



wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 3, 2024 – 07:59 pm GMT

PDB ID : 4V5S
Title : The crystal structure of EF-Tu and G24A-tRNA-Trp bound to a cognate codon on the 70S ribosome.
Authors : Schmeing, T.M.; Voorhees, R.M.; Ramakrishnan, V.
Deposited on : 2010-12-07
Resolution : 3.10 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

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>.

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)
Xtrriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
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

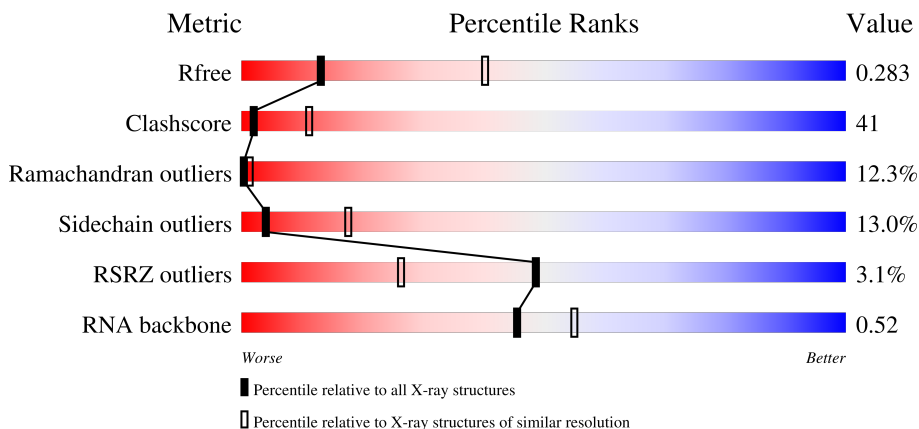
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 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.



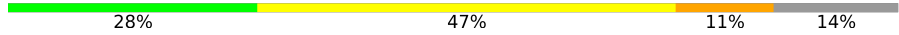
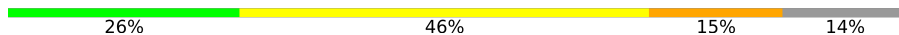
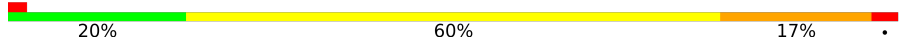
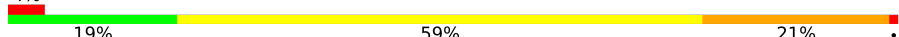
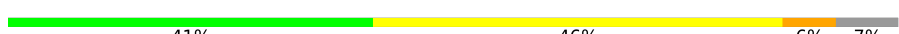
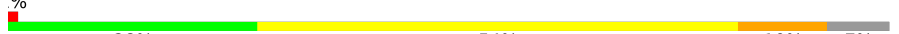

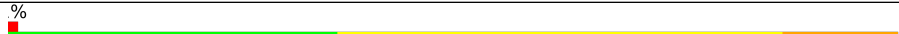
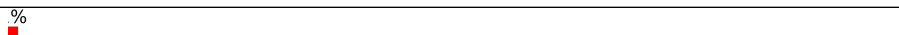
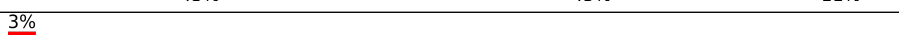
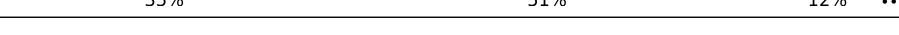


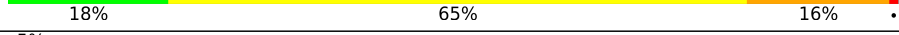
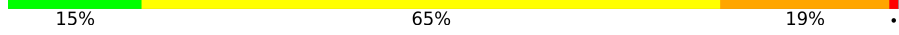
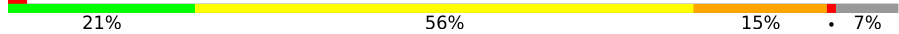
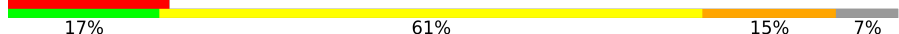

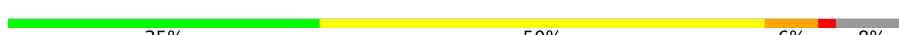


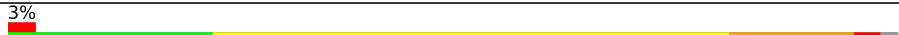
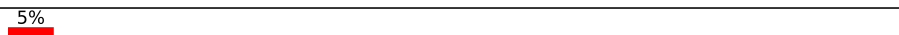
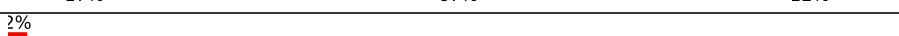
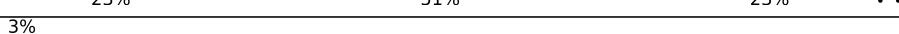
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)
RNA backbone	3102	1116 (3.40-2.80)

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 ≥ 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AA	1522	
1	CA	1522	
2	AB	256	
2	CB	256	

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Mol	Chain	Length	Quality of chain
3	AC	239	
3	CC	239	
4	AD	209	
4	CD	209	
5	AE	162	
5	CE	162	
6	AF	101	
6	CF	101	
7	AG	156	
7	CG	156	
8	AH	138	
8	CH	138	
9	AI	128	
9	CI	128	
10	AJ	105	
10	CJ	105	
11	AK	129	
11	CK	129	
12	AL	131	
12	CL	131	
13	AM	126	
13	CM	126	
14	AN	61	
14	CN	61	
15	AO	89	

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Mol	Chain	Length	Quality of chain
15	CO	89	45% 45% 8% ..
16	AP	88	28% 55% 11% 6%
16	CP	88	34% 49% 11% 6%
17	AQ	105	39% 49% 7% 6%
17	CQ	105	33% 52% 7% 6%
18	AR	88	31% 47% .. 20%
18	CR	88	26% 48% 6% 20%
19	AS	93	30% 37% 13% 16%
19	CS	93	12% 56% 13% 16%
20	AT	106	27% 53% 12% 7%
20	CT	106	28% 50% 14% 7%
21	AU	27	15% 67% 7% 11%
21	CU	27	26% 59% 11% 4%
22	AV	76	25% 46% 28% .
22	AW	76	26% 51% 21% .
22	CV	76	34% 42% 22% .
22	CW	76	13% 64% 22% 3%
23	AX	27	15% 30% 15% 37%
23	CX	27	15% 22% 19% 7% 37%
24	AY	77	18% 45% 26% 10%
24	CY	77	14% 52% 23% 10%
25	AZ	405	25% 54% 15% 5%
25	CZ	405	21% 58% 14% 5%
26	B0	85	36% 51% 11% ..
26	D0	85	31% 55% 12% ..


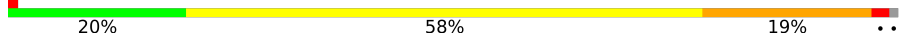
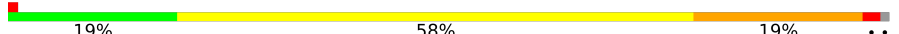
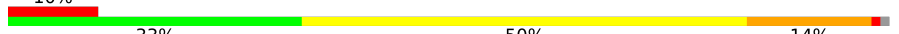
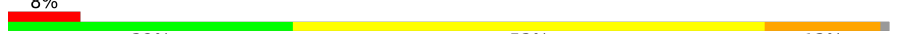

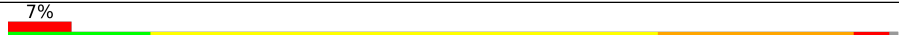
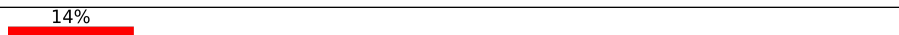
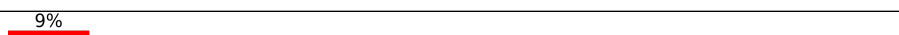
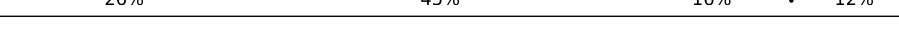
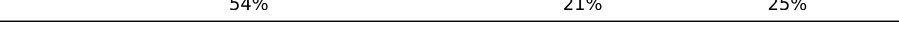
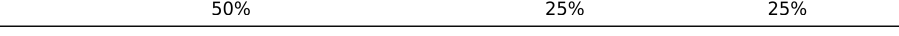


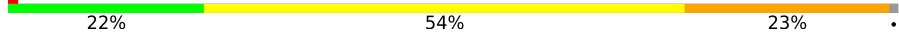
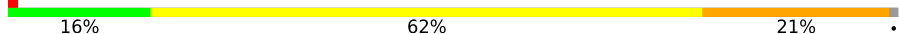

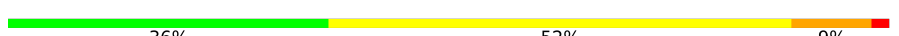
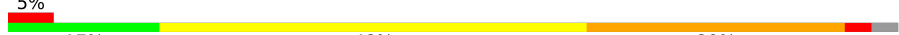

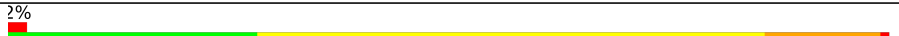


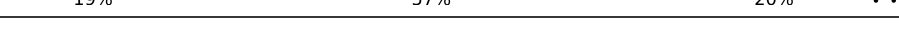
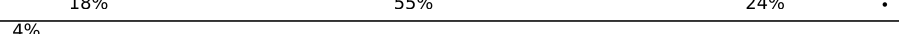
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Mol	Chain	Length	Quality of chain
27	B1	98	
27	D1	98	
28	B2	72	
28	D2	72	
29	B3	60	
29	D3	60	
30	B4	71	
30	D4	71	
31	B5	60	
31	D5	60	
32	B6	54	
32	D6	54	
33	B7	49	
33	D7	49	
34	B8	65	
34	D8	65	
35	B9	37	
35	D9	37	
36	BA	2915	
36	DA	2915	
37	BB	122	
37	DB	122	
38	BC	229	
38	DC	229	
39	BD	276	

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Mol	Chain	Length	Quality of chain
39	DD	276	
40	BE	206	
40	DE	206	
41	BF	210	
41	DF	210	
42	BG	182	
42	DG	182	
43	BH	180	
43	DH	180	
44	BJ	173	
44	DJ	173	
45	BK	147	
45	DK	147	
46	BN	140	
46	DN	140	
47	BO	122	
47	DO	122	
48	BP	150	
48	DP	150	
49	BQ	141	
49	DQ	141	
50	BR	118	
50	DR	118	
51	BS	112	
51	DS	112	

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Mol	Chain	Length	Quality of chain
52	BT	146	
52	DT	146	
53	BU	118	
53	DU	118	
54	BV	101	
54	DV	101	
55	BW	113	
55	DW	113	
56	BX	96	
56	DX	96	
57	BY	110	
57	DY	110	
58	BZ	206	
58	DZ	206	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
24	H2U	AY	16	-	-	-	X
24	H2U	CY	17	-	-	-	X
59	ZN	AD	301	-	-	X	-
60	GDP	CZ	501	-	-	X	-
61	KIR	CZ	502	-	-	-	X

2 Entry composition [i](#)

There are 61 unique types of molecules in this entry. The entry contains 307196 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 RRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	AA	1504	Total 32329	C 14390	N 5992	O 10444	P 1503	0	0	0
1	CA	1504	Total 32329	C 14390	N 5992	O 10444	P 1503	0	0	0

- Molecule 2 is a protein called 30S RIBOSOMAL PROTEIN S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	AB	234	Total 1900	C 1213	N 341	O 341	S 5	0	0	0
2	CB	234	Total 1900	C 1213	N 341	O 341	S 5	0	0	0

- Molecule 3 is a protein called 30S RIBOSOMAL PROTEIN S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	AC	206	Total 1612	C 1016	N 314	O 281	S 1	0	0	0
3	CC	206	Total 1612	C 1016	N 314	O 281	S 1	0	0	0

- Molecule 4 is a protein called 30S RIBOSOMAL PROTEIN S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	AD	208	Total 1703	C 1066	N 339	O 291	S 7	0	0	0
4	CD	208	Total 1703	C 1066	N 339	O 291	S 7	0	0	0

- Molecule 5 is a protein called 30S RIBOSOMAL PROTEIN S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	AE	150	Total	C	N	O	S	0	0	0
			1146	724	217	201	4			
5	CE	150	Total	C	N	O	S	0	0	0
			1146	724	217	201	4			

- Molecule 6 is a protein called 30S RIBOSOMAL PROTEIN S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	AF	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			
6	CF	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			

- Molecule 7 is a protein called 30S RIBOSOMAL PROTEIN S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	AG	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			
7	CG	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			

- Molecule 8 is a protein called 30S RIBOSOMAL PROTEIN S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	AH	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			
8	CH	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			

- Molecule 9 is a protein called 30S RIBOSOMAL PROTEIN S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
9	AI	127	Total	C	N	O	0	0	0
			1010	639	197	174			
9	CI	127	Total	C	N	O	0	0	0
			1010	639	197	174			

- Molecule 10 is a protein called 30S RIBOSOMAL PROTEIN S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	AJ	98	Total	C	N	O	S	0	0	0
			794	499	156	138	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	CJ	98	Total	C	N	O	S	0	0	0
			794	499	156	138	1			

- Molecule 11 is a protein called 30S RIBOSOMAL PROTEIN S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	AK	119	Total	C	N	O	S	0	0	0
			885	549	168	165	3			
11	CK	119	Total	C	N	O	S	0	0	0
			885	549	168	165	3			

- Molecule 12 is a protein called 30S RIBOSOMAL PROTEIN S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
12	AL	124	Total	C	N	O	S	0	0	0
			970	611	195	163	1			
12	CL	124	Total	C	N	O	S	0	0	0
			970	611	195	163	1			

- Molecule 13 is a protein called 30S RIBOSOMAL PROTEIN S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
13	AM	124	Total	C	N	O	S	0	0	0
			987	611	205	169	2			
13	CM	124	Total	C	N	O	S	0	0	0
			987	611	205	169	2			

- Molecule 14 is a protein called 30S RIBOSOMAL PROTEIN S14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	AN	60	Total	C	N	O	S	0	0	0
			492	312	104	72	4			
14	CN	60	Total	C	N	O	S	0	0	0
			492	312	104	72	4			

- Molecule 15 is a protein called 30S RIBOSOMAL PROTEIN S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
15	AO	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			
15	CO	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			

- Molecule 16 is a protein called 30S RIBOSOMAL PROTEIN S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
16	AP	83	Total	C	N	O	S	0	0	0
			700	443	139	117	1			
16	CP	83	Total	C	N	O	S	0	0	0
			700	443	139	117	1			

- Molecule 17 is a protein called 30S RIBOSOMAL PROTEIN S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
17	AQ	99	Total	C	N	O	S	0	0	0
			823	528	151	142	2			
17	CQ	99	Total	C	N	O	S	0	0	0
			823	528	151	142	2			

- Molecule 18 is a protein called 30S RIBOSOMAL PROTEIN S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
18	AR	70	Total	C	N	O	0	0	0
			574	367	112	95			
18	CR	70	Total	C	N	O	0	0	0
			574	367	112	95			

- Molecule 19 is a protein called 30S RIBOSOMAL PROTEIN S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
19	AS	78	Total	C	N	O	S	0	0	0
			629	403	114	110	2			
19	CS	78	Total	C	N	O	S	0	0	0
			629	403	114	110	2			

- Molecule 20 is a protein called 30S RIBOSOMAL PROTEIN S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	AT	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			
20	CT	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			

- Molecule 21 is a protein called 30S RIBOSOMAL PROTEIN THX.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
21	AU	24	Total	C	N	O	0	0	0
			208	128	50	30			
21	CU	24	Total	C	N	O	0	0	0
			208	128	50	30			

- Molecule 22 is a RNA chain called E-SITE TRNA PHE OR P-SITE TRNA PHE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	AV	76	Total	C	N	O	P	0	0	0
			1619	723	290	531	75			
22	AW	76	Total	C	N	O	P	0	0	0
			1619	723	290	531	75			
22	CV	76	Total	C	N	O	P	0	0	0
			1619	723	290	531	75			
22	CW	76	Total	C	N	O	P	0	0	0
			1619	723	290	531	75			

- Molecule 23 is a RNA chain called MRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	AX	17	Total	C	N	O	P	0	0	0
			362	164	68	114	16			
23	CX	17	Total	C	N	O	P	0	0	0
			362	164	68	114	16			

- Molecule 24 is a RNA chain called A-SITE TRNA G24A TRP-TRNA TRP.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
24	AY	77	Total	C	N	O	P	S	0	0	0
			1644	742	289	535	76	2			
24	CY	77	Total	C	N	O	P	S	0	0	0
			1644	742	289	535	76	2			

- Molecule 25 is a protein called ELONGATION FACTOR TU.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
25	AZ	385	Total	C	N	O	S	0	0	0
			2984	1885	524	563	12			
25	CZ	385	Total	C	N	O	S	0	0	0
			2984	1885	524	563	12			

- Molecule 26 is a protein called 50S RIBOSOMAL PROTEIN L27.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	B0	84	Total	C	N	O	S	0	0	0
			662	410	140	111	1			
26	D0	84	Total	C	N	O	S	0	0	0
			662	410	140	111	1			

- Molecule 27 is a protein called 50S RIBOSOMAL PROTEIN L28.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
27	B1	93	Total	C	N	O	S	0	0	0
			731	460	145	125	1			
27	D1	93	Total	C	N	O	S	0	0	0
			731	460	145	125	1			

- Molecule 28 is a protein called 50S RIBOSOMAL PROTEIN L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	B2	71	Total	C	N	O	S	0	0	0
			598	370	121	106	1			
28	D2	71	Total	C	N	O	S	0	0	0
			598	370	121	106	1			

- Molecule 29 is a protein called 50S RIBOSOMAL PROTEIN L30.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
29	B3	59	Total	C	N	O	S	0	0	0
			467	298	90	78	1			
29	D3	59	Total	C	N	O	S	0	0	0
			467	298	90	78	1			

- Molecule 30 is a protein called 50S RIBOSOMAL PROTEIN L31.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
30	B4	44	Total	C	N	O	S	0	0	0
			340	218	57	61	4			
30	D4	44	Total	C	N	O	S	0	0	0
			340	218	57	61	4			

- Molecule 31 is a protein called 50S RIBOSOMAL PROTEIN L32.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	B5	59	Total	C	N	O	S	0	0	0
			459	288	90	76	5			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	D5	59	Total	C	N	O	S	0	0	0
			459	288	90	76	5			

- Molecule 32 is a protein called 50S RIBOSOMAL PROTEIN L33.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
32	B6	50	Total	C	N	O	S	0	0	0
			433	270	88	71	4			
32	D6	50	Total	C	N	O	S	0	0	0
			433	270	88	71	4			

- Molecule 33 is a protein called 50S RIBOSOMAL PROTEIN L34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
33	B7	48	Total	C	N	O	S	0	0	0
			418	257	104	55	2			
33	D7	48	Total	C	N	O	S	0	0	0
			418	257	104	55	2			

- Molecule 34 is a protein called 50S RIBOSOMAL PROTEIN L35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
34	B8	63	Total	C	N	O	S	0	0	0
			507	326	101	78	2			
34	D8	63	Total	C	N	O	S	0	0	0
			507	326	101	78	2			

- Molecule 35 is a protein called 50S RIBOSOMAL PROTEIN L36.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
35	B9	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			
35	D9	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			

- Molecule 36 is a RNA chain called 23S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
36	BA	2901	Total	C	N	O	P	0	0	0
			62477	27807	11683	20087	2900			
36	DA	2901	Total	C	N	O	P	0	0	0
			62477	27807	11683	20087	2900			

- Molecule 37 is a RNA chain called 5S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
37	BB	119	2551	1136	471	826	118	0	0	0
37	DB	119	2551	1136	471	826	118	0	0	0

- Molecule 38 is a protein called 50S RIBOSOMAL PROTEIN L1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
38	BC	228	1742	1101	319	319	3	0	0	0
38	DC	228	1742	1101	319	319	3	0	0	0

- Molecule 39 is a protein called 50S RIBOSOMAL PROTEIN L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
39	BD	275	2145	1353	428	361	3	0	0	0
39	DD	275	2145	1353	428	361	3	0	0	0

- Molecule 40 is a protein called 50S RIBOSOMAL PROTEIN L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
40	BE	204	1563	988	299	270	6	0	0	0
40	DE	204	1563	988	299	270	6	0	0	0

- Molecule 41 is a protein called 50S RIBOSOMAL PROTEIN L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
41	BF	207	1623	1035	303	282	3	0	0	0
41	DF	207	1623	1035	303	282	3	0	0	0

- Molecule 42 is a protein called 50S RIBOSOMAL PROTEIN L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
42	BG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			
42	DG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			

- Molecule 43 is a protein called 50S RIBOSOMAL PROTEIN L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
43	BH	159	Total	C	N	O	S	0	0	0
			1222	773	228	220	1			
43	DH	159	Total	C	N	O	S	0	0	0
			1222	773	228	220	1			

- Molecule 44 is a protein called 50S RIBOSOMAL PROTEIN L10.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
44	BJ	130	Total	C	N	O	0	0	0
			651	391	130	130			
44	DJ	130	Total	C	N	O	0	0	0
			651	391	130	130			

- Molecule 45 is a protein called 50S RIBOSOMAL PROTEIN L11.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
45	BK	140	Total	C	N	O	0	0	0
			700	420	140	140			
45	DK	140	Total	C	N	O	0	0	0
			700	420	140	140			

- Molecule 46 is a protein called 50S RIBOSOMAL PROTEIN L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
46	BN	138	Total	C	N	O	S	0	0	0
			1104	712	206	182	4			
46	DN	138	Total	C	N	O	S	0	0	0
			1104	712	206	182	4			

- Molecule 47 is a protein called 50S RIBOSOMAL PROTEIN L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
47	BO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
47	DO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			

- Molecule 48 is a protein called 50S RIBOSOMAL PROTEIN L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
48	BP	146	Total	C	N	O	S	0	0	0
			1114	692	227	193	2			
48	DP	146	Total	C	N	O	S	0	0	0
			1114	692	227	193	2			

- Molecule 49 is a protein called 50S RIBOSOMAL PROTEIN L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
49	BQ	141	Total	C	N	O	S	0	0	0
			1122	715	212	188	7			
49	DQ	141	Total	C	N	O	S	0	0	0
			1122	715	212	188	7			

- Molecule 50 is a protein called 50S RIBOSOMAL PROTEIN L17.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
50	BR	117	Total	C	N	O	0	0	0
			960	599	202	159			
50	DR	117	Total	C	N	O	0	0	0
			960	599	202	159			

- Molecule 51 is a protein called 50S RIBOSOMAL PROTEIN L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
51	BS	98	Total	C	N	O	0	0	0
			770	486	154	130			
51	DS	98	Total	C	N	O	0	0	0
			770	486	154	130			

- Molecule 52 is a protein called 50S RIBOSOMAL PROTEIN L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
52	BT	137	Total	C	N	O	S	0	0	0
			1141	710	234	196	1			
52	DT	137	Total	C	N	O	S	0	0	0
			1141	710	234	196	1			

- Molecule 53 is a protein called 50S RIBOSOMAL PROTEIN L20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
53	BU	117	Total 958	C 604	N 202	O 151	S 1	0	0	0
53	DU	117	Total 958	C 604	N 202	O 151	S 1	0	0	0

- Molecule 54 is a protein called 50S RIBOSOMAL PROTEIN L21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
54	BV	101	Total 779	C 501	N 142	O 135	S 1	0	0	0
54	DV	101	Total 779	C 501	N 142	O 135	S 1	0	0	0

- Molecule 55 is a protein called 50S RIBOSOMAL PROTEIN L22.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
55	BW	113	Total 896	C 563	N 176	O 155	S 2	0	0	0
55	DW	113	Total 896	C 563	N 176	O 155	S 2	0	0	0

- Molecule 56 is a protein called 50S RIBOSOMAL PROTEIN L23.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
56	BX	92	Total 725	C 471	N 131	O 123	0	0	0
56	DX	92	Total 725	C 471	N 131	O 123	0	0	0

- Molecule 57 is a protein called 50S RIBOSOMAL PROTEIN L24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
57	BY	100	Total 775	C 500	N 148	O 123	S 4	0	0	0
57	DY	100	Total 775	C 500	N 148	O 123	S 4	0	0	0

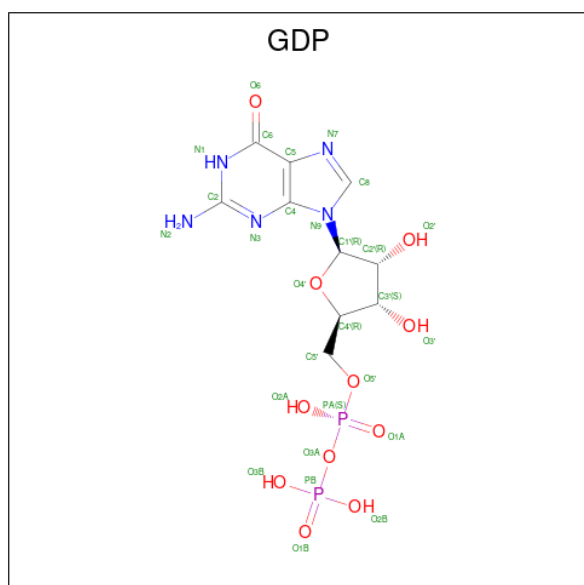
- Molecule 58 is a protein called 50S RIBOSOMAL PROTEIN L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
58	BZ	183	Total	C	N	O	S	0	0	0
			1459	932	260	265	2			
58	DZ	183	Total	C	N	O	S	0	0	0
			1459	932	260	265	2			

- Molecule 59 is ZINC ION (three-letter code: ZN) (formula: Zn).

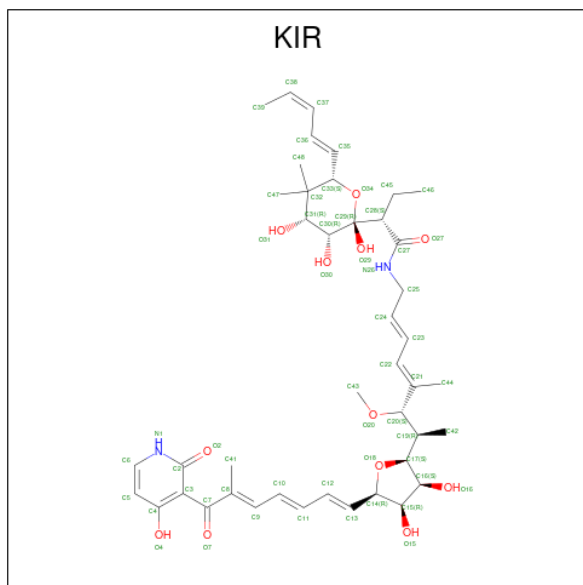
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
59	AD	1	Total	Zn	0	0
			1	1		
59	AN	1	Total	Zn	0	0
			1	1		
59	B4	1	Total	Zn	0	0
			1	1		
59	B9	1	Total	Zn	0	0
			1	1		
59	CD	1	Total	Zn	0	0
			1	1		
59	CN	1	Total	Zn	0	0
			1	1		
59	D4	1	Total	Zn	0	0
			1	1		
59	D9	1	Total	Zn	0	0
			1	1		

- Molecule 60 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
60	AZ	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
60	CZ	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 61 is KIRROMYCIN (three-letter code: KIR) (formula: $C_{43}H_{60}N_2O_{12}$).

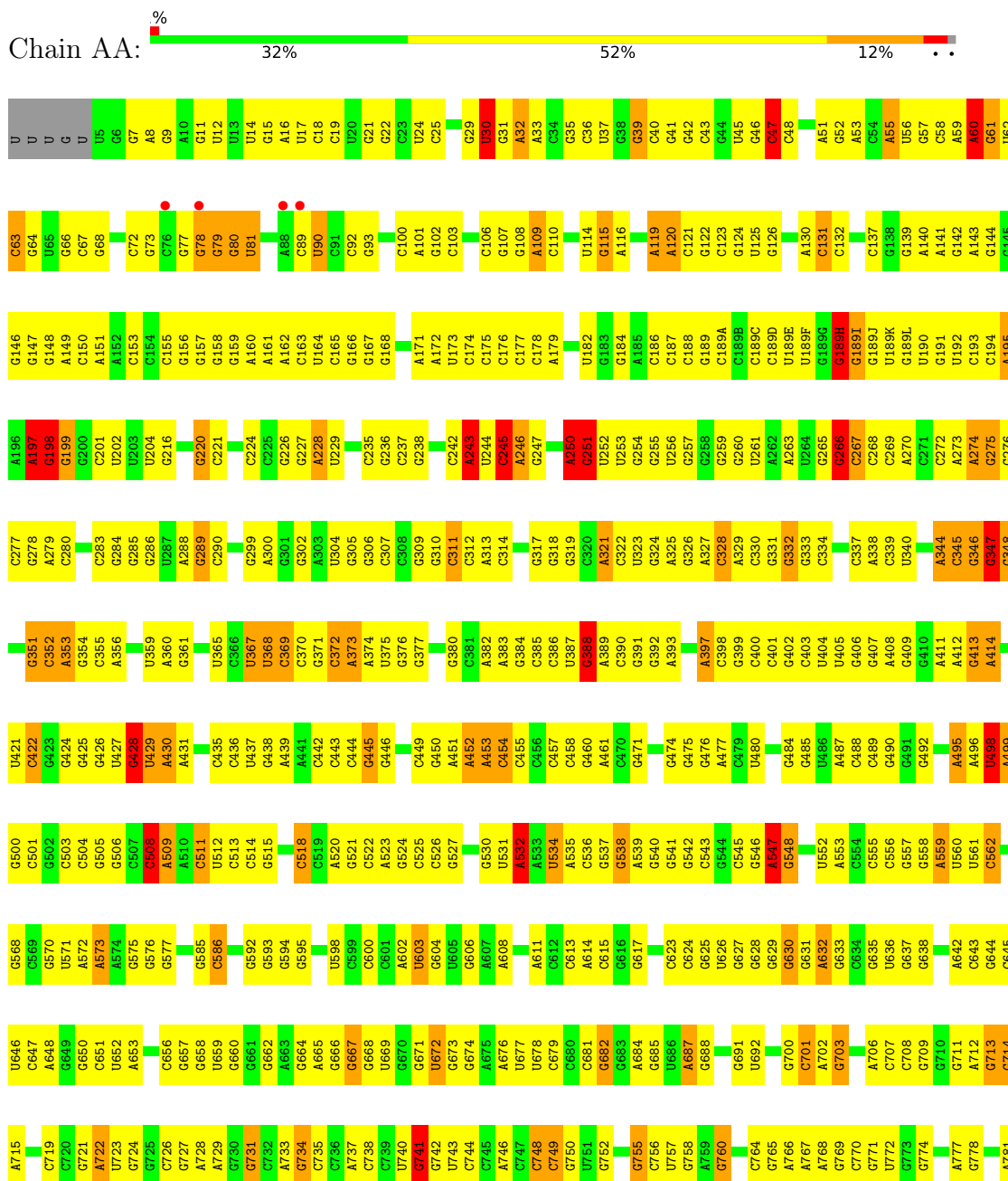


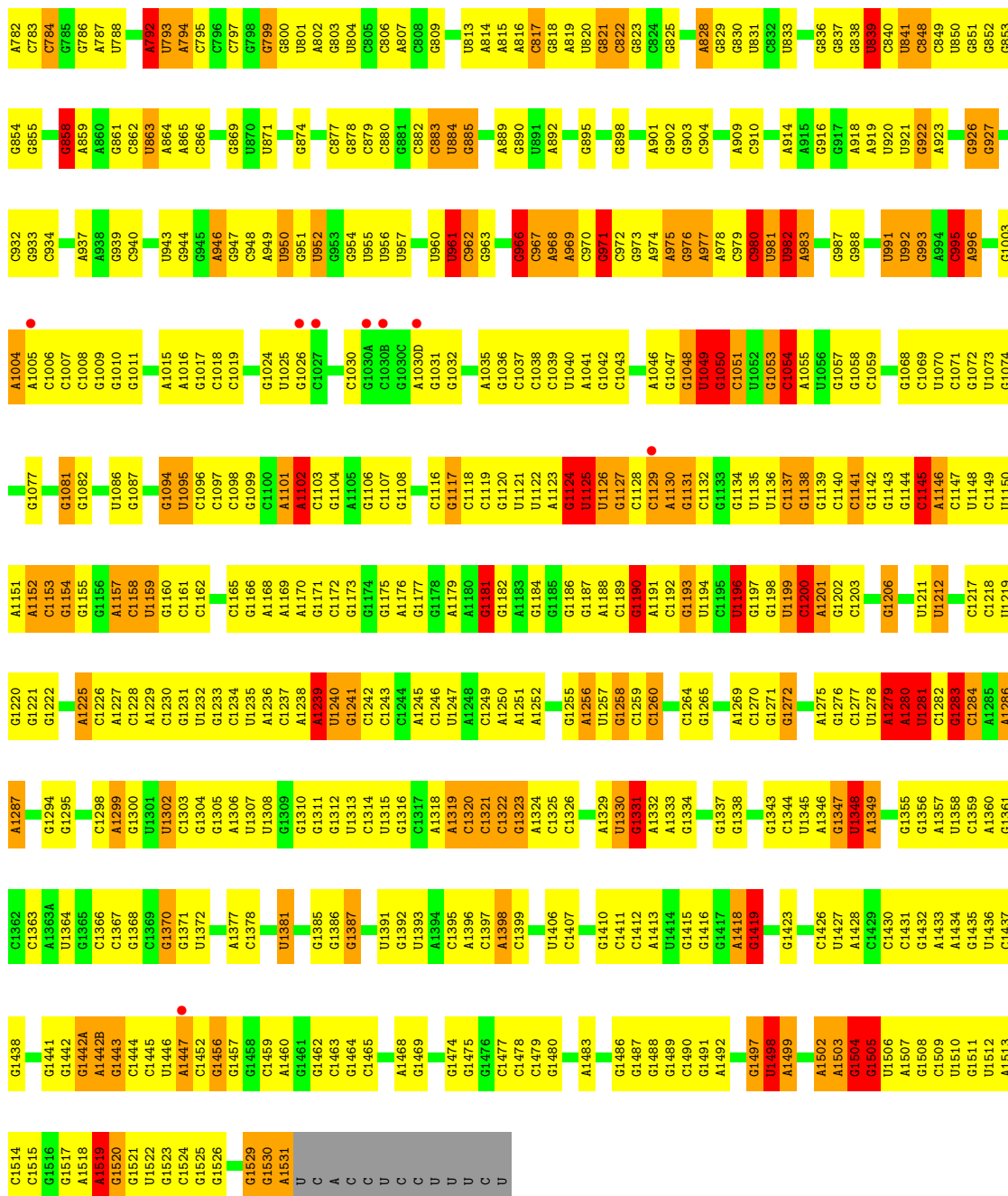
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
61	AZ	1	Total	C	N	O	0	0
			57	43	2	12		
61	CZ	1	Total	C	N	O	0	0
			57	43	2	12		

3 Residue-property plots

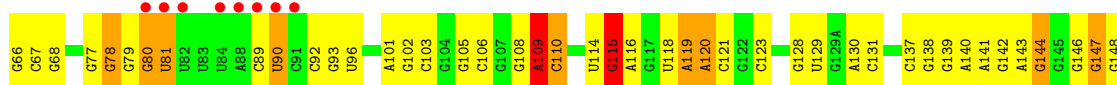
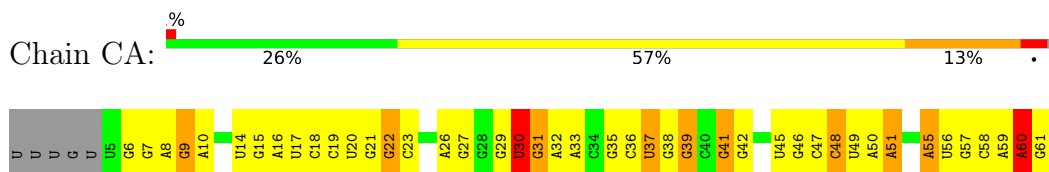
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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 dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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 RRNA

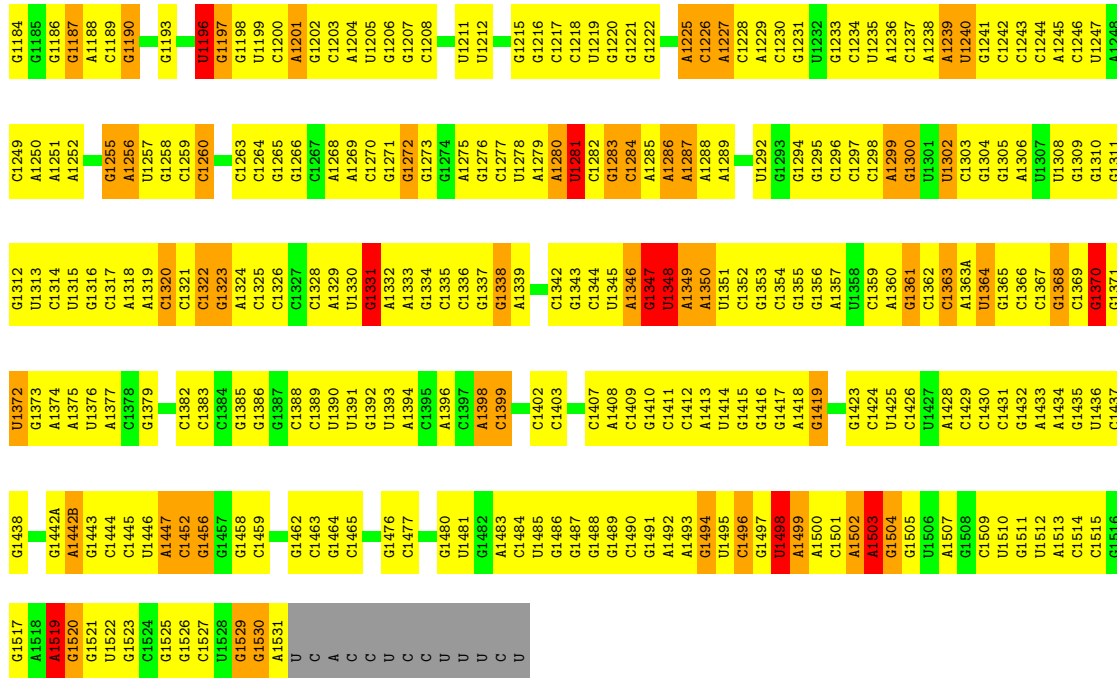




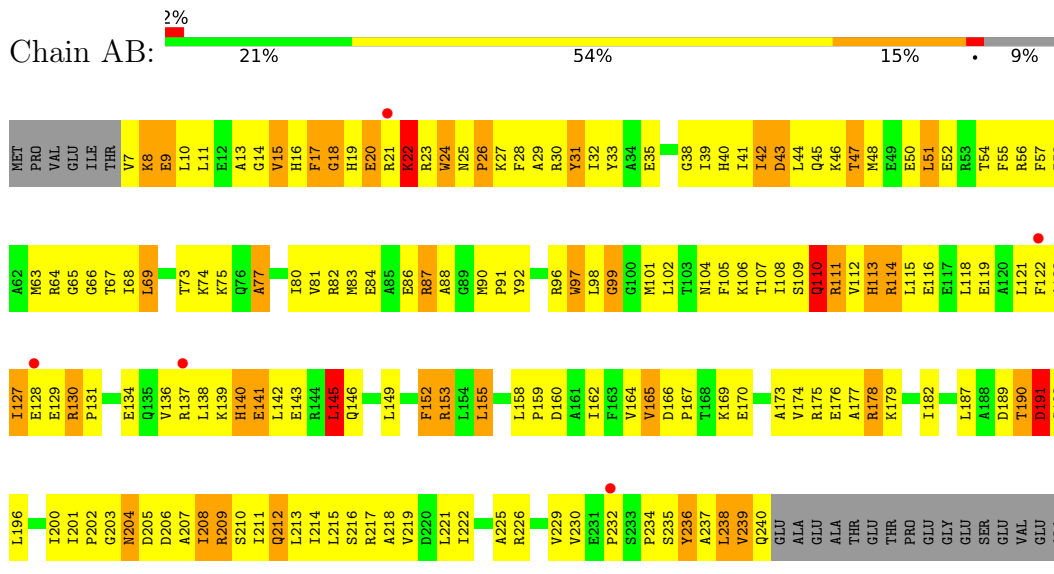
● Molecule 1: 16S rRNA



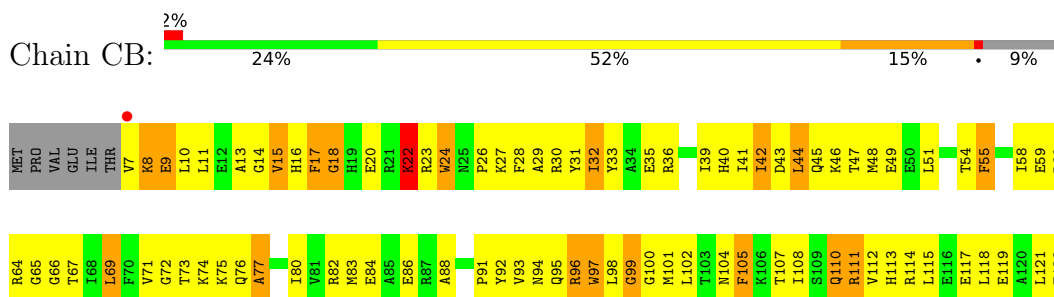
G1120	G1054	A923	U841	C708	G638	G566	G492	C418	G351	G285	C285	A149
G1121	A1055	C924	C848	G778	C643	G567	G493	C419	C352	A288	G220	C150
G1122	A1056	G925	C849	G779	G644	G568	U494	U420	A353	G289	C221	A151
U1123	G1057	G926	A780	A712	G645	G569	A495	U421	G354	G290	U222	G156
U1124	G1058	G927	G853	G713	C646	C645	A496	C422	C355	C291	C223	G157
U1125	C1059	G928	A781	G714	U646	A572	U498	G423	A356	C292	C224	G158
C1127	C1060	G929	C783	A715	C647	A573	A499	G424	G357	G293	C225	G159
C1128	U1061	C930	C784	A716	G650	A574	G500	G425	U358	U294	G227	A160
C1129	G1062	G933	A859	C717	G651	G575	C501	G426	A360	C295	A228	A161
A1130	A994	G934	C786	C718	U652	G576	G502	G428	A361	U296	U229	A162
G1131	C995	C934	A787	C719	U653	G577	C503	U429	G361	U297	U230	G165
C1132	A996	A935	U788	C720	A653	G578	C504	U430	U365	A298	G230	G166
C1133	U987	C936	U789	G721	A654	G585	G505	A430	U366	G299	C234	G166
G1134	A937	A937	A790	A722	A655	C586	G506	A431	C367	G300	C235	G167
U1135	A938	A938	G791	U723	C656	G592	C507	U434	U368	A301	G236	G168
U1136	G939	G939	A792	G724	G657	G593	C508	U435	A302	G302	C237	G171
C1137	C940	C940	U793	G725	G658	G594	A509	C436	C370	G303	C238	A171
G1138	G941	G941	A794	C726	U659	G595	A510	C437	C371	U304	C239	A172
C1139	G942	G942	C795	G727	G660	C596	C511	U437	G372	G304	C240	U173
C1140	U943	U943	C796	G728	G661	C597	C512	G438	C373	G305	C241	U174
C1141	G944	G944	C797	G731	G662	U603	C518	A439	A374	A313	U244	C174
G1142	G945	G945	A807	A732	G663	G604	C519	A441	A375	A314	U245	C175
G1143	A946	A946	C808	C733	A663	U605	C520	A442	U376	A315	C246	C176
C1144	G947	G947	C809	A734	G664	G606	C521	A443	U377	G311	G247	C177
C1145	C948	C948	G810	U740	U665	A607	G522	C443	G376	C312	C248	C178
A1146	A949	A949	C811	G741	G666	A608	C523	C444	G377	C312	U249	A179
U1086	U950	U950	C812	C744	G667	U609	A523	G445	G378	A313	U250	U180
U1087	G951	G951	U813	C745	G668	G610	G524	G446	C379	A314	C251	G184
G1088	U952	U952	C808	A746	G669	U611	C525	G447	G380	A315	G254	A185
U1089	G953	G953	C809	C739	G674	G612	C526	G448	C381	G319	G255	C186
U1090	U954	U954	G810	U740	U677	A609	G530	A451	A382	C320	U256	C187
U1091	U955	U955	C811	G741	U678	A608	U531	A452	A383	A321	U257	C188
U1092	U956	U956	G812	C744	C679	A609	U532	A453	C384	G322	G258	C189
A1093	U957	U957	U813	A745	C680	G610	A533	A453	C385	U323	G259	C189A
U1094	A958	A958	C810	A746	G681	G611	U534	A454	C386	G324	G260	C189B
U1095	A959	A959	G811	C747	G682	C612	U534	C455	U387	G325	U261	U189E
C1096	U960	U960	C812	C748	G683	A614	A535	C456	G388	G326	A262	G189F
C1097	U961	U961	G813	C749	G684	C615	A536	C457	C390	A327	A263	G189G
C1098	C962	C962	U819	U750	G685	G616	G537	C458	G391	C328	U264	G189H
C1100	G963	G963	U820	U751	G686	G617	G538	C460	G392	A329	U265	G189I
A1101	A964	A964	C821	C754	A687	C618	A539	G471	A393	C330	G266	G189J
C1102	A965	A965	G822	G755	G688	U619	G540	A472	A394	G332	C267	G189K
C1103	C967	C967	C823	G756	C689	A621	G541	A473	G397	G333	C268	G189L
G1104	A968	A968	G824	C757	G690	A622	C542	G474	A398	G334	C269	U190
A1105	A969	A969	G825	U757	G691	G623	C543	G475	C403	C337	A270	G191
G1106	C970	C970	U826	U758	G692	G624	C544	G476	U404	A338	C272	C193
C1107	G971	G971	A828	A759	G693	C625	G545	G477	U405	C339	A273	C194
C1108	C972	C972	G829	G760	A694	U626	G546	U480	G406	U340	A274	A195
C1109	G973	G973	U830	G761	A695	G627	G547	A482	G407	C341	G275	A196
C1110	A974	A974	C831	C764	A696	G628	G548	A483	A397	C342	G276	G197
A1111	G975	G975	U832	U765	G698	G629	C549	C483	C408	C342	G277	G198
A1112	A976	A976	C833	A766	G699	G630	C555	C484	A408	U343	C278	G199
C1113	A977	A977	U833	A767	G700	G631	C556	G484	G409	U344	C279	G200
C1114	G978	G978	C834	C701	A768	A632	G557	U486	G410	C345	A279	G201
C1115	C979	C979	C835	U702	A769	G633	G558	A487	A411	C346	C280	C201
C1116	A980	A980	U836	C770	A770	C634	A559	C488	A412	G347	G281	U202
C1117	U981	U981	G837	G771	G703	C635	U560	C489	G413	G348	A282	U203
C1118	U982	U982	C838	G774	A706	U636	U561	G490	A414	A349	C283	U204
C1119	G983	G983	U839	U774	C707	U637	C562	G491	A415	G350	G284	G216

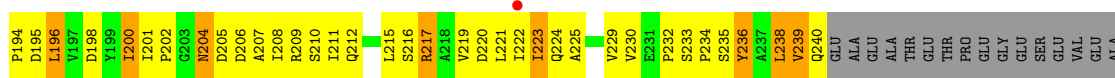
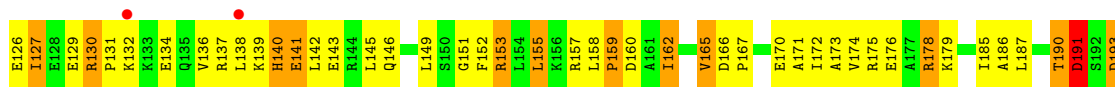


• Molecule 2: 30S RIBOSOMAL PROTEIN S2

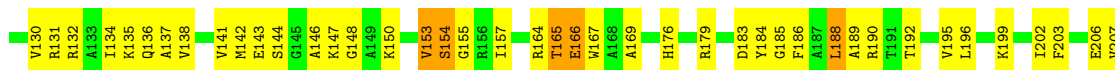
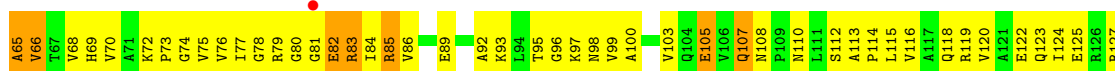
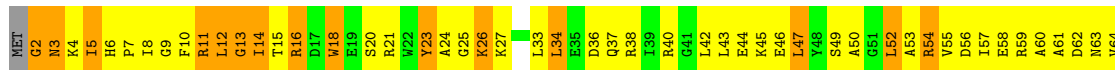


• Molecule 2: 30S RIBOSOMAL PROTEIN S2



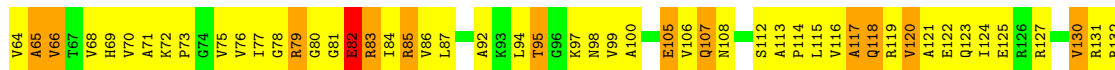


● Molecule 3: 30S RIBOSOMAL PROTEIN S3



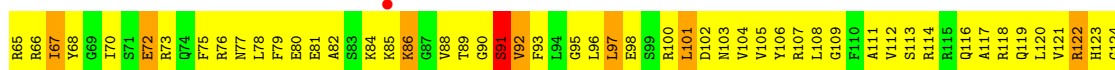
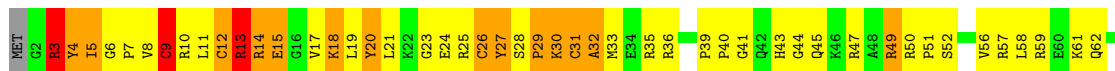
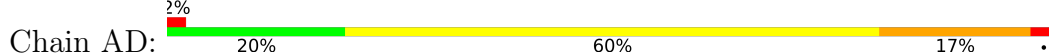
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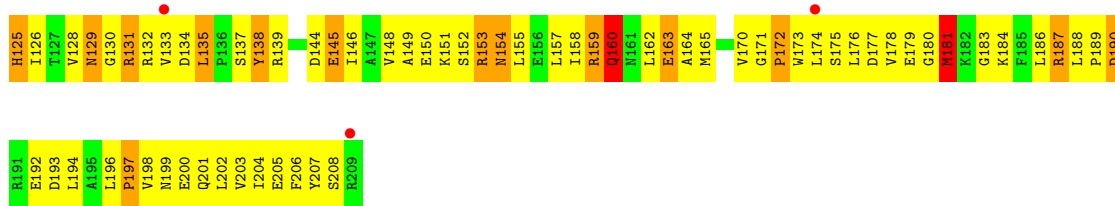
● Molecule 3: 30S RIBOSOMAL PROTEIN S3



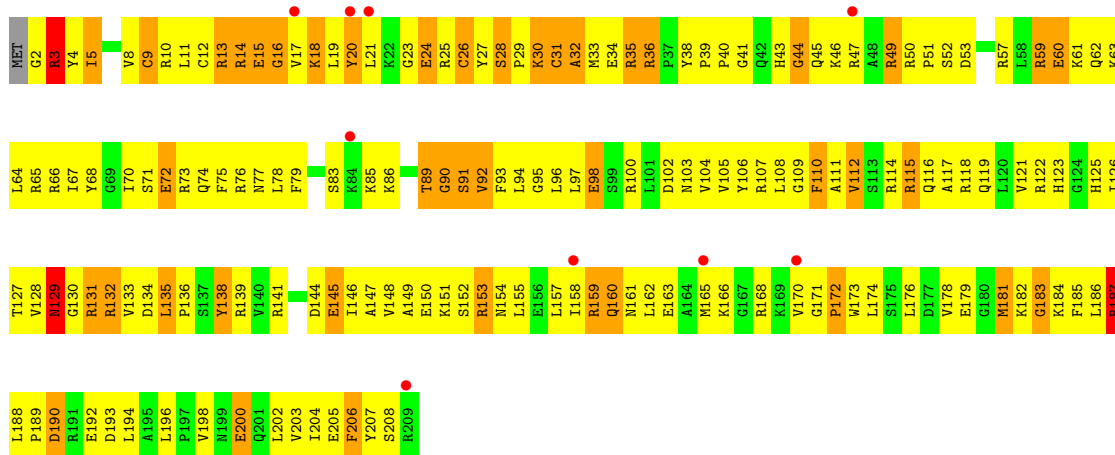
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● Molecule 4: 30S RIBOSOMAL PROTEIN S4

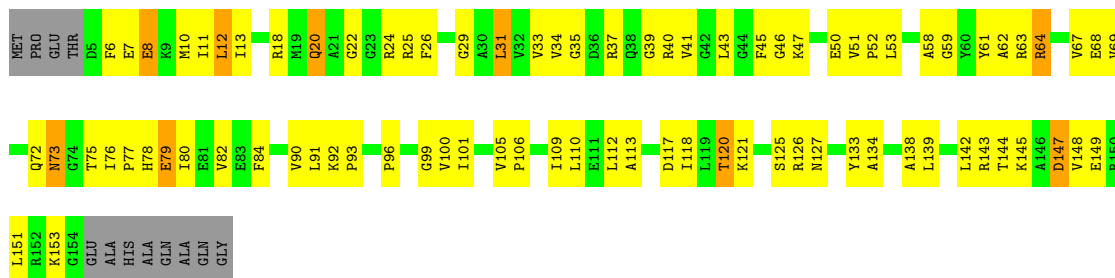




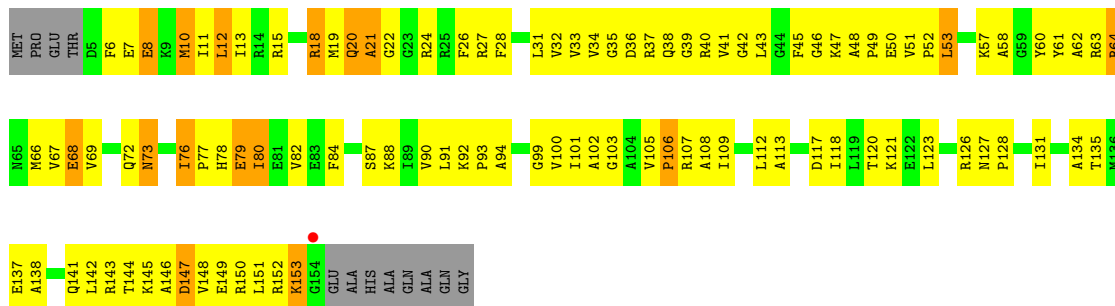
• Molecule 4: 30S RIBOSOMAL PROTEIN S4



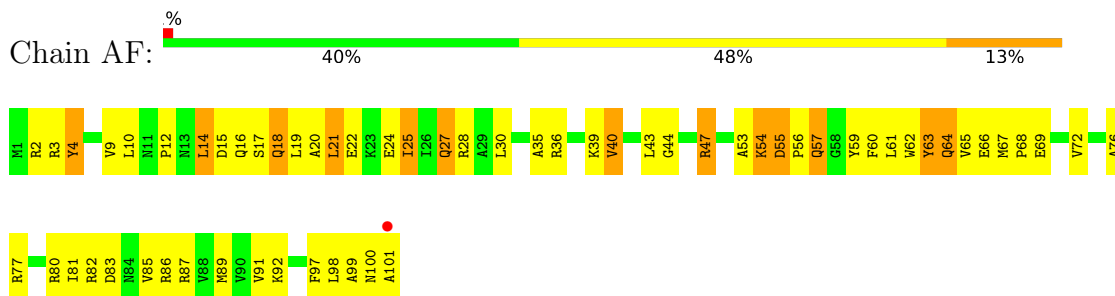
• Molecule 5: 30S RIBOSOMAL PROTEIN S5



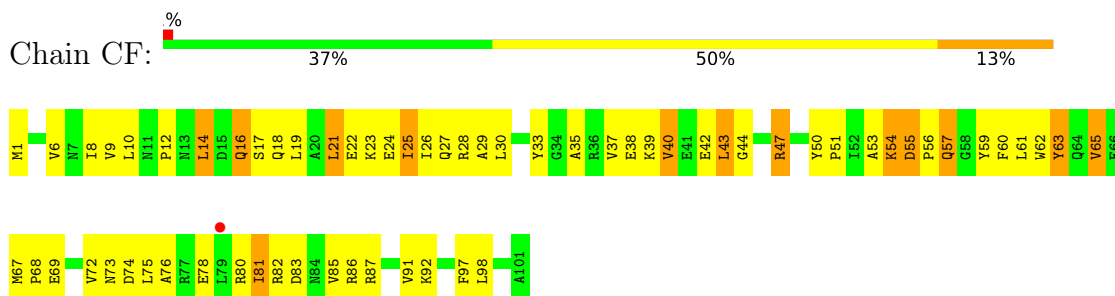
• Molecule 5: 30S RIBOSOMAL PROTEIN S5



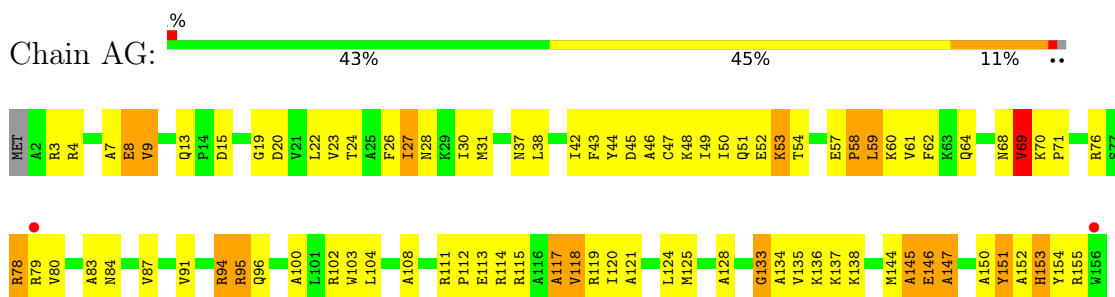
- Molecule 6: 30S RIBOSOMAL PROTEIN S6



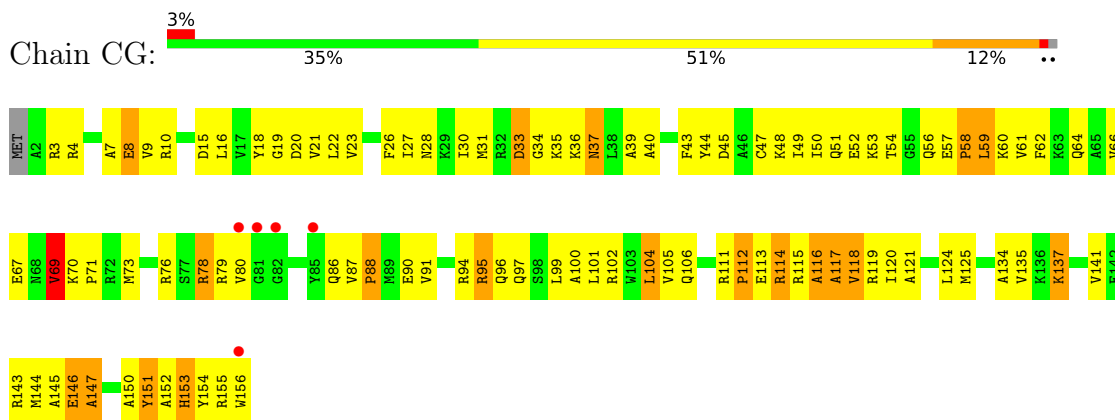
- Molecule 6: 30S RIBOSOMAL PROTEIN S6



- Molecule 7: 30S RIBOSOMAL PROTEIN S7

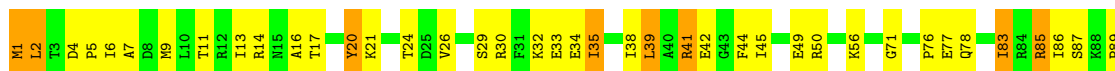


- Molecule 7: 30S RIBOSOMAL PROTEIN S7



- Molecule 8: 30S RIBOSOMAL PROTEIN S8

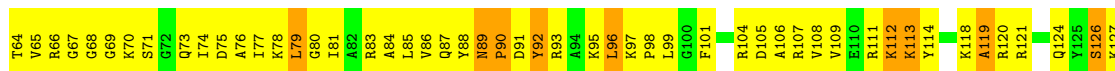




• Molecule 8: 30S RIBOSOMAL PROTEIN S8



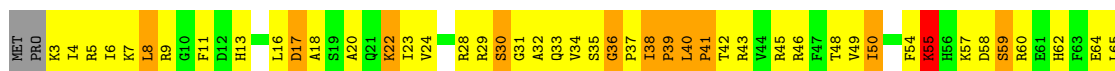
• Molecule 9: 30S RIBOSOMAL PROTEIN S9



• Molecule 9: 30S RIBOSOMAL PROTEIN S9



• Molecule 10: 30S RIBOSOMAL PROTEIN S10

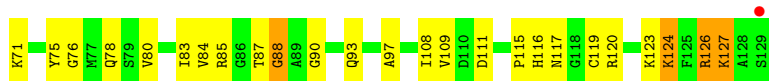




• Molecule 10: 30S RIBOSOMAL PROTEIN S10



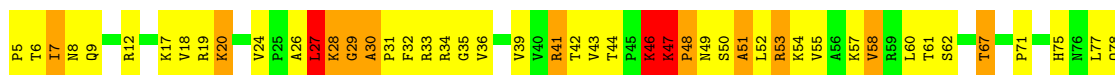
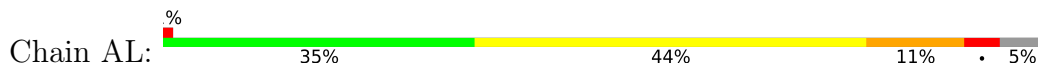
• Molecule 11: 30S RIBOSOMAL PROTEIN S11



• Molecule 11: 30S RIBOSOMAL PROTEIN S11

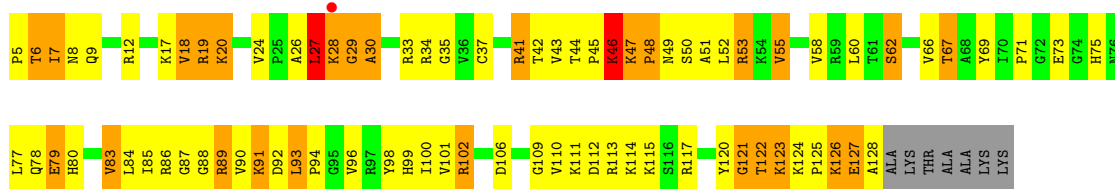


• Molecule 12: 30S RIBOSOMAL PROTEIN S12

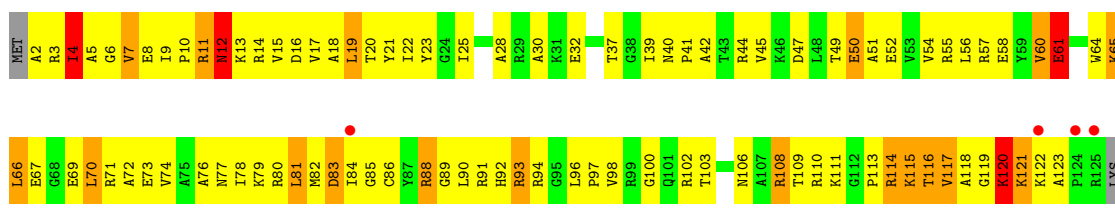


• Molecule 12: 30S RIBOSOMAL PROTEIN S12

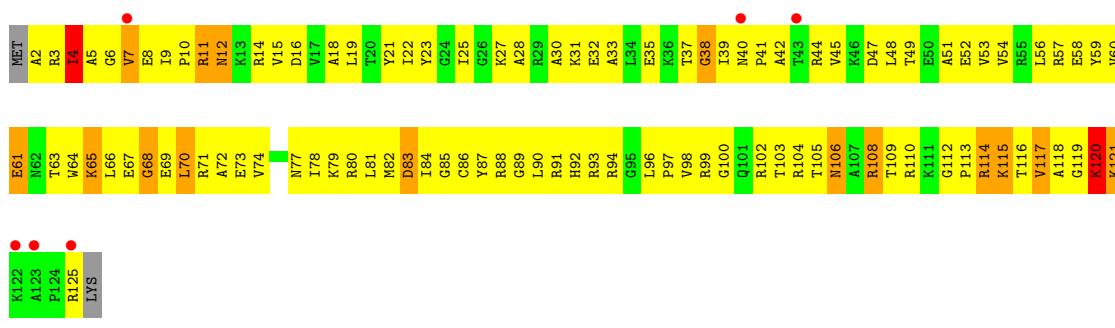




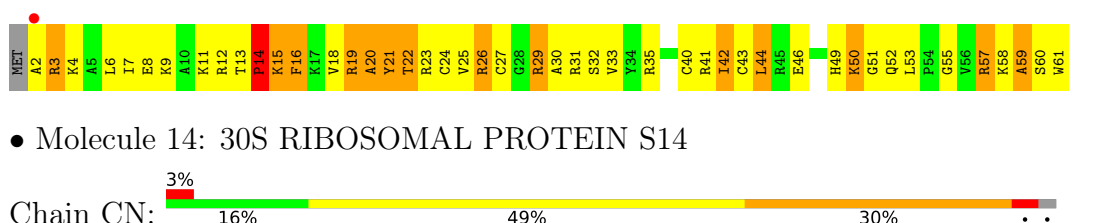
• Molecule 13: 30S RIBOSOMAL PROTEIN S13



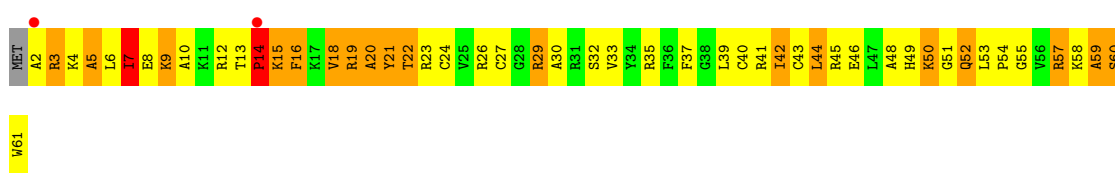
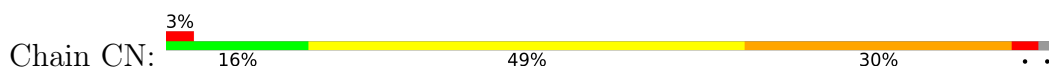
• Molecule 13: 30S RIBOSOMAL PROTEIN S13



• Molecule 14: 30S RIBOSOMAL PROTEIN S14

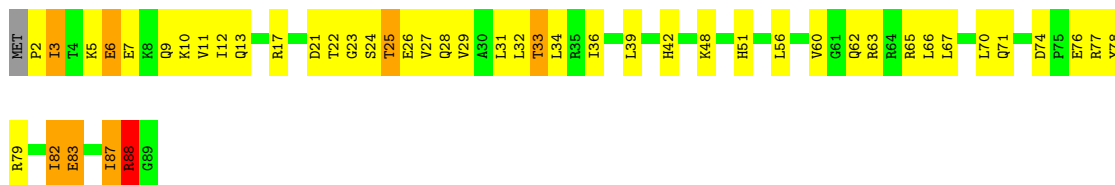


• Molecule 14: 30S RIBOSOMAL PROTEIN S14

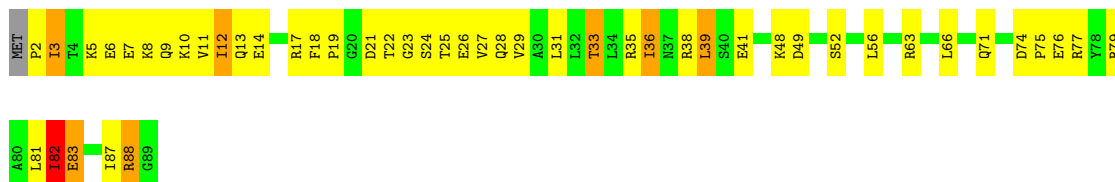


• Molecule 15: 30S RIBOSOMAL PROTEIN S15

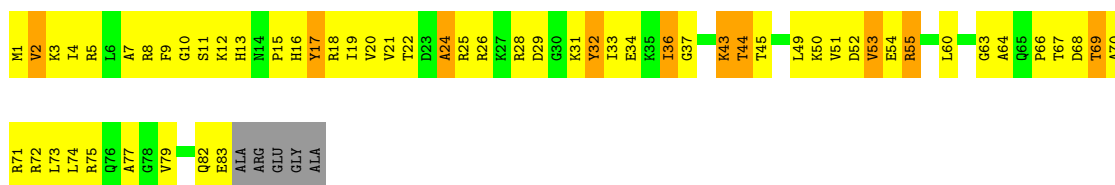




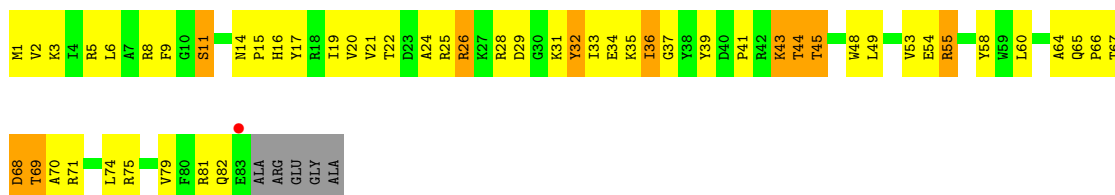
- Molecule 15: 30S RIBOSOMAL PROTEIN S15



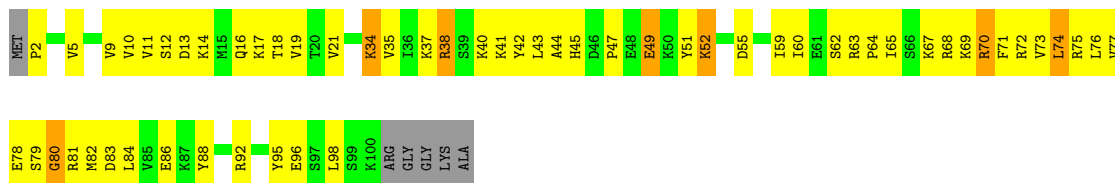
- Molecule 16: 30S RIBOSOMAL PROTEIN S16



- Molecule 16: 30S RIBOSOMAL PROTEIN S16

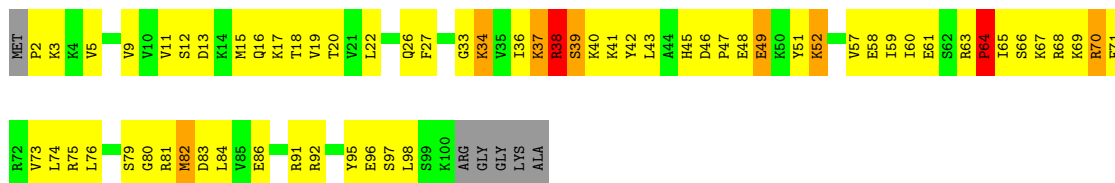


- Molecule 17: 30S RIBOSOMAL PROTEIN S17

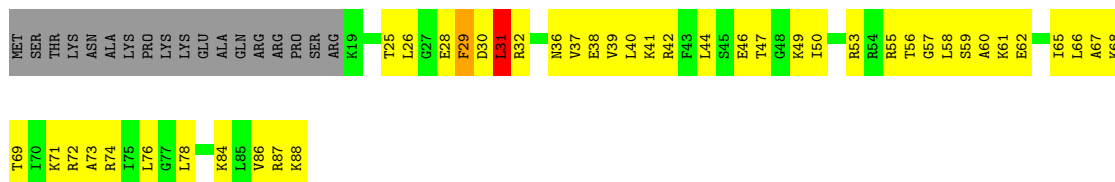


- Molecule 17: 30S RIBOSOMAL PROTEIN S17





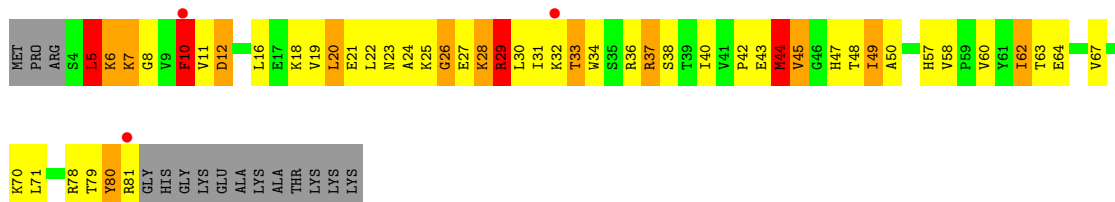
• Molecule 18: 30S RIBOSOMAL PROTEIN S18



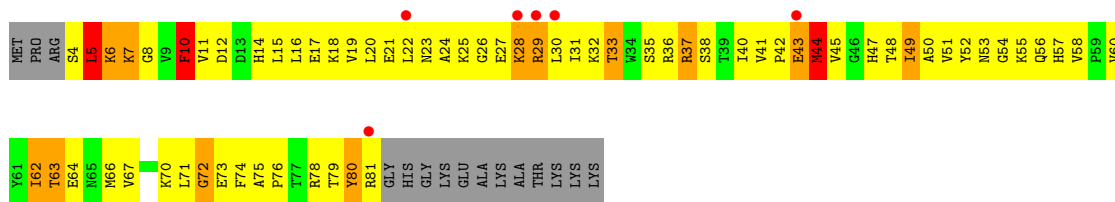
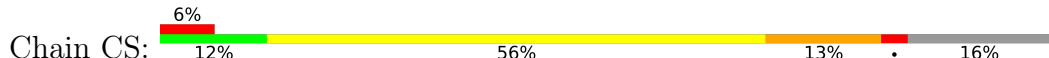
• Molecule 18: 30S RIBOSOMAL PROTEIN S18



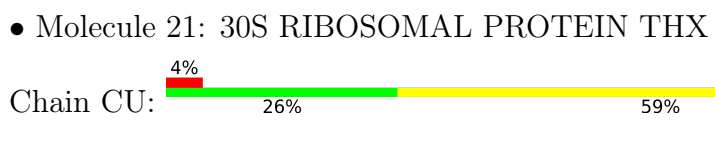
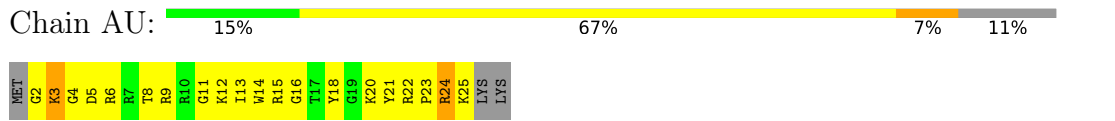
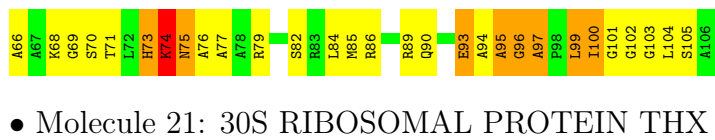
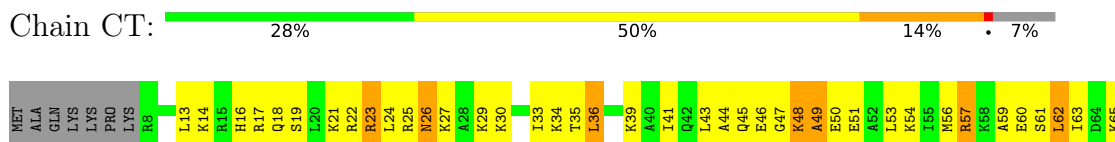
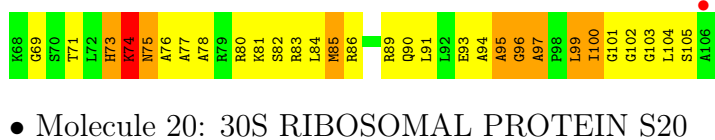
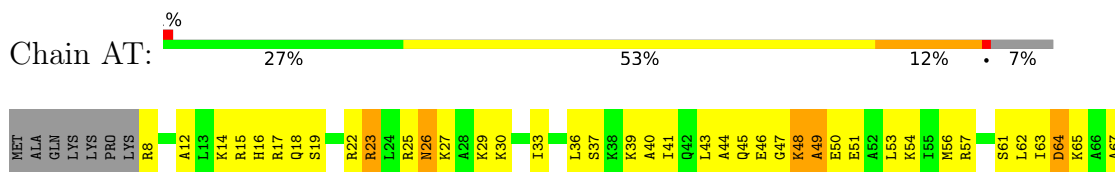
• Molecule 19: 30S RIBOSOMAL PROTEIN S19



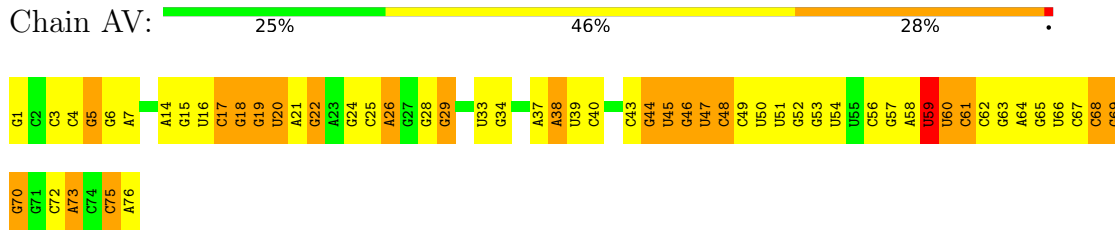
• Molecule 19: 30S RIBOSOMAL PROTEIN S19



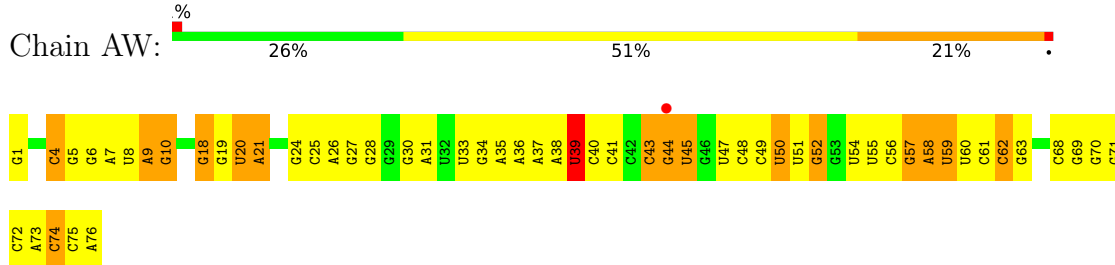
• Molecule 20: 30S RIBOSOMAL PROTEIN S20



- Molecule 22: E-SITE TRNA PHE OR P-SITE TRNA PHE

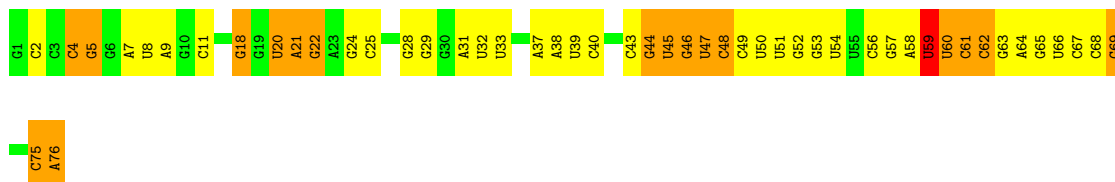


- Molecule 22: E-SITE TRNA PHE OR P-SITE TRNA PHE



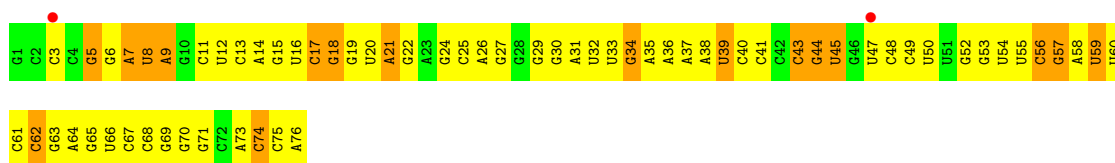
- Molecule 22: E-SITE TRNA PHE OR P-SITE TRNA PHE

Chain CV: 



- Molecule 22: E-SITE TRNA PHE OR P-SITE TRNA PHE

Chain CW: 



- Molecule 23: MRNA

Chain AX: 

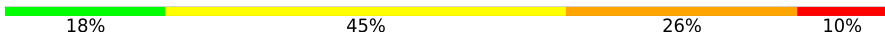


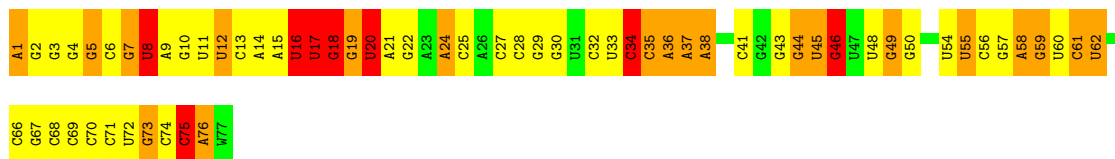
- Molecule 23: MRNA

Chain CX: 

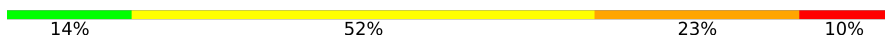


- Molecule 24: A-SITE TRNA G24A TRP-TRNA TRP

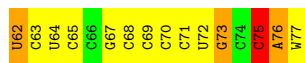
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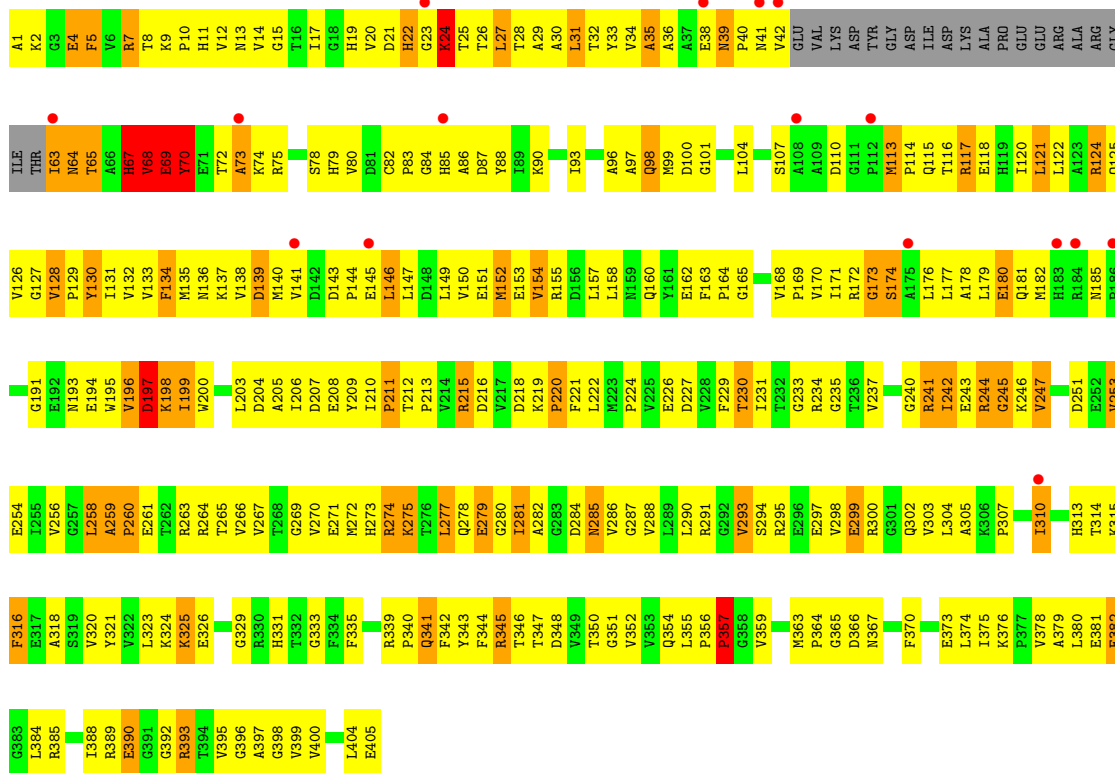
- Molecule 24: A-SITE TRNA G24A TRP-TRNA TRP

Chain CY: 

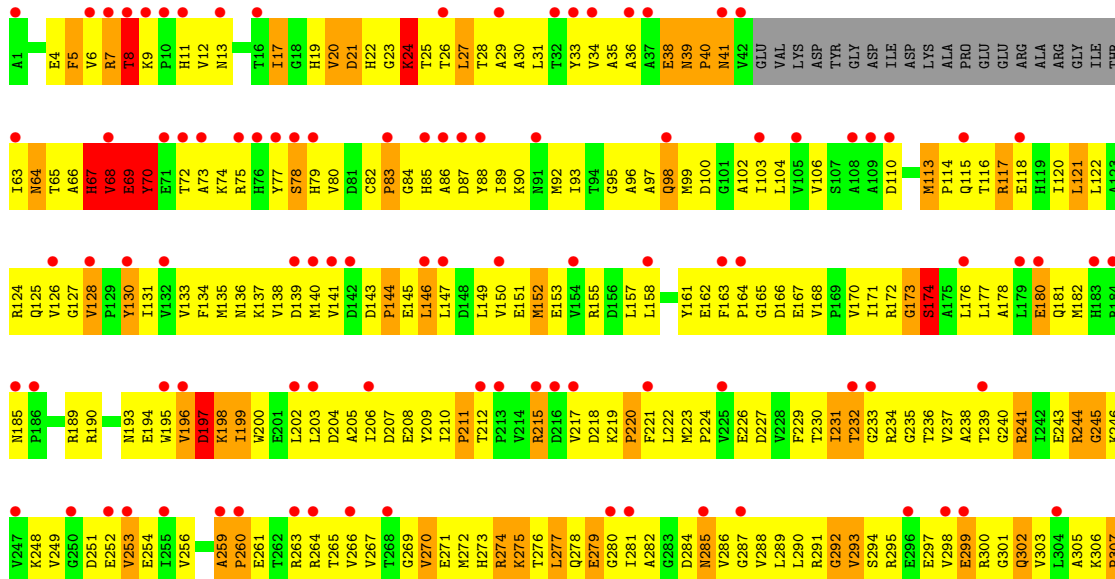
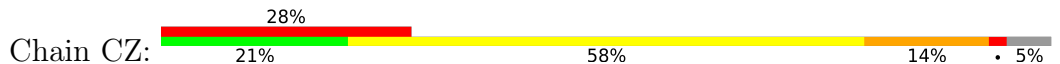


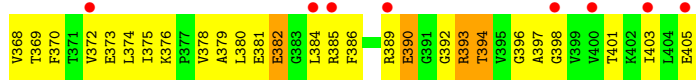
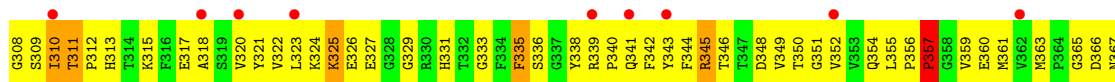


• Molecule 25: ELONGATION FACTOR TU



• Molecule 25: ELONGATION FACTOR TU





● Molecule 26: 50S RIBOSOMAL PROTEIN L27



● Molecule 26: 50S RIBOSOMAL PROTEIN L27



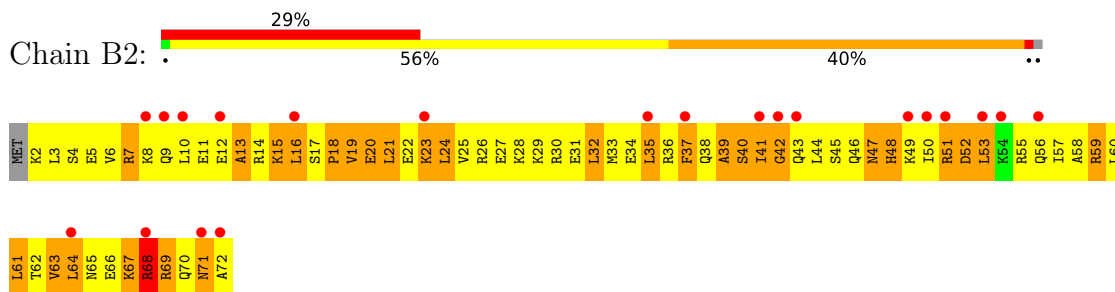
● Molecule 27: 50S RIBOSOMAL PROTEIN L28



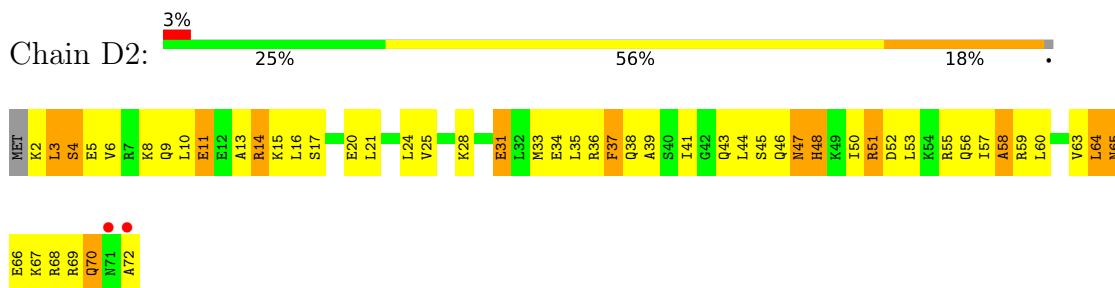
● Molecule 27: 50S RIBOSOMAL PROTEIN L28



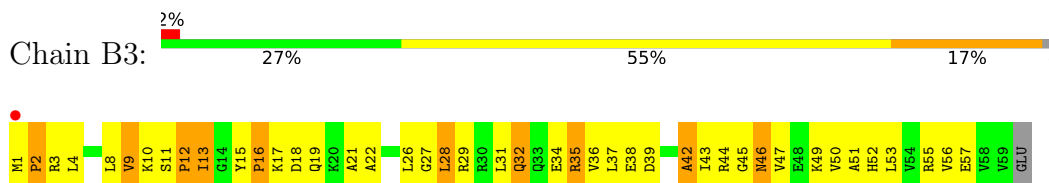
● Molecule 28: 50S RIBOSOMAL PROTEIN L29



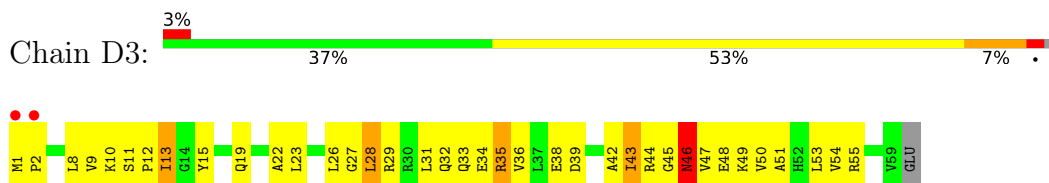
• Molecule 28: 50S RIBOSOMAL PROTEIN L29



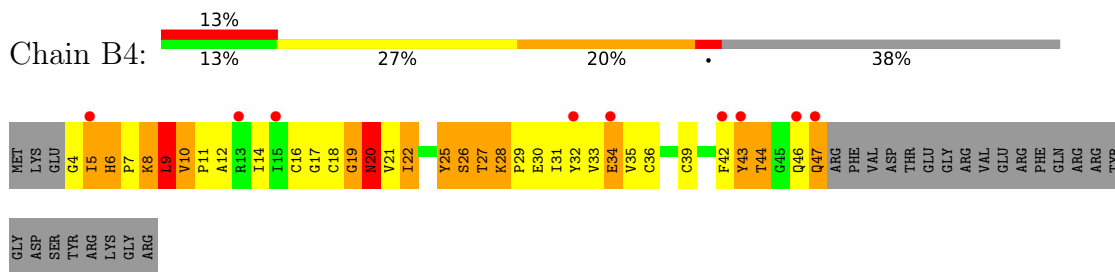
• Molecule 29: 50S RIBOSOMAL PROTEIN L30



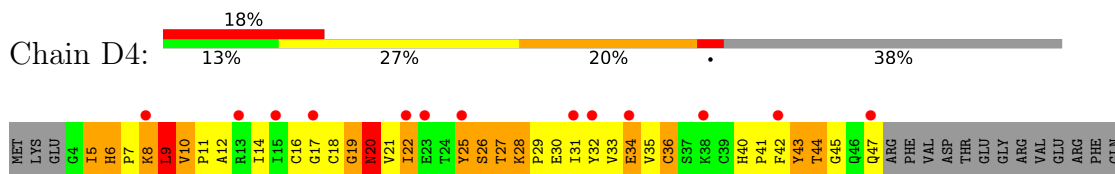
• Molecule 29: 50S RIBOSOMAL PROTEIN L30



• Molecule 30: 50S RIBOSOMAL PROTEIN L31

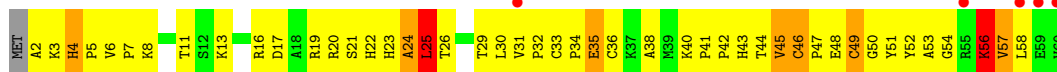


• Molecule 30: 50S RIBOSOMAL PROTEIN L31

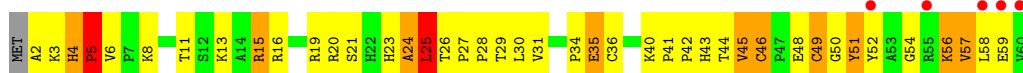


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LYS
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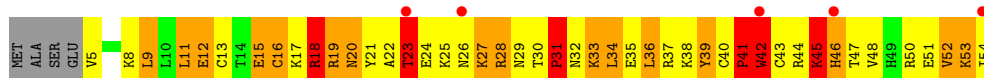
• Molecule 31: 50S RIBOSOMAL PROTEIN L32



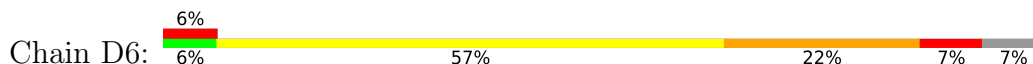
• Molecule 31: 50S RIBOSOMAL PROTEIN L32



• Molecule 32: 50S RIBOSOMAL PROTEIN L33



• Molecule 32: 50S RIBOSOMAL PROTEIN L33



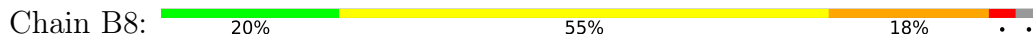
• Molecule 33: 50S RIBOSOMAL PROTEIN L34

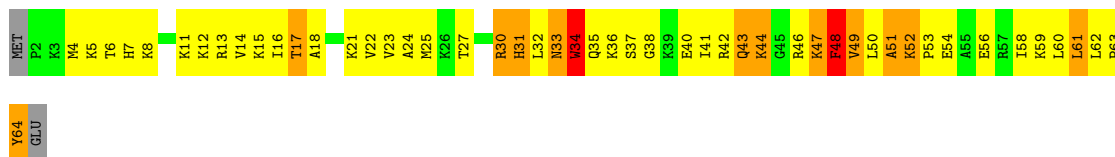


• Molecule 33: 50S RIBOSOMAL PROTEIN L34

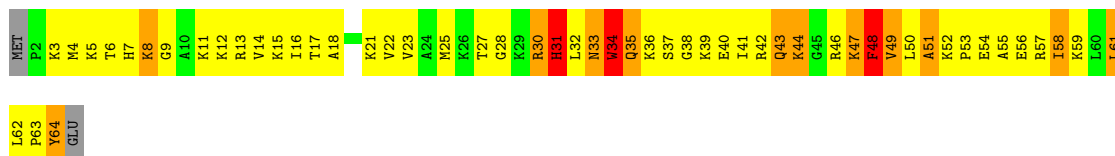
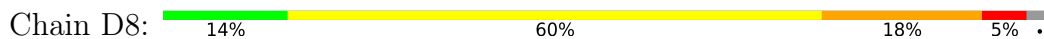


• Molecule 34: 50S RIBOSOMAL PROTEIN L35

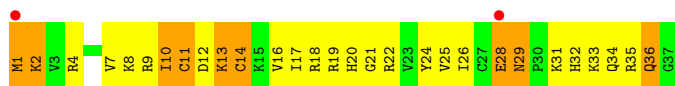




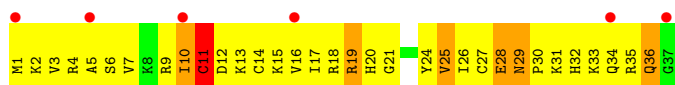
• Molecule 34: 50S RIBOSOMAL PROTEIN L35



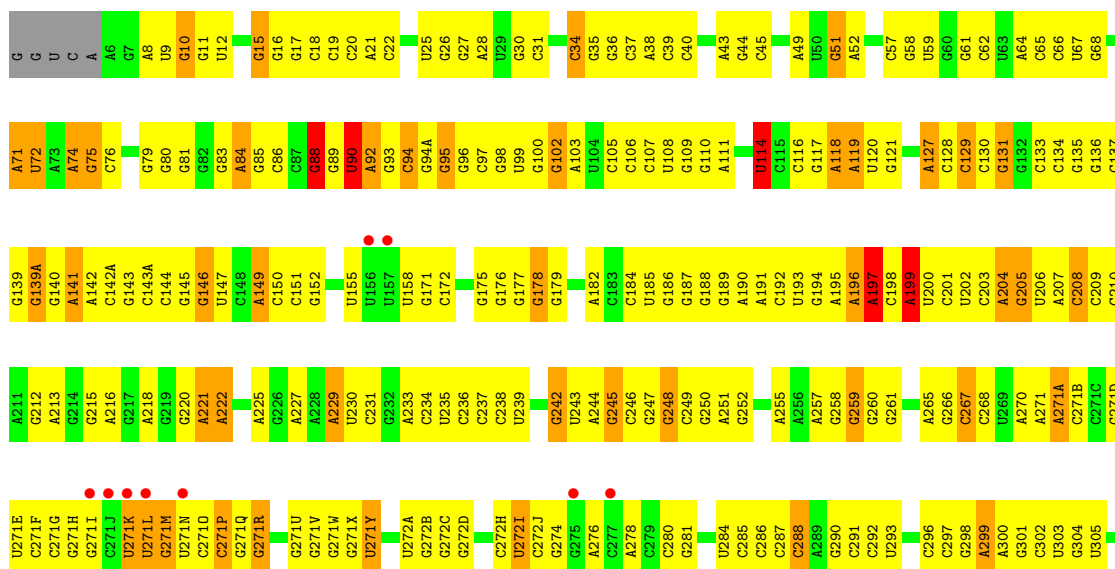
• Molecule 35: 50S RIBOSOMAL PROTEIN L36



• Molecule 35: 50S RIBOSOMAL PROTEIN L36

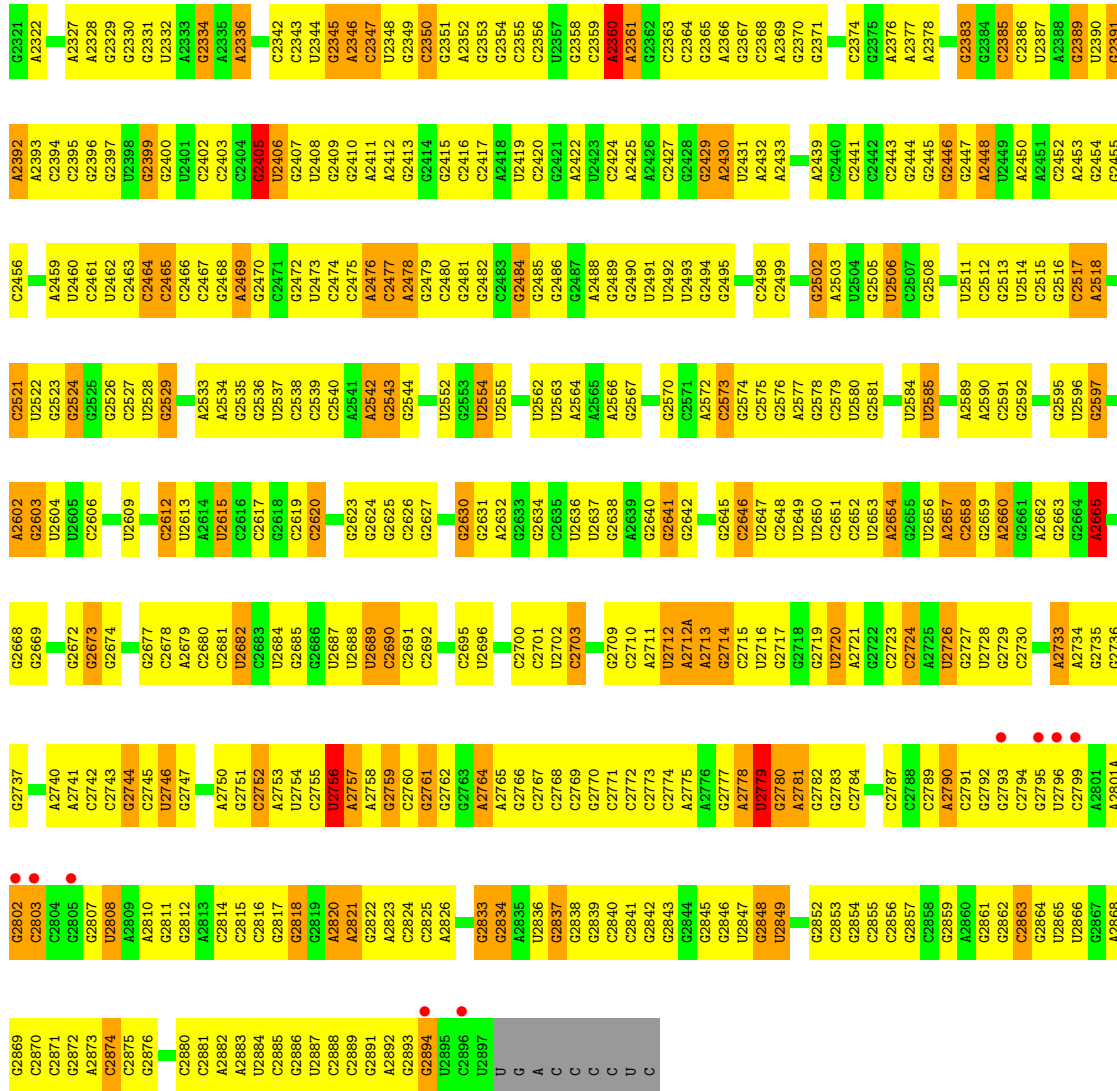


• Molecule 36: 23S RIBOSOMAL RNA

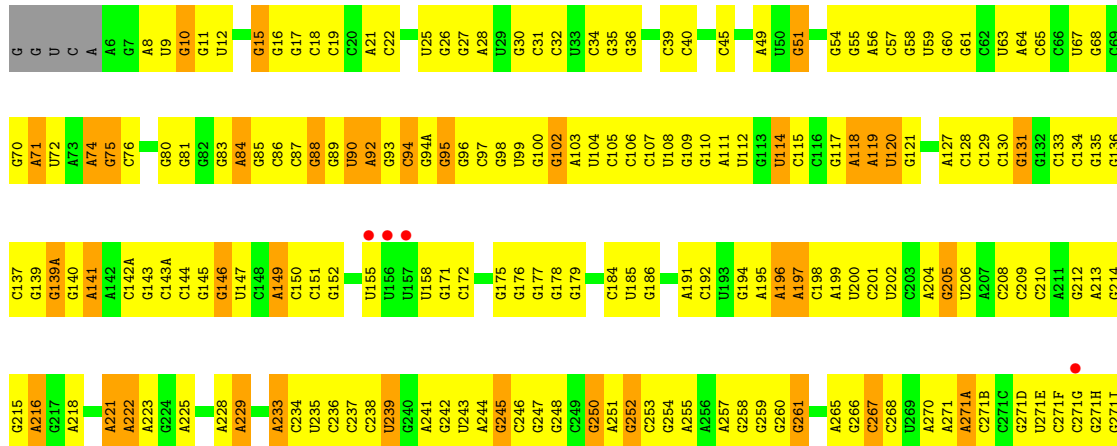


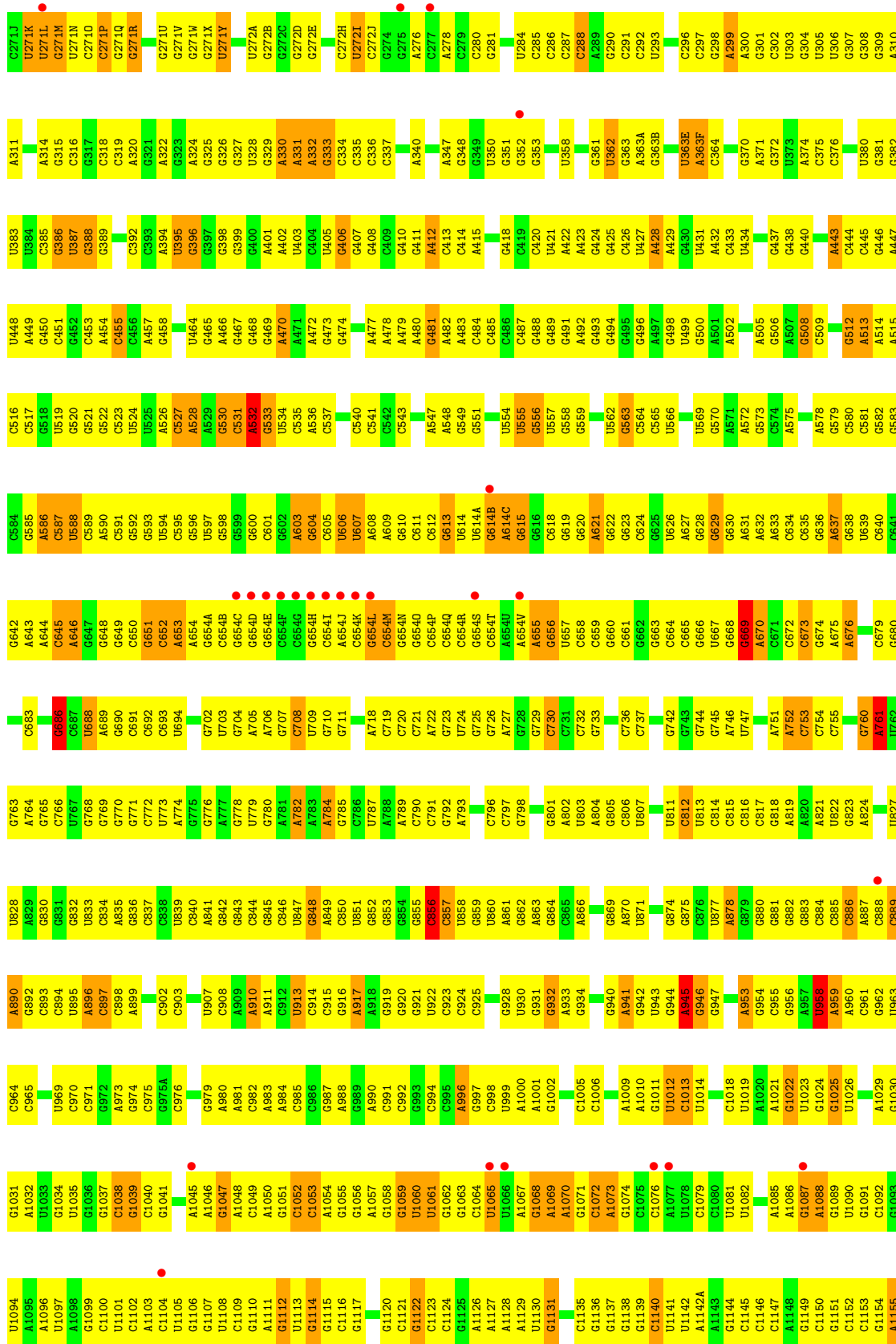
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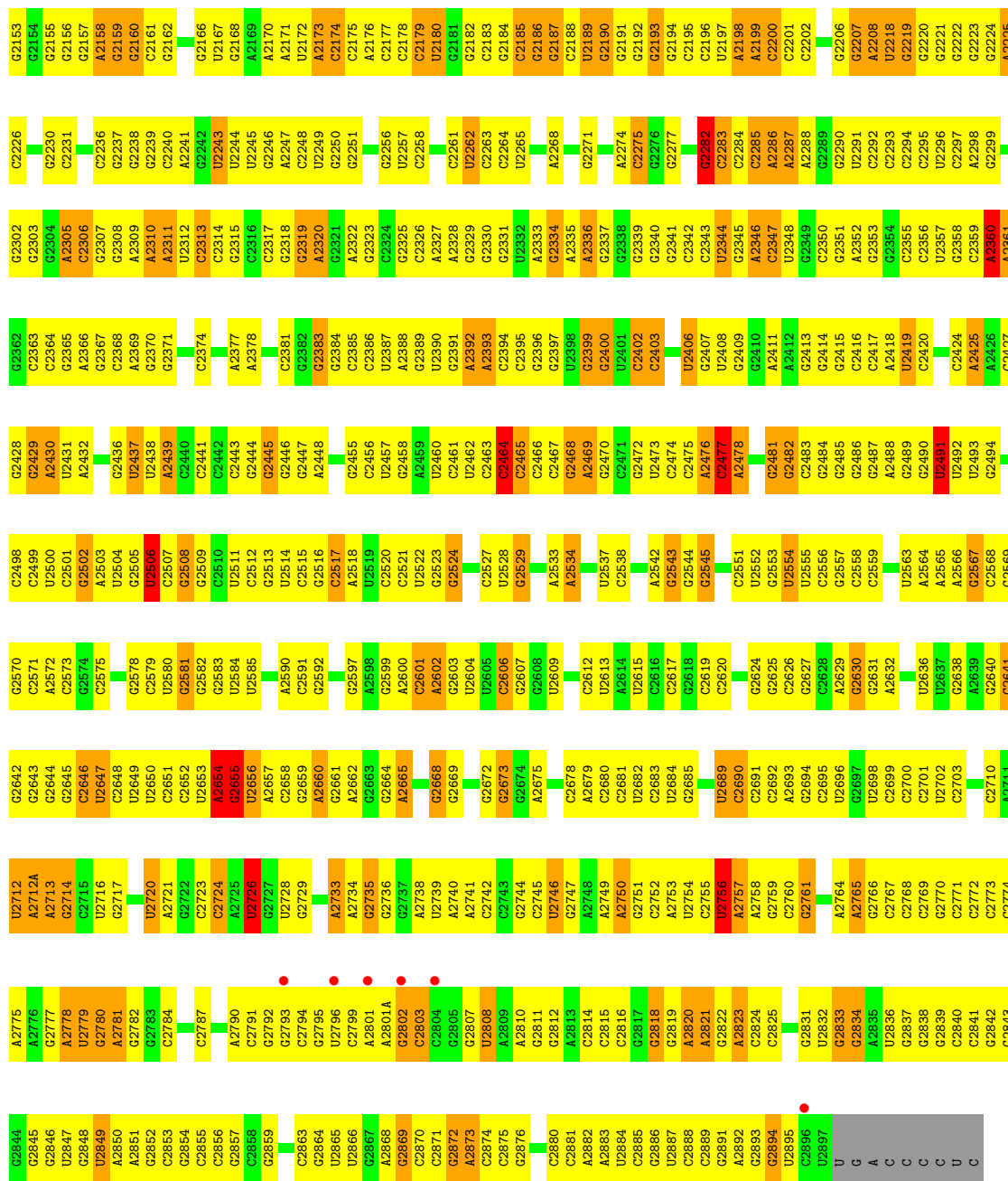


● Molecule 36: 23S RIBOSOMAL RNA





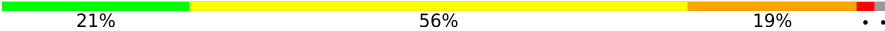
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G2100	G2023	C1879	G1799	G1714	G1647	U1523	G1444	G1374	G1315	G1234	U1175
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C2146	G2009	G1933	U1857	A1784	G1696	U1561	C1498	G1287	G1355	A1287	G1215
G2147	G2010	C1934	G1858	A1785	G1697	U1562	C1499	U1288	G1356	G1216	G1216
G2148	U2011	G1935	A1859	A1786	A1698	C1563	G1500	G1426	U1359	C1289	C1217
G2149	G2012	A1936	A1859	U1786	G1699	C1564	C1501	A1427	A1359	C1290	C1218
G2087	A2013	A1937	G1860	A1789	A1700	A1565	C1502	C1428	A1360	C1291	C1221
G2088	A2014	A1938	U1790	A1789	A1701	A1567	C1503	G1429	G1361	C1292	C1221A
U2089	A2015	U1939	G1862	A1791	G1702	G1568	C1504	C1430	C1362	C1297	

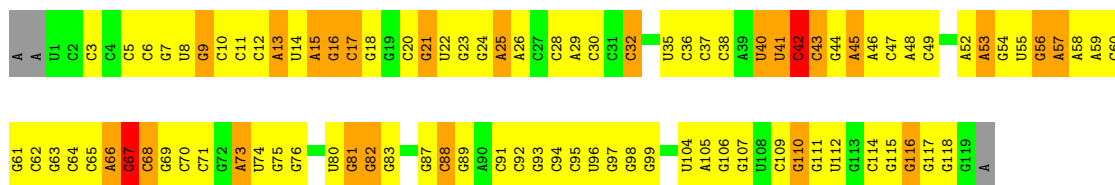


• Molecule 37: 5S RIBOSOMAL RNA



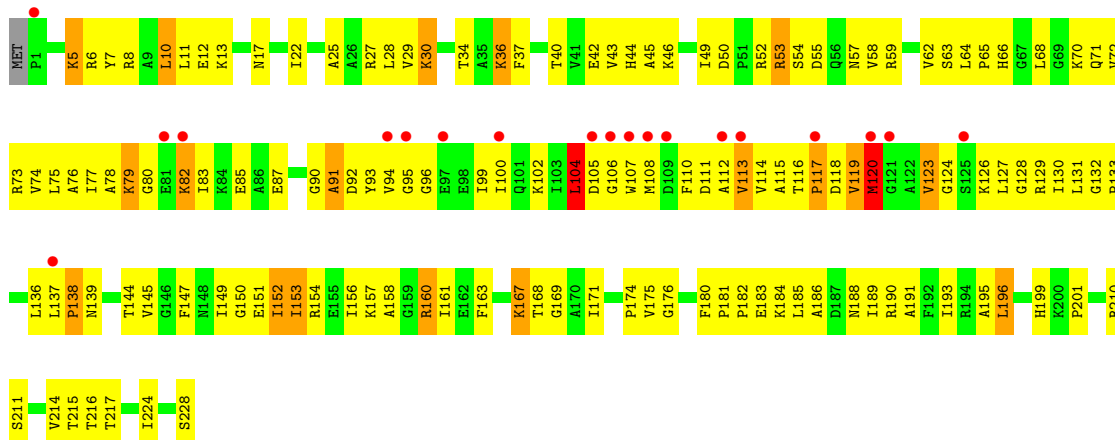
• Molecule 37: 5S RIBOSOMAL RNA

Chain DB: 



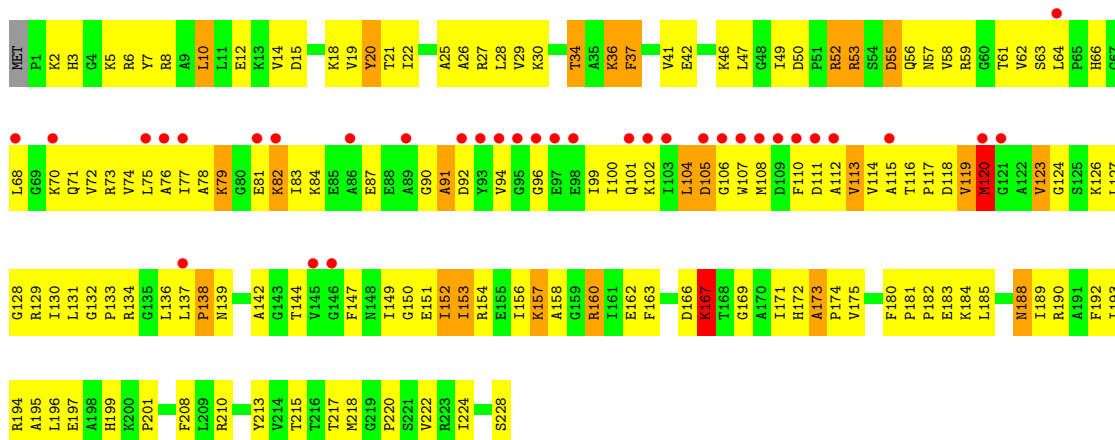
● Molecule 38: 50S RIBOSOMAL PROTEIN L1

Chain BC: 

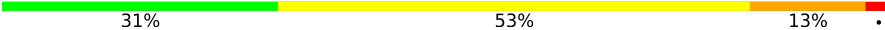


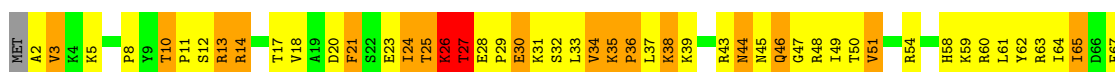
● Molecule 38: 50S RIBOSOMAL PROTEIN L1

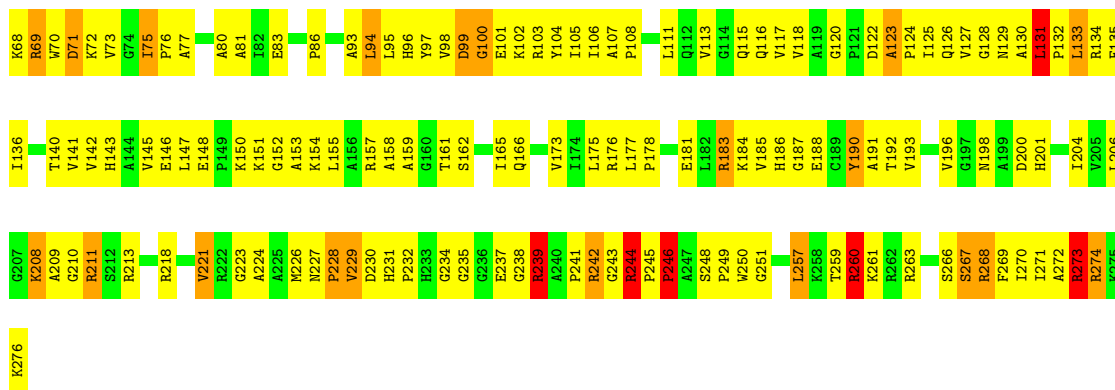
Chain DC: 



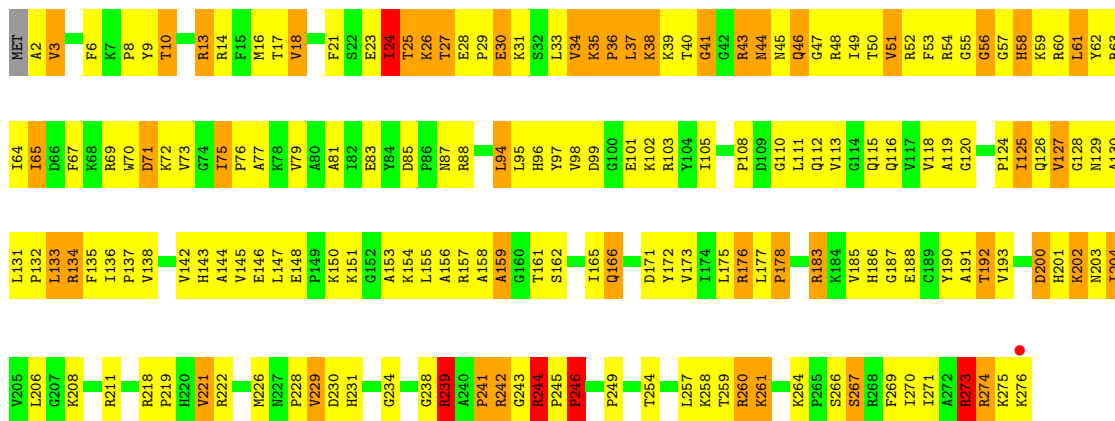
● Molecule 39: 50S RIBOSOMAL PROTEIN L2

Chain BD: 

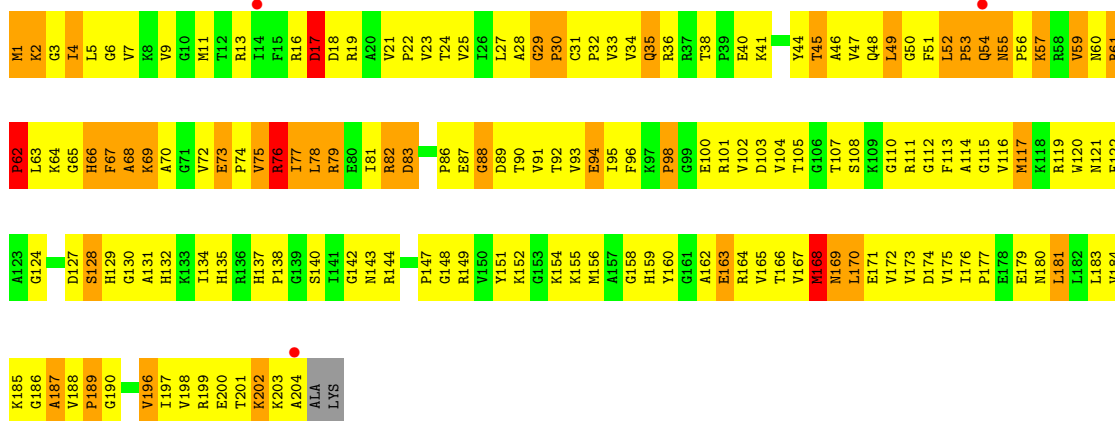




• Molecule 39: 50S RIBOSOMAL PROTEIN L2

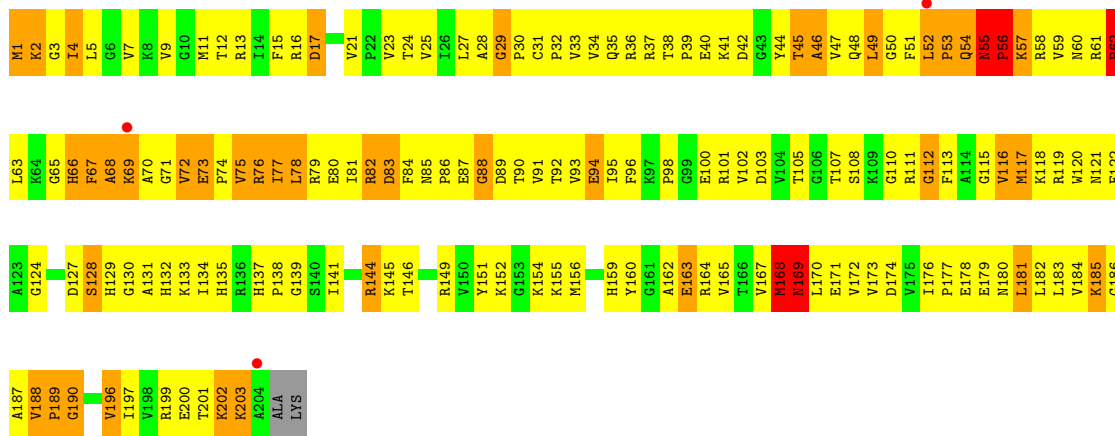


• Molecule 40: 50S RIBOSOMAL PROTEIN L3

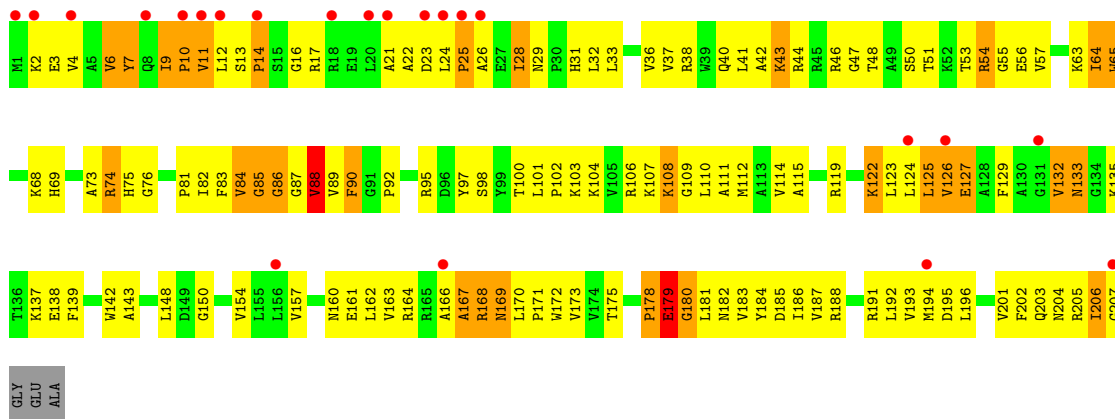


• Molecule 40: 50S RIBOSOMAL PROTEIN L3

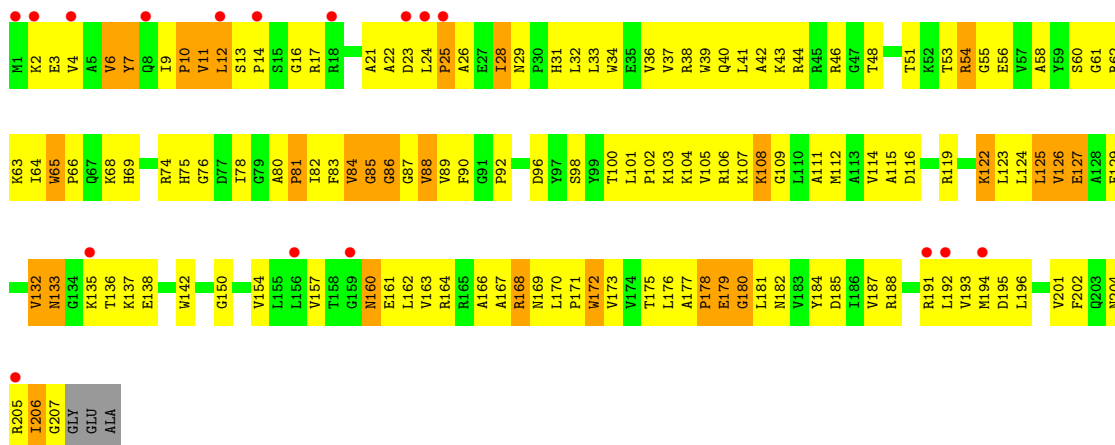




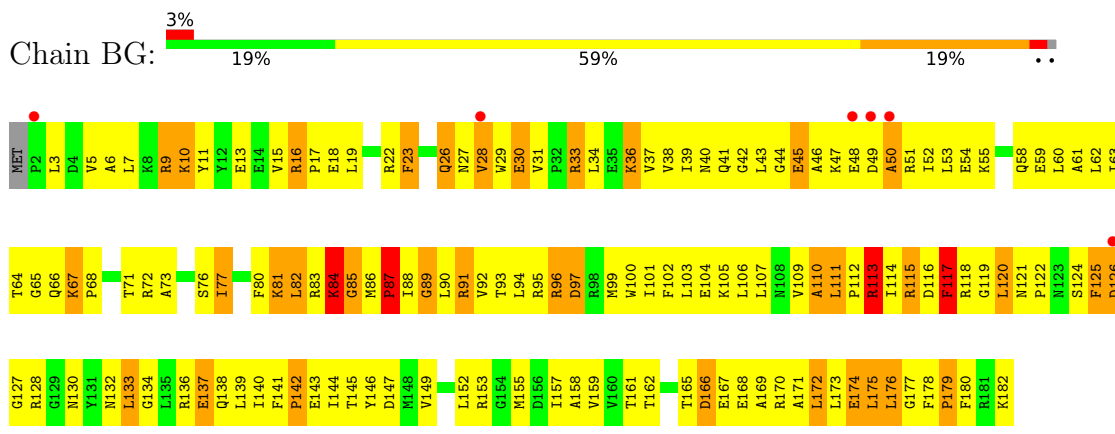
• Molecule 41: 50S RIBOSOMAL PROTEIN L4



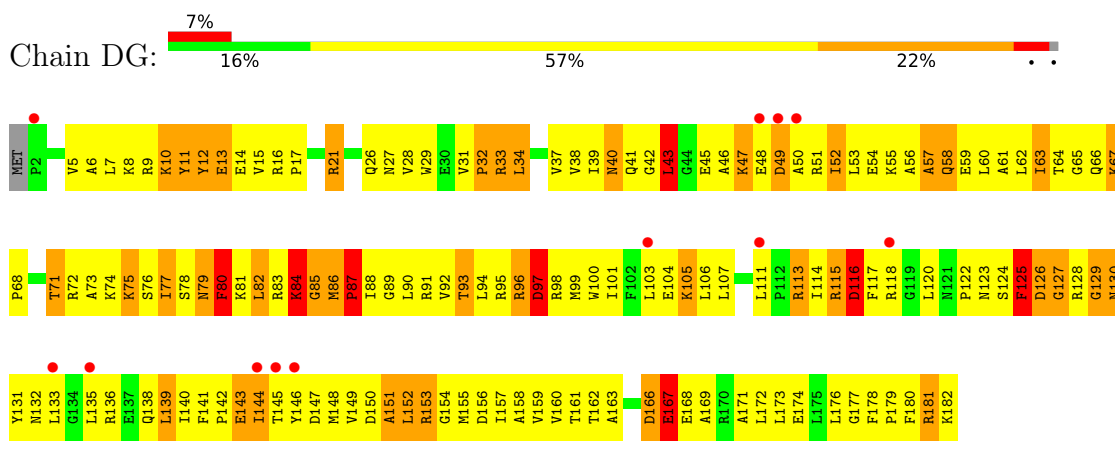
• Molecule 41: 50S RIBOSOMAL PROTEIN L4



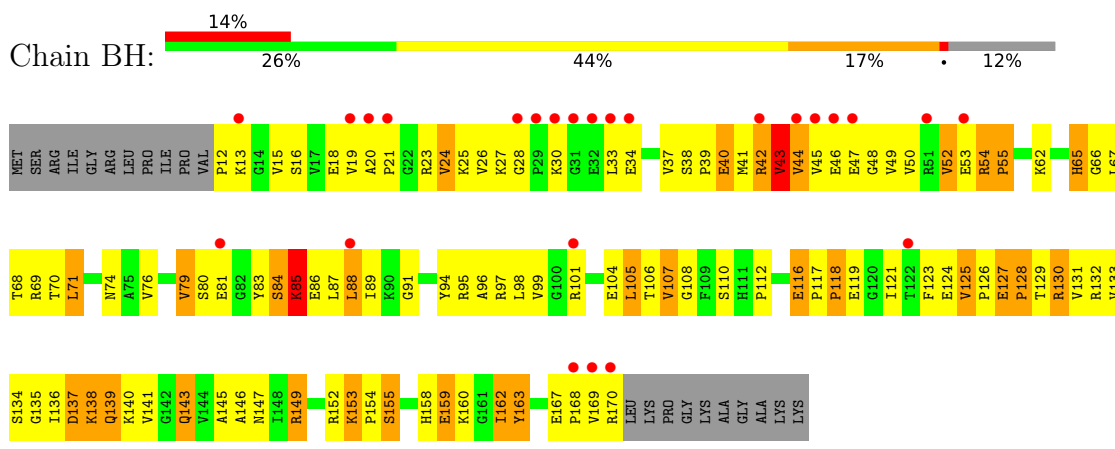
• Molecule 42: 50S RIBOSOMAL PROTEIN L5



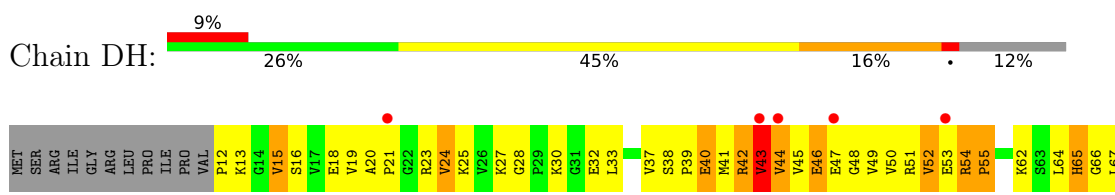
• Molecule 42: 50S RIBOSOMAL PROTEIN L5

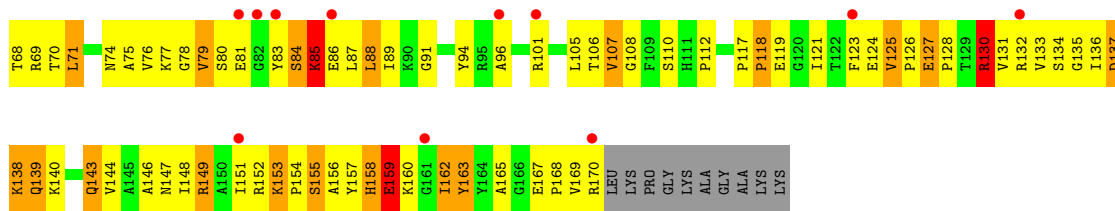


• Molecule 43: 50S RIBOSOMAL PROTEIN L6

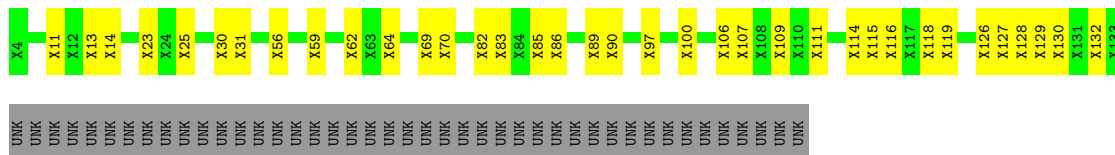


• Molecule 43: 50S RIBOSOMAL PROTEIN L6

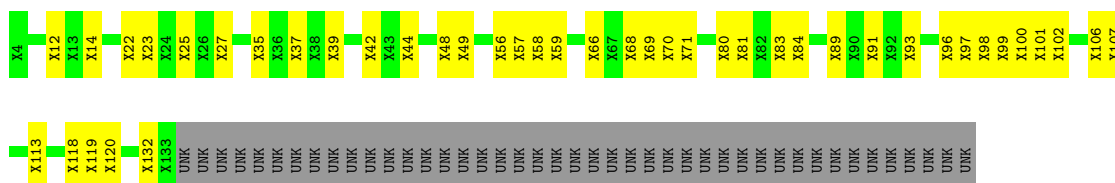




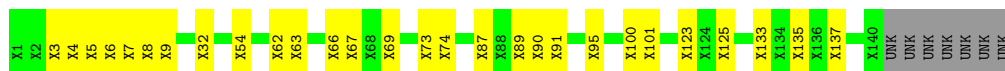
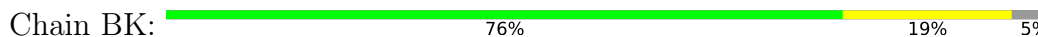
● Molecule 44: 50S RIBOSOMAL PROTEIN L10



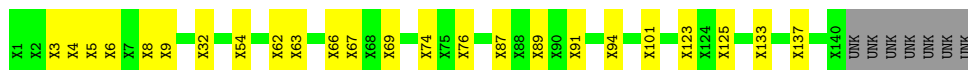
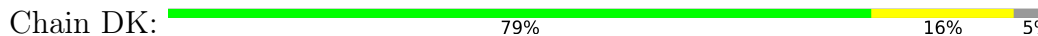
● Molecule 44: 50S RIBOSOMAL PROTEIN L10



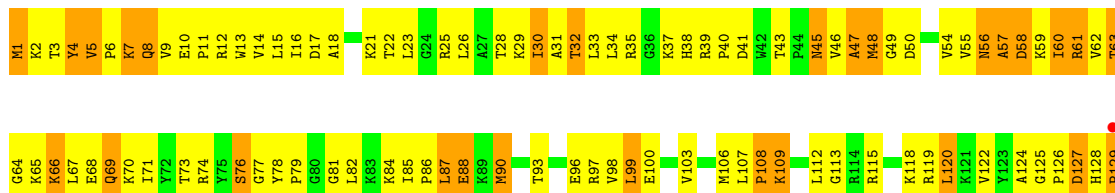
● Molecule 45: 50S RIBOSOMAL PROTEIN L11



● Molecule 45: 50S RIBOSOMAL PROTEIN L11

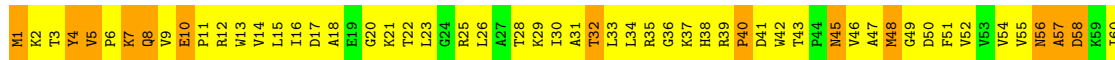


● Molecule 46: 50S RIBOSOMAL PROTEIN L13

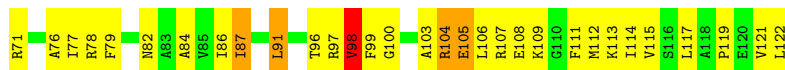
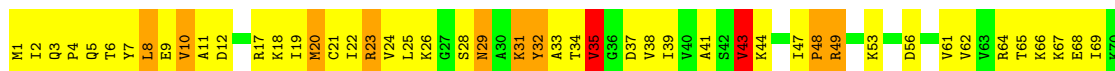




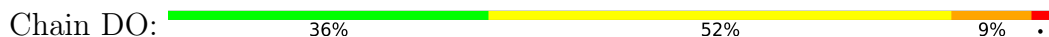
• Molecule 46: 50S RIBOSOMAL PROTEIN L13



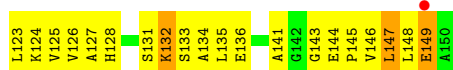
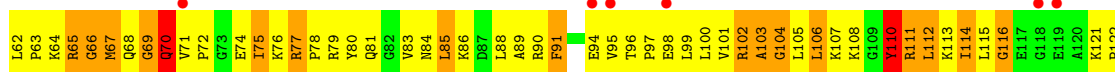
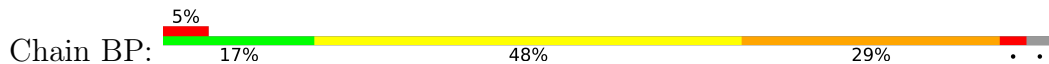
• Molecule 47: 50S RIBOSOMAL PROTEIN L14




• Molecule 47: 50S RIBOSOMAL PROTEIN L14

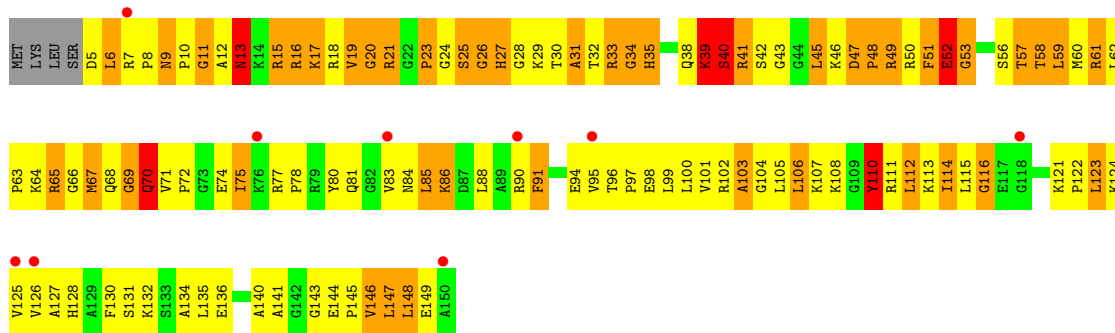


• Molecule 48: 50S RIBOSOMAL PROTEIN L15



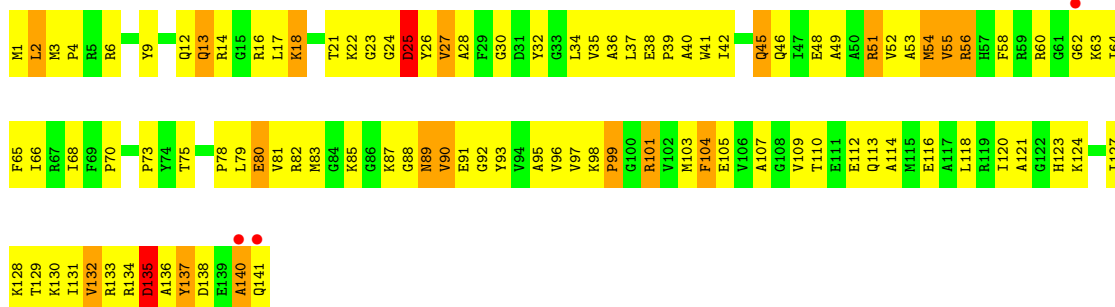
- Molecule 48: 50S RIBOSOMAL PROTEIN L15

Chain DP: 



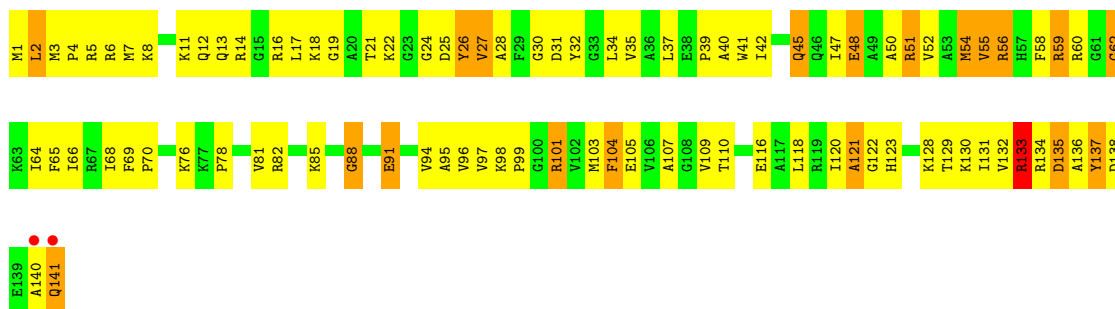
- Molecule 49: 50S RIBOSOMAL PROTEIN L16

Chain BQ: 



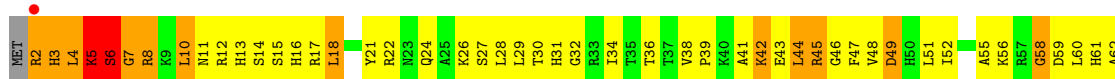
- Molecule 49: 50S RIBOSOMAL PROTEIN L16

Chain DQ: 



- Molecule 50: 50S RIBOSOMAL PROTEIN L17

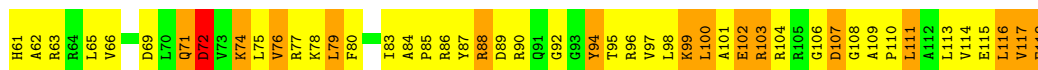
Chain BR: 





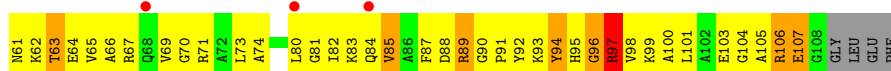
- Molecule 50: 50S RIBOSOMAL PROTEIN L17

Chain DR: 18% 55% 24%



- Molecule 51: 50S RIBOSOMAL PROTEIN L18

Chain BS: 4% 12% 54% 19% 12%



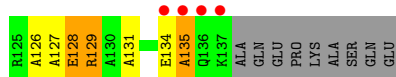
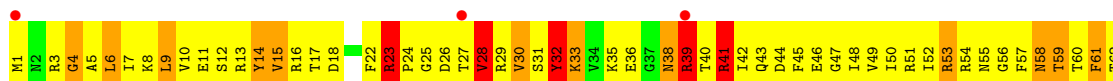
- Molecule 51: 50S RIBOSOMAL PROTEIN L18

Chain DS: 4% 12% 50% 22% 12%



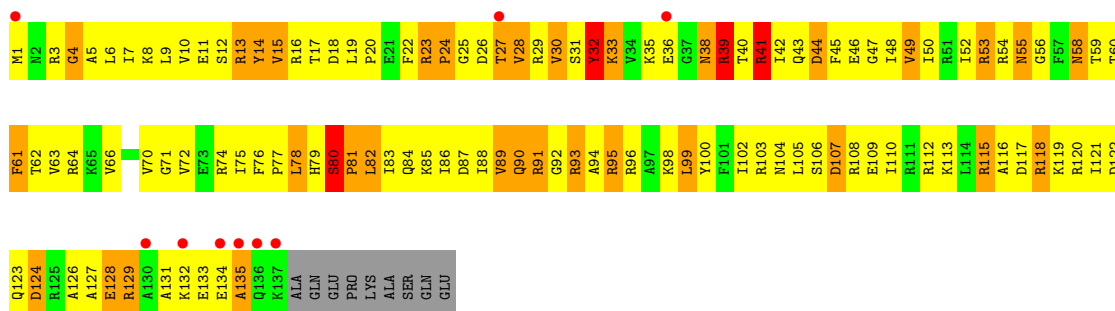
- Molecule 52: 50S RIBOSOMAL PROTEIN L19

Chain BT: 5% 15% 56% 17% 5% 6%



- Molecule 52: 50S RIBOSOMAL PROTEIN L19

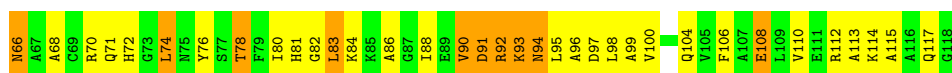
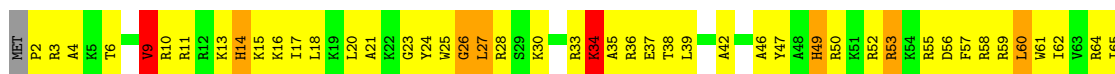
Chain DT: 6% 13% 55% 23% 6%



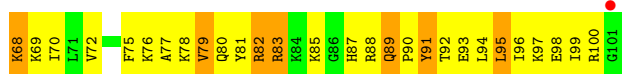
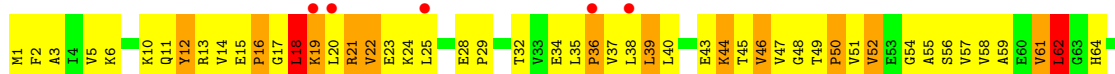
• Molecule 53: 50S RIBOSOMAL PROTEIN L20



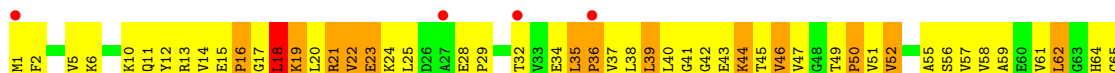
• Molecule 53: 50S RIBOSOMAL PROTEIN L20

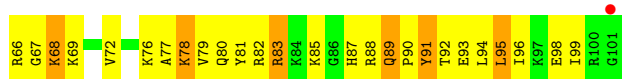


• Molecule 54: 50S RIBOSOMAL PROTEIN L21

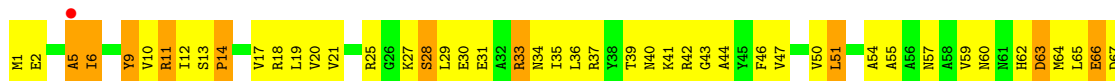


• Molecule 54: 50S RIBOSOMAL PROTEIN L21





- Molecule 55: 50S RIBOSOMAL PROTEIN L22



- Molecule 55: 50S RIBOSOMAL PROTEIN L22



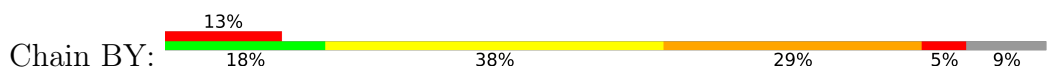
- Molecule 56: 50S RIBOSOMAL PROTEIN L23

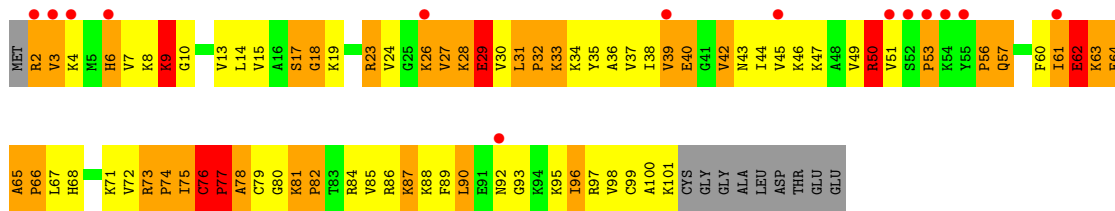


- Molecule 56: 50S RIBOSOMAL PROTEIN L23

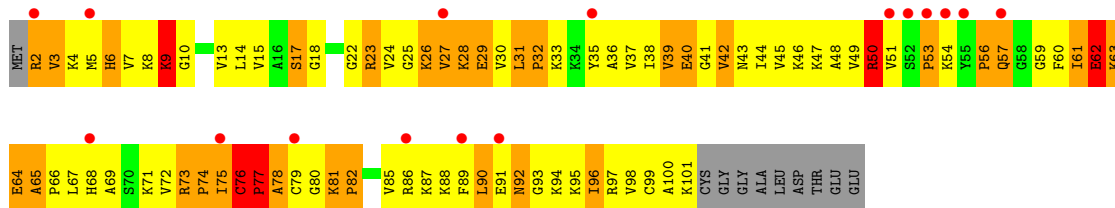
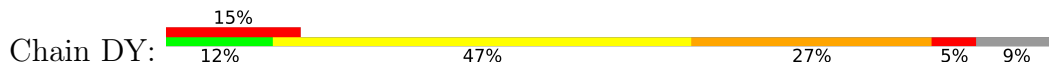


- Molecule 57: 50S RIBOSOMAL PROTEIN L24

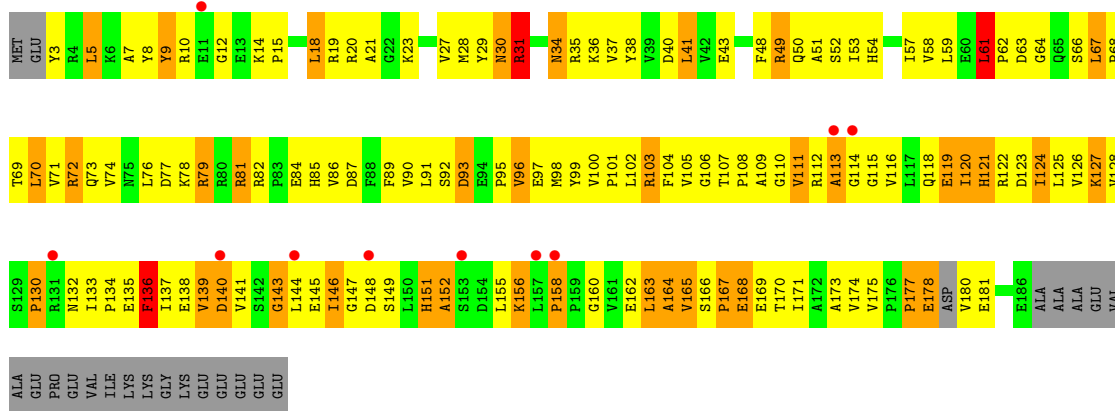
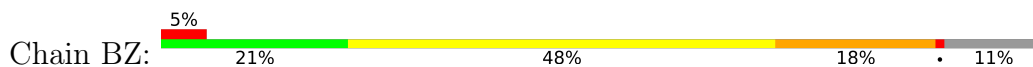




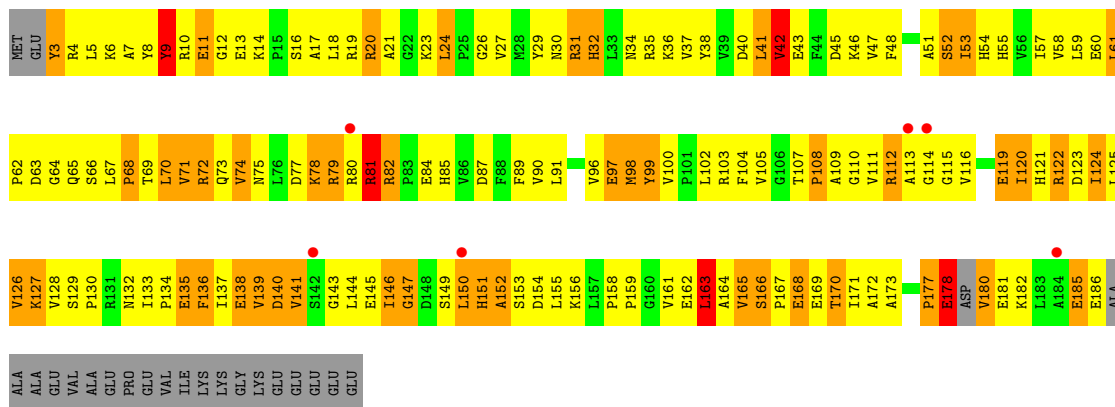
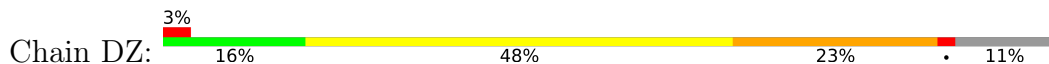
● Molecule 57: 50S RIBOSOMAL PROTEIN L24



● Molecule 58: 50S RIBOSOMAL PROTEIN L25



● Molecule 58: 50S RIBOSOMAL PROTEIN L25



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	289.80Å 269.10Å 403.90Å 90.00° 91.22° 90.00°	Depositor
Resolution (Å)	50.00 – 3.10 49.83 – 2.93	Depositor EDS
% Data completeness (in resolution range)	97.4 (50.00-3.10) 89.6 (49.83-2.93)	Depositor EDS
R_{merge}	0.02	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.31 (at 2.96Å)	Xtrriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.247 , 0.285 0.246 , 0.283	Depositor DCC
R_{free} test set	58969 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	67.3	Xtrriage
Anisotropy	0.050	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 39.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.43$, $\langle L^2 \rangle = 0.26$	Xtrriage
Estimated twinning fraction	0.038 for h,-k,-l	Xtrriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	307196	wwPDB-VP
Average B, all atoms (Å ²)	83.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.99% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 5MU, ZN, GDP, KIR, H2U, MIA, OMC, 7MG, PSU, 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	AA	0.63	5/36190 (0.0%)	0.80	59/56486 (0.1%)
1	CA	0.60	4/36190 (0.0%)	0.78	33/56486 (0.1%)
2	AB	0.51	0/1935	0.76	2/2609 (0.1%)
2	CB	0.49	0/1935	0.76	0/2609
3	AC	0.57	1/1636 (0.1%)	0.81	0/2205
3	CC	0.54	0/1636	0.76	0/2205
4	AD	0.51	0/1733	0.81	2/2318 (0.1%)
4	CD	0.56	0/1733	0.84	1/2318 (0.0%)
5	AE	0.58	0/1162	0.85	0/1564
5	CE	0.56	0/1162	0.84	0/1564
6	AF	0.45	0/856	0.70	0/1154
6	CF	0.45	0/856	0.74	0/1154
7	AG	0.46	0/1276	0.68	2/1709 (0.1%)
7	CG	0.50	0/1276	0.63	0/1709
8	AH	0.51	0/1136	0.80	0/1527
8	CH	0.51	0/1136	0.80	0/1527
9	AI	0.50	0/1029	0.77	0/1379
9	CI	0.49	0/1029	0.74	0/1379
10	AJ	0.51	0/807	0.80	0/1085
10	CJ	0.48	0/807	0.74	0/1085
11	AK	0.56	0/900	0.84	1/1213 (0.1%)
11	CK	0.51	0/900	0.77	1/1213 (0.1%)
12	AL	0.53	0/986	0.90	2/1320 (0.2%)
12	CL	0.54	0/986	0.87	1/1320 (0.1%)
13	AM	0.43	0/998	0.75	0/1336
13	CM	0.42	0/998	0.75	0/1336
14	AN	0.56	0/501	0.87	1/664 (0.2%)
14	CN	0.70	0/501	0.92	0/664
15	AO	0.49	0/745	0.71	0/992
15	CO	0.50	0/745	0.71	0/992
16	AP	0.44	0/716	0.73	0/963
16	CP	0.40	0/716	0.71	0/963

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
17	AQ	0.47	0/836	0.73	0/1117
17	CQ	0.48	0/836	0.76	0/1117
18	AR	0.54	0/579	0.76	0/768
18	CR	0.52	0/579	0.76	0/768
19	AS	0.49	0/642	0.74	1/865 (0.1%)
19	CS	0.45	0/642	0.71	0/865
20	AT	0.40	0/765	0.72	0/1007
20	CT	0.37	0/765	0.70	0/1007
21	AU	0.43	0/212	0.75	0/277
21	CU	0.60	0/212	0.81	0/277
22	AV	0.64	0/1809	0.80	1/2819 (0.0%)
22	AW	0.47	1/1809 (0.1%)	0.74	0/2819
22	CV	0.58	0/1809	0.79	1/2819 (0.0%)
22	CW	0.40	0/1809	0.73	0/2819
23	AX	0.80	0/406	0.89	2/631 (0.3%)
23	CX	0.78	0/406	0.94	2/631 (0.3%)
24	AY	0.80	7/1618 (0.4%)	0.91	7/2514 (0.3%)
24	CY	0.76	4/1618 (0.2%)	0.91	7/2514 (0.3%)
25	AZ	0.72	7/3042 (0.2%)	0.84	8/4129 (0.2%)
25	CZ	0.79	6/3042 (0.2%)	0.88	7/4129 (0.2%)
26	B0	0.44	0/671	0.68	0/892
26	D0	0.45	0/671	0.72	0/892
27	B1	0.47	0/738	0.77	0/981
27	D1	0.42	0/738	0.70	0/981
28	B2	0.39	0/600	0.77	0/793
28	D2	0.34	0/600	0.66	0/793
29	B3	0.43	0/472	0.69	0/634
29	D3	0.39	0/472	0.71	0/634
30	B4	0.53	0/349	0.67	0/474
30	D4	0.52	0/349	0.65	0/474
31	B5	0.44	0/473	0.76	0/639
31	D5	0.43	0/473	0.77	0/639
32	B6	0.62	0/440	0.93	0/586
32	D6	0.60	0/440	0.91	0/586
33	B7	0.51	0/426	0.74	0/561
33	D7	0.47	0/426	0.71	0/561
34	B8	0.59	0/515	0.87	0/679
34	D8	0.56	0/515	0.87	0/679
35	B9	0.53	0/310	0.74	0/407
35	D9	0.61	0/310	0.92	0/407
36	BA	0.55	2/69976 (0.0%)	0.75	50/109244 (0.0%)
36	DA	0.54	3/69976 (0.0%)	0.75	43/109244 (0.0%)
37	BB	0.47	0/2853	0.75	0/4451

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
37	DB	0.49	0/2853	0.75	0/4451
38	BC	0.42	1/1774 (0.1%)	0.68	0/2391
38	DC	0.46	2/1774 (0.1%)	0.65	0/2391
39	BD	0.55	0/2195	0.89	4/2955 (0.1%)
39	DD	0.55	0/2195	0.90	5/2955 (0.2%)
40	BE	0.47	0/1596	0.76	0/2153
40	DE	0.49	0/1596	0.78	1/2153 (0.0%)
41	BF	0.41	0/1658	0.69	0/2244
41	DF	0.39	0/1658	0.67	0/2244
42	BG	0.43	0/1499	0.72	0/2016
42	DG	0.39	0/1499	0.71	0/2016
43	BH	0.40	0/1245	0.68	0/1682
43	DH	0.38	0/1245	0.71	0/1682
46	BN	0.44	0/1131	0.74	0/1525
46	DN	0.41	0/1131	0.72	0/1525
47	BO	0.52	0/943	0.76	1/1269 (0.1%)
47	DO	0.51	0/943	0.77	0/1269
48	BP	0.48	0/1131	1.00	6/1504 (0.4%)
48	DP	0.46	0/1131	1.00	6/1504 (0.4%)
49	BQ	0.51	0/1143	0.77	0/1527
49	DQ	0.50	0/1143	0.79	0/1527
50	BR	0.40	0/974	0.77	0/1302
50	DR	0.39	0/974	0.74	2/1302 (0.2%)
51	BS	0.41	0/778	0.74	0/1036
51	DS	0.41	0/778	0.70	0/1036
52	BT	0.44	0/1155	0.78	2/1542 (0.1%)
52	DT	0.43	0/1155	0.76	1/1542 (0.1%)
53	BU	0.46	0/975	0.75	0/1297
53	DU	0.49	0/975	0.74	0/1297
54	BV	0.40	0/790	0.75	0/1057
54	DV	0.41	0/790	0.73	0/1057
55	BW	0.39	0/907	0.70	0/1216
55	DW	0.40	0/907	0.67	0/1216
56	BX	0.45	0/739	0.70	1/993 (0.1%)
56	DX	0.45	0/739	0.72	1/993 (0.1%)
57	BY	0.38	0/788	0.70	0/1051
57	DY	0.38	0/788	0.73	1/1051 (0.1%)
58	BZ	0.46	0/1491	0.80	1/2024 (0.0%)
58	DZ	0.46	0/1491	0.74	1/2024 (0.0%)
All	All	0.55	43/330118 (0.0%)	0.77	267/493190 (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
1	AA	6	89
1	CA	4	91
8	AH	0	1
8	CH	0	1
19	AS	0	1
22	AV	0	7
22	CV	0	1
22	CW	0	1
23	AX	0	1
23	CX	0	4
24	AY	2	1
24	CY	2	2
25	AZ	0	2
25	CZ	0	2
36	BA	0	123
36	DA	1	104
37	BB	0	3
37	DB	0	3
39	BD	0	1
49	BQ	0	1
49	DQ	0	1
All	All	15	440

The worst 5 of 43 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	DA	761	A	C5-C6	-10.85	1.31	1.41
24	AY	34	C	C5-C6	10.54	1.42	1.34
25	AZ	69	GLU	N-CA	9.82	1.66	1.46
25	CZ	67	HIS	C-O	9.21	1.40	1.23
25	CZ	69	GLU	N-CA	8.60	1.63	1.46

The worst 5 of 267 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	AA	1054	C	N1-C1'-C2'	12.37	130.09	114.00
1	AA	1054	C	N3-C2-O2	12.20	130.44	121.90
1	AA	1498	U	C2'-C3'-O3'	11.43	134.65	109.50
1	CA	1054	C	N1-C1'-C2'	11.34	128.74	114.00
1	CA	1503	A	N9-C1'-C2'	-11.14	99.52	114.00

5 of 15 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	AA	243	A	C3'
1	AA	508	C	C3'
1	AA	687	A	C3'
1	AA	968	A	C3'
1	AA	1498	U	C3'

5 of 440 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	114	U	Sidechain
1	AA	122	G	Sidechain
1	AA	14	U	Sidechain
1	AA	189(H)	G	Sidechain
1	AA	47	C	Sidechain

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AA	32329	0	16318	1145	0
1	CA	32329	0	16317	1398	0
2	AB	1900	0	1951	238	3
2	CB	1900	0	1951	239	3
3	AC	1612	0	1677	194	0
3	CC	1612	0	1677	201	0
4	AD	1703	0	1765	251	0
4	CD	1703	0	1763	265	0
5	AE	1146	0	1207	111	0
5	CE	1146	0	1207	159	0
6	AF	843	0	857	75	0
6	CF	843	0	857	82	0
7	AG	1257	0	1296	81	0
7	CG	1257	0	1296	109	0
8	AH	1116	0	1177	72	0
8	CH	1116	0	1177	99	0
9	AI	1010	0	1037	145	0
9	CI	1010	0	1037	159	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	AJ	794	0	840	146	0
10	CJ	794	0	840	155	0
11	AK	885	0	904	58	0
11	CK	885	0	904	86	0
12	AL	970	0	1057	118	0
12	CL	970	0	1057	124	0
13	AM	987	0	1059	158	0
13	CM	987	0	1059	179	0
14	AN	492	0	529	70	0
14	CN	492	0	530	115	0
15	AO	734	0	771	64	0
15	CO	734	0	771	61	0
16	AP	700	0	720	71	0
16	CP	700	0	720	77	0
17	AQ	823	0	891	63	0
17	CQ	823	0	891	73	0
18	AR	574	0	644	51	0
18	CR	574	0	644	77	0
19	AS	629	0	652	73	0
19	CS	629	0	652	98	0
20	AT	763	0	861	84	0
20	CT	763	0	861	88	0
21	AU	208	0	221	28	0
21	CU	208	0	221	23	0
22	AV	1619	0	822	88	0
22	AW	1619	0	822	89	0
22	CV	1619	0	822	64	0
22	CW	1619	0	822	97	0
23	AX	362	0	184	13	0
23	CX	362	0	184	11	0
24	AY	1644	0	853	74	0
24	CY	1644	0	853	92	0
25	AZ	2984	0	2997	411	0
25	CZ	2984	0	2997	510	0
26	B0	662	0	688	90	0
26	D0	662	0	688	104	0
27	B1	731	0	808	104	0
27	D1	731	0	808	101	0
28	B2	598	0	653	192	0
28	D2	598	0	653	98	0
29	B3	467	0	523	58	0
29	D3	467	0	523	34	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	B4	340	0	336	62	0
30	D4	340	0	337	55	0
31	B5	459	0	480	90	0
31	D5	459	0	480	73	0
32	B6	433	0	461	134	0
32	D6	433	0	461	134	0
33	B7	418	0	467	37	0
33	D7	418	0	467	31	0
34	B8	507	0	576	115	0
34	D8	507	0	576	130	0
35	B9	307	0	336	53	0
35	D9	307	0	338	83	0
36	BA	62477	0	31497	2434	0
36	DA	62477	0	31497	2526	0
37	BB	2551	0	1295	127	0
37	DB	2551	0	1295	122	0
38	BC	1742	0	1800	167	3
38	DC	1742	0	1800	184	3
39	BD	2145	0	2234	266	0
39	DD	2145	0	2234	290	0
40	BE	1563	0	1629	263	0
40	DE	1563	0	1629	276	0
41	BF	1623	0	1677	212	0
41	DF	1623	0	1677	226	0
42	BG	1474	0	1535	247	0
42	DG	1474	0	1535	278	0
43	BH	1222	0	1282	178	0
43	DH	1222	0	1282	193	0
44	BJ	651	0	170	25	0
44	DJ	651	0	157	32	0
45	BK	700	0	180	17	0
45	DK	700	0	176	16	0
46	BN	1104	0	1180	178	0
46	DN	1104	0	1180	205	0
47	BO	933	0	996	116	0
47	DO	933	0	996	108	0
48	BP	1114	0	1187	292	0
48	DP	1114	0	1187	290	0
49	BQ	1122	0	1179	166	0
49	DQ	1122	0	1179	165	0
50	BR	960	0	1021	150	0
50	DR	960	0	1021	154	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
51	BS	770	0	832	148	0
51	DS	770	0	832	140	0
52	BT	1141	0	1202	257	0
52	DT	1141	0	1202	227	0
53	BU	958	0	1015	165	0
53	DU	958	0	1015	154	0
54	BV	779	0	852	122	0
54	DV	779	0	852	122	0
55	BW	896	0	953	98	0
55	DW	896	0	953	93	0
56	BX	725	0	778	91	0
56	DX	725	0	778	108	0
57	BY	775	0	870	165	0
57	DY	775	0	870	168	0
58	BZ	1459	0	1488	216	0
58	DZ	1459	0	1488	254	0
59	AD	1	0	0	2	0
59	AN	1	0	0	0	0
59	B4	1	0	0	0	0
59	B9	1	0	0	0	0
59	CD	1	0	0	0	0
59	CN	1	0	0	0	0
59	D4	1	0	0	0	0
59	D9	1	0	0	1	0
60	AZ	28	0	12	7	0
60	CZ	28	0	12	17	0
61	AZ	57	0	58	5	0
61	CZ	57	0	58	7	0
All	All	307196	0	208708	20879	6

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 41.

The worst 5 of 20879 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)
25:AZ:357:PRO:CG	25:AZ:357:PRO:CB	1.77	1.43
38:DC:100:ILE:HG23	38:DC:127:LEU:CD1	1.68	1.23
4:CD:187:ARG:HB3	4:CD:187:ARG:NH1	1.52	1.22
15:AO:87:ILE:HG22	15:AO:88:ARG:H	1.08	1.18
24:CY:76:A:H1 [?]	25:CZ:287:GLY:HA3	1.26	1.18

The worst 5 of 6 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)
2:CB:65:GLY:O	38:DC:27:ARG:NH2[2_646]	1.45	0.75
2:AB:65:GLY:O	38:BC:27:ARG:NH2[2_445]	1.59	0.61
2:CB:66:GLY:CA	38:DC:27:ARG:NH2[2_646]	1.87	0.33
2:AB:66:GLY:CA	38:BC:27:ARG:NH2[2_445]	1.94	0.26
2:CB:65:GLY:C	38:DC:27:ARG:NH2[2_646]	2.04	0.16

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	
2	AB	232/256 (91%)	163 (70%)	43 (18%)	26 (11%)	0	2
2	CB	232/256 (91%)	157 (68%)	52 (22%)	23 (10%)	0	3
3	AC	204/239 (85%)	148 (72%)	37 (18%)	19 (9%)	0	3
3	CC	204/239 (85%)	136 (67%)	43 (21%)	25 (12%)	0	1
4	AD	206/209 (99%)	130 (63%)	48 (23%)	28 (14%)	0	1
4	CD	206/209 (99%)	124 (60%)	53 (26%)	29 (14%)	0	1
5	AE	148/162 (91%)	131 (88%)	13 (9%)	4 (3%)	5	25
5	CE	148/162 (91%)	125 (84%)	18 (12%)	5 (3%)	3	21
6	AF	99/101 (98%)	79 (80%)	14 (14%)	6 (6%)	1	9
6	CF	99/101 (98%)	76 (77%)	16 (16%)	7 (7%)	1	6
7	AG	153/156 (98%)	113 (74%)	27 (18%)	13 (8%)	1	5
7	CG	153/156 (98%)	113 (74%)	23 (15%)	17 (11%)	0	2
8	AH	136/138 (99%)	120 (88%)	12 (9%)	4 (3%)	4	24
8	CH	136/138 (99%)	118 (87%)	13 (10%)	5 (4%)	3	19
9	AI	125/128 (98%)	79 (63%)	29 (23%)	17 (14%)	0	1
9	CI	125/128 (98%)	81 (65%)	25 (20%)	19 (15%)	0	0

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	AJ	96/105 (91%)	69 (72%)	19 (20%)	8 (8%)	1	5
10	CJ	96/105 (91%)	71 (74%)	17 (18%)	8 (8%)	1	5
11	AK	117/129 (91%)	98 (84%)	13 (11%)	6 (5%)	2	13
11	CK	117/129 (91%)	88 (75%)	22 (19%)	7 (6%)	1	9
12	AL	122/131 (93%)	93 (76%)	17 (14%)	12 (10%)	0	3
12	CL	122/131 (93%)	86 (70%)	19 (16%)	17 (14%)	0	1
13	AM	122/126 (97%)	70 (57%)	34 (28%)	18 (15%)	0	0
13	CM	122/126 (97%)	72 (59%)	36 (30%)	14 (12%)	0	2
14	AN	58/61 (95%)	39 (67%)	8 (14%)	11 (19%)	0	0
14	CN	58/61 (95%)	29 (50%)	14 (24%)	15 (26%)	0	0
15	AO	86/89 (97%)	71 (83%)	12 (14%)	3 (4%)	3	20
15	CO	86/89 (97%)	64 (74%)	18 (21%)	4 (5%)	2	14
16	AP	81/88 (92%)	63 (78%)	14 (17%)	4 (5%)	2	14
16	CP	81/88 (92%)	60 (74%)	15 (18%)	6 (7%)	1	6
17	AQ	97/105 (92%)	82 (84%)	11 (11%)	4 (4%)	3	16
17	CQ	97/105 (92%)	77 (79%)	13 (13%)	7 (7%)	1	6
18	AR	68/88 (77%)	45 (66%)	19 (28%)	4 (6%)	1	10
18	CR	68/88 (77%)	49 (72%)	15 (22%)	4 (6%)	1	10
19	AS	76/93 (82%)	47 (62%)	20 (26%)	9 (12%)	0	1
19	CS	76/93 (82%)	41 (54%)	25 (33%)	10 (13%)	0	1
20	AT	97/106 (92%)	65 (67%)	20 (21%)	12 (12%)	0	1
20	CT	97/106 (92%)	67 (69%)	19 (20%)	11 (11%)	0	2
21	AU	22/27 (82%)	19 (86%)	2 (9%)	1 (4%)	2	15
21	CU	22/27 (82%)	15 (68%)	6 (27%)	1 (4%)	2	15
25	AZ	381/405 (94%)	268 (70%)	74 (19%)	39 (10%)	0	3
25	CZ	381/405 (94%)	275 (72%)	61 (16%)	45 (12%)	0	1
26	B0	82/85 (96%)	61 (74%)	16 (20%)	5 (6%)	1	9
26	D0	82/85 (96%)	63 (77%)	16 (20%)	3 (4%)	3	19
27	B1	91/98 (93%)	60 (66%)	19 (21%)	12 (13%)	0	1
27	D1	91/98 (93%)	62 (68%)	15 (16%)	14 (15%)	0	0
28	B2	69/72 (96%)	36 (52%)	14 (20%)	19 (28%)	0	0

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	D2	69/72 (96%)	43 (62%)	19 (28%)	7 (10%)	0	3
29	B3	57/60 (95%)	39 (68%)	10 (18%)	8 (14%)	0	1
29	D3	57/60 (95%)	43 (75%)	7 (12%)	7 (12%)	0	1
30	B4	42/71 (59%)	24 (57%)	10 (24%)	8 (19%)	0	0
30	D4	42/71 (59%)	19 (45%)	13 (31%)	10 (24%)	0	0
31	B5	57/60 (95%)	33 (58%)	14 (25%)	10 (18%)	0	0
31	D5	57/60 (95%)	35 (61%)	13 (23%)	9 (16%)	0	0
32	B6	48/54 (89%)	20 (42%)	11 (23%)	17 (35%)	0	0
32	D6	48/54 (89%)	23 (48%)	13 (27%)	12 (25%)	0	0
33	B7	46/49 (94%)	41 (89%)	4 (9%)	1 (2%)	6	29
33	D7	46/49 (94%)	31 (67%)	14 (30%)	1 (2%)	6	29
34	B8	61/65 (94%)	39 (64%)	15 (25%)	7 (12%)	0	2
34	D8	61/65 (94%)	40 (66%)	12 (20%)	9 (15%)	0	0
35	B9	35/37 (95%)	18 (51%)	12 (34%)	5 (14%)	0	1
35	D9	35/37 (95%)	18 (51%)	10 (29%)	7 (20%)	0	0
38	BC	226/229 (99%)	159 (70%)	52 (23%)	15 (7%)	1	7
38	DC	226/229 (99%)	153 (68%)	54 (24%)	19 (8%)	1	5
39	BD	273/276 (99%)	194 (71%)	51 (19%)	28 (10%)	0	3
39	DD	273/276 (99%)	200 (73%)	47 (17%)	26 (10%)	0	3
40	BE	202/206 (98%)	133 (66%)	41 (20%)	28 (14%)	0	1
40	DE	202/206 (98%)	134 (66%)	37 (18%)	31 (15%)	0	0
41	BF	205/210 (98%)	137 (67%)	40 (20%)	28 (14%)	0	1
41	DF	205/210 (98%)	140 (68%)	37 (18%)	28 (14%)	0	1
42	BG	179/182 (98%)	109 (61%)	44 (25%)	26 (14%)	0	1
42	DG	179/182 (98%)	103 (58%)	40 (22%)	36 (20%)	0	0
43	BH	157/180 (87%)	94 (60%)	40 (26%)	23 (15%)	0	1
43	DH	157/180 (87%)	94 (60%)	39 (25%)	24 (15%)	0	0
46	BN	136/140 (97%)	85 (62%)	29 (21%)	22 (16%)	0	0
46	DN	136/140 (97%)	89 (65%)	27 (20%)	20 (15%)	0	0
47	BO	120/122 (98%)	102 (85%)	10 (8%)	8 (7%)	1	7
47	DO	120/122 (98%)	99 (82%)	14 (12%)	7 (6%)	1	10

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
48	BP	144/150 (96%)	66 (46%)	39 (27%)	39 (27%)	0	0
48	DP	144/150 (96%)	68 (47%)	39 (27%)	37 (26%)	0	0
49	BQ	139/141 (99%)	97 (70%)	28 (20%)	14 (10%)	0	3
49	DQ	139/141 (99%)	102 (73%)	29 (21%)	8 (6%)	1	10
50	BR	115/118 (98%)	79 (69%)	17 (15%)	19 (16%)	0	0
50	DR	115/118 (98%)	69 (60%)	24 (21%)	22 (19%)	0	0
51	BS	96/112 (86%)	53 (55%)	24 (25%)	19 (20%)	0	0
51	DS	96/112 (86%)	52 (54%)	23 (24%)	21 (22%)	0	0
52	BT	135/146 (92%)	79 (58%)	32 (24%)	24 (18%)	0	0
52	DT	135/146 (92%)	77 (57%)	34 (25%)	24 (18%)	0	0
53	BU	115/118 (98%)	75 (65%)	27 (24%)	13 (11%)	0	2
53	DU	115/118 (98%)	76 (66%)	25 (22%)	14 (12%)	0	1
54	BV	99/101 (98%)	63 (64%)	23 (23%)	13 (13%)	0	1
54	DV	99/101 (98%)	61 (62%)	26 (26%)	12 (12%)	0	1
55	BW	111/113 (98%)	79 (71%)	21 (19%)	11 (10%)	0	3
55	DW	111/113 (98%)	81 (73%)	20 (18%)	10 (9%)	1	4
56	BX	90/96 (94%)	64 (71%)	21 (23%)	5 (6%)	2	11
56	DX	90/96 (94%)	64 (71%)	19 (21%)	7 (8%)	1	5
57	BY	98/110 (89%)	39 (40%)	27 (28%)	32 (33%)	0	0
57	DY	98/110 (89%)	43 (44%)	26 (26%)	29 (30%)	0	0
58	BZ	181/206 (88%)	114 (63%)	39 (22%)	28 (16%)	0	0
58	DZ	181/206 (88%)	106 (59%)	34 (19%)	41 (23%)	0	0
All	All	12270/13098 (94%)	8296 (68%)	2465 (20%)	1509 (12%)	0	1

5 of 1509 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	AB	8	LYS
2	AB	9	GLU
2	AB	15	VAL
2	AB	18	GLY
2	AB	77	ALA

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	
2	AB	202/220 (92%)	174 (86%)	28 (14%)	3	15
2	CB	202/220 (92%)	173 (86%)	29 (14%)	3	14
3	AC	160/188 (85%)	139 (87%)	21 (13%)	4	17
3	CC	160/188 (85%)	141 (88%)	19 (12%)	5	20
4	AD	180/181 (99%)	150 (83%)	30 (17%)	2	9
4	CD	180/181 (99%)	151 (84%)	29 (16%)	2	10
5	AE	115/123 (94%)	104 (90%)	11 (10%)	8	31
5	CE	115/123 (94%)	103 (90%)	12 (10%)	7	27
6	AF	90/90 (100%)	76 (84%)	14 (16%)	2	11
6	CF	90/90 (100%)	77 (86%)	13 (14%)	3	14
7	AG	126/127 (99%)	116 (92%)	10 (8%)	12	40
7	CG	126/127 (99%)	118 (94%)	8 (6%)	18	48
8	AH	119/119 (100%)	105 (88%)	14 (12%)	5	21
8	CH	119/119 (100%)	106 (89%)	13 (11%)	6	25
9	AI	98/99 (99%)	84 (86%)	14 (14%)	3	14
9	CI	98/99 (99%)	86 (88%)	12 (12%)	5	19
10	AJ	88/92 (96%)	78 (89%)	10 (11%)	5	23
10	CJ	88/92 (96%)	79 (90%)	9 (10%)	7	27
11	AK	90/99 (91%)	84 (93%)	6 (7%)	16	46
11	CK	90/99 (91%)	81 (90%)	9 (10%)	7	28
12	AL	104/108 (96%)	84 (81%)	20 (19%)	1	6
12	CL	104/108 (96%)	84 (81%)	20 (19%)	1	6
13	AM	99/101 (98%)	85 (86%)	14 (14%)	3	15
13	CM	99/101 (98%)	90 (91%)	9 (9%)	9	33
14	AN	49/50 (98%)	41 (84%)	8 (16%)	2	10
14	CN	49/50 (98%)	40 (82%)	9 (18%)	1	7

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	AO	79/80 (99%)	73 (92%)	6 (8%)	13	41
15	CO	79/80 (99%)	69 (87%)	10 (13%)	4	18
16	AP	72/74 (97%)	64 (89%)	8 (11%)	6	24
16	CP	72/74 (97%)	66 (92%)	6 (8%)	11	38
17	AQ	94/97 (97%)	86 (92%)	8 (8%)	10	37
17	CQ	94/97 (97%)	85 (90%)	9 (10%)	8	31
18	AR	61/77 (79%)	55 (90%)	6 (10%)	8	29
18	CR	61/77 (79%)	54 (88%)	7 (12%)	5	22
19	AS	69/80 (86%)	56 (81%)	13 (19%)	1	6
19	CS	69/80 (86%)	57 (83%)	12 (17%)	2	9
20	AT	76/82 (93%)	70 (92%)	6 (8%)	12	40
20	CT	76/82 (93%)	69 (91%)	7 (9%)	9	33
21	AU	19/22 (86%)	18 (95%)	1 (5%)	22	54
21	CU	19/22 (86%)	17 (90%)	2 (10%)	7	26
25	AZ	322/338 (95%)	281 (87%)	41 (13%)	4	18
25	CZ	322/338 (95%)	284 (88%)	38 (12%)	5	21
26	B0	66/67 (98%)	57 (86%)	9 (14%)	3	16
26	D0	66/67 (98%)	56 (85%)	10 (15%)	3	12
27	B1	78/83 (94%)	67 (86%)	11 (14%)	3	15
27	D1	78/83 (94%)	64 (82%)	14 (18%)	2	8
28	B2	66/67 (98%)	54 (82%)	12 (18%)	1	7
28	D2	66/67 (98%)	60 (91%)	6 (9%)	9	33
29	B3	51/52 (98%)	46 (90%)	5 (10%)	8	29
29	D3	51/52 (98%)	47 (92%)	4 (8%)	12	40
30	B4	39/63 (62%)	28 (72%)	11 (28%)	0	1
30	D4	39/63 (62%)	28 (72%)	11 (28%)	0	1
31	B5	51/52 (98%)	48 (94%)	3 (6%)	19	50
31	D5	51/52 (98%)	45 (88%)	6 (12%)	5	21
32	B6	49/52 (94%)	38 (78%)	11 (22%)	1	3
32	D6	49/52 (94%)	40 (82%)	9 (18%)	1	7
33	B7	41/42 (98%)	34 (83%)	7 (17%)	2	9

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
33	D7	41/42 (98%)	34 (83%)	7 (17%)	2	9
34	B8	53/55 (96%)	43 (81%)	10 (19%)	1	6
34	D8	53/55 (96%)	44 (83%)	9 (17%)	2	9
35	B9	34/34 (100%)	28 (82%)	6 (18%)	2	8
35	D9	34/34 (100%)	31 (91%)	3 (9%)	10	36
38	BC	180/181 (99%)	164 (91%)	16 (9%)	9	34
38	DC	180/181 (99%)	167 (93%)	13 (7%)	14	44
39	BD	217/218 (100%)	185 (85%)	32 (15%)	3	13
39	DD	217/218 (100%)	185 (85%)	32 (15%)	3	13
40	BE	165/166 (99%)	142 (86%)	23 (14%)	3	15
40	DE	165/166 (99%)	139 (84%)	26 (16%)	2	11
41	BF	165/166 (99%)	156 (94%)	9 (6%)	21	53
41	DF	165/166 (99%)	158 (96%)	7 (4%)	30	62
42	BG	155/156 (99%)	133 (86%)	22 (14%)	3	14
42	DG	155/156 (99%)	131 (84%)	24 (16%)	2	11
43	BH	132/148 (89%)	117 (89%)	15 (11%)	5	23
43	DH	132/148 (89%)	115 (87%)	17 (13%)	4	18
46	BN	117/119 (98%)	102 (87%)	15 (13%)	4	18
46	DN	117/119 (98%)	104 (89%)	13 (11%)	6	24
47	BO	100/100 (100%)	88 (88%)	12 (12%)	5	20
47	DO	100/100 (100%)	90 (90%)	10 (10%)	7	28
48	BP	112/116 (97%)	95 (85%)	17 (15%)	3	12
48	DP	112/116 (97%)	90 (80%)	22 (20%)	1	6
49	BQ	111/111 (100%)	97 (87%)	14 (13%)	4	18
49	DQ	111/111 (100%)	97 (87%)	14 (13%)	4	18
50	BR	100/101 (99%)	86 (86%)	14 (14%)	3	15
50	DR	100/101 (99%)	86 (86%)	14 (14%)	3	15
51	BS	77/88 (88%)	66 (86%)	11 (14%)	3	14
51	DS	77/88 (88%)	66 (86%)	11 (14%)	3	14
52	BT	120/127 (94%)	98 (82%)	22 (18%)	1	7
52	DT	120/127 (94%)	99 (82%)	21 (18%)	2	8

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
53	BU	92/94 (98%)	82 (89%)	10 (11%)	6	25
53	DU	92/94 (98%)	83 (90%)	9 (10%)	8	29
54	BV	82/82 (100%)	66 (80%)	16 (20%)	1	6
54	DV	82/82 (100%)	69 (84%)	13 (16%)	2	11
55	BW	91/92 (99%)	80 (88%)	11 (12%)	5	20
55	DW	91/92 (99%)	81 (89%)	10 (11%)	6	25
56	BX	74/78 (95%)	65 (88%)	9 (12%)	5	19
56	DX	74/78 (95%)	68 (92%)	6 (8%)	11	39
57	BY	84/91 (92%)	71 (84%)	13 (16%)	2	11
57	DY	84/91 (92%)	71 (84%)	13 (16%)	2	11
58	BZ	161/179 (90%)	137 (85%)	24 (15%)	3	13
58	DZ	161/179 (90%)	133 (83%)	28 (17%)	2	9
All	All	10350/10854 (95%)	9007 (87%)	1343 (13%)	4	18

5 of 1343 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	CZ	21	ASP
43	DH	71	LEU
25	CZ	277	LEU
25	CZ	8	THR
38	DC	10	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 317 such sidechains are listed below:

Mol	Chain	Res	Type
26	D0	29	GLN
46	DN	56	ASN
28	D2	47	ASN
39	DD	126	GLN
50	DR	23	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1503/1522 (98%)	236 (15%)	51 (3%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	CA	1503/1522 (98%)	237 (15%)	46 (3%)
22	AV	75/76 (98%)	17 (22%)	1 (1%)
22	AW	75/76 (98%)	21 (28%)	0
22	CV	75/76 (98%)	21 (28%)	0
22	CW	75/76 (98%)	21 (28%)	2 (2%)
23	AX	16/27 (59%)	5 (31%)	0
23	CX	17/27 (62%)	6 (35%)	1 (5%)
24	AY	74/77 (96%)	29 (39%)	4 (5%)
24	CY	74/77 (96%)	27 (36%)	3 (4%)
36	BA	2900/2915 (99%)	525 (18%)	49 (1%)
36	DA	2900/2915 (99%)	520 (17%)	46 (1%)
37	BB	118/122 (96%)	26 (22%)	2 (1%)
37	DB	118/122 (96%)	24 (20%)	3 (2%)
All	All	9523/9630 (98%)	1715 (18%)	208 (2%)

5 of 1715 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	9	G
1	AA	31	G
1	AA	32	A
1	AA	39	G
1	AA	47	C

5 of 208 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	CA	250	A
1	CA	1054	C
36	DA	2477	C
1	CA	347	G
1	CA	575	G

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

18 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
24	5MU	AY	54	24	19,22,23	0.23	0	28,32,35	0.32	0
24	MIA	AY	37	24	24,31,32	1.35	4 (16%)	26,44,47	2.24	4 (15%)
24	PSU	CY	55	24	18,21,22	0.87	1 (5%)	22,30,33	1.84	5 (22%)
24	H2U	AY	20	24	18,21,22	0.91	1 (5%)	21,30,33	1.90	6 (28%)
24	OMC	CY	32	24	19,22,23	0.37	0	26,31,34	0.60	1 (3%)
24	4SU	CY	8	24	18,21,22	0.62	0	26,30,33	0.77	2 (7%)
24	MIA	CY	37	24	24,31,32	2.00	4 (16%)	26,44,47	2.06	4 (15%)
24	PSU	AY	55	24	18,21,22	0.99	1 (5%)	22,30,33	1.88	5 (22%)
24	OMC	AY	32	24	19,22,23	0.37	0	26,31,34	0.64	1 (3%)
24	H2U	AY	16	24	18,21,22	0.83	0	21,30,33	1.85	4 (19%)
24	H2U	CY	17	24	18,21,22	0.89	1 (5%)	21,30,33	1.80	4 (19%)
24	5MU	CY	54	24	19,22,23	0.27	0	28,32,35	0.34	0
24	H2U	CY	16	24	18,21,22	0.86	0	21,30,33	1.80	4 (19%)
24	H2U	CY	20	24	18,21,22	0.96	1 (5%)	21,30,33	1.92	6 (28%)
24	H2U	AY	17	24	18,21,22	0.81	1 (5%)	21,30,33	1.83	4 (19%)
24	7MG	AY	46	24	22,26,27	2.86	2 (9%)	29,39,42	1.60	2 (6%)
24	4SU	AY	8	24	18,21,22	0.66	0	26,30,33	0.91	2 (7%)
24	7MG	CY	46	24	22,26,27	3.07	2 (9%)	29,39,42	1.63	2 (6%)

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
24	5MU	AY	54	24	-	0/7/25/26	0/2/2/2
24	MIA	AY	37	24	-	3/11/33/34	0/3/3/3
24	PSU	CY	55	24	-	1/7/25/26	0/2/2/2
24	H2U	AY	20	24	-	4/7/38/39	0/2/2/2
24	OMC	CY	32	24	-	0/9/27/28	0/2/2/2
24	4SU	CY	8	24	-	1/7/25/26	0/2/2/2
24	MIA	CY	37	24	-	3/11/33/34	0/3/3/3
24	PSU	AY	55	24	-	1/7/25/26	0/2/2/2
24	OMC	AY	32	24	-	0/9/27/28	0/2/2/2
24	H2U	AY	16	24	-	2/7/38/39	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
24	H2U	CY	17	24	-	4/7/38/39	0/2/2/2
24	5MU	CY	54	24	-	0/7/25/26	0/2/2/2
24	H2U	CY	16	24	-	2/7/38/39	0/2/2/2
24	H2U	CY	20	24	-	4/7/38/39	0/2/2/2
24	H2U	AY	17	24	-	4/7/38/39	0/2/2/2
24	7MG	AY	46	24	-	3/7/37/38	0/3/3/3
24	4SU	AY	8	24	-	1/7/25/26	0/2/2/2
24	7MG	CY	46	24	-	3/7/37/38	0/3/3/3

The worst 5 of 18 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
24	CY	46	7MG	C8-N9	-13.98	1.38	1.46
24	AY	46	7MG	C8-N9	-12.90	1.38	1.46
24	CY	37	MIA	C2-S10	7.97	1.82	1.75
24	AY	37	MIA	C2-S10	3.96	1.79	1.75
24	AY	46	7MG	C5-N7	3.43	1.39	1.35

The worst 5 of 56 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
24	AY	37	MIA	C11-S10-C2	8.90	108.91	102.27
24	CY	37	MIA	C11-S10-C2	7.98	108.22	102.27
24	CY	46	7MG	N9-C8-N7	6.93	113.29	103.38
24	AY	46	7MG	N9-C8-N7	6.81	113.12	103.38
24	CY	17	H2U	C4-N3-C2	-5.10	121.56	125.79

There are no chirality outliers.

5 of 36 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
24	AY	17	H2U	O4'-C1'-N1-C6
24	AY	20	H2U	O4'-C1'-N1-C2
24	AY	20	H2U	O4'-C1'-N1-C6
24	AY	37	MIA	C5-C6-N6-C12
24	CY	17	H2U	O4'-C1'-N1-C2

There are no ring outliers.

16 monomers are involved in 33 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
24	AY	54	5MU	3	0
24	AY	37	MIA	1	0
24	CY	55	PSU	1	0
24	AY	20	H2U	3	0
24	CY	8	4SU	4	0
24	CY	37	MIA	1	0
24	AY	55	PSU	1	0
24	AY	16	H2U	1	0
24	CY	17	H2U	1	0
24	CY	54	5MU	2	0
24	CY	16	H2U	1	0
24	CY	20	H2U	3	0
24	AY	17	H2U	1	0
24	AY	46	7MG	3	0
24	AY	8	4SU	5	0
24	CY	46	7MG	4	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 8 are monoatomic - leaving 4 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
60	GDP	CZ	501	-	24,30,30	1.71	5 (20%)	30,47,47	1.40	4 (13%)
61	KIR	CZ	502	-	56,59,59	3.71	25 (44%)	62,84,84	1.64	14 (22%)
61	KIR	AZ	502	-	56,59,59	3.47	23 (41%)	62,84,84	1.65	11 (17%)
60	GDP	AZ	501	-	24,30,30	2.41	4 (16%)	30,47,47	1.70	6 (20%)

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
60	GDP	CZ	501	-	-	6/12/32/32	0/3/3/3
61	KIR	CZ	502	-	-	11/54/98/98	0/3/3/3
61	KIR	AZ	502	-	-	10/54/98/98	0/3/3/3
60	GDP	AZ	501	-	-	2/12/32/32	0/3/3/3

The worst 5 of 57 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
61	CZ	502	KIR	O18-C17	-14.47	1.22	1.44
61	AZ	502	KIR	O18-C17	-14.29	1.23	1.44
61	CZ	502	KIR	O30-C30	-12.76	1.17	1.42
61	AZ	502	KIR	O30-C30	-12.71	1.17	1.42
60	AZ	501	GDP	C5-C6	-9.71	1.27	1.47

The worst 5 of 35 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
61	CZ	502	KIR	O29-C29-O34	-5.24	101.42	110.21
61	AZ	502	KIR	O29-C29-O34	-5.07	101.72	110.21
61	AZ	502	KIR	C48-C32-C47	-4.09	101.88	107.72
61	AZ	502	KIR	C11-C10-C9	-4.07	115.13	123.47
61	CZ	502	KIR	C48-C32-C47	-4.07	101.92	107.72

There are no chirality outliers.

5 of 29 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
60	CZ	501	GDP	C5'-O5'-PA-O2A
61	AZ	502	KIR	C16-C17-C19-C20
61	AZ	502	KIR	C16-C17-C19-C42
61	AZ	502	KIR	O18-C17-C19-C20
61	AZ	502	KIR	O18-C17-C19-C42

There are no ring outliers.

4 monomers are involved in 36 short contacts:

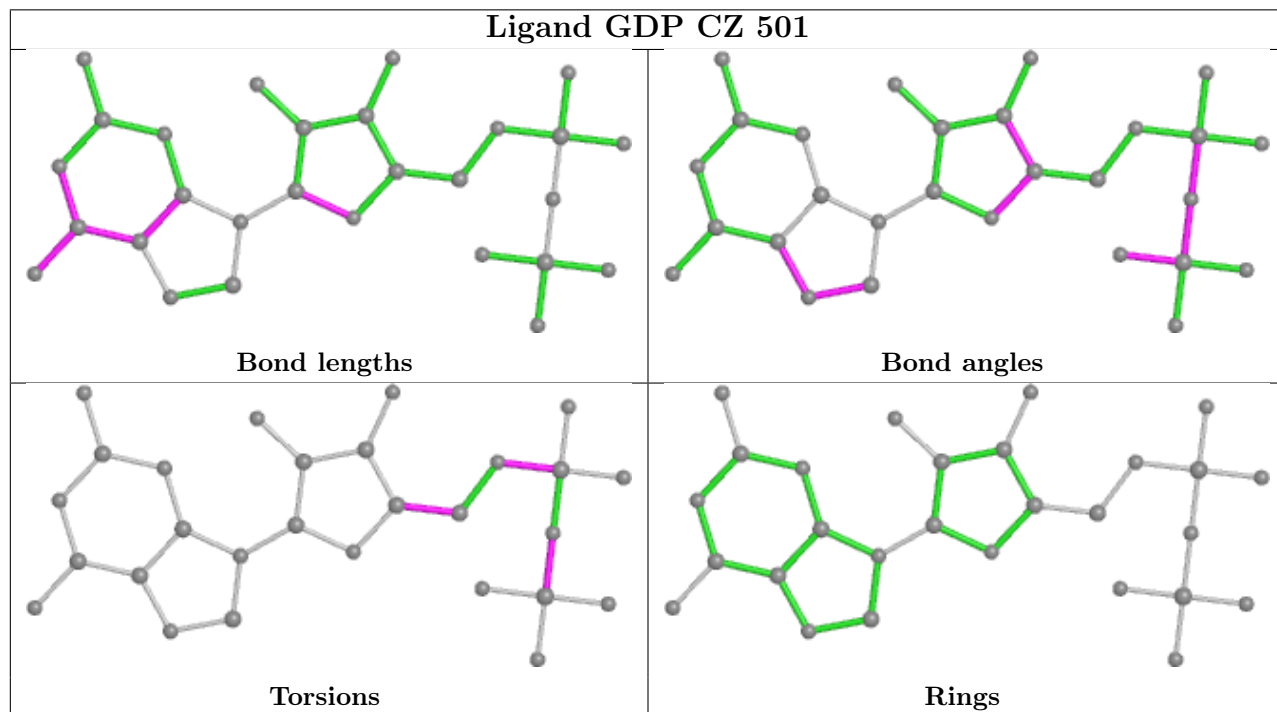
Mol	Chain	Res	Type	Clashes	Symm-Clashes
60	CZ	501	GDP	17	0

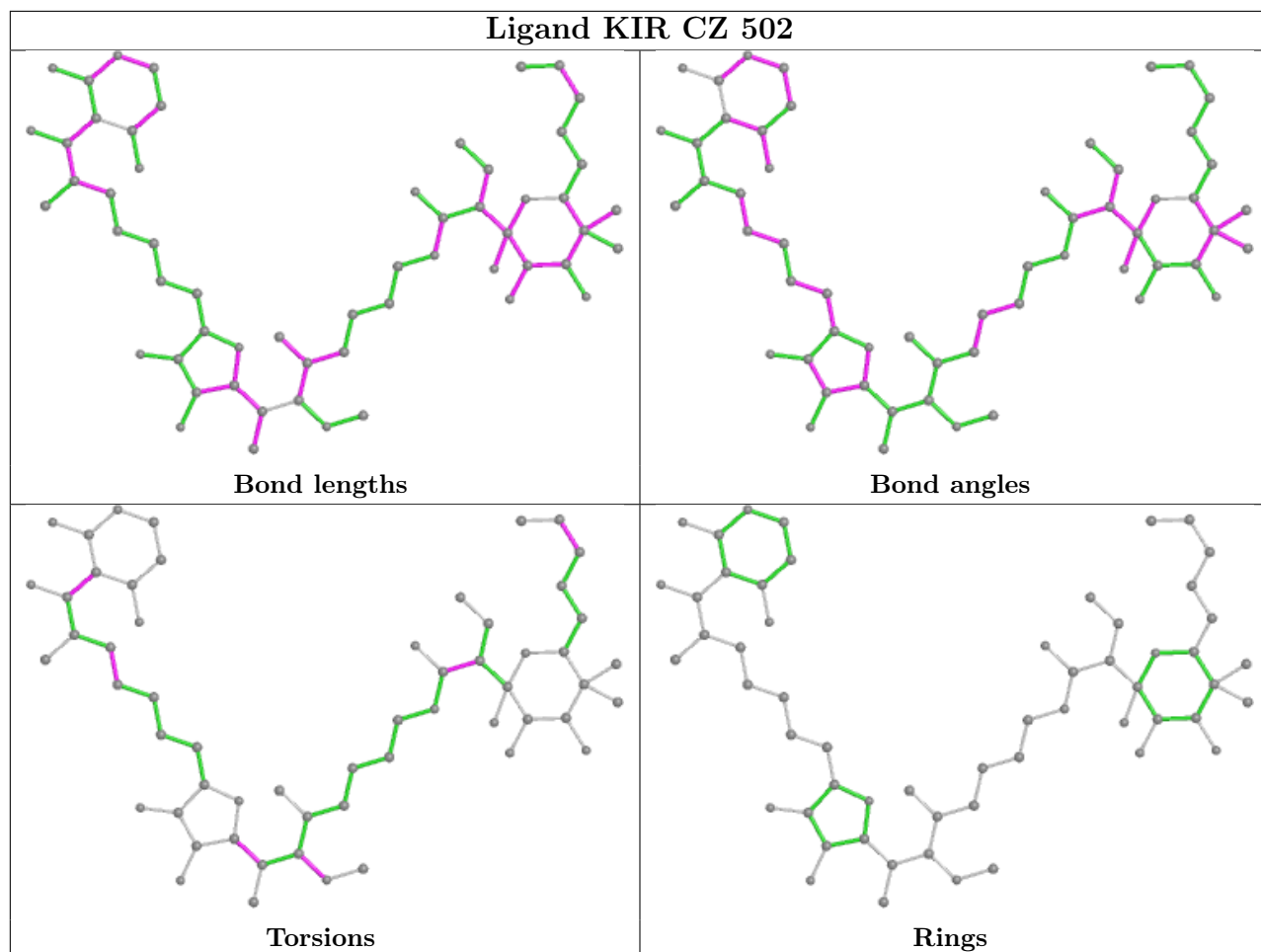
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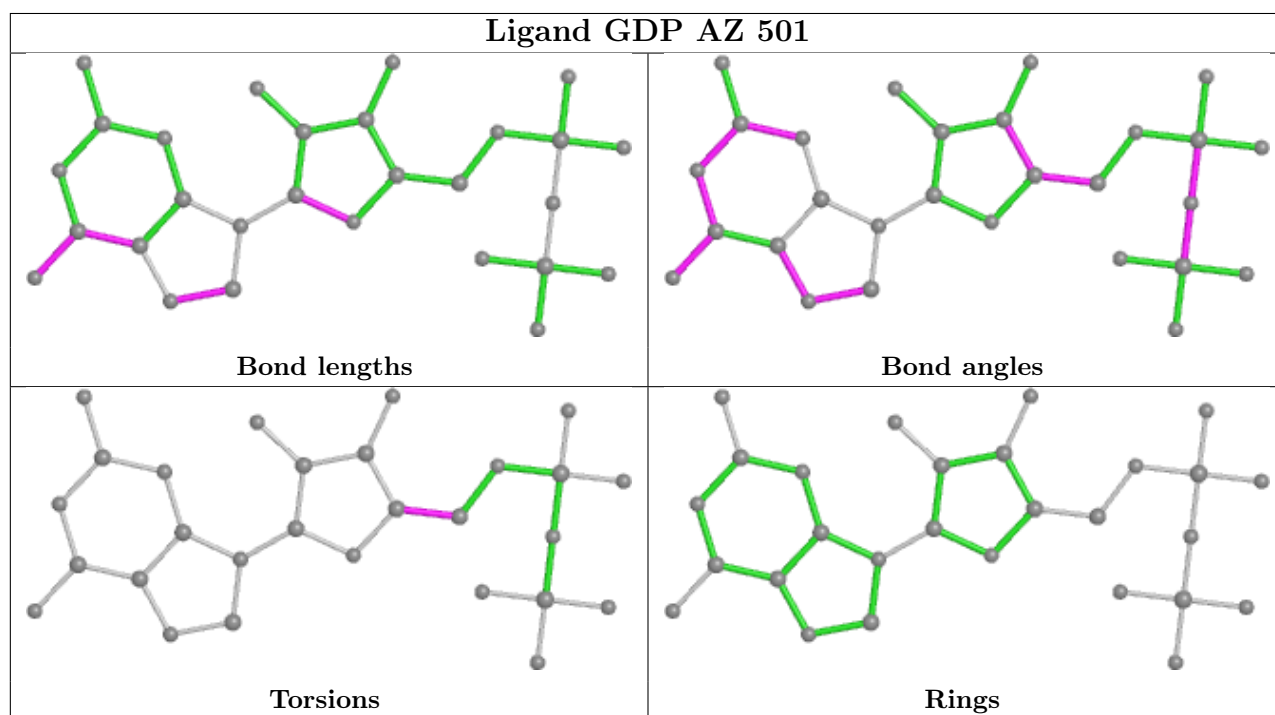
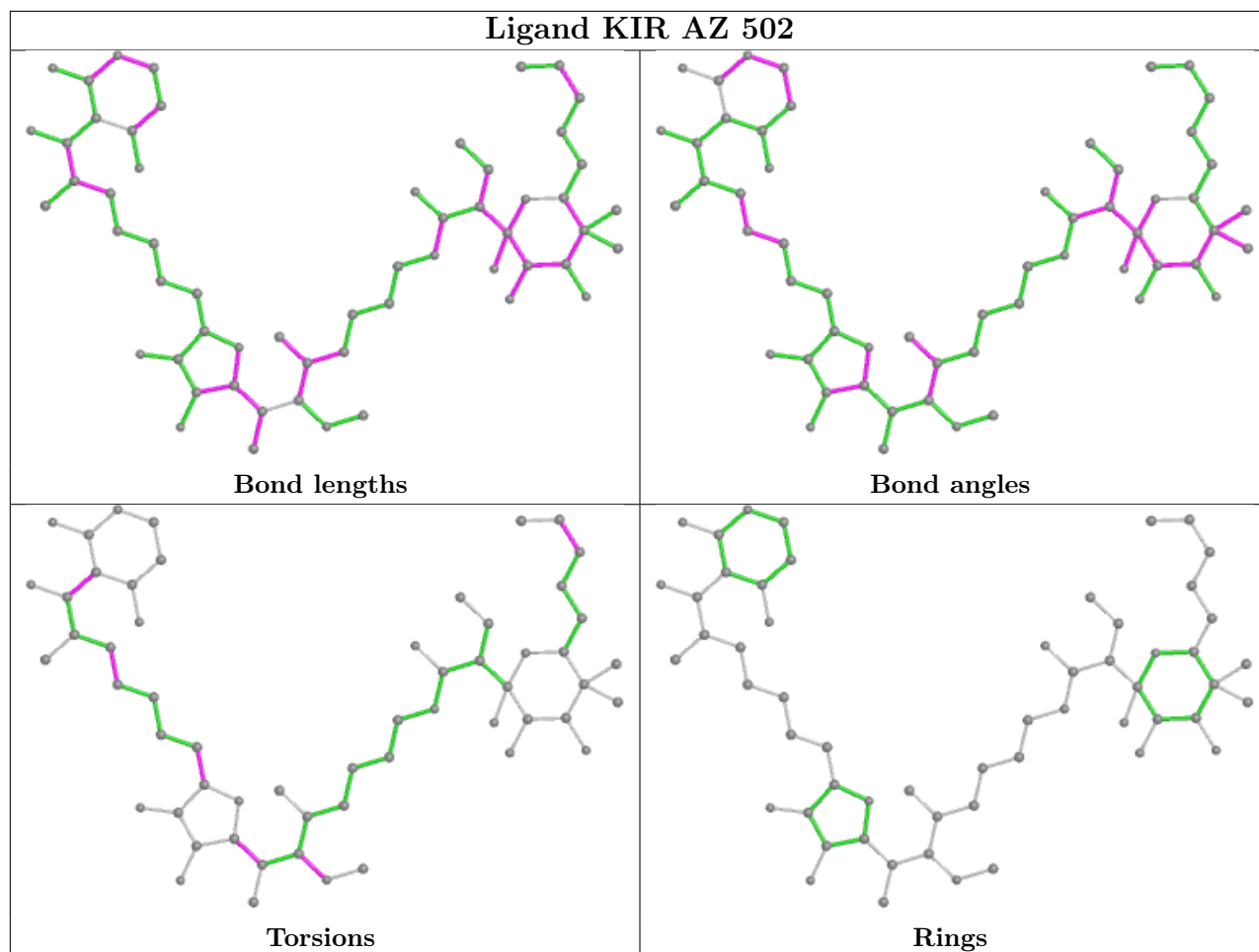
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
61	CZ	502	KIR	7	0
61	AZ	502	KIR	5	0
60	AZ	501	GDP	7	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 Fit of model and data i

6.1 Protein, DNA and RNA chains i

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q < 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	AA	1504/1522 (98%)	-0.28	12 (0%) 86 72	21, 54, 143, 200	0
1	CA	1504/1522 (98%)	-0.37	10 (0%) 87 75	31, 70, 146, 200	0
2	AB	234/256 (91%)	-0.16	5 (2%) 63 43	31, 60, 136, 149	0
2	CB	234/256 (91%)	-0.10	4 (1%) 70 49	46, 81, 139, 148	0
3	AC	206/239 (86%)	-0.32	1 (0%) 91 81	20, 46, 78, 89	0
3	CC	206/239 (86%)	-0.16	1 (0%) 91 81	49, 74, 96, 100	0
4	AD	208/209 (99%)	0.08	4 (1%) 66 46	45, 83, 112, 119	0
4	CD	208/209 (99%)	0.23	9 (4%) 35 17	64, 95, 118, 126	0
5	AE	150/162 (92%)	-0.42	0 100 100	25, 42, 69, 86	0
5	CE	150/162 (92%)	-0.31	1 (0%) 87 75	43, 58, 82, 100	0
6	AF	101/101 (100%)	-0.17	1 (0%) 82 67	44, 70, 86, 94	0
6	CF	101/101 (100%)	-0.12	1 (0%) 82 67	64, 86, 97, 101	0
7	AG	155/156 (99%)	-0.26	2 (1%) 77 59	37, 66, 97, 113	0
7	CG	155/156 (99%)	0.02	5 (3%) 47 25	67, 87, 107, 122	0
8	AH	138/138 (100%)	-0.41	0 100 100	31, 47, 68, 75	0
8	CH	138/138 (100%)	-0.33	0 100 100	41, 61, 75, 84	0
9	AI	127/128 (99%)	-0.16	0 100 100	32, 72, 111, 123	0
9	CI	127/128 (99%)	0.21	6 (4%) 31 15	59, 97, 119, 124	0
10	AJ	98/105 (93%)	0.13	2 (2%) 65 44	30, 73, 126, 129	0
10	CJ	98/105 (93%)	0.73	19 (19%) 1 0	57, 102, 133, 137	0
11	AK	119/129 (92%)	-0.33	2 (1%) 70 49	29, 45, 78, 105	0
11	CK	119/129 (92%)	-0.27	0 100 100	43, 66, 91, 106	0
12	AL	124/131 (94%)	-0.41	1 (0%) 86 72	24, 49, 70, 103	0
12	CL	124/131 (94%)	-0.35	1 (0%) 86 72	38, 54, 78, 111	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
13	AM	124/126 (98%)	-0.05	4 (3%) 47 25	46, 82, 106, 147	0
13	CM	124/126 (98%)	0.06	6 (4%) 30 14	67, 92, 114, 148	0
14	AN	60/61 (98%)	-0.26	1 (1%) 70 49	28, 51, 84, 90	0
14	CN	60/61 (98%)	0.13	2 (3%) 46 24	65, 78, 98, 105	0
15	AO	88/89 (98%)	-0.40	0 100 100	31, 51, 79, 85	0
15	CO	88/89 (98%)	-0.29	0 100 100	41, 63, 85, 92	0
16	AP	83/88 (94%)	-0.26	0 100 100	48, 67, 85, 123	0
16	CP	83/88 (94%)	-0.28	1 (1%) 79 61	62, 77, 92, 122	0
17	AQ	99/105 (94%)	-0.43	0 100 100	40, 58, 77, 85	0
17	CQ	99/105 (94%)	-0.36	0 100 100	44, 65, 85, 93	0
18	AR	70/88 (79%)	-0.33	0 100 100	35, 55, 88, 104	0
18	CR	70/88 (79%)	-0.19	1 (1%) 75 56	47, 73, 100, 113	0
19	AS	78/93 (83%)	-0.00	3 (3%) 40 20	48, 75, 119, 122	0
19	CS	78/93 (83%)	0.11	6 (7%) 13 5	71, 91, 120, 124	0
20	AT	99/106 (93%)	-0.15	1 (1%) 82 67	65, 83, 117, 119	0
20	CT	99/106 (93%)	-0.19	0 100 100	64, 84, 117, 118	0
21	AU	24/27 (88%)	-0.46	0 100 100	45, 61, 75, 90	0
21	CU	24/27 (88%)	-0.05	1 (4%) 36 18	67, 79, 92, 94	0
22	AV	76/76 (100%)	-0.39	0 100 100	35, 70, 102, 112	0
22	AW	76/76 (100%)	-0.09	1 (1%) 77 59	63, 136, 178, 190	0
22	CV	76/76 (100%)	-0.43	0 100 100	48, 76, 115, 128	0
22	CW	76/76 (100%)	-0.07	2 (2%) 56 33	71, 165, 186, 196	0
23	AX	17/27 (62%)	0.07	0 100 100	30, 82, 132, 133	0
23	CX	17/27 (62%)	0.28	1 (5%) 22 10	36, 99, 145, 145	0
24	AY	68/77 (88%)	-0.36	0 100 100	37, 108, 152, 185	0
24	CY	68/77 (88%)	-0.33	0 100 100	45, 111, 145, 185	0
25	AZ	385/405 (95%)	0.36	16 (4%) 36 18	63, 105, 134, 163	0
25	CZ	385/405 (95%)	1.40	115 (29%) 0 0	93, 117, 143, 169	0
26	B0	84/85 (98%)	-0.12	2 (2%) 59 37	62, 73, 100, 114	0
26	D0	84/85 (98%)	0.02	2 (2%) 59 37	66, 79, 101, 111	0
27	B1	93/98 (94%)	-0.14	3 (3%) 47 25	47, 63, 120, 125	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
27	D1	93/98 (94%)	-0.16	0 100 100	51, 74, 115, 120	0
28	B2	71/72 (98%)	1.41	21 (29%) 0 0	122, 140, 151, 153	0
28	D2	71/72 (98%)	0.18	2 (2%) 53 30	90, 106, 126, 139	0
29	B3	59/60 (98%)	-0.06	1 (1%) 70 49	59, 79, 101, 116	0
29	D3	59/60 (98%)	0.10	2 (3%) 45 24	58, 80, 97, 114	0
30	B4	44/71 (61%)	1.24	9 (20%) 1 0	102, 156, 180, 186	0
30	D4	44/71 (61%)	1.43	13 (29%) 0 0	113, 165, 186, 187	0
31	B5	59/60 (98%)	0.41	5 (8%) 10 4	52, 86, 150, 164	0
31	D5	59/60 (98%)	0.18	5 (8%) 10 4	55, 80, 148, 161	0
32	B6	50/54 (92%)	0.36	5 (10%) 7 2	55, 88, 106, 112	0
32	D6	50/54 (92%)	0.32	3 (6%) 21 10	57, 95, 107, 113	0
33	B7	48/49 (97%)	-0.18	1 (2%) 63 43	47, 61, 95, 116	0
33	D7	48/49 (97%)	-0.37	0 100 100	47, 61, 91, 109	0
34	B8	63/65 (96%)	-0.11	0 100 100	55, 72, 84, 112	0
34	D8	63/65 (96%)	-0.19	0 100 100	56, 73, 85, 109	0
35	B9	37/37 (100%)	0.47	2 (5%) 25 12	79, 98, 112, 116	0
35	D9	37/37 (100%)	1.02	6 (16%) 1 1	84, 104, 115, 119	0
36	BA	2901/2915 (99%)	-0.29	45 (1%) 72 51	25, 74, 176, 200	0
36	DA	2901/2915 (99%)	-0.31	38 (1%) 77 59	32, 76, 175, 200	0
37	BB	119/122 (97%)	-0.43	0 100 100	54, 97, 123, 144	0
37	DB	119/122 (97%)	-0.50	0 100 100	61, 104, 128, 140	0
38	BC	228/229 (99%)	0.32	19 (8%) 11 4	40, 73, 163, 176	0
38	DC	228/229 (99%)	0.60	34 (14%) 2 1	64, 87, 166, 174	0
39	BD	275/276 (99%)	-0.36	0 100 100	28, 48, 78, 93	0
39	DD	275/276 (99%)	-0.34	1 (0%) 92 84	28, 53, 80, 94	0
40	BE	204/206 (99%)	-0.10	3 (1%) 73 54	46, 73, 120, 129	0
40	DE	204/206 (99%)	-0.11	3 (1%) 73 54	39, 72, 122, 132	0
41	BF	207/210 (98%)	0.40	22 (10%) 6 2	42, 102, 155, 162	0
41	DF	207/210 (98%)	0.33	17 (8%) 11 4	47, 104, 155, 161	0
42	BG	181/182 (99%)	0.12	6 (3%) 46 24	66, 85, 120, 134	0
42	DG	181/182 (99%)	0.33	12 (6%) 18 7	89, 108, 130, 139	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
43	BH	159/180 (88%)	0.82	25 (15%) 2 1	85, 123, 148, 152	0
43	DH	159/180 (88%)	0.53	16 (10%) 7 2	85, 123, 145, 150	0
44	BJ	0/173	-	-	-	-
44	DJ	0/173	-	-	-	-
45	BK	0/147	-	-	-	-
45	DK	0/147	-	-	-	-
46	BN	138/140 (98%)	-0.07	1 (0%) 87 75	56, 86, 130, 138	0
46	DN	138/140 (98%)	-0.05	2 (1%) 75 56	61, 83, 132, 136	0
47	BO	122/122 (100%)	-0.33	0 100 100	43, 60, 73, 82	0
47	DO	122/122 (100%)	-0.35	0 100 100	40, 60, 73, 77	0
48	BP	146/150 (97%)	0.33	7 (4%) 30 14	49, 98, 124, 145	0
48	DP	146/150 (97%)	0.28	9 (6%) 20 9	47, 102, 126, 141	0
49	BQ	141/141 (100%)	-0.20	3 (2%) 63 43	47, 61, 84, 125	0
49	DQ	141/141 (100%)	-0.26	2 (1%) 75 56	43, 60, 87, 122	0
50	BR	117/118 (99%)	-0.05	1 (0%) 84 69	55, 84, 101, 108	0
50	DR	117/118 (99%)	-0.14	0 100 100	52, 79, 97, 106	0
51	BS	98/112 (87%)	0.23	5 (5%) 28 13	69, 101, 122, 126	0
51	DS	98/112 (87%)	0.48	5 (5%) 28 13	86, 106, 124, 126	0
52	BT	137/146 (93%)	0.13	7 (5%) 28 13	54, 84, 135, 163	0
52	DT	137/146 (93%)	0.12	9 (6%) 18 7	56, 81, 137, 160	0
53	BU	117/118 (99%)	-0.19	1 (0%) 84 69	60, 74, 102, 111	0
53	DU	117/118 (99%)	-0.27	0 100 100	52, 74, 100, 108	0
54	BV	101/101 (100%)	0.24	6 (5%) 22 10	61, 102, 117, 121	0
54	DV	101/101 (100%)	0.35	5 (4%) 28 13	50, 102, 117, 119	0
55	BW	113/113 (100%)	-0.01	4 (3%) 44 23	60, 83, 111, 140	0
55	DW	113/113 (100%)	-0.01	2 (1%) 68 47	59, 76, 112, 143	0
56	BX	92/96 (95%)	0.10	0 100 100	69, 86, 109, 120	0
56	DX	92/96 (95%)	0.04	1 (1%) 80 64	60, 88, 108, 121	0
57	BY	100/110 (90%)	0.78	14 (14%) 2 1	103, 121, 153, 159	0
57	DY	100/110 (90%)	0.80	16 (16%) 1 1	99, 119, 153, 162	0
58	BZ	183/206 (88%)	0.21	10 (5%) 25 11	53, 85, 129, 139	0
58	DZ	183/206 (88%)	0.22	6 (3%) 46 24	59, 85, 124, 132	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
All	All	21996/23368 (94%)	-0.09	687 (3%) 49 26	20, 77, 144, 200	0

The worst 5 of 687 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
38	BC	106	GLY	12.9
38	DC	97	GLU	12.1
28	B2	72	ALA	11.6
36	BA	654(K)	C	11.0
31	B5	60	VAL	10.8

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
24	H2U	CY	17	20/21	0.60	0.43	186,194,196,196	0
24	H2U	CY	16	20/21	0.67	0.27	171,181,183,185	0
24	H2U	AY	16	20/21	0.70	0.49	172,183,184,185	0
24	H2U	CY	20	20/21	0.73	0.26	176,177,180,180	0
24	H2U	AY	17	20/21	0.77	0.34	186,190,190,191	0
24	H2U	AY	20	20/21	0.81	0.23	174,177,179,179	0
24	4SU	AY	8	20/21	0.84	0.17	110,113,114,115	0
24	PSU	AY	55	20/21	0.86	0.17	130,139,140,140	0
24	5MU	CY	54	21/22	0.86	0.18	113,125,126,129	0
24	7MG	CY	46	24/25	0.87	0.19	125,128,129,130	0
24	4SU	CY	8	20/21	0.88	0.18	115,116,119,119	0
24	PSU	CY	55	20/21	0.89	0.17	131,134,135,136	0
24	7MG	AY	46	24/25	0.90	0.19	121,123,124,124	0
24	5MU	AY	54	21/22	0.90	0.14	108,122,123,127	0
24	MIA	CY	37	29/30	0.93	0.23	52,66,80,85	0
24	OMC	AY	32	21/22	0.94	0.16	61,66,79,80	0
24	OMC	CY	32	21/22	0.94	0.17	78,83,93,94	0
24	MIA	AY	37	29/30	0.96	0.23	42,52,67,76	0

6.3 Carbohydrates [i](#)

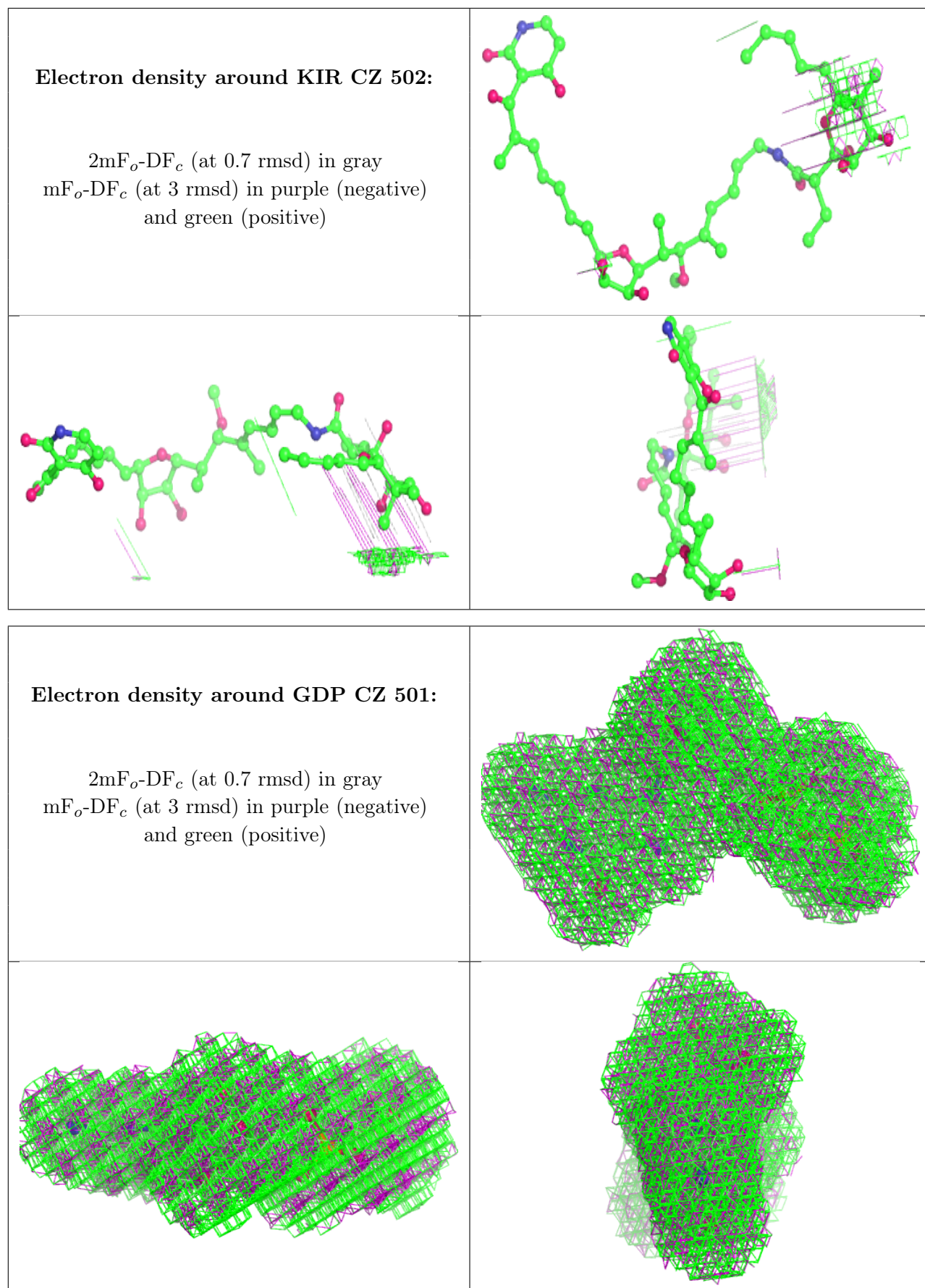
There are no monosaccharides in this entry.

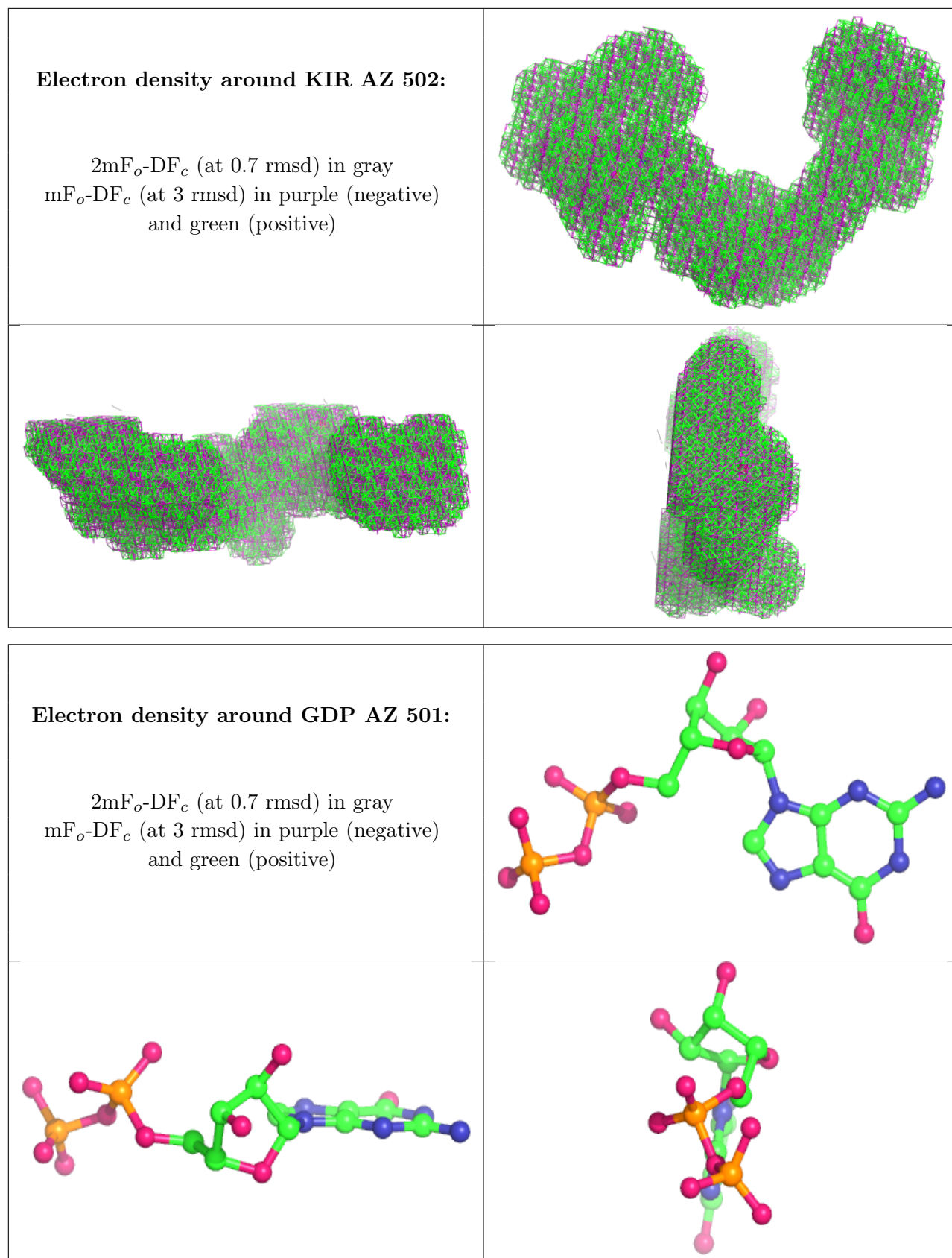
6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
61	KIR	CZ	502	57/57	0.76	0.66	115,117,122,122	0
60	GDP	CZ	501	28/28	0.86	0.23	114,131,139,140	0
61	KIR	AZ	502	57/57	0.89	0.38	100,107,118,119	0
59	ZN	B9	101	1/1	0.91	0.16	103,103,103,103	0
60	GDP	AZ	501	28/28	0.92	0.18	114,118,123,123	0
59	ZN	D9	101	1/1	0.95	0.18	87,87,87,87	0
59	ZN	D4	101	1/1	0.96	0.12	103,103,103,103	0
59	ZN	B4	101	1/1	0.97	0.19	91,91,91,91	0
59	ZN	CD	301	1/1	0.97	0.29	75,75,75,75	0
59	ZN	AN	101	1/1	0.99	0.20	42,42,42,42	0
59	ZN	AD	301	1/1	0.99	0.29	61,61,61,61	0
59	ZN	CN	101	1/1	0.99	0.18	69,69,69,69	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.





6.5 Other polymers [i](#)

There are no such residues in this entry.