



wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 9, 2023 – 06:08 PM EDT

PDB ID : 6B4V
Title : Antibiotic blasticidin S and E. coli release factor 1 bound to the 70S ribosome
Authors : Svidritskiy, E.; Korostelev, A.A.
Deposited on : 2017-09-27
Resolution : 3.40 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.35.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

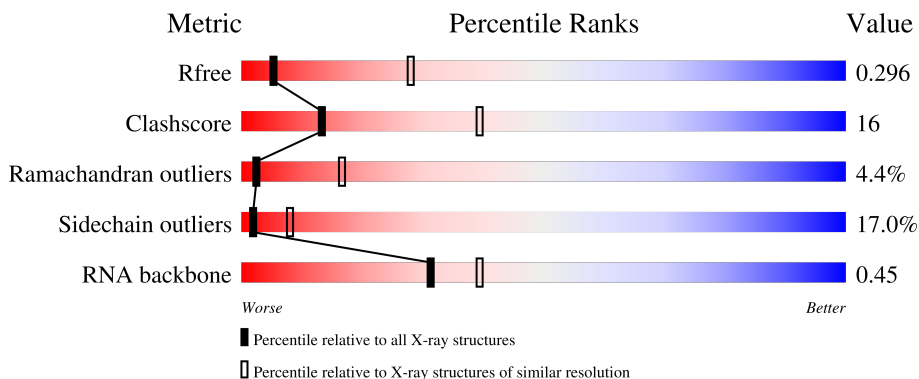
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 Å.

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



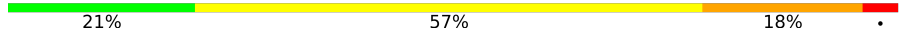
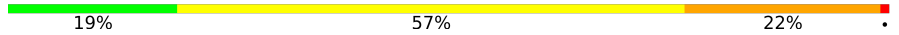
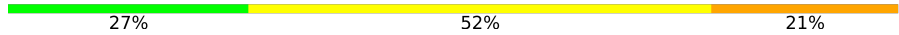
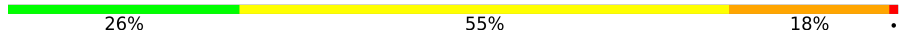






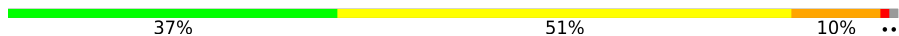
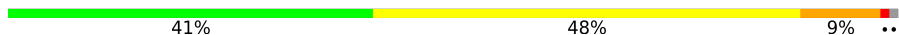
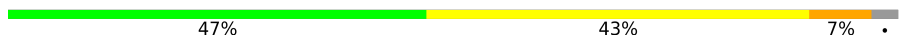












Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1026 (3.48-3.32)
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)
RNA backbone	3102	1006 (3.84-2.96)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	1507	38% (green), 48% (yellow), 13% (orange), 1% (red), 1% (grey)
1	EB	1507	38% (green), 48% (yellow), 13% (orange), 1% (red), 1% (grey)
2	B	2880	40% (green), 41% (yellow), 16% (orange), 1% (red), 1% (grey)
2	FB	2880	43% (green), 41% (yellow), 14% (orange), 1% (red), 1% (grey)
3	C	120	45% (green), 42% (yellow), 13% (orange), 1% (red), 1% (grey)
3	GB	120	42% (green), 46% (yellow), 12% (orange), 1% (red), 1% (grey)

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Mol	Chain	Length	Quality of chain
4	D	77	 21% 57% 18% .
4	HB	77	 19% 57% 22% .
4	IA	77	 27% 52% 21%
4	MC	77	 26% 55% 18% .
5	E	275	 49% 44% 6% .
5	IB	275	 51% 43% 6% .
6	F	206	 56% 35% 8% .
6	JB	206	 55% 38% 6% .
7	G	205	 55% 33% 11% .
7	KB	205	 52% 36% 11% .
8	H	182	 37% 51% 10% ..
8	LB	182	 41% 48% 9% ..
9	I	180	 47% 43% 7% .
9	MB	180	 48% 43% 6% .
10	J	148	 36% 48% 14% .
10	NB	148	 34% 51% 14% .
11	K	140	 56% 35% 8% .
11	OB	140	 54% 39% 7% .
12	L	122	 50% 44% 6%
12	PB	122	 48% 46% 7%
13	M	150	 55% 31% 14% .
13	QB	150	 53% 33% 14%
14	N	141	 57% 35% 7% .
14	RB	141	 57% 34% 9% .
15	O	118	 55% 36% 8%




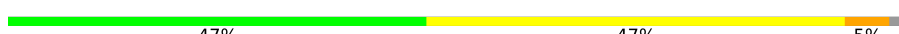
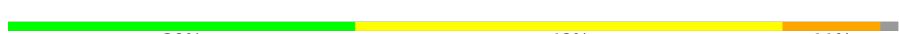

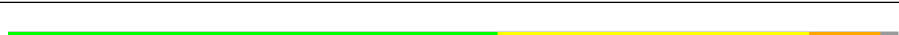
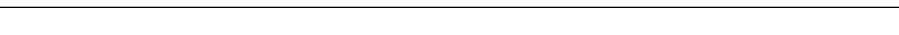
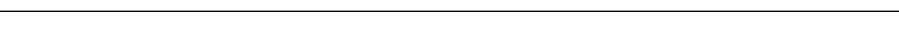
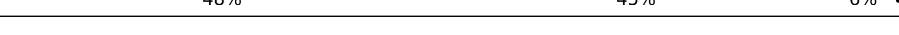
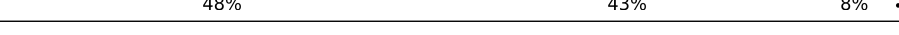
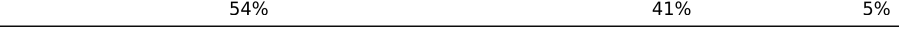



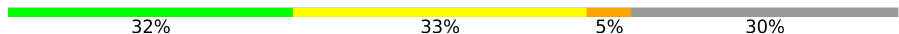
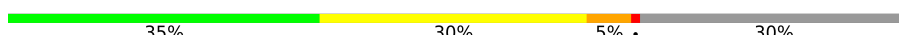
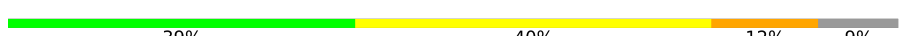
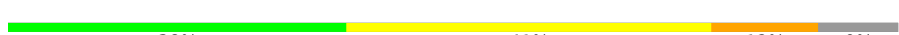

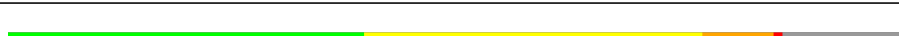




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Mol	Chain	Length	Quality of chain			
15	SB	118	50%	42%	8%	
16	P	112	55%	32%	10%	..
16	TB	112	55%	33%	8%	..
17	Q	146	50%	39%	5%	6%
17	UB	146	53%	34%	7%	6%
18	R	118	62%	31%	6%	.
18	VB	118	58%	36%	6%	.
19	S	101	53%	41%	6%	
19	WB	101	54%	39%	7%	
20	T	113	53%	42%		..
20	XB	113	52%	44%		..
21	U	96	59%	31%	7%	..
21	YB	96	64%	27%	7%	..
22	V	110	49%	38%	10%	.
22	ZB	110	48%	41%	8%	.
23	AC	206	49%	36%	7%	8%
23	W	206	47%	35%	9%	8%
24	BC	85	44%	48%	7%	.
24	X	85	41%	51%	6%	..
25	CC	98	40%	47%	12%	.
25	Y	98	41%	41%	17%	.
26	DC	72	43%	43%	11%	.
26	Z	72	42%	42%	14%	.
27	AA	60	45%	43%	12%	
27	EC	60	55%	33%	12%	

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Mol	Chain	Length	Quality of chain
28	BA	71	 48% 38% 10% . .
28	FC	71	 56% 32% 7% . .
29	CA	60	 50% 45% . .
29	GC	60	 47% 47% 5% .
30	DA	54	 39% 48% 11% .
30	HC	54	 39% 48% 11% .
31	EA	49	 55% 35% 8% .
31	IC	49	 55% 35% 8% .
32	FA	65	 48% 45% 6% .
32	JC	65	 48% 43% 8% .
33	GA	37	 54% 41% 5%
33	KC	37	 49% 46% 5%
34	HA	23	 9% 22% 17% 52%
34	LC	23	 22% 13% 13% 52%
35	JA	368	 32% 33% 5% 30%
35	NC	368	 35% 30% 5% 30%
36	KA	256	 39% 40% 12% 9%
36	OC	256	 38% 41% 12% 9%
37	LA	239	 40% 38% 8% 14%
37	PC	239	 40% 38% 8% 14%
38	MA	209	 43% 45% 11%
38	QC	209	 40% 46% 13%
39	NA	162	 51% 36% 6% 7%
39	RC	162	 52% 35% 6% 7%
40	OA	101	 48% 42% 11%

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Mol	Chain	Length	Quality of chain			
40	SC	101	51%	39%	10%	
41	PA	156	44%	38%	17%	..
41	TC	156	41%	42%	15%	..
42	QA	138	43%	46%	10%	
42	UC	138	45%	46%	9%	
43	RA	128	44%	49%	5%	..
43	VC	128	43%	50%	5%	..
44	SA	105	47%	40%	6%	7%
44	WC	105	46%	41%	7%	7%
45	TA	129	40%	43%	7%	10%
45	XC	129	39%	43%	7%	10%
46	UA	132	51%	33%	8%	8%
46	YC	132	43%	40%	8%	8%
47	VA	126	35%	44%	11%	7%
47	ZC	126	34%	44%	13%	7%
48	AD	61	46%	46%	7%	.
48	WA	61	43%	46%	10%	.
49	BD	89	58%	39%		..
49	XA	89	52%	45%		..
50	CD	88	44%	45%	5%	6%
50	YA	88	36%	52%	6%	6%
51	DD	105	42%	39%	13%	6%
51	ZA	105	39%	40%	15%	6%
52	AB	88	33%	39%	8%	20%
52	ED	88	32%	40%	8%	20%

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Mol	Chain	Length	Quality of chain
53	BB	93	 40% 34% 14% • 11%
53	FD	93	 39% 37% 12% • 11%
54	CB	106	 41% 45% 7% • 7%
54	GD	106	 42% 44% 7% • 7%
55	DB	27	 26% 44% 19% 11%
55	HD	27	 26% 48% 15% 11%

2 Entry composition [i](#)

There are 58 unique types of molecules in this entry. The entry contains 299841 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	A	1507	Total	C	N	O	P	0	0	0
			32394	14424	5998	10465	1507			
1	EB	1507	Total	C	N	O	P	0	0	0
			32394	14424	5998	10465	1507			

- Molecule 2 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	B	2880	Total	C	N	O	P	0	0	0
			62031	27612	11589	19950	2880			
2	FB	2880	Total	C	N	O	P	0	0	0
			62031	27612	11589	19950	2880			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	154A	C	UNK	conflict	GB 46197919
FB	154A	C	UNK	conflict	GB 46197919

- Molecule 3 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	C	120	Total	C	N	O	P	0	0	0
			2576	1146	476	834	120			
3	GB	120	Total	C	N	O	P	0	0	0
			2576	1146	476	834	120			

- Molecule 4 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
4	D	77	Total	C	N	O	P	S	0	0	0
			1642	734	297	534	76	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
4	IA	77	Total	C	N	O	P	S	0	0	0
			1642	734	297	534	76	1			
4	HB	77	Total	C	N	O	P	S	0	0	0
			1642	734	297	534	76	1			
4	MC	77	Total	C	N	O	P	S	0	0	0
			1642	734	297	534	76	1			

- Molecule 5 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	275	Total	C	N	O	S	0	0	0
			2145	1353	428	361	3			
5	IB	275	Total	C	N	O	S	0	0	0
			2145	1353	428	361	3			

- Molecule 6 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	204	Total	C	N	O	S	0	0	0
			1563	988	299	270	6			
6	JB	204	Total	C	N	O	S	0	0	0
			1563	988	299	270	6			

- Molecule 7 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	202	Total	C	N	O	S	0	0	0
			1586	1011	297	275	3			
7	KB	202	Total	C	N	O	S	0	0	0
			1586	1011	297	275	3			

- Molecule 8 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	181	Total	C	N	O	S	0	0	0
			1471	940	267	260	4			
8	LB	181	Total	C	N	O	S	0	0	0
			1471	940	267	260	4			

- Molecule 9 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	I	174	Total	C	N	O	S	0	0	0
			1330	845	248	236	1			
9	MB	174	Total	C	N	O	S	0	0	0
			1330	845	248	236	1			

- Molecule 10 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	146	Total	C	N	O	S	0	0	0
			1137	727	201	208	1			
10	NB	146	Total	C	N	O	S	0	0	0
			1137	727	201	208	1			

- Molecule 11 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	K	140	Total	C	N	O	S	0	0	0
			1121	722	208	187	4			
11	OB	140	Total	C	N	O	S	0	0	0
			1121	722	208	187	4			

- Molecule 12 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
12	L	122	Total	C	N	O	S	0	0	0
			932	587	171	170	4			
12	PB	122	Total	C	N	O	S	0	0	0
			932	587	171	170	4			

- Molecule 13 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
13	M	150	Total	C	N	O	S	0	0	0
			1145	712	232	198	3			
13	QB	150	Total	C	N	O	S	0	0	0
			1145	712	232	198	3			

- Molecule 14 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	N	141	Total	C	N	O	S	0	0	0
			1121	715	212	187	7			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
14	RB	141	Total	C	N	O	S	0	0	0
			1121	715	212	187	7			

- Molecule 15 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
15	O	118	Total	C	N	O	S	0	0	0
			968	604	203	160	1			
15	SB	118	Total	C	N	O	S	0	0	0
			968	604	203	160	1			

- Molecule 16 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
16	P	110	Total	C	N	O	0	0	0
			877	553	175	149			
16	TB	110	Total	C	N	O	0	0	0
			877	553	175	149			

- Molecule 17 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
17	Q	137	Total	C	N	O	S	0	0	0
			1143	713	234	195	1			
17	UB	137	Total	C	N	O	S	0	0	0
			1143	713	234	195	1			

- Molecule 18 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
18	R	117	Total	C	N	O	S	0	0	0
			964	610	202	151	1			
18	VB	117	Total	C	N	O	S	0	0	0
			964	610	202	151	1			

- Molecule 19 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
19	S	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			
19	WB	101	Total	C	N	O	S	0	0	0
			779	501	142	135	1			

- Molecule 20 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
20	T	112	Total	C	N	O	S	0	0	0
			890	560	175	153	2			
20	XB	112	Total	C	N	O	S	0	0	0
			890	560	175	153	2			

- Molecule 21 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
21	U	95	Total	C	N	O	S	0	0	0
			750	488	135	126	1			
21	YB	95	Total	C	N	O	S	0	0	0
			750	488	135	126	1			

- Molecule 22 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
22	V	107	Total	C	N	O	S	0	0	0
			814	523	154	131	6			
22	ZB	107	Total	C	N	O	S	0	0	0
			814	523	154	131	6			

- Molecule 23 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
23	W	189	Total	C	N	O	S	0	0	0
			1495	953	266	273	3			
23	AC	189	Total	C	N	O	S	0	0	0
			1495	953	266	273	3			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
24	X	84	Total	C	N	O	S	0	0	0
			662	410	140	111	1			
24	BC	84	Total	C	N	O	S	0	0	0
			662	410	140	111	1			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	11	ARG	LYS	conflict	UNP Q72HR3

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Chain	Residue	Modelled	Actual	Comment	Reference
BC	11	ARG	LYS	conflict	UNP Q72HR3

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
25	Y	97	Total	C	N	O	S	0	0	0
			761	478	151	131	1			
25	CC	97	Total	C	N	O	S	0	0	0
			761	478	151	131	1			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
26	Z	70	Total	C	N	O	S	0	0	0
			592	368	119	103	2			
26	DC	70	Total	C	N	O	S	0	0	0
			592	368	119	103	2			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
27	AA	60	Total	C	N	O	S	0	0	0
			477	303	91	82	1			
27	EC	60	Total	C	N	O	S	0	0	0
			477	303	91	82	1			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
28	BA	69	Total	C	N	O	S	0	0	0
			552	349	99	99	5			
28	FC	69	Total	C	N	O	S	0	0	0
			552	349	99	99	5			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
29	CA	59	Total	C	N	O	S	0	0	0
			460	290	90	75	5			
29	GC	59	Total	C	N	O	S	0	0	0
			460	290	90	75	5			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
30	DA	53	Total	C	N	O	S	0	0	0
			453	281	91	77	4			
30	HC	53	Total	C	N	O	S	0	0	0
			453	281	91	77	4			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
31	EA	48	Total	C	N	O	S	0	0	0
			418	257	104	55	2			
31	IC	48	Total	C	N	O	S	0	0	0
			418	257	104	55	2			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
32	FA	64	Total	C	N	O	S	0	0	0
			517	331	102	82	2			
32	JC	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	GA	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			
33	KC	37	Total	C	N	O	S	0	0	0
			307	188	68	47	4			

- Molecule 34 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
34	HA	11	Total	C	N	O	P	0	0	0
			220	98	44	67	11			
34	LC	11	Total	C	N	O	P	0	0	0
			220	98	44	67	11			

- Molecule 35 is a protein called Peptide chain release factor 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
35	JA	258	2005	1227	380	390	8	0	0	0
35	NC	258	2005	1227	380	390	8	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
JA	361	LEU	-	expression tag	UNP A7ZKY5
JA	362	GLU	-	expression tag	UNP A7ZKY5
JA	363	HIS	-	expression tag	UNP A7ZKY5
JA	364	HIS	-	expression tag	UNP A7ZKY5
JA	365	HIS	-	expression tag	UNP A7ZKY5
JA	366	HIS	-	expression tag	UNP A7ZKY5
JA	367	HIS	-	expression tag	UNP A7ZKY5
JA	368	HIS	-	expression tag	UNP A7ZKY5
NC	361	LEU	-	expression tag	UNP A7ZKY5
NC	362	GLU	-	expression tag	UNP A7ZKY5
NC	363	HIS	-	expression tag	UNP A7ZKY5
NC	364	HIS	-	expression tag	UNP A7ZKY5
NC	365	HIS	-	expression tag	UNP A7ZKY5
NC	366	HIS	-	expression tag	UNP A7ZKY5
NC	367	HIS	-	expression tag	UNP A7ZKY5
NC	368	HIS	-	expression tag	UNP A7ZKY5

- Molecule 36 is a protein called 30S ribosomal protein S2.

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

- Molecule 37 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
37	LA	206	1612	1016	314	281	1	0	0	0
37	PC	206	1612	1016	314	281	1	0	0	0

- Molecule 38 is a protein called 30S ribosomal protein S4.

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

- Molecule 39 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
39	NA	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			
39	RC	151	Total	C	N	O	S	0	0	0
			1155	729	218	204	4			

- Molecule 40 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
40	OA	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			
40	SC	101	Total	C	N	O	S	0	0	0
			843	531	155	154	3			

- Molecule 41 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
41	PA	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			
41	TC	155	Total	C	N	O	S	0	0	0
			1257	781	252	218	6			

- Molecule 42 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
42	QA	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			
42	UC	138	Total	C	N	O	S	0	0	0
			1116	705	215	193	3			

- Molecule 43 is a protein called 30S ribosomal protein S9.

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

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

- Molecule 44 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
44	SA	98	794	499	156	138	1	0	0	0
44	WC	98	794	499	156	138	1	0	0	0

- Molecule 45 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
45	TA	116	864	537	164	160	3	0	0	0
45	XC	116	864	537	164	160	3	0	0	0

- Molecule 46 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
46	UA	122	958	604	193	159	2	0	0	0
46	YC	122	958	604	193	159	2	0	0	0

- Molecule 47 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
47	VA	117	933	577	192	162	2	0	0	0
47	ZC	117	933	577	192	162	2	0	0	0

- Molecule 48 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
48	WA	60	492	312	104	72	4	0	0	0
48	AD	60	492	312	104	72	4	0	0	0

- Molecule 49 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
49	XA	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			
49	BD	88	Total	C	N	O	S	0	0	0
			734	459	147	126	2			

- Molecule 50 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
50	YA	83	Total	C	N	O	S	0	0	0
			700	443	139	117	1			
50	CD	83	Total	C	N	O	S	0	0	0
			700	443	139	117	1			

- Molecule 51 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
51	ZA	99	Total	C	N	O	S	0	0	0
			823	528	152	141	2			
51	DD	99	Total	C	N	O	S	0	0	0
			823	528	152	141	2			

- Molecule 52 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
52	AB	70	Total	C	N	O	0	0	0
			574	367	112	95			
52	ED	70	Total	C	N	O	0	0	0
			574	367	112	95			

- Molecule 53 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
53	BB	83	Total	C	N	O	S	0	0	0
			665	424	124	115	2			
53	FD	83	Total	C	N	O	S	0	0	0
			665	424	124	115	2			

- Molecule 54 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
54	CB	99	Total	C	N	O	S	0	0	0
			762	469	162	129	2			
54	GD	99	Total	C	N	O	S	0	0	0
			762	469	162	129	2			

- Molecule 55 is a protein called 30S ribosomal protein Thx.

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

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
56	A	214	Total	Mg	0	0
			214	214		
56	B	562	Total	Mg	0	0
			562	562		
56	C	21	Total	Mg	0	0
			21	21		
56	D	5	Total	Mg	0	0
			5	5		
56	E	1	Total	Mg	0	0
			1	1		
56	F	2	Total	Mg	0	0
			2	2		
56	G	2	Total	Mg	0	0
			2	2		
56	H	1	Total	Mg	0	0
			1	1		
56	I	3	Total	Mg	0	0
			3	3		
56	J	2	Total	Mg	0	0
			2	2		
56	K	4	Total	Mg	0	0
			4	4		
56	L	2	Total	Mg	0	0
			2	2		
56	M	5	Total	Mg	0	0
			5	5		
56	O	2	Total	Mg	0	0
			2	2		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
56	Q	2	Total 2	Mg 2	0	0
56	S	2	Total 2	Mg 2	0	0
56	T	3	Total 3	Mg 3	0	0
56	U	2	Total 2	Mg 2	0	0
56	V	2	Total 2	Mg 2	0	0
56	W	2	Total 2	Mg 2	0	0
56	X	1	Total 1	Mg 1	0	0
56	Y	1	Total 1	Mg 1	0	0
56	Z	4	Total 4	Mg 4	0	0
56	AA	2	Total 2	Mg 2	0	0
56	BA	1	Total 1	Mg 1	0	0
56	CA	1	Total 1	Mg 1	0	0
56	DA	2	Total 2	Mg 2	0	0
56	EA	1	Total 1	Mg 1	0	0
56	HA	3	Total 3	Mg 3	0	0
56	IA	6	Total 6	Mg 6	0	0
56	JA	6	Total 6	Mg 6	0	0
56	KA	1	Total 1	Mg 1	0	0
56	LA	2	Total 2	Mg 2	0	0
56	MA	2	Total 2	Mg 2	0	0
56	NA	2	Total 2	Mg 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
56	QA	2	Total Mg 2 2	0	0
56	SA	3	Total Mg 3 3	0	0
56	TA	3	Total Mg 3 3	0	0
56	UA	4	Total Mg 4 4	0	0
56	XA	6	Total Mg 6 6	0	0
56	ZA	1	Total Mg 1 1	0	0
56	AB	2	Total Mg 2 2	0	0
56	CB	1	Total Mg 1 1	0	0
56	EB	206	Total Mg 206 206	0	0
56	FB	475	Total Mg 475 475	0	0
56	GB	15	Total Mg 15 15	0	0
56	HB	9	Total Mg 9 9	0	0
56	IB	4	Total Mg 4 4	0	0
56	JB	2	Total Mg 2 2	0	0
56	KB	4	Total Mg 4 4	0	0
56	MB	2	Total Mg 2 2	0	0
56	NB	3	Total Mg 3 3	0	0
56	OB	3	Total Mg 3 3	0	0
56	PB	1	Total Mg 1 1	0	0
56	RB	1	Total Mg 1 1	0	0
56	SB	2	Total Mg 2 2	0	0

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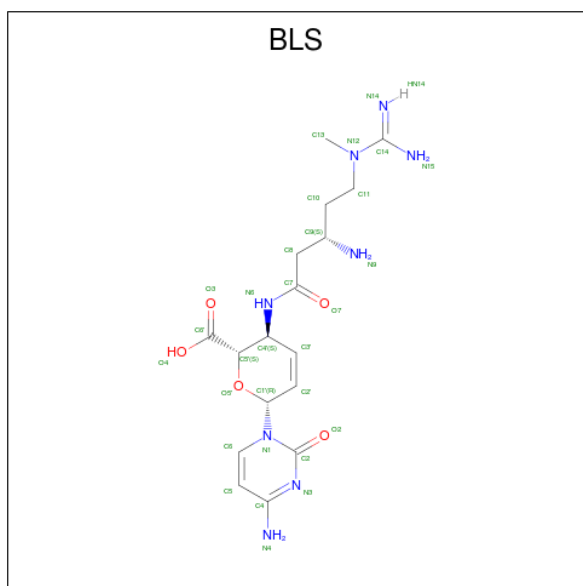
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
56	TB	1	Total 1	Mg 1	0	0
56	UB	3	Total 3	Mg 3	0	0
56	VB	1	Total 1	Mg 1	0	0
56	WB	1	Total 1	Mg 1	0	0
56	ZB	2	Total 2	Mg 2	0	0
56	BC	1	Total 1	Mg 1	0	0
56	CC	7	Total 7	Mg 7	0	0
56	DC	1	Total 1	Mg 1	0	0
56	EC	1	Total 1	Mg 1	0	0
56	FC	1	Total 1	Mg 1	0	0
56	JC	1	Total 1	Mg 1	0	0
56	LC	1	Total 1	Mg 1	0	0
56	MC	5	Total 5	Mg 5	0	0
56	NC	5	Total 5	Mg 5	0	0
56	OC	5	Total 5	Mg 5	0	0
56	PC	1	Total 1	Mg 1	0	0
56	QC	4	Total 4	Mg 4	0	0
56	RC	3	Total 3	Mg 3	0	0
56	SC	1	Total 1	Mg 1	0	0
56	TC	1	Total 1	Mg 1	0	0
56	UC	2	Total 2	Mg 2	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
56	VC	1	Total	Mg	0	0
			1	1		
56	WC	1	Total	Mg	0	0
			1	1		
56	XC	1	Total	Mg	0	0
			1	1		
56	YC	5	Total	Mg	0	0
			5	5		
56	AD	2	Total	Mg	0	0
			2	2		
56	BD	1	Total	Mg	0	0
			1	1		
56	CD	1	Total	Mg	0	0
			1	1		

- Molecule 57 is BLASTICIDIN S (three-letter code: BLS) (formula: C₁₇H₂₆N₈O₅).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
57	B	1	Total	C	N	O	0	0
			30	17	8	5		
57	FB	1	Total	C	N	O	0	0
			30	17	8	5		

- Molecule 58 is ZINC ION (three-letter code: ZN) (formula: Zn).

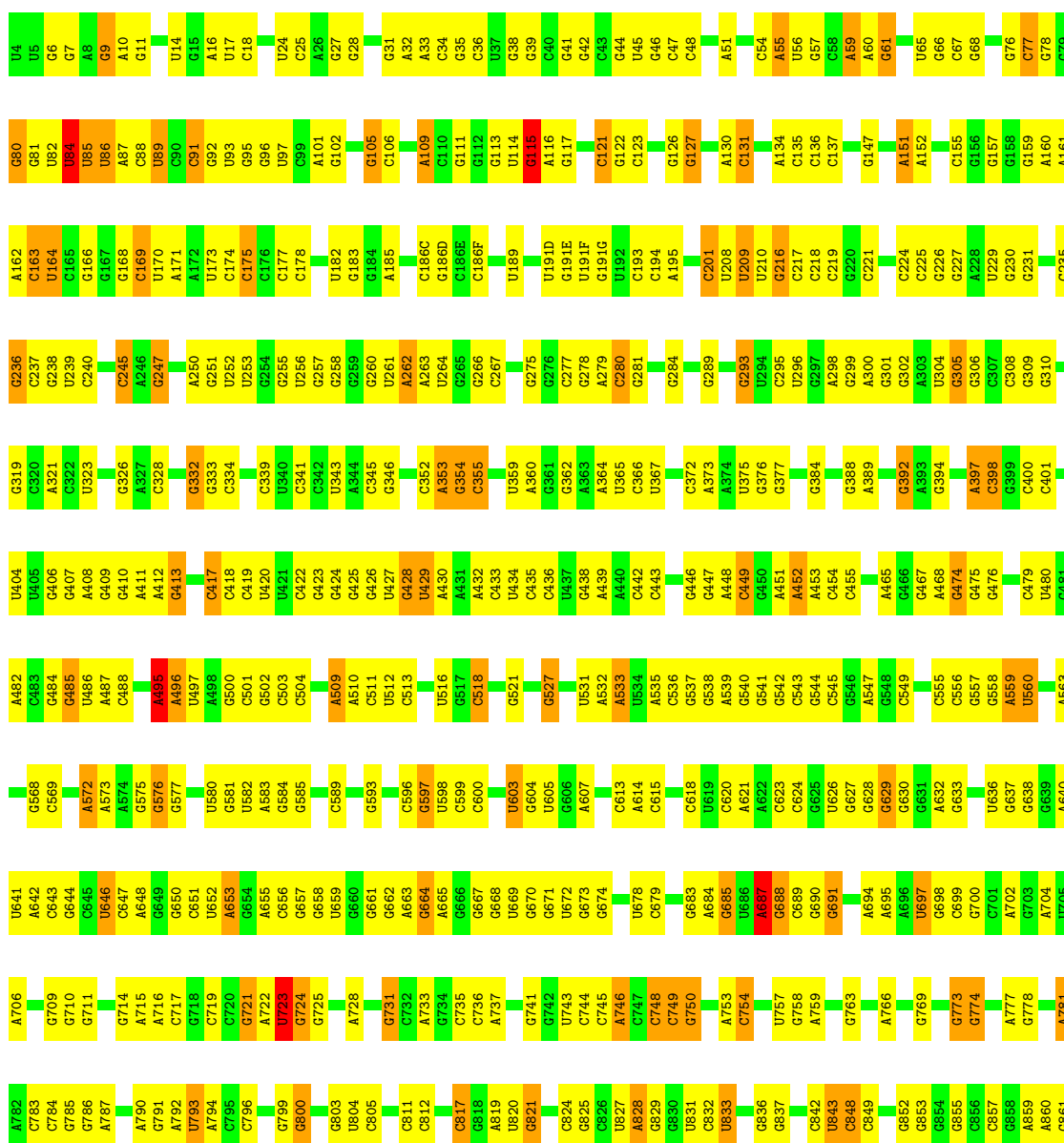
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
58	V	1	Total 1	Zn 1	0	0
58	BA	1	Total 1	Zn 1	0	0
58	CA	1	Total 1	Zn 1	0	0
58	DA	1	Total 1	Zn 1	0	0
58	GA	1	Total 1	Zn 1	0	0
58	ZB	1	Total 1	Zn 1	0	0
58	FC	1	Total 1	Zn 1	0	0
58	GC	1	Total 1	Zn 1	0	0
58	HC	1	Total 1	Zn 1	0	0
58	KC	1	Total 1	Zn 1	0	0

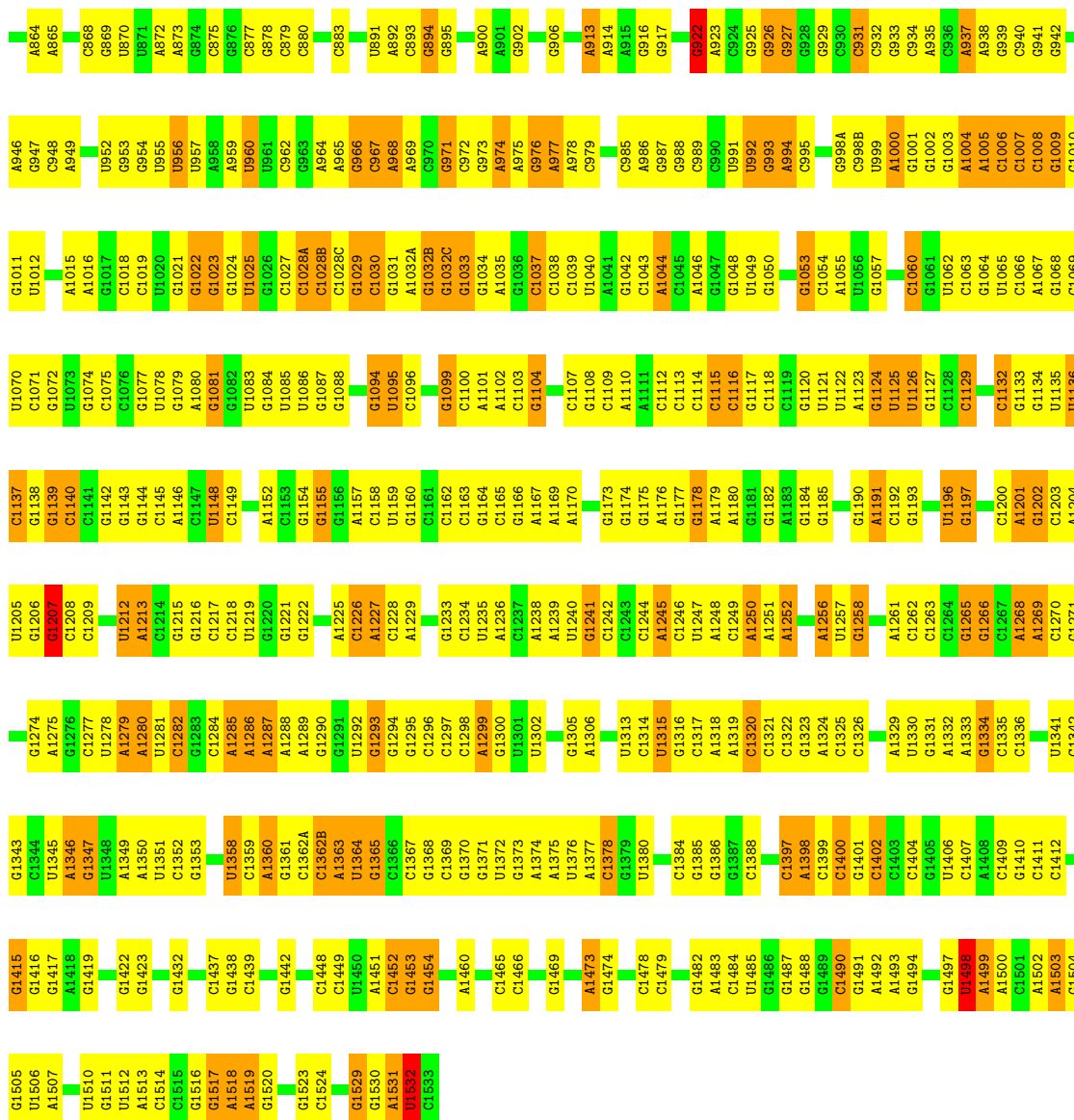
3 Residue-property plots

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

- Molecule 1: 16S ribosomal RNA

Chain A: 





● Molecule 1: 16S ribosomal RNA

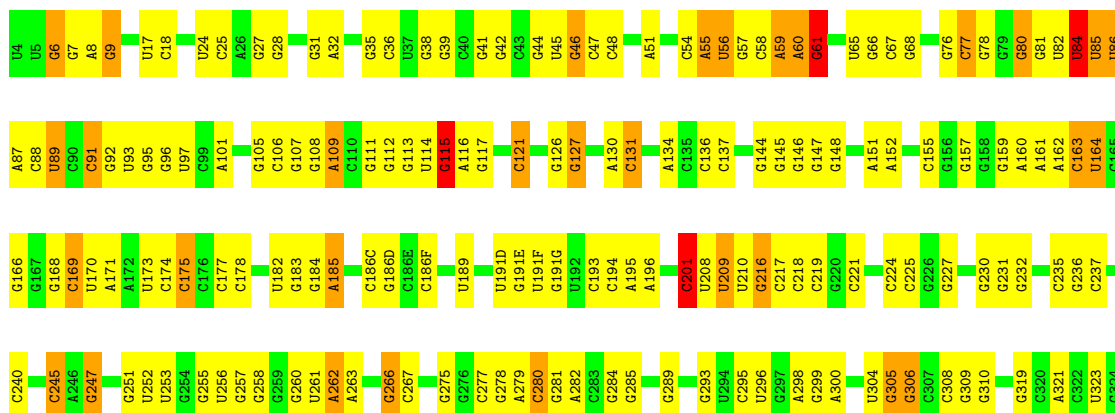
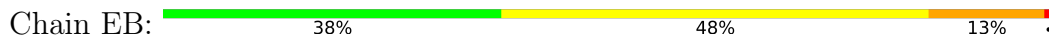
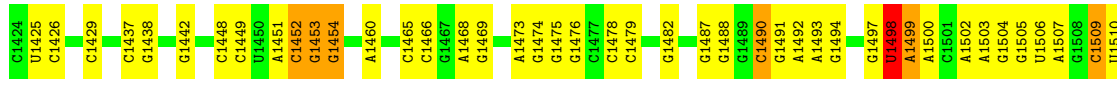
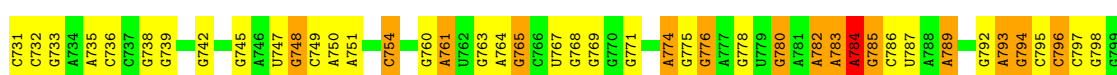
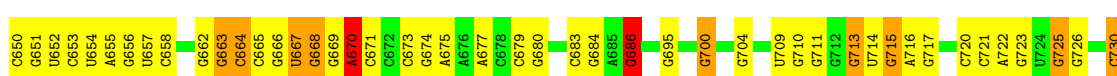
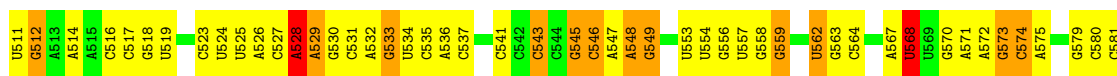
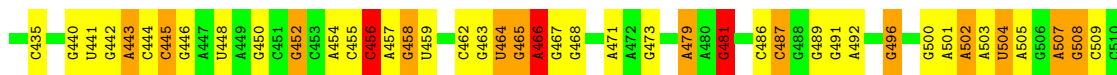
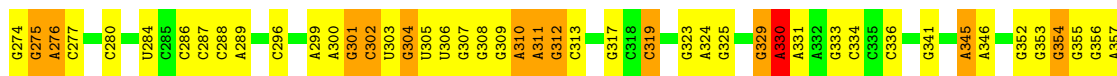
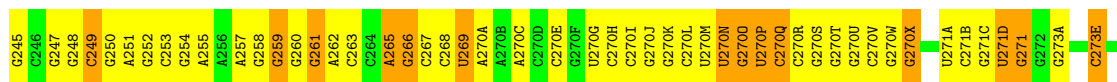
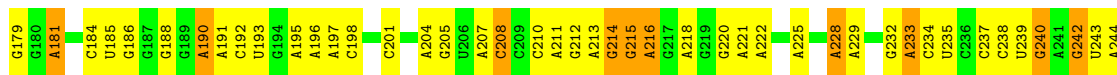
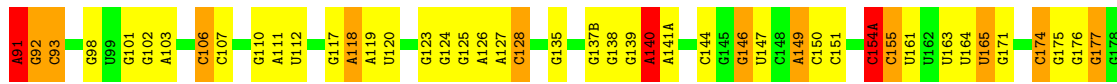
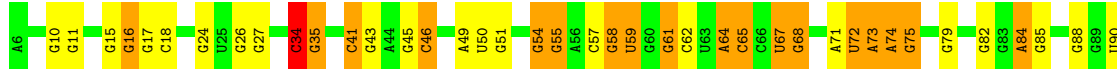
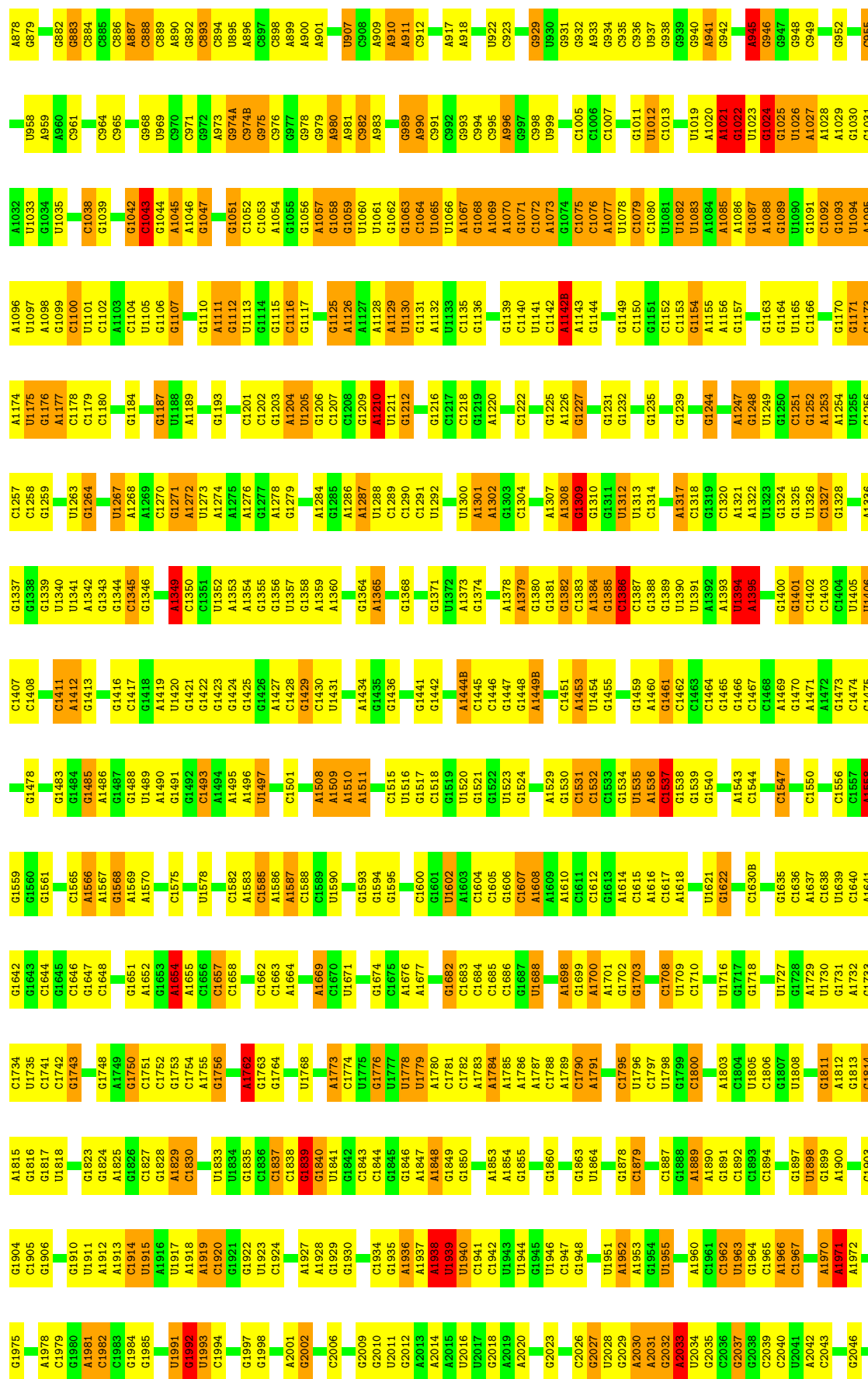


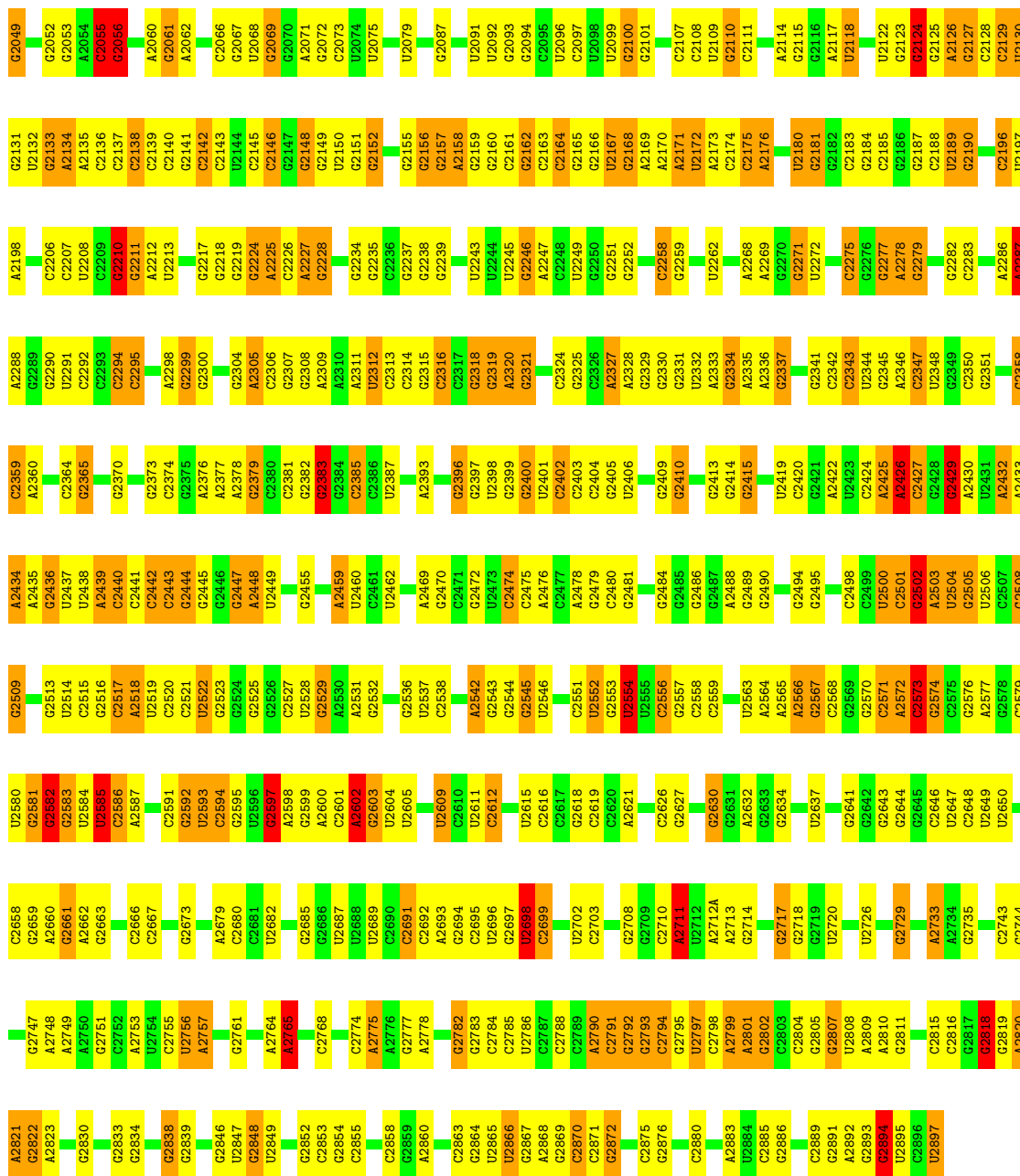
Table with 10 columns of residue IDs. Each cell contains one or more residue IDs in a single column. The IDs are color-coded: green for good, yellow for moderate, orange for poor, and red for bad. The columns represent different validation metrics, though they are not explicitly labeled with text in this view.



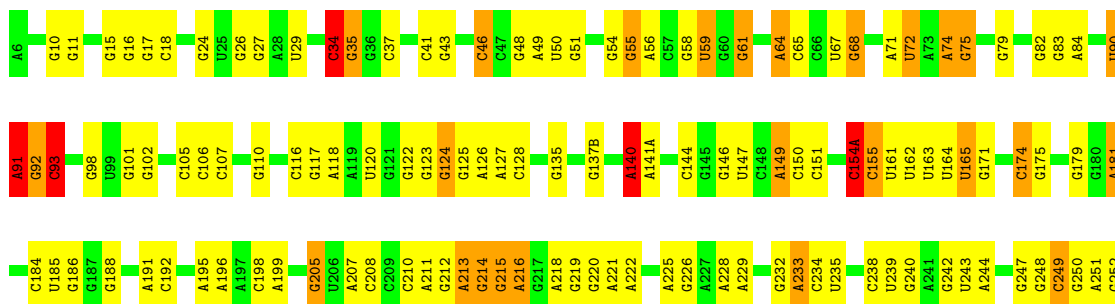
● Molecule 2: 23S ribosomal RNA





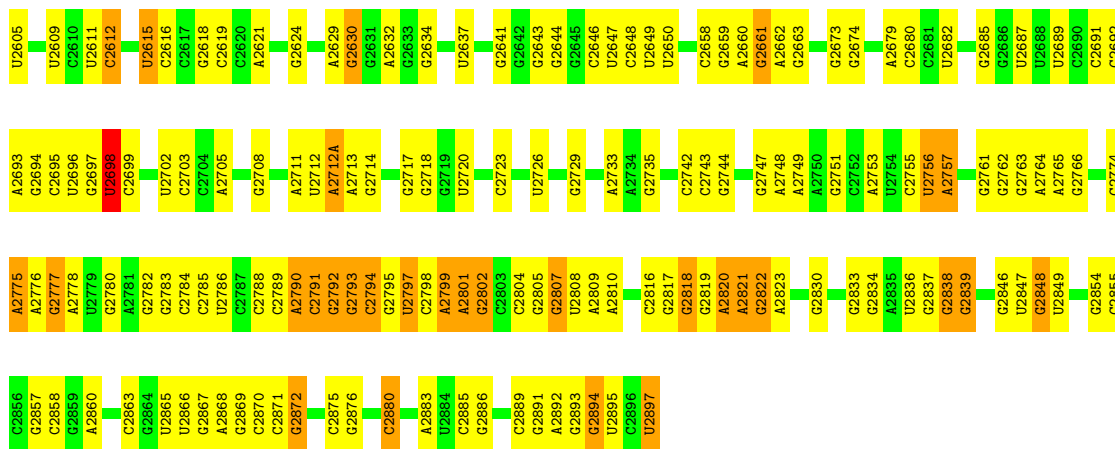


• Molecule 2: 23S ribosomal RNA

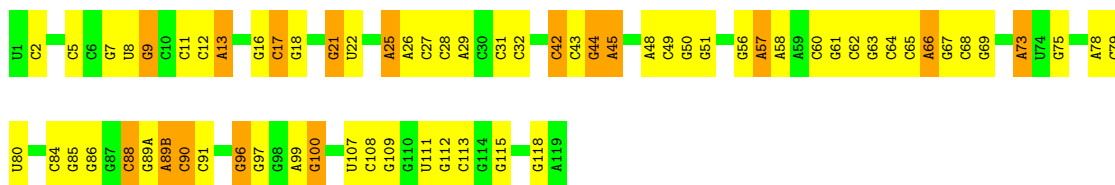


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G1154	A1155	A1156	G1087	A1088	G1089	U1090	G1091	G1092	G1093	G1094	A1095	A1096	U1097	A1098	G1099	C1100	U1101	G1102	A1103	C1104	U1105	G1106	U1107	U1108	C1109	G1110	A1111	G1112	U1113	G1114	C1115	G1116	G1117	G1125	A1126	A1127	A1128	U1129	U1130	G1131	G1132	U1133	C1135	G1136	G1139	C1140	U1141	C1142	A1142B	A1143	G1144	U1249	G1250	C1251	G1252	A1253	A1254																																															
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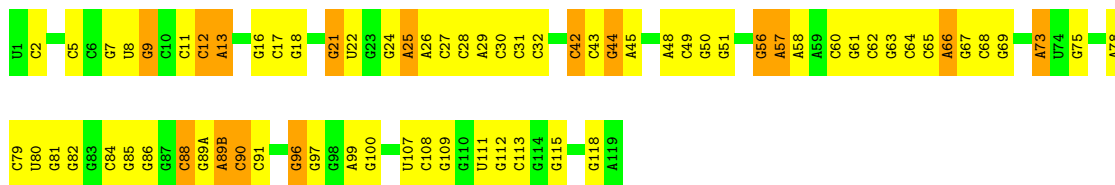
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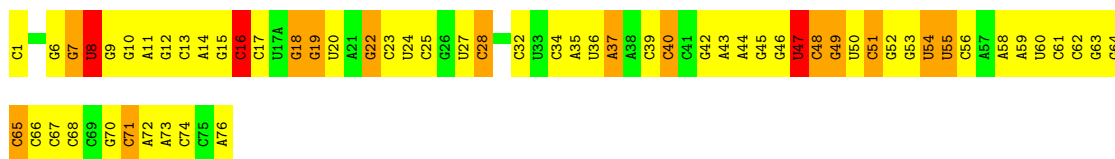
• Molecule 3: 5S ribosomal RNA



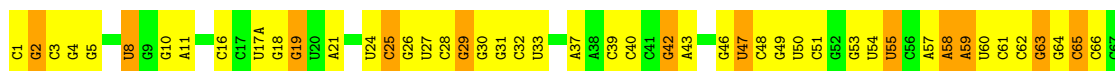
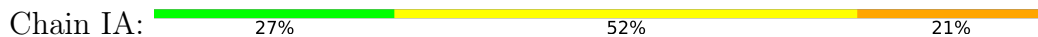
• Molecule 3: 5S ribosomal RNA



• Molecule 4: tRNA

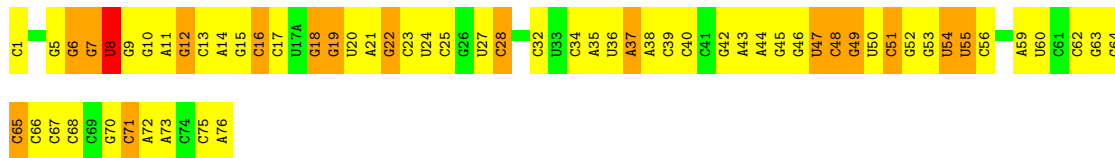


• Molecule 4: tRNA

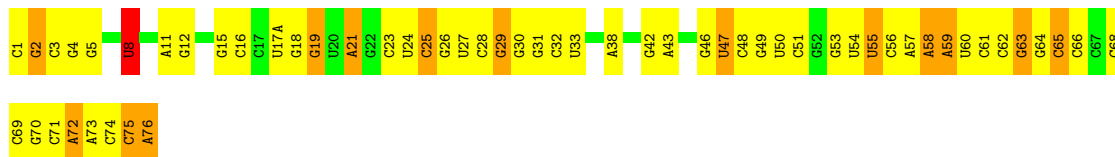




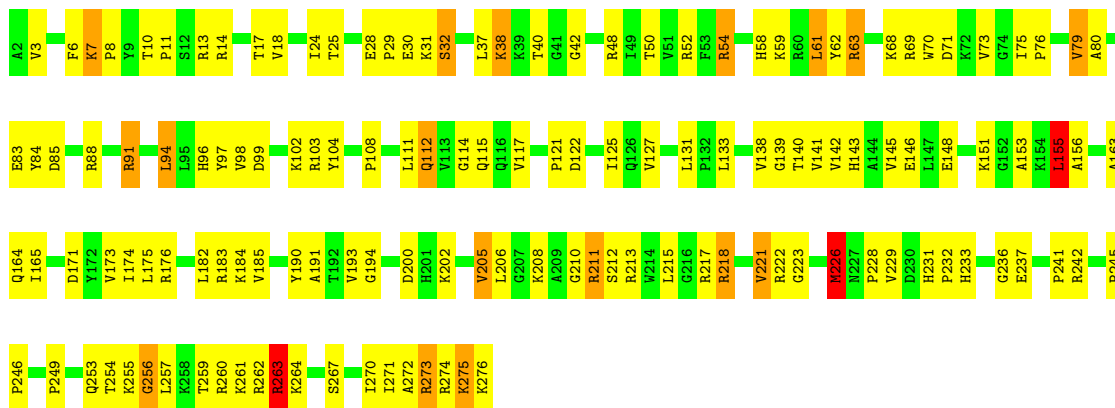
• Molecule 4: tRNA



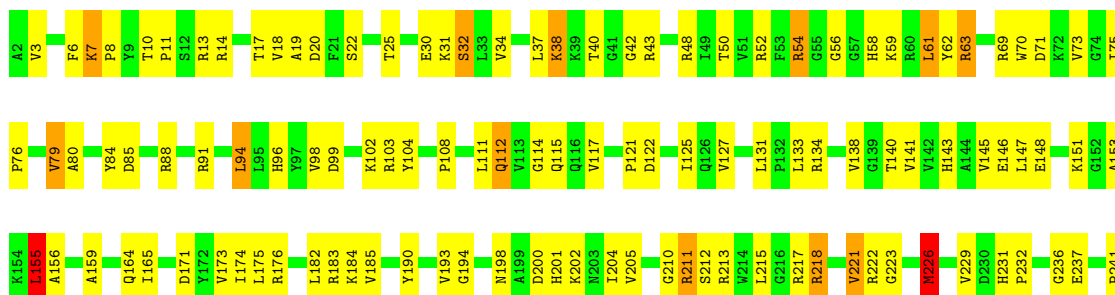
• Molecule 4: tRNA



• Molecule 5: 50S ribosomal protein L2



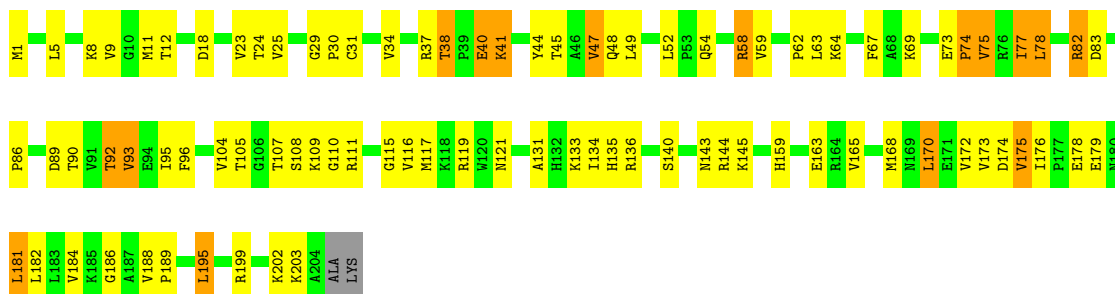
• Molecule 5: 50S ribosomal protein L2





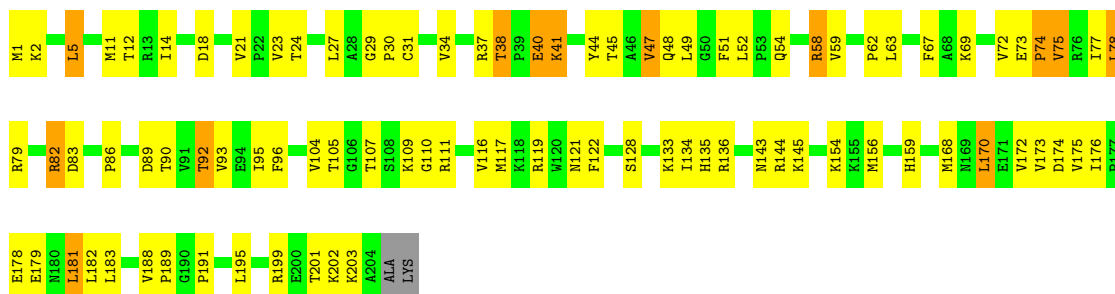
- Molecule 6: 50S ribosomal protein L3

Chain F: 56% 35% 8%



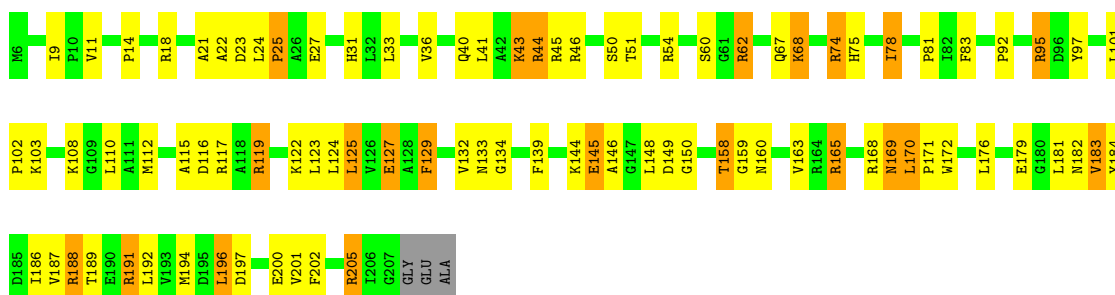
- Molecule 6: 50S ribosomal protein L3

Chain JB: 55% 38% 6%



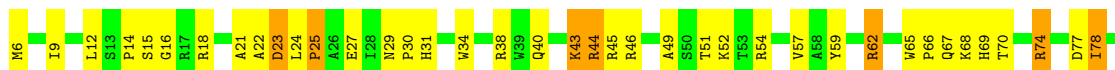
- Molecule 7: 50S ribosomal protein L4

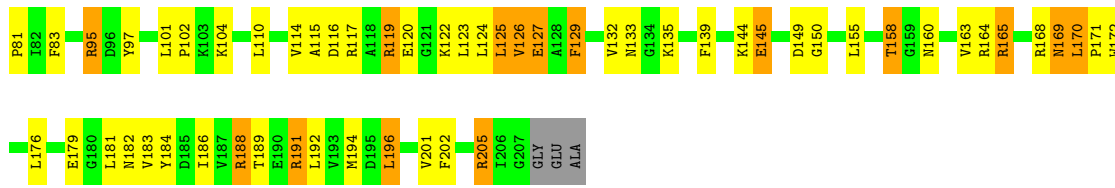
Chain G: 55% 33% 11%



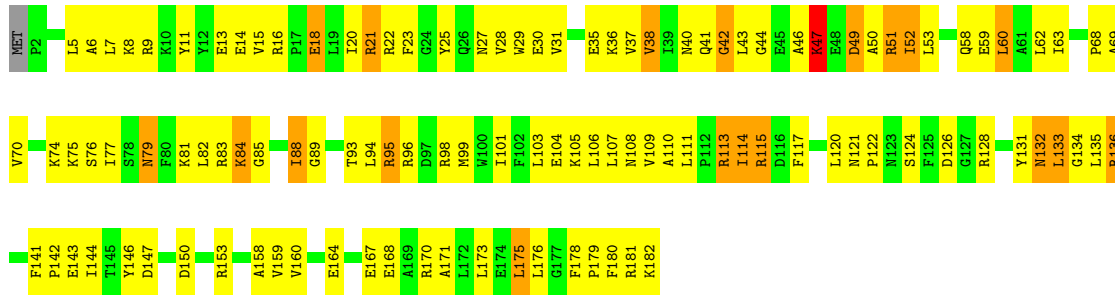
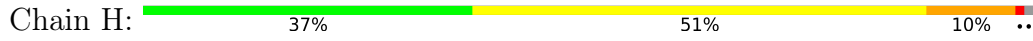
- Molecule 7: 50S ribosomal protein L4

Chain KB: 52% 36% 11%

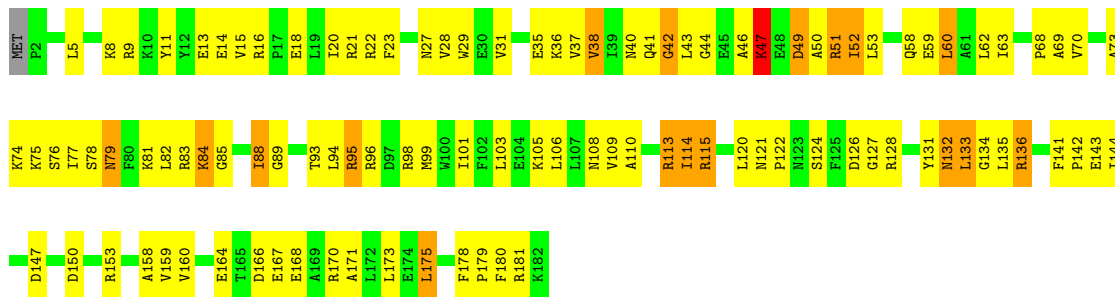




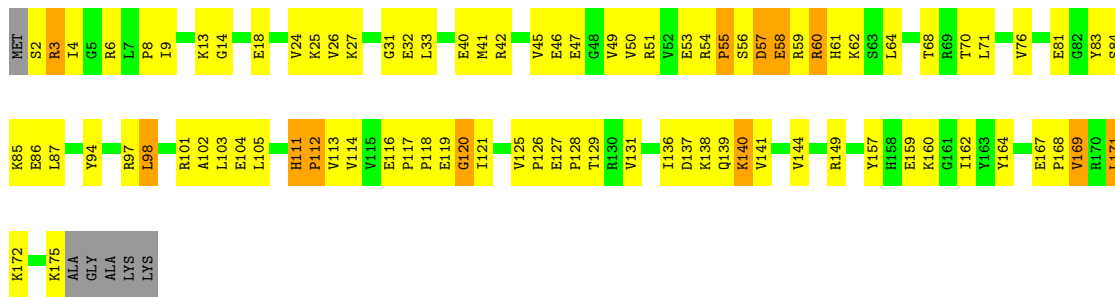
• Molecule 8: 50S ribosomal protein L5



• Molecule 8: 50S ribosomal protein L5

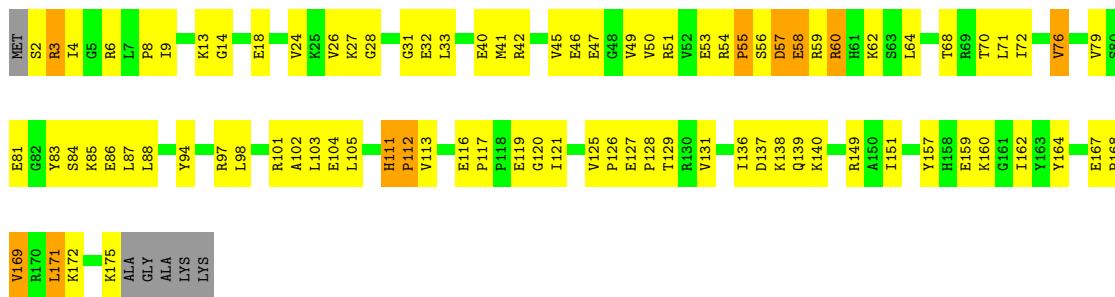


• Molecule 9: 50S ribosomal protein L6

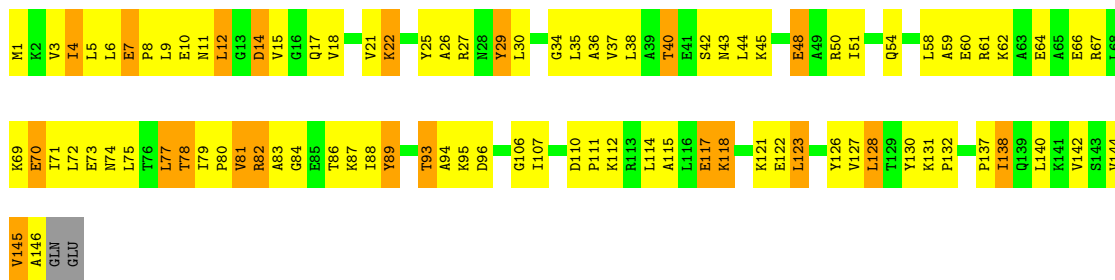


• Molecule 9: 50S ribosomal protein L6

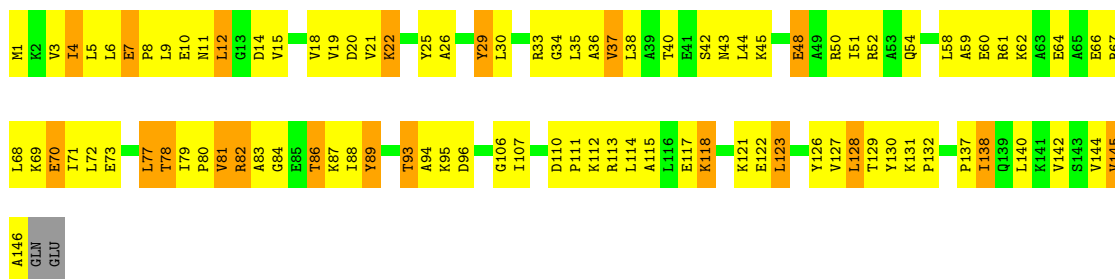




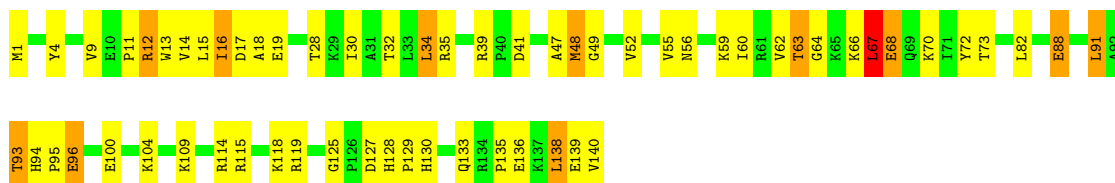
• Molecule 10: 50S ribosomal protein L9



• Molecule 10: 50S ribosomal protein L9

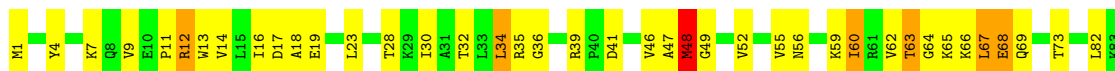


• Molecule 11: 50S ribosomal protein L13



• Molecule 11: 50S ribosomal protein L13





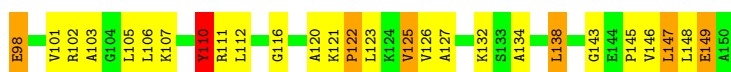
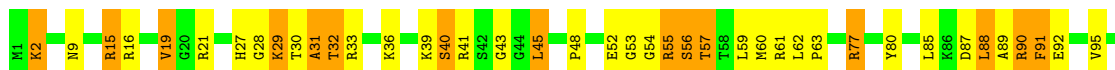
- Molecule 12: 50S ribosomal protein L14



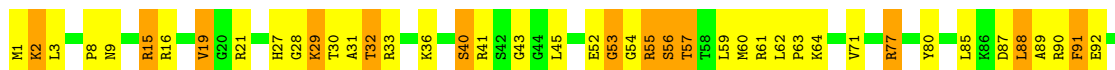
- Molecule 12: 50S ribosomal protein L14



- Molecule 13: 50S ribosomal protein L15

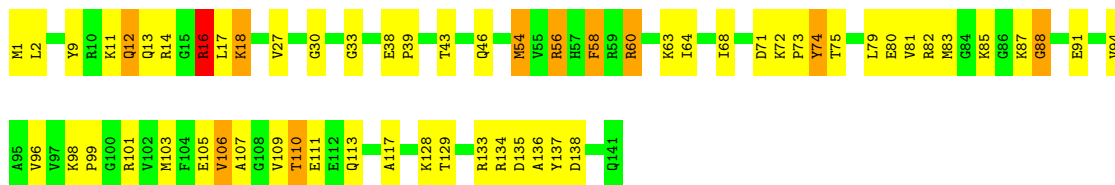


- Molecule 13: 50S ribosomal protein L15

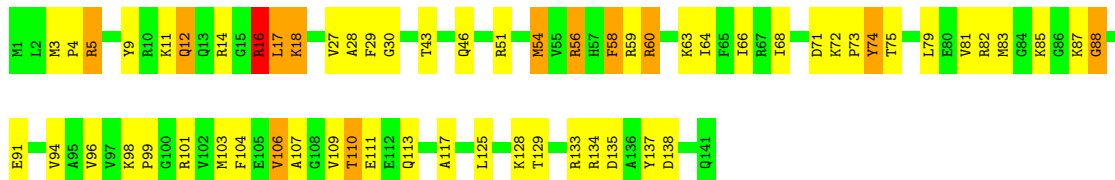


- Molecule 14: 50S ribosomal protein L16

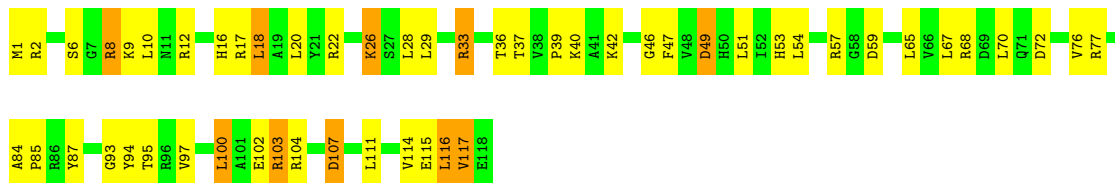




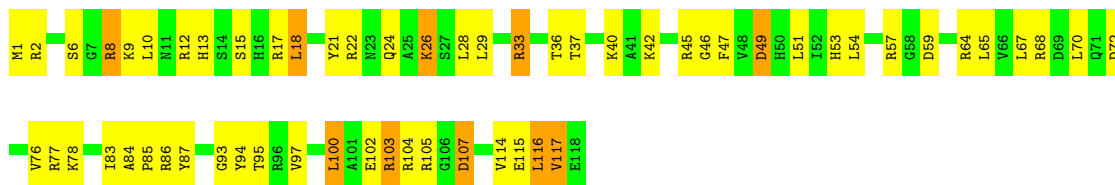
- Molecule 14: 50S ribosomal protein L16



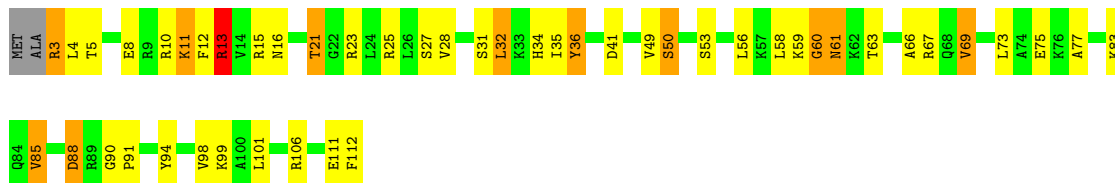
- Molecule 15: 50S ribosomal protein L17



- Molecule 15: 50S ribosomal protein L17

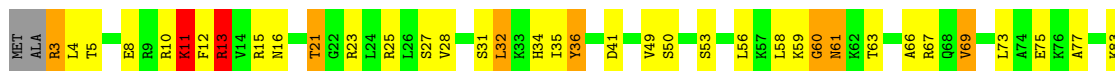


- Molecule 16: 50S ribosomal protein L18

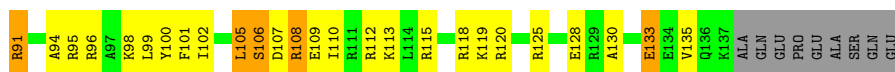
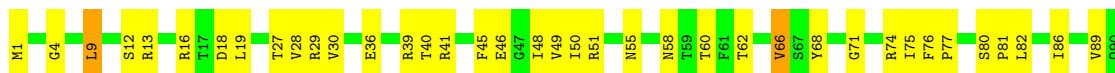


- Molecule 16: 50S ribosomal protein L18





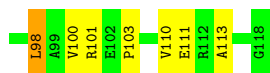
- Molecule 17: 50S ribosomal protein L19



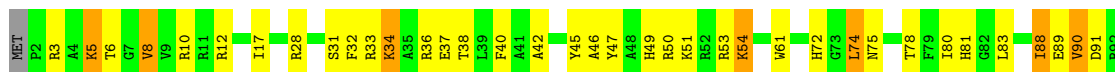
- Molecule 17: 50S ribosomal protein L19



- Molecule 18: 50S ribosomal protein L20

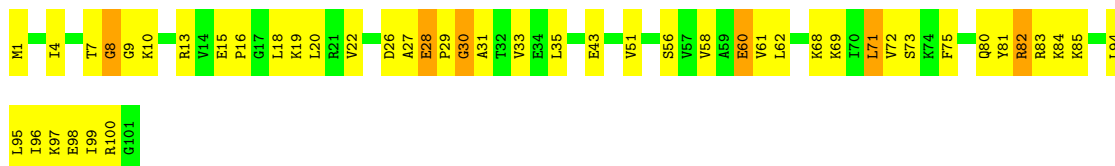


- Molecule 18: 50S ribosomal protein L20

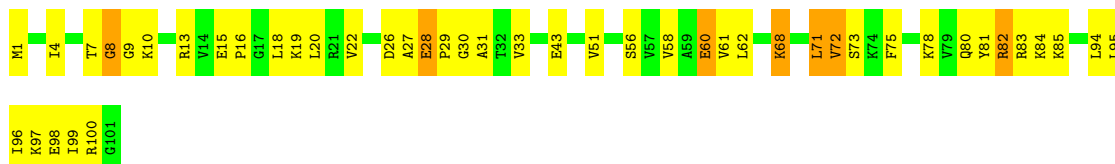


- Molecule 19: 50S ribosomal protein L21

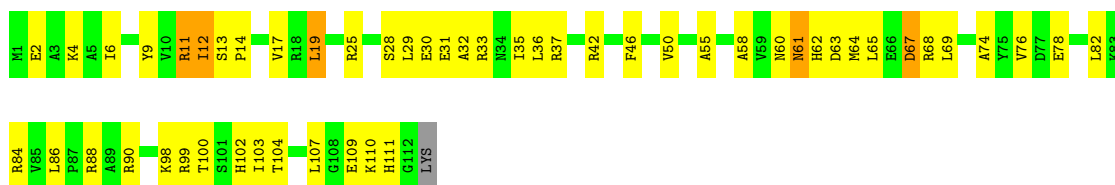




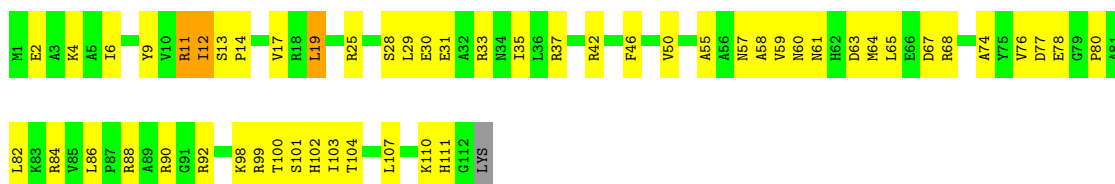
- Molecule 19: 50S ribosomal protein L21



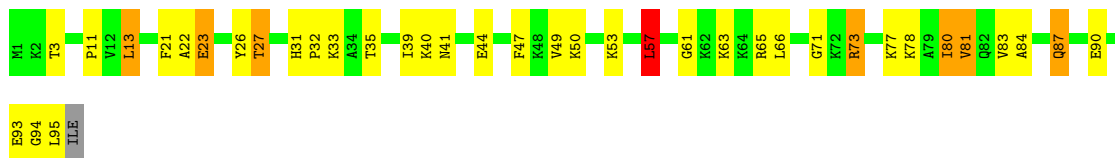
- Molecule 20: 50S ribosomal protein L22



- Molecule 20: 50S ribosomal protein L22



- Molecule 21: 50S ribosomal protein L23

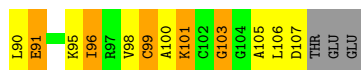
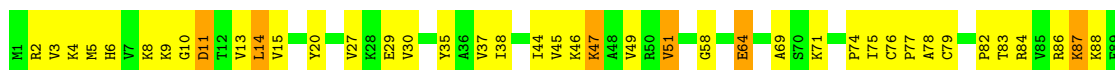


- Molecule 21: 50S ribosomal protein L23

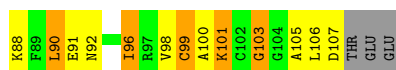
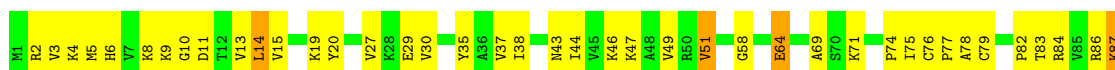




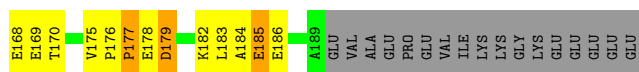
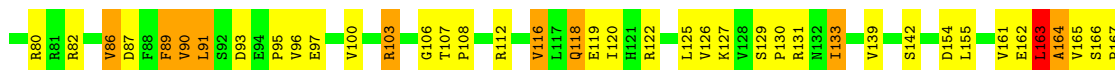
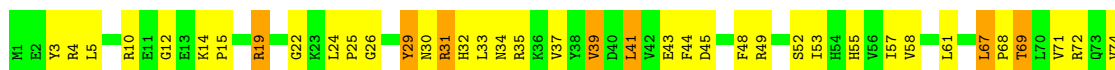
• Molecule 22: 50S ribosomal protein L24



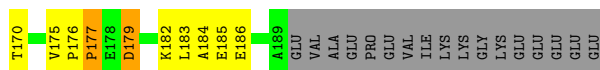
• Molecule 22: 50S ribosomal protein L24



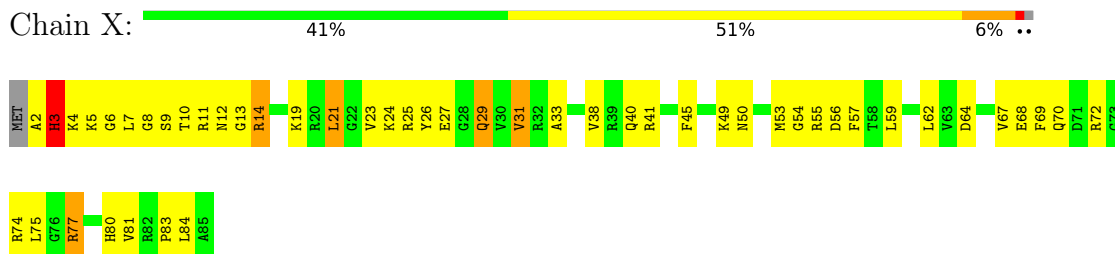
• Molecule 23: 50S ribosomal protein L25



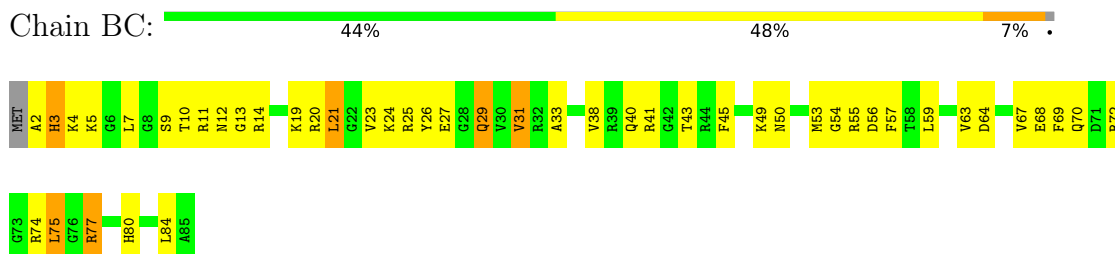
• Molecule 23: 50S ribosomal protein L25



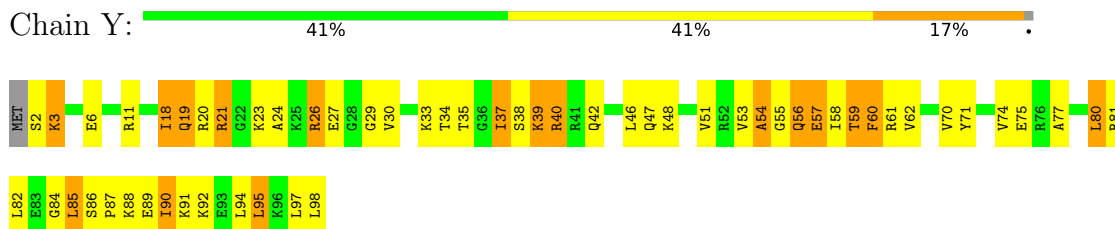
- Molecule 24: 50S ribosomal protein L27



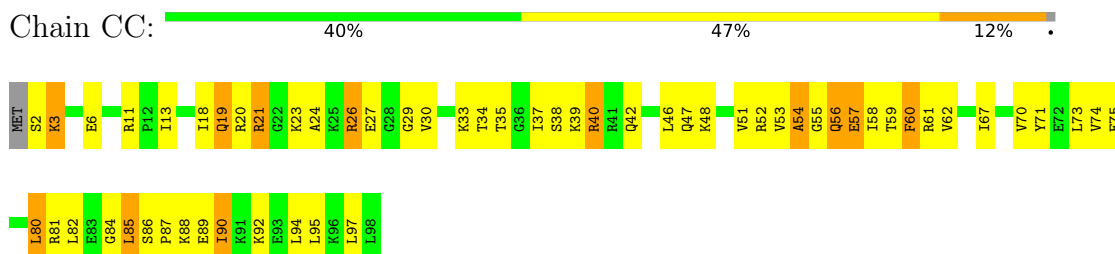
- Molecule 24: 50S ribosomal protein L27



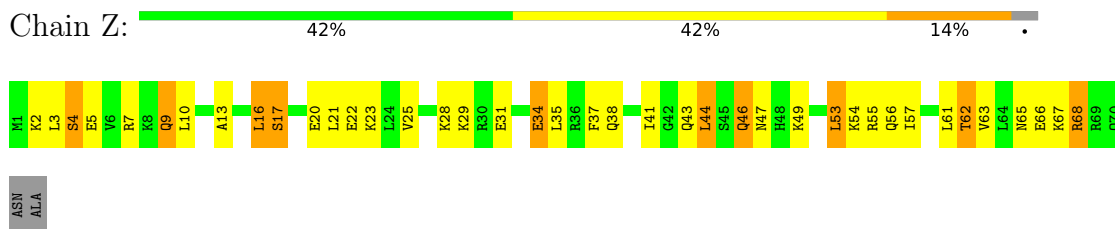
- Molecule 25: 50S ribosomal protein L28



- Molecule 25: 50S ribosomal protein L28

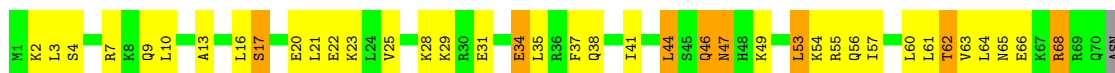


- Molecule 26: 50S ribosomal protein L29



- Molecule 26: 50S ribosomal protein L29

Chain DC:  43% 43% 11%



ALA

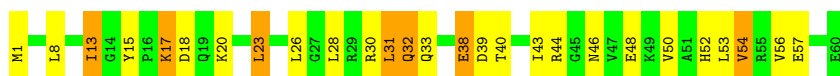
- Molecule 27: 50S ribosomal protein L30

Chain AA:  45% 43% 12%



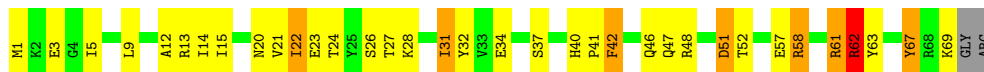
- Molecule 27: 50S ribosomal protein L30

Chain EC:  55% 33% 12%



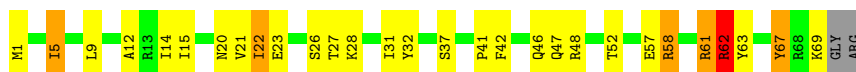
- Molecule 28: 50S ribosomal protein L31

Chain BA:  48% 38% 10%



- Molecule 28: 50S ribosomal protein L31

Chain FC:  56% 32% 7%



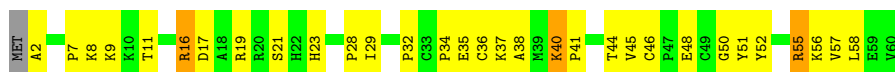
- Molecule 29: 50S ribosomal protein L32

Chain CA:  50% 45%



- Molecule 29: 50S ribosomal protein L32

Chain GC:  47% 47% 5%



- Molecule 30: 50S ribosomal protein L33

Chain DA:  39% 48% 11%



- Molecule 30: 50S ribosomal protein L33

Chain HC:  39% 48% 11%



- Molecule 31: 50S ribosomal protein L34

Chain EA:  55% 35% 8%



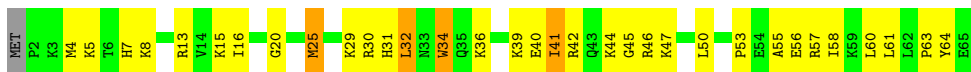
- Molecule 31: 50S ribosomal protein L34

Chain IC:  55% 35% 8%



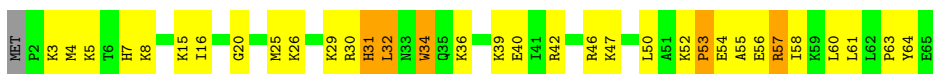
- Molecule 32: 50S ribosomal protein L35

Chain FA:  48% 45% 6%



- Molecule 32: 50S ribosomal protein L35

Chain JC:  48% 43% 8%



- Molecule 33: 50S ribosomal protein L36

Chain GA:  54% 41% 5%



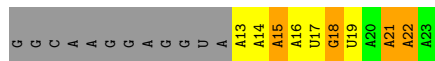
- Molecule 33: 50S ribosomal protein L36

Chain KC: 49% 46% 5%



• Molecule 34: mRNA

Chain HA: 9% 22% 17% 52%



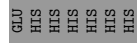
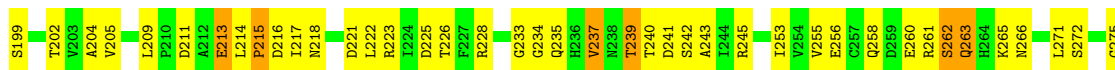
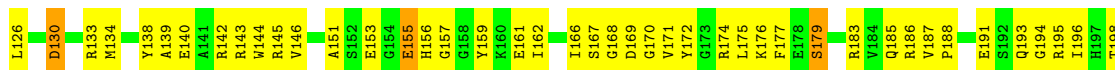
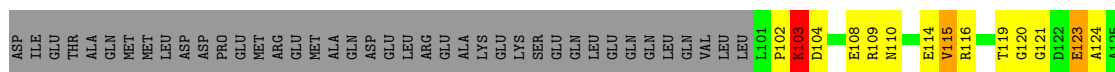
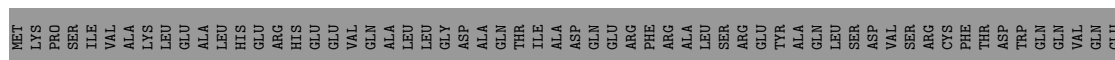
• Molecule 34: mRNA

Chain LC: 22% 13% 13% 52%



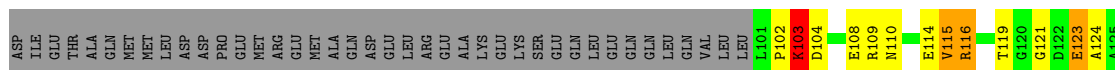
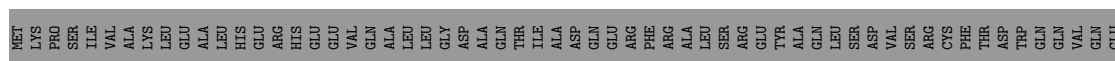
• Molecule 35: Peptide chain release factor 1

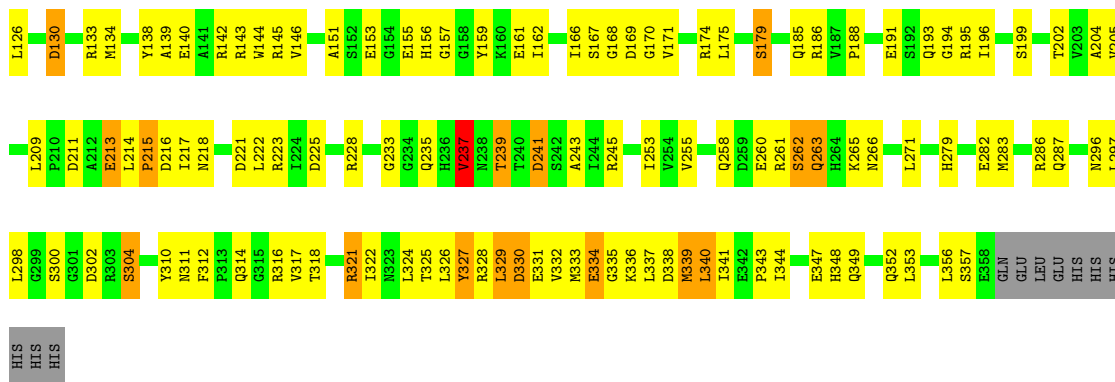
Chain JA: 32% 33% 5% 30%



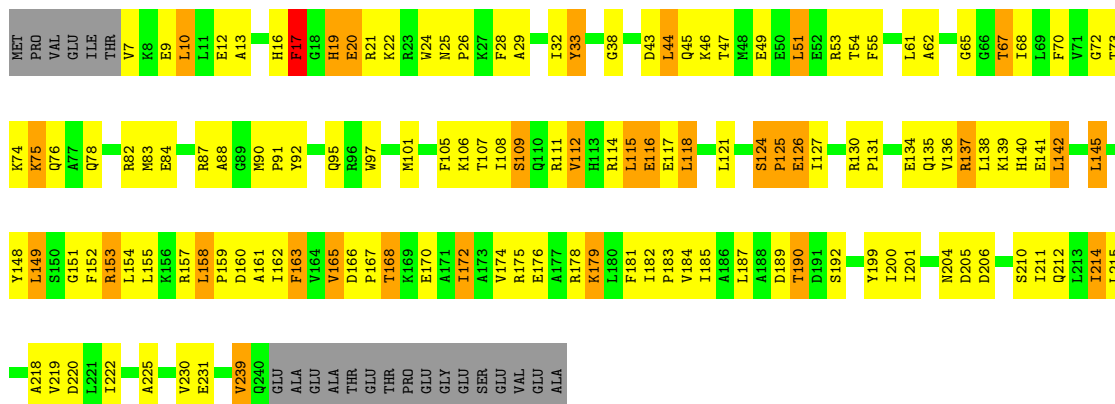
• Molecule 35: Peptide chain release factor 1

Chain NC: 35% 30% 5% 30%

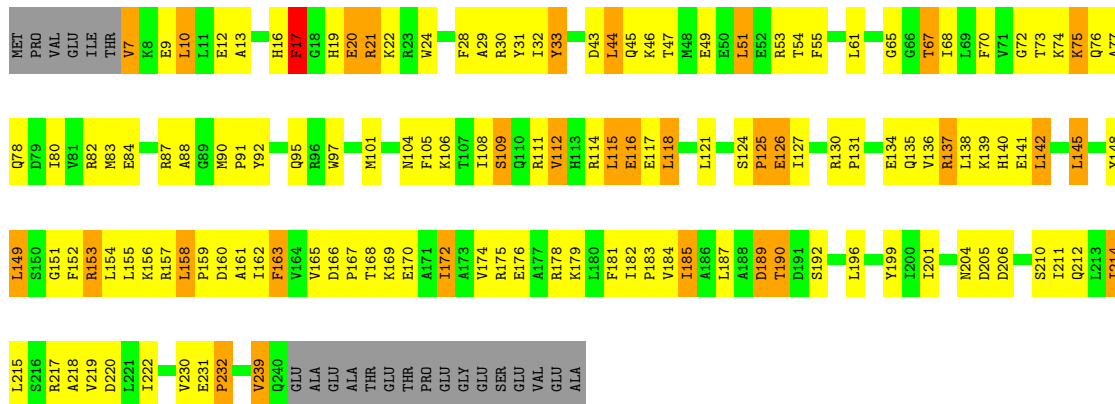
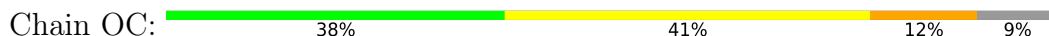




• Molecule 36: 30S ribosomal protein S2

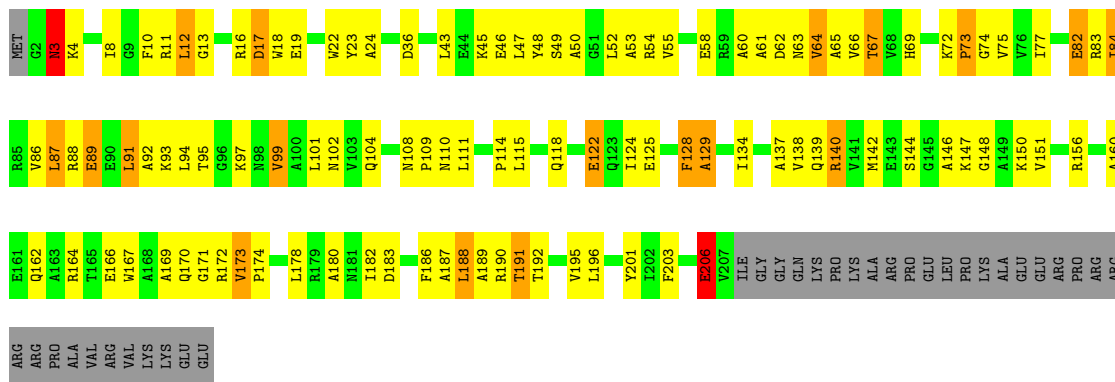


• Molecule 36: 30S ribosomal protein S2

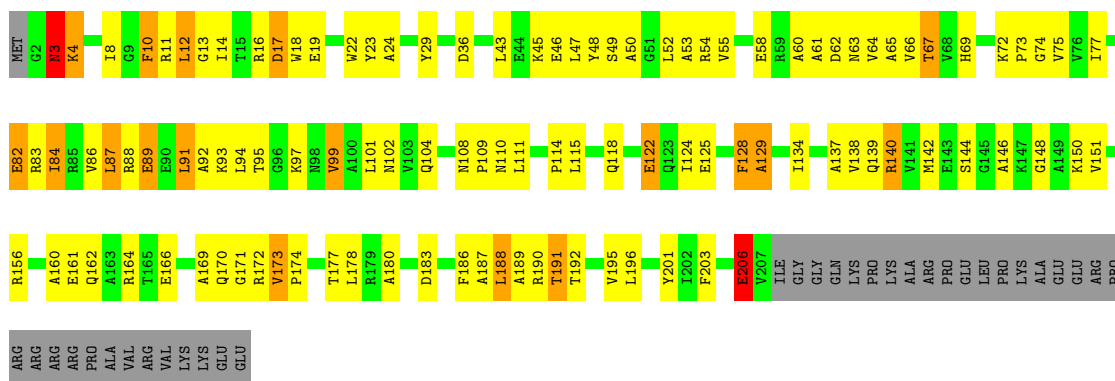


• Molecule 37: 30S ribosomal protein S3

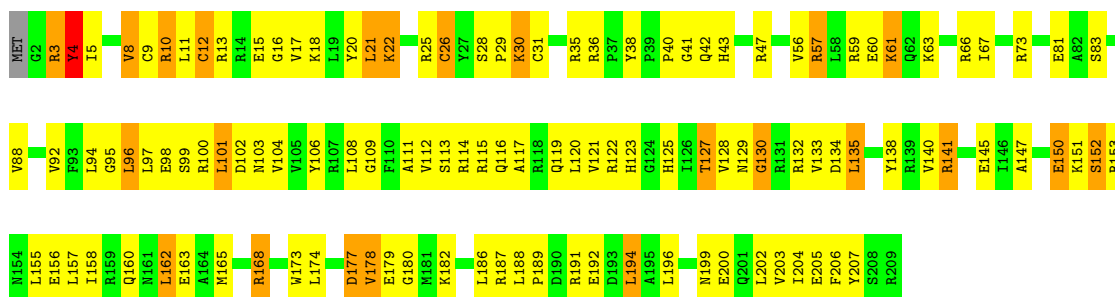




• Molecule 37: 30S ribosomal protein S3

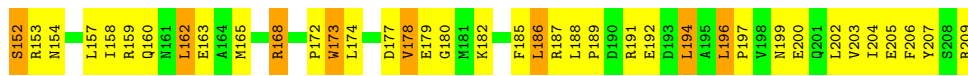


• Molecule 38: 30S ribosomal protein S4

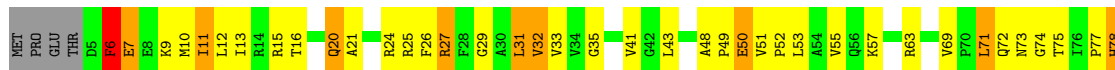


• Molecule 38: 30S ribosomal protein S4

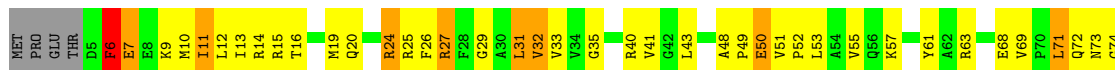




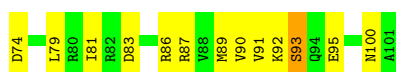
• Molecule 39: 30S ribosomal protein S5



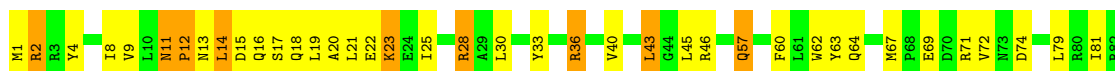
• Molecule 39: 30S ribosomal protein S5



• Molecule 40: 30S ribosomal protein S6

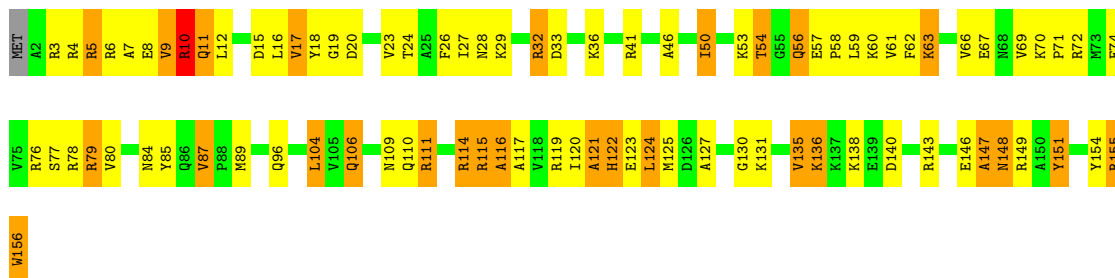


• Molecule 40: 30S ribosomal protein S6



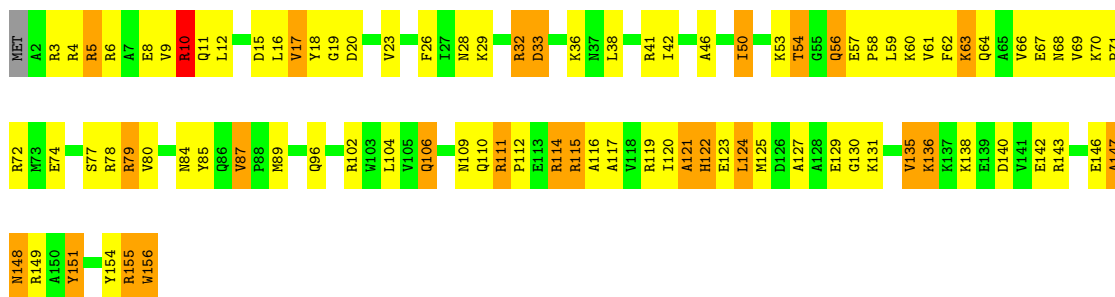
• Molecule 41: 30S ribosomal protein S7





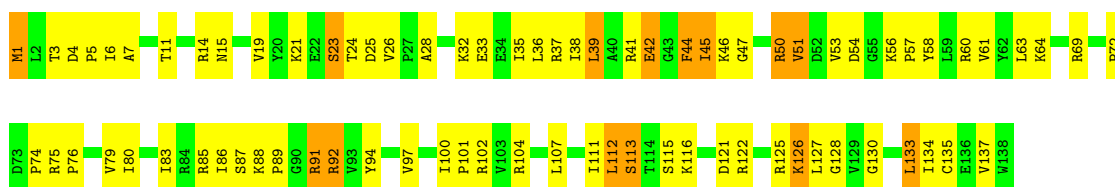
- Molecule 41: 30S ribosomal protein S7

Chain TC: 41% 42% 15% ..



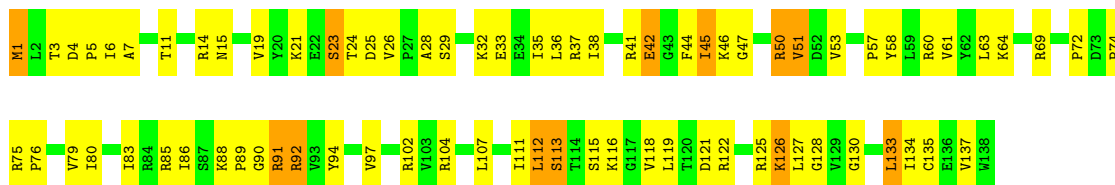
- Molecule 42: 30S ribosomal protein S8

Chain QA: 43% 46% 10%



- Molecule 42: 30S ribosomal protein S8

Chain UC: 45% 46% 9%



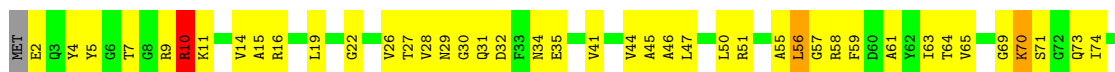
- Molecule 43: 30S ribosomal protein S9

Chain RA: 44% 49% 5% ..

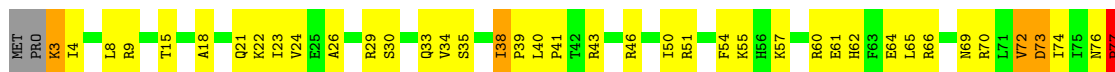




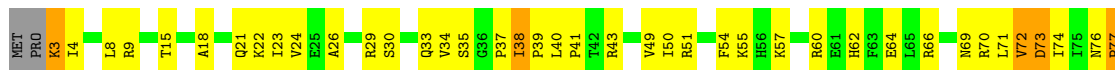
- Molecule 43: 30S ribosomal protein S9



- Molecule 44: 30S ribosomal protein S10



- Molecule 44: 30S ribosomal protein S10



- Molecule 45: 30S ribosomal protein S11

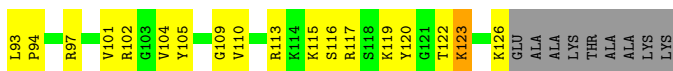
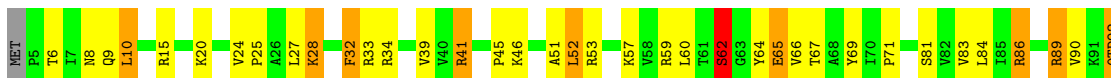


- Molecule 45: 30S ribosomal protein S11

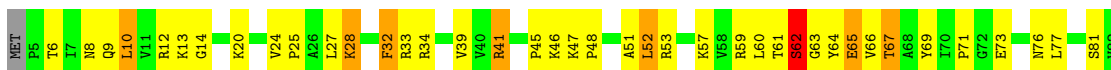




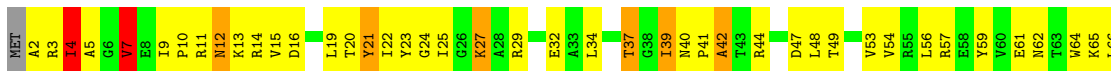
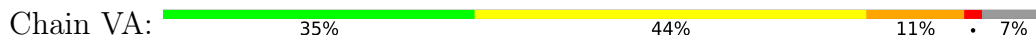
- Molecule 46: 30S ribosomal protein S12



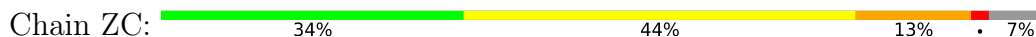
- Molecule 46: 30S ribosomal protein S12



- Molecule 47: 30S ribosomal protein S13



- Molecule 47: 30S ribosomal protein S13

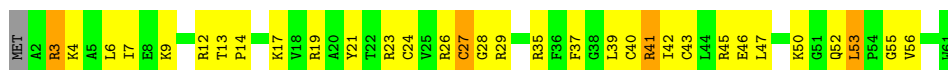


- Molecule 48: 30S ribosomal protein S14 type Z

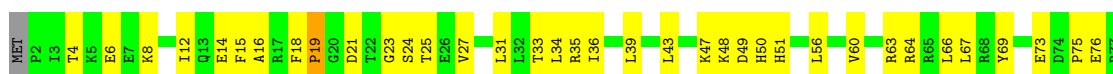




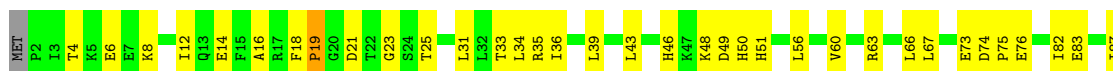
- Molecule 48: 30S ribosomal protein S14 type Z



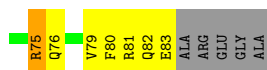
- Molecule 49: 30S ribosomal protein S15



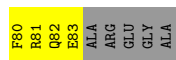
- Molecule 49: 30S ribosomal protein S15



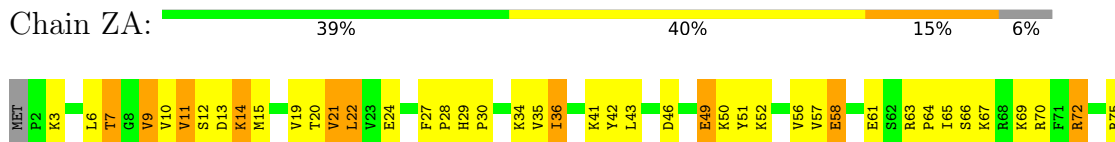
- Molecule 50: 30S ribosomal protein S16



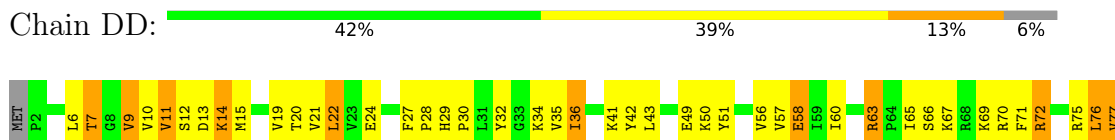
- Molecule 50: 30S ribosomal protein S16



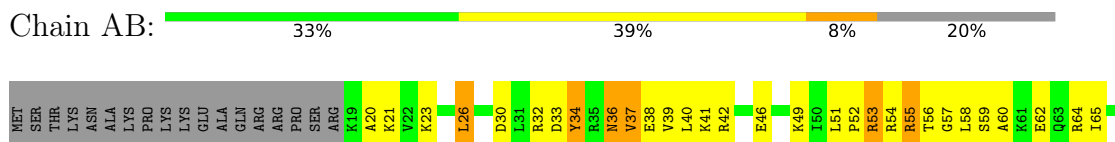
- Molecule 51: 30S ribosomal protein S17



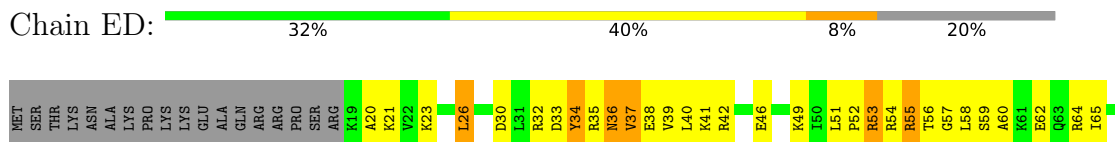
- Molecule 51: 30S ribosomal protein S17



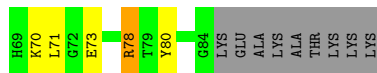
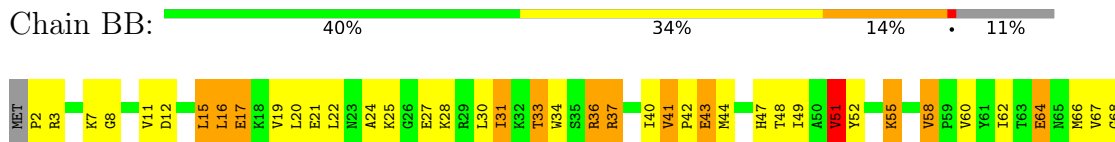
- Molecule 52: 30S ribosomal protein S18



- Molecule 52: 30S ribosomal protein S18

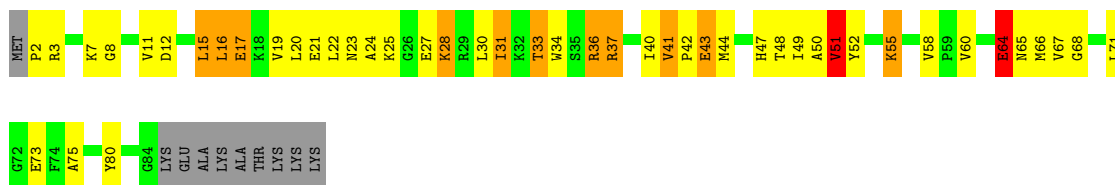


- Molecule 53: 30S ribosomal protein S19



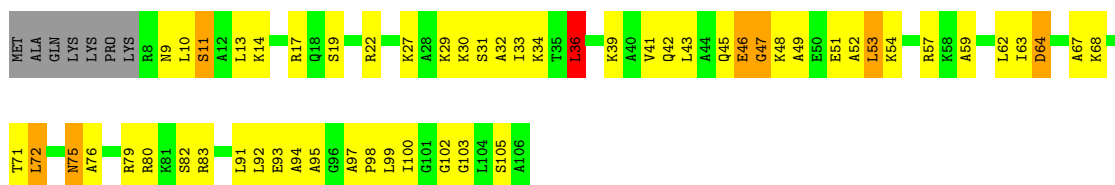
- Molecule 53: 30S ribosomal protein S19

Chain FD:  39% 37% 12% 11%



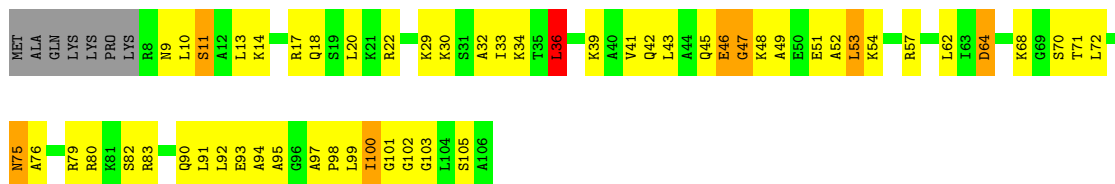
- Molecule 54: 30S ribosomal protein S20

Chain CB:  41% 45% 7% 7%



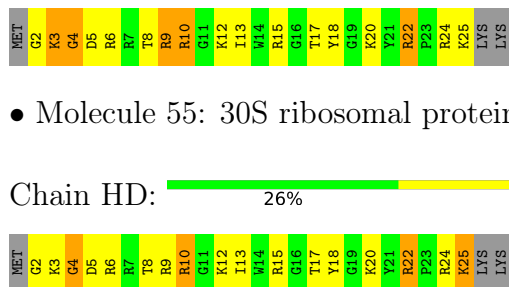
- Molecule 54: 30S ribosomal protein S20

Chain GD:  42% 44% 7% 7%



- Molecule 55: 30S ribosomal protein Thx

Chain DB:  26% 44% 19% 11%



- Molecule 55: 30S ribosomal protein Thx

Chain HD:  26% 48% 15% 11%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	211.85Å 452.54Å 624.45Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 3.40 87.52 – 3.40	Depositor EDS
% Data completeness (in resolution range)	99.9 (50.00-3.40) 99.9 (87.52-3.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.32 (at 3.41Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	(Not available) , (Not available) 0.261 , 0.296	Depositor DCC
R_{free} test set	16277 reflections (2.00%)	wwPDB-VP
Wilson B-factor (Å ²)	100.4	Xtriage
Anisotropy	0.211	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 62.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.38$, $\langle L^2 \rangle = 0.21$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	299841	wwPDB-VP
Average B, all atoms (Å ²)	108.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.57% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: 4OC, MA6, UR3, BLS, OMG, 2MG, 2MA, 5MU, 7MG, 0TD, 2MU, ZN, MG, 4SU, 5MC, M2G, PSU

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	A	0.56	0/35961	1.08	64/56125 (0.1%)
1	EB	0.59	0/35961	1.11	67/56125 (0.1%)
2	B	0.90	35/69214 (0.1%)	1.38	667/108048 (0.6%)
2	FB	0.77	20/69214 (0.0%)	1.28	431/108048 (0.4%)
3	C	0.61	0/2881	1.13	3/4494 (0.1%)
3	GB	0.57	0/2881	1.09	1/4494 (0.0%)
4	D	0.43	0/1744	1.04	7/2719 (0.3%)
4	HB	0.43	0/1744	1.04	8/2719 (0.3%)
4	IA	0.53	0/1744	1.04	0/2719
4	MC	0.51	0/1744	1.03	0/2719
5	E	0.71	3/2195 (0.1%)	0.74	2/2955 (0.1%)
5	IB	0.65	2/2195 (0.1%)	0.73	1/2955 (0.0%)
6	F	0.61	1/1596 (0.1%)	0.65	0/2153
6	JB	0.55	2/1596 (0.1%)	0.62	0/2153
7	G	0.63	0/1621	0.66	0/2194
7	KB	0.55	0/1621	0.64	0/2194
8	H	0.36	0/1496	0.58	0/2013
8	LB	0.35	0/1496	0.57	0/2013
9	I	0.49	0/1356	0.58	0/1834
9	MB	0.36	0/1356	0.54	0/1834
10	J	0.44	0/1152	0.62	0/1559
10	NB	0.41	0/1152	0.60	0/1559
11	K	0.54	0/1148	0.64	0/1547
11	OB	0.44	0/1148	0.61	0/1547
12	L	0.65	0/942	0.64	0/1268
12	PB	0.56	0/942	0.64	0/1268
13	M	0.56	0/1162	0.72	0/1544
13	QB	0.51	0/1162	0.69	0/1544
14	N	0.57	0/1142	0.65	0/1525
14	RB	0.51	0/1142	0.63	0/1525
15	O	0.55	0/982	0.68	0/1312

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
15	SB	0.51	0/982	0.65	0/1312
16	P	0.38	0/887	0.56	0/1180
16	TB	0.38	0/887	0.56	0/1180
17	Q	0.52	0/1157	0.62	0/1544
17	UB	0.50	0/1157	0.61	0/1544
18	R	0.63	0/982	0.63	0/1306
18	VB	0.51	0/982	0.60	0/1306
19	S	0.61	0/790	0.66	0/1057
19	WB	0.55	0/790	0.65	0/1057
20	T	0.67	0/901	0.67	0/1209
20	XB	0.58	0/901	0.62	0/1209
21	U	0.64	0/764	0.72	1/1025 (0.1%)
21	YB	0.57	0/764	0.69	1/1025 (0.1%)
22	V	0.57	0/827	0.66	0/1103
22	ZB	0.49	0/827	0.63	0/1103
23	AC	0.44	0/1527	0.55	0/2073
23	W	0.50	0/1527	0.57	0/2073
24	BC	0.51	0/671	0.69	0/892
24	X	0.53	0/671	0.70	0/892
25	CC	0.55	0/768	0.64	0/1021
25	Y	0.58	0/768	0.69	0/1021
26	DC	0.51	0/594	0.59	0/785
26	Z	0.63	0/594	0.64	0/785
27	AA	0.56	0/482	0.61	0/646
27	EC	0.52	0/482	0.60	0/646
28	BA	0.33	0/565	0.51	0/761
28	FC	0.34	0/565	0.50	0/761
29	CA	0.58	0/474	0.64	0/640
29	GC	0.47	0/474	0.61	0/640
30	DA	0.35	0/460	0.52	0/613
30	HC	0.33	0/460	0.51	0/613
31	EA	0.67	0/426	0.80	0/561
31	IC	0.60	0/426	0.71	0/561
32	FA	0.56	0/525	0.60	0/691
32	JC	0.54	0/525	0.60	0/691
33	GA	0.50	0/310	0.57	0/407
33	KC	0.46	0/310	0.54	0/407
34	HA	0.72	0/247	1.07	0/382
34	LC	0.74	0/247	1.04	0/382
35	JA	0.44	0/2037	0.61	0/2746
35	NC	0.41	0/2037	0.61	0/2746
36	KA	0.44	2/1935 (0.1%)	0.55	0/2609
36	OC	0.46	2/1935 (0.1%)	0.56	0/2609

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
37	LA	0.35	0/1636	0.55	0/2205
37	PC	0.38	0/1636	0.56	0/2205
38	MA	0.40	0/1733	0.57	0/2318
38	QC	0.48	0/1733	0.59	0/2318
39	NA	0.43	0/1171	0.59	0/1576
39	RC	0.48	0/1171	0.62	0/1576
40	OA	0.49	0/856	0.59	0/1154
40	SC	0.46	0/856	0.59	0/1154
41	PA	0.35	0/1276	0.51	0/1709
41	TC	0.33	0/1276	0.50	0/1709
42	QA	0.38	0/1136	0.57	0/1527
42	UC	0.42	0/1136	0.60	0/1527
43	RA	0.32	0/1029	0.57	0/1378
43	VC	0.34	0/1029	0.58	0/1378
44	SA	0.33	0/807	0.54	0/1085
44	WC	0.34	0/807	0.55	0/1085
45	TA	0.44	0/879	0.61	0/1187
45	XC	0.43	0/879	0.62	0/1187
46	UA	0.48	0/963	0.62	0/1287
46	YC	0.50	0/963	0.63	0/1287
47	VA	0.32	0/943	0.58	0/1265
47	ZC	0.34	0/943	0.58	0/1265
48	AD	0.38	0/501	0.53	0/664
48	WA	0.38	0/501	0.52	0/664
49	BD	0.47	0/745	0.55	0/992
49	XA	0.46	0/745	0.56	0/992
50	CD	0.42	0/716	0.56	0/963
50	YA	0.38	0/716	0.53	0/963
51	DD	0.51	0/836	0.57	0/1117
51	ZA	0.46	0/836	0.56	0/1117
52	AB	0.43	0/579	0.55	0/768
52	ED	0.44	0/579	0.54	0/768
53	BB	0.34	0/680	0.57	0/915
53	FD	0.33	0/680	0.56	0/915
54	CB	0.36	0/764	0.56	0/1006
54	GD	0.42	0/764	0.59	0/1006
55	DB	0.35	0/212	0.54	0/277
55	HD	0.32	0/212	0.52	0/277
All	All	0.68	67/322254 (0.0%)	1.11	1253/481306 (0.3%)

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
24	BC	0	1
24	X	0	1
38	MA	0	1
38	QC	0	1
All	All	0	4

The worst 5 of 67 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	945	A	N9-C4	12.76	1.45	1.37
2	B	1762	A	N9-C4	11.81	1.45	1.37
2	FB	945	A	N9-C4	11.72	1.44	1.37
2	B	945	A	C5-C6	10.43	1.50	1.41
2	FB	1762	A	N9-C4	10.17	1.44	1.37

The worst 5 of 1253 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	945	A	C2-N3-C4	21.30	121.25	110.60
2	FB	945	A	C2-N3-C4	17.33	119.27	110.60
2	B	945	A	C5-C6-N1	16.78	126.09	117.70
2	B	945	A	N1-C6-N6	-15.09	109.55	118.60
2	FB	945	A	C5-C6-N1	15.07	125.23	117.70

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
24	BC	84	LEU	Peptide
38	MA	21	LEU	Peptide
38	QC	21	LEU	Peptide
24	X	84	LEU	Peptide

5.2 Too-close contacts

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	A	32394	0	16368	745	0
1	EB	32394	0	16366	711	0
2	B	62031	0	31274	1148	0
2	FB	62031	0	31274	1141	1
3	C	2576	0	1305	54	0
3	GB	2576	0	1305	60	0
4	D	1642	0	841	45	0
4	HB	1642	0	841	40	0
4	IA	1642	0	841	54	0
4	MC	1642	0	841	49	0
5	E	2145	0	2234	113	0
5	IB	2145	0	2234	105	0
6	F	1563	0	1629	63	0
6	JB	1563	0	1629	63	0
7	G	1586	0	1632	77	0
7	KB	1586	0	1632	79	0
8	H	1471	0	1526	98	0
8	LB	1471	0	1526	87	1
9	I	1330	0	1407	56	0
9	MB	1330	0	1407	58	0
10	J	1137	0	1225	57	0
10	NB	1137	0	1225	59	0
11	K	1121	0	1195	43	0
11	OB	1121	0	1195	46	0
12	L	932	0	994	36	0
12	PB	932	0	994	40	0
13	M	1145	0	1228	58	0
13	QB	1145	0	1228	59	0
14	N	1121	0	1179	53	0
14	RB	1121	0	1179	55	0
15	O	968	0	1033	46	0
15	SB	968	0	1033	45	0
16	P	877	0	938	45	0
16	TB	877	0	938	42	0
17	Q	1143	0	1211	56	0
17	UB	1143	0	1211	53	0
18	R	964	0	1022	34	0
18	VB	964	0	1022	42	0
19	S	779	0	852	26	0
19	WB	779	0	852	31	0
20	T	890	0	951	38	0
20	XB	890	0	951	39	0
21	U	750	0	814	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	YB	750	0	814	24	0
22	V	814	0	906	33	0
22	ZB	814	0	906	36	0
23	AC	1495	0	1521	59	0
23	W	1495	0	1521	74	0
24	BC	662	0	688	39	0
24	X	662	0	688	36	0
25	CC	761	0	837	40	0
25	Y	761	0	837	42	0
26	DC	592	0	654	28	0
26	Z	592	0	654	29	0
27	AA	477	0	529	22	0
27	EC	477	0	529	18	0
28	BA	552	0	537	26	0
28	FC	552	0	537	21	0
29	CA	460	0	480	15	0
29	GC	460	0	480	17	0
30	DA	453	0	476	19	0
30	HC	453	0	476	19	0
31	EA	418	0	467	19	0
31	IC	418	0	467	17	0
32	FA	517	0	582	26	0
32	JC	517	0	582	26	0
33	GA	307	0	335	14	0
33	KC	307	0	335	17	0
34	HA	220	0	108	14	0
34	LC	220	0	108	5	0
35	JA	2005	0	1964	108	0
35	NC	2005	0	1964	95	0
36	KA	1900	0	1951	87	0
36	OC	1900	0	1951	93	0
37	LA	1612	0	1677	74	0
37	PC	1612	0	1677	74	0
38	MA	1703	0	1767	102	0
38	QC	1703	0	1767	105	0
39	NA	1155	0	1213	48	0
39	RC	1155	0	1213	45	0
40	OA	843	0	857	41	0
40	SC	843	0	857	42	0
41	PA	1257	0	1296	84	0
41	TC	1257	0	1296	77	0
42	QA	1116	0	1177	65	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
42	UC	1116	0	1177	65	0
43	RA	1011	0	1043	60	0
43	VC	1011	0	1043	61	0
44	SA	794	0	840	44	0
44	WC	794	0	840	43	0
45	TA	864	0	881	51	0
45	XC	864	0	881	50	0
46	UA	958	0	1047	41	0
46	YC	958	0	1047	52	0
47	VA	933	0	992	64	0
47	ZC	933	0	992	63	0
48	AD	492	0	533	32	0
48	WA	492	0	533	37	0
49	BD	734	0	771	26	0
49	XA	734	0	771	30	0
50	CD	700	0	720	40	0
50	YA	700	0	720	48	0
51	DD	823	0	893	46	0
51	ZA	823	0	893	42	0
52	AB	574	0	644	41	0
52	ED	574	0	644	42	0
53	BB	665	0	686	52	0
53	FD	665	0	686	54	0
54	CB	762	0	859	36	0
54	GD	762	0	859	39	0
55	DB	208	0	221	24	0
55	HD	208	0	221	21	0
56	A	214	0	0	0	0
56	AA	2	0	0	0	0
56	AB	2	0	0	0	0
56	AD	2	0	0	0	0
56	B	562	0	0	0	0
56	BA	1	0	0	0	0
56	BC	1	0	0	0	0
56	BD	1	0	0	0	0
56	C	21	0	0	0	0
56	CA	1	0	0	0	0
56	CB	1	0	0	0	0
56	CC	7	0	0	0	0
56	CD	1	0	0	0	0
56	D	5	0	0	0	0
56	DA	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
56	DC	1	0	0	0	0
56	E	1	0	0	0	0
56	EA	1	0	0	0	0
56	EB	206	0	0	0	0
56	EC	1	0	0	0	0
56	F	2	0	0	0	0
56	FB	475	0	0	0	0
56	FC	1	0	0	0	0
56	G	2	0	0	0	0
56	GB	15	0	0	0	0
56	H	1	0	0	0	0
56	HA	3	0	0	0	0
56	HB	9	0	0	0	0
56	I	3	0	0	0	0
56	IA	6	0	0	0	0
56	IB	4	0	0	0	0
56	J	2	0	0	0	0
56	JA	6	0	0	0	0
56	JB	2	0	0	0	0
56	JC	1	0	0	0	0
56	K	4	0	0	0	0
56	KA	1	0	0	0	0
56	KB	4	0	0	0	0
56	L	2	0	0	0	0
56	LA	2	0	0	0	0
56	LC	1	0	0	0	0
56	M	5	0	0	0	0
56	MA	2	0	0	0	0
56	MB	2	0	0	0	0
56	MC	5	0	0	0	0
56	NA	2	0	0	0	0
56	NB	3	0	0	0	0
56	NC	5	0	0	0	0
56	O	2	0	0	0	0
56	OB	3	0	0	0	0
56	OC	5	0	0	0	0
56	PB	1	0	0	0	0
56	PC	1	0	0	0	0
56	Q	2	0	0	0	0
56	QA	2	0	0	0	0
56	QC	4	0	0	0	0
56	RB	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
56	RC	3	0	0	0	0
56	S	2	0	0	0	0
56	SA	3	0	0	0	0
56	SB	2	0	0	0	0
56	SC	1	0	0	0	0
56	T	3	0	0	0	0
56	TA	3	0	0	0	0
56	TB	1	0	0	0	0
56	TC	1	0	0	0	0
56	U	2	0	0	0	0
56	UA	4	0	0	0	0
56	UB	3	0	0	0	0
56	UC	2	0	0	0	0
56	V	2	0	0	0	0
56	VB	1	0	0	0	0
56	VC	1	0	0	0	0
56	W	2	0	0	0	0
56	WB	1	0	0	0	0
56	WC	1	0	0	0	0
56	X	1	0	0	0	0
56	XA	6	0	0	0	0
56	XC	1	0	0	0	0
56	Y	1	0	0	0	0
56	YC	5	0	0	0	0
56	Z	4	0	0	0	0
56	ZA	1	0	0	0	0
56	ZB	2	0	0	0	0
57	B	30	0	24	2	0
57	FB	30	0	24	1	0
58	BA	1	0	0	0	0
58	CA	1	0	0	0	0
58	DA	1	0	0	0	0
58	FC	1	0	0	0	0
58	GA	1	0	0	0	0
58	GC	1	0	0	0	0
58	HC	1	0	0	0	0
58	KC	1	0	0	0	0
58	V	1	0	0	0	0
58	ZB	1	0	0	0	0
All	All	299841	0	203748	7838	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 16.

The worst 5 of 7838 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)
38:QC:18:LYS:NZ	38:QC:26:CYS:SG	2.00	1.34
38:MA:9:CYS:SG	38:MA:18:LYS:NZ	2.05	1.30
38:QC:9:CYS:SG	38:QC:18:LYS:NZ	2.03	1.29
2:B:630:G:OP2	32:FA:15:LYS:NZ	1.65	1.29
38:MA:18:LYS:NZ	38:MA:26:CYS:SG	2.04	1.28

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:FB:1412:A:O2'	8:LB:9:ARG:NH1[1_655]	2.16	0.04

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	E	273/275 (99%)	238 (87%)	27 (10%)	8 (3%)	4	24
5	IB	273/275 (99%)	238 (87%)	27 (10%)	8 (3%)	4	24
6	F	202/206 (98%)	171 (85%)	25 (12%)	6 (3%)	4	23
6	JB	202/206 (98%)	171 (85%)	26 (13%)	5 (2%)	5	26
7	G	200/205 (98%)	173 (86%)	22 (11%)	5 (2%)	5	26
7	KB	200/205 (98%)	170 (85%)	26 (13%)	4 (2%)	7	30
8	H	179/182 (98%)	137 (76%)	29 (16%)	13 (7%)	1	7
8	LB	179/182 (98%)	135 (75%)	31 (17%)	13 (7%)	1	7
9	I	172/180 (96%)	138 (80%)	24 (14%)	10 (6%)	1	11
9	MB	172/180 (96%)	138 (80%)	25 (14%)	9 (5%)	2	13
10	J	144/148 (97%)	108 (75%)	27 (19%)	9 (6%)	1	9

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	NB	144/148 (97%)	108 (75%)	27 (19%)	9 (6%)	1	9
11	K	138/140 (99%)	120 (87%)	12 (9%)	6 (4%)	2	17
11	OB	138/140 (99%)	121 (88%)	11 (8%)	6 (4%)	2	17
12	L	120/122 (98%)	105 (88%)	11 (9%)	4 (3%)	4	22
12	PB	120/122 (98%)	105 (88%)	11 (9%)	4 (3%)	4	22
13	M	148/150 (99%)	115 (78%)	24 (16%)	9 (6%)	1	10
13	QB	148/150 (99%)	117 (79%)	24 (16%)	7 (5%)	2	15
14	N	139/141 (99%)	113 (81%)	22 (16%)	4 (3%)	4	24
14	RB	139/141 (99%)	114 (82%)	20 (14%)	5 (4%)	3	21
15	O	116/118 (98%)	100 (86%)	14 (12%)	2 (2%)	9	34
15	SB	116/118 (98%)	101 (87%)	12 (10%)	3 (3%)	5	26
16	P	108/112 (96%)	88 (82%)	17 (16%)	3 (3%)	5	24
16	TB	108/112 (96%)	88 (82%)	16 (15%)	4 (4%)	3	20
17	Q	135/146 (92%)	111 (82%)	20 (15%)	4 (3%)	4	23
17	UB	135/146 (92%)	112 (83%)	19 (14%)	4 (3%)	4	23
18	R	115/118 (98%)	104 (90%)	9 (8%)	2 (2%)	9	34
18	VB	115/118 (98%)	104 (90%)	9 (8%)	2 (2%)	9	34
19	S	99/101 (98%)	80 (81%)	14 (14%)	5 (5%)	2	14
19	WB	99/101 (98%)	81 (82%)	14 (14%)	4 (4%)	3	18
20	T	110/113 (97%)	101 (92%)	9 (8%)	0	100	100
20	XB	110/113 (97%)	100 (91%)	9 (8%)	1 (1%)	17	49
21	U	93/96 (97%)	80 (86%)	10 (11%)	3 (3%)	4	22
21	YB	93/96 (97%)	82 (88%)	8 (9%)	3 (3%)	4	22
22	V	105/110 (96%)	83 (79%)	15 (14%)	7 (7%)	1	8
22	ZB	105/110 (96%)	84 (80%)	16 (15%)	5 (5%)	2	15
23	AC	187/206 (91%)	153 (82%)	26 (14%)	8 (4%)	2	17
23	W	187/206 (91%)	150 (80%)	29 (16%)	8 (4%)	2	17
24	BC	82/85 (96%)	67 (82%)	11 (13%)	4 (5%)	2	14
24	X	82/85 (96%)	66 (80%)	10 (12%)	6 (7%)	1	7
25	CC	95/98 (97%)	81 (85%)	10 (10%)	4 (4%)	3	18
25	Y	95/98 (97%)	81 (85%)	10 (10%)	4 (4%)	3	18

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	DC	68/72 (94%)	65 (96%)	2 (3%)	1 (2%)	10	36
26	Z	68/72 (94%)	65 (96%)	2 (3%)	1 (2%)	10	36
27	AA	58/60 (97%)	49 (84%)	8 (14%)	1 (2%)	9	34
27	EC	58/60 (97%)	51 (88%)	6 (10%)	1 (2%)	9	34
28	BA	67/71 (94%)	44 (66%)	14 (21%)	9 (13%)	0	1
28	FC	67/71 (94%)	44 (66%)	16 (24%)	7 (10%)	0	3
29	CA	57/60 (95%)	50 (88%)	7 (12%)	0	100	100
29	GC	57/60 (95%)	51 (90%)	6 (10%)	0	100	100
30	DA	51/54 (94%)	35 (69%)	12 (24%)	4 (8%)	1	6
30	HC	51/54 (94%)	35 (69%)	12 (24%)	4 (8%)	1	6
31	EA	46/49 (94%)	42 (91%)	4 (9%)	0	100	100
31	IC	46/49 (94%)	43 (94%)	3 (6%)	0	100	100
32	FA	62/65 (95%)	56 (90%)	5 (8%)	1 (2%)	9	34
32	JC	62/65 (95%)	57 (92%)	3 (5%)	2 (3%)	4	22
33	GA	35/37 (95%)	33 (94%)	2 (6%)	0	100	100
33	KC	35/37 (95%)	32 (91%)	3 (9%)	0	100	100
35	JA	256/368 (70%)	197 (77%)	46 (18%)	13 (5%)	2	14
35	NC	256/368 (70%)	197 (77%)	44 (17%)	15 (6%)	1	11
36	KA	232/256 (91%)	180 (78%)	38 (16%)	14 (6%)	1	10
36	OC	232/256 (91%)	180 (78%)	36 (16%)	16 (7%)	1	8
37	LA	204/239 (85%)	158 (78%)	35 (17%)	11 (5%)	2	13
37	PC	204/239 (85%)	158 (78%)	35 (17%)	11 (5%)	2	13
38	MA	206/209 (99%)	159 (77%)	33 (16%)	14 (7%)	1	8
38	QC	206/209 (99%)	159 (77%)	34 (16%)	13 (6%)	1	9
39	NA	149/162 (92%)	121 (81%)	21 (14%)	7 (5%)	2	15
39	RC	149/162 (92%)	120 (80%)	22 (15%)	7 (5%)	2	15
40	OA	99/101 (98%)	81 (82%)	16 (16%)	2 (2%)	7	30
40	SC	99/101 (98%)	83 (84%)	14 (14%)	2 (2%)	7	30
41	PA	153/156 (98%)	115 (75%)	25 (16%)	13 (8%)	1	5
41	TC	153/156 (98%)	114 (74%)	26 (17%)	13 (8%)	1	5
42	QA	136/138 (99%)	120 (88%)	15 (11%)	1 (1%)	22	55

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
42	UC	136/138 (99%)	119 (88%)	16 (12%)	1 (1%)	22	55
43	RA	125/128 (98%)	94 (75%)	22 (18%)	9 (7%)	1	7
43	VC	125/128 (98%)	94 (75%)	23 (18%)	8 (6%)	1	9
44	SA	96/105 (91%)	81 (84%)	14 (15%)	1 (1%)	15	46
44	WC	96/105 (91%)	82 (85%)	13 (14%)	1 (1%)	15	46
45	TA	114/129 (88%)	91 (80%)	16 (14%)	7 (6%)	1	10
45	XC	114/129 (88%)	91 (80%)	17 (15%)	6 (5%)	2	13
46	UA	119/132 (90%)	97 (82%)	20 (17%)	2 (2%)	9	34
46	YC	119/132 (90%)	96 (81%)	19 (16%)	4 (3%)	3	21
47	VA	115/126 (91%)	82 (71%)	25 (22%)	8 (7%)	1	7
47	ZC	115/126 (91%)	81 (70%)	25 (22%)	9 (8%)	1	6
48	AD	58/61 (95%)	48 (83%)	7 (12%)	3 (5%)	2	13
48	WA	58/61 (95%)	47 (81%)	9 (16%)	2 (3%)	3	21
49	BD	86/89 (97%)	72 (84%)	11 (13%)	3 (4%)	3	21
49	XA	86/89 (97%)	72 (84%)	10 (12%)	4 (5%)	2	15
50	CD	81/88 (92%)	70 (86%)	9 (11%)	2 (2%)	5	26
50	YA	81/88 (92%)	70 (86%)	9 (11%)	2 (2%)	5	26
51	DD	97/105 (92%)	80 (82%)	14 (14%)	3 (3%)	4	23
51	ZA	97/105 (92%)	79 (81%)	15 (16%)	3 (3%)	4	23
52	AB	68/88 (77%)	59 (87%)	7 (10%)	2 (3%)	4	24
52	ED	68/88 (77%)	58 (85%)	8 (12%)	2 (3%)	4	24
53	BB	81/93 (87%)	56 (69%)	19 (24%)	6 (7%)	1	7
53	FD	81/93 (87%)	58 (72%)	17 (21%)	6 (7%)	1	7
54	CB	97/106 (92%)	74 (76%)	14 (14%)	9 (9%)	0	4
54	GD	97/106 (92%)	75 (77%)	14 (14%)	8 (8%)	1	5
55	DB	22/27 (82%)	15 (68%)	5 (23%)	2 (9%)	1	4
55	HD	22/27 (82%)	15 (68%)	5 (23%)	2 (9%)	1	4
All	All	11996/12852 (93%)	9782 (82%)	1686 (14%)	528 (4%)	2	16

5 of 528 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	H	47	LYS

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Mol	Chain	Res	Type
8	H	51	ARG
8	H	52	ILE
8	H	84	LYS
8	H	126	ASP

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	E	217/217 (100%)	178 (82%)	39 (18%)	1	6
5	IB	217/217 (100%)	176 (81%)	41 (19%)	1	4
6	F	165/166 (99%)	136 (82%)	29 (18%)	2	6
6	JB	165/166 (99%)	137 (83%)	28 (17%)	2	8
7	G	161/162 (99%)	132 (82%)	29 (18%)	1	6
7	KB	161/162 (99%)	132 (82%)	29 (18%)	1	6
8	H	154/156 (99%)	131 (85%)	23 (15%)	3	12
8	LB	154/156 (99%)	131 (85%)	23 (15%)	3	12
9	I	144/148 (97%)	122 (85%)	22 (15%)	2	11
9	MB	144/148 (97%)	122 (85%)	22 (15%)	2	11
10	J	122/124 (98%)	92 (75%)	30 (25%)	0	2
10	NB	122/124 (98%)	91 (75%)	31 (25%)	0	2
11	K	119/119 (100%)	102 (86%)	17 (14%)	3	13
11	OB	119/119 (100%)	102 (86%)	17 (14%)	3	13
12	L	100/100 (100%)	85 (85%)	15 (15%)	3	12
12	PB	100/100 (100%)	85 (85%)	15 (15%)	3	12
13	M	116/116 (100%)	92 (79%)	24 (21%)	1	3
13	QB	116/116 (100%)	93 (80%)	23 (20%)	1	4
14	N	111/111 (100%)	93 (84%)	18 (16%)	2	9
14	RB	111/111 (100%)	93 (84%)	18 (16%)	2	9

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	O	101/101 (100%)	86 (85%)	15 (15%)	3	12
15	SB	101/101 (100%)	86 (85%)	15 (15%)	3	12
16	P	87/88 (99%)	73 (84%)	14 (16%)	2	10
16	TB	87/88 (99%)	73 (84%)	14 (16%)	2	10
17	Q	121/128 (94%)	108 (89%)	13 (11%)	6	24
17	UB	121/128 (94%)	106 (88%)	15 (12%)	4	17
18	R	93/94 (99%)	81 (87%)	12 (13%)	4	16
18	VB	93/94 (99%)	83 (89%)	10 (11%)	6	24
19	S	82/82 (100%)	66 (80%)	16 (20%)	1	4
19	WB	82/82 (100%)	65 (79%)	17 (21%)	1	3
20	T	91/92 (99%)	77 (85%)	14 (15%)	2	11
20	XB	91/92 (99%)	76 (84%)	15 (16%)	2	9
21	U	77/78 (99%)	65 (84%)	12 (16%)	2	11
21	YB	77/78 (99%)	66 (86%)	11 (14%)	3	13
22	V	87/91 (96%)	71 (82%)	16 (18%)	1	5
22	ZB	87/91 (96%)	71 (82%)	16 (18%)	1	5
23	AC	163/179 (91%)	137 (84%)	26 (16%)	2	10
23	W	163/179 (91%)	137 (84%)	26 (16%)	2	10
24	BC	66/67 (98%)	57 (86%)	9 (14%)	3	14
24	X	66/67 (98%)	57 (86%)	9 (14%)	3	14
25	CC	81/83 (98%)	61 (75%)	20 (25%)	0	2
25	Y	81/83 (98%)	61 (75%)	20 (25%)	0	2
26	DC	66/67 (98%)	52 (79%)	14 (21%)	1	3
26	Z	66/67 (98%)	52 (79%)	14 (21%)	1	3
27	AA	52/52 (100%)	40 (77%)	12 (23%)	1	2
27	EC	52/52 (100%)	40 (77%)	12 (23%)	1	2
28	BA	59/63 (94%)	50 (85%)	9 (15%)	2	11
28	FC	59/63 (94%)	50 (85%)	9 (15%)	2	11
29	CA	51/52 (98%)	39 (76%)	12 (24%)	1	2
29	GC	51/52 (98%)	39 (76%)	12 (24%)	1	2
30	DA	51/52 (98%)	42 (82%)	9 (18%)	2	6

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	HC	51/52 (98%)	42 (82%)	9 (18%)	2	6
31	EA	41/42 (98%)	30 (73%)	11 (27%)	0	1
31	IC	41/42 (98%)	29 (71%)	12 (29%)	0	1
32	FA	54/55 (98%)	46 (85%)	8 (15%)	3	12
32	JC	54/55 (98%)	47 (87%)	7 (13%)	4	16
33	GA	34/34 (100%)	31 (91%)	3 (9%)	10	33
33	KC	34/34 (100%)	31 (91%)	3 (9%)	10	33
35	JA	209/308 (68%)	176 (84%)	33 (16%)	2	10
35	NC	209/308 (68%)	178 (85%)	31 (15%)	3	12
36	KA	202/220 (92%)	164 (81%)	38 (19%)	1	4
36	OC	202/220 (92%)	164 (81%)	38 (19%)	1	4
37	LA	160/188 (85%)	133 (83%)	27 (17%)	2	8
37	PC	160/188 (85%)	133 (83%)	27 (17%)	2	8
38	MA	180/181 (99%)	146 (81%)	34 (19%)	1	4
38	QC	180/181 (99%)	145 (81%)	35 (19%)	1	4
39	NA	116/123 (94%)	102 (88%)	14 (12%)	5	18
39	RC	116/123 (94%)	102 (88%)	14 (12%)	5	18
40	OA	90/90 (100%)	75 (83%)	15 (17%)	2	8
40	SC	90/90 (100%)	75 (83%)	15 (17%)	2	8
41	PA	126/127 (99%)	100 (79%)	26 (21%)	1	3
41	TC	126/127 (99%)	99 (79%)	27 (21%)	1	3
42	QA	119/119 (100%)	100 (84%)	19 (16%)	2	10
42	UC	119/119 (100%)	101 (85%)	18 (15%)	3	12
43	RA	98/99 (99%)	86 (88%)	12 (12%)	5	18
43	VC	98/99 (99%)	86 (88%)	12 (12%)	5	18
44	SA	88/92 (96%)	79 (90%)	9 (10%)	7	26
44	WC	88/92 (96%)	80 (91%)	8 (9%)	9	32
45	TA	88/99 (89%)	71 (81%)	17 (19%)	1	4
45	XC	88/99 (89%)	71 (81%)	17 (19%)	1	4
46	UA	102/108 (94%)	85 (83%)	17 (17%)	2	8
46	YC	102/108 (94%)	85 (83%)	17 (17%)	2	8

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
47	VA	94/101 (93%)	71 (76%)	23 (24%)	0	2
47	ZC	94/101 (93%)	72 (77%)	22 (23%)	1	2
48	AD	49/50 (98%)	42 (86%)	7 (14%)	3	13
48	WA	49/50 (98%)	42 (86%)	7 (14%)	3	13
49	BD	79/80 (99%)	71 (90%)	8 (10%)	7	27
49	XA	79/80 (99%)	71 (90%)	8 (10%)	7	27
50	CD	72/74 (97%)	62 (86%)	10 (14%)	3	13
50	YA	72/74 (97%)	61 (85%)	11 (15%)	2	11
51	DD	94/97 (97%)	72 (77%)	22 (23%)	1	2
51	ZA	94/97 (97%)	72 (77%)	22 (23%)	1	2
52	AB	61/77 (79%)	50 (82%)	11 (18%)	1	6
52	ED	61/77 (79%)	50 (82%)	11 (18%)	1	6
53	BB	72/80 (90%)	58 (81%)	14 (19%)	1	4
53	FD	72/80 (90%)	59 (82%)	13 (18%)	1	6
54	CB	76/82 (93%)	65 (86%)	11 (14%)	3	12
54	GD	76/82 (93%)	65 (86%)	11 (14%)	3	12
55	DB	19/22 (86%)	15 (79%)	4 (21%)	1	3
55	HD	19/22 (86%)	15 (79%)	4 (21%)	1	3
All	All	10120/10672 (95%)	8397 (83%)	1723 (17%)	2	8

5 of 1723 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	JB	175	VAL
17	UB	89	VAL
46	YC	10	LEU
7	KB	170	LEU
6	JB	173	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 33 such sidechains are listed below:

Mol	Chain	Res	Type
45	XC	26	ASN
47	ZC	62	ASN
53	FD	23	ASN

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Mol	Chain	Res	Type
41	PA	110	GLN
41	PA	109	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1502/1507 (99%)	330 (21%)	13 (0%)
1	EB	1502/1507 (99%)	330 (21%)	13 (0%)
2	B	2876/2880 (99%)	644 (22%)	22 (0%)
2	FB	2876/2880 (99%)	642 (22%)	23 (0%)
3	C	119/120 (99%)	22 (18%)	1 (0%)
3	GB	119/120 (99%)	21 (17%)	1 (0%)
34	HA	9/23 (39%)	5 (55%)	0
34	LC	9/23 (39%)	5 (55%)	0
4	D	76/77 (98%)	25 (32%)	0
4	HB	76/77 (98%)	26 (34%)	0
4	IA	76/77 (98%)	20 (26%)	0
4	MC	76/77 (98%)	20 (26%)	0
All	All	9316/9368 (99%)	2090 (22%)	73 (0%)

5 of 2090 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	9	G
1	A	32	A
1	A	39	G
1	A	47	C
1	A	48	C

5 of 73 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	FB	974(A)	G
2	FB	2756	U
2	FB	1060	U
2	FB	1939	5MU
2	B	1267	U

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

64 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
2	4OC	B	1920	2	19,22,24	1.15	1 (5%)	26,31,35	1.12	2 (7%)
2	PSU	B	1911	2	18,21,22	1.64	3 (16%)	22,30,33	1.29	3 (13%)
4	PSU	IA	55	4	18,21,22	1.64	2 (11%)	22,30,33	1.54	4 (18%)
1	UR3	EB	1498	1	19,22,23	1.74	1 (5%)	26,32,35	1.51	4 (15%)
1	PSU	EB	516	1	18,21,22	1.68	3 (16%)	22,30,33	1.42	4 (18%)
1	MA6	EB	1519	1	19,26,27	1.59	3 (15%)	18,38,41	1.22	2 (11%)
2	5MC	FB	1962	2	18,22,23	1.64	3 (16%)	26,32,35	1.20	1 (3%)
46	0TD	UA	92	46	7,9,10	2.25	1 (14%)	6,11,13	1.99	3 (50%)
4	5MC	HB	32	4	18,22,23	1.73	4 (22%)	26,32,35	1.01	2 (7%)
1	MA6	EB	1518	1	19,26,27	1.77	3 (15%)	18,38,41	1.69	3 (16%)
4	5MU	D	54	4	19,22,23	2.08	3 (15%)	28,32,35	2.08	7 (25%)
4	4SU	D	8	4	18,21,22	5.59	1 (5%)	26,30,33	0.61	0
1	5MC	A	1407	1	18,22,23	1.51	3 (16%)	26,32,35	1.39	3 (11%)
4	5MC	MC	32	4	18,22,23	1.68	3 (16%)	26,32,35	1.24	3 (11%)
4	PSU	HB	55	4	18,21,22	1.76	2 (11%)	22,30,33	1.55	4 (18%)
4	4SU	MC	8	4	18,21,22	5.60	1 (5%)	26,30,33	0.68	0
2	2MA	FB	2503	56,2	17,25,26	1.34	2 (11%)	17,37,40	1.15	2 (11%)
1	PSU	A	516	1	18,21,22	1.74	3 (16%)	22,30,33	1.48	3 (13%)
1	2MG	A	1207	1	18,26,27	2.37	4 (22%)	16,38,41	1.32	2 (12%)
2	2MA	B	2503	2	17,25,26	1.32	2 (11%)	17,37,40	1.21	2 (11%)
2	PSU	B	2605	2	18,21,22	1.75	3 (16%)	22,30,33	1.70	4 (18%)
2	5MC	B	1942	2	18,22,23	1.56	3 (16%)	26,32,35	1.48	3 (11%)
1	7MG	A	527	1	22,26,27	3.26	7 (31%)	29,39,42	2.12	7 (24%)
1	UR3	A	1498	1	19,22,23	1.79	1 (5%)	26,32,35	1.64	4 (15%)
2	2MU	B	2552	2	19,22,24	2.59	5 (26%)	26,31,36	2.25	6 (23%)
4	4SU	IA	8	4	18,21,22	5.59	1 (5%)	26,30,33	0.65	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	5MC	D	32	4	18,22,23	1.70	3 (16%)	26,32,35	0.97	2 (7%)
1	5MC	A	1400	1	18,22,23	1.67	4 (22%)	26,32,35	1.10	4 (15%)
1	5MC	EB	1407	1	18,22,23	1.58	3 (16%)	26,32,35	1.36	2 (7%)
2	5MU	FB	1915	2	19,22,23	2.11	3 (15%)	28,32,35	1.99	7 (25%)
4	PSU	MC	55	4	18,21,22	1.59	3 (16%)	22,30,33	1.54	3 (13%)
1	MA6	A	1519	1	19,26,27	1.72	3 (15%)	18,38,41	1.23	2 (11%)
4	4SU	HB	8	4	18,21,22	5.59	1 (5%)	26,30,33	0.60	0
4	5MU	IA	54	4	19,22,23	2.06	3 (15%)	28,32,35	2.13	8 (28%)
2	OMG	FB	2251	4,2	18,26,27	2.25	3 (16%)	19,38,41	1.35	5 (26%)
4	5MU	MC	54	4	19,22,23	2.12	3 (15%)	28,32,35	1.97	8 (28%)
2	5MC	B	1962	2	18,22,23	1.51	3 (16%)	26,32,35	1.52	4 (15%)
1	5MC	EB	1400	1	18,22,23	1.66	3 (16%)	26,32,35	1.04	3 (11%)
1	M2G	EB	966	1	20,27,28	2.56	3 (15%)	22,40,43	1.18	3 (13%)
2	4OC	FB	1920	2	19,22,24	1.13	1 (5%)	26,31,35	1.21	4 (15%)
1	5MC	EB	967	1	18,22,23	1.62	3 (16%)	26,32,35	1.11	2 (7%)
46	0TD	YC	92	46	7,9,10	1.75	1 (14%)	6,11,13	2.01	2 (33%)
2	5MU	B	1939	2	19,22,23	2.13	4 (21%)	28,32,35	2.47	9 (32%)
2	OMG	B	2251	2	18,26,27	2.19	2 (11%)	19,38,41	1.40	4 (21%)
1	4OC	A	1402	1	20,23,24	0.97	1 (5%)	26,32,35	1.17	2 (7%)
1	7MG	EB	527	1	22,26,27	3.39	7 (31%)	29,39,42	2.21	7 (24%)
2	5MC	FB	1942	56,2	18,22,23	1.57	3 (16%)	26,32,35	1.22	2 (7%)
1	5MC	EB	1404	1	18,22,23	1.56	3 (16%)	26,32,35	1.40	4 (15%)
4	5MU	HB	54	4	19,22,23	2.03	3 (15%)	28,32,35	2.10	8 (28%)
1	4OC	EB	1402	1	20,23,24	0.97	2 (10%)	26,32,35	1.21	2 (7%)
2	5MU	B	1915	56,2	19,22,23	2.04	3 (15%)	28,32,35	2.38	8 (28%)
2	PSU	FB	2605	2	18,21,22	1.57	3 (16%)	22,30,33	1.80	5 (22%)
2	2MU	FB	2552	2	19,22,24	2.49	5 (26%)	26,31,36	1.99	8 (30%)
2	PSU	FB	1911	2	18,21,22	1.70	3 (16%)	22,30,33	1.75	4 (18%)
2	5MU	FB	1939	2	19,22,23	2.10	3 (15%)	28,32,35	2.65	9 (32%)
4	PSU	D	55	4	18,21,22	1.72	2 (11%)	22,30,33	1.48	4 (18%)
1	M2G	A	966	1	20,27,28	2.55	3 (15%)	22,40,43	1.35	3 (13%)
2	PSU	FB	1917	2	18,21,22	1.75	3 (16%)	22,30,33	1.78	6 (27%)
1	5MC	A	967	1	18,22,23	1.56	3 (16%)	26,32,35	1.13	2 (7%)
1	5MC	A	1404	1	18,22,23	1.60	3 (16%)	26,32,35	1.40	3 (11%)
4	5MC	IA	32	4	18,22,23	1.67	4 (22%)	26,32,35	1.14	2 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	2MG	EB	1207	1,56	18,26,27	2.41	4 (22%)	16,38,41	1.37	3 (18%)
2	PSU	B	1917	2	18,21,22	1.42	3 (16%)	22,30,33	1.77	5 (22%)
1	MA6	A	1518	1	19,26,27	1.69	3 (15%)	18,38,41	1.57	2 (11%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	4OC	B	1920	2	-	2/9/27/30	0/2/2/2
2	PSU	B	1911	2	-	2/7/25/26	0/2/2/2
4	PSU	IA	55	4	-	2/7/25/26	0/2/2/2
1	UR3	EB	1498	1	-	2/7/25/26	0/2/2/2
1	PSU	EB	516	1	-	2/7/25/26	0/2/2/2
1	MA6	EB	1519	1	-	6/7/29/30	0/3/3/3
2	5MC	FB	1962	2	-	1/7/25/26	0/2/2/2
46	0TD	UA	92	46	-	2/7/12/14	-
4	5MC	HB	32	4	-	0/7/25/26	0/2/2/2
1	MA6	EB	1518	1	-	5/7/29/30	0/3/3/3
4	5MU	D	54	4	-	0/7/25/26	0/2/2/2
4	4SU	D	8	4	-	0/7/25/26	0/2/2/2
1	5MC	A	1407	1	-	0/7/25/26	0/2/2/2
4	5MC	MC	32	4	-	0/7/25/26	0/2/2/2
4	PSU	HB	55	4	-	1/7/25/26	0/2/2/2
4	4SU	MC	8	4	-	0/7/25/26	0/2/2/2
2	2MA	FB	2503	56,2	-	1/3/25/26	0/3/3/3
1	PSU	A	516	1	-	2/7/25/26	0/2/2/2
1	2MG	A	1207	1	-	3/5/27/28	0/3/3/3
2	2MA	B	2503	2	-	1/3/25/26	0/3/3/3
2	PSU	B	2605	2	-	0/7/25/26	0/2/2/2
2	5MC	B	1942	2	-	0/7/25/26	0/2/2/2
1	7MG	A	527	1	-	3/7/37/38	0/3/3/3
1	UR3	A	1498	1	-	2/7/25/26	0/2/2/2
2	2MU	B	2552	2	-	1/9/27/28	0/2/2/2
4	4SU	IA	8	4	-	0/7/25/26	0/2/2/2
4	5MC	D	32	4	-	0/7/25/26	0/2/2/2
1	5MC	A	1400	1	-	0/7/25/26	0/2/2/2
1	5MC	EB	1407	1	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	5MU	FB	1915	2	-	0/7/25/26	0/2/2/2
4	PSU	MC	55	4	-	2/7/25/26	0/2/2/2
1	MA6	A	1519	1	-	6/7/29/30	0/3/3/3
4	4SU	HB	8	4	-	0/7/25/26	0/2/2/2
4	5MU	IA	54	4	-	0/7/25/26	0/2/2/2
2	OMG	FB	2251	4,2	-	2/5/27/28	0/3/3/3
4	5MU	MC	54	4	-	0/7/25/26	0/2/2/2
2	5MC	B	1962	2	-	2/7/25/26	0/2/2/2
1	5MC	EB	1400	1	-	0/7/25/26	0/2/2/2
1	M2G	EB	966	1	-	1/7/29/30	0/3/3/3
2	4OC	FB	1920	2	-	2/9/27/30	0/2/2/2
1	5MC	EB	967	1	-	0/7/25/26	0/2/2/2
46	0TD	YC	92	46	-	4/7/12/14	-
2	5MU	B	1939	2	-	0/7/25/26	0/2/2/2
2	OMG	B	2251	2	-	3/5/27/28	0/3/3/3
1	4OC	A	1402	1	-	2/9/29/30	0/2/2/2
1	7MG	EB	527	1	-	3/7/37/38	0/3/3/3
2	5MC	FB	1942	56,2	-	0/7/25/26	0/2/2/2
1	5MC	EB	1404	1	-	0/7/25/26	0/2/2/2
4	5MU	HB	54	4	-	0/7/25/26	0/2/2/2
1	4OC	EB	1402	1	-	2/9/29/30	0/2/2/2
2	5MU	B	1915	56,2	-	0/7/25/26	0/2/2/2
2	PSU	FB	2605	2	-	0/7/25/26	0/2/2/2
2	2MU	FB	2552	2	-	1/9/27/28	0/2/2/2
2	PSU	FB	1911	2	-	2/7/25/26	0/2/2/2
2	5MU	FB	1939	2	-	0/7/25/26	0/2/2/2
4	PSU	D	55	4	-	1/7/25/26	0/2/2/2
1	M2G	A	966	1	-	1/7/29/30	0/3/3/3
2	PSU	FB	1917	2	-	2/7/25/26	0/2/2/2
1	5MC	A	967	1	-	0/7/25/26	0/2/2/2
1	5MC	A	1404	1	-	0/7/25/26	0/2/2/2
4	5MC	IA	32	4	-	0/7/25/26	0/2/2/2
1	2MG	EB	1207	1,56	-	4/5/27/28	0/3/3/3
2	PSU	B	1917	2	-	2/7/25/26	0/2/2/2
1	MA6	A	1518	1	-	5/7/29/30	0/3/3/3

The worst 5 of 181 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	MC	8	4SU	C4-S4	-23.69	1.23	1.68
4	HB	8	4SU	C4-S4	-23.66	1.23	1.68
4	IA	8	4SU	C4-S4	-23.65	1.23	1.68
4	D	8	4SU	C4-S4	-23.64	1.23	1.68
1	EB	527	7MG	O6-C6	10.00	1.42	1.23

The worst 5 of 239 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1915	5MU	C5-C4-N3	6.37	120.75	115.31
2	FB	1939	5MU	C4-N3-C2	-6.26	119.25	127.35
2	B	1939	5MU	C4-N3-C2	-6.22	119.30	127.35
2	B	1915	5MU	C4-N3-C2	-5.82	119.81	127.35
2	B	1939	5MU	N3-C2-N1	5.75	122.52	114.89

There are no chirality outliers.

5 of 85 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	527	7MG	C3'-C4'-C5'-O5'
1	A	1207	2MG	O4'-C4'-C5'-O5'
1	A	1207	2MG	C3'-C4'-C5'-O5'
1	A	1207	2MG	N3-C2-N2-CM2
1	A	1518	MA6	O4'-C4'-C5'-O5'

There are no ring outliers.

38 monomers are involved in 63 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1920	4OC	4	0
4	IA	55	PSU	1	0
1	EB	1498	UR3	1	0
1	EB	516	PSU	1	0
1	EB	1519	MA6	3	0
2	FB	1962	5MC	1	0
46	UA	92	0TD	2	0
1	EB	1518	MA6	1	0
4	D	54	5MU	3	0
4	D	8	4SU	2	0
4	HB	55	PSU	1	0
4	MC	8	4SU	1	0
2	FB	2503	2MA	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	1207	2MG	3	0
2	B	2503	2MA	1	0
1	A	1498	UR3	1	0
2	B	2552	2MU	1	0
1	A	1400	5MC	1	0
2	FB	1915	5MU	1	0
4	MC	55	PSU	1	0
1	A	1519	MA6	4	0
4	HB	8	4SU	2	0
2	B	1962	5MC	1	0
1	EB	1400	5MC	1	0
2	FB	1920	4OC	2	0
1	EB	967	5MC	2	0
46	YC	92	0TD	3	0
2	B	1939	5MU	3	0
1	A	1402	4OC	2	0
1	EB	1404	5MC	1	0
4	HB	54	5MU	3	0
1	EB	1402	4OC	2	0
2	B	1915	5MU	3	0
2	FB	2552	2MU	2	0
4	D	55	PSU	1	0
1	A	967	5MC	2	0
1	EB	1207	2MG	1	0
1	A	1518	MA6	2	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 1695 ligands modelled in this entry, 1693 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
57	BLS	FB	9001	-	28,31,31	3.09	10 (35%)	28,43,43	2.35	13 (46%)
57	BLS	B	9001	-	28,31,31	3.07	11 (39%)	28,43,43	2.20	14 (50%)

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
57	BLS	FB	9001	-	-	4/21/38/38	0/2/2/2
57	BLS	B	9001	-	-	4/21/38/38	0/2/2/2

The worst 5 of 21 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	FB	9001	BLS	C14-N12	8.72	1.54	1.35
57	B	9001	BLS	C14-N12	8.36	1.53	1.35
57	FB	9001	BLS	C7-N6	7.24	1.49	1.34
57	B	9001	BLS	C7-N6	7.05	1.49	1.34
57	FB	9001	BLS	C11-N12	5.02	1.56	1.47

The worst 5 of 27 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
57	FB	9001	BLS	O5'-C1'-C2'	-5.79	110.00	113.13
57	FB	9001	BLS	C1'-C2'-C3'	-4.63	116.46	122.52
57	B	9001	BLS	C1'-C2'-C3'	-4.10	117.15	122.52
57	FB	9001	BLS	O3-C6'-C5'	-3.63	107.50	120.81
57	B	9001	BLS	O3-C6'-C5'	-3.52	107.91	120.81

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

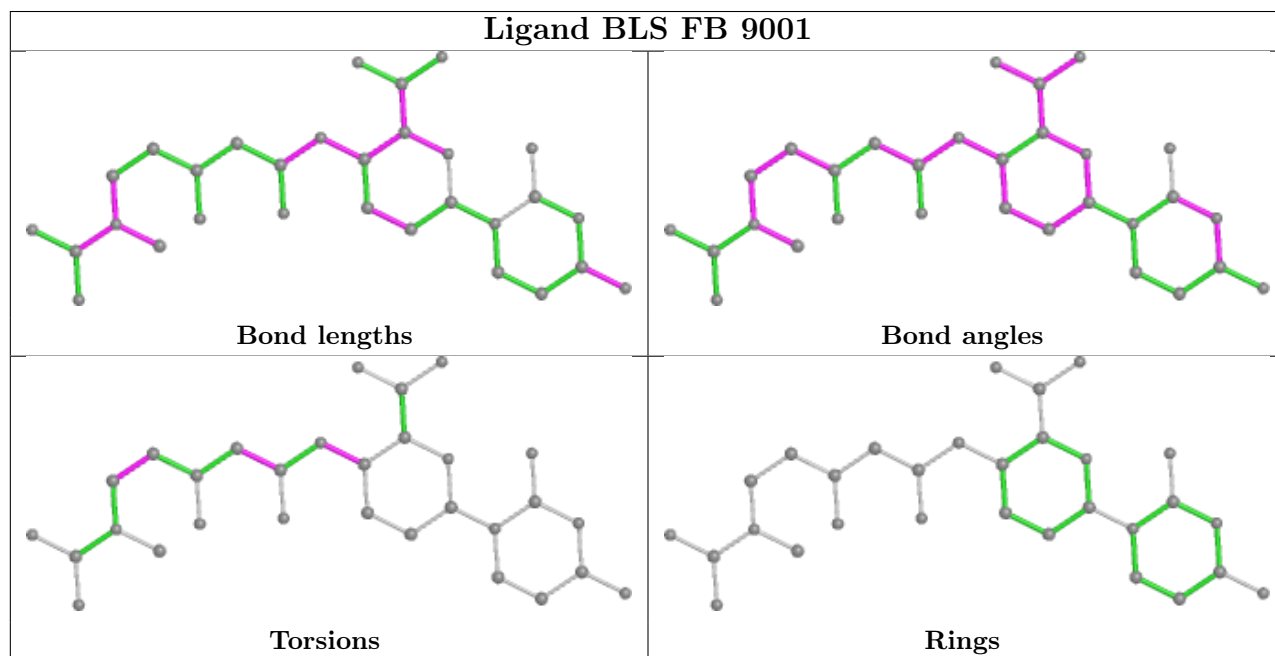
Mol	Chain	Res	Type	Atoms
57	B	9001	BLS	N6-C7-C8-C9
57	B	9001	BLS	O7-C7-C8-C9
57	B	9001	BLS	C9-C10-C11-N12
57	FB	9001	BLS	N6-C7-C8-C9
57	FB	9001	BLS	O7-C7-C8-C9

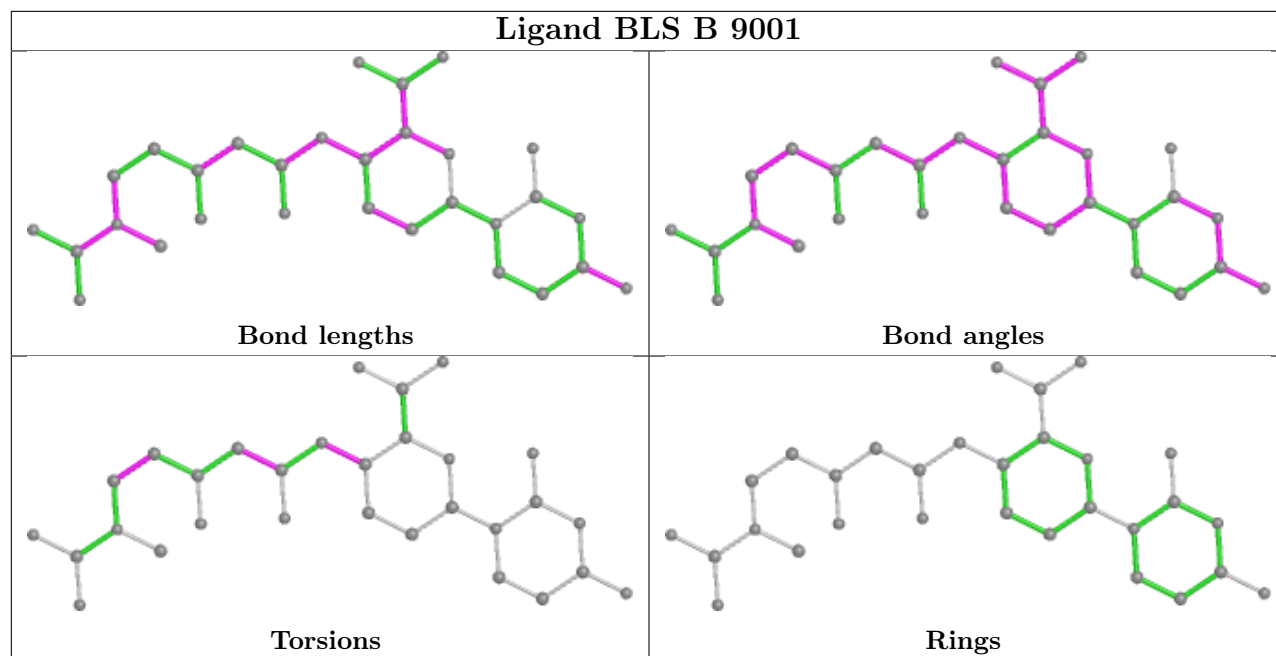
There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
57	FB	9001	BLS	1	0
57	B	9001	BLS	2	0

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





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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

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

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

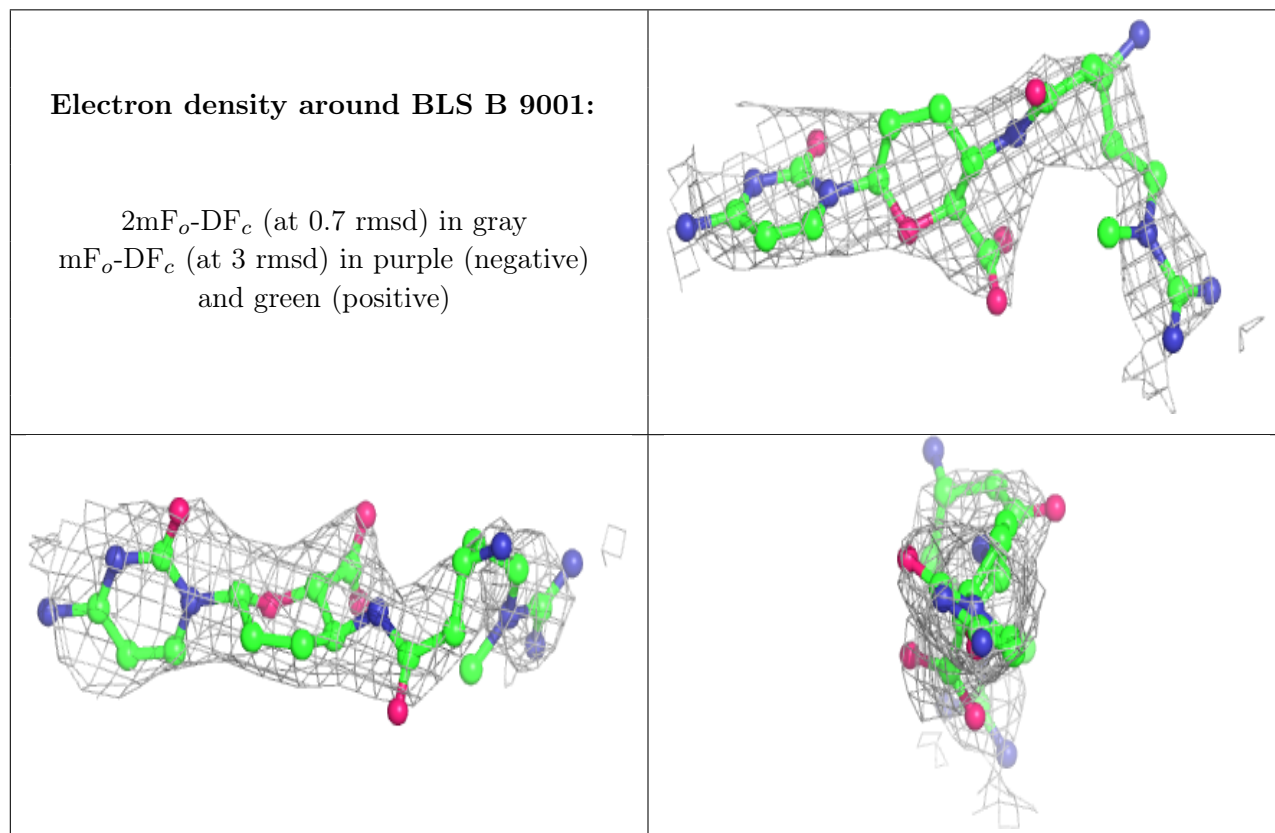
6.3 Carbohydrates [i](#)

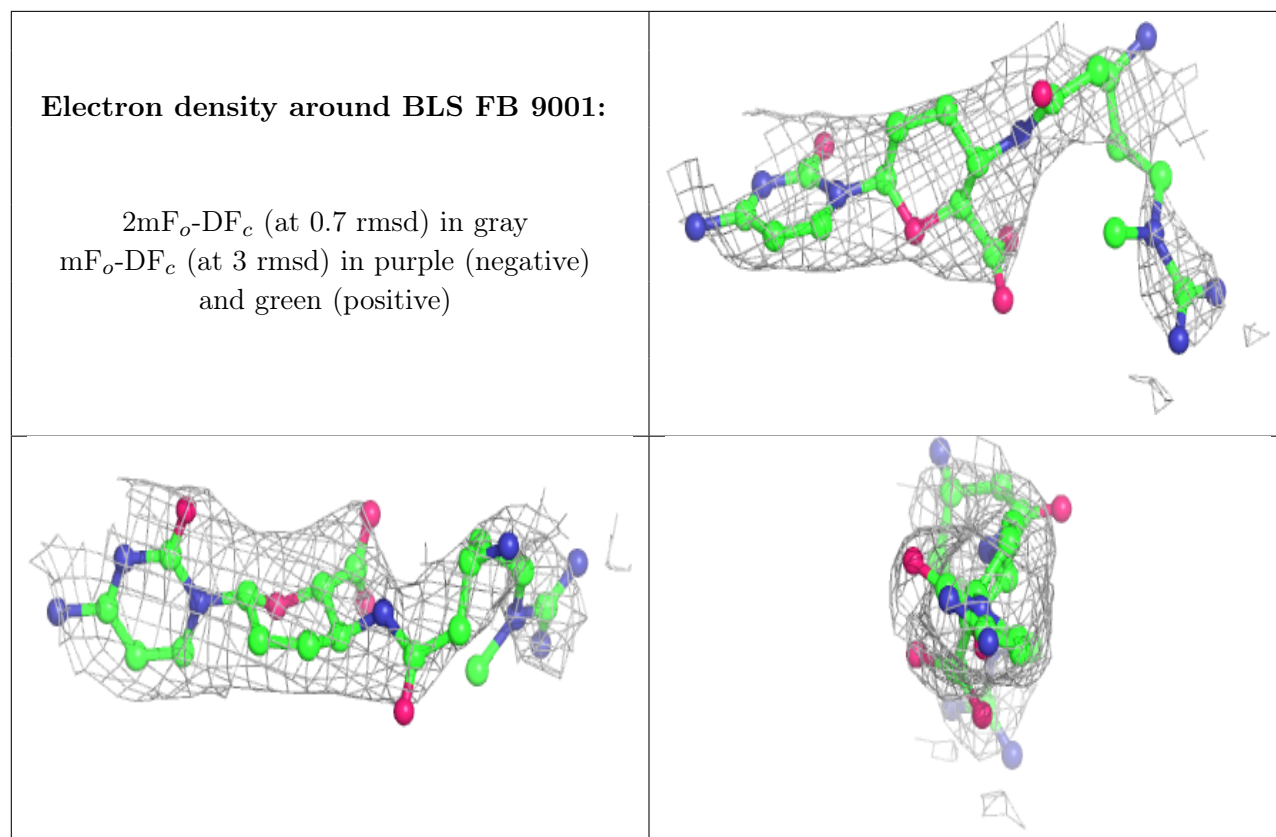
Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands [i](#)

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

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





6.5 Other polymers [i](#)

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