Full wwPDB EM Validation Report ⓘ

Apr 16, 2024 – 01:48 pm BST

PDB ID	:	8CKU
EMDB ID	:	EMD-16702
Title	:	Translocation intermediate 1 (TI-1*) of 80S S. cerevisiae ribosome with ligands and eEF2 in the absence of sordarin
Authors	:	Milicevic, N.; Jenner, L.; Myasnikov, A.; Yusupov, M.; Yusupova, G.
Deposited on	:	2023-02-16
Resolution	:	3.11 Å(reported)

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

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

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

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

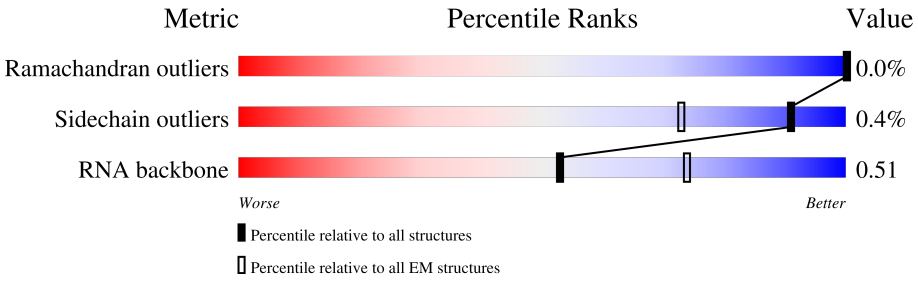
EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 3.11 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 >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Mol	Chain	Length	Quality of chain
1	0	135	99%
2	1	108	65% 35%
3	2	119	81% 18%
4	3	82	99%
5	4	67	93% 6%
6	5	56	95% 5%
7	6	63	83% 16%
8	7	319	100%
9	8	152	22% 76%

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Mol	Chain	Length	Quality of chain
10	A	199	98%
11	AA	3396	75% 18% 6%
12	Aa	842	99%
13	B	184	83% 16%
14	BB	121	91% 9%
15	Bb	76	51% 46%
16	C	186	99%
17	CC	158	82% 18%
18	Cc	77	66% 30%
19	D	189	93% 7%
20	DD	312	63% 36%
21	Dd	39	26% 8% 67%
22	E	172	100%
23	EE	254	99%
24	Ee	165	95%
25	F	160	99%
26	FF	387	99%
27	G	121	79% 20%
28	GG	362	100%
29	H	137	94% 6%
30	HH	297	100%
31	I	155	39% 59%
32	II	176	88% 12%
33	J	142	85% 15%
34	JJ	244	91% 9%

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Mol	Chain	Length	Quality of chain
35	K	127	97%
36	KK	256	91% 9%
37	L	136	98%
38	LL	191	99%
39	M	149	99%
40	MM	221	97%
41	N	59	98%
42	NN	174	97%
43	O	105	92% 8%
44	OO	199	95%
45	P	113	96%
46	PP	138	99%
47	Q	130	98%
48	QQ	204	99%
49	R	107	99%
50	S	121	90% 10%
51	T	120	99%
52	U	100	99%
53	V	88	95% 5%
54	W	78	99%
55	X	51	98%
56	Y	128	41% 59%
57	Z	25	96%
58	a	106	94%
59	b	92	99%

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Mol	Chain	Length	Quality of chain
60	c	1800	67% 21% 11%
61	d	252	81% 18%
62	e	255	83% 17%
63	f	254	85% 15%
64	g	240	86% 14%
65	h	261	98%
66	i	225	88% 12%
67	j	236	92% 7%
68	k	190	97%
69	l	200	92% 8%
70	m	197	94% 6%
71	n	105	85% 13%
72	o	156	90% 9%
73	p	151	98%
74	q	137	93% 7%
75	r	142	73% 27%
76	s	143	94%
77	t	136	88% 11%
78	u	146	98%
79	v	144	99%
80	w	121	83% 17%
81	x	87	100%
82	y	130	99%
83	z	145	98%

2 Entry composition

There are 89 unique types of molecules in this entry. The entry contains 207340 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	0	134	1073	676	208	189	0	0

- Molecule 2 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	1	70	563	360	104	99	0	0

- Molecule 3 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	97	769	475	160	129	5	0	0

- Molecule 4 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	81	610	382	110	113	5	0	0

- Molecule 5 is a protein called 40S ribosomal protein S28-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	63	497	306	99	91	1	0	0

- Molecule 6 is a protein called HLJ1_G0030400.mRNA.1.CDS.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	5	53	442	274	92	72	4	0	0

- Molecule 7 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	53	Total	C	N	O	S	0	0
			427	269	88	69	1		

- Molecule 8 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	7	318	Total	C	N	O	S	0	0
			2436	1541	418	469	8		

- Molecule 9 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	8	36	Total	C	N	O	S	0	0
			276	173	54	45	4		

- Molecule 10 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	A	197	Total	C	N	O	S	0	0
			1555	1003	289	262	1		

- Molecule 11 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AA	3190	Total	C	N	O	P	0	0
			68285	30524	12313	22258	3190		

- Molecule 12 is a protein called Elongation factor 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	Aa	842	Total	C	N	O	S	0	0
			6569	4173	1126	1239	31		

- Molecule 13 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	B	154	Total	C	N	O	0	0
			1222	761	237	224		

- Molecule 14 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	BB	121	Total	C	N	O	P	0	0
			2579	1152	461	845	121		

- Molecule 15 is a RNA chain called Transfer RNA Phe.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	Bb	76	Total	C	N	O	P	0	0
			1638	736	294	533	75		

- Molecule 16 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	C	185	Total	C	N	O	S	0	0
			1441	908	290	241	2		

- Molecule 17 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	CC	158	Total	C	N	O	P	0	0
			3353	1500	586	1109	158		

- Molecule 18 is a RNA chain called Transfer RNA fMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Cc	77	Total	C	N	O	P	0	0
			1644	732	298	537	77		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Cc	18	C	U	conflict	GB 170517292

- Molecule 19 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	D	176	Total	C	N	O	0	0
			1423	875	308	240		

- Molecule 20 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	DD	200	Total	C	N	O	S	0	0
			1551	994	269	284	4		

- Molecule 21 is a RNA chain called Messenger RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Dd	13	Total	C	N	O	P	0	0
			278	125	50	90	13		

- Molecule 22 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	E	172	Total	C	N	O	S	0	0
			1445	930	267	244	4		

- Molecule 23 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	EE	252	Total	C	N	O	S	0	0
			1914	1191	388	334	1		

- Molecule 24 is a protein called 60S ribosomal protein L12-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Ee	160	Total	C	N	O	S	0	0
			1211	759	218	232	2		

- Molecule 25 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	F	159	Total	C	N	O	S	0	0
			1276	805	246	221	4		

- Molecule 26 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	FF	386	Total	C	N	O	S	0	0
			3075	1950	584	533	8		

- Molecule 27 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	G	97	Total	C	N	O	0	0
			770	499	126	145		

- Molecule 28 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	GG	361	Total	C	N	O	S	0	0
			2748	1729	522	494	3		

- Molecule 29 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	H	129	Total	C	N	O	S	0	0
			963	607	180	169	7		

- Molecule 30 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	HH	296	Total	C	N	O	S	0	0
			2375	1501	414	458	2		

- Molecule 31 is a protein called 60S ribosomal protein L24-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	I	63	Total	C	N	O	S	0	0
			521	336	102	82	1		

- Molecule 32 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	II	155	Total	C	N	O	S	0	0
			1230	795	221	213	1		

- Molecule 33 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	J	120	Total	C	N	O	S	0	0
			959	617	168	172	2		

- Molecule 34 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	JJ	222	Total	C	N	O	S	0	0
			1784	1151	324	308	1		

- Molecule 35 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	K	126	Total	C	N	O	0	0
			993	625	192	176		

- Molecule 36 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	KK	233	Total	C	N	O	S	0	0
			1804	1151	323	327	3		

- Molecule 37 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	L	135	Total	C	N	O	0	0
			1092	710	202	180		

- Molecule 38 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	LL	191	Total	C	N	O	S	0	0
			1518	963	274	277	4		

- Molecule 39 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	M	148	Total	C	N	O	S	0	0
			1173	749	231	190	3		

- Molecule 40 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	MM	215	Total	C	N	O	S	0	0
			1743	1102	331	303	7		

- Molecule 41 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	N	58	Total 462	C 289	N 100	O 73	0	0

- Molecule 42 is a protein called 60S ribosomal protein L11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	NN	169	Total 1353	C 847	N 253	O 249	S 4	0	0

- Molecule 43 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	O	97	Total 742	C 479	N 124	O 138	S 1	0	0

- Molecule 44 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
44	OO	193	Total 1543	C 962	N 315	O 266	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
45	P	109	Total 883	C 559	N 167	O 156	S 1	0	0

- Molecule 46 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	PP	136	Total 1053	C 675	N 199	O 177	S 2	0	0

- Molecule 47 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Q	127	Total 1020	C 647	N 205	O 167	S 1	0	0

- Molecule 48 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	QQ	203	Total	C	N	O	S	0	0
			1720	1077	361	281	1		

- Molecule 49 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	R	106	Total	C	N	O	S	0	0
			850	540	165	144	1		

- Molecule 50 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	S	109	Total	C	N	O	S	0	0
			861	533	175	149	4		

- Molecule 51 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	T	119	Total	C	N	O	S	0	0
			969	615	186	167	1		

- Molecule 52 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	U	99	Total	C	N	O	S	0	0
			771	481	156	132	2		

- Molecule 53 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	V	84	Total	C	N	O	S	0	0
			665	405	145	110	5		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
54	W	77	Total	C	N	O	0	0
			612	391	115	106		

- Molecule 55 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	X	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 56 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	Y	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 57 is a protein called RPL41A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	Z	25	Total	C	N	O	S	0	0
			233	142	63	27	1		

- Molecule 58 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	a	102	Total	C	N	O	S	0	0
			819	514	166	134	5		

- Molecule 59 is a protein called 60S ribosomal protein L43-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	b	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 60 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	c	1604	Total	C	N	O	P	0	0
			34236	15322	6079	11231	1604		

- Molecule 61 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	d	206	Total	C	N	O	S	0	0
			1583	1017	281	283	2		

- Molecule 62 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	e	212	Total	C	N	O	S	0	0
			1689	1073	303	309	4		

- Molecule 63 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	f	217	Total	C	N	O	S	0	0
			1635	1047	289	297	2		

- Molecule 64 is a protein called RPS3 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	g	206	Total	C	N	O	S	0	0
			1601	1014	294	287	6		

- Molecule 65 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	h	258	Total	C	N	O	S	0	0
			2056	1308	387	358	3		

- Molecule 66 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	i	199	Total	C	N	O	S	0	0
			1572	987	290	292	3		

- Molecule 67 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	j	219	Total	C	N	O	S	0	0
			1766	1108	341	314	3		

- Molecule 68 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
68	k	184	Total	C	N	O	0	0
			1481	951	265	265		

- Molecule 69 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	l	184	Total	C	N	O	S	0	0
			1457	906	291	258	2		

- Molecule 70 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	m	185	Total	C	N	O	S	0	0
			1494	943	289	261	1		

- Molecule 71 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	n	91	Total	C	N	O	S	0	0
			772	503	123	144	2		

- Molecule 72 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	o	142	Total	C	N	O	S	0	0
			1146	735	217	191	3		

- Molecule 73 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	p	150	Total	C	N	O	S	0	0
			1192	759	224	207	2		

- Molecule 74 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	q	127	Total	C	N	O	S	0	0
			891	545	182	163	1		

- Molecule 75 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	r	104	Total	C	N	O	S	0	0
			837	533	155	143	6		

- Molecule 76 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
76	s	137	Total	C	N	O	0	0
			1080	692	199	189		

- Molecule 77 is a protein called 40S ribosomal protein S17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	t	121	Total	C	N	O	S	0	0
			961	599	182	178	2		

- Molecule 78 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	u	145	Total	C	N	O	S	0	0
			1192	743	237	210	2		

- Molecule 79 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	v	143	Total	C	N	O	S	0	0
			1112	694	208	208	2		

- Molecule 80 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	w	100	Total	C	N	O	S	0	0
			800	509	144	146	1		

- Molecule 81 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	x	87	Total	C	N	O	S	0	0
			684	420	125	137	2		

- Molecule 82 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	y	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 83 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	z	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 84 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
84	2	1	Total	Zn	0
			1	1	
84	5	1	Total	Zn	0
			1	1	
84	8	1	Total	Zn	0
			1	1	
84	S	1	Total	Zn	0
			1	1	
84	V	1	Total	Zn	0
			1	1	
84	Y	1	Total	Zn	0
			1	1	
84	a	1	Total	Zn	0
			1	1	
84	b	1	Total	Zn	0
			1	1	

- Molecule 85 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
85	AA	157	Total	Mg	0
			157	157	
85	Aa	1	Total	Mg	0
			1	1	
85	B	1	Total	Mg	0
			1	1	
85	BB	3	Total	Mg	0
			3	3	
85	Bb	1	Total	Mg	0
			1	1	
85	CC	2	Total	Mg	0
			2	2	
85	D	1	Total	Mg	0
			1	1	
85	EE	1	Total	Mg	0
			1	1	
85	F	1	Total	Mg	0
			1	1	

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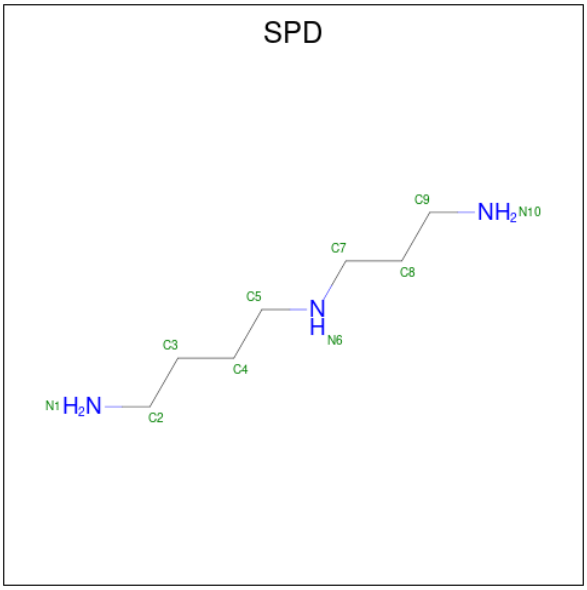
Mol	Chain	Residues	Atoms	AltConf
85	FF	1	Total Mg 1 1	0
85	H	1	Total Mg 1 1	0
85	c	35	Total Mg 35 35	0

- Molecule 86 is POTASSIUM ION (three-letter code: K) (formula: K).

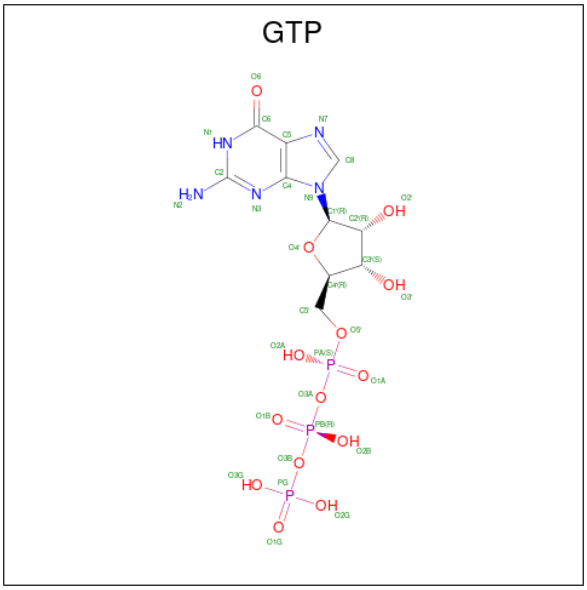
Mol	Chain	Residues	Atoms	AltConf
86	AA	10	Total K 10 10	0
86	BB	1	Total K 1 1	0
86	Dd	1	Total K 1 1	0
86	EE	1	Total K 1 1	0
86	MM	1	Total K 1 1	0
86	Q	1	Total K 1 1	0
86	c	1	Total K 1 1	0

- Molecule 87 is SPERMIDINE (three-letter code: SPD) (formula: $C_7H_{19}N_3$).



Mol	Chain	Residues	Atoms	AltConf
87	AA	1	Total C N 10 7 3	0
87	AA	1	Total C N 10 7 3	0
87	c	1	Total C N 10 7 3	0

- Molecule 88 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



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

- Molecule 89 is water.

Mol	Chain	Residues	Atoms	AltConf
89	2	1	Total O 1 1	0
89	AA	258	Total O 258 258	0
89	Aa	1	Total O 1 1	0
89	B	2	Total O 2 2	0
89	BB	4	Total O 4 4	0

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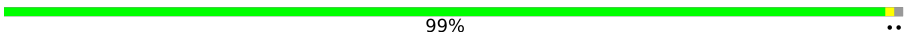
Mol	Chain	Residues	Atoms	AltConf
89	CC	3	Total O 3 3	0
89	Cc	1	Total O 1 1	0
89	F	4	Total O 4 4	0
89	FF	3	Total O 3 3	0
89	GG	1	Total O 1 1	0
89	M	1	Total O 1 1	0
89	Q	2	Total O 2 2	0
89	QQ	1	Total O 1 1	0
89	S	1	Total O 1 1	0
89	V	2	Total O 2 2	0
89	a	1	Total O 1 1	0
89	c	53	Total O 53 53	0
89	p	1	Total O 1 1	0
89	q	2	Total O 2 2	0

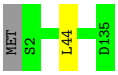
3 Residue-property plots (i)

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. 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. 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: 40S ribosomal protein S24-A

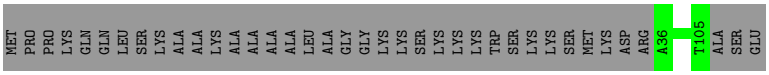
Chain 0:





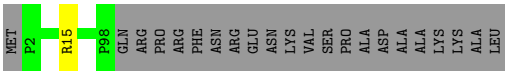
• Molecule 2: 40S ribosomal protein S25-A

Chain 1:



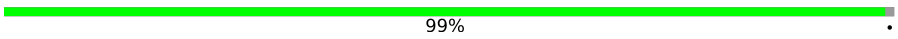
• Molecule 3: 40S ribosomal protein S26

Chain 2:



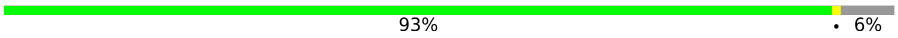
• Molecule 4: 40S ribosomal protein S27-A

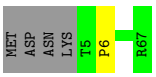
Chain 3:



• Molecule 5: 40S ribosomal protein S28-A

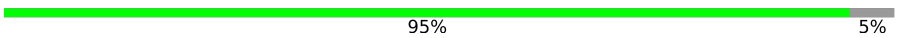
Chain 4:

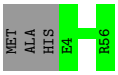




• Molecule 6: HLJ1_G0030400.mRNA.1.CDS.1

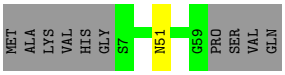
Chain 5:





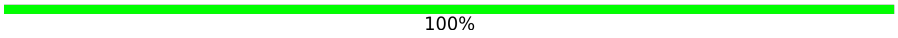
• Molecule 7: 40S ribosomal protein S30-A

Chain 6:



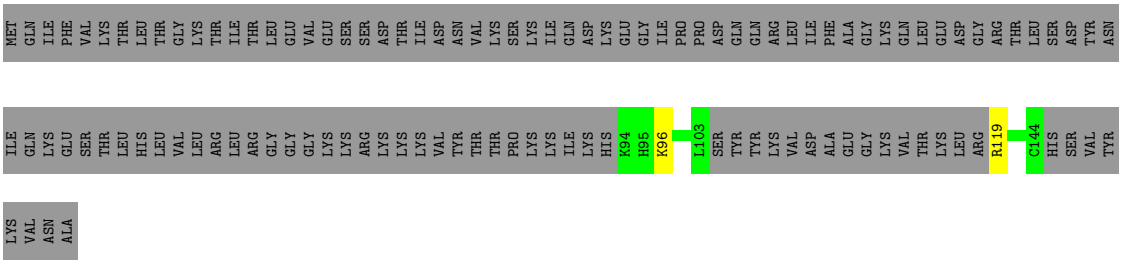
• Molecule 8: Guanine nucleotide-binding protein subunit beta-like protein

Chain 7:



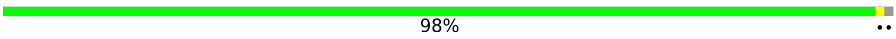
• Molecule 9: Ubiquitin-40S ribosomal protein S31

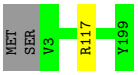
Chain 8:



• Molecule 10: 60S ribosomal protein L16-A

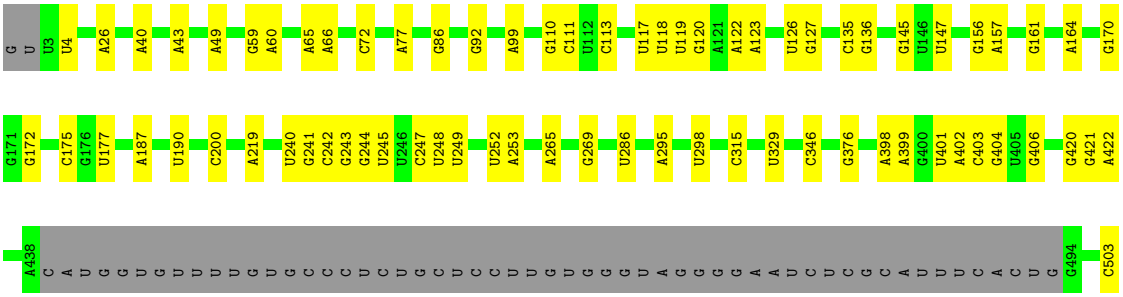
Chain A:

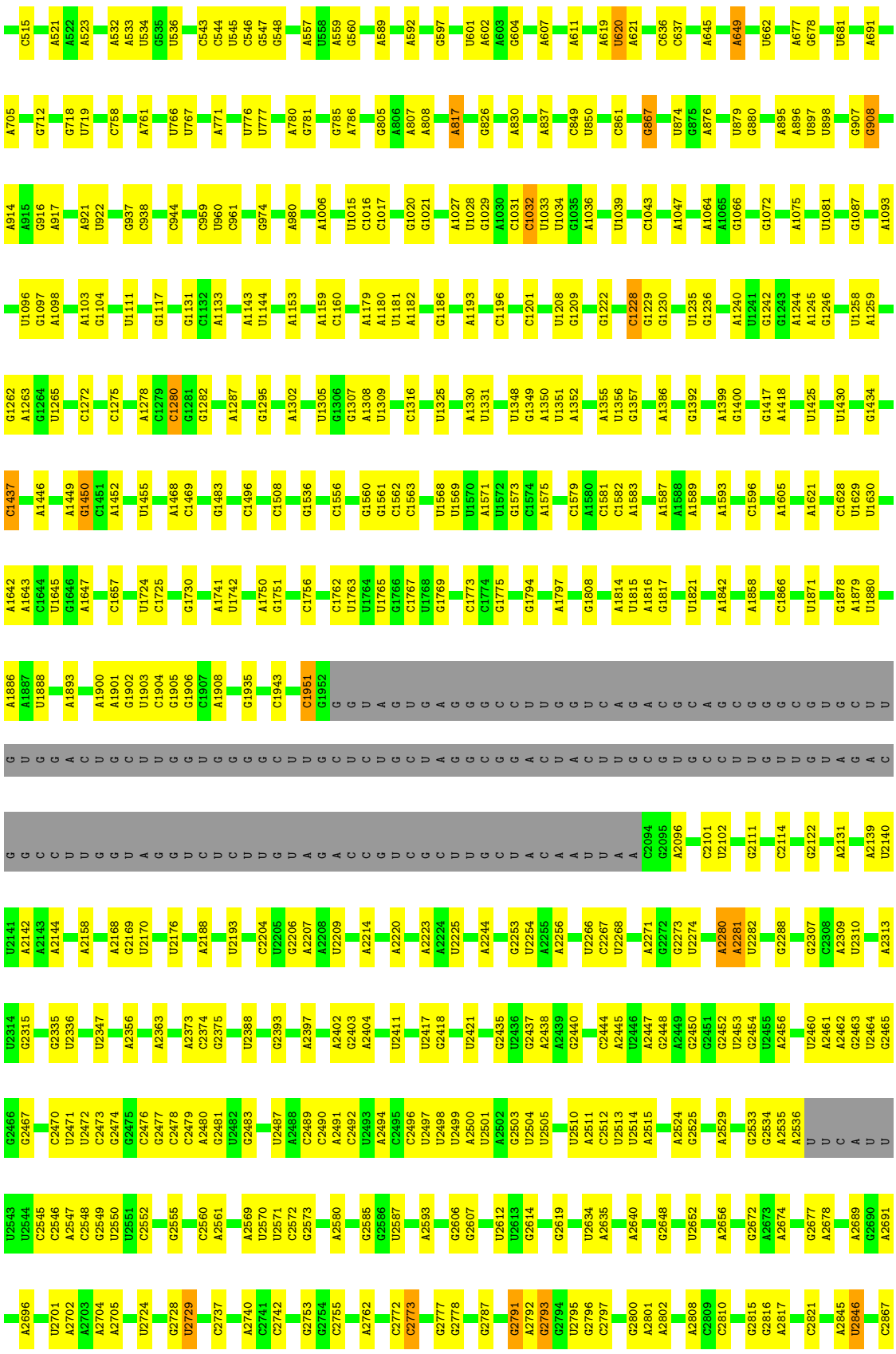


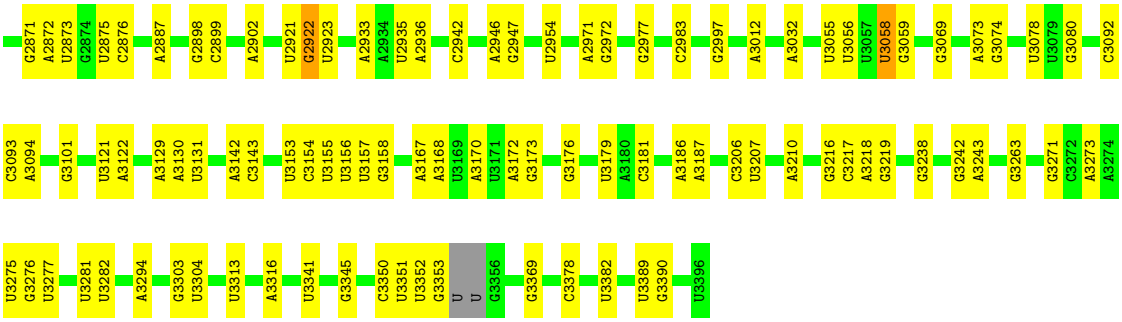


• Molecule 11: 25S ribosomal RNA

Chain AA:

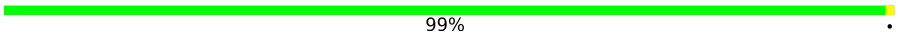






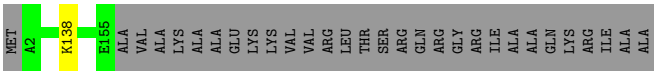
• Molecule 12: Elongation factor 2

Chain Aa:



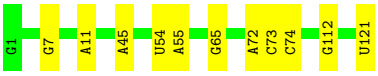
• Molecule 13: 60S ribosomal protein L17-A

Chain B:



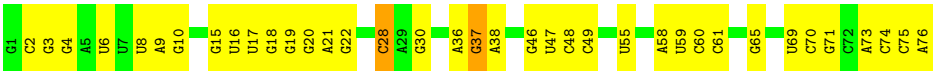
• Molecule 14: 5S ribosomal RNA

Chain BB:



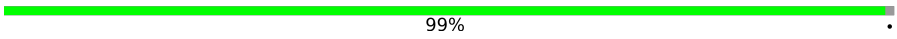
• Molecule 15: Transfer RNA Phe

Chain Bb:



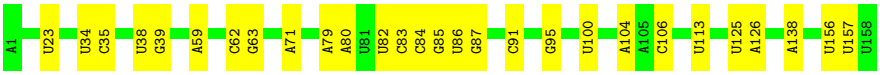
• Molecule 16: 60S ribosomal protein L18-A

Chain C:



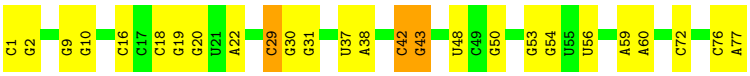
• Molecule 17: 5.8S ribosomal RNA

Chain CC:



• Molecule 18: Transfer RNA fMet

Chain Cc:

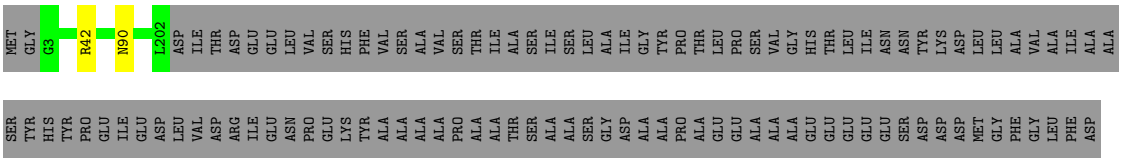


• Molecule 19: 60S ribosomal protein L19-A

Chain D:

• Molecule 20: 60S acidic ribosomal protein P0

Chain DD:

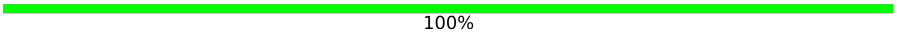


• Molecule 21: Messenger RNA

Chain Dd:

• Molecule 22: 60S ribosomal protein L20-A

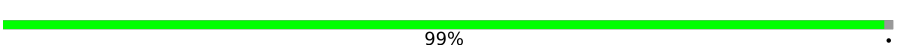
Chain E:



There are no outlier residues recorded for this chain.

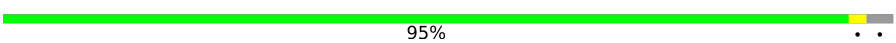
• Molecule 23: 60S ribosomal protein L2-A

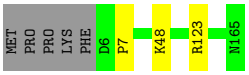
Chain EE:



• Molecule 24: 60S ribosomal protein L12-A

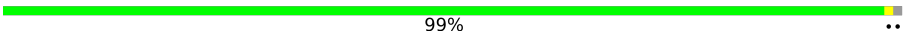
Chain Ee:

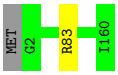




• Molecule 25: 60S ribosomal protein L21-A

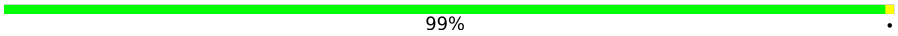
Chain F:





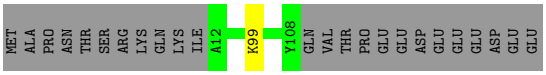
• Molecule 26: 60S ribosomal protein L3

Chain FF:



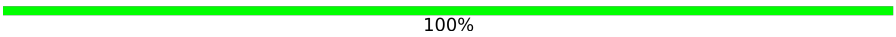
• Molecule 27: 60S ribosomal protein L22-A

Chain G:



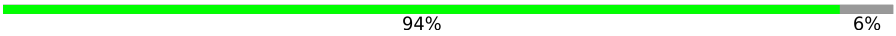
• Molecule 28: 60S ribosomal protein L4-A

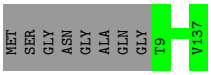
Chain GG:



• Molecule 29: 60S ribosomal protein L23-A

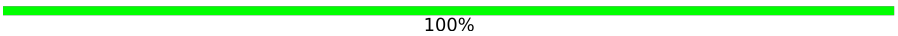
Chain H:





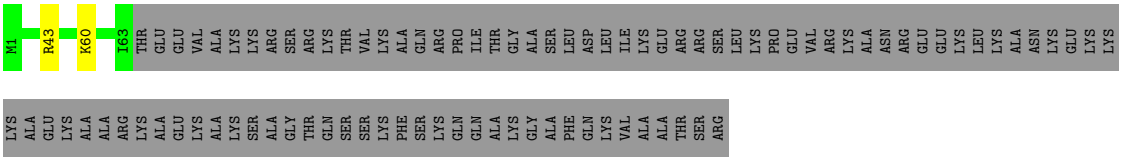
• Molecule 30: 60S ribosomal protein L5

Chain HH:

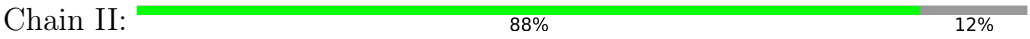


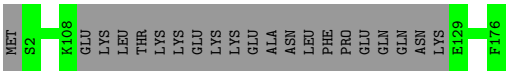
• Molecule 31: 60S ribosomal protein L24-A

Chain I:

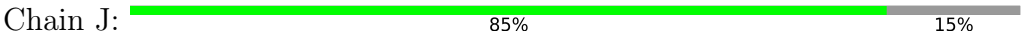


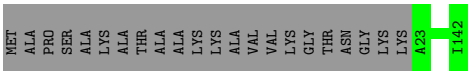
• Molecule 32: 60S ribosomal protein L6-A



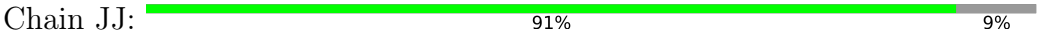


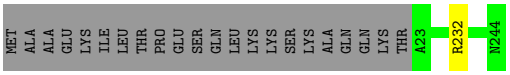
• Molecule 33: 60S ribosomal protein L25





• Molecule 34: 60S ribosomal protein L7-A

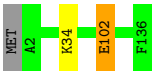




• Molecule 35: 60S ribosomal protein L26-A

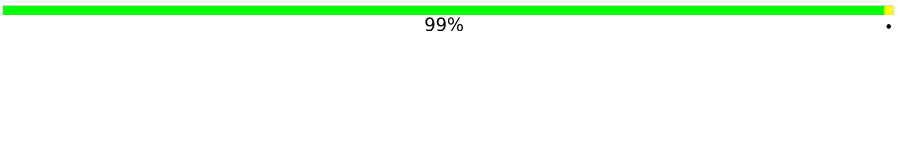
• Molecule 36: 60S ribosomal protein L8-A

• Molecule 37: 60S ribosomal protein L27-A



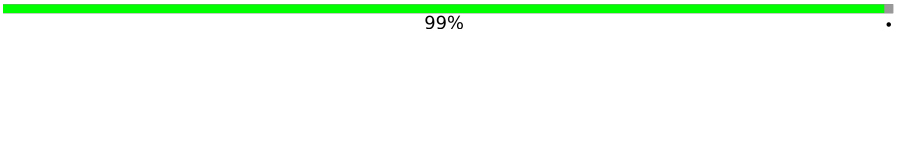
• Molecule 38: 60S ribosomal protein L9-A

Chain LL:



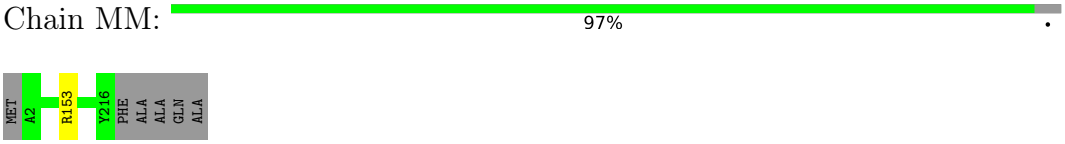
• Molecule 39: 60S ribosomal protein L28

Chain M:



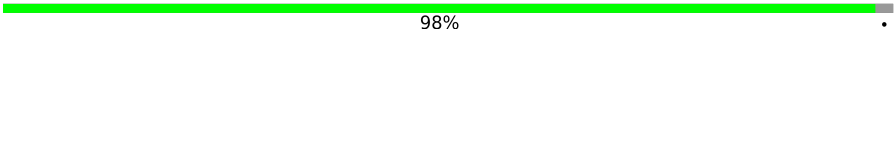
• Molecule 40: 60S ribosomal protein L10

Chain MM:



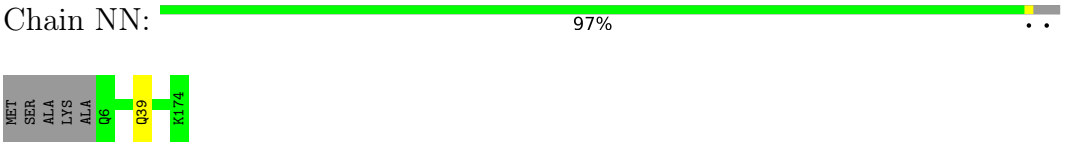
• Molecule 41: 60S ribosomal protein L29

Chain N:



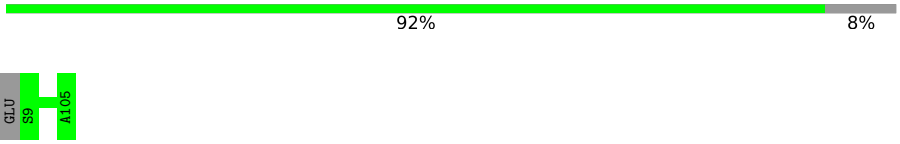
• Molecule 42: 60S ribosomal protein L11-A

Chain NN:



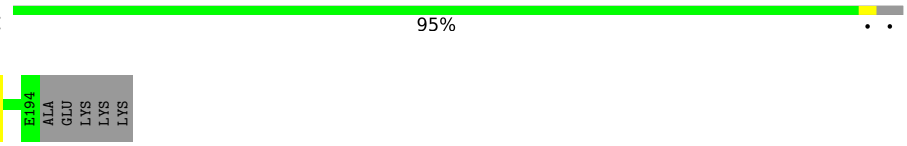
• Molecule 43: 60S ribosomal protein L30

Chain O:



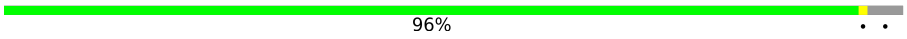
• Molecule 44: 60S ribosomal protein L13-A

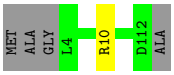
Chain OO:



• Molecule 45: 60S ribosomal protein L31-A

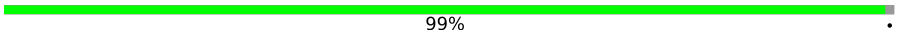
Chain P:





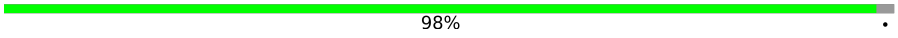
• Molecule 46: 60S ribosomal protein L14-A

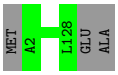
Chain PP:



• Molecule 47: 60S ribosomal protein L32

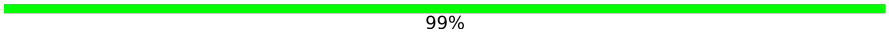
Chain Q:





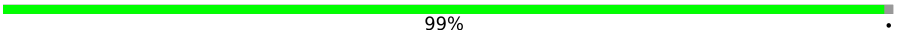
• Molecule 48: 60S ribosomal protein L15-A

Chain QQ:



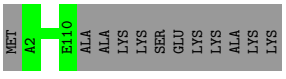
• Molecule 49: 60S ribosomal protein L33-A

Chain R:



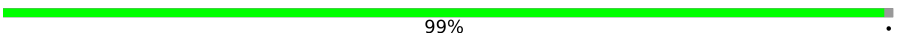
• Molecule 50: 60S ribosomal protein L34-A

Chain S:



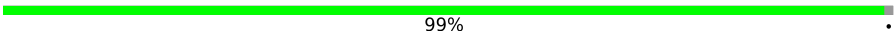
• Molecule 51: 60S ribosomal protein L35-A

Chain T:



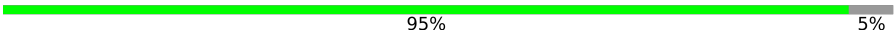
• Molecule 52: 60S ribosomal protein L36-A

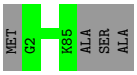
Chain U:



• Molecule 53: 60S ribosomal protein L37-A

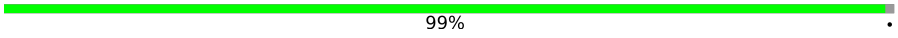
Chain V:





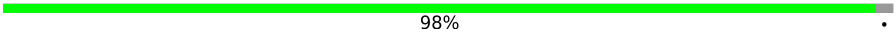
• Molecule 54: 60S ribosomal protein L38

Chain W:



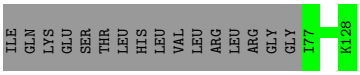
• Molecule 55: 60S ribosomal protein L39

Chain X:



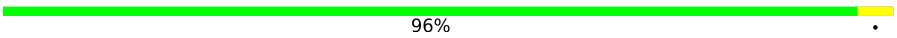
• Molecule 56: Ubiquitin-60S ribosomal protein L40

Chain Y:



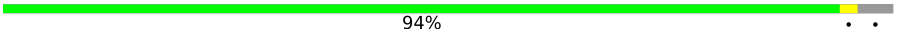
• Molecule 57: RPL41A isoform 1

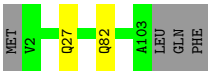
Chain Z:



• Molecule 58: 60S ribosomal protein L42-A

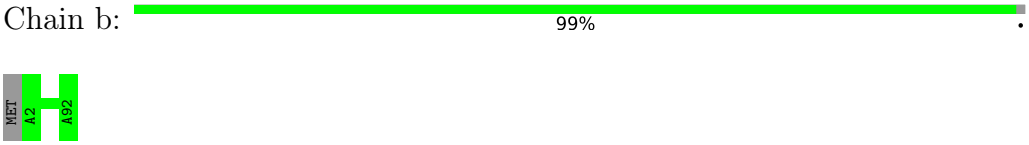
Chain a:





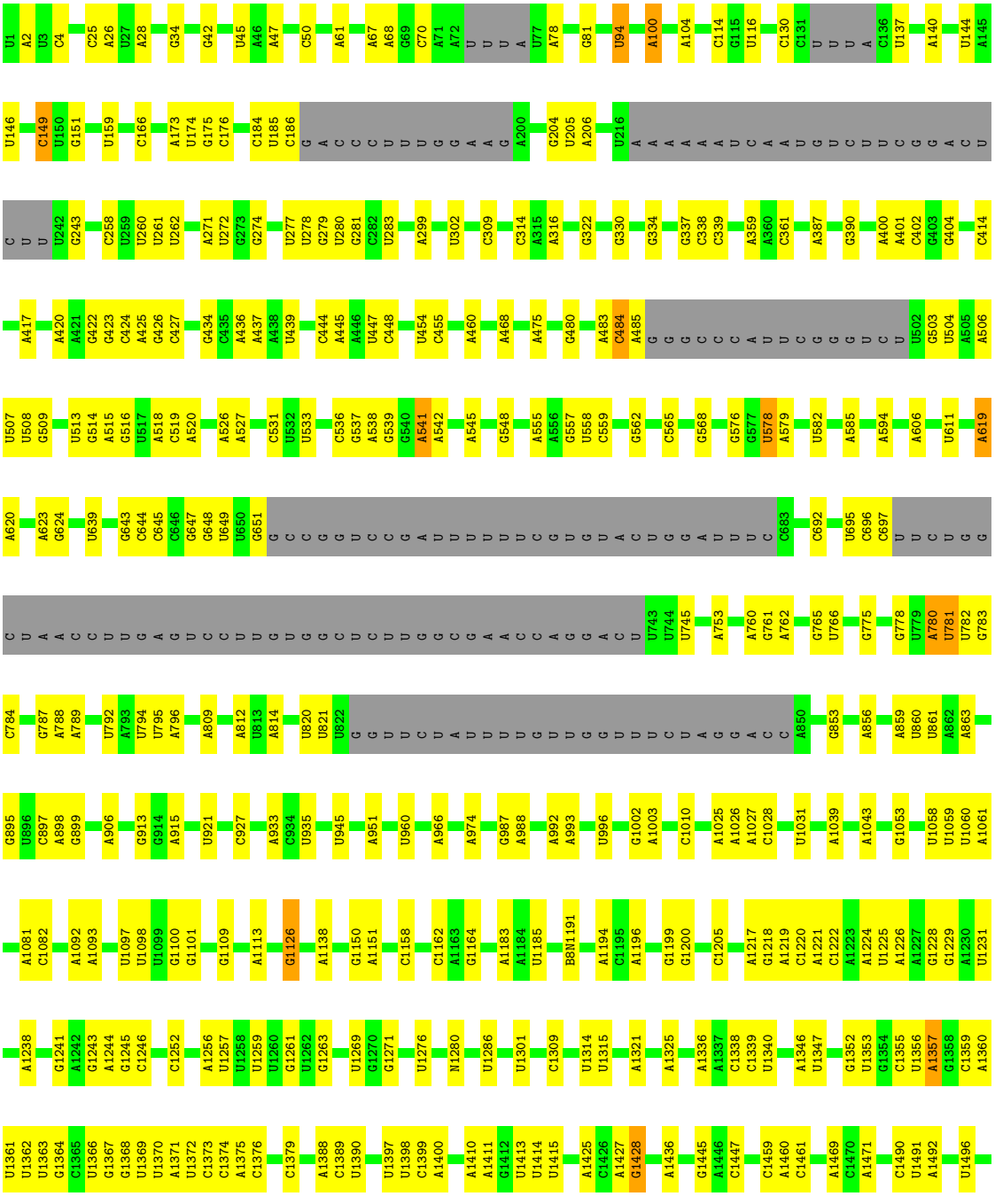
• Molecule 59: 60S ribosomal protein L43-A

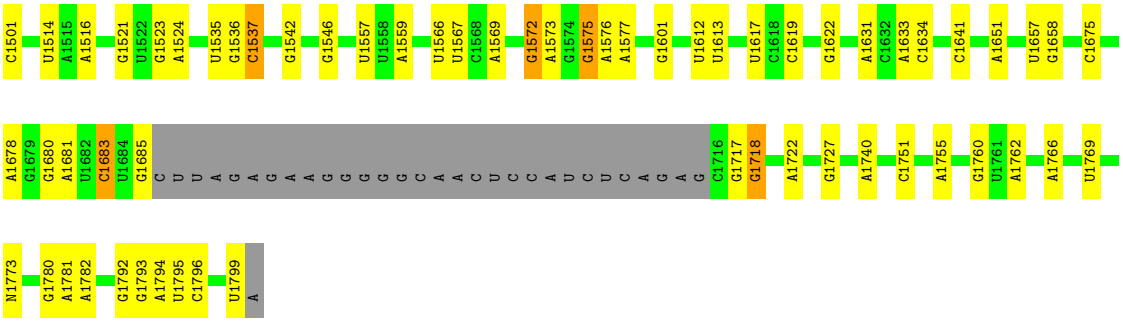
Chain b:



• Molecule 60: 18S ribosomal RNA

Chain c:





• Molecule 61: 40S ribosomal protein S0-A

Chain d:

• Molecule 62: 40S ribosomal protein S1-A

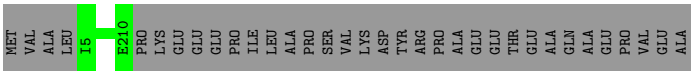
Chain e:

• Molecule 63: 40S ribosomal protein S2

Chain f:

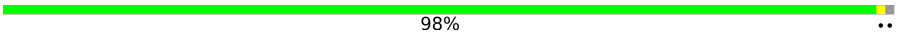
• Molecule 64: RPS3 isoform 1

Chain g:



• Molecule 65: 40S ribosomal protein S4-A

Chain h:

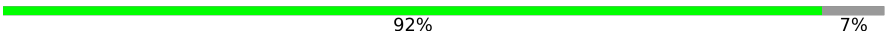


• Molecule 66: 40S ribosomal protein S5

Chain i:

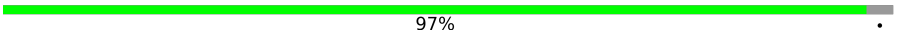
• Molecule 67: 40S ribosomal protein S6-A

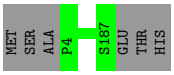
Chain j:



• Molecule 68: 40S ribosomal protein S7-A

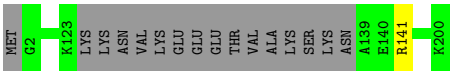
Chain k:





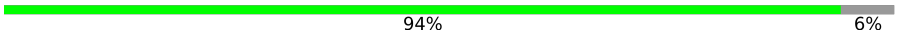
• Molecule 69: 40S ribosomal protein S8-A

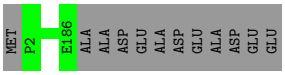
Chain l:



• Molecule 70: 40S ribosomal protein S9-A

Chain m:



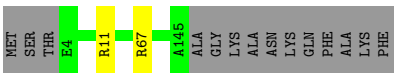


• Molecule 71: 40S ribosomal protein S10-A

Chain n:

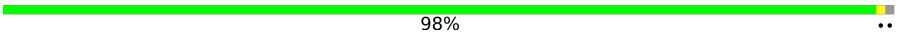
• Molecule 72: 40S ribosomal protein S11-A

Chain o:



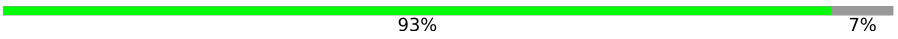
• Molecule 73: 40S ribosomal protein S13

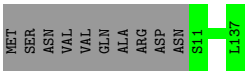
Chain p:



• Molecule 74: 40S ribosomal protein S14-A

Chain q:



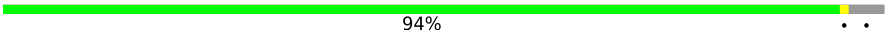


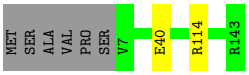
• Molecule 75: 40S ribosomal protein S15

Chain r:

• Molecule 76: 40S ribosomal protein S16-A

Chain s:



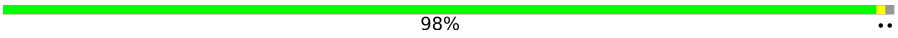


• Molecule 77: 40S ribosomal protein S17-A

Chain t:

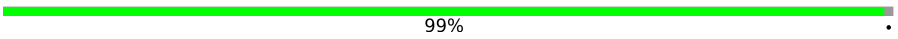
• Molecule 78: 40S ribosomal protein S18-A

Chain u:



• Molecule 79: 40S ribosomal protein S19-A

Chain v:



• Molecule 80: 40S ribosomal protein S20

Chain w:

• Molecule 81: 40S ribosomal protein S21-A

Chain x: 100%

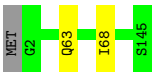
There are no outlier residues recorded for this chain.

• Molecule 82: 40S ribosomal protein S22-A

Chain y: 99%

• Molecule 83: 40S ribosomal protein S23-A

Chain z: 98%



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	22551	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 ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	1000	Depositor
Magnification	165000	Depositor
Image detector	FEI FALCON IV (4k x 4k)	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: GTP, OMU, B8N, DDE, MA6, SPD, G7M, MG, 4AC, 5MC, OMC, UR3, OMG, ZN, 1MA, A2M, K, YYG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	0	0.30	0/1087	0.59	1/1449 (0.1%)
2	1	0.29	0/571	0.70	0/768
3	2	0.34	0/782	0.61	0/1047
4	3	0.32	0/620	0.56	0/838
5	4	0.32	0/499	0.73	1/670 (0.1%)
6	5	0.32	0/452	0.62	0/600
7	6	0.30	0/433	0.62	0/575
8	7	0.31	0/2489	0.61	0/3389
9	8	0.25	0/279	0.57	0/369
10	A	0.39	0/1585	0.57	0/2128
11	AA	0.55	0/75384	0.84	33/117530 (0.0%)
12	Aa	0.29	0/6673	0.56	1/9032 (0.0%)
13	B	0.37	0/1245	0.57	0/1676
14	BB	0.48	0/2883	0.79	0/4491
15	Bb	0.34	0/1788	0.99	2/2786 (0.1%)
16	C	0.34	0/1465	0.60	0/1965
17	CC	0.55	0/3746	0.82	4/5832 (0.1%)
18	Cc	0.48	1/1836 (0.1%)	1.10	15/2859 (0.5%)
19	D	0.34	0/1440	0.64	0/1921
20	DD	0.27	0/1578	0.53	0/2134
21	Dd	0.38	0/311	0.70	0/482
22	E	0.39	0/1481	0.63	0/1990
23	EE	0.37	0/1948	0.60	0/2617
24	Ee	0.26	0/1226	0.51	0/1650
25	F	0.37	0/1300	0.59	0/1743
26	FF	0.37	0/3146	0.59	0/4228
27	G	0.32	0/786	0.54	0/1065
28	GG	0.34	0/2800	0.56	0/3790
29	H	0.37	0/978	0.61	0/1316
30	HH	0.31	0/2425	0.54	0/3271
31	I	0.40	0/533	0.61	0/707

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	II	0.34	0/1251	0.55	0/1682
33	J	0.37	0/974	0.59	0/1314
34	JJ	0.37	0/1821	0.52	0/2451
35	K	0.32	0/1004	0.65	2/1341 (0.1%)
36	KK	0.31	0/1836	0.51	0/2481
37	L	0.35	0/1118	0.55	0/1497
38	LL	0.36	0/1539	0.60	1/2073 (0.0%)
39	M	0.34	0/1204	0.58	0/1612
40	MM	0.36	0/1779	0.58	0/2386
41	N	0.30	0/473	0.58	0/629
42	NN	0.32	0/1374	0.62	0/1842
43	O	0.33	0/750	0.50	0/1008
44	OO	0.33	0/1568	0.60	0/2106
45	P	0.35	0/897	0.61	0/1205
46	PP	0.33	0/1068	0.55	0/1438
47	Q	0.35	0/1041	0.57	0/1394
48	QQ	0.37	0/1757	0.64	1/2354 (0.0%)
49	R	0.43	0/868	0.58	0/1168
50	S	0.35	0/871	0.62	0/1164
51	T	0.34	0/978	0.61	0/1301
52	U	0.30	0/778	0.63	0/1034
53	V	0.35	0/680	0.61	0/901
54	W	0.33	0/618	0.62	0/826
55	X	0.33	0/443	0.65	0/588
56	Y	0.30	0/423	0.59	0/562
57	Z	0.31	0/234	0.77	0/300
58	a	0.35	0/831	0.62	0/1097
59	b	0.33	0/701	0.61	0/934
60	c	0.87	13/37665 (0.0%)	1.02	52/58663 (0.1%)
61	d	0.31	0/1623	0.61	1/2222 (0.0%)
62	e	0.32	0/1714	0.59	0/2308
63	f	0.35	0/1665	0.59	0/2263
64	g	0.32	0/1622	0.59	0/2180
65	h	0.31	0/2097	0.60	1/2823 (0.0%)
66	i	0.31	0/1591	0.62	0/2151
67	j	0.30	0/1790	0.63	0/2393
68	k	0.31	0/1506	0.61	0/2028
69	l	0.33	0/1482	0.64	0/1980
70	m	0.31	0/1519	0.60	0/2035
71	n	0.33	0/792	0.57	0/1071
72	o	0.34	0/1172	0.57	0/1580
73	p	0.34	0/1215	0.56	0/1638
74	q	0.35	0/901	0.64	0/1217

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
75	r	0.35	0/853	0.63	0/1145
76	s	0.33	0/1099	0.59	0/1473
77	t	0.30	0/971	0.67	0/1303
78	u	0.31	0/1211	0.66	1/1628 (0.1%)
79	v	0.30	0/1130	0.60	0/1517
80	w	0.33	0/810	0.61	0/1095
81	x	0.36	0/693	0.63	0/935
82	y	0.35	0/1038	0.59	0/1395
83	z	0.31	0/1139	0.61	0/1518
All	All	0.54	14/219946 (0.0%)	0.79	116/322167 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
24	Ee	0	1
34	JJ	0	1
37	L	0	1
66	i	0	2
73	p	0	1
76	s	0	1
77	t	0	1
78	u	0	1
83	z	0	1
All	All	0	10

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	507	U	C2-N3	68.36	1.85	1.37
60	c	507	U	N3-C4	52.05	1.85	1.38
60	c	507	U	N1-C2	50.72	1.84	1.38
60	c	483	A	N9-C4	50.13	1.68	1.37
60	c	507	U	C4-C5	48.31	1.87	1.43
60	c	507	U	N1-C6	43.36	1.76	1.38
60	c	507	U	C5-C6	40.06	1.70	1.34
60	c	483	A	C1'-N9	37.19	2.04	1.48
60	c	483	A	N9-C8	25.41	1.58	1.37
60	c	483	A	N7-C5	-15.34	1.30	1.39
18	Cc	1	C	OP3-P	-10.75	1.48	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	483	A	N3-C4	7.14	1.39	1.34
60	c	483	A	C8-N7	-5.37	1.27	1.31
60	c	1357	A	O3'-P	-5.15	1.54	1.61

All (116) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
60	c	483	A	C8-N9-C4	-95.54	67.58	105.80
60	c	483	A	N7-C8-N9	68.57	148.09	113.80
60	c	483	A	N9-C4-C5	42.22	122.69	105.80
60	c	483	A	N3-C4-C5	-26.12	108.51	126.80
60	c	483	A	C2-N3-C4	24.13	122.67	110.60
60	c	483	A	C5-N7-C8	-22.94	92.43	103.90
60	c	483	A	C4-C5-C6	19.02	126.51	117.00
60	c	483	A	C4-N9-C1'	14.27	151.99	126.30
60	c	94	U	C2-N3-C4	13.59	135.15	127.00
60	c	483	A	N9-C1'-C2'	13.01	130.91	114.00
60	c	780	A	OP2-P-O3'	-11.80	79.23	105.20
17	CC	79	A	OP1-P-O3'	-11.44	80.03	105.20
18	Cc	42	C	N3-C2-O2	-11.27	114.01	121.90
60	c	483	A	C6-C5-N7	-11.24	124.43	132.30
18	Cc	37	U	OP1-P-O3'	-11.20	80.57	105.20
18	Cc	53	G	OP1-P-O3'	-11.16	80.65	105.20
11	AA	126	U	OP1-P-O3'	-11.03	80.94	105.20
11	AA	2546	C	N3-C2-O2	-10.83	114.32	121.90
18	Cc	42	C	N1-C2-O2	10.49	125.19	118.90
11	AA	2546	C	N1-C2-O2	10.30	125.08	118.90
60	c	205	U	OP1-P-O3'	-10.29	82.57	105.20
60	c	205	U	OP2-P-O3'	-10.19	82.79	105.20
11	AA	126	U	OP2-P-O3'	-10.09	83.00	105.20
18	Cc	37	U	OP2-P-O3'	-9.78	83.69	105.20
17	CC	79	A	OP2-P-O3'	-9.67	83.93	105.20
18	Cc	53	G	OP2-P-O3'	-9.47	84.36	105.20
11	AA	1280	C	N3-C2-O2	-9.36	115.35	121.90
60	c	780	A	OP1-P-O3'	-9.02	85.35	105.20
18	Cc	42	C	C2-N1-C1'	8.92	128.61	118.80
11	AA	1280	C	N1-C2-O2	8.84	124.20	118.90
18	Cc	42	C	C6-N1-C2	-8.75	116.80	120.30
60	c	484	C	N3-C2-O2	-8.73	115.79	121.90
11	AA	1951	C	N1-C2-O2	8.60	124.06	118.90
11	AA	1280	C	C6-N1-C2	-8.55	116.88	120.30
11	AA	1280	C	C2-N1-C1'	8.44	128.09	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
60	c	1389	C	C6-N1-C2	-8.40	116.94	120.30
60	c	483	A	C6-N1-C2	-8.35	113.59	118.60
60	c	484	C	N1-C2-O2	8.18	123.81	118.90
11	AA	1951	C	N3-C2-O2	-8.01	116.29	121.90
60	c	1389	C	N3-C2-O2	-7.80	116.44	121.90
11	AA	2546	C	C6-N1-C2	-7.76	117.19	120.30
11	AA	127	G	OP1-P-OP2	7.65	131.07	119.60
60	c	1675	C	N3-C2-O2	-7.57	116.61	121.90
60	c	507	U	C6-N1-C2	7.52	125.51	121.00
18	Cc	38	A	OP1-P-OP2	7.49	130.83	119.60
60	c	206	A	OP1-P-OP2	7.35	130.62	119.60
17	CC	80	A	OP1-P-OP2	7.31	130.57	119.60
18	Cc	54	G	OP1-P-OP2	7.30	130.55	119.60
60	c	781	U	OP1-P-OP2	7.26	130.49	119.60
11	AA	2546	C	C2-N1-C1'	7.25	126.78	118.80
60	c	1389	C	C2-N1-C1'	6.95	126.44	118.80
60	c	483	A	C8-N9-C1'	6.92	140.16	127.70
60	c	1389	C	N1-C2-O2	6.86	123.02	118.90
35	K	99	LEU	C-N-CA	-6.80	104.70	121.70
35	K	126	LEU	CA-CB-CG	6.70	130.70	115.30
60	c	1675	C	C6-N1-C2	-6.65	117.64	120.30
60	c	94	U	N1-C2-N3	6.62	118.87	114.90
60	c	94	U	N3-C4-C5	6.53	118.52	114.60
60	c	166	C	N1-C2-O2	6.46	122.78	118.90
18	Cc	43	G	N1-C2-N2	-6.31	110.52	116.20
61	d	57	LEU	CA-CB-CG	6.29	129.77	115.30
60	c	927	C	C6-N1-C2	-6.18	117.83	120.30
60	c	1537	C	C2-N1-C1'	6.17	125.58	118.80
11	AA	922	U	N3-C2-O2	-6.14	117.90	122.20
18	Cc	29	C	N3-C2-O2	-6.12	117.62	121.90
11	AA	922	U	N1-C2-O2	6.08	127.06	122.80
60	c	166	C	N3-C2-O2	-6.04	117.67	121.90
60	c	484	C	C6-N1-C2	-6.01	117.89	120.30
11	AA	922	U	C2-N1-C1'	6.01	124.91	117.70
38	LL	118	LEU	CA-CB-CG	5.97	129.03	115.30
12	Aa	460	ASP	CB-CG-OD1	5.95	123.66	118.30
60	c	531	C	C6-N1-C2	-5.92	117.93	120.30
60	c	166	C	C2-N1-C1'	5.87	125.25	118.80
60	c	507	U	C2-N3-C4	-5.81	123.52	127.00
11	AA	1228	C	C6-N1-C2	-5.77	117.99	120.30
60	c	483	A	O4'-C1'-N9	5.77	112.81	108.20
11	AA	1228	C	N3-C2-O2	-5.77	117.86	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	AA	1951	C	C2-N1-C1'	5.74	125.12	118.80
15	Bb	2	C	C2-N1-C1'	5.74	125.11	118.80
11	AA	620	U	N1-C2-O2	5.71	126.80	122.80
60	c	1537	C	N1-C2-O2	5.64	122.28	118.90
60	c	1675	C	N1-C2-N3	5.56	123.09	119.20
11	AA	1032	C	N3-C2-O2	-5.56	118.01	121.90
18	Cc	43	G	N1-C2-N3	5.50	127.20	123.90
60	c	166	C	C6-N1-C2	-5.49	118.10	120.30
11	AA	3058	U	N1-C2-O2	5.46	126.63	122.80
18	Cc	29	C	C6-N1-C2	-5.43	118.13	120.30
11	AA	1228	C	N1-C2-O2	5.42	122.15	118.90
11	AA	3058	U	C2-N1-C1'	5.38	124.16	117.70
1	0	44	LEU	CA-CB-CG	5.38	127.66	115.30
60	c	1683	C	N3-C2-O2	-5.35	118.16	121.90
48	QQ	113	LEU	CA-CB-CG	5.31	127.50	115.30
65	h	19	LEU	CA-CB-CG	5.30	127.50	115.30
60	c	1379	C	N1-C2-O2	5.30	122.08	118.90
11	AA	1228	C	C2-N1-C1'	5.28	124.61	118.80
11	AA	895	A	C6-C5-N7	-5.27	128.61	132.30
11	AA	2773	C	C2-N1-C1'	5.26	124.59	118.80
11	AA	406	G	O4'-C1'-N9	5.24	112.39	108.20
60	c	1162	C	N1-C2-O2	5.24	122.04	118.90
11	AA	2612	U	N3-C4-O4	5.21	123.05	119.40
60	c	536	C	C2-N1-C1'	5.21	124.53	118.80
18	Cc	42	C	C6-N1-C1'	-5.20	114.56	120.80
11	AA	543	C	N3-C2-O2	-5.17	118.28	121.90
11	AA	620	U	C2-N1-C1'	5.17	123.91	117.70
60	c	149	C	C2-N1-C1'	5.16	124.48	118.80
15	Bb	28	C	C6-N1-C2	-5.16	118.24	120.30
60	c	927	C	N3-C2-O2	-5.13	118.31	121.90
11	AA	2846	U	N3-C2-O2	-5.09	118.63	122.20
60	c	1246	C	C2-N1-C1'	5.09	124.40	118.80
11	AA	620	U	N3-C2-O2	-5.08	118.64	122.20
78	u	73	MET	CA-CB-CG	5.06	121.90	113.30
60	c	507	U	N1-C2-N3	-5.04	111.87	114.90
60	c	1683	C	C6-N1-C2	-5.04	118.29	120.30
17	CC	100	U	C2-N1-C1'	5.01	123.71	117.70
5	4	6	PRO	CA-N-CD	-5.00	104.50	111.50
60	c	1718	G	C5-C6-O6	5.00	131.60	128.60

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
24	Ee	7	PRO	Peptide
34	JJ	232	ARG	Peptide
37	L	102	GLU	Peptide
66	i	220	VAL	Peptide
66	i	65	ARG	Peptide
73	p	105	ASN	Peptide
76	s	40	GLU	Peptide
77	t	83	GLN	Peptide
78	u	90	ASN	Peptide
83	z	68	ILE	Peptide

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	132/135 (98%)	130 (98%)	2 (2%)	0	100	100
2	1	68/108 (63%)	65 (96%)	3 (4%)	0	100	100
3	2	95/119 (80%)	90 (95%)	5 (5%)	0	100	100
4	3	79/82 (96%)	74 (94%)	5 (6%)	0	100	100
5	4	61/67 (91%)	60 (98%)	1 (2%)	0	100	100
6	5	51/56 (91%)	51 (100%)	0	0	100	100
7	6	51/63 (81%)	48 (94%)	3 (6%)	0	100	100
8	7	316/319 (99%)	301 (95%)	15 (5%)	0	100	100
9	8	32/152 (21%)	26 (81%)	6 (19%)	0	100	100
10	A	195/199 (98%)	193 (99%)	2 (1%)	0	100	100
12	Aa	839/842 (100%)	808 (96%)	31 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	B	152/184 (83%)	150 (99%)	2 (1%)	0	100	100
16	C	183/186 (98%)	182 (100%)	1 (0%)	0	100	100
19	D	174/189 (92%)	170 (98%)	4 (2%)	0	100	100
20	DD	198/312 (64%)	193 (98%)	5 (2%)	0	100	100
22	E	170/172 (99%)	163 (96%)	7 (4%)	0	100	100
23	EE	250/254 (98%)	246 (98%)	4 (2%)	0	100	100
24	Ee	158/165 (96%)	155 (98%)	3 (2%)	0	100	100
25	F	157/160 (98%)	153 (98%)	4 (2%)	0	100	100
26	FF	384/387 (99%)	375 (98%)	9 (2%)	0	100	100
27	G	95/121 (78%)	95 (100%)	0	0	100	100
28	GG	359/362 (99%)	350 (98%)	9 (2%)	0	100	100
29	H	127/137 (93%)	126 (99%)	1 (1%)	0	100	100
30	HH	294/297 (99%)	288 (98%)	6 (2%)	0	100	100
31	I	61/155 (39%)	61 (100%)	0	0	100	100
32	II	151/176 (86%)	149 (99%)	2 (1%)	0	100	100
33	J	118/142 (83%)	115 (98%)	3 (2%)	0	100	100
34	JJ	220/244 (90%)	219 (100%)	1 (0%)	0	100	100
35	K	124/127 (98%)	121 (98%)	3 (2%)	0	100	100
36	KK	231/256 (90%)	226 (98%)	5 (2%)	0	100	100
37	L	133/136 (98%)	128 (96%)	4 (3%)	1 (1%)	19	53
38	LL	189/191 (99%)	181 (96%)	8 (4%)	0	100	100
39	M	146/149 (98%)	142 (97%)	4 (3%)	0	100	100
40	MM	213/221 (96%)	206 (97%)	7 (3%)	0	100	100
41	N	56/59 (95%)	53 (95%)	3 (5%)	0	100	100
42	NN	167/174 (96%)	160 (96%)	7 (4%)	0	100	100
43	O	95/105 (90%)	95 (100%)	0	0	100	100
44	OO	191/199 (96%)	178 (93%)	12 (6%)	1 (0%)	29	63
45	P	107/113 (95%)	103 (96%)	4 (4%)	0	100	100
46	PP	134/138 (97%)	133 (99%)	1 (1%)	0	100	100
47	Q	125/130 (96%)	125 (100%)	0	0	100	100
48	QQ	201/204 (98%)	194 (96%)	7 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
49	R	104/107 (97%)	103 (99%)	1 (1%)	0	100	100
50	S	107/121 (88%)	107 (100%)	0	0	100	100
51	T	117/120 (98%)	115 (98%)	2 (2%)	0	100	100
52	U	97/100 (97%)	89 (92%)	8 (8%)	0	100	100
53	V	82/88 (93%)	81 (99%)	1 (1%)	0	100	100
54	W	75/78 (96%)	70 (93%)	5 (7%)	0	100	100
55	X	48/51 (94%)	44 (92%)	4 (8%)	0	100	100
56	Y	50/128 (39%)	50 (100%)	0	0	100	100
57	Z	23/25 (92%)	23 (100%)	0	0	100	100
58	a	100/106 (94%)	95 (95%)	5 (5%)	0	100	100
59	b	89/92 (97%)	87 (98%)	2 (2%)	0	100	100
61	d	204/252 (81%)	193 (95%)	11 (5%)	0	100	100
62	e	210/255 (82%)	200 (95%)	10 (5%)	0	100	100
63	f	215/254 (85%)	205 (95%)	10 (5%)	0	100	100
64	g	204/240 (85%)	198 (97%)	6 (3%)	0	100	100
65	h	256/261 (98%)	248 (97%)	8 (3%)	0	100	100
66	i	195/225 (87%)	182 (93%)	13 (7%)	0	100	100
67	j	217/236 (92%)	209 (96%)	8 (4%)	0	100	100
68	k	182/190 (96%)	175 (96%)	7 (4%)	0	100	100
69	l	180/200 (90%)	170 (94%)	10 (6%)	0	100	100
70	m	183/197 (93%)	177 (97%)	6 (3%)	0	100	100
71	n	89/105 (85%)	84 (94%)	3 (3%)	2 (2%)	6	28
72	o	140/156 (90%)	134 (96%)	6 (4%)	0	100	100
73	p	148/151 (98%)	145 (98%)	3 (2%)	0	100	100
74	q	125/137 (91%)	120 (96%)	5 (4%)	0	100	100
75	r	100/142 (70%)	96 (96%)	4 (4%)	0	100	100
76	s	135/143 (94%)	129 (96%)	6 (4%)	0	100	100
77	t	119/136 (88%)	108 (91%)	11 (9%)	0	100	100
78	u	143/146 (98%)	134 (94%)	9 (6%)	0	100	100
79	v	141/144 (98%)	138 (98%)	3 (2%)	0	100	100
80	w	98/121 (81%)	98 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
81	x	85/87 (98%)	82 (96%)	3 (4%)	0	100	100
82	y	127/130 (98%)	125 (98%)	2 (2%)	0	100	100
83	z	142/145 (98%)	131 (92%)	11 (8%)	0	100	100
All	All	11812/13056 (90%)	11426 (97%)	382 (3%)	4 (0%)	100	100

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
71	n	49	LEU
71	n	48	SER
37	L	102	GLU
44	OO	63	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	112/113 (99%)	112 (100%)	0	100	100
2	1	61/89 (68%)	61 (100%)	0	100	100
3	2	83/101 (82%)	82 (99%)	1 (1%)	71	87
4	3	70/71 (99%)	70 (100%)	0	100	100
5	4	56/60 (93%)	56 (100%)	0	100	100
6	5	47/49 (96%)	47 (100%)	0	100	100
7	6	46/54 (85%)	45 (98%)	1 (2%)	52	77
8	7	259/262 (99%)	259 (100%)	0	100	100
9	8	30/135 (22%)	28 (93%)	2 (7%)	16	45
10	A	160/162 (99%)	159 (99%)	1 (1%)	86	93
12	Aa	714/714 (100%)	711 (100%)	3 (0%)	91	96
13	B	125/146 (86%)	124 (99%)	1 (1%)	81	92
16	C	150/151 (99%)	150 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
19	D	143/154 (93%)	142 (99%)	1 (1%)	84 93
20	DD	169/254 (66%)	167 (99%)	2 (1%)	71 87
22	E	156/156 (100%)	156 (100%)	0	100 100
23	EE	193/196 (98%)	193 (100%)	0	100 100
24	Ee	131/136 (96%)	129 (98%)	2 (2%)	65 85
25	F	136/137 (99%)	135 (99%)	1 (1%)	84 93
26	FF	318/323 (98%)	315 (99%)	3 (1%)	78 91
27	G	84/107 (78%)	83 (99%)	1 (1%)	71 87
28	GG	288/289 (100%)	288 (100%)	0	100 100
29	H	101/105 (96%)	101 (100%)	0	100 100
30	HH	244/245 (100%)	244 (100%)	0	100 100
31	I	55/129 (43%)	53 (96%)	2 (4%)	35 66
32	II	133/153 (87%)	133 (100%)	0	100 100
33	J	104/118 (88%)	104 (100%)	0	100 100
34	JJ	186/205 (91%)	186 (100%)	0	100 100
35	K	109/110 (99%)	108 (99%)	1 (1%)	78 91
36	KK	187/208 (90%)	187 (100%)	0	100 100
37	L	115/116 (99%)	114 (99%)	1 (1%)	78 91
38	LL	171/171 (100%)	170 (99%)	1 (1%)	86 93
39	M	118/119 (99%)	118 (100%)	0	100 100
40	MM	184/187 (98%)	183 (100%)	1 (0%)	88 94
41	N	46/47 (98%)	46 (100%)	0	100 100
42	NN	147/150 (98%)	146 (99%)	1 (1%)	84 93
43	O	81/88 (92%)	81 (100%)	0	100 100
44	OO	154/159 (97%)	152 (99%)	2 (1%)	69 86
45	P	94/97 (97%)	93 (99%)	1 (1%)	73 88
46	PP	107/109 (98%)	107 (100%)	0	100 100
47	Q	109/111 (98%)	109 (100%)	0	100 100
48	QQ	175/176 (99%)	175 (100%)	0	100 100
49	R	90/91 (99%)	90 (100%)	0	100 100
50	S	94/103 (91%)	94 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
51	T	104/105 (99%)	104 (100%)	0	100	100
52	U	81/82 (99%)	81 (100%)	0	100	100
53	V	69/71 (97%)	69 (100%)	0	100	100
54	W	68/69 (99%)	68 (100%)	0	100	100
55	X	45/46 (98%)	45 (100%)	0	100	100
56	Y	47/116 (40%)	47 (100%)	0	100	100
57	Z	23/23 (100%)	22 (96%)	1 (4%)	29	61
58	a	87/91 (96%)	85 (98%)	2 (2%)	50	76
59	b	71/72 (99%)	71 (100%)	0	100	100
61	d	165/210 (79%)	164 (99%)	1 (1%)	86	93
62	e	189/224 (84%)	189 (100%)	0	100	100
63	f	176/205 (86%)	175 (99%)	1 (1%)	86	93
64	g	167/195 (86%)	167 (100%)	0	100	100
65	h	220/222 (99%)	219 (100%)	1 (0%)	88	94
66	i	172/191 (90%)	172 (100%)	0	100	100
67	j	188/201 (94%)	187 (100%)	1 (0%)	88	94
68	k	165/170 (97%)	165 (100%)	0	100	100
69	l	146/161 (91%)	145 (99%)	1 (1%)	84	93
70	m	158/166 (95%)	158 (100%)	0	100	100
71	n	84/98 (86%)	84 (100%)	0	100	100
72	o	127/137 (93%)	125 (98%)	2 (2%)	62	84
73	p	127/128 (99%)	126 (99%)	1 (1%)	81	92
74	q	81/105 (77%)	81 (100%)	0	100	100
75	r	89/118 (75%)	88 (99%)	1 (1%)	73	88
76	s	114/119 (96%)	113 (99%)	1 (1%)	78	91
77	t	105/124 (85%)	105 (100%)	0	100	100
78	u	128/129 (99%)	128 (100%)	0	100	100
79	v	115/116 (99%)	115 (100%)	0	100	100
80	w	94/114 (82%)	94 (100%)	0	100	100
81	x	74/74 (100%)	74 (100%)	0	100	100
82	y	110/111 (99%)	110 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
83	z	119/120 (99%)	118 (99%)	1 (1%)	81 92
All	All	10043/10969 (92%)	10000 (100%)	43 (0%)	91 96

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	2	15	ARG
7	6	51	ASN
9	8	96	LYS
9	8	119	ARG
10	A	117	ARG
12	Aa	10	ARG
12	Aa	365	ASN
12	Aa	617	ARG
13	B	138	LYS
19	D	5	ARG
20	DD	42	ARG
20	DD	90	ASN
24	Ee	48	LYS
24	Ee	123	ARG
25	F	83	ARG
26	FF	34	LYS
26	FF	104	THR
26	FF	332	ARG
27	G	99	LYS
31	I	43	ARG
31	I	60	LYS
35	K	3	LYS
37	L	34	LYS
38	LL	157	ASN
40	MM	153	ARG
42	NN	39	GLN
44	OO	104	ARG
44	OO	120	GLN
45	P	10	ARG
57	Z	15	ARG
58	a	27	GLN
58	a	82	GLN
61	d	165	ARG
63	f	46	LYS
65	h	108	ARG
67	j	31	ARG

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Mol	Chain	Res	Type
69	l	141	ARG
72	o	11	ARG
72	o	67	ARG
73	p	64	ARG
75	r	128	HIS
76	s	114	ARG
83	z	63	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (49) such sidechains are listed below:

Mol	Chain	Res	Type
1	0	63	GLN
8	7	195	HIS
10	A	14	HIS
10	A	50	ASN
12	Aa	704	GLN
12	Aa	800	HIS
13	B	34	GLN
13	B	118	GLN
13	B	137	ASN
19	D	7	GLN
23	EE	215	ASN
24	Ee	61	GLN
24	Ee	137	GLN
24	Ee	149	HIS
26	FF	3	HIS
26	FF	13	HIS
26	FF	371	GLN
27	G	25	ASN
30	HH	40	HIS
31	I	32	GLN
37	L	127	ASN
40	MM	144	ASN
42	NN	95	ASN
43	O	47	ASN
44	OO	112	ASN
47	Q	35	GLN
48	QQ	195	ASN
55	X	33	ASN
58	a	82	GLN
61	d	30	GLN
61	d	109	ASN

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Mol	Chain	Res	Type
62	e	211	HIS
64	g	92	GLN
65	h	69	HIS
65	h	98	ASN
66	i	63	GLN
66	i	66	GLN
68	k	19	GLN
68	k	42	GLN
72	o	138	ASN
73	p	69	ASN
74	q	99	GLN
75	r	104	GLN
77	t	48	ASN
80	w	33	GLN
80	w	105	GLN
82	y	42	GLN
83	z	63	GLN
83	z	79	ASN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
11	AA	3185/3396 (93%)	591 (18%)	17 (0%)
14	BB	120/121 (99%)	10 (8%)	1 (0%)
15	Bb	75/76 (98%)	36 (48%)	0
17	CC	157/158 (99%)	25 (15%)	0
18	Cc	76/77 (98%)	21 (27%)	0
21	Dd	12/39 (30%)	3 (25%)	0
60	c	1589/1800 (88%)	374 (23%)	0
All	All	5214/5667 (92%)	1060 (20%)	18 (0%)

All (1060) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
11	AA	4	U
11	AA	26	A
11	AA	40	A
11	AA	43	A
11	AA	49	A
11	AA	59	G
11	AA	60	A

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Mol	Chain	Res	Type
11	AA	65	A
11	AA	66	A
11	AA	72	C
11	AA	77	A
11	AA	86	G
11	AA	92	G
11	AA	99	A
11	AA	110	G
11	AA	111	C
11	AA	113	C
11	AA	117	U
11	AA	118	U
11	AA	119	U
11	AA	120	G
11	AA	122	A
11	AA	123	A
11	AA	135	C
11	AA	136	G
11	AA	145	G
11	AA	147	U
11	AA	156	G
11	AA	157	A
11	AA	161	G
11	AA	164	A
11	AA	170	G
11	AA	172	G
11	AA	175	C
11	AA	177	U
11	AA	187	A
11	AA	190	U
11	AA	200	C
11	AA	219	A
11	AA	240	U
11	AA	241	G
11	AA	242	C
11	AA	243	G
11	AA	244	G
11	AA	245	U
11	AA	247	C
11	AA	248	U
11	AA	249	U
11	AA	252	U

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Mol	Chain	Res	Type
11	AA	253	A
11	AA	265	A
11	AA	269	G
11	AA	286	U
11	AA	295	A
11	AA	298	U
11	AA	315	C
11	AA	329	U
11	AA	346	C
11	AA	376	G
11	AA	398	A
11	AA	399	A
11	AA	401	U
11	AA	402	A
11	AA	403	C
11	AA	404	G
11	AA	420	G
11	AA	421	G
11	AA	422	A
11	AA	503	C
11	AA	515	C
11	AA	521	A
11	AA	523	A
11	AA	532	A
11	AA	533	A
11	AA	534	U
11	AA	536	U
11	AA	544	C
11	AA	545	U
11	AA	546	C
11	AA	547	G
11	AA	548	G
11	AA	557	A
11	AA	559	A
11	AA	560	G
11	AA	589	A
11	AA	592	A
11	AA	597	G
11	AA	601	U
11	AA	602	A
11	AA	604	G
11	AA	607	A

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Mol	Chain	Res	Type
11	AA	611	A
11	AA	620	U
11	AA	621	A
11	AA	636	C
11	AA	637	C
11	AA	649	A2M
11	AA	662	U
11	AA	677	A
11	AA	678	G
11	AA	681	U
11	AA	691	A
11	AA	705	A
11	AA	712	G
11	AA	718	G
11	AA	719	U
11	AA	758	C
11	AA	761	A
11	AA	766	U
11	AA	767	U
11	AA	771	A
11	AA	776	U
11	AA	777	U
11	AA	780	A
11	AA	781	G
11	AA	785	G
11	AA	786	A
11	AA	808	A
11	AA	817	A2M
11	AA	826	G
11	AA	830	A
11	AA	837	A
11	AA	849	C
11	AA	850	U
11	AA	861	C
11	AA	867	OMG
11	AA	874	U
11	AA	879	U
11	AA	880	G
11	AA	896	A
11	AA	897	U
11	AA	907	G
11	AA	908	OMG

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Mol	Chain	Res	Type
11	AA	914	A
11	AA	916	G
11	AA	917	A
11	AA	921	A
11	AA	937	G
11	AA	938	C
11	AA	944	C
11	AA	959	C
11	AA	960	U
11	AA	961	C
11	AA	974	G
11	AA	980	A
11	AA	1006	A
11	AA	1015	U
11	AA	1016	C
11	AA	1017	C
11	AA	1020	G
11	AA	1021	G
11	AA	1027	A
11	AA	1028	U
11	AA	1029	G
11	AA	1031	C
11	AA	1032	C
11	AA	1033	U
11	AA	1034	U
11	AA	1036	A
11	AA	1039	U
11	AA	1043	C
11	AA	1047	A
11	AA	1064	A
11	AA	1066	G
11	AA	1072	G
11	AA	1075	A
11	AA	1081	U
11	AA	1087	G
11	AA	1093	A
11	AA	1096	U
11	AA	1097	G
11	AA	1098	A
11	AA	1103	A
11	AA	1104	G
11	AA	1111	U

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Mol	Chain	Res	Type
11	AA	1117	G
11	AA	1131	G
11	AA	1143	A
11	AA	1144	U
11	AA	1153	A
11	AA	1159	A
11	AA	1160	C
11	AA	1179	A
11	AA	1180	A
11	AA	1181	U
11	AA	1182	A
11	AA	1186	G
11	AA	1193	A
11	AA	1196	C
11	AA	1201	C
11	AA	1208	U
11	AA	1209	G
11	AA	1222	G
11	AA	1228	C
11	AA	1229	G
11	AA	1230	G
11	AA	1235	U
11	AA	1236	G
11	AA	1240	A
11	AA	1242	G
11	AA	1244	A
11	AA	1245	A
11	AA	1246	G
11	AA	1258	U
11	AA	1259	A
11	AA	1262	G
11	AA	1263	A
11	AA	1265	U
11	AA	1272	C
11	AA	1275	C
11	AA	1278	A
11	AA	1280	C
11	AA	1282	G
11	AA	1287	A
11	AA	1295	G
11	AA	1302	A
11	AA	1305	U

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Mol	Chain	Res	Type
11	AA	1307	G
11	AA	1308	A
11	AA	1309	U
11	AA	1316	C
11	AA	1325	U
11	AA	1330	A
11	AA	1331	U
11	AA	1348	U
11	AA	1349	G
11	AA	1350	A
11	AA	1351	U
11	AA	1352	A
11	AA	1355	A
11	AA	1356	U
11	AA	1357	G
11	AA	1386	A
11	AA	1392	G
11	AA	1399	A
11	AA	1400	G
11	AA	1417	G
11	AA	1418	A
11	AA	1425	U
11	AA	1430	U
11	AA	1434	G
11	AA	1437	OMC
11	AA	1446	A
11	AA	1450	OMG
11	AA	1452	A
11	AA	1455	U
11	AA	1468	A
11	AA	1469	C
11	AA	1483	G
11	AA	1496	C
11	AA	1508	C
11	AA	1536	G
11	AA	1556	C
11	AA	1560	G
11	AA	1561	G
11	AA	1562	C
11	AA	1563	C
11	AA	1568	U
11	AA	1569	U

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Mol	Chain	Res	Type
11	AA	1571	A
11	AA	1573	G
11	AA	1575	A
11	AA	1579	C
11	AA	1581	C
11	AA	1582	C
11	AA	1583	A
11	AA	1587	A
11	AA	1589	A
11	AA	1593	A
11	AA	1596	C
11	AA	1605	A
11	AA	1621	A
11	AA	1628	C
11	AA	1629	U
11	AA	1630	U
11	AA	1642	A
11	AA	1643	A
11	AA	1645	U
11	AA	1647	A
11	AA	1657	C
11	AA	1724	U
11	AA	1725	C
11	AA	1730	G
11	AA	1741	A
11	AA	1742	U
11	AA	1750	A
11	AA	1751	G
11	AA	1756	C
11	AA	1762	C
11	AA	1763	U
11	AA	1765	U
11	AA	1767	C
11	AA	1769	G
11	AA	1773	C
11	AA	1775	G
11	AA	1794	G
11	AA	1797	A
11	AA	1808	G
11	AA	1814	A
11	AA	1815	U
11	AA	1816	A

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Mol	Chain	Res	Type
11	AA	1817	G
11	AA	1821	U
11	AA	1842	A
11	AA	1858	A
11	AA	1866	C
11	AA	1871	U
11	AA	1878	G
11	AA	1879	A
11	AA	1880	U
11	AA	1886	A
11	AA	1893	A
11	AA	1901	A
11	AA	1903	U
11	AA	1904	C
11	AA	1905	G
11	AA	1906	G
11	AA	1908	A
11	AA	1935	G
11	AA	1943	C
11	AA	1951	C
11	AA	2096	A
11	AA	2102	U
11	AA	2111	G
11	AA	2114	C
11	AA	2122	G
11	AA	2131	A
11	AA	2139	A
11	AA	2140	U
11	AA	2144	A
11	AA	2158	A
11	AA	2168	A
11	AA	2169	G
11	AA	2170	U
11	AA	2176	U
11	AA	2188	A
11	AA	2193	U
11	AA	2204	C
11	AA	2206	G
11	AA	2207	A
11	AA	2209	U
11	AA	2214	A
11	AA	2223	A

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Mol	Chain	Res	Type
11	AA	2225	U
11	AA	2244	A
11	AA	2254	U
11	AA	2266	U
11	AA	2267	C
11	AA	2268	U
11	AA	2271	A
11	AA	2273	G
11	AA	2274	U
11	AA	2280	A2M
11	AA	2281	A2M
11	AA	2282	U
11	AA	2307	G
11	AA	2309	A
11	AA	2310	U
11	AA	2313	A
11	AA	2315	G
11	AA	2335	G
11	AA	2336	U
11	AA	2356	A
11	AA	2363	A
11	AA	2373	A
11	AA	2374	C
11	AA	2375	G
11	AA	2388	U
11	AA	2393	G
11	AA	2397	A
11	AA	2402	A
11	AA	2403	G
11	AA	2404	A
11	AA	2411	U
11	AA	2418	G
11	AA	2435	G
11	AA	2437	G
11	AA	2438	A
11	AA	2440	G
11	AA	2444	C
11	AA	2445	A
11	AA	2447	A
11	AA	2448	G
11	AA	2450	G
11	AA	2452	G

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Mol	Chain	Res	Type
11	AA	2453	U
11	AA	2454	G
11	AA	2456	A
11	AA	2460	U
11	AA	2461	A
11	AA	2462	A
11	AA	2463	G
11	AA	2464	U
11	AA	2465	G
11	AA	2467	G
11	AA	2470	C
11	AA	2471	U
11	AA	2472	U
11	AA	2473	C
11	AA	2474	G
11	AA	2476	C
11	AA	2477	G
11	AA	2478	C
11	AA	2479	C
11	AA	2480	A
11	AA	2481	G
11	AA	2483	G
11	AA	2487	U
11	AA	2489	C
11	AA	2490	C
11	AA	2491	A
11	AA	2492	C
11	AA	2494	A
11	AA	2496	C
11	AA	2497	U
11	AA	2498	U
11	AA	2499	U
11	AA	2501	U
11	AA	2503	G
11	AA	2504	U
11	AA	2505	U
11	AA	2510	U
11	AA	2511	A
11	AA	2512	C
11	AA	2513	U
11	AA	2514	U
11	AA	2515	A

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Mol	Chain	Res	Type
11	AA	2524	A
11	AA	2525	G
11	AA	2529	A
11	AA	2533	G
11	AA	2534	G
11	AA	2535	A
11	AA	2536	A
11	AA	2545	C
11	AA	2547	A
11	AA	2548	C
11	AA	2549	G
11	AA	2550	U
11	AA	2552	C
11	AA	2555	G
11	AA	2560	C
11	AA	2561	A
11	AA	2569	A
11	AA	2570	U
11	AA	2571	U
11	AA	2572	C
11	AA	2573	G
11	AA	2580	A
11	AA	2585	G
11	AA	2587	U
11	AA	2593	A
11	AA	2606	G
11	AA	2607	G
11	AA	2614	G
11	AA	2635	A
11	AA	2648	G
11	AA	2652	U
11	AA	2656	A
11	AA	2672	G
11	AA	2674	A
11	AA	2677	G
11	AA	2678	A
11	AA	2689	A
11	AA	2691	A
11	AA	2696	A
11	AA	2701	U
11	AA	2702	A
11	AA	2704	A

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Mol	Chain	Res	Type
11	AA	2705	A
11	AA	2728	G
11	AA	2729	OMU
11	AA	2737	C
11	AA	2740	A
11	AA	2742	C
11	AA	2753	G
11	AA	2755	C
11	AA	2762	A
11	AA	2772	C
11	AA	2773	C
11	AA	2777	G
11	AA	2778	G
11	AA	2787	G
11	AA	2791	OMG
11	AA	2793	OMG
11	AA	2795	U
11	AA	2796	G
11	AA	2797	C
11	AA	2800	G
11	AA	2801	A
11	AA	2802	A
11	AA	2808	A
11	AA	2810	C
11	AA	2816	G
11	AA	2817	A
11	AA	2821	C
11	AA	2845	A
11	AA	2846	U
11	AA	2867	C
11	AA	2871	G
11	AA	2872	A
11	AA	2873	U
11	AA	2875	U
11	AA	2876	C
11	AA	2887	A
11	AA	2898	G
11	AA	2899	C
11	AA	2902	A
11	AA	2922	OMG
11	AA	2923	U
11	AA	2933	A

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Mol	Chain	Res	Type
11	AA	2935	U
11	AA	2936	A
11	AA	2942	C
11	AA	2947	G
11	AA	2954	U
11	AA	2971	A
11	AA	2972	G
11	AA	2977	G
11	AA	2983	C
11	AA	2997	G
11	AA	3012	A
11	AA	3032	A
11	AA	3055	U
11	AA	3056	U
11	AA	3058	U
11	AA	3059	G
11	AA	3069	G
11	AA	3073	A
11	AA	3074	G
11	AA	3078	U
11	AA	3080	G
11	AA	3092	C
11	AA	3093	C
11	AA	3094	A
11	AA	3101	G
11	AA	3122	A
11	AA	3129	A
11	AA	3130	A
11	AA	3131	U
11	AA	3142	A
11	AA	3143	C
11	AA	3153	U
11	AA	3154	C
11	AA	3155	U
11	AA	3156	U
11	AA	3157	U
11	AA	3158	G
11	AA	3167	A
11	AA	3168	A
11	AA	3170	A
11	AA	3172	A
11	AA	3173	G

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Mol	Chain	Res	Type
11	AA	3176	G
11	AA	3179	U
11	AA	3181	C
11	AA	3186	A
11	AA	3187	A
11	AA	3207	U
11	AA	3210	A
11	AA	3216	G
11	AA	3217	C
11	AA	3218	A
11	AA	3219	G
11	AA	3238	G
11	AA	3242	G
11	AA	3243	A
11	AA	3263	G
11	AA	3271	G
11	AA	3273	A
11	AA	3275	U
11	AA	3276	G
11	AA	3277	U
11	AA	3281	U
11	AA	3282	U
11	AA	3294	A
11	AA	3303	G
11	AA	3304	U
11	AA	3313	U
11	AA	3316	A
11	AA	3341	U
11	AA	3345	G
11	AA	3350	C
11	AA	3351	U
11	AA	3352	U
11	AA	3353	G
11	AA	3369	G
11	AA	3378	C
11	AA	3382	U
11	AA	3389	U
11	AA	3390	G
14	BB	7	G
14	BB	11	A
14	BB	45	A
14	BB	54	U

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Mol	Chain	Res	Type
14	BB	55	A
14	BB	65	G
14	BB	73	C
14	BB	74	C
14	BB	112	G
14	BB	121	U
15	Bb	3	G
15	Bb	4	G
15	Bb	6	U
15	Bb	8	U
15	Bb	9	A
15	Bb	10	G
15	Bb	15	G
15	Bb	16	U
15	Bb	17	U
15	Bb	18	G
15	Bb	19	G
15	Bb	20	G
15	Bb	21	A
15	Bb	22	G
15	Bb	28	C
15	Bb	30	G
15	Bb	36	A
15	Bb	37	YYG
15	Bb	38	A
15	Bb	46	G
15	Bb	47	U
15	Bb	48	C
15	Bb	49	C
15	Bb	55	U
15	Bb	58	A
15	Bb	59	U
15	Bb	60	C
15	Bb	61	C
15	Bb	65	G
15	Bb	69	U
15	Bb	70	C
15	Bb	71	G
15	Bb	73	A
15	Bb	74	C
15	Bb	75	C
15	Bb	76	A

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Mol	Chain	Res	Type
17	CC	23	U
17	CC	34	U
17	CC	35	C
17	CC	38	U
17	CC	39	G
17	CC	59	A
17	CC	62	C
17	CC	63	G
17	CC	71	A
17	CC	82	U
17	CC	83	C
17	CC	84	C
17	CC	85	G
17	CC	86	U
17	CC	87	G
17	CC	91	C
17	CC	95	G
17	CC	104	A
17	CC	106	C
17	CC	113	U
17	CC	125	U
17	CC	126	A
17	CC	138	A
17	CC	156	U
17	CC	157	U
18	Cc	2	G
18	Cc	9	G
18	Cc	10	G
18	Cc	16	C
18	Cc	18	C
18	Cc	19	G
18	Cc	20	G
18	Cc	22	A
18	Cc	29	C
18	Cc	30	G
18	Cc	31	G
18	Cc	42	C
18	Cc	43	G
18	Cc	48	U
18	Cc	50	G
18	Cc	56	U
18	Cc	59	A

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Mol	Chain	Res	Type
18	Cc	60	A
18	Cc	72	C
18	Cc	76	C
18	Cc	77	A
21	Dd	16	A
21	Dd	19	A
21	Dd	22	U
60	c	2	A
60	c	4	C
60	c	25	C
60	c	26	A
60	c	34	G
60	c	42	G
60	c	45	U
60	c	47	A
60	c	50	C
60	c	61	A
60	c	67	A
60	c	68	A
60	c	70	C
60	c	78	A
60	c	81	G
60	c	94	U
60	c	100	A2M
60	c	104	A
60	c	114	C
60	c	116	U
60	c	130	C
60	c	137	U
60	c	140	A
60	c	144	U
60	c	146	U
60	c	149	C
60	c	151	G
60	c	159	U
60	c	173	A
60	c	174	U
60	c	175	G
60	c	176	C
60	c	184	C
60	c	185	U
60	c	186	C

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Mol	Chain	Res	Type
60	c	204	G
60	c	243	G
60	c	258	C
60	c	260	U
60	c	261	U
60	c	262	U
60	c	271	A
60	c	272	U
60	c	274	G
60	c	277	U
60	c	278	U
60	c	279	G
60	c	280	U
60	c	281	G
60	c	283	U
60	c	299	A
60	c	302	U
60	c	309	C
60	c	314	C
60	c	316	A
60	c	322	G
60	c	330	G
60	c	334	G
60	c	337	G
60	c	338	C
60	c	339	C
60	c	359	A
60	c	361	C
60	c	387	A
60	c	390	G
60	c	400	A
60	c	401	A
60	c	402	C
60	c	404	G
60	c	414	OMC
60	c	417	A
60	c	422	G
60	c	423	G
60	c	424	C
60	c	425	A
60	c	426	G
60	c	427	C

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Mol	Chain	Res	Type
60	c	434	G
60	c	437	A
60	c	439	U
60	c	444	C
60	c	445	A
60	c	447	U
60	c	448	C
60	c	454	U
60	c	455	C
60	c	460	A
60	c	468	A
60	c	475	A
60	c	480	G
60	c	484	C
60	c	485	A
60	c	503	G
60	c	504	U
60	c	506	A
60	c	508	U
60	c	509	G
60	c	513	U
60	c	514	G
60	c	515	A
60	c	516	G
60	c	518	A
60	c	519	C
60	c	520	A
60	c	526	A
60	c	527	A
60	c	533	U
60	c	537	G
60	c	538	A
60	c	539	G
60	c	541	A2M
60	c	542	A
60	c	545	A
60	c	548	G
60	c	555	A
60	c	557	G
60	c	558	U
60	c	559	C
60	c	565	C

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Mol	Chain	Res	Type
60	c	568	G
60	c	576	G
60	c	578	OMU
60	c	579	A
60	c	582	U
60	c	585	A
60	c	594	A
60	c	606	A
60	c	611	U
60	c	619	A2M
60	c	620	A
60	c	623	A
60	c	624	G
60	c	639	U
60	c	643	G
60	c	644	C
60	c	645	C
60	c	647	G
60	c	648	G
60	c	649	U
60	c	651	G
60	c	692	C
60	c	695	U
60	c	696	C
60	c	697	C
60	c	745	U
60	c	753	A
60	c	760	A
60	c	761	G
60	c	762	A
60	c	765	G
60	c	766	U
60	c	775	G
60	c	778	G
60	c	780	A
60	c	781	U
60	c	782	U
60	c	783	G
60	c	784	C
60	c	787	G
60	c	788	A
60	c	789	A

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Mol	Chain	Res	Type
60	c	792	U
60	c	794	U
60	c	795	U
60	c	809	A
60	c	812	A
60	c	814	A
60	c	820	U
60	c	821	U
60	c	853	G
60	c	856	A
60	c	859	A
60	c	860	U
60	c	861	U
60	c	863	A
60	c	895	G
60	c	897	C
60	c	898	A
60	c	899	G
60	c	906	A
60	c	913	G
60	c	915	A
60	c	921	U
60	c	933	A
60	c	935	U
60	c	945	U
60	c	951	A
60	c	960	U
60	c	966	A
60	c	987	G
60	c	988	A
60	c	992	A
60	c	993	A
60	c	996	U
60	c	1002	G
60	c	1003	A
60	c	1010	C
60	c	1025	A
60	c	1026	A
60	c	1027	A
60	c	1028	C
60	c	1031	U
60	c	1039	A

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Mol	Chain	Res	Type
60	c	1043	A
60	c	1053	G
60	c	1058	U
60	c	1059	U
60	c	1060	U
60	c	1061	A
60	c	1081	A
60	c	1082	C
60	c	1092	A
60	c	1093	A
60	c	1097	U
60	c	1098	U
60	c	1100	G
60	c	1101	G
60	c	1109	G
60	c	1113	A
60	c	1126	OMG
60	c	1138	A
60	c	1150	G
60	c	1151	A
60	c	1158	C
60	c	1164	G
60	c	1183	A
60	c	1185	U
60	c	1194	A
60	c	1196	A
60	c	1199	G
60	c	1200	G
60	c	1205	C
60	c	1217	A
60	c	1218	G
60	c	1219	A
60	c	1220	C
60	c	1221	A
60	c	1222	C
60	c	1224	A
60	c	1225	U
60	c	1226	A
60	c	1228	G
60	c	1229	G
60	c	1231	U
60	c	1238	A

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Mol	Chain	Res	Type
60	c	1241	G
60	c	1243	G
60	c	1244	A
60	c	1245	G
60	c	1252	C
60	c	1256	A
60	c	1257	U
60	c	1259	U
60	c	1261	G
60	c	1263	G
60	c	1276	U
60	c	1286	U
60	c	1301	U
60	c	1309	C
60	c	1314	U
60	c	1315	U
60	c	1321	A
60	c	1325	A
60	c	1336	A
60	c	1338	C
60	c	1339	C
60	c	1340	U
60	c	1346	A
60	c	1347	U
60	c	1352	G
60	c	1353	U
60	c	1355	C
60	c	1356	U
60	c	1357	A
60	c	1359	C
60	c	1360	A
60	c	1361	U
60	c	1362	U
60	c	1363	U
60	c	1364	G
60	c	1366	U
60	c	1367	G
60	c	1368	G
60	c	1369	U
60	c	1370	U
60	c	1371	A
60	c	1372	U

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Mol	Chain	Res	Type
60	c	1373	C
60	c	1374	C
60	c	1375	A
60	c	1376	C
60	c	1388	A
60	c	1390	U
60	c	1397	U
60	c	1398	U
60	c	1399	C
60	c	1400	A
60	c	1410	A
60	c	1411	A
60	c	1413	U
60	c	1414	U
60	c	1415	U
60	c	1425	A
60	c	1427	A
60	c	1428	OMG
60	c	1436	A
60	c	1445	G
60	c	1447	C
60	c	1459	C
60	c	1460	A
60	c	1461	C
60	c	1469	A
60	c	1471	A
60	c	1490	C
60	c	1491	U
60	c	1492	A
60	c	1496	U
60	c	1501	C
60	c	1514	U
60	c	1516	A
60	c	1521	G
60	c	1523	G
60	c	1524	A
60	c	1535	U
60	c	1536	G
60	c	1537	C
60	c	1542	G
60	c	1546	G
60	c	1557	U

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Mol	Chain	Res	Type
60	c	1559	A
60	c	1566	U
60	c	1567	U
60	c	1569	A
60	c	1572	OMG
60	c	1573	A
60	c	1575	G7M
60	c	1576	A
60	c	1577	A
60	c	1601	G
60	c	1612	U
60	c	1613	U
60	c	1617	U
60	c	1619	C
60	c	1622	G
60	c	1631	A
60	c	1633	A
60	c	1634	C
60	c	1641	C
60	c	1651	A
60	c	1657	U
60	c	1658	G
60	c	1678	A
60	c	1680	G
60	c	1681	A
60	c	1683	C
60	c	1685	G
60	c	1717	G
60	c	1718	G
60	c	1722	A
60	c	1727	G
60	c	1740	A
60	c	1751	C
60	c	1755	A
60	c	1760	G
60	c	1762	A
60	c	1766	A
60	c	1769	U
60	c	1780	G
60	c	1792	G
60	c	1793	G
60	c	1794	A

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Mol	Chain	Res	Type
60	c	1795	U
60	c	1796	C
60	c	1799	U

All (18) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
11	AA	601	U
11	AA	619	A
11	AA	916	G
11	AA	1033	U
11	AA	1348	U
11	AA	1562	C
11	AA	1900	A
11	AA	1902	G
11	AA	1904	C
11	AA	2101	C
11	AA	2253	G
11	AA	2280	A2M
11	AA	2491	A
11	AA	2500	A
11	AA	2792	A
11	AA	3121	U
11	AA	3206	C
14	BB	72	A

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

68 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	$\#\|Z\| > 2$
11	OMG	AA	1450	11	18,26,27	1.16	2 (11%)	19,38,41	0.84	1 (5%)
60	G7M	c	1575	60	20,26,27	2.34	7 (35%)	17,39,42	1.15	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
60	OMU	c	578	60	19,22,23	3.01	8 (42%)	26,31,34	1.66	5 (19%)
60	B8N	c	1191	60	24,29,30	5.04	9 (37%)	29,42,45	2.08	8 (27%)
11	OMC	AA	650	85,11	19,22,23	0.62	0	26,31,34	0.71	0
11	OMG	AA	2288	11	18,26,27	1.20	2 (11%)	19,38,41	0.84	1 (5%)
60	OMU	c	1269	60	19,22,23	3.02	8 (42%)	26,31,34	1.71	5 (19%)
11	OMC	AA	2337	11	19,22,23	0.62	0	26,31,34	0.60	0
11	A2M	AA	649	11	18,25,26	3.62	8 (44%)	18,36,39	3.40	4 (22%)
60	OMC	c	414	60	19,22,23	0.56	0	26,31,34	0.68	0
11	1MA	AA	2142	85,11	16,25,26	1.02	2 (12%)	18,37,40	1.09	1 (5%)
11	OMU	AA	2921	11	19,22,23	2.89	8 (42%)	26,31,34	1.78	5 (19%)
60	A2M	c	796	60	18,25,26	3.62	8 (44%)	18,36,39	3.32	3 (16%)
11	OMG	AA	805	11	18,26,27	1.20	3 (16%)	19,38,41	0.85	1 (5%)
11	UR3	AA	2634	11	19,22,23	2.74	7 (36%)	26,32,35	1.34	2 (7%)
11	OMC	AA	2197	86,11	19,22,23	0.57	0	26,31,34	0.61	0
11	A2M	AA	2946	85,11	18,25,26	3.59	7 (38%)	18,36,39	3.38	3 (16%)
11	OMC	AA	2948	11	19,22,23	0.60	0	26,31,34	0.67	0
11	5MC	AA	2278	57,11	18,22,23	0.62	0	26,32,35	0.71	0
11	OMG	AA	867	86,11	18,26,27	1.19	2 (11%)	19,38,41	0.82	1 (5%)
11	A2M	AA	2280	11	18,25,26	3.67	9 (50%)	18,36,39	3.44	4 (22%)
11	OMC	AA	2959	11	19,22,23	0.63	0	26,31,34	0.64	0
11	A2M	AA	876	11	18,25,26	3.64	8 (44%)	18,36,39	3.37	4 (22%)
60	A2M	c	420	60	18,25,26	3.60	8 (44%)	18,36,39	3.39	4 (22%)
11	OMC	AA	663	11	19,22,23	0.65	0	26,31,34	0.62	0
11	A2M	AA	817	85,11	18,25,26	3.71	7 (38%)	18,36,39	3.58	4 (22%)
11	OMU	AA	2729	11	19,22,23	3.01	8 (42%)	26,31,34	1.65	4 (15%)
60	OMG	c	1126	60	18,26,27	1.25	2 (11%)	19,38,41	0.82	1 (5%)
60	MA6	c	1782	60	18,26,27	1.11	2 (11%)	19,38,41	3.51	2 (10%)
11	A2M	AA	1133	11	18,25,26	3.64	8 (44%)	18,36,39	3.45	3 (16%)
11	OMC	AA	1437	11	19,22,23	0.67	0	26,31,34	1.31	2 (7%)
11	A2M	AA	2640	11	18,25,26	3.67	8 (44%)	18,36,39	3.29	4 (22%)
60	4AC	c	1280	60	21,24,25	3.53	10 (47%)	29,34,37	1.68	6 (20%)
11	OMU	AA	2347	11	19,22,23	2.93	8 (42%)	26,31,34	1.72	5 (19%)
11	OMG	AA	2791	11	18,26,27	1.15	2 (11%)	19,38,41	0.86	1 (5%)
60	OMG	c	1271	60	18,26,27	1.12	2 (11%)	19,38,41	0.89	1 (5%)
11	A2M	AA	2256	11	18,25,26	3.59	8 (44%)	18,36,39	3.44	5 (27%)
60	OMG	c	1428	60,85	18,26,27	1.18	2 (11%)	19,38,41	0.85	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
11	OMU	AA	898	11	19,22,23	2.91	8 (42%)	26,31,34	1.80	5 (19%)
11	OMG	AA	2815	11	18,26,27	1.18	2 (11%)	19,38,41	0.87	2 (10%)
60	A2M	c	436	60	18,25,26	3.72	8 (44%)	18,36,39	3.49	4 (22%)
11	OMU	AA	2724	11	19,22,23	2.92	8 (42%)	26,31,34	1.77	5 (19%)
11	OMG	AA	2793	11	18,26,27	1.18	2 (11%)	19,38,41	0.84	1 (5%)
11	A2M	AA	1449	85,11	18,25,26	3.63	9 (50%)	18,36,39	3.38	4 (22%)
11	5MC	AA	2870	86,11	18,22,23	0.71	0	26,32,35	0.65	0
11	A2M	AA	2281	11	18,25,26	3.72	8 (44%)	18,36,39	3.44	4 (22%)
11	OMG	AA	908	11	18,26,27	1.20	2 (11%)	19,38,41	0.82	1 (5%)
11	OMU	AA	2417	11	19,22,23	3.00	8 (42%)	26,31,34	1.75	5 (19%)
12	DDE	Aa	699	12	14,20,21	0.97	1 (7%)	14,28,30	1.25	2 (14%)
60	A2M	c	28	60	18,25,26	3.65	8 (44%)	18,36,39	3.39	4 (22%)
60	A2M	c	541	60	18,25,26	3.56	8 (44%)	18,36,39	3.44	5 (27%)
11	OMG	AA	2922	11	18,26,27	1.21	2 (11%)	19,38,41	0.92	1 (5%)
60	OMG	c	1572	60	18,26,27	1.15	2 (11%)	19,38,41	0.89	1 (5%)
60	A2M	c	100	60	18,25,26	3.62	7 (38%)	18,36,39	3.35	3 (16%)
60	OMC	c	1639	60,85	19,22,23	0.60	0	26,31,34	0.56	0
60	MA6	c	1781	60	18,26,27	1.06	2 (11%)	19,38,41	3.56	2 (10%)
60	OMC	c	1007	60	19,22,23	0.62	0	26,31,34	0.64	0
60	A2M	c	974	60	18,25,26	3.65	7 (38%)	18,36,39	3.34	3 (16%)
11	A2M	AA	807	11	18,25,26	3.66	9 (50%)	18,36,39	3.40	4 (22%)
11	OMU	AA	1888	11	19,22,23	2.96	8 (42%)	26,31,34	1.81	5 (19%)
60	OMG	c	562	60	18,26,27	1.18	2 (11%)	19,38,41	0.79	1 (5%)
11	A2M	AA	2220	11	18,25,26	3.64	8 (44%)	18,36,39	3.23	4 (22%)
11	OMU	AA	2421	11	19,22,23	2.97	8 (42%)	26,31,34	1.77	5 (19%)
11	1MA	AA	645	85,11	16,25,26	0.98	2 (12%)	18,37,40	1.11	2 (11%)
11	OMG	AA	2619	11	18,26,27	1.19	2 (11%)	19,38,41	0.84	1 (5%)
60	A2M	c	619	60,85	18,25,26	3.65	8 (44%)	18,36,39	3.52	3 (16%)
60	4AC	c	1773	60	21,24,25	3.39	10 (47%)	29,34,37	1.64	5 (17%)
15	YYG	Bb	37	85,15	31,42,43	2.19	8 (25%)	33,62,65	1.91	10 (30%)

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
11	OMG	AA	1450	11	-	3/5/27/28	0/3/3/3
60	G7M	c	1575	60	-	2/3/25/26	0/3/3/3
60	OMU	c	578	60	-	1/9/27/28	0/2/2/2
60	B8N	c	1191	60	-	4/16/34/35	0/2/2/2
11	OMC	AA	650	85,11	-	0/9/27/28	0/2/2/2
11	OMG	AA	2288	11	-	0/5/27/28	0/3/3/3
60	OMU	c	1269	60	-	0/9/27/28	0/2/2/2
11	OMC	AA	2337	11	-	1/9/27/28	0/2/2/2
11	A2M	AA	649	11	-	2/5/27/28	0/3/3/3
60	OMC	c	414	60	-	2/9/27/28	0/2/2/2
11	1MA	AA	2142	85,11	-	1/3/25/26	0/3/3/3
11	OMU	AA	2921	11	-	0/9/27/28	0/2/2/2
60	A2M	c	796	60	-	0/5/27/28	0/3/3/3
11	OMG	AA	805	11	-	0/5/27/28	0/3/3/3
11	UR3	AA	2634	11	-	0/7/25/26	0/2/2/2
11	OMC	AA	2197	86,11	-	4/9/27/28	0/2/2/2
11	A2M	AA	2946	85,11	-	0/5/27/28	0/3/3/3
11	OMC	AA	2948	11	-	0/9/27/28	0/2/2/2
11	5MC	AA	2278	57,11	-	0/7/25/26	0/2/2/2
11	OMG	AA	867	86,11	-	2/5/27/28	0/3/3/3
11	A2M	AA	2280	11	-	3/5/27/28	0/3/3/3
11	OMC	AA	2959	11	-	0/9/27/28	0/2/2/2
11	A2M	AA	876	11	-	1/5/27/28	0/3/3/3
60	A2M	c	420	60	-	1/5/27/28	0/3/3/3
11	OMC	AA	663	11	-	1/9/27/28	0/2/2/2
11	A2M	AA	817	85,11	-	1/5/27/28	0/3/3/3
11	OMU	AA	2729	11	-	3/9/27/28	0/2/2/2
60	OMG	c	1126	60	-	2/5/27/28	0/3/3/3
60	MA6	c	1782	60	-	3/7/29/30	0/3/3/3
11	A2M	AA	1133	11	-	0/5/27/28	0/3/3/3
11	OMC	AA	1437	11	-	4/9/27/28	0/2/2/2
11	A2M	AA	2640	11	-	1/5/27/28	0/3/3/3
60	4AC	c	1280	60	-	3/11/29/30	0/2/2/2
11	OMU	AA	2347	11	-	1/9/27/28	0/2/2/2
11	OMG	AA	2791	11	-	2/5/27/28	0/3/3/3
60	OMG	c	1271	60	-	1/5/27/28	0/3/3/3
11	A2M	AA	2256	11	-	1/5/27/28	0/3/3/3
60	OMG	c	1428	60,85	-	0/5/27/28	0/3/3/3
11	OMU	AA	898	11	-	0/9/27/28	0/2/2/2
11	OMG	AA	2815	11	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
60	A2M	c	436	60	-	1/5/27/28	0/3/3/3
11	OMU	AA	2724	11	-	1/9/27/28	0/2/2/2
11	OMG	AA	2793	11	-	2/5/27/28	0/3/3/3
11	A2M	AA	1449	85,11	-	0/5/27/28	0/3/3/3
11	5MC	AA	2870	86,11	-	4/7/25/26	0/2/2/2
11	A2M	AA	2281	11	-	3/5/27/28	0/3/3/3
11	OMG	AA	908	11	-	2/5/27/28	0/3/3/3
11	OMU	AA	2417	11	-	1/9/27/28	0/2/2/2
12	DDE	Aa	699	12	-	9/20/21/23	0/1/1/1
60	A2M	c	28	60	-	3/5/27/28	0/3/3/3
60	A2M	c	541	60	-	3/5/27/28	0/3/3/3
11	OMG	AA	2922	11	-	1/5/27/28	0/3/3/3
60	OMG	c	1572	60	-	4/5/27/28	0/3/3/3
60	A2M	c	100	60	-	2/5/27/28	0/3/3/3
60	OMC	c	1639	60,85	-	1/9/27/28	0/2/2/2
60	MA6	c	1781	60	-	0/7/29/30	0/3/3/3
60	OMC	c	1007	60	-	1/9/27/28	0/2/2/2
60	A2M	c	974	60	-	1/5/27/28	0/3/3/3
11	A2M	AA	807	11	-	0/5/27/28	0/3/3/3
11	OMU	AA	1888	11	-	1/9/27/28	0/2/2/2
60	OMG	c	562	60	-	1/5/27/28	0/3/3/3
11	A2M	AA	2220	11	-	1/5/27/28	0/3/3/3
11	OMU	AA	2421	11	-	1/9/27/28	0/2/2/2
11	1MA	AA	645	85,11	-	0/3/25/26	0/3/3/3
11	OMG	AA	2619	11	-	0/5/27/28	0/3/3/3
60	A2M	c	619	60,85	-	2/5/27/28	0/3/3/3
60	4AC	c	1773	60	-	2/11/29/30	0/2/2/2
15	YYG	Bb	37	85,15	-	11/20/42/43	0/3/4/4

All (330) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	1191	B8N	C2'-C1'	-17.84	1.30	1.53
60	c	1191	B8N	O4'-C1'	9.10	1.56	1.43
11	AA	807	A2M	C3'-C4'	-9.09	1.29	1.53
60	c	619	A2M	C3'-C4'	-9.01	1.30	1.53
11	AA	817	A2M	C3'-C4'	-8.97	1.30	1.53
60	c	28	A2M	C3'-C4'	-8.97	1.30	1.53
60	c	436	A2M	C3'-C4'	-8.97	1.30	1.53
11	AA	1449	A2M	C3'-C4'	-8.96	1.30	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	974	A2M	C3'-C4'	-8.96	1.30	1.53
11	AA	876	A2M	C3'-C4'	-8.93	1.30	1.53
60	c	796	A2M	C3'-C4'	-8.90	1.30	1.53
11	AA	2946	A2M	C3'-C4'	-8.90	1.30	1.53
11	AA	2220	A2M	C3'-C4'	-8.88	1.30	1.53
11	AA	2640	A2M	C3'-C4'	-8.85	1.30	1.53
60	c	420	A2M	C3'-C4'	-8.85	1.30	1.53
11	AA	1133	A2M	C3'-C4'	-8.82	1.30	1.53
11	AA	2280	A2M	C3'-C4'	-8.82	1.30	1.53
11	AA	649	A2M	C3'-C4'	-8.73	1.30	1.53
60	c	541	A2M	C3'-C4'	-8.67	1.30	1.53
11	AA	2281	A2M	C3'-C4'	-8.66	1.30	1.53
60	c	100	A2M	C3'-C4'	-8.59	1.31	1.53
11	AA	2256	A2M	C3'-C4'	-8.57	1.31	1.53
11	AA	2281	A2M	O4'-C1'	-8.26	1.29	1.41
60	c	1191	B8N	C4-N3	-8.14	1.25	1.40
60	c	436	A2M	O4'-C1'	-7.87	1.30	1.41
11	AA	817	A2M	O4'-C1'	-7.84	1.30	1.41
11	AA	2220	A2M	O4'-C4'	7.76	1.62	1.45
60	c	420	A2M	O4'-C4'	7.75	1.62	1.45
11	AA	2640	A2M	O4'-C4'	7.74	1.62	1.45
60	c	28	A2M	O4'-C1'	-7.73	1.30	1.41
60	c	619	A2M	O4'-C1'	-7.71	1.30	1.41
11	AA	2256	A2M	O4'-C4'	7.69	1.62	1.45
60	c	796	A2M	O4'-C4'	7.67	1.62	1.45
60	c	100	A2M	O4'-C4'	7.66	1.62	1.45
60	c	436	A2M	O4'-C4'	7.62	1.62	1.45
60	c	974	A2M	O4'-C4'	7.60	1.62	1.45
11	AA	807	A2M	O4'-C1'	-7.58	1.30	1.41
11	AA	2280	A2M	O4'-C4'	7.57	1.61	1.45
60	c	541	A2M	O4'-C4'	7.53	1.61	1.45
11	AA	2280	A2M	O4'-C1'	-7.52	1.30	1.41
11	AA	2281	A2M	O4'-C4'	7.49	1.61	1.45
11	AA	649	A2M	O4'-C4'	7.48	1.61	1.45
60	c	1191	B8N	C6-N1	7.47	1.55	1.36
11	AA	817	A2M	O4'-C4'	7.45	1.61	1.45
11	AA	876	A2M	O4'-C4'	7.44	1.61	1.45
11	AA	1449	A2M	O4'-C1'	-7.43	1.30	1.41
11	AA	1133	A2M	O4'-C1'	-7.42	1.30	1.41
11	AA	649	A2M	O4'-C1'	-7.42	1.30	1.41
60	c	1280	4AC	C4-N3	7.41	1.45	1.32
11	AA	2946	A2M	O4'-C4'	7.41	1.61	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	AA	1133	A2M	O4'-C4'	7.41	1.61	1.45
11	AA	876	A2M	O4'-C1'	-7.40	1.30	1.41
60	c	100	A2M	O4'-C1'	-7.40	1.30	1.41
11	AA	2640	A2M	O4'-C1'	-7.38	1.30	1.41
11	AA	2256	A2M	O4'-C1'	-7.34	1.30	1.41
60	c	974	A2M	O4'-C1'	-7.31	1.30	1.41
60	c	1773	4AC	C4-N3	7.23	1.45	1.32
11	AA	1449	A2M	O4'-C4'	7.21	1.61	1.45
11	AA	807	A2M	O4'-C4'	7.20	1.61	1.45
60	c	619	A2M	O4'-C4'	7.18	1.61	1.45
60	c	541	A2M	O4'-C1'	-7.15	1.31	1.41
15	Bb	37	YYG	C21-N20	7.13	1.52	1.34
60	c	28	A2M	O4'-C4'	7.13	1.60	1.45
11	AA	2946	A2M	O4'-C1'	-7.10	1.31	1.41
11	AA	2220	A2M	O4'-C1'	-7.06	1.31	1.41
60	c	796	A2M	O4'-C1'	-7.01	1.31	1.41
11	AA	2729	OMU	C2-N1	6.99	1.49	1.38
60	c	1269	OMU	C2-N1	6.98	1.49	1.38
11	AA	2417	OMU	C2-N1	6.94	1.49	1.38
60	c	578	OMU	C2-N1	6.93	1.49	1.38
11	AA	1888	OMU	C2-N1	6.89	1.49	1.38
60	c	420	A2M	O4'-C1'	-6.87	1.31	1.41
60	c	578	OMU	C2-N3	6.76	1.50	1.38
11	AA	898	OMU	C2-N1	6.75	1.49	1.38
11	AA	2421	OMU	C2-N3	6.71	1.49	1.38
11	AA	2421	OMU	C2-N1	6.70	1.49	1.38
11	AA	2417	OMU	C2-N3	6.65	1.49	1.38
60	c	1280	4AC	C6-C5	6.64	1.50	1.35
11	AA	2724	OMU	C2-N1	6.62	1.49	1.38
11	AA	2634	UR3	C6-C5	6.60	1.50	1.35
60	c	1269	OMU	C2-N3	6.57	1.49	1.38
60	c	1773	4AC	C6-C5	6.56	1.50	1.35
11	AA	2347	OMU	C2-N1	6.56	1.49	1.38
11	AA	2729	OMU	C2-N3	6.55	1.49	1.38
11	AA	2921	OMU	C2-N1	6.55	1.49	1.38
11	AA	2724	OMU	C2-N3	6.52	1.49	1.38
11	AA	1888	OMU	C2-N3	6.52	1.49	1.38
11	AA	2347	OMU	C2-N3	6.46	1.49	1.38
11	AA	898	OMU	C2-N3	6.42	1.49	1.38
11	AA	2921	OMU	C2-N3	6.41	1.49	1.38
11	AA	2634	UR3	C2-N1	6.35	1.47	1.38
60	c	1280	4AC	C7-N4	5.80	1.47	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	1269	OMU	C6-C5	5.77	1.48	1.35
11	AA	2729	OMU	C6-C5	5.66	1.48	1.35
11	AA	2347	OMU	C6-C5	5.65	1.48	1.35
60	c	578	OMU	C6-C5	5.64	1.48	1.35
11	AA	1888	OMU	C6-C5	5.64	1.48	1.35
11	AA	2421	OMU	C6-C5	5.63	1.48	1.35
60	c	1575	G7M	C2-N3	5.62	1.46	1.33
11	AA	2417	OMU	C6-C5	5.59	1.48	1.35
11	AA	2921	OMU	C6-C5	5.51	1.47	1.35
11	AA	898	OMU	C6-C5	5.48	1.47	1.35
60	c	1773	4AC	C7-N4	5.45	1.47	1.37
11	AA	2724	OMU	C6-C5	5.43	1.47	1.35
11	AA	2634	UR3	C2-N3	5.39	1.49	1.39
60	c	1191	B8N	C2-N1	5.36	1.55	1.39
15	Bb	37	YYG	O23-C21	5.26	1.43	1.34
60	c	1191	B8N	C6-C5	5.23	1.42	1.34
60	c	1280	4AC	C2-N3	5.23	1.47	1.36
60	c	1280	4AC	C2-N1	5.18	1.51	1.40
60	c	1280	4AC	C4-N4	5.17	1.47	1.39
60	c	1773	4AC	C2-N3	5.00	1.46	1.36
60	c	1575	G7M	C4-N3	4.97	1.49	1.37
60	c	1773	4AC	C2-N1	4.90	1.50	1.40
60	c	1773	4AC	C4-N4	4.63	1.46	1.39
60	c	1575	G7M	C2-N2	4.53	1.45	1.34
60	c	578	OMU	C4-N3	4.27	1.46	1.38
60	c	1269	OMU	C4-N3	4.24	1.46	1.38
60	c	1280	4AC	CM7-C7	4.20	1.59	1.50
11	AA	2417	OMU	C4-N3	4.14	1.46	1.38
11	AA	2421	OMU	C4-N3	4.13	1.46	1.38
11	AA	2729	OMU	C4-N3	4.07	1.45	1.38
11	AA	2921	OMU	C4-N3	4.00	1.45	1.38
11	AA	2724	OMU	C4-N3	3.99	1.45	1.38
60	c	1773	4AC	CM7-C7	3.93	1.58	1.50
11	AA	1888	OMU	C4-N3	3.92	1.45	1.38
11	AA	898	OMU	C4-N3	3.91	1.45	1.38
15	Bb	37	YYG	O18-C16	3.90	1.42	1.33
11	AA	2347	OMU	C4-N3	3.90	1.45	1.38
60	c	1280	4AC	C5-C4	3.87	1.49	1.40
60	c	1773	4AC	C5-C4	3.70	1.48	1.40
15	Bb	37	YYG	O6-C6	-3.38	1.18	1.22
60	c	796	A2M	C6-N6	3.20	1.45	1.34
60	c	1191	B8N	C1'-C5	3.19	1.57	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	AA	876	A2M	C6-N6	3.14	1.45	1.34
60	c	436	A2M	C6-N6	3.13	1.45	1.34
60	c	28	A2M	C6-N6	3.12	1.45	1.34
11	AA	2724	OMU	O4-C4	-3.12	1.18	1.24
11	AA	2634	UR3	C6-N1	3.12	1.45	1.38
11	AA	2256	A2M	C6-N6	3.12	1.45	1.34
60	c	619	A2M	C6-N6	3.10	1.45	1.34
60	c	541	A2M	C6-N6	3.09	1.45	1.34
11	AA	2640	A2M	C6-N6	3.09	1.45	1.34
11	AA	2417	OMU	O4-C4	-3.08	1.18	1.24
60	c	974	A2M	C6-N6	3.07	1.45	1.34
60	c	100	A2M	C6-N6	3.06	1.45	1.34
11	AA	2220	A2M	C6-N6	3.06	1.45	1.34
11	AA	2280	A2M	C6-N6	3.06	1.45	1.34
60	c	1126	OMG	C8-N7	-3.05	1.29	1.35
11	AA	1133	A2M	C6-N6	3.05	1.45	1.34
11	AA	649	A2M	C6-N6	3.04	1.45	1.34
11	AA	898	OMU	O4-C4	-3.04	1.18	1.24
11	AA	2347	OMU	O4-C4	-3.04	1.18	1.24
11	AA	2922	OMG	C8-N7	-3.04	1.29	1.35
11	AA	1449	A2M	C6-N6	3.03	1.45	1.34
11	AA	2288	OMG	C8-N7	-3.03	1.29	1.35
11	AA	807	A2M	C6-N6	3.02	1.45	1.34
60	c	420	A2M	C6-N6	3.02	1.45	1.34
11	AA	2946	A2M	C6-N6	3.01	1.45	1.34
11	AA	2421	OMU	O4-C4	-3.01	1.18	1.24
11	AA	817	A2M	C5-C4	-3.01	1.33	1.40
11	AA	2729	OMU	O4-C4	-2.99	1.18	1.24
60	c	1575	G7M	C6-N1	2.99	1.42	1.37
11	AA	2921	OMU	O4-C4	-2.98	1.18	1.24
11	AA	2281	A2M	C5-C4	-2.98	1.33	1.40
11	AA	1449	A2M	C5-C4	-2.98	1.33	1.40
11	AA	2619	OMG	C8-N7	-2.97	1.30	1.35
11	AA	2281	A2M	C6-N6	2.96	1.44	1.34
11	AA	817	A2M	C6-N6	2.96	1.44	1.34
11	AA	2946	A2M	C5-C4	-2.95	1.33	1.40
11	AA	1133	A2M	C5-C4	-2.94	1.33	1.40
60	c	1269	OMU	O4-C4	-2.94	1.18	1.24
11	AA	1888	OMU	O4-C4	-2.94	1.18	1.24
60	c	562	OMG	C8-N7	-2.93	1.30	1.35
60	c	578	OMU	O4-C4	-2.92	1.18	1.24
11	AA	817	A2M	O2'-C2'	-2.92	1.35	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	974	A2M	C5-C4	-2.92	1.33	1.40
60	c	1782	MA6	C5-C4	-2.92	1.33	1.40
11	AA	649	A2M	C5-C4	-2.91	1.33	1.40
60	c	436	A2M	O3'-C3'	2.90	1.49	1.43
11	AA	649	A2M	O3'-C3'	2.90	1.49	1.43
11	AA	2640	A2M	O3'-C3'	2.90	1.49	1.43
11	AA	2280	A2M	C5-C4	-2.89	1.33	1.40
60	c	619	A2M	C5-C4	-2.89	1.33	1.40
60	c	1428	OMG	C8-N7	-2.89	1.30	1.35
60	c	100	A2M	C5-C4	-2.88	1.33	1.40
11	AA	2946	A2M	O2'-C2'	-2.87	1.35	1.42
11	AA	1133	A2M	O3'-C3'	2.87	1.49	1.43
11	AA	2791	OMG	C8-N7	-2.86	1.30	1.35
11	AA	2815	OMG	C8-N7	-2.86	1.30	1.35
60	c	28	A2M	O3'-C3'	2.86	1.49	1.43
60	c	578	OMU	C6-N1	2.86	1.44	1.38
15	Bb	37	YYG	C2-N1	-2.86	1.31	1.37
11	AA	2256	A2M	O3'-C3'	2.86	1.49	1.43
60	c	28	A2M	O2'-C2'	-2.85	1.35	1.42
60	c	420	A2M	O3'-C3'	2.85	1.49	1.43
60	c	100	A2M	O3'-C3'	2.85	1.49	1.43
60	c	541	A2M	O3'-C3'	2.85	1.49	1.43
11	AA	908	OMG	C8-N7	-2.85	1.30	1.35
11	AA	2220	A2M	O3'-C3'	2.85	1.49	1.43
60	c	1781	MA6	C5-C4	-2.84	1.33	1.40
11	AA	867	OMG	C8-N7	-2.83	1.30	1.35
11	AA	805	OMG	C8-N7	-2.83	1.30	1.35
11	AA	2280	A2M	O2'-C2'	-2.83	1.35	1.42
11	AA	807	A2M	O2'-C2'	-2.83	1.35	1.42
11	AA	807	A2M	C5-C4	-2.82	1.33	1.40
11	AA	1450	OMG	C8-N7	-2.82	1.30	1.35
11	AA	2729	OMU	C6-N1	2.81	1.44	1.38
11	AA	876	A2M	C5-C4	-2.81	1.33	1.40
60	c	796	A2M	C5-C4	-2.81	1.33	1.40
60	c	796	A2M	O3'-C3'	2.80	1.49	1.43
11	AA	2281	A2M	O2'-C2'	-2.78	1.35	1.42
60	c	28	A2M	C5-C4	-2.78	1.33	1.40
60	c	1269	OMU	C6-N1	2.78	1.44	1.38
11	AA	1449	A2M	O2'-C2'	-2.77	1.35	1.42
60	c	974	A2M	O2'-C2'	-2.77	1.35	1.42
60	c	436	A2M	O2'-C2'	-2.76	1.35	1.42
60	c	1271	OMG	C8-N7	-2.75	1.30	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
60	c	1126	OMG	C5-C6	-2.75	1.41	1.47
60	c	436	A2M	C5-C4	-2.74	1.33	1.40
60	c	619	A2M	O2'-C2'	-2.74	1.35	1.42
11	AA	2417	OMU	C6-N1	2.74	1.44	1.38
11	AA	1449	A2M	O3'-C3'	2.73	1.49	1.43
11	AA	2220	A2M	C5-C4	-2.73	1.33	1.40
11	AA	2640	A2M	C5-C4	-2.73	1.33	1.40
11	AA	2281	A2M	O3'-C3'	2.73	1.49	1.43
11	AA	817	A2M	O3'-C3'	2.71	1.49	1.43
11	AA	2793	OMG	C8-N7	-2.71	1.30	1.35
11	AA	2280	A2M	O3'-C3'	2.71	1.49	1.43
60	c	1575	G7M	C5-C6	2.71	1.52	1.45
11	AA	2220	A2M	O2'-C2'	-2.70	1.35	1.42
11	AA	2256	A2M	C5-C4	-2.70	1.33	1.40
60	c	100	A2M	O2'-C2'	-2.69	1.35	1.42
11	AA	2421	OMU	C6-N1	2.68	1.44	1.38
11	AA	1133	A2M	O2'-C2'	-2.68	1.35	1.42
11	AA	2724	OMU	C6-N1	2.68	1.44	1.38
15	Bb	37	YYG	C13-C12	2.67	1.58	1.50
15	Bb	37	YYG	C10-C11	2.67	1.54	1.50
15	Bb	37	YYG	C4-N3	-2.67	1.35	1.40
60	c	974	A2M	O3'-C3'	2.66	1.49	1.43
11	AA	2347	OMU	O2-C2	-2.66	1.18	1.23
11	AA	2347	OMU	C6-N1	2.66	1.44	1.38
11	AA	876	A2M	O2'-C2'	-2.65	1.35	1.42
11	AA	908	OMG	C5-C6	-2.65	1.42	1.47
11	AA	876	A2M	O3'-C3'	2.65	1.49	1.43
60	c	420	A2M	C5-C4	-2.64	1.33	1.40
60	c	420	A2M	O2'-C2'	-2.63	1.35	1.42
11	AA	2142	1MA	C8-N7	-2.63	1.30	1.35
11	AA	2640	A2M	O2'-C2'	-2.63	1.35	1.42
60	c	796	A2M	O2'-C2'	-2.62	1.35	1.42
60	c	1428	OMG	C5-C6	-2.62	1.42	1.47
11	AA	867	OMG	C5-C6	-2.62	1.42	1.47
60	c	1572	OMG	C8-N7	-2.61	1.30	1.35
11	AA	898	OMU	C6-N1	2.60	1.44	1.38
60	c	619	A2M	O3'-C3'	2.60	1.49	1.43
60	c	541	A2M	C5-C4	-2.60	1.34	1.40
11	AA	2921	OMU	C6-N1	2.60	1.44	1.38
11	AA	1888	OMU	C6-N1	2.59	1.44	1.38
11	AA	2946	A2M	O3'-C3'	2.56	1.49	1.43
11	AA	2288	OMG	C5-C6	-2.55	1.42	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	AA	1450	OMG	C5-C6	-2.55	1.42	1.47
11	AA	805	OMG	C5-C6	-2.54	1.42	1.47
11	AA	898	OMU	O2-C2	-2.54	1.18	1.23
11	AA	2421	OMU	O2-C2	-2.52	1.18	1.23
11	AA	2619	OMG	C5-C6	-2.52	1.42	1.47
11	AA	2724	OMU	O2-C2	-2.51	1.18	1.23
11	AA	2142	1MA	C5-C4	-2.51	1.36	1.43
60	c	1773	4AC	O7-C7	-2.51	1.17	1.23
60	c	562	OMG	C5-C6	-2.51	1.42	1.47
11	AA	2793	OMG	C5-C6	-2.50	1.42	1.47
60	c	1191	B8N	O2-C2	-2.49	1.18	1.22
11	AA	2729	OMU	O2-C2	-2.48	1.18	1.23
11	AA	807	A2M	O3'-C3'	2.48	1.48	1.43
11	AA	645	1MA	C8-N7	-2.47	1.30	1.35
11	AA	649	A2M	O2'-C2'	-2.47	1.36	1.42
11	AA	1888	OMU	O2-C2	-2.46	1.18	1.23
11	AA	2417	OMU	O2-C2	-2.46	1.18	1.23
60	c	1269	OMU	C5-C4	2.45	1.49	1.43
60	c	1575	G7M	C2-N1	2.45	1.43	1.37
11	AA	2815	OMG	C5-C6	-2.44	1.42	1.47
11	AA	2791	OMG	C5-C6	-2.44	1.42	1.47
11	AA	2921	OMU	O2-C2	-2.44	1.18	1.23
60	c	578	OMU	C5-C4	2.44	1.49	1.43
60	c	1191	B8N	O4-C4	-2.43	1.18	1.23
11	AA	645	1MA	C5-C4	-2.43	1.36	1.43
60	c	1269	OMU	O2-C2	-2.42	1.18	1.23
11	AA	2922	OMG	C5-C6	-2.42	1.42	1.47
60	c	1782	MA6	C2-N3	2.40	1.36	1.32
11	AA	2640	A2M	C2-N3	2.36	1.35	1.32
60	c	1575	G7M	O6-C6	-2.35	1.18	1.23
60	c	1271	OMG	C5-C6	-2.35	1.42	1.47
60	c	1781	MA6	C2-N3	2.34	1.35	1.32
11	AA	2729	OMU	C5-C4	2.34	1.48	1.43
60	c	1572	OMG	C5-C6	-2.34	1.42	1.47
60	c	1773	4AC	C6-N1	2.33	1.43	1.38
60	c	541	A2M	O2'-C2'	-2.29	1.36	1.42
11	AA	1888	OMU	C5-C4	2.28	1.48	1.43
11	AA	2347	OMU	C5-C4	2.27	1.48	1.43
60	c	1280	4AC	C6-N1	2.26	1.43	1.38
11	AA	2256	A2M	O2'-C2'	-2.25	1.36	1.42
11	AA	2634	UR3	O2-C2	-2.23	1.18	1.22
11	AA	2421	OMU	C5-C4	2.22	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	AA	2724	OMU	C5-C4	2.21	1.48	1.43
11	AA	2220	A2M	C2-N3	2.21	1.35	1.32
60	c	1280	4AC	O7-C7	-2.20	1.18	1.23
60	c	436	A2M	C2-N3	2.20	1.35	1.32
11	AA	1133	A2M	O5'-C5'	-2.20	1.39	1.44
11	AA	2921	OMU	C5-C4	2.20	1.48	1.43
11	AA	2281	A2M	O5'-C5'	-2.19	1.39	1.44
60	c	420	A2M	C2-N3	2.17	1.35	1.32
60	c	541	A2M	C2-N3	2.17	1.35	1.32
60	c	578	OMU	O2-C2	-2.15	1.19	1.23
11	AA	2280	A2M	C2-N3	2.15	1.35	1.32
11	AA	898	OMU	C5-C4	2.15	1.48	1.43
11	AA	2417	OMU	C5-C4	2.14	1.48	1.43
11	AA	2280	A2M	O5'-C5'	-2.13	1.39	1.44
12	Aa	699	DDE	CD2-NE2	2.12	1.39	1.36
11	AA	2634	UR3	C4-N3	2.11	1.45	1.40
11	AA	805	OMG	C5-C4	-2.08	1.37	1.43
11	AA	876	A2M	O5'-C5'	-2.07	1.39	1.44
11	AA	807	A2M	O5'-C5'	-2.07	1.39	1.44
11	AA	2256	A2M	C2-N3	2.06	1.35	1.32
60	c	619	A2M	O5'-C5'	-2.06	1.39	1.44
60	c	796	A2M	C2-N3	2.05	1.35	1.32
11	AA	1449	A2M	O5'-C5'	-2.03	1.39	1.44
11	AA	2634	UR3	C5-C4	2.02	1.49	1.43
11	AA	649	A2M	C2-N3	2.02	1.35	1.32
11	AA	807	A2M	C2-N3	2.02	1.35	1.32
60	c	28	A2M	C2-N3	2.02	1.35	1.32
11	AA	1449	A2M	C2-N3	2.02	1.35	1.32

All (184) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
60	c	1781	MA6	N1-C6-N6	-14.32	101.98	117.06
60	c	1782	MA6	N1-C6-N6	-14.03	102.29	117.06
60	c	619	A2M	C5-C6-N6	11.05	137.15	120.35
11	AA	1133	A2M	C5-C6-N6	10.96	137.00	120.35
60	c	436	A2M	C5-C6-N6	10.82	136.80	120.35
11	AA	817	A2M	C5-C6-N6	10.78	136.73	120.35
60	c	420	A2M	C5-C6-N6	10.65	136.54	120.35
11	AA	1449	A2M	C5-C6-N6	10.59	136.44	120.35
60	c	100	A2M	C5-C6-N6	10.55	136.38	120.35
11	AA	2280	A2M	C5-C6-N6	10.52	136.34	120.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	AA	649	A2M	C5-C6-N6	10.52	136.34	120.35
11	AA	2256	A2M	C5-C6-N6	10.52	136.34	120.35
11	AA	2946	A2M	C5-C6-N6	10.52	136.34	120.35
60	c	541	A2M	C5-C6-N6	10.50	136.31	120.35
60	c	796	A2M	C5-C6-N6	10.48	136.28	120.35
11	AA	876	A2M	C5-C6-N6	10.48	136.28	120.35
60	c	974	A2M	C5-C6-N6	10.45	136.23	120.35
11	AA	807	A2M	C5-C6-N6	10.45	136.23	120.35
60	c	28	A2M	C5-C6-N6	10.45	136.23	120.35
11	AA	2281	A2M	C5-C6-N6	10.27	135.97	120.35
11	AA	2220	A2M	C5-C6-N6	10.17	135.80	120.35
11	AA	2640	A2M	C5-C6-N6	10.14	135.76	120.35
60	c	619	A2M	N6-C6-N1	-7.65	102.70	118.57
11	AA	817	A2M	N6-C6-N1	-7.59	102.82	118.57
60	c	436	A2M	N6-C6-N1	-7.53	102.94	118.57
11	AA	1133	A2M	N6-C6-N1	-7.53	102.95	118.57
11	AA	1449	A2M	N6-C6-N1	-7.36	103.31	118.57
60	c	420	A2M	N6-C6-N1	-7.34	103.33	118.57
11	AA	649	A2M	N6-C6-N1	-7.28	103.46	118.57
60	c	28	A2M	N6-C6-N1	-7.27	103.48	118.57
11	AA	2946	A2M	N6-C6-N1	-7.24	103.54	118.57
11	AA	2280	A2M	N6-C6-N1	-7.21	103.60	118.57
60	c	100	A2M	N6-C6-N1	-7.21	103.61	118.57
11	AA	2281	A2M	N6-C6-N1	-7.20	103.63	118.57
11	AA	2256	A2M	N6-C6-N1	-7.20	103.63	118.57
60	c	541	A2M	N6-C6-N1	-7.20	103.63	118.57
60	c	974	A2M	N6-C6-N1	-7.12	103.79	118.57
11	AA	807	A2M	N6-C6-N1	-7.12	103.79	118.57
11	AA	876	A2M	N6-C6-N1	-7.11	103.82	118.57
60	c	796	A2M	N6-C6-N1	-7.03	103.99	118.57
11	AA	2640	A2M	N6-C6-N1	-6.94	104.18	118.57
11	AA	2220	A2M	N6-C6-N1	-6.85	104.36	118.57
60	c	1773	4AC	CM7-C7-N4	5.92	125.54	115.29
11	AA	2946	A2M	N3-C2-N1	-5.81	119.60	128.68
60	c	28	A2M	N3-C2-N1	-5.72	119.74	128.68
60	c	1280	4AC	CM7-C7-N4	5.70	125.15	115.29
60	c	974	A2M	N3-C2-N1	-5.64	119.86	128.68
11	AA	898	OMU	C4-N3-C2	-5.59	119.20	126.58
11	AA	649	A2M	N3-C2-N1	-5.56	119.98	128.68
11	AA	2921	OMU	C4-N3-C2	-5.55	119.26	126.58
11	AA	817	A2M	N3-C2-N1	-5.55	120.00	128.68
11	AA	2280	A2M	N3-C2-N1	-5.54	120.02	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	AA	2724	OMU	C4-N3-C2	-5.50	119.33	126.58
11	AA	1133	A2M	N3-C2-N1	-5.49	120.10	128.68
15	Bb	37	YYG	O23-C21-N20	5.48	120.43	110.80
60	c	1781	MA6	N3-C2-N1	-5.48	120.12	128.68
11	AA	1449	A2M	N3-C2-N1	-5.46	120.14	128.68
60	c	100	A2M	N3-C2-N1	-5.46	120.14	128.68
60	c	1782	MA6	N3-C2-N1	-5.46	120.15	128.68
60	c	436	A2M	N3-C2-N1	-5.46	120.15	128.68
11	AA	2281	A2M	N3-C2-N1	-5.45	120.15	128.68
60	c	796	A2M	N3-C2-N1	-5.45	120.16	128.68
11	AA	876	A2M	N3-C2-N1	-5.45	120.16	128.68
11	AA	1888	OMU	C4-N3-C2	-5.43	119.41	126.58
60	c	541	A2M	N3-C2-N1	-5.40	120.24	128.68
11	AA	2640	A2M	N3-C2-N1	-5.34	120.34	128.68
11	AA	2417	OMU	C4-N3-C2	-5.33	119.55	126.58
11	AA	2421	OMU	C4-N3-C2	-5.33	119.55	126.58
60	c	1269	OMU	C4-N3-C2	-5.32	119.57	126.58
60	c	420	A2M	N3-C2-N1	-5.30	120.39	128.68
60	c	619	A2M	N3-C2-N1	-5.27	120.44	128.68
11	AA	2347	OMU	C4-N3-C2	-5.26	119.65	126.58
11	AA	2220	A2M	N3-C2-N1	-5.25	120.47	128.68
11	AA	807	A2M	N3-C2-N1	-5.21	120.53	128.68
11	AA	2256	A2M	N3-C2-N1	-5.21	120.54	128.68
60	c	578	OMU	C4-N3-C2	-5.14	119.80	126.58
60	c	1191	B8N	O4'-C1'-C2'	5.07	112.30	105.14
11	AA	2729	OMU	C4-N3-C2	-4.95	120.05	126.58
11	AA	2634	UR3	C4-N3-C2	-4.80	120.04	124.56
60	c	1191	B8N	C5-C4-N3	4.69	124.85	116.17
11	AA	1888	OMU	N3-C2-N1	4.21	120.47	114.89
11	AA	2347	OMU	N3-C2-N1	4.13	120.38	114.89
11	AA	1437	OMC	C1'-N1-C2	4.05	127.47	118.42
11	AA	898	OMU	N3-C2-N1	4.04	120.25	114.89
60	c	1191	B8N	C4-N3-C2	-3.91	120.51	125.46
11	AA	2421	OMU	N3-C2-N1	3.90	120.07	114.89
11	AA	2724	OMU	N3-C2-N1	3.87	120.03	114.89
11	AA	2921	OMU	N3-C2-N1	3.81	119.95	114.89
11	AA	2281	A2M	O4'-C1'-C2'	-3.77	100.05	106.59
11	AA	2729	OMU	N3-C2-N1	3.71	119.81	114.89
60	c	1269	OMU	N3-C2-N1	3.69	119.79	114.89
11	AA	2417	OMU	N3-C2-N1	3.67	119.76	114.89
11	AA	2921	OMU	C5-C4-N3	3.64	120.28	114.84
11	AA	2724	OMU	C5-C4-N3	3.60	120.23	114.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	Bb	37	YYG	O18-C16-C15	3.56	120.64	111.52
60	c	1191	B8N	C3'-C2'-C1'	3.55	105.77	101.64
11	AA	2417	OMU	C5-C4-N3	3.51	120.10	114.84
11	AA	898	OMU	C5-C4-N3	3.47	120.03	114.84
60	c	578	OMU	N3-C2-N1	3.40	119.40	114.89
60	c	578	OMU	C5-C4-N3	3.39	119.92	114.84
60	c	1269	OMU	C5-C4-N3	3.35	119.84	114.84
60	c	1575	G7M	C2-N1-C6	-3.32	118.99	125.10
11	AA	2421	OMU	C5-C4-N3	3.28	119.74	114.84
11	AA	2729	OMU	C5-C4-N3	3.26	119.71	114.84
15	Bb	37	YYG	O22-C21-N20	-3.24	119.54	124.85
11	AA	1888	OMU	C5-C4-N3	3.19	119.61	114.84
60	c	1191	B8N	N3-C2-N1	3.18	121.25	116.76
11	AA	2347	OMU	C5-C4-N3	3.13	119.52	114.84
11	AA	1437	OMC	C1'-N1-C6	-3.11	114.06	120.84
11	AA	2417	OMU	O4-C4-C5	-3.10	119.70	125.16
11	AA	2421	OMU	O4-C4-C5	-3.10	119.71	125.16
15	Bb	37	YYG	O23-C21-O22	-3.10	120.02	124.58
11	AA	2921	OMU	O4-C4-C5	-3.09	119.72	125.16
11	AA	2640	A2M	C1'-N9-C4	3.06	132.02	126.64
60	c	1191	B8N	C31-N3-C4	3.04	121.79	117.31
11	AA	807	A2M	C1'-N9-C4	3.03	131.96	126.64
15	Bb	37	YYG	C5-C6-N1	3.03	118.47	113.96
11	AA	817	A2M	O4'-C1'-C2'	-3.02	101.35	106.59
60	c	578	OMU	O4-C4-C5	-2.97	119.93	125.16
11	AA	2724	OMU	O4-C4-C5	-2.95	119.97	125.16
60	c	1773	4AC	C6-C5-C4	2.94	120.56	116.96
60	c	1269	OMU	O4-C4-C5	-2.92	120.02	125.16
60	c	1280	4AC	C6-C5-C4	2.91	120.53	116.96
11	AA	898	OMU	O4-C4-C5	-2.89	120.07	125.16
15	Bb	37	YYG	C8-N7-C5	2.77	108.27	102.99
60	c	1773	4AC	O7-C7-N4	-2.75	117.36	121.82
11	AA	1888	OMU	O4-C4-C5	-2.75	120.33	125.16
11	AA	2347	OMU	O4-C4-C5	-2.75	120.33	125.16
11	AA	2256	A2M	O2'-C2'-C1'	2.73	114.52	109.09
60	c	1280	4AC	C5-C4-N3	-2.71	118.24	122.59
15	Bb	37	YYG	C3-N3-C2	-2.70	117.61	120.13
60	c	1280	4AC	O7-C7-N4	-2.67	117.50	121.82
60	c	1773	4AC	O7-C7-CM7	-2.67	117.11	122.06
15	Bb	37	YYG	C3-N3-C4	2.65	121.42	116.71
11	AA	2142	1MA	N1-C6-N6	2.61	126.41	119.77
11	AA	876	A2M	C1'-N9-C4	2.61	131.22	126.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	AA	2729	OMU	O4-C4-C5	-2.59	120.60	125.16
11	AA	649	A2M	C1'-N9-C4	2.59	131.18	126.64
60	c	1271	OMG	O6-C6-C5	2.57	129.38	124.37
60	c	1280	4AC	O7-C7-CM7	-2.53	117.35	122.06
11	AA	2815	OMG	O6-C6-C5	2.51	129.28	124.37
60	c	1773	4AC	C5-C4-N3	-2.50	118.57	122.59
11	AA	2922	OMG	O6-C6-C5	2.48	129.21	124.37
15	Bb	37	YYG	O6-C6-C5	-2.45	119.84	124.17
11	AA	2921	OMU	O2-C2-N1	-2.43	119.55	122.79
60	c	1572	OMG	O6-C6-C5	2.43	129.11	124.37
60	c	1191	B8N	O2'-C2'-C1'	-2.41	105.48	111.23
60	c	1428	OMG	O6-C6-C5	2.41	129.08	124.37
11	AA	898	OMU	O2-C2-N1	-2.40	119.60	122.79
11	AA	1450	OMG	O6-C6-C5	2.40	129.06	124.37
11	AA	2220	A2M	C1'-N9-C4	2.40	130.85	126.64
11	AA	2421	OMU	O2-C2-N1	-2.39	119.61	122.79
11	AA	2288	OMG	O6-C6-C5	2.39	129.03	124.37
60	c	541	A2M	O2'-C2'-C1'	2.38	113.81	109.09
11	AA	645	1MA	C5-C6-N1	-2.37	110.36	113.90
11	AA	805	OMG	O6-C6-C5	2.33	128.92	124.37
11	AA	2634	UR3	C1'-N1-C2	2.33	120.92	116.99
11	AA	2724	OMU	O2-C2-N1	-2.31	119.72	122.79
60	c	562	OMG	O6-C6-C5	2.30	128.87	124.37
60	c	541	A2M	C1'-N9-C4	2.30	130.68	126.64
11	AA	2347	OMU	O2-C2-N1	-2.29	119.74	122.79
11	AA	2619	OMG	O6-C6-C5	2.29	128.84	124.37
11	AA	2791	OMG	O6-C6-C5	2.27	128.81	124.37
11	AA	2417	OMU	O2-C2-N1	-2.27	119.77	122.79
11	AA	2793	OMG	O6-C6-C5	2.25	128.76	124.37
12	Aa	699	DDE	CAU-CBW-CBI	-2.24	106.76	111.20
60	c	420	A2M	C1'-N9-C4	2.22	130.54	126.64
11	AA	2280	A2M	C2'-C3'-C4'	2.21	106.80	101.99
12	Aa	699	DDE	CBW-CBI-NAD	2.21	118.10	115.28
60	c	1280	4AC	N4-C4-N3	2.21	117.56	113.85
60	c	1191	B8N	C4'-O4'-C1'	-2.20	103.02	108.55
11	AA	1888	OMU	O2-C2-N1	-2.20	119.86	122.79
60	c	1126	OMG	O6-C6-C5	2.17	128.60	124.37
11	AA	2256	A2M	C1'-N9-C4	2.16	130.44	126.64
11	AA	867	OMG	O6-C6-C5	2.14	128.54	124.37
11	AA	908	OMG	O6-C6-C5	2.12	128.51	124.37
60	c	578	OMU	O2-C2-N1	-2.10	119.99	122.79
60	c	28	A2M	C1'-N9-C4	2.10	130.33	126.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
60	c	436	A2M	C1'-N9-C4	2.07	130.28	126.64
60	c	1269	OMU	O2-C2-N1	-2.06	120.04	122.79
15	Bb	37	YYG	O18-C16-O17	-2.06	119.81	123.84
11	AA	645	1MA	CM1-N1-C6	-2.02	117.21	120.27
11	AA	2815	OMG	C5-C6-N1	-2.02	110.39	113.95
11	AA	1449	A2M	C1'-N9-C4	2.00	130.16	126.64

There are no chirality outliers.

All (108) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	AA	649	A2M	C1'-C2'-O2'-CM'
11	AA	663	OMC	C1'-C2'-O2'-CM2
11	AA	867	OMG	O4'-C4'-C5'-O5'
11	AA	867	OMG	C3'-C4'-C5'-O5'
11	AA	876	A2M	C1'-C2'-O2'-CM'
11	AA	1437	OMC	C1'-C2'-O2'-CM2
11	AA	1450	OMG	O4'-C4'-C5'-O5'
11	AA	1450	OMG	C3'-C4'-C5'-O5'
11	AA	2220	A2M	C1'-C2'-O2'-CM'
11	AA	2256	A2M	C1'-C2'-O2'-CM'
11	AA	2280	A2M	C1'-C2'-O2'-CM'
11	AA	2337	OMC	C1'-C2'-O2'-CM2
11	AA	2417	OMU	C1'-C2'-O2'-CM2
11	AA	2421	OMU	C1'-C2'-O2'-CM2
11	AA	2640	A2M	C1'-C2'-O2'-CM'
11	AA	2724	OMU	C1'-C2'-O2'-CM2
11	AA	2729	OMU	C1'-C2'-O2'-CM2
11	AA	2791	OMG	C3'-C4'-C5'-O5'
11	AA	2793	OMG	O4'-C4'-C5'-O5'
11	AA	2870	5MC	C2'-C1'-N1-C2
11	AA	2870	5MC	C2'-C1'-N1-C6
12	Aa	699	DDE	C-CA-CB-CG
12	Aa	699	DDE	CA-CB-CG-ND1
15	Bb	37	YYG	C3'-C4'-C5'-O5'
15	Bb	37	YYG	C14-C15-N20-C21
15	Bb	37	YYG	O23-C21-N20-C15
15	Bb	37	YYG	N20-C21-O23-C24
15	Bb	37	YYG	O22-C21-O23-C24
60	c	28	A2M	C1'-C2'-O2'-CM'
60	c	100	A2M	O4'-C4'-C5'-O5'
60	c	414	OMC	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
60	c	414	OMC	O4'-C4'-C5'-O5'
60	c	541	A2M	C3'-C4'-C5'-O5'
60	c	541	A2M	C1'-C2'-O2'-CM'
60	c	562	OMG	C1'-C2'-O2'-CM2
60	c	619	A2M	O4'-C4'-C5'-O5'
60	c	974	A2M	C1'-C2'-O2'-CM'
60	c	1007	OMC	C1'-C2'-O2'-CM2
60	c	1191	B8N	N3-C31-C32-C33
60	c	1271	OMG	C1'-C2'-O2'-CM2
60	c	1572	OMG	O4'-C4'-C5'-O5'
60	c	1572	OMG	C1'-C2'-O2'-CM2
60	c	1639	OMC	C1'-C2'-O2'-CM2
60	c	1782	MA6	O4'-C4'-C5'-O5'
60	c	1782	MA6	C3'-C4'-C5'-O5'
15	Bb	37	YYG	C15-C16-O18-C19
15	Bb	37	YYG	O22-C21-N20-C15
15	Bb	37	YYG	O17-C16-O18-C19
11	AA	2280	A2M	O4'-C4'-C5'-O5'
11	AA	2280	A2M	C3'-C4'-C5'-O5'
11	AA	2281	A2M	O4'-C4'-C5'-O5'
11	AA	2793	OMG	C3'-C4'-C5'-O5'
15	Bb	37	YYG	O4'-C4'-C5'-O5'
60	c	28	A2M	O4'-C4'-C5'-O5'
60	c	541	A2M	O4'-C4'-C5'-O5'
60	c	578	OMU	O4'-C4'-C5'-O5'
60	c	1572	OMG	C3'-C4'-C5'-O5'
60	c	1575	G7M	C3'-C4'-C5'-O5'
11	AA	2281	A2M	C3'-C4'-C5'-O5'
11	AA	2791	OMG	O4'-C4'-C5'-O5'
60	c	100	A2M	C3'-C4'-C5'-O5'
60	c	619	A2M	C3'-C4'-C5'-O5'
60	c	1575	G7M	O4'-C4'-C5'-O5'
11	AA	908	OMG	C3'-C4'-C5'-O5'
12	Aa	699	DDE	CE1-CAT-CAU-CBW
11	AA	2729	OMU	C3'-C4'-C5'-O5'
60	c	1126	OMG	C3'-C4'-C5'-O5'
11	AA	2197	OMC	C2'-C1'-N1-C6
60	c	1280	4AC	O7-C7-N4-C4
60	c	1280	4AC	CM7-C7-N4-C4
60	c	1773	4AC	O7-C7-N4-C4
60	c	1773	4AC	CM7-C7-N4-C4
12	Aa	699	DDE	CAU-CAT-CE1-NE2

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Mol	Chain	Res	Type	Atoms
60	c	420	A2M	C1'-C2'-O2'-CM'
60	c	436	A2M	C1'-C2'-O2'-CM'
60	c	1191	B8N	C31-C32-C33-N34
11	AA	2870	5MC	O4'-C1'-N1-C6
11	AA	2922	OMG	C3'-C4'-C5'-O5'
11	AA	1437	OMC	C2'-C1'-N1-C2
12	Aa	699	DDE	N-CA-CB-CG
60	c	1572	OMG	C4'-C5'-O5'-P
11	AA	2197	OMC	O4'-C1'-N1-C6
11	AA	1437	OMC	C2'-C1'-N1-C6
60	c	1782	MA6	C4'-C5'-O5'-P
11	AA	817	A2M	O4'-C4'-C5'-O5'
11	AA	2347	OMU	C3'-C4'-C5'-O5'
15	Bb	37	YYG	N20-C15-C16-O17
60	c	1191	B8N	O4'-C1'-C5-C4
11	AA	2281	A2M	C3'-C2'-O2'-CM'
11	AA	908	OMG	O4'-C4'-C5'-O5'
11	AA	2729	OMU	O4'-C4'-C5'-O5'
15	Bb	37	YYG	N20-C15-C16-O18
11	AA	2197	OMC	O4'-C1'-N1-C2
11	AA	2870	5MC	O4'-C1'-N1-C2
11	AA	2142	1MA	C4'-C5'-O5'-P
60	c	28	A2M	C3'-C4'-C5'-O5'
12	Aa	699	DDE	CAT-CAU-CBW-CBI
12	Aa	699	DDE	OAG-CBI-CBW-CAU
60	c	1126	OMG	C4'-C5'-O5'-P
60	c	1191	B8N	O4'-C1'-C5-C6
11	AA	2197	OMC	C2'-C1'-N1-C2
11	AA	1437	OMC	O4'-C4'-C5'-O5'
11	AA	649	A2M	C4'-C5'-O5'-P
11	AA	1450	OMG	C4'-C5'-O5'-P
11	AA	1888	OMU	C3'-C4'-C5'-O5'
12	Aa	699	DDE	NAD-CBI-CBW-CAU
12	Aa	699	DDE	NAD-CBI-CBW-NCB
60	c	1280	4AC	C2'-C1'-N1-C2

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 233 ligands modelled in this entry, 229 are monoatomic - leaving 4 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	$\#\|Z\| > 2$
87	SPD	AA	3566	-	9,9,9	0.31	0	8,8,8	0.81	0
87	SPD	AA	3567	-	9,9,9	0.31	0	8,8,8	0.69	0
87	SPD	c	1937	-	9,9,9	0.32	0	8,8,8	0.93	0
88	GTP	Aa	1001	85	26,34,34	1.20	2 (7%)	32,54,54	1.61	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
87	SPD	AA	3566	-	-	4/7/7/7	-
87	SPD	AA	3567	-	-	3/7/7/7	-
87	SPD	c	1937	-	-	3/7/7/7	-
88	GTP	Aa	1001	85	-	2/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
88	Aa	1001	GTP	C5-C6	-4.37	1.38	1.47
88	Aa	1001	GTP	C2-N3	2.07	1.38	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
88	Aa	1001	GTP	PB-O3B-PG	-3.94	119.31	132.83
88	Aa	1001	GTP	C5-C6-N1	3.24	119.68	113.95
88	Aa	1001	GTP	C3'-C2'-C1'	3.15	105.73	100.98
88	Aa	1001	GTP	C8-N7-C5	2.94	108.59	102.99
88	Aa	1001	GTP	C2-N1-C6	-2.79	119.96	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
88	Aa	1001	GTP	PA-O3A-PB	-2.53	124.15	132.83
88	Aa	1001	GTP	O6-C6-C5	-2.39	119.70	124.37

There are no chirality outliers.

All (12) torsion outliers are listed below:

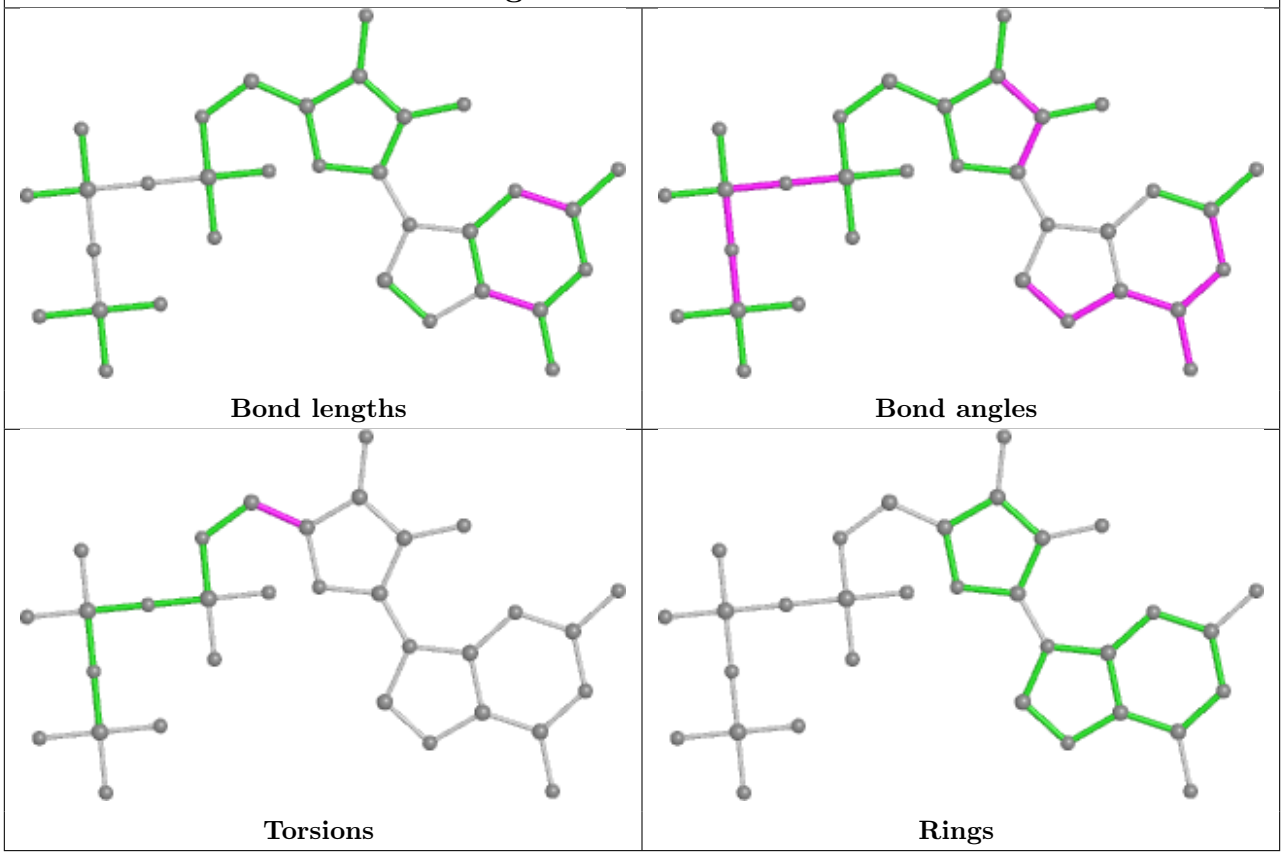
Mol	Chain	Res	Type	Atoms
87	AA	3566	SPD	N6-C7-C8-C9
87	AA	3567	SPD	C3-C4-C5-N6
88	Aa	1001	GTP	O4'-C4'-C5'-O5'
88	Aa	1001	GTP	C3'-C4'-C5'-O5'
87	AA	3567	SPD	C8-C7-N6-C5
87	AA	3566	SPD	C2-C3-C4-C5
87	c	1937	SPD	C4-C5-N6-C7
87	c	1937	SPD	N1-C2-C3-C4
87	c	1937	SPD	C2-C3-C4-C5
87	AA	3566	SPD	C4-C5-N6-C7
87	AA	3567	SPD	N1-C2-C3-C4
87	AA	3566	SPD	N1-C2-C3-C4

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 then 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.

Ligand GTP Aa 1001



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Map visualisation

This section contains visualisations of the EMDB entry EMD-16702. 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

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal standard-deviation projections (False-color)

This section was not generated.

6.5 Orthogonal surface views

This section was not generated.

6.6 Mask visualisation

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

7 Map analysis

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

7.1 Map-value distribution

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation (i)

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

9 Map-model fit

This section was not generated.