Full wwPDB EM Validation Report ⓘ

Nov 18, 2026 – 01:36 PM EST

PDB ID	:	9ZR1 / pdb_00009zr1
EMDB ID	:	EMD-74587
Title	:	Class-Ib: EF-G bound E. coli 70S pre-H1 early translocation intermediate in the presence of GTP-gamma-S
Authors	:	Rundlet, E.J.; Natchiar, K.S.; Holm, M.; Myasnikov, A.G.; Altman, R.; Blanchard, S.C.
Deposited on	:	2025-12-19
Resolution	:	3.00 Å(reported)
Based on initial model	:	7N2U

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

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

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

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

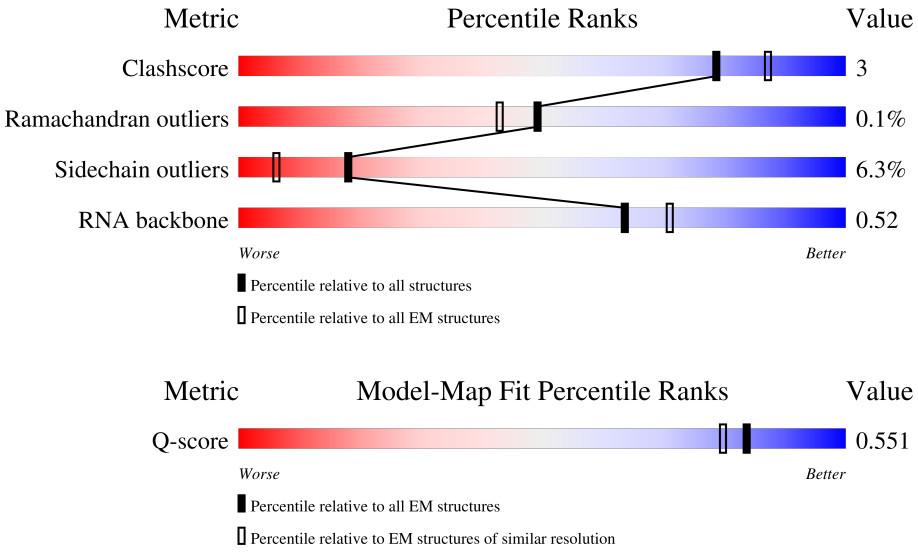
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.2
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.00 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	14081 (2.50 - 3.50)

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

Mol	Chain	Length	Quality of chain
1	16	1542	6% 69% 27%
2	SB	241	23% 85% 9% 5%

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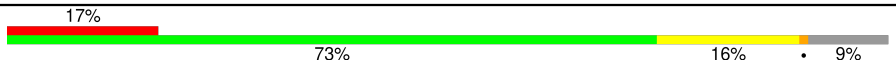
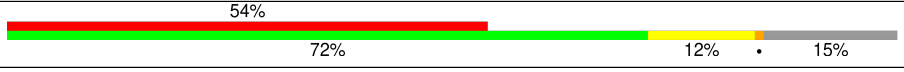
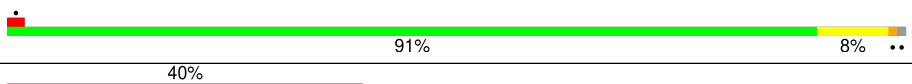
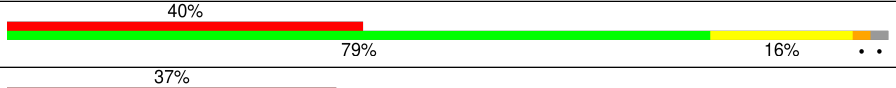
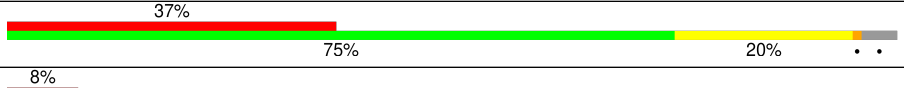
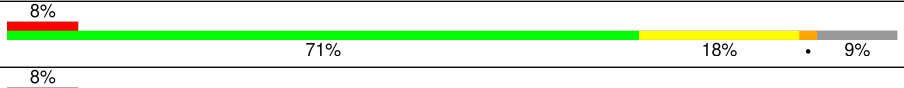
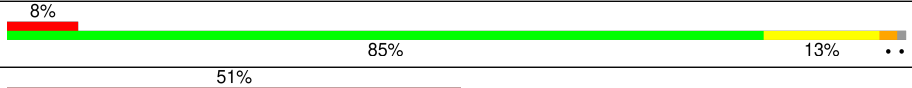
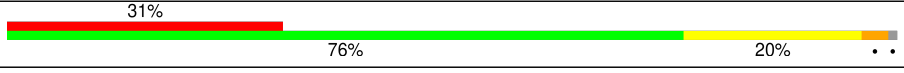
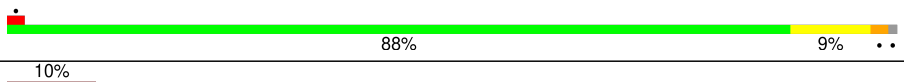
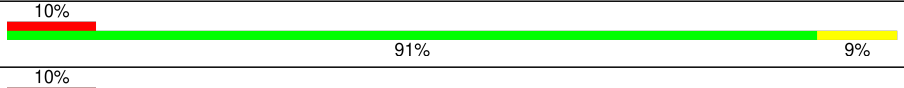
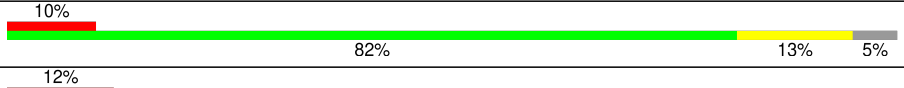
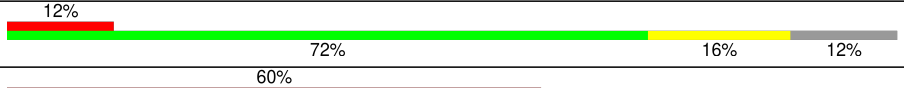
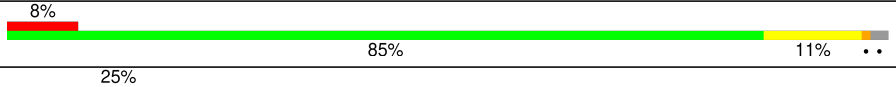
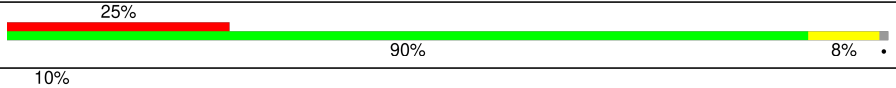
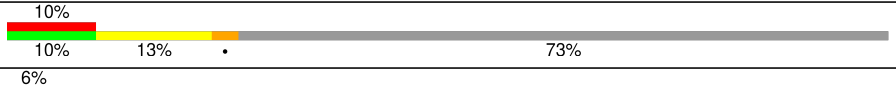
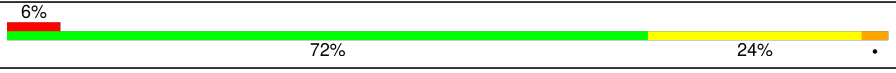
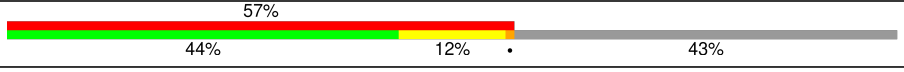
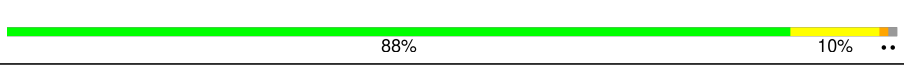
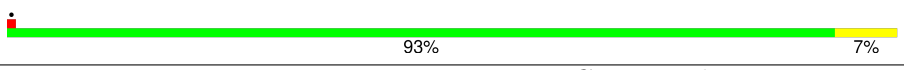
Mol	Chain	Length	Quality of chain
3	SC	233	
4	SD	206	
5	SE	167	
6	SF	135	
7	SG	179	
8	SH	130	
9	SI	130	
10	SJ	103	
11	SK	129	
12	SL	124	
13	SM	118	
14	SN	101	
15	SO	89	
16	SP	82	
17	SQ	84	
18	SR	75	
19	SS	92	
20	ST	87	
21	SU	71	
22	mR	60	
23	23	2904	
24	5	120	
25	LA	234	
26	LB	273	
27	LC	209	

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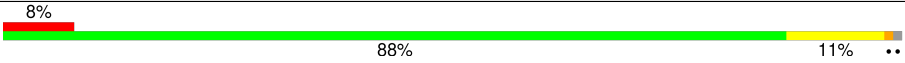
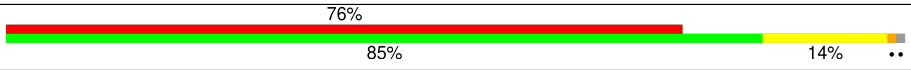
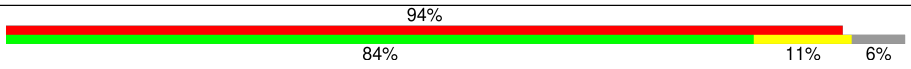
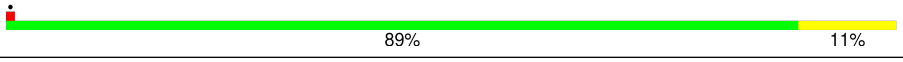
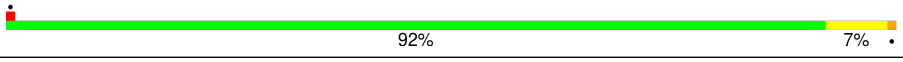
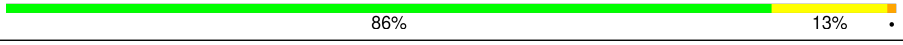
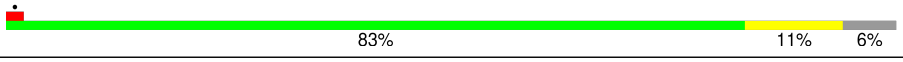
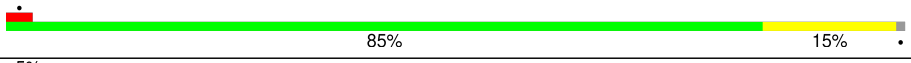
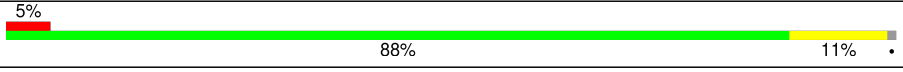
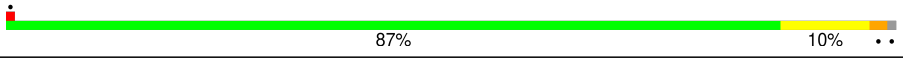
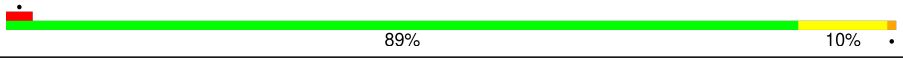
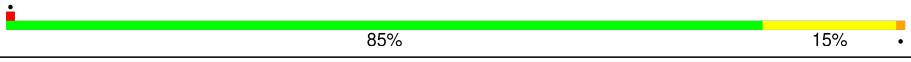
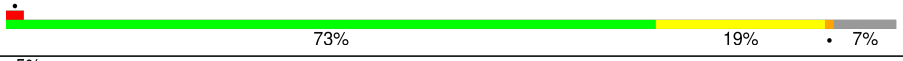
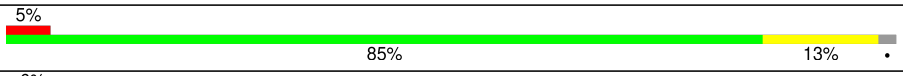
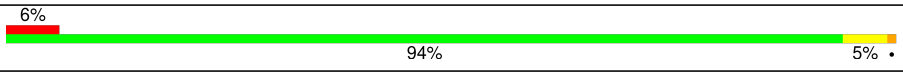
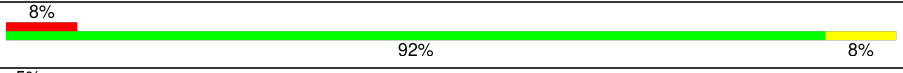
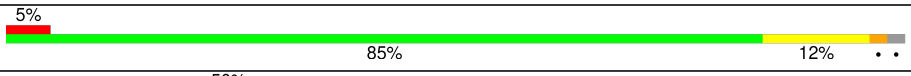
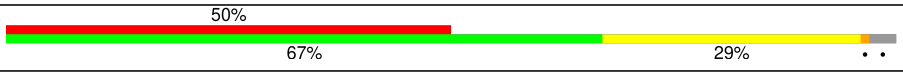
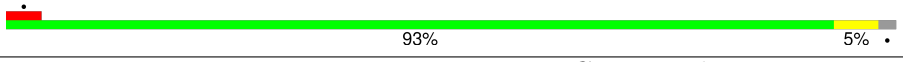
Mol	Chain	Length	Quality of chain
28	LD	201	
29	LE	179	
30	LF	177	
31	LI	149	
32	LJ	165	
33	LK	142	
34	LM	142	
35	LN	123	
36	LO	144	
37	LP	136	
38	LQ	127	
39	LR	117	
40	LS	115	
41	LT	118	
42	LU	103	
43	LV	110	
44	LW	100	
45	LX	104	
46	LY	94	
47	La	85	
48	Lb	78	
49	Lc	63	
50	Ld	59	
51	Le	70	
52	Lf	57	

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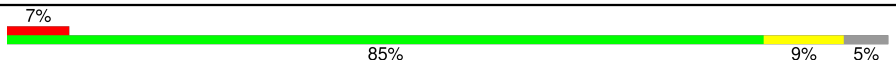
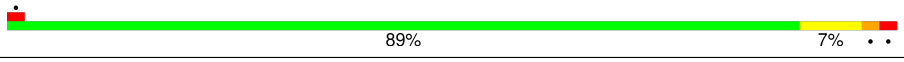
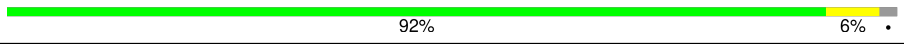
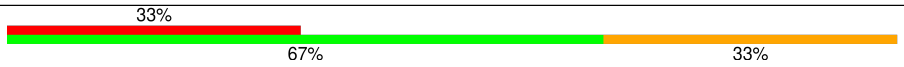
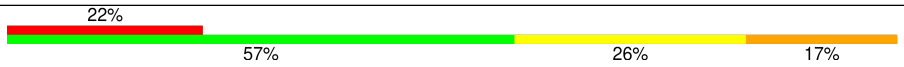
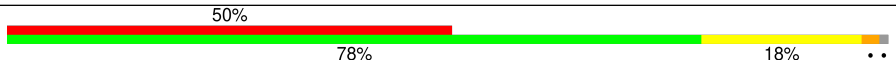
Mol	Chain	Length	Quality of chain
53	Lg	55	
54	Lh	46	
55	Li	65	
56	Lj	38	
57	Pt	76	
58	Pp	3	
59	Dt	76	
60	EF	704	

2 Entry composition (i)

There are 67 unique types of molecules in this entry. The entry contains 155054 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called Small ribosomal subunit RNA (16S rRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	16	1533	32927	14692	6039	10662	1534	1	0

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	SB	228	1781	1126	319	328	8	0	0

- Molecule 3 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	SC	211	1653	1046	310	293	4	0	0

- Molecule 4 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	SD	205	1642	1026	315	297	4	0	0

- Molecule 5 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	SE	155	1144	711	216	211	6	0	0

- Molecule 6 is a protein called Small ribosomal subunit protein bS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	SF	106	862	545	156	154	7	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	SG	152	Total	C	N	O	S	0	0
			1186	738	228	216	4		

- Molecule 8 is a protein called Small ribosomal subunit protein uS8.

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

- Molecule 9 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	SI	127	Total	C	N	O	S	0	0
			1021	634	206	178	3		

- Molecule 10 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	SJ	99	Total	C	N	O	S	0	0
			795	498	152	144	1		

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	SK	118	Total	C	N	O	S	0	0
			887	546	178	160	3		

- Molecule 12 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	SL	123	Total	C	N	O	S	0	0
			956	591	196	164	5		

- Molecule 13 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	SM	114	Total	C	N	O	S	0	0
			883	546	178	156	3		

- Molecule 14 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	SN	100	Total	C	N	O	S	0	0
			804	499	164	138	3		

- Molecule 15 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SO	88	Total	C	N	O	S	0	0
			713	439	144	129	1		

- Molecule 16 is a protein called Small ribosomal subunit protein bS16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SP	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 17 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	SQ	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 18 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	SR	66	Total	C	N	O	S	0	0
			544	345	102	96	1		

- Molecule 19 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	SS	83	Total	C	N	O	S	0	0
			663	424	126	111	2		

- Molecule 20 is a protein called Small ribosomal subunit protein bS20.

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

- Molecule 21 is a protein called Small ribosomal subunit protein bS21.

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

- Molecule 22 is a RNA chain called Messenger RNA (mRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
22	mR	16	Total	C	N	O	P	0	0
			336	151	56	113	16		

- Molecule 23 is a RNA chain called Large ribosomal subunit RNA (23S rRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
23	23	2904	Total	C	N	O	P	0	0
			62355	27824	11469	20158	2904		

- Molecule 24 is a RNA chain called Large ribosomal subunit RNA (5S rRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
24	5	120	Total	C	N	O	P	0	0
			2570	1144	468	838	120		

- Molecule 25 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LA	134	Total	C	N	O	S	0	0
			1026	645	186	193	2		

- Molecule 26 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LB	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 27 is a protein called 50S ribosomal protein L3.

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

- Molecule 28 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LD	201	Total	C	N	O	S	0	0
			1551	974	283	289	5		

- Molecule 29 is a protein called Large ribosomal subunit protein uL5.

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

- Molecule 30 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	LF	176	Total	C	N	O	S	0	0
			1322	832	243	245	2		

- Molecule 31 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	LI	148	Total	C	N	O	S	0	0
			1101	694	196	210	1		

- Molecule 32 is a protein called 50S ribosomal protein L10.

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

- Molecule 33 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	LK	134	Total	C	N	O	S	0	0
			979	619	169	185	6		

- Molecule 34 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	LM	142	Total	C	N	O	S	0	0
			1128	714	212	198	4		

- Molecule 35 is a protein called Large ribosomal subunit protein uL14.

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

- Molecule 36 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	LO	144	Total	C	N	O	S	0	0
			1052	654	207	189	2		

- Molecule 37 is a protein called 50S ribosomal protein L16.

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

- Molecule 38 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	LQ	120	Total	C	N	O	S	0	0
			960	593	196	166	5		

- Molecule 39 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	LR	116	Total	C	N	O	0	0
			891	552	178	161		

- Molecule 40 is a protein called Large ribosomal subunit protein bL19.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	LS	114	Total	C	N	O	S	0	0
			916	574	179	162	1		

- Molecule 41 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	LT	117	Total	C	N	O	0	0
			946	604	192	150		

- Molecule 42 is a protein called Ribosomal protein L21.

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

- Molecule 43 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	LV	110	Total	C	N	O	S	0	0
			856	532	166	155	3		

- Molecule 44 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	LW	93	Total	C	N	O	S	0	0
			738	466	139	131	2		

- Molecule 45 is a protein called 50S ribosomal protein L24.

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

- Molecule 46 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	LY	94	Total	C	N	O	S	0	0
			752	479	137	133	3		

- Molecule 47 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	La	76	Total	C	N	O	S	0	0
			581	360	117	103	1		

- Molecule 48 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Lb	77	Total	C	N	O	S	0	0
			624	388	129	105	2		

- Molecule 49 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Lc	63	Total	C	N	O	S	0	0
			508	313	99	94	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Ld	58	Total	C	N	O	S	0	0
			448	281	87	78	2		

- Molecule 51 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Le	68	Total	C	N	O	S	0	0
			533	330	101	96	6		

- Molecule 52 is a protein called 50S ribosomal protein L32.

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

- Molecule 53 is a protein called 50S ribosomal protein L33.

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

- Molecule 54 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	Lh	46	Total	C	N	O	S	0	0
			376	228	90	56	2		

- Molecule 55 is a protein called 50S ribosomal protein L35.

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

- Molecule 56 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	Lj	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 57 is a RNA chain called Lysine transfer RNA (tRNA-Lys).

Mol	Chain	Residues	Atoms						AltConf	Trace
57	Pt	76	Total	C	N	O	P	S	0	0
			1629	729	283	540	76	1		

- Molecule 58 is a protein called Nascent peptide.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	Pp	3	Total	C	N	O	S	0	0
			30	21	4	4	1		

- Molecule 59 is a RNA chain called Phenylalanyl transfer RNA (tRNA-Phe).

Mol	Chain	Residues	Atoms						AltConf	Trace
59	Dt	76	Total	C	N	O	P	S	0	0
			1638	734	291	535	76	2		

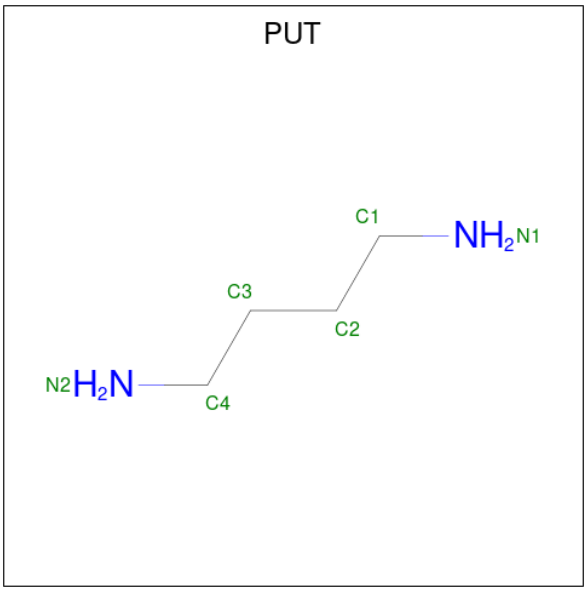
- Molecule 60 is a protein called Elongation factor G.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	EF	695	Total	C	N	O	S	0	0
			5382	3393	927	1038	24		

There is a discrepancy between the modelled and reference sequences:

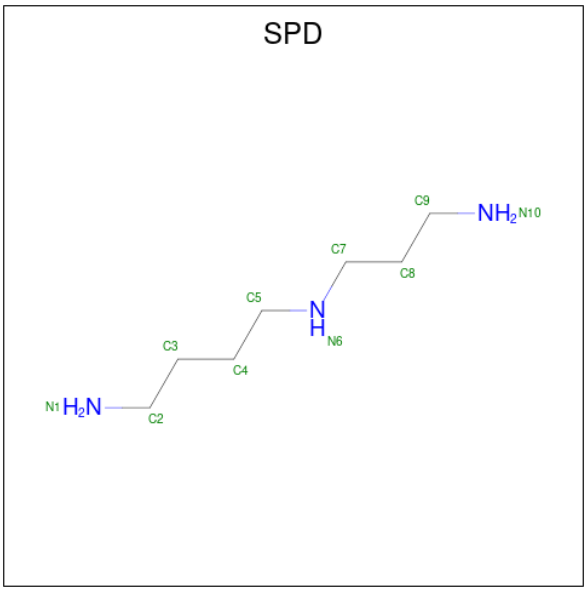
Chain	Residue	Modelled	Actual	Comment	Reference
EF	1	SER	-	expression tag	UNP A7ZSL5

- Molecule 61 is 1,4-DIAMINOBUTANE (CCD ID: PUT) (formula: $C_4H_{12}N_2$).



Mol	Chain	Residues	Atoms	AltConf
61	16	1	Total C N 6 4 2	0
61	16	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0
61	23	1	Total C N 6 4 2	0

- Molecule 62 is SPERMIDINE (CCD ID: SPD) (formula: $C_7H_{19}N_3$).



Mol	Chain	Residues	Atoms	AltConf
62	16	1	Total C N 10 7 3	0
62	23	1	Total C N 10 7 3	0
62	23	1	Total C N 10 7 3	0

- Molecule 63 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
63	16	69	Total Mg 69 69	0
63	SK	1	Total Mg 1 1	0
63	23	224	Total Mg 224 224	0
63	5	4	Total Mg 4 4	0
63	LC	1	Total Mg 1 1	0
63	LT	1	Total Mg 1 1	0
63	Lf	1	Total Mg 1 1	0
63	Dt	2	Total Mg 2 2	0
63	EF	2	Total Mg 2 2	0

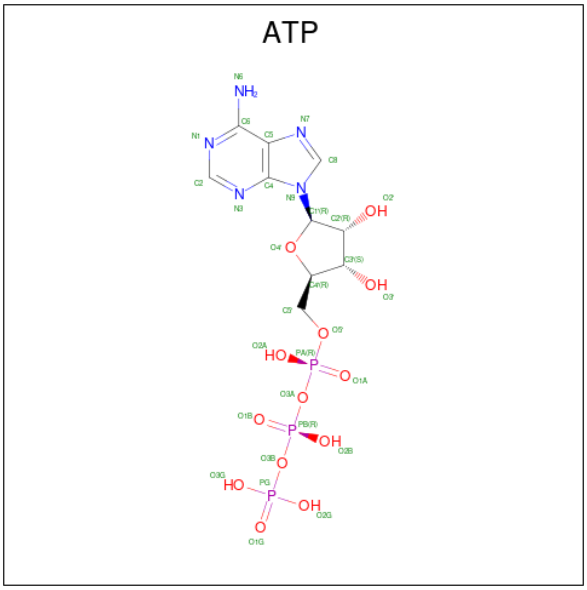
- Molecule 64 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
64	16	1	Total K 1 1	0
64	23	16	Total K 16 16	0

- Molecule 65 is ZINC ION (CCD ID: ZN) (formula: Zn).

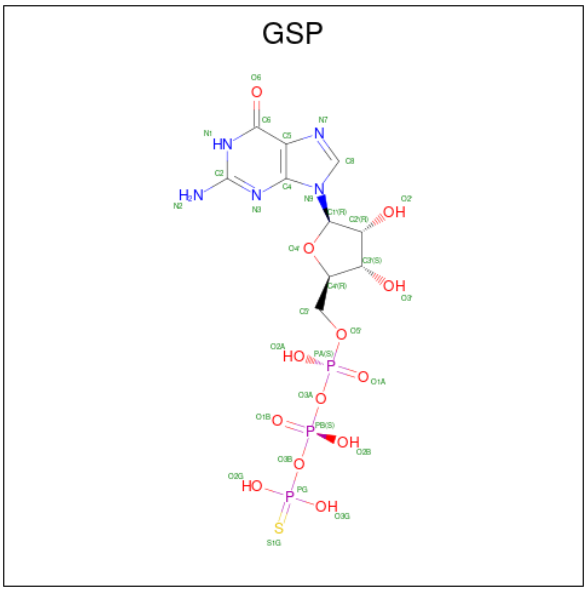
Mol	Chain	Residues	Atoms	AltConf
65	SB	1	Total Zn 1 1	0
65	Le	1	Total Zn 1 1	0
65	Lj	1	Total Zn 1 1	0

- Molecule 66 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms	AltConf
66	23	1	Total C N O P 31 10 5 13 3	0
66	23	1	Total C N O P 31 10 5 13 3	0

- Molecule 67 is 5'-GUANOSINE-DIPHOSPHATE-MONOTHIOPHOSPHATE (CCD ID: GSP) (formula: $C_{10}H_{16}N_5O_{13}P_3S$).



Mol	Chain	Residues	Atoms						AltConf
67	EF	1	Total	C	N	O	P	S	0
			32	10	5	13	3	1	

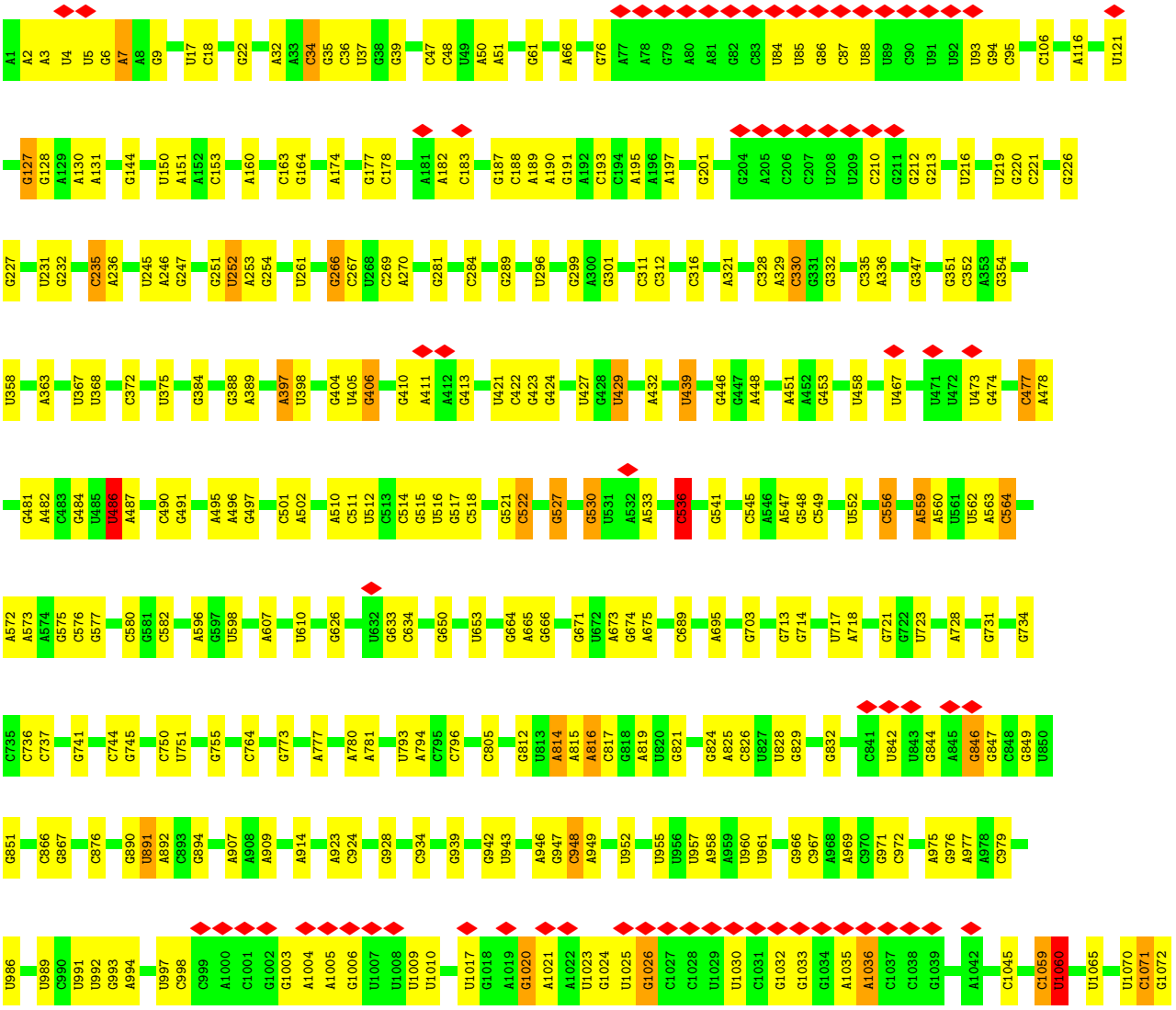
3 Residue-property plots (i)

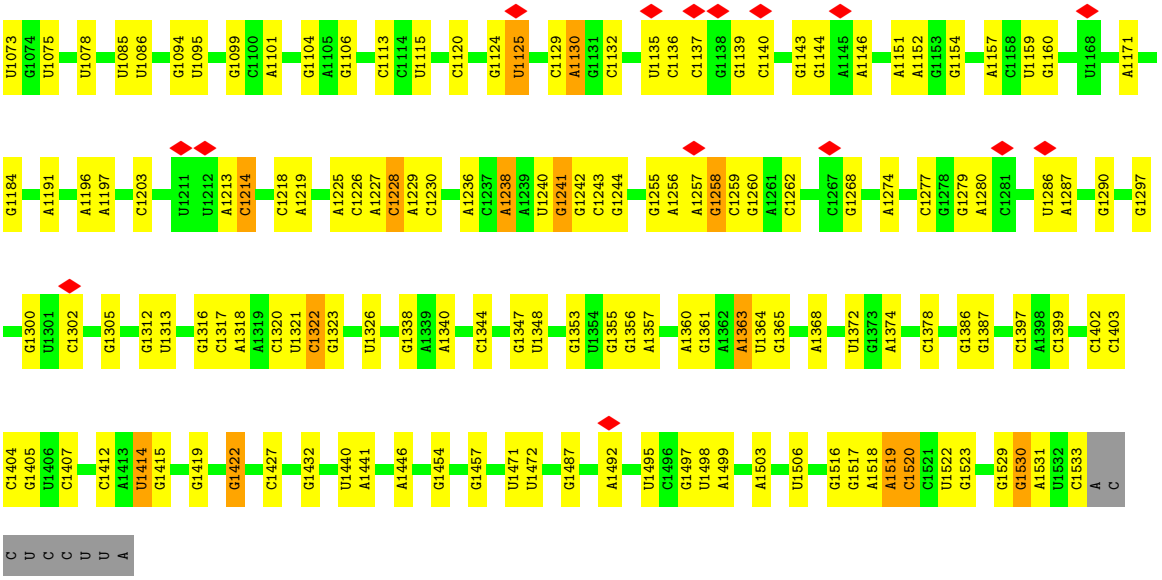
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Small ribosomal subunit RNA (16S rRNA)

Chain 16:



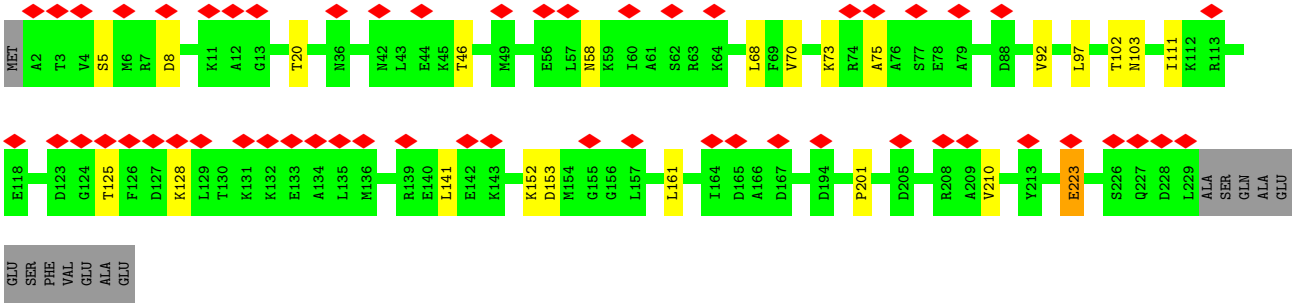




• Molecule 2: 30S ribosomal protein S2

Chain SB:

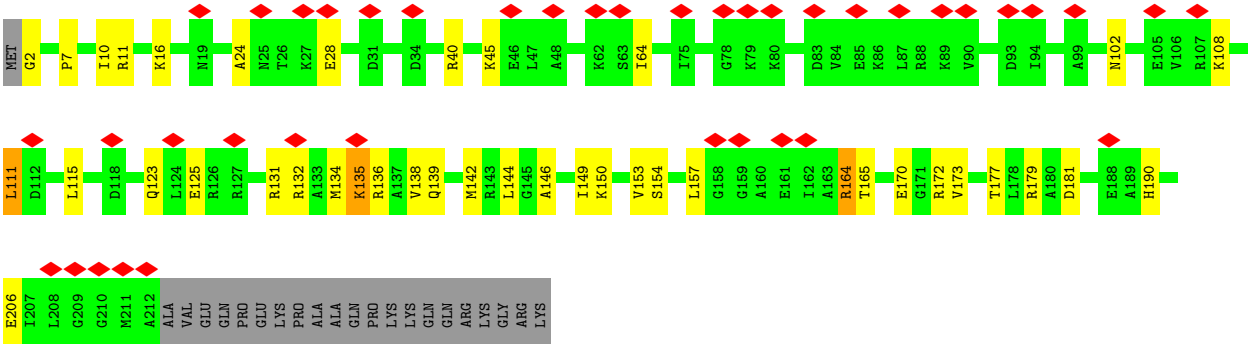




• Molecule 3: 30S ribosomal protein S3

Chain SC:

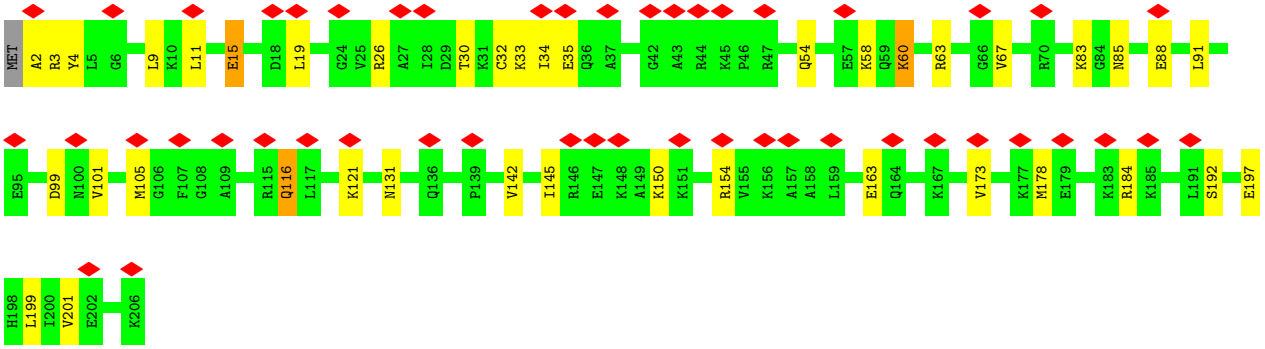




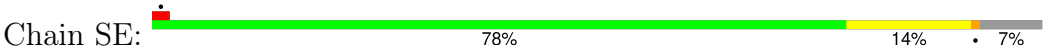
• Molecule 4: Small ribosomal subunit protein uS4

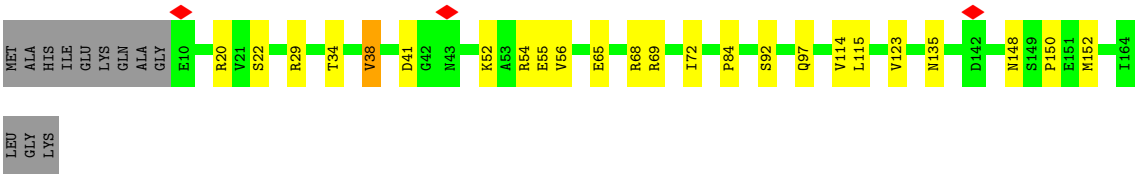
Chain SD:





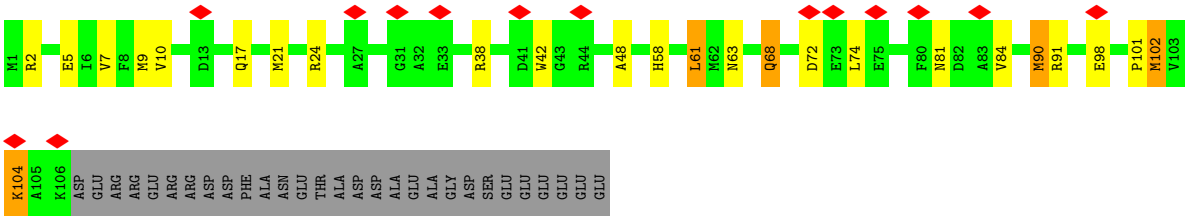
• Molecule 5: Small ribosomal subunit protein uS5





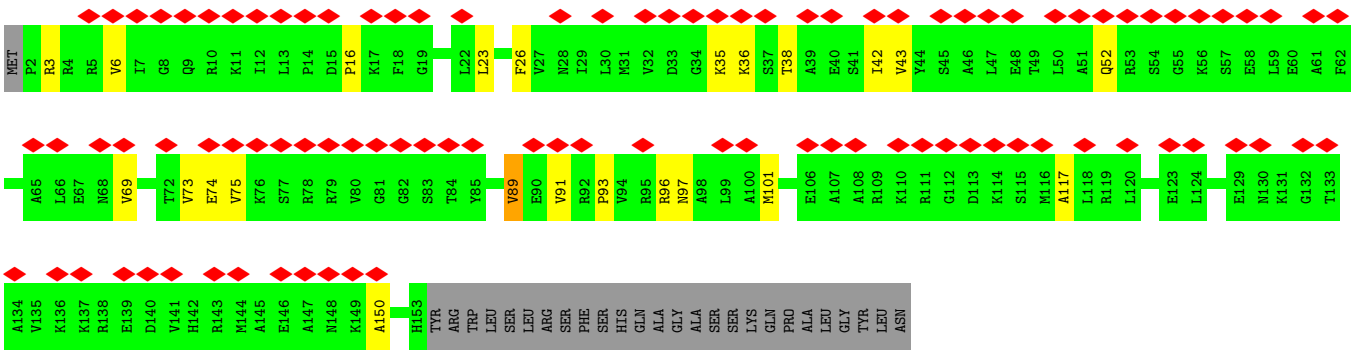
• Molecule 6: Small ribosomal subunit protein bS6



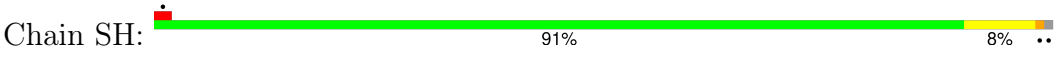


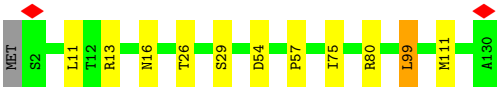
• Molecule 7: Small ribosomal subunit protein uS7





• Molecule 8: Small ribosomal subunit protein uS8

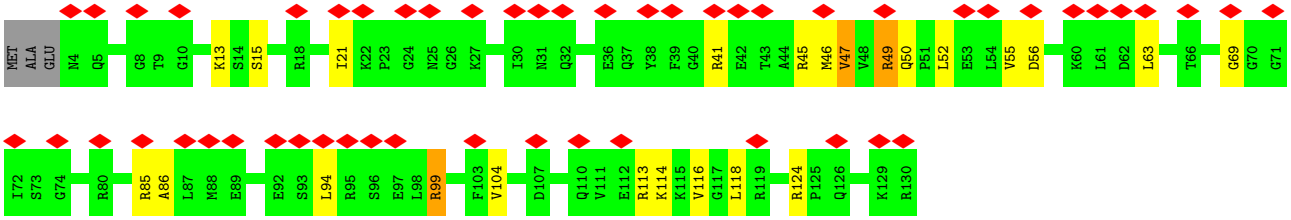




• Molecule 9: Small ribosomal subunit protein uS9

Chain SI:

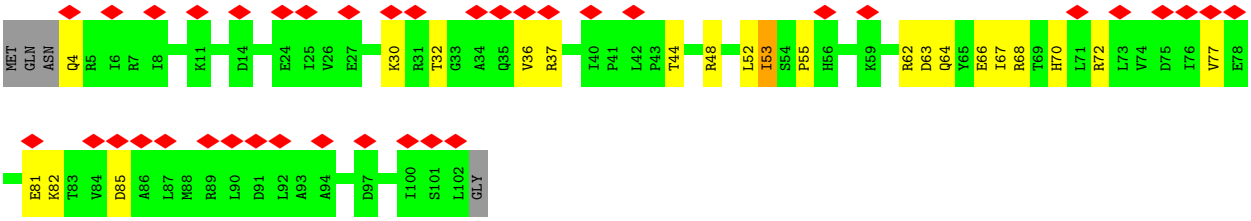




• Molecule 10: Small ribosomal subunit protein uS10

Chain SJ:

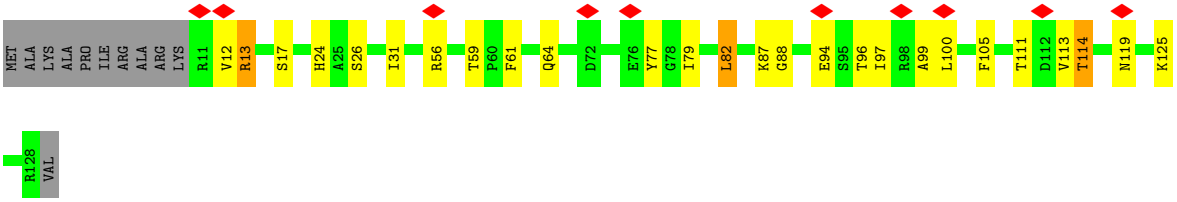




• Molecule 11: 30S ribosomal protein S11

Chain SK:

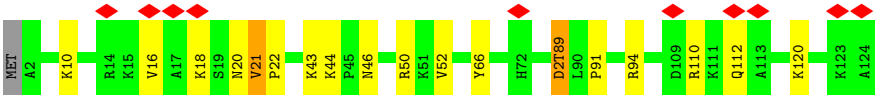




• Molecule 12: 30S ribosomal protein S12

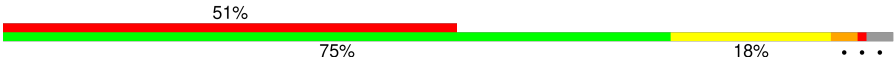
Chain SL:

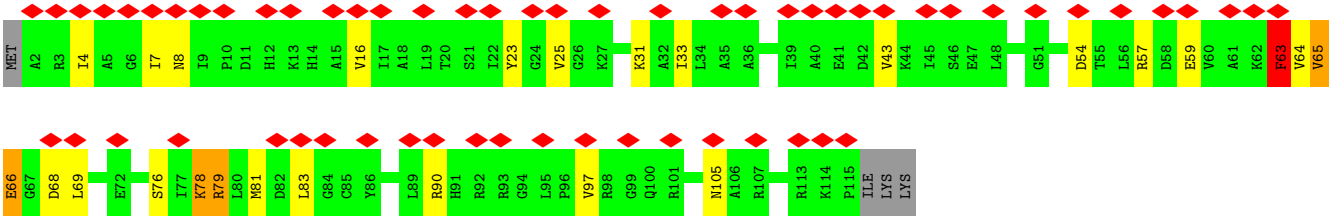




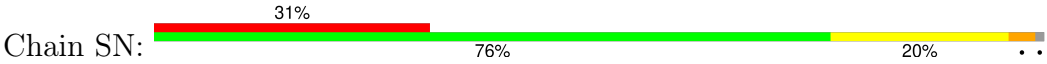
• Molecule 13: Small ribosomal subunit protein uS13

Chain SM:

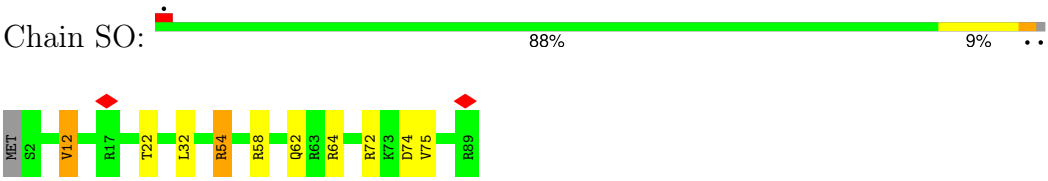




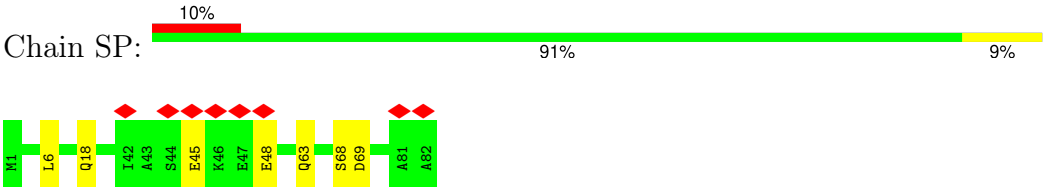
• Molecule 14: Small ribosomal subunit protein uS14



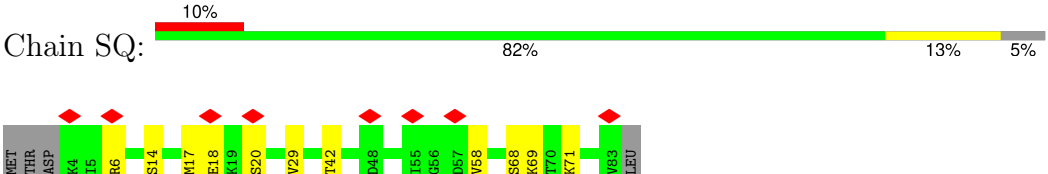
• Molecule 15: Small ribosomal subunit protein uS15



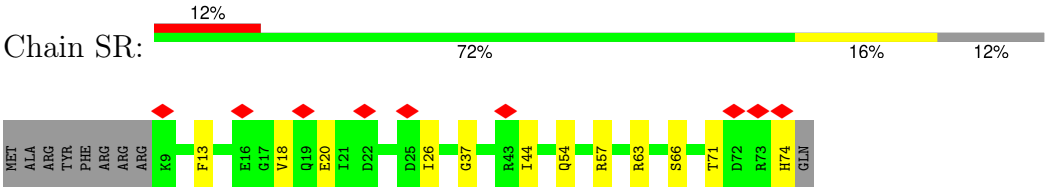
• Molecule 16: Small ribosomal subunit protein bS16



• Molecule 17: Small ribosomal subunit protein uS17

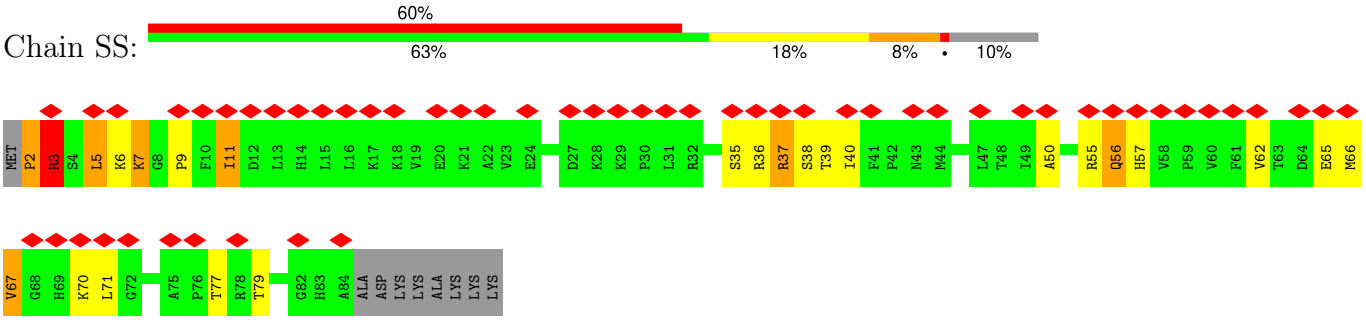


• Molecule 18: Small ribosomal subunit protein bS18



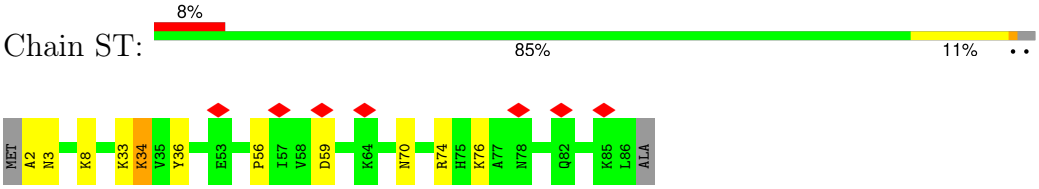
• Molecule 19: Small ribosomal subunit protein uS19

Chain SS:



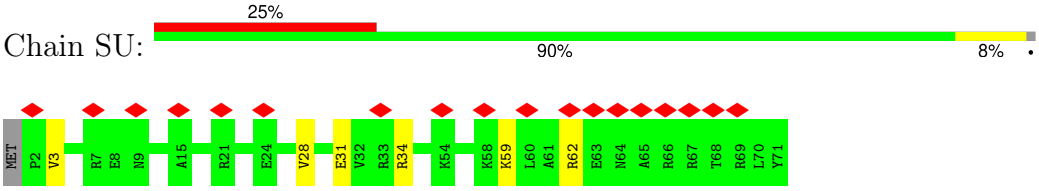
• Molecule 20: Small ribosomal subunit protein bS20

Chain ST:



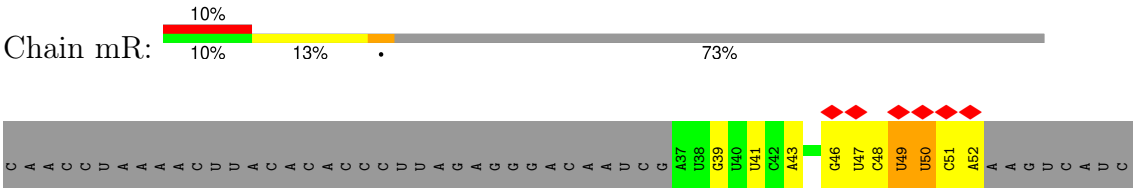
• Molecule 21: Small ribosomal subunit protein bS21

Chain SU:



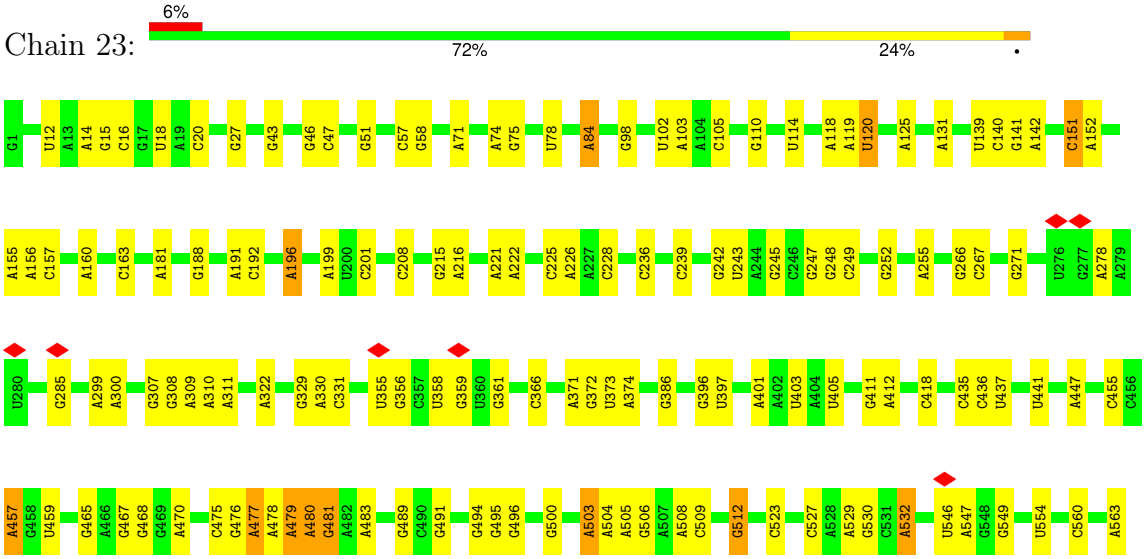
• Molecule 22: Messenger RNA (mRNA)

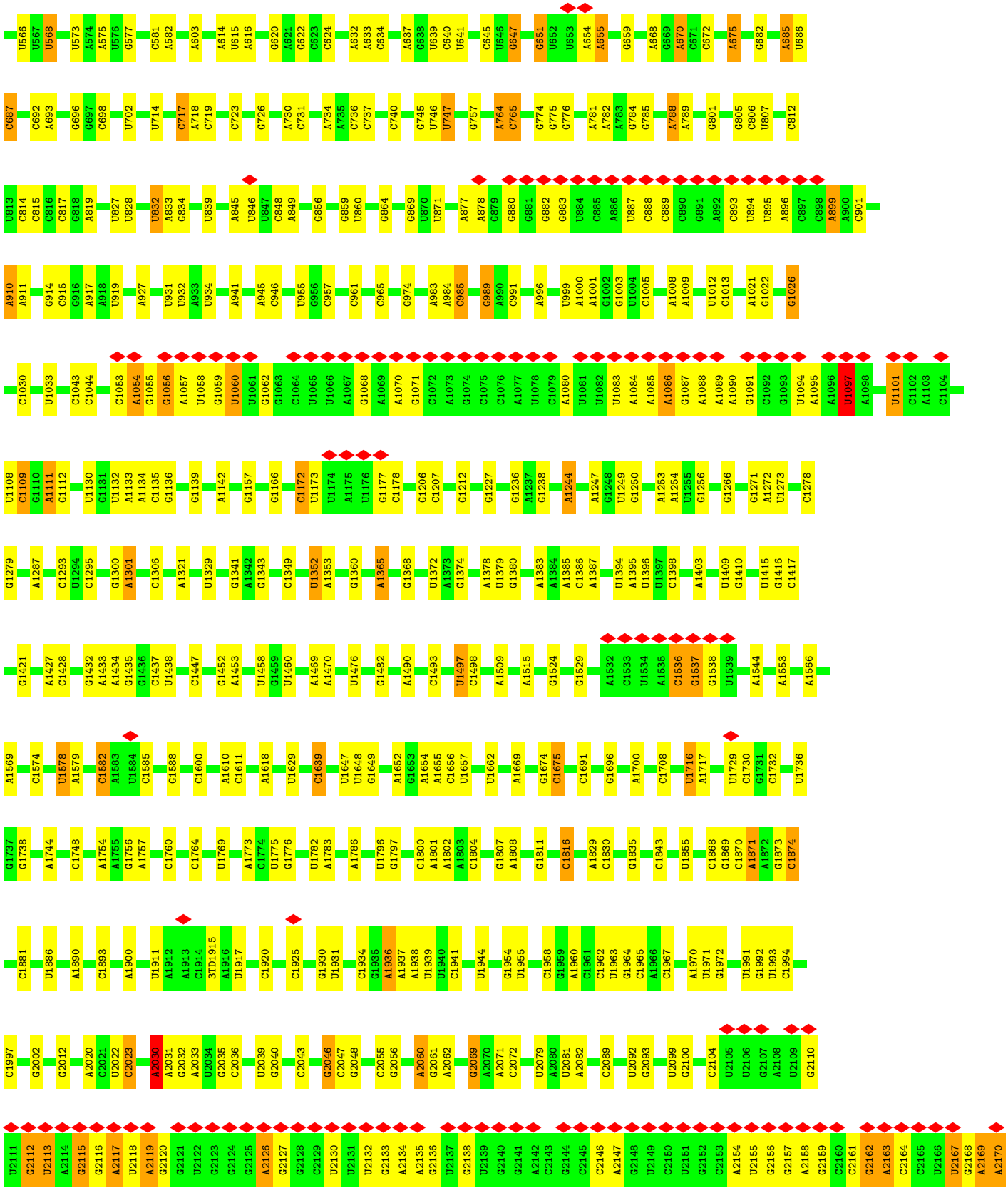
Chain mR:



• Molecule 23: Large ribosomal subunit RNA (23S rRNA)

Chain 23:

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C687 C692 A693 G696 G697 C698 U702 U714 C717 A718 C719 C723 G726 A730 C731 A734 A735 C736 C737 C740 G745 U746 U747 G757 A764 C765 G774 G775 G776 A781 A782 A783 G784 G785 A788 A789 G801 G805 C806 U807 C812
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C1030 U1033 C1043 C1044 C1053 A1054 G1055 G1056 A1057 U1058 G1059 U1060 U1061 G1062 G1063 C1064 U1065 U1066 A1067 G1068 A1069 A1070 G1071 C1072 A1073 G1074 C1075 C1076 A1077 U1078 C1079 A1080 U1081 U1082 U1083 A1084 A1085 A1086 G1087 A1088 A1089 A1090 G1091 C1092 G1093 U1094 A1095 A1096 U1097 A1098 U1101 C1102 A1103 C1104
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G1421 A1427 C1428 G1432 A1433 A1434 G1435 G1436 C1437 U1438 C1447 G1452 A1453 U1458 G1459 U1460 A1469 A1470 U1476 G1482 A1490 C1493 U1497 C1498 A1509 A1515 G1524 G1529 A1532 C1533 U1534 A1535 C1536 G1537 G1538 U1539 A1544 A1553 A1566
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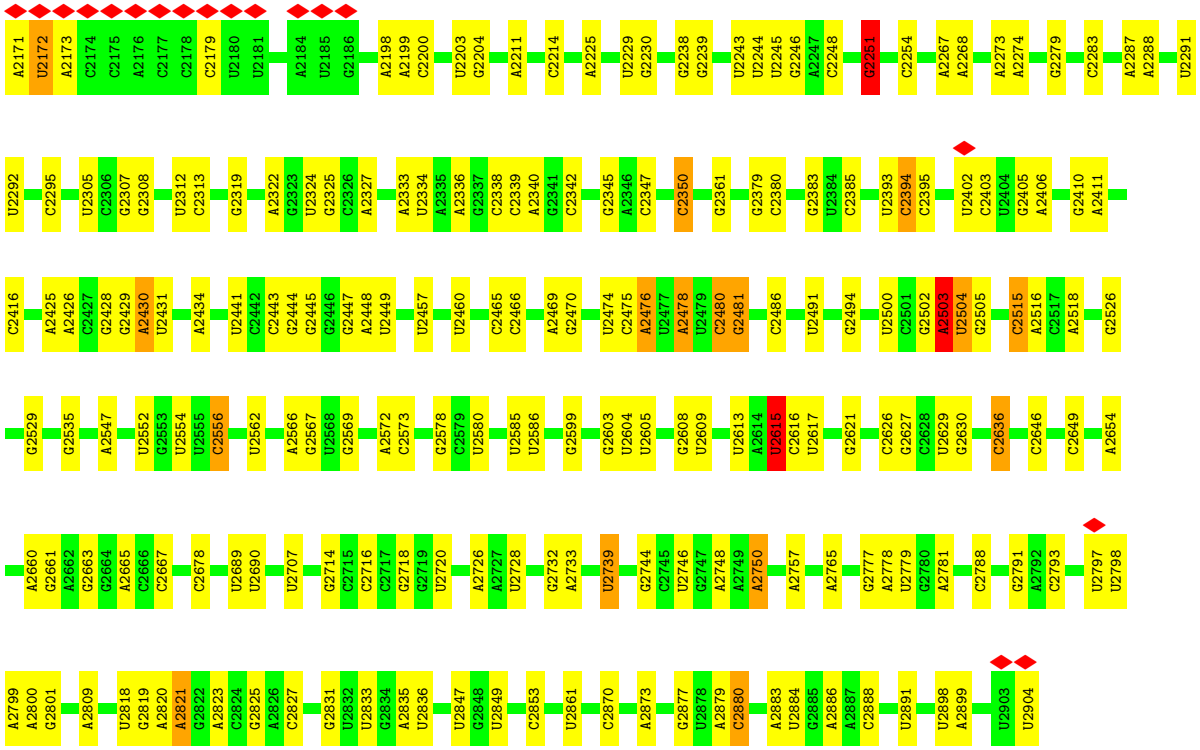
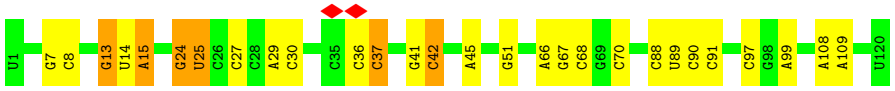


• Molecule 24: Large ribosomal subunit RNA (5S rRNA)

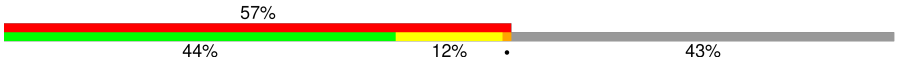
Chain 5:

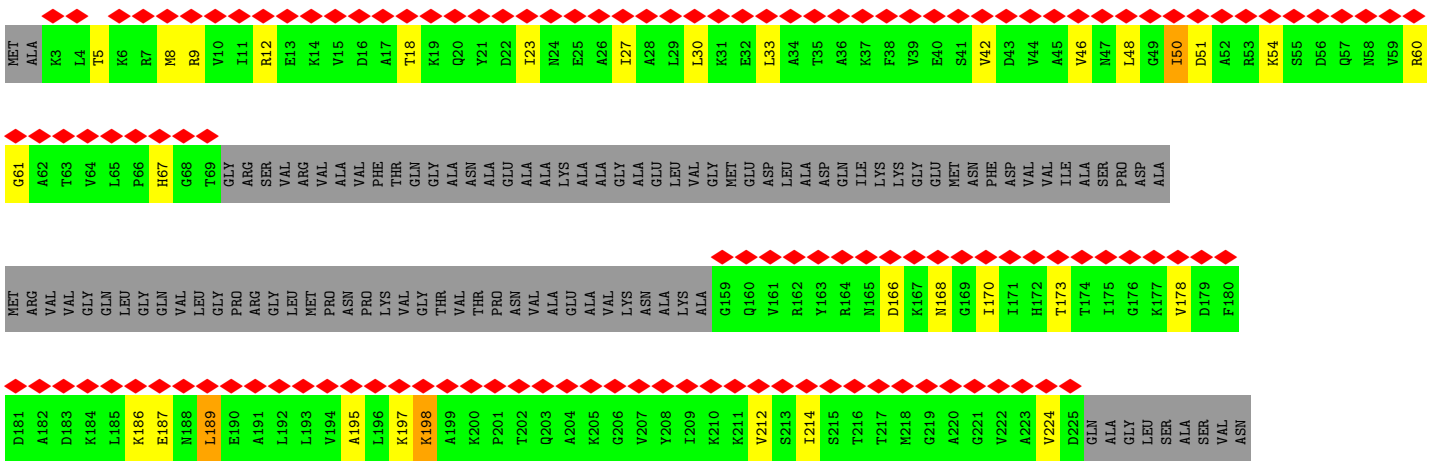




• Molecule 25: 50S ribosomal protein L1

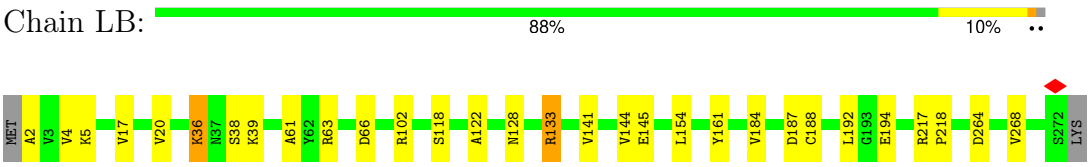
Chain LA:





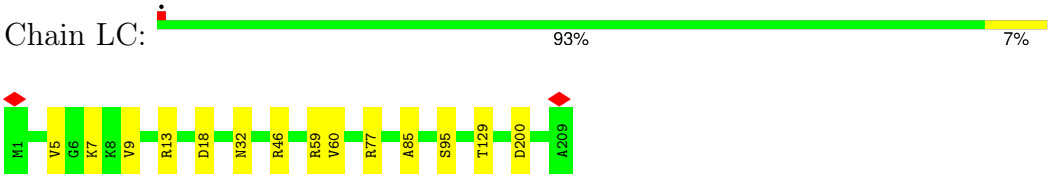
• Molecule 26: 50S ribosomal protein L2

Chain LB:



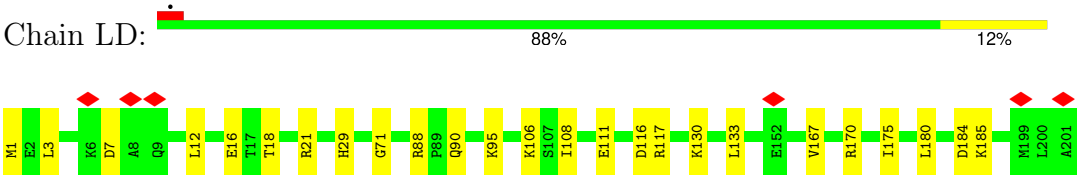
• Molecule 27: 50S ribosomal protein L3

Chain LC:



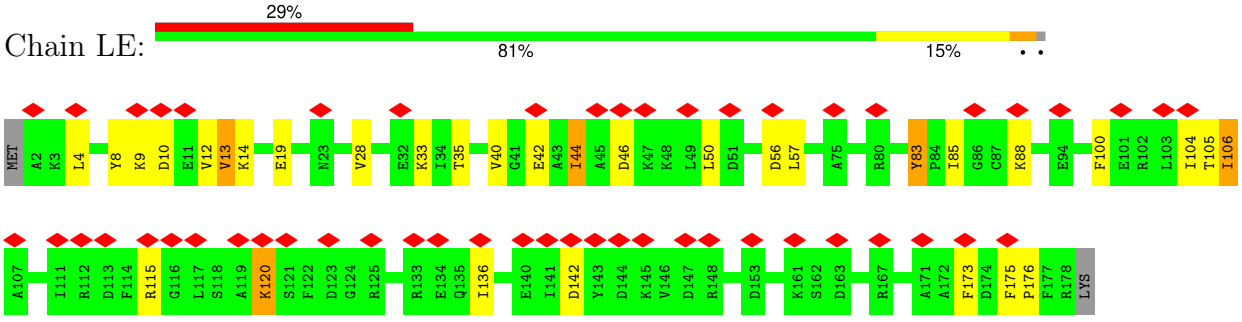
• Molecule 28: Large ribosomal subunit protein uL4

Chain LD:



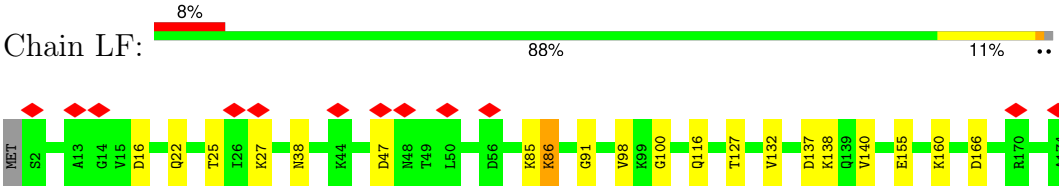
• Molecule 29: Large ribosomal subunit protein uL5

Chain LE:



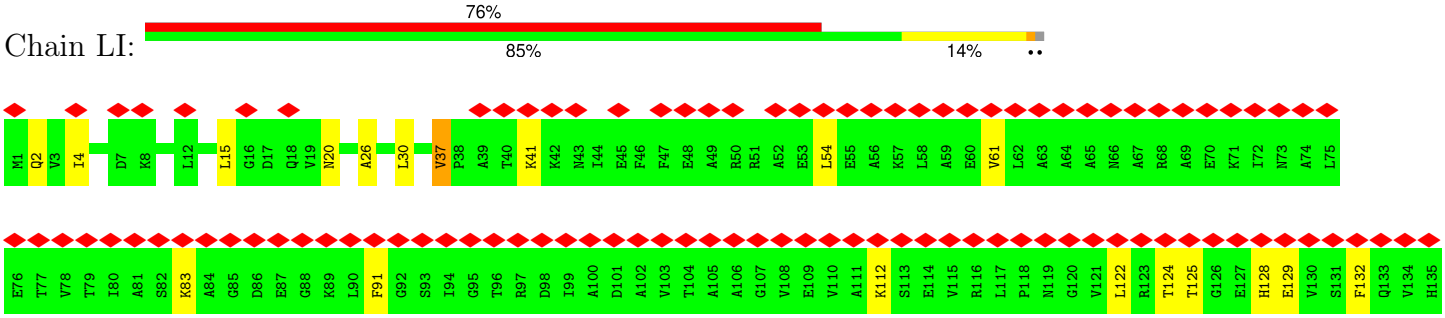
• Molecule 30: Large ribosomal subunit protein uL6

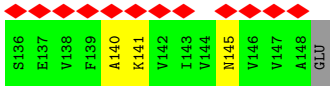
Chain LF:



• Molecule 31: Large ribosomal subunit protein bL9

Chain LI:

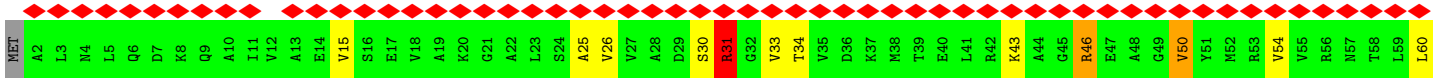


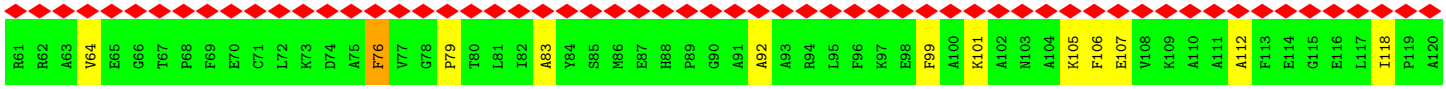


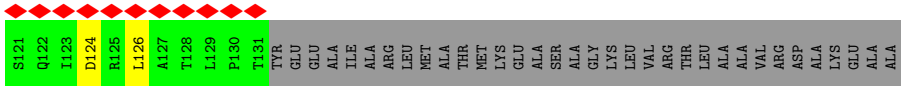
• Molecule 32: 50S ribosomal protein L10

Chain LJ:



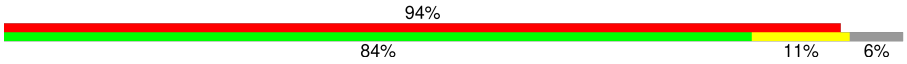


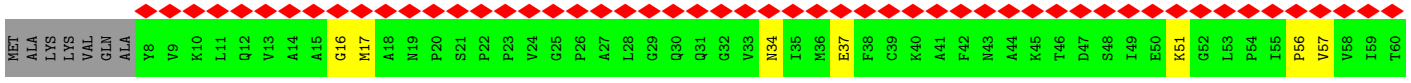


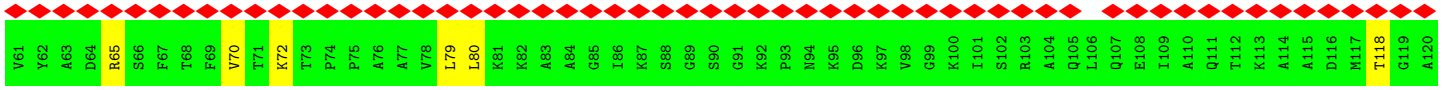


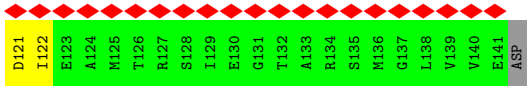
• Molecule 33: 50S ribosomal protein L11

Chain LK:





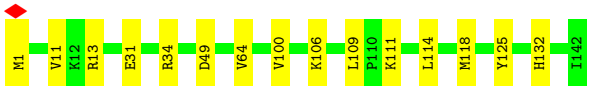




• Molecule 34: Large ribosomal subunit protein uL13

Chain LM:

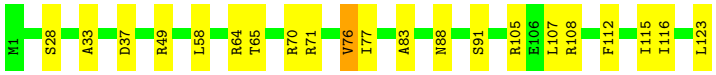




• Molecule 35: Large ribosomal subunit protein uL14

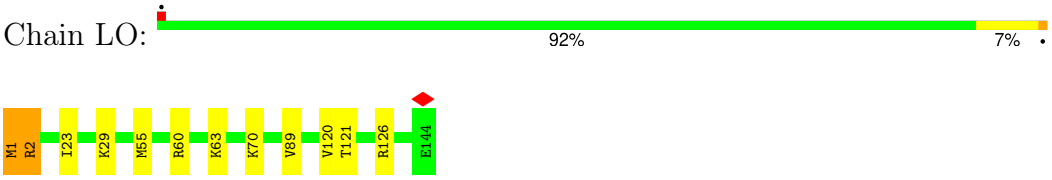
Chain LN:





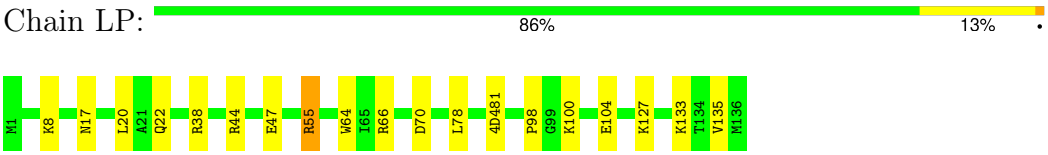
• Molecule 36: Large ribosomal subunit protein uL15

Chain LO:



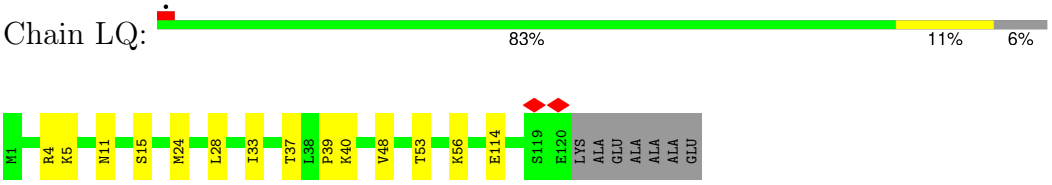
• Molecule 37: 50S ribosomal protein L16

Chain LP:



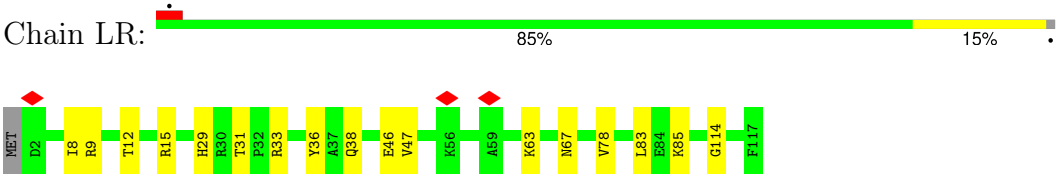
• Molecule 38: Large ribosomal subunit protein bL17

Chain LQ:



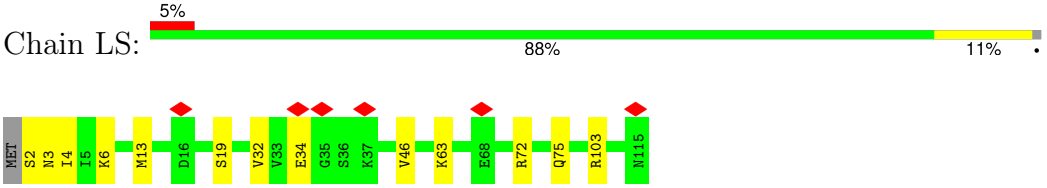
• Molecule 39: Large ribosomal subunit protein uL18

Chain LR:



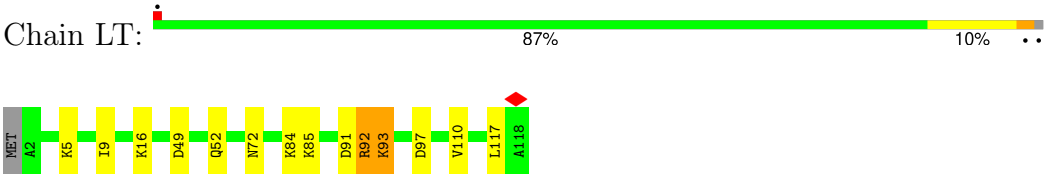
• Molecule 40: Large ribosomal subunit protein bL19

Chain LS:



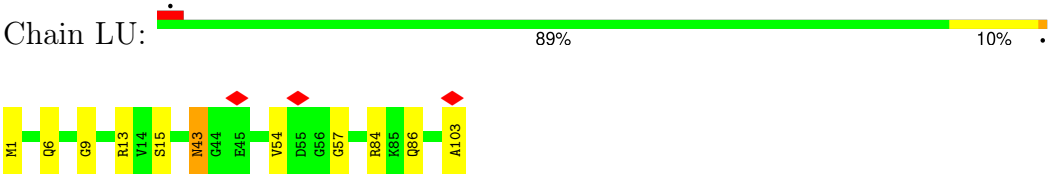
• Molecule 41: 50S ribosomal protein L20

Chain LT:



• Molecule 42: Ribosomal protein L21

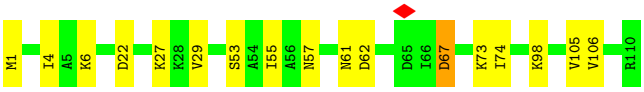
Chain LU:



• Molecule 43: 50S ribosomal protein L22

Chain LV:

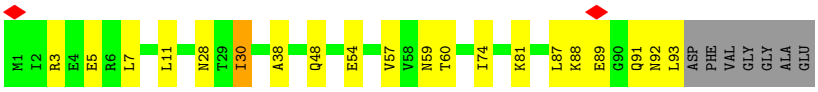




• Molecule 44: 50S ribosomal protein L23

Chain LW:





• Molecule 45: 50S ribosomal protein L24

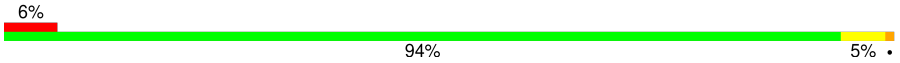
Chain LX:

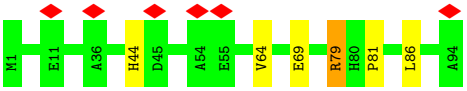




• Molecule 46: Large ribosomal subunit protein bL25

Chain LY:

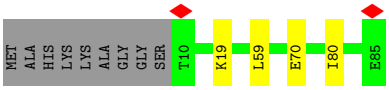




• Molecule 47: 50S ribosomal protein L27

Chain La:

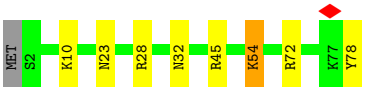




• Molecule 48: 50S ribosomal protein L28

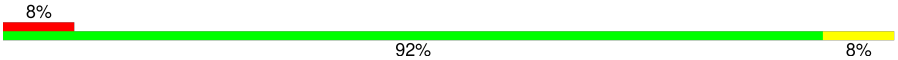
Chain Lb:

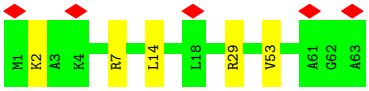




• Molecule 49: Large ribosomal subunit protein uL29

Chain Lc:





• Molecule 50: 50S ribosomal protein L30

Chain Ld:

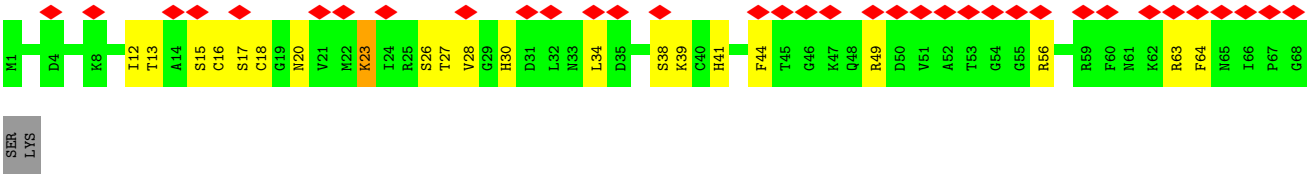




• Molecule 51: 50S ribosomal protein L31

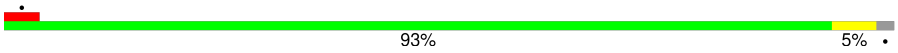
Chain Le:

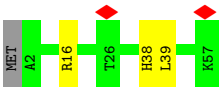




• Molecule 52: 50S ribosomal protein L32

Chain Lf:

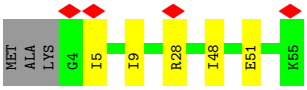




• Molecule 53: 50S ribosomal protein L33

Chain Lg:

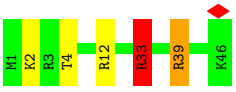




• Molecule 54: 50S ribosomal protein L34

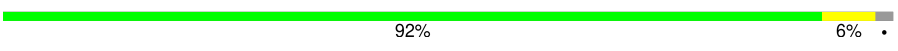
Chain Lh:





• Molecule 55: 50S ribosomal protein L35

Chain Li:

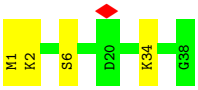




• Molecule 56: 50S ribosomal protein L36

Chain Lj:

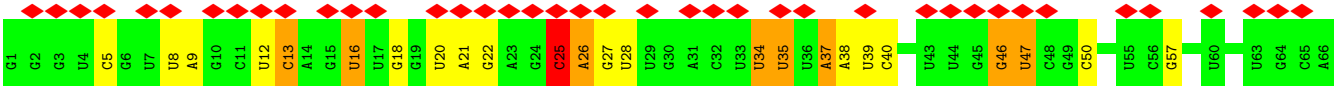


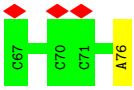


• Molecule 57: Lysine transfer RNA (tRNA-Lys)

Chain Pt:







• Molecule 58: Nascent peptide

Chain Pp:

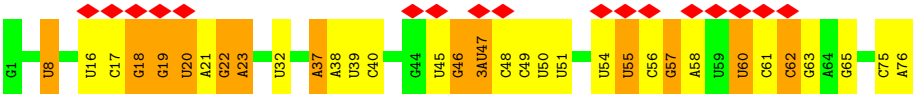




• Molecule 59: Phenylalanyl transfer RNA (tRNA-Phe)

Chain Dt:

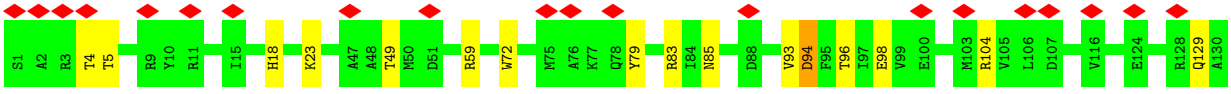


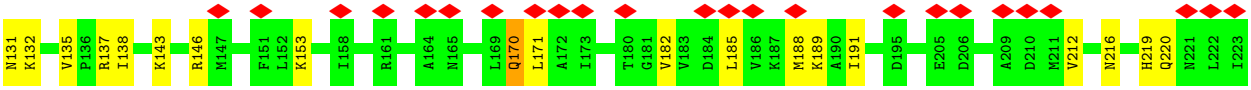


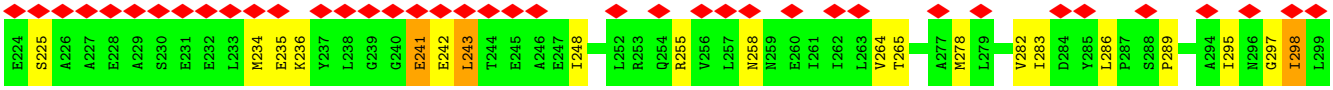
• Molecule 60: Elongation factor G

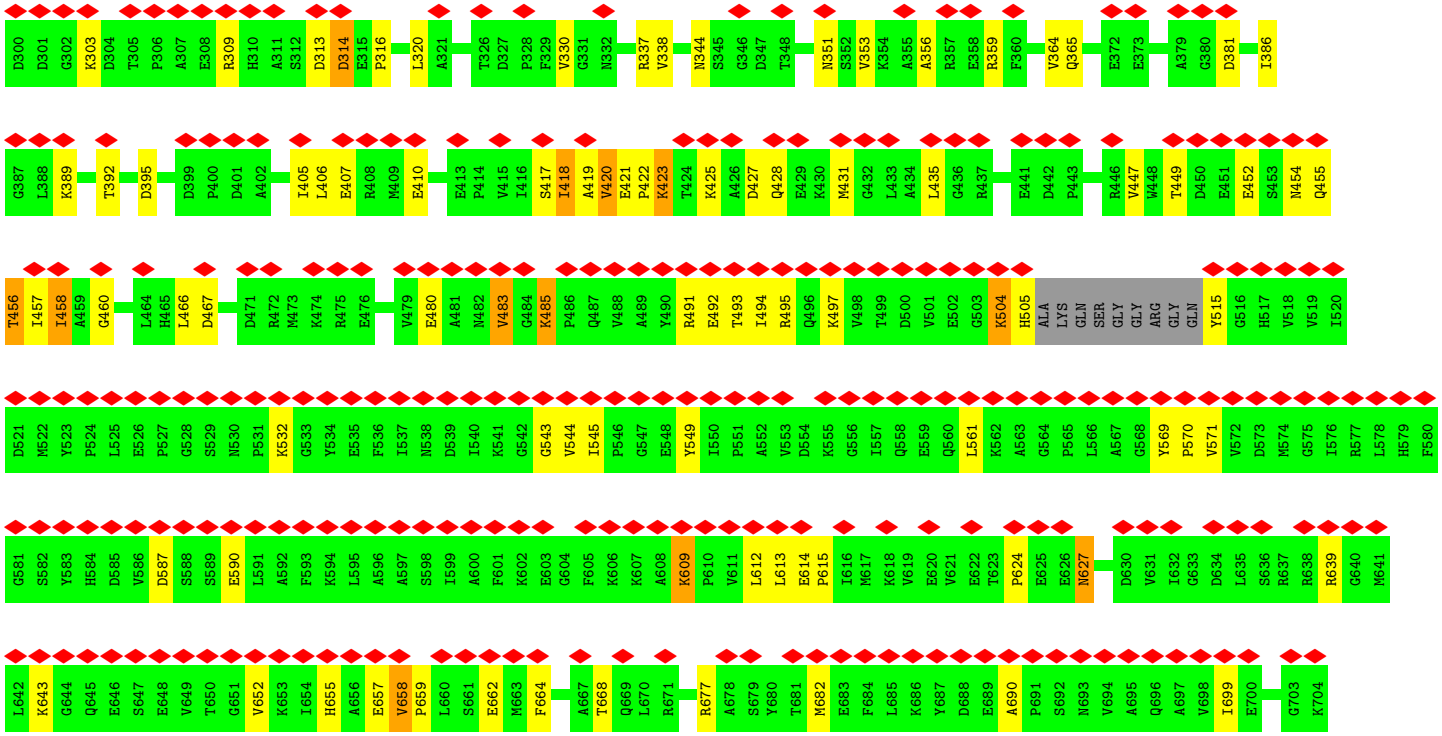
Chain EF:










D300 D301 G302 K303 D304 T305 P306 A307 E308 R309 H310 A311 S312 D313 D314 E315 P316 L320 A321 T326 D327 P328 F329 V330 G331 N332 R337 V338 N344 S345 G346 D347 T348 N351 S352 V353 K354 A355 A356 R357 E358 R359 F360 V364 Q365 E372 E373 A379 G380 D381 I386
G387 L388 K389 T392 D395 D399 P400 D401 A402 I405 L406 E407 R408 M409 E410 E413 P414 V415 I416 S417 I418 A419 V420 E421 P422 K423 T424 K425 A426 D427 Q428 E429 K430 M431 G432 L433 A434 L435 G436 R437 E441 D442 P443 R446 V447 W448 T449 D450 E451 E452 S453 N454 Q455
T456 I457 I458 A459 G460 L464 H465 L466 D467 D471 R472 M473 K474 R475 E476 V479 E480 A481 N482 V483 G484 K485 P486 Q487 V488 A489 Y490 R491 E492 T493 I494 R495 Q496 K497 V498 T499 D500 V501 E502 G503 K504 H505 ALA LYS GLN SER GLY GLY ARG GLY GLN Y515 G516 H517 V518 V519 I520
D521 M522 Y523 P524 L525 E526 P527 G528 S529 N530 P531 K532 G533 Y534 E535 F536 I537 N538 D539 I540 K541 G542 G543 V544 I545 P546 G547 E548 Y549 I550 P551 A552 V553 D554 K555 G556 I557 Q558 E559 Q560 L561 K562 A563 G564 P565 L566 A567 G568 Y569 P570 V571 V572 D573 M574 G575 I576 R577 L578 H579 F580
G581 S582 Y583 H584 D585 V586 D587 S588 S589 E590 L591 A592 F593 K594 L595 A596 A597 S598 I599 A600 F601 K602 E603 G604 F605 K606 K607 A608 K609 P610 V611 L612 L613 E614 P615 I616 M617 K618 V619 E620 V621 E622 T623 P624 E625 E626 N627 D630 V631 I632 G633 D634 L635 S636 R637 R638 R639 G640 M641
L642 K643 G644 Q645 E646 S647 E648 V649 T650 G651 V652 K653 I654 H655 A656 E657 V658 P659 L660 S661 E662 M663 F664 A667 T668 Q669 L670 R671 R677 A678 S679 Y680 T681 M682 E683 F684 L685 K686 Y687 D688 E689 A690 P691 S692 N693 V694 A695 Q696 A697 V698 I699 E700 G703 K704

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14079	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	1.4596	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.042	Depositor
Minimum map value	-0.021	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0045	Depositor
Map size (Å)	423.936, 423.936, 423.936	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.828, 0.828, 0.828	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: T6A, H2U, 1MG, PSU, UR3, K, 2MG, PUT, SPD, 6MZ, 4D4, 4SU, GSP, 5MU, OMC, MA6, U8U, MG, 3AU, ATP, 5MC, ZN, OMG, MIA, 2MA, 3TD, D2T, OMU, FME, 4OC, G7M

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	16	0.48	2/36616 (0.0%)	1.11	102/57117 (0.2%)
2	SB	0.21	0/1812	0.53	0/2442
3	SC	0.35	0/1680	0.60	0/2263
4	SD	0.27	0/1664	0.60	0/2227
5	SE	0.27	0/1157	0.54	0/1557
6	SF	0.27	0/881	0.58	0/1189
7	SG	0.24	0/1200	0.50	0/1609
8	SH	0.22	0/989	0.46	0/1326
9	SI	0.29	0/1033	0.60	0/1375
10	SJ	0.34	0/805	0.59	0/1089
11	SK	0.26	0/903	0.53	0/1219
12	SL	0.27	0/959	0.54	0/1286
13	SM	0.28	0/892	0.55	0/1193
14	SN	0.44	0/816	0.67	0/1088
15	SO	0.21	0/721	0.46	0/964
16	SP	0.24	0/659	0.58	0/884
17	SQ	0.32	0/657	0.52	0/881
18	SR	0.19	0/553	0.40	0/742
19	SS	0.51	0/680	0.71	0/915
20	ST	0.22	0/670	0.49	0/888
21	SU	0.17	0/597	0.43	0/792
22	mR	0.75	0/374	1.07	1/579 (0.2%)
23	23	0.58	0/69284	1.12	202/108082 (0.2%)
24	5	0.51	0/2873	1.10	7/4478 (0.2%)
25	LA	0.25	0/1033	0.47	0/1387
26	LB	0.29	0/2121	0.48	0/2852
27	LC	0.33	0/1586	0.57	0/2134
28	LD	0.26	0/1570	0.48	0/2113
29	LE	0.42	0/1434	0.66	0/1926
30	LF	0.25	0/1342	0.50	0/1816
31	LI	0.21	0/1112	0.50	0/1503

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	LJ	0.25	0/993	0.52	0/1340
33	LK	0.23	0/993	0.57	0/1341
34	LM	0.26	0/1151	0.49	0/1551
35	LN	0.28	0/955	0.52	0/1279
36	LO	0.27	0/1061	0.47	0/1413
37	LP	0.32	0/1080	0.55	0/1443
38	LQ	0.34	0/973	0.61	0/1301
39	LR	0.24	0/901	0.52	0/1209
40	LS	0.25	0/928	0.43	0/1242
41	LT	0.37	0/959	0.63	0/1278
42	LU	0.36	0/829	0.58	0/1107
43	LV	0.23	0/863	0.42	0/1156
44	LW	0.22	0/744	0.43	0/994
45	LX	0.21	0/787	0.47	0/1051
46	LY	0.25	0/765	0.46	0/1025
47	La	0.27	0/588	0.44	0/779
48	Lb	0.26	0/634	0.46	0/848
49	Lc	0.19	0/509	0.41	0/677
50	Ld	0.23	0/452	0.42	0/605
51	Le	0.39	0/543	0.71	0/726
52	Lf	0.25	0/449	0.40	0/599
53	Lg	0.23	0/433	0.55	0/576
54	Lh	0.33	0/379	0.50	0/498
55	Li	0.25	0/513	0.49	0/676
56	Lj	0.22	0/303	0.38	0/397
57	Pt	0.50	1/1707 (0.1%)	1.10	2/2653 (0.1%)
58	Pp	0.62	0/20	0.76	0/24
59	Dt	0.56	1/1650 (0.1%)	1.12	4/2565 (0.2%)
60	EF	0.32	0/5483	0.64	0/7423
All	All	0.48	4/166318 (0.0%)	0.98	318/247692 (0.1%)

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
3	SC	0	3
5	SE	0	2
7	SG	0	1
9	SI	0	2
14	SN	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
19	SS	0	3
26	LB	0	1
32	LJ	0	1
36	LO	0	1
37	LP	0	2
38	LQ	0	1
41	LT	0	1
42	LU	0	1
54	Lh	0	2
All	All	0	22

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	Dt	8	4SU	O3'-P	5.29	1.61	1.56
57	Pt	46	G7M	O3'-P	5.15	1.61	1.56
1	16	1498	UR3	O3'-P	5.13	1.61	1.56
1	16	527	G7M	O3'-P	5.00	1.61	1.56

All (318) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16	330	C	O5'-C5'-C4'	6.34	114.48	109.40
23	23	620	G	O5'-C5'-C4'	6.12	114.30	109.40
23	23	2667	C	C6-N1-C2	-6.00	117.90	120.30
23	23	114	U	N1-C2-O2	5.98	126.99	122.80
23	23	2636	C	C2-N1-C1'	5.98	125.38	118.80
1	16	737	C	C5-C6-N1	5.98	123.99	121.00
23	23	2393	U	N3-C2-O2	-5.98	118.02	122.20
23	23	1816	C	N1-C2-O2	5.96	122.47	118.90
23	23	1101	U	N3-C2-O2	-5.96	118.03	122.20
23	23	243	U	N1-C2-O2	5.95	126.97	122.80
23	23	1295	C	C6-N1-C2	-5.93	117.93	120.30
23	23	2870	C	C6-N1-C2	-5.92	117.93	120.30
23	23	18	U	N3-C2-O2	-5.92	118.05	122.20
23	23	1490	A	C2-N3-C4	5.92	113.56	110.60
23	23	475	C	C6-N1-C2	-5.91	117.94	120.30
1	16	943	U	N3-C2-O2	-5.90	118.07	122.20
23	23	1097	U	N3-C2-O2	-5.90	118.07	122.20
1	16	1060	U	N3-C2-O2	-5.89	118.08	122.20
23	23	1398	C	C5-C6-N1	5.89	123.94	121.00
1	16	955	U	C5-C6-N1	5.88	125.64	122.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	1804	C	C6-N1-C2	-5.88	117.95	120.30
23	23	1097	U	N1-C2-O2	5.88	126.91	122.80
1	16	575	G	C4-N9-C1'	-5.87	118.87	126.50
23	23	901	C	C6-N1-C2	-5.87	117.95	120.30
23	23	114	U	C2-N1-C1'	5.87	124.74	117.70
23	23	991	C	C6-N1-C2	-5.87	117.95	120.30
23	23	225	C	C6-N1-C2	-5.86	117.95	120.30
1	16	552	U	N3-C2-O2	-5.86	118.10	122.20
23	23	1349	C	C6-N1-C2	-5.86	117.96	120.30
1	16	486	U	N3-C2-O2	-5.86	118.10	122.20
23	23	475	C	C5-C6-N1	5.86	123.93	121.00
1	16	610	U	N3-C2-O2	-5.85	118.11	122.20
23	23	114	U	N3-C2-O2	-5.84	118.11	122.20
23	23	624	C	C6-N1-C2	-5.84	117.96	120.30
23	23	2200	C	C6-N1-C2	-5.84	117.96	120.30
23	23	1629	U	N3-C2-O2	-5.82	118.13	122.20
23	23	2394	C	C6-N1-C2	-5.82	117.97	120.30
1	16	178	C	N3-C2-O2	-5.82	117.83	121.90
23	23	2393	U	N1-C2-O2	5.82	126.87	122.80
23	23	2342	C	C6-N1-C2	-5.81	117.98	120.30
23	23	765	C	C6-N1-C2	-5.81	117.98	120.30
1	16	1520	C	C6-N1-C2	-5.81	117.98	120.30
23	23	1662	U	N3-C2-O2	-5.80	118.14	122.20
1	16	316	C	C6-N1-C2	-5.80	117.98	120.30
23	23	2739	U	N1-C2-O2	5.79	126.86	122.80
1	16	1262	C	C6-N1-C2	-5.79	117.98	120.30
24	5	70	C	C6-N1-C2	-5.79	117.98	120.30
1	16	536	C	C6-N1-C2	-5.79	117.99	120.30
1	16	1060	U	N1-C2-O2	5.78	126.85	122.80
23	23	436	C	C6-N1-C2	-5.78	117.99	120.30
1	16	814	A	O5'-C5'-C4'	5.78	114.02	109.40
23	23	1349	C	C2-N1-C1'	5.78	125.16	118.80
23	23	2739	U	N3-C2-O2	-5.77	118.16	122.20
23	23	1021	A	C2-N3-C4	5.77	113.48	110.60
1	16	1070	U	N3-C2-O2	-5.76	118.17	122.20
23	23	2720	U	N3-C2-O2	-5.76	118.17	122.20
23	23	1934	C	C6-N1-C2	-5.76	118.00	120.30
23	23	157	C	C6-N1-C2	-5.75	118.00	120.30
23	23	2248	C	C6-N1-C2	-5.75	118.00	120.30
23	23	1611	C	C6-N1-C2	-5.74	118.00	120.30
23	23	2465	C	C6-N1-C2	-5.74	118.00	120.30
1	16	34	C	C5-C6-N1	5.74	123.87	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16	997	U	N3-C2-O2	-5.74	118.19	122.20
1	16	522	C	N1-C2-O2	5.73	122.34	118.90
23	23	1372	U	N3-C2-O2	-5.73	118.19	122.20
23	23	2214	C	C6-N1-C2	-5.73	118.01	120.30
1	16	805	C	C6-N1-C2	-5.73	118.01	120.30
23	23	2248	C	C2-N1-C1'	5.72	125.09	118.80
1	16	188	C	N1-C2-O2	5.71	122.32	118.90
1	16	1203	C	C6-N1-C2	-5.71	118.02	120.30
23	23	1639	C	N1-C2-O2	5.70	122.32	118.90
1	16	1412	C	C6-N1-C2	-5.70	118.02	120.30
1	16	866	C	C6-N1-C2	-5.69	118.03	120.30
23	23	2556	C	N1-C2-O2	5.69	122.31	118.90
23	23	765	C	C2-N1-C1'	5.68	125.05	118.80
1	16	575	G	C8-N9-C1'	5.66	134.35	127.00
1	16	153	C	C6-N1-C2	-5.65	118.04	120.30
23	23	278	A	C2-N3-C4	5.64	113.42	110.60
23	23	1349	C	N1-C2-O2	5.64	122.28	118.90
23	23	243	U	N3-C2-O2	-5.64	118.25	122.20
23	23	47	C	C6-N1-C2	-5.63	118.05	120.30
23	23	736	C	C6-N1-C2	-5.63	118.05	120.30
23	23	1760	C	N1-C2-O2	5.62	122.27	118.90
23	23	1398	C	N1-C2-O2	5.61	122.27	118.90
23	23	1026	G	O5'-C5'-C4'	5.60	113.88	109.40
23	23	20	C	C6-N1-C2	-5.60	118.06	120.30
1	16	737	C	C6-N1-C2	-5.59	118.06	120.30
1	16	1262	C	N1-C2-O2	5.59	122.26	118.90
23	23	2460	U	N3-C2-O2	-5.59	118.29	122.20
23	23	2214	C	N1-C2-O2	5.59	122.25	118.90
23	23	1931	U	N3-C2-O2	-5.57	118.30	122.20
1	16	477	C	C6-N1-C2	-5.56	118.08	120.30
23	23	1536	C	N1-C2-O2	5.56	122.24	118.90
23	23	1893	C	N1-C2-O2	5.56	122.24	118.90
1	16	989	U	N3-C2-O2	-5.55	118.31	122.20
23	23	503	A	O5'-C5'-C4'	5.54	113.83	109.40
23	23	201	C	N3-C2-O2	-5.54	118.02	121.90
23	23	2248	C	C5-C6-N1	5.54	123.77	121.00
23	23	2853	C	C6-N1-C2	-5.54	118.09	120.30
1	16	610	U	N1-C2-O2	5.53	126.67	122.80
1	16	312	C	C6-N1-C2	-5.53	118.09	120.30
23	23	1157	G	N3-C4-N9	5.53	129.32	126.00
23	23	1893	C	N3-C2-O2	-5.52	118.03	121.90
1	16	924	C	C6-N1-C2	-5.52	118.09	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	157	C	C5-C6-N1	5.52	123.76	121.00
23	23	1716	U	N3-C2-O2	-5.52	118.34	122.20
23	23	1030	C	C6-N1-C2	-5.51	118.10	120.30
1	16	1403	C	C6-N1-C2	-5.50	118.10	120.30
22	mR	41	U	N3-C2-O2	-5.50	118.35	122.20
1	16	764	C	C6-N1-C2	-5.50	118.10	120.30
23	23	1639	C	N3-C2-O2	-5.49	118.05	121.90
23	23	2267	A	N1-C2-N3	-5.49	126.55	129.30
23	23	1301	A	O5'-C5'-C4'	5.49	113.79	109.40
23	23	2667	C	N1-C2-O2	5.48	122.19	118.90
1	16	796	C	C6-N1-C2	-5.48	118.11	120.30
1	16	556	C	C5-C6-N1	5.48	123.74	121.00
1	16	1414	U	N3-C2-O2	-5.48	118.36	122.20
23	23	151	C	C6-N1-C2	-5.48	118.11	120.30
23	23	1931	U	N1-C2-O2	5.48	126.63	122.80
23	23	1398	C	C6-N1-C2	-5.48	118.11	120.30
1	16	1472	U	N3-C2-O2	-5.47	118.37	122.20
23	23	236	C	C6-N1-C2	-5.47	118.11	120.30
23	23	1301	A	C2-N3-C4	5.47	113.34	110.60
1	16	1071	C	C6-N1-C2	-5.47	118.11	120.30
1	16	1495	U	N3-C2-O2	-5.47	118.37	122.20
23	23	1874	C	N1-C2-O2	5.47	122.18	118.90
1	16	1414	U	N1-C2-O2	5.46	126.62	122.80
23	23	2827	C	C6-N1-C2	-5.46	118.12	120.30
23	23	1775	U	N3-C2-O2	-5.45	118.39	122.20
23	23	1582	C	C5-C6-N1	5.44	123.72	121.00
23	23	2757	A	O5'-C5'-C4'	5.44	113.75	109.40
1	16	34	C	C6-N1-C2	-5.42	118.13	120.30
59	Dt	51	U	N3-C2-O2	-5.42	118.40	122.20
24	5	37	C	N3-C2-O2	-5.42	118.11	121.90
1	16	750	C	N3-C2-O2	-5.42	118.11	121.90
1	16	1326	U	N3-C2-O2	-5.41	118.41	122.20
23	23	2380	C	C6-N1-C2	-5.41	118.14	120.30
23	23	2586	U	N1-C2-O2	5.41	126.58	122.80
23	23	1657	U	N3-C2-O2	-5.40	118.42	122.20
1	16	979	C	N1-C2-O2	5.40	122.14	118.90
23	23	1352	U	N3-C2-O2	-5.40	118.42	122.20
23	23	2615	U	N3-C2-O2	-5.40	118.42	122.20
23	23	801	G	O5'-C5'-C4'	5.40	113.72	109.40
23	23	1438	U	N3-C2-O2	-5.40	118.42	122.20
1	16	1113	C	C6-N1-C2	-5.39	118.14	120.30
23	23	806	C	C6-N1-C2	-5.39	118.14	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16	1059	C	C6-N1-C2	-5.39	118.14	120.30
1	16	1130	A	C2-N3-C4	5.38	113.29	110.60
23	23	105	C	C6-N1-C2	-5.38	118.15	120.30
1	16	634	C	C6-N1-C2	-5.38	118.15	120.30
1	16	563	A	C4-N9-C1'	5.38	135.98	126.30
1	16	689	C	C6-N1-C2	-5.37	118.15	120.30
57	Pt	13	C	C6-N1-C2	-5.37	118.15	120.30
23	23	737	C	C6-N1-C2	-5.37	118.15	120.30
23	23	1005	C	C6-N1-C2	-5.37	118.15	120.30
1	16	1010	U	N3-C2-O2	-5.37	118.44	122.20
23	23	1101	U	N1-C2-O2	5.35	126.55	122.80
1	16	1520	C	C2-N1-C1'	5.35	124.68	118.80
23	23	267	C	C6-N1-C2	-5.35	118.16	120.30
1	16	1238	A	C2-N3-C4	5.34	113.27	110.60
1	16	486	U	N1-C2-O2	5.34	126.54	122.80
23	23	1941	C	N1-C2-O2	5.34	122.10	118.90
23	23	1716	U	N1-C2-O2	5.33	126.53	122.80
23	23	2626	C	C6-N1-C2	-5.33	118.17	120.30
23	23	2880	C	C6-N1-C2	-5.33	118.17	120.30
1	16	582	C	C6-N1-C2	-5.33	118.17	120.30
1	16	998	C	N3-C2-O2	-5.33	118.17	121.90
23	23	1343	G	C4-N9-C1'	5.33	133.43	126.50
1	16	37	U	N3-C2-O2	-5.33	118.47	122.20
1	16	582	C	N1-C2-O2	5.33	122.10	118.90
23	23	1708	C	C6-N1-C2	-5.32	118.17	120.30
1	16	1060	U	C2-N1-C1'	5.32	124.08	117.70
23	23	2649	C	C5-C6-N1	5.32	123.66	121.00
1	16	221	C	N1-C2-O2	5.32	122.09	118.90
23	23	1537	G	C4-N9-C1'	5.32	133.41	126.50
1	16	575	G	N3-C4-N9	-5.31	122.81	126.00
23	23	196	A	C2-N3-C4	5.31	113.26	110.60
23	23	2254	C	N1-C2-O2	5.31	122.09	118.90
1	16	221	C	N3-C2-O2	-5.31	118.18	121.90
1	16	1471	U	N3-C2-O2	-5.31	118.48	122.20
1	16	389	A	C2-N3-C4	5.31	113.25	110.60
23	23	2254	C	C6-N1-C2	-5.31	118.18	120.30
24	5	97	C	C6-N1-C2	-5.31	118.18	120.30
57	Pt	25	C	N3-C2-O2	-5.30	118.19	121.90
23	23	1398	C	C2-N1-C1'	5.30	124.63	118.80
1	16	598	U	N3-C2-O2	-5.30	118.49	122.20
23	23	2615	U	N1-C2-O2	5.30	126.51	122.80
23	23	1675	C	N1-C2-O2	5.30	122.08	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	1881	C	C6-N1-C2	-5.30	118.18	120.30
23	23	719	C	C6-N1-C2	-5.30	118.18	120.30
23	23	1691	C	C6-N1-C2	-5.30	118.18	120.30
23	23	1920	C	C6-N1-C2	-5.29	118.18	120.30
23	23	1043	C	C6-N1-C2	-5.29	118.19	120.30
1	16	972	C	C6-N1-C2	-5.28	118.19	120.30
23	23	475	C	C2-N3-C4	5.28	122.54	119.90
1	16	564	C	N1-C2-O2	5.28	122.07	118.90
23	23	2586	U	N3-C2-O2	-5.28	118.50	122.20
23	23	532	A	C2-N3-C4	5.28	113.24	110.60
1	16	311	C	C6-N1-C2	-5.27	118.19	120.30
23	23	2460	U	N1-C2-O2	5.27	126.49	122.80
23	23	1669	A	C2-N3-C4	5.27	113.23	110.60
1	16	986	U	C5-C6-N1	5.26	125.33	122.70
23	23	441	U	N3-C2-O2	-5.26	118.52	122.20
23	23	1830	C	N1-C2-O2	5.26	122.06	118.90
23	23	2667	C	C5-C6-N1	5.25	123.63	121.00
23	23	418	C	C6-N1-C2	-5.25	118.20	120.30
1	16	751	U	N3-C2-O2	-5.25	118.53	122.20
1	16	1427	C	C6-N1-C2	-5.25	118.20	120.30
23	23	1207	C	C6-N1-C2	-5.25	118.20	120.30
1	16	358	U	N3-C2-O2	-5.24	118.53	122.20
23	23	1611	C	C2-N1-C1'	5.23	124.56	118.80
23	23	901	C	C5-C6-N1	5.23	123.61	121.00
1	16	178	C	N1-C2-O2	5.23	122.04	118.90
24	5	37	C	C6-N1-C2	-5.23	118.21	120.30
59	Dt	40	C	C6-N1-C2	-5.22	118.21	120.30
1	16	1363	A	C2-N3-C4	5.22	113.21	110.60
1	16	235	C	C6-N1-C2	-5.22	118.21	120.30
1	16	891	U	N1-C2-O2	5.22	126.45	122.80
23	23	1830	C	C6-N1-C2	-5.21	118.21	120.30
23	23	2793	C	C6-N1-C2	-5.21	118.21	120.30
1	16	989	U	N1-C2-O2	5.21	126.45	122.80
23	23	57	C	C6-N1-C2	-5.21	118.22	120.30
23	23	2888	C	N1-C2-O2	5.21	122.02	118.90
23	23	1874	C	C6-N1-C2	-5.20	118.22	120.30
23	23	2515	C	C6-N1-C2	-5.20	118.22	120.30
23	23	1306	C	C2-N1-C1'	5.20	124.52	118.80
23	23	560	C	C6-N1-C2	-5.20	118.22	120.30
23	23	2825	G	C4-N9-C1'	5.20	133.26	126.50
1	16	1023	U	N3-C2-O2	-5.20	118.56	122.20
23	23	1760	C	C6-N1-C2	-5.19	118.22	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	2556	C	N3-C2-O2	-5.19	118.27	121.90
1	16	948	C	C6-N1-C2	-5.19	118.22	120.30
23	23	1855	U	N3-C2-O2	-5.19	118.57	122.20
1	16	316	C	C2-N1-C1'	5.18	124.50	118.80
23	23	723	C	C6-N1-C2	-5.18	118.23	120.30
23	23	1352	U	N1-C2-O2	5.18	126.43	122.80
23	23	208	C	C6-N1-C2	-5.18	118.23	120.30
23	23	1536	C	C6-N1-C2	-5.18	118.23	120.30
23	23	2757	A	C2-N3-C4	5.18	113.19	110.60
23	23	243	U	C2-N1-C1'	5.18	123.91	117.70
23	23	1917	U	N3-C2-O2	-5.18	118.58	122.20
1	16	397	A	C2-N3-C4	5.17	113.19	110.60
23	23	2394	C	N1-C2-O2	5.17	122.00	118.90
23	23	2649	C	C6-N1-C2	-5.17	118.23	120.30
23	23	1306	C	C6-N1-C2	-5.17	118.23	120.30
23	23	1843	C	C5-C6-N1	5.17	123.58	121.00
23	23	871	U	O5'-C5'-C4'	5.16	113.53	109.40
1	16	1120	C	C6-N1-C2	-5.16	118.23	120.30
23	23	1306	C	N1-C2-O2	5.16	121.99	118.90
23	23	1868	C	C6-N1-C2	-5.16	118.24	120.30
1	16	1226	C	O5'-C5'-C4'	5.15	113.52	109.40
24	5	27	C	N1-C2-O2	5.15	121.99	118.90
23	23	672	C	C6-N1-C2	-5.15	118.24	120.30
23	23	1874	C	C2-N1-C1'	5.14	124.46	118.80
24	5	14	U	O5'-C5'-C4'	5.14	113.51	109.40
1	16	1230	C	C6-N1-C2	-5.14	118.25	120.30
1	16	736	C	C6-N1-C2	-5.13	118.25	120.30
1	16	952	U	N3-C2-O2	-5.13	118.61	122.20
23	23	2750	A	O5'-C5'-C4'	5.12	113.50	109.40
1	16	6	G	C4-N9-C1'	5.12	133.16	126.50
23	23	2338	C	C6-N1-C2	-5.12	118.25	120.30
23	23	2556	C	C6-N1-C2	-5.12	118.25	120.30
1	16	1075	U	N3-C2-O2	-5.12	118.62	122.20
23	23	366	C	C6-N1-C2	-5.11	118.25	120.30
23	23	765	C	C5-C6-N1	5.11	123.56	121.00
23	23	120	U	O5'-C5'-C4'	5.11	113.49	109.40
23	23	2214	C	N3-C2-O2	-5.11	118.32	121.90
23	23	687	C	C6-N1-C2	-5.11	118.26	120.30
23	23	985	C	C6-N1-C2	-5.11	118.26	120.30
23	23	1574	C	C6-N1-C2	-5.11	118.26	120.30
23	23	2036	C	C6-N1-C2	-5.11	118.26	120.30
23	23	1293	C	C6-N1-C2	-5.10	118.26	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	1886	U	N1-C2-O2	5.10	126.37	122.80
23	23	655	A	O5'-C5'-C4'	5.10	113.48	109.40
23	23	1920	C	C5-C6-N1	5.10	123.55	121.00
23	23	1600	C	C6-N1-C2	-5.10	118.26	120.30
24	5	37	C	N1-C2-O2	5.09	121.96	118.90
1	16	106	C	C6-N1-C2	-5.08	118.27	120.30
23	23	1109	C	C6-N1-C2	-5.08	118.27	120.30
1	16	580	C	C5-C6-N1	5.07	123.54	121.00
23	23	437	U	N3-C2-O2	-5.07	118.65	122.20
23	23	1675	C	N3-C2-O2	-5.07	118.35	121.90
23	23	832	U	N3-C2-O2	-5.07	118.65	122.20
23	23	2254	C	N3-C2-O2	-5.07	118.35	121.90
23	23	2678	C	C6-N1-C2	-5.07	118.27	120.30
1	16	284	C	C6-N1-C2	-5.06	118.28	120.30
59	Dt	62	C	C6-N1-C2	-5.06	118.28	120.30
23	23	2395	C	C6-N1-C2	-5.06	118.28	120.30
23	23	2104	C	N1-C2-O2	5.06	121.93	118.90
59	Dt	51	U	N1-C2-O2	5.05	126.34	122.80
23	23	1582	C	C6-N1-C2	-5.05	118.28	120.30
23	23	2500	U	O5'-C5'-C4'	5.04	113.44	109.40
23	23	16	C	C6-N1-C2	-5.04	118.28	120.30
23	23	2089	C	C6-N1-C2	-5.04	118.28	120.30
23	23	1452	G	C4-N9-C1'	5.04	133.05	126.50
1	16	580	C	C6-N1-C2	-5.04	118.28	120.30
23	23	1760	C	N3-C2-O2	-5.04	118.37	121.90
23	23	2394	C	N3-C2-O2	-5.04	118.38	121.90
1	16	1070	U	N1-C2-O2	5.03	126.32	122.80
23	23	228	C	O5'-C5'-C4'	5.03	113.43	109.40
23	23	2248	C	N1-C2-O2	5.03	121.92	118.90
23	23	2486	C	C6-N1-C2	-5.03	118.29	120.30
1	16	943	U	N1-C2-O2	5.03	126.32	122.80
1	16	87	C	N1-C2-O2	5.02	121.91	118.90
23	23	2636	C	N1-C2-O2	5.02	121.91	118.90
23	23	815	C	C6-N1-C2	-5.02	118.29	120.30
1	16	246	A	O5'-C5'-C4'	5.01	113.41	109.40
1	16	1471	U	N1-C2-O2	5.01	126.31	122.80
23	23	201	C	C6-N1-C2	-5.01	118.30	120.30
23	23	985	C	C2-N1-C1'	5.01	124.31	118.80
23	23	1748	C	C6-N1-C2	-5.01	118.30	120.30
23	23	2416	C	C6-N1-C2	-5.01	118.30	120.30
23	23	1008	A	O5'-C5'-C4'	5.01	113.41	109.40
23	23	1394	U	C6-N1-C1'	5.01	128.21	121.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16	1113	C	C2-N1-C1'	5.01	124.31	118.80
23	23	731	C	C6-N1-C2	-5.01	118.30	120.30
1	16	7	A	O5'-C5'-C4'	5.00	113.40	109.40
23	23	2179	C	N1-C2-O2	5.00	121.90	118.90

There are no chirality outliers.

All (22) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
26	LB	217	ARG	Sidechain
32	LJ	31	ARG	Sidechain
36	LO	126	ARG	Sidechain
37	LP	44	ARG	Sidechain
37	LP	55	ARG	Sidechain
38	LQ	4	ARG	Sidechain
41	LT	92	ARG	Sidechain
42	LU	13	ARG	Sidechain
54	Lh	33	ARG	Sidechain
54	Lh	39	ARG	Sidechain
3	SC	131	ARG	Sidechain
3	SC	132	ARG	Sidechain
3	SC	136	ARG	Sidechain
5	SE	20	ARG	Sidechain
5	SE	54	ARG	Sidechain
7	SG	3	ARG	Sidechain
9	SI	45	ARG	Sidechain
9	SI	49	ARG	Sidechain
14	SN	53	ARG	Sidechain
19	SS	3	ARG	Sidechain
19	SS	36	ARG	Sidechain
19	SS	37	ARG	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	16	32927	0	16589	121	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	SB	1781	0	1807	8	0
3	SC	1653	0	1727	20	0
4	SD	1642	0	1707	17	0
5	SE	1144	0	1185	12	0
6	SF	862	0	864	15	0
7	SG	1186	0	1240	9	0
8	SH	979	0	1031	5	0
9	SI	1021	0	1070	15	0
10	SJ	795	0	836	13	0
11	SK	887	0	900	14	0
12	SL	956	0	1017	11	0
13	SM	883	0	941	12	0
14	SN	804	0	844	10	0
15	SO	713	0	734	4	0
16	SP	649	0	666	4	0
17	SQ	648	0	691	6	0
18	SR	544	0	565	7	0
19	SS	663	0	688	17	0
20	ST	664	0	714	7	0
21	SU	589	0	629	3	0
22	mR	336	0	171	2	0
23	23	62355	0	31383	177	0
24	5	2570	0	1301	7	0
25	LA	1026	0	1092	14	0
26	LB	2082	0	2154	15	0
27	LC	1565	0	1616	8	0
28	LD	1551	0	1619	14	0
29	LE	1410	0	1444	16	0
30	LF	1322	0	1371	8	0
31	LI	1101	0	1142	8	0
32	LJ	980	0	1013	12	0
33	LK	979	0	1028	5	0
34	LM	1128	0	1162	6	0
35	LN	946	0	1023	10	0
36	LO	1052	0	1129	8	0
37	LP	1074	0	1154	12	0
38	LQ	960	0	1000	6	0
39	LR	891	0	923	9	0
40	LS	916	0	962	6	0
41	LT	946	0	1019	8	0
42	LU	816	0	839	6	0
43	LV	856	0	922	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	LW	738	0	807	7	0
45	LX	779	0	831	7	0
46	LY	752	0	780	4	0
47	La	581	0	599	1	0
48	Lb	624	0	652	6	0
49	Lc	508	0	543	3	0
50	Ld	448	0	488	5	0
51	Le	533	0	530	13	0
52	Lf	443	0	458	2	0
53	Lg	426	0	464	1	0
54	Lh	376	0	418	4	0
55	Li	504	0	572	2	0
56	Lj	302	0	340	4	0
57	Pt	1629	0	829	6	0
58	Pp	30	0	32	1	0
59	Dt	1638	0	842	10	0
60	EF	5382	0	5342	72	0
61	16	12	0	24	1	0
61	23	48	0	96	1	0
62	16	10	0	19	0	0
62	23	20	0	38	0	0
63	16	69	0	0	0	0
63	23	224	0	0	0	0
63	5	4	0	0	0	0
63	Dt	2	0	0	0	0
63	EF	2	0	0	0	0
63	LC	1	0	0	0	0
63	LT	1	0	0	0	0
63	Lf	1	0	0	0	0
63	SK	1	0	0	0	0
64	16	1	0	0	0	0
64	23	16	0	0	0	0
65	Le	1	0	0	0	0
65	Lj	1	0	0	0	0
65	SB	1	0	0	0	0
66	23	62	0	24	0	0
67	EF	32	0	12	1	0
All	All	155054	0	106652	724	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (724) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:23:2135:A:H62	23:23:2156:G:H21	1.19	0.90
29:LE:104:ILE:HD11	29:LE:175:PHE:HA	1.57	0.86
60:EF:419:ALA:HA	60:EF:457:ILE:HA	1.64	0.80
10:SJ:53:ILE:HD11	10:SJ:63:ASP:HB2	1.67	0.74
13:SM:33:ILE:HD11	13:SM:63:PHE:HE2	1.50	0.74
23:23:1055:G:H2'	23:23:1056:G:C8	2.24	0.72
37:LP:55:ARG:HH11	37:LP:55:ARG:HB2	1.54	0.72
23:23:2112:G:H1'	59:Dt:19:G:H2'	1.72	0.71
23:23:2503:2MA:H8	58:Pp:77:FME:HE2	1.75	0.69
23:23:2163:A:H3'	23:23:2164:C:H5'	1.74	0.68
23:23:2480:C:H2'	23:23:2481:G:H5'	1.76	0.68
1:16:664:G:H22	1:16:741:G:H1	1.40	0.68
23:23:1997:C:OP2	27:LC:129:THR:HB	1.94	0.67
23:23:495:G:H21	43:LV:61:ASN:HD21	1.42	0.67
23:23:2469:A:H4'	37:LP:55:ARG:CD	2.25	0.67
27:LC:5:VAL:H	27:LC:32:ASN:HD21	1.43	0.67
23:23:2469:A:H4'	37:LP:55:ARG:HD3	1.78	0.66
1:16:1357:A:H61	1:16:1365:G:H1	1.44	0.66
23:23:2135:A:H62	23:23:2156:G:N2	1.93	0.65
6:SF:102:MET:HE1	18:SR:26:ILE:HG12	1.79	0.65
30:LF:137:ASP:HB3	30:LF:140:VAL:HG22	1.79	0.64
60:EF:659:PRO:HB2	60:EF:662:GLU:HB2	1.79	0.63
29:LE:4:LEU:HB3	29:LE:173:PHE:HE1	1.64	0.63
1:16:718:A:H5'	11:SK:119:ASN:HB2	1.81	0.63
32:LJ:31:ARG:HE	32:LJ:107:GLU:H	1.47	0.63
42:LU:1:MET:HB2	42:LU:43:ASN:HB3	1.81	0.62
44:LW:54:GLU:H	44:LW:91:GLN:HG2	1.64	0.62
1:16:1086:U:H3	1:16:1099:G:H22	1.45	0.62
1:16:128:G:H5'	17:SQ:6:ARG:HH12	1.65	0.62
15:SO:32:LEU:HD11	15:SO:62:GLN:HE21	1.65	0.62
23:23:2746:U:H5"	30:LF:138:LYS:HE2	1.83	0.61
17:SQ:17:MET:HB3	17:SQ:20:SER:HB2	1.81	0.61
23:23:2115:G:H2'	23:23:2117:A:H62	1.66	0.60
23:23:2480:C:C2'	23:23:2481:G:H5'	2.31	0.60
29:LE:176:PRO:HB3	51:Le:44:PHE:CE1	2.35	0.60
1:16:1360:A:H2'	1:16:1361:G:C8	2.37	0.60
60:EF:452:GLU:HB2	60:EF:455:GLN:HB2	1.82	0.60
1:16:1106:G:H5"	3:SC:172:ARG:HG2	1.84	0.59
39:LR:31:THR:HG22	39:LR:33:ARG:H	1.67	0.59
34:LM:125:TYR:HH	34:LM:132:HIS:HE2	1.50	0.59
51:Le:16:CYS:SG	51:Le:17:SER:N	2.75	0.59
26:LB:144:VAL:HB	26:LB:154:LEU:HB2	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
60:EF:104:ARG:O	60:EF:104:ARG:NH1	2.35	0.59
23:23:764:A:H2	26:LB:218:PRO:HG3	1.68	0.59
23:23:12:U:H2'	23:23:12:U:O2	2.03	0.58
1:16:1009:U:H3	1:16:1020:G:H1	1.51	0.58
1:16:1360:A:H2'	1:16:1361:G:H8	1.68	0.58
60:EF:219:HIS:HB3	60:EF:220:GLN:HE21	1.69	0.58
60:EF:447:VAL:HG22	60:EF:458:ILE:HA	1.86	0.58
24:5:24:G:H4'	24:5:25:U:C5	2.39	0.58
1:16:458:U:H3	1:16:474:G:H1	1.53	0.57
3:SC:134:MET:SD	3:SC:153:VAL:HG12	2.43	0.57
41:LT:49:ASP:HA	41:LT:52:GLN:HB2	1.85	0.57
48:Lb:10:LYS:HE3	48:Lb:54:LYS:HG2	1.86	0.57
23:23:1108:U:H2'	23:23:1109:C:C6	2.40	0.57
23:23:2163:A:H5'	23:23:2164:C:C6	2.39	0.57
32:LJ:30:SER:HB2	32:LJ:79:PRO:HB2	1.86	0.57
7:SG:16:PRO:HB3	9:SI:46:MET:HG2	1.86	0.57
23:23:2135:A:N6	23:23:2156:G:H21	1.98	0.57
23:23:2162:G:H2'	23:23:2163:A:O4'	2.05	0.57
9:SI:15:SER:HA	9:SI:69:GLY:HA3	1.86	0.57
23:23:1108:U:H2'	23:23:1109:C:H6	1.70	0.56
13:SM:23:TYR:O	13:SM:65:VAL:HG13	2.05	0.56
35:LN:105:ARG:HD3	35:LN:108:ARG:HD3	1.86	0.56
31:LI:4:ILE:HB	31:LI:37:VAL:HG12	1.87	0.56
32:LJ:33:VAL:HG12	32:LJ:34:THR:HG23	1.86	0.56
33:LK:34:ASN:HB3	33:LK:37:GLU:HB3	1.88	0.56
39:LR:29:HIS:HB3	39:LR:36:TYR:HB2	1.88	0.56
9:SI:21:ILE:HG12	9:SI:86:ALA:HB1	1.88	0.56
23:23:2113:U:H3	23:23:2169:A:H61	1.53	0.56
23:23:2168:G:H3'	23:23:2169:A:C8	2.40	0.56
23:23:483:A:H5"	45:LX:47:LYS:HG3	1.87	0.56
45:LX:14:LEU:O	45:LX:19:LYS:NZ	2.39	0.56
1:16:894:G:N7	61:16:2002:PUT:N1	2.54	0.56
1:16:1255:G:O2'	1:16:1258:G:N3	2.39	0.55
17:SQ:68:SER:HB3	17:SQ:71:LYS:HB2	1.88	0.55
31:LI:26:ALA:HA	31:LI:30:LEU:HB2	1.89	0.55
53:Lg:5:ILE:HD11	53:Lg:28:ARG:HD2	1.87	0.55
3:SC:142:MET:HE2	3:SC:170:GLU:HG2	1.88	0.55
29:LE:40:VAL:HG21	29:LE:50:LEU:HD13	1.88	0.55
39:LR:83:LEU:HD11	39:LR:114:GLY:HA3	1.88	0.55
60:EF:351:ASN:HD21	60:EF:395:ASP:HB3	1.71	0.55
23:23:2168:G:H3'	23:23:2169:A:H8	1.71	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:LI:132:PHE:HB2	31:LI:140:ALA:HB3	1.87	0.55
5:SE:115:LEU:HD13	5:SE:123:VAL:HG11	1.88	0.55
18:SR:71:THR:H	18:SR:74:HIS:HE1	1.54	0.55
1:16:261:U:OP2	20:ST:74:ARG:NH2	2.40	0.54
28:LD:1:MET:HG2	28:LD:16:GLU:HG3	1.89	0.54
35:LN:88:ASN:HD22	35:LN:91:SER:H	1.54	0.54
14:SN:3:LYS:HB2	14:SN:6:MET:HG2	1.89	0.54
23:23:1053:C:H2'	23:23:1054:A:C8	2.42	0.54
60:EF:418:ILE:HG21	60:EF:466:LEU:HD13	1.87	0.54
60:EF:170:GLN:HE21	60:EF:265:THR:HB	1.72	0.54
24:5:8:C:OP1	39:LR:15:ARG:NH2	2.40	0.54
27:LC:13:ARG:HH22	40:LS:75:GLN:HE21	1.55	0.54
60:EF:83:ARG:NH2	60:EF:381:ASP:OD1	2.41	0.54
23:23:882:G:N2	23:23:894:U:O2	2.40	0.54
9:SI:52:LEU:HD11	9:SI:63:LEU:HD11	1.88	0.54
1:16:76:G:H1	1:16:93:U:H3	1.56	0.54
60:EF:561:LEU:HD12	60:EF:571:VAL:HG23	1.89	0.54
20:ST:33:LYS:HA	20:ST:36:TYR:HB2	1.89	0.54
60:EF:309:ARG:HH12	60:EF:316:PRO:HG2	1.73	0.54
9:SI:47:VAL:HA	9:SI:50:GLN:HB2	1.90	0.53
12:SL:20:ASN:C	12:SL:22:PRO:HD3	2.32	0.53
23:23:878:A:N6	23:23:899:A:O2'	2.39	0.53
60:EF:423:LYS:HG2	60:EF:480:GLU:HB2	1.88	0.53
8:SH:29:SER:HB3	8:SH:57:PRO:HB2	1.89	0.53
23:23:714:U:H1'	23:23:717:C:H5	1.73	0.53
23:23:1068:G:N2	23:23:1095:A:O2'	2.40	0.53
25:LA:67:HIS:HE1	25:LA:187:GLU:HB2	1.73	0.53
60:EF:243:LEU:HD12	60:EF:248:ILE:HG23	1.91	0.53
60:EF:495:ARG:HH21	60:EF:609:LYS:HG3	1.73	0.53
4:SD:15:GLU:HG3	4:SD:19:LEU:HD21	1.89	0.53
5:SE:65:GLU:HG2	5:SE:69:ARG:HH21	1.73	0.53
23:23:397:U:H5"	48:Lb:32:ASN:HB2	1.90	0.53
23:23:2243:U:H2'	23:23:2244:U:C6	2.43	0.53
30:LF:16:ASP:HB3	30:LF:27:LYS:HB2	1.91	0.53
45:LX:99:ASN:OD1	45:LX:99:ASN:N	2.41	0.53
22:mR:49:U:H2'	22:mR:49:U:O2	2.09	0.53
23:23:568:U:H1'	23:23:2030:6MZ:H9C1	1.88	0.53
23:23:191:A:H2'	23:23:192:C:C6	2.43	0.53
1:16:1035:A:H2'	1:16:1036:A:H8	1.73	0.53
23:23:848:C:H2'	23:23:849:A:H8	1.74	0.53
51:Le:18:CYS:SG	51:Le:20:ASN:HB2	2.49	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:Le:28:VAL:HG23	51:Le:30:HIS:H	1.71	0.53
57:Pt:26:A:H3'	57:Pt:27:G:H21	1.73	0.53
23:23:1870:C:H2'	23:23:1871:A:C8	2.44	0.53
1:16:814:A:H2'	1:16:816:A:H5"	1.91	0.52
29:LE:105:THR:HA	51:Le:38:SER:HB2	1.91	0.52
32:LJ:50:VAL:HG11	32:LJ:92:ALA:HB2	1.90	0.52
1:16:826:C:O2	8:SH:16:ASN:ND2	2.42	0.52
23:23:1108:U:O5'	23:23:1108:U:H6	1.92	0.52
13:SM:33:ILE:HG12	13:SM:59:GLU:HB3	1.90	0.52
60:EF:485:LYS:HB2	60:EF:664:PHE:CZ	2.44	0.52
60:EF:613:LEU:HB3	60:EF:690:ALA:HB1	1.91	0.52
1:16:1357:A:N6	1:16:1365:G:H1	2.06	0.52
38:LQ:53:THR:HA	38:LQ:56:LYS:HD2	1.92	0.52
29:LE:104:ILE:HD11	29:LE:175:PHE:CA	2.33	0.52
1:16:501:C:H2'	1:16:502:A:C8	2.44	0.52
1:16:1241:G:OP1	7:SG:35:LYS:NZ	2.42	0.52
23:23:494:G:H4'	43:LV:6:LYS:HB2	1.91	0.52
60:EF:658:VAL:HG22	60:EF:659:PRO:HD2	1.92	0.52
6:SF:10:VAL:HG12	6:SF:58:HIS:HB3	1.91	0.52
23:23:639:U:H2'	23:23:640:C:C6	2.45	0.52
26:LB:61:ALA:O	26:LB:63:ARG:NH1	2.43	0.52
13:SM:79:ARG:NH1	19:SS:65:GLU:O	2.43	0.52
28:LD:108:ILE:HG23	36:LO:1:MET:HE1	1.92	0.52
60:EF:452:GLU:HB2	60:EF:455:GLN:CB	2.40	0.52
11:SK:111:THR:HG23	21:SU:3:VAL:HG22	1.92	0.52
32:LJ:26:VAL:HB	32:LJ:83:ALA:HB3	1.92	0.51
59:Dt:62:C:H2'	59:Dt:63:G:H8	1.76	0.51
60:EF:255:ARG:NH1	60:EF:258:ASN:OD1	2.43	0.51
23:23:659:G:H4'	28:LD:95:LYS:HG2	1.92	0.51
23:23:889:C:O2'	29:LE:115:ARG:NH1	2.43	0.51
23:23:1994:C:H5"	61:23:3012:PUT:H22	1.93	0.51
1:16:909:A:H5"	12:SL:18:LYS:HE3	1.92	0.51
60:EF:492:GLU:HB2	60:EF:571:VAL:HG12	1.93	0.51
1:16:1073:U:O2	2:SB:103:ASN:ND2	2.44	0.51
23:23:2012:G:OP1	43:LV:98:LYS:NZ	2.44	0.51
19:SS:67:VAL:HG12	51:Le:56:ARG:HG3	1.93	0.51
23:23:2127:G:N2	23:23:2173:A:H1'	2.25	0.51
1:16:501:C:H2'	1:16:502:A:H8	1.76	0.51
1:16:1124:G:N2	1:16:1125:U:O4	2.44	0.51
14:SN:64:CYS:HB3	14:SN:68:GLY:H	1.76	0.51
1:16:958:A:C2	19:SS:55:ARG:HB2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:SM:64:VAL:HG12	13:SM:69:LEU:HB2	1.93	0.50
23:23:2291:U:H2'	23:23:2292:U:C6	2.46	0.50
1:16:1025:U:H5"	1:16:1026:G:H5'	1.93	0.50
2:SB:46:THR:HG23	2:SB:201:PRO:HG2	1.93	0.50
23:23:500:G:N1	23:23:503:A:OP2	2.41	0.50
26:LB:2:ALA:N	26:LB:20:VAL:O	2.45	0.50
38:LQ:33:ILE:HG13	38:LQ:114:GLU:HB3	1.93	0.50
45:LX:99:ASN:ND2	45:LX:101:GLU:OE2	2.45	0.50
6:SF:38:ARG:NH1	6:SF:98:GLU:O	2.44	0.50
6:SF:81:ASN:HB3	6:SF:84:VAL:HG22	1.93	0.50
23:23:647:G:N2	23:23:2350:C:O2'	2.45	0.50
23:23:1783:A:H5'	23:23:2608:G:H4'	1.93	0.50
23:23:2430:A:N3	23:23:2430:A:H2'	2.26	0.50
57:Pt:25:C:H2'	57:Pt:26:A:H8	1.76	0.50
1:16:1457:G:OP1	20:ST:34:LYS:NZ	2.43	0.50
23:23:1365:A:OP1	48:Lb:28:ARG:NH2	2.42	0.50
1:16:626:G:OP1	16:SP:18:GLN:NE2	2.45	0.50
28:LD:184:ASP:OD1	36:LO:2:ARG:NH2	2.44	0.50
33:LK:56:PRO:HG2	33:LK:72:LYS:HB3	1.94	0.50
48:Lb:72:ARG:NH1	48:Lb:78:TYR:OH	2.45	0.50
60:EF:212:VAL:O	60:EF:216:ASN:ND2	2.45	0.50
14:SN:90:ARG:NH2	14:SN:92:GLU:OE2	2.45	0.50
23:23:355:U:H2'	23:23:356:G:H8	1.76	0.50
34:LM:109:LEU:O	34:LM:111:LYS:NZ	2.44	0.50
8:SH:11:LEU:HD22	8:SH:75:ILE:HD11	1.93	0.50
28:LD:111:GLU:HG2	36:LO:1:MET:HG2	1.94	0.50
10:SJ:48:ARG:NH1	10:SJ:66:GLU:OE1	2.45	0.50
29:LE:176:PRO:HB3	51:Le:44:PHE:HE1	1.76	0.50
30:LF:47:ASP:OD1	30:LF:47:ASP:N	2.42	0.50
57:Pt:37:T6A:N1	57:Pt:37:T6A:N11	2.54	0.50
23:23:2469:A:H4'	37:LP:55:ARG:HD2	1.94	0.49
30:LF:98:VAL:HG12	30:LF:100:GLY:H	1.77	0.49
41:LT:72:ASN:HB3	41:LT:110:VAL:HG11	1.94	0.49
23:23:2119:A:C2	23:23:2169:A:H2'	2.46	0.49
31:LI:124:THR:O	31:LI:128:HIS:NE2	2.41	0.49
1:16:1241:G:H2'	1:16:1242:G:H8	1.77	0.49
1:16:1344:C:OP1	9:SI:124:ARG:NH1	2.45	0.49
60:EF:418:ILE:O	60:EF:458:ILE:HG12	2.12	0.49
8:SH:13:ARG:NH1	8:SH:26:THR:O	2.45	0.49
36:LO:55:MET:O	36:LO:60:ARG:NH1	2.44	0.49
37:LP:66:ARG:NH1	37:LP:104:GLU:OE2	2.44	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
60:EF:59:ARG:NH2	60:EF:467:ASP:OD2	2.46	0.49
1:16:193:C:H4'	20:ST:56:PRO:HG3	1.93	0.49
4:SD:150:LYS:NZ	4:SD:178:MET:SD	2.85	0.49
23:23:2313:C:H5"	29:LE:88:LYS:HD3	1.94	0.49
42:LU:6:GLN:HE21	42:LU:9:GLY:H	1.59	0.49
43:LV:29:VAL:HB	43:LV:55:ILE:HD11	1.95	0.49
15:SO:74:ASP:OD1	15:SO:74:ASP:N	2.45	0.49
18:SR:37:GLY:O	18:SR:63:ARG:NH2	2.45	0.49
23:23:2126:A:C2	23:23:2162:G:H1'	2.47	0.49
37:LP:20:LEU:HD13	46:LY:81:PRO:HG3	1.95	0.49
42:LU:57:GLY:HA2	42:LU:103:ALA:HA	1.95	0.49
1:16:780:A:H5"	11:SK:125:LYS:HE2	1.94	0.49
2:SB:58:ASN:ND2	2:SB:223:GLU:OE2	2.43	0.49
3:SC:16:LYS:NZ	3:SC:181:ASP:OD1	2.44	0.49
5:SE:148:ASN:HA	5:SE:152:MET:HE3	1.93	0.49
6:SF:101:PRO:HA	6:SF:104:LYS:HB2	1.93	0.49
18:SR:20:GLU:OE2	18:SR:54:GLN:NE2	2.46	0.49
23:23:78:U:OP1	49:Lc:7:ARG:NH2	2.45	0.49
60:EF:297:GLY:HA2	60:EF:405:ILE:HG22	1.94	0.49
6:SF:42:TRP:CZ2	6:SF:102:MET:HG3	2.48	0.49
1:16:1124:G:OP1	10:SJ:37:ARG:NH2	2.46	0.49
19:SS:56:GLN:HG2	19:SS:57:HIS:H	1.78	0.49
23:23:447:A:OP1	41:LT:5:LYS:NZ	2.46	0.49
27:LC:77:ARG:NH1	27:LC:200:ASP:OD1	2.46	0.49
32:LJ:43:LYS:HG2	33:LK:118:THR:HG22	1.95	0.49
45:LX:86:ARG:NH2	45:LX:102:THR:OG1	2.44	0.49
1:16:127:G:O2'	17:SQ:6:ARG:NH1	2.46	0.49
4:SD:54:GLN:HG2	4:SD:199:LEU:HD22	1.94	0.49
23:23:2515:C:H2'	23:23:2516:A:H8	1.77	0.49
41:LT:85:LYS:HD2	41:LT:117:LEU:HD23	1.94	0.49
43:LV:73:LYS:HB2	43:LV:106:VAL:HB	1.94	0.49
44:LW:38:ALA:O	44:LW:81:LYS:NZ	2.44	0.49
45:LX:66:GLN:HB2	45:LX:69:ASN:HD22	1.78	0.49
50:Ld:5:ILE:HG22	50:Ld:59:GLU:HA	1.95	0.49
1:16:1115:U:OP1	10:SJ:68:ARG:NH2	2.46	0.48
1:16:1312:G:H5'	19:SS:5:LEU:HG	1.95	0.48
3:SC:157:LEU:HD23	3:SC:164:ARG:HG3	1.94	0.48
23:23:1469:A:H2'	23:23:1470:A:H8	1.78	0.48
32:LJ:25:ALA:HB3	32:LJ:112:ALA:HB3	1.94	0.48
44:LW:30:ILE:HD11	44:LW:87:LEU:HD21	1.94	0.48
60:EF:351:ASN:HB3	60:EF:356:ALA:HB3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:16:427:U:O2'	1:16:541:G:OP1	2.31	0.48
1:16:1078:U:H1'	5:SE:135:ASN:HD21	1.77	0.48
23:23:2245:U:H5"	23:23:2246:G:H5'	1.95	0.48
3:SC:111:LEU:HD11	3:SC:146:ALA:HB2	1.95	0.48
6:SF:7:VAL:HG23	6:SF:61:LEU:HB2	1.96	0.48
37:LP:17:ASN:O	37:LP:38:ARG:NH1	2.41	0.48
50:Ld:37:GLU:O	50:Ld:38:ARG:NH1	2.46	0.48
4:SD:99:ASP:OD1	4:SD:99:ASP:N	2.46	0.48
35:LN:70:ARG:HD2	35:LN:76:VAL:HB	1.94	0.48
52:Lf:38:HIS:ND1	52:Lf:39:LEU:O	2.44	0.48
6:SF:10:VAL:HA	6:SF:84:VAL:HA	1.96	0.48
23:23:1796:U:H2'	23:23:1797:G:H8	1.79	0.48
4:SD:9:LEU:HD13	4:SD:32:CYS:HB3	1.96	0.48
44:LW:11:LEU:O	49:Lc:29:ARG:NH1	2.46	0.48
50:Ld:11:ARG:HB2	50:Ld:54:MET:HG2	1.95	0.48
60:EF:138:ILE:HG12	60:EF:286:LEU:HD11	1.94	0.48
1:16:219:U:H2'	1:16:220:G:H8	1.79	0.48
23:23:358:U:H2'	23:23:359:G:H8	1.78	0.48
29:LE:8:TYR:HA	29:LE:12:VAL:HB	1.96	0.48
37:LP:38:ARG:HB2	37:LP:98:PRO:HD3	1.95	0.48
60:EF:94:ASP:OD1	60:EF:94:ASP:N	2.45	0.48
1:16:744:C:H2'	1:16:745:G:H8	1.79	0.48
4:SD:11:LEU:HB3	4:SD:63:ARG:HD2	1.95	0.48
7:SG:74:GLU:HG3	7:SG:89:VAL:HG23	1.95	0.48
26:LB:36:LYS:HZ1	26:LB:38:SER:HG	1.58	0.48
59:Dt:18:G:H4'	59:Dt:60:U:C4	2.49	0.48
59:Dt:55:PSU:N3	59:Dt:57:G:H5"	2.29	0.48
1:16:473:U:H2'	1:16:474:G:H8	1.79	0.48
3:SC:40:ARG:NH1	14:SN:92:GLU:OE1	2.47	0.48
23:23:247:G:OP2	23:23:249:C:N4	2.45	0.48
23:23:1044:C:O2'	23:23:1111:A:N1	2.43	0.48
39:LR:8:ILE:O	39:LR:12:THR:OG1	2.30	0.48
59:Dt:19:G:H1'	59:Dt:20:U:C5	2.49	0.48
60:EF:236:LYS:NZ	60:EF:241:GLU:HB2	2.29	0.48
60:EF:282:VAL:HA	60:EF:286:LEU:HD13	1.96	0.48
11:SK:64:GLN:HG2	11:SK:99:ALA:HB2	1.95	0.47
23:23:685:A:H5"	23:23:788:A:H62	1.78	0.47
26:LB:264:ASP:OD1	26:LB:264:ASP:N	2.45	0.47
44:LW:3:ARG:NH1	44:LW:5:GLU:OE1	2.47	0.47
37:LP:22:GLN:O	37:LP:100:LYS:NZ	2.47	0.47
23:23:2079:U:O2'	48:Lb:23:ASN:OD1	2.31	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:23:2476:A:H5”	23:23:2476:A:H8	1.79	0.47
37:LP:64:TRP:HB2	37:LP:104:GLU:HB2	1.96	0.47
13:SM:33:ILE:HD11	13:SM:63:PHE:CE2	2.40	0.47
23:23:84:A:N1	23:23:98:G:O2’	2.46	0.47
23:23:698:C:O2’	23:23:734:A:N6	2.45	0.47
23:23:1059:G:H3’	23:23:1060:U:H2’	1.96	0.47
1:16:1356:G:H2’	1:16:1357:A:H8	1.79	0.47
23:23:477:A:H2’	23:23:478:A:C8	2.49	0.47
23:23:2627:G:O2’	23:23:2781:A:N1	2.44	0.47
60:EF:72:TRP:HD1	60:EF:283:ILE:HD11	1.79	0.47
4:SD:26:ARG:HH21	4:SD:30:THR:HG22	1.80	0.47
23:23:989:G:H5”	50:Ld:14:ILE:HD11	1.96	0.47
38:LQ:37:THR:HG22	38:LQ:39:PRO:HD2	1.95	0.47
1:16:1059:C:O2	10:SJ:55:PRO:HG2	2.15	0.47
2:SB:111:ILE:HD12	2:SB:152:LYS:HA	1.95	0.47
4:SD:121:LYS:HG3	4:SD:131:ASN:HB3	1.97	0.47
23:23:692:C:H5”	26:LB:39:LYS:HB2	1.97	0.47
28:LD:117:ARG:HA	28:LD:185:LYS:HZ3	1.80	0.47
32:LJ:118:ILE:HD13	32:LJ:126:LEU:HD22	1.97	0.47
5:SE:84:PRO:HB3	5:SE:97:GLN:HG3	1.97	0.47
9:SI:114:LYS:NZ	9:SI:118:LEU:O	2.46	0.47
31:LI:129:GLU:HB2	31:LI:141:LYS:HD2	1.97	0.47
40:LS:2:SER:OG	40:LS:3:ASN:N	2.48	0.47
25:LA:46:VAL:HG22	25:LA:212:VAL:HG13	1.96	0.47
33:LK:16:GLY:HA3	33:LK:51:LYS:HA	1.97	0.47
51:Le:23:LYS:HE2	51:Le:23:LYS:HB3	1.51	0.47
23:23:2046:G:H5’	52:Lf:16:ARG:HA	1.97	0.47
46:LY:64:VAL:HG22	46:LY:69:GLU:HG2	1.97	0.47
60:EF:532:LYS:HD2	60:EF:532:LYS:HA	1.76	0.47
1:16:1152:A:OP1	10:SJ:70:HIS:ND1	2.48	0.46
3:SC:135:LYS:HD2	3:SC:135:LYS:HA	1.55	0.46
23:23:307:G:N1	23:23:310:A:OP2	2.45	0.46
27:LC:9:VAL:HG11	40:LS:4:ILE:HB	1.96	0.46
60:EF:171:LEU:HG	60:EF:185:LEU:HD11	1.97	0.46
23:23:1341:G:O2’	44:LW:59:ASN:ND2	2.46	0.46
28:LD:175:ILE:HD12	28:LD:180:LEU:HD11	1.96	0.46
33:LK:121:ASP:OD1	33:LK:121:ASP:N	2.44	0.46
60:EF:423:LYS:HD2	60:EF:423:LYS:HA	1.73	0.46
1:16:517:G:N2	1:16:530:G:OP1	2.43	0.46
6:SF:38:ARG:HB2	6:SF:63:ASN:HB2	1.98	0.46
11:SK:17:SER:HA	11:SK:79:ILE:HA	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:23:577:G:O2'	23:23:1254:A:OP1	2.33	0.46
1:16:231:U:H2'	1:16:232:G:H8	1.78	0.46
1:16:501:C:H1'	1:16:549:C:H1'	1.97	0.46
2:SB:68:LEU:HD11	2:SB:92:VAL:HG23	1.98	0.46
60:EF:639:ARG:O	60:EF:659:PRO:HD3	2.15	0.46
1:16:514:C:H2'	1:16:515:G:H8	1.80	0.46
1:16:891:U:H2'	1:16:892:A:H8	1.79	0.46
3:SC:179:ARG:HG3	3:SC:206:GLU:HB2	1.96	0.46
23:23:717:C:H3'	23:23:718:A:H8	1.81	0.46
23:23:1172:C:H2'	23:23:1173:U:C6	2.51	0.46
23:23:2023:C:H5'	23:23:2617:U:H4'	1.97	0.46
42:LU:1:MET:HA	42:LU:43:ASN:HA	1.98	0.46
60:EF:309:ARG:HD3	60:EF:309:ARG:HA	1.78	0.46
60:EF:569:TYR:HD1	60:EF:570:PRO:HD2	1.80	0.46
1:16:1368:A:OP1	9:SI:113:ARG:NH2	2.49	0.46
23:23:1386:C:H2'	23:23:1387:A:H8	1.81	0.46
23:23:2130:U:HO2'	23:23:2133:G:HO2'	1.61	0.46
49:Lc:14:LEU:HD22	49:Lc:53:VAL:HG13	1.96	0.46
23:23:641:U:O2'	23:23:2350:C:OP1	2.34	0.46
23:23:1086:A:H2'	23:23:1086:A:N3	2.30	0.46
60:EF:422:PRO:HB3	60:EF:431:MET:SD	2.56	0.46
1:16:1071:C:H2'	1:16:1072:G:H8	1.80	0.46
23:23:1386:C:H2'	23:23:1387:A:C8	2.51	0.46
23:23:2443:C:H2'	23:23:2444:G:H8	1.79	0.46
34:LM:13:ARG:HH21	34:LM:49:ASP:HB3	1.81	0.46
7:SG:42:ILE:HG23	7:SG:117:ALA:HA	1.96	0.46
1:16:335:C:H2'	1:16:336:A:H8	1.81	0.45
1:16:1218:C:H2'	1:16:1219:A:H8	1.81	0.45
6:SF:48:ALA:N	18:SR:66:SER:OG	2.49	0.45
18:SR:13:PHE:HD1	18:SR:18:VAL:HG21	1.80	0.45
43:LV:74:ILE:HD12	43:LV:105:VAL:HG22	1.97	0.45
60:EF:132:LYS:NZ	60:EF:410:GLU:OE2	2.44	0.45
1:16:1144:G:H21	1:16:1146:A:H62	1.64	0.45
3:SC:11:ARG:NH1	3:SC:177:THR:O	2.48	0.45
3:SC:138:VAL:HG13	3:SC:149:ILE:HG21	1.98	0.45
25:LA:9:ARG:HA	25:LA:12:ARG:HG2	1.98	0.45
26:LB:161:TYR:HD1	26:LB:194:GLU:HG3	1.81	0.45
38:LQ:28:LEU:HD23	38:LQ:48:VAL:HG21	1.97	0.45
39:LR:85:LYS:HD3	39:LR:85:LYS:HA	1.80	0.45
1:16:266:G:H3'	17:SQ:69:LYS:HB2	1.98	0.45
11:SK:87:LYS:HB2	11:SK:113:VAL:HG23	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:LE:120:LYS:HA	29:LE:120:LYS:HD3	1.66	0.45
60:EF:330:VAL:HG11	60:EF:386:ILE:HG23	1.99	0.45
11:SK:82:LEU:HD23	11:SK:105:PHE:CB	2.47	0.45
23:23:373:U:H2'	23:23:374:A:H8	1.82	0.45
23:23:2115:G:N2	23:23:2119:A:N7	2.64	0.45
23:23:2229:U:H2'	23:23:2230:G:H8	1.81	0.45
60:EF:624:PRO:HG2	60:EF:627:ASN:HD21	1.82	0.45
1:16:1317:C:H2'	1:16:1318:A:O4'	2.17	0.45
12:SL:52:VAL:HG12	12:SL:66:TYR:HA	1.98	0.45
23:23:27:G:N2	23:23:512:G:H1'	2.31	0.45
23:23:2615:U:H2'	23:23:2616:C:H6	1.81	0.45
35:LN:71:ARG:NH2	35:LN:123:LEU:O	2.49	0.45
1:16:1060:U:H5'	10:SJ:53:ILE:HG21	1.97	0.45
23:23:309:A:N3	23:23:329:G:O2'	2.45	0.45
23:23:2466:C:H5"	56:Lj:6:SER:HB3	1.99	0.45
23:23:2478:A:OP2	56:Lj:2:LYS:NZ	2.43	0.45
26:LB:122:ALA:HB1	26:LB:128:ASN:HD22	1.80	0.45
30:LF:22:GLN:NE2	30:LF:38:ASN:O	2.46	0.45
32:LJ:76:PHE:HD1	32:LJ:76:PHE:HA	1.74	0.45
1:16:150:U:H2'	1:16:151:A:H8	1.82	0.45
1:16:1228:C:H2'	1:16:1229:A:H8	1.82	0.45
23:23:1936:A:H61	23:23:1963:U:H3	1.65	0.45
27:LC:46:ARG:NH2	27:LC:85:ALA:O	2.43	0.45
59:Dt:22:G:H2'	59:Dt:23:A:H8	1.81	0.45
59:Dt:37:MIA:H132	59:Dt:38:A:C2	2.52	0.45
60:EF:545:ILE:HD11	60:EF:549:TYR:HB2	1.99	0.45
14:SN:59:ARG:HE	14:SN:59:ARG:HB3	1.56	0.45
25:LA:195:ALA:O	25:LA:198:LYS:HG3	2.16	0.45
36:LO:23:ILE:HD12	42:LU:84:ARG:HH21	1.81	0.45
60:EF:491:ARG:HA	60:EF:491:ARG:HD3	1.83	0.45
3:SC:125:GLU:OE2	3:SC:190:HIS:N	2.49	0.45
4:SD:4:TYR:CZ	4:SD:11:LEU:HD21	2.51	0.45
23:23:494:G:H21	43:LV:57:ASN:HD21	1.64	0.45
30:LF:91:GLY:HA2	30:LF:160:LYS:HG2	1.99	0.45
47:La:59:LEU:HD12	47:La:80:ILE:HD12	1.98	0.45
51:Le:20:ASN:HD21	51:Le:39:LYS:HD3	1.81	0.45
1:16:18:C:H4'	1:16:1078:U:O2	2.16	0.44
1:16:1355:G:H2'	1:16:1356:G:H8	1.82	0.44
23:23:1000:A:H2'	23:23:1001:A:C8	2.52	0.44
23:23:1266:G:O2'	23:23:2012:G:O6	2.31	0.44
3:SC:108:LYS:HD2	3:SC:144:LEU:HD22	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:SG:36:LYS:HD3	9:SI:41:ARG:HH22	1.82	0.44
23:23:84:A:OP1	45:LX:6:ARG:NH1	2.50	0.44
60:EF:418:ILE:HD11	60:EF:483:VAL:HG12	2.00	0.44
1:16:406:G:H21	4:SD:116:GLN:HE22	1.64	0.44
1:16:522:C:H1'	1:16:536:C:H5"	1.99	0.44
1:16:1214:C:H41	60:EF:543:GLY:HA2	1.83	0.44
12:SL:43:LYS:HE2	12:SL:91:PRO:HG3	1.99	0.44
1:16:404:G:H4'	1:16:439:U:O2	2.17	0.44
12:SL:110:ARG:NH1	12:SL:112:GLN:O	2.49	0.44
23:23:523:C:O2	23:23:554:U:O2'	2.35	0.44
34:LM:114:LEU:HG	34:LM:118:MET:HE3	1.98	0.44
1:16:486:U:H2'	1:16:487:A:H8	1.82	0.44
6:SF:21:MET:HA	6:SF:24:ARG:HB3	2.00	0.44
23:23:1385:A:O2'	23:23:1396:U:O2	2.32	0.44
23:23:2113:U:H3	23:23:2169:A:N6	2.15	0.44
46:LY:44:HIS:HE1	46:LY:86:LEU:H	1.66	0.44
60:EF:18:HIS:O	60:EF:23:LYS:NZ	2.50	0.44
9:SI:99:ARG:HG2	9:SI:104:VAL:HG11	1.98	0.44
20:ST:70:ASN:OD1	20:ST:70:ASN:N	2.50	0.44
21:SU:59:LYS:HD3	21:SU:59:LYS:HA	1.76	0.44
23:23:1094:U:H1'	23:23:1097:U:H5	1.82	0.44
23:23:2394:C:H5"	36:LO:63:LYS:HD3	1.99	0.44
38:LQ:24:MET:HE1	38:LQ:40:LYS:HD3	2.00	0.44
1:16:235:C:H2'	1:16:236:A:H8	1.83	0.44
1:16:673:A:H2'	1:16:674:G:C8	2.52	0.44
1:16:1414:U:H2'	1:16:1415:G:H8	1.83	0.44
23:23:675:A:OP1	28:LD:71:GLY:HA3	2.17	0.44
23:23:1497:U:H5"	23:23:1498:C:H5	1.83	0.44
25:LA:27:ILE:H	25:LA:27:ILE:HG12	1.66	0.44
1:16:664:G:OP1	18:SR:57:ARG:NH2	2.50	0.44
1:16:1321:U:H5"	1:16:1322:C:H2'	1.98	0.44
23:23:2339:C:O2'	24:5:41:G:N2	2.51	0.44
31:LI:83:LYS:HB2	31:LI:91:PHE:HB2	2.00	0.44
1:16:1191:A:OP2	3:SC:2:GLY:N	2.50	0.44
3:SC:154:SER:HB3	3:SC:165:THR:HG23	1.99	0.44
4:SD:60:LYS:HE2	4:SD:60:LYS:HB3	1.68	0.44
6:SF:102:MET:H	6:SF:102:MET:HG2	1.59	0.44
11:SK:24:HIS:HB3	11:SK:31:ILE:HB	1.99	0.44
23:23:781:A:C8	26:LB:218:PRO:HG2	2.52	0.44
23:23:1536:C:H3'	23:23:1537:G:H21	1.82	0.44
23:23:2047:C:H2'	23:23:2048:G:H8	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:23:2112:G:H3'	23:23:2113:U:C5	2.52	0.44
60:EF:278:MET:HE3	60:EF:278:MET:HB3	1.82	0.44
1:16:490:C:H2'	1:16:491:G:H8	1.82	0.43
1:16:1372:U:OP2	9:SI:13:LYS:NZ	2.43	0.43
5:SE:34:THR:HG22	5:SE:52:LYS:HG2	2.00	0.43
6:SF:2:ARG:HD3	6:SF:91:ARG:HD2	2.00	0.43
15:SO:12:VAL:HG21	15:SO:22:THR:HG22	1.98	0.43
44:LW:28:ASN:ND2	44:LW:88:LYS:O	2.51	0.43
60:EF:418:ILE:HG12	60:EF:458:ILE:HD11	2.00	0.43
23:23:2898:U:H2'	23:23:2899:A:H8	1.83	0.43
41:LT:9:ILE:HD13	41:LT:9:ILE:HA	1.87	0.43
1:16:946:A:H2'	1:16:947:G:C8	2.53	0.43
1:16:1243:C:H2'	1:16:1244:G:H8	1.83	0.43
19:SS:50:ALA:HB1	19:SS:57:HIS:HB3	1.99	0.43
23:23:1227:G:OP2	41:LT:16:LYS:NZ	2.44	0.43
1:16:269:C:H2'	1:16:270:A:C8	2.53	0.43
1:16:375:U:H4'	16:SP:6:LEU:HD12	2.00	0.43
21:SU:31:GLU:OE2	21:SU:34:ARG:NH2	2.51	0.43
23:23:2172:U:OP2	23:23:2173:A:H5'	2.18	0.43
23:23:2788:C:O2'	23:23:2809:A:N3	2.44	0.43
26:LB:66:ASP:OD2	26:LB:102:ARG:NH1	2.43	0.43
1:16:405:U:O4	4:SD:2:ALA:N	2.51	0.43
23:23:632:A:H2'	23:23:633:A:C8	2.53	0.43
23:23:807:U:O2'	23:23:2060:A:N1	2.46	0.43
60:EF:614:GLU:HA	60:EF:615:PRO:HD3	1.83	0.43
1:16:1228:C:H2'	1:16:1229:A:C8	2.53	0.43
1:16:1404:C:H2'	1:16:1405:G:C8	2.53	0.43
6:SF:90:MET:HE2	6:SF:90:MET:HB2	1.91	0.43
60:EF:83:ARG:HH21	60:EF:85:ASN:HD21	1.64	0.43
60:EF:643:LYS:HG3	60:EF:655:HIS:HB3	2.00	0.43
1:16:674:G:H2'	1:16:675:A:H8	1.84	0.43
1:16:1129:C:H1'	1:16:1130:A:H2	1.83	0.43
6:SF:68:GLN:H	6:SF:68:GLN:HG3	1.69	0.43
9:SI:116:VAL:HG11	10:SJ:62:ARG:HB2	2.01	0.43
60:EF:420:VAL:N	60:EF:456:THR:O	2.51	0.43
1:16:713:G:H2'	1:16:714:G:C8	2.54	0.43
12:SL:43:LYS:HB3	12:SL:89:D2T:H8	1.99	0.43
23:23:687:C:H5"	54:Lh:2:LYS:HE2	2.01	0.43
23:23:1469:A:H2'	23:23:1470:A:C8	2.54	0.43
29:LE:106:ILE:HG23	51:Le:34:LEU:HD21	1.99	0.43
7:SG:150:ALA:HA	11:SK:61:PHE:HB3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:SI:56:ASP:OD1	9:SI:56:ASP:N	2.52	0.43
12:SL:21:VAL:N	12:SL:22:PRO:HD3	2.34	0.43
23:23:2831:G:N7	27:LC:59:ARG:NH2	2.66	0.43
28:LD:130:LYS:HB2	28:LD:133:LEU:HG	2.00	0.43
31:LI:2:GLN:HE22	31:LI:20:ASN:HB2	1.83	0.43
60:EF:389:LYS:HA	60:EF:389:LYS:HD3	1.84	0.43
60:EF:485:LYS:HB2	60:EF:664:PHE:CE1	2.54	0.43
1:16:201:G:H1	1:16:216:U:H3	1.65	0.43
19:SS:11:ILE:HG13	19:SS:38:SER:HB3	2.01	0.43
23:23:817:C:O2'	23:23:839:U:H5"	2.18	0.43
41:LT:93:LYS:HZ2	41:LT:93:LYS:HG3	1.68	0.43
23:23:1278:C:H2'	23:23:1279:G:H8	1.84	0.42
29:LE:44:ILE:H	29:LE:44:ILE:HG13	1.61	0.42
34:LM:31:GLU:OE2	34:LM:34:ARG:NH1	2.52	0.42
35:LN:107:LEU:HB2	35:LN:116:ILE:HD11	2.00	0.42
59:Dt:22:G:H2'	59:Dt:23:A:C8	2.54	0.42
1:16:227:G:N2	16:SP:63:GLN:O	2.45	0.42
2:SB:111:ILE:HD13	2:SB:111:ILE:HA	1.91	0.42
2:SB:125:THR:O	2:SB:128:LYS:NZ	2.52	0.42
3:SC:102:ASN:OD1	3:SC:102:ASN:N	2.53	0.42
4:SD:101:VAL:O	4:SD:105:MET:N	2.52	0.42
23:23:1769:U:O2'	23:23:1958:C:OP1	2.36	0.42
25:LA:60:ARG:NH2	25:LA:61:GLY:O	2.52	0.42
32:LJ:43:LYS:HD3	32:LJ:46:ARG:HG2	2.00	0.42
41:LT:84:LYS:HA	41:LT:84:LYS:HD3	1.81	0.42
46:LY:79:ARG:HE	46:LY:79:ARG:HB3	1.66	0.42
55:Li:30:ARG:HA	55:Li:30:ARG:HD3	1.82	0.42
1:16:949:A:N7	13:SM:105:ASN:ND2	2.67	0.42
23:23:468:G:N7	54:Lh:39:ARG:NH2	2.51	0.42
23:23:479:A:N3	23:23:481:G:H5"	2.34	0.42
23:23:693:A:O2'	23:23:1353:A:N3	2.47	0.42
23:23:2273:A:H2'	23:23:2274:A:C8	2.54	0.42
60:EF:153:LYS:HD3	60:EF:153:LYS:HA	1.82	0.42
1:16:846:G:H2'	1:16:847:G:H8	1.84	0.42
3:SC:24:ALA:HB1	3:SC:28:GLU:HG2	2.00	0.42
12:SL:50:ARG:NH1	12:SL:89:D2T:OD2	2.53	0.42
23:23:581:C:H2'	23:23:582:A:C8	2.54	0.42
23:23:2099:U:H2'	23:23:2100:G:H8	1.84	0.42
24:5:7:G:O2'	39:LR:38:GLN:NE2	2.52	0.42
30:LF:86:LYS:HG2	30:LF:132:VAL:HG22	2.02	0.42
43:LV:67:ASP:OD1	43:LV:67:ASP:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
60:EF:624:PRO:HG3	60:EF:677:ARG:HB2	2.01	0.42
1:16:296:U:O2'	1:16:556:C:O2	2.38	0.42
20:ST:59:ASP:OD1	20:ST:76:LYS:NZ	2.44	0.42
23:23:931:U:O4	23:23:1166:G:N2	2.52	0.42
56:Lj:1:MET:HE2	56:Lj:1:MET:HB2	1.96	0.42
60:EF:493:THR:OG1	60:EF:494:ILE:N	2.51	0.42
1:16:1218:C:H2'	1:16:1219:A:C8	2.54	0.42
1:16:1356:G:H2'	1:16:1357:A:C8	2.55	0.42
2:SB:73:LYS:HG3	2:SB:75:ALA:H	1.85	0.42
3:SC:7:PRO:HA	3:SC:10:ILE:HG22	2.01	0.42
13:SM:78:LYS:HA	13:SM:81:MET:HB2	2.00	0.42
19:SS:9:PRO:HB3	51:Le:64:PHE:CE2	2.54	0.42
23:23:2251:OMG:HM23	23:23:2251:OMG:H1'	1.83	0.42
25:LA:168:ASN:HB3	25:LA:170:ILE:HD12	2.01	0.42
35:LN:112:PHE:HB3	35:LN:115:ILE:HD12	2.01	0.42
40:LS:32:VAL:HG12	40:LS:34:GLU:HG2	2.01	0.42
60:EF:392:THR:N	60:EF:395:ASP:OD2	2.48	0.42
3:SC:150:LYS:HB2	3:SC:173:VAL:HG21	2.02	0.42
23:23:833:A:H2'	23:23:834:G:C8	2.55	0.42
25:LA:30:LEU:HA	25:LA:33:LEU:HD23	2.01	0.42
26:LB:5:LYS:HG3	26:LB:17:VAL:HG22	2.01	0.42
26:LB:141:VAL:HG12	26:LB:192:LEU:HA	2.01	0.42
60:EF:435:LEU:HD13	60:EF:447:VAL:HG11	2.02	0.42
1:16:923:A:O2'	1:16:1399:C:OP2	2.33	0.42
1:16:958:A:N6	19:SS:77:THR:O	2.53	0.42
1:16:1522:U:H2'	1:16:1523:G:H8	1.84	0.42
7:SG:74:GLU:HG2	7:SG:91:VAL:HG22	2.00	0.42
12:SL:10:LYS:HA	12:SL:10:LYS:HD2	1.90	0.42
13:SM:90:ARG:HB2	13:SM:97:VAL:HG12	2.02	0.42
23:23:479:A:H4'	23:23:480:A:H5'	2.00	0.42
23:23:1754:A:O2'	40:LS:103:ARG:NH2	2.53	0.42
23:23:1796:U:H2'	23:23:1797:G:C8	2.54	0.42
23:23:2443:C:H2'	23:23:2444:G:C8	2.53	0.42
25:LA:51:ASP:HB3	25:LA:54:LYS:HD3	2.02	0.42
25:LA:186:LYS:HA	25:LA:189:LEU:HD23	2.02	0.42
1:16:948:C:H2'	1:16:949:A:H8	1.85	0.42
23:23:651:G:H5'	55:Li:19:LYS:HG3	2.01	0.42
23:23:1447:C:O2'	23:23:1544:A:N3	2.45	0.42
28:LD:12:LEU:HD12	28:LD:12:LEU:HA	1.96	0.42
60:EF:143:LYS:HB3	60:EF:146:ARG:HG3	2.02	0.42
60:EF:314:ASP:OD1	60:EF:314:ASP:N	2.44	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:SE:56:VAL:HG21	22:mR:50:U:O2'	2.19	0.42
16:SP:68:SER:OG	16:SP:69:ASP:N	2.51	0.42
19:SS:70:LYS:HA	19:SS:70:LYS:HD3	1.82	0.42
23:23:299:A:H2'	23:23:300:A:C8	2.55	0.42
28:LD:116:ASP:O	28:LD:185:LYS:NZ	2.53	0.42
51:Le:12:ILE:HD11	51:Le:26:SER:HB2	2.02	0.42
54:Lh:33:ARG:HE	54:Lh:33:ARG:HB2	1.61	0.42
59:Dt:37:MIA:H153	59:Dt:37:MIA:H121	1.78	0.42
19:SS:2:PRO:HB2	19:SS:7:LYS:HB2	2.02	0.41
23:23:717:C:H2'	23:23:718:A:O4'	2.19	0.41
23:23:1655:A:H3'	23:23:1656:C:C6	2.54	0.41
23:23:2039:U:H2'	23:23:2040:G:C8	2.55	0.41
25:LA:23:ILE:HG23	25:LA:186:LYS:HZ1	1.85	0.41
28:LD:18:THR:HG23	28:LD:106:LYS:HG2	2.02	0.41
43:LV:62:ASP:OD1	43:LV:62:ASP:N	2.53	0.41
51:Le:49:ARG:HE	51:Le:49:ARG:HB2	1.62	0.41
14:SN:87:ALA:HB1	14:SN:92:GLU:HB2	2.02	0.41
23:23:457:A:N1	23:23:470:A:H5"	2.34	0.41
23:23:882:G:N1	23:23:894:U:C2	2.85	0.41
23:23:2405:G:O2'	23:23:2411:A:N6	2.49	0.41
28:LD:88:ARG:HA	28:LD:88:ARG:HD3	1.92	0.41
37:LP:8:LYS:HB2	37:LP:8:LYS:HE3	1.90	0.41
1:16:410:G:H21	1:16:432:A:H62	1.68	0.41
5:SE:150:PRO:HB3	8:SH:99:LEU:HD11	2.03	0.41
7:SG:93:PRO:HA	7:SG:96:ARG:HB2	2.02	0.41
19:SS:35:SER:O	19:SS:71:LEU:HD22	2.20	0.41
19:SS:62:VAL:HG13	19:SS:66:MET:HE2	2.02	0.41
23:23:832:U:H2'	23:23:833:A:C8	2.55	0.41
60:EF:298:ILE:H	60:EF:405:ILE:HG22	1.86	0.41
60:EF:497:LYS:HD2	60:EF:497:LYS:HA	1.85	0.41
1:16:404:G:O6	4:SD:2:ALA:N	2.54	0.41
10:SJ:52:LEU:O	14:SN:81:ARG:NH1	2.52	0.41
13:SM:54:ASP:HA	13:SM:57:ARG:HD2	2.02	0.41
23:23:465:G:OP1	54:Lh:12:ARG:NH2	2.54	0.41
23:23:2339:C:H2'	23:23:2340:A:C8	2.55	0.41
60:EF:289:PRO:HB3	60:EF:337:ARG:HH22	1.85	0.41
1:16:728:A:OP1	15:SO:54:ARG:NH2	2.53	0.41
12:SL:46:ASN:ND2	12:SL:89:D2T:OD1	2.53	0.41
23:23:1409:U:H2'	23:23:1410:G:H8	1.85	0.41
23:23:2295:C:OP2	39:LR:9:ARG:NH2	2.52	0.41
23:23:2526:G:O2'	56:Lj:34:LYS:NZ	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:LE:13:VAL:HG22	29:LE:28:VAL:HG11	2.02	0.41
29:LE:83:TYR:HD1	29:LE:83:TYR:HA	1.75	0.41
31:LI:41:LYS:HE2	31:LI:41:LYS:HB2	1.90	0.41
57:Pt:47:U:O2'	57:Pt:50:C:OP1	2.31	0.41
60:EF:504:LYS:HB2	60:EF:505:HIS:H	1.75	0.41
1:16:17:U:H2'	1:16:18:C:C6	2.56	0.41
1:16:36:C:H5"	12:SL:120:LYS:HD3	2.03	0.41
23:23:1716:U:H2'	23:23:1717:A:H8	1.86	0.41
24:5:29:A:H2'	24:5:30:C:O4'	2.20	0.41
24:5:41:G:H3'	24:5:42:C:H5"	2.01	0.41
60:EF:406:LEU:HB3	60:EF:407:GLU:H	1.78	0.41
1:16:254:G:O2'	17:SQ:18:GLU:O	2.37	0.41
1:16:1422:G:O3'	35:LN:49:ARG:NH1	2.54	0.41
1:16:1530:G:H2'	1:16:1531:A:C8	2.55	0.41
7:SG:26:PHE:HD2	7:SG:101:MET:HG2	1.85	0.41
11:SK:97:ILE:H	11:SK:97:ILE:HG13	1.72	0.41
14:SN:69:ARG:HA	14:SN:70:PRO:HD3	1.94	0.41
23:23:1244:A:O2'	28:LD:29:HIS:NE2	2.51	0.41
23:23:1433:A:H2'	23:23:1434:A:C8	2.55	0.41
23:23:1578:U:H2'	23:23:1579:A:H8	1.85	0.41
25:LA:5:THR:H	25:LA:8:MET:HE2	1.85	0.41
25:LA:166:ASP:OD1	25:LA:166:ASP:N	2.51	0.41
48:Lb:45:ARG:HE	48:Lb:45:ARG:HB3	1.55	0.41
57:Pt:16:U:O2'	57:Pt:18:G:OP1	2.38	0.41
1:16:34:C:H2'	1:16:35:G:H8	1.85	0.41
1:16:269:C:H2'	1:16:270:A:H8	1.86	0.41
1:16:1397[A]:C:OP2	5:SE:29:ARG:NH2	2.53	0.41
1:16:1397[B]:C:OP2	5:SE:29:ARG:NH2	2.53	0.41
5:SE:38:VAL:HG11	5:SE:114:VAL:HG22	2.03	0.41
5:SE:41:ASP:OD1	5:SE:41:ASP:N	2.54	0.41
9:SI:55:VAL:HG11	9:SI:94:LEU:HD13	2.02	0.41
9:SI:113:ARG:NH2	10:SJ:64:GLN:OE1	2.46	0.41
10:SJ:30:LYS:HA	10:SJ:30:LYS:HD2	1.85	0.41
11:SK:13:ARG:NH1	11:SK:77:TYR:OH	2.54	0.41
20:ST:2:ALA:HB3	20:ST:8:LYS:HG2	2.02	0.41
23:23:151:C:H2'	23:23:152:A:H8	1.85	0.41
23:23:1415:U:H1'	23:23:1588:G:N2	2.36	0.41
23:23:1432:G:H2'	23:23:1433:A:C8	2.56	0.41
23:23:2081:U:H2'	23:23:2082:A:H8	1.85	0.41
23:23:2898:U:H2'	23:23:2899:A:C8	2.56	0.41
37:LP:127:LYS:HB2	37:LP:127:LYS:HE2	1.79	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
39:LR:67:ASN:OD1	39:LR:67:ASN:N	2.52	0.41
60:EF:243:LEU:HA	60:EF:243:LEU:HD13	1.81	0.41
60:EF:449:THR:HB	60:EF:456:THR:HB	2.02	0.41
1:16:252:U:H2'	1:16:253:A:C8	2.56	0.41
1:16:477:C:H2'	1:16:478:A:C8	2.56	0.41
23:23:814:C:OP1	42:LU:86:GLN:N	2.48	0.41
23:23:864:G:O2'	23:23:914:G:O6	2.37	0.41
23:23:910:A:H2'	23:23:911:A:C8	2.56	0.41
23:23:1434:A:H2'	23:23:1435:G:C8	2.56	0.41
23:23:2718:G:O2'	23:23:2847:U:OP1	2.38	0.41
26:LB:133:ARG:NH1	26:LB:187:ASP:OD1	2.54	0.41
27:LC:7:LYS:HB3	27:LC:7:LYS:HE3	1.87	0.41
34:LM:106:LYS:HB2	34:LM:106:LYS:HE3	1.83	0.41
36:LO:89:VAL:HG22	36:LO:121:THR:HB	2.02	0.41
60:EF:5:THR:HG21	60:EF:83:ARG:HB2	2.03	0.41
1:16:212:G:H2'	1:16:213:G:H8	1.85	0.40
1:16:559:A:H4'	1:16:560:A:H3'	2.03	0.40
11:SK:88:GLY:H	11:SK:114:THR:HG23	1.86	0.40
13:SM:64:VAL:HG13	13:SM:68:ASP:HB3	2.02	0.40
19:SS:40:ILE:HG22	19:SS:67:VAL:HG23	2.04	0.40
23:23:155:A:H2'	23:23:156:A:C8	2.56	0.40
25:LA:48:LEU:HD23	25:LA:50:ILE:HG12	2.04	0.40
32:LJ:101:LYS:HA	32:LJ:101:LYS:HD2	1.89	0.40
1:16:187:G:N2	1:16:190:A:OP2	2.50	0.40
1:16:429:U:H3'	4:SD:9:LEU:HD12	2.02	0.40
1:16:824:G:H2'	1:16:825:A:H8	1.86	0.40
1:16:957:U:H4'	19:SS:79:THR:HB	2.03	0.40
19:SS:6:LYS:H	19:SS:6:LYS:HG2	1.68	0.40
23:23:2092:U:OP1	23:23:2199:A:O2'	2.32	0.40
35:LN:33:ALA:HB1	35:LN:37:ASP:HB2	2.02	0.40
57:Pt:34:U8U:H2'	57:Pt:35:U:O4'	2.21	0.40
4:SD:85:ASN:HB3	4:SD:88:GLU:HB2	2.02	0.40
13:SM:83:LEU:HD23	13:SM:83:LEU:HA	1.93	0.40
14:SN:35:ASN:O	14:SN:36:ALA:HB3	2.22	0.40
23:23:668:A:H2'	23:23:670:A:H62	1.87	0.40
24:5:13:G:O2'	24:5:15:A:OP2	2.36	0.40
35:LN:64:ARG:HB2	35:LN:83:ALA:HB3	2.04	0.40
59:Dt:60:U:H5'	59:Dt:61:C:H5	1.86	0.40
60:EF:23:LYS:NZ	67:EF:901:GSP:O1B	2.49	0.40
60:EF:406:LEU:HD23	60:EF:406:LEU:HA	1.89	0.40
1:16:928:G:O2'	1:16:1533:C:OP1	2.39	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:16:1071:C:H2'	1:16:1072:G:C8	2.56	0.40
1:16:1313:U:O4	19:SS:3:ARG:NH2	2.54	0.40
3:SC:108:LYS:HB2	3:SC:111:LEU:HB2	2.03	0.40
4:SD:145:ILE:HD13	4:SD:145:ILE:HA	1.93	0.40
23:23:476:G:N1	23:23:479:A:OP2	2.51	0.40
23:23:2071:A:H2'	23:23:2072:C:C6	2.56	0.40
23:23:2155:U:H2'	23:23:2156:G:C8	2.57	0.40
26:LB:145:GLU:HB2	26:LB:188:CYS:HB3	2.02	0.40
32:LJ:124:ASP:OD1	32:LJ:124:ASP:N	2.54	0.40
35:LN:77:ILE:HG12	40:LS:72:ARG:HG2	2.03	0.40
1:16:514:C:H2'	1:16:515:G:C8	2.56	0.40
1:16:1277:C:O2'	1:16:1279:G:N3	2.49	0.40
1:16:1386:G:H2'	1:16:1387:G:H8	1.86	0.40
10:SJ:32:THR:HG23	10:SJ:82:LYS:HE3	2.02	0.40
10:SJ:72:ARG:HD3	10:SJ:72:ARG:HA	1.87	0.40
11:SK:56:ARG:O	11:SK:59:THR:OG1	2.35	0.40
11:SK:100:LEU:HD23	11:SK:100:LEU:HA	1.93	0.40
14:SN:23:LYS:HA	14:SN:23:LYS:HD3	1.85	0.40
23:23:566:U:H5"	36:LO:29:LYS:HE3	2.04	0.40
23:23:1652:A:H62	38:LQ:11:ASN:HD21	1.68	0.40
23:23:2119:A:N1	23:23:2169:A:H2'	2.37	0.40
23:23:2167:U:N3	23:23:2170:A:OP2	2.46	0.40
23:23:2819:G:H2'	23:23:2821:A:N7	2.36	0.40
29:LE:10:ASP:O	29:LE:14:LYS:NZ	2.54	0.40
50:Ld:5:ILE:H	50:Ld:5:ILE:HG13	1.48	0.40
60:EF:460:GLY:HA3	60:EF:466:LEU:HD21	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	SB	226/241 (94%)	216 (96%)	10 (4%)	0	100	100
3	SC	209/233 (90%)	197 (94%)	12 (6%)	0	100	100
4	SD	203/206 (98%)	198 (98%)	5 (2%)	0	100	100
5	SE	153/167 (92%)	148 (97%)	5 (3%)	0	100	100
6	SF	104/135 (77%)	100 (96%)	4 (4%)	0	100	100
7	SG	150/179 (84%)	140 (93%)	10 (7%)	0	100	100
8	SH	127/130 (98%)	125 (98%)	2 (2%)	0	100	100
9	SI	125/130 (96%)	119 (95%)	6 (5%)	0	100	100
10	SJ	97/103 (94%)	92 (95%)	5 (5%)	0	100	100
11	SK	116/129 (90%)	108 (93%)	8 (7%)	0	100	100
12	SL	120/124 (97%)	115 (96%)	5 (4%)	0	100	100
13	SM	112/118 (95%)	106 (95%)	4 (4%)	2 (2%)	6	31
14	SN	98/101 (97%)	95 (97%)	2 (2%)	1 (1%)	12	45
15	SO	86/89 (97%)	84 (98%)	2 (2%)	0	100	100
16	SP	80/82 (98%)	77 (96%)	3 (4%)	0	100	100
17	SQ	78/84 (93%)	74 (95%)	4 (5%)	0	100	100
18	SR	64/75 (85%)	62 (97%)	2 (3%)	0	100	100
19	SS	81/92 (88%)	77 (95%)	4 (5%)	0	100	100
20	ST	83/87 (95%)	82 (99%)	1 (1%)	0	100	100
21	SU	68/71 (96%)	68 (100%)	0	0	100	100
25	LA	130/234 (56%)	125 (96%)	5 (4%)	0	100	100
26	LB	269/273 (98%)	266 (99%)	3 (1%)	0	100	100
27	LC	207/209 (99%)	202 (98%)	5 (2%)	0	100	100
28	LD	199/201 (99%)	194 (98%)	5 (2%)	0	100	100
29	LE	175/179 (98%)	166 (95%)	9 (5%)	0	100	100
30	LF	174/177 (98%)	162 (93%)	12 (7%)	0	100	100
31	LI	146/149 (98%)	137 (94%)	9 (6%)	0	100	100
32	LJ	128/165 (78%)	114 (89%)	14 (11%)	0	100	100
33	LK	132/142 (93%)	123 (93%)	8 (6%)	1 (1%)	16	50
34	LM	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
35	LN	121/123 (98%)	121 (100%)	0	0	100	100
36	LO	142/144 (99%)	138 (97%)	4 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	LP	133/136 (98%)	130 (98%)	3 (2%)	0	100	100
38	LQ	118/127 (93%)	115 (98%)	3 (2%)	0	100	100
39	LR	114/117 (97%)	113 (99%)	1 (1%)	0	100	100
40	LS	112/115 (97%)	107 (96%)	5 (4%)	0	100	100
41	LT	115/118 (98%)	114 (99%)	1 (1%)	0	100	100
42	LU	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
43	LV	108/110 (98%)	103 (95%)	5 (5%)	0	100	100
44	LW	91/100 (91%)	90 (99%)	1 (1%)	0	100	100
45	LX	100/104 (96%)	91 (91%)	9 (9%)	0	100	100
46	LY	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
47	La	74/85 (87%)	71 (96%)	3 (4%)	0	100	100
48	Lb	75/78 (96%)	75 (100%)	0	0	100	100
49	Lc	61/63 (97%)	60 (98%)	1 (2%)	0	100	100
50	Ld	56/59 (95%)	54 (96%)	2 (4%)	0	100	100
51	Le	66/70 (94%)	61 (92%)	5 (8%)	0	100	100
52	Lf	54/57 (95%)	53 (98%)	1 (2%)	0	100	100
53	Lg	50/55 (91%)	48 (96%)	2 (4%)	0	100	100
54	Lh	44/46 (96%)	43 (98%)	1 (2%)	0	100	100
55	Li	62/65 (95%)	59 (95%)	3 (5%)	0	100	100
56	Lj	36/38 (95%)	34 (94%)	2 (6%)	0	100	100
58	Pp	1/3 (33%)	1 (100%)	0	0	100	100
60	EF	691/704 (98%)	625 (90%)	66 (10%)	0	100	100
All	All	6697/7161 (94%)	6402 (96%)	291 (4%)	4 (0%)	49	80

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
13	SM	66	GLU
14	SN	37	SER
13	SM	63	PHE
33	LK	122	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	SB	189/199 (95%)	178 (94%)	11 (6%)	18 51
3	SC	172/190 (90%)	164 (95%)	8 (5%)	23 58
4	SD	172/173 (99%)	153 (89%)	19 (11%)	6 25
5	SE	118/126 (94%)	112 (95%)	6 (5%)	21 55
6	SF	92/116 (79%)	82 (89%)	10 (11%)	6 26
7	SG	124/147 (84%)	114 (92%)	10 (8%)	11 38
8	SH	104/105 (99%)	100 (96%)	4 (4%)	29 63
9	SI	105/107 (98%)	101 (96%)	4 (4%)	29 63
10	SJ	87/90 (97%)	79 (91%)	8 (9%)	8 33
11	SK	91/99 (92%)	84 (92%)	7 (8%)	12 40
12	SL	102/103 (99%)	98 (96%)	4 (4%)	28 62
13	SM	92/96 (96%)	79 (86%)	13 (14%)	3 16
14	SN	83/84 (99%)	73 (88%)	10 (12%)	5 22
15	SO	76/77 (99%)	70 (92%)	6 (8%)	11 39
16	SP	65/65 (100%)	63 (97%)	2 (3%)	35 68
17	SQ	74/78 (95%)	70 (95%)	4 (5%)	20 53
18	SR	57/65 (88%)	56 (98%)	1 (2%)	51 77
19	SS	72/79 (91%)	63 (88%)	9 (12%)	4 20
20	ST	65/66 (98%)	63 (97%)	2 (3%)	35 68
21	SU	60/61 (98%)	58 (97%)	2 (3%)	33 67
25	LA	110/181 (61%)	100 (91%)	10 (9%)	9 33
26	LB	216/218 (99%)	210 (97%)	6 (3%)	38 70
27	LC	164/164 (100%)	161 (98%)	3 (2%)	51 77
28	LD	165/165 (100%)	159 (96%)	6 (4%)	31 65
29	LE	148/150 (99%)	131 (88%)	17 (12%)	5 24
30	LF	137/138 (99%)	130 (95%)	7 (5%)	21 55

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
31	LI	113/114 (99%)	105 (93%)	8 (7%)	13 43
32	LJ	99/123 (80%)	88 (89%)	11 (11%)	6 25
33	LK	104/110 (94%)	98 (94%)	6 (6%)	18 51
34	LM	116/116 (100%)	112 (97%)	4 (3%)	32 66
35	LN	104/104 (100%)	100 (96%)	4 (4%)	29 63
36	LO	103/103 (100%)	99 (96%)	4 (4%)	28 62
37	LP	108/108 (100%)	103 (95%)	5 (5%)	24 58
38	LQ	100/103 (97%)	98 (98%)	2 (2%)	48 76
39	LR	86/87 (99%)	82 (95%)	4 (5%)	23 58
40	LS	99/100 (99%)	94 (95%)	5 (5%)	21 55
41	LT	89/90 (99%)	85 (96%)	4 (4%)	24 59
42	LU	84/84 (100%)	81 (96%)	3 (4%)	31 65
43	LV	93/93 (100%)	87 (94%)	6 (6%)	15 47
44	LW	80/84 (95%)	71 (89%)	9 (11%)	5 24
45	LX	83/85 (98%)	79 (95%)	4 (5%)	23 57
46	LY	78/78 (100%)	77 (99%)	1 (1%)	61 81
47	La	58/63 (92%)	56 (97%)	2 (3%)	32 66
48	Lb	67/68 (98%)	66 (98%)	1 (2%)	57 80
49	Lc	55/55 (100%)	54 (98%)	1 (2%)	51 77
50	Ld	48/49 (98%)	46 (96%)	2 (4%)	26 61
51	Le	60/62 (97%)	54 (90%)	6 (10%)	7 29
52	Lf	47/48 (98%)	47 (100%)	0	100 100
53	Lg	47/49 (96%)	44 (94%)	3 (6%)	16 48
54	Lh	38/38 (100%)	36 (95%)	2 (5%)	20 54
55	Li	51/52 (98%)	49 (96%)	2 (4%)	28 62
56	Lj	34/34 (100%)	34 (100%)	0	100 100
58	Pp	2/2 (100%)	2 (100%)	0	100 100
60	EF	571/578 (99%)	509 (89%)	62 (11%)	6 26
All	All	5557/5822 (95%)	5207 (94%)	350 (6%)	18 48

All (350) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	SB	5	SER
2	SB	8	ASP
2	SB	20	THR
2	SB	70	VAL
2	SB	97	LEU
2	SB	102	THR
2	SB	141	LEU
2	SB	153	ASP
2	SB	161	LEU
2	SB	210	VAL
2	SB	223	GLU
3	SC	45	LYS
3	SC	64	ILE
3	SC	111	LEU
3	SC	115	LEU
3	SC	123	GLN
3	SC	135	LYS
3	SC	139	GLN
3	SC	164	ARG
4	SD	3	ARG
4	SD	15	GLU
4	SD	33	LYS
4	SD	34	ILE
4	SD	35	GLU
4	SD	58	LYS
4	SD	60	LYS
4	SD	67	VAL
4	SD	83	LYS
4	SD	91	LEU
4	SD	116	GLN
4	SD	142	VAL
4	SD	154	ARG
4	SD	163	GLU
4	SD	173	VAL
4	SD	184	ARG
4	SD	192	SER
4	SD	197	GLU
4	SD	201	VAL
5	SE	22	SER
5	SE	38	VAL
5	SE	55	GLU
5	SE	68	ARG
5	SE	72	ILE

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Mol	Chain	Res	Type
5	SE	92	SER
6	SF	5	GLU
6	SF	9	MET
6	SF	17	GLN
6	SF	61	LEU
6	SF	68	GLN
6	SF	72	ASP
6	SF	74	LEU
6	SF	90	MET
6	SF	102	MET
6	SF	104	LYS
7	SG	6	VAL
7	SG	23	LEU
7	SG	38	THR
7	SG	43	VAL
7	SG	52	GLN
7	SG	69	VAL
7	SG	73	VAL
7	SG	75	VAL
7	SG	89	VAL
7	SG	97	ASN
8	SH	54	ASP
8	SH	80	ARG
8	SH	99	LEU
8	SH	111	MET
9	SI	47	VAL
9	SI	49	ARG
9	SI	85	ARG
9	SI	99	ARG
10	SJ	4	GLN
10	SJ	36	VAL
10	SJ	44	THR
10	SJ	53	ILE
10	SJ	67	ILE
10	SJ	77	VAL
10	SJ	81	GLU
10	SJ	85	ASP
11	SK	12	VAL
11	SK	13	ARG
11	SK	26	SER
11	SK	82	LEU
11	SK	94	GLU

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Mol	Chain	Res	Type
11	SK	96	THR
11	SK	114	THR
12	SL	16	VAL
12	SL	21	VAL
12	SL	44	LYS
12	SL	94	ARG
13	SM	4	ILE
13	SM	7	ILE
13	SM	8	ASN
13	SM	16	VAL
13	SM	25	VAL
13	SM	31	LYS
13	SM	43	VAL
13	SM	63	PHE
13	SM	65	VAL
13	SM	66	GLU
13	SM	76	SER
13	SM	78	LYS
13	SM	79	ARG
14	SN	11	VAL
14	SN	26	GLU
14	SN	32	SER
14	SN	34	VAL
14	SN	37	SER
14	SN	43	ASN
14	SN	50	THR
14	SN	53	ARG
14	SN	59	ARG
14	SN	84	VAL
15	SO	12	VAL
15	SO	54	ARG
15	SO	58	ARG
15	SO	64	ARG
15	SO	72	ARG
15	SO	75	VAL
16	SP	45	GLU
16	SP	48	GLU
17	SQ	14	SER
17	SQ	29	VAL
17	SQ	42	THR
17	SQ	58	VAL
18	SR	44	ILE

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Mol	Chain	Res	Type
19	SS	2	PRO
19	SS	3	ARG
19	SS	5	LEU
19	SS	7	LYS
19	SS	11	ILE
19	SS	37	ARG
19	SS	39	THR
19	SS	56	GLN
19	SS	67	VAL
20	ST	3	ASN
20	ST	34	LYS
21	SU	28	VAL
21	SU	62	ARG
25	LA	18	THR
25	LA	42	VAL
25	LA	50	ILE
25	LA	173	THR
25	LA	178	VAL
25	LA	189	LEU
25	LA	197	LYS
25	LA	198	LYS
25	LA	214	ILE
25	LA	224	VAL
26	LB	4	VAL
26	LB	36	LYS
26	LB	118	SER
26	LB	133	ARG
26	LB	184	VAL
26	LB	268	VAL
27	LC	18	ASP
27	LC	60	VAL
27	LC	95	SER
28	LD	3	LEU
28	LD	7	ASP
28	LD	21	ARG
28	LD	90	GLN
28	LD	167	VAL
28	LD	170	ARG
29	LE	9	LYS
29	LE	13	VAL
29	LE	19	GLU
29	LE	33	LYS

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Mol	Chain	Res	Type
29	LE	35	THR
29	LE	42	GLU
29	LE	44	ILE
29	LE	46	ASP
29	LE	56	ASP
29	LE	57	LEU
29	LE	83	TYR
29	LE	85	ILE
29	LE	100	PHE
29	LE	106	ILE
29	LE	120	LYS
29	LE	136	ILE
29	LE	142	ASP
30	LF	25	THR
30	LF	85	LYS
30	LF	86	LYS
30	LF	116	GLN
30	LF	127	THR
30	LF	155	GLU
30	LF	166	ASP
31	LI	15	LEU
31	LI	37	VAL
31	LI	54	LEU
31	LI	61	VAL
31	LI	112	LYS
31	LI	122	LEU
31	LI	125	THR
31	LI	145	ASN
32	LJ	15	VAL
32	LJ	31	ARG
32	LJ	46	ARG
32	LJ	50	VAL
32	LJ	54	VAL
32	LJ	60	LEU
32	LJ	64	VAL
32	LJ	76	PHE
32	LJ	99	PHE
32	LJ	105	LYS
32	LJ	106	PHE
33	LK	17	MET
33	LK	57	VAL
33	LK	65	ARG

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Mol	Chain	Res	Type
33	LK	70	VAL
33	LK	79	LEU
33	LK	80	LEU
34	LM	1	MET
34	LM	11	VAL
34	LM	64	VAL
34	LM	100	VAL
35	LN	28	SER
35	LN	58	LEU
35	LN	65	THR
35	LN	76	VAL
36	LO	1	MET
36	LO	2	ARG
36	LO	70	LYS
36	LO	120	VAL
37	LP	47	GLU
37	LP	70	ASP
37	LP	78	LEU
37	LP	133	LYS
37	LP	135	VAL
38	LQ	5	LYS
38	LQ	15	SER
39	LR	46	GLU
39	LR	47	VAL
39	LR	63	LYS
39	LR	78	VAL
40	LS	6	LYS
40	LS	13	MET
40	LS	19	SER
40	LS	46	VAL
40	LS	63	LYS
41	LT	91	ASP
41	LT	92	ARG
41	LT	93	LYS
41	LT	97	ASP
42	LU	15	SER
42	LU	43	ASN
42	LU	54	VAL
43	LV	1	MET
43	LV	4	ILE
43	LV	22	ASP
43	LV	27	LYS

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Mol	Chain	Res	Type
43	LV	53	SER
43	LV	67	ASP
44	LW	7	LEU
44	LW	30	ILE
44	LW	48	GLN
44	LW	57	VAL
44	LW	60	THR
44	LW	74	ILE
44	LW	89	GLU
44	LW	92	ASN
44	LW	93	LEU
45	LX	15	THR
45	LX	59	VAL
45	LX	62	GLU
45	LX	88	GLU
46	LY	79	ARG
47	La	19	LYS
47	La	70	GLU
48	Lb	54	LYS
49	Lc	2	LYS
50	Ld	4	THR
50	Ld	5	ILE
51	Le	13	THR
51	Le	15	SER
51	Le	23	LYS
51	Le	27	THR
51	Le	41	HIS
51	Le	63	ARG
53	Lg	9	ILE
53	Lg	48	ILE
53	Lg	51	GLU
54	Lh	4	THR
54	Lh	33	ARG
55	Li	29	LEU
55	Li	54	ASP
60	EF	4	THR
60	EF	49	THR
60	EF	79	TYR
60	EF	93	VAL
60	EF	94	ASP
60	EF	96	THR
60	EF	98	GLU

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Mol	Chain	Res	Type
60	EF	129	GLN
60	EF	131	ASN
60	EF	135	VAL
60	EF	137	ARG
60	EF	170	GLN
60	EF	182	VAL
60	EF	188	MET
60	EF	189	LYS
60	EF	191	ILE
60	EF	225	SER
60	EF	234	MET
60	EF	235	GLU
60	EF	241	GLU
60	EF	242	GLU
60	EF	243	LEU
60	EF	264	VAL
60	EF	295	ILE
60	EF	298	ILE
60	EF	303	LYS
60	EF	313	ASP
60	EF	314	ASP
60	EF	320	LEU
60	EF	338	VAL
60	EF	344	ASN
60	EF	353	VAL
60	EF	359	ARG
60	EF	364	VAL
60	EF	365	GLN
60	EF	417	SER
60	EF	418	ILE
60	EF	420	VAL
60	EF	421	GLU
60	EF	423	LYS
60	EF	425	LYS
60	EF	427	ASP
60	EF	428	GLN
60	EF	454	ASN
60	EF	456	THR
60	EF	458	ILE
60	EF	483	VAL
60	EF	485	LYS
60	EF	504	LYS

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Mol	Chain	Res	Type
60	EF	515	TYR
60	EF	544	VAL
60	EF	587	ASP
60	EF	590	GLU
60	EF	609	LYS
60	EF	612	LEU
60	EF	627	ASN
60	EF	652	VAL
60	EF	657	GLU
60	EF	658	VAL
60	EF	668	THR
60	EF	682	MET
60	EF	699	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (105) such sidechains are listed below:

Mol	Chain	Res	Type
2	SB	51	ASN
3	SC	69	HIS
3	SC	100	GLN
3	SC	123	GLN
4	SD	54	GLN
4	SD	116	GLN
4	SD	120	HIS
4	SD	140	ASN
5	SE	135	ASN
5	SE	148	ASN
6	SF	17	GLN
7	SG	86	GLN
7	SG	122	ASN
7	SG	148	ASN
8	SH	18	GLN
9	SI	126	GLN
10	SJ	99	GLN
11	SK	22	HIS
11	SK	28	ASN
11	SK	40	ASN
12	SL	5	ASN
13	SM	100	GLN
14	SN	4	GLN
14	SN	66	GLN
15	SO	37	ASN

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Mol	Chain	Res	Type
15	SO	62	GLN
16	SP	18	GLN
16	SP	63	GLN
17	SQ	9	GLN
17	SQ	47	HIS
18	SR	31	ASN
18	SR	54	GLN
19	SS	56	GLN
20	ST	13	GLN
20	ST	52	ASN
20	ST	78	ASN
26	LB	117	GLN
26	LB	128	ASN
26	LB	143	ASN
26	LB	163	GLN
26	LB	251	GLN
27	LC	32	ASN
27	LC	42	ASN
27	LC	49	GLN
27	LC	126	ASN
27	LC	150	GLN
28	LD	94	GLN
28	LD	115	GLN
28	LD	136	GLN
29	LE	27	GLN
29	LE	81	GLN
30	LF	30	ASN
30	LF	104	ASN
30	LF	116	GLN
30	LF	143	GLN
31	LI	2	GLN
31	LI	11	ASN
31	LI	28	ASN
31	LI	33	GLN
31	LI	133	GLN
33	LK	31	GLN
33	LK	43	ASN
33	LK	107	GLN
34	LM	67	ASN
35	LN	88	ASN
38	LQ	11	ASN
38	LQ	81	ASN

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Mol	Chain	Res	Type
38	LQ	107	ASN
39	LR	29	HIS
39	LR	38	GLN
39	LR	61	GLN
40	LS	12	GLN
40	LS	75	GLN
41	LT	20	GLN
41	LT	44	GLN
41	LT	52	GLN
42	LU	6	GLN
42	LU	18	GLN
43	LV	7	HIS
43	LV	57	ASN
43	LV	61	ASN
44	LW	59	ASN
45	LX	27	ASN
45	LX	69	ASN
45	LX	74	ASN
46	LY	12	GLN
46	LY	87	GLN
48	Lb	16	ASN
49	Lc	36	GLN
49	Lc	38	GLN
49	Lc	45	GLN
51	Le	20	ASN
51	Le	61	ASN
52	Lf	5	GLN
55	Li	26	HIS
60	EF	55	GLN
60	EF	122	GLN
60	EF	170	GLN
60	EF	216	ASN
60	EF	220	GLN
60	EF	254	GLN
60	EF	351	ASN
60	EF	365	GLN
60	EF	428	GLN
60	EF	538	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	16	1531/1542 (99%)	252 (16%)	4 (0%)
22	mR	15/60 (25%)	9 (60%)	0
23	23	2903/2904 (99%)	480 (16%)	14 (0%)
24	5	119/120 (99%)	19 (15%)	0
57	Pt	75/76 (98%)	19 (25%)	0
59	Dt	75/76 (98%)	23 (30%)	0
All	All	4718/4778 (98%)	802 (16%)	18 (0%)

All (802) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	16	2	A
1	16	3	A
1	16	4	U
1	16	5	U
1	16	7	A
1	16	9	G
1	16	22	G
1	16	32	A
1	16	39	G
1	16	47	C
1	16	48	C
1	16	50	A
1	16	51	A
1	16	61	G
1	16	66	A
1	16	84	U
1	16	85	U
1	16	86	G
1	16	88	U
1	16	94	G
1	16	95	C
1	16	116	A
1	16	121	U
1	16	127	G
1	16	130	A
1	16	131	A
1	16	144	G
1	16	160	A
1	16	163	C
1	16	164	G
1	16	174	A
1	16	177	G

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Mol	Chain	Res	Type
1	16	182	A
1	16	183	C
1	16	189	A
1	16	191	G
1	16	195	A
1	16	197	A
1	16	210	C
1	16	226	G
1	16	245	U
1	16	247	G
1	16	251	G
1	16	252	U
1	16	266	G
1	16	267	C
1	16	281	G
1	16	289	G
1	16	299	G
1	16	301	G
1	16	321	A
1	16	328	C
1	16	329	A
1	16	330	C
1	16	332	G
1	16	347	G
1	16	351	G
1	16	352	C
1	16	354	G
1	16	363	A
1	16	367	U
1	16	368	U
1	16	372	C
1	16	384	G
1	16	388	G
1	16	397	A
1	16	398	U
1	16	406	G
1	16	411	A
1	16	413	G
1	16	421	U
1	16	422	C
1	16	423	G
1	16	424	G

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Mol	Chain	Res	Type
1	16	429	U
1	16	439	U
1	16	446	G
1	16	448	A
1	16	451	A
1	16	453	G
1	16	467	U
1	16	481	G
1	16	482	A
1	16	484	G
1	16	486	U
1	16	495	A
1	16	496	A
1	16	497	G
1	16	510	A
1	16	511	C
1	16	512	U
1	16	518	C
1	16	521	G
1	16	527	G7M
1	16	530	G
1	16	533	A
1	16	536	C
1	16	545	C
1	16	547	A
1	16	548	G
1	16	559	A
1	16	562	U
1	16	564	C
1	16	572	A
1	16	573	A
1	16	576	C
1	16	577	G
1	16	596	A
1	16	607	A
1	16	633	G
1	16	650	G
1	16	653	U
1	16	665	A
1	16	666	G
1	16	671	G
1	16	695	A

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Mol	Chain	Res	Type
1	16	703	G
1	16	717	U
1	16	721	G
1	16	723	U
1	16	731	G
1	16	734	G
1	16	755	G
1	16	773	G
1	16	777	A
1	16	781	A
1	16	793	U
1	16	794	A
1	16	812	G
1	16	815	A
1	16	816	A
1	16	817	C
1	16	819	A
1	16	821	G
1	16	828	U
1	16	829	G
1	16	832	G
1	16	842	U
1	16	844	G
1	16	846	G
1	16	849	G
1	16	851	G
1	16	867	G
1	16	876	C
1	16	890	G
1	16	907	A
1	16	914	A
1	16	934	C
1	16	939	G
1	16	942	G
1	16	960	U
1	16	961	U
1	16	969	A
1	16	971	G
1	16	975	A
1	16	976	G
1	16	977	A
1	16	991	U

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Mol	Chain	Res	Type
1	16	992	U
1	16	994	A
1	16	1003	G
1	16	1004	A
1	16	1005	A
1	16	1006	G
1	16	1017	U
1	16	1020	G
1	16	1021	A
1	16	1024	G
1	16	1026	G
1	16	1030	U
1	16	1032	G
1	16	1033	G
1	16	1036	A
1	16	1045	C
1	16	1060	U
1	16	1065	U
1	16	1085	U
1	16	1094	G
1	16	1095	U
1	16	1101	A
1	16	1104	G
1	16	1125	U
1	16	1132	C
1	16	1135	U
1	16	1136	C
1	16	1137	C
1	16	1139	G
1	16	1140	C
1	16	1143	G
1	16	1151	A
1	16	1154	G
1	16	1157	A
1	16	1159	U
1	16	1160	G
1	16	1171	A
1	16	1184	G
1	16	1196	A
1	16	1197	A
1	16	1213	A
1	16	1214	C

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Mol	Chain	Res	Type
1	16	1225	A
1	16	1227	A
1	16	1228	C
1	16	1236	A
1	16	1238	A
1	16	1240	U
1	16	1241	G
1	16	1256	A
1	16	1257	A
1	16	1258	G
1	16	1259	C
1	16	1260	G
1	16	1268	G
1	16	1274	A
1	16	1280	A
1	16	1286	U
1	16	1287	A
1	16	1290	G
1	16	1297	G
1	16	1300	G
1	16	1302	C
1	16	1305	G
1	16	1316	G
1	16	1320	C
1	16	1322	C
1	16	1323	G
1	16	1338	G
1	16	1340	A
1	16	1347	G
1	16	1348	U
1	16	1353	G
1	16	1363	A
1	16	1364	U
1	16	1374	A
1	16	1378	C
1	16	1419	G
1	16	1422	G
1	16	1440	U
1	16	1441	A
1	16	1446	A
1	16	1454	G
1	16	1487	G

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Mol	Chain	Res	Type
1	16	1492	A
1	16	1497	G
1	16	1499	A
1	16	1503	A
1	16	1506	U
1	16	1517	G
1	16	1519	MA6
1	16	1520	C
1	16	1529	G
1	16	1530	G
22	mR	39	G
22	mR	43	A
22	mR	46	G
22	mR	47	U
22	mR	48	C
22	mR	49	U
22	mR	50	U
22	mR	51	C
22	mR	52	A
23	23	14	A
23	23	15	G
23	23	43	G
23	23	46	G
23	23	51	G
23	23	58	G
23	23	71	A
23	23	74	A
23	23	75	G
23	23	84	A
23	23	102	U
23	23	103	A
23	23	110	G
23	23	118	A
23	23	119	A
23	23	120	U
23	23	125	A
23	23	131	A
23	23	139	U
23	23	140	C
23	23	141	G
23	23	142	A
23	23	160	A

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Mol	Chain	Res	Type
23	23	163	C
23	23	181	A
23	23	188	G
23	23	196	A
23	23	199	A
23	23	215	G
23	23	216	A
23	23	221	A
23	23	222	A
23	23	226	A
23	23	239	C
23	23	242	G
23	23	245	G
23	23	248	G
23	23	252	G
23	23	255	A
23	23	266	G
23	23	271	G
23	23	285	G
23	23	308	G
23	23	311	A
23	23	322	A
23	23	330	A
23	23	331	C
23	23	361	G
23	23	371	A
23	23	372	G
23	23	386	G
23	23	396	G
23	23	401	A
23	23	403	U
23	23	405	U
23	23	411	G
23	23	412	A
23	23	435	C
23	23	455	C
23	23	457	A
23	23	459	U
23	23	467	G
23	23	477	A
23	23	479	A
23	23	480	A

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Mol	Chain	Res	Type
23	23	481	G
23	23	489	G
23	23	491	G
23	23	496	G
23	23	504	A
23	23	505	A
23	23	506	G
23	23	508	A
23	23	509	C
23	23	527	C
23	23	529	A
23	23	530	G
23	23	532	A
23	23	546	U
23	23	547	A
23	23	549	G
23	23	563	A
23	23	568	U
23	23	573	U
23	23	575	A
23	23	603	A
23	23	614	A
23	23	615	U
23	23	616	A
23	23	622	G
23	23	634	C
23	23	637	A
23	23	645	C
23	23	647	G
23	23	651	G
23	23	654	A
23	23	655	A
23	23	670	A
23	23	675	A
23	23	682	G
23	23	685	A
23	23	686	U
23	23	696	G
23	23	702	U
23	23	717	C
23	23	726	G
23	23	730	A

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Mol	Chain	Res	Type
23	23	740	C
23	23	747	5MU
23	23	757	G
23	23	764	A
23	23	765	C
23	23	774	G
23	23	775	G
23	23	776	G
23	23	782	A
23	23	784	G
23	23	785	G
23	23	788	A
23	23	789	A
23	23	805	G
23	23	812	C
23	23	819	A
23	23	827	U
23	23	828	U
23	23	845	A
23	23	846	U
23	23	856	G
23	23	859	G
23	23	860	U
23	23	869	G
23	23	877	A
23	23	880	G
23	23	883	G
23	23	887	U
23	23	888	C
23	23	893	C
23	23	895	U
23	23	896	A
23	23	899	A
23	23	910	A
23	23	915	C
23	23	917	A
23	23	919	U
23	23	927	A
23	23	932	U
23	23	934	U
23	23	941	A
23	23	945	A

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Mol	Chain	Res	Type
23	23	946	C
23	23	957	C
23	23	961	C
23	23	965	C
23	23	974	G
23	23	983	A
23	23	984	A
23	23	985	C
23	23	989	G
23	23	996	A
23	23	999	U
23	23	1003	G
23	23	1009	A
23	23	1012	U
23	23	1013	C
23	23	1022	G
23	23	1026	G
23	23	1033	U
23	23	1054	A
23	23	1056	G
23	23	1057	A
23	23	1058	U
23	23	1060	U
23	23	1062	G
23	23	1070	A
23	23	1071	G
23	23	1080	A
23	23	1083	U
23	23	1084	A
23	23	1085	A
23	23	1086	A
23	23	1087	G
23	23	1088	A
23	23	1089	A
23	23	1090	A
23	23	1091	G
23	23	1097	U
23	23	1101	U
23	23	1111	A
23	23	1112	G
23	23	1130	U
23	23	1132	U

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Mol	Chain	Res	Type
23	23	1133	A
23	23	1134	A
23	23	1135	C
23	23	1136	G
23	23	1139	G
23	23	1142	A
23	23	1172	C
23	23	1177	G
23	23	1178	C
23	23	1206	G
23	23	1212	G
23	23	1236	G
23	23	1238	G
23	23	1244	A
23	23	1247	A
23	23	1249	U
23	23	1250	G
23	23	1253	A
23	23	1256	G
23	23	1271	G
23	23	1272	A
23	23	1273	U
23	23	1287	A
23	23	1300	G
23	23	1301	A
23	23	1321	A
23	23	1329	U
23	23	1352	U
23	23	1360	G
23	23	1365	A
23	23	1368	G
23	23	1374	G
23	23	1378	A
23	23	1379	U
23	23	1380	G
23	23	1383	A
23	23	1395	A
23	23	1403	A
23	23	1416	G
23	23	1417	C
23	23	1421	G
23	23	1427	A

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Mol	Chain	Res	Type
23	23	1428	C
23	23	1437	C
23	23	1453	A
23	23	1458	U
23	23	1460	U
23	23	1476	U
23	23	1482	G
23	23	1493	C
23	23	1497	U
23	23	1509	A
23	23	1515	A
23	23	1524	G
23	23	1529	G
23	23	1538	G
23	23	1553	A
23	23	1566	A
23	23	1569	A
23	23	1578	U
23	23	1582	C
23	23	1585	C
23	23	1610	A
23	23	1639	C
23	23	1647	U
23	23	1648	U
23	23	1649	G
23	23	1654	A
23	23	1674	G
23	23	1675	C
23	23	1696	G
23	23	1700	A
23	23	1729	U
23	23	1730	C
23	23	1732	C
23	23	1736	U
23	23	1738	G
23	23	1744	A
23	23	1756	G
23	23	1757	A
23	23	1764	C
23	23	1773	A
23	23	1776	G
23	23	1782	U

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Mol	Chain	Res	Type
23	23	1786	A
23	23	1800	C
23	23	1801	A
23	23	1802	A
23	23	1807	G
23	23	1808	A
23	23	1811	G
23	23	1816	C
23	23	1829	A
23	23	1869	G
23	23	1871	A
23	23	1873	G
23	23	1874	C
23	23	1890	A
23	23	1900	A
23	23	1925	C
23	23	1930	G
23	23	1936	A
23	23	1937	A
23	23	1938	A
23	23	1944	U
23	23	1954	G
23	23	1955	U
23	23	1960	A
23	23	1964	G
23	23	1965	C
23	23	1967	C
23	23	1970	A
23	23	1971	U
23	23	1972	G
23	23	1991	U
23	23	1992	G
23	23	1993	U
23	23	2002	G
23	23	2020	A
23	23	2022	U
23	23	2023	C
23	23	2030	6MZ
23	23	2031	A
23	23	2032	G
23	23	2033	A
23	23	2035	G

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Mol	Chain	Res	Type
23	23	2043	C
23	23	2046	G
23	23	2055	C
23	23	2056	G
23	23	2060	A
23	23	2061	G
23	23	2062	A
23	23	2069	G7M
23	23	2093	G
23	23	2110	G
23	23	2112	G
23	23	2113	U
23	23	2115	G
23	23	2116	G
23	23	2117	A
23	23	2118	U
23	23	2119	A
23	23	2126	A
23	23	2132	U
23	23	2134	A
23	23	2136	G
23	23	2138	G
23	23	2146	C
23	23	2147	A
23	23	2154	A
23	23	2157	G
23	23	2158	A
23	23	2159	G
23	23	2161	C
23	23	2162	G
23	23	2163	A
23	23	2167	U
23	23	2169	A
23	23	2170	A
23	23	2171	A
23	23	2172	U
23	23	2198	A
23	23	2203	U
23	23	2204	G
23	23	2211	A
23	23	2225	A
23	23	2238	G

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Mol	Chain	Res	Type
23	23	2239	G
23	23	2251	OMG
23	23	2268	A
23	23	2279	G
23	23	2283	C
23	23	2287	A
23	23	2288	A
23	23	2305	U
23	23	2307	G
23	23	2308	G
23	23	2312	U
23	23	2319	G
23	23	2322	A
23	23	2325	G
23	23	2327	A
23	23	2333	A
23	23	2334	U
23	23	2336	A
23	23	2345	G
23	23	2347	C
23	23	2350	C
23	23	2361	G
23	23	2379	G
23	23	2383	G
23	23	2385	C
23	23	2402	U
23	23	2403	C
23	23	2406	A
23	23	2410	G
23	23	2425	A
23	23	2426	A
23	23	2428	G
23	23	2429	G
23	23	2430	A
23	23	2431	U
23	23	2434	A
23	23	2441	U
23	23	2447	G
23	23	2448	A
23	23	2470	G
23	23	2475	C
23	23	2476	A

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Mol	Chain	Res	Type
23	23	2478	A
23	23	2480	C
23	23	2481	G
23	23	2491	U
23	23	2494	G
23	23	2502	G
23	23	2503	2MA
23	23	2504	PSU
23	23	2505	G
23	23	2518	A
23	23	2529	G
23	23	2535	G
23	23	2547	A
23	23	2554	U
23	23	2556	C
23	23	2562	U
23	23	2566	A
23	23	2567	G
23	23	2569	G
23	23	2572	A
23	23	2573	C
23	23	2578	G
23	23	2585	U
23	23	2599	G
23	23	2603	G
23	23	2609	U
23	23	2613	U
23	23	2615	U
23	23	2621	G
23	23	2629	U
23	23	2630	G
23	23	2636	C
23	23	2646	C
23	23	2654	A
23	23	2660	A
23	23	2661	G
23	23	2663	G
23	23	2665	A
23	23	2689	U
23	23	2690	U
23	23	2707	U
23	23	2714	G

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Mol	Chain	Res	Type
23	23	2716	C
23	23	2726	A
23	23	2728	U
23	23	2732	G
23	23	2733	A
23	23	2739	U
23	23	2744	G
23	23	2748	A
23	23	2750	A
23	23	2765	A
23	23	2777	G
23	23	2778	A
23	23	2779	U
23	23	2791	G
23	23	2797	U
23	23	2798	U
23	23	2799	A
23	23	2800	A
23	23	2801	G
23	23	2818	U
23	23	2820	A
23	23	2821	A
23	23	2823	A
23	23	2833	U
23	23	2835	A
23	23	2836	U
23	23	2849	U
23	23	2861	U
23	23	2873	A
23	23	2877	G
23	23	2879	A
23	23	2880	C
23	23	2883	A
23	23	2884	U
23	23	2886	A
23	23	2891	U
23	23	2904	U
24	5	13	G
24	5	15	A
24	5	24	G
24	5	25	U
24	5	36	C

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Mol	Chain	Res	Type
24	5	37	C
24	5	42	C
24	5	45	A
24	5	51	G
24	5	66	A
24	5	67	G
24	5	68	C
24	5	88	C
24	5	89	U
24	5	90	C
24	5	91	C
24	5	99	A
24	5	108	A
24	5	109	A
57	Pt	5	C
57	Pt	8	U
57	Pt	9	A
57	Pt	12	U
57	Pt	13	C
57	Pt	16	U
57	Pt	20	U
57	Pt	21	A
57	Pt	22	G
57	Pt	25	C
57	Pt	26	A
57	Pt	28	U
57	Pt	35	U
57	Pt	38	A
57	Pt	40	C
57	Pt	46	G7M
57	Pt	47	U
57	Pt	57	G
57	Pt	76	A
59	Dt	8	4SU
59	Dt	16	U
59	Dt	17	C
59	Dt	18	G
59	Dt	19	G
59	Dt	20	U
59	Dt	21	A
59	Dt	22	G
59	Dt	23	A

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Mol	Chain	Res	Type
59	Dt	45	U
59	Dt	46	G7M
59	Dt	47	3AU
59	Dt	48	C
59	Dt	49	C
59	Dt	50	U
59	Dt	54	U
59	Dt	56	C
59	Dt	57	G
59	Dt	58	A
59	Dt	60	U
59	Dt	65	G
59	Dt	75	C
59	Dt	76	A

All (18) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	16	329	A
1	16	993	G
1	16	1159	U
1	16	1432	G
23	23	479	A
23	23	512	G
23	23	775	G
23	23	784	G
23	23	827	U
23	23	984	A
23	23	2112	G
23	23	2120	G
23	23	2170	A
23	23	2171	A
23	23	2324	U
23	23	2430	A
23	23	2474	U
23	23	2481	G

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

47 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	5MC	16	1407	1	19,22,23	1.46	2 (10%)	26,32,35	1.23	2 (7%)
23	2MA	23	2503	63,23	22,25,26	1.52	5 (22%)	32,37,40	2.29	7 (21%)
1	G7M	16	527	1	23,26,27	0.73	1 (4%)	34,39,42	0.70	1 (2%)
59	MIA	Dt	37	59	28,31,32	2.42	7 (25%)	38,44,47	2.90	17 (44%)
23	PSU	23	746	63,23	18,21,22	1.47	4 (22%)	21,30,33	2.00	3 (14%)
23	OMG	23	2251	57,63,23	23,26,27	1.21	3 (13%)	32,38,41	1.99	6 (18%)
59	PSU	Dt	55	59	18,21,22	1.36	2 (11%)	21,30,33	2.02	4 (19%)
23	OMC	23	2498	63,23	19,22,23	0.29	0	25,31,34	0.55	0
1	MA6	16	1519	1	23,26,27	1.54	4 (17%)	33,38,41	2.19	9 (27%)
23	3TD	23	1915	23	19,22,23	1.28	2 (10%)	23,32,35	2.31	4 (17%)
58	FME	Pp	77	58	8,9,10	0.67	0	8,9,11	1.31	2 (25%)
23	PSU	23	2580	23	18,21,22	1.46	5 (27%)	21,30,33	2.08	4 (19%)
23	PSU	23	1911	23	18,21,22	1.42	2 (11%)	21,30,33	2.05	3 (14%)
23	5MU	23	1939	23	19,22,23	1.39	4 (21%)	27,32,35	2.26	6 (22%)
1	UR3	16	1498	1	19,22,23	0.96	0	26,32,35	1.74	2 (7%)
59	3AU	Dt	47	59	24,28,29	1.10	1 (4%)	30,40,43	1.61	6 (20%)
23	2MG	23	2445	23	23,26,27	1.26	3 (13%)	33,38,41	2.28	8 (24%)
59	4SU	Dt	8	59	18,21,22	1.86	5 (27%)	25,30,33	2.40	6 (24%)
12	D2T	SL	89	12	8,9,10	3.16	2 (25%)	6,11,13	2.65	3 (50%)
23	PSU	23	2504	64,23	18,21,22	1.60	4 (22%)	21,30,33	2.17	4 (19%)
59	PSU	Dt	39	59	18,21,22	1.45	4 (22%)	21,30,33	1.97	4 (19%)
59	G7M	Dt	46	59	23,26,27	0.72	1 (4%)	34,39,42	0.59	0
23	5MC	23	1962	23	19,22,23	1.45	3 (15%)	26,32,35	1.11	2 (7%)
59	PSU	Dt	32	59	18,21,22	1.38	4 (22%)	21,30,33	1.91	4 (19%)
23	6MZ	23	2030	23	22,25,26	1.46	6 (27%)	29,36,39	2.46	11 (37%)
23	H2U	23	2449	23	18,21,22	1.14	3 (16%)	19,30,33	1.01	1 (5%)
1	2MG	16	966	1	23,26,27	1.28	4 (17%)	33,38,41	2.15	6 (18%)
23	2MG	23	1835	23	23,26,27	1.28	3 (13%)	33,38,41	2.22	7 (21%)
23	5MU	23	747	23	19,22,23	1.45	5 (26%)	27,32,35	2.19	6 (22%)
1	5MC	16	967	1	19,22,23	1.50	3 (15%)	26,32,35	1.08	2 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	PSU	16	516	1,63	18,21,22	1.39	2 (11%)	21,30,33	2.03	4 (19%)
23	PSU	23	2604	23	18,21,22	1.49	4 (22%)	21,30,33	2.04	4 (19%)
1	4OC	16	1402	1,63	20,23,24	0.74	0	25,32,35	0.99	1 (4%)
1	2MG	16	1516	1	23,26,27	1.25	3 (13%)	33,38,41	2.24	7 (21%)
23	6MZ	23	1618	23	22,25,26	1.44	5 (22%)	29,36,39	2.20	9 (31%)
23	OMU	23	2552	23	19,22,23	1.24	3 (15%)	25,31,34	1.82	5 (20%)
23	PSU	23	955	23	18,21,22	1.48	4 (22%)	21,30,33	2.08	4 (19%)
23	PSU	23	2605	23	18,21,22	1.44	3 (16%)	21,30,33	2.18	4 (19%)
57	PSU	Pt	39	57	18,21,22	1.43	2 (11%)	21,30,33	1.98	4 (19%)
1	MA6	16	1518	1	23,26,27	1.55	5 (21%)	33,38,41	2.20	10 (30%)
57	G7M	Pt	46	57	23,26,27	0.77	1 (4%)	34,39,42	0.64	1 (2%)
23	G7M	23	2069	23	23,26,27	0.70	1 (4%)	34,39,42	0.65	1 (2%)
23	PSU	23	2457	23	18,21,22	1.45	3 (16%)	21,30,33	2.13	4 (19%)
23	1MG	23	745	23	23,26,27	1.14	3 (13%)	33,39,42	1.73	5 (15%)
57	U8U	Pt	34	57,22	20,24,25	1.42	2 (10%)	22,34,37	1.05	3 (13%)
57	T6A	Pt	37	57	31,34,35	1.42	4 (12%)	43,49,52	1.91	9 (20%)
37	4D4	LP	81	37	9,11,12	0.90	0	7,13,15	1.60	1 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	5MC	16	1407	1	-	0/7/25/26	0/2/2/2
23	2MA	23	2503	63,23	-	2/7/25/26	0/3/3/3
1	G7M	16	527	1	-	2/7/25/26	0/3/3/3
59	MIA	Dt	37	59	-	5/15/33/34	0/3/3/3
23	PSU	23	746	63,23	-	4/7/25/26	0/2/2/2
23	OMG	23	2251	57,63,23	-	3/9/27/28	0/3/3/3
59	PSU	Dt	55	59	-	1/7/25/26	0/2/2/2
23	OMC	23	2498	63,23	-	0/9/27/28	0/2/2/2
1	MA6	16	1519	1	-	4/11/29/30	0/3/3/3
23	3TD	23	1915	23	-	3/7/25/26	0/2/2/2
58	FME	Pp	77	58	-	5/7/9/11	-
23	PSU	23	2580	23	-	1/7/25/26	0/2/2/2
23	PSU	23	1911	23	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
23	5MU	23	1939	23	-	0/7/25/26	0/2/2/2
1	UR3	16	1498	1	-	0/7/25/26	0/2/2/2
59	3AU	Dt	47	59	-	4/16/34/35	0/2/2/2
23	2MG	23	2445	23	-	0/9/27/28	0/3/3/3
59	4SU	Dt	8	59	-	0/7/25/26	0/2/2/2
12	D2T	SL	89	12	-	4/7/12/14	-
23	PSU	23	2504	64,23	-	2/7/25/26	0/2/2/2
59	PSU	Dt	39	59	-	0/7/25/26	0/2/2/2
59	G7M	Dt	46	59	-	2/7/25/26	0/3/3/3
23	5MC	23	1962	23	-	0/7/25/26	0/2/2/2
59	PSU	Dt	32	59	-	0/7/25/26	0/2/2/2
23	6MZ	23	2030	23	-	2/9/27/28	0/3/3/3
23	H2U	23	2449	23	-	0/7/38/39	0/2/2/2
1	2MG	16	966	1	-	0/9/27/28	0/3/3/3
23	2MG	23	1835	23	-	2/9/27/28	0/3/3/3
23	5MU	23	747	23	-	0/7/25/26	0/2/2/2
1	5MC	16	967	1	-	0/7/25/26	0/2/2/2
1	PSU	16	516	1,63	-	0/7/25/26	0/2/2/2
23	PSU	23	2604	23	-	0/7/25/26	0/2/2/2
1	4OC	16	1402	1,63	-	2/9/29/30	0/2/2/2
1	2MG	16	1516	1	-	0/9/27/28	0/3/3/3
23	6MZ	23	1618	23	-	0/9/27/28	0/3/3/3
23	OMU	23	2552	23	-	0/9/27/28	0/2/2/2
23	PSU	23	955	23	-	0/7/25/26	0/2/2/2
23	PSU	23	2605	23	-	0/7/25/26	0/2/2/2
57	PSU	Pt	39	57	-	2/7/25/26	0/2/2/2
1	MA6	16	1518	1	-	0/11/29/30	0/3/3/3
57	G7M	Pt	46	57	-	0/7/25/26	0/3/3/3
23	G7M	23	2069	23	-	1/7/25/26	0/3/3/3
23	PSU	23	2457	23	-	0/7/25/26	0/2/2/2
23	1MG	23	745	23	-	0/7/25/26	0/3/3/3
57	U8U	Pt	34	57,22	-	0/10/28/29	0/2/2/2
57	T6A	Pt	37	57	-	7/23/41/42	0/3/3/3
37	4D4	LP	81	37	-	2/11/12/14	-

All (137) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	Dt	37	MIA	C2-S10	-8.25	1.68	1.75
59	Dt	37	MIA	C13-C14	6.70	1.52	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	SL	89	D2T	CB-CA	-6.46	1.52	1.54
12	SL	89	D2T	CB-SB	-5.37	1.76	1.82
1	16	967	5MC	C5-C4	5.28	1.48	1.44
1	16	1407	5MC	C5-C4	5.14	1.48	1.44
23	23	1962	5MC	C5-C4	5.05	1.47	1.44
59	Dt	8	4SU	C4-S4	-5.05	1.59	1.68
1	16	1519	MA6	C5-C4	4.79	1.47	1.39
1	16	1518	MA6	C5-C4	4.74	1.47	1.39
57	Pt	34	U8U	C2-S2	-4.59	1.60	1.67
57	Pt	37	T6A	C5-C4	4.56	1.47	1.39
23	23	2503	2MA	C5-C4	4.47	1.47	1.39
23	23	1618	6MZ	C5-C4	4.37	1.46	1.39
59	Dt	37	MIA	C5-C4	4.05	1.46	1.39
23	23	2030	6MZ	C5-C4	4.03	1.46	1.39
23	23	2504	PSU	C6-C5	3.98	1.39	1.35
23	23	1915	3TD	C6-C5	3.81	1.39	1.35
57	Pt	39	PSU	C6-C5	3.43	1.39	1.35
23	23	1911	PSU	C6-C5	3.40	1.39	1.35
1	16	1518	MA6	C5-C6	3.34	1.49	1.41
59	Dt	39	PSU	C6-C5	3.30	1.38	1.35
59	Dt	8	4SU	C4-N3	-3.29	1.34	1.37
59	Dt	55	PSU	C6-C5	3.21	1.38	1.35
1	16	1519	MA6	C5-C6	3.18	1.49	1.41
23	23	955	PSU	C6-C5	3.18	1.38	1.35
23	23	747	5MU	C4-N3	-3.16	1.32	1.38
23	23	746	PSU	C6-C5	3.11	1.38	1.35
23	23	2604	PSU	C6-C5	3.11	1.38	1.35
23	23	2457	PSU	C4-N3	-3.10	1.33	1.38
1	16	966	2MG	C5-C4	3.08	1.47	1.38
1	16	516	PSU	C6-C5	3.07	1.38	1.35
23	23	2605	PSU	C6-C5	3.07	1.38	1.35
23	23	2605	PSU	C4-N3	-3.05	1.33	1.38
23	23	1939	5MU	C4-N3	-3.04	1.33	1.38
23	23	745	1MG	C5-C4	2.99	1.47	1.38
23	23	2030	6MZ	C5-N7	-2.99	1.33	1.39
23	23	955	PSU	C4-N3	-2.99	1.33	1.38
23	23	2604	PSU	C4-N3	-2.99	1.33	1.38
23	23	2552	OMU	C4-N3	-2.96	1.33	1.38
23	23	1835	2MG	C5-C4	2.94	1.46	1.38
23	23	2251	OMG	C5-C4	2.91	1.46	1.38
1	16	1516	2MG	C5-C4	2.90	1.46	1.38
23	23	2504	PSU	C4-N3	-2.89	1.33	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	Pt	34	U8U	C4-N3	-2.88	1.33	1.38
23	23	2449	H2U	C2-N3	-2.88	1.33	1.38
23	23	2457	PSU	C6-C5	2.87	1.38	1.35
23	23	1835	2MG	C6-N1	-2.83	1.33	1.38
23	23	2445	2MG	C5-C4	2.83	1.46	1.38
23	23	2580	PSU	C4-N3	-2.82	1.33	1.38
23	23	746	PSU	C4-N3	-2.81	1.33	1.38
23	23	2251	OMG	C6-N1	-2.80	1.33	1.38
59	Dt	32	PSU	C6-C5	2.78	1.38	1.35
23	23	1911	PSU	C4-N3	-2.78	1.33	1.38
59	Dt	47	3AU	C2-N1	2.74	1.42	1.38
23	23	2445	2MG	C6-N1	-2.72	1.33	1.38
59	Dt	39	PSU	C4-N3	-2.72	1.33	1.38
23	23	2580	PSU	C6-C5	2.71	1.38	1.35
23	23	1939	5MU	C6-C5	2.71	1.39	1.34
57	Pt	37	T6A	C5-C6	2.70	1.48	1.41
1	16	966	2MG	C6-N1	-2.70	1.33	1.38
23	23	747	5MU	C6-N1	-2.69	1.33	1.38
23	23	2503	2MA	C5-N7	-2.68	1.34	1.39
57	Pt	46	G7M	C8-N7	2.67	1.37	1.33
59	Dt	8	4SU	C5-C4	-2.65	1.39	1.42
59	Dt	32	PSU	C4-N3	-2.65	1.33	1.38
1	16	1407	5MC	C6-C5	2.65	1.38	1.34
23	23	1618	6MZ	C5-N7	-2.64	1.34	1.39
23	23	2449	H2U	C4-N3	-2.64	1.33	1.37
1	16	1516	2MG	C6-N1	-2.63	1.33	1.38
1	16	967	5MC	C6-C5	2.62	1.38	1.34
57	Pt	39	PSU	C4-N3	-2.61	1.34	1.38
59	Dt	55	PSU	C4-N3	-2.60	1.34	1.38
1	16	516	PSU	C4-N3	-2.60	1.34	1.38
59	Dt	46	G7M	C8-N7	2.60	1.37	1.33
1	16	527	G7M	C8-N7	2.56	1.37	1.33
23	23	2030	6MZ	C5-C6	2.54	1.48	1.41
23	23	747	5MU	C2-N3	-2.53	1.33	1.38
23	23	1915	3TD	C2-N1	-2.53	1.34	1.37
23	23	2552	OMU	C2-N3	-2.52	1.33	1.38
59	Dt	37	MIA	C5-C6	2.50	1.47	1.41
23	23	2504	PSU	C2-N1	-2.50	1.33	1.36
57	Pt	37	T6A	C5-N7	-2.50	1.34	1.39
59	Dt	37	MIA	C4-N9	-2.48	1.32	1.37
23	23	2503	2MA	C5-C6	2.47	1.47	1.41
23	23	2605	PSU	C2-N3	-2.47	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	Dt	37	MIA	C5-N7	-2.47	1.34	1.39
23	23	1618	6MZ	C5-C6	2.47	1.47	1.41
23	23	1939	5MU	C2-N3	-2.45	1.33	1.38
1	16	1519	MA6	C5-N7	-2.44	1.34	1.39
23	23	1962	5MC	C6-N1	-2.43	1.33	1.38
23	23	1962	5MC	C6-C5	2.43	1.38	1.34
23	23	745	1MG	C5-N7	-2.40	1.34	1.39
23	23	1939	5MU	C6-N1	-2.40	1.33	1.38
23	23	747	5MU	C6-C5	2.38	1.38	1.34
23	23	2457	PSU	C2-N3	-2.37	1.33	1.37
23	23	2069	G7M	C8-N7	2.36	1.37	1.33
23	23	2580	PSU	C2-N1	-2.36	1.33	1.36
23	23	2445	2MG	C5-N7	-2.35	1.34	1.39
23	23	955	PSU	C2-N3	-2.35	1.33	1.37
23	23	2604	PSU	C2-N1	-2.34	1.33	1.36
23	23	2030	6MZ	C4-N9	-2.32	1.32	1.37
23	23	2251	OMG	C5-N7	-2.31	1.34	1.39
23	23	1835	2MG	C5-N7	-2.30	1.34	1.39
1	16	967	5MC	C6-N1	-2.30	1.34	1.38
1	16	1516	2MG	C5-N7	-2.29	1.34	1.39
23	23	2604	PSU	C2-N3	-2.28	1.33	1.37
59	Dt	37	MIA	C8-N7	2.28	1.36	1.31
23	23	2503	2MA	C8-N9	-2.26	1.33	1.37
23	23	746	PSU	C2-N3	-2.26	1.33	1.37
23	23	2504	PSU	C2-N3	-2.26	1.33	1.37
23	23	2580	PSU	O4'-C1'	-2.23	1.40	1.43
57	Pt	37	T6A	C8-N7	2.23	1.36	1.31
59	Dt	39	PSU	C2-N1	-2.23	1.33	1.36
23	23	746	PSU	C2-N1	-2.22	1.33	1.36
1	16	966	2MG	C5-N7	-2.21	1.34	1.39
23	23	2552	OMU	C5-C4	-2.20	1.38	1.43
59	Dt	39	PSU	C2-N3	-2.18	1.33	1.37
23	23	955	PSU	C2-N1	-2.16	1.33	1.36
1	16	1518	MA6	C4-N9	-2.15	1.33	1.37
23	23	2580	PSU	C2-N3	-2.15	1.33	1.37
1	16	966	2MG	C2-N3	2.12	1.36	1.32
23	23	745	1MG	C2-N1	2.11	1.41	1.37
59	Dt	8	4SU	C2-N3	-2.09	1.34	1.38
23	23	2449	H2U	C2-N1	-2.09	1.32	1.35
59	Dt	8	4SU	C2-N1	2.09	1.41	1.38
23	23	747	5MU	C4-C5	2.08	1.48	1.44
1	16	1518	MA6	C5-N7	-2.07	1.35	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	16	1519	MA6	C8-N9	-2.07	1.34	1.37
23	23	2030	6MZ	C8-N9	-2.07	1.34	1.37
59	Dt	32	PSU	C2-N1	-2.06	1.34	1.36
1	16	1518	MA6	C8-N9	-2.05	1.34	1.37
59	Dt	32	PSU	C2-N3	-2.04	1.34	1.37
23	23	2030	6MZ	C8-N7	2.04	1.35	1.31
23	23	2503	2MA	C8-N7	2.02	1.35	1.31
23	23	1618	6MZ	C4-N9	-2.02	1.33	1.37
23	23	1618	6MZ	C8-N7	2.01	1.35	1.31

All (216) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
59	Dt	37	MIA	C12-C13-C14	-8.80	111.21	127.01
23	23	2503	2MA	C5-C4-N3	-8.16	118.58	127.18
59	Dt	37	MIA	C5-C4-N3	-7.59	119.19	127.18
23	23	2445	2MG	C2-N3-C4	7.55	121.45	112.00
23	23	1835	2MG	C2-N3-C4	7.47	121.35	112.00
1	16	1516	2MG	C2-N3-C4	7.36	121.20	112.00
1	16	966	2MG	C2-N3-C4	7.05	120.82	112.00
59	Dt	8	4SU	C4-N3-C2	-7.03	120.57	127.31
1	16	1498	UR3	C4-N3-C2	-6.76	119.14	124.58
23	23	2457	PSU	N1-C2-N3	6.74	122.28	115.17
23	23	2605	PSU	N1-C2-N3	6.61	122.14	115.17
23	23	955	PSU	N1-C2-N3	6.52	122.05	115.17
23	23	2504	PSU	N1-C2-N3	6.38	121.89	115.17
23	23	2503	2MA	N3-C4-N9	6.37	135.07	126.99
23	23	1915	3TD	N1-C2-N3	6.36	120.75	116.13
23	23	1835	2MG	C5-C4-N3	-6.35	118.28	128.39
23	23	2445	2MG	C5-C4-N3	-6.35	118.28	128.39
23	23	2580	PSU	N1-C2-N3	6.35	121.87	115.17
23	23	2251	OMG	C5-C4-N3	-6.34	118.29	128.39
23	23	1911	PSU	N1-C2-N3	6.34	121.86	115.17
59	Dt	55	PSU	N1-C2-N3	6.33	121.85	115.17
23	23	2604	PSU	N1-C2-N3	6.31	121.83	115.17
1	16	516	PSU	N1-C2-N3	6.28	121.79	115.17
23	23	746	PSU	N1-C2-N3	6.25	121.77	115.17
1	16	966	2MG	C5-C4-N3	-6.20	118.52	128.39
1	16	1516	2MG	C5-C4-N3	-6.16	118.58	128.39
23	23	1915	3TD	C1'-C5-C4	6.14	126.93	117.61
57	Pt	37	T6A	C5-C4-N3	-6.09	118.34	126.72
57	Pt	39	PSU	N1-C2-N3	6.07	121.57	115.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
59	Dt	39	PSU	N1-C2-N3	6.03	121.53	115.17
23	23	2030	6MZ	C5-C4-N3	-5.97	118.50	126.72
59	Dt	32	PSU	N1-C2-N3	5.93	121.42	115.17
59	Dt	8	4SU	C5-C4-N3	5.92	120.26	114.75
23	23	1618	6MZ	C5-C4-N3	-5.92	118.57	126.72
1	16	1519	MA6	C5-C4-N3	-5.70	118.86	126.72
23	23	747	5MU	N3-C2-N1	5.68	122.28	114.89
23	23	1939	5MU	N3-C2-N1	5.62	122.20	114.89
23	23	1939	5MU	C4-N3-C2	-5.57	120.04	127.34
59	Dt	37	MIA	N3-C4-N9	5.41	133.85	126.99
23	23	2030	6MZ	C9-N6-C6	-5.39	117.85	122.85
23	23	745	1MG	C5-C4-N3	-5.36	119.86	128.39
23	23	747	5MU	C4-N3-C2	-5.30	120.40	127.34
23	23	2251	OMG	C2-N3-C4	5.11	121.10	112.30
1	16	1518	MA6	C5-C4-N3	-5.05	119.76	126.72
23	23	2251	OMG	N9-C4-N3	4.93	135.81	125.95
1	16	1518	MA6	C4-C5-N7	-4.93	104.95	110.58
57	Pt	37	T6A	N3-C4-N9	4.84	135.41	127.17
1	16	1519	MA6	C4-C5-N7	-4.83	105.06	110.58
23	23	1618	6MZ	N3-C4-N9	4.82	135.37	127.17
1	16	1518	MA6	C2-N1-C6	4.79	123.53	111.83
23	23	1835	2MG	N9-C4-N3	4.79	135.53	125.95
1	16	966	2MG	N9-C4-N3	4.66	135.27	125.95
23	23	2445	2MG	N9-C4-N3	4.63	135.20	125.95
23	23	2552	OMU	C4-N3-C2	-4.59	120.92	126.61
1	16	1519	MA6	C2-N1-C6	4.56	122.98	111.83
23	23	2605	PSU	C4-N3-C2	-4.54	120.12	126.37
23	23	1939	5MU	C5-C4-N3	4.53	119.26	115.32
23	23	745	1MG	C2-N3-C4	4.49	122.07	111.98
23	23	2552	OMU	N3-C2-N1	4.48	120.72	114.89
23	23	1915	3TD	C4-N3-C2	-4.45	119.90	124.61
1	16	1516	2MG	N9-C4-N3	4.42	134.79	125.95
12	SL	89	D2T	CB1-SB-CB	4.41	110.30	102.36
23	23	2457	PSU	C4-N3-C2	-4.32	120.43	126.37
59	Dt	47	3AU	C4-N3-C2	-4.31	119.60	124.66
23	23	2030	6MZ	C6-C5-N7	4.29	137.11	132.43
23	23	1939	5MU	C5-C6-N1	-4.26	118.69	123.31
23	23	2030	6MZ	C4-C5-N7	-4.23	105.75	110.58
23	23	2030	6MZ	N3-C4-N9	4.21	134.33	127.17
59	Dt	8	4SU	C5-C4-S4	-4.18	119.53	124.31
59	Dt	8	4SU	N3-C2-N1	4.17	120.32	114.89
59	Dt	37	MIA	C15-C14-C13	-4.15	110.19	122.66

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	1911	PSU	C4-N3-C2	-4.13	120.68	126.37
59	Dt	55	PSU	C4-N3-C2	-4.09	120.73	126.37
23	23	746	PSU	C4-N3-C2	-4.09	120.74	126.37
23	23	1939	5MU	O4-C4-C5	-4.06	120.28	124.92
23	23	745	1MG	N9-C4-N3	4.03	134.02	125.95
23	23	2504	PSU	O2-C2-N1	-4.03	118.64	122.79
1	16	1519	MA6	N3-C4-N9	4.02	134.01	127.17
23	23	955	PSU	C4-N3-C2	-3.99	120.88	126.37
23	23	2552	OMU	C5-C4-N3	3.97	120.36	114.80
23	23	2504	PSU	C6-C5-C4	-3.97	115.50	118.17
23	23	2580	PSU	C4-N3-C2	-3.96	120.92	126.37
59	Dt	37	MIA	C4-C5-N7	-3.96	106.06	110.58
1	16	516	PSU	C4-N3-C2	-3.94	120.94	126.37
57	Pt	37	T6A	N6-C10-N11	3.94	119.19	113.77
23	23	2030	6MZ	C2-N3-C4	3.94	121.45	111.83
23	23	2580	PSU	O2-C2-N1	-3.88	118.79	122.79
59	Dt	37	MIA	C6-C5-N7	3.87	136.65	132.43
23	23	747	5MU	C5-C4-N3	3.85	118.67	115.32
23	23	1618	6MZ	C2-N3-C4	3.85	121.23	111.83
57	Pt	37	T6A	C2-N3-C4	3.84	121.22	111.83
59	Dt	37	MIA	C16-C14-C13	-3.82	111.19	122.66
59	Dt	37	MIA	C11-S10-C2	-3.81	99.39	102.25
23	23	747	5MU	C5-C6-N1	-3.79	119.20	123.31
23	23	955	PSU	O2-C2-N1	-3.76	118.91	122.79
23	23	746	PSU	O2-C2-N1	-3.76	118.91	122.79
1	16	1519	MA6	C2-N3-C4	3.74	120.96	111.83
57	Pt	39	PSU	O2-C2-N1	-3.67	119.01	122.79
23	23	2504	PSU	C4-N3-C2	-3.66	121.33	126.37
1	16	1518	MA6	N1-C2-N3	-3.64	123.07	128.58
23	23	2503	2MA	C4-C5-N7	-3.64	106.42	110.58
1	16	1518	MA6	N3-C4-N9	3.62	133.32	127.17
1	16	1518	MA6	C2-N3-C4	3.62	120.67	111.83
23	23	1911	PSU	O2-C2-N1	-3.59	119.08	122.79
1	16	516	PSU	O2-C2-N1	-3.59	119.09	122.79
59	Dt	32	PSU	C4-N3-C2	-3.58	121.44	126.37
57	Pt	39	PSU	C4-N3-C2	-3.57	121.45	126.37
59	Dt	39	PSU	O2-C2-N1	-3.55	119.13	122.79
23	23	2457	PSU	O2-C2-N1	-3.53	119.15	122.79
23	23	2605	PSU	O2-C2-N1	-3.53	119.15	122.79
23	23	747	5MU	O4-C4-C5	-3.53	120.88	124.92
23	23	2604	PSU	C4-N3-C2	-3.52	121.53	126.37
12	SL	89	D2T	OD2-CG-CB	3.49	120.70	113.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	1618	6MZ	N1-C2-N3	-3.49	123.30	128.58
23	23	2030	6MZ	N1-C2-N3	-3.46	123.34	128.58
59	Dt	55	PSU	O2-C2-N1	-3.45	119.23	122.79
59	Dt	39	PSU	C4-N3-C2	-3.44	121.63	126.37
23	23	1939	5MU	O2-C2-N1	-3.44	118.32	122.80
23	23	2604	PSU	O2-C2-N1	-3.42	119.26	122.79
1	16	1519	MA6	N1-C2-N3	-3.41	123.42	128.58
1	16	1516	2MG	C6-C5-N7	3.40	136.48	130.29
1	16	1518	MA6	C5-N7-C8	3.39	108.78	103.45
57	Pt	37	T6A	N3-C2-N1	-3.38	123.46	128.58
23	23	1962	5MC	C5-C6-N1	-3.37	119.65	123.31
1	16	1407	5MC	O2-C2-N3	-3.37	117.02	122.33
59	Dt	37	MIA	C2'-C1'-N9	-3.37	104.94	113.30
57	Pt	37	T6A	C4-C5-N7	-3.37	106.73	110.58
59	Dt	37	MIA	C2-N3-C4	3.34	121.04	112.29
1	16	1498	UR3	C5-C4-N3	3.32	119.42	115.04
1	16	967	5MC	C5-C6-N1	-3.29	119.74	123.31
1	16	1519	MA6	C5-N7-C8	3.29	108.62	103.45
59	Dt	32	PSU	O2-C2-N1	-3.23	119.46	122.79
23	23	2445	2MG	C6-C5-N7	3.23	136.17	130.29
23	23	1618	6MZ	C6-C5-N7	3.21	135.93	132.43
23	23	1618	6MZ	C4-C5-N7	-3.18	106.95	110.58
23	23	2503	2MA	N6-C6-N1	3.16	121.29	117.03
23	23	1835	2MG	C6-C5-N7	3.16	136.04	130.29
57	Pt	37	T6A	C6-C5-N7	3.14	135.85	132.43
1	16	1518	MA6	C6-C5-N7	3.13	138.43	133.43
1	16	1407	5MC	C5-C4-N3	-3.12	118.56	121.75
59	Dt	47	3AU	C1'-N1-C2	3.11	122.13	117.04
1	16	966	2MG	C6-C5-N7	3.09	135.91	130.29
23	23	2030	6MZ	C5-N7-C8	3.04	108.23	103.45
37	LP	81	4D4	NE-CZ-NH2	3.00	125.82	120.67
1	16	1518	MA6	C4-N9-C8	3.00	108.89	105.74
59	Dt	39	PSU	C6-C5-C4	-2.98	116.16	118.17
23	23	2604	PSU	C6-C5-C4	-2.98	116.17	118.17
23	23	1618	6MZ	C9-N6-C6	-2.97	120.09	122.85
23	23	2251	OMG	C6-C5-N7	2.94	135.64	130.29
23	23	2552	OMU	O4-C4-C5	-2.93	120.11	125.16
59	Dt	47	3AU	C6-N1-C2	-2.83	119.48	121.80
59	Dt	37	MIA	C4-N9-C8	2.81	108.69	105.74
59	Dt	37	MIA	C5-N7-C8	2.74	107.76	103.45
1	16	967	5MC	C5-C4-N3	-2.69	118.99	121.75
57	Pt	39	PSU	C6-C5-C4	-2.67	116.37	118.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16	1516	2MG	C4-C5-N7	-2.67	106.43	110.67
23	23	2445	2MG	C4-C5-N7	-2.65	106.47	110.67
59	Dt	47	3AU	C5-C4-N3	2.65	119.30	115.64
23	23	2449	H2U	C5-C4-N3	2.63	119.49	116.69
23	23	1915	3TD	C6-C5-C4	-2.63	116.43	118.19
23	23	745	1MG	C6-C5-N7	2.63	135.20	129.36
1	16	1519	MA6	C6-C5-N7	2.62	137.62	133.43
1	16	1402	4OC	O2-C2-N3	-2.60	118.23	122.33
23	23	1962	5MC	C5-C4-N3	-2.58	119.11	121.75
59	Dt	47	3AU	O2-C2-N3	-2.58	118.51	121.98
23	23	1618	6MZ	C4-N9-C8	2.57	108.43	105.74
23	23	2503	2MA	C5-N7-C8	2.51	107.40	103.45
23	23	2580	PSU	O4'-C1'-C2'	2.47	108.57	105.15
1	16	966	2MG	C4-C5-N7	-2.45	106.79	110.67
23	23	2503	2MA	C4-N9-C8	2.45	108.31	105.74
1	16	1518	MA6	N9-C8-N7	-2.45	110.47	113.94
57	Pt	37	T6A	C5-N7-C8	2.44	107.29	103.45
59	Dt	37	MIA	O4'-C1'-N9	2.44	112.77	108.09
23	23	2445	2MG	N1-C2-N2	2.43	119.05	116.56
57	Pt	34	U8U	O4-C4-C5	-2.41	120.65	124.71
59	Dt	37	MIA	N9-C8-N7	-2.40	110.53	113.94
23	23	1835	2MG	C4-C5-N7	-2.40	106.87	110.67
59	Dt	32	PSU	C6-C5-C4	-2.39	116.56	118.17
23	23	745	1MG	C4-C5-N7	-2.38	106.89	110.67
12	SL	89	D2T	OD1-CG-CB	-2.38	117.46	122.44
57	Pt	37	T6A	C4-N9-C8	2.37	108.23	105.74
23	23	2503	2MA	C2-N1-C6	2.37	121.75	118.10
1	16	516	PSU	O4'-C1'-C2'	2.37	108.43	105.15
59	Dt	37	MIA	N6-C6-N1	2.35	121.48	118.33
23	23	1618	6MZ	C5-N7-C8	2.34	107.13	103.45
23	23	2251	OMG	C4-C5-N7	-2.34	106.96	110.67
57	Pt	34	U8U	C1'-N1-C6	-2.31	117.34	121.15
23	23	2552	OMU	O2-C2-N1	-2.30	119.80	122.80
57	Pt	34	U8U	C5-C4-N3	2.30	118.71	115.21
23	23	747	5MU	O2-C2-N1	-2.30	119.81	122.80
59	Dt	47	3AU	C3'-C2'-C1'	2.29	105.80	101.46
23	23	2030	6MZ	C4-N9-C8	2.29	108.14	105.74
23	23	2030	6MZ	N9-C8-N7	-2.28	110.70	113.94
1	16	1516	2MG	N1-C2-N2	2.21	118.82	116.56
59	Dt	8	4SU	C2'-C1'-N1	-2.18	107.19	113.25
1	16	1516	2MG	O6-C6-C5	-2.16	120.84	126.53
23	23	2445	2MG	O6-C6-C5	-2.15	120.85	126.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	23	2251	OMG	O6-C6-C5	-2.15	120.86	126.53
1	16	1519	MA6	C4-N9-C8	2.14	107.98	105.74
59	Dt	37	MIA	N3-C2-N1	-2.13	123.11	127.00
23	23	2069	G7M	N9-C8-N7	-2.12	107.34	112.48
1	16	527	G7M	N9-C8-N7	-2.11	107.37	112.48
59	Dt	37	MIA	C2-N1-C6	2.10	121.53	117.54
23	23	2605	PSU	C5-C6-N1	-2.09	119.25	122.14
1	16	966	2MG	O6-C6-C5	-2.08	121.03	126.53
23	23	2457	PSU	C5-C6-N1	-2.08	119.26	122.14
23	23	2445	2MG	C2-N1-C6	-2.06	122.05	124.55
57	Pt	46	G7M	N9-C8-N7	-2.05	107.50	112.48
23	23	1835	2MG	O6-C6-C5	-2.05	121.12	126.53
58	Pp	77	FME	CA-N-CN	-2.03	119.69	122.82
58	Pp	77	FME	O1-CN-N	-2.03	120.08	125.32
59	Dt	8	4SU	O2-C2-N1	-2.03	120.16	122.80
59	Dt	55	PSU	C5-C6-N1	-2.02	119.33	122.14
23	23	955	PSU	C6-C5-C4	-2.01	116.81	118.17
23	23	1835	2MG	C5-C6-N1	2.01	118.38	113.25
23	23	2030	6MZ	C2-N1-C6	2.01	121.91	115.24

There are no chirality outliers.

All (60) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	16	527	G7M	O4'-C4'-C5'-O5'
1	16	1519	MA6	O4'-C4'-C5'-O5'
12	SL	89	D2T	O-C-CA-CB
12	SL	89	D2T	SB-CB-CG-OD1
57	Pt	37	T6A	O10-C10-N6-C6
57	Pt	37	T6A	N11-C10-N6-C6
57	Pt	37	T6A	N6-C10-N11-C12
57	Pt	37	T6A	C13-C12-C14-O14
57	Pt	37	T6A	C13-C12-C14-C15
23	23	746	PSU	C2'-C1'-C5-C4
23	23	1915	3TD	O4'-C1'-C5-C4
23	23	1915	3TD	O4'-C1'-C5-C6
23	23	2251	OMG	O4'-C4'-C5'-O5'
23	23	2251	OMG	C1'-C2'-O2'-CM2
23	23	2504	PSU	O4'-C4'-C5'-O5'
58	Pp	77	FME	O1-CN-N-CA
58	Pp	77	FME	CB-CA-N-CN
58	Pp	77	FME	N-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
58	Pp	77	FME	C-CA-CB-CG
59	Dt	37	MIA	C12-C13-C14-C15
1	16	527	G7M	C3'-C4'-C5'-O5'
57	Pt	39	PSU	C3'-C4'-C5'-O5'
57	Pt	39	PSU	O4'-C4'-C5'-O5'
23	23	2251	OMG	C3'-C4'-C5'-O5'
23	23	2503	2MA	O4'-C4'-C5'-O5'
59	Dt	47	3AU	C3'-C4'-C5'-O5'
59	Dt	47	3AU	O4'-C4'-C5'-O5'
57	Pt	37	T6A	O10-C10-N11-C12
23	23	2030	6MZ	O4'-C4'-C5'-O5'
23	23	2503	2MA	C3'-C4'-C5'-O5'
59	Dt	37	MIA	O4'-C4'-C5'-O5'
1	16	1519	MA6	C3'-C4'-C5'-O5'
23	23	2030	6MZ	C3'-C4'-C5'-O5'
23	23	2504	PSU	C3'-C4'-C5'-O5'
1	16	1519	MA6	C5-C6-N6-C10
59	Dt	46	G7M	O4'-C4'-C5'-O5'
59	Dt	47	3AU	N40-C12-C13-O31
1	16	1402	4OC	O4'-C4'-C5'-O5'
59	Dt	46	G7M	C3'-C4'-C5'-O5'
58	Pp	77	FME	CB-CG-SD-CE
23	23	1835	2MG	O4'-C4'-C5'-O5'
23	23	1835	2MG	C3'-C4'-C5'-O5'
59	Dt	37	MIA	C5-C6-N6-C12
59	Dt	55	PSU	C3'-C4'-C5'-O5'
12	SL	89	D2T	CG-CB-SB-CB1
59	Dt	47	3AU	N3-C10-C11-C12
59	Dt	37	MIA	N1-C6-N6-C12
23	23	746	PSU	O4'-C1'-C5-C4
59	Dt	37	MIA	C3'-C4'-C5'-O5'
12	SL	89	D2T	CA-CB-SB-CB1
23	23	746	PSU	O4'-C1'-C5-C6
1	16	1519	MA6	C4'-C5'-O5'-P
23	23	1915	3TD	C3'-C4'-C5'-O5'
23	23	2580	PSU	O4'-C4'-C5'-O5'
23	23	746	PSU	C2'-C1'-C5-C6
23	23	2069	G7M	C4'-C5'-O5'-P
37	LP	81	4D4	C-CA-CB-CG
37	LP	81	4D4	O-C-CA-CB
57	Pt	37	T6A	N11-C12-C14-C15
1	16	1402	4OC	C3'-C4'-C5'-O5'

There are no ring outliers.

9 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
23	23	2503	2MA	1	0
59	Dt	37	MIA	2	0
23	23	2251	OMG	1	0
59	Dt	55	PSU	1	0
58	Pp	77	FME	1	0
12	SL	89	D2T	3	0
23	23	2030	6MZ	1	0
57	Pt	34	U8U	1	0
57	Pt	37	T6A	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 341 ligands modelled in this entry, 325 are monoatomic - leaving 16 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	$\#\|Z\| > 2$
61	PUT	23	3004	-	5,5,5	0.13	0	4,4,4	0.17	0
66	ATP	23	3001	-	32,33,33	0.33	0	48,52,52	0.38	0
66	ATP	23	3002	-	32,33,33	0.29	0	48,52,52	0.49	0
61	PUT	23	3010	-	5,5,5	0.14	0	4,4,4	0.14	0
61	PUT	16	2002	-	5,5,5	0.11	0	4,4,4	0.23	0
62	SPD	16	2003	-	9,9,9	0.28	0	8,8,8	0.24	0
61	PUT	16	2001	-	5,5,5	0.11	0	4,4,4	0.21	0
62	SPD	23	3009	-	9,9,9	0.26	0	8,8,8	0.30	0
61	PUT	23	3008	-	5,5,5	0.11	0	4,4,4	0.21	0
67	GSP	EF	901	63	33,34,34	1.90	1 (3%)	47,54,54	1.77	10 (21%)
61	PUT	23	3007	-	5,5,5	0.11	0	4,4,4	0.15	0
61	PUT	23	3012	-	5,5,5	0.13	0	4,4,4	0.19	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
62	SPD	23	3011	-	9,9,9	0.24	0	8,8,8	0.29	0
61	PUT	23	3006	-	5,5,5	0.05	0	4,4,4	0.32	0
61	PUT	23	3003	-	5,5,5	0.13	0	4,4,4	0.22	0
61	PUT	23	3005	-	5,5,5	0.12	0	4,4,4	0.16	0

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
61	PUT	23	3004	-	-	0/3/3/3	-
66	ATP	23	3001	-	-	4/22/38/38	0/3/3/3
66	ATP	23	3002	-	-	5/22/38/38	0/3/3/3
61	PUT	23	3010	-	-	0/3/3/3	-
61	PUT	16	2002	-	-	1/3/3/3	-
62	SPD	16	2003	-	-	2/7/7/7	-
61	PUT	16	2001	-	-	0/3/3/3	-
62	SPD	23	3009	-	-	3/7/7/7	-
61	PUT	23	3008	-	-	1/3/3/3	-
67	GSP	EF	901	63	-	0/21/38/38	0/3/3/3
61	PUT	23	3007	-	-	0/3/3/3	-
61	PUT	23	3012	-	-	2/3/3/3	-
62	SPD	23	3011	-	-	4/7/7/7	-
61	PUT	23	3006	-	-	0/3/3/3	-
61	PUT	23	3003	-	-	2/3/3/3	-
61	PUT	23	3005	-	-	1/3/3/3	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
67	EF	901	GSP	PG-S1G	-9.55	1.69	1.90

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
67	EF	901	GSP	C5-C4-N3	-4.76	120.81	128.39
67	EF	901	GSP	PB-O3B-PG	-4.56	116.50	133.17
67	EF	901	GSP	C2-N3-C4	4.52	120.08	112.30
67	EF	901	GSP	N9-C4-N3	3.11	132.17	125.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
67	EF	901	GSP	C2-N1-C6	-2.93	119.80	125.11
67	EF	901	GSP	N9-C8-N7	-2.81	108.19	113.40
67	EF	901	GSP	O6-C6-C5	-2.57	119.75	126.53
67	EF	901	GSP	C5-C6-N1	2.56	119.76	113.25
67	EF	901	GSP	C8-N7-C5	2.51	108.73	104.26
67	EF	901	GSP	O2B-PB-O3A	2.08	112.89	107.27

There are no chirality outliers.

All (25) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
66	23	3002	ATP	C3'-C4'-C5'-O5'
62	23	3011	SPD	C3-C4-C5-N6
66	23	3002	ATP	O4'-C4'-C5'-O5'
66	23	3002	ATP	O4'-C1'-N9-C4
62	23	3009	SPD	C4-C5-N6-C7
62	23	3011	SPD	C8-C7-N6-C5
62	23	3009	SPD	C3-C4-C5-N6
66	23	3002	ATP	O4'-C1'-N9-C8
66	23	3001	ATP	PB-O3B-PG-O1G
61	23	3003	PUT	C1-C2-C3-C4
61	23	3005	PUT	C1-C2-C3-C4
62	23	3011	SPD	C2-C3-C4-C5
61	23	3012	PUT	C1-C2-C3-C4
62	23	3009	SPD	C2-C3-C4-C5
66	23	3001	ATP	PB-O3B-PG-O2G
61	16	2002	PUT	C1-C2-C3-C4
66	23	3001	ATP	PA-O3A-PB-O1B
61	23	3003	PUT	N1-C1-C2-C3
61	23	3008	PUT	C2-C3-C4-N2
62	23	3011	SPD	C4-C5-N6-C7
61	23	3012	PUT	N1-C1-C2-C3
66	23	3002	ATP	PA-O3A-PB-O2B
62	16	2003	SPD	C3-C4-C5-N6
62	16	2003	SPD	C4-C5-N6-C7
66	23	3001	ATP	PB-O3A-PA-O2A

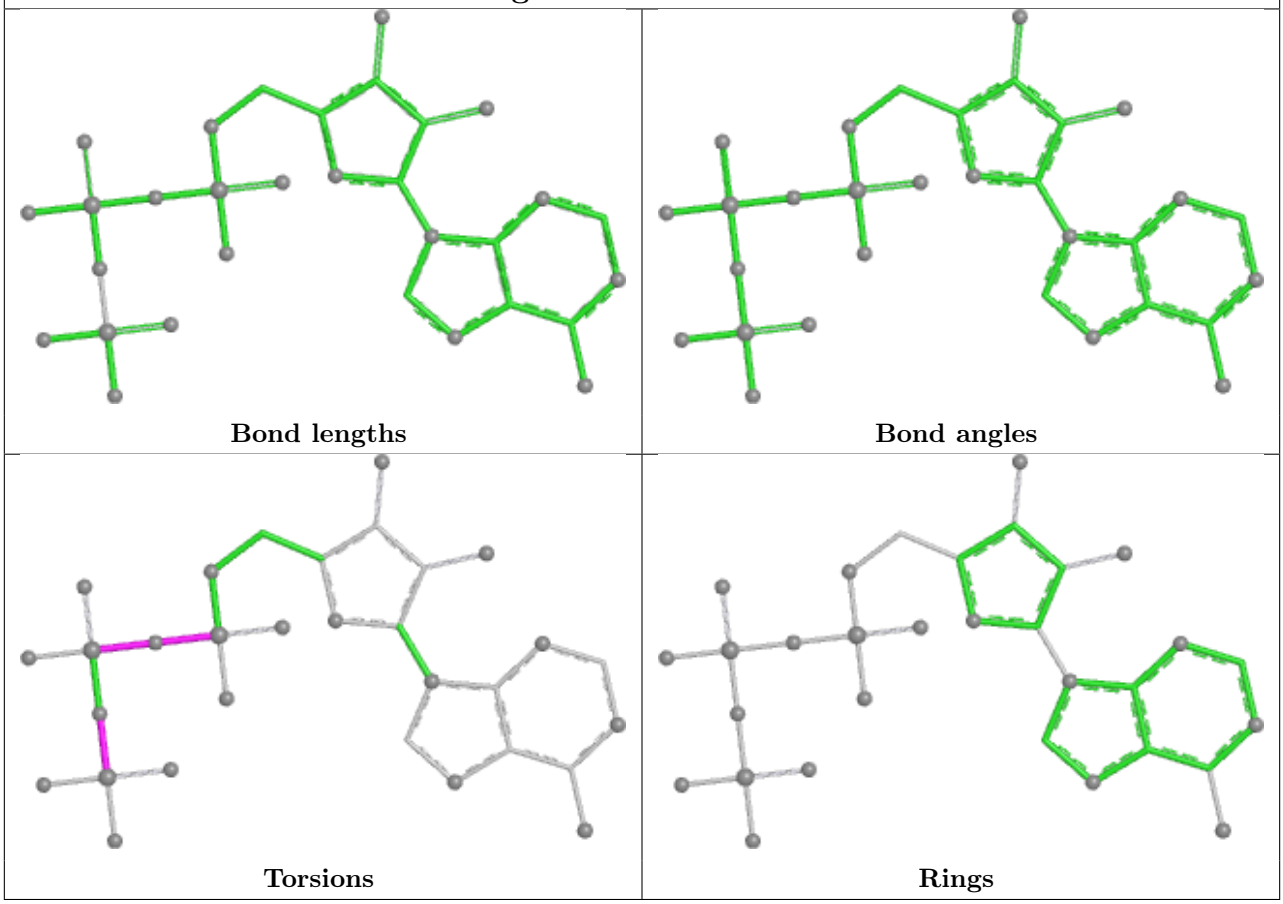
There are no ring outliers.

3 monomers are involved in 3 short contacts:

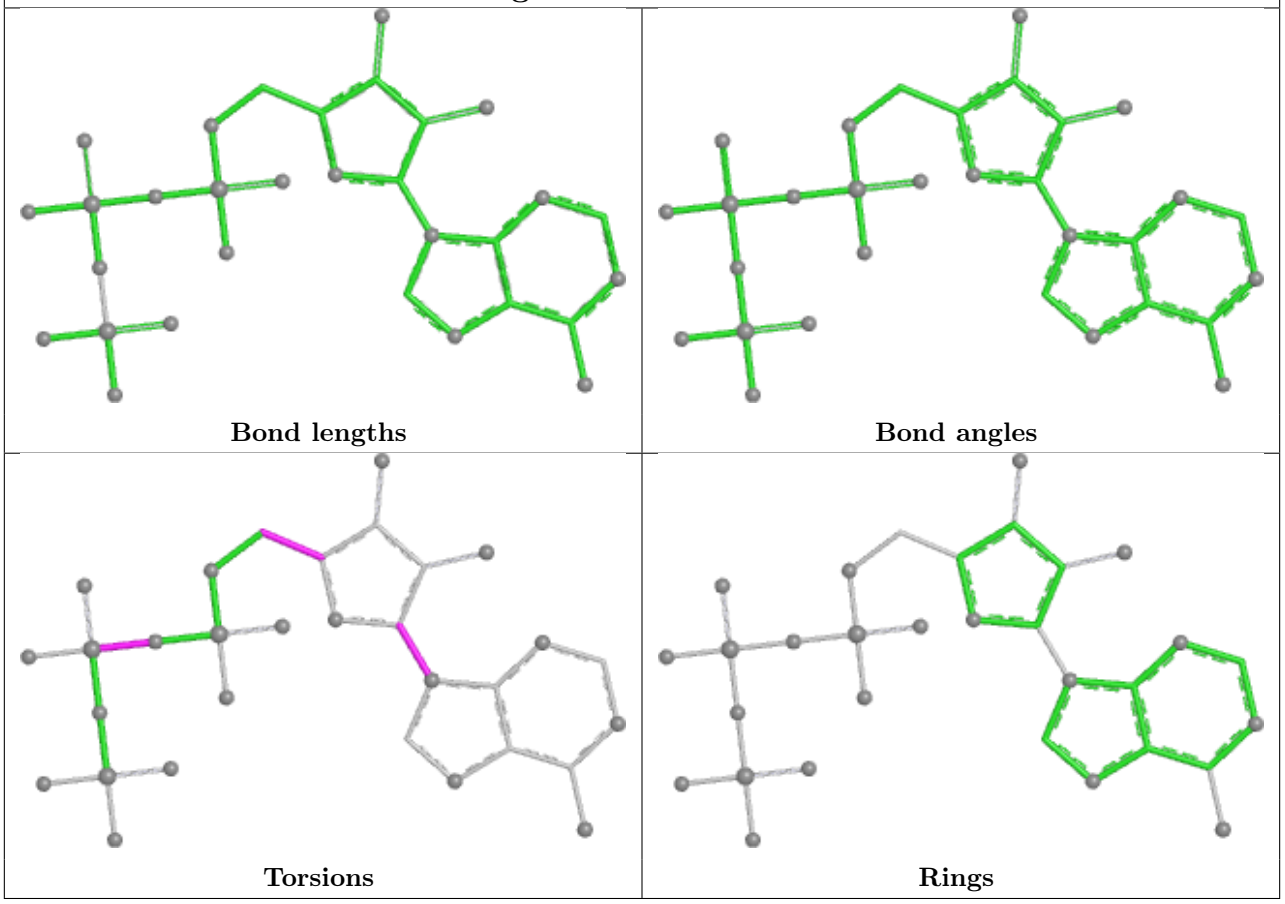
Mol	Chain	Res	Type	Clashes	Symm-Clashes
61	16	2002	PUT	1	0
67	EF	901	GSP	1	0
61	23	3012	PUT	1	0

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.

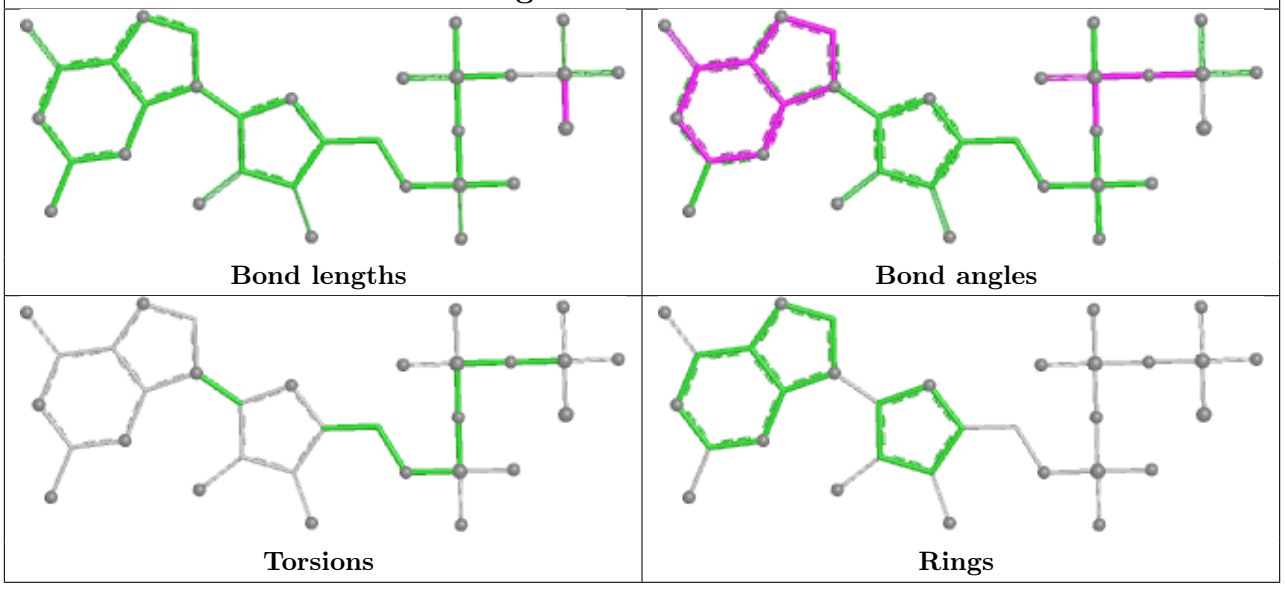
Ligand ATP 23 3001



Ligand ATP 23 3002



Ligand GSP EF 901



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

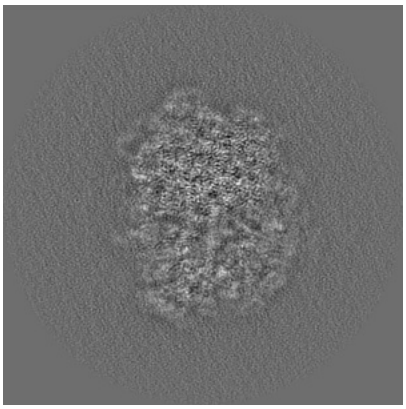
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-74587. These allow visual inspection of the internal detail of the map and identification of artifacts.

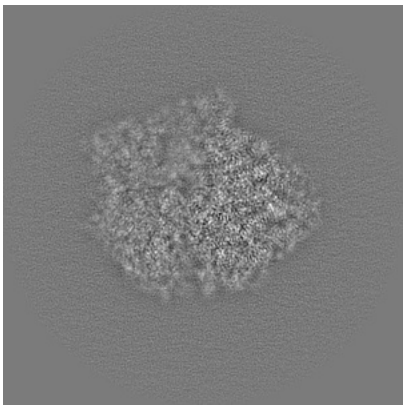
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

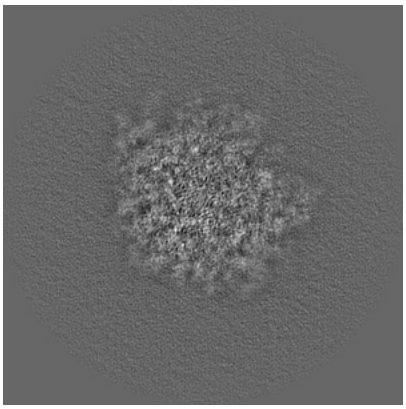
6.1.1 Primary map



X

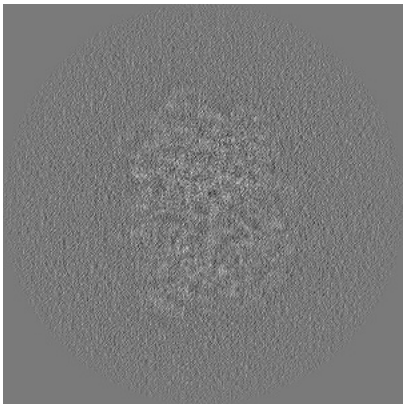


Y

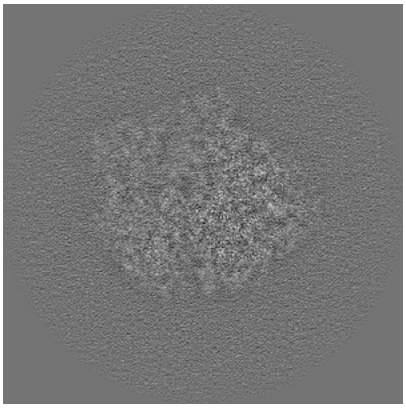


Z

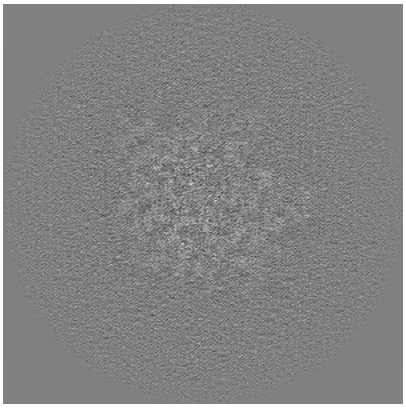
6.1.2 Raw map



X



Y

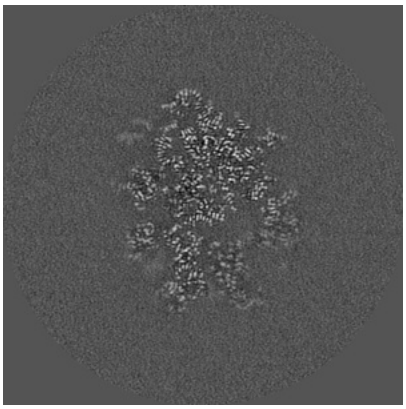


Z

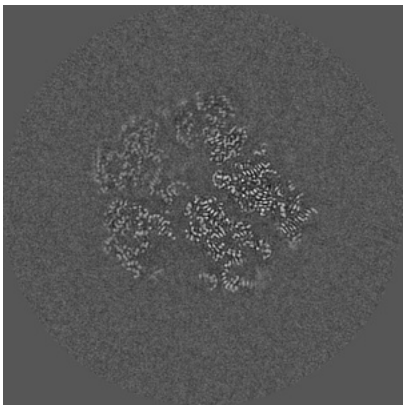
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

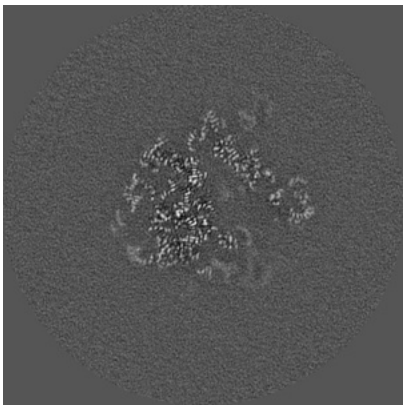
6.2.1 Primary map



X Index: 256

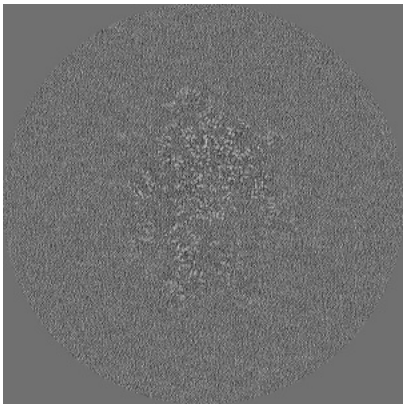


Y Index: 256

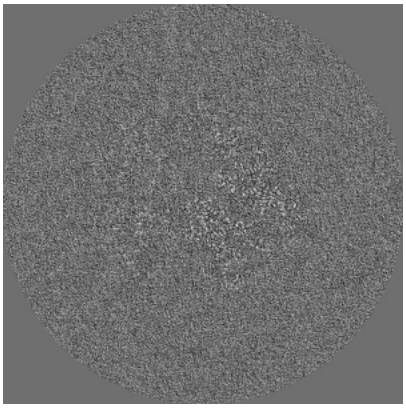


Z Index: 256

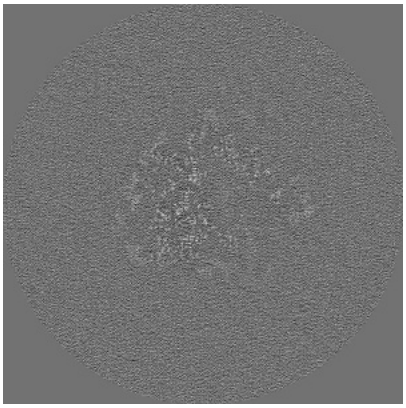
6.2.2 Raw map



X Index: 256



Y Index: 256

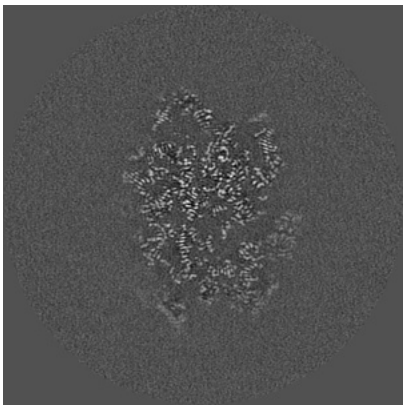


Z Index: 256

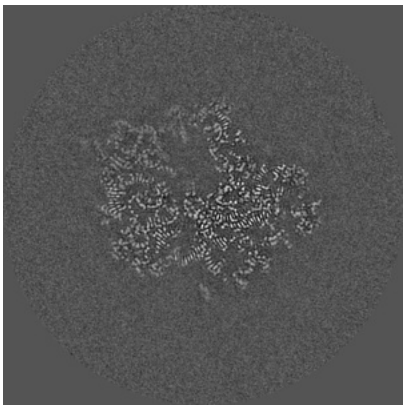
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

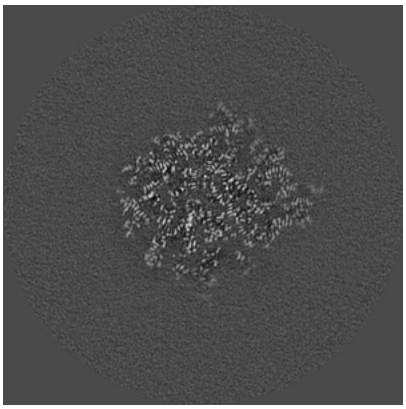
6.3.1 Primary map



X Index: 228

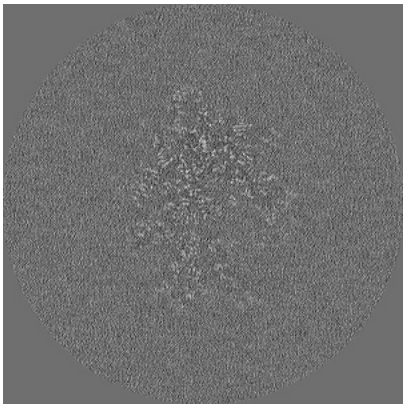


Y Index: 235

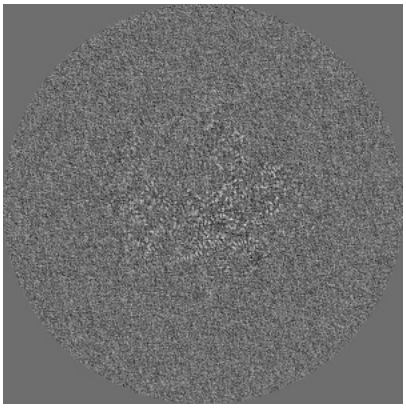


Z Index: 283

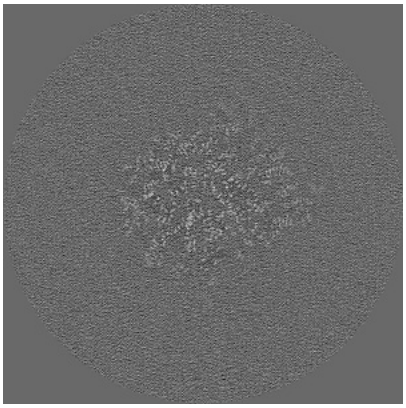
6.3.2 Raw map



X Index: 259



Y Index: 240

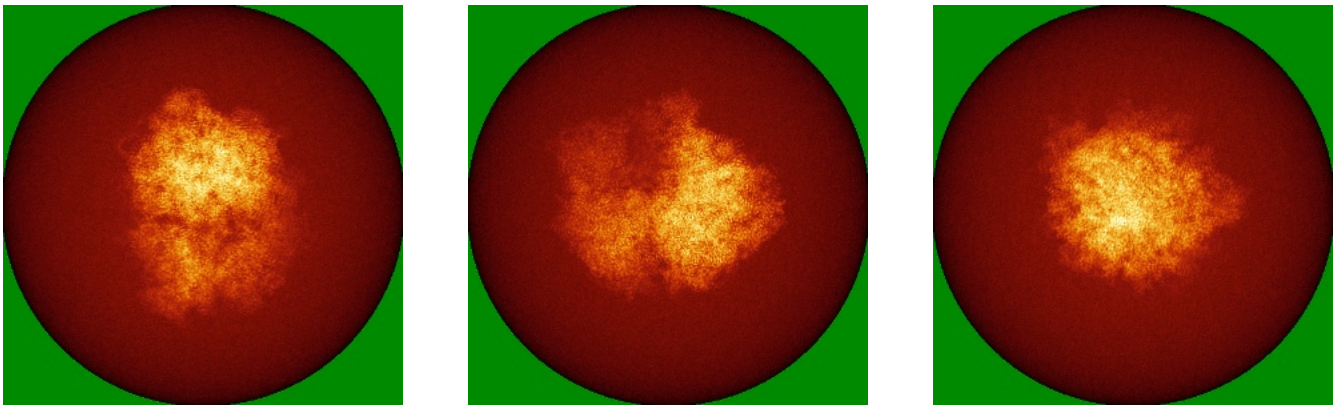


Z Index: 283

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

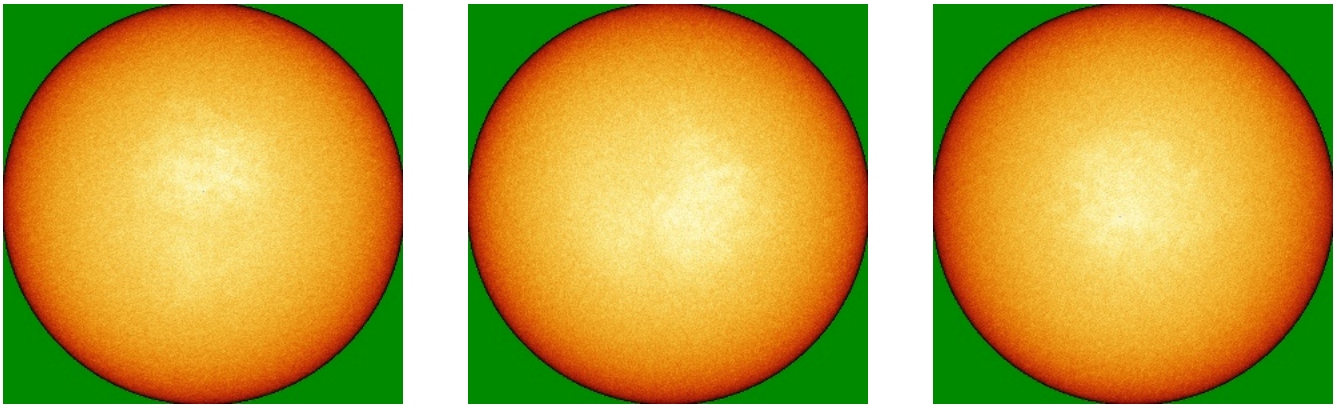
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

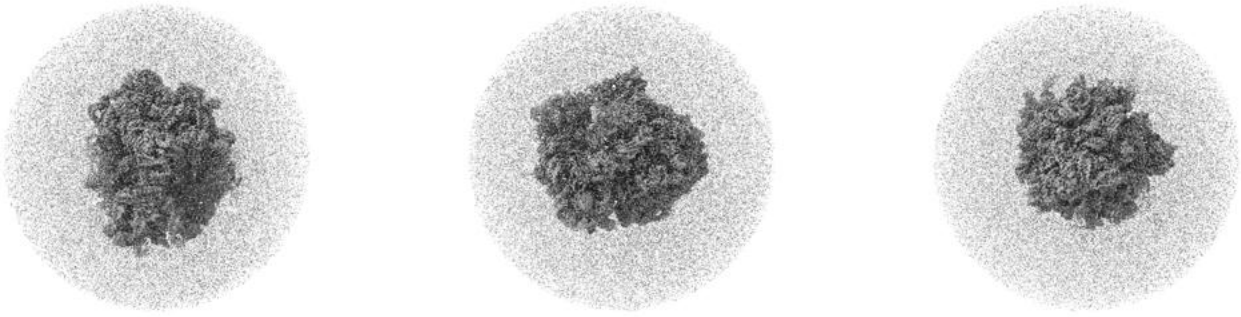


X Y Z

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

6.5 Orthogonal surface views (i)

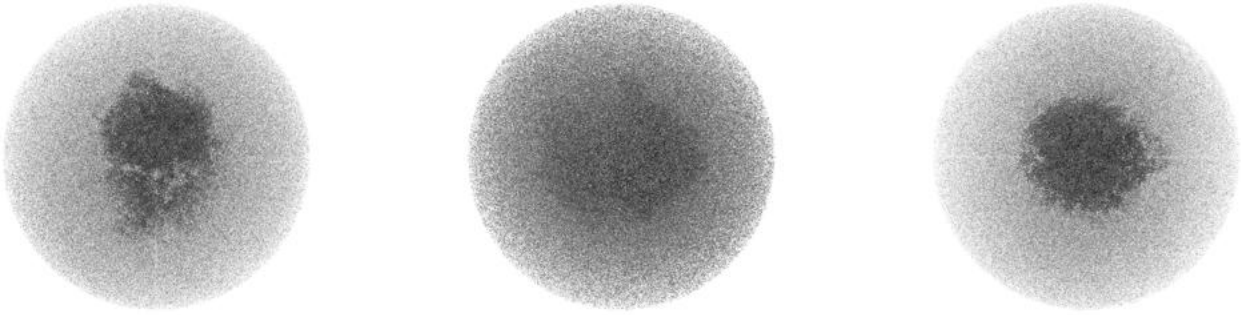
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

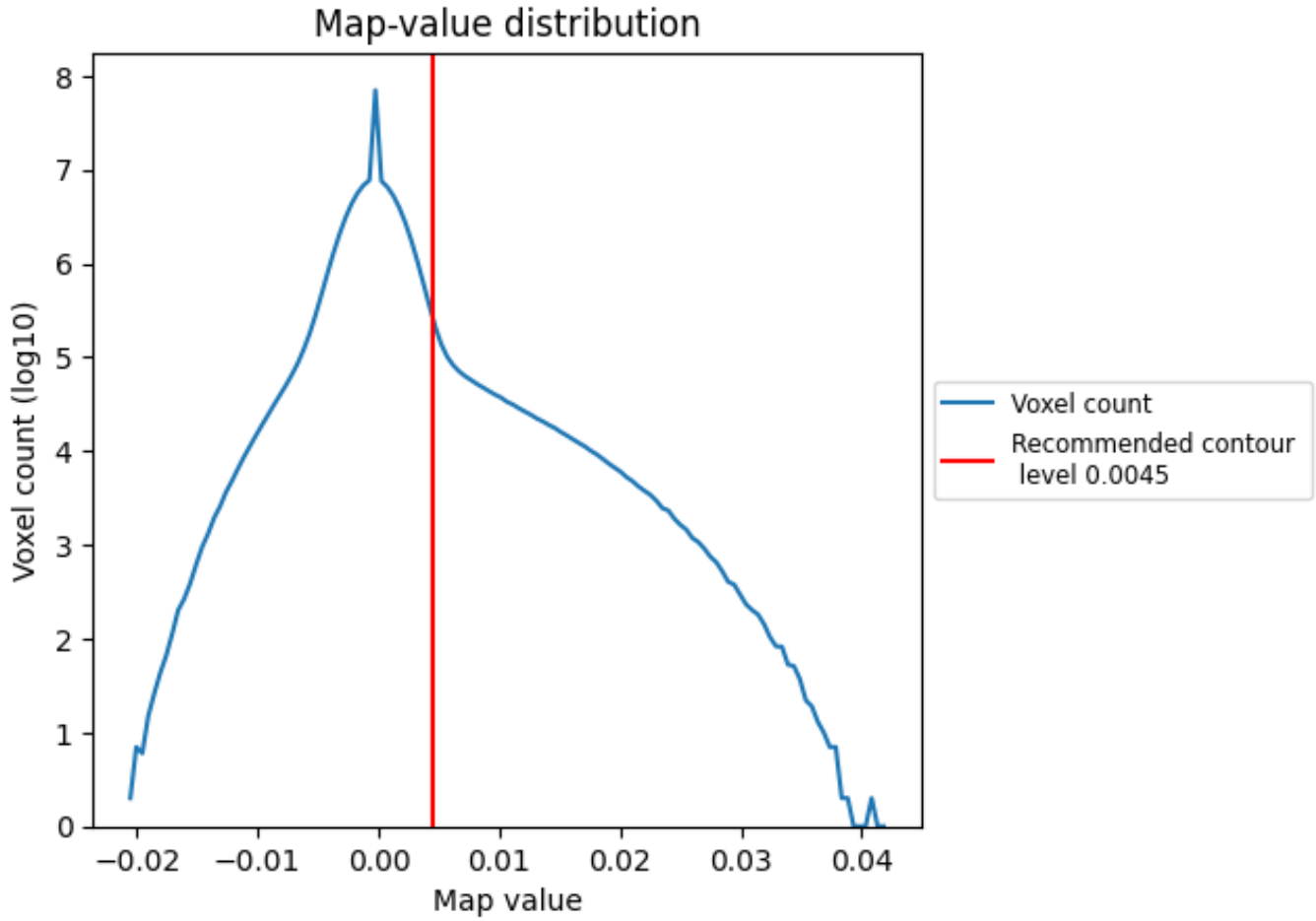
6.6 Mask visualisation (i)

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

7 Map analysis

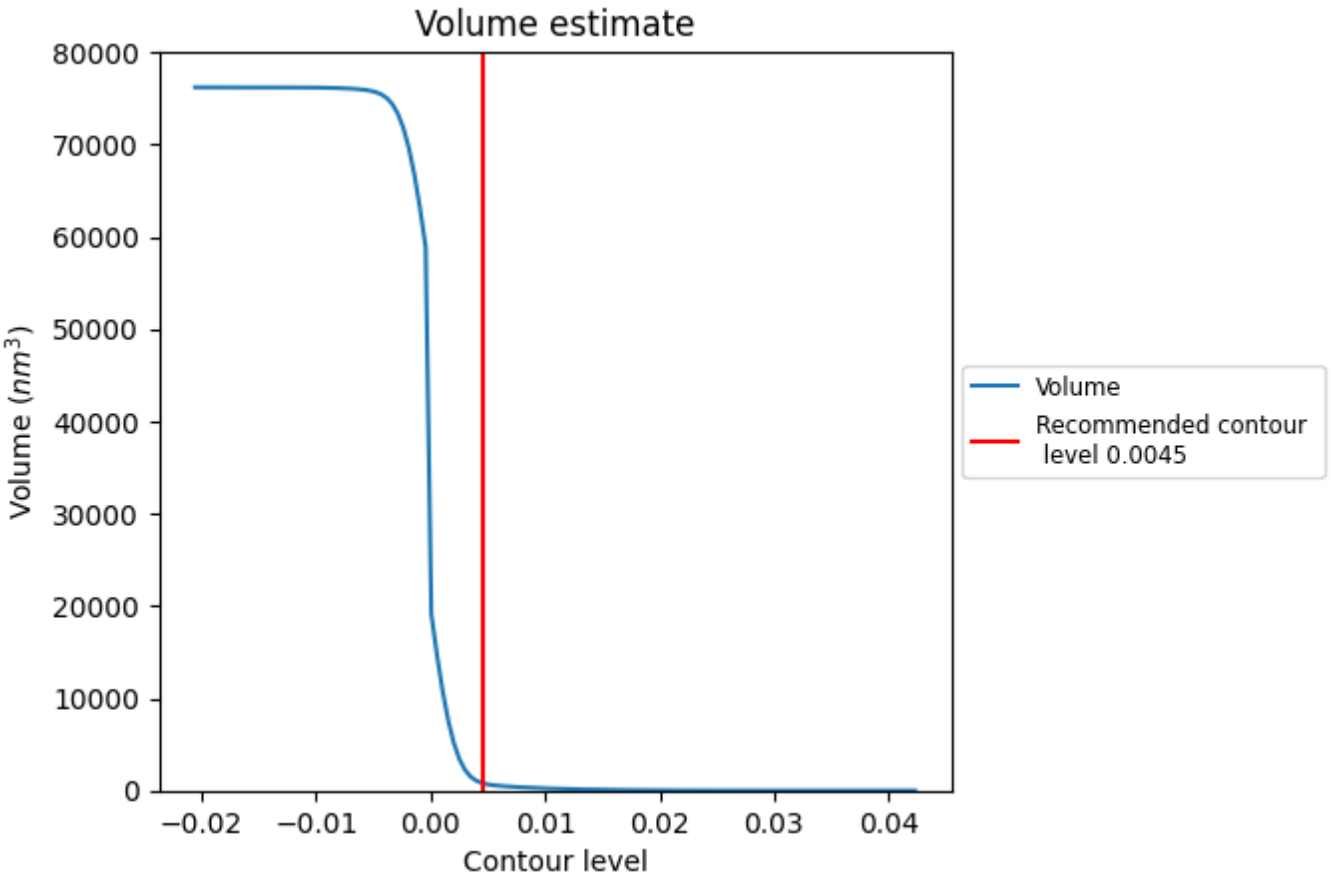
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

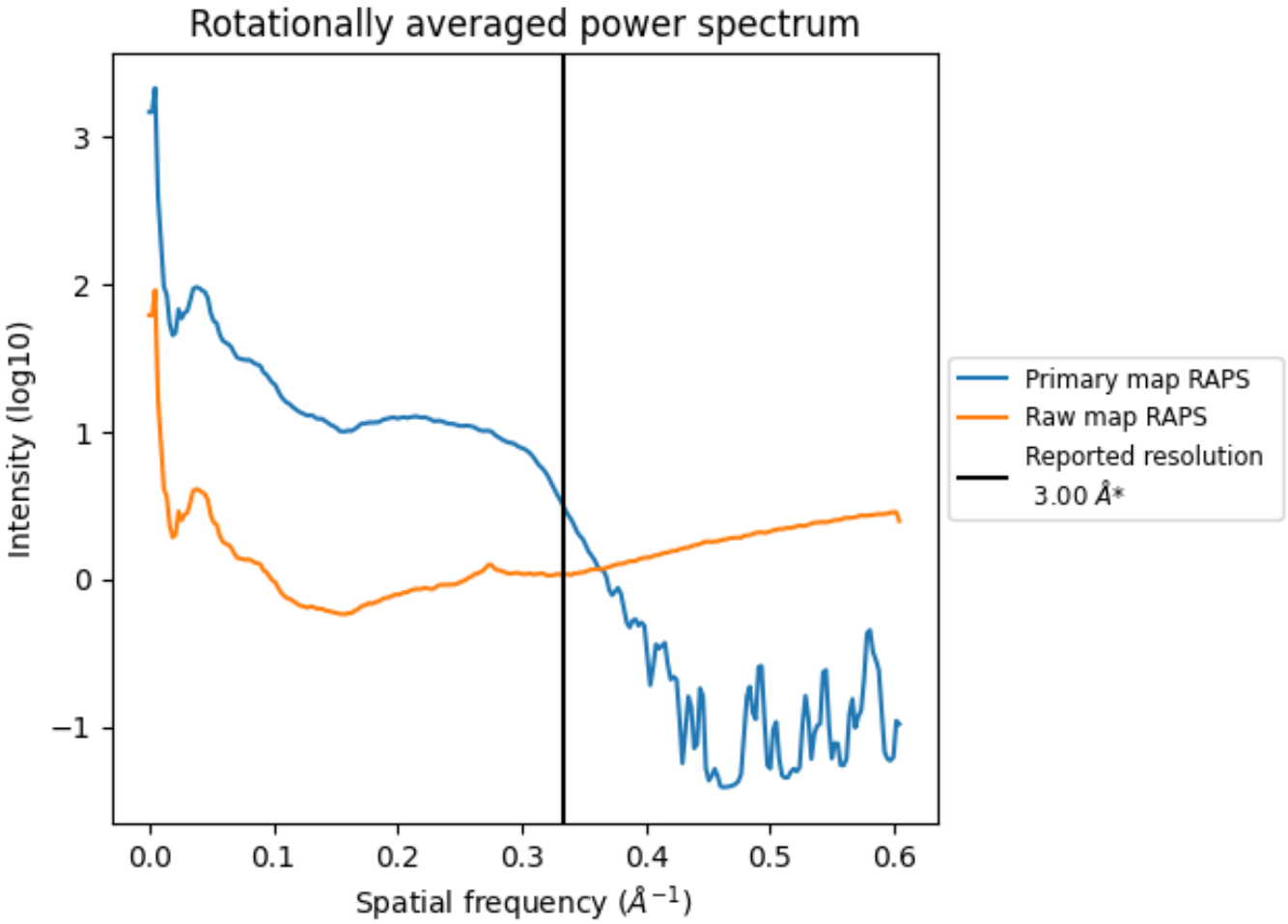
7.2 Volume estimate



The volume at the recommended contour level is 819 nm^3; this corresponds to an approximate mass of 740 kDa.

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

7.3 Rotationally averaged power spectrum (i)

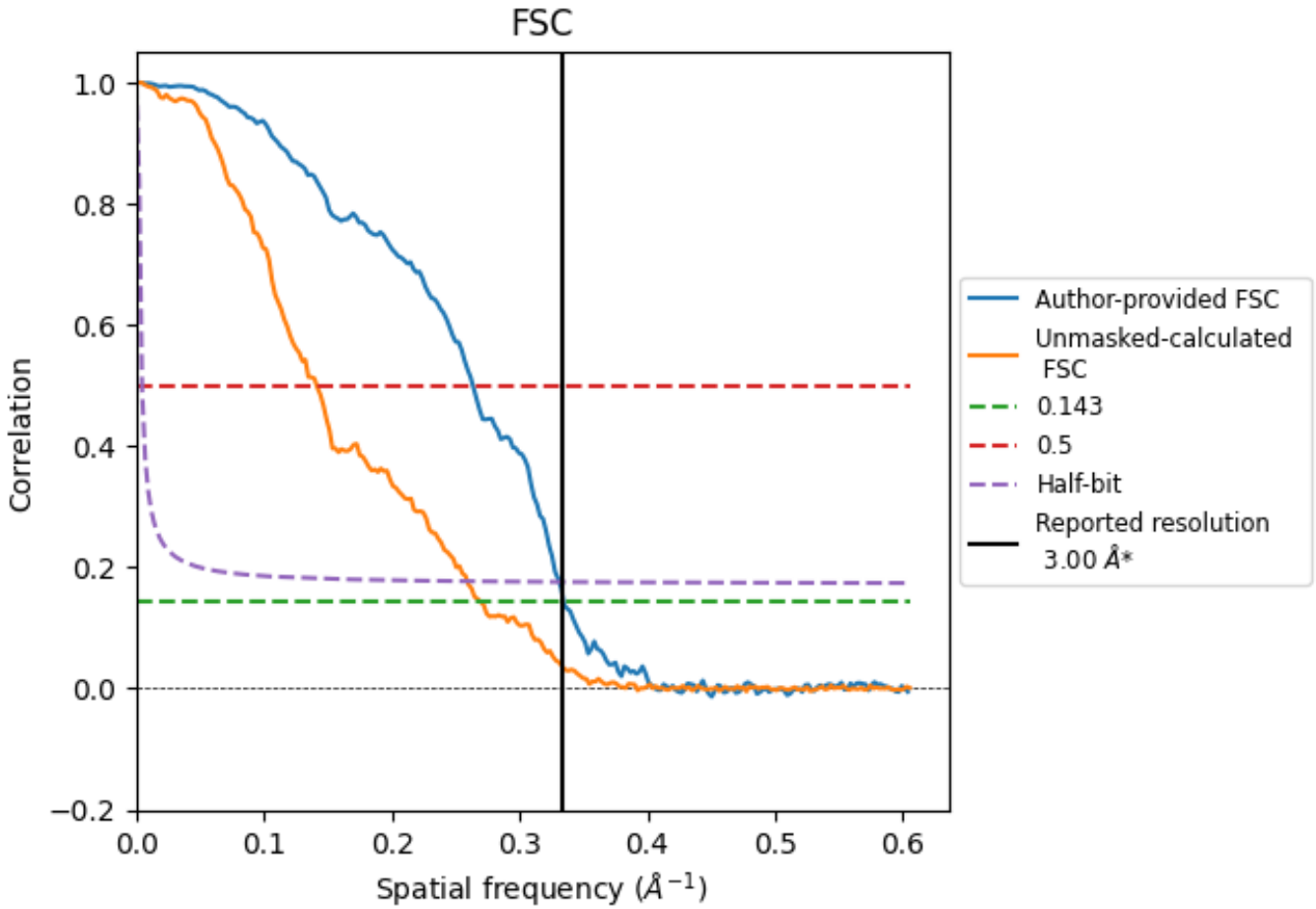


*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

8.2 Resolution estimates (i)

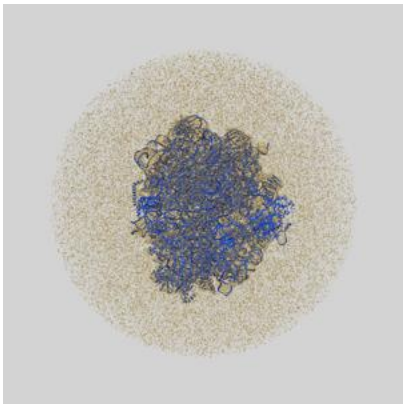
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	2.99	3.80	3.02
Unmasked-calculated*	3.71	7.08	3.86

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.71 differs from the reported value 3.0 by more than 10 %

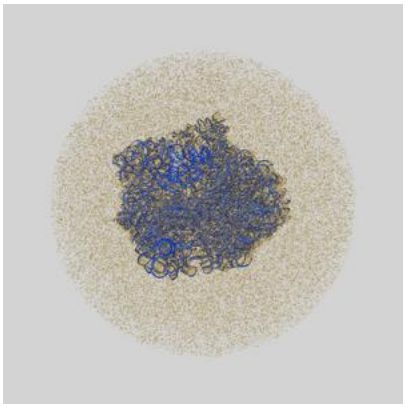
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-74587 and PDB model 9ZR1. Per-residue inclusion information can be found in section 3 on page 19.

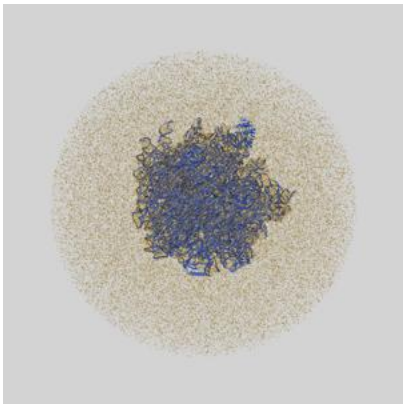
9.1 Map-model overlay



X



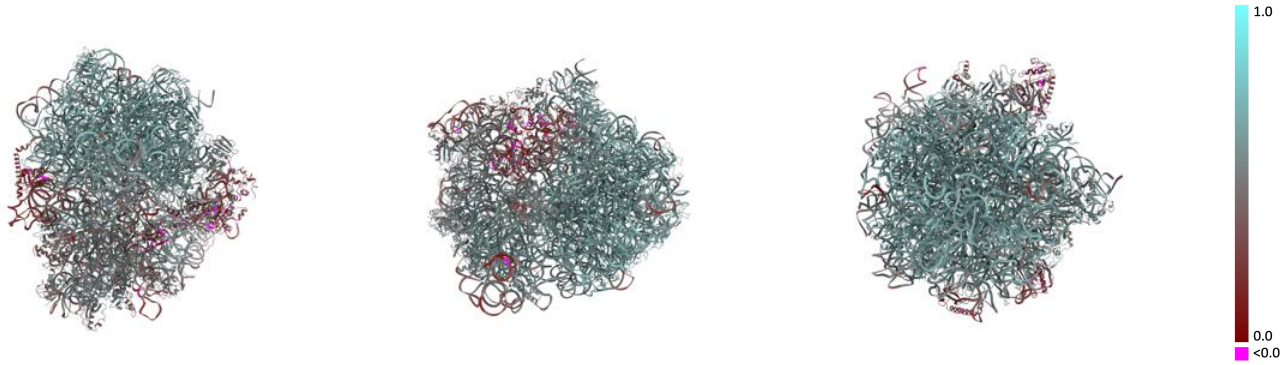
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

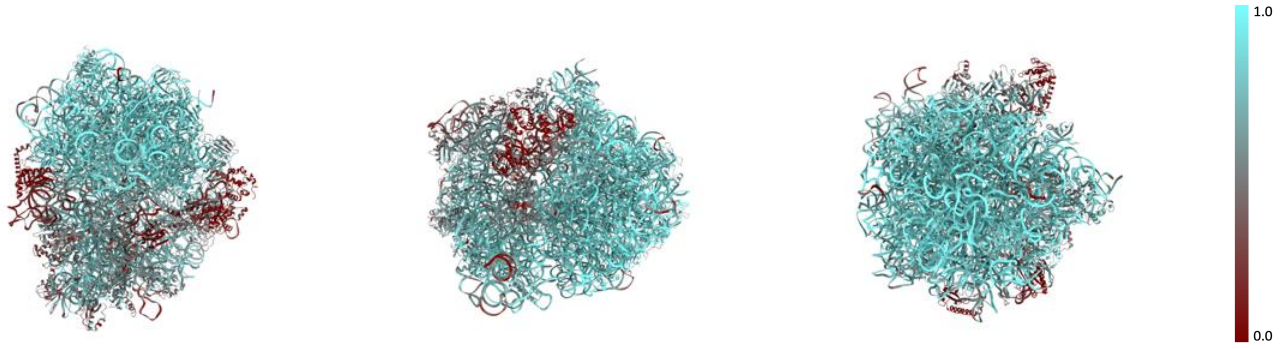
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

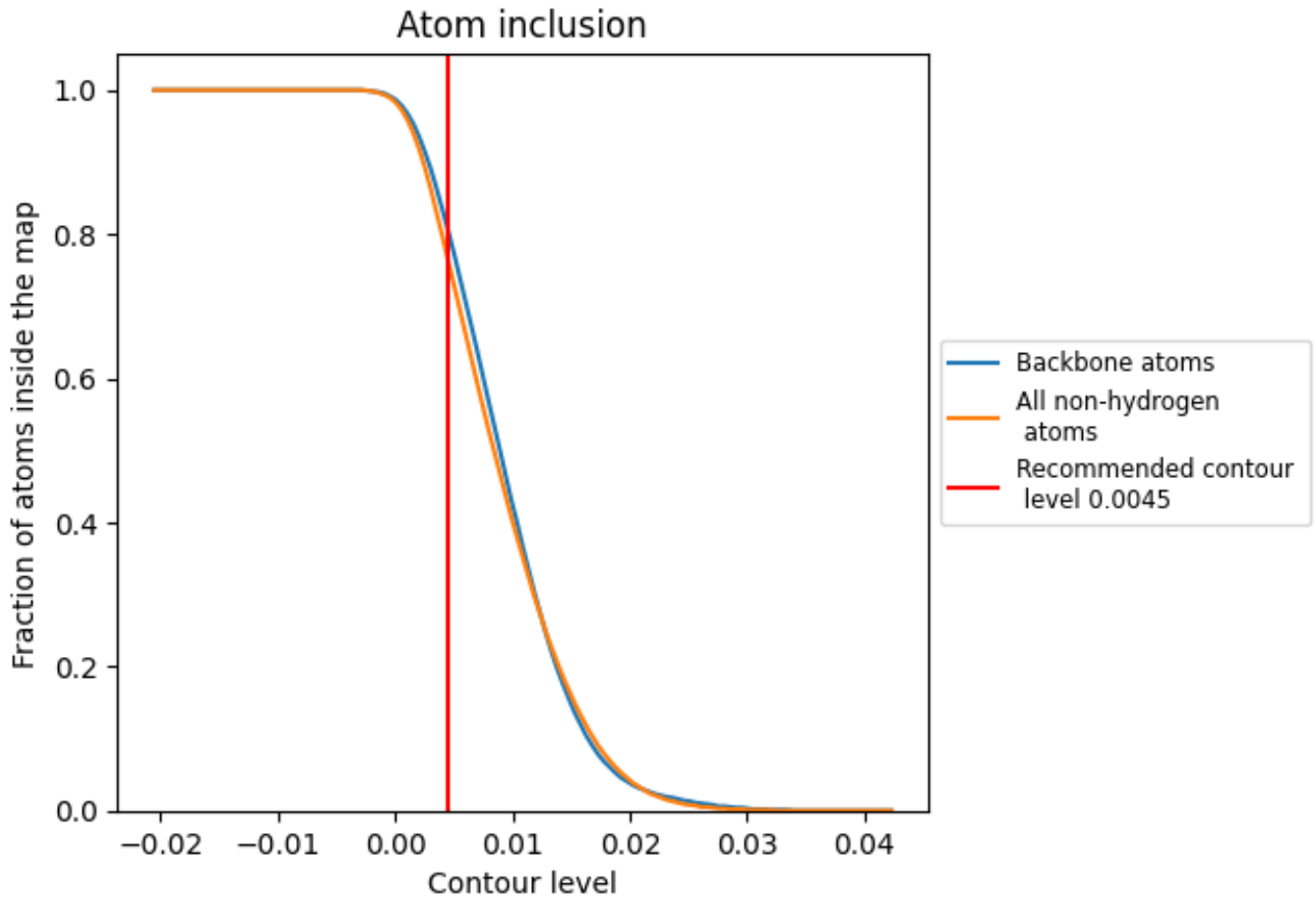
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0045).

9.4 Atom inclusion (i)



At the recommended contour level, 81% of all backbone atoms, 76% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.0045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7650	0.5510
16	0.7850	0.5290
23	0.8820	0.5890
5	0.8630	0.5710
Dt	0.6580	0.4820
EF	0.3910	0.4190
LA	0.0570	0.2400
LB	0.8650	0.6320
LC	0.8540	0.6280
LD	0.8120	0.6120
LE	0.5330	0.5000
LF	0.6600	0.5370
LI	0.2100	0.3220
LJ	0.0580	0.2740
LK	0.0330	0.1760
LM	0.8640	0.6210
LN	0.8530	0.6290
LO	0.8230	0.6150
LP	0.8360	0.6230
LQ	0.8780	0.6300
LR	0.7150	0.5630
LS	0.7910	0.6030
LT	0.8790	0.6300
LU	0.8380	0.6110
LV	0.8550	0.6230
LW	0.7620	0.6040
LX	0.7650	0.5910
LY	0.7380	0.5830
La	0.8640	0.6230
Lb	0.8320	0.6180
Lc	0.7280	0.5720
Ld	0.8280	0.6100
Le	0.4090	0.4300
Lf	0.8440	0.6230
Lg	0.7660	0.5930



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Chain	Atom inclusion	Q-score
Lh	0.9010	0.6490
Li	0.8960	0.6410
Lj	0.8020	0.6190
Pp	0.4670	0.5170
Pt	0.3900	0.3850
SB	0.5470	0.5070
SC	0.6120	0.5190
SD	0.5610	0.5110
SE	0.7500	0.5800
SF	0.6270	0.5180
SG	0.3610	0.4250
SH	0.7450	0.5850
SI	0.4660	0.4720
SJ	0.4580	0.4700
SK	0.7050	0.5720
SL	0.6990	0.5780
SM	0.4160	0.4370
SN	0.5150	0.4920
SO	0.7330	0.5810
SP	0.6830	0.5640
SQ	0.6740	0.5550
SR	0.6620	0.5590
SS	0.3520	0.4350
ST	0.6590	0.5500
SU	0.5740	0.5110
mR	0.4670	0.4380