



wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 14, 2023 – 01:59 AM EDT

PDB ID : 4V4J
Title : Interactions and Dynamics of the Shine-Dalgarno Helix in the 70S Ribosome.
Authors : Korostelev, A.; Trakhanov, S.; Asahara, H.; Laurberg, M.; Noller, H.F.
Deposited on : 2007-07-18
Resolution : 3.83 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)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

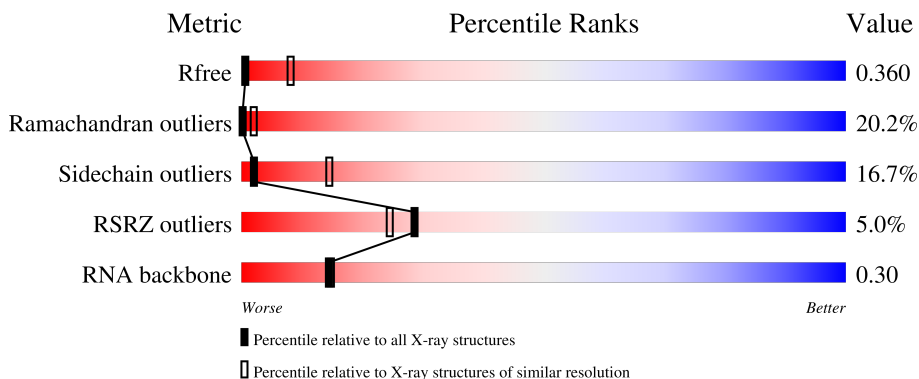
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.83 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.






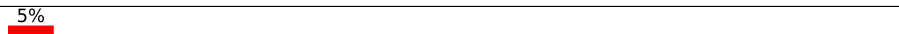
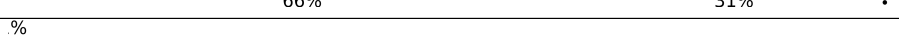
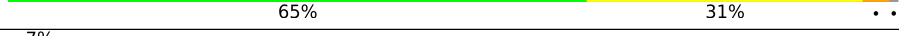



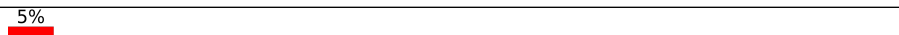
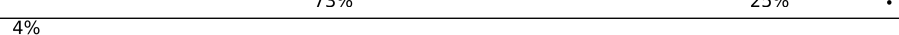




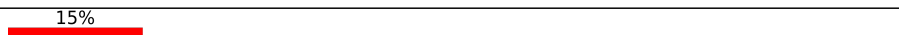


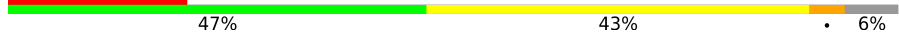



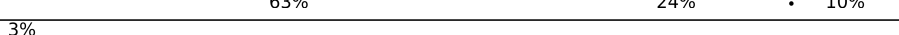


Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1242 (4.08-3.60)
Ramachandran outliers	138981	1003 (4.06-3.62)
Sidechain outliers	138945	1266 (4.08-3.60)
RSRZ outliers	127900	1149 (4.08-3.60)
RNA backbone	3102	1038 (4.68-3.00)

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

Mol	Chain	Length	Quality of chain
1	w	2889	 4% 65% 33%
2	x	120	 61% 38%
3	A	229	 3% 40% 13% 45%
4	B	276	 7% 62% 34%
5	C	206	 6% 60% 33%

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Mol	Chain	Length	Quality of chain
6	D	205	
7	E	182	
8	F	180	
9	G	148	
10	H	140	
11	I	122	
12	J	150	
13	K	141	
14	L	118	
15	M	112	
16	N	146	
17	O	118	
18	P	101	
19	Q	113	
20	R	96	
21	S	110	
22	T	206	
23	U	85	
24	V	98	
25	W	72	
26	X	60	
27	Y	60	
28	Z	49	
29	a	65	
30	b	37	

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Mol	Chain	Length	Quality of chain
31	y	1522	4% 65% 32% ..
32	z	77	5% 74% 26%
33	2	76	9% 71% 28% .
34	3	18	33% 72% 28%
35	c	256	4% 69% 20% . 9%
36	d	239	3% 59% 25% . 14%
37	e	209	3% 77% 21% .
38	f	162	4% 77% 14% . 7%
39	g	101	2% 81% 17% .
40	h	156	3% 72% 25% ..
41	i	138	8% 72% 26% .
42	j	128	9% 81% 17% ..
43	k	105	2% 68% 25% . 7%
44	l	129	9% 73% 17% 10%
45	m	132	6% 61% 33% 6%
46	n	126	13% 67% 29% ..
47	o	61	3% 64% 30% 5% .
48	p	89	12% 74% 22% ..
49	q	88	24% 56% 35% . 6%
50	r	105	63% 33% ..
51	s	88	69% 22% . 8%
52	t	93	6% 46% 34% 5% 14%
53	u	106	14% 71% 22% . 7%
54	v	27	48% 41% 11%

2 Entry composition [i](#)

There are 54 unique types of molecules in this entry. The entry contains 147125 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 23S LARGE SUBUNIT RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	w	2889	62213	27690	11624	20011	2888	0	0	0

- Molecule 2 is a RNA chain called 5S LARGE SUBUNIT RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	x	120	2573	1146	476	832	119	0	0	0

- Molecule 3 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	A	127	996	627	184	184	1	0	0	0

- Molecule 4 is a protein called 50S ribosomal protein L2.

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

- Molecule 5 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	C	201	1541	974	295	267	5	0	0	0

- Molecule 6 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	D	194	1517	969	283	263	2	0	0	0

- Molecule 7 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	E	180	1468	938	267	259	4	0	0	0

- Molecule 8 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	F	173	1319	839	245	234	1	0	0	0

- Molecule 9 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	G	148	1156	737	204	214	1	0	0	0

- Molecule 10 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	H	138	1103	712	206	182	3	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	24	VAL	MET	conflict	UNP Q72IN1

- Molecule 11 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	I	122	932	587	171	170	4	0	0	0

- Molecule 12 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	J	146	1114	692	227	193	2	0	0	0

- Molecule 13 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	K	137	1089	698	207	177	7	0	0	0

- Molecule 14 is a protein called 50S ribosomal protein L17.

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

- Molecule 15 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
15	M	106	846	534	168	144	0	0	0

- Molecule 16 is a protein called 50S ribosomal protein L19.

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

- Molecule 17 is a protein called 50S ribosomal protein L20.

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

- Molecule 18 is a protein called 50S ribosomal protein L21.

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

- Molecule 19 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
19	Q	109	868	547	170	150	1	0	0	0

- Molecule 20 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
20	R	92	725	471	131	123	0	0	0

- Molecule 21 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
21	S	103	793	510	151	126	6	0	0	0

- Molecule 22 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
22	T	185	1475	941	262	269	3	0	0	0

- Molecule 23 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
23	U	76	605	376	126	102	1	0	0	0

- Molecule 24 is a protein called LSU ribosomal protein L28P.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
24	V	88	694	435	141	118	0	0	0

- Molecule 25 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
25	W	62	520	325	102	91	2	0	0	0

- Molecule 26 is a protein called LSU ribosomal protein L30P.

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

- Molecule 27 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
27	Y	56	436	275	84	72	5	0	0	0

- Molecule 28 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
28	Z	48	418	257	104	55	2	0	0	0

- Molecule 29 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
29	a	63	507	326	101	78	2	0	0	0

- Molecule 30 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
30	b	35	294	181	66	44	3	0	0	0

- Molecule 31 is a RNA chain called 16S RNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
31	y	1514	32546	14494	6022	10517	1513	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
y	466	G	C	conflict	GB 155076

- Molecule 32 is a RNA chain called P-site tRNA^fMET.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
32	z	77	1639	732	297	534	76	0	0	0

- Molecule 33 is a RNA chain called E-site tRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
33	2	76	Total	C	N	O	P	0	0	0
			1621	725	293	528	75			

- Molecule 34 is a RNA chain called MRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
34	3	18	Total	C	N	O	P	0	0	0
			390	176	80	117	17			

- Molecule 35 is a protein called 30S ribosomal protein S2.

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

- Molecule 36 is a protein called 30S ribosomal protein S3.

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

- Molecule 37 is a protein called 30S ribosomal protein S4.

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

- Molecule 38 is a protein called 30S ribosomal protein S5.

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

- Molecule 39 is a protein called 30S ribosomal protein S6.

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

- Molecule 40 is a protein called 30S ribosomal protein S7.

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

- Molecule 41 is a protein called 30S ribosomal protein S8.

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

- Molecule 42 is a protein called 30S ribosomal protein S9.

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

- Molecule 43 is a protein called 30S ribosomal protein S10.

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

- Molecule 44 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
44	l	116	864	537	164	160	3	0	0	0

- Molecule 45 is a protein called 30S ribosomal protein S12.

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

- Molecule 46 is a protein called 30S ribosomal protein S13.

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

- Molecule 47 is a protein called 30S ribosomal protein S14 type Z.

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

- Molecule 48 is a protein called 30S ribosomal protein S15.

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

- Molecule 49 is a protein called 30S ribosomal protein S16.

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

- Molecule 50 is a protein called 30S ribosomal protein S17.

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

- Molecule 51 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
51	s	81	668	423	135	110	0	0	0

- Molecule 52 is a protein called 30S ribosomal protein S19.

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

- Molecule 53 is a protein called 30S ribosomal protein S20.

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

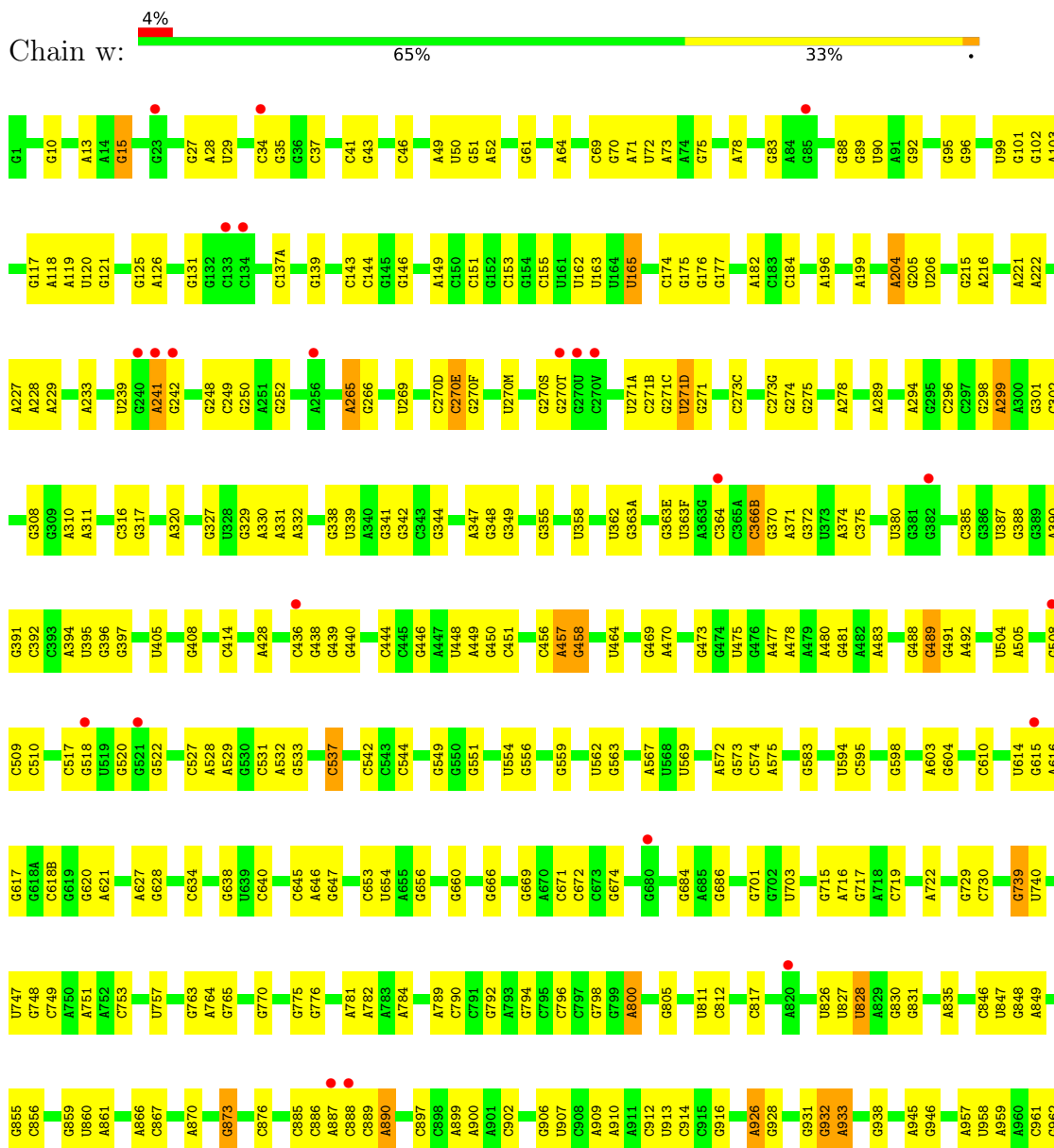
- Molecule 54 is a protein called 30S ribosomal protein Thx.

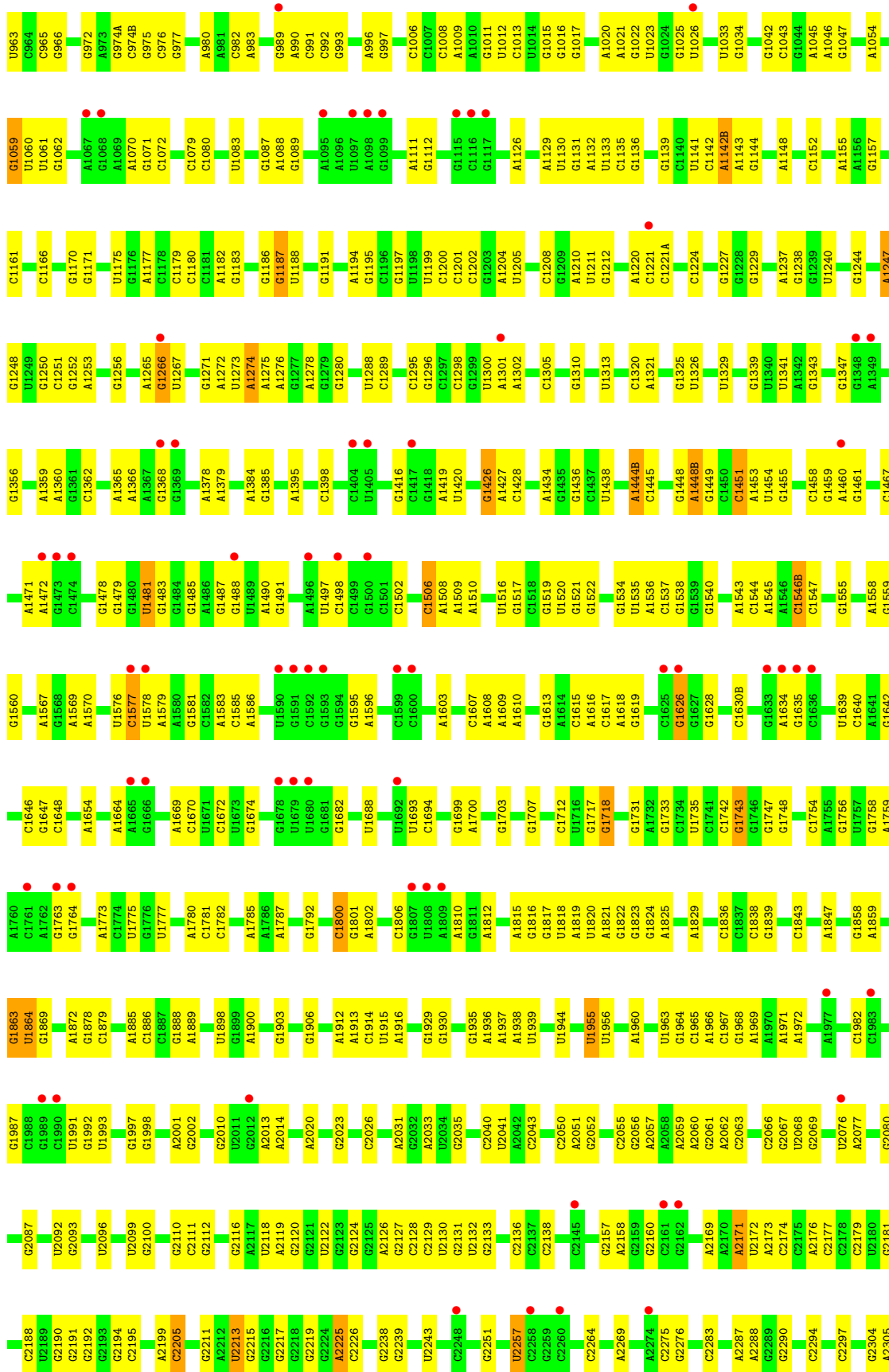
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
54	v	24	208	128	50	30	0	0	0

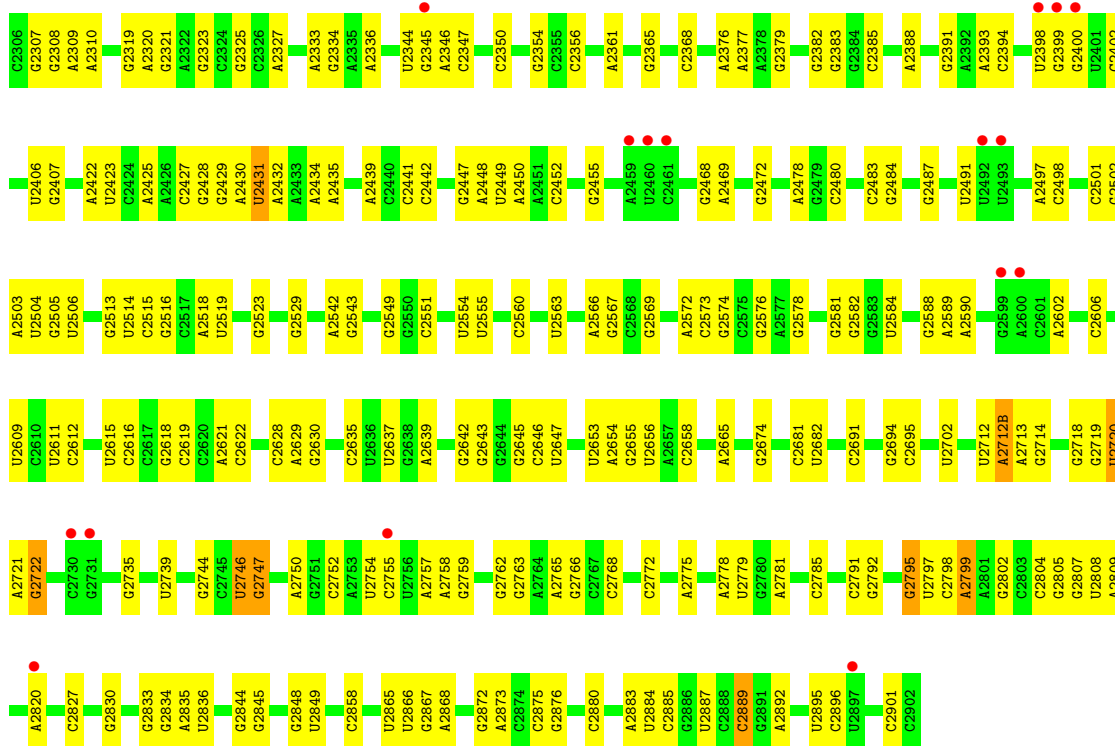
3 Residue-property plots [i](#)

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

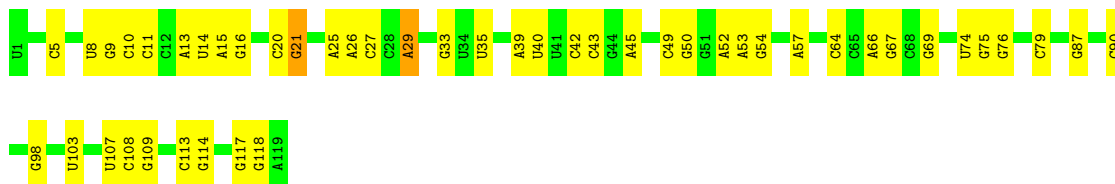
- Molecule 1: 23S LARGE SUBUNIT RIBOSOMAL RNA



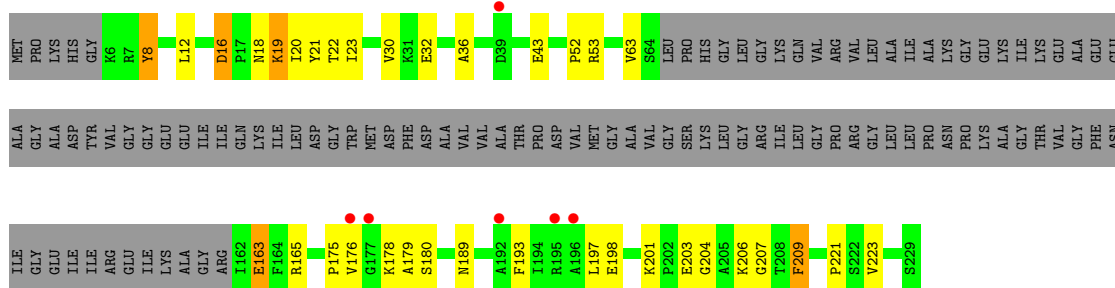
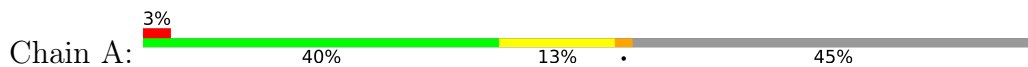




• Molecule 2: 5S LARGE SUBUNIT RIBOSOMAL RNA

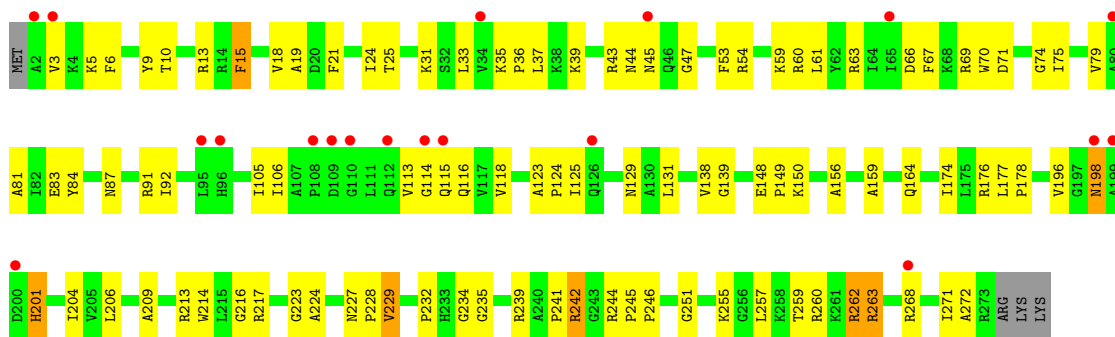


• Molecule 3: 50S ribosomal protein L1

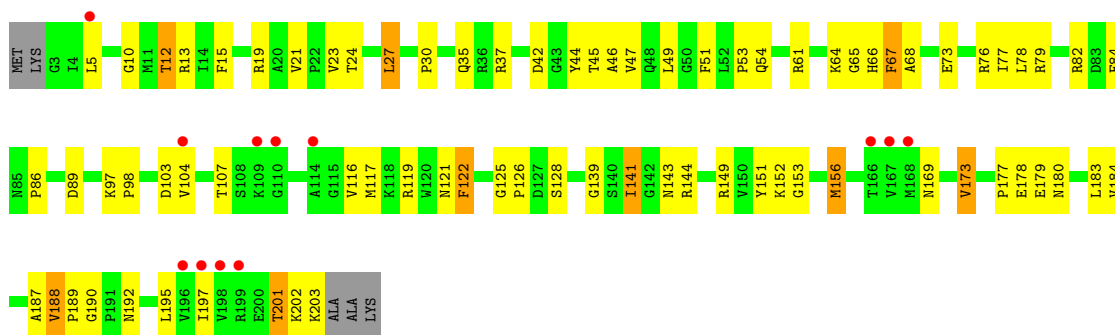


• Molecule 4: 50S ribosomal protein L2

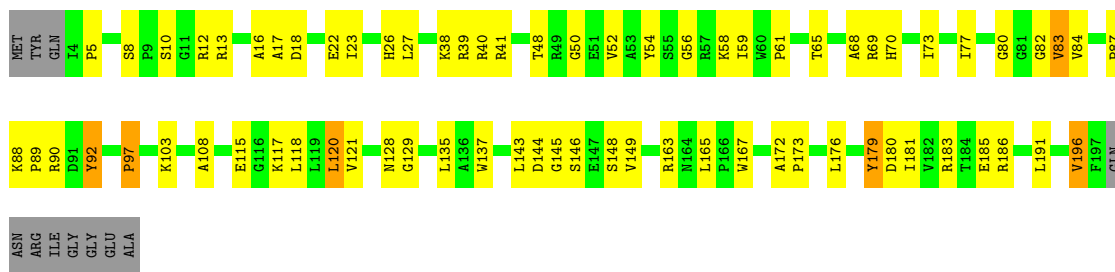




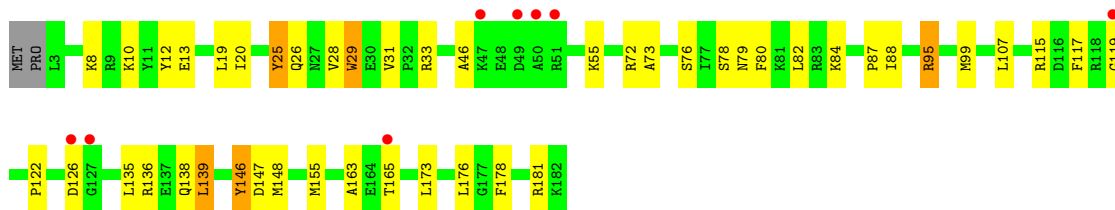
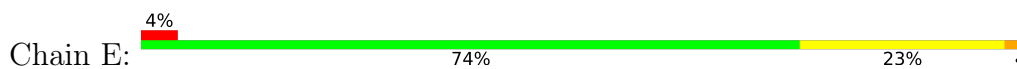
• Molecule 5: 50S ribosomal protein L3



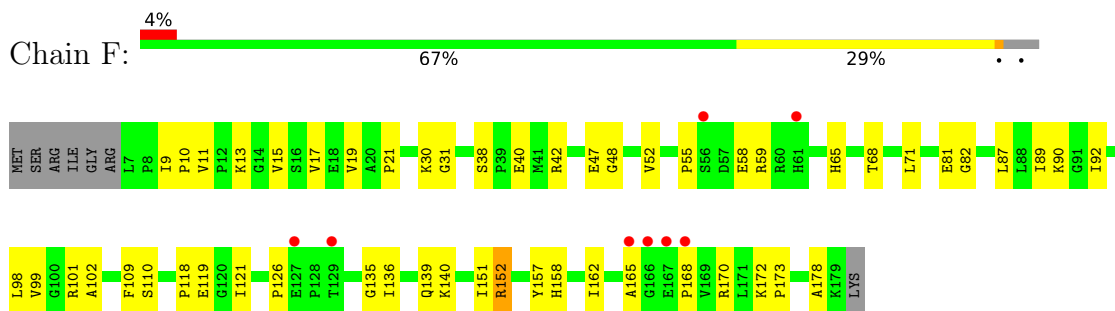
• Molecule 6: 50S ribosomal protein L4



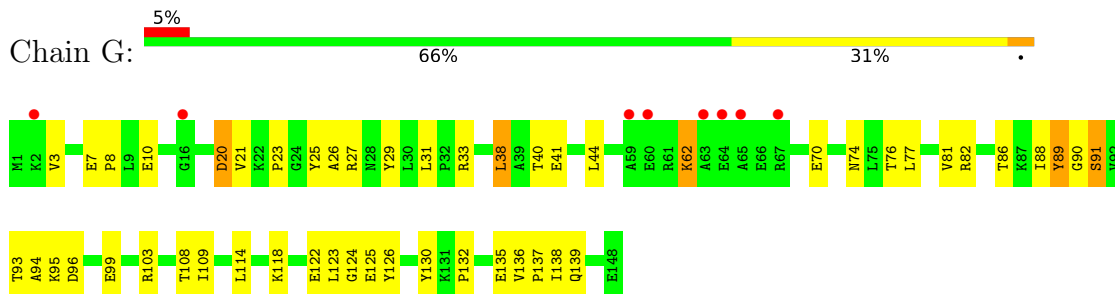
• Molecule 7: 50S ribosomal protein L5



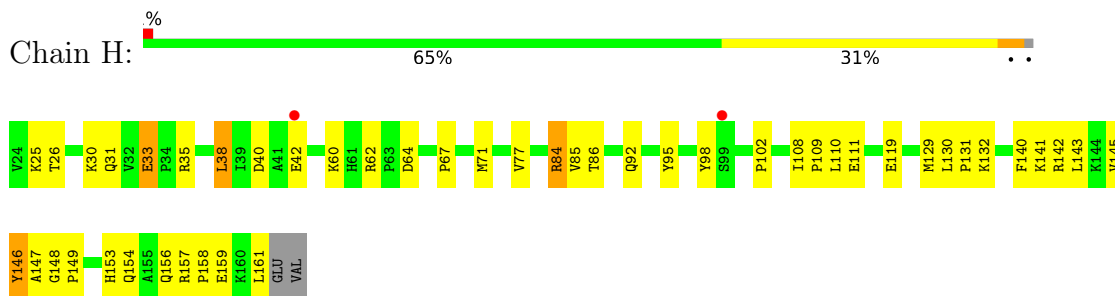
• Molecule 8: 50S ribosomal protein L6



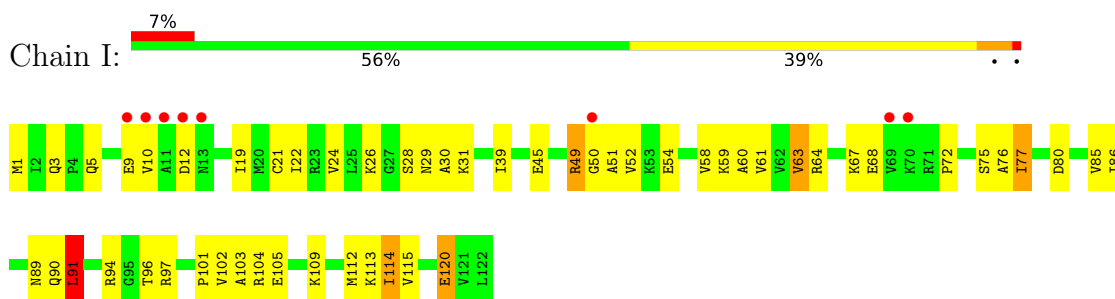
- Molecule 9: 50S ribosomal protein L9



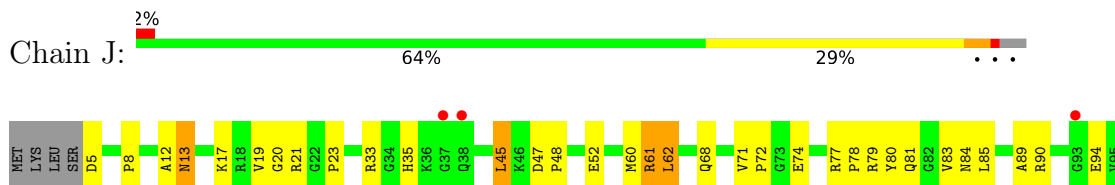
- Molecule 10: 50S ribosomal protein L13

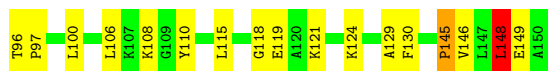


- Molecule 11: 50S ribosomal protein L14

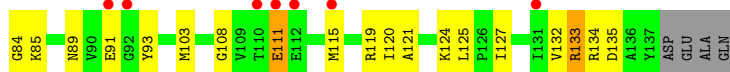
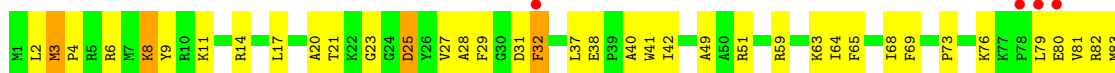


- Molecule 12: 50S ribosomal protein L15

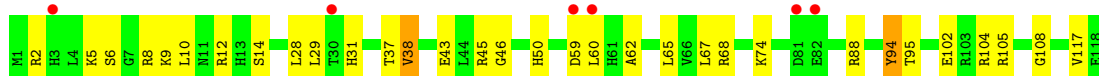




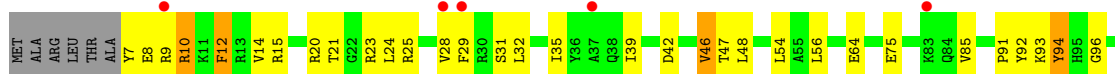
- Molecule 13: 50S ribosomal protein L16



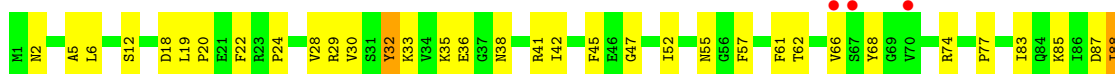
- Molecule 14: 50S ribosomal protein L17



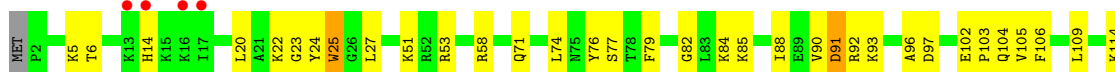
- Molecule 15: 50S ribosomal protein L18



- Molecule 16: 50S ribosomal protein L19



- Molecule 17: 50S ribosomal protein L20



A115
A116
Q117
G118

• Molecule 18: 50S ribosomal protein L21

Chain P: 15% 55% 40% 5%

M1 F2 R13 R14 R15 R16 R17 R18 R19 L20 L21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 A31 L35 P36 L39 L40 L44 T45 T46 V47 P50 P51 V52 E53 S56 S57 V58 A59 E60 E61 L62 G65 K68 V72 S73 K74 F75 F76 A77 K78 V79 Q80

Y81 R82 R83 R84 R85 R86 R87 R88 R89 R90 R91 Y91 T92 L95 L96 R97 R98 E99 I99 R100 G101

• Molecule 19: 50S ribosomal protein L22

Chain Q: 15% 69% 24% . .

MET E2 A3 I6 A7 R8 S13 P14 V20 V21 D22 L23 E31 E35 M40 K41 R42 R43 G44 A45 Y46 K49 V50 L51 D63 D67 R68 L69 Y70 A73 A74 Y75 V76 P80 A81 L82 L83 K84 R84 V85 L86 P87 R88 R89 R90 G91 R92 A93 D94 I95

I96 K97 K98 S101 K110 HIS GLY LYS

• Molecule 20: 50S ribosomal protein L23

Chain R: % 61% 30% . .

MET LYS T3 D6 V7 P11 Y12 L13 Y18 A22 K25 Y26 T27 V30 H31 K33 K33 A34 E38 K48 V49 T56 V59 R60 G61 K62 R65 Y69 K72 K76 K77 A79 I80 V81 Q82 V83 K88 L89 E90 E93 G94 ILE

• Molecule 21: 50S ribosomal protein L24

Chain S: 20% 47% 43% . 6%

M1 R2 V3 K4 M5 H6 V7 K8 K9 G10 G11 D11 T12 V15 A16 S17 G18 K19 Y20 K21 G22 P23 V24 K25 K26 V27 K28 E29 V30 L31 P32 K33 K34 Y35 A36 V37 I38 V39 E40 I44 V45 K46 R50 V51 S52 P53 K54 K54 Y55 P56 Q57 F60 I61 E64 A65 P66 L67

H68 K71 V72 W73 R74 W75 G76 F77 F77 A78 C79 G80 R86 R87 R88 R89 L90 E91 R92 G93 G93 R94 K95 I96 E97 A100 K101 C102 G103 GLY ALA LEU THR GLU GLU

• Molecule 22: 50S ribosomal protein L25

Chain T: 2% 68% 19% . 10%

M1 E2 Y8 Y9 G12 S16 R19 R20 R31 V39 D40 L41 V42 E43 F44 F48 R49 Q50 A51 S52 I53 D63 S66 K78 R79 R80 P83 F88 F89 V90 P95 F104 E119 I120 H121 H121 D122 I123 I124 L144 E145 I146 L150 H151



- Molecule 23: 50S ribosomal protein L27



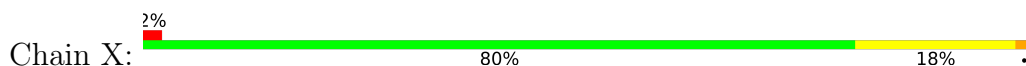
- Molecule 24: LSU ribosomal protein L28P



- Molecule 25: 50S ribosomal protein L29



- Molecule 26: LSU ribosomal protein L30P



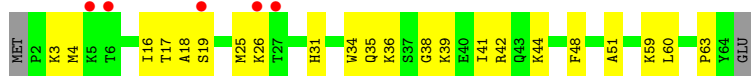
- Molecule 27: 50S ribosomal protein L32



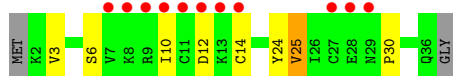
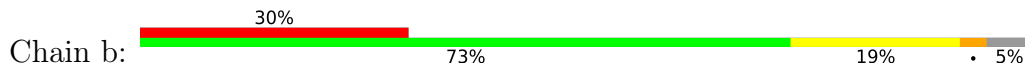
- Molecule 28: 50S ribosomal protein L34



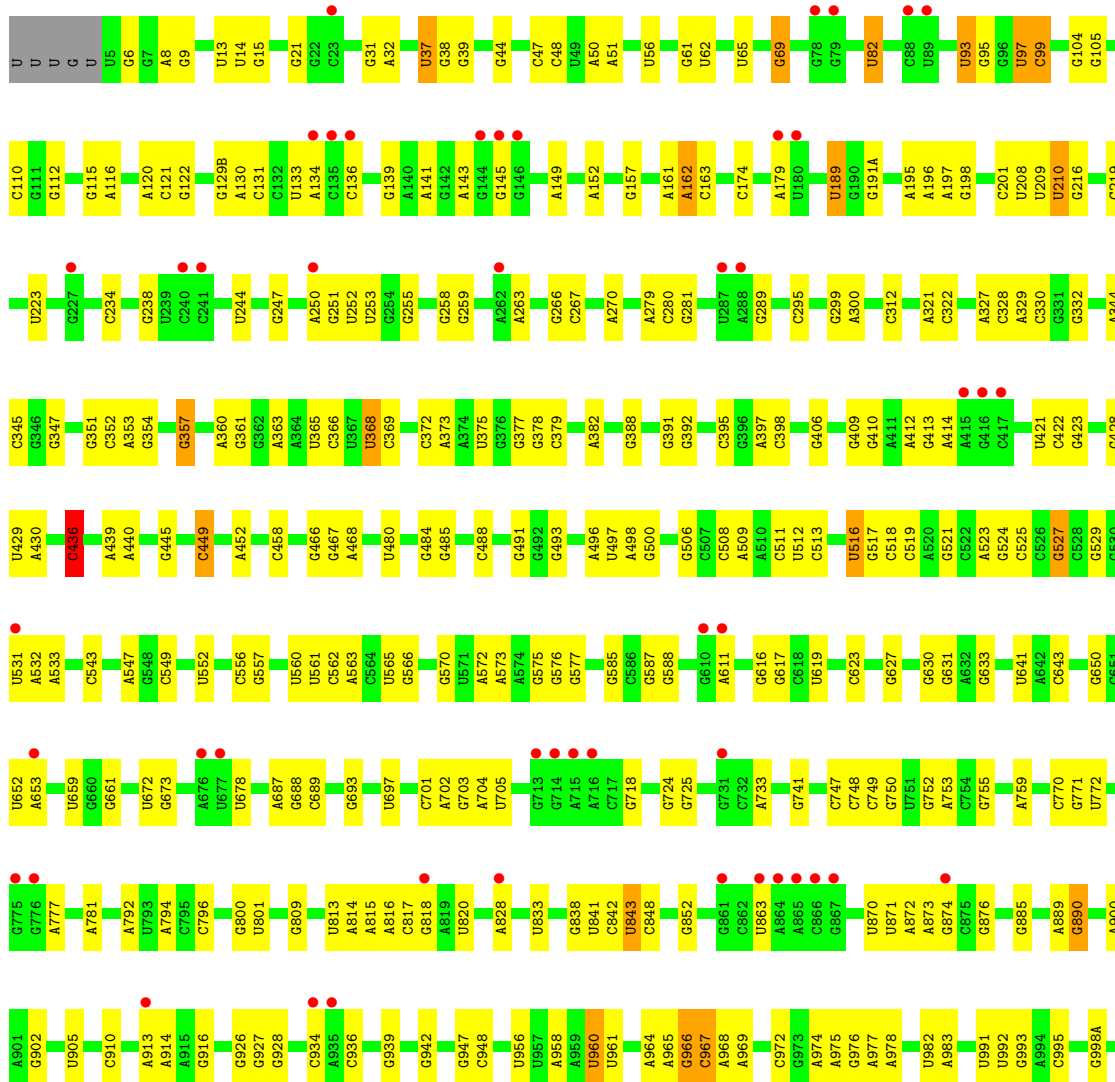
- Molecule 29: 50S ribosomal protein L35

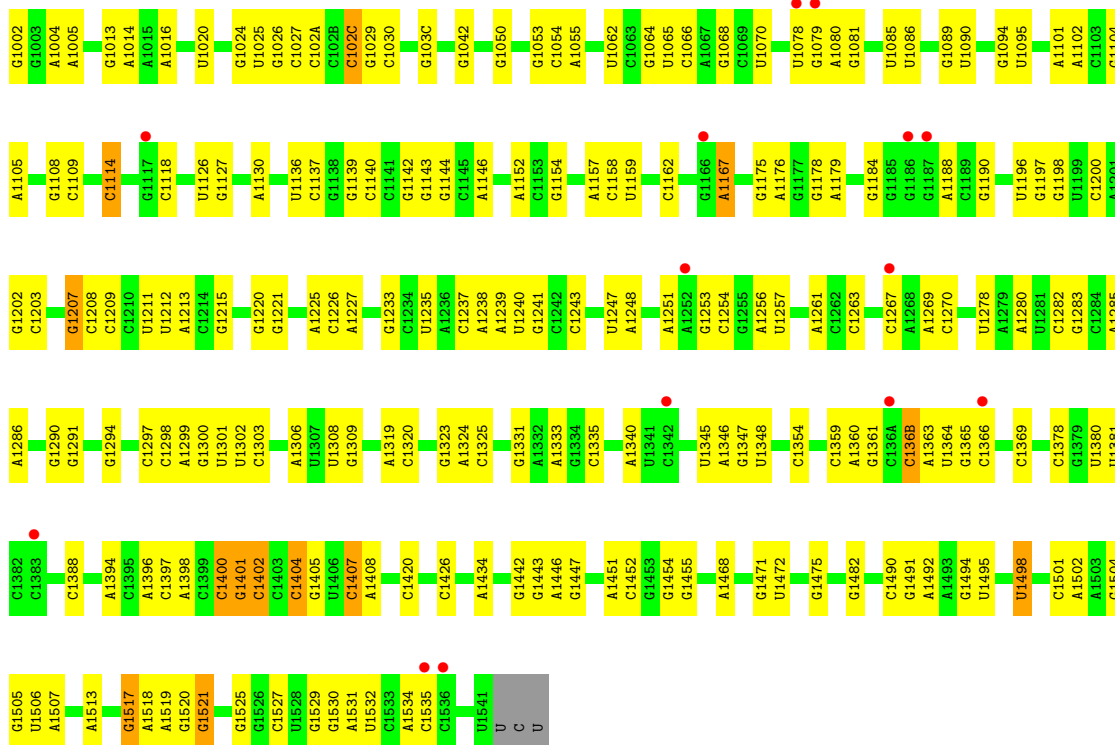


• Molecule 30: 50S ribosomal protein L36

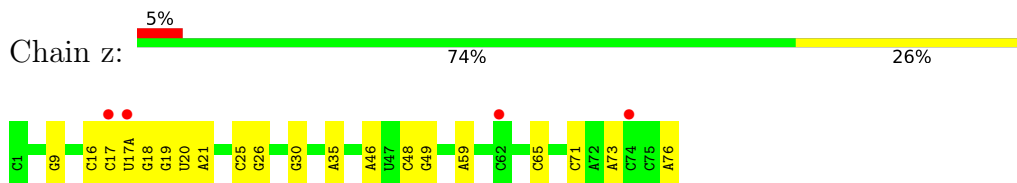


• Molecule 31: 16S RNA

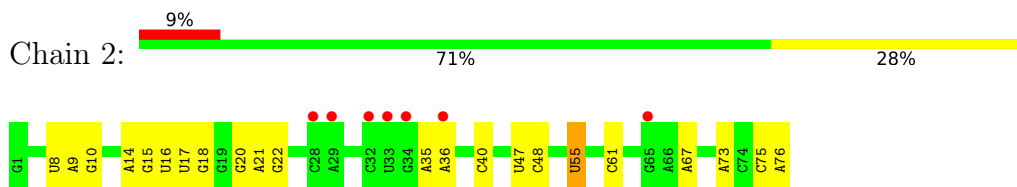




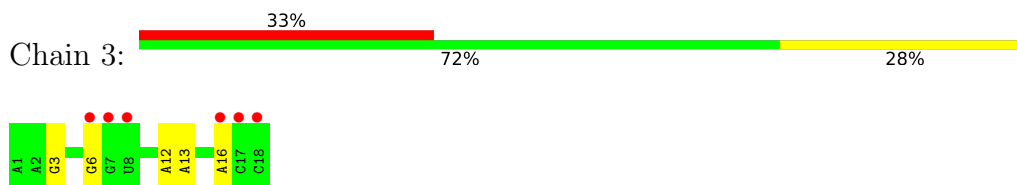
• Molecule 32: P-site tRNA^{fMET}



• Molecule 33: E-site tRNA

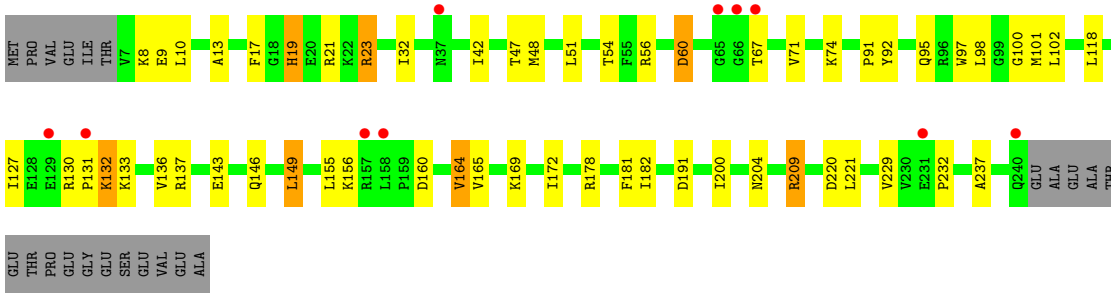


• Molecule 34: MRNA

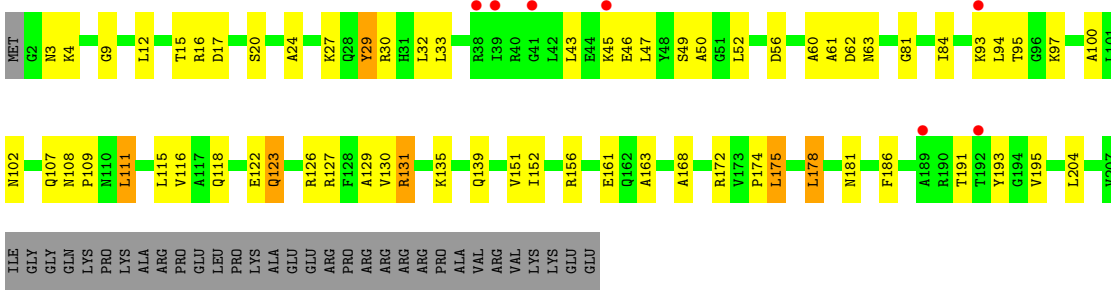


• Molecule 35: 30S ribosomal protein S2

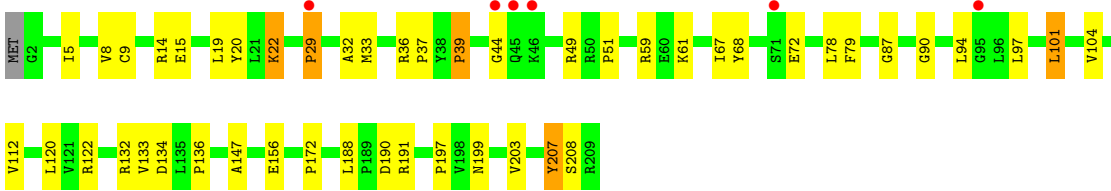
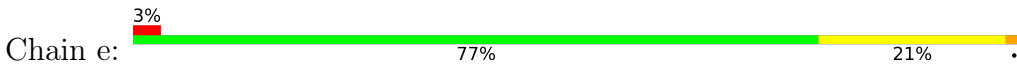




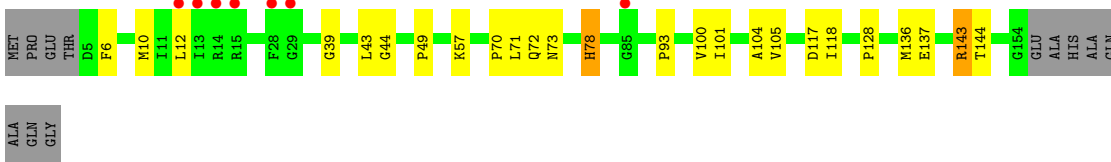
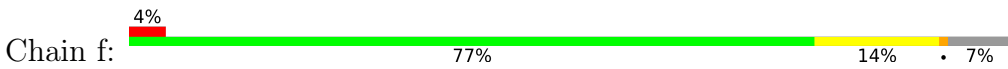
• Molecule 36: 30S ribosomal protein S3



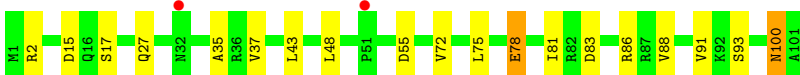
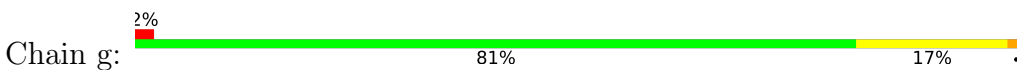
• Molecule 37: 30S ribosomal protein S4



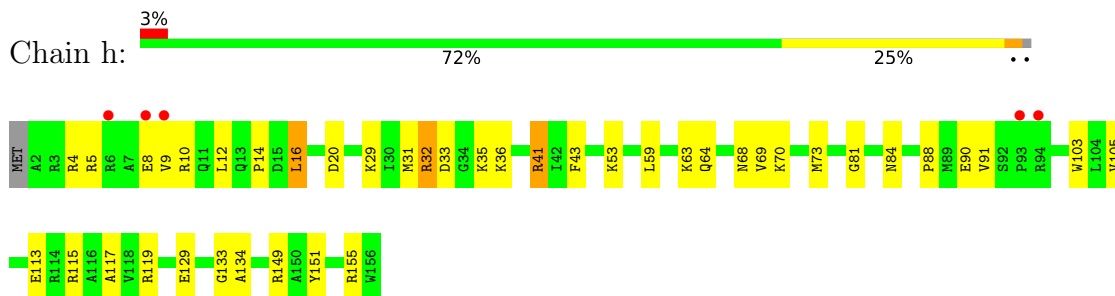
• Molecule 38: 30S ribosomal protein S5



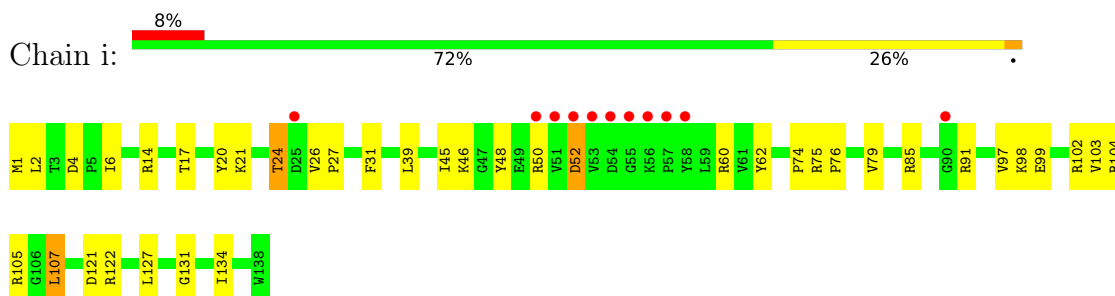
• Molecule 39: 30S ribosomal protein S6



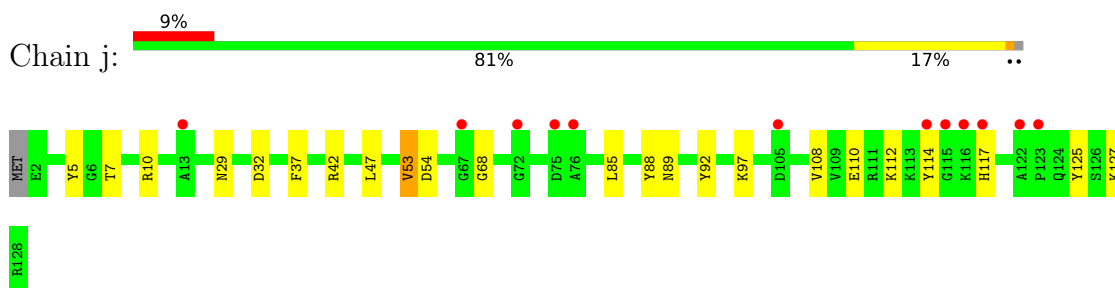
- Molecule 40: 30S ribosomal protein S7



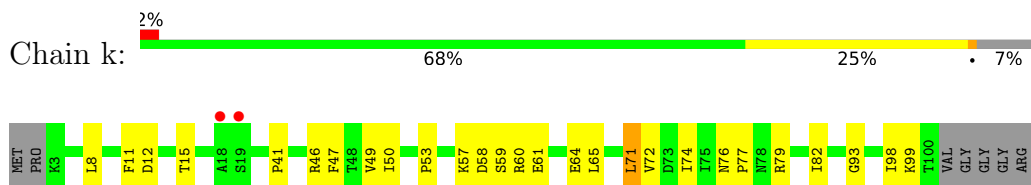
- Molecule 41: 30S ribosomal protein S8



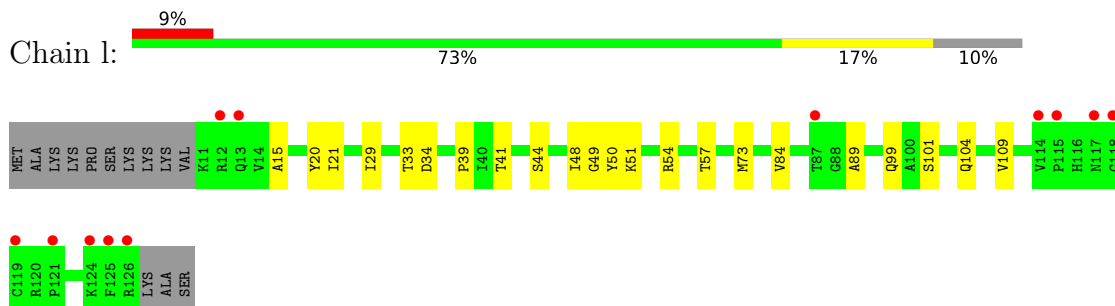
- Molecule 42: 30S ribosomal protein S9



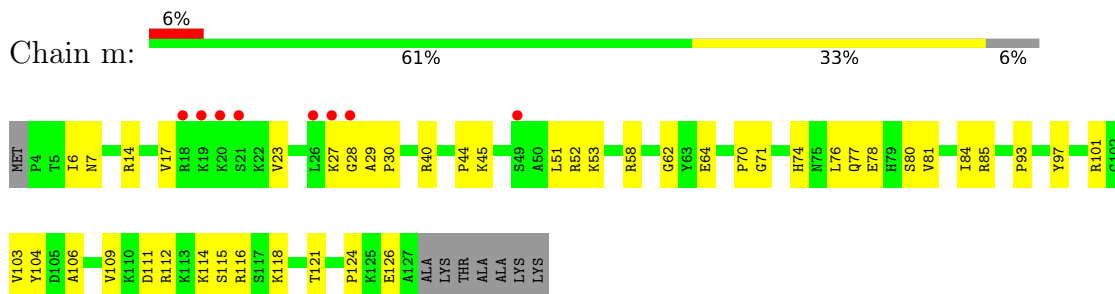
- Molecule 43: 30S ribosomal protein S10



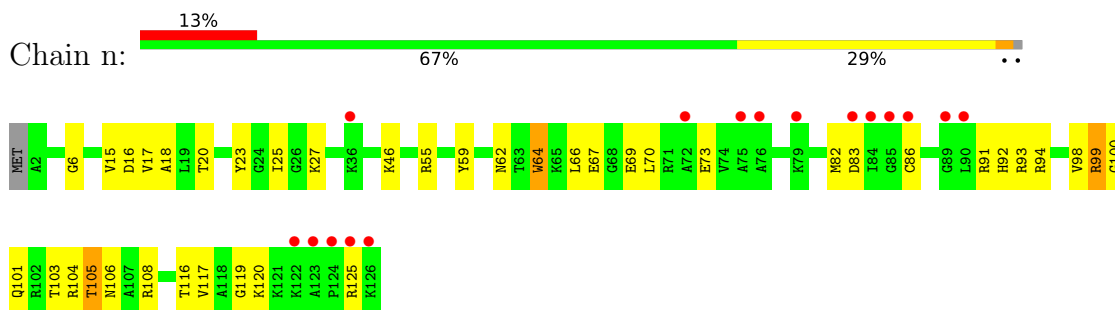
- Molecule 44: 30S ribosomal protein S11



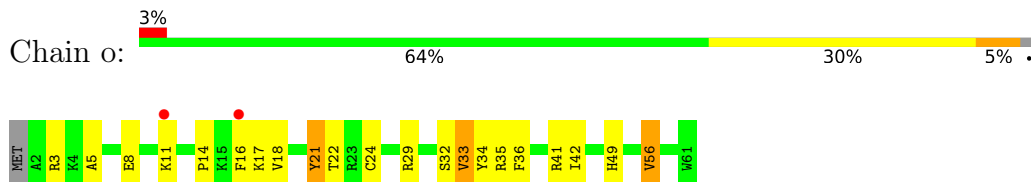
- Molecule 45: 30S ribosomal protein S12



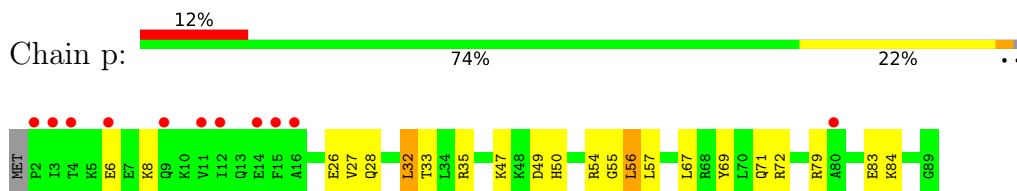
- Molecule 46: 30S ribosomal protein S13



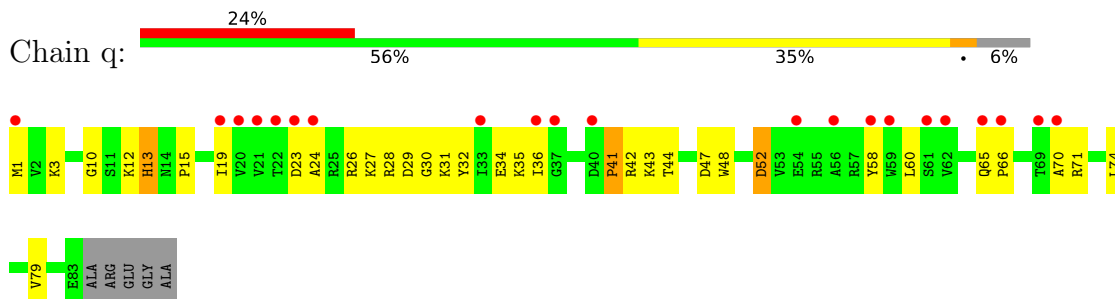
- Molecule 47: 30S ribosomal protein S14 type Z



- Molecule 48: 30S ribosomal protein S15

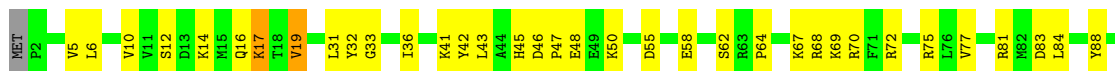


- Molecule 49: 30S ribosomal protein S16



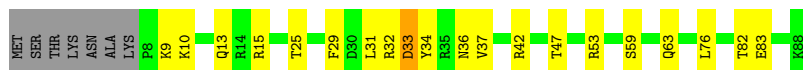
- Molecule 50: 30S ribosomal protein S17





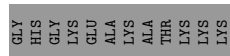
- Molecule 51: 30S ribosomal protein S18

Chain s: 69% 22% 8%



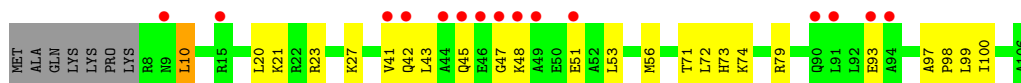
- Molecule 52: 30S ribosomal protein S19

Chain t: 6% 46% 34% 5% 14%



- Molecule 53: 30S ribosomal protein S20

Chain u: 14% 71% 22% 7%



- Molecule 54: 30S ribosomal protein Thx

Chain v: 48% 41% 11%



4 Data and refinement statistics i

Property	Value	Source
Space group	I 4 2 2	Depositor
Cell constants a, b, c, α , β , γ	507.21Å 507.21Å 692.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 3.83 78.70 – 3.70	Depositor EDS
% Data completeness (in resolution range)	81.7 (30.00-3.83) 68.4 (78.70-3.70)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.43 (at 3.67Å)	Xtrriage
Refinement program	REFMAC 5.2.0019, CNS	Depositor
R, R_{free}	0.327 , 0.351 0.340 , 0.360	Depositor DCC
R_{free} test set	10300 reflections (2.90%)	wwPDB-VP
Wilson B-factor (Å ²)	26.5	Xtrriage
Anisotropy	0.111	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.07 , -110.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.22$, $\langle L^2 \rangle = 0.07$	Xtrriage
Estimated twinning fraction	0.267 for $-1/2^*h+1/2^*k-1/2^*l, 1/2^*h-1/2^*k-1/2^*l, -h-k$ 0.260 for $-1/2^*h-1/2^*k+1/2^*l, -1/2^*h-1/2^*k-1/2^*l, h-k$	Xtrriage
F_o, F_c correlation	0.69	EDS
Total number of atoms	147125	wwPDB-VP
Average B, all atoms (Å ²)	1.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.08% 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: 7MG, 5MC, PSU, 2MG, MA6, M2G

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	w	1.00	42/69679 (0.1%)	1.03	92/108779 (0.1%)
2	x	0.65	1/2878 (0.0%)	0.90	1/4490 (0.0%)
3	A	0.53	0/1015	0.63	0/1369
4	B	0.53	0/2165	0.70	0/2919
5	C	0.56	0/1574	0.69	0/2125
6	D	0.58	0/1551	0.69	0/2101
7	E	0.58	0/1492	0.72	1/2006 (0.0%)
8	F	0.56	0/1345	0.70	0/1819
9	G	0.51	0/1171	0.70	0/1583
10	H	0.54	0/1130	0.71	1/1525 (0.1%)
11	I	0.57	0/942	0.74	1/1268 (0.1%)
12	J	0.57	0/1131	0.76	1/1504 (0.1%)
13	K	0.58	0/1110	0.74	1/1483 (0.1%)
14	L	0.49	0/982	0.69	0/1312
15	M	0.51	0/856	0.63	0/1138
16	N	0.56	0/1157	0.72	0/1544
17	O	0.53	0/982	0.64	0/1306
18	P	0.58	0/790	0.69	0/1057
19	Q	0.51	0/878	0.74	1/1179 (0.1%)
20	R	0.60	0/739	0.75	0/993
21	S	0.61	0/806	0.70	0/1074
22	T	0.54	0/1507	0.66	0/2045
23	U	0.56	0/613	0.75	0/816
24	V	0.64	0/701	0.71	0/932
25	W	0.53	0/522	0.75	0/690
26	X	0.51	0/482	0.66	0/646
27	Y	0.53	0/449	0.69	0/606
28	Z	0.52	0/426	0.65	0/561
29	a	0.56	0/515	0.70	0/679
30	b	0.60	0/297	0.63	0/392
31	y	0.72	23/36178 (0.1%)	0.93	44/56463 (0.1%)
32	z	0.62	0/1831	0.88	0/2853

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	2	0.65	0/1791	0.85	0/2791
34	3	0.63	0/439	0.90	0/684
35	c	0.56	0/1935	0.67	0/2609
36	d	0.51	0/1636	0.68	0/2205
37	e	0.55	0/1733	0.68	1/2318 (0.0%)
38	f	0.60	0/1162	0.68	0/1564
39	g	0.55	0/856	0.70	0/1154
40	h	0.54	0/1276	0.63	0/1709
41	i	0.51	0/1136	0.68	0/1527
42	j	0.58	0/1029	0.66	0/1378
43	k	0.59	0/807	0.66	0/1085
44	l	0.58	0/879	0.64	0/1187
45	m	0.55	0/986	0.75	0/1320
46	n	0.54	0/1008	0.68	0/1347
47	o	0.52	0/501	0.67	0/664
48	p	0.50	0/745	0.64	0/992
49	q	0.57	0/716	0.70	0/963
50	r	0.55	0/870	0.71	0/1159
51	s	0.60	0/675	0.67	0/894
52	t	0.59	0/661	0.68	1/890 (0.1%)
53	u	0.46	0/764	0.65	0/1006
54	v	0.58	0/212	0.60	0/277
All	All	0.81	66/159711 (0.0%)	0.92	145/238980 (0.1%)

The worst 5 of 66 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	w	41	C	O3'-P	43.37	2.13	1.61
1	w	1506	C	O3'-P	40.09	2.09	1.61
1	w	489	G	O3'-P	39.72	2.08	1.61
1	w	1448(B)	A	O3'-P	38.61	2.07	1.61
1	w	436	C	O3'-P	36.62	2.05	1.61

The worst 5 of 145 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	w	2712(B)	A	P-O3'-C3'	-23.05	92.04	119.70
1	w	489	G	P-O3'-C3'	-18.72	97.23	119.70
31	y	97	U	P-O3'-C3'	-16.92	99.40	119.70
1	w	41	C	P-O3'-C3'	-15.29	101.35	119.70
1	w	1712	C	P-O3'-C3'	-15.07	101.61	119.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	
3	A	123/229 (54%)	72 (58%)	31 (25%)	20 (16%)	0	3
4	B	270/276 (98%)	134 (50%)	64 (24%)	72 (27%)	0	0
5	C	199/206 (97%)	99 (50%)	47 (24%)	53 (27%)	0	0
6	D	192/205 (94%)	91 (47%)	45 (23%)	56 (29%)	0	0
7	E	178/182 (98%)	97 (54%)	55 (31%)	26 (15%)	0	4
8	F	171/180 (95%)	90 (53%)	40 (23%)	41 (24%)	0	1
9	G	146/148 (99%)	83 (57%)	35 (24%)	28 (19%)	0	2
10	H	136/140 (97%)	62 (46%)	45 (33%)	29 (21%)	0	1
11	I	120/122 (98%)	62 (52%)	24 (20%)	34 (28%)	0	0
12	J	144/150 (96%)	63 (44%)	46 (32%)	35 (24%)	0	1
13	K	135/141 (96%)	56 (42%)	41 (30%)	38 (28%)	0	0
14	L	116/118 (98%)	64 (55%)	30 (26%)	22 (19%)	0	2
15	M	104/112 (93%)	58 (56%)	22 (21%)	24 (23%)	0	1
16	N	135/146 (92%)	56 (42%)	40 (30%)	39 (29%)	0	0
17	O	115/118 (98%)	66 (57%)	28 (24%)	21 (18%)	0	2
18	P	99/101 (98%)	39 (39%)	28 (28%)	32 (32%)	0	0
19	Q	107/113 (95%)	64 (60%)	23 (22%)	20 (19%)	0	2
20	R	90/96 (94%)	29 (32%)	36 (40%)	25 (28%)	0	0

Continued on next page...

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
21	S	101/110 (92%)	28 (28%)	31 (31%)	42 (42%)	0	0
22	T	183/206 (89%)	115 (63%)	45 (25%)	23 (13%)	0	5
23	U	74/85 (87%)	31 (42%)	21 (28%)	22 (30%)	0	0
24	V	86/98 (88%)	41 (48%)	29 (34%)	16 (19%)	0	2
25	W	60/72 (83%)	33 (55%)	11 (18%)	16 (27%)	0	0
26	X	58/60 (97%)	31 (53%)	20 (34%)	7 (12%)	0	6
27	Y	54/60 (90%)	27 (50%)	16 (30%)	11 (20%)	0	2
28	Z	46/49 (94%)	31 (67%)	10 (22%)	5 (11%)	0	8
29	a	61/65 (94%)	28 (46%)	20 (33%)	13 (21%)	0	1
30	b	33/37 (89%)	16 (48%)	10 (30%)	7 (21%)	0	2
35	c	232/256 (91%)	142 (61%)	59 (25%)	31 (13%)	0	4
36	d	204/239 (85%)	102 (50%)	60 (29%)	42 (21%)	0	2
37	e	206/209 (99%)	120 (58%)	60 (29%)	26 (13%)	0	5
38	f	148/162 (91%)	102 (69%)	32 (22%)	14 (10%)	0	11
39	g	99/101 (98%)	72 (73%)	19 (19%)	8 (8%)	1	14
40	h	153/156 (98%)	96 (63%)	30 (20%)	27 (18%)	0	3
41	i	136/138 (99%)	84 (62%)	33 (24%)	19 (14%)	0	4
42	j	125/128 (98%)	81 (65%)	29 (23%)	15 (12%)	0	6
43	k	96/105 (91%)	55 (57%)	25 (26%)	16 (17%)	0	3
44	l	114/129 (88%)	74 (65%)	28 (25%)	12 (10%)	0	9
45	m	122/132 (92%)	67 (55%)	35 (29%)	20 (16%)	0	3
46	n	123/126 (98%)	70 (57%)	35 (28%)	18 (15%)	0	4
47	o	58/61 (95%)	30 (52%)	16 (28%)	12 (21%)	0	2
48	p	86/89 (97%)	51 (59%)	24 (28%)	11 (13%)	0	5
49	q	81/88 (92%)	34 (42%)	25 (31%)	22 (27%)	0	0
50	r	102/105 (97%)	54 (53%)	24 (24%)	24 (24%)	0	1
51	s	79/88 (90%)	45 (57%)	21 (27%)	13 (16%)	0	3
52	t	78/93 (84%)	30 (38%)	26 (33%)	22 (28%)	0	0
53	u	97/106 (92%)	47 (48%)	35 (36%)	15 (16%)	0	4
54	v	22/27 (82%)	8 (36%)	6 (27%)	8 (36%)	0	0
All	All	5697/6163 (92%)	3030 (53%)	1515 (27%)	1152 (20%)	0	2

5 of 1152 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	8	TYR
3	A	16	ASP
3	A	63	VAL
3	A	176	VAL
3	A	179	ALA

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	A	106/181 (59%)	86 (81%)	20 (19%)	1 10
4	B	214/218 (98%)	179 (84%)	35 (16%)	2 15
5	C	163/166 (98%)	130 (80%)	33 (20%)	1 9
6	D	154/162 (95%)	133 (86%)	21 (14%)	3 21
7	E	154/156 (99%)	130 (84%)	24 (16%)	2 17
8	F	142/148 (96%)	129 (91%)	13 (9%)	9 35
9	G	124/124 (100%)	100 (81%)	24 (19%)	1 9
10	H	117/119 (98%)	96 (82%)	21 (18%)	2 12
11	I	100/100 (100%)	74 (74%)	26 (26%)	0 4
12	J	112/116 (97%)	91 (81%)	21 (19%)	1 10
13	K	108/111 (97%)	84 (78%)	24 (22%)	1 7
14	L	101/101 (100%)	89 (88%)	12 (12%)	5 25
15	M	84/88 (96%)	71 (84%)	13 (16%)	2 17
16	N	121/128 (94%)	101 (84%)	20 (16%)	2 15
17	O	93/94 (99%)	77 (83%)	16 (17%)	2 13
18	P	82/82 (100%)	64 (78%)	18 (22%)	1 7
19	Q	89/92 (97%)	75 (84%)	14 (16%)	2 17
20	R	74/78 (95%)	62 (84%)	12 (16%)	2 15
21	S	86/91 (94%)	73 (85%)	13 (15%)	3 18

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	T	163/179 (91%)	136 (83%)	27 (17%)	2	14
23	U	61/67 (91%)	54 (88%)	7 (12%)	5	27
24	V	73/83 (88%)	61 (84%)	12 (16%)	2	15
25	W	58/67 (87%)	47 (81%)	11 (19%)	1	10
26	X	52/52 (100%)	46 (88%)	6 (12%)	5	27
27	Y	49/52 (94%)	40 (82%)	9 (18%)	1	11
28	Z	41/42 (98%)	34 (83%)	7 (17%)	2	14
29	a	53/55 (96%)	44 (83%)	9 (17%)	2	14
30	b	33/34 (97%)	31 (94%)	2 (6%)	18	50
35	c	202/220 (92%)	169 (84%)	33 (16%)	2	15
36	d	160/188 (85%)	130 (81%)	30 (19%)	1	10
37	e	180/181 (99%)	154 (86%)	26 (14%)	3	19
38	f	115/123 (94%)	102 (89%)	13 (11%)	6	27
39	g	90/90 (100%)	77 (86%)	13 (14%)	3	19
40	h	126/127 (99%)	108 (86%)	18 (14%)	3	20
41	i	119/119 (100%)	96 (81%)	23 (19%)	1	10
42	j	98/99 (99%)	89 (91%)	9 (9%)	9	35
43	k	88/92 (96%)	76 (86%)	12 (14%)	3	21
44	l	88/99 (89%)	78 (89%)	10 (11%)	5	27
45	m	104/109 (95%)	80 (77%)	24 (23%)	1	6
46	n	100/101 (99%)	75 (75%)	25 (25%)	0	4
47	o	49/50 (98%)	37 (76%)	12 (24%)	0	5
48	p	79/80 (99%)	66 (84%)	13 (16%)	2	15
49	q	72/74 (97%)	57 (79%)	15 (21%)	1	8
50	r	96/97 (99%)	79 (82%)	17 (18%)	2	12
51	s	71/77 (92%)	63 (89%)	8 (11%)	6	27
52	t	71/80 (89%)	52 (73%)	19 (27%)	0	3
53	u	76/82 (93%)	66 (87%)	10 (13%)	4	22
54	v	19/22 (86%)	16 (84%)	3 (16%)	2	16
All	All	4810/5096 (94%)	4007 (83%)	803 (17%)	2	14

5 of 803 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
29	a	34	TRP
39	g	15	ASP
53	u	79	ARG
35	c	47	THR
29	a	25	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 134 such sidechains are listed below:

Mol	Chain	Res	Type
43	k	76	ASN
45	m	77	GLN
51	s	63	GLN
15	M	38	GLN
14	L	71	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	w	2888/2889 (99%)	983 (34%)	0
2	x	119/120 (99%)	47 (39%)	0
31	y	1511/1522 (99%)	507 (33%)	0
32	z	76/77 (98%)	20 (26%)	0
33	2	75/76 (98%)	22 (29%)	0
34	3	17/18 (94%)	5 (29%)	0
All	All	4686/4702 (99%)	1584 (33%)	0

5 of 1584 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	w	10	G
1	w	13	A
1	w	15	G
1	w	27	G
1	w	28	A

There are no RNA pucker outliers to report.

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

11 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
31	MA6	y	1519	31	19,26,27	2.21	4 (21%)	18,38,41	1.89	5 (27%)
31	M2G	y	966	31	20,27,28	1.63	4 (20%)	22,40,43	1.32	2 (9%)
31	5MC	y	1400	31	18,22,23	0.95	1 (5%)	26,32,35	0.98	1 (3%)
31	7MG	y	527	31	22,26,27	3.33	3 (13%)	29,39,42	1.69	6 (20%)
31	5MC	y	1404	31	18,22,23	1.04	1 (5%)	26,32,35	1.48	4 (15%)
33	PSU	2	55	33	18,21,22	1.81	3 (16%)	22,30,33	2.02	6 (27%)
31	MA6	y	1518	31	19,26,27	1.79	2 (10%)	18,38,41	2.21	6 (33%)
31	5MC	y	1407	31	18,22,23	0.87	1 (5%)	26,32,35	1.29	3 (11%)
31	5MC	y	967	31	18,22,23	0.74	1 (5%)	26,32,35	1.28	3 (11%)
31	PSU	y	516	31	18,21,22	2.00	5 (27%)	22,30,33	1.85	5 (22%)
31	2MG	y	1207	31	18,26,27	1.88	4 (22%)	16,38,41	1.45	3 (18%)

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
31	MA6	y	1519	31	-	3/7/29/30	0/3/3/3
31	M2G	y	966	31	-	0/7/29/30	0/3/3/3
31	5MC	y	1400	31	-	0/7/25/26	0/2/2/2
31	7MG	y	527	31	-	0/7/37/38	0/3/3/3
31	5MC	y	1404	31	-	2/7/25/26	0/2/2/2
33	PSU	2	55	33	-	4/7/25/26	0/2/2/2
31	MA6	y	1518	31	-	2/7/29/30	0/3/3/3
31	5MC	y	1407	31	-	0/7/25/26	0/2/2/2
31	5MC	y	967	31	-	0/7/25/26	0/2/2/2
31	PSU	y	516	31	-	0/7/25/26	0/2/2/2
31	2MG	y	1207	31	-	1/5/27/28	0/3/3/3

The worst 5 of 29 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
31	y	527	7MG	C8-N9	-14.62	1.37	1.46
31	y	1518	MA6	C6-N1	5.46	1.41	1.33
31	y	1519	MA6	O4'-C1'	5.27	1.48	1.41
33	2	55	PSU	O2-C2	5.19	1.34	1.23
31	y	1519	MA6	C6-N1	5.10	1.40	1.33

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
31	y	527	7MG	N9-C8-N7	6.33	112.42	103.38
31	y	1518	MA6	N1-C6-N6	6.21	123.59	117.06
33	2	55	PSU	N1-C2-N3	4.78	120.55	115.13
33	2	55	PSU	C4-N3-C2	-4.26	120.19	126.34
31	y	516	PSU	N1-C2-N3	4.23	119.93	115.13

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
31	y	1518	MA6	O4'-C4'-C5'-O5'
31	y	1518	MA6	C3'-C4'-C5'-O5'
31	y	1519	MA6	C5-C6-N6-C9
33	2	55	PSU	C2'-C1'-C5-C4
33	2	55	PSU	C2'-C1'-C5-C6

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	w	35
31	y	9

The worst 5 of 44 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	w	41:C	O3'	43:G	P	2.13
1	w	1506:C	O3'	1508:A	P	2.09
1	w	489:G	O3'	491:G	P	2.08
1	w	1448(B):A	O3'	1449:G	P	2.07
1	w	436:C	O3'	438:G	P	2.05

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

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	w	2889/2889 (100%)	0.03	107 (3%) 41 33	1, 1, 1, 1	0
2	x	120/120 (100%)	-0.22	0 100 100	1, 1, 1, 1	0
3	A	127/229 (55%)	-0.37	6 (4%) 31 26	1, 1, 1, 1	0
4	B	272/276 (98%)	-0.14	19 (6%) 16 12	1, 1, 1, 1	0
5	C	201/206 (97%)	-0.13	12 (5%) 21 17	1, 1, 1, 1	0
6	D	194/205 (94%)	-0.64	0 100 100	1, 1, 1, 1	0
7	E	180/182 (98%)	-0.30	8 (4%) 34 29	1, 1, 1, 1	0
8	F	173/180 (96%)	-0.46	8 (4%) 32 27	1, 1, 1, 1	0
9	G	148/148 (100%)	-0.21	8 (5%) 25 21	1, 1, 1, 1	0
10	H	138/140 (98%)	-0.43	2 (1%) 75 67	1, 1, 1, 1	0
11	I	122/122 (100%)	-0.17	8 (6%) 18 13	1, 1, 1, 1	0
12	J	146/150 (97%)	-0.51	3 (2%) 63 55	1, 1, 1, 1	0
13	K	137/141 (97%)	-0.08	11 (8%) 12 10	1, 1, 1, 1	0
14	L	118/118 (100%)	-0.24	6 (5%) 28 24	1, 1, 1, 1	0
15	M	106/112 (94%)	-0.16	5 (4%) 31 26	1, 1, 1, 1	0
16	N	137/146 (93%)	-0.24	3 (2%) 62 53	1, 1, 1, 1	0
17	O	117/118 (99%)	-0.40	4 (3%) 45 37	1, 1, 1, 1	0
18	P	101/101 (100%)	0.17	15 (14%) 2 2	1, 1, 1, 1	0
19	Q	109/113 (96%)	0.43	17 (15%) 2 2	1, 1, 1, 1	0
20	R	92/96 (95%)	-0.49	1 (1%) 80 74	1, 1, 1, 1	0
21	S	103/110 (93%)	0.56	22 (21%) 0 1	1, 1, 1, 1	0
22	T	185/206 (89%)	-0.41	5 (2%) 54 45	1, 1, 1, 1	0
23	U	76/85 (89%)	-0.41	1 (1%) 77 70	1, 1, 1, 1	0
24	V	88/98 (89%)	-0.30	2 (2%) 60 52	1, 1, 1, 1	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
25	W	62/72 (86%)	-0.12	2 (3%) 47 38	1, 1, 1, 1	0
26	X	60/60 (100%)	-0.14	1 (1%) 70 62	1, 1, 1, 1	0
27	Y	56/60 (93%)	-0.72	0 100 100	1, 1, 1, 1	0
28	Z	48/49 (97%)	-0.69	0 100 100	1, 1, 1, 1	0
29	a	63/65 (96%)	-0.07	5 (7%) 12 10	1, 1, 1, 1	0
30	b	35/37 (94%)	0.97	11 (31%) 0 0	1, 1, 1, 1	0
31	y	1504/1522 (98%)	0.04	62 (4%) 37 31	1, 1, 1, 1	0
32	z	77/77 (100%)	0.23	4 (5%) 27 23	1, 1, 1, 1	0
33	2	75/76 (98%)	0.63	7 (9%) 8 7	1, 1, 1, 1	0
34	3	18/18 (100%)	1.14	6 (33%) 0 0	1, 1, 1, 1	0
35	c	234/256 (91%)	-0.28	10 (4%) 35 29	1, 1, 1, 1	0
36	d	206/239 (86%)	-0.50	7 (3%) 45 37	1, 1, 1, 1	0
37	e	208/209 (99%)	-0.40	6 (2%) 51 41	1, 1, 1, 1	0
38	f	150/162 (92%)	-0.49	7 (4%) 31 26	1, 1, 1, 1	0
39	g	101/101 (100%)	-0.56	2 (1%) 65 57	1, 1, 1, 1	0
40	h	155/156 (99%)	-0.37	5 (3%) 47 38	1, 1, 1, 1	0
41	i	138/138 (100%)	-0.04	11 (7%) 12 10	1, 1, 1, 1	0
42	j	127/128 (99%)	-0.03	12 (9%) 8 7	1, 1, 1, 1	0
43	k	98/105 (93%)	-0.32	2 (2%) 65 57	1, 1, 1, 1	0
44	l	116/129 (89%)	0.07	12 (10%) 6 6	1, 1, 1, 1	0
45	m	124/132 (93%)	-0.25	8 (6%) 18 14	1, 1, 1, 1	0
46	n	125/126 (99%)	0.14	16 (12%) 3 4	1, 1, 1, 1	0
47	o	60/61 (98%)	-0.50	2 (3%) 46 37	1, 1, 1, 1	0
48	p	88/89 (98%)	0.18	11 (12%) 3 4	1, 1, 1, 1	0
49	q	83/88 (94%)	1.02	21 (25%) 0 0	1, 1, 1, 1	0
50	r	104/105 (99%)	-0.59	0 100 100	1, 1, 1, 1	0
51	s	81/88 (92%)	-0.65	0 100 100	1, 1, 1, 1	0
52	t	80/93 (86%)	-0.11	6 (7%) 14 11	1, 1, 1, 1	0
53	u	99/106 (93%)	0.44	15 (15%) 2 2	1, 1, 1, 1	0
54	v	24/27 (88%)	-0.51	0 100 100	1, 1, 1, 1	0
All	All	10478/10865 (96%)	-0.11	524 (5%) 28 24	1, 1, 1, 1	0

The worst 5 of 524 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
34	3	7	G	9.1
31	y	145	G	8.0
41	i	52	ASP	7.4
1	w	2399	G	7.0
44	l	118	GLY	7.0

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
33	PSU	2	55	20/21	0.82	0.24	1,1,1,1	0
31	M2G	y	966	25/26	0.92	0.14	1,1,1,1	0
31	PSU	y	516	20/21	0.92	0.17	1,1,1,1	0
31	5MC	y	1407	21/22	0.93	0.16	1,1,1,1	0
31	MA6	y	1518	24/25	0.93	0.17	1,1,1,1	0
31	MA6	y	1519	24/25	0.93	0.16	1,1,1,1	0
31	7MG	y	527	24/25	0.93	0.23	1,1,1,1	0
31	5MC	y	967	21/22	0.94	0.14	1,1,1,1	0
31	5MC	y	1404	21/22	0.94	0.20	1,1,1,1	0
31	2MG	y	1207	24/25	0.95	0.16	1,1,1,1	0
31	5MC	y	1400	21/22	0.97	0.24	1,1,1,1	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.