Full wwPDB EM Validation Report ⓘ

Nov 17, 2026 – 02:38 PM EST

PDB ID	:	10ZE / pdb_000010ze
EMDB ID	:	EMD-75564
Title	:	Wild-type Escherichia coli ribosome stalled with MNTAIK peptide
Authors	:	Raskar, T.; Kleinman, J.
Deposited on	:	2026-02-12
Resolution	:	2.77 Å(reported)

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

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

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

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

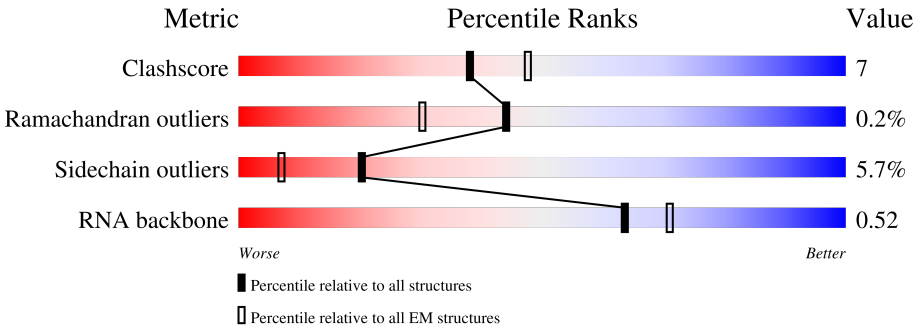
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

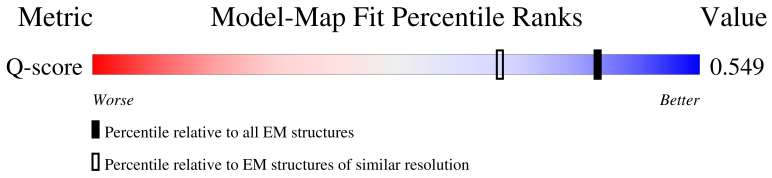
1 Overall quality at a glance

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

The reported resolution of this entry is 2.77 Å.

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





Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	10695 (2.27 - 3.27)

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	C	1542	56% 38% 5%
2	I	2904	63% 33% .
3	K	273	78% 19% ..

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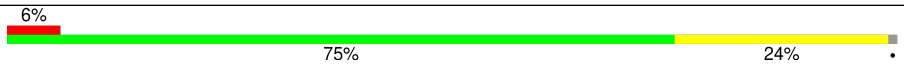
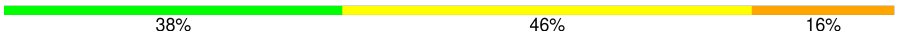
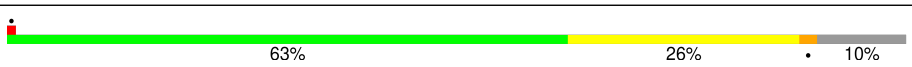
Mol	Chain	Length	Quality of chain
4	L	209	
5	Q	70	
6	U	136	
7	V	127	
8	m	38	
9	1	92	
10	2	87	
11	3	71	
12	4	18	
13	A	76	
14	D	241	
15	E	233	
16	F	206	
17	G	167	
18	H	135	
19	J	120	
20	M	201	
21	N	179	
22	O	177	
23	P	149	
24	R	142	
25	S	123	
26	T	144	
27	W	117	
28	X	115	

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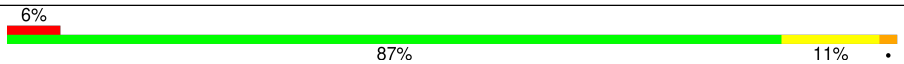
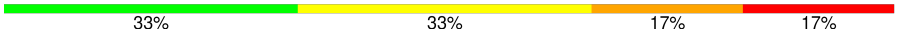
Mol	Chain	Length	Quality of chain
29	Y	118	
30	Z	103	
31	a	110	
32	b	100	
33	c	104	
34	d	94	
35	e	85	
36	f	78	
37	g	63	
38	h	59	
39	i	57	
40	j	55	
41	k	46	
42	l	65	
43	n	179	
44	o	130	
45	p	130	
46	q	103	
47	r	129	
48	s	6	
49	t	124	
50	u	118	
51	v	101	
52	w	89	
53	x	82	

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Mol	Chain	Length	Quality of chain
54	y	84	61% 35% 5%
55	z	75	63% 11% 27%

2 Entry composition (i)

There are 58 unique types of molecules in this entry. The entry contains 145685 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 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	C	1540	33037	14735	6057	10705	1540	0	0

- Molecule 2 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	I	2898	62229	27768	11448	20115	2898	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	K	271	2093	1294	427	365	7	1	0

- Molecule 4 is a protein called Large ribosomal subunit protein uL3.

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

- Molecule 5 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	Q	60	480	299	90	85	6	0	0

- Molecule 6 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	U	136	1075	686	205	178	6	0	0

- Molecule 7 is a protein called Large ribosomal subunit protein bL17.

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

- Molecule 8 is a protein called 50S ribosomal protein L36.

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

- Molecule 9 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	1	79	Total	C	N	O	S	0	0
			637	408	120	107	2		

- Molecule 10 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	2	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 11 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	3	70	Total	C	N	O	S	0	0
			590	366	125	98	1		

- Molecule 12 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	4	6	Total	C	N	O	P	0	0
			128	58	25	39	6		

- Molecule 13 is a RNA chain called P-site tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	A	76	Total	C	N	O	P	S	0	0
			1627	728	283	539	76	1		

- Molecule 14 is a protein called 30S ribosomal protein S2.

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

- Molecule 15 is a protein called 30S ribosomal protein S3.

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

- Molecule 16 is a protein called 30S ribosomal protein S4.

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

- Molecule 17 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	G	150	Total	C	N	O	S	0	0
			1105	687	211	201	6		

- Molecule 18 is a protein called 30S ribosomal protein S6.

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

- Molecule 19 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	J	118	Total	C	N	O	P	0	0
			2529	1126	464	821	118		

- Molecule 20 is a protein called 50S ribosomal protein L4.

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

- Molecule 21 is a protein called Large ribosomal subunit protein uL5.

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

- Molecule 22 is a protein called Large ribosomal subunit protein uL6.

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

- Molecule 23 is a protein called Large ribosomal subunit protein bL9.

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

- Molecule 24 is a protein called Large ribosomal subunit protein uL13.

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

- Molecule 25 is a protein called 50S ribosomal protein L14.

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

- Molecule 26 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	T	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 27 is a protein called Large ribosomal subunit protein uL18.

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

- Molecule 28 is a protein called Large ribosomal subunit protein bL19.

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

- Molecule 29 is a protein called 50S ribosomal protein L20.

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

- Molecule 30 is a protein called 50S ribosomal protein L21.

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

- Molecule 31 is a protein called 50S ribosomal protein L22.

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

- Molecule 32 is a protein called 50S ribosomal protein L23.

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

- Molecule 33 is a protein called 50S ribosomal protein L24.

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

- Molecule 34 is a protein called Large ribosomal subunit protein bL25.

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

- Molecule 35 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	e	85	Total	C	N	O	S	0	0
			642	396	130	114	2		

- Molecule 36 is a protein called 50S ribosomal protein L28.

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

- Molecule 37 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	g	62	Total	C	N	O	S	0	0
			501	308	98	94	1		

- Molecule 38 is a protein called 50S ribosomal protein L30.

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

- Molecule 39 is a protein called 50S ribosomal protein L32.

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

- Molecule 40 is a protein called Large ribosomal subunit protein bL33.

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

- Molecule 41 is a protein called 50S ribosomal protein L34.

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

- Molecule 42 is a protein called 50S ribosomal protein L35.

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

- Molecule 43 is a protein called Small ribosomal subunit protein uS7.

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

- Molecule 44 is a protein called Small ribosomal subunit protein uS8.

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

- Molecule 45 is a protein called Small ribosomal subunit protein uS9.

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

- Molecule 46 is a protein called Small ribosomal subunit protein uS10.

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

- Molecule 47 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	r	117	Total	C	N	O	S	0	0
			877	540	174	160	3		

- Molecule 48 is a protein called Nascent peptide chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	s	6	Total	C	N	O	S	0	0
			45	28	8	8	1		

- Molecule 49 is a protein called 30S ribosomal protein S12.

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

- Molecule 50 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	u	115	Total	C	N	O	S	0	0
			891	552	179	157	3		

- Molecule 51 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	v	96	Total	C	N	O	S	0	0
			774	483	160	128	3		

- Molecule 52 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	w	88	Total	C	N	O	S	0	0
			710	437	143	129	1		

- Molecule 53 is a protein called Small ribosomal subunit protein bS16.

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

- Molecule 54 is a protein called Small ribosomal subunit protein uS17.

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

- Molecule 55 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms				AltConf	Trace
55	z	55	Total	C	N	O	0	0
			455	288	86	81		

- Molecule 56 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
56	C	82	Total Mg 82 82	0
56	I	111	Total Mg 111 111	0
56	K	1	Total Mg 1 1	0
56	L	1	Total Mg 1 1	0
56	A	1	Total Mg 1 1	0
56	v	1	Total Mg 1 1	0

- Molecule 57 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
57	Q	1	Total Zn 1 1	0
57	m	1	Total Zn 1 1	0

- Molecule 58 is water.

Mol	Chain	Residues	Atoms	AltConf
58	C	445	Total O 445 445	0
58	I	833	Total O 833 833	0
58	K	4	Total O 4 4	0
58	L	4	Total O 4 4	0
58	Q	5	Total O 5 5	0
58	U	3	Total O 3 3	0
58	V	5	Total O 5 5	0
58	m	2	Total O 2 2	0
58	1	3	Total O 3 3	0
58	2	1	Total O 1 1	0

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Mol	Chain	Residues	Atoms	AltConf
58	3	12	Total O 12 12	0
58	4	4	Total O 4 4	0
58	A	17	Total O 17 17	0
58	D	15	Total O 15 15	0
58	E	11	Total O 11 11	0
58	F	8	Total O 8 8	0
58	G	4	Total O 4 4	0
58	H	3	Total O 3 3	0
58	J	16	Total O 16 16	0
58	M	6	Total O 6 6	0
58	N	6	Total O 6 6	0
58	O	4	Total O 4 4	0
58	P	13	Total O 13 13	0
58	R	4	Total O 4 4	0
58	T	11	Total O 11 11	0
58	W	4	Total O 4 4	0
58	X	2	Total O 2 2	0
58	Z	7	Total O 7 7	0
58	a	2	Total O 2 2	0
58	b	2	Total O 2 2	0
58	c	7	Total O 7 7	0

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Mol	Chain	Residues	Atoms	AltConf
58	d	5	Total O 5 5	0
58	e	1	Total O 1 1	0
58	f	3	Total O 3 3	0
58	g	5	Total O 5 5	0
58	h	2	Total O 2 2	0
58	i	1	Total O 1 1	0
58	j	3	Total O 3 3	0
58	k	2	Total O 2 2	0
58	n	9	Total O 9 9	0
58	o	1	Total O 1 1	0
58	p	5	Total O 5 5	0
58	q	10	Total O 10 10	0
58	r	8	Total O 8 8	0
58	s	1	Total O 1 1	0
58	t	6	Total O 6 6	0
58	u	4	Total O 4 4	0
58	w	3	Total O 3 3	0
58	x	4	Total O 4 4	0
58	y	1	Total O 1 1	0
58	z	1	Total O 1 1	0

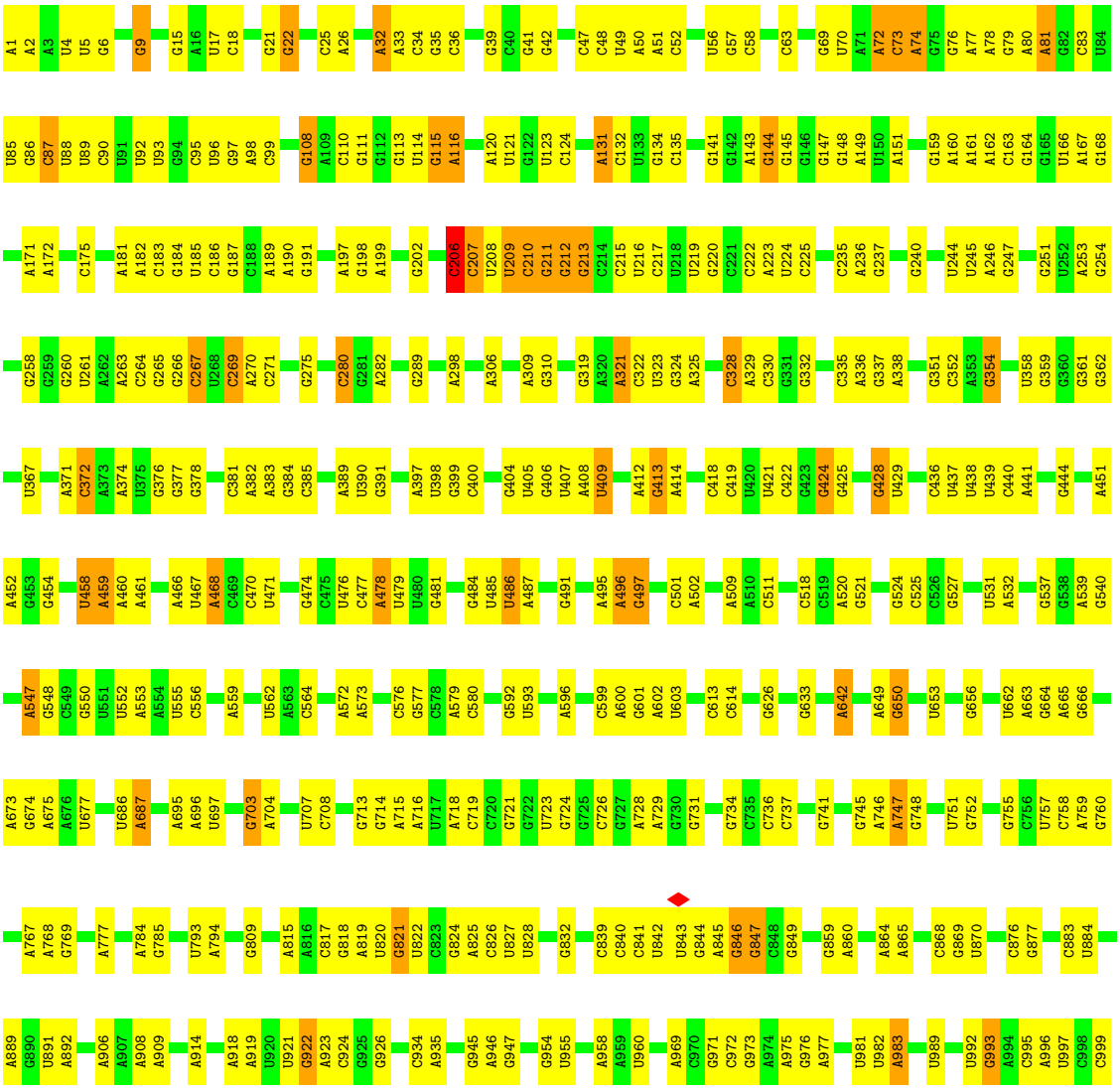
3 Residue-property plots (i)

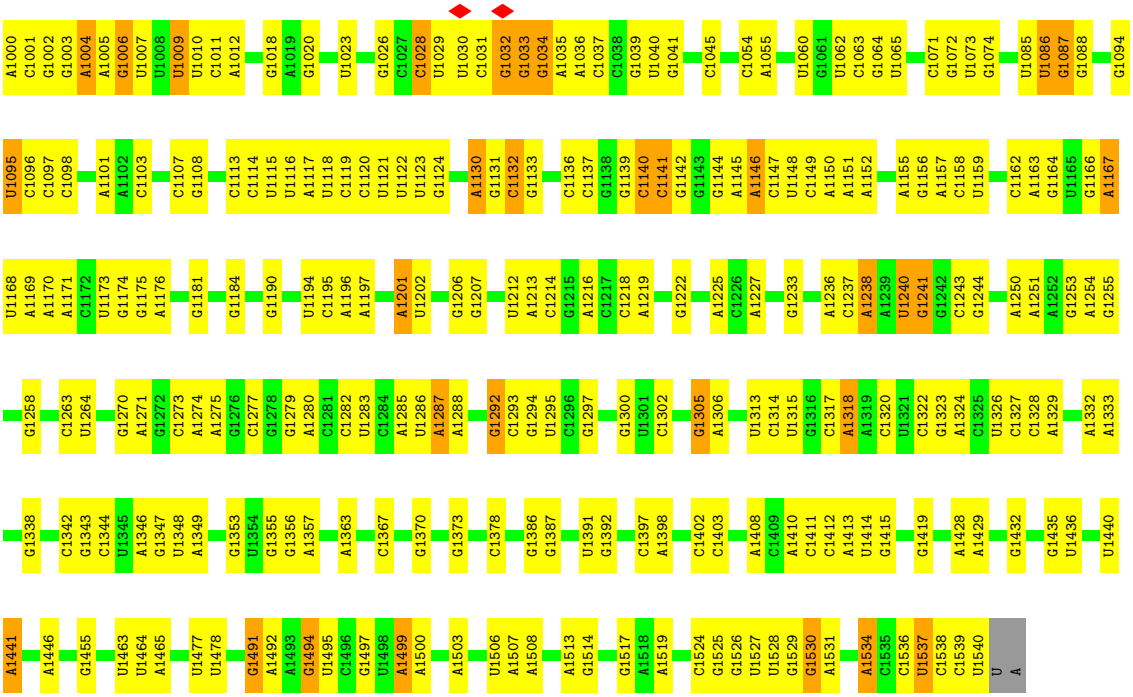
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 16S ribosomal RNA

Chain C:



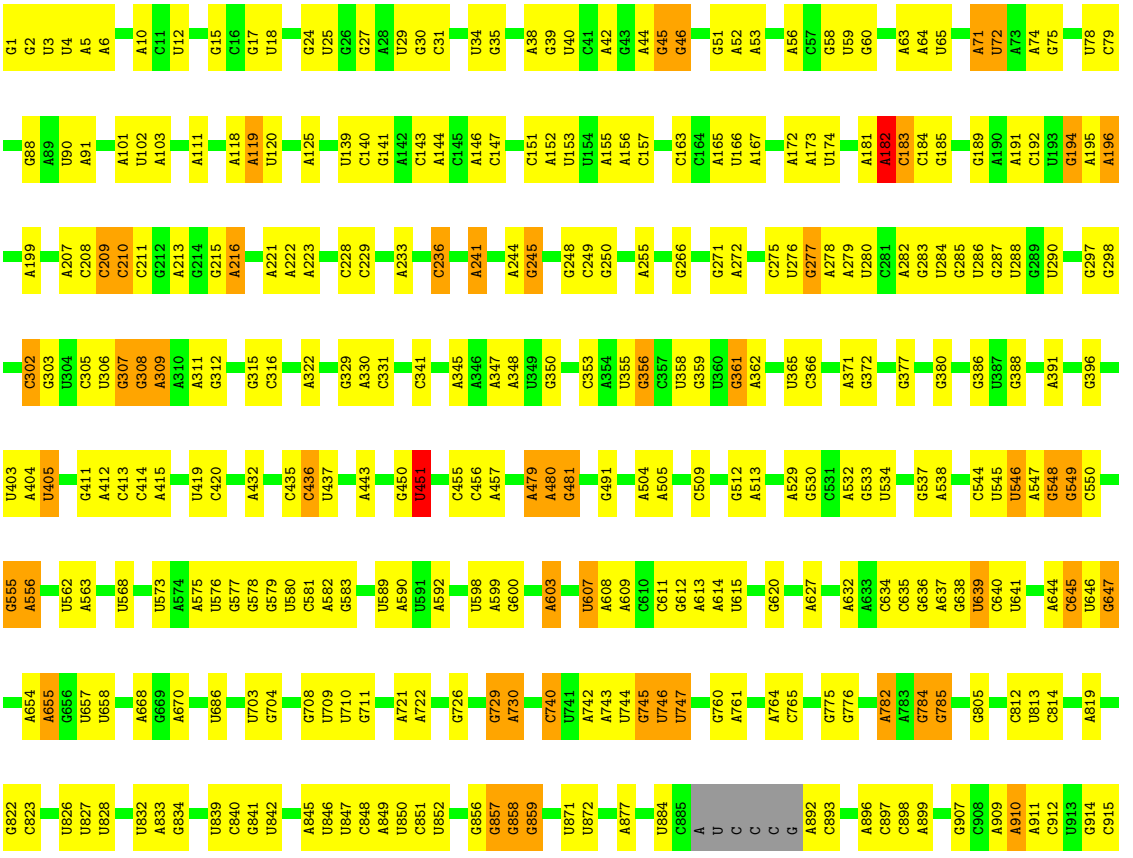


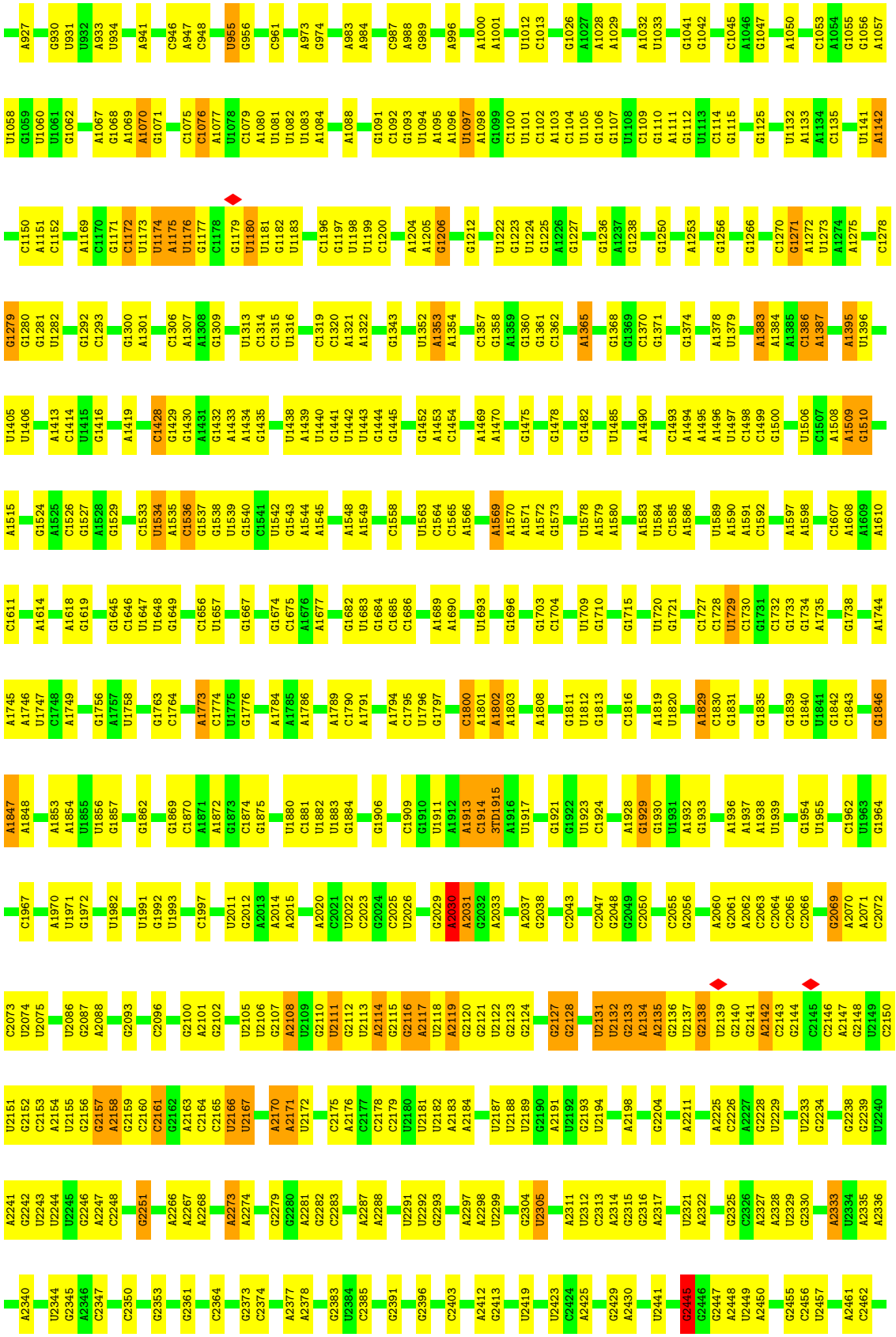


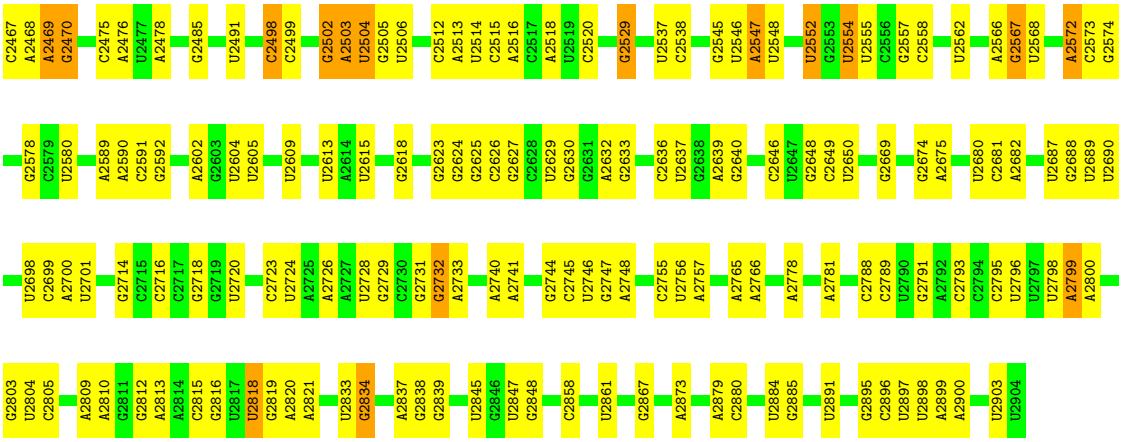
• Molecule 2: 23S ribosomal RNA

Chain I:





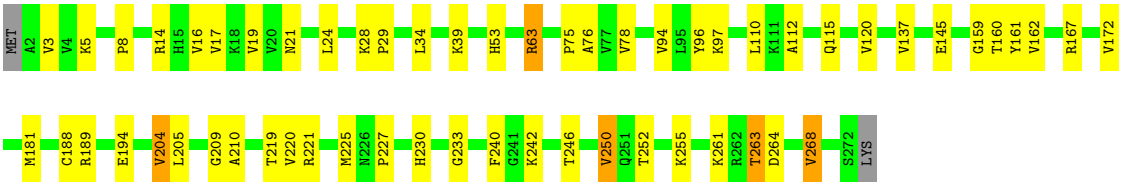




• Molecule 3: 50S ribosomal protein L2

Chain K:

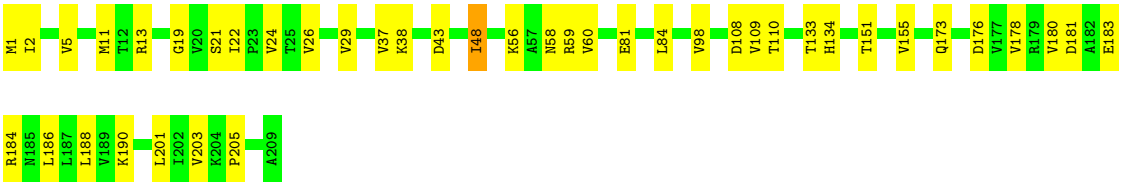




• Molecule 4: Large ribosomal subunit protein uL3

Chain L:





• Molecule 5: 50S ribosomal protein L31

Chain Q:

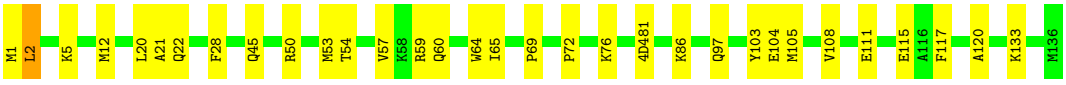




• Molecule 6: Large ribosomal subunit protein uL16

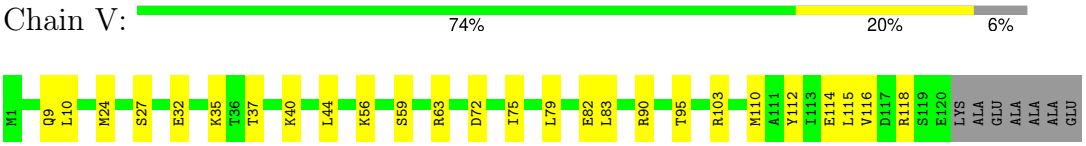
Chain U:





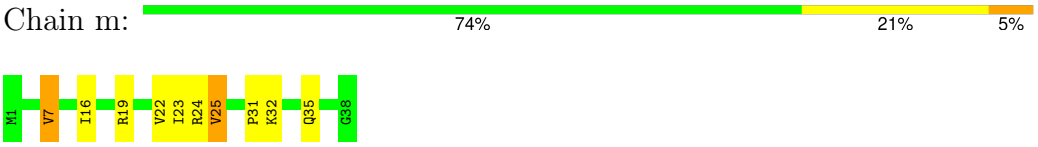
• Molecule 7: Large ribosomal subunit protein bL17

Chain V:



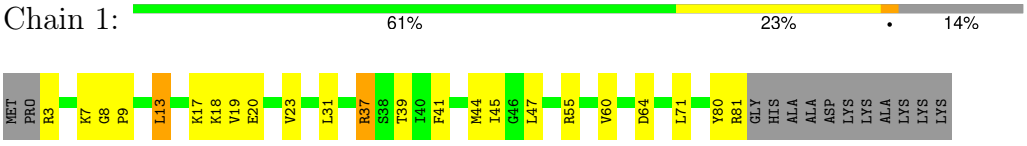
• Molecule 8: 50S ribosomal protein L36

Chain m:



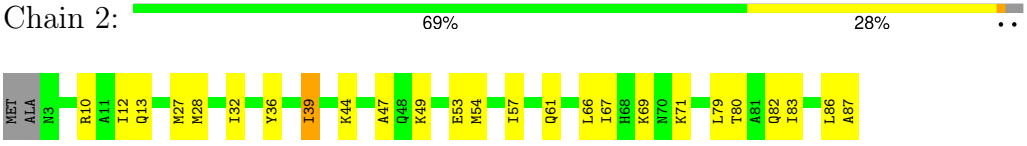
• Molecule 9: Small ribosomal subunit protein uS19

Chain 1:



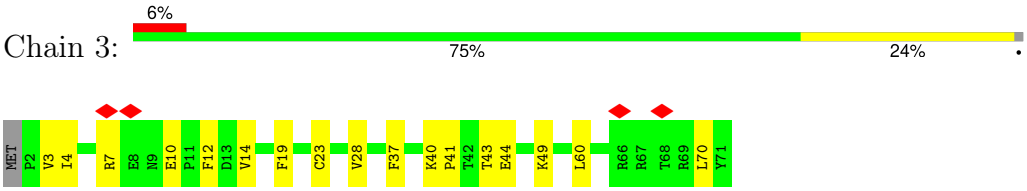
• Molecule 10: 30S ribosomal protein S20

Chain 2:



• Molecule 11: 30S ribosomal protein S21

Chain 3:



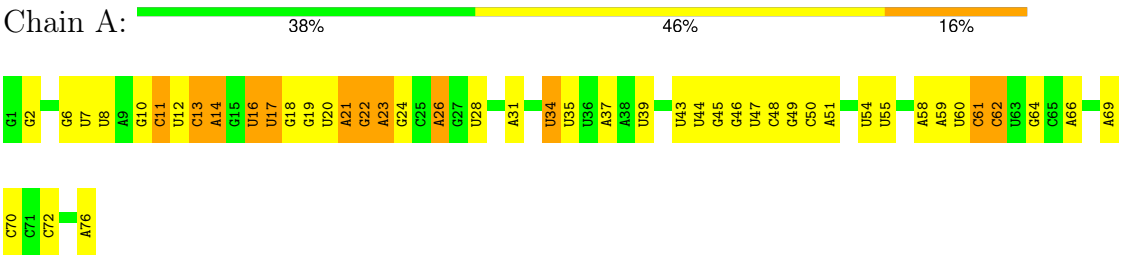
• Molecule 12: mRNA

Chain 4:



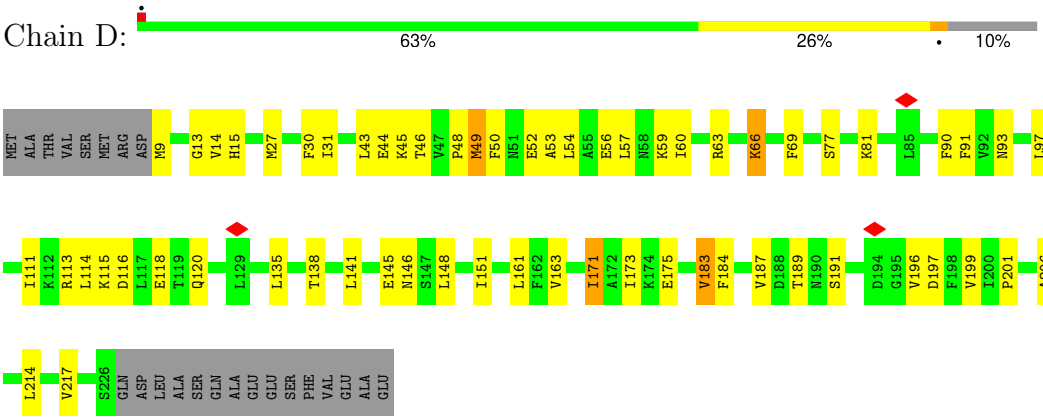
• Molecule 13: P-site tRNA

Chain A:



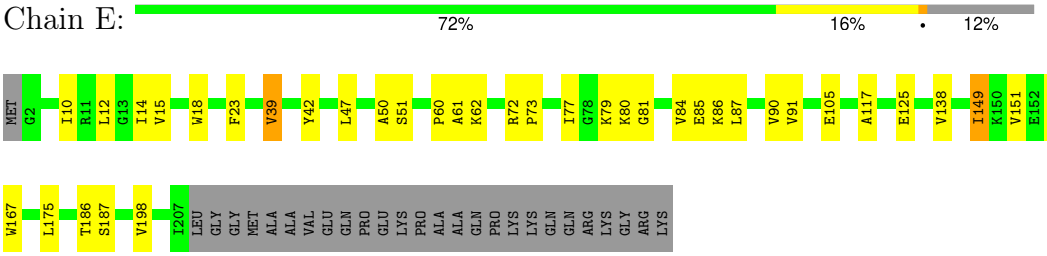
• Molecule 14: 30S ribosomal protein S2

Chain D:



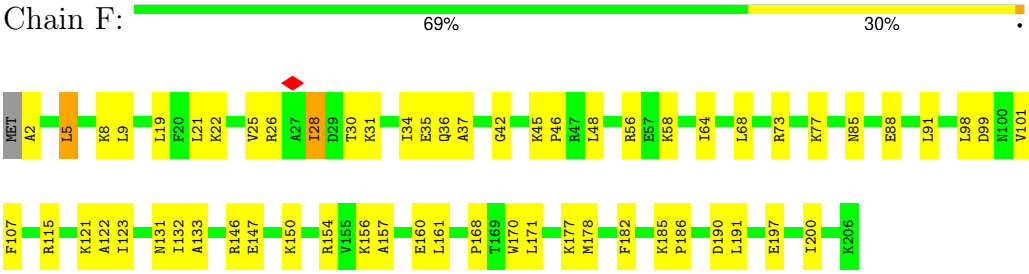
• Molecule 15: 30S ribosomal protein S3

Chain E:



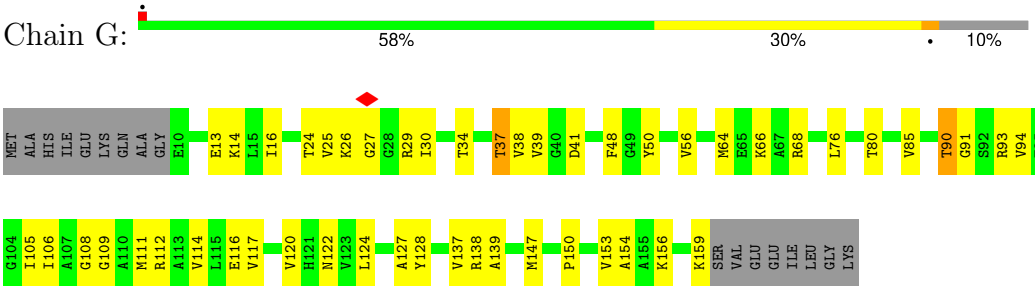
• Molecule 16: 30S ribosomal protein S4

Chain F:



• Molecule 17: 30S ribosomal protein S5

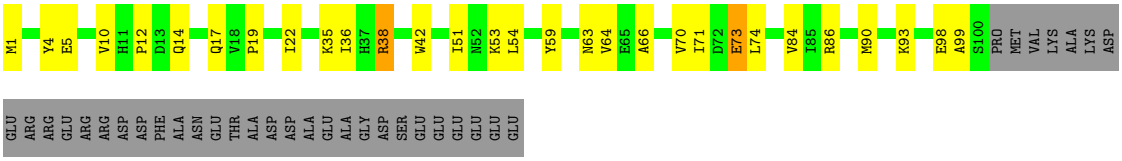
Chain G:



• Molecule 18: 30S ribosomal protein S6

Chain H:

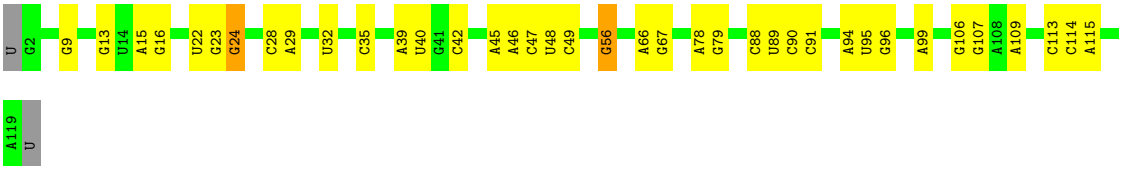




• Molecule 19: 5S ribosomal RNA

Chain J:

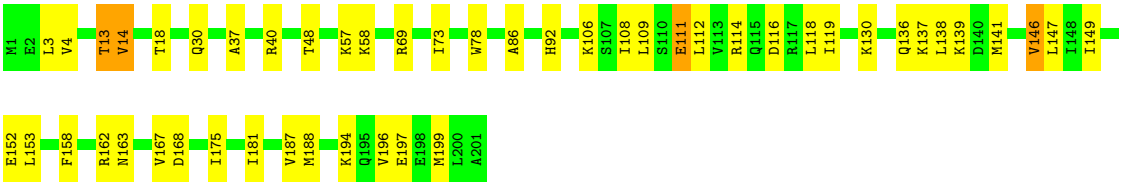




• Molecule 20: 50S ribosomal protein L4

Chain M:

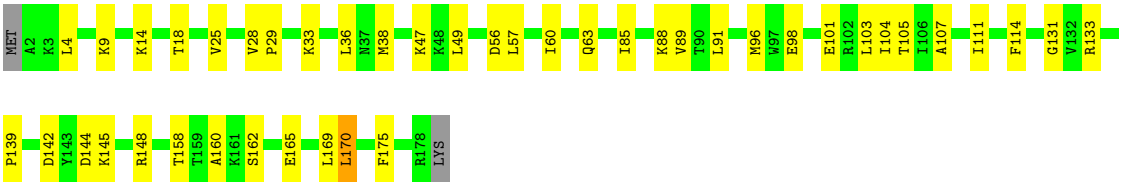




• Molecule 21: Large ribosomal subunit protein uL5

Chain N:

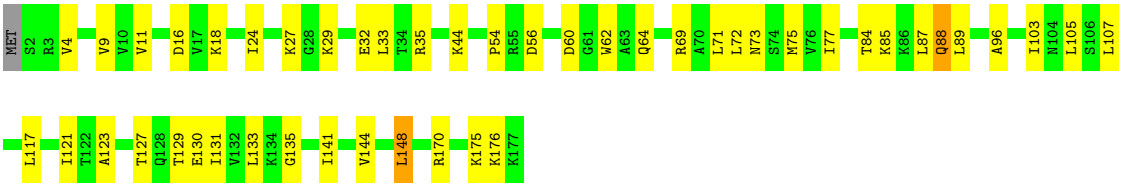




• Molecule 22: Large ribosomal subunit protein uL6

Chain O:

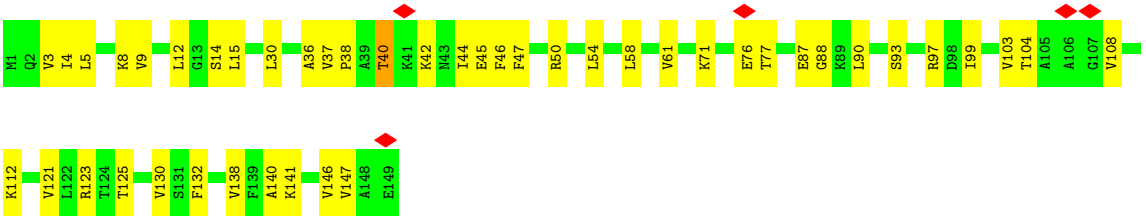




• Molecule 23: Large ribosomal subunit protein bL9

Chain P:

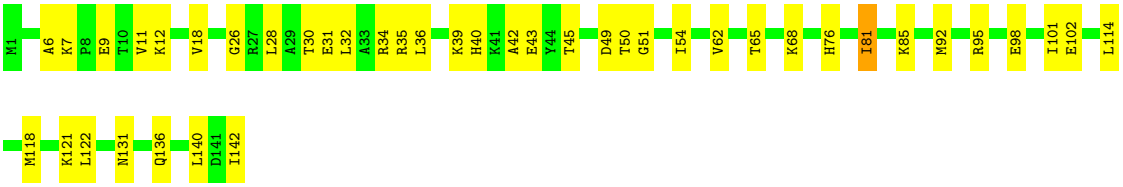




• Molecule 24: Large ribosomal subunit protein uL13

Chain R:

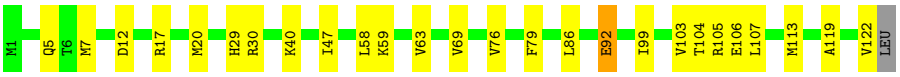




• Molecule 25: 50S ribosomal protein L14

Chain S:

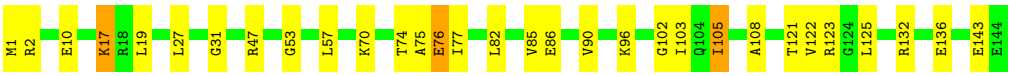




• Molecule 26: 50S ribosomal protein L15

Chain T:





• Molecule 27: Large ribosomal subunit protein uL18

Chain W:

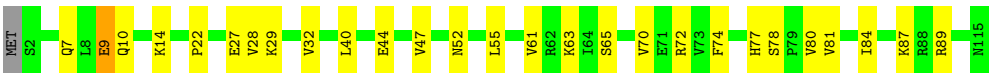




• Molecule 28: Large ribosomal subunit protein bL19

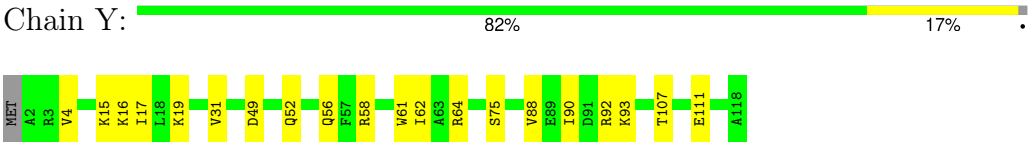
Chain X:





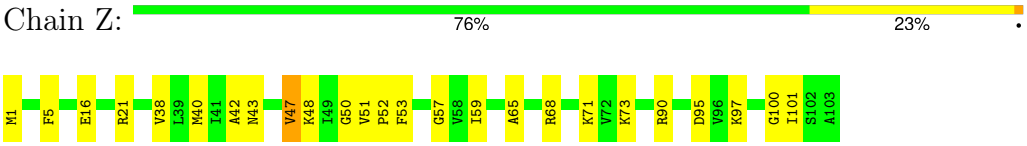
• Molecule 29: 50S ribosomal protein L20

Chain Y:



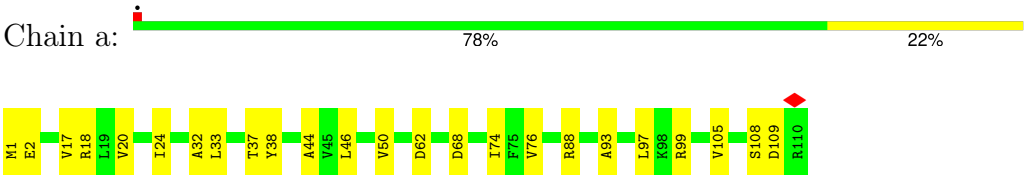
• Molecule 30: 50S ribosomal protein L21

Chain Z:



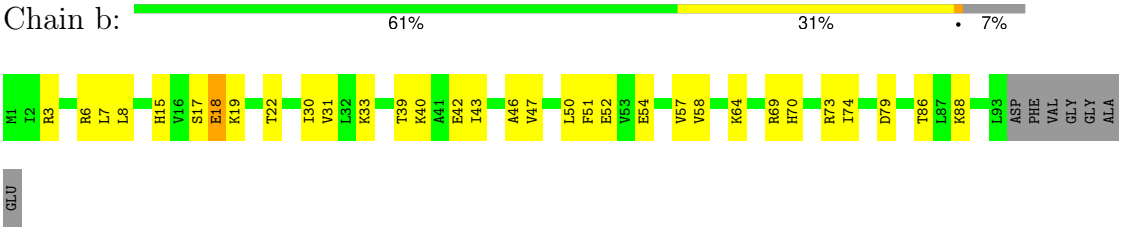
• Molecule 31: 50S ribosomal protein L22

Chain a:



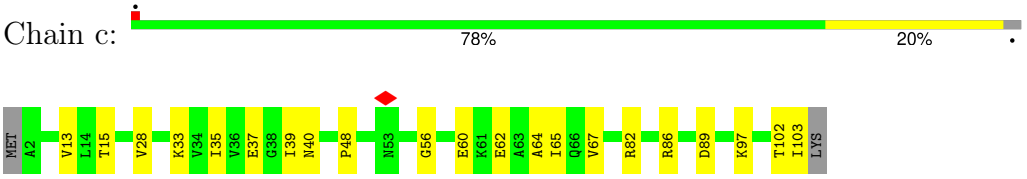
• Molecule 32: 50S ribosomal protein L23

Chain b:



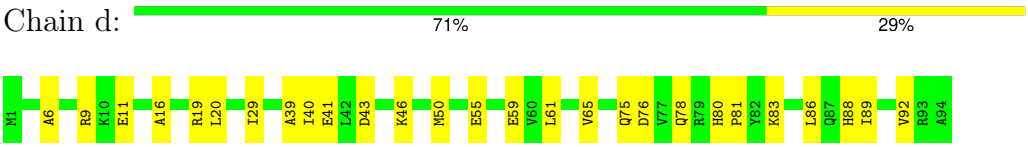
• Molecule 33: 50S ribosomal protein L24

Chain c:



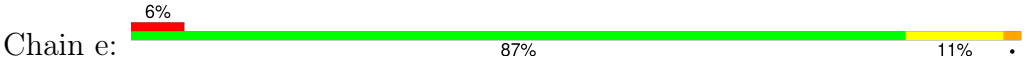
• Molecule 34: Large ribosomal subunit protein bL25

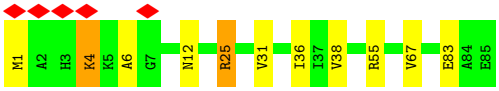
Chain d:



• Molecule 35: 50S ribosomal protein L27

Chain e:





• Molecule 36: 50S ribosomal protein L28

Chain f:

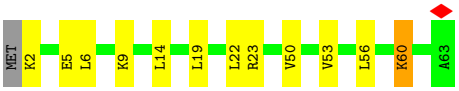




• Molecule 37: Large ribosomal subsunit protein uL29

Chain g:

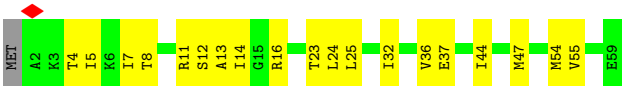




• Molecule 38: 50S ribosomal protein L30

Chain h:

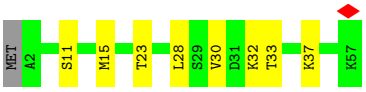




• Molecule 39: 50S ribosomal protein L32

Chain i:





• Molecule 40: Large ribosomal subunit protein bL33

Chain j:

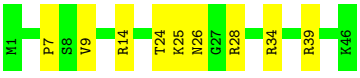




• Molecule 41: 50S ribosomal protein L34

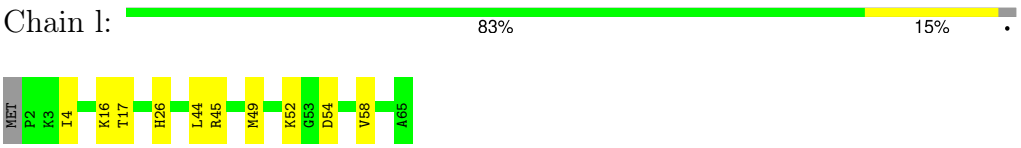
Chain k:





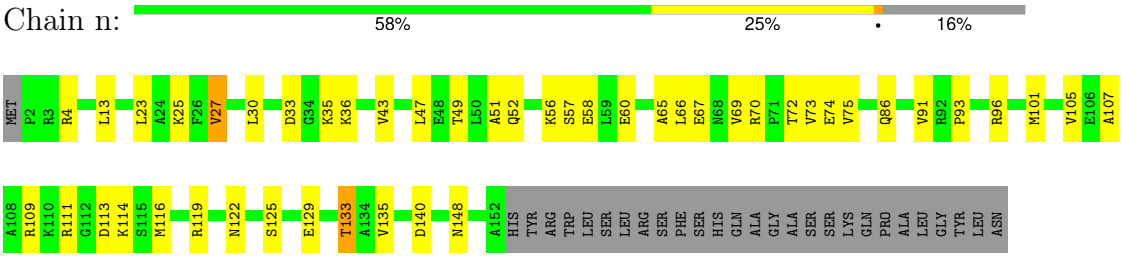
• Molecule 42: 50S ribosomal protein L35

Chain l:



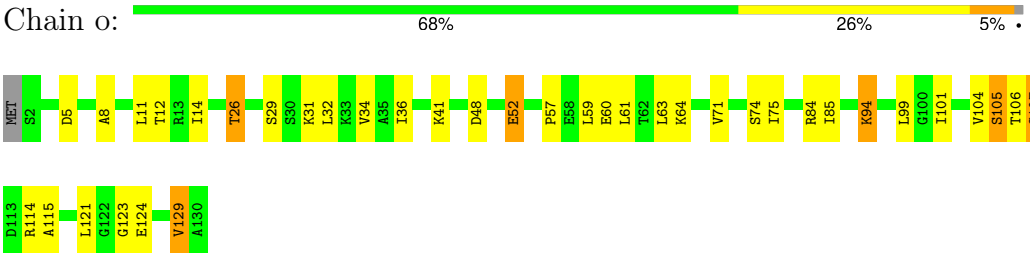
• Molecule 43: Small ribosomal subunit protein uS7

Chain n:



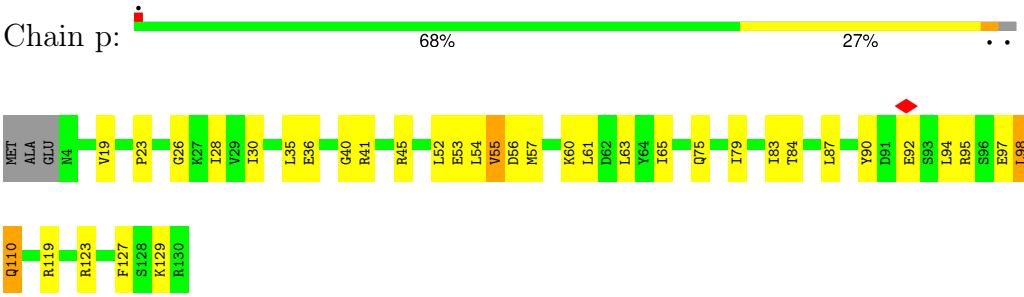
• Molecule 44: Small ribosomal subunit protein uS8

Chain o:



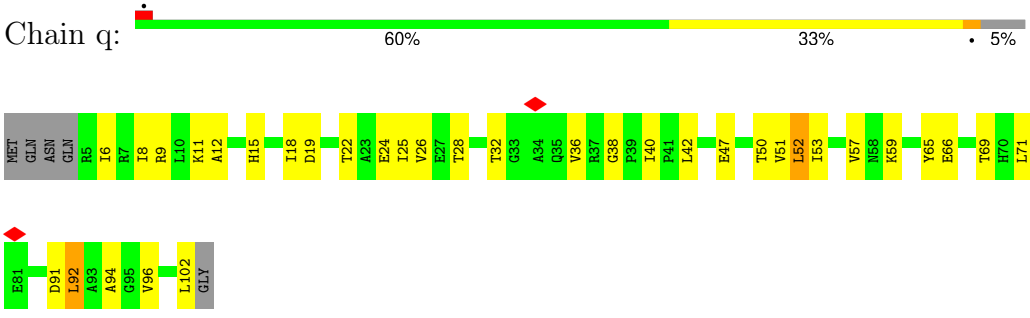
• Molecule 45: Small ribosomal subunit protein uS9

Chain p:



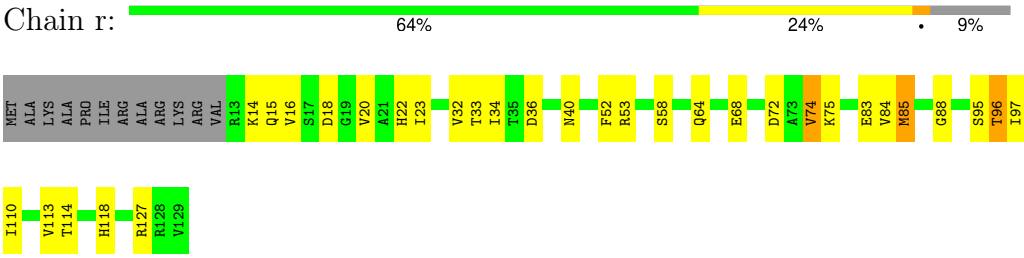
• Molecule 46: Small ribosomal subunit protein uS10

Chain q:



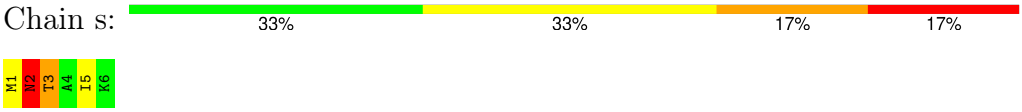
• Molecule 47: 30S ribosomal protein S11

Chain r:



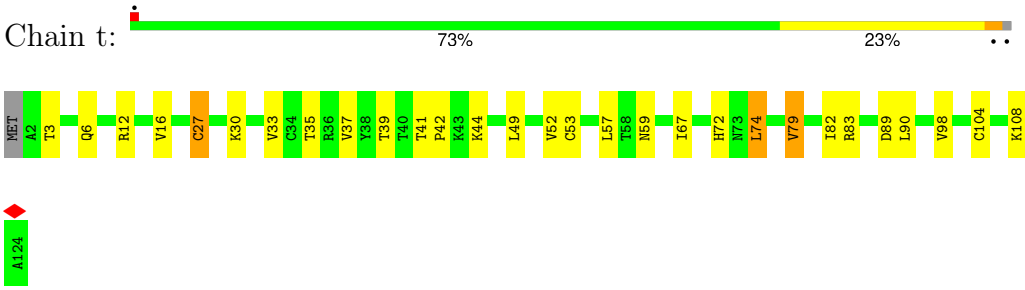
• Molecule 48: Nascent peptide chain

Chain s:



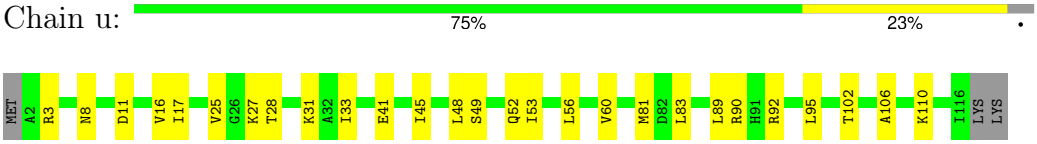
• Molecule 49: 30S ribosomal protein S12

Chain t:



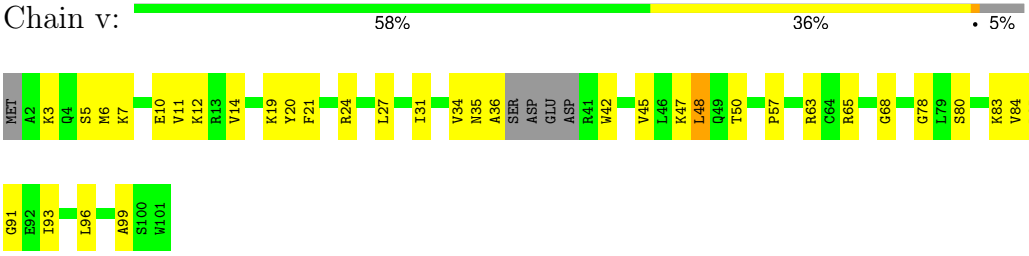
• Molecule 50: Small ribosomal subunit protein uS13

Chain u:



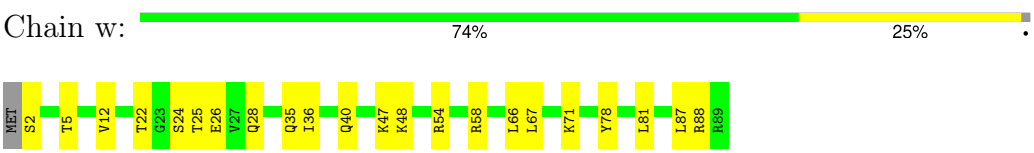
• Molecule 51: Small ribosomal subunit protein uS14

Chain v:



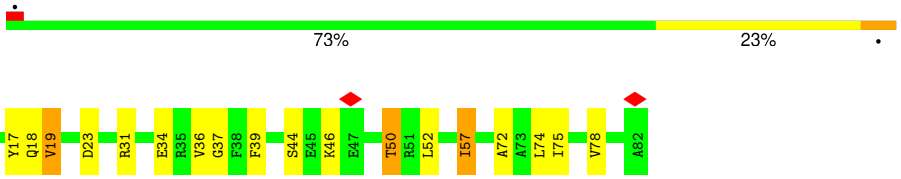
• Molecule 52: Small ribosomal subunit protein uS15

Chain w:



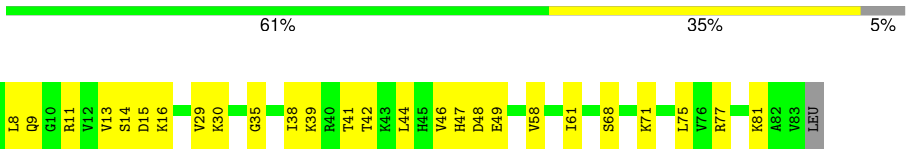
• Molecule 53: Small ribosomal subunit protein bS16

Chain x:



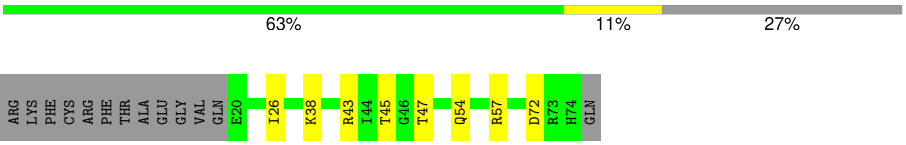
• Molecule 54: Small ribosomal subunit protein uS17

Chain y:



• Molecule 55: Small ribosomal subunit protein bS18

Chain z:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	738955	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.540	Depositor
Minimum map value	-0.256	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.022	Depositor
Recommended contour level	0.035	Depositor
Map size (Å)	429.24002, 429.24002, 429.24002	wwPDB
Map dimensions	588, 588, 588	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.73, 0.73, 0.73	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 2MG, OMG, G7M, 6MZ, 1MG, ZN, 3TD, 5MC, 5MU, MG, PSU, OMU, U8U, H2U, T6A, 2MA, OMC, 4D4

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	C	0.39	0/36991	0.73	3/57705 (0.0%)
2	I	0.46	0/69121	0.75	12/107828 (0.0%)
3	K	0.20	0/2132	0.39	0/2866
4	L	0.20	0/1586	0.35	0/2134
5	Q	0.21	0/488	0.49	0/649
6	U	0.20	0/1081	0.44	0/1443
7	V	0.18	0/973	0.36	0/1301
8	m	0.19	0/303	0.44	0/397
9	1	0.16	0/652	0.40	0/877
10	2	0.19	0/671	0.44	0/888
11	3	0.13	0/598	0.36	0/792
12	4	0.77	0/143	0.89	0/220
13	A	0.79	0/1732	0.94	0/2694
14	D	0.18	0/1735	0.44	0/2338
15	E	0.18	0/1651	0.40	0/2225
16	F	0.17	0/1665	0.42	0/2227
17	G	0.24	0/1118	0.55	0/1504
18	H	0.23	0/835	0.54	1/1128 (0.1%)
19	J	0.38	0/2828	0.70	0/4410
20	M	0.21	0/1571	0.42	0/2113
21	N	0.16	0/1434	0.37	0/1926
22	O	0.17	0/1343	0.41	0/1816
23	P	0.14	0/1122	0.39	0/1515
24	R	0.20	0/1152	0.35	0/1551
25	S	0.21	0/947	0.40	0/1268
26	T	0.20	0/1062	0.38	0/1413
27	W	0.19	0/902	0.51	0/1209
28	X	0.19	0/929	0.37	0/1242
29	Y	0.20	0/960	0.29	0/1278
30	Z	0.23	0/829	0.44	0/1107
31	a	0.20	0/864	0.35	0/1156

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	b	0.21	0/744	0.51	0/994
33	c	0.17	0/787	0.39	0/1051
34	d	0.21	0/766	0.47	0/1025
35	e	0.19	0/650	0.38	0/858
36	f	0.21	0/635	0.38	0/848
37	g	0.15	0/502	0.40	0/667
38	h	0.18	0/453	0.33	0/605
39	i	0.18	0/450	0.31	0/599
40	j	0.19	0/416	0.47	0/554
41	k	0.18	0/380	0.36	0/498
42	l	0.18	0/513	0.29	0/676
43	n	0.17	0/1195	0.40	0/1602
44	o	0.18	0/989	0.44	0/1326
45	p	0.20	0/1034	0.50	0/1375
46	q	0.25	0/796	0.59	0/1077
47	r	0.20	0/893	0.40	0/1205
48	s	0.88	0/44	0.98	0/57
49	t	0.20	0/969	0.41	0/1300
50	u	0.17	0/900	0.37	0/1204
51	v	0.18	0/785	0.44	1/1043 (0.1%)
52	w	0.21	0/718	0.49	0/959
53	x	0.20	0/659	0.41	0/884
54	y	0.20	0/657	0.54	0/881
55	z	0.17	0/462	0.34	0/621
All	All	0.39	0/155815	0.68	17/233129 (0.0%)

There are no bond length outliers.

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	I	1313	U	C2-N1-C1'	7.37	126.54	117.70
2	I	209	C	C2-N1-C1'	6.01	125.42	118.80
2	I	451	U	O5'-C5'-C4'	5.96	114.17	109.40
1	C	328	C	C2-N1-C1'	5.86	125.25	118.80
51	v	48	LEU	CA-CB-CG	5.77	136.51	116.30
2	I	1314	C	C2-N1-C1'	5.72	125.09	118.80
2	I	436	C	C2-N1-C1'	5.36	124.70	118.80
2	I	2629	U	O5'-C5'-C4'	5.30	113.64	109.40
2	I	884	U	O5'-C5'-C4'	5.22	113.57	109.40
2	I	236	C	C2-N1-C1'	5.17	124.49	118.80
2	I	2158	A	P-O3'-C3'	5.16	125.90	119.70
2	I	182	A	P-O3'-C3'	5.15	125.88	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	206	C	P-O3'-C3'	5.12	125.84	119.70
2	I	405	U	O5'-C5'-C4'	5.12	113.49	109.40
2	I	1313	U	C6-N1-C1'	-5.09	114.07	121.20
1	C	1201	A	P-O3'-C3'	5.04	125.74	119.70
18	H	73	GLU	CA-CB-CG	5.02	124.15	114.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	33037	0	16628	381	0
2	I	62229	0	31320	538	0
3	K	2093	0	2166	33	0
4	L	1565	0	1616	20	0
5	Q	480	0	478	10	0
6	U	1075	0	1154	24	0
7	V	960	0	1000	14	0
8	m	302	0	340	8	0
9	1	637	0	665	18	0
10	2	665	0	714	25	0
11	3	590	0	629	7	0
12	4	128	0	66	1	0
13	A	1627	0	826	20	0
14	D	1704	0	1732	40	0
15	E	1624	0	1696	23	0
16	F	1643	0	1707	44	0
17	G	1105	0	1148	35	0
18	H	817	0	808	16	0
19	J	2529	0	1281	19	0
20	M	1552	0	1619	32	0
21	N	1410	0	1444	27	0
22	O	1323	0	1371	29	0
23	P	1111	0	1148	23	0
24	R	1129	0	1162	24	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
25	S	938	0	1012	19	0
26	T	1053	0	1129	24	0
27	W	892	0	923	21	0
28	X	917	0	962	17	0
29	Y	947	0	1019	12	0
30	Z	816	0	839	13	0
31	a	857	0	922	17	0
32	b	738	0	807	21	0
33	c	779	0	831	10	0
34	d	753	0	780	16	0
35	e	642	0	665	3	0
36	f	625	0	652	8	0
37	g	501	0	531	10	0
38	h	449	0	488	11	0
39	i	444	0	458	4	0
40	j	409	0	440	8	0
41	k	377	0	418	4	0
42	l	504	0	572	7	0
43	n	1181	0	1238	30	0
44	o	979	0	1031	26	0
45	p	1022	0	1070	33	0
46	q	786	0	828	35	0
47	r	877	0	887	26	0
48	s	45	0	53	1	0
49	t	955	0	1016	19	0
50	u	891	0	952	17	0
51	v	774	0	824	29	0
52	w	710	0	728	12	0
53	x	649	0	666	10	0
54	y	648	0	691	18	0
55	z	455	0	478	5	0
56	A	1	0	0	0	0
56	C	82	0	0	0	0
56	I	111	0	0	0	0
56	K	1	0	0	0	0
56	L	1	0	0	0	0
56	v	1	0	0	0	0
57	Q	1	0	0	0	0
57	m	1	0	0	0	0
58	1	3	0	0	0	0
58	2	1	0	0	0	0
58	3	12	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
58	4	4	0	0	0	0
58	A	17	0	0	2	0
58	C	445	0	0	0	0
58	D	15	0	0	0	0
58	E	11	0	0	0	0
58	F	8	0	0	0	0
58	G	4	0	0	0	0
58	H	3	0	0	0	0
58	I	833	0	0	1	0
58	J	16	0	0	0	0
58	K	4	0	0	0	0
58	L	4	0	0	0	0
58	M	6	0	0	0	0
58	N	6	0	0	0	0
58	O	4	0	0	0	0
58	P	13	0	0	0	0
58	Q	5	0	0	0	0
58	R	4	0	0	0	0
58	T	11	0	0	0	0
58	U	3	0	0	0	0
58	V	5	0	0	0	0
58	W	4	0	0	0	0
58	X	2	0	0	0	0
58	Z	7	0	0	0	0
58	a	2	0	0	0	0
58	b	2	0	0	0	0
58	c	7	0	0	0	0
58	d	5	0	0	0	0
58	e	1	0	0	0	0
58	f	3	0	0	0	0
58	g	5	0	0	0	0
58	h	2	0	0	0	0
58	i	1	0	0	0	0
58	j	3	0	0	0	0
58	k	2	0	0	0	0
58	m	2	0	0	0	0
58	n	9	0	0	0	0
58	o	1	0	0	0	0
58	p	5	0	0	0	0
58	q	10	0	0	0	0
58	r	8	0	0	0	0
58	s	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
58	t	6	0	0	0	0
58	u	4	0	0	0	0
58	w	3	0	0	0	0
58	x	4	0	0	0	0
58	y	1	0	0	0	0
58	z	1	0	0	0	0
All	All	145685	0	96628	1772	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 (1772) 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)
2:I:2100:G:H1	2:I:2189:U:H3	1.08	0.99
13:A:23:A:H5'	58:A:215:HOH:O	1.63	0.98
20:M:181:ILE:HG12	26:T:1:MET:HE3	1.49	0.93
1:C:212:G:H1'	1:C:213:G:H8	1.42	0.83
49:t:42:PRO:HB3	49:t:89:ASP:HB3	1.61	0.83
40:j:5:ILE:HG13	40:j:28:ARG:HH22	1.44	0.82
1:C:664:G:H22	1:C:741:G:H1	1.27	0.81
1:C:673:A:H2'	1:C:674:G:C8	2.16	0.81
5:Q:64:PHE:HE2	9:1:8:GLY:HA2	1.46	0.81
2:I:2728:U:HO2'	2:I:2729:G:H8	1.28	0.79
2:I:52:A:H2	2:I:119:A:H62	1.31	0.79
17:G:94:VAL:HG22	17:G:111:MET:HE2	1.64	0.79
2:I:603:A:H5"	2:I:655:A:H61	1.47	0.78
2:I:2133:G:H2'	2:I:2157:G:H1	1.49	0.78
8:m:25:VAL:HG22	8:m:35:GLN:HG2	1.65	0.77
2:I:285:G:H1	2:I:355:U:H3	1.31	0.77
25:S:12:ASP:HB3	25:S:99:ILE:HG22	1.67	0.76
2:I:2111:U:H4'	2:I:2119:A:H5"	1.68	0.76
2:I:848:C:H2'	2:I:849:A:H8	1.51	0.76
10:2:39:ILE:HD11	10:2:83:ILE:HG22	1.66	0.76
22:O:24:ILE:HD11	22:O:72:LEU:HD11	1.67	0.75
45:p:75:GLN:O	45:p:79:ILE:HD12	1.87	0.75
2:I:2136:G:H1	2:I:2155:U:H3	1.34	0.75
2:I:284:U:O2	2:I:356:G:O6	2.04	0.75
47:r:84:VAL:HB	47:r:110:ILE:HG22	1.69	0.74
25:S:99:ILE:HD11	25:S:119:ALA:HA	1.70	0.74
53:x:52:LEU:HD21	53:x:78:VAL:HG11	1.71	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:v:93:ILE:H	51:v:93:ILE:HD12	1.54	0.73
45:p:94:LEU:HA	45:p:97:GLU:HG2	1.70	0.73
16:F:45:LYS:HD3	16:F:46:PRO:HD2	1.70	0.72
2:I:358:U:H2'	2:I:359:G:H8	1.55	0.72
40:j:34:LEU:HD12	40:j:36:LEU:HD23	1.72	0.72
44:o:14:ILE:HD11	44:o:61:LEU:HD22	1.71	0.71
16:F:91:LEU:HD13	16:F:191:LEU:HD11	1.72	0.71
24:R:62:VAL:HG21	24:R:101:ILE:HD11	1.72	0.71
15:E:14:ILE:HG22	15:E:15:VAL:HG13	1.72	0.71
50:u:48:LEU:HB3	50:u:53:ILE:HD11	1.71	0.71
50:u:11:ASP:HA	50:u:45:ILE:HB	1.73	0.71
5:Q:64:PHE:CE2	9:1:8:GLY:HA2	2.26	0.71
33:c:82:ARG:HG3	33:c:97:LYS:HG3	1.72	0.71
44:o:32:LEU:O	44:o:36:ILE:HD12	1.89	0.71
19:J:48:U:H4'	27:W:100:HIS:HE1	1.56	0.70
32:b:39:THR:O	32:b:43:ILE:HD12	1.92	0.70
6:U:1:MET:HA	6:U:1:MET:HE3	1.73	0.70
28:X:28:VAL:HG13	28:X:84:ILE:HG22	1.73	0.70
3:K:167:ARG:HG3	3:K:172:VAL:HG12	1.72	0.70
47:r:88:GLY:H	47:r:114:THR:HG22	1.55	0.70
1:C:1006:G:H1	1:C:1023:U:H3	1.37	0.69
2:I:568:U:H1'	2:I:2030:6MZ:H9C1	1.75	0.69
1:C:714:G:H2'	1:C:715:A:C8	2.27	0.69
46:q:52:LEU:HD21	46:q:59:LYS:HA	1.74	0.69
3:K:78:VAL:HG12	3:K:94:VAL:HG12	1.75	0.69
2:I:2328:A:H2'	2:I:2329:U:C6	2.28	0.69
38:h:7:ILE:HD11	38:h:55:VAL:HB	1.74	0.68
36:f:6:GLN:HG2	36:f:76:GLU:OE2	1.93	0.68
16:F:102:VAL:HG13	16:F:107:PHE:HB2	1.76	0.68
46:q:11:LYS:HG3	46:q:71:LEU:HD13	1.76	0.68
2:I:2144:G:H21	2:I:2147:A:H62	1.41	0.68
34:d:75:GLN:HB2	34:d:92:VAL:HG23	1.76	0.68
16:F:150:LYS:HD2	16:F:178:MET:HE3	1.75	0.68
24:R:6:ALA:H	24:R:45:THR:HG21	1.58	0.68
1:C:1323:G:H2'	1:C:1324:A:C8	2.29	0.68
17:G:25:VAL:HG13	17:G:27:GLY:H	1.59	0.68
45:p:30:ILE:HG12	45:p:65:ILE:HD11	1.77	0.67
2:I:2485:G:H5"	6:U:45:GLN:HE21	1.60	0.67
2:I:729:G:H5"	2:I:730:A:H5"	1.76	0.67
2:I:1079:C:H2'	2:I:1080:A:C8	2.30	0.67
1:C:1356:G:H2'	1:C:1357:A:C8	2.30	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:133:THR:HG22	4:L:134:HIS:H	1.59	0.67
9:1:13:LEU:O	9:1:17:LYS:HG2	1.95	0.66
14:D:207:ILE:HD12	14:D:207:ILE:H	1.59	0.66
1:C:1088:G:H21	1:C:1167:A:H62	1.41	0.66
21:N:144:ASP:HB2	21:N:145:LYS:HE2	1.76	0.66
30:Z:65:ALA:HB3	30:Z:95:ASP:HB2	1.76	0.66
16:F:121:LYS:HG3	16:F:131:ASN:HB3	1.76	0.66
1:C:713:G:H2'	1:C:714:G:C8	2.31	0.65
1:C:76:G:H1	1:C:93:U:H3	1.42	0.65
17:G:154:ALA:HB1	17:G:159:LYS:HG2	1.78	0.65
5:Q:28:VAL:HG11	5:Q:32:LEU:HD11	1.77	0.65
27:W:56:LYS:H	27:W:56:LYS:HD2	1.60	0.65
17:G:150:PRO:HA	17:G:153:VAL:HG12	1.78	0.65
22:O:85:LYS:HG3	22:O:141:ILE:HG12	1.77	0.65
46:q:65:TYR:HB3	51:v:96:LEU:HD11	1.79	0.65
1:C:147:G:H2'	1:C:148:G:C8	2.32	0.65
46:q:22:THR:O	46:q:26:VAL:HG12	1.97	0.65
18:H:17:GLN:OE1	23:P:87:GLU:HA	1.97	0.64
1:C:501:C:H2'	1:C:502:A:H8	1.63	0.64
1:C:946:A:H2'	1:C:947:G:C8	2.32	0.64
33:c:35:ILE:HG23	33:c:62:GLU:HG3	1.80	0.64
14:D:207:ILE:O	14:D:211:THR:HG23	1.96	0.64
30:Z:51:VAL:HB	30:Z:52:PRO:HD3	1.79	0.64
1:C:677:U:H3	1:C:713:G:H22	1.45	0.64
21:N:4:LEU:HG	21:N:101:GLU:HB2	1.79	0.64
2:I:1176:U:H2'	2:I:1177:G:C8	2.33	0.64
13:A:10:G:N2	13:A:26:A:H1'	2.13	0.64
30:Z:1:MET:HG2	30:Z:43:ASN:HA	1.80	0.64
2:I:2170:A:H1'	2:I:2171:A:O4'	1.97	0.64
1:C:337:G:H2'	1:C:338:A:C8	2.33	0.64
1:C:695:A:H2'	1:C:696:A:C8	2.33	0.64
1:C:1292:G:H5'	45:p:41:ARG:HH21	1.62	0.63
34:d:46:LYS:O	34:d:50:MET:HG3	1.99	0.63
1:C:1218:C:H2'	1:C:1219:A:C8	2.33	0.63
53:x:39:PHE:HB2	53:x:74:LEU:HD21	1.79	0.63
19:J:48:U:H4'	27:W:100:HIS:CE1	2.33	0.63
1:C:1062:U:H2'	1:C:1063:C:C6	2.33	0.63
2:I:1802:A:H2'	2:I:1803:A:C8	2.34	0.63
2:I:2246:G:H2'	2:I:2247:A:H8	1.64	0.63
20:M:146:VAL:HG23	20:M:167:VAL:HG12	1.79	0.63
2:I:1353:A:H2'	2:I:1354:A:C8	2.33	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:48:ILE:HG23	4:L:84:LEU:HD11	1.81	0.63
16:F:105:MET:HE3	16:F:171:LEU:HB3	1.80	0.63
21:N:57:LEU:HD13	21:N:89:VAL:HG23	1.81	0.63
15:E:77:ILE:HA	15:E:84:VAL:HG13	1.80	0.63
2:I:1812:U:H2'	2:I:1813:G:H8	1.64	0.63
2:I:1105:U:H2'	2:I:1106:G:C8	2.34	0.62
2:I:1469:A:H2'	2:I:1470:A:C8	2.34	0.62
2:I:2127:G:H2'	2:I:2128:G:H8	1.63	0.62
47:r:14:LYS:HG3	47:r:16:VAL:HB	1.81	0.62
1:C:501:C:H2'	1:C:502:A:C8	2.34	0.62
9:1:18:LYS:HD3	9:1:31:LEU:HD11	1.81	0.62
1:C:1151:A:HO2'	1:C:1152:A:H8	1.45	0.62
31:a:97:LEU:HD12	31:a:99:ARG:HH21	1.62	0.62
43:n:111:ARG:HB2	43:n:119:ARG:HG2	1.81	0.62
2:I:1386:C:H2'	2:I:1387:A:H8	1.65	0.62
1:C:17:U:H2'	1:C:18:C:C6	2.35	0.62
1:C:1240:U:H5	43:n:116:MET:HE3	1.64	0.62
2:I:639:U:H2'	2:I:640:C:C6	2.35	0.62
18:H:86:ARG:HB2	18:H:86:ARG:HH11	1.65	0.62
51:v:19:LYS:HD3	51:v:20:TYR:CD2	2.35	0.62
2:I:1171:G:H2'	2:I:1172:C:C6	2.34	0.62
2:I:1173:U:H3'	2:I:1174:U:H4'	1.82	0.62
2:I:2047:C:H2'	2:I:2048:G:H8	1.65	0.62
45:p:19:VAL:HG11	45:p:83:ILE:HG22	1.82	0.62
15:E:61:ALA:O	15:E:62:LYS:HD2	2.00	0.62
14:D:43:LEU:HA	14:D:46:THR:HG22	1.82	0.61
28:X:72:ARG:HD3	28:X:74:PHE:CZ	2.35	0.61
43:n:47:LEU:HD21	43:n:58:GLU:HG3	1.82	0.61
2:I:537:G:H22	2:I:555:G:H2'	1.65	0.61
45:p:84:THR:HG23	45:p:98:LEU:HG	1.82	0.61
2:I:1597:A:H5"	2:I:1598:A:H5'	1.83	0.61
2:I:2246:G:H2'	2:I:2247:A:C8	2.34	0.61
1:C:1356:G:H2'	1:C:1357:A:H8	1.65	0.61
2:I:1432:G:H2'	2:I:1433:A:C8	2.35	0.61
53:x:46:LYS:H	53:x:46:LYS:HD2	1.64	0.61
2:I:856:G:H2'	2:I:857:G:C8	2.35	0.61
2:I:1105:U:H2'	2:I:1106:G:H8	1.65	0.61
1:C:1530:G:H2'	1:C:1531:A:H8	1.64	0.61
10:2:12:ILE:HD12	10:2:13:GLN:N	2.16	0.61
26:T:96:LYS:HD3	26:T:103:ILE:HA	1.83	0.61
32:b:40:LYS:HG3	32:b:58:VAL:HB	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
47:r:84:VAL:HG11	47:r:97:ILE:HD11	1.83	0.61
2:I:1570:A:H2'	2:I:1571:A:C8	2.36	0.61
2:I:2591:C:H2'	2:I:2592:G:C8	2.35	0.61
3:K:21:ASN:HB3	3:K:24:LEU:HG	1.82	0.61
4:L:183:GLU:HG3	4:L:184:ARG:HD3	1.82	0.61
1:C:537:G:H5"	49:t:110:ARG:NH1	2.15	0.60
2:I:2108:A:H5'	2:I:2150:C:H4'	1.83	0.60
2:I:2071:A:H2'	2:I:2072:C:C6	2.36	0.60
45:p:97:GLU:HA	45:p:100:LYS:HE3	1.83	0.60
2:I:2120:G:H2'	2:I:2121:G:C8	2.37	0.60
6:U:50:ARG:HG3	6:U:65:ILE:HD11	1.82	0.60
29:Y:107:THR:O	29:Y:111:GLU:HG2	2.02	0.60
43:n:74:GLU:HG2	43:n:91:VAL:HG22	1.82	0.60
2:I:1590:A:H2'	2:I:1591:A:H8	1.66	0.60
2:I:1812:U:H2'	2:I:1813:G:C8	2.37	0.60
3:K:17:VAL:HB	3:K:204:VAL:HG13	1.82	0.60
2:I:2120:G:H2'	2:I:2121:G:H8	1.66	0.60
1:C:9:G:H5'	17:G:108:GLY:HA3	1.83	0.60
1:C:1491:G:H5'	49:t:44:LYS:HE2	1.81	0.60
15:E:87:LEU:O	15:E:91:VAL:HG12	2.02	0.60
1:C:1530:G:H2'	1:C:1531:A:C8	2.37	0.60
1:C:390:U:H2'	1:C:391:G:C8	2.37	0.59
2:I:555:G:HO2'	2:I:556:A:H8	1.49	0.59
2:I:2291:U:H2'	2:I:2292:U:C6	2.36	0.59
2:I:2636:C:H2'	2:I:2637:U:H6	1.68	0.59
6:U:64:TRP:HB2	6:U:104:GLU:HB3	1.84	0.59
33:c:86:ARG:HH21	33:c:102:THR:HG22	1.66	0.59
2:I:1028:A:H2'	2:I:1029:A:C8	2.37	0.59
1:C:454:G:H1	1:C:478:A:H61	1.51	0.59
23:P:132:PHE:HB2	23:P:140:ALA:HB3	1.83	0.59
43:n:56:LYS:HE2	43:n:60:GLU:HB3	1.84	0.59
4:L:37:VAL:HG12	4:L:48:ILE:HG22	1.84	0.59
1:C:1140:C:HO2'	1:C:1141:C:H6	1.50	0.59
2:I:1796:U:H2'	2:I:1797:G:H8	1.67	0.59
1:C:459:A:H2'	1:C:460:A:H8	1.67	0.59
2:I:1733:G:H2'	2:I:1734:G:H8	1.68	0.59
2:I:2086:U:H2'	2:I:2087:G:C8	2.38	0.59
2:I:2140:G:H2'	2:I:2141:G:H8	1.68	0.59
41:k:24:THR:HG22	41:k:26:ASN:H	1.67	0.59
41:k:34:ARG:NH1	41:k:39:ARG:HG2	2.18	0.59
1:C:1314:C:H2'	1:C:1315:U:C6	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:1353:A:H2'	2:I:1354:A:H8	1.67	0.59
9:1:41:PHE:H	9:1:44:MET:HE3	1.66	0.59
14:D:81:LYS:HB2	14:D:93:ASN:HD21	1.67	0.59
45:p:92:GLU:HA	45:p:95:ARG:HB3	1.84	0.59
1:C:460:A:H2'	1:C:461:A:H8	1.68	0.58
1:C:674:G:H21	47:r:118:HIS:HB2	1.68	0.58
2:I:358:U:H2'	2:I:359:G:C8	2.38	0.58
2:I:1278:C:H2'	2:I:1279:G:H8	1.68	0.58
20:M:137:LYS:O	20:M:141:MET:HG3	2.02	0.58
34:d:11:GLU:HG2	34:d:16:ALA:HB1	1.85	0.58
1:C:134:G:H1'	1:C:325:A:C5	2.38	0.58
1:C:524:G:H2'	1:C:525:C:C6	2.38	0.58
1:C:745:G:H2'	1:C:746:A:H8	1.67	0.58
1:C:1318:A:H1'	9:1:37:ARG:HH21	1.67	0.58
3:K:3:VAL:HG12	3:K:19:VAL:HG12	1.84	0.58
1:C:674:G:H2'	1:C:675:A:H8	1.67	0.58
2:I:1509:A:HO2'	2:I:1510:G:H8	1.51	0.58
2:I:2788:C:H2'	2:I:2789:C:C6	2.37	0.58
15:E:61:ALA:C	15:E:62:LYS:HD2	2.27	0.58
25:S:113:MET:HE3	25:S:113:MET:HA	1.85	0.58
1:C:78:A:H2'	1:C:79:G:H8	1.67	0.58
1:C:390:U:H2'	1:C:391:G:H8	1.68	0.58
1:C:113:G:H1'	1:C:354:G:H5'	1.84	0.58
10:2:44:LYS:NZ	10:2:86:LEU:H	2.01	0.58
16:F:37:ALA:HA	16:F:42:GLY:HA3	1.85	0.58
52:w:12:VAL:HG21	52:w:22:THR:HG22	1.85	0.58
1:C:673:A:H2'	1:C:674:G:H8	1.67	0.58
2:I:45:G:H5'	2:I:46:G:OP1	2.03	0.58
10:2:44:LYS:HD2	10:2:87:ALA:HB2	1.85	0.58
2:I:1590:A:H2'	2:I:1591:A:C8	2.39	0.58
45:p:55:VAL:HG13	45:p:56:ASP:H	1.68	0.58
43:n:72:THR:HG23	43:n:73:VAL:HG13	1.86	0.58
46:q:18:ILE:HD12	46:q:19:ASP:N	2.18	0.58
1:C:946:A:H2'	1:C:947:G:H8	1.68	0.58
2:I:1853:A:H2'	2:I:1854:A:C8	2.39	0.58
2:I:2329:U:H2'	2:I:2330:G:C8	2.38	0.58
24:R:12:LYS:HE2	24:R:12:LYS:HA	1.84	0.58
24:R:18:VAL:HG22	24:R:140:LEU:HB3	1.86	0.58
27:W:35:ILE:H	27:W:53:THR:HG22	1.69	0.58
27:W:56:LYS:H	27:W:56:LYS:CD	2.16	0.58
2:I:181:A:H2'	2:I:182:A:H8	1.69	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:742:A:H2'	2:I:743:A:C8	2.38	0.58
40:j:9:ILE:HD13	40:j:25:LYS:HD2	1.86	0.58
2:I:599:A:H2'	2:I:600:G:H8	1.69	0.57
32:b:30:ILE:HD12	32:b:31:VAL:H	1.68	0.57
36:f:66:THR:O	36:f:70:GLU:HG2	2.04	0.57
43:n:25:LYS:HB3	43:n:101:MET:HE1	1.85	0.57
50:u:56:LEU:O	50:u:60:VAL:HG23	2.04	0.57
1:C:599:C:H2'	1:C:600:A:H8	1.69	0.57
2:I:479:A:N3	2:I:481:G:H5"	2.19	0.57
46:q:15:HIS:HA	46:q:18:ILE:HG13	1.85	0.57
24:R:45:THR:HG22	29:Y:64:ARG:HH21	1.69	0.57
51:v:19:LYS:HD3	51:v:20:TYR:HD2	1.69	0.57
1:C:728:A:H2'	1:C:729:A:C8	2.40	0.57
1:C:1507:A:H2'	1:C:1508:A:C8	2.39	0.57
2:I:581:C:H2'	2:I:582:A:C8	2.39	0.57
48:s:2:ASN:O	48:s:3:THR:C	2.48	0.57
2:I:1794:A:H2'	2:I:1795:C:C6	2.39	0.57
2:I:2591:C:H2'	2:I:2592:G:H8	1.69	0.57
38:h:24:LEU:HD11	38:h:54:MET:SD	2.44	0.57
45:p:60:LYS:H	45:p:60:LYS:HZ3	1.53	0.57
1:C:1412:C:H2'	1:C:1413:A:C8	2.39	0.57
2:I:181:A:H2'	2:I:182:A:C8	2.38	0.57
2:I:581:C:H2'	2:I:582:A:H8	1.70	0.57
2:I:2636:C:H2'	2:I:2637:U:C6	2.40	0.57
7:V:24:MET:HE1	7:V:40:LYS:HB3	1.87	0.57
10:2:83:ILE:O	10:2:87:ALA:HB3	2.04	0.57
16:F:146:ARG:O	16:F:150:LYS:HB2	2.03	0.57
2:I:1794:A:H2'	2:I:1795:C:H6	1.70	0.57
2:I:2117:A:H61	2:I:2166:U:H3	1.53	0.57
51:v:80:SER:O	51:v:84:VAL:HG12	2.04	0.57
1:C:206:C:O2	1:C:207:C:H5'	2.04	0.57
15:E:60:PRO:HB3	46:q:94:ALA:HA	1.86	0.57
1:C:459:A:H2'	1:C:460:A:C8	2.40	0.57
6:U:28:PHE:HB2	6:U:104:GLU:HG2	1.86	0.57
1:C:1071:C:H2'	1:C:1072:G:H8	1.70	0.57
2:I:2675:A:H4'	25:S:29:HIS:HB2	1.86	0.57
23:P:8:LYS:HD2	23:P:14:SER:HA	1.86	0.57
43:n:86:GLN:HB2	43:n:148:ASN:ND2	2.20	0.57
1:C:458:U:H3	1:C:474:G:H1	1.52	0.56
2:I:172:A:H2'	2:I:173:A:H8	1.68	0.56
1:C:131:A:H2'	1:C:132:C:C6	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:1197:G:H2'	2:I:1198:U:H6	1.70	0.56
2:I:1405:U:H2'	2:I:1406:U:C6	2.41	0.56
2:I:2502:G:H5"	2:I:2503:2MA:H5"	1.87	0.56
1:C:335:C:H2'	1:C:336:A:H8	1.70	0.56
1:C:996:A:H2'	1:C:997:U:H6	1.71	0.56
2:I:2419:U:H4'	40:j:22:THR:HG21	1.88	0.56
35:e:4:LYS:HG2	35:e:6:ALA:H	1.69	0.56
45:p:65:ILE:HD12	45:p:79:ILE:HG21	1.87	0.56
2:I:1434:A:H2'	2:I:1435:G:C8	2.40	0.56
2:I:1097:U:H3'	2:I:1098:A:H8	1.71	0.56
2:I:1270:C:H5"	2:I:1271:G:H5'	1.87	0.56
47:r:23:ILE:HD12	47:r:32:VAL:HG22	1.86	0.56
49:t:33:VAL:HG12	49:t:79:VAL:HG12	1.86	0.56
21:N:14:LYS:O	21:N:18:THR:HG23	2.05	0.56
50:u:28:THR:HA	50:u:31:LYS:HG2	1.87	0.56
2:I:1032:A:H1'	8:m:23:ILE:HD13	1.86	0.56
7:V:90:ARG:HH22	7:V:116:VAL:HG21	1.71	0.56
1:C:384:G:H2'	1:C:385:C:C6	2.41	0.56
2:I:639:U:H2'	2:I:640:C:H6	1.70	0.56
34:d:20:LEU:HD21	34:d:41:GLU:HG3	1.87	0.56
1:C:477:C:H2'	1:C:478:A:C8	2.41	0.56
1:C:1463:U:H2'	1:C:1464:U:H6	1.71	0.56
2:I:1292:G:H2'	2:I:1293:C:C6	2.41	0.56
2:I:1469:A:H2'	2:I:1470:A:H8	1.71	0.56
20:M:40:ARG:HH21	20:M:92:HIS:CE1	2.24	0.56
54:y:46:VAL:HG21	54:y:61:ILE:HG21	1.87	0.56
1:C:460:A:H2'	1:C:461:A:C8	2.41	0.56
2:I:2327:A:H2'	2:I:2328:A:C8	2.41	0.56
16:F:34:ILE:HD12	16:F:35:GLU:N	2.21	0.56
16:F:48:LEU:HD21	16:F:56:ARG:HG2	1.88	0.56
17:G:90:THR:HG22	17:G:91:GLY:N	2.20	0.56
1:C:1086:U:HO2'	1:C:1087:G:H8	1.53	0.55
2:I:2305:U:H5"	21:N:131:GLY:HA3	1.88	0.55
44:o:11:LEU:HD22	44:o:75:ILE:HD11	1.88	0.55
1:C:745:G:H2'	1:C:746:A:C8	2.41	0.55
1:C:824:G:H2'	1:C:825:A:H8	1.70	0.55
2:I:1079:C:H2'	2:I:1080:A:H8	1.72	0.55
2:I:2144:G:N2	2:I:2147:A:H62	2.04	0.55
53:x:39:PHE:HD1	53:x:50:THR:HB	1.72	0.55
1:C:613:C:H2'	1:C:614:C:C6	2.42	0.55
2:I:2557:G:H2'	2:I:2558:C:C6	2.42	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
33:c:48:PRO:HD3	33:c:56:GLY:HA3	1.87	0.55
1:C:219:U:H2'	1:C:220:G:H8	1.71	0.55
1:C:996:A:H2'	1:C:997:U:C6	2.41	0.55
2:I:721:A:H2'	2:I:722:A:C8	2.41	0.55
2:I:1199:U:H1'	29:Y:4:VAL:HG22	1.88	0.55
2:I:1796:U:H2'	2:I:1797:G:C8	2.41	0.55
2:I:2100:G:H2'	2:I:2101:A:H8	1.70	0.55
2:I:2140:G:H2'	2:I:2141:G:C8	2.42	0.55
6:U:105:MET:HG2	6:U:117:PHE:CZ	2.42	0.55
10:2:39:ILE:HG21	10:2:82:GLN:HG2	1.88	0.55
10:2:44:LYS:HZ2	10:2:86:LEU:H	1.55	0.55
1:C:269:C:H2'	1:C:270:A:C8	2.42	0.55
4:L:109:VAL:HG22	4:L:203:VAL:HG13	1.89	0.55
14:D:183:VAL:HG13	14:D:197:ASP:H	1.71	0.55
22:O:105:LEU:HB3	22:O:107:LEU:HD21	1.87	0.55
27:W:51:ALA:HB3	27:W:78:VAL:HB	1.88	0.55
1:C:269:C:H2'	1:C:270:A:H8	1.72	0.55
1:C:1149:C:H2'	1:C:1150:A:C8	2.41	0.55
1:C:1323:G:H2'	1:C:1324:A:H8	1.68	0.55
2:I:172:A:H2'	2:I:173:A:C8	2.41	0.55
22:O:9:VAL:HG23	22:O:69:ARG:HE	1.71	0.55
33:c:40:ASN:HB2	33:c:65:ILE:HD11	1.89	0.55
2:I:849:A:H2'	2:I:850:U:H6	1.72	0.55
2:I:2070:A:H2'	2:I:2071:A:C8	2.41	0.55
21:N:160:ALA:HB1	21:N:165:GLU:HB2	1.88	0.55
44:o:105:SER:HB2	44:o:110:VAL:HG12	1.89	0.55
1:C:80:A:H2'	1:C:81:A:C8	2.42	0.55
20:M:196:VAL:HA	20:M:199:MET:HG2	1.89	0.55
50:u:16:VAL:HG13	50:u:17:ILE:HG13	1.88	0.55
1:C:662:U:H2'	1:C:663:A:C8	2.42	0.55
26:T:70:LYS:O	26:T:74:THR:HG23	2.07	0.55
32:b:54:GLU:HB2	32:b:88:LYS:HG3	1.89	0.55
44:o:8:ALA:O	44:o:12:THR:HG22	2.07	0.55
1:C:1003:G:H21	1:C:1005:A:H5'	1.73	0.55
2:I:52:A:H2	2:I:119:A:N6	2.02	0.55
2:I:546:U:H4'	2:I:547:A:H5'	1.88	0.55
2:I:1104:C:H2'	2:I:1105:U:C6	2.41	0.55
2:I:2834:G:H2'	2:I:2879:A:H61	1.72	0.55
16:F:9:LEU:HD11	16:F:22:LYS:HB2	1.89	0.55
44:o:111:MET:HG3	44:o:115:ALA:HB3	1.87	0.55
1:C:1060:U:H5"	46:q:53:ILE:HG13	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1240:U:C5	43:n:116:MET:HE3	2.42	0.54
6:U:20:LEU:HD13	34:d:81:PRO:HG3	1.88	0.54
14:D:116:ASP:O	14:D:120:GLN:HG3	2.06	0.54
23:P:47:PHE:HA	23:P:50:ARG:HH21	1.72	0.54
46:q:36:VAL:HG12	46:q:38:GLY:H	1.71	0.54
1:C:555:U:H2'	1:C:556:C:C6	2.42	0.54
2:I:2064:C:H2'	2:I:2065:C:C6	2.41	0.54
2:I:2100:G:H2'	2:I:2101:A:C8	2.40	0.54
13:A:43:U:H2'	13:A:44:U:C6	2.43	0.54
16:F:104:ARG:HG3	16:F:168:PRO:HG3	1.90	0.54
2:I:1106:G:H2'	2:I:1107:G:H8	1.73	0.54
2:I:2316:G:H2'	2:I:2317:A:H8	1.72	0.54
13:A:10:G:C2	13:A:26:A:H1'	2.42	0.54
32:b:47:VAL:HG23	32:b:51:PHE:HD2	1.71	0.54
2:I:191:A:H2'	2:I:192:C:C6	2.43	0.54
2:I:2273:A:H2'	2:I:2274:A:C8	2.41	0.54
15:E:12:LEU:HD11	51:v:91:GLY:HA2	1.90	0.54
42:l:17:THR:HG21	42:l:49:MET:HE1	1.89	0.54
1:C:41:G:H2'	1:C:42:G:H8	1.70	0.54
1:C:1355:G:H2'	1:C:1356:G:H8	1.73	0.54
2:I:2698:U:H2'	2:I:2699:C:C6	2.43	0.54
20:M:138:LEU:HD11	20:M:167:VAL:HG11	1.90	0.54
1:C:1513:A:H2'	1:C:1514:G:C8	2.43	0.54
2:I:2328:A:H2'	2:I:2329:U:H6	1.71	0.54
33:c:33:LYS:HB2	33:c:64:ALA:HB1	1.89	0.54
1:C:171:A:H2'	1:C:172:A:C8	2.43	0.54
1:C:537:G:H5"	49:t:110:ARG:HH12	1.72	0.54
2:I:598:U:H2'	2:I:599:A:H8	1.73	0.54
2:I:645:C:H2'	2:I:647:G:N7	2.23	0.54
2:I:2243:U:H2'	2:I:2244:U:C6	2.42	0.54
26:T:108:ALA:HB3	26:T:125:LEU:HD22	1.88	0.54
2:I:636:G:H1	26:T:76:GLU:CD	2.16	0.54
2:I:1589:U:H2'	2:I:1590:A:H8	1.72	0.54
2:I:2074:U:H2'	2:I:2075:U:C6	2.43	0.54
23:P:40:THR:O	23:P:44:ILE:HG13	2.08	0.54
34:d:29:ILE:HD12	34:d:39:ALA:HA	1.90	0.54
45:p:36:GLU:HA	45:p:40:GLY:HA3	1.88	0.54
49:t:57:LEU:HD11	49:t:82:ILE:HD11	1.89	0.54
18:H:12:PRO:HD2	18:H:54:LEU:HD11	1.89	0.54
2:I:1309:G:OP1	41:k:9:VAL:HG23	2.08	0.53
2:I:1746:A:H2'	2:I:1747:U:C6	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:2123:G:H2'	2:I:2124:G:C8	2.43	0.53
2:I:2373:G:H2'	2:I:2374:C:C6	2.43	0.53
15:E:125:GLU:OE1	15:E:125:GLU:HA	2.08	0.53
43:n:51:ALA:HB2	43:n:58:GLU:HB3	1.89	0.53
1:C:78:A:H2'	1:C:79:G:C8	2.43	0.53
1:C:309:A:H2'	1:C:310:G:H8	1.72	0.53
1:C:1116:U:H2'	1:C:1117:A:C8	2.44	0.53
1:C:1463:U:H2'	1:C:1464:U:C6	2.42	0.53
2:I:287:G:H2'	2:I:288:U:C6	2.42	0.53
14:D:60:ILE:HD13	14:D:63:ARG:HH21	1.73	0.53
29:Y:58:ARG:O	29:Y:62:ILE:HG12	2.08	0.53
39:i:28:LEU:HD23	39:i:37:LYS:HB3	1.90	0.53
1:C:166:U:H2'	1:C:167:A:H8	1.73	0.53
2:I:414:C:H2'	2:I:415:A:C8	2.43	0.53
2:I:1689:A:H2'	2:I:1690:A:C8	2.43	0.53
2:I:2899:A:H2'	2:I:2900:A:C8	2.43	0.53
23:P:76:GLU:HG3	23:P:77:THR:HG23	1.89	0.53
34:d:9:ARG:HG2	34:d:41:GLU:HB2	1.89	0.53
2:I:1141:U:H4'	2:I:1142:A:O4'	2.08	0.53
2:I:1429:G:H2'	2:I:1430:G:H8	1.74	0.53
49:t:123:LYS:HE2	49:t:123:LYS:HA	1.90	0.53
54:y:11:ARG:HG2	54:y:58:VAL:HG22	1.90	0.53
1:C:34:C:H2'	1:C:35:G:H8	1.74	0.53
2:I:1028:A:N6	2:I:1125:G:H2'	2.24	0.53
26:T:75:ALA:HB2	26:T:105:ILE:HG12	1.89	0.53
28:X:63:LYS:HD2	28:X:65:SER:HB2	1.90	0.53
1:C:1250:A:H2'	1:C:1251:A:C8	2.44	0.53
2:I:1000:A:H2'	2:I:1001:A:C8	2.43	0.53
2:I:1069:A:H4'	2:I:1070:A:H5"	1.90	0.53
3:K:181:MET:HB2	3:K:268:VAL:HG22	1.90	0.53
40:j:8:LYS:HA	40:j:24:THR:HA	1.91	0.53
1:C:1124:G:H4'	46:q:40:ILE:HD11	1.91	0.53
1:C:1277:C:HO2'	1:C:1279:G:H8	1.55	0.53
2:I:1496:A:H2'	2:I:1498:C:C5	2.44	0.53
17:G:25:VAL:HG13	17:G:27:GLY:N	2.22	0.53
19:J:48:U:H2'	19:J:49:C:H6	1.74	0.53
20:M:48:THR:HG22	20:M:86:ALA:HB3	1.90	0.53
21:N:142:ASP:HB3	21:N:145:LYS:HG2	1.90	0.53
1:C:358:U:H2'	1:C:359:G:H8	1.74	0.53
1:C:1119:C:H2'	1:C:1120:C:H6	1.74	0.53
2:I:599:A:H2'	2:I:600:G:C8	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:1548:A:H2'	2:I:1549:A:C8	2.43	0.53
13:A:11:C:H2'	13:A:12:U:C6	2.44	0.53
45:p:127:PHE:CE2	45:p:129:LYS:HG2	2.44	0.53
1:C:539:A:H2'	1:C:540:G:C8	2.44	0.53
13:A:37:T6A:N11	13:A:37:T6A:N1	2.55	0.53
21:N:63:GLN:HE21	21:N:91:LEU:HD23	1.74	0.53
23:P:93:SER:OG	23:P:123:ARG:HG2	2.09	0.53
38:h:12:SER:HB2	38:h:32:ILE:HD11	1.90	0.53
50:u:48:LEU:HG	50:u:52:GLN:OE1	2.09	0.53
55:z:45:THR:HG22	55:z:47:THR:HG23	1.91	0.53
1:C:908:A:H2'	1:C:909:A:C8	2.44	0.52
1:C:918:A:H2'	1:C:919:A:C8	2.43	0.52
1:C:1347:G:H2'	45:p:110:GLN:O	2.08	0.52
5:Q:42:PRO:HA	5:Q:47:LYS:HD3	1.91	0.52
14:D:27:MET:HE2	14:D:189:THR:HA	1.91	0.52
1:C:77:A:H2'	1:C:78:A:H8	1.75	0.52
1:C:1314:C:H2'	1:C:1315:U:H6	1.74	0.52
1:C:1373:G:H5"	43:n:36:LYS:HD2	1.92	0.52
2:I:1490:A:N1	3:K:97:LYS:HE3	2.24	0.52
24:R:11:VAL:HG21	24:R:50:THR:HG22	1.91	0.52
1:C:859:G:H2'	1:C:860:A:C8	2.44	0.52
2:I:1386:C:H2'	2:I:1387:A:C8	2.42	0.52
4:L:19:GLY:HA3	28:X:80:VAL:HG23	1.91	0.52
16:F:147:GLU:HA	16:F:150:LYS:HE2	1.90	0.52
31:a:33:LEU:O	31:a:37:THR:HG22	2.08	0.52
43:n:107:ALA:HB1	43:n:133:THR:HG23	1.91	0.52
45:p:28:ILE:HG21	45:p:35:LEU:HD12	1.90	0.52
49:t:39:THR:HG21	49:t:49:LEU:HB3	1.92	0.52
1:C:56:U:H2'	1:C:57:G:C8	2.44	0.52
1:C:198:G:H2'	1:C:199:A:H8	1.75	0.52
10:2:61:GLN:HB3	10:2:66:LEU:HD21	1.91	0.52
46:q:9:ARG:HH21	46:q:71:LEU:HD21	1.73	0.52
47:r:15:GLN:OE1	47:r:15:GLN:HA	2.09	0.52
1:C:209:U:H4'	1:C:210:C:H2'	1.91	0.52
1:C:982:U:H4'	1:C:983:A:H5'	1.92	0.52
1:C:1414:U:H2'	1:C:1415:G:H8	1.75	0.52
2:I:644:A:H2'	2:I:645:C:O4'	2.10	0.52
4:L:56:LYS:HD3	4:L:58:ASN:HB3	1.91	0.52
14:D:53:ALA:O	14:D:57:LEU:HG	2.08	0.52
47:r:34:ILE:HB	47:r:74:VAL:HG21	1.90	0.52
2:I:1579:A:H2'	2:I:1580:A:H8	1.74	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:2183:A:H2'	2:I:2184:A:C4	2.44	0.52
3:K:8:PRO:HB3	3:K:14:ARG:HG3	1.92	0.52
18:H:19:PRO:HA	18:H:22:ILE:HD12	1.92	0.52
24:R:34:ARG:HG3	24:R:39:LYS:HB2	1.92	0.52
30:Z:42:ALA:HA	30:Z:47:VAL:HA	1.91	0.52
47:r:88:GLY:N	47:r:114:THR:HG22	2.25	0.52
52:w:67:LEU:HD11	52:w:87:LEU:HD11	1.92	0.52
2:I:555:G:O2'	2:I:556:A:H8	1.92	0.52
27:W:82:ALA:HB1	27:W:87:ILE:HD11	1.91	0.52
1:C:33:A:H2'	1:C:34:C:C6	2.45	0.52
1:C:41:G:H2'	1:C:42:G:C8	2.44	0.52
1:C:56:U:H2'	1:C:57:G:H8	1.75	0.52
1:C:222:C:H2'	1:C:223:A:H8	1.74	0.52
1:C:384:G:H2'	1:C:385:C:H6	1.75	0.52
15:E:73:PRO:HG3	15:E:105:GLU:HG3	1.91	0.52
31:a:74:ILE:HD12	31:a:105:VAL:HG22	1.90	0.52
42:l:54:ASP:O	42:l:58:VAL:HG23	2.08	0.52
1:C:1328:C:H5"	50:u:28:THR:HG21	1.92	0.52
1:C:1464:U:H2'	1:C:1465:A:H8	1.74	0.52
1:C:1524:C:H2'	1:C:1525:G:C8	2.45	0.52
2:I:2228:G:H2'	2:I:2229:U:C6	2.45	0.52
20:M:108:ILE:HG23	26:T:1:MET:HE1	1.92	0.52
26:T:132:ARG:O	26:T:136:GLU:HG2	2.10	0.52
45:p:52:LEU:HG	45:p:57:MET:HB2	1.92	0.52
1:C:1355:G:H2'	1:C:1356:G:C8	2.44	0.52
2:I:64:A:H2'	2:I:65:U:C6	2.45	0.52
2:I:282:A:H2'	2:I:283:G:H8	1.75	0.52
2:I:414:C:H2'	2:I:415:A:H8	1.75	0.52
2:I:858:G:H3'	2:I:859:G:C8	2.45	0.52
2:I:1057:A:H2'	2:I:1058:U:H6	1.75	0.52
3:K:5:LYS:HG3	3:K:17:VAL:HG22	1.92	0.52
2:I:5:A:H2'	2:I:6:A:H8	1.74	0.51
2:I:645:C:H2'	2:I:647:G:C8	2.45	0.51
2:I:2845:U:H5'	28:X:52:ASN:O	2.09	0.51
3:K:29:PRO:HG2	3:K:34:LEU:HD11	1.92	0.51
5:Q:14:ALA:HB1	5:Q:34:LEU:HD23	1.91	0.51
15:E:117:ALA:HB1	15:E:187:SER:HB3	1.93	0.51
27:W:56:LYS:HD2	27:W:56:LYS:N	2.25	0.51
2:I:851:C:H2'	2:I:852:U:C6	2.46	0.51
2:I:930:G:H1'	38:h:25:LEU:HD21	1.91	0.51
2:I:2329:U:H2'	2:I:2330:G:H8	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:U:53:MET:HG3	6:U:120:ALA:HB2	1.91	0.51
6:U:53:MET:HE1	6:U:103:TYR:CD2	2.45	0.51
24:R:32:LEU:HD22	24:R:54:ILE:HG21	1.92	0.51
35:e:25:ARG:HD3	35:e:31:VAL:HG12	1.91	0.51
37:g:6:LEU:HB3	37:g:56:LEU:HD21	1.92	0.51
1:C:1305:G:H21	1:C:1332:A:H2	1.58	0.51
2:I:2590:A:H2'	2:I:2591:C:H6	1.75	0.51
16:F:101:VAL:O	16:F:105:MET:HG3	2.10	0.51
25:S:104:THR:HG22	25:S:106:GLU:H	1.74	0.51
39:i:11:SER:O	39:i:15:MET:HG3	2.10	0.51
44:o:29:SER:HB3	44:o:57:PRO:HB2	1.92	0.51
52:w:25:THR:HG23	52:w:66:LEU:HD22	1.91	0.51
1:C:674:G:H2'	1:C:675:A:C8	2.43	0.51
1:C:1279:G:P	46:q:9:ARG:HH12	2.34	0.51
2:I:64:A:H2'	2:I:65:U:H6	1.75	0.51
3:K:78:VAL:HG23	3:K:112:ALA:HA	1.92	0.51
15:E:51:SER:OG	15:E:72:ARG:HG2	2.10	0.51
21:N:47:LYS:H	21:N:47:LYS:HD3	1.75	0.51
1:C:715:A:H2'	1:C:716:A:C8	2.45	0.51
1:C:1513:A:H2'	1:C:1514:G:H8	1.76	0.51
4:L:29:VAL:HB	4:L:98:VAL:HG22	1.93	0.51
9:1:80:TYR:CE1	9:1:81:ARG:HG3	2.46	0.51
15:E:79:LYS:C	15:E:80:LYS:HD3	2.35	0.51
51:v:24:ARG:HH22	51:v:27:LEU:HD23	1.76	0.51
1:C:696:A:H2'	1:C:697:U:H6	1.76	0.51
1:C:1011:C:H2'	1:C:1012:A:C8	2.46	0.51
2:I:241:A:N1	2:I:255:A:H5"	2.25	0.51
2:I:322:A:OP2	20:M:163:ASN:HB2	2.11	0.51
2:I:742:A:H2'	2:I:743:A:H8	1.76	0.51
2:I:1361:G:H2'	2:I:1362:C:C6	2.46	0.51
2:I:2153:C:H2'	2:I:2154:A:H8	1.76	0.51
22:O:73:ASN:O	22:O:77:ILE:HG22	2.10	0.51
45:p:98:LEU:HD12	45:p:103:PHE:HD2	1.76	0.51
52:w:26:GLU:HG3	52:w:81:LEU:HD13	1.93	0.51
20:M:108:ILE:HG12	26:T:1:MET:HE1	1.93	0.51
21:N:104:ILE:HD11	21:N:175:PHE:CE1	2.45	0.51
43:n:113:ASP:HB2	43:n:119:ARG:HG3	1.93	0.51
1:C:1216:A:H5"	51:v:5:SER:HB3	1.92	0.51
2:I:1434:A:H2'	2:I:1435:G:H8	1.76	0.51
2:I:1441:G:H2'	2:I:1442:U:C6	2.45	0.51
2:I:1689:A:H2'	2:I:1690:A:H8	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:Y:49:ASP:HA	29:Y:52:GLN:HB2	1.91	0.51
1:C:398:U:H2'	1:C:399:G:H8	1.76	0.51
1:C:846:G:H2'	1:C:847:G:C8	2.46	0.51
2:I:2515:C:H2'	2:I:2516:A:H8	1.75	0.51
13:A:16:U:H5	13:A:59:A:H61	1.59	0.51
21:N:33:LYS:HA	21:N:96:MET:HE2	1.92	0.51
23:P:99:ILE:O	23:P:103:VAL:HG12	2.10	0.51
49:t:57:LEU:HD21	49:t:82:ILE:HD13	1.93	0.51
51:v:89:MET:HA	51:v:89:MET:HE2	1.92	0.51
2:I:833:A:H2'	2:I:834:G:C8	2.45	0.51
13:A:44:U:H2'	13:A:44:U:O2	2.10	0.51
14:D:44:GLU:H	14:D:44:GLU:CD	2.19	0.51
31:a:1:MET:HG2	31:a:62:ASP:HB3	1.92	0.51
32:b:3:ARG:HG3	32:b:6:ARG:H	1.76	0.51
52:w:48:LYS:HB2	52:w:48:LYS:NZ	2.26	0.51
1:C:89:U:H2'	1:C:90:C:C6	2.46	0.50
2:I:582:A:H2'	2:I:583:G:H8	1.76	0.50
2:I:1727:C:H2'	2:I:1728:C:C6	2.46	0.50
2:I:2537:U:H2'	2:I:2538:C:C6	2.46	0.50
2:I:2674:G:H4'	25:S:30:ARG:HD2	1.92	0.50
4:L:38:LYS:HD2	4:L:43:ASP:OD2	2.11	0.50
9:1:20:GLU:O	9:1:23:VAL:HG22	2.11	0.50
28:X:22:PRO:HA	28:X:47:VAL:HG23	1.92	0.50
2:I:1057:A:H2'	2:I:1058:U:C6	2.46	0.50
2:I:2141:G:H2'	2:I:2142:A:H8	1.76	0.50
7:V:37:THR:HG22	7:V:110:MET:HE1	1.93	0.50
15:E:151:VAL:O	15:E:167:TRP:HA	2.11	0.50
22:O:127:THR:HG23	22:O:129:THR:H	1.76	0.50
28:X:29:LYS:HB3	28:X:40:LEU:HD22	1.93	0.50
46:q:28:THR:O	46:q:32:THR:HG22	2.10	0.50
1:C:983:A:H2	1:C:1222:G:H22	1.60	0.50
2:I:1544:A:H2'	2:I:1545:A:C8	2.46	0.50
54:y:48:ASP:HA	54:y:75:LEU:HD22	1.93	0.50
1:C:198:G:H2'	1:C:199:A:C8	2.46	0.50
2:I:189:G:OP2	36:f:14:THR:HG21	2.12	0.50
2:I:1789:A:OP1	3:K:221:ARG:HG3	2.11	0.50
16:F:26:ARG:HD2	16:F:31:LYS:HG2	1.94	0.50
16:F:122:ALA:C	16:F:123:ILE:HD13	2.37	0.50
19:J:48:U:H2'	19:J:49:C:C6	2.46	0.50
30:Z:50:GLY:HA3	30:Z:53:PHE:C	2.36	0.50
1:C:923:A:H4'	17:G:26:LYS:HZ1	1.76	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:17:G:H2'	2:I:18:U:C6	2.46	0.50
2:I:851:C:H2'	2:I:852:U:H6	1.76	0.50
2:I:1438:U:H2'	2:I:1439:A:H8	1.76	0.50
10:2:28:MET:O	10:2:32:ILE:HG13	2.11	0.50
18:H:53:LYS:HG3	18:H:53:LYS:O	2.12	0.50
26:T:19:LEU:HD13	26:T:31:GLY:HA3	1.93	0.50
44:o:101:ILE:HG13	44:o:129:VAL:HG22	1.92	0.50
51:v:10:GLU:O	51:v:14:VAL:HG12	2.12	0.50
53:x:72:ALA:O	53:x:75:ILE:HG22	2.11	0.50
1:C:818:G:HO2'	1:C:820:U:H6	1.60	0.50
2:I:1198:U:H2'	2:I:1199:U:C6	2.47	0.50
15:E:47:LEU:HD22	15:E:50:ALA:HB3	1.93	0.50
1:C:1440:U:O2'	1:C:1441:A:H5"	2.12	0.50
2:I:2:G:H2'	2:I:3:U:C6	2.47	0.50
2:I:1579:A:H2'	2:I:1580:A:C8	2.47	0.50
22:O:33:LEU:HB3	22:O:75:MET:HE2	1.93	0.50
43:n:23:LEU:O	43:n:27:VAL:HG13	2.12	0.50
53:x:19:VAL:HG13	53:x:37:GLY:C	2.37	0.50
2:I:2514:U:H2'	2:I:2515:C:C6	2.46	0.50
14:D:69:PHE:O	14:D:91:PHE:HA	2.12	0.50
20:M:111:GLU:HA	20:M:114:ARG:HB3	1.94	0.50
23:P:104:THR:HA	23:P:108:VAL:O	2.12	0.50
2:I:832:U:H2'	2:I:833:A:H8	1.77	0.50
14:D:30:PHE:CD2	14:D:201:PRO:HG3	2.47	0.50
43:n:30:LEU:HD12	43:n:105:VAL:HG13	1.94	0.50
51:v:31:ILE:HG13	51:v:45:VAL:HG21	1.93	0.50
52:w:2:SER:HB3	52:w:35:GLN:HE21	1.77	0.50
1:C:1120:C:H2'	1:C:1121:U:H6	1.77	0.49
1:C:1328:C:C2	1:C:1329:A:C8	3.00	0.49
2:I:5:A:H2'	2:I:6:A:C8	2.47	0.49
2:I:1534:U:H2'	2:I:1536:C:C4	2.47	0.49
24:R:42:ALA:O	29:Y:64:ARG:HD3	2.12	0.49
1:C:454:G:H1	1:C:478:A:N6	2.09	0.49
2:I:848:C:H2'	2:I:849:A:C8	2.39	0.49
2:I:1443:U:H2'	2:I:1444:G:H8	1.76	0.49
2:I:2141:G:H2'	2:I:2142:A:C8	2.48	0.49
19:J:95:U:H2'	19:J:96:G:C8	2.47	0.49
19:J:95:U:H2'	19:J:96:G:H8	1.76	0.49
23:P:71:LYS:HD2	23:P:108:VAL:HG12	1.93	0.49
43:n:65:ALA:O	43:n:69:VAL:HG23	2.12	0.49
45:p:60:LYS:HZ3	45:p:60:LYS:N	2.10	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
54:y:38:ILE:HD12	54:y:39:LYS:H	1.77	0.49
2:I:44:A:H2'	2:I:45:G:O4'	2.12	0.49
2:I:849:A:H2'	2:I:850:U:C6	2.47	0.49
2:I:1542:U:H2'	2:I:1543:G:O4'	2.12	0.49
2:I:2142:A:H2'	2:I:2143:C:H6	1.77	0.49
2:I:2562:U:OP1	25:S:40:LYS:HE3	2.12	0.49
2:I:2700:A:H2'	2:I:2701:U:C6	2.47	0.49
14:D:66:LYS:HB3	14:D:90:PHE:HE2	1.77	0.49
37:g:19:LEU:HB3	37:g:23:ARG:HH21	1.77	0.49
1:C:496:A:H5'	1:C:497:G:OP2	2.12	0.49
1:C:1169:A:H2'	1:C:1170:A:C8	2.48	0.49
2:I:30:G:H2'	2:I:31:C:C6	2.47	0.49
2:I:1709:U:H2'	2:I:1710:G:H8	1.76	0.49
2:I:2567:G:H2'	2:I:2568:U:C6	2.47	0.49
18:H:98:GLU:CD	18:H:99:ALA:H	2.21	0.49
19:J:106:G:H2'	19:J:107:G:O4'	2.12	0.49
22:O:88:GLN:HG3	22:O:89:LEU:N	2.27	0.49
26:T:86:GLU:HA	26:T:86:GLU:OE2	2.12	0.49
27:W:43:ASN:HD21	27:W:46:GLU:HB2	1.77	0.49
32:b:52:GLU:OE1	32:b:52:GLU:HA	2.12	0.49
50:u:106:ALA:HB3	50:u:110:LYS:HD3	1.93	0.49
54:y:4:LYS:HE2	54:y:5:ILE:H	1.77	0.49
1:C:1144:G:N2	1:C:1146:A:H62	2.10	0.49
2:I:638:G:H2'	2:I:639:U:C6	2.47	0.49
2:I:1041:G:H2'	2:I:1042:G:H8	1.78	0.49
2:I:1709:U:H2'	2:I:1710:G:C8	2.47	0.49
21:N:38:MET:SD	21:N:57:LEU:HG	2.52	0.49
2:I:2037:A:H2'	2:I:2038:G:C8	2.48	0.49
14:D:135:LEU:HA	14:D:138:THR:HG22	1.94	0.49
32:b:70:HIS:O	32:b:73:ARG:HG2	2.13	0.49
1:C:405:U:C4	16:F:5:LEU:HD21	2.47	0.49
2:I:1442:U:H2'	2:I:1443:U:C6	2.48	0.49
2:I:2267:A:H5"	2:I:2268:A:H5'	1.95	0.49
2:I:2745:C:H2'	2:I:2746:U:C6	2.48	0.49
7:V:32:GLU:HG2	7:V:115:LEU:HD12	1.94	0.49
31:a:38:TYR:CE2	39:i:28:LEU:HD21	2.48	0.49
1:C:945:G:C2	1:C:946:A:C8	3.01	0.49
1:C:1071:C:H2'	1:C:1072:G:C8	2.48	0.49
1:C:1086:U:O2'	1:C:1087:G:H8	1.96	0.49
2:I:78:U:H2'	2:I:79:C:C6	2.48	0.49
2:I:1744:A:H3'	2:I:1745:A:H8	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:2795:C:H2'	2:I:2796:U:C6	2.47	0.49
5:Q:59:ARG:HA	5:Q:62:LYS:HE3	1.92	0.49
6:U:21:ALA:HB2	6:U:97:GLN:HB2	1.95	0.49
12:4:14:A:H2'	12:4:15:A:C8	2.47	0.49
15:E:81:GLY:O	15:E:85:GLU:HG2	2.13	0.49
16:F:58:LYS:HG3	16:F:200:ILE:HG23	1.95	0.49
1:C:335:C:H2'	1:C:336:A:C8	2.48	0.49
2:I:1365:A:H5"	36:f:28:ARG:HH22	1.78	0.49
2:I:1842:G:H2'	2:I:1843:C:H6	1.78	0.49
1:C:148:G:N3	1:C:1446:A:H2	2.11	0.49
2:I:52:A:C8	2:I:53:A:C8	3.01	0.49
2:I:608:A:H2'	2:I:609:A:C8	2.48	0.49
2:I:1076:C:H2'	2:I:1077:A:C8	2.48	0.49
2:I:2064:C:H2'	2:I:2065:C:H6	1.78	0.49
21:N:162:SER:HB3	21:N:165:GLU:HG3	1.95	0.49
33:c:13:VAL:HG21	33:c:39:ILE:HG21	1.95	0.49
46:q:9:ARG:NH2	46:q:71:LEU:HD21	2.27	0.49
47:r:64:GLN:HG2	47:r:99:ALA:HB2	1.95	0.49
1:C:424:G:H2'	1:C:425:G:H8	1.78	0.48
1:C:1040:U:H2'	1:C:1041:G:C8	2.47	0.48
2:I:580:U:H2'	2:I:581:C:C6	2.48	0.48
2:I:1846:G:H2'	2:I:1847:A:C8	2.48	0.48
2:I:2281:A:O2'	2:I:2282:G:H5'	2.13	0.48
17:G:26:LYS:O	17:G:26:LYS:HD3	2.13	0.48
50:u:31:LYS:HE2	50:u:41:GLU:OE1	2.12	0.48
1:C:73:C:O2'	1:C:74:A:H8	1.96	0.48
1:C:993:G:H2'	1:C:995:C:H41	1.77	0.48
1:C:999:C:H2'	1:C:1000:A:H8	1.78	0.48
1:C:1294:G:H2'	1:C:1295:U:C6	2.49	0.48
2:I:58:G:H2'	2:I:59:U:C6	2.47	0.48
2:I:657:U:H2'	2:I:658:U:C6	2.48	0.48
4:L:176:ASP:OD1	4:L:190:LYS:HB3	2.14	0.48
20:M:136:GLN:OE1	20:M:136:GLN:HA	2.13	0.48
51:v:42:TRP:CD1	51:v:42:TRP:N	2.81	0.48
1:C:999:C:H2'	1:C:1000:A:C8	2.48	0.48
2:I:184:C:H2'	2:I:185:G:H8	1.79	0.48
2:I:365:U:H2'	2:I:366:C:C6	2.48	0.48
4:L:181:ASP:OD1	4:L:183:GLU:HG2	2.13	0.48
25:S:103:VAL:O	25:S:122:VAL:HG23	2.14	0.48
1:C:520:A:OP1	49:t:49:LEU:HB2	2.12	0.48
1:C:784:A:H2'	1:C:785:G:C8	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:155:A:H2'	2:I:156:A:C8	2.49	0.48
2:I:1102:C:C2	2:I:1103:A:C8	3.02	0.48
2:I:1432:G:H2'	2:I:1433:A:H8	1.78	0.48
5:Q:25:ARG:HD3	21:N:98:GLU:OE2	2.13	0.48
22:O:96:ALA:HB3	22:O:131:ILE:HD11	1.95	0.48
1:C:399:G:H2'	1:C:400:C:C6	2.49	0.48
2:I:1564:C:H2'	2:I:1565:C:C6	2.49	0.48
16:F:8:LYS:HG2	16:F:21:LEU:HB3	1.96	0.48
45:p:90:TYR:HB2	45:p:94:LEU:HD21	1.94	0.48
1:C:263:A:H2'	1:C:264:C:C6	2.48	0.48
1:C:1342:C:H2'	1:C:1343:G:C8	2.48	0.48
2:I:290:U:O2	2:I:350:G:O6	2.30	0.48
2:I:909:A:H2'	2:I:912:C:H5	1.78	0.48
10:2:80:THR:O	10:2:83:ILE:HG13	2.13	0.48
11:3:37:PHE:CZ	47:r:127:ARG:HD3	2.49	0.48
14:D:52:GLU:O	14:D:56:GLU:HG2	2.13	0.48
30:Z:21:ARG:HH11	30:Z:21:ARG:HG3	1.79	0.48
31:a:37:THR:HG23	31:a:38:TYR:CD2	2.49	0.48
46:q:6:ILE:HG22	46:q:102:LEU:HG	1.95	0.48
2:I:538:A:H4'	24:R:7:LYS:HG3	1.95	0.48
2:I:611:C:H2'	2:I:612:G:O4'	2.14	0.48
2:I:1306:C:H2'	2:I:1307:A:H8	1.79	0.48
2:I:2228:G:H2'	2:I:2229:U:H6	1.77	0.48
9:1:9:PRO:HG2	9:1:41:PHE:CZ	2.49	0.48
17:G:24:THR:HA	17:G:29:ARG:HA	1.96	0.48
20:M:13:THR:HG23	20:M:14:VAL:H	1.79	0.48
20:M:194:LYS:HD2	20:M:194:LYS:HA	1.58	0.48
50:u:3:ARG:HA	50:u:8:ASN:HA	1.96	0.48
1:C:398:U:H2'	1:C:399:G:C8	2.49	0.48
1:C:1032:G:H2'	1:C:1032:G:N3	2.29	0.48
1:C:1218:C:H2'	1:C:1219:A:H8	1.76	0.48
1:C:1428:A:H2'	1:C:1429:A:O4'	2.14	0.48
2:I:721:A:H2'	2:I:722:A:H8	1.77	0.48
21:N:103:LEU:HD12	21:N:107:ALA:HB3	1.96	0.48
30:Z:51:VAL:HB	30:Z:52:PRO:CD	2.44	0.48
1:C:736:C:H2'	1:C:737:C:C6	2.48	0.48
2:I:703:U:H2'	2:I:704:G:O4'	2.12	0.48
2:I:1179:G:C6	2:I:1180:U:H1'	2.48	0.48
2:I:2127:G:H4'	2:I:2128:G:OP1	2.14	0.48
2:I:2537:U:H2'	2:I:2538:C:H6	1.78	0.48
2:I:2740:A:H2'	2:I:2741:A:C8	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:3:41:PRO:HA	11:3:44:GLU:HG3	1.96	0.48
43:n:67:GLU:HG2	43:n:70:ARG:HH21	1.78	0.48
2:I:784:G:H5'	2:I:785:G:OP1	2.14	0.48
2:I:1197:G:H2'	2:I:1198:U:C6	2.48	0.48
1:C:275:G:H5'	54:y:16:LYS:HE3	1.96	0.47
1:C:757:U:H2'	1:C:758:C:O4'	2.14	0.47
1:C:1130:A:H2'	1:C:1131:G:C8	2.49	0.47
2:I:822:G:H2'	2:I:823:C:C6	2.48	0.47
2:I:1529:G:H1	2:I:1542:U:H3	1.60	0.47
2:I:2166:U:H3'	2:I:2167:U:H5"	1.95	0.47
13:A:12:U:H2'	13:A:13:C:O4'	2.14	0.47
19:J:66:A:H61	19:J:107:G:H2'	1.79	0.47
22:O:4:VAL:O	22:O:69:ARG:HD2	2.15	0.47
23:P:97:ARG:HD2	23:P:112:LYS:HE3	1.96	0.47
1:C:77:A:H2'	1:C:78:A:C8	2.48	0.47
1:C:767:A:H2'	1:C:768:A:H8	1.79	0.47
1:C:1113:C:H2'	1:C:1114:C:H6	1.79	0.47
2:I:1199:U:H2'	2:I:1200:C:H6	1.79	0.47
2:I:1856:U:H2'	2:I:1857:G:O4'	2.14	0.47
18:H:70:VAL:HA	18:H:73:GLU:OE2	2.13	0.47
28:X:55:LEU:HA	28:X:77:HIS:CD2	2.50	0.47
43:n:125:SER:O	43:n:129:GLU:HG2	2.13	0.47
1:C:374:A:H5"	1:C:452:A:C2	2.49	0.47
1:C:1103:C:H4'	14:D:97:LEU:HD23	1.95	0.47
2:I:191:A:H2'	2:I:192:C:H6	1.79	0.47
2:I:1720:U:H2'	2:I:1721:G:O4'	2.14	0.47
2:I:2114:A:N7	2:I:2167:U:H4'	2.30	0.47
2:I:2314:A:H2'	2:I:2315:G:H8	1.78	0.47
7:V:9:GLN:O	7:V:10:LEU:HD12	2.13	0.47
17:G:80:THR:HG22	17:G:122:ASN:HB2	1.96	0.47
21:N:133:ARG:NH1	21:N:133:ARG:HB2	2.29	0.47
43:n:27:VAL:HG12	43:n:43:VAL:HG21	1.96	0.47
44:o:106:THR:HG22	44:o:123:GLY:HA3	1.97	0.47
1:C:35:G:H2'	1:C:36:C:C6	2.50	0.47
2:I:598:U:H2'	2:I:599:A:C8	2.49	0.47
2:I:2138:G:H2'	2:I:2139:U:C6	2.49	0.47
2:I:2461:A:H2'	2:I:2462:C:C6	2.50	0.47
2:I:2649:C:H2'	2:I:2650:U:H6	1.79	0.47
7:V:59:SER:O	7:V:63:ARG:HG2	2.14	0.47
9:1:3:ARG:HB3	9:1:7:LYS:NZ	2.29	0.47
32:b:6:ARG:HD2	32:b:42:GLU:OE2	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:b:43:ILE:HD12	32:b:43:ILE:H	1.79	0.47
32:b:64:LYS:HA	32:b:79:ASP:OD1	2.13	0.47
34:d:78:GLN:HG2	34:d:88:HIS:HB3	1.96	0.47
1:C:33:A:H2'	1:C:34:C:H6	1.79	0.47
1:C:108:G:C6	10:2:10:ARG:HD2	2.49	0.47
2:I:582:A:H2'	2:I:583:G:C8	2.49	0.47
2:I:640:C:H2'	2:I:641:U:C6	2.49	0.47
2:I:1292:G:H2'	2:I:1293:C:H6	1.77	0.47
2:I:2187:U:H2'	2:I:2188:U:C6	2.50	0.47
2:I:2747:G:O6	2:I:2755:C:H5"	2.15	0.47
17:G:111:MET:HE3	17:G:127:ALA:HB2	1.95	0.47
32:b:6:ARG:O	32:b:6:ARG:HD3	2.14	0.47
46:q:47:GLU:O	46:q:66:GLU:HA	2.14	0.47
1:C:687:A:C2	1:C:704:A:C5	3.03	0.47
1:C:1163:A:H2'	1:C:1164:G:H8	1.80	0.47
2:I:302:C:H2'	2:I:303:G:H8	1.80	0.47
2:I:871:U:H2'	2:I:872:U:C6	2.50	0.47
2:I:2014:A:H2'	2:I:2015:A:C8	2.50	0.47
10:2:49:LYS:O	10:2:53:GLU:HG2	2.14	0.47
16:F:9:LEU:HD21	16:F:22:LYS:HD3	1.95	0.47
32:b:69:ARG:NH1	32:b:74:ILE:HD11	2.30	0.47
37:g:60:LYS:HE3	37:g:60:LYS:HB2	1.61	0.47
45:p:26:GLY:HA2	45:p:61:LEU:O	2.15	0.47
46:q:52:LEU:HD21	46:q:59:LYS:HG3	1.96	0.47
52:w:71:LYS:HG3	52:w:78:TYR:CG	2.50	0.47
1:C:206:C:H1'	1:C:207:C:H5'	1.95	0.47
1:C:246:A:C2	1:C:282:A:C5	3.03	0.47
1:C:746:A:H2'	1:C:747:A:C8	2.49	0.47
1:C:1004:A:H2'	1:C:1005:A:O4'	2.15	0.47
2:I:71:A:H4'	2:I:72:U:H5'	1.97	0.47
2:I:146:A:H2'	2:I:147:C:C6	2.50	0.47
2:I:284:U:C2	2:I:356:G:O6	2.67	0.47
2:I:307:G:H5'	2:I:308:G:OP2	2.14	0.47
2:I:871:U:OP1	6:U:5:LYS:HG2	2.14	0.47
2:I:1589:U:H2'	2:I:1590:A:C8	2.50	0.47
2:I:1727:C:H2'	2:I:1728:C:H6	1.80	0.47
2:I:1790:C:H2'	2:I:1791:A:C8	2.50	0.47
2:I:2809:A:H2'	2:I:2810:A:C8	2.49	0.47
14:D:56:GLU:O	14:D:60:ILE:HG12	2.14	0.47
16:F:35:GLU:HG2	16:F:36:GLN:N	2.29	0.47
17:G:50:TYR:H	17:G:66:LYS:HE2	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:O:130:GLU:C	22:O:131:ILE:HD13	2.39	0.47
23:P:3:VAL:HG12	23:P:38:PRO:HA	1.97	0.47
28:X:47:VAL:HG12	28:X:61:VAL:HG22	1.97	0.47
34:d:6:ALA:HB3	34:d:65:VAL:HG22	1.97	0.47
43:n:86:GLN:HB2	43:n:148:ASN:HD22	1.79	0.47
44:o:41:LYS:HD2	44:o:48:ASP:HA	1.96	0.47
1:C:1332:A:H2'	1:C:1333:A:O4'	2.15	0.47
2:I:183:C:H42	2:I:213:A:H61	1.62	0.47
2:I:898:C:H2'	2:I:899:A:O4'	2.15	0.47
2:I:1094:U:H1'	2:I:1097:U:H5	1.80	0.47
2:I:1281:G:H2'	2:I:1282:U:C6	2.49	0.47
3:K:145:GLU:HG2	3:K:188:CYS:HB3	1.96	0.47
10:2:39:ILE:HD13	10:2:39:ILE:HA	1.82	0.47
16:F:99:ASP:OD2	16:F:133:ALA:HB1	2.15	0.47
21:N:29:PRO:HB2	21:N:169:LEU:HD12	1.95	0.47
51:v:34:VAL:HG22	51:v:36:ALA:H	1.80	0.47
54:y:61:ILE:HG22	54:y:75:LEU:HA	1.95	0.47
1:C:135:C:O2	53:x:1:MET:HB2	2.15	0.47
1:C:1120:C:C2	1:C:1121:U:C5	3.03	0.47
2:I:2478:A:H5'	8:m:32:LYS:HE2	1.97	0.47
25:S:105:ARG:HB2	25:S:105:ARG:CZ	2.44	0.47
30:Z:38:VAL:HG11	30:Z:57:GLY:HA3	1.97	0.47
47:r:64:GLN:HB2	47:r:95:SER:HB3	1.97	0.47
47:r:72:ASP:HA	47:r:75:LYS:HE2	1.96	0.47
51:v:12:LYS:HB2	51:v:12:LYS:HE2	1.63	0.47
1:C:579:A:H2'	1:C:580:C:C6	2.50	0.47
1:C:666:G:H5'	1:C:726:C:H1'	1.97	0.47
1:C:1233:G:H5'	45:p:119:ARG:HH22	1.80	0.47
2:I:1614:A:N1	31:a:93:ALA:HB2	2.29	0.47
2:I:2572:A:OP1	2:I:2574:G:H4'	2.15	0.47
11:3:40:LYS:O	11:3:44:GLU:HG3	2.15	0.47
38:h:44:ILE:HA	38:h:47:MET:HE3	1.96	0.47
44:o:105:SER:HA	44:o:110:VAL:HA	1.97	0.47
1:C:424:G:H2'	1:C:425:G:C8	2.50	0.46
1:C:613:C:H2'	1:C:614:C:H6	1.80	0.46
1:C:859:G:H2'	1:C:860:A:H8	1.80	0.46
1:C:864:A:H2'	1:C:865:A:C8	2.50	0.46
2:I:1106:G:H2'	2:I:1107:G:C8	2.51	0.46
2:I:1494:A:H2'	2:I:1495:A:C8	2.50	0.46
2:I:2554:U:H2'	2:I:2555:U:C6	2.50	0.46
2:I:2700:A:H2'	2:I:2701:U:H6	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:S:99:ILE:CD1	25:S:119:ALA:HA	2.43	0.46
52:w:71:LYS:HG3	52:w:78:TYR:CD2	2.51	0.46
1:C:1313:U:H2'	1:C:1314:C:C6	2.50	0.46
2:I:1563:U:H2'	2:I:1564:C:C6	2.50	0.46
2:I:1585:C:H3'	2:I:1586:A:H8	1.80	0.46
6:U:133:LYS:HE3	6:U:133:LYS:HB3	1.72	0.46
15:E:39:VAL:HG21	15:E:91:VAL:HG23	1.96	0.46
17:G:150:PRO:HG3	44:o:99:LEU:HD11	1.97	0.46
1:C:1243:C:H2'	1:C:1244:G:H8	1.80	0.46
2:I:1028:A:H2'	2:I:1029:A:H8	1.77	0.46
2:I:1175:A:H5"	2:I:1176:U:C5	2.49	0.46
2:I:2116:G:H3'	2:I:2117:A:H8	1.80	0.46
2:I:2233:U:H2'	2:I:2234:G:C8	2.50	0.46
2:I:2455:G:H2'	2:I:2456:C:C6	2.51	0.46
16:F:177:LYS:C	16:F:178:MET:HG3	2.39	0.46
47:r:113:VAL:O	47:r:113:VAL:HG12	2.14	0.46
52:w:47:LYS:NZ	52:w:47:LYS:HB3	2.31	0.46
1:C:1003:G:N2	1:C:1005:A:H5'	2.30	0.46
2:I:1081:U:H2'	2:I:1082:U:C6	2.51	0.46
2:I:2150:C:H2'	2:I:2151:U:O4'	2.16	0.46
2:I:2155:U:H2'	2:I:2156:G:O4'	2.14	0.46
6:U:111:GLU:OE1	6:U:111:GLU:N	2.48	0.46
20:M:108:ILE:O	20:M:112:LEU:HB2	2.16	0.46
45:p:94:LEU:O	45:p:98:LEU:HD22	2.16	0.46
2:I:1395:A:O2'	2:I:1396:U:H5"	2.16	0.46
3:K:110:LEU:HD12	3:K:110:LEU:HA	1.75	0.46
22:O:27:LYS:HG2	22:O:32:GLU:OE1	2.15	0.46
30:Z:71:LYS:HB2	30:Z:90:ARG:HD3	1.98	0.46
44:o:52:GLU:O	44:o:57:PRO:HA	2.16	0.46
1:C:470:C:H2'	1:C:471:U:C6	2.51	0.46
1:C:827:U:H2'	1:C:870:U:O4	2.16	0.46
1:C:1527:U:H2'	1:C:1528:U:C6	2.50	0.46
2:I:1499:C:C2	2:I:1500:G:C8	3.03	0.46
2:I:1572:A:H2'	2:I:1573:G:H8	1.80	0.46
2:I:1874:C:H2'	2:I:1875:G:O4'	2.16	0.46
2:I:2412:A:H2'	2:I:2413:G:O4'	2.15	0.46
13:A:23:A:C5'	58:A:215:HOH:O	2.40	0.46
16:F:104:ARG:HB3	16:F:171:LEU:CD1	2.46	0.46
18:H:38:ARG:HD3	18:H:63:ASN:OD1	2.15	0.46
27:W:67:ASN:HB3	27:W:69:ASP:OD1	2.16	0.46
43:n:70:ARG:HG2	43:n:96:ARG:HB3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:440:C:C2	1:C:441:A:C8	3.04	0.46
2:I:1682:G:H2'	2:I:1683:U:C6	2.51	0.46
2:I:1820:U:C4	3:K:159:GLY:HA3	2.51	0.46
2:I:2070:A:H2'	2:I:2071:A:H8	1.80	0.46
2:I:2123:G:H2'	2:I:2124:G:H8	1.79	0.46
2:I:2815:C:C2	2:I:2816:G:C8	3.04	0.46
8:m:7:VAL:HG22	8:m:35:GLN:HG3	1.98	0.46
10:2:66:LEU:HG	10:2:67:ILE:HG23	1.98	0.46
17:G:68:ARG:CZ	17:G:68:ARG:HB2	2.46	0.46
19:J:114:C:H2'	19:J:115:A:H8	1.80	0.46
20:M:18:THR:HA	20:M:106:LYS:HG2	1.98	0.46
2:I:782:A:C2	3:K:225:MET:HG2	2.51	0.46
10:2:83:ILE:O	10:2:87:ALA:CB	2.64	0.46
26:T:123:ARG:HA	26:T:143:GLU:O	2.15	0.46
34:d:80:HIS:CE1	34:d:83:LYS:HD3	2.51	0.46
1:C:216:U:H2'	1:C:217:C:C6	2.51	0.46
1:C:1435:G:H2'	1:C:1436:U:C6	2.50	0.46
2:I:1222:U:H2'	2:I:1223:G:C8	2.50	0.46
2:I:2087:G:H2'	2:I:2088:A:C8	2.51	0.46
14:D:171:ILE:O	14:D:175:GLU:HG3	2.16	0.46
16:F:185:LYS:HE3	16:F:185:LYS:HB2	1.66	0.46
32:b:43:ILE:O	32:b:47:VAL:HG12	2.14	0.46
1:C:235:C:H2'	1:C:236:A:C8	2.50	0.46
1:C:1005:A:C5	1:C:1006:G:H1'	2.51	0.46
1:C:1060:U:C5'	46:q:53:ILE:HG13	2.44	0.46
2:I:1443:U:H2'	2:I:1444:G:C8	2.51	0.46
1:C:6:G:H4'	1:C:298:A:H4'	1.98	0.45
1:C:371:A:H2'	1:C:372:C:O4'	2.16	0.45
1:C:592:G:H2'	1:C:593:U:C6	2.51	0.45
1:C:868:C:H2'	1:C:869:G:O4'	2.15	0.45
1:C:973:G:OP1	46:q:59:LYS:HD3	2.16	0.45
2:I:29:U:H2'	2:I:30:G:C8	2.51	0.45
2:I:1370:C:H2'	2:I:1371:G:O4'	2.16	0.45
2:I:1773:A:C8	2:I:1829:A:C8	3.04	0.45
2:I:2618:G:H21	4:L:155:VAL:HG21	1.81	0.45
23:P:58:LEU:HA	23:P:61:VAL:HG12	1.98	0.45
38:h:13:ALA:HA	38:h:16:ARG:HG2	1.98	0.45
42:l:52:LYS:HE2	42:l:52:LYS:HB3	1.80	0.45
46:q:24:GLU:O	46:q:28:THR:HG22	2.16	0.45
52:w:36:ILE:O	52:w:40:GLN:HG2	2.15	0.45
1:C:767:A:H2'	1:C:768:A:C8	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:891:U:H2'	1:C:892:A:H8	1.81	0.45
1:C:1033:G:H2'	1:C:1034:G:H5"	1.98	0.45
2:I:603:A:H5"	2:I:655:A:N6	2.23	0.45
2:I:1538:G:H2'	2:I:1539:U:C6	2.51	0.45
2:I:2025:C:H2'	2:I:2026:U:C6	2.52	0.45
2:I:2142:A:H2'	2:I:2143:C:C6	2.52	0.45
2:I:2547:A:H2'	2:I:2548:U:C6	2.51	0.45
20:M:3:LEU:HD12	20:M:14:VAL:HG21	1.98	0.45
30:Z:16:GLU:OE1	30:Z:100:GLY:HA2	2.16	0.45
44:o:84:ARG:C	44:o:85:ILE:HD13	2.41	0.45
1:C:404:G:P	16:F:115:ARG:HH12	2.39	0.45
1:C:1010:U:H2'	1:C:1011:C:C6	2.50	0.45
1:C:1095:U:H2'	1:C:1096:C:C6	2.52	0.45
1:C:1343:G:H2'	1:C:1344:C:C6	2.51	0.45
2:I:287:G:H2'	2:I:288:U:H6	1.79	0.45
2:I:1357:C:H2'	2:I:1358:G:O4'	2.16	0.45
2:I:2344:U:O2'	40:j:36:LEU:HD12	2.16	0.45
2:I:2373:G:H2'	2:I:2374:C:H6	1.81	0.45
25:S:69:VAL:HG11	25:S:104:THR:HG21	1.98	0.45
34:d:6:ALA:HB1	34:d:40:ILE:HB	1.99	0.45
1:C:1011:C:H2'	1:C:1012:A:H8	1.81	0.45
1:C:1273:C:H2'	1:C:1274:A:O4'	2.16	0.45
2:I:549:G:O2'	2:I:550:C:H5"	2.15	0.45
2:I:2313:C:H4'	21:N:88:LYS:HG3	1.98	0.45
2:I:2723:C:H2'	2:I:2724:U:O4'	2.16	0.45
9:1:80:TYR:CZ	9:1:81:ARG:HG3	2.51	0.45
10:2:36:TYR:HA	10:2:39:ILE:HB	1.98	0.45
11:3:7:ARG:HB2	11:3:10:GLU:HG3	1.97	0.45
23:P:30:LEU:HB3	23:P:36:ALA:HB3	1.98	0.45
24:R:98:GLU:O	24:R:102:GLU:HG3	2.16	0.45
27:W:4:LYS:O	27:W:8:ILE:HG13	2.15	0.45
32:b:33:LYS:HD3	32:b:33:LYS:HA	1.81	0.45
45:p:87:LEU:HD23	45:p:98:LEU:HD21	1.98	0.45
1:C:260:G:H2'	1:C:261:U:C6	2.51	0.45
1:C:361:G:H2'	1:C:362:G:O4'	2.16	0.45
1:C:382:A:H2'	1:C:383:A:C8	2.52	0.45
2:I:782:A:N7	3:K:220:VAL:HG21	2.32	0.45
2:I:1205:A:H5"	2:I:1206:G:C8	2.51	0.45
2:I:1842:G:H2'	2:I:1843:C:C6	2.51	0.45
2:I:1932:A:H2'	2:I:1933:G:O4'	2.16	0.45
9:1:19:VAL:O	9:1:23:VAL:HG13	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:2:36:TYR:HD2	10:2:79:LEU:HD11	1.81	0.45
18:H:42:TRP:HB2	18:H:59:TYR:HB2	1.98	0.45
18:H:53:LYS:HE3	18:H:53:LYS:HB2	1.69	0.45
20:M:37:ALA:O	20:M:40:ARG:HB2	2.16	0.45
22:O:72:LEU:HA	22:O:72:LEU:HD13	1.76	0.45
22:O:144:VAL:O	22:O:148:LEU:HD22	2.16	0.45
22:O:176:LYS:HD3	22:O:176:LYS:HA	1.76	0.45
26:T:10:GLU:OE1	26:T:10:GLU:HA	2.17	0.45
47:r:97:ILE:HD13	47:r:97:ILE:HA	1.78	0.45
1:C:877:G:O2'	44:o:5:ASP:HB2	2.16	0.45
1:C:1175:G:H2'	1:C:1176:A:H8	1.82	0.45
1:C:1313:U:H2'	1:C:1314:C:H6	1.82	0.45
1:C:1348:U:C2	1:C:1349:A:C8	3.05	0.45
2:I:1:G:H2'	2:I:2:G:H8	1.80	0.45
2:I:638:G:H2'	2:I:639:U:H6	1.81	0.45
2:I:947:A:H2'	2:I:948:C:C6	2.52	0.45
2:I:2514:U:H2'	2:I:2515:C:H6	1.82	0.45
14:D:66:LYS:HB3	14:D:90:PHE:CE2	2.52	0.45
28:X:55:LEU:HA	28:X:77:HIS:HD2	1.82	0.45
45:p:45:ARG:HD3	45:p:45:ARG:H	1.82	0.45
1:C:34:C:H2'	1:C:35:G:C8	2.51	0.45
1:C:323:U:H2'	1:C:324:G:O4'	2.17	0.45
2:I:30:G:H2'	2:I:31:C:H6	1.82	0.45
2:I:580:U:H2'	2:I:581:C:H6	1.82	0.45
2:I:2251:OMG:HM23	2:I:2251:OMG:H1'	1.55	0.45
6:U:20:LEU:HD23	6:U:20:LEU:HA	1.81	0.45
19:J:45:A:C4	19:J:46:A:C8	3.04	0.45
24:R:76:HIS:CE1	24:R:85:LYS:HB2	2.52	0.45
29:Y:61:TRP:CH2	29:Y:93:LYS:HB2	2.51	0.45
40:j:28:ARG:H	40:j:28:ARG:HD3	1.82	0.45
44:o:31:LYS:O	44:o:34:VAL:HG12	2.17	0.45
45:p:19:VAL:HA	45:p:65:ILE:HG22	1.99	0.45
52:w:24:SER:O	52:w:28:GLN:HG3	2.16	0.45
1:C:223:A:H2'	1:C:224:U:C6	2.51	0.45
1:C:270:A:H2'	1:C:271:C:C6	2.52	0.45
1:C:719:C:H1'	55:z:38:LYS:HG2	1.98	0.45
1:C:883:C:O2'	1:C:884:U:H5'	2.17	0.45
2:I:826:U:O2'	26:T:53:GLY:HA3	2.16	0.45
2:I:1533:C:H5"	2:I:1534:U:H5	1.81	0.45
2:I:1675:C:O2	4:L:133:THR:HG22	2.17	0.45
2:I:1728:C:H2'	2:I:1729:U:H5"	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:2266:A:H4'	2:I:2267:A:N3	2.32	0.45
7:V:72:ASP:HB3	7:V:75:ILE:HB	1.99	0.45
20:M:116:ASP:C	20:M:116:ASP:OD2	2.60	0.45
1:C:1121:U:H2'	1:C:1122:U:H6	1.82	0.45
1:C:1225:A:OP1	50:u:102:THR:HG22	2.17	0.45
1:C:1326:U:H2'	1:C:1327:C:H6	1.81	0.45
1:C:1477:U:H2'	1:C:1478:U:C6	2.52	0.45
2:I:38:A:H2'	2:I:39:G:O4'	2.17	0.45
2:I:1093:G:H2'	2:I:1094:U:C6	2.52	0.45
9:1:71:LEU:HD23	9:1:71:LEU:HA	1.83	0.45
14:D:59:LYS:O	14:D:63:ARG:HG3	2.17	0.45
14:D:77:SER:OG	14:D:93:ASN:HB3	2.16	0.45
14:D:187:VAL:HG13	14:D:191:SER:HB3	1.98	0.45
15:E:79:LYS:HB3	15:E:80:LYS:HD3	1.98	0.45
17:G:37:THR:HG21	17:G:64:MET:HA	1.98	0.45
19:J:39:A:H2'	19:J:40:U:C6	2.51	0.45
24:R:36:LEU:HD11	24:R:122:LEU:HB2	1.98	0.45
45:p:56:ASP:HB3	45:p:60:LYS:HE3	1.98	0.45
1:C:280:C:N3	54:y:41:THR:HG23	2.32	0.45
1:C:921:U:O2	17:G:24:THR:HG23	2.17	0.45
2:I:948:C:H1'	2:I:984:A:C8	2.52	0.45
2:I:1068:G:H21	2:I:1096:A:H5'	1.82	0.45
2:I:1928:A:H2'	2:I:1929:G:O4'	2.17	0.45
2:I:2247:A:H2'	2:I:2248:C:H6	1.81	0.45
2:I:2469:A:H2'	2:I:2470:G:O4'	2.17	0.45
9:1:17:LYS:HE3	9:1:17:LYS:HB3	1.73	0.45
13:A:22:G:O2'	13:A:23:A:H8	2.00	0.45
54:y:81:LYS:HE2	54:y:81:LYS:HB2	1.71	0.45
55:z:26:ILE:H	55:z:26:ILE:HG12	1.62	0.45
1:C:215:C:H2'	1:C:216:U:C6	2.52	0.44
1:C:821:G:H2'	1:C:822:U:C6	2.52	0.44
1:C:1270:G:H2'	1:C:1271:A:H8	1.82	0.44
2:I:347:A:H2'	2:I:348:A:C8	2.52	0.44
2:I:708:G:H2'	2:I:709:U:C6	2.53	0.44
2:I:740:C:H5'	2:I:1784:A:H3'	1.99	0.44
2:I:832:U:H2'	2:I:833:A:C8	2.51	0.44
2:I:2134:A:H2'	2:I:2135:A:H8	1.83	0.44
2:I:2297:A:N1	2:I:2321:U:H5	2.15	0.44
4:L:26:VAL:HG22	4:L:188:LEU:HD22	1.99	0.44
4:L:58:ASN:C	4:L:58:ASN:OD1	2.60	0.44
8:m:31:PRO:HD3	22:O:170:ARG:HH21	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:F:85:ASN:CG	16:F:88:GLU:HG2	2.42	0.44
32:b:8:LEU:HD13	32:b:50:LEU:HD11	1.99	0.44
36:f:19:SER:OG	36:f:23:ASN:HB2	2.17	0.44
37:g:19:LEU:HB3	37:g:23:ARG:NH2	2.32	0.44
43:n:93:PRO:HA	43:n:96:ARG:HG3	1.99	0.44
51:v:3:LYS:O	51:v:7:LYS:HG3	2.17	0.44
1:C:202:G:O2'	1:C:468:A:H8	1.99	0.44
1:C:224:U:H2'	1:C:225:C:C6	2.52	0.44
1:C:1120:C:H2'	1:C:1121:U:C6	2.53	0.44
2:I:1614:A:P	2:I:1614:A:H8	2.40	0.44
2:I:2314:A:H2'	2:I:2315:G:C8	2.53	0.44
9:1:44:MET:HA	9:1:47:LEU:HD23	1.99	0.44
13:A:43:U:H2'	13:A:44:U:H6	1.81	0.44
17:G:96:MET:HE3	17:G:96:MET:HB3	1.75	0.44
17:G:109:GLY:C	17:G:111:MET:H	2.25	0.44
22:O:54:PRO:HG3	22:O:62:TRP:CE2	2.52	0.44
46:q:8:ILE:HB	46:q:74:VAL:HG22	2.00	0.44
1:C:413:G:H21	1:C:428:G:H1'	1.82	0.44
1:C:1173:U:H2'	1:C:1174:G:H8	1.82	0.44
1:C:1238:A:H2	1:C:1241:G:N3	2.15	0.44
2:I:27:G:N2	2:I:512:G:H1'	2.33	0.44
2:I:155:A:H2'	2:I:156:A:H8	1.81	0.44
3:K:261:LYS:HA	3:K:264:ASP:OD2	2.17	0.44
5:Q:32:LEU:CD2	21:N:139:PRO:HB2	2.47	0.44
16:F:8:LYS:HE2	16:F:8:LYS:HB2	1.67	0.44
18:H:14:GLN:HG3	18:H:17:GLN:NE2	2.32	0.44
20:M:153:LEU:HD11	20:M:158:PHE:HB2	1.98	0.44
23:P:9:VAL:HB	23:P:12:LEU:HB3	2.00	0.44
53:x:6:LEU:HD22	53:x:17:TYR:HB3	1.98	0.44
53:x:36:VAL:HG11	53:x:57:ILE:HG13	1.99	0.44
1:C:1277:C:O2'	1:C:1279:G:H8	2.00	0.44
1:C:1287:A:H2'	1:C:1288:A:C8	2.52	0.44
1:C:1408:A:H2	2:I:1913:A:H2	1.66	0.44
2:I:58:G:H2'	2:I:59:U:H6	1.83	0.44
2:I:152:A:H2'	2:I:153:U:C6	2.52	0.44
2:I:634:C:H2'	2:I:635:C:C6	2.52	0.44
2:I:2087:G:H2'	2:I:2088:A:H8	1.83	0.44
2:I:2138:G:H2'	2:I:2139:U:H6	1.82	0.44
16:F:26:ARG:HD2	16:F:31:LYS:HE3	2.00	0.44
17:G:26:LYS:HA	17:G:26:LYS:HE3	2.00	0.44
17:G:156:LYS:HD3	44:o:71:VAL:HG13	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
46:q:12:ALA:HB3	46:q:18:ILE:HG23	1.98	0.44
46:q:59:LYS:HB3	46:q:59:LYS:HE2	1.90	0.44
1:C:236:A:H2'	1:C:237:G:C8	2.52	0.44
1:C:253:A:H2'	1:C:254:G:H8	1.82	0.44
1:C:486:U:H2'	1:C:487:A:H8	1.83	0.44
2:I:4:U:H2'	2:I:5:A:H8	1.83	0.44
2:I:589:U:H2'	2:I:590:A:C8	2.52	0.44
2:I:839:U:H2'	2:I:840:C:C6	2.52	0.44
2:I:1883:U:H2'	2:I:1884:G:O4'	2.17	0.44
2:I:1914:C:H2'	2:I:1915:3TD:H6	1.99	0.44
2:I:2455:G:H2'	2:I:2456:C:H6	1.82	0.44
4:L:108:ASP:OD1	4:L:173:GLN:HA	2.17	0.44
8:m:7:VAL:HG13	8:m:25:VAL:HG13	1.99	0.44
17:G:41:ASP:OD1	17:G:41:ASP:C	2.61	0.44
26:T:102:GLY:H	26:T:105:ILE:HD13	1.81	0.44
30:Z:5:PHE:HB3	30:Z:59:ILE:HD12	1.99	0.44
38:h:7:ILE:HG23	38:h:36:VAL:HG23	2.00	0.44
43:n:111:ARG:NH2	43:n:122:ASN:HB3	2.32	0.44
47:r:64:GLN:O	47:r:68:GLU:HG3	2.18	0.44
51:v:35:ASN:CG	51:v:42:TRP:HE1	2.25	0.44
51:v:63:ARG:HB3	51:v:68:GLY:HA2	1.99	0.44
54:y:9:GLN:OE1	54:y:9:GLN:N	2.50	0.44
1:C:389:A:H3'	1:C:390:U:H6	1.83	0.44
1:C:825:A:H2'	1:C:826:C:C6	2.53	0.44
2:I:640:C:H2'	2:I:641:U:H6	1.81	0.44
2:I:822:G:H2'	2:I:823:C:H6	1.83	0.44
2:I:2899:A:H2'	2:I:2900:A:H8	1.82	0.44
23:P:90:LEU:HD11	23:P:146:VAL:HG11	1.99	0.44
26:T:90:VAL:HG12	26:T:122:VAL:HG13	2.00	0.44
31:a:18:ARG:HG3	31:a:76:VAL:HB	2.00	0.44
1:C:88:U:H2'	1:C:89:U:C6	2.53	0.44
1:C:113:G:H2'	1:C:114:U:C6	2.52	0.44
1:C:166:U:H2'	1:C:167:A:C8	2.50	0.44
1:C:244:U:O4	1:C:906:A:H1'	2.18	0.44
1:C:1131:G:H2'	1:C:1132:C:H5"	2.00	0.44
1:C:1206:G:C4	1:C:1207:G:C8	3.06	0.44
2:I:194:G:H2'	2:I:195:A:O4'	2.17	0.44
2:I:413:C:H2'	2:I:414:C:C6	2.53	0.44
2:I:1315:C:H2'	2:I:1316:U:C6	2.53	0.44
9:1:13:LEU:HD21	51:v:47:LYS:HG3	1.99	0.44
21:N:85:ILE:HD13	21:N:85:ILE:HA	1.86	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:O:18:LYS:HE2	22:O:18:LYS:HB2	1.73	0.44
45:p:52:LEU:HD12	45:p:52:LEU:HA	1.81	0.44
46:q:91:ASP:O	46:q:92:LEU:HD13	2.18	0.44
49:t:53:CYS:HB3	49:t:67:ILE:HD11	2.00	0.44
54:y:15:ASP:OD1	54:y:15:ASP:O	2.35	0.44
1:C:707:U:H2'	1:C:708:C:H6	1.81	0.44
1:C:1097:C:H2'	1:C:1098:C:C6	2.52	0.44
1:C:1107:C:C4	1:C:1108:G:C8	3.05	0.44
1:C:1147:C:H2'	1:C:1148:U:H6	1.83	0.44
1:C:1194:U:H2'	1:C:1195:C:C6	2.53	0.44
2:I:1075:C:H2'	2:I:1076:C:C6	2.52	0.44
3:K:225:MET:SD	3:K:230:HIS:HB2	2.58	0.44
22:O:121:ILE:HD13	22:O:135:GLY:HA3	2.00	0.44
23:P:121:VAL:HG12	23:P:121:VAL:O	2.17	0.44
24:R:49:ASP:OD2	24:R:121:LYS:HE3	2.17	0.44
32:b:7:LEU:HG	32:b:46:ALA:HA	1.99	0.44
45:p:23:PRO:HA	45:p:60:LYS:O	2.18	0.44
47:r:110:ILE:C	47:r:110:ILE:HD12	2.43	0.44
1:C:144:G:H2'	1:C:145:G:H8	1.83	0.44
1:C:649:A:H2'	1:C:650:G:O4'	2.18	0.44
2:I:146:A:H2'	2:I:147:C:H6	1.83	0.44
2:I:479:A:H1'	2:I:480:A:H5"	1.99	0.44
2:I:592:A:C2	42:l:4:ILE:HD11	2.52	0.44
2:I:2589:A:H2'	2:I:2590:A:H8	1.82	0.44
2:I:2623:G:H2'	2:I:2624:G:H8	1.82	0.44
3:K:227:PRO:HA	3:K:233:GLY:HA2	2.00	0.44
11:3:4:ILE:HD11	11:3:19:PHE:HB2	2.00	0.44
14:D:207:ILE:HD12	14:D:207:ILE:N	2.31	0.44
16:F:73:ARG:HE	16:F:77:LYS:NZ	2.16	0.44
21:N:170:LEU:HD13	21:N:170:LEU:HA	1.87	0.44
27:W:90:VAL:HG23	27:W:91:SER:H	1.83	0.44
28:X:7:GLN:C	28:X:7:GLN:OE1	2.60	0.44
46:q:65:TYR:HB3	51:v:96:LEU:CD1	2.45	0.44
51:v:42:TRP:CD1	51:v:42:TRP:H	2.36	0.44
1:C:751:U:H2'	1:C:752:G:O4'	2.18	0.43
2:I:282:A:H2'	2:I:283:G:C8	2.53	0.43
2:I:813:U:H2'	2:I:814:C:C6	2.53	0.43
2:I:1092:C:H2'	2:I:1093:G:O4'	2.17	0.43
2:I:1571:A:H2'	2:I:1572:A:C8	2.53	0.43
21:N:63:GLN:NE2	21:N:91:LEU:HD23	2.34	0.43
23:P:4:ILE:O	23:P:4:ILE:HD12	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:T:57:LEU:HD22	42:l:54:ASP:HB3	2.00	0.43
30:Z:59:ILE:HG23	30:Z:101:ILE:HG22	1.99	0.43
54:y:8:LEU:HB2	54:y:61:ILE:CD1	2.48	0.43
54:y:30:LYS:HE2	54:y:35:GLY:HA2	1.99	0.43
2:I:1413:A:H2'	2:I:1414:C:C6	2.52	0.43
2:I:1440:U:H2'	2:I:1441:G:C8	2.53	0.43
2:I:1710:G:H4'	2:I:2858:C:O2	2.19	0.43
2:I:2114:A:H62	2:I:2119:A:H62	1.66	0.43
13:A:49:G:H2'	13:A:50:C:C6	2.53	0.43
16:F:28:ILE:HG13	16:F:30:THR:H	1.83	0.43
17:G:93:ARG:HB2	17:G:128:TYR:HB2	2.00	0.43
23:P:15:LEU:C	23:P:15:LEU:HD23	2.43	0.43
24:R:35:ARG:HG3	24:R:40:HIS:CE1	2.52	0.43
46:q:66:GLU:HB3	51:v:99:ALA:HB2	1.99	0.43
1:C:35:G:H2'	1:C:36:C:H6	1.81	0.43
1:C:552:U:H2'	1:C:553:A:H8	1.84	0.43
1:C:1001:C:H2'	1:C:1002:G:C8	2.53	0.43
1:C:1010:U:H2'	1:C:1011:C:H6	1.84	0.43
1:C:1097:C:H2'	1:C:1098:C:H6	1.83	0.43
1:C:1526:G:H2'	1:C:1527:U:H6	1.83	0.43
2:I:216:A:C8	2:I:432:A:N6	2.87	0.43
2:I:547:A:O3'	2:I:548:G:H2'	2.18	0.43
2:I:933:A:H5'	2:I:934:U:OP2	2.18	0.43
2:I:1429:G:H2'	2:I:1430:G:C8	2.53	0.43
2:I:2545:G:H2'	2:I:2546:U:O4'	2.18	0.43
2:I:2896:C:H2'	2:I:2897:U:C6	2.52	0.43
17:G:16:ILE:HD11	17:G:38:VAL:HB	2.01	0.43
22:O:16:ASP:OD1	22:O:27:LYS:HB3	2.18	0.43
22:O:117:LEU:HD11	22:O:123:ALA:HB2	2.00	0.43
27:W:26:LEU:HD23	27:W:39:VAL:HG22	1.99	0.43
31:a:24:ILE:HD12	31:a:32:ALA:HB1	2.00	0.43
1:C:160:A:H2'	1:C:161:A:O4'	2.18	0.43
1:C:213:G:N3	1:C:213:G:H2'	2.33	0.43
1:C:253:A:H2'	1:C:254:G:C8	2.53	0.43
2:I:228:C:H4'	2:I:229:C:H5"	1.99	0.43
2:I:1319:C:O2'	2:I:1320:C:H5'	2.18	0.43
2:I:2193:G:H2'	2:I:2194:U:H6	1.83	0.43
2:I:2445:2MG:P	20:M:69:ARG:HH22	2.41	0.43
4:L:98:VAL:HG12	4:L:180:VAL:HG13	2.00	0.43
25:S:63:VAL:HG12	25:S:107:LEU:HD21	2.00	0.43
50:u:83:LEU:HD12	50:u:83:LEU:HA	1.80	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:161:A:H2'	1:C:162:A:C8	2.54	0.43
1:C:600:A:H2'	1:C:601:G:H8	1.84	0.43
1:C:922:G:H2'	1:C:923:A:C8	2.53	0.43
2:I:1067:A:H2	2:I:1095:A:N3	2.16	0.43
2:I:1179:G:H3'	2:I:1180:U:H4'	2.00	0.43
2:I:1614:A:C2	31:a:93:ALA:HB2	2.54	0.43
2:I:1685:C:H2'	2:I:1686:C:H6	1.83	0.43
3:K:205:LEU:HB3	3:K:210:ALA:HB3	2.00	0.43
5:Q:34:LEU:HD13	5:Q:34:LEU:HA	1.88	0.43
14:D:45:LYS:O	14:D:48:PRO:HD2	2.19	0.43
18:H:35:LYS:HB3	18:H:35:LYS:NZ	2.34	0.43
1:C:235:C:H2'	1:C:236:A:H8	1.82	0.43
1:C:1113:C:H2'	1:C:1114:C:C6	2.53	0.43
1:C:1282:C:H2'	1:C:1283:U:C6	2.54	0.43
2:I:1055:G:H3'	2:I:1056:G:H8	1.84	0.43
2:I:1433:A:H2'	2:I:1434:A:O4'	2.19	0.43
2:I:2161:C:H2'	58:I:3201:HOH:O	2.17	0.43
6:U:2:LEU:HG	6:U:69:PRO:HD2	2.00	0.43
17:G:137:VAL:C	17:G:139:ALA:H	2.25	0.43
23:P:141:LYS:HE2	23:P:141:LYS:HB2	1.63	0.43
25:S:79:PHE:CD2	28:X:70:VAL:HG22	2.54	0.43
30:Z:40:MET:HA	30:Z:48:LYS:O	2.17	0.43
44:o:26:THR:HG23	44:o:60:GLU:HB2	2.01	0.43
1:C:846:G:H2'	1:C:847:G:H8	1.84	0.43
1:C:1327:C:H2'	1:C:1328:C:H6	1.84	0.43
2:I:576:U:H2'	2:I:577:G:C8	2.53	0.43
2:I:1360:G:N7	2:I:1361:G:C8	2.87	0.43
2:I:1839:G:C2	2:I:1840:G:C8	3.06	0.43
2:I:2467:C:H2'	2:I:2468:A:O4'	2.19	0.43
7:V:103:ARG:HB2	7:V:110:MET:HE3	2.01	0.43
14:D:163:VAL:HG21	14:D:173:ILE:CD1	2.49	0.43
19:J:46:A:C5	19:J:47:C:C5	3.07	0.43
24:R:81:ILE:H	24:R:81:ILE:HG13	1.50	0.43
26:T:2:ARG:HD3	26:T:2:ARG:HA	1.70	0.43
28:X:44:GLU:OE1	28:X:87:LYS:HG3	2.18	0.43
47:r:23:ILE:HG13	47:r:96:THR:OG1	2.19	0.43
2:I:1175:A:H5"	2:I:1176:U:C6	2.53	0.43
20:M:73:ILE:HG13	20:M:78:TRP:CZ3	2.53	0.43
24:R:31:GLU:HG2	24:R:142:ILE:HD12	2.01	0.43
25:S:7:MET:HE3	25:S:7:MET:HB3	1.92	0.43
1:C:202:G:H21	1:C:466:A:H61	1.65	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1004:A:C6	1:C:1026:G:H1'	2.54	0.43
1:C:1391:U:H2'	1:C:1392:G:C8	2.53	0.43
2:I:419:U:H2'	2:I:420:C:C6	2.54	0.43
2:I:988:A:P	38:h:12:SER:HB3	2.58	0.43
2:I:1224:U:H2'	2:I:1225:G:C8	2.53	0.43
2:I:2313:C:H2'	2:I:2314:A:H8	1.83	0.43
2:I:2377:A:H2'	2:I:2378:A:C8	2.54	0.43
2:I:2589:A:H2'	2:I:2590:A:C8	2.54	0.43
15:E:153:VAL:HG13	15:E:198:VAL:HG22	2.01	0.43
17:G:50:TYR:N	17:G:66:LYS:HE2	2.34	0.43
20:M:40:ARG:HE	20:M:92:HIS:CG	2.36	0.43
22:O:29:LYS:HE3	22:O:29:LYS:HB3	1.86	0.43
27:W:62:LEU:HD11	27:W:70:ALA:HB2	1.99	0.43
31:a:46:LEU:O	31:a:50:VAL:HG23	2.19	0.43
32:b:30:ILE:HD12	32:b:31:VAL:N	2.34	0.43
34:d:76:ASP:C	34:d:76:ASP:OD1	2.61	0.43
36:f:39:TRP:HB2	36:f:46:PHE:CE2	2.54	0.43
37:g:22:LEU:HD23	37:g:22:LEU:HA	1.84	0.43
39:i:32:LYS:HG3	39:i:33:THR:HG23	1.99	0.43
1:C:686:U:O4	1:C:703:G:H1'	2.19	0.43
1:C:1055:A:C6	1:C:1206:G:C5	3.07	0.43
1:C:1072:G:H21	14:D:106:THR:HG21	1.84	0.43
1:C:1162:C:H2'	1:C:1163:A:H8	1.83	0.43
1:C:1236:A:H2'	1:C:1237:C:C6	2.53	0.43
1:C:1412:C:H2'	1:C:1413:A:H8	1.84	0.43
2:I:413:C:H2'	2:I:414:C:H6	1.84	0.43
2:I:910:A:H2'	2:I:911:A:C8	2.54	0.43
2:I:1172:C:H2'	2:I:1173:U:O4'	2.18	0.43
2:I:1591:A:H2'	2:I:1592:C:C6	2.53	0.43
2:I:2304:G:H22	2:I:2312:U:H3	1.66	0.43
2:I:2898:U:H2'	2:I:2899:A:C8	2.53	0.43
3:K:39:LYS:HE3	3:K:39:LYS:HB2	1.73	0.43
3:K:246:THR:HG23	3:K:250:VAL:O	2.18	0.43
14:D:111:ILE:HD12	14:D:148:LEU:HD23	2.01	0.43
14:D:206:ALA:O	14:D:210:VAL:HG23	2.19	0.43
24:R:65:THR:O	24:R:68:LYS:HG2	2.19	0.43
25:S:20:MET:HE2	25:S:20:MET:HB3	1.88	0.43
27:W:62:LEU:HD21	27:W:70:ALA:HA	2.00	0.43
31:a:24:ILE:HD13	31:a:24:ILE:HA	1.91	0.43
46:q:22:THR:HA	46:q:25:ILE:HG22	2.00	0.43
1:C:123:U:H2'	1:C:124:C:H6	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:642:A:C5	44:o:107:SER:HA	2.53	0.42
1:C:1386:G:H2'	1:C:1387:G:H8	1.84	0.42
2:I:166:U:H2'	2:I:167:A:C8	2.54	0.42
2:I:955:PSU:OP1	6:U:86:LYS:HE2	2.19	0.42
2:I:1454:C:O4'	7:V:63:ARG:HD2	2.19	0.42
2:I:1800:C:OP1	3:K:263:THR:HG21	2.19	0.42
19:J:28:C:H2'	19:J:29:A:C8	2.54	0.42
20:M:130:LYS:HE2	20:M:130:LYS:HB3	1.67	0.42
21:N:111:ILE:HB	21:N:114:PHE:HB2	1.99	0.42
47:r:18:ASP:C	47:r:18:ASP:OD1	2.62	0.42
1:C:337:G:H2'	1:C:338:A:H8	1.82	0.42
1:C:1494:G:H2'	1:C:1495:U:H6	1.84	0.42
2:I:24:G:H2'	2:I:25:U:C6	2.53	0.42
3:K:161:TYR:HB3	3:K:194:GLU:HB3	2.01	0.42
8:m:19:ARG:HD2	8:m:24:ARG:HD2	2.01	0.42
16:F:150:LYS:HB2	16:F:150:LYS:HE2	1.79	0.42
21:N:9:LYS:HE2	21:N:9:LYS:HB2	1.57	0.42
33:c:89:ASP:OD1	33:c:89:ASP:N	2.52	0.42
36:f:56:MET:HE2	36:f:56:MET:HB2	1.75	0.42
37:g:9:LYS:HE3	37:g:9:LYS:HB2	1.75	0.42
37:g:19:LEU:HA	37:g:19:LEU:HD23	1.80	0.42
49:t:27:CYS:SG	49:t:30:LYS:HD3	2.59	0.42
1:C:144:G:H2'	1:C:145:G:C8	2.54	0.42
1:C:358:U:H2'	1:C:359:G:C8	2.53	0.42
1:C:562:U:H1'	49:t:12:ARG:HB3	2.02	0.42
2:I:184:C:H2'	2:I:185:G:C8	2.54	0.42
2:I:1703:G:H2'	2:I:1704:C:C6	2.55	0.42
8:m:16:ILE:HG13	8:m:25:VAL:HG12	2.00	0.42
11:3:49:LYS:HB3	11:3:49:LYS:NZ	2.33	0.42
13:A:61:C:H2'	13:A:62:C:C6	2.55	0.42
22:O:56:ASP:OD1	22:O:56:ASP:N	2.51	0.42
23:P:5:LEU:HD21	23:P:12:LEU:HD23	2.00	0.42
26:T:1:MET:O	26:T:2:ARG:HD3	2.18	0.42
33:c:37:GLU:O	33:c:39:ILE:HG13	2.18	0.42
38:h:23:THR:HG23	38:h:47:MET:HG2	2.00	0.42
43:n:66:LEU:O	43:n:70:ARG:HB2	2.19	0.42
44:o:112:THR:HG22	44:o:114:ARG:H	1.85	0.42
1:C:1402:C:H2'	1:C:1403:C:O4'	2.19	0.42
2:I:841:G:H2'	2:I:842:U:C6	2.54	0.42
2:I:1100:C:H2'	2:I:1101:U:O4'	2.20	0.42
2:I:2450:A:O2'	13:A:76:A:N1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:U:53:MET:O	6:U:57:VAL:HG22	2.19	0.42
7:V:90:ARG:HA	7:V:90:ARG:HD2	1.75	0.42
24:R:92:MET:HE3	24:R:92:MET:HB3	1.87	0.42
25:S:59:LYS:HD3	25:S:92:GLU:OE2	2.19	0.42
27:W:5:SER:O	27:W:8:ILE:HD12	2.20	0.42
28:X:40:LEU:HD23	28:X:40:LEU:HA	1.91	0.42
32:b:40:LYS:HE3	32:b:40:LYS:HB2	1.78	0.42
33:c:33:LYS:HE2	33:c:33:LYS:HB3	1.72	0.42
1:C:1:A:H2'	1:C:2:A:C8	2.54	0.42
1:C:87:C:H2'	1:C:88:U:C6	2.55	0.42
1:C:131:A:H2'	1:C:132:C:H6	1.85	0.42
2:I:244:A:H2'	2:I:245:G:O4'	2.20	0.42
2:I:315:G:H2'	2:I:316:C:C6	2.54	0.42
2:I:764:A:H5"	3:K:209:GLY:HA2	2.01	0.42
2:I:892:A:H2'	2:I:893:C:C6	2.54	0.42
2:I:1114:C:H2'	2:I:1115:G:C8	2.54	0.42
10:2:54:MET:O	10:2:57:ILE:HG13	2.20	0.42
17:G:105:ILE:HD11	17:G:120:VAL:O	2.20	0.42
29:Y:62:ILE:CD1	29:Y:92:ARG:HD2	2.49	0.42
43:n:57:SER:HB3	43:n:60:GLU:OE1	2.19	0.42
49:t:3:THR:HB	49:t:6:GLN:HG3	2.00	0.42
1:C:115:G:H4'	1:C:116:A:O5'	2.19	0.42
2:I:4:U:H2'	2:I:5:A:C8	2.55	0.42
2:I:1526:C:H2'	2:I:1527:G:O4'	2.19	0.42
2:I:1539:U:H2'	2:I:1540:G:H8	1.84	0.42
2:I:1819:A:H5"	3:K:160:THR:HG21	2.02	0.42
2:I:2029:G:H2'	2:I:2031:A:OP1	2.20	0.42
2:I:2131:U:H5'	2:I:2132:U:O5'	2.20	0.42
4:L:1:MET:HB3	4:L:205:PRO:HG2	2.01	0.42
10:2:67:ILE:HB	10:2:71:LYS:HD3	2.00	0.42
17:G:48:PHE:CZ	17:G:138:ARG:HG2	2.55	0.42
22:O:84:THR:HA	22:O:133:LEU:O	2.20	0.42
25:S:17:ARG:CD	25:S:47:ILE:HG23	2.50	0.42
34:d:43:ASP:C	34:d:43:ASP:OD1	2.63	0.42
45:p:97:GLU:O	45:p:100:LYS:HD2	2.19	0.42
1:C:486:U:H2'	1:C:487:A:C8	2.55	0.42
1:C:1028:C:H2'	1:C:1029:U:C6	2.54	0.42
1:C:1122:U:H2'	1:C:1123:U:C6	2.55	0.42
1:C:1367:C:H4'	46:q:50:THR:HG21	2.00	0.42
1:C:1526:G:H2'	1:C:1527:U:C6	2.54	0.42
2:I:1179:G:C5	2:I:1180:U:H1'	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:1360:G:C8	2:I:1361:G:C8	3.08	0.42
2:I:1539:U:H2'	2:I:1540:G:C8	2.54	0.42
2:I:2193:G:H2'	2:I:2194:U:C6	2.54	0.42
2:I:2298:A:H2'	2:I:2299:U:O4'	2.20	0.42
2:I:2687:U:H2'	2:I:2688:G:O4'	2.19	0.42
2:I:2895:G:H2'	2:I:2896:C:C6	2.55	0.42
3:K:76:ALA:HB2	3:K:96:TYR:CD1	2.55	0.42
6:U:59:ARG:HD2	6:U:59:ARG:N	2.34	0.42
7:V:79:LEU:HD23	7:V:83:LEU:HD12	2.00	0.42
14:D:50:PHE:O	14:D:54:LEU:HD23	2.19	0.42
24:R:26:GLY:O	24:R:30:THR:HG23	2.20	0.42
27:W:81:ARG:O	27:W:84:GLU:HG2	2.20	0.42
37:g:53:VAL:O	37:g:56:LEU:HD12	2.20	0.42
43:n:33:ASP:HB3	43:n:35:LYS:HD2	2.01	0.42
44:o:14:ILE:HD13	44:o:63:LEU:HD21	2.02	0.42
44:o:64:LYS:HG3	44:o:71:VAL:HG21	2.01	0.42
47:r:52:PHE:O	47:r:53:ARG:HD2	2.18	0.42
1:C:73:C:C2	1:C:74:A:C8	3.08	0.42
1:C:1009:U:H2'	1:C:1010:U:C6	2.55	0.42
1:C:1096:C:H2'	1:C:1097:C:H6	1.85	0.42
1:C:1254:A:H2'	1:C:1255:G:C8	2.54	0.42
2:I:279:A:N6	2:I:361:G:H1'	2.34	0.42
2:I:1881:C:H2'	2:I:1882:U:O4'	2.19	0.42
2:I:1882:U:H2'	2:I:1883:U:H6	1.84	0.42
2:I:2292:U:H2'	2:I:2293:G:H8	1.85	0.42
2:I:2803:G:H2'	2:I:2804:U:H6	1.84	0.42
13:A:23:A:H3'	13:A:24:G:H8	1.84	0.42
16:F:191:LEU:HD23	16:F:191:LEU:H	1.85	0.42
16:F:197:GLU:HA	16:F:200:ILE:HD12	2.01	0.42
43:n:23:LEU:HD12	43:n:23:LEU:HA	1.88	0.42
50:u:90:ARG:HD2	50:u:90:ARG:HA	1.87	0.42
54:y:68:SER:OG	54:y:71:LYS:HB3	2.19	0.42
1:C:408:A:H2'	1:C:409:U:C6	2.55	0.42
1:C:714:G:H2'	1:C:715:A:H8	1.83	0.42
1:C:1118:U:H2'	1:C:1119:C:H6	1.85	0.42
1:C:1305:G:HO2'	1:C:1306:A:H8	1.64	0.42
2:I:2649:C:H2'	2:I:2650:U:C6	2.54	0.42
2:I:2838:G:C4	2:I:2839:G:C8	3.07	0.42
4:L:181:ASP:HB3	4:L:186:LEU:HB2	2.01	0.42
13:A:17:U:O4	13:A:55:U:H1'	2.20	0.42
17:G:85:VAL:HG11	17:G:147:MET:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:O:60:ASP:OD1	22:O:60:ASP:N	2.52	0.42
24:R:36:LEU:O	24:R:51:GLY:HA3	2.19	0.42
27:W:24:THR:HG23	27:W:41:ALA:HA	2.00	0.42
46:q:42:LEU:HB2	46:q:71:LEU:HB3	2.02	0.42
46:q:76:ILE:HD13	46:q:76:ILE:HA	1.86	0.42
51:v:21:PHE:CD2	51:v:57:PRO:HD3	2.55	0.42
51:v:27:LEU:O	51:v:31:ILE:HG23	2.19	0.42
1:C:25:C:H2'	1:C:26:A:C8	2.55	0.42
1:C:110:C:C2	1:C:111:G:C8	3.08	0.42
1:C:123:U:H2'	1:C:124:C:C6	2.54	0.42
1:C:1263:C:H2'	1:C:1264:U:H6	1.84	0.42
1:C:1534:A:H62	1:C:1537:U:H5	1.67	0.42
2:I:143:C:H2'	2:I:144:A:C8	2.55	0.42
2:I:1361:G:H2'	2:I:1362:C:H6	1.85	0.42
2:I:2011:U:H2'	2:I:2012:G:O4'	2.19	0.42
6:U:50:ARG:O	6:U:54:THR:HG23	2.20	0.42
10:2:28:MET:HE1	10:2:67:ILE:HG21	2.00	0.42
11:3:12:PHE:CD1	47:r:107:ILE:HD11	2.55	0.42
13:A:16:U:H6	13:A:16:U:H2'	1.68	0.42
16:F:19:LEU:HB3	16:F:64:ILE:HG12	2.00	0.42
22:O:103:ILE:HG22	22:O:105:LEU:HG	2.02	0.42
29:Y:61:TRP:CZ3	29:Y:93:LYS:HB2	2.55	0.42
31:a:2:GLU:HG2	31:a:108:SER:HB2	2.01	0.42
31:a:20:VAL:HG11	31:a:44:ALA:HA	2.01	0.42
1:C:376:G:H5"	53:x:5:ARG:HB2	2.02	0.41
1:C:1163:A:H2'	1:C:1164:G:C8	2.54	0.41
1:C:1410:A:H2'	1:C:1411:C:C6	2.55	0.41
2:I:322:A:OP1	20:M:162:ARG:HG2	2.20	0.41
2:I:361:G:H8	2:I:361:G:OP2	2.02	0.41
2:I:813:U:H2'	2:I:814:C:H6	1.85	0.41
2:I:2134:A:N6	2:I:2156:G:H2'	2.35	0.41
10:2:69:LYS:HB2	10:2:69:LYS:HE2	1.85	0.41
14:D:115:LYS:O	14:D:118:GLU:HG3	2.20	0.41
18:H:51:ILE:O	18:H:54:LEU:HB3	2.20	0.41
22:O:35:ARG:NE	22:O:71:LEU:HD21	2.34	0.41
31:a:88:ARG:HD2	31:a:88:ARG:HA	1.85	0.41
45:p:119:ARG:HD2	45:p:123:ARG:HG3	2.02	0.41
46:q:53:ILE:HD11	51:v:85:ARG:CZ	2.50	0.41
47:r:22:HIS:HB2	47:r:33:THR:HG23	2.01	0.41
47:r:36:ASP:OD2	47:r:40:ASN:HB2	2.20	0.41
49:t:90:LEU:H	49:t:90:LEU:HD12	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:u:95:LEU:HD23	50:u:95:LEU:HA	1.89	0.41
51:v:65:ARG:HG2	51:v:78:GLY:O	2.19	0.41
1:C:381:C:H2'	1:C:382:A:O4'	2.20	0.41
1:C:1157:A:C2	1:C:1181:G:C4	3.08	0.41
2:I:181:A:H1'	2:I:435:C:H5'	2.03	0.41
2:I:279:A:C2	2:I:362:A:H4'	2.55	0.41
2:I:579:G:H2'	2:I:580:U:C6	2.55	0.41
2:I:1830:C:H2'	2:I:1831:G:H8	1.85	0.41
2:I:2804:U:H2'	2:I:2805:C:H6	1.85	0.41
3:K:63:ARG:H	3:K:63:ARG:HG2	1.79	0.41
3:K:240:PHE:O	3:K:242:LYS:HG2	2.19	0.41
4:L:11:MET:HG3	4:L:24:VAL:O	2.19	0.41
14:D:49:MET:H	14:D:49:MET:HG2	1.53	0.41
16:F:35:GLU:HG2	16:F:36:GLN:HG2	2.02	0.41
17:G:14:LYS:HB2	17:G:14:LYS:HE3	1.76	0.41
19:J:114:C:H2'	19:J:115:A:C8	2.55	0.41
24:R:28:LEU:HD12	24:R:142:ILE:HG21	2.01	0.41
26:T:102:GLY:N	26:T:105:ILE:HD13	2.35	0.41
38:h:11:ARG:HB2	38:h:54:MET:HG3	2.01	0.41
46:q:24:GLU:C	46:q:24:GLU:OE1	2.64	0.41
49:t:41:THR:HA	49:t:42:PRO:HD3	1.94	0.41
1:C:547:A:H4'	1:C:548:G:O5'	2.20	0.41
1:C:1072:G:H2'	1:C:1073:U:C6	2.55	0.41
1:C:1088:G:H21	1:C:1167:A:N6	2.11	0.41
1:C:1096:C:H2'	1:C:1097:C:C6	2.56	0.41
1:C:1410:A:H2'	1:C:1411:C:H6	1.84	0.41
1:C:1499:A:H2'	1:C:1500:A:H8	1.84	0.41
2:I:151:C:H2'	2:I:152:A:H8	1.85	0.41
2:I:544:C:H2'	2:I:545:U:C6	2.55	0.41
2:I:1645:G:H5"	2:I:1646:C:H5'	2.02	0.41
2:I:1656:C:H2'	2:I:1657:U:H6	1.85	0.41
2:I:2127:G:H2'	2:I:2128:G:C8	2.50	0.41
2:I:2364:C:OP1	35:e:55:ARG:HD3	2.20	0.41
2:I:2529:G:H5'	22:O:175:LYS:HB3	2.02	0.41
2:I:2626:C:H2'	2:I:2627:G:C8	2.56	0.41
2:I:2847:U:H2'	2:I:2848:G:O4'	2.20	0.41
17:G:48:PHE:CE1	17:G:138:ARG:HG2	2.55	0.41
19:J:94:A:OP1	34:d:19:ARG:HD3	2.20	0.41
20:M:138:LEU:HD23	20:M:138:LEU:HA	1.89	0.41
27:W:69:ASP:OD1	27:W:69:ASP:N	2.51	0.41
29:Y:15:LYS:HE3	29:Y:15:LYS:HB3	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:a:17:VAL:HB	31:a:76:VAL:HG11	2.03	0.41
54:y:4:LYS:HE2	54:y:4:LYS:HB3	1.92	0.41
55:z:54:GLN:O	55:z:57:ARG:HG2	2.20	0.41
1:C:1114:C:H2'	1:C:1115:U:C6	2.55	0.41
2:I:308:G:H2'	2:I:309:A:C8	2.55	0.41
2:I:744:U:H2'	2:I:745:1MG:O4'	2.20	0.41
2:I:1428:C:C5	2:I:1569:A:H5"	2.55	0.41
2:I:1441:G:H2'	2:I:1442:U:H6	1.86	0.41
2:I:2065:C:H2'	2:I:2066:C:H6	1.84	0.41
2:I:2815:C:H2'	2:I:2816:G:H8	1.85	0.41
13:A:44:U:O2	13:A:44:U:C2'	2.68	0.41
16:F:91:LEU:HD23	16:F:91:LEU:HA	1.84	0.41
16:F:156:LYS:HD2	16:F:156:LYS:HA	1.86	0.41
17:G:13:GLU:HG2	17:G:39:VAL:HG22	2.01	0.41
24:R:9:GLU:H	24:R:9:GLU:HG3	1.64	0.41
51:v:6:MET:O	51:v:10:GLU:HG2	2.20	0.41
1:C:444:G:C6	1:C:491:G:C6	3.08	0.41
1:C:958:A:C5	9:1:55:ARG:HD2	2.55	0.41
1:C:1040:U:H2'	1:C:1041:G:H8	1.86	0.41
1:C:1123:U:O2'	1:C:1124:G:H5'	2.21	0.41
1:C:1170:A:H2'	1:C:1171:A:O4'	2.20	0.41
2:I:166:U:H2'	2:I:167:A:H8	1.85	0.41
10:2:79:LEU:HD13	10:2:79:LEU:HA	1.90	0.41
14:D:214:LEU:HA	14:D:217:VAL:HG22	2.02	0.41
15:E:42:TYR:OH	15:E:90:VAL:HG21	2.20	0.41
16:F:157:ALA:O	16:F:161:LEU:HG	2.21	0.41
26:T:76:GLU:C	26:T:77:ILE:HD12	2.45	0.41
46:q:19:ASP:N	46:q:19:ASP:OD1	2.53	0.41
49:t:83:ARG:HB2	49:t:98:VAL:HG23	2.02	0.41
50:u:33:ILE:HD13	50:u:33:ILE:HA	1.92	0.41
51:v:48:LEU:HD12	51:v:48:LEU:O	2.21	0.41
1:C:21:G:H2'	1:C:22:G:C8	2.56	0.41
1:C:57:G:H2'	1:C:58:C:C6	2.56	0.41
1:C:186:C:H2'	1:C:187:G:O4'	2.20	0.41
1:C:404:G:N7	16:F:2:ALA:HB3	2.34	0.41
1:C:470:C:H2'	1:C:471:U:H6	1.85	0.41
2:I:2030:6MZ:C2	2:I:2499:C:H5"	2.50	0.41
2:I:2512:C:H2'	2:I:2513:A:O4'	2.21	0.41
23:P:42:LYS:NZ	23:P:46:PHE:HB2	2.35	0.41
28:X:78:SER:O	28:X:81:VAL:HG22	2.20	0.41
29:Y:88:VAL:HG12	29:Y:90:ILE:HG13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
44:o:94:LYS:HE2	44:o:94:LYS:HB3	1.82	0.41
46:q:11:LYS:HG2	46:q:69:THR:HG22	2.02	0.41
47:r:20:VAL:HG13	47:r:83:GLU:HB3	2.03	0.41
51:v:10:GLU:HG3	51:v:63:ARG:HD2	2.03	0.41
55:z:72:ASP:OD1	55:z:72:ASP:N	2.51	0.41
1:C:436:C:H2'	1:C:437:U:C6	2.56	0.41
1:C:674:G:N2	47:r:118:HIS:HB2	2.35	0.41
1:C:728:A:N7	52:w:54:ARG:HD2	2.36	0.41
1:C:1155:A:H2'	1:C:1156:G:O4'	2.21	0.41
1:C:1166:G:C6	1:C:1168:U:H5"	2.55	0.41
2:I:589:U:H2'	2:I:590:A:H8	1.86	0.41
2:I:608:A:H2'	2:I:609:A:H8	1.86	0.41
2:I:1405:U:H2'	2:I:1406:U:H6	1.83	0.41
2:I:1880:U:H2'	2:I:1881:C:C6	2.56	0.41
2:I:2625:G:H2'	2:I:2626:C:C6	2.54	0.41
2:I:2648:G:H2'	2:I:2649:C:C6	2.56	0.41
2:I:2812:G:H2'	2:I:2813:A:C8	2.56	0.41
3:K:255:LYS:HB2	3:K:255:LYS:HE2	1.87	0.41
7:V:95:THR:HG22	7:V:115:LEU:HD23	2.03	0.41
13:A:14:A:H61	13:A:21:A:H1'	1.86	0.41
15:E:12:LEU:HD13	15:E:18:TRP:NE1	2.36	0.41
18:H:36:ILE:HD13	18:H:64:VAL:HG12	2.02	0.41
29:Y:52:GLN:O	29:Y:56:GLN:HG3	2.20	0.41
47:r:22:HIS:NE2	47:r:85:MET:HE2	2.36	0.41
1:C:208:U:H1'	1:C:211:G:O6	2.20	0.41
1:C:263:A:H2'	1:C:264:C:C5	2.56	0.41
1:C:769:G:H4'	1:C:1513:A:H4'	2.03	0.41
1:C:1064:G:H1'	1:C:1190:G:N2	2.35	0.41
2:I:196:A:H5"	26:T:47:ARG:HH21	1.86	0.41
2:I:1182:G:H2'	2:I:1183:U:O4'	2.21	0.41
2:I:1309:G:H4'	41:k:7:PRO:HB2	2.01	0.41
2:I:1774:C:O2	2:I:1774:C:H2'	2.21	0.41
2:I:1923:U:H2'	2:I:1924:C:C6	2.56	0.41
17:G:112:ARG:HB3	17:G:116:GLU:OE2	2.21	0.41
24:R:114:LEU:HG	24:R:118:MET:HE3	2.03	0.41
40:j:5:ILE:HG13	40:j:28:ARG:NH2	2.24	0.41
50:u:81:MET:HG2	50:u:92:ARG:HG3	2.02	0.41
1:C:89:U:H2'	1:C:90:C:H6	1.83	0.41
1:C:212:G:H1'	1:C:213:G:C8	2.34	0.41
1:C:321:A:H2'	1:C:322:C:H6	1.85	0.41
1:C:707:U:H2'	1:C:708:C:C6	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:736:C:H2'	1:C:737:C:H6	1.84	0.41
1:C:1233:G:C5'	45:p:119:ARG:HH22	2.33	0.41
1:C:1297:G:H21	43:n:114:LYS:HB3	1.86	0.41
2:I:39:G:H2'	2:I:40:U:C6	2.56	0.41
2:I:156:A:H2'	2:I:157:C:C6	2.56	0.41
2:I:165:A:H2'	2:I:166:U:O4'	2.21	0.41
2:I:297:G:H2'	2:I:298:G:O4'	2.21	0.41
2:I:548:G:H4'	2:I:549:G:OP1	2.21	0.41
2:I:592:A:H2	42:l:4:ILE:HD11	1.85	0.41
2:I:910:A:H62	6:U:12:MET:HA	1.85	0.41
2:I:1196:C:H2'	2:I:1197:G:C8	2.56	0.41
2:I:1444:G:C4	2:I:1445:G:C8	3.09	0.41
2:I:2114:A:H62	2:I:2119:A:N6	2.19	0.41
2:I:2153:C:H2'	2:I:2154:A:C8	2.55	0.41
2:I:2632:A:H2'	2:I:2633:G:H8	1.86	0.41
6:U:76:LYS:HE2	6:U:76:LYS:HB2	1.94	0.41
10:2:44:LYS:HA	10:2:47:ALA:HB3	2.03	0.41
14:D:141:LEU:HD12	14:D:141:LEU:HA	1.90	0.41
15:E:23:PHE:HZ	46:q:11:LYS:HD2	1.86	0.41
15:E:138:VAL:HG23	15:E:149:ILE:HG23	2.03	0.41
20:M:149:ILE:HB	20:M:188:MET:HG2	2.02	0.41
22:O:44:LYS:HD3	22:O:44:LYS:HA	1.93	0.41
25:S:58:LEU:HD12	25:S:86:LEU:HD13	2.02	0.41
31:a:68:ASP:HB3	31:a:109:ASP:OD1	2.21	0.41
32:b:73:ARG:HE	32:b:73:ARG:HB3	1.70	0.41
37:g:2:LYS:O	37:g:5:GLU:HG3	2.21	0.41
38:h:12:SER:OG	38:h:14:ILE:HG12	2.21	0.41
43:n:49:THR:HA	43:n:52:GLN:HG3	2.03	0.41
49:t:37:VAL:HG11	49:t:72:HIS:HE1	1.85	0.41
1:C:184:G:H2'	1:C:185:U:C6	2.56	0.41
1:C:418:C:H2'	1:C:419:C:C6	2.56	0.41
1:C:695:A:H2'	1:C:696:A:H8	1.85	0.41
1:C:1028:C:C2	1:C:1034:G:C5	3.09	0.41
2:I:207:A:H2'	2:I:208:C:O4'	2.20	0.41
2:I:436:C:O2	2:I:436:C:H2'	2.22	0.41
2:I:533:G:H2'	2:I:534:U:C6	2.56	0.41
2:I:1383:A:H2'	2:I:1384:A:C8	2.55	0.41
2:I:2803:G:H2'	2:I:2804:U:C6	2.56	0.41
7:V:35:LYS:HD3	7:V:112:TYR:CZ	2.56	0.41
14:D:9:MET:HE2	14:D:9:MET:HA	2.01	0.41
14:D:13:GLY:C	14:D:15:HIS:H	2.29	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:D:184:PHE:CD1	14:D:184:PHE:N	2.88	0.41
16:F:77:LYS:HB2	16:F:77:LYS:HE2	1.83	0.41
16:F:170:TRP:CE2	16:F:186:PRO:HB3	2.56	0.41
16:F:171:LEU:HD23	16:F:182:PHE:HD1	1.86	0.41
17:G:108:GLY:O	17:G:111:MET:HB2	2.21	0.41
20:M:57:LYS:HG3	20:M:58:LYS:N	2.36	0.41
20:M:147:LEU:HD12	20:M:168:ASP:O	2.20	0.41
26:T:17:LYS:HD2	26:T:27:LEU:HD11	2.03	0.41
28:X:14:LYS:HB3	28:X:77:HIS:ND1	2.36	0.41
32:b:18:GLU:HG3	32:b:19:LYS:N	2.36	0.41
34:d:55:GLU:OE1	34:d:55:GLU:N	2.52	0.41
44:o:5:ASP:HB3	44:o:8:ALA:HB3	2.03	0.41
51:v:83:LYS:HA	51:v:83:LYS:HD3	1.59	0.41
1:C:72:A:N3	1:C:72:A:H2'	2.36	0.40
1:C:715:A:H2'	1:C:716:A:H8	1.86	0.40
1:C:923:A:H2'	1:C:924:C:C6	2.57	0.40
2:I:12:U:O2	2:I:2626:C:H4'	2.22	0.40
2:I:279:A:H2'	2:I:280:U:O4'	2.21	0.40
2:I:607:U:C5	2:I:620:G:C4	3.10	0.40
2:I:956:G:H5"	6:U:76:LYS:HE2	2.03	0.40
3:K:75:PRO:HB2	3:K:115:GLN:HE21	1.86	0.40
3:K:145:GLU:CD	3:K:189:ARG:H	2.29	0.40
5:Q:22:MET:HE3	21:N:105:THR:HB	2.03	0.40
10:2:27:MET:HB3	10:2:27:MET:HE3	1.84	0.40
14:D:146:ASN:OD1	14:D:146:ASN:C	2.63	0.40
15:E:86:LYS:O	15:E:90:VAL:HG22	2.20	0.40
20:M:118:LEU:HD11	20:M:188:MET:HE2	2.02	0.40
21:N:49:LEU:HD22	21:N:148:ARG:HH12	1.86	0.40
25:S:99:ILE:HD12	25:S:99:ILE:O	2.21	0.40
26:T:77:ILE:HD12	26:T:77:ILE:N	2.36	0.40
34:d:86:LEU:HD13	34:d:89:ILE:HD11	2.02	0.40
44:o:32:LEU:HD12	44:o:32:LEU:HA	1.83	0.40
45:p:54:LEU:HD13	45:p:54:LEU:HA	1.85	0.40
54:y:75:LEU:HD23	54:y:75:LEU:H	1.86	0.40
1:C:98:A:H2'	1:C:99:C:C6	2.56	0.40
1:C:190:A:H2'	1:C:191:G:O4'	2.21	0.40
1:C:476:U:H2'	1:C:477:C:C6	2.57	0.40
1:C:602:A:H2'	1:C:603:U:C6	2.57	0.40
2:I:450:G:H2'	2:I:451:U:H5"	2.03	0.40
2:I:2072:C:H2'	2:I:2073:C:H6	1.86	0.40
6:U:64:TRP:HB2	6:U:104:GLU:CB	2.49	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:J:113:C:H2'	19:J:114:C:C6	2.56	0.40
20:M:118:LEU:HD12	20:M:119:ILE:H	1.85	0.40
20:M:139:LYS:HB3	20:M:139:LYS:NZ	2.36	0.40
28:X:9:GLU:HB3	28:X:55:LEU:HB2	2.03	0.40
42:l:26:HIS:HB3	42:l:44:LEU:HD22	2.02	0.40
1:C:32:A:H2'	1:C:33:A:C8	2.57	0.40
1:C:265:G:N2	1:C:267:C:H5'	2.36	0.40
1:C:321:A:H2'	1:C:322:C:C6	2.55	0.40
1:C:747:A:H2'	1:C:748:G:C8	2.56	0.40
1:C:839:C:H2'	1:C:840:C:C6	2.56	0.40
1:C:1031:C:H4'	1:C:1032:G:C4	2.55	0.40
2:I:312:G:H4'	2:I:331:C:C2	2.57	0.40
2:I:1682:G:H2'	2:I:1683:U:H6	1.86	0.40
2:I:2639:A:H2'	2:I:2640:G:O4'	2.20	0.40
2:I:2798:U:H4'	2:I:2799:A:H5'	2.03	0.40
2:I:2818:U:H2'	2:I:2819:G:C8	2.57	0.40
2:I:2837:A:H2'	2:I:2838:G:H8	1.87	0.40
14:D:207:ILE:H	14:D:207:ILE:CD1	2.30	0.40
19:J:24:G:N7	19:J:56:G:H2'	2.36	0.40
50:u:27:LYS:HG3	50:u:31:LYS:HD3	2.03	0.40
2:I:52:A:H2'	2:I:53:A:H8	1.85	0.40
2:I:277:G:H1'	2:I:278:A:C6	2.55	0.40
2:I:577:G:H2'	2:I:578:G:C8	2.56	0.40
2:I:760:G:H2'	2:I:761:A:O4'	2.21	0.40
2:I:987:C:H2'	2:I:988:A:O4'	2.22	0.40
2:I:2333:A:H5'	2:I:2335:A:H1'	2.03	0.40
2:I:2552:OMU:H2'	2:I:2554:U:OP2	2.22	0.40
2:I:2632:A:H2'	2:I:2633:G:C8	2.57	0.40
2:I:2788:C:H2'	2:I:2789:C:H6	1.82	0.40
6:U:12:MET:HG2	6:U:72:PRO:HD2	2.03	0.40
7:V:24:MET:HG2	7:V:44:LEU:HD22	2.03	0.40
10:2:49:LYS:HB2	10:2:49:LYS:HE2	1.75	0.40
16:F:98:LEU:HD12	16:F:98:LEU:HA	1.88	0.40
18:H:4:TYR:CD2	18:H:71:ILE:HG13	2.56	0.40
18:H:66:ALA:HB1	18:H:70:VAL:HG21	2.03	0.40
19:J:22:U:H2'	19:J:23:G:C8	2.57	0.40
19:J:78:A:H2'	19:J:79:G:O4'	2.22	0.40
21:N:56:ASP:O	21:N:60:ILE:HG12	2.21	0.40
27:W:115:LEU:HA	27:W:115:LEU:HD12	1.84	0.40
37:g:14:LEU:HD23	37:g:14:LEU:HA	1.87	0.40
49:t:74:LEU:HD11	49:t:104:CYS:HB2	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
54:y:6:ARG:HD2	54:y:6:ARG:HA	1.72	0.40
1:C:459:A:C6	1:C:474:G:C6	3.09	0.40
1:C:954:G:H2'	1:C:955:U:C6	2.57	0.40
1:C:1074:G:H1'	14:D:103:ASN:HD22	1.86	0.40
1:C:1114:C:H2'	1:C:1115:U:H6	1.85	0.40
1:C:1206:G:H2'	1:C:1207:G:O4'	2.21	0.40
1:C:1463:U:C2	1:C:1464:U:C5	3.09	0.40
2:I:189:G:P	36:f:14:THR:HG21	2.60	0.40
2:I:210:C:H2'	2:I:211:C:H6	1.86	0.40
2:I:709:U:H2'	2:I:710:U:C6	2.56	0.40
2:I:1060:U:O4'	2:I:1062:G:H5'	2.22	0.40
2:I:1321:A:C4	2:I:1322:A:C8	3.10	0.40
2:I:2241:A:H2'	2:I:2242:G:C8	2.56	0.40
2:I:2731:G:O2'	2:I:2732:G:H5'	2.21	0.40
9:1:45:ILE:CD1	9:1:64:ASP:HA	2.52	0.40
14:D:114:LEU:O	14:D:118:GLU:HG2	2.21	0.40
17:G:97:GLN:HG2	17:G:124:LEU:HB2	2.03	0.40
23:P:88:GLY:O	23:P:125:THR:HB	2.22	0.40
27:W:99:TYR:O	27:W:104:GLN:HB2	2.21	0.40
43:n:101:MET:HE2	43:n:101:MET:HB2	1.85	0.40
44:o:29:SER:HB2	44:o:59:LEU:HB2	2.03	0.40
45:p:53:GLU:HA	45:p:57:MET:HE2	2.03	0.40
54:y:47:HIS:HE2	54:y:49:GLU:HG2	1.86	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	K	270/273 (99%)	259 (96%)	11 (4%)	0	100	100
4	L	207/209 (99%)	199 (96%)	8 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	Q	56/70 (80%)	52 (93%)	4 (7%)	0	100	100
6	U	133/136 (98%)	131 (98%)	2 (2%)	0	100	100
7	V	118/127 (93%)	112 (95%)	6 (5%)	0	100	100
8	m	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
9	1	77/92 (84%)	75 (97%)	2 (3%)	0	100	100
10	2	83/87 (95%)	80 (96%)	3 (4%)	0	100	100
11	3	68/71 (96%)	66 (97%)	2 (3%)	0	100	100
14	D	216/241 (90%)	203 (94%)	12 (6%)	1 (0%)	24	52
15	E	204/233 (88%)	192 (94%)	12 (6%)	0	100	100
16	F	203/206 (98%)	187 (92%)	15 (7%)	1 (0%)	24	52
17	G	148/167 (89%)	135 (91%)	12 (8%)	1 (1%)	18	44
18	H	98/135 (73%)	93 (95%)	5 (5%)	0	100	100
20	M	199/201 (99%)	191 (96%)	7 (4%)	1 (0%)	24	52
21	N	175/179 (98%)	167 (95%)	8 (5%)	0	100	100
22	O	174/177 (98%)	172 (99%)	2 (1%)	0	100	100
23	P	147/149 (99%)	142 (97%)	5 (3%)	0	100	100
24	R	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
25	S	120/123 (98%)	117 (98%)	3 (2%)	0	100	100
26	T	142/144 (99%)	135 (95%)	7 (5%)	0	100	100
27	W	114/117 (97%)	108 (95%)	5 (4%)	1 (1%)	14	37
28	X	112/115 (97%)	111 (99%)	1 (1%)	0	100	100
29	Y	115/118 (98%)	113 (98%)	2 (2%)	0	100	100
30	Z	101/103 (98%)	94 (93%)	7 (7%)	0	100	100
31	a	108/110 (98%)	105 (97%)	3 (3%)	0	100	100
32	b	91/100 (91%)	87 (96%)	4 (4%)	0	100	100
33	c	100/104 (96%)	96 (96%)	4 (4%)	0	100	100
34	d	92/94 (98%)	88 (96%)	4 (4%)	0	100	100
35	e	83/85 (98%)	79 (95%)	4 (5%)	0	100	100
36	f	75/78 (96%)	73 (97%)	2 (3%)	0	100	100
37	g	60/63 (95%)	59 (98%)	1 (2%)	0	100	100
38	h	56/59 (95%)	52 (93%)	4 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
39	i	54/57 (95%)	52 (96%)	2 (4%)	0	100	100
40	j	48/55 (87%)	44 (92%)	4 (8%)	0	100	100
41	k	44/46 (96%)	44 (100%)	0	0	100	100
42	l	62/65 (95%)	60 (97%)	2 (3%)	0	100	100
43	n	149/179 (83%)	146 (98%)	3 (2%)	0	100	100
44	o	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
45	p	125/130 (96%)	115 (92%)	9 (7%)	1 (1%)	16	40
46	q	96/103 (93%)	91 (95%)	4 (4%)	1 (1%)	12	35
47	r	115/129 (89%)	112 (97%)	3 (3%)	0	100	100
48	s	4/6 (67%)	1 (25%)	1 (25%)	2 (50%)	0	0
49	t	121/124 (98%)	117 (97%)	4 (3%)	0	100	100
50	u	113/118 (96%)	104 (92%)	9 (8%)	0	100	100
51	v	92/101 (91%)	89 (97%)	3 (3%)	0	100	100
52	w	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
53	x	80/82 (98%)	75 (94%)	5 (6%)	0	100	100
54	y	78/84 (93%)	75 (96%)	3 (4%)	0	100	100
55	z	53/75 (71%)	53 (100%)	0	0	100	100
All	All	5568/5919 (94%)	5326 (96%)	233 (4%)	9 (0%)	44	70

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
16	F	28	ILE
14	D	14	VAL
20	M	14	VAL
27	W	91	SER
45	p	55	VAL
46	q	57	VAL
48	s	2	ASN
48	s	3	THR
17	G	90	THR

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	K	217/218 (100%)	204 (94%)	13 (6%)	17	43
4	L	164/164 (100%)	151 (92%)	13 (8%)	11	31
5	Q	55/62 (89%)	53 (96%)	2 (4%)	31	63
6	U	108/108 (100%)	103 (95%)	5 (5%)	24	55
7	V	100/103 (97%)	95 (95%)	5 (5%)	22	51
8	m	34/34 (100%)	31 (91%)	3 (9%)	9	27
9	1	70/79 (89%)	66 (94%)	4 (6%)	18	46
10	2	65/66 (98%)	64 (98%)	1 (2%)	57	81
11	3	60/61 (98%)	53 (88%)	7 (12%)	5	15
14	D	180/199 (90%)	169 (94%)	11 (6%)	17	43
15	E	170/190 (90%)	164 (96%)	6 (4%)	32	64
16	F	172/173 (99%)	165 (96%)	7 (4%)	27	59
17	G	113/126 (90%)	103 (91%)	10 (9%)	9	27
18	H	87/116 (75%)	79 (91%)	8 (9%)	8	25
20	M	165/165 (100%)	155 (94%)	10 (6%)	17	43
21	N	148/150 (99%)	143 (97%)	5 (3%)	32	65
22	O	137/138 (99%)	132 (96%)	5 (4%)	31	63
23	P	114/114 (100%)	107 (94%)	7 (6%)	17	43
24	R	116/116 (100%)	111 (96%)	5 (4%)	26	57
25	S	103/104 (99%)	100 (97%)	3 (3%)	37	70
26	T	103/103 (100%)	97 (94%)	6 (6%)	18	45
27	W	86/87 (99%)	80 (93%)	6 (7%)	14	37
28	X	99/100 (99%)	94 (95%)	5 (5%)	21	50
29	Y	89/90 (99%)	84 (94%)	5 (6%)	19	46
30	Z	84/84 (100%)	80 (95%)	4 (5%)	23	53
31	a	93/93 (100%)	93 (100%)	0	100	100
32	b	80/84 (95%)	74 (92%)	6 (8%)	12	34
33	c	83/85 (98%)	78 (94%)	5 (6%)	17	43
34	d	78/78 (100%)	76 (97%)	2 (3%)	40	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
35	e	63/63 (100%)	55 (87%)	8 (13%)	4 13
36	f	67/68 (98%)	65 (97%)	2 (3%)	36 69
37	g	54/55 (98%)	52 (96%)	2 (4%)	30 62
38	h	48/49 (98%)	44 (92%)	4 (8%)	10 29
39	i	47/48 (98%)	45 (96%)	2 (4%)	26 57
40	j	45/49 (92%)	42 (93%)	3 (7%)	15 39
41	k	38/38 (100%)	35 (92%)	3 (8%)	11 31
42	l	51/52 (98%)	49 (96%)	2 (4%)	28 60
43	n	124/147 (84%)	116 (94%)	8 (6%)	15 40
44	o	104/105 (99%)	93 (89%)	11 (11%)	6 19
45	p	105/107 (98%)	102 (97%)	3 (3%)	37 70
46	q	86/90 (96%)	82 (95%)	4 (5%)	23 54
47	r	90/99 (91%)	86 (96%)	4 (4%)	25 56
48	s	5/5 (100%)	2 (40%)	3 (60%)	0 0
49	t	103/104 (99%)	94 (91%)	9 (9%)	9 27
50	u	93/96 (97%)	90 (97%)	3 (3%)	34 67
51	v	79/84 (94%)	76 (96%)	3 (4%)	29 61
52	w	75/77 (97%)	72 (96%)	3 (4%)	28 60
53	x	65/65 (100%)	56 (86%)	9 (14%)	3 11
54	y	74/78 (95%)	68 (92%)	6 (8%)	11 30
55	z	48/65 (74%)	47 (98%)	1 (2%)	47 76
All	All	4637/4834 (96%)	4375 (94%)	262 (6%)	20 46

All (262) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	K	16	VAL
3	K	28	LYS
3	K	53	HIS
3	K	63	ARG
3	K	120	VAL
3	K	137	VAL
3	K	162	VAL
3	K	204	VAL
3	K	219	THR

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Mol	Chain	Res	Type
3	K	250	VAL
3	K	252	THR
3	K	263	THR
3	K	268	VAL
4	L	2	ILE
4	L	5	VAL
4	L	13	ARG
4	L	21	SER
4	L	22	ILE
4	L	48	ILE
4	L	59	ARG
4	L	60	VAL
4	L	81	GLU
4	L	110	THR
4	L	151	THR
4	L	178	VAL
4	L	201	LEU
5	Q	21	VAL
5	Q	34	LEU
6	U	2	LEU
6	U	22	GLN
6	U	60	GLN
6	U	108	VAL
6	U	115	GLU
7	V	27	SER
7	V	56	LYS
7	V	82	GLU
7	V	114	GLU
7	V	118	ARG
8	m	7	VAL
8	m	22	VAL
8	m	25	VAL
9	1	13	LEU
9	1	37	ARG
9	1	39	THR
9	1	60	VAL
10	2	39	ILE
11	3	3	VAL
11	3	14	VAL
11	3	23	CYS
11	3	28	VAL
11	3	43	THR

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Mol	Chain	Res	Type
11	3	60	LEU
11	3	70	LEU
14	D	31	ILE
14	D	49	MET
14	D	66	LYS
14	D	113	ARG
14	D	145	GLU
14	D	151	ILE
14	D	161	LEU
14	D	171	ILE
14	D	183	VAL
14	D	196	VAL
14	D	199	VAL
15	E	10	ILE
15	E	39	VAL
15	E	149	ILE
15	E	165	THR
15	E	175	LEU
15	E	186	THR
16	F	5	LEU
16	F	25	VAL
16	F	68	LEU
16	F	132	ILE
16	F	154	ARG
16	F	160	GLU
16	F	190	ASP
17	G	30	ILE
17	G	34	THR
17	G	37	THR
17	G	56	VAL
17	G	76	LEU
17	G	96	MET
17	G	103	THR
17	G	106	ILE
17	G	114	VAL
17	G	117	VAL
18	H	1	MET
18	H	5	GLU
18	H	10	VAL
18	H	38	ARG
18	H	74	LEU
18	H	84	VAL

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Mol	Chain	Res	Type
18	H	90	MET
18	H	93	LYS
20	M	4	VAL
20	M	13	THR
20	M	30	GLN
20	M	109	LEU
20	M	111	GLU
20	M	146	VAL
20	M	152	GLU
20	M	175	ILE
20	M	187	VAL
20	M	197	GLU
21	N	25	VAL
21	N	28	VAL
21	N	36	LEU
21	N	158	THR
21	N	170	LEU
22	O	11	VAL
22	O	64	GLN
22	O	87	LEU
22	O	88	GLN
22	O	148	LEU
23	P	37	VAL
23	P	40	THR
23	P	45	GLU
23	P	54	LEU
23	P	130	VAL
23	P	138	VAL
23	P	147	VAL
24	R	43	GLU
24	R	81	ILE
24	R	95	ARG
24	R	131	ASN
24	R	136	GLN
25	S	5	GLN
25	S	76	VAL
25	S	92	GLU
26	T	17	LYS
26	T	76	GLU
26	T	82	LEU
26	T	85	VAL
26	T	105	ILE

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Mol	Chain	Res	Type
26	T	121	THR
27	W	19	GLN
27	W	28	VAL
27	W	35	ILE
27	W	47	VAL
27	W	54	VAL
27	W	62	LEU
28	X	9	GLU
28	X	10	GLN
28	X	27	GLU
28	X	32	VAL
28	X	89	ARG
29	Y	16	LYS
29	Y	17	ILE
29	Y	19	LYS
29	Y	31	VAL
29	Y	75	SER
30	Z	47	VAL
30	Z	68	ARG
30	Z	73	LYS
30	Z	97	LYS
32	b	15	HIS
32	b	17	SER
32	b	18	GLU
32	b	22	THR
32	b	57	VAL
32	b	86	THR
33	c	15	THR
33	c	28	VAL
33	c	60	GLU
33	c	67	VAL
33	c	103	ILE
34	d	59	GLU
34	d	61	LEU
35	e	1	MET
35	e	4	LYS
35	e	12	ASN
35	e	25	ARG
35	e	36	ILE
35	e	38	VAL
35	e	67	VAL
35	e	83	GLU

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Mol	Chain	Res	Type
36	f	25	THR
36	f	56	MET
37	g	50	VAL
37	g	60	LYS
38	h	4	THR
38	h	5	ILE
38	h	8	THR
38	h	37	GLU
39	i	23	THR
39	i	30	VAL
40	j	5	ILE
40	j	17	THR
40	j	48	ILE
41	k	14	ARG
41	k	25	LYS
41	k	28	ARG
42	l	16	LYS
42	l	45	ARG
43	n	4	ARG
43	n	13	LEU
43	n	27	VAL
43	n	75	VAL
43	n	109	ARG
43	n	133	THR
43	n	135	VAL
43	n	140	ASP
44	o	26	THR
44	o	52	GLU
44	o	74	SER
44	o	94	LYS
44	o	104	VAL
44	o	105	SER
44	o	107	SER
44	o	110	VAL
44	o	121	LEU
44	o	124	GLU
44	o	129	VAL
45	p	63	LEU
45	p	98	LEU
45	p	110	GLN
46	q	51	VAL
46	q	52	LEU

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Mol	Chain	Res	Type
46	q	92	LEU
46	q	96	VAL
47	r	58	SER
47	r	74	VAL
47	r	85	MET
47	r	96	THR
48	s	1	MET
48	s	2	ASN
48	s	5	ILE
49	t	16	VAL
49	t	27	CYS
49	t	35	THR
49	t	52	VAL
49	t	59	ASN
49	t	74	LEU
49	t	79	VAL
49	t	108	LYS
49	t	111	LYS
50	u	25	VAL
50	u	49	SER
50	u	89	LEU
51	v	11	VAL
51	v	50	THR
51	v	86	GLU
52	w	5	THR
52	w	58	ARG
52	w	88	ARG
53	x	3	THR
53	x	18	GLN
53	x	19	VAL
53	x	23	ASP
53	x	31	ARG
53	x	34	GLU
53	x	44	SER
53	x	50	THR
53	x	57	ILE
54	y	13	VAL
54	y	14	SER
54	y	29	VAL
54	y	42	THR
54	y	44	LEU
54	y	77	ARG

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Mol	Chain	Res	Type
55	z	43	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
3	K	46	ASN
4	L	150	GLN
5	Q	48	GLN
6	U	45	GLN
7	V	18	GLN
7	V	73	ASN
10	2	13	GLN
14	D	177	ASN
15	E	100	GLN
15	E	123	GLN
16	F	54	GLN
17	G	78	ASN
17	G	89	HIS
17	G	121	HIS
18	H	68	GLN
20	M	9	GLN
20	M	195	GLN
21	N	52	ASN
22	O	45	HIS
24	R	40	HIS
24	R	58	ASN
24	R	128	ASN
25	S	3	GLN
25	S	90	ASN
27	W	29	HIS
27	W	43	ASN
27	W	100	HIS
29	Y	59	GLN
29	Y	72	ASN
30	Z	89	HIS
37	g	25	GLN
37	g	27	ASN
37	g	41	HIS
38	h	49	ASN
43	n	9	GLN
49	t	73	ASN
52	w	40	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	C	1539/1542 (99%)	269 (17%)	11 (0%)
12	4	5/18 (27%)	0	0
13	A	75/76 (98%)	35 (46%)	3 (4%)
19	J	117/120 (97%)	16 (13%)	0
2	I	2896/2904 (99%)	478 (16%)	17 (0%)
All	All	4632/4660 (99%)	798 (17%)	31 (0%)

All (798) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	C	4	U
1	C	5	U
1	C	9	G
1	C	15	G
1	C	22	G
1	C	32	A
1	C	39	G
1	C	47	C
1	C	48	C
1	C	49	U
1	C	50	A
1	C	51	A
1	C	52	C
1	C	63	C
1	C	69	G
1	C	70	U
1	C	72	A
1	C	73	C
1	C	74	A
1	C	81	A
1	C	83	C
1	C	85	U
1	C	86	G
1	C	87	C
1	C	92	U
1	C	95	C
1	C	97	G
1	C	108	G
1	C	116	A
1	C	120	A
1	C	121	U

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Mol	Chain	Res	Type
1	C	131	A
1	C	141	G
1	C	143	A
1	C	144	G
1	C	149	A
1	C	151	A
1	C	159	G
1	C	163	C
1	C	164	G
1	C	168	G
1	C	175	C
1	C	181	A
1	C	182	A
1	C	183	C
1	C	189	A
1	C	197	A
1	C	207	C
1	C	209	U
1	C	210	C
1	C	211	G
1	C	212	G
1	C	213	G
1	C	240	G
1	C	245	U
1	C	247	G
1	C	251	G
1	C	258	G
1	C	266	G
1	C	267	C
1	C	269	C
1	C	280	C
1	C	289	G
1	C	306	A
1	C	319	G
1	C	321	A
1	C	328	C
1	C	329	A
1	C	330	C
1	C	332	G
1	C	351	G
1	C	352	C
1	C	354	G

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Mol	Chain	Res	Type
1	C	367	U
1	C	372	C
1	C	377	G
1	C	378	G
1	C	397	A
1	C	406	G
1	C	407	U
1	C	409	U
1	C	412	A
1	C	413	G
1	C	414	A
1	C	421	U
1	C	422	C
1	C	424	G
1	C	428	G
1	C	429	U
1	C	439	U
1	C	451	A
1	C	458	U
1	C	459	A
1	C	467	U
1	C	468	A
1	C	478	A
1	C	479	U
1	C	481	G
1	C	484	G
1	C	485	U
1	C	486	U
1	C	495	A
1	C	496	A
1	C	497	G
1	C	509	A
1	C	511	C
1	C	518	C
1	C	521	G
1	C	527	G
1	C	531	U
1	C	532	A
1	C	547	A
1	C	550	G
1	C	559	A
1	C	564	C

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Mol	Chain	Res	Type
1	C	572	A
1	C	573	A
1	C	576	C
1	C	577	G
1	C	596	A
1	C	626	G
1	C	633	G
1	C	642	A
1	C	650	G
1	C	653	U
1	C	656	G
1	C	665	A
1	C	687	A
1	C	703	G
1	C	718	A
1	C	721	G
1	C	723	U
1	C	724	G
1	C	731	G
1	C	734	G
1	C	747	A
1	C	755	G
1	C	759	A
1	C	760	G
1	C	777	A
1	C	793	U
1	C	794	A
1	C	809	G
1	C	815	A
1	C	817	C
1	C	819	A
1	C	821	G
1	C	828	U
1	C	832	G
1	C	841	C
1	C	842	U
1	C	843	U
1	C	844	G
1	C	845	A
1	C	846	G
1	C	847	G
1	C	849	G

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Mol	Chain	Res	Type
1	C	876	C
1	C	889	A
1	C	914	A
1	C	922	G
1	C	926	G
1	C	934	C
1	C	935	A
1	C	960	U
1	C	969	A
1	C	971	G
1	C	972	C
1	C	975	A
1	C	976	G
1	C	977	A
1	C	981	U
1	C	983	A
1	C	989	U
1	C	992	U
1	C	993	G
1	C	1004	A
1	C	1006	G
1	C	1007	U
1	C	1009	U
1	C	1018	G
1	C	1020	G
1	C	1028	C
1	C	1030	U
1	C	1032	G
1	C	1033	G
1	C	1034	G
1	C	1035	A
1	C	1036	A
1	C	1037	C
1	C	1039	G
1	C	1045	C
1	C	1054	C
1	C	1065	U
1	C	1085	U
1	C	1086	U
1	C	1087	G
1	C	1094	G
1	C	1095	U

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Mol	Chain	Res	Type
1	C	1101	A
1	C	1130	A
1	C	1132	C
1	C	1133	G
1	C	1136	C
1	C	1137	C
1	C	1139	G
1	C	1140	C
1	C	1141	C
1	C	1142	G
1	C	1145	A
1	C	1146	A
1	C	1158	C
1	C	1159	U
1	C	1167	A
1	C	1184	G
1	C	1196	A
1	C	1197	A
1	C	1202	U
1	C	1212	U
1	C	1213	A
1	C	1214	C
1	C	1227	A
1	C	1238	A
1	C	1240	U
1	C	1241	G
1	C	1253	G
1	C	1258	G
1	C	1275	A
1	C	1280	A
1	C	1285	A
1	C	1286	U
1	C	1287	A
1	C	1292	G
1	C	1293	C
1	C	1300	G
1	C	1302	C
1	C	1305	G
1	C	1317	C
1	C	1318	A
1	C	1320	C
1	C	1322	C

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Mol	Chain	Res	Type
1	C	1338	G
1	C	1346	A
1	C	1353	G
1	C	1363	A
1	C	1370	G
1	C	1378	C
1	C	1397	C
1	C	1398	A
1	C	1419	G
1	C	1432	G
1	C	1441	A
1	C	1455	G
1	C	1492	A
1	C	1494	G
1	C	1497	G
1	C	1499	A
1	C	1503	A
1	C	1506	U
1	C	1517	G
1	C	1519	A
1	C	1529	G
1	C	1530	G
1	C	1534	A
1	C	1536	C
1	C	1537	U
1	C	1538	C
1	C	1539	C
1	C	1540	U
2	I	10	A
2	I	15	G
2	I	34	U
2	I	35	G
2	I	42	A
2	I	45	G
2	I	46	G
2	I	51	G
2	I	56	A
2	I	60	G
2	I	63	A
2	I	71	A
2	I	72	U
2	I	74	A

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Mol	Chain	Res	Type
2	I	75	G
2	I	88	G
2	I	90	U
2	I	91	A
2	I	101	A
2	I	102	U
2	I	103	A
2	I	111	A
2	I	118	A
2	I	119	A
2	I	120	U
2	I	125	A
2	I	139	U
2	I	140	C
2	I	141	G
2	I	163	C
2	I	174	U
2	I	183	C
2	I	194	G
2	I	196	A
2	I	199	A
2	I	209	C
2	I	210	C
2	I	215	G
2	I	216	A
2	I	221	A
2	I	222	A
2	I	223	A
2	I	233	A
2	I	236	C
2	I	241	A
2	I	245	G
2	I	248	G
2	I	249	C
2	I	250	G
2	I	266	G
2	I	272	A
2	I	275	C
2	I	276	U
2	I	277	G
2	I	286	U
2	I	302	C

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Mol	Chain	Res	Type
2	I	305	C
2	I	306	U
2	I	307	G
2	I	308	G
2	I	309	A
2	I	311	A
2	I	329	G
2	I	330	A
2	I	341	C
2	I	345	A
2	I	353	C
2	I	356	G
2	I	361	G
2	I	371	A
2	I	372	G
2	I	377	G
2	I	380	G
2	I	386	G
2	I	388	G
2	I	391	A
2	I	396	G
2	I	403	U
2	I	405	U
2	I	411	G
2	I	412	A
2	I	437	U
2	I	443	A
2	I	451	U
2	I	455	C
2	I	456	C
2	I	457	A
2	I	480	A
2	I	481	G
2	I	491	G
2	I	504	A
2	I	505	A
2	I	509	C
2	I	513	A
2	I	529	A
2	I	530	G
2	I	532	A
2	I	546	U

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Mol	Chain	Res	Type
2	I	548	G
2	I	549	G
2	I	556	A
2	I	562	U
2	I	563	A
2	I	573	U
2	I	575	A
2	I	603	A
2	I	607	U
2	I	613	A
2	I	614	A
2	I	615	U
2	I	627	A
2	I	632	A
2	I	637	A
2	I	639	U
2	I	645	C
2	I	646	U
2	I	647	G
2	I	654	A
2	I	655	A
2	I	668	A
2	I	670	A
2	I	686	U
2	I	711	G
2	I	726	G
2	I	729	G
2	I	730	A
2	I	740	C
2	I	746	PSU
2	I	747	5MU
2	I	765	C
2	I	775	G
2	I	776	G
2	I	782	A
2	I	784	G
2	I	785	G
2	I	805	G
2	I	812	C
2	I	819	A
2	I	827	U
2	I	828	U

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Mol	Chain	Res	Type
2	I	845	A
2	I	846	U
2	I	847	U
2	I	857	G
2	I	858	G
2	I	859	G
2	I	877	A
2	I	896	A
2	I	897	C
2	I	907	G
2	I	910	A
2	I	914	G
2	I	915	C
2	I	927	A
2	I	931	U
2	I	941	A
2	I	946	C
2	I	961	C
2	I	973	A
2	I	974	G
2	I	983	A
2	I	989	G
2	I	996	A
2	I	1012	U
2	I	1013	C
2	I	1026	G
2	I	1033	U
2	I	1045	C
2	I	1047	G
2	I	1050	A
2	I	1053	C
2	I	1070	A
2	I	1071	G
2	I	1076	C
2	I	1083	U
2	I	1084	A
2	I	1088	A
2	I	1091	G
2	I	1097	U
2	I	1109	C
2	I	1110	G
2	I	1111	A

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Mol	Chain	Res	Type
2	I	1112	G
2	I	1132	U
2	I	1133	A
2	I	1135	C
2	I	1142	A
2	I	1150	C
2	I	1151	A
2	I	1152	C
2	I	1169	A
2	I	1172	C
2	I	1174	U
2	I	1175	A
2	I	1176	U
2	I	1180	U
2	I	1181	U
2	I	1204	A
2	I	1206	G
2	I	1212	G
2	I	1227	G
2	I	1236	G
2	I	1238	G
2	I	1250	G
2	I	1253	A
2	I	1256	G
2	I	1266	G
2	I	1271	G
2	I	1272	A
2	I	1273	U
2	I	1275	A
2	I	1279	G
2	I	1280	G
2	I	1300	G
2	I	1301	A
2	I	1343	G
2	I	1352	U
2	I	1353	A
2	I	1365	A
2	I	1368	G
2	I	1374	G
2	I	1378	A
2	I	1379	U
2	I	1383	A

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Mol	Chain	Res	Type
2	I	1386	C
2	I	1387	A
2	I	1395	A
2	I	1416	G
2	I	1419	A
2	I	1428	C
2	I	1452	G
2	I	1453	A
2	I	1475	G
2	I	1478	G
2	I	1482	G
2	I	1485	U
2	I	1493	C
2	I	1497	U
2	I	1506	U
2	I	1508	A
2	I	1509	A
2	I	1510	G
2	I	1515	A
2	I	1524	G
2	I	1534	U
2	I	1535	A
2	I	1536	C
2	I	1537	G
2	I	1558	C
2	I	1566	A
2	I	1569	A
2	I	1578	U
2	I	1583	A
2	I	1584	U
2	I	1607	C
2	I	1608	A
2	I	1610	A
2	I	1611	C
2	I	1619	G
2	I	1647	U
2	I	1648	U
2	I	1649	G
2	I	1667	G
2	I	1674	G
2	I	1677	A
2	I	1684	G

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Mol	Chain	Res	Type
2	I	1693	U
2	I	1696	G
2	I	1715	G
2	I	1729	U
2	I	1730	C
2	I	1732	C
2	I	1735	A
2	I	1738	G
2	I	1749	A
2	I	1756	G
2	I	1758	U
2	I	1763	G
2	I	1764	C
2	I	1773	A
2	I	1776	G
2	I	1786	A
2	I	1800	C
2	I	1801	A
2	I	1802	A
2	I	1808	A
2	I	1811	G
2	I	1816	C
2	I	1829	A
2	I	1847	A
2	I	1848	A
2	I	1862	G
2	I	1869	G
2	I	1870	C
2	I	1872	A
2	I	1906	G
2	I	1909	C
2	I	1913	A
2	I	1914	C
2	I	1921	G
2	I	1929	G
2	I	1930	G
2	I	1936	A
2	I	1937	A
2	I	1938	A
2	I	1954	G
2	I	1955	U
2	I	1964	G

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Mol	Chain	Res	Type
2	I	1967	C
2	I	1970	A
2	I	1971	U
2	I	1972	G
2	I	1982	U
2	I	1991	U
2	I	1992	G
2	I	1993	U
2	I	1997	C
2	I	2020	A
2	I	2022	U
2	I	2023	C
2	I	2030	6MZ
2	I	2031	A
2	I	2033	A
2	I	2043	C
2	I	2050	C
2	I	2055	C
2	I	2056	G
2	I	2060	A
2	I	2061	G
2	I	2062	A
2	I	2063	C
2	I	2069	G7M
2	I	2093	G
2	I	2096	C
2	I	2102	G
2	I	2105	U
2	I	2106	U
2	I	2107	G
2	I	2108	A
2	I	2111	U
2	I	2112	G
2	I	2113	U
2	I	2114	A
2	I	2115	G
2	I	2116	G
2	I	2117	A
2	I	2118	U
2	I	2119	A
2	I	2122	U
2	I	2128	G

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Mol	Chain	Res	Type
2	I	2131	U
2	I	2132	U
2	I	2133	G
2	I	2134	A
2	I	2135	A
2	I	2137	U
2	I	2138	G
2	I	2142	A
2	I	2146	C
2	I	2148	G
2	I	2152	G
2	I	2157	G
2	I	2159	G
2	I	2160	C
2	I	2161	C
2	I	2163	A
2	I	2164	C
2	I	2165	C
2	I	2166	U
2	I	2167	U
2	I	2170	A
2	I	2171	A
2	I	2172	U
2	I	2175	C
2	I	2176	A
2	I	2178	C
2	I	2179	C
2	I	2181	U
2	I	2182	U
2	I	2191	A
2	I	2198	A
2	I	2204	G
2	I	2211	A
2	I	2225	A
2	I	2226	C
2	I	2238	G
2	I	2239	G
2	I	2273	A
2	I	2279	G
2	I	2283	C
2	I	2287	A
2	I	2288	A

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Mol	Chain	Res	Type
2	I	2305	U
2	I	2311	A
2	I	2322	A
2	I	2325	G
2	I	2333	A
2	I	2336	A
2	I	2340	A
2	I	2345	G
2	I	2347	C
2	I	2350	C
2	I	2353	G
2	I	2361	G
2	I	2383	G
2	I	2385	C
2	I	2391	G
2	I	2396	G
2	I	2403	C
2	I	2423	U
2	I	2425	A
2	I	2429	G
2	I	2430	A
2	I	2441	U
2	I	2445	2MG
2	I	2448	A
2	I	2469	A
2	I	2470	G
2	I	2475	C
2	I	2476	A
2	I	2491	U
2	I	2498	OMC
2	I	2502	G
2	I	2504	PSU
2	I	2505	G
2	I	2506	U
2	I	2518	A
2	I	2520	C
2	I	2529	G
2	I	2547	A
2	I	2554	U
2	I	2566	A
2	I	2567	G
2	I	2572	A

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Mol	Chain	Res	Type
2	I	2573	C
2	I	2578	G
2	I	2602	A
2	I	2609	U
2	I	2613	U
2	I	2615	U
2	I	2630	G
2	I	2646	C
2	I	2669	G
2	I	2681	C
2	I	2682	A
2	I	2689	U
2	I	2690	U
2	I	2714	G
2	I	2716	C
2	I	2718	G
2	I	2720	U
2	I	2726	A
2	I	2732	G
2	I	2733	A
2	I	2744	G
2	I	2748	A
2	I	2757	A
2	I	2765	A
2	I	2766	A
2	I	2778	A
2	I	2781	A
2	I	2791	G
2	I	2793	C
2	I	2799	A
2	I	2800	A
2	I	2818	U
2	I	2820	A
2	I	2821	A
2	I	2833	U
2	I	2834	G
2	I	2861	U
2	I	2867	G
2	I	2873	A
2	I	2880	C
2	I	2884	U
2	I	2885	G

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Mol	Chain	Res	Type
2	I	2891	U
2	I	2903	U
13	A	2	G
13	A	6	G
13	A	7	U
13	A	8	U
13	A	11	C
13	A	13	C
13	A	14	A
13	A	16	U
13	A	17	U
13	A	18	G
13	A	19	G
13	A	20	U
13	A	21	A
13	A	22	G
13	A	23	A
13	A	26	A
13	A	28	U
13	A	31	A
13	A	34	U8U
13	A	35	U
13	A	45	G
13	A	46	G
13	A	47	U
13	A	48	C
13	A	51	A
13	A	54	U
13	A	58	A
13	A	60	U
13	A	61	C
13	A	62	C
13	A	64	G
13	A	66	A
13	A	69	A
13	A	70	C
13	A	72	C
19	J	9	G
19	J	13	G
19	J	15	A
19	J	16	G
19	J	24	G

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Mol	Chain	Res	Type
19	J	32	U
19	J	35	C
19	J	42	C
19	J	56	G
19	J	67	G
19	J	88	C
19	J	89	U
19	J	90	C
19	J	91	C
19	J	99	A
19	J	109	A

All (31) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	C	96	U
1	C	115	G
1	C	206	C
1	C	212	G
1	C	428	G
1	C	438	U
1	C	484	G
1	C	846	G
1	C	1201	A
1	C	1317	C
1	C	1491	G
2	I	182	A
2	I	271	G
2	I	404	A
2	I	479	A
2	I	555	G
2	I	784	G
2	I	1352	U
2	I	1846	G
2	I	1847	A
2	I	2110	G
2	I	2127	G
2	I	2158	A
2	I	2171	A
2	I	2225	A
2	I	2447	G
2	I	2680	U

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Mol	Chain	Res	Type
2	I	2756	U
13	A	16	U
13	A	45	G
13	A	60	U

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	5MC	I	1962	2	19,22,23	1.29	2 (10%)	26,32,35	1.21	3 (11%)
2	5MU	I	1939	2	19,22,23	1.12	4 (21%)	27,32,35	2.22	6 (22%)
2	PSU	I	1911	2	18,21,22	0.96	1 (5%)	21,30,33	1.95	3 (14%)
2	3TD	I	1915	2	19,22,23	1.13	2 (10%)	23,32,35	1.93	3 (13%)
2	H2U	I	2449	2	18,21,22	0.50	0	19,30,33	1.12	1 (5%)
13	T6A	A	37	13	31,34,35	0.50	0	43,49,52	0.52	0
2	OMG	I	2251	13,2	23,26,27	0.82	1 (4%)	32,38,41	1.99	9 (28%)
2	OMC	I	2498	56,2	19,22,23	0.94	1 (5%)	25,31,34	1.17	2 (8%)
2	PSU	I	955	2	18,21,22	1.04	2 (11%)	21,30,33	2.01	4 (19%)
2	1MG	I	745	2	23,26,27	0.98	1 (4%)	33,39,42	1.76	7 (21%)
2	PSU	I	2604	2	18,21,22	1.00	1 (5%)	21,30,33	2.01	3 (14%)
6	4D4	U	81	6	9,11,12	0.86	0	7,13,15	1.73	2 (28%)
2	6MZ	I	2030	2	22,25,26	1.11	2 (9%)	29,36,39	2.32	9 (31%)
2	2MA	I	2503	2	22,25,26	1.32	4 (18%)	32,37,40	2.01	7 (21%)
2	PSU	I	2605	2	18,21,22	1.03	2 (11%)	21,30,33	1.92	3 (14%)
2	PSU	I	2457	2	18,21,22	1.05	2 (11%)	21,30,33	1.97	5 (23%)
2	6MZ	I	1618	2	22,25,26	1.18	2 (9%)	29,36,39	2.28	9 (31%)
2	PSU	I	746	56,2	18,21,22	1.10	3 (16%)	21,30,33	1.89	4 (19%)
2	PSU	I	1917	2	18,21,22	0.99	1 (5%)	21,30,33	1.97	4 (19%)
2	2MG	I	1835	2	23,26,27	0.80	1 (4%)	33,38,41	2.23	9 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
13	PSU	A	39	13	18,21,22	0.94	1 (5%)	21,30,33	0.71	0
2	5MU	I	747	2	19,22,23	1.07	3 (15%)	27,32,35	2.11	7 (25%)
2	G7M	I	2069	2	23,26,27	0.55	0	34,39,42	0.90	1 (2%)
2	2MG	I	2445	2	23,26,27	0.86	1 (4%)	33,38,41	2.15	10 (30%)
2	OMU	I	2552	2	19,22,23	1.05	3 (15%)	25,31,34	1.96	6 (24%)
2	PSU	I	2580	2	18,21,22	1.11	3 (16%)	21,30,33	1.98	5 (23%)
13	U8U	A	34	13	20,24,25	0.89	1 (5%)	22,34,37	0.77	0
2	PSU	I	2504	2	18,21,22	0.98	1 (5%)	21,30,33	1.94	3 (14%)

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
2	5MC	I	1962	2	-	0/7/25/26	0/2/2/2
2	5MU	I	1939	2	-	0/7/25/26	0/2/2/2
2	PSU	I	1911	2	-	0/7/25/26	0/2/2/2
2	3TD	I	1915	2	-	0/7/25/26	0/2/2/2
2	H2U	I	2449	2	-	0/7/38/39	0/2/2/2
13	T6A	A	37	13	-	9/23/41/42	0/3/3/3
2	OMG	I	2251	13,2	-	1/9/27/28	0/3/3/3
2	OMC	I	2498	56,2	-	2/9/27/28	0/2/2/2
2	PSU	I	955	2	-	0/7/25/26	0/2/2/2
2	1MG	I	745	2	-	0/7/25/26	0/3/3/3
2	PSU	I	2604	2	-	0/7/25/26	0/2/2/2
6	4D4	U	81	6	-	4/11/12/14	-
2	6MZ	I	2030	2	-	2/9/27/28	0/3/3/3
2	2MA	I	2503	2	-	2/7/25/26	0/3/3/3
2	PSU	I	2605	2	-	2/7/25/26	0/2/2/2
2	PSU	I	2457	2	-	0/7/25/26	0/2/2/2
2	6MZ	I	1618	2	-	4/9/27/28	0/3/3/3
2	PSU	I	746	56,2	-	1/7/25/26	0/2/2/2
2	PSU	I	1917	2	-	0/7/25/26	0/2/2/2
2	2MG	I	1835	2	-	0/9/27/28	0/3/3/3
13	PSU	A	39	13	-	0/7/25/26	0/2/2/2
2	5MU	I	747	2	-	0/7/25/26	0/2/2/2
2	G7M	I	2069	2	-	0/7/25/26	0/3/3/3
2	2MG	I	2445	2	-	2/9/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	OMU	I	2552	2	-	0/9/27/28	0/2/2/2
2	PSU	I	2580	2	-	0/7/25/26	0/2/2/2
13	U8U	A	34	13	-	3/10/28/29	0/2/2/2
2	PSU	I	2504	2	-	2/7/25/26	0/2/2/2

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I	1962	5MC	C5-C4	-4.15	1.41	1.44
2	I	1618	6MZ	C6-N6	4.04	1.38	1.34
2	I	2503	2MA	C6-N1	3.69	1.39	1.35
13	A	39	PSU	C6-C5	3.54	1.39	1.35
2	I	2030	6MZ	C6-N6	3.52	1.38	1.34
13	A	34	U8U	C4-C5	-3.36	1.37	1.45
2	I	2503	2MA	C5-N7	-3.13	1.33	1.39
2	I	745	1MG	C6-N1	-2.78	1.34	1.40
2	I	2552	OMU	C2-N1	-2.67	1.34	1.38
2	I	1915	3TD	C4-N3	-2.58	1.35	1.40
2	I	1939	5MU	C2-N1	-2.57	1.34	1.38
2	I	1962	5MC	C2-N1	-2.56	1.34	1.40
2	I	2498	OMC	C2-N1	-2.50	1.34	1.40
2	I	1915	3TD	C4-C5	-2.48	1.41	1.47
2	I	746	PSU	O4'-C1'	-2.35	1.40	1.43
2	I	2580	PSU	O4'-C1'	-2.33	1.40	1.43
2	I	2503	2MA	C5-C6	2.31	1.47	1.41
2	I	1939	5MU	C4-N3	-2.31	1.34	1.38
2	I	747	5MU	C4-N3	-2.29	1.34	1.38
2	I	747	5MU	C2-N1	-2.28	1.34	1.38
2	I	2445	2MG	C6-N1	-2.26	1.34	1.38
2	I	2251	OMG	C6-N1	-2.24	1.34	1.38
2	I	2552	OMU	C4-N3	-2.23	1.34	1.38
2	I	2605	PSU	C4-N3	-2.23	1.34	1.38
2	I	2457	PSU	C4-N3	-2.22	1.34	1.38
2	I	746	PSU	C4-N3	-2.19	1.34	1.38
2	I	955	PSU	C4-N3	-2.19	1.34	1.38
2	I	2580	PSU	C4-N3	-2.19	1.34	1.38
2	I	2604	PSU	C4-N3	-2.16	1.34	1.38
2	I	1835	2MG	C6-N1	-2.15	1.34	1.38
2	I	746	PSU	C2-N3	-2.12	1.34	1.37
2	I	1939	5MU	C4-C5	-2.12	1.41	1.44
2	I	1911	PSU	C4-N3	-2.11	1.34	1.38
2	I	2504	PSU	C4-N3	-2.10	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I	1917	PSU	C4-N3	-2.07	1.35	1.38
2	I	2605	PSU	C2-N3	-2.06	1.34	1.37
2	I	747	5MU	C2-N3	-2.06	1.34	1.38
2	I	955	PSU	C2-N3	-2.05	1.34	1.37
2	I	1939	5MU	C2-N3	-2.05	1.34	1.38
2	I	2580	PSU	C2-N1	-2.04	1.34	1.36
2	I	2457	PSU	C2-N3	-2.04	1.34	1.37
2	I	2030	6MZ	C5-N7	-2.04	1.35	1.39
2	I	2552	OMU	C2-N3	-2.03	1.34	1.38
2	I	1618	6MZ	C5-N7	-2.02	1.35	1.39
2	I	2503	2MA	C2-N3	-2.02	1.30	1.34

All (125) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	I	1835	2MG	C2-N3-C4	7.44	121.31	112.00
2	I	2445	2MG	C2-N3-C4	7.14	120.93	112.00
2	I	1915	3TD	N1-C2-N3	6.73	121.03	116.13
2	I	2503	2MA	C5-C4-N3	-6.12	120.73	127.18
2	I	1618	6MZ	C5-C4-N3	-5.99	118.46	126.72
2	I	2251	OMG	C5-C4-N3	-5.88	119.03	128.39
2	I	1835	2MG	C5-C4-N3	-5.79	119.17	128.39
2	I	1939	5MU	C4-N3-C2	-5.70	119.86	127.34
2	I	955	PSU	N1-C2-N3	5.62	121.10	115.17
2	I	2604	PSU	N1-C2-N3	5.58	121.06	115.17
2	I	745	1MG	C5-C4-N3	-5.54	119.57	128.39
2	I	2457	PSU	N1-C2-N3	5.51	120.98	115.17
2	I	746	PSU	N1-C2-N3	5.48	120.95	115.17
2	I	2030	6MZ	C5-C4-N3	-5.46	119.20	126.72
2	I	2504	PSU	N1-C2-N3	5.41	120.88	115.17
2	I	2580	PSU	N1-C2-N3	5.40	120.87	115.17
2	I	1917	PSU	N1-C2-N3	5.40	120.86	115.17
2	I	1911	PSU	N1-C2-N3	5.39	120.85	115.17
2	I	2605	PSU	N1-C2-N3	5.39	120.85	115.17
2	I	2552	OMU	C4-N3-C2	-5.29	120.04	126.61
2	I	2445	2MG	C5-C4-N3	-5.29	119.97	128.39
2	I	747	5MU	C4-N3-C2	-5.24	120.48	127.34
2	I	2251	OMG	C2-N3-C4	5.19	121.23	112.30
2	I	1939	5MU	N3-C2-N1	5.16	121.61	114.89
2	I	2552	OMU	N3-C2-N1	4.96	121.35	114.89
2	I	1618	6MZ	N3-C4-N9	4.84	135.40	127.17
2	I	2503	2MA	N3-C4-N9	4.78	133.06	126.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	I	747	5MU	N3-C2-N1	4.74	121.06	114.89
2	I	2604	PSU	C4-N3-C2	-4.73	119.85	126.37
2	I	955	PSU	C4-N3-C2	-4.68	119.93	126.37
2	I	2030	6MZ	C9-N6-C6	-4.65	118.54	122.85
2	I	1911	PSU	C4-N3-C2	-4.62	120.00	126.37
2	I	1939	5MU	C5-C4-N3	4.56	119.29	115.32
2	I	1917	PSU	C4-N3-C2	-4.55	120.11	126.37
2	I	2457	PSU	C4-N3-C2	-4.54	120.12	126.37
2	I	2504	PSU	C4-N3-C2	-4.53	120.14	126.37
2	I	746	PSU	C4-N3-C2	-4.52	120.14	126.37
2	I	2605	PSU	C4-N3-C2	-4.47	120.21	126.37
2	I	747	5MU	C5-C4-N3	4.37	119.13	115.32
2	I	1835	2MG	N9-C4-N3	4.37	134.69	125.95
2	I	2251	OMG	N9-C4-N3	4.34	134.62	125.95
2	I	2580	PSU	C4-N3-C2	-4.26	120.50	126.37
2	I	2030	6MZ	N3-C4-N9	4.23	134.35	127.17
2	I	745	1MG	N9-C4-N3	4.13	134.21	125.95
2	I	2030	6MZ	C5-N7-C8	4.09	109.88	103.45
2	I	2503	2MA	N6-C6-N1	4.09	122.54	117.03
2	I	1915	3TD	C4-N3-C2	-4.09	120.29	124.61
2	I	1939	5MU	O4-C4-C5	-4.00	120.34	124.92
2	I	745	1MG	C2-N3-C4	3.99	120.94	111.98
2	I	2030	6MZ	N1-C2-N3	-3.92	122.64	128.58
2	I	1618	6MZ	N1-C2-N3	-3.85	122.75	128.58
2	I	1962	5MC	C5-C6-N1	-3.85	119.14	123.31
2	I	1939	5MU	C5-C6-N1	-3.83	119.15	123.31
2	I	2445	2MG	N9-C4-N3	3.82	133.59	125.95
2	I	1618	6MZ	C5-N7-C8	3.79	109.40	103.45
2	I	2503	2MA	C5-N7-C8	3.74	109.33	103.45
2	I	1618	6MZ	C2-N3-C4	3.72	120.93	111.83
2	I	1835	2MG	C2-N1-C6	-3.68	120.10	124.55
2	I	2449	H2U	C5-C4-N3	-3.66	112.80	116.69
2	I	2030	6MZ	C2-N3-C4	3.58	120.58	111.83
2	I	747	5MU	O4-C4-C5	-3.56	120.84	124.92
2	I	2030	6MZ	C4-C5-N7	-3.49	106.60	110.58
2	I	2445	2MG	C2-N1-C6	-3.47	120.35	124.55
2	I	747	5MU	C5-C6-N1	-3.34	119.69	123.31
2	I	2552	OMU	CM2-O2'-C2'	-3.31	105.97	114.47
2	I	2552	OMU	C5-C4-N3	3.30	119.42	114.80
2	I	2580	PSU	O2-C2-N1	-3.25	119.44	122.79
6	U	81	4D4	NE-CZ-NH2	3.25	126.25	120.67
2	I	2503	2MA	N9-C8-N7	-3.15	109.47	113.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	I	1917	PSU	O2-C2-N1	-3.12	119.57	122.79
2	I	955	PSU	O2-C2-N1	-3.09	119.60	122.79
2	I	2030	6MZ	N9-C8-N7	-3.07	109.58	113.94
2	I	1618	6MZ	C4-C5-N7	-3.06	107.08	110.58
2	I	1911	PSU	O2-C2-N1	-3.04	119.66	122.79
2	I	2604	PSU	O2-C2-N1	-3.02	119.67	122.79
2	I	2069	G7M	C8-N7-C5	-2.99	104.04	107.78
2	I	2251	OMG	C2-N1-C6	-2.98	119.70	125.11
2	I	2504	PSU	O2-C2-N1	-2.96	119.74	122.79
2	I	2498	OMC	O2-C2-N3	-2.94	117.70	122.33
2	I	2457	PSU	O2-C2-N1	-2.93	119.77	122.79
2	I	1835	2MG	C8-N7-C5	2.91	109.45	104.26
2	I	745	1MG	C8-N7-C5	2.90	109.43	104.26
2	I	2605	PSU	O2-C2-N1	-2.88	119.81	122.79
2	I	2498	OMC	CM2-O2'-C2'	-2.87	107.11	114.47
2	I	2251	OMG	C8-N7-C5	2.86	109.36	104.26
2	I	2445	2MG	C8-N7-C5	2.86	109.35	104.26
2	I	746	PSU	O2-C2-N1	-2.79	119.91	122.79
2	I	2503	2MA	C5-C6-N1	-2.77	114.59	118.90
2	I	2030	6MZ	C6-C5-N7	2.73	135.41	132.43
2	I	1939	5MU	O2-C2-N1	-2.71	119.27	122.80
2	I	1618	6MZ	C9-N6-C6	-2.66	120.38	122.85
2	I	2503	2MA	C4-C5-N7	-2.66	107.54	110.58
2	I	2445	2MG	N1-C2-N2	2.59	119.20	116.56
2	I	2552	OMU	O2-C2-N1	-2.57	119.46	122.80
2	I	2552	OMU	O4-C4-C5	-2.56	120.74	125.16
2	I	1618	6MZ	N9-C8-N7	-2.56	110.31	113.94
2	I	2580	PSU	O4'-C1'-C2'	2.42	108.50	105.15
2	I	2580	PSU	C6-N1-C2	-2.38	120.48	122.69
2	I	2445	2MG	C6-C5-N7	2.30	134.48	130.29
2	I	745	1MG	C4-C5-N7	-2.27	107.07	110.67
2	I	2445	2MG	C4-C5-N7	-2.26	107.09	110.67
2	I	1618	6MZ	C4-C5-C6	2.24	118.64	116.78
2	I	745	1MG	C6-C5-N7	2.22	134.28	129.36
2	I	1915	3TD	C1'-C5-C4	2.20	120.95	117.61
6	U	81	4D4	NH1-CZ-NE	-2.20	114.27	119.27
2	I	955	PSU	C6-N1-C2	-2.20	120.65	122.69
2	I	2251	OMG	CM2-O2'-C2'	-2.19	108.86	114.47
2	I	1835	2MG	C4-C5-N7	-2.19	107.20	110.67
2	I	747	5MU	C1'-N1-C2	2.17	121.50	117.59
2	I	2251	OMG	C4-C5-N7	-2.15	107.26	110.67
2	I	1835	2MG	O6-C6-C5	-2.12	120.93	126.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	I	1835	2MG	N1-C2-N2	2.12	118.73	116.56
2	I	2457	PSU	O4'-C1'-C2'	2.12	108.08	105.15
2	I	2445	2MG	N9-C8-N7	-2.11	109.49	113.40
2	I	2457	PSU	C6-N1-C2	-2.10	120.74	122.69
2	I	2251	OMG	O6-C6-C5	-2.10	120.99	126.53
2	I	2251	OMG	C5-C6-N1	2.09	118.58	113.25
2	I	1962	5MC	C5-C4-N3	-2.09	119.62	121.75
2	I	1962	5MC	O2-C2-N3	-2.07	119.06	122.33
2	I	1917	PSU	O4'-C1'-C2'	2.07	108.02	105.15
2	I	2445	2MG	O6-C6-C5	-2.07	121.07	126.53
2	I	745	1MG	N9-C8-N7	-2.06	109.58	113.40
2	I	1835	2MG	C5-C6-N1	2.03	118.43	113.25
2	I	747	5MU	C5M-C5-C6	-2.03	120.11	122.85
2	I	746	PSU	C6-N1-C2	-2.01	120.82	122.69

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	U	81	4D4	C-CA-CB-OB
6	U	81	4D4	C-CA-CB-CG
6	U	81	4D4	N-CA-CB-CG
13	A	34	U8U	C5-C-N-CA
13	A	37	T6A	C13-C12-C14-O14
13	A	37	T6A	C13-C12-C14-C15
2	I	1618	6MZ	C5-C6-N6-C9
2	I	1618	6MZ	N1-C6-N6-C9
2	I	2251	OMG	C1'-C2'-O2'-CM2
2	I	2445	2MG	O4'-C4'-C5'-O5'
2	I	2504	PSU	O4'-C4'-C5'-O5'
13	A	37	T6A	N6-C10-N11-C12
2	I	2445	2MG	C3'-C4'-C5'-O5'
13	A	34	U8U	O4'-C4'-C5'-O5'
2	I	2030	6MZ	O4'-C4'-C5'-O5'
2	I	2605	PSU	C3'-C4'-C5'-O5'
2	I	2605	PSU	O4'-C4'-C5'-O5'
13	A	37	T6A	O10-C10-N11-C12
2	I	2504	PSU	C3'-C4'-C5'-O5'
13	A	37	T6A	N11-C12-C14-C15
2	I	2030	6MZ	C3'-C4'-C5'-O5'
2	I	1618	6MZ	O4'-C4'-C5'-O5'
13	A	34	U8U	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
2	I	2498	OMC	O4'-C4'-C5'-O5'
13	A	37	T6A	N11-C12-C14-O14
13	A	37	T6A	N11-C12-C13-ODA
13	A	37	T6A	N11-C12-C13-ODB
13	A	37	T6A	O4'-C4'-C5'-O5'
2	I	746	PSU	O4'-C1'-C5-C6
2	I	1618	6MZ	C3'-C4'-C5'-O5'
6	U	81	4D4	O-C-CA-CB
2	I	2498	OMC	C3'-C4'-C5'-O5'
2	I	2503	2MA	O4'-C4'-C5'-O5'
2	I	2503	2MA	C4'-C5'-O5'-P

There are no ring outliers.

9 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	I	1915	3TD	1	0
13	A	37	T6A	1	0
2	I	2251	OMG	1	0
2	I	955	PSU	1	0
2	I	745	1MG	1	0
2	I	2030	6MZ	2	0
2	I	2503	2MA	1	0
2	I	2445	2MG	1	0
2	I	2552	OMU	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 199 ligands modelled in this entry, 199 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

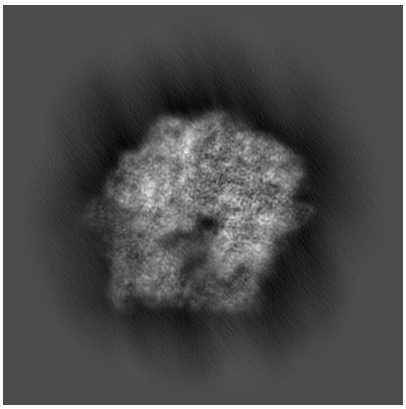
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-75564. These allow visual inspection of the internal detail of the map and identification of artifacts.

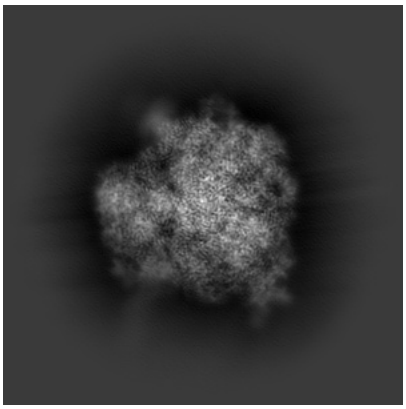
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

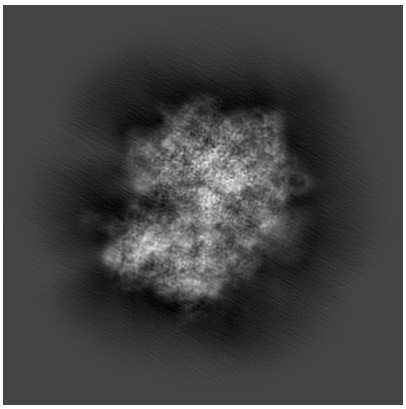
6.1.1 Primary map



X

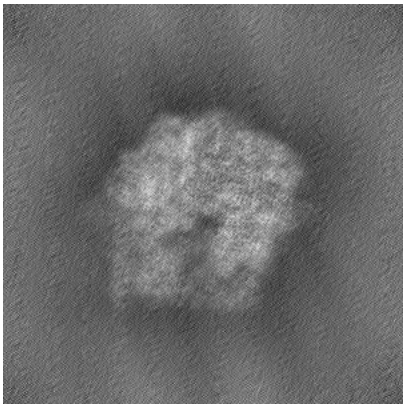


Y

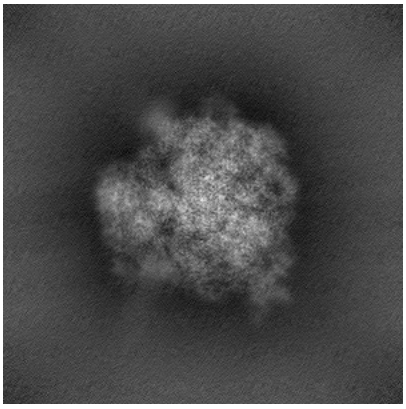


Z

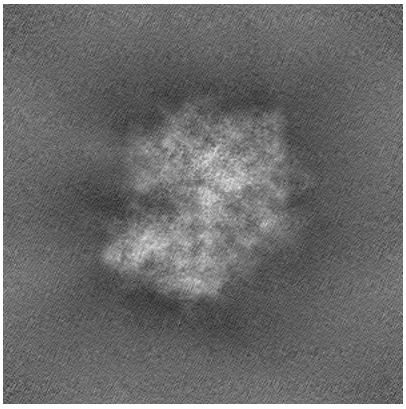
6.1.2 Raw map



X



Y

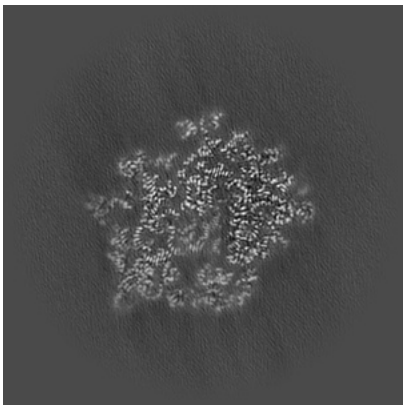


Z

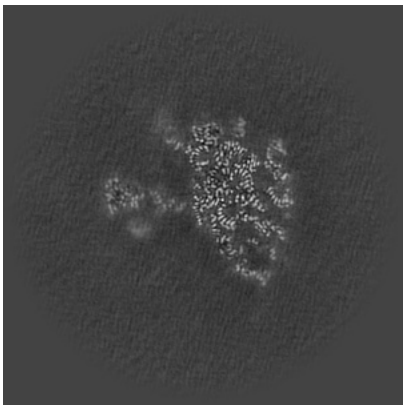
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

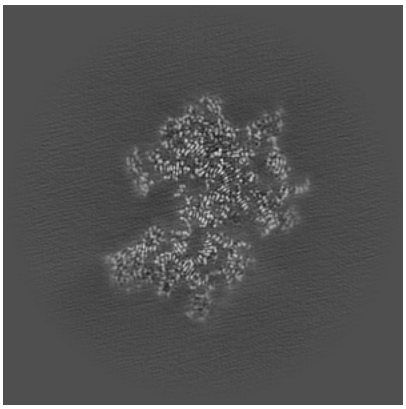
6.2.1 Primary map



X Index: 294

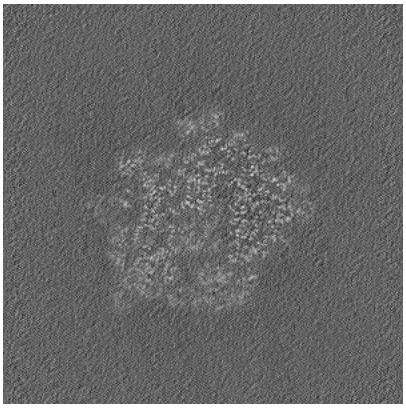


Y Index: 294

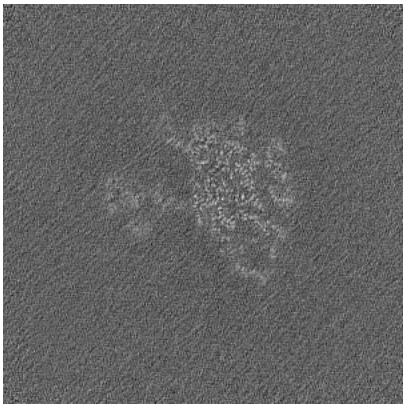


Z Index: 294

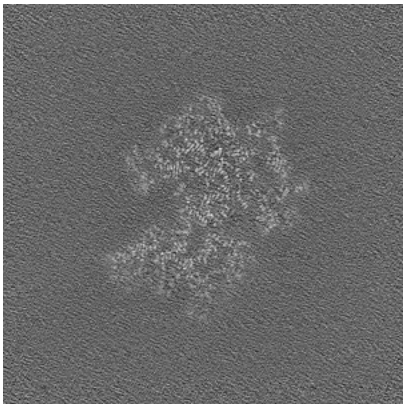
6.2.2 Raw map



X Index: 294



Y Index: 294

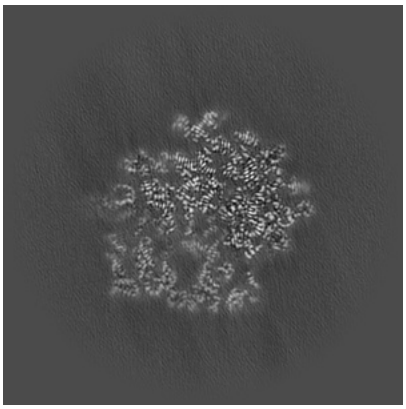


Z Index: 294

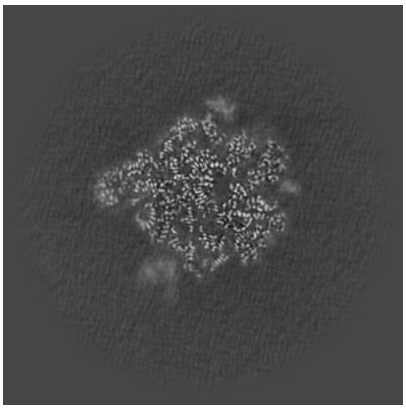
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

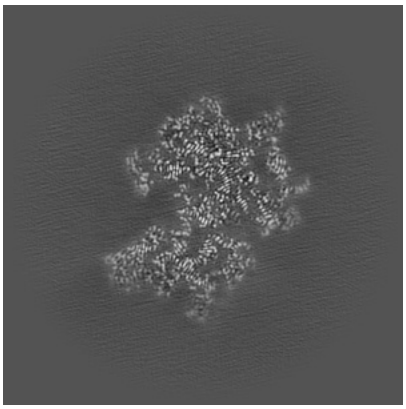
6.3.1 Primary map



X Index: 303

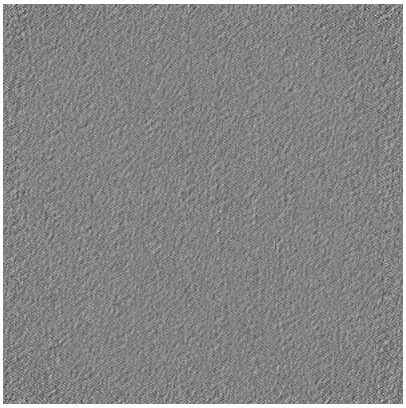


Y Index: 336

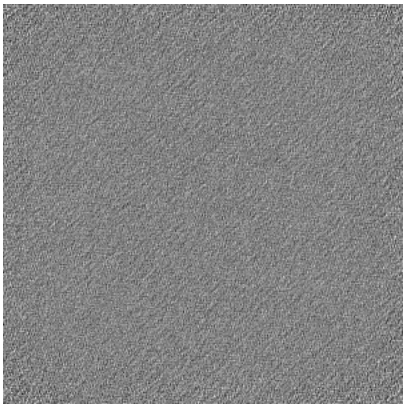


Z Index: 295

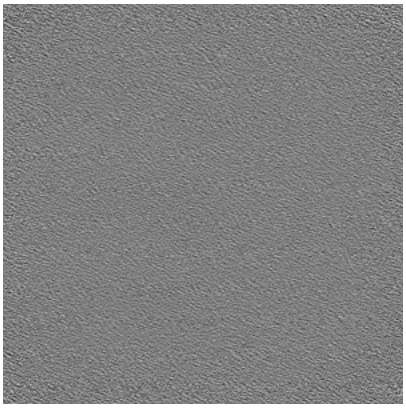
6.3.2 Raw map



X Index: 0



Y Index: 0

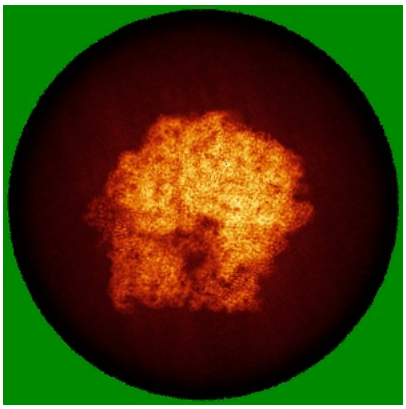


Z Index: 0

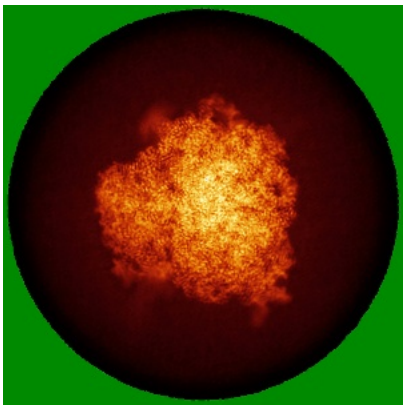
The images above show the largest variance slices of the map in three orthogonal directions.

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

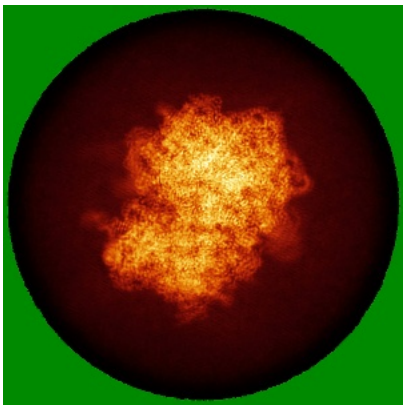
6.4.1 Primary map



X

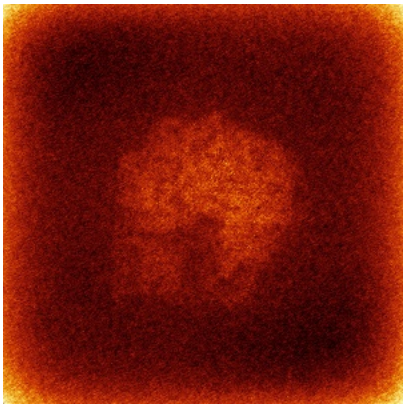


Y

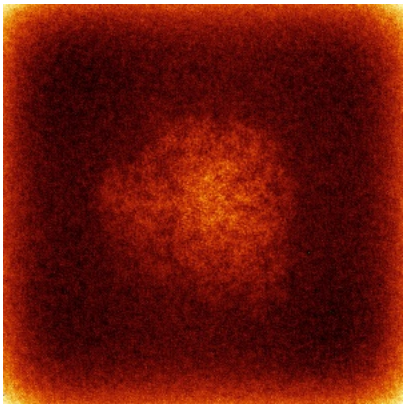


Z

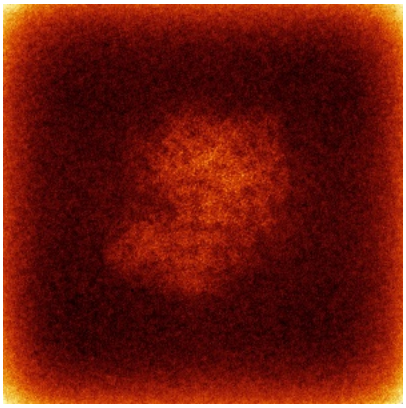
6.4.2 Raw map



X



Y

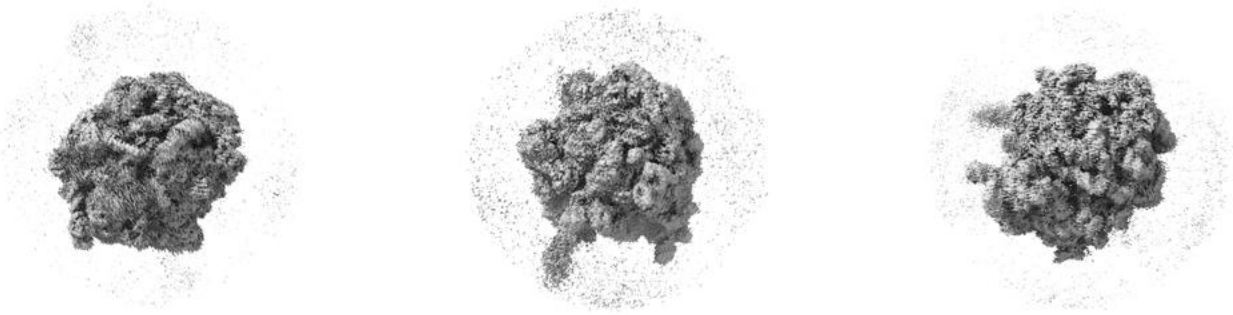


Z

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

6.5 Orthogonal surface views (i)

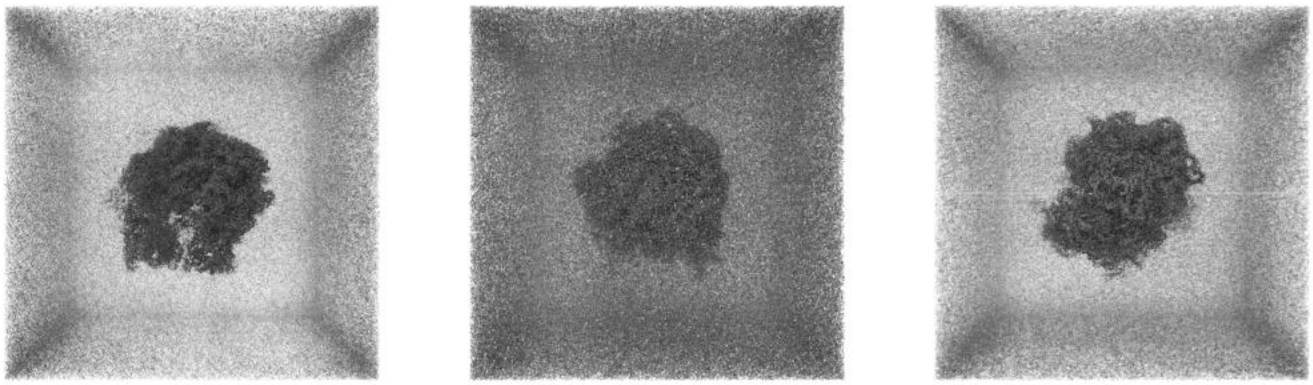
6.5.1 Primary map



X Y Z

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

6.5.2 Raw map



X Y Z

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

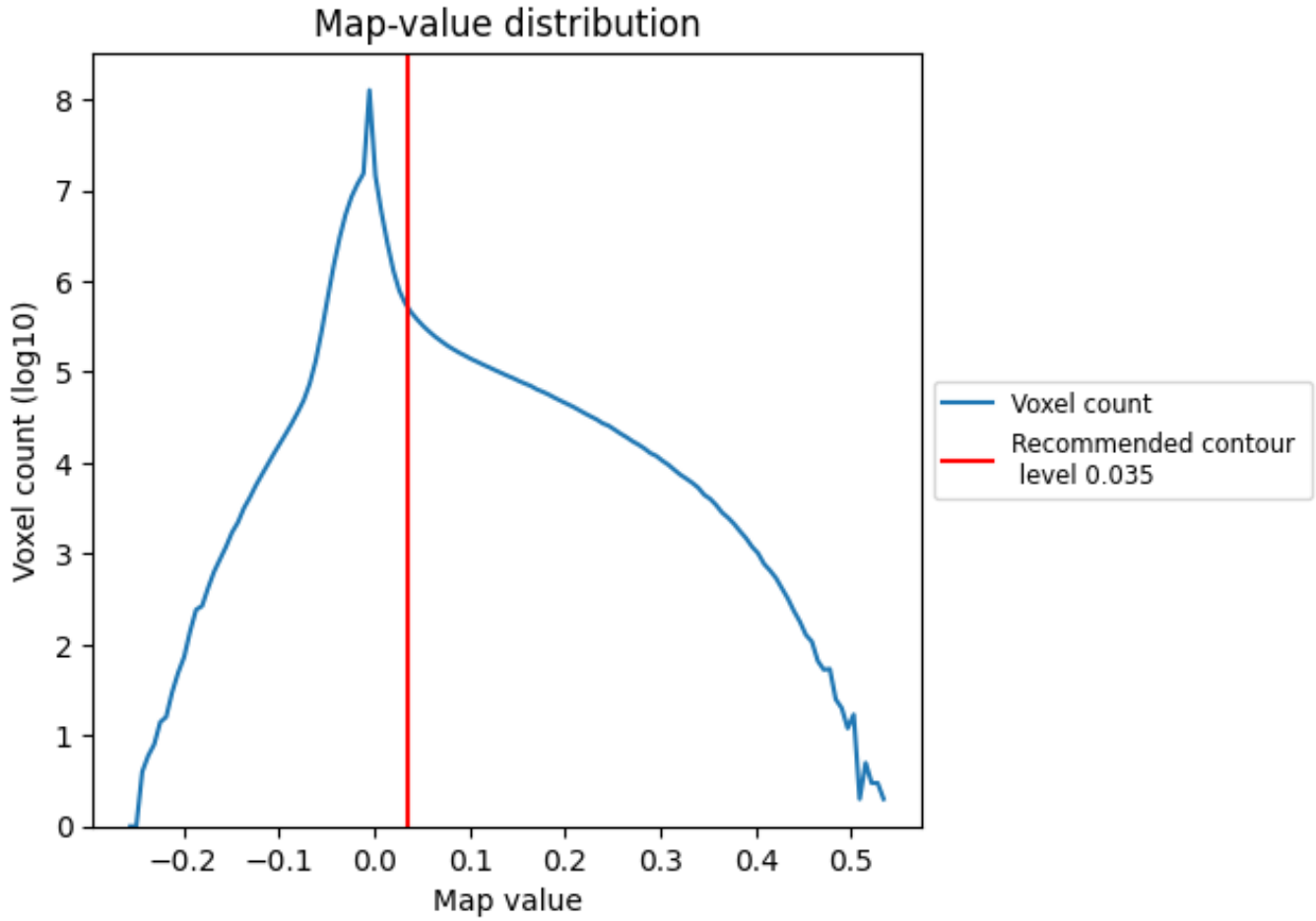
6.6 Mask visualisation (i)

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

7 Map analysis

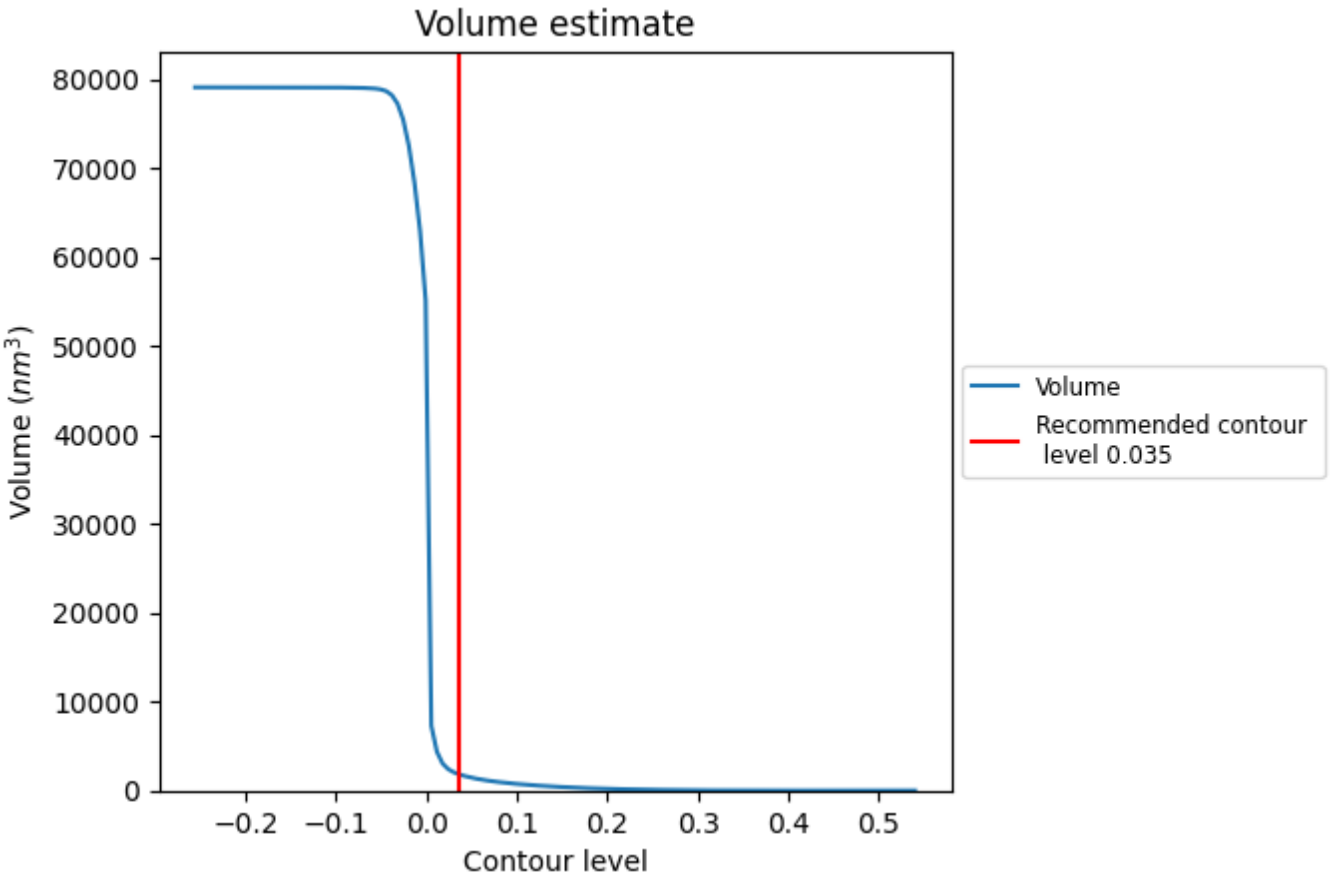
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

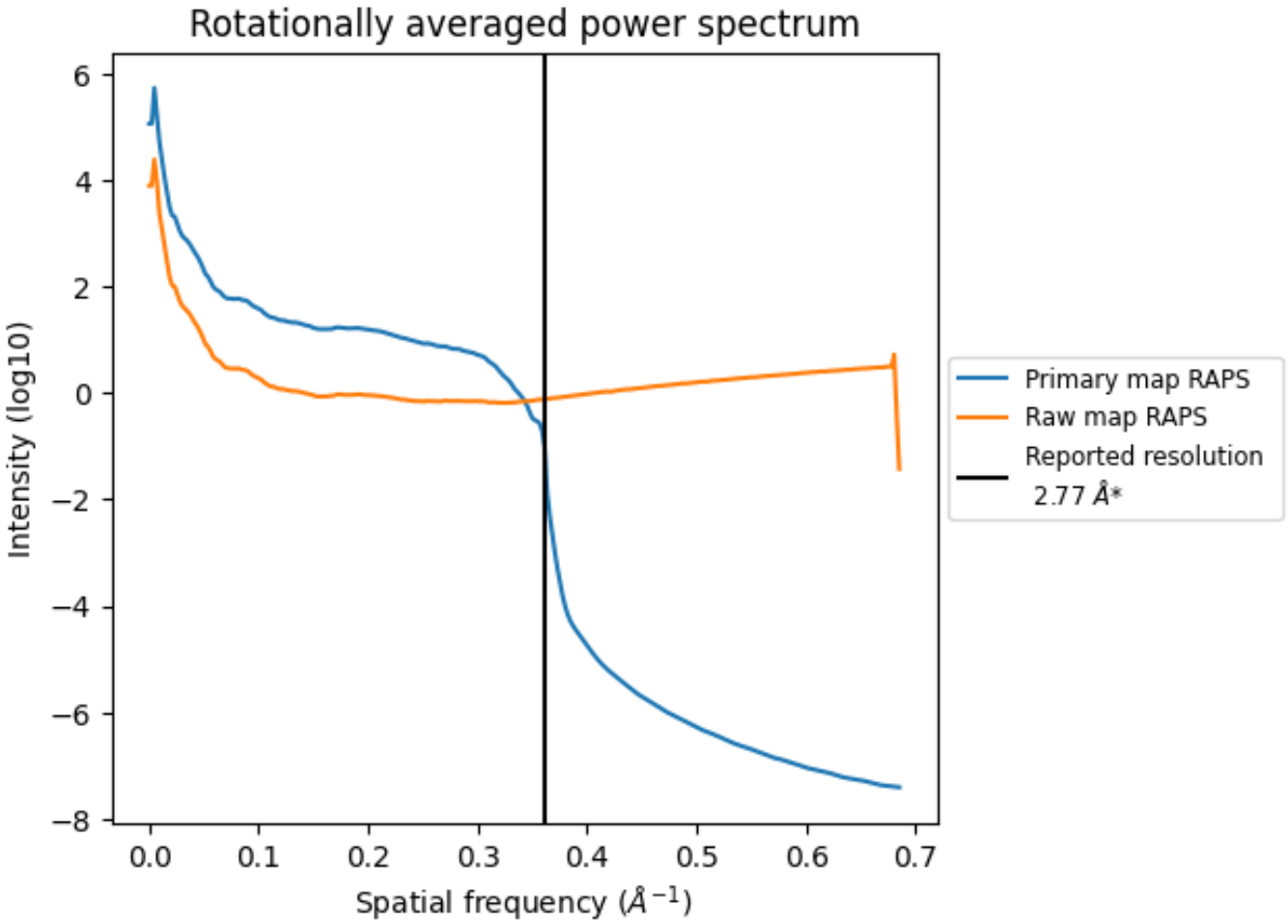
7.2 Volume estimate



The volume at the recommended contour level is 1865 nm^3; this corresponds to an approximate mass of 1685 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)

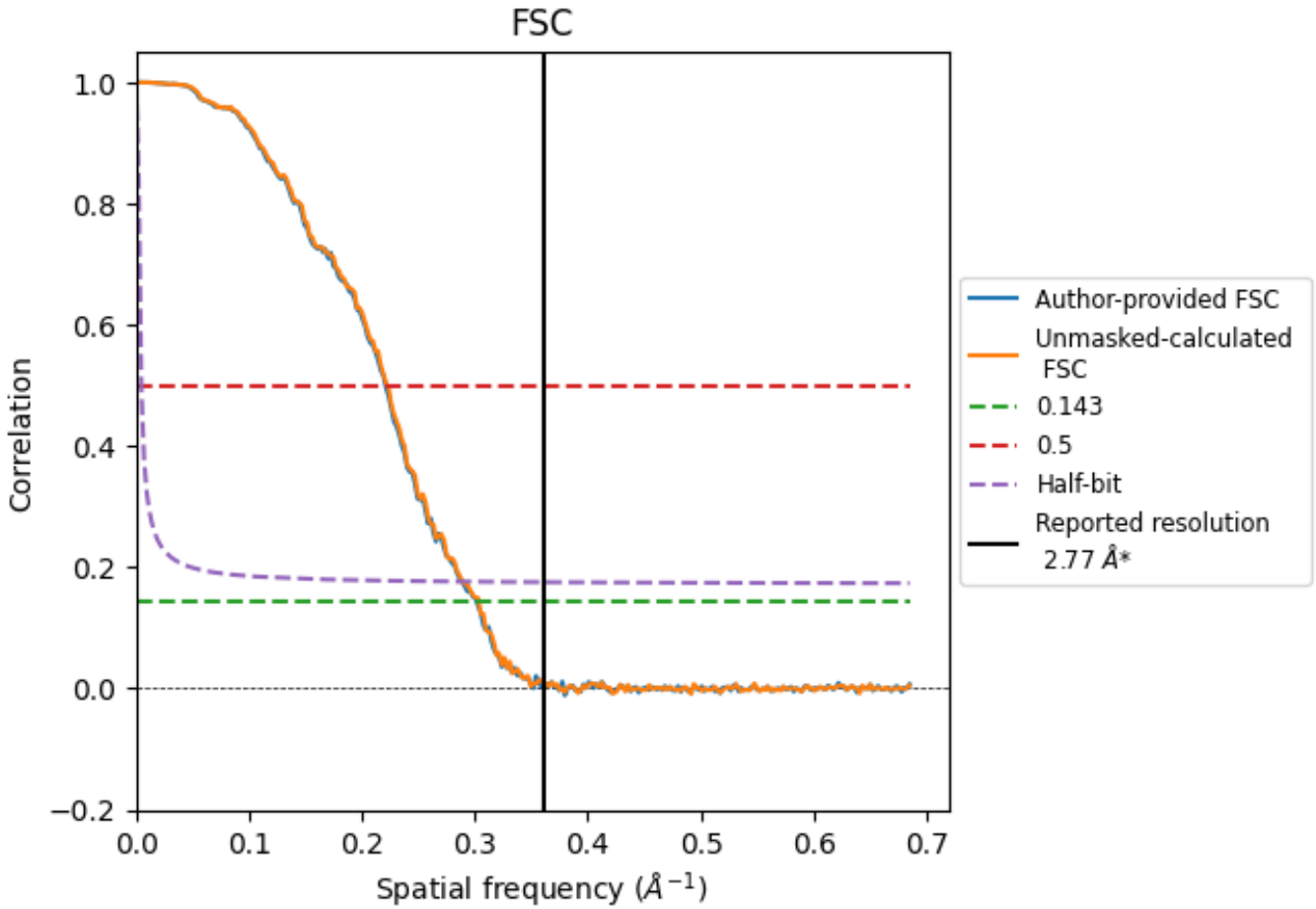


*Reported resolution corresponds to spatial frequency of 0.361 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.361 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.77	-	-
Author-provided FSC curve	3.32	4.53	3.47
Unmasked-calculated*	3.30	4.50	3.46

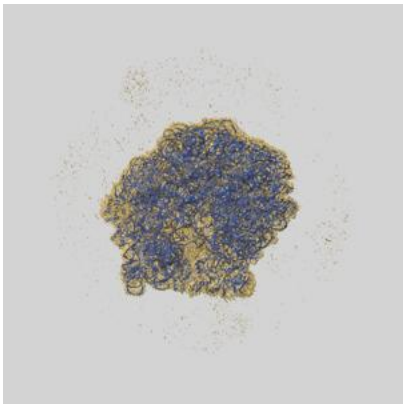
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.32 differs from the reported value 2.77 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.30 differs from the reported value 2.77 by more than 10 %

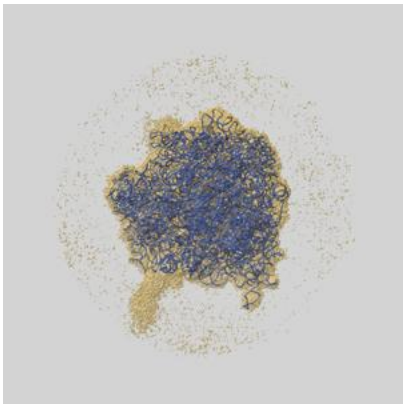
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-75564 and PDB model 10ZE. Per-residue inclusion information can be found in section 3 on page 17.

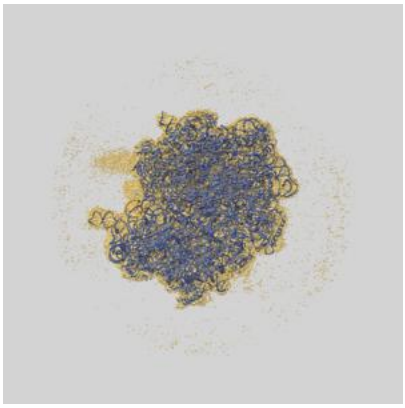
9.1 Map-model overlay



X



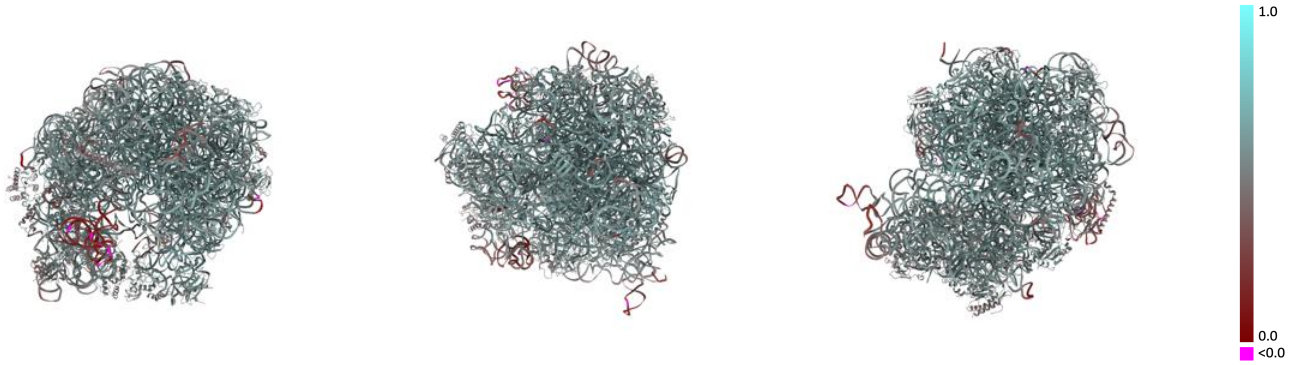
Y



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.

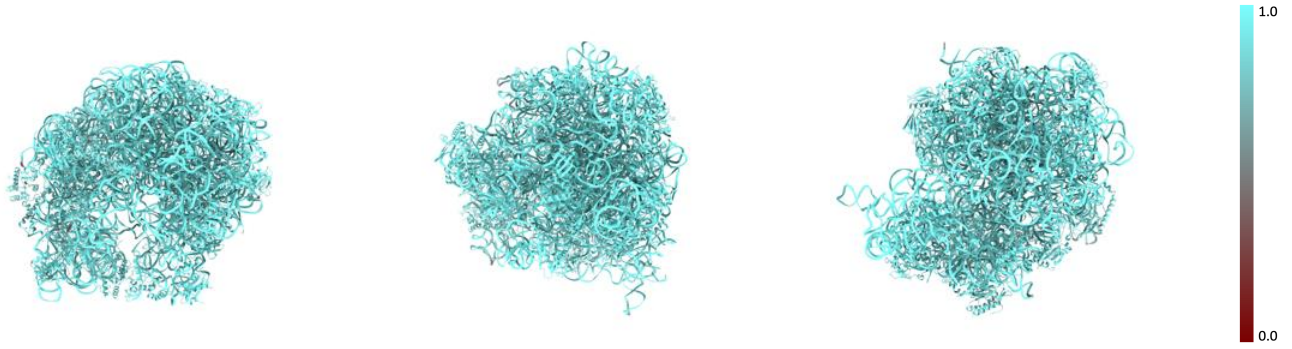
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

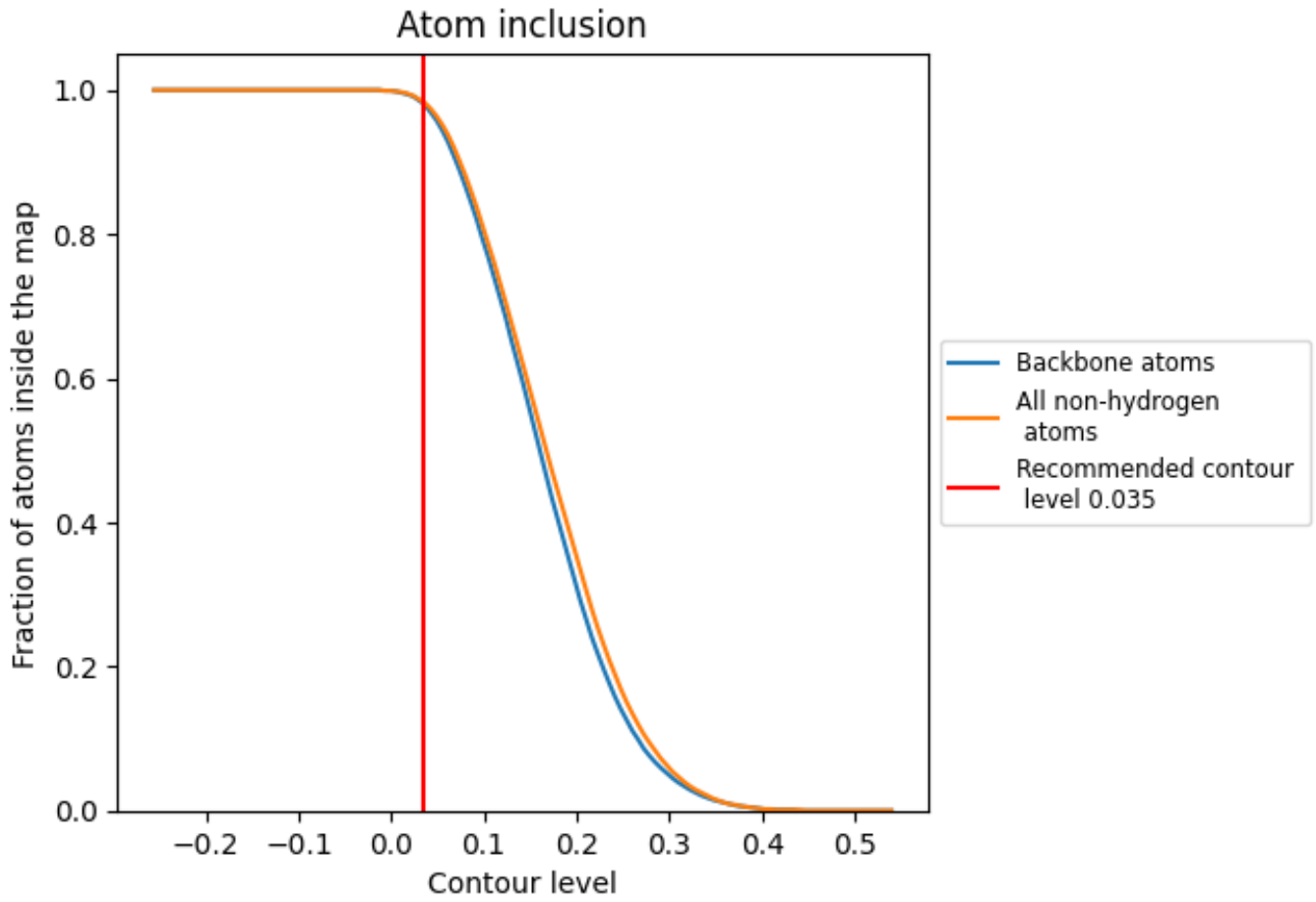
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.035).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 98% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9830	0.5490
1	0.9860	0.5060
2	0.9790	0.5240
3	0.8410	0.4520
4	0.9450	0.5230
A	0.9760	0.5200
C	0.9920	0.5420
D	0.8730	0.4670
E	0.9550	0.5220
F	0.9400	0.4960
G	0.9550	0.5350
H	0.9820	0.5310
I	0.9920	0.5580
J	0.9970	0.5630
K	0.9930	0.5990
L	0.9810	0.5920
M	0.9750	0.5490
N	0.9880	0.5200
O	0.9760	0.5150
P	0.8830	0.4370
Q	0.9830	0.4910
R	0.9860	0.5890
S	0.9800	0.5970
T	0.9800	0.5690
U	0.9710	0.5890
V	0.9920	0.5960
W	0.9830	0.5420
X	0.9690	0.5860
Y	0.9890	0.5900
Z	0.9710	0.5660
a	0.9650	0.5810
b	0.9680	0.5480
c	0.9770	0.5240
d	0.9630	0.5660
e	0.9170	0.5900



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Continued from previous page...

Chain	Atom inclusion	Q-score
f	0.9820	0.5800
g	0.9690	0.5170
h	0.9700	0.5710
i	0.9770	0.5910
j	0.9300	0.5380
k	0.9940	0.6100
l	0.9920	0.6080
m	0.9900	0.5970
n	0.9550	0.5010
o	0.9520	0.5490
p	0.9540	0.4830
q	0.9150	0.4610
r	0.9790	0.5410
s	0.8440	0.5490
t	0.9860	0.5610
u	0.9900	0.5230
v	0.9560	0.5080
w	0.9840	0.5430
x	0.9600	0.5010
y	0.9750	0.5370
z	0.9950	0.5660