wwPDB X-ray Structure Validation Summary Report (i)

Sep 15, 2023 – 01:06 AM EDT

PDB ID	:	4V4T
Title	:	Crystal structure of the whole ribosomal complex with a stop codon in the A-site.
Authors	:	Petry, S.; Brodersen, D.E.; Murphy IV, F.V.; Dunham, C.M.; Selmer, M.; Tarry, M.J.; Kelley, A.C.; Ramakrishnan, V.
Deposited on	:	2005-10-12
Resolution	:	6.46 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 (1)) were used in the production of this report:

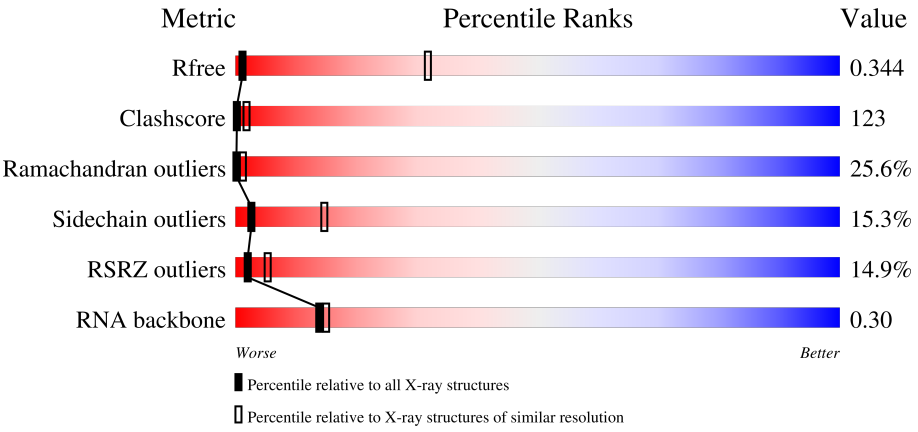
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 6.46 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	1000 (9.00-3.90)
Clashscore	141614	1064 (9.00-3.90)
Ramachandran outliers	138981	1012 (9.00-3.88)
Sidechain outliers	138945	1010 (9.00-3.84)
RSRZ outliers	127900	1002 (9.00-3.80)
RNA backbone	3102	1077 (9.50-3.00)

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% 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	10% 24% 42% 24% 9%
2	AV	76	11% 17% 61% 22%
3	AW	76	12% 30% 39% 20% 11%
4	AX	18	28% 61% 33% 6%

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Mol	Chain	Length	Quality of chain
5	AB	256	5% 44% 38% 7% 9%
6	AC	239	24% 48% 30% 8% 14%
7	AD	209	32% 35% 54% 10%
8	AE	162	56% 47% 36% 10% 7%
9	AF	101	% 67% 27% 5%
10	AG	156	35% 58% 36% 5%
11	AH	138	31% 39% 45% 15%
12	AI	128	21% 55% 38% 5%
13	AJ	105	13% 41% 42% 10% 7%
14	AK	129	14% 49% 40% 8%
15	AL	135	19% 37% 44% 10% 8%
16	AM	126	13% 52% 38% 9%
17	AN	61	31% 31% 59% 8%
18	AO	89	2% 63% 29% 7%
19	AP	88	36% 42% 40% 11% 6%
20	AQ	105	39% 36% 55% 7%
21	AR	88	41% 31% 11% 17%
22	AS	93	18% 41% 42% 14%
23	AT	106	7% 50% 37% 7% 7%
24	AU	27	37% 26% 56% 7% 11%
25	BB	123	5% 31% 39% 28%
26	BA	2916	5% 11% 34% 38% 13%
27	BD	173	35% 44% 46% 9%
28	BE	338	26% 30% 21% 43%
29	BF	246	4% 37% 31% 7% 23%

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Mol	Chain	Length	Quality of chain
30	BG	176	4% 7% 39% 21% 31%
31	BH	177	8% 5% 50% 32% 6% 7%
32	BI	149	32% 6% 55% 34% 5%
33	BN	145	32% 36% 38% 5% 19%
34	BO	122	20% 61% 33%
35	BP	164	9% 5% 21% 23% 49%
36	BQ	138	51% 45% 46% 7%
37	BS	186	% 28% 25% 5% 39%
38	BT	66	47% 6% 35% 29% 9% 21%
39	BW	113	5% 40% 50%
40	BX	84	21% 40% 31% 15% 10%
41	BY	119	13% 49% 31% 8% 8%
42	BZ	253	4% 35% 28% 30%
43	BR	118	7% 37% 46% 5% 11%
44	BU	118	12% 32% 50% 17%
45	BV	100	20% 9% 54% 33%
46	B2	70	6% 23% 49% 19% 9%
47	B3	60	7% 5% 57% 33% 5%
48	B0	91	25% 9% 42% 41% 5%
49	B4	73	47% 41% 49% 8%
50	B5	60	48% 40% 5%
51	B6	82	2% 34% 27% 35%
52	B7	47	6% 21% 68% 9%
53	B8	64	20% 8% 38% 45% 8%
54	B9	36	58% 69% 25%

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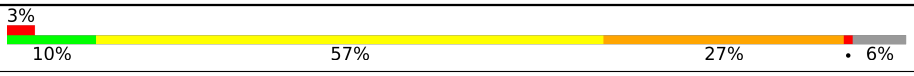
Mol	Chain	Length	Quality of chain
55	BK	141	

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
3	YYG	AW	37	X	-	X	X
3	PSU	AW	39	-	-	-	X

2 Entry composition (i)

There are 55 unique types of molecules in this entry. The entry contains 142447 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	AA	1515	32551	14490	6022	10525	1514	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AA	416	G	-	insertion	GB 155076
AA	905	U	-	insertion	GB 155076
AA	1395	C	-	insertion	GB 155076

- Molecule 2 is a RNA chain called P-site tRNA (Phe).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	AV	76	1622	725	293	529	75	0	0	0

- Molecule 3 is a RNA chain called E-site tRNA (Phe).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	AW	76	1638	736	294	533	75	0	0	0

- Molecule 4 is a RNA chain called 5'-D(*AP*UP*GP*UP*UP*CP*UP*AP*GP*UP*AP*CP*AP*AP*UP*AP*AP*U)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
4	AX	17	136	56	19	44	17	0	0	11

- Molecule 5 is a protein called 30S ribosomal protein S2.

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

- Molecule 6 is a protein called 30S ribosomal protein S3.

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

- Molecule 7 is a protein called 30S ribosomal protein S4.

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

- Molecule 8 is a protein called 30S ribosomal protein S5.

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

- Molecule 9 is a protein called 30S ribosomal protein S6.

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

- Molecule 10 is a protein called 30S ribosomal protein S7.

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

- Molecule 11 is a protein called 30S ribosomal protein S8.

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

- Molecule 12 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
12	AI	127	Total	C	N	O	0	0	0
			1011	639	198	174			

- Molecule 13 is a protein called 30S ribosomal protein S10.

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

- Molecule 14 is a protein called 30S ribosomal protein S11.

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

- Molecule 15 is a protein called 30S ribosomal protein S12.

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

- Molecule 16 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
16	AM	125	Total	C	N	O	S	0	0	0
			997	617	207	171	2			

- Molecule 17 is a protein called 30S ribosomal protein S14.

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

- Molecule 18 is a protein called 30S ribosomal protein S15.

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

- Molecule 19 is a protein called 30S ribosomal protein S16.

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

- Molecule 20 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	AQ	104	Total	C	N	O	S	0	0	0
			857	547	161	147	2			

- Molecule 21 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
21	AR	73	Total	C	N	O	0	0	0
			597	380	118	99			

- Molecule 22 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	AS	80	Total	C	N	O	S	0	0	0
			647	414	119	112	2			

- Molecule 23 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	AT	99	Total	C	N	O	S	0	0	0
			762	469	162	129	2			

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

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

- Molecule 25 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
25	BB	123	Total	C	N	O	P	0	0	0
			2637	1175	488	852	122			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BB	-1	A	-	insertion	GB 48271

- Molecule 26 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	BA	2814	Total	C	N	O	P	0	0	0
			60600	26974	11331	19482	2813			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BA	493	G	-	insertion	GB 48268

- Molecule 27 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
27	BD	173	Total	C	N	O	S	0	0	0
			1308	820	246	236	6			

- Molecule 28 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	BE	191	Total	C	N	O	S	0	0	0
			1507	940	290	273	4			

- Molecule 29 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
29	BF	189	Total	C	N	O	S	0	0	0
			1430	872	255	302	1			

- Molecule 30 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
30	BG	122	Total	C	N	O	S	0	0	0
			957	597	176	180	4			

- Molecule 31 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	BH	164	Total	C	N	O	S	0	0	0
			1251	787	225	237	2			

- Molecule 32 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
32	BI	148	Total	C	N	O	S	0	0	0
			1145	727	205	212	1			

- Molecule 33 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
33	BN	117	Total	C	N	O	S	0	0	0
			917	570	164	180	3			

- Molecule 34 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
34	BO	122	Total	C	N	O	S	0	0	0
			937	585	180	169	3			

- Molecule 35 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
35	BP	84	Total	C	N	O	0	0	0
			639	391	109	139			

- Molecule 36 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
36	BQ	138	Total	C	N	O	S	0	0	0
			1081	678	208	192	3			

- Molecule 37 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
37	BS	113	Total	C	N	O	S	0	0	0
			866	536	165	164	1			

- Molecule 38 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
38	BT	52	Total	C	N	O	S	0	0	0
			406	242	74	85	5			

- Molecule 39 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
39	BW	108	Total	C	N	O	0	0	0
			860	542	169	149			

- Molecule 40 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
40	BX	76	Total	C	N	O	S	0	0	0
			602	366	102	131	3			

- Molecule 41 is a protein called 50S ribosomal protein 24.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
41	BY	110	Total	C	N	O	0	0	0
			879	531	166	182			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
42	BZ	177	Total	C	N	O	S	0	0	0
			1360	859	238	257	6			

- Molecule 43 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
43	BR	105	Total	C	N	O	0	0	0
			855	536	174	145			

- Molecule 44 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
44	BU	117	Total	C	N	O	S	0	0	0
			978	608	210	159	1			

- Molecule 45 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
45	BV	100	Total	C	N	O	S	0	0	0
			787	495	146	145	1			

- Molecule 46 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
46	B2	64	Total	C	N	O	S	0	0	0
			494	301	93	99	1			

- Molecule 47 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
47	B3	60	Total	C	N	O	S	0	0	0
			477	303	91	82	1			

- Molecule 48 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
48	B0	86	Total	C	N	O	S	0	0	0
			641	402	124	114	1			

- Molecule 49 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
49	B4	73	Total	C	N	O	S	0	0	0
			604	382	110	108	4			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
50	B5	58	Total	C	N	O	S	0	0	0
			457	281	94	77	5			

- Molecule 51 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
51	B6	53	Total	C	N	O	S	0	0	0
			431	274	80	76	1			

- Molecule 52 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
52	B7	46	Total	C	N	O	S	0	0	0
			383	230	91	60	2			

- Molecule 53 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
53	B8	63	Total	C	N	O	S	0	0	0
			496	312	101	78	5			

- Molecule 54 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
54	B9	35	Total	C	N	O	S	0	0	0
			285	172	64	45	4			

- Molecule 55 is a protein called 50S ribosomal protein L11.

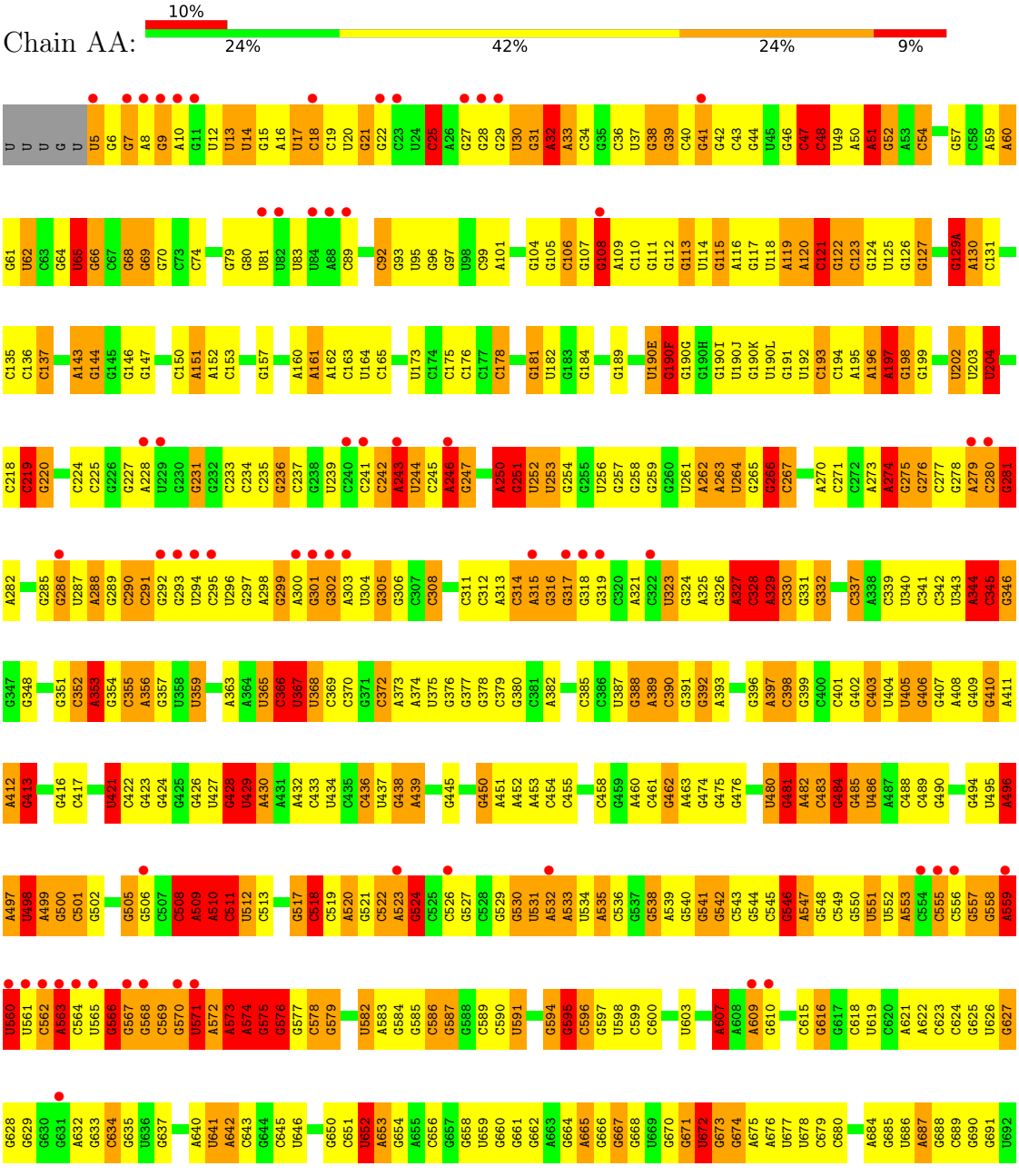
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
55	BK	133	Total	C	N	O	S	0	0	0
			999	642	169	182	6			

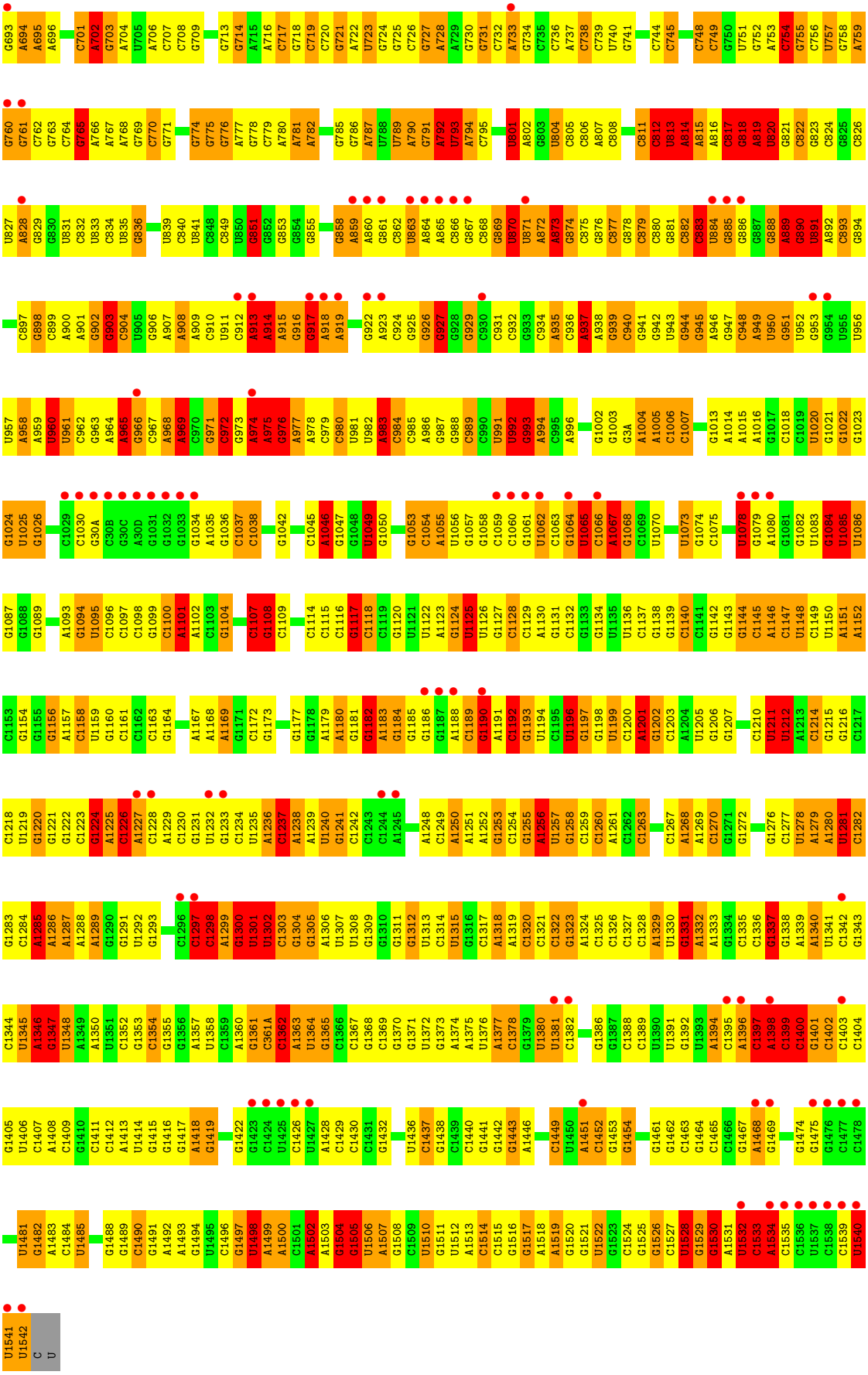
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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 ribosomal RNA

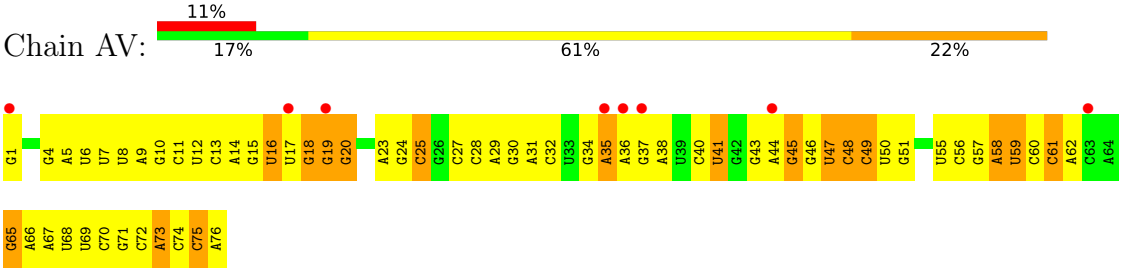
Chain AA:





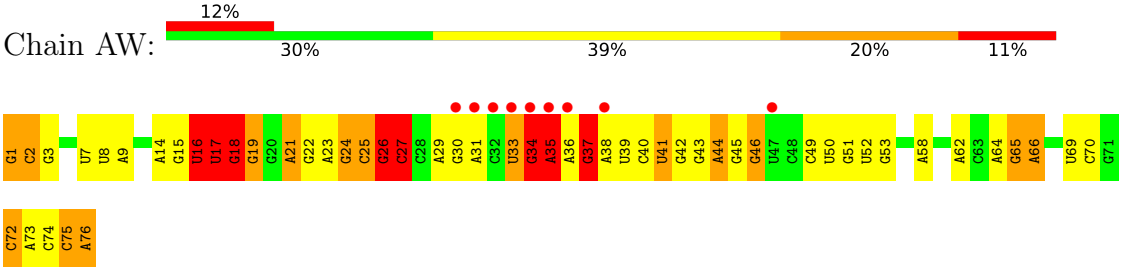
• Molecule 2: P-site tRNA (Phe)

Chain AV:



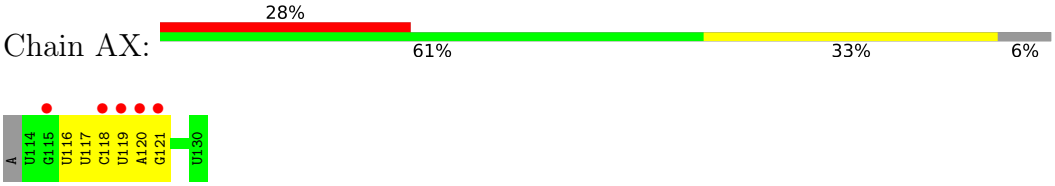
• Molecule 3: E-site tRNA (Phe)

Chain AW:



• Molecule 4: 5'-D(*AP*UP*GP*UP*UP*CP*UP*AP*GP*UP*AP*CP*AP*AP*UP*AP*AP*U)-3'

Chain AX:

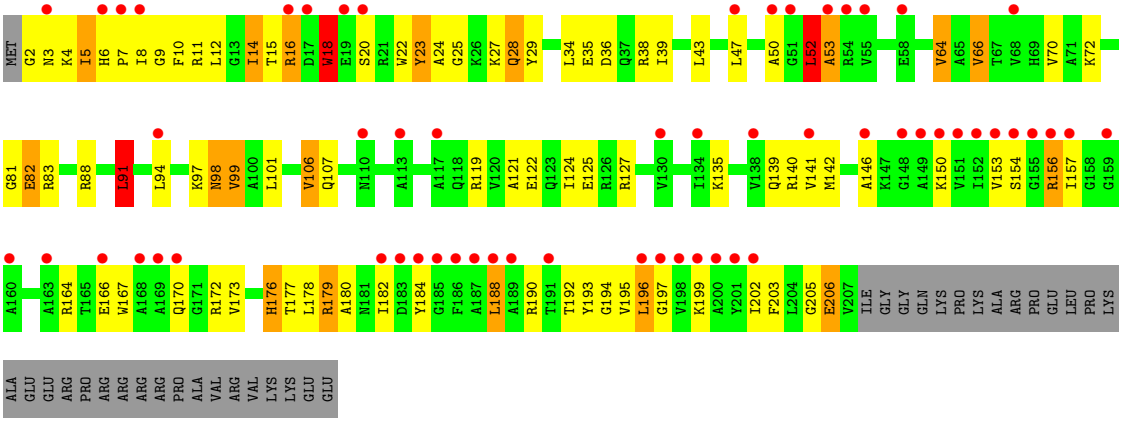


• Molecule 5: 30S ribosomal protein S2

Chain AB:

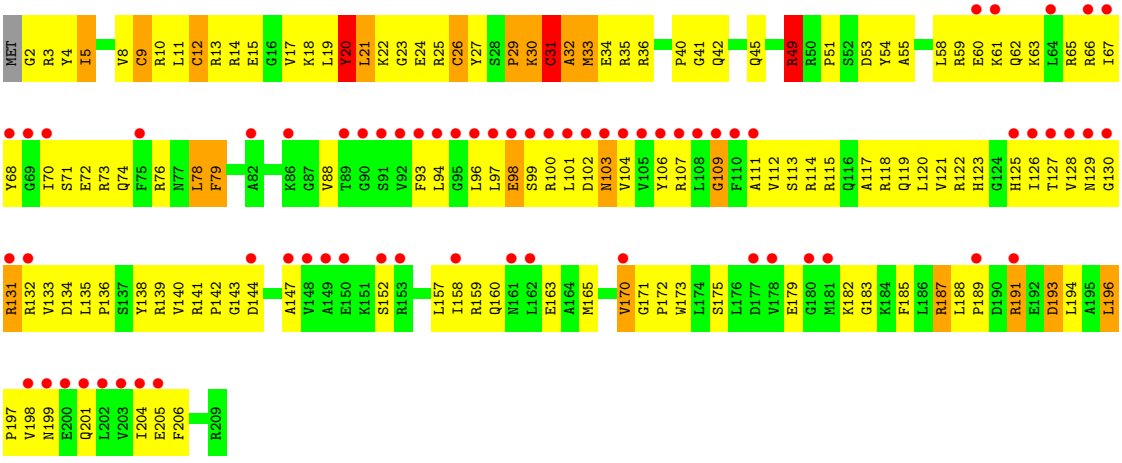
• Molecule 6: 30S ribosomal protein S3

Chain AC:



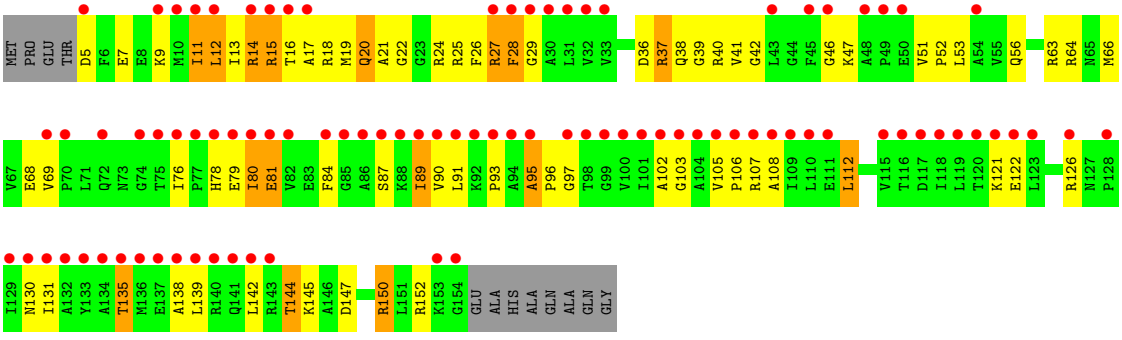
• Molecule 7: 30S ribosomal protein S4

Chain AD:



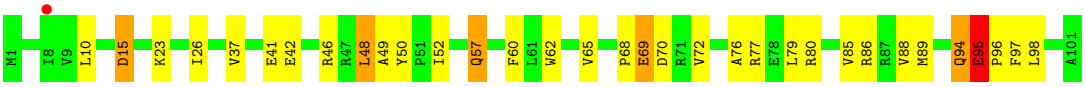
• Molecule 8: 30S ribosomal protein S5

Chain AE:

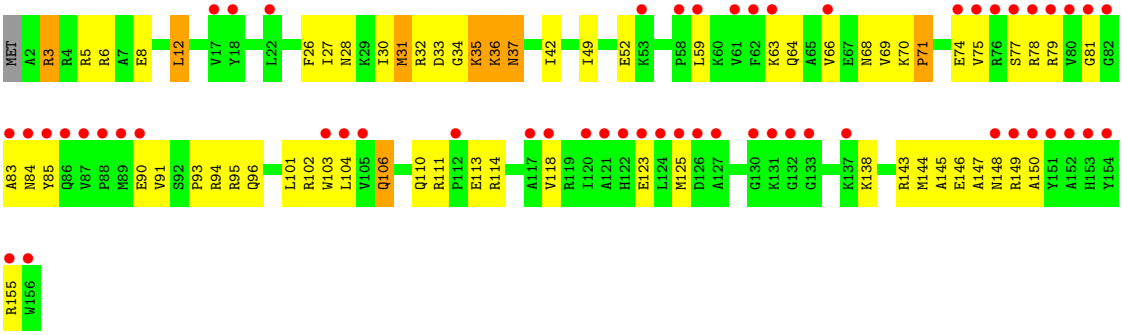


• Molecule 9: 30S ribosomal protein S6

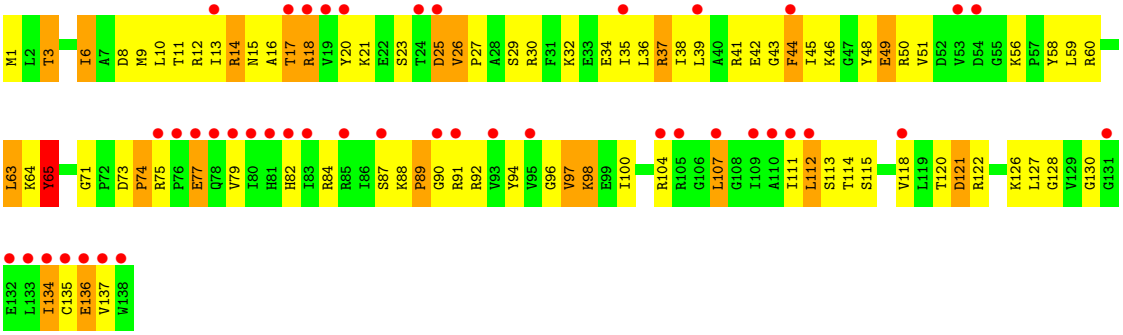
Chain AF:



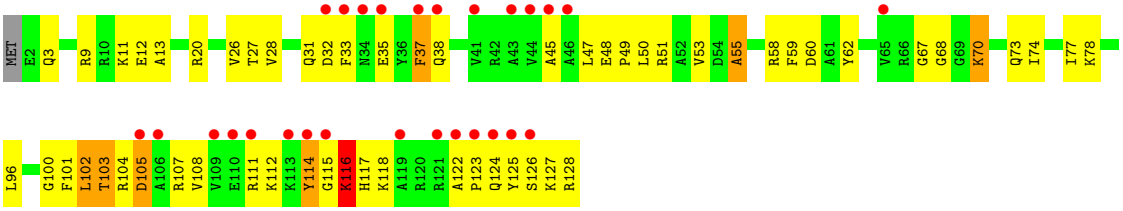
• Molecule 10: 30S ribosomal protein S7



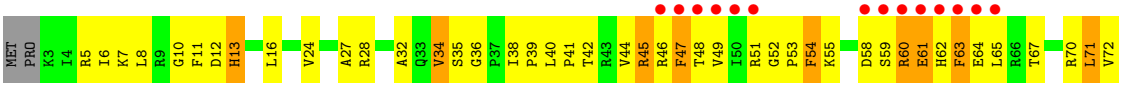
• Molecule 11: 30S ribosomal protein S8

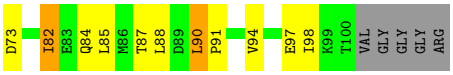


• Molecule 12: 30S ribosomal protein S9

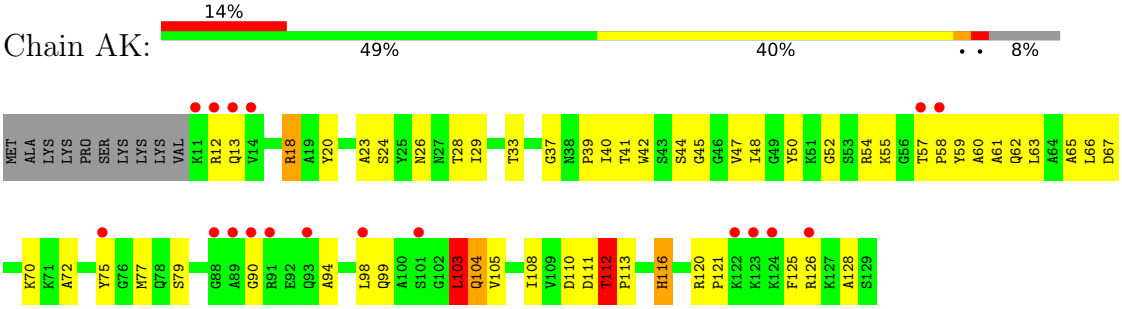


• Molecule 13: 30S ribosomal protein S10

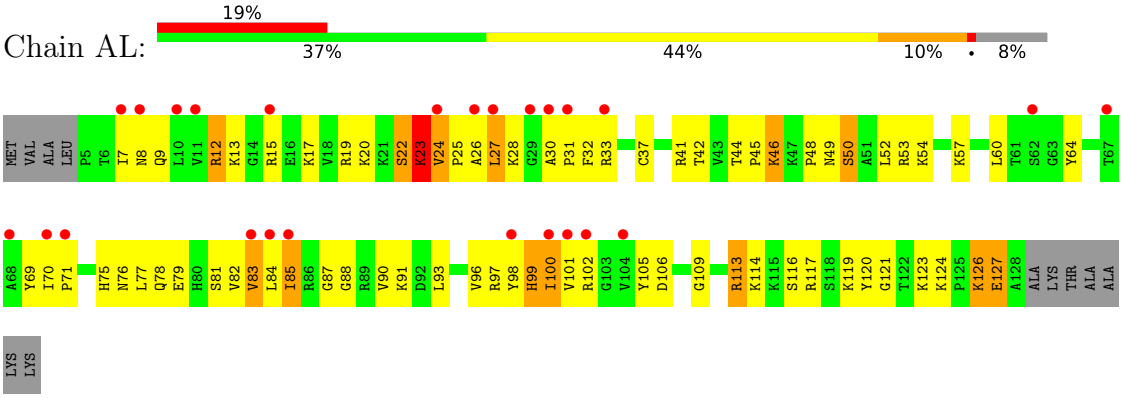




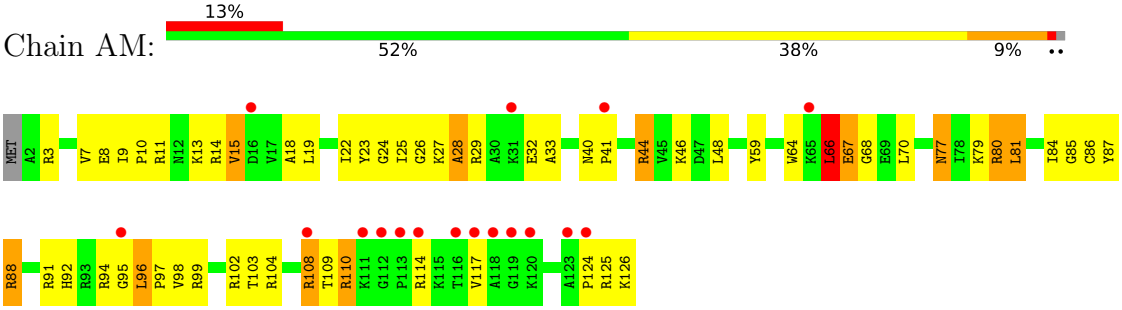
• Molecule 14: 30S ribosomal protein S11



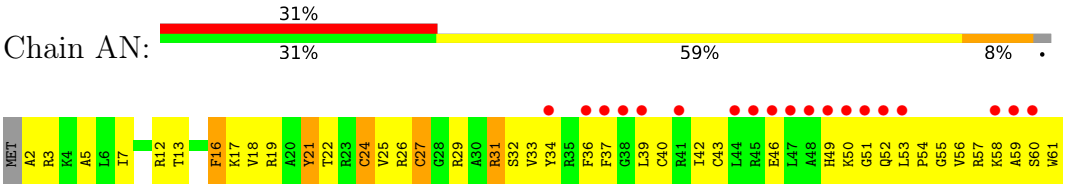
• Molecule 15: 30S ribosomal protein S12



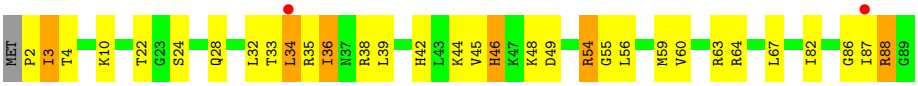
• Molecule 16: 30S ribosomal protein S13



• Molecule 17: 30S ribosomal protein S14

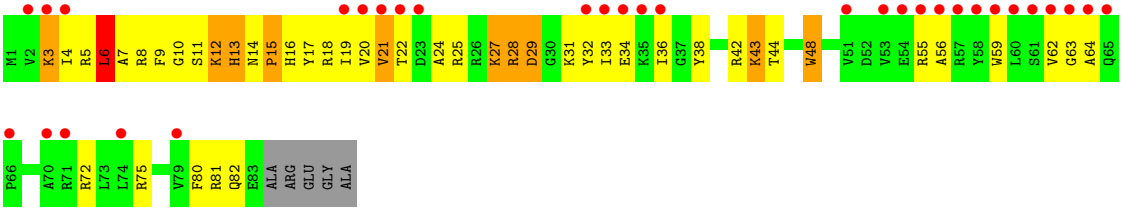


• Molecule 18: 30S ribosomal protein S15



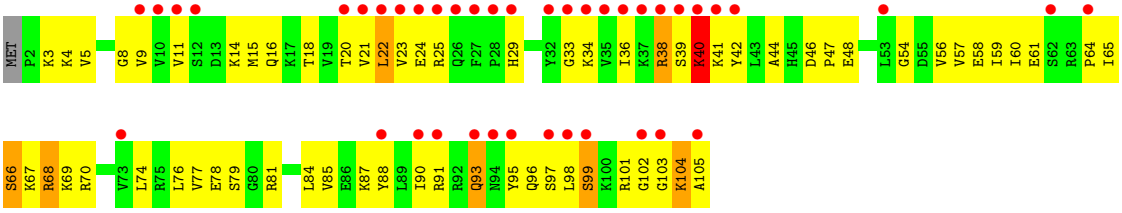
• Molecule 19: 30S ribosomal protein S16

Chain AP:



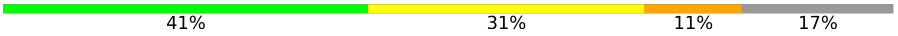
• Molecule 20: 30S ribosomal protein S17

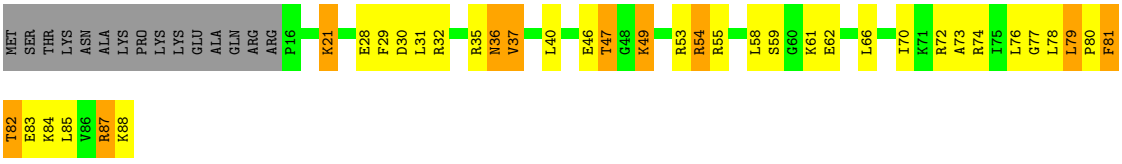
Chain AQ:



• Molecule 21: 30S ribosomal protein S18

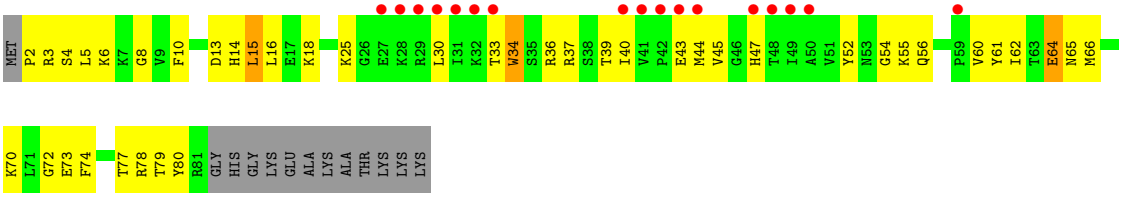
Chain AR:





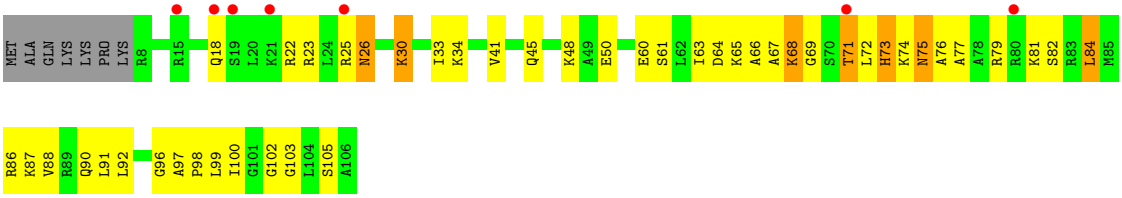
• Molecule 22: 30S ribosomal protein S19

Chain AS:



• Molecule 23: 30S ribosomal protein S20

Chain AT:



• Molecule 24: 30S ribosomal protein Thx

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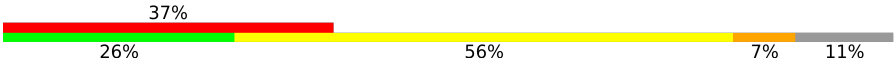
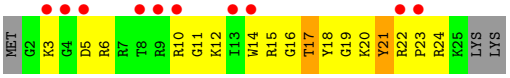
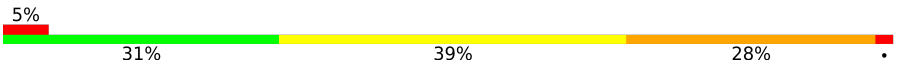
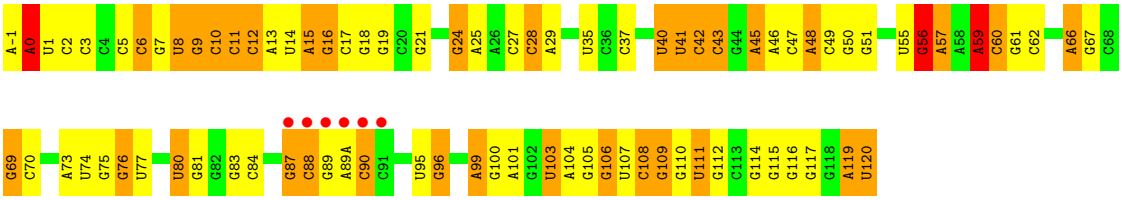




• Molecule 25: 5S ribosomal RNA

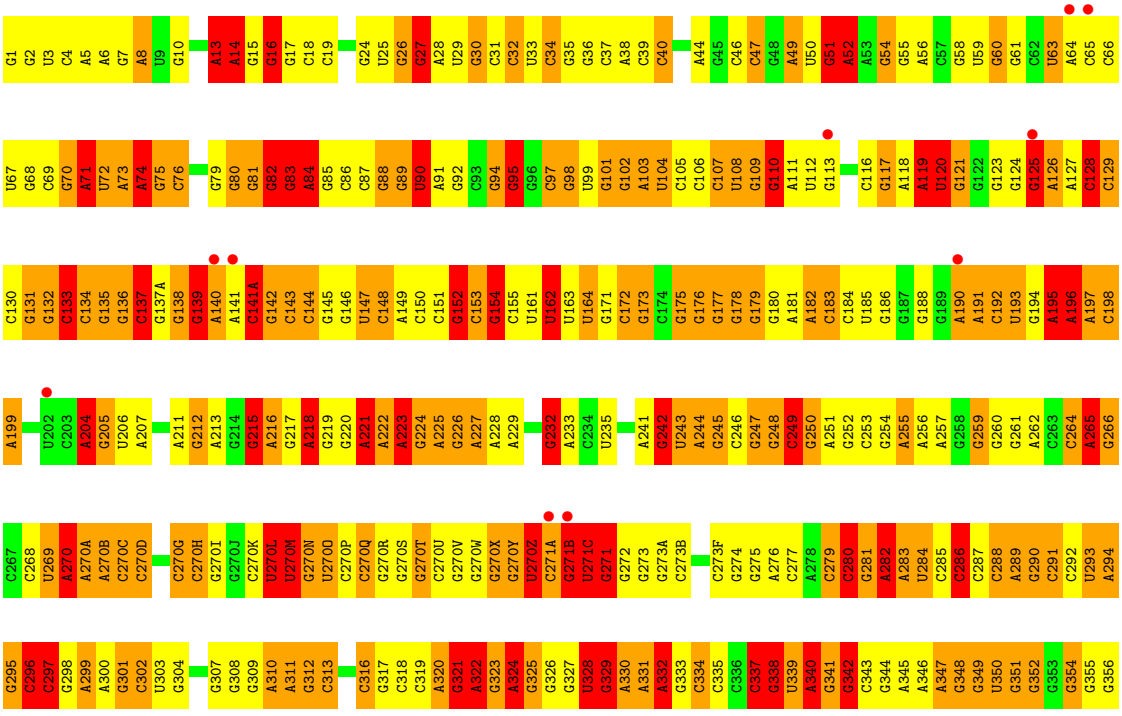
Chain BB:

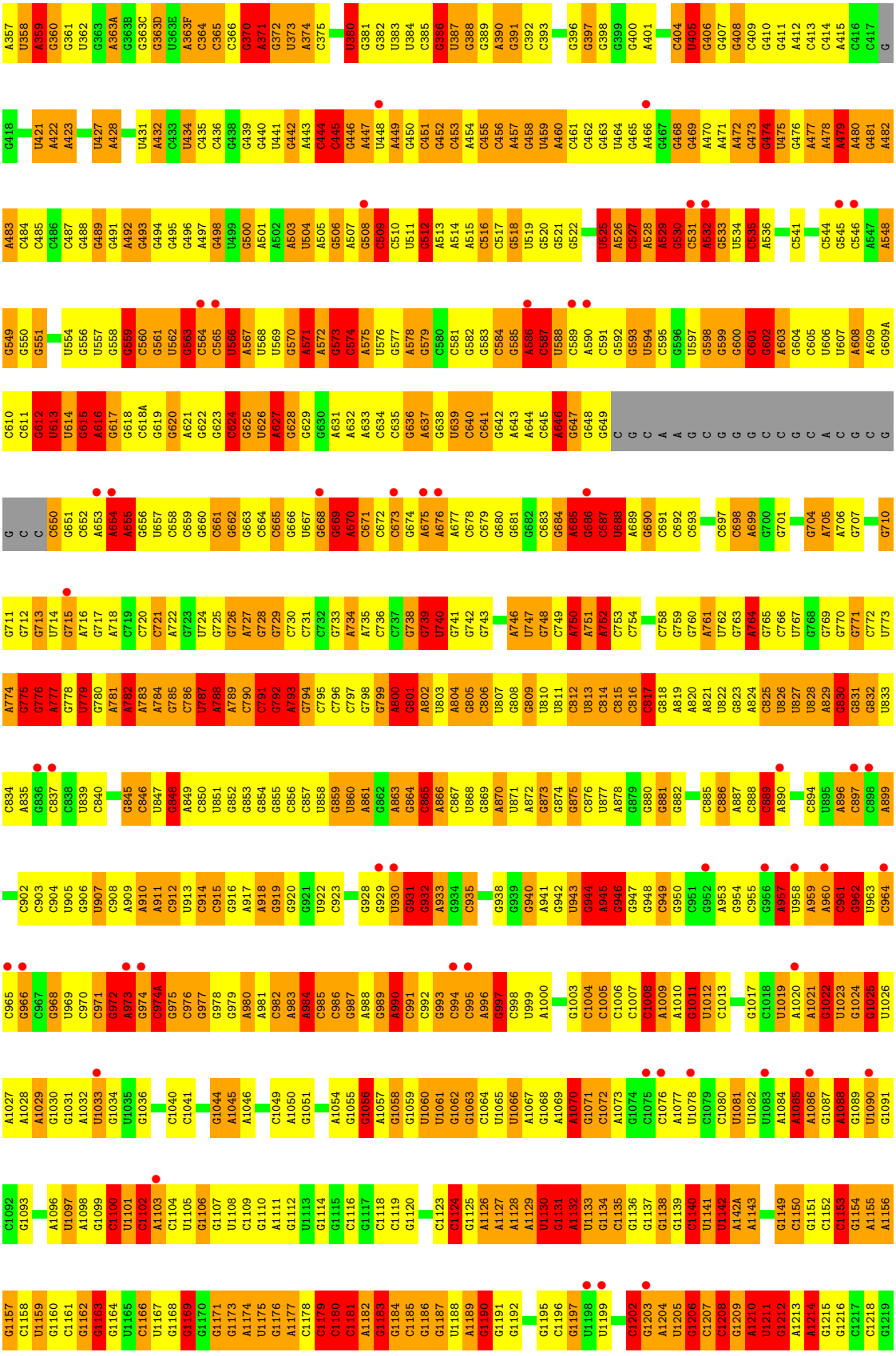


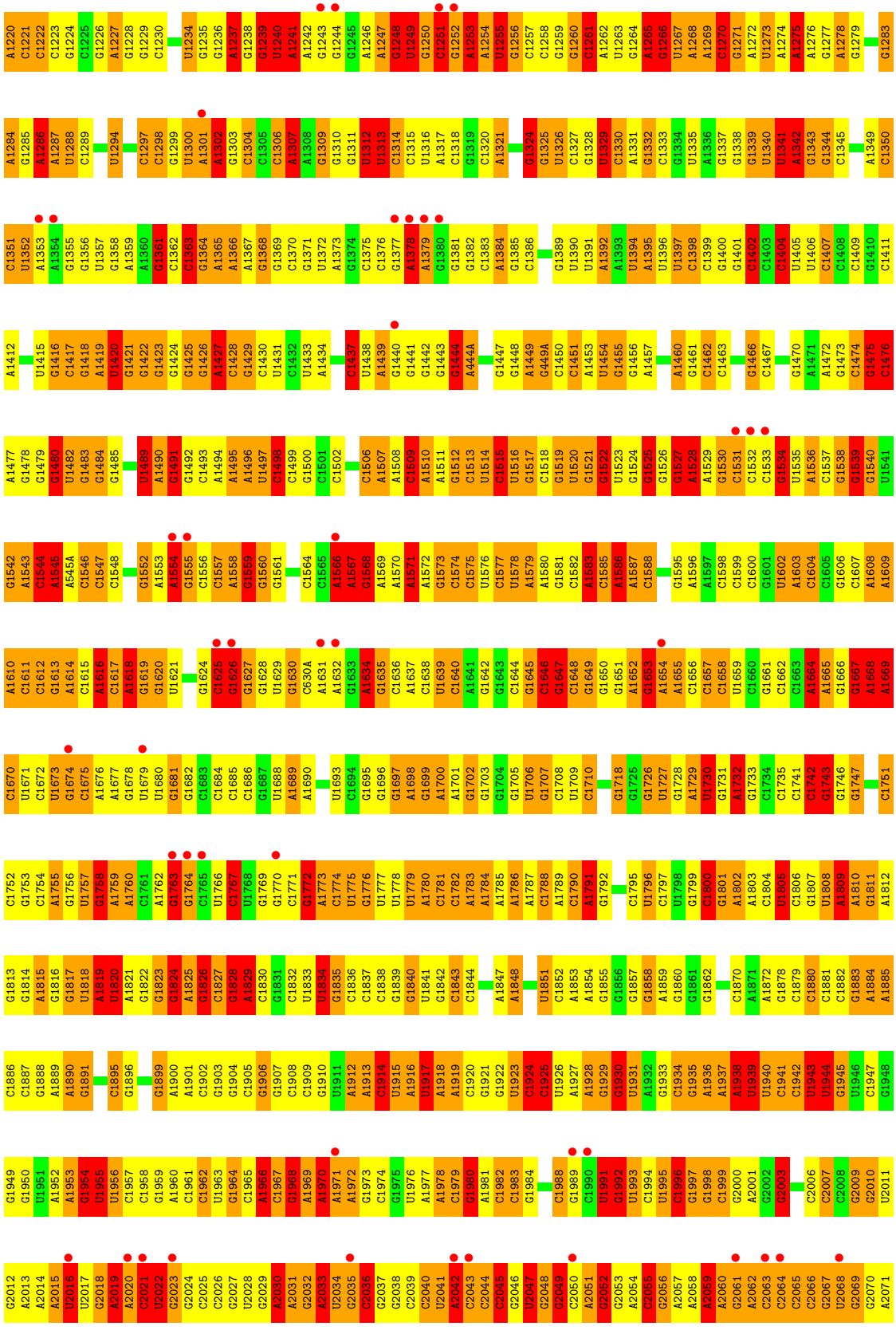


• Molecule 26: 23S ribosomal RNA

Chain BA:



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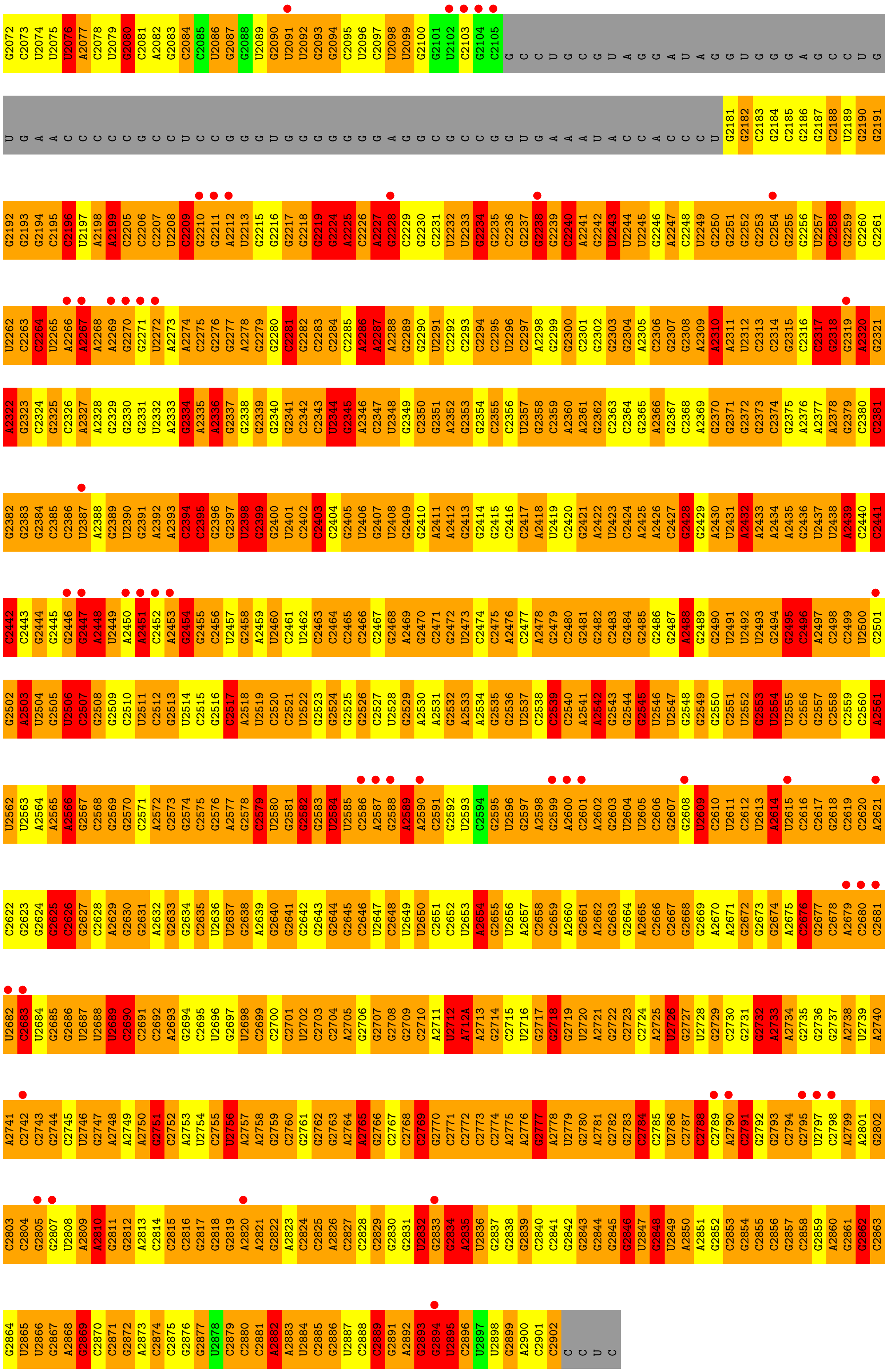
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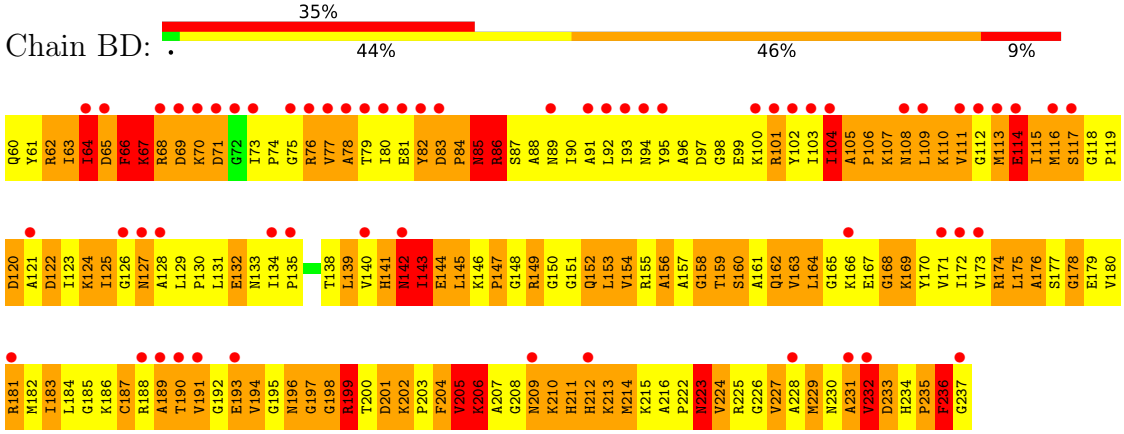
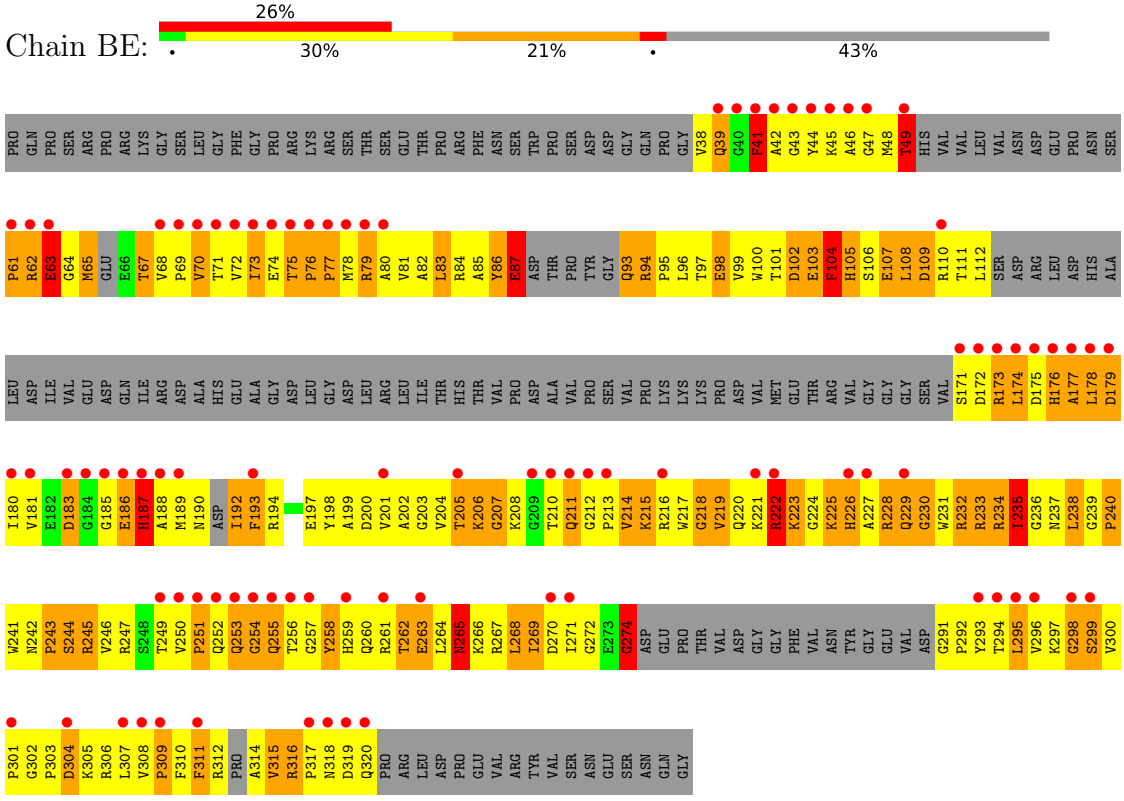
• Molecule 27: 50S ribosomal protein L2

Chain BD:



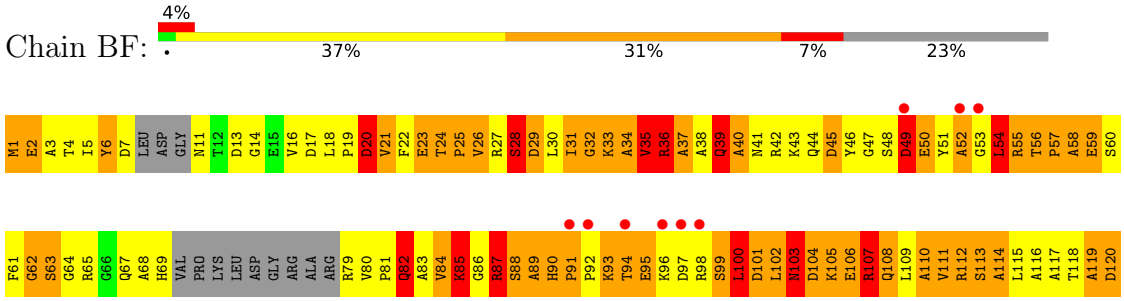
• Molecule 28: 50S ribosomal protein L3

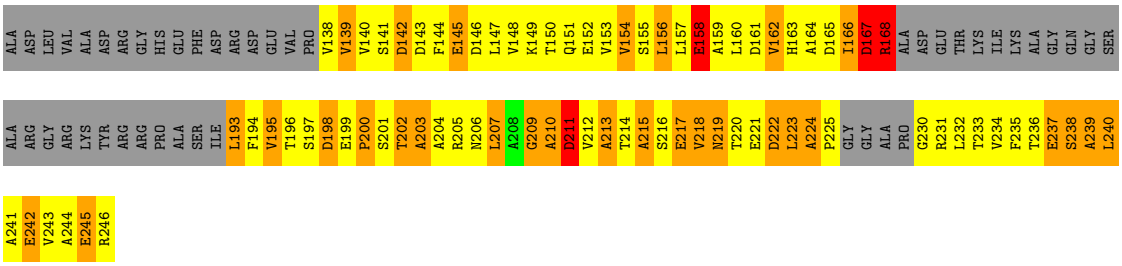
Chain BE:



• Molecule 29: 50S ribosomal protein L4

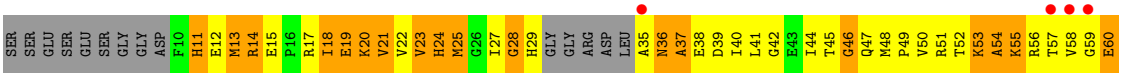
Chain BF:

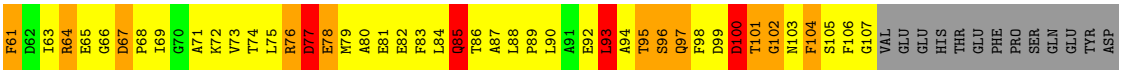


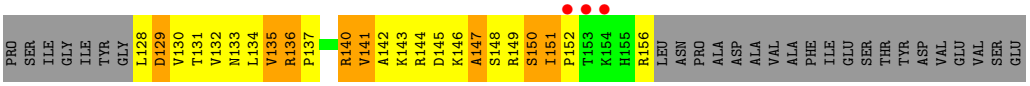


• Molecule 30: 50S ribosomal protein L5

Chain BG:

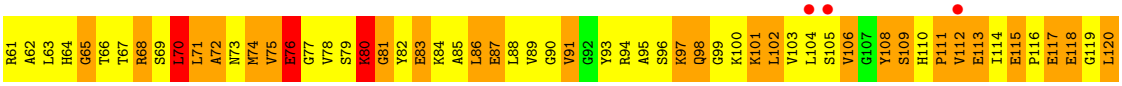






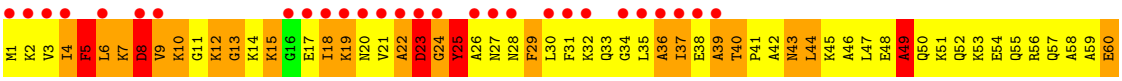
• Molecule 31: 50S ribosomal protein L6

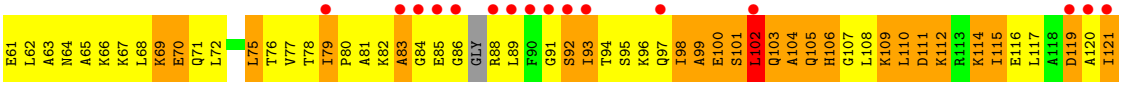
Chain BH:

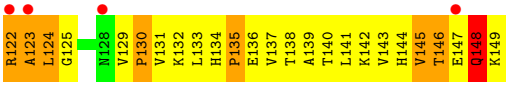


• Molecule 32: 50S ribosomal protein L9

Chain BI:

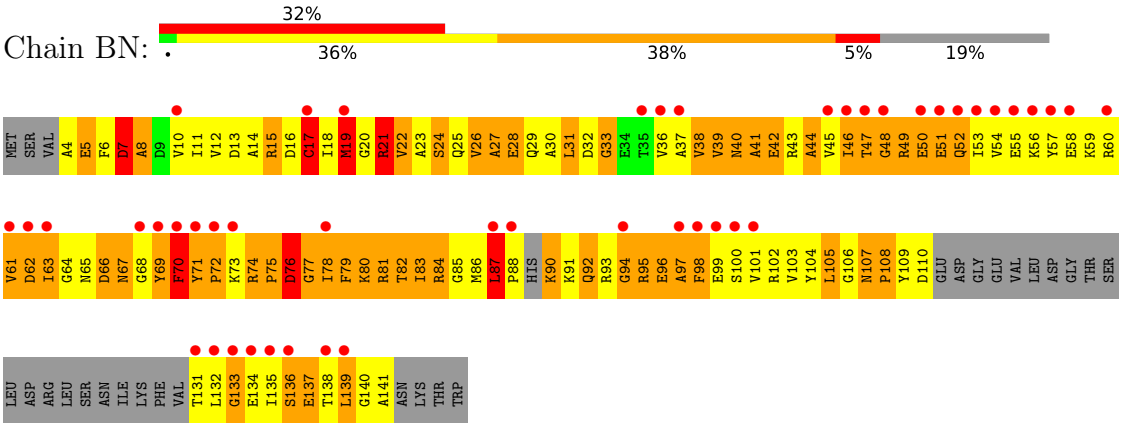






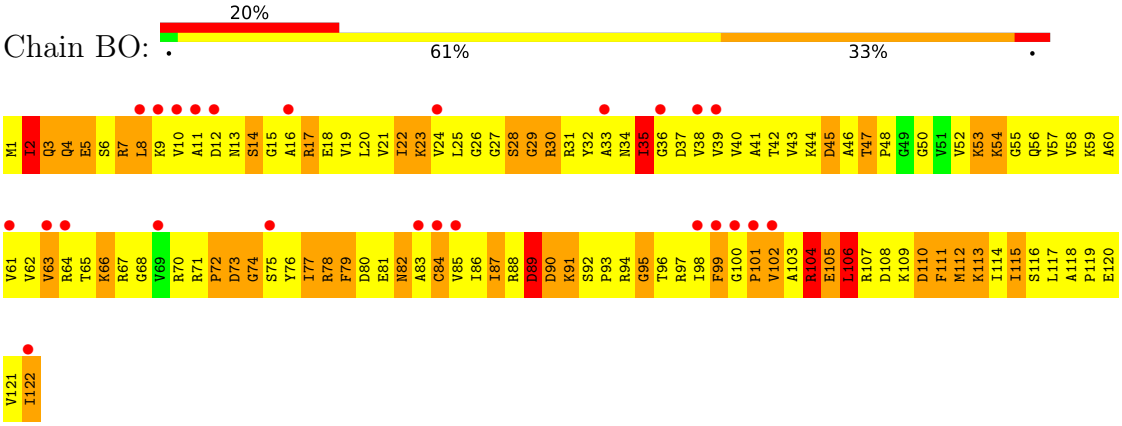
• Molecule 33: 50S ribosomal protein L13

Chain BN:



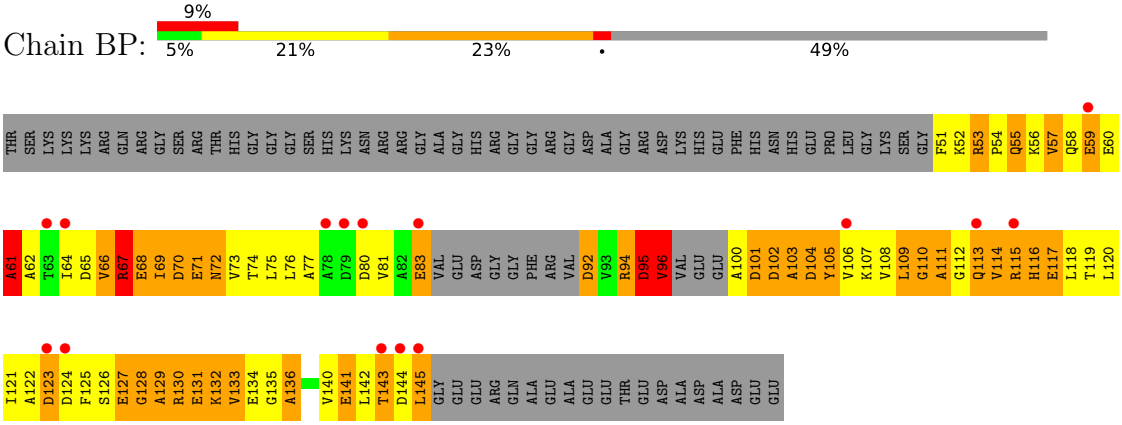
• Molecule 34: 50S ribosomal protein L14

Chain BO:



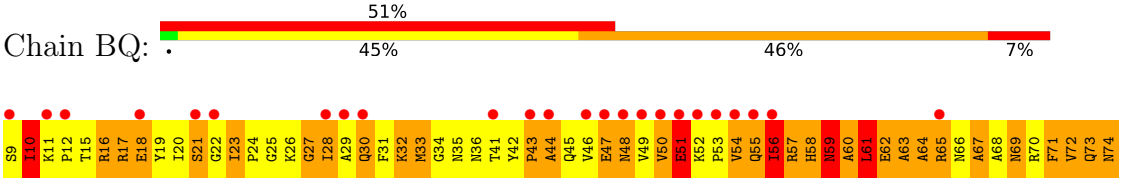
• Molecule 35: 50S ribosomal protein L15

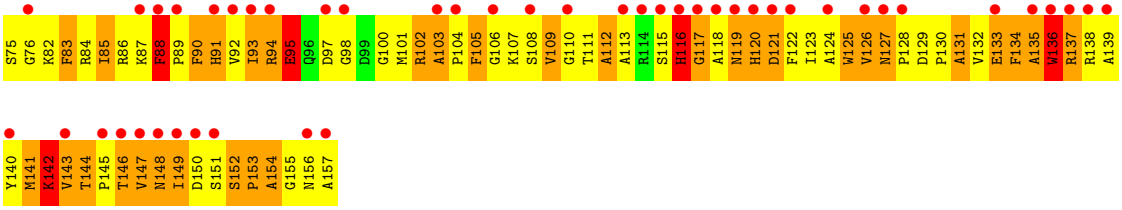
Chain BP:



• Molecule 36: 50S ribosomal protein L16

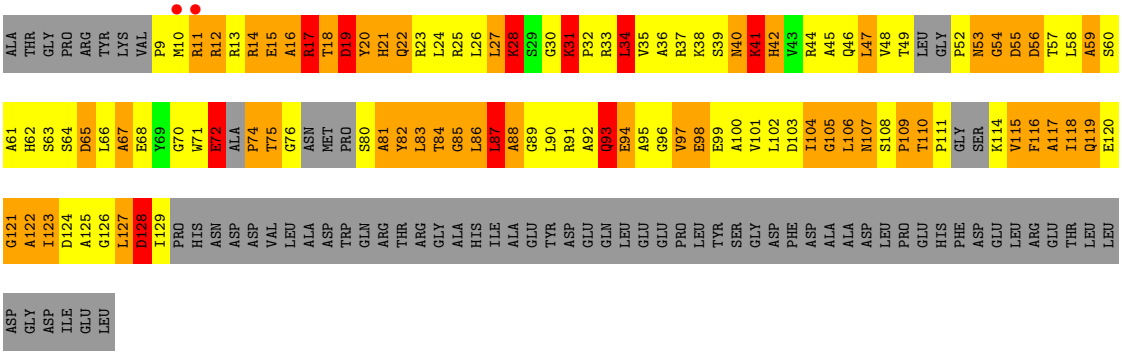
Chain BQ:





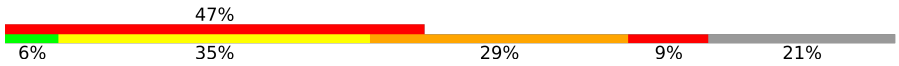
• Molecule 37: 50S ribosomal protein L18

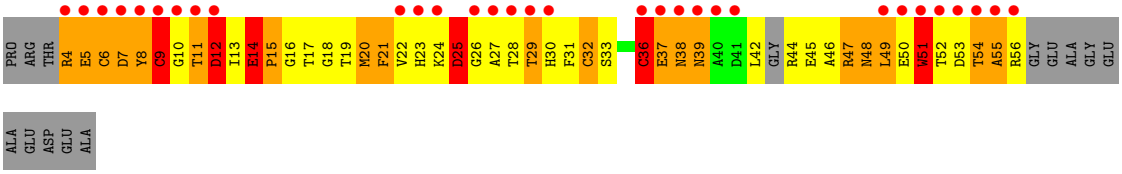
Chain BS:



• Molecule 38: 50S ribosomal protein L19

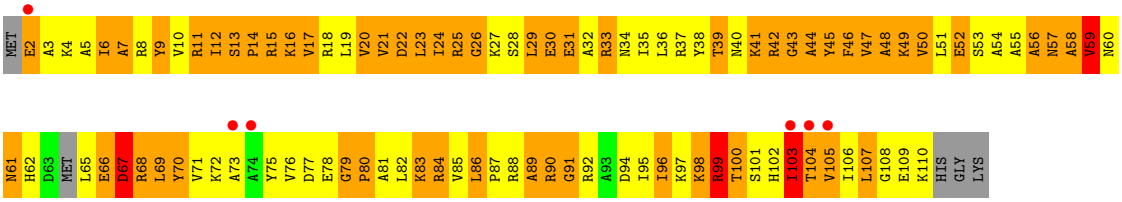
Chain BT:





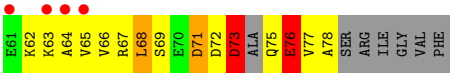
• Molecule 39: 50S ribosomal protein L22

Chain BW:

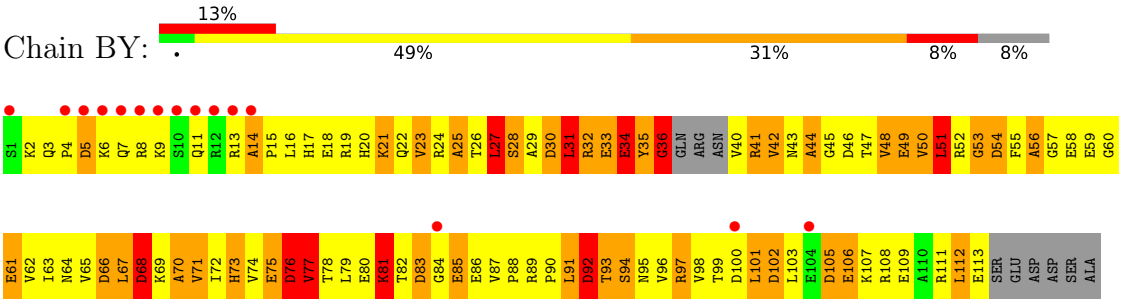


• Molecule 40: 50S ribosomal protein L23

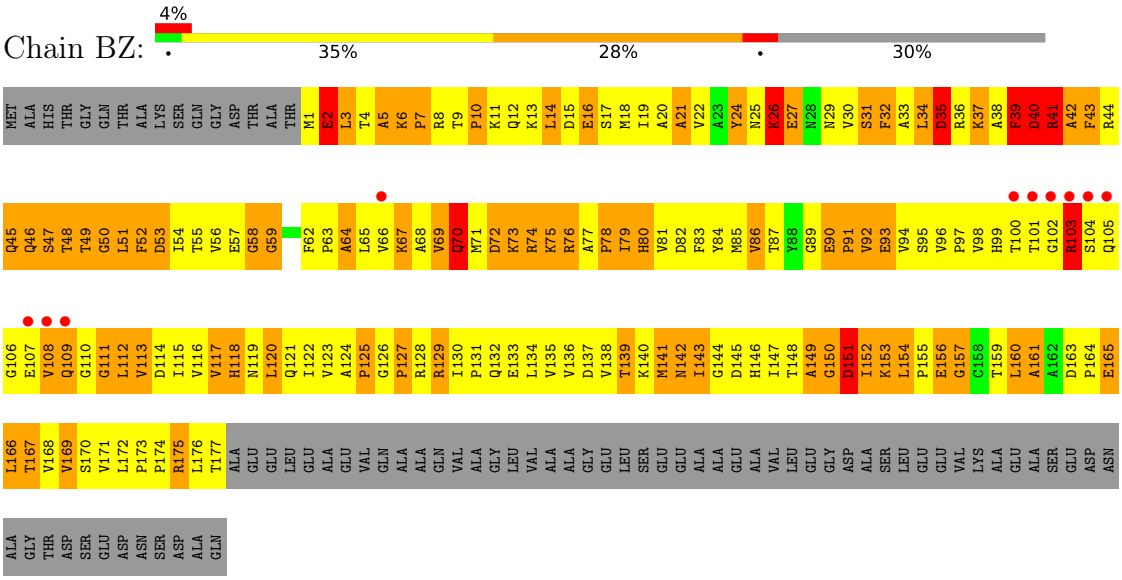
Chain BX:



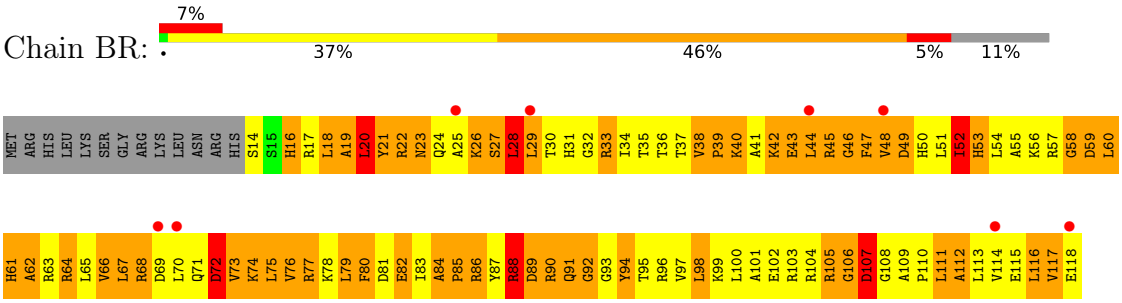
• Molecule 41: 50S ribosomal protein 24



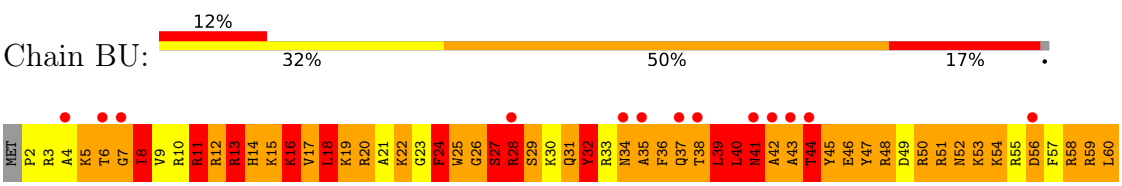
• Molecule 42: 50S ribosomal protein CTC



• Molecule 43: 50S ribosomal protein L17

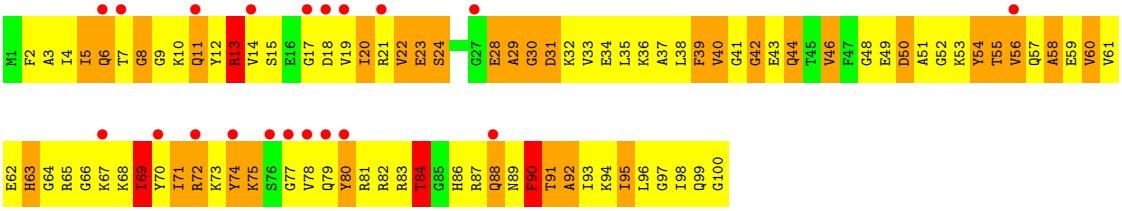


• Molecule 44: 50S ribosomal protein L20



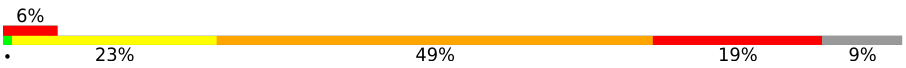
• Molecule 45: 50S ribosomal protein L21

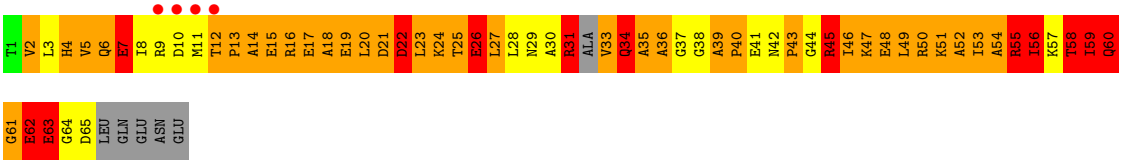
Chain BV:



• Molecule 46: 50S ribosomal protein L29

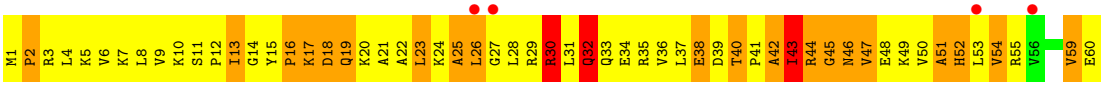
Chain B2:





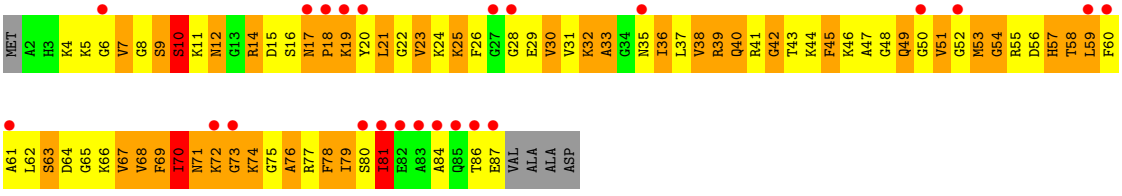
• Molecule 47: 50S ribosomal protein L30

Chain B3:



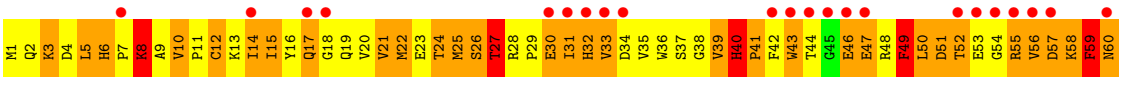
• Molecule 48: 50S ribosomal protein L27

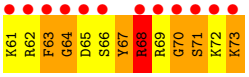
Chain B0:



• Molecule 49: 50S ribosomal protein L31

Chain B4:



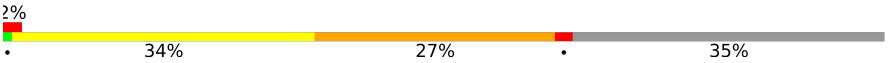


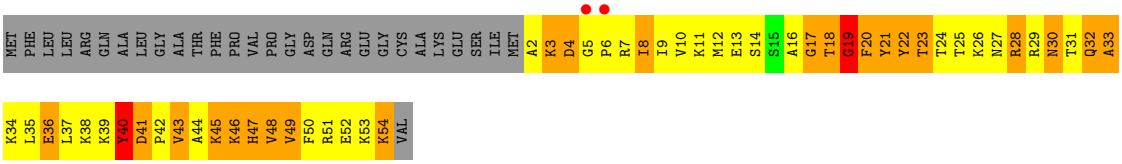
• Molecule 50: 50S ribosomal protein L32

Chain B5:

• Molecule 51: 50S ribosomal protein L33

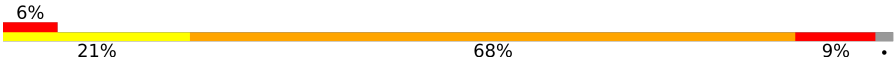
Chain B6:

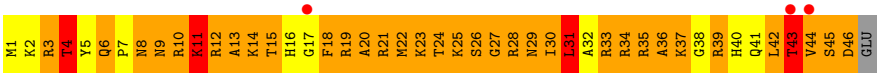




• Molecule 52: 50S ribosomal protein L34

Chain B7:





• Molecule 53: 50S ribosomal protein L35

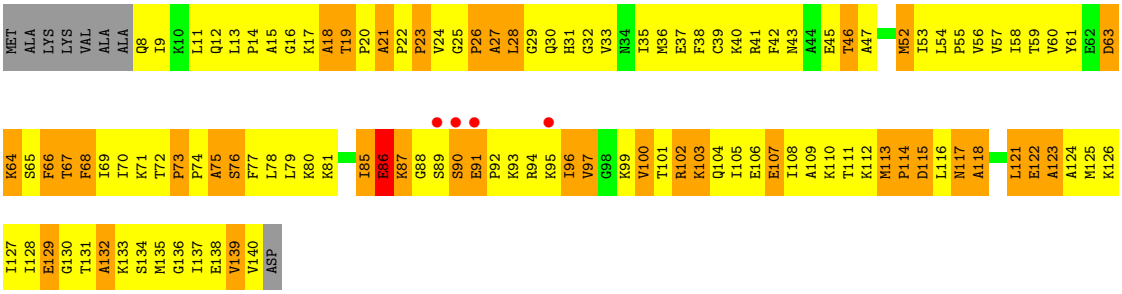
Chain B8:

• Molecule 54: 50S ribosomal protein L36

Chain B9:

• Molecule 55: 50S ribosomal protein L11

Chain BK:


MET ALA LYS LYS VAL ALA ALA Q8 I9 K10 L11 Q12 L13 P14 A15 G16 K17 A18 T19 P20 A21 P22 P23 V24 G25 P26 A27 L28 G29 Q30 H31 G32 V33 N34 I35 M36 E37 F38 C39 K40 R41 F42 N43 A44 E45 T46 A47 M52 I53 L54 P55 V56 V57 I58 T59 V60 Y61 E62 D63
K64 S65 F66 T67 F68 I69 I70 K71 T72 P73 P74 A75 S76 F77 L78 L79 K80 K81 I85 E86 K87 G88 S89 S90 E91 P92 K93 R94 K95 I96 V97 G98 K99 V100 T101 R102 K103 Q104 I105 E106 E107 I108 A109 K110 T111 K112 M113 P114 D115 L116 N117 A118 L121 E122 A123 A124 M125 K126
I127 I128 E129 G130 T131 A132 K133 S134 M135 G136 I137 E138 V139 V140 ASP

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	517.41Å 517.41Å 365.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.00 – 6.46 99.57 – 6.00	Depositor EDS
% Data completeness (in resolution range)	99.9 (40.00-6.46) 99.7 (99.57-6.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.13	Depositor
$< I/\sigma(I) >$ [1]	1.87 (at 6.19Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.354 , 0.361 0.329 , 0.344	Depositor DCC
R_{free} test set	6075 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	240.8	Xtriage
Anisotropy	0.222	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.10 , 90.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.87	EDS
Total number of atoms	142447	wwPDB-VP
Average B, all atoms (Å^2)	314.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.58% 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: PSU, YYG

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	1.32	68/36413 (0.2%)	1.49	439/56777 (0.8%)
2	AV	0.74	3/1812 (0.2%)	1.20	8/2819 (0.3%)
3	AW	1.81	19/1739 (1.1%)	2.15	47/2698 (1.7%)
4	AX	0.18	0/139	0.67	0/213
5	AB	0.60	2/1935 (0.1%)	0.61	0/2609
6	AC	0.73	2/1636 (0.1%)	0.61	4/2205 (0.2%)
7	AD	0.70	4/1733 (0.2%)	1.03	11/2318 (0.5%)
8	AE	0.83	1/1162 (0.1%)	0.63	1/1564 (0.1%)
9	AF	0.35	0/856	0.54	0/1154
10	AG	0.34	0/1276	0.59	3/1709 (0.2%)
11	AH	0.41	0/1136	0.66	0/1527
12	AI	0.34	0/1029	0.54	0/1378
13	AJ	0.35	0/807	0.56	0/1085
14	AK	0.59	1/900 (0.1%)	0.54	0/1213
15	AL	1.33	1/986 (0.1%)	1.11	3/1320 (0.2%)
16	AM	0.92	1/1007 (0.1%)	0.59	1/1344 (0.1%)
17	AN	0.49	1/501 (0.2%)	0.65	1/664 (0.2%)
18	AO	0.32	0/745	0.54	0/992
19	AP	0.40	0/716	0.59	1/963 (0.1%)
20	AQ	1.23	2/870 (0.2%)	1.38	6/1159 (0.5%)
21	AR	0.40	0/603	0.70	0/799
22	AS	0.34	0/661	0.53	0/890
23	AT	0.32	0/764	0.57	1/1006 (0.1%)
24	AU	0.33	0/212	0.49	0/277
25	BB	1.25	6/2950 (0.2%)	1.44	25/4602 (0.5%)
26	BA	1.17	153/67839 (0.2%)	1.46	906/105818 (0.9%)
27	BD	0.38	0/1328	0.60	0/1783
28	BE	0.65	4/1540 (0.3%)	1.07	7/2078 (0.3%)
29	BF	0.76	3/1444 (0.2%)	0.83	1/1954 (0.1%)
30	BG	0.25	0/971	0.46	0/1304
31	BH	0.54	1/1272 (0.1%)	0.80	3/1721 (0.2%)
32	BI	0.32	0/1156	0.71	3/1544 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	BN	0.35	0/927	0.55	0/1245
34	BO	0.32	0/946	0.57	0/1269
35	BP	1.59	3/643 (0.5%)	1.31	5/870 (0.6%)
36	BQ	0.32	0/1106	0.53	0/1490
37	BS	1.13	3/877 (0.3%)	0.69	1/1179 (0.1%)
38	BT	0.39	0/412	0.70	0/554
39	BW	0.75	3/869 (0.3%)	0.75	4/1166 (0.3%)
40	BX	0.49	1/608 (0.2%)	1.04	3/820 (0.4%)
41	BY	0.26	0/887	0.83	3/1195 (0.3%)
42	BZ	0.32	1/1385 (0.1%)	0.62	3/1883 (0.2%)
43	BR	0.30	0/867	0.50	0/1162
44	BU	0.64	1/994 (0.1%)	0.74	3/1323 (0.2%)
45	BV	0.82	1/796 (0.1%)	0.91	3/1058 (0.3%)
46	B2	0.37	0/497	1.00	2/668 (0.3%)
47	B3	0.31	0/482	0.50	0/646
48	B0	0.38	1/649 (0.2%)	0.87	3/860 (0.3%)
49	B4	0.89	2/620 (0.3%)	0.54	0/831
50	B5	0.36	0/469	0.90	3/629 (0.5%)
51	B6	0.32	0/438	0.55	1/583 (0.2%)
52	B7	0.38	0/387	0.64	0/509
53	B8	0.91	2/503 (0.4%)	0.92	3/657 (0.5%)
54	B9	0.33	0/286	0.59	0/375
55	BK	0.27	1/1014 (0.1%)	0.44	0/1363
All	All	1.09	291/154800 (0.2%)	1.33	1508/231822 (0.7%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
3	AW	1	5
5	AB	0	1
6	AC	0	1
7	AD	0	1
14	AK	0	1
15	AL	0	1
20	AQ	0	1
27	BD	0	1
28	BE	0	3
29	BF	0	4
31	BH	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
32	BI	0	1
35	BP	0	1
37	BS	0	1
40	BX	0	1
41	BY	0	1
46	B2	0	1
50	B5	0	1
55	BK	0	1
All	All	1	28

The worst 5 of 291 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	BA	2199	A	O3'-P	-71.04	0.75	1.61
1	AA	1278	U	O3'-P	-56.53	0.93	1.61
1	AA	1337	G	O3'-P	-53.91	0.96	1.61
26	BA	1546	C	O3'-P	-51.62	0.99	1.61
1	AA	1004	A	O3'-P	48.18	2.19	1.61

The worst 5 of 1508 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	AW	65	G	P-O3'-C3'	-50.68	58.88	119.70
26	BA	712(A)	A	P-O3'-C3'	-43.62	67.36	119.70
26	BA	2199	A	O3'-P-O5'	-43.07	22.17	104.00
2	AV	65	G	P-O3'-C3'	39.88	167.56	119.70
1	AA	1255	G	P-O3'-C3'	-38.36	73.67	119.70

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	AW	37	YYG	C15

5 of 28 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	AW	16	U	Sidechain
3	AW	17	U	Sidechain
3	AW	18	G	Sidechain
3	AW	19	G	Sidechain
3	AW	62	A	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	32551	0	16459	2042	3
2	AV	1622	0	821	231	0
3	AW	1638	0	836	243	0
4	AX	136	0	63	26	0
5	AB	1900	0	1950	97	0
6	AC	1612	0	1675	99	0
7	AD	1703	0	1761	289	0
8	AE	1146	0	1206	68	0
9	AF	843	0	857	30	0
10	AG	1257	0	1295	102	0
11	AH	1116	0	1177	100	0
12	AI	1011	0	1040	80	0
13	AJ	794	0	840	81	0
14	AK	885	0	904	53	0
15	AL	970	0	1056	72	0
16	AM	997	0	1070	149	0
17	AN	492	0	529	82	0
18	AO	734	0	771	28	0
19	AP	700	0	720	70	0
20	AQ	857	0	928	80	0
21	AR	597	0	668	40	0
22	AS	647	0	673	155	0
23	AT	762	0	859	37	0
24	AU	208	0	221	84	0
25	BB	2637	0	1339	219	1
26	BA	60600	0	30514	11060	138
27	BD	1308	0	1346	1086	0
28	BE	1507	0	1478	1144	3
29	BF	1430	0	1357	1085	0
30	BG	957	0	952	692	0
31	BH	1251	0	1291	754	0
32	BI	1145	0	1225	625	3
33	BN	917	0	896	771	2
34	BO	937	0	992	613	0
35	BP	639	0	605	482	0
36	BQ	1081	0	1047	932	0
37	BS	866	0	866	677	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	BT	406	0	359	167	0
39	BW	860	0	909	557	0
40	BX	602	0	558	460	0
41	BY	879	0	860	755	0
42	BZ	1360	0	1378	902	0
43	BR	855	0	904	579	0
44	BU	978	0	996	895	0
45	BV	787	0	782	635	0
46	B2	494	0	504	393	0
47	B3	477	0	527	460	0
48	B0	641	0	661	531	0
49	B4	604	0	587	489	0
50	B5	457	0	456	279	0
51	B6	431	0	454	289	0
52	B7	383	0	409	382	0
53	B8	496	0	539	349	0
54	B9	285	0	312	195	0
55	BK	999	0	1064	573	0
All	All	142447	0	94546	28969	145

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 123.

The worst 5 of 28969 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)
50:B5:33:CYS:SG	50:B5:36:CYS:HB2	1.24	1.69
26:BA:2470:G:C2	26:BA:2471:C:C5	1.81	1.68
52:B7:30:ILE:HA	52:B7:33:ARG:CD	1.21	1.67
26:BA:2712:U:C6	26:BA:712(A):A:C8	1.77	1.67
26:BA:2580:U:C6	26:BA:2581:G:C8	1.82	1.66

The worst 5 of 145 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)
26:BA:6:A:O4'	26:BA:2902:C:C2'[8_554]	0.72	1.48
26:BA:2899:G:N1	26:BA:2901:C:C4[8_554]	0.79	1.41
26:BA:6:A:C4'	26:BA:2902:C:C2'[8_554]	0.97	1.23
26:BA:2900:A:N7	26:BA:2900:A:N6[8_554]	1.03	1.17

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:BA:3:U:O4	26:BA:2899:G:O2'[8_554]	1.09	1.11

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
5	AB	232/256 (91%)	183 (79%)	33 (14%)	16 (7%)	1 15
6	AC	204/239 (85%)	166 (81%)	24 (12%)	14 (7%)	1 15
7	AD	206/209 (99%)	157 (76%)	33 (16%)	16 (8%)	1 13
8	AE	148/162 (91%)	116 (78%)	29 (20%)	3 (2%)	7 38
9	AF	99/101 (98%)	85 (86%)	10 (10%)	4 (4%)	3 23
10	AG	153/156 (98%)	131 (86%)	18 (12%)	4 (3%)	5 31
11	AH	136/138 (99%)	101 (74%)	25 (18%)	10 (7%)	1 13
12	AI	125/128 (98%)	86 (69%)	31 (25%)	8 (6%)	1 16
13	AJ	96/105 (91%)	73 (76%)	14 (15%)	9 (9%)	0 10
14	AK	117/129 (91%)	88 (75%)	22 (19%)	7 (6%)	1 17
15	AL	122/135 (90%)	90 (74%)	13 (11%)	19 (16%)	0 3
16	AM	121/126 (96%)	95 (78%)	20 (16%)	6 (5%)	2 20
17	AN	58/61 (95%)	42 (72%)	12 (21%)	4 (7%)	1 15
18	AO	86/89 (97%)	76 (88%)	9 (10%)	1 (1%)	13 50
19	AP	81/88 (92%)	64 (79%)	11 (14%)	6 (7%)	1 13
20	AQ	102/105 (97%)	78 (76%)	18 (18%)	6 (6%)	1 17
21	AR	71/88 (81%)	54 (76%)	11 (16%)	6 (8%)	1 11
22	AS	78/93 (84%)	60 (77%)	15 (19%)	3 (4%)	3 24
23	AT	97/106 (92%)	79 (81%)	12 (12%)	6 (6%)	1 17
24	AU	22/27 (82%)	17 (77%)	3 (14%)	2 (9%)	1 11

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	BD	169/173 (98%)	60 (36%)	34 (20%)	75 (44%)	0	0
28	BE	183/338 (54%)	89 (49%)	34 (19%)	60 (33%)	0	0
29	BF	179/246 (73%)	51 (28%)	47 (26%)	81 (45%)	0	0
30	BG	116/176 (66%)	46 (40%)	31 (27%)	39 (34%)	0	0
31	BH	162/177 (92%)	74 (46%)	39 (24%)	49 (30%)	0	0
32	BI	144/149 (97%)	71 (49%)	29 (20%)	44 (31%)	0	0
33	BN	111/145 (77%)	34 (31%)	21 (19%)	56 (50%)	0	0
34	BO	120/122 (98%)	61 (51%)	27 (22%)	32 (27%)	0	0
35	BP	82/164 (50%)	28 (34%)	21 (26%)	33 (40%)	0	0
36	BQ	130/138 (94%)	38 (29%)	35 (27%)	57 (44%)	0	0
37	BS	105/186 (56%)	36 (34%)	20 (19%)	49 (47%)	0	0
38	BT	48/66 (73%)	17 (35%)	13 (27%)	18 (38%)	0	0
39	BW	104/113 (92%)	41 (39%)	16 (15%)	47 (45%)	0	0
40	BX	72/84 (86%)	26 (36%)	18 (25%)	28 (39%)	0	0
41	BY	108/119 (91%)	49 (45%)	20 (18%)	39 (36%)	0	0
42	BZ	175/253 (69%)	52 (30%)	53 (30%)	70 (40%)	0	0
43	BR	103/118 (87%)	35 (34%)	20 (19%)	48 (47%)	0	0
44	BU	115/118 (98%)	22 (19%)	23 (20%)	70 (61%)	0	0
45	BV	96/100 (96%)	39 (41%)	25 (26%)	32 (33%)	0	0
46	B2	62/70 (89%)	8 (13%)	9 (14%)	45 (73%)	0	0
47	B3	58/60 (97%)	24 (41%)	13 (22%)	21 (36%)	0	0
48	B0	84/91 (92%)	32 (38%)	17 (20%)	35 (42%)	0	0
49	B4	71/73 (97%)	21 (30%)	16 (22%)	34 (48%)	0	0
50	B5	56/60 (93%)	16 (29%)	18 (32%)	22 (39%)	0	0
51	B6	51/82 (62%)	21 (41%)	9 (18%)	21 (41%)	0	0
52	B7	44/47 (94%)	4 (9%)	7 (16%)	33 (75%)	0	0
53	B8	61/64 (95%)	22 (36%)	10 (16%)	29 (48%)	0	0
54	B9	33/36 (92%)	14 (42%)	9 (27%)	10 (30%)	0	0
55	BK	129/141 (92%)	73 (57%)	18 (14%)	38 (30%)	0	0
All	All	5325/6250 (85%)	2945 (55%)	1015 (19%)	1365 (26%)	0	1

5 of 1365 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	AB	24	TRP
5	AB	104	ASN
5	AB	153	ARG
5	AB	154	LEU
5	AB	161	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
5	AB	202/220 (92%)	173 (86%)	29 (14%)	3 16
6	AC	160/188 (85%)	146 (91%)	14 (9%)	10 31
7	AD	180/181 (99%)	162 (90%)	18 (10%)	7 26
8	AE	115/123 (94%)	94 (82%)	21 (18%)	1 10
9	AF	90/90 (100%)	83 (92%)	7 (8%)	12 36
10	AG	126/127 (99%)	116 (92%)	10 (8%)	12 36
11	AH	119/119 (100%)	92 (77%)	27 (23%)	1 5
12	AI	98/99 (99%)	90 (92%)	8 (8%)	11 34
13	AJ	88/92 (96%)	77 (88%)	11 (12%)	4 19
14	AK	90/99 (91%)	85 (94%)	5 (6%)	21 46
15	AL	104/111 (94%)	93 (89%)	11 (11%)	6 24
16	AM	100/101 (99%)	87 (87%)	13 (13%)	4 18
17	AN	49/50 (98%)	43 (88%)	6 (12%)	5 20
18	AO	79/80 (99%)	70 (89%)	9 (11%)	5 21
19	AP	72/74 (97%)	62 (86%)	10 (14%)	3 17
20	AQ	96/97 (99%)	87 (91%)	9 (9%)	8 28
21	AR	64/77 (83%)	57 (89%)	7 (11%)	6 23
22	AS	71/80 (89%)	64 (90%)	7 (10%)	8 26
23	AT	76/82 (93%)	68 (90%)	8 (10%)	7 24
24	AU	19/22 (86%)	19 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
27	BD	135/135 (100%)	99 (73%)	36 (27%)	0 3
28	BE	156/284 (55%)	128 (82%)	28 (18%)	2 10
29	BF	152/193 (79%)	124 (82%)	28 (18%)	1 10
30	BG	102/147 (69%)	93 (91%)	9 (9%)	10 31
31	BH	137/147 (93%)	111 (81%)	26 (19%)	1 9
32	BI	119/119 (100%)	98 (82%)	21 (18%)	2 11
33	BN	95/121 (78%)	80 (84%)	15 (16%)	2 14
34	BO	101/101 (100%)	81 (80%)	20 (20%)	1 8
35	BP	67/126 (53%)	56 (84%)	11 (16%)	2 13
36	BQ	110/110 (100%)	83 (76%)	27 (24%)	0 4
37	BS	89/149 (60%)	73 (82%)	16 (18%)	1 10
38	BT	44/52 (85%)	30 (68%)	14 (32%)	0 2
39	BW	88/92 (96%)	74 (84%)	14 (16%)	2 14
40	BX	67/73 (92%)	44 (66%)	23 (34%)	0 1
41	BY	97/105 (92%)	80 (82%)	17 (18%)	2 11
42	BZ	151/203 (74%)	130 (86%)	21 (14%)	3 17
43	BR	89/101 (88%)	71 (80%)	18 (20%)	1 7
44	BU	96/97 (99%)	68 (71%)	28 (29%)	0 2
45	BV	79/79 (100%)	69 (87%)	10 (13%)	4 19
46	B2	51/56 (91%)	37 (72%)	14 (28%)	0 3
47	B3	52/52 (100%)	47 (90%)	5 (10%)	8 27
48	B0	64/67 (96%)	57 (89%)	7 (11%)	6 23
49	B4	66/66 (100%)	54 (82%)	12 (18%)	1 10
50	B5	51/53 (96%)	43 (84%)	8 (16%)	2 14
51	B6	46/69 (67%)	39 (85%)	7 (15%)	3 15
52	B7	39/40 (98%)	31 (80%)	8 (20%)	1 7
53	B8	50/51 (98%)	39 (78%)	11 (22%)	1 6
54	B9	34/35 (97%)	30 (88%)	4 (12%)	5 20
55	BK	108/113 (96%)	104 (96%)	4 (4%)	34 58
All	All	4533/5148 (88%)	3841 (85%)	692 (15%)	2 15

5 of 692 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
37	BS	93	GLN
43	BR	116	LEU
38	BT	36	CYS
37	BS	87	LEU
41	BY	34	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 129 such sidechains are listed below:

Mol	Chain	Res	Type
46	B2	42	ASN
48	B0	71	ASN
23	AT	73	HIS
23	AT	26	ASN
50	B5	29	ASN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1497/1522 (98%)	520 (34%)	164 (10%)
2	AV	73/76 (96%)	16 (21%)	1 (1%)
25	BB	122/123 (99%)	45 (36%)	3 (2%)
26	BA	2780/2916 (95%)	1487 (53%)	360 (12%)
3	AW	70/76 (92%)	16 (22%)	3 (4%)
4	AX	5/18 (27%)	0	0
All	All	4547/4731 (96%)	2084 (45%)	531 (11%)

5 of 2084 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	6	G
1	AA	7	G
1	AA	8	A
1	AA	9	G
1	AA	12	U

5 of 531 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
26	BA	2454	G
26	BA	2532	G
26	BA	2451	A

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Mol	Chain	Res	Type
26	BA	2820	A
26	BA	247	G

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

3 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	$\#\|Z\| > 2$
3	PSU	AW	55	3	18,21,22	0.72	0	22,30,33	0.86	0
3	PSU	AW	39	3	18,21,22	0.73	0	22,30,33	0.67	0
3	YYG	AW	37	10,3	31,42,43	0.92	1 (3%)	33,62,65	2.61	10 (30%)

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
3	PSU	AW	55	3	-	0/7/25/26	0/2/2/2
3	PSU	AW	39	3	-	0/7/25/26	0/2/2/2
3	YYG	AW	37	10,3	1/1/8/9	7/20/42/43	0/3/4/4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	AW	37	YYG	C8-N7	-2.20	1.31	1.35

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	AW	37	YYG	C11-C12-N1	8.65	111.41	106.53
3	AW	37	YYG	C24-O23-C21	6.32	123.13	115.66

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	AW	37	YYG	C3-N3-C4	4.98	125.55	116.71
3	AW	37	YYG	O23-C21-N20	4.37	118.48	110.80
3	AW	37	YYG	C4-N3-C2	-3.41	111.80	122.15

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	AW	37	YYG	C15

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	AW	37	YYG	C12-C13-C14-C15
3	AW	37	YYG	C15-C16-O18-C19
3	AW	37	YYG	O17-C16-O18-C19
3	AW	37	YYG	C13-C14-C15-C16
3	AW	37	YYG	C14-C15-C16-O18

There are no ring outliers.

2 monomers are involved in 42 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	AW	39	PSU	4	0
3	AW	37	YYG	38	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
26	BA	98
1	AA	68
3	AW	7
25	BB	4
36	BQ	3
2	AV	3
45	BV	2
16	AM	2
5	AB	2
49	B4	2
39	BW	2
20	AQ	2
6	AC	2
27	BD	1
55	BK	1
37	BS	1
8	AE	1
35	BP	1
53	B8	1
48	B0	1
14	AK	1
31	BH	1
29	BF	1
44	BU	1
7	AD	1
15	AL	1

The worst 5 of 210 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	AA	30(D):A	O3'	1031:G	P	5.01
1	BA	142(A):A	O3'	1143:A	P	4.98
1	AW	73:A	O3'	74:C	P	4.88
1	BA	1171:G	O3'	1173:G	P	4.41
1	AA	440:A	O3'	442:C	P	4.34

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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, 95^{th} 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	1515/1522 (99%)	0.48	151 (9%) 7 10	188, 339, 400, 400	0
2	AV	76/76 (100%)	0.90	8 (10%) 6 9	242, 299, 394, 394	0
3	AW	73/76 (96%)	0.44	9 (12%) 4 8	253, 400, 400, 400	0
4	AX	17/18 (94%)	1.31	5 (29%) 0 2	400, 400, 400, 400	0
5	AB	234/256 (91%)	0.10	12 (5%) 28 27	395, 395, 400, 400	0
6	AC	206/239 (86%)	1.60	58 (28%) 0 2	393, 398, 398, 398	0
7	AD	208/209 (99%)	1.61	67 (32%) 0 2	257, 391, 400, 400	0
8	AE	150/162 (92%)	3.17	90 (60%) 0 0	371, 400, 400, 400	0
9	AF	101/101 (100%)	-0.42	1 (0%) 82 75	400, 400, 400, 400	0
10	AG	155/156 (99%)	1.88	55 (35%) 0 1	358, 400, 400, 400	0
11	AH	138/138 (100%)	1.39	43 (31%) 0 2	396, 396, 396, 396	0
12	AI	127/128 (99%)	0.70	27 (21%) 0 3	395, 395, 395, 395	0
13	AJ	98/105 (93%)	1.25	14 (14%) 2 6	400, 400, 400, 400	0
14	AK	119/129 (92%)	0.82	18 (15%) 2 5	202, 202, 400, 400	0
15	AL	124/135 (91%)	0.96	25 (20%) 1 3	399, 399, 400, 400	0
16	AM	125/126 (99%)	0.47	17 (13%) 3 6	348, 400, 400, 400	0
17	AN	60/61 (98%)	1.49	19 (31%) 0 2	400, 400, 400, 400	0
18	AO	88/89 (98%)	-0.12	2 (2%) 60 54	400, 400, 400, 400	0
19	AP	83/88 (94%)	1.76	32 (38%) 0 1	400, 400, 400, 400	0
20	AQ	104/105 (99%)	1.84	41 (39%) 0 1	400, 400, 400, 400	0
21	AR	73/88 (82%)	-0.38	0 100 100	400, 400, 400, 400	0
22	AS	80/93 (86%)	0.67	17 (21%) 0 3	400, 400, 400, 400	0
23	AT	99/106 (93%)	-0.06	7 (7%) 16 16	400, 400, 400, 400	0
24	AU	24/27 (88%)	1.91	10 (41%) 0 1	400, 400, 400, 400	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
25	BB	123/123 (100%)	-0.16	6 (4%) 29 28	267, 323, 388, 388	0
26	BA	2814/2916 (96%)	0.34	156 (5%) 25 25	65, 238, 393, 400	0
27	BD	173/173 (100%)	1.56	60 (34%) 0 2	392, 392, 400, 400	0
28	BE	191/338 (56%)	2.04	89 (46%) 0 1	400, 400, 400, 400	0
29	BF	189/246 (76%)	-0.33	9 (4%) 30 29	393, 396, 396, 396	0
30	BG	122/176 (69%)	0.06	7 (5%) 23 23	400, 400, 400, 400	0
31	BH	164/177 (92%)	0.26	14 (8%) 10 13	400, 400, 400, 400	0
32	BI	148/149 (99%)	1.42	48 (32%) 0 2	400, 400, 400, 400	0
33	BN	117/145 (80%)	1.71	46 (39%) 0 1	400, 400, 400, 400	0
34	BO	122/122 (100%)	1.10	25 (20%) 1 3	400, 400, 400, 400	0
35	BP	84/164 (51%)	1.02	15 (17%) 1 4	395, 395, 400, 400	0
36	BQ	138/138 (100%)	2.38	70 (50%) 0 1	393, 393, 393, 393	0
37	BS	113/186 (60%)	-0.12	2 (1%) 68 60	278, 400, 400, 400	0
38	BT	52/66 (78%)	3.00	31 (59%) 0 0	400, 400, 400, 400	0
39	BW	108/113 (95%)	0.18	6 (5%) 24 24	278, 395, 400, 400	0
40	BX	76/84 (90%)	0.80	18 (23%) 0 2	400, 400, 400, 400	0
41	BY	110/119 (92%)	0.70	15 (13%) 3 6	400, 400, 400, 400	0
42	BZ	177/253 (69%)	0.28	10 (5%) 24 24	396, 398, 398, 398	0
43	BR	105/118 (88%)	0.35	8 (7%) 13 15	400, 400, 400, 400	0
44	BU	117/118 (99%)	0.44	14 (11%) 4 8	391, 391, 400, 400	0
45	BV	100/100 (100%)	1.10	20 (20%) 1 3	400, 400, 400, 400	0
46	B2	64/70 (91%)	0.03	4 (6%) 20 19	400, 400, 400, 400	0
47	B3	60/60 (100%)	0.28	4 (6%) 17 18	398, 398, 398, 398	0
48	B0	86/91 (94%)	1.44	23 (26%) 0 2	396, 400, 400, 400	0
49	B4	73/73 (100%)	1.92	34 (46%) 0 1	396, 397, 397, 397	0
50	B5	58/60 (96%)	-0.14	0 100 100	400, 400, 400, 400	0
51	B6	53/82 (64%)	-0.08	2 (3%) 40 36	400, 400, 400, 400	0
52	B7	46/47 (97%)	0.80	3 (6%) 18 18	396, 396, 396, 396	0
53	B8	63/64 (98%)	1.02	13 (20%) 1 3	400, 400, 400, 400	0
54	B9	35/36 (97%)	3.63	21 (60%) 0 0	400, 400, 400, 400	0
55	BK	133/141 (94%)	0.06	4 (3%) 50 43	392, 400, 400, 400	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
All	All	10091/10981 (91%)	0.70	1505 (14%)	2	5	65, 395, 400, 400	0

The worst 5 of 1505 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
13	AJ	61	GLU	17.3
13	AJ	62	HIS	16.0
13	AJ	48	THR	14.7
8	AE	134	ALA	13.7
54	B9	24	LEU	13.3

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
3	YYG	AW	37	39/40	0.17	0.79	399,399,399,399	0
3	PSU	AW	39	20/21	0.58	0.44	399,399,399,399	0
3	PSU	AW	55	20/21	0.94	0.09	400,400,400,400	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.