



## Full wwPDB EM Validation Report ⓘ

Jul 2, 2024 – 06:23 PM JST

PDB ID : 8K2C  
EMDB ID : EMD-36838  
Title : Cryo-EM structure of the human 80S ribosome with Tigecycline  
Authors : Li, X.; Wang, M.; Cheng, J.  
Deposited on : 2023-07-12  
Resolution : 2.40 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

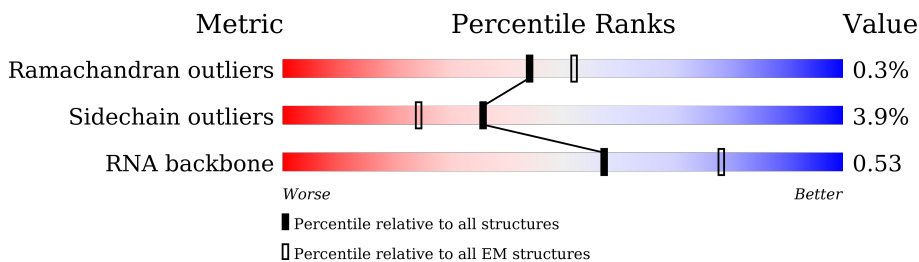
EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

# 1 Overall quality at a glance

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

The reported resolution of this entry is 2.40 Å.

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



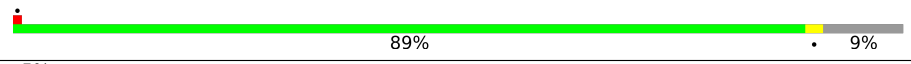

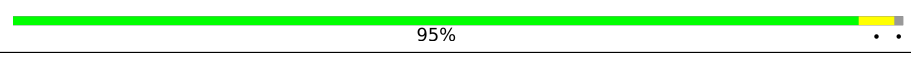
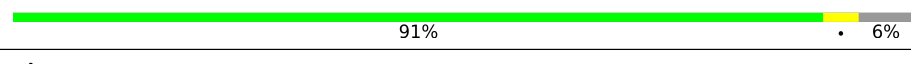
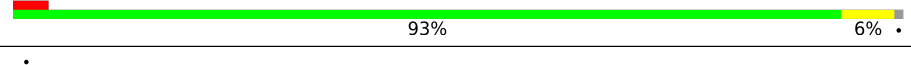
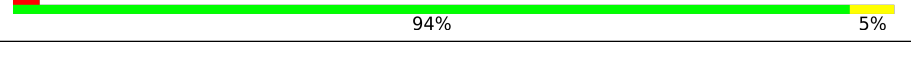

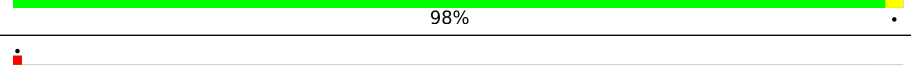
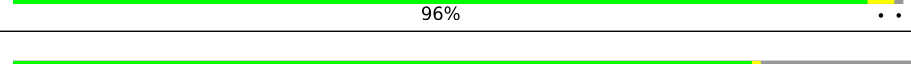
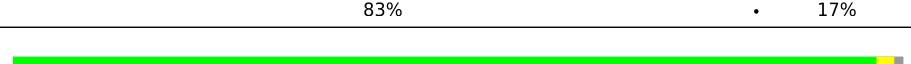
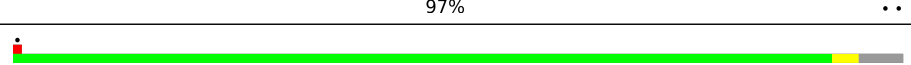
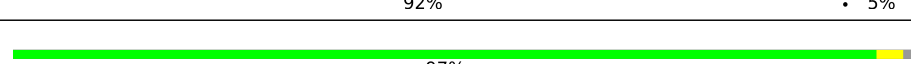
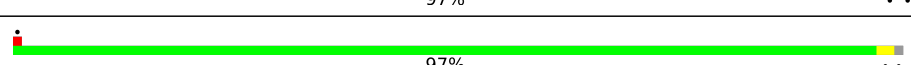
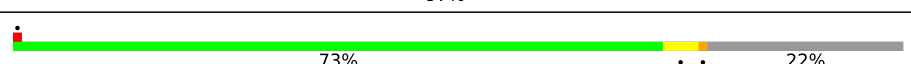
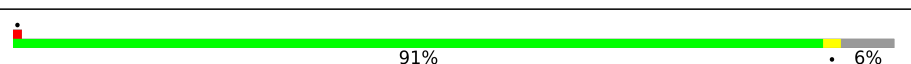
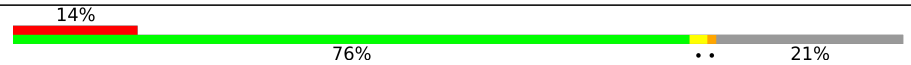
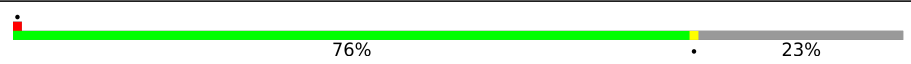

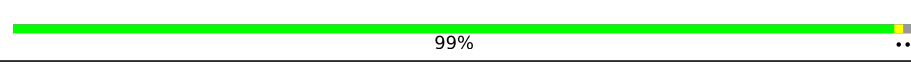
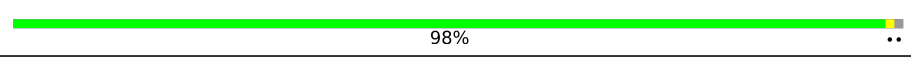

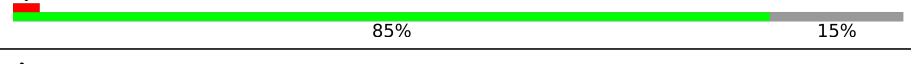

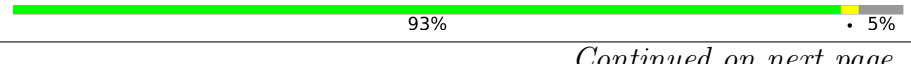

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	L5	5070	
2	L7	121	
3	L8	157	
4	LA	257	
5	LB	403	
6	LC	427	
7	LD	297	
8	LE	288	

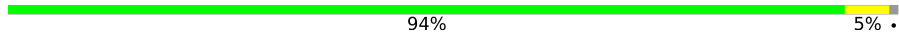
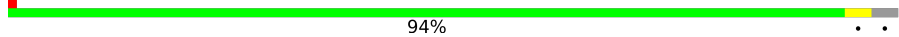
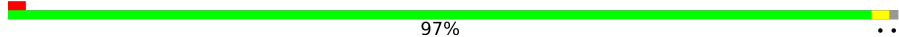
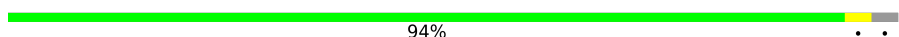

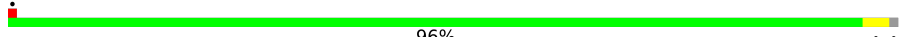




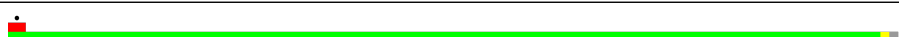




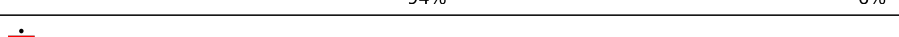



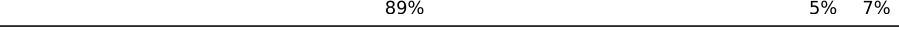
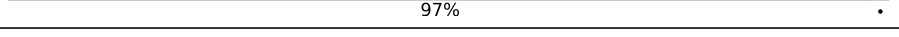


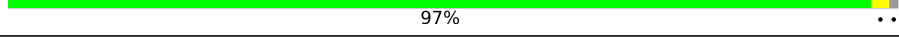

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Mol	Chain	Length	Quality of chain
9	LF	248	 89% 9%
10	LG	266	 88% 9% 5%
11	LH	192	 95%
12	LI	214	 91% 6%
13	LJ	178	 93% 6%
14	LL	211	 94% 5%
15	LM	215	 65% 35%
16	LN	204	 98%
17	LO	203	 96%
18	LP	184	 83% 17%
19	LQ	188	 97%
20	LR	196	 92% 5%
21	LS	176	 97%
22	LT	160	 97%
23	LU	128	 73% 22%
24	LV	140	 91% 6%
25	LW	157	 76% 21% 14%
26	LX	156	 76% 23%
27	LY	145	 88% 8%
28	LZ	136	 99%
29	La	148	 98%
30	Lb	159	 67% 31%
31	Lc	115	 85% 15%
32	Ld	125	 85% 14%
33	Le	135	 93% 5%

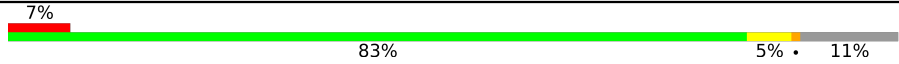
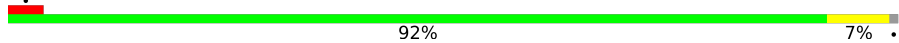
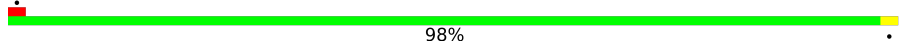

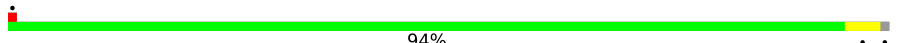

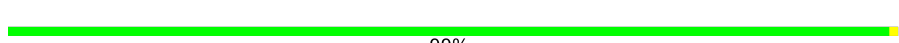

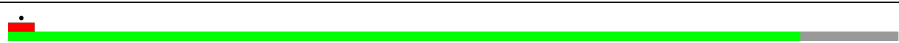

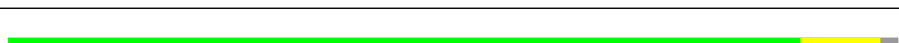


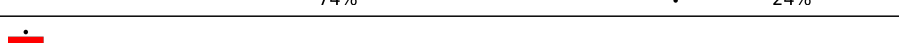
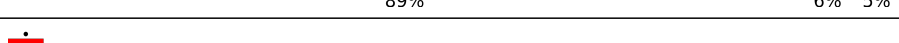
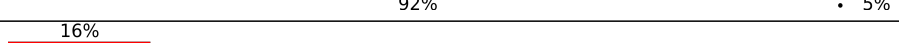
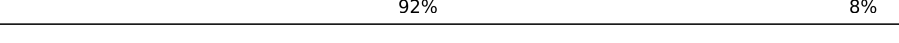
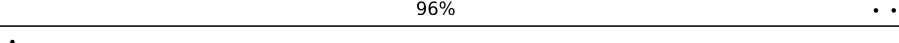
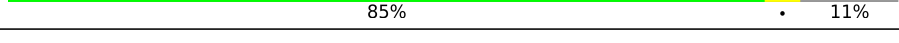
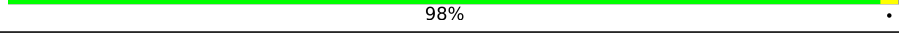


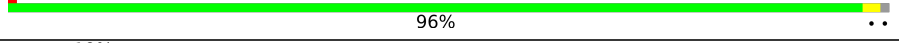
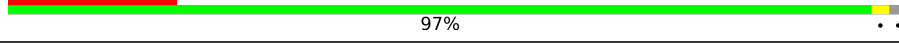

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Mol	Chain	Length	Quality of chain
34	Lf	110	 94% 5%
35	Lg	117	 94%
36	Lh	123	 97%
37	Li	105	 94%
38	Lj	97	 85% 11%
39	Lk	70	 96%
40	Ll	51	 94%
41	Lm	128	 38% 59%
42	Ln	25	 92%
43	Lo	106	 95%
44	Lp	92	 98%
45	Lr	137	 89% 9%
46	Ls	317	 35% 61% 38%
47	Lt	165	 58% 81% 15%
48	Lz	217	 57% 94% 6%
49	S2	1869	 71% 21% 7%
50	SA	295	 72% 25%
51	SB	264	 78% 19%
52	SD	243	 89% 5% 7%
53	SE	263	 97%
54	SF	204	 85% 5% 10%
55	SH	194	 91% 5%
56	SI	208	 97%
57	SK	165	 52% 5% 42%
58	SL	158	 88% 9%

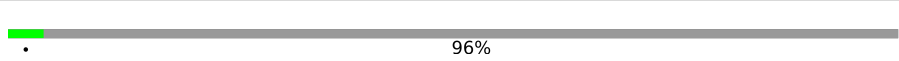


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Mol	Chain	Length	Quality of chain
59	SP	145	
60	SQ	146	
61	SR	135	
62	SS	152	
63	ST	145	
64	SU	119	
65	SV	83	
66	SX	143	
67	Sa	115	
68	Sc	69	
69	Sd	56	
70	Sg	317	
71	SC	293	
72	SG	249	
73	SJ	194	
74	SM	132	
75	SN	151	
76	SO	151	
77	SW	130	
78	SY	133	
79	SZ	125	
80	Sb	84	
81	Se	59	
82	Sf	156	
83	CA	394	

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Mol	Chain	Length	Quality of chain
84	CB	408	 96%
85	CC	75	 12% 69% 31%
86	CE	223	 16% 30% 67%

## 2 Entry composition

There are 89 unique types of molecules in this entry. The entry contains 223987 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	L5	3771	80096	35636	14582	26108	3770	0	0

- Molecule 2 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	L7	120	2561	1141	456	844	120	0	0

- Molecule 3 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	L8	156	3314	1480	585	1094	155	0	0

- Molecule 4 is a protein called 60S ribosomal protein L8.

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

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	LB	402	3238	2060	608	556	14	0	0

- Molecule 6 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	LC	368	2927	1840	583	489	15	0	0

- Molecule 7 is a protein called 60S ribosomal protein L5.

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

- Molecule 8 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	LE	221	1774	1142	336	292	4	0	0

- Molecule 9 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	LF	225	1870	1202	358	301	9	0	0

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

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

- Molecule 11 is a protein called 60S ribosomal protein L9.

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

- Molecule 12 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	LI	202	1639	1041	316	269	13	0	0

- Molecule 13 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	LJ	176	1410	888	263	253	6	0	0

- Molecule 14 is a protein called 60S ribosomal protein L13.



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

- Molecule 15 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LM	139	Total	C	N	O	S	0	0
			1138	730	218	183	7		

- Molecule 16 is a protein called 60S ribosomal protein L15.

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

- Molecule 17 is a protein called 60S ribosomal protein L13a.

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

- Molecule 18 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LP	153	Total	C	N	O	S	0	0
			1242	776	241	216	9		

- Molecule 19 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LQ	187	Total	C	N	O	S	0	0
			1513	944	314	250	5		

- Molecule 20 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LR	187	Total	C	N	O	S	0	0
			1566	971	336	250	9		

- Molecule 21 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	LS	175	1453	925	283	235	10	0	0

- Molecule 22 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	LT	159	1298	823	252	217	6	0	0

- Molecule 23 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	LU	100	816	524	142	148	2	0	0

- Molecule 24 is a protein called 60S ribosomal protein L23.

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

- Molecule 25 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	LW	124	1015	634	207	170	4	0	0

- Molecule 26 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	LX	120	985	630	185	169	1	0	0

- Molecule 27 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	LY	133	1106	694	224	185	3	0	0

- Molecule 28 is a protein called 60S ribosomal protein L27.

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

- Molecule 29 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	La	147	1162	736	237	186	3	0	0

- Molecule 30 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	Lb	109	876	546	189	137	4	0	0

- Molecule 31 is a protein called 60S ribosomal protein L30.

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

- Molecule 32 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	Ld	107	888	560	171	155	2	0	0

- Molecule 33 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	Le	128	1053	667	216	165	5	0	0

- Molecule 34 is a protein called 60S ribosomal protein L35a.

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

- Molecule 35 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	Lg	114	906	566	187	147	6	0	0

- Molecule 36 is a protein called 60S ribosomal protein L35.

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

- Molecule 37 is a protein called 60S ribosomal protein L36.

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

- Molecule 38 is a protein called 60S ribosomal protein L37.

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

- Molecule 39 is a protein called 60S ribosomal protein L38.

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

- Molecule 40 is a protein called 60S ribosomal protein L39.

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

- Molecule 41 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	Lm	52	430	267	90	67	6	0	0

- Molecule 42 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Ln	24	Total	C	N	O	S	0	0
			230	139	62	26	3		

- Molecule 43 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lo	105	Total	C	N	O	S	0	0
			862	542	175	139	6		

- Molecule 44 is a protein called 60S ribosomal protein L37a.

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

- Molecule 45 is a protein called 60S ribosomal protein L28.

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

- Molecule 46 is a protein called Large ribosomal subunit protein uL10.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Ls	196	Total	C	N	O	S	0	0
			1496	952	259	276	9		

- Molecule 47 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lt	141	Total	C	N	O	S	0	0
			1046	652	191	199	4		

- Molecule 48 is a protein called 60S ribosomal protein L10a.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	Lz	205	Total	C	N	O	0	0
			1018	607	205	206		

- Molecule 49 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
49	S2	1740	36896	16458	6597	12102	1739	0	0

- Molecule 50 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	SA	221	1741	1106	305	322	8	0	0

- Molecule 51 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	SB	214	1738	1103	310	311	14	0	0

- Molecule 52 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	SD	227	1765	1125	317	315	8	0	0

- Molecule 53 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	SE	262	2076	1324	386	358	8	0	0

- Molecule 54 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	SF	184	1461	914	276	264	7	0	0

- Molecule 55 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	SH	186	1497	956	274	266	1	0	0

- Molecule 56 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SI	206	Total	C	N	O	S	0	0
			1686	1058	332	291	5		

- Molecule 57 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SK	95	Total	C	N	O	S	0	0
			799	524	139	130	6		

- Molecule 58 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	SL	144	Total	C	N	O	S	0	0
			1182	752	224	200	6		

- Molecule 59 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SP	129	Total	C	N	O	S	0	0
			1061	672	202	180	7		

- Molecule 60 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SQ	144	Total	C	N	O	S	0	0
			1142	726	216	197	3		

- Molecule 61 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	SR	135	Total	C	N	O	S	0	0
			1090	685	202	198	5		

- Molecule 62 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	SS	144	Total	C	N	O	S	0	0
			1190	746	241	202	1		

- Molecule 63 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	ST	143	1112	697	214	198	3	0	0

- Molecule 64 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	SU	104	821	514	155	148	4	0	0

- Molecule 65 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	SV	83	636	393	117	121	5	0	0

- Molecule 66 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	SX	141	1098	693	219	183	3	0	0

- Molecule 67 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	Sa	102	821	512	171	133	5	0	0

- Molecule 68 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	Sc	64	506	308	102	94	2	0	0

- Molecule 69 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	Sd	55	459	286	94	74	5	0	0

- Molecule 70 is a protein called Receptor of activated protein C kinase 1.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	Sg	313	2436	1535	424	465	12	0	0

- Molecule 71 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	SC	222	1725	1115	298	302	10	0	0

- Molecule 72 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	SG	237	1923	1200	387	329	7	0	0

- Molecule 73 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	SJ	185	1525	969	306	248	2	0	0

- Molecule 74 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
74	SM	122	604	359	122	123	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SM	52	GLN	LEU	conflict	UNP P25398
SM	69	LEU	CYS	conflict	UNP P25398
SM	99	ASN	LYS	conflict	UNP P25398

- Molecule 75 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
75	SN	150	1208	773	229	205	1	0	0

- Molecule 76 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
76	SO	135	1010	618	198	188	6	0	0

- Molecule 77 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
77	SW	129	1034	659	193	176	6	0	0

- Molecule 78 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
78	SY	126	1027	648	201	173	5	0	0

- Molecule 79 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
79	SZ	75	598	382	111	104	1	0	0

- Molecule 80 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
80	Sb	83	651	408	121	115	7	0	0

- Molecule 81 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
81	Se	58	459	284	100	74	1	0	0

- Molecule 82 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	Sf	67	548	346	102	93	7	0	0

- Molecule 83 is a protein called Proliferation-associated protein 2G4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
83	CA	354	2764	1744	475	528	17	4	0

- Molecule 84 is a protein called SERPINE1 mRNA-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
84	CB	16	127	80	22	24	1	0	0

- Molecule 85 is a RNA chain called tRNA-Met.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
85	CC	75	1607	717	298	517	75	0	0

- Molecule 86 is a protein called Coiled-coil domain-containing protein 124.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
86	CE	73	613	369	122	121	1	0	0

- Molecule 87 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

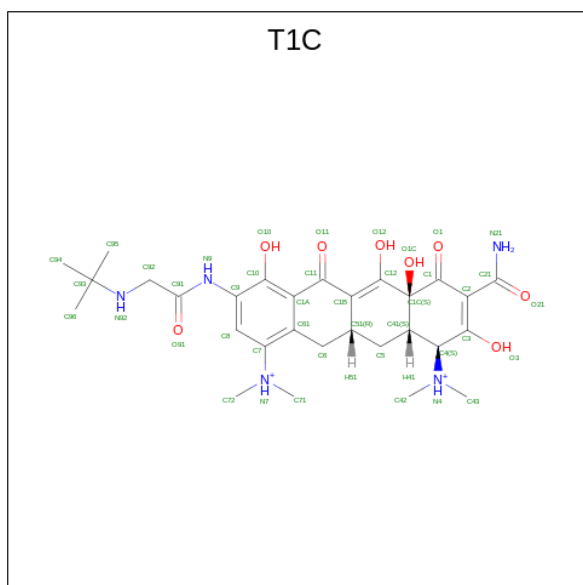
Mol	Chain	Residues	Atoms		AltConf
87	L5	215	Total	Mg	0
			215	215	
87	L7	3	Total	Mg	0
			3	3	
87	L8	4	Total	Mg	0
			4	4	
87	LA	1	Total	Mg	0
			1	1	
87	LP	1	Total	Mg	0
			1	1	
87	LV	1	Total	Mg	0
			1	1	
87	Le	2	Total	Mg	0
			2	2	
87	Lg	1	Total	Mg	0
			1	1	
87	Lj	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
87	S2	29	Total	Mg	0
			29	29	
87	SG	1	Total	Mg	0
			1	1	

- Molecule 88 is TIGECYCLINE (three-letter code: T1C) (formula: C<sub>29</sub>H<sub>41</sub>N<sub>5</sub>O<sub>8</sub>).



Mol	Chain	Residues	Atoms				AltConf
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	L5	1	Total	C	N	O	0
			42	29	5	8	
88	S2	1	Total	C	N	O	0
			42	29	5	8	
88	CC	1	Total	C	N	O	0
			42	29	5	8	

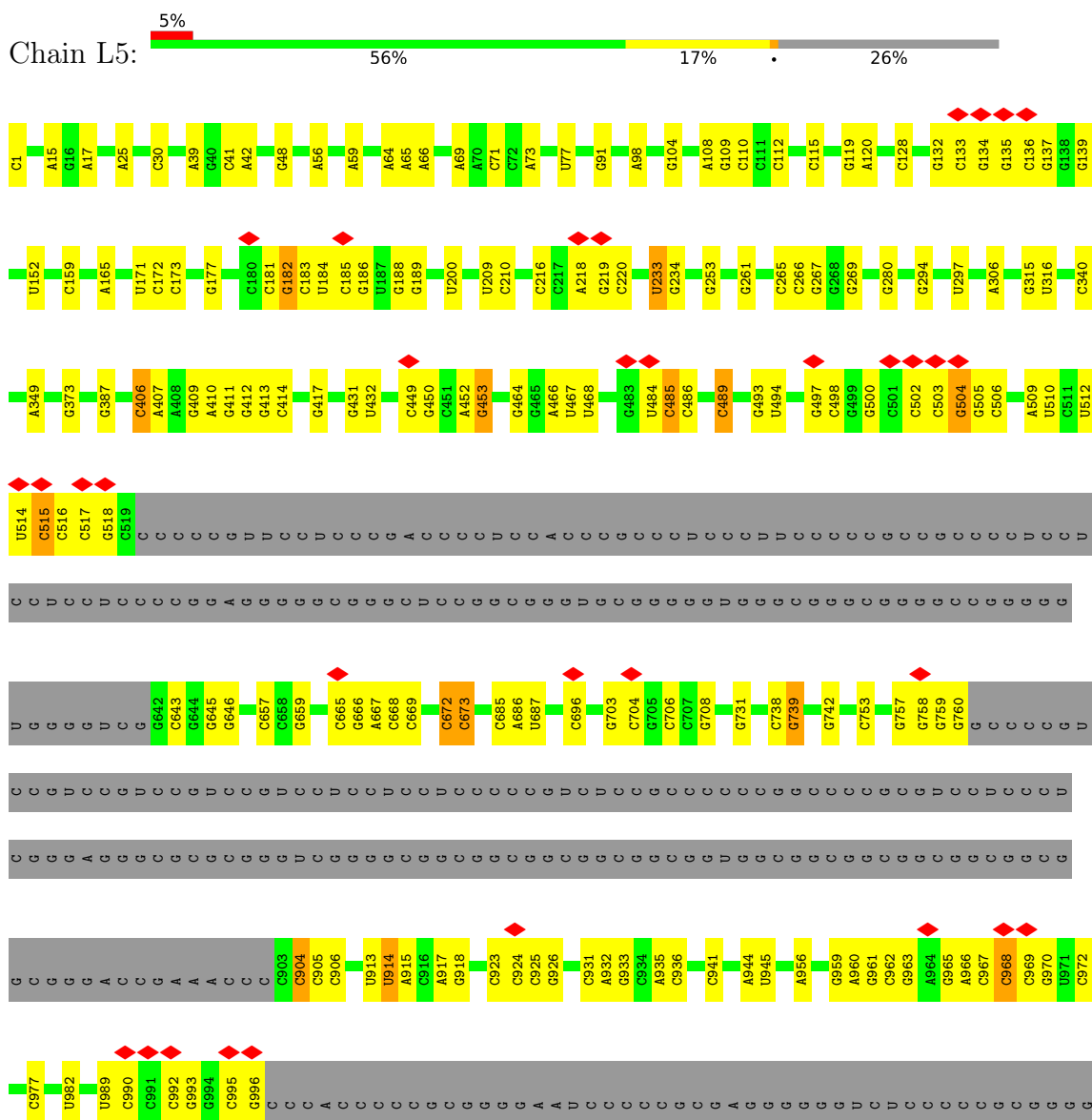
- Molecule 89 is ZINC ION (three-letter code: ZN) (formula: Zn).

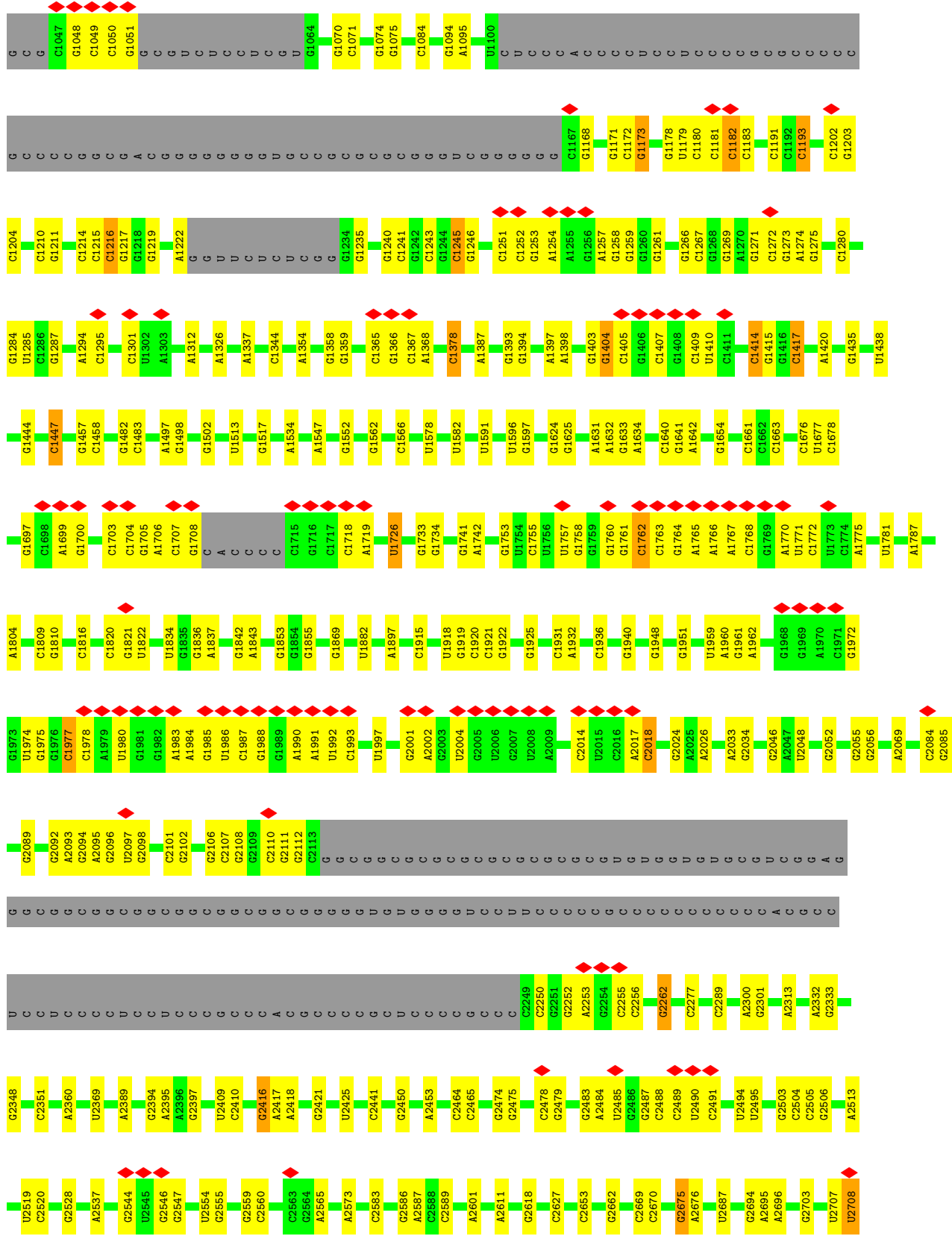
Mol	Chain	Residues	Atoms		AltConf
89	Lg	1	Total 1	Zn 1	0
89	Lj	1	Total 1	Zn 1	0
89	Lm	1	Total 1	Zn 1	0
89	Lo	1	Total 1	Zn 1	0
89	Lp	1	Total 1	Zn 1	0
89	Sa	1	Total 1	Zn 1	0
89	Sd	1	Total 1	Zn 1	0
89	Sf	1	Total 1	Zn 1	0

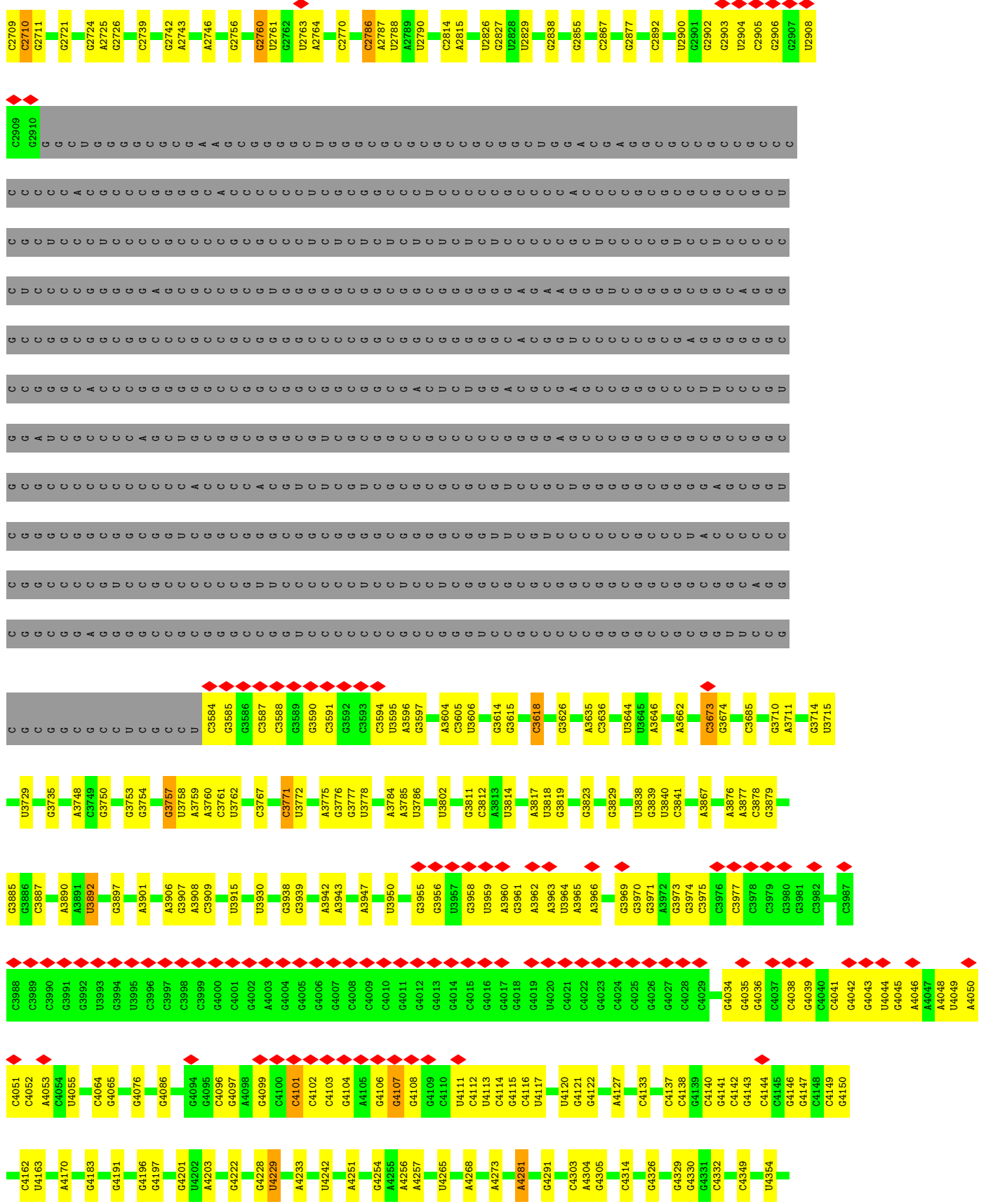
### 3 Residue-property plots [i](#)

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

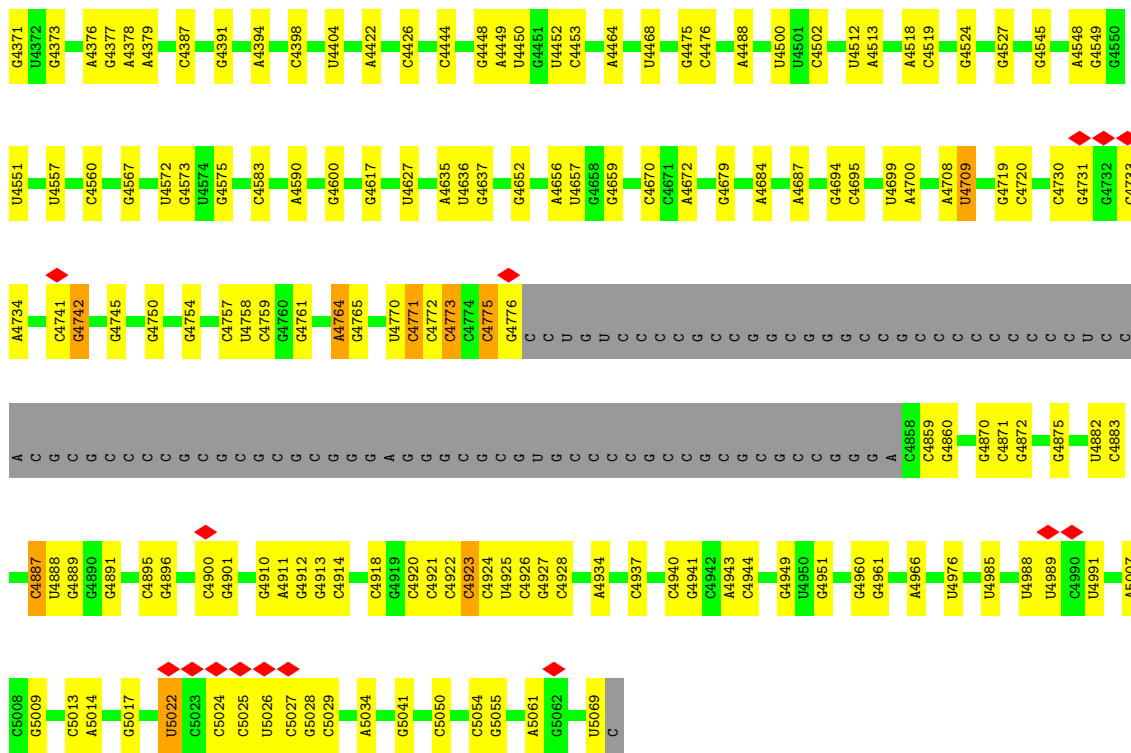
- Molecule 1: 28S rRNA



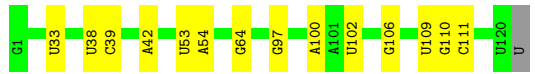
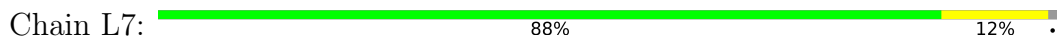




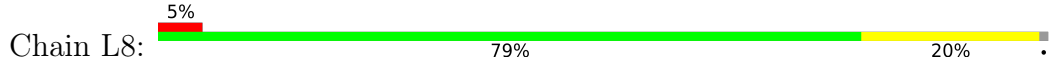




• Molecule 2: 5S rRNA



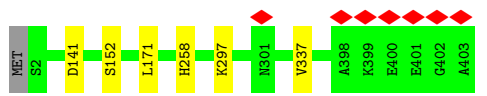
• Molecule 3: 5.8S rRNA



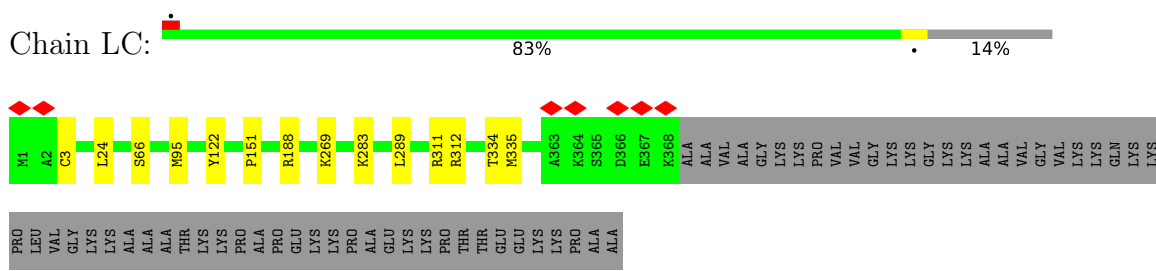
• Molecule 4: 60S ribosomal protein L8



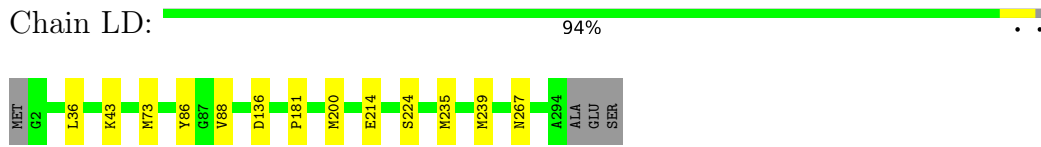
• Molecule 5: 60S ribosomal protein L3



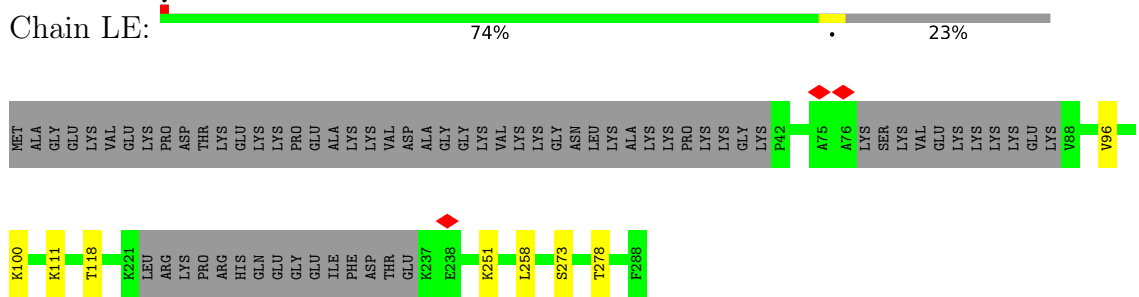
• Molecule 6: 60S ribosomal protein L4



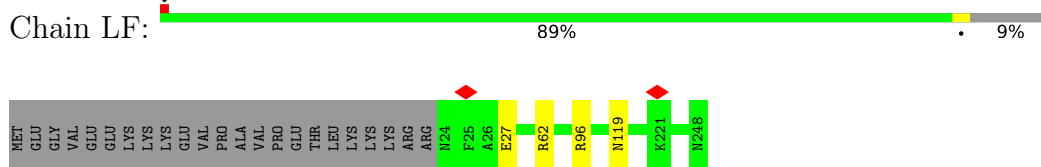
• Molecule 7: 60S ribosomal protein L5



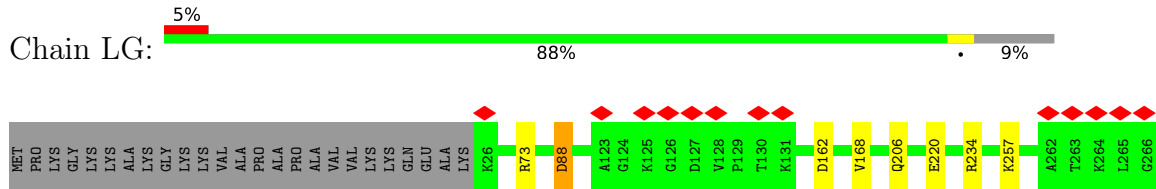
• Molecule 8: 60S ribosomal protein L6



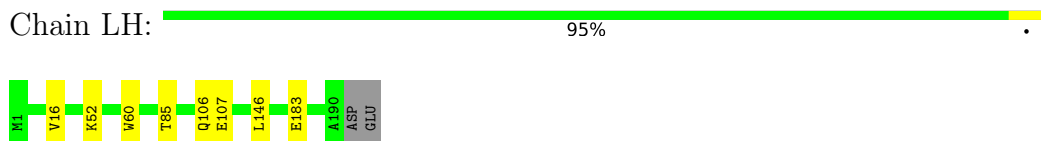
• Molecule 9: 60S ribosomal protein L7



• Molecule 10: 60S ribosomal protein L7a

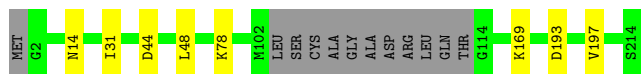


• Molecule 11: 60S ribosomal protein L9



- Molecule 12: Large ribosomal subunit protein uL16

Chain LI:  91% 6%



- Molecule 13: 60S ribosomal protein L11

Chain LJ:  93% 6%



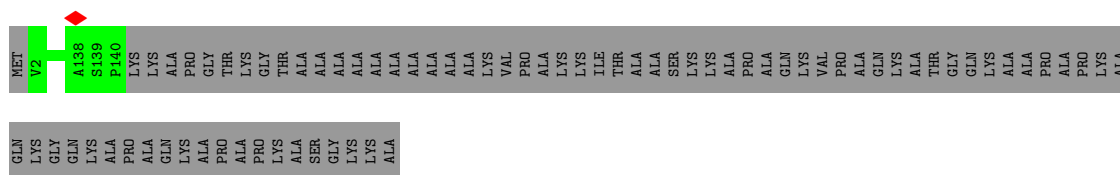
- Molecule 14: 60S ribosomal protein L13

Chain LL:  94% 5%



- Molecule 15: 60S ribosomal protein L14

Chain LM:  65% 35%



- Molecule 16: 60S ribosomal protein L15

Chain LN:  98%




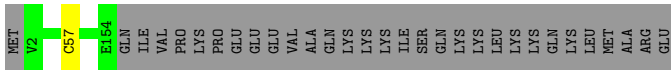
- Molecule 17: 60S ribosomal protein L13a

Chain LO:  96%

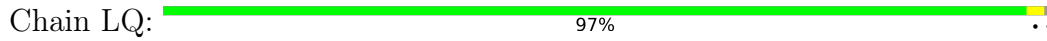


- Molecule 18: 60S ribosomal protein L17

Chain LP:  83% 17%



- Molecule 19: 60S ribosomal protein L18



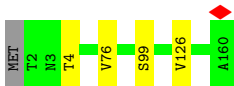
- Molecule 20: 60S ribosomal protein L19



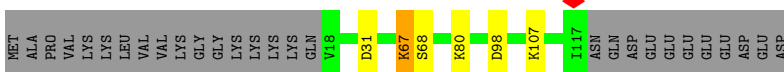
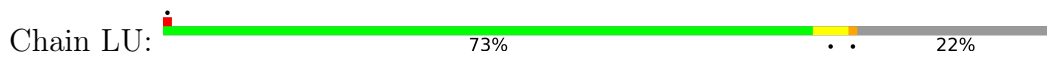
- Molecule 21: 60S ribosomal protein L18a



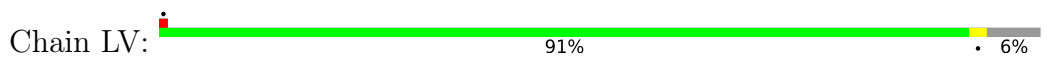
- Molecule 22: 60S ribosomal protein L21



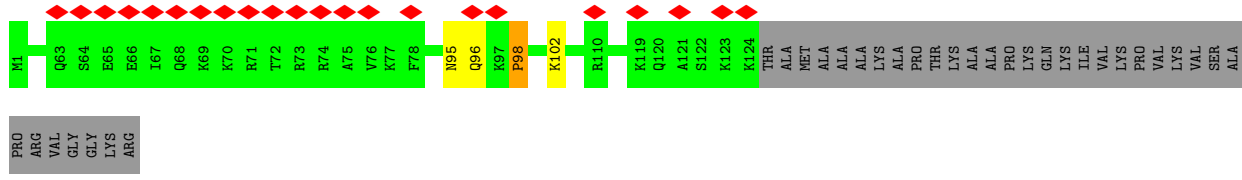
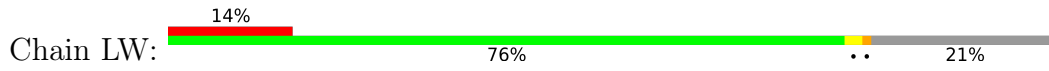
- Molecule 23: 60S ribosomal protein L22



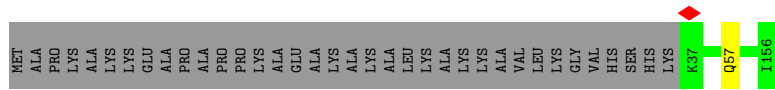
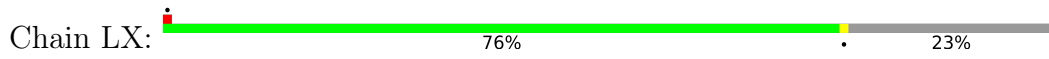
- Molecule 24: 60S ribosomal protein L23



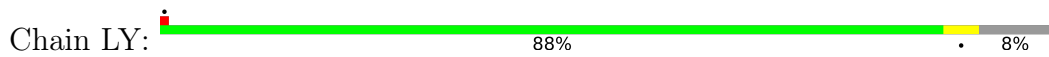
- Molecule 25: 60S ribosomal protein L24



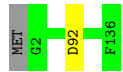
• Molecule 26: 60S ribosomal protein L23a



• Molecule 27: 60S ribosomal protein L26



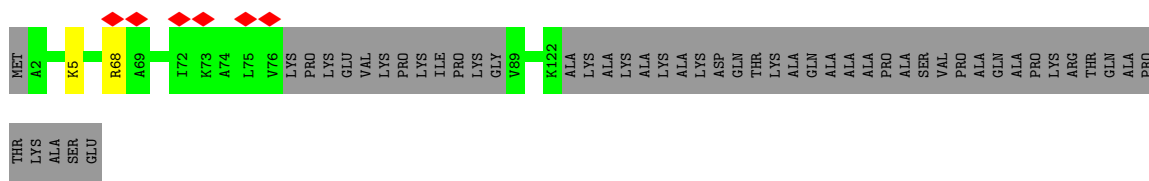
• Molecule 28: 60S ribosomal protein L27




• Molecule 29: 60S ribosomal protein L27a



• Molecule 30: 60S ribosomal protein L29




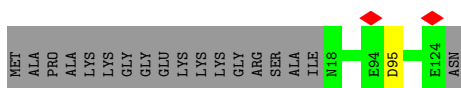
• Molecule 31: 60S ribosomal protein L30

Chain Lc:  85% 15%



- Molecule 32: 60S ribosomal protein L31

Chain Ld:  85% 14%



- Molecule 33: 60S ribosomal protein L32

Chain Le:  93% 5%



- Molecule 34: 60S ribosomal protein L35a

Chain Lf:  94% 5%



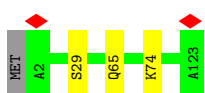
- Molecule 35: 60S ribosomal protein L34

Chain Lg:  94%



- Molecule 36: 60S ribosomal protein L35

Chain Lh:  97%



- Molecule 37: 60S ribosomal protein L36

Chain Li:  94%



- Molecule 38: 60S ribosomal protein L37

Chain Lj: 85% 11%



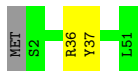
- Molecule 39: 60S ribosomal protein L38

Chain Lk: 96%



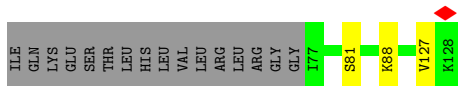
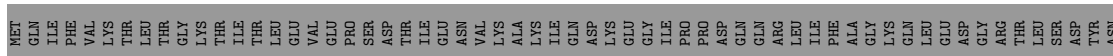
- Molecule 40: 60S ribosomal protein L39

Chain Ll: 94%



- Molecule 41: Ubiquitin-60S ribosomal protein L40

Chain Lm: 38% 59%



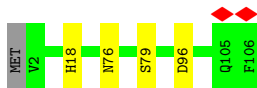
- Molecule 42: 60S ribosomal protein L41

Chain Ln: 92%



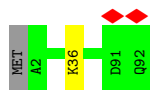
- Molecule 43: 60S ribosomal protein L36a

Chain Lo: 95%

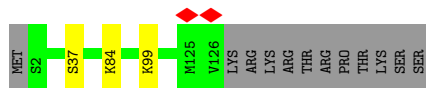


- Molecule 44: 60S ribosomal protein L37a

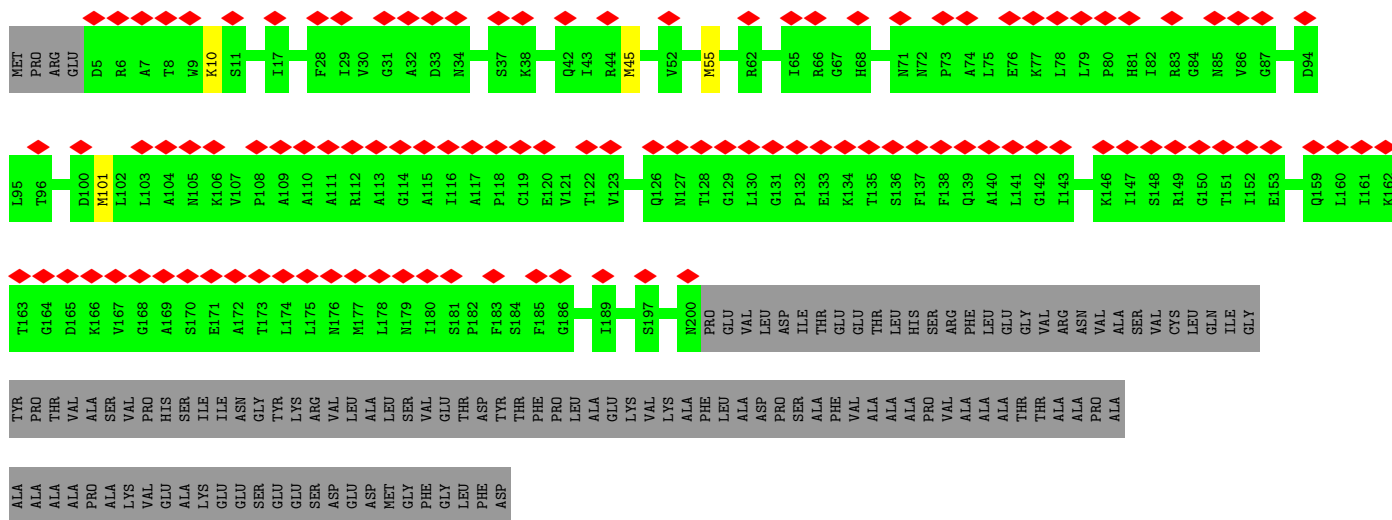
Chain Lp: 98%



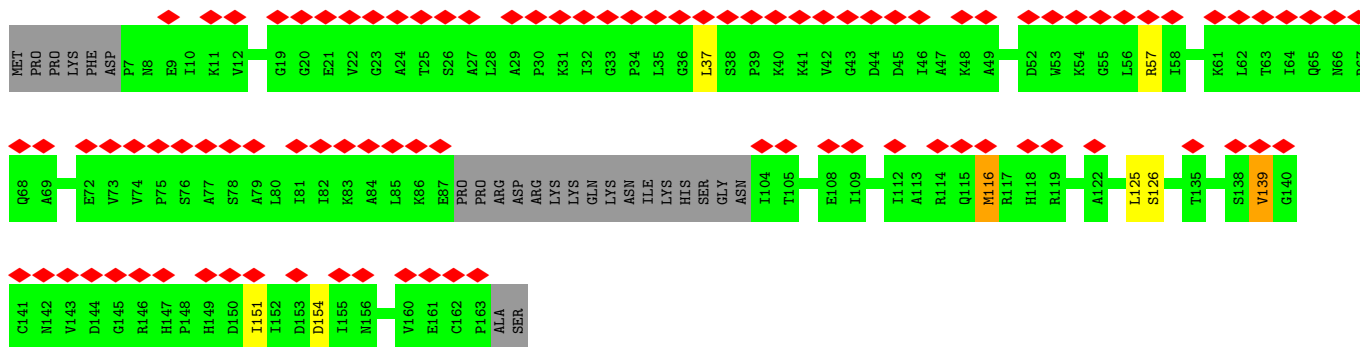
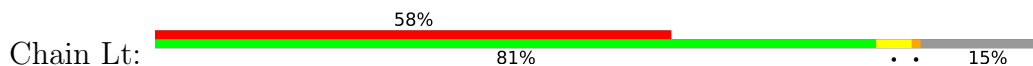
• Molecule 45: 60S ribosomal protein L28



• Molecule 46: Large ribosomal subunit protein uL10



• Molecule 47: 60S ribosomal protein L12




• Molecule 48: 60S ribosomal protein L10a









Chain SF:  85% 5% 10%



- Molecule 55: 40S ribosomal protein S7

Chain SH:  91% 5%



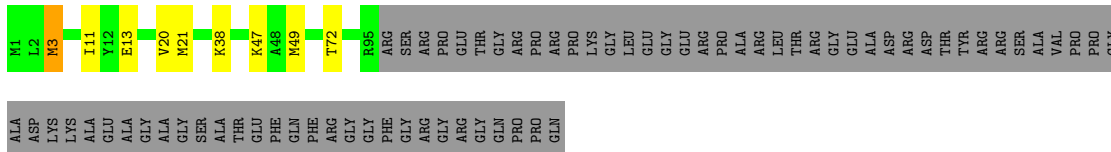
- Molecule 56: 40S ribosomal protein S8

Chain SI:  97%




- Molecule 57: 40S ribosomal protein S10

Chain SK:  52% 5% 42%




- Molecule 58: 40S ribosomal protein S11

Chain SL:  88% 5% 9%



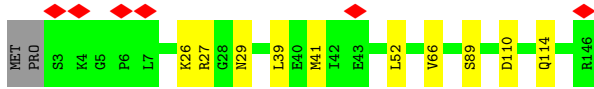
- Molecule 59: 40S ribosomal protein S15

Chain SP:  7% 83% 5% 11%

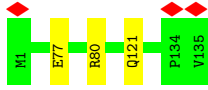


- Molecule 60: 40S ribosomal protein S16

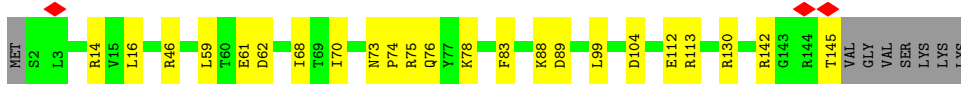
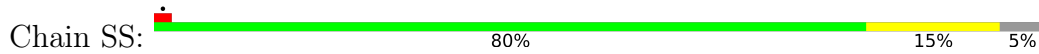
Chain SQ:  92% 7%



- Molecule 61: 40S ribosomal protein S17



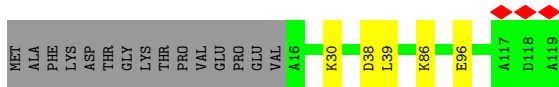
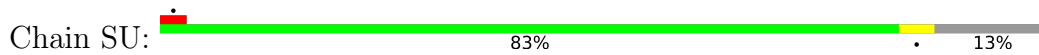
- Molecule 62: 40S ribosomal protein S18



- Molecule 63: 40S ribosomal protein S19



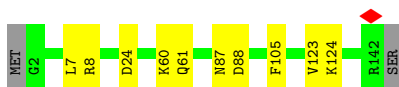
- Molecule 64: 40S ribosomal protein S20



- Molecule 65: 40S ribosomal protein S21



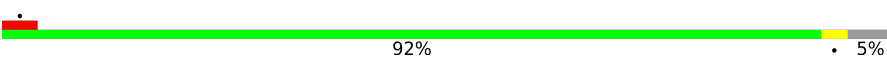
- Molecule 66: 40S ribosomal protein S23

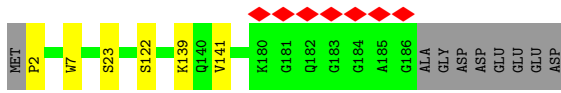


- Molecule 67: 40S ribosomal protein S26



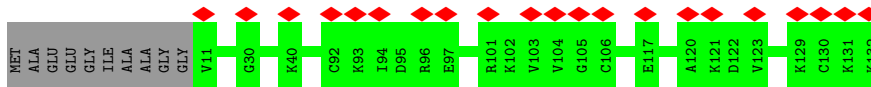
- Molecule 73: 40S ribosomal protein S9

Chain SJ:  92% 5%



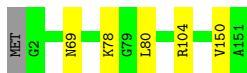
- Molecule 74: 40S ribosomal protein S12

Chain SM:  16% 92% 8%




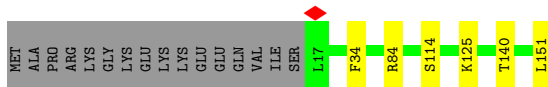
- Molecule 75: 40S ribosomal protein S13

Chain SN:  96%



- Molecule 76: 40S ribosomal protein S14

Chain SO:  85% 11%

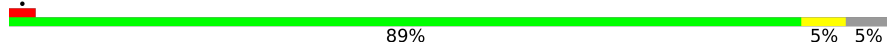


- Molecule 77: 40S ribosomal protein S15a

Chain SW:  98%



- Molecule 78: 40S ribosomal protein S24

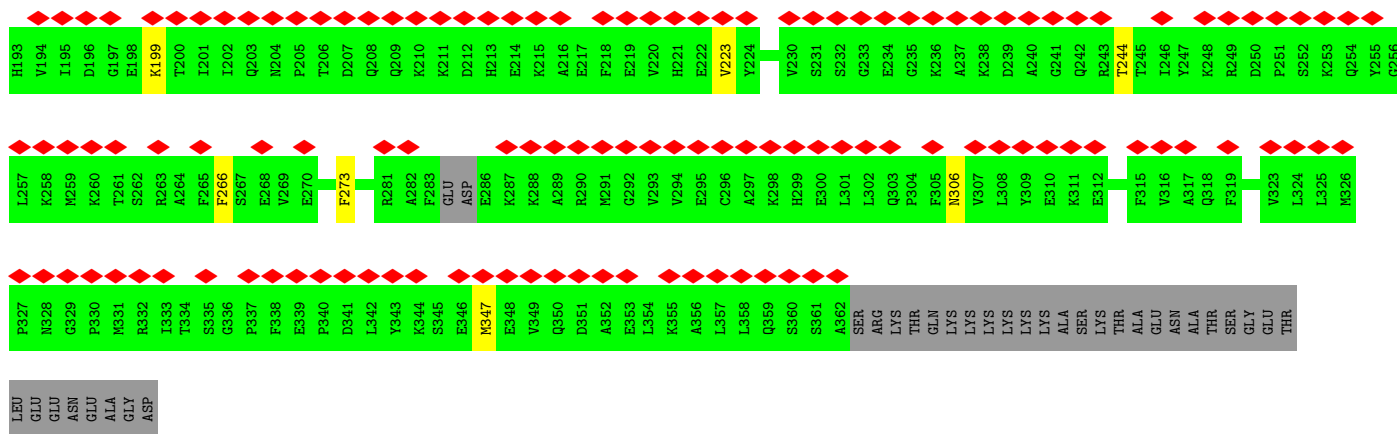
Chain SY:  89% 5% 5%



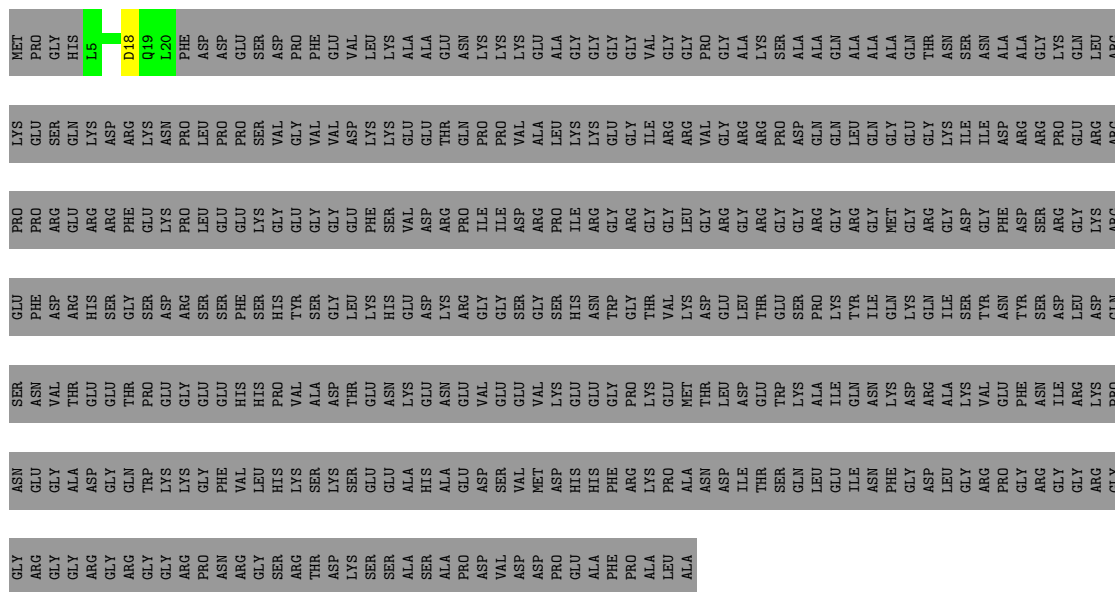
- Molecule 79: 40S ribosomal protein S25

Chain SZ:  56% 40%





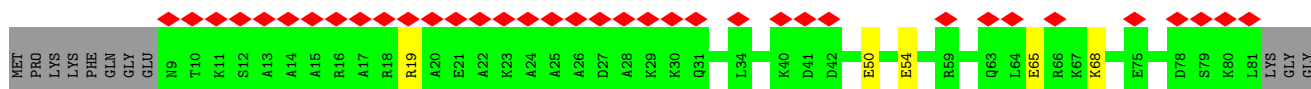
• Molecule 84: SERPINE1 mRNA-binding protein 1



• Molecule 85: tRNA-Met



• Molecule 86: Coiled-coil domain-containing protein 124





LYS  
ALA  
PRO  
ARG  
VAL  
ALA  
THR  
SER  
SER  
LYS  
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ARG  
ALA  
GLN  
ILE  
GLU  
ALA  
GLU  
THR  
LEU  
ARG  
PRO  
GLU  
ARG  
ASP  
HIS  
ARG  
MET  
GLN  
LEU  
ARG  
ALA  
GLU  
PHE  
ALA  
PRO  
THR  
ALA  
ASP  
THR  
PHE  
GLU  
GLU  
ALA  
LYS  
LYS  
LEU  
SER  
HIS  
LEU  
GLU  
LYS  
VAL  
GLN  
PRO  
LEU  
ASN  
GLU  
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GLN  
ARG  
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LEU  
LYS  
GLN  
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LEU  
LYS  
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GLU  
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LYS  
SER  
VAL  
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TRP

LEU  
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SER  
PRO  
ASP  
ASN  
PRO  
MET  
ASN  
GLN  
ARG  
VAL  
VAL  
PRO  
PHE  
ASN  
ALA  
PRO  
LYS

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	157229	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; Relion	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.625	Depositor
Minimum map value	-0.055	Depositor
Average map value	0.005	Depositor
Map value standard deviation	0.051	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	447.36, 447.36, 447.36	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.932, 0.932, 0.932	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: T1C, ZN, MLZ, MG

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	L5	0.48	0/89548	0.98	229/139613 (0.2%)
2	L7	0.46	0/2861	0.88	3/4459 (0.1%)
3	L8	0.45	0/3701	0.87	2/5766 (0.0%)
4	LA	0.48	0/1936	0.80	2/2596 (0.1%)
5	LB	0.39	0/3306	0.64	0/4424
6	LC	0.42	0/2981	0.70	1/4002 (0.0%)
7	LD	0.42	0/2428	0.62	1/3252 (0.0%)
8	LE	0.39	0/1808	0.65	0/2425
9	LF	0.36	0/1905	0.60	0/2539
10	LG	0.39	0/1960	0.61	1/2637 (0.0%)
11	LH	0.41	0/1537	0.66	0/2066
12	LI	0.40	0/1677	0.63	0/2237
13	LJ	0.45	0/1433	0.64	0/1915
14	LL	0.42	0/1732	0.72	1/2315 (0.0%)
15	LM	0.39	0/1161	0.64	0/1554
16	LN	0.35	0/1746	0.66	0/2338
17	LO	0.41	0/1682	0.67	0/2250
18	LP	0.38	0/1268	0.64	0/1701
19	LQ	0.43	0/1537	0.69	0/2052
20	LR	0.34	0/1582	0.61	0/2091
21	LS	0.45	0/1493	0.70	1/2003 (0.0%)
22	LT	0.48	0/1326	0.69	0/1770
23	LU	0.47	0/830	0.67	0/1114
24	LV	0.43	0/993	0.68	0/1332
25	LW	0.34	0/1030	0.61	0/1364
26	LX	0.32	0/1002	0.59	0/1345
27	LY	0.41	0/1123	0.65	0/1493
28	LZ	0.43	0/1130	0.66	1/1507 (0.1%)
29	La	0.39	0/1191	0.64	0/1591
30	Lb	0.34	0/889	0.60	0/1175
31	Lc	0.48	0/774	0.65	0/1038
32	Ld	0.40	0/903	0.65	0/1216

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	Le	0.44	0/1071	0.69	0/1429
34	Lf	0.48	0/895	0.69	0/1198
35	Lg	0.46	0/916	0.61	0/1220
36	Lh	0.41	0/1023	0.60	0/1351
37	Li	0.45	0/843	0.61	0/1115
38	Lj	0.44	0/720	0.70	0/952
39	Lk	0.48	0/575	0.63	0/761
40	Ll	0.50	0/454	0.63	0/599
41	Lm	0.37	0/425	0.65	0/561
42	Ln	0.41	0/231	0.69	0/294
43	Lo	0.47	0/876	0.62	0/1156
44	Lp	0.42	0/718	0.59	0/953
45	Lr	0.51	0/1017	0.66	0/1364
46	Ls	0.37	0/1519	0.63	0/2052
47	Lt	0.35	0/1058	0.74	3/1430 (0.2%)
48	Lz	0.43	0/1017	0.62	0/1416
49	S2	0.42	0/41241	0.93	73/64258 (0.1%)
50	SA	0.49	0/1778	0.61	0/2416
51	SB	0.36	0/1765	0.61	2/2362 (0.1%)
52	SD	0.43	0/1793	0.67	1/2414 (0.0%)
53	SE	0.36	0/2118	0.58	0/2849
54	SF	0.50	0/1481	0.61	0/1988
55	SH	0.42	0/1519	0.64	1/2033 (0.0%)
56	SI	0.43	0/1715	0.61	0/2287
57	SK	0.59	2/823 (0.2%)	0.84	2/1111 (0.2%)
58	SL	0.49	0/1202	0.59	0/1606
59	SP	0.38	0/1082	0.74	4/1446 (0.3%)
60	SQ	0.52	0/1160	0.70	1/1553 (0.1%)
61	SR	0.50	0/1105	0.61	0/1484
62	SS	0.48	0/1208	0.74	1/1618 (0.1%)
63	ST	0.39	0/1131	0.63	1/1515 (0.1%)
64	SU	0.47	0/831	0.59	0/1115
65	SV	0.47	0/643	0.60	0/860
66	SX	0.48	0/1116	0.71	1/1490 (0.1%)
67	Sa	0.41	0/836	0.65	0/1121
68	Sc	0.57	0/508	0.69	0/680
69	Sd	0.31	0/470	0.71	1/623 (0.2%)
70	Sg	0.46	0/2493	0.71	2/3394 (0.1%)
71	SC	0.40	0/1762	0.60	0/2381
72	SG	0.39	0/1946	0.69	2/2590 (0.1%)
73	SJ	0.48	1/1550 (0.1%)	0.61	0/2069
74	SM	0.31	0/603	0.57	0/837
75	SN	0.39	0/1232	0.59	0/1656

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
76	SO	0.47	0/1023	0.66	0/1372
77	SW	0.45	0/1051	0.66	0/1406
78	SY	0.43	0/1044	0.64	0/1388
79	SZ	0.48	0/604	0.74	0/810
80	Sb	0.44	0/665	0.62	0/891
81	Se	0.36	0/465	0.58	0/612
82	Sf	0.31	0/560	0.66	0/745
83	CA	0.30	0/2810	0.64	6/3780 (0.2%)
84	CB	0.63	0/128	0.67	0/171
85	CC	0.34	0/1798	0.94	0/2802
86	CE	0.36	0/616	0.59	0/812
All	All	0.44	3/239706 (0.0%)	0.85	343/351576 (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
5	LB	0	1
34	Lf	0	1
54	SF	0	1
All	All	0	3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
73	SJ	2	PRO	N-CD	-8.97	1.35	1.47
57	SK	13	GLU	CD-OE1	-5.81	1.19	1.25
57	SK	13	GLU	CB-CG	5.46	1.62	1.52

All (343) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	1367	C	N1-C2-O2	12.48	126.39	118.90
1	L5	485	C	C2-N1-C1'	12.40	132.44	118.80
1	L5	1367	C	C2-N1-C1'	12.28	132.30	118.80
49	S2	839	C	N1-C2-O2	10.51	125.20	118.90
1	L5	417	G	O4'-C1'-N9	10.37	116.50	108.20
1	L5	515	C	N1-C2-O2	9.98	124.89	118.90
1	L5	1367	C	N3-C2-O2	-9.97	114.92	121.90
1	L5	4923	C	N3-C2-O2	-9.96	114.92	121.90

*Continued on next page...*

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	1414	C	N3-C2-O2	-9.80	115.04	121.90
1	L5	4149	C	N3-C2-O2	-9.76	115.07	121.90
49	S2	839	C	N3-C2-O2	-9.73	115.09	121.90
1	L5	2814	C	N1-C2-O2	9.58	124.65	118.90
1	L5	3715	U	N3-C2-O2	-9.54	115.52	122.20
1	L5	4921	C	N3-C2-O2	-9.35	115.36	121.90
1	L5	4138	C	N3-C2-O2	-9.13	115.51	121.90
1	L5	485	C	C6-N1-C1'	-9.05	109.94	120.80
1	L5	4303	C	N3-C2-O2	-9.00	115.60	121.90
1	L5	2814	C	C2-N1-C1'	8.98	128.68	118.80
1	L5	4557	U	N3-C2-O2	-8.93	115.95	122.20
49	S2	1453	C	C2-N1-C1'	8.66	128.33	118.80
1	L5	968	C	O5'-P-OP1	-8.65	97.92	105.70
1	L5	1367	C	C6-N1-C1'	-8.46	110.65	120.80
49	S2	1453	C	N1-C2-O2	8.41	123.95	118.90
1	L5	2627	C	C2-N1-C1'	8.38	128.01	118.80
1	L5	1367	C	C6-N1-C2	-8.24	117.00	120.30
1	L5	4926	C	N1-C2-O2	8.19	123.81	118.90
1	L5	1252	C	N3-C2-O2	-8.17	116.18	121.90
1	L5	5022	U	N1-C2-O2	8.16	128.52	122.80
69	Sd	56	ASP	CB-CG-OD1	8.13	125.62	118.30
1	L5	485	C	N1-C2-O2	8.07	123.74	118.90
1	L5	2409	U	C2-N1-C1'	8.06	127.37	117.70
1	L5	2814	C	N3-C2-O2	-8.04	116.28	121.90
1	L5	2409	U	N3-C2-O2	-8.00	116.60	122.20
1	L5	2409	U	N1-C2-O2	7.95	128.37	122.80
1	L5	4926	C	C2-N1-C1'	7.92	127.51	118.80
1	L5	4557	U	C2-N1-C1'	7.87	127.14	117.70
1	L5	4303	C	C6-N1-C2	-7.84	117.17	120.30
1	L5	515	C	C2-N1-C1'	7.74	127.31	118.80
1	L5	1216	C	C2-N1-C1'	7.72	127.29	118.80
1	L5	4923	C	N1-C2-O2	7.68	123.51	118.90
59	SP	27	ASP	CB-CG-OD1	7.60	125.14	118.30
1	L5	925	C	N3-C2-O2	-7.57	116.60	121.90
1	L5	1414	C	N1-C2-O2	7.56	123.44	118.90
49	S2	1520	G	C4-N9-C1'	7.53	136.28	126.50
1	L5	504	G	C2-N3-C4	7.49	115.64	111.90
1	L5	4107	G	N1-C6-O6	-7.43	115.44	119.90
1	L5	4557	U	N1-C2-O2	7.42	127.99	122.80
49	S2	1022	U	C2-N1-C1'	7.41	126.59	117.70
1	L5	3715	U	C2-N1-C1'	7.39	126.57	117.70
49	S2	1271	C	N1-C2-O2	7.37	123.32	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	925	C	N1-C2-O2	7.36	123.31	118.90
1	L5	5022	U	N3-C2-O2	-7.34	117.06	122.20
1	L5	2410	C	C2-N1-C1'	7.29	126.82	118.80
1	L5	4303	C	N1-C2-O2	7.28	123.27	118.90
1	L5	4924	C	N3-C2-O2	-7.18	116.88	121.90
1	L5	4229	U	N3-C2-O2	-7.12	117.21	122.20
1	L5	1191	C	N3-C2-O2	-7.11	116.92	121.90
47	Lt	37	LEU	CA-CB-CG	7.07	131.56	115.30
1	L5	4758	U	C2-N1-C1'	7.04	126.14	117.70
1	L5	3715	U	N1-C2-O2	7.01	127.70	122.80
1	L5	1216	C	N1-C2-O2	7.00	123.10	118.90
1	L5	485	C	C6-N1-C2	-6.99	117.50	120.30
1	L5	1762	C	C2-N1-C1'	6.96	126.45	118.80
49	S2	833	C	N1-C2-O2	6.95	123.07	118.90
49	S2	1520	G	N3-C4-N9	6.87	130.12	126.00
47	Lt	116	MET	CG-SD-CE	6.87	111.19	100.20
55	SH	14	GLU	C-N-CA	6.87	138.86	121.70
1	L5	673	C	C2-N1-C1'	6.80	126.28	118.80
1	L5	4303	C	C2-N1-C1'	6.76	126.24	118.80
49	S2	1309	C	C2-N1-C1'	6.75	126.23	118.80
1	L5	1632	A	C2-N3-C4	6.75	113.97	110.60
1	L5	2262	G	C4-N9-C1'	6.75	135.27	126.50
49	S2	1520	G	C8-N9-C1'	-6.74	118.24	127.00
1	L5	1241	C	C2-N1-C1'	6.70	126.17	118.80
1	L5	4758	U	N3-C2-O2	-6.67	117.53	122.20
1	L5	1367	C	C5-C6-N1	6.65	124.33	121.00
1	L5	504	G	N3-C4-C5	-6.64	125.28	128.60
4	LA	123	ARG	CB-CA-C	6.61	123.63	110.40
1	L5	1762	C	N1-C2-O2	6.61	122.86	118.90
49	S2	659	G	C4-N9-C1'	6.60	135.08	126.50
49	S2	427	U	N3-C2-O2	-6.60	117.58	122.20
1	L5	3757	G	O4'-C1'-N9	6.58	113.46	108.20
1	L5	4758	U	N1-C2-O2	6.56	127.39	122.80
1	L5	963	G	C4-N9-C1'	6.55	135.01	126.50
1	L5	485	C	C5-C6-N1	6.52	124.26	121.00
47	Lt	116	MET	CA-CB-CG	6.49	124.34	113.30
1	L5	1193	C	C2-N1-C1'	6.48	125.92	118.80
49	S2	583	C	N1-C2-O2	6.44	122.77	118.90
1	L5	2708	U	C2-N1-C1'	6.44	125.43	117.70
1	L5	1216	C	N3-C2-O2	-6.42	117.41	121.90
1	L5	2262	G	N3-C4-C5	-6.40	125.40	128.60
49	S2	1865	C	C6-N1-C2	-6.39	117.74	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	453	G	N3-C4-C5	-6.39	125.41	128.60
1	L5	5022	U	C2-N1-C1'	6.39	125.37	117.70
14	LL	50	PRO	N-CA-C	6.38	128.69	112.10
1	L5	2262	G	N3-C4-N9	6.38	129.82	126.00
1	L5	489	C	C2-N1-C1'	6.36	125.79	118.80
1	L5	3778	U	N1-C2-O2	6.36	127.25	122.80
6	LC	151	PRO	N-CA-C	-6.35	95.59	112.10
1	L5	1182	C	N1-C2-O2	6.29	122.68	118.90
1	L5	516	C	N1-C2-O2	6.26	122.66	118.90
1	L5	3775	A	C2-N3-C4	-6.26	107.47	110.60
49	S2	537	C	C2-N1-C1'	6.25	125.67	118.80
49	S2	1261	C	C6-N1-C2	-6.24	117.81	120.30
1	L5	1417	C	C2-N1-C1'	6.23	125.66	118.80
49	S2	427	U	C2-N1-C1'	6.23	125.17	117.70
1	L5	2627	C	N1-C2-O2	6.22	122.63	118.90
49	S2	903	A	N7-C8-N9	6.21	116.90	113.80
1	L5	4926	C	N3-C2-O2	-6.20	117.56	121.90
1	L5	1216	C	C6-N1-C2	-6.20	117.82	120.30
1	L5	672	C	C2-N1-C1'	6.19	125.61	118.80
1	L5	209	U	C2-N1-C1'	6.18	125.12	117.70
1	L5	4229	U	N1-C2-O2	6.18	127.12	122.80
1	L5	4502	C	N1-C2-O2	6.18	122.61	118.90
1	L5	3775	A	N1-C2-N3	6.18	132.39	129.30
1	L5	2760	G	P-O3'-C3'	6.17	127.11	119.70
49	S2	1389	C	C2-N1-C1'	6.16	125.57	118.80
1	L5	3775	A	N7-C8-N9	6.16	116.88	113.80
1	L5	914	U	P-O3'-C3'	6.15	127.08	119.70
49	S2	1453	C	C6-N1-C1'	-6.15	113.42	120.80
1	L5	4921	C	N1-C2-O2	6.15	122.59	118.90
1	L5	115	C	C2-N1-C1'	6.14	125.56	118.80
1	L5	2814	C	C6-N1-C2	-6.14	117.84	120.30
49	S2	632	C	C2-N1-C1'	6.14	125.55	118.80
1	L5	453	G	C4-N9-C1'	6.13	134.48	126.50
1	L5	1762	C	N3-C2-O2	-6.13	117.61	121.90
1	L5	1182	C	C2-N1-C1'	6.13	125.55	118.80
60	SQ	114	GLN	CA-CB-CG	6.13	126.89	113.40
1	L5	2814	C	C6-N1-C1'	-6.11	113.47	120.80
1	L5	4107	G	C4-N9-C1'	6.11	134.44	126.50
1	L5	1	C	N1-C2-O2	6.08	122.55	118.90
1	L5	4101	C	N3-C4-C5	6.08	124.33	121.90
1	L5	4572	U	C2-N1-C1'	6.07	124.98	117.70
1	L5	3771	C	C2-N1-C1'	6.07	125.47	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	4572	U	N1-C2-O2	6.07	127.05	122.80
1	L5	2528	G	C4-N9-C1'	6.04	134.35	126.50
59	SP	70	MET	CA-CB-CG	6.04	123.57	113.30
49	S2	530	U	C2-N1-C1'	6.03	124.93	117.70
1	L5	3772	U	N3-C2-O2	-6.01	117.99	122.20
1	L5	515	C	N3-C2-O2	-6.01	117.69	121.90
49	S2	291	G	C2'-C3'-O3'	6.01	123.31	113.70
49	S2	1453	C	N3-C2-O2	-6.00	117.70	121.90
1	L5	1	C	C2-N1-C1'	6.00	125.39	118.80
1	L5	4149	C	C6-N1-C2	-5.98	117.91	120.30
1	L5	4281	A	O4'-C1'-N9	5.97	112.97	108.20
49	S2	1591	C	N1-C2-O2	5.96	122.48	118.90
51	SB	62	LEU	CA-CB-CG	5.96	129.00	115.30
49	S2	1022	U	N1-C2-O2	5.95	126.96	122.80
49	S2	659	G	C8-N9-C1'	-5.95	119.27	127.00
49	S2	1597	C	N3-C2-O2	-5.95	117.74	121.90
1	L5	4450	U	N3-C2-O2	-5.94	118.05	122.20
49	S2	1314	U	N1-C2-O2	5.93	126.95	122.80
1	L5	3772	U	C2-N1-C1'	5.93	124.82	117.70
1	L5	2018	C	C5-C6-N1	5.92	123.96	121.00
1	L5	4281	A	C8-N9-C4	-5.91	103.44	105.80
1	L5	182	G	N3-C4-C5	-5.91	125.65	128.60
1	L5	1552	G	O4'-C1'-N9	5.89	112.91	108.20
1	L5	2627	C	C6-N1-C2	-5.87	117.95	120.30
49	S2	1315	U	N1-C2-O2	5.87	126.91	122.80
1	L5	3767	C	C5-C6-N1	5.86	123.93	121.00
28	LZ	92	ASP	CB-CG-OD1	5.86	123.58	118.30
49	S2	1271	C	N3-C2-O2	-5.86	117.80	121.90
1	L5	4138	C	N1-C2-O2	5.86	122.41	118.90
1	L5	963	G	N3-C4-N9	5.85	129.51	126.00
63	ST	111	LYS	CA-CB-CG	5.84	126.25	113.40
49	S2	839	C	C6-N1-C2	-5.83	117.97	120.30
1	L5	753	C	C2-N1-C1'	5.82	125.20	118.80
1	L5	2416	G	P-O3'-C3'	5.81	126.67	119.70
1	L5	4773	C	N1-C2-O2	5.81	122.39	118.90
3	L8	128	C	C5-C6-N1	5.81	123.90	121.00
49	S2	1271	C	C2-N1-C1'	5.80	125.18	118.80
59	SP	70	MET	CB-CG-SD	5.80	129.79	112.40
57	SK	13	GLU	CA-CB-CG	5.79	126.15	113.40
1	L5	4138	C	C6-N1-C2	-5.78	117.99	120.30
1	L5	4920	C	N1-C2-O2	5.77	122.36	118.90
1	L5	453	G	N3-C4-N9	5.77	129.46	126.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
49	S2	841	G	N1-C2-N2	-5.76	111.01	116.20
49	S2	1597	C	N1-C2-O2	5.76	122.36	118.90
1	L5	2255	C	C2-N1-C1'	5.76	125.14	118.80
49	S2	130	G	C4-N9-C1'	5.75	133.97	126.50
1	L5	2528	G	N3-C4-C5	-5.74	125.73	128.60
72	SG	41	LEU	CA-CB-CG	5.74	128.50	115.30
1	L5	1378	C	N1-C2-O2	5.73	122.34	118.90
1	L5	2410	C	C5-C6-N1	5.73	123.86	121.00
1	L5	1458	C	N1-C2-O2	5.72	122.33	118.90
1	L5	2627	C	C6-N1-C1'	-5.72	113.94	120.80
1	L5	4923	C	C6-N1-C2	-5.72	118.01	120.30
49	S2	1520	G	N3-C4-C5	-5.71	125.74	128.60
1	L5	1251	C	N1-C2-O2	5.71	122.33	118.90
1	L5	2409	U	C6-N1-C1'	-5.70	113.22	121.20
1	L5	1762	C	C6-N1-C2	-5.69	118.02	120.30
1	L5	2094	G	C4-N9-C1'	5.69	133.90	126.50
1	L5	4107	G	C5-C6-O6	5.69	132.02	128.60
1	L5	963	G	N3-C4-C5	-5.68	125.76	128.60
1	L5	1816	C	C6-N1-C2	-5.67	118.03	120.30
1	L5	1853	G	C4-N9-C1'	5.67	133.87	126.50
1	L5	1915	C	N3-C2-O2	-5.66	117.94	121.90
1	L5	2262	G	C8-N9-C1'	-5.66	119.65	127.00
49	S2	593	C	N1-C2-O2	5.66	122.29	118.90
1	L5	1173	G	N3-C4-N9	-5.65	122.61	126.00
1	L5	963	G	C8-N9-C1'	-5.65	119.65	127.00
1	L5	4107	G	N3-C4-C5	-5.65	125.78	128.60
3	L8	128	C	C2-N1-C1'	5.64	125.00	118.80
49	S2	1314	U	N1-C2-N3	-5.64	111.52	114.90
1	L5	77	U	N3-C2-O2	-5.63	118.26	122.20
1	L5	1663	C	C5-C6-N1	5.63	123.81	121.00
1	L5	3775	A	C5-N7-C8	-5.62	101.09	103.90
1	L5	4404	U	O4'-C1'-N1	5.62	112.69	108.20
1	L5	3785	A	O4'-C1'-N9	5.61	112.69	108.20
1	L5	515	C	C6-N1-C1'	-5.61	114.07	120.80
10	LG	88	ASP	CB-CG-OD2	-5.61	113.25	118.30
1	L5	3892	U	N3-C2-O2	-5.61	118.28	122.20
1	L5	4281	A	N7-C8-N9	5.61	116.60	113.80
49	S2	579	C	N1-C2-O2	5.60	122.26	118.90
83	CA	23	MET	CA-CB-CG	5.60	122.82	113.30
72	SG	217	MET	CA-CB-CG	5.60	122.82	113.30
49	S2	1261	C	C2-N1-C1'	5.60	124.95	118.80
1	L5	4551	U	N3-C2-O2	-5.59	118.28	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	2410	C	C6-N1-C2	-5.58	118.07	120.30
1	L5	4149	C	N1-C2-O2	5.58	122.25	118.90
1	L5	2710	C	C6-N1-C2	-5.58	118.07	120.30
49	S2	112	U	C2'-C3'-O3'	5.56	122.60	113.70
2	L7	102	U	N1-C2-O2	5.56	126.69	122.80
1	L5	1597	G	O4'-C1'-N9	5.55	112.64	108.20
1	L5	2094	G	N3-C4-N9	5.55	129.33	126.00
49	S2	1660	C	C2-N1-C1'	5.55	124.90	118.80
49	S2	188	C	C2-N1-C1'	5.54	124.89	118.80
1	L5	115	C	N1-C2-O2	5.52	122.21	118.90
49	S2	1022	U	N3-C2-O2	-5.52	118.33	122.20
1	L5	515	C	C5-C6-N1	5.52	123.76	121.00
49	S2	168	C	N1-C2-O2	5.51	122.21	118.90
1	L5	1414	C	C6-N1-C2	-5.50	118.10	120.30
1	L5	4709	U	N3-C2-O2	-5.50	118.35	122.20
1	L5	1404	G	N1-C2-N2	-5.49	111.26	116.20
1	L5	41	C	C6-N1-C2	-5.48	118.11	120.30
49	S2	130	G	N3-C4-N9	5.48	129.29	126.00
1	L5	4926	C	C6-N1-C1'	-5.47	114.23	120.80
1	L5	485	C	N3-C2-O2	-5.47	118.07	121.90
1	L5	5022	U	C5-C6-N1	5.47	125.43	122.70
1	L5	516	C	N3-C2-O2	-5.46	118.07	121.90
1	L5	4147	G	C5-C6-O6	5.46	131.88	128.60
1	L5	2786	C	P-O3'-C3'	5.46	126.25	119.70
49	S2	119	U	N3-C2-O2	-5.46	118.38	122.20
1	L5	3930	U	C2-N1-C1'	5.46	124.25	117.70
2	L7	39	C	N1-C2-O2	5.45	122.17	118.90
51	SB	60	ASP	CB-CG-OD1	5.44	123.20	118.30
1	L5	1726	U	N3-C2-O2	-5.44	118.39	122.20
49	S2	119	U	N1-C2-O2	5.43	126.60	122.80
49	S2	130	G	N3-C4-C5	-5.43	125.89	128.60
83	CA	185	MET	CG-SD-CE	5.43	108.88	100.20
1	L5	1417	C	N1-C2-O2	5.42	122.15	118.90
49	S2	427	U	N1-C2-O2	5.42	126.60	122.80
1	L5	2708	U	N1-C2-O2	5.41	126.59	122.80
49	S2	1315	U	C2-N1-C1'	5.41	124.20	117.70
59	SP	25	LEU	CA-CB-CG	5.40	127.73	115.30
49	S2	834	C	N3-C2-O2	-5.40	118.12	121.90
1	L5	1447	C	C2-N1-C1'	5.39	124.73	118.80
49	S2	325	C	C2-N1-C1'	5.38	124.72	118.80
62	SS	89	ASP	CB-CG-OD1	5.37	123.13	118.30
49	S2	583	C	N3-C2-O2	-5.37	118.14	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L5	4147	G	N1-C6-O6	-5.37	116.68	119.90
1	L5	4921	C	C6-N1-C2	-5.36	118.16	120.30
70	Sg	230	LEU	CA-CB-CG	5.35	127.60	115.30
49	S2	1434	C	P-O3'-C3'	5.34	126.10	119.70
49	S2	1453	C	C5-C6-N1	5.34	123.67	121.00
49	S2	833	C	N3-C2-O2	-5.32	118.17	121.90
83	CA	110	LEU	CA-CB-CG	5.32	127.53	115.30
1	L5	1252	C	C6-N1-C2	-5.31	118.17	120.30
1	L5	2786	C	C6-N1-C2	-5.31	118.17	120.30
1	L5	1182	C	N3-C2-O2	-5.30	118.19	121.90
1	L5	1977	C	P-O3'-C3'	5.30	126.06	119.70
1	L5	3584	C	N1-C2-O2	5.30	122.08	118.90
49	S2	1314	U	O4'-C1'-N1	5.29	112.43	108.20
57	SK	3	MET	CA-CB-CG	5.29	122.30	113.30
1	L5	1241	C	O4'-C1'-N1	5.28	112.43	108.20
1	L5	3909	C	C6-N1-C2	-5.28	118.19	120.30
1	L5	4775	C	C2-N1-C1'	5.28	124.61	118.80
1	L5	1245	C	C2-N1-C1'	5.27	124.59	118.80
70	Sg	266	ILE	CG1-CB-CG2	-5.26	99.83	111.40
2	L7	102	U	N3-C2-O2	-5.25	118.52	122.20
49	S2	659	G	N3-C4-N9	5.24	129.14	126.00
1	L5	1663	C	C6-N1-C2	-5.22	118.21	120.30
1	L5	294	G	N3-C4-N9	5.22	129.13	126.00
49	S2	201	C	N1-C2-O2	5.22	122.03	118.90
1	L5	904	C	C6-N1-C2	-5.22	118.21	120.30
1	L5	4502	C	N3-C2-O2	-5.21	118.25	121.90
1	L5	4709	U	N1-C2-O2	5.21	126.44	122.80
49	S2	1218	C	C5-C6-N1	5.20	123.60	121.00
21	LS	155	PRO	N-CA-C	5.20	125.61	112.10
66	SX	8	ARG	CG-CD-NE	5.19	122.71	111.80
1	L5	3673	C	P-O3'-C3'	5.19	125.92	119.70
49	S2	1389	C	C6-N1-C2	-5.18	118.23	120.30
52	SD	218	LEU	CA-CB-CG	5.18	127.22	115.30
83	CA	156	LEU	CA-CB-CG	5.18	127.22	115.30
1	L5	4137	C	N1-C2-O2	5.17	122.00	118.90
1	L5	1378	C	C2-N1-C1'	5.17	124.48	118.80
1	L5	4764	A	C6-N1-C2	5.16	121.70	118.60
1	L5	1632	A	N3-C4-C5	-5.15	123.19	126.80
1	L5	2528	G	N3-C4-N9	5.15	129.09	126.00
1	L5	4926	C	C6-N1-C2	-5.15	118.24	120.30
1	L5	4742	G	C8-N9-C1'	5.14	133.69	127.00
49	S2	1315	U	N3-C2-O2	-5.14	118.60	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	LA	195	CYS	CB-CA-C	-5.13	100.13	110.40
49	S2	1306	U	C2-N1-C1'	5.13	123.86	117.70
1	L5	3762	U	N1-C2-O2	5.13	126.39	122.80
49	S2	1453	C	C6-N1-C2	-5.12	118.25	120.30
1	L5	1259	G	N1-C6-O6	-5.12	116.83	119.90
1	L5	1853	G	C8-N9-C1'	-5.12	120.34	127.00
1	L5	4557	U	C6-N1-C1'	-5.12	114.03	121.20
1	L5	3775	A	C8-N9-C4	-5.11	103.76	105.80
7	LD	200	MET	CB-CG-SD	5.11	127.71	112.40
1	L5	233	U	O4'-C1'-N1	5.10	112.28	108.20
1	L5	4527	G	O4'-C1'-N9	5.09	112.27	108.20
1	L5	4773	C	C2-N1-C1'	5.08	124.39	118.80
1	L5	3636	C	N3-C2-O2	-5.08	118.34	121.90
1	L5	3778	U	N3-C2-O2	-5.08	118.65	122.20
1	L5	516	C	C2-N1-C1'	5.07	124.38	118.80
1	L5	1809	C	C2-N1-C1'	5.07	124.38	118.80
83	CA	105	LEU	CA-CB-CG	5.07	126.97	115.30
1	L5	4583	C	O4'-C1'-N1	5.07	112.26	108.20
1	L5	3829	G	C2-N3-C4	5.07	114.43	111.90
1	L5	2627	C	C5-C6-N1	5.06	123.53	121.00
49	S2	1865	C	C2-N1-C1'	5.06	124.36	118.80
83	CA	55	MET	CB-CG-SD	5.06	127.58	112.40
1	L5	182	G	N3-C4-N9	5.06	129.03	126.00
1	L5	4468	U	C5-C4-O4	5.06	128.93	125.90
49	S2	1309	C	N1-C2-O2	5.05	121.93	118.90
1	L5	220	C	C2-N1-C1'	5.05	124.36	118.80
1	L5	4920	C	N3-C2-O2	-5.04	118.37	121.90
1	L5	3767	C	C6-N1-C2	-5.04	118.28	120.30
1	L5	406	C	P-O3'-C3'	5.04	125.75	119.70
49	S2	1022	U	C6-N1-C1'	-5.04	114.14	121.20
1	L5	739	G	N3-C4-N9	5.03	129.02	126.00
1	L5	2394	G	O4'-C1'-N9	5.02	112.22	108.20
1	L5	2675	G	P-O3'-C3'	5.02	125.73	119.70
1	L5	2708	U	N3-C2-O2	-5.02	118.68	122.20
1	L5	4887	C	C2-N1-C1'	5.02	124.32	118.80
49	S2	178	C	N1-C2-O2	5.02	121.91	118.90
1	L5	4771	C	C5-C6-N1	5.01	123.51	121.00
49	S2	325	C	N1-C2-O2	5.01	121.91	118.90
49	S2	1314	U	C6-N1-C2	5.01	124.00	121.00
1	L5	1582	U	N3-C2-O2	-5.00	118.70	122.20
1	L5	3618	C	C6-N1-C2	-5.00	118.30	120.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	LB	258	HIS	Peptide
34	Lf	106	TYR	Peptide
54	SF	78	MET	Peptide

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

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

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	LA	246/257 (96%)	228 (93%)	17 (7%)	1 (0%)	34	48
5	LB	400/403 (99%)	385 (96%)	15 (4%)	0	100	100
6	LC	366/427 (86%)	344 (94%)	22 (6%)	0	100	100
7	LD	291/297 (98%)	277 (95%)	14 (5%)	0	100	100
8	LE	215/288 (75%)	197 (92%)	16 (7%)	2 (1%)	17	25
9	LF	223/248 (90%)	214 (96%)	9 (4%)	0	100	100
10	LG	239/266 (90%)	226 (95%)	13 (5%)	0	100	100
11	LH	188/192 (98%)	175 (93%)	11 (6%)	2 (1%)	14	20
12	LI	198/214 (92%)	191 (96%)	7 (4%)	0	100	100
13	LJ	174/178 (98%)	168 (97%)	5 (3%)	1 (1%)	25	36
14	LL	208/211 (99%)	194 (93%)	12 (6%)	2 (1%)	15	23
15	LM	137/215 (64%)	131 (96%)	6 (4%)	0	100	100
16	LN	201/204 (98%)	192 (96%)	7 (4%)	2 (1%)	15	23
17	LO	199/203 (98%)	196 (98%)	2 (1%)	1 (0%)	29	41
18	LP	151/184 (82%)	144 (95%)	7 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	LQ	185/188 (98%)	178 (96%)	7 (4%)	0	100	100
20	LR	185/196 (94%)	183 (99%)	2 (1%)	0	100	100
21	LS	173/176 (98%)	166 (96%)	7 (4%)	0	100	100
22	LT	157/160 (98%)	150 (96%)	7 (4%)	0	100	100
23	LU	98/128 (77%)	90 (92%)	7 (7%)	1 (1%)	15	23
24	LV	129/140 (92%)	122 (95%)	7 (5%)	0	100	100
25	LW	122/157 (78%)	115 (94%)	6 (5%)	1 (1%)	19	29
26	LX	118/156 (76%)	116 (98%)	2 (2%)	0	100	100
27	LY	131/145 (90%)	128 (98%)	3 (2%)	0	100	100
28	LZ	133/136 (98%)	129 (97%)	4 (3%)	0	100	100
29	La	145/148 (98%)	138 (95%)	7 (5%)	0	100	100
30	Lb	105/159 (66%)	99 (94%)	6 (6%)	0	100	100
31	Lc	96/115 (84%)	93 (97%)	3 (3%)	0	100	100
32	Ld	105/125 (84%)	99 (94%)	6 (6%)	0	100	100
33	Le	126/135 (93%)	122 (97%)	3 (2%)	1 (1%)	19	29
34	Lf	107/110 (97%)	96 (90%)	9 (8%)	2 (2%)	8	10
35	Lg	112/117 (96%)	109 (97%)	3 (3%)	0	100	100
36	Lh	120/123 (98%)	119 (99%)	1 (1%)	0	100	100
37	Li	100/105 (95%)	99 (99%)	1 (1%)	0	100	100
38	Lj	84/97 (87%)	81 (96%)	3 (4%)	0	100	100
39	Lk	67/70 (96%)	65 (97%)	2 (3%)	0	100	100
40	Ll	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
41	Lm	49/128 (38%)	49 (100%)	0	0	100	100
42	Ln	22/25 (88%)	22 (100%)	0	0	100	100
43	Lo	103/106 (97%)	97 (94%)	6 (6%)	0	100	100
44	Lp	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
45	Lr	123/137 (90%)	116 (94%)	7 (6%)	0	100	100
46	Ls	194/317 (61%)	174 (90%)	20 (10%)	0	100	100
47	Lt	137/165 (83%)	106 (77%)	30 (22%)	1 (1%)	22	32
48	Lz	203/217 (94%)	164 (81%)	39 (19%)	0	100	100
50	SA	219/295 (74%)	205 (94%)	14 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
51	SB	212/264 (80%)	198 (93%)	14 (7%)	0	100	100
52	SD	225/243 (93%)	209 (93%)	16 (7%)	0	100	100
53	SE	260/263 (99%)	250 (96%)	10 (4%)	0	100	100
54	SF	180/204 (88%)	164 (91%)	14 (8%)	2 (1%)	14	20
55	SH	182/194 (94%)	175 (96%)	7 (4%)	0	100	100
56	SI	204/208 (98%)	200 (98%)	4 (2%)	0	100	100
57	SK	93/165 (56%)	81 (87%)	12 (13%)	0	100	100
58	SL	140/158 (89%)	128 (91%)	12 (9%)	0	100	100
59	SP	127/145 (88%)	117 (92%)	10 (8%)	0	100	100
60	SQ	142/146 (97%)	129 (91%)	13 (9%)	0	100	100
61	SR	133/135 (98%)	120 (90%)	13 (10%)	0	100	100
62	SS	142/152 (93%)	129 (91%)	12 (8%)	1 (1%)	22	32
63	ST	141/145 (97%)	134 (95%)	6 (4%)	1 (1%)	22	32
64	SU	102/119 (86%)	94 (92%)	8 (8%)	0	100	100
65	SV	81/83 (98%)	79 (98%)	2 (2%)	0	100	100
66	SX	139/143 (97%)	130 (94%)	7 (5%)	2 (1%)	11	15
67	Sa	100/115 (87%)	93 (93%)	7 (7%)	0	100	100
68	Sc	62/69 (90%)	58 (94%)	2 (3%)	2 (3%)	4	3
69	Sd	53/56 (95%)	48 (91%)	5 (9%)	0	100	100
70	Sg	311/317 (98%)	263 (85%)	45 (14%)	3 (1%)	15	23
71	SC	220/293 (75%)	203 (92%)	17 (8%)	0	100	100
72	SG	235/249 (94%)	222 (94%)	13 (6%)	0	100	100
73	SJ	183/194 (94%)	175 (96%)	7 (4%)	1 (0%)	29	41
74	SM	120/132 (91%)	112 (93%)	8 (7%)	0	100	100
75	SN	148/151 (98%)	146 (99%)	2 (1%)	0	100	100
76	SO	133/151 (88%)	126 (95%)	6 (4%)	1 (1%)	19	29
77	SW	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
78	SY	124/133 (93%)	122 (98%)	2 (2%)	0	100	100
79	SZ	73/125 (58%)	60 (82%)	10 (14%)	3 (4%)	3	2
80	Sb	81/84 (96%)	74 (91%)	7 (9%)	0	100	100
81	Se	56/59 (95%)	50 (89%)	6 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
82	Sf	65/156 (42%)	56 (86%)	9 (14%)	0	100	100
83	CA	350/394 (89%)	335 (96%)	15 (4%)	0	100	100
84	CB	14/408 (3%)	14 (100%)	0	0	100	100
86	CE	71/223 (32%)	70 (99%)	1 (1%)	0	100	100
All	All	12250/14412 (85%)	11509 (94%)	708 (6%)	33 (0%)	44	55

All (33) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	LE	96	VAL
23	LU	67	LYS
63	ST	45	LEU
79	SZ	45	ASN
79	SZ	78	LYS
4	LA	172	GLY
14	LL	17	ASP
16	LN	124	ASP
25	LW	98	PRO
33	Le	73	GLY
66	SX	87	ASN
66	SX	124	LYS
70	Sg	179	LEU
11	LH	60	TRP
14	LL	50	PRO
34	Lf	83	MET
70	Sg	103	GLY
73	SJ	122	SER
76	SO	140	THR
8	LE	111	LYS
54	SF	128	ILE
62	SS	74	PRO
68	Sc	31	ARG
11	LH	107	GLU
34	Lf	80	ASN
68	Sc	35	MET
70	Sg	178	ASN
17	LO	202	LEU
79	SZ	49	LEU
13	LJ	176	PRO
16	LN	83	LYS
47	Lt	139	VAL

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Mol	Chain	Res	Type
54	SF	41	VAL

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
4	LA	190/199 (96%)	189 (100%)	1 (0%)	88 95
5	LB	348/349 (100%)	343 (99%)	5 (1%)	67 82
6	LC	306/348 (88%)	293 (96%)	13 (4%)	30 47
7	LD	246/250 (98%)	234 (95%)	12 (5%)	25 40
8	LE	195/252 (77%)	189 (97%)	6 (3%)	40 60
9	LF	194/215 (90%)	190 (98%)	4 (2%)	53 72
10	LG	203/223 (91%)	195 (96%)	8 (4%)	32 50
11	LH	169/171 (99%)	163 (96%)	6 (4%)	35 54
12	LI	172/181 (95%)	164 (95%)	8 (5%)	26 42
13	LJ	148/149 (99%)	139 (94%)	9 (6%)	18 30
14	LL	176/177 (99%)	166 (94%)	10 (6%)	20 33
15	LM	118/161 (73%)	118 (100%)	0	100 100
16	LN	171/172 (99%)	169 (99%)	2 (1%)	71 85
17	LO	173/174 (99%)	168 (97%)	5 (3%)	42 62
18	LP	134/163 (82%)	133 (99%)	1 (1%)	84 92
19	LQ	164/165 (99%)	160 (98%)	4 (2%)	49 68
20	LR	166/175 (95%)	160 (96%)	6 (4%)	35 54
21	LS	156/157 (99%)	152 (97%)	4 (3%)	46 66
22	LT	139/140 (99%)	135 (97%)	4 (3%)	42 62
23	LU	90/115 (78%)	84 (93%)	6 (7%)	16 26
24	LV	101/107 (94%)	98 (97%)	3 (3%)	41 61
25	LW	103/126 (82%)	99 (96%)	4 (4%)	32 50
26	LX	108/133 (81%)	107 (99%)	1 (1%)	78 90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
27	LY	123/135 (91%)	117 (95%)	6 (5%)	25	40
28	LZ	117/118 (99%)	117 (100%)	0	100	100
29	La	120/121 (99%)	118 (98%)	2 (2%)	60	78
30	Lb	88/126 (70%)	86 (98%)	2 (2%)	50	70
31	Lc	83/97 (86%)	83 (100%)	0	100	100
32	Ld	98/110 (89%)	97 (99%)	1 (1%)	76	88
33	Le	114/121 (94%)	112 (98%)	2 (2%)	59	76
34	Lf	88/89 (99%)	85 (97%)	3 (3%)	37	56
35	Lg	98/100 (98%)	94 (96%)	4 (4%)	30	48
36	Lh	109/110 (99%)	106 (97%)	3 (3%)	43	63
37	Li	86/89 (97%)	83 (96%)	3 (4%)	36	55
38	Lj	73/80 (91%)	69 (94%)	4 (6%)	21	35
39	Lk	64/65 (98%)	62 (97%)	2 (3%)	40	60
40	Ll	47/48 (98%)	45 (96%)	2 (4%)	29	46
41	Lm	47/115 (41%)	44 (94%)	3 (6%)	17	28
42	Ln	23/24 (96%)	22 (96%)	1 (4%)	29	46
43	Lo	93/94 (99%)	89 (96%)	4 (4%)	29	46
44	Lp	74/75 (99%)	73 (99%)	1 (1%)	67	82
45	Lr	109/121 (90%)	106 (97%)	3 (3%)	43	63
46	Ls	162/258 (63%)	158 (98%)	4 (2%)	47	67
47	Lt	112/137 (82%)	105 (94%)	7 (6%)	18	28
50	SA	183/243 (75%)	173 (94%)	10 (6%)	21	35
51	SB	195/231 (84%)	189 (97%)	6 (3%)	40	60
52	SD	190/202 (94%)	180 (95%)	10 (5%)	22	37
53	SE	224/225 (100%)	218 (97%)	6 (3%)	44	65
54	SF	156/170 (92%)	149 (96%)	7 (4%)	27	44
55	SH	166/174 (95%)	157 (95%)	9 (5%)	22	36
56	SI	178/180 (99%)	173 (97%)	5 (3%)	43	63
57	SK	86/136 (63%)	78 (91%)	8 (9%)	9	13
58	SL	130/142 (92%)	125 (96%)	5 (4%)	33	51
59	SP	115/130 (88%)	109 (95%)	6 (5%)	23	38

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
60	SQ	119/121 (98%)	110 (92%)	9 (8%)	13	20
61	SR	122/122 (100%)	119 (98%)	3 (2%)	47	67
62	SS	125/132 (95%)	104 (83%)	21 (17%)	2	2
63	ST	113/115 (98%)	109 (96%)	4 (4%)	36	55
64	SU	94/107 (88%)	89 (95%)	5 (5%)	22	37
65	SV	67/67 (100%)	66 (98%)	1 (2%)	65	80
66	SX	113/115 (98%)	106 (94%)	7 (6%)	18	29
67	Sa	89/98 (91%)	89 (100%)	0	100	100
68	Sc	57/62 (92%)	56 (98%)	1 (2%)	59	76
69	Sd	48/49 (98%)	44 (92%)	4 (8%)	11	17
70	Sg	272/275 (99%)	248 (91%)	24 (9%)	10	15
71	SC	188/225 (84%)	182 (97%)	6 (3%)	39	59
72	SG	207/218 (95%)	193 (93%)	14 (7%)	16	25
73	SJ	161/168 (96%)	157 (98%)	4 (2%)	47	67
75	SN	130/131 (99%)	125 (96%)	5 (4%)	33	51
76	SO	105/119 (88%)	100 (95%)	5 (5%)	25	41
77	SW	112/113 (99%)	110 (98%)	2 (2%)	59	76
78	SY	109/115 (95%)	102 (94%)	7 (6%)	17	28
79	SZ	66/103 (64%)	64 (97%)	2 (3%)	41	61
80	Sb	75/76 (99%)	73 (97%)	2 (3%)	44	65
81	Se	47/48 (98%)	46 (98%)	1 (2%)	53	72
82	Sf	60/140 (43%)	55 (92%)	5 (8%)	11	17
83	CA	303/336 (90%)	291 (96%)	12 (4%)	31	49
84	CB	14/328 (4%)	13 (93%)	1 (7%)	14	23
86	CE	62/190 (33%)	57 (92%)	5 (8%)	11	18
All	All	10379/11941 (87%)	9978 (96%)	401 (4%)	36	50

All (401) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	LA	15	VAL
5	LB	141	ASP
5	LB	152	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	LB	171	LEU
5	LB	297	LYS
5	LB	337	VAL
6	LC	3	CYS
6	LC	24	LEU
6	LC	66	SER
6	LC	95	MET
6	LC	122	TYR
6	LC	188	ARG
6	LC	269	LYS
6	LC	283	LYS
6	LC	289	LEU
6	LC	311	ARG
6	LC	312	ARG
6	LC	334	THR
6	LC	335	MET
7	LD	36	LEU
7	LD	43	LYS
7	LD	73	MET
7	LD	86	TYR
7	LD	88	VAL
7	LD	136	ASP
7	LD	181	PRO
7	LD	214	GLU
7	LD	224	SER
7	LD	235	MET
7	LD	239	MET
7	LD	267	ASN
8	LE	100	LYS
8	LE	118	THR
8	LE	251	LYS
8	LE	258	LEU
8	LE	273	SER
8	LE	278	THR
9	LF	27	GLU
9	LF	62	ARG
9	LF	96	ARG
9	LF	119	ASN
10	LG	73	ARG
10	LG	88	ASP
10	LG	162	ASP
10	LG	168	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
10	LG	206	GLN
10	LG	220	GLU
10	LG	234	ARG
10	LG	257	LYS
11	LH	16	VAL
11	LH	52	LYS
11	LH	85	THR
11	LH	106	GLN
11	LH	146	LEU
11	LH	183	GLU
12	LI	14	ASN
12	LI	31	ILE
12	LI	44	ASP
12	LI	48	LEU
12	LI	78	LYS
12	LI	169	LYS
12	LI	193	ASP
12	LI	197	VAL
13	LJ	15	LEU
13	LJ	47	THR
13	LJ	63	ARG
13	LJ	88	LYS
13	LJ	90	ARG
13	LJ	101	ASP
13	LJ	132	VAL
13	LJ	143	ASP
13	LJ	169	LYS
14	LL	20	ARG
14	LL	59	VAL
14	LL	67	HIS
14	LL	97	SER
14	LL	122	SER
14	LL	126	LEU
14	LL	138	ASP
14	LL	148	THR
14	LL	154	VAL
14	LL	200	LYS
16	LN	108	ARG
16	LN	123	GLU
17	LO	27	VAL
17	LO	92	THR
17	LO	103	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
17	LO	117	ARG
17	LO	119	VAL
18	LP	57	CYS
19	LQ	3	VAL
19	LQ	62	SER
19	LQ	115	ARG
19	LQ	188	ASN
20	LR	3	MET
20	LR	111	GLU
20	LR	119	MET
20	LR	149	LYS
20	LR	167	LYS
20	LR	170	ARG
21	LS	16	CYS
21	LS	76	LYS
21	LS	85	ASP
21	LS	118	ARG
22	LT	4	THR
22	LT	76	VAL
22	LT	99	SER
22	LT	126	VAL
23	LU	31	ASP
23	LU	67	LYS
23	LU	68	SER
23	LU	80	LYS
23	LU	98	ASP
23	LU	107	LYS
24	LV	48	ARG
24	LV	65	VAL
24	LV	67	LYS
25	LW	95	ASN
25	LW	96	GLN
25	LW	98	PRO
25	LW	102	LYS
26	LX	57	GLN
27	LY	44	VAL
27	LY	47	MET
27	LY	52	ASP
27	LY	74	TYR
27	LY	79	VAL
27	LY	112	ASP
29	La	6	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
29	La	106	SER
30	Lb	5	LYS
30	Lb	68	ARG
32	Ld	95	ASP
33	Le	85	LEU
33	Le	91	CYS
34	Lf	43	LEU
34	Lf	73	LYS
34	Lf	95	LYS
35	Lg	65	MET
35	Lg	73	HIS
35	Lg	100	GLN
35	Lg	114	GLN
36	Lh	29	SER
36	Lh	65	GLN
36	Lh	74	LYS
37	Li	29	ARG
37	Li	35	LYS
37	Li	59	GLU
38	Lj	32	SER
38	Lj	36	LYS
38	Lj	55	ARG
38	Lj	65	ARG
39	Lk	10	ASP
39	Lk	27	LYS
40	Ll	36	ARG
40	Ll	37	TYR
41	Lm	81	SER
41	Lm	88	LYS
41	Lm	127	VAL
42	Ln	24	SER
43	Lo	18	HIS
43	Lo	76	ASN
43	Lo	79	SER
43	Lo	96	ASP
44	Lp	36	LYS
45	Lr	37	SER
45	Lr	84	LYS
45	Lr	99	LYS
46	Ls	10	LYS
46	Ls	45	MET
46	Ls	55	MET

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
46	Ls	101	MET
47	Lt	57	ARG
47	Lt	116	MET
47	Lt	125	LEU
47	Lt	126	SER
47	Lt	139	VAL
47	Lt	151	ILE
47	Lt	154	ASP
50	SA	10	MET
50	SA	29	ASN
50	SA	43	SER
50	SA	52	LYS
50	SA	75	SER
50	SA	138	SER
50	SA	169	HIS
50	SA	200	ASP
50	SA	209	GLU
50	SA	211	GLU
51	SB	34	LYS
51	SB	68	GLU
51	SB	108	ASP
51	SB	179	ASN
51	SB	195	LYS
51	SB	202	GLN
52	SD	34	TYR
52	SD	56	GLN
52	SD	72	VAL
52	SD	74	GLN
52	SD	81	GLU
52	SD	143	ARG
52	SD	157	MET
52	SD	168	VAL
52	SD	181	VAL
52	SD	201	LYS
53	SE	6	LYS
53	SE	105	THR
53	SE	120	LYS
53	SE	171	ASP
53	SE	216	ASN
53	SE	260	GLN
54	SF	22	LYS
54	SF	28	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
54	SF	32	ASP
54	SF	65	GLN
54	SF	149	GLN
54	SF	165	ASN
54	SF	195	GLU
55	SH	15	LYS
55	SH	29	GLU
55	SH	31	GLU
55	SH	33	ASN
55	SH	64	VAL
55	SH	82	GLU
55	SH	137	SER
55	SH	142	LYS
55	SH	186	ASN
56	SI	5	ARG
56	SI	12	ARG
56	SI	66	SER
56	SI	100	CYS
56	SI	167	GLN
57	SK	3	MET
57	SK	11	ILE
57	SK	20	VAL
57	SK	21	MET
57	SK	38	LYS
57	SK	47	LYS
57	SK	49	MET
57	SK	72	THR
58	SL	45	LYS
58	SL	69	ARG
58	SL	74	SER
58	SL	141	ASN
58	SL	144	LYS
59	SP	25	LEU
59	SP	38	SER
59	SP	89	MET
59	SP	97	TYR
59	SP	103	ASN
59	SP	130	ARG
60	SQ	26	LYS
60	SQ	27	ARG
60	SQ	29	ASN
60	SQ	39	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
60	SQ	41	MET
60	SQ	52	LEU
60	SQ	66	VAL
60	SQ	89	SER
60	SQ	110	ASP
61	SR	77	GLU
61	SR	80	ARG
61	SR	121	GLN
62	SS	14	ARG
62	SS	16	LEU
62	SS	46	ARG
62	SS	59	LEU
62	SS	61	GLU
62	SS	62	ASP
62	SS	68	ILE
62	SS	70	ILE
62	SS	73	ASN
62	SS	75	ARG
62	SS	76	GLN
62	SS	78	LYS
62	SS	83	PHE
62	SS	88	LYS
62	SS	99	LEU
62	SS	104	ASP
62	SS	112	GLU
62	SS	113	ARG
62	SS	130	ARG
62	SS	142	ARG
62	SS	145	THR
63	ST	23	LYS
63	ST	35	ASP
63	ST	93	SER
63	ST	107	LEU
64	SU	30	LYS
64	SU	38	ASP
64	SU	39	LEU
64	SU	86	LYS
64	SU	96	GLU
65	SV	66	ASP
66	SX	7	LEU
66	SX	24	ASP
66	SX	60	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
66	SX	61	GLN
66	SX	88	ASP
66	SX	105	PHE
66	SX	123	VAL
68	Sc	10	LYS
69	Sd	25	SER
69	Sd	30	LEU
69	Sd	39	CYS
69	Sd	48	LYS
70	Sg	7	LEU
70	Sg	14	HIS
70	Sg	30	MET
70	Sg	32	LEU
70	Sg	37	ASP
70	Sg	46	THR
70	Sg	60	ARG
70	Sg	107	ASP
70	Sg	113	PHE
70	Sg	118	ARG
70	Sg	121	VAL
70	Sg	131	LEU
70	Sg	140	TYR
70	Sg	153	CYS
70	Sg	156	PHE
70	Sg	157	SER
70	Sg	177	TRP
70	Sg	178	ASN
70	Sg	200	VAL
70	Sg	217	MET
70	Sg	228	TYR
70	Sg	248	LEU
70	Sg	255	SER
70	Sg	303	THR
71	SC	66	LEU
71	SC	76	LYS
71	SC	104	ASP
71	SC	222	CYS
71	SC	236	PHE
71	SC	248	TYR
72	SG	13	GLN
72	SG	21	GLU
72	SG	22	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
72	SG	27	PHE
72	SG	32	MET
72	SG	93	LYS
72	SG	124	LEU
72	SG	126	ASP
72	SG	144	LEU
72	SG	150	GLU
72	SG	153	VAL
72	SG	163	ASN
72	SG	217	MET
72	SG	221	LYS
73	SJ	7	TRP
73	SJ	23	SER
73	SJ	139	LYS
73	SJ	141	VAL
75	SN	69	ASN
75	SN	78	LYS
75	SN	80	LEU
75	SN	104	ARG
75	SN	150	VAL
76	SO	34	PHE
76	SO	84	ARG
76	SO	114	SER
76	SO	125	LYS
76	SO	151	LEU
77	SW	25	VAL
77	SW	74	VAL
78	SY	4	THR
78	SY	21	LYS
78	SY	22	GLN
78	SY	23	MET
78	SY	47	MET
78	SY	69	THR
78	SY	85	ASN
79	SZ	44	LEU
79	SZ	60	LYS
80	Sb	43	ILE
80	Sb	79	PHE
81	Se	36	MET
82	Sf	85	TYR
82	Sf	104	LYS
82	Sf	118	ARG

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Mol	Chain	Res	Type
82	Sf	140	TYR
82	Sf	144	CYS
83	CA	23	MET
83	CA	70	MET
83	CA	85	CYS
83	CA	105	LEU
83	CA	113	HIS
83	CA	199	LYS
83	CA	223	VAL
83	CA	244	THR
83	CA	266	PHE
83	CA	273	PHE
83	CA	306	ASN
83	CA	347	MET
84	CB	18	ASP
86	CE	19	ARG
86	CE	50	GLU
86	CE	54	GLU
86	CE	65	GLU
86	CE	68	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (78) such sidechains are listed below:

Mol	Chain	Res	Type
4	LA	50	HIS
5	LB	204	GLN
6	LC	119	GLN
7	LD	229	ASN
7	LD	291	GLN
9	LF	39	GLN
9	LF	63	GLN
9	LF	248	ASN
10	LG	43	GLN
10	LG	90	GLN
11	LH	39	ASN
11	LH	78	GLN
12	LI	144	ASN
13	LJ	65	ASN
13	LJ	104	ASN
13	LJ	112	HIS
15	LM	44	GLN
16	LN	37	HIS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
19	LQ	21	GLN
19	LQ	45	GLN
19	LQ	188	ASN
22	LT	79	GLN
24	LV	135	ASN
25	LW	48	GLN
26	LX	111	GLN
27	LY	66	GLN
27	LY	72	GLN
28	LZ	127	ASN
29	La	67	GLN
29	La	120	GLN
32	Ld	118	GLN
36	Lh	20	GLN
36	Lh	65	GLN
36	Lh	107	GLN
37	Li	20	ASN
40	Ll	19	GLN
43	Lo	102	GLN
50	SA	36	GLN
50	SA	193	HIS
51	SB	40	ASN
51	SB	43	ASN
51	SB	147	ASN
52	SD	101	GLN
52	SD	145	GLN
53	SE	138	HIS
53	SE	224	ASN
54	SF	31	ASN
54	SF	79	HIS
54	SF	203	ASN
55	SH	186	ASN
56	SI	88	ASN
57	SK	32	HIS
57	SK	44	HIS
60	SQ	11	GLN
60	SQ	24	HIS
60	SQ	80	GLN
61	SR	74	GLN
62	SS	72	GLN
62	SS	101	ASN
62	SS	105	ASN

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Mol	Chain	Res	Type
64	SU	28	ASN
64	SU	92	HIS
64	SU	100	GLN
65	SV	82	ASN
66	SX	127	ASN
69	Sd	10	HIS
70	Sg	62	HIS
70	Sg	147	HIS
70	Sg	178	ASN
72	SG	202	ASN
75	SN	105	ASN
76	SO	113	GLN
78	SY	22	GLN
78	SY	112	ASN
79	SZ	46	ASN
80	Sb	65	GLN
83	CA	221	HIS
84	CB	6	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	L5	3704/5070 (73%)	831 (22%)	30 (0%)
2	L7	119/121 (98%)	12 (10%)	0
3	L8	155/157 (98%)	31 (20%)	1 (0%)
49	S2	1717/1869 (91%)	383 (22%)	14 (0%)
85	CC	74/75 (98%)	23 (31%)	0
All	All	5769/7292 (79%)	1280 (22%)	45 (0%)

All (1280) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	L5	15	A
1	L5	17	A
1	L5	25	A
1	L5	30	C
1	L5	39	A
1	L5	42	A
1	L5	48	G
1	L5	56	A
1	L5	59	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	64	A
1	L5	65	A
1	L5	66	A
1	L5	69	A
1	L5	71	C
1	L5	73	A
1	L5	91	G
1	L5	98	A
1	L5	104	G
1	L5	108	A
1	L5	109	G
1	L5	110	C
1	L5	112	C
1	L5	119	G
1	L5	120	A
1	L5	128	C
1	L5	132	G
1	L5	133	C
1	L5	134	G
1	L5	135	G
1	L5	136	C
1	L5	137	G
1	L5	139	G
1	L5	152	U
1	L5	159	C
1	L5	165	A
1	L5	171	U
1	L5	172	C
1	L5	173	C
1	L5	177	G
1	L5	181	C
1	L5	182	G
1	L5	183	C
1	L5	184	U
1	L5	185	C
1	L5	186	G
1	L5	188	G
1	L5	189	G
1	L5	200	U
1	L5	210	C
1	L5	216	C
1	L5	218	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	219	G
1	L5	233	U
1	L5	234	G
1	L5	253	G
1	L5	261	G
1	L5	265	C
1	L5	266	C
1	L5	267	G
1	L5	269	G
1	L5	280	G
1	L5	297	U
1	L5	306	A
1	L5	315	G
1	L5	316	U
1	L5	340	C
1	L5	349	A
1	L5	373	G
1	L5	387	G
1	L5	406	C
1	L5	407	A
1	L5	409	G
1	L5	410	A
1	L5	411	G
1	L5	412	G
1	L5	413	G
1	L5	414	C
1	L5	431	G
1	L5	432	U
1	L5	449	C
1	L5	450	G
1	L5	452	A
1	L5	453	G
1	L5	464	G
1	L5	466	A
1	L5	467	U
1	L5	468	U
1	L5	484	U
1	L5	485	C
1	L5	486	C
1	L5	489	C
1	L5	493	G
1	L5	494	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	497	G
1	L5	498	C
1	L5	500	G
1	L5	502	C
1	L5	503	C
1	L5	504	G
1	L5	505	G
1	L5	506	C
1	L5	509	A
1	L5	510	U
1	L5	512	U
1	L5	513	U
1	L5	514	U
1	L5	515	C
1	L5	517	C
1	L5	518	G
1	L5	643	C
1	L5	645	G
1	L5	646	G
1	L5	657	C
1	L5	659	G
1	L5	665	C
1	L5	666	G
1	L5	667	A
1	L5	668	C
1	L5	669	C
1	L5	672	C
1	L5	673	C
1	L5	685	C
1	L5	686	A
1	L5	687	U
1	L5	696	C
1	L5	703	G
1	L5	704	C
1	L5	706	C
1	L5	708	G
1	L5	731	G
1	L5	738	C
1	L5	739	G
1	L5	742	G
1	L5	757	G
1	L5	758	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	759	G
1	L5	760	G
1	L5	904	C
1	L5	905	C
1	L5	906	C
1	L5	913	U
1	L5	914	U
1	L5	915	A
1	L5	917	A
1	L5	918	G
1	L5	923	C
1	L5	924	C
1	L5	926	G
1	L5	931	C
1	L5	932	A
1	L5	933	G
1	L5	935	A
1	L5	936	C
1	L5	941	C
1	L5	944	A
1	L5	945	U
1	L5	956	A
1	L5	959	G
1	L5	960	A
1	L5	961	G
1	L5	962	C
1	L5	965	G
1	L5	966	A
1	L5	967	C
1	L5	968	C
1	L5	969	C
1	L5	970	G
1	L5	972	C
1	L5	977	C
1	L5	982	U
1	L5	989	U
1	L5	990	C
1	L5	992	C
1	L5	993	G
1	L5	995	C
1	L5	996	G
1	L5	1048	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	1049	C
1	L5	1050	C
1	L5	1051	G
1	L5	1070	G
1	L5	1071	C
1	L5	1074	G
1	L5	1075	G
1	L5	1084	C
1	L5	1094	G
1	L5	1095	A
1	L5	1168	G
1	L5	1171	G
1	L5	1172	C
1	L5	1173	G
1	L5	1178	G
1	L5	1179	U
1	L5	1180	C
1	L5	1181	C
1	L5	1182	C
1	L5	1183	C
1	L5	1193	C
1	L5	1202	C
1	L5	1203	G
1	L5	1204	C
1	L5	1210	C
1	L5	1211	G
1	L5	1214	C
1	L5	1215	C
1	L5	1216	C
1	L5	1217	G
1	L5	1219	G
1	L5	1222	A
1	L5	1235	G
1	L5	1240	G
1	L5	1243	C
1	L5	1245	C
1	L5	1246	G
1	L5	1253	G
1	L5	1254	A
1	L5	1257	A
1	L5	1258	G
1	L5	1261	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	1266	G
1	L5	1267	C
1	L5	1269	G
1	L5	1271	G
1	L5	1272	C
1	L5	1273	G
1	L5	1274	A
1	L5	1275	G
1	L5	1280	C
1	L5	1284	G
1	L5	1285	U
1	L5	1287	G
1	L5	1294	A
1	L5	1295	C
1	L5	1301	C
1	L5	1312	A
1	L5	1326	A
1	L5	1337	A
1	L5	1344	C
1	L5	1354	A
1	L5	1358	G
1	L5	1359	G
1	L5	1365	C
1	L5	1366	G
1	L5	1368	A
1	L5	1378	C
1	L5	1387	A
1	L5	1393	G
1	L5	1394	G
1	L5	1397	A
1	L5	1398	A
1	L5	1403	G
1	L5	1404	G
1	L5	1405	C
1	L5	1407	C
1	L5	1409	C
1	L5	1410	U
1	L5	1414	C
1	L5	1415	G
1	L5	1417	C
1	L5	1420	A
1	L5	1435	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	1438	U
1	L5	1444	G
1	L5	1447	C
1	L5	1457	G
1	L5	1482	G
1	L5	1483	C
1	L5	1497	A
1	L5	1498	G
1	L5	1502	G
1	L5	1513	U
1	L5	1517	G
1	L5	1534	A
1	L5	1547	A
1	L5	1562	G
1	L5	1566	C
1	L5	1578	U
1	L5	1591	U
1	L5	1596	U
1	L5	1624	G
1	L5	1625	G
1	L5	1631	A
1	L5	1633	G
1	L5	1634	A
1	L5	1640	C
1	L5	1641	G
1	L5	1642	A
1	L5	1654	G
1	L5	1661	C
1	L5	1676	C
1	L5	1677	U
1	L5	1678	C
1	L5	1697	G
1	L5	1699	A
1	L5	1700	G
1	L5	1703	C
1	L5	1704	C
1	L5	1705	G
1	L5	1706	A
1	L5	1707	C
1	L5	1708	G
1	L5	1718	C
1	L5	1719	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	1726	U
1	L5	1734	G
1	L5	1741	G
1	L5	1742	A
1	L5	1753	G
1	L5	1755	C
1	L5	1757	U
1	L5	1758	G
1	L5	1760	G
1	L5	1761	G
1	L5	1762	C
1	L5	1763	C
1	L5	1764	G
1	L5	1765	A
1	L5	1766	A
1	L5	1767	A
1	L5	1768	C
1	L5	1770	A
1	L5	1771	U
1	L5	1772	C
1	L5	1775	A
1	L5	1781	U
1	L5	1787	A
1	L5	1804	A
1	L5	1810	G
1	L5	1820	C
1	L5	1821	G
1	L5	1822	U
1	L5	1834	U
1	L5	1836	G
1	L5	1837	A
1	L5	1842	G
1	L5	1843	A
1	L5	1855	G
1	L5	1869	G
1	L5	1882	U
1	L5	1897	A
1	L5	1918	U
1	L5	1919	G
1	L5	1920	C
1	L5	1921	C
1	L5	1922	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	1925	G
1	L5	1931	C
1	L5	1932	A
1	L5	1936	C
1	L5	1940	G
1	L5	1948	G
1	L5	1951	G
1	L5	1959	U
1	L5	1960	A
1	L5	1961	G
1	L5	1962	A
1	L5	1972	G
1	L5	1974	U
1	L5	1975	G
1	L5	1978	C
1	L5	1980	U
1	L5	1983	A
1	L5	1984	A
1	L5	1985	G
1	L5	1986	U
1	L5	1987	C
1	L5	1988	G
1	L5	1990	A
1	L5	1991	A
1	L5	1992	U
1	L5	1993	C
1	L5	1997	U
1	L5	2001	G
1	L5	2002	A
1	L5	2004	U
1	L5	2014	C
1	L5	2017	A
1	L5	2018	C
1	L5	2024	G
1	L5	2026	A
1	L5	2033	A
1	L5	2034	G
1	L5	2046	G
1	L5	2048	U
1	L5	2052	G
1	L5	2055	G
1	L5	2056	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	2069	A
1	L5	2084	C
1	L5	2085	G
1	L5	2089	G
1	L5	2092	G
1	L5	2093	A
1	L5	2095	A
1	L5	2096	G
1	L5	2097	U
1	L5	2098	G
1	L5	2101	C
1	L5	2102	G
1	L5	2106	G
1	L5	2107	C
1	L5	2108	G
1	L5	2110	C
1	L5	2111	G
1	L5	2112	G
1	L5	2250	C
1	L5	2252	G
1	L5	2253	A
1	L5	2256	C
1	L5	2262	G
1	L5	2277	C
1	L5	2289	C
1	L5	2300	A
1	L5	2301	G
1	L5	2313	A
1	L5	2332	A
1	L5	2333	G
1	L5	2348	G
1	L5	2351	C
1	L5	2360	A
1	L5	2369	U
1	L5	2389	A
1	L5	2395	A
1	L5	2397	G
1	L5	2417	A
1	L5	2418	A
1	L5	2421	G
1	L5	2425	U
1	L5	2441	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	2450	G
1	L5	2453	A
1	L5	2464	C
1	L5	2465	C
1	L5	2474	G
1	L5	2475	G
1	L5	2478	C
1	L5	2479	G
1	L5	2483	G
1	L5	2484	A
1	L5	2485	U
1	L5	2487	G
1	L5	2488	C
1	L5	2489	C
1	L5	2490	U
1	L5	2491	C
1	L5	2494	U
1	L5	2495	U
1	L5	2503	G
1	L5	2504	C
1	L5	2505	C
1	L5	2506	G
1	L5	2513	A
1	L5	2519	U
1	L5	2520	C
1	L5	2537	A
1	L5	2544	G
1	L5	2546	G
1	L5	2547	G
1	L5	2554	U
1	L5	2555	G
1	L5	2559	G
1	L5	2560	C
1	L5	2565	A
1	L5	2573	A
1	L5	2583	C
1	L5	2586	G
1	L5	2587	A
1	L5	2589	C
1	L5	2601	A
1	L5	2611	A
1	L5	2618	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	2653	C
1	L5	2662	G
1	L5	2669	C
1	L5	2670	C
1	L5	2675	G
1	L5	2676	A
1	L5	2687	U
1	L5	2694	G
1	L5	2695	A
1	L5	2696	A
1	L5	2703	G
1	L5	2707	U
1	L5	2708	U
1	L5	2709	C
1	L5	2710	C
1	L5	2711	G
1	L5	2721	G
1	L5	2724	G
1	L5	2725	A
1	L5	2726	G
1	L5	2739	C
1	L5	2742	G
1	L5	2743	A
1	L5	2746	A
1	L5	2756	G
1	L5	2761	U
1	L5	2763	U
1	L5	2764	A
1	L5	2770	C
1	L5	2787	A
1	L5	2788	U
1	L5	2790	U
1	L5	2815	A
1	L5	2826	U
1	L5	2827	G
1	L5	2829	U
1	L5	2838	G
1	L5	2855	G
1	L5	2867	C
1	L5	2877	G
1	L5	2892	C
1	L5	2900	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	2902	G
1	L5	2903	G
1	L5	2904	U
1	L5	2905	C
1	L5	2906	G
1	L5	2908	U
1	L5	3585	G
1	L5	3587	C
1	L5	3588	C
1	L5	3590	G
1	L5	3591	C
1	L5	3594	C
1	L5	3595	U
1	L5	3596	A
1	L5	3597	G
1	L5	3604	A
1	L5	3605	C
1	L5	3606	U
1	L5	3615	G
1	L5	3618	C
1	L5	3626	G
1	L5	3635	A
1	L5	3644	U
1	L5	3646	A
1	L5	3662	A
1	L5	3673	C
1	L5	3674	G
1	L5	3685	C
1	L5	3710	G
1	L5	3711	A
1	L5	3714	G
1	L5	3729	U
1	L5	3735	G
1	L5	3748	A
1	L5	3750	G
1	L5	3753	G
1	L5	3754	G
1	L5	3757	G
1	L5	3758	U
1	L5	3759	A
1	L5	3760	A
1	L5	3761	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	3771	C
1	L5	3776	G
1	L5	3777	G
1	L5	3784	A
1	L5	3786	U
1	L5	3802	U
1	L5	3811	G
1	L5	3812	C
1	L5	3814	U
1	L5	3817	A
1	L5	3818	U
1	L5	3819	G
1	L5	3823	G
1	L5	3838	U
1	L5	3839	G
1	L5	3840	U
1	L5	3841	C
1	L5	3867	A
1	L5	3877	A
1	L5	3878	C
1	L5	3879	G
1	L5	3885	G
1	L5	3887	C
1	L5	3890	A
1	L5	3892	U
1	L5	3897	G
1	L5	3901	A
1	L5	3906	A
1	L5	3907	G
1	L5	3908	A
1	L5	3915	U
1	L5	3938	G
1	L5	3939	G
1	L5	3942	A
1	L5	3943	A
1	L5	3947	A
1	L5	3950	U
1	L5	3955	G
1	L5	3956	G
1	L5	3958	G
1	L5	3959	U
1	L5	3960	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	3961	G
1	L5	3962	A
1	L5	3963	A
1	L5	3964	U
1	L5	3965	A
1	L5	3966	A
1	L5	3969	G
1	L5	3970	G
1	L5	3971	G
1	L5	3973	G
1	L5	3974	G
1	L5	3975	C
1	L5	3977	C
1	L5	4034	G
1	L5	4035	G
1	L5	4036	G
1	L5	4038	C
1	L5	4039	G
1	L5	4041	C
1	L5	4042	G
1	L5	4043	G
1	L5	4044	U
1	L5	4045	G
1	L5	4046	A
1	L5	4048	A
1	L5	4049	U
1	L5	4050	A
1	L5	4051	C
1	L5	4052	C
1	L5	4053	A
1	L5	4055	U
1	L5	4064	C
1	L5	4065	G
1	L5	4076	G
1	L5	4086	G
1	L5	4096	C
1	L5	4097	G
1	L5	4099	G
1	L5	4101	C
1	L5	4102	C
1	L5	4103	C
1	L5	4104	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	4106	G
1	L5	4107	G
1	L5	4108	G
1	L5	4111	U
1	L5	4112	C
1	L5	4113	U
1	L5	4114	C
1	L5	4115	G
1	L5	4116	C
1	L5	4117	U
1	L5	4120	U
1	L5	4121	G
1	L5	4122	G
1	L5	4127	A
1	L5	4133	C
1	L5	4140	C
1	L5	4141	G
1	L5	4142	C
1	L5	4143	G
1	L5	4144	C
1	L5	4146	G
1	L5	4150	G
1	L5	4162	C
1	L5	4163	U
1	L5	4170	A
1	L5	4183	G
1	L5	4191	G
1	L5	4196	G
1	L5	4197	G
1	L5	4201	G
1	L5	4203	A
1	L5	4222	G
1	L5	4228	G
1	L5	4229	U
1	L5	4233	A
1	L5	4242	U
1	L5	4251	A
1	L5	4254	G
1	L5	4256	A
1	L5	4257	A
1	L5	4265	U
1	L5	4268	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	4273	A
1	L5	4281	A
1	L5	4291	G
1	L5	4304	A
1	L5	4305	G
1	L5	4314	C
1	L5	4326	G
1	L5	4329	G
1	L5	4330	G
1	L5	4332	C
1	L5	4349	C
1	L5	4354	U
1	L5	4371	G
1	L5	4373	G
1	L5	4376	A
1	L5	4377	G
1	L5	4378	A
1	L5	4379	A
1	L5	4387	C
1	L5	4391	G
1	L5	4394	A
1	L5	4398	C
1	L5	4422	A
1	L5	4426	C
1	L5	4444	C
1	L5	4448	G
1	L5	4449	A
1	L5	4452	U
1	L5	4453	C
1	L5	4464	A
1	L5	4475	G
1	L5	4476	C
1	L5	4488	A
1	L5	4500	U
1	L5	4512	U
1	L5	4513	A
1	L5	4518	A
1	L5	4519	C
1	L5	4524	G
1	L5	4545	G
1	L5	4548	A
1	L5	4549	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	4560	C
1	L5	4567	G
1	L5	4573	G
1	L5	4575	G
1	L5	4590	A
1	L5	4600	G
1	L5	4617	G
1	L5	4627	U
1	L5	4635	A
1	L5	4636	U
1	L5	4637	G
1	L5	4652	G
1	L5	4656	A
1	L5	4657	U
1	L5	4659	G
1	L5	4670	C
1	L5	4672	A
1	L5	4679	G
1	L5	4684	A
1	L5	4687	A
1	L5	4694	G
1	L5	4695	C
1	L5	4700	A
1	L5	4708	A
1	L5	4709	U
1	L5	4719	G
1	L5	4720	C
1	L5	4730	C
1	L5	4731	G
1	L5	4733	C
1	L5	4734	A
1	L5	4741	C
1	L5	4742	G
1	L5	4745	G
1	L5	4750	G
1	L5	4754	G
1	L5	4757	C
1	L5	4759	C
1	L5	4761	G
1	L5	4764	A
1	L5	4765	G
1	L5	4770	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	4771	C
1	L5	4772	C
1	L5	4773	C
1	L5	4775	C
1	L5	4776	G
1	L5	4859	C
1	L5	4860	G
1	L5	4870	G
1	L5	4871	C
1	L5	4872	G
1	L5	4875	G
1	L5	4882	U
1	L5	4883	C
1	L5	4887	C
1	L5	4888	U
1	L5	4889	G
1	L5	4891	G
1	L5	4895	C
1	L5	4896	G
1	L5	4900	C
1	L5	4901	G
1	L5	4910	G
1	L5	4911	A
1	L5	4912	G
1	L5	4913	G
1	L5	4914	C
1	L5	4918	C
1	L5	4922	C
1	L5	4923	C
1	L5	4925	U
1	L5	4928	C
1	L5	4934	A
1	L5	4937	C
1	L5	4940	C
1	L5	4941	G
1	L5	4943	A
1	L5	4944	C
1	L5	4949	G
1	L5	4951	G
1	L5	4960	G
1	L5	4961	G
1	L5	4966	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L5	4976	U
1	L5	4985	U
1	L5	4988	U
1	L5	4989	U
1	L5	4991	U
1	L5	5007	A
1	L5	5009	G
1	L5	5013	C
1	L5	5014	A
1	L5	5017	G
1	L5	5022	U
1	L5	5024	C
1	L5	5025	C
1	L5	5026	U
1	L5	5027	C
1	L5	5028	G
1	L5	5029	C
1	L5	5034	A
1	L5	5041	G
1	L5	5050	C
1	L5	5054	C
1	L5	5055	G
1	L5	5061	A
1	L5	5069	U
2	L7	33	U
2	L7	38	U
2	L7	42	A
2	L7	53	U
2	L7	54	A
2	L7	64	G
2	L7	97	G
2	L7	100	A
2	L7	106	G
2	L7	109	U
2	L7	110	G
2	L7	111	C
3	L8	25	G
3	L8	34	U
3	L8	35	C
3	L8	39	G
3	L8	48	A
3	L8	51	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	L8	52	A
3	L8	59	A
3	L8	60	G
3	L8	62	A
3	L8	63	U
3	L8	68	G
3	L8	82	A
3	L8	83	C
3	L8	84	A
3	L8	85	U
3	L8	86	U
3	L8	87	G
3	L8	94	G
3	L8	103	A
3	L8	104	A
3	L8	105	C
3	L8	110	U
3	L8	112	G
3	L8	114	G
3	L8	123	U
3	L8	124	U
3	L8	125	C
3	L8	126	C
3	L8	127	U
3	L8	147	G
49	S2	23	G
49	S2	33	G
49	S2	45	A
49	S2	46	A
49	S2	56	G
49	S2	58	C
49	S2	59	U
49	S2	64	A
49	S2	65	C
49	S2	67	C
49	S2	68	A
49	S2	72	C
49	S2	73	C
49	S2	74	G
49	S2	76	U
49	S2	103	A
49	S2	113	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	114	G
49	S2	115	U
49	S2	116	U
49	S2	121	U
49	S2	126	G
49	S2	129	C
49	S2	130	G
49	S2	139	C
49	S2	143	U
49	S2	147	A
49	S2	149	A
49	S2	160	U
49	S2	162	C
49	S2	163	U
49	S2	175	A
49	S2	190	G
49	S2	198	U
49	S2	199	C
49	S2	200	G
49	S2	203	G
49	S2	204	G
49	S2	206	G
49	S2	207	G
49	S2	211	G
49	S2	214	U
49	S2	291	G
49	S2	292	A
49	S2	293	C
49	S2	294	U
49	S2	295	C
49	S2	302	A
49	S2	306	C
49	S2	307	G
49	S2	308	G
49	S2	309	G
49	S2	311	C
49	S2	318	A
49	S2	319	C
49	S2	322	C
49	S2	323	C
49	S2	324	C
49	S2	325	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	326	C
49	S2	327	G
49	S2	328	U
49	S2	329	G
49	S2	332	G
49	S2	339	A
49	S2	340	C
49	S2	347	G
49	S2	351	G
49	S2	360	A
49	S2	362	C
49	S2	364	A
49	S2	368	U
49	S2	370	G
49	S2	385	G
49	S2	386	C
49	S2	407	G
49	S2	408	A
49	S2	409	C
49	S2	417	C
49	S2	418	A
49	S2	428	U
49	S2	438	G
49	S2	448	A
49	S2	449	A
49	S2	450	C
49	S2	452	G
49	S2	464	A
49	S2	471	G
49	S2	472	C
49	S2	473	A
49	S2	474	G
49	S2	482	G
49	S2	487	U
49	S2	488	U
49	S2	492	C
49	S2	496	C
49	S2	503	C
49	S2	512	A
49	S2	523	A
49	S2	525	A
49	S2	529	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	530	U
49	S2	540	U
49	S2	541	U
49	S2	542	U
49	S2	545	A
49	S2	546	G
49	S2	547	G
49	S2	548	C
49	S2	554	A
49	S2	555	A
49	S2	563	G
49	S2	564	A
49	S2	576	A
49	S2	583	C
49	S2	585	C
49	S2	589	G
49	S2	591	U
49	S2	592	C
49	S2	596	U
49	S2	597	G
49	S2	604	A
49	S2	608	C
49	S2	614	C
49	S2	623	G
49	S2	627	U
49	S2	628	A
49	S2	629	A
49	S2	631	U
49	S2	643	A
49	S2	644	G
49	S2	655	A
49	S2	660	C
49	S2	664	A
49	S2	668	A
49	S2	669	A
49	S2	671	A
49	S2	672	A
49	S2	673	G
49	S2	687	C
49	S2	688	U
49	S2	689	U
49	S2	692	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	693	A
49	S2	695	C
49	S2	696	G
49	S2	697	G
49	S2	698	G
49	S2	732	U
49	S2	733	C
49	S2	736	C
49	S2	738	C
49	S2	749	U
49	S2	751	G
49	S2	752	G
49	S2	753	C
49	S2	788	G
49	S2	791	C
49	S2	792	C
49	S2	798	A
49	S2	799	U
49	S2	810	A
49	S2	821	G
49	S2	822	U
49	S2	830	A
49	S2	834	C
49	S2	835	C
49	S2	836	G
49	S2	837	A
49	S2	838	G
49	S2	839	C
49	S2	840	C
49	S2	841	G
49	S2	842	C
49	S2	847	A
49	S2	869	A
49	S2	870	A
49	S2	873	G
49	S2	874	G
49	S2	878	G
49	S2	880	G
49	S2	883	U
49	S2	887	U
49	S2	888	U
49	S2	889	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	891	G
49	S2	896	U
49	S2	897	U
49	S2	898	U
49	S2	899	U
49	S2	900	C
49	S2	901	G
49	S2	906	U
49	S2	913	A
49	S2	920	A
49	S2	922	A
49	S2	930	C
49	S2	933	G
49	S2	934	G
49	S2	943	U
49	S2	955	A
49	S2	963	A
49	S2	971	G
49	S2	990	A
49	S2	992	A
49	S2	999	G
49	S2	1001	A
49	S2	1016	U
49	S2	1017	U
49	S2	1023	A
49	S2	1027	A
49	S2	1028	A
49	S2	1061	U
49	S2	1062	A
49	S2	1067	C
49	S2	1083	A
49	S2	1085	C
49	S2	1089	G
49	S2	1109	C
49	S2	1114	U
49	S2	1115	U
49	S2	1116	C
49	S2	1119	A
49	S2	1121	G
49	S2	1133	A
49	S2	1138	C
49	S2	1153	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	1154	U
49	S2	1195	A
49	S2	1203	G
49	S2	1207	G
49	S2	1208	A
49	S2	1212	G
49	S2	1215	C
49	S2	1216	C
49	S2	1217	A
49	S2	1224	G
49	S2	1227	G
49	S2	1242	U
49	S2	1243	U
49	S2	1251	A
49	S2	1253	A
49	S2	1256	G
49	S2	1257	G
49	S2	1259	A
49	S2	1264	C
49	S2	1271	C
49	S2	1274	G
49	S2	1275	G
49	S2	1283	C
49	S2	1284	A
49	S2	1286	G
49	S2	1294	G
49	S2	1295	A
49	S2	1301	A
49	S2	1302	G
49	S2	1303	C
49	S2	1306	U
49	S2	1308	U
49	S2	1312	G
49	S2	1341	C
49	S2	1342	U
49	S2	1343	U
49	S2	1348	G
49	S2	1371	U
49	S2	1373	C
49	S2	1378	A
49	S2	1382	A
49	S2	1396	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	1397	U
49	S2	1402	A
49	S2	1404	U
49	S2	1412	C
49	S2	1414	A
49	S2	1416	C
49	S2	1421	A
49	S2	1423	C
49	S2	1431	G
49	S2	1433	C
49	S2	1435	C
49	S2	1436	C
49	S2	1438	A
49	S2	1442	U
49	S2	1449	G
49	S2	1452	A
49	S2	1454	A
49	S2	1462	U
49	S2	1463	U
49	S2	1464	C
49	S2	1480	A
49	S2	1487	A
49	S2	1489	A
49	S2	1490	G
49	S2	1495	G
49	S2	1497	G
49	S2	1498	A
49	S2	1505	U
49	S2	1507	G
49	S2	1509	U
49	S2	1520	G
49	S2	1521	C
49	S2	1533	A
49	S2	1536	G
49	S2	1537	A
49	S2	1544	C
49	S2	1553	C
49	S2	1556	A
49	S2	1558	C
49	S2	1560	U
49	S2	1570	G
49	S2	1575	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	1580	A
49	S2	1585	U
49	S2	1587	G
49	S2	1588	A
49	S2	1594	A
49	S2	1601	A
49	S2	1606	G
49	S2	1621	U
49	S2	1623	A
49	S2	1632	G
49	S2	1637	A
49	S2	1638	G
49	S2	1640	A
49	S2	1643	U
49	S2	1644	C
49	S2	1648	G
49	S2	1649	U
49	S2	1654	G
49	S2	1663	A
49	S2	1664	A
49	S2	1665	G
49	S2	1680	G
49	S2	1683	C
49	S2	1686	G
49	S2	1696	C
49	S2	1698	C
49	S2	1699	A
49	S2	1715	A
49	S2	1719	A
49	S2	1721	U
49	S2	1722	G
49	S2	1742	C
49	S2	1743	G
49	S2	1744	G
49	S2	1745	A
49	S2	1752	C
49	S2	1753	C
49	S2	1754	G
49	S2	1757	G
49	S2	1758	G
49	S2	1759	G
49	S2	1760	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
49	S2	1761	U
49	S2	1771	G
49	S2	1772	C
49	S2	1773	C
49	S2	1774	C
49	S2	1775	U
49	S2	1776	G
49	S2	1777	G
49	S2	1781	A
49	S2	1783	C
49	S2	1784	G
49	S2	1786	U
49	S2	1798	C
49	S2	1822	A
49	S2	1823	A
49	S2	1824	A
49	S2	1825	A
49	S2	1826	G
49	S2	1829	G
49	S2	1831	A
49	S2	1835	A
49	S2	1838	U
49	S2	1849	G
49	S2	1851	A
49	S2	1852	C
49	S2	1861	G
49	S2	1862	G
49	S2	1863	A
49	S2	1864	U
49	S2	1865	C
85	CC	7	G
85	CC	8	U
85	CC	9	G
85	CC	17	G
85	CC	18	G
85	CC	20	A
85	CC	29	G
85	CC	30	G
85	CC	32	C
85	CC	34	A
85	CC	35	U
85	CC	36	A

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Mol	Chain	Res	Type
85	CC	37	A
85	CC	43	A
85	CC	45	G
85	CC	46	U
85	CC	47	C
85	CC	57	A
85	CC	58	A
85	CC	60	C
85	CC	63	U
85	CC	73	C
85	CC	75	A

All (45) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	L5	184	U
1	L5	406	C
1	L5	412	G
1	L5	413	G
1	L5	493	G
1	L5	504	G
1	L5	914	U
1	L5	968	C
1	L5	1633	G
1	L5	1733	G
1	L5	1919	G
1	L5	1977	C
1	L5	2033	A
1	L5	2056	G
1	L5	2084	C
1	L5	2416	G
1	L5	2675	G
1	L5	2696	A
1	L5	2724	G
1	L5	2760	G
1	L5	2786	C
1	L5	3614	G
1	L5	3673	C
1	L5	3876	A
1	L5	4291	G
1	L5	4378	A
1	L5	4475	G

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Mol	Chain	Res	Type
1	L5	4699	U
1	L5	4913	G
1	L5	4927	G
3	L8	51	U
49	S2	112	U
49	S2	113	G
49	S2	291	G
49	S2	293	C
49	S2	407	G
49	S2	417	C
49	S2	563	G
49	S2	628	A
49	S2	688	U
49	S2	821	G
49	S2	1434	C
49	S2	1488	C
49	S2	1534	C
49	S2	1598	G

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

1 non-standard protein/DNA/RNA residue is 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	$\# Z  > 2$
41	MLZ	Lm	98	41	8,9,10	0.81	0	4,9,11	0.60	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
41	MLZ	Lm	98	41	-	0/7/8/10	-



There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 276 ligands modelled in this entry, 267 are monoatomic - leaving 9 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	$\# Z  > 2$
88	T1C	L5	5312	87	44,45,45	1.18	4 (9%)	53,72,72	1.12	3 (5%)
88	T1C	CC	101	-	44,45,45	1.19	4 (9%)	53,72,72	1.18	4 (7%)
88	T1C	L5	5317	-	44,45,45	1.23	4 (9%)	53,72,72	1.47	11 (20%)
88	T1C	S2	1930	-	44,45,45	1.21	4 (9%)	53,72,72	1.24	5 (9%)
88	T1C	L5	5314	87	44,45,45	1.20	4 (9%)	53,72,72	0.85	2 (3%)
88	T1C	L5	5313	87	44,45,45	1.18	4 (9%)	53,72,72	1.22	4 (7%)
88	T1C	L5	5316	-	44,45,45	1.21	4 (9%)	53,72,72	1.26	6 (11%)
88	T1C	L5	5318	-	44,45,45	1.20	4 (9%)	53,72,72	1.01	3 (5%)
88	T1C	L5	5315	87	44,45,45	1.21	4 (9%)	53,72,72	1.05	6 (11%)

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
88	T1C	L5	5312	87	-	11/22/80/80	0/4/4/4
88	T1C	CC	101	-	-	12/22/80/80	0/4/4/4
88	T1C	L5	5317	-	-	9/22/80/80	0/4/4/4
88	T1C	S2	1930	-	-	14/22/80/80	0/4/4/4
88	T1C	L5	5314	87	-	13/22/80/80	0/4/4/4
88	T1C	L5	5313	87	-	11/22/80/80	0/4/4/4
88	T1C	L5	5316	-	-	12/22/80/80	0/4/4/4
88	T1C	L5	5318	-	-	11/22/80/80	0/4/4/4
88	T1C	L5	5315	87	-	13/22/80/80	0/4/4/4

All (36) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
88	L5	5318	T1C	C21-N21	5.54	1.48	1.33
88	S2	1930	T1C	C21-N21	5.50	1.48	1.33
88	L5	5315	T1C	C21-N21	5.50	1.48	1.33
88	L5	5314	T1C	C21-N21	5.48	1.48	1.33
88	L5	5312	T1C	C21-N21	5.47	1.48	1.33
88	L5	5316	T1C	C21-N21	5.46	1.48	1.33
88	CC	101	T1C	C21-N21	5.45	1.47	1.33
88	L5	5313	T1C	C21-N21	5.45	1.47	1.33
88	L5	5317	T1C	C21-N21	5.45	1.47	1.33
88	L5	5318	T1C	C4-N4	2.56	1.53	1.47
88	L5	5317	T1C	C4-N4	2.54	1.53	1.47
88	L5	5314	T1C	C4-N4	2.46	1.52	1.47
88	L5	5315	T1C	C4-N4	2.44	1.52	1.47
88	CC	101	T1C	C4-N4	2.42	1.52	1.47
88	S2	1930	T1C	C4-N4	2.41	1.52	1.47
88	L5	5312	T1C	C4-N4	2.39	1.52	1.47
88	L5	5317	T1C	C7-N7	2.32	1.48	1.42
88	L5	5315	T1C	C7-N7	2.25	1.48	1.42
88	L5	5313	T1C	C4-N4	2.21	1.52	1.47
88	L5	5317	T1C	O11-C11	2.21	1.27	1.23
88	L5	5316	T1C	O11-C11	2.21	1.27	1.23
88	S2	1930	T1C	O11-C11	2.21	1.27	1.23
88	L5	5313	T1C	O11-C11	2.21	1.27	1.23
88	L5	5315	T1C	O11-C11	2.20	1.27	1.23
88	L5	5314	T1C	O11-C11	2.20	1.27	1.23
88	CC	101	T1C	O11-C11	2.19	1.27	1.23
88	L5	5318	T1C	O11-C11	2.19	1.27	1.23
88	L5	5312	T1C	O11-C11	2.18	1.27	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
88	L5	5316	T1C	C4-N4	2.16	1.52	1.47
88	CC	101	T1C	C7-N7	2.16	1.48	1.42
88	L5	5316	T1C	C7-N7	2.14	1.48	1.42
88	L5	5318	T1C	C7-N7	2.14	1.48	1.42
88	S2	1930	T1C	C7-N7	2.13	1.48	1.42
88	L5	5313	T1C	C7-N7	2.12	1.48	1.42
88	L5	5312	T1C	C7-N7	2.09	1.48	1.42
88	L5	5314	T1C	C7-N7	2.02	1.47	1.42

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
88	L5	5316	T1C	C11-C1B-C12	5.27	122.97	118.80
88	CC	101	T1C	C11-C1B-C12	4.74	122.55	118.80
88	L5	5317	T1C	C1C-C1-C2	4.60	123.05	115.75
88	L5	5313	T1C	C1C-C1-C2	4.29	122.56	115.75
88	S2	1930	T1C	C1C-C41-C4	4.07	117.20	111.64
88	L5	5312	T1C	C1C-C1-C2	4.00	122.10	115.75
88	L5	5318	T1C	C1C-C1-C2	3.87	121.91	115.75
88	L5	5317	T1C	C1C-C41-C4	3.76	116.79	111.64
88	L5	5312	T1C	C11-C1B-C12	3.75	121.77	118.80
88	S2	1930	T1C	C11-C1B-C12	3.69	121.72	118.80
88	L5	5313	T1C	C11-C1B-C12	3.60	121.65	118.80
88	L5	5317	T1C	C51-C5-C41	3.27	116.23	110.49
88	L5	5316	T1C	C1C-C12-C1B	-2.93	120.09	123.06
88	L5	5316	T1C	C1C-C41-C4	2.86	115.54	111.64
88	L5	5314	T1C	C11-C1B-C12	2.84	121.05	118.80
88	L5	5315	T1C	C11-C1B-C12	2.84	121.04	118.80
88	L5	5317	T1C	C61-C7-N7	2.80	122.33	118.91
88	S2	1930	T1C	C51-C5-C41	2.80	115.41	110.49
88	CC	101	T1C	O1C-C1C-C12	-2.79	105.68	110.14
88	L5	5317	T1C	C11-C1B-C12	2.78	121.00	118.80
88	L5	5316	T1C	C1C-C1-C2	2.76	120.13	115.75
88	CC	101	T1C	C1C-C1-C2	2.73	120.09	115.75
88	L5	5317	T1C	C8-C7-N7	-2.70	117.29	120.91
88	L5	5318	T1C	C11-C1B-C12	2.64	120.89	118.80
88	L5	5314	T1C	C1C-C1-C2	2.56	119.82	115.75
88	S2	1930	T1C	C1C-C12-C1B	-2.47	120.56	123.06
88	L5	5315	T1C	C1-C1C-C12	2.46	112.77	109.88
88	L5	5313	T1C	C51-C5-C41	2.46	114.81	110.49
88	CC	101	T1C	C1C-C12-C1B	-2.34	120.69	123.06
88	L5	5313	T1C	O1C-C1C-C41	-2.30	107.27	110.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
88	L5	5316	T1C	C51-C5-C41	2.26	114.47	110.49
88	L5	5317	T1C	C72-N7-C71	-2.24	108.89	116.12
88	L5	5312	T1C	C1-C1C-C12	2.23	112.50	109.88
88	L5	5318	T1C	O1C-C1C-C41	-2.19	107.39	110.09
88	L5	5317	T1C	O1C-C1C-C12	-2.19	106.63	110.14
88	L5	5315	T1C	O1C-C1C-C12	-2.17	106.67	110.14
88	L5	5315	T1C	C61-C7-N7	2.13	121.51	118.91
88	L5	5317	T1C	O12-C12-C1B	-2.13	120.98	123.90
88	L5	5315	T1C	C1C-C1-C2	2.10	119.09	115.75
88	L5	5316	T1C	O12-C12-C1C	2.09	116.39	113.37
88	L5	5317	T1C	C1C-C12-C1B	2.07	125.16	123.06
88	L5	5317	T1C	O1C-C1C-C41	-2.02	107.61	110.09
88	L5	5315	T1C	C72-N7-C71	-2.01	109.63	116.12
88	S2	1930	T1C	C1C-C1-C2	2.01	118.95	115.75

There are no chirality outliers.

All (106) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
88	L5	5312	T1C	C92-C91-N9-C9
88	L5	5312	T1C	C1-C2-C21-O21
88	L5	5312	T1C	C1-C2-C21-N21
88	L5	5313	T1C	C94-C93-N92-C92
88	L5	5313	T1C	C95-C93-N92-C92
88	L5	5313	T1C	C96-C93-N92-C92
88	L5	5313	T1C	C92-C91-N9-C9
88	L5	5313	T1C	C1-C2-C21-O21
88	L5	5313	T1C	C1-C2-C21-N21
88	L5	5314	T1C	C92-C91-N9-C9
88	L5	5314	T1C	C1-C2-C21-O21
88	L5	5314	T1C	C1-C2-C21-N21
88	L5	5315	T1C	C91-C92-N92-C93
88	L5	5315	T1C	C3-C4-N4-C43
88	L5	5315	T1C	C1-C2-C21-O21
88	L5	5315	T1C	C1-C2-C21-N21
88	L5	5316	T1C	C92-C91-N9-C9
88	L5	5316	T1C	C41-C4-N4-C43
88	L5	5316	T1C	C1-C2-C21-O21
88	L5	5316	T1C	C1-C2-C21-N21
88	L5	5317	T1C	C1-C2-C21-O21
88	L5	5317	T1C	C1-C2-C21-N21
88	L5	5318	T1C	C91-C92-N92-C93

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Mol	Chain	Res	Type	Atoms
88	L5	5318	T1C	C92-C91-N9-C9
88	L5	5318	T1C	O91-C91-N9-C9
88	L5	5318	T1C	C1-C2-C21-O21
88	L5	5318	T1C	C1-C2-C21-N21
88	S2	1930	T1C	C95-C93-N92-C92
88	S2	1930	T1C	C96-C93-N92-C92
88	S2	1930	T1C	C92-C91-N9-C9
88	S2	1930	T1C	C3-C2-C21-O21
88	S2	1930	T1C	C3-C2-C21-N21
88	S2	1930	T1C	C1-C2-C21-O21
88	S2	1930	T1C	C1-C2-C21-N21
88	CC	101	T1C	C1-C2-C21-O21
88	CC	101	T1C	C1-C2-C21-N21
88	L5	5316	T1C	O91-C91-N9-C9
88	L5	5314	T1C	O91-C91-N9-C9
88	L5	5313	T1C	O91-C91-N9-C9
88	L5	5312	T1C	O91-C91-N9-C9
88	S2	1930	T1C	C94-C93-N92-C92
88	S2	1930	T1C	O91-C91-N9-C9
88	L5	5315	T1C	C92-C91-N9-C9
88	L5	5314	T1C	O91-C91-C92-N92
88	L5	5315	T1C	O91-C91-C92-N92
88	L5	5315	T1C	O91-C91-N9-C9
88	L5	5314	T1C	N9-C91-C92-N92
88	L5	5315	T1C	N9-C91-C92-N92
88	L5	5314	T1C	C10-C9-N9-C91
88	S2	1930	T1C	N9-C91-C92-N92
88	L5	5316	T1C	C10-C9-N9-C91
88	L5	5317	T1C	C10-C9-N9-C91
88	L5	5312	T1C	O91-C91-C92-N92
88	S2	1930	T1C	O91-C91-C92-N92
88	L5	5318	T1C	C10-C9-N9-C91
88	CC	101	T1C	C10-C9-N9-C91
88	L5	5312	T1C	N9-C91-C92-N92
88	CC	101	T1C	O91-C91-N9-C9
88	L5	5313	T1C	C91-C92-N92-C93
88	L5	5314	T1C	C91-C92-N92-C93
88	L5	5316	T1C	C91-C92-N92-C93
88	S2	1930	T1C	C91-C92-N92-C93
88	L5	5314	T1C	C8-C9-N9-C91
88	L5	5315	T1C	C41-C4-N4-C43
88	L5	5315	T1C	C41-C4-N4-C42

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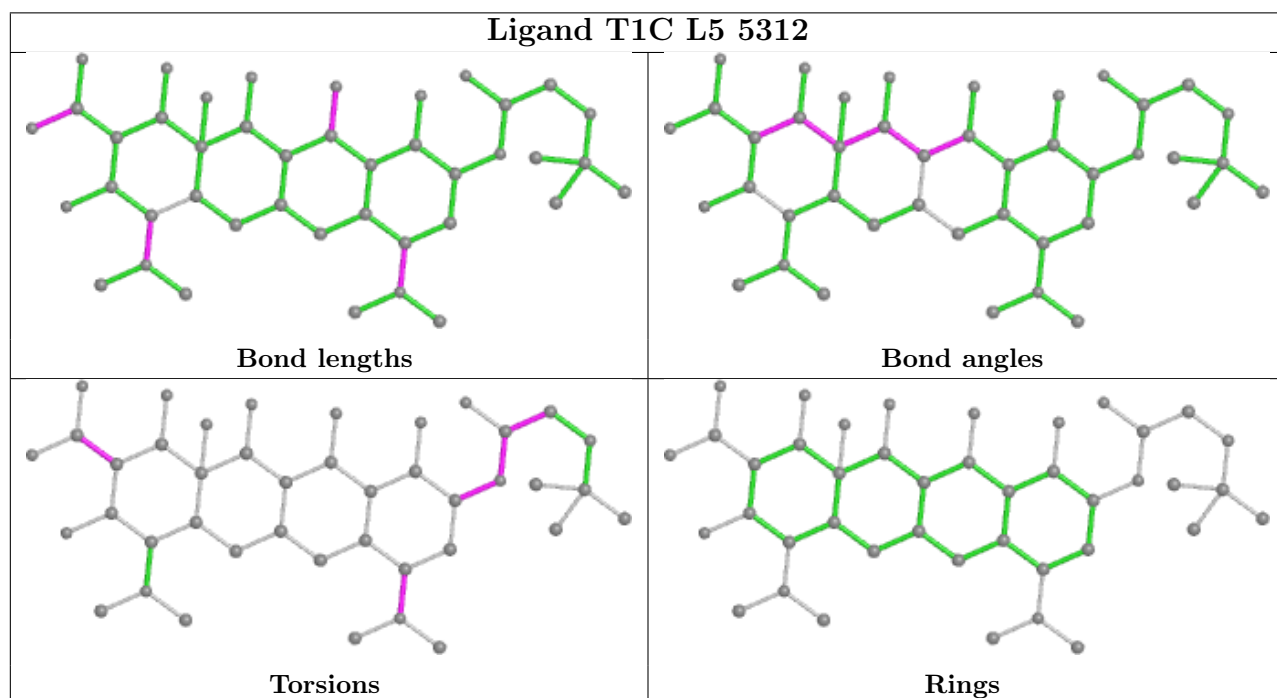
*Continued from previous page...*

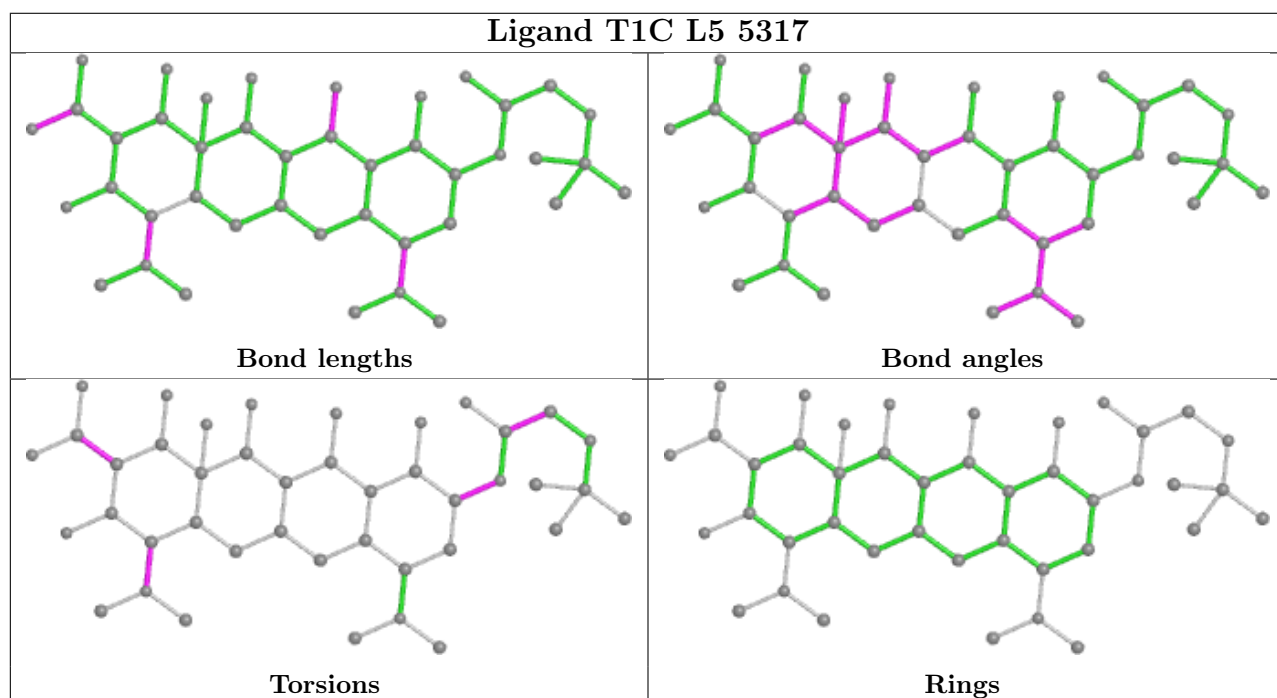
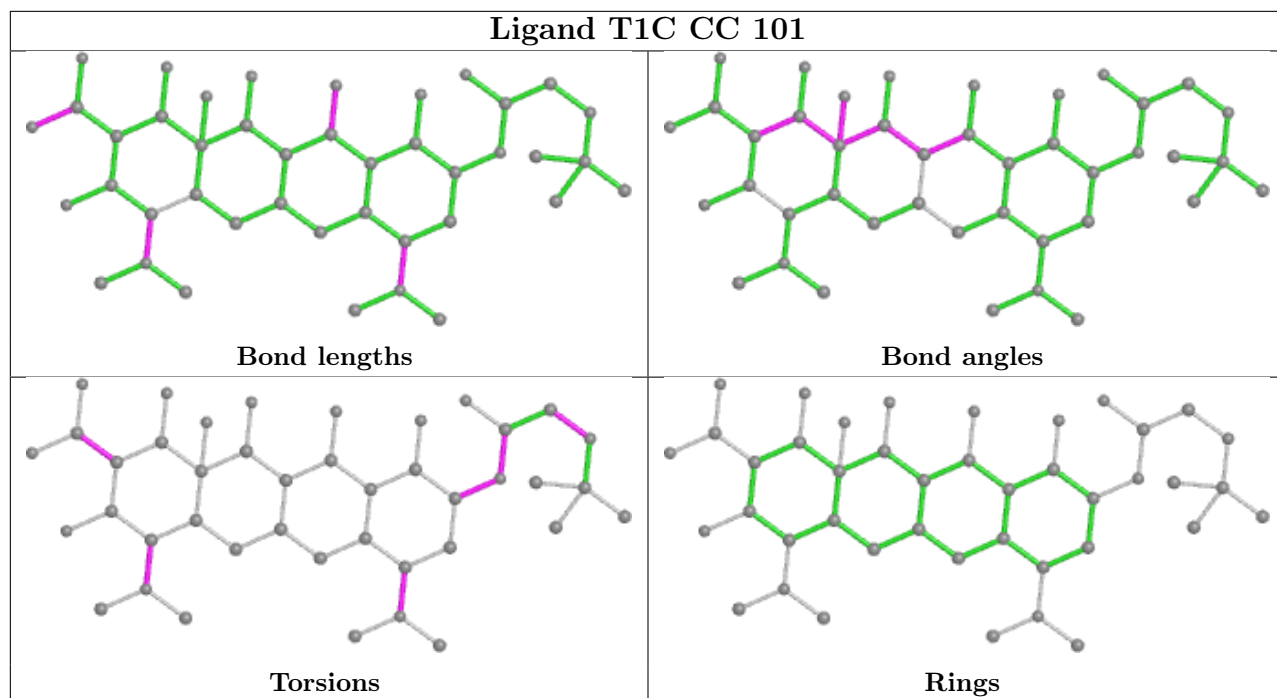
Mol	Chain	Res	Type	Atoms
88	L5	5315	T1C	C3-C4-N4-C42
88	L5	5317	T1C	C3-C4-N4-C42
88	L5	5318	T1C	C41-C4-N4-C42
88	L5	5313	T1C	C3-C2-C21-N21
88	L5	5314	T1C	C3-C2-C21-N21
88	L5	5317	T1C	C3-C2-C21-N21
88	L5	5312	T1C	C10-C9-N9-C91
88	L5	5312	T1C	C3-C2-C21-O21
88	L5	5313	T1C	C3-C2-C21-O21
88	L5	5314	T1C	C3-C2-C21-O21
88	CC	101	T1C	C92-C91-N9-C9
88	L5	5317	T1C	O91-C91-C92-N92
88	CC	101	T1C	C8-C9-N9-C91
88	L5	5317	T1C	N9-C91-C92-N92
88	L5	5316	T1C	C8-C9-N9-C91
88	L5	5317	T1C	C8-C9-N9-C91
88	L5	5318	T1C	C8-C9-N9-C91
88	L5	5312	T1C	C61-C7-N7-C71
88	L5	5314	T1C	C61-C7-N7-C72
88	CC	101	T1C	C91-C92-N92-C93
88	L5	5314	T1C	C61-C7-N7-C71
88	L5	5312	T1C	C61-C7-N7-C72
88	L5	5316	T1C	C61-C7-N7-C71
88	S2	1930	T1C	C61-C7-N7-C72
88	CC	101	T1C	C61-C7-N7-C72
88	L5	5318	T1C	C41-C4-N4-C43
88	CC	101	T1C	C41-C4-N4-C42
88	L5	5312	T1C	C3-C2-C21-N21
88	L5	5315	T1C	C3-C2-C21-N21
88	L5	5316	T1C	C3-C2-C21-N21
88	L5	5318	T1C	C3-C2-C21-N21
88	CC	101	T1C	C3-C2-C21-N21
88	S2	1930	T1C	C61-C7-N7-C71
88	L5	5315	T1C	C3-C2-C21-O21
88	L5	5316	T1C	C3-C2-C21-O21
88	L5	5317	T1C	C3-C2-C21-O21
88	L5	5318	T1C	C3-C2-C21-O21
88	CC	101	T1C	C3-C2-C21-O21
88	L5	5313	T1C	C61-C7-N7-C71
88	L5	5316	T1C	C61-C7-N7-C72
88	CC	101	T1C	C61-C7-N7-C71

There are no ring outliers.

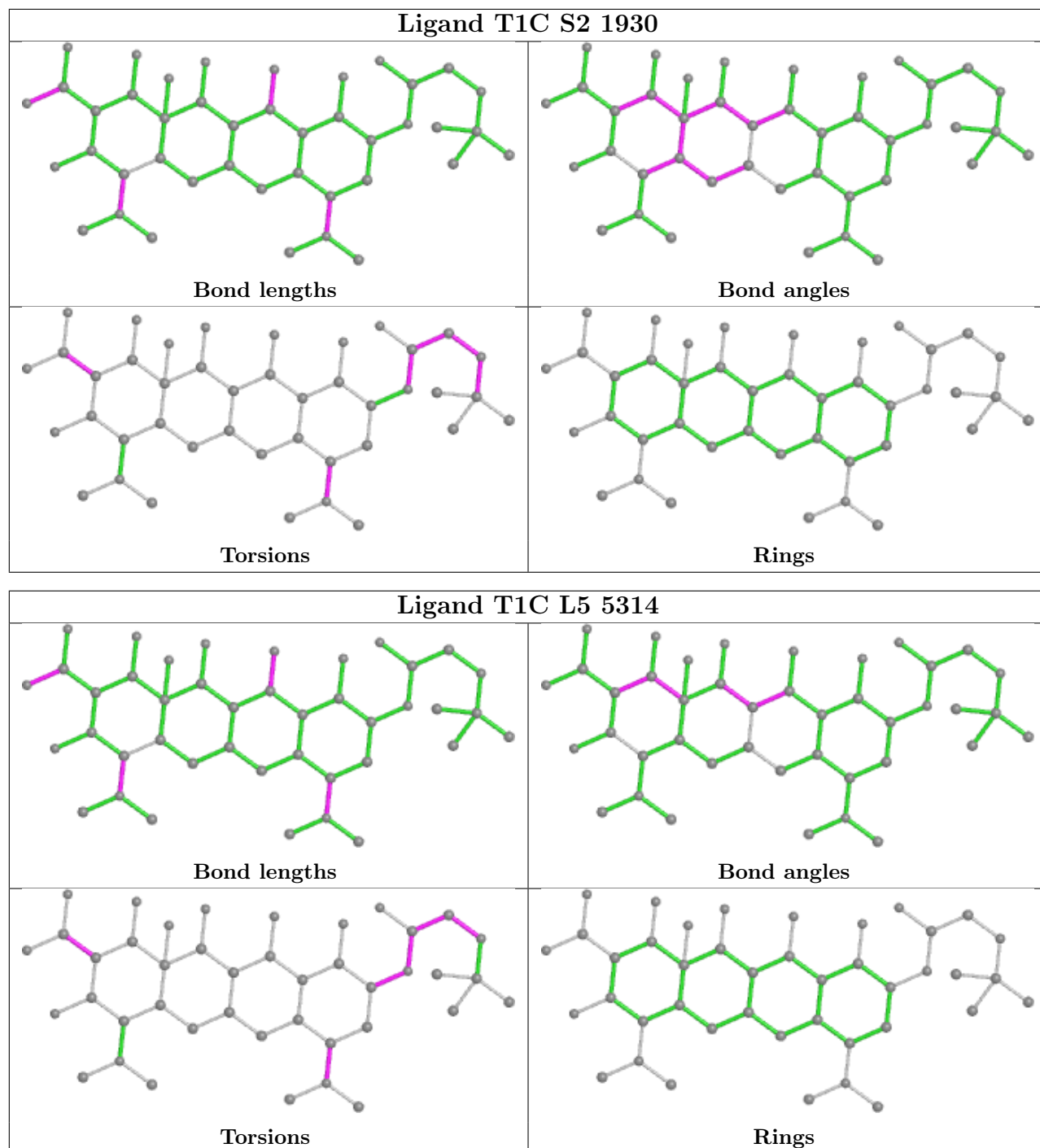
No monomer is involved in short contacts.

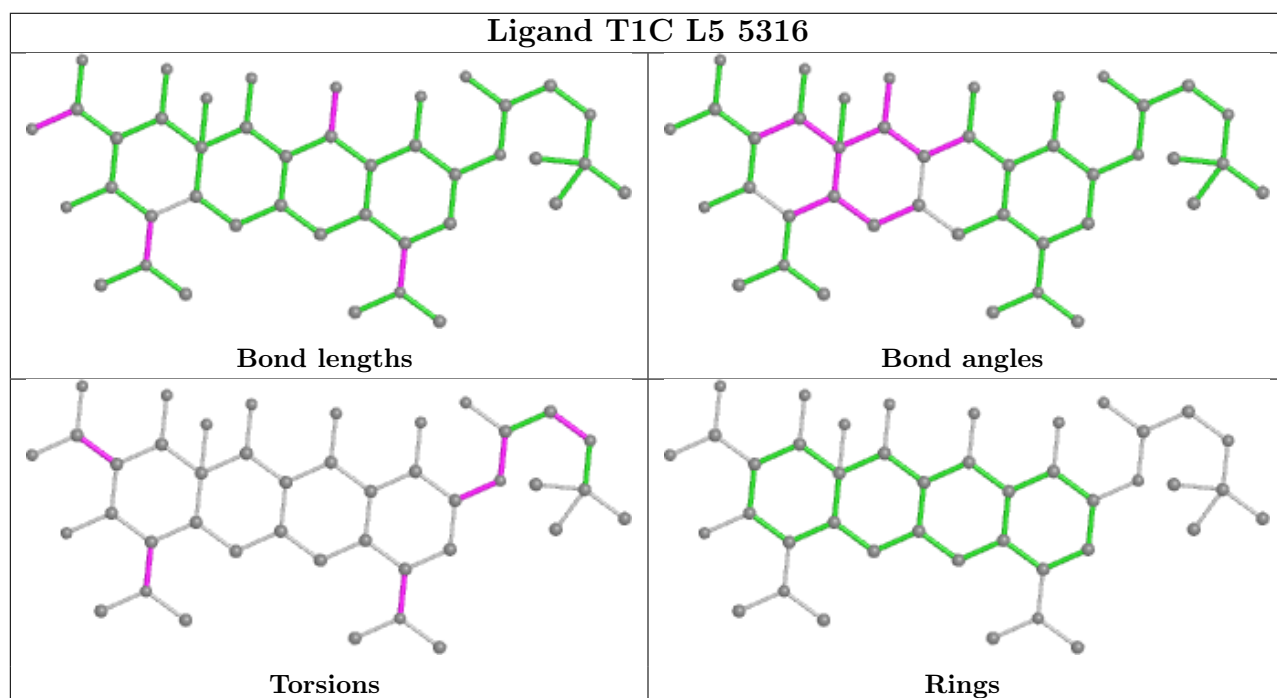
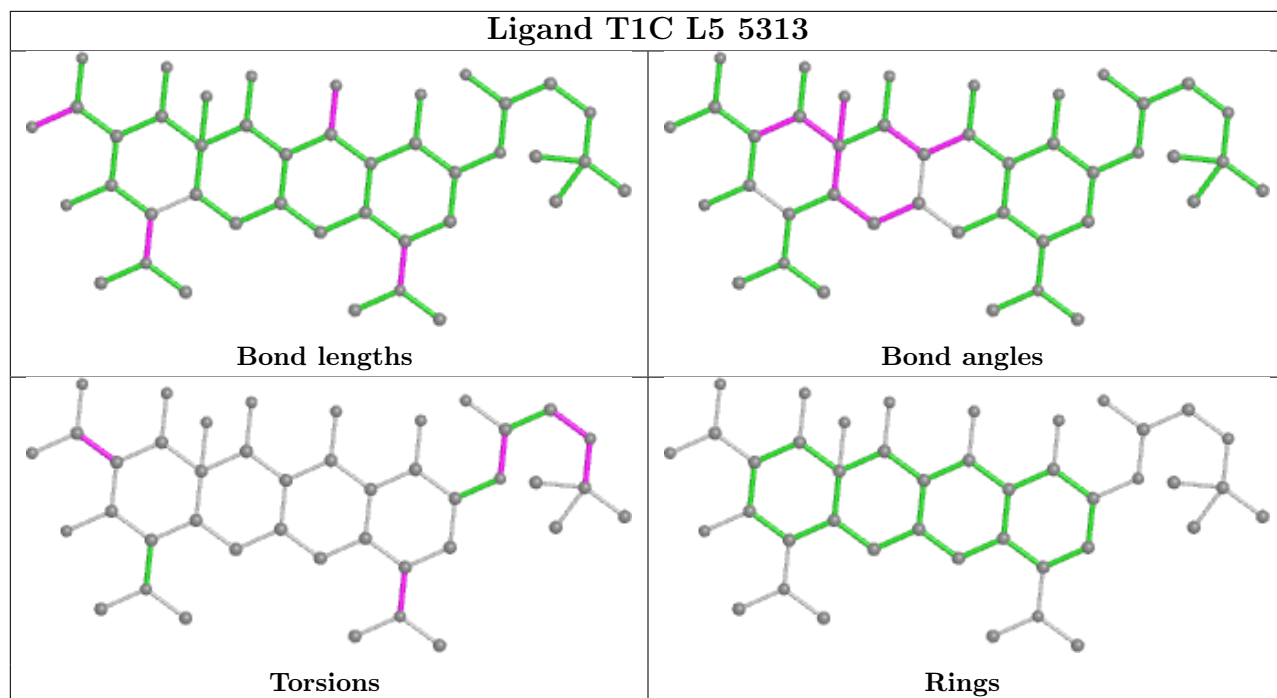
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

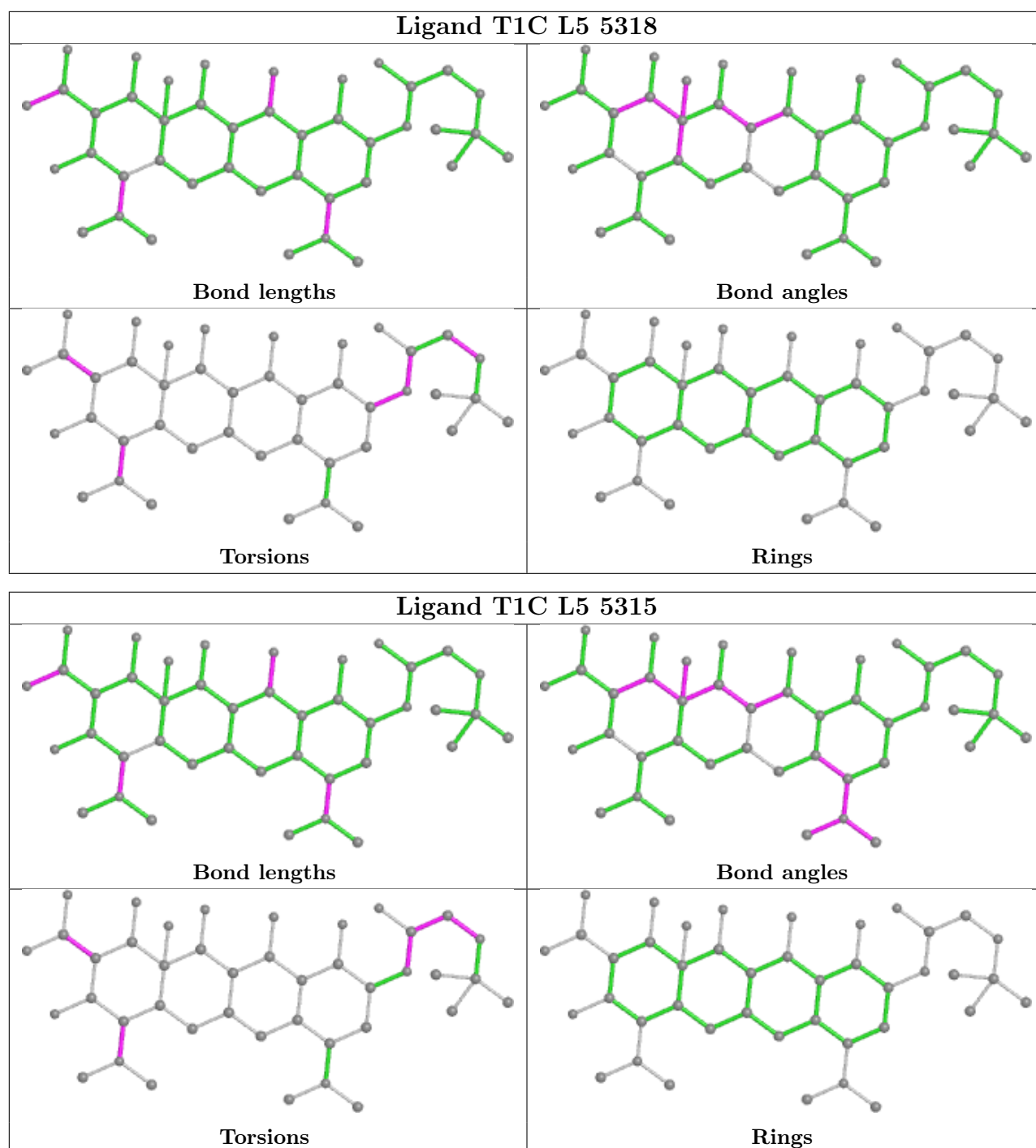












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

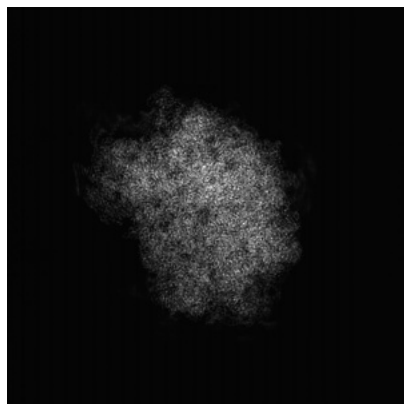
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36838. These allow visual inspection of the internal detail of the map and identification of artifacts.

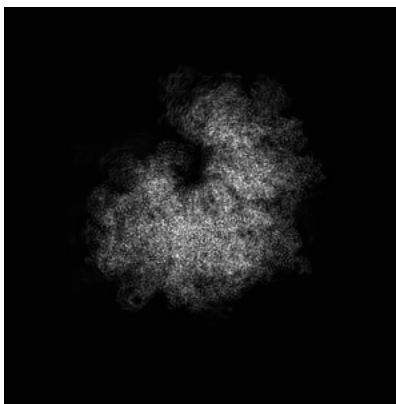
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

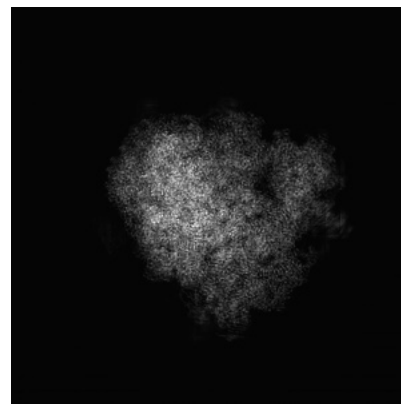
#### 6.1.1 Primary map



X

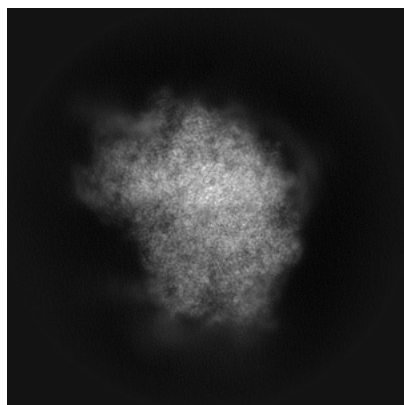


Y

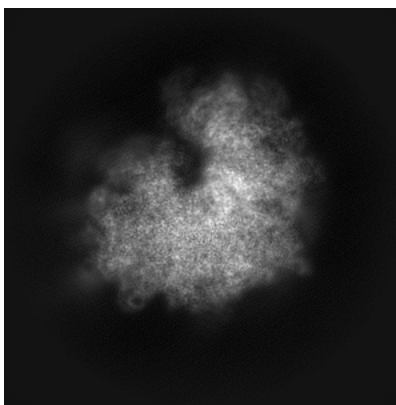


Z

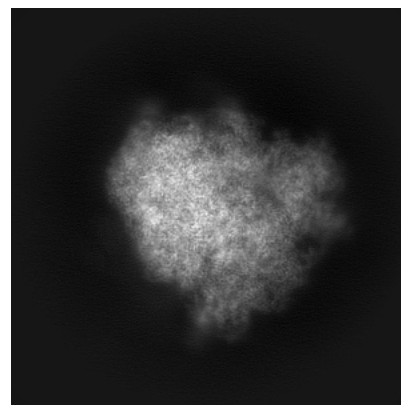
#### 6.1.2 Raw map



X



Y



Z

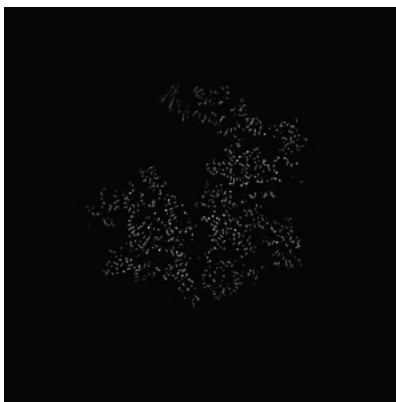
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

### 6.2.1 Primary map



X Index: 240

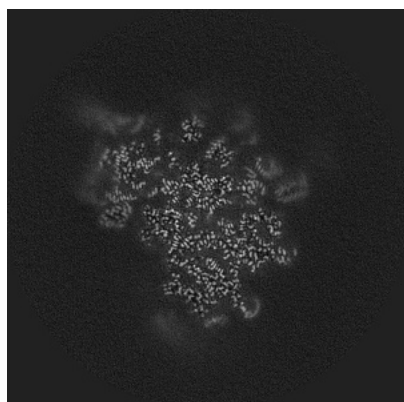


Y Index: 240

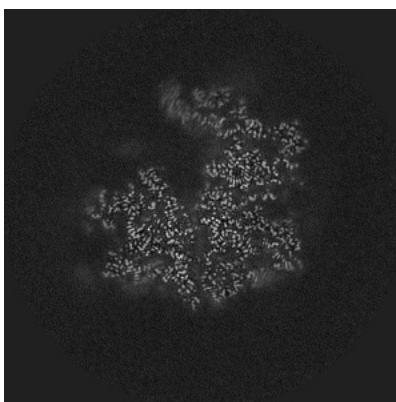


Z Index: 240

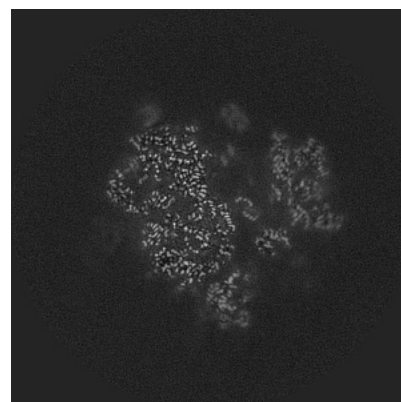
### 6.2.2 Raw map



X Index: 240



Y Index: 240



Z Index: 240

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: 215

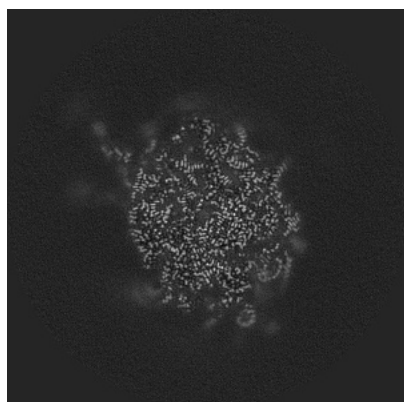


Y Index: 231

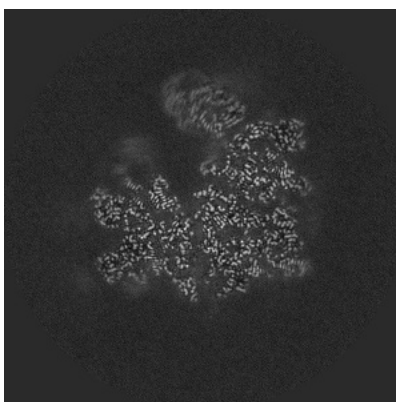


Z Index: 266

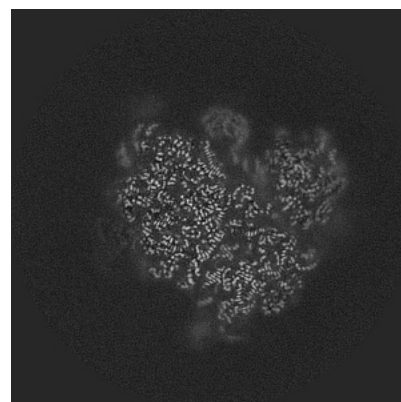
### 6.3.2 Raw map



X Index: 215



Y Index: 231

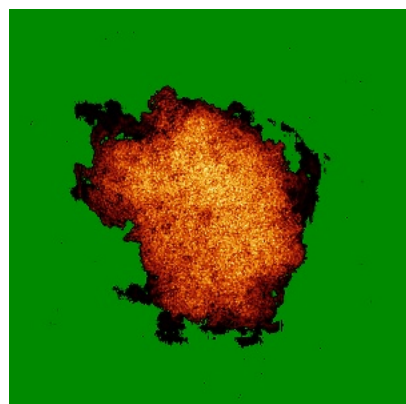


Z Index: 266

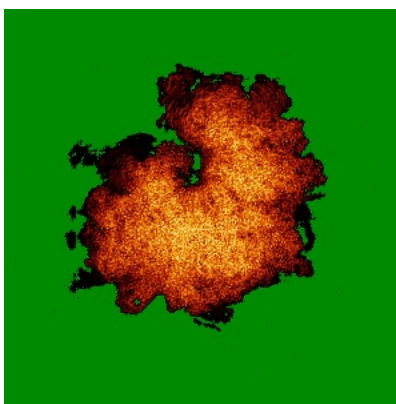
The images above show the largest variance slices of the map in three orthogonal directions.

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

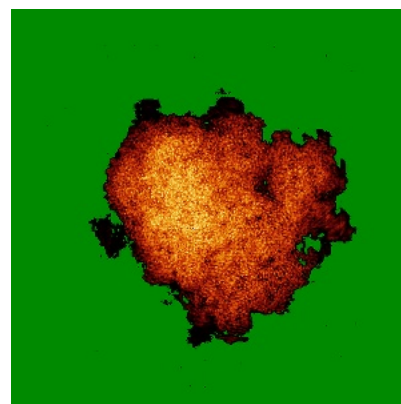
### 6.4.1 Primary map



X

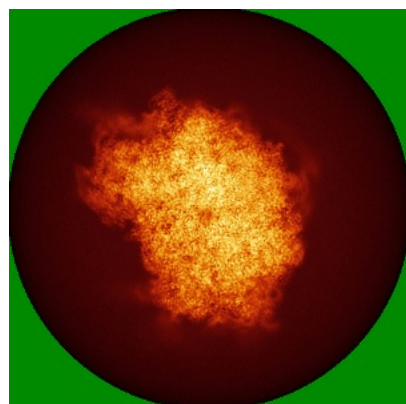


Y

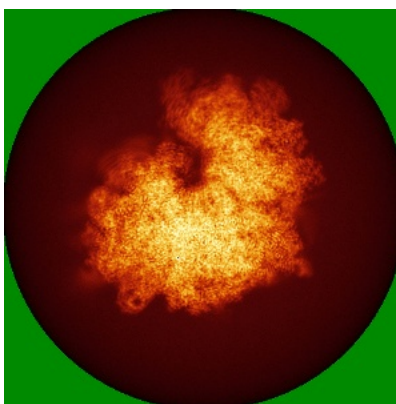


Z

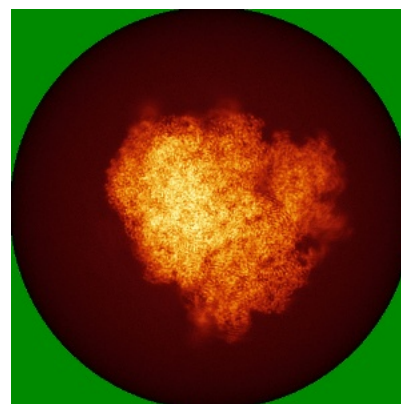
### 6.4.2 Raw map



X



Y



Z

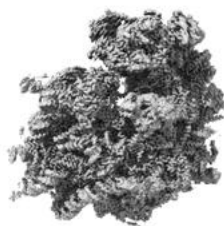
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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

### 6.5.1 Primary map



X



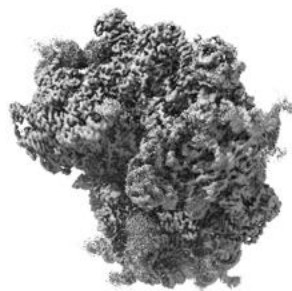
Y



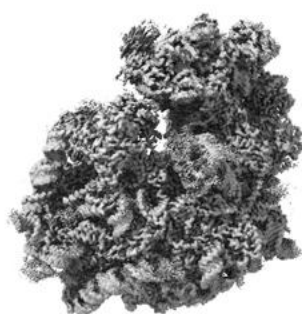
Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

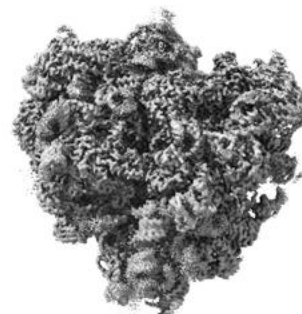
### 6.5.2 Raw map



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](#)

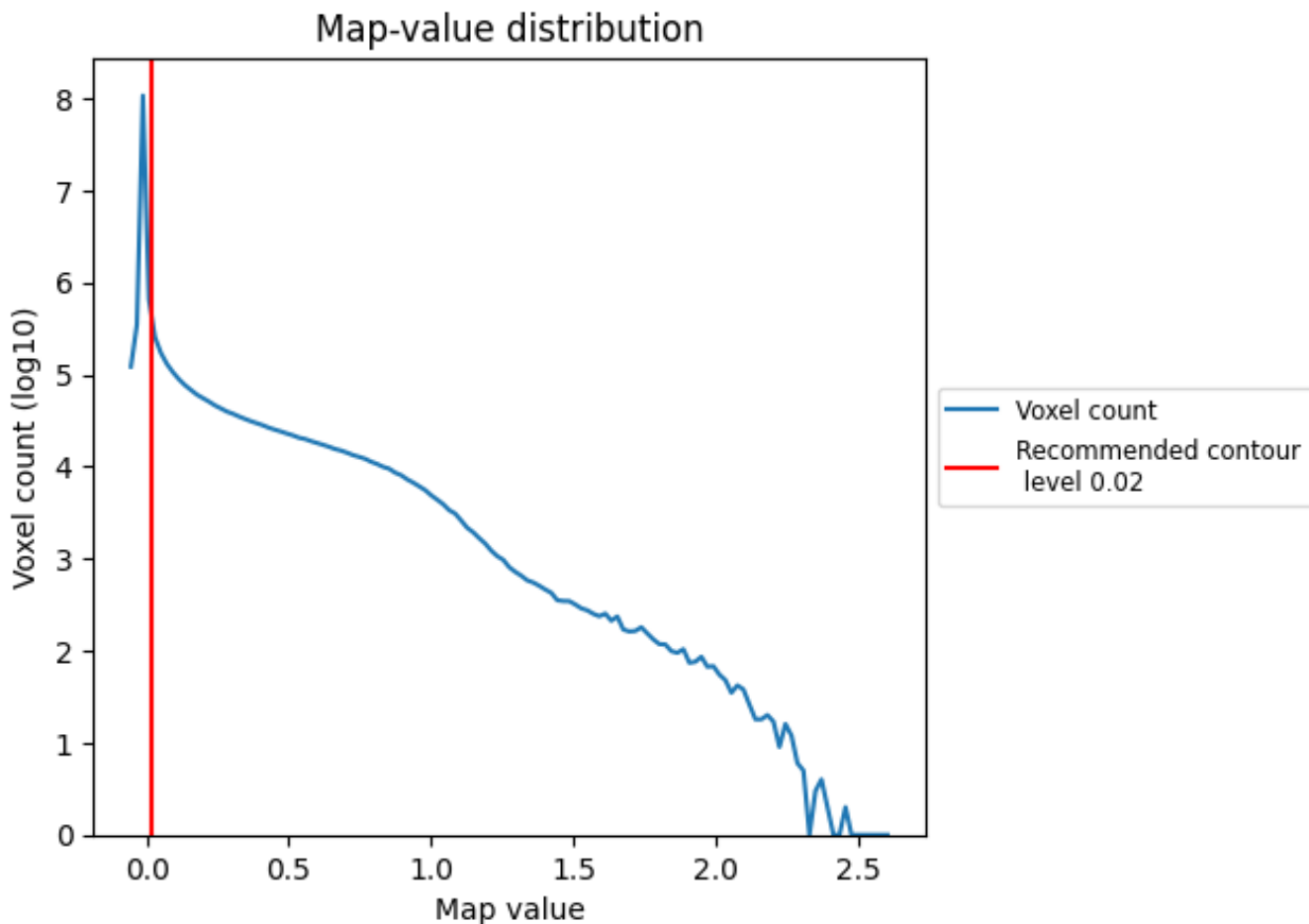
This section was not generated. No masks/segmentation were deposited.



## 7 Map analysis [i](#)

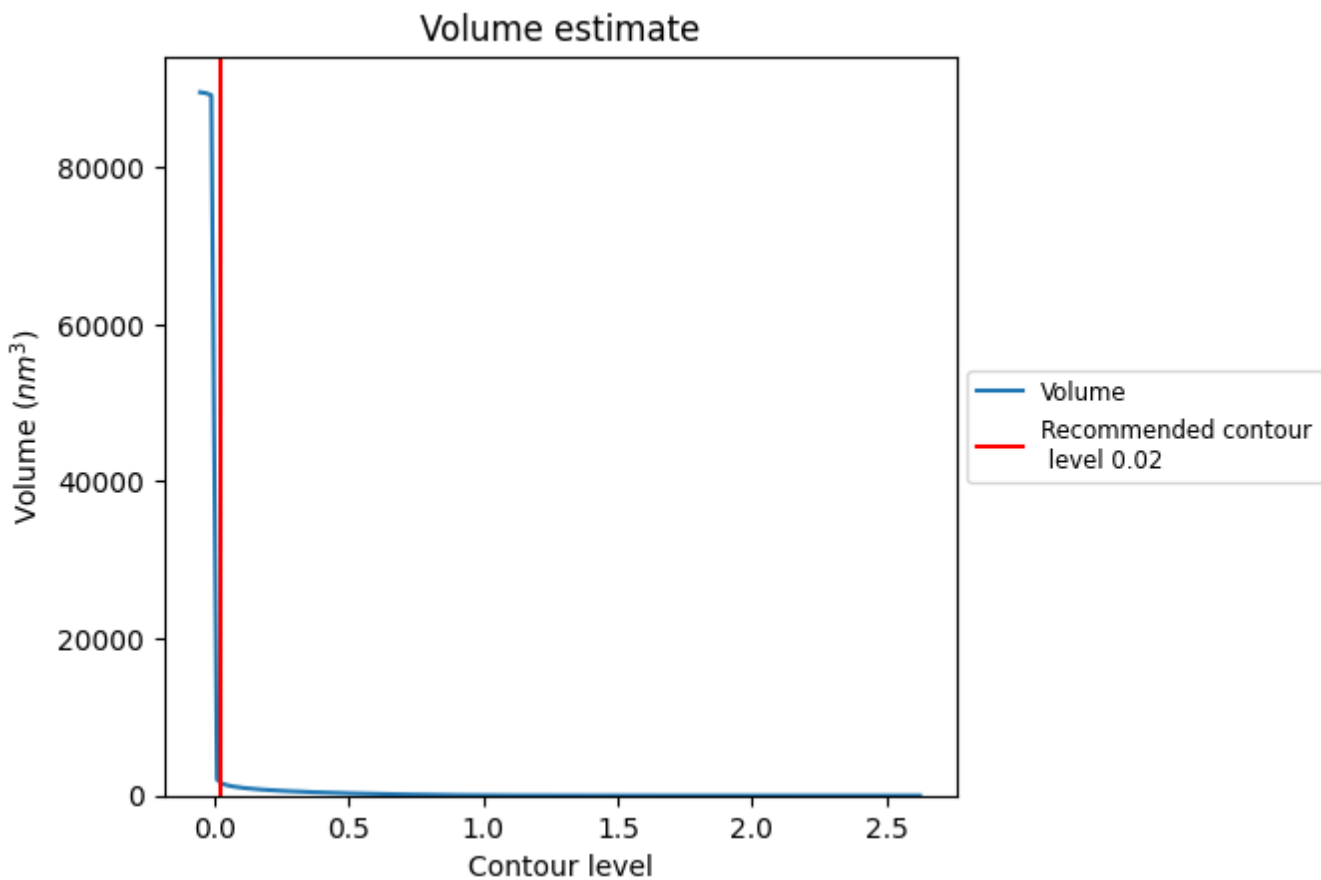
This section contains the results of statistical analysis of the map.

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



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

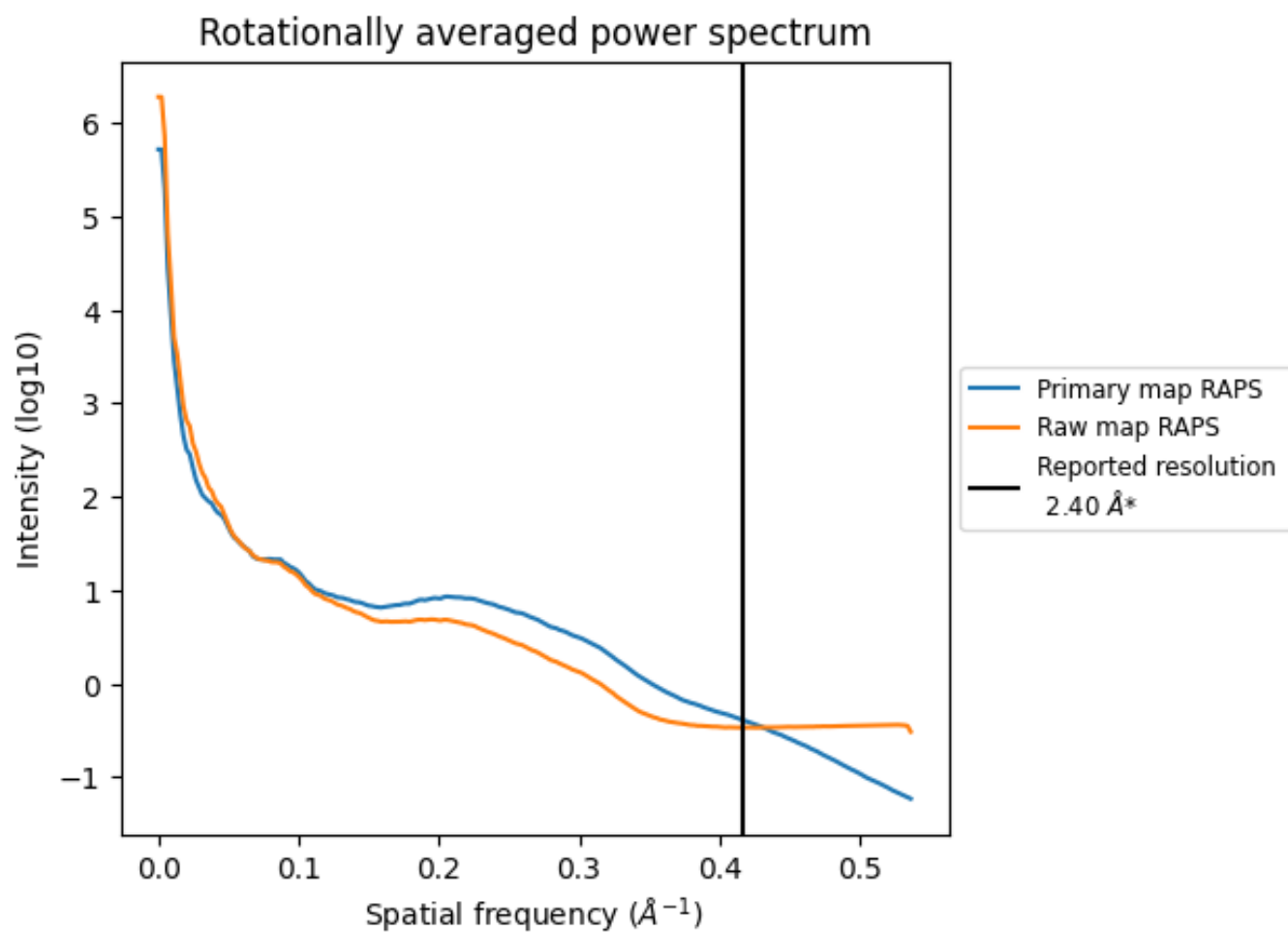
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1717 nm<sup>3</sup>; this corresponds to an approximate mass of 1551 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](#)

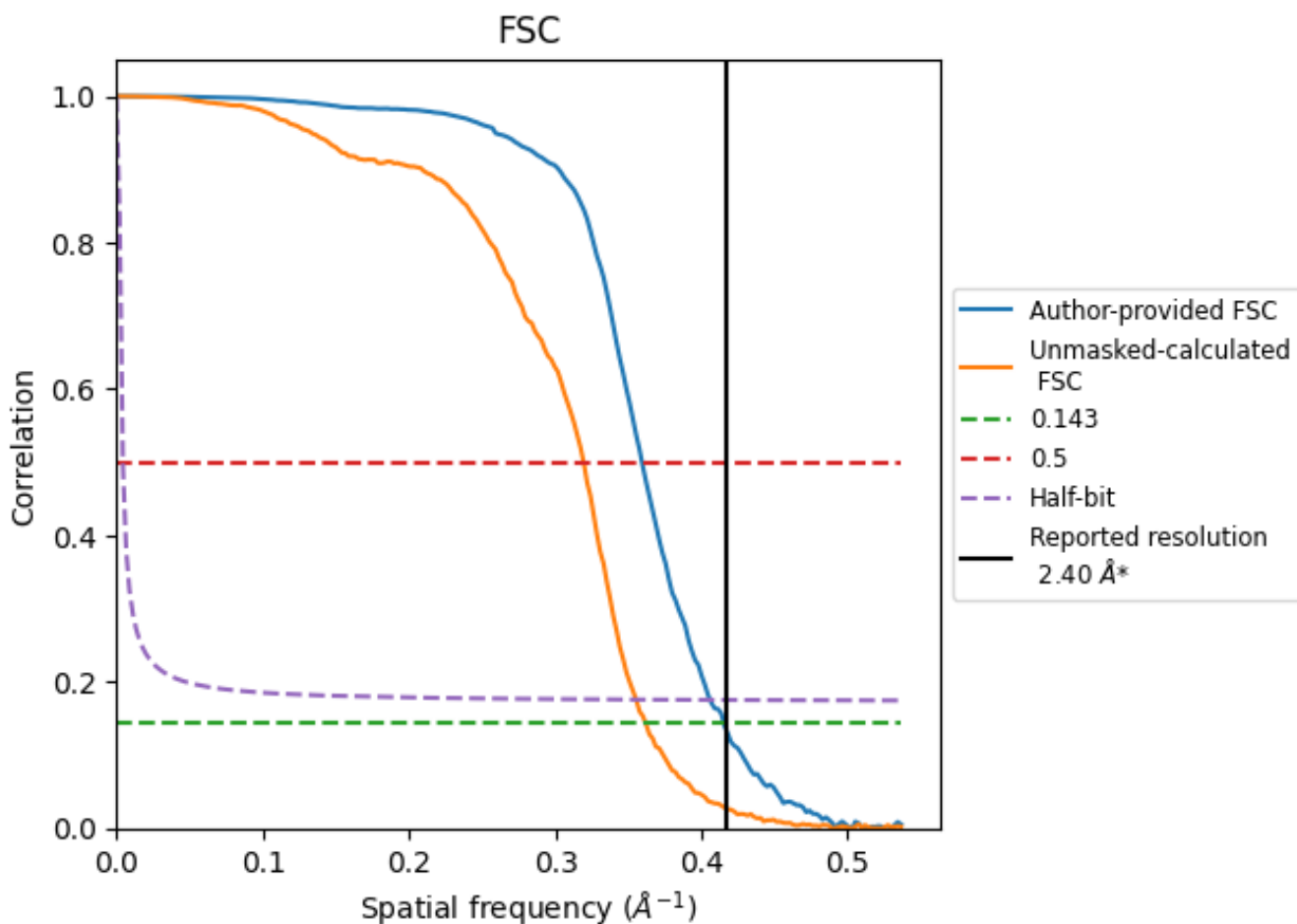


\*Reported resolution corresponds to spatial frequency of  $0.417 \text{ \AA}^{-1}$

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.417 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

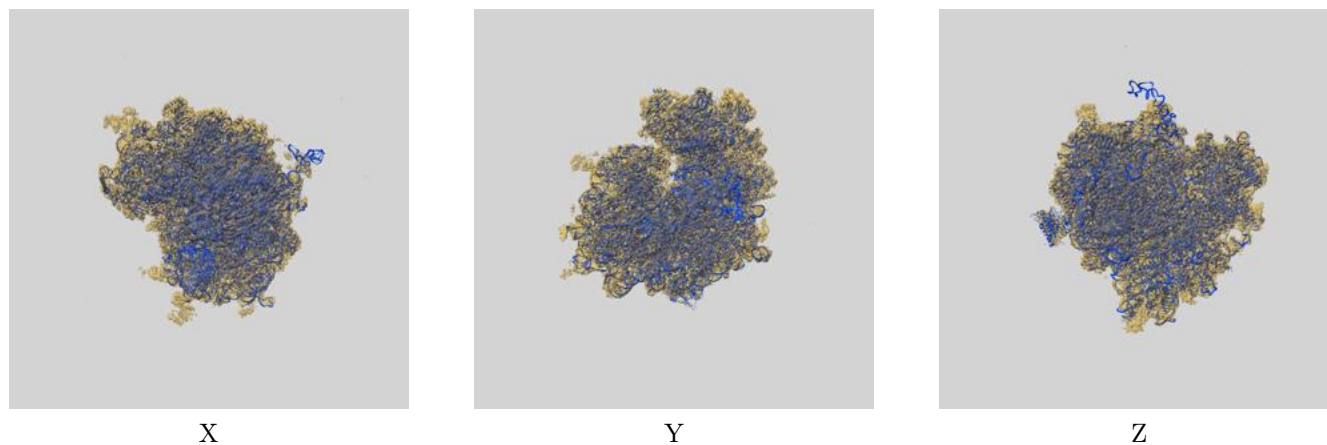
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	2.41	2.78	2.46
Unmasked-calculated*	2.76	3.13	2.81

\*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 2.76 differs from the reported value 2.4 by more than 10 %

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

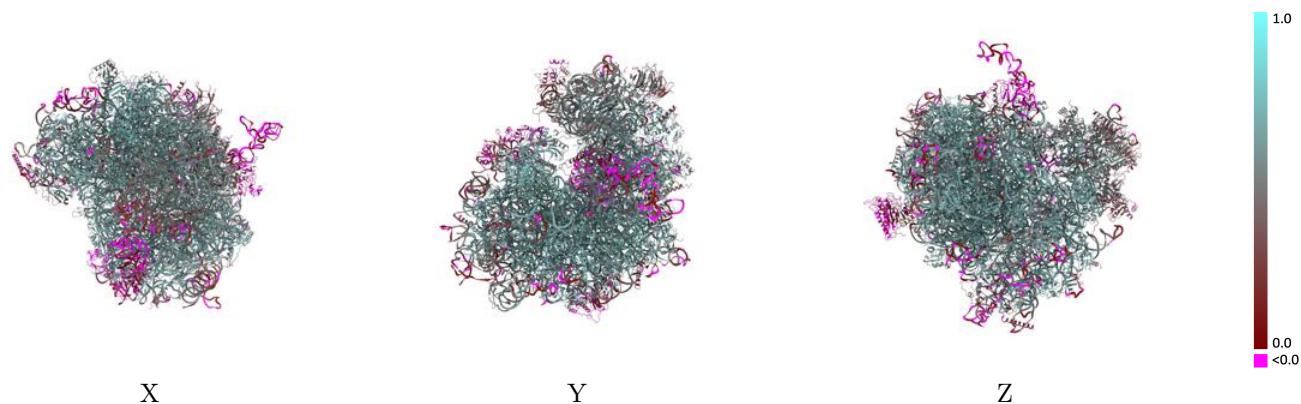
This section contains information regarding the fit between EMDB map EMD-36838 and PDB model 8K2C. Per-residue inclusion information can be found in section 3 on page 22.

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



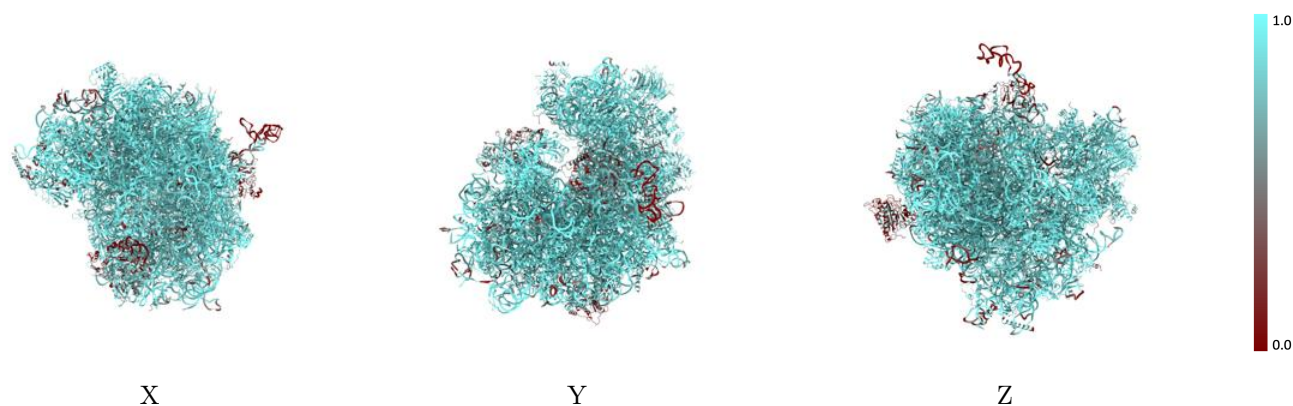
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



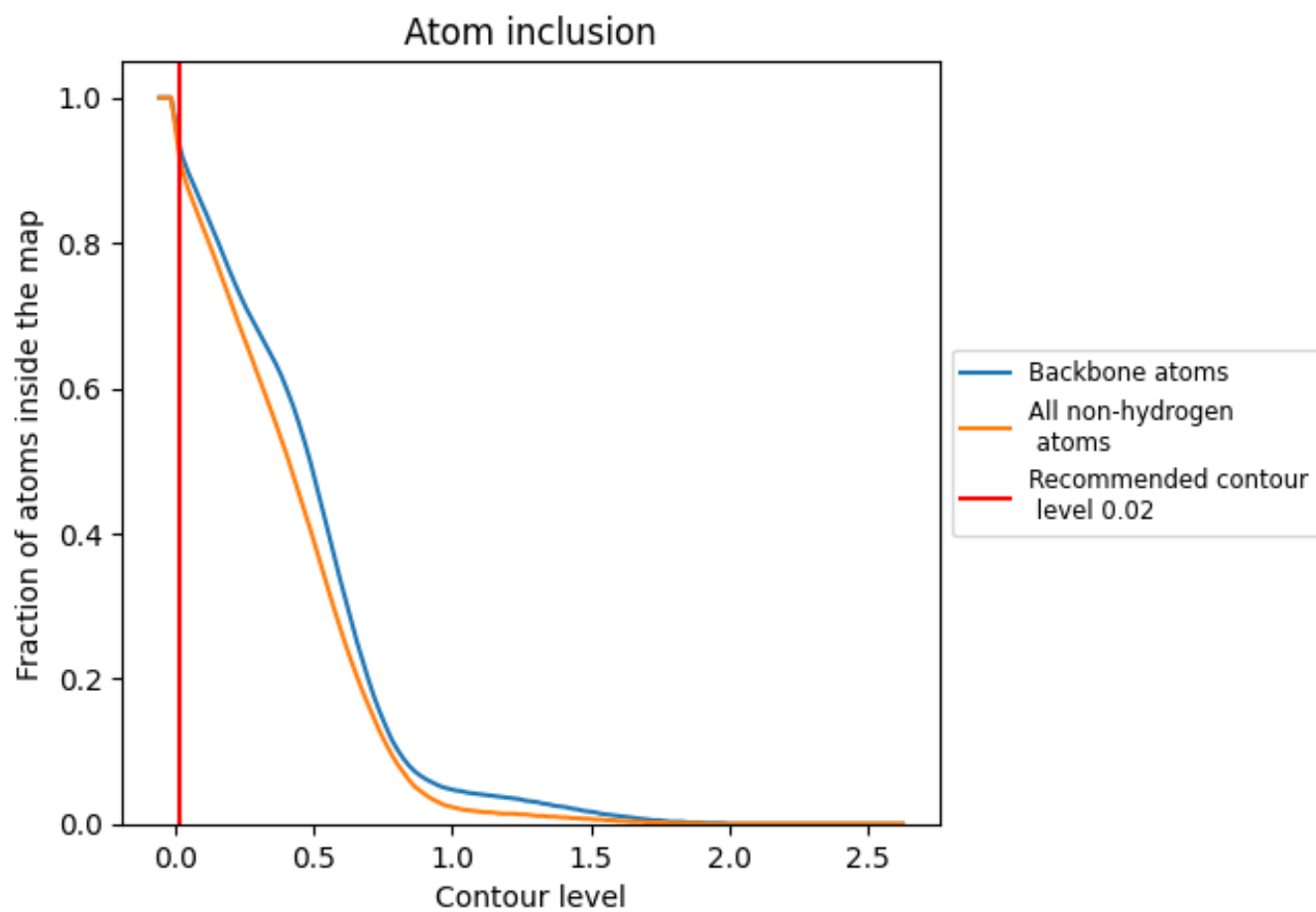
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

## 9.4 Atom inclusion [i](#)









































































At the recommended contour level, 93% of all backbone atoms, 91% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9110	 0.5480
CA	 0.2330	 0.0850
CB	 0.8560	 0.4860
CC	 0.7710	 0.3860
CE	 0.3980	 0.2590
L5	 0.9180	 0.5490
L7	 0.9970	 0.6440
L8	 0.9450	 0.5880
LA	 0.9850	 0.6690
LB	 0.9590	 0.6380
LC	 0.9630	 0.6340
LD	 0.9590	 0.6140
LE	 0.9460	 0.5760
LF	 0.9690	 0.6540
LG	 0.9110	 0.5740
LH	 0.9610	 0.6190
LI	 0.9630	 0.6410
LJ	 0.9050	 0.5340
LL	 0.9310	 0.5950
LM	 0.9610	 0.6200
LN	 0.9930	 0.6730
LO	 0.9640	 0.6510
LP	 0.9660	 0.6520
LQ	 0.9810	 0.6670
LR	 0.9320	 0.5970
LS	 0.9820	 0.6660
LT	 0.9540	 0.6230
LU	 0.9060	 0.5380
LV	 0.9650	 0.6600
LW	 0.7360	 0.4090
LX	 0.9400	 0.6200
LY	 0.9520	 0.6240
LZ	 0.9700	 0.6330
La	 0.9820	 0.6670
Lb	 0.8850	 0.5480























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Chain	Atom inclusion	Q-score
Lc	0.9480	0.6320
Ld	0.9350	0.6060
Le	0.9770	0.6600
Lf	0.9860	0.6710
Lg	0.9550	0.6280
Lh	0.9490	0.6170
Li	0.9620	0.6170
Lj	0.9820	0.6560
Lk	0.8990	0.5430
Ll	0.9550	0.6140
Lm	0.9500	0.6290
Ln	0.9570	0.6390
Lo	0.9350	0.6160
Lp	0.9450	0.6360
Lr	0.9720	0.6440
Ls	0.3660	0.0200
Lt	0.3050	0.0050
Lz	0.4120	0.0190
S2	0.9440	0.5490
SA	0.9650	0.6050
SB	0.9550	0.6090
SC	0.9680	0.6260
SD	0.8940	0.4700
SE	0.9710	0.6160
SF	0.9340	0.5270
SG	0.8900	0.4950
SH	0.9150	0.5340
SI	0.9400	0.5990
SJ	0.9420	0.5940
SK	0.9100	0.4170
SL	0.9320	0.6180
SM	0.7900	0.1960
SN	0.9680	0.6340
SO	0.9610	0.6140
SP	0.7910	0.3590
SQ	0.9170	0.5130
SR	0.9100	0.5320
SS	0.8940	0.4720
ST	0.9210	0.4810
SU	0.8840	0.4390
SV	0.9730	0.6140
SW	0.9810	0.6500

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Chain	Atom inclusion	Q-score
SX	 0.9560	 0.6260
SY	 0.9280	 0.5520
SZ	 0.8580	 0.4180
Sa	 0.9380	 0.5990
Sb	 0.9330	 0.5770
Sc	 0.8750	 0.4920
Sd	 0.9340	 0.5200
Se	 0.7720	 0.4700
Sf	 0.6270	 0.1760
Sg	 0.8570	 0.3880