Full wwPDB EM Validation Report

Nov 7, 2026 – 01:28 pm GMT

PDB ID	:	9T8X / pdb_00009t8x
EMDB ID	:	EMD-55713
Title	:	Structural characterization of hibernating ribosomes in the Gram-negative pathogen Acinetobacter baumannii with bS21 and E-site tRNA
Authors	:	Vasanthakrishnan, R.K.B.S.; Olivier, D.; Sophie, C.; Yann, L.C.; Sylvie, G.D.; Sassi, M.; Emmanuel, G.; Reynald, G.
Deposited on	:	2025-11-13
Resolution	:	2.70 Å(reported)
Based on initial model	:	8B0X

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

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

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

The following versions of software and data (see references (1)) were used in the production of this report:

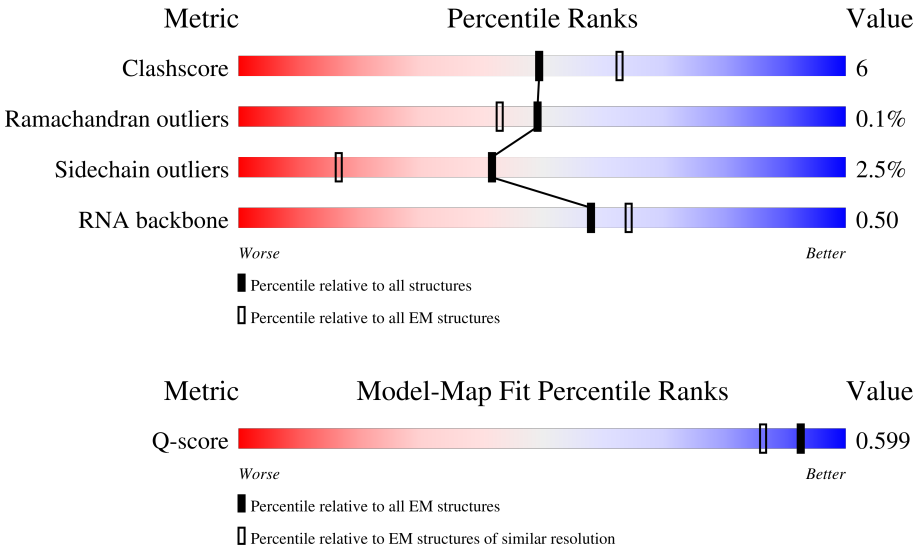
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal 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 2.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	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	10327 (2.20 - 3.20)

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

Mol	Chain	Length	Quality of chain
1	0	51	39% 75% 24% ·
2	1	44	5% 84% 16%
3	2	64	5% 81% 17% ·

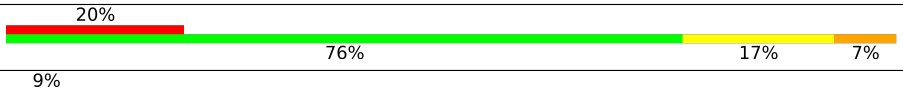
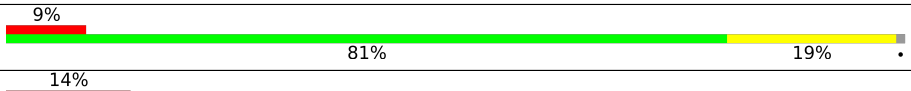
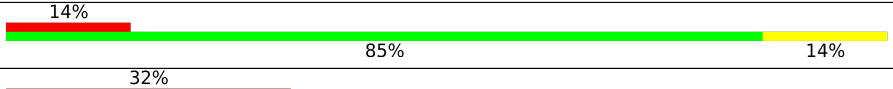
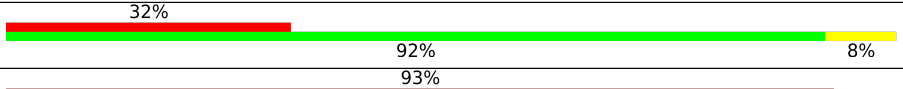
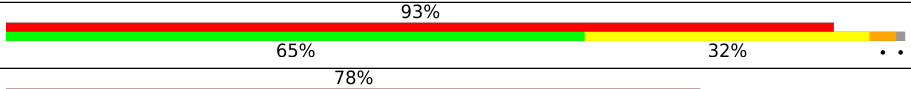
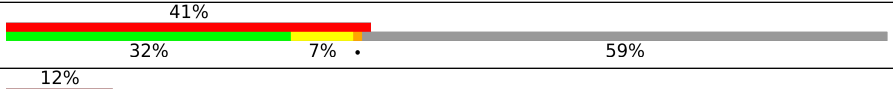
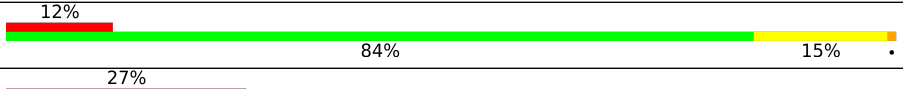
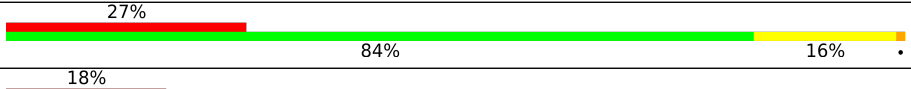
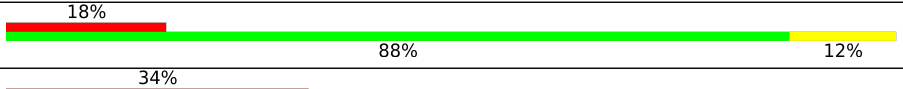
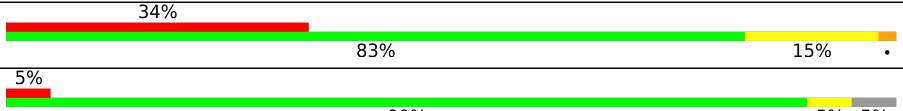
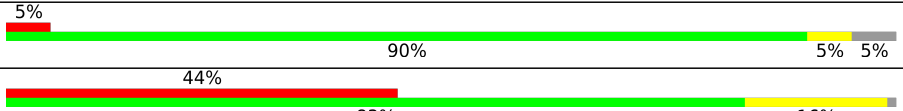
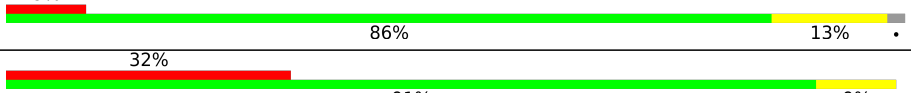
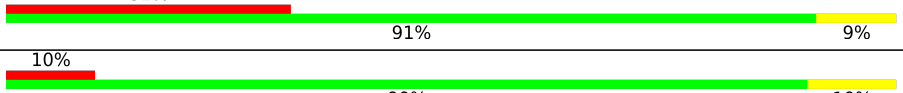
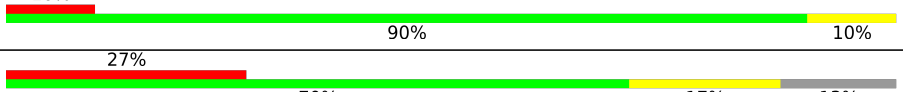
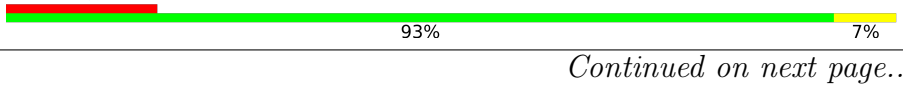
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Mol	Chain	Length	Quality of chain
4	3	38	18% 66% 34%
5	4	74	96% 62% 32%
6	A	1537	22% 62% 32% 6%
7	B	250	75% 72% 20% 8%
8	C	250	54% 72% 14% 14%
9	D	208	74% 76% 23%
10	E	165	24% 85% 8% 6%
11	F	127	56% 60% 22% 17%
12	G	156	85% 75% 22%
13	H	131	29% 77% 21%
14	I	128	67% 77% 22%
15	J	103	68% 67% 30%
16	K	128	41% 80% 9% 9%
17	L	124	45% 75% 22%
18	M	118	84% 76% 21%
19	N	101	64% 80% 18%
20	O	89	45% 90% 8%
21	P	83	43% 86% 13%
22	Q	85	53% 71% 22% 7%
23	R	75	41% 68% 20% 12%
24	S	91	87% 74% 18% 8%
25	T	88	38% 82% 16%
26	U	71	93% 75% 24%
27	V	77	99% 34% 47% 18%
28	X	116	47% 69% 21% 10%

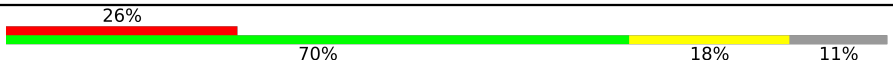
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Mol	Chain	Length	Quality of chain
29	a	2893	
30	b	115	
31	c	274	
32	d	212	
33	e	200	
34	f	178	
35	g	177	
36	h	148	
37	i	142	
38	j	122	
39	k	146	
40	l	137	
41	m	125	
42	n	116	
43	o	122	
44	p	119	
45	q	103	
46	r	109	
47	s	106	
48	t	105	
49	u	98	
50	v	85	
51	w	78	
52	x	65	
53	y	58	

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Mol	Chain	Length	Quality of chain
54	z	61	

2 Entry composition

There are 57 unique types of molecules in this entry. The entry contains 144222 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Large ribosomal subunit protein bL33.

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

- Molecule 2 is a protein called Large ribosomal subunit protein bL34.

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

- Molecule 3 is a protein called Large ribosomal subunit protein bL35.

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

- Molecule 4 is a protein called Large ribosomal subunit protein bL36.

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

- Molecule 5 is a protein called Large ribosomal subunit protein bL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	71	552	343	101	102	6	0	0

- Molecule 6 is a RNA chain called 16S rRNA (1529-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	A	1528	32785	14632	5993	10632	1528	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B	229	Total	C	N	O	S	0	0
			1801	1130	333	332	6		

- Molecule 8 is a protein called Small ribosomal subunit protein uS3.

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

- Molecule 9 is a protein called Small ribosomal subunit protein uS4.

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

- Molecule 10 is a protein called Small ribosomal subunit protein uS5.

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

- Molecule 11 is a protein called Small ribosomal subunit protein bS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	F	106	Total	C	N	O	S	0	0
			878	552	160	162	4		

- Molecule 12 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	G	153	Total	C	N	O	S	0	0
			1210	758	229	216	7		

- Molecule 13 is a protein called Small ribosomal subunit protein uS8.

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

- Molecule 14 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	I	127	Total	C	N	O	S	0	0
			995	621	198	175	1		

- Molecule 15 is a protein called Small ribosomal subunit protein uS10.

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

- Molecule 16 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	K	117	Total	C	N	O	S	0	0
			862	535	166	160	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	118	IAS	ASN	modified residue	UNP D0CD20

- Molecule 17 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	L	122	Total	C	N	O	S	0	0
			947	581	193	167	6		

- Molecule 18 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	M	116	Total	C	N	O	S	0	0
			912	564	186	159	3		

- Molecule 19 is a protein called Small ribosomal subunit protein uS14.

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

- Molecule 20 is a protein called Small ribosomal subunit protein uS15.

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

- Molecule 21 is a protein called Small ribosomal subunit protein bS16.

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

- Molecule 22 is a protein called Small ribosomal subunit protein uS17.

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

- Molecule 23 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	R	66	Total	C	N	O	S	0	0
			545	349	96	99	1		

- Molecule 24 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	S	84	Total	C	N	O	S	0	0
			657	419	127	109	2		

- Molecule 25 is a protein called Small ribosomal subunit protein bS20.

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

- Molecule 26 is a protein called Small ribosomal subunit protein bS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	U	70	Total	C	N	O	S	0	0
			585	367	118	99	1		

- Molecule 27 is a RNA chain called tRNA (77-MER).

Mol	Chain	Residues	Atoms						AltConf	Trace
27	V	77	Total	C	N	O	P	S	0	0
			1644	734	297	535	77	1		

- Molecule 28 is a protein called Putative ribosomal subunit interface protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	X	104	Total	C	N	O	S	0	0
			841	519	161	158	3		

- Molecule 29 is a RNA chain called 23S rRNA (2890-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
29	a	2890	Total	C	N	O	P	0	0
			61984	27671	11335	20088	2890		

- Molecule 30 is a RNA chain called 5S rRNA (115-MER).

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

- Molecule 31 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	c	272	Total	C	N	O	S	0	0
			2111	1302	436	365	8		

- Molecule 32 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	d	211	Total	C	N	O	S	0	0
			1573	973	297	300	3		

- Molecule 33 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	e	199	Total	C	N	O	S	0	0
			1511	950	280	276	5		

- Molecule 34 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	f	177	Total	C	N	O	S	0	0
			1395	886	250	251	8		

- Molecule 35 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	g	175	Total	C	N	O	S	0	0
			1327	838	238	250	1		

- Molecule 36 is a protein called Large ribosomal subunit protein bL9.

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

- Molecule 37 is a protein called Large ribosomal subunit protein uL13.

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

- Molecule 38 is a protein called Large ribosomal subunit protein uL14.

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

- Molecule 39 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	k	146	Total	C	N	O	S	0	0
			1089	673	215	200	1		

- Molecule 40 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	l	137	Total	C	N	O	S	0	0
			1088	687	210	185	6		

- Molecule 41 is a protein called Large ribosomal subunit protein bL17.

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

- Molecule 42 is a protein called Large ribosomal subunit protein uL18.

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

- Molecule 43 is a protein called Large ribosomal subunit protein bL19.

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

- Molecule 44 is a protein called Large ribosomal subunit protein bL20.

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

- Molecule 45 is a protein called Large ribosomal subunit protein bL21.

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

- Molecule 46 is a protein called Large ribosomal subunit protein uL22.

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

- Molecule 47 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	s	92	Total	C	N	O	S	0	0
			717	457	129	130	1		

- Molecule 48 is a protein called Large ribosomal subunit protein uL24.

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

- Molecule 49 is a protein called Large ribosomal subunit protein bL25.

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

- Molecule 50 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	v	78	Total 589	C 365	N 113	O 109	S 2	0	0

- Molecule 51 is a protein called Large ribosomal subunit protein bL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	w	77	Total 632	C 395	N 130	O 105	S 2	0	0

- Molecule 52 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	x	62	Total 498	C 308	N 96	O 93	S 1	0	0

- Molecule 53 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	y	58	Total 463	C 286	N 88	O 85	S 4	0	0

- Molecule 54 is a protein called Large ribosomal subunit protein bL32.

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

- Molecule 55 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
55	1	1	Total K 1 1	0
55	3	1	Total K 1 1	0
55	A	47	Total K 47 47	0
55	L	1	Total K 1 1	0
55	a	109	Total K 109 109	0
55	b	1	Total K 1 1	0
55	c	6	Total K 6 6	0
55	e	1	Total K 1 1	0
55	r	1	Total K 1 1	0
55	t	1	Total K 1 1	0

- Molecule 56 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
56	3	1	Total Zn 1 1	0
56	4	1	Total Zn 1 1	0

- Molecule 57 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
57	A	97	Total Mg 97 97	0
57	J	1	Total Mg 1 1	0
57	a	252	Total Mg 252 252	0
57	b	5	Total Mg 5 5	0
57	c	1	Total Mg 1 1	0
57	d	1	Total Mg 1 1	0

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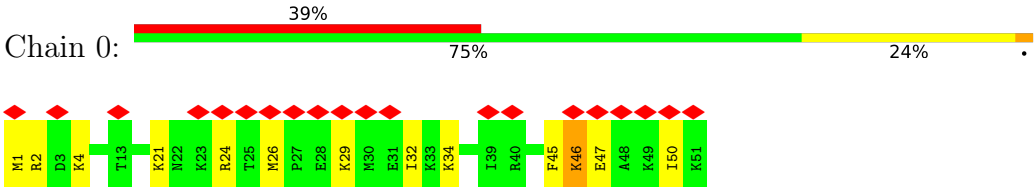
Continued from previous page...

Mol	Chain	Residues	Atoms	AltConf
57	k	1	Total Mg 1 1	0
57	v	1	Total Mg 1 1	0
57	z	1	Total Mg 1 1	0

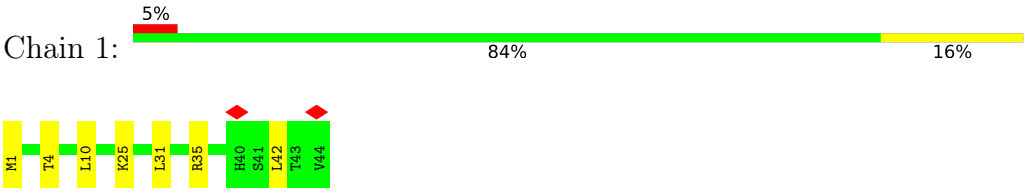
3 Residue-property plots (i)

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.

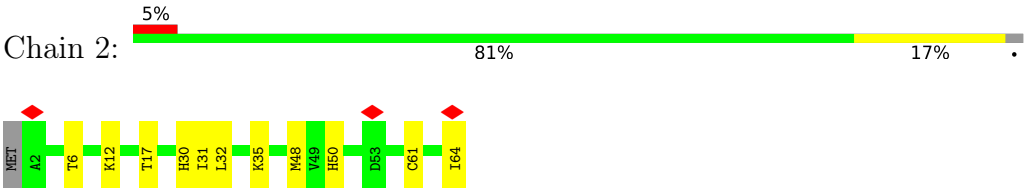
• Molecule 1: Large ribosomal subunit protein bL33



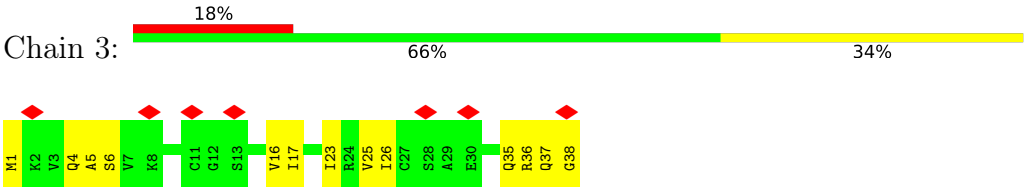
• Molecule 2: Large ribosomal subunit protein bL34



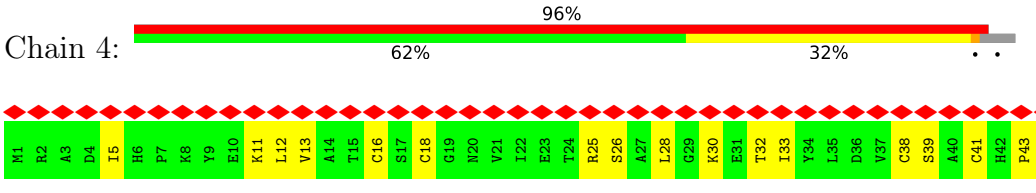
• Molecule 3: Large ribosomal subunit protein bL35

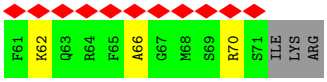


• Molecule 4: Large ribosomal subunit protein bL36



• Molecule 5: Large ribosomal subunit protein bL31

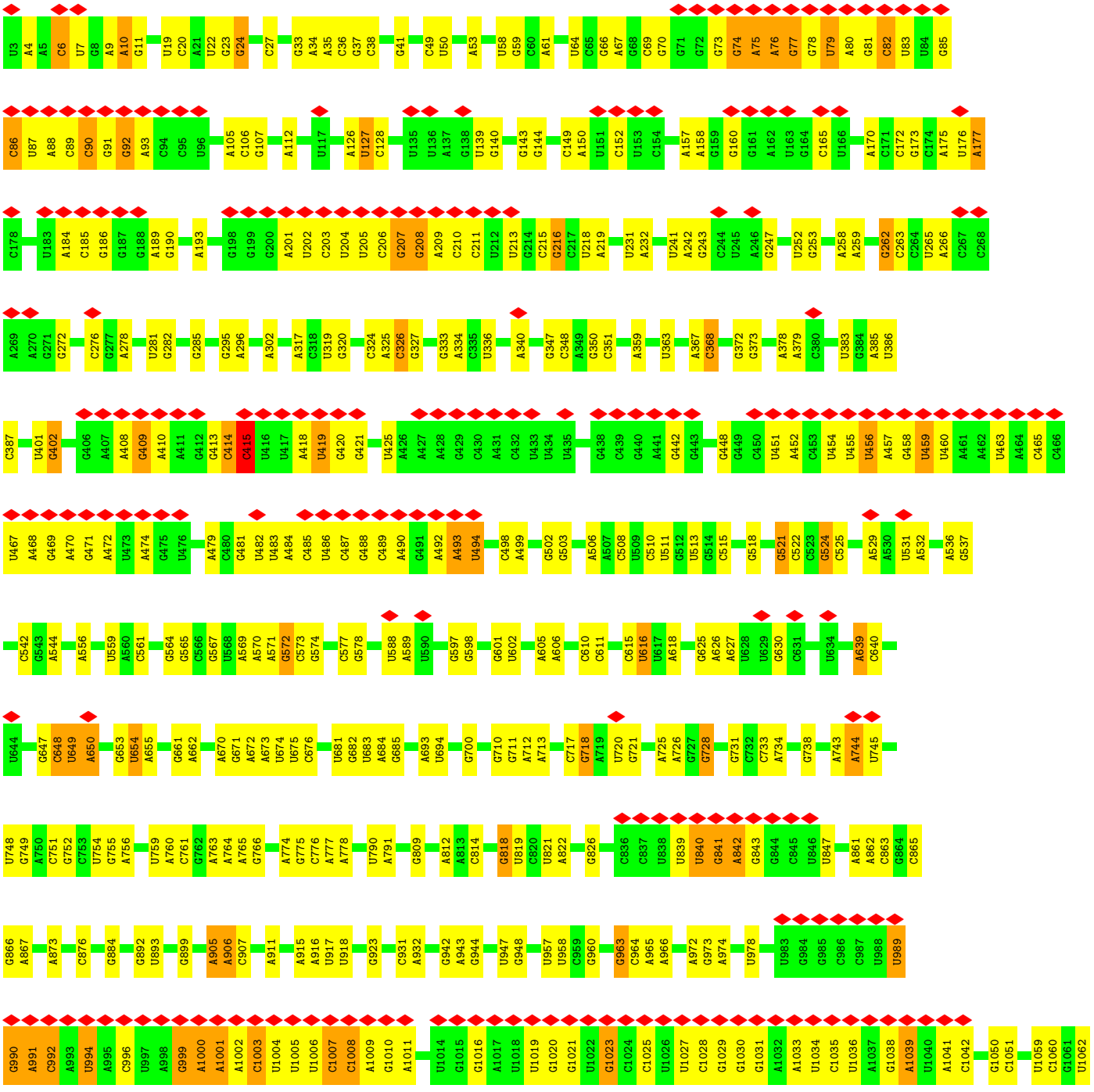


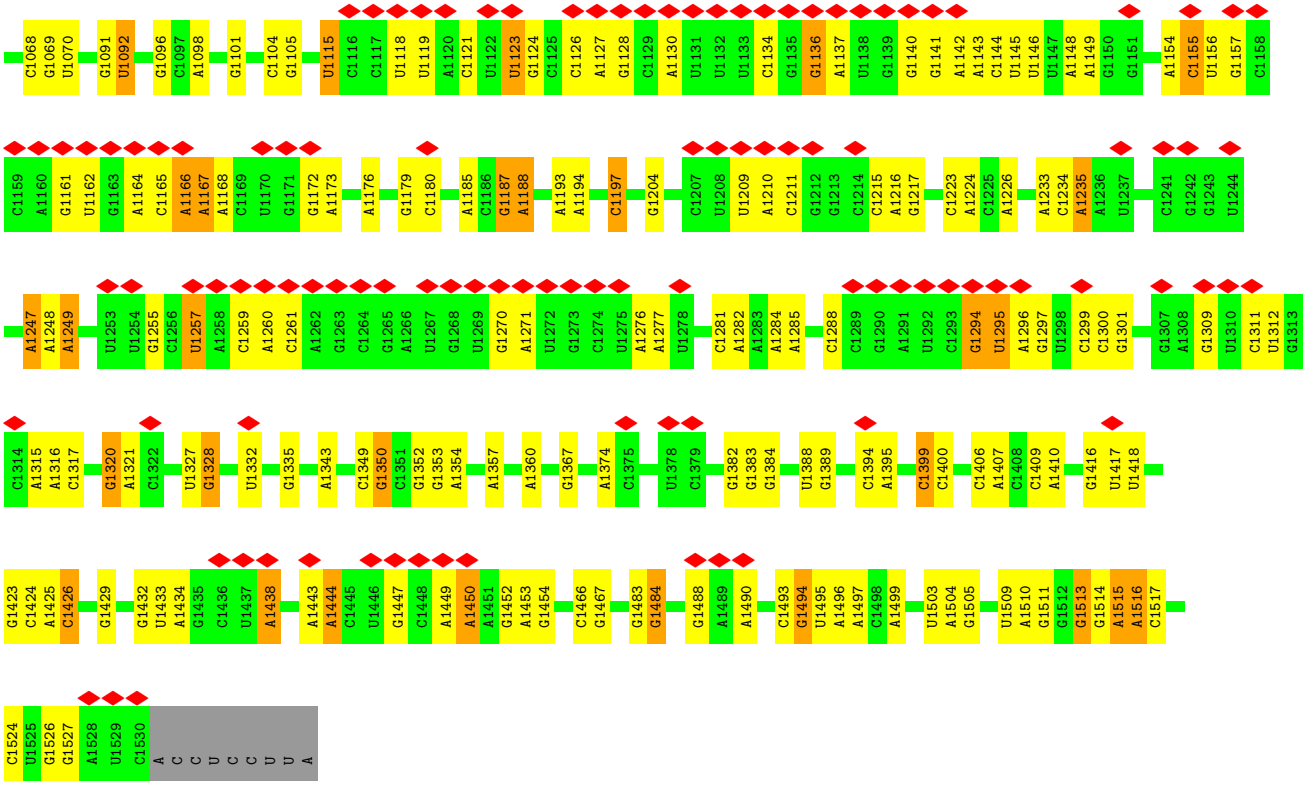


• Molecule 6: 16S rRNA (1529-MER)

Chain A:



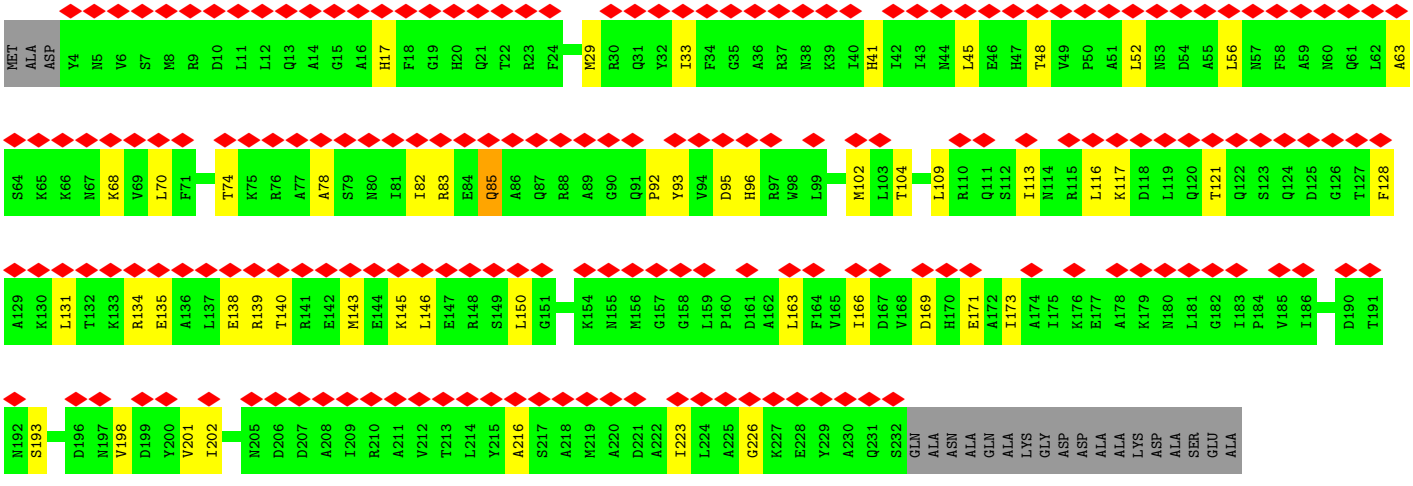




• Molecule 7: Small ribosomal subunit protein uS2

Chain B:

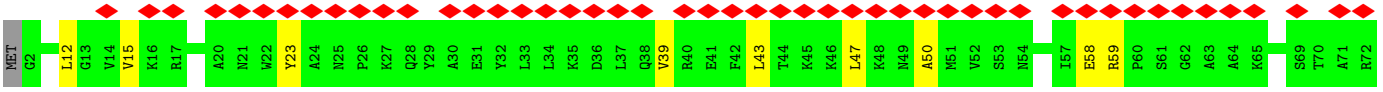


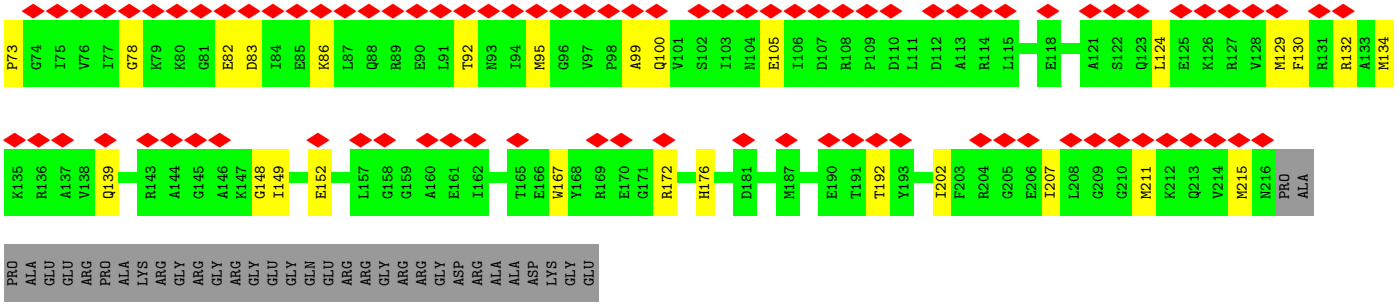


• Molecule 8: Small ribosomal subunit protein uS3

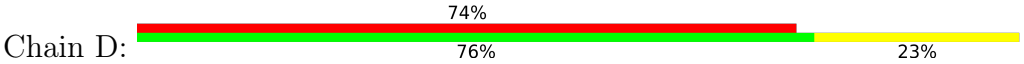
Chain C:





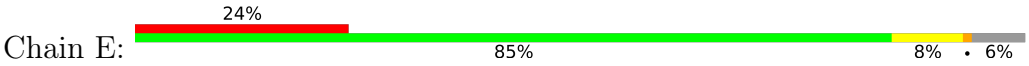


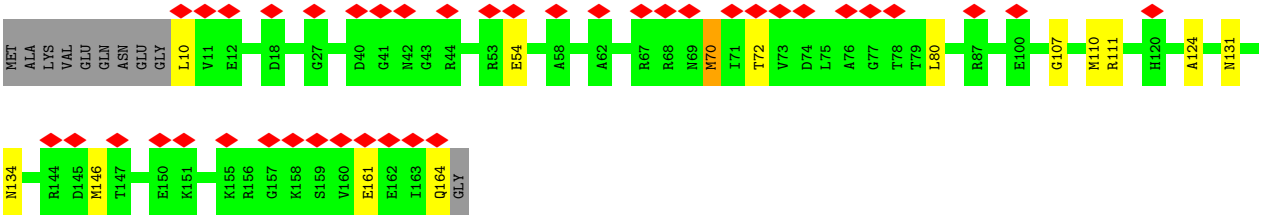
• Molecule 9: Small ribosomal subunit protein uS4





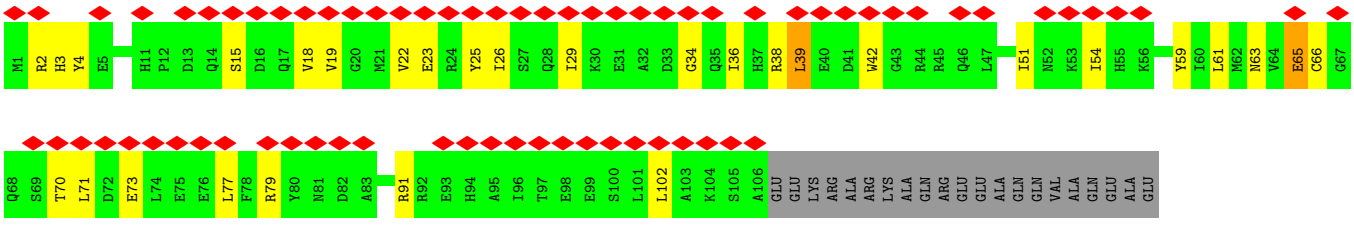
• Molecule 10: Small ribosomal subunit protein uS5





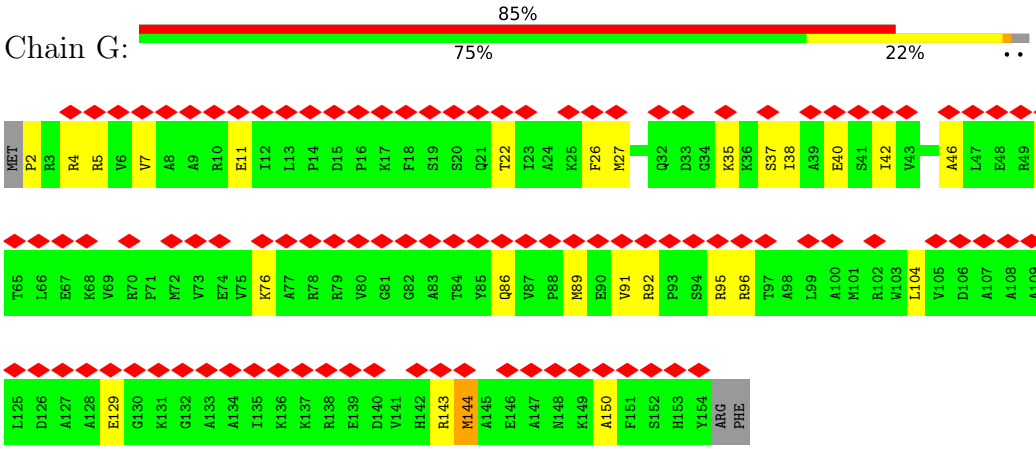
• Molecule 11: Small ribosomal subunit protein bS6





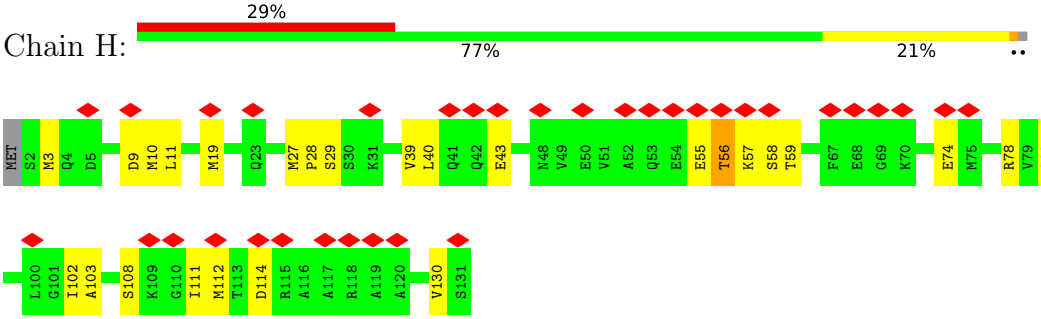
• Molecule 12: Small ribosomal subunit protein uS7

Chain G:



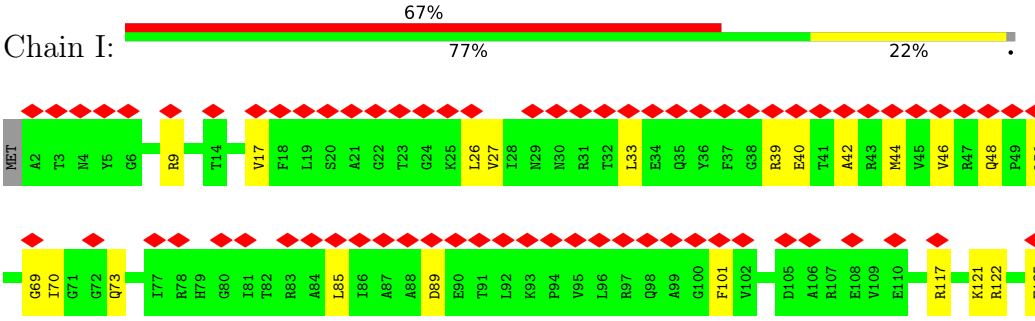
• Molecule 13: Small ribosomal subunit protein uS8

Chain H:



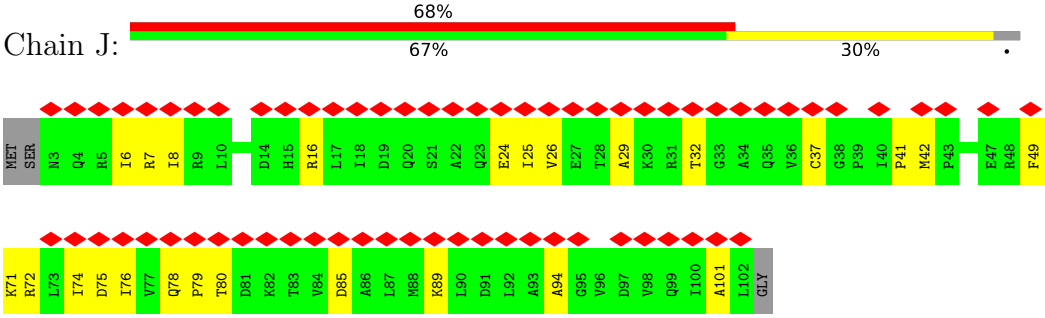
• Molecule 14: Small ribosomal subunit protein uS9

Chain I:



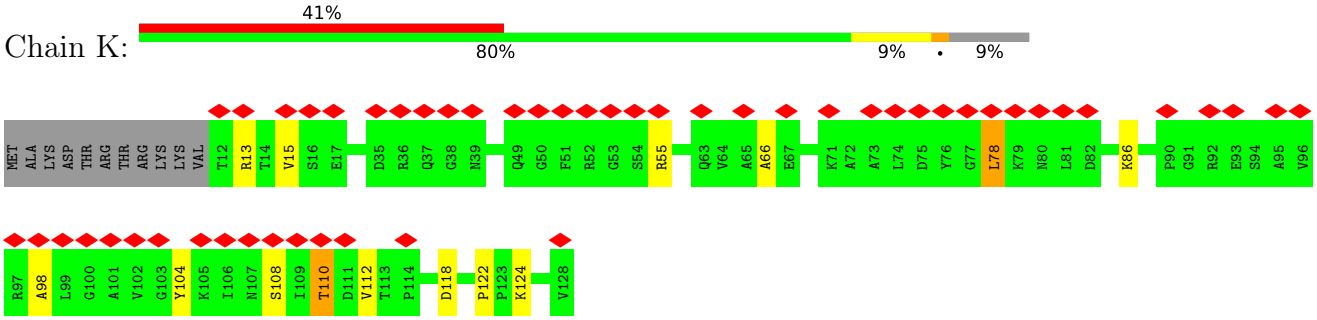
• Molecule 15: Small ribosomal subunit protein uS10

Chain J:



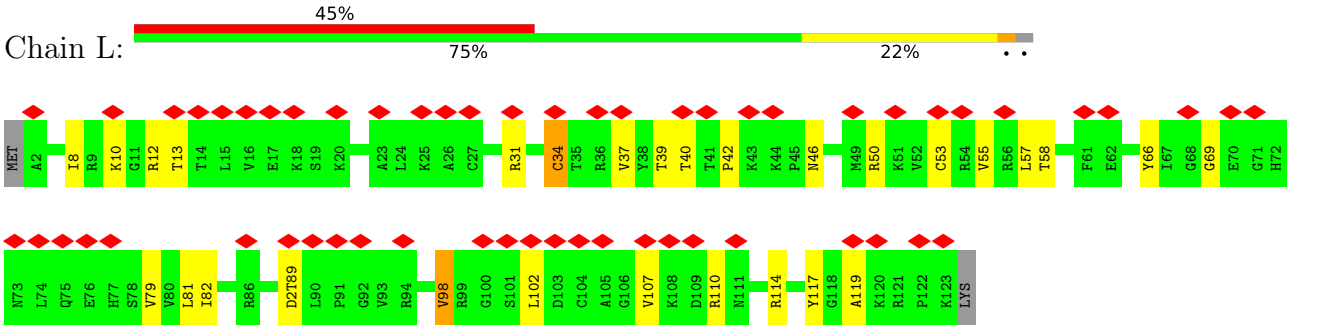
• Molecule 16: Small ribosomal subunit protein uS11

Chain K:



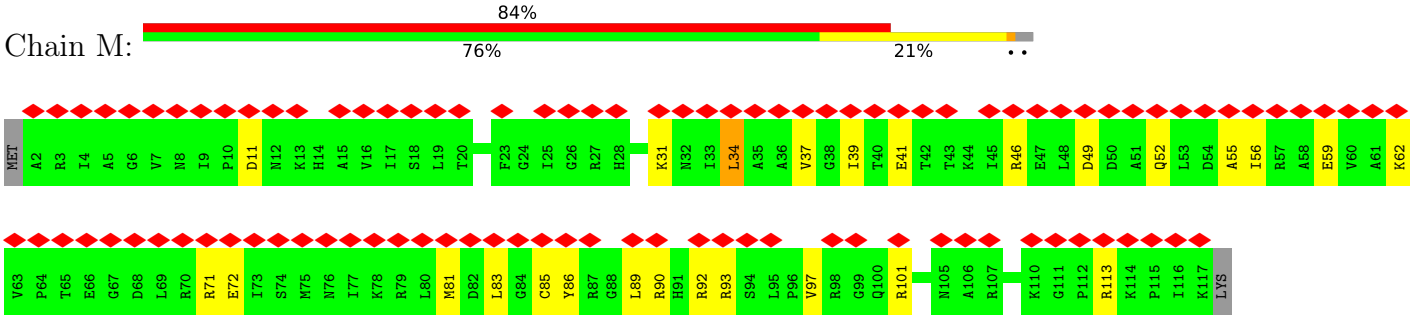
• Molecule 17: Small ribosomal subunit protein uS12

Chain L:



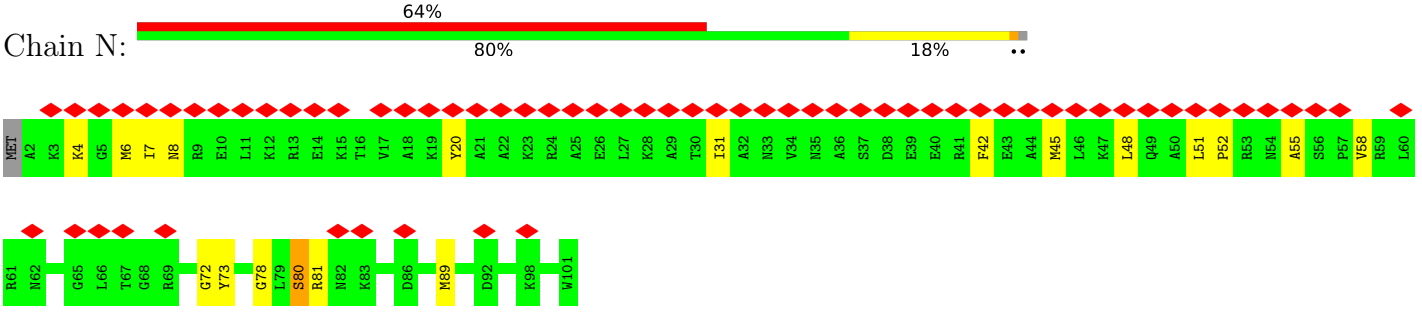
• Molecule 18: Small ribosomal subunit protein uS13

Chain M:



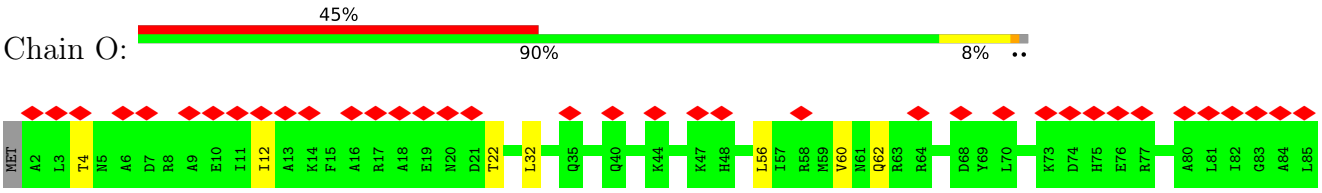
• Molecule 19: Small ribosomal subunit protein uS14

Chain N:



• Molecule 20: Small ribosomal subunit protein uS15

Chain O:

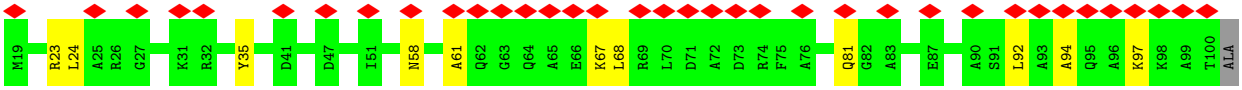




• Molecule 21: Small ribosomal subunit protein bS16

Chain P:

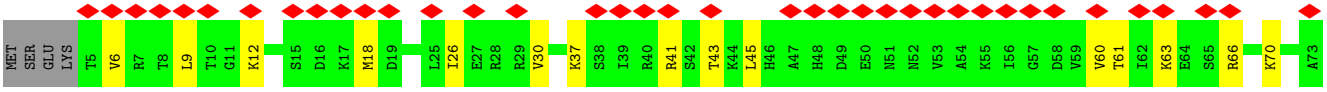


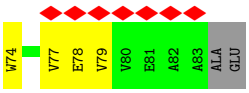


• Molecule 22: Small ribosomal subunit protein uS17

Chain Q:



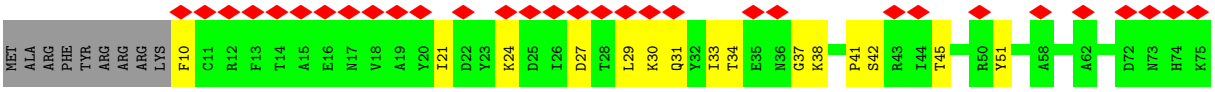




• Molecule 23: Small ribosomal subunit protein bS18

Chain R:

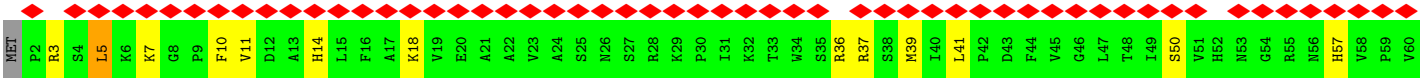


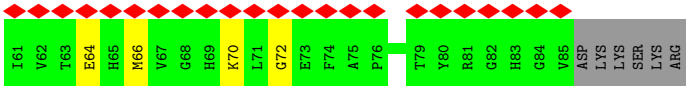


• Molecule 24: Small ribosomal subunit protein uS19

Chain S:



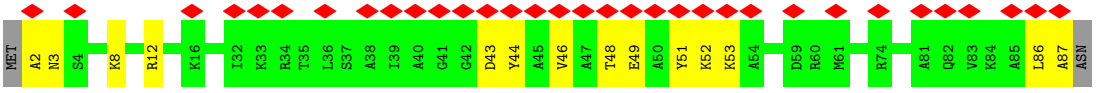




• Molecule 25: Small ribosomal subunit protein bS20

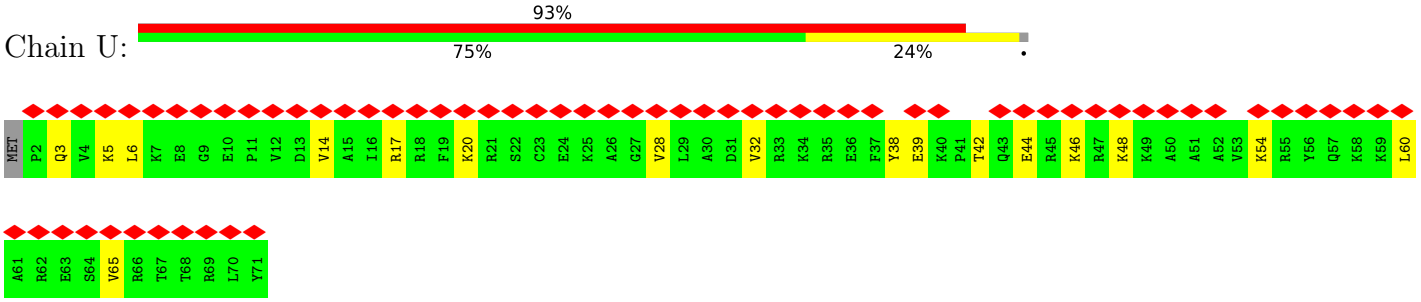
Chain T:





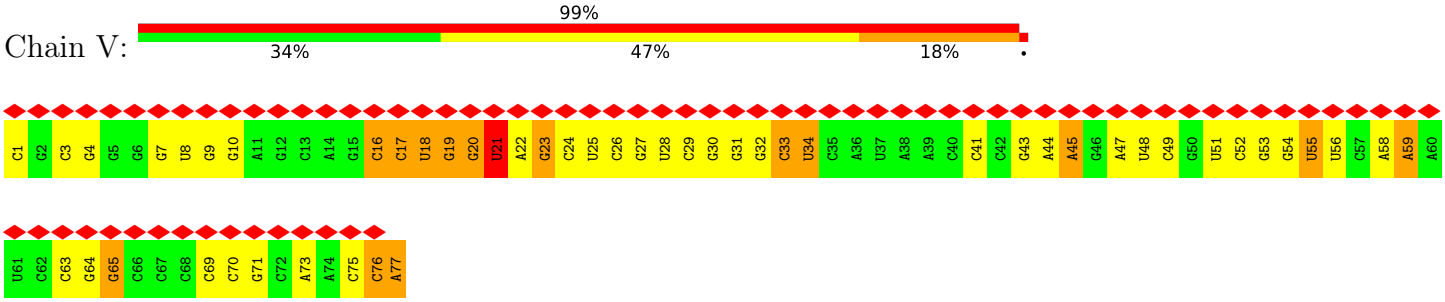
• Molecule 26: Small ribosomal subunit protein bS21

Chain U:



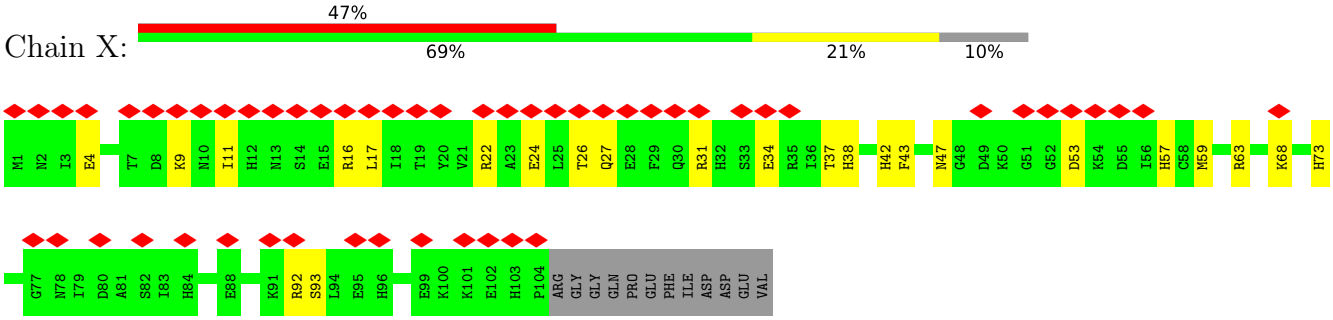
• Molecule 27: tRNA (77-MER)

Chain V:



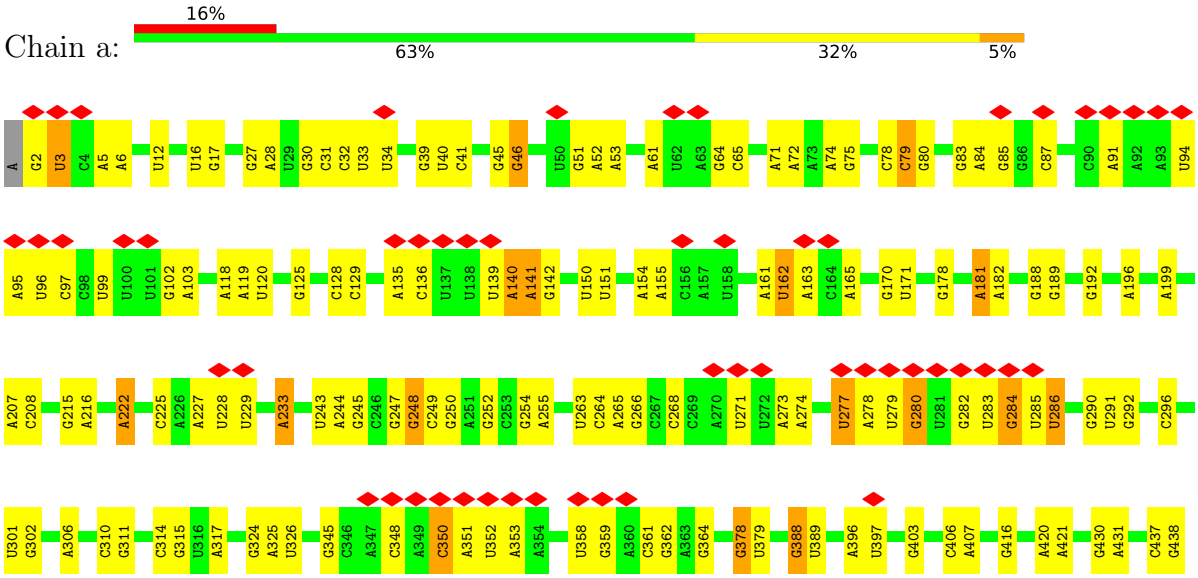
• Molecule 28: Putative ribosomal subunit interface protein

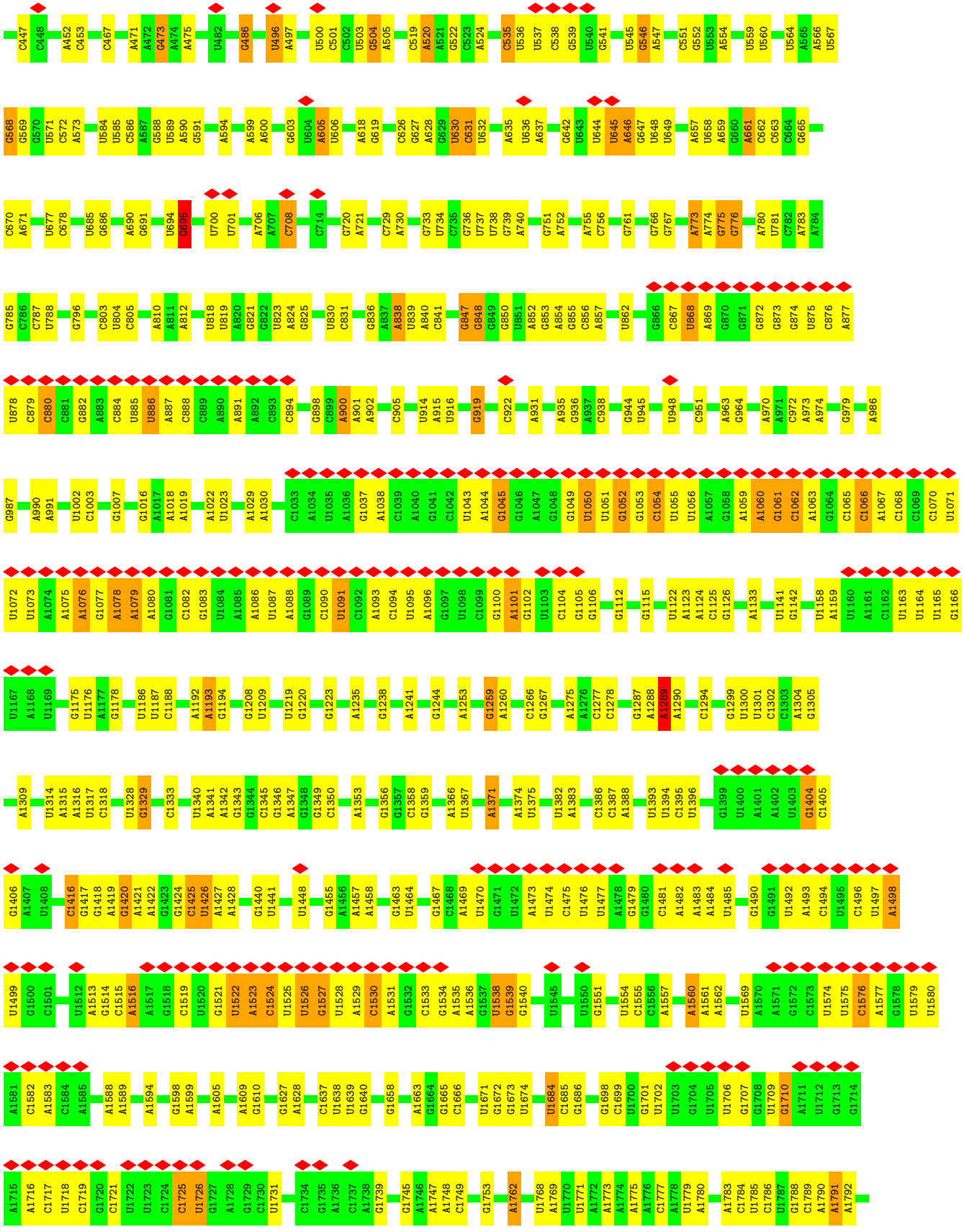
Chain X:

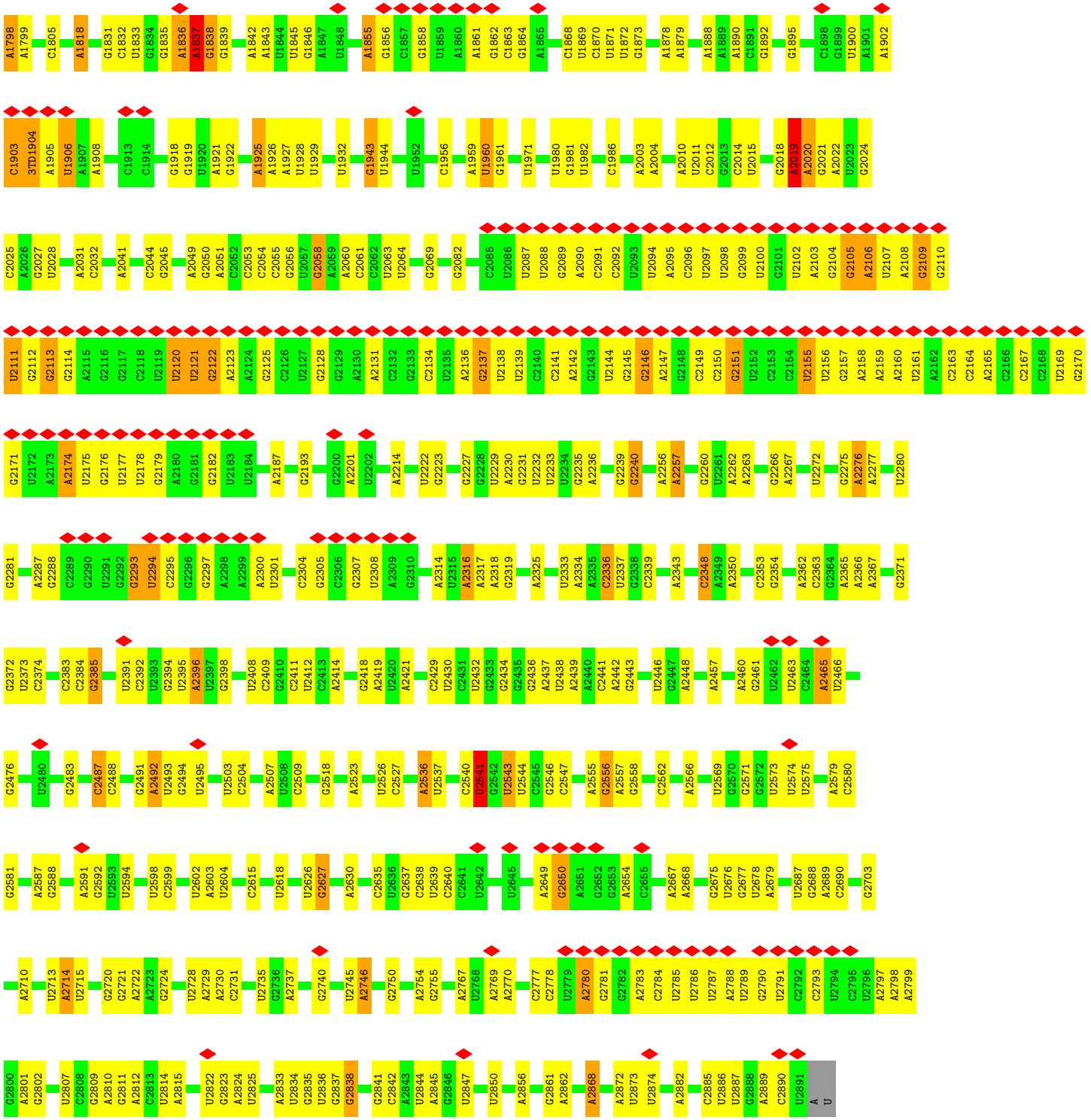


• Molecule 29: 23S rRNA (2890-MER)

Chain a:



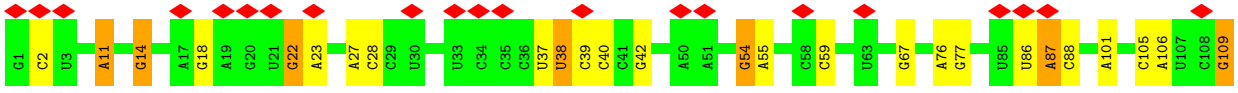

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G568 G569 G570 U571 C572 A573 U584 U585 C586 A587 G588 U589 A590 G591 A594 A599 A600 G603 U604 A605 U606 A618 G619 C626 G627 A628 G629 U630 C631 U632 A635 U636 A637 G642 U643 U644 U645 A646 G647 U648 U649 A657 U658 A659 G660 A661 C662 C663 C664 G665
C670 A671 U677 C678 U685 G686 A690 G691 U694 G695 U700 U701 A706 A707 C708 C714 G720 A721 C729 A730 G733 U734 C735 G736 U737 U738 G739 A740 G751 A752 A755 C756 G761 G766 G767 A773 A774 G775 G776 A780 U781 C782 A783 A784
G785 C786 C787 U788 G796 C803 U804 C805 A810 A811 A812 U818 U819 A820 G821 G822 U823 A824 G825 U830 C831 G836 A837 A838 U839 A840 C841 G847 G848 G849 G850 U851 A852 G853 A854 G855 C856 A857 U862 G866 C867 U868 A869 G870 G871 G872 G873 G874 U875 C876 A877
U878 C879 C880 C881 G882 A883 C884 U885 U886 A887 C888 C889 A890 A891 A892 C893 C894 G898 C899 A900 A901 A902 C905 U914 A915 U916 G919 C922 A931 A935 G936 A937 C938 G944 U945 U948 C951 A963 G964 A970 A971 C972 A973 A974 G979 A986
G987 A990 A991 U1002 C1003 G1007 G1016 A1017 A1018 A1019 A1022 U1023 A1029 A1030 C1033 A1034 U1035 A1036 G1037 A1038 C1039 A1040 G1041 C1042 U1043 A1044 G1045 G1046 A1047 G1048 G1049 U1050 U1051 G1052 G1053 C1054 U1055 U1056 A1057 G1058 A1059 A1060 G1061 C1062 A1063 G1064 C1065 C1066 A1067 C1068 C1069 C1070 U1071
U1072 U1073 A1074 A1075 A1076 G1077 A1078 A1079 A1080 G1081 C1082 G1083 U1084 A1085 A1086 U1087 A1088 G1089 C1090 U1091 C1092 A1093 C1094 U1095 A1096 G1097 U1098 C1099 G1100 A1101 G1102 U1103 C1104 G1105 G1106 G1112 G1115 U1122 A1123 A1124 C1125 G1126 A1133 U1141 G1142 U1158 A1159 U1160 A1161 C1162 U1163 U1164 U1165 G1166
U1167 A1168 U1169 G1175 U1176 A1177 G1178 U1186 U1187 C1188 A1192 A1193 G1194 G1208 U1209 U1219 G1220 G1223 A1235 G1238 A1241 G1244 A1253 G1259 A1260 C1266 G1267 A1275 A1276 C1277 C1278 G1287 A1288 A1289 A1290 C1294 G1299 U1300 U1301 C1302 C1303 A1304 G1305
A1309 U1314 A1315 A1316 U1317 C1318 U1328 G1329 C1333 U1340 A1341 A1342 C1343 G1344 C1345 G1346 A1347 G1348 G1349 C1350 A1353 G1356 C1357 C1358 G1359 A1366 U1367 A1371 A1374 U1375 U1382 A1383 C1386 C1387 A1388 U1393 U1394 C1395 U1396 G1399 U1400 A1401 A1402 U1403 G1404 C1405
G1406 A1407 U1408 C1416 G1417 G1418 A1419 G1420 A1421 A1422 G1423 G1424 C1425 U1426 A1427 A1428 G1440 U1441 U1448 G1455 A1456 A1457 A1458 G1463 U1464 G1467 C1468 A1469 U1470 G1471 U1472 A1473 U1474 C1475 U1476 U1477 A1478 G1479 G1480 C1481 A1482 A1483 A1484 U1485 G1490 G1491 U1492 A1493 C1494 U1495 C1496 U1497 A1498
U1499 G1500 C1501 U1512 A1513 G1514 C1515 A1516 A1517 G1518 C1519 U1520 G1521 U1522 A1523 C1524 U1525 U1526 G1527 U1528 A1529 C1530 A1531 G1532 C1533 G1534 A1535 A1536 G1537 U1538 G1539 G1540 U1545 U1550 G1551 U1554 C1555 C1556 A1557 A1560 A1561 A1562 U1569 A1570 A1571 G1572 C1573 U1574 U1575 C1576 A1577 G1578 U1579 U1580
A1581 C1582 A1583 C1584 A1585 A1588 A1589 A1594 G1598 A1599 A1605 A1609 G1610 G1627 A1628 C1637 U1638 U1639 G1640 G1658 A1663 G1664 G1665 C1666 U1671 G1672 G1673 U1674 U1684 C1685 G1686 G1698 C1699 U1700 G1701 U1702 U1703 G1704 U1705 U1706 G1707 G1708 U1709 G1710 A1711 U1712 G1713 G1714
A1715 A1716 C1717 U1718 C1719 G1720 C1721 U1722 U1723 C1724 C1725 U1726 G1727 A1728 G1729 C1730 U1731 C1734 G1735 A1736 C1737 A1738 G1739 G1745 A1746 A1747 A1748 C1749 G1753 A1762 U1768 A1769 U1770 U1771 A1772 A1773 A1774 A1775 A1776 C1777 A1778 U1779 A1780 A1783 C1784 U1785 C1786 U1787 G1788 C1789 A1790 A1791 A1792

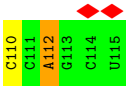


• Molecule 30: 5S rRNA (115-MER)

Chain b:



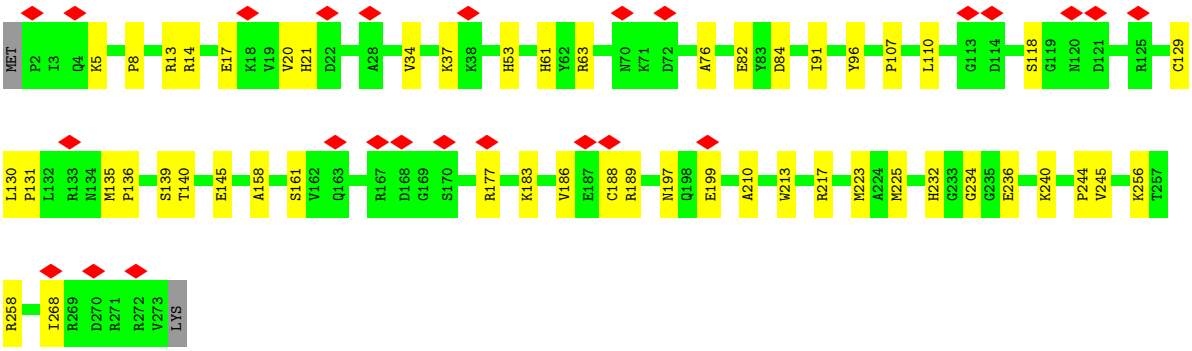




• Molecule 31: Large ribosomal subunit protein uL2

Chain c:

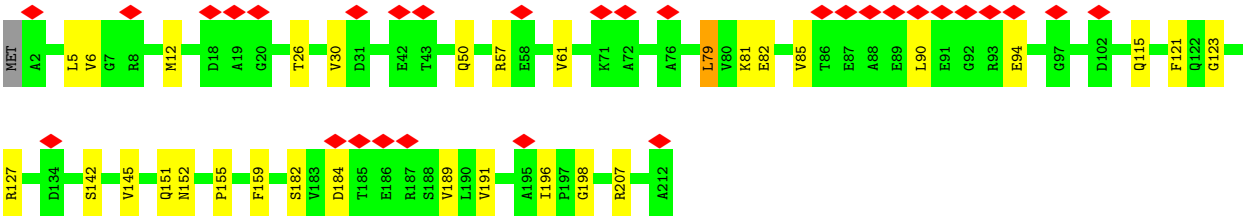




• Molecule 32: Large ribosomal subunit protein uL3

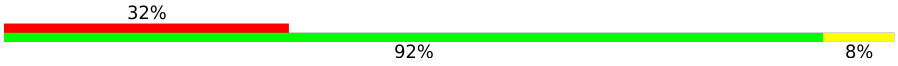
Chain d:

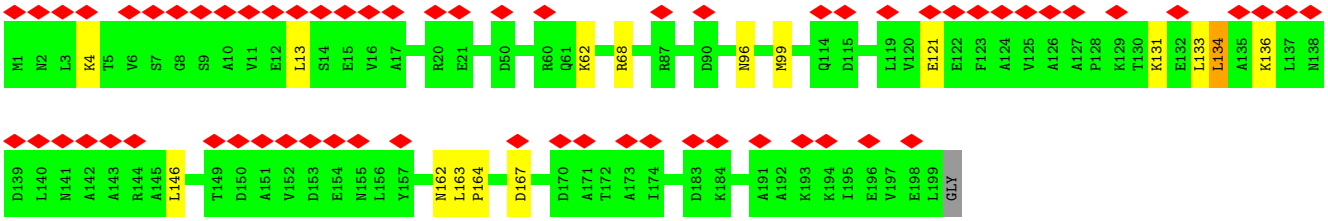




• Molecule 33: Large ribosomal subunit protein uL4

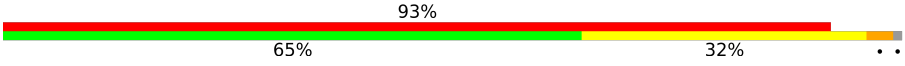
Chain e:

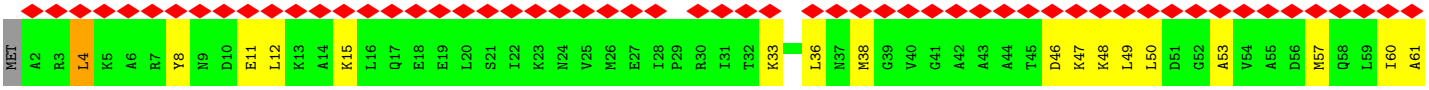


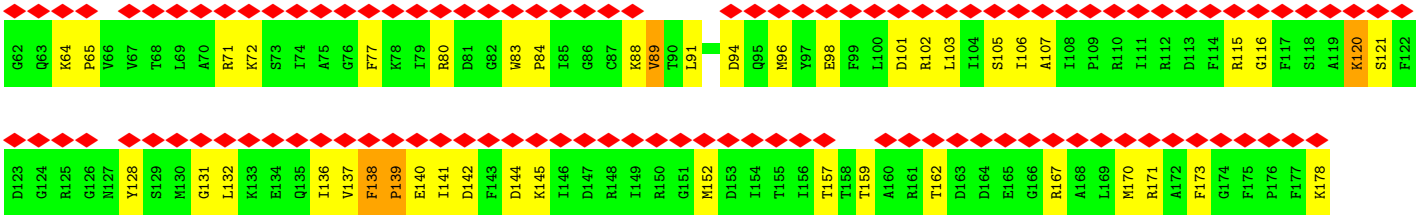


• Molecule 34: Large ribosomal subunit protein uL5

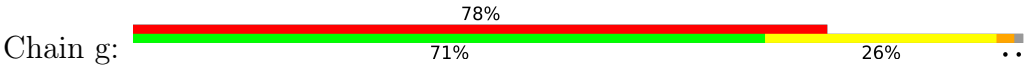
Chain f:

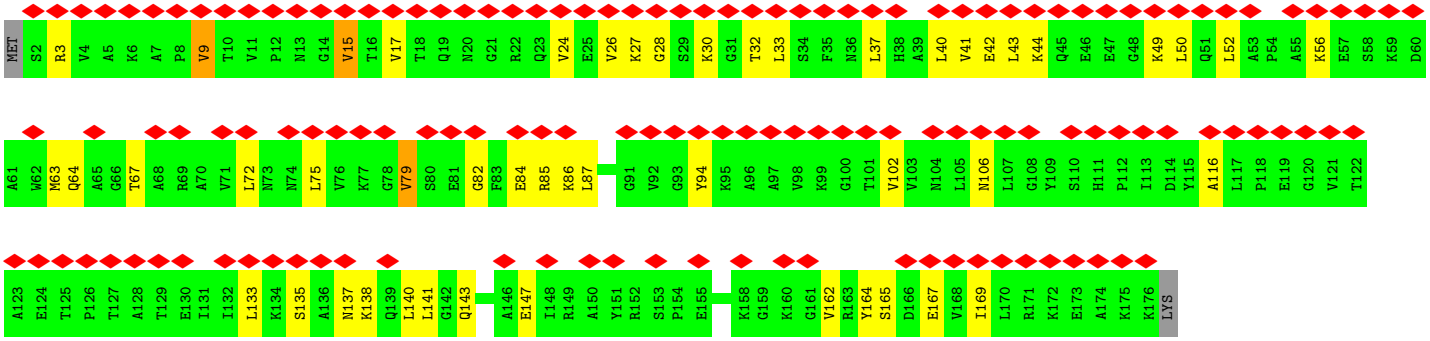






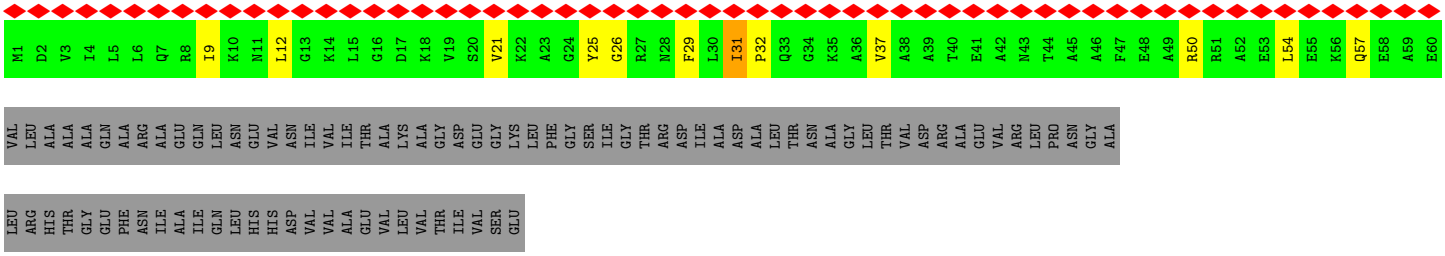
• Molecule 35: Large ribosomal subunit protein uL6



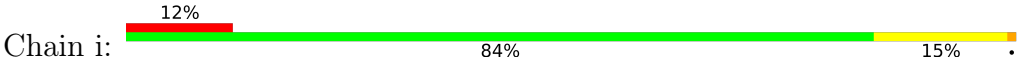


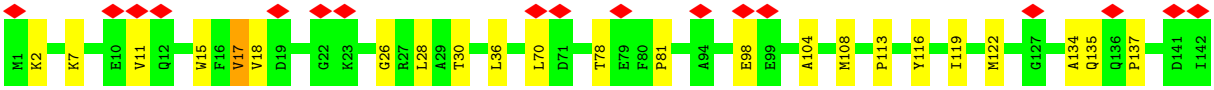
• Molecule 36: Large ribosomal subunit protein bL9



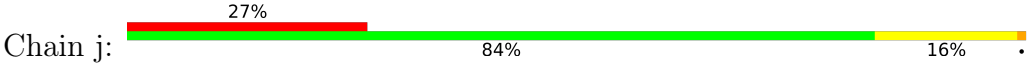


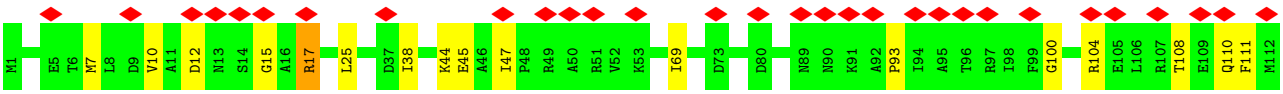
• Molecule 37: Large ribosomal subunit protein uL13

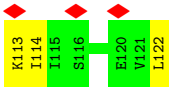




• Molecule 38: Large ribosomal subunit protein uL14



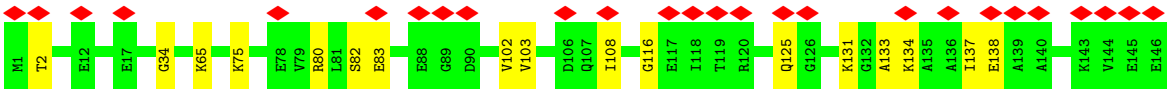




• Molecule 39: Large ribosomal subunit protein uL15

Chain k:

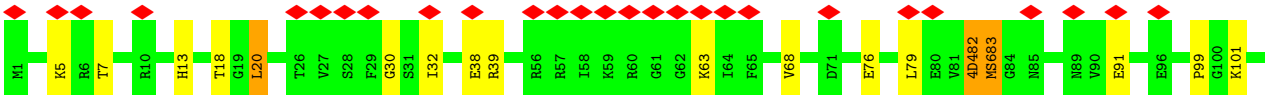




• Molecule 40: Large ribosomal subunit protein uL16

Chain l:

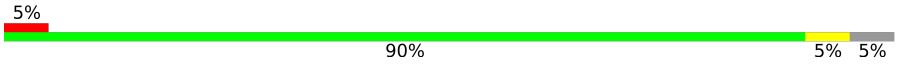


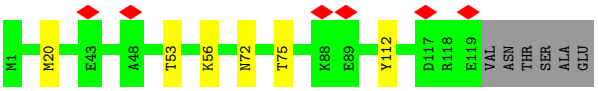




• Molecule 41: Large ribosomal subunit protein bL17

Chain m:

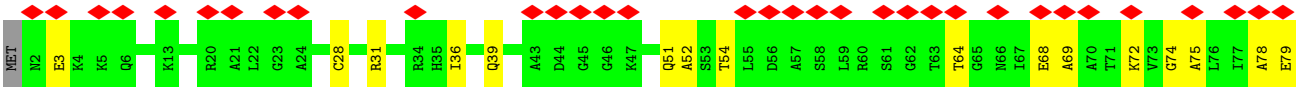


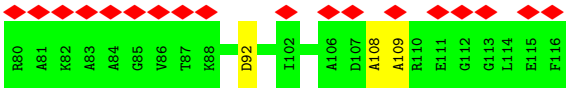


• Molecule 42: Large ribosomal subunit protein uL18

Chain n:



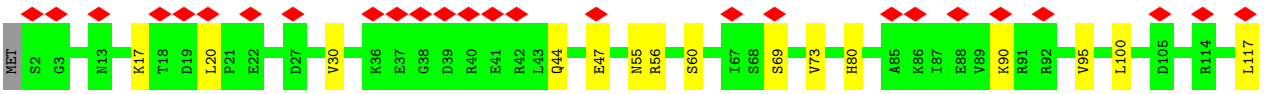


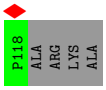


• Molecule 43: Large ribosomal subunit protein bL19

Chain o:



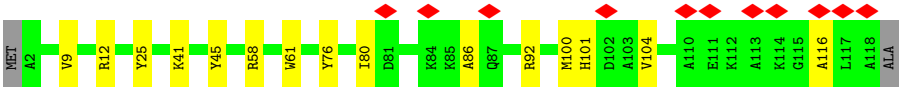




• Molecule 44: Large ribosomal subunit protein bL20

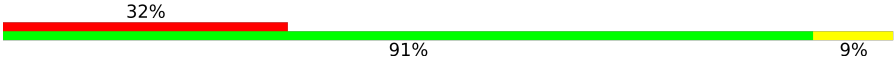
Chain p:

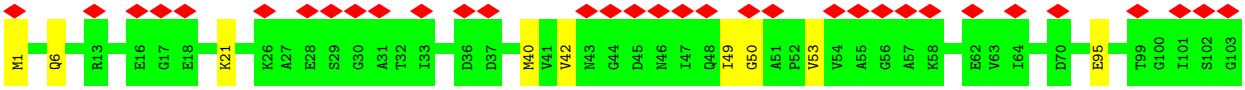




• Molecule 45: Large ribosomal subunit protein bL21

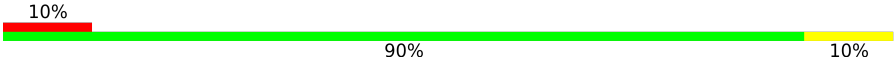
Chain q:

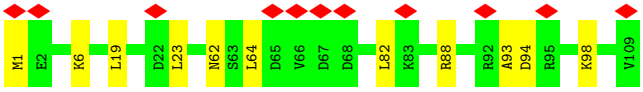




• Molecule 46: Large ribosomal subunit protein uL22

Chain r:

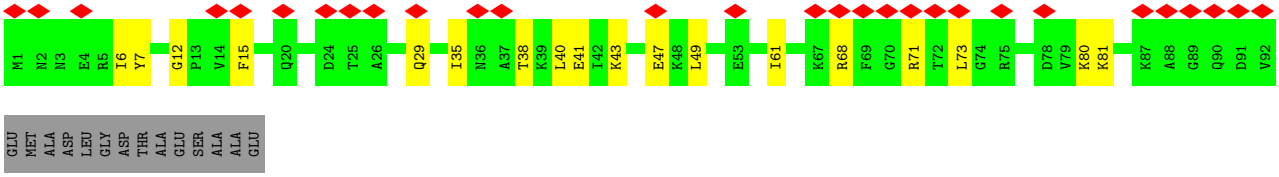




• Molecule 47: Large ribosomal subunit protein uL23

Chain s:

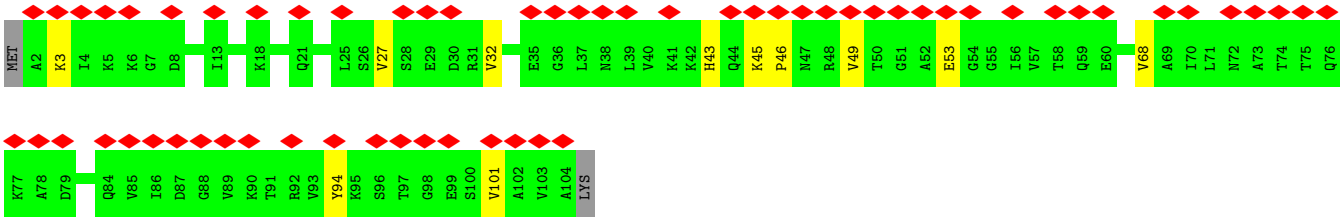




• Molecule 48: Large ribosomal subunit protein uL24

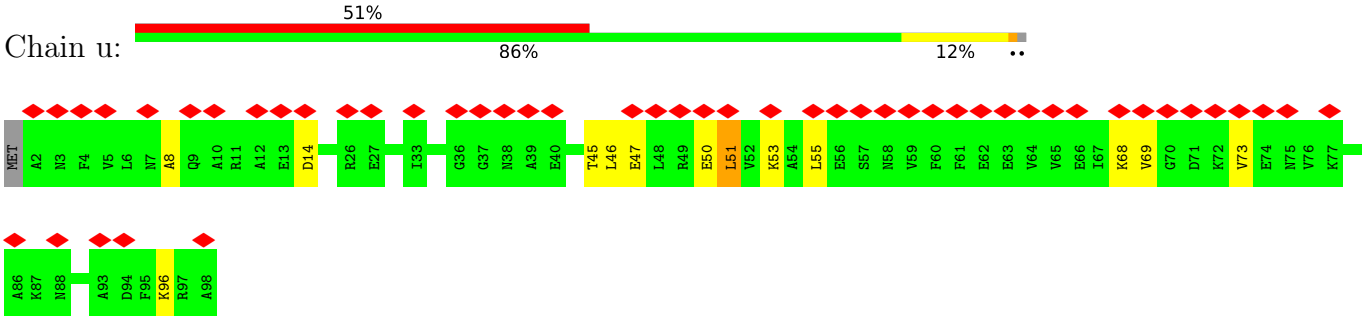
Chain t:





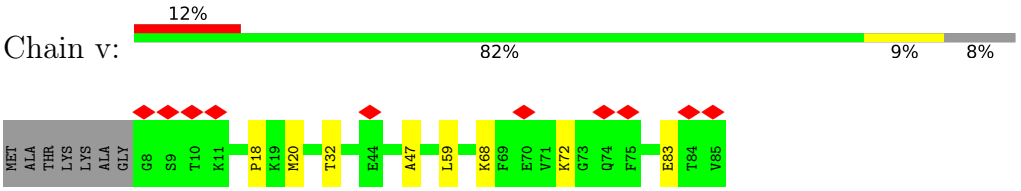
• Molecule 49: Large ribosomal subunit protein bL25

Chain u:



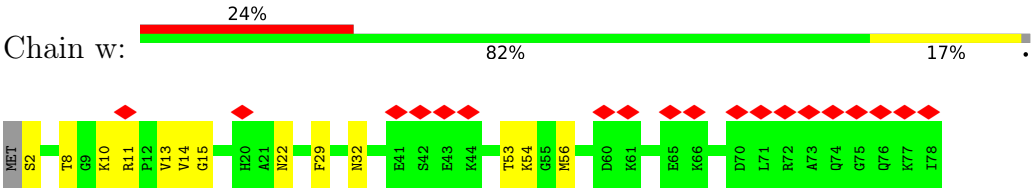
• Molecule 50: Large ribosomal subunit protein bL27

Chain v:



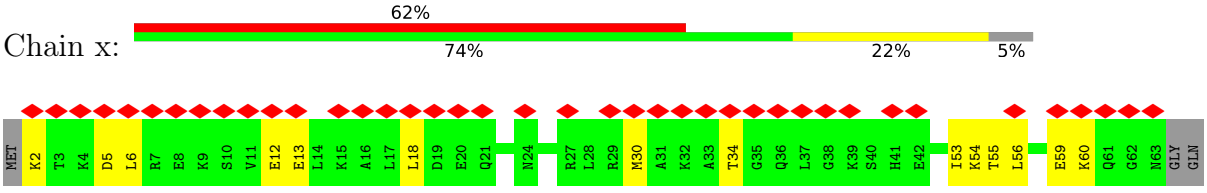
• Molecule 51: Large ribosomal subunit protein bL28

Chain w:



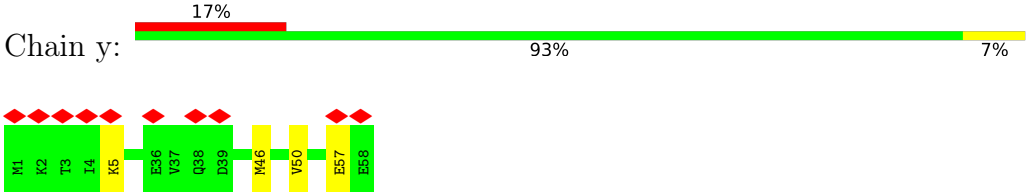
• Molecule 52: Large ribosomal subunit protein uL29

Chain x:



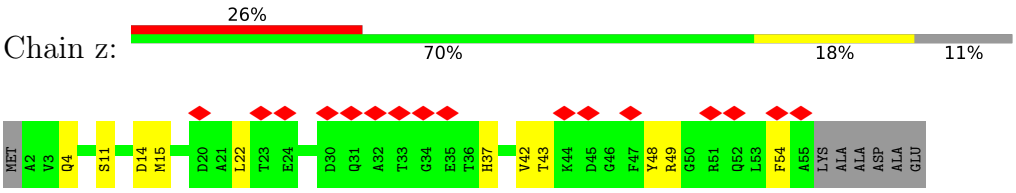
• Molecule 53: Large ribosomal subunit protein uL30

Chain y:



• Molecule 54: Large ribosomal subunit protein bL32

Chain z:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	74087	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	35	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.781	Depositor
Minimum map value	-1.246	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.073	Depositor
Recommended contour level	0.55	Depositor
Map size (Å)	542.72, 542.72, 542.72	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 2MG, MG, D2T, 1MG, 4OC, H2U, 4D4, MA6, 3TD, 6MZ, IAS, 5MU, OMU, 2MA, 5MC, K, MS6, PSU, ZN, G7M, 4SU, MEQ, UR3, OMG, OMC

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	0	0.30	0/434	0.47	0/573
2	1	0.36	0/367	0.34	0/481
3	2	0.33	0/515	0.36	0/678
4	3	0.32	0/296	0.36	0/389
5	4	0.18	0/561	0.38	0/750
6	A	0.68	0/36452	0.78	9/56856 (0.0%)
7	B	0.21	0/1832	0.36	0/2474
8	C	0.23	0/1714	0.33	0/2304
9	D	0.24	0/1653	0.33	0/2213
10	E	0.29	0/1141	0.38	0/1537
11	F	0.26	0/893	0.39	0/1204
12	G	0.21	0/1229	0.37	0/1647
13	H	0.29	0/993	0.37	0/1331
14	I	0.26	0/1006	0.38	0/1346
15	J	0.25	0/811	0.35	0/1096
16	K	0.26	0/869	0.35	0/1175
17	L	0.27	0/949	0.43	1/1270 (0.1%)
18	M	0.21	0/922	0.33	0/1237
19	N	0.23	0/803	0.33	0/1071
20	O	0.26	0/715	0.31	0/958
21	P	0.27	0/655	0.37	0/879
22	Q	0.23	0/628	0.32	0/847
23	R	0.27	0/555	0.35	0/749
24	S	0.19	0/675	0.33	0/912
25	T	0.26	0/669	0.28	0/892
26	U	0.19	0/592	0.31	0/784
27	V	0.35	0/1724	0.76	0/2687
28	X	0.23	0/858	0.31	0/1150
29	a	0.81	0/68962	0.82	38/107563 (0.0%)
30	b	0.64	0/2739	0.78	0/4266
31	c	0.34	0/2152	0.35	0/2891

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	d	0.33	0/1580	0.37	0/2127
33	e	0.32	0/1532	0.36	0/2068
34	f	0.24	0/1415	0.45	0/1895
35	g	0.23	0/1346	0.34	0/1818
36	h	0.16	0/461	0.40	0/616
37	i	0.33	0/1151	0.37	0/1551
38	j	0.30	0/956	0.34	0/1286
39	k	0.31	0/1097	0.35	0/1461
40	l	0.28	0/1084	0.33	0/1448
41	m	0.33	0/956	0.37	0/1282
42	n	0.26	0/873	0.35	0/1167
43	o	0.31	0/931	0.37	0/1249
44	p	0.35	0/947	0.34	0/1262
45	q	0.32	0/818	0.38	0/1094
46	r	0.31	0/831	0.38	0/1113
47	s	0.28	0/723	0.31	0/967
48	t	0.25	0/770	0.30	0/1034
49	u	0.25	0/770	0.35	0/1036
50	v	0.32	0/597	0.32	0/798
51	w	0.32	0/642	0.35	0/856
52	x	0.23	0/499	0.34	0/662
53	y	0.31	0/468	0.35	0/624
54	z	0.33	0/453	0.37	0/604
All	All	0.66	0/155264	0.72	48/232228 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
40	l	0	1

There are no bond length outliers.

All (48) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	1301	U	C2-N1-C1'	7.65	126.88	117.70
6	A	415	C	N3-C2-O2	-6.90	117.07	121.90
29	a	739	G	O4'-C1'-N9	6.54	113.08	108.50
29	a	781	U	C2-N1-C1'	6.54	125.55	117.70
29	a	520	A	C2-N3-C4	-6.42	107.39	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	2336	C	O5'-C5'-C4'	6.17	114.33	109.40
6	A	653	G	O4'-C1'-N9	6.16	113.13	108.20
29	a	504	G	O4'-C1'-N9	6.04	112.73	108.50
29	a	880	C	N1-C2-O2	5.95	122.47	118.90
6	A	326	C	C2-N1-C1'	5.93	125.32	118.80
29	a	2465	A	O4'-C1'-N9	5.93	112.94	108.20
6	A	1155	C	C2-N1-C1'	5.81	125.19	118.80
29	a	1302	C	C2-N1-C1'	5.69	125.06	118.80
29	a	1289	A	O4'-C1'-N9	5.68	112.75	108.20
29	a	972	C	C6-N1-C2	-5.66	118.04	120.30
29	a	1301	U	N1-C2-O2	5.66	126.76	122.80
17	L	34	CYS	CA-CB-SG	5.66	127.41	114.40
29	a	2443	G	O5'-C5'-C4'	5.63	113.91	109.40
6	A	1092	U	N3-C2-O2	-5.62	118.27	122.20
6	A	326	C	N1-C2-O2	5.57	122.24	118.90
29	a	695	G	O4'-C1'-N9	5.50	112.60	108.20
6	A	409	G	C4-N9-C1'	5.49	133.64	126.50
29	a	192	G	O4'-C1'-N9	5.49	112.34	108.50
29	a	708	C	N3-C2-O2	-5.49	118.06	121.90
29	a	970	A	N9-C1'-C2'	5.47	118.02	112.00
29	a	900	A	O4'-C1'-N9	5.44	112.31	108.50
29	a	2443	G	O4'-C1'-N9	5.44	112.31	108.50
29	a	1837	A	O4'-C1'-N9	5.39	112.52	108.20
29	a	496	U	N3-C2-O2	-5.37	118.44	122.20
29	a	27	G	N3-C4-N9	-5.36	122.79	126.00
29	a	781	U	N1-C2-O2	5.35	126.54	122.80
29	a	2429	C	C2-N1-C1'	5.34	124.68	118.80
29	a	880	C	N3-C2-O2	-5.31	118.18	121.90
29	a	1301	U	N3-C2-O2	-5.27	118.51	122.20
29	a	708	C	N1-C2-O2	5.26	122.06	118.90
29	a	880	C	C2-N1-C1'	5.18	124.50	118.80
29	a	473	G	O4'-C1'-N9	5.15	112.32	108.20
29	a	535	C	C2-N1-C1'	5.14	124.45	118.80
29	a	1925	A	C2-N3-C4	-5.12	108.04	110.60
29	a	361	C	P-O3'-C3'	5.12	125.84	119.70
29	a	496	U	N1-C2-O2	5.11	126.38	122.80
29	a	1521	G	P-O3'-C3'	5.09	125.81	119.70
29	a	1301	U	C6-N1-C1'	-5.08	114.09	121.20
6	A	751	C	C2-N1-C1'	5.05	124.35	118.80
29	a	2429	C	C6-N1-C2	-5.05	118.28	120.30
29	a	249	C	C2-N1-C1'	5.03	124.33	118.80
6	A	152	C	O5'-C5'-C4'	5.01	113.41	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	1386	C	C2-N1-C1'	5.01	124.31	118.80

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
40	l	82	4D4	Mainchain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	427	0	462	9	0
2	1	363	0	401	6	0
3	2	509	0	566	9	0
4	3	295	0	325	9	0
5	4	552	0	552	17	0
6	A	32785	0	16499	273	0
7	B	1801	0	1814	30	0
8	C	1690	0	1774	21	0
9	D	1631	0	1691	31	0
10	E	1129	0	1174	8	0
11	F	878	0	878	23	0
12	G	1210	0	1255	25	0
13	H	985	0	1047	18	0
14	I	995	0	1053	16	0
15	J	801	0	832	20	0
16	K	862	0	874	10	0
17	L	947	0	996	18	0
18	M	912	0	975	21	0
19	N	792	0	833	14	0
20	O	705	0	712	6	0
21	P	644	0	655	6	0
22	Q	621	0	665	10	0
23	R	545	0	556	13	0
24	S	657	0	675	16	0
25	T	663	0	715	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	U	585	0	634	9	0
27	V	1644	0	842	32	0
28	X	841	0	824	13	0
29	a	61984	0	31157	474	0
30	b	2450	0	1241	11	0
31	c	2111	0	2175	34	0
32	d	1573	0	1612	17	0
33	e	1511	0	1566	12	0
34	f	1395	0	1451	50	0
35	g	1327	0	1386	30	0
36	h	458	0	480	7	0
37	i	1125	0	1148	14	0
38	j	946	0	1007	12	0
39	k	1089	0	1158	10	0
40	l	1088	0	1150	16	0
41	m	942	0	987	4	0
42	n	865	0	905	10	0
43	o	919	0	973	12	0
44	p	934	0	997	9	0
45	q	807	0	842	4	0
46	r	826	0	894	8	0
47	s	717	0	777	10	0
48	t	766	0	816	6	0
49	u	760	0	783	7	0
50	v	589	0	592	4	0
51	w	632	0	667	11	0
52	x	498	0	537	10	0
53	y	463	0	488	3	0
54	z	447	0	435	11	0
55	1	1	0	0	0	0
55	3	1	0	0	0	0
55	A	47	0	0	0	0
55	L	1	0	0	0	0
55	a	109	0	0	2	0
55	b	1	0	0	0	0
55	c	6	0	0	0	0
55	e	1	0	0	0	0
55	r	1	0	0	0	0
55	t	1	0	0	0	0
56	3	1	0	0	0	0
56	4	1	0	0	0	0
57	A	97	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
57	J	1	0	0	0	0
57	a	252	0	0	2	0
57	b	5	0	0	0	0
57	c	1	0	0	0	0
57	d	1	0	0	0	0
57	k	1	0	0	0	0
57	v	1	0	0	0	0
57	z	1	0	0	0	0
All	All	144222	0	96503	1368	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 6.

All (1368) 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)
29:a:1837:A:HO2'	29:a:1838:G:H8	1.02	0.97
33:e:96:ASN:HB2	33:e:99:MET:HG3	1.52	0.89
29:a:536:U:O2	29:a:539:G:O6	1.94	0.86
31:c:183:LYS:HD3	31:c:268:ILE:HD11	1.55	0.85
34:f:144:ASP:HB2	34:f:145:LYS:HE3	1.59	0.84
29:a:1925:A:H2	29:a:1932:U:H3	1.22	0.83
29:a:872:G:H1	29:a:886:U:H3	1.27	0.81
29:a:1059:A:H1'	29:a:1086:A:H4'	1.61	0.81
34:f:4:LEU:HD11	34:f:101:ASP:HB2	1.62	0.81
2:1:1:MET:H2	29:a:1610:G:H21	1.30	0.80
9:D:38:ALA:HB3	9:D:43:GLY:HA2	1.64	0.79
29:a:467:C:O2	29:a:471:A:N6	2.16	0.78
6:A:994:U:H3	6:A:1041:A:H62	1.31	0.78
6:A:1447:G:H21	6:A:1450:A:H2	1.32	0.77
17:L:34:CYS:HB3	17:L:55:VAL:HG22	1.66	0.77
37:i:17:VAL:HG22	37:i:137:PRO:HB2	1.65	0.77
29:a:559:U:H1'	29:a:2019:6MZ:H9C1	1.66	0.76
16:K:78:LEU:HB3	16:K:104:TYR:HE1	1.49	0.75
27:V:29:C:H2'	27:V:30:G:H8	1.50	0.75
12:G:76:LYS:HB2	12:G:89:MET:HE1	1.68	0.75
22:Q:9:LEU:HD23	22:Q:26:ILE:HD13	1.67	0.74
12:G:111:ARG:HD2	12:G:123:GLU:HG2	1.70	0.73
29:a:1083:G:H21	29:a:1088:A:H62	1.34	0.72
34:f:94:ASP:O	34:f:98:GLU:HG3	1.89	0.72
29:a:520:A:H5'	37:i:113:PRO:HG3	1.71	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
48:t:45:LYS:HG3	48:t:46:PRO:HD2	1.71	0.72
6:A:74:G:H8	6:A:93:A:H62	1.37	0.71
14:I:44:MET:HE3	14:I:44:MET:HA	1.71	0.71
49:u:68:LYS:HD3	49:u:73:VAL:HG22	1.71	0.71
34:f:8:TYR:HA	34:f:12:LEU:HB2	1.73	0.71
3:2:17:THR:HG21	3:2:48:MET:HE1	1.73	0.70
11:F:22:VAL:HG11	11:F:39:LEU:HD21	1.73	0.70
29:a:2109:G:H2'	29:a:2110:G:H8	1.56	0.70
9:D:89:GLY:HA3	9:D:199:GLU:HG3	1.73	0.70
6:A:1003:C:N3	6:A:1019:U:O4	2.25	0.69
6:A:905:A:HO2'	6:A:906:A:H8	1.40	0.69
6:A:1309:G:H5'	24:S:5:LEU:HD21	1.74	0.69
43:o:30:VAL:HG22	43:o:47:GLU:HG3	1.73	0.69
6:A:451:U:H2'	6:A:452:A:H8	1.56	0.69
13:H:3:MET:HE1	13:H:9:ASP:HB2	1.73	0.69
14:I:26:LEU:HD22	14:I:33:LEU:HB2	1.75	0.69
29:a:2094:U:H2'	29:a:2095:A:C8	2.29	0.68
9:D:97:GLU:HG2	9:D:188:PRO:HG3	1.75	0.68
7:B:131:LEU:HD23	7:B:135:GLU:HB3	1.74	0.68
27:V:19:G:H21	27:V:59:A:H5'	1.58	0.68
29:a:28:A:N6	29:a:504:G:H1'	2.08	0.68
29:a:78:C:HO2'	29:a:79:C:H6	1.42	0.68
38:j:108:THR:HG23	38:j:110:GLN:H	1.59	0.68
29:a:1588:A:H5"	29:a:1589:A:H5'	1.77	0.67
6:A:1353:G:H2'	6:A:1354:A:C8	2.30	0.67
29:a:572:C:H2'	29:a:573:A:C8	2.30	0.67
15:J:7:ARG:HB2	15:J:101:ALA:HB3	1.76	0.67
29:a:139:U:H1'	29:a:140:A:H5"	1.74	0.67
29:a:2317:A:H2'	29:a:2318:A:C8	2.30	0.67
6:A:725:A:H2'	6:A:726:A:C8	2.30	0.67
29:a:1837:A:O2'	29:a:1838:G:H8	1.76	0.66
1:0:29:LYS:HD2	1:0:47:GLU:HG2	1.77	0.66
34:f:137:VAL:HG13	34:f:140:GLU:HB3	1.76	0.66
6:A:536:A:H2'	6:A:537:G:C8	2.30	0.66
29:a:45:G:H5"	29:a:46:G:H5'	1.78	0.66
40:l:76:GLU:HB2	40:l:91:GLU:HG3	1.77	0.66
35:g:52:LEU:HD21	35:g:72:LEU:HD12	1.77	0.66
27:V:51:U:O4	27:V:65:G:O6	2.14	0.65
6:A:471:G:H2'	6:A:472:A:C8	2.31	0.65
6:A:670:A:H2'	6:A:671:G:C8	2.31	0.65
27:V:29:C:H2'	27:V:30:G:C8	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1068:C:H2'	6:A:1069:G:H8	1.61	0.65
31:c:130:LEU:HB2	31:c:135:MET:HE2	1.78	0.65
6:A:943:A:H2'	6:A:944:G:C8	2.32	0.65
25:T:43:ASP:HB3	25:T:46:VAL:HG22	1.78	0.65
29:a:1018:A:H2'	29:a:1019:A:C8	2.31	0.65
47:s:35:ILE:HD12	47:s:80:LYS:HB2	1.77	0.65
22:Q:6:VAL:HG21	22:Q:63:LYS:HE3	1.79	0.65
30:b:87:A:H5'	40:l:18:THR:HG22	1.77	0.65
7:B:135:GLU:O	7:B:139:ARG:HG2	1.96	0.65
13:H:103:ALA:HB3	13:H:114:ASP:HB3	1.78	0.64
29:a:2094:U:H2'	29:a:2095:A:H8	1.62	0.64
47:s:38:THR:HG22	47:s:40:LEU:H	1.62	0.64
5:4:38:CYS:SG	5:4:41:CYS:HB2	2.37	0.64
29:a:2056:G:H1	29:a:2432:U:H3	1.46	0.64
29:a:2169:U:H2'	29:a:2170:G:C8	2.33	0.64
29:a:839:U:H2'	29:a:840:A:H8	1.63	0.64
29:a:2280:U:H2'	29:a:2281:G:C8	2.32	0.64
48:t:27:VAL:HG22	48:t:32:VAL:HG23	1.80	0.64
17:L:34:CYS:HA	17:L:55:VAL:HA	1.80	0.64
25:T:51:TYR:HD2	25:T:52:LYS:HE2	1.63	0.63
33:e:133:LEU:HD23	33:e:163:LEU:HD12	1.80	0.63
34:f:138:PHE:HD1	34:f:138:PHE:H	1.46	0.63
10:E:80:LEU:HD22	10:E:146:MET:HE1	1.79	0.63
29:a:279:U:H2'	29:a:280:G:C8	2.34	0.63
52:x:56:LEU:O	52:x:60:LYS:HG3	1.99	0.63
6:A:6:C:H2'	6:A:7:U:H2'	1.81	0.62
6:A:766:G:H4'	6:A:1510:A:H4'	1.81	0.62
24:S:10:PHE:HE2	24:S:37:ARG:HG3	1.62	0.62
5:4:26:SER:HB2	34:f:139:PRO:HB3	1.81	0.62
11:F:19:VAL:O	11:F:23:GLU:HG3	1.99	0.62
27:V:20:G:H4'	27:V:21:H2U:OP2	1.99	0.62
35:g:42:GLU:HG3	35:g:44:LYS:HE2	1.81	0.62
6:A:265:U:H2'	6:A:266:A:C8	2.35	0.62
34:f:138:PHE:CG	34:f:139:PRO:HD3	2.35	0.62
6:A:1247:A:H2'	6:A:1248:A:C8	2.34	0.62
24:S:3:ARG:HE	24:S:7:LYS:HB2	1.64	0.62
52:x:30:MET:HA	52:x:30:MET:HE2	1.81	0.62
29:a:839:U:H2'	29:a:840:A:C8	2.35	0.62
4:3:36:ARG:HD2	4:3:37:GLN:H	1.65	0.61
29:a:1192:A:H4'	29:a:1193:A:H5"	1.82	0.61
21:P:94:ALA:HA	21:P:97:LYS:HE3	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:c:232:HIS:HE2	31:c:244:PRO:HA	1.65	0.61
5:4:50:LYS:HE2	34:f:115:ARG:HD2	1.82	0.61
6:A:143:G:H2'	6:A:144:G:C8	2.35	0.61
29:a:2294:U:H5"	34:f:131:GLY:HA3	1.82	0.61
6:A:1215:C:H2'	6:A:1216:A:C8	2.36	0.61
39:k:80:ARG:HB2	39:k:83:GLU:HG3	1.82	0.61
29:a:1836:A:HO2'	29:a:1837:A:H8	1.48	0.61
6:A:536:A:H2'	6:A:537:G:H8	1.66	0.61
29:a:1061:G:H5'	29:a:1079:A:H5'	1.83	0.61
6:A:252:U:H2'	6:A:253:G:H8	1.64	0.61
29:a:1791:A:H2'	29:a:1792:A:C8	2.35	0.61
15:J:41:PRO:HA	15:J:72:ARG:HE	1.65	0.61
29:a:1043:U:H2'	29:a:1044:A:C8	2.36	0.60
45:q:40:MET:HE3	45:q:49:ILE:HG12	1.82	0.60
12:G:35:LYS:HD3	12:G:38:ILE:HD12	1.82	0.60
15:J:52:LEU:HB2	19:N:81:ARG:HD2	1.83	0.60
29:a:1083:G:N2	29:a:1088:A:H62	1.99	0.60
35:g:15:VAL:HA	35:g:27:LYS:O	2.01	0.60
6:A:176:U:H2'	6:A:177:A:H5'	1.84	0.60
6:A:733:C:H2'	6:A:734:A:C8	2.35	0.60
34:f:57:MET:HE3	34:f:65:PRO:HB3	1.84	0.60
13:H:39:VAL:HG21	13:H:111:ILE:HG22	1.82	0.60
31:c:107:PRO:HD2	31:c:110:LEU:HD22	1.82	0.60
30:b:101:A:H4'	49:u:96:LYS:HD2	1.84	0.59
1:0:32:ILE:HG23	1:0:34:LYS:HG3	1.83	0.59
15:J:85:ASP:O	15:J:89:LYS:HG3	2.02	0.59
34:f:138:PHE:CD1	34:f:138:PHE:N	2.70	0.59
29:a:161:A:H3'	29:a:162:U:H5"	1.85	0.59
29:a:1051:U:H4'	29:a:1060:A:C4	2.38	0.59
29:a:1071:U:H2'	29:a:1072:U:C6	2.38	0.59
29:a:1627:G:H2'	29:a:1628:A:C8	2.37	0.59
4:3:16:VAL:HG22	4:3:25:VAL:HG22	1.85	0.59
6:A:1007:C:H2'	6:A:1009:A:C8	2.38	0.59
9:D:10:LYS:HD2	9:D:39:PRO:HB2	1.84	0.59
7:B:74:THR:HB	7:B:171:GLU:OE1	2.03	0.59
20:O:12:ILE:HD13	20:O:22:THR:HG22	1.85	0.59
36:h:9:ILE:HB	36:h:12:LEU:HB3	1.85	0.59
11:F:42:TRP:CZ2	11:F:61:LEU:HD12	2.38	0.58
24:S:14:HIS:O	24:S:18:LYS:HG3	2.03	0.58
29:a:1457:A:H2'	29:a:1458:A:C8	2.37	0.58
6:A:989:U:H5	6:A:1041:A:C2	2.22	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:d:159:PHE:HB3	37:i:81:PRO:HG3	1.85	0.58
6:A:1068:C:H2'	6:A:1069:G:C8	2.39	0.58
7:B:109:LEU:HD12	7:B:150:LEU:HD11	1.85	0.58
29:a:273:A:H2'	29:a:274:A:C8	2.38	0.58
29:a:2125:G:H1	29:a:2144:U:H3	1.52	0.58
29:a:773:A:C2	31:c:225:MET:HG2	2.39	0.58
29:a:1530:C:H2'	29:a:1531:A:C8	2.38	0.58
38:j:93:PRO:HB2	38:j:113:LYS:HD3	1.86	0.58
43:o:95:VAL:HG11	43:o:100:LEU:HD21	1.85	0.58
6:A:456:U:H2'	6:A:457:A:C8	2.39	0.58
9:D:56:GLN:HB3	9:D:205:LEU:HB2	1.86	0.58
29:a:733:G:H2'	29:a:734:U:C6	2.38	0.58
29:a:1474:U:H2'	29:a:1475:C:C6	2.39	0.58
6:A:661:G:H22	6:A:738:G:H1	1.51	0.58
11:F:42:TRP:HZ2	11:F:61:LEU:HD12	1.69	0.58
29:a:28:A:H61	29:a:504:G:H1'	1.67	0.58
29:a:1684:U:H5"	29:a:1685:C:H5	1.69	0.58
46:r:1:MET:HA	46:r:1:MET:HE2	1.86	0.58
29:a:694:U:H2'	29:a:695:G:O4'	2.03	0.58
29:a:1785:U:H2'	29:a:1786:C:C6	2.39	0.58
29:a:2579:A:H2'	29:a:2580:C:H6	1.68	0.58
29:a:2121:U:H5'	29:a:2122:G:C4	2.38	0.58
6:A:572:G:O2'	6:A:818:G:H5'	2.04	0.57
6:A:19:U:H2'	6:A:20:C:C6	2.39	0.57
29:a:2111:U:H2'	29:a:2112:G:O4'	2.04	0.57
14:I:17:VAL:HG22	14:I:63:ILE:HG12	1.85	0.57
29:a:188:G:H5'	51:w:14:VAL:HG21	1.86	0.57
29:a:1421:A:H2'	29:a:1422:A:C8	2.40	0.57
11:F:102:LEU:HD12	23:R:24:LYS:HB3	1.87	0.57
29:a:2318:A:H2'	29:a:2319:G:C8	2.40	0.57
29:a:2441:C:H2'	29:a:2442:A:C8	2.40	0.57
47:s:68:ARG:HH12	47:s:71:ARG:HA	1.69	0.57
7:B:117:LYS:O	7:B:121:THR:HG22	2.04	0.57
10:E:10:LEU:HD11	10:E:70:MET:HE1	1.85	0.57
19:N:31:ILE:HD11	19:N:45:MET:HA	1.86	0.57
6:A:978:U:H5"	19:N:6:MET:HE1	1.86	0.57
6:A:1524:C:OP2	26:U:42:THR:HG22	2.05	0.57
8:C:78:GLY:HA3	8:C:83:ASP:HB2	1.87	0.57
13:H:10:MET:HE2	13:H:11:LEU:HD23	1.87	0.57
6:A:33:G:C5	6:A:302:A:H1'	2.39	0.57
6:A:489:C:H2'	6:A:490:A:C8	2.39	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:I:42:ALA:O	14:I:46:VAL:HG23	2.04	0.57
14:I:122:ARG:HD3	14:I:125:PHE:HE2	1.69	0.57
6:A:710:G:H2'	6:A:711:G:C8	2.40	0.57
35:g:43:LEU:HD11	35:g:50:LEU:HD22	1.87	0.57
8:C:73:PRO:HG2	8:C:105:GLU:HG3	1.86	0.57
18:M:55:ALA:O	18:M:59:GLU:HG3	2.05	0.57
28:X:42:HIS:HB2	28:X:59:MET:HE3	1.85	0.57
9:D:106:ARG:HB3	9:D:170:PRO:HG2	1.87	0.56
29:a:2103:A:H3'	29:a:2104:G:H8	1.70	0.56
11:F:2:ARG:HG2	11:F:91:ARG:HH21	1.69	0.56
29:a:1050:U:H4'	29:a:1052:G:O4'	2.05	0.56
35:g:135:SER:HB3	35:g:141:LEU:HB2	1.87	0.56
6:A:711:G:H2'	6:A:712:A:C8	2.40	0.56
8:C:92:THR:HG22	8:C:99:ALA:H	1.70	0.56
27:V:48:U:H4'	27:V:49:C:H5'	1.87	0.56
29:a:648:U:H2'	29:a:649:U:C6	2.41	0.56
29:a:2109:G:H2'	29:a:2110:G:C8	2.39	0.56
31:c:232:HIS:HE2	31:c:245:VAL:H	1.52	0.56
35:g:27:LYS:HG2	35:g:32:THR:HG23	1.87	0.56
29:a:572:C:H2'	29:a:573:A:H8	1.67	0.56
29:a:584:U:H2'	29:a:585:U:C6	2.39	0.56
6:A:69:C:H2'	6:A:70:G:C8	2.41	0.56
29:a:1178:G:H5'	39:k:34:GLY:HA2	1.86	0.56
29:a:1903:C:H2'	29:a:1904:3TD:H6	1.88	0.56
29:a:2834:U:H5"	43:o:55:ASN:O	2.04	0.56
15:J:37:CYS:HB2	15:J:75:ASP:HB2	1.87	0.56
20:O:89:ARG:HB2	20:O:89:ARG:HH11	1.69	0.56
29:a:847:G:H2'	29:a:848:G:C8	2.40	0.56
3:2:12:LYS:HB3	39:k:65:LYS:HG2	1.87	0.56
6:A:502:G:H5'	6:A:531:U:H2'	1.87	0.56
6:A:989:U:H4'	6:A:990:G:O5'	2.05	0.56
16:K:78:LEU:HB3	16:K:104:TYR:CE1	2.36	0.56
29:a:52:A:H2'	29:a:53:A:C8	2.41	0.56
6:A:420:G:H2'	6:A:421:G:C8	2.40	0.56
29:a:2235:G:H2'	29:a:2236:A:C8	2.41	0.56
29:a:840:A:H2'	29:a:841:C:C6	2.41	0.55
6:A:639:A:H2'	6:A:640:C:H6	1.70	0.55
6:A:1050:G:N7	6:A:1197:C:H5'	2.21	0.55
27:V:51:U:H3	27:V:65:G:H1	0.70	0.55
36:h:12:LEU:HD11	36:h:21:VAL:HG12	1.88	0.55
47:s:15:PHE:HE2	52:x:34:THR:HA	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:252:U:H2'	6:A:253:G:C8	2.41	0.55
6:A:1353:G:H2'	6:A:1354:A:H8	1.69	0.55
17:L:107:VAL:HG23	17:L:110:ARG:HG3	1.87	0.55
29:a:2262:A:H2'	29:a:2263:A:C8	2.41	0.55
31:c:5:LYS:HG2	31:c:17:GLU:HG2	1.87	0.55
4:3:36:ARG:HD2	4:3:37:GLN:N	2.21	0.55
24:S:50:SER:HB2	24:S:57:HIS:HB3	1.88	0.55
6:A:77:G:H3'	6:A:78:G:H8	1.72	0.55
29:a:2790:G:H2'	29:a:2791:U:C6	2.42	0.55
7:B:135:GLU:O	7:B:138:GLU:HG2	2.07	0.55
9:D:199:GLU:HA	9:D:202:ILE:HD12	1.88	0.55
29:a:902:A:H8	29:a:2266:G:H21	1.54	0.55
28:X:11:ILE:HD12	28:X:43:PHE:HB3	1.89	0.55
29:a:78:C:O2'	29:a:79:C:H6	1.90	0.55
29:a:1018:A:N6	29:a:1115:G:H2'	2.21	0.55
3:2:32:LEU:HB2	29:a:2408:U:H5"	1.89	0.55
6:A:647:G:H2'	6:A:648:C:H5'	1.89	0.55
6:A:1020:G:H2'	6:A:1021:G:C8	2.42	0.55
29:a:630:U:H2'	29:a:631:C:C6	2.41	0.55
29:a:2169:U:H2'	29:a:2170:G:H8	1.70	0.55
6:A:1409:C:H2'	6:A:1410:A:C8	2.42	0.55
17:L:37:VAL:HG22	17:L:53:CYS:HB3	1.89	0.55
29:a:1785:U:H2'	29:a:1786:C:H6	1.72	0.55
32:d:5:LEU:HD13	32:d:30:VAL:HG11	1.87	0.55
43:o:56:ARG:H	43:o:60:SER:HB3	1.70	0.55
6:A:1172:G:H2'	6:A:1173:A:H8	1.71	0.54
29:a:856:C:H42	29:a:900:A:H2	1.56	0.54
1:0:24:ARG:HB3	1:0:24:ARG:NH1	2.22	0.54
6:A:1233:A:H4'	6:A:1301:G:H4'	1.89	0.54
8:C:152:GLU:HG3	8:C:167:TRP:HB3	1.88	0.54
29:a:2836:U:H2'	29:a:2837:G:O4'	2.08	0.54
33:e:121:GLU:CD	33:e:121:GLU:H	2.15	0.54
11:F:61:LEU:HD11	23:R:24:LYS:HE2	1.88	0.54
14:I:48:GLN:HG2	14:I:101:PHE:CZ	2.42	0.54
29:a:181:A:H2'	29:a:182:A:C8	2.43	0.54
29:a:2230:A:H2'	29:a:2231:G:C8	2.43	0.54
47:s:12:GLY:HA2	52:x:30:MET:HE1	1.88	0.54
29:a:2175:U:H2'	29:a:2176:G:C8	2.42	0.54
6:A:207:G:C2	6:A:208:G:H1'	2.42	0.54
29:a:467:C:N3	29:a:471:A:N7	2.56	0.54
29:a:2060:A:H2'	29:a:2061:C:C6	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:34:LYS:HB2	1:0:45:PHE:CD1	2.42	0.54
6:A:455:U:H2'	6:A:456:U:H6	1.72	0.54
6:A:457:A:H2'	6:A:458:G:H8	1.73	0.54
26:U:14:VAL:HA	26:U:17:ARG:HG3	1.89	0.54
29:a:990:A:H2'	29:a:991:A:C8	2.43	0.54
31:c:20:VAL:HG23	31:c:21:HIS:H	1.72	0.54
29:a:2041:A:H4'	32:d:151:GLN:O	2.07	0.54
18:M:83:LEU:HD11	24:S:66:MET:HG3	1.89	0.53
21:P:68:LEU:HD13	21:P:92:LEU:HD22	1.90	0.53
29:a:486:G:H4'	46:r:6:LYS:HB2	1.90	0.53
29:a:2176:G:H2'	29:a:2177:U:C6	2.43	0.53
6:A:295:G:H2'	6:A:296:A:C8	2.43	0.53
6:A:610:C:H2'	6:A:611:C:C6	2.43	0.53
15:J:52:LEU:HD23	15:J:62:ARG:HG3	1.90	0.53
29:a:840:A:H2'	29:a:841:C:H6	1.71	0.53
44:p:9:VAL:HG13	44:p:12:ARG:HH12	1.73	0.53
6:A:821:U:H2'	6:A:822:A:C8	2.43	0.53
28:X:92:ARG:HH11	28:X:92:ARG:HG2	1.73	0.53
29:a:599:A:H2'	29:a:600:A:C8	2.43	0.53
29:a:1835:G:H5'	29:a:1836:A:OP2	2.09	0.53
5:4:58:ILE:HD11	24:S:64:GLU:HB2	1.91	0.53
29:a:2014:C:H2'	29:a:2015:U:C6	2.43	0.53
6:A:498:C:H2'	6:A:499:A:C8	2.44	0.53
6:A:386:U:H2'	6:A:387:C:C6	2.44	0.53
7:B:113:ILE:HG13	7:B:150:LEU:HD13	1.90	0.53
11:F:29:ILE:HG22	11:F:34:GLY:HA3	1.89	0.53
24:S:3:ARG:HH21	24:S:7:LYS:HB3	1.72	0.53
29:a:823:U:H2'	29:a:824:A:C8	2.44	0.53
29:a:2141:C:H2'	29:a:2142:A:C8	2.43	0.53
29:a:2777:C:H2'	29:a:2778:C:C6	2.43	0.53
32:d:182:SER:HB2	32:d:191:VAL:HB	1.89	0.53
51:w:13:VAL:HG22	51:w:29:PHE:HB2	1.91	0.53
6:A:451:U:H2'	6:A:452:A:C8	2.40	0.53
19:N:20:TYR:HE2	19:N:52:PRO:HG2	1.72	0.53
29:a:2543:U:H2'	29:a:2544:U:C6	2.44	0.53
37:i:18:VAL:HG11	37:i:28:LEU:HD11	1.91	0.53
6:A:733:C:H2'	6:A:734:A:H8	1.72	0.53
6:A:840:U:H3'	6:A:841:G:C8	2.44	0.53
29:a:1049:G:H3'	29:a:1050:U:C5'	2.37	0.53
29:a:1078:A:H4'	29:a:1079:A:H5"	1.91	0.53
29:a:1374:A:H2'	29:a:1375:U:C6	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:1393:U:H2'	29:a:1394:U:C6	2.44	0.53
34:f:33:LYS:HG2	34:f:157:THR:HB	1.91	0.53
6:A:75:A:H4'	6:A:76:A:C8	2.43	0.53
6:A:204:U:H1'	6:A:207:G:N2	2.24	0.53
8:C:211:MET:O	8:C:215:MET:HG2	2.08	0.53
9:D:161:ILE:HD12	9:D:177:HIS:ND1	2.24	0.53
29:a:1526:U:H3'	29:a:1527:G:O4'	2.09	0.53
27:V:51:U:O2	27:V:65:G:N2	2.24	0.52
13:H:3:MET:CE	13:H:9:ASP:HB2	2.39	0.52
15:J:29:ALA:O	15:J:32:THR:HG22	2.09	0.52
29:a:2232:U:H2'	29:a:2233:U:C6	2.44	0.52
35:g:26:VAL:HG12	35:g:79:VAL:HG11	1.91	0.52
9:D:103:VAL:O	9:D:107:MET:HG2	2.09	0.52
29:a:2579:A:H2'	29:a:2580:C:C6	2.43	0.52
36:h:25:TYR:HE1	36:h:29:PHE:HD2	1.58	0.52
31:c:232:HIS:NE2	31:c:244:PRO:HA	2.23	0.52
35:g:17:VAL:HG22	35:g:26:VAL:HG13	1.90	0.52
45:q:21:LYS:HG2	45:q:95:GLU:HG2	1.91	0.52
29:a:2316:A:H2'	29:a:2317:A:C8	2.44	0.52
46:r:62:ASN:HB3	46:r:64:LEU:HD13	1.91	0.52
6:A:648:C:HO2'	6:A:649:U:H6	1.52	0.52
29:a:1783:A:H2'	29:a:1784:C:C6	2.44	0.52
29:a:2138:U:H2'	29:a:2139:U:C6	2.45	0.52
29:a:2604:U:H1'	54:z:4:GLN:HB3	1.91	0.52
40:l:38:GLU:OE1	40:l:128:LYS:HB2	2.09	0.52
6:A:892:G:H2'	6:A:893:U:C6	2.45	0.52
6:A:917:U:H2'	6:A:918:U:C6	2.45	0.52
20:O:32:LEU:HD11	20:O:62:GLN:HG2	1.91	0.52
29:a:1838:G:H2'	29:a:1839:G:H8	1.74	0.52
30:b:11:A:H8	30:b:67:G:H21	1.58	0.52
30:b:112:A:H4'	42:n:51:GLN:OE1	2.10	0.52
34:f:4:LEU:CD1	34:f:101:ASP:HB2	2.35	0.52
34:f:71:ARG:O	34:f:72:LYS:HB2	2.10	0.52
46:r:82:LEU:HB2	46:r:98:LYS:HB2	1.92	0.52
29:a:536:U:O2	29:a:539:G:C6	2.62	0.52
6:A:639:A:H2'	6:A:640:C:C6	2.45	0.52
6:A:1248:A:H2'	6:A:1249:A:C8	2.45	0.52
29:a:1054:C:N3	29:a:1059:A:H8	2.08	0.52
29:a:1316:A:H2'	29:a:1318:C:C5	2.45	0.52
29:a:2105:G:O2'	29:a:2106:A:H5'	2.10	0.52
29:a:2120:U:H3'	29:a:2121:U:H6	1.75	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:777:A:H5”	16:K:124:LYS:HD3	1.92	0.51
51:w:53:THR:HA	51:w:56:MET:HE3	1.93	0.51
6:A:1059:U:H2’	6:A:1060:C:C6	2.45	0.51
6:A:1141:G:N2	6:A:1143:A:H62	2.08	0.51
10:E:131:ASN:HB3	10:E:134:ASN:HB2	1.91	0.51
24:S:39:MET:HA	24:S:70:LYS:HA	1.91	0.51
29:a:1527:G:H2’	29:a:1528:U:C6	2.44	0.51
29:a:2053:C:H2’	29:a:2054:C:C6	2.45	0.51
5:4:13:VAL:O	5:4:32:THR:HA	2.11	0.51
6:A:1504:A:H2’	6:A:1505:G:C8	2.46	0.51
29:a:2823:G:H2’	29:a:2868:A:H61	1.76	0.51
30:b:109:G:H2’	30:b:110:C:H6	1.76	0.51
5:4:5:ILE:HD12	34:f:64:LYS:HD2	1.92	0.51
11:F:25:TYR:O	11:F:29:ILE:HG13	2.10	0.51
29:a:545:U:C2’	29:a:546:G:H5’	2.40	0.51
29:a:1526:U:H5”	29:a:1527:G:C8	2.46	0.51
29:a:1527:G:H2’	29:a:1528:U:H6	1.76	0.51
35:g:30:LYS:HD2	35:g:82:GLY:H	1.76	0.51
6:A:455:U:H2’	6:A:456:U:C6	2.45	0.51
6:A:905:A:O2’	6:A:906:A:H8	1.93	0.51
17:L:57:LEU:HD21	17:L:82:ILE:HG12	1.90	0.51
18:M:92:ARG:HG2	29:a:879:C:C5	2.45	0.51
29:a:919:G:H21	53:y:46:MET:HE1	1.76	0.51
14:I:65:VAL:HG22	14:I:73:GLN:HG2	1.93	0.51
29:a:12:U:O2	29:a:2615:C:H4’	2.10	0.51
29:a:1921:A:H2’	29:a:1922:G:O4’	2.10	0.51
31:c:8:PRO:HB3	31:c:14:ARG:HG3	1.91	0.51
39:k:102:VAL:HG23	39:k:103:VAL:HG23	1.93	0.51
6:A:319:U:H2’	6:A:320:G:O4’	2.11	0.51
6:A:1123:U:P	15:J:7:ARG:HH22	2.34	0.51
9:D:170:PRO:HB2	9:D:173:ILE:HG12	1.93	0.51
16:K:122:PRO:HD2	26:U:38:TYR:HD1	1.76	0.51
34:f:138:PHE:HD1	34:f:138:PHE:N	2.08	0.51
54:z:11:SER:O	54:z:15:MET:HG3	2.11	0.51
7:B:45:LEU:HA	7:B:48:THR:HG22	1.93	0.51
7:B:70:LEU:HB3	7:B:163:LEU:HD12	1.91	0.51
9:D:172:TRP:O	9:D:185:LYS:HG2	2.11	0.51
14:I:117:ARG:HB2	14:I:121:LYS:HD3	1.93	0.51
29:a:139:U:H4’	29:a:140:A:OP1	2.10	0.51
24:S:3:ARG:NH1	24:S:10:PHE:HB2	2.26	0.51
29:a:2063:U:H2’	29:a:2064:U:C6	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:2160:A:H1'	29:a:2161:U:C4	2.46	0.51
36:h:31:ILE:HG13	36:h:32:PRO:HD3	1.92	0.51
43:o:90:LYS:NZ	43:o:90:LYS:HB3	2.25	0.51
4:3:25:VAL:HB	4:3:35:GLN:HB2	1.92	0.50
6:A:470:A:H2'	6:A:471:G:H8	1.76	0.50
29:a:2164:C:H2'	29:a:2165:A:C8	2.47	0.50
30:b:27:A:H2'	30:b:28:C:C6	2.46	0.50
40:l:68:VAL:HG12	40:l:101:LYS:HZ3	1.76	0.50
2:1:35:ARG:HG3	2:1:42:LEU:HD11	1.93	0.50
6:A:942:G:C2	6:A:943:A:C8	3.00	0.50
29:a:406:C:H2'	29:a:407:A:C8	2.46	0.50
29:a:2235:G:H2'	29:a:2236:A:H8	1.76	0.50
35:g:9:VAL:HG13	35:g:50:LEU:HB2	1.92	0.50
42:n:51:GLN:HG2	42:n:52:ALA:N	2.25	0.50
53:y:46:MET:O	53:y:50:VAL:HG22	2.11	0.50
29:a:2137:G:H2'	29:a:2138:U:C6	2.45	0.50
34:f:11:GLU:O	34:f:15:LYS:HG3	2.10	0.50
34:f:61:ALA:HB1	34:f:91:LEU:HD21	1.94	0.50
29:a:824:A:H2'	29:a:825:G:C8	2.46	0.50
29:a:1314:U:H2'	29:a:1315:A:H8	1.75	0.50
29:a:1482:A:H2'	29:a:1483:A:C8	2.47	0.50
29:a:2667:A:H2'	29:a:2668:A:C8	2.46	0.50
39:k:134:LYS:O	39:k:138:GLU:HG2	2.11	0.50
49:u:47:GLU:HB2	49:u:50:GLU:HG3	1.94	0.50
6:A:989:U:H5	6:A:1041:A:H2	1.60	0.50
29:a:263:U:H2'	29:a:264:C:O4'	2.11	0.50
29:a:284:G:O2'	29:a:285:U:H5"	2.12	0.50
42:n:74:GLY:HA3	42:n:108:ALA:HB3	1.94	0.50
4:3:1:MET:HE3	29:a:2731:C:H5"	1.92	0.50
6:A:1140:G:H2'	6:A:1141:G:H8	1.77	0.50
12:G:27:MET:HE3	12:G:40:GLU:HG2	1.93	0.50
29:a:2110:G:O2'	29:a:2111:U:H5'	2.11	0.50
51:w:11:ARG:HH11	51:w:11:ARG:HG2	1.77	0.50
54:z:49:ARG:HH11	54:z:49:ARG:HG2	1.77	0.50
29:a:1018:A:H61	29:a:1115:G:H2'	1.77	0.50
29:a:1673:G:H2'	29:a:1674:U:C6	2.46	0.50
29:a:2362:A:H2'	29:a:2363:C:C6	2.47	0.50
49:u:51:LEU:O	49:u:55:LEU:HG	2.12	0.50
6:A:1320:G:H2'	6:A:1321:A:C8	2.47	0.50
16:K:13:ARG:O	16:K:15:VAL:HG13	2.12	0.50
7:B:63:ALA:HB3	7:B:226:GLY:HA3	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:475:A:C8	48:t:43:HIS:HD2	2.30	0.50
29:a:1836:A:O2'	29:a:1837:A:H8	1.93	0.50
40:l:39:ARG:HB3	40:l:99:PRO:HD3	1.93	0.50
6:A:35:A:H2'	6:A:36:C:C6	2.47	0.49
6:A:454:U:H2'	6:A:455:U:C6	2.46	0.49
6:A:493:A:H2'	6:A:494:U:H5	1.76	0.49
23:R:42:SER:HA	23:R:45:THR:HG22	1.93	0.49
29:a:855:G:H2'	29:a:856:C:C6	2.47	0.49
29:a:1528:U:H2'	29:a:1529:A:C8	2.47	0.49
29:a:1671:U:H2'	29:a:1672:G:O4'	2.11	0.49
29:a:2158:A:H2'	29:a:2159:A:C8	2.47	0.49
29:a:2293:G:H5'	29:a:2294:U:OP2	2.12	0.49
29:a:2729:A:H2'	29:a:2730:A:C8	2.46	0.49
30:b:109:G:H2'	30:b:110:C:C6	2.47	0.49
6:A:1008:C:H4'	6:A:1009:A:H5'	1.93	0.49
6:A:1388:U:H2'	6:A:1389:G:C8	2.47	0.49
27:V:10:G:N2	27:V:27:G:H1'	2.27	0.49
29:a:277:U:H3	29:a:353:A:H62	1.59	0.49
5:4:39:SER:HB3	34:f:105:SER:HA	1.93	0.49
6:A:85:G:H21	6:A:87:U:H3	1.60	0.49
6:A:207:G:P	6:A:207:G:H21	2.34	0.49
15:J:8:ILE:HG21	15:J:25:ILE:HD13	1.93	0.49
19:N:48:LEU:HD12	19:N:51:LEU:HD12	1.94	0.49
29:a:301:U:H2'	29:a:302:G:O4'	2.12	0.49
43:o:47:GLU:OE2	43:o:90:LYS:HE2	2.12	0.49
13:H:80:SER:HB2	13:H:86:GLN:H	1.77	0.49
29:a:1314:U:H2'	29:a:1315:A:C8	2.47	0.49
29:a:2222:U:H2'	29:a:2223:G:C8	2.48	0.49
38:j:104:ARG:HH22	43:o:44:GLN:NE2	2.09	0.49
18:M:34:LEU:HD23	18:M:41:GLU:HA	1.93	0.49
22:Q:61:THR:HG23	22:Q:77:VAL:HB	1.93	0.49
29:a:244:A:H2'	29:a:245:G:O4'	2.12	0.49
34:f:4:LEU:HD11	34:f:101:ASP:CB	2.38	0.49
7:B:52:LEU:HA	7:B:202:ILE:HD12	1.95	0.49
29:a:17:G:H4'	44:p:25:TYR:HE1	1.76	0.49
29:a:590:A:H2'	29:a:591:G:H8	1.77	0.49
34:f:50:LEU:HD21	34:f:84:PRO:HB2	1.95	0.49
6:A:281:U:H2'	6:A:282:G:C8	2.48	0.49
6:A:1294:G:H21	12:G:114:LYS:HG3	1.77	0.49
11:F:3:HIS:CD2	11:F:65:GLU:HG3	2.48	0.49
16:K:110:THR:HG22	26:U:3:GLN:HG3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:914:U:H2'	29:a:915:A:C8	2.47	0.49
29:a:1193:A:C6	33:e:164:PRO:HB3	2.48	0.49
29:a:2626:U:H2'	29:a:2627:G:O4'	2.13	0.49
6:A:597:G:H5"	13:H:90:LYS:HD3	1.95	0.49
11:F:2:ARG:HE	11:F:91:ARG:NH2	2.09	0.49
12:G:22:THR:HG22	12:G:62:PHE:HE2	1.78	0.49
29:a:314:C:OP2	33:e:131:LYS:HE3	2.13	0.49
29:a:2457:A:H2'	29:a:2465:A:C6	2.48	0.49
29:a:2812:A:OP1	32:d:121:PHE:HB2	2.13	0.49
34:f:4:LEU:HB3	34:f:173:PHE:HE1	1.76	0.49
6:A:419:U:H2'	6:A:420:G:O4'	2.11	0.49
6:A:521:G:H2'	6:A:522:C:C6	2.48	0.49
9:D:28:PHE:O	9:D:32:THR:HG22	2.12	0.49
27:V:10:G:C2	27:V:27:G:H1'	2.48	0.49
29:a:1716:A:H2'	29:a:1717:C:O4'	2.12	0.49
35:g:137:ASN:HB3	35:g:140:LEU:HB3	1.95	0.49
3:2:48:MET:HE2	3:2:48:MET:HA	1.94	0.49
6:A:717:C:OP1	23:R:41:PRO:HG3	2.13	0.49
7:B:139:ARG:HG3	7:B:139:ARG:HH11	1.78	0.49
5:4:28:LEU:HD22	5:4:30:LYS:HB2	1.95	0.48
6:A:208:G:H2'	6:A:209:A:H8	1.78	0.48
12:G:4:ARG:C	12:G:5:ARG:HG2	2.37	0.48
18:M:37:VAL:HG22	18:M:59:GLU:OE2	2.13	0.48
18:M:71:ARG:NH2	34:f:115:ARG:HD3	2.28	0.48
29:a:1061:G:O4'	29:a:1079:A:H2'	2.13	0.48
5:4:43:PRO:HB2	5:4:50:LYS:HG2	1.95	0.48
6:A:498:C:H2'	6:A:499:A:H8	1.78	0.48
6:A:577:C:H2'	6:A:578:G:O4'	2.13	0.48
40:l:32:ILE:HG21	40:l:114:ALA:HB1	1.95	0.48
5:4:16:CYS:C	5:4:18:CYS:H	2.21	0.48
32:d:184:ASP:HB3	32:d:189:VAL:HG22	1.95	0.48
6:A:127:U:H2'	6:A:128:C:C6	2.49	0.48
9:D:24:GLY:HA2	9:D:163:LEU:HD22	1.96	0.48
12:G:86:GLN:OE1	12:G:144:MET:HE1	2.14	0.48
13:H:43:GLU:HG3	13:H:102:ILE:HG21	1.95	0.48
18:M:59:GLU:HA	18:M:62:LYS:HE2	1.94	0.48
29:a:2317:A:H2'	29:a:2318:A:H8	1.77	0.48
17:L:114:ARG:HG2	17:L:119:ALA:HB3	1.95	0.48
29:a:1530:C:H2'	29:a:1531:A:H8	1.77	0.48
29:a:1701:G:H2'	29:a:1702:U:C6	2.48	0.48
6:A:281:U:H2'	6:A:282:G:H8	1.79	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:92:ARG:O	12:G:96:ARG:HG3	2.14	0.48
29:a:5:A:H2'	29:a:6:A:C8	2.49	0.48
31:c:34:VAL:HG13	31:c:61:HIS:HB3	1.95	0.48
34:f:120:LYS:HB2	34:f:120:LYS:HE3	1.67	0.48
6:A:671:G:H2'	6:A:672:A:H8	1.78	0.48
6:A:1510:A:H2'	6:A:1511:G:C8	2.49	0.48
29:a:1492:U:H2'	29:a:1493:A:H8	1.77	0.48
29:a:2097:U:H2'	29:a:2098:U:C6	2.48	0.48
29:a:2105:G:H2'	29:a:2106:A:C5	2.48	0.48
29:a:2294:U:H2'	29:a:2295:C:C6	2.49	0.48
29:a:2566:A:H2'	29:a:2603:A:H62	1.78	0.48
44:p:86:ALA:HB2	44:p:116:ALA:HB2	1.95	0.48
29:a:645:U:H5'	29:a:646:A:OP2	2.13	0.48
29:a:1492:U:H2'	29:a:1493:A:C8	2.49	0.48
29:a:2713:U:H2'	29:a:2714:A:C8	2.49	0.48
35:g:28:GLY:HA3	35:g:79:VAL:HG13	1.96	0.48
35:g:64:GLN:O	35:g:67:THR:HG22	2.14	0.48
6:A:76:A:H62	6:A:92:G:H21	1.62	0.48
6:A:1513:2MG:H2'	6:A:1515:MA6:OP2	2.14	0.48
8:C:47:LEU:HB3	8:C:50:ALA:HB3	1.94	0.48
29:a:585:U:H2'	29:a:586:C:C6	2.47	0.48
29:a:1287:G:H5"	29:a:1288:A:H5"	1.95	0.48
29:a:2120:U:H5'	29:a:2121:U:H2'	1.96	0.48
2:1:10:LEU:HD23	29:a:761:G:H5"	1.96	0.48
6:A:748:U:H2'	6:A:749:G:O4'	2.14	0.48
16:K:86:LYS:HB2	16:K:112:VAL:HG23	1.95	0.48
29:a:277:U:H3	29:a:353:A:N6	2.11	0.48
29:a:520:A:C2	29:a:2031:A:H2'	2.48	0.48
29:a:1059:A:O2'	29:a:1062:C:H5'	2.14	0.48
29:a:2546:G:H2'	29:a:2547:C:C6	2.49	0.48
29:a:2798:A:H2'	29:a:2799:A:C8	2.49	0.48
6:A:639:A:N7	13:H:108:SER:HA	2.29	0.47
6:A:1069:G:H2'	6:A:1070:U:C6	2.49	0.47
7:B:78:ALA:O	7:B:82:ILE:HB	2.13	0.47
18:M:89:LEU:HA	18:M:92:ARG:HD3	1.96	0.47
27:V:76:C:H5'	27:V:77:A:O5'	2.13	0.47
29:a:1043:U:H2'	29:a:1044:A:H8	1.79	0.47
34:f:36:LEU:O	34:f:88:LYS:HA	2.14	0.47
35:g:40:LEU:HD22	35:g:56:LYS:NZ	2.29	0.47
42:n:68:GLU:HG3	42:n:69:ALA:N	2.28	0.47
51:w:8:THR:HG21	51:w:54:LYS:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:999:G:H3'	6:A:1000:A:H8	1.79	0.47
15:J:8:ILE:HB	15:J:74:ILE:HB	1.97	0.47
18:M:86:TYR:O	18:M:90:ARG:HG2	2.13	0.47
24:S:3:ARG:HH11	24:S:10:PHE:HB2	1.79	0.47
29:a:1316:A:H2'	29:a:1318:C:C4	2.49	0.47
29:a:1514:G:H2'	29:a:1515:C:O4'	2.14	0.47
29:a:1516:A:H61	29:a:1535:A:H5'	1.79	0.47
29:a:1538:U:HO2'	29:a:1539:G:H8	1.59	0.47
29:a:2138:U:H2'	29:a:2139:U:H6	1.77	0.47
31:c:76:ALA:HB2	31:c:96:TYR:CD2	2.49	0.47
35:g:143:GLN:O	35:g:147:GLU:HG3	2.13	0.47
6:A:712:A:H2'	6:A:713:A:C8	2.49	0.47
18:M:81:MET:HG2	18:M:92:ARG:HG3	1.95	0.47
29:a:700:U:H2'	29:a:701:U:C6	2.50	0.47
29:a:2587:A:H5"	31:c:234:GLY:HA3	1.96	0.47
31:c:53:HIS:HA	31:c:217:ARG:HB2	1.96	0.47
32:d:26:THR:HG21	32:d:196:ILE:HG12	1.95	0.47
34:f:65:PRO:HA	34:f:89:VAL:HG13	1.96	0.47
6:A:525:C:H41	17:L:46:ASN:ND2	2.13	0.47
13:H:102:ILE:HG12	13:H:130:VAL:HB	1.97	0.47
26:U:28:VAL:O	26:U:32:VAL:HG23	2.13	0.47
28:X:57:HIS:NE2	28:X:73:HIS:HB3	2.30	0.47
29:a:207:A:H2'	29:a:208:C:O4'	2.15	0.47
29:a:1528:U:H2'	29:a:1529:A:H8	1.80	0.47
29:a:2141:C:H2'	29:a:2142:A:H8	1.77	0.47
34:f:80:ARG:HD3	34:f:83:TRP:CE2	2.49	0.47
5:4:52:VAL:HG22	34:f:115:ARG:HH12	1.79	0.47
11:F:38:ARG:HB3	11:F:63:ASN:HB2	1.96	0.47
16:K:108:SER:HB3	26:U:5:LYS:HD2	1.95	0.47
17:L:8:ILE:HD11	22:Q:37:LYS:HB3	1.96	0.47
29:a:804:U:H2'	29:a:805:C:C6	2.49	0.47
29:a:1253:A:OP1	29:a:1253:A:H8	1.98	0.47
29:a:1493:A:H2'	29:a:1494:C:C6	2.50	0.47
29:a:1872:U:H2'	29:a:1873:G:O4'	2.14	0.47
42:n:78:ALA:HB2	42:n:109:ALA:HA	1.96	0.47
6:A:378:A:H2'	6:A:379:A:C8	2.49	0.47
6:A:1187:G:H4'	6:A:1188:A:OP2	2.13	0.47
6:A:1288:C:OP1	12:G:37:SER:HB3	2.15	0.47
6:A:1374:A:H2'	12:G:2:PRO:HD3	1.95	0.47
6:A:1399:4OC:H2'	6:A:1400:C:O4'	2.14	0.47
29:a:310:C:H2'	29:a:311:G:O4'	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:2676:U:H2'	29:a:2677:G:O4'	2.14	0.47
57:a:2959:MG:MG	55:a:3238:K:K	1.50	0.47
36:h:26:GLY:O	36:h:31:ILE:HG23	2.15	0.47
44:p:9:VAL:HG13	44:p:12:ARG:NH1	2.30	0.47
3:2:32:LEU:HA	3:2:35:LYS:HG3	1.97	0.47
5:4:48:LYS:HB3	5:4:49:GLN:H	1.47	0.47
6:A:201:A:H61	6:A:209:A:H61	1.63	0.47
6:A:725:A:H2'	6:A:726:A:H8	1.79	0.47
6:A:991:A:H3'	6:A:992:C:H5"	1.97	0.47
6:A:1136:G:H4'	6:A:1137:A:H5'	1.97	0.47
6:A:1187:G:H5'	8:C:176:HIS:NE2	2.30	0.47
11:F:39:LEU:HD13	11:F:39:LEU:O	2.14	0.47
12:G:26:PHE:HZ	12:G:120:LEU:HD11	1.79	0.47
12:G:113:GLU:HG3	12:G:119:ARG:HA	1.95	0.47
15:J:6:ILE:HB	15:J:76:ILE:HB	1.97	0.47
28:X:68:LYS:HE3	28:X:68:LYS:HB3	1.73	0.47
29:a:589:U:H2'	29:a:590:A:C8	2.49	0.47
29:a:1078:A:H5'	29:a:1079:A:OP1	2.15	0.47
29:a:1345:C:H2'	29:a:1346:G:O4'	2.15	0.47
29:a:1358:C:H2'	29:a:1359:G:O4'	2.14	0.47
29:a:2353:C:H2'	29:a:2354:G:O4'	2.15	0.47
40:l:30:GLY:HA2	40:l:107:GLU:HB3	1.96	0.47
44:p:58:ARG:HA	44:p:61:TRP:CE3	2.50	0.47
6:A:671:G:H2'	6:A:672:A:C8	2.50	0.47
6:A:1233:A:H2'	6:A:1234:C:C6	2.50	0.47
9:D:93:LEU:HD23	9:D:93:LEU:HA	1.79	0.47
21:P:61:ALA:HB3	21:P:67:LYS:HE3	1.96	0.47
29:a:1075:A:H5'	29:a:1076:A:OP2	2.15	0.47
29:a:1943:G:N3	29:a:2540:C:H5"	2.30	0.47
31:c:136:PRO:HG2	31:c:139:SER:HB3	1.97	0.47
34:f:116:GLY:HA3	34:f:178:LYS:HB3	1.97	0.47
35:g:85:ARG:HG2	35:g:141:LEU:HG	1.97	0.47
6:A:75:A:H1'	6:A:92:G:H22	1.80	0.47
6:A:231:U:H2'	6:A:232:A:C8	2.49	0.47
6:A:333:G:H2'	6:A:334:A:C8	2.50	0.47
6:A:1295:U:C4	12:G:114:LYS:HD2	2.50	0.47
6:A:1443:A:H1'	6:A:1444:A:H5'	1.97	0.47
18:M:11:ASP:HB3	18:M:46:ARG:HB3	1.97	0.47
27:V:17:C:C4	27:V:18:U:H5	2.33	0.47
27:V:28:U:H2'	27:V:29:C:H6	1.80	0.47
29:a:1798:A:H2'	29:a:1799:A:C8	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
36:h:54:LEU:HA	36:h:57:GLN:HG2	1.97	0.47
6:A:91:G:H2'	6:A:92:G:C8	2.50	0.47
7:B:171:GLU:OE2	7:B:171:GLU:HA	2.15	0.47
17:L:50:ARG:HB3	17:L:66:TYR:HE1	1.80	0.47
27:V:63:C:H2'	27:V:64:G:C8	2.50	0.47
6:A:58:U:H2'	6:A:59:G:C8	2.50	0.46
28:X:16:ARG:HG3	28:X:17:LEU:N	2.29	0.46
29:a:1394:U:H2'	29:a:1395:C:H6	1.80	0.46
37:i:26:GLY:O	37:i:30:THR:HG23	2.15	0.46
6:A:86:C:H3'	6:A:87:U:C6	2.50	0.46
6:A:673:A:H2'	6:A:674:U:H6	1.79	0.46
6:A:1034:U:H2'	6:A:1035:C:C6	2.50	0.46
7:B:33:ILE:HG21	7:B:41:HIS:HD2	1.79	0.46
29:a:545:U:H2'	29:a:546:G:H5'	1.97	0.46
29:a:2156:U:H2'	29:a:2157:G:C8	2.50	0.46
29:a:2366:A:H2'	29:a:2367:A:C8	2.51	0.46
5:4:44:PHE:HB2	5:4:50:LYS:HZ3	1.80	0.46
17:L:31:ARG:O	17:L:58:THR:HG23	2.15	0.46
27:V:69:C:H2'	27:V:70:C:C6	2.51	0.46
29:a:388:G:H1'	51:w:29:PHE:HB3	1.96	0.46
29:a:1473:A:H2'	29:a:1474:U:C6	2.51	0.46
29:a:2150:C:C4	29:a:2151:G:C8	3.03	0.46
29:a:2588:G:C8	31:c:236:GLU:HG2	2.49	0.46
32:d:12:MET:HE2	32:d:12:MET:HB3	1.89	0.46
33:e:136:LYS:HE3	33:e:136:LYS:HB3	1.75	0.46
34:f:38:MET:HE3	34:f:53:ALA:HB1	1.97	0.46
34:f:170:MET:HE2	34:f:170:MET:HA	1.97	0.46
49:u:53:LYS:HA	49:u:53:LYS:HD3	1.81	0.46
5:4:12:LEU:HD11	5:4:33:ILE:HG12	1.96	0.46
6:A:1019:U:H3'	6:A:1020:G:H8	1.81	0.46
7:B:116:LEU:HB2	7:B:146:LEU:HB3	1.95	0.46
15:J:42:MET:HG3	15:J:71:LYS:HZ2	1.80	0.46
29:a:64:G:H2'	29:a:65:C:C6	2.50	0.46
29:a:1187:U:H2'	29:a:1188:C:C6	2.51	0.46
29:a:2098:U:H2'	29:a:2099:G:C8	2.50	0.46
29:a:2174:A:H2'	29:a:2175:U:H6	1.80	0.46
42:n:68:GLU:O	42:n:72:LYS:HD3	2.16	0.46
51:w:11:ARG:HG2	51:w:11:ARG:NH1	2.29	0.46
2:1:25:LYS:HE3	2:1:25:LYS:HB2	1.79	0.46
6:A:759:U:H2'	6:A:760:A:C8	2.51	0.46
9:D:107:MET:HE3	9:D:145:ILE:HB	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:452:A:H2'	29:a:453:C:O4'	2.15	0.46
29:a:1498:A:H2'	29:a:1499:U:C6	2.50	0.46
29:a:1605:A:C2	46:r:93:ALA:HB2	2.51	0.46
35:g:84:GLU:HA	35:g:133:LEU:O	2.16	0.46
52:x:18:LEU:HB2	52:x:53:ILE:HG21	1.98	0.46
6:A:176:U:C2'	6:A:177:A:H5'	2.45	0.46
6:A:675:U:H2'	6:A:676:C:C6	2.49	0.46
6:A:1406:C:H2'	6:A:1407:A:H8	1.81	0.46
7:B:29:MET:O	7:B:33:ILE:HG12	2.16	0.46
8:C:82:GLU:O	8:C:86:LYS:HG2	2.16	0.46
19:N:6:MET:HB3	19:N:6:MET:HE3	1.71	0.46
29:a:140:A:O2'	29:a:141:A:H8	1.98	0.46
29:a:170:G:H2'	29:a:171:U:C6	2.51	0.46
29:a:2003:A:H2'	29:a:2004:A:C8	2.50	0.46
29:a:2541:OMU:HM23	29:a:2543:U:C6	2.51	0.46
35:g:164:TYR:HB2	35:g:167:GLU:HB2	1.96	0.46
6:A:960:G:H5'	28:X:9:LYS:HD3	1.98	0.46
8:C:149:ILE:HG13	8:C:202:ILE:HG12	1.98	0.46
11:F:26:ILE:HG23	11:F:36:ILE:HG13	1.97	0.46
14:I:39:ARG:HG3	14:I:70:ILE:HG21	1.96	0.46
23:R:33:ILE:HD12	23:R:37:GLY:HA2	1.98	0.46
27:V:28:U:H2'	27:V:29:C:C6	2.51	0.46
29:a:914:U:H2'	29:a:915:A:H8	1.81	0.46
29:a:1476:U:H2'	29:a:1477:U:C6	2.51	0.46
29:a:2280:U:H2'	29:a:2281:G:H8	1.77	0.46
29:a:2745:U:H1'	29:a:2746:A:H5"	1.98	0.46
29:a:2780:A:O2'	29:a:2781:G:H5"	2.16	0.46
31:c:161:SER:H	31:c:177:ARG:HD3	1.81	0.46
45:q:1:MET:HA	45:q:42:VAL:O	2.16	0.46
47:s:38:THR:HB	47:s:41:GLU:HG3	1.97	0.46
6:A:681:U:H2'	6:A:682:G:O4'	2.15	0.46
6:A:1051:C:C2	28:X:47:ASN:HB3	2.51	0.46
17:L:42:PRO:HG3	17:L:50:ARG:HE	1.80	0.46
28:X:92:ARG:HG2	28:X:92:ARG:NH1	2.30	0.46
29:a:1404:G:H2'	29:a:1405:C:C6	2.51	0.46
29:a:2160:A:H1'	29:a:2161:U:C5	2.50	0.46
29:a:2837:G:O2'	29:a:2838:G:H5'	2.16	0.46
6:A:265:U:H2'	6:A:266:A:H8	1.78	0.46
6:A:605:A:H2'	6:A:606:A:O4'	2.16	0.46
6:A:1349:C:H2'	6:A:1350:G:C8	2.51	0.46
23:R:21:ILE:HD11	23:R:51:TYR:HD1	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:V:31:G:H2'	27:V:32:G:H8	1.81	0.46
29:a:1463:G:O2'	29:a:1464:U:H6	1.99	0.46
31:c:145:GLU:HB3	31:c:188:CYS:HB3	1.98	0.46
41:m:112:TYR:CZ	54:z:54:PHE:HZ	2.34	0.46
6:A:493:A:H2'	6:A:494:U:C5	2.51	0.46
6:A:743:A:O2'	6:A:744:A:H5'	2.16	0.46
6:A:1035:C:H2'	6:A:1036:U:C6	2.50	0.46
24:S:10:PHE:CE2	24:S:37:ARG:HG3	2.48	0.46
29:a:227:A:C2	29:a:2396:A:H1'	2.51	0.46
29:a:1483:A:H2'	29:a:1484:A:C8	2.51	0.46
29:a:1523:A:H4'	29:a:1524:C:C6	2.51	0.46
29:a:2580:C:H2'	29:a:2581:G:C8	2.51	0.46
31:c:199:GLU:CD	31:c:199:GLU:H	2.23	0.46
6:A:414:C:H2'	6:A:415:C:C6	2.51	0.45
6:A:625:G:H2'	6:A:626:A:C8	2.51	0.45
6:A:675:U:H2'	6:A:676:C:H6	1.81	0.45
6:A:1295:U:H4'	6:A:1296:A:O4'	2.15	0.45
11:F:51:ILE:O	11:F:54:ILE:HG13	2.16	0.45
13:H:29:SER:OG	13:H:58:SER:HB2	2.16	0.45
25:T:8:LYS:O	25:T:12:ARG:HG3	2.16	0.45
29:a:273:A:H2'	29:a:274:A:H8	1.80	0.45
29:a:1395:C:H2'	29:a:1396:U:H6	1.80	0.45
29:a:2735:U:H5"	35:g:138:LYS:HE3	1.97	0.45
32:d:115:GLN:O	32:d:198:GLY:HA2	2.16	0.45
6:A:1115:U:H1'	6:A:1176:A:C5	2.51	0.45
6:A:1497:A:H5"	6:A:1505:G:H5"	1.98	0.45
24:S:11:VAL:HG21	24:S:41:LEU:HD11	1.98	0.45
27:V:16:C:H5"	27:V:17:C:H5	1.80	0.45
29:a:1474:U:H2'	29:a:1475:C:H6	1.79	0.45
29:a:1725:C:H2'	29:a:1726:U:H6	1.81	0.45
29:a:2260:G:H5"	50:v:18:PRO:HB2	1.98	0.45
29:a:2336:C:H2'	29:a:2337:U:C6	2.51	0.45
29:a:2536:A:H2'	29:a:2537:U:C6	2.51	0.45
29:a:2720:G:H2'	29:a:2721:G:C8	2.52	0.45
32:d:94:GLU:OE2	32:d:94:GLU:N	2.50	0.45
35:g:87:LEU:HD22	35:g:162:VAL:HG12	1.98	0.45
37:i:2:LYS:HE2	37:i:2:LYS:HB3	1.70	0.45
6:A:776:C:H2'	6:A:777:A:O4'	2.16	0.45
23:R:29:LEU:O	23:R:33:ILE:HG23	2.16	0.45
29:a:775:G:H5'	29:a:776:G:OP1	2.16	0.45
29:a:1219:U:H2'	29:a:1220:G:H8	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:1341:A:H2'	29:a:1342:A:C8	2.52	0.45
29:a:1779:U:H2'	29:a:1780:A:C8	2.52	0.45
1:0:46:LYS:HE3	1:0:46:LYS:HB3	1.45	0.45
6:A:258:A:H2'	6:A:259:A:C8	2.52	0.45
15:J:26:VAL:HG23	15:J:74:ILE:HD13	1.98	0.45
15:J:65:TYR:HE1	19:N:89:MET:HE3	1.82	0.45
29:a:1522:U:C4	29:a:1523:A:H1'	2.52	0.45
29:a:2304:C:H2'	29:a:2305:G:H8	1.81	0.45
29:a:2556:G:H2'	29:a:2557:A:C8	2.50	0.45
35:g:37:LEU:HD22	35:g:41:VAL:HB	1.97	0.45
54:z:42:VAL:HG12	54:z:48:TYR:HB2	1.98	0.45
6:A:862:A:H2'	6:A:863:C:C6	2.52	0.45
6:A:1438:A:C4	43:o:117:LEU:HD11	2.52	0.45
7:B:85:GLN:HG2	7:B:216:ALA:C	2.42	0.45
9:D:156:ARG:HG3	9:D:157:ILE:N	2.31	0.45
20:O:56:LEU:O	20:O:60:VAL:HG13	2.17	0.45
27:V:70:C:H2'	27:V:71:G:H8	1.82	0.45
29:a:503:U:H4'	29:a:1223:G:H4'	1.98	0.45
29:a:830:U:H2'	29:a:831:C:C6	2.52	0.45
29:a:1663:A:C2	29:a:2571:G:H5'	2.51	0.45
29:a:1831:G:H2'	29:a:1832:C:C6	2.52	0.45
29:a:2091:C:H2'	29:a:2092:C:H6	1.81	0.45
29:a:2120:U:H3'	29:a:2121:U:C6	2.52	0.45
35:g:56:LYS:NZ	35:g:56:LYS:HB2	2.31	0.45
38:j:44:LYS:HA	38:j:44:LYS:HD2	1.76	0.45
40:l:63:LYS:HB2	40:l:107:GLU:HG2	1.99	0.45
42:n:28:CYS:HA	42:n:92:ASP:HB3	1.99	0.45
42:n:54:THR:HB	42:n:64:THR:HG22	1.98	0.45
6:A:502:G:H2'	6:A:503:G:C8	2.52	0.45
6:A:728:G:H5'	6:A:763:A:H4'	1.99	0.45
6:A:821:U:H2'	6:A:822:A:H8	1.78	0.45
29:a:1783:A:H2'	29:a:1784:C:H6	1.82	0.45
29:a:1869:U:H2'	29:a:1870:C:C6	2.51	0.45
29:a:2240:OMG:HM23	29:a:2240:OMG:H1'	1.66	0.45
29:a:2275:G:H4'	29:a:2276:A:O4'	2.16	0.45
29:a:2689:A:H2'	29:a:2690:C:C6	2.52	0.45
32:d:6:VAL:HG11	32:d:79:LEU:HD11	1.99	0.45
6:A:1038:G:H2'	6:A:1039:A:C8	2.52	0.45
7:B:82:ILE:HD11	7:B:166:ILE:HG13	1.99	0.45
8:C:15:VAL:HB	8:C:207:ILE:HD12	1.99	0.45
27:V:33:OMC:HM22	27:V:34:U:H1'	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:V:52:C:H2'	27:V:53:G:C8	2.52	0.45
35:g:17:VAL:HG21	35:g:50:LEU:HD11	1.99	0.45
37:i:36:LEU:HD11	37:i:122:MET:HB2	1.98	0.45
6:A:27:C:H5'	6:A:521:G:H1'	1.97	0.45
8:C:132:ARG:HA	8:C:132:ARG:HD3	1.74	0.45
29:a:406:C:H2'	29:a:407:A:H8	1.81	0.45
29:a:1576:C:H2'	29:a:1577:A:O4'	2.17	0.45
29:a:2104:G:H4'	29:a:2155:U:O2'	2.17	0.45
29:a:2604:U:C2	54:z:4:GLN:HA	2.51	0.45
6:A:23:G:H2'	6:A:24:G:C8	2.51	0.45
11:F:79:ARG:HG3	11:F:79:ARG:HH11	1.81	0.45
14:I:50:LEU:HB3	14:I:56:THR:HA	1.99	0.45
28:X:31:ARG:HH11	28:X:31:ARG:HB3	1.80	0.45
29:a:1628:A:H5'	29:a:1749:C:O2'	2.16	0.45
29:a:2113:G:H2'	29:a:2114:G:O4'	2.17	0.45
39:k:82:SER:HB3	39:k:116:GLY:HA3	1.98	0.45
46:r:88:ARG:HG3	46:r:94:ASP:OD1	2.17	0.45
6:A:865:C:H2'	6:A:866:G:O4'	2.16	0.45
10:E:10:LEU:HD12	10:E:10:LEU:HA	1.87	0.45
19:N:72:GLY:O	19:N:80:SER:HA	2.17	0.45
22:Q:63:LYS:HG2	22:Q:77:VAL:HG22	1.99	0.45
29:a:1288:A:H4'	29:a:1289:A:H5"	1.98	0.45
31:c:20:VAL:HG23	31:c:21:HIS:N	2.32	0.45
47:s:81:LYS:HB2	47:s:81:LYS:HE2	1.81	0.45
6:A:1352:G:H2'	6:A:1353:G:C8	2.53	0.44
7:B:83:ARG:HG3	7:B:93:TYR:CZ	2.52	0.44
18:M:85:CYS:O	18:M:89:LEU:HD13	2.17	0.44
23:R:27:ASP:O	23:R:31:GLN:HG2	2.17	0.44
29:a:317:A:OP2	33:e:162:ASN:HB2	2.17	0.44
29:a:568:G:H2'	29:a:569:G:C8	2.52	0.44
29:a:635:A:H2'	29:a:637:A:C8	2.52	0.44
29:a:1842:A:H2'	29:a:1843:A:C8	2.52	0.44
29:a:2740:G:C5	35:g:3:ARG:HD3	2.52	0.44
45:q:50:GLY:HA3	45:q:53:VAL:C	2.42	0.44
1:0:4:LYS:HB3	1:0:50:ILE:HD13	1.98	0.44
18:M:89:LEU:O	18:M:93:ARG:HG2	2.17	0.44
21:P:58:ASN:HB3	21:P:61:ALA:HB2	1.99	0.44
29:a:248:G:H5'	29:a:250:G:N7	2.31	0.44
29:a:1395:C:H2'	29:a:1396:U:C6	2.52	0.44
30:b:37:U:H2'	30:b:38:U:C6	2.52	0.44
40:l:79:LEU:HD12	40:l:79:LEU:HA	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1406:C:H2'	6:A:1407:A:C8	2.52	0.44
6:A:1432:G:H2'	6:A:1433:U:C6	2.52	0.44
9:D:13:ARG:NH2	9:D:39:PRO:HA	2.32	0.44
27:V:27:G:C2	27:V:28:U:C6	3.06	0.44
29:a:222:A:C2	29:a:233:A:H5"	2.53	0.44
29:a:1304:A:H2'	29:a:1305:G:C8	2.53	0.44
29:a:1404:G:H2'	29:a:1405:C:H6	1.82	0.44
34:f:36:LEU:HB2	34:f:89:VAL:HG23	1.98	0.44
48:t:32:VAL:HG11	48:t:68:VAL:HG21	1.99	0.44
6:A:470:A:H2'	6:A:471:G:C8	2.51	0.44
6:A:760:A:H2'	6:A:761:C:C6	2.52	0.44
29:a:853:G:H2'	29:a:854:A:O4'	2.18	0.44
29:a:1371:A:H1'	29:a:1393:U:O2'	2.17	0.44
29:a:1417:G:H2'	29:a:1418:G:H8	1.82	0.44
29:a:1516:A:N6	29:a:1534:G:H2'	2.33	0.44
29:a:2151:G:H2'	29:a:2151:G:N3	2.32	0.44
50:v:72:LYS:HE3	50:v:72:LYS:HB2	1.68	0.44
6:A:210:C:H2'	6:A:211:C:C6	2.53	0.44
6:A:892:G:H2'	6:A:893:U:H6	1.82	0.44
6:A:1104:C:C4	6:A:1105:G:C8	3.06	0.44
6:A:1352:G:H2'	6:A:1353:G:H8	1.82	0.44
28:X:38:HIS:HB3	28:X:63:ARG:HD2	1.98	0.44
29:a:135:A:H2'	29:a:136:C:C6	2.53	0.44
29:a:437:C:H2'	29:a:438:G:O4'	2.17	0.44
29:a:665:G:O2'	33:e:68:ARG:HD2	2.16	0.44
29:a:2090:A:H2'	29:a:2091:C:C6	2.53	0.44
29:a:2637:G:H2'	29:a:2638:C:C6	2.53	0.44
6:A:201:A:N6	6:A:209:A:H61	2.16	0.44
6:A:1425:A:H2'	6:A:1426:C:O4'	2.18	0.44
11:F:66:CYS:HB2	11:F:70:THR:HB	1.99	0.44
15:J:49:PHE:HE1	15:J:67:ILE:HG22	1.83	0.44
18:M:31:LYS:HG2	18:M:41:GLU:OE2	2.17	0.44
19:N:4:LYS:HD2	19:N:4:LYS:HA	1.68	0.44
20:O:56:LEU:HD21	29:a:706:A:C2	2.53	0.44
29:a:740:A:H4'	29:a:1259:G:N3	2.32	0.44
40:l:63:LYS:HE2	40:l:63:LYS:HB3	1.78	0.44
4:3:23:ILE:HD13	29:a:1022:A:H1'	2.00	0.44
6:A:401:U:H3'	6:A:402:G:H5'	2.00	0.44
6:A:601:G:H2'	6:A:602:U:O4'	2.18	0.44
6:A:1118:U:H2'	6:A:1119:U:C6	2.53	0.44
6:A:1493:C:H2'	6:A:1494:G:O4'	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:46:ALA:O	12:G:50:VAL:HG13	2.18	0.44
13:H:55:GLU:HG2	13:H:56:THR:N	2.33	0.44
24:S:36:ARG:HB3	24:S:72:GLY:HA3	2.00	0.44
29:a:2:G:H2'	29:a:3:U:C6	2.52	0.44
29:a:938:C:H1'	29:a:974:A:C8	2.53	0.44
29:a:1054:C:N3	29:a:1059:A:H5"	2.33	0.44
29:a:1960:U:O2'	31:c:223:MET:HE1	2.18	0.44
29:a:2526:U:H2'	29:a:2527:C:C6	2.52	0.44
29:a:2790:G:H2'	29:a:2791:U:H6	1.80	0.44
31:c:82:GLU:HB2	31:c:91:ILE:HG13	2.00	0.44
34:f:138:PHE:CD2	34:f:139:PRO:HD3	2.53	0.44
35:g:102:VAL:HG12	35:g:116:ALA:HA	2.00	0.44
41:m:53:THR:HA	41:m:56:LYS:HG3	1.99	0.44
44:p:41:LYS:HE2	44:p:45:TYR:CZ	2.53	0.44
52:x:6:LEU:HD22	52:x:53:ILE:HG12	2.00	0.44
1:0:21:LYS:HD2	1:0:26:MET:HG2	2.00	0.44
6:A:76:A:H2'	6:A:76:A:N3	2.33	0.44
11:F:42:TRP:CZ2	23:R:24:LYS:HD3	2.51	0.44
11:F:42:TRP:HB2	11:F:59:TYR:HB2	1.99	0.44
14:I:69:GLY:O	14:I:73:GLN:HB2	2.18	0.44
28:X:34:GLU:CD	28:X:34:GLU:H	2.26	0.44
29:a:1416:C:C5	29:a:1560:A:H5"	2.53	0.44
29:a:1554:U:H2'	29:a:1555:C:C6	2.52	0.44
29:a:2503:U:H2'	29:a:2504:C:C6	2.53	0.44
30:b:76:A:H2'	30:b:77:G:O4'	2.18	0.44
33:e:134:LEU:HG	33:e:163:LEU:HD21	2.00	0.44
35:g:86:LYS:HG3	35:g:165:SER:HB3	1.99	0.44
38:j:111:PHE:HB3	38:j:114:ILE:HD12	2.00	0.44
42:n:31:ARG:HB2	42:n:36:ILE:HD12	2.00	0.44
44:p:76:TYR:CZ	44:p:80:ILE:HG13	2.52	0.44
6:A:947:U:H2'	6:A:948:G:C8	2.53	0.44
7:B:223:ILE:HD13	7:B:223:ILE:HA	1.88	0.44
18:M:39:ILE:HD11	18:M:52:GLN:HB3	1.99	0.44
27:V:26:C:C2	27:V:27:G:C8	3.06	0.44
28:X:22:ARG:O	28:X:26:THR:HG23	2.18	0.44
29:a:16:U:H5"	54:z:14:ASP:HB2	2.00	0.44
29:a:291:U:H2'	29:a:292:G:C8	2.53	0.44
29:a:1104:C:H2'	29:a:1105:G:C8	2.53	0.44
29:a:1424:G:H2'	29:a:1425:C:O4'	2.18	0.44
29:a:1457:A:H2'	29:a:1458:A:H8	1.81	0.44
29:a:1863:C:H2'	29:a:1864:G:O4'	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:c:131:PRO:HA	31:c:189:ARG:HA	1.99	0.44
39:k:75:LYS:HB3	39:k:108:ILE:HG23	2.00	0.44
50:v:20:MET:HE2	50:v:20:MET:HB2	1.88	0.44
6:A:242:A:C2	6:A:278:A:C5	3.06	0.43
6:A:654:U:H2'	6:A:655:A:C8	2.53	0.43
18:M:49:ASP:OD2	18:M:49:ASP:C	2.61	0.43
29:a:2275:G:N3	29:a:2275:G:H2'	2.33	0.43
29:a:2841:G:H2'	29:a:2842:C:O4'	2.17	0.43
34:f:103:LEU:HD12	34:f:107:ALA:HB3	2.00	0.43
47:s:61:ILE:HD11	47:s:80:LYS:HE3	1.99	0.43
53:y:5:LYS:HB2	53:y:57:GLU:HB3	2.00	0.43
6:A:502:G:H2'	6:A:503:G:H8	1.82	0.43
14:I:65:VAL:CG2	14:I:73:GLN:HG2	2.49	0.43
29:a:430:G:H2'	29:a:431:A:C8	2.53	0.43
29:a:1855:A:H2'	29:a:1856:G:O4'	2.19	0.43
29:a:2112:G:H2'	29:a:2113:G:H8	1.84	0.43
38:j:7:MET:HE3	38:j:7:MET:HB3	1.77	0.43
38:j:15:GLY:O	38:j:47:ILE:HG12	2.18	0.43
38:j:25:LEU:HD12	38:j:38:ILE:HG22	2.00	0.43
7:B:169:ASP:HB2	7:B:193:SER:OG	2.18	0.43
8:C:59:ARG:NH2	8:C:95:MET:HG3	2.33	0.43
10:E:107:GLY:O	10:E:111:ARG:HB3	2.19	0.43
19:N:20:TYR:HD2	19:N:55:ALA:HB2	1.83	0.43
29:a:1328:U:H3'	29:a:1329:G:H5'	2.01	0.43
29:a:2834:U:H2'	29:a:2835:G:C8	2.53	0.43
31:c:63:ARG:HD3	31:c:84:ASP:OD1	2.18	0.43
32:d:123:GLY:O	32:d:127:ARG:HB2	2.18	0.43
41:m:20:MET:HE3	41:m:20:MET:HB3	1.83	0.43
6:A:1166:A:H2'	6:A:1167:A:C8	2.53	0.43
6:A:1257:U:OP1	6:A:1281:C:H4'	2.18	0.43
15:J:78:GLN:N	15:J:79:PRO:HD3	2.34	0.43
18:M:39:ILE:HD12	18:M:56:ILE:HD11	1.99	0.43
29:a:140:A:HO2'	29:a:141:A:H8	1.54	0.43
29:a:1394:U:H2'	29:a:1395:C:C6	2.52	0.43
29:a:1496:C:H4'	29:a:1498:A:C8	2.54	0.43
29:a:2027:G:H2'	29:a:2028:U:O4'	2.19	0.43
29:a:2163:C:H2'	29:a:2164:C:C6	2.54	0.43
29:a:2174:A:H2'	29:a:2175:U:C6	2.53	0.43
33:e:146:LEU:HD12	33:e:167:ASP:HB3	2.00	0.43
37:i:7:LYS:O	37:i:11:VAL:HG23	2.18	0.43
51:w:10:LYS:HE3	51:w:54:LYS:HD2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1148:A:HO2'	6:A:1149:A:H8	1.64	0.43
8:C:215:MET:HE3	15:J:16:ARG:HB2	2.01	0.43
12:G:42:ILE:HG21	12:G:116:MET:HG3	1.99	0.43
25:T:86:LEU:HD12	25:T:86:LEU:HA	1.74	0.43
29:a:128:C:H2'	29:a:129:C:C6	2.53	0.43
29:a:1943:G:C2	29:a:2540:C:H5"	2.54	0.43
34:f:46:ASP:OD2	34:f:48:LYS:HG3	2.17	0.43
6:A:157:A:H2'	6:A:158:A:C8	2.53	0.43
6:A:487:C:H2'	6:A:488:G:H8	1.83	0.43
6:A:1423:G:H2'	6:A:1424:C:C6	2.53	0.43
8:C:43:LEU:HD23	8:C:43:LEU:HA	1.80	0.43
29:a:1049:G:H3'	29:a:1050:U:H5'	2.00	0.43
31:c:118:SER:HB3	31:c:129:CYS:HB3	1.99	0.43
52:x:55:THR:O	52:x:59:GLU:HG3	2.18	0.43
6:A:10:A:C6	9:D:208:LYS:HB2	2.53	0.43
9:D:64:ARG:HG3	9:D:74:PHE:CD1	2.54	0.43
27:V:44:A:H2'	27:V:45:A:O4'	2.19	0.43
29:a:64:G:H2'	29:a:65:C:H6	1.84	0.43
29:a:567:U:H2'	29:a:568:G:C8	2.54	0.43
29:a:590:A:H2'	29:a:591:G:C8	2.52	0.43
29:a:1018:A:H2'	29:a:1019:A:H8	1.82	0.43
29:a:2460:A:H2'	29:a:2461:G:O4'	2.19	0.43
29:a:2788:A:H2'	29:a:2790:G:OP2	2.18	0.43
6:A:559:U:H1'	17:L:12:ARG:HD2	2.01	0.43
6:A:626:A:H2'	6:A:627:A:O4'	2.18	0.43
8:C:12:LEU:HA	8:C:12:LEU:HD23	1.70	0.43
9:D:169:ILE:HD11	9:D:175:VAL:HG21	2.01	0.43
12:G:38:ILE:O	12:G:42:ILE:HG13	2.19	0.43
29:a:222:A:N1	29:a:233:A:H5"	2.33	0.43
29:a:285:U:H2'	29:a:286:U:C6	2.54	0.43
29:a:1420:G:H2'	29:a:1421:A:C8	2.53	0.43
29:a:2885:C:H2'	29:a:2886:U:H6	1.84	0.43
32:d:85:VAL:HG21	32:d:90:LEU:HD13	1.99	0.43
1:0:24:ARG:HB3	1:0:24:ARG:HH11	1.82	0.43
3:2:50:HIS:CG	29:a:2348:C:H5'	2.54	0.43
6:A:486:U:H2'	6:A:487:C:C6	2.54	0.43
6:A:1115:U:OP1	14:I:9:ARG:HD2	2.19	0.43
6:A:1509:U:H2'	6:A:1510:A:C8	2.54	0.43
7:B:68:LYS:HD2	7:B:92:PRO:HD3	2.00	0.43
8:C:129:MET:HE2	8:C:132:ARG:HB2	2.01	0.43
11:F:2:ARG:HE	11:F:91:ARG:CZ	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:M:90:ARG:HB2	18:M:97:VAL:HG22	2.00	0.43
23:R:34:THR:HG22	23:R:38:LYS:H	1.82	0.43
29:a:40:U:H2'	29:a:41:C:C6	2.54	0.43
29:a:150:U:H2'	29:a:151:U:C6	2.53	0.43
29:a:1066:C:C2	29:a:1067:A:C8	3.06	0.43
29:a:1561:A:H2'	29:a:1562:A:C8	2.54	0.43
29:a:2112:G:H2'	29:a:2113:G:C8	2.53	0.43
29:a:2801:A:H2'	29:a:2802:G:O4'	2.19	0.43
41:m:72:ASN:HB3	41:m:75:THR:HB	2.01	0.43
6:A:1144:C:H2'	6:A:1145:U:C6	2.54	0.43
9:D:60:LYS:HD3	9:D:205:LEU:HD23	2.00	0.43
9:D:123:ARG:HB3	9:D:131:ARG:HE	1.84	0.43
18:M:92:ARG:NH2	29:a:878:U:H5'	2.33	0.43
29:a:1831:G:H2'	29:a:1832:C:H6	1.84	0.43
29:a:1868:C:H2'	29:a:1869:U:O4'	2.19	0.43
37:i:104:ALA:O	37:i:108:MET:HG3	2.19	0.43
49:u:14:ASP:OD2	49:u:14:ASP:C	2.62	0.43
6:A:89:C:H5"	6:A:90:C:C6	2.54	0.42
6:A:175:A:H2'	6:A:176:U:C6	2.54	0.42
6:A:218:U:H2'	6:A:219:A:C8	2.54	0.42
6:A:333:G:H2'	6:A:334:A:H8	1.82	0.42
6:A:861:A:H2'	6:A:862:A:C8	2.53	0.42
6:A:1311:C:H2'	6:A:1312:U:H6	1.84	0.42
29:a:32:C:O2'	29:a:33:U:H5'	2.19	0.42
29:a:670:C:H2'	29:a:671:A:C8	2.54	0.42
29:a:2833:A:H2'	29:a:2834:U:O4'	2.19	0.42
34:f:140:GLU:HG2	34:f:141:ILE:H	1.84	0.42
2:1:4:THR:HG22	29:a:678:C:H1'	2.01	0.42
6:A:467:U:H2'	6:A:468:A:C8	2.54	0.42
6:A:639:A:C8	13:H:108:SER:HA	2.53	0.42
6:A:818:G:H2'	6:A:819:U:C6	2.54	0.42
29:a:571:U:H2'	29:a:572:C:C6	2.55	0.42
29:a:733:G:H2'	29:a:734:U:H6	1.81	0.42
29:a:2887:U:O2	37:i:134:ALA:HB1	2.20	0.42
31:c:223:MET:SD	31:c:240:LYS:HG3	2.59	0.42
48:t:46:PRO:HB3	48:t:53:GLU:OE2	2.19	0.42
6:A:456:U:H2'	6:A:457:A:H8	1.79	0.42
6:A:564:G:H2'	6:A:565:G:O4'	2.19	0.42
6:A:1235:A:N7	6:A:1300:C:H1'	2.34	0.42
9:D:190:ARG:HA	9:D:190:ARG:HD2	1.79	0.42
27:V:20:G:N2	27:V:58:A:H1'	2.35	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:154:A:H2'	29:a:155:A:C8	2.54	0.42
29:a:1266:C:H2'	29:a:1267:G:H8	1.84	0.42
29:a:1277:C:H2'	29:a:1278:C:H6	1.84	0.42
29:a:1349:G:H2'	29:a:1350:C:C6	2.53	0.42
29:a:2639:U:H2'	29:a:2640:C:H6	1.85	0.42
29:a:2649:A:H2'	29:a:2650:G:C8	2.54	0.42
35:g:94:TYR:HA	35:g:106:ASN:O	2.19	0.42
4:3:4:GLN:HG3	4:3:6:SER:O	2.20	0.42
6:A:367:A:H2'	6:A:368:C:O4'	2.19	0.42
27:V:33:OMC:H2'	27:V:34:U:C6	2.54	0.42
29:a:350:C:H2'	29:a:351:A:C8	2.53	0.42
29:a:787:C:H2'	29:a:788:U:C6	2.55	0.42
29:a:838:A:H5"	29:a:839:U:OP2	2.19	0.42
29:a:1038:A:N7	29:a:1101:A:C6	2.87	0.42
29:a:1387:C:H2'	29:a:1388:A:C8	2.54	0.42
29:a:1426:U:H2'	29:a:1427:A:C8	2.54	0.42
29:a:1845:U:H2'	29:a:1846:G:O4'	2.19	0.42
29:a:2783:A:H2'	29:a:2784:C:C6	2.54	0.42
30:b:22:G:N7	30:b:54:G:H2'	2.34	0.42
34:f:167:ARG:HG2	34:f:171:ARG:NH1	2.35	0.42
37:i:15:TRP:CE2	37:i:135:GLN:HG2	2.54	0.42
47:s:7:TYR:CE1	47:s:49:LEU:HD21	2.55	0.42
48:t:94:TYR:CE2	48:t:101:VAL:HA	2.55	0.42
6:A:650:A:C6	13:H:57:LYS:HB3	2.53	0.42
6:A:1382:G:H2'	6:A:1383:G:O4'	2.19	0.42
11:F:4:TYR:CZ	11:F:71:LEU:HD22	2.54	0.42
17:L:39:THR:HA	17:L:50:ARG:O	2.20	0.42
29:a:1158:U:H2'	29:a:1159:A:C8	2.55	0.42
29:a:2889:A:H2'	29:a:2890:C:O4'	2.20	0.42
31:c:158:ALA:HB1	31:c:197:ASN:O	2.19	0.42
40:l:20:LEU:HD23	40:l:99:PRO:HG2	2.01	0.42
6:A:61:A:H5"	6:A:383:U:H5"	2.00	0.42
6:A:79:U:H2'	6:A:80:A:C8	2.55	0.42
6:A:208:G:H2'	6:A:209:A:C8	2.54	0.42
6:A:262:G:H3'	22:Q:70:LYS:HB2	2.00	0.42
6:A:674:U:H3	6:A:710:G:H22	1.68	0.42
6:A:1039:A:OP2	6:A:1039:A:H8	2.01	0.42
6:A:1145:U:H2'	6:A:1146:U:O4'	2.18	0.42
6:A:1188:A:OP2	6:A:1188:A:H8	2.03	0.42
7:B:52:LEU:O	7:B:56:LEU:HG	2.20	0.42
20:O:89:ARG:H	20:O:89:ARG:HG3	1.57	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:V:23:G:H2'	27:V:24:C:C6	2.54	0.42
29:a:873:G:C4	29:a:874:G:C8	3.08	0.42
29:a:1701:G:H4'	29:a:2847:U:O2	2.20	0.42
29:a:2090:A:H2'	29:a:2091:C:H6	1.85	0.42
29:a:2383:C:H5"	39:k:65:LYS:HD3	2.00	0.42
29:a:2384:C:H2'	29:a:2385:G:O4'	2.19	0.42
38:j:100:GLY:HA2	43:o:69:SER:HB2	2.00	0.42
51:w:15:GLY:HA3	51:w:29:PHE:HE1	1.85	0.42
6:A:842:A:H1'	23:R:10:PHE:HB2	2.02	0.42
9:D:102:ASN:O	9:D:106:ARG:HG2	2.19	0.42
9:D:104:VAL:HG13	9:D:109:PHE:HB2	2.02	0.42
13:H:40:LEU:HD21	13:H:130:VAL:HG21	2.00	0.42
18:M:113:ARG:HA	18:M:113:ARG:HD3	1.81	0.42
26:U:20:LYS:HE2	26:U:20:LYS:HB3	1.85	0.42
29:a:1419:A:O2'	29:a:1420:G:H5'	2.20	0.42
29:a:2687:U:H2'	29:a:2688:G:C8	2.55	0.42
29:a:2811:G:H2'	29:a:2812:A:H5"	2.02	0.42
34:f:106:ILE:HG22	34:f:138:PHE:HB3	2.02	0.42
35:g:63:MET:HE2	35:g:63:MET:HB3	1.82	0.42
37:i:116:TYR:O	37:i:119:ILE:HG22	2.20	0.42
5:4:25:ARG:HB2	34:f:98:GLU:OE1	2.19	0.42
6:A:1433:U:H2'	6:A:1434:A:C8	2.54	0.42
11:F:73:GLU:O	11:F:77:LEU:HG	2.20	0.42
12:G:91:VAL:HB	12:G:96:ARG:HG2	2.02	0.42
14:I:53:LEU:HD12	14:I:85:LEU:HD13	2.01	0.42
25:T:44:TYR:CD1	25:T:87:ALA:HB2	2.55	0.42
29:a:39:G:H2'	29:a:40:U:C6	2.54	0.42
29:a:1090:C:H2'	29:a:1091:U:C6	2.55	0.42
29:a:1426:U:H2'	29:a:1427:A:H8	1.85	0.42
29:a:1709:U:H2'	29:a:1710:G:O4'	2.20	0.42
29:a:2300:A:C2	34:f:77:PHE:HB3	2.54	0.42
29:a:2675:G:H2'	29:a:2676:U:C6	2.54	0.42
30:b:14:G:N2	30:b:67:G:H1'	2.35	0.42
34:f:137:VAL:HG13	34:f:140:GLU:CB	2.46	0.42
6:A:172:C:H2'	6:A:173:G:N3	2.34	0.42
6:A:915:A:H2'	6:A:916:A:C8	2.55	0.42
6:A:1001:A:P	6:A:1023:G:H22	2.42	0.42
6:A:1140:G:H2'	6:A:1141:G:C8	2.55	0.42
23:R:31:GLN:HG2	23:R:31:GLN:H	1.68	0.42
25:T:49:GLU:HG3	25:T:53:LYS:HE3	2.02	0.42
29:a:2095:A:H2'	29:a:2096:C:O4'	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:2365:A:H2'	29:a:2366:A:O4'	2.19	0.42
4:3:5:ALA:O	4:3:38:GLY:HA2	2.20	0.42
6:A:37:G:H2'	6:A:38:C:C6	2.55	0.42
6:A:73:G:C2	6:A:74:G:H1'	2.54	0.42
6:A:372:G:H4'	21:P:23:ARG:HD2	2.02	0.42
6:A:991:A:H8	19:N:8:ASN:OD1	2.02	0.42
6:A:1327:U:H2'	6:A:1328:G:O4'	2.19	0.42
6:A:1417:U:H2'	6:A:1418:U:O4'	2.20	0.42
14:I:125:PHE:O	14:I:127:LYS:HD2	2.20	0.42
17:L:79:VAL:HG12	17:L:102:LEU:HD13	2.02	0.42
29:a:631:C:H2'	29:a:632:U:C6	2.55	0.42
29:a:662:C:H2'	29:a:663:C:C6	2.55	0.42
29:a:1528:U:C2	29:a:1529:A:C8	3.08	0.42
29:a:1582:C:H2'	29:a:1583:A:C8	2.55	0.42
38:j:10:VAL:HG12	38:j:12:ASP:OD1	2.19	0.42
38:j:17:ARG:HB2	38:j:45:GLU:HG2	2.02	0.42
6:A:484:A:H2'	6:A:485:C:O4'	2.20	0.41
7:B:70:LEU:HD23	7:B:163:LEU:HD11	2.02	0.41
7:B:74:THR:HA	7:B:95:ASP:O	2.20	0.41
12:G:144:MET:HE3	12:G:144:MET:HB3	1.96	0.41
17:L:107:VAL:CG2	17:L:110:ARG:HG3	2.49	0.41
22:Q:18:MET:HE3	22:Q:18:MET:HB2	1.87	0.41
22:Q:41:ARG:HA	22:Q:41:ARG:HD3	1.59	0.41
29:a:170:G:H2'	29:a:171:U:H6	1.85	0.41
29:a:657:A:H2'	29:a:658:U:C6	2.55	0.41
29:a:1382:U:H4'	29:a:1594:A:H4'	2.02	0.41
29:a:2256:A:H5"	29:a:2257:A:H5'	2.02	0.41
29:a:2557:A:H2'	29:a:2558:G:O4'	2.20	0.41
29:a:2566:A:H2'	29:a:2603:A:N6	2.34	0.41
31:c:210:ALA:HA	31:c:213:TRP:CE3	2.55	0.41
38:j:122:LEU:HD13	43:o:73:VAL:HG11	2.02	0.41
39:k:133:ALA:O	39:k:137:ILE:HG12	2.20	0.41
40:l:120:LEU:HD23	40:l:120:LEU:HA	1.84	0.41
6:A:215:C:C4	6:A:216:G:C8	3.08	0.41
6:A:459:U:H2'	6:A:460:U:C6	2.55	0.41
6:A:693:A:H2'	6:A:694:U:H6	1.83	0.41
6:A:1050:G:H4'	6:A:1051:C:H3'	2.01	0.41
6:A:1424:C:H2'	6:A:1425:A:C8	2.55	0.41
8:C:58:GLU:HB3	15:J:94:ALA:HB1	2.02	0.41
9:D:75:SER:O	9:D:79:LYS:HG3	2.21	0.41
19:N:4:LYS:HA	19:N:7:ILE:HD12	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:987:G:H5”	44:p:92:ARG:NH1	2.35	0.41
29:a:1277:C:H2’	29:a:1278:C:C6	2.55	0.41
29:a:1405:C:H2’	29:a:1406:G:O4’	2.20	0.41
29:a:2158:A:H8	29:a:2158:A:OP1	2.03	0.41
33:e:4:LYS:HE2	33:e:4:LYS:HB3	1.69	0.41
54:z:37:HIS:HB3	54:z:43:THR:HG22	2.01	0.41
6:A:22:U:H2’	6:A:23:G:O4’	2.20	0.41
6:A:1011:A:H5”	24:S:14:HIS:CG	2.56	0.41
12:G:91:VAL:HG12	12:G:95:ARG:HB3	2.02	0.41
29:a:279:U:H2’	29:a:280:G:H8	1.83	0.41
29:a:963:A:H5’	29:a:1176:U:H1’	2.01	0.41
29:a:1304:A:H2’	29:a:1305:G:H8	1.84	0.41
29:a:2105:G:H3’	29:a:2106:A:C8	2.54	0.41
32:d:57:ARG:O	32:d:61:VAL:HG23	2.20	0.41
34:f:142:ASP:OD2	34:f:145:LYS:HG2	2.20	0.41
37:i:98:GLU:CD	37:i:98:GLU:H	2.28	0.41
43:o:20:LEU:HD23	43:o:20:LEU:HA	1.84	0.41
6:A:542:C:P	9:D:64:ARG:HH12	2.43	0.41
6:A:1357:A:H8	6:A:1357:A:OP1	2.02	0.41
7:B:29:MET:HB3	7:B:29:MET:HE3	1.67	0.41
9:D:60:LYS:HD2	9:D:206:TYR:OH	2.20	0.41
11:F:15:SER:HA	11:F:18:VAL:HG23	2.03	0.41
25:T:48:THR:O	25:T:52:LYS:HG2	2.20	0.41
27:V:51:U:H2’	27:V:52:C:C6	2.55	0.41
27:V:54:G:H3’	27:V:55:5MU:H73	2.01	0.41
29:a:72:A:C8	52:x:54:LYS:HD3	2.55	0.41
29:a:560:U:H5”	29:a:812:A:C2	2.55	0.41
29:a:1070:C:H2’	29:a:1071:U:C6	2.56	0.41
29:a:1579:U:H2’	29:a:1580:U:C6	2.55	0.41
29:a:1582:C:H2’	29:a:1583:A:H8	1.85	0.41
29:a:1779:U:H2’	29:a:1780:A:C5	2.55	0.41
29:a:1784:C:H2’	29:a:1785:U:O4’	2.21	0.41
29:a:2087:U:H2’	29:a:2088:U:C6	2.56	0.41
57:a:2958:MG:MG	55:a:3191:K:K	1.57	0.41
32:d:142:SER:HB3	32:d:145:VAL:HG21	2.03	0.41
1:0:1:MET:O	1:0:2:ARG:C	2.63	0.41
3:2:61:CYS:HB3	3:2:64:ILE:HD13	2.02	0.41
6:A:754:U:H2’	6:A:755:G:O4’	2.20	0.41
6:A:1311:C:H2’	6:A:1312:U:C6	2.55	0.41
6:A:1483:G:H2’	6:A:1484:G:O4’	2.21	0.41
10:E:54:GLU:OE2	10:E:54:GLU:HA	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:104:LEU:HD23	12:G:104:LEU:HA	1.90	0.41
22:Q:45:LEU:HD22	22:Q:74:TRP:CD1	2.56	0.41
29:a:30:G:H2'	29:a:31:C:C6	2.56	0.41
29:a:1044:A:H2'	29:a:1045:G:O4'	2.21	0.41
29:a:1093:A:N3	29:a:1093:A:H2'	2.36	0.41
29:a:1698:G:H2'	29:a:1699:C:C6	2.56	0.41
34:f:46:ASP:OD2	34:f:49:LEU:HD13	2.21	0.41
34:f:102:ARG:HH11	34:f:139:PRO:HG3	1.84	0.41
42:n:75:ALA:O	42:n:79:GLU:HG2	2.19	0.41
44:p:100:MET:HG2	44:p:101:HIS:CD2	2.56	0.41
52:x:2:LYS:HE3	52:x:2:LYS:HB3	1.88	0.41
6:A:66:G:H4'	6:A:67:A:H3'	2.03	0.41
6:A:947:U:OP2	18:M:101:ARG:HD2	2.20	0.41
6:A:1315:A:H5"	24:S:3:ARG:NH1	2.35	0.41
6:A:1453:A:H2'	6:A:1454:G:O4'	2.21	0.41
21:P:24:LEU:HB3	21:P:35:TYR:HB3	2.02	0.41
29:a:627:G:H5"	39:k:131:LYS:NZ	2.36	0.41
29:a:751:G:H2'	29:a:752:A:O4'	2.21	0.41
29:a:2110:G:H2'	29:a:2111:U:C6	2.55	0.41
29:a:2239:G:H5"	40:l:83:MS6:S	2.60	0.41
29:a:2639:U:H2'	29:a:2640:C:C6	2.55	0.41
29:a:2689:A:H2'	29:a:2690:C:H6	1.85	0.41
29:a:2814:U:H3'	29:a:2815:A:H8	1.84	0.41
34:f:47:LYS:HE2	34:f:47:LYS:HB2	1.73	0.41
2:1:31:LEU:HD22	2:1:42:LEU:HG	2.02	0.41
5:4:70:ARG:NH1	19:N:42:PHE:HZ	2.18	0.41
6:A:327:G:O2'	25:T:2:ALA:HB1	2.21	0.41
6:A:510:C:H2'	6:A:511:U:H6	1.85	0.41
15:J:50:ASN:HB3	15:J:62:ARG:HD2	2.02	0.41
17:L:81:LEU:O	17:L:98:VAL:HG13	2.21	0.41
27:V:23:G:C2	27:V:24:C:C4	3.08	0.41
29:a:551:C:H2'	29:a:552:G:O4'	2.20	0.41
29:a:1762:A:N7	29:a:1818:A:H1'	2.35	0.41
54:z:49:ARG:HG2	54:z:49:ARG:NH1	2.35	0.41
4:3:17:ILE:HD13	4:3:26:ILE:HD13	2.03	0.41
6:A:202:U:H2'	6:A:203:C:C6	2.56	0.41
6:A:648:C:O2'	6:A:649:U:H6	2.02	0.41
9:D:74:PHE:CE1	9:D:96:LEU:HD11	2.55	0.41
10:E:161:GLU:HA	10:E:164:GLN:HG2	2.02	0.41
19:N:73:TYR:CZ	19:N:78:GLY:HA2	2.55	0.41
22:Q:60:VAL:HG12	22:Q:79:VAL:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:a:315:G:H4'	29:a:317:A:C8	2.55	0.41
29:a:589:U:H2'	29:a:590:A:H8	1.85	0.41
29:a:659:A:H2'	29:a:661:A:H62	1.85	0.41
29:a:944:G:H5"	40:l:13:HIS:CG	2.56	0.41
32:d:50:GLN:HG3	32:d:82:GLU:HG3	2.02	0.41
34:f:121:SER:HB3	34:f:128:TYR:CE1	2.56	0.41
35:g:33:LEU:HD13	35:g:75:LEU:HD22	2.02	0.41
35:g:49:LYS:HE3	35:g:49:LYS:HB3	1.79	0.41
36:h:31:ILE:HG13	36:h:32:PRO:CD	2.51	0.41
40:l:32:ILE:HG23	40:l:118:PHE:HE2	1.86	0.41
3:2:30:HIS:CD2	3:2:31:ILE:HG13	2.56	0.41
6:A:81:G:H5"	6:A:82:C:C5	2.56	0.41
6:A:92:G:H5'	6:A:93:A:OP1	2.21	0.41
6:A:588:U:H2'	6:A:589:A:C8	2.56	0.41
6:A:764:A:H2'	6:A:765:A:O4'	2.21	0.41
6:A:1127:A:H2'	6:A:1128:G:H8	1.85	0.41
6:A:1260:A:H2'	6:A:1261:C:C6	2.56	0.41
6:A:1295:U:C5	12:G:114:LYS:HD2	2.55	0.41
6:A:1316:A:C8	6:A:1320:G:C5	3.09	0.41
7:B:102:MET:HB2	7:B:102:MET:HE2	1.82	0.41
17:L:107:VAL:HG22	17:L:117:TYR:HB3	2.03	0.41
29:a:1747:A:H3'	29:a:1748:A:C8	2.56	0.41
29:a:1836:A:O2'	29:a:1837:A:H5'	2.19	0.41
29:a:1861:A:O5'	29:a:1861:A:H8	2.04	0.41
29:a:1905:A:H2'	29:a:1906:PSU:O4'	2.21	0.41
29:a:2054:C:H2'	29:a:2055:C:H6	1.85	0.41
29:a:2102:U:H2'	29:a:2103:A:H8	1.86	0.41
29:a:2288:G:OP1	34:f:72:LYS:HD3	2.21	0.41
29:a:2573:U:H2'	29:a:2574:U:H2'	2.02	0.41
29:a:2630:A:H5"	37:i:78:THR:CG2	2.51	0.41
31:c:13:ARG:HA	31:c:13:ARG:HD2	1.91	0.41
31:c:37:LYS:HB3	31:c:37:LYS:HE3	1.74	0.41
31:c:118:SER:HB2	31:c:189:ARG:NH2	2.36	0.41
31:c:140:THR:HG23	31:c:161:SER:HB2	2.02	0.41
34:f:60:ILE:HG21	34:f:152:MET:HE1	2.02	0.41
43:o:17:LYS:HD3	43:o:80:HIS:HA	2.02	0.41
47:s:43:LYS:HE3	47:s:47:GLU:OE2	2.21	0.41
49:u:8:ALA:HB2	49:u:46:LEU:HD23	2.03	0.41
6:A:654:U:H2'	6:A:655:A:H8	1.85	0.41
8:C:23:TYR:HE2	15:J:69:THR:HG23	1.86	0.41
8:C:130:PHE:O	8:C:134:MET:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:92:ARG:H	12:G:92:ARG:HG2	1.71	0.41
12:G:150:ALA:HB3	16:K:55:ARG:HD2	2.03	0.41
26:U:39:GLU:OE1	26:U:44:GLU:HG3	2.20	0.41
26:U:44:GLU:O	26:U:48:LYS:HG2	2.20	0.41
29:a:389:U:H5"	51:w:32:ASN:HB2	2.03	0.41
29:a:420:A:H2'	29:a:421:A:C8	2.56	0.41
29:a:603:G:H2'	29:a:605:A:C8	2.55	0.41
29:a:804:U:H2'	29:a:805:C:H6	1.84	0.41
29:a:1538:U:O2'	29:a:1539:G:H8	2.04	0.41
29:a:2145:G:H2'	29:a:2146:G:C4	2.56	0.41
29:a:2145:G:H3'	29:a:2146:G:C8	2.55	0.41
29:a:2232:U:H2'	29:a:2233:U:H6	1.86	0.41
32:d:155:PRO:HG3	32:d:159:PHE:CZ	2.56	0.41
6:A:385:A:H3'	6:A:386:U:H6	1.86	0.40
6:A:1141:G:H21	6:A:1143:A:H62	1.69	0.40
8:C:92:THR:CG2	8:C:99:ALA:H	2.33	0.40
9:D:14:ARG:HA	9:D:14:ARG:HD3	1.95	0.40
12:G:114:LYS:HD3	12:G:114:LYS:HA	1.92	0.40
27:V:1:C:H42	27:V:73:A:H61	1.69	0.40
29:a:852:A:H2'	29:a:853:G:O4'	2.20	0.40
29:a:1342:A:H2'	29:a:1343:G:O4'	2.21	0.40
29:a:1833:U:O3'	31:c:256:LYS:HE3	2.20	0.40
29:a:2019:6MZ:C2	29:a:2488:C:H5"	2.51	0.40
29:a:2287:A:H2'	29:a:2288:G:O4'	2.21	0.40
29:a:2885:C:H2'	29:a:2886:U:C6	2.56	0.40
34:f:91:LEU:C	34:f:96:MET:HB2	2.46	0.40
6:A:189:A:H2'	6:A:190:G:C8	2.56	0.40
6:A:717:C:H2'	6:A:718:G:C8	2.56	0.40
7:B:134:ARG:HA	7:B:134:ARG:HD2	1.82	0.40
8:C:148:GLY:HA3	8:C:172:ARG:O	2.21	0.40
13:H:112:MET:HE2	13:H:112:MET:HB3	1.81	0.40
23:R:30:LYS:HA	23:R:33:ILE:HG12	2.02	0.40
25:T:51:TYR:CD2	25:T:52:LYS:HE2	2.50	0.40
29:a:862:U:OP1	40:l:5:LYS:HG3	2.21	0.40
29:a:1701:G:H2'	29:a:1702:U:H6	1.84	0.40
29:a:1870:C:H2'	29:a:1871:U:O4'	2.20	0.40
29:a:2018:G:H2'	29:a:2020:A:OP1	2.21	0.40
29:a:2730:A:H2'	29:a:2731:C:O4'	2.21	0.40
46:r:19:LEU:HB3	54:z:22:LEU:HG	2.02	0.40
46:r:23:LEU:HD22	54:z:22:LEU:HB2	2.03	0.40
52:x:12:GLU:HG2	52:x:13:GLU:N	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:2:6:THR:HG21	29:a:243:U:OP1	2.21	0.40
6:A:149:C:H2'	6:A:150:A:H8	1.85	0.40
6:A:615:C:H5'	6:A:616:U:H5"	2.04	0.40
6:A:906:A:H2'	6:A:907:C:O4'	2.22	0.40
6:A:943:A:H2'	6:A:944:G:H8	1.80	0.40
6:A:1270:G:H2'	6:A:1271:A:O4'	2.22	0.40
27:V:24:C:C2	27:V:25:U:C5	3.10	0.40
29:a:247:G:H4'	29:a:378:G:C5	2.56	0.40
29:a:867:C:H2'	29:a:868:U:O4'	2.21	0.40
29:a:2304:C:H2'	29:a:2305:G:C8	2.55	0.40
29:a:2432:U:OP1	33:e:62:LYS:HD3	2.22	0.40
50:v:47:ALA:HB2	50:v:59:LEU:HD22	2.04	0.40
5:4:62:LYS:O	5:4:66:ALA:HB2	2.22	0.40
6:A:1466:C:H2'	6:A:1467:G:O4'	2.22	0.40
7:B:140:THR:HA	7:B:143:MET:HE3	2.02	0.40
9:D:4:TYR:CD2	9:D:4:TYR:C	3.00	0.40
13:H:27:MET:HG3	13:H:28:PRO:O	2.21	0.40
14:I:40:GLU:O	14:I:44:MET:HG2	2.21	0.40
16:K:66:ALA:HB3	16:K:98:ALA:HB3	2.04	0.40
29:a:84:A:C2	29:a:103:A:C5	3.09	0.40
29:a:189:G:OP2	51:w:14:VAL:HG11	2.22	0.40
29:a:1208:G:H2'	29:a:1209:U:O4'	2.22	0.40
29:a:2054:C:H2'	29:a:2055:C:C6	2.57	0.40
6:A:1005:U:H2'	6:A:1006:U:C6	2.57	0.40
6:A:1154:A:H4'	6:A:1155:C:O4'	2.21	0.40
10:E:110:MET:CE	10:E:124:ALA:HB1	2.51	0.40
13:H:11:LEU:HD12	13:H:78:ARG:HB2	2.03	0.40
17:L:69:GLY:HA3	17:L:107:VAL:HG11	2.04	0.40
29:a:690:A:H2'	29:a:691:G:O4'	2.20	0.40
29:a:1186:U:H2'	29:a:1187:U:C6	2.57	0.40
29:a:1788:G:OP1	31:c:258:ARG:HD2	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	49/51 (96%)	48 (98%)	1 (2%)	0	100	100
2	1	42/44 (96%)	41 (98%)	1 (2%)	0	100	100
3	2	61/64 (95%)	58 (95%)	3 (5%)	0	100	100
4	3	36/38 (95%)	34 (94%)	2 (6%)	0	100	100
5	4	69/74 (93%)	61 (88%)	8 (12%)	0	100	100
7	B	227/250 (91%)	211 (93%)	15 (7%)	1 (0%)	30	54
8	C	213/250 (85%)	208 (98%)	5 (2%)	0	100	100
9	D	205/208 (99%)	199 (97%)	6 (3%)	0	100	100
10	E	153/165 (93%)	152 (99%)	1 (1%)	0	100	100
11	F	104/127 (82%)	100 (96%)	4 (4%)	0	100	100
12	G	151/156 (97%)	140 (93%)	11 (7%)	0	100	100
13	H	128/131 (98%)	121 (94%)	7 (6%)	0	100	100
14	I	125/128 (98%)	119 (95%)	6 (5%)	0	100	100
15	J	98/103 (95%)	94 (96%)	4 (4%)	0	100	100
16	K	113/128 (88%)	108 (96%)	5 (4%)	0	100	100
17	L	119/124 (96%)	114 (96%)	5 (4%)	0	100	100
18	M	114/118 (97%)	110 (96%)	4 (4%)	0	100	100
19	N	98/101 (97%)	93 (95%)	5 (5%)	0	100	100
20	O	86/89 (97%)	85 (99%)	1 (1%)	0	100	100
21	P	80/83 (96%)	77 (96%)	3 (4%)	0	100	100
22	Q	77/85 (91%)	75 (97%)	2 (3%)	0	100	100
23	R	64/75 (85%)	64 (100%)	0	0	100	100
24	S	82/91 (90%)	81 (99%)	1 (1%)	0	100	100
25	T	84/88 (96%)	84 (100%)	0	0	100	100
26	U	68/71 (96%)	66 (97%)	1 (2%)	1 (2%)	8	22
28	X	102/116 (88%)	100 (98%)	2 (2%)	0	100	100
31	c	270/274 (98%)	259 (96%)	11 (4%)	0	100	100
32	d	208/212 (98%)	201 (97%)	6 (3%)	1 (0%)	24	48
33	e	197/200 (98%)	196 (100%)	1 (0%)	0	100	100
34	f	175/178 (98%)	160 (91%)	13 (7%)	2 (1%)	11	29

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
35	g	173/177 (98%)	163 (94%)	10 (6%)	0	100	100
36	h	58/148 (39%)	51 (88%)	7 (12%)	0	100	100
37	i	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
38	j	120/122 (98%)	118 (98%)	2 (2%)	0	100	100
39	k	144/146 (99%)	139 (96%)	5 (4%)	0	100	100
40	l	133/137 (97%)	128 (96%)	5 (4%)	0	100	100
41	m	117/125 (94%)	114 (97%)	3 (3%)	0	100	100
42	n	113/116 (97%)	109 (96%)	3 (3%)	1 (1%)	14	35
43	o	115/122 (94%)	113 (98%)	2 (2%)	0	100	100
44	p	115/119 (97%)	115 (100%)	0	0	100	100
45	q	101/103 (98%)	96 (95%)	5 (5%)	0	100	100
46	r	107/109 (98%)	104 (97%)	3 (3%)	0	100	100
47	s	90/106 (85%)	87 (97%)	3 (3%)	0	100	100
48	t	101/105 (96%)	99 (98%)	2 (2%)	0	100	100
49	u	95/98 (97%)	90 (95%)	5 (5%)	0	100	100
50	v	76/85 (89%)	75 (99%)	1 (1%)	0	100	100
51	w	75/78 (96%)	75 (100%)	0	0	100	100
52	x	60/65 (92%)	59 (98%)	1 (2%)	0	100	100
53	y	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
54	z	52/61 (85%)	50 (96%)	2 (4%)	0	100	100
All	All	5639/6044 (93%)	5436 (96%)	197 (4%)	6 (0%)	49	73

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	B	128	PHE
34	f	136	ILE
32	d	152	ASN
34	f	139	PRO
26	U	65	VAL
42	n	3	GLU

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	47/47 (100%)	46 (98%)	1 (2%)	47	75
2	1	36/36 (100%)	36 (100%)	0	100	100
3	2	52/53 (98%)	52 (100%)	0	100	100
4	3	33/33 (100%)	33 (100%)	0	100	100
5	4	60/63 (95%)	58 (97%)	2 (3%)	33	63
7	B	188/200 (94%)	180 (96%)	8 (4%)	26	54
8	C	175/198 (88%)	170 (97%)	5 (3%)	37	67
9	D	170/171 (99%)	167 (98%)	3 (2%)	51	78
10	E	113/120 (94%)	111 (98%)	2 (2%)	51	78
11	F	95/111 (86%)	93 (98%)	2 (2%)	47	75
12	G	125/128 (98%)	119 (95%)	6 (5%)	23	50
13	H	108/109 (99%)	103 (95%)	5 (5%)	24	51
14	I	99/100 (99%)	96 (97%)	3 (3%)	36	66
15	J	89/91 (98%)	87 (98%)	2 (2%)	45	74
16	K	87/97 (90%)	85 (98%)	2 (2%)	44	73
17	L	103/105 (98%)	99 (96%)	4 (4%)	28	57
18	M	96/98 (98%)	94 (98%)	2 (2%)	47	75
19	N	81/82 (99%)	79 (98%)	2 (2%)	42	71
20	O	71/72 (99%)	69 (97%)	2 (3%)	38	68
21	P	63/63 (100%)	62 (98%)	1 (2%)	55	80
22	Q	71/76 (93%)	66 (93%)	5 (7%)	14	34
23	R	58/66 (88%)	58 (100%)	0	100	100
24	S	71/78 (91%)	70 (99%)	1 (1%)	59	82
25	T	65/67 (97%)	64 (98%)	1 (2%)	57	81
26	U	61/62 (98%)	57 (93%)	4 (7%)	15	36
28	X	92/102 (90%)	86 (94%)	6 (6%)	15	37

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
31	c	218/220 (99%)	217 (100%)	1 (0%)	81 92
32	d	165/166 (99%)	162 (98%)	3 (2%)	51 78
33	e	155/155 (100%)	153 (99%)	2 (1%)	61 83
34	f	146/147 (99%)	139 (95%)	7 (5%)	23 50
35	g	140/142 (99%)	135 (96%)	5 (4%)	31 60
36	h	45/112 (40%)	42 (93%)	3 (7%)	15 36
37	i	118/118 (100%)	116 (98%)	2 (2%)	53 79
38	j	103/103 (100%)	101 (98%)	2 (2%)	50 77
39	k	108/108 (100%)	106 (98%)	2 (2%)	50 77
40	l	111/111 (100%)	109 (98%)	2 (2%)	51 78
41	m	96/101 (95%)	96 (100%)	0	100 100
42	n	84/85 (99%)	83 (99%)	1 (1%)	63 84
43	o	99/102 (97%)	99 (100%)	0	100 100
44	p	85/86 (99%)	84 (99%)	1 (1%)	63 84
45	q	84/84 (100%)	83 (99%)	1 (1%)	63 84
46	r	88/88 (100%)	88 (100%)	0	100 100
47	s	78/87 (90%)	75 (96%)	3 (4%)	29 58
48	t	83/85 (98%)	81 (98%)	2 (2%)	43 72
49	u	79/80 (99%)	76 (96%)	3 (4%)	29 58
50	v	60/64 (94%)	57 (95%)	3 (5%)	22 48
51	w	69/70 (99%)	67 (97%)	2 (3%)	37 67
52	x	54/56 (96%)	53 (98%)	1 (2%)	50 77
53	y	54/54 (100%)	54 (100%)	0	100 100
54	z	46/50 (92%)	46 (100%)	0	100 100
All	All	4677/4902 (95%)	4562 (98%)	115 (2%)	42 71

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

Mol	Chain	Res	Type
1	0	46	LYS
5	4	11	LYS
5	4	52	VAL
7	B	17	HIS
7	B	85	GLN

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Mol	Chain	Res	Type
7	B	96	HIS
7	B	104	THR
7	B	145	LYS
7	B	173	ILE
7	B	198	VAL
7	B	201	VAL
8	C	39	VAL
8	C	100	GLN
8	C	124	LEU
8	C	139	GLN
8	C	192	THR
9	D	136	SER
9	D	156	ARG
9	D	189	ASP
10	E	70	MET
10	E	72	THR
11	F	39	LEU
11	F	65	GLU
12	G	7	VAL
12	G	11	GLU
12	G	56	VAL
12	G	129	GLU
12	G	143	ARG
12	G	144	MET
13	H	19	MET
13	H	56	THR
13	H	59	THR
13	H	74	GLU
13	H	81	ARG
14	I	27	VAL
14	I	51	GLU
14	I	89	ASP
15	J	24	GLU
15	J	80	THR
16	K	78	LEU
16	K	110	THR
17	L	10	LYS
17	L	13	THR
17	L	40	THR
17	L	98	VAL
18	M	34	LEU
18	M	72	GLU

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Mol	Chain	Res	Type
19	N	58	VAL
19	N	80	SER
20	O	4	THR
20	O	89	ARG
21	P	81	GLN
22	Q	12	LYS
22	Q	30	VAL
22	Q	43	THR
22	Q	66	ARG
22	Q	78	GLU
24	S	5	LEU
25	T	3	ASN
26	U	6	LEU
26	U	46	LYS
26	U	54	LYS
26	U	60	LEU
28	X	4	GLU
28	X	24	GLU
28	X	27	GLN
28	X	37	THR
28	X	53	ASP
28	X	93	SER
31	c	186	VAL
32	d	79	LEU
32	d	81	LYS
32	d	207	ARG
33	e	13	LEU
33	e	134	LEU
34	f	4	LEU
34	f	89	VAL
34	f	120	LYS
34	f	132	LEU
34	f	138	PHE
34	f	159	THR
34	f	162	THR
35	g	9	VAL
35	g	15	VAL
35	g	24	VAL
35	g	79	VAL
35	g	169	ILE
36	h	31	ILE
36	h	37	VAL

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Mol	Chain	Res	Type
36	h	50	ARG
37	i	17	VAL
37	i	70	LEU
38	j	17	ARG
38	j	69	ILE
39	k	2	THR
39	k	125	GLN
40	l	7	THR
40	l	20	LEU
42	n	39	GLN
44	p	104	VAL
45	q	6	GLN
47	s	6	ILE
47	s	29	GLN
47	s	73	LEU
48	t	3	LYS
48	t	49	VAL
49	u	45	THR
49	u	51	LEU
49	u	69	VAL
50	v	32	THR
50	v	68	LYS
50	v	83	GLU
51	w	2	SER
51	w	22	ASN
52	x	5	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
7	B	26	ASN
7	B	41	HIS
7	B	61	GLN
8	C	28	GLN
8	C	88	GLN
9	D	36	ASN
10	E	85	ASN
11	F	68	GLN
14	I	124	GLN
16	K	21	HIS
16	K	39	ASN
17	L	77	HIS

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Mol	Chain	Res	Type
18	M	32	ASN
19	N	8	ASN
20	O	50	HIS
20	O	62	GLN
25	T	3	ASN
28	X	12	HIS
31	c	239	ASN
32	d	129	ASN
34	f	95	GLN
35	g	38	HIS
37	i	47	HIS
39	k	18	HIS
39	k	101	ASN
40	l	85	ASN
43	o	32	GLN
44	p	44	GLN
45	q	86	GLN
48	t	47	ASN
50	v	12	ASN
53	y	24	GLN
54	z	4	GLN
54	z	19	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
27	V	76/77 (98%)	21 (27%)	1 (1%)
29	a	2889/2893 (99%)	532 (18%)	0
30	b	114/115 (99%)	20 (17%)	0
6	A	1527/1537 (99%)	270 (17%)	14 (0%)
All	All	4606/4622 (99%)	843 (18%)	15 (0%)

All (843) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	A	4	A
6	A	6	C
6	A	9	A
6	A	10	A
6	A	11	G
6	A	24	G

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Mol	Chain	Res	Type
6	A	34	A
6	A	41	G
6	A	49	C
6	A	50	U
6	A	53	A
6	A	64	U
6	A	74	G
6	A	75	A
6	A	76	A
6	A	77	G
6	A	79	U
6	A	82	C
6	A	83	U
6	A	86	C
6	A	88	A
6	A	90	C
6	A	92	G
6	A	105	A
6	A	106	C
6	A	107	G
6	A	112	A
6	A	126	A
6	A	127	U
6	A	140	G
6	A	160	G
6	A	165	C
6	A	170	A
6	A	177	A
6	A	184	A
6	A	186	G
6	A	193	A
6	A	205	U
6	A	206	C
6	A	207	G
6	A	208	G
6	A	213	U
6	A	216	G
6	A	241	U
6	A	243	G
6	A	247	G
6	A	262	G
6	A	263	C

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Mol	Chain	Res	Type
6	A	272	G
6	A	276	C
6	A	285	G
6	A	317	A
6	A	324	C
6	A	325	A
6	A	326	C
6	A	336	U
6	A	340	A
6	A	347	G
6	A	348	C
6	A	350	G
6	A	351	C
6	A	359	A
6	A	363	U
6	A	368	C
6	A	373	G
6	A	402	G
6	A	408	A
6	A	409	G
6	A	410	A
6	A	413	G
6	A	414	C
6	A	415	C
6	A	418	A
6	A	419	U
6	A	425	U
6	A	442	G
6	A	448	G
6	A	456	U
6	A	459	U
6	A	463	U
6	A	465	C
6	A	469	G
6	A	474	A
6	A	479	A
6	A	481	G
6	A	482	U
6	A	483	U
6	A	493	A
6	A	494	U
6	A	506	A

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Mol	Chain	Res	Type
6	A	508	C
6	A	515	C
6	A	518	G
6	A	521	G
6	A	524	G7M
6	A	529	A
6	A	532	A
6	A	544	A
6	A	556	A
6	A	561	C
6	A	567	G
6	A	569	A
6	A	570	A
6	A	571	A
6	A	572	G
6	A	573	C
6	A	574	G
6	A	598	G
6	A	616	U
6	A	630	G
6	A	639	A
6	A	648	C
6	A	649	U
6	A	650	A
6	A	654	U
6	A	662	A
6	A	683	U
6	A	684	A
6	A	685	G
6	A	700	G
6	A	718	G
6	A	720	U
6	A	721	G
6	A	728	G
6	A	731	G
6	A	744	A
6	A	745	U
6	A	752	G
6	A	756	A
6	A	774	A
6	A	778	A
6	A	790	U

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Mol	Chain	Res	Type
6	A	791	A
6	A	809	G
6	A	812	A
6	A	814	C
6	A	818	G
6	A	826	G
6	A	839	U
6	A	840	U
6	A	841	G
6	A	842	A
6	A	843	G
6	A	847	U
6	A	867	A
6	A	873	A
6	A	884	G
6	A	899	G
6	A	906	A
6	A	911	A
6	A	923	G
6	A	931	C
6	A	932	A
6	A	957	U
6	A	958	U
6	A	963	2MG
6	A	965	A
6	A	966	A
6	A	972	A
6	A	973	G
6	A	974	A
6	A	990	G
6	A	991	A
6	A	992	C
6	A	994	U
6	A	996	C
6	A	999	G
6	A	1000	A
6	A	1001	A
6	A	1002	A
6	A	1003	C
6	A	1004	U
6	A	1007	C
6	A	1008	C

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Mol	Chain	Res	Type
6	A	1010	G
6	A	1016	G
6	A	1023	G
6	A	1025	C
6	A	1027	U
6	A	1028	C
6	A	1029	G
6	A	1030	G
6	A	1031	G
6	A	1033	A
6	A	1039	A
6	A	1042	C
6	A	1062	U
6	A	1091	G
6	A	1092	U
6	A	1096	G
6	A	1098	A
6	A	1101	G
6	A	1115	U
6	A	1121	C
6	A	1123	U
6	A	1124	G
6	A	1126	C
6	A	1130	A
6	A	1134	C
6	A	1136	G
6	A	1142	A
6	A	1156	U
6	A	1157	G
6	A	1161	G
6	A	1162	U
6	A	1164	A
6	A	1165	C
6	A	1166	A
6	A	1167	A
6	A	1168	A
6	A	1179	G
6	A	1180	C
6	A	1185	A
6	A	1188	A
6	A	1193	A
6	A	1194	A

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Mol	Chain	Res	Type
6	A	1197	C
6	A	1209	U
6	A	1210	A
6	A	1211	C
6	A	1217	G
6	A	1223	C
6	A	1224	A
6	A	1226	A
6	A	1235	A
6	A	1247	A
6	A	1249	A
6	A	1255	G
6	A	1257	U
6	A	1259	C
6	A	1276	A
6	A	1277	A
6	A	1282	A
6	A	1284	A
6	A	1285	A
6	A	1294	G
6	A	1295	U
6	A	1297	G
6	A	1299	C
6	A	1317	C
6	A	1320	G
6	A	1328	G
6	A	1332	U
6	A	1335	G
6	A	1343	A
6	A	1350	G
6	A	1360	A
6	A	1367	G
6	A	1384	G
6	A	1394	C
6	A	1395	A
6	A	1416	G
6	A	1426	C
6	A	1429	G
6	A	1438	A
6	A	1444	A
6	A	1450	A
6	A	1452	G

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Mol	Chain	Res	Type
6	A	1484	G
6	A	1488	G
6	A	1490	A
6	A	1494	G
6	A	1496	A
6	A	1499	A
6	A	1503	U
6	A	1514	G
6	A	1516	MA6
6	A	1517	C
6	A	1526	G
6	A	1527	G
27	V	3	C
27	V	4	G
27	V	7	G
27	V	9	G
27	V	16	C
27	V	17	C
27	V	18	U
27	V	19	G
27	V	21	H2U
27	V	22	A
27	V	23	G
27	V	34	U
27	V	41	C
27	V	43	G
27	V	45	A
27	V	47	A
27	V	59	A
27	V	65	G
27	V	75	C
27	V	76	C
27	V	77	A
29	a	3	U
29	a	34	U
29	a	46	G
29	a	51	G
29	a	61	A
29	a	71	A
29	a	74	A
29	a	75	G
29	a	79	C

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Mol	Chain	Res	Type
29	a	80	G
29	a	83	G
29	a	85	G
29	a	87	C
29	a	91	A
29	a	94	U
29	a	95	A
29	a	96	U
29	a	97	C
29	a	99	U
29	a	102	G
29	a	118	A
29	a	119	A
29	a	120	U
29	a	125	G
29	a	140	A
29	a	141	A
29	a	142	G
29	a	162	U
29	a	163	A
29	a	165	A
29	a	178	G
29	a	181	A
29	a	196	A
29	a	199	A
29	a	215	G
29	a	216	A
29	a	222	A
29	a	225	C
29	a	228	U
29	a	229	U
29	a	233	A
29	a	248	G
29	a	252	G
29	a	254	G
29	a	255	A
29	a	265	A
29	a	266	G
29	a	268	C
29	a	271	U
29	a	277	U
29	a	278	A

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Mol	Chain	Res	Type
29	a	280	G
29	a	282	G
29	a	283	U
29	a	284	G
29	a	286	U
29	a	290	G
29	a	296	C
29	a	306	A
29	a	324	G
29	a	325	A
29	a	326	U
29	a	345	G
29	a	348	C
29	a	350	C
29	a	352	U
29	a	358	U
29	a	359	G
29	a	362	G
29	a	364	G
29	a	378	G
29	a	379	U
29	a	388	G
29	a	396	A
29	a	397	U
29	a	403	G
29	a	416	G
29	a	447	C
29	a	473	G
29	a	486	G
29	a	496	U
29	a	497	A
29	a	500	U
29	a	501	C
29	a	505	A
29	a	519	C
29	a	522	G
29	a	524	A
29	a	535	C
29	a	537	U
29	a	538	C
29	a	541	G
29	a	546	G

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Mol	Chain	Res	Type
29	a	547	A
29	a	554	A
29	a	564	U
29	a	566	A
29	a	568	G
29	a	588	G
29	a	594	A
29	a	605	A
29	a	606	U
29	a	618	A
29	a	619	G
29	a	626	C
29	a	628	A
29	a	630	U
29	a	631	C
29	a	636	U
29	a	642	G
29	a	644	U
29	a	645	U
29	a	646	A
29	a	647	G
29	a	661	A
29	a	677	U
29	a	685	U
29	a	686	G
29	a	695	G
29	a	708	C
29	a	720	G
29	a	721	A
29	a	729	C
29	a	730	A
29	a	738	U
29	a	755	A
29	a	756	C
29	a	766	G
29	a	767	G
29	a	773	A
29	a	774	A
29	a	775	G
29	a	776	G
29	a	780	A
29	a	783	A

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Mol	Chain	Res	Type
29	a	785	G
29	a	796	G
29	a	803	C
29	a	810	A
29	a	818	U
29	a	819	U
29	a	821	G
29	a	836	G
29	a	838	A
29	a	847	G
29	a	848	G
29	a	850	G
29	a	857	A
29	a	868	U
29	a	869	A
29	a	875	U
29	a	876	C
29	a	877	A
29	a	880	C
29	a	882	G
29	a	884	C
29	a	885	U
29	a	886	U
29	a	887	A
29	a	888	C
29	a	891	A
29	a	894	C
29	a	898	G
29	a	901	A
29	a	905	C
29	a	916	U
29	a	919	G
29	a	922	C
29	a	931	A
29	a	935	A
29	a	936	G
29	a	948	U
29	a	951	C
29	a	964	G
29	a	973	A
29	a	979	G
29	a	986	A

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Mol	Chain	Res	Type
29	a	1002	U
29	a	1003	C
29	a	1007	G
29	a	1016	G
29	a	1023	U
29	a	1029	A
29	a	1030	A
29	a	1037	G
29	a	1045	G
29	a	1050	U
29	a	1052	G
29	a	1053	G
29	a	1054	C
29	a	1055	U
29	a	1056	U
29	a	1060	A
29	a	1061	G
29	a	1062	C
29	a	1063	A
29	a	1065	C
29	a	1066	C
29	a	1068	C
29	a	1073	U
29	a	1076	A
29	a	1077	G
29	a	1078	A
29	a	1079	A
29	a	1080	A
29	a	1082	C
29	a	1087	U
29	a	1091	U
29	a	1094	C
29	a	1095	U
29	a	1096	A
29	a	1100	G
29	a	1101	A
29	a	1102	G
29	a	1106	G
29	a	1112	G
29	a	1122	U
29	a	1123	A
29	a	1124	A

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Mol	Chain	Res	Type
29	a	1125	C
29	a	1126	G
29	a	1133	A
29	a	1141	U
29	a	1142	G
29	a	1163	U
29	a	1164	U
29	a	1165	U
29	a	1166	G
29	a	1175	G
29	a	1193	A
29	a	1194	G
29	a	1235	A
29	a	1238	G
29	a	1241	A
29	a	1244	G
29	a	1259	G
29	a	1260	A
29	a	1275	A
29	a	1289	A
29	a	1290	A
29	a	1294	C
29	a	1299	G
29	a	1300	U
29	a	1309	A
29	a	1317	U
29	a	1329	G
29	a	1333	C
29	a	1340	U
29	a	1347	A
29	a	1353	A
29	a	1356	G
29	a	1366	A
29	a	1367	U
29	a	1371	A
29	a	1383	A
29	a	1404	G
29	a	1416	C
29	a	1420	G
29	a	1425	C
29	a	1426	U
29	a	1428	A

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Mol	Chain	Res	Type
29	a	1440	G
29	a	1441	U
29	a	1448	U
29	a	1455	G
29	a	1467	G
29	a	1469	A
29	a	1470	U
29	a	1479	G
29	a	1481	C
29	a	1485	U
29	a	1490	G
29	a	1497	U
29	a	1498	A
29	a	1513	A
29	a	1516	A
29	a	1519	C
29	a	1522	U
29	a	1523	A
29	a	1524	C
29	a	1525	U
29	a	1526	U
29	a	1527	G
29	a	1530	C
29	a	1533	C
29	a	1536	A
29	a	1538	U
29	a	1539	G
29	a	1540	G
29	a	1551	G
29	a	1557	A
29	a	1560	A
29	a	1569	U
29	a	1574	U
29	a	1575	U
29	a	1576	C
29	a	1598	G
29	a	1599	A
29	a	1609	A
29	a	1637	C
29	a	1638	U
29	a	1639	U
29	a	1640	G

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Mol	Chain	Res	Type
29	a	1658	G
29	a	1665	G
29	a	1666	C
29	a	1684	U
29	a	1686	G
29	a	1706	U
29	a	1707	G
29	a	1710	G
29	a	1718	U
29	a	1719	C
29	a	1721	C
29	a	1725	C
29	a	1726	U
29	a	1731	U
29	a	1739	G
29	a	1745	G
29	a	1753	G
29	a	1762	A
29	a	1768	U
29	a	1769	A
29	a	1771	U
29	a	1773	A
29	a	1775	A
29	a	1777	C
29	a	1789	C
29	a	1790	A
29	a	1791	A
29	a	1798	A
29	a	1805	C
29	a	1818	A
29	a	1836	A
29	a	1837	A
29	a	1838	G
29	a	1855	A
29	a	1858	G
29	a	1862	G
29	a	1878	A
29	a	1879	A
29	a	1888	A
29	a	1890	A
29	a	1892	G
29	a	1895	G

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Mol	Chain	Res	Type
29	a	1902	A
29	a	1903	C
29	a	1908	A
29	a	1918	G
29	a	1919	G
29	a	1926	A
29	a	1927	A
29	a	1929	U
29	a	1943	G
29	a	1944	U
29	a	1956	C
29	a	1959	A
29	a	1960	U
29	a	1961	G
29	a	1971	U
29	a	1980	U
29	a	1981	G
29	a	1982	U
29	a	1986	C
29	a	2010	A
29	a	2011	U
29	a	2012	C
29	a	2019	6MZ
29	a	2020	A
29	a	2021	G
29	a	2022	A
29	a	2024	G
29	a	2025	C
29	a	2032	C
29	a	2044	C
29	a	2045	G
29	a	2049	A
29	a	2050	G
29	a	2051	A
29	a	2058	G7M
29	a	2069	G
29	a	2082	G
29	a	2089	G
29	a	2100	U
29	a	2105	G
29	a	2106	A
29	a	2107	U

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Mol	Chain	Res	Type
29	a	2108	A
29	a	2109	G
29	a	2111	U
29	a	2113	G
29	a	2120	U
29	a	2121	U
29	a	2122	G
29	a	2123	A
29	a	2128	G
29	a	2131	A
29	a	2134	C
29	a	2136	A
29	a	2137	G
29	a	2146	G
29	a	2147	A
29	a	2149	C
29	a	2151	G
29	a	2155	U
29	a	2167	C
29	a	2171	G
29	a	2174	A
29	a	2178	U
29	a	2179	G
29	a	2182	G
29	a	2187	A
29	a	2193	G
29	a	2201	A
29	a	2214	A
29	a	2227	G
29	a	2229	U
29	a	2257	A
29	a	2267	A
29	a	2272	U
29	a	2276	A
29	a	2277	A
29	a	2293	G
29	a	2294	U
29	a	2297	G
29	a	2301	U
29	a	2307	G
29	a	2308	U
29	a	2314	A

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Mol	Chain	Res	Type
29	a	2316	A
29	a	2325	A
29	a	2333	U
29	a	2334	A
29	a	2339	C
29	a	2343	A
29	a	2348	C
29	a	2350	A
29	a	2371	G
29	a	2372	G
29	a	2373	U
29	a	2374	C
29	a	2385	G
29	a	2391	U
29	a	2392	C
29	a	2394	G
29	a	2395	U
29	a	2396	A
29	a	2398	G
29	a	2409	C
29	a	2411	C
29	a	2412	U
29	a	2414	A
29	a	2418	G
29	a	2419	A
29	a	2421	A
29	a	2430	U
29	a	2436	G
29	a	2437	A
29	a	2439	A
29	a	2448	A
29	a	2463	U
29	a	2466	U
29	a	2476	G
29	a	2483	G
29	a	2487	OMC
29	a	2491	G
29	a	2492	2MA
29	a	2494	G
29	a	2495	U
29	a	2507	A
29	a	2509	C

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Mol	Chain	Res	Type
29	a	2518	G
29	a	2523	A
29	a	2536	A
29	a	2541	OMU
29	a	2543	U
29	a	2555	A
29	a	2556	G
29	a	2562	C
29	a	2575	U
29	a	2591	A
29	a	2592	G
29	a	2598	U
29	a	2599	C
29	a	2602	U
29	a	2618	U
29	a	2627	G
29	a	2635	C
29	a	2650	G
29	a	2654	A
29	a	2678	U
29	a	2679	A
29	a	2703	G
29	a	2710	A
29	a	2714	A
29	a	2715	U
29	a	2722	A
29	a	2724	G
29	a	2728	U
29	a	2737	A
29	a	2746	A
29	a	2750	G
29	a	2754	A
29	a	2755	G
29	a	2767	A
29	a	2769	A
29	a	2770	A
29	a	2780	A
29	a	2785	U
29	a	2786	U
29	a	2787	U
29	a	2789	U
29	a	2793	C

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Mol	Chain	Res	Type
29	a	2797	A
29	a	2807	U
29	a	2809	G
29	a	2810	A
29	a	2822	U
29	a	2824	A
29	a	2825	U
29	a	2838	G
29	a	2844	U
29	a	2845	A
29	a	2850	U
29	a	2856	A
29	a	2861	G
29	a	2862	A
29	a	2868	A
29	a	2872	A
29	a	2873	U
29	a	2874	U
29	a	2882	A
30	b	2	C
30	b	11	A
30	b	14	G
30	b	18	G
30	b	22	G
30	b	23	A
30	b	38	U
30	b	39	C
30	b	40	C
30	b	42	G
30	b	54	G
30	b	55	A
30	b	59	C
30	b	86	U
30	b	87	A
30	b	88	C
30	b	105	C
30	b	106	A
30	b	109	G
30	b	112	A

All (15) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	A	139	U
6	A	185	C
6	A	481	G
6	A	492	A
6	A	618	A
6	A	683	U
6	A	775	G
6	A	876	C
6	A	905	A
6	A	989	U
6	A	1123	U
6	A	1179	G
6	A	1187	G
6	A	1449	A
27	V	20	G

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

39 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	$\#\|Z\| > 2$
27	OMC	V	33	27	19,22,23	1.78	3 (15%)	26,31,34	0.97	2 (7%)
16	IAS	K	118	16	6,7,8	1.73	1 (16%)	6,8,10	2.72	1 (16%)
29	PSU	a	2569	29	18,21,22	2.23	9 (50%)	22,30,33	1.96	5 (22%)
29	OMU	a	2541	29	19,22,23	2.69	7 (36%)	26,31,34	1.79	5 (19%)
6	MA6	A	1515	6	23,26,27	1.28	3 (13%)	34,38,41	2.20	9 (26%)
6	2MG	A	1204	6	23,26,27	2.58	5 (21%)	32,38,41	2.12	9 (28%)
29	OMG	a	2240	55,29	23,26,27	2.35	6 (26%)	33,38,41	1.90	10 (30%)
27	PSU	V	56	27	18,21,22	1.90	7 (38%)	22,30,33	1.78	3 (13%)
6	2MG	A	1513	6	23,26,27	2.58	7 (30%)	32,38,41	2.18	11 (34%)
29	1MG	a	736	29	22,26,27	2.50	6 (27%)	33,39,42	2.01	7 (21%)
29	PSU	a	2446	29	18,21,22	2.24	8 (44%)	22,30,33	1.94	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
27	4SU	V	8	27	18,21,22	3.73	8 (44%)	26,30,33	2.20	4 (15%)
6	5MC	A	964	6	18,22,23	1.92	6 (33%)	26,32,35	1.35	2 (7%)
6	2MG	A	963	6	23,26,27	2.57	6 (26%)	32,38,41	2.08	11 (34%)
6	PSU	A	513	57,6	18,21,22	2.06	8 (44%)	22,30,33	1.86	4 (18%)
40	4D4	l	82	40	9,11,12	0.83	0	8,13,15	1.72	2 (25%)
29	2MG	a	2434	29	23,26,27	2.61	7 (30%)	32,38,41	2.09	11 (34%)
6	4OC	A	1399	6	20,23,24	2.17	4 (20%)	26,32,35	1.11	2 (7%)
29	H2U	a	2438	29	18,21,22	4.01	5 (27%)	21,30,33	5.01	7 (33%)
29	PSU	a	737	57,29	18,21,22	2.20	9 (50%)	22,30,33	1.82	3 (13%)
29	G7M	a	2058	29	23,26,27	2.24	5 (21%)	35,39,42	1.93	7 (20%)
29	5MU	a	1928	55,29	19,22,23	2.66	7 (36%)	28,32,35	3.74	9 (32%)
29	3TD	a	1904	29	18,22,23	2.73	7 (38%)	22,32,35	1.75	2 (9%)
6	UR3	A	1495	6	19,22,23	2.56	5 (26%)	26,32,35	1.32	2 (7%)
29	PSU	a	1900	29	18,21,22	2.09	7 (38%)	22,30,33	1.86	3 (13%)
17	D2T	L	89	17	7,9,10	1.25	1 (14%)	6,11,13	1.62	1 (16%)
29	PSU	a	2493	55,29	18,21,22	2.16	7 (38%)	22,30,33	1.80	4 (18%)
29	PSU	a	1906	29	18,21,22	2.09	7 (38%)	22,30,33	1.86	3 (13%)
6	G7M	A	524	55,6	23,26,27	2.17	5 (21%)	35,39,42	1.88	7 (20%)
40	MS6	l	83	40	5,7,8	0.60	0	2,7,9	1.73	1 (50%)
27	5MU	V	55	27	19,22,23	2.39	7 (36%)	28,32,35	3.83	11 (39%)
29	6MZ	a	2019	29	22,25,26	2.39	3 (13%)	30,36,39	2.47	9 (30%)
27	H2U	V	21	27	18,21,22	4.30	5 (27%)	21,30,33	4.91	7 (33%)
29	PSU	a	2594	29	18,21,22	2.20	8 (44%)	22,30,33	1.89	3 (13%)
32	MEQ	d	153	32	8,9,10	0.88	0	5,10,12	0.55	0
29	2MA	a	2492	55,57,29	22,25,26	1.37	3 (13%)	33,37,40	2.03	7 (21%)
29	OMC	a	2487	57,29	19,22,23	1.76	3 (15%)	26,31,34	1.14	2 (7%)
29	PSU	a	945	29	18,21,22	2.17	7 (38%)	22,30,33	1.96	4 (18%)
6	MA6	A	1516	6	23,26,27	1.26	3 (13%)	34,38,41	2.21	9 (26%)

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
27	OMC	V	33	27	-	0/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	IAS	K	118	16	-	3/7/7/8	-
29	PSU	a	2569	29	-	0/7/25/26	0/2/2/2
29	OMU	a	2541	29	-	2/9/27/28	0/2/2/2
6	MA6	A	1515	6	-	0/11/29/30	0/3/3/3
6	2MG	A	1204	6	-	2/9/27/28	0/3/3/3
29	OMG	a	2240	55,29	-	1/9/27/28	0/3/3/3
27	PSU	V	56	27	-	0/7/25/26	0/2/2/2
6	2MG	A	1513	6	-	0/9/27/28	0/3/3/3
29	1MG	a	736	29	-	0/7/25/26	0/3/3/3
29	PSU	a	2446	29	-	0/7/25/26	0/2/2/2
27	4SU	V	8	27	-	0/7/25/26	0/2/2/2
6	5MC	A	964	6	-	0/7/25/26	0/2/2/2
6	2MG	A	963	6	-	0/9/27/28	0/3/3/3
6	PSU	A	513	57,6	-	0/7/25/26	0/2/2/2
40	4D4	l	82	40	-	4/11/12/14	-
29	2MG	a	2434	29	-	2/9/27/28	0/3/3/3
6	4OC	A	1399	6	-	0/9/29/30	0/2/2/2
29	H2U	a	2438	29	-	2/7/38/39	0/2/2/2
29	PSU	a	737	57,29	-	1/7/25/26	0/2/2/2
29	G7M	a	2058	29	-	2/7/25/26	0/3/3/3
29	5MU	a	1928	55,29	-	0/7/25/26	0/2/2/2
29	3TD	a	1904	29	-	0/7/25/26	0/2/2/2
6	UR3	A	1495	6	-	0/7/25/26	0/2/2/2
29	PSU	a	1900	29	-	0/7/25/26	0/2/2/2
17	D2T	L	89	17	-	2/7/12/14	-
29	PSU	a	2493	55,29	-	2/7/25/26	0/2/2/2
29	PSU	a	1906	29	-	0/7/25/26	0/2/2/2
6	G7M	A	524	55,6	-	3/7/25/26	0/3/3/3
40	MS6	l	83	40	-	3/4/6/8	-
27	5MU	V	55	27	-	0/7/25/26	0/2/2/2
29	6MZ	a	2019	29	-	2/9/27/28	0/3/3/3
27	H2U	V	21	27	-	4/7/38/39	0/2/2/2
29	PSU	a	2594	29	-	0/7/25/26	0/2/2/2
32	MEQ	d	153	32	-	2/8/9/11	-
29	2MA	a	2492	55,57,29	-	2/7/25/26	0/3/3/3
29	OMC	a	2487	57,29	-	0/9/27/28	0/2/2/2
29	PSU	a	945	29	-	0/7/25/26	0/2/2/2
6	MA6	A	1516	6	-	1/11/29/30	0/3/3/3

All (205) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
27	V	21	H2U	O4-C4	10.25	1.44	1.23
29	a	2438	H2U	O4-C4	9.78	1.43	1.23
29	a	2019	6MZ	C6-N6	9.59	1.44	1.34
6	A	1204	2MG	O6-C6	9.05	1.40	1.23
6	A	1513	2MG	O6-C6	8.94	1.40	1.23
6	A	963	2MG	O6-C6	8.86	1.40	1.23
29	a	2434	2MG	O6-C6	8.82	1.40	1.23
27	V	21	H2U	C2-N1	8.74	1.48	1.35
6	A	1495	UR3	O4-C4	8.55	1.42	1.23
27	V	21	H2U	O2-C2	8.53	1.38	1.23
29	a	2240	OMG	O6-C6	8.33	1.39	1.23
29	a	1904	3TD	O4-C4	8.16	1.40	1.23
29	a	2438	H2U	O2-C2	8.05	1.37	1.23
6	A	524	G7M	O6-C6	7.86	1.38	1.23
29	a	736	1MG	O6-C6	7.86	1.39	1.23
29	a	2058	G7M	O6-C6	7.84	1.38	1.23
29	a	2438	H2U	C2-N1	7.80	1.46	1.35
29	a	2541	OMU	O4-C4	7.77	1.39	1.24
27	V	8	4SU	C4-N3	7.68	1.45	1.37
27	V	8	4SU	C2-N3	7.05	1.50	1.38
27	V	21	H2U	C2-N3	7.04	1.50	1.38
27	V	8	4SU	C4-S4	-6.77	1.55	1.68
29	a	2438	H2U	C2-N3	6.58	1.49	1.38
29	a	1928	5MU	C2-N1	-6.45	1.28	1.38
6	A	1399	4OC	O2-C2	6.24	1.35	1.23
6	A	963	2MG	C2-N2	6.04	1.46	1.33
6	A	1204	2MG	C2-N2	5.89	1.46	1.33
29	a	736	1MG	C2-N2	5.87	1.44	1.34
6	A	1513	2MG	C2-N2	5.86	1.46	1.33
29	a	2434	2MG	C2-N2	5.71	1.46	1.33
27	V	55	5MU	C2-N1	-5.60	1.29	1.38
27	V	21	H2U	C4-N3	5.22	1.46	1.37
29	a	1928	5MU	C2-N3	-5.22	1.28	1.38
6	A	1399	4OC	C4-N4	5.21	1.46	1.35
27	V	8	4SU	C6-C5	5.00	1.46	1.35
27	V	33	OMC	C4-N4	4.98	1.45	1.33
27	V	8	4SU	C2-N1	4.87	1.46	1.38
29	a	2438	H2U	C4-N3	4.70	1.45	1.37
27	V	55	5MU	C2-N3	-4.63	1.29	1.38
29	a	2487	OMC	C4-N4	4.56	1.44	1.33
29	a	1928	5MU	C6-N1	-4.55	1.30	1.38
29	a	2492	2MA	C6-N6	4.33	1.45	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
27	V	55	5MU	C6-N1	-4.29	1.30	1.38
29	a	2569	PSU	C2-N1	-4.22	1.31	1.36
29	a	2594	PSU	C4-N3	-4.22	1.31	1.38
29	a	2541	OMU	C2-N1	-4.20	1.31	1.38
29	a	2446	PSU	C4-N3	-4.19	1.31	1.38
29	a	945	PSU	C4-N3	-4.18	1.31	1.38
29	a	1904	3TD	C2-N1	-4.16	1.31	1.37
27	V	8	4SU	C5-C4	4.11	1.47	1.42
29	a	2446	PSU	C2-N1	-4.07	1.31	1.36
6	A	964	5MC	C4-N4	4.07	1.44	1.34
29	a	737	PSU	C2-N1	-4.06	1.31	1.36
29	a	2493	PSU	C2-N1	-4.04	1.31	1.36
29	a	737	PSU	C4-N3	-4.03	1.31	1.38
29	a	736	1MG	C6-N1	-3.99	1.31	1.40
27	V	33	OMC	C2-N1	-3.98	1.31	1.40
29	a	2541	OMU	C4-N3	-3.98	1.31	1.38
29	a	2240	OMG	C2-N2	3.98	1.43	1.34
29	a	2487	OMC	C2-N1	-3.96	1.31	1.40
27	V	8	4SU	C6-N1	3.96	1.47	1.38
29	a	2541	OMU	C2-N3	-3.96	1.30	1.38
29	a	1900	PSU	C4-N3	-3.92	1.31	1.38
6	A	964	5MC	C2-N1	-3.89	1.31	1.40
29	a	2493	PSU	C4-N3	-3.86	1.31	1.38
29	a	2569	PSU	C4-N3	-3.86	1.31	1.38
6	A	1495	UR3	C4-N3	-3.86	1.31	1.40
29	a	2240	OMG	C6-N1	-3.83	1.31	1.38
29	a	2594	PSU	C2-N3	-3.83	1.30	1.37
29	a	1904	3TD	C4-N3	-3.82	1.32	1.40
29	a	1900	PSU	C2-N1	-3.82	1.31	1.36
29	a	945	PSU	C2-N1	-3.80	1.31	1.36
29	a	2446	PSU	C2-N3	-3.79	1.31	1.37
29	a	945	PSU	C2-N3	-3.77	1.31	1.37
29	a	1906	PSU	C4-N3	-3.76	1.31	1.38
29	a	737	PSU	C2-N3	-3.76	1.31	1.37
29	a	1906	PSU	C2-N1	-3.76	1.31	1.36
6	A	513	PSU	C2-N1	-3.73	1.31	1.36
6	A	513	PSU	C4-N3	-3.69	1.32	1.38
29	a	2594	PSU	C2-N1	-3.69	1.31	1.36
29	a	2058	G7M	C6-N1	-3.67	1.32	1.38
29	a	1928	5MU	C4-N3	-3.63	1.32	1.38
29	a	2058	G7M	C5-N7	-3.62	1.35	1.39
6	A	1399	4OC	C2-N1	-3.62	1.32	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	524	G7M	C5-N7	-3.62	1.35	1.39
29	a	2569	PSU	C2-N3	-3.61	1.31	1.37
29	a	2493	PSU	C2-N3	-3.60	1.31	1.37
29	a	1906	PSU	C2-N3	-3.59	1.31	1.37
6	A	1495	UR3	C2-N3	-3.54	1.32	1.39
16	K	118	IAS	OD1-CG	3.53	1.39	1.19
27	V	8	4SU	O2-C2	-3.52	1.16	1.23
6	A	513	PSU	C2-N3	-3.49	1.31	1.37
29	a	1900	PSU	C2-N3	-3.48	1.31	1.37
27	V	55	5MU	C6-C5	3.41	1.40	1.34
29	a	1928	5MU	C6-C5	3.41	1.40	1.34
6	A	1515	MA6	C8-N9	-3.39	1.31	1.37
27	V	56	PSU	C4-N3	-3.33	1.32	1.38
6	A	1515	MA6	C6-N6	3.32	1.46	1.36
6	A	524	G7M	C6-N1	-3.29	1.32	1.38
29	a	2019	6MZ	C8-N9	-3.26	1.31	1.37
6	A	1516	MA6	C8-N9	-3.26	1.31	1.37
27	V	55	5MU	C4-N3	-3.25	1.32	1.38
29	a	2434	2MG	C6-N1	-3.25	1.32	1.38
6	A	964	5MC	C6-N1	-3.25	1.32	1.38
6	A	1204	2MG	C6-N1	-3.22	1.32	1.38
27	V	56	PSU	C2-N1	-3.22	1.32	1.36
6	A	1516	MA6	C6-N6	3.20	1.46	1.36
27	V	56	PSU	C6-C5	3.19	1.39	1.35
6	A	1513	2MG	C6-N1	-3.18	1.32	1.38
6	A	524	G7M	C2-N2	3.15	1.41	1.34
29	a	2594	PSU	O4-C4	-3.10	1.17	1.23
6	A	1495	UR3	C2-N1	-3.06	1.34	1.38
6	A	963	2MG	C6-N1	-3.06	1.33	1.38
27	V	56	PSU	C2-N3	-3.05	1.32	1.37
29	a	2594	PSU	C6-C5	3.03	1.38	1.35
29	a	2019	6MZ	C5-N7	-3.01	1.33	1.39
29	a	2541	OMU	O2-C2	-3.01	1.17	1.23
29	a	2058	G7M	C2-N2	3.00	1.41	1.34
29	a	1904	3TD	C6-C5	2.99	1.38	1.35
6	A	964	5MC	O2-C2	-2.99	1.18	1.23
29	a	2446	PSU	O4-C4	-2.94	1.18	1.23
29	a	945	PSU	O4-C4	-2.92	1.18	1.23
29	a	1904	3TD	C2-N3	-2.91	1.32	1.38
29	a	1900	PSU	O4-C4	-2.91	1.18	1.23
29	a	2434	2MG	C5-N7	-2.91	1.33	1.39
29	a	2446	PSU	C6-N1	-2.90	1.31	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
29	a	1906	PSU	C6-C5	2.89	1.38	1.35
29	a	2493	PSU	C6-C5	2.89	1.38	1.35
29	a	2240	OMG	C8-N9	-2.88	1.31	1.37
29	a	945	PSU	C6-N1	-2.87	1.31	1.36
6	A	1204	2MG	C5-N7	-2.85	1.33	1.39
6	A	963	2MG	C5-N7	-2.83	1.33	1.39
29	a	1928	5MU	O2-C2	-2.82	1.17	1.23
29	a	737	PSU	O4-C4	-2.82	1.18	1.23
29	a	1928	5MU	O4-C4	-2.82	1.18	1.23
29	a	2569	PSU	O4-C4	-2.82	1.18	1.23
29	a	2493	PSU	O4-C4	-2.81	1.18	1.23
29	a	1906	PSU	O4-C4	-2.81	1.18	1.23
29	a	737	PSU	C6-N1	-2.78	1.31	1.36
29	a	2569	PSU	C6-N1	-2.77	1.31	1.36
6	A	513	PSU	C6-C5	2.77	1.38	1.35
6	A	1513	2MG	C5-N7	-2.74	1.33	1.39
29	a	2569	PSU	C6-C5	2.69	1.38	1.35
29	a	2240	OMG	C5-N7	-2.68	1.33	1.39
29	a	2493	PSU	C6-N1	-2.68	1.31	1.36
29	a	2446	PSU	C6-C5	2.64	1.38	1.35
29	a	1900	PSU	C6-C5	2.64	1.38	1.35
27	V	55	5MU	O4-C4	-2.63	1.18	1.23
29	a	2594	PSU	C6-N1	-2.63	1.31	1.36
29	a	2058	G7M	C2-N1	-2.62	1.31	1.37
6	A	513	PSU	O4-C4	-2.61	1.18	1.23
29	a	2541	OMU	C5-C4	-2.59	1.37	1.43
29	a	736	1MG	C5-N7	-2.59	1.34	1.39
29	a	736	1MG	C8-N9	-2.57	1.31	1.37
29	a	2569	PSU	O4'-C1'	-2.57	1.40	1.43
29	a	945	PSU	O2-C2	-2.56	1.18	1.23
29	a	1904	3TD	C6-N1	-2.56	1.32	1.36
6	A	513	PSU	C6-N1	-2.56	1.32	1.36
29	a	2569	PSU	O2-C2	-2.56	1.18	1.23
29	a	2446	PSU	O2-C2	-2.54	1.18	1.23
29	a	737	PSU	C6-C5	2.53	1.38	1.35
29	a	2541	OMU	C6-N1	-2.53	1.31	1.38
27	V	56	PSU	O4-C4	-2.51	1.18	1.23
29	a	945	PSU	C6-C5	2.50	1.38	1.35
29	a	2493	PSU	O2-C2	-2.49	1.18	1.23
6	A	964	5MC	C6-C5	2.48	1.38	1.34
29	a	1900	PSU	C6-N1	-2.47	1.32	1.36
29	a	1906	PSU	C6-N1	-2.45	1.32	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	524	G7M	C2-N1	-2.45	1.31	1.37
29	a	1906	PSU	O2-C2	-2.43	1.18	1.23
29	a	1904	3TD	O2-C2	-2.42	1.18	1.23
6	A	1515	MA6	C5-N7	-2.39	1.34	1.39
29	a	737	PSU	O2-C2	-2.38	1.18	1.23
29	a	2594	PSU	O2-C2	-2.37	1.18	1.23
29	a	2434	2MG	C4-N9	-2.36	1.31	1.38
29	a	1900	PSU	O2-C2	-2.34	1.18	1.23
29	a	2434	2MG	CM2-N2	-2.32	1.41	1.45
27	V	56	PSU	C6-N1	-2.31	1.32	1.36
29	a	2487	OMC	C5-C4	-2.31	1.37	1.42
29	a	2240	OMG	C2-N1	-2.30	1.32	1.37
6	A	1495	UR3	C6-N1	-2.30	1.32	1.38
6	A	1516	MA6	C5-N7	-2.29	1.34	1.39
6	A	513	PSU	O2-C2	-2.28	1.18	1.23
27	V	55	5MU	O2-C2	-2.27	1.18	1.23
6	A	1399	4OC	C2-N3	-2.26	1.31	1.36
29	a	2569	PSU	C4-C5	-2.22	1.37	1.44
29	a	2492	2MA	C8-N9	-2.19	1.33	1.37
6	A	1513	2MG	C4-N9	-2.17	1.32	1.38
29	a	736	1MG	C5-C6	-2.15	1.40	1.45
29	a	2434	2MG	C8-N9	-2.15	1.32	1.37
6	A	964	5MC	C2-N3	-2.15	1.32	1.36
29	a	2492	2MA	C5-N7	-2.13	1.35	1.39
17	L	89	D2T	CB-CG	2.13	1.55	1.52
29	a	737	PSU	O4'-C1'	-2.12	1.40	1.43
29	a	737	PSU	C4-C5	-2.12	1.38	1.44
27	V	33	OMC	C6-C5	2.12	1.39	1.35
6	A	1513	2MG	CM2-N2	-2.11	1.41	1.45
27	V	56	PSU	O2-C2	-2.10	1.19	1.23
6	A	1204	2MG	CM2-N2	-2.09	1.41	1.45
6	A	963	2MG	C4-N9	-2.09	1.32	1.38
6	A	1513	2MG	C8-N9	-2.07	1.32	1.37
29	a	2446	PSU	O4'-C1'	-2.06	1.41	1.43
29	a	2594	PSU	C4-C5	-2.06	1.38	1.44
6	A	513	PSU	C4-C5	-2.02	1.38	1.44
6	A	963	2MG	CM2-N2	-2.00	1.42	1.45

All (204) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	2438	H2U	C4-N3-C2	-14.38	113.86	125.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
27	V	21	H2U	C4-N3-C2	-14.08	114.11	125.79
27	V	21	H2U	O2-C2-N1	-11.90	108.17	123.11
29	a	2438	H2U	O2-C2-N1	-10.86	109.47	123.11
27	V	55	5MU	C5M-C5-C4	8.99	128.66	118.77
29	a	1928	5MU	C4-N3-C2	-8.66	116.14	127.35
29	a	1928	5MU	N3-C2-N1	8.64	126.36	114.89
27	V	55	5MU	C4-N3-C2	-8.35	116.54	127.35
29	a	2438	H2U	O4-C4-N3	-8.09	107.46	120.28
27	V	55	5MU	N3-C2-N1	7.92	125.41	114.89
29	a	1928	5MU	C5-C6-N1	-7.72	115.39	123.34
27	V	8	4SU	C4-N3-C2	-7.70	119.86	127.34
29	a	1928	5MU	C5M-C5-C4	7.55	127.08	118.77
6	A	1513	2MG	C2-N3-C4	7.44	121.26	112.04
6	A	1204	2MG	C2-N3-C4	7.27	121.05	112.04
29	a	2434	2MG	C2-N3-C4	7.21	120.98	112.04
27	V	21	H2U	O4-C4-N3	-7.21	108.86	120.28
6	A	963	2MG	C2-N3-C4	7.19	120.96	112.04
27	V	55	5MU	C5-C6-N1	-7.18	115.95	123.34
27	V	21	H2U	O2-C2-N3	-7.07	108.33	121.50
29	a	2492	2MA	C5-C4-N3	-7.05	119.26	127.19
27	V	55	5MU	C5M-C5-C6	-6.93	113.60	122.85
29	a	736	1MG	C5-C4-N3	-6.82	117.40	128.46
29	a	2019	6MZ	C9-N6-C6	-6.71	117.09	122.87
29	a	1904	3TD	N1-C2-N3	6.71	121.43	116.14
29	a	2438	H2U	O4-C4-C5	-6.70	107.87	122.17
29	a	2438	H2U	O2-C2-N3	-6.63	109.16	121.50
27	V	55	5MU	C5-C4-N3	6.41	120.79	115.31
29	a	2438	H2U	N3-C2-N1	-6.29	110.00	116.65
29	a	1928	5MU	C5-C4-N3	6.29	120.68	115.31
27	V	21	H2U	O4-C4-C5	-6.27	108.78	122.17
29	a	2446	PSU	N1-C2-N3	6.08	122.02	115.13
16	K	118	IAS	OD1-CG-CB	-6.05	107.80	125.43
29	a	1928	5MU	C5M-C5-C6	-6.02	114.81	122.85
29	a	945	PSU	N1-C2-N3	6.01	121.94	115.13
29	a	2569	PSU	N1-C2-N3	5.76	121.65	115.13
29	a	2594	PSU	N1-C2-N3	5.61	121.48	115.13
29	a	1906	PSU	N1-C2-N3	5.61	121.48	115.13
29	a	2541	OMU	N3-C2-N1	5.61	122.33	114.89
29	a	737	PSU	N1-C2-N3	5.58	121.45	115.13
27	V	8	4SU	C5-C4-N3	5.58	119.86	114.69
29	a	1900	PSU	N1-C2-N3	5.56	121.43	115.13
6	A	1515	MA6	C5-C4-N3	-5.54	119.52	126.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	513	PSU	N1-C2-N3	5.53	121.40	115.13
6	A	1204	2MG	C5-C4-N3	-5.52	119.50	128.46
29	a	2058	G7M	C2-N3-C4	5.45	122.00	112.30
29	a	2493	PSU	N1-C2-N3	5.42	121.28	115.13
29	a	2240	OMG	C5-C4-N3	-5.41	119.69	128.46
6	A	1516	MA6	C5-C4-N3	-5.40	119.70	126.75
6	A	524	G7M	C2-N3-C4	5.37	121.86	112.30
27	V	56	PSU	N1-C2-N3	5.31	121.14	115.13
6	A	964	5MC	C5-C6-N1	-5.20	117.99	123.34
6	A	1516	MA6	N1-C2-N3	-5.09	120.64	128.60
29	a	736	1MG	C2-N3-C4	5.08	123.39	111.98
6	A	1513	2MG	C5-C4-N3	-5.02	120.31	128.46
29	a	2492	2MA	N3-C4-N9	5.00	133.92	126.99
29	a	2019	6MZ	C5-C4-N3	-4.97	120.26	126.75
6	A	963	2MG	C5-C4-N3	-4.96	120.41	128.46
29	a	2434	2MG	C5-C4-N3	-4.88	120.55	128.46
29	a	2019	6MZ	N1-C2-N3	-4.85	121.01	128.60
29	a	2240	OMG	C2-N3-C4	4.81	120.86	112.30
6	A	1515	MA6	N1-C2-N3	-4.73	121.20	128.60
6	A	1495	UR3	C4-N3-C2	-4.73	120.11	124.56
6	A	524	G7M	C5-C4-N3	-4.67	119.20	128.15
29	a	736	1MG	N9-C4-N3	4.64	135.26	125.94
6	A	1515	MA6	N3-C4-N9	4.47	134.44	127.08
29	a	2058	G7M	C5-C4-N3	-4.42	119.67	128.15
29	a	2058	G7M	C5-C6-N1	4.33	120.83	111.79
6	A	1516	MA6	C2-N1-C6	4.31	121.93	111.75
6	A	524	G7M	C5-C6-N1	4.31	120.78	111.79
6	A	1515	MA6	C2-N1-C6	4.18	121.62	111.75
29	a	2541	OMU	C4-N3-C2	-4.17	121.08	126.58
27	V	55	5MU	O4-C4-N3	-4.15	112.16	120.12
6	A	1516	MA6	N3-C4-N9	4.14	133.90	127.08
6	A	1516	MA6	C2-N3-C4	4.11	121.46	111.75
29	a	2058	G7M	C6-C5-N7	4.08	137.18	132.25
29	a	945	PSU	C4-N3-C2	-3.98	120.61	126.34
29	a	2019	6MZ	C6-C5-N7	3.97	136.68	132.39
6	A	1515	MA6	C2-N3-C4	3.95	121.09	111.75
29	a	1928	5MU	O2-C2-N1	-3.94	117.55	122.79
29	a	2594	PSU	C4-N3-C2	-3.84	120.81	126.34
29	a	2019	6MZ	C2-N3-C4	3.82	120.78	111.75
29	a	1928	5MU	O4-C4-N3	-3.80	112.84	120.12
29	a	2446	PSU	C4-N3-C2	-3.74	120.95	126.34
29	a	1900	PSU	C4-N3-C2	-3.74	120.95	126.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	2240	OMG	N9-C4-N3	3.73	133.44	125.94
6	A	513	PSU	C4-N3-C2	-3.73	120.97	126.34
29	a	737	PSU	C4-N3-C2	-3.72	120.97	126.34
27	V	8	4SU	N3-C2-N1	3.69	119.79	114.89
29	a	1906	PSU	C4-N3-C2	-3.69	121.03	126.34
6	A	1516	MA6	N9-C8-N7	-3.66	108.90	113.91
6	A	1515	MA6	N9-C8-N7	-3.66	108.91	113.91
6	A	524	G7M	N9-C4-N3	3.66	133.28	125.94
29	a	2019	6MZ	C5-N7-C8	3.64	108.68	103.51
27	V	21	H2U	N3-C2-N1	-3.64	112.81	116.65
29	a	2569	PSU	C4-N3-C2	-3.63	121.11	126.34
6	A	1204	2MG	N9-C4-N3	3.62	133.21	125.94
27	V	56	PSU	C4-N3-C2	-3.61	121.13	126.34
29	a	2019	6MZ	C4-C5-N7	-3.56	106.28	110.62
6	A	524	G7M	O6-C6-C5	-3.54	120.08	128.06
6	A	1515	MA6	C4-N9-C8	3.52	109.54	105.73
29	a	2058	G7M	O6-C6-C5	-3.50	120.16	128.06
6	A	963	2MG	N9-C4-N3	3.48	132.93	125.94
6	A	1515	MA6	C5-N7-C8	3.45	108.41	103.51
6	A	524	G7M	C6-C5-N7	3.44	136.41	132.25
29	a	2487	OMC	O2-C2-N3	-3.41	116.78	122.33
6	A	1513	2MG	C6-C5-N7	3.40	136.57	130.25
6	A	1516	MA6	C5-N7-C8	3.40	108.34	103.51
29	a	737	PSU	O2-C2-N1	-3.40	119.05	122.79
27	V	8	4SU	C5-C4-S4	-3.38	120.11	124.47
29	a	2569	PSU	O2-C2-N1	-3.33	119.13	122.79
40	l	82	4D4	NE-CZ-NH2	3.33	126.54	120.70
6	A	1516	MA6	C4-N9-C8	3.32	109.33	105.73
29	a	2434	2MG	N9-C4-N3	3.32	132.61	125.94
29	a	2493	PSU	C4-N3-C2	-3.30	121.58	126.34
29	a	2058	G7M	N9-C4-N3	3.27	132.50	125.94
29	a	945	PSU	O2-C2-N1	-3.23	119.23	122.79
29	a	1906	PSU	O2-C2-N1	-3.19	119.28	122.79
6	A	513	PSU	O2-C2-N1	-3.16	119.32	122.79
29	a	2492	2MA	N9-C8-N7	-3.15	109.60	113.91
29	a	1900	PSU	O2-C2-N1	-3.15	119.32	122.79
29	a	2019	6MZ	N9-C8-N7	-3.14	109.62	113.91
27	V	55	5MU	O2-C2-N3	-3.11	115.70	121.50
29	a	2446	PSU	O2-C2-N1	-3.09	119.39	122.79
6	A	1513	2MG	N9-C4-N3	3.07	132.10	125.94
29	a	2492	2MA	C5-N7-C8	3.06	107.86	103.51
29	a	2434	2MG	C6-C5-N7	3.04	135.90	130.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1399	4OC	O2-C2-N3	-3.01	117.43	122.33
29	a	2019	6MZ	N3-C4-N9	2.98	131.99	127.08
6	A	1516	MA6	C4-C5-N7	-2.95	107.03	110.62
27	V	55	5MU	O2-C2-N1	-2.93	118.89	122.79
27	V	56	PSU	O2-C2-N1	-2.92	119.57	122.79
29	a	1928	5MU	O2-C2-N3	-2.91	116.09	121.50
27	V	55	5MU	C1'-N1-C6	-2.89	116.32	121.12
6	A	1515	MA6	C4-C5-N7	-2.89	107.10	110.62
6	A	963	2MG	C6-C5-N7	2.87	135.58	130.25
29	a	2493	PSU	O2-C2-N1	-2.85	119.66	122.79
29	a	2240	OMG	C6-C5-N7	2.85	135.54	130.25
17	L	89	D2T	OD1-CG-CB	-2.81	116.55	122.44
29	a	2492	2MA	C4-C5-N7	-2.76	107.26	110.62
29	a	2594	PSU	O2-C2-N1	-2.73	119.78	122.79
6	A	1204	2MG	C6-C5-N7	2.73	135.32	130.25
29	a	2058	G7M	C2-N1-C6	-2.71	120.16	125.10
29	a	1904	3TD	C4-N3-C2	-2.71	121.67	124.61
6	A	1513	2MG	C4-C5-N7	-2.71	106.44	110.72
27	V	33	OMC	O2-C2-N3	-2.66	118.01	122.33
6	A	524	G7M	C2-N1-C6	-2.63	120.31	125.10
29	a	736	1MG	C5-C6-N1	2.59	119.91	114.91
29	a	2541	OMU	C5-C4-N3	2.56	118.67	114.84
29	a	2569	PSU	O4'-C1'-C2'	2.52	108.70	105.14
29	a	2492	2MA	C4-N9-C8	2.52	108.46	105.73
29	a	2240	OMG	C5-C6-N1	2.51	119.58	113.19
6	A	1204	2MG	C4-C5-N7	-2.51	106.75	110.72
40	l	82	4D4	NH1-CZ-NE	-2.50	113.42	119.19
6	A	1399	4OC	CM4-N4-C4	-2.50	117.57	122.45
29	a	2240	OMG	O6-C6-C5	-2.50	119.98	126.60
29	a	2434	2MG	O6-C6-C5	-2.45	120.09	126.60
29	a	2240	OMG	C4-C5-N7	-2.44	106.86	110.72
29	a	2541	OMU	O4-C4-C5	-2.43	120.88	125.16
29	a	2240	OMG	C8-N7-C5	2.42	108.62	104.24
29	a	2492	2MA	N3-C2-N1	-2.42	121.28	125.72
27	V	21	H2U	C5-C4-N3	-2.41	113.94	116.65
29	a	736	1MG	C4-C5-N7	-2.41	106.90	110.72
6	A	963	2MG	O6-C6-C5	-2.40	120.22	126.60
40	l	83	MS6	CE-SD-CG	2.39	108.63	100.40
29	a	736	1MG	C6-C5-N7	2.38	134.74	129.35
29	a	2569	PSU	C6-N1-C2	-2.37	120.26	122.68
6	A	963	2MG	N1-C2-N3	-2.37	120.29	123.95
27	V	33	OMC	N1-C2-N3	2.35	123.09	118.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1513	2MG	C5-C6-N1	2.35	119.16	113.19
29	a	2240	OMG	C2-N1-C6	-2.35	120.82	125.10
6	A	963	2MG	C5-C6-N1	2.31	119.05	113.19
6	A	1513	2MG	N1-C2-N3	-2.30	120.40	123.95
29	a	2438	H2U	C5-C4-N3	-2.30	114.07	116.65
29	a	2240	OMG	N9-C8-N7	-2.29	109.08	113.39
29	a	2434	2MG	N1-C2-N3	-2.29	120.41	123.95
29	a	2434	2MG	C4-C5-N7	-2.29	107.10	110.72
6	A	1204	2MG	C2-N1-C6	-2.28	121.86	124.48
29	a	2493	PSU	C6-N1-C2	-2.28	120.36	122.68
6	A	964	5MC	C5-C4-N3	-2.28	119.22	121.67
6	A	1513	2MG	C2-N1-C6	-2.26	121.88	124.48
6	A	1513	2MG	C8-N7-C5	2.26	108.33	104.24
29	a	2446	PSU	C6-N1-C2	-2.25	120.38	122.68
6	A	1495	UR3	C5-C6-N1	-2.25	118.03	121.81
29	a	2434	2MG	C5-C6-N1	2.25	118.91	113.19
27	V	55	5MU	C6-N1-C2	2.24	123.57	121.30
29	a	2487	OMC	N1-C2-N3	2.24	122.89	118.81
6	A	1513	2MG	O6-C6-C5	-2.22	120.72	126.60
6	A	1204	2MG	C8-N7-C5	2.21	108.23	104.24
29	a	2541	OMU	O2-C2-N3	-2.20	117.40	121.50
6	A	963	2MG	C4-C5-N7	-2.17	107.28	110.72
6	A	1204	2MG	C5-C6-N1	2.17	118.69	113.19
6	A	513	PSU	O4'-C1'-C2'	2.15	108.18	105.14
29	a	2434	2MG	N9-C8-N7	-2.08	109.48	113.39
29	a	945	PSU	C6-N1-C2	-2.07	120.57	122.68
29	a	736	1MG	C8-N7-C5	2.06	107.98	104.24
6	A	1513	2MG	N9-C8-N7	-2.06	109.51	113.39
29	a	2434	2MG	C8-N7-C5	2.06	107.96	104.24
29	a	2446	PSU	O4'-C1'-C2'	2.05	108.03	105.14
6	A	1204	2MG	CM2-N2-C2	-2.05	119.34	123.86
29	a	2434	2MG	C2-N1-C6	-2.02	122.15	124.48
6	A	963	2MG	C2-N1-C6	-2.02	122.16	124.48
6	A	963	2MG	C8-N7-C5	2.01	107.87	104.24
6	A	963	2MG	CM2-N2-C2	-2.00	119.44	123.86

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1204	2MG	N1-C2-N2-CM2
6	A	1204	2MG	N3-C2-N2-CM2

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Mol	Chain	Res	Type	Atoms
27	V	21	H2U	O4'-C4'-C5'-O5'
27	V	21	H2U	C3'-C4'-C5'-O5'
27	V	21	H2U	O4'-C1'-N1-C6
40	l	83	MS6	CA-CB-CG-SD
16	K	118	IAS	N-CA-CB-CG
16	K	118	IAS	C-CA-CB-CG
29	a	2240	OMG	C1'-C2'-O2'-CM2
29	a	2434	2MG	N3-C2-N2-CM2
29	a	2541	OMU	C3'-C4'-C5'-O5'
29	a	2541	OMU	O4'-C4'-C5'-O5'
6	A	524	G7M	C3'-C4'-C5'-O5'
29	a	2019	6MZ	O4'-C4'-C5'-O5'
29	a	2019	6MZ	C3'-C4'-C5'-O5'
29	a	2492	2MA	O4'-C4'-C5'-O5'
29	a	2493	PSU	O4'-C4'-C5'-O5'
29	a	2492	2MA	C3'-C4'-C5'-O5'
32	d	153	MEQ	NE2-CD-CG-CB
32	d	153	MEQ	OE1-CD-CG-CB
29	a	2493	PSU	C3'-C4'-C5'-O5'
40	l	83	MS6	CB-CG-SD-CE
6	A	524	G7M	O4'-C4'-C5'-O5'
40	l	82	4D4	OB-CB-CG-CD
17	L	89	D2T	CG-CB-SB-CB1
6	A	524	G7M	C4'-C5'-O5'-P
6	A	1516	MA6	C4'-C5'-O5'-P
27	V	21	H2U	O4'-C1'-N1-C2
29	a	2434	2MG	C3'-C4'-C5'-O5'
40	l	82	4D4	CA-CB-CG-CD
29	a	2058	G7M	C4'-C5'-O5'-P
16	K	118	IAS	CA-CB-CG-OD1
29	a	2438	H2U	O4'-C1'-N1-C2
40	l	82	4D4	CG-CD-NE-CZ
29	a	2438	H2U	C2'-C1'-N1-C2
17	L	89	D2T	SB-CB-CG-OD2
40	l	83	MS6	N-CA-CB-CG
29	a	737	PSU	O4'-C1'-C5-C6
29	a	2058	G7M	O4'-C4'-C5'-O5'
40	l	82	4D4	O-C-CA-CB

There are no ring outliers.

12 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
27	V	33	OMC	2	0
29	a	2541	OMU	1	0
6	A	1515	MA6	1	0
29	a	2240	OMG	1	0
6	A	1513	2MG	1	0
6	A	1399	4OC	1	0
29	a	1904	3TD	1	0
29	a	1906	PSU	1	0
40	l	83	MS6	1	0
27	V	55	5MU	1	0
29	a	2019	6MZ	2	0
27	V	21	H2U	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 531 ligands modelled in this entry, 531 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.

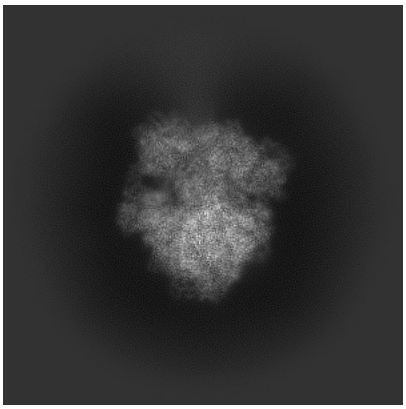
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-55713. These allow visual inspection of the internal detail of the map and identification of artifacts.

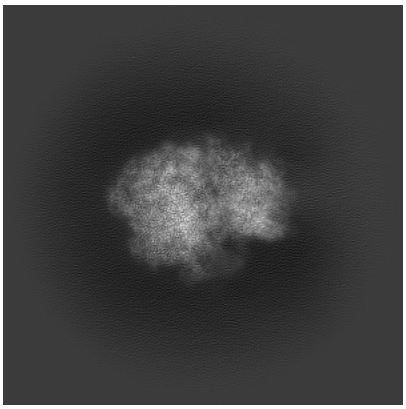
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

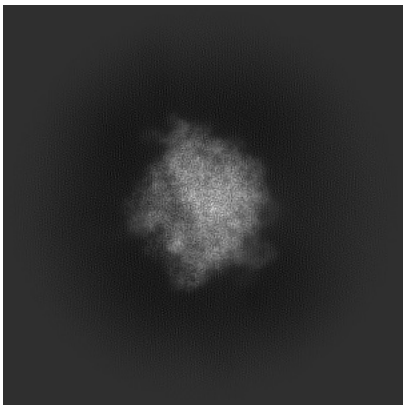
6.1.1 Primary map



X

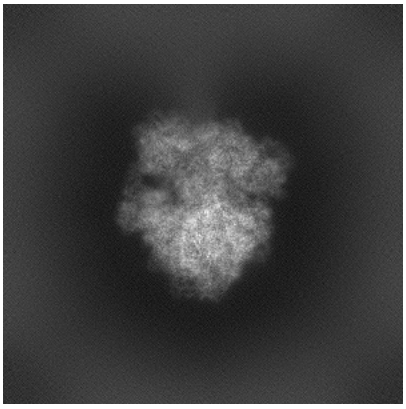


Y

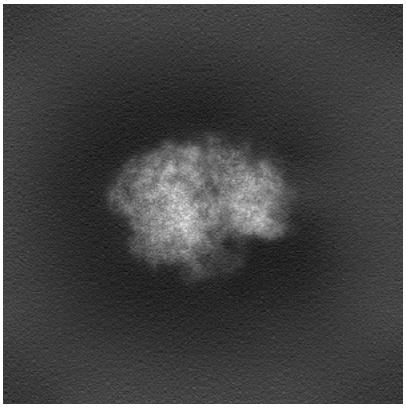


Z

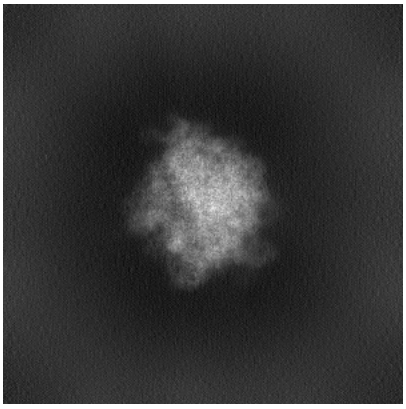
6.1.2 Raw map



X



Y

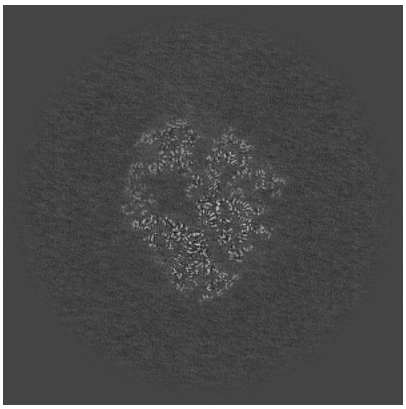


Z

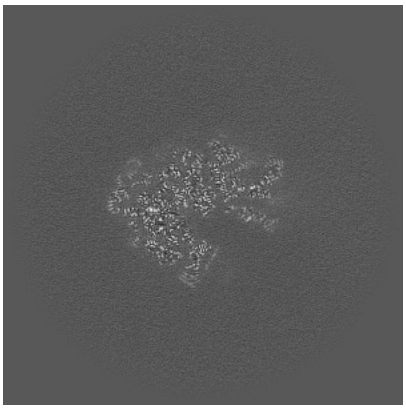
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

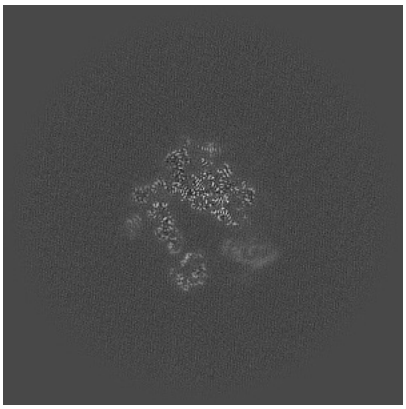
6.2.1 Primary map



X Index: 256

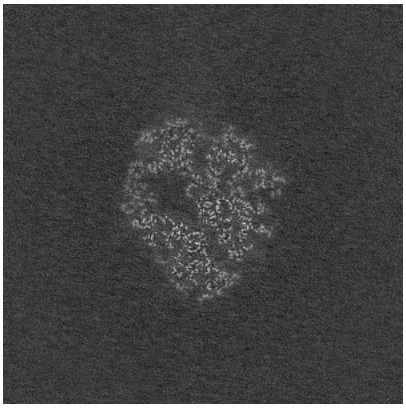


Y Index: 256

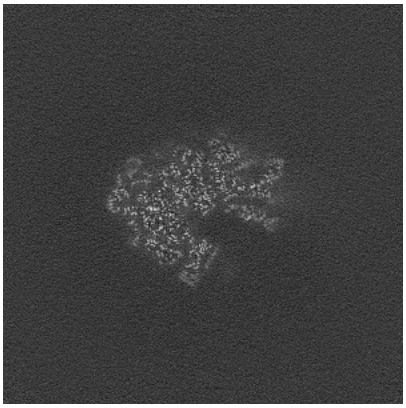


Z Index: 256

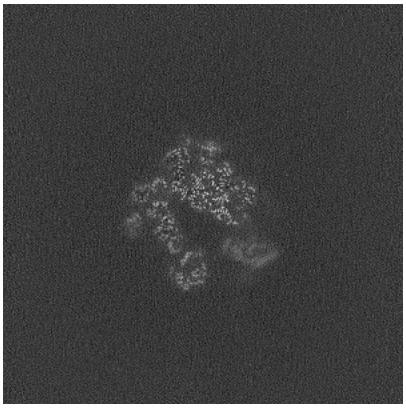
6.2.2 Raw map



X Index: 256



Y Index: 256

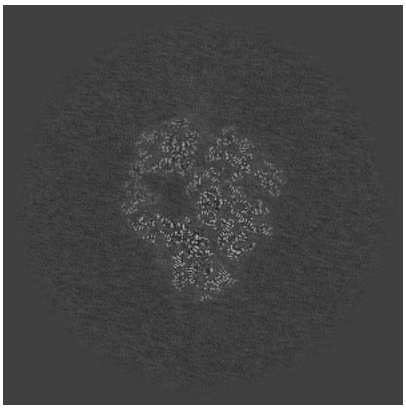


Z Index: 256

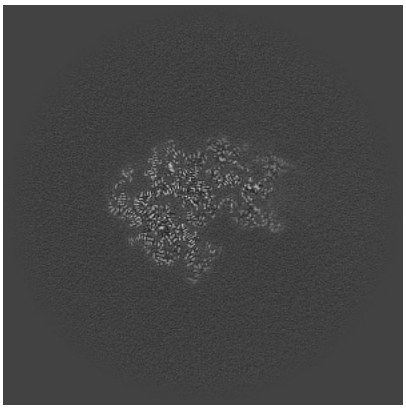
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

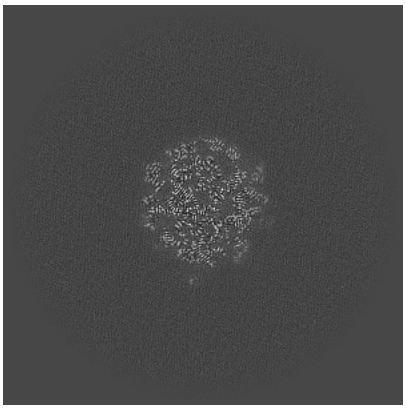
6.3.1 Primary map



X Index: 254

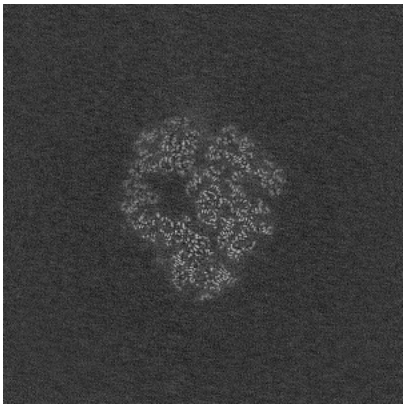


Y Index: 263

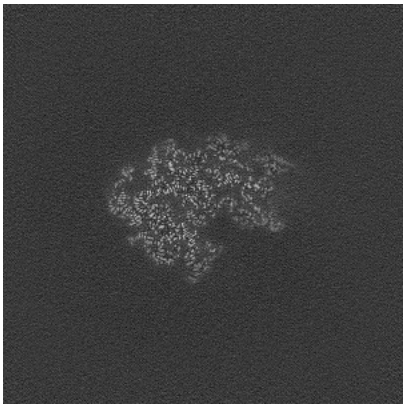


Z Index: 216

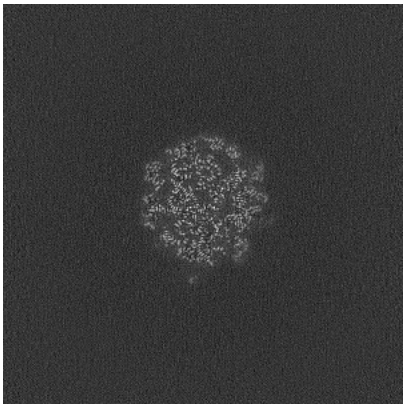
6.3.2 Raw map



X Index: 254



Y Index: 263

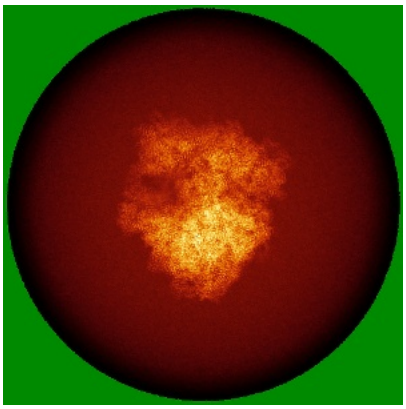


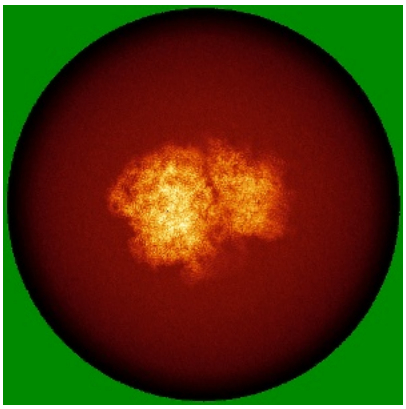
Z Index: 216

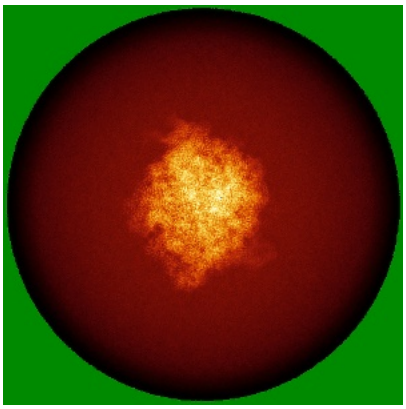
The images above show the largest variance slices of the map in three orthogonal directions.

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

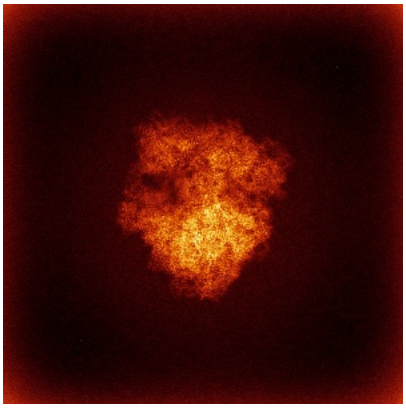
6.4.1 Primary map

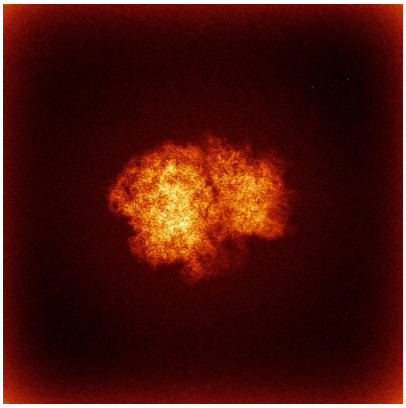

X

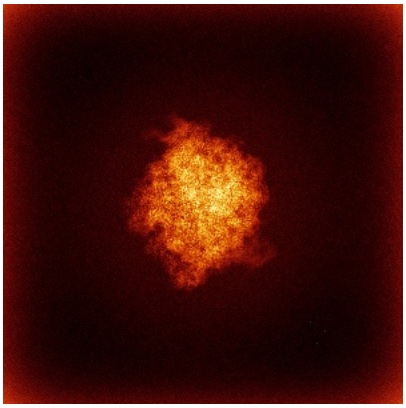

Y


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 0.55. 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.

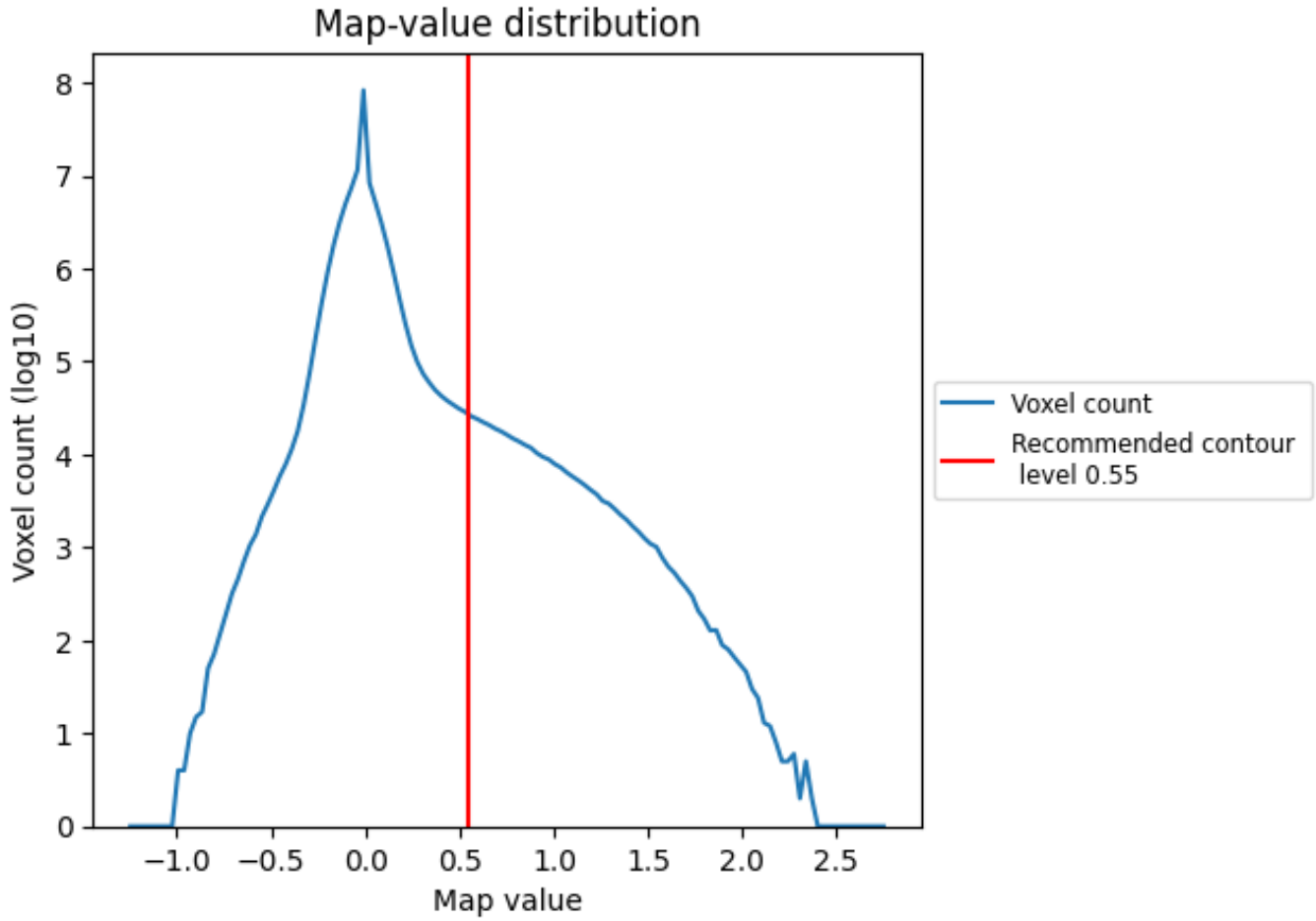
6.6 Mask visualisation (i)

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

7 Map analysis

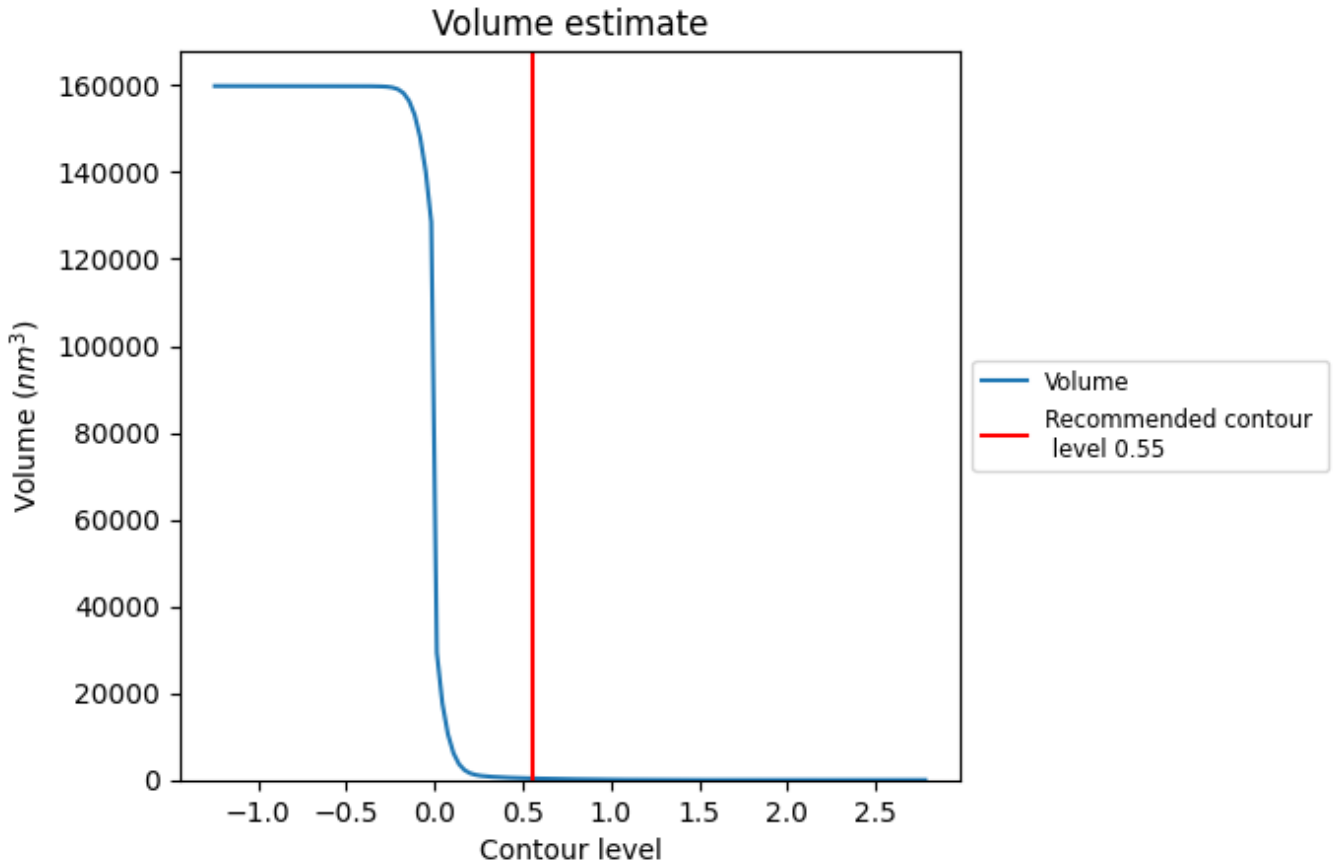
This section contains the results of statistical analysis of the map.

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.

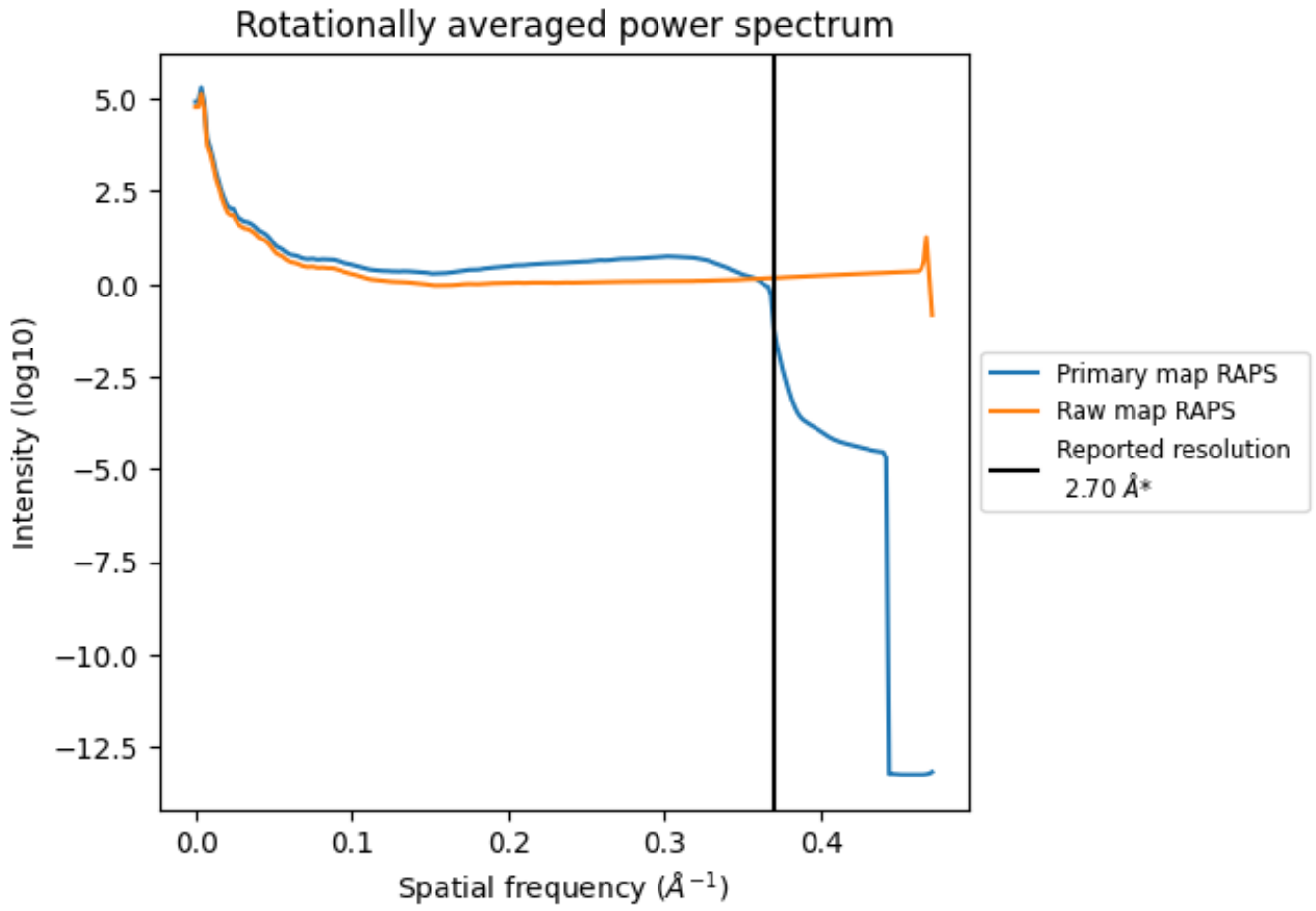
7.2 Volume estimate



The volume at the recommended contour level is 365 nm^3; this corresponds to an approximate mass of 330 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)

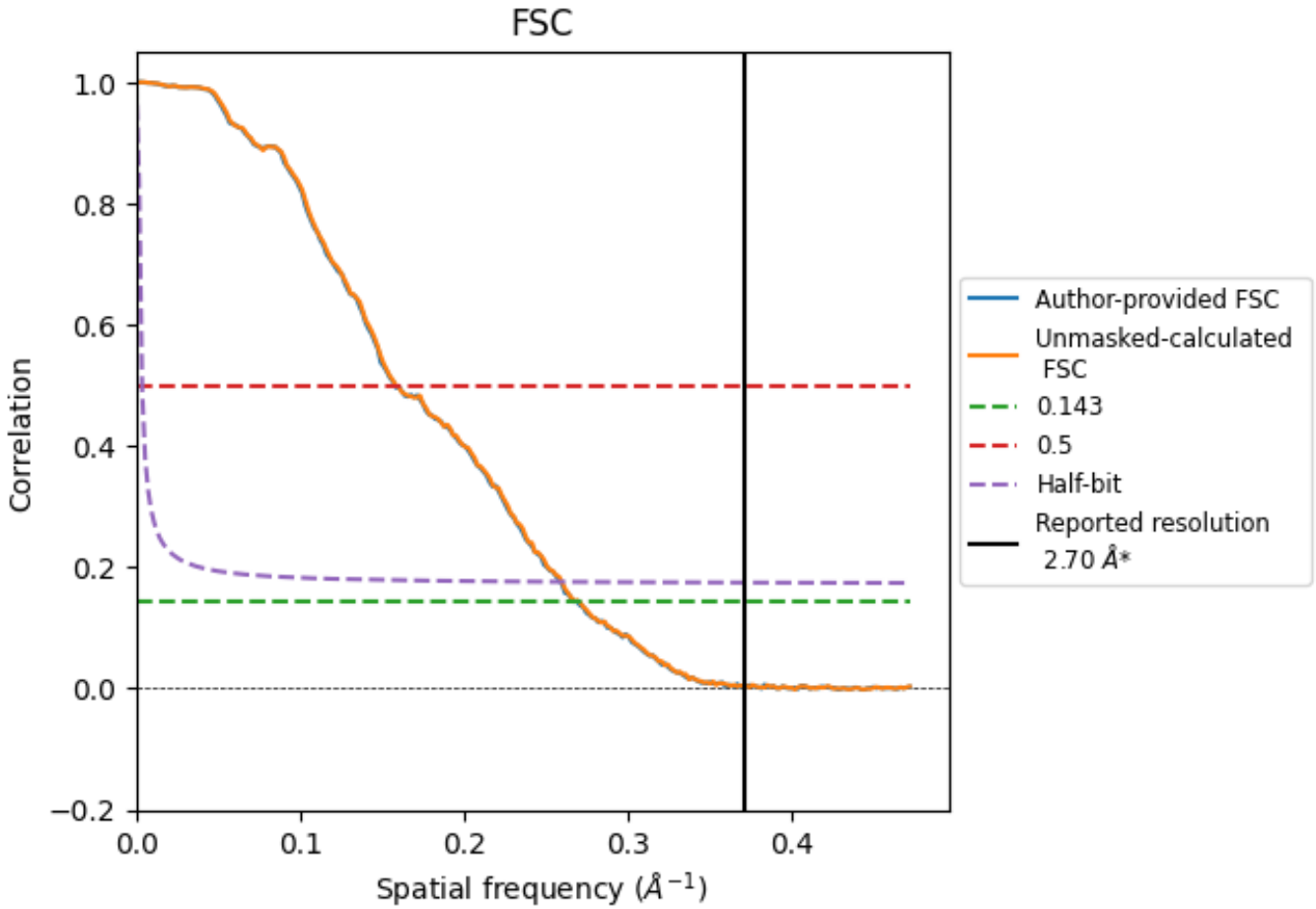


*Reported resolution corresponds to spatial frequency of 0.370 $Å^{-1}$

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 0.370 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	3.74	6.34	3.86
Unmasked-calculated*	3.70	6.31	3.85

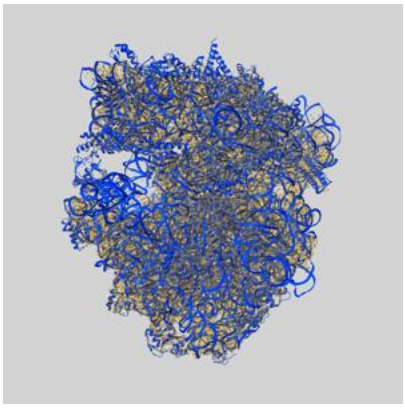
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.74 differs from the reported value 2.7 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.70 differs from the reported value 2.7 by more than 10 %

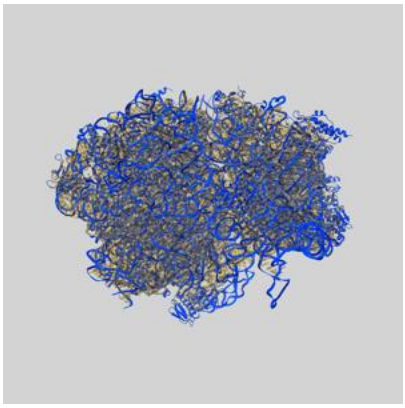
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-55713 and PDB model 9T8X. Per-residue inclusion information can be found in section 3 on page 16.

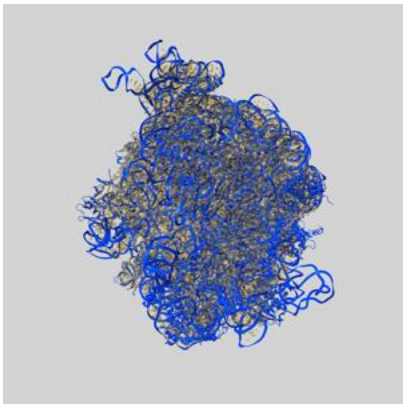
9.1 Map-model overlay



X



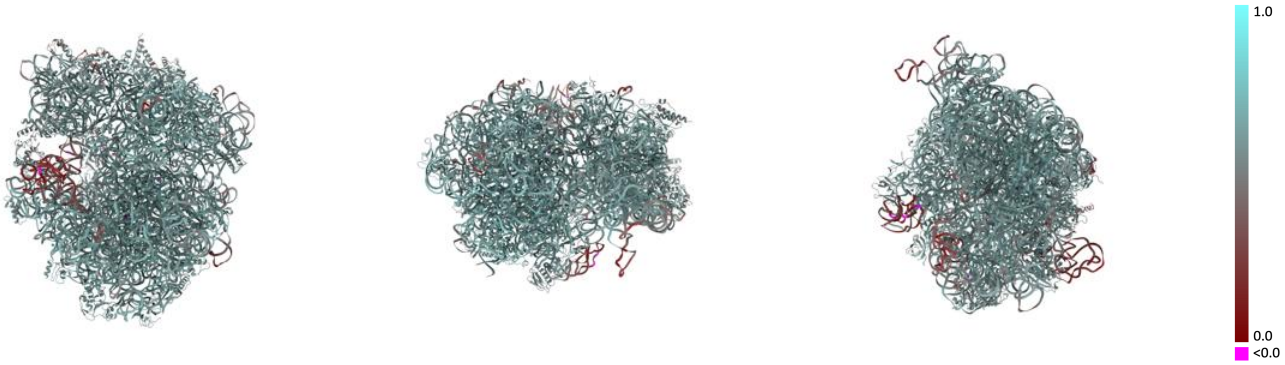
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.55 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.

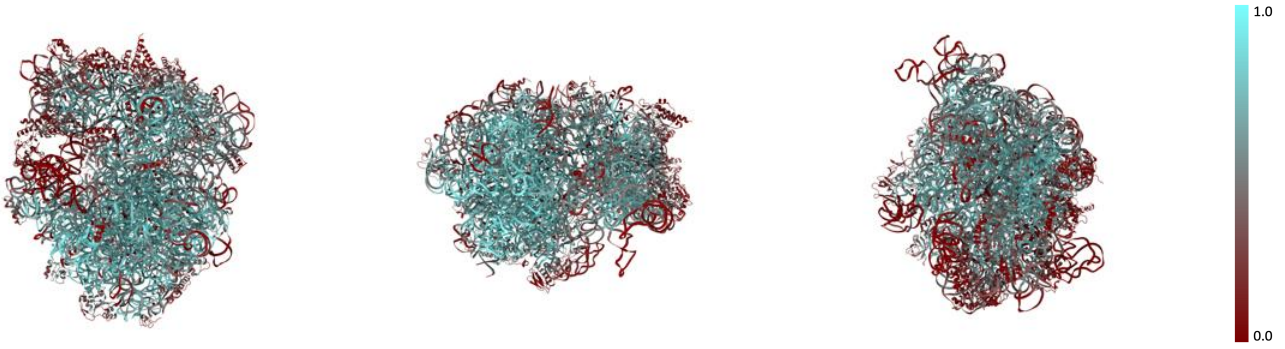
9.2 Q-score mapped to coordinate model (i)



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.

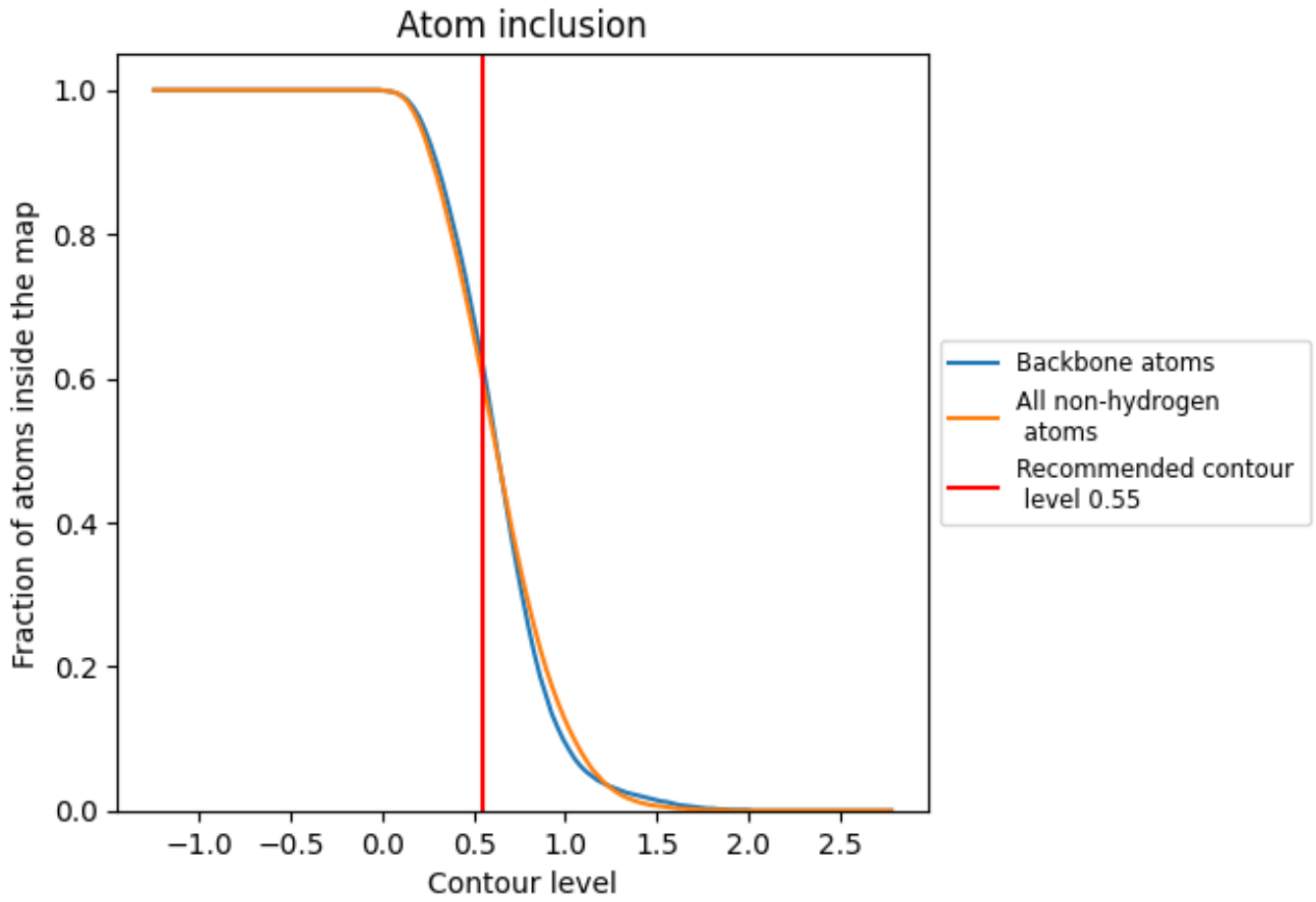
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.55).

9.4 Atom inclusion (i)



At the recommended contour level, 62% of all backbone atoms, 60% 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 (0.55) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5960	0.5990
0	0.5040	0.6230
1	0.7820	0.6490
2	0.7790	0.6580
3	0.5920	0.6370
4	0.0110	0.4390
A	0.6060	0.5940
B	0.1980	0.5530
C	0.3440	0.5830
D	0.2610	0.5700
E	0.5270	0.6270
F	0.3310	0.5920
G	0.2090	0.5550
H	0.5120	0.6220
I	0.3200	0.5830
J	0.2870	0.5660
K	0.4260	0.5970
L	0.4440	0.6130
M	0.1910	0.5640
N	0.3140	0.5750
O	0.4990	0.6160
P	0.4730	0.5920
Q	0.3690	0.6010
R	0.4220	0.5890
S	0.1360	0.5460
T	0.4440	0.6120
U	0.1390	0.5480
V	0.0280	0.3970
X	0.4060	0.6050
a	0.7140	0.6040
b	0.5660	0.6020
c	0.7000	0.6470
d	0.6580	0.6420
e	0.5560	0.6300
f	0.1230	0.5430



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
g	0.2290	0.5720
h	0.0310	0.4350
i	0.6620	0.6350
j	0.5640	0.6380
k	0.6130	0.6310
l	0.5340	0.6300
m	0.7130	0.6480
n	0.4430	0.6070
o	0.5760	0.6340
p	0.7250	0.6540
q	0.5790	0.6350
r	0.6250	0.6370
s	0.4910	0.6220
t	0.3650	0.5990
u	0.4190	0.6010
v	0.6810	0.6500
w	0.6020	0.6370
x	0.3300	0.5910
y	0.6120	0.6350
z	0.6250	0.6380