Full wwPDB EM Validation Report ⓘ

Nov 7, 2026 – 01:29 pm GMT

PDB ID	:	32PC / pdb_000032pc
EMDB ID	:	EMD-59045
Title	:	Structural characterization of hibernating ribosomes in the Gram-negative pathogen Klebsiella quasipneumoniae with no E-site tRNA and no bS21
Authors	:	Vasanthakrishnan, R.K.B.S.; Olivier, D.; Sophie, C.; Yann, L.C.; Sylvie, G.D.; Sassi, M.; Emmanuel, G.; Reynald, G.
Deposited on	:	2026-07-18
Resolution	:	2.50 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 ⓘ symbol.

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

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

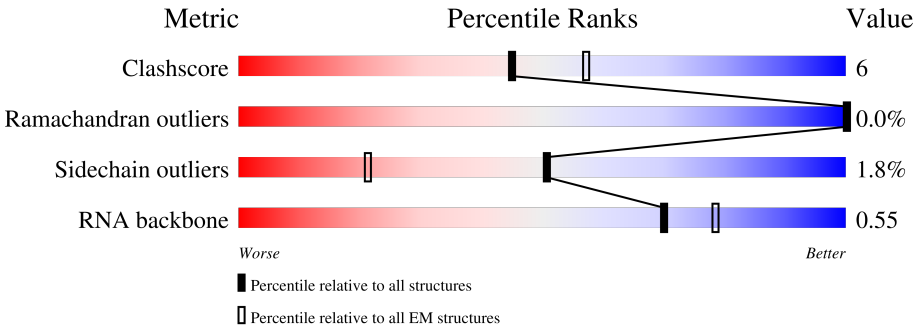
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

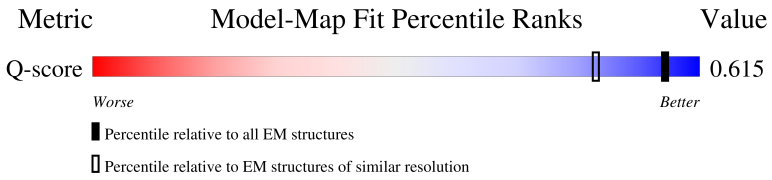
1 Overall quality at a glance

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

The reported resolution of this entry is 2.50 Å.

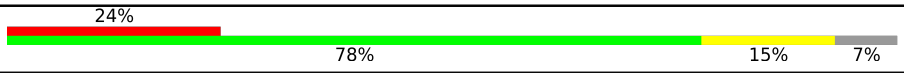
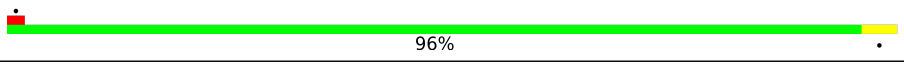
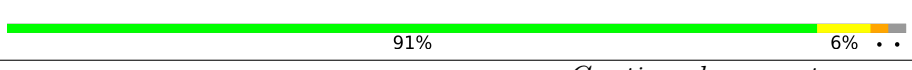
Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.





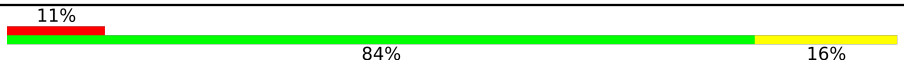
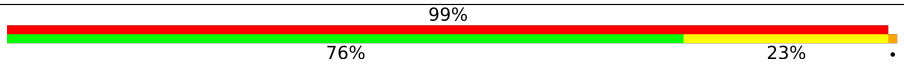
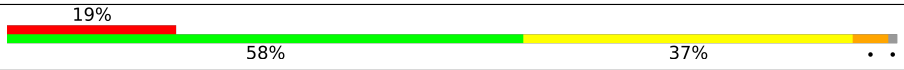
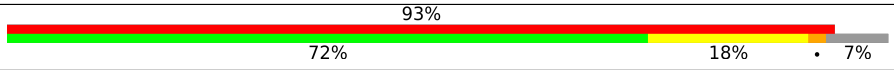
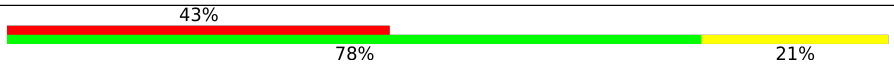
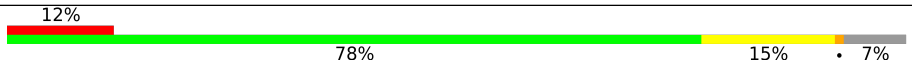
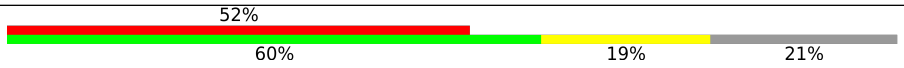
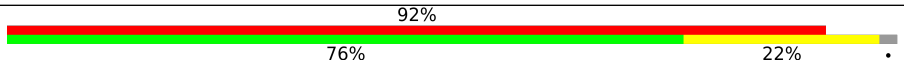
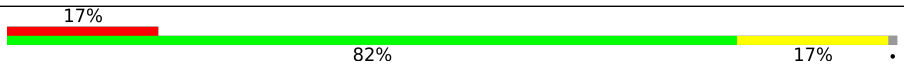
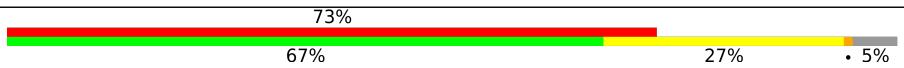
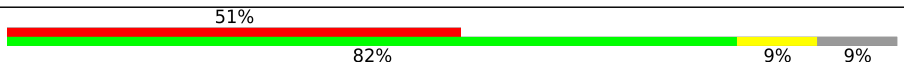
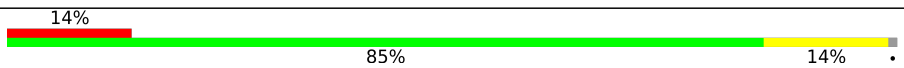
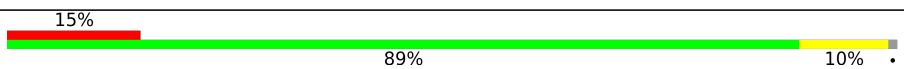
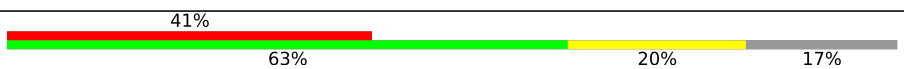
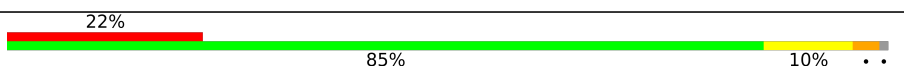
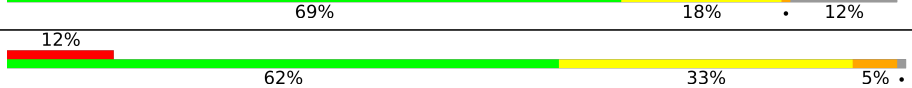
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	7115 (2.00 - 3.00)

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	55	
2	1	46	
3	2	65	

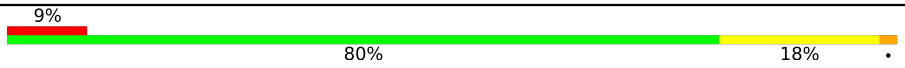
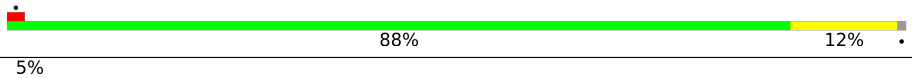
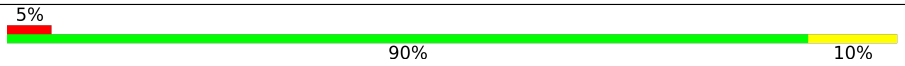
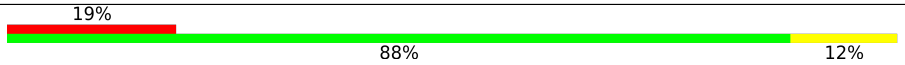
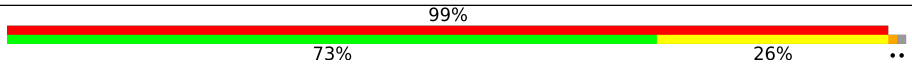
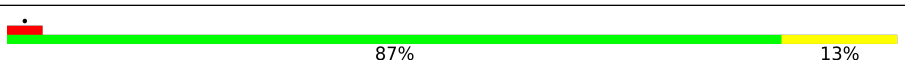
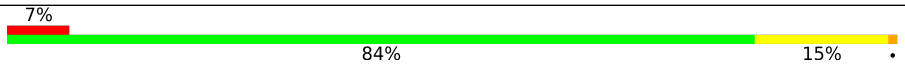
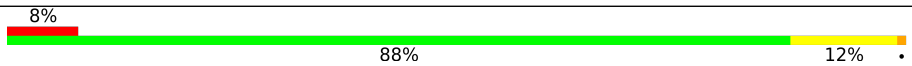
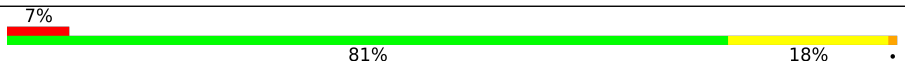
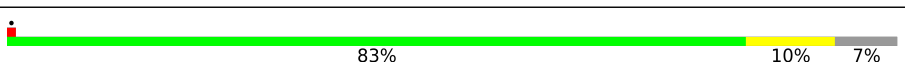
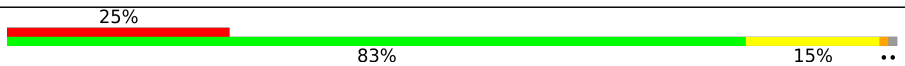
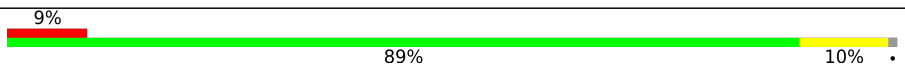
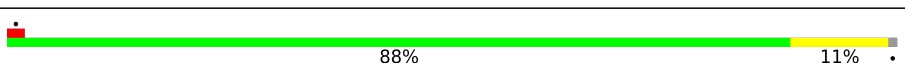
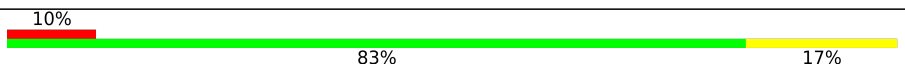
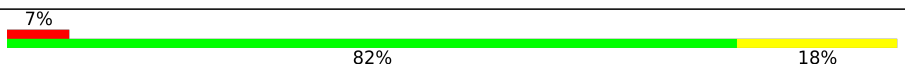
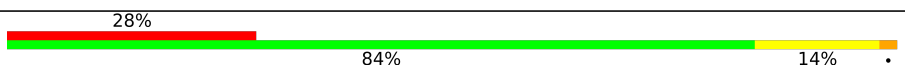
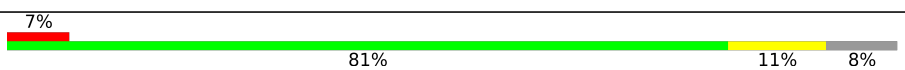
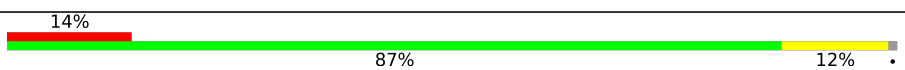
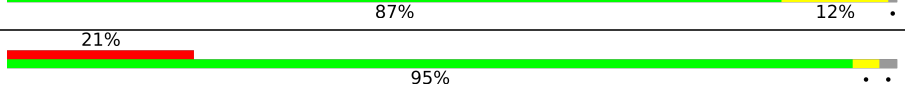
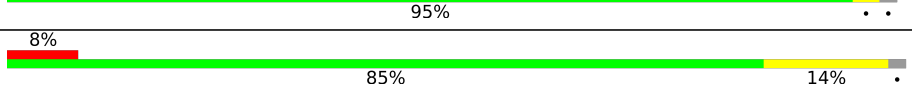
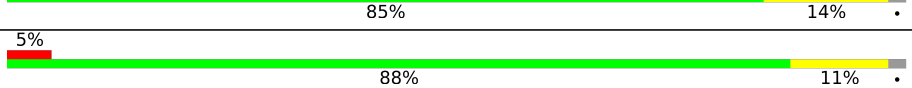
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Mol	Chain	Length	Quality of chain
4	3	38	
5	4	70	
6	A	1550	
7	B	241	
8	C	232	
9	D	206	
10	E	167	
11	F	131	
12	G	156	
13	H	130	
14	I	130	
15	J	103	
16	K	129	
17	L	124	
18	M	118	
19	N	101	
20	O	89	
21	P	82	
22	Q	84	
23	R	75	
24	S	92	
25	T	87	
26	W	15	
27	X	111	
28	a	2923	

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Mol	Chain	Length	Quality of chain
29	b	116	
30	c	273	
31	d	209	
32	e	201	
33	f	179	
34	g	177	
35	h	149	
36	i	142	
37	j	123	
38	k	144	
39	l	136	
40	m	128	
41	n	117	
42	o	115	
43	p	118	
44	q	103	
45	r	110	
46	s	100	
47	t	104	
48	u	94	
49	v	85	
50	w	78	
51	x	63	
52	y	59	
53	z	57	

2 Entry composition

There are 56 unique types of molecules in this entry. The entry contains 143322 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	418	268	76	73	1	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	46	377	228	90	57	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	64	504	323	105	74	2	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	302	185	65	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	70	540	333	103	98	6	0	0

- Molecule 6 is a RNA chain called RNA (1538-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	A	1538	33009	14730	6051	10690	1538	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B	224	Total	C	N	O	S	0	0
			1749	1106	315	320	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	C	206	Total	C	N	O	S	0	0
			1623	1028	305	287	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	D	205	Total	C	N	O	S	0	0
			1644	1025	316	298	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
10	E	156	Total	C	N	O	S	0	0
			1155	719	219	211	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	F	103	Total	C	N	O	S	0	0
			832	524	151	150	7		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	62	MET	LEU	variant	UNP A0A2N4W582

- 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
			1204	751	231	218	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
13	H	129	Total	C	N	O	S	0	0
			977	616	171	184	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	I	126	Total	C	N	O	S	0	0
			1010	628	202	177	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
15	J	98	Total	C	N	O	S	0	0
			788	493	151	143	1		

- 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
			878	541	173	161	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	119	IAS	ASN	conflict	UNP A0A1C1EGM1

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	L	123	Total	C	N	O	S	0	0
			958	592	196	165	5		

- 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
			907	564	181	158	4		

- 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
			805	500	164	138	3		

- 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
			710	438	144	127	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	P	81	Total	C	N	O	S	0	0
			636	397	127	111	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
			639	402	121	112	4		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
23	R	62	Total	C	N	O	0	0
			507	321	94	92		

- 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
			667	426	127	112	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
			669	413	138	115	3		

- Molecule 26 is a RNA chain called non-STOP mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	W	11	Total	C	N	O	P	0	0
			242	107	46	78	11		

- Molecule 27 is a protein called Ribosomal subunit interface protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	X	98	Total	C	N	O	S	0	0
			778	484	149	142	3		

- Molecule 28 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	a	2901	Total	C	N	O	P	0	0
			62284	27795	11452	20136	2901		

- Molecule 29 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	b	116	Total	C	N	O	P	0	0
			2483	1106	453	808	116		

- Molecule 30 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	c	271	Total	C	N	O	S	0	0
			2080	1286	423	364	7		

- Molecule 31 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	d	209	Total	C	N	O	S	0	0
			1567	981	289	294	3		

- Molecule 32 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	e	201	Total	C	N	O	S	0	0
			1554	975	284	290	5		

- Molecule 33 is a protein called Large ribosomal subunit protein uL5.

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

- Molecule 34 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	g	176	Total	C	N	O	S	0	0
			1319	830	243	244	2		

- Molecule 35 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	h	148	Total	C	N	O	S	0	0
			1099	693	197	208	1		

- Molecule 36 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	i	142	Total	C	N	O	S	0	0
			1134	716	211	202	5		

- Molecule 37 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	j	123	Total	C	N	O	S	0	0
			947	594	181	166	6		

- Molecule 38 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	k	144	Total	C	N	O	S	0	0
			1063	658	211	191	3		

- Molecule 39 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	l	136	Total	C	N	O	S	0	0
			1074	685	204	179	6		

- Molecule 40 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	m	119	Total	C	N	O	S	0	0
			950	588	195	162	5		

- Molecule 41 is a protein called Large ribosomal subunit protein uL18.

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

- Molecule 42 is a protein called Large ribosomal subunit protein bL19.

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

- Molecule 43 is a protein called Large ribosomal subunit protein bL20.

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

- Molecule 44 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	q	103	Total	C	N	O	S	0	0
			816	517	153	144	2		

- Molecule 45 is a protein called Large ribosomal subunit protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	r	110	Total	C	N	O	S	0	0
			855	530	166	156	3		

- Molecule 46 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	s	93	Total	C	N	O	S	0	0
			739	467	139	131	2		

- Molecule 47 is a protein called Large ribosomal subunit protein uL24.

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

- Molecule 48 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	u	94	Total 749	C 477	N 136	O 134	S 2	0	0

- Molecule 49 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	v	78	Total 592	C 367	N 118	O 106	S 1	0	0

- Molecule 50 is a protein called Large ribosomal subunit protein bL28.

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

- Molecule 51 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	x	62	Total 499	C 308	N 98	O 92	S 1	0	0

- Molecule 52 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	y	58	Total 447	C 279	N 87	O 79	S 2	0	0

- Molecule 53 is a protein called Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	z	56	Total 443	C 269	N 94	O 79	S 1	0	0

- Molecule 54 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
54	3	1	Total Zn 1 1	0
54	4	1	Total Zn 1 1	0

- Molecule 55 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
55	A	94	Total Mg 94 94	0
55	N	1	Total Mg 1 1	0
55	Q	1	Total Mg 1 1	0
55	a	253	Total Mg 253 253	0
55	b	5	Total Mg 5 5	0
55	c	1	Total Mg 1 1	0
55	p	2	Total Mg 2 2	0
55	w	1	Total Mg 1 1	0
55	z	1	Total Mg 1 1	0

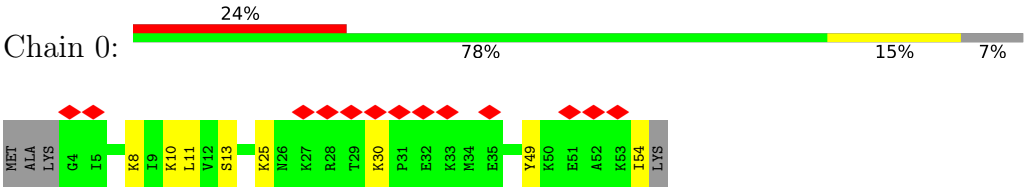
- Molecule 56 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
56	A	47	Total K 47 47	0
56	a	115	Total K 115 115	0
56	b	1	Total K 1 1	0
56	c	3	Total K 3 3	0
56	d	1	Total K 1 1	0
56	e	1	Total K 1 1	0
56	f	1	Total K 1 1	0

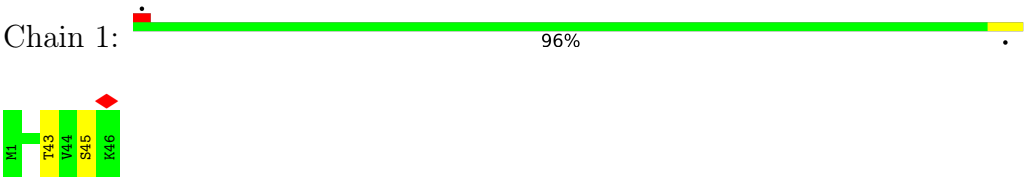
3 Residue-property plots (i)

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.

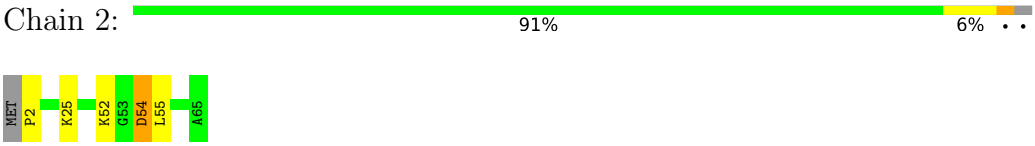
• Molecule 1: Large ribosomal subunit protein bL33



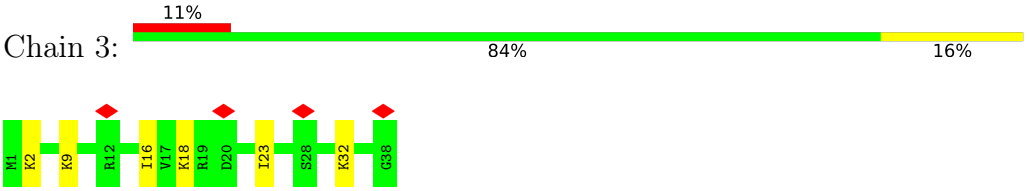
• Molecule 2: Large ribosomal subunit protein bL34



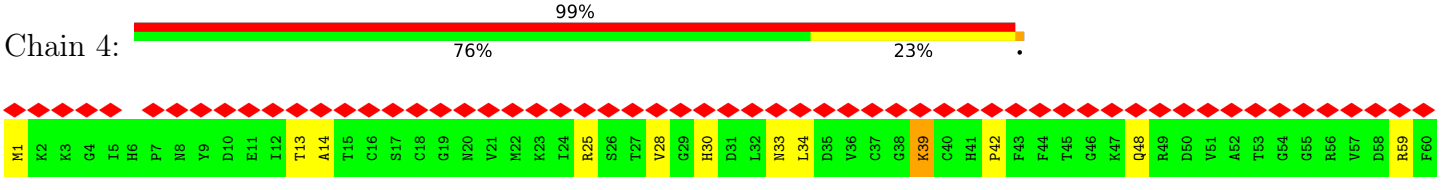
• Molecule 3: Large ribosomal subunit protein bL35



• Molecule 4: Large ribosomal subunit protein bL36



• Molecule 5: Large ribosomal subunit protein bL31

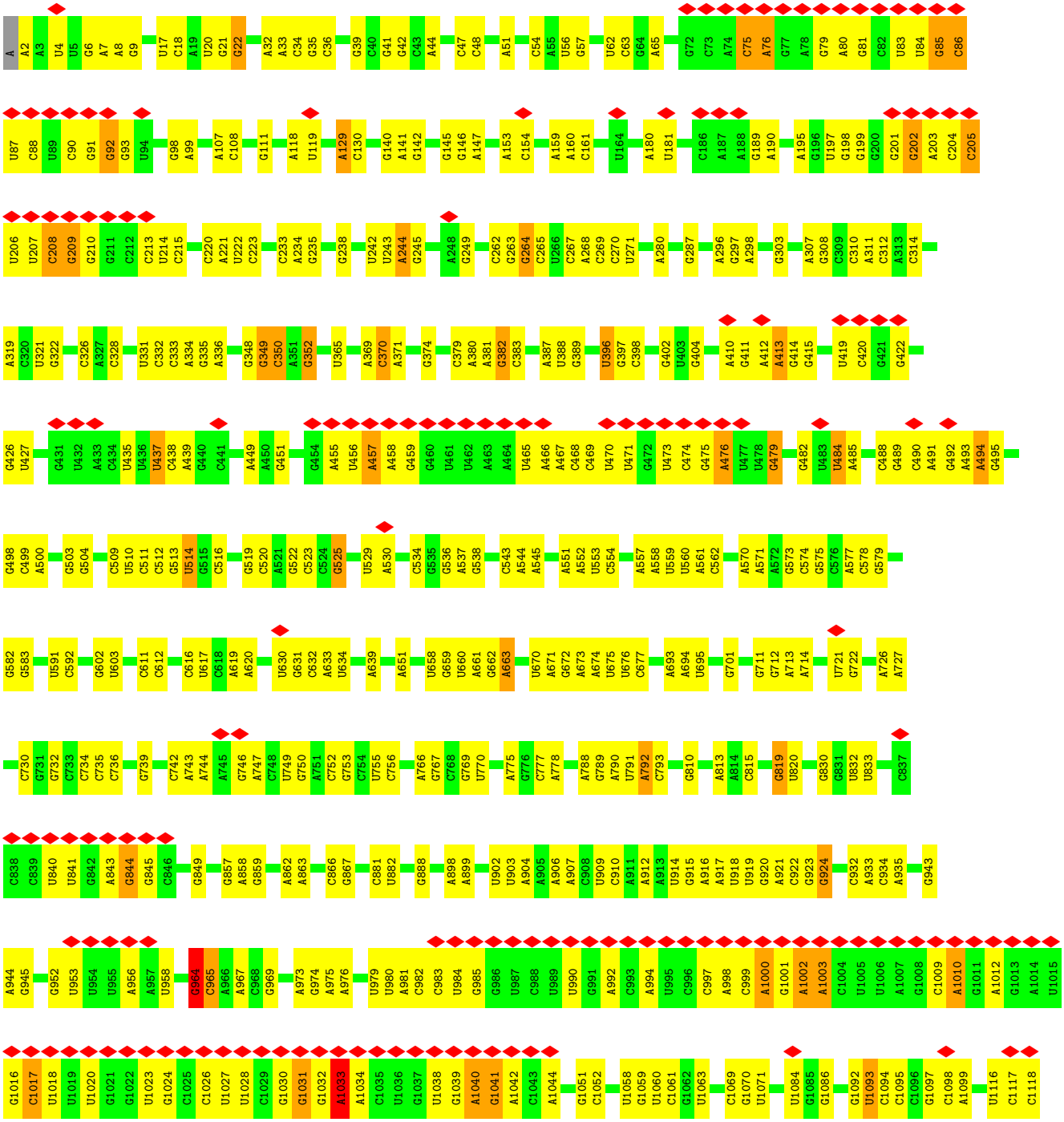


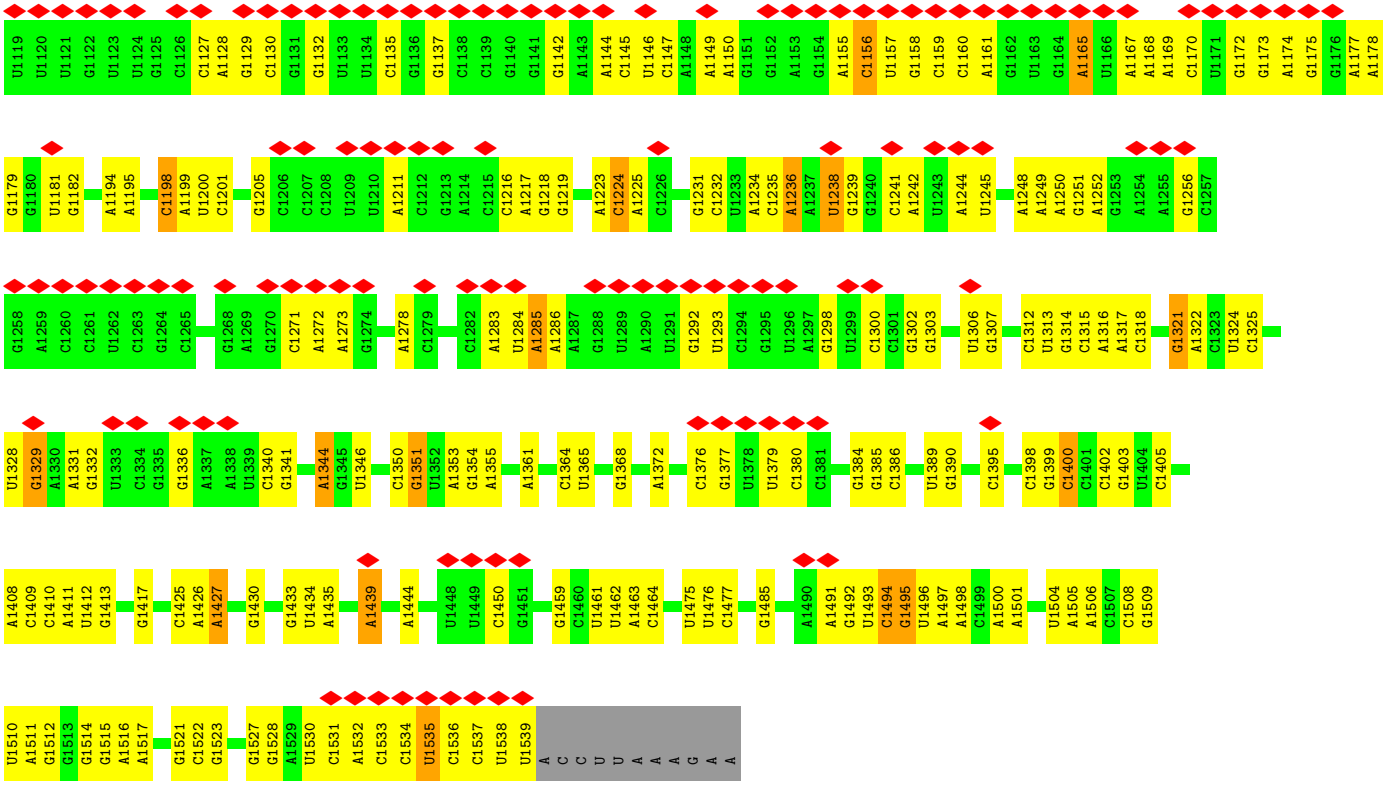


• Molecule 6: RNA (1538-MER)

Chain A:

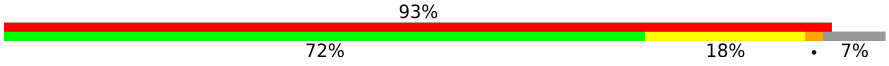


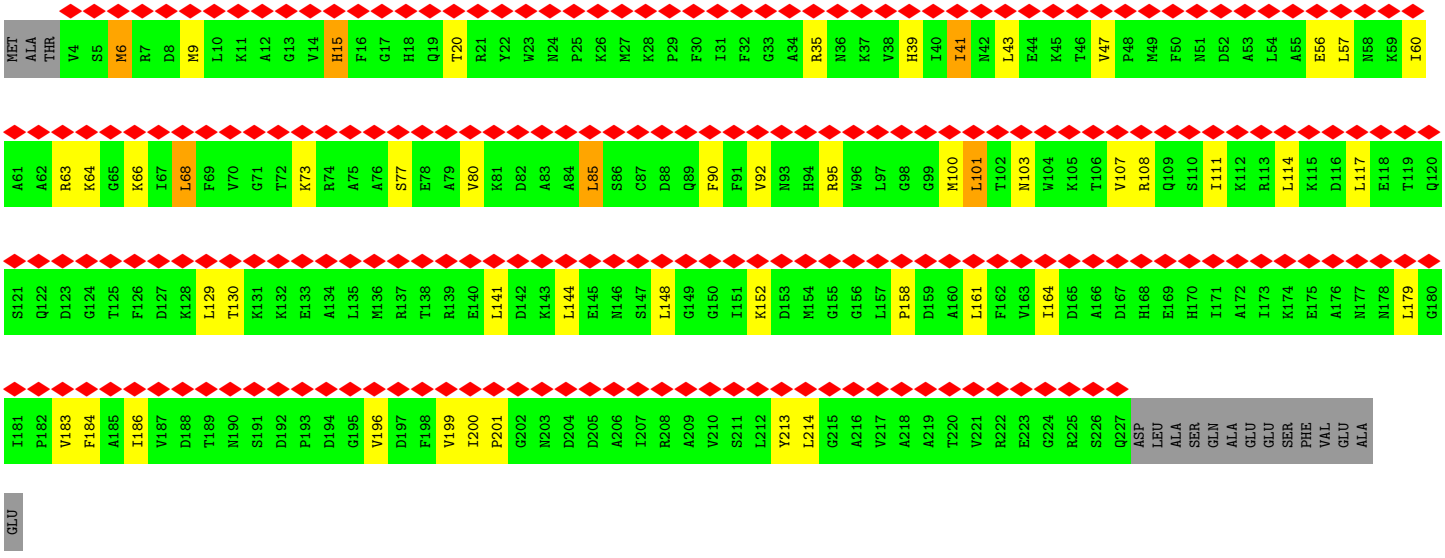




• Molecule 7: Small ribosomal subunit protein uS2

Chain B:





• Molecule 8: Small ribosomal subunit protein uS3

Chain C:

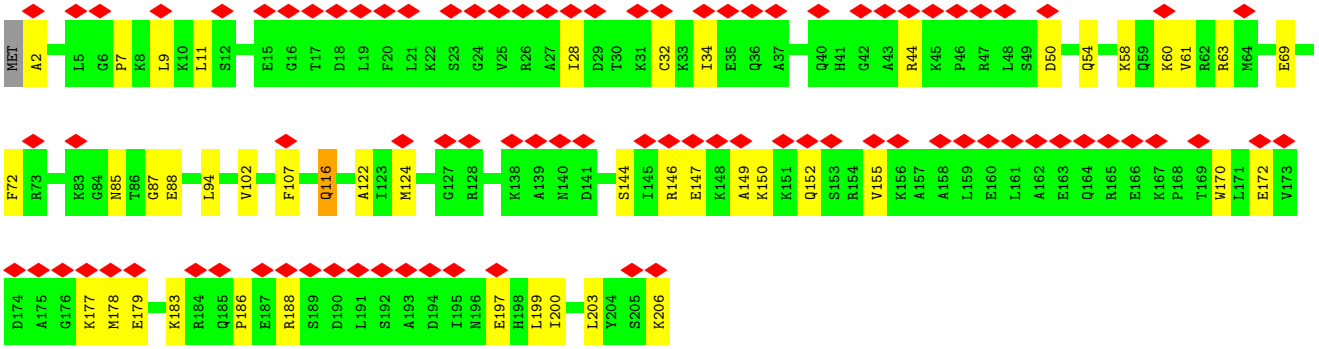




• Molecule 9: Small ribosomal subunit protein uS4

Chain D:

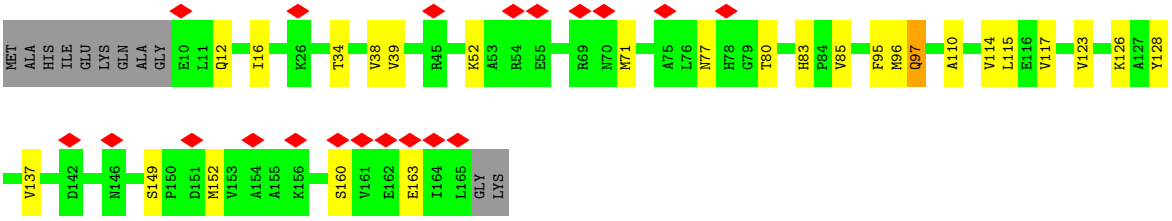




• Molecule 10: Small ribosomal subunit protein uS5

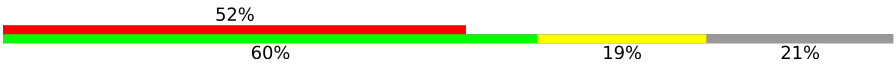
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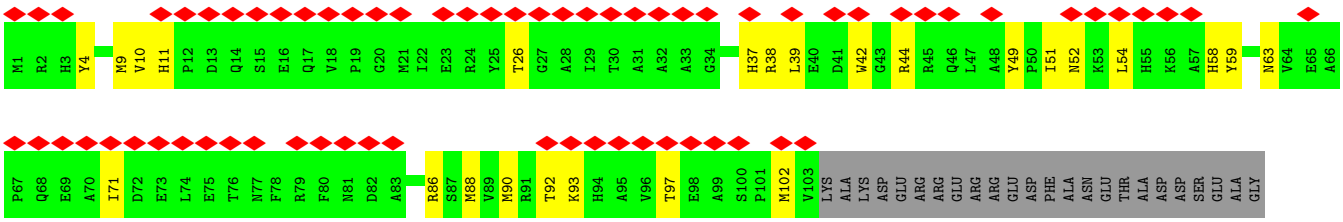




• Molecule 11: Small ribosomal subunit protein bS6

Chain F:

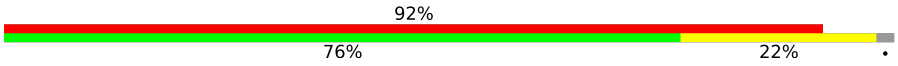


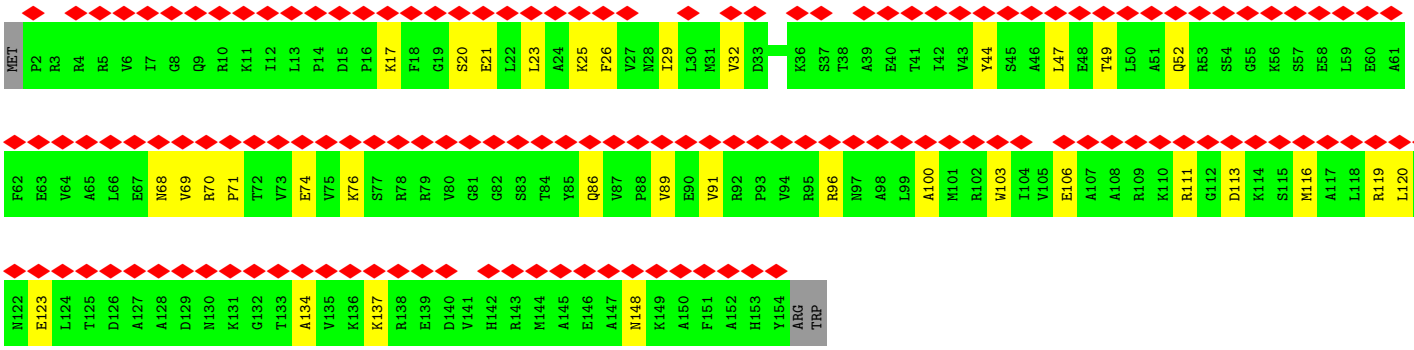




• Molecule 12: Small ribosomal subunit protein uS7

Chain G:

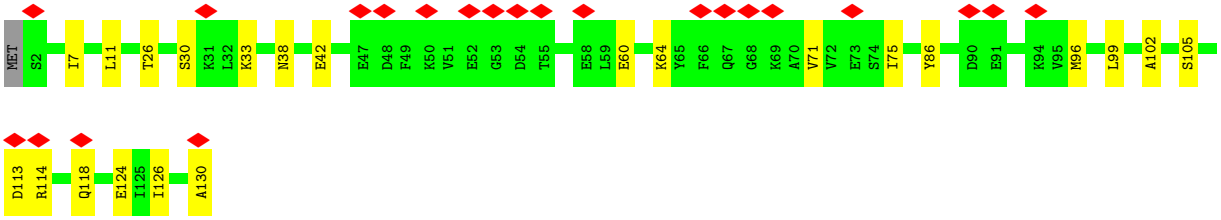




• Molecule 13: Small ribosomal subunit protein uS8

Chain H:

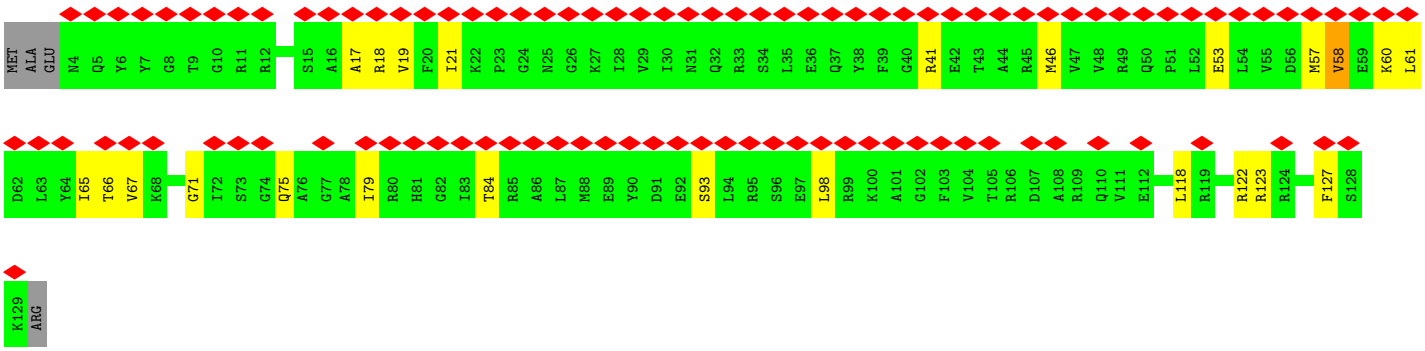




• Molecule 14: Small ribosomal subunit protein uS9

Chain I:

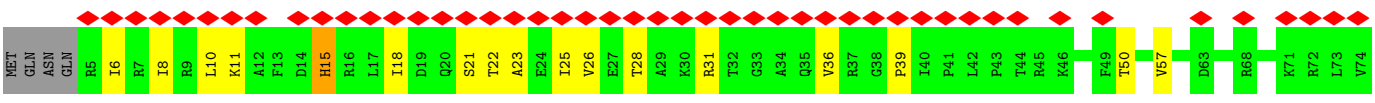


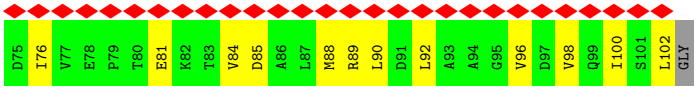


• Molecule 15: Small ribosomal subunit protein uS10

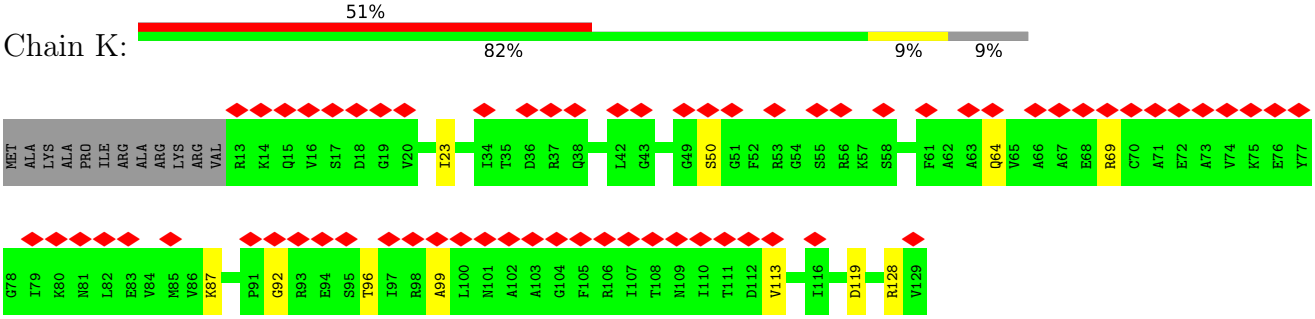
Chain J:



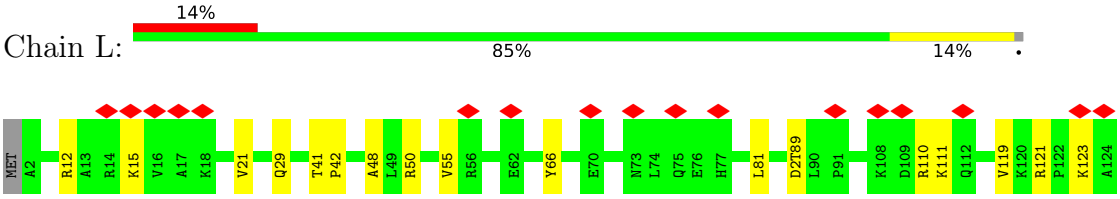




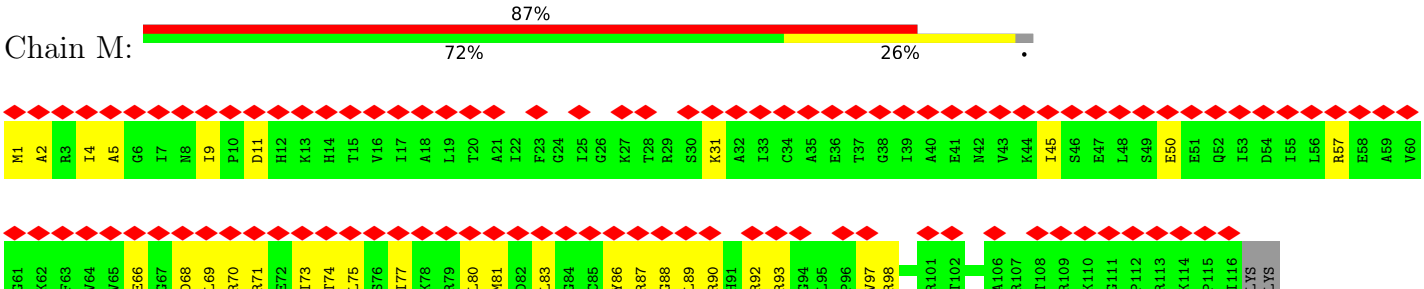
• Molecule 16: Small ribosomal subunit protein uS11



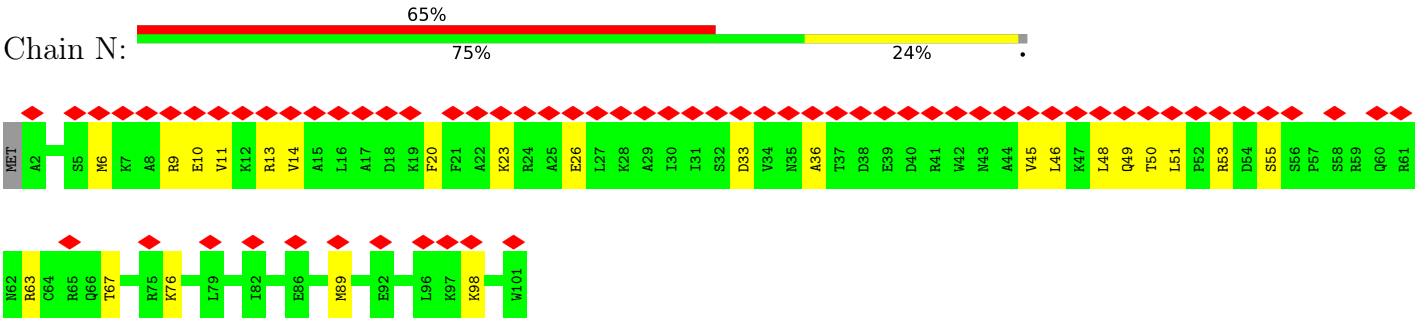
• Molecule 17: Small ribosomal subunit protein uS12



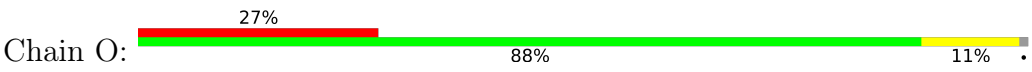
• Molecule 18: Small ribosomal subunit protein uS13



• Molecule 19: Small ribosomal subunit protein uS14

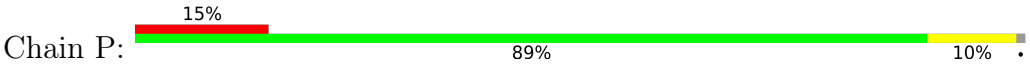


• Molecule 20: Small ribosomal subunit protein uS15

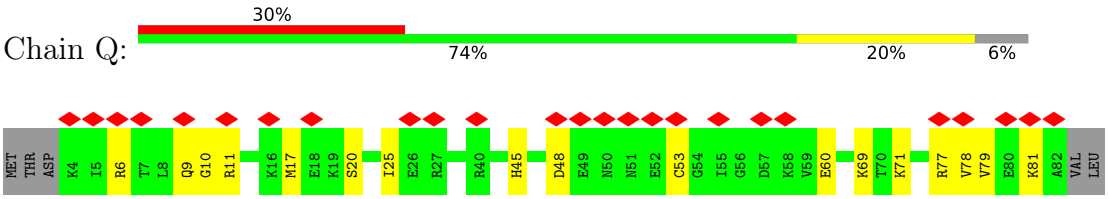




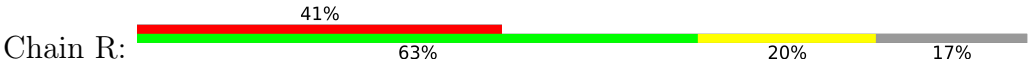
• Molecule 21: Small ribosomal subunit protein bS16

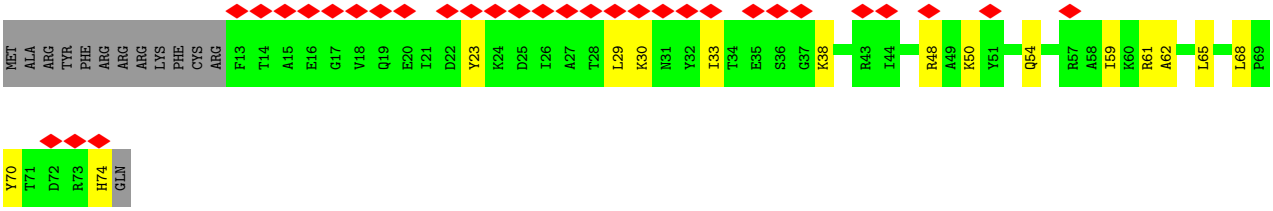


• Molecule 22: Small ribosomal subunit protein uS17

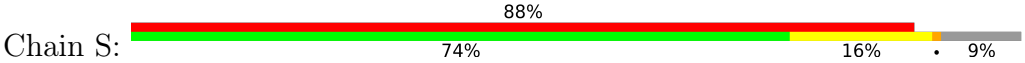


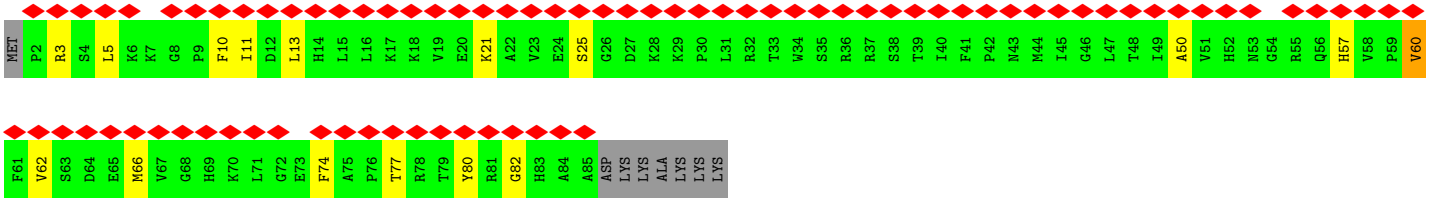
• Molecule 23: Small ribosomal subunit protein bS18



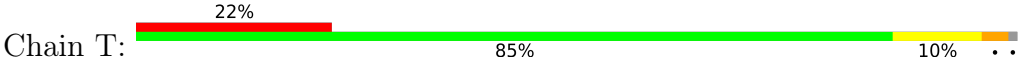


• Molecule 24: Small ribosomal subunit protein uS19



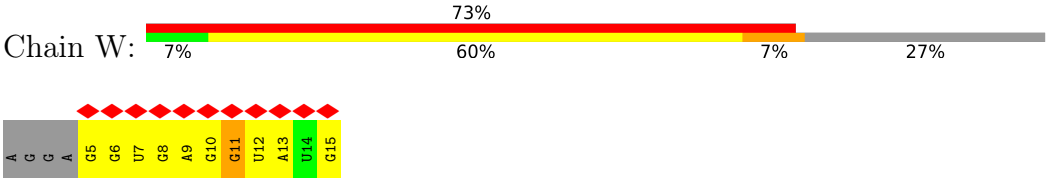


• Molecule 25: Small ribosomal subunit protein bS20



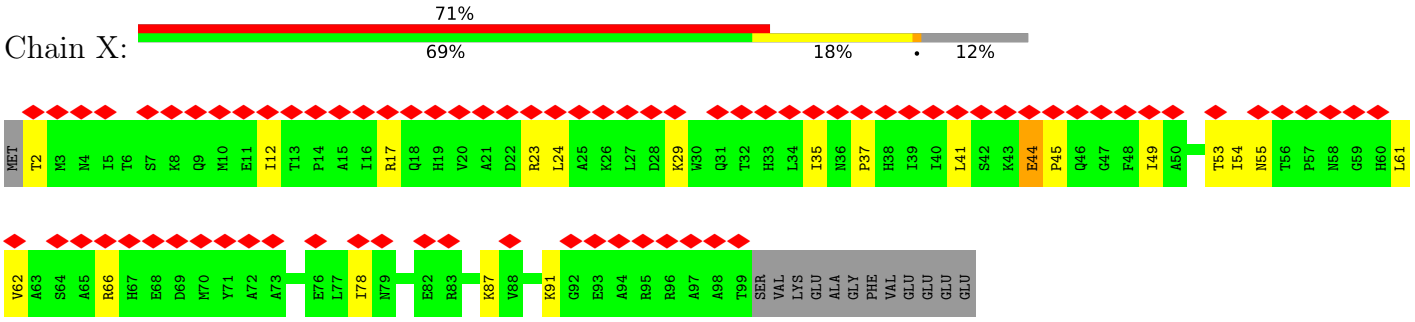
• Molecule 26: non-STOP mRNA

Chain W:



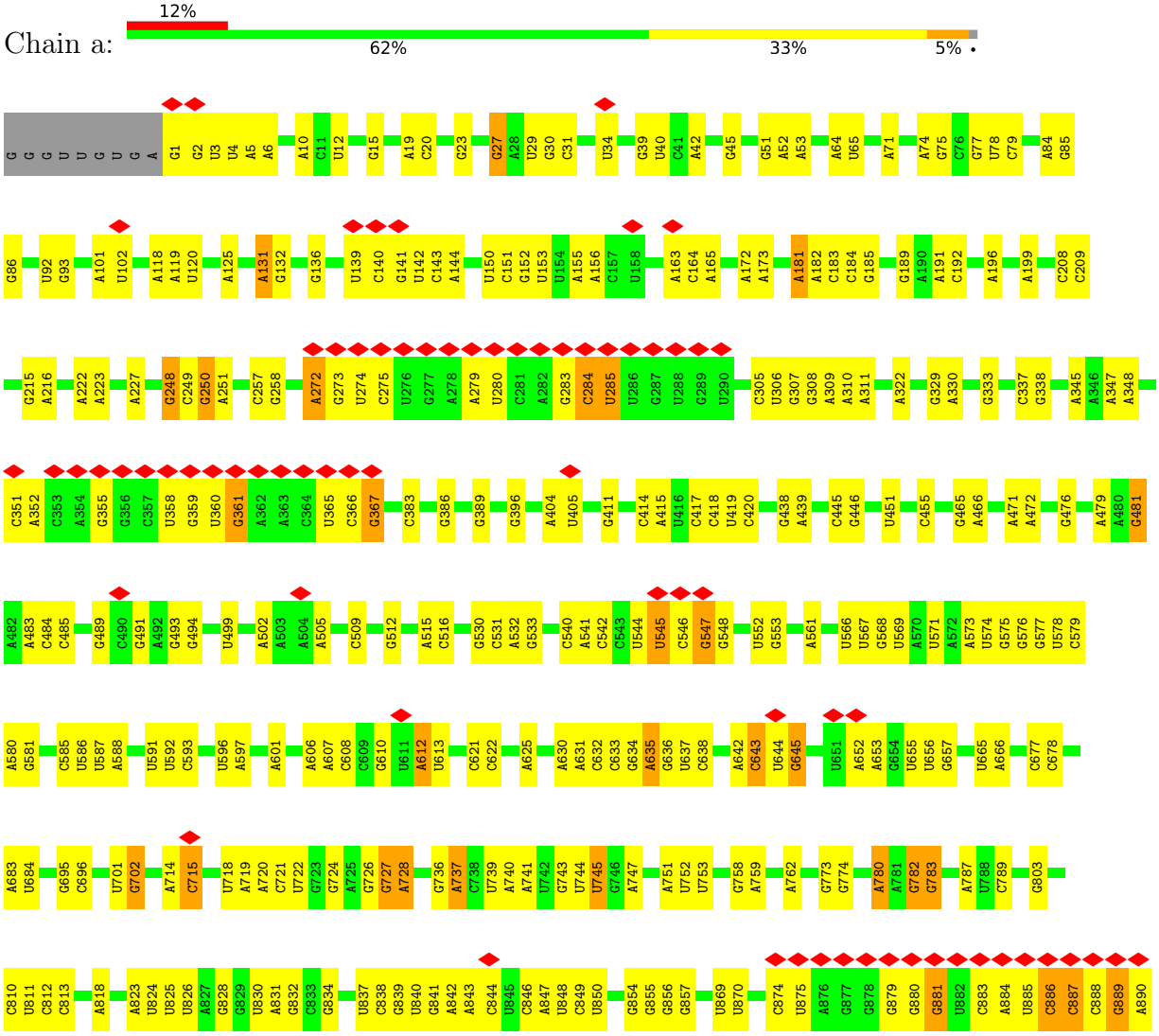
• Molecule 27: Ribosomal subunit interface protein

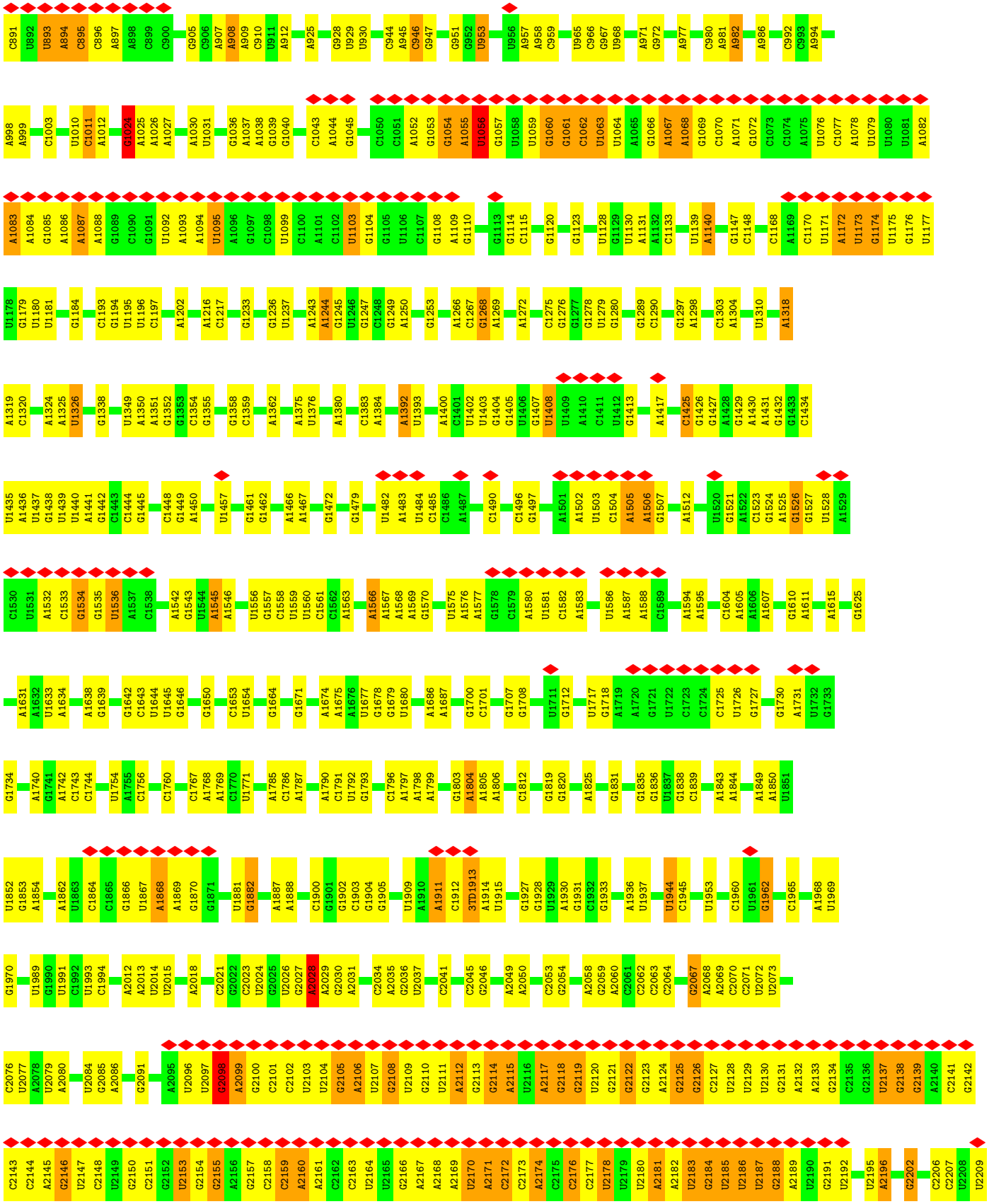
Chain X:

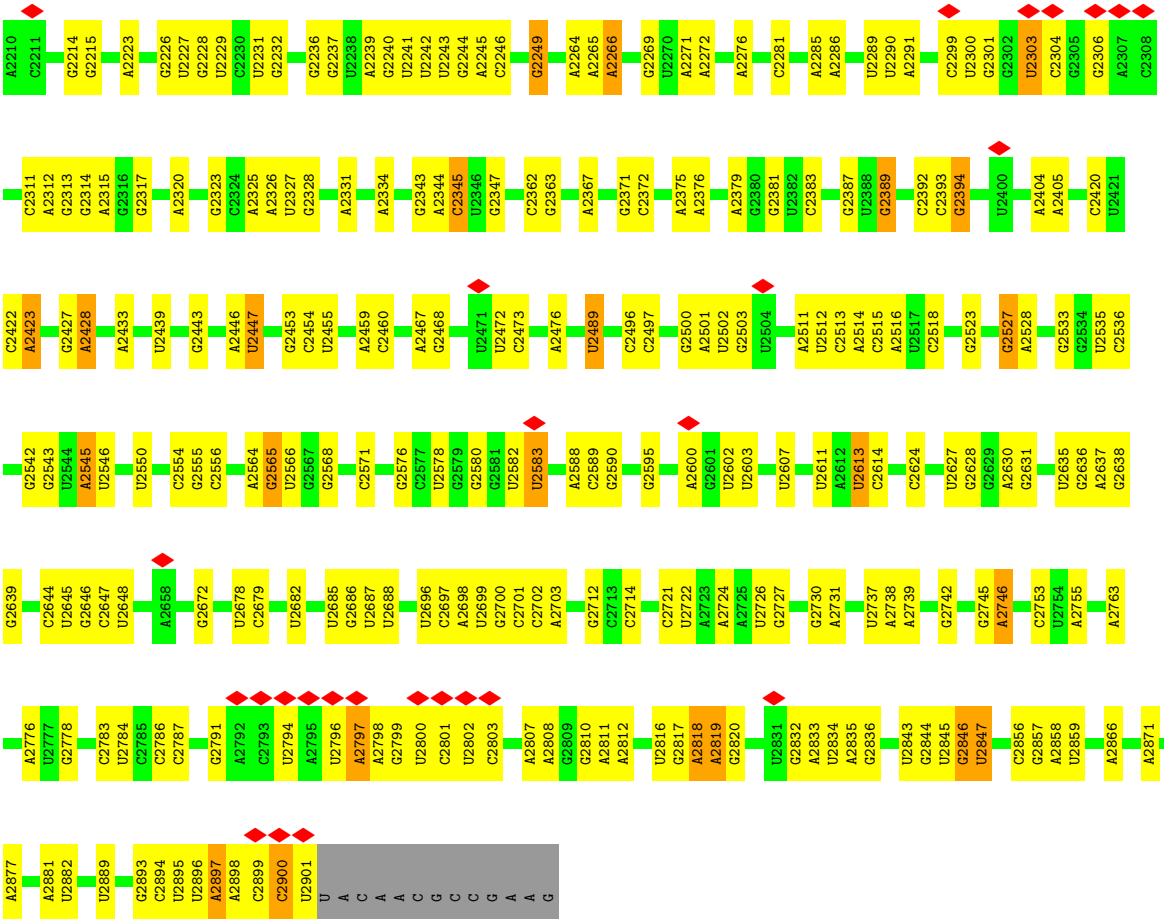


• Molecule 28: 23S rRNA

Chain a:



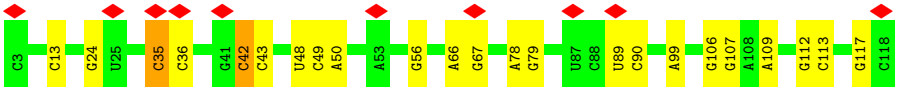

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A998 A999 C1003 U1010 C1011 A1012 G1024 A1025 A1026 A1027 A1030 U1031 G1036 A1037 A1038 G1039 G1040 C1043 A1044 G1045 C1050 C1051 A1052 G1053 G1054 A1055 U1056 G1057 U1058 U1059 G1060 G1061 C1062 U1063 U1064 A1065 G1066 A1067 A1068 G1069 C1070 A1071 G1072 C1073 C1074 A1075 U1076 C1077 A1078 U1079 U1080 U1081 A1082
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A1319 C1320 A1324 A1325 U1326 G1338 U1349 A1350 A1351 G1352 G1353 C1354 G1355 G1358 C1359 A1362 A1375 U1376 A1380 C1383 A1384 A1392 U1393 A1400 C1401 U1402 U1403 G1404 G1405 U1406 G1407 U1408 U1409 A1410 C1411 U1412 G1413 A1417 C1425 G1426 G1427 A1428 G1429 A1430 A1431 G1432 G1433 C1434
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C2143 C2144 A2145 G2146 U2147 C2148 U2149 G2150 C2151 G2152 U2153 G2154 G2155 A2156 G2157 C2158 C2159 A2160 A2161 C2162 C2163 U2164 U2165 G2166 A2167 A2168 A2169 U2170 A2171 C2172 C2173 A2174 C2175 C2176 C2177 U2178 U2179 U2180 A2181 A2182 U2183 G2184 U2185 U2186 U2187 G2188 A2189 U2190 G2191 U2192 U2195 A2196 G2202 C2206 C2207 U2208 U2209



• Molecule 29: 5S rRNA

Chain b:

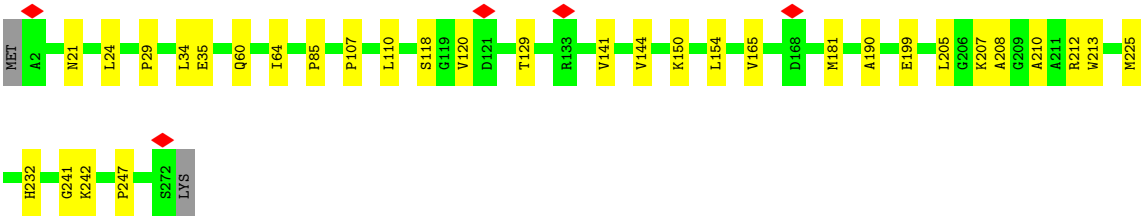




• Molecule 30: Large ribosomal subunit protein uL2

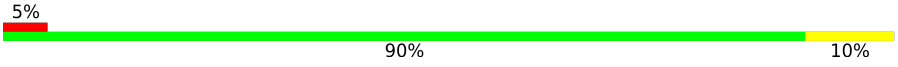
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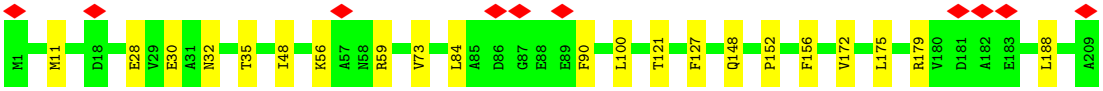




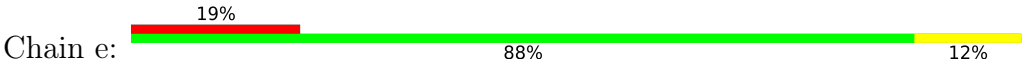
• Molecule 31: Large ribosomal subunit protein uL3

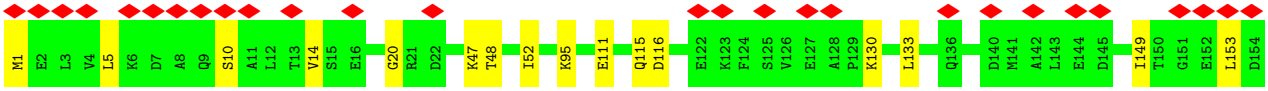
Chain d:

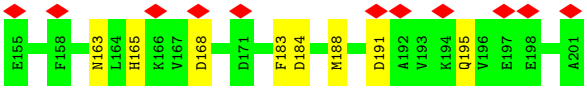




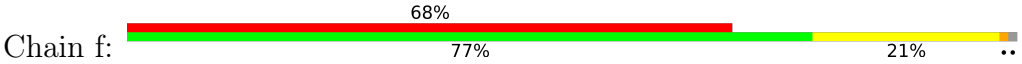
• Molecule 32: Large ribosomal subunit protein uL4

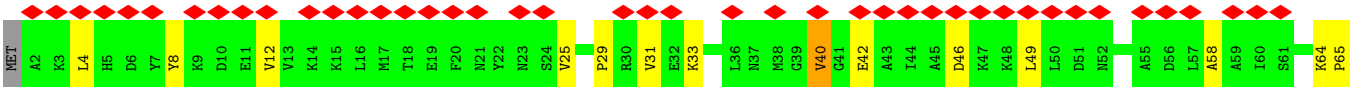


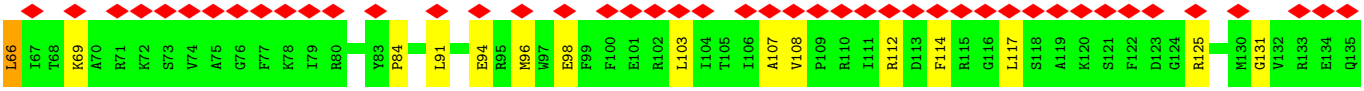


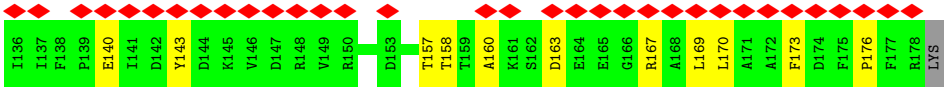


• Molecule 33: Large ribosomal subunit protein uL5

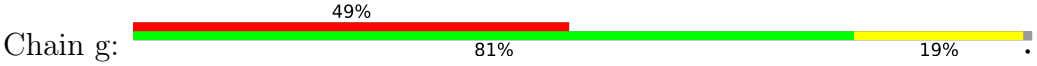


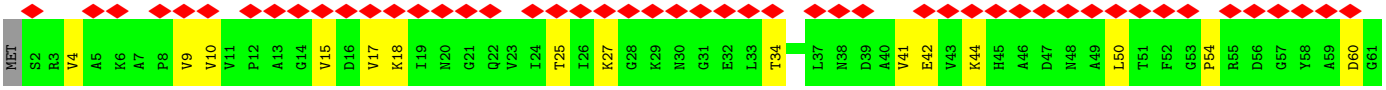


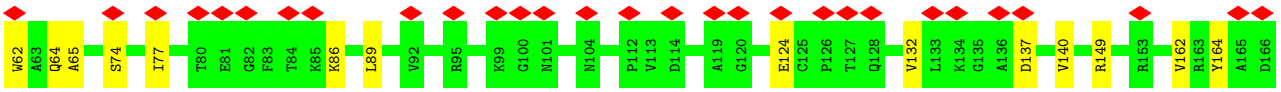


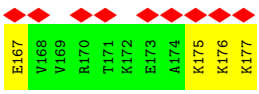


• Molecule 34: Large ribosomal subunit protein uL6



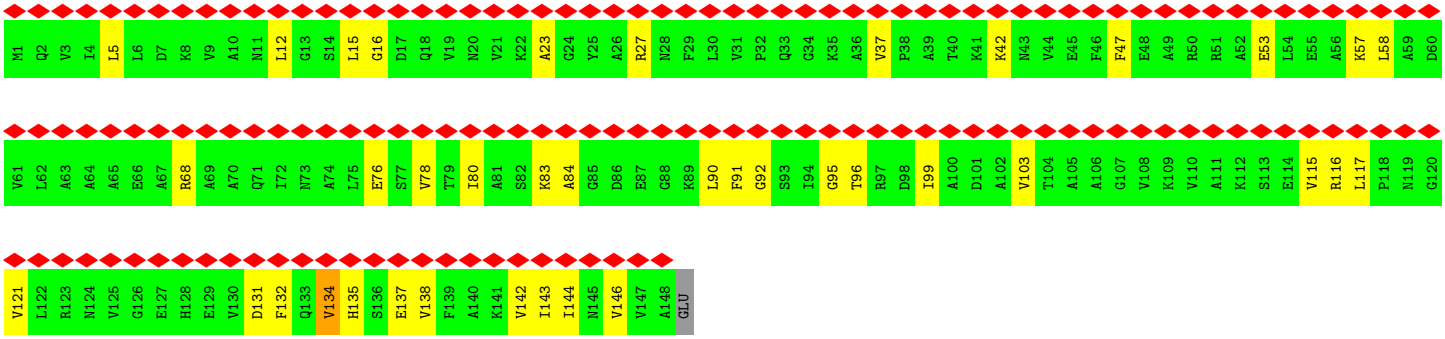




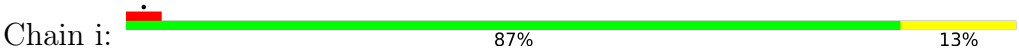


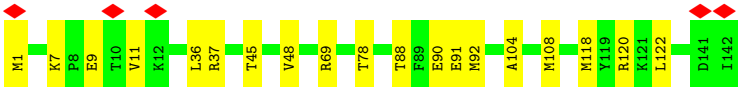
• Molecule 35: Large ribosomal subunit protein bL9



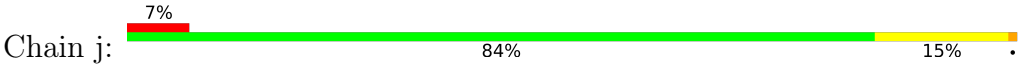


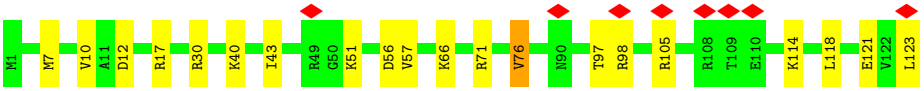
• Molecule 36: Large ribosomal subunit protein uL13



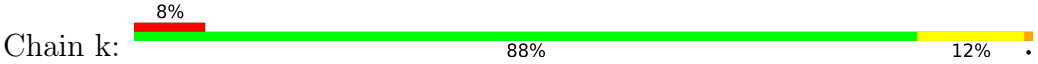


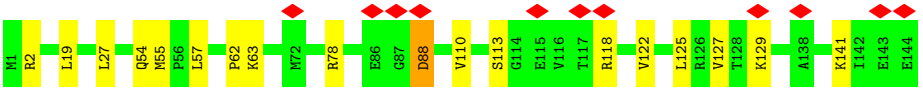
• Molecule 37: Large ribosomal subunit protein uL14



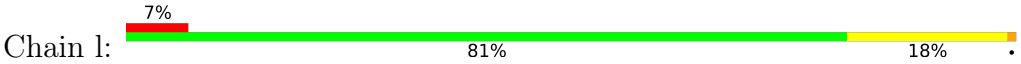


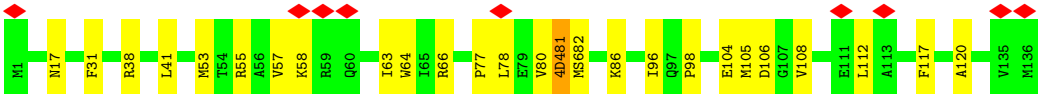
• Molecule 38: Large ribosomal subunit protein uL15



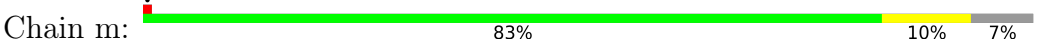


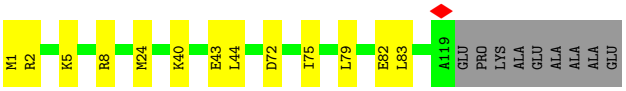
• Molecule 39: Large ribosomal subunit protein uL16





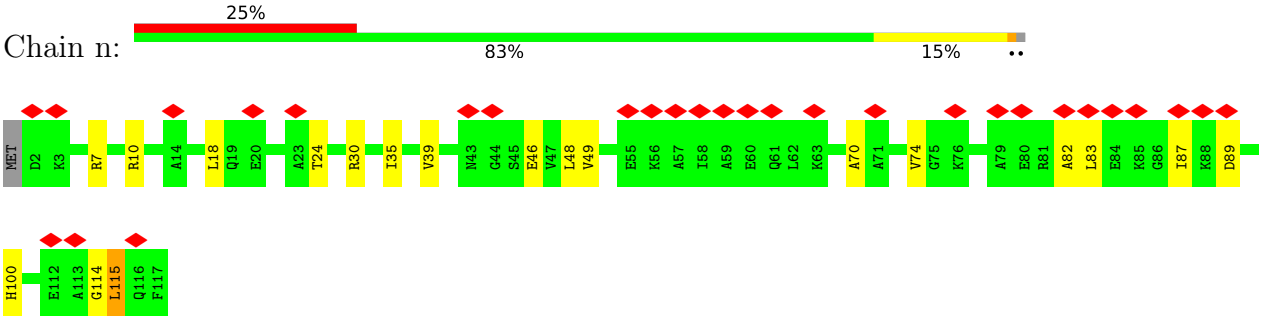
• Molecule 40: Large ribosomal subunit protein bL17





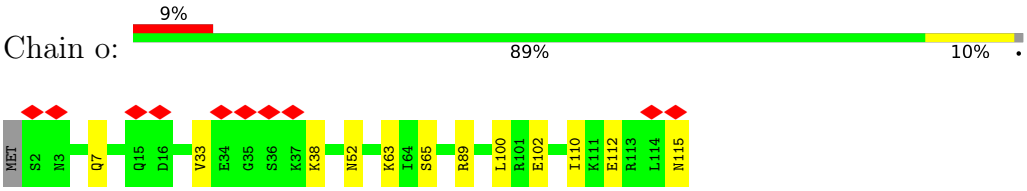
• Molecule 41: Large ribosomal subunit protein uL18

Chain n:



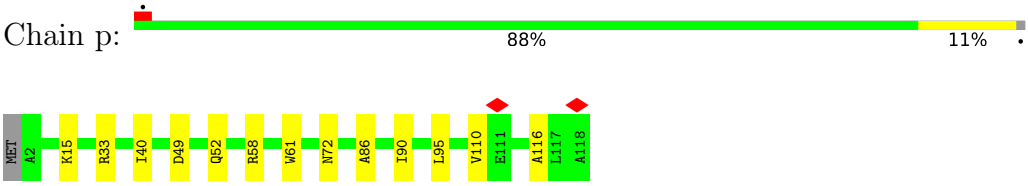
• Molecule 42: Large ribosomal subunit protein bL19

Chain o:



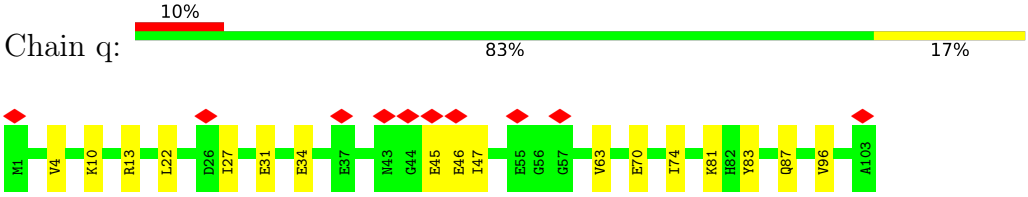
• Molecule 43: Large ribosomal subunit protein bL20

Chain p:



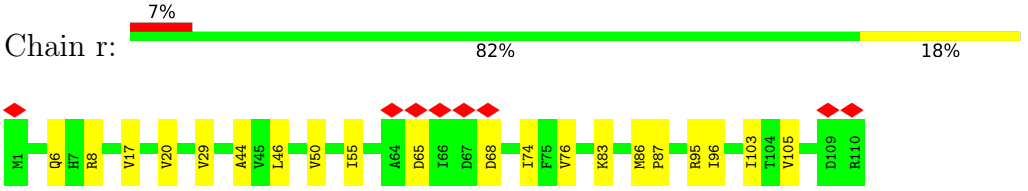
• Molecule 44: Large ribosomal subunit protein bL21

Chain q:



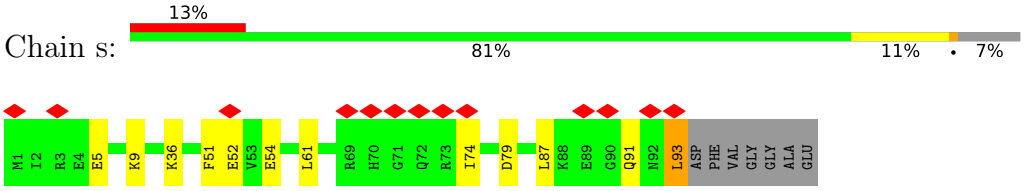
• Molecule 45: Large ribosomal subunit protein uL22

Chain r:



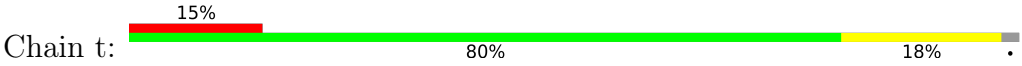
• Molecule 46: Large ribosomal subunit protein uL23

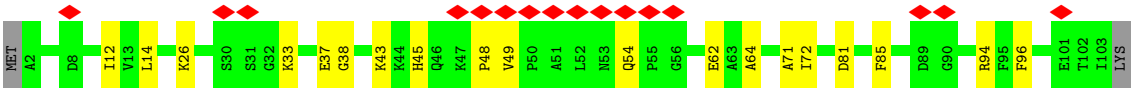
Chain s:



• Molecule 47: Large ribosomal subunit protein uL24

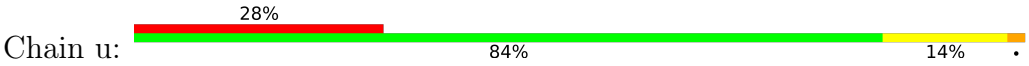
Chain t:

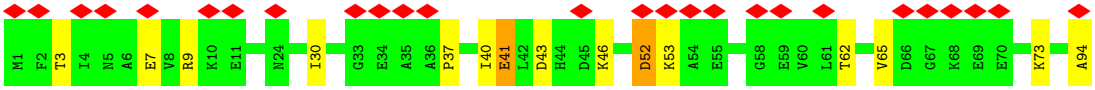




• Molecule 48: Large ribosomal subunit protein bL25

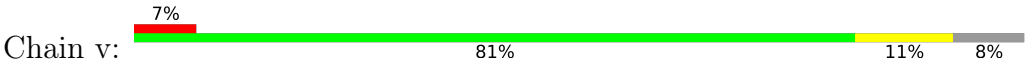
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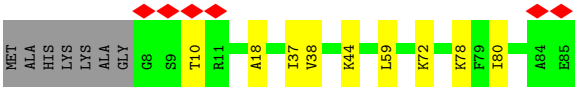




• Molecule 49: Large ribosomal subunit protein bL27

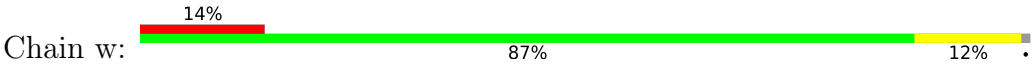
Chain v:

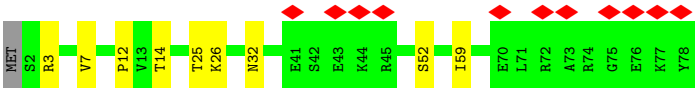




• Molecule 50: Large ribosomal subunit protein bL28

Chain w:

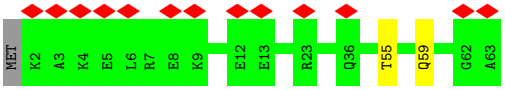




• Molecule 51: Large ribosomal subunit protein uL29

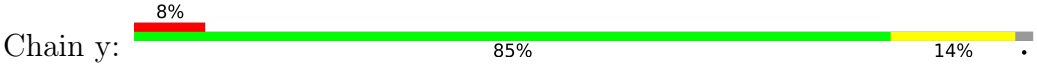
Chain x:

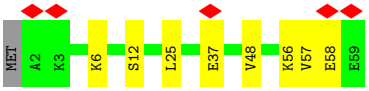




• Molecule 52: Large ribosomal subunit protein uL30

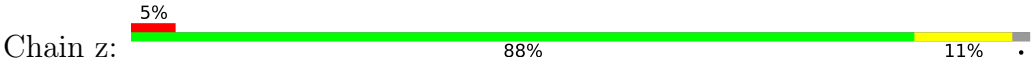
Chain y:

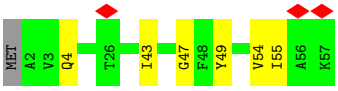




• Molecule 53: Large ribosomal subunit protein bL32

Chain z:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	251038	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	2.984	Depositor
Minimum map value	-1.552	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.071	Depositor
Recommended contour level	0.45	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: MS6, MEQ, OMG, 4OC, PSU, 5MC, 2MG, IAS, ZN, 6MZ, OMU, MA6, MG, 5MU, OMC, 1MG, 2MA, H2U, UR3, G7M, D2T, 4D4, K, 3TD

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	0.15	0/425	0.30	0/566
2	1	0.18	0/380	0.33	0/498
3	2	0.17	0/513	0.30	0/676
4	3	0.17	0/303	0.30	0/397
5	4	0.15	0/550	0.39	0/734
6	A	0.34	0/36680	0.72	4/57215 (0.0%)
7	B	0.14	0/1780	0.38	0/2398
8	C	0.13	0/1650	0.28	0/2223
9	D	0.12	0/1665	0.26	0/2225
10	E	0.17	0/1168	0.31	0/1570
11	F	0.15	0/851	0.36	0/1152
12	G	0.14	0/1220	0.32	0/1638
13	H	0.15	0/987	0.35	0/1323
14	I	0.13	0/1022	0.31	0/1361
15	J	0.16	0/798	0.40	0/1078
16	K	0.13	0/885	0.30	0/1192
17	L	0.15	0/961	0.30	0/1287
18	M	0.12	0/916	0.29	0/1225
19	N	0.13	0/817	0.28	0/1088
20	O	0.14	0/718	0.25	0/955
21	P	0.16	0/646	0.33	0/870
22	Q	0.18	0/647	0.38	0/865
23	R	0.14	0/515	0.30	0/693
24	S	0.15	0/684	0.34	0/920
25	T	0.18	0/675	0.31	0/894
26	W	0.28	0/271	0.78	0/422
27	X	0.13	0/791	0.32	0/1069
28	a	0.44	0/69183	0.76	14/107924 (0.0%)
29	b	0.36	0/2776	0.75	1/4328 (0.0%)
30	c	0.18	0/2118	0.31	0/2846
31	d	0.18	0/1577	0.33	0/2122

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	e	0.18	0/1573	0.31	0/2115
33	f	0.15	0/1434	0.37	0/1926
34	g	0.13	0/1339	0.29	0/1811
35	h	0.14	0/1110	0.33	0/1500
36	i	0.17	0/1157	0.29	0/1556
37	j	0.19	0/956	0.37	0/1281
38	k	0.16	0/1073	0.29	0/1427
39	l	0.17	0/1072	0.30	0/1434
40	m	0.18	0/963	0.32	0/1288
41	n	0.15	0/902	0.36	0/1209
42	o	0.17	0/929	0.27	0/1242
43	p	0.20	0/960	0.32	0/1278
44	q	0.18	0/829	0.34	0/1106
45	r	0.17	0/862	0.28	0/1154
46	s	0.18	0/745	0.33	0/996
47	t	0.15	0/787	0.28	0/1051
48	u	0.17	0/763	0.37	0/1024
49	v	0.17	0/599	0.29	0/795
50	w	0.18	0/635	0.30	0/848
51	x	0.15	0/500	0.28	0/665
52	y	0.15	0/451	0.30	0/603
53	z	0.17	0/449	0.30	0/597
All	All	0.35	0/154260	0.66	19/230660 (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
22	Q	0	1
39	l	0	1
All	All	0	2

There are no bond length outliers.

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
28	a	2098	G	OP1-P-O3'	-10.92	75.23	108.00
28	a	2098	G	OP2-P-O3'	-10.55	76.34	108.00
28	a	1310	U	C2-N1-C1'	7.30	126.46	117.70
28	a	1056	U	C2-N1-C1'	7.28	126.44	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
28	a	1056	U	N3-C2-O2	-5.54	118.32	122.20
28	a	1056	U	N1-C2-O2	5.53	126.67	122.80
6	A	1156	C	C2-N1-C1'	5.51	124.86	118.80
28	a	1310	U	N1-C2-O2	5.43	126.60	122.80
29	b	117	G	N3-C4-N9	-5.40	122.76	126.00
28	a	2846	G	O4'-C1'-N9	5.33	112.46	108.20
28	a	310	A	O5'-C5'-C4'	5.24	113.59	109.40
28	a	1043	C	N1-C2-O2	5.24	122.04	118.90
6	A	1033	A	O4'-C1'-N9	5.21	112.37	108.20
28	a	2183	U	N1-C2-O2	5.20	126.44	122.80
6	A	844	G	N1-C2-N2	-5.14	111.57	116.20
28	a	1043	C	C2-N1-C1'	5.13	124.44	118.80
6	A	752	C	C2-N1-C1'	5.11	124.42	118.80
28	a	1024	G	O5'-C5'-C4'	5.04	113.43	109.40
28	a	1310	U	C6-N1-C1'	-5.01	114.19	121.20

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
22	Q	11	ARG	Sidechain
39	l	81	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	418	0	449	5	0
2	1	377	0	418	1	0
3	2	504	0	572	5	0
4	3	302	0	340	3	0
5	4	540	0	537	12	0
6	A	33009	0	16625	372	0
7	B	1749	0	1774	37	0
8	C	1623	0	1696	21	0
9	D	1644	0	1706	32	0
10	E	1155	0	1206	14	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	F	832	0	821	18	0
12	G	1204	0	1256	23	0
13	H	977	0	1031	14	0
14	I	1010	0	1057	16	0
15	J	788	0	830	21	0
16	K	878	0	885	7	0
17	L	958	0	1019	11	0
18	M	907	0	977	21	0
19	N	805	0	846	18	0
20	O	710	0	735	6	0
21	P	636	0	649	7	0
22	Q	639	0	684	10	0
23	R	507	0	525	12	0
24	S	667	0	691	13	0
25	T	669	0	717	7	0
26	W	242	0	119	11	0
27	X	778	0	793	17	0
28	a	62284	0	31321	601	0
29	b	2483	0	1258	13	0
30	c	2080	0	2152	21	0
31	d	1567	0	1619	13	0
32	e	1554	0	1620	15	0
33	f	1410	0	1444	26	0
34	g	1319	0	1367	19	0
35	h	1099	0	1139	22	0
36	i	1134	0	1161	11	0
37	j	947	0	1025	12	0
38	k	1063	0	1130	14	0
39	l	1074	0	1138	19	0
40	m	950	0	994	8	0
41	n	892	0	923	8	0
42	o	917	0	962	5	0
43	p	947	0	1019	8	0
44	q	816	0	841	10	0
45	r	855	0	915	12	0
46	s	739	0	809	7	0
47	t	779	0	830	10	0
48	u	749	0	763	8	0
49	v	592	0	612	7	0
50	w	625	0	652	5	0
51	x	499	0	534	1	0
52	y	447	0	484	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
53	z	443	0	458	4	0
54	3	1	0	0	0	0
54	4	1	0	0	0	0
55	A	94	0	0	0	0
55	N	1	0	0	0	0
55	Q	1	0	0	0	0
55	a	253	0	0	0	0
55	b	5	0	0	0	0
55	c	1	0	0	0	0
55	p	2	0	0	0	0
55	w	1	0	0	0	0
55	z	1	0	0	0	0
56	A	47	0	0	0	0
56	a	115	0	0	0	0
56	b	1	0	0	0	0
56	c	3	0	0	0	0
56	d	1	0	0	0	0
56	e	1	0	0	0	0
56	f	1	0	0	0	0
All	All	143322	0	96128	1511	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 (1511) 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)
6:A:76:A:N6	6:A:91:G:H1	1.53	1.05
28:a:2134:G:H1	28:a:2153:U:H3	1.16	0.91
28:a:2139:G:N2	28:a:2148:C:O2	2.04	0.91
6:A:1538:U:H3	26:W:5:G:H22	1.19	0.88
28:a:879:G:H1	28:a:893:U:H3	1.16	0.87
6:A:1024:G:H1	6:A:1033:A:H61	1.19	0.85
19:N:46:LEU:HD22	24:S:13:LEU:HD12	1.60	0.84
28:a:285:U:H3	28:a:355:G:H1	0.85	0.84
24:S:62:VAL:HA	24:S:66:MET:HE2	1.60	0.84
28:a:1798:A:H2'	28:a:1799:A:C8	2.13	0.83
28:a:544:U:O2	28:a:547:G:O6	1.97	0.82
17:L:121:ARG:HB3	17:L:123:LYS:HE2	1.62	0.82
28:a:2303:U:H5"	33:f:131:GLY:HA3	1.63	0.81
6:A:1024:G:H1	6:A:1033:A:N6	1.79	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:111:ARG:HB3	12:G:119:ARG:HG2	1.64	0.80
28:a:2794:U:H3	28:a:2797:A:H61	1.26	0.79
28:a:566:U:H1'	28:a:2028:6MZ:H9C1	1.65	0.78
28:a:1036:G:N2	28:a:1115:C:O2	2.13	0.77
6:A:944:A:H2'	6:A:945:G:C8	2.20	0.76
6:A:671:A:H2'	6:A:672:G:C8	2.21	0.76
6:A:76:A:N1	6:A:91:G:N2	2.34	0.75
6:A:76:A:H61	6:A:91:G:H1	0.80	0.75
28:a:2185:U:HO2'	28:a:2186:U:H6	1.35	0.75
6:A:1534:C:H42	26:W:9:A:H61	1.36	0.74
28:a:1383:C:H2'	28:a:1384:A:C8	2.23	0.74
15:J:6:ILE:HG22	15:J:76:ILE:HB	1.69	0.72
28:a:1060:G:H3'	28:a:1061:G:H21	1.53	0.72
28:a:1383:C:H2'	28:a:1384:A:H8	1.54	0.72
28:a:2112:A:H62	28:a:2169:A:H62	1.37	0.72
48:u:9:ARG:HG2	48:u:41:GLU:HG2	1.71	0.72
28:a:2145:A:H2'	28:a:2146:G:C8	2.25	0.72
9:D:87:GLY:HA3	9:D:197:GLU:HG3	1.72	0.71
6:A:662:G:H22	6:A:739:G:H1	1.38	0.71
8:C:110:GLU:HB2	8:C:144:LEU:HD22	1.71	0.71
6:A:92:G:H4'	6:A:93:G:H5'	1.73	0.71
53:z:54:VAL:HG23	53:z:55:ILE:HG23	1.73	0.70
19:N:10:GLU:HG3	19:N:63:ARG:HD2	1.73	0.70
7:B:68:LEU:HD11	7:B:158:PRO:HB2	1.74	0.70
28:a:2107:U:H2'	28:a:2108:G:C8	2.27	0.70
34:g:176:LYS:HB2	34:g:177:LYS:HE2	1.74	0.70
6:A:1216:C:H2'	6:A:1217:A:C8	2.26	0.70
40:m:24:MET:HE1	40:m:40:LYS:HD3	1.73	0.70
13:H:96:MET:HG2	13:H:99:LEU:HB2	1.75	0.69
35:h:78:VAL:HG21	35:h:103:VAL:HG12	1.74	0.69
14:I:19:VAL:HG22	14:I:65:ILE:HG23	1.73	0.69
28:a:2050:A:H4'	31:d:148:GLN:O	1.92	0.69
15:J:88:MET:HE3	15:J:88:MET:HA	1.75	0.69
12:G:113:ASP:HB2	12:G:119:ARG:HG3	1.74	0.68
28:a:1172:A:H4'	28:a:1174:G:H1'	1.75	0.68
6:A:1127:C:H5'	14:I:18:ARG:HH12	1.59	0.68
28:a:2118:G:H2'	28:a:2119:G:H8	1.59	0.68
28:a:1103:U:H2'	28:a:1104:G:H8	1.58	0.68
43:p:49:ASP:HA	43:p:52:GLN:HB2	1.75	0.68
8:C:175:LEU:HD23	8:C:182:ILE:HD13	1.76	0.68
18:M:90:ARG:HB2	18:M:97:VAL:HG12	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:H:11:LEU:HD22	13:H:75:ILE:HD11	1.76	0.67
18:M:92:ARG:HD2	28:a:886:C:C5	2.30	0.67
31:d:35:THR:HG22	31:d:73:VAL:HG21	1.75	0.67
28:a:1055:A:H5"	28:a:1087:A:H61	1.60	0.67
16:K:64:GLN:HG2	16:K:99:ALA:HB2	1.77	0.67
6:A:1354:G:H2'	6:A:1355:A:C8	2.29	0.67
42:o:63:LYS:HE3	42:o:65:SER:HB2	1.77	0.67
16:K:87:LYS:HB2	16:K:113:VAL:HG23	1.77	0.67
5:4:61:ASN:HA	5:4:65:SER:HB3	1.76	0.66
33:f:114:PHE:HE1	33:f:117:LEU:HG	1.59	0.66
20:O:26:GLU:HG3	20:O:81:LEU:HD22	1.78	0.66
6:A:56:U:H2'	6:A:57:G:C8	2.31	0.66
6:A:712:G:H2'	6:A:713:A:C8	2.31	0.66
9:D:197:GLU:HA	9:D:200:ILE:HD12	1.78	0.66
28:a:64:A:H2'	28:a:65:U:C6	2.31	0.66
28:a:637:U:H2'	28:a:638:C:C6	2.31	0.66
6:A:475:G:H2'	6:A:476:A:C8	2.32	0.65
18:M:93:ARG:HH12	24:S:80:TYR:HD2	1.45	0.65
6:A:1128:A:H2'	6:A:1129:G:H8	1.61	0.65
25:T:39:ILE:HD13	25:T:82:GLN:HB3	1.78	0.65
28:a:1466:A:H2'	28:a:1467:A:C8	2.31	0.65
45:r:83:LYS:HG2	45:r:95:ARG:HD3	1.77	0.65
9:D:172:GLU:HB2	9:D:183:LYS:HD2	1.79	0.65
28:a:1068:A:H3'	28:a:1070:C:H41	1.60	0.65
6:A:743:A:H2'	6:A:744:A:C8	2.32	0.64
28:a:1055:A:C5	28:a:1056:U:H1'	2.32	0.64
37:j:114:LYS:O	37:j:118:LEU:HD12	1.97	0.64
28:a:1026:A:H2'	28:a:1027:A:C8	2.33	0.64
6:A:490:C:H2'	6:A:491:A:C8	2.33	0.64
6:A:944:A:H2'	6:A:945:G:H8	1.60	0.64
18:M:69:LEU:O	18:M:73:ILE:HG13	1.98	0.64
28:a:191:A:H2'	28:a:192:C:C6	2.33	0.64
28:a:2139:G:N1	28:a:2148:C:N3	2.34	0.64
35:h:84:ALA:HB2	35:h:90:LEU:HD13	1.79	0.63
38:k:110:VAL:HB	38:k:127:VAL:HG12	1.79	0.63
6:A:129:A:H2'	6:A:130:C:C6	2.33	0.63
6:A:1535:U:H3	26:W:8:G:H1	1.45	0.63
30:c:29:PRO:HG2	30:c:34:LEU:HD11	1.79	0.63
41:n:82:ALA:HB3	41:n:115:LEU:HD11	1.79	0.63
18:M:2:ALA:HB3	18:M:9:ILE:HG12	1.81	0.63
39:l:53:MET:HG3	39:l:120:ALA:HB2	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:74:GLU:OE2	12:G:91:VAL:HG22	1.98	0.62
6:A:1285:A:H2'	6:A:1286:A:C8	2.34	0.62
28:a:2589:C:H2'	28:a:2590:G:C8	2.34	0.62
6:A:711:G:H2'	6:A:712:G:C8	2.34	0.62
34:g:15:VAL:HA	34:g:27:LYS:O	2.00	0.62
22:Q:9:GLN:HG2	22:Q:60:GLU:HG3	1.82	0.62
28:a:579:C:H2'	28:a:580:A:C8	2.34	0.62
28:a:2289:U:H2'	28:a:2290:U:C6	2.34	0.62
6:A:1002:A:H2'	6:A:1003:A:O4'	2.00	0.62
6:A:1389:U:H2'	6:A:1390:G:C8	2.35	0.62
13:H:64:LYS:HG2	13:H:71:VAL:HG21	1.81	0.62
33:f:8:TYR:HB2	33:f:173:PHE:HZ	1.65	0.62
28:a:854:G:H2'	28:a:855:G:C8	2.35	0.62
28:a:1742:A:H2'	28:a:1743:C:C6	2.35	0.62
28:a:2126:G:H2'	28:a:2127:C:C6	2.35	0.62
21:P:4:ILE:HG12	21:P:21:VAL:HG22	1.82	0.62
28:a:1194:G:H2'	28:a:1195:U:H6	1.64	0.62
52:y:6:LYS:HB2	52:y:58:GLU:HG2	1.81	0.62
6:A:1511:A:H2'	6:A:1512:G:C8	2.35	0.61
6:A:1354:G:H2'	6:A:1355:A:H8	1.63	0.61
8:C:26:THR:HG23	19:N:76:LYS:HD3	1.82	0.61
12:G:69:VAL:HG13	12:G:100:ALA:HB1	1.81	0.61
27:X:2:THR:HA	27:X:37:PRO:HG2	1.82	0.61
21:P:71:VAL:O	21:P:75:ILE:HG13	2.01	0.61
28:a:1429:G:H2'	28:a:1430:A:C8	2.35	0.61
28:a:2134:G:O6	28:a:2153:U:O4	2.19	0.61
28:a:1587:A:H2'	28:a:1588:A:H8	1.64	0.61
15:J:10:LEU:HD22	15:J:98:VAL:HG22	1.82	0.61
28:a:2185:U:O2'	28:a:2186:U:H5'	2.01	0.61
6:A:726:A:H2'	6:A:727:A:C8	2.36	0.61
9:D:11:LEU:HD13	9:D:63:ARG:HG2	1.81	0.61
10:E:160:SER:HB3	10:E:163:GLU:HG3	1.81	0.61
28:a:727:G:H5"	28:a:728:A:H5"	1.83	0.61
44:q:63:VAL:HA	44:q:96:VAL:HG12	1.83	0.61
28:a:1887:A:H2'	28:a:1888:A:C8	2.36	0.61
37:j:43:ILE:HD12	37:j:56:ASP:HB2	1.83	0.61
28:a:1431:A:H2'	28:a:1432:G:C8	2.36	0.60
39:l:77:PRO:HG2	39:l:80:VAL:HG21	1.83	0.60
4:3:9:LYS:HE2	4:3:16:ILE:HD12	1.82	0.60
6:A:267:C:H2'	6:A:268:A:C8	2.36	0.60
24:S:3:ARG:HH11	24:S:10:PHE:HB2	1.67	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:767:G:H4'	6:A:1511:A:H4'	1.83	0.60
6:A:17:U:H2'	6:A:18:C:C6	2.37	0.60
18:M:88:GLY:O	18:M:92:ARG:HG3	2.01	0.60
27:X:44:GLU:HG2	27:X:45:PRO:HD2	1.83	0.60
28:a:552:U:H2'	28:a:553:G:O4'	2.01	0.60
6:A:335:G:H2'	6:A:336:A:C8	2.37	0.60
6:A:536:G:H5"	17:L:111:LYS:HB2	1.82	0.60
6:A:1346:U:H4'	14:I:122:ARG:HG3	1.84	0.60
2:1:43:THR:HG22	2:1:45:SER:H	1.65	0.60
28:a:579:C:H2'	28:a:580:A:H8	1.66	0.60
6:A:1531:C:H2'	6:A:1532:A:C8	2.36	0.60
24:S:50:ALA:HB1	24:S:57:HIS:HB3	1.84	0.60
28:a:846:C:H2'	28:a:847:A:H8	1.67	0.60
6:A:734:C:H2'	6:A:735:C:C6	2.37	0.59
6:A:90:C:H2'	6:A:91:G:C8	2.37	0.59
6:A:1248:A:H2'	6:A:1249:A:C8	2.37	0.59
6:A:1201:C:H5'	19:N:67:THR:HG23	1.85	0.59
11:F:38:ARG:HB3	11:F:63:ASN:HB2	1.84	0.59
28:a:998:A:H2'	28:a:999:A:C8	2.36	0.59
35:h:15:LEU:HD22	35:h:58:LEU:HD22	1.84	0.59
41:n:30:ARG:HG3	41:n:35:ILE:HD12	1.84	0.59
6:A:742:C:H2'	6:A:743:A:C8	2.37	0.59
10:E:115:LEU:HD13	10:E:123:VAL:HG11	1.83	0.59
26:W:8:G:H2'	26:W:9:A:H8	1.67	0.59
28:a:1792:U:H2'	28:a:1793:G:C8	2.37	0.59
35:h:135:HIS:HB3	35:h:138:VAL:HB	1.84	0.59
6:A:214:U:H2'	6:A:215:C:C6	2.38	0.59
7:B:68:LEU:HB2	7:B:161:LEU:HD13	1.83	0.59
41:n:70:ALA:O	41:n:74:VAL:HG23	2.03	0.59
9:D:9:LEU:HD13	9:D:32:CYS:HB3	1.84	0.59
6:A:997:C:H2'	6:A:998:A:C8	2.38	0.59
26:W:12:U:H2'	26:W:13:A:C8	2.38	0.59
28:a:2326:A:H2'	28:a:2327:U:C6	2.38	0.59
6:A:233:C:H2'	6:A:234:A:C8	2.38	0.59
28:a:5:A:H2'	28:a:6:A:C8	2.38	0.59
6:A:1353:A:H2'	6:A:1354:G:H8	1.68	0.58
7:B:43:LEU:O	7:B:47:VAL:HG13	2.03	0.58
28:a:2118:G:H2'	28:a:2119:G:C8	2.37	0.58
33:f:33:LYS:HG2	33:f:157:THR:HB	1.84	0.58
28:a:1402:U:H2'	28:a:1403:U:C6	2.38	0.58
28:a:1587:A:H2'	28:a:1588:A:C8	2.38	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:2325:A:H2'	28:a:2326:A:C8	2.38	0.58
19:N:20:PHE:HB2	19:N:55:SER:HB2	1.84	0.58
27:X:53:THR:HG22	27:X:62:VAL:HG13	1.85	0.58
28:a:2231:U:H2'	28:a:2232:G:C8	2.39	0.58
26:W:9:A:H2'	26:W:10:G:H8	1.68	0.58
32:e:184:ASP:HB3	38:k:2:ARG:HH12	1.68	0.58
6:A:75:C:H2'	6:A:76:A:C8	2.38	0.58
8:C:43:LEU:HD13	8:C:68:ILE:HD11	1.86	0.58
28:a:2084:U:H2'	28:a:2085:G:C8	2.39	0.58
28:a:2786:C:H2'	28:a:2787:C:C6	2.39	0.58
42:o:100:LEU:HD11	42:o:110:ILE:HD11	1.86	0.58
6:A:734:C:H2'	6:A:735:C:H6	1.69	0.58
27:X:23:ARG:HB3	27:X:78:ILE:HG12	1.85	0.58
30:c:120:VAL:HB	35:h:91:PHE:HB3	1.84	0.58
6:A:660:U:H2'	6:A:661:A:C8	2.39	0.58
6:A:1410:C:H2'	6:A:1411:A:C8	2.39	0.58
28:a:365:U:H2'	28:a:366:C:C6	2.38	0.58
6:A:145:G:H2'	6:A:146:G:C8	2.39	0.57
27:X:49:ILE:HD13	27:X:66:ARG:HG2	1.86	0.57
28:a:907:A:H2'	28:a:910:C:H5	1.68	0.57
28:a:2513:C:H2'	28:a:2514:A:H8	1.68	0.57
6:A:611:C:H2'	6:A:612:C:C6	2.40	0.57
14:I:17:ALA:HB2	14:I:67:VAL:HG23	1.86	0.57
28:a:846:C:H2'	28:a:847:A:C8	2.39	0.57
11:F:51:ILE:HG22	11:F:52:ASN:OD1	2.04	0.57
28:a:64:A:H2'	28:a:65:U:H6	1.68	0.57
39:l:64:TRP:HZ3	39:l:106:ASP:HB2	1.69	0.57
6:A:382:G:H2'	6:A:383:C:C6	2.39	0.57
6:A:499:C:H2'	6:A:500:A:C8	2.39	0.57
28:a:1173:U:H4'	28:a:1174:G:O5'	2.05	0.57
30:c:144:VAL:HB	30:c:154:LEU:HB2	1.85	0.57
6:A:374:G:H5"	21:P:5:ARG:HB2	1.87	0.57
6:A:537:A:H2'	6:A:538:G:C8	2.39	0.57
28:a:869:U:H2'	28:a:870:U:C6	2.38	0.57
28:a:2896:U:H2'	28:a:2897:A:H8	1.70	0.57
6:A:979:U:H5"	19:N:6:MET:HE1	1.87	0.57
11:F:88:MET:HE1	23:R:61:ARG:HG2	1.85	0.57
18:M:1:MET:HG3	18:M:11:ASP:HB3	1.85	0.57
6:A:522:G:H2'	6:A:523:C:C6	2.40	0.57
6:A:1117:C:H2'	6:A:1118:C:H6	1.70	0.57
28:a:740:A:H2'	28:a:741:A:C8	2.40	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1289:G:H2'	28:a:1290:C:C6	2.40	0.57
6:A:742:C:H2'	6:A:743:A:H8	1.69	0.57
28:a:811:U:H2'	28:a:812:C:C6	2.40	0.57
28:a:2582:U:H2'	28:a:2583:U:H2'	1.87	0.57
40:m:2:ARG:HA	40:m:5:LYS:HD2	1.87	0.57
6:A:267:C:H2'	6:A:268:A:H8	1.68	0.56
10:E:110:ALA:HB1	10:E:137:VAL:HG23	1.87	0.56
14:I:65:ILE:HG21	14:I:79:ILE:HG12	1.87	0.56
13:H:96:MET:HE3	13:H:130:ALA:HB1	1.87	0.56
28:a:2327:U:H2'	28:a:2328:G:C8	2.40	0.56
6:A:672:G:H2'	6:A:673:A:H8	1.70	0.56
9:D:124:MET:HG3	9:D:146:ARG:HG2	1.86	0.56
28:a:1:G:H2'	28:a:2:G:H8	1.70	0.56
28:a:634:G:H5"	38:k:129:LYS:HE3	1.86	0.56
28:a:971:A:H5"	44:q:81:LYS:HD2	1.86	0.56
28:a:830:U:H2'	28:a:831:A:C8	2.41	0.56
28:a:1743:C:H2'	28:a:1744:C:C6	2.40	0.56
28:a:2244:G:H2'	28:a:2245:A:C8	2.40	0.56
6:A:1531:C:H2'	6:A:1532:A:H8	1.70	0.56
9:D:50:ASP:O	9:D:54:GLN:HG3	2.05	0.56
12:G:70:ARG:HD3	12:G:96:ARG:HB3	1.88	0.56
15:J:23:ALA:HA	15:J:26:VAL:HG22	1.88	0.56
28:a:2068:A:H2'	28:a:2069:A:C8	2.40	0.56
33:f:94:GLU:O	33:f:98:GLU:HG3	2.06	0.56
6:A:1353:A:H2'	6:A:1354:G:C8	2.40	0.56
22:Q:78:VAL:HG11	22:Q:81:LYS:HD2	1.87	0.56
28:a:1868:A:H2'	28:a:1869:A:C8	2.40	0.56
35:h:68:ARG:HB3	35:h:134:VAL:HG11	1.88	0.56
6:A:438:C:C2	6:A:439:A:C8	2.94	0.56
28:a:1792:U:H2'	28:a:1793:G:H8	1.69	0.56
28:a:2244:G:H2'	28:a:2245:A:H8	1.71	0.56
36:i:7:LYS:O	36:i:11:VAL:HG13	2.06	0.56
28:a:908:A:H2'	28:a:909:A:C8	2.40	0.56
28:a:2241:U:H2'	28:a:2242:U:C6	2.41	0.56
28:a:1011:C:H2'	28:a:1012:A:H8	1.70	0.56
6:A:499:C:H2'	6:A:500:A:H8	1.70	0.55
6:A:233:C:H2'	6:A:234:A:H8	1.70	0.55
28:a:701:U:H2'	28:a:702:G:O4'	2.06	0.55
28:a:2123:G:H22	28:a:2170:U:H3'	1.71	0.55
45:r:86:MET:HE3	45:r:96:ILE:HG13	1.87	0.55
5:4:14:ALA:HB1	5:4:34:LEU:HD11	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1475:U:H2'	6:A:1476:U:C6	2.42	0.55
7:B:80:VAL:HG23	7:B:214:LEU:HD21	1.87	0.55
12:G:68:ASN:ND2	12:G:68:ASN:O	2.38	0.55
28:a:2797:A:O2'	28:a:2798:A:H5"	2.06	0.55
6:A:1009:C:H2'	6:A:1010:A:C8	2.41	0.55
11:F:90:MET:HE1	23:R:23:TYR:CZ	2.42	0.55
18:M:80:LEU:HD22	18:M:87:ARG:HB2	1.87	0.55
28:a:849:C:H2'	28:a:850:U:C6	2.41	0.55
33:f:8:TYR:HA	33:f:12:VAL:HB	1.89	0.55
41:n:39:VAL:HB	41:n:49:VAL:HG22	1.89	0.55
6:A:56:U:H2'	6:A:57:G:H8	1.70	0.55
19:N:10:GLU:O	19:N:14:VAL:HG23	2.07	0.55
28:a:483:A:C8	47:t:45:HIS:HD2	2.24	0.55
6:A:387:A:H3'	6:A:388:U:H6	1.72	0.55
28:a:1026:A:N6	28:a:1123:G:H2'	2.22	0.55
30:c:21:ASN:HB3	30:c:24:LEU:HG	1.87	0.55
39:l:53:MET:HE3	39:l:63:ILE:HD13	1.86	0.55
6:A:634:U:H5'	22:Q:6:ARG:HH21	1.71	0.55
28:a:191:A:H2'	28:a:192:C:H6	1.71	0.55
28:a:637:U:H2'	28:a:638:C:H6	1.71	0.55
8:C:86:LYS:O	8:C:90:VAL:HG23	2.07	0.55
28:a:2613:U:C2	53:z:4:GLN:HA	2.42	0.55
6:A:964:2MG:C5	27:X:62:VAL:HG11	2.42	0.55
7:B:41:ILE:HD13	7:B:201:PRO:HB2	1.88	0.55
14:I:84:THR:HG23	14:I:98:LEU:HD13	1.88	0.54
45:r:17:VAL:HG11	45:r:103:ILE:HG12	1.89	0.54
6:A:414:G:H2'	6:A:415:G:H8	1.71	0.54
15:J:88:MET:HE1	15:J:100:ILE:HD12	1.88	0.54
28:a:721:C:H2'	28:a:722:U:O4'	2.07	0.54
28:a:1350:A:H2'	28:a:1351:A:C8	2.41	0.54
28:a:2023:C:H2'	28:a:2024:U:C6	2.43	0.54
13:H:96:MET:HG2	13:H:96:MET:O	2.07	0.54
27:X:12:ILE:HG21	27:X:17:ARG:HE	1.71	0.54
28:a:2588:A:H2'	28:a:2589:C:H6	1.72	0.54
10:E:34:THR:HG22	10:E:52:LYS:HG2	1.90	0.54
28:a:2153:U:C2	28:a:2154:G:C8	2.96	0.54
32:e:1:MET:HE1	32:e:20:GLY:HA3	1.90	0.54
6:A:1321:G:H2'	6:A:1322:A:C8	2.43	0.54
44:q:70:GLU:H	44:q:70:GLU:CD	2.16	0.54
6:A:1084:U:H3	6:A:1097:G:H22	1.56	0.54
28:a:1068:A:H2'	28:a:1095:U:H4'	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:2127:C:H2'	28:a:2128:U:O4'	2.08	0.54
28:a:2187:U:O2'	28:a:2188:G:H8	1.91	0.54
6:A:41:G:H2'	6:A:42:G:H8	1.72	0.54
6:A:997:C:H2'	6:A:998:A:H8	1.72	0.54
6:A:1070:G:H2'	6:A:1071:U:C6	2.42	0.54
6:A:1324:U:H2'	6:A:1325:C:H6	1.71	0.54
16:K:92:GLY:O	16:K:96:THR:HG23	2.08	0.54
19:N:89:MET:HE2	19:N:89:MET:HA	1.89	0.54
28:a:1184:G:H5'	44:q:83:TYR:CE1	2.42	0.54
28:a:2311:C:H2'	28:a:2312:A:H8	1.73	0.54
28:a:2120:U:H2'	28:a:2121:G:C8	2.43	0.54
5:4:42:PRO:HB2	5:4:48:GLN:HA	1.90	0.54
5:4:59:ARG:O	5:4:63:ARG:HG3	2.08	0.54
10:E:39:VAL:HG23	10:E:71:MET:HE3	1.89	0.54
28:a:2799:G:H2'	28:a:2800:U:H6	1.73	0.54
1:0:10:LYS:HZ2	1:0:54:ILE:HA	1.73	0.53
6:A:208:C:H3'	6:A:209:G:C8	2.43	0.53
6:A:234:A:H2'	6:A:235:G:C8	2.43	0.53
6:A:1532:A:H2'	6:A:1533:C:C6	2.43	0.53
9:D:144:SER:HB3	9:D:179:GLU:HG2	1.91	0.53
28:a:272:A:H2'	28:a:273:G:H8	1.73	0.53
28:a:831:A:H2'	28:a:832:G:C8	2.42	0.53
33:f:8:TYR:HB2	33:f:173:PHE:CZ	2.43	0.53
33:f:69:LYS:HA	33:f:84:PRO:HA	1.89	0.53
33:f:108:VAL:HG11	33:f:176:PRO:HG3	1.90	0.53
6:A:819:G:H2'	6:A:820:U:C6	2.44	0.53
6:A:1098:C:OP2	7:B:95:ARG:HG3	2.08	0.53
28:a:1525:A:H2'	28:a:1526:G:O4'	2.09	0.53
28:a:1743:C:H2'	28:a:1744:C:H6	1.74	0.53
5:4:28:VAL:HG12	5:4:30:HIS:H	1.73	0.53
6:A:297:G:H2'	6:A:298:A:C8	2.43	0.53
28:a:306:U:H2'	28:a:307:G:O4'	2.08	0.53
28:a:2738:A:H2'	28:a:2739:A:C8	2.44	0.53
13:H:105:SER:HB2	13:H:126:ILE:HD11	1.90	0.53
28:a:347:A:H2'	28:a:348:A:C8	2.42	0.53
6:A:488:C:H2'	6:A:489:G:H8	1.74	0.53
28:a:2126:G:O2'	28:a:2172:C:H4'	2.09	0.53
37:j:40:LYS:HE2	37:j:57:VAL:HG12	1.89	0.53
6:A:21:G:H2'	6:A:22:G:C8	2.43	0.53
23:R:50:LYS:O	23:R:54:GLN:HG3	2.08	0.53
28:a:3:U:H2'	28:a:4:U:C6	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:d:56:LYS:HD2	31:d:59:ARG:HG3	1.89	0.53
6:A:503:G:H2'	6:A:504:G:C8	2.44	0.53
6:A:512:C:H2'	6:A:513:G:H8	1.74	0.53
28:a:587:U:H2'	28:a:588:A:C8	2.44	0.53
28:a:751:A:H2'	28:a:752:U:H6	1.72	0.53
28:a:1426:G:H2'	28:a:1427:G:H8	1.74	0.53
28:a:2700:G:H2'	28:a:2701:C:H6	1.74	0.53
39:l:31:PHE:HB2	39:l:105:MET:HB3	1.90	0.53
6:A:81:G:H22	6:A:86:C:H42	1.55	0.53
8:C:14:ILE:HG22	8:C:15:VAL:HG13	1.90	0.53
28:a:657:G:H4'	32:e:95:LYS:HG2	1.91	0.53
28:a:718:U:H2'	28:a:719:A:C8	2.44	0.53
28:a:2062:C:H2'	28:a:2063:C:C6	2.43	0.53
28:a:2589:C:H2'	28:a:2590:G:H8	1.72	0.53
28:a:2696:U:H2'	28:a:2697:C:C6	2.44	0.53
7:B:68:LEU:HD13	7:B:161:LEU:HD22	1.89	0.53
11:F:42:TRP:HB2	11:F:59:TYR:HB2	1.91	0.53
18:M:11:ASP:HA	18:M:45:ILE:HB	1.90	0.53
28:a:578:U:H2'	28:a:579:C:C6	2.44	0.53
28:a:719:A:H2'	28:a:720:A:C8	2.43	0.53
28:a:1024:G:H2'	28:a:1025:A:H8	1.74	0.53
47:t:33:LYS:HB3	47:t:64:ALA:HB1	1.90	0.53
6:A:35:G:H2'	6:A:36:C:C6	2.44	0.52
6:A:380:A:H2'	6:A:381:A:C8	2.45	0.52
7:B:108:ARG:O	7:B:111:ILE:HG13	2.09	0.52
12:G:25:LYS:O	12:G:29:ILE:HG13	2.09	0.52
25:T:29:ARG:O	25:T:33:LYS:HD2	2.09	0.52
28:a:847:A:H2'	28:a:848:U:C6	2.43	0.52
28:a:1679:G:H2'	28:a:1680:U:C6	2.44	0.52
49:v:37:ILE:HG21	49:v:80:ILE:HG21	1.91	0.52
50:w:7:VAL:HG21	50:w:59:ILE:HD11	1.91	0.52
12:G:111:ARG:HH21	12:G:123:GLU:HA	1.74	0.52
28:a:1798:A:H2'	28:a:1799:A:H8	1.72	0.52
28:a:2810:G:H2'	28:a:2811:A:C8	2.44	0.52
28:a:1431:A:H2'	28:a:1432:G:H8	1.74	0.52
28:a:2183:U:C2	28:a:2184:G:C8	2.98	0.52
28:a:2312:A:H2'	28:a:2313:G:C8	2.45	0.52
28:a:2896:U:H2'	28:a:2897:A:C8	2.44	0.52
29:b:112:G:H2'	29:b:113:C:H6	1.74	0.52
6:A:1086:G:H21	6:A:1165:A:H61	1.56	0.52
28:a:484:C:H2'	28:a:485:C:H6	1.73	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1083:A:H2'	28:a:1084:A:O4'	2.10	0.52
28:a:1179:G:H2'	28:a:1180:U:O4'	2.10	0.52
28:a:2147:U:H2'	28:a:2148:C:C6	2.44	0.52
6:A:1142:G:N2	6:A:1144:A:H62	2.07	0.52
16:K:50:SER:HA	16:K:69:ARG:NH1	2.25	0.52
28:a:642:A:H2'	28:a:643:C:O4'	2.08	0.52
28:a:1568:A:H2'	28:a:1569:A:C8	2.44	0.52
28:a:1438:G:H2'	28:a:1439:U:C6	2.45	0.52
28:a:2102:C:H2'	28:a:2103:U:C6	2.45	0.52
28:a:2698:A:H2'	28:a:2699:U:C6	2.45	0.52
35:h:99:ILE:O	35:h:103:VAL:HG13	2.10	0.52
40:m:8:ARG:HD2	40:m:43:GLU:HG2	1.90	0.52
6:A:87:U:H2'	6:A:88:C:H6	1.75	0.52
7:B:111:ILE:HG22	7:B:148:LEU:HD13	1.92	0.52
28:a:419:U:H2'	28:a:420:C:C6	2.45	0.52
28:a:751:A:H2'	28:a:752:U:C6	2.45	0.52
28:a:1180:U:H2'	28:a:1181:U:C6	2.45	0.52
28:a:2672:G:H4'	37:j:30:ARG:HG3	1.91	0.52
28:a:2811:A:H2'	28:a:2812:A:H8	1.74	0.52
29:b:48:U:H2'	29:b:49:C:C6	2.45	0.52
28:a:27:G:N2	28:a:512:G:H1'	2.24	0.52
28:a:150:U:H2'	28:a:151:C:C6	2.45	0.52
28:a:907:A:H2'	28:a:910:C:C5	2.45	0.52
33:f:169:LEU:HD23	33:f:170:LEU:HD23	1.91	0.52
6:A:1127:C:H5"	14:I:18:ARG:HH22	1.74	0.52
8:C:23:PHE:CE1	15:J:11:LYS:HD3	2.44	0.52
41:n:83:LEU:HD11	41:n:114:GLY:HA3	1.90	0.52
46:s:36:LYS:HE3	46:s:79:ASP:HB3	1.92	0.52
5:4:25:ARG:HG3	33:f:98:GLU:OE2	2.10	0.52
6:A:41:G:H2'	6:A:42:G:C8	2.45	0.52
28:a:2726:U:HO2'	28:a:2727:G:H8	1.57	0.52
28:a:2802:U:H2'	28:a:2803:C:H6	1.75	0.52
34:g:42:GLU:OE1	34:g:44:LYS:HE2	2.09	0.52
24:S:60:VAL:HG23	24:S:66:MET:HE1	1.91	0.51
28:a:1466:A:H2'	28:a:1467:A:H8	1.74	0.51
28:a:1560:U:H2'	28:a:1561:C:C6	2.45	0.51
28:a:2112:A:N6	28:a:2169:A:H62	2.08	0.51
28:a:2811:A:H2'	28:a:2812:A:C8	2.45	0.51
28:a:1790:A:H2'	28:a:1791:C:C6	2.45	0.51
28:a:2202:G:H4'	30:c:150:LYS:HG3	1.92	0.51
28:a:2231:U:H2'	28:a:2232:G:H8	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:2512:U:H2'	28:a:2513:C:C6	2.46	0.51
28:a:2799:G:H2'	28:a:2800:U:C6	2.46	0.51
35:h:80:ILE:O	35:h:146:VAL:HA	2.10	0.51
42:o:89:ARG:HH22	42:o:115:ASN:H	1.59	0.51
6:A:264:G:H3'	22:Q:69:LYS:HB2	1.92	0.51
11:F:9:MET:HE3	11:F:59:TYR:CZ	2.45	0.51
23:R:30:LYS:HA	23:R:33:ILE:HG12	1.93	0.51
26:W:8:G:H2'	26:W:9:A:C8	2.45	0.51
27:X:12:ILE:HD11	27:X:41:LEU:HD22	1.93	0.51
28:a:52:A:H2'	28:a:53:A:C8	2.44	0.51
28:a:1482:U:H2'	28:a:1483:A:H8	1.75	0.51
28:a:1567:A:H2'	28:a:1568:A:C8	2.44	0.51
28:a:1804:A:H3'	28:a:1805:A:C8	2.46	0.51
28:a:2141:C:H1'	28:a:2146:G:H22	1.74	0.51
28:a:2239:A:H2'	28:a:2240:G:C8	2.45	0.51
6:A:553:U:H2'	6:A:554:C:C6	2.45	0.51
28:a:928:G:H1'	52:y:25:LEU:HD11	1.92	0.51
28:a:1503:U:H2'	28:a:1504:C:C6	2.46	0.51
46:s:36:LYS:HE3	46:s:79:ASP:CB	2.41	0.51
6:A:676:U:H2'	6:A:677:C:H6	1.76	0.51
6:A:1434:U:H2'	6:A:1435:A:C8	2.45	0.51
28:a:1852:U:H2'	28:a:1853:G:O4'	2.11	0.51
28:a:2185:U:O2'	28:a:2186:U:H6	1.93	0.51
28:a:2271:A:H2'	28:a:2272:A:C8	2.45	0.51
38:k:88:ASP:HA	38:k:118:ARG:HH21	1.75	0.51
45:r:20:VAL:HG11	45:r:44:ALA:HA	1.91	0.51
28:a:1:G:H2'	28:a:2:G:C8	2.46	0.51
28:a:1767:C:H2'	28:a:1768:A:C8	2.46	0.51
28:a:2069:A:H2'	28:a:2070:C:C6	2.45	0.51
28:a:2112:A:H62	28:a:2169:A:N6	2.07	0.51
34:g:164:TYR:HB2	34:g:167:GLU:HB3	1.91	0.51
6:A:1532:A:H2'	6:A:1533:C:H6	1.76	0.51
11:F:37:HIS:HB3	11:F:97:THR:HG22	1.92	0.51
28:a:30:G:H2'	28:a:31:C:C6	2.46	0.51
28:a:849:C:H2'	28:a:850:U:H6	1.75	0.51
28:a:1849:A:H2'	28:a:1850:A:C8	2.45	0.51
28:a:2150:G:H2'	28:a:2151:C:C6	2.46	0.51
30:c:232:HIS:HA	30:c:242:LYS:HD2	1.92	0.51
6:A:213:C:H2'	6:A:214:U:C6	2.46	0.51
6:A:1498:A:H5"	6:A:1506:A:H5"	1.93	0.51
45:r:74:ILE:HD12	45:r:105:VAL:HG22	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:743:A:H2'	6:A:744:A:H8	1.76	0.51
7:B:103:ASN:O	7:B:107:VAL:HG23	2.11	0.51
15:J:92:LEU:HD12	15:J:98:VAL:HG21	1.93	0.51
28:a:580:A:H2'	28:a:581:G:C8	2.46	0.51
28:a:2072:U:H2'	28:a:2073:U:C6	2.45	0.51
28:a:2428:A:H2'	28:a:2428:A:N3	2.24	0.51
6:A:348:G:H2'	6:A:349:G:C8	2.46	0.51
6:A:1511:A:H2'	6:A:1512:G:H8	1.75	0.51
9:D:85:ASN:HB3	9:D:88:GLU:HB2	1.93	0.51
28:a:285:U:O2	28:a:355:G:N2	2.29	0.51
28:a:591:U:H2'	28:a:592:U:C6	2.46	0.51
28:a:1358:G:H2'	28:a:1359:C:C6	2.46	0.51
28:a:2160:A:H5'	28:a:2171:A:H1'	1.93	0.51
33:f:103:LEU:HA	33:f:107:ALA:HB3	1.93	0.51
39:l:64:TRP:HB2	39:l:104:GLU:HB2	1.92	0.51
6:A:1051:G:N7	6:A:1198:C:H5'	2.26	0.50
6:A:1060:U:H2'	6:A:1061:C:C6	2.46	0.50
28:a:358:U:H2'	28:a:359:G:H8	1.75	0.50
28:a:414:C:H2'	28:a:415:A:H8	1.77	0.50
32:e:5:LEU:HD12	32:e:10:SER:HB2	1.93	0.50
6:A:844:G:H2'	6:A:845:G:C8	2.46	0.50
6:A:1505:A:H2'	6:A:1506:A:C8	2.47	0.50
12:G:17:LYS:HG3	12:G:44:TYR:CZ	2.47	0.50
28:a:1052:A:H2'	28:a:1053:G:O4'	2.11	0.50
28:a:2187:U:C2	28:a:2188:G:C8	2.99	0.50
15:J:26:VAL:HG11	15:J:39:PRO:HD3	1.91	0.50
17:L:42:PRO:HD3	17:L:48:ALA:O	2.11	0.50
27:X:37:PRO:HB3	27:X:54:ILE:HG12	1.92	0.50
28:a:358:U:H2'	28:a:359:G:C8	2.46	0.50
28:a:1338:G:H5'	46:s:61:LEU:HB3	1.94	0.50
28:a:2489:U:H5"	28:a:2568:G:H5"	1.93	0.50
31:d:28:GLU:OE1	31:d:30:GLU:HG3	2.12	0.50
11:F:51:ILE:O	11:F:54:LEU:HD12	2.11	0.50
28:a:285:U:O4	28:a:355:G:O6	2.29	0.50
28:a:1275:C:H2'	28:a:1276:G:H8	1.76	0.50
40:m:24:MET:HB3	40:m:44:LEU:HD13	1.93	0.50
48:u:73:LYS:HG3	48:u:94:ALA:HB2	1.94	0.50
1:0:8:LYS:HB3	1:0:54:ILE:HD13	1.94	0.50
28:a:879:G:N2	28:a:893:U:O2	2.38	0.50
30:c:118:SER:HB3	30:c:129:THR:HB	1.93	0.50
6:A:308:G:H5"	21:P:31:ARG:HB2	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:388:U:H2'	6:A:389:G:C8	2.46	0.50
6:A:484:U:H2'	6:A:485:A:H8	1.76	0.50
28:a:2117:A:O2'	28:a:2169:A:H2'	2.11	0.50
30:c:165:VAL:HG21	30:c:181:MET:HE1	1.94	0.50
31:d:152:PRO:HG3	31:d:156:PHE:CZ	2.46	0.50
35:h:16:GLY:HA2	35:h:47:PHE:CE2	2.47	0.50
39:l:64:TRP:CZ3	39:l:106:ASP:HB2	2.46	0.50
5:4:64:PHE:O	5:4:67:PRO:HD3	2.12	0.50
6:A:1026:C:H2'	6:A:1027:U:C6	2.47	0.50
6:A:1069:C:H2'	6:A:1070:G:H8	1.77	0.50
6:A:1234:A:H4'	6:A:1302:G:H4'	1.93	0.50
15:J:6:ILE:HD12	15:J:102:LEU:HA	1.94	0.50
28:a:30:G:H2'	28:a:31:C:H6	1.77	0.50
28:a:830:U:H2'	28:a:831:A:H8	1.74	0.50
28:a:1139:U:H4'	28:a:1140:A:O4'	2.12	0.50
32:e:191:ASP:O	32:e:195:GLN:HG3	2.11	0.50
6:A:857:G:H2'	6:A:858:A:C8	2.46	0.50
7:B:20:THR:HG22	7:B:39:HIS:CD2	2.46	0.50
7:B:73:LYS:HZ1	7:B:164:ILE:HG22	1.77	0.50
28:a:606:A:H2'	28:a:607:A:C8	2.47	0.50
33:f:31:VAL:HA	33:f:158:THR:HG22	1.94	0.50
36:i:36:LEU:HD11	36:i:122:LEU:HB2	1.94	0.50
6:A:630:U:H5"	6:A:631:G:C8	2.47	0.50
6:A:1094:C:H2'	6:A:1095:C:H6	1.76	0.50
28:a:155:A:H2'	28:a:156:A:C8	2.46	0.50
28:a:479:A:N3	28:a:481:G:H5"	2.27	0.50
28:a:1103:U:H2'	28:a:1104:G:C8	2.43	0.50
28:a:1440:U:H2'	28:a:1441:A:H8	1.76	0.50
28:a:2191:G:H2'	28:a:2192:U:H6	1.77	0.50
28:a:2196:A:H8	28:a:2196:A:OP1	1.94	0.50
28:a:2098:G:H3'	28:a:2099:A:H8	1.75	0.49
48:u:43:ASP:OD1	48:u:46:LYS:HG2	2.12	0.49
6:A:1086:G:N2	6:A:1165:A:H61	2.11	0.49
6:A:1241:C:H2'	6:A:1242:A:H8	1.77	0.49
8:C:47:LEU:HD13	8:C:76:VAL:HG22	1.93	0.49
11:F:42:TRP:CE2	11:F:102:MET:HG3	2.47	0.49
28:a:1674:A:H2'	28:a:1675:A:C8	2.47	0.49
28:a:2163:C:H42	28:a:2170:U:H5	1.60	0.49
34:g:137:ASP:HB3	34:g:140:VAL:HB	1.94	0.49
6:A:503:G:H2'	6:A:504:G:H8	1.77	0.49
9:D:150:LYS:HE2	9:D:178:MET:HB2	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1147:G:H2'	28:a:1148:C:C6	2.47	0.49
35:h:83:LYS:C	35:h:83:LYS:HD2	2.37	0.49
37:j:114:LYS:HD3	37:j:118:LEU:HD11	1.93	0.49
45:r:6:GLN:HG2	45:r:8:ARG:HG2	1.94	0.49
6:A:537:A:H2'	6:A:538:G:H8	1.77	0.49
9:D:72:PHE:HE1	9:D:94:LEU:HD11	1.78	0.49
28:a:250:G:H2'	28:a:251:A:C8	2.47	0.49
28:a:2845:U:H2'	28:a:2846:G:O4'	2.12	0.49
35:h:116:ARG:HB2	35:h:131:ASP:HB2	1.93	0.49
46:s:51:PHE:HB3	46:s:93:LEU:HD11	1.93	0.49
47:t:49:VAL:HG22	47:t:54:GLN:HB3	1.93	0.49
6:A:197:U:H2'	6:A:198:G:C8	2.48	0.49
6:A:557:A:H4'	6:A:558:A:H3'	1.95	0.49
6:A:909:U:H2'	6:A:910:C:C6	2.47	0.49
6:A:1350:C:H2'	6:A:1351:G:C8	2.47	0.49
28:a:273:G:H2'	28:a:274:U:C6	2.47	0.49
28:a:414:C:H2'	28:a:415:A:C8	2.47	0.49
28:a:493:G:H2'	28:a:494:G:O4'	2.12	0.49
28:a:818:A:H4'	28:a:834:G:H22	1.78	0.49
28:a:896:C:H2'	28:a:897:A:O4'	2.13	0.49
28:a:2107:U:H4'	28:a:2141:C:H4'	1.94	0.49
28:a:2555:G:H2'	28:a:2556:C:C6	2.47	0.49
39:l:105:MET:HB2	39:l:117:PHE:CZ	2.48	0.49
9:D:147:GLU:HA	9:D:150:LYS:HD2	1.93	0.49
13:H:86:TYR:CE2	13:H:124:GLU:HG3	2.48	0.49
28:a:476:G:H4'	28:a:502:A:N1	2.27	0.49
33:f:112:ARG:HB2	33:f:112:ARG:CZ	2.42	0.49
6:A:713:A:H2'	6:A:714:A:C8	2.48	0.49
28:a:643:C:H2'	28:a:645:G:C8	2.48	0.49
28:a:2191:G:H2'	28:a:2192:U:C6	2.48	0.49
28:a:2843:U:H5"	42:o:52:ASN:O	2.13	0.49
10:E:83:HIS:CG	13:H:96:MET:HG3	2.47	0.49
28:a:337:C:H2'	28:a:338:G:O4'	2.12	0.49
28:a:351:C:H2'	28:a:352:A:C8	2.48	0.49
28:a:1011:C:H2'	28:a:1012:A:C8	2.47	0.49
28:a:1176:G:H2'	28:a:1177:U:C6	2.48	0.49
28:a:2698:A:H2'	28:a:2699:U:H6	1.78	0.49
28:a:272:A:H2'	28:a:273:G:C8	2.48	0.49
28:a:575:G:H2'	28:a:576:G:C8	2.48	0.49
28:a:2290:U:H2'	28:a:2291:A:C8	2.48	0.49
44:q:27:ILE:HG22	44:q:31:GLU:HB3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:w:32:ASN:O	50:w:52:SER:HA	2.13	0.49
7:B:15:HIS:HA	7:B:41:ILE:HG23	1.94	0.49
8:C:88:ARG:HD2	8:C:99:ALA:HB3	1.95	0.49
15:J:21:SER:C	15:J:23:ALA:H	2.21	0.49
15:J:22:THR:HA	15:J:25:ILE:HB	1.95	0.49
16:K:23:ILE:HD13	16:K:96:THR:OG1	2.13	0.49
28:a:632:C:H2'	28:a:633:C:C6	2.48	0.49
28:a:889:G:H2'	28:a:890:A:C8	2.47	0.49
28:a:1303:C:H2'	28:a:1304:A:H8	1.78	0.49
6:A:213:C:H2'	6:A:214:U:H6	1.78	0.48
6:A:902:U:H2'	6:A:903:U:C6	2.48	0.48
6:A:1000:A:H2'	6:A:1001:G:H8	1.78	0.48
7:B:117:LEU:HB3	7:B:141:LEU:HD21	1.95	0.48
15:J:84:VAL:O	15:J:88:MET:HG2	2.13	0.48
28:a:5:A:H2'	28:a:6:A:H8	1.75	0.48
28:a:155:A:H2'	28:a:156:A:H8	1.77	0.48
28:a:574:U:H2'	28:a:575:G:C8	2.47	0.48
28:a:1887:A:H2'	28:a:1888:A:H8	1.78	0.48
28:a:2312:A:H2'	28:a:2313:G:H8	1.78	0.48
33:f:163:ASP:O	33:f:167:ARG:HG2	2.13	0.48
39:l:17:ASN:O	39:l:38:ARG:HD3	2.11	0.48
44:q:4:VAL:HG22	44:q:13:ARG:HG3	1.95	0.48
6:A:676:U:H2'	6:A:677:C:C6	2.47	0.48
6:A:983:C:H2'	6:A:984:U:C6	2.48	0.48
6:A:1271:C:H2'	6:A:1272:A:O4'	2.13	0.48
6:A:1491:A:H5'	28:a:1911:A:N3	2.28	0.48
9:D:170:TRP:CD2	9:D:186:PRO:HB3	2.47	0.48
20:O:55:GLY:O	20:O:59:MET:HG3	2.13	0.48
28:a:143:C:H2'	28:a:144:A:C8	2.48	0.48
28:a:248:G:O5'	28:a:249:C:H5"	2.12	0.48
28:a:874:C:H2'	28:a:875:U:O4'	2.13	0.48
28:a:1174:G:H8	28:a:1174:G:OP2	1.94	0.48
28:a:1403:U:H2'	28:a:1404:G:C8	2.48	0.48
28:a:2012:A:H2'	28:a:2013:A:C8	2.47	0.48
6:A:675:U:H3	6:A:711:G:H22	1.62	0.48
7:B:101:LEU:HB3	7:B:179:LEU:HD12	1.95	0.48
4:3:23:ILE:HD13	28:a:1030:A:H1'	1.94	0.48
6:A:1402:C:H2'	6:A:1403:G:C8	2.49	0.48
7:B:57:LEU:HA	7:B:60:ILE:HG22	1.94	0.48
15:J:22:THR:O	15:J:26:VAL:HG13	2.14	0.48
28:a:451:U:H4'	32:e:47:LYS:HE2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1060:G:N3	28:a:1060:G:H2'	2.28	0.48
28:a:1083:A:H4'	28:a:1103:U:H4'	1.95	0.48
28:a:2535:U:H2'	28:a:2536:C:C6	2.49	0.48
6:A:670:U:H2'	6:A:671:A:C8	2.48	0.48
6:A:1160:C:H2'	6:A:1161:A:H8	1.78	0.48
9:D:28:ILE:HG12	9:D:34:ILE:HD13	1.95	0.48
6:A:33:A:H2'	6:A:34:C:C6	2.49	0.48
6:A:54:C:H2'	6:A:350:C:H41	1.79	0.48
6:A:844:G:H2'	6:A:845:G:H8	1.79	0.48
6:A:952:G:H2'	6:A:953:U:C6	2.49	0.48
8:C:135:LYS:O	8:C:139:GLN:HG2	2.12	0.48
28:a:585:C:C2	38:k:19:LEU:HD12	2.49	0.48
28:a:1195:U:C2	28:a:1196:U:C5	3.02	0.48
28:a:1318:A:C4	28:a:1319:A:C8	3.01	0.48
28:a:2035:A:H2'	28:a:2036:G:C8	2.48	0.48
37:j:10:VAL:HG12	37:j:12:ASP:OD1	2.14	0.48
6:A:310:C:H2'	6:A:311:A:C8	2.49	0.48
6:A:335:G:H2'	6:A:336:A:H8	1.78	0.48
10:E:16:ILE:HD11	10:E:38:VAL:HG13	1.94	0.48
28:a:1700:G:H2'	28:a:1701:C:C6	2.49	0.48
28:a:2177:C:H2'	28:a:2178:U:C6	2.48	0.48
6:A:943:G:C2	6:A:944:A:C8	3.02	0.48
6:A:1324:U:H2'	6:A:1325:C:C6	2.49	0.48
10:E:77:ASN:O	10:E:80:THR:HG22	2.14	0.48
15:J:26:VAL:HG12	15:J:36:VAL:HG11	1.95	0.48
18:M:4:ILE:HG23	18:M:57:ARG:HG2	1.96	0.48
28:a:2085:G:H2'	28:a:2086:A:H8	1.79	0.48
28:a:2807:A:H2'	28:a:2808:A:C8	2.48	0.48
35:h:83:LYS:HD2	35:h:83:LYS:O	2.14	0.48
6:A:331:U:H2'	6:A:332:C:H6	1.79	0.48
7:B:196:VAL:HG23	7:B:199:VAL:HG22	1.94	0.48
43:p:72:ASN:HB3	43:p:110:VAL:HG11	1.95	0.48
6:A:1145:C:H2'	6:A:1146:U:C6	2.49	0.48
7:B:9:MET:SD	7:B:47:VAL:HG12	2.53	0.48
18:M:89:LEU:O	18:M:93:ARG:HG3	2.13	0.48
28:a:274:U:H2'	28:a:275:C:C6	2.48	0.48
6:A:214:U:H2'	6:A:215:C:H6	1.78	0.47
6:A:672:G:H2'	6:A:673:A:C8	2.49	0.47
6:A:1312:C:H2'	6:A:1313:U:C6	2.49	0.47
28:a:577:G:H2'	28:a:578:U:C6	2.48	0.47
28:a:1289:G:H2'	28:a:1290:C:H6	1.78	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1790:A:H2'	28:a:1791:C:H6	1.77	0.47
28:a:2028:6MZ:C2	28:a:2497:C:H5"	2.44	0.47
29:b:112:G:H2'	29:b:113:C:C6	2.49	0.47
35:h:78:VAL:HB	35:h:144:ILE:HD13	1.96	0.47
6:A:333:C:H2'	6:A:334:A:H8	1.78	0.47
6:A:1238:U:C5	12:G:116:MET:HG2	2.49	0.47
28:a:78:U:H2'	28:a:79:C:C6	2.49	0.47
28:a:1404:G:H2'	28:a:1405:G:H8	1.79	0.47
6:A:62:U:H2'	6:A:63:C:C6	2.49	0.47
6:A:197:U:H2'	6:A:198:G:H8	1.78	0.47
28:a:1063:U:C4	28:a:1067:A:H8	2.31	0.47
28:a:1195:U:H2'	28:a:1196:U:C6	2.49	0.47
28:a:2173:C:H2'	28:a:2174:A:C8	2.49	0.47
28:a:2778:G:OP2	36:i:120:ARG:HD3	2.14	0.47
46:s:5:GLU:O	46:s:9:LYS:HG3	2.13	0.47
49:v:38:VAL:HG12	49:v:59:LEU:HB2	1.96	0.47
6:A:75:C:H2'	6:A:76:A:H8	1.79	0.47
6:A:1000:A:H2'	6:A:1001:G:C8	2.49	0.47
28:a:2159:C:H2'	28:a:2160:A:O4'	2.14	0.47
28:a:2647:C:H2'	28:a:2648:U:C6	2.49	0.47
28:a:2835:A:H2'	28:a:2836:G:H8	1.80	0.47
28:a:2898:A:H2'	28:a:2899:C:C6	2.49	0.47
29:b:66:A:H61	29:b:107:G:H2'	1.79	0.47
32:e:111:GLU:OE1	32:e:115:GLN:NE2	2.47	0.47
6:A:397:G:H2'	6:A:398:C:C6	2.50	0.47
28:a:1350:A:H2'	28:a:1351:A:H8	1.79	0.47
28:a:2343:G:C5	28:a:2345:C:C5	3.02	0.47
28:a:2528:A:H5'	34:g:175:LYS:HE2	1.96	0.47
1:0:11:LEU:HB3	1:0:49:TYR:HB3	1.95	0.47
28:a:946:C:H2'	28:a:947:G:H8	1.79	0.47
28:a:977:A:H2'	28:a:980:C:H42	1.80	0.47
28:a:1594:A:H5"	28:a:1595:A:H5'	1.96	0.47
28:a:2045:C:H2'	28:a:2046:G:H8	1.78	0.47
28:a:2802:U:H2'	28:a:2803:C:C6	2.49	0.47
40:m:1:MET:HE3	40:m:1:MET:HB2	1.74	0.47
46:s:52:GLU:OE2	46:s:52:GLU:HA	2.14	0.47
6:A:234:A:H2'	6:A:235:G:H8	1.79	0.47
6:A:1002:A:N6	6:A:1024:G:H1'	2.30	0.47
6:A:1017:C:H2'	6:A:1018:U:O4'	2.15	0.47
6:A:1241:C:H2'	6:A:1242:A:C8	2.50	0.47
6:A:1439:A:H62	6:A:1459:G:H21	1.61	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:B:164:ILE:HA	7:B:186:ILE:CG2	2.45	0.47
12:G:76:LYS:HD3	12:G:89:VAL:HG21	1.96	0.47
12:G:91:VAL:HG12	12:G:96:ARG:HG3	1.96	0.47
13:H:30:SER:HB3	13:H:33:LYS:HE3	1.96	0.47
22:Q:48:ASP:OD1	22:Q:53:CYS:HB2	2.15	0.47
28:a:2269:G:OP1	49:v:18:ALA:HB1	2.15	0.47
28:a:2595:G:H5'	30:c:241:GLY:HA3	1.97	0.47
28:a:2745:G:O6	28:a:2753:C:H5"	2.15	0.47
32:e:149:ILE:HB	32:e:188:MET:HG2	1.95	0.47
34:g:74:SER:HA	34:g:77:ILE:HG22	1.97	0.47
6:A:670:U:H2'	6:A:671:A:H8	1.77	0.47
6:A:1058:U:H2'	6:A:1059:G:H8	1.80	0.47
28:a:189:G:OP1	50:w:26:LYS:HD2	2.15	0.47
28:a:2513:C:H2'	28:a:2514:A:C8	2.48	0.47
30:c:205:LEU:HB3	30:c:210:ALA:HB3	1.97	0.47
36:i:37:ARG:HA	36:i:118:MET:HE3	1.97	0.47
6:A:1116:U:H2'	6:A:1117:C:H6	1.80	0.47
10:E:12:GLN:NE2	10:E:117:VAL:HA	2.29	0.47
26:W:9:A:H2'	26:W:10:G:C8	2.48	0.47
28:a:1483:A:H2'	28:a:1484:U:C6	2.50	0.47
28:a:2176:C:H2'	28:a:2177:C:C6	2.50	0.47
28:a:2847:U:H4'	28:a:2866:A:C2	2.50	0.47
33:f:29:PRO:HB3	33:f:160:ALA:HB2	1.95	0.47
33:f:58:ALA:HB2	33:f:65:PRO:HD3	1.96	0.47
47:t:14:LEU:HD11	47:t:71:ALA:HB2	1.96	0.47
50:w:3:ARG:O	50:w:12:PRO:HD3	2.14	0.47
6:A:1155:A:H4'	6:A:1156:C:O4'	2.15	0.47
6:A:1510:U:H2'	6:A:1511:A:C8	2.50	0.47
12:G:49:THR:O	12:G:52:GLN:HG3	2.15	0.47
28:a:19:A:H2'	28:a:20:C:C6	2.50	0.47
28:a:1881:U:H2'	28:a:1882:G:O4'	2.14	0.47
43:p:90:ILE:HG22	43:p:95:LEU:HG	1.96	0.47
6:A:577:A:H2'	6:A:578:C:C6	2.50	0.46
6:A:916:A:H2'	6:A:917:A:C8	2.50	0.46
6:A:1331:A:H2'	6:A:1332:G:O4'	2.14	0.46
20:O:73:LYS:HD2	20:O:73:LYS:HA	1.56	0.46
21:P:56:ARG:HD2	21:P:56:ARG:HA	1.74	0.46
31:d:121:THR:HB	31:d:127:PHE:CD2	2.50	0.46
34:g:86:LYS:HG2	34:g:132:VAL:HG22	1.97	0.46
53:z:43:ILE:HG22	53:z:49:TYR:HB2	1.96	0.46
6:A:1533:C:H2'	6:A:1534:C:C6	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:M:97:VAL:HG23	18:M:98:ARG:HG2	1.96	0.46
28:a:2:G:H2'	28:a:3:U:C6	2.50	0.46
28:a:172:A:H2'	28:a:173:A:C8	2.50	0.46
28:a:782:G:H5'	28:a:783:G:OP1	2.14	0.46
31:d:48:ILE:HG23	31:d:84:LEU:HD11	1.97	0.46
46:s:54:GLU:HB2	46:s:91:GLN:HG3	1.97	0.46
6:A:382:G:H2'	6:A:383:C:H6	1.78	0.46
6:A:1461:U:H2'	6:A:1462:U:C6	2.51	0.46
7:B:186:ILE:HD12	7:B:200:ILE:O	2.15	0.46
12:G:71:PRO:O	12:G:96:ARG:HG2	2.15	0.46
28:a:747:A:H4'	28:a:1268:G:N3	2.30	0.46
28:a:965:U:H2'	28:a:966:C:C6	2.50	0.46
28:a:1054:G:H4'	28:a:1084:A:C8	2.51	0.46
28:a:1930:A:H2'	28:a:1931:G:O4'	2.15	0.46
28:a:2122:G:H2'	28:a:2123:G:O4'	2.15	0.46
28:a:2137:U:H2'	28:a:2138:G:H8	1.81	0.46
35:h:53:GLU:O	35:h:57:LYS:HG2	2.15	0.46
53:z:43:ILE:HD12	53:z:47:GLY:HA2	1.96	0.46
6:A:81:G:N2	6:A:86:C:H42	2.13	0.46
28:a:894:A:C6	28:a:895:C:H1'	2.50	0.46
31:d:32:ASN:N	31:d:32:ASN:HD22	2.12	0.46
3:2:54:ASP:HB3	38:k:57:LEU:HD22	1.98	0.46
6:A:674:A:H2'	6:A:675:U:H6	1.80	0.46
6:A:1312:C:H2'	6:A:1313:U:H6	1.81	0.46
28:a:279:A:H2'	28:a:280:U:O4'	2.15	0.46
28:a:884:A:H2'	28:a:885:U:O4'	2.15	0.46
28:a:1194:G:C4	28:a:1195:U:C5	3.03	0.46
28:a:1402:U:H2'	28:a:1403:U:H6	1.81	0.46
28:a:1576:A:H2'	28:a:1577:A:C8	2.50	0.46
28:a:2453:G:H2'	28:a:2454:C:C6	2.51	0.46
35:h:135:HIS:CE1	35:h:137:GLU:H	2.32	0.46
5:4:1:MET:HG2	29:b:43:C:H5"	1.97	0.46
6:A:591:U:H2'	6:A:592:C:C6	2.50	0.46
6:A:1012:A:C2	6:A:1217:A:H1'	2.51	0.46
28:a:283:G:H2'	28:a:284:C:C6	2.50	0.46
28:a:305:C:H2'	28:a:306:U:C6	2.51	0.46
28:a:1611:A:C6	45:r:87:PRO:HB3	2.51	0.46
28:a:1730:G:H2'	28:a:1731:A:H8	1.81	0.46
28:a:2126:G:H2'	28:a:2127:C:H6	1.79	0.46
40:m:79:LEU:HD23	40:m:83:LEU:HD12	1.97	0.46
6:A:693:A:H2'	6:A:694:A:C8	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:B:66:LYS:HG2	7:B:90:PHE:HE2	1.81	0.46
23:R:50:LYS:HB2	23:R:50:LYS:HE3	1.69	0.46
26:W:7:U:H2'	26:W:8:G:C8	2.50	0.46
28:a:880:G:H2'	28:a:881:G:C8	2.50	0.46
28:a:1717:U:H2'	28:a:1718:G:O4'	2.16	0.46
30:c:107:PRO:HD2	30:c:110:LEU:HD22	1.96	0.46
34:g:41:VAL:HG13	34:g:65:ALA:HA	1.98	0.46
35:h:42:LYS:HB2	35:h:42:LYS:HE2	1.63	0.46
45:r:29:VAL:HB	45:r:55:ILE:HD11	1.98	0.46
6:A:694:A:H2'	6:A:695:U:H6	1.80	0.46
28:a:3:U:H2'	28:a:4:U:H6	1.81	0.46
28:a:992:C:O2	44:q:10:LYS:HE2	2.15	0.46
28:a:2115:A:N6	28:a:2170:U:H3	2.14	0.46
47:t:81:ASP:OD2	47:t:96:PHE:HB3	2.16	0.46
6:A:379:C:H2'	6:A:380:A:O4'	2.15	0.46
6:A:1408:A:H2'	6:A:1409:C:C6	2.49	0.46
24:S:21:LYS:O	24:S:25:SER:HB3	2.15	0.46
28:a:445:C:H2'	28:a:446:G:O4'	2.16	0.46
28:a:642:A:C2	28:a:2367:A:H1'	2.51	0.46
28:a:1024:G:H2'	28:a:1025:A:C8	2.51	0.46
28:a:1036:G:H2'	28:a:1037:A:C8	2.51	0.46
28:a:2343:G:N3	28:a:2379:A:H2'	2.31	0.46
38:k:78:ARG:HG2	38:k:113:SER:HB3	1.98	0.46
6:A:458:A:H2'	6:A:459:G:C8	2.50	0.46
6:A:898:A:H2'	6:A:899:A:C8	2.51	0.46
6:A:1149:A:O2'	6:A:1150:A:H8	1.99	0.46
6:A:1249:A:H2'	6:A:1250:A:C8	2.51	0.46
8:C:47:LEU:HB3	8:C:50:ALA:HB3	1.97	0.46
19:N:45:VAL:HG12	19:N:49:GLN:HE21	1.81	0.46
28:a:189:G:P	50:w:14:THR:HG21	2.56	0.46
28:a:1403:U:H2'	28:a:1404:G:H8	1.81	0.46
28:a:2389:G:O6	28:a:2423:A:H8	1.99	0.46
28:a:2835:A:H2'	28:a:2836:G:C8	2.51	0.46
45:r:83:LYS:HG2	45:r:95:ARG:HH11	1.81	0.46
6:A:520:C:H41	17:L:50:ARG:NH2	2.14	0.45
6:A:965:5MC:H4'	14:I:127:PHE:HE1	1.82	0.45
8:C:151:VAL:O	8:C:167:TRP:HA	2.16	0.45
10:E:38:VAL:HG11	10:E:114:VAL:HG22	1.98	0.45
6:A:8:A:N7	9:D:206:LYS:HA	2.30	0.45
6:A:475:G:H2'	6:A:476:A:H8	1.81	0.45
18:M:77:ILE:HG22	18:M:81:MET:HE2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:643:C:H2'	28:a:645:G:N7	2.31	0.45
28:a:655:U:H2'	28:a:656:U:C6	2.51	0.45
1:0:25:LYS:HE3	1:0:30:LYS:O	2.16	0.45
28:a:739:U:H2'	28:a:740:A:C8	2.50	0.45
28:a:1324:A:H2'	28:a:1325:A:O4'	2.16	0.45
28:a:1426:G:H2'	28:a:1427:G:C8	2.51	0.45
28:a:1523:C:H2'	28:a:1524:G:O4'	2.17	0.45
28:a:1569:A:H2'	28:a:1570:G:H8	1.81	0.45
28:a:1767:C:H2'	28:a:1768:A:H8	1.82	0.45
28:a:2290:U:H2'	28:a:2291:A:H8	1.81	0.45
28:a:2527:G:H4'	34:g:175:LYS:HD3	1.97	0.45
35:h:83:LYS:NZ	35:h:92:GLY:H	2.14	0.45
6:A:153:A:H2'	6:A:154:C:C6	2.51	0.45
6:A:492:G:O2'	6:A:494:A:H1'	2.16	0.45
6:A:920:G:H2'	6:A:921:A:C8	2.51	0.45
6:A:964:2MG:H1'	27:X:53:THR:HG21	1.98	0.45
6:A:982:C:H2'	6:A:983:C:H6	1.81	0.45
6:A:1128:A:H2'	6:A:1129:G:C8	2.46	0.45
6:A:1173:G:H2'	6:A:1174:A:H8	1.82	0.45
6:A:1433:G:H2'	6:A:1434:U:C6	2.51	0.45
10:E:95:PHE:CZ	10:E:97:GLN:HG3	2.52	0.45
13:H:38:ASN:O	13:H:42:GLU:HG2	2.17	0.45
28:a:2311:C:H2'	28:a:2312:A:C8	2.51	0.45
28:a:2635:U:H2'	28:a:2636:G:O4'	2.16	0.45
37:j:66:LYS:HB3	37:j:66:LYS:HE2	1.68	0.45
39:l:58:LYS:HE3	39:l:58:LYS:HB2	1.76	0.45
6:A:473:U:H2'	6:A:474:C:C6	2.52	0.45
6:A:543:C:H5'	9:D:69:GLU:CB	2.46	0.45
6:A:793:C:H5"	16:K:128:ARG:HH21	1.82	0.45
6:A:906:A:H2'	6:A:907:A:C8	2.52	0.45
6:A:1218:G:P	19:N:53:ARG:HH12	2.38	0.45
28:a:208:C:H2'	28:a:209:C:H6	1.81	0.45
28:a:1677:U:H2'	28:a:1678:G:O4'	2.17	0.45
28:a:1849:A:N1	28:a:2085:G:H1'	2.30	0.45
28:a:2132:A:H2'	28:a:2133:A:O4'	2.16	0.45
51:x:55:THR:O	51:x:59:GLN:HG2	2.16	0.45
6:A:202:G:H2'	6:A:203:A:C8	2.52	0.45
6:A:1408:A:H2'	6:A:1409:C:H6	1.81	0.45
11:F:10:VAL:HB	11:F:58:HIS:HB3	1.99	0.45
18:M:83:LEU:HD22	24:S:66:MET:HG2	1.98	0.45
28:a:1444:C:H2'	28:a:1445:G:H8	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:b:106:G:H2'	29:b:107:G:O4'	2.16	0.45
32:e:1:MET:HE1	32:e:20:GLY:CA	2.46	0.45
6:A:307:A:H2'	6:A:308:G:H8	1.81	0.45
6:A:536:G:H2'	6:A:537:A:H8	1.81	0.45
8:C:83:ASP:O	8:C:87:LEU:HG	2.17	0.45
22:Q:17:MET:HE3	22:Q:20:SER:CB	2.47	0.45
28:a:182:A:H2'	28:a:183:C:H6	1.81	0.45
28:a:2467:A:H4'	39:l:55:ARG:NE	2.31	0.45
28:a:2832:G:H2'	28:a:2877:A:H61	1.82	0.45
30:c:199:GLU:CD	30:c:199:GLU:H	2.25	0.45
6:A:205:C:H2'	6:A:206:U:O4'	2.16	0.45
6:A:1340:C:H2'	6:A:1341:G:C8	2.51	0.45
8:C:10:ILE:HD13	19:N:98:LYS:HD3	1.98	0.45
15:J:36:VAL:HA	15:J:76:ILE:HD13	1.98	0.45
17:L:50:ARG:HB3	17:L:66:TYR:HE1	1.80	0.45
28:a:92:U:H2'	28:a:93:G:O4'	2.17	0.45
34:g:54:PRO:HG3	34:g:62:TRP:CE2	2.52	0.45
36:i:69:ARG:HG2	36:i:90:GLU:HG2	1.98	0.45
43:p:58:ARG:HA	43:p:61:TRP:CE3	2.52	0.45
45:r:46:LEU:O	45:r:50:VAL:HG23	2.17	0.45
6:A:769:G:H2'	6:A:770:U:C6	2.52	0.45
6:A:918:U:H2'	6:A:919:U:C6	2.51	0.45
8:C:79:LYS:HD2	8:C:79:LYS:HA	1.74	0.45
28:a:2206:C:H2'	28:a:2207:C:C6	2.51	0.45
28:a:2545:A:H2'	28:a:2546:U:C6	2.52	0.45
29:b:35:C:H2'	29:b:36:C:O4'	2.16	0.45
52:y:6:LYS:HG3	52:y:37:GLU:OE1	2.16	0.45
6:A:311:A:H2'	6:A:312:C:C6	2.51	0.45
6:A:457:A:H2'	6:A:458:A:C8	2.52	0.45
14:I:46:MET:HE2	14:I:46:MET:HB3	1.90	0.45
27:X:29:LYS:HB3	27:X:29:LYS:HE2	1.76	0.45
28:a:184:C:H2'	28:a:185:G:H8	1.82	0.45
28:a:366:C:H2'	28:a:367:G:O4'	2.17	0.45
28:a:592:U:H2'	28:a:593:C:C6	2.52	0.45
28:a:823:A:O2'	38:k:54:GLN:HB2	2.17	0.45
28:a:957:A:H2'	28:a:958:A:C8	2.52	0.45
28:a:1193:C:H2'	28:a:1194:G:C8	2.51	0.45
28:a:1236:G:H2'	28:a:1237:U:O4'	2.17	0.45
28:a:2392:C:H5"	38:k:63:LYS:HE2	1.98	0.45
28:a:2637:A:H2'	28:a:2638:G:O4'	2.17	0.45
33:f:46:ASP:HB3	33:f:49:LEU:HG	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:819:G:H2'	6:A:820:U:H6	1.82	0.44
6:A:1236:A:H2	6:A:1239:G:N3	2.15	0.44
8:C:150:LYS:HE2	8:C:169:ARG:NH1	2.32	0.44
13:H:102:ALA:HB3	13:H:113:ASP:HB3	1.99	0.44
28:a:1077:C:H2'	28:a:1078:A:O4'	2.17	0.44
28:a:1078:A:H2'	28:a:1079:U:H6	1.82	0.44
28:a:1354:C:H2'	28:a:1355:G:O4'	2.16	0.44
28:a:1534:G:C5	28:a:1535:G:H1'	2.52	0.44
28:a:2685:U:H2'	28:a:2686:G:O4'	2.16	0.44
29:b:49:C:H2'	29:b:50:A:H8	1.82	0.44
44:q:46:GLU:C	44:q:47:ILE:HD13	2.42	0.44
48:u:3:THR:HA	48:u:62:THR:HG23	1.99	0.44
49:v:72:LYS:HB2	49:v:72:LYS:HE2	1.80	0.44
6:A:2:A:H1'	6:A:611:C:O2'	2.18	0.44
6:A:1093:U:H2'	6:A:1094:C:C6	2.52	0.44
6:A:1116:U:H2'	6:A:1117:C:C6	2.52	0.44
7:B:77:SER:O	7:B:80:VAL:HG12	2.17	0.44
11:F:4:TYR:CE2	11:F:71:ILE:HG13	2.52	0.44
28:a:12:U:O2	28:a:2624:C:H4'	2.16	0.44
28:a:1638:A:H2'	28:a:1639:G:O4'	2.17	0.44
28:a:2108:G:C4	28:a:2118:G:H1'	2.52	0.44
28:a:2746:A:H5'	34:g:4:VAL:HG21	1.99	0.44
28:a:2893:G:H2'	28:a:2894:C:C6	2.53	0.44
38:k:55:MET:HE2	38:k:55:MET:HA	2.00	0.44
6:A:85:G:H3'	6:A:86:C:C6	2.53	0.44
6:A:321:U:H2'	6:A:322:G:O4'	2.18	0.44
6:A:735:C:H2'	6:A:736:C:H6	1.82	0.44
6:A:1002:A:C6	6:A:1024:G:H1'	2.52	0.44
6:A:1009:C:H2'	6:A:1010:A:H8	1.80	0.44
6:A:1292:G:H2'	6:A:1293:U:C6	2.52	0.44
7:B:85:LEU:HD23	7:B:85:LEU:HA	1.87	0.44
9:D:116:GLN:HE21	9:D:116:GLN:HB2	1.65	0.44
15:J:92:LEU:HD23	15:J:92:LEU:HA	1.71	0.44
28:a:856:G:N3	28:a:2266:A:H2'	2.31	0.44
28:a:2819:A:H2'	28:a:2820:G:C8	2.52	0.44
30:c:141:VAL:HB	30:c:190:ALA:HB1	1.99	0.44
45:r:17:VAL:HB	45:r:76:VAL:HG11	2.00	0.44
6:A:20:U:H2'	6:A:21:G:O4'	2.18	0.44
6:A:374:G:H5"	21:P:5:ARG:HD2	2.00	0.44
6:A:536:G:H2'	6:A:537:A:C8	2.53	0.44
6:A:788:A:H2'	6:A:789:G:C8	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1094:C:H2'	6:A:1095:C:C6	2.52	0.44
6:A:1313:U:H2'	6:A:1314:G:O4'	2.17	0.44
7:B:114:LEU:HD13	7:B:144:LEU:HB3	1.99	0.44
9:D:188:ARG:HA	9:D:188:ARG:HD2	1.83	0.44
28:a:84:A:H4'	28:a:85:G:O5'	2.17	0.44
28:a:2362:C:H2'	28:a:2363:G:O4'	2.17	0.44
1:0:13:SER:HB2	1:0:49:TYR:CZ	2.52	0.44
6:A:270:C:H2'	6:A:271:U:C6	2.52	0.44
6:A:602:G:H2'	6:A:603:U:O4'	2.18	0.44
6:A:980:U:H4'	6:A:981:A:O4'	2.18	0.44
19:N:9:ARG:O	19:N:13:ARG:HG3	2.17	0.44
28:a:1056:U:O2	28:a:1056:U:H2'	2.16	0.44
28:a:1440:U:H2'	28:a:1441:A:C8	2.51	0.44
28:a:1441:A:H2'	28:a:1442:G:C8	2.52	0.44
33:f:91:LEU:C	33:f:96:MET:HB2	2.43	0.44
39:l:38:ARG:HB2	39:l:98:PRO:HD3	2.00	0.44
6:A:333:C:H2'	6:A:334:A:C8	2.53	0.44
6:A:402:G:N7	9:D:2:ALA:HB3	2.32	0.44
26:W:10:G:C6	26:W:11:G:C6	3.05	0.44
28:a:740:A:H2'	28:a:741:A:H8	1.81	0.44
28:a:1194:G:H2'	28:a:1195:U:C6	2.49	0.44
28:a:2068:A:H2'	28:a:2069:A:H8	1.81	0.44
28:a:2114:G:H2'	28:a:2115:A:N7	2.32	0.44
34:g:149:ARG:HA	34:g:162:VAL:HB	1.99	0.44
40:m:72:ASP:HB3	40:m:75:ILE:HB	2.00	0.44
6:A:1070:G:H2'	6:A:1071:U:H6	1.82	0.44
6:A:1219:G:O3'	24:S:77:THR:HG21	2.18	0.44
6:A:1251:G:H2'	6:A:1252:A:C8	2.53	0.44
11:F:9:MET:SD	11:F:86:ARG:HB3	2.56	0.44
12:G:26:PHE:HE2	12:G:120:LEU:HD21	1.83	0.44
28:a:208:C:H2'	28:a:209:C:C6	2.53	0.44
28:a:986:A:P	52:y:12:SER:HB3	2.58	0.44
28:a:1039:G:H2'	28:a:1040:G:H8	1.83	0.44
28:a:1053:G:C2	28:a:1054:G:H1'	2.52	0.44
28:a:1083:A:H1'	28:a:1103:U:H1'	1.99	0.44
28:a:1686:A:H2'	28:a:1687:A:C8	2.52	0.44
28:a:2639:G:H5"	36:i:78:THR:HB	1.99	0.44
30:c:208:ALA:O	30:c:212:ARG:HG2	2.17	0.44
30:c:210:ALA:HA	30:c:213:TRP:CE3	2.52	0.44
31:d:11:MET:HE2	31:d:11:MET:HB3	1.89	0.44
34:g:9:VAL:HG23	34:g:50:LEU:HB2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
52:y:56:LYS:HE3	52:y:56:LYS:HB3	1.63	0.44
6:A:369:A:H2'	6:A:370:C:O4'	2.18	0.44
6:A:777:C:H2'	6:A:778:A:O4'	2.18	0.44
6:A:1462:U:H2'	6:A:1463:A:H8	1.83	0.44
23:R:48:ARG:NH2	23:R:50:LYS:HD3	2.33	0.44
28:a:39:G:H2'	28:a:40:U:C6	2.53	0.44
28:a:580:A:H2'	28:a:581:G:H8	1.80	0.44
28:a:780:A:C2	30:c:225:MET:HG2	2.52	0.44
28:a:1633:U:H2'	28:a:1634:A:C8	2.52	0.44
28:a:1786:C:H2'	28:a:1787:A:C5	2.53	0.44
28:a:1835:G:C2	28:a:1836:G:C8	3.06	0.44
28:a:2314:G:H2'	28:a:2315:A:H8	1.82	0.44
28:a:2467:A:H4'	39:l:55:ARG:HD3	2.00	0.44
28:a:2647:C:H2'	28:a:2648:U:H6	1.83	0.44
34:g:17:VAL:HG11	34:g:50:LEU:HD21	2.00	0.44
37:j:17:ARG:HA	37:j:17:ARG:HD3	1.81	0.44
48:u:30:ILE:O	48:u:37:PRO:HA	2.17	0.44
3:2:25:LYS:HB3	38:k:62:PRO:HG2	1.99	0.44
6:A:1158:G:C2	6:A:1159:C:C6	3.06	0.44
6:A:1384:G:H2'	6:A:1385:G:H8	1.83	0.44
15:J:15:HIS:HA	15:J:18:ILE:HG22	1.98	0.44
28:a:322:A:OP2	32:e:163:ASN:HB2	2.17	0.44
28:a:967:G:H2'	28:a:968:U:C6	2.53	0.44
28:a:1913:3TD:H2'	28:a:1914:A:H8	1.83	0.44
28:a:2026:U:H2'	28:a:2027:G:C8	2.53	0.44
35:h:95:GLY:HA2	35:h:121:VAL:HG23	1.98	0.44
38:k:122:VAL:HG13	38:k:125:LEU:HD12	2.00	0.44
6:A:6:G:O2'	6:A:7:A:H8	2.00	0.43
6:A:510:U:H2'	6:A:511:C:C6	2.52	0.43
6:A:1146:U:H2'	6:A:1147:C:O4'	2.17	0.43
28:a:578:U:H2'	28:a:579:C:H6	1.83	0.43
28:a:1482:U:H2'	28:a:1483:A:C8	2.53	0.43
28:a:1707:G:H4'	28:a:2856:C:O2	2.18	0.43
28:a:2045:C:H2'	28:a:2046:G:C8	2.53	0.43
36:i:104:ALA:O	36:i:108:MET:HG3	2.18	0.43
37:j:71:ARG:HD3	37:j:71:ARG:HA	1.86	0.43
6:A:413:A:C4	6:A:414:G:C8	3.06	0.43
6:A:921:A:H2'	6:A:922:C:C6	2.53	0.43
10:E:85:VAL:HG23	10:E:96:MET:HB2	2.01	0.43
11:F:44:ARG:HB2	11:F:44:ARG:CZ	2.48	0.43
19:N:23:LYS:O	19:N:26:GLU:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:78:U:H2'	28:a:79:C:H6	1.83	0.43
28:a:630:A:H2'	28:a:631:A:C8	2.53	0.43
28:a:758:G:H2'	28:a:759:A:O4'	2.17	0.43
28:a:886:C:H2'	28:a:887:C:O4'	2.18	0.43
28:a:2182:A:C6	28:a:2183:U:C5	3.06	0.43
28:a:2314:G:H4'	33:f:125:ARG:HH11	1.83	0.43
6:A:573:G:O2'	6:A:819:G:H5'	2.18	0.43
6:A:906:A:H2'	6:A:907:A:H8	1.83	0.43
6:A:924:G:C4	27:X:91:LYS:HG3	2.52	0.43
28:a:499:U:H5"	47:t:43:LYS:HD2	2.00	0.43
28:a:2141:C:H2'	28:a:2142:G:O4'	2.18	0.43
28:a:2160:A:C4	28:a:2161:A:C8	3.07	0.43
6:A:511:C:H2'	6:A:512:C:C6	2.54	0.43
6:A:862:A:H2'	6:A:863:A:C8	2.54	0.43
6:A:999:C:H2'	6:A:1000:A:C8	2.53	0.43
6:A:1086:G:H21	6:A:1165:A:N6	2.16	0.43
7:B:144:LEU:HD23	7:B:144:LEU:HA	1.86	0.43
11:F:93:LYS:HB3	11:F:93:LYS:HE3	1.85	0.43
25:T:2:ALA:HB3	25:T:8:LYS:HG2	1.99	0.43
28:a:184:C:H2'	28:a:185:G:C8	2.53	0.43
28:a:308:G:H2'	28:a:309:A:C8	2.52	0.43
28:a:1805:A:H2'	28:a:1806:A:C8	2.54	0.43
28:a:2070:C:H2'	28:a:2071:C:H6	1.84	0.43
43:p:86:ALA:HB2	43:p:116:ALA:HB2	2.00	0.43
6:A:1031:G:H2'	6:A:1032:G:C8	2.53	0.43
6:A:1314:G:N2	6:A:1316:A:H3'	2.34	0.43
27:X:35:ILE:HB	27:X:55:ASN:HB3	2.00	0.43
28:a:1351:A:H2'	28:a:1352:G:O4'	2.18	0.43
28:a:1650:G:H3'	40:m:2:ARG:HG2	2.00	0.43
28:a:2106:A:H5'	28:a:2148:C:H4'	1.99	0.43
29:b:49:C:H2'	29:b:50:A:C8	2.53	0.43
38:k:141:LYS:HB3	38:k:141:LYS:HE3	1.80	0.43
6:A:98:G:C4	6:A:99:A:C8	3.07	0.43
6:A:111:G:H1'	6:A:352:G:H5'	2.00	0.43
6:A:426:G:OP2	9:D:7:PRO:HG2	2.19	0.43
6:A:560:U:H1'	17:L:12:ARG:HB3	1.98	0.43
6:A:632:C:H2'	6:A:633:A:H8	1.84	0.43
6:A:1032:G:H2'	6:A:1033:A:H8	1.83	0.43
6:A:1177:A:H2'	6:A:1178:A:C8	2.54	0.43
9:D:44:ARG:H	9:D:44:ARG:HG2	1.60	0.43
28:a:946:C:H1'	28:a:982:A:C8	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
35:h:96:THR:HB	35:h:117:LEU:HD11	2.00	0.43
36:i:88:THR:OG1	36:i:91:GLU:HG3	2.18	0.43
48:u:7:GLU:O	48:u:40:ILE:HA	2.18	0.43
6:A:268:A:H2'	6:A:269:C:C6	2.54	0.43
6:A:591:U:H2'	6:A:592:C:H6	1.84	0.43
6:A:632:C:H2'	6:A:633:A:C8	2.54	0.43
6:A:1389:U:H2'	6:A:1390:G:H8	1.83	0.43
6:A:1537:C:C2	6:A:1538:U:C5	3.07	0.43
9:D:146:ARG:O	9:D:150:LYS:HG3	2.18	0.43
17:L:15:LYS:H	17:L:15:LYS:HG2	1.49	0.43
25:T:27:MET:HE3	25:T:27:MET:HB3	1.84	0.43
28:a:665:U:H2'	28:a:666:A:O4'	2.18	0.43
28:a:1266:A:H2'	28:a:1267:C:C6	2.54	0.43
28:a:1545:A:H2'	28:a:1546:A:C8	2.54	0.43
28:a:2085:G:H2'	28:a:2086:A:C8	2.53	0.43
28:a:2459:A:H2'	28:a:2460:C:C6	2.53	0.43
28:a:2646:G:H2'	28:a:2647:C:C6	2.54	0.43
32:e:48:THR:O	32:e:52:ILE:HG12	2.18	0.43
34:g:60:ASP:O	34:g:64:GLN:HG2	2.19	0.43
36:i:9:GLU:CD	36:i:9:GLU:H	2.26	0.43
39:l:41:LEU:HG	39:l:96:ILE:HG13	2.01	0.43
39:l:108:VAL:HB	39:l:112:LEU:HD23	2.00	0.43
3:2:55:LEU:HD23	3:2:55:LEU:HA	1.81	0.43
6:A:663:A:N3	6:A:730:C:H2'	2.33	0.43
6:A:858:A:H2'	6:A:859:G:O4'	2.19	0.43
6:A:866:C:H2'	6:A:867:G:O4'	2.18	0.43
6:A:1530:U:H2'	6:A:1531:C:C6	2.54	0.43
7:B:68:LEU:HD11	7:B:158:PRO:CB	2.44	0.43
7:B:68:LEU:HD21	7:B:158:PRO:HG3	2.00	0.43
9:D:152:GLN:HB2	9:D:155:VAL:HG23	2.00	0.43
19:N:48:LEU:HD12	19:N:48:LEU:HA	1.82	0.43
28:a:1216:A:H2'	28:a:1217:C:C6	2.53	0.43
28:a:2243:U:H5"	28:a:2244:G:H5'	2.00	0.43
28:a:2249:OMG:HM23	28:a:2249:OMG:H1'	1.67	0.43
28:a:2554:C:H2'	28:a:2555:G:O4'	2.19	0.43
28:a:2588:A:H2'	28:a:2589:C:C6	2.53	0.43
28:a:2894:C:H2'	28:a:2895:U:C6	2.54	0.43
30:c:60:GLN:HG2	30:c:85:PRO:HB2	2.01	0.43
6:A:458:A:H2'	6:A:459:G:H8	1.83	0.43
6:A:1508:C:H2'	6:A:1509:G:C8	2.54	0.43
9:D:149:ALA:O	9:D:152:GLN:HG3	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:I:57:MET:HE2	14:I:60:LYS:HE3	2.00	0.43
28:a:471:A:H2'	28:a:472:A:O4'	2.19	0.43
28:a:714:A:H2'	28:a:715:C:O4'	2.18	0.43
28:a:1174:G:H2'	28:a:1175:U:C6	2.53	0.43
32:e:1:MET:HB3	32:e:14:VAL:HG23	2.01	0.43
33:f:114:PHE:CE1	33:f:117:LEU:HG	2.47	0.43
47:t:85:PHE:CE1	47:t:94:ARG:HG2	2.53	0.43
6:A:242:U:O4	6:A:904:A:H1'	2.19	0.43
6:A:1069:C:H2'	6:A:1070:G:C8	2.54	0.43
6:A:1328:U:H2'	6:A:1329:G:O4'	2.19	0.43
8:C:70:THR:HG21	8:C:76:VAL:HG21	2.00	0.43
25:T:53:GLU:O	25:T:57:ILE:HD12	2.19	0.43
28:a:143:C:H2'	28:a:144:A:H8	1.84	0.43
28:a:839:G:H2'	28:a:840:U:C6	2.54	0.43
28:a:1275:C:H2'	28:a:1276:G:C8	2.54	0.43
28:a:2121:G:H3'	28:a:2122:G:O4'	2.19	0.43
28:a:2613:U:H2'	28:a:2614:C:H6	1.84	0.43
41:n:87:ILE:HG22	41:n:89:ASP:H	1.84	0.43
6:A:244:A:C2	6:A:280:A:C5	3.07	0.42
6:A:766:A:H4'	6:A:1521:G:N2	2.34	0.42
6:A:923:G:H1'	6:A:1500:A:C4	2.54	0.42
8:C:6:HIS:CG	19:N:89:MET:HB3	2.54	0.42
22:Q:77:ARG:NH1	22:Q:79:VAL:HA	2.34	0.42
25:T:35:VAL:HG11	25:T:79:LEU:HD13	2.00	0.42
28:a:718:U:H2'	28:a:719:A:H8	1.84	0.42
28:a:1425:C:C5	28:a:1566:A:H5"	2.53	0.42
28:a:1444:C:H2'	28:a:1445:G:C8	2.54	0.42
28:a:1535:G:H2'	28:a:1536:U:C6	2.54	0.42
28:a:1542:A:H2'	28:a:1543:G:O4'	2.18	0.42
28:a:2214:G:H2'	28:a:2215:G:C8	2.54	0.42
28:a:2371:G:H2'	28:a:2372:C:C6	2.54	0.42
28:a:2726:U:O2'	28:a:2727:G:H8	2.02	0.42
28:a:2783:C:H2'	28:a:2784:U:H6	1.84	0.42
42:o:33:VAL:HG22	42:o:38:LYS:HG3	2.00	0.42
48:u:53:LYS:H	48:u:53:LYS:HG2	1.69	0.42
6:A:221:A:H2'	6:A:222:U:C6	2.54	0.42
6:A:551:A:H2'	6:A:552:A:C8	2.54	0.42
6:A:558:A:H4'	6:A:559:U:H5"	2.01	0.42
6:A:1316:A:H4'	24:S:10:PHE:CD1	2.54	0.42
9:D:102:VAL:HG13	9:D:107:PHE:HB2	2.01	0.42
12:G:91:VAL:CG1	12:G:96:ARG:HG3	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:G:134:ALA:HA	12:G:137:LYS:HB3	2.00	0.42
15:J:90:LEU:HD12	15:J:90:LEU:HA	1.75	0.42
19:N:48:LEU:HD12	19:N:51:LEU:HD12	2.01	0.42
28:a:29:U:H2'	28:a:30:G:C8	2.54	0.42
28:a:248:G:H5'	28:a:250:G:N7	2.33	0.42
28:a:812:C:H2'	28:a:813:C:H6	1.84	0.42
28:a:2103:U:H2'	28:a:2104:U:H6	1.84	0.42
28:a:2511:A:H2'	28:a:2512:U:C6	2.54	0.42
28:a:2682:U:H4'	37:j:76:VAL:CG2	2.49	0.42
28:a:2818:A:H2'	28:a:2818:A:N3	2.34	0.42
45:r:65:ASP:HB3	45:r:68:ASP:OD2	2.19	0.42
6:A:735:C:C2	6:A:736:C:C5	3.08	0.42
6:A:1216:C:H2'	6:A:1217:A:H8	1.78	0.42
6:A:1476:U:H2'	6:A:1477:C:C6	2.54	0.42
7:B:6:MET:HE2	7:B:6:MET:HB2	1.96	0.42
7:B:35:ARG:HA	7:B:35:ARG:HD2	1.84	0.42
7:B:129:LEU:HG	7:B:130:THR:HG23	2.01	0.42
28:a:515:A:H3'	28:a:516:C:H6	1.84	0.42
28:a:837:U:H2'	28:a:838:C:C6	2.54	0.42
28:a:945:A:H2'	28:a:946:C:C6	2.54	0.42
28:a:1742:A:H2'	28:a:1743:C:H6	1.82	0.42
28:a:2079:U:H2'	28:a:2080:A:H8	1.84	0.42
3:2:52:LYS:HB3	3:2:52:LYS:HE3	1.90	0.42
6:A:498:G:H2'	6:A:499:C:C6	2.54	0.42
6:A:857:G:H2'	6:A:858:A:H8	1.83	0.42
7:B:117:LEU:HB3	7:B:141:LEU:CD2	2.49	0.42
11:F:49:TYR:HB3	23:R:74:HIS:CD2	2.54	0.42
18:M:71:ARG:HA	18:M:74:THR:HG22	2.01	0.42
22:Q:17:MET:HE3	22:Q:20:SER:HB2	2.02	0.42
27:X:54:ILE:HB	27:X:61:LEU:HD12	2.01	0.42
28:a:227:A:C2	28:a:2405:A:H1'	2.54	0.42
28:a:417:C:H2'	28:a:418:C:C6	2.54	0.42
28:a:484:C:H2'	28:a:485:C:C6	2.53	0.42
28:a:636:G:H2'	28:a:637:U:C6	2.54	0.42
28:a:946:C:H2'	28:a:947:G:C8	2.54	0.42
28:a:1196:U:H2'	28:a:1197:C:C6	2.54	0.42
28:a:1202:A:C6	32:e:165:HIS:HB2	2.53	0.42
28:a:1838:G:H2'	28:a:1839:C:C6	2.54	0.42
28:a:2375:A:H2'	28:a:2376:A:C8	2.54	0.42
35:h:23:ALA:O	35:h:27:ARG:HB3	2.19	0.42
6:A:331:U:H2'	6:A:332:C:C6	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:468:C:H2'	6:A:469:C:H6	1.84	0.42
6:A:543:C:H5'	9:D:69:GLU:HB2	2.00	0.42
6:A:755:U:H2'	6:A:756:C:O4'	2.19	0.42
6:A:1169:A:H2'	6:A:1170:C:C6	2.55	0.42
6:A:1223:A:H2'	6:A:1224:C:C5	2.54	0.42
7:B:161:LEU:HB2	7:B:183:VAL:HG22	2.01	0.42
12:G:20:SER:OG	12:G:23:LEU:HB2	2.20	0.42
22:Q:10:GLY:HA3	22:Q:25:ILE:HD13	2.01	0.42
28:a:150:U:H2'	28:a:151:C:H6	1.85	0.42
28:a:736:G:H3'	28:a:737:A:C8	2.55	0.42
28:a:823:A:H2'	28:a:824:U:C6	2.55	0.42
28:a:1799:A:H2	28:a:1819:G:H1'	1.83	0.42
34:g:89:LEU:HD22	34:g:162:VAL:HG22	2.02	0.42
36:i:45:THR:HB	36:i:48:VAL:HB	2.01	0.42
6:A:1399:G:H2'	6:A:1400:4OC:O4'	2.19	0.42
7:B:186:ILE:HG12	7:B:213:TYR:CE2	2.55	0.42
14:I:21:ILE:HG23	14:I:61:LEU:HD22	2.00	0.42
14:I:71:GLY:O	14:I:75:GLN:HB2	2.19	0.42
20:O:35:GLN:HA	20:O:35:GLN:OE1	2.20	0.42
28:a:540:C:H2'	28:a:541:A:C8	2.55	0.42
28:a:541:A:H2'	28:a:542:C:C6	2.55	0.42
28:a:545:U:H1'	28:a:547:G:O6	2.20	0.42
28:a:695:G:H2'	28:a:696:C:C6	2.54	0.42
28:a:1392:A:O2'	28:a:1393:U:H5"	2.20	0.42
3:2:2:PRO:HD2	28:a:665:U:O2	2.20	0.42
6:A:1199:A:H4'	6:A:1200:U:H5"	2.02	0.42
6:A:1463:A:H2'	6:A:1464:C:C6	2.55	0.42
19:N:33:ASP:HB3	19:N:36:ALA:HB2	2.01	0.42
24:S:66:MET:HB3	24:S:74:PHE:CZ	2.54	0.42
27:X:87:LYS:O	27:X:91:LYS:HB2	2.19	0.42
28:a:1434:C:H2'	28:a:1435:U:C6	2.55	0.42
28:a:1944:U:H2'	28:a:1945:C:C6	2.54	0.42
28:a:2036:G:H2'	28:a:2037:U:O4'	2.20	0.42
28:a:2303:U:H2'	28:a:2304:C:C6	2.55	0.42
28:a:2630:A:H2'	28:a:2631:G:C8	2.55	0.42
28:a:2857:G:H2'	28:a:2858:A:C8	2.55	0.42
31:d:56:LYS:HE2	31:d:56:LYS:HB3	1.80	0.42
35:h:115:VAL:HG22	35:h:132:PHE:CZ	2.55	0.42
37:j:7:MET:HE3	37:j:7:MET:HB3	1.75	0.42
6:A:1533:C:H2'	6:A:1534:C:H6	1.85	0.42
6:A:1535:U:C2	6:A:1536:C:C6	3.07	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:B:92:VAL:HG21	7:B:100:MET:HE3	2.02	0.42
28:a:544:U:O2	28:a:547:G:C6	2.71	0.42
28:a:586:U:H2'	28:a:587:U:C6	2.54	0.42
28:a:1407:G:H2'	28:a:1408:U:C6	2.54	0.42
28:a:1441:A:H2'	28:a:1442:G:H8	1.85	0.42
28:a:2514:A:O2'	28:a:2515:C:H5'	2.20	0.42
41:n:7:ARG:HG3	41:n:10:ARG:HH21	1.85	0.42
4:3:2:LYS:HE2	4:3:32:LYS:O	2.20	0.42
5:4:63:ARG:HB3	24:S:5:LEU:HD22	2.02	0.42
6:A:262:C:H2'	6:A:263:G:O4'	2.19	0.42
6:A:1051:G:H4'	6:A:1052:C:H3'	2.02	0.42
6:A:1538:U:H3	26:W:5:G:N2	2.01	0.42
18:M:86:TYR:O	18:M:90:ARG:HG2	2.19	0.42
19:N:45:VAL:O	19:N:49:GLN:HG3	2.20	0.42
20:O:48:LYS:HA	20:O:48:LYS:HD3	1.82	0.42
28:a:953:PSU:H5'	39:l:86:LYS:HD2	2.01	0.42
28:a:1278:G:H2'	28:a:1279:U:C6	2.55	0.42
28:a:1437:U:H2'	28:a:1438:G:C8	2.55	0.42
28:a:1484:U:H2'	28:a:1485:C:C6	2.55	0.42
28:a:2125:G:H2'	28:a:2126:G:C8	2.55	0.42
28:a:2264:A:H4'	28:a:2265:A:N3	2.35	0.42
39:l:66:ARG:HD3	39:l:104:GLU:OE2	2.20	0.42
48:u:52:ASP:OD1	48:u:53:LYS:HE3	2.20	0.42
6:A:513:G:H2'	6:A:514:PSU:H6	1.84	0.42
6:A:843:A:O5'	6:A:843:A:H8	2.03	0.42
6:A:881:C:O2'	6:A:882:U:H5'	2.20	0.42
6:A:1027:U:H2'	6:A:1028:U:O4'	2.19	0.42
6:A:1031:G:H2'	6:A:1032:G:H8	1.85	0.42
6:A:1040:A:O2'	6:A:1041:G:H5'	2.20	0.42
6:A:1084:U:H3	6:A:1097:G:N2	2.18	0.42
6:A:1117:C:H2'	6:A:1118:C:C6	2.53	0.42
8:C:80:LYS:HE3	8:C:80:LYS:HB3	1.86	0.42
13:H:114:ARG:CZ	13:H:114:ARG:HB3	2.49	0.42
18:M:66:GLU:O	18:M:70:ARG:HG3	2.20	0.42
28:a:27:G:H22	28:a:512:G:H1'	1.85	0.42
28:a:484:C:OP1	47:t:48:PRO:HG3	2.20	0.42
28:a:752:U:H2'	28:a:753:U:C6	2.55	0.42
28:a:841:G:H2'	28:a:842:A:C8	2.55	0.42
28:a:1249:G:N3	43:p:33:ARG:HG2	2.35	0.42
28:a:1483:A:H2'	28:a:1484:U:H6	1.84	0.42
43:p:40:ILE:HD13	43:p:40:ILE:HA	1.91	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1494:C:H2'	6:A:1495:G:O4'	2.20	0.41
13:H:7:ILE:O	13:H:11:LEU:HG	2.20	0.41
28:a:596:U:H2'	28:a:597:A:C8	2.55	0.41
28:a:610:G:H2'	28:a:612:A:C8	2.55	0.41
28:a:677:C:H2'	28:a:678:C:H6	1.84	0.41
28:a:677:C:H2'	28:a:678:C:C6	2.55	0.41
28:a:727:G:C6	30:c:207:LYS:HB2	2.55	0.41
28:a:869:U:H2'	28:a:870:U:H6	1.81	0.41
28:a:1820:G:O3'	30:c:247:PRO:HD3	2.20	0.41
28:a:2542:G:H2'	28:a:2543:G:O4'	2.20	0.41
28:a:2721:C:H2'	28:a:2722:U:O4'	2.20	0.41
29:b:42:C:C6	33:f:66:LEU:HB2	2.54	0.41
49:v:44:LYS:HB2	49:v:44:LYS:HE2	1.70	0.41
49:v:59:LEU:HD12	49:v:80:ILE:HD12	2.01	0.41
6:A:107:A:H5'	6:A:108:C:C5	2.55	0.41
6:A:1344:A:N1	6:A:1372:A:H5"	2.34	0.41
10:E:149:SER:OG	10:E:152:MET:HG3	2.20	0.41
23:R:70:TYR:HB2	23:R:74:HIS:NE2	2.34	0.41
28:a:1279:U:H2'	28:a:1280:G:O4'	2.20	0.41
28:a:2063:C:H2'	28:a:2064:C:H6	1.85	0.41
28:a:2393:C:H2'	28:a:2394:G:O4'	2.20	0.41
28:a:2817:G:H2'	28:a:2819:A:N7	2.35	0.41
30:c:35:GLU:HG3	30:c:64:ILE:HD11	2.02	0.41
34:g:18:LYS:HB3	34:g:25:THR:HB	2.02	0.41
44:q:74:ILE:HB	44:q:87:GLN:HB3	2.02	0.41
6:A:619:A:H2'	6:A:620:A:C8	2.56	0.41
6:A:1145:C:H2'	6:A:1146:U:H6	1.85	0.41
6:A:1379:U:H2'	6:A:1380:C:O4'	2.19	0.41
6:A:1491:A:N3	6:A:1491:A:H2'	2.35	0.41
22:Q:45:HIS:HB3	22:Q:71:LYS:HG2	2.02	0.41
23:R:65:LEU:HD23	23:R:65:LEU:HA	1.87	0.41
28:a:1902:G:H2'	28:a:1903:C:O4'	2.19	0.41
28:a:2049:A:H5'	28:a:2576:G:O4'	2.21	0.41
28:a:2467:A:H4'	39:l:55:ARG:CD	2.49	0.41
36:i:92:MET:HE3	36:i:92:MET:HB3	1.83	0.41
6:A:159:A:H2'	6:A:160:A:C8	2.56	0.41
6:A:449:A:H61	6:A:479:G:H5'	1.84	0.41
6:A:560:U:H5'	6:A:561:A:C5	2.56	0.41
6:A:616:C:H5'	6:A:617:U:H5"	2.02	0.41
6:A:832:U:H2'	6:A:833:U:C6	2.55	0.41
6:A:914:U:H2'	6:A:915:G:H8	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:D:61:VAL:HG21	9:D:200:ILE:HD11	2.02	0.41
15:J:85:ASP:O	15:J:89:ARG:HG2	2.20	0.41
28:a:1634:A:H5'	28:a:1756:C:O2'	2.21	0.41
28:a:1933:G:H1'	28:a:1962:G:N2	2.35	0.41
28:a:2076:C:H2'	28:a:2077:U:C6	2.55	0.41
28:a:2105:G:C6	28:a:2181:A:C6	3.08	0.41
28:a:2245:A:H2'	28:a:2246:C:H6	1.85	0.41
35:h:76:GLU:O	35:h:142:VAL:HG23	2.20	0.41
43:p:15:LYS:HE3	43:p:15:LYS:HB3	1.86	0.41
44:q:81:LYS:HA	44:q:81:LYS:HD3	1.90	0.41
5:4:39:LYS:HE2	5:4:39:LYS:HB3	1.89	0.41
6:A:199:G:H21	6:A:467:A:H1'	1.84	0.41
6:A:999:C:H2'	6:A:1000:A:H8	1.86	0.41
18:M:5:ALA:HB1	18:M:66:GLU:HG3	2.02	0.41
28:a:4:U:H2'	28:a:5:A:C8	2.55	0.41
28:a:465:G:H2'	28:a:466:A:C8	2.55	0.41
28:a:1319:A:C5	28:a:1320:C:C5	3.08	0.41
28:a:1799:A:H2	28:a:1819:G:C1'	2.32	0.41
28:a:2099:A:H2'	28:a:2100:G:H8	1.85	0.41
5:4:28:VAL:HG22	33:f:140:GLU:HA	2.03	0.41
6:A:34:C:H2'	6:A:35:G:H8	1.84	0.41
6:A:189:G:H2'	6:A:190:A:C8	2.56	0.41
6:A:749:U:H2'	6:A:750:G:O4'	2.20	0.41
6:A:1167:A:H2'	6:A:1168:A:C8	2.55	0.41
6:A:1244:A:H2'	6:A:1245:U:C6	2.55	0.41
6:A:1317:A:C8	6:A:1321:G:C5	3.09	0.41
7:B:63:ARG:O	7:B:64:LYS:HG2	2.21	0.41
10:E:126:LYS:HG2	10:E:128:TYR:CZ	2.56	0.41
16:K:69:ARG:HG3	16:K:69:ARG:HH11	1.86	0.41
28:a:2226:G:H2'	28:a:2227:U:C6	2.56	0.41
32:e:168:ASP:HB2	32:e:183:PHE:CZ	2.56	0.41
6:A:7:A:H5'	6:A:296:A:O4'	2.20	0.41
6:A:582:G:H2'	6:A:583:G:C8	2.56	0.41
6:A:1231:G:H2'	6:A:1232:C:C6	2.56	0.41
6:A:1234:A:H2'	6:A:1235:C:C6	2.56	0.41
6:A:1364:C:H2'	6:A:1365:U:C6	2.55	0.41
6:A:1412:U:H2'	6:A:1413:G:H8	1.85	0.41
8:C:107:ARG:H	8:C:107:ARG:HD2	1.84	0.41
12:G:23:LEU:HD12	12:G:23:LEU:HA	1.85	0.41
12:G:47:LEU:HA	12:G:47:LEU:HD12	1.78	0.41
14:I:53:GLU:HA	14:I:58:VAL:HG22	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:R:38:LYS:HE3	23:R:38:LYS:HB3	1.79	0.41
28:a:181:A:H2'	28:a:182:A:C8	2.56	0.41
28:a:621:C:H2'	28:a:622:C:C6	2.56	0.41
28:a:1633:U:H2'	28:a:1634:A:H8	1.85	0.41
28:a:2644:C:H2'	28:a:2645:U:O4'	2.20	0.41
28:a:2900:C:H2'	28:a:2901:U:O4'	2.20	0.41
29:b:66:A:N6	29:b:107:G:H2'	2.35	0.41
33:f:4:LEU:HD23	33:f:4:LEU:HA	1.80	0.41
47:t:26:LYS:HD2	47:t:37:GLU:HG2	2.02	0.41
6:A:220:C:H2'	6:A:221:A:H8	1.86	0.41
6:A:1522:C:H2'	6:A:1523:G:C8	2.56	0.41
12:G:86:GLN:HB2	12:G:148:ASN:OD1	2.20	0.41
13:H:26:THR:HG23	13:H:60:GLU:HB2	2.03	0.41
21:P:57:ILE:HG21	21:P:75:ILE:HD13	2.02	0.41
24:S:80:TYR:CZ	24:S:82:GLY:HA2	2.56	0.41
28:a:77:G:H2'	28:a:78:U:C6	2.56	0.41
28:a:152:G:H2'	28:a:153:U:C6	2.56	0.41
28:a:257:C:H2'	28:a:258:G:O4'	2.20	0.41
28:a:635:A:H4'	28:a:636:G:O5'	2.21	0.41
28:a:2014:U:H2'	28:a:2015:U:C6	2.55	0.41
28:a:2079:U:H2'	28:a:2080:A:C8	2.56	0.41
28:a:2299:C:H2'	28:a:2300:U:C6	2.56	0.41
31:d:172:VAL:HG12	31:d:175:LEU:HD21	2.02	0.41
6:A:435:U:H5"	9:D:152:GLN:OE1	2.21	0.41
6:A:437:U:C2	6:A:438:C:C6	3.09	0.41
6:A:544:A:P	9:D:69:GLU:HB3	2.61	0.41
6:A:1155:A:H5'	6:A:1156:C:C6	2.55	0.41
6:A:1217:A:H2'	6:A:1218:G:C8	2.55	0.41
6:A:1324:U:C2	6:A:1325:C:C5	3.08	0.41
6:A:1491:A:H5"	28:a:1911:A:H1'	2.01	0.41
9:D:54:GLN:HG2	9:D:199:LEU:HD22	2.03	0.41
11:F:4:TYR:CD2	11:F:71:ILE:HG13	2.56	0.41
11:F:26:THR:HG21	11:F:39:LEU:HD22	2.03	0.41
12:G:71:PRO:HG3	12:G:103:TRP:CH2	2.56	0.41
14:I:118:LEU:HB3	14:I:123:ARG:O	2.21	0.41
15:J:81:GLU:O	15:J:84:VAL:HG12	2.20	0.41
17:L:110:ARG:HD2	17:L:110:ARG:HA	1.80	0.41
18:M:31:LYS:HB3	18:M:31:LYS:HE2	1.84	0.41
28:a:27:G:C2	28:a:512:G:N3	2.89	0.41
28:a:643:C:O2'	28:a:644:U:H5"	2.21	0.41
28:a:1061:G:H2'	28:a:1062:C:C6	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:1280:G:H1'	28:a:1326:U:O2	2.21	0.41
28:a:1461:G:H2'	28:a:1462:G:C8	2.55	0.41
28:a:1496:C:C2	28:a:1497:G:C8	3.08	0.41
28:a:1707:G:H2'	28:a:1708:G:C8	2.56	0.41
28:a:1771:U:O4	28:a:1785:A:H2	2.04	0.41
28:a:1900:C:H4'	30:c:242:LYS:O	2.21	0.41
28:a:2146:G:H2'	28:a:2147:U:C6	2.55	0.41
28:a:2228:G:H2'	28:a:2229:U:C6	2.55	0.41
28:a:2701:C:C2	28:a:2702:C:C5	3.09	0.41
28:a:2702:C:H2'	28:a:2703:A:O4'	2.20	0.41
33:f:40:VAL:HG23	33:f:42:GLU:OE1	2.20	0.41
37:j:97:THR:O	37:j:98:ARG:HG2	2.21	0.41
6:A:189:G:H2'	6:A:190:A:H8	1.86	0.41
6:A:484:U:H2'	6:A:485:A:C8	2.55	0.41
6:A:1425:C:H2'	6:A:1426:A:H8	1.85	0.41
7:B:164:ILE:HA	7:B:186:ILE:HG23	2.03	0.41
9:D:58:LYS:HD3	9:D:203:LEU:HD23	2.02	0.41
12:G:21:GLU:H	12:G:21:GLU:HG2	1.66	0.41
17:L:29:GLN:HB3	17:L:81:LEU:HG	2.02	0.41
18:M:90:ARG:HA	18:M:90:ARG:HD2	1.92	0.41
25:T:57:ILE:O	25:T:61:GLN:HG2	2.21	0.41
28:a:1062:C:N4	28:a:1067:A:H3'	2.36	0.41
28:a:1176:G:H2'	28:a:1177:U:H6	1.86	0.41
28:a:1439:U:H2'	28:a:1440:U:C6	2.56	0.41
28:a:1505:A:H2'	28:a:1506:A:O4'	2.21	0.41
28:a:1993:U:H3'	28:a:1994:C:H2'	2.03	0.41
28:a:2096:U:H2'	28:a:2097:U:O4'	2.21	0.41
28:a:2344:A:H3'	28:a:2345:C:H5"	2.03	0.41
31:d:179:ARG:HB3	31:d:188:LEU:HB2	2.02	0.41
6:A:578:C:H2'	6:A:579:G:O4'	2.20	0.40
8:C:150:LYS:HE2	8:C:169:ARG:HH12	1.86	0.40
27:X:12:ILE:HG21	27:X:17:ARG:HH21	1.86	0.40
28:a:1180:U:H2'	28:a:1181:U:H6	1.82	0.40
28:a:1558:C:H2'	28:a:1559:U:C6	2.57	0.40
28:a:2844:G:H2'	28:a:2845:U:C6	2.56	0.40
29:b:78:A:H2'	29:b:79:G:O4'	2.21	0.40
31:d:48:ILE:HG21	31:d:90:PHE:HB2	2.02	0.40
33:f:64:LYS:HA	33:f:65:PRO:HD3	1.95	0.40
6:A:658:U:H2'	6:A:659:G:O4'	2.21	0.40
6:A:1023:U:O3'	6:A:1024:G:H8	2.04	0.40
6:A:1038:U:H2'	6:A:1039:G:C8	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:1306:U:H2'	6:A:1307:G:H8	1.86	0.40
6:A:1385:G:H2'	6:A:1386:C:C6	2.57	0.40
6:A:1426:A:H2'	6:A:1427:A:O4'	2.21	0.40
15:J:28:THR:O	15:J:31:ARG:HG3	2.21	0.40
17:L:110:ARG:HB3	17:L:119:VAL:HG21	2.03	0.40
28:a:131:A:H2'	28:a:132:G:C8	2.56	0.40
28:a:607:A:H2'	28:a:608:C:O4'	2.21	0.40
28:a:856:G:OP1	49:v:78:LYS:HE2	2.22	0.40
28:a:1243:A:H2'	28:a:1244:A:O4'	2.21	0.40
28:a:1435:U:H2'	28:a:1436:A:H8	1.86	0.40
28:a:1484:U:H2'	28:a:1485:C:H6	1.86	0.40
28:a:2565:G:H2'	28:a:2566:U:C6	2.56	0.40
34:g:124:GLU:HG2	34:g:132:VAL:HB	2.04	0.40
38:k:19:LEU:HD22	38:k:27:LEU:HD22	2.03	0.40
47:t:38:GLY:H	47:t:62:GLU:CD	2.29	0.40
5:4:33:ASN:HB3	18:M:50:GLU:OE1	2.22	0.40
6:A:1251:G:H2'	6:A:1252:A:H8	1.86	0.40
7:B:56:GLU:HB3	7:B:184:PHE:HE2	1.86	0.40
14:I:18:ARG:HE	14:I:66:THR:HB	1.87	0.40
23:R:29:LEU:HD22	23:R:59:ILE:HG13	2.03	0.40
27:X:24:LEU:HD22	27:X:78:ILE:HD11	2.03	0.40
28:a:361:G:H8	28:a:361:G:OP2	2.04	0.40
28:a:2101:C:H2'	28:a:2102:C:C6	2.56	0.40
28:a:2125:G:N2	28:a:2160:A:H1'	2.37	0.40
28:a:2300:U:H2'	28:a:2301:G:C8	2.57	0.40
28:a:2783:C:H2'	28:a:2784:U:C6	2.56	0.40
29:b:48:U:H4'	41:n:100:HIS:CD2	2.57	0.40
39:l:57:VAL:HG11	39:l:105:MET:HE3	2.02	0.40
52:y:48:VAL:HG11	52:y:57:VAL:HG21	2.02	0.40
6:A:396:U:H2'	6:A:397:G:H8	1.85	0.40
6:A:790:A:H1'	6:A:792:A:N7	2.36	0.40
6:A:934:C:C2	6:A:935:A:C8	3.10	0.40
9:D:122:ALA:C	9:D:146:ARG:HG3	2.46	0.40
23:R:62:ALA:HB3	23:R:68:LEU:HD12	2.04	0.40
28:a:1060:G:C4	28:a:1061:G:N2	2.89	0.40
28:a:1429:G:H2'	28:a:1430:A:H8	1.85	0.40
28:a:1527:G:H2'	28:a:1528:U:C6	2.56	0.40
28:a:1653:C:H2'	28:a:1654:U:H6	1.85	0.40
28:a:2099:A:H2'	28:a:2100:G:C8	2.57	0.40
28:a:2154:G:H2'	28:a:2155:G:N7	2.37	0.40
28:a:2700:G:H2'	28:a:2701:C:C6	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:a:2700:G:C4	28:a:2701:C:C5	3.10	0.40
28:a:2800:U:H2'	28:a:2801:C:C6	2.57	0.40
6:A:222:U:H2'	6:A:223:C:C6	2.56	0.40
6:A:470:U:H2'	6:A:471:U:C6	2.56	0.40
6:A:551:A:H5"	17:L:21:VAL:HG21	2.03	0.40
6:A:984:U:H2'	6:A:985:G:C8	2.56	0.40
6:A:1156:C:C4	6:A:1158:G:C8	3.10	0.40
6:A:1174:A:H2'	6:A:1175:G:C8	2.56	0.40
11:F:11:HIS:NE2	11:F:54:LEU:HD21	2.36	0.40
14:I:41:ARG:HA	14:I:41:ARG:HD2	1.80	0.40
20:O:22:SER:HA	20:O:27:VAL:HG11	2.04	0.40
28:a:438:G:H2'	28:a:439:A:C8	2.57	0.40
28:a:567:U:H2'	28:a:568:G:O4'	2.21	0.40
28:a:587:U:H2'	28:a:588:A:H8	1.85	0.40
28:a:1576:A:H2'	28:a:1577:A:H8	1.86	0.40
28:a:1586:U:H2'	28:a:1587:A:C8	2.57	0.40
28:a:1642:G:H5"	28:a:1643:C:H5'	2.03	0.40
28:a:2101:C:H2'	28:a:2102:C:H6	1.87	0.40
28:a:2227:U:H2'	28:a:2228:G:H8	1.86	0.40
28:a:2678:U:O2'	28:a:2679:C:H5'	2.21	0.40
32:e:130:LYS:HB2	32:e:133:LEU:HG	2.04	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	49/55 (89%)	48 (98%)	1 (2%)	0	100	100
2	1	44/46 (96%)	44 (100%)	0	0	100	100
3	2	62/65 (95%)	60 (97%)	2 (3%)	0	100	100
4	3	36/38 (95%)	36 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	4	68/70 (97%)	60 (88%)	8 (12%)	0	100	100
7	B	222/241 (92%)	209 (94%)	13 (6%)	0	100	100
8	C	204/232 (88%)	197 (97%)	7 (3%)	0	100	100
9	D	203/206 (98%)	201 (99%)	2 (1%)	0	100	100
10	E	154/167 (92%)	148 (96%)	6 (4%)	0	100	100
11	F	101/131 (77%)	98 (97%)	3 (3%)	0	100	100
12	G	151/156 (97%)	147 (97%)	4 (3%)	0	100	100
13	H	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
14	I	124/130 (95%)	117 (94%)	7 (6%)	0	100	100
15	J	96/103 (93%)	87 (91%)	8 (8%)	1 (1%)	12	24
16	K	113/129 (88%)	109 (96%)	4 (4%)	0	100	100
17	L	120/124 (97%)	117 (98%)	3 (2%)	0	100	100
18	M	114/118 (97%)	108 (95%)	6 (5%)	0	100	100
19	N	98/101 (97%)	97 (99%)	1 (1%)	0	100	100
20	O	86/89 (97%)	85 (99%)	1 (1%)	0	100	100
21	P	79/82 (96%)	77 (98%)	2 (2%)	0	100	100
22	Q	77/84 (92%)	74 (96%)	3 (4%)	0	100	100
23	R	60/75 (80%)	58 (97%)	2 (3%)	0	100	100
24	S	82/92 (89%)	79 (96%)	3 (4%)	0	100	100
25	T	84/87 (97%)	83 (99%)	1 (1%)	0	100	100
27	X	96/111 (86%)	94 (98%)	2 (2%)	0	100	100
30	c	269/273 (98%)	265 (98%)	4 (2%)	0	100	100
31	d	206/209 (99%)	200 (97%)	6 (3%)	0	100	100
32	e	199/201 (99%)	199 (100%)	0	0	100	100
33	f	175/179 (98%)	167 (95%)	8 (5%)	0	100	100
34	g	174/177 (98%)	165 (95%)	9 (5%)	0	100	100
35	h	146/149 (98%)	142 (97%)	4 (3%)	0	100	100
36	i	140/142 (99%)	140 (100%)	0	0	100	100
37	j	121/123 (98%)	116 (96%)	5 (4%)	0	100	100
38	k	142/144 (99%)	138 (97%)	4 (3%)	0	100	100
39	l	132/136 (97%)	129 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
40	m	117/128 (91%)	115 (98%)	2 (2%)	0	100	100
41	n	114/117 (97%)	107 (94%)	7 (6%)	0	100	100
42	o	112/115 (97%)	111 (99%)	1 (1%)	0	100	100
43	p	115/118 (98%)	115 (100%)	0	0	100	100
44	q	101/103 (98%)	100 (99%)	1 (1%)	0	100	100
45	r	108/110 (98%)	108 (100%)	0	0	100	100
46	s	91/100 (91%)	88 (97%)	3 (3%)	0	100	100
47	t	100/104 (96%)	93 (93%)	7 (7%)	0	100	100
48	u	92/94 (98%)	88 (96%)	4 (4%)	0	100	100
49	v	76/85 (89%)	74 (97%)	2 (3%)	0	100	100
50	w	75/78 (96%)	75 (100%)	0	0	100	100
51	x	60/63 (95%)	59 (98%)	1 (2%)	0	100	100
52	y	56/59 (95%)	55 (98%)	1 (2%)	0	100	100
53	z	54/57 (95%)	53 (98%)	1 (2%)	0	100	100
All	All	5625/5926 (95%)	5456 (97%)	168 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
15	J	57	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	46/49 (94%)	46 (100%)	0	100	100
2	1	38/38 (100%)	38 (100%)	0	100	100
3	2	51/52 (98%)	50 (98%)	1 (2%)	48	75
4	3	34/34 (100%)	33 (97%)	1 (3%)	37	65

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
5	4	60/60 (100%)	58 (97%)	2 (3%)	33 61
7	B	185/198 (93%)	178 (96%)	7 (4%)	29 56
8	C	170/189 (90%)	170 (100%)	0	100 100
9	D	171/172 (99%)	168 (98%)	3 (2%)	51 77
10	E	119/126 (94%)	118 (99%)	1 (1%)	73 88
11	F	88/111 (79%)	87 (99%)	1 (1%)	65 84
12	G	126/129 (98%)	124 (98%)	2 (2%)	55 79
13	H	104/105 (99%)	103 (99%)	1 (1%)	68 86
14	I	104/107 (97%)	102 (98%)	2 (2%)	50 76
15	J	87/91 (96%)	83 (95%)	4 (5%)	24 48
16	K	89/98 (91%)	89 (100%)	0	100 100
17	L	102/103 (99%)	100 (98%)	2 (2%)	48 75
18	M	96/98 (98%)	94 (98%)	2 (2%)	47 74
19	N	83/84 (99%)	81 (98%)	2 (2%)	43 70
20	O	75/76 (99%)	74 (99%)	1 (1%)	61 82
21	P	63/63 (100%)	63 (100%)	0	100 100
22	Q	73/78 (94%)	73 (100%)	0	100 100
23	R	53/65 (82%)	53 (100%)	0	100 100
24	S	72/79 (91%)	70 (97%)	2 (3%)	38 66
25	T	65/66 (98%)	62 (95%)	3 (5%)	24 48
27	X	83/94 (88%)	82 (99%)	1 (1%)	63 83
30	c	215/217 (99%)	215 (100%)	0	100 100
31	d	163/163 (100%)	162 (99%)	1 (1%)	78 91
32	e	165/165 (100%)	163 (99%)	2 (1%)	63 83
33	f	148/150 (99%)	144 (97%)	4 (3%)	39 67
34	g	135/136 (99%)	133 (98%)	2 (2%)	57 80
35	h	112/113 (99%)	107 (96%)	5 (4%)	24 49
36	i	116/116 (100%)	115 (99%)	1 (1%)	70 87
37	j	104/104 (100%)	99 (95%)	5 (5%)	23 46
38	k	105/105 (100%)	104 (99%)	1 (1%)	68 86
39	l	107/107 (100%)	106 (99%)	1 (1%)	70 87

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
40	m	98/103 (95%)	97 (99%)	1 (1%)	68 86
41	n	86/87 (99%)	81 (94%)	5 (6%)	18 38
42	o	99/100 (99%)	96 (97%)	3 (3%)	36 64
43	p	89/90 (99%)	89 (100%)	0	100 100
44	q	83/83 (100%)	80 (96%)	3 (4%)	31 58
45	r	92/92 (100%)	92 (100%)	0	100 100
46	s	80/84 (95%)	77 (96%)	3 (4%)	29 56
47	t	83/85 (98%)	81 (98%)	2 (2%)	43 70
48	u	76/76 (100%)	73 (96%)	3 (4%)	28 55
49	v	60/64 (94%)	59 (98%)	1 (2%)	53 78
50	w	67/68 (98%)	66 (98%)	1 (2%)	57 80
51	x	53/54 (98%)	53 (100%)	0	100 100
52	y	48/49 (98%)	48 (100%)	0	100 100
53	z	47/48 (98%)	47 (100%)	0	100 100
All	All	4668/4824 (97%)	4586 (98%)	82 (2%)	51 77

All (82) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	2	54	ASP
4	3	18	LYS
5	4	13	THR
5	4	39	LYS
7	B	6	MET
7	B	15	HIS
7	B	41	ILE
7	B	68	LEU
7	B	85	LEU
7	B	101	LEU
7	B	152	LYS
9	D	60	LYS
9	D	116	GLN
9	D	177	LYS
10	E	97	GLN
11	F	92	THR
12	G	32	VAL
12	G	106	GLU

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Mol	Chain	Res	Type
13	H	118	GLN
14	I	58	VAL
14	I	93	SER
15	J	8	ILE
15	J	15	HIS
15	J	50	THR
15	J	96	VAL
17	L	41	THR
17	L	55	VAL
18	M	68	ASP
18	M	75	LEU
19	N	11	VAL
19	N	50	THR
20	O	40	GLN
24	S	11	ILE
24	S	60	VAL
25	T	27	MET
25	T	29	ARG
25	T	82	GLN
27	X	44	GLU
31	d	100	LEU
32	e	116	ASP
32	e	153	LEU
33	f	25	VAL
33	f	40	VAL
33	f	66	LEU
33	f	143	TYR
34	g	10	VAL
34	g	34	THR
35	h	5	LEU
35	h	12	LEU
35	h	37	VAL
35	h	134	VAL
35	h	143	ILE
36	i	1	MET
37	j	51	LYS
37	j	76	VAL
37	j	105	ARG
37	j	121	GLU
37	j	123	LEU
38	k	88	ASP
39	l	78	LEU

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Mol	Chain	Res	Type
40	m	82	GLU
41	n	18	LEU
41	n	24	THR
41	n	46	GLU
41	n	48	LEU
41	n	115	LEU
42	o	7	GLN
42	o	102	GLU
42	o	112	GLU
44	q	22	LEU
44	q	34	GLU
44	q	45	GLU
46	s	74	ILE
46	s	87	LEU
46	s	93	LEU
47	t	12	ILE
47	t	72	ILE
48	u	41	GLU
48	u	52	ASP
48	u	65	VAL
49	v	10	THR
50	w	25	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (45) such sidechains are listed below:

Mol	Chain	Res	Type
2	1	26	ASN
7	B	39	HIS
7	B	190	ASN
9	D	116	GLN
10	E	70	ASN
11	F	46	GLN
11	F	77	ASN
11	F	94	HIS
13	H	67	GLN
15	J	58	ASN
16	K	38	GLN
16	K	40	ASN
17	L	5	ASN
18	M	12	HIS
20	O	40	GLN
25	T	48	GLN

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Mol	Chain	Res	Type
25	T	82	GLN
27	X	19	HIS
30	c	25	HIS
30	c	134	ASN
30	c	153	GLN
31	d	58	ASN
31	d	94	GLN
32	e	9	GLN
32	e	92	HIS
32	e	94	GLN
32	e	136	GLN
33	f	5	HIS
34	g	73	ASN
35	h	11	ASN
35	h	20	ASN
36	i	58	ASN
36	i	128	ASN
37	j	3	GLN
37	j	9	ASN
39	l	13	HIS
40	m	31	HIS
41	n	29	HIS
41	n	38	GLN
41	n	43	ASN
41	n	98	GLN
43	p	44	GLN
43	p	71	GLN
48	u	24	ASN
50	w	36	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
26	W	10/15 (66%)	3 (30%)	0
28	a	2899/2923 (99%)	444 (15%)	0
29	b	115/116 (99%)	10 (8%)	0
6	A	1537/1550 (99%)	211 (13%)	2 (0%)
All	All	4561/4604 (99%)	668 (14%)	2 (0%)

All (668) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	A	4	U
6	A	9	G
6	A	22	G
6	A	32	A
6	A	39	G
6	A	44	A
6	A	47	C
6	A	48	C
6	A	51	A
6	A	65	A
6	A	75	C
6	A	76	A
6	A	79	G
6	A	80	A
6	A	83	U
6	A	84	U
6	A	85	G
6	A	86	C
6	A	92	G
6	A	118	A
6	A	119	U
6	A	129	A
6	A	140	G
6	A	141	A
6	A	142	G
6	A	147	A
6	A	161	C
6	A	180	A
6	A	181	U
6	A	195	A
6	A	201	G
6	A	202	G
6	A	204	C
6	A	205	C
6	A	207	U
6	A	208	C
6	A	209	G
6	A	210	G
6	A	238	G
6	A	243	U
6	A	244	A
6	A	245	G
6	A	249	G

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Mol	Chain	Res	Type
6	A	264	G
6	A	265	C
6	A	287	G
6	A	303	G
6	A	314	C
6	A	319	A
6	A	326	C
6	A	328	C
6	A	349	G
6	A	350	C
6	A	352	G
6	A	365	U
6	A	370	C
6	A	371	A
6	A	382	G
6	A	396	U
6	A	404	G
6	A	410	A
6	A	411	G
6	A	412	A
6	A	413	A
6	A	419	U
6	A	420	C
6	A	422	G
6	A	427	U
6	A	437	U
6	A	451	G
6	A	455	A
6	A	456	U
6	A	457	A
6	A	465	U
6	A	466	A
6	A	476	A
6	A	479	G
6	A	482	G
6	A	484	U
6	A	493	A
6	A	494	A
6	A	495	G
6	A	509	C
6	A	516	C
6	A	519	G

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Mol	Chain	Res	Type
6	A	525	G7M
6	A	529	U
6	A	530	A
6	A	534	C
6	A	545	A
6	A	562	C
6	A	570	A
6	A	571	A
6	A	574	C
6	A	575	G
6	A	639	A
6	A	651	A
6	A	663	A
6	A	701	G
6	A	721	U
6	A	722	G
6	A	732	G
6	A	746	G
6	A	747	A
6	A	753	G
6	A	775	A
6	A	791	U
6	A	792	A
6	A	810	G
6	A	813	A
6	A	815	C
6	A	819	G
6	A	830	G
6	A	840	U
6	A	841	U
6	A	849	G
6	A	888	G
6	A	912	A
6	A	924	G
6	A	932	C
6	A	933	A
6	A	956	A
6	A	958	U
6	A	964	2MG
6	A	967	A
6	A	969	G
6	A	973	A

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Mol	Chain	Res	Type
6	A	974	G
6	A	975	A
6	A	976	A
6	A	990	U
6	A	992	A
6	A	994	A
6	A	1000	A
6	A	1002	A
6	A	1003	A
6	A	1010	A
6	A	1016	G
6	A	1017	C
6	A	1020	U
6	A	1030	G
6	A	1031	G
6	A	1033	A
6	A	1034	A
6	A	1040	A
6	A	1041	G
6	A	1042	A
6	A	1044	A
6	A	1063	U
6	A	1092	G
6	A	1093	U
6	A	1099	A
6	A	1130	C
6	A	1132	G
6	A	1135	C
6	A	1137	G
6	A	1157	U
6	A	1165	A
6	A	1172	G
6	A	1179	G
6	A	1181	U
6	A	1182	G
6	A	1194	A
6	A	1195	A
6	A	1198	C
6	A	1211	A
6	A	1224	C
6	A	1225	A
6	A	1236	A

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Mol	Chain	Res	Type
6	A	1238	U
6	A	1256	G
6	A	1273	A
6	A	1278	A
6	A	1283	A
6	A	1284	U
6	A	1285	A
6	A	1298	G
6	A	1300	C
6	A	1303	G
6	A	1315	C
6	A	1318	C
6	A	1321	G
6	A	1329	G
6	A	1336	G
6	A	1344	A
6	A	1351	G
6	A	1361	A
6	A	1368	G
6	A	1376	C
6	A	1377	G
6	A	1395	C
6	A	1398	C
6	A	1417	G
6	A	1427	A
6	A	1430	G
6	A	1439	A
6	A	1444	A
6	A	1450	C
6	A	1485	G
6	A	1492	G
6	A	1493	U
6	A	1494	C
6	A	1495	G
6	A	1497	A
6	A	1501	A
6	A	1504	U
6	A	1515	G
6	A	1527	G
6	A	1528	G
6	A	1535	U
6	A	1539	U

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Mol	Chain	Res	Type
26	W	6	G
26	W	11	G
26	W	15	G
28	a	10	A
28	a	15	G
28	a	23	G
28	a	27	G
28	a	34	U
28	a	42	A
28	a	45	G
28	a	51	G
28	a	71	A
28	a	74	A
28	a	75	G
28	a	86	G
28	a	101	A
28	a	102	U
28	a	118	A
28	a	119	A
28	a	120	U
28	a	125	A
28	a	131	A
28	a	136	G
28	a	139	U
28	a	140	C
28	a	141	G
28	a	142	U
28	a	163	A
28	a	164	C
28	a	165	A
28	a	181	A
28	a	196	A
28	a	199	A
28	a	215	G
28	a	216	A
28	a	222	A
28	a	223	A
28	a	248	G
28	a	250	G
28	a	272	A
28	a	284	C
28	a	285	U

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Mol	Chain	Res	Type
28	a	311	A
28	a	329	G
28	a	330	A
28	a	333	G
28	a	345	A
28	a	360	U
28	a	361	G
28	a	367	G
28	a	383	C
28	a	386	G
28	a	389	G
28	a	396	G
28	a	404	A
28	a	405	U
28	a	411	G
28	a	455	C
28	a	481	G
28	a	489	G
28	a	491	G
28	a	505	A
28	a	509	C
28	a	530	G
28	a	531	C
28	a	532	A
28	a	533	G
28	a	545	U
28	a	546	C
28	a	547	G
28	a	548	G
28	a	561	A
28	a	569	U
28	a	571	U
28	a	573	A
28	a	601	A
28	a	612	A
28	a	613	U
28	a	625	A
28	a	635	A
28	a	643	C
28	a	645	G
28	a	652	A
28	a	653	A

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Mol	Chain	Res	Type
28	a	683	A
28	a	684	U
28	a	702	G
28	a	715	C
28	a	724	G
28	a	726	G
28	a	727	G
28	a	728	A
28	a	737	A
28	a	745	5MU
28	a	762	A
28	a	773	G
28	a	774	G
28	a	780	A
28	a	782	G
28	a	783	G
28	a	787	A
28	a	789	C
28	a	803	G
28	a	810	C
28	a	825	U
28	a	826	U
28	a	828	G
28	a	843	A
28	a	844	C
28	a	857	G
28	a	881	G
28	a	883	C
28	a	886	C
28	a	887	C
28	a	888	C
28	a	889	G
28	a	891	C
28	a	893	U
28	a	894	A
28	a	895	C
28	a	905	G
28	a	908	A
28	a	912	A
28	a	925	A
28	a	929	U
28	a	930	U

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Mol	Chain	Res	Type
28	a	944	C
28	a	946	C
28	a	951	G
28	a	959	C
28	a	972	G
28	a	981	A
28	a	982	A
28	a	994	A
28	a	1003	C
28	a	1010	U
28	a	1011	C
28	a	1024	G
28	a	1031	U
28	a	1038	A
28	a	1044	A
28	a	1045	G
28	a	1054	G
28	a	1055	A
28	a	1056	U
28	a	1057	G
28	a	1059	U
28	a	1060	G
28	a	1061	G
28	a	1062	C
28	a	1063	U
28	a	1064	U
28	a	1066	G
28	a	1067	A
28	a	1068	A
28	a	1069	G
28	a	1071	A
28	a	1072	G
28	a	1076	U
28	a	1082	A
28	a	1083	A
28	a	1085	G
28	a	1086	A
28	a	1087	A
28	a	1088	A
28	a	1092	U
28	a	1093	A
28	a	1094	A

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Mol	Chain	Res	Type
28	a	1095	U
28	a	1099	U
28	a	1103	U
28	a	1108	G
28	a	1109	A
28	a	1110	G
28	a	1114	G
28	a	1120	G
28	a	1128	U
28	a	1130	U
28	a	1131	A
28	a	1133	C
28	a	1140	A
28	a	1168	C
28	a	1170	C
28	a	1171	U
28	a	1172	A
28	a	1173	U
28	a	1174	G
28	a	1233	G
28	a	1244	A
28	a	1245	G
28	a	1247	G
28	a	1250	A
28	a	1253	G
28	a	1268	G
28	a	1269	A
28	a	1272	A
28	a	1297	G
28	a	1298	A
28	a	1318	A
28	a	1326	U
28	a	1349	U
28	a	1362	A
28	a	1375	A
28	a	1376	U
28	a	1380	A
28	a	1392	A
28	a	1400	A
28	a	1408	U
28	a	1413	G
28	a	1417	A

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Mol	Chain	Res	Type
28	a	1425	C
28	a	1448	C
28	a	1449	G
28	a	1450	A
28	a	1457	U
28	a	1472	G
28	a	1479	G
28	a	1490	C
28	a	1502	A
28	a	1505	A
28	a	1506	A
28	a	1507	G
28	a	1512	A
28	a	1521	G
28	a	1526	G
28	a	1532	A
28	a	1533	C
28	a	1534	G
28	a	1536	U
28	a	1545	A
28	a	1556	U
28	a	1557	G
28	a	1563	A
28	a	1566	A
28	a	1575	U
28	a	1580	A
28	a	1581	U
28	a	1582	C
28	a	1583	A
28	a	1604	C
28	a	1605	A
28	a	1607	A
28	a	1610	G
28	a	1625	G
28	a	1631	A
28	a	1644	U
28	a	1645	U
28	a	1646	G
28	a	1664	G
28	a	1671	G
28	a	1712	G
28	a	1725	C

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Mol	Chain	Res	Type
28	a	1726	U
28	a	1727	G
28	a	1734	G
28	a	1740	A
28	a	1754	U
28	a	1760	C
28	a	1769	A
28	a	1796	C
28	a	1797	A
28	a	1803	G
28	a	1804	A
28	a	1812	C
28	a	1825	A
28	a	1843	A
28	a	1844	A
28	a	1854	A
28	a	1862	A
28	a	1864	C
28	a	1866	G
28	a	1867	U
28	a	1868	A
28	a	1870	G
28	a	1882	G
28	a	1904	G
28	a	1905	G
28	a	1911	A
28	a	1912	C
28	a	1927	G
28	a	1928	G
28	a	1936	A
28	a	1944	U
28	a	1953	U
28	a	1962	G
28	a	1965	C
28	a	1968	A
28	a	1969	U
28	a	1970	G
28	a	1989	U
28	a	1991	U
28	a	2018	A
28	a	2021	C
28	a	2028	6MZ

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Mol	Chain	Res	Type
28	a	2029	A
28	a	2030	G
28	a	2031	A
28	a	2034	C
28	a	2041	C
28	a	2053	C
28	a	2054	G
28	a	2058	A
28	a	2059	G
28	a	2060	A
28	a	2067	G7M
28	a	2091	G
28	a	2098	G
28	a	2099	A
28	a	2105	G
28	a	2106	A
28	a	2108	G
28	a	2109	U
28	a	2110	G
28	a	2111	U
28	a	2112	A
28	a	2113	G
28	a	2114	G
28	a	2115	A
28	a	2117	A
28	a	2118	G
28	a	2119	G
28	a	2122	G
28	a	2124	A
28	a	2125	G
28	a	2126	G
28	a	2129	U
28	a	2130	U
28	a	2131	G
28	a	2137	U
28	a	2138	G
28	a	2139	G
28	a	2143	C
28	a	2144	C
28	a	2146	G
28	a	2153	U
28	a	2155	G

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Mol	Chain	Res	Type
28	a	2157	G
28	a	2158	C
28	a	2159	C
28	a	2160	A
28	a	2164	U
28	a	2166	G
28	a	2167	A
28	a	2168	A
28	a	2170	U
28	a	2171	A
28	a	2172	C
28	a	2174	A
28	a	2176	C
28	a	2178	U
28	a	2180	U
28	a	2181	A
28	a	2184	G
28	a	2185	U
28	a	2186	U
28	a	2187	U
28	a	2188	G
28	a	2189	A
28	a	2195	U
28	a	2196	A
28	a	2202	G
28	a	2209	U
28	a	2223	A
28	a	2236	G
28	a	2237	G
28	a	2266	A
28	a	2276	A
28	a	2281	C
28	a	2285	A
28	a	2286	A
28	a	2303	U
28	a	2306	G
28	a	2317	G
28	a	2320	A
28	a	2323	G
28	a	2331	A
28	a	2334	A
28	a	2345	C

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Mol	Chain	Res	Type
28	a	2347	G
28	a	2381	G
28	a	2383	C
28	a	2387	G
28	a	2389	G
28	a	2394	G
28	a	2404	A
28	a	2420	C
28	a	2422	C
28	a	2423	A
28	a	2427	G
28	a	2428	A
28	a	2433	A
28	a	2439	U
28	a	2446	A
28	a	2447	H2U
28	a	2468	G
28	a	2472	U
28	a	2473	C
28	a	2476	A
28	a	2489	U
28	a	2500	G
28	a	2503	G
28	a	2516	A
28	a	2518	C
28	a	2523	G
28	a	2527	G
28	a	2533	G
28	a	2545	A
28	a	2564	A
28	a	2565	G
28	a	2571	C
28	a	2580	G
28	a	2583	U
28	a	2600	A
28	a	2607	U
28	a	2611	U
28	a	2613	U
28	a	2627	U
28	a	2628	G
28	a	2687	U
28	a	2688	U

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Mol	Chain	Res	Type
28	a	2712	G
28	a	2714	C
28	a	2724	A
28	a	2730	G
28	a	2731	A
28	a	2737	U
28	a	2742	G
28	a	2746	A
28	a	2755	A
28	a	2763	A
28	a	2776	A
28	a	2791	G
28	a	2796	U
28	a	2797	A
28	a	2816	U
28	a	2818	A
28	a	2819	A
28	a	2833	A
28	a	2834	U
28	a	2847	U
28	a	2859	U
28	a	2871	A
28	a	2881	A
28	a	2882	U
28	a	2889	U
28	a	2897	A
28	a	2900	C
29	b	13	C
29	b	24	G
29	b	35	C
29	b	42	C
29	b	56	G
29	b	67	G
29	b	89	U
29	b	90	C
29	b	99	A
29	b	109	A

All (2) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	A	1033	A

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Mol	Chain	Res	Type
6	A	1492	G

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

40 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	$\#\|Z\| > 2$
17	D2T	L	89	17	7,9,10	1.23	1 (14%)	6,11,13	1.67	1 (16%)
28	3TD	a	1913	28	18,22,23	2.70	7 (38%)	22,32,35	1.67	2 (9%)
6	2MG	A	1514	6	23,26,27	2.57	5 (21%)	32,38,41	2.09	11 (34%)
28	5MC	a	1960	56,28	18,22,23	1.86	5 (27%)	26,32,35	1.32	2 (7%)
28	PSU	a	2603	28	18,21,22	2.02	7 (38%)	22,30,33	1.84	3 (13%)
28	PSU	a	2602	28	18,21,22	2.04	7 (38%)	22,30,33	1.86	3 (13%)
6	5MC	A	965	6	18,22,23	1.87	5 (27%)	26,32,35	1.29	2 (7%)
6	5MC	A	1405	6	18,22,23	1.87	5 (27%)	26,32,35	1.27	2 (7%)
6	PSU	A	514	6,55	18,21,22	2.00	8 (44%)	22,30,33	1.85	4 (18%)
39	MS6	l	82	39	5,7,8	0.57	0	2,7,9	1.68	1 (50%)
28	PSU	a	2502	56,28	18,21,22	2.02	7 (38%)	22,30,33	1.79	3 (13%)
6	MA6	A	1516	6	23,26,27	1.18	3 (13%)	34,38,41	2.24	9 (26%)
28	2MA	a	2501	56,55,28	22,25,26	1.30	1 (4%)	33,37,40	2.07	7 (21%)
6	G7M	A	525	6,56	23,26,27	2.15	5 (21%)	35,39,42	1.84	7 (20%)
28	1MG	a	743	28	22,26,27	2.48	5 (22%)	33,39,42	2.02	6 (18%)
28	PSU	a	744	55,28	18,21,22	2.05	8 (44%)	22,30,33	1.81	3 (13%)
6	UR3	A	1496	6	19,22,23	2.52	6 (31%)	26,32,35	1.30	2 (7%)
28	OMU	a	2550	56,55,28	19,22,23	2.58	7 (36%)	26,31,34	1.70	5 (19%)
6	2MG	A	964	6	23,26,27	2.57	4 (17%)	32,38,41	2.08	11 (34%)
28	PSU	a	1915	28	18,21,22	1.96	7 (38%)	22,30,33	1.78	3 (13%)
16	IAS	K	119	16	6,7,8	1.78	1 (16%)	6,8,10	2.56	1 (16%)
28	G7M	a	2067	56,28	23,26,27	2.13	5 (21%)	35,39,42	1.90	7 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
28	5MU	a	745	28	19,22,23	2.40	7 (36%)	28,32,35	3.75	10 (35%)
28	OMG	a	2249	56,28	23,26,27	2.31	6 (26%)	33,38,41	1.90	10 (30%)
6	2MG	A	1205	6,56	23,26,27	2.56	4 (17%)	32,38,41	2.09	10 (31%)
28	2MG	a	1831	28	23,26,27	2.56	4 (17%)	32,38,41	2.12	11 (34%)
28	OMC	a	2496	55,28	19,22,23	1.75	4 (21%)	26,31,34	1.01	2 (7%)
28	5MU	a	1937	56,28	19,22,23	2.50	7 (36%)	28,32,35	3.81	10 (35%)
28	6MZ	a	2028	28	22,25,26	2.38	3 (13%)	30,36,39	2.40	10 (33%)
39	4D4	l	81	39	9,11,12	0.81	0	8,13,15	1.75	2 (25%)
31	MEQ	d	150	31	8,9,10	0.84	0	5,10,12	0.84	0
28	PSU	a	2578	56,28	18,21,22	2.09	8 (44%)	22,30,33	1.91	4 (18%)
28	H2U	a	2447	28	18,21,22	4.13	5 (27%)	21,30,33	5.30	6 (28%)
28	PSU	a	2455	28	18,21,22	2.09	7 (38%)	22,30,33	1.83	4 (18%)
6	4OC	A	1400	6	20,23,24	2.22	3 (15%)	26,32,35	1.03	1 (3%)
28	6MZ	a	1615	28	22,25,26	2.41	3 (13%)	30,36,39	2.22	10 (33%)
6	MA6	A	1517	6	23,26,27	1.18	3 (13%)	34,38,41	2.26	9 (26%)
28	PSU	a	1909	28	18,21,22	1.95	7 (38%)	22,30,33	1.86	3 (13%)
28	PSU	a	953	28	18,21,22	2.00	7 (38%)	22,30,33	1.83	3 (13%)
28	2MG	a	2443	28	23,26,27	2.57	7 (30%)	32,38,41	2.08	10 (31%)

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
17	D2T	L	89	17	-	4/7/12/14	-
28	3TD	a	1913	28	-	0/7/25/26	0/2/2/2
6	2MG	A	1514	6	-	0/9/27/28	0/3/3/3
28	5MC	a	1960	56,28	-	0/7/25/26	0/2/2/2
28	PSU	a	2603	28	-	0/7/25/26	0/2/2/2
28	PSU	a	2602	28	-	0/7/25/26	0/2/2/2
6	5MC	A	965	6	-	0/7/25/26	0/2/2/2
6	5MC	A	1405	6	-	0/7/25/26	0/2/2/2
6	PSU	A	514	6,55	-	0/7/25/26	0/2/2/2
39	MS6	l	82	39	-	1/4/6/8	-
28	PSU	a	2502	56,28	-	2/7/25/26	0/2/2/2
6	MA6	A	1516	6	-	2/11/29/30	0/3/3/3
28	2MA	a	2501	56,55,28	-	2/7/25/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	G7M	A	525	6,56	-	3/7/25/26	0/3/3/3
28	1MG	a	743	28	-	0/7/25/26	0/3/3/3
28	PSU	a	744	55,28	-	1/7/25/26	0/2/2/2
6	UR3	A	1496	6	-	0/7/25/26	0/2/2/2
28	OMU	a	2550	56,55,28	-	0/9/27/28	0/2/2/2
6	2MG	A	964	6	-	0/9/27/28	0/3/3/3
28	PSU	a	1915	28	-	0/7/25/26	0/2/2/2
16	IAS	K	119	16	-	1/7/7/8	-
28	G7M	a	2067	56,28	-	2/7/25/26	0/3/3/3
28	5MU	a	745	28	-	0/7/25/26	0/2/2/2
28	OMG	a	2249	56,28	-	1/9/27/28	0/3/3/3
6	2MG	A	1205	6,56	-	2/9/27/28	0/3/3/3
28	2MG	a	1831	28	-	0/9/27/28	0/3/3/3
28	OMC	a	2496	55,28	-	0/9/27/28	0/2/2/2
28	5MU	a	1937	56,28	-	0/7/25/26	0/2/2/2
28	6MZ	a	2028	28	-	2/9/27/28	0/3/3/3
39	4D4	l	81	39	-	2/11/12/14	-
31	MEQ	d	150	31	-	2/8/9/11	-
28	PSU	a	2578	56,28	-	0/7/25/26	0/2/2/2
28	H2U	a	2447	28	-	2/7/38/39	0/2/2/2
28	PSU	a	2455	28	-	0/7/25/26	0/2/2/2
6	4OC	A	1400	6	-	1/9/29/30	0/2/2/2
28	6MZ	a	1615	28	-	0/9/27/28	0/3/3/3
6	MA6	A	1517	6	-	4/11/29/30	0/3/3/3
28	PSU	a	1909	28	-	0/7/25/26	0/2/2/2
28	PSU	a	953	28	-	0/7/25/26	0/2/2/2
28	2MG	a	2443	28	-	1/9/27/28	0/3/3/3

All (194) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	a	1615	6MZ	C6-N6	10.18	1.45	1.34
28	a	2447	H2U	O4-C4	10.07	1.43	1.23
28	a	2028	6MZ	C6-N6	9.89	1.44	1.34
6	A	964	2MG	O6-C6	9.17	1.41	1.23
6	A	1205	2MG	O6-C6	9.08	1.40	1.23
6	A	1514	2MG	O6-C6	9.08	1.40	1.23
28	a	1831	2MG	O6-C6	8.95	1.40	1.23
28	a	2443	2MG	O6-C6	8.90	1.40	1.23
6	A	1496	UR3	O4-C4	8.79	1.42	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	a	2249	OMG	O6-C6	8.35	1.39	1.23
28	a	2447	H2U	C2-N1	8.28	1.47	1.35
28	a	1913	3TD	O4-C4	8.21	1.40	1.23
28	a	2447	H2U	O2-C2	8.13	1.37	1.23
28	a	2550	OMU	O4-C4	8.01	1.40	1.24
28	a	743	1MG	O6-C6	8.01	1.40	1.23
6	A	525	G7M	O6-C6	8.01	1.38	1.23
28	a	2067	G7M	O6-C6	7.92	1.38	1.23
28	a	2447	H2U	C2-N3	6.66	1.49	1.38
6	A	1400	4OC	O2-C2	6.59	1.35	1.23
28	a	743	1MG	C2-N2	6.10	1.45	1.34
6	A	1205	2MG	C2-N2	6.03	1.46	1.33
28	a	1937	5MU	C2-N1	-6.02	1.28	1.38
6	A	964	2MG	C2-N2	5.98	1.46	1.33
28	a	1831	2MG	C2-N2	5.96	1.46	1.33
6	A	1514	2MG	C2-N2	5.96	1.46	1.33
28	a	2443	2MG	C2-N2	5.84	1.46	1.33
28	a	745	5MU	C2-N1	-5.49	1.29	1.38
6	A	1400	4OC	C4-N4	5.41	1.47	1.35
28	a	2447	H2U	C4-N3	5.04	1.46	1.37
28	a	1937	5MU	C2-N3	-4.88	1.29	1.38
28	a	2496	OMC	C4-N4	4.81	1.45	1.33
28	a	745	5MU	C2-N3	-4.69	1.29	1.38
28	a	2501	2MA	C6-N6	4.33	1.45	1.34
28	a	745	5MU	C6-N1	-4.24	1.30	1.38
28	a	1937	5MU	C6-N1	-4.23	1.30	1.38
6	A	965	5MC	C4-N4	4.19	1.45	1.34
28	a	2249	OMG	C2-N2	4.19	1.44	1.34
6	A	1405	5MC	C4-N4	4.16	1.44	1.34
28	a	2550	OMU	C2-N1	-4.09	1.31	1.38
28	a	1960	5MC	C4-N4	4.04	1.44	1.34
28	a	2496	OMC	C2-N1	-3.92	1.31	1.40
28	a	2603	PSU	C4-N3	-3.85	1.31	1.38
28	a	2455	PSU	C4-N3	-3.85	1.31	1.38
28	a	1913	3TD	C2-N1	-3.82	1.32	1.37
28	a	2602	PSU	C4-N3	-3.81	1.31	1.38
28	a	2249	OMG	C6-N1	-3.78	1.31	1.38
28	a	1913	3TD	C4-N3	-3.77	1.32	1.40
28	a	743	1MG	C6-N1	-3.69	1.32	1.40
28	a	744	PSU	C4-N3	-3.68	1.32	1.38
28	a	2578	PSU	C2-N1	-3.68	1.31	1.36
28	a	1960	5MC	C2-N1	-3.68	1.32	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	a	2455	PSU	C2-N1	-3.67	1.31	1.36
28	a	2578	PSU	C4-N3	-3.65	1.32	1.38
28	a	2502	PSU	C4-N3	-3.64	1.32	1.38
6	A	965	5MC	C2-N1	-3.63	1.32	1.40
28	a	1937	5MU	C6-C5	3.62	1.40	1.34
28	a	953	PSU	C4-N3	-3.62	1.32	1.38
16	K	119	IAS	OD1-CG	3.62	1.40	1.19
6	A	1405	5MC	C2-N1	-3.59	1.32	1.40
28	a	2502	PSU	C2-N1	-3.58	1.31	1.36
28	a	2550	OMU	C4-N3	-3.58	1.32	1.38
6	A	1400	4OC	C2-N1	-3.54	1.32	1.40
6	A	514	PSU	C4-N3	-3.54	1.32	1.38
28	a	2455	PSU	C2-N3	-3.53	1.31	1.37
28	a	745	5MU	C6-C5	3.52	1.40	1.34
6	A	514	PSU	C2-N1	-3.51	1.32	1.36
28	a	1915	PSU	C4-N3	-3.50	1.32	1.38
28	a	1909	PSU	C4-N3	-3.49	1.32	1.38
28	a	2602	PSU	C2-N3	-3.49	1.31	1.37
28	a	953	PSU	C2-N1	-3.48	1.32	1.36
28	a	744	PSU	C2-N1	-3.48	1.32	1.36
28	a	2550	OMU	C2-N3	-3.45	1.31	1.38
6	A	1516	MA6	C6-N6	3.45	1.47	1.36
28	a	1915	PSU	C2-N1	-3.45	1.32	1.36
28	a	2603	PSU	C2-N1	-3.44	1.32	1.36
6	A	1496	UR3	C4-N3	-3.44	1.32	1.40
28	a	744	PSU	C2-N3	-3.42	1.31	1.37
28	a	2603	PSU	C2-N3	-3.42	1.31	1.37
28	a	1909	PSU	C2-N1	-3.40	1.32	1.36
6	A	525	G7M	C5-N7	-3.38	1.35	1.39
6	A	1517	MA6	C6-N6	3.36	1.46	1.36
28	a	2602	PSU	C2-N1	-3.35	1.32	1.36
28	a	1913	3TD	C6-C5	3.35	1.39	1.35
28	a	1937	5MU	C4-N3	-3.33	1.32	1.38
28	a	953	PSU	C2-N3	-3.33	1.31	1.37
28	a	745	5MU	C4-N3	-3.31	1.32	1.38
28	a	2502	PSU	C2-N3	-3.28	1.31	1.37
28	a	2578	PSU	C2-N3	-3.27	1.31	1.37
28	a	2502	PSU	C6-C5	3.26	1.39	1.35
28	a	1915	PSU	C2-N3	-3.25	1.31	1.37
28	a	2602	PSU	C6-C5	3.23	1.39	1.35
6	A	514	PSU	C2-N3	-3.21	1.32	1.37
6	A	525	G7M	C2-N2	3.18	1.41	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	a	1915	PSU	C6-C5	3.18	1.39	1.35
28	a	1909	PSU	C6-C5	3.18	1.39	1.35
28	a	1960	5MC	C6-N1	-3.17	1.32	1.38
28	a	1909	PSU	C2-N3	-3.15	1.32	1.37
28	a	744	PSU	C6-C5	3.13	1.39	1.35
6	A	525	G7M	C6-N1	-3.13	1.33	1.38
28	a	2067	G7M	C2-N2	3.12	1.41	1.34
28	a	2443	2MG	C6-N1	-3.11	1.33	1.38
28	a	2578	PSU	C6-C5	3.10	1.38	1.35
6	A	1516	MA6	C8-N9	-3.09	1.32	1.37
6	A	514	PSU	C6-C5	3.08	1.38	1.35
28	a	953	PSU	C6-C5	3.08	1.38	1.35
6	A	1405	5MC	C6-N1	-3.08	1.32	1.38
28	a	2067	G7M	C5-N7	-3.07	1.35	1.39
28	a	2067	G7M	C6-N1	-3.06	1.33	1.38
28	a	2603	PSU	C6-C5	3.05	1.38	1.35
28	a	2028	6MZ	C8-N9	-3.04	1.32	1.37
28	a	2455	PSU	C6-C5	3.04	1.38	1.35
6	A	1496	UR3	C2-N3	-3.03	1.33	1.39
6	A	1517	MA6	C8-N9	-3.01	1.32	1.37
6	A	965	5MC	C6-N1	-3.00	1.32	1.38
28	a	1831	2MG	C6-N1	-3.00	1.33	1.38
6	A	1205	2MG	C6-N1	-2.93	1.33	1.38
28	a	1615	6MZ	C8-N9	-2.89	1.32	1.37
6	A	1514	2MG	C6-N1	-2.87	1.33	1.38
28	a	1831	2MG	C5-N7	-2.86	1.33	1.39
28	a	1913	3TD	C2-N3	-2.84	1.32	1.38
6	A	964	2MG	C6-N1	-2.83	1.33	1.38
28	a	2443	2MG	C5-N7	-2.82	1.33	1.39
28	a	1960	5MC	O2-C2	-2.79	1.18	1.23
6	A	1405	5MC	O2-C2	-2.78	1.18	1.23
6	A	964	2MG	C5-N7	-2.76	1.33	1.39
6	A	965	5MC	O2-C2	-2.73	1.18	1.23
28	a	1937	5MU	O4-C4	-2.72	1.18	1.23
6	A	965	5MC	C6-C5	2.72	1.39	1.34
28	a	2578	PSU	O4-C4	-2.71	1.18	1.23
6	A	1514	2MG	C5-N7	-2.70	1.33	1.39
28	a	745	5MU	O4-C4	-2.70	1.18	1.23
28	a	953	PSU	O4-C4	-2.70	1.18	1.23
28	a	2455	PSU	O4-C4	-2.68	1.18	1.23
6	A	1205	2MG	C5-N7	-2.66	1.33	1.39
6	A	1496	UR3	C2-N1	-2.65	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	a	1909	PSU	O4-C4	-2.65	1.18	1.23
28	a	2502	PSU	O4-C4	-2.64	1.18	1.23
28	a	744	PSU	O4-C4	-2.63	1.18	1.23
6	A	1405	5MC	C6-C5	2.62	1.38	1.34
28	a	2249	OMG	C8-N9	-2.61	1.31	1.37
28	a	2603	PSU	O4-C4	-2.59	1.18	1.23
6	A	514	PSU	O4-C4	-2.59	1.18	1.23
28	a	1615	6MZ	C5-N7	-2.58	1.34	1.39
28	a	2455	PSU	C6-N1	-2.57	1.32	1.36
28	a	2602	PSU	O4-C4	-2.57	1.18	1.23
28	a	2028	6MZ	C5-N7	-2.55	1.34	1.39
28	a	2578	PSU	C6-N1	-2.54	1.32	1.36
28	a	1915	PSU	O4-C4	-2.52	1.18	1.23
28	a	1937	5MU	O2-C2	-2.48	1.18	1.23
28	a	1960	5MC	C6-C5	2.46	1.38	1.34
28	a	2550	OMU	O2-C2	-2.45	1.18	1.23
28	a	2578	PSU	O4'-C1'	-2.44	1.40	1.43
28	a	744	PSU	C6-N1	-2.43	1.32	1.36
28	a	2502	PSU	C6-N1	-2.42	1.32	1.36
28	a	2602	PSU	C6-N1	-2.42	1.32	1.36
28	a	2067	G7M	C2-N1	-2.41	1.31	1.37
28	a	743	1MG	C5-N7	-2.41	1.34	1.39
28	a	745	5MU	O2-C2	-2.40	1.18	1.23
28	a	953	PSU	C6-N1	-2.40	1.32	1.36
28	a	2603	PSU	C6-N1	-2.39	1.32	1.36
28	a	2249	OMG	C5-N7	-2.39	1.34	1.39
6	A	514	PSU	C6-N1	-2.37	1.32	1.36
28	a	2602	PSU	O2-C2	-2.36	1.18	1.23
28	a	2603	PSU	O2-C2	-2.35	1.18	1.23
28	a	2455	PSU	O2-C2	-2.34	1.18	1.23
6	A	1496	UR3	O2-C2	2.34	1.26	1.22
28	a	1913	3TD	O2-C2	-2.33	1.18	1.23
28	a	1909	PSU	C6-N1	-2.33	1.32	1.36
28	a	743	1MG	C8-N9	-2.32	1.32	1.37
28	a	2578	PSU	O2-C2	-2.32	1.18	1.23
28	a	2502	PSU	O2-C2	-2.32	1.18	1.23
28	a	953	PSU	O2-C2	-2.31	1.18	1.23
28	a	1915	PSU	C6-N1	-2.31	1.32	1.36
28	a	2550	OMU	C6-N1	-2.31	1.32	1.38
6	A	525	G7M	C2-N1	-2.30	1.32	1.37
28	a	1913	3TD	C6-N1	-2.29	1.32	1.36
28	a	744	PSU	O2-C2	-2.24	1.18	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	514	PSU	O2-C2	-2.24	1.18	1.23
28	a	2550	OMU	C5-C4	-2.24	1.38	1.43
28	a	1909	PSU	O2-C2	-2.22	1.18	1.23
28	a	1915	PSU	O2-C2	-2.21	1.18	1.23
6	A	1517	MA6	C5-N7	-2.19	1.34	1.39
28	a	2249	OMG	C2-N1	-2.16	1.32	1.37
28	a	2443	2MG	C4-N9	-2.14	1.32	1.38
6	A	1514	2MG	C4-N9	-2.12	1.32	1.38
17	L	89	D2T	CB-CG	2.11	1.55	1.52
6	A	1496	UR3	C6-N1	-2.10	1.32	1.38
6	A	1516	MA6	C5-N7	-2.08	1.35	1.39
28	a	2443	2MG	CM2-N2	-2.08	1.41	1.45
6	A	514	PSU	O4'-C1'	-2.08	1.41	1.43
28	a	2496	OMC	C5-C4	-2.06	1.38	1.42
28	a	744	PSU	O4'-C1'	-2.05	1.41	1.43
28	a	2443	2MG	C8-N9	-2.04	1.33	1.37
28	a	2496	OMC	C6-C5	2.04	1.39	1.35

All (210) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
28	a	2447	H2U	C4-N3-C2	-17.43	111.33	125.79
28	a	2447	H2U	O2-C2-N1	-10.27	110.22	123.11
28	a	745	5MU	C5M-C5-C4	8.71	128.36	118.77
28	a	1937	5MU	C4-N3-C2	-8.63	116.18	127.35
28	a	1937	5MU	N3-C2-N1	8.26	125.85	114.89
28	a	745	5MU	C4-N3-C2	-8.11	116.85	127.35
28	a	1937	5MU	C5M-C5-C4	8.10	127.69	118.77
28	a	745	5MU	N3-C2-N1	7.96	125.46	114.89
28	a	1937	5MU	C5-C6-N1	-7.78	115.33	123.34
28	a	2501	2MA	C5-C4-N3	-7.29	118.99	127.19
28	a	1831	2MG	C2-N3-C4	7.28	121.07	112.04
6	A	1205	2MG	C2-N3-C4	7.18	120.94	112.04
6	A	1514	2MG	C2-N3-C4	7.12	120.87	112.04
6	A	964	2MG	C2-N3-C4	7.11	120.85	112.04
28	a	2443	2MG	C2-N3-C4	7.08	120.82	112.04
28	a	745	5MU	C5-C6-N1	-7.00	116.14	123.34
28	a	2447	H2U	O4-C4-N3	-6.98	109.21	120.28
28	a	2447	H2U	N3-C2-N1	-6.92	109.34	116.65
28	a	743	1MG	C5-C4-N3	-6.90	117.26	128.46
28	a	745	5MU	C5M-C5-C6	-6.73	113.87	122.85
28	a	2447	H2U	O2-C2-N3	-6.71	109.00	121.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
28	a	1937	5MU	C5-C4-N3	6.61	120.96	115.31
28	a	1913	3TD	N1-C2-N3	6.55	121.31	116.14
28	a	1937	5MU	C5M-C5-C6	-6.30	114.44	122.85
28	a	745	5MU	C5-C4-N3	6.15	120.56	115.31
28	a	2028	6MZ	C9-N6-C6	-6.11	117.61	122.87
6	A	1517	MA6	C5-C4-N3	-5.96	118.97	126.75
28	a	2602	PSU	N1-C2-N3	5.82	121.73	115.13
28	a	2455	PSU	N1-C2-N3	5.63	121.51	115.13
16	K	119	IAS	OD1-CG-CB	-5.60	109.09	125.43
28	a	2603	PSU	N1-C2-N3	5.60	121.48	115.13
28	a	744	PSU	N1-C2-N3	5.60	121.47	115.13
6	A	1516	MA6	C5-C4-N3	-5.60	119.45	126.75
28	a	1909	PSU	N1-C2-N3	5.58	121.45	115.13
28	a	2447	H2U	O4-C4-C5	-5.58	110.25	122.17
28	a	953	PSU	N1-C2-N3	5.55	121.42	115.13
28	a	2578	PSU	N1-C2-N3	5.50	121.36	115.13
28	a	2502	PSU	N1-C2-N3	5.46	121.32	115.13
28	a	2501	2MA	N3-C4-N9	5.45	134.56	126.99
6	A	514	PSU	N1-C2-N3	5.43	121.29	115.13
28	a	2249	OMG	C5-C4-N3	-5.41	119.69	128.46
28	a	1915	PSU	N1-C2-N3	5.35	121.19	115.13
28	a	1831	2MG	C5-C4-N3	-5.32	119.83	128.46
28	a	2067	G7M	C2-N3-C4	5.29	121.73	112.30
28	a	1615	6MZ	C5-C4-N3	-5.27	119.88	126.75
28	a	2550	OMU	N3-C2-N1	5.24	121.84	114.89
6	A	525	G7M	C2-N3-C4	5.20	121.56	112.30
28	a	2028	6MZ	C5-C4-N3	-5.17	120.00	126.75
6	A	964	2MG	C5-C4-N3	-5.16	120.08	128.46
28	a	743	1MG	C2-N3-C4	5.11	123.47	111.98
6	A	1205	2MG	C5-C4-N3	-5.08	120.22	128.46
28	a	2443	2MG	C5-C4-N3	-5.06	120.26	128.46
6	A	1516	MA6	N1-C2-N3	-5.03	120.73	128.60
28	a	743	1MG	N9-C4-N3	4.99	135.95	125.94
28	a	1615	6MZ	N1-C2-N3	-4.98	120.82	128.60
6	A	965	5MC	C5-C6-N1	-4.97	118.23	123.34
28	a	2028	6MZ	N1-C2-N3	-4.93	120.88	128.60
28	a	1960	5MC	C5-C6-N1	-4.91	118.28	123.34
6	A	1514	2MG	C5-C4-N3	-4.88	120.54	128.46
6	A	1517	MA6	N1-C2-N3	-4.85	121.02	128.60
28	a	2249	OMG	C2-N3-C4	4.74	120.75	112.30
6	A	1405	5MC	C5-C6-N1	-4.65	118.56	123.34
6	A	1496	UR3	C4-N3-C2	-4.61	120.22	124.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1517	MA6	N3-C4-N9	4.55	134.57	127.08
6	A	525	G7M	C5-C4-N3	-4.51	119.50	128.15
6	A	1516	MA6	N3-C4-N9	4.40	134.32	127.08
28	a	2067	G7M	C5-C6-N1	4.32	120.82	111.79
6	A	1516	MA6	C2-N1-C6	4.31	121.92	111.75
28	a	2067	G7M	C5-C4-N3	-4.30	119.91	128.15
6	A	1517	MA6	C2-N3-C4	4.22	121.72	111.75
6	A	525	G7M	C5-C6-N1	4.19	120.54	111.79
28	a	2550	OMU	C4-N3-C2	-4.14	121.12	126.58
6	A	1516	MA6	C2-N3-C4	4.11	121.47	111.75
28	a	2067	G7M	C6-C5-N7	4.07	137.17	132.25
6	A	1517	MA6	C2-N1-C6	4.04	121.30	111.75
28	a	1937	5MU	O4-C4-N3	-4.03	112.39	120.12
28	a	745	5MU	O4-C4-N3	-4.00	112.45	120.12
28	a	1937	5MU	O2-C2-N1	-3.94	117.55	122.79
28	a	2028	6MZ	C2-N3-C4	3.94	121.05	111.75
28	a	1615	6MZ	C2-N3-C4	3.92	121.02	111.75
28	a	2249	OMG	N9-C4-N3	3.85	133.66	125.94
28	a	1909	PSU	C4-N3-C2	-3.83	120.82	126.34
28	a	2603	PSU	C4-N3-C2	-3.79	120.87	126.34
28	a	1615	6MZ	C9-N6-C6	-3.78	119.62	122.87
28	a	953	PSU	C4-N3-C2	-3.77	120.90	126.34
28	a	744	PSU	C4-N3-C2	-3.75	120.93	126.34
6	A	1516	MA6	N9-C8-N7	-3.73	108.81	113.91
28	a	1831	2MG	N9-C4-N3	3.65	133.26	125.94
28	a	2602	PSU	C4-N3-C2	-3.62	121.12	126.34
39	l	81	4D4	NE-CZ-NH2	3.58	127.00	120.70
6	A	1517	MA6	N9-C8-N7	-3.58	109.02	113.91
28	a	1615	6MZ	N3-C4-N9	3.57	132.96	127.08
28	a	2455	PSU	C4-N3-C2	-3.55	121.22	126.34
6	A	1516	MA6	C5-N7-C8	3.55	108.55	103.51
28	a	2502	PSU	C4-N3-C2	-3.54	121.23	126.34
28	a	2578	PSU	C4-N3-C2	-3.53	121.25	126.34
6	A	525	G7M	C6-C5-N7	3.53	136.51	132.25
6	A	1517	MA6	C5-N7-C8	3.52	108.52	103.51
28	a	2067	G7M	O6-C6-C5	-3.52	120.11	128.06
28	a	2443	2MG	N9-C4-N3	3.50	132.97	125.94
6	A	514	PSU	C4-N3-C2	-3.49	121.31	126.34
6	A	525	G7M	N9-C4-N3	3.48	132.93	125.94
6	A	1516	MA6	C4-N9-C8	3.46	109.48	105.73
28	a	1915	PSU	C4-N3-C2	-3.46	121.36	126.34
28	a	2028	6MZ	C6-C5-N7	3.45	136.12	132.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	964	2MG	N9-C4-N3	3.43	132.82	125.94
28	a	745	5MU	O2-C2-N3	-3.39	115.19	121.50
28	a	2028	6MZ	N3-C4-N9	3.37	132.64	127.08
28	a	2578	PSU	O2-C2-N1	-3.35	119.10	122.79
6	A	525	G7M	O6-C6-C5	-3.33	120.56	128.06
28	a	1909	PSU	O2-C2-N1	-3.29	119.16	122.79
28	a	2067	G7M	N9-C4-N3	3.29	132.54	125.94
28	a	2028	6MZ	C5-N7-C8	3.28	108.17	103.51
6	A	1205	2MG	N9-C4-N3	3.28	132.52	125.94
6	A	514	PSU	O2-C2-N1	-3.23	119.23	122.79
28	a	1615	6MZ	C5-N7-C8	3.19	108.05	103.51
6	A	1514	2MG	C6-C5-N7	3.12	136.06	130.25
28	a	2028	6MZ	C4-C5-N7	-3.12	106.82	110.62
28	a	2028	6MZ	N9-C8-N7	-3.12	109.65	113.91
28	a	2501	2MA	N9-C8-N7	-3.09	109.69	113.91
6	A	1517	MA6	C4-N9-C8	3.09	109.08	105.73
28	a	1615	6MZ	C6-C5-N7	3.07	135.72	132.39
6	A	1514	2MG	N9-C4-N3	3.07	132.10	125.94
28	a	2502	PSU	O2-C2-N1	-3.06	119.42	122.79
28	a	744	PSU	O2-C2-N1	-3.06	119.42	122.79
6	A	1517	MA6	C4-C5-N7	-3.03	106.93	110.62
6	A	1205	2MG	C6-C5-N7	3.02	135.87	130.25
6	A	1516	MA6	C4-C5-N7	-3.02	106.94	110.62
28	a	953	PSU	O2-C2-N1	-3.01	119.48	122.79
17	L	89	D2T	OD1-CG-CB	-3.00	116.16	122.44
28	a	2455	PSU	O2-C2-N1	-2.98	119.51	122.79
28	a	745	5MU	C1'-N1-C6	-2.97	116.18	121.12
28	a	1615	6MZ	C4-C5-N7	-2.97	107.00	110.62
28	a	1615	6MZ	N9-C8-N7	-2.95	109.88	113.91
28	a	2501	2MA	C5-N7-C8	2.93	107.68	103.51
28	a	1915	PSU	O2-C2-N1	-2.93	119.57	122.79
28	a	2443	2MG	C6-C5-N7	2.90	135.65	130.25
28	a	2249	OMG	C6-C5-N7	2.88	135.60	130.25
28	a	2602	PSU	O2-C2-N1	-2.88	119.62	122.79
28	a	2603	PSU	O2-C2-N1	-2.86	119.64	122.79
28	a	2496	OMC	O2-C2-N3	-2.81	117.77	122.33
6	A	964	2MG	C6-C5-N7	2.79	135.44	130.25
28	a	2550	OMU	O2-C2-N1	-2.73	119.16	122.79
28	a	1831	2MG	C6-C5-N7	2.72	135.30	130.25
6	A	525	G7M	C2-N1-C6	-2.67	120.24	125.10
28	a	2501	2MA	C4-N9-C8	2.66	108.61	105.73
28	a	2578	PSU	O4'-C1'-C2'	2.65	108.88	105.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
28	a	2067	G7M	C2-N1-C6	-2.64	120.29	125.10
6	A	1400	4OC	O2-C2-N3	-2.64	118.04	122.33
28	a	1937	5MU	O2-C2-N3	-2.63	116.60	121.50
6	A	1514	2MG	C4-C5-N7	-2.59	106.62	110.72
28	a	745	5MU	O2-C2-N1	-2.58	119.35	122.79
28	a	743	1MG	C5-C6-N1	2.57	119.87	114.91
28	a	2249	OMG	C5-C6-N1	2.57	119.71	113.19
28	a	2550	OMU	C5-C4-N3	2.56	118.67	114.84
6	A	1205	2MG	C4-C5-N7	-2.54	106.71	110.72
28	a	2249	OMG	C8-N7-C5	2.51	108.79	104.24
28	a	2501	2MA	C4-C5-N7	-2.50	107.58	110.62
28	a	1913	3TD	C4-N3-C2	-2.49	121.90	124.61
28	a	1937	5MU	C6-N1-C2	2.48	123.80	121.30
39	l	81	4D4	NH1-CZ-NE	-2.45	113.55	119.19
6	A	964	2MG	C4-C5-N7	-2.44	106.86	110.72
28	a	2550	OMU	O4-C4-C5	-2.44	120.88	125.16
6	A	514	PSU	O4'-C1'-C2'	2.43	108.57	105.14
28	a	2249	OMG	C4-C5-N7	-2.41	106.90	110.72
28	a	1831	2MG	C2-N1-C6	-2.39	121.73	124.48
28	a	2249	OMG	N9-C8-N7	-2.39	108.89	113.39
28	a	2249	OMG	O6-C6-C5	-2.39	120.27	126.60
28	a	2443	2MG	C4-C5-N7	-2.35	107.00	110.72
6	A	1405	5MC	C5-C4-N3	-2.35	119.14	121.67
28	a	1831	2MG	O6-C6-C5	-2.34	120.39	126.60
28	a	2501	2MA	N3-C2-N1	-2.32	121.45	125.72
28	a	2443	2MG	C2-N1-C6	-2.32	121.81	124.48
6	A	965	5MC	C5-C4-N3	-2.32	119.17	121.67
28	a	1831	2MG	C4-C5-N7	-2.30	107.08	110.72
39	l	82	MS6	CE-SD-CG	2.30	108.30	100.40
28	a	2443	2MG	O6-C6-C5	-2.29	120.52	126.60
28	a	1831	2MG	C5-C6-N1	2.28	118.97	113.19
28	a	2443	2MG	C5-C6-N1	2.25	118.90	113.19
6	A	964	2MG	O6-C6-C5	-2.24	120.66	126.60
28	a	2249	OMG	C2-N1-C6	-2.24	121.02	125.10
6	A	1514	2MG	O6-C6-C5	-2.23	120.69	126.60
28	a	2496	OMC	N1-C2-N3	2.23	122.86	118.81
6	A	1514	2MG	C8-N7-C5	2.22	108.25	104.24
6	A	964	2MG	C2-N1-C6	-2.21	121.93	124.48
6	A	1205	2MG	C8-N7-C5	2.19	108.21	104.24
6	A	1205	2MG	C5-C6-N1	2.17	118.71	113.19
28	a	743	1MG	C4-C5-N7	-2.16	107.30	110.72
6	A	1205	2MG	N1-C2-N3	-2.16	120.62	123.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1514	2MG	N1-C2-N3	-2.15	120.62	123.95
6	A	1514	2MG	C2-N1-C6	-2.15	122.01	124.48
6	A	964	2MG	CM2-N2-C2	-2.14	119.12	123.86
6	A	1514	2MG	C5-C6-N1	2.14	118.64	113.19
28	a	743	1MG	C6-C5-N7	2.13	134.18	129.35
6	A	964	2MG	C8-N7-C5	2.13	108.10	104.24
6	A	964	2MG	C5-C6-N1	2.13	118.59	113.19
28	a	2443	2MG	C8-N7-C5	2.12	108.08	104.24
28	a	2028	6MZ	C4-N9-C8	2.10	108.01	105.73
28	a	2455	PSU	O4'-C1'-C2'	2.09	108.10	105.14
6	A	1205	2MG	O6-C6-C5	-2.09	121.05	126.60
6	A	1205	2MG	C2-N1-C6	-2.09	122.08	124.48
28	a	1831	2MG	C8-N7-C5	2.06	107.97	104.24
6	A	1496	UR3	C5-C6-N1	-2.06	118.36	121.81
28	a	1831	2MG	N1-C2-N3	-2.05	120.78	123.95
6	A	1514	2MG	N9-C8-N7	-2.03	109.57	113.39
28	a	1615	6MZ	C4-N9-C8	2.02	107.92	105.73
28	a	1960	5MC	C5-C4-N3	-2.01	119.50	121.67
6	A	964	2MG	N1-C2-N3	-2.01	120.84	123.95
28	a	1831	2MG	CM2-N2-C2	-2.00	119.44	123.86
28	a	2443	2MG	N1-C2-N3	-2.00	120.86	123.95

There are no chirality outliers.

All (35) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1205	2MG	N1-C2-N2-CM2
6	A	1205	2MG	N3-C2-N2-CM2
6	A	1517	MA6	C5-C6-N6-C10
17	L	89	D2T	CA-CB-CG-OD1
17	L	89	D2T	CA-CB-CG-OD2
16	K	119	IAS	N-CA-CB-CG
28	a	2249	OMG	C1'-C2'-O2'-CM2
28	a	2028	6MZ	O4'-C4'-C5'-O5'
28	a	2028	6MZ	C3'-C4'-C5'-O5'
28	a	2502	PSU	O4'-C4'-C5'-O5'
31	d	150	MEQ	NE2-CD-CG-CB
28	a	2502	PSU	C3'-C4'-C5'-O5'
31	d	150	MEQ	OE1-CD-CG-CB
6	A	525	G7M	C3'-C4'-C5'-O5'
6	A	1517	MA6	C5-C6-N6-C9
39	l	82	MS6	CB-CG-SD-CE

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Mol	Chain	Res	Type	Atoms
6	A	525	G7M	O4'-C4'-C5'-O5'
17	L	89	D2T	CG-CB-SB-CB1
28	a	2443	2MG	C3'-C4'-C5'-O5'
39	l	81	4D4	OB-CB-CG-CD
6	A	525	G7M	C4'-C5'-O5'-P
28	a	2501	2MA	C4'-C5'-O5'-P
28	a	2447	H2U	O4'-C4'-C5'-O5'
17	L	89	D2T	SB-CB-CG-OD2
6	A	1517	MA6	N1-C6-N6-C10
6	A	1517	MA6	O4'-C4'-C5'-O5'
28	a	2067	G7M	O4'-C4'-C5'-O5'
28	a	2067	G7M	C4'-C5'-O5'-P
6	A	1400	4OC	O4'-C4'-C5'-O5'
6	A	1516	MA6	O4'-C4'-C5'-O5'
6	A	1516	MA6	C3'-C4'-C5'-O5'
28	a	744	PSU	O4'-C1'-C5-C6
28	a	2447	H2U	C3'-C4'-C5'-O5'
28	a	2501	2MA	O4'-C4'-C5'-O5'
39	l	81	4D4	O-C-CA-CB

There are no ring outliers.

8 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
28	a	1913	3TD	1	0
6	A	965	5MC	1	0
6	A	514	PSU	1	0
6	A	964	2MG	2	0
28	a	2249	OMG	1	0
28	a	2028	6MZ	2	0
6	A	1400	4OC	1	0
28	a	953	PSU	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 530 ligands modelled in this entry, 530 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

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
28	a	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	a	1913:3TD	O3'	1914:A	P	4.86

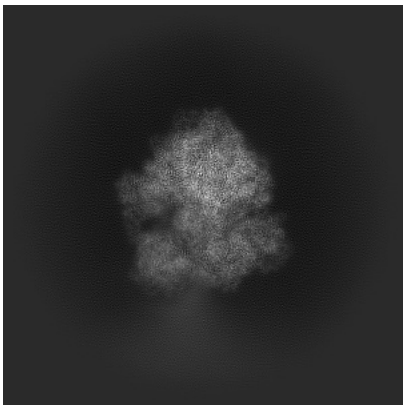
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-59045. These allow visual inspection of the internal detail of the map and identification of artifacts.

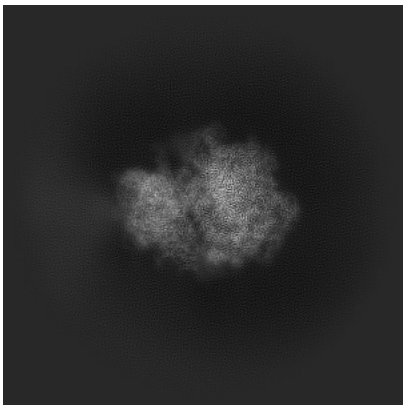
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

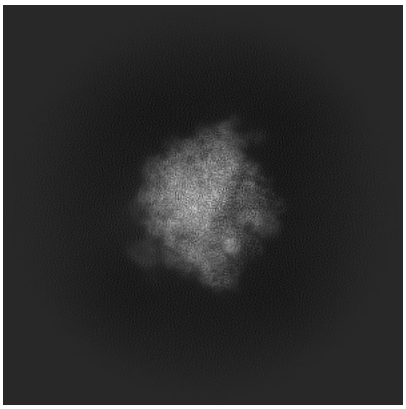
6.1.1 Primary map



X

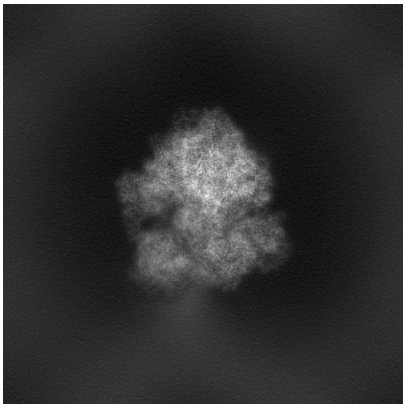


Y

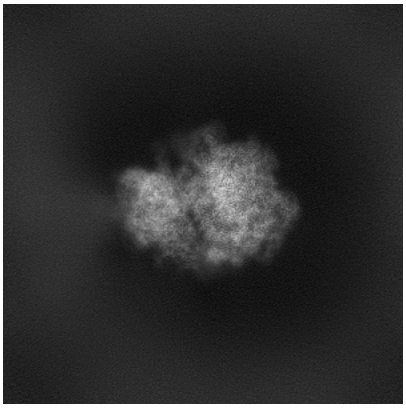


Z

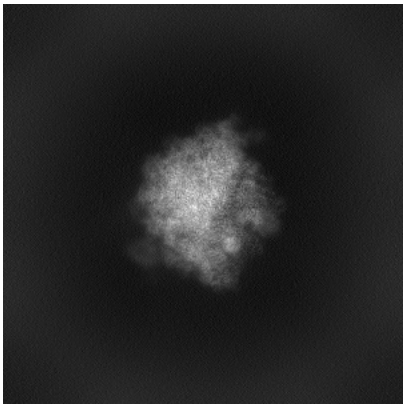
6.1.2 Raw map



X



Y

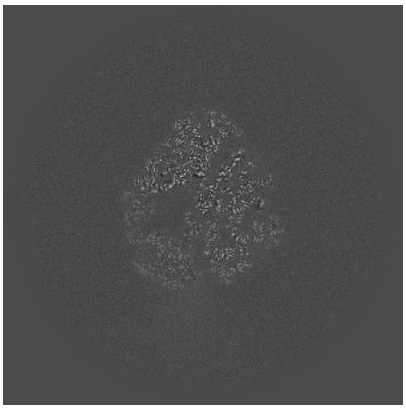


Z

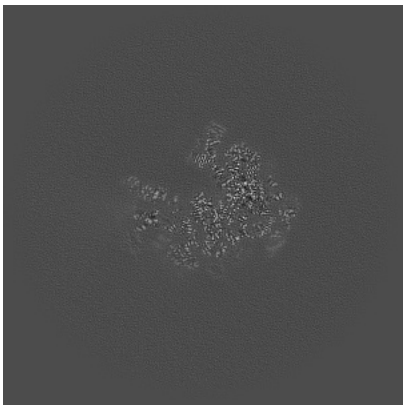
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

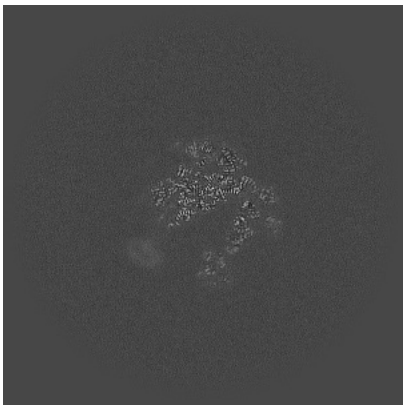
6.2.1 Primary map



X Index: 256

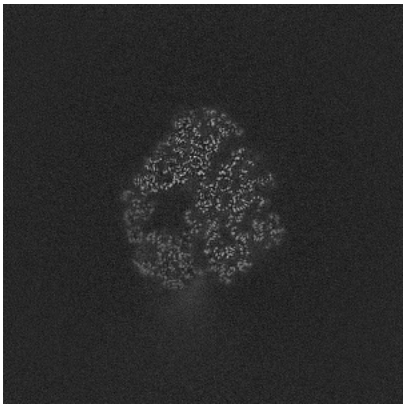


Y Index: 256

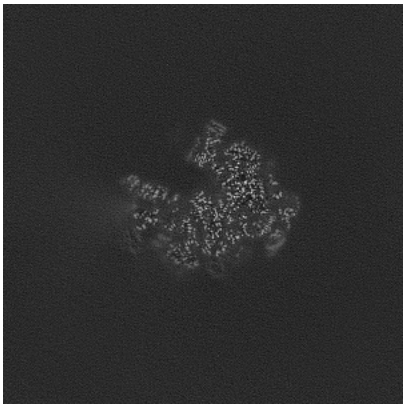


Z Index: 256

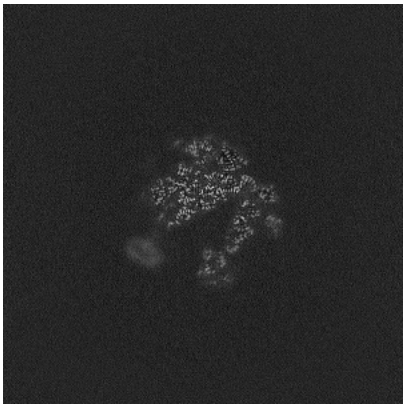
6.2.2 Raw map



X Index: 256



Y Index: 256

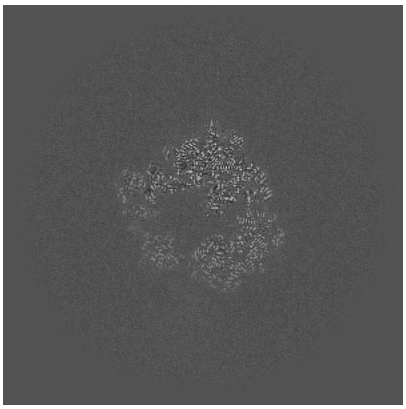


Z Index: 256

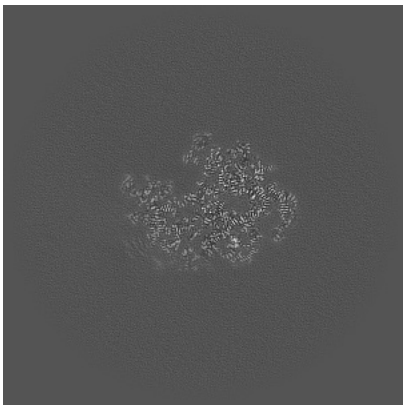
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

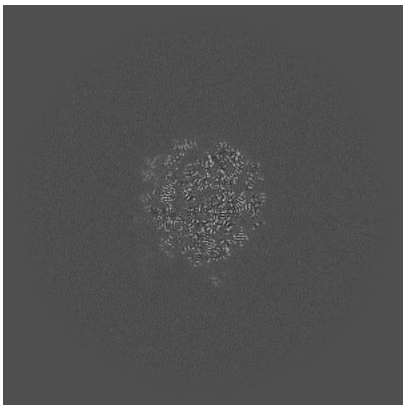
6.3.1 Primary map



X Index: 273

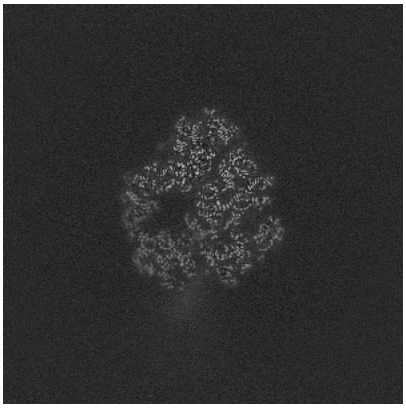


Y Index: 268

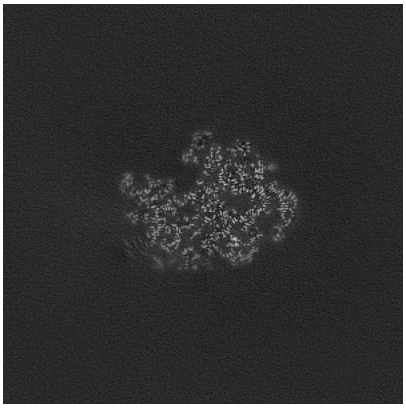


Z Index: 298

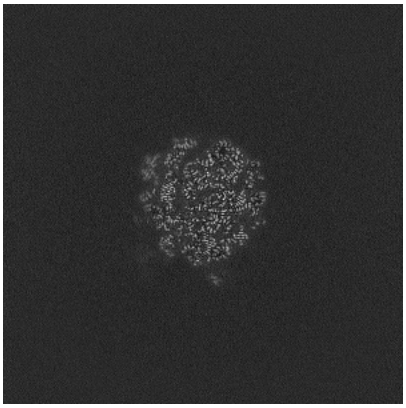
6.3.2 Raw map



X Index: 260



Y Index: 268

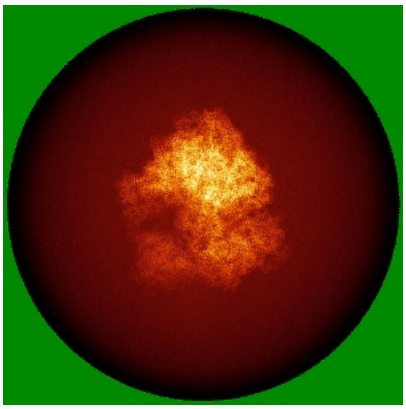


Z Index: 298

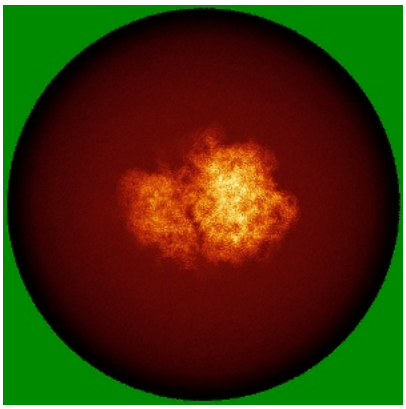
The images above show the largest variance slices of the map in three orthogonal directions.

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

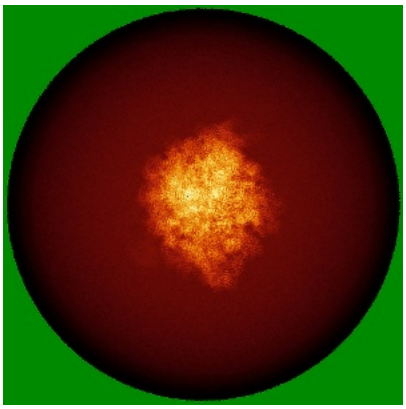
6.4.1 Primary map



X

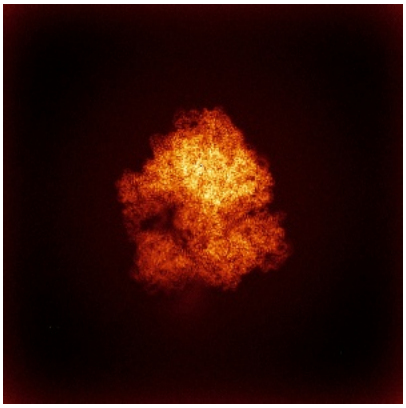


Y

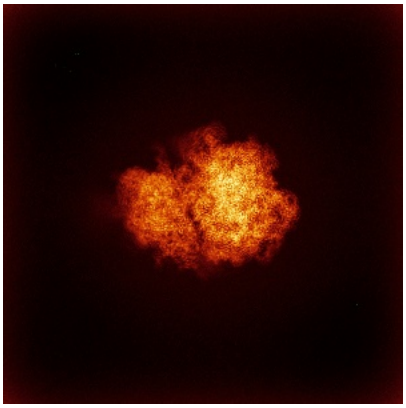


Z

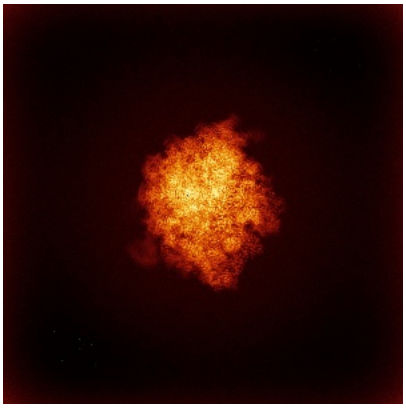
6.4.2 Raw map



X



Y

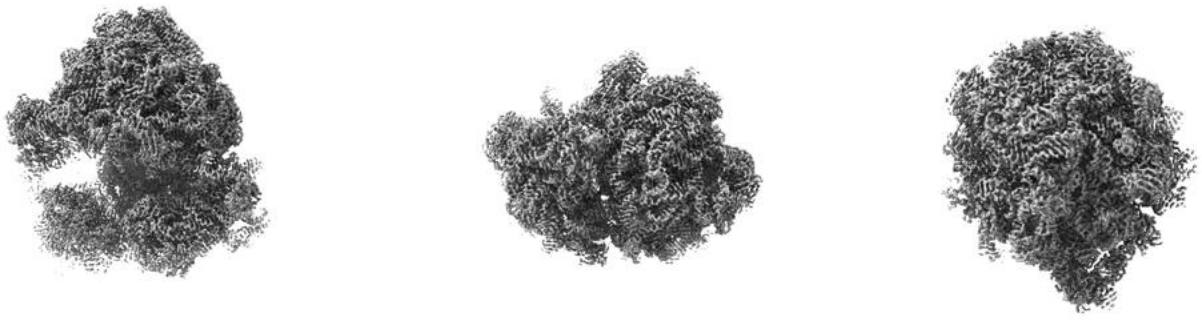


Z

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 0.45. 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.

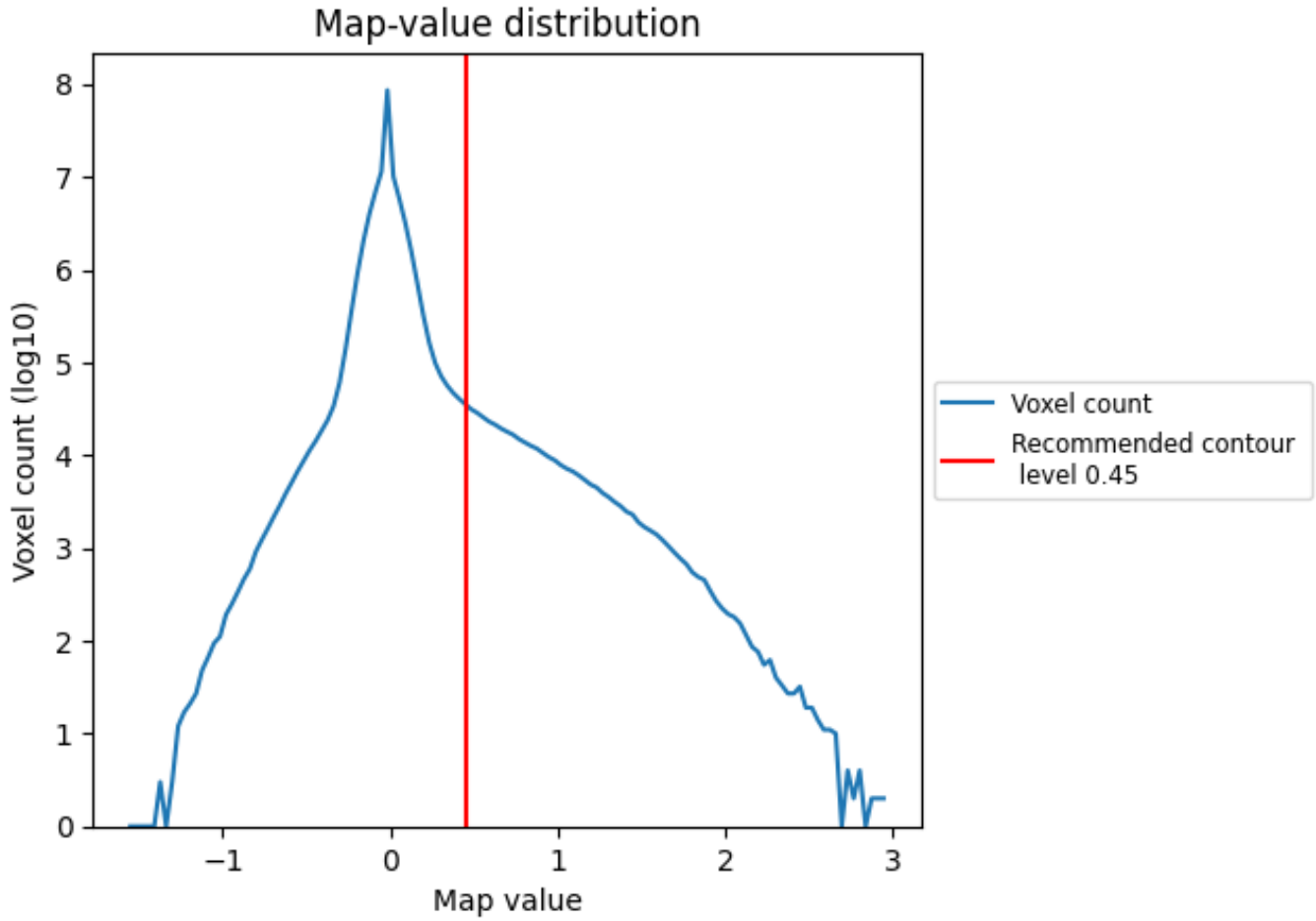
6.6 Mask visualisation (i)

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

7 Map analysis

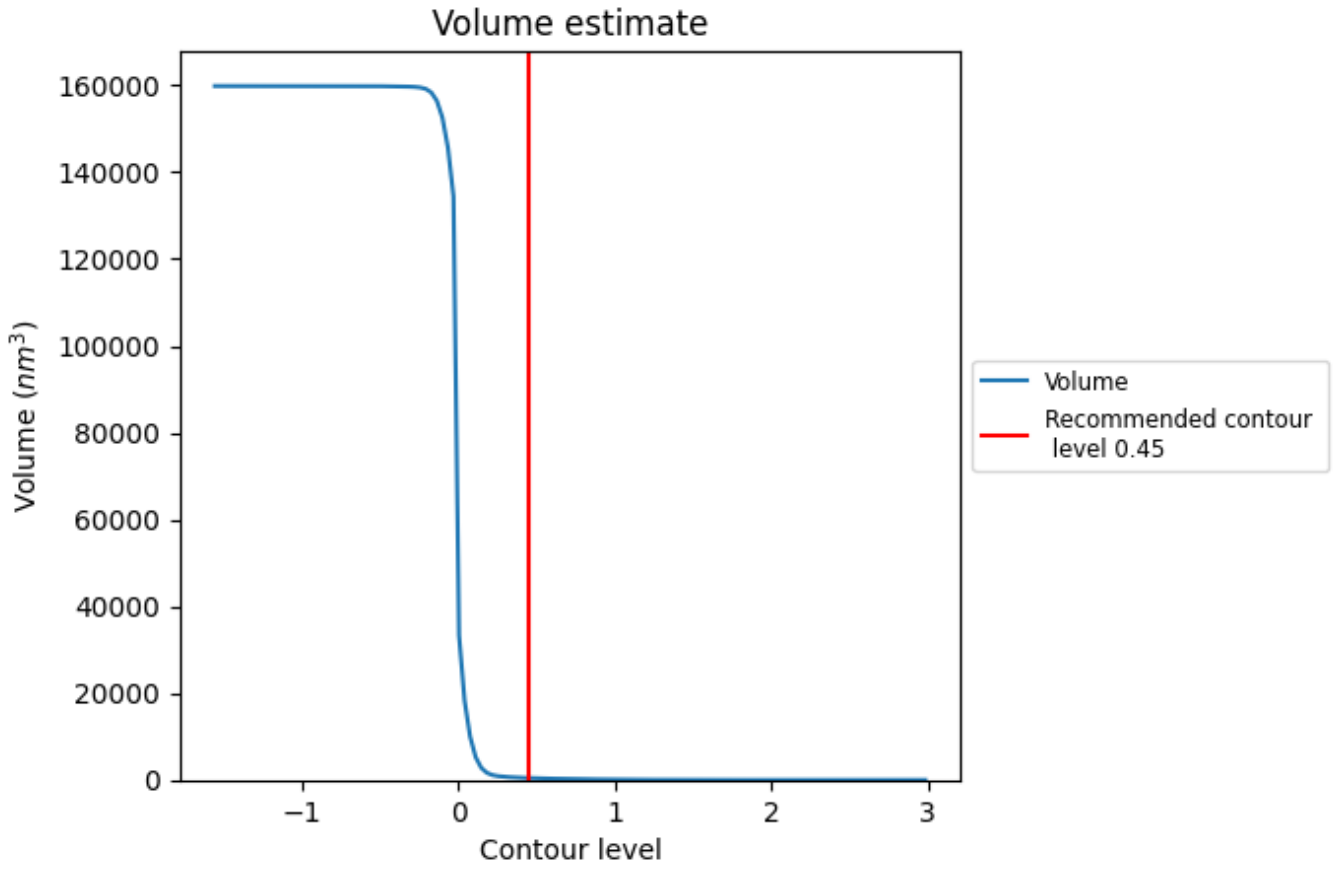
This section contains the results of statistical analysis of the map.

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.

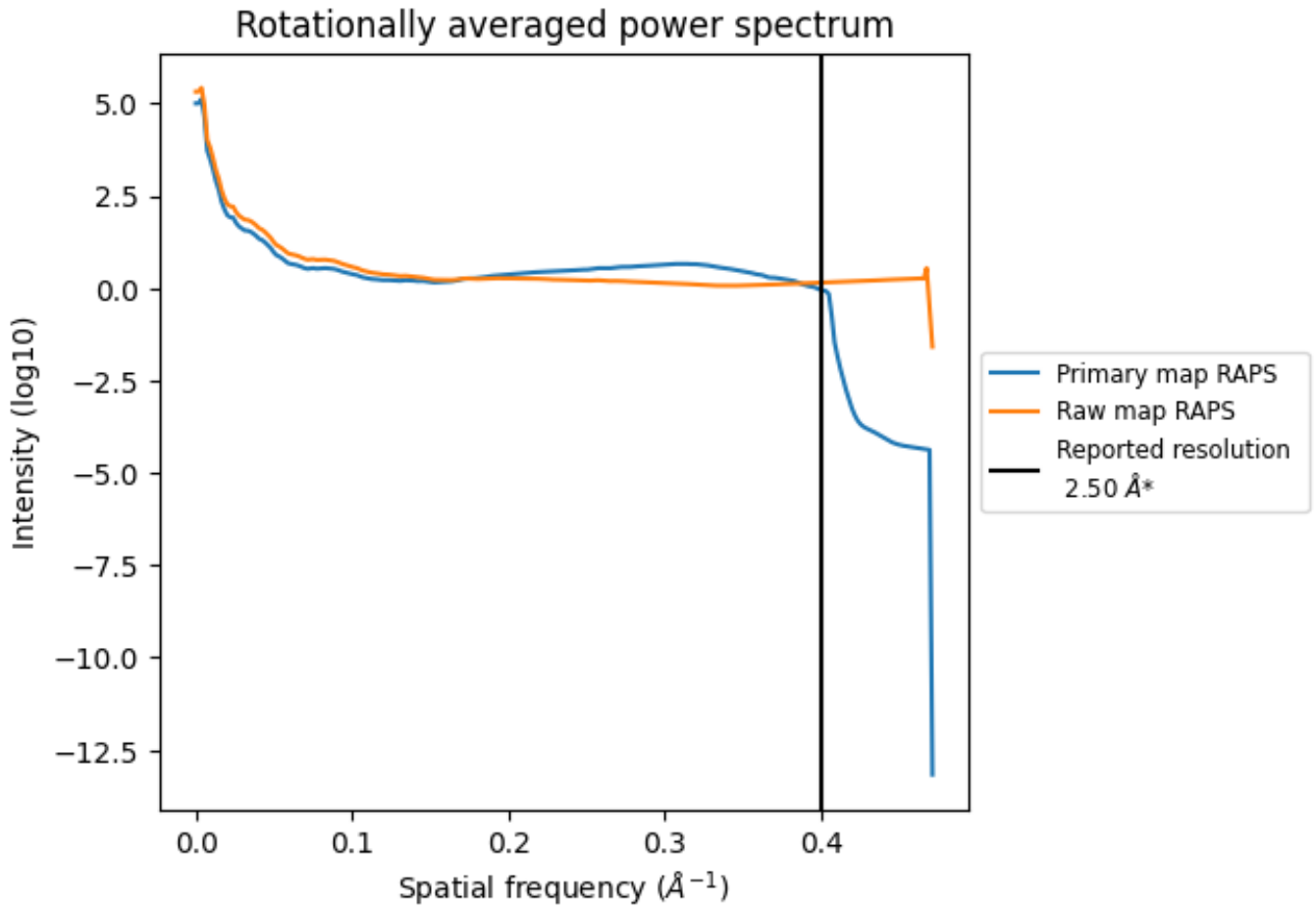
7.2 Volume estimate



The volume at the recommended contour level is 447 nm^3; this corresponds to an approximate mass of 404 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)

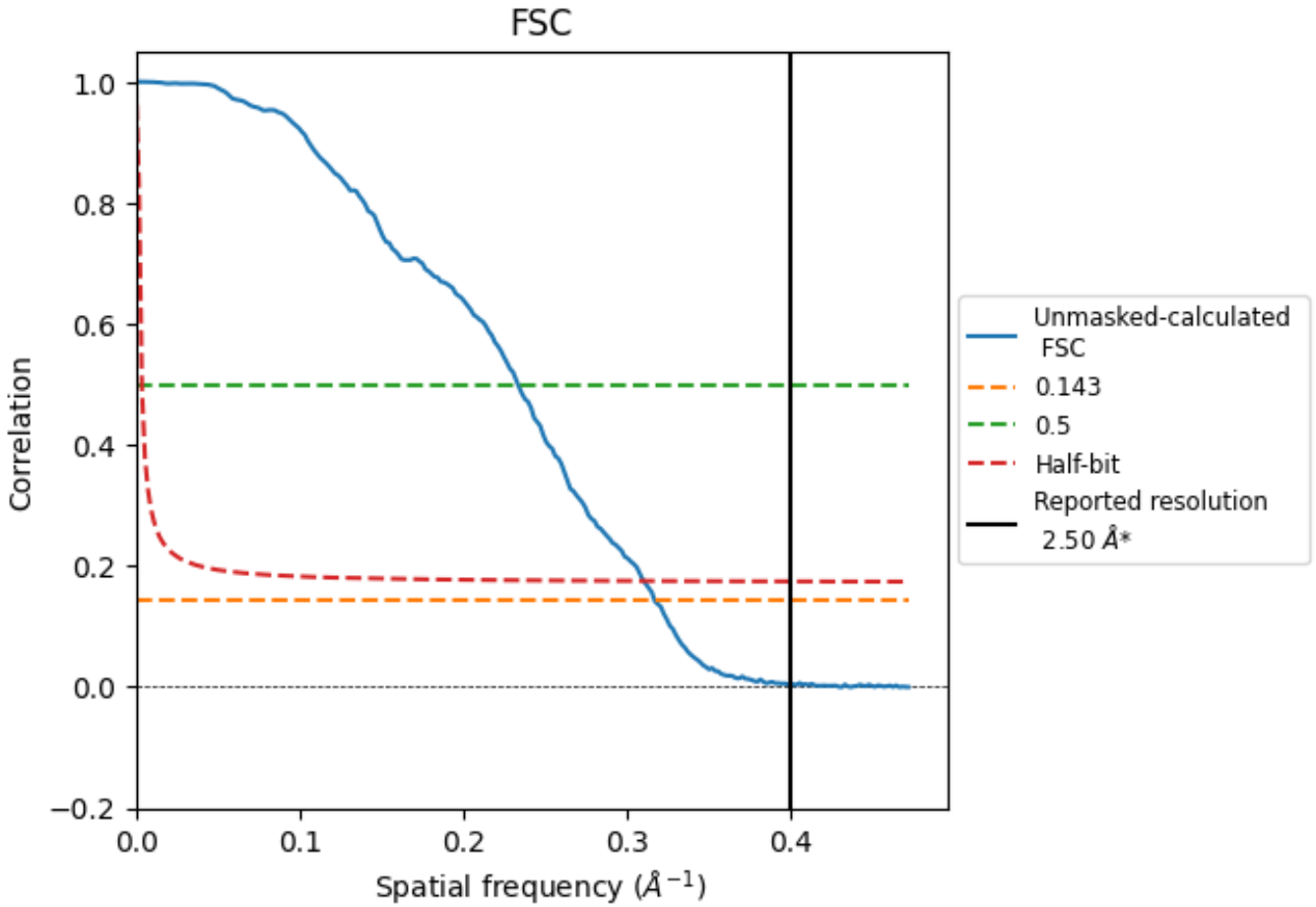


*Reported resolution corresponds to spatial frequency of 0.400 $Å^{-1}$

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 0.400 Å^{-1}

8.2 Resolution estimates (i)

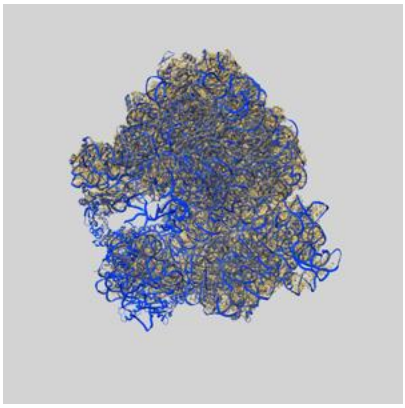
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.50	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.16	4.29	3.22

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.16 differs from the reported value 2.5 by more than 10 %

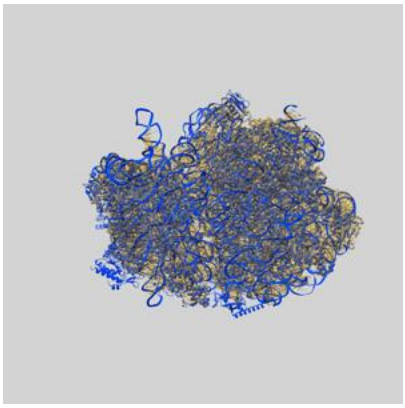
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-59045 and PDB model 32PC. Per-residue inclusion information can be found in section 3 on page 14.

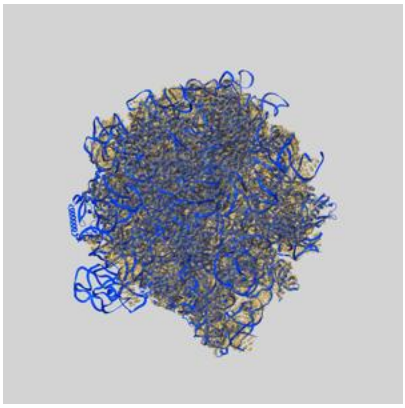
9.1 Map-model overlay



X



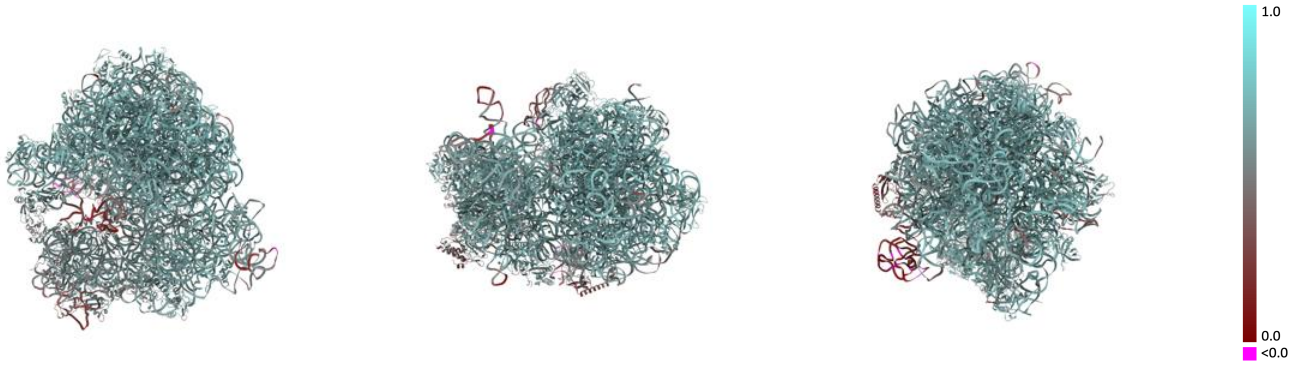
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.45 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.

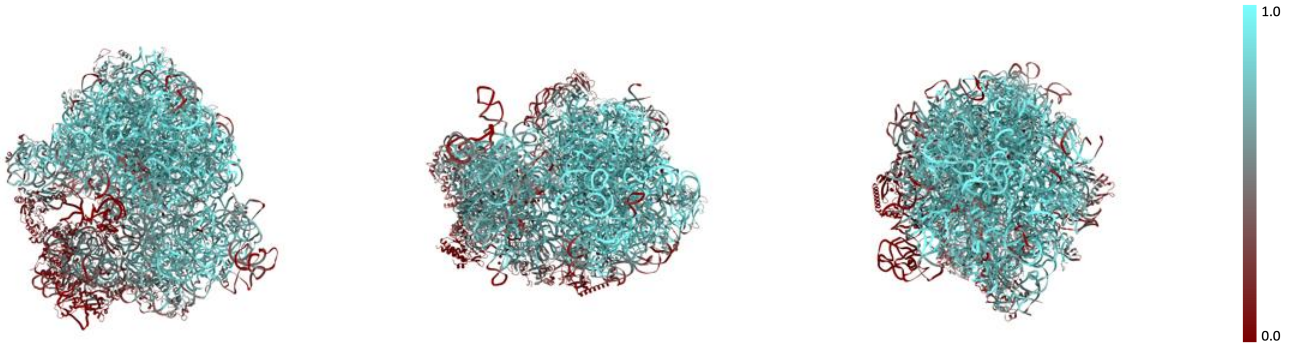
9.2 Q-score mapped to coordinate model (i)



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.

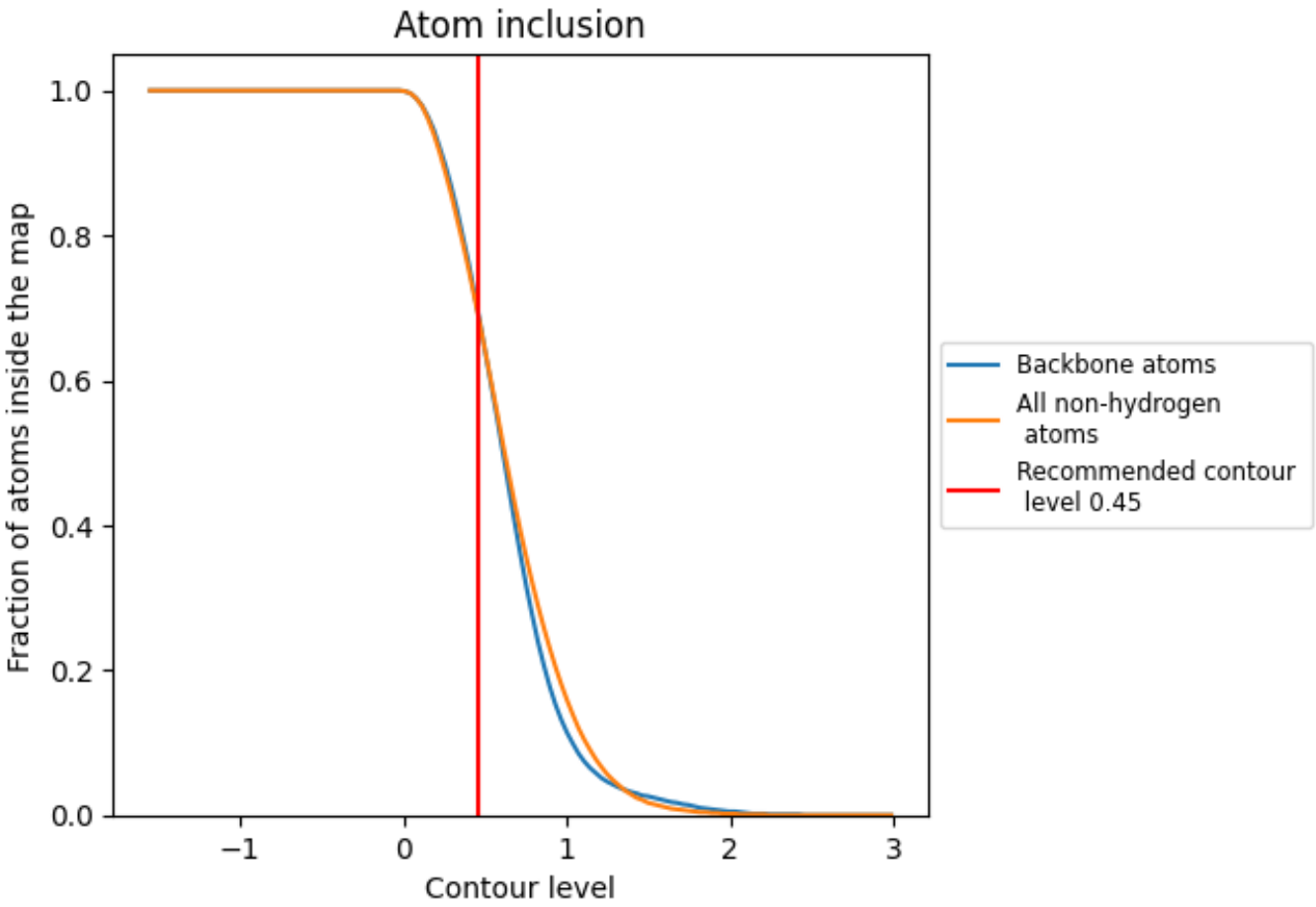
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.45).

9.4 Atom inclusion (i)



At the recommended contour level, 70% of all backbone atoms, 70% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6970	0.6150
0	0.6060	0.6560
1	0.9100	0.6880
2	0.9060	0.6870
3	0.7990	0.6690
4	0.0620	0.4690
A	0.6720	0.6020
B	0.0020	0.4090
C	0.3120	0.5760
D	0.4610	0.6120
E	0.6450	0.6420
F	0.3290	0.5680
G	0.1330	0.5440
H	0.6310	0.6410
I	0.2060	0.5490
J	0.1930	0.4980
K	0.3790	0.5860
L	0.6470	0.6450
M	0.1620	0.5450
N	0.3010	0.5730
O	0.5790	0.6320
P	0.6790	0.6370
Q	0.5430	0.6240
R	0.3960	0.5700
S	0.1010	0.5240
T	0.6020	0.6370
W	0.0250	0.3910
X	0.2620	0.5700
a	0.8190	0.6260
b	0.7420	0.6250
c	0.8480	0.6790
d	0.8420	0.6770
e	0.7000	0.6550
f	0.2840	0.5660
g	0.4120	0.5930



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Chain	Atom inclusion	Q-score
h	0.0160	0.3880
i	0.8320	0.6720
j	0.7690	0.6710
k	0.7660	0.6670
l	0.7600	0.6670
m	0.8960	0.6850
n	0.5860	0.6290
o	0.7660	0.6690
p	0.8900	0.6830
q	0.7480	0.6590
r	0.8210	0.6730
s	0.6970	0.6480
t	0.6540	0.6400
u	0.6270	0.6470
v	0.8250	0.6750
w	0.7690	0.6690
x	0.5960	0.6300
y	0.7910	0.6630
z	0.8110	0.6770