



## Full wwPDB EM Validation Report ⓘ

Apr 16, 2024 – 01:39 am BST

PDB ID : 6Q97  
EMDB ID : EMD-4476  
Title : Structure of tmRNA SmpB bound in A site of E. coli 70S ribosome  
Authors : Rae, C.D.  
Deposited on : 2018-12-17  
Resolution : 3.90 Å (reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

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<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>.

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

EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.4, CSD as541be (2020)  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

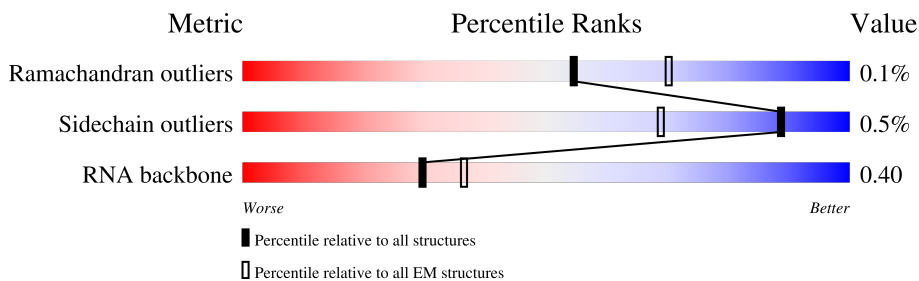
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 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  $\leq 5\%$ . 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	1	2903	
2	2	1534	
3	3	120	
4	5	145	
5	6	28	
6	8	77	
7	9	6	
8	B	270	

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Mol	Chain	Length	Quality of chain
9	C	209	94% 100%
10	D	201	86% 100%
11	E	177	95% 98%
12	F	175	100% 99%
13	G	149	81% 99%
14	H	130	100% 98%
15	I	135	100% 99%
16	J	141	96% 100%
17	K	123	93% 99%
18	L	144	69% 99%
19	M	136	93% 100%
20	N	119	89% 99%
21	O	115	79% 100%
22	P	114	85% 99%
23	Q	117	87% 99%
24	R	103	88% 100%
25	S	108	76% 98%
26	T	94	80% 100%
27	U	103	79% 100%
28	V	94	98% 99%
29	W	76	91% 100%
30	X	77	78% 99%
31	Y	58	88% 100%
32	Z	56	88% 100%
33	a	66	97% 100%

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Mol	Chain	Length	Quality of chain
34	b	54	87% 100%
35	c	52	88% 100%
36	d	46	65% 100%
37	e	64	72% 95% 5%
38	f	37	100%
39	g	225	100%
40	h	208	99% 98% 98%
41	i	205	99% 100%
42	j	156	99% 100%
43	k	104	76% 100%
44	l	151	66% 99%
45	m	129	99% 100%
46	n	126	80% 99%
47	o	99	97% 100%
48	p	117	85% 99%
49	q	123	76% 99%
50	r	115	70% 98%
51	s	100	90% 100%
52	t	87	60% 98%
53	u	81	98% 98%
54	v	80	88% 100%
55	w	65	85% 98%
56	x	82	85% 100%
57	y	85	76% 99%
58	z	70	81% 99%

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Mol	Chain	Length	Quality of chain
59	4	363	
60	7	77	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
1	6MZ	1	1618	X	-	-	-
1	PSU	1	1911	X	-	-	-
1	3TD	1	1915	X	-	-	-
1	PSU	1	1917	X	-	-	-
1	5MU	1	1939	X	-	-	-
1	6MZ	1	2030	X	-	-	-
1	G7M	1	2069	X	-	-	-
1	OMG	1	2251	X	-	-	-
1	PSU	1	2457	X	-	-	-
1	OMC	1	2498	X	-	-	-
1	2MA	1	2503	X	-	-	-
1	PSU	1	2504	X	-	-	-
1	OMU	1	2552	X	-	-	-
1	PSU	1	2580	X	-	-	-
1	PSU	1	2605	X	-	-	-
1	1MG	1	745	X	-	-	-
1	PSU	1	746	X	-	-	-
1	5MU	1	747	X	-	-	-
1	PSU	1	955	X	-	-	-
2	4OC	2	1402	X	-	-	-
2	PSU	2	516	X	-	-	-
2	7MG	2	527	X	-	-	-

## 2 Entry composition [i](#)

There are 63 unique types of molecules in this entry. The entry contains 156609 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2903	62336	27816	11470	20147	2903	0	0

- Molecule 2 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	1534	32929	14693	6041	10661	1534	0	0

- Molecule 3 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	3	120	2569	1144	468	837	120	0	0

- Molecule 4 is a protein called SsrA-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	5	145	1170	741	216	209	4	0	0

- Molecule 5 is a protein called Nascent peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	6	28	140	84	28	28	0	0

- Molecule 6 is a RNA chain called tRNA-Met.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	8	77	1638	732	291	538	77	0	0

- Molecule 7 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	9	6	128	57	22	43	6	0	0

- Molecule 8 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	B	270	2078	1285	422	364	7	0	0

- Molecule 9 is a protein called 50S ribosomal protein L3.

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

- Molecule 10 is a protein called 50S ribosomal protein L4.

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

- Molecule 11 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	E	177	1411	899	249	257	6	0	0

- Molecule 12 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	F	175	1313	826	241	244	2	0	0

- Molecule 13 is a protein called 50S ribosomal protein L9.

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

- Molecule 14 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	H	130	Total	C	N	O	S	0	0
			980	620	174	182	4		

- Molecule 15 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	I	135	Total	C	N	O	S	0	0
			984	622	171	185	6		

- Molecule 16 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	J	141	Total	C	N	O	S	0	0
			1121	709	211	198	3		

- Molecule 17 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	K	123	Total	C	N	O	S	0	0
			946	593	181	166	6		

- Molecule 18 is a protein called 50S ribosomal protein L15.

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

- Molecule 19 is a protein called 50S ribosomal protein L16.

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

- Molecule 20 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	N	119	Total	C	N	O	S	0	0
			951	588	195	163	5		

- Molecule 21 is a protein called 50S ribosomal protein L18.



Mol	Chain	Residues	Atoms				AltConf	Trace
21	O	115	Total	C	N	O	0	0
			884	548	177	159		

- Molecule 22 is a protein called 50S ribosomal protein L19.

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

- Molecule 23 is a protein called 50S ribosomal protein L20.

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

- Molecule 24 is a protein called 50S ribosomal protein L21.

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

- Molecule 25 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	S	108	Total	C	N	O	S	0	0
			840	522	164	152	2		

- Molecule 26 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	T	94	Total	C	N	O	S	0	0
			746	470	140	134	2		

- Molecule 27 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	U	103	Total	C	N	O	0	0
			788	498	148	142		

- Molecule 28 is a protein called 50S ribosomal protein L25.

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

- Molecule 29 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	W	76	Total	C	N	O	S	0	0
			582	360	117	104	1		

- Molecule 30 is a protein called 50S ribosomal protein L28.

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

- Molecule 31 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Y	58	Total	C	N	O	S	0	0
			477	294	93	89	1		

- Molecule 32 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Z	56	Total	C	N	O	S	0	0
			434	272	84	76	2		

- Molecule 33 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	a	66	Total	C	N	O	S	0	0
			522	323	99	94	6		

- Molecule 34 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	b	54	Total	C	N	O	S	0	0
			429	260	91	77	1		

- Molecule 35 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	c	52	Total	C	N	O	0	0
			426	275	78	73		

- Molecule 36 is a protein called 50S ribosomal protein L34.

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

- Molecule 37 is a protein called 50S ribosomal protein L35.

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

- Molecule 38 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	f	37	Total	C	N	O	S	0	0
			297	183	64	46	4		

- Molecule 39 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	g	225	Total	C	N	O	S	0	0
			1760	1113	316	323	8		

- Molecule 40 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	h	208	Total	C	N	O	S	0	0
			1636	1036	307	290	3		

- Molecule 41 is a protein called 30S ribosomal protein S4.

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

- Molecule 42 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	j	156	1152	717	217	212	6	0	0

- Molecule 43 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	k	104	848	536	153	152	7	0	0

- Molecule 44 is a protein called 30S ribosomal protein S7.

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

- Molecule 45 is a protein called 30S ribosomal protein S8.

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

- Molecule 46 is a protein called 30S ribosomal protein S9.

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

- Molecule 47 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	o	99	790	495	151	143	1	0	0

- Molecule 48 is a protein called 30S ribosomal protein S11.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	q	123	957	591	196	165	5	0	0

- Molecule 50 is a protein called 30S ribosomal protein S13.

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

- Molecule 51 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	s	100	805	499	164	139	3	0	0

- Molecule 52 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	t	87	708	436	143	128	1	0	0

- Molecule 53 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	u	81	643	403	127	112	1	0	0

- Molecule 54 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	v	80	649	411	121	114	3	0	0

- Molecule 55 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	w	65	535	339	100	95	1	0	0

- Molecule 56 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	x	82	Total	C	N	O	S	0	0
			658	421	125	110	2		

- Molecule 57 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	y	85	Total	C	N	O	S	0	0
			664	411	137	113	3		

- Molecule 58 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	z	70	Total	C	N	O	S	0	0
			589	366	125	97	1		

- Molecule 59 is a RNA chain called transfer-messenger RNA (tmRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
59	4	334	Total	C	N	O	P	0	0
			7134	3184	1286	2330	334		

- Molecule 60 is a RNA chain called tRNA-Val.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	7	77	Total	C	N	O	P	0	0
			1644	732	292	543	77		

- Molecule 61 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
61	1	294	Total	Mg	0
			294	294	
61	2	128	Total	Mg	0
			128	128	
61	3	8	Total	Mg	0
			8	8	
61	8	2	Total	Mg	0
			2	2	
61	M	1	Total	Mg	0
			1	1	
61	Q	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms	AltConf
61	X	1	Total Mg 1 1	0
61	y	1	Total Mg 1 1	0
61	7	3	Total Mg 3 3	0

- Molecule 62 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
62	a	1	Total Zn 1 1	0
62	f	1	Total Zn 1 1	0

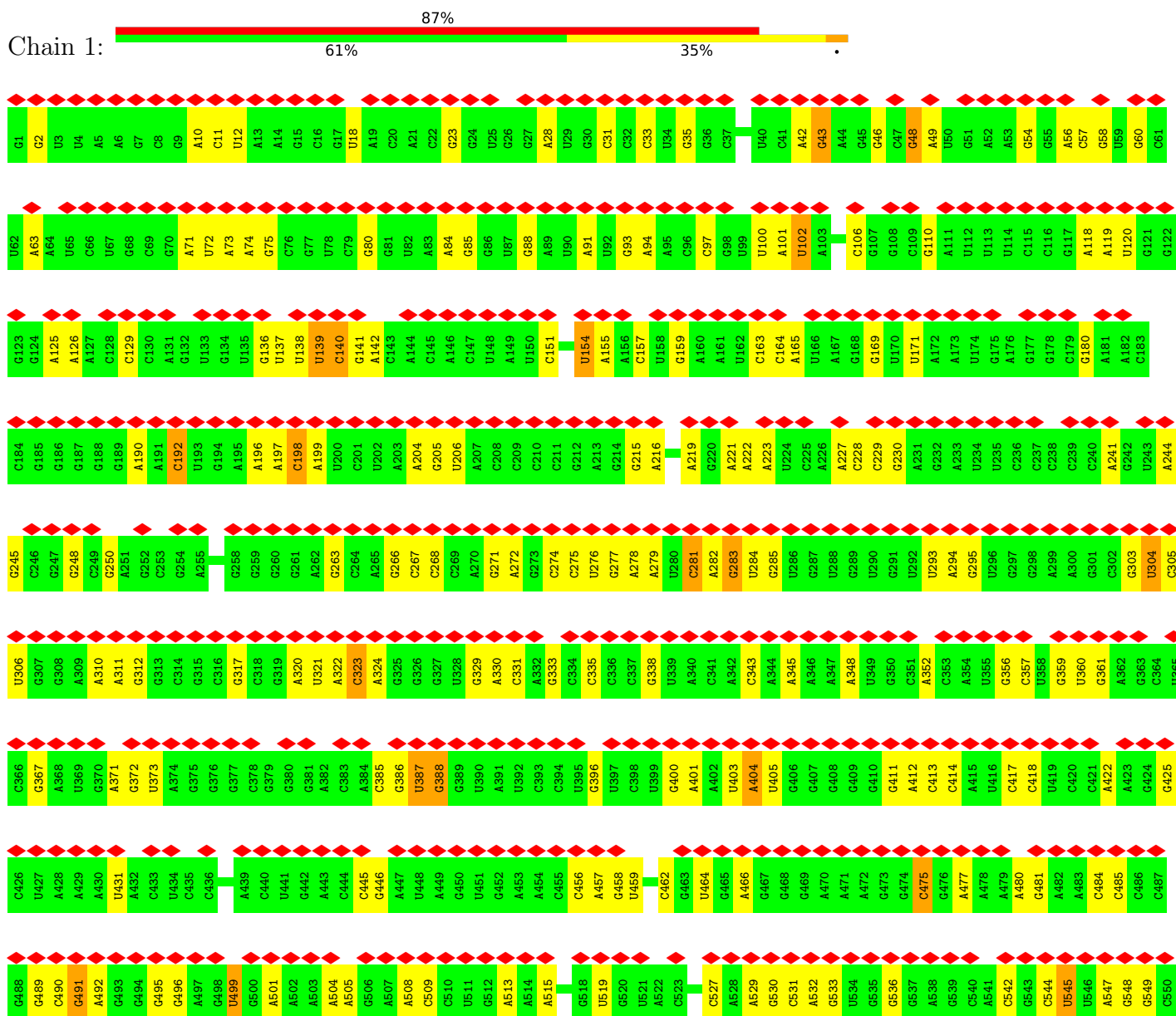
- Molecule 63 is water.

Mol	Chain	Residues	Atoms	AltConf
63	B	2	Total O 2 2	0

### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: 23S ribosomal RNA



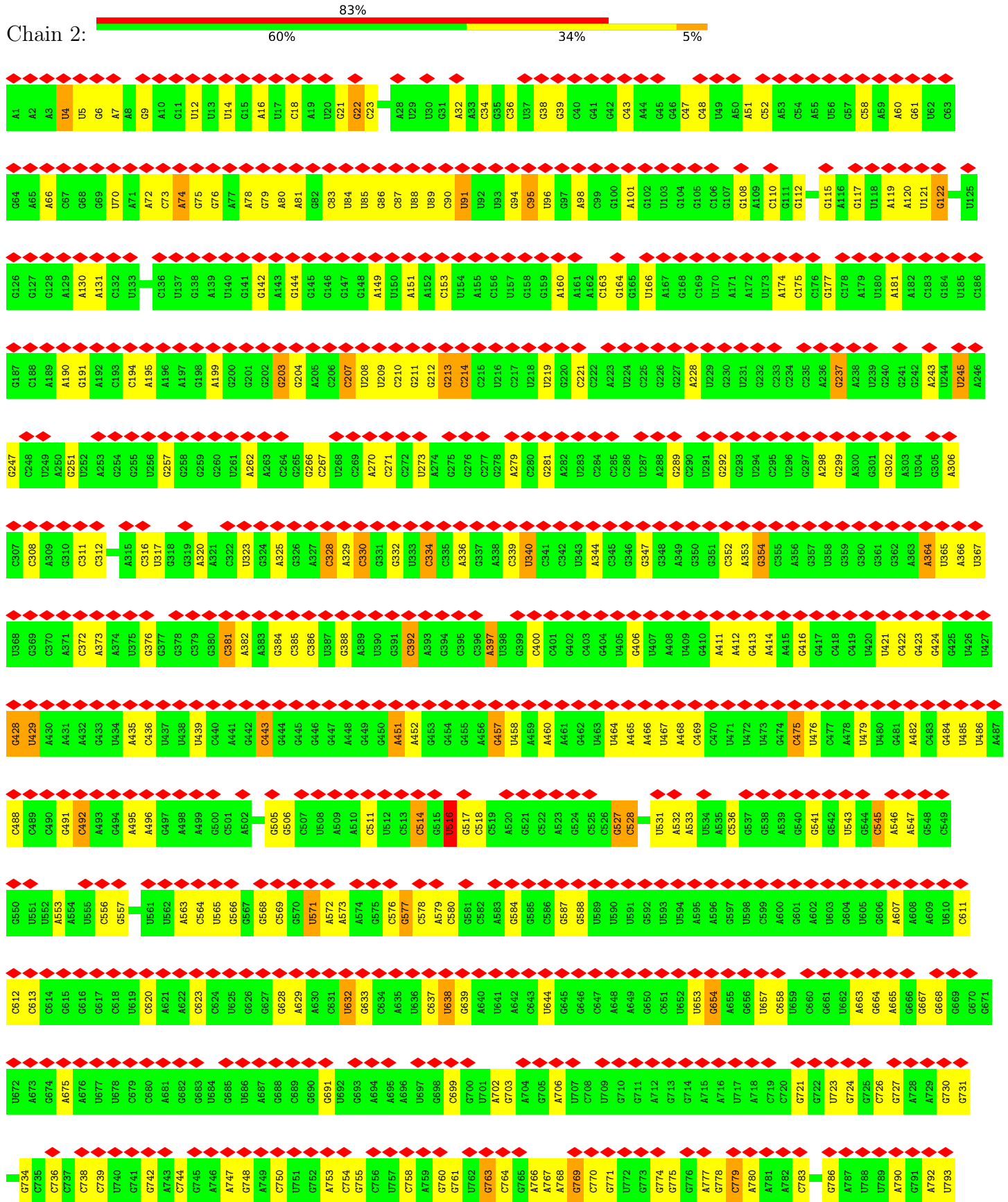


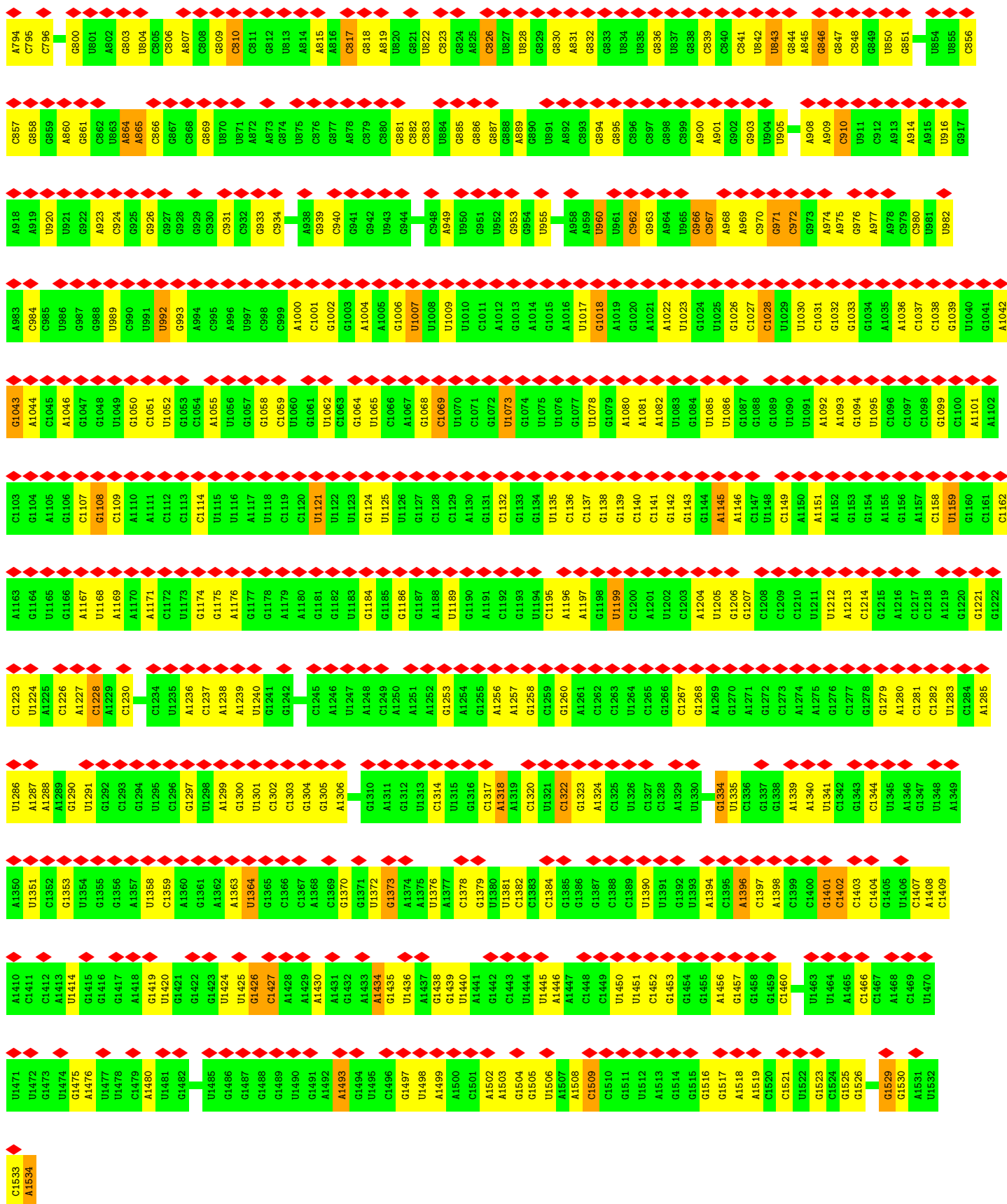
G1286	G1289	G1290	G1291	G1292	G1293	G1294	G1295	G1296	G1297	G1298	G1299	G1300	A1301	A1302	G1303	A1304	C1305	C1306	A1307	A1308	G1309	G1310	G1311	G1312	G1313	G1314	G1315	G1316	G1317	G1318	G1319	G1320	A1321	A1322	G1323	G1324	G1325	G1326	G1327	A1328	G1329	G1330	G1331	G1332	G1333	G1334	G1335	G1336	G1337	G1338	G1339	G1340	G1341	A1342	G1343	G1344	G1345	G1346	A1347	
G1223	U1224	G1225	A1226	G1227	G1228	C1229	A1230	U1231	G1236	A1237	G1238	G1239	U1240	A1241	U1242	C1243	A1244	G1245	A1246	A1247	G1248	U1249	G1250	C1251	G1252	A1253	U1254	U1255	G1256	C1257	U1258	G1259	A1260	C1261	A1264	A1265	G1266	U1267	A1268	A1269	C1270	G1271	A1272	U1273	A1276	G1277	C1278	G1279	G1280	G1281	U1282	G1283	G1284	A1285	A1286	A1287				
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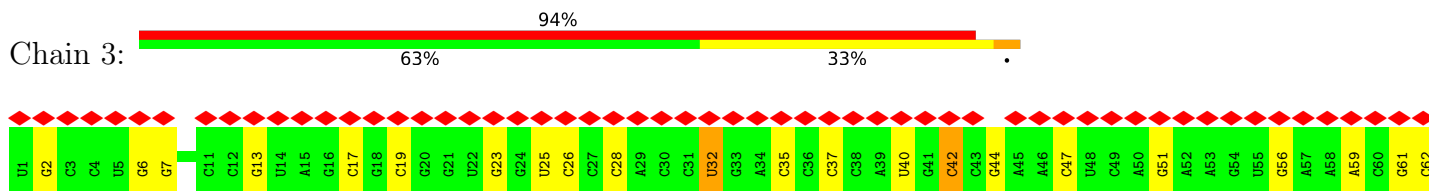
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U2861	G2862	C2863	G2864	U2865	U2866	G2867	A2868	G2869	C2870	U2871	A2872	A2873	C2874	C2875	G2876	G2877	U2878	A2879	C2880	U2881	A2882	A2883	U2884	G2885	A2886	A2887	C2888	C2889	G2890	U2891	G2892	A2893	G2894	G2895	C2896	U2897	A2898	A2899	A2900	C2901	C2902	U2903																		

• Molecule 2: 16S ribosomal RNA

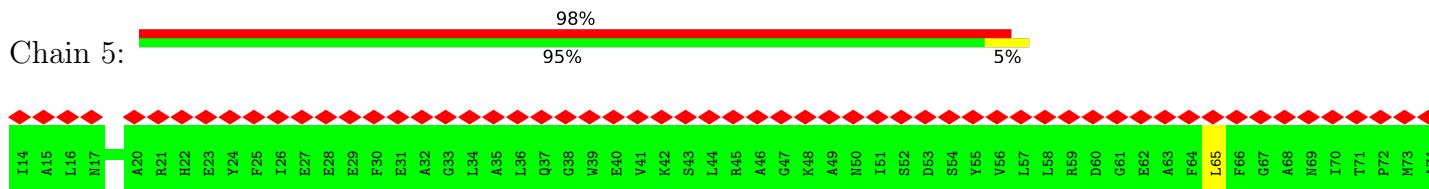




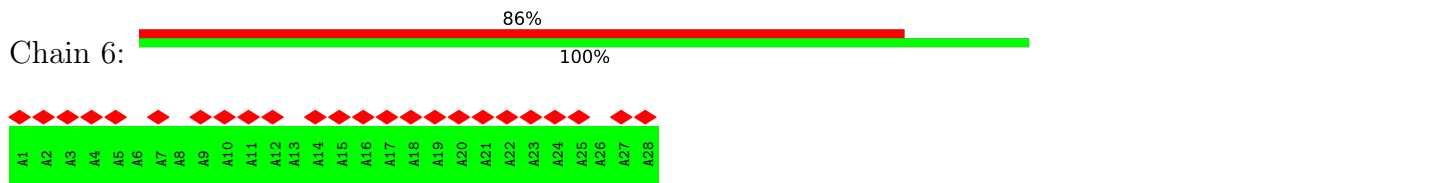
• Molecule 3: 5S ribosomal RNA



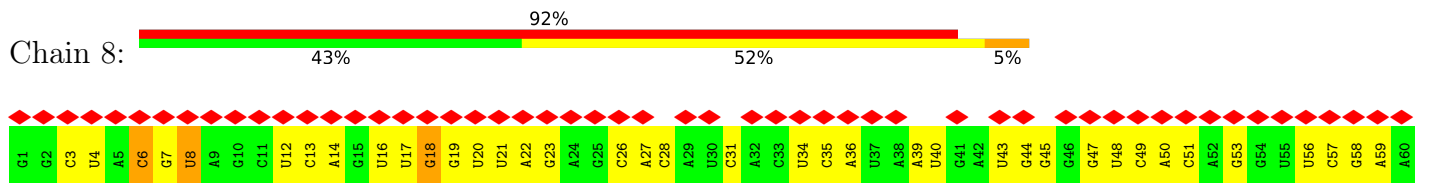
• Molecule 4: SsrA-binding protein



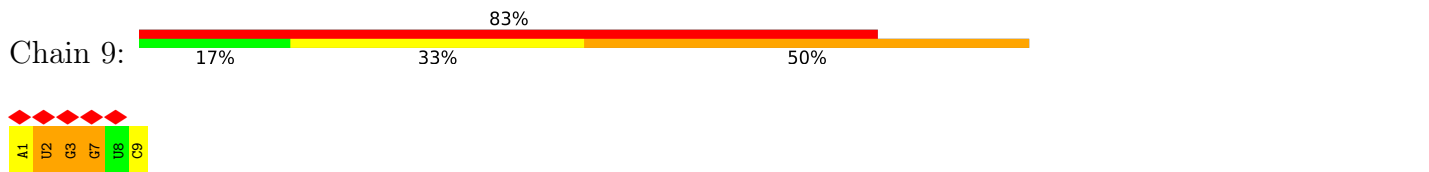
• Molecule 5: Nascent peptide



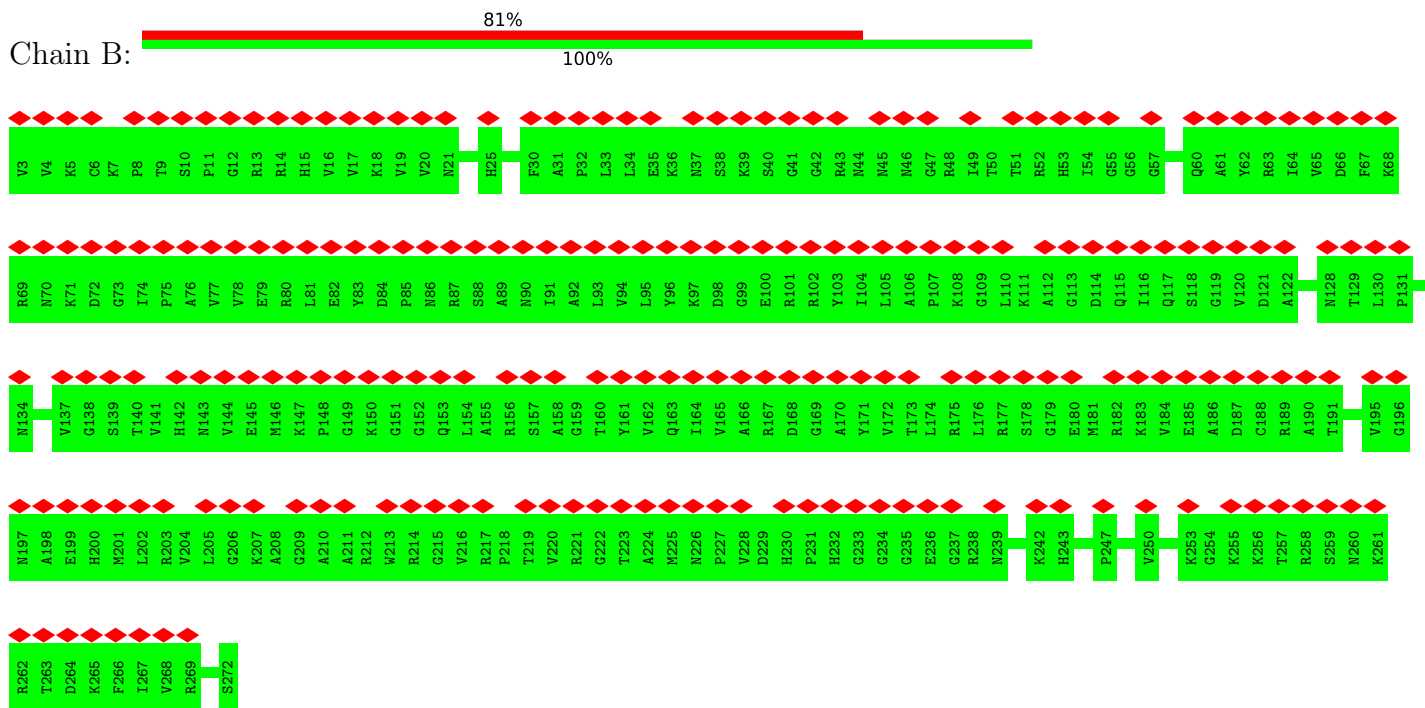
• Molecule 6: tRNA-Met



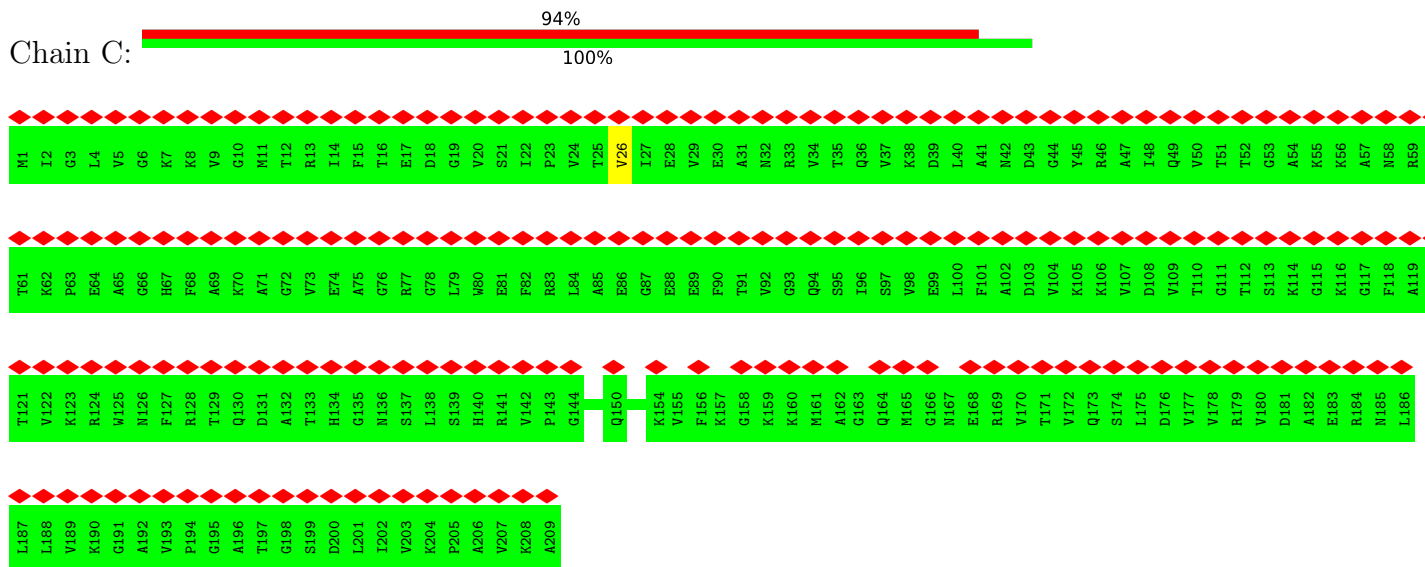
• Molecule 7: mRNA



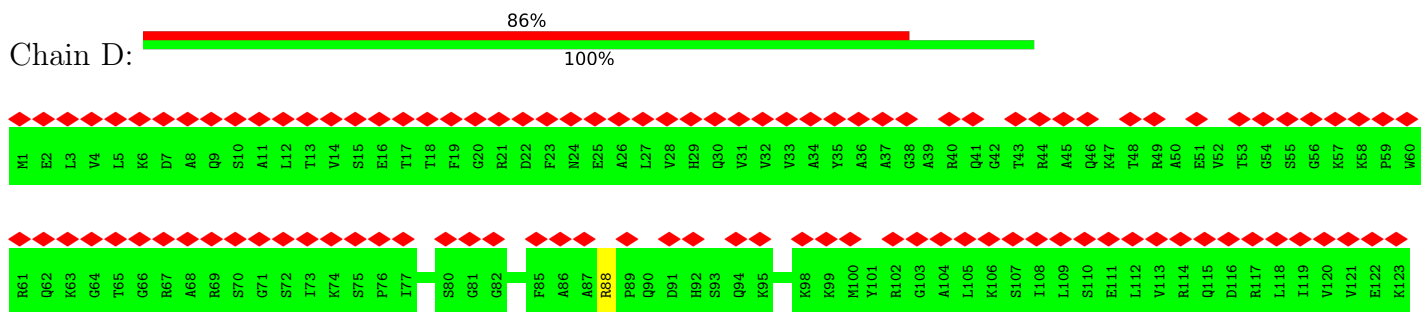
• Molecule 8: 50S ribosomal protein L2

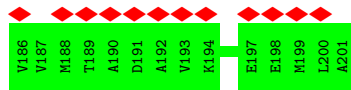
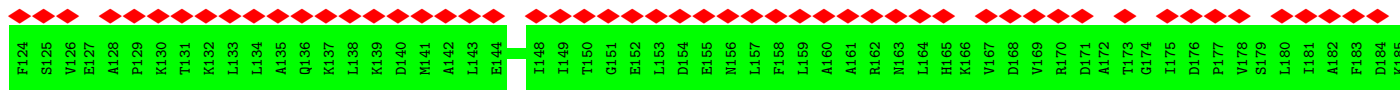


• Molecule 9: 50S ribosomal protein L3

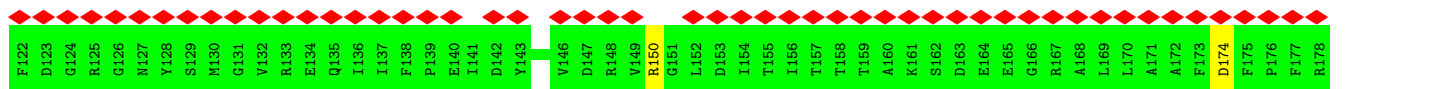
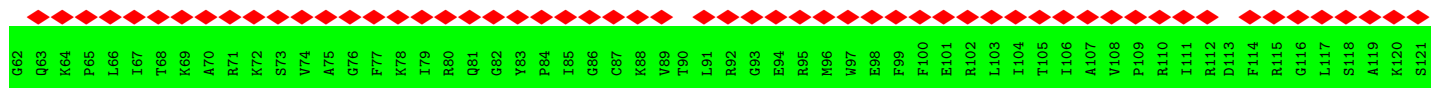
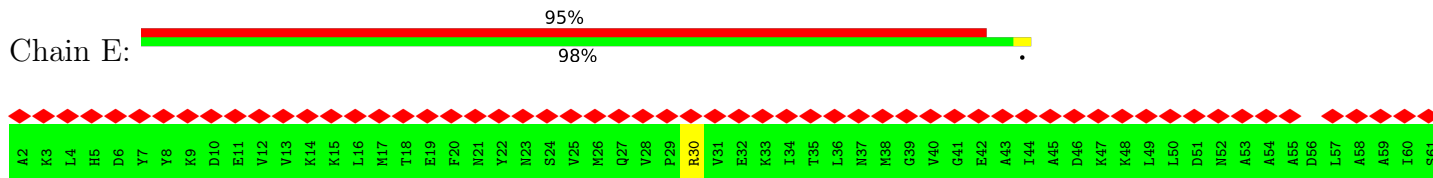


• Molecule 10: 50S ribosomal protein L4

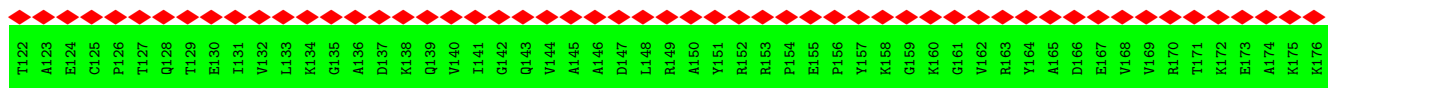
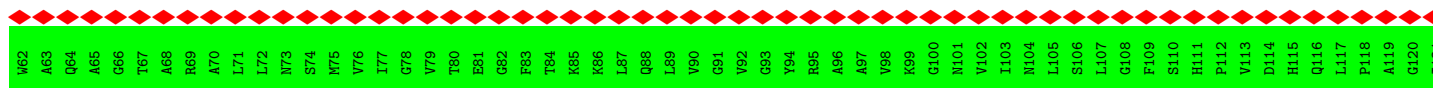
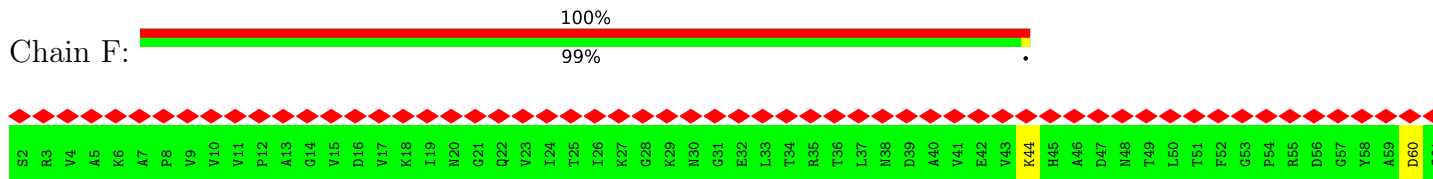




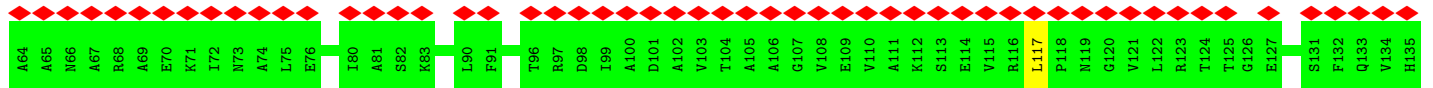
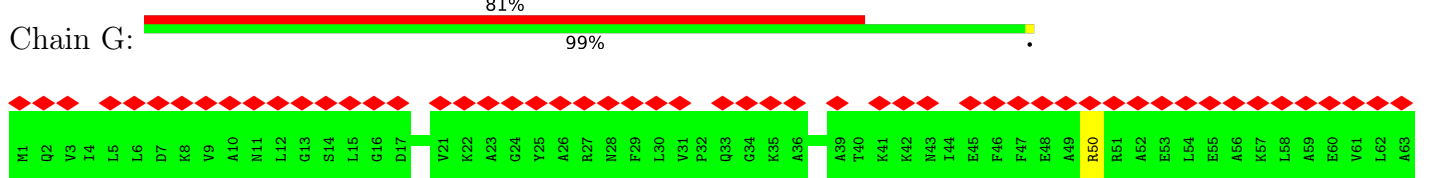
• Molecule 11: 50S ribosomal protein L5



• Molecule 12: 50S ribosomal protein L6

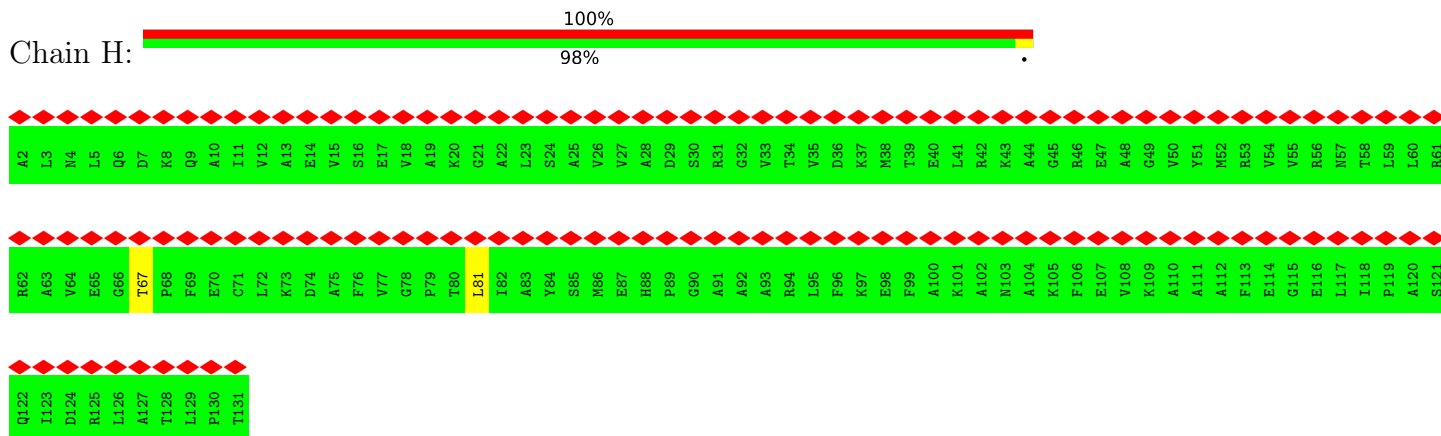


• Molecule 13: 50S ribosomal protein L9

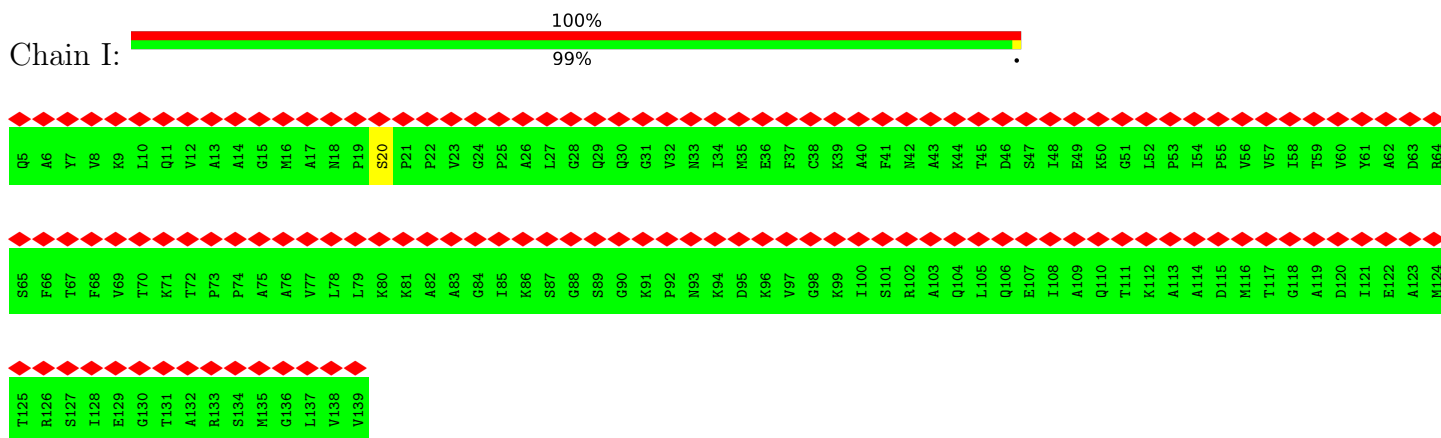




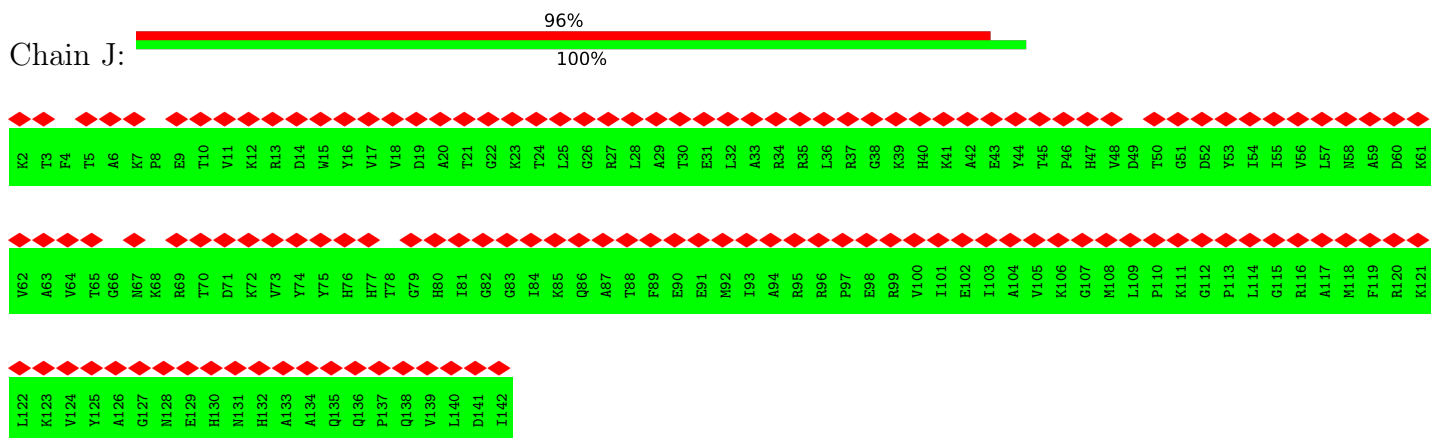
• Molecule 14: 50S ribosomal protein L10



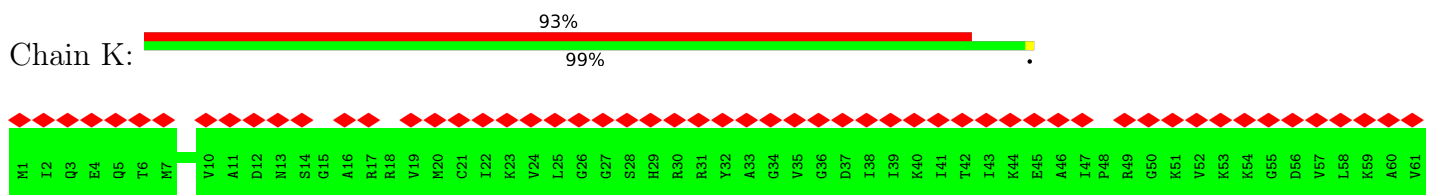
• Molecule 15: 50S ribosomal protein L11



• Molecule 16: 50S ribosomal protein L13



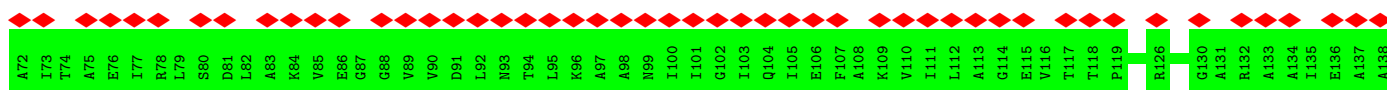
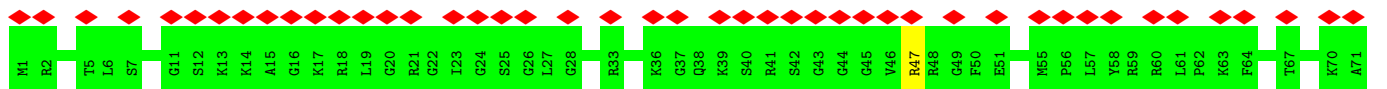
• Molecule 17: 50S ribosomal protein L14





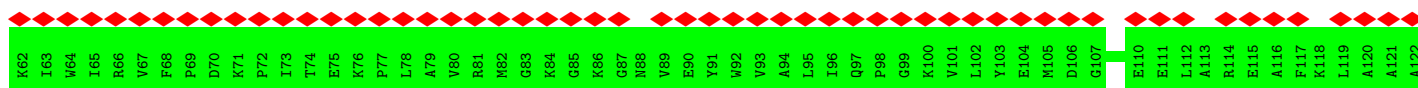
Li23

• Molecule 18: 50S ribosomal protein L15



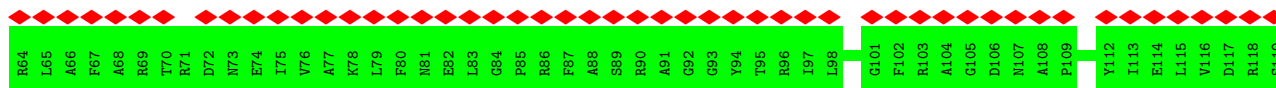
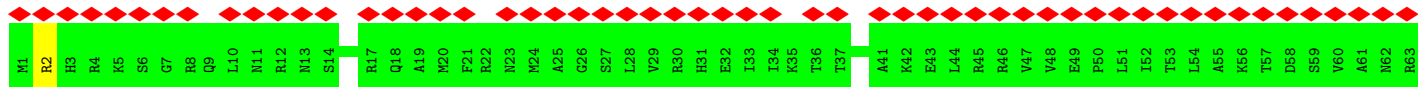
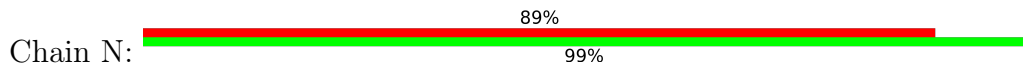
G139  
G140  
K141  
I142  
E143  
E144

• Molecule 19: 50S ribosomal protein L16

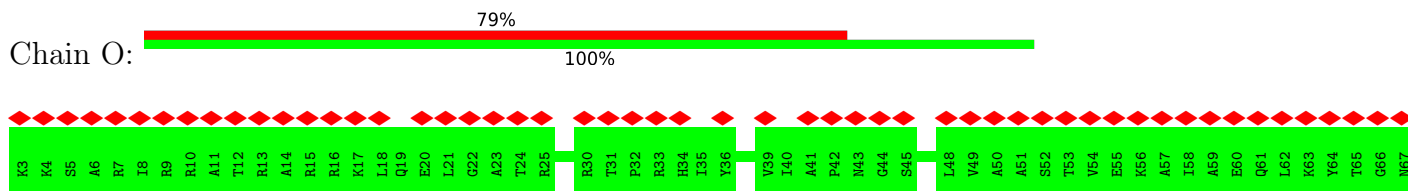


K123  
L124  
P125  
I126  
K127  
T128  
T129  
F130  
V131  
T132  
K133  
T134  
V135  
M136

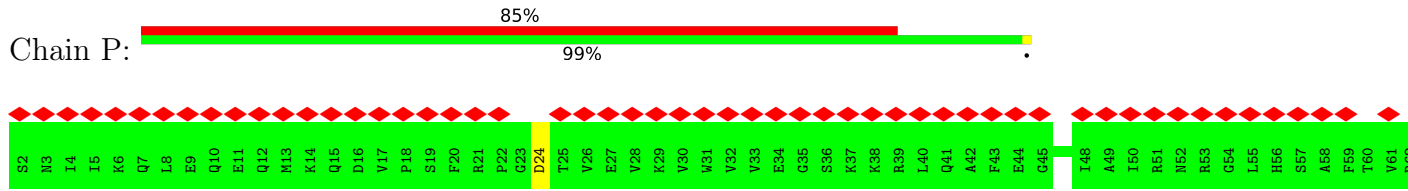
• Molecule 20: 50S ribosomal protein L17



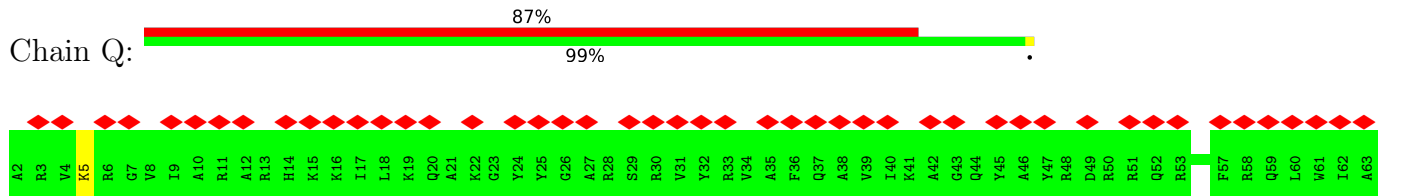
• Molecule 21: 50S ribosomal protein L18



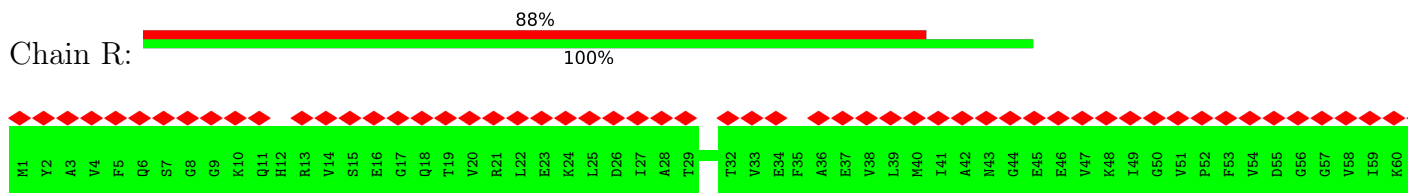
• Molecule 22: 50S ribosomal protein L19



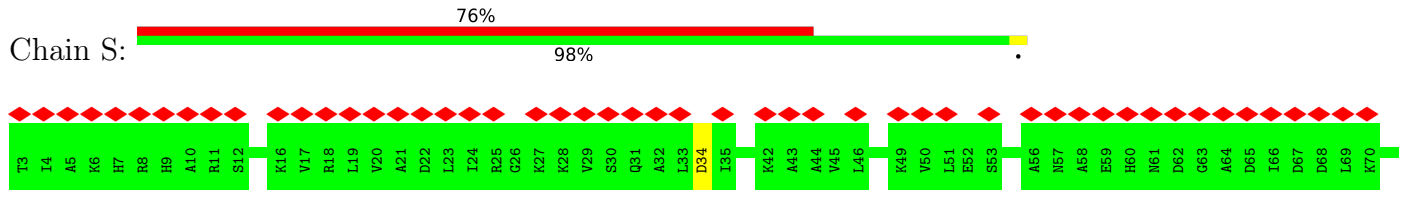
• Molecule 23: 50S ribosomal protein L20

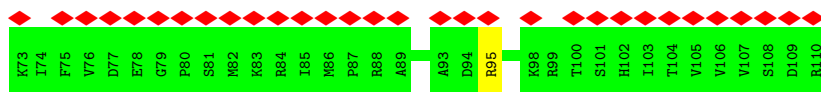


• Molecule 24: 50S ribosomal protein L21

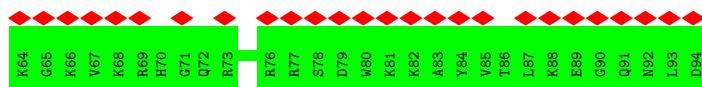
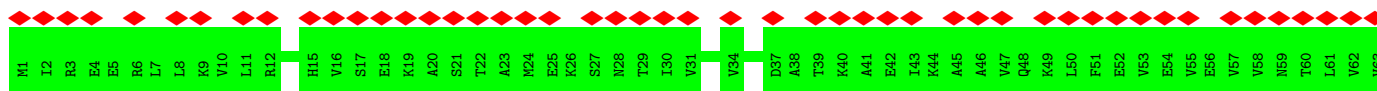
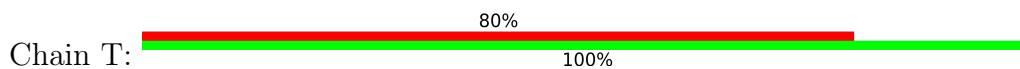


• Molecule 25: 50S ribosomal protein L22

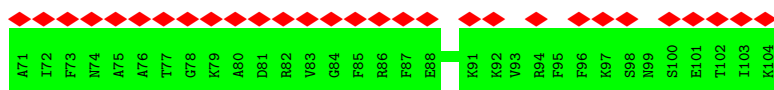
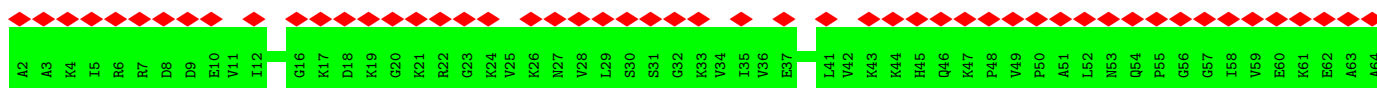
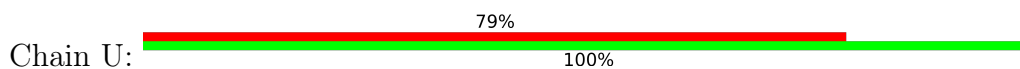




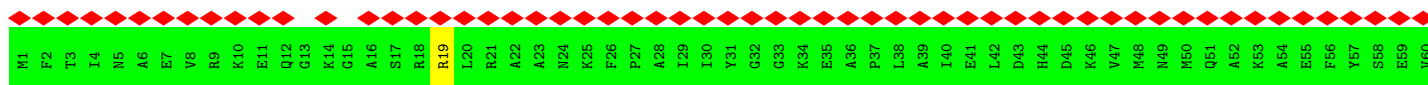
- Molecule 26: 50S ribosomal protein L23



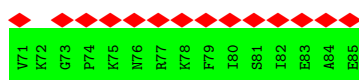
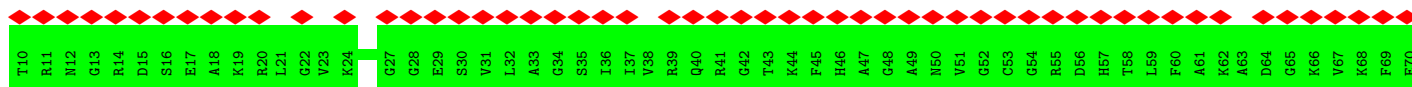
- Molecule 27: 50S ribosomal protein L24



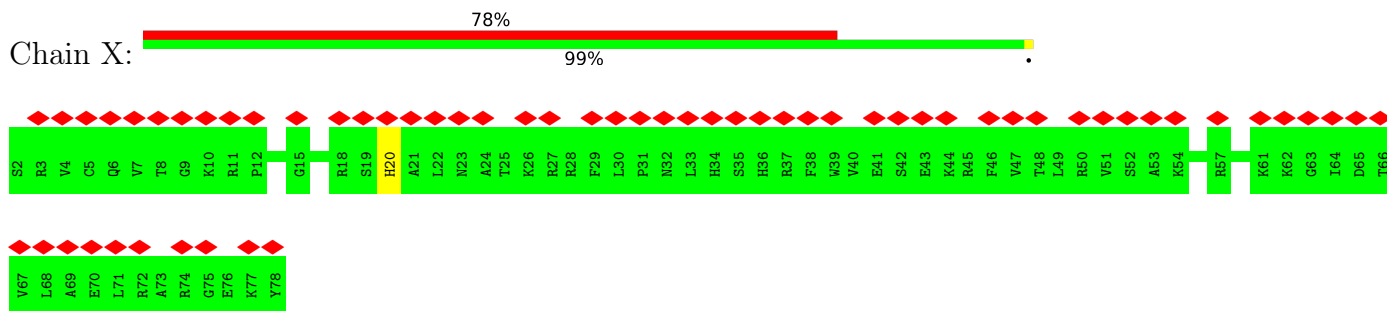
- Molecule 28: 50S ribosomal protein L25



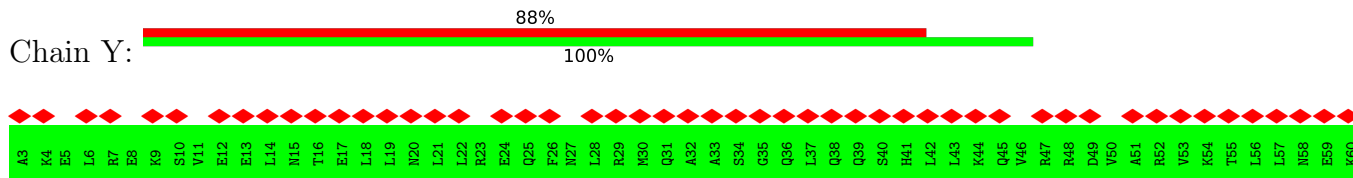
- Molecule 29: 50S ribosomal protein L27



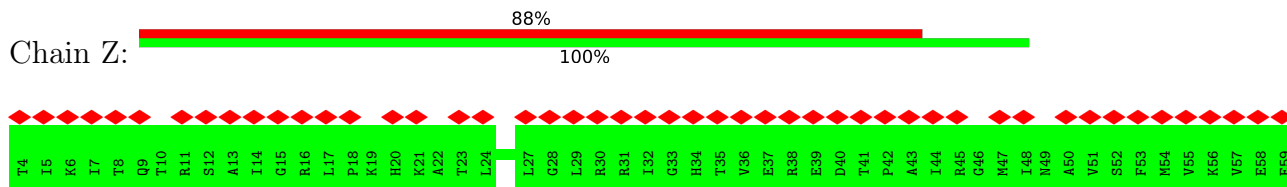
- Molecule 30: 50S ribosomal protein L28



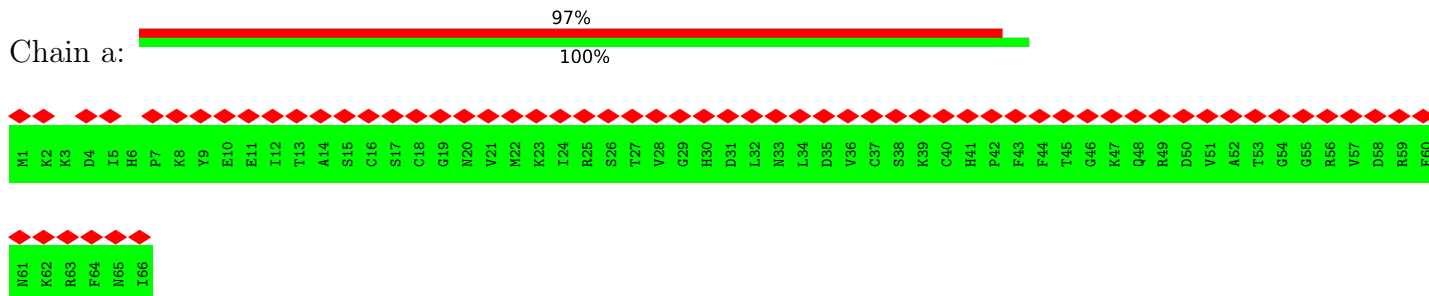
• Molecule 31: 50S ribosomal protein L29



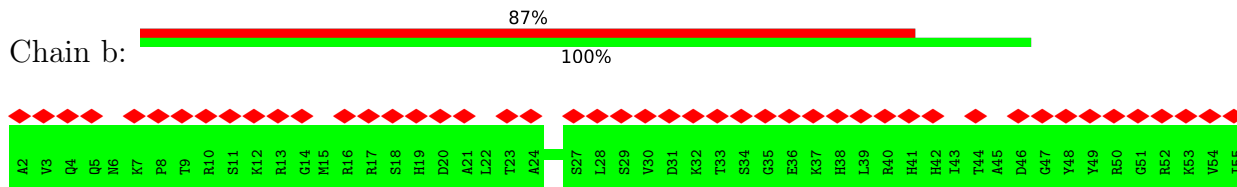
• Molecule 32: 50S ribosomal protein L30



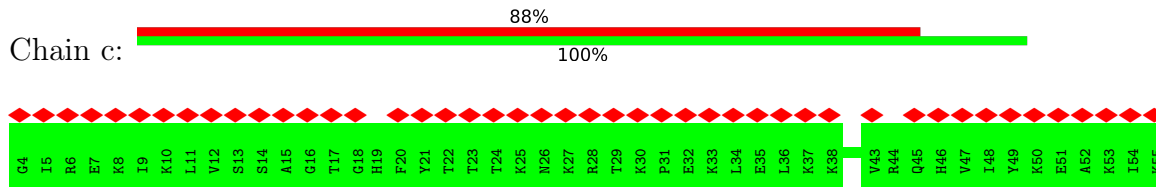
• Molecule 33: 50S ribosomal protein L31



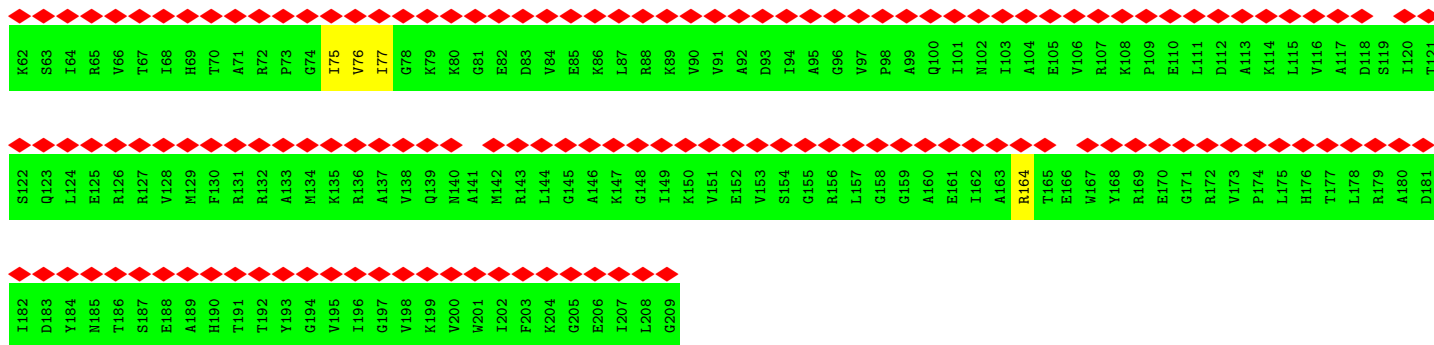
• Molecule 34: 50S ribosomal protein L32



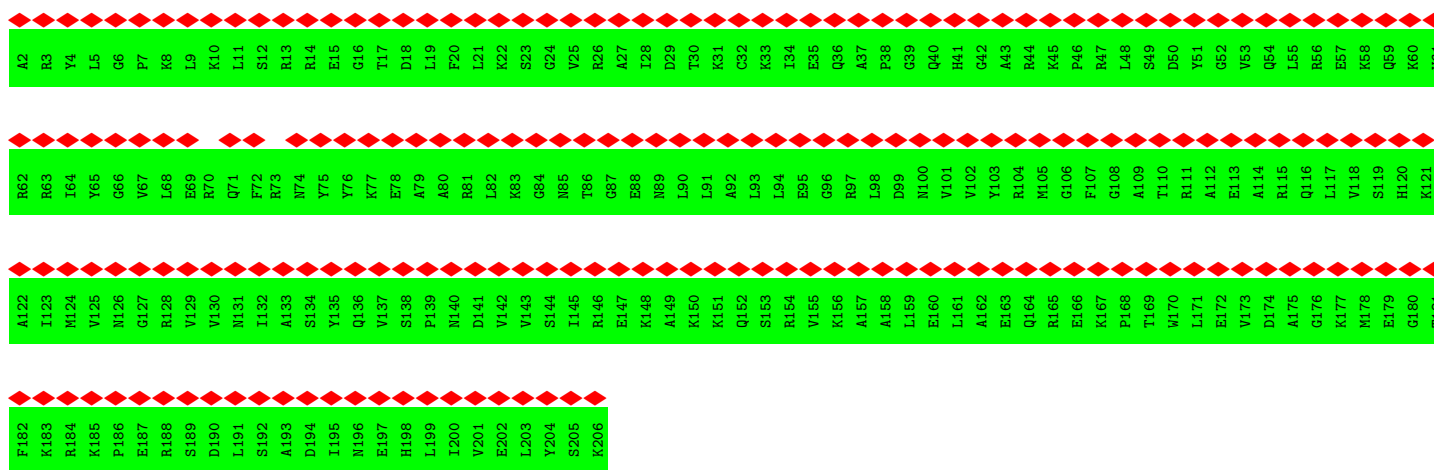
• Molecule 35: 50S ribosomal protein L33



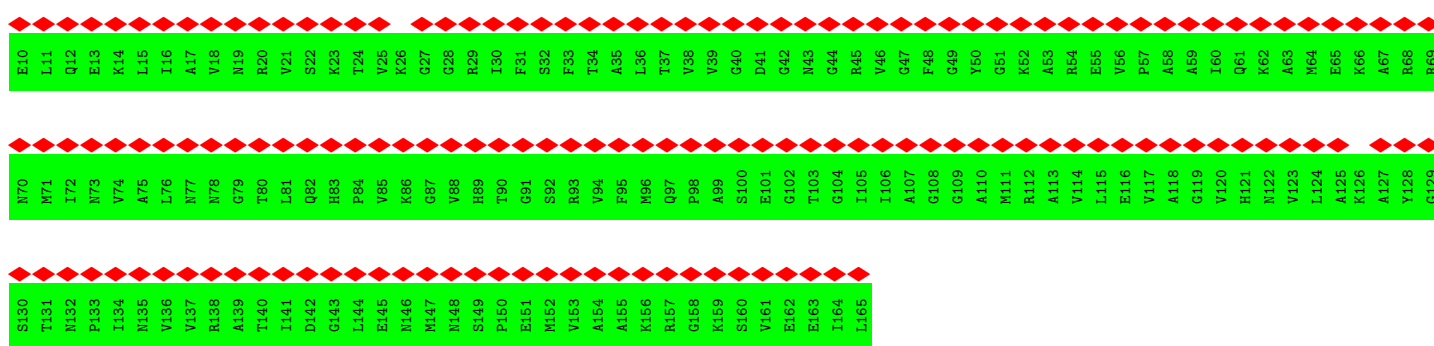




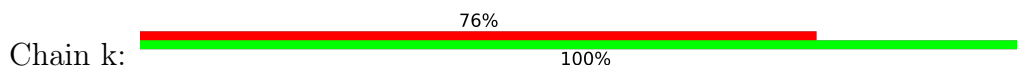
• Molecule 41: 30S ribosomal protein S4

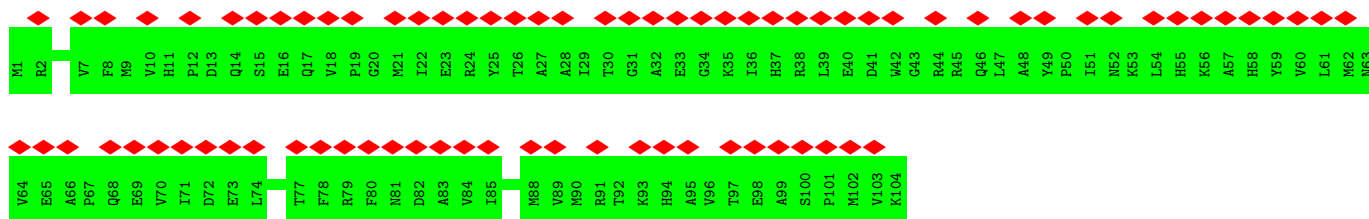


• Molecule 42: 30S ribosomal protein S5



• Molecule 43: 30S ribosomal protein S6

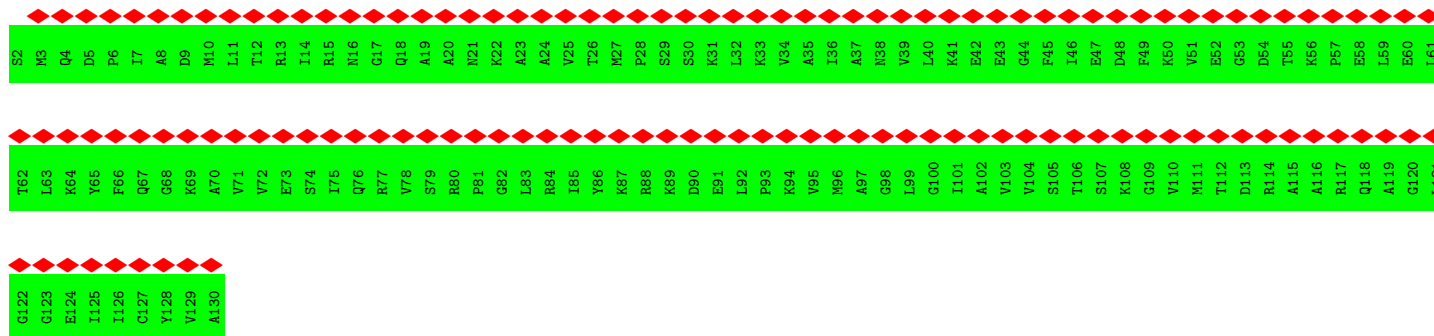




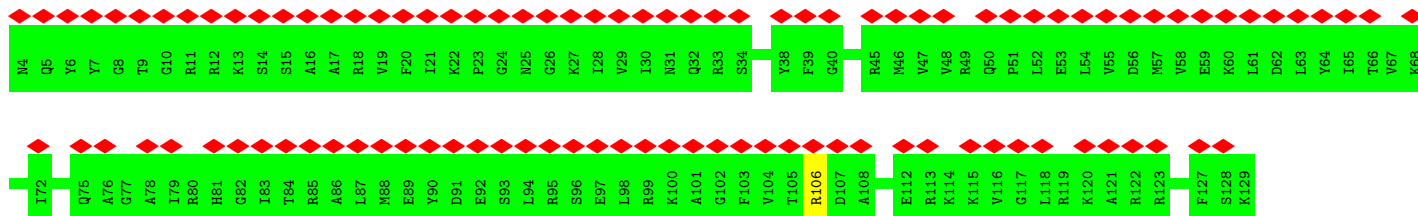
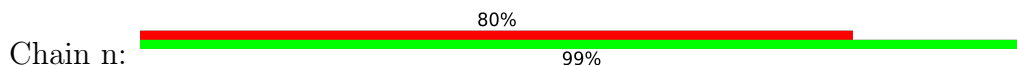
• Molecule 44: 30S ribosomal protein S7



• Molecule 45: 30S ribosomal protein S8

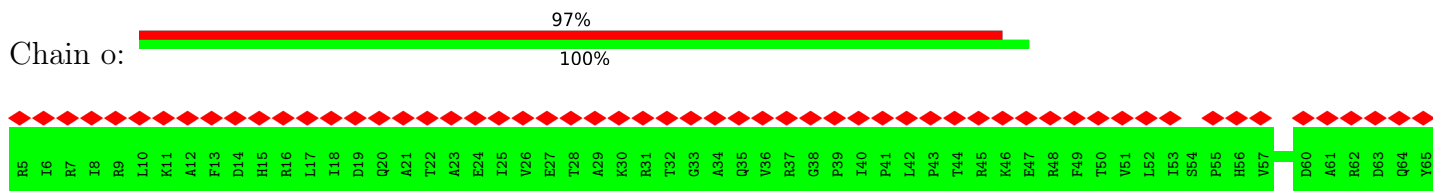


• Molecule 46: 30S ribosomal protein S9

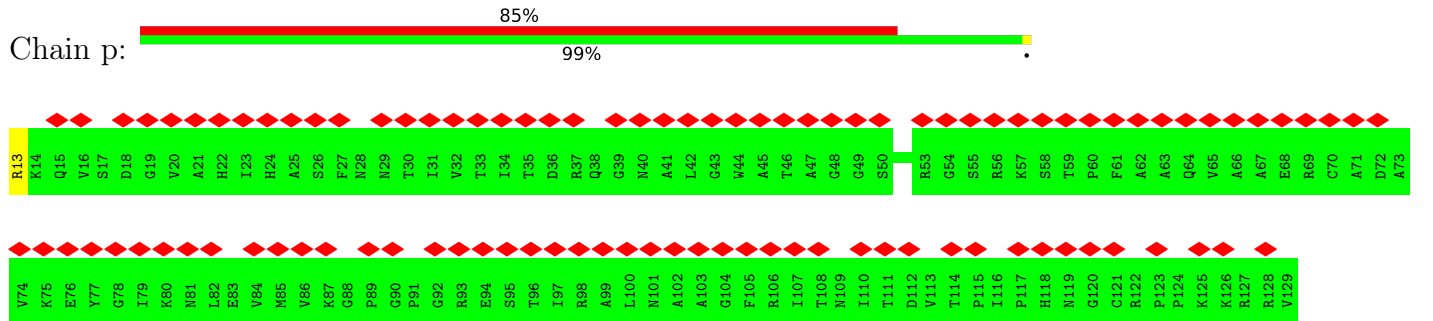


• Molecule 47: 30S ribosomal protein S10

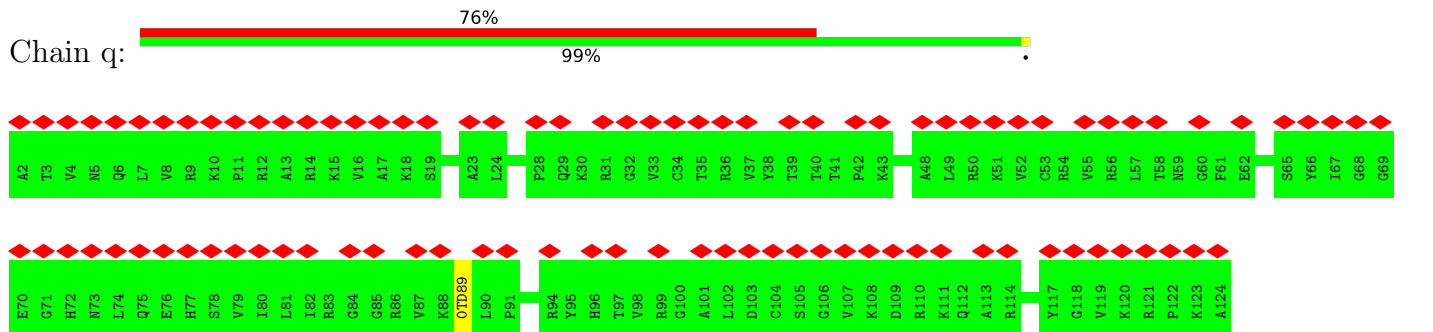




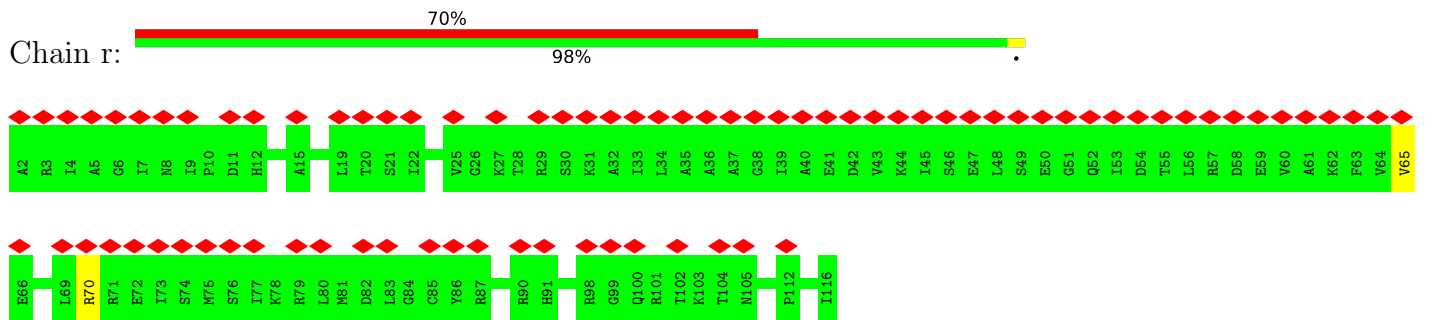
• Molecule 48: 30S ribosomal protein S11



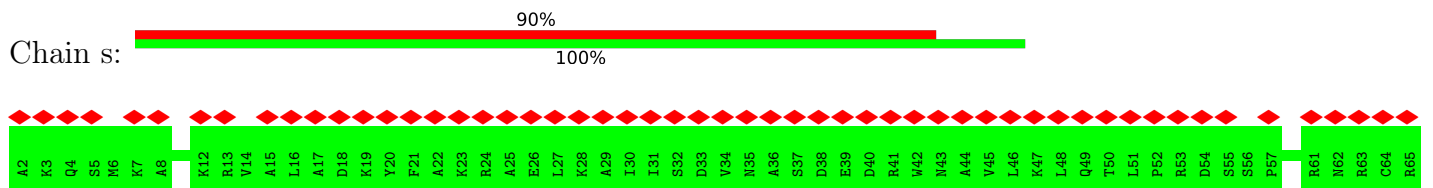
• Molecule 49: 30S ribosomal protein S12

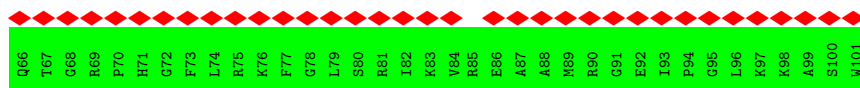


• Molecule 50: 30S ribosomal protein S13

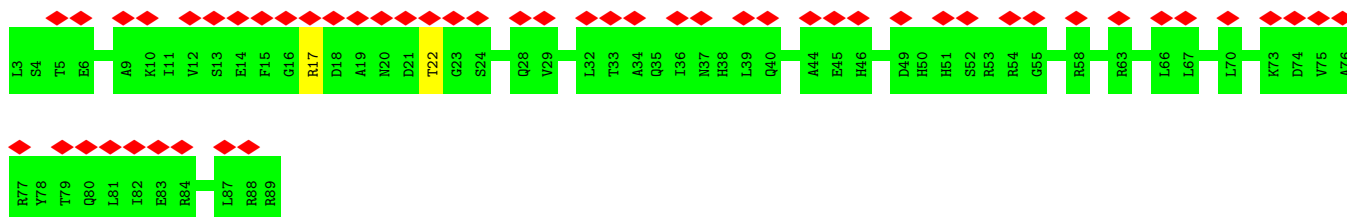


• Molecule 51: 30S ribosomal protein S14

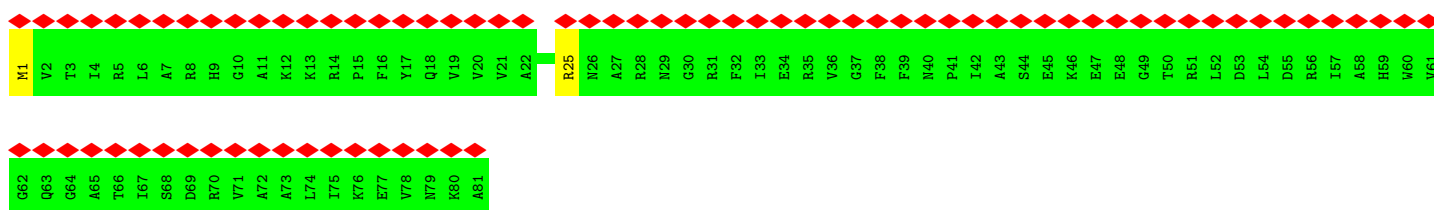




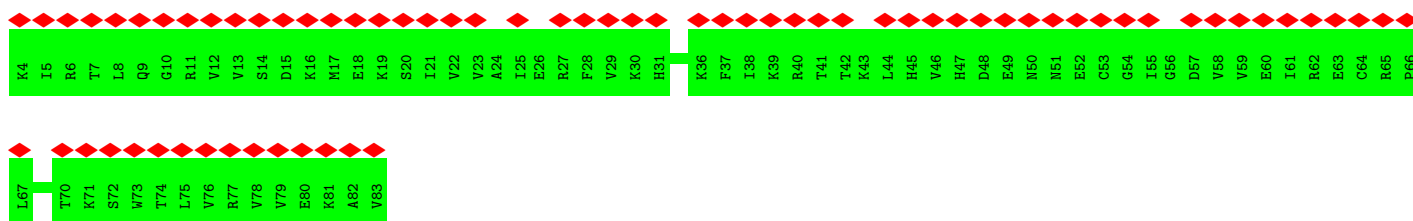
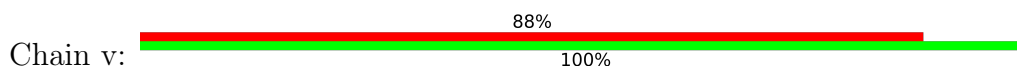
- Molecule 52: 30S ribosomal protein S15



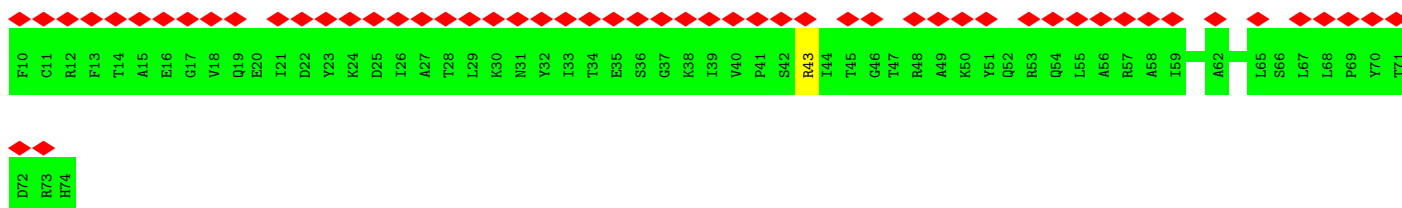
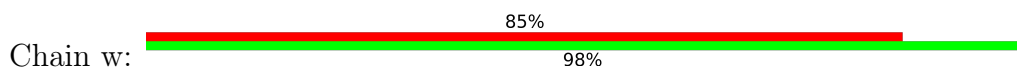
- Molecule 53: 30S ribosomal protein S16



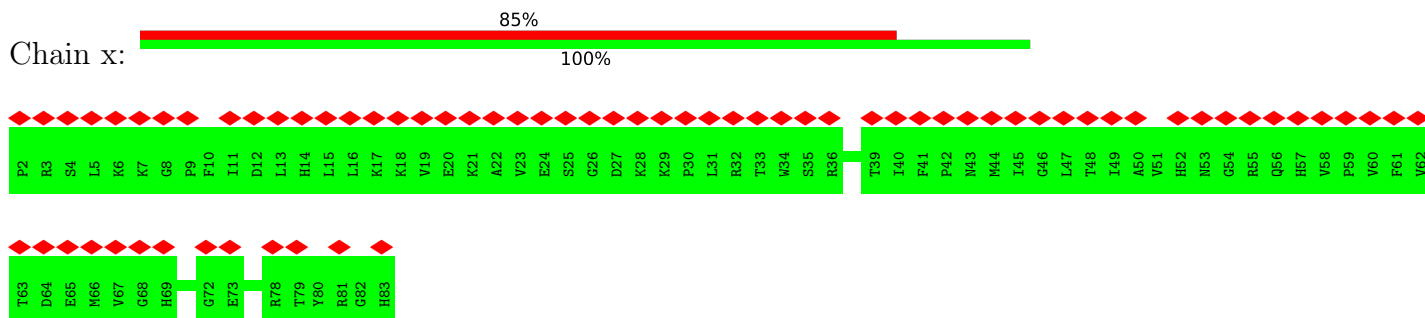
- Molecule 54: 30S ribosomal protein S17



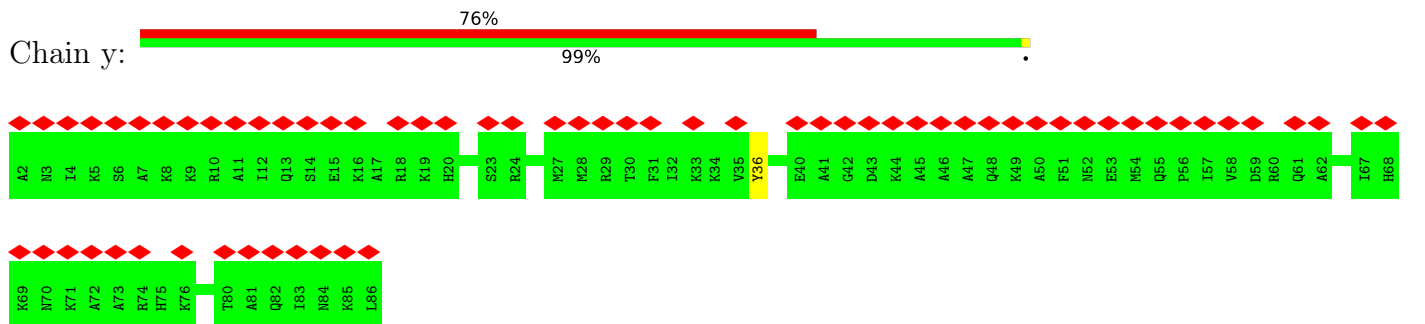
- Molecule 55: 30S ribosomal protein S18



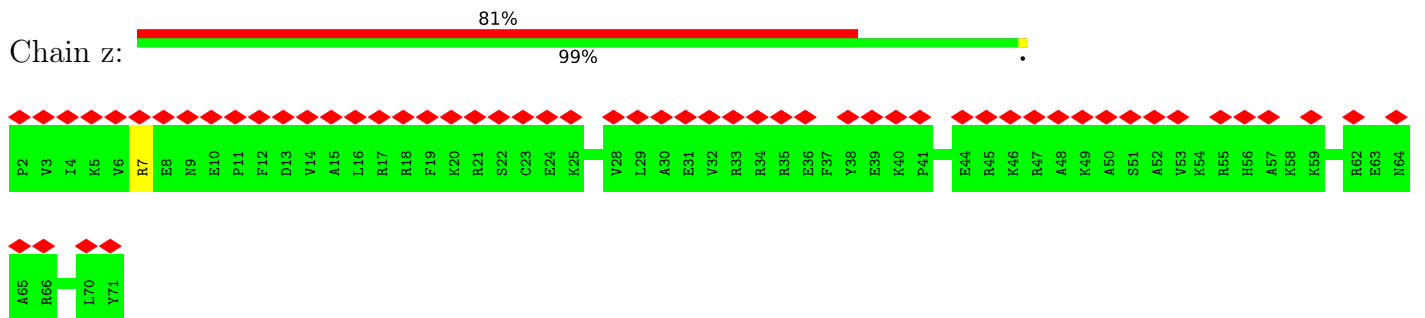
- Molecule 56: 30S ribosomal protein S19



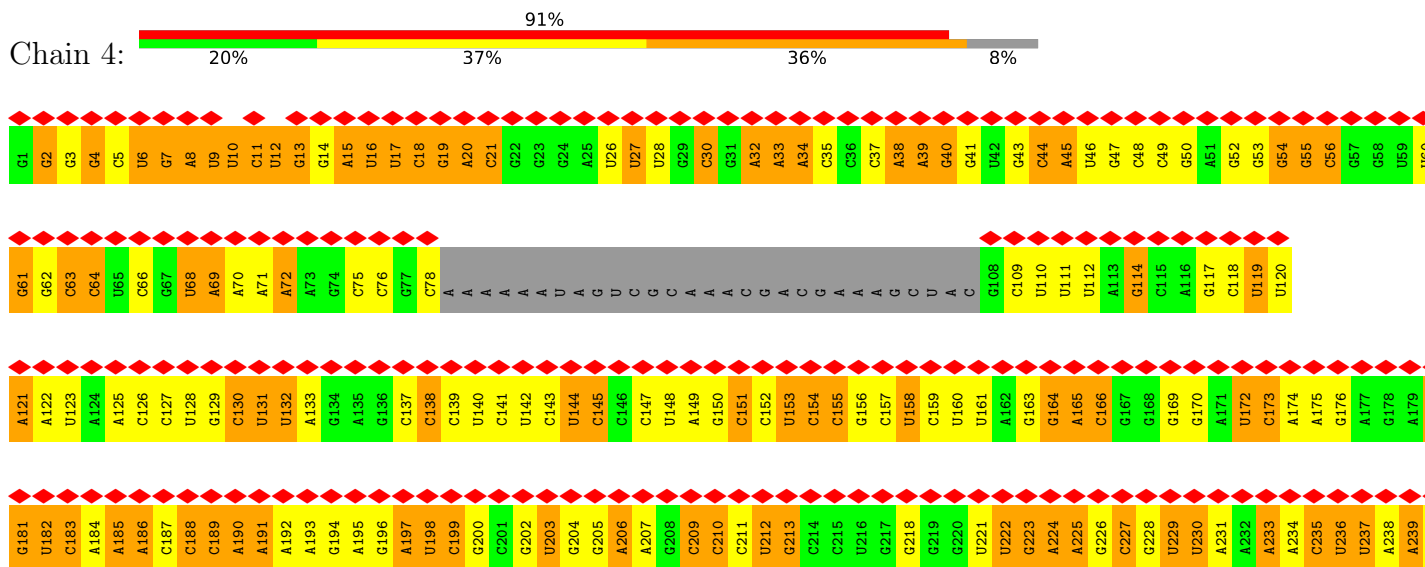
• Molecule 57: 30S ribosomal protein S20

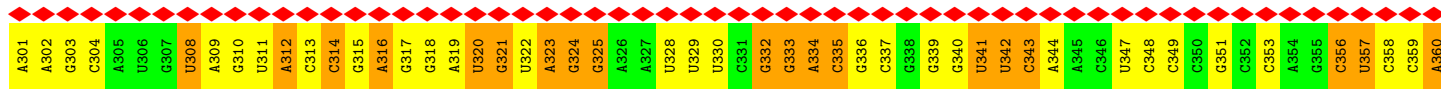
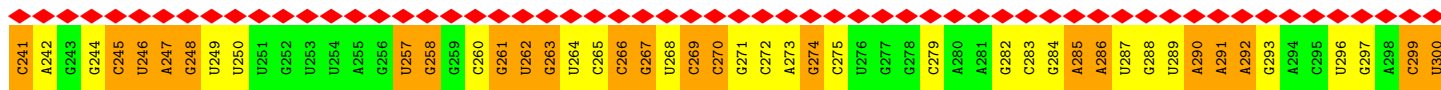


• Molecule 58: 30S ribosomal protein S21

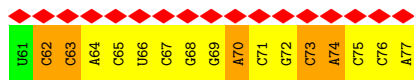
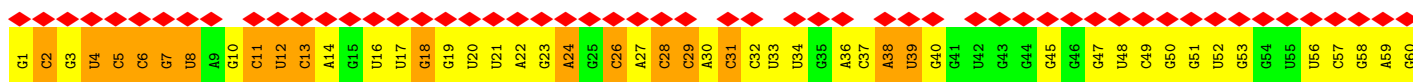
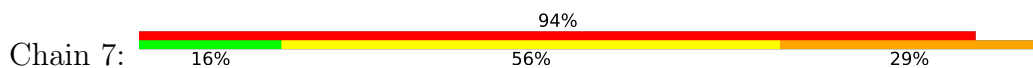


• Molecule 59: transfer-messenger RNA (tmRNA)





• Molecule 60: tRNA-Val



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	47776	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	44	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.508	Depositor
Minimum map value	-0.282	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	406.6, 406.6, 406.6	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	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: OMG, 0TD, 2MA, PSU, MG, 5MU, 3TD, ZN, OMU, MA6, UR3, 6MZ, 1MG, 5MC, 4OC, 7MG, G7M, OMC, 2MG

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	1	1.04	5/69285 (0.0%)	1.22	519/108083 (0.5%)
2	2	1.31	47/36588 (0.1%)	1.40	436/57066 (0.8%)
3	3	0.50	0/2872	1.17	18/4478 (0.4%)
4	5	0.41	0/1191	0.71	1/1601 (0.1%)
5	6	0.33	0/139	0.91	0/193
6	8	5.08	5/1830 (0.3%)	1.48	17/2849 (0.6%)
7	9	0.93	1/142 (0.7%)	2.01	7/219 (3.2%)
8	B	0.46	0/2117	0.64	0/2845
9	C	0.34	0/1586	0.60	0/2134
10	D	0.31	0/1571	0.59	0/2113
11	E	0.35	0/1435	0.65	1/1926 (0.1%)
12	F	0.30	0/1333	0.57	0/1805
13	G	0.31	0/1122	0.64	1/1515 (0.1%)
14	H	0.32	0/993	0.69	1/1340 (0.1%)
15	I	0.31	0/998	0.66	0/1348
16	J	0.30	0/1144	0.56	0/1541
17	K	0.42	0/955	0.62	0/1279
18	L	0.30	0/1062	0.57	0/1413
19	M	0.33	0/1093	0.59	0/1460
20	N	0.33	0/964	0.64	0/1289
21	O	0.30	0/894	0.54	0/1198
22	P	0.40	0/929	0.59	1/1242 (0.1%)
23	Q	0.33	0/960	0.50	0/1278
24	R	0.31	0/829	0.56	0/1107
25	S	0.31	0/847	0.61	1/1134 (0.1%)
26	T	0.32	0/752	0.59	0/1005
27	U	0.30	0/796	0.53	0/1062
28	V	0.29	0/766	0.55	0/1025
29	W	0.35	0/589	0.55	0/779
30	X	0.37	0/635	0.62	0/848
31	Y	0.28	0/478	0.57	0/637

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
32	Z	0.27	0/438	0.60	0/587
33	a	0.34	0/531	0.55	0/709
34	b	0.31	0/435	0.58	0/581
35	c	0.33	0/433	0.55	0/576
36	d	0.33	0/380	0.53	0/498
37	e	0.34	0/513	0.66	0/676
38	f	0.29	0/298	0.56	0/392
39	g	0.46	0/1791	0.70	1/2413 (0.0%)
40	h	0.51	0/1663	0.65	0/2241
41	i	0.58	0/1665	0.64	0/2227
42	j	0.61	0/1165	0.70	0/1568
43	k	0.58	0/867	0.66	0/1171
44	l	0.47	0/1195	0.60	0/1602
45	m	0.60	0/989	0.67	0/1326
46	n	0.49	0/1022	0.65	0/1361
47	o	0.51	0/800	0.63	0/1082
48	p	0.51	0/893	0.60	0/1205
49	q	0.61	0/960	0.67	0/1286
50	r	0.40	0/900	0.68	1/1204 (0.1%)
51	s	0.50	0/817	0.58	0/1088
52	t	0.58	0/716	0.65	0/956
53	u	0.63	0/653	0.71	0/877
54	v	0.58	0/658	0.68	0/881
55	w	0.63	0/544	0.66	0/731
56	x	0.48	0/675	0.63	0/908
57	y	0.48	0/670	0.61	0/888
58	z	0.44	0/597	0.55	0/792
59	4	0.74	1/7978 (0.0%)	2.10	509/12434 (4.1%)
60	7	0.74	1/1836 (0.1%)	2.21	114/2861 (4.0%)
All	All	1.09	60/168977 (0.0%)	1.22	1628/252933 (0.6%)

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
1	1	34	0
2	2	5	0
14	H	0	1
15	I	0	1
17	K	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
23	Q	0	1
30	X	0	1
37	e	0	2
39	g	0	1
40	h	0	2
53	u	0	1
All	All	39	11

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	388	G	P-O5'	205.16	3.65	1.59
6	8	77	A	N9-C4	114.08	2.06	1.37
6	8	77	A	N7-C5	106.12	2.02	1.39
6	8	77	A	C8-N7	92.91	1.96	1.31
6	8	77	A	N9-C8	85.15	2.05	1.37
6	8	77	A	C5-C4	81.16	1.95	1.38
2	2	16	A	N9-C4	-8.07	1.33	1.37
2	2	1082	A	N9-C4	-6.67	1.33	1.37
2	2	1081	A	N9-C4	-6.60	1.33	1.37
2	2	580	C	N1-C6	-6.45	1.33	1.37
2	2	780	A	N7-C5	-6.41	1.35	1.39
7	9	1	A	N9-C4	6.34	1.41	1.37
2	2	864	A	N7-C5	-5.98	1.35	1.39
1	1	1365	A	N9-C4	-5.92	1.34	1.37
2	2	861	G	N7-C5	-5.91	1.35	1.39
2	2	1476	A	N9-C4	-5.86	1.34	1.37
2	2	858	G	C5-C6	-5.83	1.36	1.42
2	2	858	G	N7-C5	-5.81	1.35	1.39
2	2	817	C	N1-C6	-5.66	1.33	1.37
2	2	452	A	N9-C4	-5.62	1.34	1.37
1	1	2607	G	N3-C4	-5.49	1.31	1.35
2	2	364	A	N9-C4	-5.45	1.34	1.37
2	2	1434	A	N7-C5	-5.45	1.35	1.39
2	2	1504	G	N9-C8	-5.44	1.34	1.37
2	2	320	A	N9-C4	-5.41	1.34	1.37
2	2	112	G	N7-C5	-5.39	1.36	1.39
2	2	807	A	N7-C5	-5.37	1.36	1.39
2	2	115	G	N7-C5	-5.35	1.36	1.39
2	2	568	G	N7-C5	-5.33	1.36	1.39
60	7	13	C	N1-C2	5.32	1.45	1.40
2	2	354	G	N3-C4	-5.29	1.31	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	1318	A	N9-C4	-5.29	1.34	1.37
2	2	302	G	N7-C5	-5.27	1.36	1.39
2	2	628	G	N3-C4	-5.22	1.31	1.35
2	2	553	A	N7-C5	-5.20	1.36	1.39
2	2	60	A	N3-C4	-5.20	1.31	1.34
2	2	865	A	N7-C5	-5.20	1.36	1.39
2	2	778	G	N7-C5	-5.18	1.36	1.39
2	2	668	G	N7-C5	-5.13	1.36	1.39
2	2	766	A	N9-C4	-5.12	1.34	1.37
2	2	675	A	N9-C4	-5.12	1.34	1.37
59	4	72	A	N9-C4	5.11	1.41	1.37
2	2	451	A	N9-C4	-5.09	1.34	1.37
2	2	663	A	N9-C4	-5.08	1.34	1.37
2	2	353	A	N9-C4	-5.08	1.34	1.37
2	2	16	A	N3-C4	-5.07	1.31	1.34
2	2	664	G	N7-C5	-5.07	1.36	1.39
1	1	2114	A	N9-C4	5.06	1.40	1.37
2	2	953	G	N7-C5	-5.06	1.36	1.39
2	2	1396	A	N9-C4	-5.06	1.34	1.37
2	2	823	C	N1-C6	-5.05	1.34	1.37
2	2	1080	A	N3-C4	-5.05	1.31	1.34
2	2	786	G	N7-C5	-5.05	1.36	1.39
1	1	1933	G	N7-C5	-5.04	1.36	1.39
2	2	774	G	N7-C5	-5.04	1.36	1.39
2	2	577	G	C5-C6	-5.03	1.37	1.42
2	2	1068	G	N7-C5	-5.02	1.36	1.39
2	2	667	G	N7-C5	-5.02	1.36	1.39
2	2	1526	G	N7-C5	-5.01	1.36	1.39
2	2	21	G	N7-C5	-5.00	1.36	1.39

All (1628) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	8	77	A	N7-C8-N9	-24.47	101.56	113.80
1	1	388	G	P-O5'-C5'	22.44	156.80	120.90
6	8	77	A	C5-N7-C8	20.39	114.09	103.90
60	7	72	G	OP1-P-O3'	-19.57	62.15	105.20
60	7	73	C	OP1-P-OP2	19.16	148.35	119.60
59	4	356	C	C6-N1-C2	-16.30	113.78	120.30
59	4	358	C	C6-N1-C2	-15.13	114.25	120.30
60	7	73	C	C5-C6-N1	15.08	128.54	121.00
60	7	29	C	C6-N1-C2	-14.93	114.33	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	7	76	C	N1-C2-O2	14.68	127.71	118.90
60	7	73	C	C6-N1-C2	-14.61	114.46	120.30
59	4	358	C	C5-C6-N1	14.30	128.15	121.00
59	4	173	C	N1-C2-O2	14.28	127.47	118.90
59	4	334	A	O4'-C1'-N9	14.28	119.62	108.20
59	4	132	U	O5'-P-OP2	-14.27	92.86	105.70
6	8	77	A	N1-C2-N3	14.11	136.36	129.30
59	4	34	A	O5'-P-OP1	-13.93	93.17	105.70
59	4	154	C	N1-C2-O2	13.92	127.25	118.90
6	8	77	A	C8-N9-C4	13.78	111.31	105.80
59	4	154	C	C2-N1-C1'	13.61	133.77	118.80
60	7	13	C	N1-C2-O2	13.60	127.06	118.90
59	4	39	A	O4'-C1'-N9	13.40	118.92	108.20
60	7	1	G	C8-N9-C4	-13.27	101.09	106.40
59	4	15	A	O5'-P-OP1	13.20	126.55	110.70
59	4	245	C	C6-N1-C2	-12.93	115.13	120.30
59	4	356	C	N1-C2-O2	12.81	126.59	118.90
59	4	299	C	C2-N1-C1'	12.80	132.88	118.80
60	7	13	C	C2-N1-C1'	12.52	132.57	118.80
6	8	77	A	C6-N1-C2	12.51	126.11	118.60
60	7	13	C	N3-C2-O2	-12.31	113.28	121.90
59	4	335	C	C2-N1-C1'	12.30	132.33	118.80
2	2	1052	U	C2-N1-C1'	12.18	132.32	117.70
59	4	237	U	N1-C2-O2	12.17	131.32	122.80
59	4	356	C	N3-C2-O2	-12.12	113.42	121.90
59	4	155	C	C2-N1-C1'	12.01	132.01	118.80
59	4	237	U	C2-N1-C1'	11.96	132.06	117.70
60	7	76	C	N3-C2-O2	-11.90	113.57	121.90
59	4	323	A	C8-N9-C4	-11.88	101.05	105.80
59	4	137	C	C6-N1-C2	-11.85	115.56	120.30
59	4	15	A	P-O3'-C3'	11.82	133.89	119.70
60	7	73	C	O5'-P-OP2	-11.80	95.08	105.70
60	7	63	C	C6-N1-C2	-11.77	115.59	120.30
60	7	13	C	O5'-P-OP1	11.70	124.74	110.70
60	7	29	C	C5-C6-N1	11.65	126.83	121.00
6	8	77	A	C6-C5-N7	11.65	140.46	132.30
60	7	28	C	C6-N1-C2	-11.63	115.65	120.30
59	4	356	C	C5-C6-N1	11.36	126.68	121.00
59	4	173	C	C2-N1-C1'	11.36	131.29	118.80
59	4	173	C	N3-C2-O2	-11.35	113.96	121.90
2	2	1052	U	N3-C2-O2	-11.31	114.28	122.20
1	1	431	U	C2-N1-C1'	11.28	131.24	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	237	U	N3-C2-O2	-11.28	114.31	122.20
59	4	343	C	C2-N1-C1'	11.27	131.19	118.80
59	4	154	C	N3-C2-O2	-11.22	114.05	121.90
1	1	431	U	N3-C2-O2	-11.18	114.37	122.20
59	4	245	C	C5-C6-N1	11.16	126.58	121.00
59	4	258	G	O5'-P-OP1	-11.12	95.69	105.70
60	7	1	G	N7-C8-N9	11.10	118.65	113.10
60	7	28	C	C5-C6-N1	11.00	126.50	121.00
60	7	76	C	C6-N1-C2	-10.96	115.92	120.30
60	7	5	C	C6-N1-C2	-10.88	115.95	120.30
59	4	335	C	N1-C2-O2	10.86	125.42	118.90
59	4	262	U	N3-C2-O2	-10.76	114.67	122.20
59	4	173	C	C6-N1-C2	-10.69	116.02	120.30
6	8	77	A	N3-C4-C5	-10.53	119.43	126.80
60	7	13	C	C6-N1-C2	-10.52	116.09	120.30
59	4	245	C	N1-C2-O2	10.52	125.21	118.90
59	4	262	U	N1-C2-O2	10.50	130.15	122.80
59	4	362	C	O5'-P-OP1	10.49	123.29	110.70
2	2	1052	U	N1-C2-O2	10.49	130.14	122.80
60	7	67	C	N1-C2-O2	10.49	125.19	118.90
59	4	21	C	C6-N1-C2	-10.41	116.13	120.30
39	g	88	ASP	CB-CG-OD1	10.38	127.65	118.30
1	1	1905	C	C6-N1-C2	-10.29	116.18	120.30
1	1	475	C	C2-N1-C1'	10.28	130.11	118.80
59	4	155	C	N1-C2-O2	10.25	125.05	118.90
2	2	1109	C	N1-C2-O2	10.21	125.02	118.90
59	4	266	C	P-O3'-C3'	10.20	131.94	119.70
59	4	63	C	N1-C2-O2	10.11	124.97	118.90
59	4	48	C	P-O3'-C3'	10.09	131.81	119.70
1	1	1065	U	N3-C2-O2	-10.08	115.14	122.20
2	2	569	C	C6-N1-C2	-10.07	116.27	120.30
60	7	76	C	C2-N1-C1'	10.01	129.81	118.80
2	2	613	C	C6-N1-C2	-10.00	116.30	120.30
2	2	1322	C	N3-C2-O2	-10.00	114.90	121.90
59	4	120	U	N3-C2-O2	-9.98	115.21	122.20
2	2	1322	C	C6-N1-C2	-9.98	116.31	120.30
59	4	173	C	C5-C6-N1	9.90	125.95	121.00
59	4	299	C	N1-C2-O2	9.90	124.84	118.90
1	1	1313	U	C2-N1-C1'	9.88	129.56	117.70
1	1	387	U	P-O3'-C3'	9.84	131.51	119.70
59	4	145	C	C6-N1-C2	-9.82	116.37	120.30
59	4	290	A	P-O3'-C3'	9.79	131.44	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	7	5	C	C5-C6-N1	9.75	125.88	121.00
60	7	73	C	N1-C2-O2	9.71	124.73	118.90
1	1	2255	G	C8-N9-C4	-9.71	102.52	106.40
59	4	300	U	N3-C2-O2	-9.70	115.41	122.20
59	4	13	G	N3-C4-N9	-9.69	120.18	126.00
1	1	475	C	N1-C2-O2	9.68	124.71	118.90
60	7	32	C	N1-C2-O2	9.66	124.70	118.90
1	1	431	U	N1-C2-O2	9.52	129.46	122.80
59	4	299	C	C6-N1-C1'	-9.49	109.41	120.80
59	4	9	U	P-O3'-C3'	9.47	131.07	119.70
59	4	64	C	C6-N1-C2	-9.45	116.52	120.30
59	4	154	C	C6-N1-C1'	-9.44	109.48	120.80
59	4	209	C	O5'-P-OP1	9.39	121.97	110.70
59	4	262	U	C2-N1-C1'	9.39	128.97	117.70
59	4	222	U	C5-C6-N1	9.37	127.38	122.70
2	2	1059	C	C6-N1-C2	-9.35	116.56	120.30
59	4	260	C	C6-N1-C2	-9.35	116.56	120.30
2	2	1427	C	C2-N1-C1'	9.31	129.04	118.80
59	4	154	C	C6-N1-C2	-9.29	116.58	120.30
59	4	341	U	N3-C2-O2	-9.28	115.70	122.20
59	4	48	C	C6-N1-C2	-9.23	116.61	120.30
1	1	1585	C	N1-C2-O2	9.22	124.43	118.90
2	2	858	G	C6-C5-N7	-9.19	124.88	130.40
1	1	2403	C	N1-C2-O2	9.19	124.42	118.90
2	2	1404	C	C6-N1-C2	-9.18	116.63	120.30
59	4	210	C	C6-N1-C2	-9.16	116.63	120.30
59	4	141	C	C6-N1-C2	-9.14	116.64	120.30
1	1	2096	C	C2-N1-C1'	9.12	128.84	118.80
59	4	39	A	N9-C1'-C2'	9.09	125.82	114.00
60	7	32	C	N3-C2-O2	-9.09	115.54	121.90
59	4	187	C	N3-C2-O2	-9.08	115.55	121.90
60	7	12	U	C6-N1-C2	-9.03	115.58	121.00
59	4	343	C	N1-C2-O2	9.03	124.32	118.90
2	2	1109	C	N3-C2-O2	-9.03	115.58	121.90
59	4	265	C	C6-N1-C2	-9.00	116.70	120.30
6	8	77	A	C4-C5-C6	-8.93	112.53	117.00
7	9	3	G	O4'-C1'-N9	8.93	115.35	108.20
1	1	387	U	OP2-P-O3'	-8.92	85.58	105.20
59	4	308	U	P-O3'-C3'	8.92	130.40	119.70
60	7	71	C	P-O3'-C3'	-8.89	109.03	119.70
6	8	77	A	N3-C4-N9	8.89	134.51	127.40
2	2	475	C	C2-N1-C1'	8.84	128.53	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	187	C	N1-C2-O2	8.84	124.20	118.90
59	4	37	C	C6-N1-C2	-8.82	116.77	120.30
59	4	158	U	C5-C6-N1	8.78	127.09	122.70
59	4	181	G	N3-C4-C5	-8.76	124.22	128.60
59	4	245	C	P-O3'-C3'	8.76	130.21	119.70
1	1	2460	U	N3-C2-O2	-8.75	116.08	122.20
7	9	1	A	C2-N3-C4	8.74	114.97	110.60
59	4	308	U	C5-C6-N1	8.74	127.07	122.70
1	1	343	C	N1-C2-O2	8.71	124.13	118.90
59	4	299	C	C5-C6-N1	8.70	125.35	121.00
59	4	137	C	C5-C6-N1	8.68	125.34	121.00
59	4	11	C	N1-C2-O2	8.68	124.11	118.90
59	4	199	C	C6-N1-C2	-8.65	116.84	120.30
59	4	181	G	O4'-C1'-N9	8.65	115.12	108.20
2	2	970	C	C6-N1-C2	-8.64	116.84	120.30
1	1	1060	U	N1-C2-O2	8.64	128.85	122.80
2	2	1159	U	N3-C2-O2	-8.63	116.16	122.20
59	4	120	U	N1-C2-O2	8.63	128.84	122.80
2	2	1158	C	N1-C2-O2	8.62	124.07	118.90
60	7	27	A	C8-N9-C4	-8.61	102.36	105.80
60	7	63	C	C5-C6-N1	8.61	125.30	121.00
1	1	385	C	N1-C2-O2	8.57	124.04	118.90
1	1	1065	U	N1-C2-O2	8.56	128.79	122.80
59	4	245	C	N3-C2-O2	-8.56	115.91	121.90
59	4	343	C	C6-N1-C2	-8.55	116.88	120.30
1	1	2585	U	N3-C2-O2	-8.55	116.22	122.20
1	1	1905	C	C5-C6-N1	8.54	125.27	121.00
60	7	27	A	N7-C8-N9	8.53	118.07	113.80
59	4	270	C	C6-N1-C2	-8.52	116.89	120.30
2	2	1007	U	N1-C2-O2	8.52	128.76	122.80
1	1	1816	C	N1-C2-O2	8.50	124.00	118.90
2	2	1158	C	C2-N1-C1'	8.49	128.15	118.80
59	4	7	G	C8-N9-C4	-8.48	103.01	106.40
59	4	335	C	C6-N1-C1'	-8.48	110.63	120.80
1	1	2460	U	N1-C2-O2	8.47	128.73	122.80
59	4	341	U	C6-N1-C2	-8.47	115.92	121.00
59	4	75	C	C6-N1-C2	-8.47	116.91	120.30
59	4	155	C	C6-N1-C2	-8.46	116.92	120.30
59	4	45	A	C8-N9-C4	-8.46	102.42	105.80
59	4	241	C	C6-N1-C2	-8.44	116.92	120.30
59	4	349	C	C6-N1-C2	-8.44	116.92	120.30
59	4	341	U	N1-C2-O2	8.44	128.71	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	120	U	C2-N1-C1'	8.44	127.83	117.70
59	4	341	U	C5-C6-N1	8.42	126.91	122.70
59	4	63	C	C2-N1-C1'	8.41	128.05	118.80
59	4	137	C	N3-C2-O2	-8.38	116.03	121.90
1	1	2207	C	N3-C2-O2	-8.37	116.04	121.90
60	7	75	C	C5-C6-N1	8.36	125.18	121.00
60	7	75	C	C6-N1-C2	-8.34	116.97	120.30
1	1	1816	C	C2-N1-C1'	8.33	127.97	118.80
59	4	300	U	N1-C2-O2	8.33	128.63	122.80
59	4	335	C	C5-C6-N1	8.32	125.16	121.00
60	7	76	C	C5-C6-N1	8.32	125.16	121.00
1	1	1892	C	N1-C2-O2	8.32	123.89	118.90
2	2	584	G	C6-C5-N7	-8.29	125.43	130.40
59	4	41	G	N7-C8-N9	8.28	117.24	113.10
1	1	1595	C	C6-N1-C2	-8.25	117.00	120.30
59	4	275	C	C6-N1-C2	-8.24	117.00	120.30
59	4	314	C	P-O3'-C3'	8.24	129.59	119.70
1	1	1971	U	N1-C2-O2	8.23	128.56	122.80
2	2	1279	G	C4-N9-C1'	8.23	137.20	126.50
59	4	152	C	N1-C2-O2	8.22	123.83	118.90
2	2	1303	C	N1-C2-O2	8.22	123.83	118.90
59	4	342	U	C5-C6-N1	8.22	126.81	122.70
59	4	147	C	C6-N1-C2	-8.20	117.02	120.30
2	2	1159	U	N1-C2-O2	8.19	128.53	122.80
59	4	8	A	C4-N9-C1'	8.19	141.04	126.30
59	4	11	C	OP2-P-O3'	8.19	123.21	105.20
59	4	335	C	C6-N1-C2	-8.17	117.03	120.30
59	4	45	A	N7-C8-N9	8.16	117.88	113.80
60	7	67	C	C2-N1-C1'	8.13	127.74	118.80
2	2	1521	C	C6-N1-C2	-8.13	117.05	120.30
60	7	67	C	C6-N1-C2	-8.13	117.05	120.30
59	4	308	U	C2-N1-C1'	8.12	127.45	117.70
1	1	1052	C	N1-C2-O2	8.11	123.77	118.90
59	4	155	C	C6-N1-C1'	-8.11	111.07	120.80
59	4	138	C	N3-C2-O2	-8.10	116.23	121.90
59	4	272	C	P-O3'-C3'	8.10	129.42	119.70
1	1	1060	U	N3-C2-O2	-8.10	116.53	122.20
2	2	1427	C	C5-C6-N1	8.09	125.04	121.00
59	4	183	C	N3-C2-O2	-8.09	116.24	121.90
2	2	568	G	C6-C5-N7	-8.08	125.55	130.40
60	7	73	C	N3-C2-O2	-8.08	116.24	121.90
1	1	1313	U	N1-C2-O2	8.08	128.46	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	475	C	C6-N1-C2	-8.07	117.07	120.30
59	4	158	U	C6-N1-C2	-8.07	116.16	121.00
59	4	323	A	N7-C8-N9	8.06	117.83	113.80
1	1	2006	C	C5-C6-N1	8.05	125.03	121.00
2	2	736	C	C6-N1-C2	-8.06	117.08	120.30
59	4	223	G	C4-N9-C1'	8.05	136.97	126.50
1	1	2888	C	N1-C2-O2	8.05	123.73	118.90
1	1	1313	U	N3-C2-O2	-8.03	116.58	122.20
1	1	1971	U	N3-C2-O2	-8.03	116.58	122.20
59	4	48	C	O3'-P-O5'	8.02	119.23	104.00
59	4	222	U	C2-N1-C1'	8.01	127.31	117.70
59	4	112	U	C5-C6-N1	8.01	126.70	122.70
59	4	54	G	C4-N9-C1'	8.01	136.91	126.50
1	1	2539	C	N3-C2-O2	-8.00	116.30	121.90
2	2	858	G	N1-C6-O6	8.00	124.70	119.90
2	2	1322	C	N1-C2-O2	7.99	123.70	118.90
59	4	10	U	P-O3'-C3'	7.99	129.29	119.70
59	4	138	C	N1-C2-O2	7.98	123.69	118.90
59	4	152	C	C6-N1-C2	-7.98	117.11	120.30
60	7	26	C	N1-C2-O2	7.97	123.68	118.90
1	1	2443	C	C6-N1-C2	-7.97	117.11	120.30
2	2	365	U	C2-N1-C1'	7.97	127.26	117.70
2	2	210	C	N1-C2-O2	7.95	123.67	118.90
59	4	154	C	O5'-P-OP2	-7.94	98.55	105.70
60	7	12	U	C5-C6-N1	7.94	126.67	122.70
59	4	155	C	N3-C2-O2	-7.93	116.35	121.90
59	4	137	C	N1-C2-O2	7.89	123.63	118.90
59	4	187	C	C6-N1-C2	-7.88	117.15	120.30
60	7	13	C	C6-N1-C1'	-7.88	111.34	120.80
59	4	54	G	N3-C4-C5	-7.88	124.66	128.60
2	2	210	C	C2-N1-C1'	7.87	127.45	118.80
59	4	38	A	P-O3'-C3'	7.85	129.12	119.70
59	4	181	G	N3-C4-N9	7.85	130.71	126.00
60	7	26	C	N3-C2-O2	-7.85	116.41	121.90
59	4	39	A	C4-N9-C1'	7.84	140.42	126.30
14	H	81	LEU	CA-CB-CG	7.84	133.33	115.30
59	4	12	U	N1-C2-O2	7.84	128.28	122.80
59	4	152	C	N3-C2-O2	-7.83	116.42	121.90
1	1	57	C	C6-N1-C2	-7.82	117.17	120.30
1	1	1401	G	N3-C2-N2	-7.81	114.43	119.90
1	1	2096	C	N1-C2-O2	7.81	123.59	118.90
2	2	328	C	N1-C2-O2	7.81	123.58	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	7	67	C	N3-C2-O2	-7.81	116.43	121.90
59	4	229	U	C5-C6-N1	7.80	126.60	122.70
59	4	222	U	N1-C2-O2	7.80	128.26	122.80
2	2	245	U	N1-C2-O2	7.80	128.26	122.80
2	2	858	G	C4-C5-N7	7.80	113.92	110.80
1	1	545	U	N1-C2-O2	7.79	128.25	122.80
2	2	95	C	N1-C2-O2	7.79	123.57	118.90
1	1	1401	G	C8-N9-C1'	7.79	137.12	127.00
2	2	1306	A	C8-N9-C4	-7.78	102.69	105.80
1	1	475	C	N3-C2-O2	-7.77	116.46	121.90
1	1	138	U	C2-N1-C1'	7.75	127.00	117.70
60	7	1	G	N3-C4-C5	-7.75	124.73	128.60
1	1	1401	G	N3-C4-N9	-7.74	121.36	126.00
59	4	329	U	C5-C6-N1	7.72	126.56	122.70
1	1	2465	C	C2-N1-C1'	7.72	127.29	118.80
2	2	804	U	C2-N1-C1'	7.72	126.96	117.70
1	1	1102	C	N1-C2-O2	7.72	123.53	118.90
1	1	192	C	C6-N1-C2	-7.69	117.22	120.30
2	2	1109	C	C2-N1-C1'	7.68	127.25	118.80
3	3	89	U	N1-C2-O2	7.66	128.16	122.80
59	4	225	A	C8-N9-C4	-7.66	102.74	105.80
59	4	343	C	C6-N1-C1'	-7.66	111.61	120.80
2	2	571	U	C5-C6-N1	7.66	126.53	122.70
59	4	155	C	C5-C6-N1	7.65	124.82	121.00
2	2	864	A	C8-N9-C4	-7.64	102.75	105.80
59	4	8	A	C8-N9-C1'	-7.64	113.95	127.70
59	4	357	U	C5-C6-N1	7.63	126.52	122.70
60	7	63	C	N1-C2-O2	7.63	123.48	118.90
59	4	237	U	C6-N1-C1'	-7.61	110.55	121.20
1	1	57	C	C5-C6-N1	7.60	124.80	121.00
59	4	225	A	N7-C8-N9	7.59	117.60	113.80
1	1	948	C	C6-N1-C2	-7.59	117.27	120.30
3	3	89	U	C2-N1-C1'	7.58	126.80	117.70
1	1	2255	G	N7-C8-N9	7.58	116.89	113.10
2	2	556	C	C6-N1-C2	-7.57	117.27	120.30
2	2	73	C	N1-C2-O2	7.56	123.44	118.90
2	2	1159	U	C2-N1-C1'	7.56	126.77	117.70
3	3	89	U	N3-C2-O2	-7.55	116.91	122.20
1	1	1585	C	N3-C2-O2	-7.55	116.62	121.90
3	3	26	C	N1-C2-O2	7.55	123.43	118.90
59	4	109	C	C5-C6-N1	7.54	124.77	121.00
2	2	1427	C	C6-N1-C2	-7.54	117.28	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	313	C	C5-C6-N1	7.53	124.77	121.00
2	2	571	U	C6-N1-C2	-7.53	116.48	121.00
59	4	223	G	N3-C4-N9	7.53	130.52	126.00
2	2	1306	A	N7-C8-N9	7.53	117.56	113.80
2	2	12	U	C6-N1-C2	-7.53	116.48	121.00
1	1	2585	U	N1-C2-O2	7.51	128.06	122.80
1	1	2226	C	N1-C2-O2	7.50	123.40	118.90
1	1	1109	C	N1-C2-O2	7.50	123.40	118.90
2	2	1426	G	C4-N9-C1'	7.49	136.24	126.50
1	1	970	U	N1-C2-O2	7.47	128.03	122.80
6	8	77	A	C4-C5-N7	-7.47	106.97	110.70
2	2	245	U	N3-C2-O2	-7.45	116.98	122.20
59	4	182	U	C6-N1-C2	-7.45	116.53	121.00
1	1	2442	C	C6-N1-C2	-7.44	117.32	120.30
1	1	2607	G	N3-C4-N9	-7.44	121.54	126.00
59	4	343	C	C5-C6-N1	7.43	124.72	121.00
2	2	761	G	C4-C5-N7	7.42	113.77	110.80
2	2	1052	U	C6-N1-C2	-7.41	116.56	121.00
2	2	984	C	C6-N1-C2	-7.41	117.34	120.30
1	1	545	U	C2-N1-C1'	7.40	126.58	117.70
2	2	843	U	C5-C6-N1	7.39	126.40	122.70
59	4	245	C	C2-N1-C1'	7.39	126.93	118.80
1	1	2006	C	C6-N1-C2	-7.38	117.35	120.30
22	P	24	ASP	CB-CG-OD1	7.37	124.93	118.30
1	1	885	C	C6-N1-C2	-7.37	117.35	120.30
59	4	15	A	O5'-P-OP2	-7.37	99.07	105.70
2	2	769	G	C4-N9-C1'	7.36	136.06	126.50
59	4	189	C	P-O3'-C3'	7.36	128.53	119.70
59	4	154	C	C5-C6-N1	7.35	124.67	121.00
59	4	222	U	N3-C2-O2	-7.34	117.06	122.20
1	1	2394	C	C5-C6-N1	7.34	124.67	121.00
1	1	281	C	O4'-C1'-N1	7.33	114.07	108.20
1	1	970	U	N3-C2-O2	-7.33	117.07	122.20
2	2	95	C	C2-N1-C1'	7.32	126.85	118.80
59	4	343	C	N3-C2-O2	-7.32	116.78	121.90
59	4	227	C	C5-C6-N1	7.31	124.66	121.00
1	1	2888	C	C2-N1-C1'	7.31	126.84	118.80
1	1	2771	C	N1-C2-O2	7.30	123.28	118.90
59	4	248	G	P-O3'-C3'	7.29	128.45	119.70
1	1	1196	C	C6-N1-C2	-7.29	117.39	120.30
1	1	2260	C	C6-N1-C2	-7.28	117.39	120.30
2	2	1052	U	C6-N1-C1'	-7.28	111.01	121.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	54	G	N3-C4-N9	7.28	130.37	126.00
59	4	320	U	P-O3'-C3'	7.27	128.43	119.70
1	1	545	U	N3-C2-O2	-7.27	117.11	122.20
2	2	1109	C	C6-N1-C2	-7.27	117.39	120.30
2	2	328	C	C2-N1-C1'	7.27	126.79	118.80
59	4	34	A	O4'-C1'-N9	7.26	114.01	108.20
59	4	182	U	C5-C6-N1	7.26	126.33	122.70
59	4	229	U	N3-C2-O2	-7.26	117.12	122.20
1	1	1967	C	C6-N1-C2	-7.26	117.40	120.30
59	4	361	C	C6-N1-C2	-7.26	117.40	120.30
59	4	181	G	C4-N9-C1'	7.24	135.91	126.50
59	4	222	U	C6-N1-C2	-7.24	116.66	121.00
1	1	1109	C	C6-N1-C2	-7.24	117.41	120.30
1	1	2656	U	C2-N1-C1'	7.24	126.38	117.70
59	4	9	U	C5'-C4'-O4'	-7.23	100.42	109.10
1	1	1010	A	C8-N9-C4	-7.23	102.91	105.80
2	2	316	C	C6-N1-C2	-7.23	117.41	120.30
59	4	229	U	OP1-P-O3'	7.22	121.09	105.20
59	4	111	U	C5-C6-N1	7.22	126.31	122.70
59	4	335	C	N3-C2-O2	-7.21	116.85	121.90
59	4	56	C	C6-N1-C2	-7.20	117.42	120.30
59	4	78	C	C6-N1-C2	-7.20	117.42	120.30
1	1	1065	U	C6-N1-C2	-7.19	116.68	121.00
60	7	11	C	N1-C2-O2	7.19	123.22	118.90
59	4	12	U	P-O3'-C3'	7.18	128.32	119.70
2	2	584	G	N1-C6-O6	7.18	124.21	119.90
1	1	431	U	C6-N1-C1'	-7.18	111.15	121.20
59	4	270	C	C5-C6-N1	7.17	124.59	121.00
59	4	163	G	P-O3'-C3'	7.17	128.30	119.70
1	1	2562	U	N3-C2-O2	-7.16	117.19	122.20
59	4	180	G	C8-N9-C4	-7.16	103.54	106.40
59	4	229	U	C6-N1-C2	-7.16	116.71	121.00
59	4	284	G	P-O3'-C3'	7.15	128.28	119.70
1	1	1927	A	N7-C8-N9	7.14	117.37	113.80
1	1	1153	C	C6-N1-C2	-7.14	117.44	120.30
60	7	74	A	C8-N9-C4	-7.14	102.94	105.80
59	4	13	G	C8-N9-C1'	7.13	136.27	127.00
59	4	181	G	C5'-C4'-O4'	7.12	117.65	109.10
59	4	223	G	N3-C4-C5	-7.12	125.04	128.60
59	4	292	A	C8-N9-C4	-7.11	102.96	105.80
1	1	2403	C	N3-C2-O2	-7.10	116.93	121.90
1	1	669	G	C4-N9-C1'	7.09	135.72	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	237	U	C5-C6-N1	7.09	126.25	122.70
59	4	335	C	C2-N3-C4	7.09	123.44	119.90
60	7	32	C	C6-N1-C2	-7.08	117.47	120.30
1	1	1927	A	C8-N9-C4	-7.08	102.97	105.80
2	2	960	U	C2-N1-C1'	7.07	126.19	117.70
1	1	1065	U	C2-N1-C1'	7.07	126.19	117.70
1	1	992	C	N1-C2-O2	7.07	123.14	118.90
59	4	21	C	O4'-C1'-N1	7.06	113.85	108.20
2	2	744	C	C6-N1-C2	-7.06	117.48	120.30
59	4	230	U	O4'-C1'-N1	7.06	113.85	108.20
1	1	2562	U	N1-C2-O2	7.05	127.73	122.80
59	4	186	A	O4'-C1'-N9	7.05	113.84	108.20
2	2	340	U	N3-C2-O2	-7.04	117.27	122.20
59	4	332	G	P-O3'-C3'	7.04	128.15	119.70
2	2	972	C	C6-N1-C2	-7.03	117.49	120.30
59	4	13	G	N9-C4-C5	7.03	108.21	105.40
59	4	11	C	P-O3'-C3'	7.03	128.13	119.70
2	2	882	C	C6-N1-C2	-7.02	117.49	120.30
60	7	63	C	N3-C2-O2	-7.02	116.98	121.90
1	1	1379	U	N3-C2-O2	-7.02	117.29	122.20
59	4	183	C	N1-C2-O2	7.02	123.11	118.90
60	7	2	C	O4'-C1'-N1	7.02	113.81	108.20
1	1	984	A	C2-N3-C4	7.01	114.11	110.60
2	2	73	C	C2-N1-C1'	7.00	126.50	118.80
1	1	2226	C	C6-N1-C2	-7.00	117.50	120.30
60	7	7	G	O4'-C1'-N9	7.00	113.80	108.20
2	2	568	G	N3-C4-N9	6.99	130.20	126.00
60	7	73	C	C4-C5-C6	-6.99	113.90	117.40
59	4	213	G	OP1-P-OP2	-6.99	109.12	119.60
1	1	1967	C	C5-C6-N1	6.99	124.49	121.00
2	2	1121	U	C2-N1-C1'	6.98	126.08	117.70
59	4	266	C	O3'-P-O5'	6.98	117.27	104.00
1	1	1582	C	C6-N1-C2	-6.98	117.51	120.30
1	1	2888	C	N3-C2-O2	-6.98	117.01	121.90
2	2	330	C	N1-C2-O2	6.98	123.09	118.90
2	2	861	G	C8-N9-C4	-6.98	103.61	106.40
1	1	475	C	C5-C6-N1	6.97	124.49	121.00
1	1	499	U	N1-C2-O2	6.97	127.68	122.80
1	1	97	C	N1-C2-O2	6.97	123.08	118.90
1	1	138	U	N3-C2-O2	-6.97	117.32	122.20
1	1	2880	C	N1-C2-O2	6.97	123.08	118.90
59	4	8	A	N7-C8-N9	6.97	117.28	113.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	299	C	C6-N1-C2	-6.96	117.52	120.30
2	2	108	G	C4-C5-N7	6.96	113.58	110.80
1	1	1585	C	C2-N1-C1'	6.95	126.45	118.80
59	4	131	U	OP2-P-O3'	6.95	120.50	105.20
1	1	2106	U	C2-N1-C1'	6.95	126.03	117.70
1	1	2244	U	C5-C6-N1	6.94	126.17	122.70
59	4	269	C	N1-C2-O2	6.94	123.06	118.90
1	1	499	U	C2-N1-C1'	6.93	126.02	117.70
59	4	78	C	C5-C6-N1	6.93	124.47	121.00
59	4	151	C	N1-C2-O2	6.93	123.06	118.90
59	4	223	G	C8-N9-C1'	-6.93	117.99	127.00
1	1	885	C	C5-C6-N1	6.93	124.46	121.00
1	1	1774	C	N3-C2-O2	-6.92	117.05	121.90
59	4	8	A	C8-N9-C4	-6.92	103.03	105.80
1	1	2214	C	C6-N1-C2	-6.92	117.53	120.30
1	1	1053	C	N1-C2-O2	6.92	123.05	118.90
59	4	15	A	OP1-P-OP2	-6.91	109.23	119.60
1	1	1967	C	C2-N1-C1'	6.91	126.40	118.80
59	4	63	C	N3-C2-O2	-6.90	117.07	121.90
1	1	1752	C	C5-C6-N1	6.90	124.45	121.00
2	2	654	G	C4-N9-C1'	6.90	135.47	126.50
59	4	265	C	C5-C6-N1	6.89	124.45	121.00
59	4	180	G	N7-C8-N9	6.89	116.55	113.10
1	1	2111	U	C2-N1-C1'	6.89	125.96	117.70
59	4	330	U	N3-C2-O2	-6.88	117.38	122.20
1	1	2773	C	N1-C2-O2	6.88	123.03	118.90
1	1	1109	C	N3-C2-O2	-6.88	117.08	121.90
1	1	2656	U	C5-C6-N1	6.87	126.14	122.70
60	7	26	C	C6-N1-C2	-6.87	117.55	120.30
59	4	32	A	C2-N3-C4	6.87	114.03	110.60
59	4	330	U	N1-C2-O2	6.87	127.61	122.80
59	4	11	C	C6-N1-C2	-6.86	117.55	120.30
1	1	2626	C	C6-N1-C2	-6.86	117.56	120.30
1	1	1533	C	C2-N1-C1'	6.86	126.34	118.80
59	4	147	C	O4'-C1'-N1	6.86	113.68	108.20
1	1	2652	C	N1-C2-O2	6.85	123.01	118.90
59	4	17	U	C6-N1-C2	-6.84	116.89	121.00
1	1	2773	C	N3-C2-O2	-6.84	117.11	121.90
2	2	108	G	C6-C5-N7	-6.84	126.30	130.40
1	1	2394	C	C6-N1-C2	-6.83	117.57	120.30
2	2	568	G	C4-C5-N7	6.83	113.53	110.80
59	4	229	U	C2-N1-C1'	6.83	125.90	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	304	C	C6-N1-C2	-6.83	117.57	120.30
1	1	138	U	N1-C2-O2	6.83	127.58	122.80
60	7	70	A	N7-C8-N9	6.82	117.21	113.80
1	1	106	C	N1-C2-O2	6.81	122.98	118.90
59	4	261	G	P-O3'-C3'	6.80	127.87	119.70
59	4	358	C	O4'-C1'-N1	6.80	113.64	108.20
59	4	362	C	C6-N1-C1'	6.80	128.96	120.80
2	2	578	C	C6-N1-C2	-6.80	117.58	120.30
2	2	12	U	C5-C6-N1	6.79	126.09	122.70
2	2	1279	G	C8-N9-C1'	-6.78	118.18	127.00
60	7	12	U	O4'-C1'-N1	6.78	113.63	108.20
1	1	758	C	C6-N1-C2	-6.78	117.59	120.30
1	1	2656	U	N1-C2-O2	6.77	127.54	122.80
2	2	786	G	C4-N9-C1'	6.77	135.31	126.50
59	4	356	C	C2-N3-C4	6.77	123.29	119.90
2	2	1493	A	O5'-P-OP2	6.77	118.82	110.70
1	1	2256	G	O5'-P-OP1	-6.77	99.61	105.70
59	4	2	G	C6-C5-N7	-6.76	126.34	130.40
59	4	151	C	N3-C2-O2	-6.76	117.17	121.90
59	4	173	C	C6-N1-C1'	-6.76	112.68	120.80
1	1	1079	C	C2-N1-C1'	6.76	126.24	118.80
60	7	66	U	C5-C6-N1	6.76	126.08	122.70
1	1	992	C	C6-N1-C2	-6.76	117.60	120.30
2	2	846	G	N3-C4-N9	6.75	130.05	126.00
2	2	117	G	C6-C5-N7	-6.75	126.35	130.40
2	2	488	C	C6-N1-C2	-6.75	117.60	120.30
1	1	475	C	C6-N1-C1'	-6.75	112.70	120.80
2	2	340	U	C2-N1-C1'	6.75	125.80	117.70
59	4	229	U	N1-C2-O2	6.75	127.53	122.80
59	4	357	U	C6-N1-C2	-6.75	116.95	121.00
59	4	41	G	C6-C5-N7	-6.74	126.36	130.40
2	2	1267	C	N1-C2-O2	6.74	122.94	118.90
1	1	894	U	P-O3'-C3'	6.73	127.77	119.70
1	1	2403	C	C6-N1-C2	-6.72	117.61	120.30
59	4	165	A	P-O3'-C3'	6.72	127.77	119.70
59	4	223	G	P-O3'-C3'	6.72	127.77	119.70
59	4	182	U	C2-N1-C1'	6.72	125.76	117.70
1	1	2607	G	N3-C2-N2	-6.71	115.20	119.90
2	2	848	C	C6-N1-C2	-6.71	117.62	120.30
2	2	654	G	C8-N9-C1'	-6.71	118.28	127.00
2	2	795	C	C2-N1-C1'	6.71	126.18	118.80
1	1	1053	C	C2-N1-C1'	6.71	126.18	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	182	U	N3-C2-O2	-6.70	117.51	122.20
1	1	1990	C	N3-C2-O2	-6.70	117.21	121.90
2	2	843	U	C2-N1-C1'	6.70	125.74	117.70
59	4	16	U	P-O3'-C3'	6.69	127.73	119.70
1	1	1752	C	C6-N1-C2	-6.69	117.62	120.30
2	2	843	U	C6-N1-C2	-6.69	116.99	121.00
2	2	568	G	C4-N9-C1'	6.69	135.19	126.50
59	4	54	G	C8-N9-C1'	-6.67	118.32	127.00
60	7	29	C	O4'-C1'-N1	6.67	113.54	108.20
1	1	2888	C	C6-N1-C2	-6.67	117.63	120.30
2	2	112	G	C6-C5-N7	-6.66	126.40	130.40
2	2	1158	C	N3-C2-O2	-6.66	117.24	121.90
1	1	1816	C	C5-C6-N1	6.66	124.33	121.00
1	1	840	C	N3-C2-O2	-6.66	117.24	121.90
59	4	11	C	C5-C6-N1	6.66	124.33	121.00
59	4	212	U	OP1-P-O3'	6.66	119.85	105.20
60	7	24	A	O5'-P-OP1	6.66	118.69	110.70
59	4	151	C	C6-N1-C2	-6.65	117.64	120.30
1	1	343	C	N3-C2-O2	-6.64	117.25	121.90
2	2	783	C	C6-N1-C2	-6.64	117.64	120.30
59	4	185	A	N7-C8-N9	6.64	117.12	113.80
2	2	1052	U	C5-C6-N1	6.64	126.02	122.70
2	2	1314	C	C6-N1-C2	-6.64	117.64	120.30
59	4	356	C	C2-N1-C1'	6.64	126.10	118.80
1	1	1079	C	C6-N1-C2	-6.64	117.64	120.30
1	1	2255	G	O4'-C1'-N9	6.64	113.51	108.20
1	1	97	C	C2-N1-C1'	6.63	126.10	118.80
60	7	36	A	N7-C8-N9	6.63	117.12	113.80
1	1	1417	C	C5-C6-N1	6.63	124.31	121.00
59	4	139	C	C6-N1-C2	-6.63	117.65	120.30
2	2	61	G	C6-C5-N7	-6.63	126.42	130.40
59	4	20	A	O4'-C1'-N9	6.63	113.50	108.20
2	2	1109	C	C3'-C2'-C1'	6.62	106.80	101.50
1	1	385	C	N3-C2-O2	-6.62	117.26	121.90
59	4	227	C	C6-N1-C2	-6.62	117.65	120.30
1	1	140	C	C2-N1-C1'	6.62	126.08	118.80
1	1	2226	C	N3-C2-O2	-6.61	117.27	121.90
60	7	1	G	C5-N7-C8	-6.61	100.99	104.30
59	4	38	A	OP1-P-O3'	6.61	119.74	105.20
2	2	1282	C	N1-C2-O2	6.60	122.86	118.90
1	1	1795	C	C6-N1-C2	-6.59	117.66	120.30
2	2	557	G	C4-N9-C1'	6.59	135.07	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	7	70	A	C8-N9-C4	-6.59	103.16	105.80
1	1	1314	C	N1-C2-O2	6.59	122.85	118.90
2	2	207	C	C6-N1-C2	-6.58	117.67	120.30
1	1	2460	U	C2-N1-C1'	6.57	125.58	117.70
1	1	1121	C	C2-N1-C1'	6.57	126.03	118.80
1	1	2525	G	C5-C6-O6	6.56	132.53	128.60
1	1	154	U	N3-C2-O2	-6.55	117.61	122.20
2	2	381	C	N1-C2-O2	6.55	122.83	118.90
1	1	2096	C	C6-N1-C1'	-6.55	112.94	120.80
2	2	1373	G	C4-C5-N7	6.55	113.42	110.80
1	1	970	U	C2-N1-C1'	6.54	125.55	117.70
2	2	96	U	N3-C2-O2	-6.54	117.62	122.20
59	4	314	C	OP1-P-O3'	6.54	119.59	105.20
59	4	32	A	P-O3'-C3'	6.54	127.55	119.70
1	1	1102	C	C2-N1-C1'	6.54	125.99	118.80
1	1	198	C	C2-N1-C1'	6.54	125.99	118.80
59	4	11	C	N3-C2-O2	-6.54	117.32	121.90
1	1	1315	C	C2-N1-C1'	6.54	125.99	118.80
6	8	8	U	N1-C2-O2	6.53	127.37	122.80
59	4	189	C	C6-N1-C2	-6.53	117.69	120.30
2	2	1303	C	N3-C2-O2	-6.53	117.33	121.90
60	7	11	C	C6-N1-C2	-6.52	117.69	120.30
1	1	2153	C	C5-C6-N1	6.52	124.26	121.00
2	2	1526	G	C6-C5-N7	-6.52	126.49	130.40
59	4	329	U	C6-N1-C2	-6.52	117.09	121.00
2	2	970	C	C6-N1-C1'	6.51	128.62	120.80
59	4	9	U	O5'-P-OP1	-6.51	99.84	105.70
59	4	13	G	C4-N9-C1'	-6.51	118.04	126.50
2	2	962	C	C6-N1-C2	-6.51	117.70	120.30
2	2	1466	C	N3-C2-O2	-6.51	117.35	121.90
2	2	475	C	C6-N1-C1'	-6.50	113.00	120.80
2	2	312	C	C6-N1-C2	-6.50	117.70	120.30
60	7	18	G	P-O3'-C3'	6.50	127.50	119.70
1	1	678	C	C6-N1-C2	-6.50	117.70	120.30
59	4	12	U	N3-C2-O2	-6.49	117.66	122.20
1	1	811	U	C6-N1-C2	-6.49	117.11	121.00
1	1	1052	C	N3-C2-O2	-6.49	117.36	121.90
2	2	1132	C	N1-C2-O2	6.49	122.79	118.90
59	4	41	G	C5-N7-C8	-6.49	101.06	104.30
2	2	761	G	C5-C6-O6	-6.48	124.71	128.60
2	2	429	U	C2-N1-C1'	-6.48	109.92	117.70
59	4	17	U	N3-C2-O2	-6.48	117.66	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	311	C	C6-N1-C2	-6.47	117.71	120.30
59	4	349	C	C5-C6-N1	6.47	124.24	121.00
1	1	198	C	N1-C2-O2	6.47	122.78	118.90
59	4	39	A	C8-N9-C1'	-6.47	116.06	127.70
2	2	795	C	N1-C2-O2	6.47	122.78	118.90
2	2	23	C	C5-C6-N1	6.46	124.23	121.00
2	2	1334	G	C4-N9-C1'	6.46	134.90	126.50
2	2	623	C	C6-N1-C2	-6.46	117.72	120.30
2	2	769	G	C8-N9-C1'	-6.46	118.60	127.00
59	4	333	G	C5'-C4'-O4'	-6.45	101.36	109.10
1	1	736	C	C6-N1-C2	-6.45	117.72	120.30
1	1	2880	C	C6-N1-C2	-6.45	117.72	120.30
59	4	158	U	C5'-C4'-O4'	-6.45	101.36	109.10
59	4	260	C	C5-C6-N1	6.45	124.22	121.00
1	1	2771	C	C2-N1-C1'	6.44	125.88	118.80
59	4	141	C	C5-C6-N1	6.44	124.22	121.00
59	4	233	A	P-O3'-C3'	6.44	127.43	119.70
1	1	1412	U	C5-C6-N1	6.44	125.92	122.70
59	4	262	U	C6-N1-C2	-6.44	117.14	121.00
2	2	638	U	C2-N1-C1'	6.43	125.42	117.70
59	4	279	C	C5-C6-N1	6.43	124.22	121.00
2	2	637	C	C6-N1-C2	-6.43	117.73	120.30
59	4	5	C	O4'-C1'-N1	6.43	113.34	108.20
59	4	40	G	N3-C4-C5	-6.42	125.39	128.60
1	1	2656	U	N3-C2-O2	-6.41	117.71	122.20
59	4	15	A	OP2-P-O3'	6.41	119.30	105.20
2	2	786	G	C6-C5-N7	-6.41	126.56	130.40
59	4	164	G	P-O3'-C3'	6.41	127.39	119.70
1	1	1680	U	N3-C2-O2	-6.40	117.72	122.20
59	4	2	G	C4-C5-N7	6.40	113.36	110.80
1	1	1313	U	C6-N1-C1'	-6.40	112.24	121.20
60	7	13	C	C5-C6-N1	6.40	124.20	121.00
1	1	970	U	C5-C6-N1	6.40	125.90	122.70
59	4	44	C	O4'-C1'-N1	6.40	113.32	108.20
1	1	1971	U	C2-N1-C1'	6.39	125.38	117.70
59	4	63	C	C6-N1-C1'	-6.39	113.13	120.80
59	4	324	G	N1-C6-O6	-6.38	116.07	119.90
2	2	569	C	C5-C6-N1	6.37	124.19	121.00
59	4	16	U	N3-C2-O2	-6.37	117.74	122.20
3	3	26	C	N3-C2-O2	-6.37	117.44	121.90
2	2	632	U	N1-C2-O2	6.36	127.25	122.80
2	2	810	C	C6-N1-C2	-6.36	117.75	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1059	C	C5-C6-N1	6.36	124.18	121.00
1	1	1840	G	N3-C4-N9	6.36	129.82	126.00
3	3	62	C	N3-C2-O2	-6.36	117.45	121.90
1	1	2006	C	N1-C2-O2	6.36	122.71	118.90
2	2	1282	C	N3-C2-O2	-6.36	117.45	121.90
59	4	130	C	P-O3'-C3'	6.36	127.33	119.70
1	1	1153	C	C2-N1-C1'	6.35	125.79	118.80
1	1	2525	G	N3-C4-N9	-6.35	122.19	126.00
1	1	1079	C	C5-C6-N1	6.35	124.17	121.00
2	2	806	C	C6-N1-C2	-6.35	117.76	120.30
2	2	22	G	C4-N9-C1'	6.35	134.75	126.50
59	4	247	A	P-O3'-C3'	6.35	127.32	119.70
60	7	76	C	C2-N3-C4	6.35	123.07	119.90
59	4	229	U	P-O3'-C3'	6.34	127.31	119.70
2	2	857	C	N3-C2-O2	-6.34	117.46	121.90
59	4	227	C	N1-C2-O2	6.34	122.70	118.90
60	7	65	C	C6-N1-C2	-6.34	117.77	120.30
2	2	861	G	C6-C5-N7	-6.33	126.60	130.40
1	1	106	C	N3-C2-O2	-6.33	117.47	121.90
1	1	679	C	C6-N1-C2	-6.33	117.77	120.30
2	2	810	C	C2-N1-C1'	6.33	125.76	118.80
7	9	1	A	N3-C4-C5	-6.33	122.37	126.80
1	1	1776	G	C4-N9-C1'	6.32	134.72	126.50
2	2	237	G	C4-N9-C1'	6.32	134.72	126.50
59	4	39	A	N7-C8-N9	6.32	116.96	113.80
2	2	214	C	N3-C2-O2	-6.32	117.48	121.90
1	1	2057	G	N3-C4-N9	-6.32	122.21	126.00
60	7	13	C	O5'-P-OP2	-6.32	100.02	105.70
59	4	72	A	C2-N3-C4	6.31	113.76	110.60
59	4	312	A	O4'-C1'-N9	6.31	113.25	108.20
59	4	356	C	N3-C4-C5	-6.31	119.38	121.90
2	2	858	G	C5-C6-O6	-6.31	124.81	128.60
2	2	1279	G	N3-C4-N9	6.31	129.79	126.00
1	1	723	C	N1-C2-O2	6.31	122.69	118.90
2	2	175	C	C6-N1-C2	-6.31	117.78	120.30
59	4	138	C	C6-N1-C2	-6.31	117.78	120.30
60	7	31	C	N3-C2-O2	-6.31	117.48	121.90
1	1	2404	U	C2-N1-C1'	6.30	125.27	117.70
59	4	157	C	C6-N1-C2	-6.30	117.78	120.30
1	1	2720	U	N3-C2-O2	-6.30	117.79	122.20
2	2	903	G	N3-C4-N9	-6.30	122.22	126.00
2	2	330	C	N3-C2-O2	-6.29	117.49	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	1060	U	C5-C4-O4	6.29	129.67	125.90
1	1	565	C	C5-C6-N1	6.29	124.14	121.00
1	1	1843	C	C6-N1-C2	-6.28	117.79	120.30
1	1	991	C	C5-C6-N1	6.28	124.14	121.00
1	1	2720	U	N1-C2-O2	6.28	127.20	122.80
2	2	1373	G	C6-C5-N7	-6.28	126.63	130.40
1	1	1092	C	N1-C2-O2	6.28	122.67	118.90
59	4	203	U	C5-C6-N1	6.28	125.84	122.70
1	1	992	C	N3-C2-O2	-6.27	117.51	121.90
2	2	1158	C	C6-N1-C1'	-6.27	113.27	120.80
1	1	1768	C	C6-N1-C2	-6.27	117.79	120.30
2	2	1043	G	N3-C4-N9	6.27	129.76	126.00
1	1	2880	C	N3-C2-O2	-6.26	117.52	121.90
2	2	1509	C	C6-N1-C2	-6.26	117.80	120.30
59	4	41	G	C4-C5-N7	6.26	113.30	110.80
59	4	316	A	C8-N9-C4	-6.25	103.30	105.80
1	1	2091	C	C6-N1-C2	-6.25	117.80	120.30
1	1	2615	U	C2-N1-C1'	6.25	125.20	117.70
59	4	66	C	P-O3'-C3'	6.25	127.20	119.70
2	2	1107	C	C5-C6-N1	6.25	124.12	121.00
1	1	2260	C	C5-C6-N1	6.24	124.12	121.00
1	1	2403	C	C2-N1-C1'	6.24	125.66	118.80
60	7	11	C	O4'-C1'-N1	6.23	113.19	108.20
1	1	515	A	N7-C8-N9	6.23	116.92	113.80
2	2	22	G	C8-N9-C1'	-6.23	118.90	127.00
1	1	1585	C	C6-N1-C2	-6.23	117.81	120.30
59	4	75	C	C5-C6-N1	6.23	124.11	121.00
2	2	1007	U	N3-C2-O2	-6.23	117.84	122.20
2	2	1460	C	C5-C6-N1	6.22	124.11	121.00
2	2	774	G	C4-N9-C1'	6.22	134.58	126.50
1	1	1401	G	N1-C6-O6	6.21	123.63	119.90
1	1	1990	C	C6-N1-C2	-6.21	117.82	120.30
2	2	528	C	N1-C2-O2	6.20	122.62	118.90
2	2	1426	G	C8-N9-C1'	-6.20	118.94	127.00
59	4	190	A	P-O3'-C3'	6.20	127.14	119.70
2	2	658	C	C6-N1-C2	-6.20	117.82	120.30
59	4	153	U	OP2-P-O3'	6.20	118.83	105.20
2	2	654	G	C6-C5-N7	-6.20	126.68	130.40
2	2	774	G	C6-C5-N7	-6.20	126.68	130.40
59	4	41	G	C8-N9-C4	-6.20	103.92	106.40
3	3	62	C	N1-C2-O2	6.19	122.62	118.90
59	4	313	C	C6-N1-C2	-6.19	117.82	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	292	A	N7-C8-N9	6.19	116.89	113.80
59	4	145	C	C5-C6-N1	6.19	124.09	121.00
59	4	362	C	O5'-P-OP2	-6.19	100.13	105.70
59	4	144	U	O5'-P-OP1	6.19	118.12	110.70
2	2	775	G	C8-N9-C4	-6.18	103.93	106.40
1	1	385	C	C6-N1-C2	-6.18	117.83	120.30
1	1	418	C	C6-N1-C2	-6.18	117.83	120.30
1	1	2558	C	C6-N1-C2	-6.18	117.83	120.30
2	2	760	G	N3-C4-N9	6.18	129.71	126.00
60	7	31	C	N1-C2-O2	6.18	122.61	118.90
2	2	830	G	N3-C4-N9	-6.17	122.30	126.00
1	1	691	C	C6-N1-C2	-6.17	117.83	120.30
59	4	12	U	C2-N1-C1'	6.17	125.10	117.70
59	4	76	C	C6-N1-C2	-6.17	117.83	120.30
1	1	2255	G	N3-C4-C5	-6.16	125.52	128.60
2	2	843	U	N3-C2-O2	-6.16	117.89	122.20
2	2	1427	C	C6-N1-C1'	-6.16	113.41	120.80
1	1	491	G	C4-N9-C1'	6.15	134.50	126.50
2	2	1438	G	C4-N9-C1'	6.15	134.50	126.50
59	4	21	C	C6-N1-C1'	6.15	128.18	120.80
1	1	2196	C	N1-C2-O2	6.15	122.59	118.90
59	4	334	A	OP2-P-O3'	6.15	118.72	105.20
1	1	2794	C	C6-N1-C2	-6.14	117.84	120.30
2	2	1162	C	C6-N1-C2	-6.14	117.84	120.30
59	4	37	C	P-O3'-C3'	6.14	127.07	119.70
59	4	45	A	C4-N9-C1'	6.14	137.36	126.30
1	1	991	C	C6-N1-C2	-6.14	117.84	120.30
2	2	699	C	C5-C6-N1	6.14	124.07	121.00
1	1	2465	C	N1-C2-O2	6.14	122.58	118.90
1	1	2827	C	C6-N1-C2	-6.13	117.85	120.30
2	2	428	G	N3-C4-N9	-6.13	122.32	126.00
1	1	1761	C	C5-C6-N1	6.12	124.06	121.00
1	1	1840	G	C8-N9-C1'	-6.12	119.05	127.00
1	1	2096	C	N3-C2-O2	-6.12	117.62	121.90
2	2	923	A	C8-N9-C4	-6.12	103.35	105.80
2	2	194	C	C6-N1-C2	-6.12	117.85	120.30
59	4	131	U	P-O3'-C3'	6.11	127.04	119.70
1	1	1644	C	N3-C2-O2	-6.11	117.62	121.90
2	2	5	U	C2-N1-C1'	6.11	125.03	117.70
60	7	31	C	O4'-C1'-N1	6.11	113.09	108.20
2	2	628	G	N3-C4-N9	-6.11	122.34	126.00
59	4	241	C	C5-C6-N1	6.11	124.05	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	279	C	C6-N1-C2	-6.11	117.86	120.30
3	3	70	C	C6-N1-C2	-6.10	117.86	120.30
60	7	12	U	N3-C2-O2	-6.10	117.93	122.20
6	8	18	G	OP2-P-O3'	6.09	118.61	105.20
59	4	225	A	P-O3'-C3'	6.09	127.01	119.70
1	1	764	A	O4'-C1'-N9	6.09	113.07	108.20
1	1	811	U	C5-C6-N1	6.09	125.75	122.70
59	4	8	A	N9-C1'-C2'	6.09	121.92	114.00
2	2	771	G	N3-C4-N9	-6.08	122.35	126.00
1	1	1892	C	N3-C2-O2	-6.08	117.64	121.90
2	2	1237	C	C6-N1-C2	-6.08	117.87	120.30
2	2	1279	G	N3-C4-C5	-6.08	125.56	128.60
59	4	266	C	C6-N1-C2	-6.08	117.87	120.30
1	1	1121	C	N1-C2-O2	6.08	122.55	118.90
59	4	114	G	C8-N9-C4	-6.07	103.97	106.40
59	4	224	A	O5'-P-OP1	-6.07	100.24	105.70
59	4	269	C	N3-C2-O2	-6.07	117.65	121.90
1	1	1370	C	C2-N1-C1'	6.07	125.47	118.80
2	2	1228	C	C6-N1-C2	-6.06	117.87	120.30
2	2	328	C	N3-C2-O2	-6.06	117.66	121.90
2	2	1109	C	O4'-C1'-N1	-6.06	103.35	108.20
1	1	404	A	P-O3'-C3'	6.06	126.97	119.70
59	4	300	U	C6-N1-C2	-6.06	117.36	121.00
2	2	429	U	O4'-C1'-N1	6.06	113.05	108.20
1	1	2394	C	C2-N1-C1'	6.06	125.46	118.80
2	2	210	C	N3-C2-O2	-6.06	117.66	121.90
1	1	669	G	N3-C4-N9	6.05	129.63	126.00
2	2	557	G	C8-N9-C1'	-6.05	119.14	127.00
59	4	39	A	C5'-C4'-O4'	6.05	116.36	109.10
1	1	2403	C	C5-C6-N1	6.05	124.02	121.00
1	1	1065	U	C5-C6-N1	6.05	125.72	122.70
59	4	16	U	N1-C2-O2	6.04	127.03	122.80
1	1	783	A	C4-N9-C1'	6.04	137.18	126.30
2	2	972	C	N3-C2-O2	-6.04	117.67	121.90
59	4	13	G	N3-C2-N2	-6.04	115.67	119.90
2	2	846	G	C8-N9-C1'	-6.04	119.15	127.00
6	8	18	G	P-O3'-C3'	6.04	126.95	119.70
59	4	2	G	N3-C4-N9	6.04	129.62	126.00
59	4	189	C	N1-C2-O2	6.04	122.52	118.90
2	2	786	G	C8-N9-C1'	-6.04	119.15	127.00
59	4	191	A	OP1-P-OP2	-6.04	110.54	119.60
1	1	1060	U	N3-C4-O4	-6.04	115.17	119.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	2562	U	C2-N1-C1'	6.04	124.94	117.70
59	4	263	G	C8-N9-C4	-6.04	103.99	106.40
1	1	2652	C	C2-N1-C1'	6.03	125.44	118.80
59	4	269	C	P-O3'-C3'	6.03	126.94	119.70
1	1	669	G	C8-N9-C1'	-6.03	119.16	127.00
1	1	581	C	C6-N1-C2	-6.03	117.89	120.30
59	4	237	U	C6-N1-C2	-6.02	117.39	121.00
2	2	207	C	N1-C2-O2	6.01	122.51	118.90
1	1	2652	C	N3-C2-O2	-6.01	117.69	121.90
59	4	166	C	C6-N1-C2	-6.01	117.90	120.30
2	2	334	C	C5-C6-N1	6.01	124.00	121.00
2	2	1228	C	C5-C6-N1	6.01	124.00	121.00
1	1	2585	U	C6-N1-C2	-6.00	117.40	121.00
1	1	499	U	N3-C2-O2	-6.00	118.00	122.20
59	4	148	U	C5-C6-N1	5.99	125.70	122.70
59	4	210	C	C5-C6-N1	5.99	124.00	121.00
60	7	1	G	O4'-C1'-N9	5.99	113.00	108.20
1	1	1401	G	C4-N9-C1'	-5.99	118.71	126.50
59	4	63	C	P-O3'-C3'	5.99	126.88	119.70
59	4	195	A	P-O3'-C3'	5.99	126.88	119.70
6	8	6	C	N1-C2-O2	5.99	122.49	118.90
59	4	361	C	O5'-P-OP2	5.99	117.88	110.70
1	1	1053	C	N3-C2-O2	-5.98	117.71	121.90
1	1	1349	C	C6-N1-C2	-5.98	117.91	120.30
59	4	239	A	P-O3'-C3'	5.98	126.88	119.70
59	4	260	C	N3-C2-O2	-5.98	117.72	121.90
1	1	1123	C	C6-N1-C2	-5.98	117.91	120.30
1	1	1994	C	C6-N1-C2	-5.98	117.91	120.30
2	2	381	C	N3-C2-O2	-5.98	117.72	121.90
1	1	1947	C	C6-N1-C2	-5.97	117.91	120.30
2	2	213	G	C4-N9-C1'	5.97	134.27	126.50
2	2	207	C	C5-C6-N1	5.97	123.99	121.00
2	2	1145	A	P-O3'-C3'	5.97	126.87	119.70
2	2	843	U	N1-C2-O2	5.97	126.98	122.80
1	1	1315	C	C6-N1-C2	-5.97	117.91	120.30
2	2	810	C	C5-C6-N1	5.96	123.98	121.00
2	2	861	G	N7-C8-N9	5.96	116.08	113.10
59	4	161	U	C5-C6-N1	5.96	125.68	122.70
59	4	137	C	P-O3'-C3'	5.96	126.85	119.70
2	2	475	C	N1-C2-O2	5.96	122.47	118.90
2	2	1373	G	C5-C6-O6	-5.96	125.03	128.60
1	1	1691	C	C6-N1-C2	-5.95	117.92	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	750	C	C6-N1-C2	-5.95	117.92	120.30
59	4	68	U	P-O3'-C3'	5.95	126.84	119.70
1	1	1289	C	C2-N1-C1'	5.94	125.33	118.80
2	2	74	A	O4'-C1'-N9	5.94	112.95	108.20
59	4	109	C	C6-N1-C2	-5.94	117.92	120.30
59	4	299	C	N3-C2-O2	-5.94	117.74	121.90
1	1	1533	C	C6-N1-C2	-5.93	117.93	120.30
2	2	760	G	C5-C6-N1	5.93	114.47	111.50
2	2	1382	C	C6-N1-C2	-5.93	117.93	120.30
59	4	325	G	N3-C4-N9	5.93	129.56	126.00
1	1	462	C	C6-N1-C2	-5.93	117.93	120.30
2	2	397	A	C2-N3-C4	5.93	113.56	110.60
1	1	691	C	C5-C6-N1	5.93	123.97	121.00
2	2	1239	A	O4'-C1'-N9	5.93	112.94	108.20
60	7	11	C	C5-C6-N1	5.93	123.97	121.00
59	4	26	U	N3-C2-O2	-5.93	118.05	122.20
59	4	20	A	P-O3'-C3'	5.92	126.81	119.70
2	2	569	C	C6-N1-C1'	5.92	127.91	120.80
2	2	778	G	C4-N9-C1'	5.92	134.20	126.50
2	2	628	G	N9-C4-C5	5.92	107.77	105.40
1	1	1795	C	C5-C6-N1	5.92	123.96	121.00
2	2	4	U	N1-C2-O2	5.92	126.94	122.80
2	2	803	G	N3-C4-C5	-5.92	125.64	128.60
59	4	157	C	O4'-C1'-N1	5.92	112.93	108.20
59	4	270	C	N1-C2-O2	5.92	122.45	118.90
59	4	311	U	O4'-C1'-N1	5.91	112.93	108.20
59	4	269	C	O3'-P-O5'	5.91	115.23	104.00
59	4	196	G	P-O3'-C3'	5.91	126.79	119.70
2	2	726	C	C6-N1-C2	-5.90	117.94	120.30
59	4	272	C	C6-N1-C2	-5.90	117.94	120.30
59	4	362	C	C6-N1-C2	-5.90	117.94	120.30
2	2	73	C	N3-C2-O2	-5.90	117.77	121.90
59	4	328	U	C6-N1-C2	-5.90	117.46	121.00
60	7	39	U	O4'-C1'-N1	5.90	112.92	108.20
1	1	1401	G	C8-N9-C4	-5.90	104.04	106.40
1	1	2646	C	C6-N1-C2	-5.89	117.94	120.30
2	2	910	C	C2-N1-C1'	5.89	125.28	118.80
59	4	37	C	O4'-C1'-N1	5.89	112.91	108.20
2	2	91	U	N3-C2-O2	-5.89	118.08	122.20
3	3	74	U	N1-C2-O2	5.89	126.92	122.80
59	4	209	C	C6-N1-C2	-5.89	117.94	120.30
2	2	34	C	C6-N1-C2	-5.89	117.94	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1073	U	C5-C6-N1	5.89	125.64	122.70
2	2	452	A	C5-N7-C8	-5.88	100.96	103.90
2	2	778	G	C6-C5-N7	-5.88	126.87	130.40
1	1	970	U	C6-N1-C2	-5.88	117.47	121.00
1	1	1595	C	C5-C6-N1	5.88	123.94	121.00
3	3	28	C	C5-C6-N1	5.88	123.94	121.00
1	1	2076	U	C2-N1-C1'	5.88	124.75	117.70
59	4	110	U	C5-C6-N1	5.88	125.64	122.70
59	4	308	U	C5'-C4'-O4'	-5.88	102.05	109.10
1	1	2025	C	C2-N1-C1'	5.87	125.26	118.80
1	1	431	U	C6-N1-C2	-5.87	117.48	121.00
60	7	63	C	C2-N1-C1'	5.87	125.26	118.80
1	1	1315	C	C5-C6-N1	5.87	123.93	121.00
2	2	826	C	N1-C2-O2	5.87	122.42	118.90
1	1	784	G	P-O3'-C3'	5.86	126.74	119.70
1	1	1816	C	N3-C2-O2	-5.86	117.80	121.90
1	1	335	C	C6-N1-C2	-5.86	117.96	120.30
2	2	611	C	N1-C2-O2	5.86	122.42	118.90
1	1	1816	C	C6-N1-C1'	-5.86	113.77	120.80
2	2	90	C	C5-C6-N1	5.86	123.93	121.00
1	1	2339	C	C6-N1-C2	-5.85	117.96	120.30
59	4	39	A	P-O3'-C3'	5.85	126.72	119.70
1	1	418	C	C5-C6-N1	5.85	123.93	121.00
2	2	95	C	C5-C6-N1	5.85	123.92	121.00
59	4	137	C	O3'-P-O5'	5.85	115.11	104.00
2	2	761	G	C6-C5-N7	-5.84	126.89	130.40
1	1	1574	C	C6-N1-C2	-5.84	117.96	120.30
25	S	34	ASP	CB-CG-OD1	5.84	123.56	118.30
2	2	4	U	C2-N1-C1'	5.84	124.71	117.70
2	2	1055	A	C5-C6-N1	5.84	120.62	117.70
59	4	206	A	O4'-C1'-N9	-5.84	103.53	108.20
1	1	1052	C	C6-N1-C2	-5.83	117.97	120.30
59	4	257	U	OP1-P-O3'	5.83	118.03	105.20
60	7	6	C	O5'-P-OP1	5.83	117.70	110.70
2	2	334	C	C2-N3-C4	5.83	122.81	119.90
59	4	61	G	P-O3'-C3'	5.83	126.70	119.70
1	1	2425	A	P-O3'-C3'	5.83	126.69	119.70
59	4	198	U	P-O5'-C5'	-5.83	111.58	120.90
2	2	970	C	C5-C6-N1	5.83	123.91	121.00
59	4	147	C	C5-C6-N1	5.83	123.91	121.00
1	1	1153	C	C5-C6-N1	5.82	123.91	121.00
2	2	175	C	C6-N1-C1'	5.82	127.79	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	7	4	U	C5-C6-N1	5.82	125.61	122.70
1	1	1644	C	N1-C2-O2	5.82	122.39	118.90
59	4	341	U	C2-N1-C1'	5.82	124.68	117.70
60	7	13	C	OP1-P-OP2	-5.82	110.87	119.60
60	7	33	U	N3-C2-O2	-5.82	118.13	122.20
2	2	376	G	C4-N9-C1'	5.82	134.06	126.50
1	1	2025	C	N1-C2-O2	5.82	122.39	118.90
1	1	2460	U	C5-C6-N1	5.82	125.61	122.70
1	1	2585	U	C5-C6-N1	5.81	125.61	122.70
2	2	237	G	C8-N9-C1'	-5.81	119.44	127.00
1	1	1993	U	N3-C2-O2	-5.81	118.13	122.20
1	1	2593	U	C5-C6-N1	5.81	125.60	122.70
59	4	245	C	OP2-P-O3'	5.81	117.97	105.20
59	4	291	A	C2-N3-C4	5.81	113.50	110.60
1	1	1152	C	C6-N1-C2	-5.80	117.98	120.30
2	2	1058	G	C6-C5-N7	-5.80	126.92	130.40
2	2	1267	C	C2-N1-C1'	5.80	125.18	118.80
1	1	2076	U	N1-C2-O2	5.80	126.86	122.80
1	1	2226	C	C2-N1-C1'	5.80	125.18	118.80
60	7	10	G	C5'-C4'-O4'	5.80	116.06	109.10
1	1	304	U	N1-C2-O2	5.80	126.86	122.80
1	1	2827	C	N1-C2-O2	5.80	122.38	118.90
1	1	515	A	C8-N9-C4	-5.80	103.48	105.80
2	2	428	G	C4-N9-C1'	-5.80	118.96	126.50
60	7	11	C	C2-N1-C1'	5.80	125.17	118.80
2	2	1108	G	C4-N9-C1'	5.79	134.03	126.50
59	4	271	G	P-O3'-C3'	5.79	126.65	119.70
1	1	1993	U	N1-C2-O2	5.79	126.85	122.80
1	1	2874	C	N1-C2-O2	5.79	122.38	118.90
2	2	429	U	C5-C6-N1	-5.79	119.80	122.70
59	4	153	U	P-O3'-C3'	5.79	126.65	119.70
1	1	1092	C	C2-N1-C1'	5.79	125.16	118.80
1	1	495	G	N1-C6-O6	-5.78	116.43	119.90
1	1	2404	U	N3-C2-O2	-5.77	118.16	122.20
1	1	267	C	C6-N1-C2	-5.77	117.99	120.30
59	4	304	C	N3-C2-O2	-5.77	117.86	121.90
1	1	1178	C	N3-C2-O2	-5.76	117.86	121.90
1	1	35	G	N1-C6-O6	-5.76	116.44	119.90
1	1	1330	C	C2-N1-C1'	5.76	125.13	118.80
2	2	727	G	C6-C5-N7	-5.75	126.95	130.40
59	4	360	A	C8-N9-C4	-5.75	103.50	105.80
1	1	740	C	C5-C6-N1	5.75	123.87	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	1840	G	C4-N9-C1'	5.75	133.97	126.50
2	2	644	U	C5-C6-N1	5.75	125.57	122.70
7	9	1	A	N3-C4-N9	5.75	132.00	127.40
1	1	171	U	C2-N1-C1'	5.74	124.59	117.70
1	1	1314	C	C2-N1-C1'	5.74	125.12	118.80
1	1	2607	G	N9-C4-C5	5.74	107.70	105.40
1	1	2026	U	C5-C6-N1	5.74	125.57	122.70
2	2	340	U	N1-C2-O2	5.73	126.81	122.80
1	1	2460	U	C6-N1-C2	-5.73	117.56	121.00
2	2	869	G	C4-C5-N7	5.73	113.09	110.80
60	7	74	A	N7-C8-N9	5.73	116.67	113.80
2	2	221	C	C6-N1-C2	-5.73	118.01	120.30
59	4	189	C	C5-C6-N1	5.73	123.86	121.00
1	1	97	C	N3-C2-O2	-5.72	117.89	121.90
2	2	1460	C	C6-N1-C2	-5.72	118.01	120.30
59	4	275	C	O4'-C1'-N1	5.72	112.78	108.20
2	2	924	C	C6-N1-C2	-5.72	118.01	120.30
59	4	297	G	C8-N9-C4	-5.72	104.11	106.40
59	4	321	G	C8-N9-C4	-5.72	104.11	106.40
2	2	739	C	C6-N1-C2	-5.72	118.01	120.30
1	1	2036	C	C6-N1-C2	-5.71	118.02	120.30
1	1	2539	C	C6-N1-C2	-5.71	118.02	120.30
2	2	506	G	C4-C5-N7	5.71	113.08	110.80
59	4	5	C	C6-N1-C2	-5.71	118.02	120.30
1	1	2465	C	C6-N1-C2	-5.71	118.02	120.30
2	2	1420	U	C5-C6-N1	5.70	125.55	122.70
59	4	304	C	N1-C2-O2	5.70	122.32	118.90
2	2	1404	C	C5-C6-N1	5.70	123.85	121.00
59	4	148	U	C6-N1-C2	-5.70	117.58	121.00
1	1	1257	C	C6-N1-C2	-5.70	118.02	120.30
1	1	648	G	C8-N9-C4	-5.70	104.12	106.40
1	1	650	C	C5-C6-N1	5.69	123.85	121.00
59	4	39	A	C8-N9-C4	-5.69	103.52	105.80
1	1	343	C	C5-C6-N1	5.69	123.85	121.00
1	1	1079	C	N1-C2-O2	5.69	122.31	118.90
59	4	275	C	C5-C6-N1	5.69	123.84	121.00
1	1	445	C	N3-C2-O2	-5.68	117.92	121.90
59	4	159	C	C6-N1-C2	-5.68	118.03	120.30
59	4	33	A	OP1-P-O3'	5.68	117.70	105.20
1	1	984	A	C8-N9-C4	-5.68	103.53	105.80
1	1	2771	C	N3-C2-O2	-5.67	117.93	121.90
2	2	1303	C	C2-N1-C1'	5.67	125.04	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	783	A	N3-C4-N9	5.67	131.94	127.40
1	1	1776	G	C8-N9-C1'	-5.67	119.63	127.00
59	4	8	A	OP1-P-O3'	5.67	117.66	105.20
1	1	2427	C	N3-C2-O2	-5.66	117.94	121.90
2	2	667	G	C8-N9-C1'	-5.66	119.64	127.00
59	4	161	U	C6-N1-C2	-5.66	117.60	121.00
59	4	189	C	C2-N1-C1'	5.66	125.03	118.80
2	2	778	G	N3-C4-C5	-5.66	125.77	128.60
59	4	199	C	C5-C6-N1	5.66	123.83	121.00
2	2	830	G	C5-C6-O6	5.66	131.99	128.60
1	1	2096	C	C6-N1-C2	-5.66	118.04	120.30
1	1	2870	C	C6-N1-C2	-5.66	118.04	120.30
2	2	1340	A	C6-N1-C2	5.66	121.99	118.60
2	2	667	G	C4-N9-C1'	5.65	133.85	126.50
1	1	584	C	C6-N1-C2	-5.65	118.04	120.30
1	1	2226	C	C5-C6-N1	5.65	123.83	121.00
2	2	34	C	C5-C6-N1	5.65	123.83	121.00
1	1	1774	C	C6-N1-C2	-5.65	118.04	120.30
59	4	33	A	P-O3'-C3'	5.65	126.48	119.70
1	1	783	A	C2-N3-C4	5.65	113.42	110.60
2	2	316	C	C2-N1-C1'	5.65	125.01	118.80
2	2	323	U	C5-C6-N1	5.65	125.52	122.70
1	1	1417	C	C6-N1-C2	-5.65	118.04	120.30
2	2	1253	G	C4-N9-C1'	5.65	133.84	126.50
60	7	37	C	C6-N1-C2	-5.65	118.04	120.30
2	2	213	G	C8-N9-C1'	-5.64	119.67	127.00
2	2	429	U	C6-N1-C1'	5.64	129.10	121.20
3	3	32	U	N3-C2-O2	-5.64	118.25	122.20
2	2	117	G	N3-C4-N9	5.64	129.38	126.00
6	8	8	U	N3-C2-O2	-5.64	118.25	122.20
2	2	612	C	C5-C6-N1	5.64	123.82	121.00
59	4	328	U	C5-C6-N1	5.64	125.52	122.70
1	1	192	C	C5-C6-N1	5.63	123.82	121.00
59	4	362	C	OP1-P-OP2	-5.63	111.15	119.60
1	1	669	G	N3-C4-C5	-5.63	125.78	128.60
1	1	1584	U	C2-N1-C1'	5.63	124.46	117.70
2	2	846	G	C4-N9-C1'	5.63	133.81	126.50
2	2	117	G	C4-N9-C1'	5.62	133.81	126.50
1	1	48	G	N3-C4-N9	5.62	129.37	126.00
59	4	212	U	P-O3'-C3'	5.62	126.45	119.70
59	4	185	A	C8-N9-C4	-5.62	103.55	105.80
59	4	260	C	N1-C2-O2	5.62	122.27	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	214	C	N1-C2-O2	5.62	122.27	118.90
60	7	33	U	N1-C2-O2	5.62	126.73	122.80
1	1	1905	C	P-O3'-C3'	5.62	126.44	119.70
1	1	2394	C	N1-C2-O2	5.61	122.27	118.90
3	3	74	U	N3-C2-O2	-5.61	118.27	122.20
1	1	422	A	C2-N3-C4	-5.61	107.80	110.60
59	4	206	A	C2-N3-C4	5.61	113.40	110.60
2	2	826	C	C2-N1-C1'	5.60	124.97	118.80
1	1	2507	C	C6-N1-C2	-5.60	118.06	120.30
59	4	235	C	C6-N1-C2	-5.60	118.06	120.30
59	4	148	U	N3-C2-O2	-5.60	118.28	122.20
59	4	2	G	N9-C4-C5	-5.60	103.16	105.40
59	4	17	U	C5-C6-N1	5.60	125.50	122.70
59	4	222	U	P-O3'-C3'	5.60	126.42	119.70
59	4	37	C	C5-C6-N1	5.59	123.80	121.00
59	4	308	U	O4'-C1'-N1	-5.59	103.72	108.20
2	2	1223	C	C6-N1-C2	-5.59	118.06	120.30
2	2	385	C	C6-N1-C2	-5.58	118.07	120.30
59	4	13	G	P-O3'-C3'	5.58	126.40	119.70
1	1	2430	A	C4-N9-C1'	5.58	136.35	126.30
3	3	28	C	C6-N1-C2	-5.58	118.07	120.30
1	1	955	PSU	OP2-P-O3'	5.58	117.48	105.20
59	4	181	G	C2-N3-C4	5.58	114.69	111.90
59	4	225	A	C4-N9-C1'	5.58	136.34	126.30
59	4	248	G	C5'-C4'-O4'	-5.58	102.41	109.10
59	4	191	A	O3'-P-O5'	5.58	114.60	104.00
1	1	281	C	C6-N1-C2	-5.58	118.07	120.30
59	4	17	U	P-O3'-C3'	5.57	126.39	119.70
1	1	1401	G	N3-C4-C5	5.57	131.39	128.60
2	2	1279	G	N7-C8-N9	5.57	115.89	113.10
2	2	339	C	C6-N1-C2	-5.57	118.07	120.30
2	2	584	G	C4-N9-C1'	5.57	133.74	126.50
2	2	588	G	N3-C4-C5	-5.57	125.82	128.60
2	2	923	A	N7-C8-N9	5.57	116.58	113.80
2	2	400	C	C5-C6-N1	5.56	123.78	121.00
1	1	1776	G	N3-C4-N9	5.56	129.34	126.00
2	2	443	C	C6-N1-C2	-5.56	118.08	120.30
60	7	70	A	O4'-C1'-N9	5.56	112.65	108.20
59	4	181	G	C8-N9-C1'	-5.56	119.77	127.00
1	1	31	C	N1-C2-O2	5.55	122.23	118.90
59	4	202	G	N7-C8-N9	5.55	115.88	113.10
60	7	38	A	C8-N9-C4	-5.55	103.58	105.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	2783	U	N1-C2-O2	5.55	126.69	122.80
2	2	1018	G	C6-C5-N7	-5.55	127.07	130.40
59	4	16	U	C5-C6-N1	5.55	125.47	122.70
1	1	1255	U	C5-C6-N1	5.54	125.47	122.70
2	2	328	C	C6-N1-C1'	-5.54	114.15	120.80
60	7	13	C	P-O3'-C3'	5.54	126.35	119.70
59	4	72	A	N3-C4-N9	5.54	131.83	127.40
60	7	66	U	C6-N1-C2	-5.54	117.68	121.00
1	1	2422	C	N1-C2-O2	5.54	122.22	118.90
1	1	2179	C	C2-N1-C1'	-5.53	112.71	118.80
1	1	2200	C	C6-N1-C2	-5.53	118.09	120.30
59	4	181	G	C8-N9-C4	-5.53	104.19	106.40
2	2	654	G	C4-C5-N7	5.53	113.01	110.80
59	4	221	U	C6-N1-C2	-5.52	117.69	121.00
2	2	1230	C	C6-N1-C1'	5.52	127.43	120.80
59	4	48	C	N3-C2-O2	-5.52	118.03	121.90
60	7	7	G	OP2-P-O3'	5.52	117.35	105.20
60	7	60	G	C4-N9-C1'	5.52	133.68	126.50
2	2	365	U	N1-C2-O2	5.52	126.67	122.80
2	2	654	G	N3-C4-N9	5.52	129.31	126.00
1	1	48	G	N3-C4-C5	-5.52	125.84	128.60
2	2	1109	C	C5-C6-N1	5.52	123.76	121.00
1	1	783	A	C8-N9-C1'	-5.52	117.77	127.70
1	1	2539	C	C5-C4-N4	5.52	124.06	120.20
2	2	620	C	N1-C2-O2	5.52	122.21	118.90
59	4	144	U	OP2-P-O3'	5.52	117.34	105.20
1	1	2332	C	C6-N1-C2	-5.51	118.09	120.30
59	4	16	U	OP2-P-O3'	5.51	117.33	105.20
60	7	76	C	C6-N1-C1'	-5.51	114.18	120.80
1	1	650	C	N1-C2-O2	5.51	122.21	118.90
1	1	1600	C	C6-N1-C2	-5.51	118.09	120.30
60	7	72	G	OP2-P-O3'	-5.51	93.07	105.20
59	4	52	G	C8-N9-C4	-5.51	104.20	106.40
1	1	1473	G	N3-C4-N9	5.50	129.30	126.00
2	2	1282	C	C2-N1-C1'	5.50	124.85	118.80
2	2	488	C	C5-C6-N1	5.50	123.75	121.00
1	1	723	C	N3-C2-O2	-5.50	118.05	121.90
59	4	30	C	C6-N1-C2	-5.50	118.10	120.30
1	1	1833	C	C6-N1-C2	-5.50	118.10	120.30
59	4	323	A	N9-C4-C5	5.50	108.00	105.80
60	7	36	A	C8-N9-C4	-5.50	103.60	105.80
2	2	632	U	C2-N1-C1'	5.49	124.29	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	337	C	O5'-P-OP2	-5.49	100.76	105.70
1	1	1187	G	C8-N9-C1'	-5.49	119.86	127.00
1	1	1816	C	C6-N1-C2	-5.49	118.10	120.30
1	1	1053	C	C6-N1-C2	-5.49	118.11	120.30
1	1	1187	G	C4-N9-C1'	5.49	133.63	126.50
1	1	1892	C	C6-N1-C2	-5.49	118.10	120.30
1	1	1914	C	C6-N1-C2	-5.49	118.11	120.30
2	2	1466	C	N1-C2-O2	5.49	122.19	118.90
59	4	111	U	C6-N1-C2	-5.49	117.71	121.00
59	4	289	U	C5-C6-N1	5.49	125.44	122.70
2	2	739	C	C5-C6-N1	5.49	123.74	121.00
50	r	70	ARG	NE-CZ-NH2	-5.49	117.56	120.30
59	4	263	G	OP2-P-O3'	5.49	117.27	105.20
2	2	43	C	C6-N1-C2	-5.48	118.11	120.30
60	7	73	C	O4'-C1'-N1	5.48	112.58	108.20
2	2	90	C	C6-N1-C2	-5.48	118.11	120.30
2	2	270	A	C5-C6-N1	5.48	120.44	117.70
1	1	1768	C	C5-C6-N1	5.47	123.74	121.00
2	2	428	G	C8-N9-C1'	5.47	134.11	127.00
2	2	237	G	C6-C5-N7	-5.47	127.12	130.40
2	2	1086	U	N1-C2-O2	5.47	126.63	122.80
3	3	42	C	N1-C2-O2	5.47	122.18	118.90
1	1	2244	U	C2-N1-C1'	5.47	124.26	117.70
1	1	2626	C	C5-C6-N1	5.47	123.73	121.00
2	2	1132	C	C6-N1-C2	-5.47	118.11	120.30
2	2	568	G	C8-N9-C1'	-5.46	119.90	127.00
59	4	362	C	C2-N1-C1'	-5.46	112.79	118.80
1	1	1343	G	C4-N9-C1'	5.46	133.60	126.50
6	8	66	U	C5-C6-N1	5.46	125.43	122.70
1	1	206	U	C5-C6-N1	5.46	125.43	122.70
2	2	153	C	C2-N1-C1'	5.46	124.80	118.80
2	2	770	C	C6-N1-C2	-5.46	118.12	120.30
2	2	1376	U	C5-C6-N1	5.46	125.43	122.70
60	7	8	U	N3-C2-O2	-5.45	118.38	122.20
1	1	1892	C	C5-C6-N1	5.45	123.73	121.00
1	1	157	C	C6-N1-C1'	5.45	127.34	120.80
1	1	716	A	C8-N9-C4	-5.45	103.62	105.80
2	2	963	G	N3-C4-C5	-5.44	125.88	128.60
1	1	1208	C	C6-N1-C2	-5.44	118.12	120.30
59	4	358	C	C2-N3-C4	5.44	122.62	119.90
59	4	182	U	N1-C2-O2	5.44	126.61	122.80
1	1	1776	G	C6-C5-N7	-5.44	127.14	130.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	830	G	N9-C4-C5	5.44	107.58	105.40
2	2	1237	C	C5-C6-N1	5.44	123.72	121.00
1	1	1301	A	C4-N9-C1'	5.44	136.09	126.30
59	4	30	C	N3-C2-O2	-5.44	118.09	121.90
2	2	5	U	N1-C2-O2	5.44	126.61	122.80
1	1	1748	C	C6-N1-C2	-5.43	118.13	120.30
1	1	2525	G	N9-C4-C5	5.43	107.57	105.40
2	2	112	G	C4-N9-C1'	5.43	133.56	126.50
2	2	210	C	C6-N1-C1'	-5.43	114.28	120.80
2	2	568	G	N3-C4-C5	-5.43	125.88	128.60
59	4	126	C	C6-N1-C2	-5.43	118.13	120.30
59	4	325	G	N3-C4-C5	-5.43	125.88	128.60
2	2	514	C	C5-C6-N1	5.43	123.72	121.00
2	2	545	C	C5-C6-N1	5.43	123.72	121.00
59	4	4	G	O4'-C1'-N9	5.43	112.55	108.20
2	2	760	G	C5-C6-O6	-5.43	125.34	128.60
59	4	239	A	O3'-P-O5'	5.43	114.31	104.00
59	4	246	U	N1-C2-O2	5.43	126.60	122.80
59	4	286	A	O4'-C1'-N9	5.43	112.54	108.20
2	2	971	G	O4'-C1'-N9	5.43	112.54	108.20
1	1	1313	U	C5-C6-N1	5.43	125.41	122.70
2	2	1086	U	N3-C2-O2	-5.43	118.40	122.20
1	1	1379	U	C6-N1-C2	-5.42	117.75	121.00
3	3	68	C	C2-N1-C1'	5.42	124.77	118.80
59	4	44	C	O3'-P-O5'	5.42	114.31	104.00
2	2	91	U	N1-C2-O2	5.42	126.59	122.80
3	3	70	C	C5-C6-N1	5.42	123.71	121.00
59	4	235	C	C5-C6-N1	5.42	123.71	121.00
1	1	1324	G	O4'-C1'-N9	5.42	112.53	108.20
2	2	1149	C	C6-N1-C2	-5.42	118.13	120.30
59	4	285	A	P-O3'-C3'	5.42	126.20	119.70
1	1	491	G	N3-C4-C5	-5.42	125.89	128.60
1	1	2593	U	C6-N1-C2	-5.42	117.75	121.00
59	4	203	U	C6-N1-C2	-5.42	117.75	121.00
1	1	2582	G	C4-N9-C1'	5.42	133.54	126.50
59	4	152	C	C5-C6-N1	5.41	123.71	121.00
2	2	578	C	C5-C6-N1	5.41	123.71	121.00
1	1	1109	C	C5-C6-N1	5.41	123.70	121.00
1	1	1541	C	N1-C2-O2	5.41	122.15	118.90
1	1	2025	C	C6-N1-C2	-5.41	118.14	120.30
1	1	2515	C	C6-N1-C2	-5.41	118.14	120.30
2	2	528	C	C5-C6-N1	5.41	123.70	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	16	U	C6-N1-C2	-5.41	117.76	121.00
1	1	1596	A	C4-N9-C1'	5.40	136.03	126.30
2	2	18	C	C6-N1-C1'	5.40	127.28	120.80
60	7	8	U	N1-C2-O2	5.40	126.58	122.80
1	1	317	G	N3-C4-N9	5.40	129.24	126.00
1	1	2656	U	C6-N1-C2	-5.40	117.76	121.00
59	4	48	C	C5-C6-N1	5.40	123.70	121.00
3	3	77	U	N3-C2-O2	-5.39	118.42	122.20
59	4	353	C	C6-N1-C2	-5.39	118.14	120.30
1	1	1804	C	C6-N1-C2	-5.39	118.14	120.30
1	1	343	C	C6-N1-C2	-5.39	118.14	120.30
1	1	1644	C	C6-N1-C2	-5.39	118.14	120.30
2	2	528	C	C2-N1-C1'	5.39	124.73	118.80
1	1	2114	A	C2-N3-C4	5.39	113.29	110.60
1	1	2552	OMU	P-O3'-C3'	5.39	126.17	119.70
59	4	8	A	P-O3'-C3'	5.39	126.17	119.70
59	4	262	U	C6-N1-C1'	-5.39	113.66	121.20
2	2	760	G	C4-C5-N7	5.39	112.95	110.80
59	4	227	C	N3-C2-O2	-5.39	118.13	121.90
1	1	151	C	C6-N1-C2	-5.38	118.15	120.30
1	1	1102	C	C6-N1-C1'	-5.38	114.34	120.80
1	1	2196	C	N3-C2-O2	-5.38	118.13	121.90
1	1	2578	G	N3-C4-N9	-5.38	122.77	126.00
2	2	584	G	C4-C5-N7	5.38	112.95	110.80
60	7	1	G	C2-N3-C4	5.38	114.59	111.90
2	2	175	C	N1-C2-O2	-5.38	115.67	118.90
2	2	108	G	C5-N7-C8	-5.38	101.61	104.30
1	1	304	U	N3-C2-O2	-5.38	118.43	122.20
59	4	7	G	N7-C8-N9	5.38	115.79	113.10
59	4	172	U	C6-N1-C2	-5.38	117.77	121.00
7	9	1	A	C8-N9-C4	-5.38	103.65	105.80
2	2	475	C	C5-C6-N1	5.37	123.69	121.00
59	4	30	C	N1-C2-O2	5.37	122.12	118.90
1	1	2765	A	C4-N9-C1'	5.37	135.96	126.30
59	4	353	C	C5-C6-N1	5.37	123.69	121.00
1	1	48	G	C4-N9-C1'	5.37	133.48	126.50
1	1	2078	C	N1-C2-O2	5.37	122.12	118.90
59	4	202	G	C4-N9-C1'	5.37	133.48	126.50
2	2	637	C	C5-C6-N1	5.36	123.68	121.00
59	4	342	U	C6-N1-C2	-5.36	117.78	121.00
1	1	2827	C	N3-C2-O2	-5.36	118.15	121.90
1	1	1965	C	C6-N1-C2	-5.36	118.16	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	771	G	N9-C4-C5	5.36	107.54	105.40
2	2	1334	G	C8-N9-C1'	-5.36	120.03	127.00
59	4	299	C	C2-N3-C4	5.36	122.58	119.90
1	1	830	G	O4'-C1'-N9	-5.35	103.92	108.20
2	2	1239	A	C8-N9-C4	-5.35	103.66	105.80
59	4	299	C	P-O3'-C3'	5.35	126.12	119.70
1	1	43	G	N3-C4-N9	5.35	129.21	126.00
2	2	920	U	C2-N1-C1'	-5.35	111.28	117.70
2	2	584	G	N7-C8-N9	5.35	115.77	113.10
2	2	644	U	C6-N1-C2	-5.34	117.79	121.00
2	2	1132	C	C2-N1-C1'	5.34	124.68	118.80
2	2	1384	C	N1-C2-O2	5.34	122.11	118.90
59	4	329	U	N3-C2-O2	-5.34	118.46	122.20
59	4	138	C	P-O5'-C5'	5.34	129.45	120.90
2	2	804	U	N3-C2-O2	-5.34	118.46	122.20
1	1	1060	U	C2-N1-C1'	5.34	124.11	117.70
1	1	1198	U	C2-N1-C1'	5.34	124.11	117.70
1	1	1161	C	C6-N1-C2	-5.33	118.17	120.30
2	2	563	A	O4'-C1'-N9	5.33	112.47	108.20
2	2	365	U	C6-N1-C1'	-5.33	113.74	121.20
2	2	953	G	C4-N9-C1'	5.33	133.43	126.50
59	4	308	U	C6-N1-C1'	-5.33	113.74	121.20
2	2	543	U	C5-C6-N1	5.33	125.36	122.70
59	4	261	G	OP1-P-O3'	5.33	116.92	105.20
59	4	274	G	O4'-C1'-N9	5.33	112.46	108.20
60	7	18	G	OP2-P-O3'	5.33	116.92	105.20
2	2	536	C	C6-N1-C2	-5.33	118.17	120.30
2	2	73	C	C6-N1-C2	-5.32	118.17	120.30
2	2	775	G	N7-C8-N9	5.32	115.76	113.10
2	2	1435	G	N3-C4-C5	-5.32	125.94	128.60
59	4	181	G	O5'-C5'-C4'	5.32	121.81	111.70
2	2	439	U	C2-N1-C1'	5.32	124.08	117.70
1	1	2179	C	N3-C2-O2	-5.32	118.18	121.90
1	1	2783	U	N3-C2-O2	-5.32	118.48	122.20
59	4	130	C	C5-C6-N1	5.32	123.66	121.00
59	4	245	C	C2-N3-C4	5.32	122.56	119.90
59	4	241	C	N1-C2-O2	5.31	122.09	118.90
1	1	1330	C	N1-C2-O2	5.31	122.09	118.90
1	1	2179	C	C6-N1-C1'	5.31	127.17	120.80
2	2	12	U	C6-N1-C1'	5.31	128.64	121.20
7	9	7	G	N3-C4-C5	-5.31	125.94	128.60
59	4	53	G	OP1-P-O3'	5.31	116.89	105.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	388	G	O4'-C1'-N9	-5.31	103.95	108.20
1	1	2138	G	C6-C5-N7	-5.31	127.22	130.40
2	2	858	G	C5-N7-C8	-5.31	101.64	104.30
2	2	894	G	C6-C5-N7	-5.31	127.21	130.40
60	7	62	C	C6-N1-C2	-5.31	118.18	120.30
59	4	292	A	P-O3'-C3'	5.31	126.07	119.70
2	2	742	G	C8-N9-C4	-5.30	104.28	106.40
59	4	69	A	O4'-C1'-N9	-5.30	103.96	108.20
1	1	404	A	OP2-P-O3'	5.30	116.87	105.20
59	4	198	U	N1-C1'-C2'	5.30	120.89	114.00
1	1	1605	C	N1-C2-O2	5.30	122.08	118.90
1	1	2196	C	C2-N1-C1'	5.30	124.63	118.80
2	2	429	U	N1-C2-N3	5.30	118.08	114.90
2	2	475	C	C6-N1-C2	-5.30	118.18	120.30
59	4	27	U	C6-N1-C2	-5.30	117.82	121.00
59	4	325	G	C2-N3-C4	5.30	114.55	111.90
2	2	243	A	O4'-C1'-N9	-5.29	103.96	108.20
60	7	10	G	C8-N9-C4	-5.29	104.28	106.40
1	1	323	C	N1-C2-O2	5.29	122.08	118.90
1	1	2078	C	N3-C2-O2	-5.29	118.19	121.90
59	4	75	C	N3-C2-O2	-5.29	118.19	121.90
1	1	2106	U	N1-C2-O2	5.29	126.50	122.80
59	4	21	C	C5-C6-N1	5.29	123.64	121.00
1	1	2339	C	C2-N1-C1'	5.29	124.61	118.80
2	2	1069	C	C6-N1-C2	-5.29	118.19	120.30
59	4	151	C	O4'-C1'-N1	5.29	112.43	108.20
1	1	491	G	N3-C4-N9	5.28	129.17	126.00
2	2	108	G	C4-N9-C1'	5.28	133.37	126.50
59	4	141	C	N3-C2-O2	-5.28	118.20	121.90
1	1	2244	U	C6-N1-C2	-5.28	117.83	121.00
2	2	1504	G	N3-C4-N9	5.28	129.17	126.00
59	4	181	G	N7-C8-N9	5.28	115.74	113.10
1	1	491	G	C8-N9-C1'	-5.28	120.14	127.00
1	1	736	C	C5-C6-N1	5.27	123.64	121.00
2	2	1529	G	N3-C4-N9	5.27	129.16	126.00
1	1	388	G	O5'-P-OP2	5.27	117.02	110.70
59	4	188	C	O3'-P-O5'	5.27	114.01	104.00
1	1	2811	G	N3-C2-N2	-5.26	116.22	119.90
2	2	869	G	C5-N7-C8	-5.26	101.67	104.30
1	1	885	C	C2-N1-C1'	5.26	124.59	118.80
1	1	1943	U	N1-C2-O2	5.26	126.48	122.80
2	2	1204	A	C2-N3-C4	-5.26	107.97	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	267	G	P-O5'-C5'	5.26	129.32	120.90
1	1	385	C	C5-C6-N1	5.26	123.63	121.00
1	1	992	C	C2-N1-C1'	5.26	124.59	118.80
1	1	335	C	C2-N1-C1'	5.26	124.58	118.80
1	1	2465	C	C6-N1-C1'	-5.26	114.49	120.80
2	2	16	A	N3-C4-N9	-5.25	123.20	127.40
2	2	903	G	C2-N3-C4	-5.25	109.27	111.90
60	7	63	C	O4'-C1'-N1	5.25	112.40	108.20
2	2	800	G	C6-C5-N7	-5.25	127.25	130.40
2	2	864	A	N7-C8-N9	5.25	116.43	113.80
2	2	1114	C	C6-N1-C2	-5.25	118.20	120.30
59	4	140	U	O4'-C1'-N1	5.25	112.40	108.20
1	1	1301	A	C2-N3-C4	5.25	113.22	110.60
2	2	1121	U	N1-C2-O2	5.25	126.47	122.80
2	2	308	C	C6-N1-C2	-5.25	118.20	120.30
1	1	1844	C	C5-C6-N1	5.25	123.62	121.00
1	1	2772	C	C2-N1-C1'	5.25	124.57	118.80
59	4	75	C	N1-C2-O2	5.25	122.05	118.90
2	2	439	U	N3-C2-O2	-5.24	118.53	122.20
2	2	949	A	C6-N1-C2	-5.24	115.45	118.60
2	2	953	G	C6-C5-N7	-5.24	127.26	130.40
59	4	245	C	C4'-C3'-O3'	5.24	123.48	113.00
59	4	324	G	C2-N3-C4	5.24	114.52	111.90
1	1	737	C	C6-N1-C2	-5.24	118.20	120.30
2	2	491	G	N3-C4-C5	-5.24	125.98	128.60
59	4	209	C	N3-C2-O2	-5.24	118.23	121.90
2	2	436	C	C6-N1-C2	-5.24	118.20	120.30
1	1	417	C	C6-N1-C2	-5.23	118.21	120.30
1	1	1440	U	N3-C2-O2	-5.23	118.54	122.20
1	1	1255	U	C2-N1-C1'	5.23	123.98	117.70
2	2	4	U	N3-C2-O2	-5.23	118.54	122.20
1	1	807	U	N1-C2-O2	5.23	126.46	122.80
60	7	31	C	C6-N1-C2	-5.23	118.21	120.30
1	1	2512	C	C6-N1-C2	-5.23	118.21	120.30
2	2	822	U	C6-N1-C2	-5.23	117.86	121.00
1	1	304	U	C2-N1-C1'	5.22	123.97	117.70
1	1	955	PSU	P-O3'-C3'	5.22	125.97	119.70
60	7	1	G	C6-C5-N7	-5.22	127.27	130.40
1	1	650	C	C6-N1-C2	-5.22	118.21	120.30
1	1	2393	U	N1-C2-O2	5.22	126.46	122.80
1	1	1980	G	N3-C4-C5	-5.22	125.99	128.60
1	1	2580	PSU	P-O3'-C3'	5.22	125.96	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1159	U	C6-N1-C2	-5.22	117.87	121.00
1	1	154	U	N1-C2-O2	5.22	126.45	122.80
59	4	63	C	O3'-P-O5'	5.21	113.91	104.00
2	2	506	G	N9-C4-C5	-5.21	103.32	105.40
1	1	710	U	N1-C2-O2	5.21	126.44	122.80
2	2	219	U	C6-N1-C2	-5.21	117.88	121.00
2	2	809	G	C4-N9-C1'	5.21	133.27	126.50
59	4	64	C	C5-C6-N1	5.21	123.60	121.00
2	2	992	U	C6-N1-C2	-5.20	117.88	121.00
59	4	13	G	N3-C4-C5	5.20	131.20	128.60
59	4	289	U	C6-N1-C2	-5.20	117.88	121.00
7	9	2	U	O4'-C1'-N1	5.20	112.36	108.20
2	2	1132	C	N3-C2-O2	-5.20	118.26	121.90
59	4	209	C	N1-C2-O2	5.20	122.02	118.90
1	1	2880	C	C2-N1-C1'	5.20	124.52	118.80
59	4	63	C	C5-C6-N1	5.20	123.60	121.00
2	2	95	C	N3-C2-O2	-5.20	118.26	121.90
2	2	492	C	C6-N1-C2	-5.20	118.22	120.30
2	2	1409	C	C6-N1-C1'	5.19	127.03	120.80
6	8	6	C	N3-C2-O2	-5.19	118.26	121.90
2	2	16	A	C2-N3-C4	-5.19	108.00	110.60
2	2	761	G	N9-C4-C5	-5.19	103.32	105.40
1	1	43	G	C4-N9-C1'	5.19	133.25	126.50
1	1	1188	U	N3-C2-O2	-5.19	118.57	122.20
1	1	2570	G	C2-N3-C4	-5.19	109.31	111.90
59	4	41	G	N1-C6-O6	5.19	123.01	119.90
59	4	236	U	C5-C6-N1	5.18	125.29	122.70
1	1	1398	C	C2-N1-C1'	5.18	124.50	118.80
60	7	37	C	C5-C6-N1	5.18	123.59	121.00
1	1	2243	U	C5-C6-N1	5.18	125.29	122.70
1	1	2605	PSU	OP2-P-O3'	5.18	116.59	105.20
2	2	760	G	C6-C5-N7	-5.18	127.29	130.40
2	2	1322	C	C2-N1-C1'	5.18	124.49	118.80
1	1	984	A	N7-C8-N9	5.17	116.39	113.80
1	1	1564	C	C6-N1-C2	-5.17	118.23	120.30
1	1	1595	C	N3-C2-O2	-5.17	118.28	121.90
2	2	620	C	C6-N1-C2	-5.17	118.23	120.30
60	7	67	C	C2-N3-C4	5.17	122.49	119.90
2	2	22	G	C6-C5-N7	-5.17	127.30	130.40
1	1	624	C	C5-C6-N1	5.17	123.58	121.00
2	2	1376	U	C6-N1-C2	-5.17	117.90	121.00
59	4	45	A	C5-N7-C8	-5.17	101.32	103.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	120	U	C6-N1-C2	-5.17	117.90	121.00
59	4	112	U	C6-N1-C2	-5.16	117.90	121.00
59	4	291	A	C8-N9-C4	-5.16	103.73	105.80
1	1	2025	C	C5-C6-N1	5.16	123.58	121.00
2	2	804	U	N1-C2-O2	5.16	126.41	122.80
2	2	826	C	C5-C6-N1	5.16	123.58	121.00
59	4	358	C	N3-C4-N4	5.16	121.61	118.00
59	4	241	C	N3-C2-O2	-5.16	118.29	121.90
59	4	357	U	C6-N1-C1'	5.16	128.42	121.20
1	1	283	G	O4'-C1'-N9	5.16	112.32	108.20
1	1	2751	G	N1-C6-O6	-5.16	116.81	119.90
2	2	774	G	C8-N9-C1'	-5.16	120.30	127.00
1	1	164	C	C6-N1-C2	-5.15	118.24	120.30
1	1	1596	A	C8-N9-C1'	-5.15	118.42	127.70
1	1	2849	U	N3-C2-O2	-5.15	118.59	122.20
59	4	50	G	N3-C4-N9	5.15	129.09	126.00
1	1	139	U	C2-N1-C1'	5.15	123.88	117.70
1	1	268	C	C6-N1-C2	-5.15	118.24	120.30
1	1	2715	C	C6-N1-C2	-5.15	118.24	120.30
2	2	166	U	N3-C2-O2	-5.15	118.59	122.20
2	2	376	G	C6-C5-N7	-5.15	127.31	130.40
2	2	1253	G	C8-N9-C1'	-5.15	120.31	127.00
1	1	1163	G	C4-N9-C1'	5.15	133.19	126.50
2	2	1206	G	C6-C5-N7	-5.15	127.31	130.40
2	2	316	C	C5-C6-N1	5.15	123.57	121.00
59	4	56	C	C5-C6-N1	5.14	123.57	121.00
59	4	236	U	N3-C2-O2	-5.14	118.60	122.20
1	1	102	U	C2-N1-C1'	5.14	123.87	117.70
1	1	1092	C	N3-C2-O2	-5.14	118.30	121.90
1	1	1555	G	C4-N9-C1'	5.14	133.19	126.50
59	4	18	C	C6-N1-C1'	5.14	126.97	120.80
2	2	334	C	C4-C5-C6	-5.14	114.83	117.40
59	4	16	U	C2-N1-C1'	5.14	123.87	117.70
1	1	2586	U	N1-C2-O2	5.14	126.40	122.80
2	2	177	G	N3-C4-N9	5.14	129.08	126.00
2	2	632	U	N3-C2-O2	-5.14	118.60	122.20
59	4	209	C	P-O5'-C5'	5.14	129.12	120.90
1	1	915	C	C2-N1-C1'	5.14	124.45	118.80
1	1	915	C	N1-C2-O2	5.14	121.98	118.90
59	4	19	G	P-O3'-C3'	5.14	125.87	119.70
59	4	72	A	N3-C4-C5	-5.14	123.20	126.80
1	1	1945	G	C4-N9-C1'	5.14	133.18	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	6	U	O4'-C1'-N1	5.14	112.31	108.20
60	7	73	C	P-O5'-C5'	5.14	129.12	120.90
1	1	2586	U	C2-N1-C1'	5.13	123.86	117.70
1	1	499	U	C5-C6-N1	5.13	125.27	122.70
2	2	61	G	C4-C5-N7	5.13	112.85	110.80
59	4	270	C	N3-C2-O2	-5.13	118.31	121.90
13	G	117	LEU	CA-CB-CG	5.13	127.10	115.30
1	1	1840	G	N9-C4-C5	-5.13	103.35	105.40
1	1	1967	C	N1-C2-O2	5.13	121.98	118.90
1	1	1255	U	N3-C2-O2	-5.13	118.61	122.20
1	1	1771	C	C6-N1-C2	-5.12	118.25	120.30
2	2	883	C	C6-N1-C2	-5.12	118.25	120.30
1	1	2652	C	C6-N1-C2	-5.12	118.25	120.30
2	2	628	G	N1-C2-N3	5.12	126.97	123.90
2	2	1401	G	C4-N9-C1'	5.12	133.16	126.50
1	1	744	U	C5-C6-N1	5.12	125.26	122.70
1	1	1196	C	C5-C6-N1	5.12	123.56	121.00
2	2	36	C	C6-N1-C2	-5.12	118.25	120.30
2	2	1364	U	C2-N1-C1'	5.12	123.84	117.70
1	1	1930	G	O4'-C1'-N9	5.12	112.30	108.20
60	7	28	C	C2-N3-C4	5.12	122.46	119.90
1	1	1473	G	N3-C4-C5	-5.12	126.04	128.60
1	1	1255	U	C6-N1-C2	-5.12	117.93	121.00
2	2	122	G	C4-N9-C1'	5.12	133.15	126.50
2	2	365	U	C5-C6-N1	5.12	125.26	122.70
2	2	1239	A	N7-C8-N9	5.12	116.36	113.80
1	1	2057	G	C5-C6-O6	5.11	131.67	128.60
1	1	769	U	C5-C4-O4	-5.11	122.83	125.90
1	1	807	U	C2-N1-C1'	5.11	123.83	117.70
2	2	1159	U	C5-C6-N1	5.11	125.25	122.70
59	4	54	G	C2-N3-C4	5.11	114.45	111.90
59	4	55	G	O5'-P-OP2	-5.11	101.10	105.70
59	4	236	U	N1-C2-O2	5.11	126.38	122.80
1	1	2214	C	N1-C2-O2	5.11	121.97	118.90
59	4	342	U	C5-C4-O4	-5.11	122.84	125.90
1	1	2462	C	C6-N1-C2	-5.10	118.26	120.30
2	2	691	G	C6-C5-N7	-5.10	127.34	130.40
59	4	297	G	N7-C8-N9	5.10	115.65	113.10
1	1	245	G	C8-N9-C1'	-5.10	120.37	127.00
1	1	961	C	C6-N1-C2	-5.10	118.26	120.30
1	1	2404	U	N1-C2-O2	5.10	126.37	122.80
1	1	2457	PSU	P-O3'-C3'	5.10	125.82	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	203	G	N3-C4-N9	5.10	129.06	126.00
2	2	779	C	C2-N1-C1'	5.10	124.41	118.80
2	2	1043	G	C4-N9-C1'	5.10	133.13	126.50
1	1	1343	G	C8-N9-C1'	-5.10	120.38	127.00
1	1	1927	A	C5-N7-C8	-5.09	101.35	103.90
59	4	27	U	C5-C6-N1	5.09	125.25	122.70
1	1	129	C	N1-C2-O2	5.09	121.96	118.90
2	2	1344	C	C5-C6-N1	5.09	123.55	121.00
2	2	1504	G	N9-C4-C5	-5.09	103.36	105.40
2	2	6	G	C4-C5-N7	5.09	112.84	110.80
59	4	13	G	C8-N9-C4	-5.09	104.37	106.40
2	2	142	G	N3-C4-C5	-5.08	126.06	128.60
59	4	172	U	C5-C6-N1	5.08	125.24	122.70
1	1	1840	G	C6-C5-N7	-5.08	127.35	130.40
2	2	95	C	C6-N1-C1'	-5.08	114.70	120.80
2	2	210	C	C6-N1-C2	-5.08	118.27	120.30
59	4	118	C	C6-N1-C2	-5.08	118.27	120.30
2	2	18	C	C5-C6-N1	5.08	123.54	121.00
1	1	2585	U	C2-N1-C1'	5.08	123.79	117.70
2	2	292	G	N3-C4-C5	-5.08	126.06	128.60
1	1	2430	A	C8-N9-C1'	-5.08	118.56	127.70
1	1	1314	C	N3-C2-O2	-5.07	118.35	121.90
1	1	1343	G	N3-C4-N9	5.07	129.04	126.00
1	1	1696	G	C4-N9-C1'	5.07	133.09	126.50
59	4	121	A	P-O3'-C3'	5.07	125.78	119.70
59	4	265	C	O4'-C1'-N1	5.07	112.26	108.20
2	2	881	G	C8-N9-C4	-5.07	104.37	106.40
1	1	1179	G	C2-N3-C4	5.07	114.43	111.90
2	2	527	7MG	P-O3'-C3'	5.07	125.78	119.70
2	2	545	C	C6-N1-C2	-5.07	118.27	120.30
2	2	1043	G	C8-N9-C1'	-5.07	120.41	127.00
60	7	53	G	C8-N9-C4	-5.07	104.37	106.40
1	1	1507	C	C5-C6-N1	5.07	123.53	121.00
59	4	119	U	O4'-C1'-N1	5.07	112.25	108.20
2	2	1438	G	C8-N9-C1'	-5.06	120.42	127.00
1	1	2138	G	C4-C5-N7	5.06	112.83	110.80
2	2	754	C	C2-N1-C1'	5.06	124.37	118.80
2	2	1358	U	P-O3'-C3'	5.06	125.78	119.70
2	2	1534	A	C4-N9-C1'	5.06	135.41	126.30
59	4	290	A	O3'-P-O5'	5.06	113.62	104.00
1	1	1779	U	O4'-C1'-N1	5.06	112.25	108.20
2	2	112	G	N3-C4-N9	5.06	129.04	126.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	4	197	A	P-O3'-C3'	5.06	125.77	119.70
1	1	422	A	N1-C2-N3	5.06	131.83	129.30
1	1	484	C	C5-C6-N1	5.06	123.53	121.00
1	1	2628	C	C6-N1-C2	-5.06	118.28	120.30
2	2	905	U	N3-C2-O2	-5.06	118.66	122.20
4	5	65	LEU	CA-CB-CG	5.06	126.93	115.30
2	2	763	G	C4-C5-N7	5.06	112.82	110.80
59	4	18	C	O4'-C1'-N1	5.06	112.25	108.20
1	1	840	C	N1-C2-O2	5.05	121.93	118.90
60	7	1	G	C4-C5-N7	5.05	112.82	110.80
2	2	760	G	C6-N1-C2	-5.05	122.07	125.10
2	2	778	G	N3-C4-N9	5.05	129.03	126.00
2	2	1082	A	N3-C4-N9	-5.05	123.36	127.40
1	1	43	G	N3-C4-C5	-5.05	126.08	128.60
2	2	1199	U	N1-C2-O2	5.05	126.33	122.80
59	4	221	U	C5-C6-N1	5.05	125.22	122.70
2	2	1466	C	C6-N1-C2	-5.05	118.28	120.30
60	7	39	U	C6-N1-C2	-5.05	117.97	121.00
59	4	263	G	N7-C8-N9	5.04	115.62	113.10
1	1	1688	U	N3-C2-O2	-5.04	118.67	122.20
1	1	2636	C	N1-C2-O2	5.04	121.92	118.90
2	2	1199	U	C5-C6-N1	5.04	125.22	122.70
2	2	95	C	C6-N1-C2	-5.04	118.28	120.30
60	7	28	C	N1-C2-O2	5.04	121.92	118.90
1	1	867	C	N1-C2-O2	5.04	121.92	118.90
2	2	774	G	C4-C5-N7	5.04	112.82	110.80
11	E	174	ASP	CB-CG-OD1	5.04	122.83	118.30
59	4	130	C	C6-N1-C2	-5.04	118.28	120.30
2	2	769	G	C6-C5-N7	-5.04	127.38	130.40
1	1	1663	G	OP2-P-O3'	5.04	116.28	105.20
1	1	2704	C	N1-C2-O2	5.04	121.92	118.90
2	2	1069	C	C6-N1-C1'	5.04	126.84	120.80
59	4	283	C	O4'-C1'-N1	5.03	112.23	108.20
1	1	2174	C	N3-C2-O2	-5.03	118.38	121.90
2	2	392	C	C5-C6-N1	5.03	123.52	121.00
3	3	26	C	C2-N1-C1'	5.03	124.33	118.80
2	2	657	U	N3-C2-O2	-5.03	118.68	122.20
1	1	710	U	C2-N1-C1'	5.03	123.73	117.70
1	1	1571	A	C8-N9-C4	-5.03	103.79	105.80
2	2	730	G	N3-C4-C5	-5.03	126.09	128.60
2	2	457	G	C6-C5-N7	-5.03	127.39	130.40
2	2	949	A	C5-C6-N1	5.03	120.21	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1499	A	C2-N3-C4	5.03	113.11	110.60
1	1	140	C	N1-C2-O2	5.02	121.91	118.90
1	1	1675	C	C6-N1-C2	-5.02	118.29	120.30
1	1	206	U	C6-N1-C2	-5.02	117.99	121.00
59	4	130	C	OP2-P-O3'	5.02	116.24	105.20
59	4	142	U	C5-C6-N1	5.02	125.21	122.70
60	7	65	C	N1-C2-O2	5.02	121.91	118.90
1	1	1052	C	C5-C6-N1	5.01	123.51	121.00
1	1	1473	G	C4-N9-C1'	5.01	133.02	126.50
2	2	1028	C	N1-C2-O2	5.01	121.91	118.90
1	1	678	C	C5-C6-N1	5.01	123.50	121.00
59	4	358	C	C4-C5-C6	-5.01	114.89	117.40
1	1	495	G	C5-C6-O6	5.01	131.61	128.60
1	1	692	C	C6-N1-C2	-5.01	118.30	120.30
1	1	1775	U	C5-C4-O4	-5.01	122.90	125.90
59	4	265	C	C6-N1-C1'	5.01	126.81	120.80
59	4	21	C	O5'-P-OP1	-5.00	101.20	105.70
60	7	27	A	C4-N9-C1'	5.00	135.31	126.30
1	1	245	G	C4-N9-C1'	5.00	133.00	126.50
59	4	198	U	N3-C2-O2	-5.00	118.70	122.20
1	1	317	G	C4-N9-C1'	5.00	133.00	126.50
1	1	1595	C	N1-C2-O2	5.00	121.90	118.90
2	2	940	C	C6-N1-C2	-5.00	118.30	120.30

All (39) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	1	745	1MG	C1',C2'
1	1	746	PSU	C4',C3'
1	1	747	5MU	C4',C2'
1	1	955	PSU	C4',C3'
1	1	1618	6MZ	C2',C3'
1	1	1911	PSU	C4',C3'
1	1	1915	3TD	C3'
1	1	1917	PSU	C4',C3'
1	1	1939	5MU	C4',C2'
1	1	2030	6MZ	C2',C3'
1	1	2069	G7M	C2'
1	1	2251	OMG	C2'
1	1	2457	PSU	C4',C3'
1	1	2498	OMC	C4'
1	1	2503	2MA	C2',C3'

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Mol	Chain	Res	Type	Atom
1	1	2504	PSU	C4',C3'
1	1	2552	OMU	C2',C3'
1	1	2580	PSU	C4',C3'
1	1	2605	PSU	C4',C3'
2	2	516	PSU	C4',C3'
2	2	527	7MG	C3'
2	2	1402	4OC	C1',C3'

All (11) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
14	H	67	THR	Peptide
15	I	20	SER	Peptide
17	K	93	GLN	Peptide
23	Q	5	LYS	Peptide
30	X	20	HIS	Peptide
37	e	31	HIS	Peptide
37	e	51	SER	Peptide
39	g	57	LEU	Peptide
40	h	75	ILE	Peptide
40	h	76	VAL	Peptide
53	u	1	MET	Peptide

## 5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 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
4	5	143/145 (99%)	112 (78%)	27 (19%)	4 (3%)	<b>5</b> 34

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	6	26/28 (93%)	17 (65%)	9 (35%)	0	100	100
8	B	268/270 (99%)	243 (91%)	25 (9%)	0	100	100
9	C	207/209 (99%)	194 (94%)	13 (6%)	0	100	100
10	D	199/201 (99%)	176 (88%)	23 (12%)	0	100	100
11	E	175/177 (99%)	157 (90%)	18 (10%)	0	100	100
12	F	173/175 (99%)	151 (87%)	22 (13%)	0	100	100
13	G	147/149 (99%)	133 (90%)	14 (10%)	0	100	100
14	H	128/130 (98%)	103 (80%)	25 (20%)	0	100	100
15	I	133/135 (98%)	108 (81%)	25 (19%)	0	100	100
16	J	139/141 (99%)	129 (93%)	10 (7%)	0	100	100
17	K	121/123 (98%)	105 (87%)	16 (13%)	0	100	100
18	L	142/144 (99%)	124 (87%)	18 (13%)	0	100	100
19	M	134/136 (98%)	128 (96%)	6 (4%)	0	100	100
20	N	117/119 (98%)	102 (87%)	15 (13%)	0	100	100
21	O	113/115 (98%)	103 (91%)	10 (9%)	0	100	100
22	P	112/114 (98%)	102 (91%)	10 (9%)	0	100	100
23	Q	115/117 (98%)	109 (95%)	6 (5%)	0	100	100
24	R	101/103 (98%)	90 (89%)	11 (11%)	0	100	100
25	S	106/108 (98%)	97 (92%)	9 (8%)	0	100	100
26	T	92/94 (98%)	85 (92%)	7 (8%)	0	100	100
27	U	101/103 (98%)	91 (90%)	10 (10%)	0	100	100
28	V	92/94 (98%)	86 (94%)	6 (6%)	0	100	100
29	W	74/76 (97%)	65 (88%)	9 (12%)	0	100	100
30	X	75/77 (97%)	66 (88%)	9 (12%)	0	100	100
31	Y	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
32	Z	54/56 (96%)	51 (94%)	3 (6%)	0	100	100
33	a	64/66 (97%)	57 (89%)	7 (11%)	0	100	100
34	b	52/54 (96%)	44 (85%)	8 (15%)	0	100	100
35	c	50/52 (96%)	45 (90%)	5 (10%)	0	100	100
36	d	44/46 (96%)	40 (91%)	4 (9%)	0	100	100
37	e	62/64 (97%)	53 (86%)	8 (13%)	1 (2%)	9	44

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
38	f	35/37 (95%)	35 (100%)	0	0	100	100
39	g	223/225 (99%)	198 (89%)	25 (11%)	0	100	100
40	h	206/208 (99%)	188 (91%)	17 (8%)	1 (0%)	29	67
41	i	203/205 (99%)	190 (94%)	13 (6%)	0	100	100
42	j	154/156 (99%)	135 (88%)	19 (12%)	0	100	100
43	k	102/104 (98%)	96 (94%)	6 (6%)	0	100	100
44	l	149/151 (99%)	140 (94%)	9 (6%)	0	100	100
45	m	127/129 (98%)	113 (89%)	14 (11%)	0	100	100
46	n	124/126 (98%)	113 (91%)	11 (9%)	0	100	100
47	o	97/99 (98%)	87 (90%)	10 (10%)	0	100	100
48	p	115/117 (98%)	103 (90%)	12 (10%)	0	100	100
49	q	120/123 (98%)	105 (88%)	15 (12%)	0	100	100
50	r	113/115 (98%)	100 (88%)	13 (12%)	0	100	100
51	s	98/100 (98%)	86 (88%)	12 (12%)	0	100	100
52	t	85/87 (98%)	79 (93%)	5 (6%)	1 (1%)	13	49
53	u	79/81 (98%)	71 (90%)	8 (10%)	0	100	100
54	v	78/80 (98%)	69 (88%)	9 (12%)	0	100	100
55	w	63/65 (97%)	57 (90%)	6 (10%)	0	100	100
56	x	80/82 (98%)	75 (94%)	5 (6%)	0	100	100
57	y	83/85 (98%)	76 (92%)	7 (8%)	0	100	100
58	z	68/70 (97%)	66 (97%)	2 (3%)	0	100	100
All	All	6017/6124 (98%)	5403 (90%)	607 (10%)	7 (0%)	54	84

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	5	137	ASP
52	t	22	THR
4	5	135	GLN
4	5	132	GLY
4	5	120	ASN
40	h	77	ILE
37	e	32	ILE

### 5.3.2 Protein sidechains

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	
4	5	121/121 (100%)	119 (98%)	2 (2%)	60	78
8	B	216/216 (100%)	216 (100%)	0	100	100
9	C	164/164 (100%)	163 (99%)	1 (1%)	86	91
10	D	165/165 (100%)	164 (99%)	1 (1%)	86	91
11	E	148/148 (100%)	146 (99%)	2 (1%)	67	81
12	F	136/136 (100%)	134 (98%)	2 (2%)	65	80
13	G	114/114 (100%)	113 (99%)	1 (1%)	78	87
14	H	99/99 (100%)	99 (100%)	0	100	100
15	I	104/104 (100%)	104 (100%)	0	100	100
16	J	115/115 (100%)	115 (100%)	0	100	100
17	K	104/104 (100%)	104 (100%)	0	100	100
18	L	103/103 (100%)	102 (99%)	1 (1%)	76	86
19	M	109/109 (100%)	109 (100%)	0	100	100
20	N	99/99 (100%)	98 (99%)	1 (1%)	76	86
21	O	85/85 (100%)	85 (100%)	0	100	100
22	P	99/99 (100%)	99 (100%)	0	100	100
23	Q	89/89 (100%)	89 (100%)	0	100	100
24	R	84/84 (100%)	84 (100%)	0	100	100
25	S	91/91 (100%)	90 (99%)	1 (1%)	73	84
26	T	81/81 (100%)	81 (100%)	0	100	100
27	U	84/84 (100%)	84 (100%)	0	100	100
28	V	78/78 (100%)	77 (99%)	1 (1%)	69	82
29	W	58/58 (100%)	58 (100%)	0	100	100
30	X	67/67 (100%)	67 (100%)	0	100	100
31	Y	53/53 (100%)	53 (100%)	0	100	100
32	Z	47/47 (100%)	47 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
33	a	59/59 (100%)	59 (100%)	0	100	100
34	b	46/46 (100%)	46 (100%)	0	100	100
35	c	47/47 (100%)	47 (100%)	0	100	100
36	d	38/38 (100%)	38 (100%)	0	100	100
37	e	51/51 (100%)	51 (100%)	0	100	100
38	f	34/34 (100%)	34 (100%)	0	100	100
39	g	187/187 (100%)	186 (100%)	1 (0%)	88	93
40	h	171/171 (100%)	170 (99%)	1 (1%)	86	91
41	i	172/172 (100%)	172 (100%)	0	100	100
42	j	119/119 (100%)	119 (100%)	0	100	100
43	k	91/91 (100%)	91 (100%)	0	100	100
44	l	124/124 (100%)	123 (99%)	1 (1%)	81	89
45	m	104/104 (100%)	104 (100%)	0	100	100
46	n	104/104 (100%)	103 (99%)	1 (1%)	76	86
47	o	86/86 (100%)	86 (100%)	0	100	100
48	p	90/90 (100%)	89 (99%)	1 (1%)	73	84
49	q	102/102 (100%)	102 (100%)	0	100	100
50	r	93/93 (100%)	92 (99%)	1 (1%)	73	84
51	s	83/83 (100%)	83 (100%)	0	100	100
52	t	75/75 (100%)	74 (99%)	1 (1%)	69	82
53	u	65/65 (100%)	64 (98%)	1 (2%)	65	80
54	v	74/74 (100%)	74 (100%)	0	100	100
55	w	56/56 (100%)	55 (98%)	1 (2%)	59	77
56	x	72/72 (100%)	72 (100%)	0	100	100
57	y	65/65 (100%)	64 (98%)	1 (2%)	65	80
58	z	60/60 (100%)	59 (98%)	1 (2%)	60	78
All	All	4981/4981 (100%)	4957 (100%)	24 (0%)	89	93

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	5	83	ASP
4	5	134	LYS

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Mol	Chain	Res	Type
9	C	26	VAL
10	D	88	ARG
11	E	30	ARG
11	E	150	ARG
12	F	44	LYS
12	F	60	ASP
13	G	50	ARG
18	L	47	ARG
20	N	2	ARG
25	S	95	ARG
28	V	19	ARG
39	g	70	VAL
40	h	164	ARG
44	l	4	ARG
46	n	106	ARG
48	p	13	ARG
50	r	65	VAL
52	t	17	ARG
53	u	25	ARG
55	w	43	ARG
57	y	36	TYR
58	z	7	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (62) such sidechains are listed below:

Mol	Chain	Res	Type
4	5	93	ASN
8	B	86	ASN
8	B	128	ASN
8	B	153	GLN
8	B	251	GLN
9	C	49	GLN
9	C	130	GLN
9	C	164	GLN
11	E	52	ASN
11	E	127	ASN
13	G	43	ASN
13	G	128	HIS
14	H	103	ASN
15	I	30	GLN
15	I	104	GLN
15	I	110	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
17	K	3	GLN
20	N	31	HIS
20	N	81	ASN
22	P	10	GLN
22	P	12	GLN
23	Q	20	GLN
25	S	60	HIS
25	S	61	ASN
26	T	28	ASN
26	T	91	GLN
27	U	45	HIS
27	U	66	GLN
27	U	99	ASN
28	V	5	ASN
28	V	75	GLN
30	X	16	ASN
31	Y	20	ASN
31	Y	36	GLN
31	Y	58	ASN
33	a	20	ASN
37	e	26	HIS
37	e	28	ASN
38	f	33	HIS
38	f	37	GLN
39	g	109	GLN
40	h	25	ASN
41	i	198	HIS
44	l	97	ASN
45	m	18	GLN
45	m	21	ASN
46	n	31	ASN
46	n	75	GLN
46	n	81	HIS
46	n	126	GLN
48	p	15	GLN
48	p	22	HIS
48	p	64	GLN
49	q	5	ASN
49	q	46	ASN
50	r	105	ASN
52	t	46	HIS
52	t	50	HIS

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Mol	Chain	Res	Type
56	x	52	HIS
57	y	3	ASN
57	y	13	GLN
57	y	70	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2897/2903 (99%)	951 (32%)	24 (0%)
2	2	1526/1534 (99%)	428 (28%)	7 (0%)
3	3	119/120 (99%)	38 (31%)	0
59	4	332/363 (91%)	198 (59%)	33 (9%)
6	8	76/77 (98%)	43 (56%)	1 (1%)
60	7	76/77 (98%)	49 (64%)	2 (2%)
7	9	5/6 (83%)	4 (80%)	0
All	All	5031/5080 (99%)	1711 (34%)	67 (1%)

All (1711) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	2	G
1	1	10	A
1	1	11	C
1	1	12	U
1	1	18	U
1	1	23	G
1	1	28	A
1	1	33	C
1	1	42	A
1	1	43	G
1	1	46	G
1	1	48	G
1	1	49	A
1	1	54	G
1	1	56	A
1	1	58	G
1	1	60	G
1	1	63	A
1	1	71	A
1	1	72	U
1	1	73	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	74	A
1	1	75	G
1	1	80	G
1	1	84	A
1	1	85	G
1	1	88	G
1	1	91	A
1	1	93	G
1	1	94	A
1	1	100	U
1	1	101	A
1	1	102	U
1	1	110	G
1	1	118	A
1	1	119	A
1	1	120	U
1	1	125	A
1	1	126	A
1	1	136	G
1	1	137	U
1	1	139	U
1	1	140	C
1	1	141	G
1	1	142	A
1	1	154	U
1	1	155	A
1	1	159	G
1	1	163	C
1	1	165	A
1	1	169	G
1	1	180	G
1	1	190	A
1	1	192	C
1	1	196	A
1	1	197	A
1	1	198	C
1	1	199	A
1	1	204	A
1	1	205	G
1	1	215	G
1	1	216	A
1	1	219	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	221	A
1	1	222	A
1	1	223	A
1	1	227	A
1	1	228	C
1	1	229	C
1	1	230	G
1	1	241	A
1	1	244	A
1	1	248	G
1	1	250	G
1	1	263	G
1	1	266	G
1	1	271	G
1	1	272	A
1	1	274	C
1	1	275	C
1	1	276	U
1	1	277	G
1	1	278	A
1	1	279	A
1	1	281	C
1	1	282	A
1	1	283	G
1	1	284	U
1	1	285	G
1	1	293	U
1	1	294	A
1	1	295	G
1	1	303	G
1	1	304	U
1	1	305	C
1	1	306	U
1	1	310	A
1	1	311	A
1	1	312	G
1	1	320	A
1	1	321	U
1	1	322	A
1	1	323	C
1	1	324	A
1	1	329	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	330	A
1	1	331	C
1	1	333	G
1	1	338	G
1	1	345	A
1	1	348	A
1	1	352	A
1	1	356	G
1	1	357	C
1	1	359	G
1	1	360	U
1	1	361	G
1	1	367	G
1	1	371	A
1	1	372	G
1	1	373	U
1	1	386	G
1	1	387	U
1	1	388	G
1	1	396	G
1	1	400	G
1	1	401	A
1	1	403	U
1	1	404	A
1	1	405	U
1	1	411	G
1	1	412	A
1	1	413	C
1	1	414	C
1	1	425	G
1	1	446	G
1	1	456	C
1	1	457	A
1	1	458	G
1	1	459	U
1	1	464	U
1	1	466	A
1	1	475	C
1	1	477	A
1	1	480	A
1	1	481	G
1	1	485	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	489	G
1	1	490	C
1	1	491	G
1	1	492	A
1	1	496	G
1	1	499	U
1	1	501	A
1	1	504	A
1	1	505	A
1	1	508	A
1	1	509	C
1	1	513	A
1	1	519	U
1	1	527	C
1	1	529	A
1	1	530	G
1	1	531	C
1	1	532	A
1	1	533	G
1	1	536	G
1	1	542	C
1	1	544	C
1	1	545	U
1	1	547	A
1	1	548	G
1	1	549	G
1	1	554	U
1	1	557	C
1	1	562	U
1	1	563	A
1	1	571	U
1	1	572	A
1	1	573	U
1	1	575	A
1	1	583	G
1	1	586	A
1	1	587	C
1	1	592	A
1	1	603	A
1	1	613	A
1	1	614	A
1	1	615	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	616	A
1	1	618	G
1	1	620	G
1	1	623	C
1	1	627	A
1	1	628	G
1	1	632	A
1	1	634	C
1	1	635	C
1	1	637	A
1	1	642	U
1	1	643	A
1	1	644	A
1	1	646	U
1	1	647	G
1	1	651	G
1	1	654	A
1	1	655	A
1	1	662	G
1	1	672	C
1	1	685	A
1	1	686	U
1	1	702	U
1	1	703	U
1	1	709	U
1	1	710	U
1	1	715	A
1	1	717	C
1	1	719	C
1	1	720	U
1	1	726	G
1	1	728	G
1	1	729	G
1	1	730	A
1	1	734	A
1	1	745	1MG
1	1	746	PSU
1	1	747	5MU
1	1	748	G
1	1	749	A
1	1	762	U
1	1	764	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	765	C
1	1	769	U
1	1	770	G
1	1	775	G
1	1	782	A
1	1	784	G
1	1	785	G
1	1	792	A
1	1	800	A
1	1	801	G
1	1	805	G
1	1	807	U
1	1	812	C
1	1	813	U
1	1	819	A
1	1	827	U
1	1	828	U
1	1	830	G
1	1	831	G
1	1	835	C
1	1	840	C
1	1	842	U
1	1	845	A
1	1	846	U
1	1	847	U
1	1	856	G
1	1	858	G
1	1	859	G
1	1	860	U
1	1	865	C
1	1	868	U
1	1	875	G
1	1	878	A
1	1	882	G
1	1	883	G
1	1	884	U
1	1	885	C
1	1	886	A
1	1	887	A
1	1	888	C
1	1	890	C
1	1	892	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	893	C
1	1	894	U
1	1	895	U
1	1	896	A
1	1	897	C
1	1	898	C
1	1	899	A
1	1	910	A
1	1	911	A
1	1	912	C
1	1	913	U
1	1	928	A
1	1	931	U
1	1	934	U
1	1	941	A
1	1	953	G
1	1	955	PSU
1	1	956	G
1	1	958	U
1	1	959	A
1	1	961	C
1	1	962	G
1	1	965	C
1	1	970	U
1	1	971	G
1	1	974	G
1	1	977	G
1	1	983	A
1	1	988	A
1	1	990	A
1	1	995	C
1	1	996	A
1	1	997	G
1	1	999	U
1	1	1006	C
1	1	1007	C
1	1	1012	U
1	1	1013	C
1	1	1017	G
1	1	1023	U
1	1	1025	G
1	1	1026	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1033	U
1	1	1041	G
1	1	1043	C
1	1	1046	A
1	1	1047	G
1	1	1051	G
1	1	1052	C
1	1	1053	C
1	1	1054	A
1	1	1056	G
1	1	1057	A
1	1	1058	U
1	1	1059	G
1	1	1061	U
1	1	1062	G
1	1	1065	U
1	1	1066	U
1	1	1067	A
1	1	1068	G
1	1	1069	A
1	1	1070	A
1	1	1071	G
1	1	1072	C
1	1	1073	A
1	1	1075	C
1	1	1077	A
1	1	1078	U
1	1	1082	U
1	1	1083	U
1	1	1084	A
1	1	1085	A
1	1	1087	G
1	1	1088	A
1	1	1089	A
1	1	1090	A
1	1	1093	G
1	1	1095	A
1	1	1096	A
1	1	1097	U
1	1	1098	A
1	1	1101	U
1	1	1103	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1104	C
1	1	1106	G
1	1	1108	U
1	1	1110	G
1	1	1111	A
1	1	1112	G
1	1	1113	U
1	1	1114	C
1	1	1121	C
1	1	1122	G
1	1	1129	A
1	1	1130	U
1	1	1131	G
1	1	1132	U
1	1	1133	A
1	1	1134	A
1	1	1135	C
1	1	1139	G
1	1	1141	U
1	1	1142	A
1	1	1144	A
1	1	1147	A
1	1	1148	U
1	1	1155	A
1	1	1157	G
1	1	1158	C
1	1	1163	G
1	1	1171	G
1	1	1173	U
1	1	1174	U
1	1	1175	A
1	1	1176	U
1	1	1177	G
1	1	1178	C
1	1	1179	G
1	1	1180	U
1	1	1182	G
1	1	1186	G
1	1	1191	G
1	1	1192	G
1	1	1199	U
1	1	1200	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1206	G
1	1	1211	C
1	1	1212	G
1	1	1218	G
1	1	1220	G
1	1	1225	G
1	1	1227	G
1	1	1236	G
1	1	1237	A
1	1	1238	G
1	1	1240	U
1	1	1244	A
1	1	1245	G
1	1	1247	A
1	1	1250	G
1	1	1251	C
1	1	1253	A
1	1	1256	G
1	1	1265	A
1	1	1266	G
1	1	1267	U
1	1	1268	A
1	1	1271	G
1	1	1272	A
1	1	1273	U
1	1	1286	A
1	1	1287	A
1	1	1300	G
1	1	1301	A
1	1	1302	A
1	1	1310	G
1	1	1312	U
1	1	1321	A
1	1	1325	U
1	1	1330	C
1	1	1332	G
1	1	1333	G
1	1	1338	G
1	1	1341	G
1	1	1345	C
1	1	1358	G
1	1	1359	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1367	A
1	1	1368	G
1	1	1370	C
1	1	1372	U
1	1	1378	A
1	1	1379	U
1	1	1380	G
1	1	1381	G
1	1	1383	A
1	1	1390	U
1	1	1393	A
1	1	1394	U
1	1	1395	A
1	1	1401	G
1	1	1403	A
1	1	1408	G
1	1	1409	U
1	1	1414	C
1	1	1416	G
1	1	1417	C
1	1	1419	A
1	1	1427	A
1	1	1428	C
1	1	1429	G
1	1	1433	A
1	1	1434	A
1	1	1440	U
1	1	1443	U
1	1	1444	G
1	1	1451	C
1	1	1452	G
1	1	1453	A
1	1	1454	C
1	1	1455	G
1	1	1458	U
1	1	1460	U
1	1	1461	C
1	1	1464	G
1	1	1474	U
1	1	1475	G
1	1	1482	G
1	1	1490	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1493	C
1	1	1495	A
1	1	1497	U
1	1	1498	C
1	1	1499	C
1	1	1502	A
1	1	1508	A
1	1	1509	A
1	1	1510	G
1	1	1515	A
1	1	1517	G
1	1	1522	A
1	1	1524	G
1	1	1529	G
1	1	1530	G
1	1	1531	C
1	1	1532	A
1	1	1534	U
1	1	1535	A
1	1	1536	C
1	1	1537	G
1	1	1538	G
1	1	1541	C
1	1	1546	G
1	1	1554	U
1	1	1557	C
1	1	1558	C
1	1	1566	A
1	1	1567	G
1	1	1569	A
1	1	1575	C
1	1	1578	U
1	1	1580	A
1	1	1581	G
1	1	1583	A
1	1	1584	U
1	1	1587	G
1	1	1588	G
1	1	1590	A
1	1	1596	A
1	1	1597	A
1	1	1602	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1603	A
1	1	1606	C
1	1	1607	C
1	1	1608	A
1	1	1610	A
1	1	1611	C
1	1	1614	A
1	1	1615	C
1	1	1616	A
1	1	1617	C
1	1	1628	G
1	1	1630	A
1	1	1633	G
1	1	1634	A
1	1	1639	C
1	1	1642	G
1	1	1643	G
1	1	1644	C
1	1	1646	C
1	1	1647	U
1	1	1648	U
1	1	1649	G
1	1	1650	A
1	1	1651	G
1	1	1654	A
1	1	1671	U
1	1	1672	A
1	1	1673	G
1	1	1674	G
1	1	1676	A
1	1	1690	A
1	1	1694	C
1	1	1695	G
1	1	1698	A
1	1	1699	G
1	1	1702	G
1	1	1703	G
1	1	1705	A
1	1	1715	G
1	1	1726	C
1	1	1729	U
1	1	1730	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1732	C
1	1	1733	G
1	1	1738	G
1	1	1749	A
1	1	1756	G
1	1	1757	A
1	1	1758	U
1	1	1761	C
1	1	1762	A
1	1	1764	C
1	1	1768	C
1	1	1769	U
1	1	1770	G
1	1	1773	A
1	1	1780	A
1	1	1781	U
1	1	1782	U
1	1	1785	A
1	1	1791	A
1	1	1799	G
1	1	1800	C
1	1	1801	A
1	1	1802	A
1	1	1805	A
1	1	1808	A
1	1	1810	A
1	1	1815	A
1	1	1816	C
1	1	1829	A
1	1	1830	C
1	1	1833	C
1	1	1835	2MG
1	1	1842	G
1	1	1859	U
1	1	1862	G
1	1	1866	A
1	1	1868	C
1	1	1869	G
1	1	1870	C
1	1	1871	A
1	1	1872	A
1	1	1873	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	1880	U
1	1	1886	U
1	1	1890	A
1	1	1905	C
1	1	1906	G
1	1	1910	G
1	1	1911	PSU
1	1	1912	A
1	1	1913	A
1	1	1914	C
1	1	1917	PSU
1	1	1918	A
1	1	1923	U
1	1	1924	C
1	1	1929	G
1	1	1930	G
1	1	1933	G
1	1	1936	A
1	1	1937	A
1	1	1938	A
1	1	1939	5MU
1	1	1940	U
1	1	1942	C
1	1	1943	U
1	1	1945	G
1	1	1955	U
1	1	1961	C
1	1	1964	G
1	1	1965	C
1	1	1967	C
1	1	1968	G
1	1	1970	A
1	1	1971	U
1	1	1972	G
1	1	1981	A
1	1	1982	U
1	1	1991	U
1	1	1992	G
1	1	1993	U
1	1	1996	C
1	1	1997	C
1	1	2015	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2022	U
1	1	2023	C
1	1	2031	A
1	1	2032	G
1	1	2033	A
1	1	2034	U
1	1	2035	G
1	1	2036	C
1	1	2041	U
1	1	2043	C
1	1	2044	C
1	1	2049	G
1	1	2052	A
1	1	2055	C
1	1	2056	G
1	1	2058	A
1	1	2059	A
1	1	2060	A
1	1	2061	G
1	1	2062	A
1	1	2068	U
1	1	2069	G7M
1	1	2070	A
1	1	2072	C
1	1	2077	A
1	1	2081	U
1	1	2085	U
1	1	2092	U
1	1	2093	G
1	1	2094	A
1	1	2095	A
1	1	2096	C
1	1	2097	A
1	1	2099	U
1	1	2101	A
1	1	2102	G
1	1	2103	C
1	1	2104	C
1	1	2105	U
1	1	2106	U
1	1	2107	G
1	1	2108	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2111	U
1	1	2112	G
1	1	2114	A
1	1	2115	G
1	1	2116	G
1	1	2117	A
1	1	2118	U
1	1	2120	G
1	1	2121	G
1	1	2122	U
1	1	2124	G
1	1	2125	G
1	1	2126	A
1	1	2127	G
1	1	2128	G
1	1	2131	U
1	1	2132	U
1	1	2136	G
1	1	2138	G
1	1	2139	U
1	1	2145	C
1	1	2146	C
1	1	2147	A
1	1	2150	C
1	1	2151	U
1	1	2155	U
1	1	2156	G
1	1	2157	G
1	1	2158	A
1	1	2159	G
1	1	2161	C
1	1	2163	A
1	1	2164	C
1	1	2165	C
1	1	2166	U
1	1	2168	G
1	1	2169	A
1	1	2170	A
1	1	2171	A
1	1	2172	U
1	1	2174	C
1	1	2177	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2178	C
1	1	2180	U
1	1	2181	U
1	1	2182	U
1	1	2183	A
1	1	2184	A
1	1	2186	G
1	1	2187	U
1	1	2189	U
1	1	2190	G
1	1	2191	A
1	1	2193	G
1	1	2194	U
1	1	2198	A
1	1	2204	G
1	1	2211	A
1	1	2212	A
1	1	2213	U
1	1	2214	C
1	1	2218	G
1	1	2219	U
1	1	2226	C
1	1	2232	C
1	1	2238	G
1	1	2250	G
1	1	2252	G
1	1	2255	G
1	1	2256	G
1	1	2266	A
1	1	2268	A
1	1	2278	A
1	1	2279	G
1	1	2280	G
1	1	2283	C
1	1	2286	G
1	1	2287	A
1	1	2288	A
1	1	2305	U
1	1	2306	C
1	1	2308	G
1	1	2320	U
1	1	2322	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2325	G
1	1	2327	A
1	1	2328	A
1	1	2333	A
1	1	2334	U
1	1	2335	A
1	1	2336	A
1	1	2344	U
1	1	2347	C
1	1	2350	C
1	1	2351	G
1	1	2352	A
1	1	2354	C
1	1	2359	C
1	1	2361	G
1	1	2367	G
1	1	2371	G
1	1	2376	A
1	1	2378	A
1	1	2383	G
1	1	2385	C
1	1	2391	G
1	1	2401	U
1	1	2402	U
1	1	2403	C
1	1	2406	A
1	1	2410	G
1	1	2420	C
1	1	2423	U
1	1	2424	C
1	1	2425	A
1	1	2426	A
1	1	2428	G
1	1	2429	G
1	1	2430	A
1	1	2432	A
1	1	2441	U
1	1	2445	2MG
1	1	2448	A
1	1	2449	U
1	1	2457	PSU
1	1	2458	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2462	C
1	1	2465	C
1	1	2470	G
1	1	2476	A
1	1	2478	A
1	1	2481	G
1	1	2491	U
1	1	2498	OMC
1	1	2499	C
1	1	2501	C
1	1	2502	G
1	1	2504	PSU
1	1	2505	G
1	1	2506	U
1	1	2507	C
1	1	2509	G
1	1	2513	A
1	1	2518	A
1	1	2520	C
1	1	2529	G
1	1	2533	U
1	1	2534	A
1	1	2535	G
1	1	2537	U
1	1	2538	C
1	1	2543	G
1	1	2547	A
1	1	2552	OMU
1	1	2553	G
1	1	2556	C
1	1	2564	A
1	1	2566	A
1	1	2567	G
1	1	2573	C
1	1	2574	G
1	1	2580	PSU
1	1	2581	G
1	1	2582	G
1	1	2585	U
1	1	2586	U
1	1	2600	A
1	1	2602	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2604	U
1	1	2605	PSU
1	1	2606	C
1	1	2608	G
1	1	2609	U
1	1	2613	U
1	1	2614	A
1	1	2615	U
1	1	2629	U
1	1	2630	G
1	1	2631	G
1	1	2634	A
1	1	2646	C
1	1	2648	G
1	1	2654	A
1	1	2663	G
1	1	2668	G
1	1	2670	A
1	1	2679	A
1	1	2682	A
1	1	2689	U
1	1	2690	U
1	1	2697	G
1	1	2700	A
1	1	2713	U
1	1	2714	G
1	1	2716	C
1	1	2718	G
1	1	2721	A
1	1	2726	A
1	1	2729	G
1	1	2732	G
1	1	2733	A
1	1	2739	U
1	1	2741	A
1	1	2744	G
1	1	2748	A
1	1	2750	A
1	1	2751	G
1	1	2752	C
1	1	2753	A
1	1	2755	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2756	U
1	1	2766	A
1	1	2773	C
1	1	2775	G
1	1	2776	A
1	1	2777	G
1	1	2778	A
1	1	2780	G
1	1	2781	A
1	1	2786	U
1	1	2790	U
1	1	2791	G
1	1	2792	A
1	1	2794	C
1	1	2795	C
1	1	2797	U
1	1	2798	U
1	1	2800	A
1	1	2802	G
1	1	2804	U
1	1	2806	C
1	1	2808	G
1	1	2818	U
1	1	2820	A
1	1	2825	G
1	1	2832	U
1	1	2833	U
1	1	2834	G
1	1	2835	A
1	1	2836	U
1	1	2837	A
1	1	2847	U
1	1	2849	U
1	1	2853	C
1	1	2859	G
1	1	2867	G
1	1	2872	A
1	1	2874	C
1	1	2879	A
1	1	2880	C
1	1	2883	A
1	1	2884	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	2885	G
1	1	2891	U
1	1	2895	G
1	1	2898	U
1	1	2901	C
1	1	2903	U
2	2	4	U
2	2	7	A
2	2	9	G
2	2	14	U
2	2	22	G
2	2	32	A
2	2	38	G
2	2	39	G
2	2	47	C
2	2	48	C
2	2	51	A
2	2	52	C
2	2	58	C
2	2	66	A
2	2	70	U
2	2	72	A
2	2	74	A
2	2	75	G
2	2	76	G
2	2	78	A
2	2	79	G
2	2	80	A
2	2	81	A
2	2	83	C
2	2	84	U
2	2	85	U
2	2	86	G
2	2	87	C
2	2	88	U
2	2	89	U
2	2	91	U
2	2	94	G
2	2	95	C
2	2	98	A
2	2	101	A
2	2	110	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	119	A
2	2	120	A
2	2	121	U
2	2	122	G
2	2	130	A
2	2	131	A
2	2	144	G
2	2	149	A
2	2	151	A
2	2	160	A
2	2	163	C
2	2	164	G
2	2	174	A
2	2	181	A
2	2	190	A
2	2	191	G
2	2	195	A
2	2	199	A
2	2	203	G
2	2	204	G
2	2	207	C
2	2	208	U
2	2	209	U
2	2	211	G
2	2	212	G
2	2	213	G
2	2	214	C
2	2	228	A
2	2	237	G
2	2	245	U
2	2	247	G
2	2	251	G
2	2	257	G
2	2	262	A
2	2	266	G
2	2	267	C
2	2	271	C
2	2	273	U
2	2	279	A
2	2	281	G
2	2	289	G
2	2	298	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	299	G
2	2	306	A
2	2	317	U
2	2	325	A
2	2	328	C
2	2	329	A
2	2	330	C
2	2	332	G
2	2	334	C
2	2	336	A
2	2	340	U
2	2	344	A
2	2	347	G
2	2	352	C
2	2	354	G
2	2	364	A
2	2	366	A
2	2	367	U
2	2	372	C
2	2	373	A
2	2	381	C
2	2	382	A
2	2	384	G
2	2	386	C
2	2	388	G
2	2	392	C
2	2	397	A
2	2	406	G
2	2	411	A
2	2	412	A
2	2	413	G
2	2	414	A
2	2	416	G
2	2	421	U
2	2	422	C
2	2	423	G
2	2	424	G
2	2	428	G
2	2	429	U
2	2	435	A
2	2	443	C
2	2	451	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	457	G
2	2	458	U
2	2	460	A
2	2	464	U
2	2	465	A
2	2	466	A
2	2	467	U
2	2	468	A
2	2	469	C
2	2	475	C
2	2	476	U
2	2	479	U
2	2	482	A
2	2	484	G
2	2	485	U
2	2	486	U
2	2	492	C
2	2	495	A
2	2	496	A
2	2	505	G
2	2	511	C
2	2	514	C
2	2	516	PSU
2	2	517	G
2	2	518	C
2	2	527	7MG
2	2	528	C
2	2	531	U
2	2	532	A
2	2	533	A
2	2	541	G
2	2	545	C
2	2	546	A
2	2	547	A
2	2	564	C
2	2	565	U
2	2	566	G
2	2	571	U
2	2	572	A
2	2	573	A
2	2	576	C
2	2	577	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	579	A
2	2	587	G
2	2	607	A
2	2	629	A
2	2	632	U
2	2	633	G
2	2	638	U
2	2	639	G
2	2	653	U
2	2	654	G
2	2	665	A
2	2	702	A
2	2	703	G
2	2	706	A
2	2	721	G
2	2	723	U
2	2	724	G
2	2	731	G
2	2	734	G
2	2	738	C
2	2	747	A
2	2	748	G
2	2	753	A
2	2	755	G
2	2	758	C
2	2	763	G
2	2	764	C
2	2	767	A
2	2	768	A
2	2	769	G
2	2	777	A
2	2	779	C
2	2	790	A
2	2	792	A
2	2	793	U
2	2	794	A
2	2	796	C
2	2	810	C
2	2	815	A
2	2	817	C
2	2	818	G
2	2	819	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	826	C
2	2	828	U
2	2	831	A
2	2	832	G
2	2	836	G
2	2	839	C
2	2	841	C
2	2	842	U
2	2	843	U
2	2	844	G
2	2	845	A
2	2	846	G
2	2	847	G
2	2	850	U
2	2	851	G
2	2	856	C
2	2	860	A
2	2	864	A
2	2	865	A
2	2	866	C
2	2	885	G
2	2	886	G
2	2	887	G
2	2	889	A
2	2	895	G
2	2	900	A
2	2	901	A
2	2	908	A
2	2	909	A
2	2	910	C
2	2	914	A
2	2	916	U
2	2	926	G
2	2	931	C
2	2	933	G
2	2	934	C
2	2	939	G
2	2	955	U
2	2	960	U
2	2	962	C
2	2	966	2MG
2	2	967	5MC

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	968	A
2	2	969	A
2	2	971	G
2	2	972	C
2	2	974	A
2	2	975	A
2	2	976	G
2	2	977	A
2	2	980	C
2	2	982	U
2	2	989	U
2	2	992	U
2	2	993	G
2	2	1000	A
2	2	1001	C
2	2	1002	G
2	2	1004	A
2	2	1006	G
2	2	1007	U
2	2	1009	U
2	2	1017	U
2	2	1018	G
2	2	1022	A
2	2	1023	U
2	2	1026	G
2	2	1027	C
2	2	1028	C
2	2	1030	U
2	2	1031	C
2	2	1032	G
2	2	1033	G
2	2	1036	A
2	2	1037	C
2	2	1038	C
2	2	1039	G
2	2	1042	A
2	2	1043	G
2	2	1044	A
2	2	1046	A
2	2	1050	G
2	2	1051	C
2	2	1062	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1064	G
2	2	1065	U
2	2	1069	C
2	2	1073	U
2	2	1078	U
2	2	1085	U
2	2	1092	A
2	2	1093	A
2	2	1094	G
2	2	1095	U
2	2	1099	G
2	2	1101	A
2	2	1108	G
2	2	1121	U
2	2	1124	G
2	2	1125	U
2	2	1135	U
2	2	1136	C
2	2	1137	C
2	2	1138	G
2	2	1139	G
2	2	1140	C
2	2	1141	C
2	2	1142	G
2	2	1143	G
2	2	1146	A
2	2	1151	A
2	2	1159	U
2	2	1167	A
2	2	1168	U
2	2	1169	A
2	2	1171	A
2	2	1174	G
2	2	1175	G
2	2	1176	A
2	2	1184	G
2	2	1186	G
2	2	1189	U
2	2	1195	C
2	2	1196	A
2	2	1197	A
2	2	1199	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1205	U
2	2	1212	U
2	2	1213	A
2	2	1214	C
2	2	1221	G
2	2	1224	U
2	2	1226	C
2	2	1227	A
2	2	1228	C
2	2	1236	A
2	2	1238	A
2	2	1240	U
2	2	1256	A
2	2	1257	A
2	2	1258	G
2	2	1260	G
2	2	1268	G
2	2	1280	A
2	2	1281	C
2	2	1283	U
2	2	1285	A
2	2	1286	U
2	2	1287	A
2	2	1288	A
2	2	1290	G
2	2	1291	U
2	2	1297	G
2	2	1299	A
2	2	1300	G
2	2	1301	U
2	2	1302	C
2	2	1304	G
2	2	1305	G
2	2	1317	C
2	2	1318	A
2	2	1320	C
2	2	1322	C
2	2	1323	G
2	2	1324	A
2	2	1334	G
2	2	1335	U
2	2	1339	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1341	U
2	2	1351	U
2	2	1353	G
2	2	1359	C
2	2	1363	A
2	2	1364	U
2	2	1370	G
2	2	1372	U
2	2	1373	G
2	2	1378	C
2	2	1379	G
2	2	1381	U
2	2	1390	U
2	2	1394	A
2	2	1396	A
2	2	1397	C
2	2	1398	A
2	2	1401	G
2	2	1403	C
2	2	1408	A
2	2	1414	U
2	2	1419	G
2	2	1424	U
2	2	1425	U
2	2	1426	G
2	2	1427	C
2	2	1430	A
2	2	1434	A
2	2	1436	U
2	2	1439	G
2	2	1440	U
2	2	1445	U
2	2	1446	A
2	2	1450	U
2	2	1451	U
2	2	1452	C
2	2	1453	G
2	2	1456	A
2	2	1457	G
2	2	1475	G
2	2	1480	A
2	2	1493	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1497	G
2	2	1502	A
2	2	1503	A
2	2	1505	G
2	2	1506	U
2	2	1508	A
2	2	1509	C
2	2	1517	G
2	2	1523	G
2	2	1525	G
2	2	1529	G
2	2	1530	G
2	2	1533	C
2	2	1534	A
3	3	2	G
3	3	6	G
3	3	7	G
3	3	13	G
3	3	17	C
3	3	19	C
3	3	23	G
3	3	25	U
3	3	32	U
3	3	35	C
3	3	37	C
3	3	40	U
3	3	42	C
3	3	44	G
3	3	47	C
3	3	51	G
3	3	56	G
3	3	59	A
3	3	61	G
3	3	63	C
3	3	66	A
3	3	67	G
3	3	68	C
3	3	73	A
3	3	84	G
3	3	88	C
3	3	89	U
3	3	90	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	3	94	A
3	3	96	G
3	3	99	A
3	3	101	A
3	3	102	G
3	3	105	G
3	3	108	A
3	3	109	A
3	3	114	C
3	3	115	A
6	8	3	C
6	8	4	U
6	8	6	C
6	8	7	G
6	8	8	U
6	8	12	U
6	8	13	C
6	8	14	A
6	8	16	U
6	8	17	U
6	8	18	G
6	8	19	G
6	8	20	U
6	8	21	U
6	8	22	A
6	8	23	G
6	8	26	C
6	8	27	A
6	8	28	C
6	8	31	C
6	8	34	U
6	8	35	C
6	8	36	A
6	8	39	A
6	8	40	U
6	8	43	U
6	8	44	G
6	8	45	G
6	8	47	G
6	8	48	U
6	8	49	C
6	8	50	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
6	8	51	C
6	8	53	G
6	8	56	U
6	8	57	C
6	8	58	G
6	8	59	A
6	8	62	C
6	8	64	C
6	8	68	G
6	8	76	C
6	8	77	A
7	9	2	U
7	9	3	G
7	9	7	G
7	9	9	C
59	4	2	G
59	4	3	G
59	4	4	G
59	4	6	U
59	4	7	G
59	4	8	A
59	4	9	U
59	4	10	U
59	4	11	C
59	4	12	U
59	4	13	G
59	4	14	G
59	4	15	A
59	4	16	U
59	4	17	U
59	4	18	C
59	4	20	A
59	4	21	C
59	4	27	U
59	4	28	U
59	4	30	C
59	4	32	A
59	4	33	A
59	4	34	A
59	4	35	C
59	4	38	A
59	4	39	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
59	4	40	G
59	4	43	G
59	4	44	C
59	4	45	A
59	4	46	U
59	4	47	G
59	4	49	C
59	4	54	G
59	4	55	G
59	4	56	C
59	4	60	U
59	4	61	G
59	4	62	G
59	4	63	C
59	4	64	C
59	4	68	U
59	4	69	A
59	4	70	A
59	4	71	A
59	4	72	A
59	4	114	G
59	4	117	G
59	4	119	U
59	4	121	A
59	4	122	A
59	4	123	U
59	4	125	A
59	4	127	C
59	4	128	U
59	4	129	G
59	4	130	C
59	4	131	U
59	4	132	U
59	4	133	A
59	4	138	C
59	4	143	C
59	4	144	U
59	4	145	C
59	4	149	A
59	4	150	G
59	4	151	C
59	4	154	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
59	4	155	C
59	4	156	G
59	4	158	U
59	4	160	U
59	4	164	G
59	4	165	A
59	4	166	C
59	4	169	G
59	4	170	G
59	4	172	U
59	4	173	C
59	4	174	A
59	4	175	A
59	4	176	G
59	4	180	G
59	4	181	G
59	4	182	U
59	4	183	C
59	4	184	A
59	4	185	A
59	4	186	A
59	4	188	C
59	4	189	C
59	4	190	A
59	4	191	A
59	4	192	A
59	4	193	A
59	4	194	G
59	4	197	A
59	4	198	U
59	4	199	C
59	4	200	G
59	4	203	U
59	4	204	G
59	4	205	G
59	4	206	A
59	4	207	A
59	4	209	C
59	4	210	C
59	4	211	C
59	4	213	G
59	4	218	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
59	4	222	U
59	4	223	G
59	4	224	A
59	4	225	A
59	4	226	G
59	4	227	C
59	4	228	G
59	4	230	U
59	4	231	A
59	4	233	A
59	4	234	A
59	4	235	C
59	4	236	U
59	4	237	U
59	4	238	A
59	4	239	A
59	4	240	U
59	4	241	C
59	4	242	A
59	4	244	G
59	4	245	C
59	4	246	U
59	4	248	G
59	4	249	U
59	4	250	U
59	4	257	U
59	4	258	G
59	4	261	G
59	4	262	U
59	4	263	G
59	4	264	U
59	4	266	C
59	4	267	G
59	4	268	U
59	4	269	C
59	4	270	C
59	4	273	A
59	4	274	G
59	4	282	G
59	4	285	A
59	4	286	A
59	4	287	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
59	4	288	G
59	4	291	A
59	4	292	A
59	4	293	G
59	4	296	U
59	4	299	C
59	4	300	U
59	4	301	A
59	4	302	A
59	4	303	G
59	4	308	U
59	4	309	A
59	4	310	G
59	4	312	A
59	4	315	G
59	4	316	A
59	4	317	G
59	4	318	G
59	4	319	A
59	4	321	G
59	4	322	U
59	4	323	A
59	4	324	G
59	4	325	G
59	4	332	G
59	4	333	G
59	4	334	A
59	4	335	C
59	4	336	G
59	4	339	G
59	4	340	G
59	4	341	U
59	4	342	U
59	4	343	C
59	4	344	A
59	4	347	U
59	4	348	C
59	4	351	G
59	4	356	C
59	4	357	U
59	4	359	C
59	4	360	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
59	4	361	C
59	4	362	C
59	4	363	A
60	7	2	C
60	7	3	G
60	7	4	U
60	7	5	C
60	7	6	C
60	7	7	G
60	7	8	U
60	7	11	C
60	7	12	U
60	7	13	C
60	7	14	A
60	7	16	U
60	7	17	U
60	7	18	G
60	7	19	G
60	7	20	U
60	7	21	U
60	7	22	A
60	7	23	G
60	7	24	A
60	7	26	C
60	7	28	C
60	7	29	C
60	7	30	A
60	7	31	C
60	7	34	U
60	7	38	A
60	7	39	U
60	7	40	G
60	7	45	G
60	7	47	G
60	7	48	U
60	7	49	C
60	7	50	G
60	7	51	G
60	7	52	U
60	7	56	U
60	7	57	C
60	7	58	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
60	7	59	A
60	7	62	C
60	7	63	C
60	7	64	A
60	7	68	G
60	7	69	G
60	7	70	A
60	7	73	C
60	7	74	A
60	7	77	A

All (67) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	1	278	A
1	1	387	U
1	1	404	A
1	1	747	5MU
1	1	784	G
1	1	894	U
1	1	955	PSU
1	1	1332	G
1	1	1379	U
1	1	1614	A
1	1	1905	C
1	1	1911	PSU
1	1	1917	PSU
1	1	1939	5MU
1	1	2193	G
1	1	2225	A
1	1	2255	G
1	1	2425	A
1	1	2457	PSU
1	1	2498	OMC
1	1	2504	PSU
1	1	2506	U
1	1	2580	PSU
1	1	2605	PSU
2	2	120	A
2	2	149	A
2	2	516	PSU
2	2	527	7MG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	2	1145	A
2	2	1151	A
2	2	1281	C
6	8	18	G
59	4	9	U
59	4	11	C
59	4	13	G
59	4	14	G
59	4	15	A
59	4	16	U
59	4	17	U
59	4	19	G
59	4	20	A
59	4	32	A
59	4	33	A
59	4	38	A
59	4	68	U
59	4	130	C
59	4	131	U
59	4	153	U
59	4	183	C
59	4	185	A
59	4	212	U
59	4	223	G
59	4	229	U
59	4	233	A
59	4	245	C
59	4	247	A
59	4	257	U
59	4	261	G
59	4	290	A
59	4	299	C
59	4	308	U
59	4	314	C
59	4	320	U
59	4	332	G
59	4	333	G
60	7	13	C
60	7	18	G

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

34 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$
1	OMU	1	2552	61,1	19,22,23	2.76	7 (36%)	26,31,34	2.07	8 (30%)
2	2MG	2	966	2	18,26,27	2.95	6 (33%)	16,38,41	1.41	3 (18%)
49	0TD	q	89	49	7,9,10	1.39	0	6,11,13	1.90	2 (33%)
2	MA6	2	1518	2	18,26,27	1.00	1 (5%)	19,38,41	1.48	2 (10%)
1	5MC	1	1962	1	18,22,23	2.15	3 (16%)	26,32,35	1.47	5 (19%)
1	2MG	1	1835	1	18,26,27	2.96	6 (33%)	16,38,41	1.78	4 (25%)
1	PSU	1	1917	1	18,21,22	2.09	5 (27%)	22,30,33	2.15	5 (22%)
1	PSU	1	2580	1	18,21,22	1.94	5 (27%)	22,30,33	2.16	6 (27%)
2	4OC	2	1402	2	20,23,24	2.57	5 (25%)	26,32,35	2.03	8 (30%)
2	PSU	2	516	2	18,21,22	2.29	6 (33%)	22,30,33	2.50	6 (27%)
1	G7M	1	2069	1	20,26,27	2.82	5 (25%)	17,39,42	0.83	0
1	OMC	1	2498	61,1	19,22,23	1.70	4 (21%)	26,31,34	2.22	6 (23%)
2	2MG	2	1516	2	18,26,27	2.94	6 (33%)	16,38,41	1.43	3 (18%)
2	5MC	2	1407	2	18,22,23	2.05	3 (16%)	26,32,35	1.49	4 (15%)
1	2MG	1	2445	1	18,26,27	2.90	5 (27%)	16,38,41	1.32	3 (18%)
1	PSU	1	955	1	18,21,22	1.98	4 (22%)	22,30,33	2.17	5 (22%)
1	6MZ	1	2030	1	18,25,26	1.91	1 (5%)	16,36,39	3.25	5 (31%)
1	3TD	1	1915	61,1,4	18,22,23	2.77	7 (38%)	22,32,35	1.87	4 (18%)
1	PSU	1	2605	1	18,21,22	2.07	6 (33%)	22,30,33	1.92	4 (18%)
1	PSU	1	2504	1	18,21,22	2.02	5 (27%)	22,30,33	2.24	6 (27%)
2	7MG	2	527	2	22,26,27	6.62	6 (27%)	29,39,42	2.60	9 (31%)
1	PSU	1	746	1	18,21,22	1.85	5 (27%)	22,30,33	2.00	4 (18%)
1	PSU	1	2457	1	18,21,22	1.99	5 (27%)	22,30,33	2.10	7 (31%)
2	MA6	2	1519	2	18,26,27	1.11	1 (5%)	19,38,41	1.39	2 (10%)
2	5MC	2	967	2	18,22,23	2.11	3 (16%)	26,32,35	1.52	4 (15%)
1	6MZ	1	1618	1	18,25,26	1.90	1 (5%)	16,36,39	2.53	5 (31%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	2MG	2	1207	2	18,26,27	3.02	6 (33%)	16,38,41	1.35	4 (25%)
1	5MU	1	747	1	19,22,23	2.10	7 (36%)	28,32,35	4.58	10 (35%)
1	1MG	1	745	1	18,26,27	2.97	7 (38%)	19,39,42	2.29	9 (47%)
1	2MA	1	2503	61,1	17,25,26	1.52	3 (17%)	17,37,40	1.30	2 (11%)
1	OMG	1	2251	1	18,26,27	2.98	7 (38%)	19,38,41	1.55	4 (21%)
1	5MU	1	1939	61,1	19,22,23	2.49	7 (36%)	28,32,35	3.58	10 (35%)
2	UR3	2	1498	2	19,22,23	2.99	7 (36%)	26,32,35	1.55	5 (19%)
1	PSU	1	1911	1	18,21,22	1.95	4 (22%)	22,30,33	2.22	4 (18%)

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
1	OMU	1	2552	61,1	2/2/5/5	3/9/27/28	0/2/2/2
2	2MG	2	966	2	-	2/5/27/28	0/3/3/3
49	0TD	q	89	49	-	2/7/12/14	-
2	MA6	2	1518	2	-	4/7/29/30	0/3/3/3
1	5MC	1	1962	1	-	4/7/25/26	0/2/2/2
1	PSU	1	1917	1	2/2/5/5	2/7/25/26	0/2/2/2
1	2MG	1	1835	1	-	2/5/27/28	0/3/3/3
1	PSU	1	2580	1	2/2/5/5	4/7/25/26	0/2/2/2
2	4OC	2	1402	2	2/2/5/6	5/9/29/30	0/2/2/2
2	PSU	2	516	2	2/2/5/5	7/7/25/26	0/2/2/2
1	G7M	1	2069	1	1/1/5/5	1/3/25/26	0/3/3/3
1	OMC	1	2498	61,1	1/1/5/5	5/9/27/28	0/2/2/2
2	2MG	2	1516	2	-	2/5/27/28	0/3/3/3
2	5MC	2	1407	2	-	0/7/25/26	0/2/2/2
1	2MG	1	2445	1	-	4/5/27/28	0/3/3/3
1	PSU	1	955	1	2/2/5/5	4/7/25/26	0/2/2/2
1	6MZ	1	2030	1	2/2/5/6	3/5/27/28	0/3/3/3
1	3TD	1	1915	61,1,4	1/1/5/5	4/7/25/26	0/2/2/2
1	PSU	1	2605	1	2/2/5/5	3/7/25/26	0/2/2/2
1	PSU	1	2504	1	2/2/5/5	4/7/25/26	0/2/2/2
2	7MG	2	527	2	1/1/7/7	3/7/37/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	1	746	1	2/2/5/5	5/7/25/26	0/2/2/2
1	PSU	1	2457	1	2/2/5/5	2/7/25/26	0/2/2/2
2	MA6	2	1519	2	-	6/7/29/30	0/3/3/3
2	5MC	2	967	2	-	2/7/25/26	0/2/2/2
1	6MZ	1	1618	1	2/2/5/6	3/5/27/28	0/3/3/3
2	2MG	2	1207	2	-	0/5/27/28	0/3/3/3
1	5MU	1	747	1	2/2/5/5	5/7/25/26	0/2/2/2
1	1MG	1	745	1	2/2/5/5	1/3/25/26	0/3/3/3
1	2MA	1	2503	61,1	2/2/5/5	2/3/25/26	0/3/3/3
1	OMG	1	2251	1	1/1/5/5	1/5/27/28	0/3/3/3
1	5MU	1	1939	61,1	2/2/5/5	1/7/25/26	0/2/2/2
2	UR3	2	1498	2	-	0/7/25/26	0/2/2/2
1	PSU	1	1911	1	2/2/5/5	1/7/25/26	0/2/2/2

All (159) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	527	7MG	C8-N9	-28.63	1.30	1.46
1	1	2069	G7M	O6-C6	10.17	1.44	1.23
1	1	2251	OMG	O6-C6	9.17	1.41	1.23
2	2	1516	2MG	O6-C6	8.90	1.41	1.23
1	1	2445	2MG	O6-C6	8.76	1.41	1.23
2	2	966	2MG	O6-C6	8.67	1.40	1.23
2	2	1207	2MG	O6-C6	8.65	1.40	1.23
2	2	1402	4OC	O2-C2	8.48	1.39	1.23
1	1	745	1MG	O6-C6	8.46	1.39	1.22
2	2	1498	UR3	O4-C4	8.16	1.41	1.23
1	1	2552	OMU	O4-C4	8.04	1.40	1.24
1	1	1915	3TD	O4-C4	7.70	1.39	1.23
1	1	1835	2MG	O6-C6	7.58	1.38	1.23
1	1	1618	6MZ	C6-N6	7.26	1.46	1.35
2	2	527	7MG	O6-C6	7.23	1.37	1.23
1	1	2030	6MZ	C6-N6	6.76	1.46	1.35
2	2	967	5MC	C4-N4	6.40	1.50	1.34
1	1	1962	5MC	C4-N4	6.27	1.50	1.34
2	2	527	7MG	C2-N2	6.18	1.48	1.34
2	2	1407	5MC	C4-N4	5.98	1.49	1.34
2	2	966	2MG	C2-N2	5.96	1.46	1.33
1	1	745	1MG	C2-N2	5.77	1.44	1.34
2	2	1498	UR3	C2-N1	-5.70	1.30	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	516	PSU	C4-N3	-5.65	1.28	1.38
2	2	1207	2MG	C2-N2	5.60	1.45	1.33
1	1	2445	2MG	C2-N2	5.52	1.45	1.33
1	1	1939	5MU	C2-N1	-5.45	1.29	1.38
1	1	1962	5MC	C2-N1	-5.26	1.28	1.40
2	2	1516	2MG	C2-N2	5.24	1.45	1.33
1	1	1835	2MG	C2-N2	5.07	1.44	1.33
2	2	527	7MG	C4-N9	-5.06	1.31	1.37
1	1	2251	OMG	C2-N2	4.95	1.46	1.34
1	1	2552	OMU	C2-N1	-4.89	1.30	1.38
1	1	745	1MG	C6-N1	-4.89	1.30	1.39
1	1	1835	2MG	C6-N1	-4.86	1.30	1.37
2	2	967	5MC	C2-N1	-4.82	1.29	1.40
1	1	2580	PSU	C4-N3	-4.79	1.29	1.38
2	2	1407	5MC	C2-N1	-4.76	1.29	1.40
1	1	2498	OMC	C4-N4	4.74	1.45	1.33
1	1	1917	PSU	C4-N3	-4.68	1.30	1.38
1	1	2457	PSU	C4-N3	-4.65	1.30	1.38
1	1	1915	3TD	C2-N1	-4.62	1.31	1.37
1	1	2069	G7M	C2-N2	4.58	1.45	1.34
1	1	2605	PSU	C4-N3	-4.52	1.30	1.38
1	1	1911	PSU	C4-N3	-4.50	1.30	1.38
2	2	1402	4OC	C2-N1	-4.39	1.30	1.40
2	2	1402	4OC	C4-N4	4.37	1.44	1.35
1	1	1915	3TD	C4-N3	-4.36	1.31	1.40
1	1	1835	2MG	C5-C6	-4.36	1.38	1.47
1	1	2605	PSU	C6-C5	4.35	1.40	1.35
1	1	2504	PSU	C6-C5	4.35	1.40	1.35
1	1	2504	PSU	C4-N3	-4.34	1.30	1.38
1	1	1939	5MU	C2-N3	-4.30	1.30	1.38
2	2	1498	UR3	C4-N3	-4.28	1.30	1.40
1	1	746	PSU	C4-N3	-4.28	1.30	1.38
2	2	1207	2MG	C6-N1	-4.25	1.31	1.37
1	1	955	PSU	C4-N3	-4.21	1.31	1.38
1	1	2503	2MA	C6-N6	4.09	1.45	1.28
1	1	955	PSU	C6-C5	4.06	1.40	1.35
1	1	1917	PSU	C2-N1	-4.06	1.31	1.36
1	1	1939	5MU	C6-C5	4.01	1.41	1.34
1	1	2251	OMG	C6-N1	-4.01	1.31	1.37
1	1	1911	PSU	C6-C5	4.00	1.40	1.35
1	1	1917	PSU	C6-C5	3.99	1.40	1.35
2	2	1516	2MG	C6-N1	-3.96	1.32	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	955	PSU	C2-N1	-3.95	1.31	1.36
1	1	2069	G7M	C6-N1	-3.93	1.32	1.37
2	2	516	PSU	C2-N3	-3.92	1.30	1.37
1	1	2457	PSU	C6-C5	3.86	1.39	1.35
1	1	1835	2MG	C2-N1	-3.82	1.30	1.36
1	1	747	5MU	C6-N1	-3.81	1.31	1.38
1	1	747	5MU	C2-N3	-3.80	1.31	1.38
1	1	2445	2MG	C6-N1	-3.79	1.32	1.37
2	2	966	2MG	C6-N1	-3.78	1.32	1.37
1	1	746	PSU	C6-C5	3.76	1.39	1.35
2	2	1207	2MG	C5-C6	-3.75	1.39	1.47
1	1	1939	5MU	C6-N1	-3.75	1.31	1.38
1	1	1939	5MU	C4-N3	-3.75	1.31	1.38
2	2	1498	UR3	C6-N1	-3.64	1.29	1.38
1	1	2580	PSU	C2-N1	-3.63	1.31	1.36
1	1	2552	OMU	C2-N3	-3.60	1.31	1.38
2	2	516	PSU	C2-N1	-3.59	1.31	1.36
1	1	747	5MU	C6-C5	3.56	1.40	1.34
1	1	1917	PSU	C6-N1	-3.55	1.30	1.36
2	2	1498	UR3	C2-N3	-3.54	1.32	1.39
1	1	2552	OMU	C4-N3	-3.52	1.32	1.38
1	1	2457	PSU	C6-N1	-3.49	1.30	1.36
1	1	746	PSU	C2-N1	-3.48	1.32	1.36
2	2	1498	UR3	O2-C2	-3.45	1.16	1.22
1	1	2605	PSU	C2-N1	-3.45	1.32	1.36
2	2	527	7MG	C6-N1	-3.44	1.32	1.38
1	1	2457	PSU	C2-N1	-3.44	1.32	1.36
2	2	516	PSU	C6-C5	3.43	1.39	1.35
2	2	1516	2MG	C5-C6	-3.43	1.40	1.47
1	1	2504	PSU	C2-N1	-3.42	1.32	1.36
1	1	955	PSU	C6-N1	-3.41	1.30	1.36
1	1	2504	PSU	C6-N1	-3.38	1.30	1.36
1	1	2445	2MG	C5-C6	-3.36	1.40	1.47
1	1	1911	PSU	C6-N1	-3.35	1.30	1.36
1	1	747	5MU	C4-N3	-3.32	1.32	1.38
2	2	1207	2MG	C2-N1	-3.31	1.31	1.36
1	1	1939	5MU	O4-C4	-3.26	1.17	1.23
2	2	966	2MG	C5-C6	-3.22	1.40	1.47
1	1	1911	PSU	C2-N1	-3.21	1.32	1.36
1	1	1915	3TD	C2-N3	-3.21	1.31	1.38
1	1	747	5MU	C2-N1	-3.15	1.33	1.38
1	1	2580	PSU	C6-N1	-3.12	1.31	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	516	PSU	C6-N1	-3.12	1.31	1.36
1	1	1939	5MU	O2-C2	-3.09	1.17	1.23
2	2	527	7MG	C2-N1	-3.07	1.30	1.37
2	2	1516	2MG	C2-N1	-3.02	1.31	1.36
2	2	1402	4OC	C2-N3	-2.98	1.30	1.36
1	1	2552	OMU	O2-C2	-2.96	1.17	1.23
1	1	2605	PSU	C6-N1	-2.92	1.31	1.36
1	1	2445	2MG	C2-N1	-2.91	1.32	1.36
1	1	2251	OMG	C5-C6	-2.90	1.41	1.47
1	1	747	5MU	O4-C4	-2.89	1.18	1.23
2	2	516	PSU	O4'-C1'	-2.87	1.39	1.43
1	1	1915	3TD	C6-N1	-2.86	1.31	1.36
1	1	746	PSU	C6-N1	-2.82	1.31	1.36
1	1	745	1MG	C5-C6	-2.80	1.39	1.47
2	2	966	2MG	C2-N1	-2.78	1.32	1.36
1	1	1915	3TD	O2-C2	-2.72	1.18	1.23
1	1	2251	OMG	C2-N1	-2.69	1.31	1.37
1	1	2580	PSU	C6-C5	2.68	1.38	1.35
1	1	2580	PSU	C2-N3	-2.68	1.32	1.37
1	1	1962	5MC	C2-N3	-2.65	1.31	1.36
1	1	747	5MU	O2-C2	-2.61	1.18	1.23
1	1	2498	OMC	O2-C2	-2.59	1.18	1.23
1	1	1835	2MG	C5-C4	-2.53	1.36	1.43
1	1	2552	OMU	C6-N1	-2.53	1.31	1.38
1	1	1917	PSU	C2-N3	-2.50	1.33	1.37
1	1	2498	OMC	C5-C4	-2.45	1.37	1.42
1	1	2251	OMG	O2'-CM2	-2.44	1.33	1.42
2	2	1498	UR3	C5-C4	-2.42	1.37	1.43
1	1	2503	2MA	C6-N1	-2.42	1.32	1.38
1	1	1915	3TD	C6-C5	2.39	1.38	1.35
1	1	2251	OMG	C5-C4	-2.38	1.37	1.43
2	2	1402	4OC	C6-N1	-2.37	1.32	1.38
1	1	2552	OMU	C5-C4	-2.35	1.38	1.43
2	2	1207	2MG	C5-C4	-2.33	1.37	1.43
1	1	2504	PSU	O4'-C1'	-2.32	1.40	1.43
1	1	2605	PSU	O4'-C1'	-2.32	1.40	1.43
2	2	967	5MC	C2-N3	-2.30	1.31	1.36
1	1	2069	G7M	C2-N1	-2.30	1.32	1.37
1	1	2457	PSU	C2-N3	-2.28	1.33	1.37
1	1	2503	2MA	C5-C4	-2.27	1.37	1.43
1	1	2498	OMC	C2-N3	-2.23	1.31	1.36
1	1	2605	PSU	C2-N3	-2.21	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	745	1MG	C2'-C1'	-2.17	1.50	1.53
2	2	1407	5MC	C2-N3	-2.15	1.32	1.36
1	1	746	PSU	C2-N3	-2.13	1.33	1.37
1	1	745	1MG	C8-N7	-2.12	1.31	1.35
2	2	966	2MG	C5-C4	-2.06	1.37	1.43
2	2	1516	2MG	C5-C4	-2.06	1.37	1.43
2	2	1519	MA6	C4-N3	-2.06	1.32	1.35
1	1	745	1MG	C5-C4	-2.04	1.37	1.43
1	1	2069	G7M	C4-N3	-2.04	1.32	1.37
2	2	1518	MA6	C4-N3	-2.01	1.32	1.35

All (168) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	747	5MU	C1'-N1-C2	10.73	136.99	117.57
1	1	747	5MU	C1'-N1-C6	-10.52	103.61	121.12
1	1	2030	6MZ	C9-N6-C6	-9.43	114.75	122.87
1	1	747	5MU	C5M-C5-C4	9.35	129.06	118.77
1	1	1939	5MU	N3-C2-N1	8.73	126.48	114.89
1	1	1939	5MU	C4-N3-C2	-8.03	116.96	127.35
1	1	747	5MU	N3-C2-N1	7.98	125.49	114.89
1	1	1939	5MU	C5M-C5-C4	7.40	126.91	118.77
1	1	747	5MU	C5M-C5-C6	-7.29	113.12	122.85
1	1	2498	OMC	O2-C2-N3	-7.05	110.87	122.33
1	1	747	5MU	C4-N3-C2	-6.85	118.48	127.35
2	2	516	PSU	N1-C2-N3	6.83	122.87	115.13
1	1	1911	PSU	N1-C2-N3	6.72	122.74	115.13
2	2	527	7MG	N9-C4-N3	6.46	135.13	125.47
1	1	747	5MU	O2-C2-N3	-6.41	109.56	121.50
2	2	527	7MG	C5-C6-N1	6.27	122.04	110.99
1	1	1939	5MU	C5-C6-N1	-6.22	116.94	123.34
1	1	2504	PSU	N1-C2-N3	6.16	122.11	115.13
1	1	2457	PSU	N1-C2-N3	6.12	122.06	115.13
1	1	1939	5MU	C5-C4-N3	6.11	120.52	115.31
1	1	1915	3TD	N1-C2-N3	5.97	120.85	116.14
1	1	1618	6MZ	C9-N6-C6	-5.80	117.88	122.87
1	1	2605	PSU	N1-C2-N3	5.78	121.68	115.13
1	1	1917	PSU	N1-C2-N3	5.78	121.68	115.13
2	2	967	5MC	C5-C6-N1	-5.77	117.40	123.34
1	1	1939	5MU	C5M-C5-C6	-5.75	115.17	122.85
1	1	2580	PSU	N1-C2-N3	5.66	121.54	115.13
1	1	2030	6MZ	C2-N1-C6	5.64	121.43	116.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1402	4OC	O3'-C3'-C2'	5.55	126.93	111.17
1	1	955	PSU	N1-C2-N3	5.52	121.38	115.13
1	1	746	PSU	N1-C2-N3	5.43	121.28	115.13
1	1	1618	6MZ	C2-N1-C6	5.41	121.23	116.59
1	1	2030	6MZ	N3-C2-N1	-5.31	120.38	128.68
2	2	527	7MG	C2-N3-C4	5.17	121.52	112.30
2	2	516	PSU	C4-N3-C2	-5.12	118.97	126.34
1	1	747	5MU	C5-C4-N3	4.91	119.50	115.31
1	1	2580	PSU	C4-N3-C2	-4.73	119.53	126.34
1	1	1962	5MC	C5-C6-N1	-4.70	118.51	123.34
2	2	527	7MG	C5-C4-N3	-4.69	119.18	128.13
2	2	516	PSU	C6-C5-C4	-4.69	114.92	118.20
1	1	1939	5MU	O2-C2-N3	-4.68	112.79	121.50
2	2	1498	UR3	C4-N3-C2	-4.67	120.17	124.56
1	1	1618	6MZ	N3-C2-N1	-4.64	121.43	128.68
2	2	1518	MA6	N3-C2-N1	-4.56	121.55	128.68
1	1	2552	OMU	C4-N3-C2	-4.55	120.57	126.58
2	2	1519	MA6	N3-C2-N1	-4.54	121.59	128.68
1	1	955	PSU	C6-C5-C4	-4.41	115.12	118.20
1	1	745	1MG	O3'-C3'-C4'	4.40	123.78	111.05
1	1	955	PSU	O2-C2-N1	-4.40	117.95	122.79
1	1	2504	PSU	O2-C2-N1	-4.38	117.97	122.79
1	1	1835	2MG	C5-C6-N1	4.38	121.68	113.95
1	1	2552	OMU	N3-C2-N1	4.34	120.65	114.89
1	1	2498	OMC	O2-C2-N1	4.34	127.85	118.89
1	1	1911	PSU	O2-C2-N1	-4.26	118.10	122.79
1	1	2498	OMC	C1'-N1-C2	4.25	127.91	118.42
2	2	1402	4OC	O3'-C3'-C4'	4.23	123.29	111.05
1	1	2504	PSU	C4-N3-C2	-4.23	120.24	126.34
1	1	1911	PSU	C4-N3-C2	-4.11	120.42	126.34
1	1	1917	PSU	O2-C2-N1	-4.02	118.36	122.79
1	1	746	PSU	C4-N3-C2	-3.97	120.62	126.34
2	2	1407	5MC	O2-C2-N3	-3.96	115.90	122.33
1	1	2457	PSU	C4-N3-C2	-3.95	120.65	126.34
1	1	746	PSU	O2-C2-N1	-3.94	118.45	122.79
2	2	1407	5MC	C5-C6-N1	-3.94	119.29	123.34
1	1	1939	5MU	O4-C4-N3	-3.86	112.72	120.12
1	1	747	5MU	C5-C6-N1	-3.84	119.38	123.34
1	1	1917	PSU	C6-C5-C4	-3.80	115.54	118.20
1	1	745	1MG	O4'-C4'-C5'	3.78	121.82	109.37
2	2	1516	2MG	CM2-N2-C2	-3.78	115.51	123.86
1	1	2552	OMU	C5-C4-N3	3.67	120.33	114.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1402	4OC	CM2-O2'-C2'	3.63	124.04	114.52
2	2	527	7MG	N9-C8-N7	3.57	108.48	103.38
1	1	2503	2MA	C5-C6-N1	3.55	120.15	114.02
1	1	2030	6MZ	C4-C5-N7	-3.54	105.71	109.40
1	1	2457	PSU	O2-C2-N1	-3.51	118.92	122.79
2	2	966	2MG	C5-C6-N1	3.44	120.03	113.95
1	1	2445	2MG	C5-C6-N1	3.44	120.03	113.95
1	1	2498	OMC	C6-N1-C2	-3.44	114.53	120.49
1	1	747	5MU	O4-C4-N3	-3.43	113.54	120.12
1	1	2251	OMG	C5-C6-N1	3.42	119.99	113.95
1	1	1835	2MG	O6-C6-C5	-3.42	117.70	124.37
1	1	2552	OMU	O3'-C3'-C4'	3.35	120.74	111.05
1	1	2580	PSU	O2-C2-N1	-3.33	119.12	122.79
1	1	955	PSU	C4-N3-C2	-3.32	121.55	126.34
1	1	2605	PSU	O2-C2-N1	-3.32	119.14	122.79
1	1	745	1MG	O2'-C2'-C3'	3.32	122.55	111.82
1	1	1917	PSU	C4-N3-C2	-3.29	121.61	126.34
2	2	527	7MG	C2-N1-C6	-3.27	119.14	125.10
1	1	1911	PSU	C6-N1-C2	-3.27	119.34	122.68
2	2	1518	MA6	C4-C5-N7	-3.25	106.01	109.40
49	q	89	0TD	OD2-CG-CB	3.22	120.10	113.15
1	1	746	PSU	C6-C5-C4	-3.18	115.98	118.20
2	2	1207	2MG	C5-C6-N1	3.17	119.55	113.95
1	1	2605	PSU	C4-N3-C2	-3.15	121.80	126.34
2	2	527	7MG	C6-C5-N7	3.12	136.83	131.91
1	1	2504	PSU	C6-C5-C4	-3.11	116.03	118.20
2	2	516	PSU	O2-C2-N3	-3.10	115.97	121.82
1	1	745	1MG	O3'-C3'-C2'	3.10	121.85	111.82
1	1	745	1MG	C5'-C4'-C3'	3.06	126.66	115.18
1	1	2552	OMU	O4-C4-C5	-3.05	119.79	125.16
2	2	527	7MG	C6-C5-C4	-3.05	116.33	122.62
1	1	1915	3TD	O3'-C3'-C4'	3.05	119.86	111.05
2	2	527	7MG	O6-C6-C5	-3.03	120.11	127.54
2	2	516	PSU	O4-C4-N3	-3.03	114.31	120.12
1	1	1835	2MG	CM2-N2-C2	-3.01	117.22	123.86
1	1	2251	OMG	C2-N1-C6	-3.00	119.57	125.10
1	1	2605	PSU	C6-N1-C2	-2.99	119.63	122.68
1	1	2503	2MA	C8-N7-C5	2.94	108.58	102.99
1	1	745	1MG	C5-C6-N1	2.90	118.26	113.90
1	1	1917	PSU	C6-N1-C2	-2.86	119.76	122.68
1	1	745	1MG	C8-N7-C5	2.82	108.37	102.99
2	2	1516	2MG	C5-C6-N1	2.79	118.88	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	1915	3TD	O3'-C3'-C2'	2.76	120.75	111.82
2	2	967	5MC	O2-C2-N3	-2.76	117.84	122.33
2	2	1402	4OC	C1'-N1-C6	-2.75	114.84	120.84
2	2	966	2MG	C8-N7-C5	2.73	108.19	102.99
1	1	1962	5MC	O2-C2-N3	-2.71	117.92	122.33
1	1	2504	PSU	C6-N1-C2	-2.68	119.94	122.68
2	2	1407	5MC	C5-C4-N3	-2.65	118.81	121.67
2	2	516	PSU	C5-C4-N3	2.63	122.54	116.58
1	1	745	1MG	O2'-C2'-C1'	2.63	120.55	110.85
1	1	1618	6MZ	C4-C5-N7	-2.62	106.67	109.40
2	2	1402	4OC	C1'-N1-C2	2.61	124.25	118.42
1	1	1915	3TD	C4-N3-C2	-2.60	121.79	124.61
1	1	2445	2MG	O6-C6-C5	-2.56	119.37	124.37
1	1	955	PSU	C6-N1-C2	-2.56	120.06	122.68
2	2	1207	2MG	C8-N7-C5	2.53	107.81	102.99
1	1	2552	OMU	O3'-C3'-C2'	2.49	118.25	111.17
2	2	1519	MA6	C4-C5-N7	-2.46	106.83	109.40
2	2	1498	UR3	C5-C6-N1	-2.41	117.77	121.81
2	2	1498	UR3	C1'-N1-C2	2.39	121.02	116.99
1	1	2498	OMC	C5-C6-N1	2.37	125.78	121.81
1	1	1962	5MC	N4-C4-N3	2.36	122.79	118.48
1	1	1618	6MZ	C1'-N9-C4	2.36	130.79	126.64
1	1	2498	OMC	C4-N3-C2	2.34	124.03	120.25
1	1	1962	5MC	C5-C4-N4	-2.33	117.99	121.48
1	1	2580	PSU	O3'-C3'-C4'	2.33	117.78	111.05
2	2	1498	UR3	C1'-N1-C6	-2.33	115.77	120.84
2	2	967	5MC	C5-C4-N3	-2.33	119.17	121.67
1	1	2457	PSU	C6-N1-C2	-2.29	120.34	122.68
1	1	1962	5MC	C5-C4-N3	-2.27	119.22	121.67
2	2	1407	5MC	N1-C2-N3	2.26	122.93	118.81
1	1	2251	OMG	O6-C6-C5	-2.26	119.95	124.37
1	1	1939	5MU	C1'-N1-C6	-2.25	117.38	121.12
2	2	1402	4OC	C2'-C3'-C4'	2.25	106.88	101.99
1	1	2580	PSU	C5-C6-N1	-2.24	118.75	122.11
1	1	2251	OMG	C8-N7-C5	2.24	107.25	102.99
2	2	966	2MG	O6-C6-C5	-2.19	120.10	124.37
2	2	1207	2MG	O6-C6-C5	-2.18	120.11	124.37
1	1	1835	2MG	C8-N7-C5	2.18	107.14	102.99
1	1	2445	2MG	C8-N7-C5	2.15	107.08	102.99
1	1	2580	PSU	O3'-C3'-C2'	2.13	118.72	111.82
49	q	89	0TD	OD1-CG-CB	-2.13	117.97	122.44
1	1	2552	OMU	O2-C2-N1	-2.13	119.95	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1402	4OC	O4'-C1'-N1	2.13	113.22	108.36
1	1	1939	5MU	C1'-N1-C2	2.12	121.42	117.57
2	2	1207	2MG	CM2-N2-C2	-2.12	119.17	123.86
1	1	2457	PSU	O3'-C3'-C4'	2.11	117.15	111.05
2	2	1402	4OC	C3'-C2'-C1'	-2.09	98.95	102.89
2	2	1516	2MG	C8-N7-C5	2.08	106.95	102.99
1	1	2504	PSU	O4'-C1'-C2'	2.07	108.06	105.14
2	2	1498	UR3	O3'-C3'-C2'	-2.07	105.14	111.82
1	1	2552	OMU	CM2-O2'-C2'	-2.05	109.14	114.52
2	2	967	5MC	N1-C2-N3	2.05	122.54	118.81
1	1	2030	6MZ	C1'-N9-C4	-2.04	123.05	126.64
1	1	745	1MG	O4'-C1'-C2'	2.04	109.91	106.93
1	1	2457	PSU	C6-C5-C4	-2.02	116.79	118.20
1	1	2457	PSU	C3'-C2'-C1'	-2.01	99.30	101.64

All (39) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	1	745	1MG	C1'
1	1	745	1MG	C2'
1	1	746	PSU	C4'
1	1	746	PSU	C3'
1	1	747	5MU	C4'
1	1	747	5MU	C2'
1	1	955	PSU	C4'
1	1	955	PSU	C3'
1	1	1618	6MZ	C2'
1	1	1618	6MZ	C3'
1	1	1911	PSU	C4'
1	1	1911	PSU	C3'
1	1	1915	3TD	C3'
1	1	1917	PSU	C4'
1	1	1917	PSU	C3'
1	1	1939	5MU	C4'
1	1	1939	5MU	C2'
1	1	2030	6MZ	C2'
1	1	2030	6MZ	C3'
1	1	2069	G7M	C2'
1	1	2251	OMG	C2'
1	1	2457	PSU	C4'
1	1	2457	PSU	C3'
1	1	2498	OMC	C4'

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Mol	Chain	Res	Type	Atom
1	1	2503	2MA	C2'
1	1	2503	2MA	C3'
1	1	2504	PSU	C4'
1	1	2504	PSU	C3'
1	1	2552	OMU	C2'
1	1	2552	OMU	C3'
1	1	2580	PSU	C4'
1	1	2580	PSU	C3'
1	1	2605	PSU	C4'
1	1	2605	PSU	C3'
2	2	516	PSU	C4'
2	2	516	PSU	C3'
2	2	527	7MG	C3'
2	2	1402	4OC	C1'
2	2	1402	4OC	C3'

All (97) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	1	746	PSU	C2'-C1'-C5-C6
1	1	746	PSU	O4'-C1'-C5-C6
1	1	746	PSU	C3'-C4'-C5'-O5'
1	1	746	PSU	O4'-C4'-C5'-O5'
1	1	747	5MU	C3'-C4'-C5'-O5'
1	1	955	PSU	C2'-C1'-C5-C4
1	1	1618	6MZ	O4'-C4'-C5'-O5'
1	1	1618	6MZ	C3'-C4'-C5'-O5'
1	1	1915	3TD	O4'-C1'-C5-C6
1	1	1962	5MC	C2'-C1'-N1-C2
1	1	1962	5MC	C2'-C1'-N1-C6
1	1	2030	6MZ	N1-C6-N6-C9
1	1	2445	2MG	C3'-C4'-C5'-O5'
1	1	2445	2MG	N1-C2-N2-CM2
1	1	2445	2MG	N3-C2-N2-CM2
1	1	2498	OMC	C3'-C4'-C5'-O5'
1	1	2498	OMC	C4'-C5'-O5'-P
1	1	2504	PSU	C3'-C4'-C5'-O5'
1	1	2504	PSU	O4'-C4'-C5'-O5'
1	1	2552	OMU	O4'-C4'-C5'-O5'
1	1	2580	PSU	C2'-C1'-C5-C6
1	1	2580	PSU	C3'-C4'-C5'-O5'
1	1	2605	PSU	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
2	2	516	PSU	C2'-C1'-C5-C4
2	2	516	PSU	O4'-C1'-C5-C4
2	2	516	PSU	C2'-C1'-C5-C6
2	2	516	PSU	O4'-C1'-C5-C6
2	2	516	PSU	C3'-C4'-C5'-O5'
2	2	516	PSU	O4'-C4'-C5'-O5'
2	2	527	7MG	C3'-C4'-C5'-O5'
2	2	966	2MG	O4'-C4'-C5'-O5'
2	2	966	2MG	C3'-C4'-C5'-O5'
2	2	967	5MC	O4'-C4'-C5'-O5'
2	2	1402	4OC	C3'-C2'-O2'-CM2
2	2	1402	4OC	O4'-C1'-N1-C2
2	2	1402	4OC	O4'-C1'-N1-C6
2	2	1516	2MG	N1-C2-N2-CM2
2	2	1516	2MG	N3-C2-N2-CM2
2	2	1518	MA6	O4'-C4'-C5'-O5'
2	2	1518	MA6	C3'-C4'-C5'-O5'
2	2	1519	MA6	O4'-C4'-C5'-O5'
2	2	1519	MA6	C3'-C4'-C5'-O5'
2	2	1519	MA6	C5-C6-N6-C10
2	2	1519	MA6	N1-C6-N6-C10
1	1	747	5MU	C2'-C1'-N1-C6
1	1	747	5MU	C2'-C1'-N1-C2
1	1	745	1MG	C4'-C5'-O5'-P
1	1	2457	PSU	C4'-C5'-O5'-P
1	1	2030	6MZ	O4'-C4'-C5'-O5'
1	1	2030	6MZ	C3'-C4'-C5'-O5'
1	1	2503	2MA	O4'-C4'-C5'-O5'
1	1	2503	2MA	C3'-C4'-C5'-O5'
1	1	2552	OMU	C3'-C4'-C5'-O5'
1	1	2605	PSU	C3'-C4'-C5'-O5'
2	2	967	5MC	C3'-C4'-C5'-O5'
1	1	747	5MU	O4'-C4'-C5'-O5'
1	1	1835	2MG	O4'-C4'-C5'-O5'
1	1	1835	2MG	C3'-C4'-C5'-O5'
1	1	2445	2MG	O4'-C4'-C5'-O5'
1	1	2580	PSU	O4'-C4'-C5'-O5'
2	2	527	7MG	O4'-C4'-C5'-O5'
2	2	1402	4OC	O4'-C4'-C5'-O5'
1	1	955	PSU	C4'-C5'-O5'-P
1	1	2504	PSU	C4'-C5'-O5'-P
1	1	955	PSU	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
1	1	2498	OMC	O4'-C4'-C5'-O5'
1	1	2605	PSU	O4'-C4'-C5'-O5'
2	2	1518	MA6	C5-C6-N6-C9
2	2	1518	MA6	C5-C6-N6-C10
1	1	955	PSU	O4'-C4'-C5'-O5'
1	1	1915	3TD	C3'-C4'-C5'-O5'
1	1	2580	PSU	C4'-C5'-O5'-P
1	1	2552	OMU	C4'-C5'-O5'-P
49	q	89	0TD	SB-CB-CG-OD1
1	1	2498	OMC	C2'-C1'-N1-C6
1	1	1917	PSU	C4'-C5'-O5'-P
1	1	1939	5MU	C4'-C5'-O5'-P
1	1	1917	PSU	O4'-C4'-C5'-O5'
1	1	2457	PSU	C3'-C4'-C5'-O5'
1	1	1962	5MC	O4'-C1'-N1-C6
1	1	746	PSU	C4'-C5'-O5'-P
2	2	516	PSU	C4'-C5'-O5'-P
2	2	527	7MG	C4'-C5'-O5'-P
2	2	1519	MA6	C5-C6-N6-C9
1	1	2498	OMC	C2'-C1'-N1-C2
1	1	1915	3TD	C4'-C5'-O5'-P
1	1	1911	PSU	C4'-C5'-O5'-P
1	1	1962	5MC	O4'-C1'-N1-C2
1	1	2504	PSU	O4'-C1'-C5-C4
1	1	2251	OMG	C4'-C5'-O5'-P
1	1	747	5MU	C4'-C5'-O5'-P
2	2	1402	4OC	C3'-C4'-C5'-O5'
1	1	1915	3TD	O4'-C4'-C5'-O5'
1	1	2069	G7M	O4'-C4'-C5'-O5'
49	q	89	0TD	CG-CB-SB-CSB
2	2	1519	MA6	C4'-C5'-O5'-P
1	1	1618	6MZ	C4'-C5'-O5'-P

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.



## 5.6 Ligand geometry [i](#)

Of 441 ligands modelled in this entry, 441 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	2	2
1	1	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	1	2314:A	O3'	2315:G	P	3.20
1	2	1276:G	O3'	1277:C	P	3.19
1	2	1383:C	O3'	1384:C	P	3.17

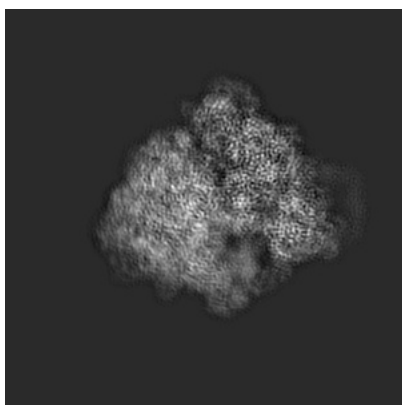
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-4476. These allow visual inspection of the internal detail of the map and identification of artifacts.

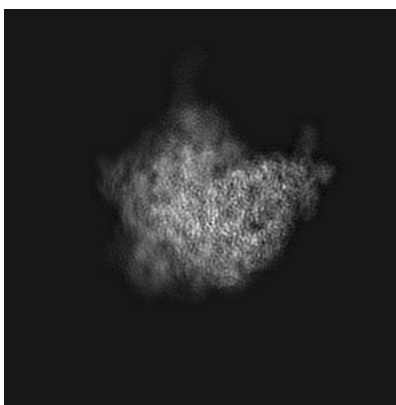
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

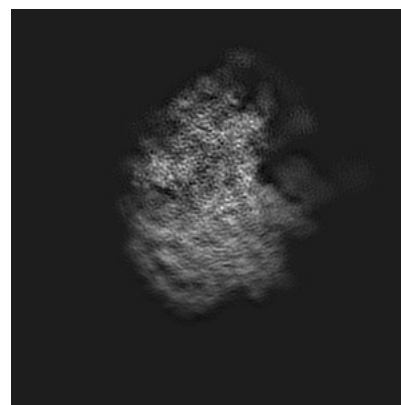
#### 6.1.1 Primary map



X



Y

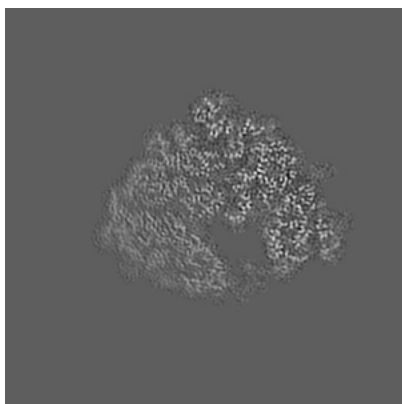


Z

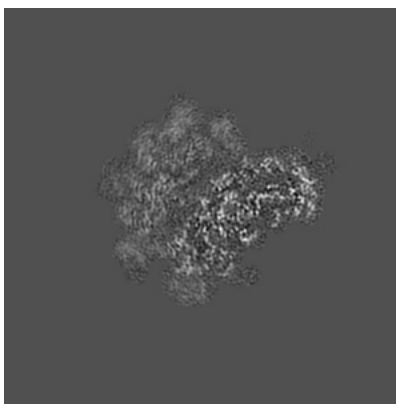
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

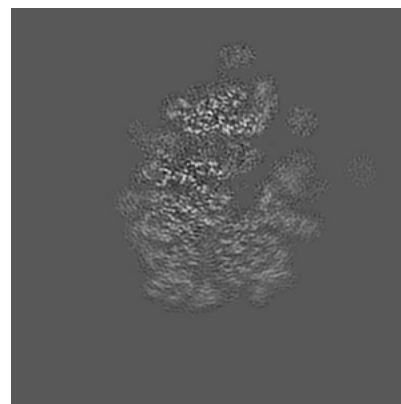
#### 6.2.1 Primary map



X Index: 190



Y Index: 190

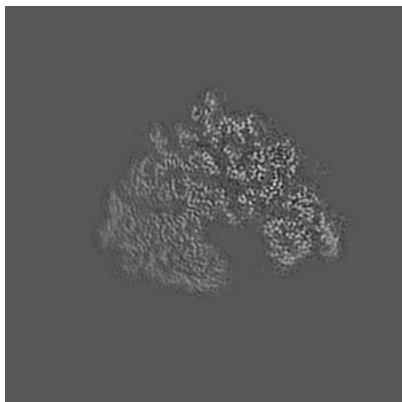


Z Index: 190

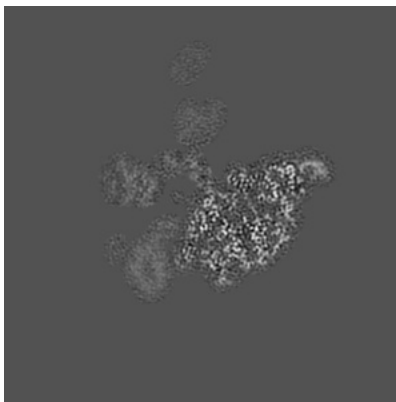
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

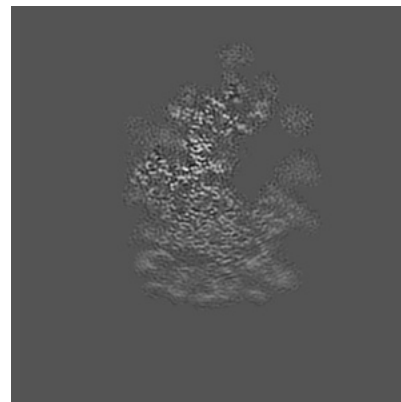
### 6.3.1 Primary map



X Index: 186



Y Index: 231

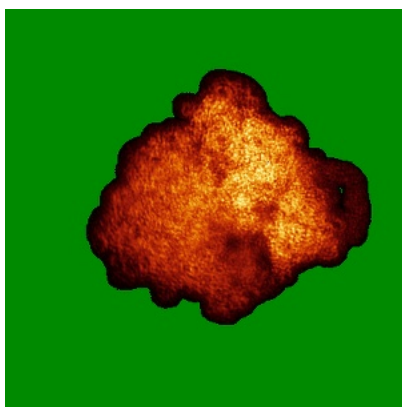


Z Index: 199

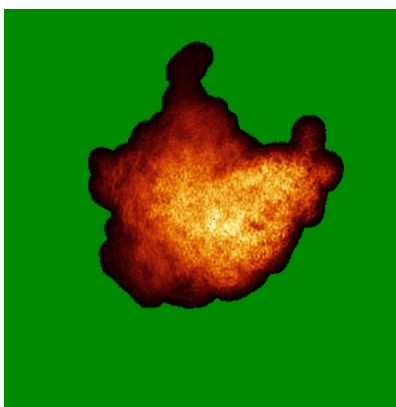
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

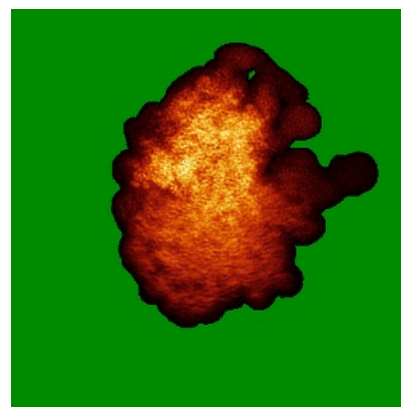
### 6.4.1 Primary map



X



Y

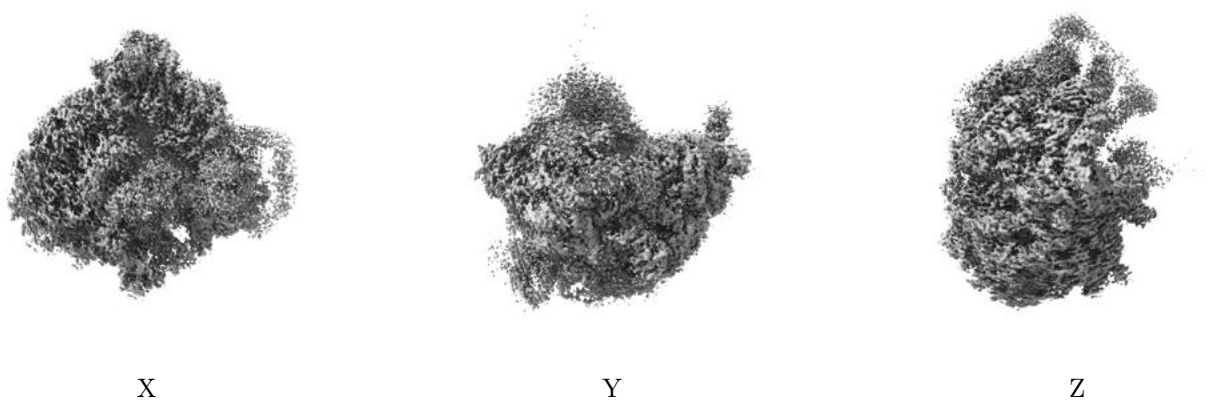


Z

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

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

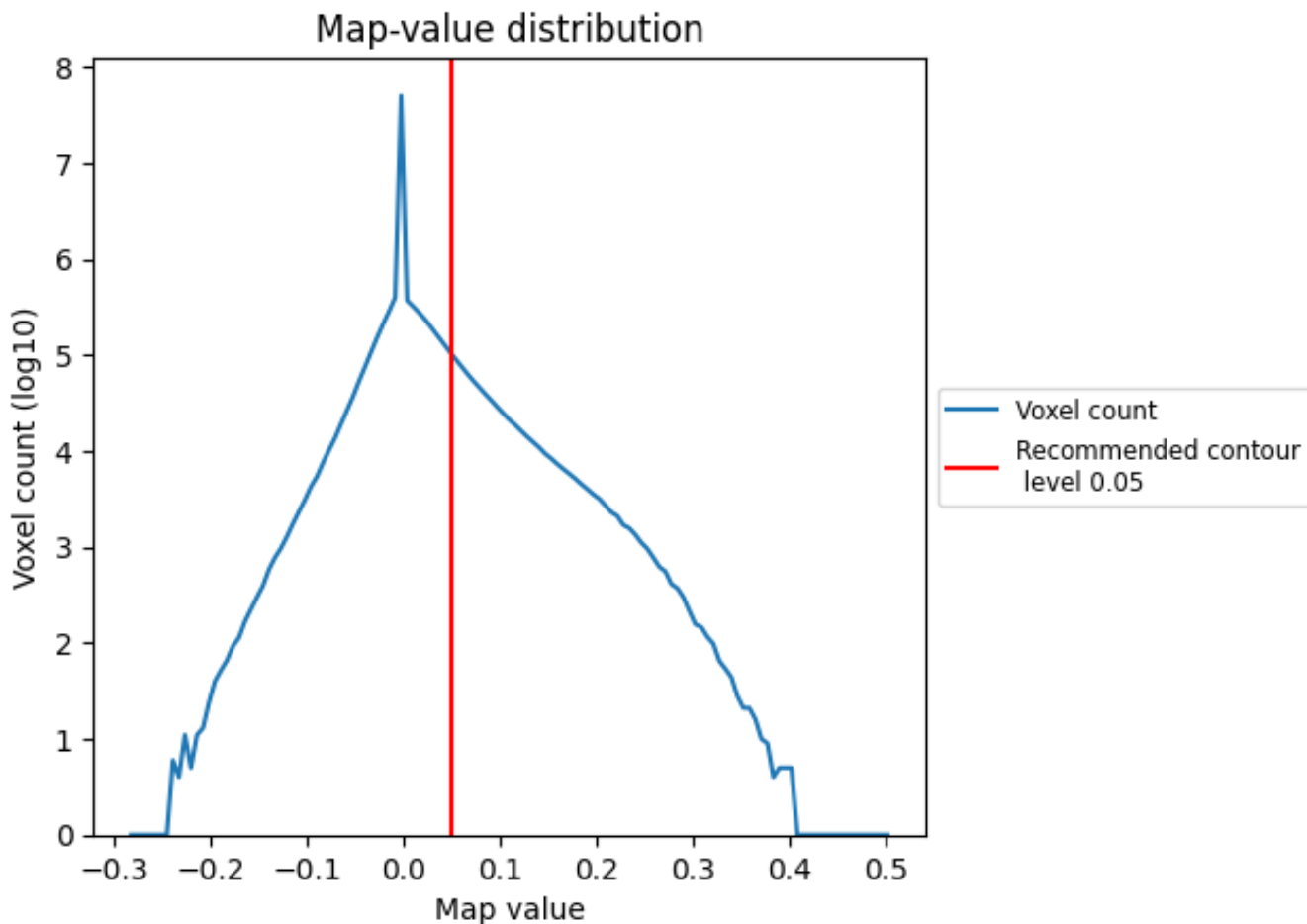
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

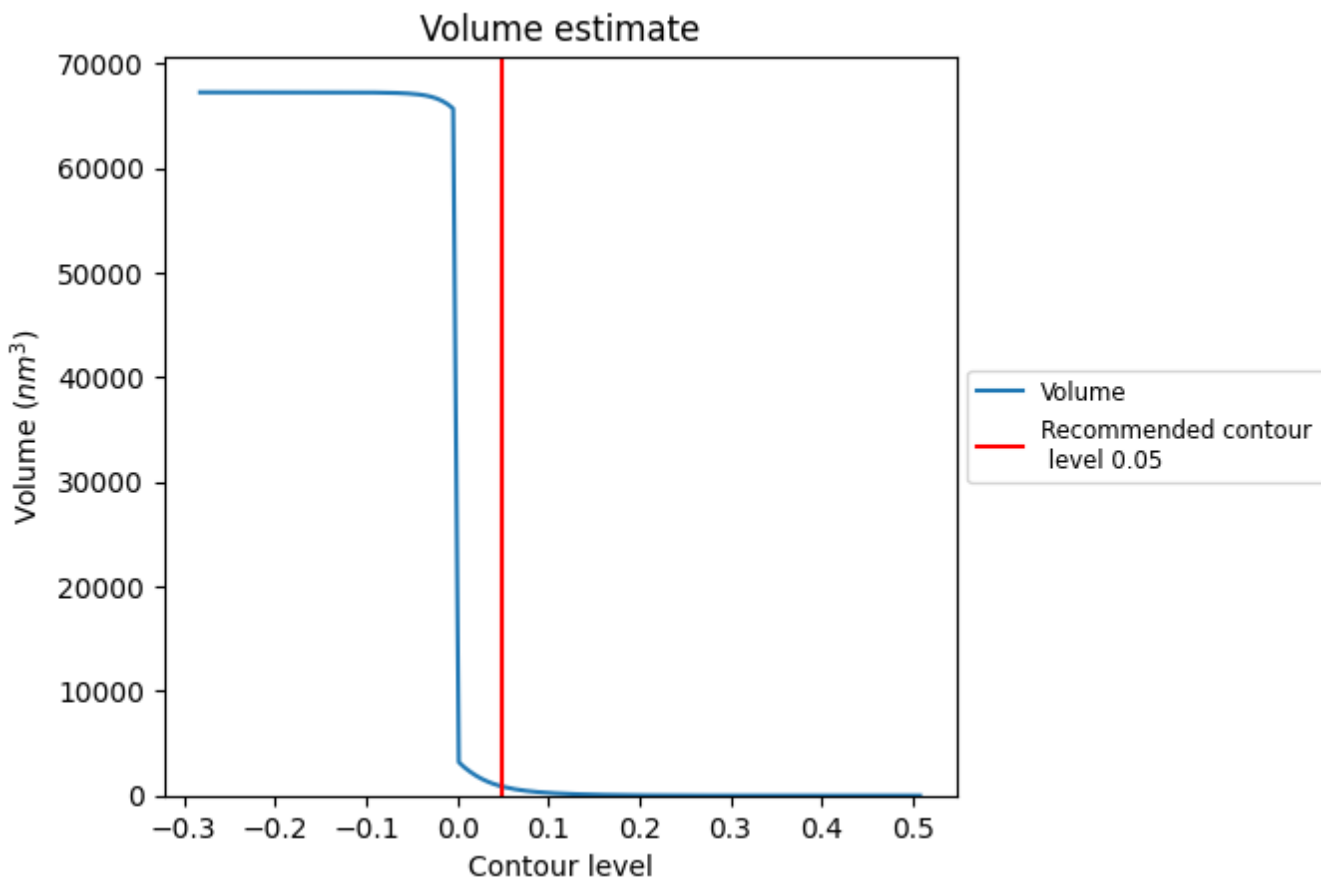
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

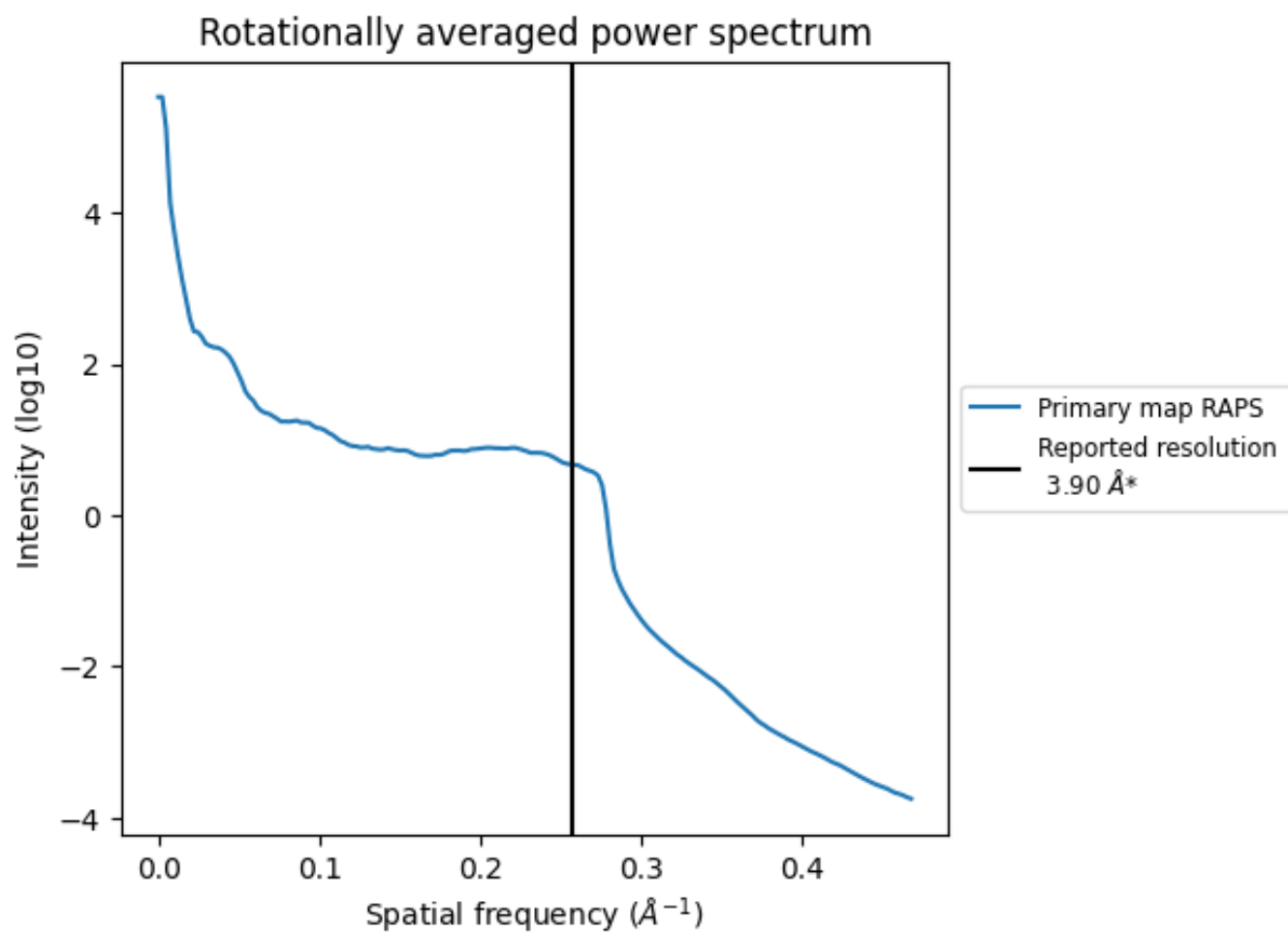
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 855  $\text{nm}^3$ ; this corresponds to an approximate mass of 773 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum i



\*Reported resolution corresponds to spatial frequency of 0.256 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

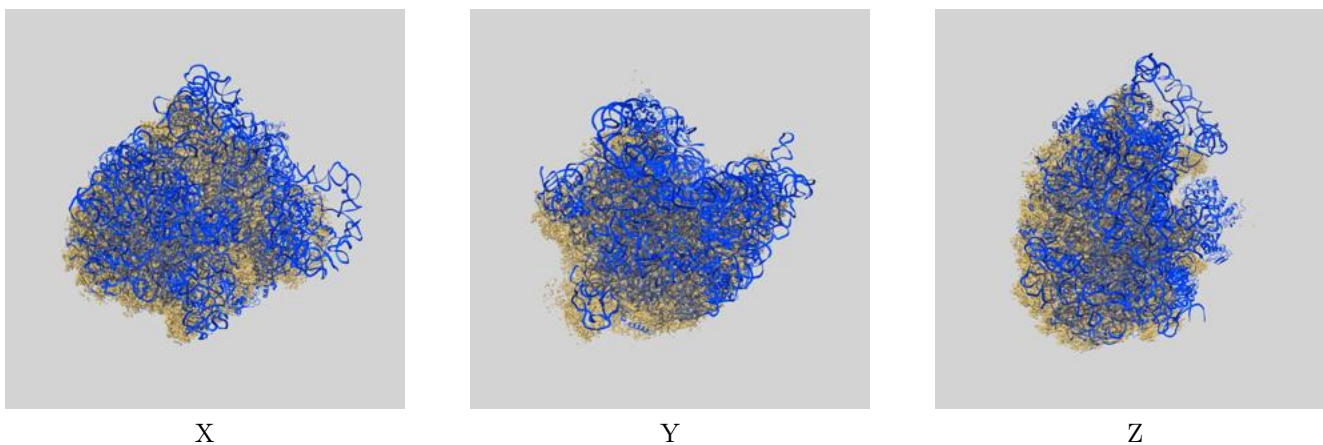
This section was not generated. No FSC curve or half-maps provided.



## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-4476 and PDB model 6Q97. Per-residue inclusion information can be found in section 3 on page 16.

### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.05 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.

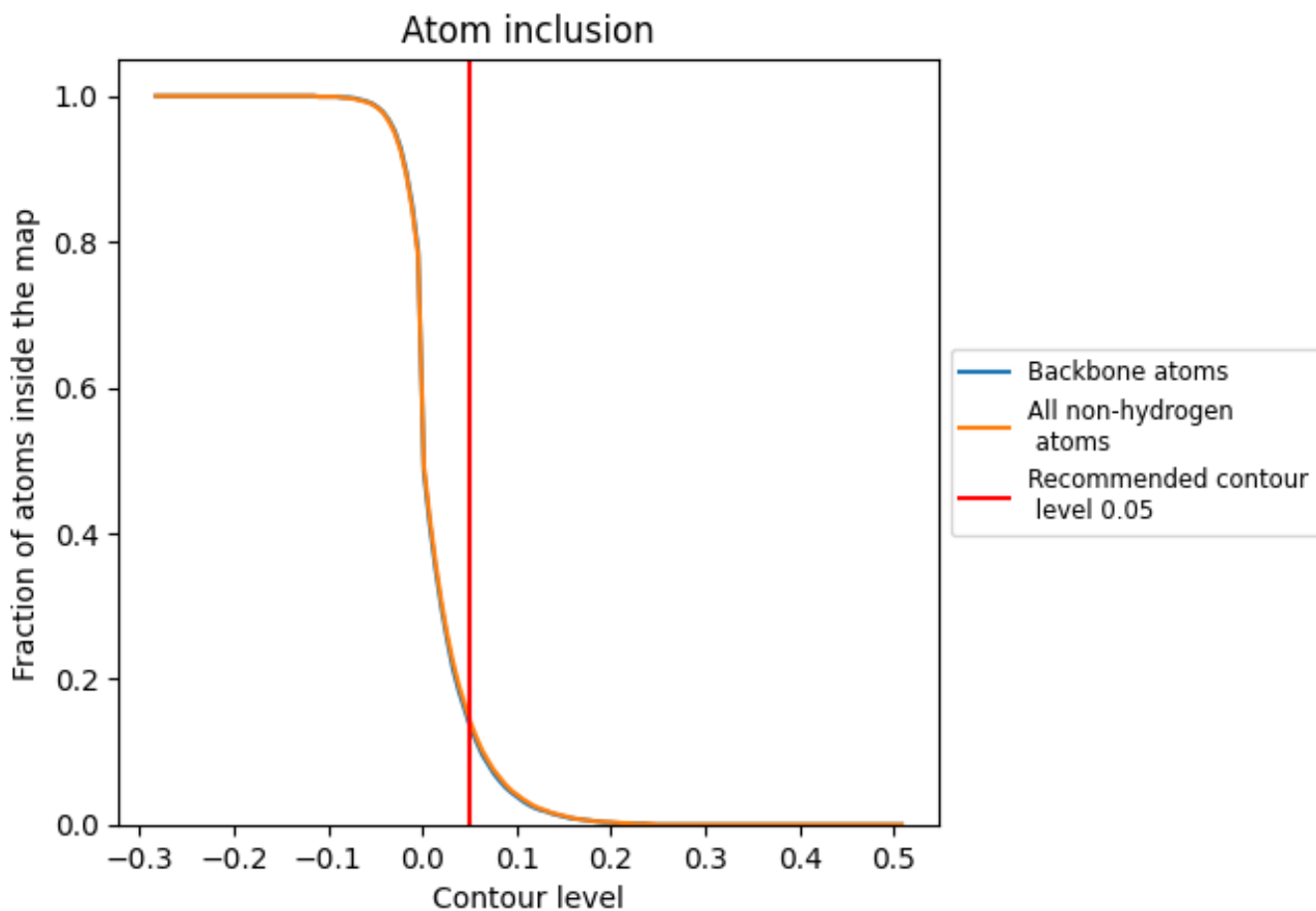
## 9.2 Q-score mapped to coordinate model [i](#)

This section was not generated.

## 9.3 Atom inclusion mapped to coordinate model [i](#)

This section was not generated.

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 14% of all backbone atoms, 14% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary [i](#)



























The table lists the average atom inclusion at the recommended contour level (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion
All	0.1440
1	0.1690
2	0.1670
3	0.0810
4	0.0140
5	0.0260
6	0.1860
7	0.1050
8	0.1050
9	0.2340
B	0.1980
C	0.0560
D	0.1420
E	0.0460
F	0.0000
G	0.1630
H	0.0000
I	0.0000
J	0.0650
K	0.0710
L	0.2730
M	0.1040
N	0.1370
O	0.1820
P	0.1140
Q	0.1330
R	0.1360
S	0.2230
T	0.1900
U	0.1970
V	0.0240
W	0.1240
X	0.2190
Y	0.1330
Z	0.0900



*Continued on next page...*

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Chain	Atom inclusion
a	 0.0350
b	 0.1310
c	 0.0860
d	 0.2650
e	 0.2750
f	 0.0210
g	 0.0090
h	 0.0380
i	 0.0230
j	 0.0260
k	 0.2410
l	 0.3350
m	 0.0070
n	 0.1730
o	 0.0580
p	 0.1480
q	 0.2100
r	 0.2560
s	 0.1080
t	 0.3320
u	 0.0180
v	 0.0920
w	 0.1950
x	 0.1480
y	 0.2090
z	 0.1430