



wwPDB EM Validation Summary Report ⓘ

Nov 27, 2022 – 01:42 AM EST

PDB ID : 5JUJ
EMDB ID : EMD-6647
Title : Saccharomyces cerevisiae 80S ribosome bound with elongation factor eEF2-GDP-sordarin and Taura Syndrome Virus IRES, Structure V (least rotated 40S subunit)
Authors : Abeyrathne, P.; Koh, C.S.; Grant, T.; Grigorieff, N.; Korostelev, A.A.
Deposited on : 2016-05-10
Resolution : 4.00 Å (reported)

This is a wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

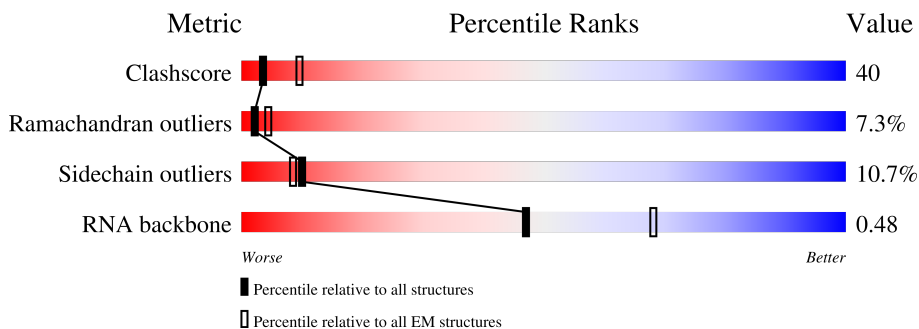
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.00 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)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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	1798	22% (green) 62% (yellow) 15% (orange) .. (red)
2	B	3396	20% (green) 62% (yellow) 14% (orange) .. (red)
3	C	158	20% (green) 64% (yellow) 13% (orange) . (red)
4	D	121	17% (green) 73% (yellow) 11% (orange)
5	E	217	30% (green) 38% (yellow) 9% (orange) . (red) 21% (grey)
6	F	254	29% (green) 59% (yellow) 11% (orange) . (red)
7	G	387	29% (green) 58% (yellow) 12% (orange) . (red)

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	H	362	33% 56% 11%
9	I	297	34% 58% 7%
10	J	176	31% 53% 15% ..
11	K	244	25% 54% 11% . 9%
12	L	256	33% 46% 12% . 9%
13	M	191	31% 61% 7% .
14	N	221	32% 56% 8% 5%
15	O	174	31% 51% 13% ..
16	P	165	18% 31% 8% 43%
17	Q	199	35% 49% 13% ..
18	R	138	27% 58% 14% .
19	S	204	21% 68% 10%
20	T	199	35% 55% 8% ..
21	U	184	32% 55% 12% .
22	V	186	26% 64% 9% ..
23	W	189	35% 58% 6% .
24	X	172	32% 51% 15% .
25	Y	160	32% 52% 14% ..
26	Z	121	36% 41% 6% 17%
27	AA	137	36% 51% 12% ..
28	BA	155	12% 21% 7% 61%
29	CA	142	21% 50% 14% 15%
30	DA	127	33% 54% 9% ..
31	EA	136	26% 60% 14% .
32	FA	149	38% 54% 7% .

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
33	GA	59	46% 42% 10% .
34	HA	105	29% 55% 9% 8%
35	IA	113	34% 54% 9% .
36	JA	130	32% 57% 8% ..
37	KA	107	26% 61% 12% .
38	LA	121	28% 53% 11% . 7%
39	MA	120	37% 53% 8% ..
40	NA	100	27% 51% 18% ..
41	OA	88	28% 63% 8% .
42	PA	78	35% 58% 6% .
43	QA	51	24% 51% 22% ..
44	RA	128	15% 20% 5% 59%
45	SA	25	36% 48% 16%
46	TA	106	31% 58% 9% ..
47	UA	92	28% 57% 14% .
48	VA	312	17% 36% 7% . 39%
49	WA	319	35% 55% 9% .
50	XA	252	22% 50% 8% . 18%
51	YA	255	22% 51% 10% . 16%
52	ZA	254	28% 50% 7% 15%
53	AB	240	30% 55% 6% . 7%
54	BB	261	25% 61% 13%
55	CB	225	30% 54% 8% 8%
56	DB	236	31% 55% 9% .
57	EB	190	28% 59% 9% ..

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
58	FB	200	32% 53% 9% 6%
59	GB	197	24% 59% 10% 6%
60	HB	105	26% 53% 12% 9%
61	IB	156	35% 54% 9% ..
62	JB	143	78% 9% 13%
63	KB	151	33% 58% 7% ..
64	LB	137	29% 50% 12% 7%
65	MB	142	29% 45% 11% 14%
66	NB	143	27% 62% 10% ..
67	OB	136	32% 41% 11% 14%
68	PB	146	39% 48% 10% ..
69	QB	144	30% 56% 13% .
70	RB	121	28% 52% 8% 12%
71	SB	87	28% 59% 13% .
72	TB	130	29% 56% 13% ..
73	UB	145	32% 57% 10% ..
74	VB	135	36% 54% 10% .
75	WB	108	16% 43% 6% 35%
76	XB	119	25% 43% 13% 18%
77	YB	82	32% 59% 9% .
78	ZB	67	33% 51% 10% 6%
79	AC	56	25% 62% 7% 5%
80	BC	63	48% 40% 8% 5%
81	CC	152	39% 7% 53%
82	DC	842	29% 60% 9% .

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
83	EC	201	 28% 31% 24% 15%

2 Entry composition

There are 86 unique types of molecules in this entry. The entry contains 215045 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	1781	37658	16811	6630	12436	1781	0	0

- Molecule 2 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	3307	70248	31336	12590	23015	3307	0	0

- Molecule 3 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C	158	3354	1500	586	1110	158	0	0

- Molecule 4 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	121	2580	1152	461	846	121	0	0

- Molecule 5 is a protein called uL1 (yeast L1).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	171	1359	869	232	251	7	0	0

- Molecule 6 is a protein called uL2 (yeast L2).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	252	1918	1193	389	335	1	0	0

- Molecule 7 is a protein called uL3 (yeast L3).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	386	3082	1956	584	534	8	0	0

- Molecule 8 is a protein called uL4 (yeast L4).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	361	2750	1730	522	495	3	0	0

- Molecule 9 is a protein called uL18 (yeast L5).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	296	2376	1501	414	459	2	0	0

- Molecule 10 is a protein called eL6 (yeast L6).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	175	1401	902	251	247	1	0	0

- Molecule 11 is a protein called uL30 (yeast L7).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	222	1785	1151	324	309	1	0	0

- Molecule 12 is a protein called eL8 (yeast L8).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	233	1818	1159	326	330	3	0	0

- Molecule 13 is a protein called uL6 (yeast L9).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	191	1519	963	274	278	4	0	0

- Molecule 14 is a protein called uL16 (yeast L10).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	N	211	1718	1089	325	298	6	0	0

- Molecule 15 is a protein called uL5 (yeast L11).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	O	169	1354	847	253	250	4	0	0

- Molecule 16 is a protein called uL11 (yeast L12).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	P	94	723	448	138	135	2	0	0

- Molecule 17 is a protein called eL13 (yeast L13).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
17	Q	193	1543	962	315	266	0	0

- Molecule 18 is a protein called eL14 (yeast L14).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	R	136	1054	675	199	178	2	0	0

- Molecule 19 is a protein called eL15 (yeast L15).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	S	203	1721	1077	361	282	1	0	0

- Molecule 20 is a protein called uL13 (yeast L16).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	T	197	1556	1003	289	263	1	0	0

- Molecule 21 is a protein called uL22 (yeast L17).

Mol	Chain	Residues	Atoms				AltConf	Trace
21	U	183	Total	C	N	O	0	0
			1443	896	287	260		

- Molecule 22 is a protein called eL18 (yeast L18).

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	185	Total	C	N	O	S	0	0
			1442	908	290	242	2		

- Molecule 23 is a protein called eL19 (yeast L19).

Mol	Chain	Residues	Atoms				AltConf	Trace
23	W	188	Total	C	N	O	0	0
			1522	935	326	261		

- Molecule 24 is a protein called eL20 (yeast L20).

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	172	Total	C	N	O	S	0	0
			1446	930	267	245	4		

- Molecule 25 is a protein called eL21 (yeast L21).

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	159	Total	C	N	O	S	0	0
			1277	805	246	222	4		

- Molecule 26 is a protein called eL22 (yeast L22).

Mol	Chain	Residues	Atoms				AltConf	Trace
26	Z	100	Total	C	N	O	0	0
			796	516	131	149		

- Molecule 27 is a protein called uL14 (yeast L23).

Mol	Chain	Residues	Atoms					AltConf	Trace
27	AA	136	Total	C	N	O	S	0	0
			1004	628	189	180	7		

- Molecule 28 is a protein called eL24 (yeast L24).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	BA	61	509	328	100	80	1	0	0

- Molecule 29 is a protein called uL23 (yeast L25).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	CA	121	969	623	170	174	2	0	0

- Molecule 30 is a protein called uL24 (yeast L26).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
30	DA	126	994	625	192	177	0	0

- Molecule 31 is a protein called eL27 (yeast L27).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
31	EA	135	1093	710	202	181	0	0

- Molecule 32 is a protein called uL15 (yeast L28).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	FA	148	1174	749	231	191	3	0	0

- Molecule 33 is a protein called eL29 (yeast L29).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
33	GA	58	463	289	100	74	0	0

- Molecule 34 is a protein called eL30 (yeast L30).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	HA	97	743	479	124	139	1	0	0

- Molecule 35 is a protein called eL31 (yeast L31).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	IA	109	890	565	168	156	1	0	0

- Molecule 36 is a protein called eL32 (yeast L32).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	JA	127	1020	647	205	167	1	0	0

- Molecule 37 is a protein called eL33 (yeast L33).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	KA	106	851	540	165	145	1	0	0

- Molecule 38 is a protein called eL34 (yeast L34).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	LA	112	881	546	179	152	4	0	0

- Molecule 39 is a protein called uL29 (yeast L35).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	MA	119	970	615	186	168	1	0	0

- Molecule 40 is a protein called eL36 (yeast L36).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	NA	99	772	481	156	133	2	0	0

- Molecule 41 is a protein called eL37 (yeast L37).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	OA	87	682	414	148	115	5	0	0

- Molecule 42 is a protein called eL38 (yeast L38).

Mol	Chain	Residues	Atoms				AltConf	Trace
42	PA	77	Total	C	N	O	0	0
			613	391	115	107		

- Molecule 43 is a protein called eL39 (yeast L39).

Mol	Chain	Residues	Atoms					AltConf	Trace
43	QA	50	Total	C	N	O	S	0	0
			437	272	97	66	2		

- Molecule 44 is a protein called eL40 (yeast L40).

Mol	Chain	Residues	Atoms					AltConf	Trace
44	RA	52	Total	C	N	O	S	0	0
			418	259	86	68	5		

- Molecule 45 is a protein called eL41 (yeast L41).

Mol	Chain	Residues	Atoms					AltConf	Trace
45	SA	25	Total	C	N	O	S	0	0
			234	142	63	28	1		

- Molecule 46 is a protein called eL42 (yeast L42).

Mol	Chain	Residues	Atoms					AltConf	Trace
46	TA	105	Total	C	N	O	S	0	0
			848	534	170	139	5		

- Molecule 47 is a protein called eL43 (yeast L43).

Mol	Chain	Residues	Atoms					AltConf	Trace
47	UA	91	Total	C	N	O	S	0	0
			695	429	138	122	6		

- Molecule 48 is a protein called uL10 (yeast P0).

Mol	Chain	Residues	Atoms					AltConf	Trace
48	VA	189	Total	C	N	O	S	0	0
			1473	942	257	270	4		

- Molecule 49 is a protein called RACK1 (yeast Asc1).

Mol	Chain	Residues	Atoms					AltConf	Trace
49	WA	318	Total	C	N	O	S	0	0
			2445	1546	419	472	8		

- Molecule 50 is a protein called uS2 (yeast S0).

Mol	Chain	Residues	Atoms					AltConf	Trace
50	XA	206	Total	C	N	O	S	0	0
			1612	1034	285	291	2		

- Molecule 51 is a protein called eS1 (yeast S1).

Mol	Chain	Residues	Atoms					AltConf	Trace
51	YA	214	Total	C	N	O	S	0	0
			1709	1084	310	311	4		

- Molecule 52 is a protein called uS5 (yeast S2).

Mol	Chain	Residues	Atoms					AltConf	Trace
52	ZA	217	Total	C	N	O	S	0	0
			1635	1047	289	297	2		

- Molecule 53 is a protein called uS3 (yeast S3).

Mol	Chain	Residues	Atoms					AltConf	Trace
53	AB	223	Total	C	N	O	S	0	0
			1734	1101	313	314	6		

- Molecule 54 is a protein called eS4 (yeast S4).

Mol	Chain	Residues	Atoms					AltConf	Trace
54	BB	260	Total	C	N	O	S	0	0
			2069	1316	389	361	3		

- Molecule 55 is a protein called uS7 (yeast S5).

Mol	Chain	Residues	Atoms					AltConf	Trace
55	CB	206	Total	C	N	O	S	0	0
			1610	1007	300	300	3		

- Molecule 56 is a protein called eS6 (yeast S6).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	DB	226	1820	1142	350	325	3	0	0

- Molecule 57 is a protein called eS7 (yeast S7).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	EB	184	1481	951	265	265		0	0

- Molecule 58 is a protein called eS8 (yeast S8).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	FB	188	1490	925	298	265	2	0	0

- Molecule 59 is a protein called uS4 (yeast S9).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	GB	185	1494	943	289	261	1	0	0

- Molecule 60 is a protein called eS10 (yeast S10).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	HB	96	817	529	133	153	2	0	0

- Molecule 61 is a protein called uS17 (yeast S11).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	IB	155	1245	798	235	209	3	0	0

- Molecule 62 is a protein called eS12 (yeast S12).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	JB	124	496	248	124	124		0	0

- Molecule 63 is a protein called uS15 (yeast S13).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	KB	150	1193	759	224	208	2	0	0

- Molecule 64 is a protein called uS11 (yeast S14).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	LB	127	942	578	186	175	3	0	0

- Molecule 65 is a protein called uS19 (yeast S15).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	MB	122	975	622	182	164	7	0	0

- Molecule 66 is a protein called uS9 (yeast S16).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
66	NB	141	1106	708	203	195	0	0

- Molecule 67 is a protein called eS17 (yeast S17).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	OB	117	836	515	166	153	2	0	0

- Molecule 68 is a protein called uS13 (yeast S18).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	PB	145	1193	743	237	211	2	0	0

- Molecule 69 is a protein called eS19 (yeast S19).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	QB	143	1113	694	208	209	2	0	0

- Molecule 70 is a protein called uS10 (yeast S20).

Mol	Chain	Residues	Atoms					AltConf	Trace
70	RB	107	Total	C	N	O	S	0	0
			856	539	156	160	1		

- Molecule 71 is a protein called eS21 (yeast S21).

Mol	Chain	Residues	Atoms					AltConf	Trace
71	SB	87	Total	C	N	O	S	0	0
			685	420	125	138	2		

- Molecule 72 is a protein called uS8 (yeast S22).

Mol	Chain	Residues	Atoms					AltConf	Trace
72	TB	129	Total	C	N	O	S	0	0
			1022	650	188	181	3		

- Molecule 73 is a protein called uS12 (yeast S23).

Mol	Chain	Residues	Atoms					AltConf	Trace
73	UB	144	Total	C	N	O	S	0	0
			1122	708	220	192	2		

- Molecule 74 is a protein called eS24 (yeast S24).

Mol	Chain	Residues	Atoms				AltConf	Trace
74	VB	134	Total	C	N	O	0	0
			1074	676	208	190		

- Molecule 75 is a protein called eS25 (yeast S25).

Mol	Chain	Residues	Atoms				AltConf	Trace
75	WB	70	Total	C	N	O	0	0
			563	360	104	99		

- Molecule 76 is a protein called eS26 (yeast S26).

Mol	Chain	Residues	Atoms					AltConf	Trace
76	XB	97	Total	C	N	O	S	0	0
			769	475	160	129	5		

- Molecule 77 is a protein called eS27 (yeast S27).

Mol	Chain	Residues	Atoms					AltConf	Trace
77	YB	81	Total	C	N	O	S	0	0
			611	382	110	114	5		

- Molecule 78 is a protein called eS28 (yeast S28).

Mol	Chain	Residues	Atoms					AltConf	Trace
78	ZB	63	Total	C	N	O	S	0	0
			498	306	99	92	1		

- Molecule 79 is a protein called uS14 (yeast S29).

Mol	Chain	Residues	Atoms					AltConf	Trace
79	AC	53	Total	C	N	O	S	0	0
			444	275	92	73	4		

- Molecule 80 is a protein called eS30 (yeast S30).

Mol	Chain	Residues	Atoms					AltConf	Trace
80	BC	60	Total	C	N	O	S	0	0
			475	299	98	77	1		

- Molecule 81 is a protein called eS31 (yeast S31).

Mol	Chain	Residues	Atoms				AltConf	Trace
81	CC	71	Total	C	N	O	0	0
			284	142	71	71		

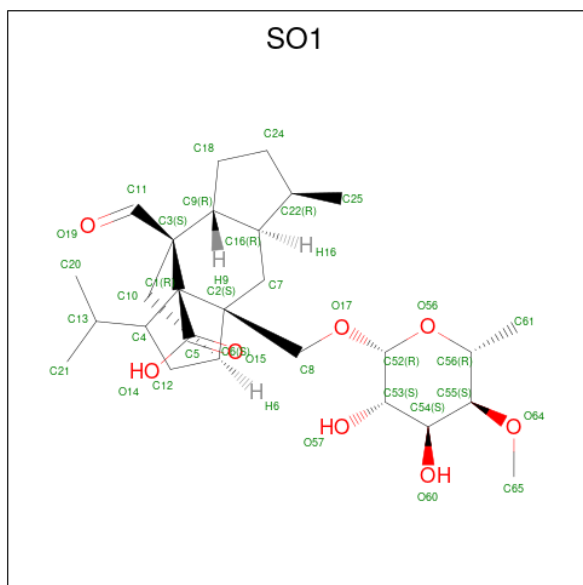
- Molecule 82 is a protein called yeast eEF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	DC	824	Total	C	N	O	S	0	0
			6419	4085	1096	1208	30		

- Molecule 83 is a RNA chain called IRES.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	EC	198	Total	C	N	O	P	0	0
			3968	1753	669	1348	198		

- Molecule 84 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



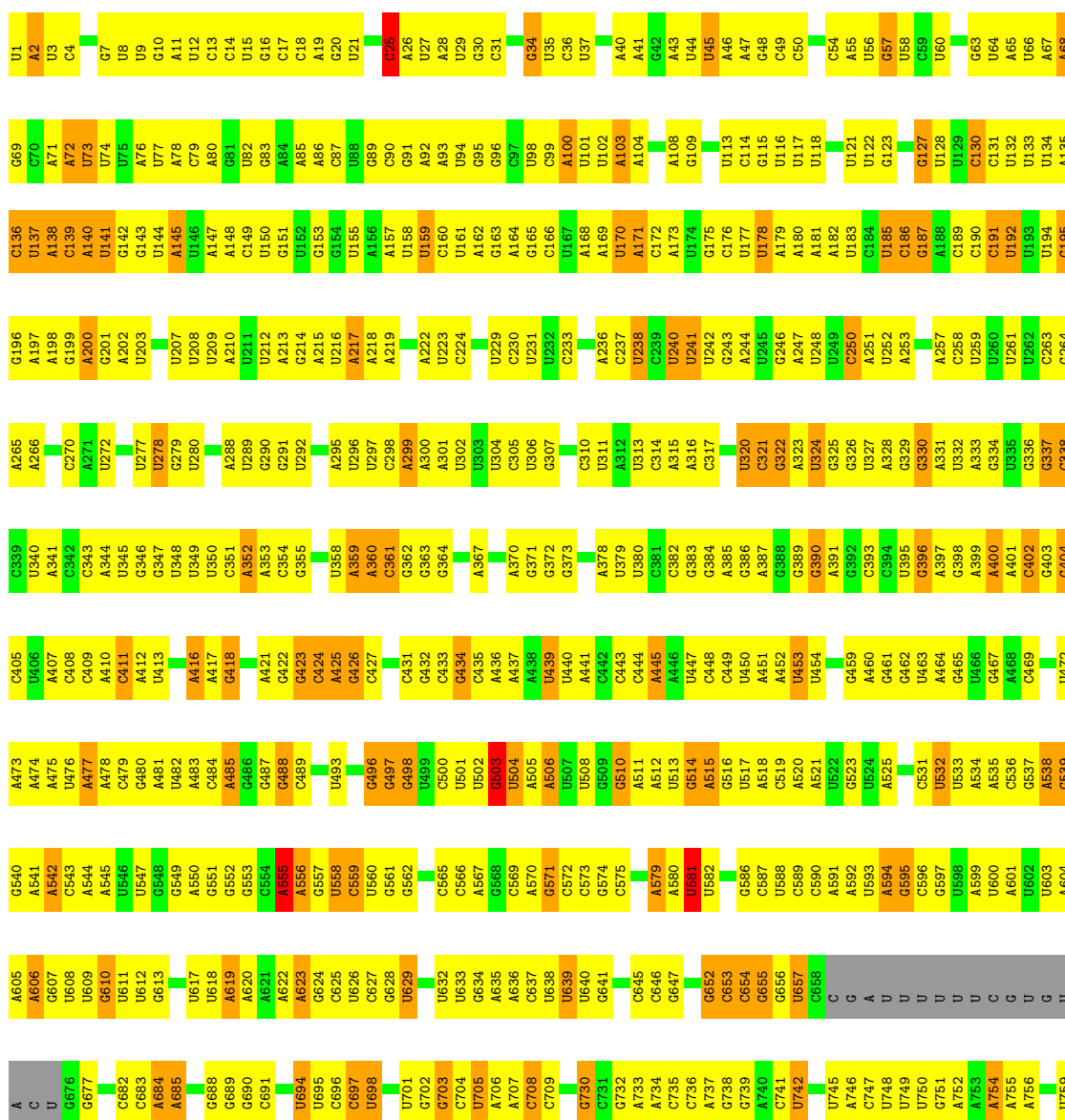
Mol	Chain	Residues	Atoms			AltConf
86	DC	1	Total	C	O	0
			35	27	8	

3 Residue-property plots i

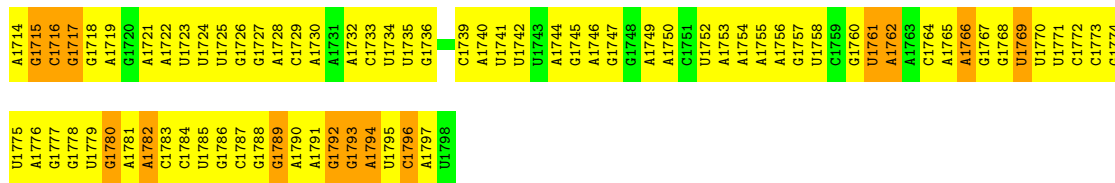
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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

- Molecule 1: 18S ribosomal RNA

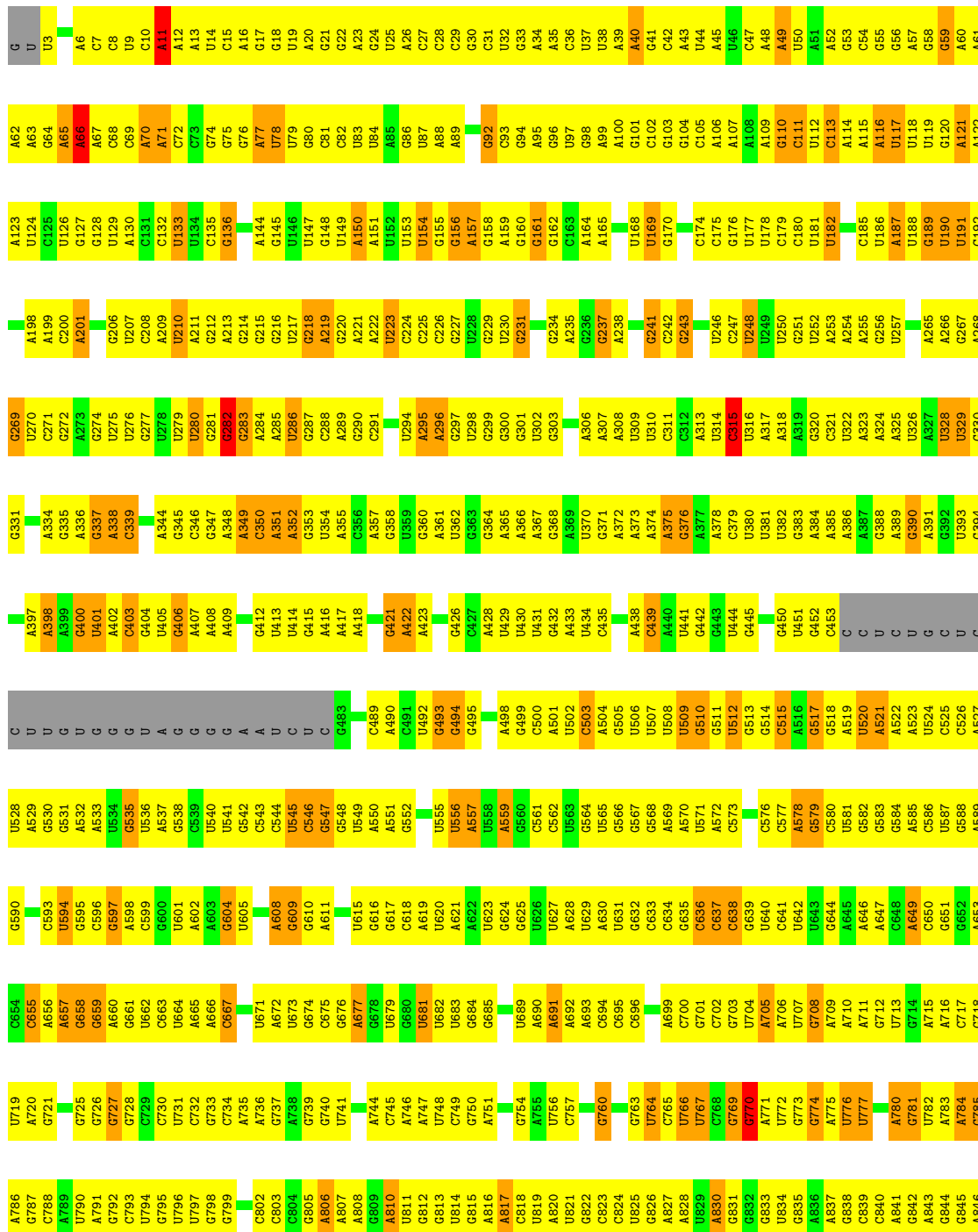
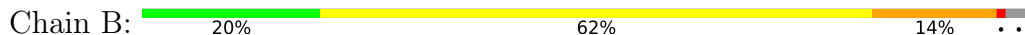
Chain A:



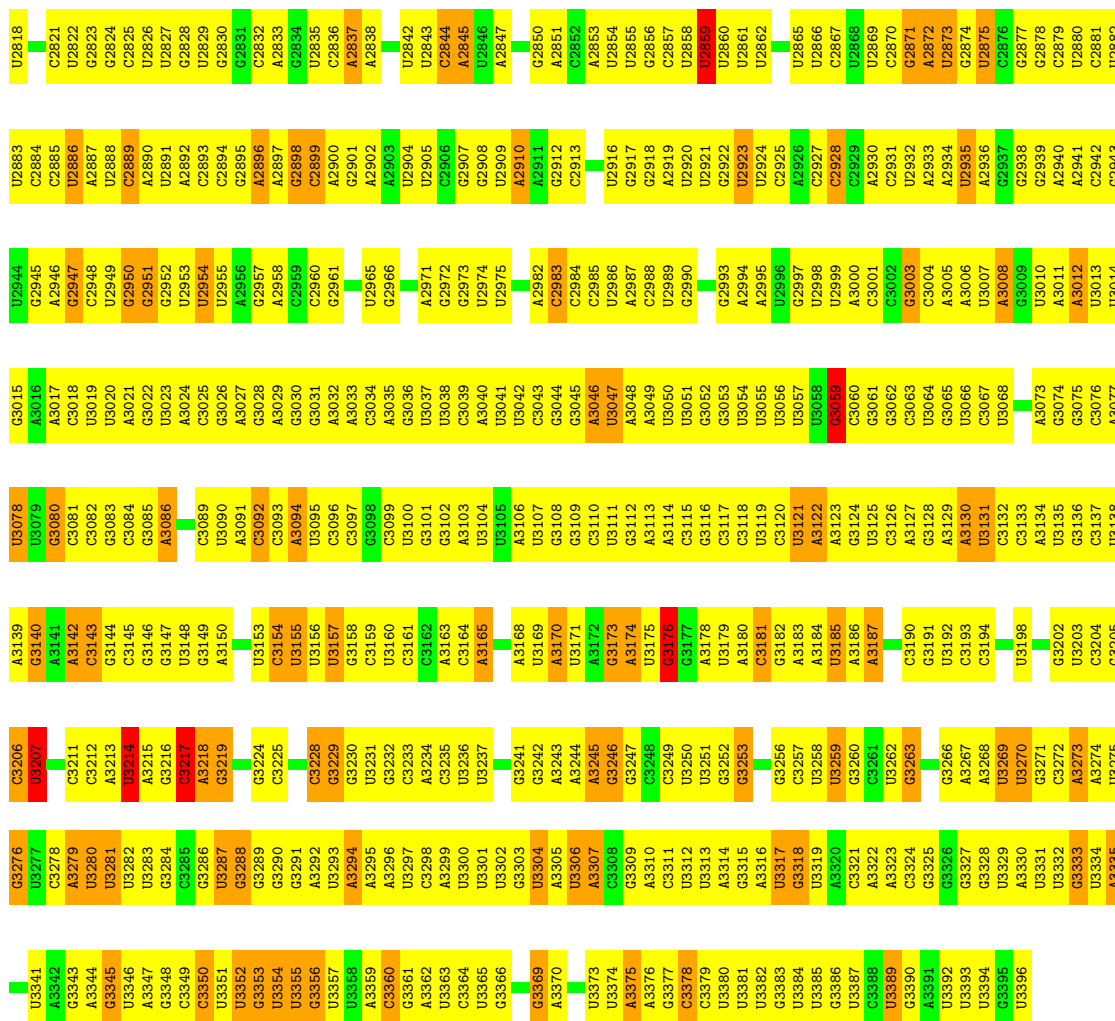
G1642	U1582	G1462	U1398	C1210	A1147	A1081	C1016	G954	A887	G823	A760
U1643	A1583	C1463	C1399	U1214	C1148	C1082	U1017	A955	U888	G824	G761
G1644	A1400	G1464	A1400	U1215	G1149	G1083	A1020	C956	C899	U825	A762
G1645	U1585	G1465	A1341	C1216	G1150	A1084	G1020	C957	U890	U826	G763
U1646	A1586	G1466	G1402	U1217	A1151	G1085	C1021	U958	U891	U827	U764
U1647	U1587	G1467	U1343	G1218	A1152	A1086	C1022	U959	U892	U828	G765
U1648	U1407	U1468	A1344	G1218	A1087	A1087	A1025	U960	U894	U830	U766
G1649	G1408	A1469	A1345	U1219	A1157	A1088	A1026	U961	U895	U831	U767
U1650	C1529	C1470	A1346	U1220	C1158	U1089	A1026	C962	U896	U832	C768
A1651	U1530	A1410	A1347	A1224	C1159	A1092	A1027	A963	U897	U833	A769
C1652	U1531	C1471	U1348	U1225	A1160	A1093	C1028	U964	A898	U834	A770
G1653	U1532	G1472	A1349	U1226	G1161	G1094	U1029	U965	U899	U835	A771
G1654	C1533	G1473	A1413	A1227	C1162	U1095	A1030	A966	A900	U836	G772
A1655	U1535	A1475	U1414	U1228	A1163	C1096	U1031	A967	G901	G837	C773
C1656	G1536	C1476	U1415	G1229	G1164	U1097	G1032	U968	G902	G838	A774
U1657	U1537	A1417	A1416	U1230	C1165	U1098	C1033	C969	U903	U839	G775
U1658	G1418	G1478	G1418	U1231	A1166	U1099	U1034	A970	U904	U840	G776
A1659	U1539	A1479	G1419	U1232	G1167	G1100	G1035	A971	A905	U841	C777
A1660	C1420	C1480	C1420	U1233	U1168	G1101	A1036	G972	A906	C842	G778
G1661	A1421	C1481	A1284	U1284	G1169	G1102	C1037	A973	U913	U843	U779
G1662	A1422	C1482	C1285	C1285	G1170	U1103	U1038	A974	G914	A844	A780
A1667	U1423	G1483	U1286	U1286	A1171	U1104	U1038	A974	U915	G845	G781
G1668	U1424	A1484	A1236	G1237	G1172	C1105	A1039	C975	A915	G846	U782
U1669	A1425	G1485	G1237	U1238	C1173	U1106	G1040	G976	U916	G847	G783
G1670	C1426	U1362	A1238	U1239	G1174	U1107	G1041	A977	U917	C848	C784
U1671	C1427	U1363	U1240	U1240	U1175	G1108	A1043	A978	U918	U849	U785
U1672	A1428	G1488	G1241	G1241	G1176	U1109	G1046	A979	U919	U850	G787
U1673	G1429	U1489	U1304	A1242	C1177	G1110	U1046	U981	U920	U851	A788
C1674	U1430	C1366	U1305	G1243	G1178	G1111	G1047	U982	U921	U852	A789
C1675	C1431	G1367	U1306	A1244	G1179	G1112	U1048	U983	U922	U853	U790
U1676	U1432	U1368	G1245	G1245	C1180	A1113	U1049	G986	A923	A855	A791
C1677	G1433	U1369	U1246	U1246	U1181	U1116	G1053	G987	A924	A856	U792
U1678	U1434	U1370	C1247	C1247	U1182	G1117	U1055	A988	A925	U857	A793
U1679	G1435	C1371	U1248	U1248	A1183	U1118	U1056	U989	A926	G858	U794
G1680	A1436	U1372	U1249	U1249	A1184	G1118	U1056	C990	A927	U859	A795
U1681	U1437	C1373	G1250	U1250	U1185	G1119	U1057	G991	U930	U860	A796
U1682	G1438	C1374	A1251	U1251	U1186	U1120	U1057	A992	A931	U863	G797
C1683	U1439	A1375	U1314	C1252	U1187	C1121	U1058	A993	C931	U864	C798
U1684	C1440	C1376	U1315	U1253	G1188	G1122	U1059	G994	U932	U865	A799
G1685	U1441	U1377	U1316	U1254	A1189	C1123	U1060	A995	A933	A865	A803
C1686	U1442	C1378	G1317	G1255	C1190	A1124	A1061	U996	C934	G866	A804
U1687	U1443	C1379	C1318	A1256	U1191	A1125	A1062	G997	U935	G867	U805
A1690	A1444	U1380	U1319	U1257	C1192	G1126	U1063	A998	G936	G868	A806
U1692	G1445	C1381	U1321	U1258	A1193	G1127	G1064	U999	C937	A869	A807
C1693	A1446	A1382	A1322	U1259	A1194	C1128	A1065	C1000	G938	C870	U808
G1694	C1447	C1383	G1323	U1260	C1195	U1129	C1066	A1001	A939	G871	A809
U1695	U1448	A1384	G1324	G1261	A1196	G1130	C1067	U1002	A940	G872	U810
C1696	U1449	G1385	A1325	U1262	C1197	A1131	C1068	A1003	A941	G873	G810
U1697	U1450	C1386	A1326	U1263	G1198	A1132	A1069	U1004	G942	C874	A811
A1698	C1451	U1387	C1327	G1264	G1199	A1133	G1070	A1005	C943	G875	A812
C1699	U1452	A1388	G1328	G1265	G1200	C1134	U1071	A1006	A944	G876	U813
U1700	G1453	C1389	A1329	U1266	G1201	C1135	C1072	C1007	U945	G877	A814
U1701	U1454	A1390	G1330	G1267	A1202	U1136	G1073	C1008	U946	G878	G815
C1702	G1455	A1391	A1331	U1268	A1203	U1137	G1074	U1009	U947	C880	G816
U1703	U1456	C1392	C1332	G1270	A1204	G1141	G1075	G948	G948	A881	A817
G1704	C1457	U1393	C1333	U1271	C1205	A1142	A1076	C949	C949	U882	C818
U1705	G1458	G1394	U1334	U1272	U1206	A1143	C1077	C950	C950	C883	G819
U1706	U1459	A1395	U1335	G1273	C1207	U1144	U1078	A951	A951	A884	U820
C1707	A1460	C1396	A1336	U1274	C1208	U1145	U1079	A952	A952	G885	U821
U1708	U1461	U1397	A1337	A1275	C1209	U1146	U1080	G953	G953	U886	U822



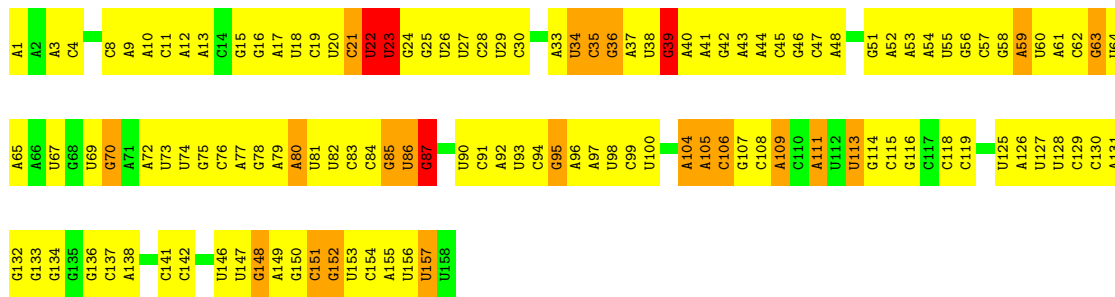
• Molecule 2: 25S ribosomal RNA



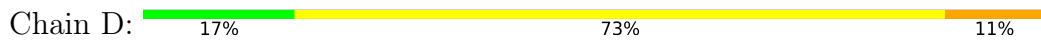
U1746	G1747	A1679	G1617	G1488	C1424	U1361	U1235	U1168	C1107	C1045	C975	A914	A847
G1748	G1749	G1680	U1620	A1489	U1425	G1362	G1286	A1169	U1108	A1046	U976	A915	A846
A1748	A1749	A1558	A1621	A1490	U1427	C1363	C1237	G1170	U1109	A1047	C977	A916	C849
A1750	A1751	A1559	G1622	A1491	U1428	C1364	C1238	A1171	U1110	A1048	C978	A917	G854
A1752	A1753	A1560	G1623	A1492	G1429	G1365	A1239	G1174	U1111	C1049	U979	A920	U855
G1754	G1755	A1561	U1430	A1493	U1430	A1366	U1241	C1175	A1112	U1050	A980	A921	G856
A1756	A1757	A1562	G1431	A1432	U1431	G1367	G1242	C1176	G1115	U1051	U981	U922	G857
G1758	G1759	C1563	C1432	A1433	A1368	U1368	G1243	G1177	G1116	U1052	C982	C923	A888
A1760	A1761	C1564	U1433	G1434	A1369	A1370	A1244	A1178	G1117	A1054	A983	G924	G859
C1762	C1763	A1565	A1435	G1435	G1371	G1372	A1245	A1179	C1118	A1055	U986	A925	G860
U1764	U1765	A1566	U1436	A1436	A1373	A1374	G1246	A1180	C1119	U1056	U987	A926	C861
U1766	U1767	A1567	C1437	U1437	G1374	G1374	U1247	U1181	A1120	U1057	U988	C927	U862
G1770	G1771	C1568	U1438	U1438	U1378	U1378	G1248	A1182	U1121	G1059	A989	C928	C863
U1772	U1773	A1569	U1439	U1439	G1379	G1379	G1249	A1183	U1122	U1060	U990	C929	G864
C1774	C1775	U1570	U1440	U1440	G1380	G1380	G1250	A1184	U1123	A1061	U991	A929	
G1776	G1777	A1571	G1441	U1441	G1381	G1381	A1251	A1185	U1124	A1062	A992	C931	G869
U1779	U1780	A1572	U1442	G1442	G1382	G1382	C1254	G1186	U1125	G1063	U993	U932	G870
C1781	C1782	A1573	G1443	U1443	U1383	U1383	C1255	U1187	G1126	A1064	G994	A933	U871
U1783	U1784	A1574	U1444	U1444	G1384	G1384	C1256	U1188	G1127	A1065	U995	C934	U872
C1785	C1786	A1575	G1445	U1445	U1385	U1385	C1257	U1189	U1128	G1066	U996	C935	C873
U1787	U1788	A1576	U1446	U1446	U1386	U1386	G1258	A1190	U1129	A1067	A997	A936	U874
G1789	G1790	A1577	U1447	U1447	G1387	G1387	U1259	U1191	A1130	C1068	G997	G937	G875
C1791	C1792	A1578	U1448	U1448	U1388	U1388	A1260	C1192	G1131	C1069	C1000	C938	A876
U1793	U1794	A1579	U1449	U1449	U1389	U1389	G1261	A1193	C1132	U1070	U1001	U939	C877
A1795	A1796	A1580	U1450	U1450	G1390	G1390	G1262	A1194	A1133	U1071	A1002	C940	G878
G1797	G1798	A1581	U1451	U1451	A1391	A1391	U1263	U1195	G1134	G1072	A1003	G941	U879
U1799	U1800	A1582	U1452	U1452	G1392	G1392	U1264	C1196	U1135	U1073	U1004	U942	G880
C1801	C1802	A1583	U1453	U1453	U1393	U1393	U1265	U1196	A1136	A1074	A1005	U943	C881
A1803	A1804	A1584	U1454	U1454	G1394	G1394	U1266	U1197	G1135	U1075	A1006	U944	A882
U1805	U1806	A1585	U1455	U1455	U1395	U1395	U1267	A1200	C1137	A1076	U1007	C945	A883
G1807	G1808	A1586	U1456	U1456	U1396	U1396	G1268	C1201	U1138	U1076	U1008	U946	A884
U1809	U1810	A1587	U1457	U1457	U1397	U1397	U1269	A1202	G1139	U1077	U1009	G947	U885
A1811	A1812	A1588	U1458	U1458	U1398	U1398	U1270	A1203	G1140	U1078	A1010	C948	C886
U1813	U1814	A1589	U1459	U1459	U1399	U1399	U1271	A1204	C1141	A1079	G1010	C949	C887
C1815	C1816	A1590	U1460	U1460	U1400	U1400	U1272	A1205	G1142	A1080	G1011	C950	G888
U1817	U1818	A1591	U1461	U1461	G1401	G1401	U1273	G1206	A1143	U1081	G1012	G951	A889
G1819	G1820	A1592	U1462	U1462	U1402	U1402	U1274	G1207	U1144	U1082	G1013	A951	C890
U1821	U1822	A1593	U1463	U1463	U1403	U1403	U1275	U1208	G1145	U1083	U1014	A952	G891
C1823	C1824	A1594	U1464	U1464	G1404	G1404	U1276	G1209	C1146	A1084	U1015	G953	
U1825	U1826	A1595	U1465	U1465	U1405	U1405	U1277	U1210	G1147	U1085	C1016	U954	
G1827	G1828	A1596	U1466	U1466	U1406	U1406	U1278	U1211	G1148	U1088	C1017	U955	G894
U1829	U1830	A1597	U1467	U1467	G1407	G1407	U1279	U1212	A1150	U1089	G1018	U956	A895
A1831	A1832	A1598	U1468	U1468	U1408	U1408	U1280	G1213	U1151	G1090	C1023	C957	U897
U1833	U1834	A1599	U1469	U1469	G1409	G1409	U1281	U1214	G1152	A1091	U1092	C958	U898
C1835	C1836	A1600	U1470	U1470	U1410	U1410	U1282	U1215	G1153	C1092	A1026	U960	U899
U1837	U1838	A1601	U1471	U1471	U1411	U1411	U1283	C1216	A1154	A1027	A1027	C961	G900
G1839	G1840	A1602	U1472	U1472	U1412	U1412	U1284	A1221	C1155	U1093	U1028	A962	G901
U1841	U1842	A1603	U1473	U1473	U1413	U1413	U1285	A1222	G1156	U1094	G1029	G963	G902
C1843	C1844	A1604	U1474	U1474	U1414	U1414	U1286	G1223	U1157	U1095	A1030	G964	U903
U1845	U1846	A1605	U1475	U1475	U1415	U1415	U1287	A1224	A1158	U1096	U1097	A965	A904
G1847	G1848	A1606	U1476	U1476	U1416	U1416	U1288	C1225	G1159	A1098	A1036	U966	U905
U1849	U1850	A1607	U1477	U1477	U1417	U1417	U1289	A1226	A1160	A1099	C1037	U967	A906
C1851	C1852	A1608	U1478	U1478	U1418	U1418	U1290	A1227	C1161	U1100	C1038	A968	G907
U1853	U1854	A1609	U1479	U1479	U1419	U1419	U1291	G1229	G1162	U1101	U1039	C969	G908
G1855	G1856	A1610	U1480	U1480	U1420	U1420	U1292	G1230	A1163	A1102	U1040	A970	G909
U1857	U1858	A1611	U1481	U1481	U1421	U1421	U1293	A1231	G1164	A1103	U1041	C971	G910
C1859	C1860	A1612	U1482	U1482	U1422	U1422	U1294	C1232	A1165	G1104	U1042	A972	C911
U1861	U1862	A1613	U1483	U1483	U1423	U1423	U1295	G1233	G1166	A1105	C1043	A973	G912
G1863	G1864	A1614	U1484	U1484	U1424	U1424	U1296	G1234	U1167	G1106	U1044	G974	A913

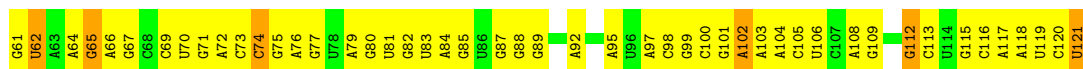


• Molecule 3: 5.8S ribosomal RNA

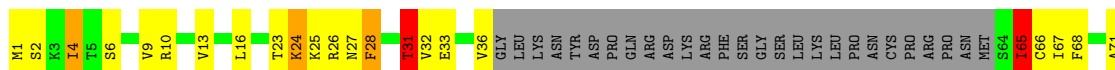
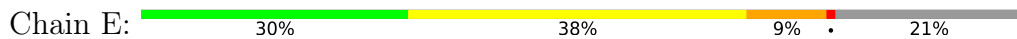


• Molecule 4: 5S ribosomal RNA

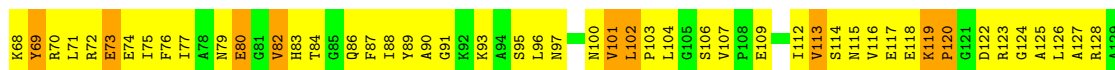




• Molecule 5: uL1 (yeast L1)

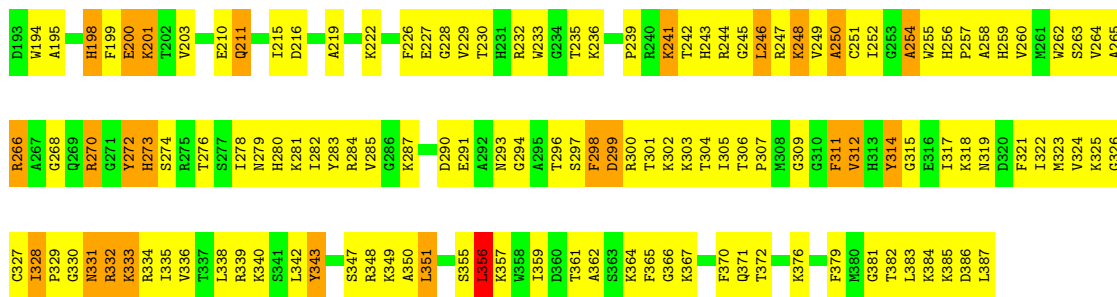


• Molecule 6: uL2 (yeast L2)

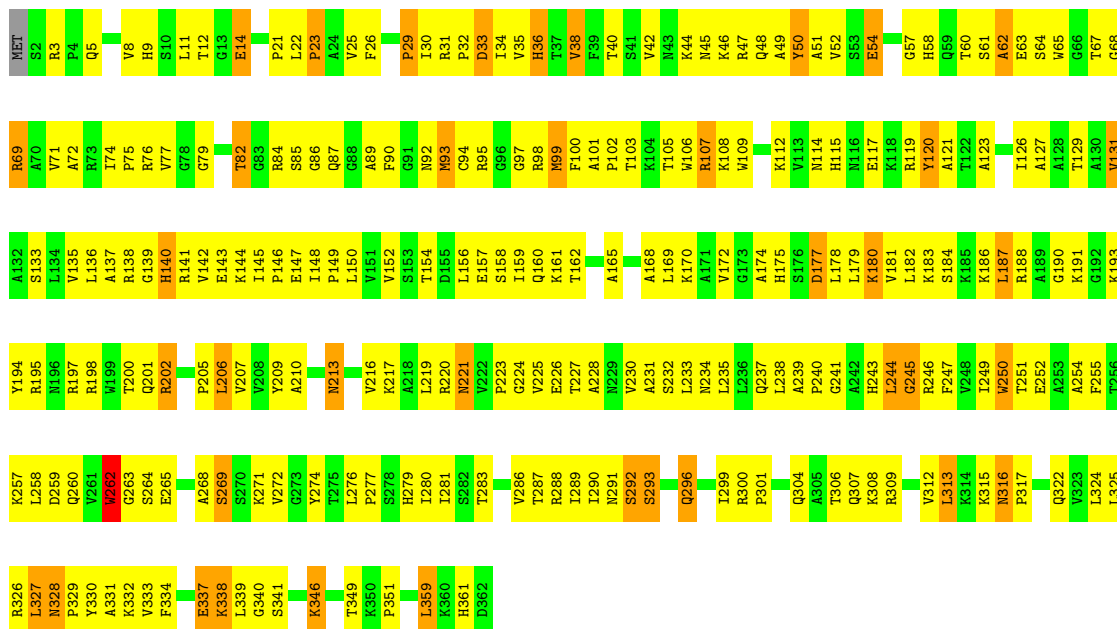
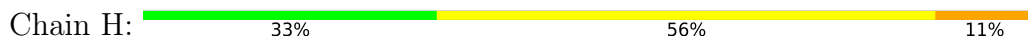


• Molecule 7: uL3 (yeast L3)

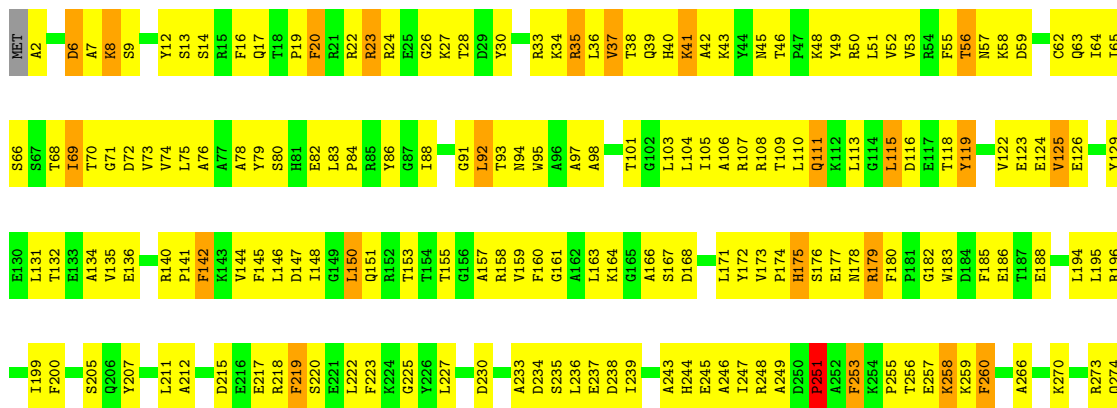
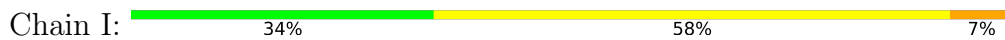


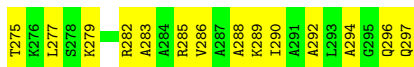


• Molecule 8: uL4 (yeast L4)

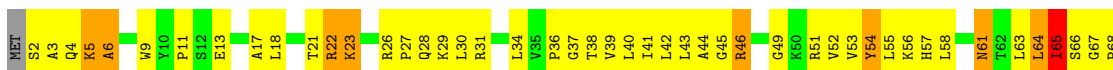
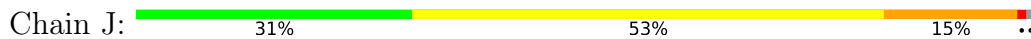


• Molecule 9: uL18 (yeast L5)

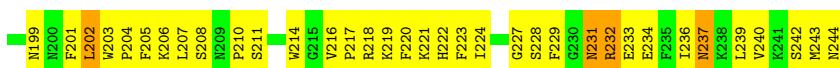
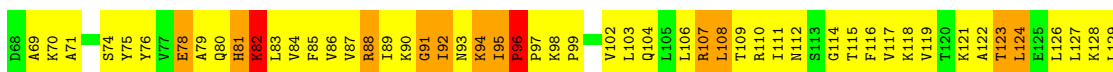
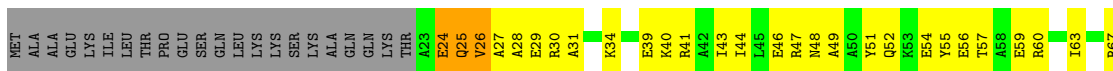




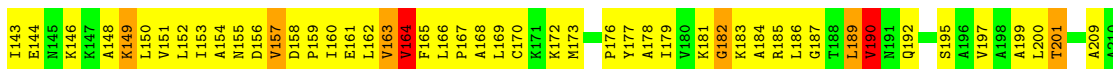
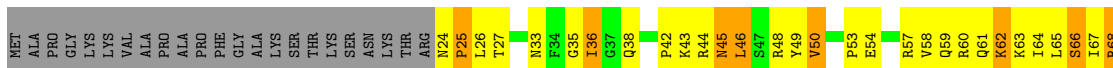
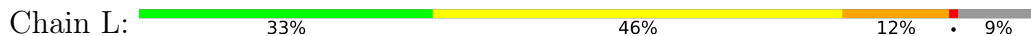
- Molecule 10: eL6 (yeast L6)



- Molecule 11: uL30 (yeast L7)

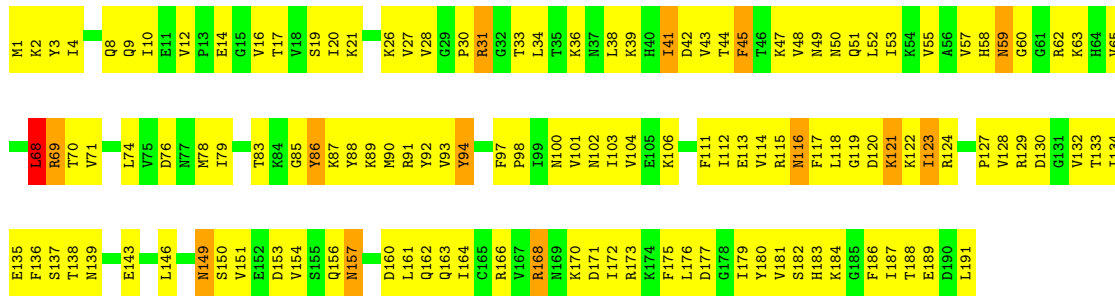


- Molecule 12: eL8 (yeast L8)



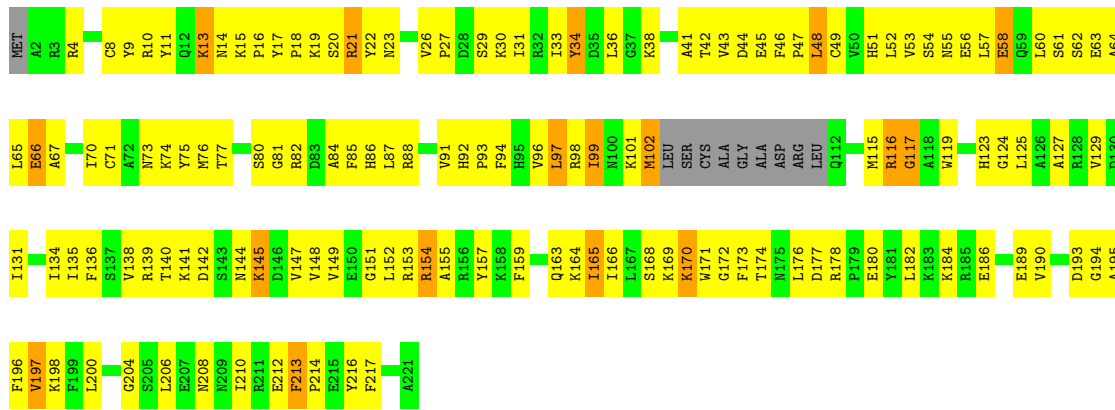
- Molecule 13: uL6 (yeast L9)

Chain M: 31% 61% 7%



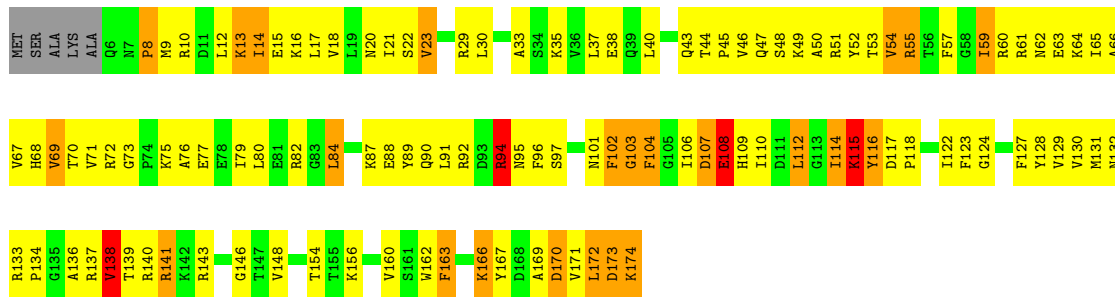
• Molecule 14: uL16 (yeast L10)

Chain N: 32% 56% 8% 5%



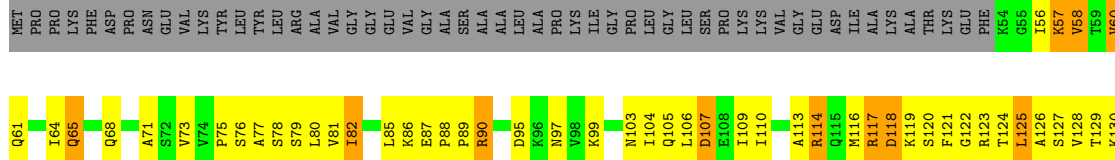
• Molecule 15: uL5 (yeast L11)

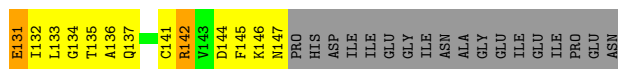
Chain O: 31% 51% 13%



• Molecule 16: uL11 (yeast L12)

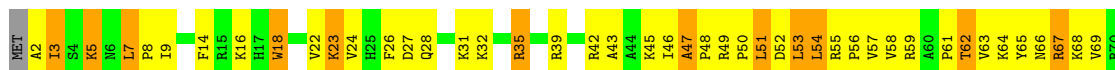
Chain P: 18% 31% 8% 43%





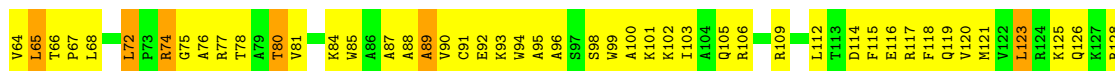
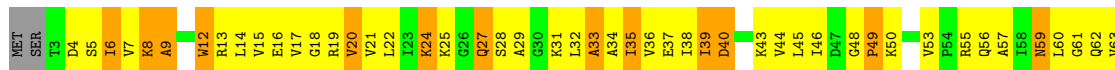
- Molecule 17: eL13 (yeast L13)

Chain Q: 35% 49% 13%



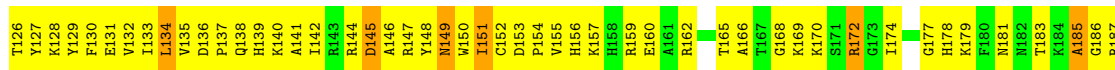
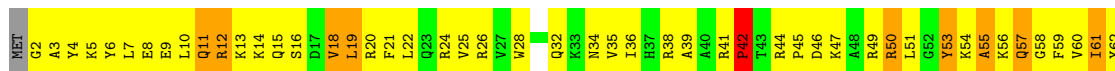
- Molecule 18: eL14 (yeast L14)

Chain R: 27% 58% 14%



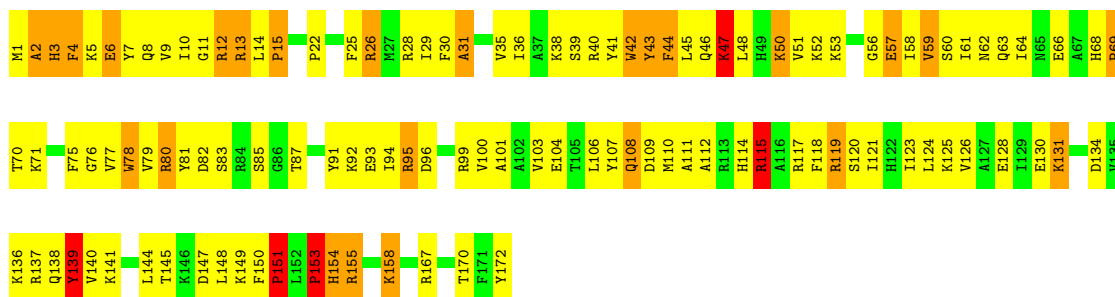
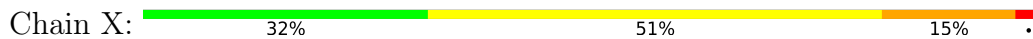
- Molecule 19: eL15 (yeast L15)

Chain S: 21% 68% 10%

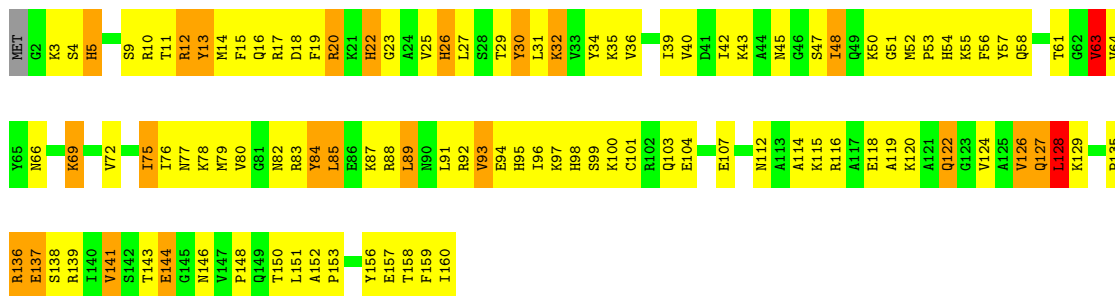


- Molecule 20: uL13 (yeast L16)

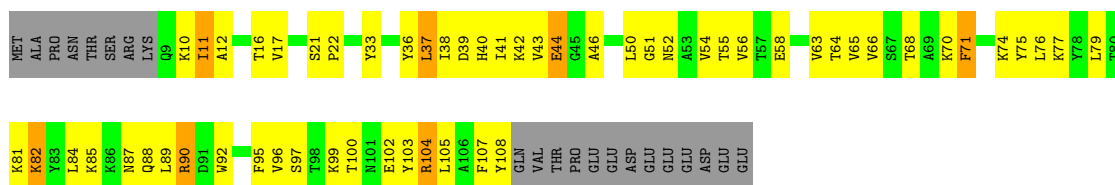
Chain T: 35% 55% 8%



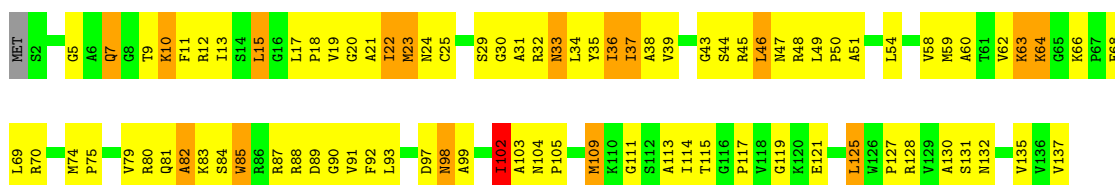
• Molecule 25: eL21 (yeast L21)



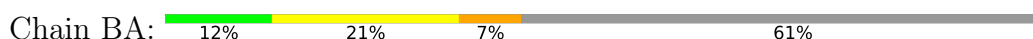
• Molecule 26: eL22 (yeast L22)

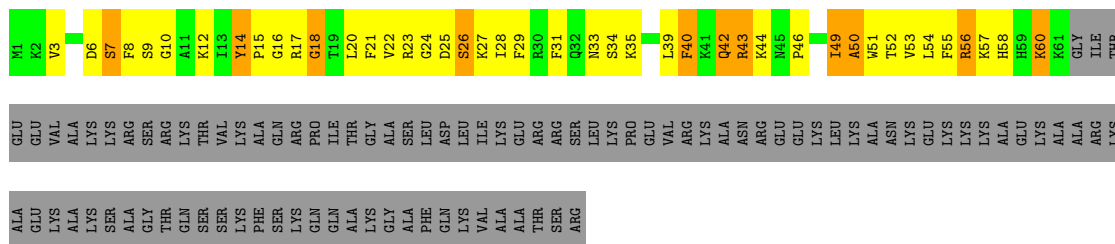


• Molecule 27: uL14 (yeast L23)

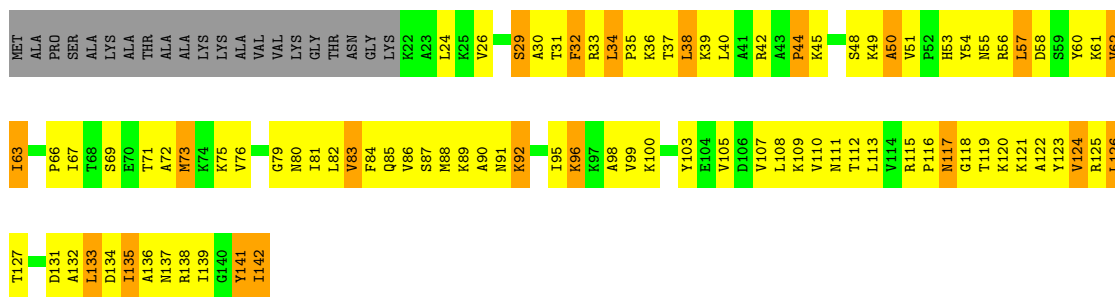
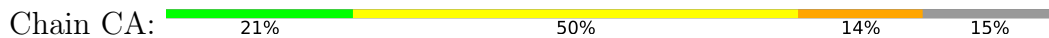


• Molecule 28: eL24 (yeast L24)

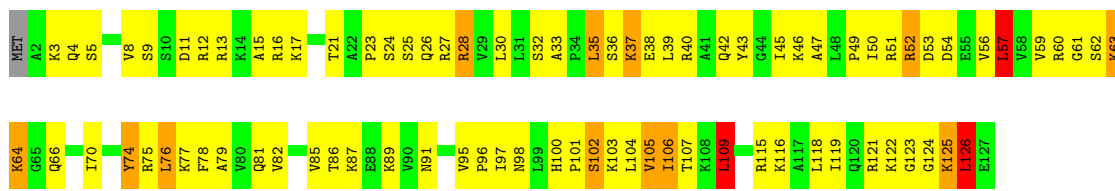
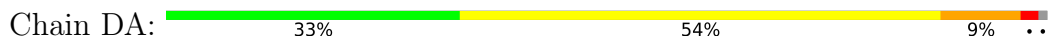




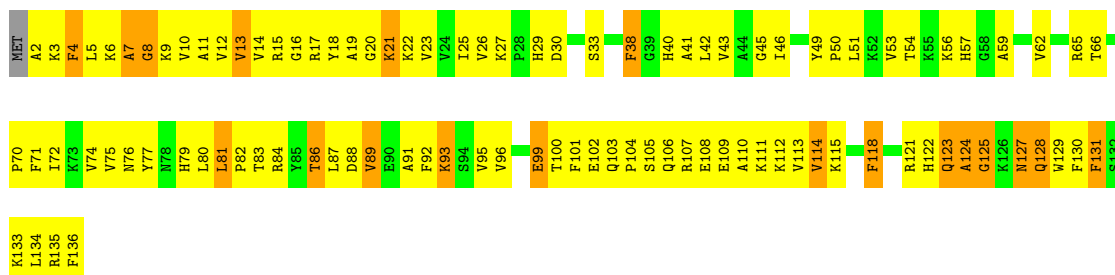
• Molecule 29: uL23 (yeast L25)



• Molecule 30: uL24 (yeast L26)



• Molecule 31: eL27 (yeast L27)

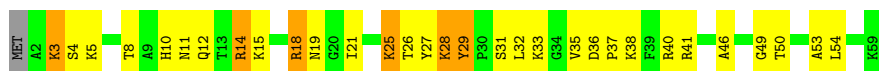


• Molecule 32: uL15 (yeast L28)

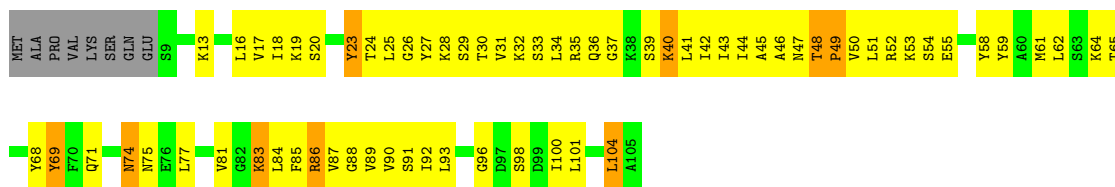




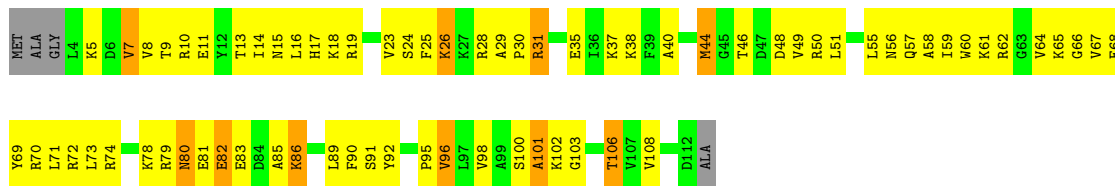
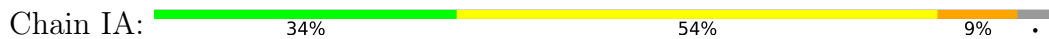
• Molecule 33: eL29 (yeast L29)



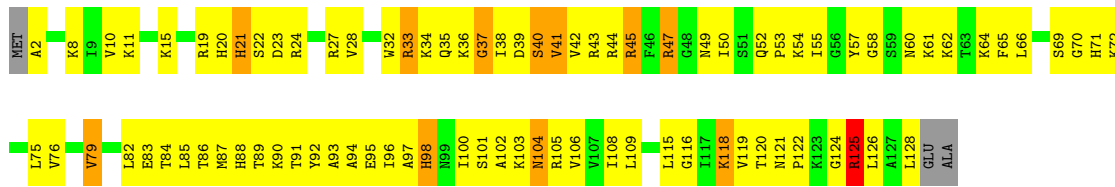
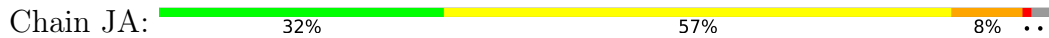
• Molecule 34: eL30 (yeast L30)



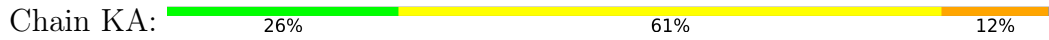
• Molecule 35: eL31 (yeast L31)



• Molecule 36: eL32 (yeast L32)

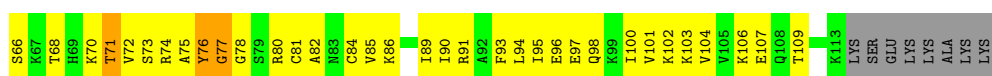
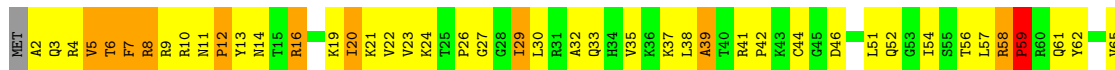


• Molecule 37: eL33 (yeast L33)

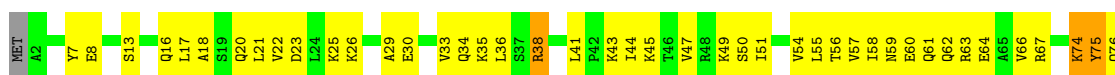




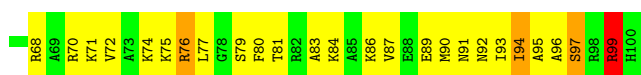
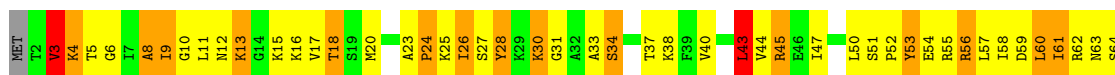
• Molecule 38: eL34 (yeast L34)



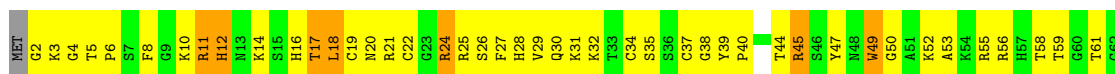
• Molecule 39: uL29 (yeast L35)



• Molecule 40: eL36 (yeast L36)

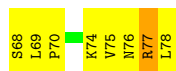


• Molecule 41: eL37 (yeast L37)

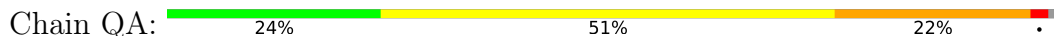


• Molecule 42: eL38 (yeast L38)

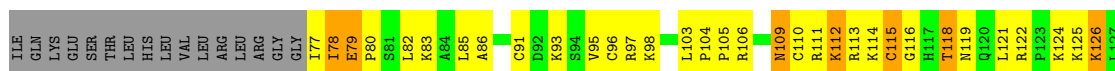
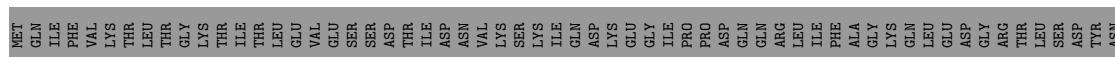
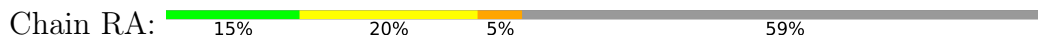




• Molecule 43: eL39 (yeast L39)



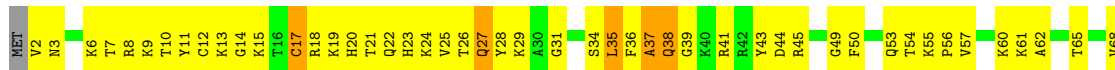
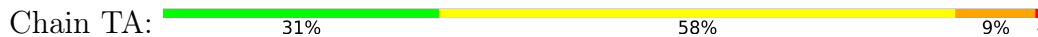
• Molecule 44: eL40 (yeast L40)



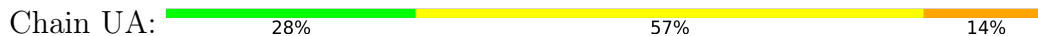
• Molecule 45: eL41 (yeast L41)



• Molecule 46: eL42 (yeast L42)

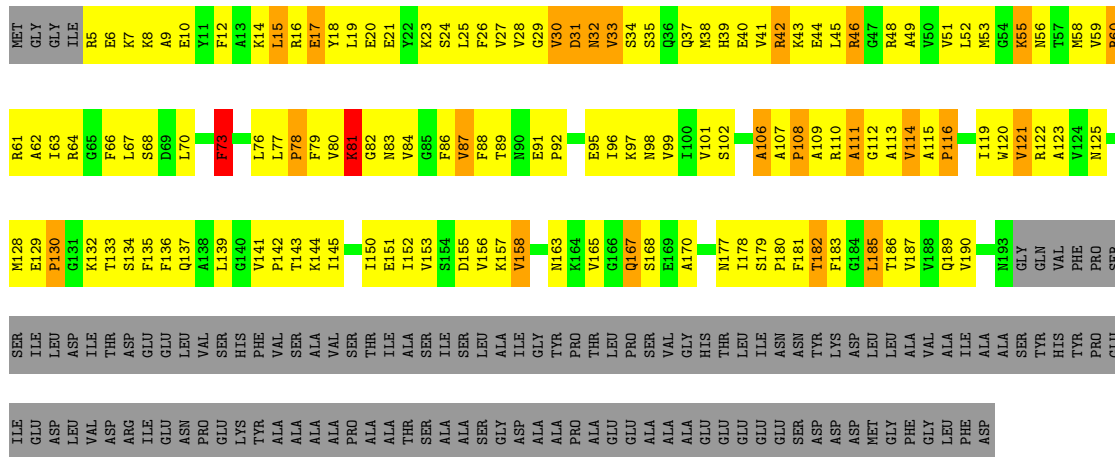
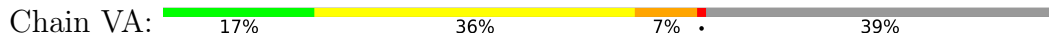


• Molecule 47: eL43 (yeast L43)

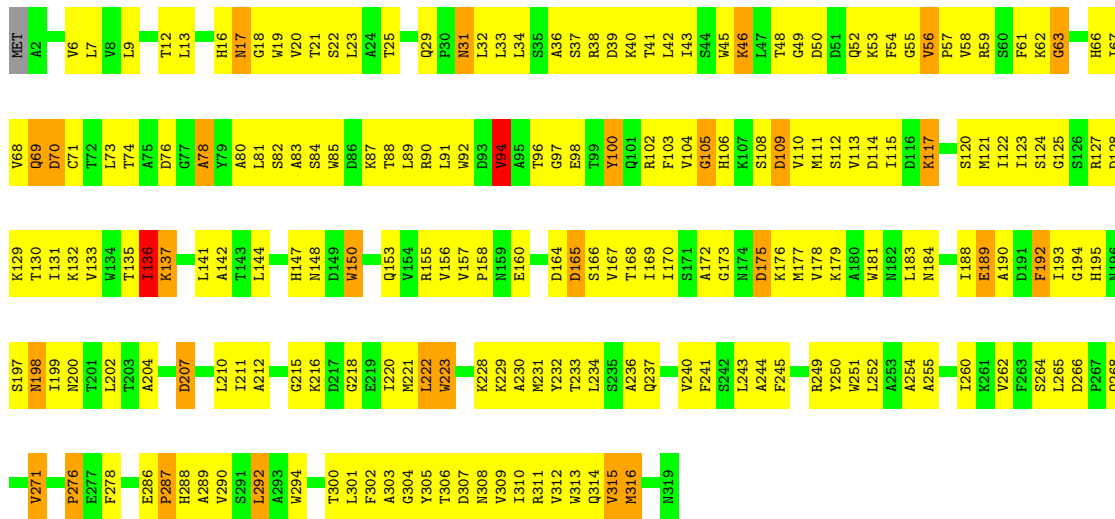
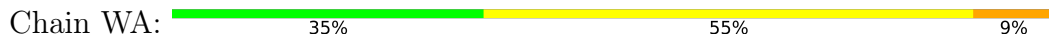




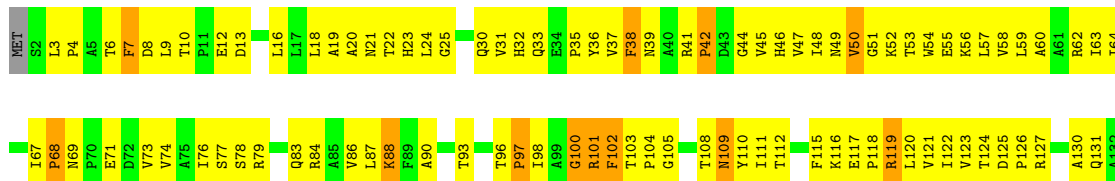
• Molecule 48: uL10 (yeast P0)

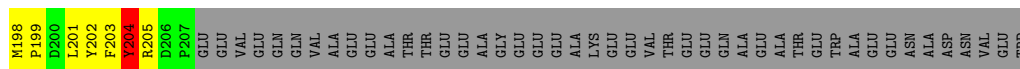
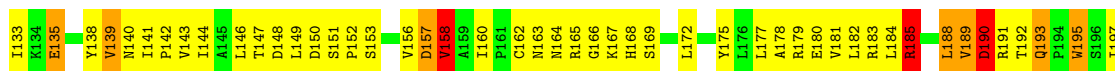


• Molecule 49: RACK1 (yeast Asc1)

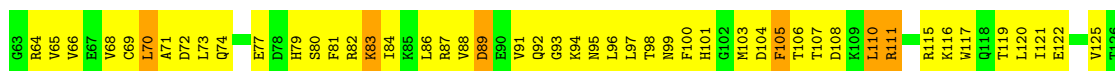
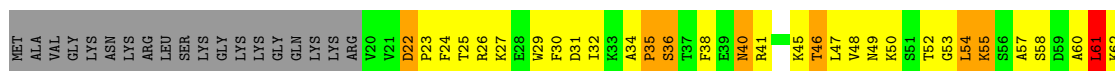


• Molecule 50: uS2 (yeast S0)



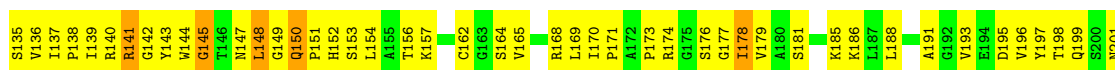
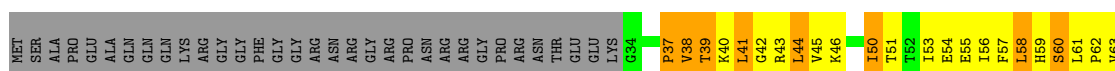
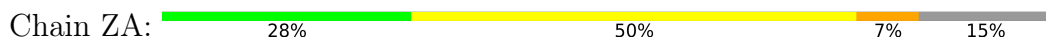


• Molecule 51: eS1 (yeast S1)

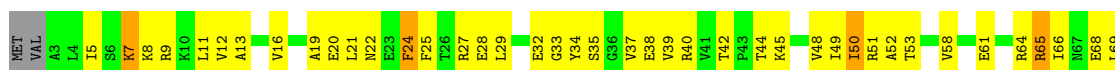


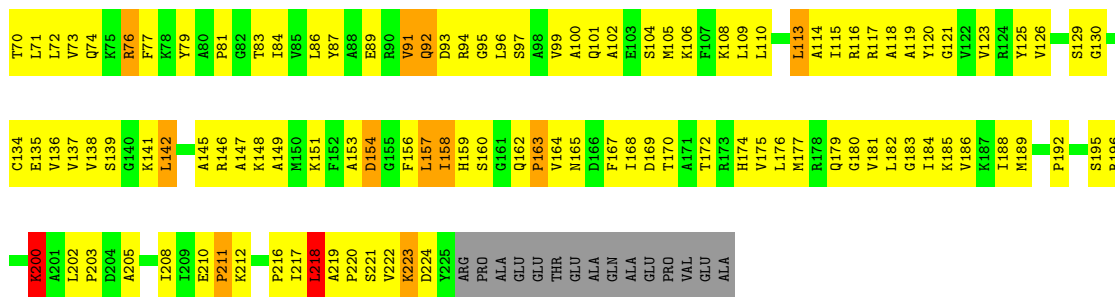
GLU
THR
VAL

• Molecule 52: uS5 (yeast S2)

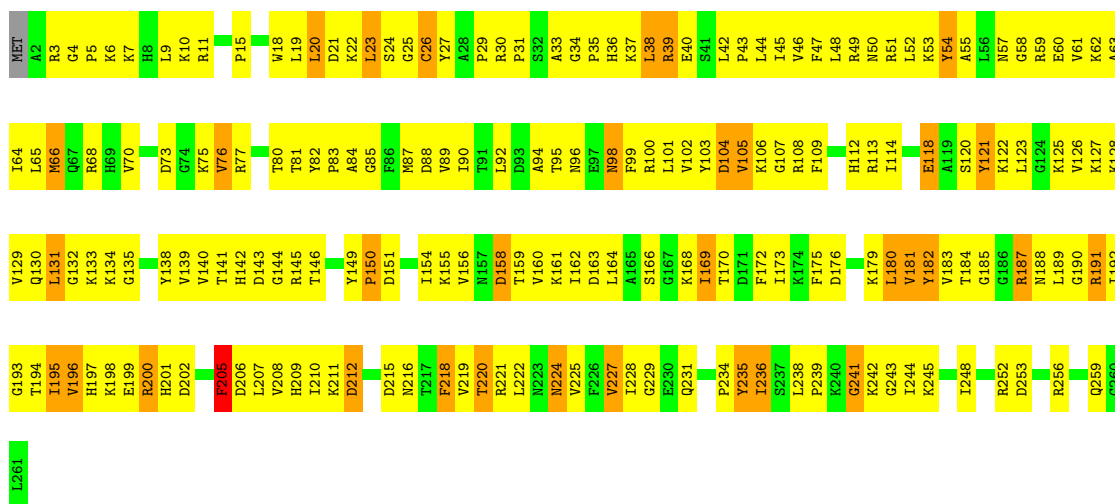


• Molecule 53: uS3 (yeast S3)

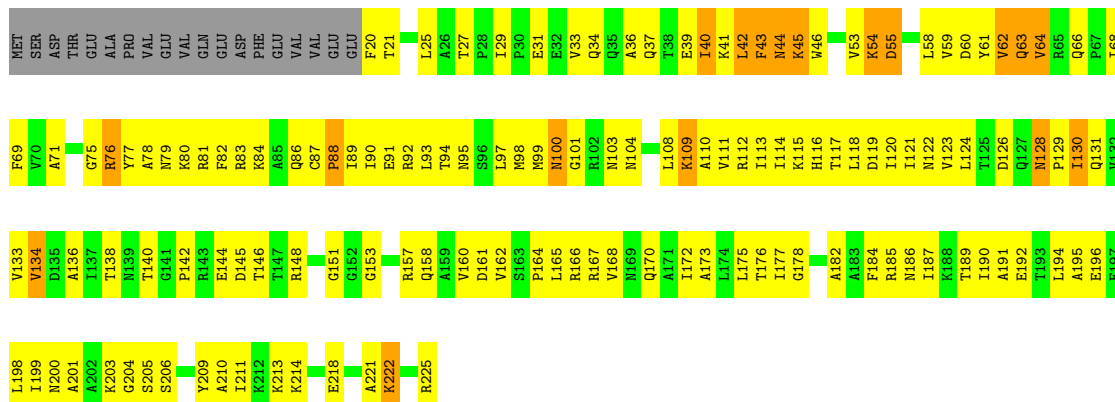
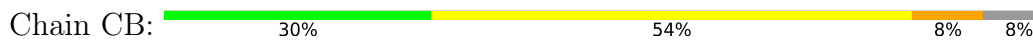




• Molecule 54: eS4 (yeast S4)

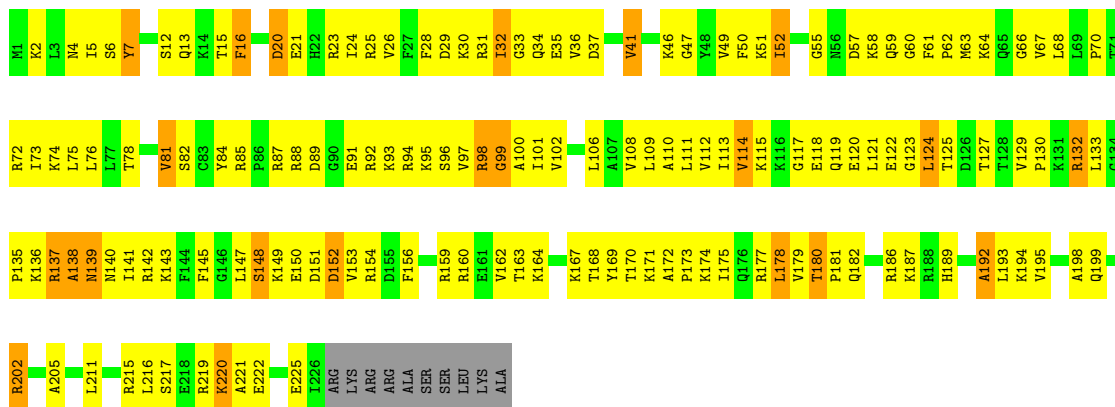


• Molecule 55: uS7 (yeast S5)

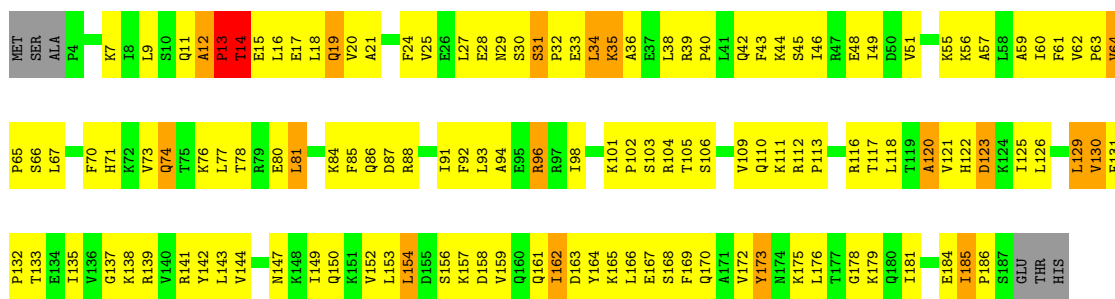


• Molecule 56: eS6 (yeast S6)

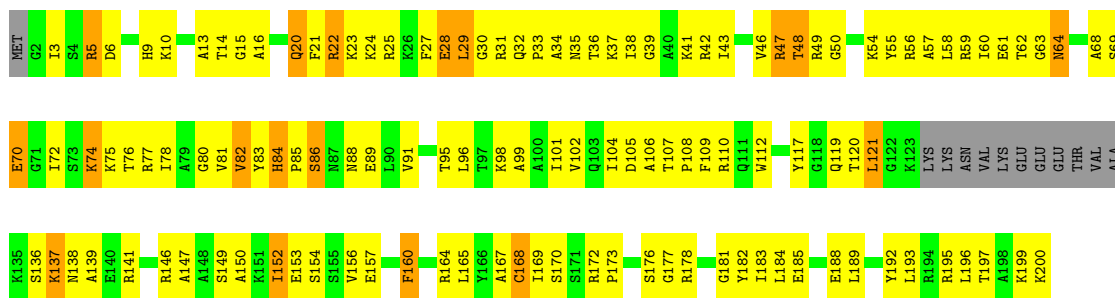




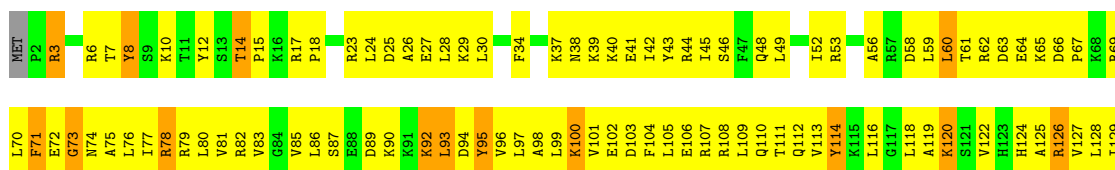
• Molecule 57: eS7 (yeast S7)



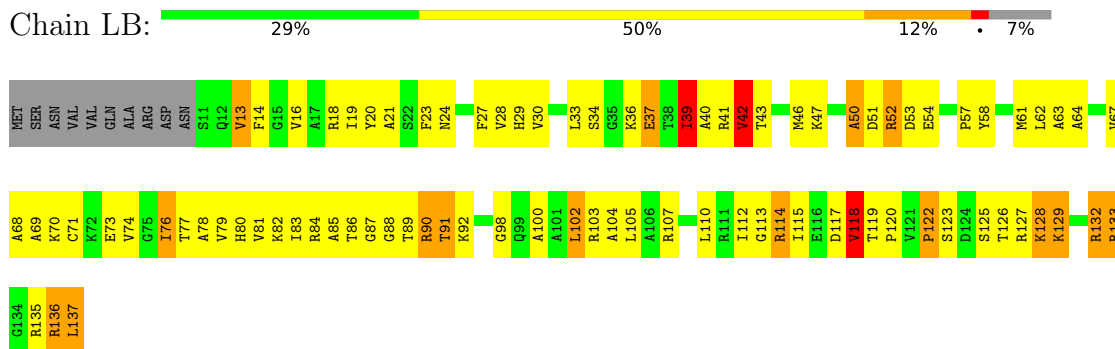
• Molecule 58: eS8 (yeast S8)



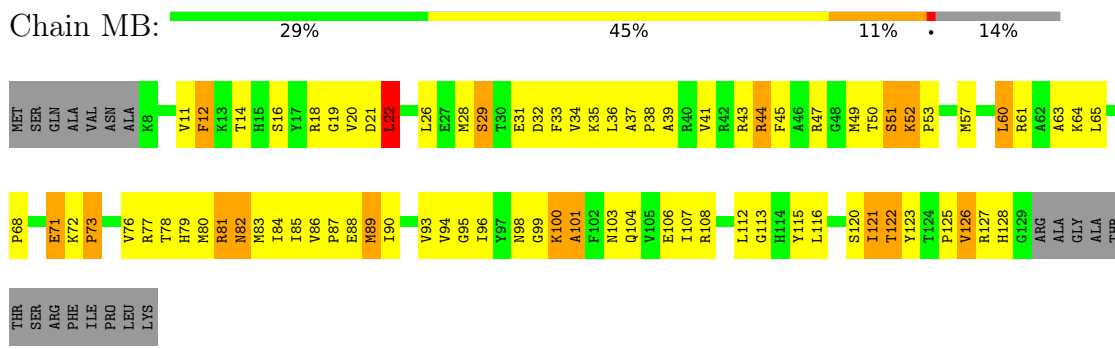
• Molecule 59: uS4 (yeast S9)



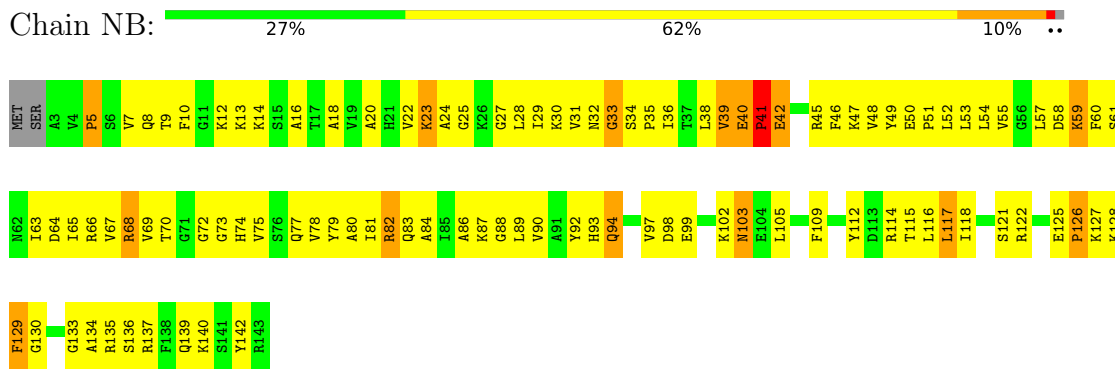
• Molecule 64: uS11 (yeast S14)



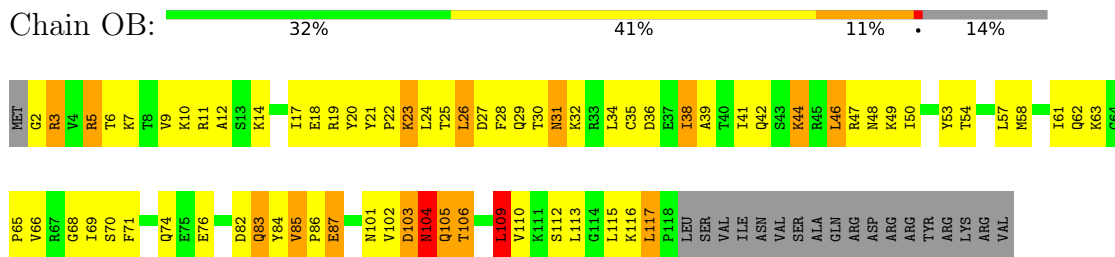
• Molecule 65: uS19 (yeast S15)



• Molecule 66: uS9 (yeast S16)

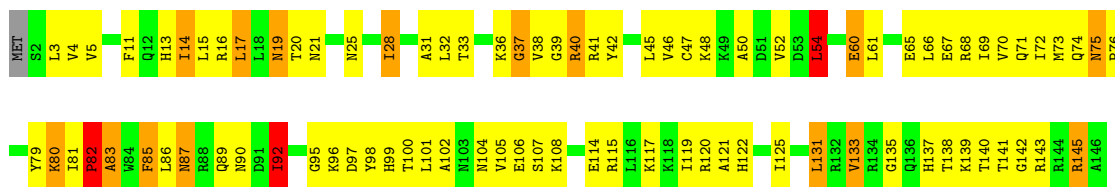


• Molecule 67: eS17 (yeast S17)

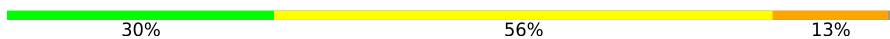


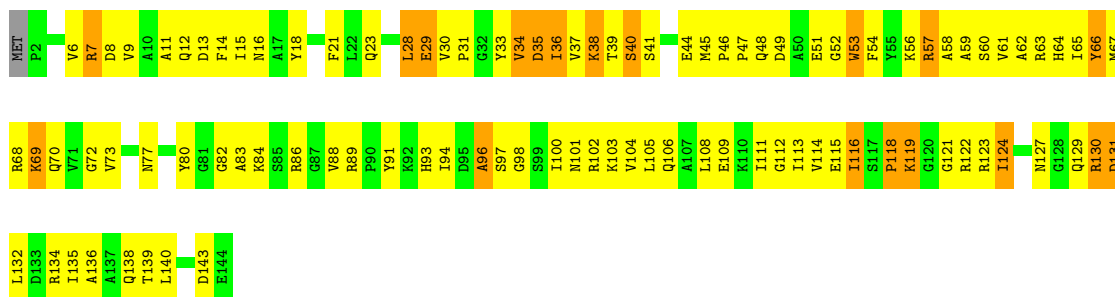
• Molecule 68: uS13 (yeast S18)

Chain PB: 



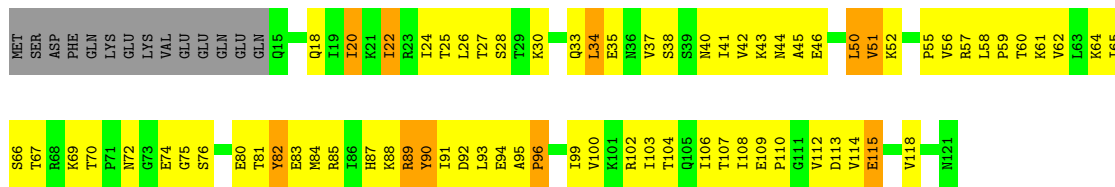
• Molecule 69: eS19 (yeast S19)

Chain QB: 



• Molecule 70: uS10 (yeast S20)

Chain RB: 

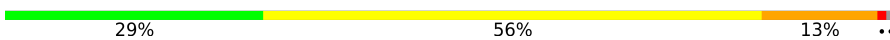


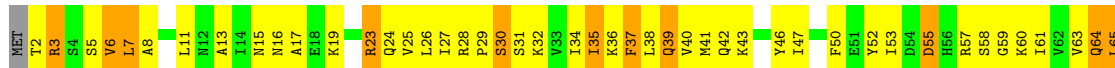
• Molecule 71: eS21 (yeast S21)

Chain SB: 



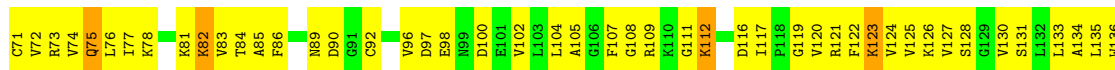
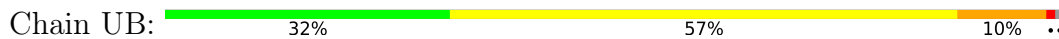
• Molecule 72: uS8 (yeast S22)

Chain TB: 

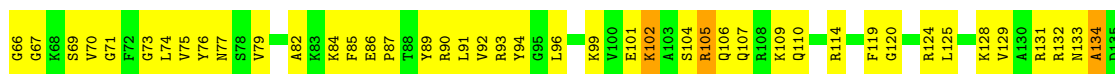
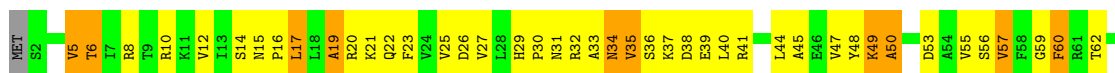




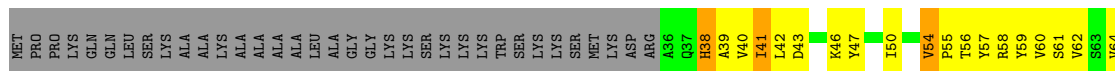
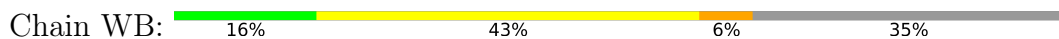
• Molecule 73: uS12 (yeast S23)



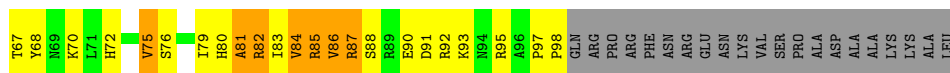
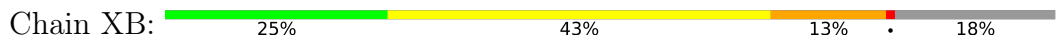
• Molecule 74: eS24 (yeast S24)



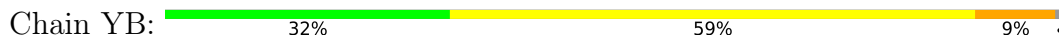
• Molecule 75: eS25 (yeast S25)



• Molecule 76: eS26 (yeast S26)



• Molecule 77: eS27 (yeast S27)



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	35045	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.4	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor

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: GDP, SO1, MG, DDE

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	0.85	1/42096 (0.0%)	0.75	16/65570 (0.0%)
2	B	1.16	20/78587 (0.0%)	0.77	40/122484 (0.0%)
3	C	1.17	3/3747 (0.1%)	0.76	3/5832 (0.1%)
4	D	1.08	1/2884 (0.0%)	0.73	1/4491 (0.0%)
5	E	1.90	2/1377 (0.1%)	0.82	1/1844 (0.1%)
6	F	1.03	0/1952	0.71	0/2622
7	G	1.00	0/3153	0.65	0/4239
8	H	1.11	0/2802	0.70	1/3792 (0.0%)
9	I	0.93	0/2426	0.65	0/3271
10	J	1.09	0/1425	0.76	1/1912 (0.1%)
11	K	1.13	0/1822	0.68	0/2451
12	L	0.95	0/1850	0.64	0/2495
13	M	1.05	0/1540	0.67	1/2073 (0.0%)
14	N	1.09	0/1754	0.64	0/2350
15	O	0.87	0/1375	0.63	0/1842
16	P	1.81	0/728	0.79	0/975
17	Q	1.03	0/1568	0.68	0/2106
18	R	1.16	0/1069	0.67	0/1438
19	S	1.13	0/1758	0.68	0/2354
20	T	1.11	0/1586	0.65	0/2128
21	U	1.12	0/1466	0.65	0/1968
22	V	1.09	0/1466	0.68	0/1965
23	W	0.90	0/1539	0.62	0/2050
24	X	1.18	0/1482	0.69	0/1990
25	Y	1.17	0/1301	0.68	0/1743
26	Z	0.82	0/812	0.58	0/1099
27	AA	1.04	0/1019	0.67	0/1369
28	BA	1.17	0/521	0.68	0/691
29	CA	1.06	0/984	0.66	0/1325
30	DA	1.09	0/1005	0.67	2/1341 (0.1%)
31	EA	0.85	0/1119	0.59	0/1497
32	FA	1.04	0/1205	0.65	0/1612

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	GA	1.02	0/474	0.66	0/629
34	HA	0.83	0/751	0.65	0/1008
35	IA	0.95	0/904	0.64	0/1213
36	JA	1.15	0/1041	0.62	0/1394
37	KA	1.14	0/869	0.69	0/1168
38	LA	0.98	0/891	0.67	0/1191
39	MA	1.02	0/979	0.66	0/1301
40	NA	0.94	0/779	0.70	1/1034 (0.1%)
41	OA	1.20	0/697	0.69	0/923
42	PA	0.92	0/619	0.61	0/826
43	QA	1.16	0/444	0.71	0/588
44	RA	1.11	0/424	0.65	0/562
45	SA	0.96	0/235	0.62	0/300
46	TA	1.04	0/861	0.66	0/1136
47	UA	1.02	0/702	0.65	0/934
48	VA	1.72	0/1498	0.83	1/2025 (0.0%)
49	WA	0.83	0/2498	0.58	0/3398
50	XA	0.67	0/1653	0.64	1/2261 (0.0%)
51	YA	0.71	0/1735	0.59	0/2335
52	ZA	0.71	0/1665	0.58	0/2263
53	AB	0.84	0/1759	0.60	0/2368
54	BB	0.72	0/2110	0.63	0/2839
55	CB	0.74	0/1630	0.61	0/2202
56	DB	0.74	0/1844	0.61	0/2464
57	EB	0.81	0/1506	0.61	0/2028
58	FB	0.86	0/1515	0.59	0/2021
59	GB	0.70	0/1519	0.61	0/2035
60	HB	0.98	0/837	0.59	0/1131
61	IB	0.92	0/1273	0.61	0/1712
62	JB	1.10	0/495	0.56	0/617
63	KB	0.80	0/1216	0.62	0/1638
64	LB	0.64	0/953	0.60	0/1279
65	MB	1.05	0/996	0.64	0/1335
66	NB	0.80	0/1126	0.60	0/1510
67	OB	0.77	0/844	0.76	1/1120 (0.1%)
68	PB	0.86	0/1212	0.62	0/1628
69	QB	0.79	0/1131	0.57	0/1517
70	RB	0.86	0/866	0.60	0/1169
71	SB	0.68	0/694	0.56	0/935
72	TB	0.75	0/1039	0.62	0/1395
73	UB	0.87	0/1140	0.65	1/1518 (0.1%)
74	VB	0.71	0/1088	0.59	0/1449
75	WB	0.80	0/571	0.60	0/768

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	XB	0.69	0/782	0.60	0/1047
77	YB	0.74	0/621	0.62	0/838
78	ZB	0.72	0/500	0.59	0/670
79	AC	0.94	0/454	0.58	0/602
80	BC	0.83	0/483	0.57	0/643
81	CC	1.05	0/283	0.63	0/352
82	DC	1.41	0/6521	0.71	2/8830 (0.0%)
83	EC	2.21	71/4413 (1.6%)	1.02	23/6849 (0.3%)
All	All	1.08	98/230558 (0.0%)	0.73	96/337917 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	19
2	B	0	65
3	C	0	4
4	D	0	1
83	EC	0	8
All	All	0	97

The worst 5 of 98 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
83	EC	6875	C	N1-C2	7.27	1.47	1.40
83	EC	6831	U	N1-C2	7.18	1.45	1.38
83	EC	6879	U	N1-C2	7.00	1.44	1.38
83	EC	6843	U	N1-C2	6.99	1.44	1.38
83	EC	6775	U	N1-C2	6.94	1.44	1.38

The worst 5 of 96 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
83	EC	6799	C	N1-C1'-C2'	8.09	124.52	114.00
48	VA	182	THR	N-CA-C	7.73	131.88	111.00
10	J	126	GLN	N-CA-C	-7.47	90.83	111.00
83	EC	6774	U	N1-C1'-C2'	7.36	123.57	114.00
2	B	3360	C	N1-C1'-C2'	7.26	123.44	114.00

There are no chirality outliers.

5 of 97 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	313	U	Sidechain
1	A	322	G	Sidechain
1	A	324	U	Sidechain
1	A	330	G	Sidechain
1	A	396	G	Sidechain

5.2 Too-close contacts [\(i\)](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	37658	0	18908	1739	0
2	B	70248	0	35241	3748	0
3	C	3354	0	1695	184	0
4	D	2580	0	1304	123	0
5	E	1359	0	1425	113	0
6	F	1918	0	1987	279	0
7	G	3082	0	3165	364	0
8	H	2750	0	2863	343	0
9	I	2376	0	2325	266	0
10	J	1401	0	1501	161	0
11	K	1785	0	1862	230	0
12	L	1818	0	1908	203	0
13	M	1519	0	1587	161	0
14	N	1718	0	1754	166	0
15	O	1354	0	1383	182	0
16	P	723	0	774	107	0
17	Q	1543	0	1608	188	0
18	R	1054	0	1149	174	0
19	S	1721	0	1779	243	0
20	T	1556	0	1659	150	0
21	U	1443	0	1485	166	0
22	V	1442	0	1543	200	0
23	W	1522	0	1617	164	0
24	X	1446	0	1487	179	0
25	Y	1277	0	1323	152	0
26	Z	796	0	812	60	0
27	AA	1004	0	1048	113	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
28	BA	509	0	537	51	0
29	CA	969	0	1036	133	0
30	DA	994	0	1081	124	0
31	EA	1093	0	1155	140	0
32	FA	1174	0	1215	132	0
33	GA	463	0	491	41	0
34	HA	743	0	797	90	0
35	IA	890	0	938	84	0
36	JA	1020	0	1090	89	0
37	KA	851	0	880	121	0
38	LA	881	0	949	128	0
39	MA	970	0	1078	122	0
40	NA	772	0	849	109	0
41	OA	682	0	687	83	0
42	PA	613	0	682	52	0
43	QA	437	0	475	72	0
44	RA	418	0	459	43	0
45	SA	234	0	284	20	0
46	TA	848	0	918	69	0
47	UA	695	0	738	87	0
48	VA	1473	0	1514	176	0
49	WA	2445	0	2401	191	0
50	XA	1612	0	1623	176	0
51	YA	1709	0	1784	217	0
52	ZA	1635	0	1723	207	0
53	AB	1734	0	1817	169	0
54	BB	2069	0	2154	255	0
55	CB	1610	0	1675	180	0
56	DB	1820	0	1918	158	0
57	EB	1481	0	1572	152	0
58	FB	1490	0	1525	155	0
59	GB	1494	0	1573	181	0
60	HB	817	0	804	72	0
61	IB	1245	0	1314	123	0
62	JB	496	0	141	0	0
63	KB	1193	0	1255	126	0
64	LB	942	0	979	148	0
65	MB	975	0	1017	91	0
66	NB	1106	0	1166	141	0
67	OB	836	0	827	75	0
68	PB	1193	0	1222	100	0
69	QB	1113	0	1124	140	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
70	RB	856	0	917	97	0
71	SB	685	0	672	107	0
72	TB	1022	0	1060	133	0
73	UB	1122	0	1196	121	0
74	VB	1074	0	1132	119	0
75	WB	563	0	603	85	0
76	XB	769	0	818	104	0
77	YB	611	0	633	76	0
78	ZB	498	0	535	56	0
79	AC	444	0	436	61	0
80	BC	475	0	525	38	0
81	CC	284	0	76	0	0
82	DC	6419	0	6493	727	0
83	EC	3968	0	1973	103	0
84	DC	28	0	12	2	0
85	DC	1	0	0	0	0
86	DC	35	0	40	6	0
All	All	215045	0	159780	14774	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 40.

The worst 5 of 14774 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)
2:B:509:U:H2'	2:B:510:G:H5''	1.22	1.20
56:DB:64:LYS:HE3	56:DB:81:VAL:HG21	1.24	1.19
2:B:1948:G:H5'	23:W:101:VAL:HG11	1.25	1.17
19:S:73:ARG:HE	19:S:92:LEU:HD21	1.11	1.15
18:R:21:VAL:HG12	18:R:65:LEU:HA	1.27	1.15

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	165/217 (76%)	114 (69%)	40 (24%)	11 (7%)	1	17
6	F	250/254 (98%)	165 (66%)	71 (28%)	14 (6%)	2	20
7	G	384/387 (99%)	277 (72%)	79 (21%)	28 (7%)	1	15
8	H	359/362 (99%)	253 (70%)	76 (21%)	30 (8%)	1	12
9	I	294/297 (99%)	221 (75%)	57 (19%)	16 (5%)	2	21
10	J	173/176 (98%)	117 (68%)	40 (23%)	16 (9%)	1	11
11	K	220/244 (90%)	173 (79%)	30 (14%)	17 (8%)	1	14
12	L	231/256 (90%)	165 (71%)	43 (19%)	23 (10%)	0	9
13	M	189/191 (99%)	146 (77%)	37 (20%)	6 (3%)	4	31
14	N	207/221 (94%)	157 (76%)	42 (20%)	8 (4%)	3	26
15	O	167/174 (96%)	125 (75%)	28 (17%)	14 (8%)	1	12
16	P	92/165 (56%)	63 (68%)	18 (20%)	11 (12%)	0	5
17	Q	191/199 (96%)	140 (73%)	38 (20%)	13 (7%)	1	17
18	R	134/138 (97%)	101 (75%)	24 (18%)	9 (7%)	1	17
19	S	201/204 (98%)	155 (77%)	33 (16%)	13 (6%)	1	18
20	T	195/199 (98%)	158 (81%)	30 (15%)	7 (4%)	3	28
21	U	181/184 (98%)	135 (75%)	35 (19%)	11 (6%)	1	19
22	V	183/186 (98%)	135 (74%)	34 (19%)	14 (8%)	1	14
23	W	186/189 (98%)	151 (81%)	30 (16%)	5 (3%)	5	34
24	X	170/172 (99%)	126 (74%)	25 (15%)	19 (11%)	0	7
25	Y	157/160 (98%)	102 (65%)	41 (26%)	14 (9%)	1	12
26	Z	98/121 (81%)	68 (69%)	22 (22%)	8 (8%)	1	13
27	AA	134/137 (98%)	95 (71%)	32 (24%)	7 (5%)	2	21
28	BA	59/155 (38%)	44 (75%)	8 (14%)	7 (12%)	0	6
29	CA	119/142 (84%)	90 (76%)	18 (15%)	11 (9%)	1	11
30	DA	124/127 (98%)	93 (75%)	21 (17%)	10 (8%)	1	13
31	EA	133/136 (98%)	93 (70%)	28 (21%)	12 (9%)	1	12
32	FA	146/149 (98%)	108 (74%)	31 (21%)	7 (5%)	2	23
33	GA	56/59 (95%)	45 (80%)	9 (16%)	2 (4%)	3	28
34	HA	95/105 (90%)	74 (78%)	16 (17%)	5 (5%)	2	21

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
35	IA	107/113 (95%)	84 (78%)	17 (16%)	6 (6%)	2	20
36	JA	125/130 (96%)	89 (71%)	27 (22%)	9 (7%)	1	16
37	KA	104/107 (97%)	82 (79%)	20 (19%)	2 (2%)	8	40
38	LA	110/121 (91%)	79 (72%)	23 (21%)	8 (7%)	1	15
39	MA	117/120 (98%)	89 (76%)	21 (18%)	7 (6%)	1	19
40	NA	97/100 (97%)	70 (72%)	13 (13%)	14 (14%)	0	3
41	OA	85/88 (97%)	65 (76%)	17 (20%)	3 (4%)	3	29
42	PA	75/78 (96%)	61 (81%)	14 (19%)	0	100	100
43	QA	48/51 (94%)	38 (79%)	6 (12%)	4 (8%)	1	13
44	RA	50/128 (39%)	32 (64%)	13 (26%)	5 (10%)	0	9
45	SA	23/25 (92%)	20 (87%)	3 (13%)	0	100	100
46	TA	103/106 (97%)	73 (71%)	19 (18%)	11 (11%)	0	7
47	UA	89/92 (97%)	55 (62%)	22 (25%)	12 (14%)	0	4
48	VA	187/312 (60%)	128 (68%)	42 (22%)	17 (9%)	1	12
49	WA	316/319 (99%)	229 (72%)	72 (23%)	15 (5%)	2	23
50	XA	204/252 (81%)	136 (67%)	49 (24%)	19 (9%)	0	11
51	YA	212/255 (83%)	146 (69%)	48 (23%)	18 (8%)	1	12
52	ZA	215/254 (85%)	165 (77%)	36 (17%)	14 (6%)	1	18
53	AB	221/240 (92%)	167 (76%)	39 (18%)	15 (7%)	1	17
54	BB	258/261 (99%)	178 (69%)	59 (23%)	21 (8%)	1	13
55	CB	204/225 (91%)	155 (76%)	31 (15%)	18 (9%)	1	12
56	DB	224/236 (95%)	167 (75%)	39 (17%)	18 (8%)	1	14
57	EB	182/190 (96%)	127 (70%)	40 (22%)	15 (8%)	1	13
58	FB	184/200 (92%)	149 (81%)	26 (14%)	9 (5%)	2	22
59	GB	183/197 (93%)	129 (70%)	35 (19%)	19 (10%)	0	8
60	HB	94/105 (90%)	67 (71%)	15 (16%)	12 (13%)	0	5
61	IB	153/156 (98%)	107 (70%)	34 (22%)	12 (8%)	1	14
62	JB	122/143 (85%)	74 (61%)	35 (29%)	13 (11%)	0	7
63	KB	148/151 (98%)	119 (80%)	21 (14%)	8 (5%)	2	21
64	LB	125/137 (91%)	83 (66%)	35 (28%)	7 (6%)	2	20
65	MB	120/142 (84%)	82 (68%)	25 (21%)	13 (11%)	0	7

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
66	NB	139/143 (97%)	104 (75%)	26 (19%)	9 (6%)	1	18
67	OB	115/136 (85%)	84 (73%)	21 (18%)	10 (9%)	1	12
68	PB	143/146 (98%)	109 (76%)	20 (14%)	14 (10%)	0	10
69	QB	141/144 (98%)	104 (74%)	23 (16%)	14 (10%)	0	9
70	RB	105/121 (87%)	73 (70%)	28 (27%)	4 (4%)	3	27
71	SB	85/87 (98%)	61 (72%)	14 (16%)	10 (12%)	0	6
72	TB	127/130 (98%)	93 (73%)	27 (21%)	7 (6%)	2	21
73	UB	142/145 (98%)	97 (68%)	36 (25%)	9 (6%)	1	18
74	VB	132/135 (98%)	94 (71%)	26 (20%)	12 (9%)	1	12
75	WB	68/108 (63%)	41 (60%)	21 (31%)	6 (9%)	1	12
76	XB	95/119 (80%)	52 (55%)	26 (27%)	17 (18%)	0	2
77	YB	79/82 (96%)	53 (67%)	21 (27%)	5 (6%)	1	18
78	ZB	61/67 (91%)	46 (75%)	10 (16%)	5 (8%)	1	13
79	AC	51/56 (91%)	37 (72%)	12 (24%)	2 (4%)	3	26
80	BC	58/63 (92%)	38 (66%)	15 (26%)	5 (9%)	1	12
81	CC	69/152 (45%)	41 (59%)	17 (25%)	11 (16%)	0	3
82	DC	819/842 (97%)	620 (76%)	154 (19%)	45 (6%)	2	21
All	All	12207/13416 (91%)	8881 (73%)	2429 (20%)	897 (7%)	2	15

5 of 897 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	138	VAL
5	E	151	VAL
6	F	57	PRO
6	F	125	ALA
6	F	217	GLN

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 PDB entries followed by that with respect to all EM entries.

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	157/198 (79%)	130 (83%)	27 (17%)	2	13
6	F	194/196 (99%)	169 (87%)	25 (13%)	4	22
7	G	322/323 (100%)	283 (88%)	39 (12%)	5	23
8	H	288/289 (100%)	263 (91%)	25 (9%)	10	35
9	I	244/245 (100%)	220 (90%)	24 (10%)	8	29
10	J	152/153 (99%)	131 (86%)	21 (14%)	3	20
11	K	186/205 (91%)	165 (89%)	21 (11%)	6	25
12	L	191/208 (92%)	177 (93%)	14 (7%)	14	42
13	M	171/171 (100%)	152 (89%)	19 (11%)	6	26
14	N	180/187 (96%)	165 (92%)	15 (8%)	11	38
15	O	147/150 (98%)	126 (86%)	21 (14%)	3	19
16	P	81/136 (60%)	69 (85%)	12 (15%)	3	17
17	Q	154/159 (97%)	132 (86%)	22 (14%)	3	19
18	R	107/109 (98%)	94 (88%)	13 (12%)	5	23
19	S	175/176 (99%)	156 (89%)	19 (11%)	6	26
20	T	160/162 (99%)	144 (90%)	16 (10%)	7	29
21	U	145/146 (99%)	125 (86%)	20 (14%)	3	20
22	V	150/151 (99%)	140 (93%)	10 (7%)	16	44
23	W	153/154 (99%)	139 (91%)	14 (9%)	9	32
24	X	156/156 (100%)	136 (87%)	20 (13%)	4	22
25	Y	136/137 (99%)	109 (80%)	27 (20%)	1	8
26	Z	87/107 (81%)	83 (95%)	4 (5%)	27	54
27	AA	104/105 (99%)	88 (85%)	16 (15%)	2	16
28	BA	54/129 (42%)	48 (89%)	6 (11%)	6	26
29	CA	105/118 (89%)	88 (84%)	17 (16%)	2	15
30	DA	109/110 (99%)	98 (90%)	11 (10%)	7	29
31	EA	115/116 (99%)	103 (90%)	12 (10%)	7	28
32	FA	118/119 (99%)	110 (93%)	8 (7%)	16	44
33	GA	46/47 (98%)	39 (85%)	7 (15%)	3	16
34	HA	81/88 (92%)	72 (89%)	9 (11%)	6	26
35	IA	96/97 (99%)	90 (94%)	6 (6%)	18	46
36	JA	109/111 (98%)	95 (87%)	14 (13%)	4	22

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
37	KA	90/91 (99%)	77 (86%)	13 (14%)	3	18
38	LA	95/103 (92%)	85 (90%)	10 (10%)	7	27
39	MA	104/105 (99%)	95 (91%)	9 (9%)	10	35
40	NA	81/82 (99%)	66 (82%)	15 (18%)	1	10
41	OA	70/71 (99%)	61 (87%)	9 (13%)	4	22
42	PA	68/69 (99%)	60 (88%)	8 (12%)	5	24
43	QA	45/46 (98%)	36 (80%)	9 (20%)	1	8
44	RA	47/116 (40%)	41 (87%)	6 (13%)	4	22
45	SA	23/23 (100%)	19 (83%)	4 (17%)	2	12
46	TA	90/91 (99%)	80 (89%)	10 (11%)	6	26
47	UA	71/72 (99%)	64 (90%)	7 (10%)	8	29
48	VA	160/254 (63%)	145 (91%)	15 (9%)	8	31
49	WA	261/262 (100%)	233 (89%)	28 (11%)	6	27
50	XA	173/210 (82%)	153 (88%)	20 (12%)	5	24
51	YA	191/224 (85%)	174 (91%)	17 (9%)	9	34
52	ZA	176/205 (86%)	169 (96%)	7 (4%)	31	57
53	AB	182/195 (93%)	164 (90%)	18 (10%)	8	29
54	BB	221/222 (100%)	197 (89%)	24 (11%)	6	26
55	CB	173/191 (91%)	162 (94%)	11 (6%)	17	45
56	DB	193/201 (96%)	177 (92%)	16 (8%)	11	38
57	EB	165/170 (97%)	154 (93%)	11 (7%)	16	44
58	FB	150/161 (93%)	135 (90%)	15 (10%)	7	29
59	GB	158/166 (95%)	140 (89%)	18 (11%)	5	25
60	HB	89/98 (91%)	79 (89%)	10 (11%)	6	25
61	IB	136/137 (99%)	121 (89%)	15 (11%)	6	26
63	KB	127/128 (99%)	118 (93%)	9 (7%)	14	42
64	LB	96/105 (91%)	79 (82%)	17 (18%)	2	12
65	MB	103/118 (87%)	95 (92%)	8 (8%)	12	39
66	NB	117/119 (98%)	107 (92%)	10 (8%)	10	37
67	OB	82/124 (66%)	65 (79%)	17 (21%)	1	6
68	PB	128/129 (99%)	112 (88%)	16 (12%)	4	22

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
69	QB	115/116 (99%)	105 (91%)	10 (9%)	10	35
70	RB	100/114 (88%)	91 (91%)	9 (9%)	9	34
71	SB	74/74 (100%)	69 (93%)	5 (7%)	16	44
72	TB	110/111 (99%)	96 (87%)	14 (13%)	4	22
73	UB	119/120 (99%)	109 (92%)	10 (8%)	11	37
74	VB	112/113 (99%)	105 (94%)	7 (6%)	18	46
75	WB	61/89 (68%)	57 (93%)	4 (7%)	16	45
76	XB	83/101 (82%)	76 (92%)	7 (8%)	11	37
77	YB	70/71 (99%)	65 (93%)	5 (7%)	14	42
78	ZB	56/60 (93%)	53 (95%)	3 (5%)	22	50
79	AC	47/49 (96%)	44 (94%)	3 (6%)	17	45
80	BC	51/54 (94%)	49 (96%)	2 (4%)	32	58
82	DC	699/714 (98%)	622 (89%)	77 (11%)	6	26
All	All	10235/11032 (93%)	9143 (89%)	1092 (11%)	10	27

5 of 1092 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
68	PB	40	ARG
70	RB	103	ILE
68	PB	28	ILE
82	DC	327	PHE
24	X	95	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 315 such sidechains are listed below:

Mol	Chain	Res	Type
58	FB	138	ASN
78	ZB	27	GLN
61	IB	81	HIS
69	QB	138	GLN
82	DC	365	ASN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1755/1798 (97%)	359 (20%)	19 (1%)
2	B	3265/3396 (96%)	569 (17%)	29 (0%)
3	C	157/158 (99%)	25 (15%)	2 (1%)
4	D	120/121 (99%)	17 (14%)	0
83	EC	176/201 (87%)	70 (39%)	4 (2%)
All	All	5473/5674 (96%)	1040 (19%)	54 (0%)

5 of 1040 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	2	A
1	A	4	C
1	A	25	C
1	A	26	A
1	A	34	G

5 of 54 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	B	1329	U
2	B	2501	U
3	C	85	G
2	B	1352	A
2	B	1816	A

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

1 non-standard protein/DNA/RNA residue is 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	$\# Z > 2$
82	DDE	DC	699	82	14,20,21	1.67	3 (21%)	14,28,30	2.17	6 (42%)

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
82	DDE	DC	699	82	-	2/20/21/23	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	DC	699	DDE	CBW-CBI	4.15	1.59	1.53
82	DC	699	DDE	CAT-CE1	2.40	1.53	1.50
82	DC	699	DDE	OAG-CBI	2.13	1.27	1.23

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
82	DC	699	DDE	CAU-CBW-CBI	-4.75	101.78	111.20
82	DC	699	DDE	OAG-CBI-CBW	-3.70	115.81	120.49
82	DC	699	DDE	OAG-CBI-NAD	2.44	127.25	123.00
82	DC	699	DDE	CG-ND1-CE1	2.38	110.07	103.05
82	DC	699	DDE	CAC-NCB-CBW	2.23	116.07	110.51

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
82	DC	699	DDE	CAU-CAT-CE1-NE2
82	DC	699	DDE	OAG-CBI-CBW-CAU

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](#)

Of 3 ligands modelled in this entry, 1 is 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
84	GDP	DC	901	85	24,30,30	1.99	6 (25%)	30,47,47	1.80	8 (26%)
86	SO1	DC	903	-	35,39,39	2.46	18 (51%)	39,64,64	2.10	11 (28%)

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
84	GDP	DC	901	85	-	0/12/32/32	0/3/3/3
86	SO1	DC	903	-	-	4/21/104/104	0/7/5/5

The worst 5 of 24 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
84	DC	901	GDP	O4'-C1'	5.01	1.48	1.41
86	DC	903	SO1	O56-C52	-4.43	1.30	1.41
86	DC	903	SO1	O17-C52	4.02	1.47	1.40
84	DC	901	GDP	PB-O1B	4.00	1.63	1.50
86	DC	903	SO1	C10-C3	3.88	1.61	1.55

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
86	DC	903	SO1	C12-C6-C10	-7.20	102.20	107.91
84	DC	901	GDP	PA-O3A-PB	-5.65	113.44	132.83
86	DC	903	SO1	C25-C22-C24	5.25	130.48	113.56
86	DC	903	SO1	C10-C6-C2	3.95	108.91	104.16
86	DC	903	SO1	C1-C4-C13	2.88	121.54	118.44

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
86	DC	903	SO1	C3-C1-C5-O14

Continued on next page...

Continued from previous page...

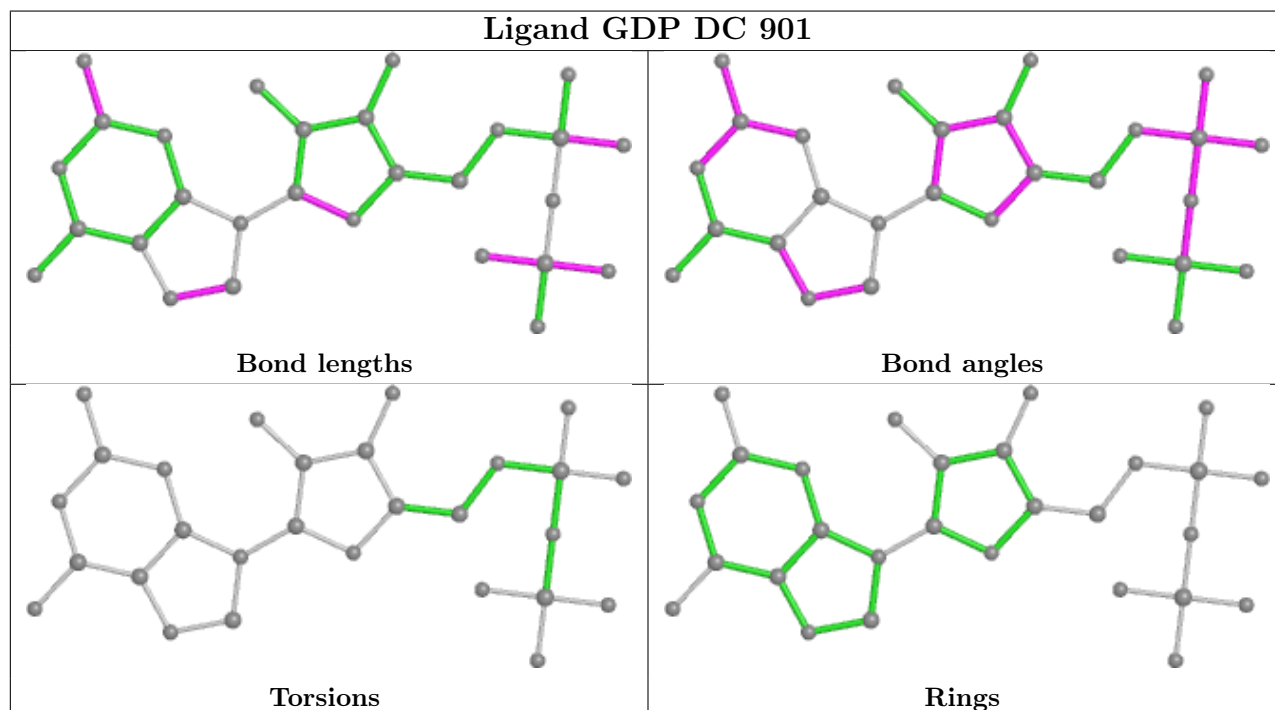
Mol	Chain	Res	Type	Atoms
86	DC	903	SO1	C3-C1-C5-O15
86	DC	903	SO1	O19-C11-C3-C10
86	DC	903	SO1	O19-C11-C3-C1

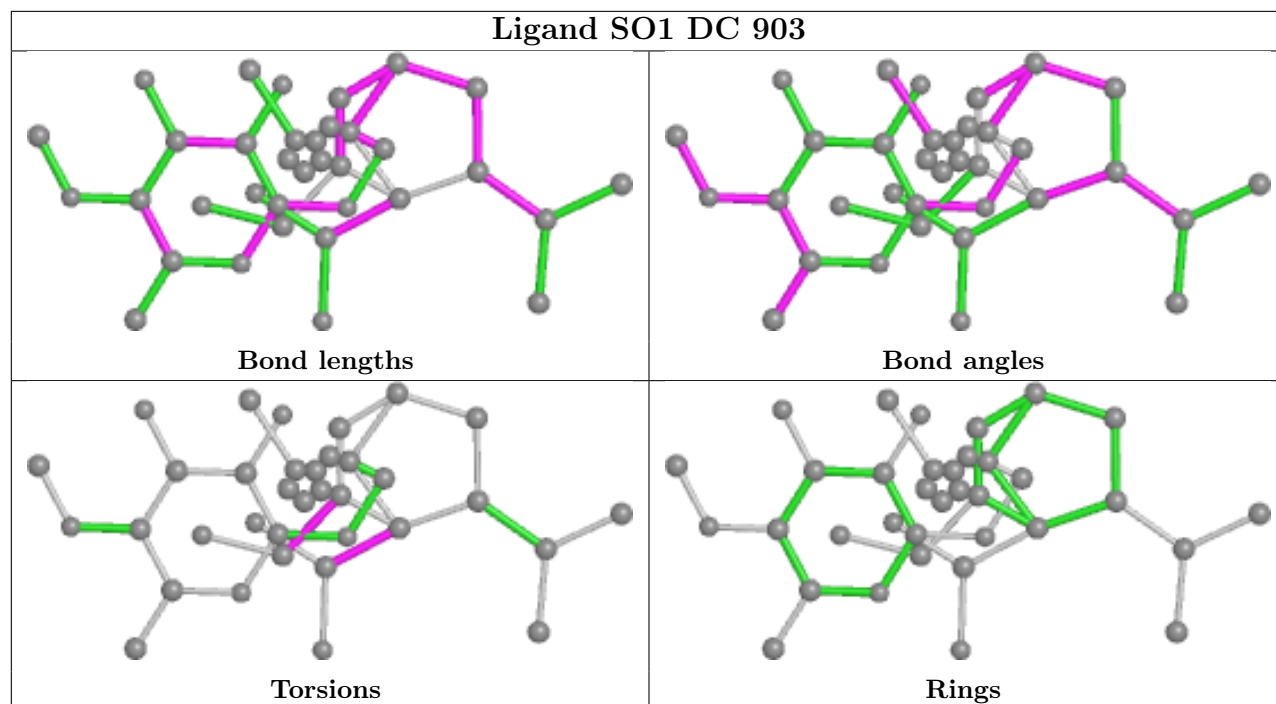
There are no ring outliers.

2 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
84	DC	901	GDP	2	0
86	DC	903	SO1	6	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 Map visualisation

This section contains visualisations of the EMDB entry EMD-6647. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal surface views

This section was not generated.

6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

This section contains the results of statistical analysis of the map.

7.1 Map-value distribution

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit

This section was not generated.