69:THR:HG22	50:q:70:LYS:H	1.83	0.43
1:A:284:U:H3	1:A:356:G:H1	1.65	0.43
1:A:476:G:N1	1:A:479:A:OP2	2.39	0.43
1:A:1209:U:H4'	1:A:1212:G:H4'	2.00	0.43
1:A:2691:C:H2'	1:A:2692:G:H8	1.82	0.43
41:h:38:VAL:HG21	41:h:109:VAL:HG12	2.01	0.43
56:w:73:SER:OG	56:w:88:ASP:OD2	2.36	0.43
1:A:1754:A:HO2'	16:P:102:ARG:HH22	1.63	0.43
1:A:1858:A:N6	1:A:1884:G:O2'	2.47	0.43
43:j:11:LYS:HB3	43:j:71:LEU:HG	2.00	0.43
1:A:1033:U:O2'	1:A:2750:A:N6	2.52	0.43
1:A:2006:C:O2'	1:A:2823:A:N3	2.50	0.43
1:A:2035:G:H5"	1:A:2036:C:H5	1.84	0.43
1:A:2295:C:OP1	15:O:10:ARG:NH1	2.39	0.43
11:K:114:LYS:HE3	11:K:118:LEU:HD11	2.00	0.43
34:a:837:U:H3	34:a:849:G:H1	1.67	0.43
38:e:65:LYS:HA	38:e:68:ARG:HG2	2.00	0.43
56:w:395:PRO:HG2	56:w:471:ALA:HB1	2.00	0.43
1:A:499:U:H5"	21:U:42:LYS:HE2	2.00	0.43
1:A:1158:C:H5"	26:Z:30:ARG:HD2	2.01	0.43
1:A:2313:C:H2'	1:A:2314:A:H8	1.84	0.43
1:A:2505:G:O2'	1:A:2506:U:O4'	2.37	0.43
2:B:45:A:O4'	6:F:91:ARG:NH2	2.52	0.43
34:a:34:C:H2'	34:a:35:G:H8	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:458:U:H2'	34:a:459:A:C8	2.54	0.43
34:a:1137:C:H5'	34:a:1138:G:H5'	2.01	0.43
34:a:1490:U:H2'	34:a:1491:G:C8	2.54	0.43
34:a:1535:C:H2'	34:a:1536:C:H4'	2.00	0.43
38:e:156:ARG:NH1	41:h:98:LEU:O	2.51	0.43
55:v:147:GLU:HB2	55:v:165:LYS:O	2.19	0.43
55:v:271:LEU:HD23	55:v:274:LEU:HD12	2.00	0.43
56:w:76:GLN:OE1	56:w:83:LEU:HB3	2.18	0.43
1:A:1171:G:N2	1:A:1179:G:N7	2.67	0.43
1:A:1431:A:H2'	1:A:1432:G:C8	2.53	0.43
1:A:2251:G:H2'	1:A:2252:G:H8	1.83	0.43
10:J:32:LEU:HD22	10:J:54:ILE:HG21	2.01	0.43
16:P:88:ARG:HB3	16:P:112:ARG:HD3	2.01	0.43
16:P:91:VAL:HG21	16:P:96:LEU:HD11	2.00	0.43
34:a:235:C:H2'	34:a:236:A:C8	2.54	0.43
34:a:368:U:C4	56:w:368:HIS:ND1	2.87	0.43
34:a:523:A:H61	45:l:88:ASP:HB2	1.84	0.43
34:a:793:U:O4	34:a:1518:A:N6	2.51	0.43
35:b:113:LEU:HD13	35:b:143:LEU:HB3	2.01	0.43
43:j:22:THR:HA	43:j:25:ILE:HG22	2.01	0.43
55:v:150:SER:OG	55:v:163:ILE:N	2.52	0.43
55:v:255:VAL:HG21	55:v:274:LEU:HD23	2.00	0.43
1:A:373:U:H2'	1:A:374:A:H8	1.83	0.43
1:A:1394:U:O2	20:T:19:LYS:NZ	2.46	0.43
1:A:1665:A:H2'	1:A:1666:G:H8	1.83	0.43
1:A:1709:U:H2'	1:A:1710:G:H8	1.84	0.43
1:A:1891:G:O2'	1:A:2235:G:O2'	2.37	0.43
9:I:117:THR:HG22	32:5:42:ARG:HH21	1.83	0.43
30:3:28:LEU:HA	30:3:32:LEU:HD11	2.00	0.43
34:a:112:G:H4'	34:a:389:A:H4'	2.01	0.43
37:d:71:PHE:HE1	37:d:93:LEU:HD11	1.83	0.43
55:v:159:TYR:HB2	55:v:162:ILE:CD1	2.48	0.43
55:v:316:ARG:CG	55:v:327:TYR:CD1	2.98	0.43
56:w:399:ARG:HD2	56:w:464:GLU:O	2.19	0.43
1:A:655:A:H4'	1:A:656:G:H5'	2.00	0.42
1:A:2131:U:H5'	1:A:2132:U:H5"	2.01	0.42
17:Q:47:ARG:NH2	17:Q:51:GLN:OE1	2.51	0.42
34:a:12:U:H4'	34:a:526:C:H4'	2.00	0.42
34:a:1354:U:H2'	34:a:1355:G:H8	1.84	0.42
38:e:80:LEU:HD21	38:e:95:MET:HE2	2.01	0.42
39:f:47:LEU:HD13	39:f:51:ILE:HD12	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2512:C:OP2	4:D:128:ARG:NH2	2.52	0.42
24:X:39:VAL:O	24:X:43:LYS:HA	2.19	0.42
34:a:254:G:O2'	50:q:17:GLU:O	2.37	0.42
34:a:362:G:N2	34:a:365:U:OP2	2.52	0.42
34:a:618:C:O2	34:a:622:A:N6	2.52	0.42
34:a:694:A:H5"	44:k:54:SER:HB3	2.01	0.42
34:a:1400:C:O2	55:v:192:SER:CB	2.67	0.42
45:l:36:VAL:HG21	45:l:73:LEU:HB3	2.01	0.42
56:w:17:ALA:O	56:w:87:LEU:O	2.38	0.42
1:A:372:G:O6	24:X:56:ARG:NH2	2.52	0.42
1:A:434:U:O2'	1:A:436:C:N4	2.53	0.42
1:A:1372:U:O2'	1:A:2212:A:N3	2.41	0.42
12:L:127:VAL:HG21	12:L:142:ILE:HD13	2.01	0.42
1:A:2289:G:H2'	1:A:2290:G:H8	1.84	0.42
1:A:2630:G:H2'	1:A:2631:G:C8	2.55	0.42
3:C:121:ALA:HB1	3:C:127:ASN:HB3	2.01	0.42
32:5:56:ARG:HE	32:5:83:ALA:HB2	1.85	0.42
34:a:790:A:C8	57:x:39:A:H4'	2.53	0.42
34:a:1351:U:H3	34:a:1371:G:H1	1.67	0.42
37:d:105:GLY:HA3	37:d:161:ALA:HB2	2.01	0.42
55:v:204:ALA:HB1	55:v:297:LEU:CD1	2.49	0.42
55:v:221:ASP:O	55:v:249:LEU:HD12	2.19	0.42
1:A:585:G:N2	1:A:1254:A:H62	2.16	0.42
1:A:1515:A:H3'	1:A:1516:G:H8	1.85	0.42
1:A:1700:A:H3'	1:A:1701:A:H8	1.85	0.42
1:A:1846:G:H5"	34:a:702:A:H61	1.85	0.42
1:A:2832:U:H1'	1:A:2834:G:C2	2.54	0.42
6:F:152:ASP:OD1	6:F:152:ASP:N	2.52	0.42
34:a:924:C:H2'	34:a:925:G:H8	1.84	0.42
57:x:27:G:H3'	57:x:28:U:H5"	2.01	0.42
1:A:568:U:N3	1:A:571:U:OP2	2.46	0.42
1:A:818:G:N2	1:A:1189:A:H62	2.14	0.42
1:A:2063:C:H1'	58:z:18:LEU:CA	2.49	0.42
4:D:47:ALA:HB2	4:D:83:ARG:HD2	2.01	0.42
7:G:25:ILE:HD12	7:G:74:MET:HE2	2.01	0.42
34:a:118:U:H3'	34:a:288:A:H61	1.84	0.42
1:A:1709:U:H2'	1:A:1710:G:C8	2.55	0.42
4:D:115:GLY:HA2	4:D:166:GLY:HA3	2.01	0.42
20:T:54:GLU:HB3	20:T:88:LYS:HD2	2.00	0.42
34:a:946:A:H2'	34:a:947:G:H8	1.85	0.42
34:a:993:G:O2'	34:a:994:A:N7	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:h:45:ILE:HD13	41:h:60:LEU:HD22	2.00	0.42
45:l:48:LEU:HD11	55:v:304:SER:HB2	2.01	0.42
55:v:142:ARG:HB2	55:v:144:TRP:CD1	2.55	0.42
1:A:184:C:H2'	1:A:185:G:H8	1.83	0.42
1:A:1140:C:H5'	10:J:26:GLY:HA3	2.02	0.42
1:A:1597:A:H4'	1:A:1598:A:H8	1.85	0.42
1:A:2327:A:H2'	1:A:2328:A:C8	2.55	0.42
1:A:2418:A:OP1	30:3:44:ARG:NH2	2.47	0.42
6:F:56:LEU:HD13	6:F:88:VAL:HG23	2.01	0.42
34:a:790:A:OP1	57:x:39:A:O2'	2.30	0.42
46:m:67:ASP:OD1	46:m:70:ARG:NH1	2.52	0.42
56:w:395:PRO:HG2	56:w:471:ALA:CB	2.49	0.42
1:A:16:C:H2'	1:A:17:G:C8	2.55	0.42
1:A:1251:C:O2'	1:A:1253:A:OP2	2.38	0.42
1:A:2781:A:H5"	1:A:2782:G:H5'	2.01	0.42
2:B:114:C:H2'	2:B:115:A:C8	2.54	0.42
9:I:53:PRO:HG2	9:I:77:VAL:HG11	2.02	0.42
34:a:60:A:N1	34:a:107:G:O2'	2.41	0.42
34:a:501:C:H1'	34:a:549:C:H1'	2.02	0.42
34:a:1241:G:H2'	34:a:1242:G:H8	1.84	0.42
34:a:1343:G:H4'	42:i:123:ARG:HB2	2.01	0.42
45:l:101:LEU:O	45:l:103:CYS:N	2.53	0.42
1:A:6:A:N3	10:J:135:GLN:NE2	2.68	0.42
1:A:546:U:H2'	1:A:547:A:H4'	2.00	0.42
1:A:1435:G:H2'	1:A:1436:G:C8	2.55	0.42
1:A:2691:C:H2'	1:A:2692:G:C8	2.54	0.42
6:F:35:LEU:HB2	6:F:88:VAL:HB	2.02	0.42
10:J:31:GLU:HG2	10:J:142:ILE:HG12	2.00	0.42
15:O:4:LYS:HE2	15:O:8:ILE:HD11	2.02	0.42
34:a:477:C:H2'	34:a:478:A:H8	1.85	0.42
55:v:112:PHE:HE1	55:v:165:LYS:CG	2.25	0.42
55:v:316:ARG:HG2	55:v:327:TYR:HE1	1.85	0.42
56:w:109:CYS:HB3	56:w:137:ILE:HG12	2.01	0.42
1:A:633:A:O2'	1:A:2404:U:OP1	2.36	0.41
1:A:745:G:C6	1:A:746:U:C5	3.07	0.41
1:A:1675:C:O2	4:D:133:THR:OG1	2.37	0.41
1:A:2240:U:H2'	1:A:2241:A:H8	1.84	0.41
1:A:2497:A:H1'	1:A:2498:C:H5	1.85	0.41
1:A:2505:G:C5	58:z:15:HIS:CE1	3.08	0.41
2:B:14:U:OP2	2:B:70:C:O2'	2.37	0.41
5:E:149:ILE:HD11	5:E:172:ALA:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:a:501:C:H2'	34:a:502:A:H8	1.85	0.41
34:a:501:C:O3'	45:l:114:SER:OG	2.32	0.41
34:a:921:U:H2'	34:a:922:G:H8	1.85	0.41
35:b:17:HIS:HB3	35:b:18:GLN:H	1.58	0.41
55:v:127:PHE:HZ	55:v:310:TYR:CG	2.37	0.41
1:A:5:A:H2'	1:A:6:A:C8	2.55	0.41
1:A:526:A:O2'	1:A:2043:C:O2	2.28	0.41
1:A:1227:G:OP2	17:Q:15:LYS:NZ	2.47	0.41
1:A:1841:U:H2'	1:A:1842:G:H8	1.85	0.41
1:A:2002:G:H5"	14:N:9:GLN:HE21	1.85	0.41
1:A:2062:A:C6	58:z:14:PRO:CG	3.03	0.41
1:A:2457:U:C5	1:A:2494:G:N1	2.63	0.41
1:A:2817:U:OP1	14:N:42:LYS:NZ	2.40	0.41
5:E:47:LYS:HB2	5:E:51:GLU:HB2	2.01	0.41
34:a:21:G:H1'	34:a:915:A:H61	1.85	0.41
34:a:85:U:OP2	34:a:87:C:N4	2.52	0.41
34:a:916:U:H2'	34:a:917:G:H8	1.85	0.41
34:a:948:C:H2'	34:a:949:A:H8	1.85	0.41
34:a:1052:U:O2	34:a:1207:G:N2	2.53	0.41
34:a:1317:C:H4'	47:n:48:LEU:HD21	2.02	0.41
40:g:55:LYS:HB3	40:g:59:GLU:HG3	2.01	0.41
55:v:142:ARG:NH2	55:v:174:ARG:HH22	2.18	0.41
55:v:147:GLU:CG	55:v:165:LYS:O	2.67	0.41
1:A:4:U:H2'	1:A:5:A:H8	1.86	0.41
1:A:151:C:H2'	1:A:152:A:H8	1.86	0.41
1:A:1687:G:N2	1:A:1701:A:H62	2.17	0.41
1:A:2175:C:H2'	1:A:2176:A:H8	1.83	0.41
1:A:2329:U:H2'	1:A:2330:G:C8	2.55	0.41
14:N:79:LEU:HD23	14:N:83:LEU:HD12	2.02	0.41
23:W:61:GLY:CA	23:W:79:GLU:O	2.65	0.41
34:a:514:C:H2'	34:a:515:G:C8	2.52	0.41
34:a:674:G:H2'	34:a:675:A:C8	2.55	0.41
35:b:71:THR:HG22	35:b:72:LYS:H	1.85	0.41
39:f:36:ILE:HA	39:f:64:VAL:HG23	2.01	0.41
43:j:10:LEU:HB3	43:j:98:VAL:HG23	2.02	0.41
50:q:44:HIS:HB2	50:q:70:LYS:HB2	2.02	0.41
1:A:1716:U:H2'	1:A:1717:A:H8	1.85	0.41
6:F:140:ILE:HG22	6:F:142:TYR:H	1.85	0.41
11:K:21:CYS:HA	11:K:41:ILE:HG22	2.02	0.41
12:L:95:LEU:HD22	12:L:100:ILE:HD11	2.03	0.41
13:M:50:ARG:HD3	13:M:65:ILE:HD11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:U:28:LEU:HD12	21:U:32:LYS:HB2	2.01	0.41
34:a:21:G:H2'	34:a:22:G:C8	2.56	0.41
34:a:362:G:P	56:w:408:LYS:HZ1	2.44	0.41
34:a:966:G:C4	57:x:35:C:H4'	2.55	0.41
34:a:1137:C:O2'	34:a:1138:G:N2	2.51	0.41
55:v:125:ALA:HB1	55:v:158:GLY:C	2.46	0.41
56:w:297:THR:HB	56:w:387:PHE:HZ	1.84	0.41
1:A:4:U:H2'	1:A:5:A:C8	2.55	0.41
1:A:851:C:O2'	26:Z:42:ALA:O	2.38	0.41
1:A:2036:C:H2'	1:A:2037:A:C8	2.56	0.41
1:A:2581:G:OP2	1:A:2581:G:N2	2.38	0.41
1:A:2836:U:H2'	1:A:2837:A:H8	1.86	0.41
3:C:74:PRO:HB3	3:C:114:GLN:HE21	1.85	0.41
34:a:411:A:H62	34:a:413:G:H21	1.68	0.41
34:a:641:U:H4'	34:a:642:A:C8	2.55	0.41
34:a:1147:C:H2'	34:a:1148:U:H6	1.85	0.41
34:a:1287:A:H2'	34:a:1288:A:C8	2.55	0.41
34:a:1309:G:H2'	34:a:1310:G:C8	2.56	0.41
34:a:1328:C:H5"	46:m:27:THR:HB	2.02	0.41
55:v:244:ILE:HD11	55:v:263:GLN:CB	2.50	0.41
56:w:454:LYS:HB2	56:w:457:TYR:HD2	1.85	0.41
1:A:248:G:O2'	1:A:2432:A:OP1	2.34	0.41
1:A:406:G:H2'	1:A:407:G:H8	1.84	0.41
1:A:626:A:N3	12:L:78:ARG:NH2	2.66	0.41
1:A:742:A:H2'	1:A:743:A:C8	2.56	0.41
1:A:854:C:H2'	1:A:855:G:H8	1.85	0.41
1:A:1327:A:H3'	1:A:1328:A:H8	1.85	0.41
1:A:1433:A:H2'	1:A:1434:A:H8	1.86	0.41
1:A:2279:G:O2'	1:A:2327:A:O2'	2.30	0.41
1:A:2511:U:H1'	4:D:130:GLN:HE21	1.86	0.41
9:I:56:VAL:HG22	9:I:68:PHE:HB2	2.03	0.41
34:a:137:U:H2'	34:a:138:G:H8	1.86	0.41
34:a:672:U:H2'	34:a:673:A:H8	1.86	0.41
34:a:1179:A:H5"	42:i:98:ARG:HH12	1.86	0.41
34:a:1271:A:H2'	34:a:1272:G:H8	1.85	0.41
35:b:46:VAL:O	35:b:50:ASN:HB2	2.21	0.41
35:b:129:THR:HG22	35:b:131:LYS:H	1.85	0.41
44:k:95:THR:O	44:k:98:ALA:HB3	2.20	0.41
53:t:12:GLN:O	53:t:15:LYS:HB3	2.20	0.41
56:w:170:THR:HG22	56:w:184:HIS:HA	2.03	0.41
1:A:1297:C:H2'	1:A:1298:C:C6	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1433:A:H2'	1:A:1434:A:C8	2.55	0.41
1:A:1592:C:H2'	1:A:1593:A:H8	1.85	0.41
1:A:1744:A:H3'	1:A:1745:A:H8	1.86	0.41
1:A:2291:U:O2	1:A:2374:C:O2'	2.36	0.41
11:K:13:ASN:ND2	34:a:339:C:OP2	2.53	0.41
30:3:31:ILE:H	30:3:31:ILE:HG13	1.49	0.41
37:d:61:ARG:O	37:d:65:GLY:N	2.50	0.41
42:i:114:LYS:HB3	42:i:117:LEU:HD13	2.03	0.41
43:j:65:TYR:OH	47:n:89:MET:SD	2.68	0.41
55:v:332:VAL:HG13	55:v:337:LEU:CD1	2.50	0.41
1:A:249:C:O2'	12:L:63:LYS:NZ	2.52	0.41
1:A:987:C:O2'	1:A:1000:A:N3	2.47	0.41
1:A:1837:C:O2'	1:A:1927:A:N3	2.42	0.41
1:A:2063:C:H1'	58:z:18:LEU:HA	2.01	0.41
11:K:103:VAL:HG21	11:K:116:ILE:HG22	2.01	0.41
33:7:22:A:H62	55:v:198:THR:CG2	2.34	0.41
34:a:520:A:H62	34:a:529:G:H21	1.67	0.41
34:a:556:C:H2'	34:a:557:G:H8	1.86	0.41
34:a:662:U:H2'	34:a:663:A:C8	2.55	0.41
34:a:815:A:O2'	34:a:1526:G:N2	2.38	0.41
34:a:1457:G:H2'	34:a:1458:G:H8	1.85	0.41
46:m:6:ILE:HG13	46:m:7:ASN:H	1.86	0.41
49:p:52:LEU:HD23	49:p:78:VAL:HG11	2.02	0.41
56:w:10:VAL:HG22	56:w:361:PRO:HG2	2.02	0.41
1:A:480:A:OP2	21:U:43:LYS:NZ	2.40	0.41
1:A:974:G:H1'	1:A:975:A:C8	2.56	0.41
1:A:1826:G:O2'	1:A:1971:U:OP2	2.35	0.41
1:A:1969:A:O2'	1:A:1972:G:N3	2.40	0.41
1:A:2063:C:O4'	58:z:18:LEU:CA	2.67	0.41
1:A:2063:C:O4'	58:z:18:LEU:HD22	2.21	0.41
1:A:2380:C:H2'	1:A:2381:A:C8	2.56	0.41
1:A:2705:A:O2'	1:A:2852:G:OP1	2.34	0.41
16:P:29:VAL:HG22	16:P:80:VAL:HG12	2.02	0.41
20:T:37:ASP:OD1	20:T:37:ASP:N	2.53	0.41
27:0:39:ARG:O	27:0:41:HIS:ND1	2.54	0.41
34:a:680:C:H2'	34:a:681:A:C8	2.55	0.41
34:a:917:G:H2'	34:a:918:A:H8	1.86	0.41
34:a:1355:G:H2'	34:a:1356:G:H8	1.86	0.41
34:a:1414:U:H2'	34:a:1415:G:C8	2.55	0.41
44:k:86:LYS:NZ	44:k:112:VAL:O	2.50	0.41
1:A:492:A:H2	19:S:7:HIS:HE1	1.68	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1653:G:H5”	14:N:2:ARG:HG2	2.03	0.41
1:A:1745:A:H2’	1:A:1746:A:H8	1.86	0.41
1:A:1921:G:H2’	1:A:1922:G:H8	1.85	0.41
1:A:2120:G:H2’	1:A:2121:G:C8	2.56	0.41
6:F:48:LEU:HD11	6:F:149:ARG:HH12	1.86	0.41
13:M:58:LYS:HB3	13:M:59:ARG:H	1.72	0.41
34:a:36:C:H5”	45:l:119:LYS:HG2	2.03	0.41
34:a:150:U:H2’	34:a:151:A:C8	2.56	0.41
34:a:407:U:H2’	34:a:408:A:H8	1.86	0.41
34:a:556:C:H2’	34:a:557:G:C8	2.56	0.41
34:a:1355:G:H2’	34:a:1356:G:C8	2.56	0.41
44:k:35:ASP:OD1	44:k:38:GLY:N	2.54	0.41
55:v:222:LEU:HD12	55:v:274:LEU:HD11	2.03	0.41
55:v:255:VAL:HG11	55:v:273:VAL:HB	2.03	0.41
55:v:309:THR:OG1	55:v:318:THR:OG1	2.28	0.41
1:A:81:G:O2’	1:A:295:G:O2’	2.39	0.40
1:A:184:C:O2’	1:A:217:A:N3	2.52	0.40
1:A:705:A:H2’	1:A:706:A:H8	1.85	0.40
1:A:832:U:H2’	1:A:833:A:C8	2.55	0.40
1:A:1190:G:H2’	1:A:1191:G:H8	1.86	0.40
1:A:1649:G:H2’	1:A:1650:A:H8	1.86	0.40
18:R:6:GLN:HE21	18:R:11:GLN:NE2	2.18	0.40
34:a:19:A:OP1	38:e:134:ASN:ND2	2.54	0.40
34:a:410:G:H21	34:a:432:A:H62	1.67	0.40
34:a:718:A:OP1	34:a:720:C:N4	2.54	0.40
34:a:719:C:N3	51:r:62:ARG:NH1	2.65	0.40
34:a:999:C:H2’	34:a:1000:A:H8	1.85	0.40
34:a:1496:C:H2’	34:a:1497:G:C8	2.55	0.40
55:v:121:GLY:O	55:v:124:ALA:HB3	2.21	0.40
55:v:236:HIS:O	55:v:237:VAL:C	2.60	0.40
55:v:248:HIS:CE1	55:v:274:LEU:HD22	2.47	0.40
56:w:76:GLN:C	56:w:76:GLN:CD	2.88	0.40
1:A:261:G:H2’	1:A:262:A:H8	1.85	0.40
1:A:521:U:H2’	1:A:522:A:H8	1.85	0.40
1:A:948:C:H2’	1:A:949:G:C8	2.57	0.40
1:A:1326:U:H5’	1:A:2010:G:H21	1.86	0.40
1:A:1834:U:H5”	1:A:1835:G:H5’	2.03	0.40
1:A:1940:U:OP1	1:A:2603:G:N2	2.54	0.40
1:A:2087:G:H2’	1:A:2088:A:C8	2.55	0.40
1:A:2140:G:H2’	1:A:2141:G:H8	1.85	0.40
1:A:2334:U:O2	15:O:13:ARG:NH1	2.45	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2559:C:H2'	1:A:2560:A:H8	1.86	0.40
1:A:2632:A:H2'	1:A:2633:G:C8	2.57	0.40
14:N:118:ARG:NH2	27:0:54:ILE:O	2.54	0.40
34:a:536:C:H2'	34:a:537:G:C8	2.55	0.40
39:f:48:ALA:HB1	51:r:68:PRO:HG3	2.02	0.40
45:l:49:ARG:HB3	45:l:65:TYR:HE1	1.86	0.40
52:s:18:VAL:HG11	52:s:43:MET:HG2	2.03	0.40
53:t:32:LYS:HA	53:t:35:TYR:HD2	1.87	0.40
56:w:378:THR:HG21	56:w:386:LYS:HA	2.04	0.40
57:x:52:C:H2'	57:x:53:G:H8	1.85	0.40
1:A:6:A:H2'	1:A:7:G:C8	2.56	0.40
1:A:395:U:H2'	1:A:396:G:C8	2.56	0.40
1:A:414:C:H2'	1:A:415:A:C8	2.56	0.40
1:A:690:G:H4'	3:C:216:ARG:HH22	1.85	0.40
1:A:2630:G:H2'	1:A:2631:G:H8	1.85	0.40
3:C:52:HIS:CE1	3:C:218:THR:HA	2.56	0.40
8:H:12:LEU:HD13	8:H:19:VAL:HB	2.03	0.40
17:Q:109:VAL:HG12	17:Q:113:LYS:HE2	2.02	0.40
20:T:22:THR:HA	20:T:25:GLU:HG2	2.02	0.40
34:a:310:G:H5"	49:p:31:ARG:HB2	2.02	0.40
34:a:1218:C:H2'	34:a:1219:A:H8	1.87	0.40
38:e:155:LYS:HB3	41:h:70:VAL:HG13	2.03	0.40
1:A:126:A:H61	29:2:42:LEU:HD23	1.87	0.40
1:A:949:G:H2'	1:A:950:G:H8	1.86	0.40
1:A:1636:U:H2'	1:A:1637:A:C8	2.56	0.40
1:A:1997:C:H2'	1:A:1998:A:C8	2.57	0.40
1:A:1999:C:O2	1:A:2687:U:O2'	2.33	0.40
21:U:20:LYS:HB3	21:U:38:ILE:HD12	2.03	0.40
28:1:10:LEU:HB3	28:1:48:TYR:HB3	2.02	0.40
28:1:36:LYS:HG3	28:1:47:ILE:HG13	2.03	0.40
34:a:166:U:H2'	34:a:167:A:H8	1.86	0.40
34:a:426:U:H4'	37:d:39:GLN:HA	2.03	0.40
34:a:999:C:H2'	34:a:1000:A:C8	2.56	0.40
34:a:1086:U:H3	34:a:1099:G:H22	1.68	0.40
34:a:1233:G:O2'	34:a:1365:G:OP1	2.34	0.40
43:j:45:ARG:HB2	43:j:69:THR:HB	2.03	0.40
43:j:57:VAL:HG22	43:j:58:ASN:H	1.87	0.40
49:p:46:LYS:NZ	49:p:48:GLU:O	2.43	0.40
51:r:24:ASP:N	51:r:24:ASP:OD1	2.54	0.40
55:v:127:PHE:CE1	55:v:312:PHE:HE2	2.27	0.40
1:A:341:C:H2'	1:A:342:A:C8	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:596:U:H2'	1:A:597:G:H8	1.86	0.40
1:A:2215:C:H2'	1:A:2216:G:C8	2.57	0.40
1:A:2675:A:H5"	11:K:31:ARG:HH11	1.86	0.40
1:A:2692:G:H2'	1:A:2693:G:C8	2.57	0.40
14:N:56:LYS:NZ	14:N:87:PHE:O	2.53	0.40
34:a:235:C:H5"	50:q:69:THR:HG23	2.02	0.40
34:a:1354:U:H2'	34:a:1355:G:C8	2.56	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	
3	C	269/271 (99%)	260 (97%)	9 (3%)	0	100	100
4	D	207/209 (99%)	194 (94%)	13 (6%)	0	100	100
5	E	199/201 (99%)	187 (94%)	12 (6%)	0	100	100
6	F	175/177 (99%)	160 (91%)	15 (9%)	0	100	100
7	G	174/176 (99%)	161 (92%)	11 (6%)	2 (1%)	12	45
8	H	147/149 (99%)	138 (94%)	9 (6%)	0	100	100
9	I	139/141 (99%)	121 (87%)	18 (13%)	0	100	100
10	J	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
11	K	120/122 (98%)	108 (90%)	12 (10%)	0	100	100
12	L	141/143 (99%)	124 (88%)	15 (11%)	2 (1%)	9	39
13	M	134/136 (98%)	124 (92%)	9 (7%)	1 (1%)	19	54
14	N	118/120 (98%)	109 (92%)	9 (8%)	0	100	100
15	O	114/116 (98%)	109 (96%)	5 (4%)	0	100	100
16	P	112/114 (98%)	108 (96%)	4 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
17	Q	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
18	R	101/103 (98%)	93 (92%)	7 (7%)	1 (1%)	13	46
19	S	108/110 (98%)	100 (93%)	7 (6%)	1 (1%)	14	48
20	T	91/93 (98%)	81 (89%)	10 (11%)	0	100	100
21	U	100/102 (98%)	88 (88%)	11 (11%)	1 (1%)	13	46
22	V	92/94 (98%)	90 (98%)	2 (2%)	0	100	100
23	W	73/75 (97%)	70 (96%)	3 (4%)	0	100	100
24	X	75/77 (97%)	73 (97%)	2 (3%)	0	100	100
25	Y	61/63 (97%)	59 (97%)	2 (3%)	0	100	100
26	Z	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
27	0	54/56 (96%)	53 (98%)	1 (2%)	0	100	100
28	1	48/50 (96%)	46 (96%)	2 (4%)	0	100	100
29	2	44/46 (96%)	43 (98%)	1 (2%)	0	100	100
30	3	62/64 (97%)	55 (89%)	5 (8%)	2 (3%)	3	26
31	4	36/38 (95%)	32 (89%)	4 (11%)	0	100	100
32	5	129/131 (98%)	104 (81%)	25 (19%)	0	100	100
35	b	216/218 (99%)	195 (90%)	20 (9%)	1 (0%)	25	60
36	c	204/206 (99%)	199 (98%)	5 (2%)	0	100	100
37	d	203/205 (99%)	181 (89%)	22 (11%)	0	100	100
38	e	155/157 (99%)	138 (89%)	15 (10%)	2 (1%)	10	41
39	f	98/100 (98%)	81 (83%)	15 (15%)	2 (2%)	6	33
40	g	149/151 (99%)	136 (91%)	13 (9%)	0	100	100
41	h	127/129 (98%)	122 (96%)	5 (4%)	0	100	100
42	i	125/127 (98%)	108 (86%)	16 (13%)	1 (1%)	16	51
43	j	96/98 (98%)	81 (84%)	15 (16%)	0	100	100
44	k	114/116 (98%)	99 (87%)	15 (13%)	0	100	100
45	l	121/123 (98%)	99 (82%)	21 (17%)	1 (1%)	16	51
46	m	112/114 (98%)	100 (89%)	12 (11%)	0	100	100
47	n	99/101 (98%)	91 (92%)	8 (8%)	0	100	100
48	o	86/88 (98%)	76 (88%)	10 (12%)	0	100	100
49	p	80/82 (98%)	71 (89%)	9 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
50	q	78/80 (98%)	67 (86%)	10 (13%)	1 (1%)	10 41
51	r	63/65 (97%)	58 (92%)	5 (8%)	0	100 100
52	s	77/79 (98%)	75 (97%)	2 (3%)	0	100 100
53	t	83/85 (98%)	78 (94%)	5 (6%)	0	100 100
54	u	63/65 (97%)	49 (78%)	13 (21%)	1 (2%)	8 37
55	v	244/248 (98%)	221 (91%)	16 (7%)	7 (3%)	3 27
56	w	494/529 (93%)	435 (88%)	55 (11%)	4 (1%)	16 51
58	z	12/14 (86%)	11 (92%)	1 (8%)	0	100 100
All	All	6533/6674 (98%)	5966 (91%)	537 (8%)	30 (0%)	27 60

All (30) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	G	46	ASP
13	M	58	LYS
30	3	31	ILE
50	q	69	THR
55	v	143	ARG
55	v	229	SER
55	v	258	GLN
55	v	261	ARG
55	v	329	LEU
55	v	338	ASP
56	w	315	VAL
7	G	47	ASN
21	U	89	GLY
30	3	32	LEU
38	e	122	VAL
39	f	53	LYS
45	l	102	ASP
56	w	18	ILE
35	b	17	HIS
39	f	55	HIS
54	u	37	TYR
56	w	77	PHE
38	e	121	ASN
56	w	400	ARG
12	L	128	THR
19	S	64	ALA

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Mol	Chain	Res	Type
42	i	90	ASP
55	v	218	ASN
12	L	31	GLY
18	R	54	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
3	C	216/216 (100%)	216 (100%)	0	100 100
4	D	164/164 (100%)	164 (100%)	0	100 100
5	E	165/165 (100%)	165 (100%)	0	100 100
6	F	148/148 (100%)	148 (100%)	0	100 100
7	G	137/137 (100%)	137 (100%)	0	100 100
8	H	114/114 (100%)	114 (100%)	0	100 100
9	I	109/109 (100%)	109 (100%)	0	100 100
10	J	116/116 (100%)	116 (100%)	0	100 100
11	K	103/103 (100%)	103 (100%)	0	100 100
12	L	102/102 (100%)	102 (100%)	0	100 100
13	M	109/109 (100%)	108 (99%)	1 (1%)	75 83
14	N	100/100 (100%)	100 (100%)	0	100 100
15	O	86/86 (100%)	86 (100%)	0	100 100
16	P	99/99 (100%)	99 (100%)	0	100 100
17	Q	89/89 (100%)	89 (100%)	0	100 100
18	R	84/84 (100%)	84 (100%)	0	100 100
19	S	93/93 (100%)	93 (100%)	0	100 100
20	T	80/80 (100%)	80 (100%)	0	100 100
21	U	83/83 (100%)	83 (100%)	0	100 100
22	V	78/78 (100%)	78 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
23	W	57/57 (100%)	57 (100%)	0	100	100
24	X	67/67 (100%)	67 (100%)	0	100	100
25	Y	55/55 (100%)	55 (100%)	0	100	100
26	Z	48/48 (100%)	48 (100%)	0	100	100
27	0	47/47 (100%)	47 (100%)	0	100	100
28	1	45/45 (100%)	45 (100%)	0	100	100
29	2	38/38 (100%)	38 (100%)	0	100	100
30	3	51/51 (100%)	51 (100%)	0	100	100
31	4	34/34 (100%)	34 (100%)	0	100	100
32	5	100/100 (100%)	100 (100%)	0	100	100
35	b	180/180 (100%)	180 (100%)	0	100	100
36	c	170/170 (100%)	170 (100%)	0	100	100
37	d	172/172 (100%)	172 (100%)	0	100	100
38	e	114/119 (96%)	114 (100%)	0	100	100
39	f	87/87 (100%)	87 (100%)	0	100	100
40	g	124/124 (100%)	124 (100%)	0	100	100
41	h	104/104 (100%)	104 (100%)	0	100	100
42	i	105/105 (100%)	105 (100%)	0	100	100
43	j	86/86 (100%)	86 (100%)	0	100	100
44	k	89/89 (100%)	89 (100%)	0	100	100
45	l	103/103 (100%)	103 (100%)	0	100	100
46	m	92/92 (100%)	92 (100%)	0	100	100
47	n	79/83 (95%)	79 (100%)	0	100	100
48	o	76/76 (100%)	76 (100%)	0	100	100
49	p	65/65 (100%)	65 (100%)	0	100	100
50	q	74/74 (100%)	74 (100%)	0	100	100
51	r	48/56 (86%)	48 (100%)	0	100	100
52	s	70/70 (100%)	69 (99%)	1 (1%)	62	75
53	t	65/65 (100%)	65 (100%)	0	100	100
54	u	44/55 (80%)	44 (100%)	0	100	100
55	v	201/201 (100%)	198 (98%)	3 (2%)	60	74

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
56	w	427/453 (94%)	424 (99%)	3 (1%)	81 86
58	z	14/14 (100%)	14 (100%)	0	100 100
All	All	5406/5460 (99%)	5398 (100%)	8 (0%)	92 95

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	M	46	ILE
52	s	10	ILE
55	v	214	LEU
55	v	222	LEU
55	v	323	ASN
56	w	71	THR
56	w	320	VAL
56	w	504	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (91) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	14	HIS
3	C	36	ASN
3	C	43	ASN
3	C	45	ASN
3	C	85	ASN
3	C	114	GLN
3	C	199	HIS
3	C	250	GLN
4	D	130	GLN
4	D	164	GLN
4	D	173	GLN
5	E	136	GLN
7	G	63	GLN
8	H	11	ASN
8	H	133	GLN
10	J	58	ASN
10	J	135	GLN
11	K	5	GLN
13	M	45	GLN
14	N	9	GLN
15	O	19	GLN

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Mol	Chain	Res	Type
15	O	38	GLN
15	O	98	GLN
16	P	11	GLN
16	P	55	HIS
17	Q	19	GLN
17	Q	43	GLN
18	R	6	GLN
18	R	18	GLN
18	R	43	ASN
18	R	86	GLN
18	R	91	GLN
19	S	7	HIS
19	S	57	ASN
20	T	15	HIS
23	W	8	ASN
23	W	42	HIS
24	X	33	HIS
25	Y	58	ASN
28	1	18	HIS
28	1	25	ASN
32	5	4	ASN
32	5	88	HIS
35	b	23	ASN
35	b	35	ASN
35	b	169	HIS
37	d	35	GLN
37	d	40	HIS
37	d	115	GLN
38	e	69	ASN
38	e	88	HIS
38	e	96	GLN
38	e	120	HIS
39	f	58	HIS
41	h	3	GLN
41	h	66	GLN
41	h	75	GLN
42	i	4	GLN
42	i	30	ASN
42	i	36	GLN
42	i	74	GLN
43	j	58	ASN
44	k	100	ASN

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Mol	Chain	Res	Type
45	l	28	GLN
47	n	60	GLN
48	o	27	GLN
48	o	45	HIS
48	o	49	HIS
48	o	50	HIS
49	p	9	HIS
49	p	18	GLN
50	q	8	GLN
50	q	30	HIS
50	q	44	HIS
51	r	51	GLN
52	s	55	GLN
53	t	2	ASN
53	t	47	GLN
55	v	156	HIS
55	v	182	HIS
55	v	235	GLN
55	v	238	ASN
55	v	263	GLN
56	w	21	HIS
56	w	184	HIS
56	w	202	GLN
56	w	262	ASN
56	w	381	GLN
56	w	445	GLN
56	w	510	ASN
58	z	15	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2895/2903 (99%)	541 (18%)	34 (1%)
2	B	119/120 (99%)	14 (11%)	2 (1%)
33	7	6/7 (85%)	6 (100%)	1 (16%)
34	a	1538/1539 (99%)	223 (14%)	0
57	x	76/77 (98%)	35 (46%)	0
All	All	4634/4646 (99%)	819 (17%)	37 (0%)

All (819) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A
1	A	12	U
1	A	27	G
1	A	34	U
1	A	35	G
1	A	36	G
1	A	46	G
1	A	49	A
1	A	51	G
1	A	52	A
1	A	60	G
1	A	63	A
1	A	71	A
1	A	74	A
1	A	75	G
1	A	84	A
1	A	91	A
1	A	92	U
1	A	98	G
1	A	110	G
1	A	118	A
1	A	119	A
1	A	120	U
1	A	125	A
1	A	137	U
1	A	138	U
1	A	139	U
1	A	140	C
1	A	141	G
1	A	142	A
1	A	158	U
1	A	162	U
1	A	163	C
1	A	188	G
1	A	196	A
1	A	199	A
1	A	205	G
1	A	206	U
1	A	215	G
1	A	216	A
1	A	218	A
1	A	219	A
1	A	221	A

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Mol	Chain	Res	Type
1	A	222	A
1	A	223	A
1	A	233	A
1	A	242	G
1	A	243	U
1	A	248	G
1	A	249	C
1	A	255	A
1	A	266	G
1	A	267	C
1	A	276	U
1	A	278	A
1	A	281	C
1	A	294	A
1	A	310	A
1	A	311	A
1	A	323	C
1	A	324	A
1	A	329	G
1	A	330	A
1	A	334	C
1	A	343	C
1	A	361	G
1	A	371	A
1	A	372	G
1	A	373	U
1	A	386	G
1	A	387	U
1	A	404	A
1	A	406	G
1	A	411	G
1	A	417	C
1	A	421	C
1	A	424	G
1	A	451	U
1	A	455	C
1	A	456	C
1	A	457	A
1	A	458	G
1	A	467	G
1	A	469	G
1	A	480	A

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Mol	Chain	Res	Type
1	A	481	G
1	A	489	G
1	A	490	C
1	A	491	G
1	A	504	A
1	A	505	A
1	A	506	G
1	A	509	C
1	A	528	A
1	A	529	A
1	A	530	G
1	A	532	A
1	A	533	G
1	A	543	G
1	A	544	C
1	A	545	U
1	A	547	A
1	A	548	G
1	A	550	C
1	A	555	G
1	A	563	A
1	A	568	U
1	A	572	A
1	A	573	U
1	A	575	A
1	A	603	A
1	A	613	A
1	A	614	A
1	A	616	A
1	A	621	A
1	A	627	A
1	A	637	A
1	A	643	A
1	A	645	C
1	A	646	U
1	A	654	A
1	A	668	A
1	A	669	G
1	A	670	A
1	A	677	A
1	A	686	U
1	A	687	C

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Mol	Chain	Res	Type
1	A	695	G
1	A	704	G
1	A	714	U
1	A	726	G
1	A	729	G
1	A	730	A
1	A	745	G
1	A	746	U
1	A	747	C
1	A	752	A
1	A	753	A
1	A	764	A
1	A	765	C
1	A	774	G
1	A	775	G
1	A	776	G
1	A	777	G
1	A	782	A
1	A	784	G
1	A	785	G
1	A	789	A
1	A	799	G
1	A	800	A
1	A	805	G
1	A	811	U
1	A	812	C
1	A	819	A
1	A	822	G
1	A	827	U
1	A	828	U
1	A	830	G
1	A	831	G
1	A	845	A
1	A	846	U
1	A	847	U
1	A	856	G
1	A	858	G
1	A	859	G
1	A	860	U
1	A	869	G
1	A	878	A
1	A	883	G

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Mol	Chain	Res	Type
1	A	896	A
1	A	897	C
1	A	899	A
1	A	900	A
1	A	901	C
1	A	907	G
1	A	910	A
1	A	932	U
1	A	941	A
1	A	946	C
1	A	953	G
1	A	961	C
1	A	965	C
1	A	974	G
1	A	980	A
1	A	983	A
1	A	989	G
1	A	990	A
1	A	995	C
1	A	996	A
1	A	999	U
1	A	1010	A
1	A	1012	U
1	A	1013	C
1	A	1021	A
1	A	1023	U
1	A	1026	G
1	A	1033	U
1	A	1046	A
1	A	1047	G
1	A	1053	C
1	A	1054	A
1	A	1057	A
1	A	1059	G
1	A	1060	U
1	A	1061	U
1	A	1062	G
1	A	1064	C
1	A	1065	U
1	A	1066	U
1	A	1068	G
1	A	1069	A

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Mol	Chain	Res	Type
1	A	1070	A
1	A	1071	G
1	A	1072	C
1	A	1075	C
1	A	1076	C
1	A	1078	U
1	A	1079	C
1	A	1083	U
1	A	1084	A
1	A	1088	A
1	A	1104	C
1	A	1106	G
1	A	1111	A
1	A	1112	G
1	A	1119	U
1	A	1130	U
1	A	1131	G
1	A	1132	U
1	A	1133	A
1	A	1135	C
1	A	1139	G
1	A	1142	A
1	A	1157	G
1	A	1174	U
1	A	1176	U
1	A	1177	G
1	A	1178	C
1	A	1180	U
1	A	1204	A
1	A	1206	G
1	A	1211	C
1	A	1212	G
1	A	1225	G
1	A	1237	A
1	A	1247	A
1	A	1248	G
1	A	1250	G
1	A	1251	C
1	A	1253	A
1	A	1256	G
1	A	1271	G
1	A	1272	A

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Mol	Chain	Res	Type
1	A	1294	U
1	A	1300	G
1	A	1301	A
1	A	1315	C
1	A	1321	A
1	A	1325	U
1	A	1329	U
1	A	1330	C
1	A	1341	G
1	A	1345	C
1	A	1365	A
1	A	1368	G
1	A	1378	A
1	A	1379	U
1	A	1383	A
1	A	1395	A
1	A	1416	G
1	A	1419	A
1	A	1420	A
1	A	1421	G
1	A	1428	C
1	A	1437	C
1	A	1454	C
1	A	1461	C
1	A	1475	G
1	A	1482	G
1	A	1490	A
1	A	1491	G
1	A	1493	C
1	A	1504	A
1	A	1515	A
1	A	1524	G
1	A	1532	A
1	A	1533	C
1	A	1535	A
1	A	1536	C
1	A	1537	G
1	A	1555	G
1	A	1559	U
1	A	1560	G
1	A	1565	C
1	A	1569	A

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Mol	Chain	Res	Type
1	A	1578	U
1	A	1585	C
1	A	1598	A
1	A	1603	A
1	A	1607	C
1	A	1610	A
1	A	1611	C
1	A	1634	A
1	A	1646	C
1	A	1647	U
1	A	1648	U
1	A	1651	G
1	A	1660	G
1	A	1664	A
1	A	1665	A
1	A	1669	A
1	A	1670	C
1	A	1674	G
1	A	1694	C
1	A	1695	G
1	A	1707	G
1	A	1715	G
1	A	1729	U
1	A	1730	C
1	A	1732	C
1	A	1733	G
1	A	1738	G
1	A	1757	A
1	A	1758	U
1	A	1764	C
1	A	1773	A
1	A	1780	A
1	A	1781	U
1	A	1782	U
1	A	1784	A
1	A	1800	C
1	A	1801	A
1	A	1802	A
1	A	1808	A
1	A	1816	C
1	A	1829	A
1	A	1833	C

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Mol	Chain	Res	Type
1	A	1835	G
1	A	1847	G
1	A	1848	A
1	A	1870	C
1	A	1871	A
1	A	1873	G
1	A	1893	C
1	A	1896	G
1	A	1901	A
1	A	1913	A
1	A	1914	C
1	A	1917	U
1	A	1918	A
1	A	1925	C
1	A	1926	U
1	A	1927	A
1	A	1929	G
1	A	1930	G
1	A	1931	U
1	A	1937	A
1	A	1938	A
1	A	1940	U
1	A	1941	C
1	A	1944	U
1	A	1955	U
1	A	1960	A
1	A	1962	C
1	A	1963	U
1	A	1967	C
1	A	1970	A
1	A	1971	U
1	A	1972	G
1	A	1991	U
1	A	1992	G
1	A	1997	C
1	A	2004	G
1	A	2020	A
1	A	2022	U
1	A	2023	C
1	A	2030	A
1	A	2031	A
1	A	2033	A

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Mol	Chain	Res	Type
1	A	2043	C
1	A	2050	C
1	A	2052	A
1	A	2055	C
1	A	2056	G
1	A	2060	A
1	A	2061	G
1	A	2062	A
1	A	2068	U
1	A	2069	G
1	A	2072	C
1	A	2093	G
1	A	2096	C
1	A	2100	G
1	A	2108	A
1	A	2110	G
1	A	2111	U
1	A	2112	G
1	A	2113	U
1	A	2118	U
1	A	2119	A
1	A	2127	G
1	A	2131	U
1	A	2132	U
1	A	2133	G
1	A	2136	G
1	A	2145	C
1	A	2147	A
1	A	2157	G
1	A	2162	G
1	A	2164	C
1	A	2170	A
1	A	2172	U
1	A	2173	A
1	A	2178	C
1	A	2189	U
1	A	2195	U
1	A	2198	A
1	A	2204	G
1	A	2211	A
1	A	2212	A
1	A	2213	U

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Mol	Chain	Res	Type
1	A	2225	A
1	A	2226	C
1	A	2238	G
1	A	2239	G
1	A	2249	U
1	A	2250	G
1	A	2251	G
1	A	2266	A
1	A	2279	G
1	A	2283	C
1	A	2287	A
1	A	2297	A
1	A	2305	U
1	A	2309	A
1	A	2325	G
1	A	2327	A
1	A	2334	U
1	A	2335	A
1	A	2336	A
1	A	2350	C
1	A	2354	C
1	A	2357	G
1	A	2361	G
1	A	2383	G
1	A	2385	C
1	A	2391	G
1	A	2392	A
1	A	2402	U
1	A	2407	A
1	A	2423	U
1	A	2424	C
1	A	2426	A
1	A	2428	G
1	A	2429	G
1	A	2430	A
1	A	2431	U
1	A	2435	A
1	A	2441	U
1	A	2447	G
1	A	2448	A
1	A	2449	U
1	A	2473	U

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Mol	Chain	Res	Type
1	A	2476	A
1	A	2478	A
1	A	2484	G
1	A	2491	U
1	A	2498	C
1	A	2502	G
1	A	2503	A
1	A	2504	U
1	A	2506	U
1	A	2518	A
1	A	2520	C
1	A	2529	G
1	A	2535	G
1	A	2547	A
1	A	2554	U
1	A	2564	A
1	A	2567	G
1	A	2572	A
1	A	2573	C
1	A	2574	G
1	A	2580	U
1	A	2582	G
1	A	2585	U
1	A	2586	U
1	A	2603	G
1	A	2604	U
1	A	2609	U
1	A	2613	U
1	A	2614	A
1	A	2621	G
1	A	2629	U
1	A	2634	A
1	A	2636	C
1	A	2646	C
1	A	2654	A
1	A	2655	G
1	A	2656	U
1	A	2682	A
1	A	2689	U
1	A	2690	U
1	A	2712	C
1	A	2713	U

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Mol	Chain	Res	Type
1	A	2714	G
1	A	2716	C
1	A	2718	G
1	A	2722	G
1	A	2726	A
1	A	2731	G
1	A	2733	A
1	A	2744	G
1	A	2748	A
1	A	2762	C
1	A	2764	A
1	A	2765	A
1	A	2778	A
1	A	2779	U
1	A	2791	G
1	A	2794	C
1	A	2796	U
1	A	2797	U
1	A	2799	A
1	A	2800	A
1	A	2808	G
1	A	2809	A
1	A	2818	U
1	A	2820	A
1	A	2833	U
1	A	2834	G
1	A	2835	A
1	A	2849	U
1	A	2861	U
1	A	2867	G
1	A	2868	A
1	A	2872	A
1	A	2873	A
1	A	2880	C
1	A	2884	U
1	A	2902	C
2	B	4	C
2	B	9	G
2	B	13	G
2	B	35	C
2	B	41	G
2	B	44	G

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Mol	Chain	Res	Type
2	B	45	A
2	B	53	A
2	B	67	G
2	B	89	U
2	B	90	C
2	B	91	C
2	B	108	A
2	B	109	A
33	7	18	U
33	7	19	G
33	7	20	U
33	7	21	A
33	7	22	A
33	7	23	A
34	a	7	A
34	a	8	A
34	a	9	G
34	a	22	G
34	a	32	A
34	a	39	G
34	a	47	C
34	a	48	C
34	a	49	U
34	a	51	A
34	a	71	A
34	a	85	U
34	a	87	C
34	a	95	C
34	a	121	U
34	a	130	A
34	a	173	U
34	a	174	A
34	a	177	G
34	a	183	C
34	a	184	G
34	a	197	A
34	a	209	U
34	a	210	C
34	a	211	G
34	a	212	G
34	a	214	C
34	a	215	C

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Mol	Chain	Res	Type
34	a	226	G
34	a	240	G
34	a	247	G
34	a	251	G
34	a	266	G
34	a	267	C
34	a	269	C
34	a	279	A
34	a	280	C
34	a	281	G
34	a	283	U
34	a	289	G
34	a	306	A
34	a	328	C
34	a	345	C
34	a	347	G
34	a	351	G
34	a	352	C
34	a	354	G
34	a	356	A
34	a	363	A
34	a	367	U
34	a	372	C
34	a	373	A
34	a	388	G
34	a	392	C
34	a	406	G
34	a	411	A
34	a	413	G
34	a	424	G
34	a	429	U
34	a	439	U
34	a	452	A
34	a	460	A
34	a	467	U
34	a	468	A
34	a	479	U
34	a	482	A
34	a	484	G
34	a	485	U
34	a	486	U
34	a	496	A

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Mol	Chain	Res	Type
34	a	497	G
34	a	510	A
34	a	511	C
34	a	516	U
34	a	519	C
34	a	521	G
34	a	527	G
34	a	531	U
34	a	532	A
34	a	547	A
34	a	560	A
34	a	561	U
34	a	564	C
34	a	572	A
34	a	573	A
34	a	574	A
34	a	575	G
34	a	576	C
34	a	577	G
34	a	596	A
34	a	633	G
34	a	665	A
34	a	687	A
34	a	688	G
34	a	701	U
34	a	703	G
34	a	713	G
34	a	718	A
34	a	719	C
34	a	723	U
34	a	724	G
34	a	731	G
34	a	733	G
34	a	755	G
34	a	777	A
34	a	812	G
34	a	814	A
34	a	815	A
34	a	817	C
34	a	818	G
34	a	819	A
34	a	820	U

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Mol	Chain	Res	Type
34	a	821	G
34	a	828	U
34	a	829	G
34	a	832	G
34	a	843	U
34	a	844	G
34	a	846	G
34	a	871	U
34	a	872	A
34	a	876	C
34	a	889	A
34	a	890	G
34	a	902	G
34	a	934	C
34	a	935	A
34	a	960	U
34	a	961	U
34	a	969	A
34	a	971	G
34	a	975	A
34	a	976	G
34	a	977	A
34	a	992	U
34	a	993	G
34	a	1004	A
34	a	1014	A
34	a	1022	A
34	a	1026	G
34	a	1028	C
34	a	1030	U
34	a	1031	C
34	a	1033	G
34	a	1034	G
34	a	1035	A
34	a	1053	G
34	a	1056	U
34	a	1065	U
34	a	1085	U
34	a	1094	G
34	a	1101	A
34	a	1108	G
34	a	1127	G

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Mol	Chain	Res	Type
34	a	1130	A
34	a	1136	C
34	a	1137	C
34	a	1138	G
34	a	1139	G
34	a	1140	C
34	a	1152	A
34	a	1158	C
34	a	1159	U
34	a	1168	U
34	a	1181	G
34	a	1183	U
34	a	1184	G
34	a	1191	A
34	a	1196	A
34	a	1201	A
34	a	1202	U
34	a	1208	C
34	a	1212	U
34	a	1213	A
34	a	1225	A
34	a	1227	A
34	a	1236	A
34	a	1238	A
34	a	1240	U
34	a	1241	G
34	a	1253	G
34	a	1256	A
34	a	1258	G
34	a	1260	G
34	a	1261	A
34	a	1278	G
34	a	1280	A
34	a	1281	C
34	a	1282	C
34	a	1286	U
34	a	1287	A
34	a	1298	U
34	a	1300	G
34	a	1302	C
34	a	1317	C
34	a	1321	U

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Mol	Chain	Res	Type
34	a	1323	G
34	a	1335	U
34	a	1346	A
34	a	1347	G
34	a	1348	U
34	a	1363	A
34	a	1378	C
34	a	1395	C
34	a	1396	A
34	a	1398	A
34	a	1400	C
34	a	1401	G
34	a	1433	A
34	a	1446	A
34	a	1451	U
34	a	1452	C
34	a	1493	A
34	a	1494	G
34	a	1499	A
34	a	1519	A
34	a	1520	C
34	a	1529	G
34	a	1530	G
34	a	1533	C
34	a	1534	A
34	a	1535	C
34	a	1536	C
57	x	2	G
57	x	3	C
57	x	4	G
57	x	8	U
57	x	9	G
57	x	11	A
57	x	15	G
57	x	16	C
57	x	17	C
57	x	18	U
57	x	19	G
57	x	20	G
57	x	21	U
57	x	22	A
57	x	23	G

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Mol	Chain	Res	Type
57	x	24	C
57	x	25	U
57	x	27	G
57	x	28	U
57	x	42	C
57	x	45	A
57	x	46	G
57	x	47	A
57	x	49	C
57	x	55	U
57	x	58	A
57	x	60	A
57	x	62	C
57	x	63	C
57	x	64	G
57	x	71	G
57	x	72	C
57	x	73	A
57	x	75	C
57	x	76	C

All (37) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	51	G
1	A	86	G
1	A	140	C
1	A	242	G
1	A	372	G
1	A	468	G
1	A	479	A
1	A	490	C
1	A	549	G
1	A	746	U
1	A	752	A
1	A	858	G
1	A	859	G
1	A	898	C
1	A	1020	A
1	A	1022	G
1	A	1070	A
1	A	1130	U

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Mol	Chain	Res	Type
1	A	1182	G
1	A	1190	G
1	A	1378	A
1	A	1399	C
1	A	1432	G
1	A	1926	U
1	A	1930	G
1	A	1940	U
1	A	2194	U
1	A	2286	G
1	A	2326	C
1	A	2333	A
1	A	2391	G
1	A	2566	A
1	A	2655	G
1	A	2808	G
2	B	66	A
2	B	88	C
33	7	18	U

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

1 ligand is 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	$\#\|Z\|>2$
59	GCP	w	601	-	27,34,34	1.65	5 (18%)	34,54,54	2.03	6 (17%)

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
59	GCP	w	601	-	-	5/15/38/38	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	w	601	GCP	PB-O3A	5.87	1.64	1.58
59	w	601	GCP	C6-N1	3.11	1.38	1.33
59	w	601	GCP	PG-O1G	2.60	1.55	1.50
59	w	601	GCP	PB-O2B	-2.24	1.51	1.56
59	w	601	GCP	C5-C6	2.05	1.44	1.41

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
59	w	601	GCP	C5-C6-N1	-8.38	111.97	123.43
59	w	601	GCP	C2-N1-C6	5.81	125.16	115.93
59	w	601	GCP	N3-C2-N1	-2.75	123.56	127.22
59	w	601	GCP	C4-C5-C6	-2.60	118.31	120.80
59	w	601	GCP	PB-O3A-PA	-2.48	124.69	132.56
59	w	601	GCP	C2-N3-C4	-2.16	112.89	115.36

There are no chirality outliers.

All (5) torsion outliers are listed below:

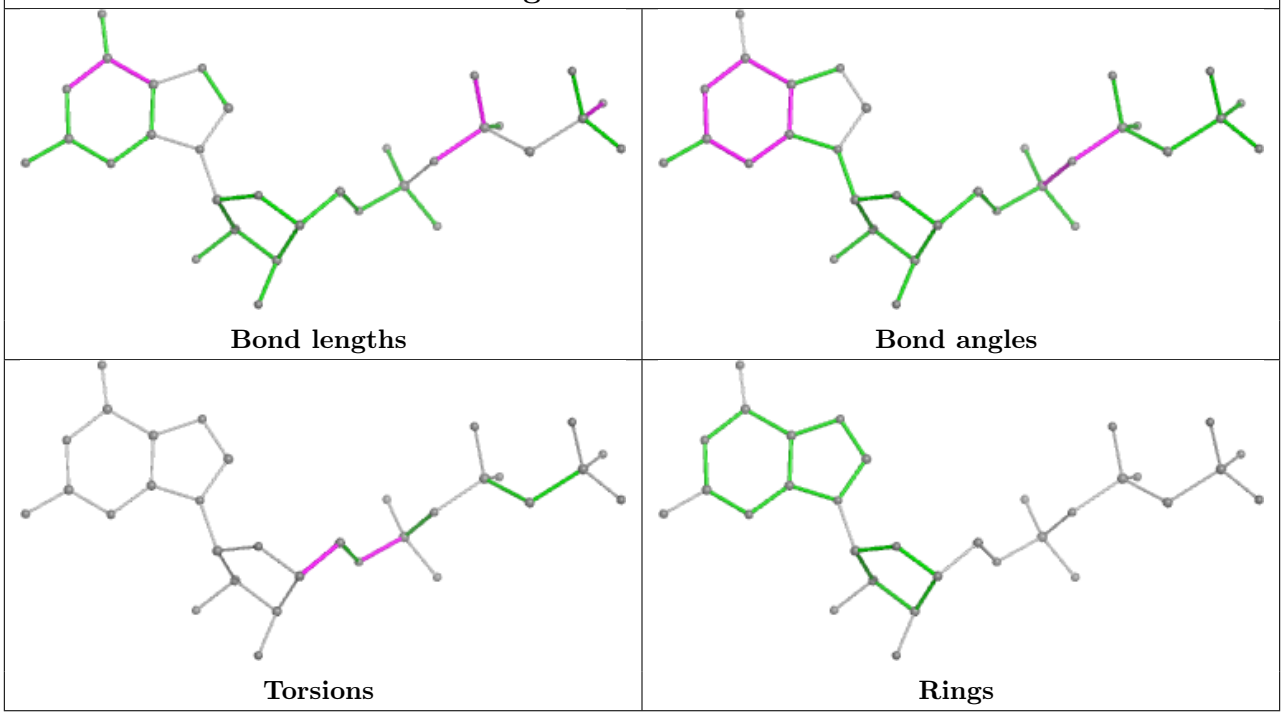
Mol	Chain	Res	Type	Atoms
59	w	601	GCP	C5'-O5'-PA-O3A
59	w	601	GCP	O4'-C4'-C5'-O5'
59	w	601	GCP	C3'-C4'-C5'-O5'
59	w	601	GCP	C5'-O5'-PA-O1A
59	w	601	GCP	C5'-O5'-PA-O2A

There are no ring outliers.

No monomer is involved in short contacts.

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

Ligand GCP w 601



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	5
55	v	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	891:G	O3'	892:A	P	9.09
1	A	884:U	O3'	885:C	P	7.63
1	A	1905:C	O3'	1906:G	P	3.75
1	A	2107:G	O3'	2108:A	P	3.38
1	A	2094:A	O3'	2095:A	P	3.36
1	v	288:GLN	C	289:ALA	N	2.14
1	v	257:CYS	C	258:GLN	N	1.69

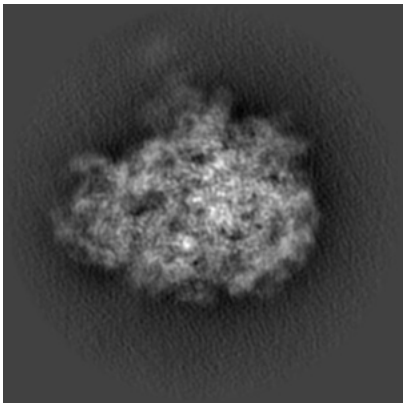
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-0082. These allow visual inspection of the internal detail of the map and identification of artifacts.

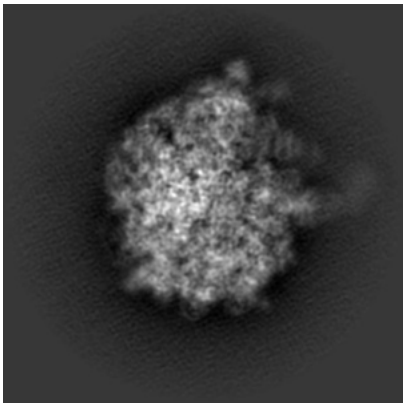
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

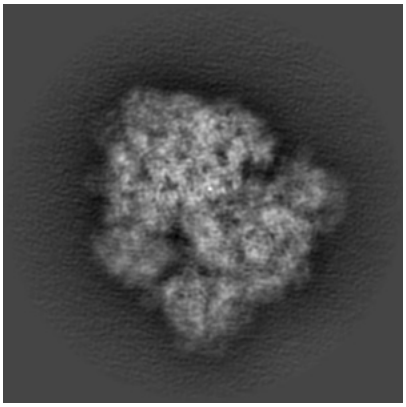
6.1.1 Primary map



X



Y

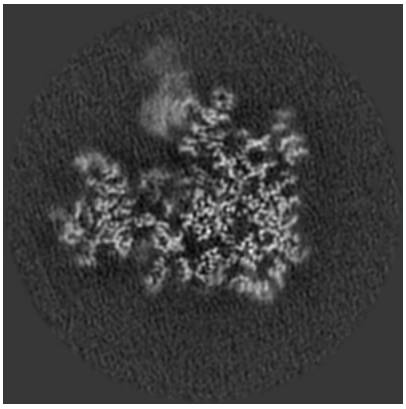


Z

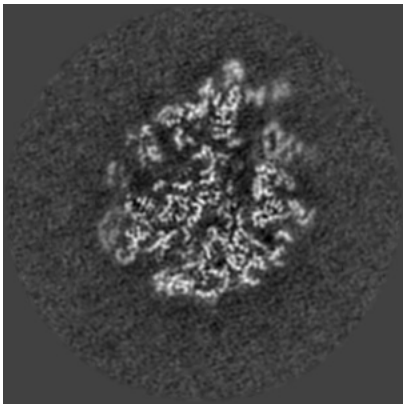
The images above show the map projected in three orthogonal directions.

6.2 Central slices

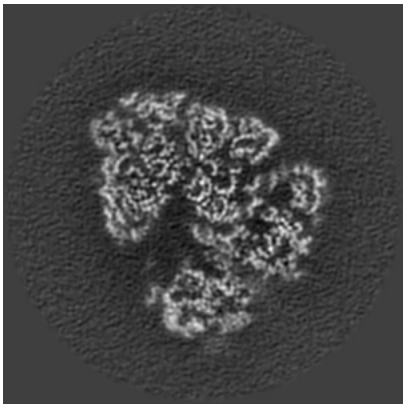
6.2.1 Primary map



X Index: 180



Y Index: 180

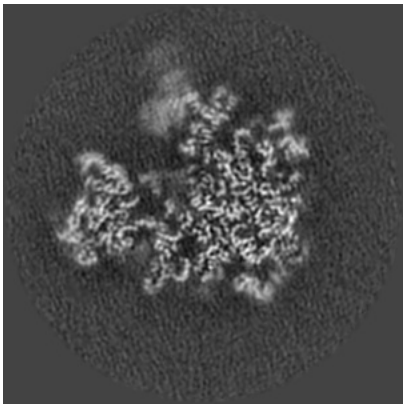


Z Index: 180

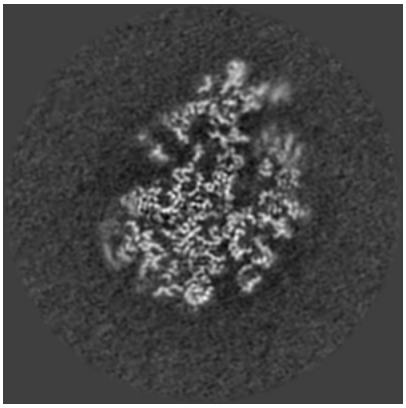
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

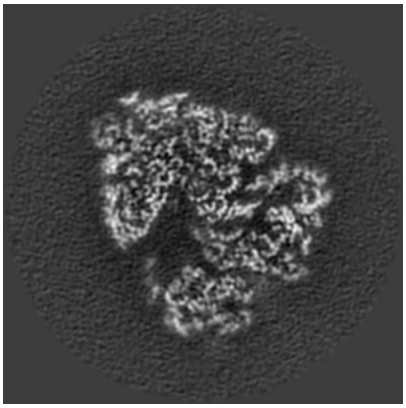
6.3.1 Primary map



X Index: 177



Y Index: 186

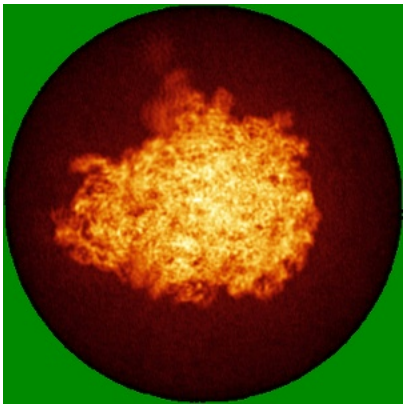


Z Index: 183

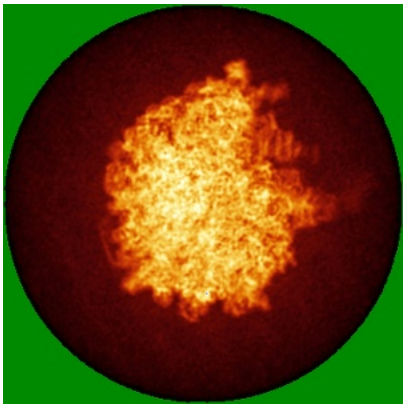
The images above show the largest variance slices of the map in three orthogonal directions.

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

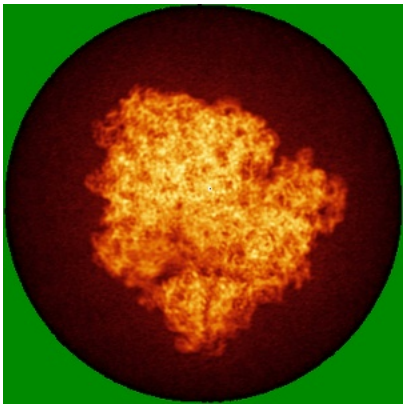
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

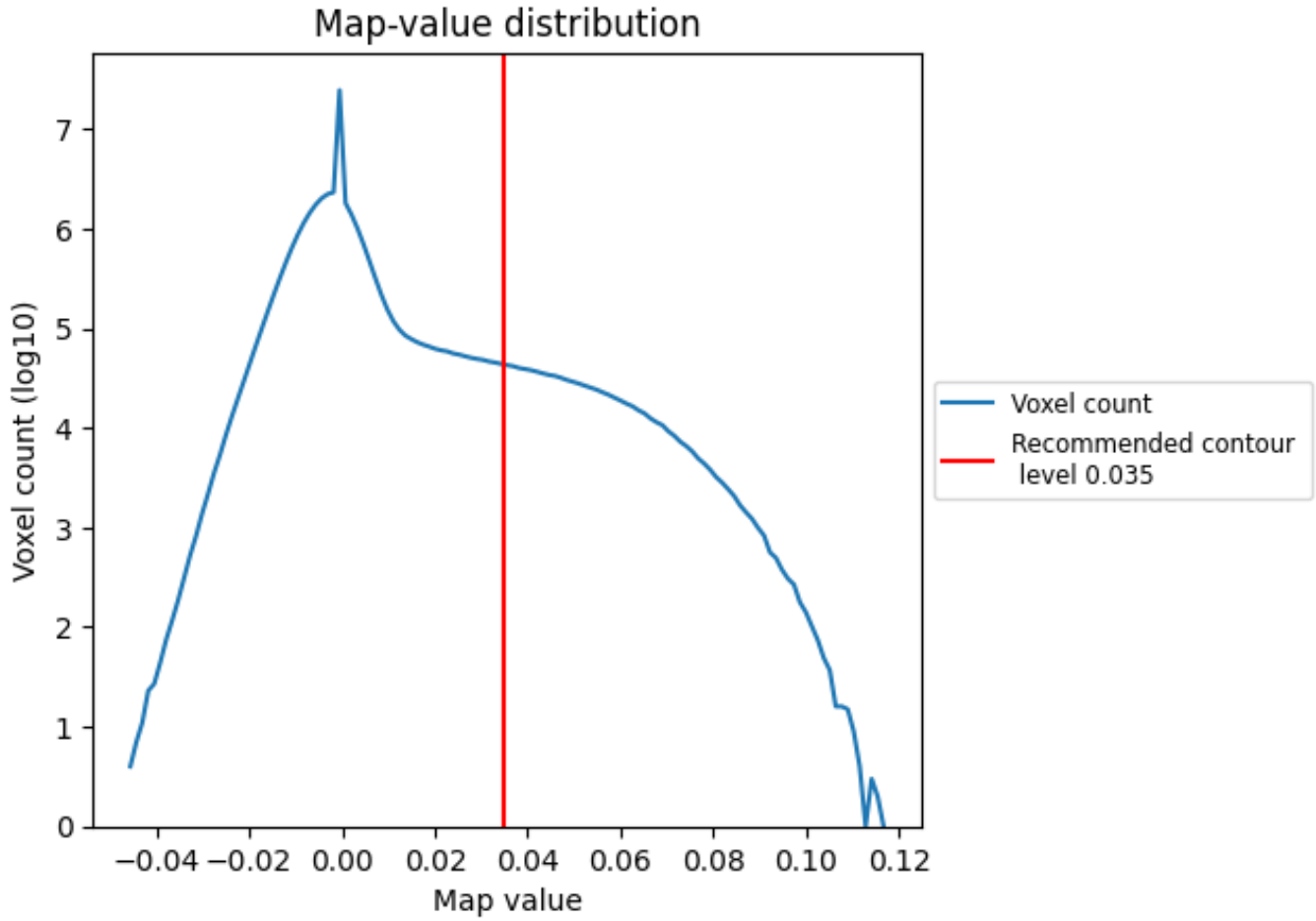
6.6 Mask visualisation (i)

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

7 Map analysis

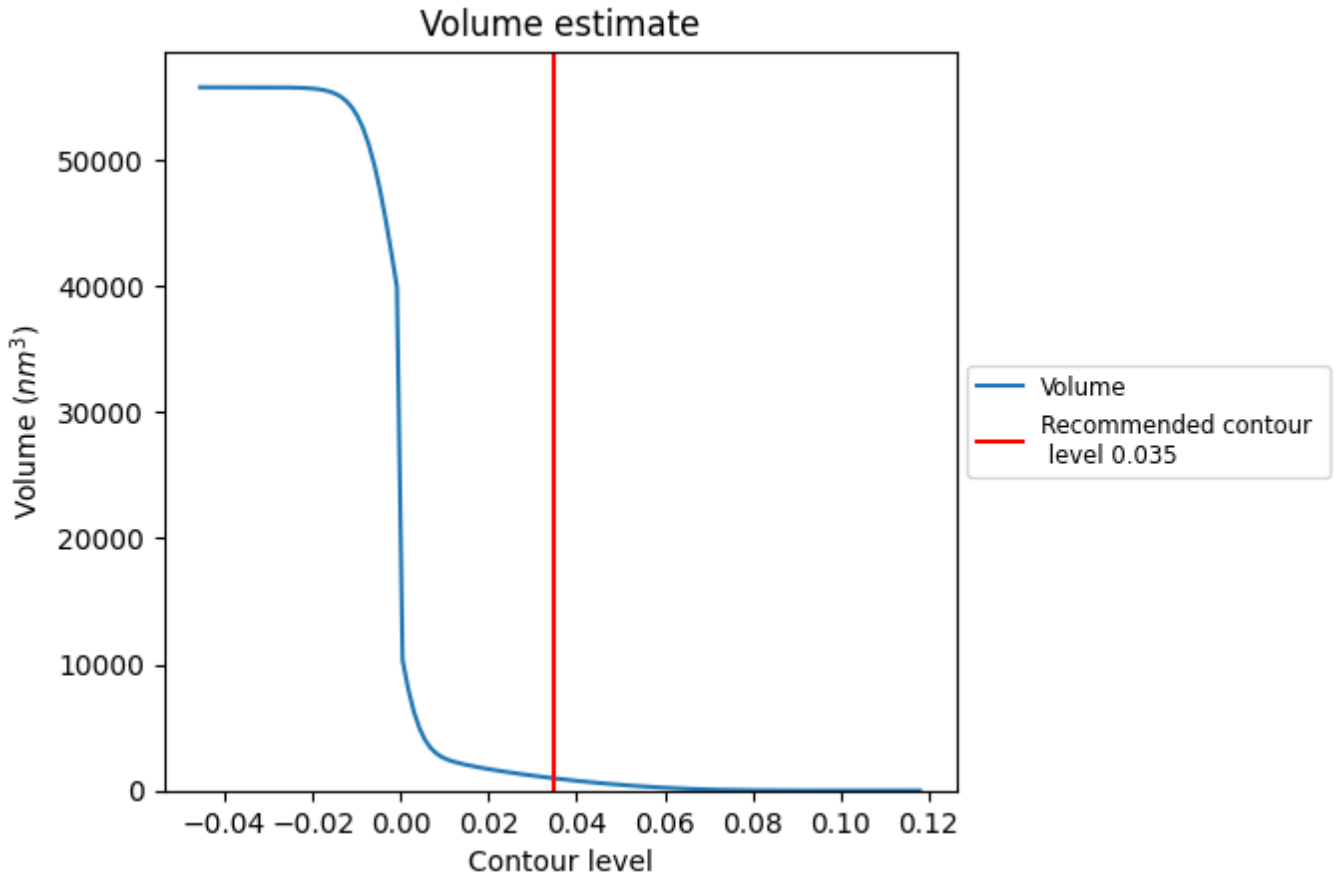
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

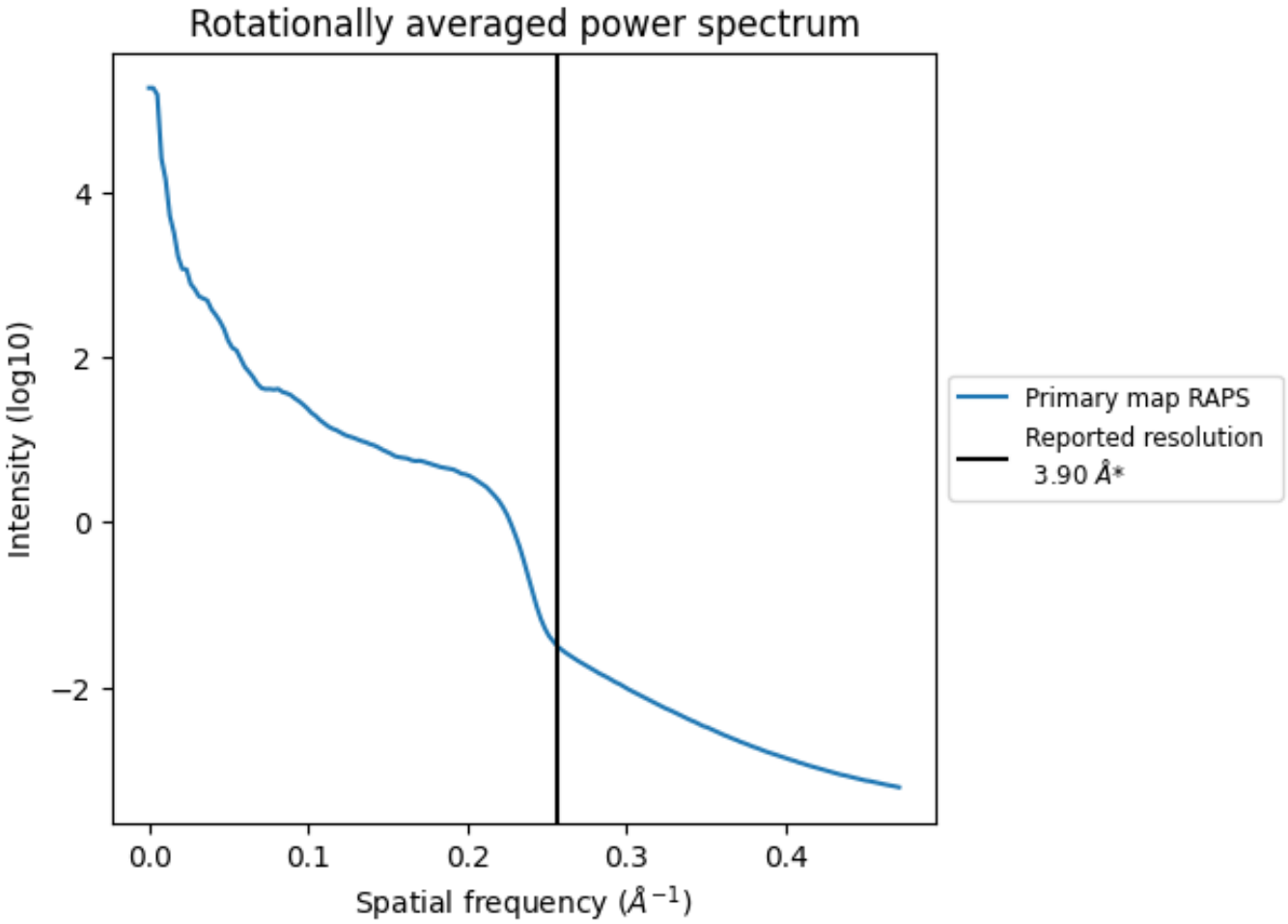
7.2 Volume estimate (i)



The volume at the recommended contour level is 965 nm^3; this corresponds to an approximate mass of 871 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 0.256 $Å^{-1}$

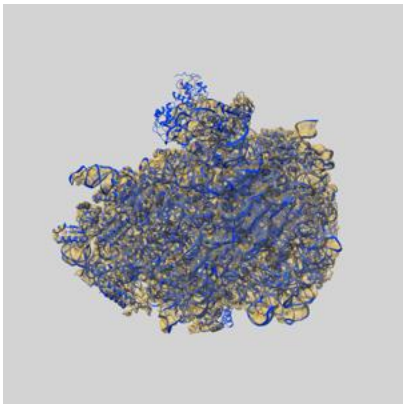
8 Fourier-Shell correlation (i)

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

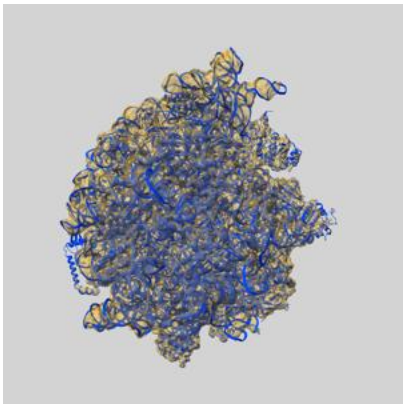
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-0082 and PDB model 6GXO. Per-residue inclusion information can be found in section 3 on page 16.

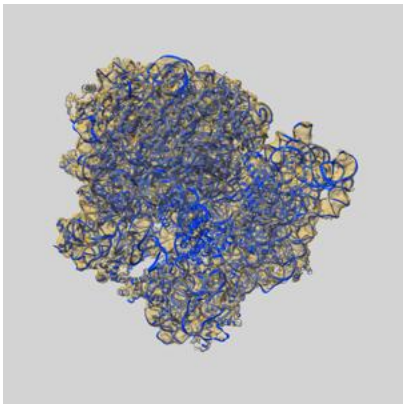
9.1 Map-model overlay



X



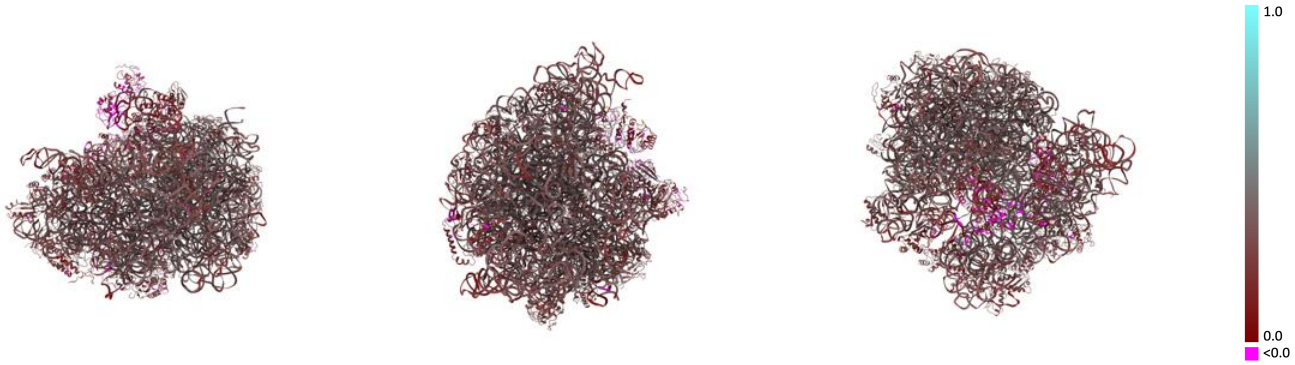
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.035 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.

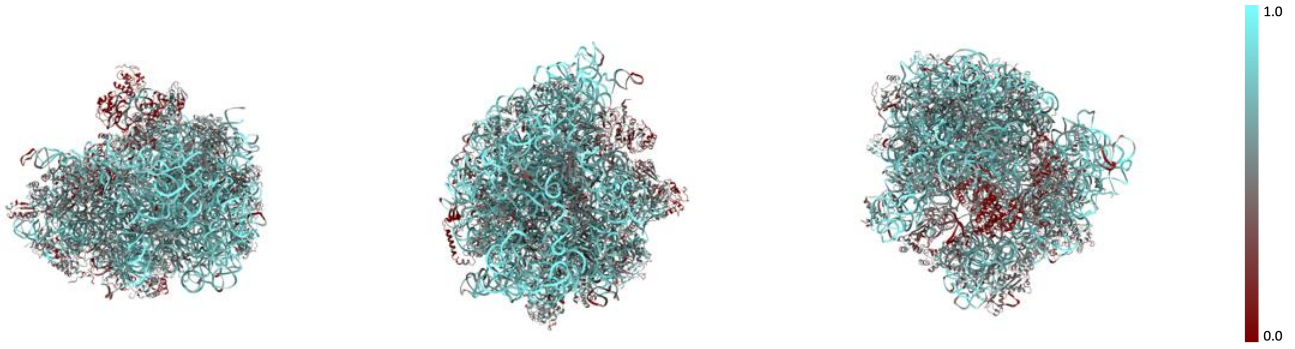
9.2 Q-score mapped to coordinate model



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.

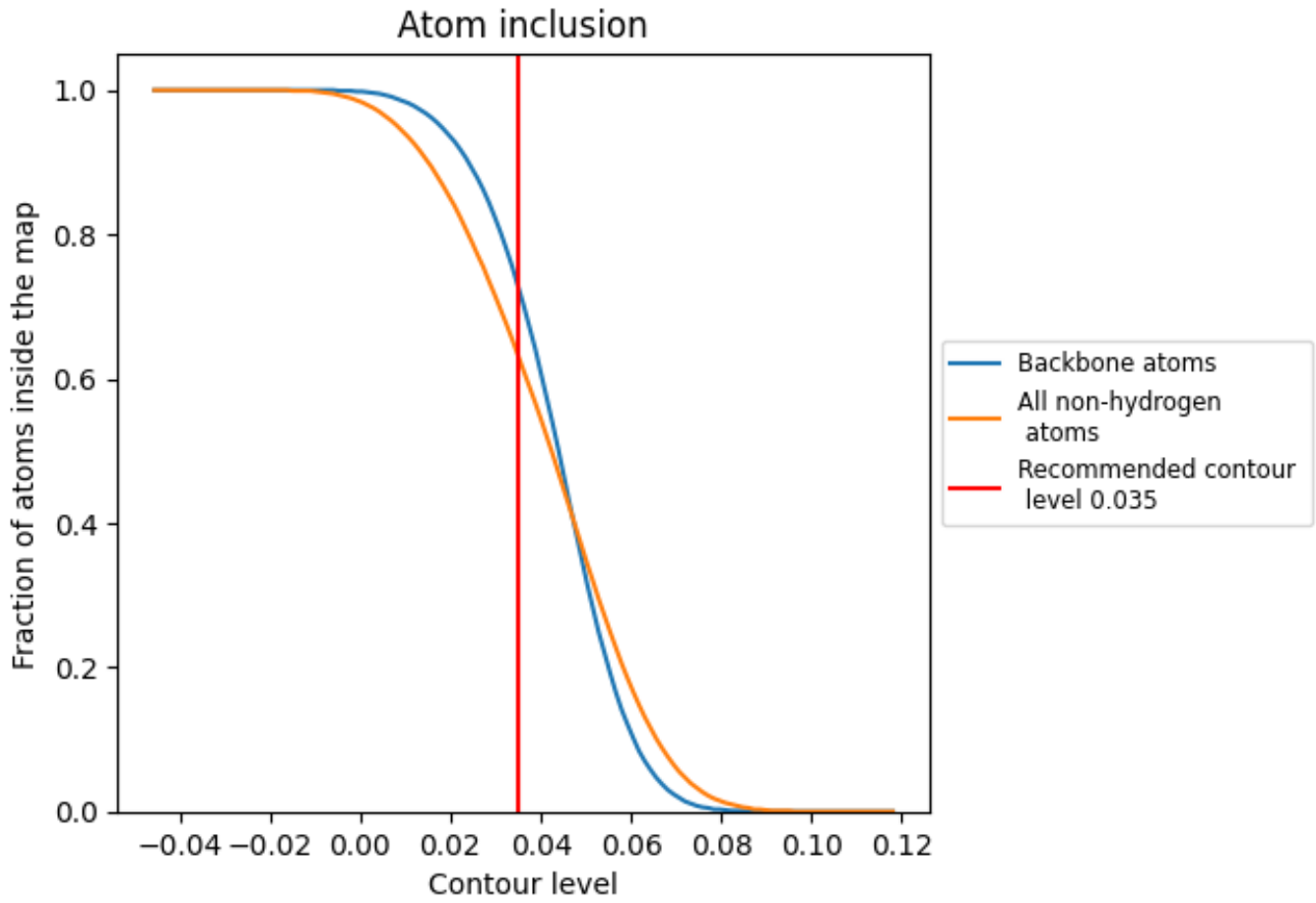
9.3 Atom inclusion mapped to coordinate model



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 (0.035).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 63% 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 (0.035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6320	0.3080
0	0.4530	0.3100
1	0.4760	0.3030
2	0.4110	0.3150
3	0.4540	0.3470
4	0.4830	0.3270
5	0.0390	0.0920
7	0.6690	0.3830
A	0.7490	0.3300
B	0.8030	0.3200
C	0.4680	0.3480
D	0.4690	0.3420
E	0.4410	0.2960
F	0.3240	0.2050
G	0.4500	0.3030
H	0.1480	0.1680
I	0.0070	0.0170
J	0.4790	0.3290
K	0.4280	0.3510
L	0.4630	0.3220
M	0.4150	0.3390
N	0.5110	0.3130
O	0.4980	0.2780
P	0.4170	0.3350
Q	0.5040	0.3080
R	0.4740	0.3260
S	0.4460	0.3240
T	0.4520	0.3220
U	0.4770	0.2970
V	0.5220	0.3230
W	0.4650	0.3550
X	0.4540	0.3100
Y	0.5090	0.2300
Z	0.4740	0.3400
a	0.7760	0.3300

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Chain	Atom inclusion	Q-score
b	0.3460	0.2520
c	0.4750	0.3020
d	0.3450	0.2440
e	0.5150	0.3090
f	0.4710	0.2390
g	0.3530	0.2190
h	0.5400	0.3370
i	0.4410	0.2740
j	0.3360	0.2590
k	0.4590	0.3120
l	0.3760	0.3240
m	0.3780	0.2410
n	0.4220	0.2760
o	0.5140	0.2820
p	0.5310	0.3200
q	0.4790	0.3230
r	0.4190	0.2500
s	0.3560	0.2390
t	0.5000	0.2650
u	0.3590	0.2010
v	0.0860	0.2690
w	0.2550	0.1470
x	0.4560	0.1980
z	0.2740	0.3330