wwPDB X-ray Structure Validation Summary Report (i)

Mar 22, 2023 – 10:51 AM EDT

PDB ID	:	8FOM
Title	:	Crystal structure of tRNA^Lys(SUU) bound to UAA codon in the ribosomal P site
Authors	:	Nguyen, H.A.; Hoffer, E.D.; Maehigashi, T.; Fagan, C.E.; Dunham, C.M.
Deposited on	:	2023-01-02
Resolution	:	3.58 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 (i) 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 (i)) were used in the production of this report:

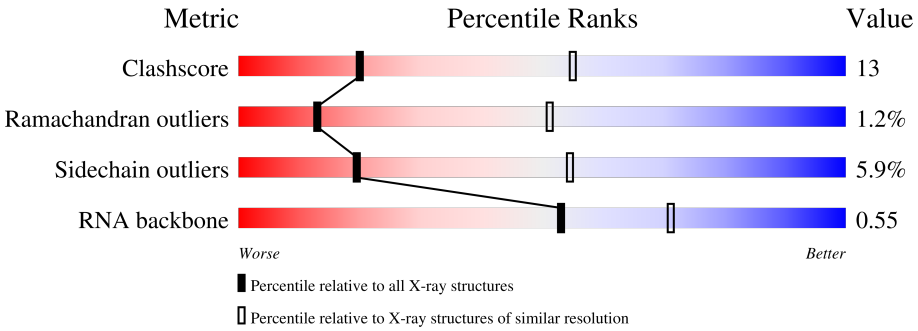
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	FAILED
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.58 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))
Clashscore	141614	1181 (3.66-3.50)
Ramachandran outliers	138981	1143 (3.66-3.50)
Sidechain outliers	138945	1143 (3.66-3.50)
RNA backbone	3102	1008 (4.10-3.00)

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 <=5%

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	QA	1522	49% 41% 8%
1	XA	1522	53% 38% 7%
2	QB	256	42% 45% 7%
2	XB	256	47% 41% 7%
3	QC	239	52% 32% 14%
3	XC	239	55% 28% 14%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	QD	209	51% 42% 6%
4	XD	209	64% 34%
5	QE	162	71% 21% 7%
5	XE	162	70% 21% 7%
6	QF	101	78% 22%
6	XF	101	87% 13%
7	QG	156	83% 16%
7	XG	156	83% 15%
8	QH	138	70% 29%
8	XH	138	74% 24%
9	QI	128	66% 32%
9	XI	128	54% 40%
10	QJ	105	59% 33% 6%
10	XJ	105	63% 29% 6%
11	QK	129	59% 31% 8%
11	XK	129	70% 20% 8%
12	QL	131	66% 28% 5%
12	XL	131	56% 36% 5%
13	QM	126	48% 43% 5%
13	XM	126	57% 33% 6%
14	QN	61	59% 33% 7%
14	XN	61	69% 26%
15	QO	89	83% 16%
15	XO	89	78% 20%
16	QP	88	67% 26% 5%

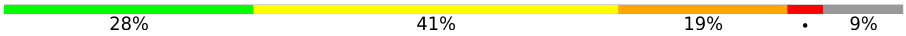
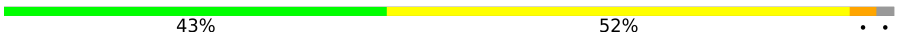
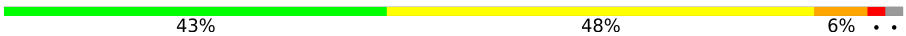
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
16	XP	88	68% 25% 5%
17	QQ	105	70% 24% 5%
17	XQ	105	59% 31% 5% 5%
18	QR	88	49% 27% 20%
18	XR	88	63% 16% 20%
19	QS	93	49% 34% 10%
19	XS	93	44% 43% 10%
20	QT	106	60% 30% 7%
20	XT	106	68% 25% 7%
21	QU	27	52% 33% 7% 7%
21	XU	27	48% 33% 11% 7%
22	QV	76	51% 38% 8%
22	XV	76	43% 43% 11%
23	QX	23	13% 87%
23	XX	23	43% 35% 22%
24	R0	85	69% 25%
24	Y0	85	71% 24%
25	R1	98	68% 28%
25	Y1	98	72% 26%
26	R2	72	57% 32% 7%
26	Y2	72	69% 28%
27	R3	60	63% 32%
27	Y3	60	67% 32%
28	R4	71	46% 38% 13%
28	Y4	71	42% 46% 10%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
29	R5	60	
29	Y5	60	
30	R6	54	
30	Y6	54	
31	R7	49	
31	Y7	49	
32	R8	65	
32	Y8	65	
33	R9	37	
33	Y9	37	
34	RA	2915	
34	YA	2915	
35	RB	122	
35	YB	122	
36	RD	276	
36	YD	276	
37	RE	206	
37	YE	206	
38	RF	210	
38	YF	210	
39	RG	182	
39	YG	182	
40	RH	180	
40	YH	180	
41	RI	148	

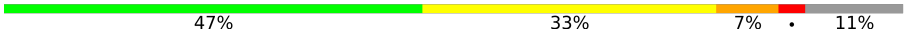
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
41	YI	148	
42	RN	140	
42	YN	140	
43	RO	122	
43	YO	122	
44	RP	150	
44	YP	150	
45	RQ	141	
45	YQ	141	
46	RR	118	
46	YR	118	
47	RS	112	
47	YS	112	
48	RT	146	
48	YT	146	
49	RU	118	
49	YU	118	
50	RV	101	
50	YV	101	
51	RW	113	
51	YW	113	
52	RX	96	
52	YX	96	
53	RY	110	
53	YY	110	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
54	RZ	206	
54	YZ	206	
55	XY	17	
56	Z6	3	
56	Z8	3	

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
58	SF4	XD	301	-	-	X	-

2 Entry composition (i)

There are 59 unique types of molecules in this entry. The entry contains 292176 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
1	QA	1500	Total	C	N	O	P	0	0	0
			32247	14353	5981	10414	1499			
1	XA	1511	Total	C	N	O	P	0	0	0
			32471	14454	6014	10493	1510			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	QB	237	Total	C	N	O	S	0	0	0
			1924	1228	344	347	5			
2	XB	237	Total	C	N	O	S	0	0	0
			1924	1228	344	347	5			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	QC	205	Total	C	N	O	S	0	0	0
			1605	1011	313	280	1			
3	XC	205	Total	C	N	O	S	0	0	0
			1605	1011	313	280	1			

- Molecule 4 is a protein called 30S ribosomal protein S4.

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

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	QE	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			
5	XE	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			

- Molecule 6 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	QF	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			
6	XF	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	QG	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			
7	XG	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	QH	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			
8	XH	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	QI	127	Total	C	N	O	0	0	0
			1010	639	197	174			
9	XI	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	QJ	99	Total	C	N	O	S	0	0	0
			801	504	157	139	1			

Continued on next page...

Continued from previous page...

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	QK	119	Total	C	N	O	S	0	0	0
			885	549	168	165	3			
11	XK	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	QL	125	Total	C	N	O	S	0	0	0
			975	614	196	164	1			
12	XL	125	Total	C	N	O	S	0	0	0
			975	614	196	164	1			

- Molecule 13 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
13	QM	121	Total	C	N	O	S	0	0	0
			964	597	199	166	2			
13	XM	121	Total	C	N	O	S	0	0	0
			964	597	199	166	2			

- Molecule 14 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	QN	60	Total	C	N	O	S	0	0	0
			492	312	104	72	4			
14	XN	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	QO	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			
15	XO	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	QP	84	Total	C	N	O	S	0	0	0
			705	446	140	118	1			
16	XP	84	Total	C	N	O	S	0	0	0
			705	446	140	118	1			

- Molecule 17 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
17	QQ	100	Total	C	N	O	S	0	0	0
			834	534	155	143	2			
17	XQ	100	Total	C	N	O	S	0	0	0
			834	534	155	143	2			

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
18	QR	70	Total	C	N	O	0	0	0
			574	367	112	95			
18	XR	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	QS	84	Total	C	N	O	S	0	0	0
			674	430	126	116	2			
19	XS	84	Total	C	N	O	S	0	0	0
			674	430	126	116	2			

- Molecule 20 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	QT	99	Total	C	N	O	S	0	0	0
			763	470	162	129	2			
20	XT	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	QU	25	Total 217	C 134	N 52	O 31	0	0	0
21	XU	25	Total 217	C 134	N 52	O 31	0	0	0

- Molecule 22 is a RNA chain called P-site tRNA^Lys(SUU).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	QV	74	Total 1594	C 717	N 279	O 525	P 73	0	0	0
22	XV	74	Total 1594	C 717	N 279	O 525	P 73	0	0	0

- Molecule 23 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	QX	3	Total 65	C 29	N 12	O 21	P 3	0	0	0
23	XX	23	Total 502	C 224	N 98	O 157	P 23	0	0	0

- Molecule 24 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
24	R0	82	Total 648	C 401	N 138	O 108	S 1	0	0	0
24	Y0	82	Total 648	C 401	N 138	O 108	S 1	0	0	0

- Molecule 25 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
25	R1	97	Total 763	C 481	N 150	O 131	S 1	0	0	0
25	Y1	97	Total 763	C 481	N 150	O 131	S 1	0	0	0

- Molecule 26 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	R2	69	Total 581	C 358	N 118	O 104	S 1	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	Y2	71	Total	C	N	O	S	0	0	0
			598	370	121	106	1			

- Molecule 27 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
27	R3	59	Total	C	N	O	0	0	0
			469	298	90	81			
27	Y3	59	Total	C	N	O	0	0	0
			469	298	90	81			

- Molecule 28 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	R4	71	Total	C	N	O	S	0	0	0
			581	364	108	104	5			
28	Y4	71	Total	C	N	O	S	0	0	0
			581	364	108	104	5			

- Molecule 29 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
29	R5	59	Total	C	N	O	S	0	0	0
			459	288	90	76	5			
29	Y5	59	Total	C	N	O	S	0	0	0
			459	288	90	76	5			

- Molecule 30 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
30	R6	49	Total	C	N	O	S	0	0	0
			424	264	87	69	4			
30	Y6	49	Total	C	N	O	S	0	0	0
			424	264	87	69	4			

- Molecule 31 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	R7	49	Total	C	N	O	S	0	0	0
			430	263	108	57	2			
31	Y7	49	Total	C	N	O	S	0	0	0
			430	263	108	57	2			

- Molecule 32 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
32	R8	64	Total	C	N	O	S	0	0	0
			517	331	102	82	2			
32	Y8	64	Total	C	N	O	S	0	0	0
			517	331	102	82	2			

- Molecule 33 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
33	R9	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			
33	Y9	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			

- Molecule 34 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
34	RA	2882	Total	C	N	O	P	0	0	0
			62071	27627	11611	19952	2881			
34	YA	2883	Total	C	N	O	P	0	0	0
			62091	27636	11613	19960	2882			

- Molecule 35 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
35	RB	120	Total	C	N	O	P	0	0	0
			2573	1146	476	832	119			
35	YB	120	Total	C	N	O	P	0	0	0
			2573	1146	476	832	119			

- Molecule 36 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
36	RD	272	Total	C	N	O	S	0	0	0
			2115	1335	420	357	3			
36	YD	272	Total	C	N	O	S	0	0	0
			2115	1335	420	357	3			

- Molecule 37 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
37	RE	205	Total	C	N	O	S	0	0	0
			1568	991	300	271	6			
37	YE	205	Total	C	N	O	S	0	0	0
			1568	991	300	271	6			

- Molecule 38 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
38	RF	202	Total	C	N	O	S	0	0	0
			1585	1011	297	275	2			
38	YF	202	Total	C	N	O	S	0	0	0
			1585	1011	297	275	2			

- Molecule 39 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
39	RG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			
39	YG	181	Total	C	N	O	S	0	0	0
			1474	942	268	260	4			

- Molecule 40 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
40	RH	170	Total	C	N	O	S	0	0	0
			1307	829	245	232	1			
40	YH	170	Total	C	N	O	S	0	0	0
			1307	829	245	232	1			

- Molecule 41 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
41	RI	146	Total	C	N	O	S	0	0	0
			1136	726	201	208	1			
41	YI	146	Total	C	N	O	S	0	0	0
			1136	726	201	208	1			

- Molecule 42 is a protein called 50S ribosomal protein L13.

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

Continued on next page...

Continued from previous page...

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

- Molecule 43 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
43	RO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			
43	YO	122	Total	C	N	O	S	0	0	0
			933	588	171	170	4			

- Molecule 44 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
44	RP	150	Total	C	N	O	S	0	0	0
			1145	712	232	198	3			
44	YP	150	Total	C	N	O	S	0	0	0
			1145	712	232	198	3			

- Molecule 45 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
45	RQ	141	Total	C	N	O	S	0	0	0
			1122	715	212	188	7			
45	YQ	141	Total	C	N	O	S	0	0	0
			1122	715	212	188	7			

- Molecule 46 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
46	RR	118	Total	C	N	O	S	0	0	0
			968	604	203	160	1			
46	YR	118	Total	C	N	O	S	0	0	0
			968	604	203	160	1			

- Molecule 47 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
47	RS	111	Total	C	N	O	0	0	0
			882	556	176	150			
47	YS	111	Total	C	N	O	0	0	0
			882	556	176	150			

- Molecule 48 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
48	RT	137	Total	C	N	O	S	0	0	0
			1141	710	234	196	1			
48	YT	137	Total	C	N	O	S	0	0	0
			1141	710	234	196	1			

- Molecule 49 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
49	RU	117	Total	C	N	O	S	0	0	0
			964	610	202	151	1			
49	YU	117	Total	C	N	O	S	0	0	0
			964	610	202	151	1			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
50	RV	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			
50	YV	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			

- Molecule 51 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
51	RW	113	Total	C	N	O	S	0	0	0
			900	566	177	155	2			
51	YW	113	Total	C	N	O	S	0	0	0
			900	566	177	155	2			

- Molecule 52 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
52	RX	92	Total	C	N	O	0	0	0
			725	471	131	123			
52	YX	92	Total	C	N	O	0	0	0
			725	471	131	123			

- Molecule 53 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
53	RY	102	Total	C	N	O	S	0	0	0
			785	505	150	125	5			
53	YY	102	Total	C	N	O	S	0	0	0
			785	505	150	125	5			

- Molecule 54 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
54	RZ	183	Total	C	N	O	S	0	0	0
			1461	933	260	265	3			
54	YZ	183	Total	C	N	O	S	0	0	0
			1461	933	260	265	3			

- Molecule 55 is a RNA chain called A-site ASL^Phe.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
55	XY	17	Total	C	N	O	P	0	0	0
			362	163	68	115	16			

- Molecule 56 is a RNA chain called CC-puro.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
56	Z6	3	Total	C	N	O	P	0	0	0
			74	40	13	19	2			
56	Z8	3	Total	C	N	O	P	0	0	0
			74	40	13	19	2			

- Molecule 57 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

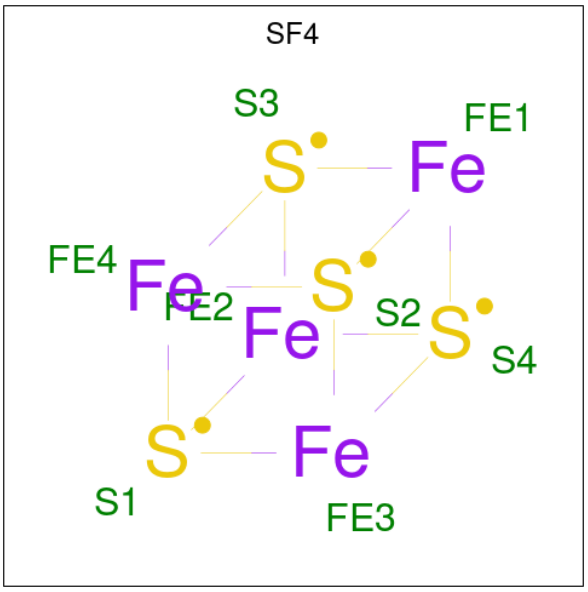
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
57	QA	54	Total	Mg	0	0
			54	54		
57	QV	1	Total	Mg	0	0
			1	1		
57	R0	1	Total	Mg	0	0
			1	1		
57	R5	1	Total	Mg	0	0
			1	1		
57	R7	1	Total	Mg	0	0
			1	1		
57	R8	1	Total	Mg	0	0
			1	1		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
57	RA	333	Total Mg 333 333	0	0
57	RB	5	Total Mg 5 5	0	0
57	RE	1	Total Mg 1 1	0	0
57	RF	1	Total Mg 1 1	0	0
57	RR	2	Total Mg 2 2	0	0
57	XA	58	Total Mg 58 58	0	0
57	XV	2	Total Mg 2 2	0	0
57	XX	1	Total Mg 1 1	0	0
57	Y0	1	Total Mg 1 1	0	0
57	Y1	1	Total Mg 1 1	0	0
57	Y3	1	Total Mg 1 1	0	0
57	Y5	1	Total Mg 1 1	0	0
57	Y7	2	Total Mg 2 2	0	0
57	YA	361	Total Mg 361 361	0	0
57	YB	4	Total Mg 4 4	0	0
57	YE	2	Total Mg 2 2	0	0
57	YP	2	Total Mg 2 2	0	0
57	YQ	2	Total Mg 2 2	0	0
57	YR	2	Total Mg 2 2	0	0
57	YY	1	Total Mg 1 1	0	0

- Molecule 58 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
58	QD	1	Total Fe S 8 4 4	0	0
58	XD	1	Total Fe S 8 4 4	0	0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
59	QN	1	Total Zn 1 1	0	0
59	XN	1	Total Zn 1 1	0	0

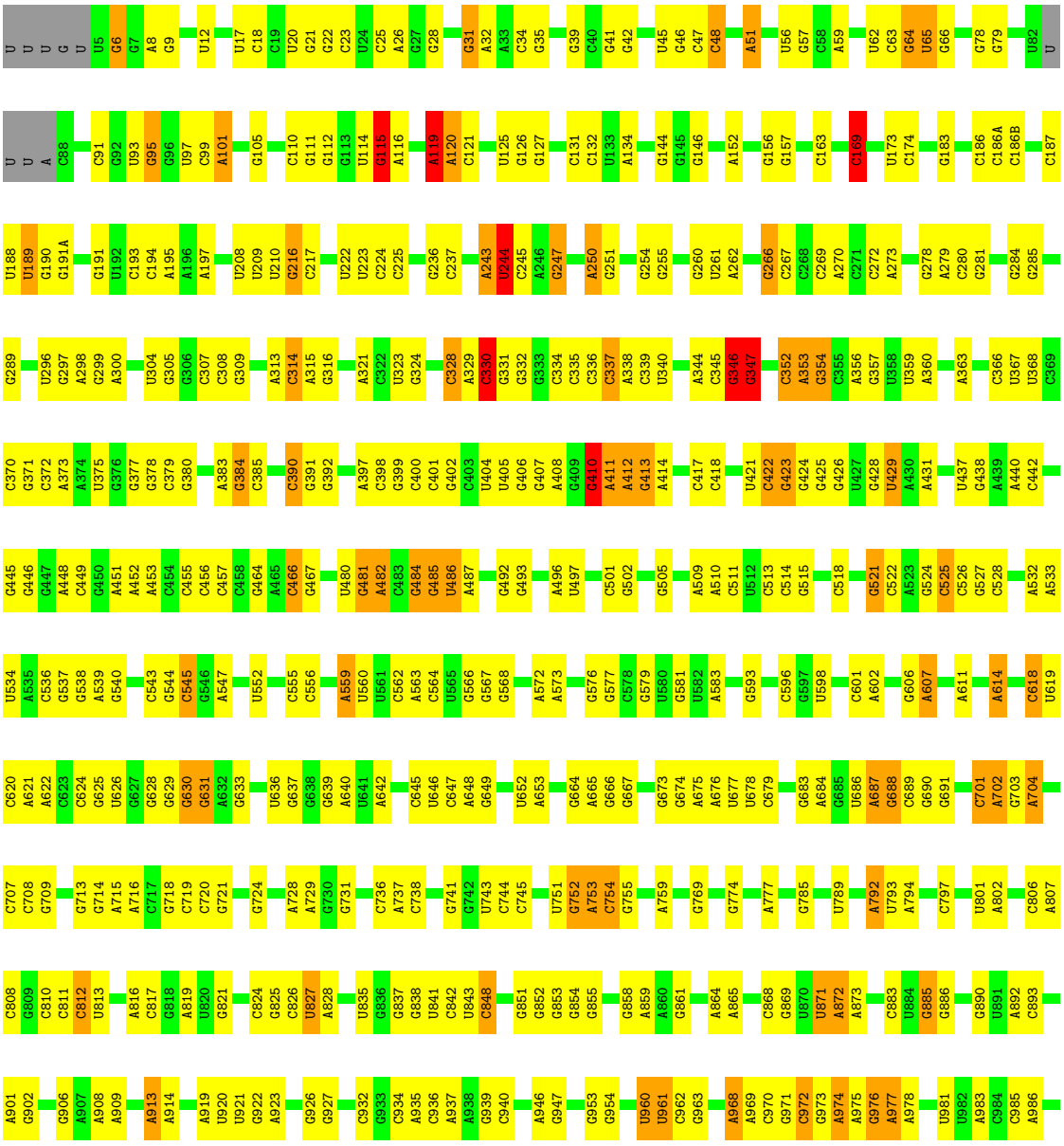
3 Residue-property plots (i)

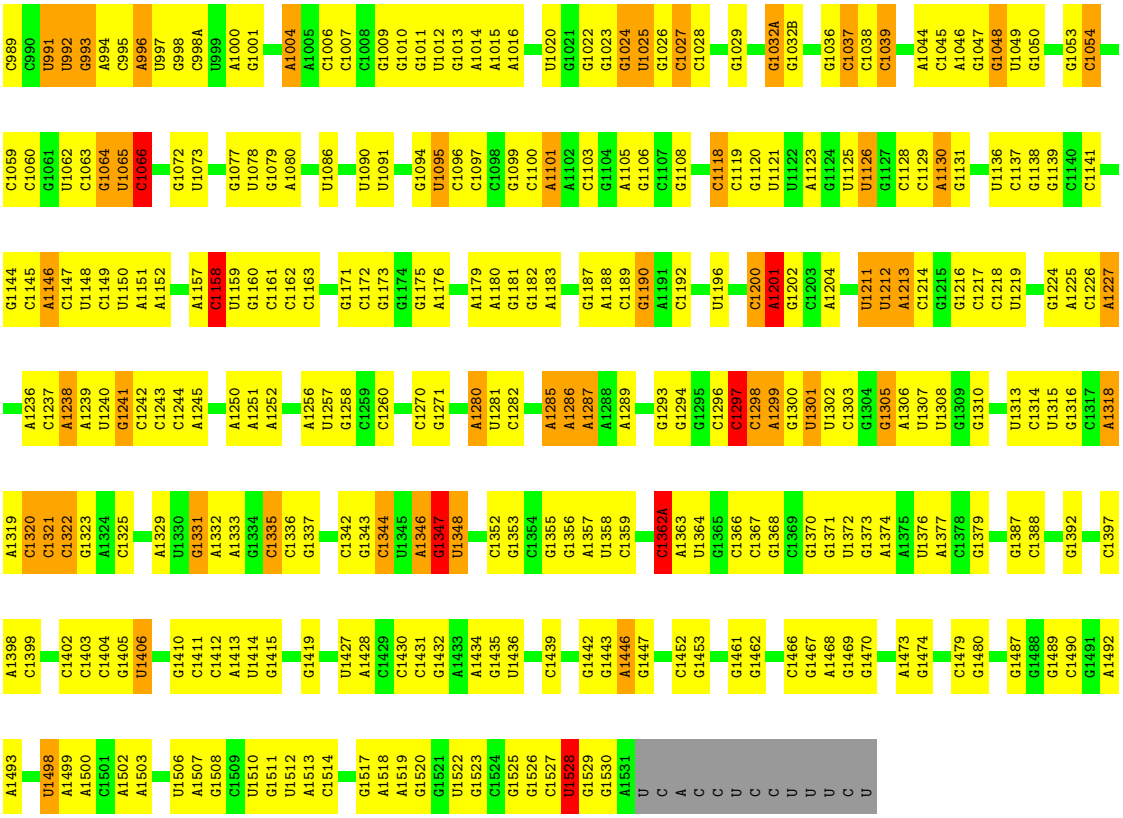
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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

Note EDS failed to run properly.

- Molecule 1: 16S rRNA

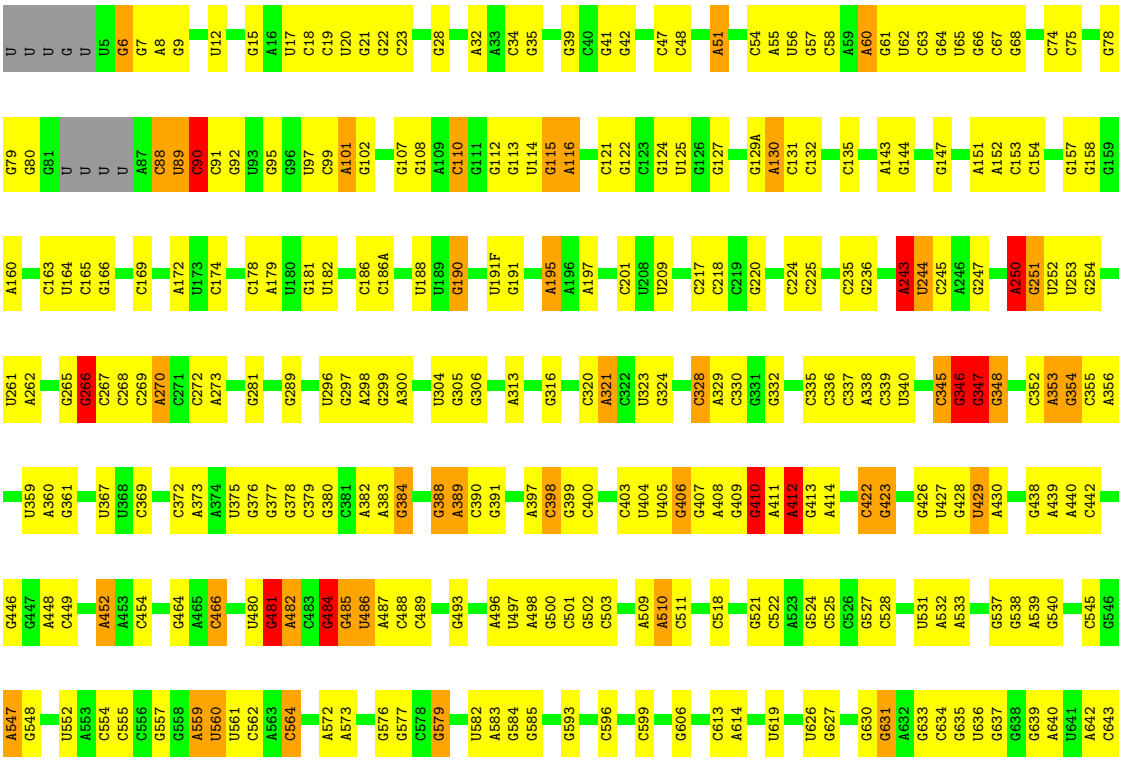
Chain QA:

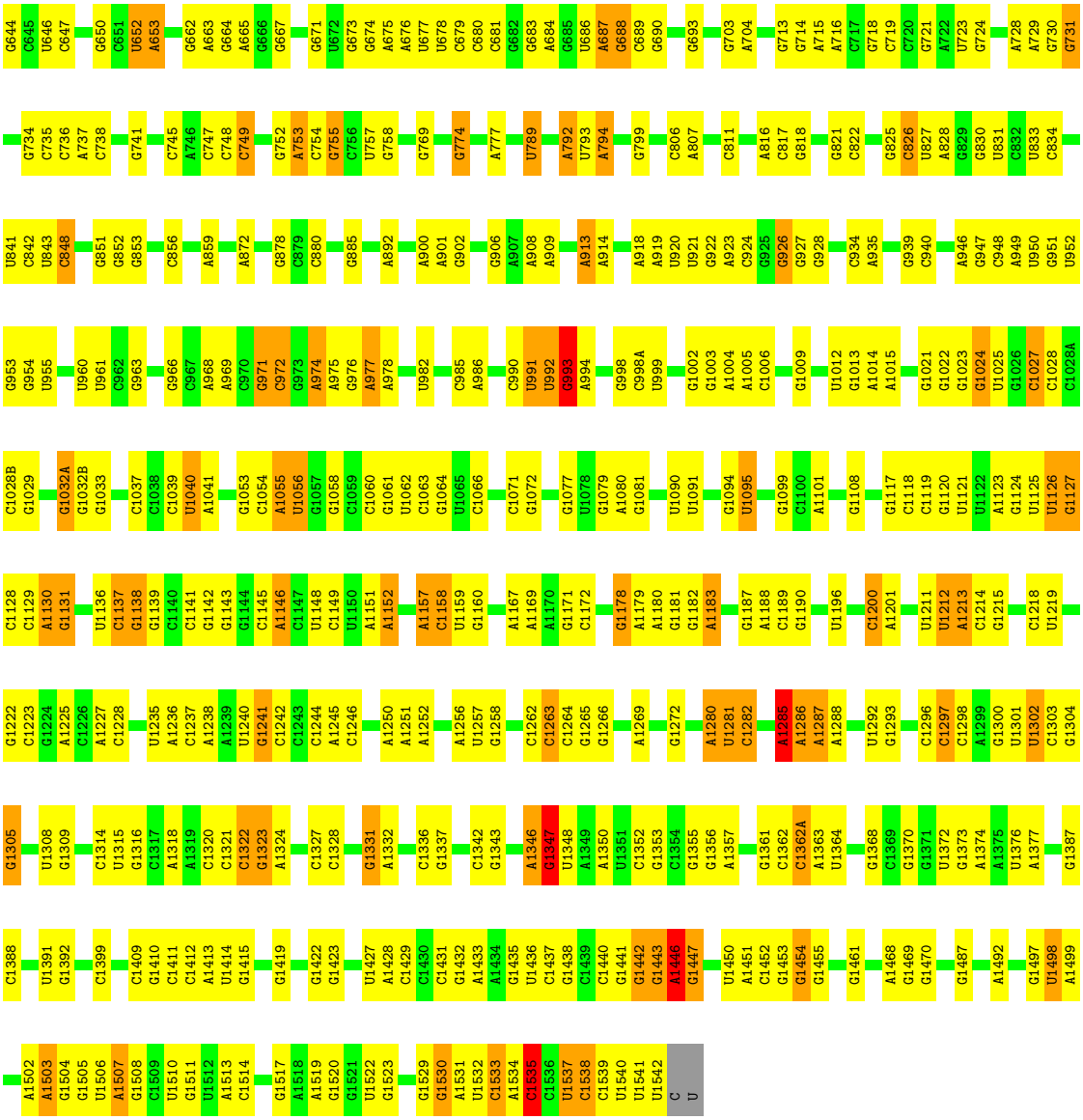




• Molecule 1: 16S rRNA

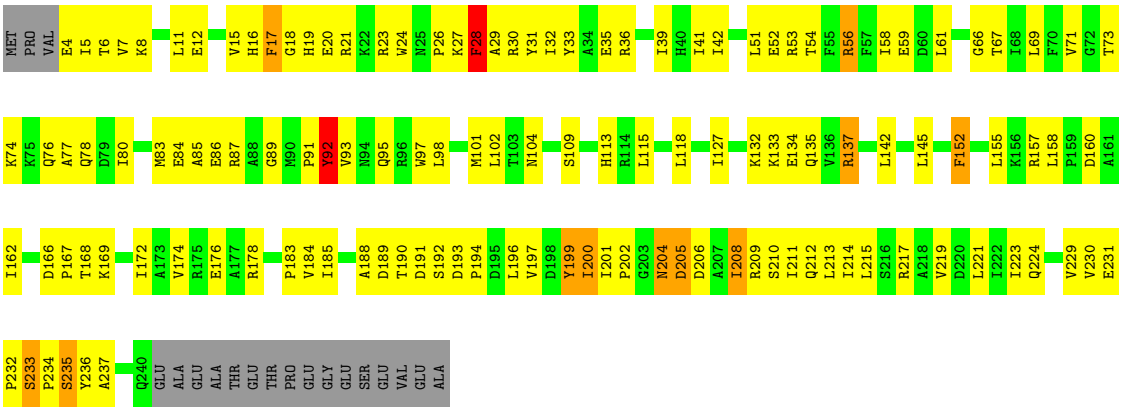
Chain XA:





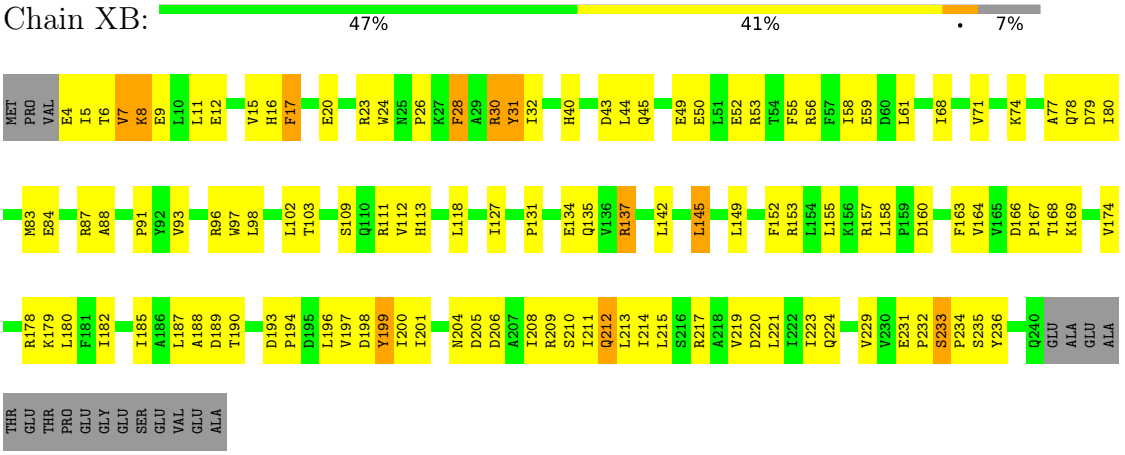
• Molecule 2: 30S ribosomal protein S2

Chain QB:



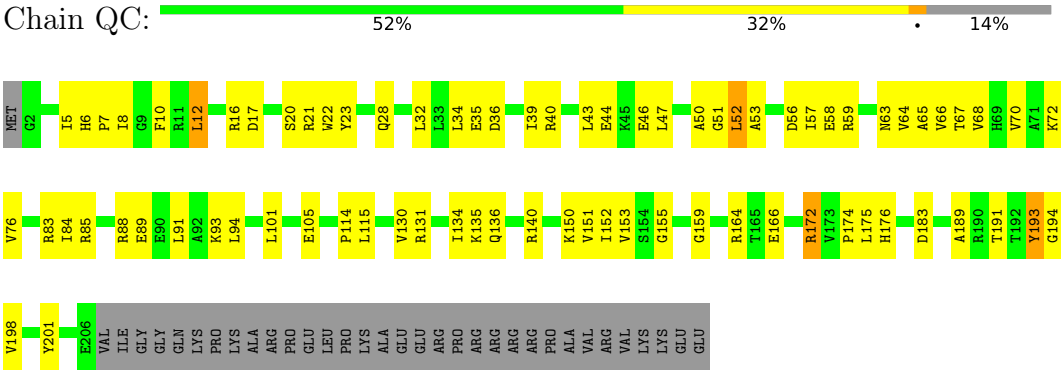
• Molecule 2: 30S ribosomal protein S2

Chain XB:



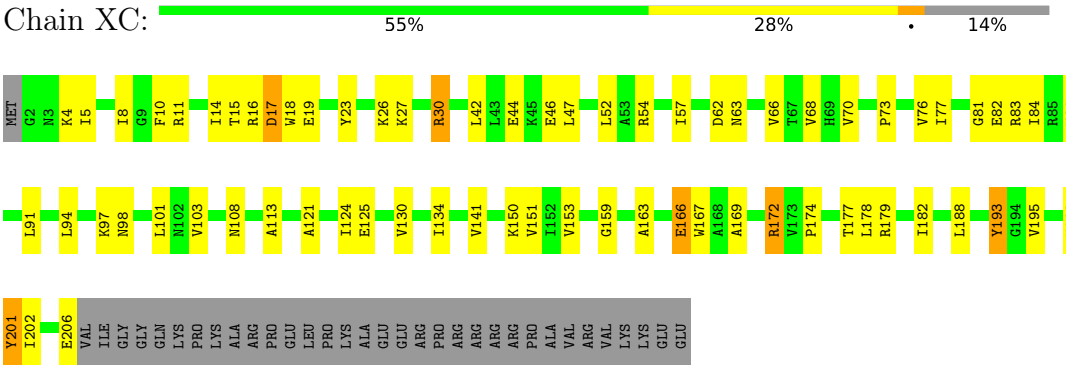
• Molecule 3: 30S ribosomal protein S3

Chain QC:



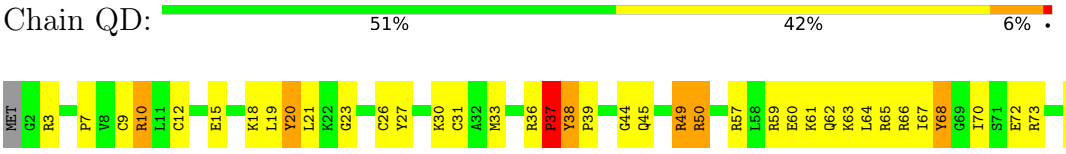
• Molecule 3: 30S ribosomal protein S3

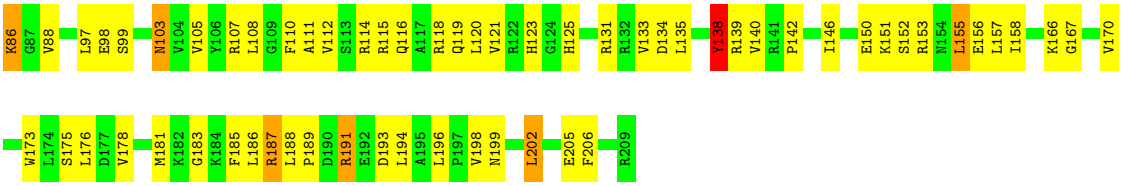
Chain XC:



• Molecule 4: 30S ribosomal protein S4

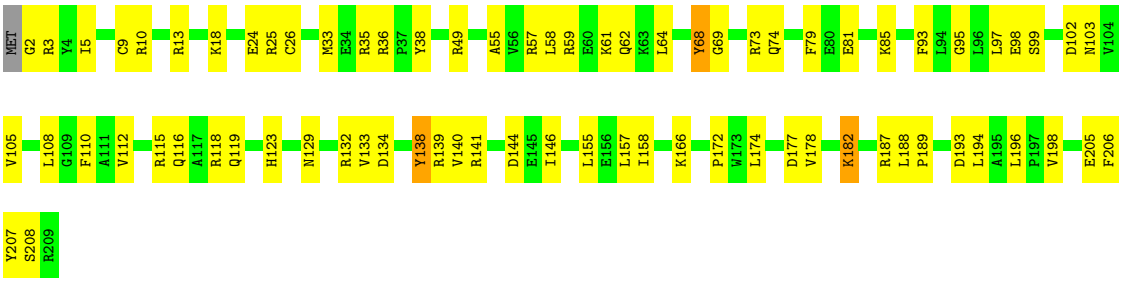
Chain QD:





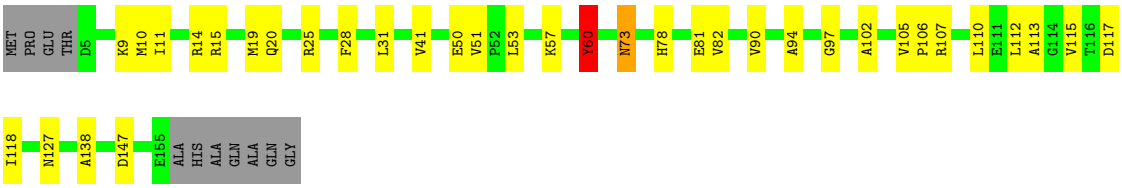
• Molecule 4: 30S ribosomal protein S4

Chain XD:



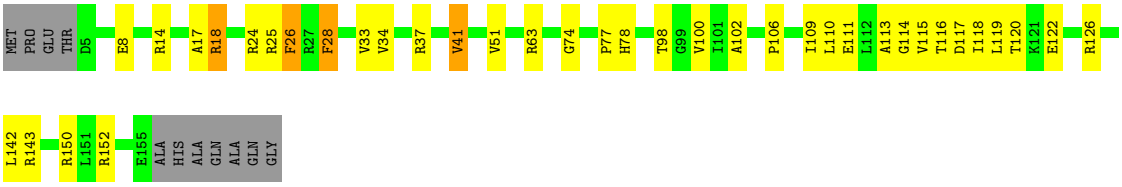
• Molecule 5: 30S ribosomal protein S5

Chain QE:



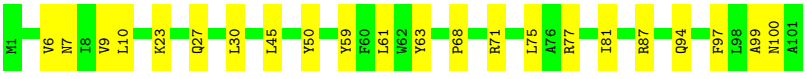
• Molecule 5: 30S ribosomal protein S5

Chain XE:



• Molecule 6: 30S ribosomal protein S6

Chain QF:

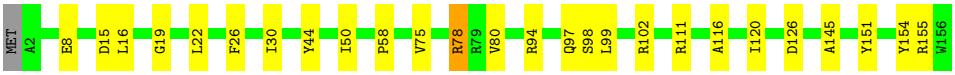


• Molecule 6: 30S ribosomal protein S6

Chain XF:

• Molecule 7: 30S ribosomal protein S7

Chain QG:

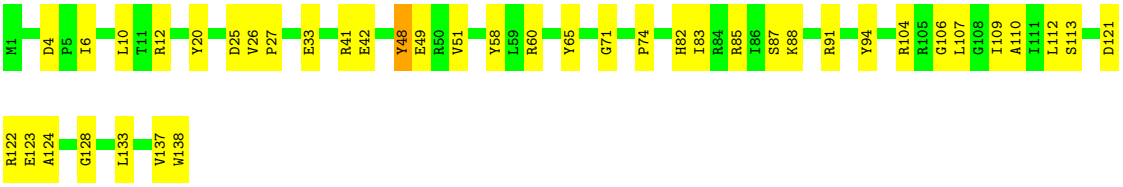


• Molecule 7: 30S ribosomal protein S7

Chain XG:

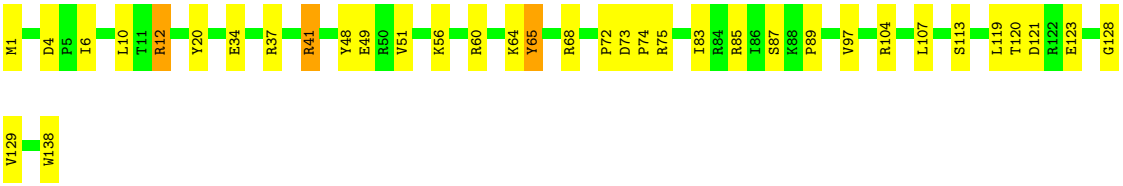
• Molecule 8: 30S ribosomal protein S8

Chain QH:



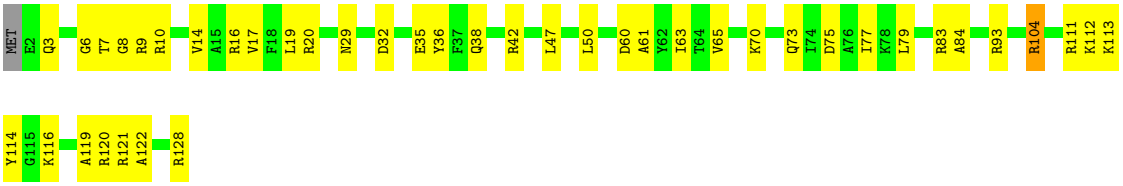
• Molecule 8: 30S ribosomal protein S8

Chain XH:



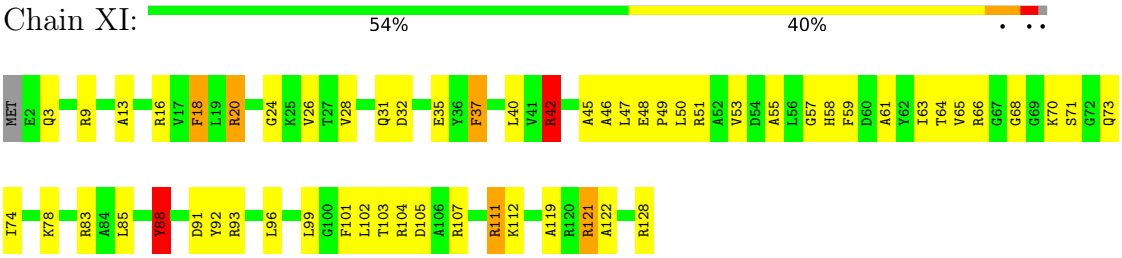
• Molecule 9: 30S ribosomal protein S9

Chain QI:



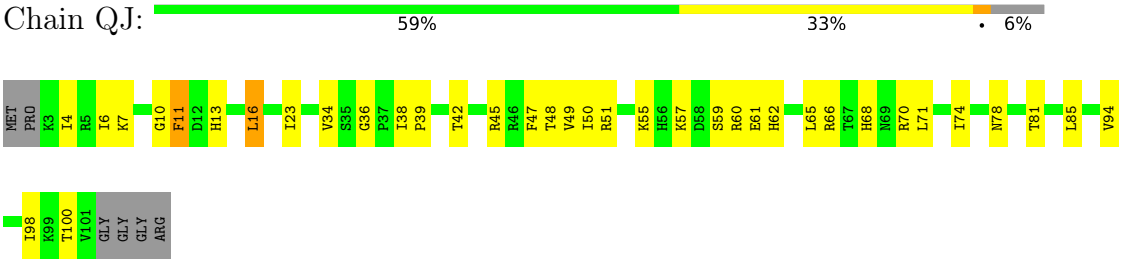
• Molecule 9: 30S ribosomal protein S9

Chain XI:



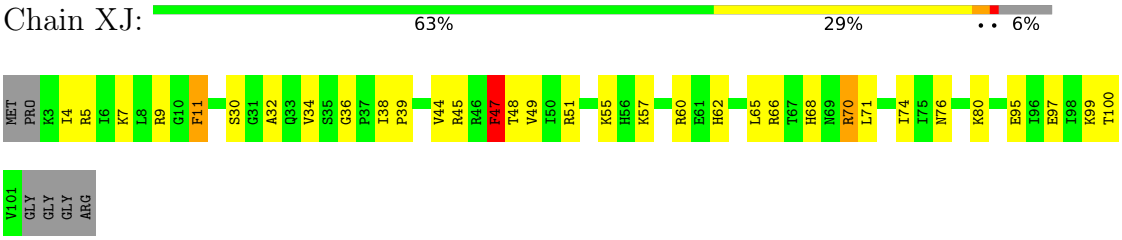
• Molecule 10: 30S ribosomal protein S10

Chain QJ:



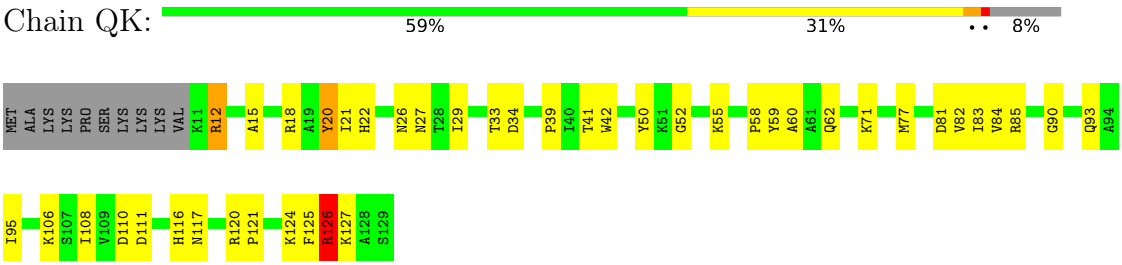
• Molecule 10: 30S ribosomal protein S10

Chain XJ:



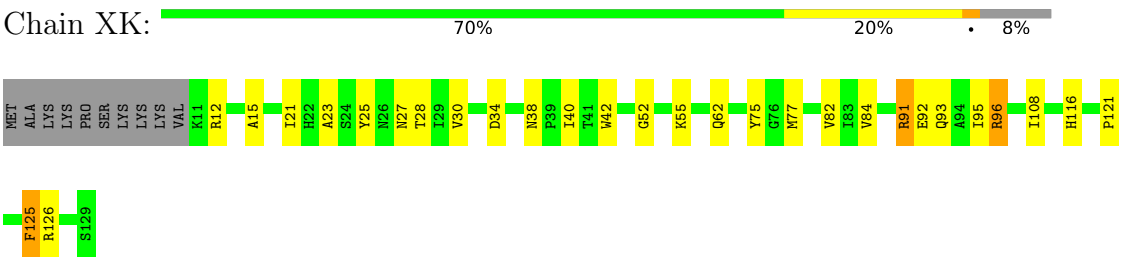
• Molecule 11: 30S ribosomal protein S11

Chain QK:



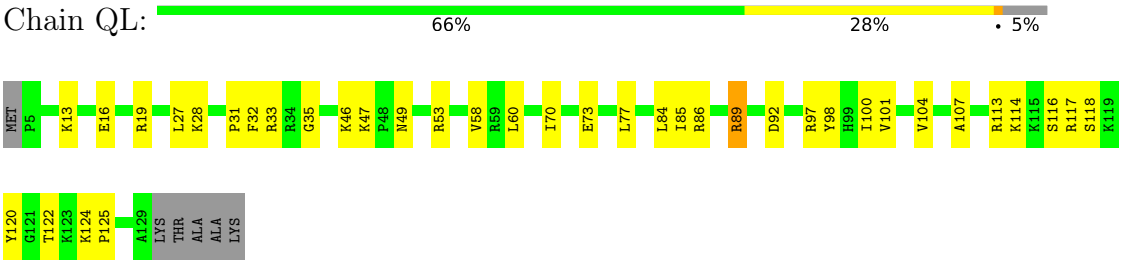
• Molecule 11: 30S ribosomal protein S11

Chain XK:



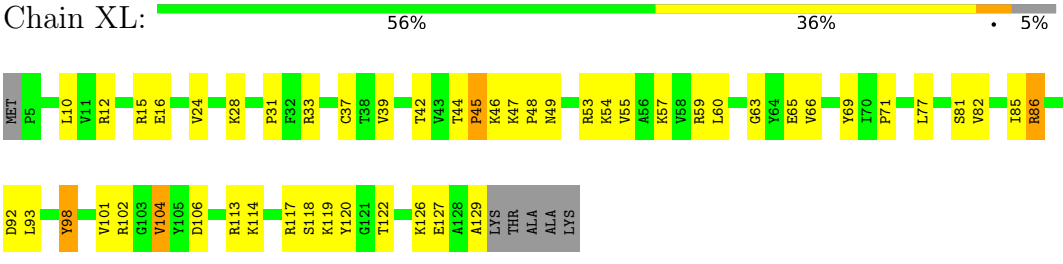
• Molecule 12: 30S ribosomal protein S12

Chain QL:



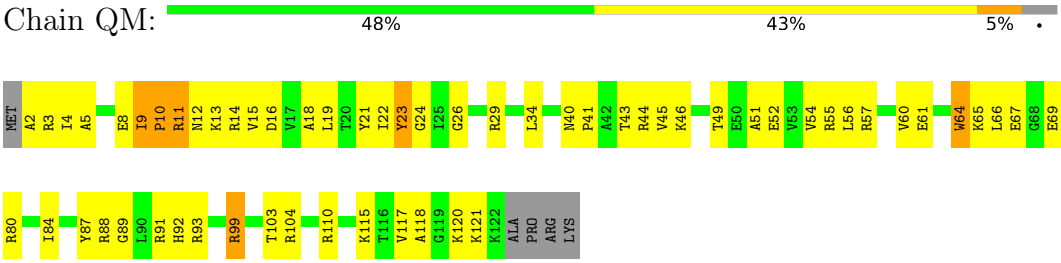
• Molecule 12: 30S ribosomal protein S12

Chain XL:



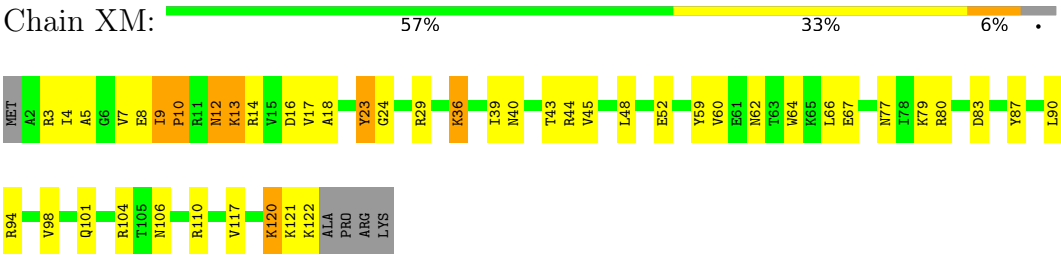
• Molecule 13: 30S ribosomal protein S13

Chain QM:



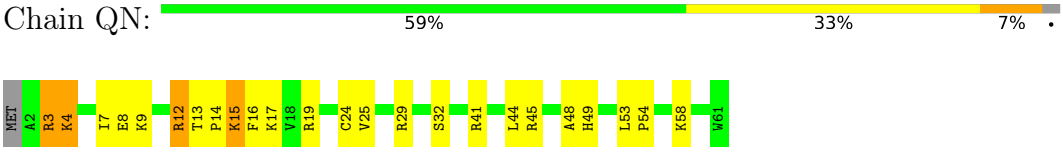
• Molecule 13: 30S ribosomal protein S13

Chain XM:



• Molecule 14: 30S ribosomal protein S14 type Z

Chain QN:



• Molecule 14: 30S ribosomal protein S14 type Z

Chain XN:

• Molecule 15: 30S ribosomal protein S15

Chain QO:

• Molecule 15: 30S ribosomal protein S15

Chain XO:

• Molecule 16: 30S ribosomal protein S16

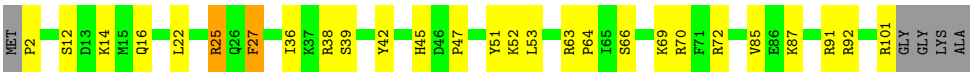
Chain QP:

• Molecule 16: 30S ribosomal protein S16

Chain XP:

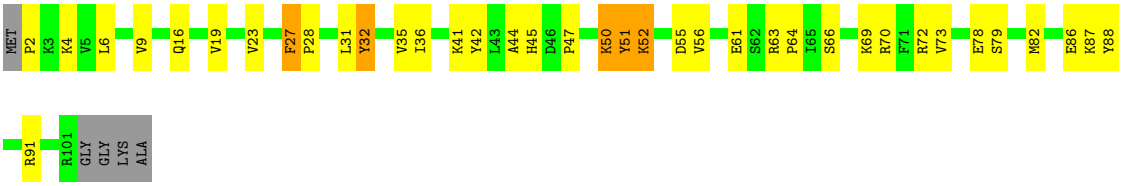
• Molecule 17: 30S ribosomal protein S17

Chain QQ:



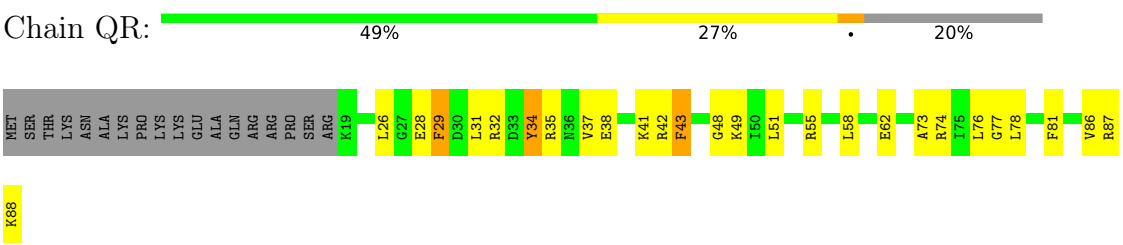
• Molecule 17: 30S ribosomal protein S17

Chain XQ:



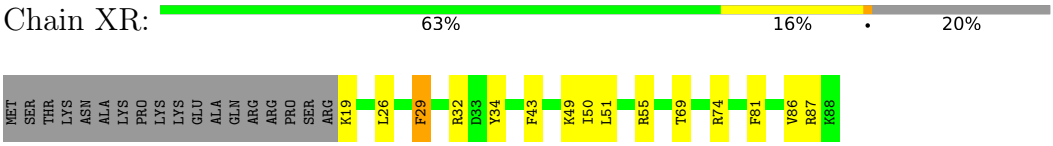
• Molecule 18: 30S ribosomal protein S18

Chain QR:



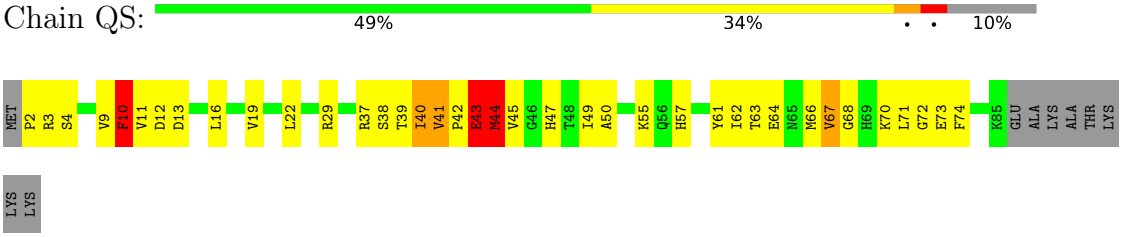
• Molecule 18: 30S ribosomal protein S18

Chain XR:



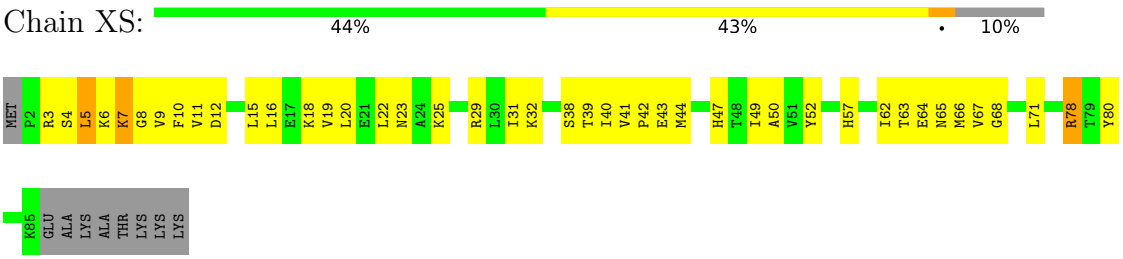
• Molecule 19: 30S ribosomal protein S19

Chain QS:



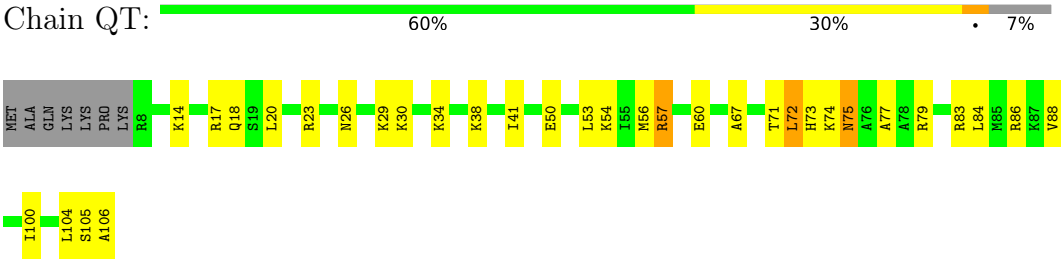
• Molecule 19: 30S ribosomal protein S19

Chain XS:



• Molecule 20: 30S ribosomal protein S20

Chain QT:



• Molecule 20: 30S ribosomal protein S20

Chain XT:

• Molecule 21: 30S ribosomal protein Thx

Chain QU:

• Molecule 21: 30S ribosomal protein Thx

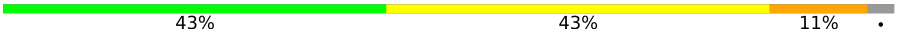
Chain XU:

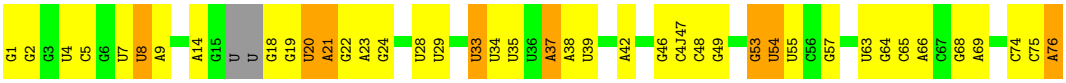
• Molecule 22: P-site tRNA^Lys(SUU)

Chain QV:

• Molecule 22: P-site tRNA^Lys(SUU)

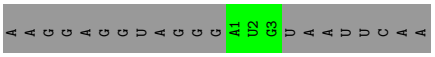
Chain XV:





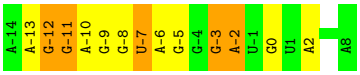
• Molecule 23: mRNA

Chain QX:



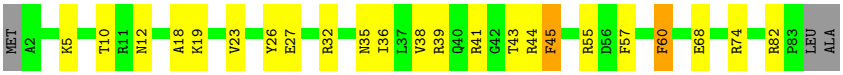
• Molecule 23: mRNA

Chain XX:



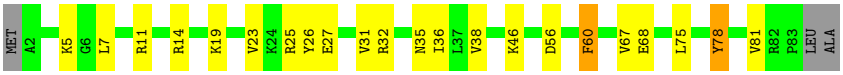
• Molecule 24: 50S ribosomal protein L27

Chain R0:



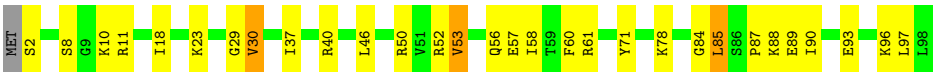
• Molecule 24: 50S ribosomal protein L27

Chain Y0:



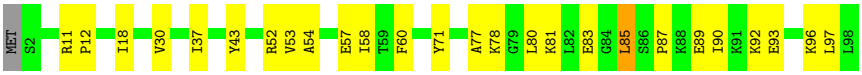
• Molecule 25: 50S ribosomal protein L28

Chain R1:



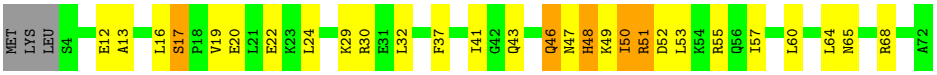
• Molecule 25: 50S ribosomal protein L28

Chain Y1:



• Molecule 26: 50S ribosomal protein L29

Chain R2:

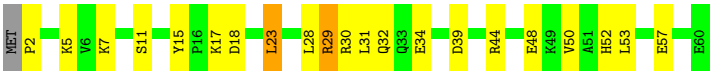


• Molecule 26: 50S ribosomal protein L29

Chain Y2:

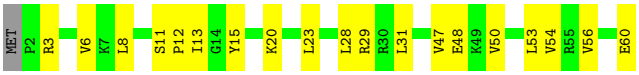
• Molecule 27: 50S ribosomal protein L30

Chain R3:



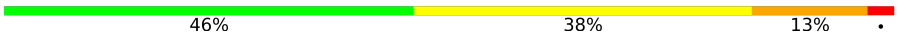
• Molecule 27: 50S ribosomal protein L30

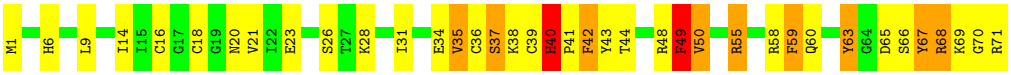
Chain Y3:



• Molecule 28: 50S ribosomal protein L31

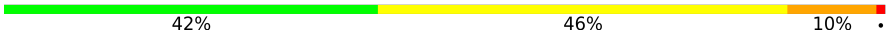
Chain R4:





• Molecule 28: 50S ribosomal protein L31

Chain Y4:



• Molecule 29: 50S ribosomal protein L32

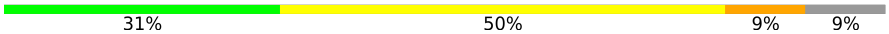
Chain R5:

• Molecule 29: 50S ribosomal protein L32

Chain Y5:

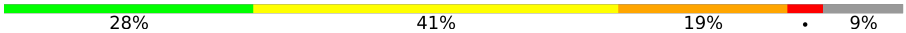
• Molecule 30: 50S ribosomal protein L33

Chain R6:



• Molecule 30: 50S ribosomal protein L33

Chain Y6:

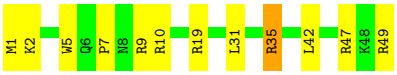


• Molecule 31: 50S ribosomal protein L34

Chain R7:

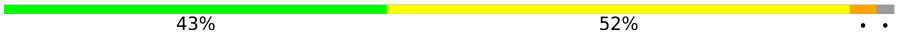
• Molecule 31: 50S ribosomal protein L34

Chain Y7:



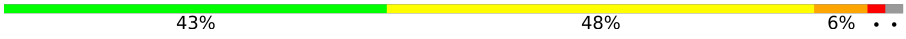
• Molecule 32: 50S ribosomal protein L35

Chain R8:



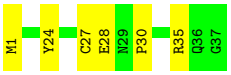
• Molecule 32: 50S ribosomal protein L35

Chain Y8:



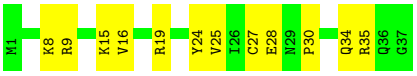
• Molecule 33: 50S ribosomal protein L36

Chain R9:



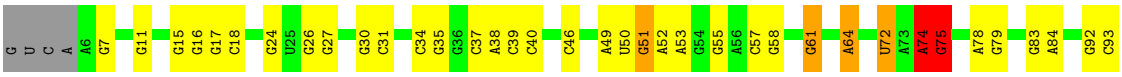
• Molecule 33: 50S ribosomal protein L36

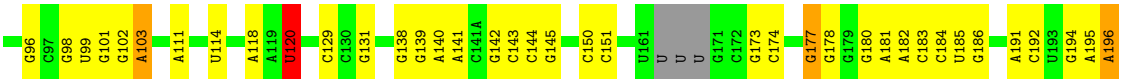
Chain Y9:

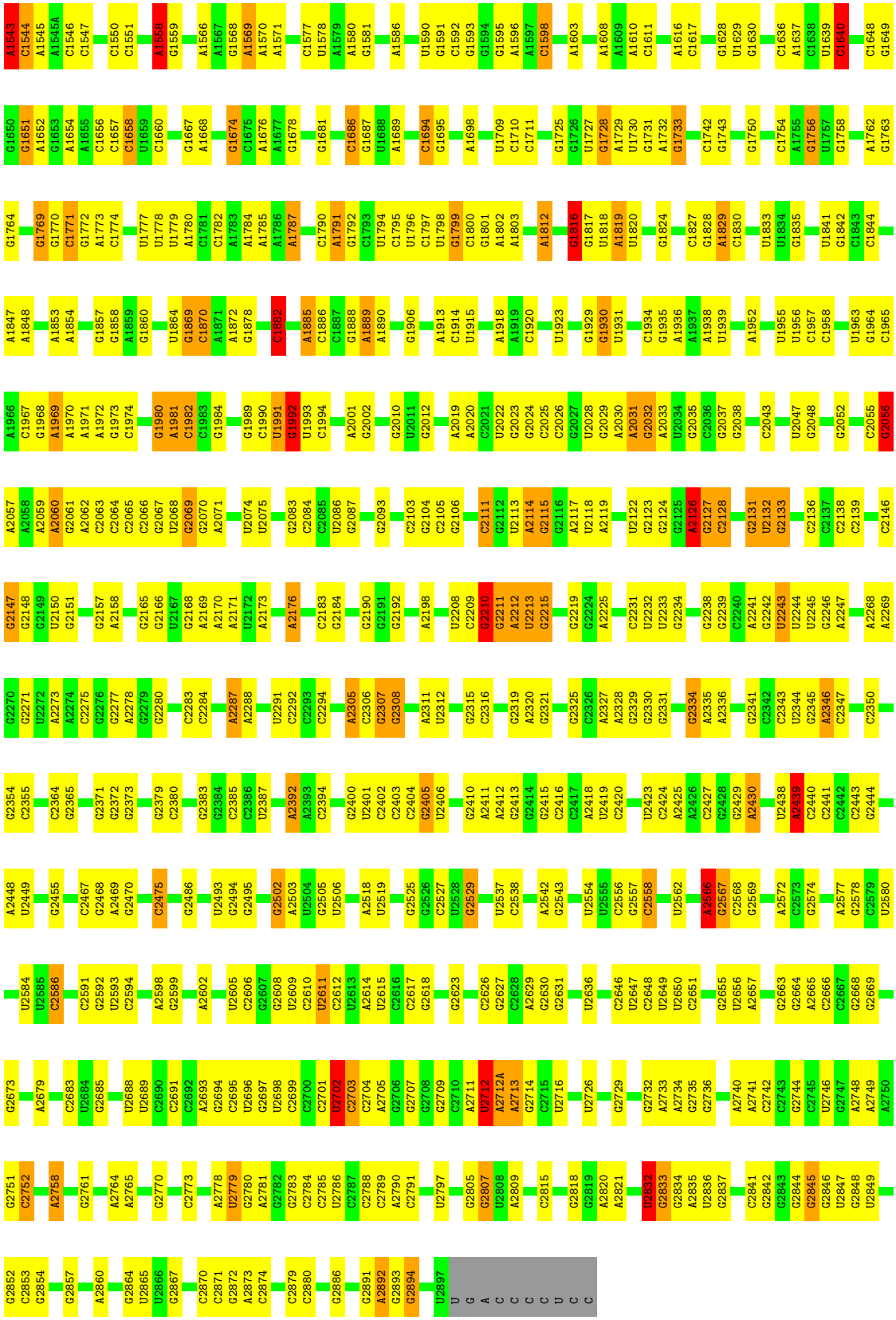


• Molecule 34: 23S rRNA

Chain RA:

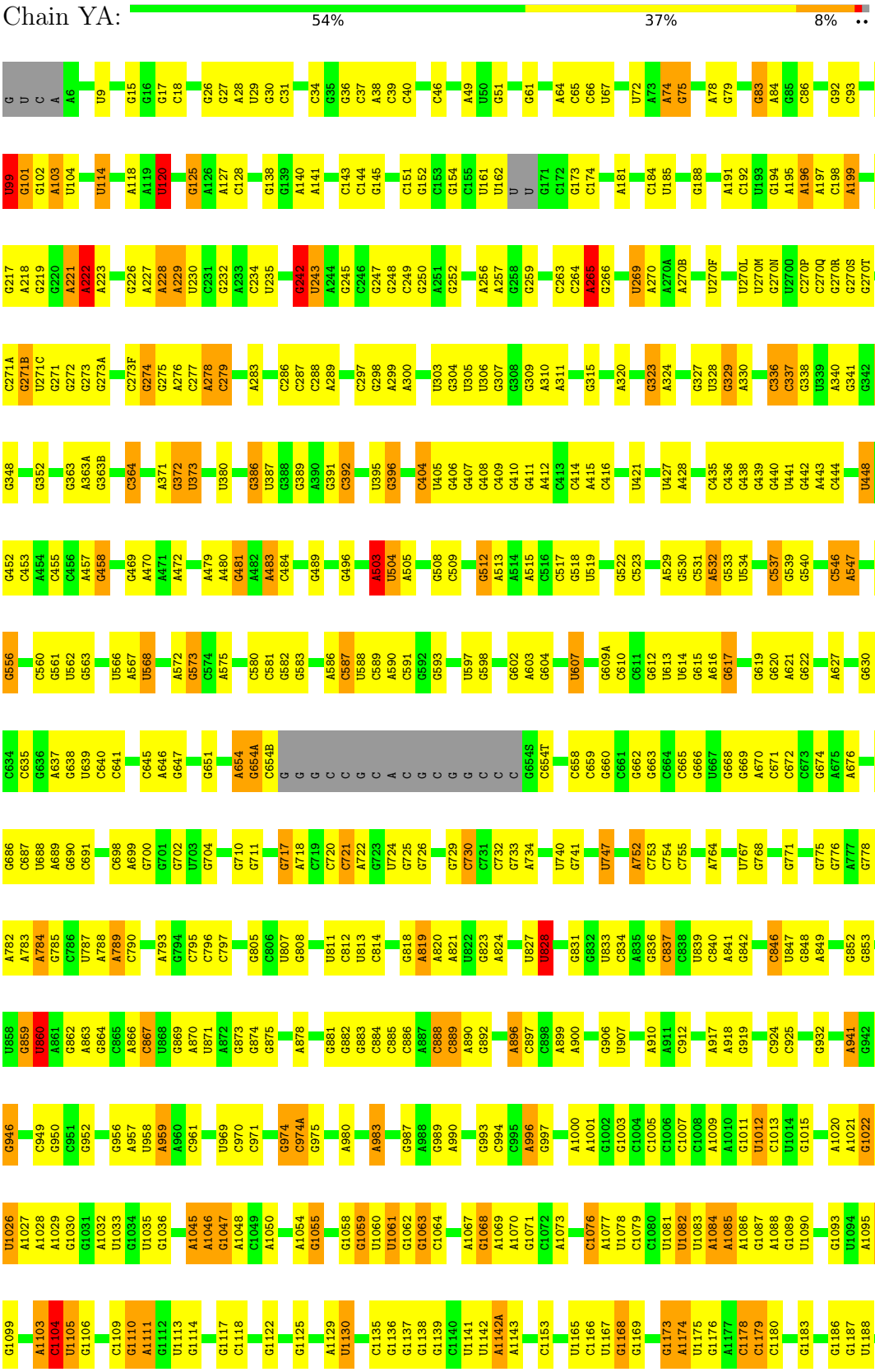




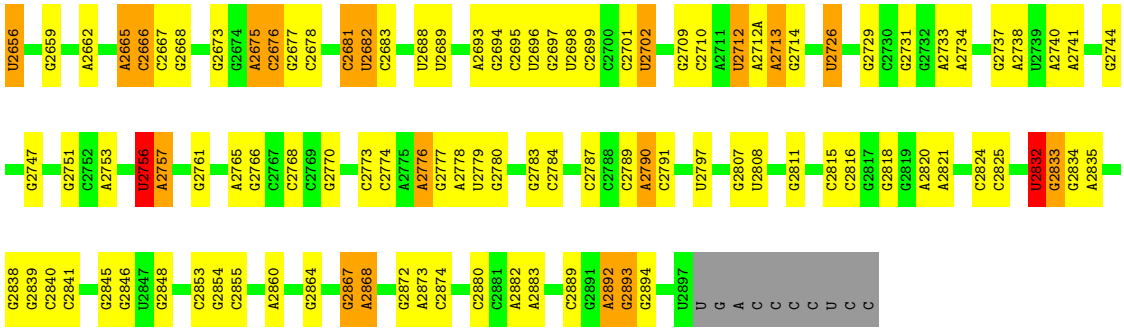


• Molecule 34: 23S rRNA

Chain YA:

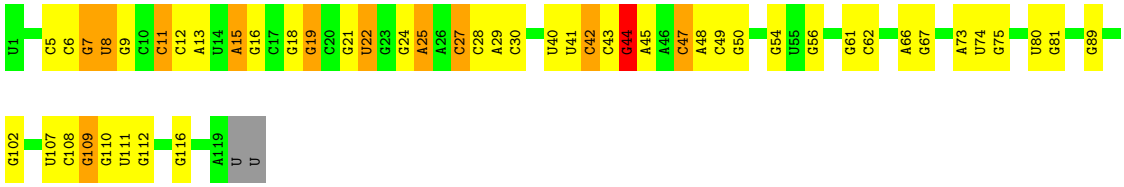


G1195 U1198 U1199 C1200 C1201 C1202 G1203 A1204 U1205 G1206 A1210 U1211 A1220 C1221 C1222 C1230 G1231 G1232 G1236 A1237 G1238 G1244 G1245 A1246 G1250 A1253 G1256 G1259 G1260 U1263 G1264 A1265 A1268 A1269 C1270 G1271 A1272 U1273 A1278 G1279 A1286 A1287 U1288 C1291 U1292
C1293 G1296 C1297 C1298 G1299 U1300 A1301 G1309 G1310 G1311 U1312 U1313 C1314 C1315 U1316 A1317 A1321 U1329 G1332 U1335 G1338 G1339 U1340 A1349 U1352 A1353 A1354 A1359 A1365 G1368 G1369 C1370 G1371 U1372 A1379 G1380 A1384 G1385 U1390 U1391 A1392 A1393 U1394 A1395
C1399 G1400 G1401 C1402 C1403 C1404 U1405 U1406 C1407 C1408 C1409 G1410 C1411 A1412 G1413 G1416 C1417 G1418 A1419 U1420 A1427 C1428 G1429 C1430 U1431 A1434 G1435 U1438 A1439 G1444 A1444A C1445 A1449 G1449A U1454 G1455 G1459 A1460 G1461 C1467 C1468 A1469 G1470 A1471 A1472 G1473 C1474 C1475 C1476 A1477 G1478
U1482 G1483 G1487 A1490 G1491 G1492 C1493 A1494 A1495 A1496 U1497 C1498 C1499 G1500 C1506 A1507 A1508 C1509 A1510 A1511 G1512 C1513 U1514 U1520 G1521 G1522 U1523 G1530 G1534 U1535 A1536 C1537 G1538 G1542 A1543 C1544 A1545 A1545A C1546 A1554 A1558 G1559 C1564 C1565 G1568 A1569 A1570 A1571
A1572 C1577 U1578 A1579 A1580 G1581 C1585 A1586 A1587 C1588 C1589 U1590 G1591 C1592 G1595 C1598 U1602 A1603 C1607 A1608 A1609 C1617 A1618 G1622 G1628 U1629 C1636 A1637 C1638 U1639 C1646 G1647 C1648 G1653 A1654 A1655 C1656 C1657 C1658 U1659 C1660 G1661 G1667 A1668 G1674 C1675
A1676 A1677 G1678 A1689 U1693 C1694 G1695 A1698 G1699 A1700 U1709 C1710 G1718 G1725 G1726 U1727 G1728 A1729 U1730 G1731 A1732 C1741 C1742 G1743 G1750 G1756 U1757 G1758 A1762 G1763 G1764 G1769 G1770 A1773 C1774 A1780 C1781 C1782 A1786 C1790 A1791 G1792 C1793 U1794 C1795 U1796
C1797 U1798 G1799 C1800 G1801 A1802 A1803 A1812 G1813 G1816 G1817 U1818 A1819 G1824 A1825 G1826 C1827 G1828 A1829 C1830 G1831 C1832 U1833 U1834 G1835 U1841 G1842 C1843 C1844 A1847 A1853 A1854 G1858 A1859 U1864 G1869 C1870 A1871 A1872 G1878 C1882 G1883 A1884 A1889 A1890 G1896 G1899 A1900
A1901 C1902 G1903 G1904 C1905 G1906 A1913 C1914 A1918 A1919 C1920 A1927 A1928 G1929 G1930 U1931 A1932 G1933 C1934 G1935 A1936 A1937 A1938 U1939 U1946 C1947 A1952 U1955 U1956 A1960 U1963 G1964 C1967 G1968 A1969 A1970 A1971 A1972 G1973 C1982 G1989 C1990 U1991 G1992 U1993 C1994 G2010 U2011
G2012 A2013 A2014 A2015 A2020 C2021 U2022 G2023 G2024 C2025 C2026 G2027 U2028 G2029 A2030 A2031 A2032 A2033 U2034 G2035 C2036 G2037 G2038 C2039 C2040 U2041 A2042 C2043 G2052 C2055 G2056 A2059 A2060 G2061 A2062 C2063 C2064 C2065 U2068 G2069 G2070 A2071 G2072 C2073 U2074 U2075 U2086 G2087 G2093 U2096 U2099
C2103 G2104 C2105 G2106 C2107 C2108 U2109 G2110 C2111 G2112 U2113 A2114 G2115 G2116 A2117 U2118 A2119 G2120 G2121 U2122 G2123 G2124 G2125 A2126 G2127 C2128 G2131 U2132 G2133 A2134 A2135 C2136 C2137 C2138 C2139 C2142 C2143 U2144 C2145 C2146 G2147 G2148 G2149 U2150 G2151 G2152 G2153 G2154 G2155 G2156 G2157 A2158 G2165 G2166 U2167 G2168
A2169 U2172 A2173 C2174 C2175 A2176 G2182 C2183 G2184 C2185 G2186 G2187 C2188 U2189 G2190 G2191 G2192 G2193 U2197 A2198 C2207 G2210 G2211 A2212 U2213 G2215 A2225 U2233 G2234 G2235 C2236 G2237 G2238 G2239 C2240 A2241 G2242 U2243 U2244 U2245 G2246 A2247 C2248 U2249 A2268 A2269 C2275 A2278 C2283
C2284 C2285 A2286 A2287 A2288 G2289 G2290 U2291 C2292 C2293 G2303 C2306 G2307 G2308 A2309 A2310 A2311 U2312 C2313 C2314 G2315 C2316 G2319 A2320 G2325 A2328 G2329 G2330 G2334 A2335 G2340 G2341 C2342 C2343 U2344 G2345 A2346 C2347 U2348 G2349 C2350 G2353 G2354 C2355 C2364 G2365 A2369 G2370 G2371 G2372
G2373 C2374 G2383 G2384 C2385 C2386 U2387 G2391 A2392 A2393 C2394 G2395 C2396 C2402 C2403 U2406 G2407 U2408 G2409 G2410 C2416 G2420 G2421 A2422 U2423 C2424 A2425 G2429 A2430 A2434 A2435 G2436 U2437 U2438 A2439 C2440 C2441 C2442 C2443 C2444 C2445 G2446 G2447 A2448 U2449 A2450 A2451 C2452 A2453 G2454 G2455 C2456
C2461 U2462 C2463 C2467 G2468 A2469 G2470 C2471 C2475 A2476 G2484 G2490 G2494 C2498 G2502 G2505 U2506 G2513 U2514 C2515 G2516 C2517 A2518 C2521 U2522 G2523 G2524 C2527 U2528 G2529 U2537 C2538 A2542 G2543 G2544 U2547 G2548 U2554 U2555 C2556 G2557 C2558 C2559
U2563 A2566 G2567 C2568 A2572 C2573 G2576 A2577 C2578 C2579 U2584 U2585 C2586 A2590 C2591 G2592 A2600 C2601 A2602 G2603 U2604 U2609 C2610 U2611 C2612 U2615 C2616 C2617 G2618 C2619 C2626 G2627 C2628 A2629 G2630 G2631 A2632 G2633 G2634 C2635 U2636 U2637 G2644 G2645 C2646 U2649 U2650 C2655



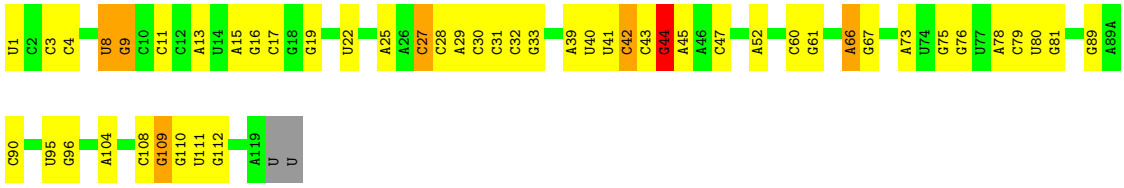
• Molecule 35: 5S rRNA

Chain RB:



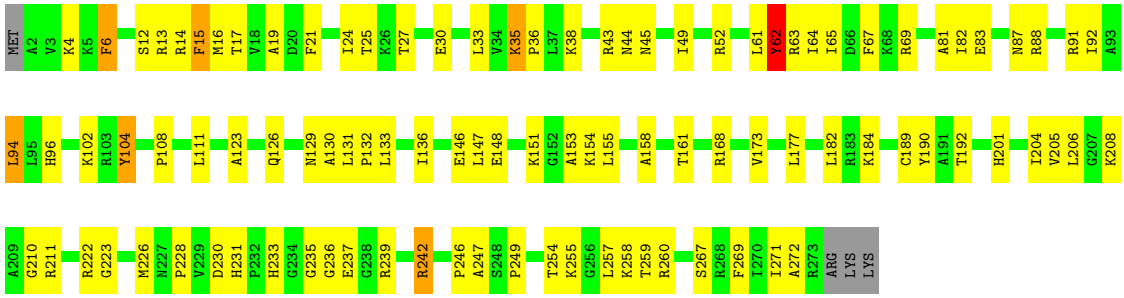
• Molecule 35: 5S rRNA

Chain YB:



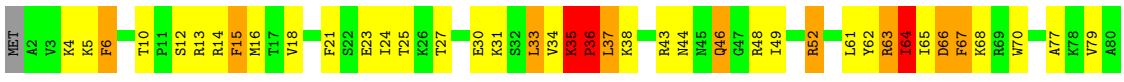
• Molecule 36: 50S ribosomal protein L2

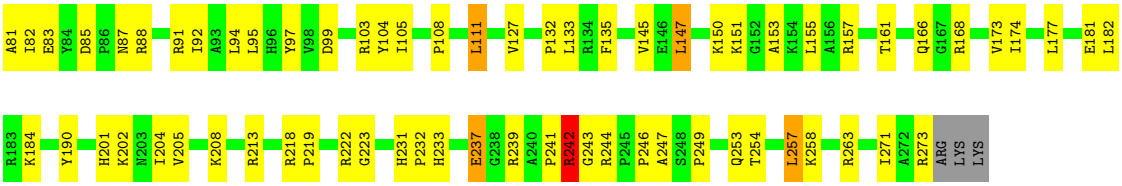
Chain RD:



• Molecule 36: 50S ribosomal protein L2

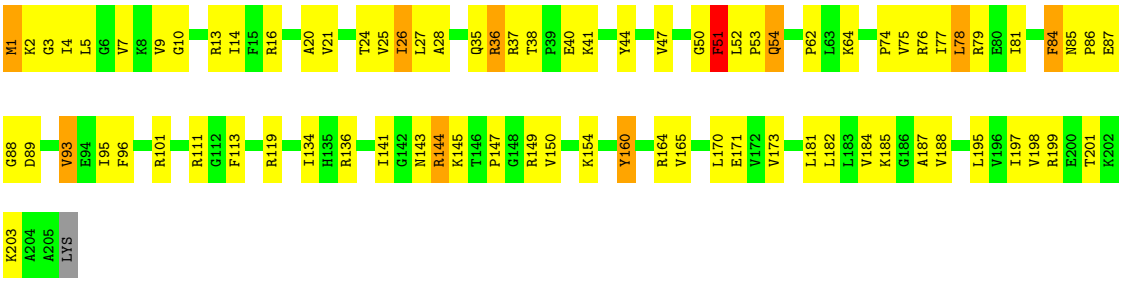
Chain YD:





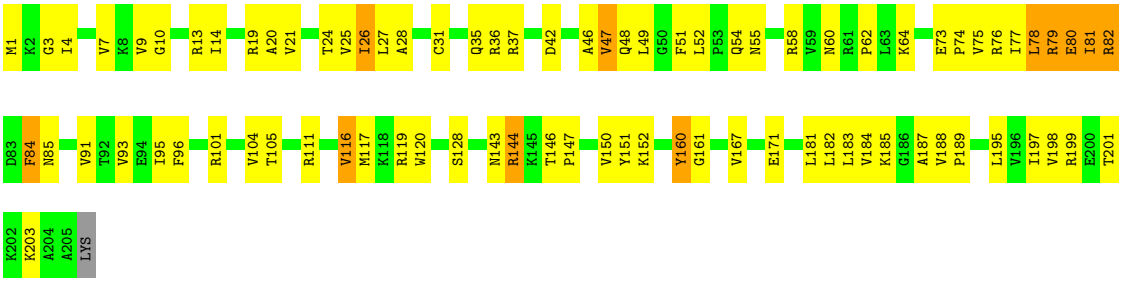
• Molecule 37: 50S ribosomal protein L3

Chain RE:



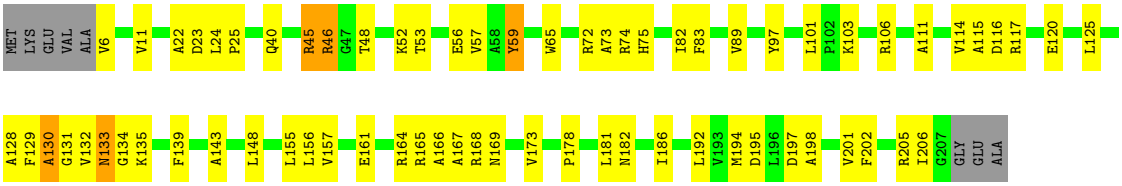
• Molecule 37: 50S ribosomal protein L3

Chain YE:



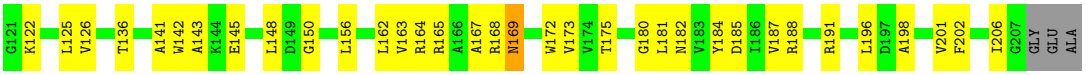
• Molecule 38: 50S ribosomal protein L4

Chain RF:



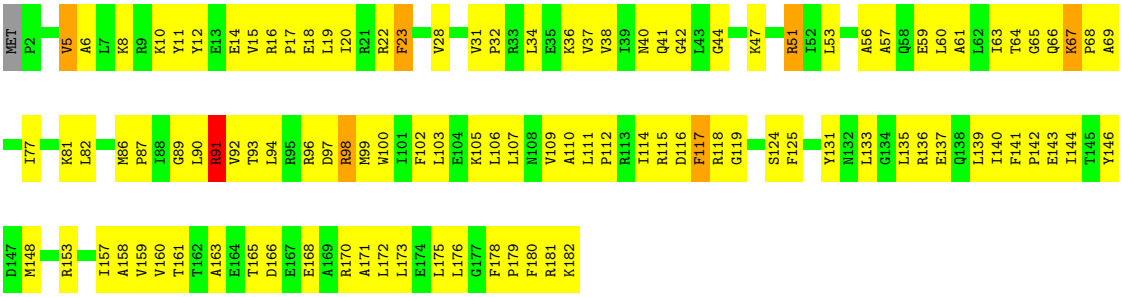
• Molecule 38: 50S ribosomal protein L4

Chain YF:



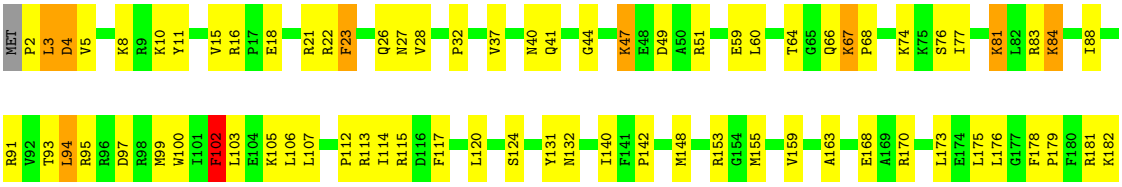
• Molecule 39: 50S ribosomal protein L5

Chain RG:



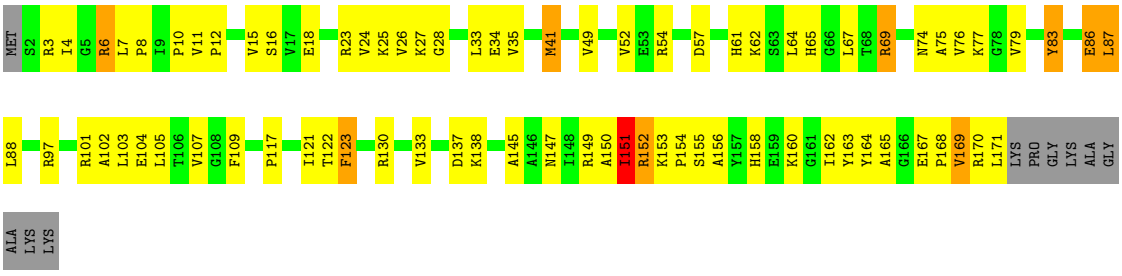
• Molecule 39: 50S ribosomal protein L5

Chain YG:



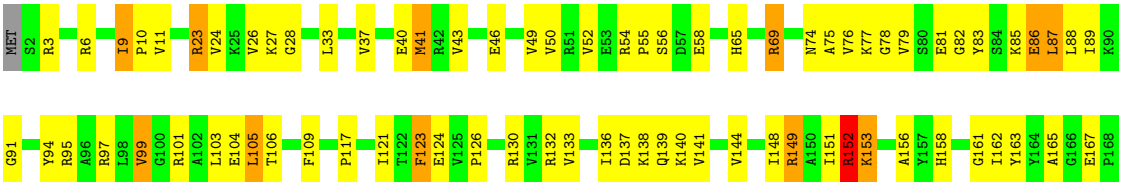
• Molecule 40: 50S ribosomal protein L6

Chain RH:



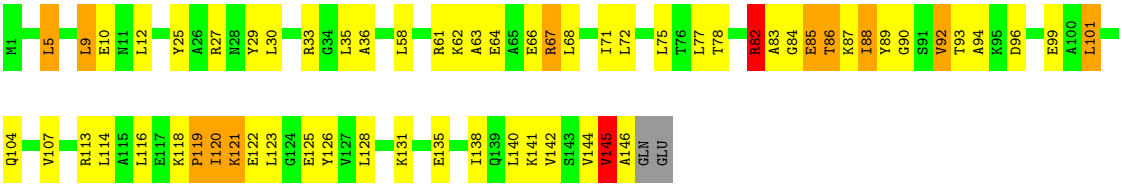
• Molecule 40: 50S ribosomal protein L6

Chain YH:



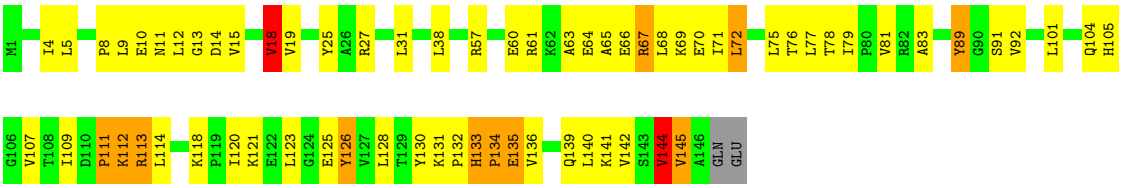
• Molecule 41: 50S ribosomal protein L9

Chain RI:



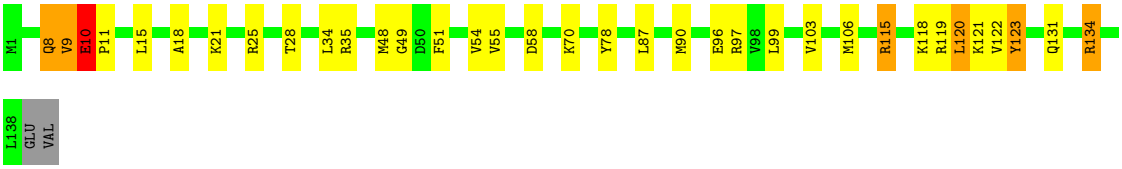
• Molecule 41: 50S ribosomal protein L9

Chain YI:



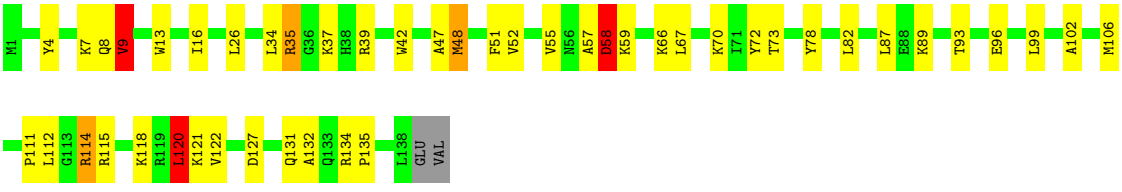
• Molecule 42: 50S ribosomal protein L13

Chain RN:



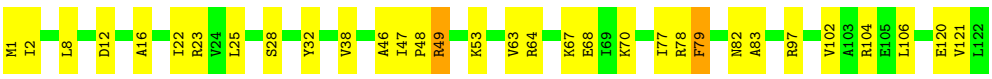
• Molecule 42: 50S ribosomal protein L13

Chain YN:



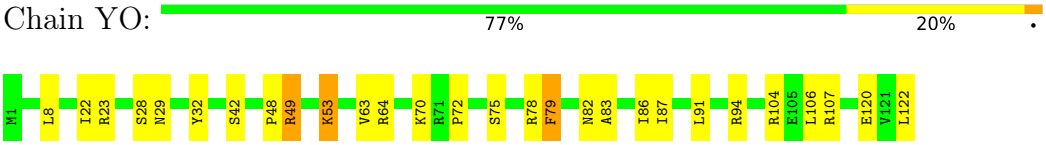
• Molecule 43: 50S ribosomal protein L14

Chain RO:



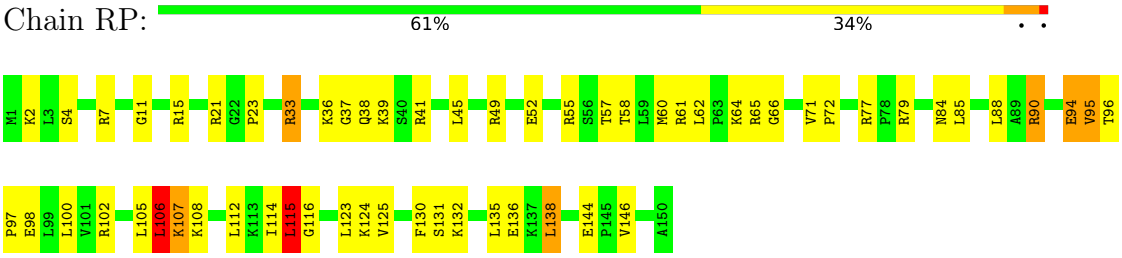
• Molecule 43: 50S ribosomal protein L14

Chain YO:



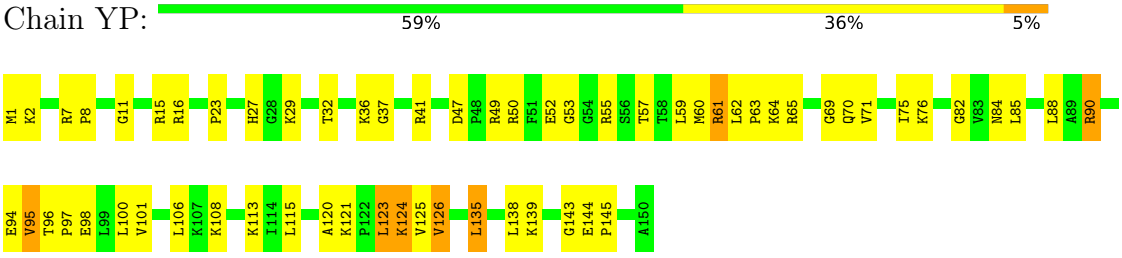
• Molecule 44: 50S ribosomal protein L15

Chain RP:



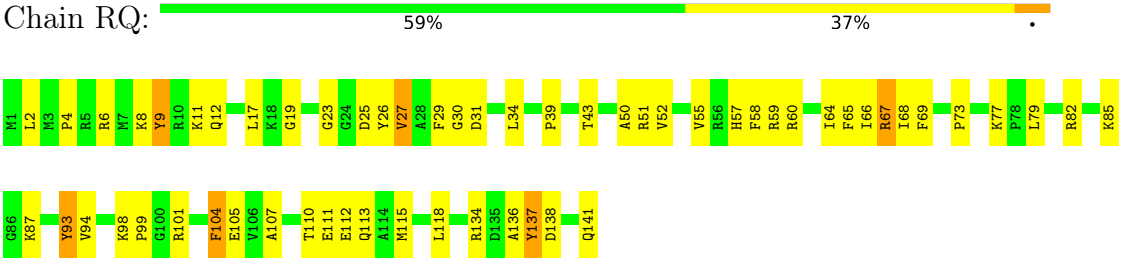
• Molecule 44: 50S ribosomal protein L15

Chain YP:



• Molecule 45: 50S ribosomal protein L16

Chain RQ:

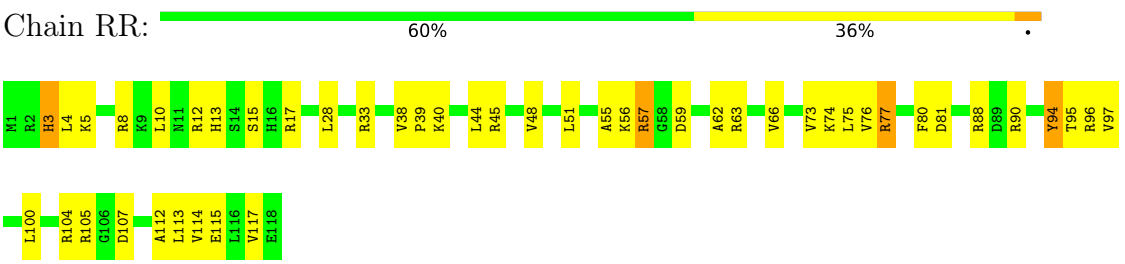


• Molecule 45: 50S ribosomal protein L16

Chain YQ:

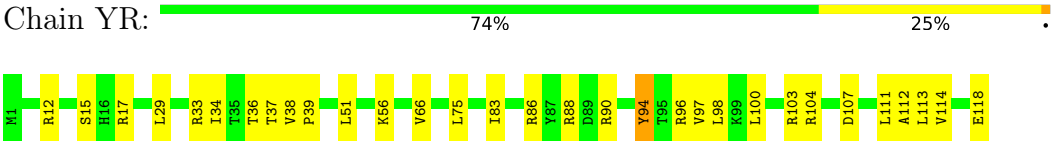
• Molecule 46: 50S ribosomal protein L17

Chain RR:



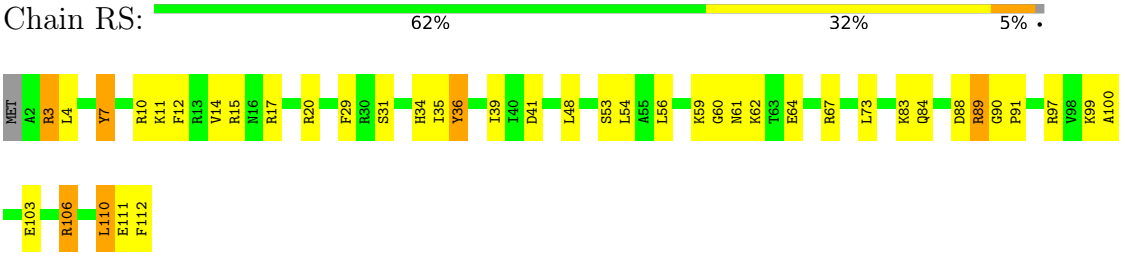
• Molecule 46: 50S ribosomal protein L17

Chain YR:



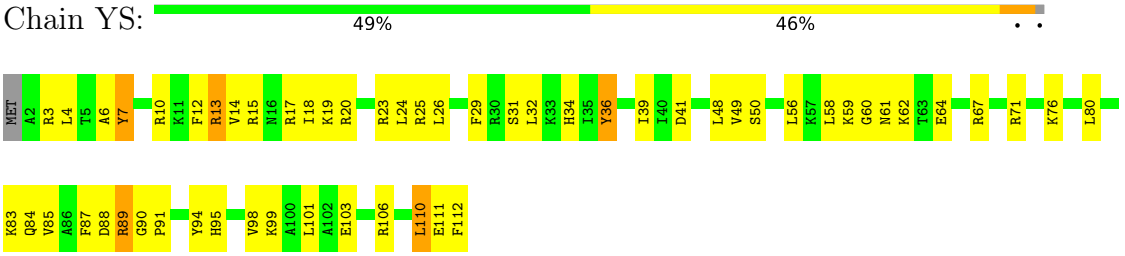
• Molecule 47: 50S ribosomal protein L18

Chain RS:



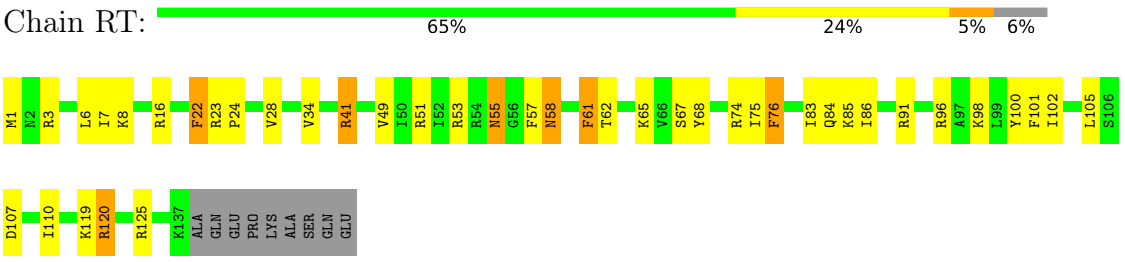
• Molecule 47: 50S ribosomal protein L18

Chain YS:



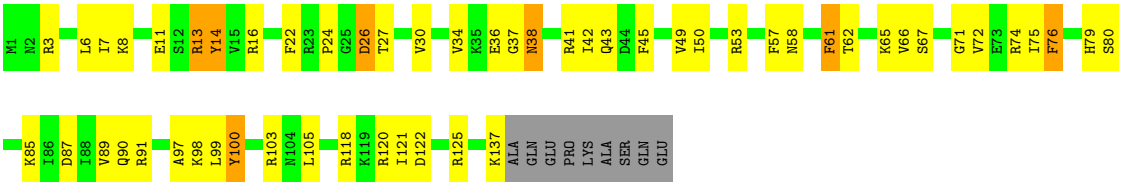
• Molecule 48: 50S ribosomal protein L19

Chain RT:



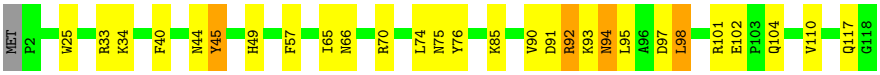
• Molecule 48: 50S ribosomal protein L19

Chain YT:



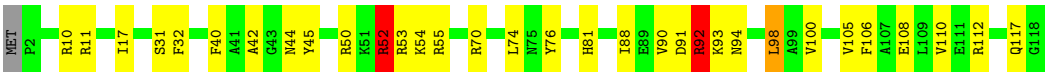
• Molecule 49: 50S ribosomal protein L20

Chain RU:



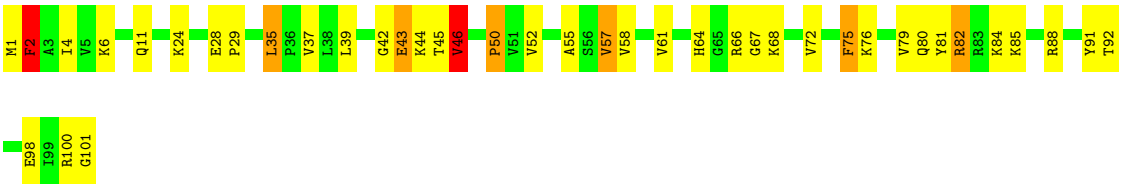
• Molecule 49: 50S ribosomal protein L20

Chain YU:



• Molecule 50: 50S ribosomal protein L21

Chain RV:

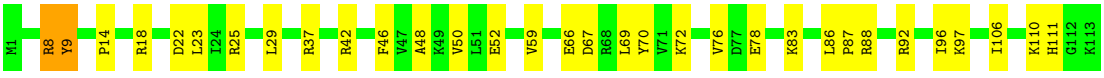


• Molecule 50: 50S ribosomal protein L21

Chain YV:

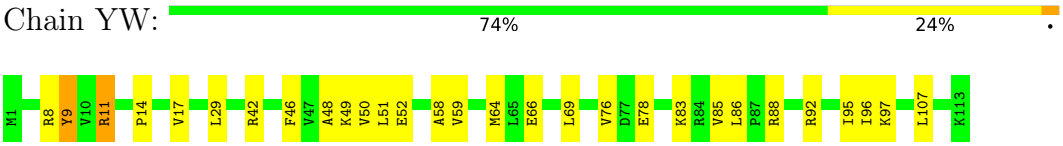
• Molecule 51: 50S ribosomal protein L22

Chain RW:



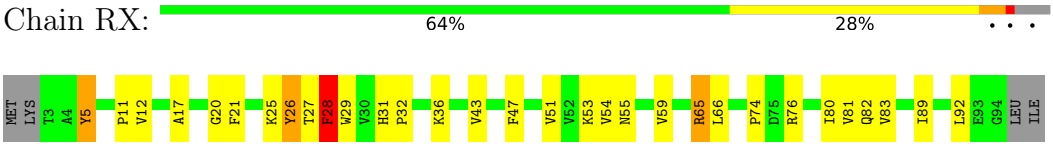
• Molecule 51: 50S ribosomal protein L22

Chain YW:



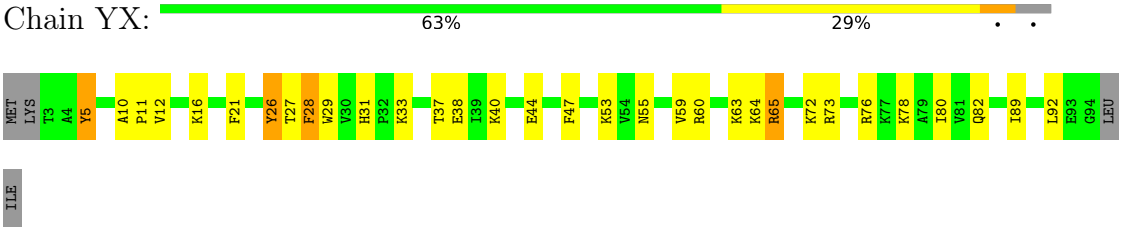
• Molecule 52: 50S ribosomal protein L23

Chain RX:



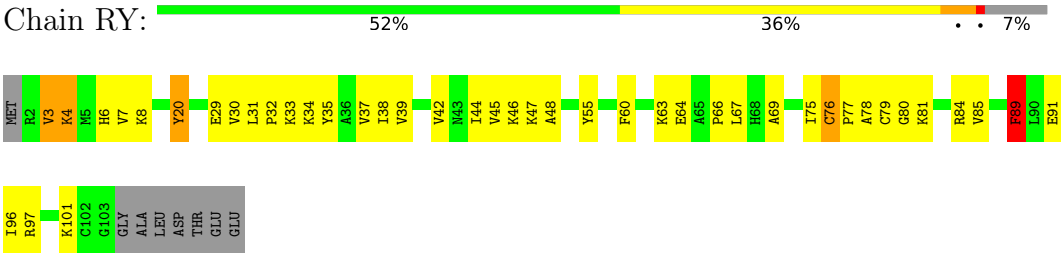
• Molecule 52: 50S ribosomal protein L23

Chain YX:



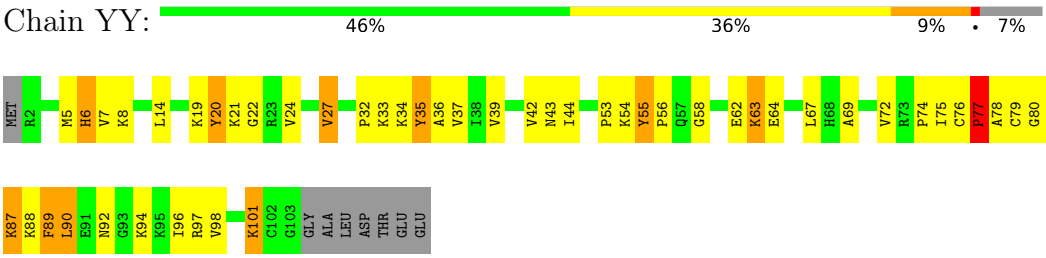
• Molecule 53: 50S ribosomal protein L24

Chain RY:



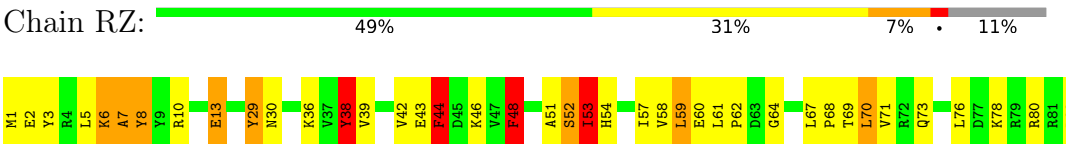
• Molecule 53: 50S ribosomal protein L24

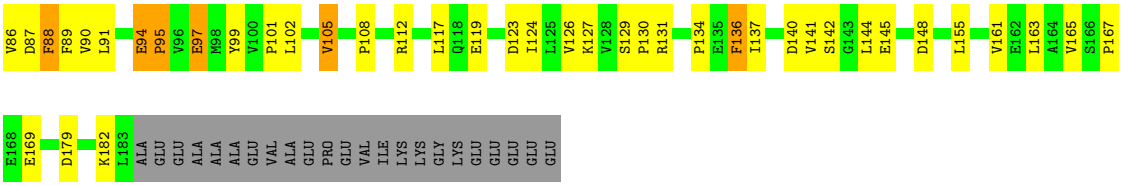
Chain YY:



• Molecule 54: 50S ribosomal protein L25

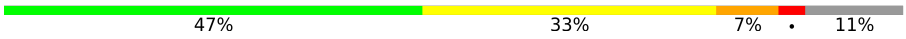
Chain RZ:

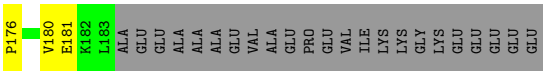




• Molecule 54: 50S ribosomal protein L25

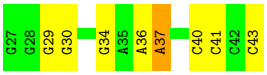
Chain YZ:





• Molecule 55: A-site ASL^Phe

Chain XY:



• Molecule 56: CC-puro

Chain Z6:

• Molecule 56: CC-puro

Chain Z8:

4 Data and refinement statistics (i)

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	209.72Å 449.48Å 617.34Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	153.33 – 3.58	Depositor
% Data completeness (in resolution range)	98.3 (153.33-3.58)	Depositor
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.30 (at 3.41Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.205 , 0.255	Depositor
Wilson B-factor (Å^2)	96.7	Xtriage
Anisotropy	0.201	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.39$, $< L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	292176	wwPDB-VP
Average B, all atoms (Å^2)	118.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.75% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: MNU, SF4, H2U, C4J, 7MG, T6A, PSU, ZN, MG, 5MU, PPU

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	QA	0.30	4/36098 (0.0%)	0.93	84/56341 (0.1%)
1	XA	0.29	1/36346 (0.0%)	0.93	69/56725 (0.1%)
2	QB	0.35	0/1959	0.75	4/2642 (0.2%)
2	XB	0.38	0/1959	0.76	2/2642 (0.1%)
3	QC	0.30	0/1629	0.61	1/2195 (0.0%)
3	XC	0.36	0/1629	0.69	0/2195
4	QD	0.37	0/1733	0.73	3/2318 (0.1%)
4	XD	0.33	0/1733	0.59	0/2318
5	QE	0.29	0/1171	0.59	1/1576 (0.1%)
5	XE	0.34	0/1171	0.64	0/1576
6	QF	0.26	0/856	0.56	0/1154
6	XF	0.27	0/856	0.56	0/1154
7	QG	0.28	0/1276	0.55	0/1709
7	XG	0.31	0/1276	0.58	0/1709
8	QH	0.28	0/1136	0.57	0/1527
8	XH	0.45	2/1136 (0.2%)	0.72	2/1527 (0.1%)
9	QI	0.37	0/1029	0.66	0/1379
9	XI	0.47	1/1029 (0.1%)	0.86	6/1379 (0.4%)
10	QJ	0.29	0/814	0.63	1/1095 (0.1%)
10	XJ	0.35	0/814	0.73	2/1095 (0.2%)
11	QK	0.29	0/900	0.65	1/1213 (0.1%)
11	XK	0.31	0/900	0.65	0/1213
12	QL	0.33	0/991	0.66	0/1327
12	XL	0.36	0/991	0.67	0/1327
13	QM	0.36	0/974	0.69	0/1303
13	XM	0.60	2/974 (0.2%)	0.75	1/1303 (0.1%)
14	QN	0.33	0/501	0.61	0/664
14	XN	0.32	0/501	0.64	0/664
15	QO	0.27	0/745	0.55	0/992
15	XO	0.26	0/745	0.59	0/992
16	QP	0.34	0/721	0.74	3/970 (0.3%)
16	XP	0.30	0/721	0.62	0/970

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
17	QQ	0.29	0/847	0.65	0/1131
17	XQ	0.30	0/847	0.60	0/1131
18	QR	0.29	0/579	0.62	0/768
18	XR	0.29	0/579	0.67	0/768
19	QS	0.43	0/689	0.84	5/926 (0.5%)
19	XS	0.38	0/689	0.67	0/926
20	QT	0.34	0/765	0.66	0/1007
20	XT	0.34	0/765	0.67	1/1007 (0.1%)
21	QU	0.36	0/221	0.77	0/288
21	XU	0.40	0/221	0.85	2/288 (0.7%)
22	QV	0.44	0/1569	1.10	11/2437 (0.5%)
22	XV	0.28	0/1569	0.92	0/2437
23	QX	0.19	0/72	0.69	0/110
23	XX	0.34	0/564	1.02	0/879
24	R0	0.32	0/657	0.68	0/874
24	Y0	0.36	0/657	0.75	1/874 (0.1%)
25	R1	0.36	0/770	0.66	0/1022
25	Y1	0.35	0/770	0.67	0/1022
26	R2	0.37	0/583	0.61	0/771
26	Y2	0.34	0/600	0.69	0/793
27	R3	0.30	0/474	0.55	0/635
27	Y3	0.30	0/474	0.59	0/635
28	R4	0.42	0/594	0.76	0/795
28	Y4	0.59	1/594 (0.2%)	1.06	4/795 (0.5%)
29	R5	0.41	0/473	0.66	0/639
29	Y5	0.40	0/473	0.65	0/639
30	R6	0.40	0/431	0.86	0/575
30	Y6	0.49	0/431	0.96	2/575 (0.3%)
31	R7	0.26	0/438	0.53	0/575
31	Y7	0.27	0/438	0.57	0/575
32	R8	0.31	0/525	0.69	0/691
32	Y8	0.40	0/525	0.78	1/691 (0.1%)
33	R9	0.28	0/310	0.56	0/407
33	Y9	0.27	0/310	0.54	0/407
34	RA	0.31	6/69521 (0.0%)	0.95	155/108529 (0.1%)
34	YA	0.31	6/69543 (0.0%)	0.94	127/108563 (0.1%)
35	RB	0.29	0/2878	0.99	11/4490 (0.2%)
35	YB	0.31	0/2878	1.04	12/4490 (0.3%)
36	RD	0.35	0/2165	0.72	3/2919 (0.1%)
36	YD	0.51	3/2165 (0.1%)	0.85	4/2919 (0.1%)
37	RE	0.46	1/1601 (0.1%)	0.79	3/2160 (0.1%)
37	YE	0.39	0/1601	0.76	2/2160 (0.1%)
38	RF	0.35	0/1620	0.67	1/2194 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
38	YF	0.32	0/1620	0.62	0/2194
39	RG	0.53	2/1499 (0.1%)	0.86	3/2016 (0.1%)
39	YG	0.39	0/1499	0.76	2/2016 (0.1%)
40	RH	0.37	0/1332	0.73	0/1802
40	YH	0.35	0/1332	0.77	1/1802 (0.1%)
41	RI	0.39	0/1151	0.72	1/1558 (0.1%)
41	YI	0.42	0/1151	0.73	0/1558
42	RN	0.41	1/1131 (0.1%)	0.68	1/1525 (0.1%)
42	YN	0.34	0/1131	0.70	1/1525 (0.1%)
43	RO	0.31	0/943	0.64	0/1269
43	YO	0.30	0/943	0.62	0/1269
44	RP	0.36	0/1162	0.75	1/1544 (0.1%)
44	YP	0.37	0/1162	0.87	6/1544 (0.4%)
45	RQ	0.45	0/1143	0.89	5/1527 (0.3%)
45	YQ	0.40	0/1143	0.76	1/1527 (0.1%)
46	RR	0.32	0/982	0.73	1/1312 (0.1%)
46	YR	0.31	0/982	0.73	3/1312 (0.2%)
47	RS	0.31	0/892	0.77	1/1187 (0.1%)
47	YS	0.35	0/892	0.80	1/1187 (0.1%)
48	RT	0.33	0/1155	0.69	0/1542
48	YT	0.34	0/1155	0.77	2/1542 (0.1%)
49	RU	0.32	0/982	0.62	0/1306
49	YU	0.39	0/982	0.72	2/1306 (0.2%)
50	RV	0.38	0/790	0.82	3/1057 (0.3%)
50	YV	0.38	0/790	0.80	1/1057 (0.1%)
51	RW	0.29	0/911	0.62	0/1220
51	YW	0.29	0/911	0.57	0/1220
52	RX	0.34	0/739	0.70	1/993 (0.1%)
52	YX	0.36	0/739	0.67	0/993
53	RY	0.43	0/798	0.83	2/1064 (0.2%)
53	YY	0.47	0/798	0.86	2/1064 (0.2%)
54	RZ	0.43	0/1493	0.88	7/2026 (0.3%)
54	YZ	0.52	2/1493 (0.1%)	0.85	5/2026 (0.2%)
55	XY	0.35	0/405	1.12	0/630
56	Z6	0.26	0/40	1.13	0/60
56	Z8	0.25	0/40	1.04	0/60
All	All	0.33	32/316100 (0.0%)	0.89	578/472551 (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
8	XH	0	1
39	RG	0	1
All	All	0	2

The worst 5 of 32 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	XM	10	PRO	N-CA	13.55	1.70	1.47
54	YZ	67	LEU	C-N	8.95	1.51	1.34
37	RE	144	ARG	CB-CG	-8.82	1.28	1.52
54	YZ	61	LEU	C-N	8.61	1.50	1.34
36	YD	35	LYS	C-N	8.57	1.50	1.34

The worst 5 of 578 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
36	YD	242	ARG	NE-CZ-NH2	17.50	129.05	120.30
36	YD	242	ARG	NE-CZ-NH1	-11.80	114.40	120.30
44	YP	90	ARG	NE-CZ-NH1	11.38	125.99	120.30
1	QA	1158	C	N1-C2-O2	10.88	125.43	118.90
1	QA	1158	C	C2-N1-C1'	10.11	129.92	118.80

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
39	RG	91	ARG	Sidechain
8	XH	41	ARG	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	QA	32247	0	16278	533	0
1	XA	32471	0	16395	479	0
2	QB	1924	0	1975	111	0
2	XB	1924	0	1975	105	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	QC	1605	0	1668	60	0
3	XC	1605	0	1668	54	0
4	QD	1703	0	1766	94	0
4	XD	1703	0	1767	73	0
5	QE	1155	0	1213	28	0
5	XE	1155	0	1213	31	0
6	QF	843	0	857	15	0
6	XF	843	0	857	9	0
7	QG	1257	0	1296	14	0
7	XG	1257	0	1296	18	0
8	QH	1116	0	1177	30	0
8	XH	1116	0	1177	27	0
9	QI	1010	0	1037	39	0
9	XI	1010	0	1037	49	0
10	QJ	801	0	849	30	0
10	XJ	801	0	849	29	0
11	QK	885	0	904	32	0
11	XK	885	0	904	22	0
12	QL	975	0	1062	46	0
12	XL	975	0	1062	49	0
13	QM	964	0	1034	79	0
13	XM	964	0	1034	48	0
14	QN	492	0	530	31	0
14	XN	492	0	529	17	0
15	QO	734	0	771	9	0
15	XO	734	0	771	11	0
16	QP	705	0	725	21	0
16	XP	705	0	725	21	0
17	QQ	834	0	904	21	0
17	XQ	834	0	904	29	0
18	QR	574	0	644	27	0
18	XR	574	0	644	11	0
19	QS	674	0	699	91	0
19	XS	674	0	699	63	0
20	QT	763	0	861	29	0
20	XT	763	0	861	22	0
21	QU	217	0	234	11	0
21	XU	217	0	234	14	0
22	QV	1594	0	806	8	0
22	XV	1594	0	806	25	0
23	QX	65	0	33	0	0
23	XX	502	0	249	10	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	R0	648	0	672	18	0
24	Y0	648	0	672	20	0
25	R1	763	0	848	28	0
25	Y1	763	0	848	22	0
26	R2	581	0	629	40	0
26	Y2	598	0	653	12	0
27	R3	469	0	518	14	0
27	Y3	469	0	518	12	0
28	R4	581	0	577	75	0
28	Y4	581	0	577	92	0
29	R5	459	0	480	59	0
29	Y5	459	0	480	58	0
30	R6	424	0	450	48	0
30	Y6	424	0	450	62	0
31	R7	430	0	480	5	0
31	Y7	430	0	480	13	0
32	R8	517	0	582	35	0
32	Y8	517	0	582	66	0
33	R9	307	0	338	4	0
33	Y9	307	0	338	9	0
34	RA	62071	0	31290	715	0
34	YA	62091	0	31297	783	0
35	RB	2573	0	1306	42	0
35	YB	2573	0	1305	34	0
36	RD	2115	0	2195	95	0
36	YD	2115	0	2195	132	0
37	RE	1568	0	1634	83	0
37	YE	1568	0	1634	94	0
38	RF	1585	0	1632	69	0
38	YF	1585	0	1632	50	0
39	RG	1474	0	1535	128	0
39	YG	1474	0	1535	83	0
40	RH	1307	0	1382	89	0
40	YH	1307	0	1382	65	0
41	RI	1136	0	1223	75	0
41	YI	1136	0	1223	76	0
42	RN	1104	0	1180	33	0
42	YN	1104	0	1180	35	0
43	RO	933	0	996	28	0
43	YO	933	0	996	26	0
44	RP	1145	0	1228	56	0
44	YP	1145	0	1228	78	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
45	RQ	1122	0	1179	42	0
45	YQ	1122	0	1179	44	0
46	RR	968	0	1033	34	0
46	YR	968	0	1033	34	0
47	RS	882	0	943	27	0
47	YS	882	0	943	58	0
48	RT	1141	0	1202	35	0
48	YT	1141	0	1202	50	0
49	RU	964	0	1022	31	0
49	YU	964	0	1022	35	0
50	RV	779	0	852	44	0
50	YV	779	0	852	34	0
51	RW	900	0	964	22	0
51	YW	900	0	964	18	0
52	RX	725	0	778	26	0
52	YX	725	0	778	33	0
53	RY	785	0	878	34	0
53	YY	785	0	878	50	0
54	RZ	1461	0	1493	97	0
54	YZ	1461	0	1493	120	0
55	XY	362	0	186	3	0
56	Z6	74	0	51	0	0
56	Z8	74	0	51	2	0
57	QA	54	0	0	0	0
57	QV	1	0	0	0	0
57	R0	1	0	0	0	0
57	R5	1	0	0	0	0
57	R7	1	0	0	0	0
57	R8	1	0	0	0	0
57	RA	333	0	0	0	0
57	RB	5	0	0	0	0
57	RE	1	0	0	0	0
57	RF	1	0	0	0	0
57	RR	2	0	0	0	0
57	XA	58	0	0	0	0
57	XV	2	0	0	0	0
57	XX	1	0	0	0	0
57	Y0	1	0	0	0	0
57	Y1	1	0	0	0	0
57	Y3	1	0	0	0	0
57	Y5	1	0	0	0	0
57	Y7	2	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
57	YA	361	0	0	0	0
57	YB	4	0	0	0	0
57	YE	2	0	0	0	0
57	YP	2	0	0	0	0
57	YQ	2	0	0	0	0
57	YR	2	0	0	0	0
57	YY	1	0	0	0	0
58	QD	8	0	0	0	0
58	XD	8	0	0	2	0
59	QN	1	0	0	0	0
59	XN	1	0	0	0	0
All	All	292176	0	198335	6065	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 13.

The worst 5 of 6065 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)
19:QS:44:MET:SD	19:QS:49:ILE:HD11	1.50	1.48
53:RY:76:CYS:SG	53:RY:77:PRO:HD3	1.53	1.48
13:XM:10:PRO:N	13:XM:10:PRO:CA	1.70	1.46
41:RI:83:ALA:C	41:RI:144:VAL:HG13	1.33	1.44
26:R2:13:ALA:HA	26:R2:16:LEU:CD1	1.50	1.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	QB	235/256 (92%)	215 (92%)	18 (8%)	2 (1%)	17 57

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	XB	235/256 (92%)	213 (91%)	20 (8%)	2 (1%)	17 57
3	QC	203/239 (85%)	190 (94%)	13 (6%)	0	100 100
3	XC	203/239 (85%)	192 (95%)	11 (5%)	0	100 100
4	QD	206/209 (99%)	200 (97%)	3 (2%)	3 (2%)	10 47
4	XD	206/209 (99%)	199 (97%)	7 (3%)	0	100 100
5	QE	149/162 (92%)	137 (92%)	12 (8%)	0	100 100
5	XE	149/162 (92%)	143 (96%)	5 (3%)	1 (1%)	22 62
6	QF	99/101 (98%)	97 (98%)	2 (2%)	0	100 100
6	XF	99/101 (98%)	97 (98%)	2 (2%)	0	100 100
7	QG	153/156 (98%)	144 (94%)	9 (6%)	0	100 100
7	XG	153/156 (98%)	149 (97%)	4 (3%)	0	100 100
8	QH	136/138 (99%)	125 (92%)	11 (8%)	0	100 100
8	XH	136/138 (99%)	123 (90%)	13 (10%)	0	100 100
9	QI	125/128 (98%)	117 (94%)	8 (6%)	0	100 100
9	XI	125/128 (98%)	119 (95%)	6 (5%)	0	100 100
10	QJ	97/105 (92%)	84 (87%)	13 (13%)	0	100 100
10	XJ	97/105 (92%)	86 (89%)	11 (11%)	0	100 100
11	QK	117/129 (91%)	111 (95%)	6 (5%)	0	100 100
11	XK	117/129 (91%)	113 (97%)	4 (3%)	0	100 100
12	QL	123/131 (94%)	111 (90%)	11 (9%)	1 (1%)	19 59
12	XL	123/131 (94%)	113 (92%)	8 (6%)	2 (2%)	9 45
13	QM	119/126 (94%)	106 (89%)	12 (10%)	1 (1%)	19 59
13	XM	119/126 (94%)	105 (88%)	13 (11%)	1 (1%)	19 59
14	QN	58/61 (95%)	53 (91%)	5 (9%)	0	100 100
14	XN	58/61 (95%)	52 (90%)	5 (9%)	1 (2%)	9 44
15	QO	86/89 (97%)	80 (93%)	6 (7%)	0	100 100
15	XO	86/89 (97%)	82 (95%)	4 (5%)	0	100 100
16	QP	82/88 (93%)	78 (95%)	4 (5%)	0	100 100
16	XP	82/88 (93%)	78 (95%)	4 (5%)	0	100 100
17	QQ	98/105 (93%)	98 (100%)	0	0	100 100
17	XQ	98/105 (93%)	98 (100%)	0	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
18	QR	68/88 (77%)	67 (98%)	1 (2%)	0	100 100
18	XR	68/88 (77%)	64 (94%)	4 (6%)	0	100 100
19	QS	82/93 (88%)	64 (78%)	13 (16%)	5 (6%)	1 17
19	XS	82/93 (88%)	73 (89%)	8 (10%)	1 (1%)	13 51
20	QT	97/106 (92%)	88 (91%)	9 (9%)	0	100 100
20	XT	97/106 (92%)	87 (90%)	10 (10%)	0	100 100
21	QU	23/27 (85%)	20 (87%)	3 (13%)	0	100 100
21	XU	23/27 (85%)	21 (91%)	2 (9%)	0	100 100
24	R0	80/85 (94%)	74 (92%)	6 (8%)	0	100 100
24	Y0	80/85 (94%)	76 (95%)	4 (5%)	0	100 100
25	R1	95/98 (97%)	87 (92%)	6 (6%)	2 (2%)	7 40
25	Y1	95/98 (97%)	92 (97%)	2 (2%)	1 (1%)	14 53
26	R2	67/72 (93%)	65 (97%)	2 (3%)	0	100 100
26	Y2	69/72 (96%)	64 (93%)	4 (6%)	1 (1%)	11 48
27	R3	57/60 (95%)	56 (98%)	1 (2%)	0	100 100
27	Y3	57/60 (95%)	55 (96%)	2 (4%)	0	100 100
28	R4	69/71 (97%)	52 (75%)	13 (19%)	4 (6%)	1 18
28	Y4	69/71 (97%)	48 (70%)	19 (28%)	2 (3%)	4 33
29	R5	57/60 (95%)	48 (84%)	6 (10%)	3 (5%)	2 19
29	Y5	57/60 (95%)	50 (88%)	6 (10%)	1 (2%)	8 43
30	R6	47/54 (87%)	36 (77%)	10 (21%)	1 (2%)	7 40
30	Y6	47/54 (87%)	34 (72%)	9 (19%)	4 (8%)	1 10
31	R7	47/49 (96%)	45 (96%)	2 (4%)	0	100 100
31	Y7	47/49 (96%)	45 (96%)	2 (4%)	0	100 100
32	R8	62/65 (95%)	53 (86%)	9 (14%)	0	100 100
32	Y8	62/65 (95%)	53 (86%)	7 (11%)	2 (3%)	4 31
33	R9	35/37 (95%)	35 (100%)	0	0	100 100
33	Y9	35/37 (95%)	34 (97%)	1 (3%)	0	100 100
36	RD	270/276 (98%)	251 (93%)	18 (7%)	1 (0%)	34 71
36	YD	270/276 (98%)	246 (91%)	21 (8%)	3 (1%)	14 53
37	RE	203/206 (98%)	177 (87%)	23 (11%)	3 (2%)	10 47

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
37	YE	203/206 (98%)	174 (86%)	27 (13%)	2 (1%)	15 55
38	RF	200/210 (95%)	188 (94%)	9 (4%)	3 (2%)	10 47
38	YF	200/210 (95%)	189 (94%)	11 (6%)	0	100 100
39	RG	179/182 (98%)	159 (89%)	18 (10%)	2 (1%)	14 53
39	YG	179/182 (98%)	160 (89%)	19 (11%)	0	100 100
40	RH	168/180 (93%)	136 (81%)	26 (16%)	6 (4%)	3 29
40	YH	168/180 (93%)	145 (86%)	18 (11%)	5 (3%)	4 33
41	RI	144/148 (97%)	130 (90%)	9 (6%)	5 (4%)	3 30
41	YI	144/148 (97%)	123 (85%)	11 (8%)	10 (7%)	1 15
42	RN	136/140 (97%)	129 (95%)	6 (4%)	1 (1%)	22 62
42	YN	136/140 (97%)	126 (93%)	8 (6%)	2 (2%)	10 47
43	RO	120/122 (98%)	116 (97%)	4 (3%)	0	100 100
43	YO	120/122 (98%)	113 (94%)	7 (6%)	0	100 100
44	RP	148/150 (99%)	129 (87%)	16 (11%)	3 (2%)	7 41
44	YP	148/150 (99%)	129 (87%)	16 (11%)	3 (2%)	7 41
45	RQ	139/141 (99%)	114 (82%)	24 (17%)	1 (1%)	22 62
45	YQ	139/141 (99%)	113 (81%)	22 (16%)	4 (3%)	4 33
46	RR	116/118 (98%)	108 (93%)	6 (5%)	2 (2%)	9 44
46	YR	116/118 (98%)	113 (97%)	3 (3%)	0	100 100
47	RS	109/112 (97%)	93 (85%)	14 (13%)	2 (2%)	8 43
47	YS	109/112 (97%)	94 (86%)	12 (11%)	3 (3%)	5 34
48	RT	135/146 (92%)	124 (92%)	9 (7%)	2 (2%)	10 47
48	YT	135/146 (92%)	127 (94%)	8 (6%)	0	100 100
49	RU	115/118 (98%)	109 (95%)	5 (4%)	1 (1%)	17 57
49	YU	115/118 (98%)	109 (95%)	5 (4%)	1 (1%)	17 57
50	RV	99/101 (98%)	92 (93%)	5 (5%)	2 (2%)	7 41
50	YV	99/101 (98%)	86 (87%)	8 (8%)	5 (5%)	2 20
51	RW	111/113 (98%)	108 (97%)	3 (3%)	0	100 100
51	YW	111/113 (98%)	105 (95%)	6 (5%)	0	100 100
52	RX	90/96 (94%)	86 (96%)	4 (4%)	0	100 100
52	YX	90/96 (94%)	90 (100%)	0	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
53	RY	100/110 (91%)	85 (85%)	13 (13%)	2 (2%)	7 41
53	YY	100/110 (91%)	77 (77%)	18 (18%)	5 (5%)	2 21
54	RZ	181/206 (88%)	158 (87%)	18 (10%)	5 (3%)	5 34
54	YZ	181/206 (88%)	159 (88%)	13 (7%)	9 (5%)	2 21
All	All	11472/12126 (95%)	10464 (91%)	874 (8%)	134 (1%)	13 51

5 of 134 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	QB	233	SER
19	QS	67	VAL
25	R1	30	VAL
28	R4	49	PHE
28	R4	50	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	QB	205/220 (93%)	194 (95%)	11 (5%)	22 57
2	XB	205/220 (93%)	192 (94%)	13 (6%)	18 52
3	QC	159/188 (85%)	156 (98%)	3 (2%)	57 80
3	XC	159/188 (85%)	150 (94%)	9 (6%)	20 55
4	QD	180/181 (99%)	165 (92%)	15 (8%)	11 42
4	XD	180/181 (99%)	176 (98%)	4 (2%)	52 78
5	QE	116/123 (94%)	113 (97%)	3 (3%)	46 74
5	XE	116/123 (94%)	111 (96%)	5 (4%)	29 63
6	QF	90/90 (100%)	90 (100%)	0	100 100
6	XF	90/90 (100%)	90 (100%)	0	100 100
7	QG	126/127 (99%)	121 (96%)	5 (4%)	31 65
7	XG	126/127 (99%)	122 (97%)	4 (3%)	39 70

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
8	QH	119/119 (100%)	118 (99%)	1 (1%)	81 92
8	XH	119/119 (100%)	116 (98%)	3 (2%)	47 75
9	QI	98/99 (99%)	95 (97%)	3 (3%)	40 71
9	XI	98/99 (99%)	91 (93%)	7 (7%)	14 48
10	QJ	89/92 (97%)	88 (99%)	1 (1%)	73 88
10	XJ	89/92 (97%)	87 (98%)	2 (2%)	52 78
11	QK	90/99 (91%)	86 (96%)	4 (4%)	28 63
11	XK	90/99 (91%)	84 (93%)	6 (7%)	16 50
12	QL	104/108 (96%)	99 (95%)	5 (5%)	25 60
12	XL	104/108 (96%)	98 (94%)	6 (6%)	20 55
13	QM	97/101 (96%)	91 (94%)	6 (6%)	18 53
13	XM	97/101 (96%)	91 (94%)	6 (6%)	18 53
14	QN	49/50 (98%)	44 (90%)	5 (10%)	7 34
14	XN	49/50 (98%)	47 (96%)	2 (4%)	30 64
15	QO	79/80 (99%)	79 (100%)	0	100 100
15	XO	79/80 (99%)	77 (98%)	2 (2%)	47 75
16	QP	72/74 (97%)	68 (94%)	4 (6%)	21 56
16	XP	72/74 (97%)	70 (97%)	2 (3%)	43 73
17	QQ	95/97 (98%)	90 (95%)	5 (5%)	22 57
17	XQ	95/97 (98%)	89 (94%)	6 (6%)	18 52
18	QR	61/77 (79%)	58 (95%)	3 (5%)	25 59
18	XR	61/77 (79%)	58 (95%)	3 (5%)	25 59
19	QS	73/80 (91%)	68 (93%)	5 (7%)	16 49
19	XS	73/80 (91%)	67 (92%)	6 (8%)	11 42
20	QT	76/82 (93%)	71 (93%)	5 (7%)	16 51
20	XT	76/82 (93%)	75 (99%)	1 (1%)	69 87
21	QU	20/22 (91%)	18 (90%)	2 (10%)	7 35
21	XU	20/22 (91%)	18 (90%)	2 (10%)	7 35
24	R0	65/67 (97%)	60 (92%)	5 (8%)	13 44
24	Y0	65/67 (97%)	61 (94%)	4 (6%)	18 53
25	R1	82/83 (99%)	78 (95%)	4 (5%)	25 59

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
25	Y1	82/83 (99%)	79 (96%)	3 (4%)	34 66
26	R2	64/67 (96%)	58 (91%)	6 (9%)	8 38
26	Y2	66/67 (98%)	62 (94%)	4 (6%)	18 53
27	R3	51/52 (98%)	47 (92%)	4 (8%)	12 44
27	Y3	51/52 (98%)	50 (98%)	1 (2%)	55 79
28	R4	63/63 (100%)	52 (82%)	11 (18%)	2 12
28	Y4	63/63 (100%)	55 (87%)	8 (13%)	4 24
29	R5	51/52 (98%)	44 (86%)	7 (14%)	3 22
29	Y5	51/52 (98%)	47 (92%)	4 (8%)	12 44
30	R6	48/52 (92%)	43 (90%)	5 (10%)	7 34
30	Y6	48/52 (92%)	36 (75%)	12 (25%)	0 4
31	R7	42/42 (100%)	42 (100%)	0	100 100
31	Y7	42/42 (100%)	40 (95%)	2 (5%)	25 60
32	R8	54/55 (98%)	52 (96%)	2 (4%)	34 66
32	Y8	54/55 (98%)	50 (93%)	4 (7%)	13 46
33	R9	34/34 (100%)	33 (97%)	1 (3%)	42 72
33	Y9	34/34 (100%)	34 (100%)	0	100 100
36	RD	214/218 (98%)	207 (97%)	7 (3%)	38 69
36	YD	214/218 (98%)	191 (89%)	23 (11%)	6 33
37	RE	165/166 (99%)	157 (95%)	8 (5%)	25 60
37	YE	165/166 (99%)	154 (93%)	11 (7%)	16 50
38	RF	161/166 (97%)	156 (97%)	5 (3%)	40 71
38	YF	161/166 (97%)	159 (99%)	2 (1%)	71 87
39	RG	155/156 (99%)	144 (93%)	11 (7%)	14 48
39	YG	155/156 (99%)	143 (92%)	12 (8%)	13 44
40	RH	142/148 (96%)	131 (92%)	11 (8%)	13 44
40	YH	142/148 (96%)	130 (92%)	12 (8%)	10 41
41	RI	122/124 (98%)	107 (88%)	15 (12%)	4 26
41	YI	122/124 (98%)	111 (91%)	11 (9%)	9 39
42	RN	117/119 (98%)	108 (92%)	9 (8%)	13 44
42	YN	117/119 (98%)	105 (90%)	12 (10%)	7 34

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
43	RO	100/100 (100%)	96 (96%)	4 (4%)	31 65
43	YO	100/100 (100%)	96 (96%)	4 (4%)	31 65
44	RP	116/116 (100%)	107 (92%)	9 (8%)	12 44
44	YP	116/116 (100%)	111 (96%)	5 (4%)	29 63
45	RQ	111/111 (100%)	101 (91%)	10 (9%)	9 39
45	YQ	111/111 (100%)	101 (91%)	10 (9%)	9 39
46	RR	101/101 (100%)	96 (95%)	5 (5%)	24 59
46	YR	101/101 (100%)	100 (99%)	1 (1%)	76 89
47	RS	87/88 (99%)	81 (93%)	6 (7%)	15 49
47	YS	87/88 (99%)	82 (94%)	5 (6%)	20 55
48	RT	120/127 (94%)	114 (95%)	6 (5%)	24 59
48	YT	120/127 (94%)	113 (94%)	7 (6%)	20 55
49	RU	93/94 (99%)	90 (97%)	3 (3%)	39 70
49	YU	93/94 (99%)	89 (96%)	4 (4%)	29 63
50	RV	82/82 (100%)	73 (89%)	9 (11%)	6 31
50	YV	82/82 (100%)	76 (93%)	6 (7%)	14 46
51	RW	92/92 (100%)	88 (96%)	4 (4%)	29 63
51	YW	92/92 (100%)	89 (97%)	3 (3%)	38 69
52	RX	74/78 (95%)	70 (95%)	4 (5%)	22 57
52	YX	74/78 (95%)	69 (93%)	5 (7%)	16 49
53	RY	85/91 (93%)	78 (92%)	7 (8%)	11 42
53	YY	85/91 (93%)	75 (88%)	10 (12%)	5 28
54	RZ	162/179 (90%)	143 (88%)	19 (12%)	5 29
54	YZ	162/179 (90%)	145 (90%)	17 (10%)	7 33
All	All	9704/10064 (96%)	9130 (94%)	574 (6%)	19 54

5 of 574 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
40	YH	23	ARG
54	YZ	181	GLU
41	YI	67	ARG
40	YH	9	ILE
47	YS	36	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 28 such sidechains are listed below:

Mol	Chain	Res	Type
51	RW	111	HIS
54	YZ	85	HIS
2	XB	204	ASN
48	YT	38	ASN
2	XB	19	HIS

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	QA	1498/1522 (98%)	271 (18%)	40 (2%)
1	XA	1509/1522 (99%)	258 (17%)	33 (2%)
22	QV	70/76 (92%)	14 (20%)	0
22	XV	70/76 (92%)	15 (21%)	0
23	QX	2/23 (8%)	0	0
23	XX	22/23 (95%)	9 (40%)	0
34	RA	2879/2915 (98%)	555 (19%)	47 (1%)
34	YA	2880/2915 (98%)	557 (19%)	47 (1%)
35	RB	119/122 (97%)	23 (19%)	1 (0%)
35	YB	119/122 (97%)	20 (16%)	1 (0%)
55	XY	16/17 (94%)	6 (37%)	0
56	Z6	1/3 (33%)	0	0
56	Z8	1/3 (33%)	0	0
All	All	9186/9339 (98%)	1728 (18%)	169 (1%)

5 of 1728 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	QA	6	G
1	QA	9	G
1	QA	32	A
1	QA	39	G
1	QA	47	C

5 of 169 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	XA	1200	C
34	YA	1085	A
1	XA	1446	A
34	YA	404	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
34	YA	1653	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	$\#\|Z\| > 2$
22	7MG	QV	46	22	22,26,27	1.40	5 (22%)	29,39,42	2.42	6 (20%)
22	PSU	XV	55	22	18,21,22	1.37	2 (11%)	22,30,33	1.87	3 (13%)
22	H2U	QV	20	22	18,21,22	1.04	1 (5%)	21,30,33	2.35	3 (14%)
22	C4J	QV	47	22	24,29,30	2.93	6 (25%)	29,42,45	1.63	5 (17%)
22	PSU	QV	55	22	18,21,22	1.42	2 (11%)	22,30,33	1.93	3 (13%)
22	PSU	XV	39	22	18,21,22	1.37	2 (11%)	22,30,33	1.84	3 (13%)
22	T6A	XV	37	22	27,34,35	0.95	1 (3%)	29,49,52	1.83	6 (20%)
22	C4J	XV	47	22	24,29,30	2.86	7 (29%)	29,42,45	1.49	5 (17%)
22	5MU	QV	54	22	19,22,23	1.36	4 (21%)	28,32,35	2.03	8 (28%)
22	T6A	QV	37	22	27,34,35	0.92	1 (3%)	29,49,52	2.29	5 (17%)
22	7MG	XV	46	22	22,26,27	1.30	3 (13%)	29,39,42	2.51	7 (24%)
22	PSU	QV	39	22	18,21,22	1.39	2 (11%)	22,30,33	1.95	4 (18%)
22	5MU	XV	54	22	19,22,23	1.36	5 (26%)	28,32,35	1.98	7 (25%)
56	PPU	Z6	76	56,34	32,40,41	0.84	1 (3%)	33,57,60	1.42	6 (18%)
56	PPU	Z8	76	56,34	32,40,41	0.89	1 (3%)	33,57,60	1.35	5 (15%)
22	MNU	QV	34	22,23	20,24,25	1.28	3 (15%)	28,34,37	1.72	8 (28%)
22	H2U	XV	20	22	18,21,22	1.04	2 (11%)	21,30,33	2.39	4 (19%)
22	MNU	XV	34	22,23	20,24,25	1.30	3 (15%)	28,34,37	1.84	7 (25%)

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
22	7MG	QV	46	22	-	2/7/37/38	0/3/3/3
22	PSU	XV	55	22	-	0/7/25/26	0/2/2/2
22	H2U	QV	20	22	-	5/7/38/39	0/2/2/2
22	C4J	QV	47	22	-	4/16/34/35	0/2/2/2
22	PSU	QV	55	22	-	0/7/25/26	0/2/2/2
22	PSU	XV	39	22	-	0/7/25/26	0/2/2/2
22	T6A	XV	37	22	-	9/19/41/42	0/3/3/3
22	C4J	XV	47	22	-	5/16/34/35	0/2/2/2
22	5MU	QV	54	22	-	0/7/25/26	0/2/2/2
22	T6A	QV	37	22	-	10/19/41/42	0/3/3/3
22	7MG	XV	46	22	-	0/7/37/38	0/3/3/3
22	PSU	QV	39	22	-	0/7/25/26	0/2/2/2
22	5MU	XV	54	22	-	0/7/25/26	0/2/2/2
56	PPU	Z6	76	56,34	-	3/21/43/44	0/4/4/4
56	PPU	Z8	76	56,34	-	3/21/43/44	0/4/4/4
22	MNU	QV	34	22,23	-	2/9/28/29	0/2/2/2
22	H2U	XV	20	22	-	5/7/38/39	0/2/2/2
22	MNU	XV	34	22,23	-	3/9/28/29	0/2/2/2

The worst 5 of 51 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	QV	47	C4J	C6-C5	10.60	1.49	1.34
22	XV	47	C4J	C6-C5	10.44	1.49	1.34
22	QV	47	C4J	C2-N3	6.45	1.50	1.38
22	XV	47	C4J	C2-N3	6.01	1.49	1.38
22	QV	55	PSU	C6-C5	3.57	1.39	1.35

The worst 5 of 95 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
22	XV	20	H2U	C4-N3-C2	-9.66	117.78	125.79
22	QV	20	H2U	C4-N3-C2	-9.15	118.20	125.79
22	QV	37	T6A	C2-N1-C6	8.74	124.08	116.59
22	XV	46	7MG	N9-C4-N3	8.72	138.52	125.47
22	QV	46	7MG	N9-C4-N3	8.52	138.21	125.47

There are no chirality outliers.

5 of 51 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
22	QV	20	H2U	C3'-C4'-C5'-O5'
22	XV	20	H2U	C3'-C4'-C5'-O5'
22	XV	20	H2U	C2'-C1'-N1-C2
22	QV	34	MNU	C6-C5-C7-N8
22	QV	34	MNU	C4-C5-C7-N8

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	XV	37	T6A	1	0
22	XV	54	5MU	1	0
56	Z8	76	PPU	2	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 846 ligands modelled in this entry, 844 are monoatomic - leaving 2 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	$\#\|Z\| > 2$
58	SF4	XD	301	4	0,12,12	-	-	-		
58	SF4	QD	301	4	0,12,12	-	-	-		

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
58	SF4	XD	301	4	-	-	0/6/5/5

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
58	SF4	QD	301	4	-	-	0/6/5/5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
58	XD	301	SF4	2	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

6.4 Ligands

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers

EDS failed to run properly - this section is therefore empty.