



# Full wwPDB EM Validation Report ⓘ

Nov 6, 2023 – 11:03 AM JST

PDB ID : 8IPX  
EMDB ID : EMD-35649  
Title : human nuclear pre-60S ribosomal particle - State C'  
Authors : Zhang, Y.; Gao, N.  
Deposited on : 2023-03-15  
Resolution : 4.30 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)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

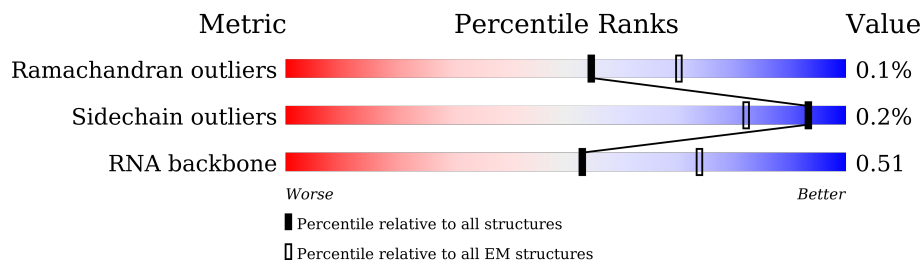
EMDB validation analysis : 0.0.1.dev70  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

# 1 Overall quality at a glance

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

The reported resolution of this entry is 4.30 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	2	5054	
2	6	245	
3	7	163	
4	8	156	
5	9	134	
6	A	159	
7	B	403	
8	D	427	

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Mol	Chain	Length	Quality of chain
9	E	115	83% 83% 15%
10	G	266	78% 89% 9%
11	H	123	67% 98% ..
12	I	192	80% 98% ..
13	J	260	82% 83% 17%
14	L	148	43% 75% 24%
15	M	97	29% 89% 11%
16	P	51	27% 98% .
17	Q	211	67% 99%
18	S	215	46% 61% 37%
19	U	204	49% 99%
20	V	203	40% 98% ..
21	X	92	91% 99% .
22	Z	188	38% 80% 20%
23	a	196	61% 74% 24%
24	b	176	64% 100%
25	e	140	71% 94% 6%
26	h	145	50% 92% 8%
27	l	137	39% 91% 9%
28	m	257	95% 96% .
29	n	110	29% 95% ..
30	o	288	65% 81% 18%
31	p	248	48% 91% 9%
32	r	360	23% 22% . 77%
33	u	549	12% 12% 88%

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Mol	Chain	Length	Quality of chain
34	v	239	91% 90% 9%
35	w	731	59% 59% 41%
36	y	165	100% 99%
37	z	129	51% 51% 48%
38	C	178	93% 92% 7%
39	R	297	99% 97%
40	W	485	80% 79% 20%
41	T	160	74% 76% 22%
42	4	634	93% 94%
43	Y	184	39% 90% 9%
44	k	135	37% 95%
45	j	125	53% 89% 11%
46	d	128	73% 79% 19%
47	t	293	38% 36% 62%
48	x	60	95% 95% 5%
49	N	490	49% 48% 51%
50	1	255	90% 88% 10%
51	K	105	85% 96%
52	F	117	76% 97%
53	i	136	96% 99%
54	O	70	90% 96%
55	3	120	92% 61% 31%
56	q	588	69% 68% 31%
57	g	156	67% 92% 7%
58	f	478	54% 53% 46%

## 2 Entry composition [i](#)

There are 60 unique types of molecules in this entry. The entry contains 160786 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 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	2	3475	74602	33261	13645	24222	3474	0	0

- Molecule 2 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	6	244	1852	1149	318	372	13	0	0

- Molecule 3 is a protein called Probable ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	7	135	1159	737	225	187	10	0	0

- Molecule 4 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	8	156	3315	1481	585	1094	155	0	0

- Molecule 5 is a protein called Zinc finger protein 593.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	9	86	711	433	154	121	3	0	0

- Molecule 6 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	A	45	352	221	76	52	3	0	0

- Molecule 7 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	B	402	3244	2065	609	556	14	1	0

- Molecule 8 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	D	358	2853	1797	570	473	13	0	0

- Molecule 9 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	E	98	764	485	135	138	6	0	0

- Molecule 10 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G	241	1927	1228	371	324	4	0	0

- Molecule 11 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	H	122	1015	641	205	168	1	0	0

- Molecule 12 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	I	190	1518	956	284	272	6	0	0

- Molecule 13 is a protein called Ribosome biogenesis protein NSA2 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	J	217	1772	1134	334	296	8	0	0

- Molecule 14 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	L	112	Total	C	N	O	S	0	0
			877	557	172	145	3		

- Molecule 15 is a protein called 60S ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	M	86	Total	C	N	O	S	0	0
			705	434	155	111	5		

- Molecule 16 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	50	Total	C	N	O	S	0	0
			444	281	98	64	1		

- Molecule 17 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	210	Total	C	N	O	S	0	0
			1701	1064	352	281	4		

- Molecule 18 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	S	135	Total	C	N	O	S	0	0
			1111	713	213	178	7		

- Molecule 19 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	203	Total	C	N	O	S	0	0
			1701	1072	359	266	4		

- Molecule 20 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	V	201	Total	C	N	O	S	0	0
			1650	1063	321	261	5		

- Molecule 21 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	X	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 22 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Z	151	Total	C	N	O	S	0	0
			1223	768	247	203	5		

- Molecule 23 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	a	148	Total	C	N	O	S	0	0
			1239	772	266	192	9		

- Molecule 24 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	b	176	Total	C	N	O	S	0	0
			1461	930	284	236	11		

- Molecule 25 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	e	131	Total	C	N	O	S	0	0
			979	618	184	172	5		

- Molecule 26 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	h	134	Total	C	N	O	S	0	0
			1115	700	226	186	3		

- Molecule 27 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	l	125	Total	C	N	O	S	0	0
			1002	622	207	168	5		

- Molecule 28 is a protein called 60S ribosomal protein L8.



Mol	Chain	Residues	Atoms					AltConf	Trace
28	m	248	Total	C	N	O	S	0	0
			1898	1189	389	314	6		

- Molecule 29 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	n	109	Total	C	N	O	S	0	0
			876	555	174	144	3		

- Molecule 30 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	o	235	Total	C	N	O	S	0	0
			1897	1217	360	316	4		

- Molecule 31 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	p	225	Total	C	N	O	S	1	0
			1878	1207	361	301	9		

- Molecule 32 is a protein called Coiled-coil domain-containing protein 86.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	r	82	Total	C	N	O	S	0	0
			723	442	158	121	2		

- Molecule 33 is a protein called Guanine nucleotide-binding protein-like 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	u	67	Total	C	N	O	S	0	0
			569	357	119	90	3		

- Molecule 34 is a protein called mRNA turnover protein 4 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	v	217	Total	C	N	O	S	0	0
			1771	1129	311	320	11		

- Molecule 35 is a protein called G Protein Nucleolar 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	w	433	3472	2201	615	643	13	0	0

- Molecule 36 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	y	165	1250	779	232	234	5	0	0

- Molecule 37 is a protein called Protein LLP homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	z	67	581	363	128	88	2	0	0

- Molecule 38 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	C	165	1319	836	245	233	5	0	0

- Molecule 39 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	R	293	2382	1507	434	427	14	0	0

- Molecule 40 is a protein called Notchless protein homolog 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	W	388	3018	1889	556	562	11	0	0

- Molecule 41 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	T	124	1001	632	194	171	4	0	0

- Molecule 42 is a protein called GTP-binding protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	4	611	Total	C	N	O	S	0	0
			5016	3151	918	920	27		

- Molecule 43 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Y	167	Total	C	N	O	S	0	0
			1355	848	260	238	9		

- Molecule 44 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	k	129	Total	C	N	O	S	0	0
			1064	673	220	166	5		

- Molecule 45 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	j	111	Total	C	N	O	S	0	0
			918	578	178	160	2		

- Molecule 46 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	d	104	Total	C	N	O	S	0	0
			850	542	149	157	2		

- Molecule 47 is a protein called MKI67 FHA domain-interacting nucleolar phosphoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	t	111	Total	C	N	O	S	0	0
			928	601	157	167	3		

- Molecule 48 is a RNA chain called ITS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	x	57	Total	C	N	O	P	0	0
			684	285	1	341	57		

- Molecule 49 is a protein called Ribosomal L1 domain-containing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	N	239	Total	C	N	O	S	0	0
			1924	1232	338	348	6		

- Molecule 50 is a protein called 60S ribosomal protein L7-like 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	1	230	Total	C	N	O	S	0	0
			1897	1226	357	310	4		

- Molecule 51 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	K	102	Total	C	N	O	S	0	0
			832	521	177	129	5		

- Molecule 52 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	F	113	Total	C	N	O	S	0	0
			897	560	185	146	6		

- Molecule 53 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	i	135	Total	C	N	O	S	0	0
			1107	714	208	182	3		

- Molecule 54 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	O	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

- Molecule 55 is a RNA chain called 5S RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	3	115	Total	C	N	O	P	0	0
			2453	1093	437	808	115		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	92	C	G	conflict	GB NR_023363
3	93	G	C	conflict	GB NR_023363
3	95	C	U	conflict	GB NR_023363
3	96	U	G	conflict	GB NR_023363

- Molecule 56 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	q	404	3317	2140	582	582	13	0	0

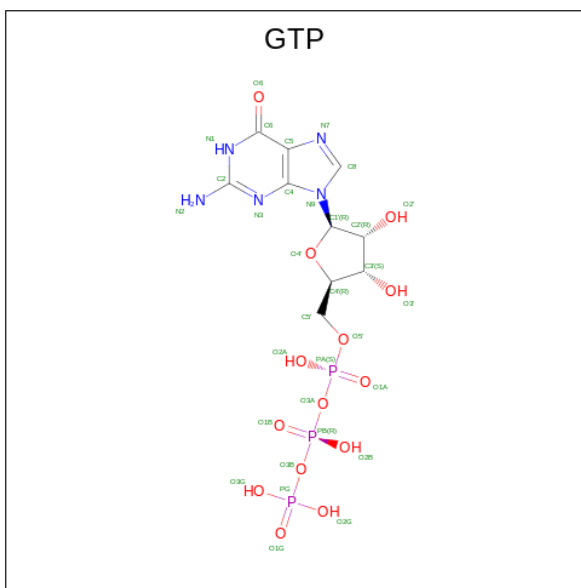
- Molecule 57 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	g	145	1170	750	222	197	1	0	0

- Molecule 58 is a protein called Ribosome biogenesis protein NOP53.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	f	258	2137	1326	427	382	2	0	0

- Molecule 59 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula:  $C_{10}H_{16}N_5O_{14}P_3$ ).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
59	w	1	32	10	5	14	3	0

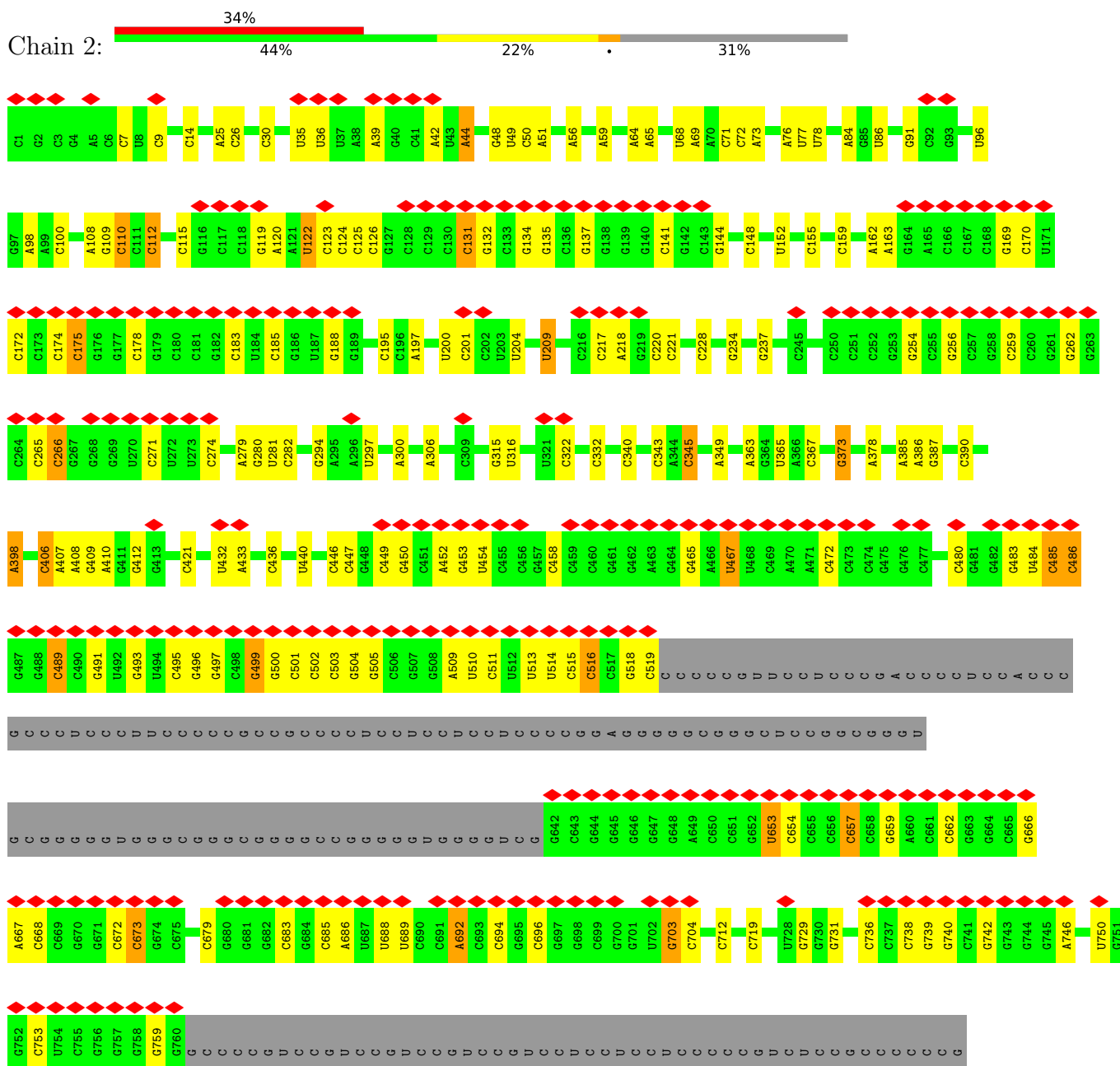
- Molecule 60 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
60	w	1	1	1	0

### 3 Residue-property plots [i](#)

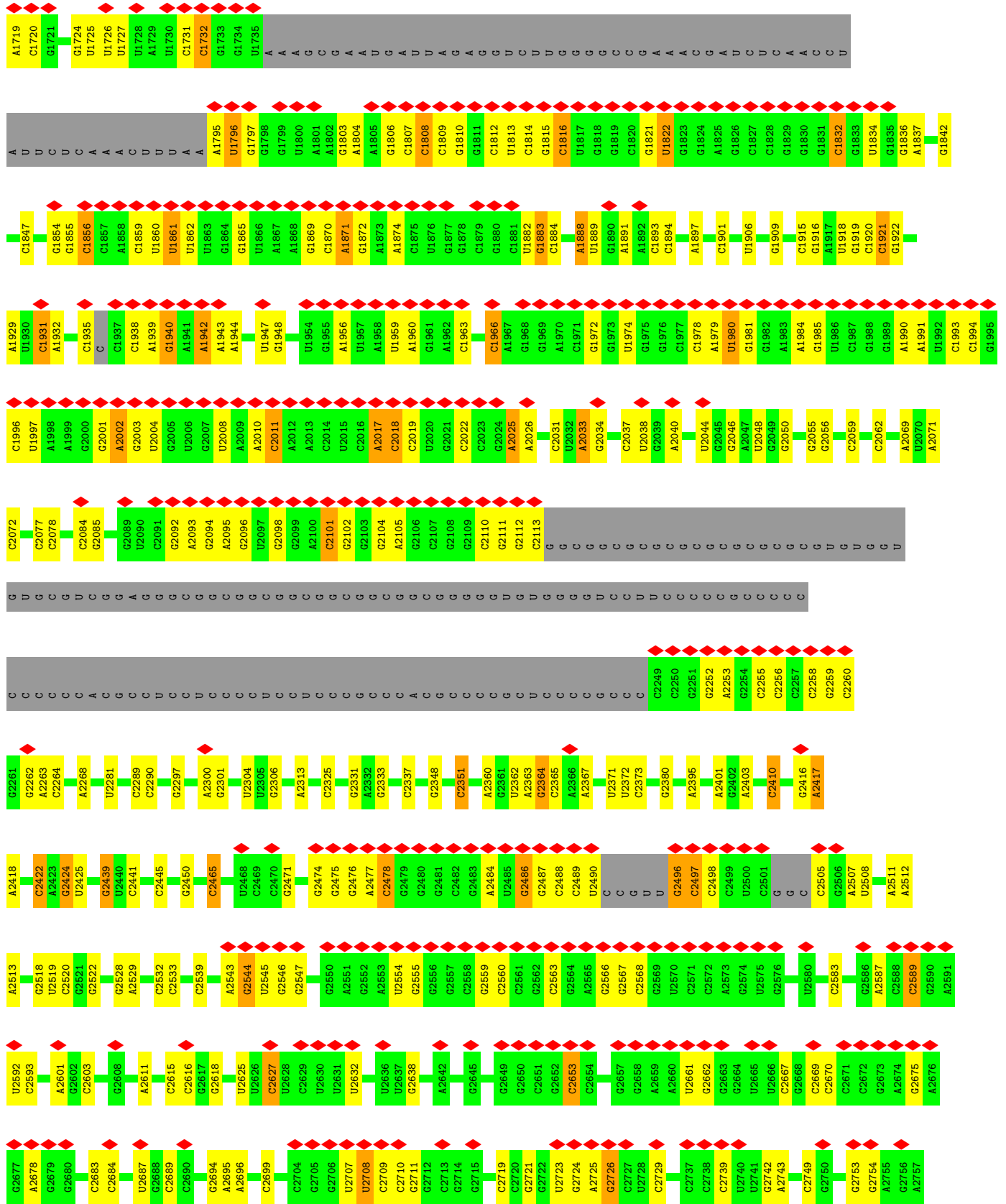
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: 28S rRNA



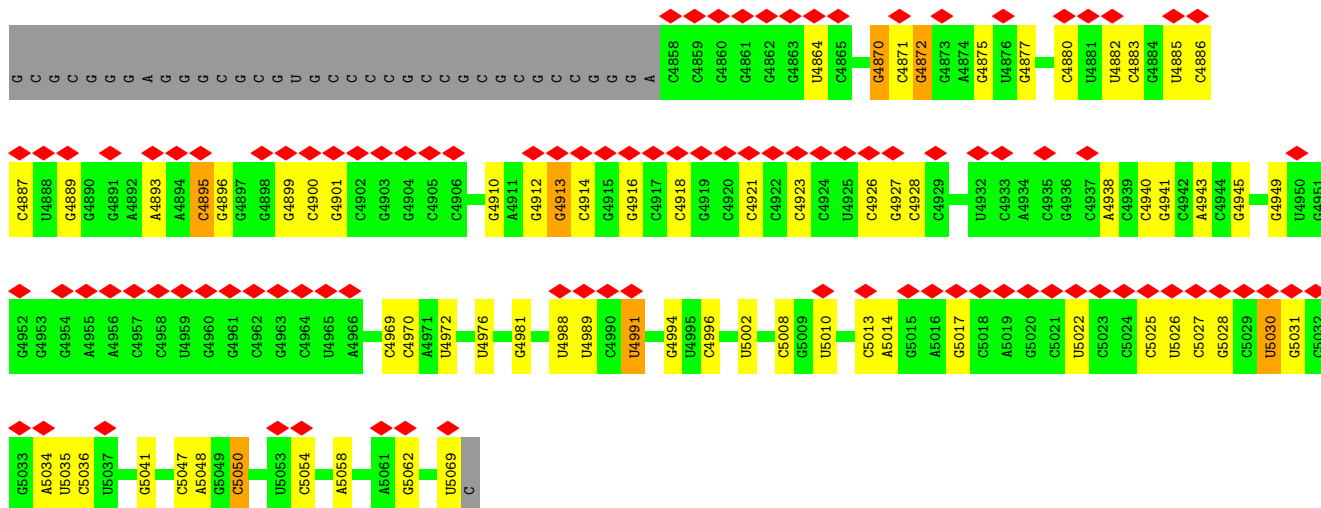
A1650	U1567	C1481	C1411	C1318	U1247	G1187	G1067	G933	G
G1654	C1568	G1482	G1412	U	C1248	C1188	G1068	G934	G
U1656	U1569	C1483	C1413	G	C1249	G1189	G1069	A935	G
U1659	G1570	G1484	C1414	A1322	C1250	C1190	G1070	C936	G
C1661	G1571	C1485	G1415	A1323	C1251	C1191	C1071	C941	G
C1663	G1572	C1486	G1416	A1324	C1252	C1192	G1072	C942	G
U1664	G1573	C1487	C1417	C1325	G1253	C1193	G1073	A943	U
C1666	G1574	G1488	C1418	A1326	A1254	G1194	G1074	A944	C
G1670	G1577	G1489	G1419	A1333	A1255	G1195	G1075	A945	C
U1671	U1578	G1490	A1420	A1334	G1256	G1196	C1076	A956	U
U1672	U1582	G1492	U1423	A1387	A1257	C1197	C1077	G	C
U1673	C1585	G1493	U1428	C1340	G1258	G1198	A1078	G	C
U1674	G1586	U1494	U1429	C1344	G1259	G1199	C1079	G	C
C1675	G1587	G1495	C1430	U1348	G1261	G1200	A1080	G	C
C1676	U1588	G1496	C1431	A1354	G1262	U1201	C1081	G	C
U1677	U1589	A1497	G1432	A1354	C1263	C1202	C1082	G	C
C1678	C1501	G1498	G1433	G1358	C1264	G1203	U1083	A964	G
A1679	G1502	C1501	G1434	G1359	G1265	C1204	U1084	G965	A
G1680	A1503	A1503	G1435	U1364	G1266	G1205	U1085	A966	G
G1681	C1504	C1504	G1436	C1367	C1267	C1206	C1086	C967	C
A1682	G1505	G1505	C1437	U1367	G1268	C1207	A1087	C968	A
U1683	C1506	A1506	U1438	G1370	G1269	U1208	C1088	C969	A
C1686	A1508	A1508	U1440	A1373	G1270	U1209	U1089	A	C
U1687	G1517	G1517	C1441	G1377	A1271	C1210	G1091	G	C
G1691	A1518	A1518	C1442	C1378	G1272	G1211	G1092	U971	C
C1694	G1522	G1522	A1443	C1379	G1273	G1212	C1093	C972	C
U1695	A1523	A1523	G1444	U1381	A1274	G1213	G1094	C974	U
C1697	A1525	A1525	U1445	G1384	G1275	C1214	A1095	C904	G
G1698	A1534	A1534	C1446	A1387	G1276	C1215	G1096	C905	C
U1699	C1535	C1535	C1447	G1394	G1277	G1216	C1097	C906	G
C1700	U1538	U1538	G1448	A1398	A1278	G1217	U1098	C907	G
A1701	G1539	G1539	C1449	G1399	C1279	G1218	C1099	A909	G
G1702	C1540	C1540	C1450	G1400	G1280	G1219	U1100	G910	G
C1703	A1547	A1547	G1451	G1401	G1283	G1220	C	G911	C
G1704	G1548	G1548	G1452	C1402	G1284	G1221	U	G912	C
C1705	G1549	G1549	G1453	G1403	G1287	A1222	C	U913	C
U1706	G1550	G1550	G1454	G1404	C1289	G	C	U914	C
C1707	C1551	C1551	G1455	G1405	G1292	U	C	A915	C
G1708	G1552	G1552	G1456	G1406	C1293	U	C	A916	C
C1709	A1553	A1553	C1457	G1407	A1294	U	C	A917	C
A	G1555	G1555	G1458	G1408	C1296	U	C	G918	C
C	G1559	G1559	G1465	G1409	G1301	G1234	U	C919	C
C	A1560	A1560	G1466	U1410	U1302	G1235	C	C920	C
C	G1561	G1561	C1467	C1313	A1303	C1236	C	C921	C
C	G1562	G1562	C1468	C1314	C1304	G1237	C	C922	C
C	G1563	G1563	C1469	C1315	C1308	A1238	C	C923	C
C	G1564	G1564	C1472	C1316	C1309	G1239	C	C924	C
C	A1565	A1565	U1473	U1317	C1310	U1240	C	C925	C
C	A1566	A1566	U1474	C1318	C1311	C1241	C	G926	C
C	A1567	A1567	U1475	C1319	C1312	G1242	C	G927	C
C	A1568	A1568	C1477	C1320	C1313	C1243	C	A928	C
C	A1569	A1569	U1478	C1321	C1314	G1244	C	A929	C
C	A1570	A1570	U1479	C1322	C1315	C1245	C	A932	C
C	A1571	A1571	C1480	C1323	C1316	G1246	C	G	C



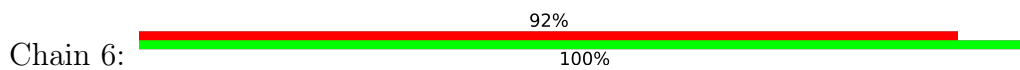




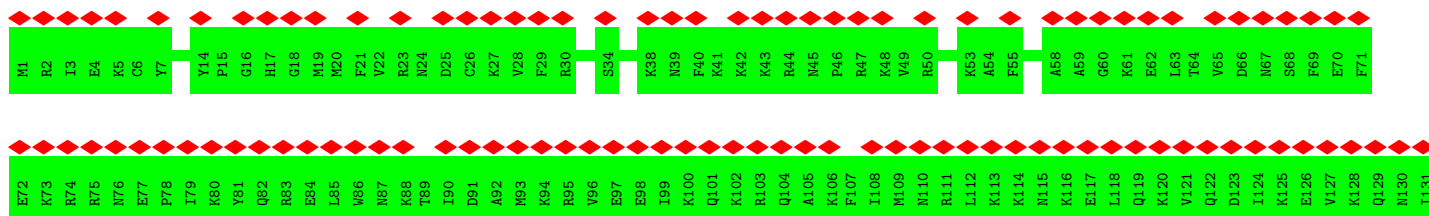
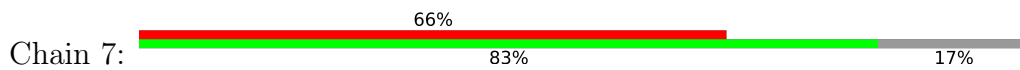




• Molecule 2: Eukaryotic translation initiation factor 6



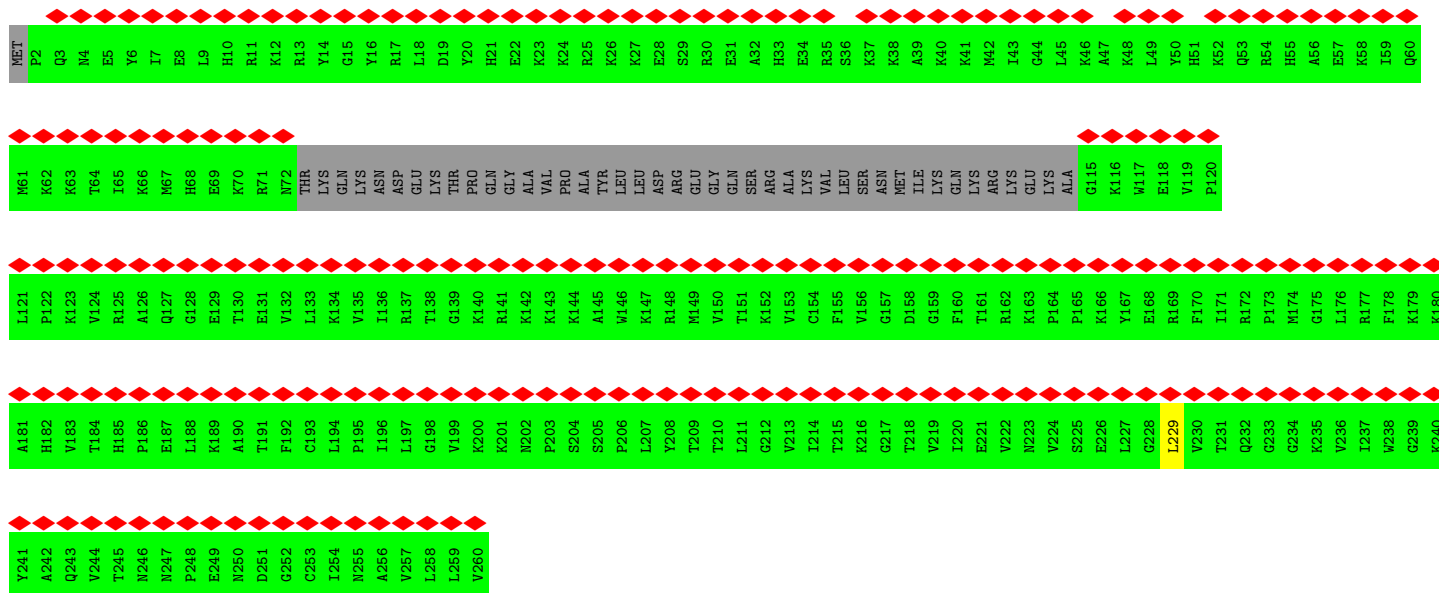
• Molecule 3: Probable ribosome biogenesis protein RLP24



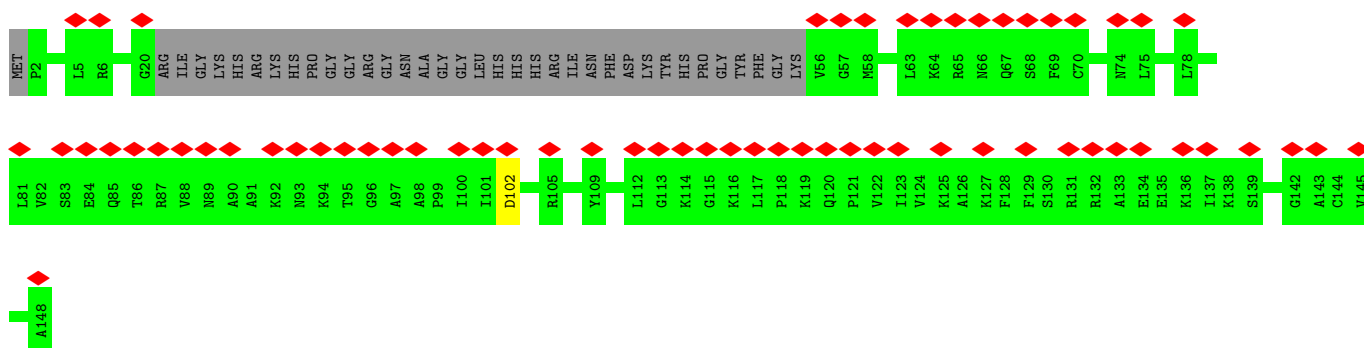
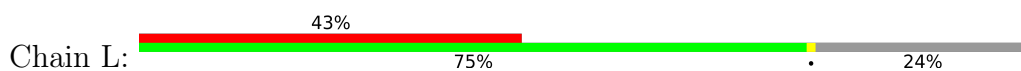




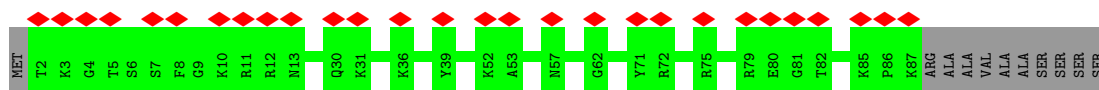
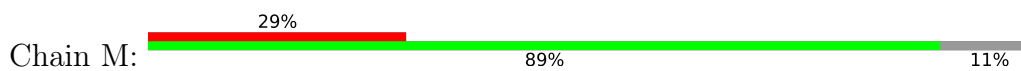




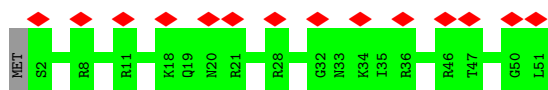
• Molecule 14: 60S ribosomal protein L27a



• Molecule 15: 60S ribosomal protein L37



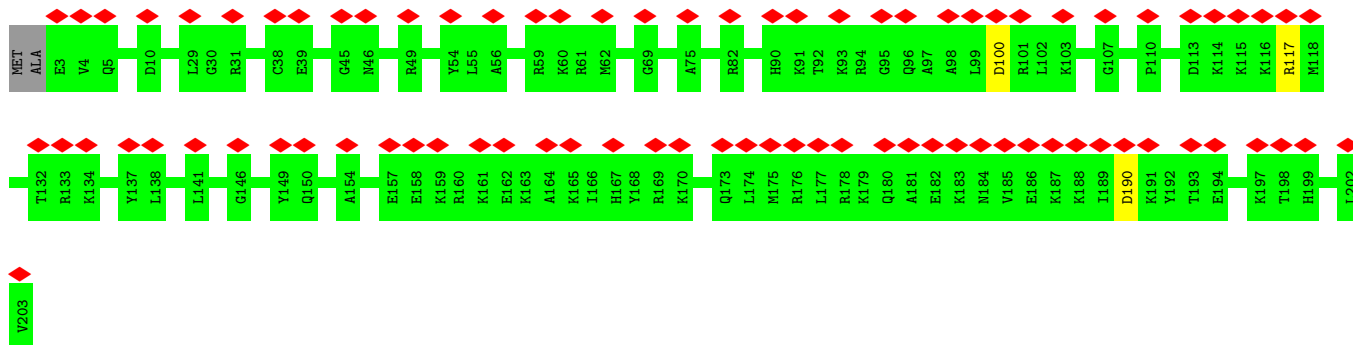
• Molecule 16: 60S ribosomal protein L39



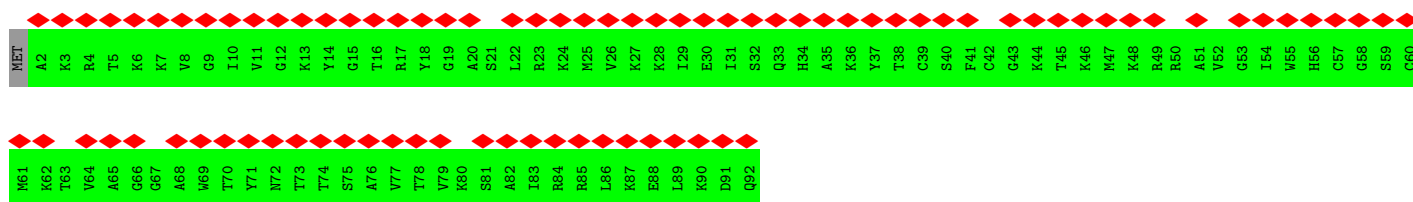
• Molecule 17: 60S ribosomal protein L13



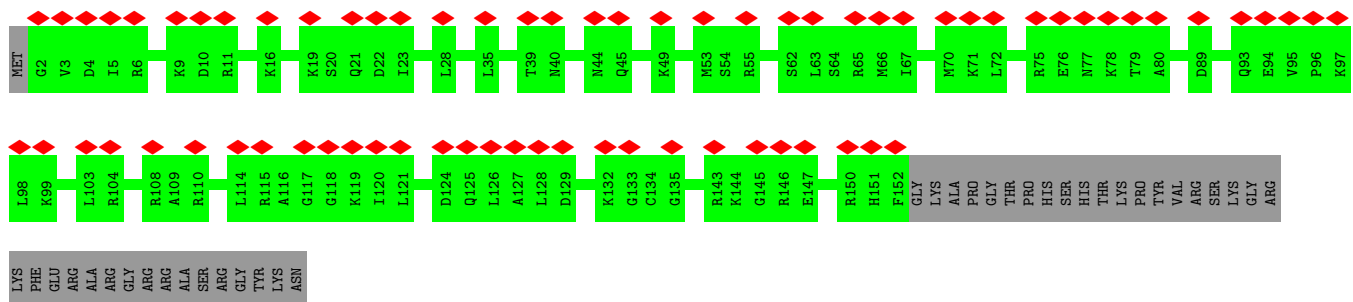
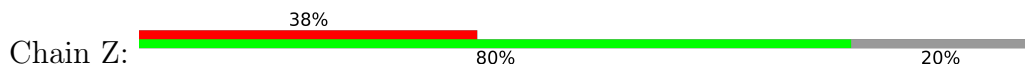




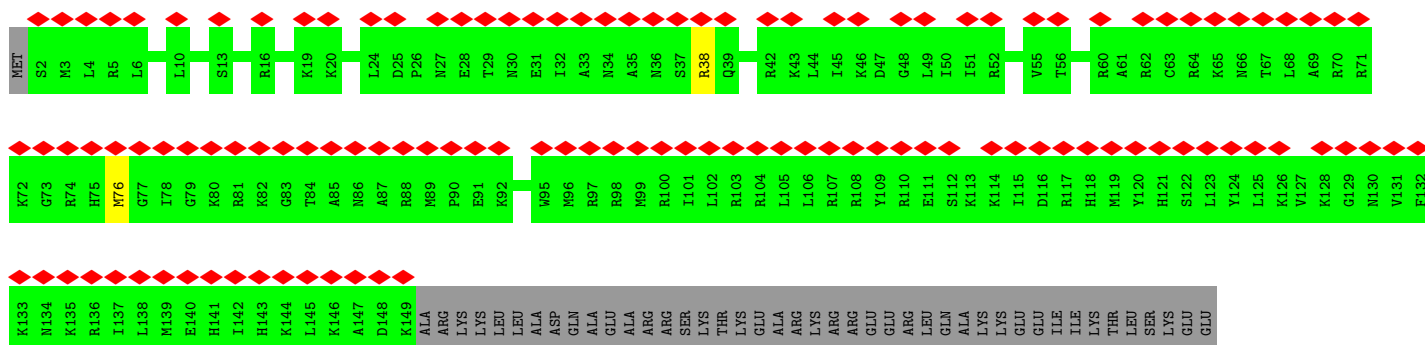
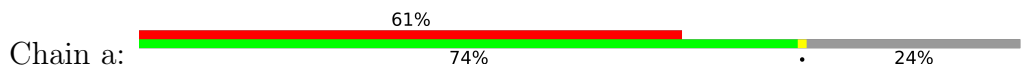
• Molecule 21: 60S ribosomal protein L37a



• Molecule 22: 60S ribosomal protein L18

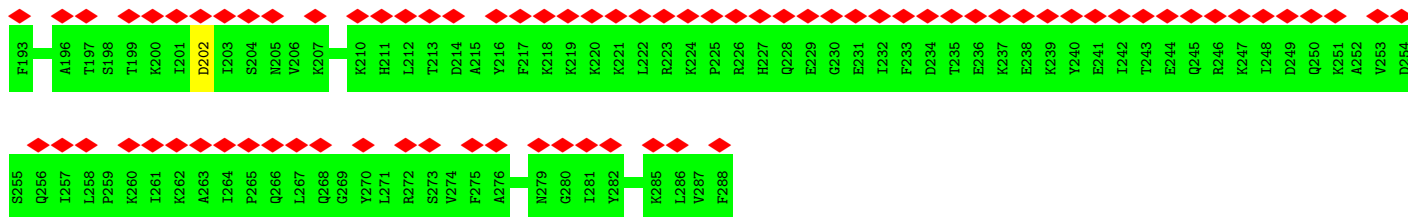


• Molecule 23: 60S ribosomal protein L19

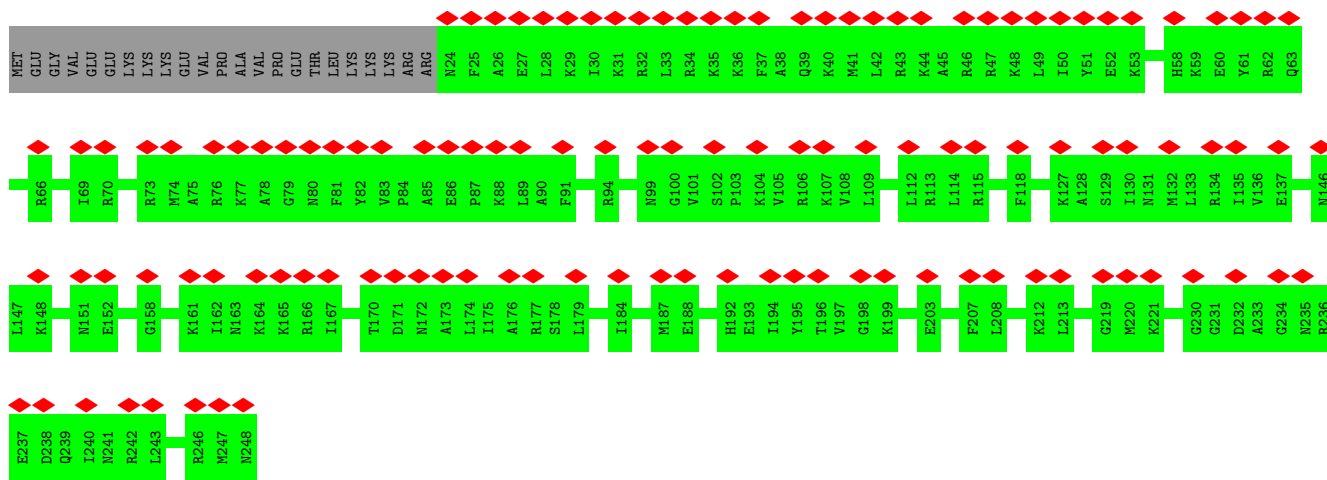
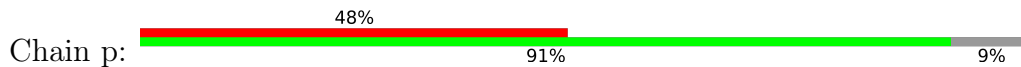




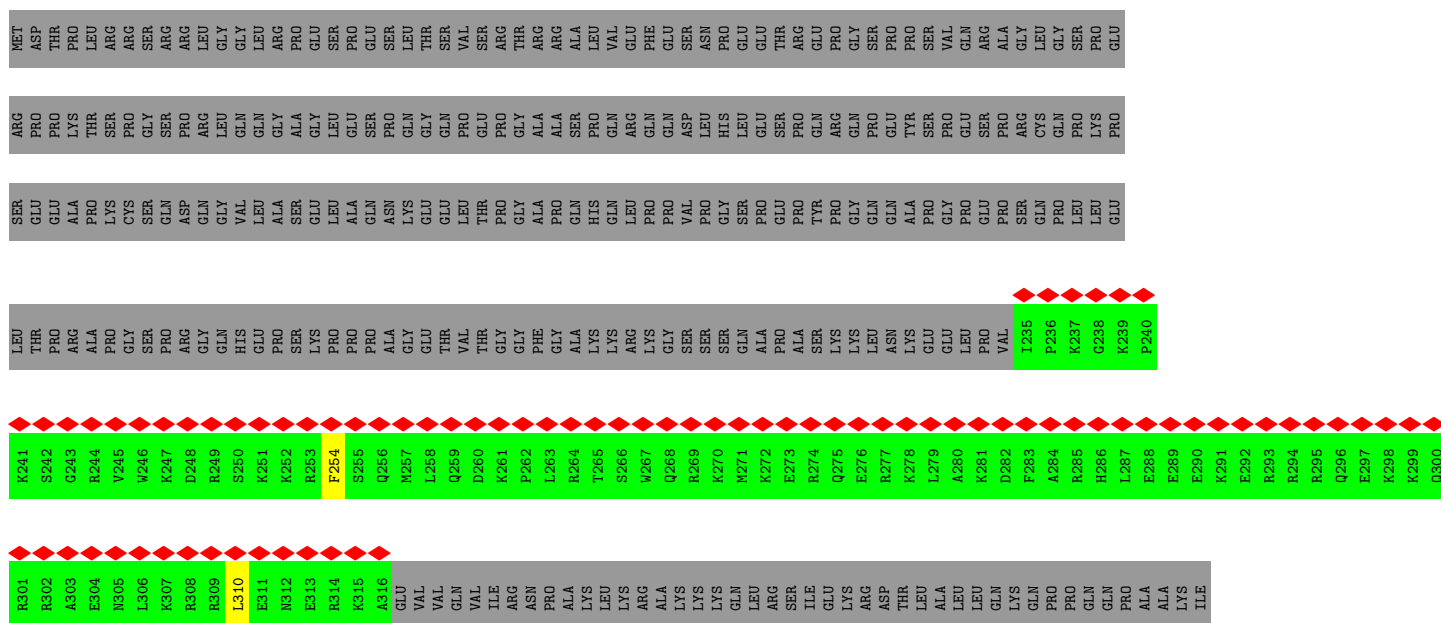




• Molecule 31: 60S ribosomal protein L7



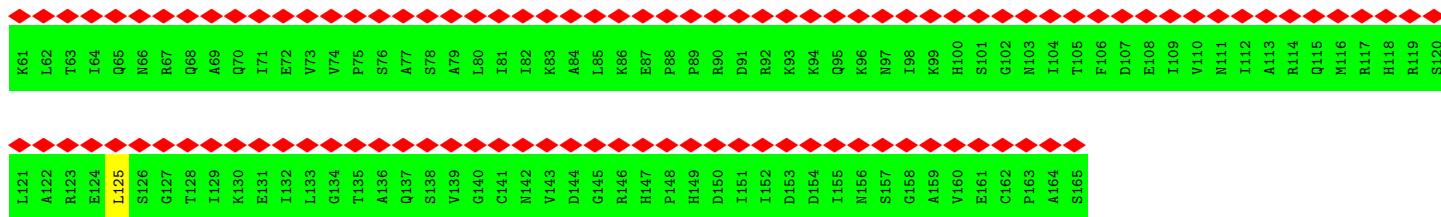
• Molecule 32: Coiled-coil domain-containing protein 86



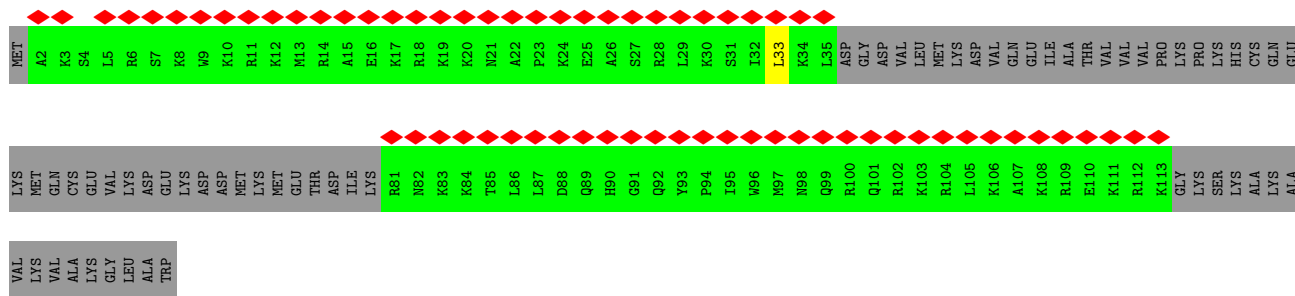
• Molecule 33: Guanine nucleotide-binding protein-like 3



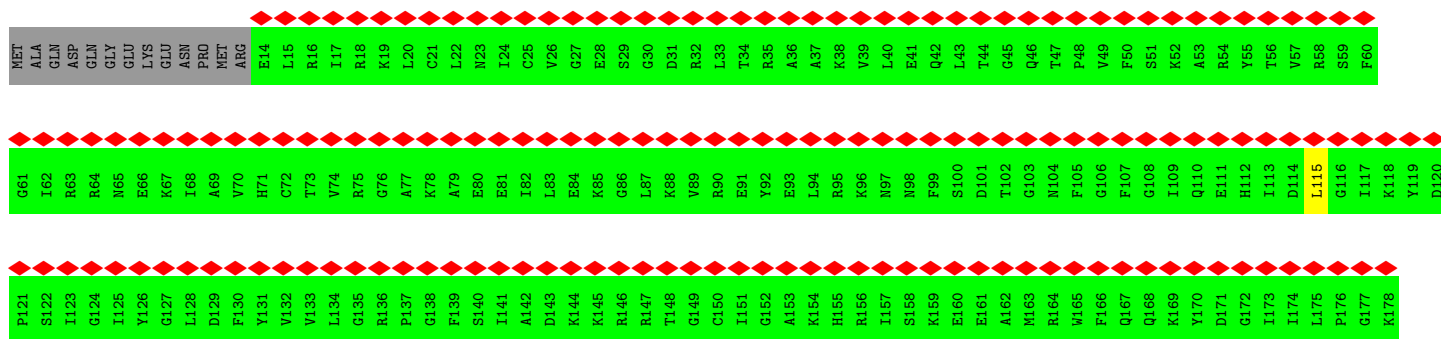




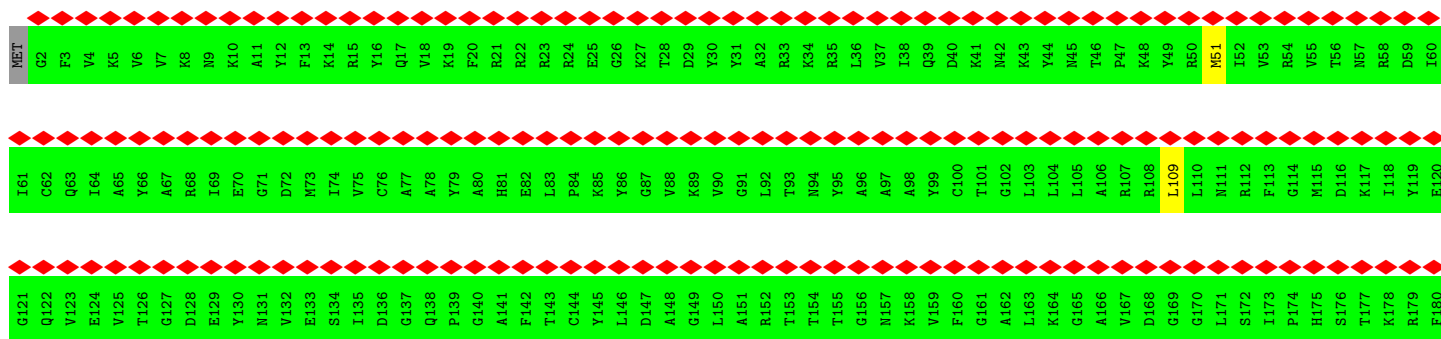
• Molecule 37: Protein LLP homolog



• Molecule 38: 60S ribosomal protein L11

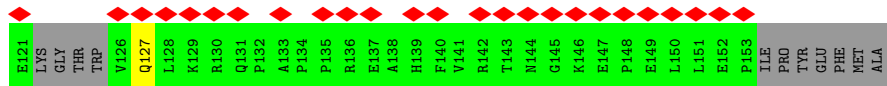
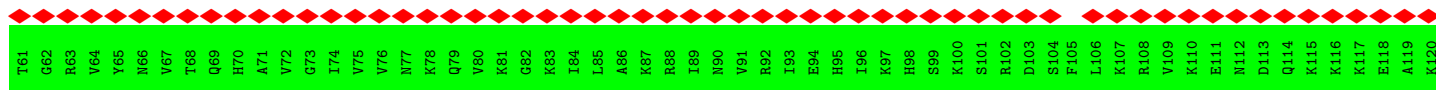


• Molecule 39: 60S ribosomal protein L5

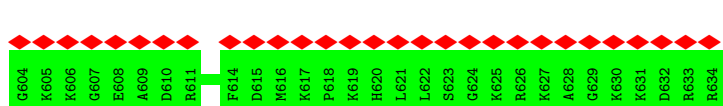
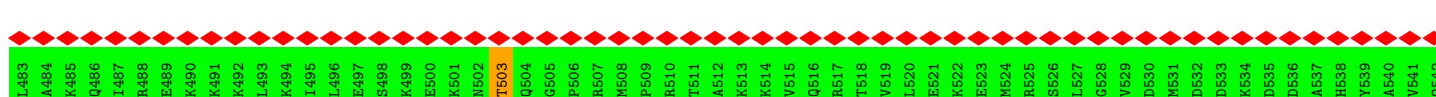
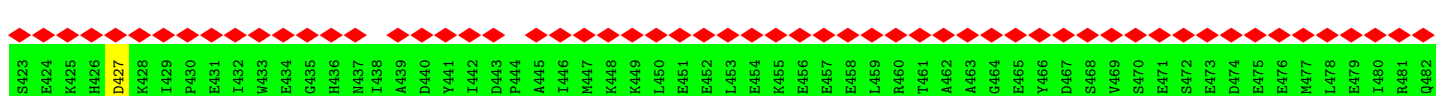
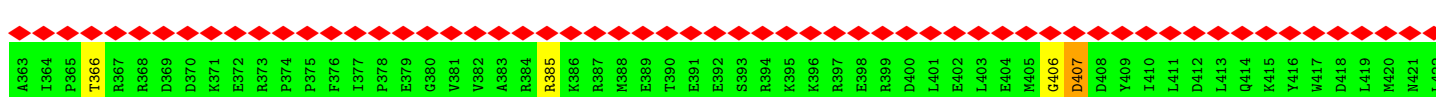
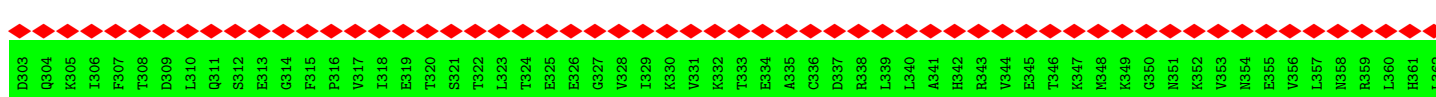
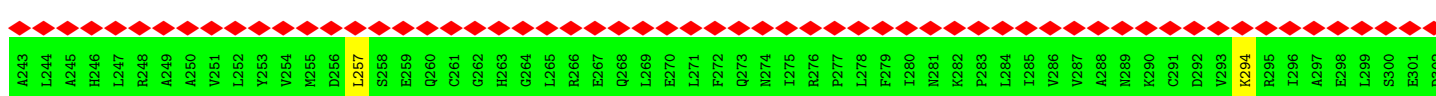
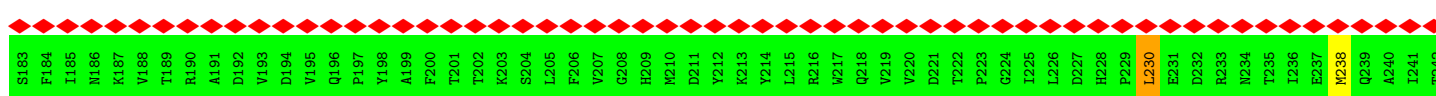
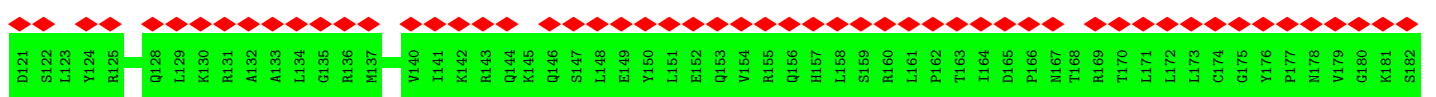
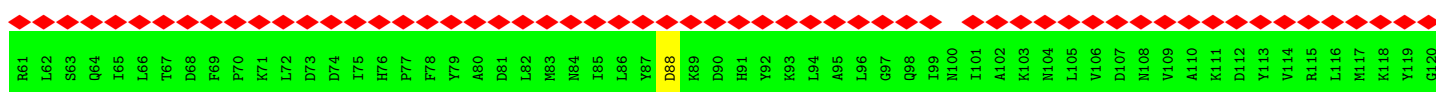
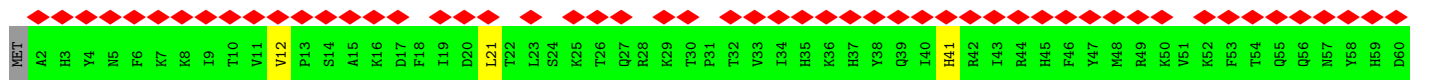
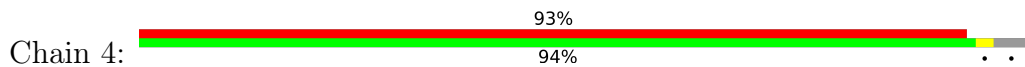




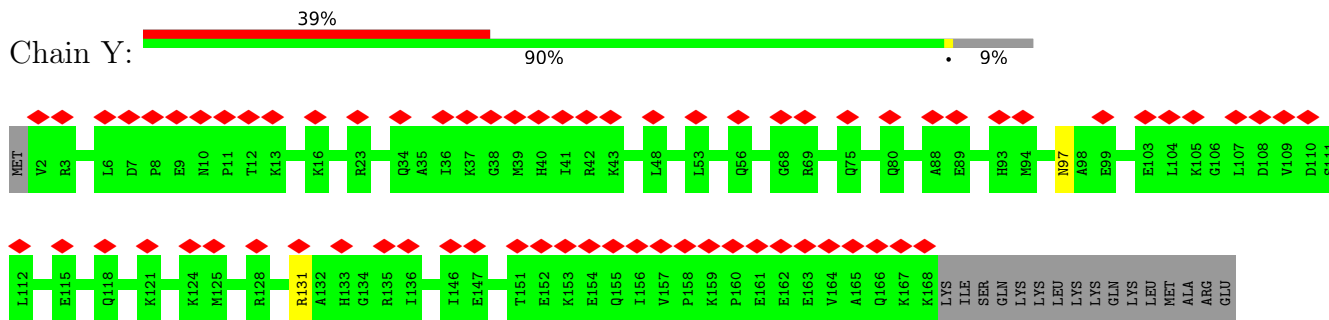




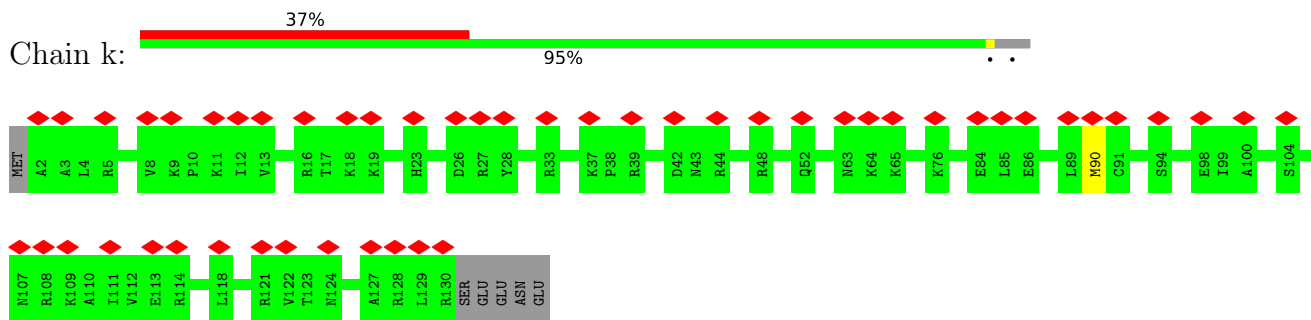
• Molecule 42: GTP-binding protein 4



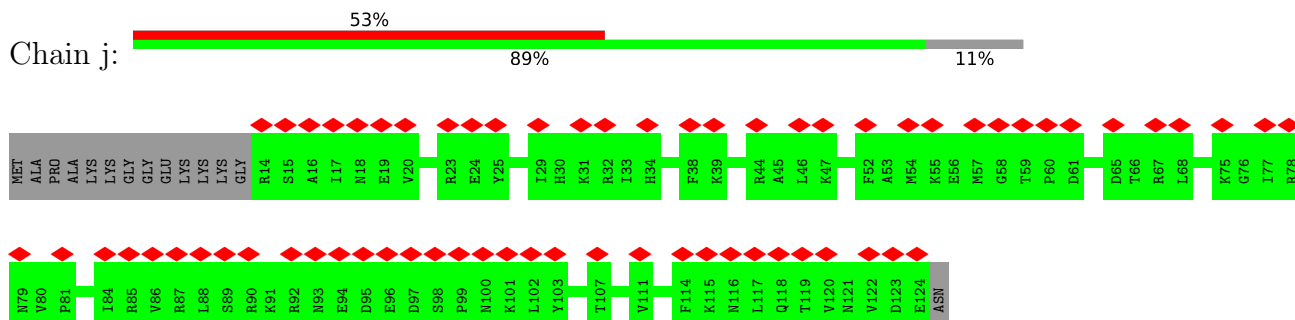
• Molecule 43: 60S ribosomal protein L17



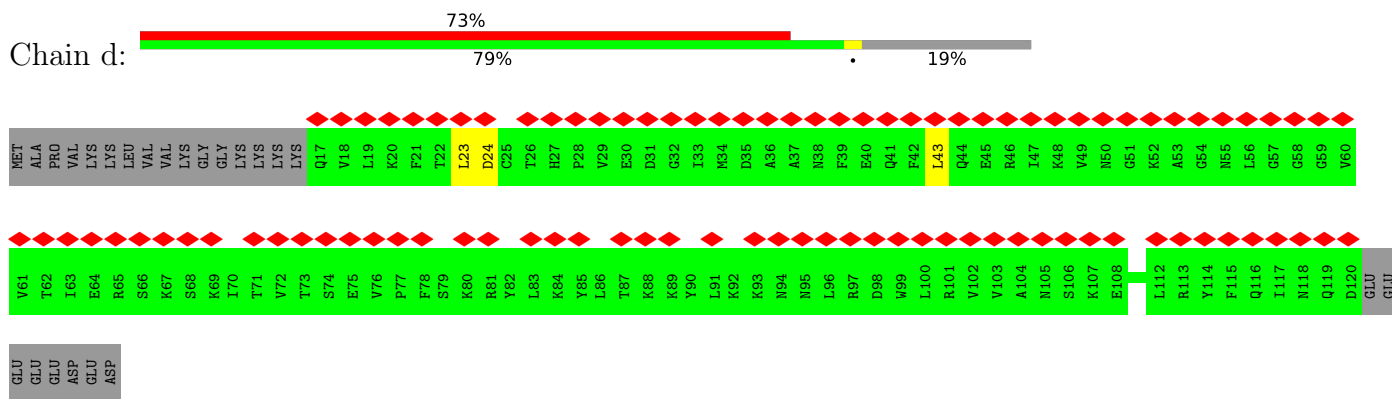
• Molecule 44: 60S ribosomal protein L32



• Molecule 45: 60S ribosomal protein L31



• Molecule 46: 60S ribosomal protein L22

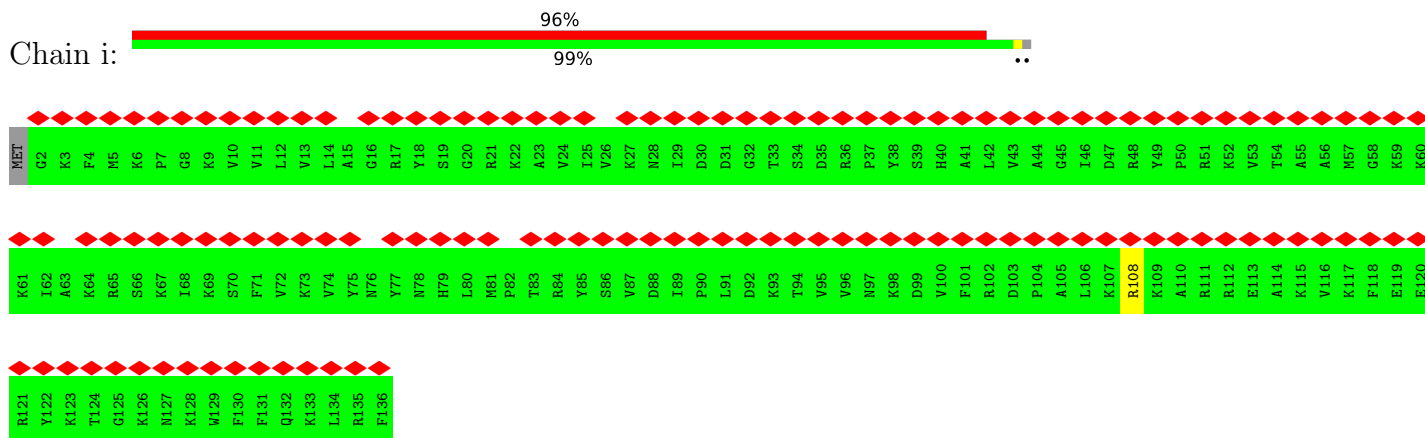


• Molecule 47: MKI67 FHA domain-interacting nucleolar phosphoprotein

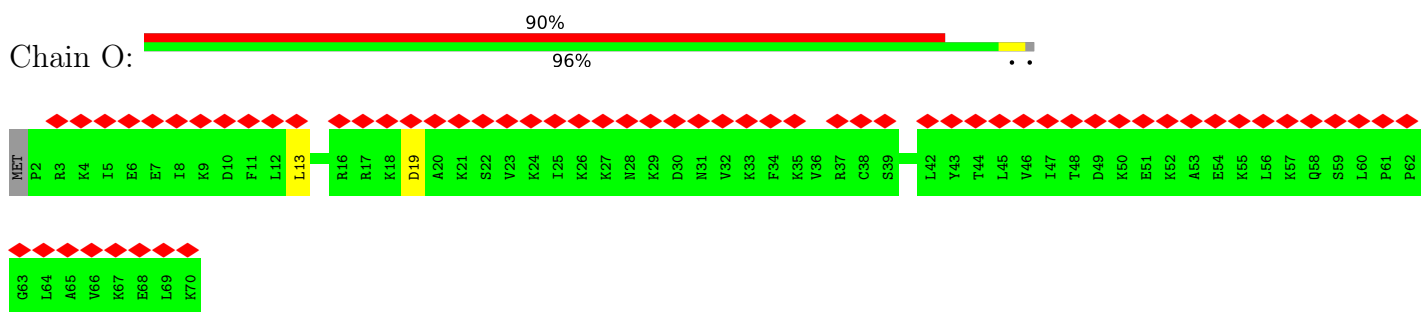




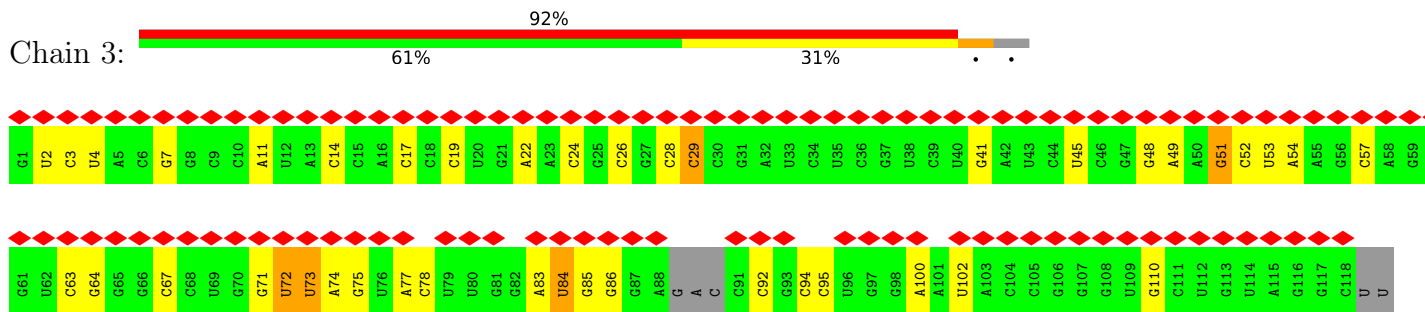




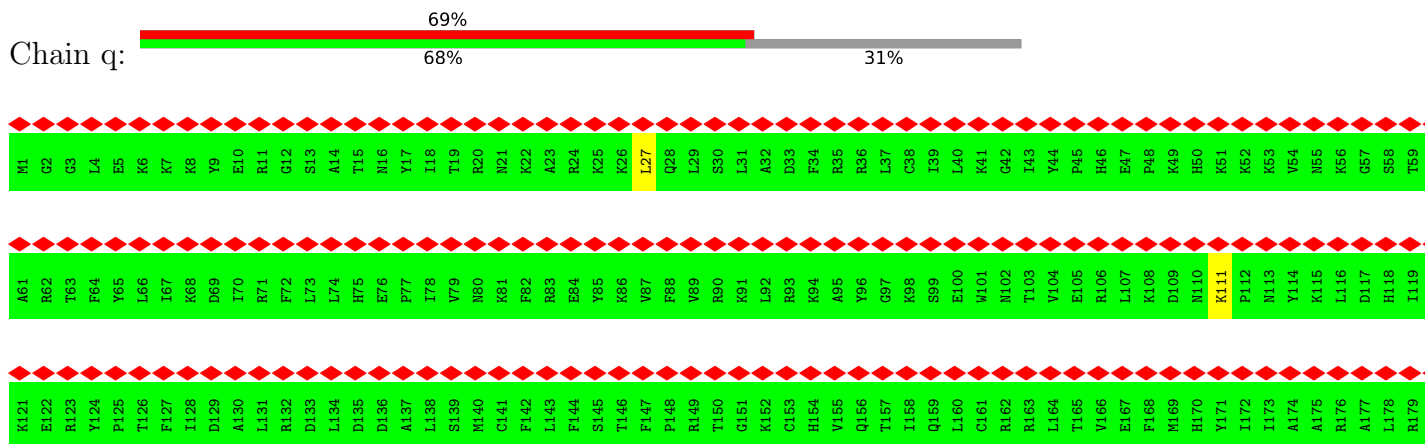
• Molecule 54: 60S ribosomal protein L38



• Molecule 55: 5S RNA



• Molecule 56: Pescadillo homolog





LYS	A241	L301	A361	S421
PRO	P242	LEU	R362	S422
GLY	A243	GLU	L363	E423
PRO	G244	GLU	R364	L424
GLN	A245	SER	H365	T425
ASP	S246	ASP	Q366	D426
THR	Y247	GLY	E367	S427
V188	N248	GLY	L368	L428
E189	P249	GLU	F369	R429
R190	S250	P80	R370	T430
P191	F251	GLY	L371	L431
F192	E252	GLN	R372	K432
Y193	D253	GLY	G373	P433
D194	H254	P80	I374	E434
L195	Q255	GLU	K375	G435
W196	T256	ALA	A376	N436
A197	L257	GLY	Q377	I437
S198	L258	ALA	V378	L438
D199	L259	GLU	A379	R439
N200	S259	VAL	L380	D440
P201	A260	CYS	R381	R441
L202	A261	PRO	L382	F442
D203	H262	THR	R383	K443
R204	E263	ALA	A384	S444
P205	V264	ARG	E385	F445
L206	E265	LEU	L386	Q446
V207	L266	ALA	A387	R447
G208	Q267	THR	R388	R448
Q209	R268	THR	Q389	N449
D210	Q269	E335	R390	M450
E211	K270	K336	R391	I451
F212	E271	K337	R392	E452
F213	A272	T338	Q393	P453
L214	E273	Q340	A394	R454
E215	K274	Q341	R395	E455
Q216	L275	R342	R396	R456
T217	E276	R343	R397	A457
K218	R277	R344	E398	K458
K219	Q278	E345	E399	F459
K220	L279	K346	A400	K460
G221	L281	A347	D401	R461
V222	P282	V348	K402	K462
K223	A283	H349	P403	Y463
R224	T284	R350	R404	K464
P225	E285	L351	R405	V465
A226	Q286	R352	L406	K466
R227	A287	V353	G407	L467
L228	T289	Q354	R408	V468
H229	A288	Q355	L409	E469
T230	T289	A356	K410	K470
K231	Q290	A357	Y411	R471
P232	E291	L358	Q412	A472
S233	S292	R359	A413	F473
Q234	T293	A360	P414	R474
A235	F294		D415	E475
P236	Q295		I416	I476
A237	E296		D417	Q477
V238	L297		V418	L478
E239	C298		Q419	
V240	E299		L420	
	G300			



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	4919	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 ( $e^-/\text{\AA}^2$ )	1.8	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.152	Depositor
Minimum map value	-0.063	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	548.0, 548.0, 548.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.37, 1.37, 1.37	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: P7G, I4U, B8K, B8W, B9B, A2M, GTP, 5MU, OMG, E7G, B8Q, MG, P4U, UR3, BGH, OMU, B8T, B9H, M7A, 2MG, OMC, 7MG

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	2	0.43	3/81689 (0.0%)	1.38	1238/127350 (1.0%)
2	6	0.31	0/1877	0.67	0/2554
3	7	0.36	0/1181	0.64	0/1563
4	8	0.43	0/3679	1.37	51/5732 (0.9%)
5	9	0.31	0/723	0.83	2/961 (0.2%)
6	A	0.27	0/354	0.74	0/465
7	B	0.32	0/3315	0.67	1/4435 (0.0%)
8	D	0.29	0/2907	0.68	2/3905 (0.1%)
9	E	0.32	0/774	0.77	2/1038 (0.2%)
10	G	0.34	0/1960	0.69	1/2637 (0.0%)
11	H	0.30	0/1023	0.62	0/1351
12	I	0.34	0/1537	0.72	1/2066 (0.0%)
13	J	0.29	0/1808	0.58	1/2414 (0.0%)
14	L	0.29	0/893	0.68	1/1193 (0.1%)
15	M	0.31	0/720	0.69	0/952
16	P	0.30	0/454	0.65	0/599
17	Q	0.31	0/1732	0.67	0/2315
18	S	0.37	0/1133	0.70	3/1516 (0.2%)
19	U	0.29	0/1746	0.67	1/2338 (0.0%)
20	V	0.33	0/1682	0.67	2/2250 (0.1%)
21	X	0.32	0/718	0.72	0/953
22	Z	0.31	0/1239	0.67	0/1658
23	a	0.30	0/1255	0.73	2/1662 (0.1%)
24	b	0.32	0/1501	0.62	0/2013
25	e	0.31	0/993	0.69	0/1332
26	h	0.31	0/1132	0.67	1/1504 (0.1%)
27	l	0.29	0/1017	0.68	0/1364
28	m	0.32	0/1936	0.72	1/2596 (0.0%)
29	n	0.33	0/895	0.77	3/1198 (0.3%)
30	o	0.31	0/1935	0.72	1/2596 (0.0%)
31	p	0.33	0/1916	0.63	0/2553

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
32	r	0.38	0/732	0.86	1/960 (0.1%)
33	u	0.35	0/576	0.72	1/755 (0.1%)
34	v	0.33	0/1806	0.70	2/2420 (0.1%)
35	w	0.33	0/3541	0.63	3/4775 (0.1%)
36	y	0.32	0/1269	0.72	1/1712 (0.1%)
37	z	0.32	0/587	0.81	1/767 (0.1%)
38	C	0.35	0/1341	0.72	1/1793 (0.1%)
39	R	0.35	0/2428	0.77	6/3252 (0.2%)
40	W	0.31	0/3093	0.72	4/4196 (0.1%)
41	T	0.33	0/1018	0.71	1/1357 (0.1%)
42	4	0.34	0/5099	0.75	9/6840 (0.1%)
43	Y	0.29	0/1383	0.61	0/1856
44	k	0.29	0/1082	0.70	2/1443 (0.1%)
45	j	0.30	0/933	0.66	0/1256
46	d	0.34	0/864	0.79	3/1160 (0.3%)
47	t	0.37	0/955	0.73	2/1290 (0.2%)
49	N	0.31	0/1956	0.65	3/2631 (0.1%)
50	1	0.35	1/1933 (0.1%)	0.70	3/2591 (0.1%)
51	K	0.34	0/843	0.77	1/1115 (0.1%)
52	F	0.28	0/907	0.69	0/1209
53	i	0.35	0/1130	0.67	0/1507
54	O	0.37	0/575	0.85	2/761 (0.3%)
55	3	0.46	0/2739	1.49	59/4266 (1.4%)
56	q	0.35	0/3395	0.67	1/4578 (0.0%)
57	g	0.32	0/1191	0.67	1/1595 (0.1%)
58	f	0.32	0/2169	0.74	3/2902 (0.1%)
All	All	0.38	4/169269 (0.0%)	1.13	1424/246050 (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
6	A	0	1
7	B	0	1
10	G	0	2
29	n	0	1
32	r	0	1
33	u	0	1
41	T	0	1
42	4	0	2

*Continued on next page...*

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
43	Y	0	1
47	t	0	1
50	1	0	1
58	f	0	1
All	All	0	14

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	3876	A	N9-C4	6.60	1.41	1.37
1	2	1795	A	N9-C4	6.39	1.41	1.37
50	1	152	PRO	CG-CD	-5.41	1.32	1.50
1	2	1929	A	N9-C4	5.16	1.41	1.37

All (1424) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1872	G	OP1-P-OP2	-27.26	78.71	119.60
1	2	1872	G	O5'-P-OP1	-25.34	80.30	110.70
1	2	1871	A2M	OP2-P-O3'	-15.92	70.18	105.20
1	2	1872	G	O5'-P-OP2	14.97	128.67	110.70
1	2	1871	A2M	OP1-P-O3'	14.70	137.55	105.20
1	2	4926	C	N1-C2-O2	12.73	126.54	118.90
1	2	1216	C	N1-C2-O2	12.27	126.26	118.90
1	2	753	C	N1-C2-O2	12.17	126.20	118.90
55	3	78	C	N1-C2-O2	11.84	126.00	118.90
1	2	4149	C	N3-C2-O2	-11.79	113.65	121.90
1	2	220	C	N1-C2-O2	11.47	125.78	118.90
1	2	516	C	N1-C2-O2	11.38	125.73	118.90
1	2	4926	C	C6-N1-C2	-11.26	115.80	120.30
1	2	100	C	N1-C2-O2	11.21	125.63	118.90
1	2	4231	C	N1-C2-O2	11.18	125.61	118.90
1	2	2820	C	N1-C2-O2	11.17	125.60	118.90
1	2	100	C	C2-N1-C1'	10.98	130.88	118.80
1	2	4423	U	C2-N1-C1'	10.93	130.81	117.70
1	2	4423	U	N1-C2-O2	10.87	130.41	122.80
1	2	753	C	C2-N1-C1'	10.76	130.64	118.80
1	2	1216	C	C2-N1-C1'	10.66	130.53	118.80
1	2	1994	C	C2-N1-C1'	10.65	130.52	118.80
1	2	4423	U	N3-C2-O2	-10.63	114.76	122.20
1	2	4926	C	N3-C2-O2	-10.63	114.46	121.90
1	2	4138	C	N3-C2-O2	-10.48	114.56	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4284	C	C5-C6-N1	10.45	126.22	121.00
55	3	78	C	C6-N1-C2	-10.42	116.13	120.30
1	2	4229	U	C2-N1-C1'	10.36	130.13	117.70
1	2	1994	C	N1-C2-O2	10.33	125.10	118.90
1	2	77	U	N3-C2-O2	-10.27	115.01	122.20
1	2	3636	C	C6-N1-C2	-10.13	116.25	120.30
1	2	516	C	N3-C2-O2	-10.12	114.82	121.90
1	2	1966	C	C6-N1-C2	-10.07	116.27	120.30
55	3	78	C	N3-C2-O2	-10.03	114.88	121.90
1	2	4149	C	C6-N1-C2	-9.89	116.34	120.30
1	2	1671	U	N1-C2-O2	9.84	129.68	122.80
1	2	4231	C	C2-N1-C1'	9.80	129.58	118.80
1	2	4426	C	C6-N1-C2	-9.78	116.39	120.30
1	2	1216	C	N3-C2-O2	-9.74	115.08	121.90
1	2	141	C	C2-N1-C1'	9.71	129.49	118.80
1	2	2627	C	C6-N1-C2	-9.69	116.42	120.30
1	2	4229	U	N1-C2-O2	9.66	129.56	122.80
1	2	5035	U	N3-C2-O2	-9.63	115.46	122.20
1	2	753	C	N3-C2-O2	-9.60	115.18	121.90
1	2	4284	C	C6-N1-C2	-9.58	116.47	120.30
42	4	230	LEU	CA-CB-CG	9.56	137.28	115.30
1	2	2439	G	C4-N9-C1'	9.55	138.92	126.50
1	2	2351	C	C6-N1-C2	-9.54	116.48	120.30
1	2	220	C	C6-N1-C2	-9.49	116.50	120.30
1	2	3876	A	C2-N3-C4	9.49	115.34	110.60
1	2	4926	C	C2-N1-C1'	9.45	129.20	118.80
1	2	4775	C	N1-C2-O2	9.42	124.55	118.90
1	2	4758	U	N1-C2-O2	9.36	129.35	122.80
1	2	4453	C	N1-C2-O2	9.35	124.51	118.90
55	3	95	C	C2-N1-C1'	9.35	129.09	118.80
1	2	4709	U	N1-C2-O2	9.33	129.33	122.80
1	2	2410	C	C6-N1-C2	-9.33	116.57	120.30
1	2	1671	U	N3-C2-O2	-9.32	115.67	122.20
1	2	4709	U	N3-C2-O2	-9.28	115.70	122.20
1	2	2627	C	N1-C2-O2	9.28	124.47	118.90
1	2	4880	C	N1-C2-O2	9.23	124.44	118.90
4	8	64	U	N3-C2-O2	-9.22	115.74	122.20
1	2	516	C	C6-N1-C2	-9.21	116.62	120.30
55	3	78	C	C2-N1-C1'	9.20	128.91	118.80
1	2	2820	C	N3-C2-O2	-9.18	115.48	121.90
1	2	100	C	N3-C2-O2	-9.16	115.48	121.90
1	2	4758	U	N3-C2-O2	-9.16	115.79	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4758	U	C2-N1-C1'	9.11	128.63	117.70
1	2	4775	C	C2-N1-C1'	9.10	128.81	118.80
1	2	499	G	C4-N9-C1'	9.09	138.32	126.50
55	3	84	U	C2-N1-C1'	9.05	128.56	117.70
1	2	1795	A	C2-N3-C4	9.00	115.10	110.60
1	2	4498	U	C2-N1-C1'	8.99	128.48	117.70
1	2	2478	C	C2-N1-C1'	8.98	128.67	118.80
1	2	4231	C	N3-C2-O2	-8.97	115.62	121.90
1	2	4149	C	N1-C2-O2	8.93	124.26	118.90
1	2	2439	G	C8-N9-C1'	-8.93	115.39	127.00
1	2	77	U	N1-C2-O2	8.93	129.05	122.80
1	2	282	C	N1-C2-O2	8.92	124.25	118.90
1	2	2262	G	C4-N9-C1'	8.91	138.09	126.50
1	2	963	G	C4-N9-C1'	8.91	138.08	126.50
1	2	1241	C	N1-C2-O2	8.91	124.25	118.90
1	2	4682	U	N3-C2-O2	-8.88	115.98	122.20
1	2	985	C	C6-N1-C2	-8.88	116.75	120.30
1	2	220	C	N3-C2-O2	-8.87	115.69	121.90
1	2	2410	C	C2-N1-C1'	8.87	128.56	118.80
1	2	4229	U	N3-C2-O2	-8.87	116.00	122.20
1	2	3878	C	N1-C2-O2	8.86	124.22	118.90
55	3	92	C	C6-N1-C2	-8.86	116.76	120.30
55	3	95	C	N1-C2-O2	8.86	124.21	118.90
55	3	72	U	O5'-P-OP1	8.84	121.31	110.70
1	2	4926	C	C5-C6-N1	8.83	125.42	121.00
1	2	4864	U	N1-C2-O2	8.82	128.98	122.80
1	2	2022	C	N1-C2-O2	8.82	124.19	118.90
1	2	1963	C	C6-N1-C2	-8.82	116.77	120.30
1	2	499	G	N3-C4-N9	8.78	131.27	126.00
1	2	4350	C	C6-N1-C2	-8.78	116.79	120.30
42	4	257	LEU	CA-CB-CG	8.76	135.45	115.30
50	1	152	PRO	N-CD-CG	-8.68	90.18	103.20
1	2	4266	G	N3-C4-C5	-8.67	124.27	128.60
1	2	4864	U	N3-C2-O2	-8.66	116.14	122.20
1	2	1994	C	N3-C2-O2	-8.65	115.84	121.90
1	2	1081	C	N3-C2-O2	-8.64	115.85	121.90
1	2	35	U	N3-C2-O2	-8.64	116.15	122.20
1	2	1216	C	C6-N1-C2	-8.63	116.85	120.30
1	2	3772	U	N3-C2-O2	-8.59	116.19	122.20
1	2	96	U	N3-C2-O2	-8.58	116.19	122.20
1	2	178	C	C6-N1-C2	-8.57	116.87	120.30
1	2	3636	C	N1-C2-O2	8.57	124.04	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2262	G	N3-C4-N9	8.54	131.12	126.00
1	2	2627	C	C2-N1-C1'	8.52	128.18	118.80
1	2	4275	G	C4-N9-C1'	8.51	137.56	126.50
55	3	92	C	N1-C2-O2	8.51	124.01	118.90
1	2	4148	C	N1-C2-O2	8.51	124.00	118.90
1	2	4158	C	N3-C2-O2	-8.50	115.95	121.90
1	2	1458	C	N1-C2-O2	8.48	123.99	118.90
1	2	4887	C	N1-C2-O2	8.47	123.98	118.90
1	2	35	U	N1-C2-O2	8.47	128.73	122.80
1	2	50	C	N1-C2-O2	8.46	123.98	118.90
8	D	319	LEU	CA-CB-CG	8.46	134.76	115.30
1	2	2478	C	N1-C2-O2	8.44	123.96	118.90
1	2	141	C	N1-C2-O2	8.44	123.96	118.90
1	2	1966	C	C5-C6-N1	8.43	125.21	121.00
1	2	4068	U	N3-C2-O2	-8.42	116.31	122.20
1	2	4231	C	C6-N1-C2	-8.41	116.94	120.30
1	2	4266	G	N3-C4-N9	8.41	131.04	126.00
1	2	220	C	C5-C6-N1	8.40	125.20	121.00
1	2	390	C	C6-N1-C2	-8.40	116.94	120.30
1	2	4608	G	C8-N9-C4	-8.38	103.05	106.40
1	2	4885	U	N3-C2-O2	-8.38	116.33	122.20
1	2	4266	G	C4-N9-C1'	8.37	137.38	126.50
1	2	2262	G	N3-C4-C5	-8.37	124.42	128.60
1	2	112	C	C6-N1-C2	-8.36	116.96	120.30
1	2	472	C	C6-N1-C2	-8.35	116.96	120.30
1	2	4123	C	N1-C2-O2	8.33	123.90	118.90
1	2	1678	C	P-O3'-C3'	8.31	129.67	119.70
1	2	467	U	N1-C2-O2	8.28	128.60	122.80
1	2	141	C	C5-C6-N1	8.28	125.14	121.00
1	2	2410	C	C5-C6-N1	8.27	125.14	121.00
1	2	467	U	N3-C2-O2	-8.27	116.41	122.20
1	2	1929	A	C2-N3-C4	8.25	114.73	110.60
1	2	1726	U	N3-C2-O2	-8.25	116.43	122.20
1	2	4068	U	N1-C2-O2	8.24	128.57	122.80
1	2	3636	C	N3-C2-O2	-8.21	116.15	121.90
1	2	4498	U	N1-C2-O2	8.21	128.55	122.80
1	2	4714	C	N1-C2-O2	8.21	123.83	118.90
1	2	2820	C	C6-N1-C2	-8.21	117.02	120.30
1	2	4138	C	C6-N1-C2	-8.21	117.02	120.30
1	2	1966	C	C2-N1-C1'	8.21	127.83	118.80
1	2	4682	U	N1-C2-O2	8.19	128.53	122.80
1	2	1241	C	C2-N1-C1'	8.18	127.79	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4608	G	N7-C8-N9	8.16	117.18	113.10
1	2	1402	C	C6-N1-C2	-8.16	117.04	120.30
1	2	322	C	C6-N1-C2	-8.15	117.04	120.30
1	2	2760	G	P-O3'-C3'	8.09	129.41	119.70
1	2	1477	C	C6-N1-C2	-8.06	117.07	120.30
1	2	2022	C	N3-C2-O2	-8.06	116.25	121.90
1	2	963	G	N3-C4-N9	8.06	130.84	126.00
1	2	112	C	C2-N1-C1'	8.04	127.65	118.80
1	2	4505	C	C6-N1-C2	-8.04	117.08	120.30
7	B	360	LEU	CA-CB-CG	8.04	133.79	115.30
1	2	2351	C	C5-C6-N1	8.00	125.00	121.00
1	2	4695	C	N1-C2-O2	8.00	123.70	118.90
1	2	178	C	N1-C2-O2	7.97	123.68	118.90
1	2	141	C	C6-N1-C2	-7.96	117.12	120.30
1	2	2528	G	C4-N9-C1'	7.96	136.85	126.50
55	3	78	C	C5-C6-N1	7.96	124.98	121.00
1	2	4714	C	C6-N1-C2	-7.95	117.12	120.30
1	2	499	G	C8-N9-C1'	-7.94	116.68	127.00
1	2	4923	C	C6-N1-C2	-7.93	117.13	120.30
55	3	72	U	O5'-P-OP2	-7.93	98.57	105.70
1	2	2505	C	N1-C2-O2	7.91	123.65	118.90
1	2	499	G	N3-C4-C5	-7.90	124.65	128.60
1	2	1963	C	N1-C2-O2	7.89	123.63	118.90
1	2	1671	U	C2-N1-C1'	7.89	127.17	117.70
1	2	5035	U	N1-C2-O2	7.88	128.32	122.80
1	2	4294	C	C6-N1-C2	-7.88	117.15	120.30
1	2	985	C	N1-C2-O2	7.87	123.62	118.90
1	2	2667	C	N1-C2-O2	7.86	123.61	118.90
55	3	95	C	N3-C2-O2	-7.82	116.42	121.90
1	2	1607	C	N1-C2-O2	7.82	123.59	118.90
1	2	1893	C	C6-N1-C2	-7.82	117.17	120.30
1	2	472	C	C2-N1-C1'	7.81	127.39	118.80
1	2	2011	C	N1-C2-O2	7.81	123.58	118.90
1	2	2410	C	N1-C2-O2	7.81	123.58	118.90
1	2	4319	C	C6-N1-C2	-7.80	117.18	120.30
1	2	1632	A	C2-N3-C4	7.79	114.50	110.60
1	2	963	G	N3-C4-C5	-7.79	124.70	128.60
1	2	1978	C	N1-C2-O2	7.79	123.57	118.90
1	2	100	C	C6-N1-C2	-7.79	117.19	120.30
1	2	2627	C	C5-C6-N1	7.79	124.89	121.00
39	R	211	LEU	CA-CB-CG	7.78	133.20	115.30
1	2	1966	C	N1-C2-O2	7.77	123.56	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4228	G	P-O3'-C3'	7.76	129.02	119.70
1	2	2362	U	N3-C2-O2	-7.76	116.77	122.20
54	O	19	ASP	CB-CG-OD1	7.75	125.27	118.30
1	2	914	U	P-O3'-C3'	7.74	128.99	119.70
1	2	220	C	C2-N1-C1'	7.72	127.30	118.80
1	2	4453	C	C2-N1-C1'	7.72	127.29	118.80
1	2	209	U	N1-C2-O2	7.72	128.20	122.80
1	2	2528	G	N3-C4-N9	7.71	130.63	126.00
1	2	3774	A	P-O3'-C3'	7.70	128.94	119.70
1	2	4171	C	N1-C2-O2	7.70	123.52	118.90
1	2	4662	C	C6-N1-C2	-7.70	117.22	120.30
1	2	1276	C	N1-C2-O2	7.68	123.51	118.90
1	2	1344	C	C6-N1-C2	-7.67	117.23	120.30
1	2	4158	C	N1-C2-O2	7.67	123.50	118.90
1	2	2528	G	N3-C4-C5	-7.65	124.77	128.60
1	2	2351	C	C2-N1-C1'	7.65	127.22	118.80
4	8	54	C	N1-C2-O2	7.64	123.48	118.90
1	2	195	C	C6-N1-C2	-7.64	117.25	120.30
1	2	282	C	N3-C2-O2	-7.64	116.55	121.90
1	2	2439	G	N3-C4-N9	7.62	130.57	126.00
1	2	1703	C	N1-C2-O2	7.61	123.47	118.90
1	2	2337	C	N1-C2-O2	7.60	123.46	118.90
1	2	1081	C	N1-C2-O2	7.59	123.46	118.90
1	2	4885	U	N1-C2-O2	7.58	128.10	122.80
1	2	1401	C	C2-N1-C1'	7.57	127.13	118.80
1	2	2532	C	C6-N1-C2	-7.57	117.27	120.30
1	2	904	C	N1-C2-O2	7.57	123.44	118.90
1	2	688	U	N3-C2-O2	-7.57	116.90	122.20
1	2	2486	G	P-O3'-C3'	7.57	128.78	119.70
1	2	4349	C	N1-C2-O2	7.57	123.44	118.90
1	2	963	G	C8-N9-C1'	-7.56	117.17	127.00
1	2	1994	C	C6-N1-C1'	-7.56	111.73	120.80
1	2	2505	C	C2-N1-C1'	7.55	127.11	118.80
1	2	4275	G	N3-C4-C5	-7.55	124.82	128.60
49	N	237	LEU	CA-CB-CG	7.55	132.67	115.30
1	2	2262	G	C8-N9-C1'	-7.54	117.19	127.00
1	2	2850	A	C2-N3-C4	7.54	114.37	110.60
1	2	2563	C	N1-C2-O2	7.53	123.42	118.90
1	2	1607	C	N3-C2-O2	-7.52	116.64	121.90
1	2	4206	C	N1-C2-O2	7.50	123.40	118.90
4	8	64	U	N1-C2-O2	7.50	128.05	122.80
46	d	24	ASP	CB-CG-OD2	7.50	125.05	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	96	U	N1-C2-O2	7.50	128.05	122.80
1	2	4747	C	C6-N1-C2	-7.50	117.30	120.30
1	2	4505	C	C5-C6-N1	7.49	124.75	121.00
1	2	4775	C	N3-C2-O2	-7.49	116.66	121.90
1	2	4614	G	C5-C6-O6	7.48	133.09	128.60
1	2	1921	C	N1-C2-O2	7.48	123.39	118.90
1	2	3650	C	C6-N1-C2	-7.48	117.31	120.30
1	2	209	U	N3-C2-O2	-7.47	116.97	122.20
1	2	4505	C	C2-N1-C1'	7.46	127.00	118.80
1	2	115	C	C2-N1-C1'	7.44	126.99	118.80
1	2	5002	U	N3-C2-O2	-7.44	116.99	122.20
1	2	1096	C	N1-C2-O2	7.43	123.36	118.90
1	2	178	C	C5-C6-N1	7.43	124.72	121.00
1	2	489	C	C6-N1-C2	-7.43	117.33	120.30
1	2	4923	C	C2-N1-C1'	7.43	126.97	118.80
1	2	1720	C	N1-C2-O2	7.43	123.36	118.90
1	2	472	C	N1-C2-O2	7.43	123.36	118.90
1	2	1315	C	C6-N1-C2	-7.42	117.33	120.30
4	8	35	C	C6-N1-C2	-7.42	117.33	120.30
1	2	2814	C	N1-C2-O2	7.40	123.34	118.90
1	2	1245	C	C6-N1-C2	-7.39	117.34	120.30
1	2	100	C	C6-N1-C1'	-7.39	111.93	120.80
1	2	485	C	C2-N1-C1'	7.39	126.93	118.80
1	2	3905	A	P-O3'-C3'	7.37	128.55	119.70
1	2	753	C	C6-N1-C2	-7.36	117.36	120.30
1	2	112	C	N1-C2-O2	7.36	123.31	118.90
1	2	365	U	N1-C2-O2	7.36	127.95	122.80
1	2	1980	U	P-O3'-C3'	7.35	128.52	119.70
1	2	3622	C	N1-C2-O2	7.34	123.31	118.90
1	2	115	C	N1-C2-O2	7.34	123.30	118.90
1	2	753	C	C6-N1-C1'	-7.34	112.00	120.80
1	2	2478	C	N3-C2-O2	-7.34	116.76	121.90
55	3	92	C	C2-N1-C1'	7.33	126.86	118.80
1	2	365	U	N3-C2-O2	-7.33	117.07	122.20
1	2	1726	U	N1-C2-O2	7.33	127.93	122.80
1	2	4138	C	N1-C2-O2	7.33	123.30	118.90
1	2	4561	C	C6-N1-C2	-7.32	117.37	120.30
1	2	4562	C	N1-C2-O2	7.32	123.29	118.90
1	2	4426	C	C5-C6-N1	7.31	124.66	121.00
1	2	4880	C	N3-C2-O2	-7.31	116.78	121.90
1	2	4294	C	N1-C2-O2	7.31	123.28	118.90
1	2	1732	C	C6-N1-C2	-7.30	117.38	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4133	C	C6-N1-C2	-7.30	117.38	120.30
1	2	3772	U	N1-C2-O2	7.28	127.89	122.80
1	2	3926	C	N1-C2-O2	7.28	123.27	118.90
1	2	467	U	C2-N1-C1'	7.27	126.43	117.70
55	3	57	C	C6-N1-C2	-7.26	117.39	120.30
1	2	2627	C	N3-C2-O2	-7.26	116.82	121.90
42	4	407	ASP	CB-CG-OD1	7.26	124.84	118.30
1	2	516	C	C2-N1-C1'	7.25	126.77	118.80
1	2	672	C	N1-C2-O2	7.24	123.25	118.90
1	2	1315	C	C5-C6-N1	7.24	124.62	121.00
1	2	4162	C	N1-C2-O2	7.24	123.25	118.90
1	2	1915	C	N1-C2-O2	7.23	123.24	118.90
1	2	4402	C	N1-C2-O2	7.22	123.23	118.90
1	2	1861	U	N1-C2-O2	7.20	127.84	122.80
1	2	485	C	N1-C2-O2	7.20	123.22	118.90
1	2	2033	A	P-O3'-C3'	7.20	128.34	119.70
1	2	3878	C	C2-N1-C1'	7.20	126.72	118.80
55	3	84	U	C6-N1-C1'	-7.19	111.13	121.20
1	2	1276	C	C6-N1-C2	-7.19	117.42	120.30
34	v	87	ASP	CB-CG-OD2	7.18	124.77	118.30
1	2	1402	C	C5-C6-N1	7.18	124.59	121.00
1	2	1931	C	P-O3'-C3'	7.17	128.30	119.70
1	2	4266	G	C2-N3-C4	7.16	115.48	111.90
1	2	4275	G	N3-C4-N9	7.16	130.30	126.00
1	2	3774	A	OP1-P-O3'	7.16	120.95	105.20
1	2	1978	C	C6-N1-C2	-7.16	117.44	120.30
55	3	92	C	C5-C6-N1	7.15	124.58	121.00
55	3	102	U	N3-C2-O2	-7.15	117.19	122.20
1	2	1993	C	C6-N1-C2	-7.14	117.44	120.30
1	2	688	U	N1-C2-O2	7.13	127.80	122.80
1	2	985	C	C2-N1-C1'	7.13	126.65	118.80
1	2	2729	C	C6-N1-C2	-7.13	117.45	120.30
1	2	485	C	C6-N1-C2	-7.12	117.45	120.30
1	2	4148	C	C2-N1-C1'	7.12	126.63	118.80
1	2	4453	C	N3-C2-O2	-7.12	116.92	121.90
1	2	2362	U	N1-C2-O2	7.11	127.78	122.80
1	2	4972	U	N3-C2-O2	-7.11	117.22	122.20
1	2	4712	C	C6-N1-C2	-7.11	117.46	120.30
1	2	1245	C	C5-C6-N1	7.10	124.55	121.00
1	2	1816	C	N1-C2-O2	7.09	123.15	118.90
1	2	390	C	C5-C6-N1	7.09	124.54	121.00
4	8	99	U	N3-C2-O2	-7.09	117.24	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4996	C	C6-N1-C2	-7.09	117.47	120.30
1	2	155	C	N1-C2-O2	7.08	123.15	118.90
1	2	4708	A	C2-N3-C4	7.07	114.13	110.60
55	3	102	U	N1-C2-O2	7.06	127.75	122.80
1	2	2290	C	C6-N1-C2	-7.06	117.48	120.30
1	2	4387	C	C6-N1-C2	-7.04	117.48	120.30
1	2	4887	C	N3-C2-O2	-7.04	116.97	121.90
14	L	102	ASP	CB-CG-OD2	7.04	124.64	118.30
1	2	2281	U	N1-C2-O2	7.04	127.73	122.80
1	2	4498	U	N3-C2-O2	-7.04	117.27	122.20
1	2	2094	G	C4-N9-C1'	7.03	135.64	126.50
1	2	4341	C	N1-C2-O2	7.02	123.11	118.90
1	2	4710	C	C6-N1-C2	-7.02	117.49	120.30
1	2	4171	C	C6-N1-C2	-7.02	117.49	120.30
55	3	92	C	N3-C2-O2	-7.02	116.99	121.90
1	2	4275	G	C8-N9-C1'	-7.01	117.89	127.00
1	2	4476	C	C2-N1-C1'	7.01	126.51	118.80
1	2	4112	C	N1-C2-O2	7.01	123.11	118.90
1	2	472	C	C5-C6-N1	7.01	124.50	121.00
1	2	2072	C	C6-N1-C2	-7.00	117.50	120.30
1	2	4229	U	C6-N1-C1'	-7.00	111.40	121.20
1	2	4345	C	C6-N1-C2	-7.00	117.50	120.30
1	2	406	C	P-O3'-C3'	7.00	128.09	119.70
1	2	3637	U	N3-C2-O2	-7.00	117.30	122.20
1	2	4537	C	C6-N1-C2	-7.00	117.50	120.30
55	3	29	C	C6-N1-C2	-6.99	117.50	120.30
1	2	1458	C	N3-C2-O2	-6.99	117.01	121.90
1	2	1191	C	N3-C2-O2	-6.98	117.01	121.90
1	2	1096	C	C6-N1-C2	-6.98	117.51	120.30
1	2	1367	C	C2-N1-C1'	6.97	126.47	118.80
1	2	1216	C	C5-C6-N1	6.96	124.48	121.00
1	2	1079	C	N1-C2-O2	6.95	123.07	118.90
1	2	4284	C	C2-N1-C1'	6.95	126.45	118.80
1	2	2371	U	N3-C2-O2	-6.95	117.33	122.20
1	2	178	C	C2-N1-C1'	6.95	126.44	118.80
1	2	4294	C	C5-C6-N1	6.95	124.47	121.00
1	2	4864	U	C2-N1-C1'	6.95	126.04	117.70
1	2	904	C	N3-C2-O2	-6.94	117.04	121.90
1	2	155	C	N3-C2-O2	-6.94	117.04	121.90
1	2	2892	C	C2-N1-C1'	6.93	126.42	118.80
55	3	95	C	C6-N1-C1'	-6.93	112.48	120.80
1	2	4913	G	P-O3'-C3'	6.92	128.01	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	26	C	N1-C2-O2	6.92	123.05	118.90
1	2	489	C	C2-N1-C1'	6.91	126.40	118.80
1	2	4771	C	C6-N1-C2	-6.91	117.54	120.30
1	2	657	C	N1-C2-O2	6.91	123.04	118.90
1	2	4747	C	C2-N1-C1'	6.91	126.39	118.80
1	2	4231	C	C5-C6-N1	6.90	124.45	121.00
1	2	1893	C	C2-N1-C1'	6.90	126.39	118.80
1	2	4266	G	C8-N9-C1'	-6.89	118.04	127.00
1	2	516	C	C5-C6-N1	6.89	124.44	121.00
1	2	49	U	N3-C2-O2	-6.88	117.38	122.20
1	2	4360	U	N3-C2-O2	-6.88	117.39	122.20
1	2	322	C	C5-C6-N1	6.87	124.44	121.00
1	2	175	C	C6-N1-C2	-6.86	117.55	120.30
1	2	50	C	N3-C2-O2	-6.86	117.10	121.90
1	2	2653	C	C6-N1-C2	-6.86	117.56	120.30
1	2	112	C	C5-C6-N1	6.85	124.42	121.00
55	3	57	C	C5-C6-N1	6.85	124.42	121.00
1	2	5002	U	N1-C2-O2	6.85	127.59	122.80
1	2	1401	C	C6-N1-C2	-6.84	117.56	120.30
1	2	4505	C	N1-C2-O2	6.84	123.00	118.90
1	2	2533	C	N1-C2-O2	6.83	123.00	118.90
1	2	3657	U	N3-C2-O2	-6.82	117.42	122.20
1	2	4350	C	C5-C6-N1	6.82	124.41	121.00
1	2	4674	C	C6-N1-C2	-6.82	117.57	120.30
1	2	1216	C	C6-N1-C1'	-6.81	112.62	120.80
1	2	4283	G	N3-C4-N9	6.81	130.09	126.00
1	2	1245	C	C2-N1-C1'	6.81	126.29	118.80
1	2	2632	U	N3-C2-O2	-6.81	117.44	122.20
1	2	49	U	N1-C2-O2	6.80	127.56	122.80
1	2	4508	C	N1-C2-O2	6.80	122.98	118.90
1	2	985	C	C5-C6-N1	6.80	124.40	121.00
1	2	1477	C	C2-N1-C1'	6.79	126.27	118.80
39	R	235	MET	CA-CB-CG	6.79	124.85	113.30
1	2	4423	U	C5-C6-N1	6.79	126.09	122.70
1	2	1860	U	N3-C2-O2	-6.79	117.45	122.20
1	2	4426	C	N1-C2-O2	6.79	122.97	118.90
39	R	211	LEU	CB-CG-CD2	6.79	122.53	111.00
55	3	84	U	C5-C4-O4	-6.78	121.83	125.90
1	2	4880	C	C6-N1-C2	-6.78	117.59	120.30
1	2	282	C	C6-N1-C2	-6.77	117.59	120.30
1	2	4709	U	C2-N1-C1'	6.77	125.83	117.70
1	2	1190	C	N1-C2-O2	6.76	122.95	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2101	C	C6-N1-C2	-6.76	117.60	120.30
1	2	44	A	C2-N3-C4	6.76	113.98	110.60
1	2	4887	C	C6-N1-C2	-6.76	117.60	120.30
1	2	4714	C	N3-C2-O2	-6.75	117.17	121.90
1	2	3636	C	C5-C6-N1	6.75	124.37	121.00
1	2	1720	C	C6-N1-C2	-6.74	117.60	120.30
1	2	3892	U	N3-C2-O2	-6.74	117.48	122.20
1	2	4923	C	C5-C6-N1	6.74	124.37	121.00
1	2	2528	G	C8-N9-C1'	-6.73	118.25	127.00
1	2	3892	U	N1-C2-O2	6.73	127.51	122.80
1	2	972	C	N1-C2-O2	6.73	122.94	118.90
1	2	26	C	C6-N1-C2	-6.73	117.61	120.30
1	2	4627	U	N3-C2-O2	-6.73	117.49	122.20
1	2	4299	U	N3-C2-O2	-6.73	117.49	122.20
1	2	2281	U	N3-C2-O2	-6.72	117.49	122.20
55	3	24	C	N1-C2-O2	6.72	122.93	118.90
1	2	2589	C	C6-N1-C2	-6.72	117.61	120.30
1	2	4120	U	C2-N1-C1'	6.71	125.76	117.70
1	2	4714	C	C5-C6-N1	6.71	124.36	121.00
55	3	26	C	C6-N1-C2	-6.71	117.62	120.30
46	d	43	LEU	CA-CB-CG	6.71	130.72	115.30
1	2	2729	C	C2-N1-C1'	6.70	126.17	118.80
1	2	322	C	C2-N1-C1'	6.69	126.16	118.80
1	2	4561	C	N1-C2-O2	6.69	122.91	118.90
1	2	4423	U	C6-N1-C1'	-6.68	111.84	121.20
1	2	4522	G	C4-N9-C1'	6.68	135.18	126.50
1	2	1401	C	N1-C2-O2	6.67	122.90	118.90
1	2	1428	U	N3-C2-O2	-6.67	117.53	122.20
1	2	972	C	C6-N1-C2	-6.67	117.63	120.30
1	2	4481	U	N3-C2-O2	-6.66	117.53	122.20
4	8	99	U	N1-C2-O2	6.66	127.46	122.80
1	2	1963	C	C5-C6-N1	6.65	124.33	121.00
4	8	54	C	C6-N1-C2	-6.65	117.64	120.30
1	2	1814	C	C5-C6-N1	6.65	124.32	121.00
1	2	1469	C	C6-N1-C2	-6.64	117.64	120.30
57	g	118	ASP	CB-CG-OD2	6.64	124.28	118.30
4	8	111	U	C2-N1-C1'	6.64	125.67	117.70
1	2	2615	C	N1-C2-O2	6.63	122.88	118.90
55	3	51	G	P-O3'-C3'	6.62	127.65	119.70
1	2	3587	C	N1-C2-O2	6.62	122.87	118.90
1	2	274	C	C2-N1-C1'	6.61	126.08	118.80
1	2	4563	U	N3-C2-O2	-6.61	117.57	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1694	C	C6-N1-C2	-6.61	117.66	120.30
1	2	1856	C	C6-N1-C2	-6.61	117.66	120.30
1	2	3637	U	N1-C2-O2	6.61	127.42	122.80
55	3	72	U	OP1-P-OP2	-6.61	109.69	119.60
1	2	2478	C	C6-N1-C2	-6.60	117.66	120.30
1	2	3882	C	C6-N1-C2	-6.60	117.66	120.30
1	2	2772	C	N1-C2-O2	6.59	122.86	118.90
1	2	1796	U	C2-N1-C1'	6.59	125.61	117.70
1	2	673	C	C6-N1-C2	-6.58	117.67	120.30
1	2	4771	C	N1-C2-O2	6.58	122.85	118.90
1	2	4972	U	N1-C2-O2	6.58	127.40	122.80
1	2	1344	C	C2-N1-C1'	6.57	126.03	118.80
1	2	2031	C	C6-N1-C2	-6.57	117.67	120.30
1	2	2532	C	C5-C6-N1	6.56	124.28	121.00
1	2	489	C	C5-C6-N1	6.55	124.27	121.00
1	2	1812	C	C6-N1-C2	-6.54	117.68	120.30
1	2	2017	A	O4'-C1'-N9	6.54	113.43	108.20
1	2	1250	C	N1-C2-O2	6.53	122.82	118.90
30	o	202	ASP	CB-CG-OD2	6.53	124.18	118.30
1	2	1993	C	C5-C6-N1	6.52	124.26	121.00
1	2	4695	C	N3-C2-O2	-6.52	117.33	121.90
1	2	4627	U	N1-C2-O2	6.52	127.37	122.80
1	2	1428	U	N1-C2-O2	6.51	127.36	122.80
1	2	1477	C	N1-C2-O2	6.51	122.81	118.90
1	2	1702	C	C2-N1-C1'	6.51	125.97	118.80
1	2	2856	C	N1-C2-O2	6.51	122.81	118.90
1	2	3690	U	N3-C2-O2	-6.51	117.64	122.20
1	2	1893	C	C5-C6-N1	6.51	124.26	121.00
1	2	1402	C	C2-N1-C1'	6.51	125.96	118.80
1	2	4319	C	N1-C2-O2	6.51	122.81	118.90
19	U	147	ASP	CB-CG-OD2	6.51	124.16	118.30
1	2	2011	C	C6-N1-C2	-6.50	117.70	120.30
1	2	985	C	N3-C2-O2	-6.49	117.36	121.90
1	2	30	C	C6-N1-C2	-6.49	117.70	120.30
55	3	72	U	P-O3'-C3'	6.49	127.49	119.70
40	W	260	LEU	CA-CB-CG	6.49	130.22	115.30
1	2	1663	C	C6-N1-C2	-6.49	117.71	120.30
1	2	1367	C	N1-C2-O2	6.48	122.79	118.90
1	2	1663	C	C5-C6-N1	6.48	124.24	121.00
1	2	4123	C	N3-C2-O2	-6.48	117.36	121.90
1	2	4133	C	C2-N1-C1'	6.48	125.93	118.80
1	2	4880	C	C2-N1-C1'	6.48	125.92	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1477	C	C5-C6-N1	6.47	124.24	121.00
1	2	4887	C	C2-N1-C1'	6.47	125.92	118.80
1	2	1096	C	C5-C6-N1	6.47	124.23	121.00
1	2	126	C	C6-N1-C2	-6.47	117.71	120.30
1	2	274	C	C6-N1-C2	-6.47	117.71	120.30
1	2	1808	C	P-O3'-C3'	6.46	127.46	119.70
1	2	1861	U	N3-C2-O2	-6.46	117.68	122.20
1	2	122	U	N3-C2-O2	-6.46	117.68	122.20
1	2	4387	C	N1-C2-O2	6.46	122.78	118.90
1	2	204	U	N3-C2-O2	-6.46	117.68	122.20
1	2	1402	C	N1-C2-O2	6.45	122.77	118.90
1	2	9	C	C6-N1-C2	-6.45	117.72	120.30
1	2	1938	C	N1-C2-O2	6.45	122.77	118.90
1	2	2592	U	N3-C2-O2	-6.44	117.69	122.20
1	2	4350	C	C2-N1-C1'	6.44	125.89	118.80
1	2	4423	U	C6-N1-C2	-6.44	117.14	121.00
1	2	4288	C	N3-C4-C5	6.44	124.47	121.90
1	2	1325	C	N1-C2-O2	6.43	122.76	118.90
1	2	4402	C	C6-N1-C2	-6.43	117.73	120.30
1	2	4710	C	C5-C6-N1	6.43	124.22	121.00
1	2	50	C	C6-N1-C2	-6.43	117.73	120.30
1	2	2892	C	C6-N1-C2	-6.42	117.73	120.30
1	2	4498	U	C6-N1-C1'	-6.42	112.21	121.20
1	2	4561	C	C2-N1-C1'	6.42	125.86	118.80
1	2	5008	C	N1-C2-O2	6.42	122.75	118.90
1	2	2011	C	N3-C2-O2	-6.42	117.41	121.90
1	2	1276	C	N3-C2-O2	-6.41	117.41	121.90
1	2	4148	C	C5-C6-N1	6.41	124.21	121.00
1	2	4476	C	N1-C2-O2	6.41	122.75	118.90
1	2	2667	C	N3-C2-O2	-6.41	117.42	121.90
1	2	2791	C	C6-N1-C2	-6.41	117.74	120.30
1	2	1963	C	C2-N1-C1'	6.40	125.84	118.80
1	2	3631	U	N3-C2-O2	-6.40	117.72	122.20
1	2	3848	U	N3-C2-O2	-6.40	117.72	122.20
1	2	2038	U	N3-C2-O2	-6.40	117.72	122.20
1	2	1812	C	C5-C6-N1	6.39	124.20	121.00
1	2	2532	C	C2-N1-C1'	6.39	125.83	118.80
1	2	1097	C	C6-N1-C2	-6.39	117.74	120.30
1	2	2632	U	N1-C2-O2	6.39	127.28	122.80
1	2	4969	C	C6-N1-C2	-6.39	117.74	120.30
1	2	1702	C	N1-C2-O2	6.39	122.73	118.90
1	2	2867	C	C6-N1-C2	-6.39	117.75	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4771	C	C5-C6-N1	6.38	124.19	121.00
1	2	26	C	C2-N1-C1'	6.38	125.82	118.80
1	2	1978	C	N3-C2-O2	-6.37	117.44	121.90
1	2	4294	C	C2-N1-C1'	6.37	125.81	118.80
1	2	1994	C	C6-N1-C2	-6.37	117.75	120.30
1	2	2037	C	C6-N1-C2	-6.37	117.75	120.30
1	2	1467	C	C6-N1-C2	-6.36	117.75	120.30
1	2	1822	U	N1-C2-O2	6.36	127.25	122.80
1	2	3866	C	C5-C6-N1	6.36	124.18	121.00
1	2	489	C	N1-C2-O2	6.36	122.72	118.90
1	2	1607	C	C6-N1-C2	-6.36	117.76	120.30
1	2	86	U	N3-C2-O2	-6.36	117.75	122.20
1	2	1251	C	C6-N1-C2	-6.36	117.76	120.30
1	2	2820	C	C2-N1-C1'	6.36	125.79	118.80
1	2	4747	C	C5-C6-N1	6.36	124.18	121.00
1	2	100	C	C5-C6-N1	6.35	124.18	121.00
1	2	4695	C	C6-N1-C2	-6.35	117.76	120.30
1	2	4283	G	C4-N9-C1'	6.35	134.75	126.50
1	2	440	U	N3-C2-O2	-6.35	117.76	122.20
1	2	2094	G	N3-C4-N9	6.35	129.81	126.00
1	2	4387	C	C2-N1-C1'	6.35	125.78	118.80
1	2	4284	C	N1-C2-O2	6.34	122.71	118.90
1	2	4171	C	N3-C2-O2	-6.34	117.46	121.90
29	n	5	LEU	CA-CB-CG	6.34	129.88	115.30
1	2	3915	U	N3-C2-O2	-6.34	117.77	122.20
4	8	153	C	C6-N1-C2	-6.33	117.77	120.30
4	8	54	C	N3-C2-O2	-6.32	117.47	121.90
1	2	141	C	C6-N1-C1'	-6.32	113.21	120.80
1	2	4133	C	C5-C6-N1	6.32	124.16	121.00
1	2	4299	U	N1-C2-O2	6.32	127.22	122.80
55	3	3	C	C6-N1-C2	-6.32	117.77	120.30
1	2	712	C	C6-N1-C2	-6.32	117.77	120.30
1	2	4471	U	N3-C2-O2	-6.32	117.78	122.20
1	2	1893	C	N1-C2-O2	6.31	122.69	118.90
1	2	4149	C	C2-N1-C1'	6.31	125.74	118.80
1	2	4262	C	C6-N1-C2	-6.31	117.78	120.30
1	2	1822	U	N3-C2-O2	-6.31	117.78	122.20
1	2	3851	U	N3-C2-O2	-6.31	117.78	122.20
1	2	3870	C	C6-N1-C2	-6.31	117.78	120.30
4	8	101	C	C6-N1-C2	-6.31	117.78	120.30
1	2	4923	C	N1-C2-O2	6.31	122.68	118.90
1	2	2019	C	C6-N1-C2	-6.30	117.78	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2371	U	N1-C2-O2	6.30	127.21	122.80
1	2	1566	C	C6-N1-C2	-6.29	117.78	120.30
1	2	2337	C	N3-C2-O2	-6.29	117.50	121.90
1	2	3739	C	C6-N1-C2	-6.29	117.78	120.30
1	2	4561	C	C5-C6-N1	6.29	124.14	121.00
1	2	345	C	C6-N1-C2	-6.29	117.78	120.30
1	2	4406	U	C2-N1-C1'	6.28	125.24	117.70
55	3	29	C	C5-C6-N1	6.28	124.14	121.00
1	2	4133	C	N1-C2-O2	6.28	122.67	118.90
1	2	322	C	N1-C2-O2	6.28	122.67	118.90
1	2	3606	U	N3-C2-O2	-6.28	117.81	122.20
1	2	3622	C	C6-N1-C2	-6.28	117.79	120.30
1	2	4137	C	N1-C2-O2	6.28	122.67	118.90
1	2	4406	U	N3-C2-O2	-6.27	117.81	122.20
1	2	4426	C	N3-C2-O2	-6.27	117.51	121.90
1	2	485	C	OP1-P-O3'	6.27	118.99	105.20
1	2	1938	C	C2-N1-C1'	6.26	125.69	118.80
1	2	984	C	C6-N1-C2	-6.26	117.80	120.30
1	2	4350	C	N1-C2-O2	6.25	122.65	118.90
1	2	3878	C	N3-C2-O2	-6.25	117.53	121.90
1	2	1856	C	C2-N1-C1'	6.25	125.67	118.80
1	2	1472	C	C2-N1-C1'	6.24	125.67	118.80
1	2	204	U	N1-C2-O2	6.24	127.17	122.80
1	2	4481	U	N1-C2-O2	6.24	127.17	122.80
55	3	26	C	N1-C2-O2	6.24	122.64	118.90
1	2	195	C	C5-C6-N1	6.24	124.12	121.00
1	2	1732	C	N1-C2-O2	6.23	122.64	118.90
1	2	1325	C	C6-N1-C2	-6.23	117.81	120.30
1	2	1686	C	C6-N1-C2	-6.23	117.81	120.30
1	2	2563	C	C6-N1-C2	-6.23	117.81	120.30
1	2	2729	C	C5-C6-N1	6.23	124.11	121.00
39	R	51	MET	CA-CB-CG	6.23	123.89	113.30
1	2	4148	C	C6-N1-C2	-6.22	117.81	120.30
1	2	4241	C	C6-N1-C2	-6.22	117.81	120.30
58	f	206	LEU	CA-CB-CG	6.22	129.60	115.30
1	2	2008	U	C2-N1-C1'	6.21	125.16	117.70
1	2	1796	U	N1-C2-O2	6.21	127.15	122.80
1	2	1963	C	N3-C2-O2	-6.21	117.55	121.90
1	2	4775	C	C6-N1-C1'	-6.21	113.35	120.80
1	2	2019	C	N1-C2-O2	6.21	122.62	118.90
18	S	32	ASP	CB-CG-OD1	6.21	123.89	118.30
1	2	2563	C	N3-C2-O2	-6.20	117.56	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	3721	U	N3-C2-O2	-6.20	117.86	122.20
1	2	1202	C	C6-N1-C2	-6.20	117.82	120.30
1	2	4429	C	N1-C2-O2	6.20	122.62	118.90
1	2	4497	U	N3-C2-O2	-6.20	117.86	122.20
1	2	4921	C	N1-C2-O2	6.20	122.62	118.90
1	2	2072	C	C5-C6-N1	6.19	124.10	121.00
1	2	115	C	N3-C2-O2	-6.19	117.57	121.90
1	2	4775	C	C6-N1-C2	-6.17	117.83	120.30
1	2	4970	C	C6-N1-C2	-6.17	117.83	120.30
1	2	2351	C	N1-C2-O2	6.16	122.60	118.90
1	2	3866	C	C6-N1-C2	-6.16	117.84	120.30
1	2	4502	C	N1-C2-O2	6.16	122.60	118.90
1	2	2062	C	C6-N1-C2	-6.15	117.84	120.30
1	2	1448	G	C4-N9-C1'	6.15	134.50	126.50
1	2	2667	C	C6-N1-C2	-6.15	117.84	120.30
4	8	32	C	N1-C2-O2	6.15	122.59	118.90
1	2	68	U	N3-C2-O2	-6.15	117.90	122.20
1	2	4112	C	N3-C2-O2	-6.14	117.60	121.90
1	2	4308	C	N1-C2-O2	6.14	122.59	118.90
1	2	3650	C	C5-C6-N1	6.14	124.07	121.00
1	2	1378	C	C2-N1-C1'	6.14	125.55	118.80
1	2	2892	C	C5-C6-N1	6.14	124.07	121.00
1	2	1439	C	C6-N1-C2	-6.13	117.85	120.30
1	2	1666	C	C6-N1-C2	-6.13	117.85	120.30
4	8	32	C	C6-N1-C2	-6.13	117.85	120.30
1	2	1860	U	N1-C2-O2	6.12	127.08	122.80
1	2	4682	U	C2-N1-C1'	6.12	125.04	117.70
1	2	274	C	N1-C2-O2	6.12	122.57	118.90
1	2	672	C	N3-C2-O2	-6.12	117.62	121.90
1	2	1401	C	C5-C6-N1	6.12	124.06	121.00
1	2	2002	A	C2-N3-C4	6.12	113.66	110.60
4	8	96	C	C6-N1-C2	-6.12	117.85	120.30
1	2	281	U	N3-C2-O2	-6.11	117.92	122.20
1	2	753	C	C5-C6-N1	6.11	124.05	121.00
1	2	2486	G	OP1-P-O3'	6.10	118.63	105.20
1	2	4231	C	C6-N1-C1'	-6.10	113.48	120.80
4	8	111	U	N1-C2-O2	6.09	127.07	122.80
1	2	4563	U	N1-C2-O2	6.09	127.06	122.80
1	2	1720	C	N3-C2-O2	-6.09	117.64	121.90
1	2	4464	A	C2-N3-C4	6.09	113.64	110.60
1	2	390	C	C2-N1-C1'	6.08	125.49	118.80
1	2	694	C	N1-C2-O2	6.08	122.55	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	3926	C	C6-N1-C2	-6.08	117.87	120.30
1	2	1241	C	N3-C2-O2	-6.08	117.65	121.90
1	2	2820	C	C5-C6-N1	6.07	124.04	121.00
1	2	4319	C	C5-C6-N1	6.07	124.04	121.00
1	2	1429	C	C6-N1-C2	-6.07	117.87	120.30
1	2	1472	C	N1-C2-O2	6.07	122.54	118.90
1	2	4569	U	N3-C2-O2	-6.07	117.95	122.20
1	2	1309	C	C6-N1-C2	-6.06	117.87	120.30
1	2	1577	G	N3-C2-N2	-6.06	115.66	119.90
1	2	1381	U	N1-C2-O2	6.06	127.04	122.80
1	2	2264	C	N1-C2-O2	6.06	122.54	118.90
32	r	310	LEU	CA-CB-CG	6.06	129.24	115.30
1	2	1568	C	C6-N1-C2	-6.06	117.88	120.30
1	2	4895	C	N1-C2-O2	6.06	122.53	118.90
1	2	4147	G	N1-C6-O6	-6.06	116.27	119.90
1	2	1795	A	C4-N9-C1'	6.05	137.19	126.30
1	2	1796	U	N3-C2-O2	-6.05	117.96	122.20
1	2	1678	C	N1-C2-O2	6.05	122.53	118.90
1	2	2362	U	C2-N1-C1'	6.05	124.96	117.70
1	2	1344	C	C5-C6-N1	6.04	124.02	121.00
1	2	1662	C	C6-N1-C2	-6.04	117.89	120.30
1	2	1191	C	N1-C2-O2	6.04	122.52	118.90
1	2	1203	G	N3-C4-C5	-6.04	125.58	128.60
1	2	4945	G	N3-C4-N9	6.04	129.62	126.00
4	8	96	C	N1-C2-O2	6.04	122.52	118.90
1	2	36	U	N3-C2-O2	-6.03	117.98	122.20
1	2	4207	C	N1-C2-O2	6.03	122.52	118.90
1	2	4402	C	N3-C2-O2	-6.03	117.68	121.90
1	2	3606	U	N1-C2-O2	6.03	127.02	122.80
1	2	4360	U	N1-C2-O2	6.03	127.02	122.80
1	2	750	U	N3-C2-O2	-6.02	117.98	122.20
1	2	2892	C	N1-C2-O2	6.02	122.51	118.90
4	8	35	C	C5-C6-N1	6.01	124.01	121.00
1	2	78	U	N3-C2-O2	-6.01	117.99	122.20
1	2	4440	G	N3-C4-N9	6.01	129.61	126.00
1	2	4261	C	C6-N1-C2	-6.01	117.90	120.30
1	2	4764	A	N1-C2-N3	-6.01	126.30	129.30
1	2	3882	C	C2-N1-C1'	6.01	125.41	118.80
1	2	657	C	C6-N1-C2	-6.01	117.90	120.30
29	n	105	LEU	C-N-CA	6.01	136.72	121.70
1	2	3851	U	N1-C2-O2	6.00	127.00	122.80
8	D	138	MET	CG-SD-CE	6.00	109.81	100.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	679	C	C6-N1-C2	-6.00	117.90	120.30
1	2	4262	C	C5-C6-N1	6.00	124.00	121.00
1	2	4895	C	C2-N1-C1'	6.00	125.40	118.80
1	2	1250	C	N3-C2-O2	-5.99	117.70	121.90
1	2	2403	A	C2-N3-C4	5.99	113.60	110.60
1	2	2532	C	N1-C2-O2	5.99	122.49	118.90
1	2	3690	U	N1-C2-O2	5.99	126.99	122.80
1	2	1381	U	N3-C2-O2	-5.99	118.01	122.20
1	2	86	U	N1-C2-O2	5.98	126.99	122.80
1	2	1472	C	C6-N1-C2	-5.98	117.91	120.30
1	2	4562	C	N3-C2-O2	-5.98	117.71	121.90
4	8	111	U	N3-C2-O2	-5.98	118.02	122.20
1	2	440	U	N1-C2-O2	5.97	126.98	122.80
1	2	4068	U	C2-N1-C1'	5.97	124.87	117.70
1	2	1309	C	C5-C6-N1	5.97	123.99	121.00
1	2	2094	G	N3-C4-C5	-5.97	125.61	128.60
1	2	988	C	N1-C2-O2	5.97	122.48	118.90
1	2	988	C	C6-N1-C2	-5.97	117.91	120.30
1	2	1378	C	N1-C2-O2	5.97	122.48	118.90
1	2	4502	C	C2-N1-C1'	5.96	125.36	118.80
1	2	36	U	N1-C2-O2	5.96	126.97	122.80
1	2	2445	C	C6-N1-C2	-5.96	117.92	120.30
1	2	2094	G	C8-N9-C1'	-5.96	119.26	127.00
1	2	259	C	N1-C2-O2	5.95	122.47	118.90
1	2	2478	C	C6-N1-C1'	-5.94	113.67	120.80
4	8	4	C	C6-N1-C2	-5.94	117.92	120.30
1	2	3876	A	N3-C4-N9	5.94	132.15	127.40
1	2	1856	C	N1-C2-O2	5.94	122.46	118.90
1	2	1592	G	C4-N9-C1'	5.94	134.22	126.50
1	2	4996	C	C5-C6-N1	5.94	123.97	121.00
26	h	82	ILE	CG1-CB-CG2	-5.94	98.34	111.40
1	2	4555	U	P-O3'-C3'	5.93	126.81	119.70
1	2	3622	C	N3-C2-O2	-5.93	117.75	121.90
1	2	3587	C	C6-N1-C2	-5.93	117.93	120.30
1	2	4206	C	N3-C2-O2	-5.92	117.75	121.90
1	2	1671	U	C5-C6-N1	5.92	125.66	122.70
1	2	2520	C	C6-N1-C2	-5.92	117.93	120.30
1	2	4712	C	N1-C2-O2	5.91	122.45	118.90
1	2	1088	C	C6-N1-C2	-5.91	117.94	120.30
4	8	80	A	C2-N3-C4	5.91	113.55	110.60
1	2	1468	C	C6-N1-C2	-5.90	117.94	120.30
1	2	1245	C	N1-C2-O2	5.90	122.44	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1966	C	N3-C2-O2	-5.90	117.77	121.90
1	2	2325	C	N3-C2-O2	-5.90	117.77	121.90
1	2	1567	U	N3-C2-O2	-5.89	118.08	122.20
1	2	1991	A	C2-N3-C4	5.88	113.54	110.60
1	2	30	C	C2-N1-C1'	5.88	125.27	118.80
1	2	4522	G	N3-C4-C5	-5.88	125.66	128.60
4	8	55	U	N3-C2-O2	-5.88	118.09	122.20
1	2	3926	C	N3-C2-O2	-5.87	117.79	121.90
42	4	406	GLY	C-N-CA	5.87	136.38	121.70
1	2	2496	G	P-O3'-C3'	5.87	126.75	119.70
1	2	1915	C	N3-C2-O2	-5.87	117.79	121.90
1	2	4349	C	N3-C2-O2	-5.87	117.79	121.90
12	I	188	GLN	CA-CB-CG	5.87	126.31	113.40
1	2	1996	C	C6-N1-C2	-5.87	117.95	120.30
1	2	2843	U	N3-C2-O2	-5.87	118.09	122.20
1	2	2867	C	C2-N1-C1'	5.86	125.25	118.80
35	w	425	LEU	CB-CG-CD2	5.86	120.97	111.00
1	2	14	C	C6-N1-C2	-5.86	117.95	120.30
4	8	101	C	C2-N1-C1'	5.86	125.25	118.80
1	2	2528	G	C2-N3-C4	5.86	114.83	111.90
1	2	4662	C	C5-C6-N1	5.86	123.93	121.00
1	2	1633	G	P-O3'-C3'	5.86	126.73	119.70
1	2	4747	C	N1-C2-O2	5.86	122.41	118.90
1	2	446	C	C6-N1-C2	-5.85	117.96	120.30
1	2	673	C	N1-C2-O2	5.85	122.41	118.90
1	2	4112	C	C6-N1-C2	-5.85	117.96	120.30
1	2	4773	C	N1-C2-O2	5.85	122.41	118.90
9	E	20	LEU	CA-CB-CG	5.85	128.75	115.30
1	2	2592	U	N1-C2-O2	5.84	126.89	122.80
1	2	195	C	C2-N1-C1'	5.84	125.22	118.80
1	2	1732	C	N3-C2-O2	-5.84	117.81	121.90
1	2	4771	C	C2-N1-C1'	5.84	125.22	118.80
1	2	1978	C	C5-C6-N1	5.83	123.92	121.00
1	2	2615	C	N3-C2-O2	-5.83	117.82	121.90
1	2	195	C	N1-C2-O2	5.83	122.40	118.90
1	2	271	C	C5-C6-N1	5.83	123.91	121.00
1	2	2031	C	N1-C2-O2	5.83	122.40	118.90
1	2	4522	G	N3-C4-N9	5.83	129.50	126.00
1	2	4996	C	C2-N1-C1'	5.83	125.21	118.80
1	2	485	C	P-O3'-C3'	5.82	126.69	119.70
1	2	1678	C	C2-N1-C1'	5.82	125.20	118.80
1	2	1942	A	C2-N3-C4	5.82	113.51	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4913	G	OP2-P-O3'	5.81	117.99	105.20
1	2	4349	C	C2-N1-C1'	5.81	125.19	118.80
1	2	485	C	N3-C2-O2	-5.81	117.83	121.90
23	a	76	MET	C-N-CA	5.81	134.50	122.30
1	2	3636	C	C2-N1-C1'	5.80	125.18	118.80
1	2	4315	A	N1-C2-N3	-5.80	126.40	129.30
1	2	4653	C	C6-N1-C2	-5.80	117.98	120.30
1	2	30	C	N1-C2-O2	5.80	122.38	118.90
1	2	2772	C	N3-C2-O2	-5.80	117.84	121.90
1	2	2814	C	C2-N1-C1'	5.80	125.18	118.80
1	2	4508	C	C6-N1-C2	-5.80	117.98	120.30
55	3	28	C	N1-C2-O2	5.80	122.38	118.90
1	2	3858	C	C6-N1-C2	-5.80	117.98	120.30
1	2	1807	C	C6-N1-C2	-5.80	117.98	120.30
1	2	1241	C	C6-N1-C1'	-5.79	113.85	120.80
1	2	3840	U	N3-C2-O2	-5.79	118.14	122.20
1	2	221	C	C6-N1-C2	-5.79	117.98	120.30
1	2	175	C	N3-C2-O2	-5.79	117.85	121.90
1	2	5002	U	C2-N1-C1'	5.79	124.65	117.70
4	8	4	C	C5-C6-N1	5.78	123.89	121.00
1	2	2821	U	N3-C2-O2	-5.78	118.15	122.20
55	3	28	C	C6-N1-C2	-5.78	117.99	120.30
1	2	4596	C	N1-C2-O2	5.78	122.37	118.90
1	2	2262	G	C2-N3-C4	5.78	114.79	111.90
55	3	2	U	N3-C2-O2	-5.78	118.16	122.20
1	2	1901	C	C6-N1-C2	-5.78	117.99	120.30
1	2	4453	C	C6-N1-C1'	-5.78	113.87	120.80
1	2	719	C	C6-N1-C2	-5.77	117.99	120.30
1	2	2505	C	N3-C2-O2	-5.77	117.86	121.90
1	2	178	C	N3-C2-O2	-5.77	117.86	121.90
1	2	4406	U	N1-C2-O2	5.77	126.84	122.80
1	2	365	U	C2-N1-C1'	5.77	124.62	117.70
55	3	24	C	C6-N1-C2	-5.77	117.99	120.30
1	2	1978	C	C2-N1-C1'	5.77	125.14	118.80
55	3	29	C	N1-C2-O2	5.77	122.36	118.90
1	2	2845	A	C2-N3-C4	5.76	113.48	110.60
1	2	1417	C	C6-N1-C2	-5.76	118.00	120.30
1	2	1929	A	C4-N9-C1'	5.75	136.66	126.30
1	2	4088	C	C6-N1-C2	-5.75	118.00	120.30
4	8	54	C	C5-C6-N1	5.75	123.87	121.00
1	2	1814	C	C6-N1-C2	-5.74	118.00	120.30
1	2	3598	C	C6-N1-C2	-5.74	118.00	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1448	G	N3-C4-N9	5.73	129.44	126.00
1	2	1795	A	N3-C4-N9	5.73	131.98	127.40
1	2	1582	U	N3-C2-O2	-5.73	118.19	122.20
1	2	4532	U	N3-C2-O2	-5.73	118.19	122.20
37	z	33	LEU	CA-CB-CG	5.73	128.47	115.30
1	2	4283	G	N3-C4-C5	-5.72	125.74	128.60
1	2	972	C	N3-C2-O2	-5.72	117.90	121.90
1	2	977	C	N1-C2-O2	5.72	122.33	118.90
1	2	1859	C	N1-C2-O2	5.72	122.33	118.90
1	2	1251	C	N3-C2-O2	-5.72	117.90	121.90
1	2	1994	C	O4'-C1'-N1	5.71	112.77	108.20
1	2	281	U	N1-C2-O2	5.71	126.80	122.80
1	2	1906	U	N3-C2-O2	-5.71	118.20	122.20
1	2	2729	C	N1-C2-O2	5.70	122.32	118.90
1	2	3905	A	OP2-P-O3'	5.70	117.75	105.20
1	2	4537	C	N1-C2-O2	5.70	122.32	118.90
1	2	122	U	N1-C2-O2	5.70	126.79	122.80
1	2	4709	U	C5-C6-N1	5.70	125.55	122.70
1	2	1813	U	C5-C4-O4	-5.70	122.48	125.90
1	2	386	A	C2-N3-C4	5.69	113.45	110.60
1	2	2337	C	C6-N1-C2	-5.69	118.02	120.30
1	2	2779	C	C6-N1-C2	-5.69	118.03	120.30
1	2	1096	C	C2-N1-C1'	5.69	125.05	118.80
1	2	7	C	C5-C6-N1	5.68	123.84	121.00
1	2	3870	C	C5-C6-N1	5.68	123.84	121.00
1	2	3848	U	N1-C2-O2	5.68	126.78	122.80
1	2	689	U	N3-C2-O2	-5.68	118.22	122.20
1	2	1808	C	C6-N1-C2	-5.67	118.03	120.30
1	2	1921	C	N3-C2-O2	-5.67	117.93	121.90
1	2	1915	C	C2-N1-C1'	5.67	125.04	118.80
1	2	1577	G	C8-N9-C4	-5.66	104.13	106.40
1	2	4709	U	C6-N1-C2	-5.66	117.60	121.00
1	2	5050	C	C6-N1-C2	-5.66	118.03	120.30
1	2	4137	C	N3-C2-O2	-5.66	117.94	121.90
1	2	26	C	C5-C6-N1	5.66	123.83	121.00
1	2	4275	G	O4'-C1'-N9	5.66	112.73	108.20
1	2	4207	C	N3-C2-O2	-5.66	117.94	121.90
1	2	1703	C	C2-N1-C1'	5.65	125.02	118.80
1	2	274	C	C5-C6-N1	5.65	123.83	121.00
1	2	1816	C	N3-C2-O2	-5.65	117.95	121.90
1	2	2290	C	C5-C6-N1	5.65	123.83	121.00
1	2	4341	C	C2-N1-C1'	5.65	125.01	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	390	C	N1-C2-O2	5.65	122.29	118.90
1	2	112	C	N3-C2-O2	-5.64	117.95	121.90
1	2	4295	U	N3-C2-O2	-5.64	118.25	122.20
1	2	1074	G	N3-C4-N9	5.64	129.38	126.00
1	2	1993	C	C2-N1-C1'	5.64	125.00	118.80
1	2	1079	C	C6-N1-C2	-5.64	118.04	120.30
1	2	3915	U	N1-C2-O2	5.64	126.75	122.80
1	2	3882	C	C5-C6-N1	5.64	123.82	121.00
1	2	1310	C	C6-N1-C2	-5.63	118.05	120.30
1	2	4758	U	C6-N1-C1'	-5.63	113.32	121.20
1	2	1921	C	C2-N1-C1'	5.63	124.99	118.80
1	2	3876	A	N3-C4-C5	-5.63	122.86	126.80
1	2	4689	U	C5-C6-N1	5.63	125.51	122.70
1	2	4752	U	N1-C2-O2	5.63	126.74	122.80
1	2	126	C	N1-C2-O2	5.62	122.28	118.90
1	2	1856	C	C5-C6-N1	5.62	123.81	121.00
1	2	2498	C	C2-N1-C1'	5.62	124.99	118.80
1	2	4148	C	N3-C2-O2	-5.62	117.97	121.90
1	2	1707	C	C6-N1-C2	-5.62	118.05	120.30
1	2	4171	C	C5-C6-N1	5.62	123.81	121.00
42	4	12	VAL	CA-CB-CG1	5.62	119.33	110.90
1	2	1276	C	C5-C6-N1	5.62	123.81	121.00
1	2	4228	G	OP1-P-O3'	5.62	117.56	105.20
1	2	4880	C	C5-C6-N1	5.62	123.81	121.00
1	2	2410	C	N3-C2-O2	-5.61	117.97	121.90
1	2	4162	C	C2-N1-C1'	5.61	124.97	118.80
1	2	485	C	C5-C6-N1	5.61	123.81	121.00
1	2	2281	U	C5-C6-N1	5.61	125.50	122.70
55	3	24	C	N3-C2-O2	-5.61	117.97	121.90
1	2	4752	U	N3-C2-O2	-5.61	118.27	122.20
1	2	1656	U	N3-C2-O2	-5.60	118.28	122.20
1	2	5008	C	C6-N1-C2	-5.60	118.06	120.30
47	t	56	LEU	CA-CB-CG	5.60	128.19	115.30
1	2	499	G	C2-N3-C4	5.60	114.70	111.90
1	2	1884	C	C6-N1-C2	-5.60	118.06	120.30
1	2	4387	C	C5-C6-N1	5.60	123.80	121.00
1	2	4562	C	C6-N1-C2	-5.60	118.06	120.30
1	2	1832	C	N1-C2-O2	5.60	122.26	118.90
1	2	4235	G	N3-C4-N9	5.59	129.36	126.00
42	4	503	THR	C-N-CA	5.58	135.66	121.70
55	3	73	U	O5'-P-OP2	-5.58	100.67	105.70
1	2	4319	C	N3-C2-O2	-5.58	117.99	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1384	C	C6-N1-C2	-5.57	118.07	120.30
1	2	1467	C	N1-C2-O2	5.57	122.24	118.90
1	2	266	C	N1-C2-O2	5.57	122.24	118.90
1	2	2689	C	C6-N1-C2	-5.57	118.07	120.30
1	2	4348	A	C2-N3-C4	5.57	113.39	110.60
1	2	2836	A	C2-N3-C4	5.57	113.38	110.60
1	2	4370	G	C4-N9-C1'	5.57	133.74	126.50
1	2	201	C	C6-N1-C2	-5.57	118.07	120.30
1	2	1947	U	C2-N1-C1'	5.57	124.38	117.70
1	2	1458	C	C6-N1-C2	-5.56	118.07	120.30
1	2	4476	C	N3-C2-O2	-5.56	118.00	121.90
1	2	1308	C	C6-N1-C2	-5.56	118.08	120.30
55	3	2	U	N1-C2-O2	5.56	126.69	122.80
1	2	2533	C	C6-N1-C2	-5.56	118.08	120.30
4	8	156	U	N3-C2-O2	-5.56	118.31	122.20
1	2	131	C	C6-N1-C2	-5.56	118.08	120.30
1	2	1582	U	N1-C2-O2	5.56	126.69	122.80
1	2	486	C	C6-N1-C2	-5.56	118.08	120.30
1	2	4308	C	C6-N1-C2	-5.56	118.08	120.30
1	2	2508	U	N3-C2-O2	-5.55	118.31	122.20
1	2	2439	G	N3-C4-C5	-5.55	125.83	128.60
1	2	4981	G	C4-N9-C1'	5.55	133.71	126.50
1	2	1430	C	C6-N1-C2	-5.55	118.08	120.30
1	2	712	C	C5-C6-N1	5.54	123.77	121.00
1	2	4500	U	C2-N1-C1'	5.54	124.35	117.70
1	2	124	C	C6-N1-C2	-5.54	118.08	120.30
55	3	3	C	C5-C6-N1	5.54	123.77	121.00
28	m	102	LEU	CA-CB-CG	5.54	128.04	115.30
1	2	1795	A	N1-C2-N3	-5.54	126.53	129.30
1	2	988	C	C5-C6-N1	5.54	123.77	121.00
1	2	2290	C	C2-N1-C1'	5.53	124.88	118.80
1	2	3772	U	C2-N1-C1'	5.53	124.34	117.70
1	2	4078	C	C6-N1-C2	-5.53	118.09	120.30
1	2	4700	A	C2-N3-C4	5.53	113.36	110.60
1	2	4885	U	C2-N1-C1'	5.53	124.34	117.70
1	2	1468	C	N1-C2-O2	5.53	122.22	118.90
1	2	2708	U	N1-C2-O2	5.53	126.67	122.80
4	8	107	C	C6-N1-C2	-5.53	118.09	120.30
55	3	71	G	P-O3'-C3'	5.53	126.33	119.70
1	2	963	G	C2-N3-C4	5.53	114.66	111.90
1	2	1632	A	N1-C2-N3	-5.53	126.54	129.30
1	2	4639	G	C4-N9-C1'	5.53	133.68	126.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
42	4	238	MET	CB-CG-SD	5.53	128.98	112.40
1	2	100	C	O4'-C1'-N1	5.52	112.62	108.20
1	2	1097	C	C5-C6-N1	5.52	123.76	121.00
1	2	2783	A	N1-C2-N3	-5.52	126.54	129.30
1	2	4683	U	N3-C2-O2	-5.52	118.34	122.20
46	d	23	LEU	CA-CB-CG	5.52	127.99	115.30
1	2	2505	C	C6-N1-C1'	-5.51	114.19	120.80
1	2	3876	A	C4-N9-C1'	5.51	136.22	126.30
4	8	156	U	N1-C2-O2	5.51	126.66	122.80
55	3	19	C	C5-C6-N1	5.51	123.76	121.00
1	2	4313	A	C2-N3-C4	5.51	113.36	110.60
1	2	4283	G	C8-N9-C1'	-5.51	119.84	127.00
1	2	4147	G	C5-C6-O6	5.51	131.90	128.60
1	2	4461	C	C6-N1-C2	-5.51	118.10	120.30
1	2	71	C	C6-N1-C2	-5.50	118.10	120.30
1	2	209	U	C2-N1-C1'	5.50	124.30	117.70
1	2	2568	C	N1-C2-O2	5.50	122.20	118.90
1	2	1672	U	O4'-C1'-N1	5.50	112.60	108.20
1	2	4206	C	C6-N1-C2	-5.50	118.10	120.30
1	2	4758	U	O4'-C1'-N1	5.50	112.60	108.20
1	2	4370	G	C8-N9-C4	-5.50	104.20	106.40
1	2	984	C	N1-C2-O2	5.50	122.20	118.90
1	2	1683	U	N3-C2-O2	-5.49	118.35	122.20
42	4	21	LEU	CA-CB-CG	5.49	127.94	115.30
1	2	1703	C	N3-C2-O2	-5.49	118.06	121.90
1	2	3932	U	N3-C2-O2	-5.49	118.36	122.20
23	a	38	ARG	C-N-CA	5.49	135.42	121.70
1	2	977	C	C6-N1-C2	-5.49	118.11	120.30
1	2	4722	G	C4-N9-C1'	5.49	133.63	126.50
1	2	2850	A	C4-N9-C1'	5.48	136.17	126.30
1	2	4429	C	C6-N1-C2	-5.48	118.11	120.30
1	2	1203	G	N3-C4-N9	5.48	129.29	126.00
4	8	81	C	C6-N1-C2	-5.48	118.11	120.30
1	2	5036	C	C2-N1-C1'	5.48	124.83	118.80
1	2	3858	C	N1-C2-O2	5.48	122.19	118.90
1	2	4345	C	C5-C6-N1	5.48	123.74	121.00
1	2	4522	G	C8-N9-C1'	-5.48	119.88	127.00
1	2	1664	U	N3-C2-O2	-5.47	118.37	122.20
1	2	3893	C	C6-N1-C2	-5.47	118.11	120.30
1	2	2372	U	N3-C2-O2	-5.47	118.37	122.20
1	2	4259	C	C6-N1-C2	-5.47	118.11	120.30
4	8	72	A	C2-N3-C4	5.47	113.33	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
55	3	26	C	C5-C6-N1	5.47	123.73	121.00
1	2	1700	G	N3-C4-C5	-5.46	125.87	128.60
1	2	4712	C	C5-C6-N1	5.46	123.73	121.00
1	2	259	C	C2-N1-C1'	5.46	124.81	118.80
1	2	4471	U	N1-C2-O2	5.46	126.62	122.80
1	2	4272	G	C4-N9-C1'	5.46	133.60	126.50
4	8	51	U	N1-C2-O2	5.45	126.62	122.80
1	2	1567	U	N1-C2-O2	5.45	126.62	122.80
1	2	4295	U	N1-C2-O2	5.45	126.62	122.80
5	9	35	LEU	CA-CB-CG	5.45	127.84	115.30
1	2	458	C	C6-N1-C2	-5.45	118.12	120.30
1	2	4162	C	N3-C2-O2	-5.45	118.08	121.90
1	2	4639	G	N3-C4-C5	-5.45	125.88	128.60
1	2	1079	C	C5-C6-N1	5.45	123.72	121.00
1	2	1505	C	C5-C6-N1	5.45	123.72	121.00
1	2	4991	U	N3-C2-O2	-5.45	118.39	122.20
1	2	271	C	C6-N1-C2	-5.45	118.12	120.30
1	2	5050	C	C2-N1-C1'	5.45	124.79	118.80
1	2	1505	C	C6-N1-C2	-5.45	118.12	120.30
1	2	2417	A	O4'-C1'-N9	5.45	112.56	108.20
1	2	3657	U	N1-C2-O2	5.45	126.61	122.80
1	2	123	C	C6-N1-C2	-5.44	118.12	120.30
1	2	421	C	C6-N1-C2	-5.44	118.12	120.30
1	2	1203	G	C2-N3-C4	5.44	114.62	111.90
1	2	673	C	C5-C6-N1	5.44	123.72	121.00
1	2	1720	C	C5-C6-N1	5.44	123.72	121.00
18	S	127	VAL	CG1-CB-CG2	-5.44	102.20	110.90
1	2	1888	A	C2-N3-C4	5.43	113.32	110.60
1	2	657	C	N3-C2-O2	-5.43	118.10	121.90
1	2	1577	G	C2-N3-C4	5.43	114.62	111.90
1	2	4569	U	N1-C2-O2	5.43	126.60	122.80
55	3	67	C	C6-N1-C2	-5.43	118.13	120.30
1	2	3876	A	N1-C2-N3	-5.43	126.58	129.30
1	2	1727	U	N3-C2-O2	-5.43	118.40	122.20
1	2	1940	G	O4'-C1'-N9	5.43	112.54	108.20
1	2	2078	C	C6-N1-C2	-5.43	118.13	120.30
1	2	2779	C	N1-C2-O2	5.43	122.16	118.90
1	2	692	A	N1-C2-N3	-5.43	126.59	129.30
1	2	977	C	C2-N1-C1'	5.43	124.77	118.80
1	2	1096	C	N3-C2-O2	-5.43	118.10	121.90
1	2	972	C	C5-C6-N1	5.42	123.71	121.00
1	2	1592	G	N3-C4-C5	-5.42	125.89	128.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4639	G	N3-C4-N9	5.42	129.25	126.00
1	2	1566	C	C5-C6-N1	5.42	123.71	121.00
1	2	984	C	C5-C6-N1	5.41	123.71	121.00
1	2	1566	C	N1-C2-O2	5.41	122.15	118.90
1	2	1725	U	N3-C2-O2	-5.41	118.41	122.20
1	2	3882	C	N1-C2-O2	5.41	122.15	118.90
1	2	4312	U	N3-C2-O2	-5.41	118.41	122.20
1	2	174	C	N1-C2-O2	5.41	122.14	118.90
1	2	2779	C	C2-N1-C1'	5.41	124.75	118.80
1	2	2856	C	N3-C2-O2	-5.41	118.12	121.90
1	2	2699	C	C6-N1-C2	-5.40	118.14	120.30
1	2	480	C	C6-N1-C2	-5.40	118.14	120.30
1	2	1431	C	C6-N1-C2	-5.40	118.14	120.30
4	8	135	C	C6-N1-C2	-5.40	118.14	120.30
41	T	127	GLN	CA-CB-CG	5.40	125.27	113.40
1	2	2373	C	C6-N1-C2	-5.40	118.14	120.30
1	2	4981	G	N3-C4-N9	5.40	129.24	126.00
1	2	282	C	C2-N1-C1'	5.39	124.73	118.80
1	2	4440	G	C4-N9-C1'	5.39	133.51	126.50
1	2	1906	U	N1-C2-O2	5.39	126.57	122.80
1	2	2497	C	C6-N1-C2	-5.39	118.14	120.30
1	2	4694	G	N3-C4-C5	-5.39	125.91	128.60
55	3	26	C	N3-C2-O2	-5.39	118.13	121.90
1	2	4497	U	N1-C2-O2	5.39	126.57	122.80
1	2	4887	C	C5-C6-N1	5.39	123.69	121.00
1	2	472	C	N3-C2-O2	-5.38	118.13	121.90
1	2	1847	C	C6-N1-C2	-5.38	118.15	120.30
36	y	125	LEU	CA-CB-CG	5.38	127.68	115.30
1	2	259	C	C6-N1-C2	-5.38	118.15	120.30
1	2	4456	C	N1-C2-O2	5.38	122.13	118.90
1	2	2498	C	N1-C2-O2	5.38	122.13	118.90
51	K	97	MET	CA-CB-CG	5.37	122.44	113.30
1	2	1662	C	C5-C6-N1	5.37	123.69	121.00
47	t	130	LEU	CA-CB-CG	5.37	127.65	115.30
1	2	2439	G	C6-C5-N7	-5.37	127.18	130.40
1	2	1344	C	N1-C2-O2	5.37	122.12	118.90
1	2	1861	U	C2-N1-C1'	5.37	124.14	117.70
1	2	653	U	N1-C2-O2	5.36	126.56	122.80
1	2	2290	C	N1-C2-O2	5.36	122.11	118.90
1	2	4662	C	N1-C2-O2	5.36	122.11	118.90
1	2	1938	C	N3-C2-O2	-5.36	118.15	121.90
1	2	2077	C	C6-N1-C2	-5.36	118.16	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	228	C	C6-N1-C2	-5.35	118.16	120.30
1	2	4700	A	N1-C2-N3	-5.35	126.62	129.30
1	2	332	C	N1-C2-O2	5.35	122.11	118.90
54	O	13	LEU	CA-CB-CG	5.35	127.61	115.30
1	2	1448	G	C8-N9-C1'	-5.35	120.05	127.00
1	2	2101	C	C6-N1-C1'	5.35	127.22	120.80
1	2	4713	G	N3-C4-C5	-5.35	125.93	128.60
1	2	1656	U	N1-C2-O2	5.35	126.54	122.80
1	2	5008	C	N3-C2-O2	-5.35	118.16	121.90
1	2	1540	C	C6-N1-C2	-5.34	118.16	120.30
1	2	2589	C	C5-C6-N1	5.34	123.67	121.00
1	2	3878	C	C6-N1-C1'	-5.34	114.39	120.80
1	2	4370	G	N3-C4-C5	-5.34	125.93	128.60
1	2	406	C	C2'-C3'-O3'	5.34	122.24	113.70
1	2	3901	A	C2-N3-C4	5.34	113.27	110.60
1	2	4708	A	N1-C2-N3	-5.34	126.63	129.30
55	3	84	U	N1-C2-O2	5.34	126.54	122.80
1	2	2821	U	N1-C2-O2	5.34	126.54	122.80
1	2	4310	A	N1-C2-N3	-5.34	126.63	129.30
4	8	99	U	C2-N1-C1'	5.33	124.09	117.70
1	2	914	U	C5-C4-O4	-5.33	122.70	125.90
1	2	2886	U	N3-C2-O2	-5.33	118.47	122.20
1	2	1478	C	C6-N1-C2	-5.33	118.17	120.30
1	2	1535	C	N1-C2-O2	5.33	122.09	118.90
1	2	4699	U	OP1-P-O3'	5.32	116.91	105.20
1	2	1700	G	N3-C4-N9	5.32	129.19	126.00
1	2	2791	C	C2-N1-C1'	5.32	124.65	118.80
1	2	694	C	C6-N1-C2	-5.31	118.17	120.30
1	2	2593	C	C6-N1-C2	-5.31	118.17	120.30
1	2	2814	C	N3-C2-O2	-5.31	118.18	121.90
1	2	486	C	OP1-P-OP2	-5.31	111.63	119.60
1	2	3835	C	C6-N1-C2	-5.31	118.18	120.30
1	2	4294	C	N3-C2-O2	-5.31	118.18	121.90
4	8	101	C	N1-C2-O2	5.31	122.09	118.90
1	2	115	C	C6-N1-C2	-5.30	118.18	120.30
1	2	4286	C	C5-C6-N1	5.30	123.65	121.00
1	2	662	C	C6-N1-C2	-5.30	118.18	120.30
1	2	1190	C	N3-C2-O2	-5.30	118.19	121.90
1	2	1538	U	N3-C2-O2	-5.30	118.49	122.20
1	2	4662	C	N3-C2-O2	-5.30	118.19	121.90
1	2	4653	C	C5-C6-N1	5.30	123.65	121.00
1	2	4918	C	C6-N1-C2	-5.30	118.18	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
50	1	139	MET	CA-CB-CG	5.30	122.31	113.30
1	2	1472	C	C5-C6-N1	5.30	123.65	121.00
1	2	2508	U	N1-C2-O2	5.30	126.51	122.80
1	2	4068	U	C6-N1-C2	-5.30	117.82	121.00
4	8	82	A	C2-N3-C4	5.29	113.25	110.60
1	2	1325	C	N3-C2-O2	-5.29	118.20	121.90
1	2	4711	C	C6-N1-C2	-5.29	118.18	120.30
1	2	2403	A	N1-C2-N3	-5.29	126.66	129.30
1	2	4714	C	C2-N1-C1'	5.29	124.62	118.80
1	2	750	U	N1-C2-O2	5.29	126.50	122.80
1	2	1439	C	N1-C2-O2	5.29	122.07	118.90
1	2	1727	U	N1-C2-O2	5.28	126.50	122.80
1	2	3631	U	N1-C2-O2	5.28	126.50	122.80
29	n	83	MET	CA-CB-CG	5.28	122.27	113.30
55	3	94	C	C6-N1-C2	-5.28	118.19	120.30
1	2	657	C	C5-C6-N1	5.28	123.64	121.00
1	2	125	C	C6-N1-C2	-5.27	118.19	120.30
1	2	26	C	N3-C2-O2	-5.27	118.21	121.90
1	2	1241	C	C5-C6-N1	5.27	123.64	121.00
1	2	3587	C	N3-C2-O2	-5.27	118.21	121.90
1	2	5050	C	N1-C2-O2	5.27	122.06	118.90
5	9	99	GLN	CA-CB-CG	5.27	125.00	113.40
1	2	1436	C	N1-C2-O2	5.27	122.06	118.90
1	2	1592	G	N3-C4-N9	5.27	129.16	126.00
1	2	4299	U	C2-N1-C1'	5.27	124.02	117.70
1	2	1687	U	N3-C2-O2	-5.27	118.51	122.20
1	2	988	C	C2-N1-C1'	5.27	124.59	118.80
1	2	1367	C	N3-C2-O2	-5.27	118.21	121.90
1	2	486	C	C5-C6-N1	5.26	123.63	121.00
1	2	1074	G	C4-N9-C1'	5.26	133.34	126.50
1	2	2802	C	C6-N1-C2	-5.26	118.19	120.30
1	2	2478	C	O4'-C1'-N1	5.26	112.41	108.20
1	2	3739	C	C5-C6-N1	5.26	123.63	121.00
1	2	163	A	N1-C2-N3	-5.26	126.67	129.30
55	3	4	U	N3-C2-O2	-5.26	118.52	122.20
1	2	2019	C	C5-C6-N1	5.26	123.63	121.00
1	2	2684	C	C6-N1-C2	-5.26	118.20	120.30
1	2	5036	C	N1-C2-O2	5.25	122.05	118.90
1	2	2465	C	C5-C6-N1	5.25	123.63	121.00
1	2	2867	C	N1-C2-O2	5.25	122.05	118.90
1	2	1628	C	C6-N1-C2	-5.25	118.20	120.30
1	2	1996	C	C5-C6-N1	5.25	123.63	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2367	A	N1-C2-N3	-5.25	126.67	129.30
1	2	2533	C	N3-C2-O2	-5.25	118.22	121.90
1	2	294	G	C4-N9-C1'	5.25	133.32	126.50
1	2	2038	U	N1-C2-O2	5.25	126.47	122.80
4	8	52	A	N1-C2-N3	-5.24	126.68	129.30
1	2	4469	U	N3-C2-O2	-5.24	118.53	122.20
1	2	4440	G	N3-C4-C5	-5.24	125.98	128.60
1	2	4614	G	N1-C6-O6	-5.24	116.76	119.90
1	2	2264	C	C6-N1-C2	-5.24	118.21	120.30
1	2	2791	C	C5-C6-N1	5.24	123.62	121.00
1	2	4674	C	C5-C6-N1	5.24	123.62	121.00
1	2	5030	U	C5-C6-N1	5.24	125.32	122.70
1	2	78	U	N1-C2-O2	5.23	126.46	122.80
4	8	28	C	C6-N1-C2	-5.23	118.21	120.30
55	3	14	C	C6-N1-C2	-5.23	118.21	120.30
1	2	3685	C	C6-N1-C2	-5.23	118.21	120.30
1	2	2833	A	C2-N3-C4	5.22	113.21	110.60
1	2	4532	U	N1-C2-O2	5.22	126.45	122.80
1	2	4628	U	N3-C2-O2	-5.22	118.54	122.20
1	2	3622	C	C5-C6-N1	5.22	123.61	121.00
4	8	141	C	C5-C6-N1	5.22	123.61	121.00
1	2	1467	C	C2-N1-C1'	5.22	124.54	118.80
1	2	4261	C	C5-C6-N1	5.21	123.61	121.00
1	2	131	C	C5-C6-N1	5.21	123.61	121.00
44	k	90	MET	CG-SD-CE	5.21	108.54	100.20
1	2	1993	C	N1-C2-O2	5.21	122.03	118.90
1	2	4508	C	N3-C2-O2	-5.21	118.25	121.90
55	3	19	C	C6-N1-C2	-5.21	118.22	120.30
1	2	2022	C	C6-N1-C2	-5.21	118.22	120.30
4	8	141	C	C6-N1-C2	-5.21	118.22	120.30
1	2	4508	C	C5-C6-N1	5.21	123.60	121.00
1	2	5010	U	N3-C2-O2	-5.21	118.56	122.20
4	8	19	C	C6-N1-C2	-5.21	118.22	120.30
1	2	1894	C	C6-N1-C2	-5.21	118.22	120.30
1	2	4308	C	N3-C2-O2	-5.20	118.26	121.90
1	2	4683	U	N1-C2-O2	5.20	126.44	122.80
1	2	683	C	N1-C2-O2	5.20	122.02	118.90
1	2	5048	A	N1-C2-N3	-5.20	126.70	129.30
1	2	2625	U	N3-C2-O2	-5.20	118.56	122.20
1	2	345	C	C5-C6-N1	5.20	123.60	121.00
1	2	446	C	C5-C6-N1	5.20	123.60	121.00
1	2	1325	C	C5-C6-N1	5.20	123.60	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	8	26	C	C6-N1-C2	-5.20	118.22	120.30
44	k	90	MET	CB-CG-SD	5.20	128.00	112.40
1	2	1469	C	N1-C2-O2	5.20	122.02	118.90
4	8	55	U	N1-C2-O2	5.20	126.44	122.80
4	8	128	C	N1-C2-O2	5.20	122.02	118.90
39	R	288	LEU	CA-CB-CG	5.20	127.25	115.30
1	2	2025	A	N1-C2-N3	-5.19	126.70	129.30
1	2	4758	U	C5-C6-N1	5.19	125.30	122.70
1	2	1572	U	N3-C2-O2	-5.19	118.57	122.20
1	2	2008	U	N3-C2-O2	-5.19	118.57	122.20
1	2	4682	U	C6-N1-C2	-5.19	117.89	121.00
1	2	30	C	C5-C6-N1	5.19	123.59	121.00
1	2	1340	C	C6-N1-C2	-5.19	118.22	120.30
40	W	330	LEU	CA-CB-CG	5.19	127.23	115.30
1	2	4319	C	C2-N1-C1'	5.18	124.50	118.80
1	2	974	C	N1-C2-O2	5.18	122.01	118.90
1	2	2867	C	C5-C6-N1	5.18	123.59	121.00
4	8	73	U	N3-C2-O2	-5.18	118.57	122.20
1	2	201	C	N1-C2-O2	5.18	122.01	118.90
1	2	436	C	C6-N1-C2	-5.18	118.23	120.30
1	2	259	C	C5-C6-N1	5.18	123.59	121.00
1	2	2018	C	C6-N1-C2	-5.18	118.23	120.30
1	2	2726	G	N3-C4-C5	-5.18	126.01	128.60
1	2	1585	C	C6-N1-C2	-5.17	118.23	120.30
1	2	4267	G	C2-N3-C4	5.17	114.49	111.90
1	2	2497	C	C2-N1-C1'	5.17	124.49	118.80
1	2	77	U	C2-N1-C1'	5.17	123.91	117.70
1	2	2539	C	N1-C2-O2	5.17	122.00	118.90
1	2	4267	G	N3-C4-C5	-5.17	126.02	128.60
1	2	4284	C	C2-N3-C4	5.17	122.48	119.90
1	2	365	U	C5-C6-N1	5.17	125.28	122.70
1	2	4149	C	C5-C6-N1	5.17	123.58	121.00
1	2	1294	A	C2-N3-C4	5.17	113.18	110.60
1	2	4120	U	N1-C2-O2	5.17	126.42	122.80
18	S	39	ASP	CB-CG-OD1	5.17	122.95	118.30
1	2	1694	C	C2-N1-C1'	5.16	124.48	118.80
34	v	7	ASP	CB-CG-OD1	5.16	122.95	118.30
1	2	141	C	N3-C2-O2	-5.16	118.29	121.90
1	2	4775	C	C5-C6-N1	5.16	123.58	121.00
1	2	300	A	N1-C2-N3	-5.16	126.72	129.30
1	2	3926	C	C5-C6-N1	5.16	123.58	121.00
1	2	4442	U	N3-C2-O2	-5.16	118.59	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	5035	U	C6-N1-C2	-5.16	117.91	121.00
1	2	694	C	N3-C2-O2	-5.16	118.29	121.90
1	2	2031	C	C5-C6-N1	5.16	123.58	121.00
1	2	2281	U	C2-N1-C1'	5.15	123.89	117.70
4	8	153	C	C5-C6-N1	5.15	123.58	121.00
1	2	1795	A	N3-C4-C5	-5.14	123.20	126.80
1	2	2615	C	C6-N1-C2	-5.14	118.24	120.30
1	2	4695	C	C5-C6-N1	5.14	123.57	121.00
55	3	14	C	C5-C6-N1	5.14	123.57	121.00
1	2	2603	C	C6-N1-C2	-5.14	118.24	120.30
1	2	2325	C	N1-C2-O2	5.14	121.98	118.90
1	2	1807	C	C5-C6-N1	5.14	123.57	121.00
1	2	4093	G	C4-N9-C1'	5.14	133.18	126.50
1	2	4286	C	C6-N1-C2	-5.14	118.25	120.30
1	2	4886	C	N1-C2-O2	5.14	121.98	118.90
1	2	1418	C	C6-N1-C2	-5.13	118.25	120.30
1	2	979	C	C6-N1-C2	-5.13	118.25	120.30
1	2	1847	C	C5-C6-N1	5.13	123.57	121.00
1	2	3668	C	C2-N1-C1'	5.13	124.45	118.80
1	2	4272	G	N3-C4-C5	-5.13	126.03	128.60
1	2	1686	C	C5-C6-N1	5.13	123.57	121.00
1	2	1812	C	N1-C2-O2	5.13	121.98	118.90
1	2	2011	C	C5-C6-N1	5.13	123.56	121.00
1	2	2683	C	C6-N1-C2	-5.12	118.25	120.30
1	2	7	C	C6-N1-C2	-5.12	118.25	120.30
1	2	4241	C	C5-C6-N1	5.12	123.56	121.00
1	2	4687	A	C2-N3-C4	5.12	113.16	110.60
4	8	32	C	N3-C2-O2	-5.12	118.31	121.90
1	2	914	U	OP2-P-O3'	5.12	116.46	105.20
1	2	2031	C	C2-N1-C1'	5.12	124.43	118.80
1	2	2872	C	C6-N1-C2	-5.12	118.25	120.30
38	C	115	LEU	CA-CB-CG	5.12	127.07	115.30
49	N	244	LYS	CB-CA-C	5.12	120.64	110.40
42	4	41	HIS	C-N-CA	5.12	134.49	121.70
33	u	54	ALA	CB-CA-C	5.12	117.77	110.10
1	2	385	A	N1-C2-N3	-5.11	126.74	129.30
1	2	657	C	C2-N1-C1'	5.11	124.42	118.80
1	2	3694	U	N1-C2-O2	5.11	126.38	122.80
1	2	3694	U	N3-C2-O2	-5.11	118.62	122.20
1	2	1340	C	C5-C6-N1	5.11	123.56	121.00
1	2	2792	C	C6-N1-C2	-5.11	118.26	120.30
1	2	2899	C	C6-N1-C2	-5.11	118.26	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4442	U	N1-C2-O2	5.11	126.37	122.80
1	2	653	U	N3-C2-O2	-5.10	118.63	122.20
1	2	909	A	N1-C2-N3	-5.10	126.75	129.30
55	3	28	C	C5-C6-N1	5.10	123.55	121.00
1	2	1929	A	N3-C4-N9	5.10	131.48	127.40
1	2	5036	C	C6-N1-C2	-5.10	118.26	120.30
1	2	68	U	N1-C2-O2	5.10	126.37	122.80
1	2	2059	C	C6-N1-C2	-5.10	118.26	120.30
1	2	3834	C	C6-N1-C2	-5.10	118.26	120.30
1	2	221	C	C5-C6-N1	5.10	123.55	121.00
1	2	1508	A	N1-C2-N3	-5.10	126.75	129.30
1	2	1572	U	N1-C2-O2	5.10	126.37	122.80
20	V	190	ASP	CB-CG-OD2	5.10	122.89	118.30
1	2	486	C	O5'-P-OP2	-5.09	101.11	105.70
1	2	1525	A	C2-N3-C4	5.09	113.15	110.60
1	2	4535	A	N1-C2-N3	-5.09	126.75	129.30
1	2	1333	A	N1-C2-N3	-5.09	126.75	129.30
1	2	1373	A	N1-C2-N3	-5.09	126.75	129.30
1	2	1637	A	N1-C2-N3	-5.09	126.75	129.30
49	N	190	LEU	CA-CB-CG	5.09	127.01	115.30
1	2	367	C	C6-N1-C2	-5.09	118.26	120.30
1	2	1700	G	C4-N9-C1'	5.09	133.12	126.50
1	2	4229	U	C5-C6-N1	5.09	125.24	122.70
55	3	51	G	C2'-C3'-O3'	5.09	121.84	113.70
56	q	27	LEU	CA-CB-CG	5.09	127.00	115.30
1	2	110	C	C6-N1-C2	-5.09	118.27	120.30
1	2	3650	C	C2-N1-C1'	5.09	124.39	118.80
1	2	4970	C	C2-N1-C1'	5.08	124.39	118.80
1	2	343	C	C6-N1-C2	-5.08	118.27	120.30
1	2	1602	U	N3-C2-O2	-5.08	118.64	122.20
1	2	3721	U	N1-C2-O2	5.08	126.36	122.80
1	2	4996	C	N1-C2-O2	5.08	121.95	118.90
1	2	1334	A	N1-C2-N3	-5.08	126.76	129.30
1	2	1554	A	N1-C2-N3	-5.08	126.76	129.30
1	2	4267	G	C8-N9-C4	-5.08	104.37	106.40
1	2	4994	G	N3-C4-N9	5.08	129.05	126.00
39	R	109	LEU	CA-CB-CG	5.08	126.99	115.30
1	2	736	C	C6-N1-C2	-5.08	118.27	120.30
1	2	1086	C	C6-N1-C2	-5.08	118.27	120.30
1	2	3912	U	N3-C2-O2	-5.08	118.64	122.20
1	2	2856	C	C6-N1-C2	-5.08	118.27	120.30
20	V	100	ASP	CB-CG-OD1	5.08	122.87	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1577	G	N1-C6-O6	-5.08	116.86	119.90
1	2	35	U	C2-N1-C1'	5.07	123.79	117.70
1	2	703	G	C4-N9-C1'	5.07	133.09	126.50
1	2	1816	C	C6-N1-C2	-5.07	118.27	120.30
1	2	2678	A	N1-C2-N3	-5.07	126.76	129.30
1	2	220	C	C2-N3-C4	5.07	122.44	119.90
1	2	1655	C	C6-N1-C2	-5.07	118.27	120.30
1	2	4628	U	N1-C2-O2	5.07	126.35	122.80
1	2	4864	U	C5-C6-N1	5.07	125.23	122.70
35	w	130	LEU	CA-CB-CG	5.07	126.95	115.30
1	2	2603	C	C5-C6-N1	5.07	123.53	121.00
1	2	4436	U	C2-N1-C1'	5.07	123.78	117.70
40	W	361	ASP	CB-CG-OD1	5.07	122.86	118.30
1	2	1632	A	C4-N9-C1'	5.06	135.41	126.30
55	3	78	C	O4'-C1'-N1	5.06	112.25	108.20
1	2	499	G	C6-C5-N7	-5.06	127.36	130.40
1	2	1671	U	C6-N1-C2	-5.06	117.96	121.00
1	2	2410	C	C6-N1-C1'	-5.06	114.73	120.80
1	2	4429	C	N3-C2-O2	-5.06	118.36	121.90
1	2	2062	C	N1-C2-O2	5.06	121.93	118.90
1	2	1203	G	C4-N9-C1'	5.05	133.07	126.50
1	2	3606	U	C2-N1-C1'	5.05	123.76	117.70
55	3	17	C	C6-N1-C2	-5.05	118.28	120.30
1	2	1093	C	C6-N1-C2	-5.05	118.28	120.30
1	2	4425	G	C4-N9-C1'	5.05	133.07	126.50
58	f	202	LEU	C-N-CA	5.05	134.33	121.70
1	2	1874	A	N1-C2-N3	-5.05	126.78	129.30
4	8	41	A	N1-C2-N3	-5.05	126.78	129.30
55	3	71	G	OP1-P-O3'	5.05	116.31	105.20
1	2	2689	C	C5-C6-N1	5.05	123.52	121.00
1	2	4969	C	C5-C6-N1	5.05	123.52	121.00
1	2	201	C	C2-N1-C1'	5.04	124.35	118.80
1	2	2544	G	C4-N9-C1'	5.04	133.06	126.50
1	2	2667	C	C5-C6-N1	5.04	123.52	121.00
1	2	1813	U	C5-C6-N1	5.04	125.22	122.70
1	2	4864	U	C6-N1-C2	-5.04	117.97	121.00
1	2	1860	U	C2-N1-C1'	5.04	123.75	117.70
1	2	2708	U	N3-C2-O2	-5.04	118.67	122.20
4	8	9	A	N1-C2-N3	-5.04	126.78	129.30
9	E	81	LEU	CA-CB-CG	5.04	126.90	115.30
35	w	169	MET	CG-SD-CE	5.04	108.26	100.20
4	8	43	A	C2-N3-C4	5.04	113.12	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2304	U	N1-C2-O2	5.04	126.33	122.80
40	W	374	LEU	CA-CB-CG	5.04	126.88	115.30
1	2	4612	C	N1-C2-O2	5.04	121.92	118.90
1	2	4619	U	N3-C2-O2	-5.04	118.68	122.20
55	3	45	U	N3-C2-O2	-5.04	118.67	122.20
1	2	126	C	C5-C6-N1	5.03	123.52	121.00
1	2	2616	C	C6-N1-C2	-5.03	118.29	120.30
1	2	4981	G	N3-C4-C5	-5.03	126.08	128.60
4	8	51	U	N3-C2-O2	-5.03	118.68	122.20
1	2	1694	C	C5-C6-N1	5.03	123.52	121.00
10	G	131	LYS	C-N-CA	5.03	134.28	121.70
13	J	229	LEU	CA-CB-CG	5.03	126.87	115.30
1	2	4123	C	C2-N1-C1'	5.03	124.33	118.80
58	f	298	CYS	CA-CB-SG	5.03	123.05	114.00
1	2	2611	A	N1-C2-N3	-5.03	126.79	129.30
1	2	3623	C	N1-C2-O2	5.03	121.92	118.90
1	2	1795	A	C8-N9-C1'	-5.03	118.65	127.70
1	2	2749	C	C6-N1-C2	-5.03	118.29	120.30
1	2	4371	G	N3-C4-N9	5.03	129.01	126.00
1	2	1682	A	N1-C2-N3	-5.02	126.79	129.30
1	2	1891	A	N1-C2-N3	-5.02	126.79	129.30
1	2	4341	C	N3-C2-O2	-5.02	118.38	121.90
1	2	4464	A	N1-C2-N3	-5.02	126.79	129.30
1	2	2653	C	C5-C6-N1	5.02	123.51	121.00
1	2	4945	G	C4-N9-C1'	5.02	133.03	126.50
55	3	77	A	N1-C2-N3	-5.02	126.79	129.30
1	2	51	A	N1-C2-N3	-5.02	126.79	129.30
1	2	162	A	N1-C2-N3	-5.02	126.79	129.30
1	2	2071	A	C2-N3-C4	5.02	113.11	110.60
1	2	4088	C	C5-C6-N1	5.02	123.51	121.00
1	2	148	C	C6-N1-C2	-5.01	118.29	120.30
1	2	378	A	N1-C2-N3	-5.01	126.79	129.30
1	2	4469	U	N1-C2-O2	5.01	126.31	122.80
1	2	2304	U	C2-N1-C1'	5.01	123.72	117.70
1	2	4970	C	N1-C2-O2	5.01	121.91	118.90
1	2	3847	C	C6-N1-C2	-5.01	118.30	120.30
1	2	4402	C	C5-C6-N1	5.01	123.51	121.00
1	2	125	C	N1-C2-O2	5.01	121.91	118.90
1	2	1293	G	N3-C4-C5	-5.01	126.09	128.60
1	2	4123	C	C6-N1-C2	-5.01	118.30	120.30
1	2	4642	U	N3-C2-O2	-5.01	118.69	122.20
1	2	4758	U	C6-N1-C2	-5.01	117.99	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	447	C	C6-N1-C2	-5.01	118.30	120.30
1	2	2362	U	C6-N1-C2	-5.01	118.00	121.00
1	2	4317	A	N1-C2-N3	-5.01	126.80	129.30
4	8	32	C	C2-N1-C1'	5.01	124.31	118.80
1	2	1439	C	C5-C6-N1	5.00	123.50	121.00
1	2	4325	A	N1-C2-N3	-5.00	126.80	129.30
1	2	4691	A	N1-C2-N3	-5.00	126.80	129.30
4	8	51	U	C2-N1-C1'	5.00	123.70	117.70
1	2	408	A	N1-C2-N3	-5.00	126.80	129.30
1	2	1889	U	N3-C2-O2	-5.00	118.70	122.20
1	2	4243	C	C6-N1-C2	-5.00	118.30	120.30
1	2	4381	A	N1-C2-N3	-5.00	126.80	129.30
50	1	21	VAL	CA-CB-CG2	5.00	118.40	110.90

There are no chirality outliers.

All (14) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
50	1	200	GLU	Peptide
42	4	294	LYS	Peptide
42	4	503	THR	Peptide
6	A	107	ARG	Sidechain
7	B	241	PRO	Peptide
10	G	162	ASP	Peptide
10	G	189	ARG	Sidechain
41	T	53	PRO	Peptide
43	Y	131	ARG	Peptide
58	f	204	ARG	Peptide
29	n	106	TYR	Peptide
32	r	254	PHE	Peptide
47	t	142	SER	Peptide
33	u	54	ALA	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

### 5.3.1 Protein backbone

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	
2	6	242/245 (99%)	227 (94%)	15 (6%)	0	100	100
3	7	133/163 (82%)	128 (96%)	5 (4%)	0	100	100
5	9	82/134 (61%)	71 (87%)	11 (13%)	0	100	100
6	A	41/159 (26%)	39 (95%)	2 (5%)	0	100	100
7	B	401/403 (100%)	382 (95%)	18 (4%)	1 (0%)	47	81
8	D	356/427 (83%)	334 (94%)	22 (6%)	0	100	100
9	E	96/115 (84%)	91 (95%)	5 (5%)	0	100	100
10	G	239/266 (90%)	225 (94%)	14 (6%)	0	100	100
11	H	120/123 (98%)	117 (98%)	3 (2%)	0	100	100
12	I	188/192 (98%)	179 (95%)	9 (5%)	0	100	100
13	J	213/260 (82%)	207 (97%)	6 (3%)	0	100	100
14	L	108/148 (73%)	101 (94%)	7 (6%)	0	100	100
15	M	84/97 (87%)	80 (95%)	4 (5%)	0	100	100
16	P	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
17	Q	208/211 (99%)	200 (96%)	8 (4%)	0	100	100
18	S	133/215 (62%)	127 (96%)	6 (4%)	0	100	100
19	U	201/204 (98%)	191 (95%)	10 (5%)	0	100	100
20	V	199/203 (98%)	192 (96%)	7 (4%)	0	100	100
21	X	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
22	Z	149/188 (79%)	147 (99%)	2 (1%)	0	100	100
23	a	146/196 (74%)	142 (97%)	4 (3%)	0	100	100
24	b	174/176 (99%)	170 (98%)	4 (2%)	0	100	100
25	e	129/140 (92%)	118 (92%)	11 (8%)	0	100	100
26	h	132/145 (91%)	126 (96%)	6 (4%)	0	100	100
27	l	123/137 (90%)	115 (94%)	8 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	m	246/257 (96%)	221 (90%)	25 (10%)	0	100	100
29	n	107/110 (97%)	102 (95%)	5 (5%)	0	100	100
30	o	231/288 (80%)	220 (95%)	11 (5%)	0	100	100
31	p	224/248 (90%)	216 (96%)	8 (4%)	0	100	100
32	r	80/360 (22%)	77 (96%)	3 (4%)	0	100	100
33	u	63/549 (12%)	58 (92%)	4 (6%)	1 (2%)	9	45
34	v	215/239 (90%)	206 (96%)	9 (4%)	0	100	100
35	w	427/731 (58%)	406 (95%)	19 (4%)	2 (0%)	29	68
36	y	163/165 (99%)	155 (95%)	8 (5%)	0	100	100
37	z	63/129 (49%)	60 (95%)	3 (5%)	0	100	100
38	C	163/178 (92%)	145 (89%)	18 (11%)	0	100	100
39	R	291/297 (98%)	273 (94%)	17 (6%)	1 (0%)	41	76
40	W	386/485 (80%)	365 (95%)	21 (5%)	0	100	100
41	T	120/160 (75%)	112 (93%)	8 (7%)	0	100	100
42	4	607/634 (96%)	555 (91%)	47 (8%)	5 (1%)	19	60
43	Y	165/184 (90%)	158 (96%)	7 (4%)	0	100	100
44	k	127/135 (94%)	120 (94%)	7 (6%)	0	100	100
45	j	109/125 (87%)	103 (94%)	6 (6%)	0	100	100
46	d	102/128 (80%)	95 (93%)	7 (7%)	0	100	100
47	t	109/293 (37%)	105 (96%)	4 (4%)	0	100	100
49	N	237/490 (48%)	231 (98%)	6 (2%)	0	100	100
50	l	224/255 (88%)	216 (96%)	7 (3%)	1 (0%)	34	72
51	K	100/105 (95%)	96 (96%)	4 (4%)	0	100	100
52	F	111/117 (95%)	109 (98%)	2 (2%)	0	100	100
53	i	133/136 (98%)	126 (95%)	7 (5%)	0	100	100
54	O	67/70 (96%)	61 (91%)	6 (9%)	0	100	100
56	q	398/588 (68%)	382 (96%)	16 (4%)	0	100	100
57	g	143/156 (92%)	135 (94%)	8 (6%)	0	100	100
58	f	254/478 (53%)	236 (93%)	17 (7%)	1 (0%)	34	72
All	All	9699/12780 (76%)	9184 (95%)	503 (5%)	12 (0%)	54	85

All (12) Ramachandran outliers are listed below:



Mol	Chain	Res	Type
33	u	55	PRO
50	1	24	ASN
58	f	203	ASP
39	R	270	LYS
42	4	88	ASP
35	w	132	VAL
42	4	230	LEU
42	4	407	ASP
35	w	323	LYS
42	4	427	ASP
42	4	366	THR
7	B	5	LYS

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	6	212/213 (100%)	212 (100%)	0	100	100
3	7	126/149 (85%)	126 (100%)	0	100	100
5	9	74/114 (65%)	74 (100%)	0	100	100
6	A	34/126 (27%)	34 (100%)	0	100	100
7	B	349/349 (100%)	349 (100%)	0	100	100
8	D	298/348 (86%)	298 (100%)	0	100	100
9	E	83/97 (86%)	82 (99%)	1 (1%)	71	84
10	G	203/223 (91%)	203 (100%)	0	100	100
11	H	109/110 (99%)	108 (99%)	1 (1%)	78	88
12	I	169/171 (99%)	169 (100%)	0	100	100
13	J	191/228 (84%)	191 (100%)	0	100	100
14	L	94/121 (78%)	94 (100%)	0	100	100
15	M	73/80 (91%)	73 (100%)	0	100	100
16	P	47/48 (98%)	47 (100%)	0	100	100
17	Q	176/177 (99%)	175 (99%)	1 (1%)	86	92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
18	S	115/161 (71%)	115 (100%)	0	100	100
19	U	171/172 (99%)	171 (100%)	0	100	100
20	V	173/174 (99%)	172 (99%)	1 (1%)	86	92
21	X	74/75 (99%)	74 (100%)	0	100	100
22	Z	136/165 (82%)	136 (100%)	0	100	100
23	a	133/175 (76%)	133 (100%)	0	100	100
24	b	157/157 (100%)	157 (100%)	0	100	100
25	e	101/107 (94%)	101 (100%)	0	100	100
26	h	124/135 (92%)	124 (100%)	0	100	100
27	l	109/121 (90%)	109 (100%)	0	100	100
28	m	190/199 (96%)	190 (100%)	0	100	100
29	n	88/89 (99%)	88 (100%)	0	100	100
30	o	208/252 (82%)	207 (100%)	1 (0%)	88	93
31	p	195/215 (91%)	195 (100%)	0	100	100
32	r	76/312 (24%)	76 (100%)	0	100	100
33	u	61/485 (13%)	61 (100%)	0	100	100
34	v	194/214 (91%)	194 (100%)	0	100	100
35	w	385/654 (59%)	385 (100%)	0	100	100
36	y	137/137 (100%)	137 (100%)	0	100	100
37	z	61/115 (53%)	61 (100%)	0	100	100
38	C	138/149 (93%)	138 (100%)	0	100	100
39	R	246/250 (98%)	246 (100%)	0	100	100
40	W	322/404 (80%)	321 (100%)	1 (0%)	92	95
41	T	109/140 (78%)	109 (100%)	0	100	100
42	4	554/574 (96%)	553 (100%)	1 (0%)	93	96
43	Y	147/163 (90%)	146 (99%)	1 (1%)	84	90
44	k	115/121 (95%)	115 (100%)	0	100	100
45	j	101/110 (92%)	101 (100%)	0	100	100
46	d	94/115 (82%)	94 (100%)	0	100	100
47	t	103/274 (38%)	101 (98%)	2 (2%)	57	75
49	N	222/437 (51%)	222 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
50	1	206/228 (90%)	205 (100%)	1 (0%)	88	93
51	K	86/89 (97%)	86 (100%)	0	100	100
52	F	97/100 (97%)	97 (100%)	0	100	100
53	i	117/118 (99%)	116 (99%)	1 (1%)	78	88
54	O	64/65 (98%)	64 (100%)	0	100	100
56	q	359/509 (70%)	358 (100%)	1 (0%)	92	95
57	g	126/133 (95%)	126 (100%)	0	100	100
58	f	222/402 (55%)	221 (100%)	1 (0%)	88	93
All	All	8554/11049 (77%)	8540 (100%)	14 (0%)	93	96

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
9	E	106	ARG
11	H	101	ASN
17	Q	103	ARG
20	V	117	ARG
30	o	56	ARG
40	W	470	ARG
42	4	385	ARG
43	Y	97	ASN
47	t	50	ARG
47	t	148	ARG
50	1	246	ARG
53	i	108	ARG
56	q	111	LYS
58	f	362	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
12	I	8	GLN
18	S	20	HIS
32	r	256	GLN
34	v	186	GLN
56	q	422	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	3431/5054 (67%)	815 (23%)	21 (0%)
4	8	155/156 (99%)	29 (18%)	0
48	x	0/60	-	-
55	3	113/120 (94%)	23 (20%)	2 (1%)
All	All	3699/5390 (68%)	867 (23%)	23 (0%)

All (867) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	25	A
1	2	39	A
1	2	42	A
1	2	44	A
1	2	48	G
1	2	56	A
1	2	59	A
1	2	64	A
1	2	65	A
1	2	69	A
1	2	72	C
1	2	73	A
1	2	76	A
1	2	84	A
1	2	91	G
1	2	98	A
1	2	108	A
1	2	109	G
1	2	110	C
1	2	112	C
1	2	119	G
1	2	120	A
1	2	122	U
1	2	131	C
1	2	132	G
1	2	134	G
1	2	135	G
1	2	137	G
1	2	144	G
1	2	152	U
1	2	159	C
1	2	169	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	170	C
1	2	172	C
1	2	175	C
1	2	183	C
1	2	185	C
1	2	188	G
1	2	197	A
1	2	200	U
1	2	209	U
1	2	217	C
1	2	218	A
1	2	234	G
1	2	254	G
1	2	256	G
1	2	262	G
1	2	265	C
1	2	266	C
1	2	279	A
1	2	280	G
1	2	297	U
1	2	306	A
1	2	315	G
1	2	316	U
1	2	340	C
1	2	345	C
1	2	349	A
1	2	363	A
1	2	373	OMG
1	2	387	G
1	2	398	A2M
1	2	407	A
1	2	409	G
1	2	410	A
1	2	412	G
1	2	432	U
1	2	433	A
1	2	449	C
1	2	450	G
1	2	452	A
1	2	453	G
1	2	454	U
1	2	465	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	467	U
1	2	483	G
1	2	484	U
1	2	485	C
1	2	486	C
1	2	489	C
1	2	491	G
1	2	493	G
1	2	495	C
1	2	496	G
1	2	497	G
1	2	499	G
1	2	500	G
1	2	501	C
1	2	502	C
1	2	503	C
1	2	504	G
1	2	505	G
1	2	509	A
1	2	510	U
1	2	511	C
1	2	513	U
1	2	514	U
1	2	515	C
1	2	516	C
1	2	518	G
1	2	519	C
1	2	653	U
1	2	654	C
1	2	657	C
1	2	659	G
1	2	666	G
1	2	667	A
1	2	668	C
1	2	673	C
1	2	685	C
1	2	686	A
1	2	692	A
1	2	696	C
1	2	703	G
1	2	704	C
1	2	731	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	738	C
1	2	739	G
1	2	740	G
1	2	742	G
1	2	746	A
1	2	759	G
1	2	904	C
1	2	905	C
1	2	906	C
1	2	913	U
1	2	914	U
1	2	915	A
1	2	916	C
1	2	917	A
1	2	918	G
1	2	924	C
1	2	925	C
1	2	926	G
1	2	932	A
1	2	933	G
1	2	936	C
1	2	941	C
1	2	943	A
1	2	944	A
1	2	945	U
1	2	956	A
1	2	959	G
1	2	960	A
1	2	961	G
1	2	962	C
1	2	965	G
1	2	966	A
1	2	967	C
1	2	968	C
1	2	969	C
1	2	970	G
1	2	977	C
1	2	982	U
1	2	984	C
1	2	989	U
1	2	990	C
1	2	991	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	992	C
1	2	993	G
1	2	994	G
1	2	995	C
1	2	1048	G
1	2	1049	C
1	2	1051	G
1	2	1066	G
1	2	1067	G
1	2	1068	G
1	2	1070	G
1	2	1072	C
1	2	1082	C
1	2	1170	G
1	2	1173	G
1	2	1177	U
1	2	1178	G
1	2	1179	U
1	2	1180	C
1	2	1181	C
1	2	1182	C
1	2	1183	C
1	2	1184	A
1	2	1185	G
1	2	1187	G
1	2	1189	G
1	2	1194	G
1	2	1195	G
1	2	1198	G
1	2	1200	G
1	2	1202	C
1	2	1203	G
1	2	1211	G
1	2	1215	C
1	2	1216	C
1	2	1219	G
1	2	1222	A
1	2	1241	C
1	2	1243	C
1	2	1245	C
1	2	1252	C
1	2	1253	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	1255	A
1	2	1256	G
1	2	1260	G
1	2	1265	G
1	2	1266	G
1	2	1269	G
1	2	1271	G
1	2	1272	C
1	2	1275	G
1	2	1280	C
1	2	1283	G
1	2	1284	G
1	2	1287	G
1	2	1294	A
1	2	1296	G
1	2	1301	C
1	2	1302	U
1	2	1303	A
1	2	1314	C
1	2	1315	C
1	2	1323	A
1	2	1337	A
1	2	1354	A
1	2	1358	G
1	2	1359	G
1	2	1365	C
1	2	1366	G
1	2	1367	C
1	2	1370	G
1	2	1377	G
1	2	1378	C
1	2	1379	C
1	2	1381	U
1	2	1387	A
1	2	1394	G
1	2	1398	A
1	2	1399	G
1	2	1402	C
1	2	1404	G
1	2	1405	C
1	2	1407	C
1	2	1408	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	1409	C
1	2	1410	U
1	2	1412	G
1	2	1420	A
1	2	1439	C
1	2	1442	C
1	2	1444	G
1	2	1446	C
1	2	1448	G
1	2	1449	C
1	2	1465	G
1	2	1472	C
1	2	1482	G
1	2	1483	C
1	2	1486	C
1	2	1497	A
1	2	1498	G
1	2	1503	A
1	2	1518	A
1	2	1525	A
1	2	1534	A2M
1	2	1547	A
1	2	1564	A
1	2	1566	C
1	2	1578	U
1	2	1592	G
1	2	1595	G
1	2	1596	U
1	2	1612	G
1	2	1613	A
1	2	1624	G
1	2	1625	OMG
1	2	1626	G
1	2	1631	A
1	2	1633	G
1	2	1634	A
1	2	1638	A
1	2	1641	G
1	2	1649	U
1	2	1650	A
1	2	1654	G
1	2	1661	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	1671	U
1	2	1672	U
1	2	1673	U
1	2	1674	C
1	2	1675	C
1	2	1676	C
1	2	1677	U
1	2	1679	A
1	2	1680	G
1	2	1681	G
1	2	1691	G
1	2	1697	G
1	2	1699	A
1	2	1700	G
1	2	1701	A
1	2	1703	C
1	2	1704	C
1	2	1705	G
1	2	1715	C
1	2	1717	C
1	2	1718	C
1	2	1719	A
1	2	1724	G
1	2	1731	C
1	2	1732	C
1	2	1796	U
1	2	1797	G
1	2	1803	G
1	2	1804	A
1	2	1806	G
1	2	1809	C
1	2	1810	G
1	2	1815	G
1	2	1816	C
1	2	1821	G
1	2	1822	U
1	2	1832	C
1	2	1834	U
1	2	1836	G
1	2	1837	A
1	2	1842	G
1	2	1854	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	1855	G
1	2	1856	C
1	2	1861	U
1	2	1862	U
1	2	1865	G
1	2	1869	G
1	2	1870	C
1	2	1871	A2M
1	2	1882	U
1	2	1883	OMG
1	2	1888	A
1	2	1897	A
1	2	1916	G
1	2	1918	U
1	2	1919	G
1	2	1920	C
1	2	1921	C
1	2	1922	G
1	2	1931	C
1	2	1932	A
1	2	1935	C
1	2	1939	A
1	2	1940	G
1	2	1942	A
1	2	1943	A
1	2	1944	A
1	2	1948	G
1	2	1956	A
1	2	1959	U
1	2	1960	A
1	2	1966	C
1	2	1972	G
1	2	1974	U
1	2	1979	A
1	2	1980	U
1	2	1981	G
1	2	1984	A
1	2	1985	G
1	2	1990	A
1	2	1997	U
1	2	2001	G
1	2	2002	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	2003	G
1	2	2004	U
1	2	2010	A
1	2	2011	C
1	2	2017	A
1	2	2018	C
1	2	2025	A
1	2	2026	A
1	2	2033	A
1	2	2034	G
1	2	2040	A
1	2	2044	U
1	2	2046	G
1	2	2048	U
1	2	2055	G
1	2	2056	G
1	2	2069	A
1	2	2084	C
1	2	2085	G
1	2	2092	G
1	2	2093	A
1	2	2095	A
1	2	2096	G
1	2	2098	G
1	2	2101	C
1	2	2102	G
1	2	2104	G
1	2	2105	A
1	2	2110	C
1	2	2111	G
1	2	2112	G
1	2	2113	C
1	2	2252	G
1	2	2253	A
1	2	2255	C
1	2	2256	C
1	2	2258	C
1	2	2259	G
1	2	2260	C
1	2	2263	A
1	2	2268	A
1	2	2289	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	2300	A
1	2	2301	G
1	2	2306	G
1	2	2313	A
1	2	2331	G
1	2	2333	G
1	2	2348	G
1	2	2351	C
1	2	2360	A
1	2	2364	OMG
1	2	2395	A
1	2	2410	C
1	2	2416	G
1	2	2417	A
1	2	2418	A
1	2	2422	OMC
1	2	2424	OMG
1	2	2425	U
1	2	2439	G
1	2	2441	C
1	2	2450	G
1	2	2465	C
1	2	2471	G
1	2	2474	G
1	2	2475	G
1	2	2476	G
1	2	2477	A
1	2	2478	C
1	2	2484	A
1	2	2486	G
1	2	2487	G
1	2	2488	C
1	2	2489	C
1	2	2490	U
1	2	2497	C
1	2	2507	A
1	2	2511	A
1	2	2512	A
1	2	2513	A
1	2	2518	G
1	2	2519	U
1	2	2529	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	2543	A
1	2	2544	G
1	2	2545	U
1	2	2546	G
1	2	2547	G
1	2	2554	U
1	2	2555	G
1	2	2559	G
1	2	2560	C
1	2	2566	G
1	2	2567	G
1	2	2583	C
1	2	2587	A
1	2	2589	C
1	2	2601	A
1	2	2618	G
1	2	2627	C
1	2	2638	G
1	2	2653	C
1	2	2661	U
1	2	2662	G
1	2	2669	C
1	2	2670	C
1	2	2675	G
1	2	2687	U
1	2	2694	G
1	2	2695	A
1	2	2696	A
1	2	2707	U
1	2	2708	U
1	2	2709	C
1	2	2710	C
1	2	2711	G
1	2	2719	C
1	2	2721	G
1	2	2723	U
1	2	2724	G
1	2	2725	A
1	2	2726	G
1	2	2739	C
1	2	2742	G
1	2	2743	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	2753	G
1	2	2758	G
1	2	2761	U
1	2	2763	U
1	2	2769	U
1	2	2770	C
1	2	2772	C
1	2	2787	A
1	2	2788	U
1	2	2790	U
1	2	2799	G
1	2	2814	C
1	2	2815	A
1	2	2826	U
1	2	2827	G
1	2	2842	G
1	2	2855	G
1	2	2875	C
1	2	2901	G
1	2	2902	G
1	2	2904	U
1	2	2905	C
1	2	2906	G
1	2	2908	U
1	2	2909	C
1	2	3585	G
1	2	3588	C
1	2	3591	C
1	2	3594	C
1	2	3595	U
1	2	3596	A
1	2	3597	G
1	2	3606	U
1	2	3615	G
1	2	3616	U
1	2	3626	G
1	2	3635	A
1	2	3644	U
1	2	3662	A
1	2	3663	A
1	2	3672	G
1	2	3673	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	3679	U
1	2	3680	U
1	2	3682	A
1	2	3691	G
1	2	3696	C
1	2	3702	A
1	2	3710	G
1	2	3711	A
1	2	3712	A
1	2	3713	U
1	2	3714	G
1	2	3722	G
1	2	3729	U
1	2	3735	G
1	2	3736	A
1	2	3748	A
1	2	3750	G
1	2	3753	G
1	2	3773	U
1	2	3775	A
1	2	3776	G
1	2	3833	C
1	2	3838	U
1	2	3839	G
1	2	3840	U
1	2	3867	A2M
1	2	3875	G
1	2	3876	A
1	2	3877	A
1	2	3879	G
1	2	3881	G
1	2	3898	G
1	2	3903	A
1	2	3904	G
1	2	3905	A
1	2	3906	A
1	2	3914	U
1	2	3915	U
1	2	3924	C
1	2	3938	G
1	2	4076	G
1	2	4084	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4085	A
1	2	4095	G
1	2	4097	G
1	2	4099	G
1	2	4100	C
1	2	4101	C
1	2	4102	C
1	2	4103	C
1	2	4104	G
1	2	4105	A
1	2	4107	G
1	2	4108	G
1	2	4111	U
1	2	4112	C
1	2	4114	C
1	2	4115	G
1	2	4116	C
1	2	4117	U
1	2	4119	C
1	2	4121	G
1	2	4127	A
1	2	4133	C
1	2	4139	G
1	2	4140	C
1	2	4141	G
1	2	4142	C
1	2	4143	G
1	2	4144	C
1	2	4146	G
1	2	4147	G
1	2	4149	C
1	2	4157	A
1	2	4158	C
1	2	4162	C
1	2	4163	U
1	2	4170	A
1	2	4183	G
1	2	4184	G
1	2	4207	C
1	2	4211	C
1	2	4223	C
1	2	4226	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4228	G
1	2	4229	U
1	2	4230	C
1	2	4231	C
1	2	4233	A
1	2	4234	A
1	2	4235	G
1	2	4236	G
1	2	4242	U
1	2	4251	A
1	2	4254	G
1	2	4255	A
1	2	4258	C
1	2	4265	U
1	2	4266	G
1	2	4267	G
1	2	4268	A
1	2	4271	A
1	2	4273	A
1	2	4274	A
1	2	4275	G
1	2	4278	C
1	2	4279	A
1	2	4280	A
1	2	4281	A
1	2	4286	C
1	2	4288	C
1	2	4290	U
1	2	4291	G
1	2	4292	A
1	2	4297	G
1	2	4302	U
1	2	4313	A
1	2	4315	A
1	2	4319	C
1	2	4321	U
1	2	4323	A
1	2	4329	G
1	2	4330	G
1	2	4332	C
1	2	4340	U
1	2	4341	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4342	C
1	2	4343	U
1	2	4347	G
1	2	4348	A
1	2	4349	C
1	2	4350	C
1	2	4368	G
1	2	4370	G
1	2	4371	G
1	2	4372	U
1	2	4387	C
1	2	4395	U
1	2	4396	A
1	2	4401	G
1	2	4413	C
1	2	4414	A
1	2	4416	G
1	2	4417	C
1	2	4418	G
1	2	4419	U
1	2	4420	U
1	2	4421	C
1	2	4422	A
1	2	4423	U
1	2	4424	A
1	2	4425	G
1	2	4426	C
1	2	4427	G
1	2	4428	A
1	2	4433	G
1	2	4436	U
1	2	4437	U
1	2	4438	U
1	2	4440	G
1	2	4441	A
1	2	4446	U
1	2	4447	C
1	2	4449	A
1	2	4450	U
1	2	4451	G
1	2	4452	U
1	2	4453	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4464	A
1	2	4466	C
1	2	4475	G
1	2	4476	C
1	2	4484	A
1	2	4498	U
1	2	4499	G
1	2	4500	U
1	2	4502	C
1	2	4503	A
1	2	4512	U
1	2	4513	A
1	2	4518	A
1	2	4519	C
1	2	4524	G
1	2	4530	UR3
1	2	4543	G
1	2	4545	G
1	2	4548	A
1	2	4550	7MG
1	2	4555	U
1	2	4556	U
1	2	4557	U
1	2	4558	U
1	2	4560	C
1	2	4567	G
1	2	4584	A
1	2	4589	A
1	2	4590	A
1	2	4599	A
1	2	4600	G
1	2	4601	U
1	2	4607	A
1	2	4608	G
1	2	4635	A
1	2	4636	U
1	2	4637	OMG
1	2	4656	A
1	2	4670	C
1	2	4678	G
1	2	4684	A
1	2	4694	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4695	C
1	2	4708	A
1	2	4709	U
1	2	4719	G
1	2	4730	C
1	2	4731	G
1	2	4732	G
1	2	4733	C
1	2	4734	A
1	2	4740	G
1	2	4741	C
1	2	4742	G
1	2	4745	G
1	2	4751	G
1	2	4754	G
1	2	4757	C
1	2	4759	C
1	2	4761	G
1	2	4765	G
1	2	4771	C
1	2	4773	C
1	2	4776	G
1	2	4870	OMG
1	2	4871	C
1	2	4872	2MG
1	2	4875	G
1	2	4877	G
1	2	4882	U
1	2	4883	C
1	2	4889	G
1	2	4893	A
1	2	4895	C
1	2	4896	G
1	2	4899	G
1	2	4900	C
1	2	4901	G
1	2	4910	G
1	2	4912	G
1	2	4914	C
1	2	4916	G
1	2	4927	G
1	2	4928	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	4938	A
1	2	4940	C
1	2	4941	G
1	2	4943	A
1	2	4949	G
1	2	4976	U
1	2	4988	U
1	2	4989	U
1	2	4991	U
1	2	5013	C
1	2	5014	A
1	2	5017	G
1	2	5022	U
1	2	5025	C
1	2	5026	U
1	2	5027	C
1	2	5028	G
1	2	5030	U
1	2	5031	G
1	2	5034	A
1	2	5041	G
1	2	5047	C
1	2	5050	C
1	2	5054	C
1	2	5058	A
1	2	5062	G
1	2	5069	U
4	8	25	G
4	8	34	U
4	8	35	C
4	8	39	G
4	8	48	A
4	8	52	A
4	8	59	A
4	8	62	A
4	8	63	U
4	8	80	A
4	8	82	A
4	8	84	A
4	8	85	U
4	8	103	A
4	8	104	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
4	8	105	C
4	8	108	A
4	8	110	U
4	8	114	G
4	8	123	U
4	8	124	U
4	8	125	C
4	8	126	C
4	8	127	U
4	8	128	C
4	8	147	G
4	8	150	C
4	8	151	G
4	8	156	U
55	3	7	G
55	3	11	A
55	3	22	A
55	3	29	C
55	3	41	G
55	3	48	G
55	3	49	A
55	3	51	G
55	3	52	C
55	3	53	U
55	3	54	A
55	3	63	C
55	3	64	G
55	3	72	U
55	3	73	U
55	3	74	A
55	3	75	G
55	3	83	A
55	3	84	U
55	3	85	G
55	3	86	G
55	3	100	A
55	3	110	G

All (23) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2	406	C

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Mol	Chain	Res	Type
1	2	914	U
1	2	1184	A
1	2	1633	G
1	2	1678	C
1	2	1808	C
1	2	1931	C
1	2	1980	U
1	2	2033	A
1	2	2486	G
1	2	2487	G
1	2	2496	G
1	2	2760	G
1	2	3701	OMC
1	2	3774	A
1	2	3875	G
1	2	3905	A
1	2	4228	G
1	2	4555	U
1	2	4636	U
1	2	4913	G
55	3	51	G
55	3	72	U

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

67 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	P7G	2	1909	1	24,28,29	4.09	11 (45%)	27,41,44	1.55	3 (11%)
1	A2M	2	398	1	18,25,26	3.61	8 (44%)	18,36,39	3.41	3 (16%)
1	2MG	2	729	1	18,26,27	2.69	6 (33%)	16,38,41	1.38	3 (18%)
1	OMG	2	1522	1	18,26,27	2.86	8 (44%)	19,38,41	1.49	4 (21%)
1	OMG	2	2050	1	18,26,27	2.83	8 (44%)	19,38,41	1.48	5 (26%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
1	B8W	2	2380	1	18,26,27	2.10	2 (11%)	21,38,41	2.47	7 (33%)
1	A2M	2	1326	1	18,25,26	3.60	8 (44%)	18,36,39	3.39	4 (22%)
1	OMG	2	1883	1	18,26,27	2.91	8 (44%)	19,38,41	1.54	4 (21%)
1	A2M	2	2363	1	18,25,26	3.59	8 (44%)	18,36,39	3.43	4 (22%)
1	OMG	2	4623	1	18,26,27	2.88	8 (44%)	19,38,41	1.57	5 (26%)
1	2MG	2	4872	1	18,26,27	2.67	6 (33%)	16,38,41	1.61	4 (25%)
1	7MG	2	4550	1	22,26,27	3.85	10 (45%)	29,39,42	1.98	7 (24%)
1	OMC	2	3869	1	19,22,23	3.02	8 (42%)	26,31,34	0.90	1 (3%)
1	A2M	2	1534	1	18,25,26	3.58	8 (44%)	18,36,39	3.48	3 (16%)
1	OMG	2	4494	1	18,26,27	2.89	8 (44%)	19,38,41	1.46	4 (21%)
1	OMG	2	4637	1	18,26,27	2.85	8 (44%)	19,38,41	1.55	5 (26%)
1	P7G	2	3880	1	24,28,29	4.19	11 (45%)	27,41,44	1.37	2 (7%)
1	OMC	2	2861	1	19,22,23	3.04	8 (42%)	26,31,34	1.10	3 (11%)
1	BGH	2	3899	1	25,29,30	4.60	17 (68%)	31,43,46	2.58	11 (35%)
1	OMU	2	4620	1	19,22,23	2.97	8 (42%)	26,31,34	1.74	5 (19%)
1	2MG	2	978	1	18,26,27	2.74	6 (33%)	16,38,41	1.41	3 (18%)
1	A2M	2	4523	1	18,25,26	3.56	8 (44%)	18,36,39	3.43	4 (22%)
1	OMC	2	2422	1,43	19,22,23	3.03	8 (42%)	26,31,34	1.00	2 (7%)
1	OMC	2	2804	1	19,22,23	2.98	8 (42%)	26,31,34	0.76	0
1	B9B	2	1574	1	21,28,29	2.00	3 (14%)	23,40,43	6.40	5 (21%)
1	UR3	2	4597	1	19,22,23	2.82	6 (31%)	26,32,35	1.88	3 (11%)
1	P4U	2	1348	1	21,24,25	3.61	8 (38%)	27,33,36	1.06	2 (7%)
1	B8T	2	4671	1	19,22,23	3.61	8 (42%)	26,31,34	0.93	1 (3%)
1	B8W	2	4472	1	18,26,27	2.08	2 (11%)	21,38,41	2.41	7 (33%)
1	7MG	2	1605	1	22,26,27	3.87	10 (45%)	29,39,42	2.00	8 (27%)
1	I4U	2	1659	1	21,24,25	3.56	9 (42%)	27,34,37	1.11	2 (7%)
1	B8Q	2	1456	1	17,22,23	2.96	5 (29%)	22,32,35	2.21	6 (27%)
1	OMG	2	2773	1	18,26,27	2.90	8 (44%)	19,38,41	1.46	4 (21%)
1	OMC	2	3701	1	19,22,23	3.01	8 (42%)	26,31,34	0.74	0
1	OMG	2	373	1	18,26,27	2.88	8 (44%)	19,38,41	1.61	5 (26%)
1	B8T	2	4483	1	19,22,23	3.66	8 (42%)	26,31,34	1.37	6 (23%)
1	A2M	2	2401	1	18,25,26	3.60	8 (44%)	18,36,39	3.39	3 (16%)
1	A2M	2	1524	1	18,25,26	3.61	8 (44%)	18,36,39	3.42	4 (22%)
1	OMC	2	2365	1	19,22,23	2.99	8 (42%)	26,31,34	0.74	0
1	7MG	2	2522	1	22,26,27	3.76	10 (45%)	29,39,42	1.97	10 (34%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
1	OMC	2	3887	1	19,22,23	3.05	8 (42%)	26,31,34	1.01	1 (3%)
4	OMU	8	14	1,4	19,22,23	2.96	8 (42%)	26,31,34	1.79	6 (23%)
1	A2M	2	3723	1	18,25,26	3.57	8 (44%)	18,36,39	3.42	4 (22%)
1	B8K	2	3897	1	24,28,29	3.44	11 (45%)	30,42,45	2.53	11 (36%)
1	B9B	2	237	1	21,28,29	1.99	3 (14%)	23,40,43	6.42	5 (21%)
1	B9B	2	2754	1	21,28,29	2.03	3 (14%)	23,40,43	6.50	5 (21%)
1	A2M	2	3825	1	18,25,26	3.59	8 (44%)	18,36,39	3.43	4 (22%)
1	OMC	2	4536	1	19,22,23	3.04	8 (42%)	26,31,34	1.12	3 (11%)
1	2MG	2	1517	1	18,26,27	2.73	6 (33%)	16,38,41	1.49	3 (18%)
1	OMG	2	4870	1	18,26,27	2.90	8 (44%)	19,38,41	1.49	4 (21%)
1	OMG	2	1625	1	18,26,27	2.92	8 (44%)	19,38,41	1.46	4 (21%)
1	A2M	2	3718	1	18,25,26	3.60	8 (44%)	18,36,39	3.37	4 (22%)
1	B9H	2	2786	1	20,25,26	3.24	3 (15%)	22,35,38	1.95	5 (22%)
1	B8K	2	4690	1	24,28,29	3.30	12 (50%)	30,42,45	2.67	11 (36%)
1	OMG	2	1316	1	18,26,27	2.88	8 (44%)	19,38,41	1.52	5 (26%)
1	A2M	2	4571	1	18,25,26	3.57	8 (44%)	18,36,39	3.40	4 (22%)
1	M7A	2	4564	1	20,25,26	2.02	3 (15%)	28,37,40	3.91	7 (25%)
1	E7G	2	2297	1	24,27,28	4.04	11 (45%)	30,40,43	2.12	9 (30%)
1	A2M	2	1871	1	18,25,26	3.57	9 (50%)	18,36,39	3.47	3 (16%)
1	OMG	2	2424	1	18,26,27	2.91	8 (44%)	19,38,41	1.48	4 (21%)
1	B8W	2	4529	1	18,26,27	2.13	2 (11%)	21,38,41	2.53	8 (38%)
1	OMG	2	2364	1	18,26,27	2.84	8 (44%)	19,38,41	1.49	5 (26%)
1	A2M	2	3867	1	18,25,26	3.61	8 (44%)	18,36,39	3.42	4 (22%)
1	OMC	2	3909	1	19,22,23	3.13	8 (42%)	26,31,34	1.85	7 (26%)
1	5MU	2	4083	1	19,22,23	7.22	8 (42%)	28,32,35	3.37	10 (35%)
1	B8W	2	4185	1	18,26,27	2.14	2 (11%)	21,38,41	2.48	7 (33%)
1	UR3	2	4530	1	19,22,23	2.89	6 (31%)	26,32,35	1.26	2 (7%)

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	P7G	2	1909	1	-	3/10/40/41	0/3/3/3
1	A2M	2	398	1	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	2MG	2	729	1	-	1/5/27/28	0/3/3/3
1	OMG	2	1522	1	-	0/5/27/28	0/3/3/3
1	OMG	2	2050	1	-	0/5/27/28	0/3/3/3
1	B8W	2	2380	1	-	2/5/27/28	0/3/3/3
1	A2M	2	1326	1	-	0/5/27/28	0/3/3/3
1	OMG	2	1883	1	-	2/5/27/28	0/3/3/3
1	A2M	2	2363	1	-	0/5/27/28	0/3/3/3
1	OMG	2	4623	1	-	0/5/27/28	0/3/3/3
1	2MG	2	4872	1	-	2/5/27/28	0/3/3/3
1	7MG	2	4550	1	-	2/7/37/38	0/3/3/3
1	OMC	2	3869	1	-	0/9/27/28	0/2/2/2
1	A2M	2	1534	1	-	2/5/27/28	0/3/3/3
1	OMG	2	4494	1	-	0/5/27/28	0/3/3/3
1	OMG	2	4637	1	-	4/5/27/28	0/3/3/3
1	P7G	2	3880	1	-	2/10/40/41	0/3/3/3
1	OMC	2	2861	1	-	0/9/27/28	0/2/2/2
1	BGH	2	3899	1	-	1/13/43/44	0/3/3/3
1	OMU	2	4620	1	-	0/9/27/28	0/2/2/2
1	2MG	2	978	1	-	0/5/27/28	0/3/3/3
1	A2M	2	4523	1	-	1/5/27/28	0/3/3/3
1	OMC	2	2422	1,43	-	1/9/27/28	0/2/2/2
1	OMC	2	2804	1	-	0/9/27/28	0/2/2/2
1	B9B	2	1574	1	-	3/7/29/30	0/3/3/3
1	UR3	2	4597	1	-	0/7/25/26	0/2/2/2
1	P4U	2	1348	1	-	1/10/29/30	0/2/2/2
1	B8T	2	4671	1	-	0/7/27/28	0/2/2/2
1	B8W	2	4472	1	-	2/5/27/28	0/3/3/3
1	7MG	2	1605	1	-	0/7/37/38	0/3/3/3
1	I4U	2	1659	1	-	1/9/29/30	0/2/2/2
1	B8Q	2	1456	1	-	0/7/42/43	0/2/2/2
1	OMG	2	2773	1	-	0/5/27/28	0/3/3/3
1	OMC	2	3701	1	-	2/9/27/28	0/2/2/2
1	OMG	2	373	1	-	1/5/27/28	0/3/3/3
1	B8T	2	4483	1	-	0/7/27/28	0/2/2/2
1	A2M	2	2401	1	-	0/5/27/28	0/3/3/3
1	A2M	2	1524	1	-	0/5/27/28	0/3/3/3
1	OMC	2	2365	1	-	0/9/27/28	0/2/2/2
1	7MG	2	2522	1	-	0/7/37/38	0/3/3/3
1	OMC	2	3887	1	-	1/9/27/28	0/2/2/2
4	OMU	8	14	1,4	-	1/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	A2M	2	3723	1	-	0/5/27/28	0/3/3/3
1	B8K	2	3897	1	-	3/11/41/42	0/3/3/3
1	B9B	2	237	1	-	6/7/29/30	0/3/3/3
1	B9B	2	2754	1	-	4/7/29/30	0/3/3/3
1	A2M	2	3825	1	-	0/5/27/28	0/3/3/3
1	OMC	2	4536	1	-	0/9/27/28	0/2/2/2
1	2MG	2	1517	1	-	1/5/27/28	0/3/3/3
1	OMG	2	4870	1	-	3/5/27/28	0/3/3/3
1	OMG	2	1625	1	-	3/5/27/28	0/3/3/3
1	A2M	2	3718	1	-	0/5/27/28	0/3/3/3
1	B9H	2	2786	1	-	1/12/47/48	0/2/2/2
1	B8K	2	4690	1	-	0/11/41/42	0/3/3/3
1	OMG	2	1316	1	-	0/5/27/28	0/3/3/3
1	A2M	2	4571	1	-	0/5/27/28	0/3/3/3
1	M7A	2	4564	1	-	0/7/37/38	0/3/3/3
1	E7G	2	2297	1	-	1/9/39/40	0/3/3/3
1	A2M	2	1871	1	-	2/5/27/28	0/3/3/3
1	OMG	2	2424	1	-	2/5/27/28	0/3/3/3
1	B8W	2	4529	1	-	2/5/27/28	0/3/3/3
1	OMG	2	2364	1	-	3/5/27/28	0/3/3/3
1	A2M	2	3867	1	-	3/5/27/28	0/3/3/3
1	OMC	2	3909	1	-	2/9/27/28	0/2/2/2
1	5MU	2	4083	1	-	0/7/25/26	0/2/2/2
1	B8W	2	4185	1	-	2/5/27/28	0/3/3/3
1	UR3	2	4530	1	-	0/7/25/26	0/2/2/2

All (505) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	4083	5MU	C4-C5	20.78	1.79	1.44
1	2	4083	5MU	C6-N1	16.00	1.65	1.38
1	2	4083	5MU	C6-C5	-11.45	1.15	1.34
1	2	4083	5MU	C4-N3	-11.05	1.18	1.38
1	2	1659	I4U	C4-N3	10.65	1.45	1.31
1	2	1348	P4U	C4-N3	10.59	1.45	1.31
1	2	2786	B9H	C2-N3	9.82	1.49	1.37
1	2	2297	E7G	C5-N7	9.67	1.46	1.35
1	2	3880	P7G	C5-N7	9.64	1.46	1.35
1	2	3880	P7G	C8-N9	9.43	1.51	1.46
1	2	1909	P7G	C5-N7	9.38	1.46	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	1909	P7G	C8-N9	9.28	1.51	1.46
1	2	3897	B8K	C8-N9	9.27	1.51	1.46
1	2	1605	7MG	C8-N9	9.11	1.51	1.46
1	2	2297	E7G	C8-N9	9.07	1.51	1.46
1	2	4550	7MG	C8-N9	9.03	1.51	1.46
1	2	3899	BGH	O4'-C1'	8.98	1.63	1.42
1	2	1871	A2M	C3'-C4'	-8.89	1.30	1.53
1	2	1524	A2M	C3'-C4'	-8.86	1.30	1.53
1	2	3825	A2M	C3'-C4'	-8.81	1.30	1.53
1	2	1326	A2M	C3'-C4'	-8.81	1.30	1.53
1	2	3723	A2M	C3'-C4'	-8.81	1.30	1.53
1	2	398	A2M	C3'-C4'	-8.78	1.30	1.53
1	2	1605	7MG	C5-N7	8.77	1.45	1.35
1	2	2363	A2M	C3'-C4'	-8.76	1.30	1.53
1	2	2401	A2M	C3'-C4'	-8.75	1.30	1.53
1	2	3899	BGH	C2'-C1'	-8.75	1.30	1.53
1	2	1534	A2M	C3'-C4'	-8.75	1.30	1.53
1	2	2522	7MG	C5-N7	8.73	1.45	1.35
1	2	3718	A2M	C3'-C4'	-8.72	1.30	1.53
1	2	4571	A2M	C3'-C4'	-8.72	1.30	1.53
1	2	4550	7MG	C5-N7	8.70	1.45	1.35
1	2	3867	A2M	C3'-C4'	-8.70	1.30	1.53
1	2	4523	A2M	C3'-C4'	-8.63	1.30	1.53
1	2	2522	7MG	C8-N9	8.57	1.50	1.46
1	2	4690	B8K	C8-N9	8.38	1.50	1.46
1	2	1456	B8Q	C6-C5	8.37	1.52	1.33
1	2	3899	BGH	C8-N9	8.36	1.50	1.46
1	2	4185	B8W	C2-N2	8.05	1.50	1.33
1	2	4529	B8W	C2-N2	8.02	1.49	1.33
1	2	2380	B8W	C2-N2	7.95	1.49	1.33
1	2	4472	B8W	C2-N2	7.84	1.49	1.33
1	2	398	A2M	O4'-C4'	7.74	1.62	1.45
1	2	3718	A2M	O4'-C4'	7.73	1.62	1.45
1	2	1871	A2M	O4'-C4'	7.69	1.62	1.45
1	2	2401	A2M	O4'-C4'	7.66	1.62	1.45
1	2	2363	A2M	O4'-C4'	7.65	1.62	1.45
1	2	3825	A2M	O4'-C4'	7.64	1.62	1.45
1	2	1534	A2M	O4'-C4'	7.63	1.62	1.45
1	2	1326	A2M	O4'-C4'	7.61	1.62	1.45
1	2	3867	A2M	O4'-C1'	-7.58	1.30	1.41
1	2	4523	A2M	O4'-C4'	7.58	1.61	1.45
1	2	4571	A2M	O4'-C4'	7.52	1.61	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	3723	A2M	O4'-C4'	7.51	1.61	1.45
1	2	4483	B8T	C2-N3	7.50	1.51	1.36
1	2	3899	BGH	O4'-C4'	-7.48	1.28	1.45
1	2	1524	A2M	O4'-C4'	7.47	1.61	1.45
1	2	3867	A2M	O4'-C4'	7.42	1.61	1.45
1	2	4671	B8T	C2-N3	7.27	1.51	1.36
1	2	1326	A2M	O4'-C1'	-7.17	1.31	1.41
1	2	1524	A2M	O4'-C1'	-7.16	1.31	1.41
1	2	398	A2M	O4'-C1'	-7.15	1.31	1.41
1	2	4671	B8T	C4-N3	7.10	1.45	1.32
1	2	3718	A2M	O4'-C1'	-7.08	1.31	1.41
1	2	2786	B9H	C2-N1	7.07	1.48	1.38
1	2	2401	A2M	O4'-C1'	-7.05	1.31	1.41
1	2	4483	B8T	C4-N3	7.04	1.45	1.32
4	8	14	OMU	C2-N1	7.04	1.49	1.38
1	2	4523	A2M	O4'-C1'	-7.02	1.31	1.41
1	2	4571	A2M	O4'-C1'	-7.02	1.31	1.41
1	2	2363	A2M	O4'-C1'	-7.01	1.31	1.41
1	2	3723	A2M	O4'-C1'	-7.01	1.31	1.41
1	2	3825	A2M	O4'-C1'	-7.00	1.31	1.41
1	2	2786	B9H	C6-C5	6.99	1.49	1.33
1	2	1534	A2M	O4'-C1'	-6.98	1.31	1.41
1	2	4620	OMU	C2-N1	6.94	1.49	1.38
1	2	4671	B8T	C6-C5	6.92	1.51	1.35
1	2	978	2MG	C2-N2	6.86	1.48	1.33
1	2	1517	2MG	C2-N2	6.84	1.48	1.33
1	2	4530	UR3	C6-C5	6.84	1.51	1.35
1	2	4530	UR3	C2-N1	6.82	1.48	1.38
1	2	4483	B8T	C6-C5	6.82	1.50	1.35
1	2	4597	UR3	C6-C5	6.81	1.50	1.35
1	2	1871	A2M	O4'-C1'	-6.70	1.31	1.41
1	2	1456	B8Q	C2-N3	6.66	1.46	1.35
1	2	4690	B8K	C2-N3	6.66	1.49	1.33
1	2	729	2MG	C2-N2	6.65	1.48	1.33
1	2	3897	B8K	C2-N3	6.62	1.49	1.33
1	2	4620	OMU	C2-N3	6.60	1.49	1.38
4	8	14	OMU	C2-N3	6.58	1.49	1.38
1	2	3909	OMC	C6-C5	6.55	1.50	1.35
1	2	2297	E7G	C8-N7	6.54	1.52	1.45
1	2	4872	2MG	C2-N2	6.53	1.47	1.33
1	2	3880	P7G	C8-N7	6.43	1.51	1.45
1	2	1909	P7G	C4-N9	6.43	1.44	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	3869	OMC	C2-N3	6.42	1.49	1.36
1	2	4536	OMC	C2-N3	6.42	1.49	1.36
1	2	3880	P7G	C4-N9	6.39	1.44	1.35
1	2	2754	B9B	O6-C6	6.38	1.40	1.35
1	2	3899	BGH	C4-N9	6.37	1.45	1.37
1	2	3887	OMC	C2-N3	6.37	1.49	1.36
1	2	2422	OMC	C2-N3	6.35	1.49	1.36
1	2	3880	P7G	C4-N3	6.35	1.48	1.37
1	2	4483	B8T	C4-N4	6.34	1.48	1.35
1	2	2861	OMC	C2-N3	6.34	1.49	1.36
1	2	2424	OMG	C2-N3	6.34	1.48	1.33
1	2	2365	OMC	C2-N3	6.32	1.49	1.36
1	2	4671	B8T	C4-N4	6.31	1.48	1.35
1	2	4597	UR3	C2-N3	6.30	1.51	1.39
1	2	1909	P7G	C4-N3	6.30	1.48	1.37
1	2	3701	OMC	C2-N3	6.30	1.49	1.36
1	2	1625	OMG	C2-N3	6.26	1.48	1.33
1	2	1659	I4U	C2-N3	6.25	1.49	1.36
1	2	1883	OMG	C2-N3	6.24	1.48	1.33
1	2	4494	OMG	C2-N3	6.24	1.48	1.33
1	2	2804	OMC	C2-N3	6.23	1.49	1.36
1	2	1348	P4U	C2-N3	6.22	1.49	1.36
1	2	1574	B9B	O6-C6	6.20	1.40	1.35
1	2	2773	OMG	C2-N3	6.17	1.48	1.33
1	2	4870	OMG	C2-N3	6.17	1.48	1.33
1	2	1348	P4U	C6-C5	6.14	1.49	1.35
1	2	1659	I4U	C6-C5	6.11	1.49	1.35
1	2	1883	OMG	C2-N2	6.07	1.48	1.34
1	2	2424	OMG	C2-N2	6.07	1.48	1.34
1	2	4870	OMG	C2-N2	6.06	1.48	1.34
1	2	237	B9B	O6-C6	6.06	1.40	1.35
1	2	373	OMG	C2-N3	6.05	1.47	1.33
1	2	1316	OMG	C2-N3	6.05	1.47	1.33
1	2	3701	OMC	C6-C5	6.05	1.49	1.35
1	2	1522	OMG	C2-N2	6.04	1.48	1.34
1	2	1522	OMG	C2-N3	6.04	1.47	1.33
1	2	4597	UR3	C2-N1	6.03	1.47	1.38
1	2	2773	OMG	C2-N2	6.03	1.48	1.34
1	2	1625	OMG	C2-N2	6.02	1.48	1.34
1	2	373	OMG	C2-N2	6.02	1.48	1.34
1	2	4494	OMG	C2-N2	6.00	1.48	1.34
1	2	3887	OMC	C6-C5	6.00	1.49	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	2365	OMC	C6-C5	6.00	1.49	1.35
1	2	2364	OMG	C2-N3	5.99	1.47	1.33
1	2	4623	OMG	C2-N2	5.97	1.48	1.34
1	2	2861	OMC	C6-C5	5.97	1.48	1.35
1	2	2422	OMC	C6-C5	5.96	1.48	1.35
1	2	4536	OMC	C6-C5	5.95	1.48	1.35
1	2	1316	OMG	C2-N2	5.95	1.48	1.34
1	2	3880	P7G	C2-N2	5.93	1.48	1.34
1	2	4623	OMG	C2-N3	5.93	1.47	1.33
1	2	1909	P7G	C2-N2	5.93	1.48	1.34
1	2	2050	OMG	C2-N3	5.92	1.47	1.33
1	2	2050	OMG	C2-N2	5.92	1.48	1.34
1	2	4637	OMG	C2-N2	5.92	1.48	1.34
1	2	2804	OMC	C6-C5	5.91	1.48	1.35
1	2	4637	OMG	C2-N3	5.90	1.47	1.33
1	2	3869	OMC	C6-C5	5.89	1.48	1.35
1	2	2364	OMG	C2-N2	5.88	1.48	1.34
1	2	4564	M7A	C4-N9	5.86	1.49	1.38
1	2	4550	7MG	C2-N3	5.82	1.47	1.33
1	2	3897	B8K	C4-N9	5.81	1.44	1.37
1	2	3899	BGH	C4-N3	5.79	1.48	1.34
1	2	1605	7MG	C2-N3	5.77	1.47	1.33
1	2	3899	BGH	C2-N3	5.74	1.47	1.33
1	2	4530	UR3	C2-N3	5.74	1.50	1.39
1	2	2297	E7G	C4-N9	5.73	1.44	1.37
1	2	237	B9B	C2-N2	5.73	1.45	1.33
1	2	2754	B9B	C2-N2	5.73	1.45	1.33
1	2	3909	OMC	C2-N3	5.70	1.47	1.36
1	2	2297	E7G	C4-N3	5.68	1.47	1.34
1	2	2522	7MG	C2-N3	5.67	1.46	1.33
1	2	1909	P7G	C8-N7	5.67	1.51	1.45
1	2	2297	E7G	C2-N3	5.66	1.46	1.33
1	2	1574	B9B	C2-N2	5.62	1.45	1.33
1	2	4550	7MG	C4-N3	5.61	1.47	1.34
1	2	1605	7MG	C4-N3	5.57	1.47	1.34
1	2	3909	OMC	C2-N1	5.56	1.52	1.40
1	2	4620	OMU	C6-C5	5.54	1.47	1.35
1	2	4550	7MG	C4-N9	5.52	1.44	1.37
1	2	1605	7MG	C4-N9	5.48	1.44	1.37
1	2	2522	7MG	C4-N3	5.48	1.47	1.34
1	2	3909	OMC	C4-N4	5.44	1.46	1.33
1	2	729	2MG	C4-N3	5.42	1.50	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	4690	B8K	C4-N9	5.34	1.43	1.37
1	2	3880	P7G	C2-N1	5.33	1.46	1.33
4	8	14	OMU	C6-C5	5.30	1.47	1.35
1	2	978	2MG	C4-N3	5.27	1.50	1.37
1	2	1517	2MG	C4-N3	5.25	1.50	1.37
1	2	1909	P7G	C2-N1	5.24	1.45	1.33
1	2	2522	7MG	C4-N9	5.24	1.43	1.37
1	2	3701	OMC	C4-N3	5.16	1.44	1.34
1	2	2297	E7G	C2-N2	5.16	1.46	1.34
1	2	4536	OMC	C4-N3	5.14	1.44	1.34
1	2	4483	B8T	C2-N1	5.13	1.51	1.40
1	2	3869	OMC	C4-N3	5.12	1.44	1.34
1	2	3887	OMC	C4-N3	5.12	1.44	1.34
1	2	2365	OMC	C4-N3	5.11	1.44	1.34
1	2	2804	OMC	C4-N3	5.10	1.44	1.34
1	2	2861	OMC	C2-N1	5.08	1.51	1.40
1	2	2422	OMC	C4-N3	5.06	1.44	1.34
1	2	2861	OMC	C4-N3	5.06	1.44	1.34
1	2	3887	OMC	C2-N1	4.98	1.50	1.40
1	2	4536	OMC	C2-N1	4.97	1.50	1.40
1	2	3701	OMC	C4-N4	4.89	1.45	1.33
1	2	2861	OMC	C4-N4	4.89	1.45	1.33
1	2	3887	OMC	C4-N4	4.88	1.45	1.33
1	2	2422	OMC	C2-N1	4.88	1.50	1.40
1	2	3899	BGH	C2-N2	4.87	1.45	1.34
1	2	2422	OMC	C4-N4	4.87	1.45	1.33
1	2	4536	OMC	C4-N4	4.87	1.45	1.33
1	2	1625	OMG	C4-N3	4.85	1.49	1.37
1	2	2804	OMC	C4-N4	4.84	1.45	1.33
1	2	2424	OMG	C4-N3	4.84	1.49	1.37
1	2	2365	OMC	C4-N4	4.84	1.45	1.33
1	2	4870	OMG	C4-N3	4.84	1.49	1.37
1	2	3869	OMC	C4-N4	4.83	1.45	1.33
1	2	1883	OMG	C4-N3	4.83	1.49	1.37
1	2	4872	2MG	C4-N3	4.81	1.49	1.37
1	2	4494	OMG	C4-N3	4.80	1.49	1.37
1	2	1605	7MG	C2-N2	4.79	1.45	1.34
1	2	2522	7MG	C2-N2	4.77	1.45	1.34
1	2	3869	OMC	C2-N1	4.76	1.50	1.40
1	2	2773	OMG	C4-N3	4.76	1.48	1.37
1	2	4550	7MG	C2-N2	4.76	1.45	1.34
1	2	1456	B8Q	C2-N1	4.73	1.45	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	4623	OMG	C6-N1	4.72	1.44	1.37
1	2	1316	OMG	C4-N3	4.71	1.48	1.37
1	2	1348	P4U	O4-C4	4.71	1.40	1.35
1	2	1522	OMG	C4-N3	4.67	1.48	1.37
1	2	2364	OMG	C4-N3	4.66	1.48	1.37
1	2	1316	OMG	C6-N1	4.66	1.44	1.37
1	2	373	OMG	C4-N3	4.65	1.48	1.37
1	2	4637	OMG	C6-N1	4.64	1.44	1.37
1	2	2364	OMG	C6-N1	4.63	1.44	1.37
1	2	1883	OMG	C6-N1	4.62	1.44	1.37
1	2	4671	B8T	C2-N1	4.61	1.50	1.40
1	2	2773	OMG	C6-N1	4.61	1.44	1.37
1	2	2050	OMG	C4-N3	4.59	1.48	1.37
1	2	3909	OMC	C4-N3	4.58	1.43	1.34
1	2	1659	I4U	C5-C4	4.58	1.49	1.43
1	2	373	OMG	C6-N1	4.57	1.44	1.37
1	2	4623	OMG	C4-N3	4.56	1.48	1.37
1	2	4637	OMG	C4-N3	4.55	1.48	1.37
1	2	3899	BGH	C5-N7	4.55	1.47	1.39
1	2	1625	OMG	C6-N1	4.53	1.44	1.37
1	2	2804	OMC	C2-N1	4.52	1.49	1.40
1	2	4494	OMG	C6-N1	4.52	1.44	1.37
1	2	1522	OMG	C6-N1	4.51	1.44	1.37
1	2	4083	5MU	C2-N3	4.49	1.46	1.38
1	2	4870	OMG	C6-N1	4.49	1.44	1.37
1	2	2050	OMG	C6-N1	4.48	1.44	1.37
1	2	2424	OMG	C6-N1	4.47	1.44	1.37
1	2	1348	P4U	C5-C4	4.47	1.48	1.43
1	2	4690	B8K	C4-N3	4.45	1.44	1.34
1	2	1348	P4U	C2-N1	4.45	1.49	1.40
1	2	3701	OMC	C2-N1	4.42	1.49	1.40
1	2	3897	B8K	C4-N3	4.41	1.44	1.34
1	2	1659	I4U	C2-N1	4.40	1.49	1.40
1	2	2365	OMC	C2-N1	4.36	1.49	1.40
1	2	4564	M7A	C6-N6	4.36	1.45	1.34
1	2	3897	B8K	C5-C6	4.33	1.54	1.43
1	2	3899	BGH	C5-C6	4.31	1.54	1.43
1	2	978	2MG	C2-N1	4.30	1.43	1.36
1	2	3897	B8K	C5-N7	4.29	1.47	1.39
1	2	4872	2MG	C2-N1	4.29	1.43	1.36
1	2	1517	2MG	C2-N1	4.27	1.43	1.36
1	2	729	2MG	C2-N1	4.15	1.43	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	4690	B8K	C5-N7	4.10	1.46	1.39
4	8	14	OMU	C4-N3	4.02	1.45	1.38
1	2	4872	2MG	C6-N1	3.94	1.43	1.37
1	2	4671	B8T	C5-C4	3.93	1.49	1.40
1	2	4620	OMU	C4-N3	3.93	1.45	1.38
1	2	4564	M7A	C5-N7	3.90	1.48	1.39
1	2	4690	B8K	C5-C6	3.90	1.53	1.43
1	2	1605	7MG	C5-C6	3.88	1.53	1.43
1	2	4550	7MG	C5-C6	3.86	1.53	1.43
1	2	1517	2MG	C6-N1	3.81	1.43	1.37
1	2	2297	E7G	C5-C6	3.81	1.53	1.43
1	2	3880	P7G	C2-N3	3.81	1.47	1.37
1	2	978	2MG	C6-N1	3.80	1.43	1.37
1	2	1909	P7G	C2-N3	3.79	1.47	1.37
1	2	3880	P7G	C6-N1	3.77	1.44	1.38
1	2	3899	BGH	O2'-C2'	3.71	1.52	1.42
1	2	1605	7MG	C2-N1	3.67	1.46	1.37
1	2	4483	B8T	C5-C4	3.63	1.48	1.40
1	2	3909	OMC	C6-N1	3.62	1.46	1.38
1	2	3897	B8K	C6-N1	3.62	1.45	1.38
1	2	4690	B8K	C6-N1	3.62	1.45	1.38
1	2	4872	2MG	C5-C6	3.61	1.54	1.47
1	2	2522	7MG	C5-C6	3.61	1.52	1.43
1	2	4550	7MG	C2-N1	3.61	1.46	1.37
1	2	3899	BGH	C71-N7	3.58	1.47	1.39
1	2	2297	E7G	C2-N1	3.57	1.46	1.37
1	2	3897	B8K	C2-N2	3.56	1.42	1.34
1	2	729	2MG	C6-N1	3.56	1.43	1.37
1	2	2522	7MG	C2-N1	3.54	1.46	1.37
1	2	978	2MG	C5-C6	3.53	1.54	1.47
1	2	1909	P7G	C6-N1	3.53	1.44	1.38
1	2	4690	B8K	C71-N7	3.51	1.47	1.39
1	2	729	2MG	C5-C6	3.50	1.54	1.47
1	2	4690	B8K	C2-N2	3.50	1.42	1.34
1	2	3897	B8K	C71-N7	3.49	1.47	1.39
1	2	1517	2MG	C5-C6	3.48	1.54	1.47
1	2	4530	UR3	C6-N1	3.46	1.46	1.38
1	2	4483	B8T	C6-N1	3.44	1.46	1.38
1	2	3869	OMC	C6-N1	3.39	1.46	1.38
1	2	1348	P4U	C6-N1	3.39	1.46	1.38
1	2	4083	5MU	C2-N1	3.37	1.43	1.38
1	2	2773	OMG	C5-C6	3.35	1.54	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	3899	BGH	C6-N1	3.34	1.45	1.38
1	2	1909	P7G	C5-C4	3.34	1.44	1.37
1	2	2522	7MG	C6-N1	3.33	1.45	1.38
1	2	3897	B8K	C2-N1	3.33	1.45	1.37
1	2	3887	OMC	C6-N1	3.33	1.46	1.38
1	2	1605	7MG	C6-N1	3.32	1.45	1.38
1	2	4550	7MG	C6-N1	3.32	1.45	1.38
1	2	4690	B8K	C2-N1	3.31	1.45	1.37
1	2	1659	I4U	C6-N1	3.28	1.45	1.38
1	2	1316	OMG	C5-C6	3.27	1.54	1.47
1	2	2297	E7G	C6-N1	3.27	1.44	1.38
1	2	2050	OMG	C5-C6	3.27	1.54	1.47
1	2	3880	P7G	C5-C4	3.27	1.43	1.37
1	2	2422	OMC	C6-N1	3.27	1.45	1.38
1	2	4536	OMC	C6-N1	3.27	1.45	1.38
1	2	3899	BGH	C2-N1	3.27	1.45	1.37
1	2	1625	OMG	C5-C6	3.26	1.54	1.47
1	2	4623	OMG	C5-C6	3.26	1.54	1.47
1	2	2365	OMC	C6-N1	3.25	1.45	1.38
1	2	2861	OMC	C6-N1	3.24	1.45	1.38
1	2	4671	B8T	C6-N1	3.22	1.45	1.38
1	2	4637	OMG	C5-C6	3.22	1.53	1.47
1	2	4597	UR3	C6-N1	3.20	1.45	1.38
1	2	1909	P7G	O6-C6	-3.19	1.18	1.23
1	2	4870	OMG	C5-C6	3.19	1.53	1.47
1	2	1522	OMG	C5-C6	3.19	1.53	1.47
1	2	4494	OMG	C5-C6	3.17	1.53	1.47
1	2	4523	A2M	C6-N6	3.17	1.45	1.34
1	2	3825	A2M	C6-N6	3.17	1.45	1.34
1	2	2424	OMG	C5-C6	3.16	1.53	1.47
1	2	1524	A2M	C6-N6	3.16	1.45	1.34
1	2	1871	A2M	C6-N6	3.16	1.45	1.34
1	2	2364	OMG	C5-C6	3.15	1.53	1.47
1	2	3701	OMC	C6-N1	3.15	1.45	1.38
1	2	373	OMG	C5-C6	3.15	1.53	1.47
1	2	3718	A2M	C6-N6	3.15	1.45	1.34
1	2	1326	A2M	C6-N6	3.14	1.45	1.34
1	2	3723	A2M	C6-N6	3.14	1.45	1.34
1	2	4571	A2M	C6-N6	3.14	1.45	1.34
1	2	2401	A2M	C6-N6	3.14	1.45	1.34
1	2	2363	A2M	C6-N6	3.13	1.45	1.34
1	2	3867	A2M	C6-N6	3.12	1.45	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	398	A2M	C6-N6	3.11	1.45	1.34
1	2	1534	A2M	C6-N6	3.10	1.45	1.34
1	2	2804	OMC	C6-N1	3.07	1.45	1.38
1	2	3880	P7G	O6-C6	-3.06	1.18	1.23
1	2	1883	OMG	C5-C6	2.97	1.53	1.47
4	8	14	OMU	O4-C4	-2.96	1.18	1.24
1	2	4620	OMU	O4-C4	-2.96	1.18	1.24
1	2	2401	A2M	O3'-C3'	2.95	1.49	1.43
1	2	3867	A2M	O3'-C3'	2.95	1.49	1.43
1	2	4872	2MG	C5-C4	-2.94	1.35	1.43
1	2	3718	A2M	O3'-C3'	2.92	1.49	1.43
1	2	1524	A2M	O3'-C3'	2.92	1.49	1.43
1	2	4083	5MU	O4-C4	-2.92	1.18	1.23
1	2	1534	A2M	O3'-C3'	2.91	1.49	1.43
1	2	398	A2M	O3'-C3'	2.90	1.49	1.43
1	2	3897	B8K	C5-C4	2.90	1.47	1.38
1	2	3899	BGH	O3'-C3'	-2.87	1.36	1.43
1	2	1659	I4U	O4-C41	-2.86	1.40	1.47
1	2	4571	A2M	O3'-C3'	2.86	1.49	1.43
1	2	3825	A2M	O3'-C3'	2.86	1.49	1.43
1	2	2363	A2M	O3'-C3'	2.85	1.49	1.43
1	2	4523	A2M	O3'-C3'	2.83	1.49	1.43
1	2	1326	A2M	O3'-C3'	2.83	1.49	1.43
1	2	1871	A2M	O3'-C3'	2.82	1.49	1.43
1	2	3723	A2M	O3'-C3'	2.82	1.49	1.43
1	2	1574	B9B	C5-C4	-2.82	1.33	1.40
1	2	4690	B8K	C5-C4	2.82	1.47	1.38
1	2	4483	B8T	O2-C2	-2.79	1.18	1.23
1	2	1883	OMG	O6-C6	-2.78	1.17	1.23
1	2	4623	OMG	O6-C6	-2.78	1.17	1.23
1	2	4637	OMG	O6-C6	-2.78	1.17	1.23
1	2	4870	OMG	O6-C6	-2.77	1.17	1.23
1	2	1316	OMG	O6-C6	-2.76	1.17	1.23
1	2	1517	2MG	C5-C4	-2.76	1.36	1.43
1	2	373	OMG	O6-C6	-2.76	1.17	1.23
1	2	978	2MG	C5-C4	-2.76	1.36	1.43
1	2	2380	B8W	C5-C4	-2.75	1.33	1.40
1	2	4671	B8T	O2-C2	-2.75	1.18	1.23
1	2	2050	OMG	O6-C6	-2.75	1.17	1.23
1	2	2364	OMG	O6-C6	-2.75	1.17	1.23
1	2	4620	OMU	C6-N1	2.75	1.44	1.38
1	2	3909	OMC	C5-C4	2.74	1.49	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	2804	OMC	O2-C2	-2.73	1.18	1.23
1	2	2422	OMC	O2-C2	-2.73	1.18	1.23
1	2	4494	OMG	O6-C6	-2.73	1.17	1.23
1	2	1659	I4U	O2-C2	-2.72	1.18	1.23
1	2	2365	OMC	O2-C2	-2.72	1.18	1.23
1	2	1348	P4U	O2-C2	-2.71	1.18	1.23
1	2	2424	OMG	O6-C6	-2.71	1.17	1.23
1	2	1522	OMG	O6-C6	-2.70	1.17	1.23
1	2	4185	B8W	C5-C4	-2.70	1.33	1.40
4	8	14	OMU	C6-N1	2.69	1.44	1.38
1	2	2363	A2M	O2'-C2'	-2.69	1.35	1.42
1	2	3899	BGH	O6-C6	-2.69	1.18	1.23
1	2	237	B9B	C5-C4	-2.69	1.33	1.40
1	2	2754	B9B	C5-C4	-2.68	1.33	1.40
1	2	1524	A2M	O2'-C2'	-2.68	1.35	1.42
1	2	2773	OMG	O6-C6	-2.68	1.17	1.23
1	2	729	2MG	C5-C4	-2.66	1.36	1.43
1	2	1534	A2M	O2'-C2'	-2.66	1.35	1.42
1	2	4529	B8W	C5-C4	-2.65	1.33	1.40
1	2	2401	A2M	C5-C4	-2.64	1.33	1.40
1	2	1534	A2M	C5-C4	-2.62	1.34	1.40
1	2	2401	A2M	O2'-C2'	-2.62	1.35	1.42
1	2	1625	OMG	O6-C6	-2.62	1.18	1.23
1	2	3867	A2M	C5-C4	-2.62	1.34	1.40
1	2	4083	5MU	O2-C2	-2.62	1.18	1.23
1	2	4472	B8W	C5-C4	-2.62	1.34	1.40
1	2	3723	A2M	C5-C4	-2.61	1.34	1.40
1	2	4523	A2M	O2'-C2'	-2.61	1.35	1.42
1	2	3825	A2M	C5-C4	-2.61	1.34	1.40
1	2	398	A2M	O2'-C2'	-2.61	1.35	1.42
1	2	3869	OMC	O2-C2	-2.61	1.18	1.23
1	2	2363	A2M	C5-C4	-2.60	1.34	1.40
1	2	3701	OMC	O2-C2	-2.60	1.18	1.23
1	2	398	A2M	C5-C4	-2.60	1.34	1.40
1	2	3825	A2M	O2'-C2'	-2.60	1.36	1.42
1	2	3718	A2M	O2'-C2'	-2.59	1.36	1.42
1	2	1326	A2M	C5-C4	-2.59	1.34	1.40
1	2	3701	OMC	C5-C4	2.59	1.48	1.42
1	2	1871	A2M	C5-C4	-2.58	1.34	1.40
1	2	1524	A2M	C5-C4	-2.58	1.34	1.40
1	2	3718	A2M	C5-C4	-2.58	1.34	1.40
1	2	4571	A2M	C5-C4	-2.58	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	2522	7MG	O6-C6	-2.57	1.18	1.23
1	2	1659	I4U	O4-C4	2.57	1.40	1.35
1	2	4523	A2M	C5-C4	-2.57	1.34	1.40
1	2	2861	OMC	O2-C2	-2.56	1.19	1.23
1	2	4536	OMC	O2-C2	-2.55	1.19	1.23
1	2	3887	OMC	O2-C2	-2.54	1.19	1.23
1	2	4637	OMG	C2-N1	2.52	1.43	1.37
1	2	373	OMG	C2-N1	2.52	1.43	1.37
1	2	1605	7MG	O6-C6	-2.51	1.18	1.23
1	2	2773	OMG	C2-N1	2.51	1.43	1.37
1	2	4623	OMG	C2-N1	2.51	1.43	1.37
1	2	3723	A2M	O2'-C2'	-2.50	1.36	1.42
1	2	4550	7MG	O6-C6	-2.50	1.18	1.23
1	2	1871	A2M	O2'-C2'	-2.50	1.36	1.42
1	2	3867	A2M	O2'-C2'	-2.50	1.36	1.42
1	2	2050	OMG	C2-N1	2.49	1.43	1.37
1	2	1522	OMG	C2-N1	2.49	1.43	1.37
1	2	4494	OMG	C2-N1	2.49	1.43	1.37
1	2	2424	OMG	C2-N1	2.49	1.43	1.37
1	2	1625	OMG	C2-N1	2.49	1.43	1.37
1	2	2364	OMG	C2-N1	2.48	1.43	1.37
1	2	4870	OMG	C2-N1	2.47	1.43	1.37
1	2	1316	OMG	C2-N1	2.47	1.43	1.37
1	2	4571	A2M	O2'-C2'	-2.47	1.36	1.42
1	2	1883	OMG	C2-N1	2.46	1.43	1.37
1	2	2297	E7G	O6-C6	-2.45	1.18	1.23
4	8	14	OMU	O2-C2	-2.45	1.18	1.23
1	2	4571	A2M	C2-N3	2.44	1.36	1.32
1	2	2861	OMC	C5-C4	2.43	1.48	1.42
1	2	1326	A2M	C2-N3	2.43	1.36	1.32
1	2	2422	OMC	C5-C4	2.42	1.48	1.42
1	2	1456	B8Q	C6-N1	2.41	1.43	1.38
1	2	3887	OMC	C5-C4	2.41	1.48	1.42
1	2	2804	OMC	C5-C4	2.41	1.48	1.42
1	2	2363	A2M	C2-N3	2.41	1.36	1.32
1	2	4620	OMU	O2-C2	-2.39	1.18	1.23
1	2	3825	A2M	C2-N3	2.39	1.35	1.32
1	2	2365	OMC	C5-C4	2.39	1.48	1.42
1	2	4623	OMG	C5-C4	-2.38	1.37	1.43
1	2	4523	A2M	C2-N3	2.38	1.35	1.32
1	2	3867	A2M	C2-N3	2.37	1.35	1.32
1	2	373	OMG	C5-C4	-2.37	1.37	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	2	1326	A2M	O2'-C2'	-2.36	1.36	1.42
1	2	4620	OMU	C5-C4	2.36	1.48	1.43
4	8	14	OMU	C5-C4	2.35	1.48	1.43
1	2	1534	A2M	C2-N3	2.35	1.35	1.32
1	2	4530	UR3	C4-N3	2.34	1.46	1.40
1	2	4597	UR3	C5-C4	2.33	1.49	1.43
1	2	3718	A2M	C2-N3	2.32	1.35	1.32
1	2	3723	A2M	C2-N3	2.32	1.35	1.32
1	2	1883	OMG	C5-C4	-2.32	1.37	1.43
1	2	1871	A2M	C2-N3	2.30	1.35	1.32
1	2	1524	A2M	C2-N3	2.30	1.35	1.32
1	2	3869	OMC	C5-C4	2.30	1.48	1.42
1	2	4536	OMC	C5-C4	2.29	1.48	1.42
1	2	2401	A2M	C2-N3	2.28	1.35	1.32
1	2	4637	OMG	C5-C4	-2.28	1.37	1.43
1	2	3909	OMC	O2-C2	-2.28	1.19	1.23
1	2	398	A2M	C2-N3	2.28	1.35	1.32
1	2	1316	OMG	C5-C4	-2.24	1.37	1.43
1	2	4530	UR3	C5-C4	2.24	1.49	1.43
1	2	2050	OMG	C5-C4	-2.23	1.37	1.43
1	2	2364	OMG	C5-C4	-2.22	1.37	1.43
1	2	4597	UR3	C4-N3	2.19	1.45	1.40
1	2	3899	BGH	C5-C4	2.18	1.45	1.38
1	2	1522	OMG	C5-C4	-2.13	1.37	1.43
1	2	4870	OMG	C5-C4	-2.11	1.37	1.43
1	2	4494	OMG	C5-C4	-2.10	1.37	1.43
1	2	2773	OMG	C5-C4	-2.09	1.37	1.43
1	2	1625	OMG	C5-C4	-2.08	1.37	1.43
1	2	4690	B8K	O6-C6	-2.08	1.19	1.23
1	2	2424	OMG	C5-C4	-2.04	1.37	1.43
1	2	1456	B8Q	O2-C2	-2.02	1.18	1.22
1	2	1871	A2M	O5'-C5'	-2.01	1.39	1.44

All (307) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2754	B9B	O6-C6-N1	-29.66	94.52	120.12
1	2	1574	B9B	O6-C6-N1	-29.32	94.82	120.12
1	2	237	B9B	O6-C6-N1	-29.25	94.87	120.12
1	2	4564	M7A	C5-C6-N6	13.86	147.40	123.74
1	2	4564	M7A	N6-C6-N1	-11.73	92.66	118.35
1	2	1534	A2M	C5-C6-N6	10.52	136.34	120.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1871	A2M	C5-C6-N6	10.50	136.31	120.35
1	2	4523	A2M	C5-C6-N6	10.46	136.24	120.35
1	2	3825	A2M	C5-C6-N6	10.40	136.16	120.35
1	2	398	A2M	C5-C6-N6	10.39	136.15	120.35
1	2	2363	A2M	C5-C6-N6	10.38	136.13	120.35
1	2	3723	A2M	C5-C6-N6	10.37	136.11	120.35
1	2	2401	A2M	C5-C6-N6	10.31	136.02	120.35
1	2	1524	A2M	C5-C6-N6	10.30	136.01	120.35
1	2	3718	A2M	C5-C6-N6	10.30	136.01	120.35
1	2	3867	A2M	C5-C6-N6	10.30	136.00	120.35
1	2	4083	5MU	C5-C4-N3	10.26	124.07	115.31
1	2	4571	A2M	C5-C6-N6	10.25	135.92	120.35
1	2	1326	A2M	C5-C6-N6	10.24	135.91	120.35
1	2	4083	5MU	C5-C6-N1	-7.94	115.17	123.34
1	2	1534	A2M	N6-C6-N1	-7.48	103.05	118.57
1	2	4597	UR3	C4-N3-C2	-7.43	117.57	124.56
1	2	2363	A2M	N6-C6-N1	-7.36	103.30	118.57
1	2	1871	A2M	N6-C6-N1	-7.35	103.31	118.57
1	2	3825	A2M	N6-C6-N1	-7.32	103.37	118.57
1	2	4523	A2M	N6-C6-N1	-7.31	103.40	118.57
1	2	3723	A2M	N6-C6-N1	-7.28	103.47	118.57
1	2	398	A2M	N6-C6-N1	-7.27	103.49	118.57
1	2	2401	A2M	N6-C6-N1	-7.26	103.51	118.57
1	2	3867	A2M	N6-C6-N1	-7.22	103.60	118.57
1	2	1326	A2M	N6-C6-N1	-7.19	103.64	118.57
1	2	4571	A2M	N6-C6-N1	-7.18	103.66	118.57
1	2	3718	A2M	N6-C6-N1	-7.17	103.69	118.57
1	2	1524	A2M	N6-C6-N1	-7.16	103.72	118.57
1	2	4083	5MU	C4-N3-C2	-6.99	118.31	127.35
1	2	4690	B8K	C72-C71-N7	6.55	128.72	118.86
1	2	3723	A2M	N3-C2-N1	-6.37	118.72	128.68
1	2	2401	A2M	N3-C2-N1	-6.34	118.77	128.68
1	2	1534	A2M	N3-C2-N1	-6.33	118.78	128.68
1	2	1871	A2M	N3-C2-N1	-6.33	118.78	128.68
1	2	3825	A2M	N3-C2-N1	-6.33	118.79	128.68
1	2	398	A2M	N3-C2-N1	-6.31	118.82	128.68
1	2	4523	A2M	N3-C2-N1	-6.30	118.83	128.68
1	2	1326	A2M	N3-C2-N1	-6.28	118.87	128.68
1	2	3867	A2M	N3-C2-N1	-6.24	118.93	128.68
1	2	1524	A2M	N3-C2-N1	-6.21	118.97	128.68
1	2	4571	A2M	N3-C2-N1	-6.20	118.98	128.68
1	2	2363	A2M	N3-C2-N1	-6.19	119.01	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	3718	A2M	N3-C2-N1	-6.18	119.03	128.68
1	2	4564	M7A	N3-C2-N1	-6.13	119.01	128.60
1	2	3899	BGH	C72-C71-N7	6.07	127.99	118.86
1	2	3897	B8K	C72-C71-N7	6.02	127.92	118.86
1	2	4690	B8K	C5-C6-N1	6.02	121.59	110.99
1	2	4185	B8W	N2-C2-N3	5.78	127.22	117.79
1	2	2380	B8W	N2-C2-N3	5.73	127.12	117.79
1	2	3899	BGH	C5-C6-N1	5.72	121.06	110.99
1	2	3897	B8K	C5-C6-N1	5.67	120.98	110.99
1	2	1456	B8Q	N3-C2-N1	5.63	123.75	117.13
1	2	2786	B9H	C31-N3-C2	5.57	124.17	117.21
1	2	4529	B8W	O6-C6-N1	5.56	126.74	119.03
1	2	3909	OMC	O2-C2-N3	-5.53	113.34	122.33
1	2	4529	B8W	N2-C2-N3	5.51	126.77	117.79
1	2	237	B9B	N3-C2-N1	-5.46	119.94	127.22
1	2	4472	B8W	N3-C2-N1	-5.44	119.97	127.22
1	2	2754	B9B	N3-C2-N1	-5.42	119.99	127.22
1	2	1909	P7G	C4-C5-N7	5.40	109.52	106.67
4	8	14	OMU	C4-N3-C2	-5.38	119.48	126.58
1	2	4185	B8W	N3-C2-N1	-5.36	120.08	127.22
1	2	2380	B8W	N3-C2-N1	-5.33	120.11	127.22
1	2	1574	B9B	N3-C2-N1	-5.28	120.17	127.22
1	2	4620	OMU	C4-N3-C2	-5.23	119.68	126.58
1	2	4472	B8W	N2-C2-N3	5.19	126.26	117.79
1	2	4529	B8W	N3-C2-N1	-5.16	120.34	127.22
1	2	3899	BGH	C2-N3-C4	5.12	121.43	112.30
1	2	1456	B8Q	C31-N3-C4	5.09	121.91	114.25
1	2	2297	E7G	C5-C6-N1	5.06	119.90	110.99
1	2	1605	7MG	C5-C6-N1	4.98	119.77	110.99
1	2	4564	M7A	N3-C4-N9	4.98	133.16	126.87
1	2	4690	B8K	C4-C5-N7	4.94	109.30	104.91
1	2	2297	E7G	C4-C5-N7	4.93	109.29	104.91
1	2	3897	B8K	C2-N3-C4	4.92	121.06	112.30
1	2	2522	7MG	C5-C6-N1	4.87	119.58	110.99
1	2	4550	7MG	C5-C6-N1	4.87	119.57	110.99
1	2	3880	P7G	C4-C5-N7	4.85	109.23	106.67
1	2	237	B9B	C2-N3-C4	4.82	120.86	115.36
1	2	2786	B9H	C6-N1-C2	-4.79	117.50	121.79
1	2	4083	5MU	N3-C2-N1	4.77	121.22	114.89
1	2	4690	B8K	C2-N3-C4	4.76	120.78	112.30
1	2	4472	B8W	C2-N3-C4	4.71	120.73	115.36
1	2	2754	B9B	C2-N3-C4	4.67	120.69	115.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4083	5MU	C5M-C5-C6	-4.62	116.68	122.85
1	2	1456	B8Q	O2-C2-N3	-4.59	116.20	122.95
1	2	4530	UR3	C4-N3-C2	-4.59	120.24	124.56
1	2	4690	B8K	N9-C8-N7	4.58	109.47	103.33
1	2	2754	B9B	N2-C2-N3	4.55	125.20	117.79
1	2	2297	E7G	C2-N3-C4	4.47	120.26	112.30
1	2	1605	7MG	C2-N3-C4	4.46	120.25	112.30
1	2	237	B9B	N2-C2-N3	4.46	125.06	117.79
1	2	4185	B8W	C2-N3-C4	4.46	120.45	115.36
1	2	1574	B9B	C2-N3-C4	4.42	120.40	115.36
1	2	4550	7MG	C2-N3-C4	4.41	120.16	112.30
1	2	3897	B8K	C5-C4-N9	4.33	111.97	106.35
1	2	2522	7MG	C2-N3-C4	4.31	119.98	112.30
1	2	4185	B8W	O6-C6-N1	4.21	124.86	119.03
1	2	2380	B8W	C2-N3-C4	4.19	120.14	115.36
1	2	3909	OMC	O2-C2-N1	4.14	127.43	118.89
1	2	3899	BGH	C4-C5-N7	4.13	108.58	104.91
1	2	3899	BGH	N9-C8-N7	4.11	108.85	103.33
1	2	2380	B8W	C1'-N9-C4	-4.10	119.43	126.64
1	2	4083	5MU	O4-C4-C5	-4.06	120.19	124.90
1	2	3899	BGH	C5-C4-N9	4.04	111.60	106.35
1	2	4529	B8W	C2-N3-C4	3.98	119.91	115.36
1	2	1574	B9B	N2-C2-N3	3.92	124.18	117.79
1	2	4690	B8K	C5-C4-N9	3.85	111.34	106.35
1	2	1659	I4U	C5-C4-N3	-3.81	119.11	124.91
1	2	3897	B8K	C4-C5-N7	3.79	108.28	104.91
1	2	3897	B8K	N9-C8-N7	3.78	108.40	103.33
1	2	4620	OMU	N3-C2-N1	3.77	119.90	114.89
1	2	4872	2MG	CM2-N2-C2	-3.77	115.54	123.86
1	2	1605	7MG	C5-C4-N3	-3.73	121.03	128.13
1	2	2297	E7G	C5-C4-N3	-3.73	121.03	128.13
1	2	4550	7MG	C5-C4-N3	-3.70	121.08	128.13
1	2	3899	BGH	C5-C4-N3	-3.70	121.08	128.13
1	2	1456	B8Q	C6-N1-C2	-3.69	118.48	121.79
1	2	1605	7MG	C5-C4-N9	3.68	111.12	106.35
1	2	4472	B8W	C1'-N9-C4	-3.67	120.20	126.64
1	2	4083	5MU	C5M-C5-C4	3.64	122.77	118.77
1	2	2380	B8W	O6-C6-N1	3.63	124.06	119.03
1	2	1517	2MG	C5-C6-N1	3.63	120.36	113.95
1	2	1883	OMG	C5-C6-N1	3.60	120.31	113.95
1	2	373	OMG	C5-C6-N1	3.59	120.29	113.95
1	2	729	2MG	C5-C6-N1	3.53	120.19	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	8	14	OMU	N3-C2-N1	3.53	119.57	114.89
1	2	4550	7MG	C5-C4-N9	3.52	110.92	106.35
1	2	4564	M7A	C2-N3-C4	3.52	120.07	111.75
1	2	2424	OMG	C5-C6-N1	3.50	120.14	113.95
1	2	2297	E7G	C5-C4-N9	3.50	110.89	106.35
1	2	1348	P4U	C5-C4-N3	-3.50	119.59	124.91
1	2	978	2MG	C5-C6-N1	3.49	120.12	113.95
4	8	14	OMU	C5-C4-N3	3.48	120.05	114.84
1	2	4870	OMG	C5-C6-N1	3.47	120.08	113.95
1	2	2364	OMG	C5-C6-N1	3.46	120.06	113.95
1	2	4623	OMG	C5-C6-N1	3.45	120.05	113.95
1	2	2522	7MG	C5-C4-N3	-3.45	121.56	128.13
1	2	4872	2MG	C5-C6-N1	3.45	120.04	113.95
1	2	2522	7MG	C5-C4-N9	3.44	110.81	106.35
1	2	1316	OMG	C5-C6-N1	3.43	120.01	113.95
1	2	4637	OMG	C5-C6-N1	3.41	119.97	113.95
1	2	4494	OMG	C5-C6-N1	3.41	119.97	113.95
1	2	2050	OMG	C5-C6-N1	3.40	119.96	113.95
1	2	1625	OMG	C5-C6-N1	3.40	119.95	113.95
1	2	1522	OMG	C5-C6-N1	3.39	119.93	113.95
1	2	2773	OMG	C5-C6-N1	3.38	119.92	113.95
1	2	4620	OMU	C5-C4-N3	3.38	119.89	114.84
1	2	4690	B8K	C6-C5-C4	-3.25	115.93	122.62
1	2	3897	B8K	C5-C4-N3	-3.19	122.05	128.13
1	2	1909	P7G	N9-C8-N7	3.17	107.92	103.38
1	2	3897	B8K	C6-C5-C4	-3.17	116.08	122.62
1	2	2050	OMG	C2-N1-C6	-3.17	119.27	125.10
1	2	4185	B8W	C1'-N9-C4	-3.16	121.09	126.64
1	2	2364	OMG	C2-N1-C6	-3.16	119.28	125.10
1	2	4637	OMG	C2-N1-C6	-3.13	119.33	125.10
1	2	1883	OMG	C2-N1-C6	-3.12	119.35	125.10
1	2	2861	OMC	O2-C2-N3	-3.12	117.25	122.33
1	2	4536	OMC	O2-C2-N3	-3.11	117.27	122.33
1	2	2424	OMG	C2-N1-C6	-3.11	119.37	125.10
1	2	4690	B8K	C5-C4-N3	-3.10	122.22	128.13
1	2	4494	OMG	C2-N1-C6	-3.10	119.39	125.10
1	2	1316	OMG	C2-N1-C6	-3.08	119.43	125.10
1	2	1625	OMG	C2-N1-C6	-3.07	119.44	125.10
1	2	4623	OMG	C2-N1-C6	-3.06	119.47	125.10
1	2	4472	B8W	O6-C6-N1	3.06	123.27	119.03
1	2	2522	7MG	N9-C8-N7	3.04	107.72	103.38
1	2	373	OMG	C2-N1-C6	-3.03	119.51	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4083	5MU	C6-C5-C4	3.01	120.55	118.03
4	8	14	OMU	O4-C4-C5	-3.01	119.87	125.16
1	2	1522	OMG	C2-N1-C6	-2.99	119.59	125.10
1	2	2773	OMG	C2-N1-C6	-2.97	119.62	125.10
1	2	4870	OMG	C2-N1-C6	-2.95	119.67	125.10
1	2	4185	B8W	N2-C2-N1	-2.92	112.71	117.25
1	2	4597	UR3	C6-N1-C2	-2.92	119.17	121.79
1	2	4483	B8T	O2-C2-N3	-2.91	117.60	122.33
1	2	3899	BGH	C6-C5-C4	-2.89	116.66	122.62
1	2	2380	B8W	N2-C2-N1	-2.89	112.76	117.25
1	2	2522	7MG	C4-C5-N7	2.89	109.54	105.53
1	2	1574	B9B	C61-O6-C6	-2.88	112.12	117.51
1	2	3887	OMC	O2-C2-N3	-2.87	117.66	122.33
1	2	4620	OMU	O4-C4-C5	-2.84	120.17	125.16
1	2	4483	B8T	O3'-C3'-C2'	2.82	120.94	111.82
1	2	1605	7MG	N9-C8-N7	2.81	107.40	103.38
1	2	4529	B8W	N2-C2-N1	-2.80	112.89	117.25
1	2	3909	OMC	C5-C4-N4	2.80	124.98	120.57
1	2	2363	A2M	C1'-N9-C4	2.77	131.52	126.64
1	2	3899	BGH	O6-C6-N1	-2.77	114.81	120.12
1	2	4671	B8T	C6-C5-C4	2.75	120.32	116.96
1	2	2422	OMC	O2-C2-N3	-2.74	117.87	122.33
1	2	1883	OMG	O6-C6-C5	-2.73	119.04	124.37
1	2	4597	UR3	C3U-N3-C2	2.72	122.09	117.31
1	2	4571	A2M	C1'-N9-C4	2.71	131.40	126.64
1	2	1909	P7G	C71-N7-C5	2.71	130.93	124.52
1	2	4529	B8W	C1'-N9-C4	-2.69	121.92	126.64
1	2	3897	B8K	O6-C6-N1	-2.68	114.98	120.12
1	2	2297	E7G	N9-C8-N7	2.68	107.20	103.38
1	2	978	2MG	C8-N7-C5	2.67	108.08	102.99
1	2	4872	2MG	C8-N7-C5	2.65	108.04	102.99
1	2	4083	5MU	O2-C2-N1	-2.63	119.29	122.79
1	2	4690	B8K	C2-N1-C6	-2.61	120.34	125.10
1	2	3867	A2M	C1'-N9-C4	2.61	131.22	126.64
1	2	4550	7MG	C4-C5-N7	2.59	109.12	105.53
1	2	1605	7MG	C4-C5-N7	2.59	109.12	105.53
1	2	3909	OMC	C4-N3-C2	2.58	124.42	120.25
1	2	4550	7MG	N9-C8-N7	2.58	107.07	103.38
1	2	3909	OMC	C1'-N1-C2	2.58	124.18	118.42
1	2	237	B9B	C61-O6-C6	-2.55	112.76	117.51
1	2	729	2MG	C8-N7-C5	2.52	107.78	102.99
1	2	1605	7MG	C2-N1-C6	-2.48	120.57	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2297	E7G	C2-N1-C6	-2.48	120.58	125.10
1	2	2754	B9B	C61-O6-C6	-2.46	112.91	117.51
1	2	1517	2MG	C8-N7-C5	2.46	107.68	102.99
1	2	1517	2MG	O6-C6-C5	-2.46	119.56	124.37
1	2	4623	OMG	C8-N7-C5	2.45	107.66	102.99
1	2	4564	M7A	C5-C4-N3	-2.44	120.90	126.62
1	2	2786	B9H	O3'-C3'-C4'	2.43	118.09	111.05
1	2	373	OMG	C8-N7-C5	2.43	107.61	102.99
1	2	3880	P7G	N9-C8-N7	2.43	106.85	103.38
1	2	2861	OMC	C1'-N1-C2	2.42	123.82	118.42
1	2	4472	B8W	C2-N1-C6	2.41	119.95	116.08
1	2	3909	OMC	C5-C4-N3	-2.41	117.23	121.33
1	2	3869	OMC	O2-C2-N3	-2.40	118.43	122.33
1	2	2786	B9H	O2-C2-N1	-2.38	117.15	122.72
1	2	4483	B8T	O3'-C3'-C4'	2.37	117.90	111.05
1	2	1316	OMG	C8-N7-C5	2.37	107.50	102.99
1	2	1456	B8Q	C31-N3-C2	2.36	121.22	117.79
1	2	3897	B8K	C2-N1-C6	-2.36	120.80	125.10
1	2	3899	BGH	N1-C2-N3	-2.35	118.94	123.32
1	2	4870	OMG	C8-N7-C5	2.35	107.46	102.99
1	2	3718	A2M	C1'-N9-C4	2.34	130.76	126.64
1	2	373	OMG	O6-C6-C5	-2.34	119.80	124.37
1	2	3899	BGH	C2-N1-C6	-2.34	120.83	125.10
1	2	1326	A2M	C1'-N9-C4	2.33	130.73	126.64
1	2	4550	7MG	C2-N1-C6	-2.32	120.86	125.10
1	2	2364	OMG	O6-C6-C5	-2.32	119.85	124.37
1	2	3897	B8K	N1-C2-N3	-2.30	119.03	123.32
1	2	2424	OMG	O6-C6-C5	-2.30	119.89	124.37
1	2	1522	OMG	O6-C6-C5	-2.29	119.89	124.37
1	2	1625	OMG	O6-C6-C5	-2.29	119.89	124.37
1	2	4623	OMG	N2-C2-N1	2.29	121.59	116.71
1	2	4083	5MU	O4-C4-N3	-2.28	115.74	120.12
1	2	4530	UR3	C6-N1-C2	-2.28	119.74	121.79
1	2	4494	OMG	O6-C6-C5	-2.28	119.91	124.37
4	8	14	OMU	C1'-N1-C2	2.27	121.68	117.57
1	2	4637	OMG	O6-C6-C5	-2.26	119.96	124.37
1	2	1456	B8Q	C1'-N1-C2	2.26	120.80	116.99
1	2	4872	2MG	O6-C6-C5	-2.26	119.97	124.37
1	2	729	2MG	O6-C6-C5	-2.25	119.97	124.37
1	2	4564	M7A	C4-N9-C1'	-2.25	121.25	126.60
1	2	4637	OMG	N2-C2-N1	2.25	121.50	116.71
1	2	4690	B8K	N1-C2-N3	-2.24	119.14	123.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	4472	B8W	N2-C2-N1	-2.24	113.77	117.25
1	2	1316	OMG	O6-C6-C5	-2.23	120.01	124.37
1	2	3909	OMC	C6-N1-C2	-2.23	116.62	120.49
1	2	2380	B8W	C2-N1-C6	2.23	119.66	116.08
1	2	978	2MG	O6-C6-C5	-2.22	120.03	124.37
4	8	14	OMU	CM2-O2'-C2'	2.22	120.35	114.52
1	2	4623	OMG	O6-C6-C5	-2.22	120.04	124.37
1	2	4690	B8K	O6-C6-C5	-2.22	122.10	127.54
1	2	2522	7MG	C2-N1-C6	-2.21	121.07	125.10
1	2	4637	OMG	C8-N7-C5	2.21	107.20	102.99
1	2	1522	OMG	C8-N7-C5	2.20	107.19	102.99
1	2	2773	OMG	C8-N7-C5	2.20	107.18	102.99
1	2	2050	OMG	C8-N7-C5	2.20	107.18	102.99
1	2	2050	OMG	O6-C6-C5	-2.20	120.08	124.37
1	2	2773	OMG	O6-C6-C5	-2.19	120.10	124.37
1	2	4536	OMC	C1'-N1-C2	2.17	123.26	118.42
1	2	4870	OMG	O6-C6-C5	-2.16	120.14	124.37
1	2	1524	A2M	C1'-N9-C4	2.15	130.42	126.64
1	2	4529	B8W	C2-N1-C6	2.15	119.53	116.08
1	2	2424	OMG	C8-N7-C5	2.14	107.08	102.99
1	2	2364	OMG	C8-N7-C5	2.14	107.06	102.99
1	2	3723	A2M	C1'-N9-C4	2.13	130.39	126.64
1	2	1883	OMG	C8-N7-C5	2.12	107.04	102.99
1	2	4483	B8T	C6-C5-C4	2.12	119.56	116.96
1	2	2522	7MG	C6-C5-C4	-2.12	118.25	122.62
1	2	4185	B8W	C2-N1-C6	2.10	119.46	116.08
1	2	1659	I4U	O2-C2-N3	-2.09	118.93	122.33
1	2	4483	B8T	C5-C4-N3	-2.09	119.23	122.59
1	2	1625	OMG	C8-N7-C5	2.09	106.97	102.99
1	2	2786	B9H	C21-O2'-C2'	2.08	119.98	114.52
1	2	2522	7MG	O6-C6-C5	-2.08	122.44	127.54
1	2	3825	A2M	C1'-N9-C4	2.08	130.29	126.64
1	2	4620	OMU	O2-C2-N1	-2.07	120.03	122.79
1	2	4529	B8W	O6-C6-C5	-2.07	113.05	116.01
1	2	2861	OMC	O2-C2-N1	2.07	123.17	118.89
1	2	2422	OMC	C1'-N1-C2	2.07	123.04	118.42
1	2	4536	OMC	O2-C2-N1	2.07	123.16	118.89
1	2	1605	7MG	O6-C6-C5	-2.06	122.49	127.54
1	2	2297	E7G	C6-C5-C4	-2.05	118.39	122.62
1	2	4483	B8T	C6-N1-C2	-2.05	116.94	120.49
1	2	4523	A2M	C1'-N9-C4	2.03	130.21	126.64
1	2	1348	P4U	O2-C2-N3	-2.03	119.03	122.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	2364	OMG	N2-C2-N1	2.02	121.01	116.71
1	2	2297	E7G	O6-C6-C5	-2.02	122.59	127.54
1	2	2522	7MG	N1-C2-N3	-2.02	119.56	123.32
1	2	4494	OMG	C8-N7-C5	2.02	106.83	102.99
1	2	373	OMG	N2-C2-N1	2.02	121.00	116.71
1	2	1316	OMG	N2-C2-N1	2.01	120.98	116.71
1	2	2050	OMG	N2-C2-N1	2.00	120.98	116.71

There are no chirality outliers.

All (75) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	8	14	OMU	C1'-C2'-O2'-CM2
1	2	237	B9B	C5-C6-O6-C61
1	2	237	B9B	N1-C6-O6-C61
1	2	237	B9B	C3'-C4'-C5'-O5'
1	2	237	B9B	O4'-C4'-C5'-O5'
1	2	398	A2M	O4'-C4'-C5'-O5'
1	2	1348	P4U	N3-C4-O4-C41
1	2	1574	B9B	C5-C6-O6-C61
1	2	1574	B9B	N1-C6-O6-C61
1	2	1574	B9B	C62-C61-O6-C6
1	2	1625	OMG	C3'-C4'-C5'-O5'
1	2	1871	A2M	O4'-C4'-C5'-O5'
1	2	1871	A2M	C3'-C4'-C5'-O5'
1	2	1883	OMG	C3'-C4'-C5'-O5'
1	2	2364	OMG	C1'-C2'-O2'-CM2
1	2	2380	B8W	C5-C6-O6-C61
1	2	2380	B8W	N1-C6-O6-C61
1	2	2424	OMG	O4'-C4'-C5'-O5'
1	2	2424	OMG	C3'-C4'-C5'-O5'
1	2	2754	B9B	C5-C6-O6-C61
1	2	2754	B9B	N1-C6-O6-C61
1	2	2754	B9B	C62-C61-O6-C6
1	2	2786	B9H	C1'-C2'-O2'-C21
1	2	4185	B8W	C5-C6-O6-C61
1	2	4472	B8W	C5-C6-O6-C61
1	2	4472	B8W	N1-C6-O6-C61
1	2	4550	7MG	O4'-C4'-C5'-O5'
1	2	4550	7MG	C3'-C4'-C5'-O5'
1	2	4637	OMG	O4'-C4'-C5'-O5'
1	2	4637	OMG	C1'-C2'-O2'-CM2

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Mol	Chain	Res	Type	Atoms
1	2	4870	OMG	O4'-C4'-C5'-O5'
1	2	4870	OMG	C3'-C4'-C5'-O5'
1	2	4872	2MG	O4'-C4'-C5'-O5'
1	2	398	A2M	C3'-C4'-C5'-O5'
1	2	1883	OMG	O4'-C4'-C5'-O5'
1	2	2364	OMG	O4'-C4'-C5'-O5'
1	2	3867	A2M	C3'-C4'-C5'-O5'
1	2	3897	B8K	O4'-C4'-C5'-O5'
1	2	4529	B8W	C3'-C4'-C5'-O5'
1	2	4529	B8W	O4'-C4'-C5'-O5'
1	2	4637	OMG	C3'-C4'-C5'-O5'
1	2	4872	2MG	C3'-C4'-C5'-O5'
1	2	237	B9B	O6-C61-C62-C63
1	2	1625	OMG	O4'-C4'-C5'-O5'
1	2	1909	P7G	O4'-C4'-C5'-O5'
1	2	2364	OMG	C3'-C4'-C5'-O5'
1	2	3867	A2M	O4'-C4'-C5'-O5'
1	2	3897	B8K	C3'-C4'-C5'-O5'
1	2	3880	P7G	O4'-C4'-C5'-O5'
1	2	1909	P7G	C3'-C4'-C5'-O5'
1	2	3701	OMC	C3'-C4'-C5'-O5'
1	2	3701	OMC	O4'-C4'-C5'-O5'
1	2	3880	P7G	C3'-C4'-C5'-O5'
1	2	2297	E7G	C72-C71-N7-C8
1	2	2754	B9B	O6-C61-C62-C63
1	2	1534	A2M	C4'-C5'-O5'-P
1	2	237	B9B	C62-C61-O6-C6
1	2	4185	B8W	N1-C6-O6-C61
1	2	3867	A2M	C4'-C5'-O5'-P
1	2	373	OMG	C4'-C5'-O5'-P
1	2	3887	OMC	C4'-C5'-O5'-P
1	2	4523	A2M	C4'-C5'-O5'-P
1	2	1625	OMG	C4'-C5'-O5'-P
1	2	4637	OMG	C4'-C5'-O5'-P
1	2	3897	B8K	C4'-C5'-O5'-P
1	2	2422	OMC	O4'-C4'-C5'-O5'
1	2	4870	OMG	C4'-C5'-O5'-P
1	2	1909	P7G	C72-C71-N7-C8
1	2	1517	2MG	C4'-C5'-O5'-P
1	2	3909	OMC	O4'-C4'-C5'-O5'
1	2	729	2MG	O4'-C4'-C5'-O5'
1	2	1534	A2M	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
1	2	3909	OMC	C2'-C1'-N1-C2
1	2	1659	I4U	C43-C41-O4-C4
1	2	3899	BGH	O4'-C4'-C5'-O5'

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 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
59	GTP	w	801	35,60	26,34,34	1.13	2 (7%)	32,54,54	1.56	7 (21%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
59	GTP	w	801	35,60	-	5/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	w	801	GTP	C5-C6	-3.97	1.39	1.47
59	w	801	GTP	C2-N3	2.11	1.38	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	w	801	GTP	PA-O3A-PB	-3.29	121.53	132.83
59	w	801	GTP	C5-C6-N1	3.29	119.76	113.95
59	w	801	GTP	C8-N7-C5	3.07	108.83	102.99
59	w	801	GTP	C2-N1-C6	-2.92	119.73	125.10
59	w	801	GTP	C3'-C2'-C1'	2.82	105.23	100.98
59	w	801	GTP	PB-O3B-PG	-2.70	123.56	132.83
59	w	801	GTP	O6-C6-C5	-2.12	120.24	124.37

There are no chirality outliers.

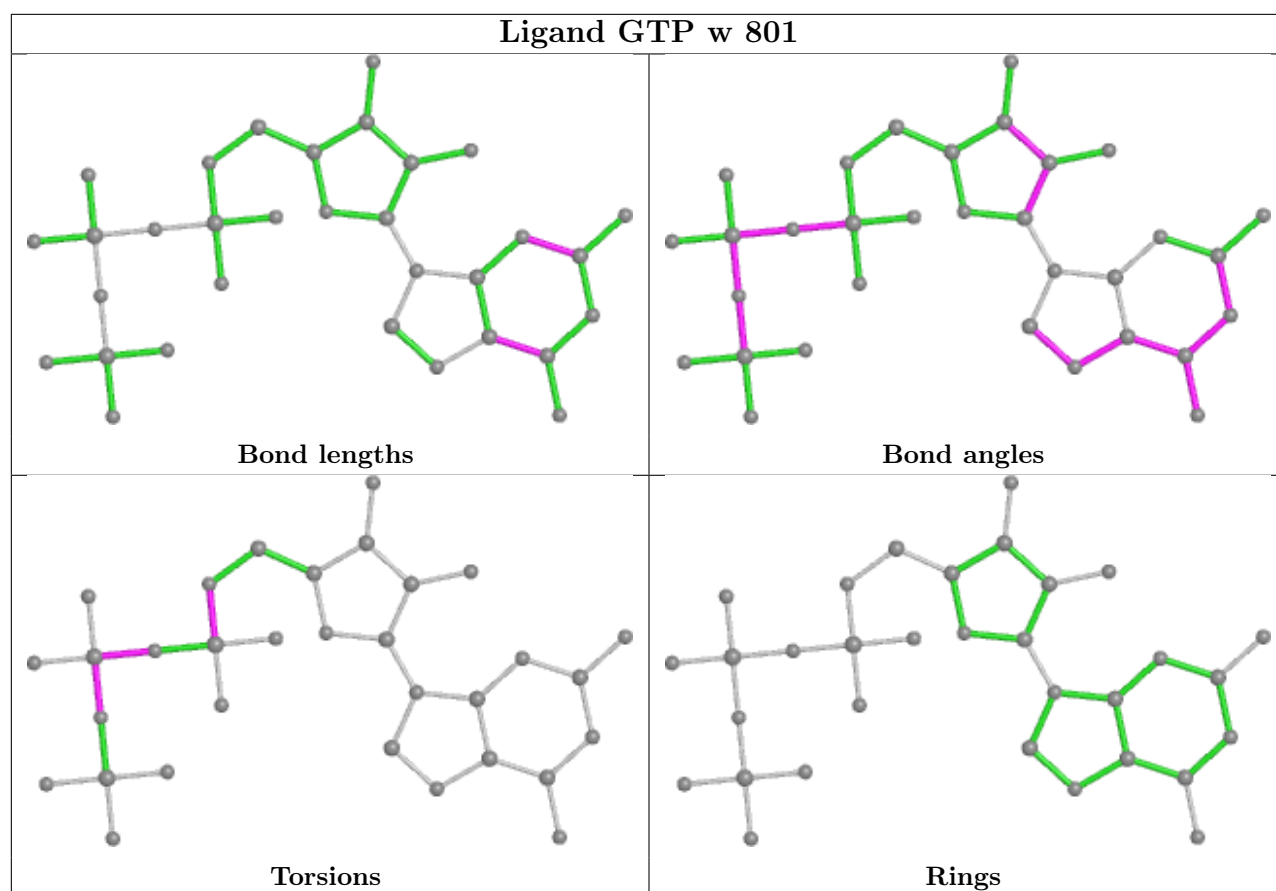
All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
59	w	801	GTP	C5'-O5'-PA-O3A
59	w	801	GTP	PA-O3A-PB-O1B
59	w	801	GTP	C5'-O5'-PA-O2A
59	w	801	GTP	PG-O3B-PB-O3A
59	w	801	GTP	PG-O3B-PB-O2B

There are no ring outliers.

No monomer is involved in short contacts.

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



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

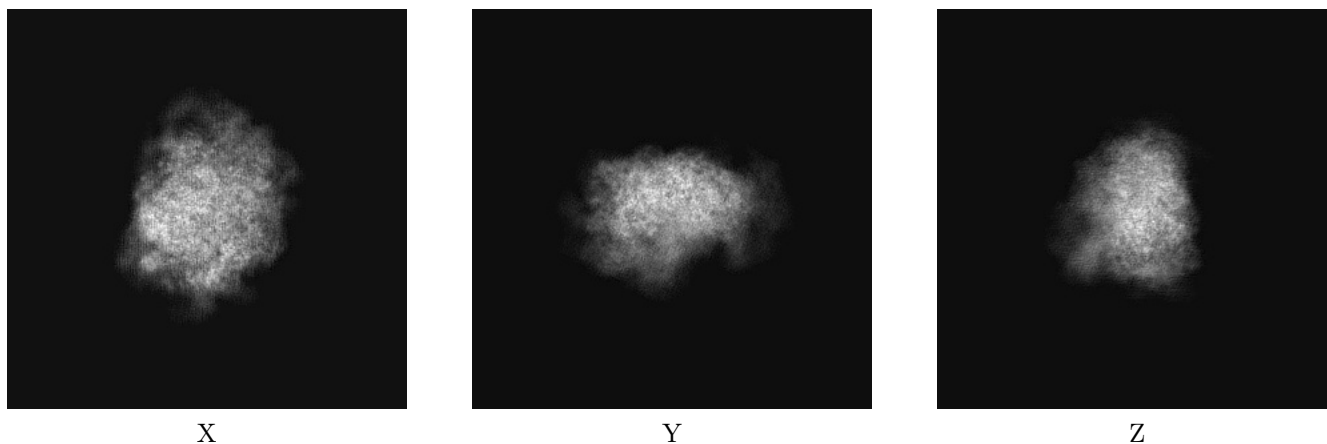
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35649. These allow visual inspection of the internal detail of the map and identification of artifacts.

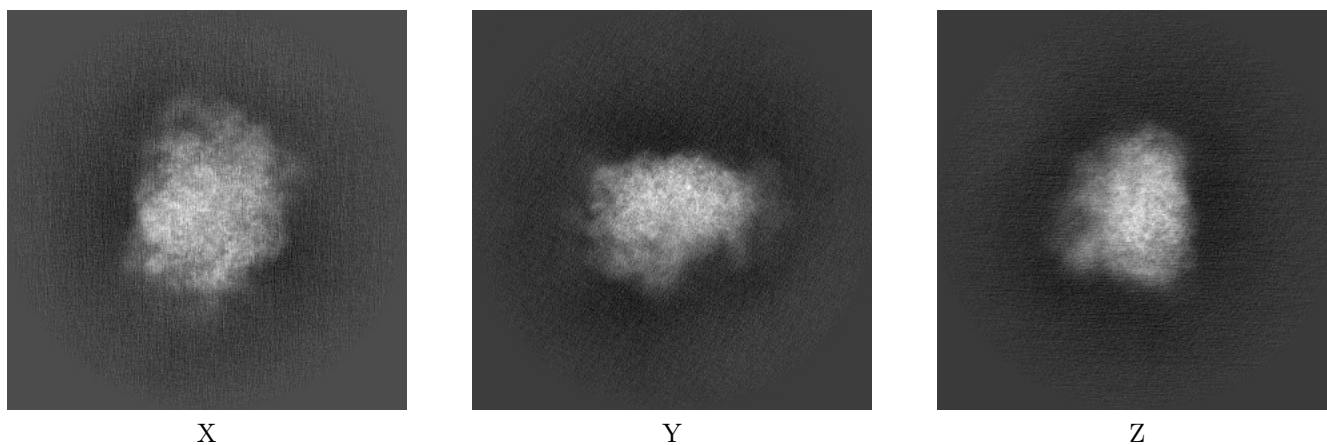
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

#### 6.1.1 Primary map



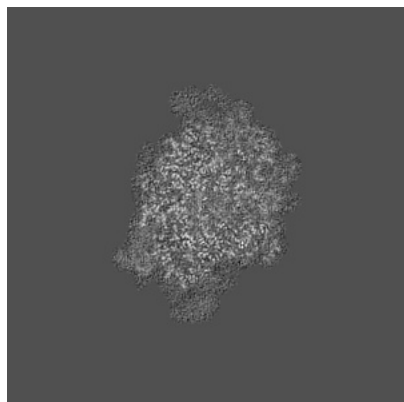
#### 6.1.2 Raw map



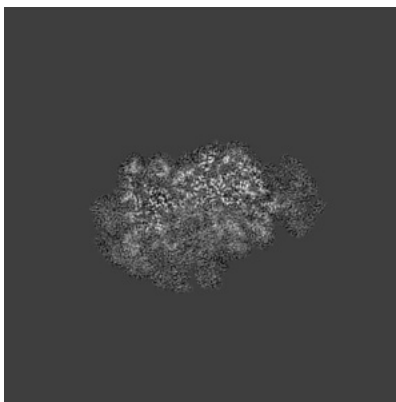
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

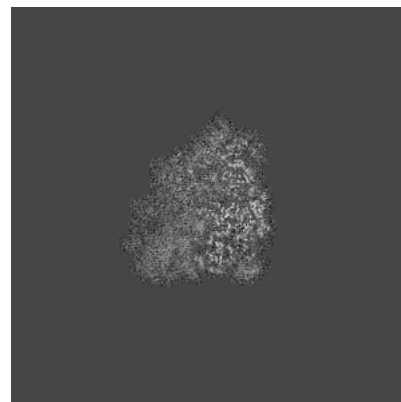
### 6.2.1 Primary map



X Index: 200

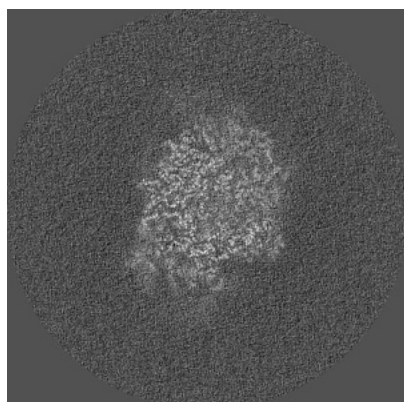


Y Index: 200

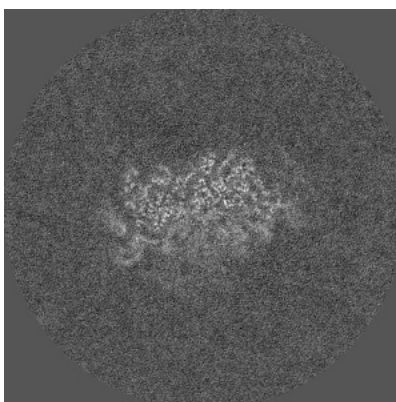


Z Index: 200

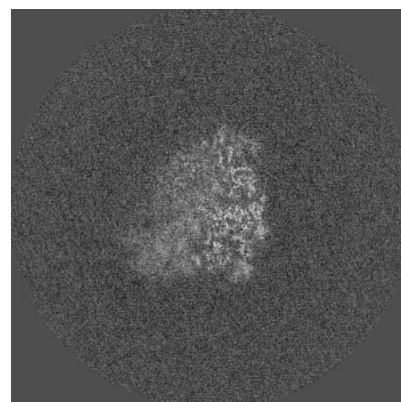
### 6.2.2 Raw map



X Index: 200



Y Index: 200



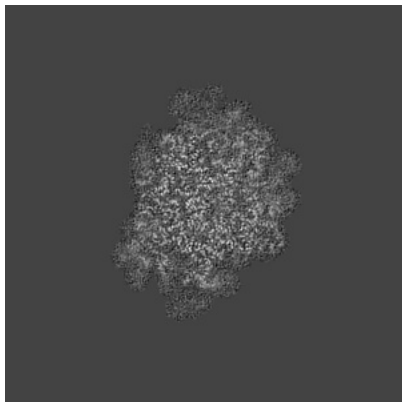
Z Index: 200

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

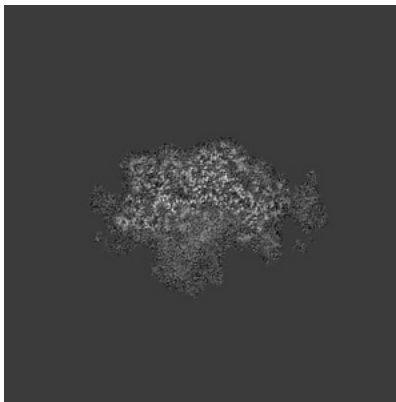


## 6.3 Largest variance slices [i](#)

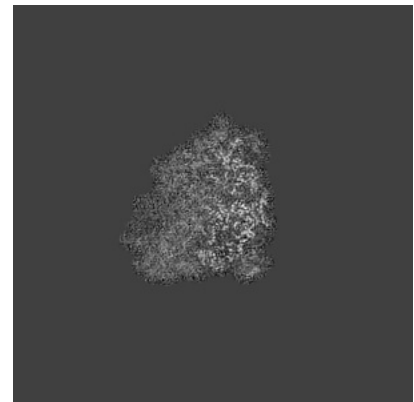
### 6.3.1 Primary map



X Index: 207

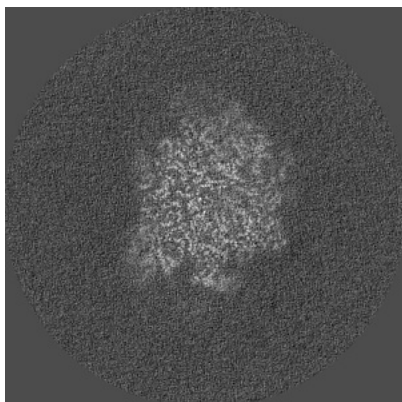


Y Index: 181

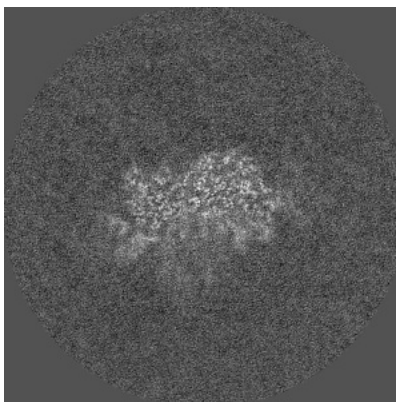


Z Index: 198

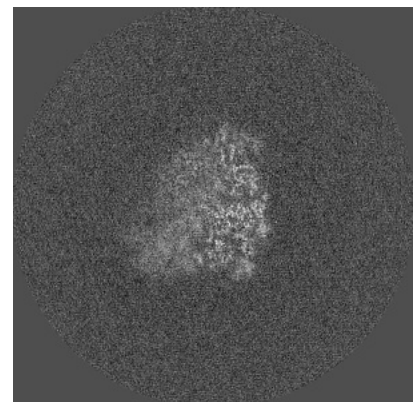
### 6.3.2 Raw map



X Index: 205



Y Index: 199



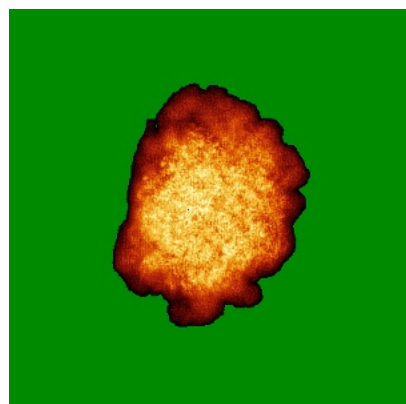
Z Index: 200

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

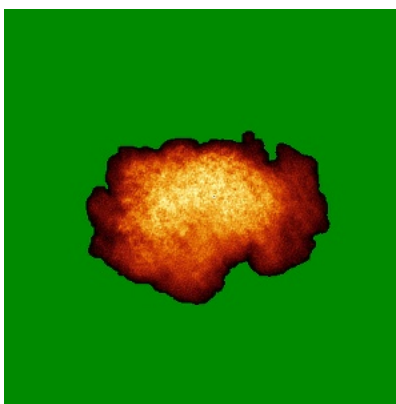


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

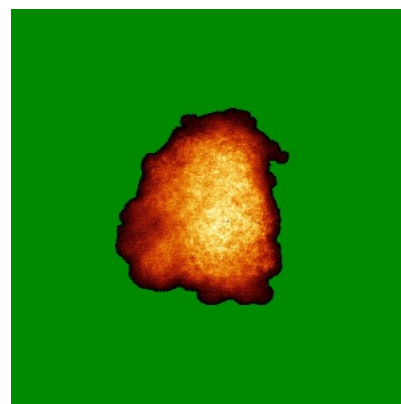
### 6.4.1 Primary map



X

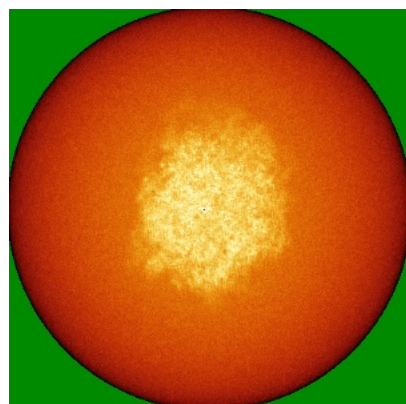


Y

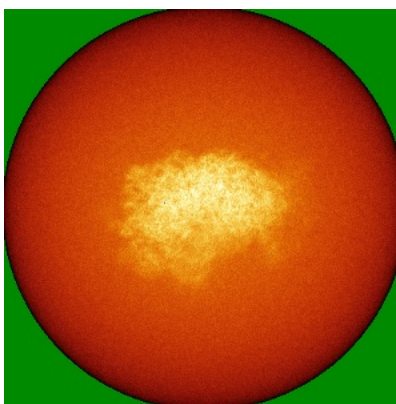


Z

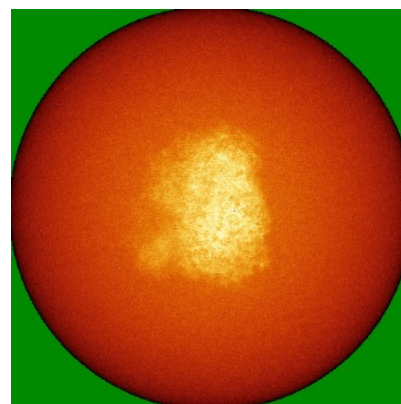
### 6.4.2 Raw map



X



Y

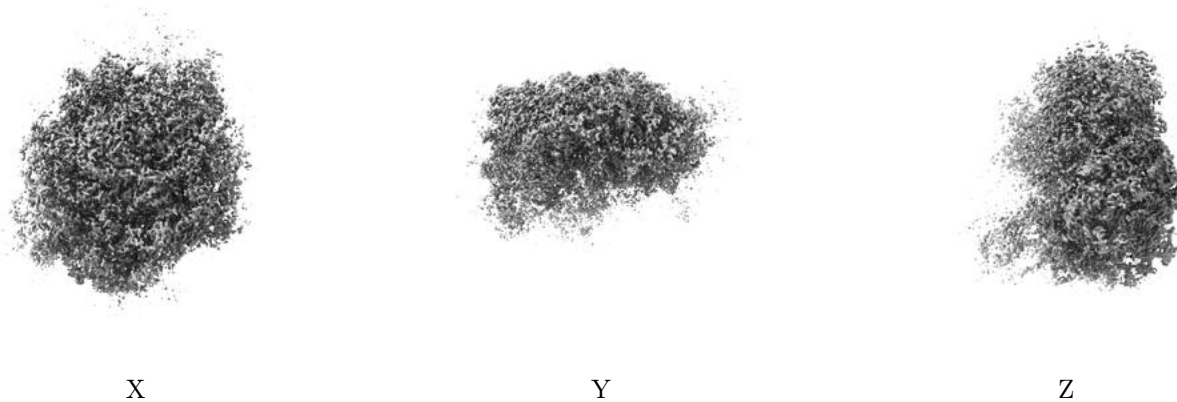


Z

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

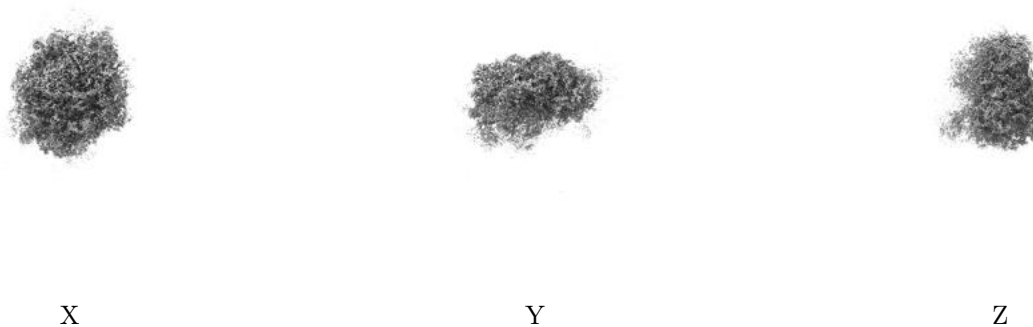
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



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.

### 6.5.2 Raw map



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

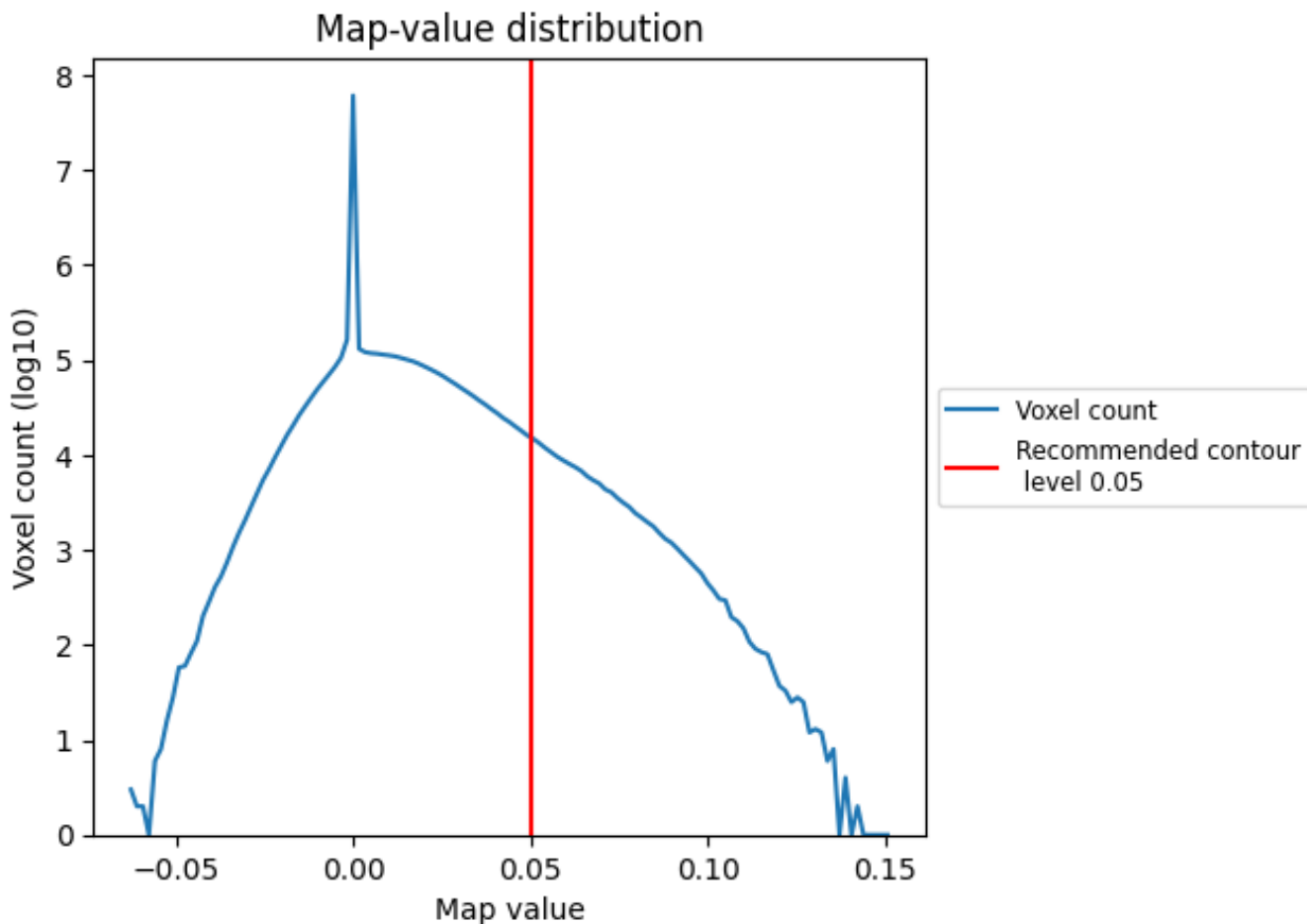
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

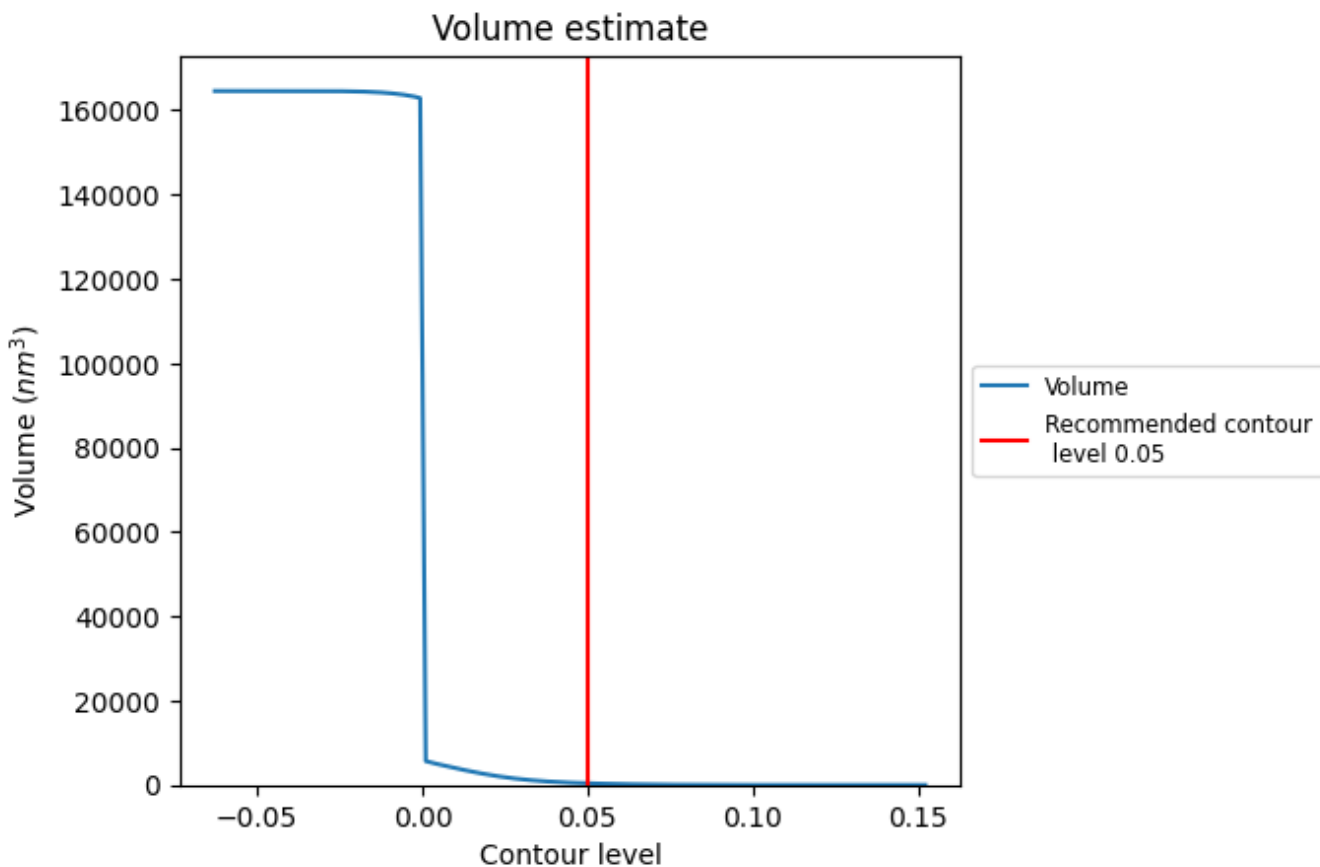
This section contains the results of statistical analysis of the map.

### 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.

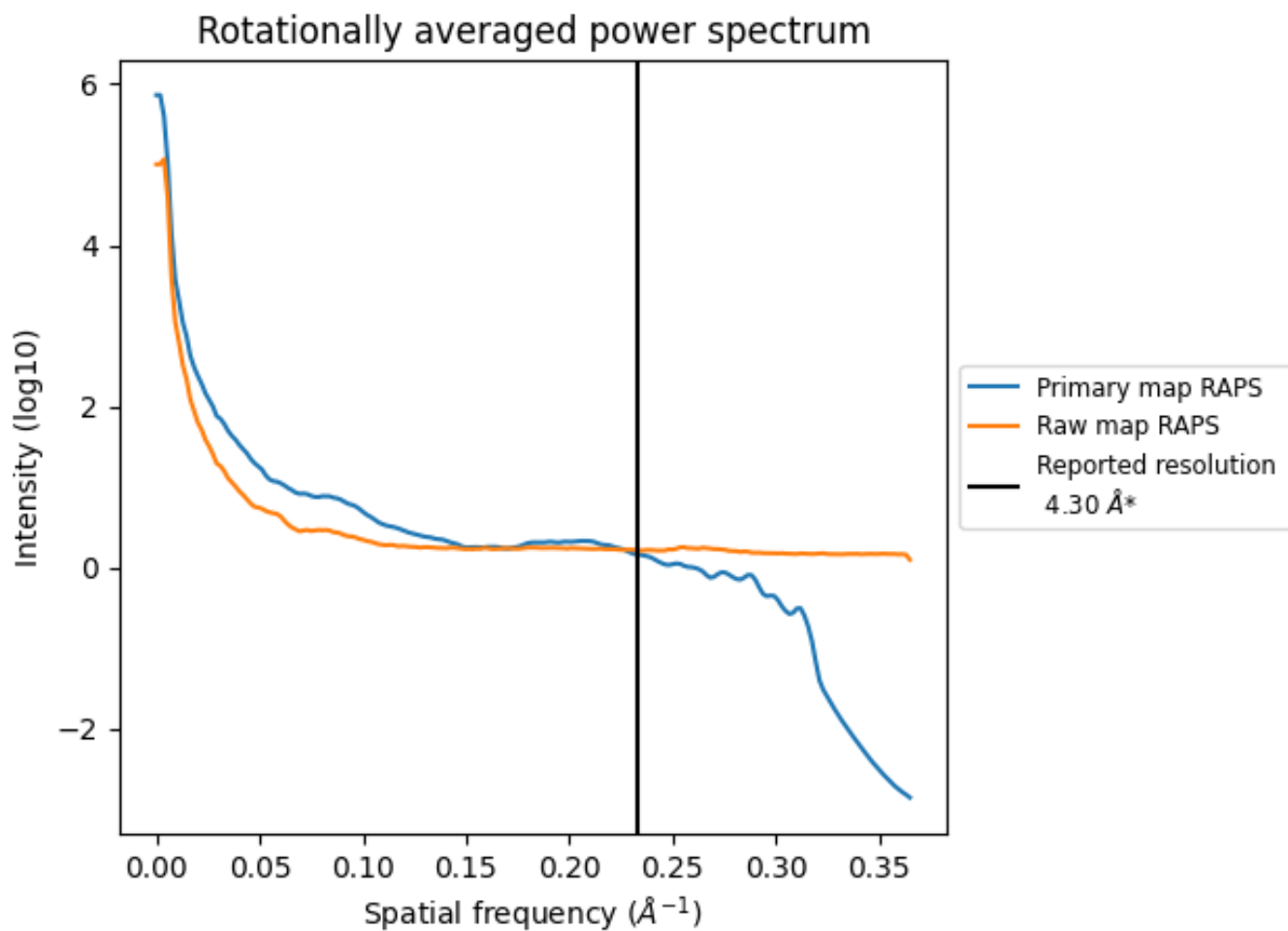
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 388 nm<sup>3</sup>; this corresponds to an approximate mass of 351 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

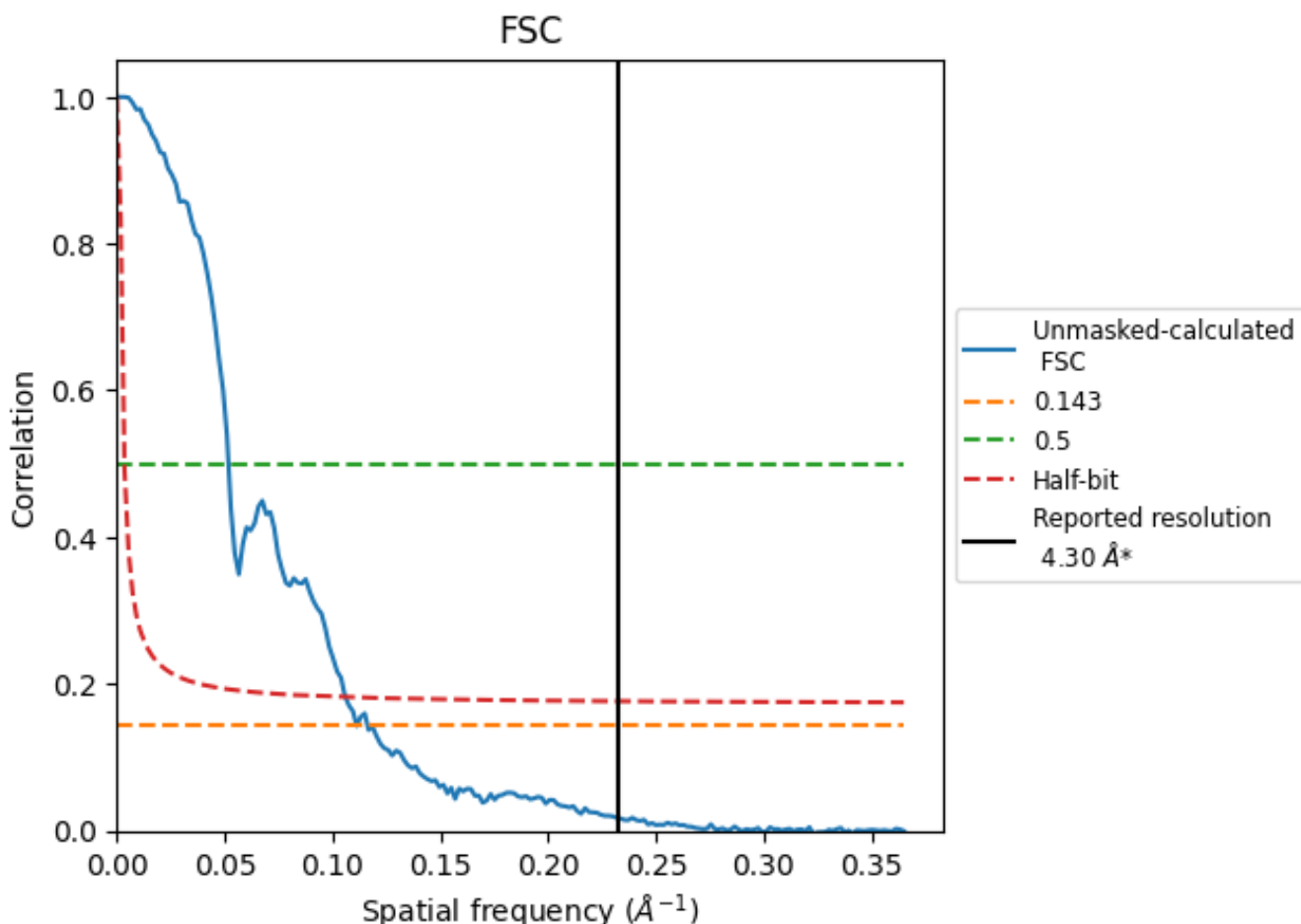


\*Reported resolution corresponds to spatial frequency of  $0.233 \text{ \AA}^{-1}$

## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.233 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

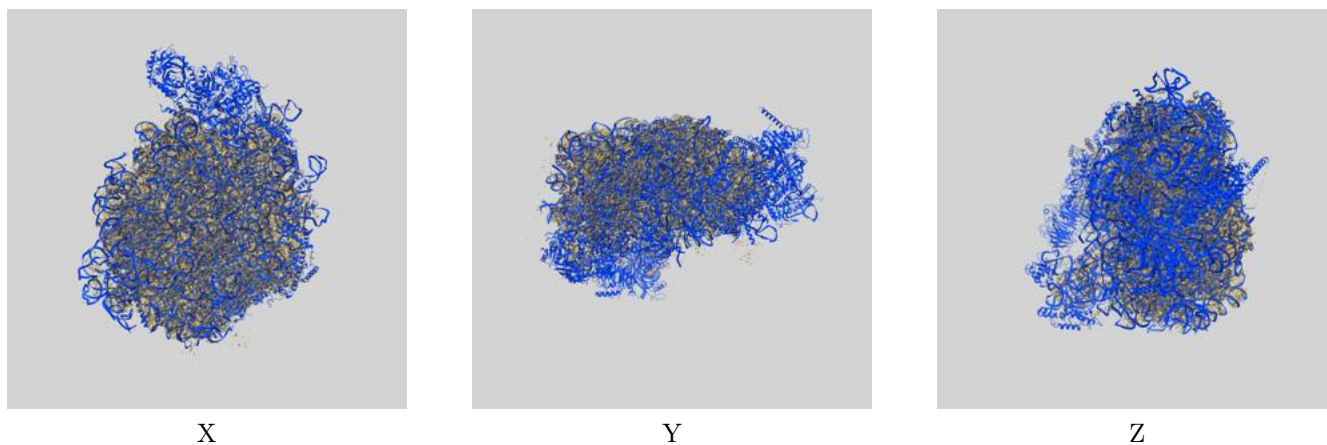
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	8.98	19.31	9.43

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 8.98 differs from the reported value 4.3 by more than 10 %

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

This section contains information regarding the fit between EMDB map EMD-35649 and PDB model 8IPX. Per-residue inclusion information can be found in section 3 on page 15.

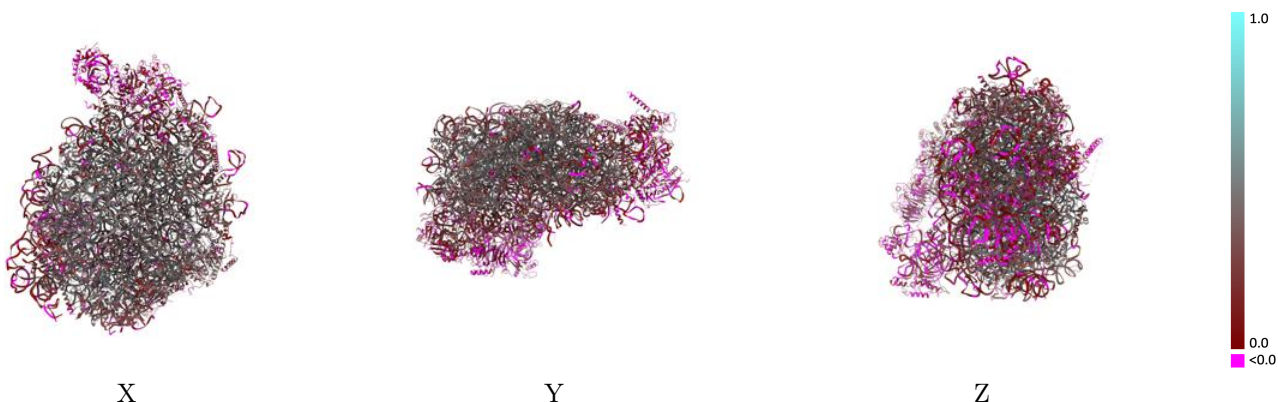
### 9.1 Map-model overlay [i](#)



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.

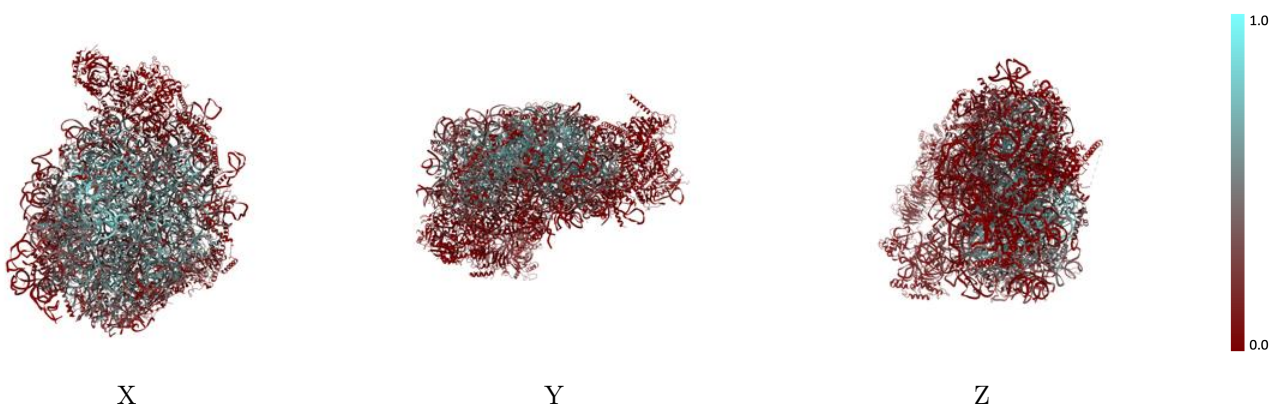


## 9.2 Q-score mapped to coordinate model [i](#)



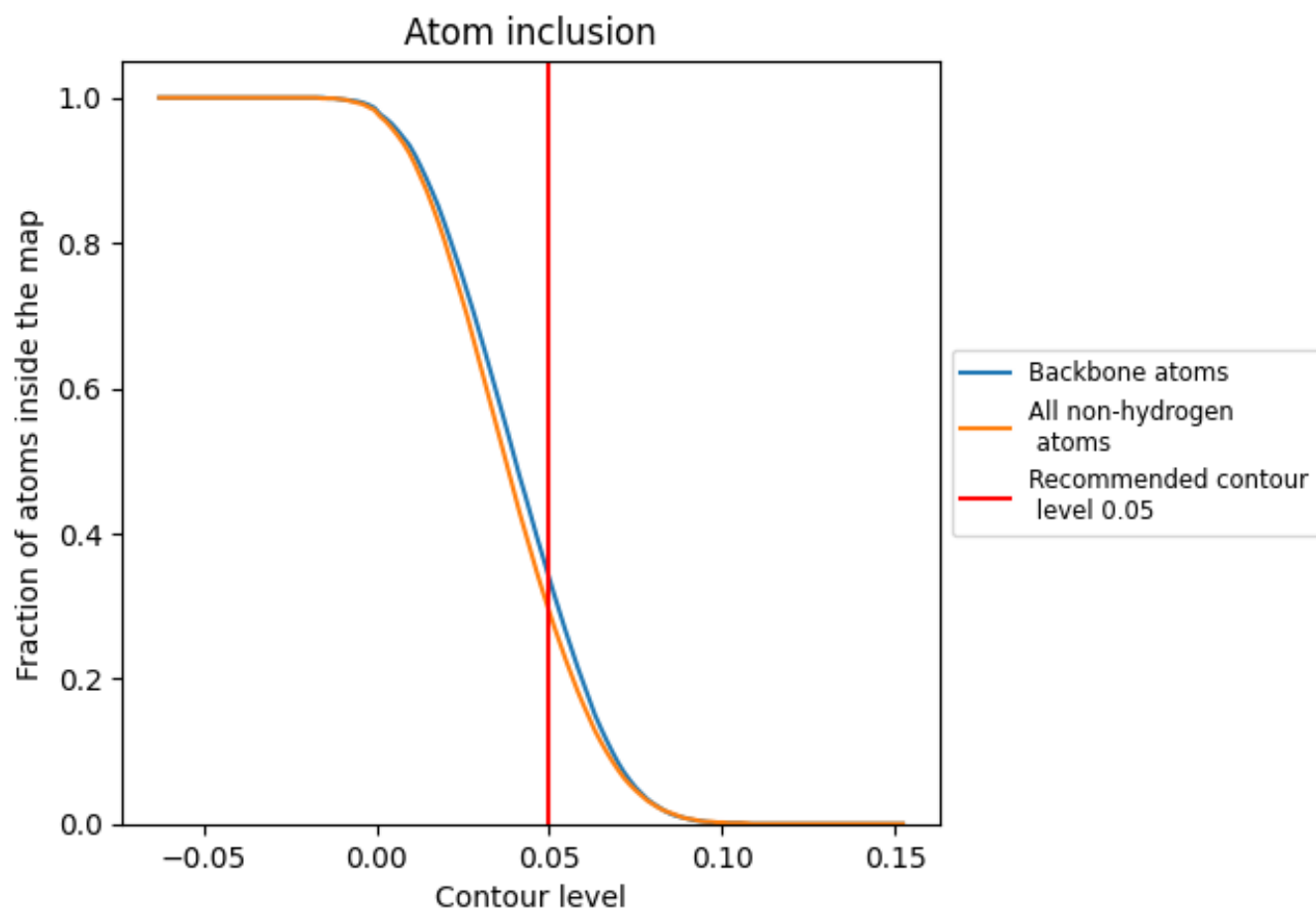
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.05).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 34% of all backbone atoms, 29% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

















































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

Chain	Atom inclusion	Q-score
All	 0.2920	 0.2920
1	 0.0010	 0.1020
2	 0.3950	 0.3190
3	 0.0950	 0.1160
4	 0.1000	 0.2600
6	 0.1430	 0.2940
7	 0.2360	 0.3640
8	 0.5910	 0.4070
9	 0.0220	 0.1700
A	 0.0470	 0.2120
B	 0.3730	 0.4160
C	 0.0010	 0.0130
D	 0.4580	 0.4280
E	 0.0670	 0.2370
F	 0.2420	 0.3550
G	 0.1610	 0.2710
H	 0.3360	 0.3750
I	 0.2290	 0.3480
J	 0.0340	 0.2070
K	 0.2470	 0.3340
L	 0.3710	 0.4000
M	 0.5040	 0.4210
N	 0.0000	 0.0090
O	 0.1290	 0.2870
P	 0.4820	 0.4440
Q	 0.3040	 0.3510
R	 0.0030	 0.0200
S	 0.3320	 0.3800
T	 0.0700	 0.1290
U	 0.4170	 0.4160
V	 0.4510	 0.4200
W	 0.0000	 0.0380
X	 0.1380	 0.2790
Y	 0.4360	 0.4010
Z	 0.4340	 0.4410



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Chain	Atom inclusion	Q-score
a	 0.2390	 0.3490
b	 0.3490	 0.4060
d	 0.1830	 0.3170
e	 0.2930	 0.3910
f	 0.0020	 0.1560
g	 0.2730	 0.3340
h	 0.4110	 0.3970
i	 0.0780	 0.2720
j	 0.3390	 0.3860
k	 0.4790	 0.4390
l	 0.4290	 0.4270
m	 0.0950	 0.2830
n	 0.4890	 0.4640
o	 0.2200	 0.3260
p	 0.4030	 0.4040
q	 0.0140	 0.1640
r	 0.0000	 0.0710
t	 0.0010	 0.0740
u	 0.0220	 0.1340
v	 0.0090	 0.1390
w	 0.0350	 0.2120
x	 0.0000	 0.0240
y	 0.0060	 0.0830
z	 0.0650	 0.2300