



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 2, 2024 – 08:59 pm GMT

PDB ID : 4WRO  
Title : Complex of 70S ribosome with tRNA-Phe and mRNA with C-A mismatch in the second position in the A-site  
Authors : Rozov, A.; Demeshkina, N.; Yusupov, M.; Yusupova, G.  
Deposited on : 2014-10-24  
Resolution : 3.05 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

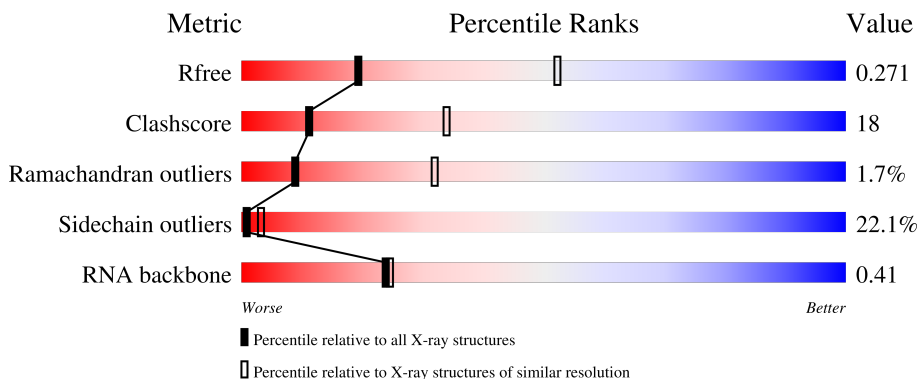
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.05 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.






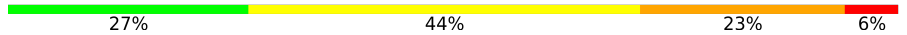
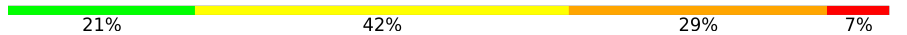
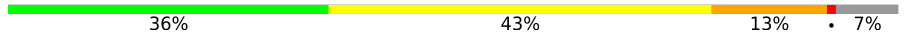
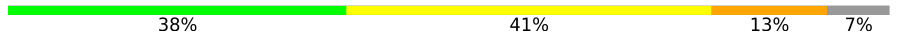
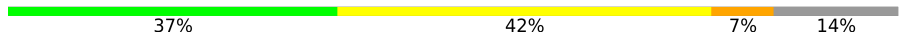



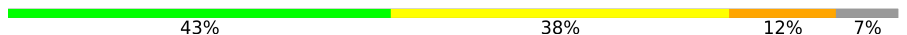













Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1754 (3.10-3.02)
Clashscore	141614	1864 (3.10-3.02)
Ramachandran outliers	138981	1794 (3.10-3.02)
Sidechain outliers	138945	1793 (3.10-3.02)
RNA backbone	3102	1036 (3.32-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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  $\leq 5\%$ .

Mol	Chain	Length	Quality of chain
1	13	1522	27% (green), 44% (yellow), 23% (orange), 6% (red), 2% (grey)
1	1G	1522	29% (green), 46% (yellow), 20% (orange), 5% (red), 2% (grey)
2	1L	76	28% (green), 39% (yellow), 29% (orange), 4% (red), 2% (grey)
2	3K	76	17% (green), 43% (yellow), 37% (orange), 3% (red), 2% (grey)
2	3L	76	21% (green), 37% (yellow), 36% (orange), 7% (red), 2% (grey)
3	2K	77	35% (green), 43% (yellow), 17% (orange), 5% (red), 2% (grey)



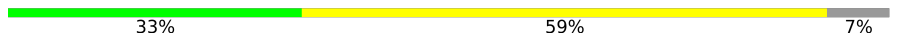
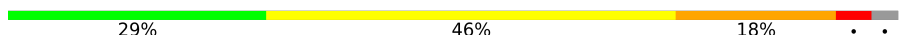
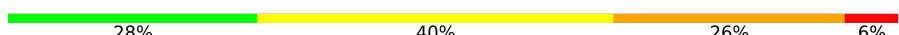
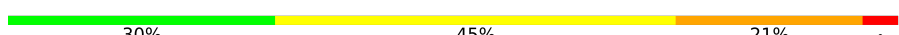





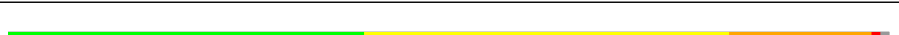

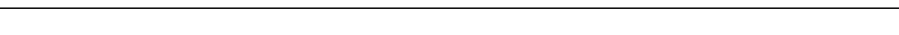
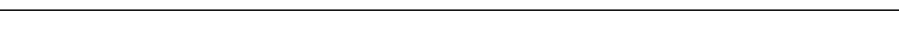
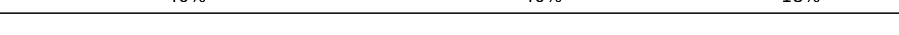

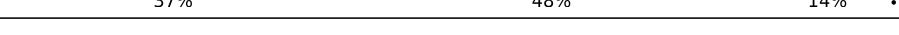







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Mol	Chain	Length	Quality of chain
3	2L	77	
4	4K	30	
4	4L	30	
5	14	2917	
5	1H	2917	
6	12	256	
6	1E	256	
7	22	239	
7	2E	239	
8	32	209	
8	3E	209	
9	4E	162	
10	5E	101	
11	6E	156	
12	7E	138	
13	8E	128	
14	1I	105	
15	2I	129	
16	3I	132	
17	4I	126	
18	5I	61	
19	6I	89	
20	7I	88	
21	8I	105	
22	9I	88	



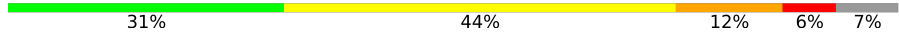



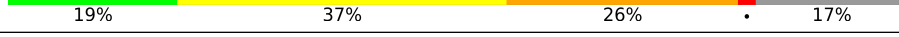


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Mol	Chain	Length	Quality of chain
23	AI	93	 35% 39% 10% 13%
24	BI	106	 49% 33% 11% 7%
25	1F	27	 33% 59% 7%
26	1K	76	 29% 46% 18% 7%
27	16	122	 28% 40% 26% 6%
27	1J	122	 30% 45% 21% 4%
28	11	276	 49% 40% 8% 3%
29	21	206	 48% 34% 16% 2%
30	31	210	 46% 38% 12% 4%
31	41	182	 42% 47% 11% 2%
32	51	180	 43% 42% 10% 5%
33	61	148	 40% 41% 16% 3%
34	58	140	 44% 41% 12% 3%
35	68	122	 56% 35% 9%
36	78	150	 40% 40% 18% 2%
37	88	141	 50% 31% 14% 5%
38	98	118	 37% 48% 14% 1%
39	A8	112	 43% 41% 12% 4%
40	B8	146	 42% 39% 12% 6%
41	C8	118	 44% 47% 6% 3%
42	D8	101	 52% 35% 13%
43	E8	113	 58% 33% 10%
44	F8	96	 42% 45% 8% 5%
45	G8	110	 35% 39% 16% 5% 5%
46	H8	206	 33% 36% 14% 1% 15%

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Mol	Chain	Length	Quality of chain
47	I8	85	
48	J8	98	
49	K8	72	
50	L8	60	
51	M8	71	
52	N8	60	
53	O8	54	
54	P8	49	
55	Q8	65	

## 2 Entry composition [i](#)

There are 58 unique types of molecules in this entry. The entry contains 260090 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	13	1497	Total	C	N	O	P	0	0	0
			32185	14324	5968	10396	1497			
1	1G	1497	Total	C	N	O	P	0	0	0
			32182	14324	5968	10394	1496			

- Molecule 2 is a RNA chain called tRNA-Phe.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
2	1L	76	Total	C	N	O	P	S	0	0	0
			1627	730	290	530	75	2			
2	3L	76	Total	C	N	O	P	S	0	0	0
			1627	730	290	530	75	2			
2	3K	76	Total	C	N	O	P	S	0	0	0
			1627	730	290	530	75	2			

- Molecule 3 is a RNA chain called tRNA-fMet.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
3	2L	77	Total	C	N	O	P	S	0	0	0
			1645	734	298	535	77	1			
3	2K	77	Total	C	N	O	P	S	0	0	0
			1645	734	298	535	77	1			

- Molecule 4 is a RNA chain called RNA (30-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
4	4L	9	Total	C	N	O	P	0	0	0
			191	86	35	61	9			
4	4K	13	Total	C	N	O	P	0	0	0
			279	126	55	85	13			

- Molecule 5 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	14	2909	Total	C	N	O	P	0	0	0
			62647	27884	11716	20139	2908			
5	1H	2912	Total	C	N	O	P	0	0	0
			62707	27911	11722	20163	2911			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
14	161	U	-	insertion	GB 48268
14	493	G	-	insertion	GB 48268
14	1228	G	-	insertion	GB 48268
1H	161	U	-	insertion	GB 48268
1H	493	G	-	insertion	GB 48268
1H	1228	G	-	insertion	GB 48268

- Molecule 6 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	1E	237	Total	C	N	O	S	0	0	0
			1924	1228	344	347	5			
6	12	237	Total	C	N	O	S	0	0	0
			1924	1228	344	347	5			

- Molecule 7 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	2E	205	Total	C	N	O	S	0	0	0
			1605	1011	313	280	1			
7	22	206	Total	C	N	O	S	0	0	0
			1612	1016	314	281	1			

- Molecule 8 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	3E	208	Total	C	N	O	S	0	0	0
			1702	1066	339	290	7			
8	32	208	Total	C	N	O	S	0	0	0
			1702	1066	339	290	7			

- Molecule 9 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	4E	151	1155	729	218	204	4	0	0	0

- Molecule 10 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	5E	101	842	531	155	153	3	0	0	0

- Molecule 11 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	6E	155	1256	781	252	217	6	0	0	0

- Molecule 12 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	7E	138	1115	705	215	192	3	0	0	0

- Molecule 13 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
13	8E	127	1009	639	197	173	0	0	0

- Molecule 14 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	1I	99	801	504	157	139	1	0	0	0

- Molecule 15 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	2I	119	884	549	168	164	3	0	0	0

- Molecule 16 is a protein called 30S ribosomal protein S12.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
16	3I	125	975	614	196	164	1	0	0	0

- Molecule 17 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
17	4I	118	938	580	193	163	2	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
4I	119	ALA	GLY	conflict	UNP P80377

- Molecule 18 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
18	5I	60	491	312	104	71	4	0	0	0

- Molecule 19 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
19	6I	88	733	459	147	125	2	0	0	0

- Molecule 20 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
20	7I	84	705	446	140	118	1	0	0	0

- Molecule 21 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
21	8I	100	834	534	155	143	2	0	0	0

- Molecule 22 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace	
			Total	C	N				O
22	9I	72	590	376	117	97	0	0	0

- Molecule 23 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
23	AI	81	647	413	119	113	2	0	0	0

- Molecule 24 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
24	BI	99	762	470	162	128	2	0	0	0

- Molecule 25 is a protein called 30S ribosomal protein Thx.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
25	1F	25	217	134	52	31	0	0	0

- Molecule 26 is a RNA chain called tRNA-Phe.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
26	1K	74	1587	712	286	514	73	2	0	0	0

- Molecule 27 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
27	1J	122	2617	1166	486	844	121	0	0	0
27	16	122	2617	1166	486	844	121	0	0	0

- Molecule 28 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
28	11	272	2115	1335	420	357	3	0	0	0

- Molecule 29 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
29	21	205	1568	991	300	271	6	0	0	0

- Molecule 30 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
30	31	202	1585	1011	297	275	2	0	0	0

- Molecule 31 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
31	41	181	1473	942	268	259	4	0	0	0

- Molecule 32 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
32	51	174	1336	848	251	236	1	0	0	0

- Molecule 33 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
33	61	146	1136	726	201	208	1	0	0	0

- Molecule 34 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
34	58	138	1104	712	206	182	4	0	0	0

- Molecule 35 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
35	68	122	932	588	171	169	4	0	0	0

- Molecule 36 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
36	78	150	1144	712	232	197	3	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
37	88	138	1086	693	208	179	6	0	0	0

- Molecule 38 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
38	98	118	967	604	203	159	1	0	0	0

- Molecule 39 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
39	A8	111	881	556	176	149	0	0	0

- Molecule 40 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
40	B8	137	1141	710	234	196	1	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
41	C8	117	963	610	202	150	1	0	0	0

- Molecule 42 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
42	D8	101	778	501	142	134	1	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
43	E8	113	899	566	177	154	2	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
44	F8	94	742	482	134	125	1	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
45	G8	104	791	510	149	127	5	0	0	0

- Molecule 46 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
46	H8	175	1397	892	251	251	3	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
47	I8	80	626	388	132	105	1	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I8	6	ALA	GLY	conflict	UNP P60493
I8	8	ALA	GLY	conflict	UNP P60493

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
48	J8	97	762	481	150	130	1	0	0	0

- Molecule 49 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
49	K8	67	563	349	114	99	1	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
50	L8	57	452	288	88	76		0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
51	M8	66	533	335	96	97	5	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
52	N8	58	453	285	89	74	5	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
53	O8	45	389	241	79	65	4	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
54	P8	45	391	240	97	52	2	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
55	Q8	60	480	306	98	74	2	0	0	0

- Molecule 56 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
56	13	149	Total Mg 149 149	0	0
56	1L	1	Total Mg 1 1	0	0
56	2L	4	Total Mg 4 4	0	0
56	3L	3	Total Mg 3 3	0	0
56	14	421	Total Mg 421 421	0	0
56	3E	2	Total Mg 2 2	0	0
56	5E	1	Total Mg 1 1	0	0
56	3I	1	Total Mg 1 1	0	0
56	5I	1	Total Mg 1 1	0	0
56	1K	2	Total Mg 2 2	0	0
56	2K	8	Total Mg 8 8	0	0
56	1H	537	Total Mg 537 537	0	0
56	1J	7	Total Mg 7 7	0	0
56	16	13	Total Mg 13 13	0	0
56	11	2	Total Mg 2 2	0	0
56	21	2	Total Mg 2 2	0	0
56	41	2	Total Mg 2 2	0	0
56	78	1	Total Mg 1 1	0	0
56	88	2	Total Mg 2 2	0	0
56	I8	1	Total Mg 1 1	0	0
56	J8	1	Total Mg 1 1	0	0
56	L8	1	Total Mg 1 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
56	P8	1	Total 1	Mg 1	0	0
56	1G	96	Total 96	Mg 96	0	0

- Molecule 57 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
57	14	1	Total 1	Zn 1	0	0
57	3E	1	Total 1	Zn 1	0	0
57	5I	1	Total 1	Zn 1	0	0
57	G8	1	Total 1	Zn 1	0	0
57	1G	1	Total 1	Zn 1	0	0
57	32	1	Total 1	Zn 1	0	0

- Molecule 58 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
58	13	230	Total 230	O 230	0	0
58	2L	1	Total 1	O 1	0	0
58	4L	2	Total 2	O 2	0	0
58	14	863	Total 863	O 863	0	0
58	3E	1	Total 1	O 1	0	0
58	4E	3	Total 3	O 3	0	0
58	8E	2	Total 2	O 2	0	0
58	1I	1	Total 1	O 1	0	0
58	3I	1	Total 1	O 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
58	5I	1	Total O 1 1	0	0
58	6I	1	Total O 1 1	0	0
58	7I	1	Total O 1 1	0	0
58	BI	1	Total O 1 1	0	0
58	1K	6	Total O 6 6	0	0
58	2K	8	Total O 8 8	0	0
58	3K	1	Total O 1 1	0	0
58	4K	4	Total O 4 4	0	0
58	1H	1212	Total O 1212 1212	0	0
58	1J	12	Total O 12 12	0	0
58	16	21	Total O 21 21	0	0
58	11	9	Total O 9 9	0	0
58	21	3	Total O 3 3	0	0
58	31	8	Total O 8 8	0	0
58	58	3	Total O 3 3	0	0
58	78	6	Total O 6 6	0	0
58	98	1	Total O 1 1	0	0
58	B8	1	Total O 1 1	0	0
58	C8	3	Total O 3 3	0	0
58	D8	1	Total O 1 1	0	0
58	E8	2	Total O 2 2	0	0

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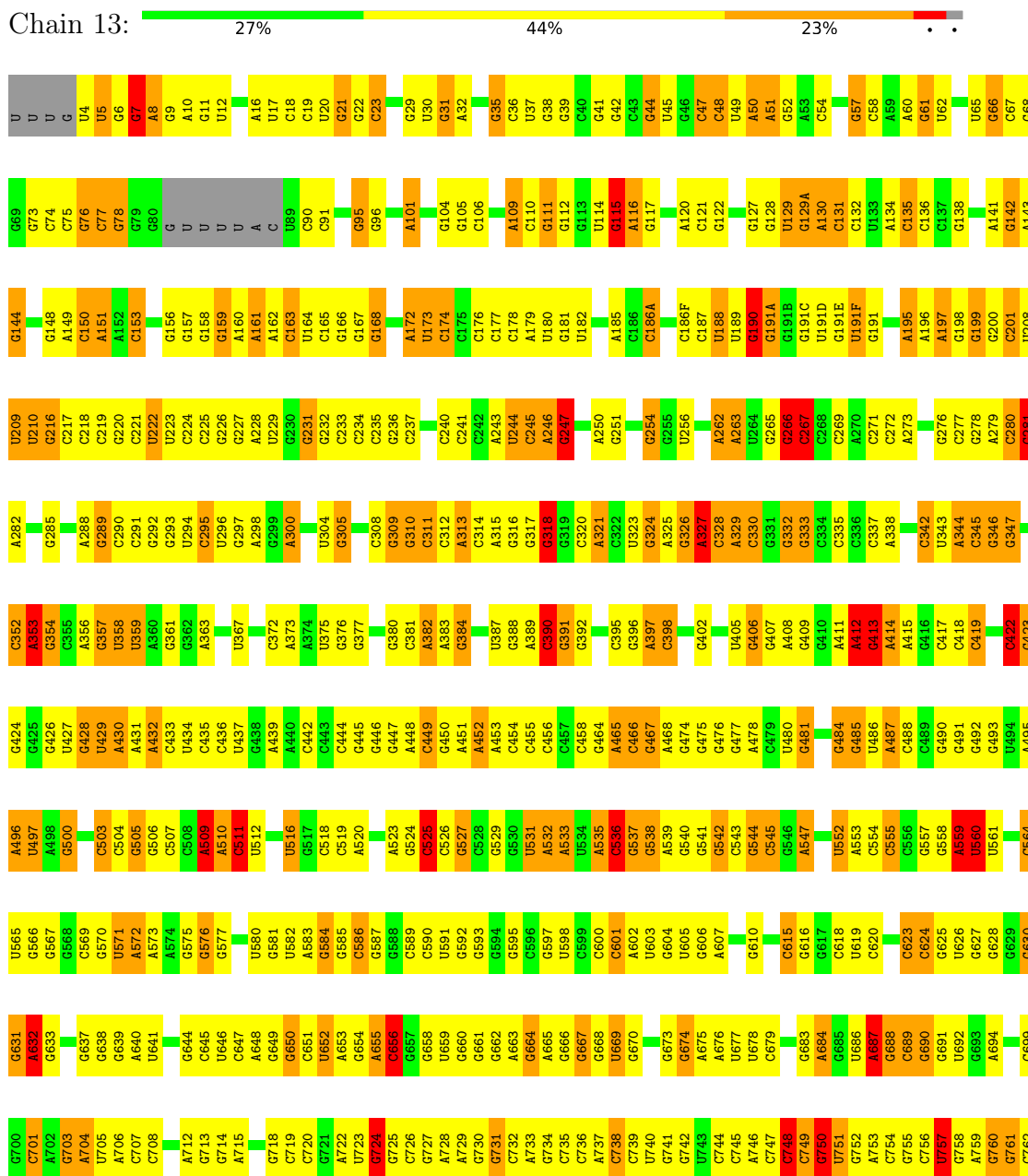
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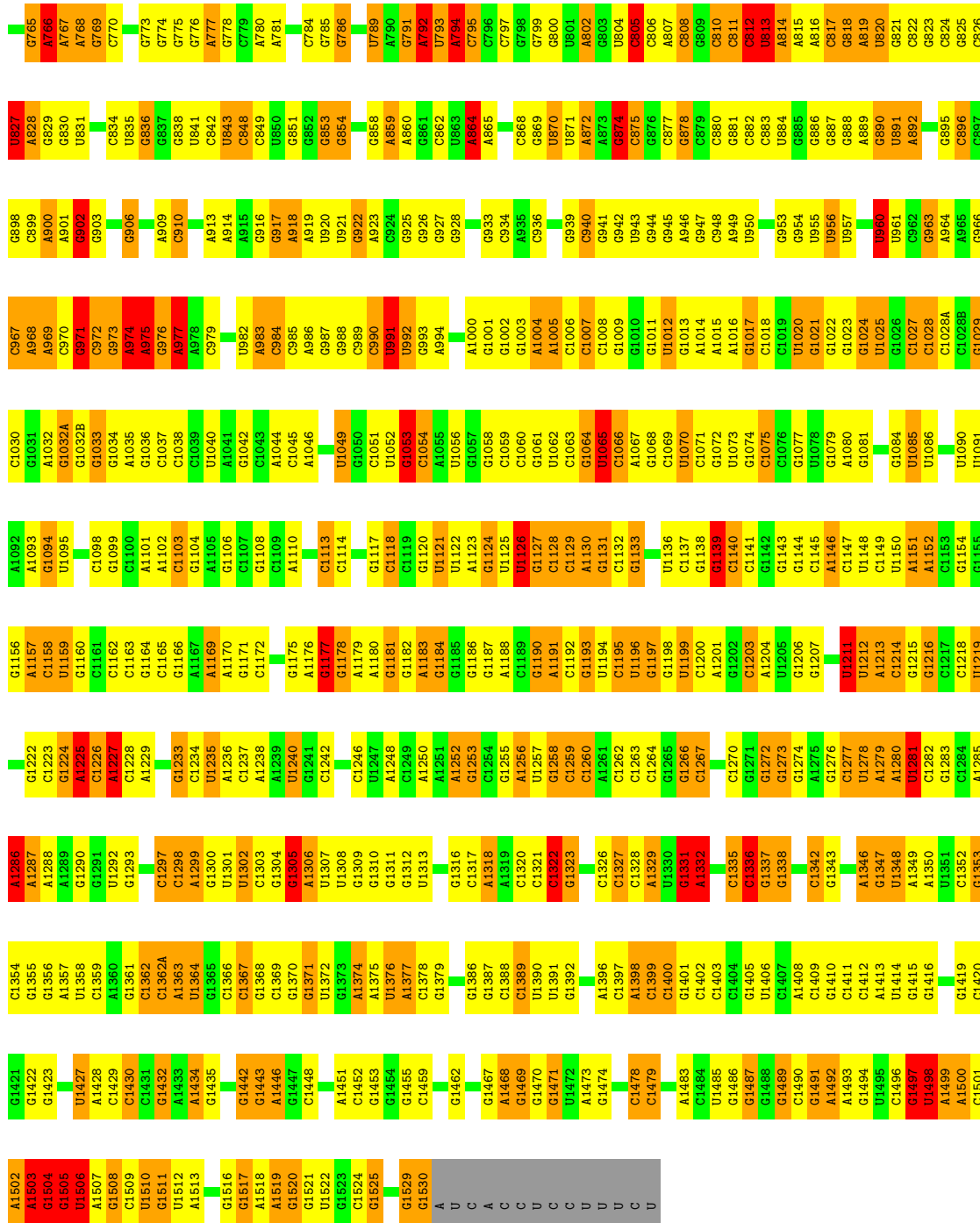
<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
58	F8	2	Total O 2 2	0	0
58	G8	3	Total O 3 3	0	0
58	I8	5	Total O 5 5	0	0
58	J8	1	Total O 1 1	0	0
58	L8	1	Total O 1 1	0	0
58	P8	4	Total O 4 4	0	0
58	Q8	1	Total O 1 1	0	0
58	1G	106	Total O 106 106	0	0

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

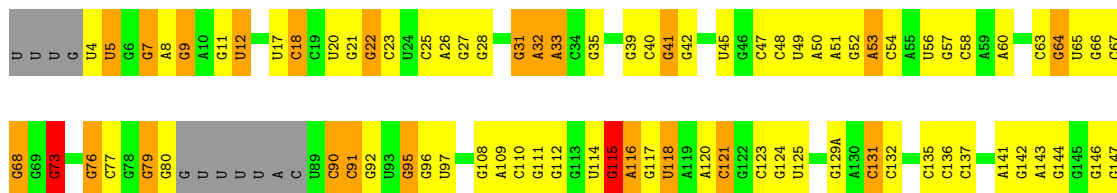
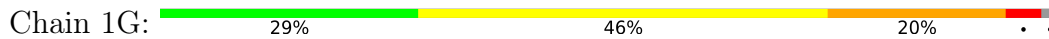
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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

- Molecule 1: 16S ribosomal RNA





• Molecule 1: 16S ribosomal RNA



G1127	U1056	C995	C934	A865	A790	C720	U641	G576	G438	A363	C290	G216	G148
C1128	G1057	G998	A935	C866	G791	G721	A642	G577	A439	C366	C291	C217	A149
A1129	C1058	C998A	C936	G867	A792	A722	C645	C578	A440	C367	G297	C218	A150
G1130	G1060	U999	A937	C868	A793	U723	C646	C579	C442	U367	A298	U222	A151
C1131	C1061	G939	A938	G869	A794	G724	C647	U580	C443	U368	G299	U223	C153
G1133	U1062	C940	C940	A872	G800	G725	C648	G581	C444	C369	G299	U224	C154
C1134	C1063	G941	A941	A873	U801	C726	A648	U582	G445	C370	A300	C224	C155
U1135	G1002	G942	A874	G874	G802	G727	G649	C583	G446	G371	G301	G227	G156
U1136	U1065	A943	A875	A875	A803	A728	G650	C584	G447	C372	G302	G157	G158
C1137	C1066	G944	C875	C875	G804	A729	C651	G585	A448	A373	A303	G230	G159
G1138	A1067	G945	C879	C879	U804	A730	U652	G586	C449	A374	U304	G231	G160
C1139	A946	C906	C880	C880	C905	G731	A653	C589	G450	U375	G305	G232	A160
C1140	C1068	G947	G881	G881	C906	C732	G654	C590	A451	G376	G306	G233	A160
C1141	U1070	C948	C882	C882	A807	A733	A655	C591	A452	G377	G307	G234	C163
G1142	A949	C883	C883	C883	C810	G734	G660	U591	A453	A382	G309	G235	U164
G1143	U1071	C884	C884	C884	C811	C735	G661	G592	C456	A383	G310	C237	C165
C1144	U1072	U884	U884	U884	C812	C736	G662	G593	C457	A384	C312	C238	G166
C1145	U1073	G885	G885	G885	C813	A737	G663	G594	C458	C385	C313	C239	G167
A1146	G1074	U886	U886	U886	U813	C738	G664	U595	C459	C386	C314	C240	C168
C1147	C1075	G887	G887	G887	A814	C739	G665	U596	G464	C387	C315	C241	C169
U1148	U1076	G888	G888	G888	A815	U740	G666	U597	G465	U387	A316	C242	C170
C1149	G1077	A889	A889	A889	A816	G741	G667	C598	C466	U388	G316	A243	C171
U1150	U1020	U956	U956	U956	C817	G742	G668	C599	C467	C390	G317	U244	C172
A1151	U1021	U957	U957	U957	G818	U743	G669	C600	A468	G391	G318	A246	C173
A1152	G1023	U958	U958	U958	A819	C744	G670	C601	G474	G392	G319	G247	C174
C1153	U1024	C893	C893	C893	U820	C745	G671	C602	G475	A393	C320	G248	C175
G1154	U1025	G894	G894	G894	G821	C746	G672	C603	G476	G394	C321	G249	C176
G1155	C1028	G895	G895	G895	A822	C747	G673	C604	G477	G395	C322	U249	C177
C1156	U1028A	C896	C896	C896	C749	A748	G674	C605	G478	A397	C323	A250	C178
A1157	C1028B	G897	G897	G897	G750	G751	G675	C606	A478	C398	G324	G251	A179
C1158	G1029	A964	A964	A964	G825	U751	G676	C607	C479	C399	G325	G252	U180
U1159	U1030	G898	G898	G898	C826	G752	G677	C608	U480	C401	G326	G253	G181
G1160	C1031	A965	A965	A965	U827	C754	G678	C609	G481	G402	A327	G254	U182
C1161	A1032	G966	G966	G966	A828	G755	G679	G610	G482	G403	G327	G255	G183
G1162	C1032A	A967	A967	A967	G829	C756	G680	G611	A483	U405	C328	G256	C186
C1163	G1032B	U970	U970	U970	G830	U757	G681	C612	G484	G406	A329	G257	C186D
G1164	U1033	C904	C904	C904	U831	G758	G682	C613	G485	G407	G330	G258	C186E
A1165	G1033A	U905	U905	U905	A684	A759	G683	C614	G486	G408	G331	G259	C186F
C1166	G1033B	G906	G906	G906	G836	G760	G684	C615	U487	A408	G332	G260	C186G
U1167	U1034	C972	C972	C972	G837	G761	G685	C616	C489	G409	G333	G261	C186H
C1168	A1035	G973	G973	G973	G838	G765	G686	C617	G490	G410	C337	G262	C186I
A1169	G1036	A974	A974	A974	U841	A766	G687	C618	G491	G411	C338	G263	U188
C1170	C1037	C975	C975	C975	U842	A767	G688	C619	G492	A412	U340	G264	U189
C1171	U1038	A976	A976	A976	U843	A768	G689	C620	G493	A413	C341	G265	G190
C1172	C1039	G977	G977	G977	U844	A769	G690	C621	U494	G414	C342	G266	G191A
C1173	U1040	A978	A978	A978	C849	C770	G691	C622	A495	A414	C343	G267	G191B
G1177	A1041	C979	C979	C979	U850	G771	G692	C623	A496	U421	U344	G268	U191D
C1178	G1042	A980	A980	A980	U851	U772	G693	C624	U497	C422	A344	C269	U191E
A1179	C1043	U981	U981	U981	G851	U773	G694	C625	A498	C423	C345	A270	U191F
A1180	A1044	G982	G982	G982	U852	G773	G695	C626	G500	G424	G346	A271	G191
G1181	C1045	A983	A983	A983	G853	G774	G696	C627	C501	G425	G347	A272	U192
C1182	A1046	U984	U984	U984	U854	A777	G697	C628	G502	G426	U343	G279	C193
C1183	G1047	C985	C985	C985	G855	G778	A702	C629	C503	G427	U344	C280	C194
C1184	U1048	A986	A986	A986	C956	G779	C708	C630	C504	U429	A345	C281	A195
G1185	U1049	G987	G987	G987	C957	A780	G709	C631	G505	U429	C352	A282	A196
C1186	G1050	G988	G988	G988	U858	G781	G710	C632	G506	A430	C353	A283	G197
G1187	C1051	G989	G989	G989	G859	C783	G711	C633	C507	A431	C354	C284	A198
A1188	U1052	U991	U991	U991	A860	U784	G712	C634	C508	U432	U345	G285	G199
C1189	A1123	U992	U992	U992	G861	G785	G713	C635	A509	U433	U346	G286	G200
G1190	G1053	U993	U993	U993	G862	U788	G714	C636	A510	U434	A361	G287	G201
C1191	C1054	A994	A994	A994	U863	U789	G715	C637	A511	U435	C362	G288	G202
A1192	U1055				A864		C719	C638	U512	U436	G363	G289	G203

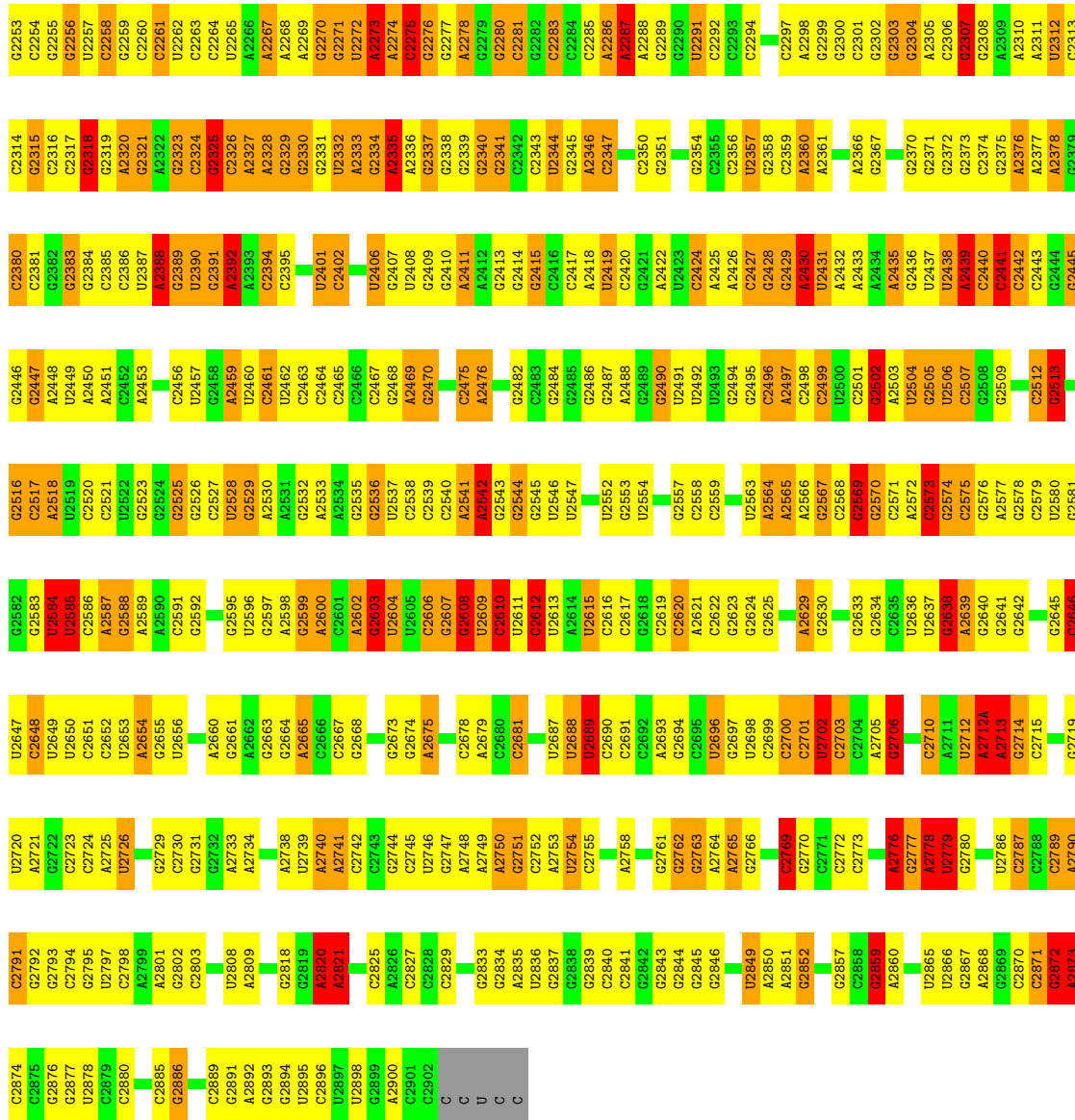




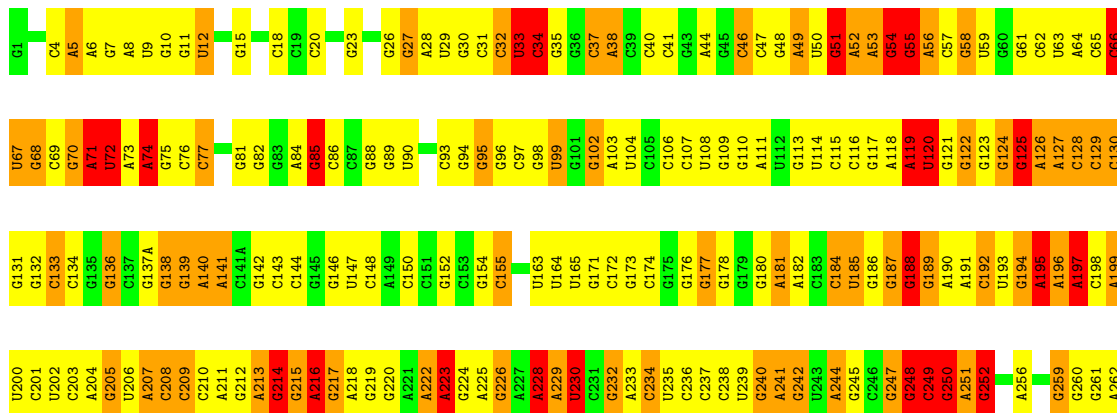
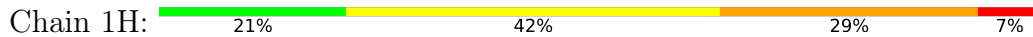
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U1094	A1095	A1096	U1097	A1098	A1099	G1100	U1101	C1102	C1103	C1104	C1105	G1110	A1111	C1112	C1113	C1114	C1115	C1116	C1117	C1118	C1119	C1120	C1121	C1122	G1125	A1128	A1129	A1130	G1131	G1132	U1133	C1134	C1135	C1136	C1137	C1138	C1139	C1140	C1141	C1142	C1143	C1144	C1145	C1146	C1147	C1148	C1149	C1150	C1151	C1152	C1153	C1154	C1155	U1159	G1160	C1161																														
C967	G968	U969	C970	C971	G972	A973	G974	C974A	G977	G978	G979	A980	A981	A982	A983	A984	C985	C986	A988	A989	A990	C991	C992	C993	C994	C995	C996	C997	C998	C999	A1000	A1001	G1002	G1003	G1004	C1005	G1011	U1012	U1013	U1014	C1015	G1016	G1017	C1018	U1019	A1020	A1021	U1023	G1024	A1025	G1026	U1027	A1028	A1029																																
C904	U905	G906	U907	C908	A909	A910	A911	C912	U913	C914	C915	A916	A917	A918	G921	U922	C923	C924	C925	A926	C928	A929	C930	C931	C932	C933	C934	C935	C936	C937	C938	C939	A940	A941	C942	U943	A944	A945	C946	C947	C948	C949	C950	C951	C952	A953	C954	C955	C956	A957	U958	U959	C960	C961	C962	C963	C964	C965	C966	C967	C968	C969	C970	C971	C972	C973	C974	C975	C976	C977	C978	C979	C980	C981	C982	C983	C984	C985	C986	C987	C988	C989	C990	C991	C992	C993
U839	C840	A841	A842	A843	C844	G845	A846	U847	U848	A849	A849	G853	C854	C855	C856	C857	C858	C859	U860	A861	U862	A863	C864	C865	C866	C867	C868	C869	C870	C871	C872	C873	C874	C875	C876	C877	C878	C879	C880	C881	C882	C883	C884	C885	C886	C887	C888	C889	C890	C891	C892	C893	C894	U895	A896	C897	C898	C899	A900	C901	C902	C903																								
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C605	U606	U607	A608	G609	A609A	C610	C611	C612	U613	U614	G615	G616	G617	G618	U619	C620	C621	C622	C623	C624	A621	G622	C623	C624	C625	U626	C627	C628	C629	C630	A631	A632	A633	C634	C635	C636	A637	C638	U639	C640	C641	C642	C643	C644	C645	C646	C647	C648	C649	C650	C651	A654	A654A	C654B	C654C	G654D	C654E	U654F	C654G	C654H	C654I	A654J																								
U534	C537	G539	A540	G541	C542	C543	C544	C545	C546	A547	U548	C549	C550	C551	C552	C553	C554	C555	C556	C557	C558	C559	C560	C561	C562	C563	C564	C565	C566	C567	C568	C569	C570	C571	C572	C573	C574	C575	C576	C577	C578	C579	C580	C581	C582	C583	C584	C585	C586	C587	C588	C589	C590	C591	C592	C593	C594	C595	C596	C597	C598	C599	C600	C601	C602	C603	C604																			
G468	G469	A470	A471	A472	G473	G474	U475	G476	A477	A478	A479	A480	C481	A482	A483	C484	C485	G488	G489	G491	A492	C493	C494	C495	U499	G500	A501	A502	A503	U504	A505	G508	C510	U511	G512	A513	A514	A515	C516	U519	G520	G521	G522	C523	U524	U525	A526	U527	A528	A529	G530	C531	G532	G533	G534	G535	G536	G537	G538	G539	G540	G541	G542	G543	G544	G545	G546	G547																		
G391	C392	C393	A394	U395	G396	G397	G398	C399	G400	A401	C402	C403	C404	U405	A406	C407	G408	G409	G410	G411	A412	C413	C414	C415	U421	C426	U427	A428	A429	C433	U434	G442	A443	C444	G446	A447	A448	U449	G450	C451	G452	C453	A454	C455	C456	A457	G458	A459	A460	C461	C462	G463	G464	G465																																
A324	G327	U328	A329	G330	A331	A332	C333	C334	C335	C336	C337	C338	U339	A340	C340	G342	C343	C344	G352	G353	G354	G355	G356	U357	U358	A359	G360	U361	U362	C363	A363A	G363B	G363C	U363E	A363F	C365	C372	A374	C375	C376	C377	C378	C379	U380	G381	G382	C386	A390																																						
G270T	C270V	G270W	U270X	G270Y	U270Z	C271A	C271B	U271C	U271D	U271E	G273A	C273B	C273C	A273D	U273E	C273F	G274	G275	A276	C277	A278	C279	C286	C287	C288	A289	G290	C291	A294	G295	C296	A299	A300	G301	U303	G304	U305	U306	G307	C308	A310	C311	G312	G315	C316	G317	C318	C319	A320	G321	A322	G323																																		



G1931	G1232	G1296	G1355	G1416	G1479	G1555	G1620	G1680	G1770	G1833	G1915	G1979	G2043	G2112	G2174
G1233	G1297	G1356	G1417	G1418	G1480	G1556	G1621	G1681	G1771	G1838	A1916	G1980	C2044	G2113	G2175
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	A1302	A1302	C1362	G1423	G1486	G1561	G1628	G1688	G1776	G1843	G1921	G1985	G2050	U2118	G2184
	G1303	G1303	C1363	G1424	G1487	A1566	G1629	G1689	G1777	A1847	G1922	A1986	A2051	G2119	G2185
	C1304	C1304	G1364	G1425	G1488	A1567	G1630	A1889	G1778	A1848	C1925	G1987	G2052	A2120	C2186
	C1305	C1305	G1365	G1426	G1489	A1568	G1631	A1890	G1779	G1849	C1926	G1988	G2053	G2121	C2187
	C1306	C1306	A1366	G1426	A1490	A1569	G1630A	G1691	A1780	G1850	A1927	G1989	G2054	G2122	G2188
	A1307	A1307	A1427	G1427	A1491	A1570	A1631	U1692	G1781	G1851	A1928	U1991	G2055	G2123	C2189
	A1308	A1308	A1367	C1428	G1492	A1571	A1632	U1693	C1782	U1852	A1929	G1992	G2056	G2124	U2189
	G1309	G1309	A1367	G1429	G1493	A1572	G1633	C1694	A1783	C1852	G1929	G1993	A2057	G2125	G2190
	G1310	G1310	G1368	G1430	A1494	G1573	A1694	G1695	A1784	A1853	G1930	U1993	G2058	A2126	G2191
	G1311	G1311	G1369	G1430	A1495	G1574	A1695	G1696	A1785	A1854	G1931	G1997	A2059	G2127	C2192
	G1251	G1251	G1371	G1432	A1496	C1575	C1636	G1697	A1786	G1856	G1932	G1998	A2060	C2128	G2193
	G1252	G1252	G1372	G1433	A1497	C1576	A1637	A1698	A1787	G1857	G1933	G1999	G2061	C2129	G2194
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	A1254	A1254	G1374	G1435	U1498	C1578	U1639	A1700	A1789	G1859	A1936	G2001	C2063	G2131	A2199
	G1248	G1248	G1375	G1436	C1504	U1578	G1640	A1701	C1790	G1860	A1937	A2001	C2064	G2132	A2205
	U1249	U1249	G1376	G1437	C1505	A1580	G1641	G1702	A1791	G1861	U1938	G2002	C2065	G2133	C2206
	G1250	G1250	G1377	G1438	C1506	G1581	G1642	G1703	A1792	G1862	U1939	G2003	C2066	A2134	C2207
	G1251	G1251	A1378	G1439	C1507	C1582	G1643	G1704	C1791	G1863	U1940	A2005	G2067	G2135	G2210
	G1252	G1252	A1379	A1439	A1507	C1583	G1644	U1709	C1792	U1864	U1941	G2006	G2068	A2136	G2211
	C1258	C1258	A1379	A1440	A1508	A1583	G1645	C1710	U1796	A1871	C1942	C2007	C2069	C2137	A2212
	G1259	G1259	G1380	G1441	C1509	C1585	G1646	C1711	U1797	A1872	C1943	C2008	C2070	G2138	A2213
	G1260	G1260	G1381	G1442	A1510	A1586	C1646	C1712	C1797	A1873	U1944	G2009	A2071	C2139	A2214
	C1261	C1261	G1382	G1443	A1511	A1587	G1647	U1716	U1798	G1878	U1945	G2010	G2072	G2140	G2215
	G1262	G1262	G1383	G1444	A1512	C1588	G1648	G1717	U1799	G1879	U1946	G2011	C2073	G2141	G2216
	G1264	G1264	A1384	A1444A	A1513	C1589	G1649	G1718	C1800	C1882	U1946	G2012	C2074	G2142	C2217
	G1265	G1265	G1385	G1445	A1514	U1590	G1650	G1725	G1801	G1883	C1947	G2013	U2074	G2143	G2218
	A1266	A1266	C1386	G1446	A1515	C1591	G1651	G1726	A1802	A1884	G1948	A2014	U2075	U2144	G2219
	G1267	G1267	G1387	G1447	A1516	C1592	A1652	U1727	A1803	A1885	G1949	A2015	G2076	G2145	G2220
	G1268	G1268	G1388	G1448	A1517	G1593	G1653	G1728	C1804	C1886	G1950	A2016	A2077	C2146	A2225
	A1268	A1268	U1389	A1448	A1518	G1594	A1654	A1729	C1805	C1887	U1951	U2016	C2078	G2147	C2226
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	C1270	C1270	U1391	C1450	A1520	A1596	A1656	G1731	G1807	A1889	A1953	A2019	G2080	G2149	G2228
	G1271	G1271	A1392	C1451	G1521	A1597	C1657	U1734	U1808	A1890	G1954	A2020	C2081	U2150	C2229
	G1272	G1272	A1393	A1453	G1522	C1598	G1658	C1734	A1809	G1891	U1955	A2021	A2082	G2151	G2231
	G1273	G1273	U1394	U1454	A1527	C1599	U1659	C1742	A1810	C1894	U1956	U2022	G2087	G2152	U2232
	A1274	A1274	U1395	G1455	A1528	G1600	G1660	G1743	A1811	C1895	A1960	U2023	C2088	G2153	U2233
	A1275	A1275	U1396	G1456	A1529	G1601	G1661	G1743	A1812	C1896	C1961	G2024	G1896	G2154	G2234
	G1276	G1276	U1397	G1457	A1530	U1602	C1662	C1753	A1813	G1897	C1962	C2025	U2092	G2155	G2237
	G1277	G1277	C1398	G1459	C1533	U1603	C1663	G1754	A1814	U1898	U1963	C2026	G2093	G2156	C2238
	A1278	A1278	G1399	A1460	G1534	C1604	A1664	C1754	A1815	U1899	G1964	G2027	G2094	G2157	C2239
	G1279	G1279	U1340	G1461	U1535	C1605	A1665	A1755	A1816	U1899	G1965	U2028	U2095	A2158	G2240
	G1280	G1280	U1341	G1462	U1536	C1606	A1666	A1756	A1819	G1899	G1966	U2029	U2096	G2159	G2241
	G1281	G1281	U1342	C1463	A1536	G1607	G1666	A1757	A1820	A1900	A1967	G2030	C2097	G2160	G2242
	G1282	G1282	A1342	G1464	C1537	C1607	G1667	A1758	A1821	C1902	C1967	A2031	C2098	G2161	U2243
	G1283	G1283	G1343	G1465	U1538	A1608	A1668	A1759	A1822	G1903	G1968	G2032	U2099	C2162	U2244
	A1284	A1284	G1344	C1466	G1539	A1609	A1669	A1760	G1823	G1904	A1969	G2033	G2100	G2163	U2245
	G1285	G1285	C1345	G1467	A1542	A1610	C1670	A1761	G1824	G1905	A1970	A2033	G2101	G2164	G2246
	G1286	G1286	U1346	G1470	A1543	C1611	C1671	A1762	A1825	C1906	U2034	G2103	U2096	G2165	U2247
	A1287	A1287	G1347	C1407	A1471	C1612	C1672	A1763	A1826	G1907	A1971	G2104	U2097	U2167	G2248
	U1288	U1288	A1348	A1408	A1471	C1613	U1673	G1763	G1827	C1908	A1972	G2105	U2098	C2168	G2249
	C1289	C1289	A1349	A1409	A1471	A1614	G1674	G1764	G1828	C1909	G1973	G2106	U2099	A2169	G2250
	C1290	C1290	C1350	A1410	A1471	C1615	C1675	G1765	A1829	C1909	G1974	G2107	G2037	G2170	G2251
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	U1292	U1292	A1352	G1412	A1471	A1617	A1677	U1767	A1831	A1913	U1977	C2039	C2039	U2172	G2253
	A1353	A1353	A1353	G1413	A1471	A1618	G1678	U1768	A1832	C1914	U1978	C2040	C2040	A2173	G2254
	A1354	A1354	A1354	G1478	A1554	A1619	G1679	G1769	A1832						



● Molecule 5: 23S ribosomal RNA



G1106	G1107	C1109	G1110	G1111	G1112	G1113	G1114	G1119	G1120	G1121	G1122	C1123	G1124	G1125	G1126	A1127	A1128	A1129	U1130	G1131	G1132	U1133	C1135	G1136	G1137	G1138	G1139	C1140	U1141	U1142	A1142A	G1144	C1145	G1146	C1147	C1150	G1151	C1152	C1153	G1154	A1155	G1156	G1157	C1158	U1159	G1160	C1161	G1162	G1163	G1164	U1165	C1166	U1167	G1168	G1169																																																																																																				
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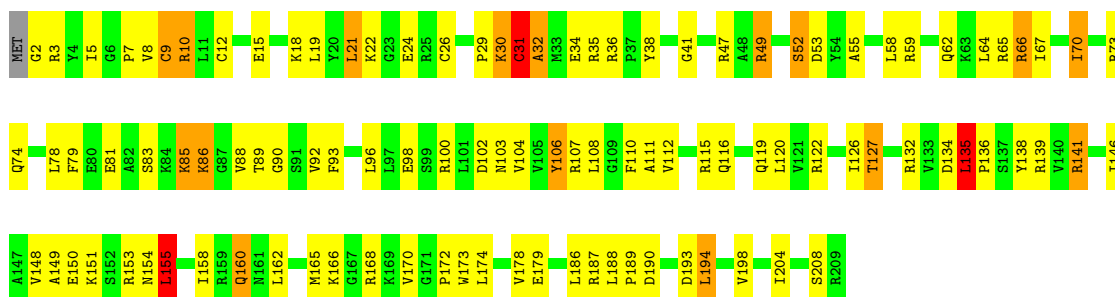
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G2105	U2034	C1908	C1832	G1790	G1682	A1619	G1558	A1494	G1243	C1305	G1244	A1177
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C2039	C1974	C1914	G1835	A1773	C1685	G1623	G1560	A1497	A1432	A1308	A1246	C1180
C2040	G1975	A1915	C1836	C1774	U1688	G1624	G1561	U1498	A1433	G1309	A1247	C1181
U2041	U1976	A1916	C1837	U1775	U1689	C1625	A1562	C1499	G1434	G1310	G1248	A1182
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A2071	C2007	U1944	G1878	A1803	G1731	G1653	G1591	A1529	C1463		A1275	
C2072	C2008	U1945	C1879	C1804	A1732	A1654	G1592	G1530	C1464		A1284	A1213
C2073	G1883	G1805	G1884	U1806	G1746	C1657	G1593	C1531	G1465		A1285	A1214
U2074	A1884	A1807	A1807	A1807	G1747	U1658	G1594	G1532	G1466		G1279	G1215
U2075	A1885	U1808	U1808	U1808	G1748	U1659	A1595	G1533	C1467		G1280	G1216
U2076	C1886	A1809	A1809	A1809	A1749	C1660	A1597	U1535	U1406		G1281	C1217
U2079	C1887	G1816	G1816	G1816	G1750	G1661	G1598	A1536	C1408		A1289	G1218
C2081	A1888	G1813	G1813	G1813	G1751	G1662	G1599	C1537	C1409		A1290	G1219
A2082	A1889	U2016	U2016	U2016	C1752	A1664	C1600	G1538	G1410		G1291	A1220
C2083	G1891	U1955	G1815	A1815	G1753	A1665	G1601	G1539	C1411		A1286	C1221
G2084	C1892	U1956	G1816	G1816	C1754	G1666	A1603	U1541	A1412		A1287	C1222
C2085	C1893	U1957	G1817	G1817	A1755	G1667	C1604	G1542	G1413		U1288	G1223
C2086	A2020	C1957	U1817	U1817	A1756	A1668	G1605	A1543	C1414		C1289	G1224
C2087	C2021	G1958	U1818	A1818	U1757	A1669	G1606	A1544	A1477		G1295	C1225
U2086	C1895	U1959	U1819	A1819	G1758	A1670	G1607	G1545	G1478		U1292	A1227
G2023	A1960	A1960	U1820	U1820	A1759	U1671	A1608	A1546	G1480		U1293	G1228
U2092	G2024	C1961	A1821	A1821	A1760	C1672	A1609	G1546	U1482		U1294	G1229
C2093	C2025	C1962	C1822	C1822	C1761	U1673	A1610	C1547	G1483		G1296	C1230
C2094	A1900	G1963	A1824	A1824	A1762	G1674	G1611	U1548	A1486		C1297	G1231
C2095	G2027	U1964	A1825	A1825	A1763	C1675	C1612	C1549	A1496		A1298	
U2096	C1902	G1965	G1826	G1826	G1764	A1676	G1613	C1550	G1487		G1299	A1237





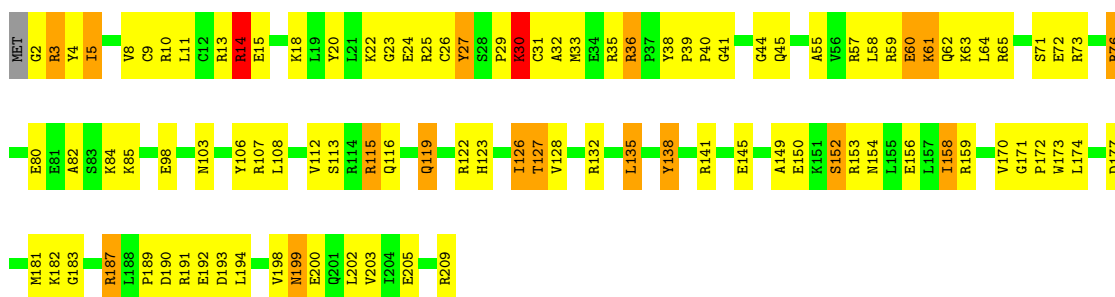
- Molecule 8: 30S ribosomal protein S4

Chain 3E:  49% 42% 8%



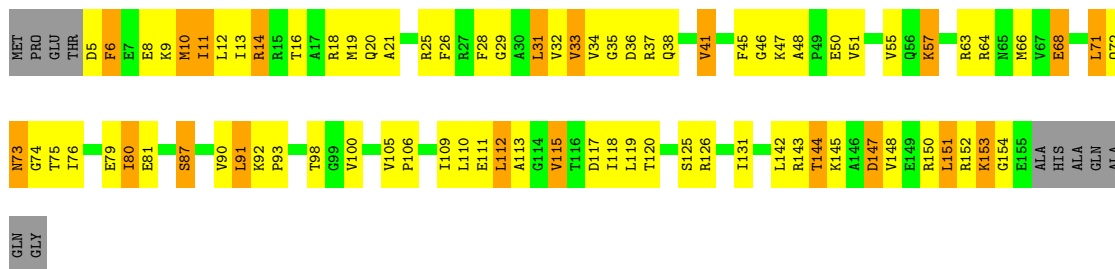
- Molecule 8: 30S ribosomal protein S4

Chain 32:  51% 39% 8%

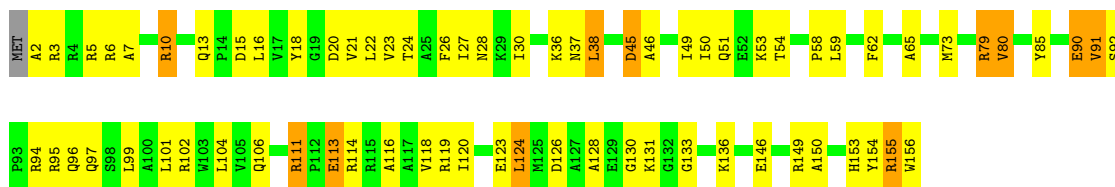


- Molecule 9: 30S ribosomal protein S5

Chain 4E:  43% 38% 12% 7%

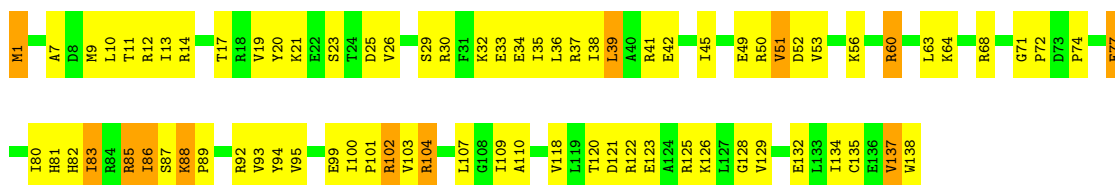


Chain 6E:  54% 38% 7%



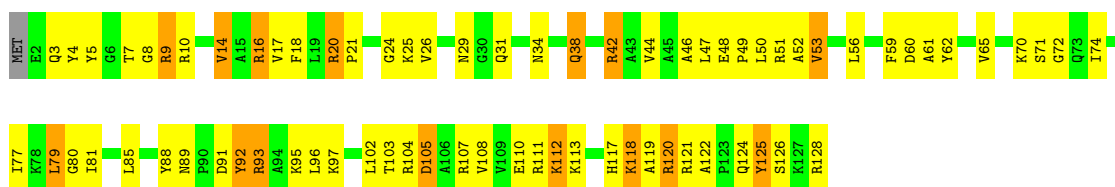
- Molecule 12: 30S ribosomal protein S8

Chain 7E:  43% 48% 9%



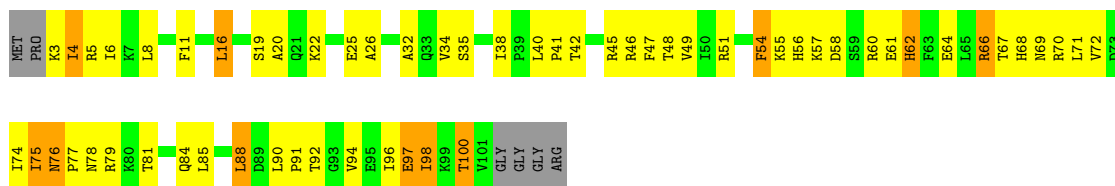
- Molecule 13: 30S ribosomal protein S9

Chain 8E:  42% 45% 12%



- Molecule 14: 30S ribosomal protein S10

Chain 1I:  38% 46% 10% 6%



- Molecule 15: 30S ribosomal protein S11

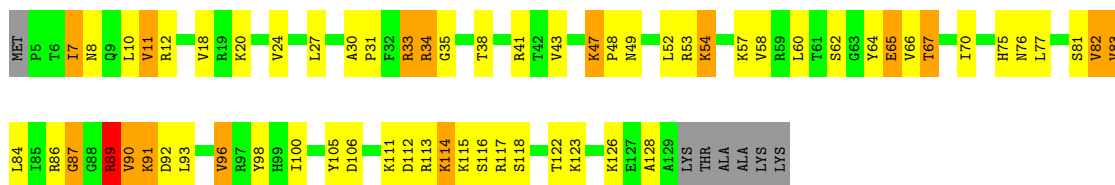
Chain 2I:  46% 40% 7% 8%



- Molecule 16: 30S ribosomal protein S12

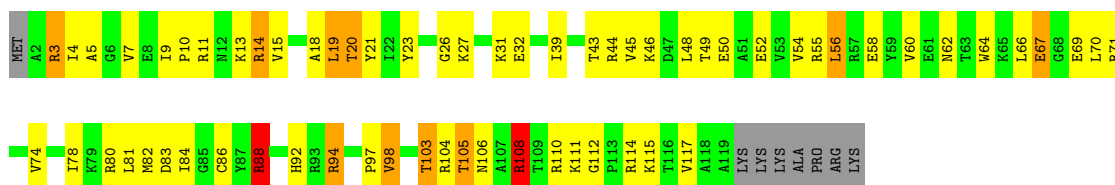


Chain 3I:  47% 36% 11% 5%



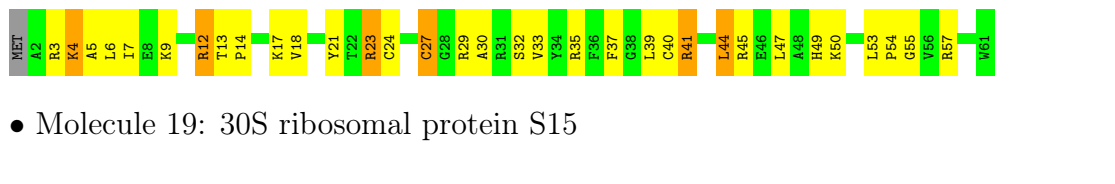
- Molecule 17: 30S ribosomal protein S13

Chain 4I:  43% 41% 8% 6%



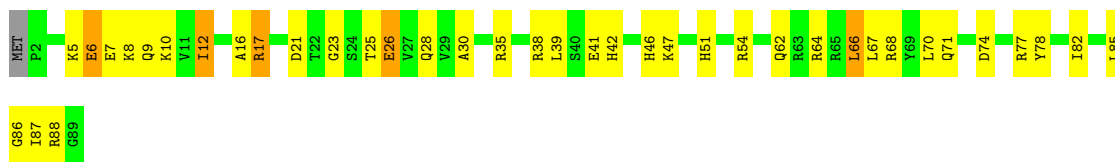
- Molecule 18: 30S ribosomal protein S14 type Z

Chain 5I:  44% 44% 10%



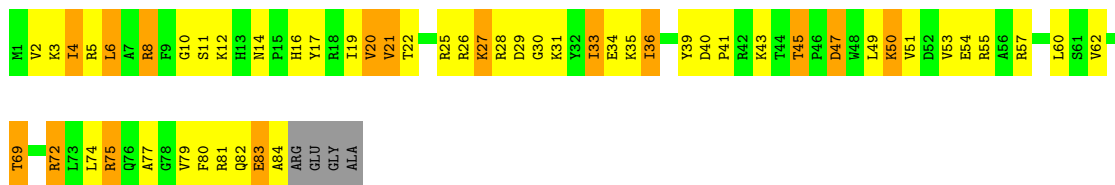
- Molecule 19: 30S ribosomal protein S15

Chain 6I:  55% 38% 6%



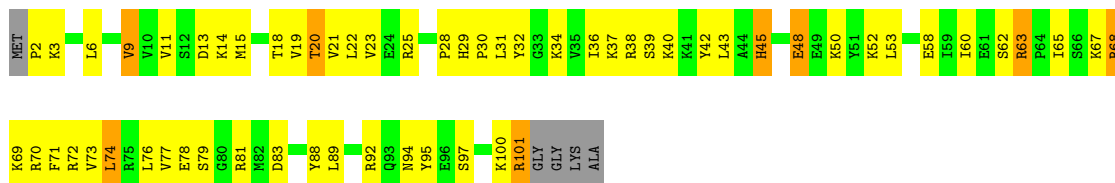
- Molecule 20: 30S ribosomal protein S16

Chain 7I:  35% 43% 17% 5%

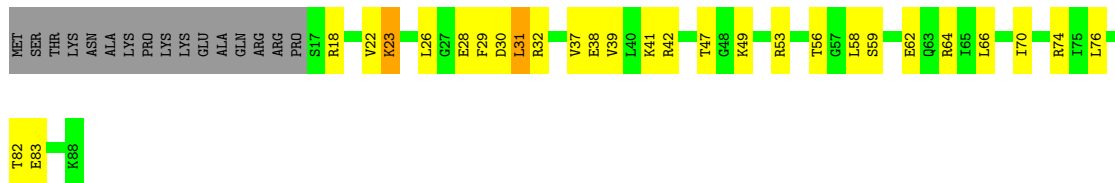


- Molecule 21: 30S ribosomal protein S17

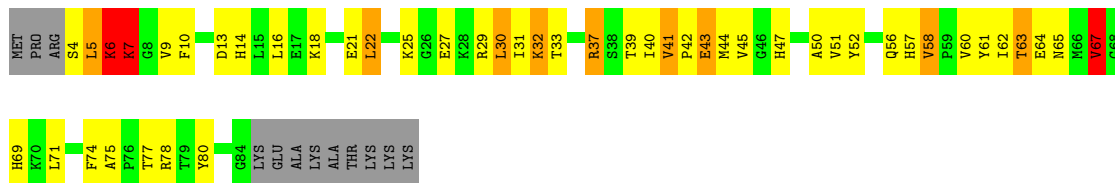
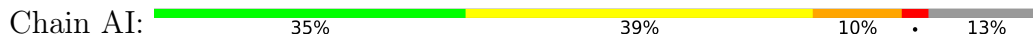
Chain 8I:  38% 50% 8% 5%



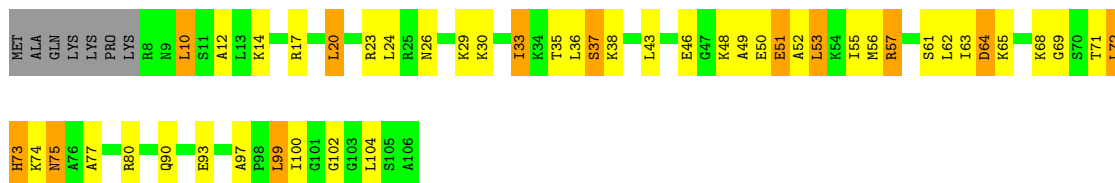
• Molecule 22: 30S ribosomal protein S18



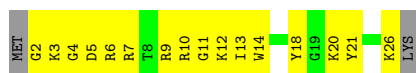
• Molecule 23: 30S ribosomal protein S19



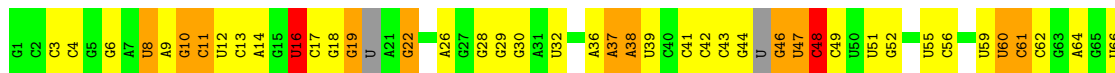
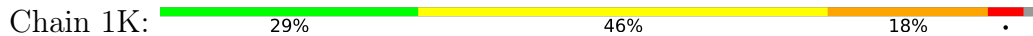
• Molecule 24: 30S ribosomal protein S20



• Molecule 25: 30S ribosomal protein Thx

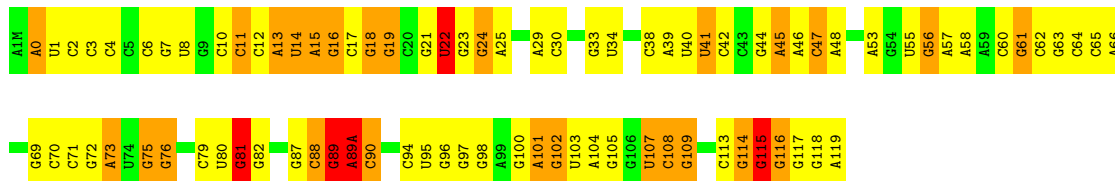


• Molecule 26: tRNA-Phe

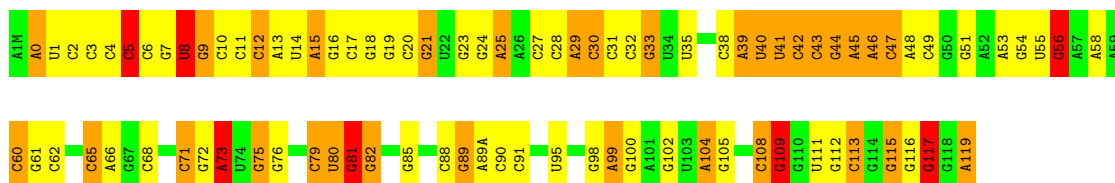




• Molecule 27: 5S ribosomal RNA



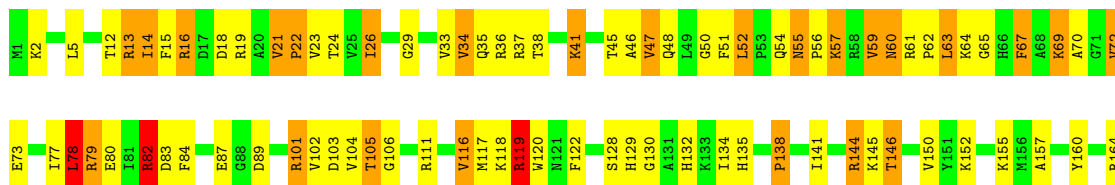
• Molecule 27: 5S ribosomal RNA

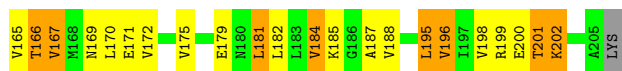


• Molecule 28: 50S ribosomal protein L2

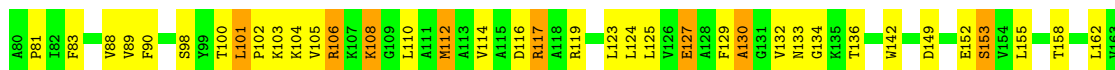
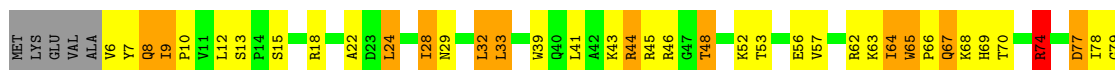


• Molecule 29: 50S ribosomal protein L3

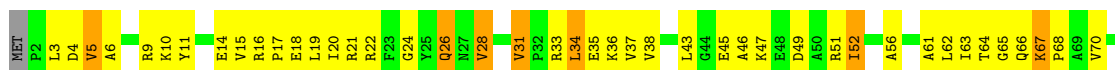




• Molecule 30: 50S ribosomal protein L4



• Molecule 31: 50S ribosomal protein L5



• Molecule 32: 50S ribosomal protein L6



• Molecule 33: 50S ribosomal protein L9

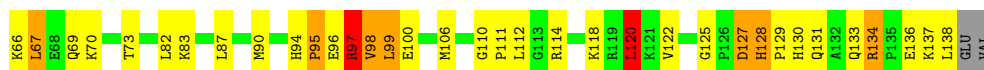
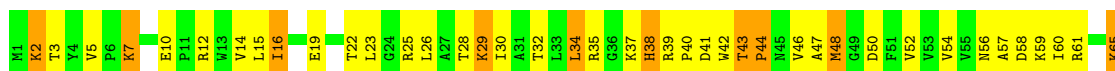




GLN  
GLU

- Molecule 34: 50S ribosomal protein L13

Chain 58: 44% 41% 12% ..



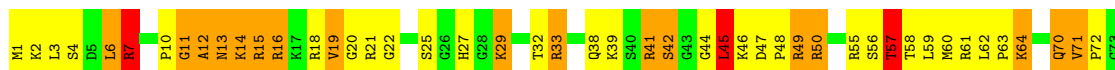
- Molecule 35: 50S ribosomal protein L14

Chain 68: 56% 35% 9%



- Molecule 36: 50S ribosomal protein L15

Chain 78: 40% 40% 18%



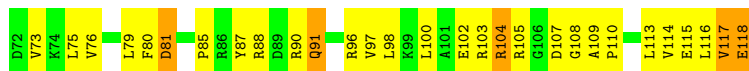
- Molecule 37: 50S ribosomal protein L16

Chain 88: 50% 31% 14% ..

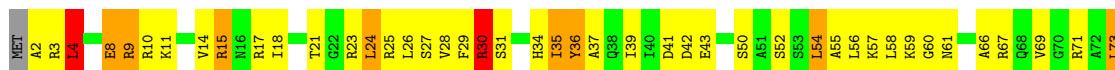


- Molecule 38: 50S ribosomal protein L17

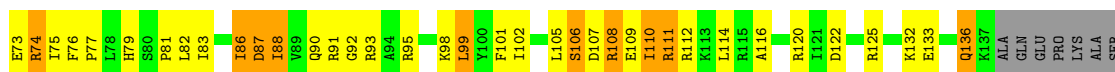
Chain 98: 37% 48% 14%



- Molecule 39: 50S ribosomal protein L18



- Molecule 40: 50S ribosomal protein L19

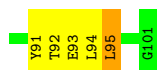


GLN  
GLU

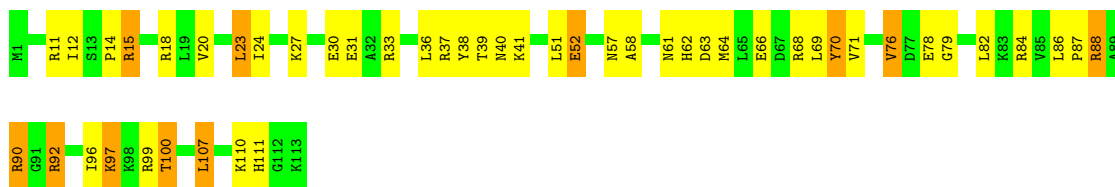
- Molecule 41: 50S ribosomal protein L20



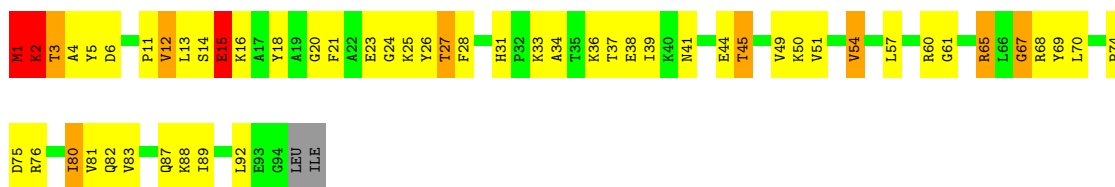
- Molecule 42: 50S ribosomal protein L21



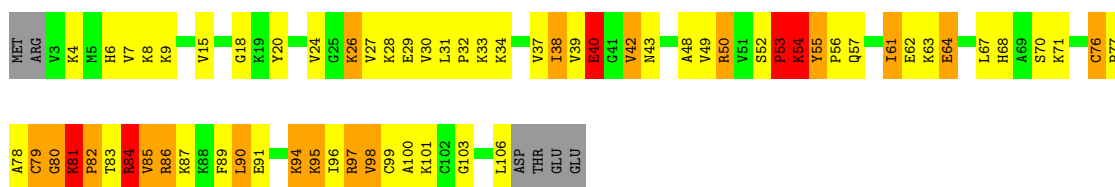
- Molecule 43: 50S ribosomal protein L22



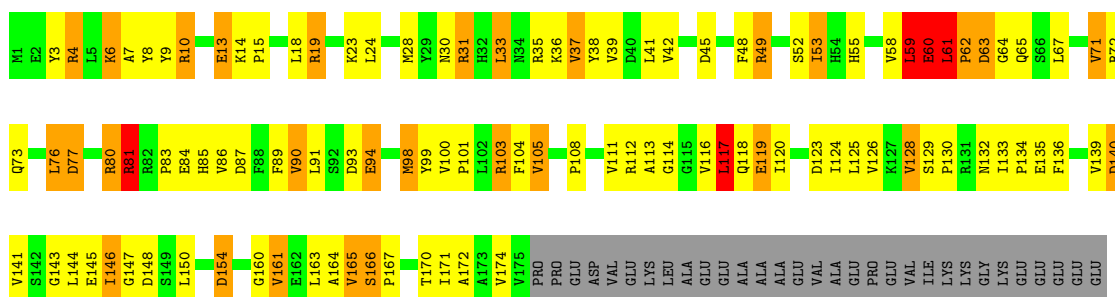
• Molecule 44: 50S ribosomal protein L23



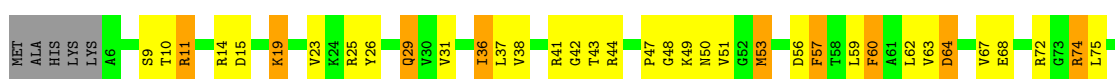
• Molecule 45: 50S ribosomal protein L24

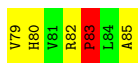


• Molecule 46: 50S ribosomal protein L25

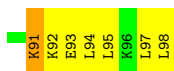
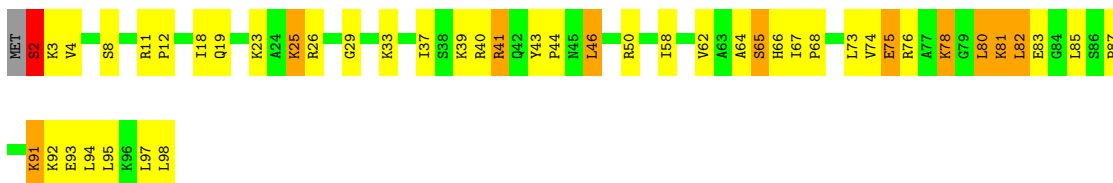


• Molecule 47: 50S ribosomal protein L27

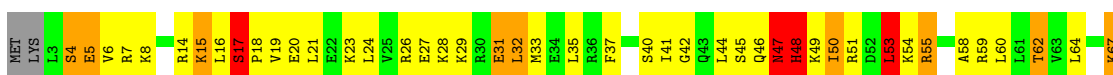
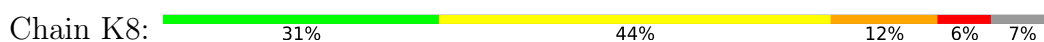




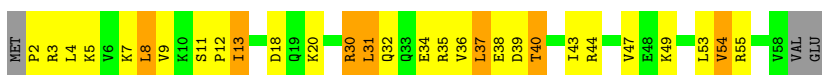
• Molecule 48: 50S ribosomal protein L28



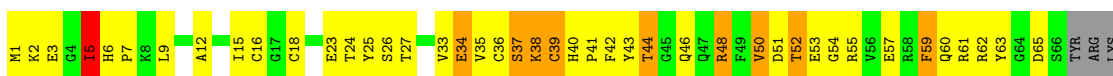
• Molecule 49: 50S ribosomal protein L29



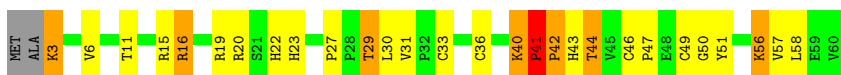
• Molecule 50: 50S ribosomal protein L30



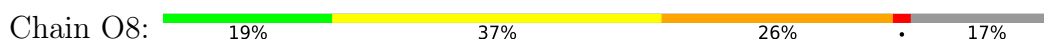
• Molecule 51: 50S ribosomal protein L31



• Molecule 52: 50S ribosomal protein L32



• Molecule 53: 50S ribosomal protein L33



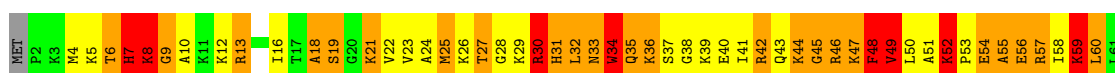
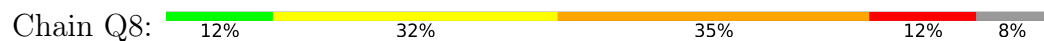




- Molecule 54: 50S ribosomal protein L34



- Molecule 55: 50S ribosomal protein L35



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	209.40Å 447.70Å 619.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	151.96 – 3.05 254.70 – 3.05	Depositor EDS
% Data completeness (in resolution range)	99.9 (151.96-3.05) 92.8 (254.70-3.05)	Depositor EDS
$R_{merge}$	0.33	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	0.76 (at 3.07Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, $R_{free}$	0.193 , 0.231 0.248 , 0.271	Depositor DCC
$R_{free}$ test set	2000 reflections (0.18%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	89.4	Xtrriage
Anisotropy	0.247	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.28 , 77.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	260090	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	113.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.46% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 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: H2U, OMC, 7MG, ZN, MG, PSU, MIA, 4SU

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	13	0.87	14/36028 (0.0%)	1.59	679/56231 (1.2%)
1	1G	0.75	2/36025 (0.0%)	1.44	481/56227 (0.9%)
2	1L	0.51	1/1625 (0.1%)	1.02	1/2531 (0.0%)
2	3K	0.57	0/1625	1.17	11/2531 (0.4%)
2	3L	0.63	0/1625	1.20	16/2531 (0.6%)
3	2K	1.02	2/1721 (0.1%)	1.69	42/2682 (1.6%)
3	2L	0.78	1/1721 (0.1%)	1.49	23/2682 (0.9%)
4	4K	1.03	0/313	1.37	4/485 (0.8%)
4	4L	1.26	0/213	1.79	4/329 (1.2%)
5	14	0.99	84/70167 (0.1%)	1.74	2119/109541 (1.9%)
5	1H	1.24	280/70233 (0.4%)	2.01	3566/109643 (3.3%)
6	12	0.40	0/1959	0.68	2/2642 (0.1%)
6	1E	0.48	0/1959	0.74	0/2642
7	22	0.45	0/1636	0.67	1/2205 (0.0%)
7	2E	0.58	0/1629	0.74	0/2195
8	32	0.53	0/1732	0.76	1/2318 (0.0%)
8	3E	0.65	2/1732 (0.1%)	0.80	3/2318 (0.1%)
9	4E	0.62	0/1171	0.81	0/1576
10	5E	0.61	0/855	0.78	0/1154
11	6E	0.56	0/1275	0.70	0/1709
12	7E	0.59	0/1135	0.79	0/1527
13	8E	0.52	0/1028	0.75	1/1379 (0.1%)
14	1I	0.54	0/814	0.75	0/1095
15	2I	0.64	0/899	0.85	1/1213 (0.1%)
16	3I	0.79	0/991	1.03	4/1327 (0.3%)
17	4I	0.59	0/948	0.84	2/1272 (0.2%)
18	5I	0.83	1/500 (0.2%)	0.85	1/664 (0.2%)
19	6I	0.62	0/744	0.84	0/992
20	7I	0.56	0/721	0.77	0/970
21	8I	0.60	0/847	0.77	0/1131
22	9I	0.58	0/595	0.79	0/790
23	AI	0.60	0/661	0.84	0/890

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
24	BI	0.47	0/764	0.73	1/1007 (0.1%)
25	1F	0.52	0/221	0.81	0/288
26	1K	0.56	0/1602	1.16	9/2493 (0.4%)
27	16	0.97	2/2928 (0.1%)	1.87	95/4568 (2.1%)
27	1J	0.80	1/2928 (0.0%)	1.48	31/4568 (0.7%)
28	11	0.96	3/2165 (0.1%)	1.09	6/2919 (0.2%)
29	21	0.78	0/1601	0.99	3/2160 (0.1%)
30	31	0.88	1/1620 (0.1%)	1.02	6/2194 (0.3%)
31	41	0.65	0/1498	0.86	1/2016 (0.0%)
32	51	0.68	0/1362	0.92	3/1841 (0.2%)
33	61	0.59	0/1151	0.83	0/1558
34	58	0.69	0/1131	0.88	1/1525 (0.1%)
35	68	0.75	0/942	0.85	1/1269 (0.1%)
36	78	0.82	0/1161	1.14	3/1544 (0.2%)
37	88	0.94	0/1106	1.13	4/1478 (0.3%)
38	98	0.66	0/981	1.00	1/1312 (0.1%)
39	A8	0.74	0/891	1.05	6/1187 (0.5%)
40	B8	0.77	0/1155	0.92	0/1542
41	C8	0.82	0/981	0.93	1/1306 (0.1%)
42	D8	0.69	0/789	0.93	2/1057 (0.2%)
43	E8	0.77	0/910	0.98	2/1220 (0.2%)
44	F8	1.00	2/756 (0.3%)	1.04	4/1014 (0.4%)
45	G8	0.83	0/804	1.11	6/1073 (0.6%)
46	H8	0.54	0/1427	0.84	1/1935 (0.1%)
47	I8	0.86	0/634	1.01	0/847
48	J8	0.84	0/769	1.03	4/1022 (0.4%)
49	K8	0.99	2/565 (0.4%)	1.16	4/748 (0.5%)
50	L8	0.70	0/457	0.99	1/613 (0.2%)
51	M8	0.58	0/545	0.84	0/733
52	N8	0.69	0/467	0.98	1/632 (0.2%)
53	O8	0.81	1/396 (0.3%)	0.97	0/529
54	P8	0.98	0/399	1.12	1/526 (0.2%)
55	Q8	1.30	3/486 (0.6%)	1.71	9/638 (1.4%)
All	All	0.96	402/280719 (0.1%)	1.64	7169/426784 (1.7%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
6	12	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
6	1E	0	3
8	32	0	2
8	3E	0	1
13	8E	0	1
16	3I	0	1
17	4I	0	1
20	7I	0	1
23	AI	0	2
28	11	0	1
29	21	0	3
30	31	0	2
31	41	0	2
33	61	0	4
36	78	0	3
37	88	0	1
38	98	0	1
39	A8	0	1
40	B8	0	1
41	C8	0	1
45	G8	0	4
46	H8	0	2
47	I8	0	2
48	J8	0	1
49	K8	0	2
51	M8	0	1
52	N8	0	2
53	O8	0	3
55	Q8	0	8
All	All	0	58

The worst 5 of 402 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	1H	2430	A	N9-C4	-15.74	1.28	1.37
5	1H	774	A	N9-C4	-13.11	1.29	1.37
5	1H	1786	A	N9-C4	-13.10	1.29	1.37
18	5I	27	CYS	CB-SG	-12.07	1.61	1.82
5	14	783	A	N9-C4	-11.82	1.30	1.37

The worst 5 of 7169 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	1H	1899	G	N3-C4-N9	-27.85	109.29	126.00
5	1H	1786	A	C2-N3-C4	-22.12	99.54	110.60
5	1H	917	A	N1-C2-N3	21.20	139.90	129.30
5	1H	1332	G	N3-C4-N9	-21.08	113.35	126.00
5	1H	1899	G	N3-C4-C5	21.00	139.10	128.60

There are no chirality outliers.

5 of 58 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
6	1E	15	VAL	Peptide
6	1E	169	LYS	Peptide
6	1E	237	ALA	Peptide
8	3E	31	CYS	Peptide
13	8E	110	GLU	Peptide

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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	13	32185	0	16244	835	0
1	1G	32182	0	16243	773	1
2	1L	1627	0	842	40	0
2	3K	1627	0	842	51	0
2	3L	1627	0	842	53	0
3	2K	1645	0	845	23	0
3	2L	1645	0	845	38	0
4	4K	279	0	142	6	0
4	4L	191	0	98	8	0
5	14	62647	0	31582	1217	0
5	1H	62707	0	31606	1584	1
6	12	1924	0	1975	116	0
6	1E	1924	0	1975	112	0
7	22	1612	0	1677	87	0
7	2E	1605	0	1668	48	0
8	32	1702	0	1763	87	0
8	3E	1702	0	1763	82	0
9	4E	1155	0	1213	67	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	5E	842	0	857	29	0
11	6E	1256	0	1296	51	0
12	7E	1115	0	1177	61	0
13	8E	1009	0	1037	60	0
14	1I	801	0	849	56	0
15	2I	884	0	904	39	0
16	3I	975	0	1062	47	0
17	4I	938	0	997	54	0
18	5I	491	0	529	28	0
19	6I	733	0	771	32	0
20	7I	705	0	725	50	0
21	8I	834	0	904	58	0
22	9I	590	0	662	25	0
23	AI	647	0	665	50	0
24	BI	762	0	861	35	0
25	1F	217	0	234	19	0
26	1K	1587	0	822	25	0
27	16	2617	0	1328	74	0
27	1J	2617	0	1328	81	0
28	11	2115	0	2195	102	0
29	21	1568	0	1634	92	0
30	31	1585	0	1632	93	0
31	41	1473	0	1535	99	0
32	51	1336	0	1418	73	0
33	61	1136	0	1223	66	0
34	58	1104	0	1180	60	0
35	68	932	0	996	42	0
36	78	1144	0	1228	96	0
37	88	1086	0	1129	57	0
38	98	967	0	1033	61	0
39	A8	881	0	943	61	0
40	B8	1141	0	1202	70	0
41	C8	963	0	1022	68	0
42	D8	778	0	852	39	0
43	E8	899	0	964	30	0
44	F8	742	0	803	46	0
45	G8	791	0	881	61	0
46	H8	1397	0	1430	78	0
47	I8	626	0	642	38	0
48	J8	762	0	848	37	0
49	K8	563	0	612	30	0
50	L8	452	0	503	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
51	M8	533	0	526	38	0
52	N8	453	0	475	29	0
53	O8	389	0	404	35	0
54	P8	391	0	432	17	0
55	Q8	480	0	549	106	0
56	11	2	0	0	0	0
56	13	149	0	0	0	0
56	14	421	0	0	0	0
56	16	13	0	0	0	0
56	1G	96	0	0	0	0
56	1H	537	0	0	0	0
56	1J	7	0	0	0	0
56	1K	2	0	0	0	0
56	1L	1	0	0	0	0
56	21	2	0	0	0	0
56	2K	8	0	0	0	0
56	2L	4	0	0	0	0
56	3E	2	0	0	0	0
56	3I	1	0	0	0	0
56	3L	3	0	0	0	0
56	41	2	0	0	0	0
56	5E	1	0	0	0	0
56	5I	1	0	0	0	0
56	78	1	0	0	0	0
56	88	2	0	0	0	0
56	I8	1	0	0	0	0
56	J8	1	0	0	0	0
56	L8	1	0	0	0	0
56	P8	1	0	0	0	0
57	14	1	0	0	0	0
57	1G	1	0	0	0	0
57	32	1	0	0	0	0
57	3E	1	0	0	0	0
57	5I	1	0	0	0	0
57	G8	1	0	0	0	0
58	11	9	0	0	3	0
58	13	230	0	0	36	0
58	14	863	0	0	119	0
58	16	21	0	0	3	0
58	1G	106	0	0	22	0
58	1H	1212	0	0	257	0
58	1I	1	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
58	1J	12	0	0	4	0
58	1K	6	0	0	0	0
58	2I	3	0	0	2	0
58	2K	8	0	0	1	0
58	2L	1	0	0	0	0
58	3I	8	0	0	0	0
58	3E	1	0	0	0	0
58	3I	1	0	0	0	0
58	3K	1	0	0	0	0
58	4E	3	0	0	0	0
58	4K	4	0	0	0	0
58	4L	2	0	0	0	0
58	58	3	0	0	0	0
58	5I	1	0	0	0	0
58	6I	1	0	0	0	0
58	78	6	0	0	0	0
58	7I	1	0	0	0	0
58	8E	2	0	0	0	0
58	98	1	0	0	1	0
58	B8	1	0	0	0	0
58	BI	1	0	0	0	0
58	C8	3	0	0	2	0
58	D8	1	0	0	0	0
58	E8	2	0	0	0	0
58	F8	2	0	0	0	0
58	G8	3	0	0	0	0
58	I8	5	0	0	1	0
58	J8	1	0	0	0	0
58	L8	1	0	0	1	0
58	P8	4	0	0	0	0
58	Q8	1	0	0	0	0
All	All	260090	0	157464	7103	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 18.

The worst 5 of 7103 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:1H:567:A:OP1	58:1H:3610:HOH:O	1.72	1.07
5:1H:987:G:OP2	58:1H:4091:HOH:O	1.74	1.03

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:1H:2714:G:OP2	58:1H:3679:HOH:O	1.74	1.03
36:78:19:VAL:HG12	36:78:21:ARG:H	1.24	1.02
5:1H:945:A:OP1	58:1H:4240:HOH:O	1.80	1.00

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:1H:2137:C:OP1	1:1G:999:U:O2'[4_555]	2.11	0.09

## 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 X-ray entries followed by that with respect to entries of similar resolution.

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	
6	12	235/256 (92%)	196 (83%)	35 (15%)	4 (2%)	9	32
6	1E	235/256 (92%)	199 (85%)	33 (14%)	3 (1%)	12	38
7	22	204/239 (85%)	185 (91%)	19 (9%)	0	100	100
7	2E	203/239 (85%)	182 (90%)	21 (10%)	0	100	100
8	32	206/209 (99%)	181 (88%)	23 (11%)	2 (1%)	15	45
8	3E	206/209 (99%)	186 (90%)	18 (9%)	2 (1%)	15	45
9	4E	149/162 (92%)	138 (93%)	10 (7%)	1 (1%)	22	52
10	5E	99/101 (98%)	93 (94%)	6 (6%)	0	100	100
11	6E	153/156 (98%)	145 (95%)	8 (5%)	0	100	100
12	7E	136/138 (99%)	125 (92%)	10 (7%)	1 (1%)	22	52
13	8E	125/128 (98%)	105 (84%)	20 (16%)	0	100	100
14	1I	97/105 (92%)	89 (92%)	8 (8%)	0	100	100
15	2I	117/129 (91%)	102 (87%)	14 (12%)	1 (1%)	17	47

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	3I	123/132 (93%)	103 (84%)	20 (16%)	0	100	100
17	4I	116/126 (92%)	97 (84%)	18 (16%)	1 (1%)	17	47
18	5I	58/61 (95%)	47 (81%)	9 (16%)	2 (3%)	3	17
19	6I	86/89 (97%)	79 (92%)	7 (8%)	0	100	100
20	7I	82/88 (93%)	76 (93%)	6 (7%)	0	100	100
21	8I	98/105 (93%)	94 (96%)	4 (4%)	0	100	100
22	9I	70/88 (80%)	60 (86%)	8 (11%)	2 (3%)	4	20
23	AI	79/93 (85%)	66 (84%)	9 (11%)	4 (5%)	2	10
24	BI	97/106 (92%)	80 (82%)	17 (18%)	0	100	100
25	1F	23/27 (85%)	21 (91%)	2 (9%)	0	100	100
28	11	270/276 (98%)	252 (93%)	15 (6%)	3 (1%)	14	42
29	21	203/206 (98%)	164 (81%)	29 (14%)	10 (5%)	2	11
30	31	200/210 (95%)	182 (91%)	16 (8%)	2 (1%)	15	45
31	41	179/182 (98%)	156 (87%)	20 (11%)	3 (2%)	9	32
32	51	172/180 (96%)	143 (83%)	22 (13%)	7 (4%)	3	14
33	61	144/148 (97%)	117 (81%)	24 (17%)	3 (2%)	7	26
34	58	136/140 (97%)	117 (86%)	15 (11%)	4 (3%)	4	20
35	68	120/122 (98%)	112 (93%)	8 (7%)	0	100	100
36	78	148/150 (99%)	116 (78%)	27 (18%)	5 (3%)	3	17
37	88	134/141 (95%)	110 (82%)	20 (15%)	4 (3%)	4	19
38	98	116/118 (98%)	100 (86%)	15 (13%)	1 (1%)	17	47
39	A8	109/112 (97%)	89 (82%)	19 (17%)	1 (1%)	17	47
40	B8	135/146 (92%)	120 (89%)	14 (10%)	1 (1%)	22	52
41	C8	115/118 (98%)	107 (93%)	5 (4%)	3 (3%)	5	22
42	D8	99/101 (98%)	92 (93%)	6 (6%)	1 (1%)	15	45
43	E8	111/113 (98%)	101 (91%)	10 (9%)	0	100	100
44	F8	92/96 (96%)	83 (90%)	7 (8%)	2 (2%)	6	25
45	G8	102/110 (93%)	80 (78%)	16 (16%)	6 (6%)	1	8
46	H8	173/206 (84%)	141 (82%)	24 (14%)	8 (5%)	2	12
47	I8	78/85 (92%)	66 (85%)	11 (14%)	1 (1%)	12	38
48	J8	95/98 (97%)	85 (90%)	8 (8%)	2 (2%)	7	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
49	K8	65/72 (90%)	57 (88%)	6 (9%)	2 (3%)	4	19
50	L8	55/60 (92%)	50 (91%)	4 (7%)	1 (2%)	8	30
51	M8	64/71 (90%)	40 (62%)	22 (34%)	2 (3%)	4	19
52	N8	56/60 (93%)	46 (82%)	8 (14%)	2 (4%)	3	16
53	O8	43/54 (80%)	28 (65%)	13 (30%)	2 (5%)	2	12
54	P8	43/49 (88%)	41 (95%)	2 (5%)	0	100	100
55	Q8	58/65 (89%)	33 (57%)	19 (33%)	6 (10%)	0	2
All	All	6312/6731 (94%)	5477 (87%)	730 (12%)	105 (2%)	9	32

5 of 105 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
29	21	83	ASP
32	51	169	VAL
36	78	57	THR
45	G8	54	LYS
49	K8	48	HIS

### 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 X-ray entries followed by that with respect to entries of similar resolution.

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	
6	12	205/220 (93%)	155 (76%)	50 (24%)	0	2
6	1E	205/220 (93%)	157 (77%)	48 (23%)	1	2
7	22	160/188 (85%)	130 (81%)	30 (19%)	1	5
7	2E	159/188 (85%)	131 (82%)	28 (18%)	2	7
8	32	180/181 (99%)	149 (83%)	31 (17%)	2	7
8	3E	180/181 (99%)	143 (79%)	37 (21%)	1	4
9	4E	116/123 (94%)	87 (75%)	29 (25%)	0	1
10	5E	90/90 (100%)	79 (88%)	11 (12%)	5	17
11	6E	126/127 (99%)	101 (80%)	25 (20%)	1	5

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	7E	119/119 (100%)	98 (82%)	21 (18%)	2	7
13	8E	98/99 (99%)	74 (76%)	24 (24%)	0	2
14	1I	89/92 (97%)	71 (80%)	18 (20%)	1	4
15	2I	90/99 (91%)	76 (84%)	14 (16%)	2	10
16	3I	104/109 (95%)	83 (80%)	21 (20%)	1	4
17	4I	94/101 (93%)	70 (74%)	24 (26%)	0	1
18	5I	49/50 (98%)	41 (84%)	8 (16%)	2	9
19	6I	79/80 (99%)	67 (85%)	12 (15%)	3	10
20	7I	72/74 (97%)	54 (75%)	18 (25%)	0	1
21	8I	95/97 (98%)	79 (83%)	16 (17%)	2	8
22	9I	63/77 (82%)	58 (92%)	5 (8%)	12	36
23	AI	70/80 (88%)	50 (71%)	20 (29%)	0	1
24	BI	76/82 (93%)	60 (79%)	16 (21%)	1	4
25	1F	20/22 (91%)	19 (95%)	1 (5%)	24	54
28	11	214/218 (98%)	169 (79%)	45 (21%)	1	4
29	21	165/166 (99%)	125 (76%)	40 (24%)	0	2
30	31	161/166 (97%)	127 (79%)	34 (21%)	1	4
31	41	155/156 (99%)	125 (81%)	30 (19%)	1	5
32	51	145/148 (98%)	110 (76%)	35 (24%)	0	2
33	61	122/124 (98%)	87 (71%)	35 (29%)	0	1
34	58	117/119 (98%)	92 (79%)	25 (21%)	1	3
35	68	100/100 (100%)	85 (85%)	15 (15%)	3	11
36	78	116/116 (100%)	82 (71%)	34 (29%)	0	0
37	88	104/111 (94%)	75 (72%)	29 (28%)	0	1
38	98	101/101 (100%)	72 (71%)	29 (29%)	0	1
39	A8	87/88 (99%)	68 (78%)	19 (22%)	1	3
40	B8	120/127 (94%)	93 (78%)	27 (22%)	1	3
41	C8	93/94 (99%)	76 (82%)	17 (18%)	1	6
42	D8	82/82 (100%)	63 (77%)	19 (23%)	1	2
43	E8	92/92 (100%)	71 (77%)	21 (23%)	1	3
44	F8	76/78 (97%)	61 (80%)	15 (20%)	1	5

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
45	G8	85/91 (93%)	56 (66%)	29 (34%)	0	0
46	H8	154/179 (86%)	114 (74%)	40 (26%)	0	1
47	I8	61/67 (91%)	47 (77%)	14 (23%)	1	2
48	J8	82/83 (99%)	65 (79%)	17 (21%)	1	4
49	K8	62/67 (92%)	39 (63%)	23 (37%)	0	0
50	L8	49/52 (94%)	40 (82%)	9 (18%)	1	6
51	M8	59/63 (94%)	42 (71%)	17 (29%)	0	1
52	N8	51/52 (98%)	37 (72%)	14 (28%)	0	1
53	O8	44/52 (85%)	31 (70%)	13 (30%)	0	0
54	P8	38/42 (90%)	32 (84%)	6 (16%)	2	9
55	Q8	50/55 (91%)	31 (62%)	19 (38%)	0	0
All	All	5324/5588 (95%)	4147 (78%)	1177 (22%)	1	3

5 of 1177 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
46	H8	140	ASP
8	32	3	ARG
48	J8	26	ARG
46	H8	135	GLU
53	O8	47	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 15 such sidechains are listed below:

Mol	Chain	Res	Type
29	21	135	HIS
49	K8	56	GLN
32	51	158	HIS
6	12	19	HIS
44	F8	31	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	13	1495/1522 (98%)	353 (23%)	38 (2%)
1	1G	1495/1522 (98%)	374 (25%)	37 (2%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	1L	74/76 (97%)	32 (43%)	3 (4%)
2	3K	74/76 (97%)	36 (48%)	5 (6%)
2	3L	74/76 (97%)	32 (43%)	1 (1%)
26	1K	70/76 (92%)	32 (45%)	2 (2%)
27	16	121/122 (99%)	26 (21%)	3 (2%)
27	1J	121/122 (99%)	31 (25%)	3 (2%)
3	2K	76/77 (98%)	15 (19%)	2 (2%)
3	2L	76/77 (98%)	17 (22%)	3 (3%)
4	4K	12/30 (40%)	2 (16%)	0
4	4L	9/30 (30%)	4 (44%)	2 (22%)
5	14	2908/2917 (99%)	754 (25%)	46 (1%)
5	1H	2911/2917 (99%)	685 (23%)	62 (2%)
All	All	9516/9640 (98%)	2393 (25%)	207 (2%)

5 of 2393 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	13	5	U
1	13	6	G
1	13	7	G
1	13	8	A
1	13	9	G

5 of 207 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
5	1H	685	A
5	1H	1762	A
1	1G	1145	C
5	1H	880	G
5	1H	1312	U

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

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

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

RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
26	MIA	1K	37	26	24,31,32	2.47	3 (12%)	26,44,47	2.67	6 (23%)
2	7MG	1L	46	2	22,26,27	3.20	8 (36%)	29,39,42	2.72	10 (34%)
3	PSU	2K	56	3	18,21,22	1.18	2 (11%)	22,30,33	1.94	5 (22%)
2	PSU	1L	32	2	18,21,22	1.27	1 (5%)	22,30,33	1.48	3 (13%)
2	MIA	3L	37	2	24,31,32	2.84	4 (16%)	26,44,47	3.85	10 (38%)
3	H2U	2L	21	3	18,21,22	2.12	3 (16%)	21,30,33	1.63	4 (19%)
26	PSU	1K	32	56,26	18,21,22	1.42	3 (16%)	22,30,33	1.56	3 (13%)
3	PSU	2L	56	3	18,21,22	1.50	2 (11%)	22,30,33	1.68	3 (13%)
26	PSU	1K	39	26	18,21,22	1.09	1 (5%)	22,30,33	1.64	3 (13%)
3	4SU	2L	8	3	18,21,22	2.00	4 (22%)	26,30,33	2.51	5 (19%)
2	H2U	1L	16	2	18,21,22	2.27	4 (22%)	21,30,33	2.06	5 (23%)
2	PSU	3L	39	2	18,21,22	1.13	1 (5%)	22,30,33	1.64	4 (18%)
26	PSU	1K	55	26	18,21,22	1.31	1 (5%)	22,30,33	1.51	4 (18%)
3	7MG	2K	47	3	22,26,27	2.96	7 (31%)	29,39,42	2.74	10 (34%)
2	PSU	1L	55	2	18,21,22	1.38	1 (5%)	22,30,33	1.46	4 (18%)
2	H2U	3L	16	2	18,21,22	2.16	4 (22%)	21,30,33	1.97	4 (19%)
2	PSU	3L	32	2	18,21,22	1.27	2 (11%)	22,30,33	1.56	3 (13%)
2	PSU	3K	39	2	18,21,22	1.32	1 (5%)	22,30,33	1.49	3 (13%)
3	OMC	2L	33	3	19,22,23	1.75	3 (15%)	26,31,34	1.07	2 (7%)
2	PSU	3K	32	2	18,21,22	1.22	1 (5%)	22,30,33	1.70	4 (18%)
2	PSU	3K	55	2	18,21,22	1.16	1 (5%)	22,30,33	1.90	6 (27%)
2	H2U	3L	20	2	18,21,22	2.23	4 (22%)	21,30,33	1.79	5 (23%)
2	4SU	3K	8	2	18,21,22	1.91	3 (16%)	26,30,33	2.46	5 (19%)
3	OMC	2K	33	3	19,22,23	1.88	3 (15%)	26,31,34	0.90	2 (7%)
2	PSU	1L	39	2	18,21,22	1.13	1 (5%)	22,30,33	1.52	4 (18%)
26	7MG	1K	46	26	22,26,27	2.99	7 (31%)	29,39,42	2.85	11 (37%)
2	H2U	3K	20	2	18,21,22	2.19	4 (22%)	21,30,33	2.07	5 (23%)
2	7MG	3L	46	2	22,26,27	3.27	6 (27%)	29,39,42	2.80	10 (34%)
2	PSU	3L	55	2	18,21,22	1.14	1 (5%)	22,30,33	1.57	3 (13%)
3	7MG	2L	47	3	22,26,27	3.16	7 (31%)	29,39,42	2.84	11 (37%)
2	4SU	3L	8	2	18,21,22	1.92	5 (27%)	26,30,33	1.97	5 (19%)
3	4SU	2K	8	3	18,21,22	1.91	3 (16%)	26,30,33	2.65	5 (19%)
2	MIA	3K	37	2	24,31,32	2.56	4 (16%)	26,44,47	4.00	10 (38%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
26	4SU	1K	8	26	18,21,22	1.76	4 (22%)	26,30,33	2.30	4 (15%)
2	4SU	1L	8	2	18,21,22	1.82	4 (22%)	26,30,33	2.08	5 (19%)
2	7MG	3K	46	2	22,26,27	3.06	6 (27%)	29,39,42	2.86	11 (37%)
2	MIA	1L	37	2	24,31,32	2.43	4 (16%)	26,44,47	2.55	9 (34%)
26	H2U	1K	16	26	18,21,22	2.52	3 (16%)	21,30,33	1.81	5 (23%)
3	H2U	2K	21	3	18,21,22	2.80	3 (16%)	21,30,33	1.82	4 (19%)
2	H2U	1L	20	2	18,21,22	2.16	3 (16%)	21,30,33	2.20	5 (23%)
2	H2U	3K	16	2	18,21,22	2.21	4 (22%)	21,30,33	1.99	5 (23%)

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
26	MIA	1K	37	26	-	7/11/33/34	0/3/3/3
2	7MG	1L	46	2	-	4/7/37/38	0/3/3/3
3	PSU	2K	56	3	-	0/7/25/26	0/2/2/2
2	PSU	1L	32	2	-	3/7/25/26	0/2/2/2
2	MIA	3L	37	2	-	8/11/33/34	0/3/3/3
3	H2U	2L	21	3	-	4/7/38/39	0/2/2/2
26	PSU	1K	32	56,26	-	0/7/25/26	0/2/2/2
3	PSU	2L	56	3	-	0/7/25/26	0/2/2/2
26	PSU	1K	39	26	-	0/7/25/26	0/2/2/2
3	4SU	2L	8	3	-	0/7/25/26	0/2/2/2
2	H2U	1L	16	2	-	5/7/38/39	0/2/2/2
2	PSU	3L	39	2	-	2/7/25/26	0/2/2/2
26	PSU	1K	55	26	-	2/7/25/26	0/2/2/2
3	7MG	2K	47	3	-	5/7/37/38	0/3/3/3
2	PSU	1L	55	2	-	0/7/25/26	0/2/2/2
2	H2U	3L	16	2	-	3/7/38/39	0/2/2/2
2	PSU	3L	32	2	-	1/7/25/26	0/2/2/2
2	PSU	3K	39	2	-	0/7/25/26	0/2/2/2
3	OMC	2L	33	3	-	1/9/27/28	0/2/2/2
2	PSU	3K	32	2	-	0/7/25/26	0/2/2/2
2	PSU	3K	55	2	-	5/7/25/26	0/2/2/2
2	H2U	3L	20	2	-	6/7/38/39	0/2/2/2
2	4SU	3K	8	2	-	5/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMC	2K	33	3	-	0/9/27/28	0/2/2/2
2	PSU	1L	39	2	-	0/7/25/26	0/2/2/2
26	7MG	1K	46	26	-	2/7/37/38	0/3/3/3
2	H2U	3K	20	2	-	0/7/38/39	0/2/2/2
2	7MG	3L	46	2	-	2/7/37/38	0/3/3/3
2	PSU	3L	55	2	-	2/7/25/26	0/2/2/2
3	7MG	2L	47	3	-	4/7/37/38	0/3/3/3
2	4SU	3L	8	2	-	3/7/25/26	0/2/2/2
3	4SU	2K	8	3	-	0/7/25/26	0/2/2/2
2	MIA	3K	37	2	-	6/11/33/34	0/3/3/3
26	4SU	1K	8	26	-	0/7/25/26	0/2/2/2
2	4SU	1L	8	2	-	7/7/25/26	0/2/2/2
2	7MG	3K	46	2	-	2/7/37/38	0/3/3/3
2	MIA	1L	37	2	-	6/11/33/34	0/3/3/3
26	H2U	1K	16	26	-	3/7/38/39	0/2/2/2
3	H2U	2K	21	3	-	3/7/38/39	0/2/2/2
2	H2U	1L	20	2	-	4/7/38/39	0/2/2/2
2	H2U	3K	16	2	-	0/7/38/39	0/2/2/2

The worst 5 of 136 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	3L	46	7MG	C5-N7	10.15	1.47	1.35
2	3K	46	7MG	C5-N7	9.71	1.46	1.35
2	1L	46	7MG	C5-N7	9.40	1.46	1.35
3	2L	47	7MG	C5-N7	9.15	1.46	1.35
26	1K	37	MIA	C13-C14	9.00	1.58	1.32

The worst 5 of 225 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	3K	37	MIA	C11-S10-C2	14.91	113.40	102.27
2	3L	37	MIA	C11-S10-C2	14.37	113.00	102.27
26	1K	37	MIA	C12-C13-C14	-9.63	108.41	127.14
3	2K	8	4SU	C4-N3-C2	-9.24	118.36	127.34
2	3K	37	MIA	C12-C13-C14	-8.87	109.87	127.14

There are no chirality outliers.

5 of 105 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	1L	8	4SU	C2'-C1'-N1-C2
2	1L	8	4SU	C2'-C1'-N1-C6
2	3K	8	4SU	C2'-C1'-N1-C2
2	3K	8	4SU	C2'-C1'-N1-C6
2	1L	16	H2U	O4'-C1'-N1-C6

There are no ring outliers.

26 monomers are involved in 52 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
26	1K	37	MIA	1	0
2	1L	46	7MG	2	0
2	3L	37	MIA	2	0
3	2L	56	PSU	2	0
3	2L	8	4SU	2	0
2	1L	16	H2U	1	0
3	2K	47	7MG	5	0
2	1L	55	PSU	1	0
2	3L	16	H2U	1	0
2	3K	39	PSU	1	0
3	2L	33	OMC	3	0
2	3K	55	PSU	3	0
2	3L	20	H2U	4	0
2	1L	39	PSU	3	0
26	1K	46	7MG	1	0
2	3K	20	H2U	1	0
2	3L	46	7MG	2	0
2	3L	55	PSU	1	0
3	2L	47	7MG	2	0
2	3L	8	4SU	2	0
3	2K	8	4SU	1	0
2	3K	37	MIA	4	0
26	1K	8	4SU	1	0
2	1L	8	4SU	4	0
2	1L	37	MIA	1	0
26	1K	16	H2U	1	0

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 1265 ligands modelled in this entry, 1265 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.