



wwPDB EM Validation Summary Report ⓘ

Feb 14, 2024 – 02:50 AM EST

PDB ID : 3J78
EMDB ID : EMD-5977
Title : Structures of yeast 80S ribosome-tRNA complexes in the rotated and non-rotated conformations (Class I - non-rotated ribosome with 2 tRNAs)
Authors : Svidritskiy, E.; Brilot, A.F.; Koh, C.S.; Grigorieff, N.; Korostelev, A.A.
Deposited on : 2014-05-29
Resolution : 6.30 Å (reported)
Based on initial models : 3J3B, 3I9B, 3U5C, 3U5D, 3U5E, 3U5B

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:

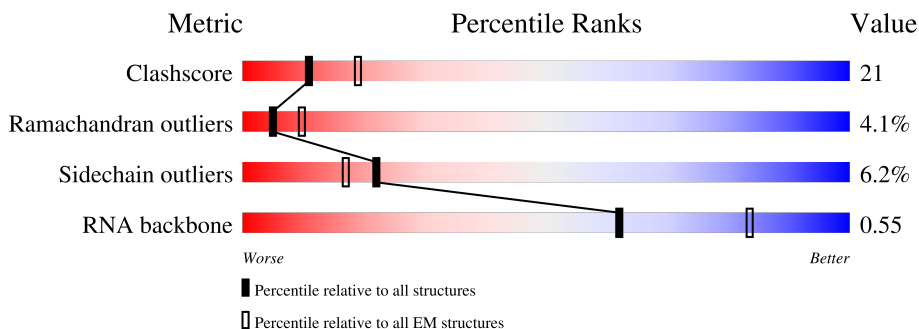
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

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 6.30 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	L1	217	78% 47% 39% 9% 6%
2	L2	254	11% 43% 51% 5%
3	L3	387	13% 51% 46%
4	L4	362	11% 51% 44%
5	L5	297	25% 52% 44%
6	L6	176	11% 50% 35% 11%
7	L7	244	6% 42% 45% 9%

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Mol	Chain	Length	Quality of chain
8	L8	256	
9	L9	191	
10	60	221	
11	61	174	
12	62	165	
13	63	199	
14	64	138	
15	65	204	
16	66	199	
17	67	184	
18	68	186	
19	69	189	
20	70	172	
21	71	160	
22	72	121	
23	73	137	
24	74	155	
25	75	142	
26	76	127	
27	77	136	
28	78	149	
29	79	59	
30	80	105	
31	81	113	
32	82	130	

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Mol	Chain	Length	Quality of chain
33	83	107	52% 40% 7%
34	84	121	43% 43% 7% 9% 7%
35	85	120	56% 39% 5% 5%
36	86	100	46% 45% 8% 8%
37	87	88	58% 38% 6% 6%
38	88	78	51% 45% 8% 8%
39	89	51	53% 37% 8% 8%
40	90	128	26% 13% 59% 6% 2%
41	91	25	40% 40% 20% 36%
42	92	106	50% 46% 9% 9%
43	93	92	50% 46% 10% 10%
44	P0	312	22% 17% 60% 18% 2%
45	RC	319	50% 46% 16% 16%
46	S0	252	39% 37% 18% 10% 5%
47	S1	255	32% 42% 16% 5% 16%
48	S2	254	42% 40% 15% 8%
49	S3	240	47% 40% 7% 12% 5%
50	S4	261	49% 45% 5% 25% 5%
51	S5	225	42% 46% 8% 16% 8%
52	S6	236	54% 38% 15% 36%
53	S7	190	53% 36% 8% 15%
54	S8	200	48% 42% 6% 24%
55	S9	197	41% 48% 6% 17%
56	10	105	40% 40% 10% 7% 9%
57	11	156	54% 40% 5% 29%


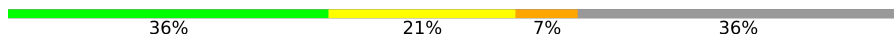
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Mol	Chain	Length	Quality of chain
58	12	143	
59	13	151	
60	14	137	
61	15	142	
62	16	143	
63	17	136	
64	18	146	
65	19	144	
66	20	121	
67	21	87	
68	22	130	
69	23	145	
70	24	135	
71	25	108	
72	26	119	
73	27	82	
74	28	67	
75	29	56	
76	30	63	
77	31	152	
78	1S	1798	
79	2S	3395	
80	8S	158	
81	5S	121	
82	ET	77	

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Mol	Chain	Length	Quality of chain
82	PT	77	 <p>53% 40% 6%</p>
83	MR	14	 <p>36% 21% 7% 36%</p>

2 Entry composition [i](#)

There are 83 unique types of molecules in this entry. The entry contains 209136 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 protein called 60S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	L1	204	1609	1031	279	290	9	0	0

- Molecule 2 is a protein called 60S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	L2	252	1918	1193	389	335	1	0	0

- Molecule 3 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	L3	386	3082	1956	584	534	8	0	0

- Molecule 4 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	L4	361	2750	1730	522	495	3	0	0

- Molecule 5 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	L5	296	2376	1501	414	459	2	0	0

- Molecule 6 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	L6	156	1240	800	222	217	1	0	0

- Molecule 7 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	L7	222	1785	1151	324	309	1	0	0

- Molecule 8 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	L8	233	1818	1159	326	330	3	0	0

- Molecule 9 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	L9	191	1519	963	274	278	4	0	0

- Molecule 10 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	60	211	1718	1089	325	298	6	0	0

- Molecule 11 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	61	169	1354	847	253	250	4	0	0

- Molecule 12 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	62	143	703	417	143	143	0	0

- Molecule 13 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	63	193	1543	962	315	266	0	0

- Molecule 14 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	64	136	1054	675	199	178	2	0	0

- Molecule 15 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	65	203	1721	1077	361	282	1	0	0

- Molecule 16 is a protein called 60S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	66	197	1556	1003	289	263	1	0	0

- Molecule 17 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
17	67	183	1443	896	287	260	0	0

- Molecule 18 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	68	185	1442	908	290	242	2	0	0

- Molecule 19 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
19	69	188	1522	935	326	261	0	0

- Molecule 20 is a protein called 60S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	70	172	1446	930	267	245	4	0	0

- Molecule 21 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	71	159	1277	805	246	222	4	0	0

- Molecule 22 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	72	100	796	516	131	149		0	0

- Molecule 23 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	73	136	1004	628	189	180	7	0	0

- Molecule 24 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	74	64	528	340	103	84	1	0	0

- Molecule 25 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	75	121	969	623	170	174	2	0	0

- Molecule 26 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	76	126	994	625	192	177		0	0

- Molecule 27 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	77	135	1093	710	202	181		0	0

- Molecule 28 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	78	148	1174	749	231	191	3	0	0

- Molecule 29 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	79	58	463	289	100	74		0	0

- Molecule 30 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	80	97	743	479	124	139	1	0	0

- Molecule 31 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	81	109	890	565	168	156	1	0	0

- Molecule 32 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	82	127	1020	647	205	167	1	0	0

- Molecule 33 is a protein called 60S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	83	106	851	540	165	145	1	0	0

- Molecule 34 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	84	112	881	546	179	152	4	0	0

- Molecule 35 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	85	119	Total	C	N	O	S	0	0
			970	615	186	168	1		

- Molecule 36 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	86	99	Total	C	N	O	S	0	0
			772	481	156	133	2		

- Molecule 37 is a protein called 60S ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	87	87	Total	C	N	O	S	0	0
			682	414	148	115	5		

- Molecule 38 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	88	77	Total	C	N	O	0	0
			613	391	115	107		

- Molecule 39 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	89	50	Total	C	N	O	S	0	0
			437	272	97	66	2		

- Molecule 40 is a protein called 60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	90	52	Total	C	N	O	S	0	0
			418	259	86	68	5		

- Molecule 41 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	91	25	Total	C	N	O	S	0	0
			234	142	63	28	1		

- Molecule 42 is a protein called 60S ribosomal protein L42.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	92	105	848	534	170	139	5	0	0

- Molecule 43 is a protein called 60S ribosomal protein L43.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	93	91	695	429	138	122	6	0	0

- Molecule 44 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	P0	125	987	633	174	177	3	0	0

- Molecule 45 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

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

- Molecule 46 is a protein called 40S ribosomal protein S0.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	S0	206	1612	1034	285	291	2	0	0

- Molecule 47 is a protein called 40S ribosomal protein S1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	S1	214	1709	1084	310	311	4	0	0

- Molecule 48 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	S2	217	1635	1047	289	297	2	0	0

- Molecule 49 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	S3	223	Total	C	N	O	S	0	0
			1734	1101	313	314	6		

- Molecule 50 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	S4	260	Total	C	N	O	S	0	0
			2069	1316	389	361	3		

- Molecule 51 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	S5	206	Total	C	N	O	S	0	0
			1610	1007	300	300	3		

- Molecule 52 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	S6	226	Total	C	N	O	S	0	0
			1820	1142	350	325	3		

- Molecule 53 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms				AltConf	Trace
53	S7	184	Total	C	N	O	0	0
			1481	951	265	265		

- Molecule 54 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	S8	188	Total	C	N	O	S	0	0
			1490	925	298	265	2		

- Molecule 55 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	S9	185	Total	C	N	O	S	0	0
			1494	943	289	261	1		

- Molecule 56 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	10	96	817	529	133	153	2	0	0

- Molecule 57 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	11	155	1245	798	235	209	3	0	0

- Molecule 58 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	12	124	935	587	165	181	2	0	0

- Molecule 59 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	13	150	1193	759	224	208	2	0	0

- Molecule 60 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	14	127	942	578	186	175	3	0	0

- Molecule 61 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	15	124	991	631	187	166	7	0	0

- Molecule 62 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
62	16	141	1106	708	203	195	0	0

- Molecule 63 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	17	120	965	603	183	177	2	0	0

- Molecule 64 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	18	145	1193	743	237	211	2	0	0

- Molecule 65 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	19	143	1113	694	208	209	2	0	0

- Molecule 66 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	20	107	856	539	156	160	1	0	0

- Molecule 67 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	21	87	685	420	125	138	2	0	0

- Molecule 68 is a protein called 40S ribosomal protein S22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	22	129	1022	650	188	181	3	0	0

- Molecule 69 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	23	144	1122	708	220	192	2	0	0

- Molecule 70 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms				AltConf	Trace
70	24	134	Total	C	N	O	0	0
			1074	676	208	190		

- Molecule 71 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms				AltConf	Trace
71	25	70	Total	C	N	O	0	0
			563	360	104	99		

- Molecule 72 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	26	97	Total	C	N	O	S	0	0
			769	475	160	129	5		

- Molecule 73 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	27	81	Total	C	N	O	S	0	0
			611	382	110	114	5		

- Molecule 74 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	28	63	Total	C	N	O	S	0	0
			498	306	99	92	1		

- Molecule 75 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	29	53	Total	C	N	O	S	0	0
			444	275	92	73	4		

- Molecule 76 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	30	60	Total	C	N	O	S	0	0
			475	299	98	77	1		

- Molecule 77 is a protein called 40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	31	71	Total	C	N	O	S	0	0
			498	309	93	92	4		

- Molecule 78 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	1S	1781	Total	C	N	O	P	0	0
			37949	16965	6715	12488	1781		

- Molecule 79 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	2S	3302	Total	C	N	O	P	0	0
			70616	31540	12710	23064	3302		

- Molecule 80 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	8S	158	Total	C	N	O	P	0	0
			3354	1500	586	1110	158		

- Molecule 81 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	5S	121	Total	C	N	O	P	0	0
			2580	1152	461	846	121		

- Molecule 82 is a RNA chain called P/E-site initiator transfer RNA^{fMet}.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	ET	77	Total	C	N	O	P	0	0
			1644	732	297	538	77		
82	PT	77	Total	C	N	O	P	0	0
			1644	732	297	538	77		

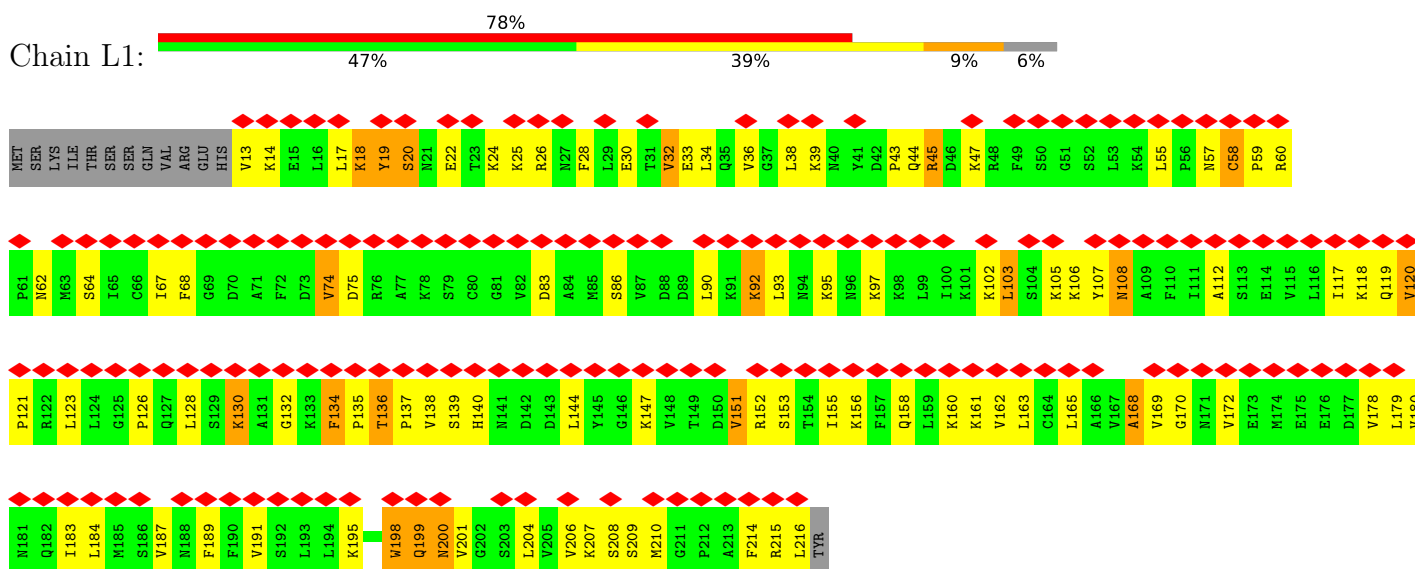
- Molecule 83 is a RNA chain called messenger RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	MR	9	Total	C	N	O	P	0	0
			195	88	39	59	9		

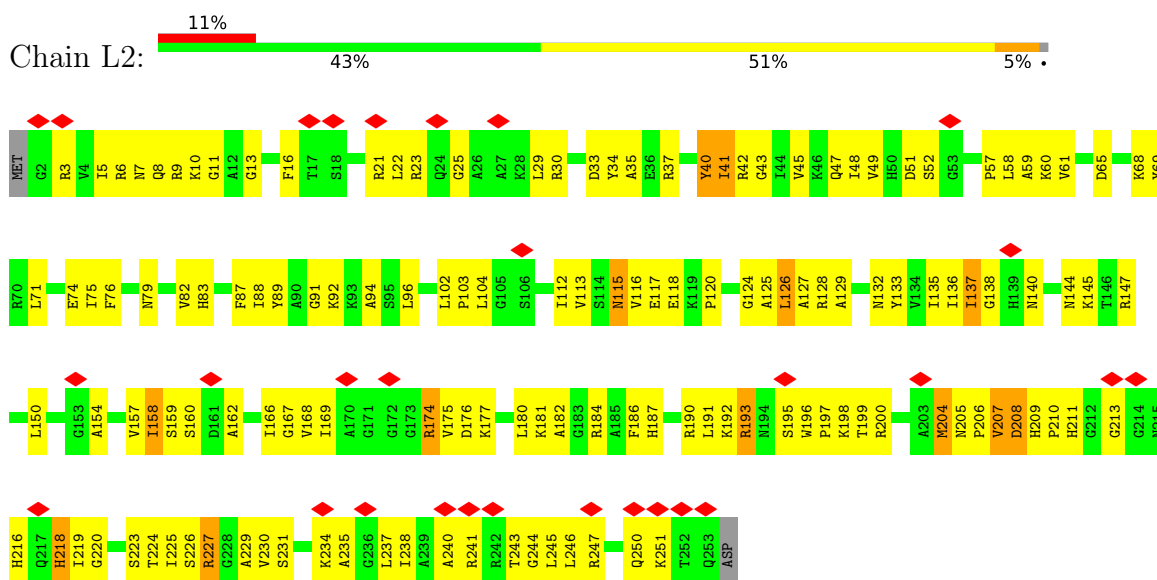
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

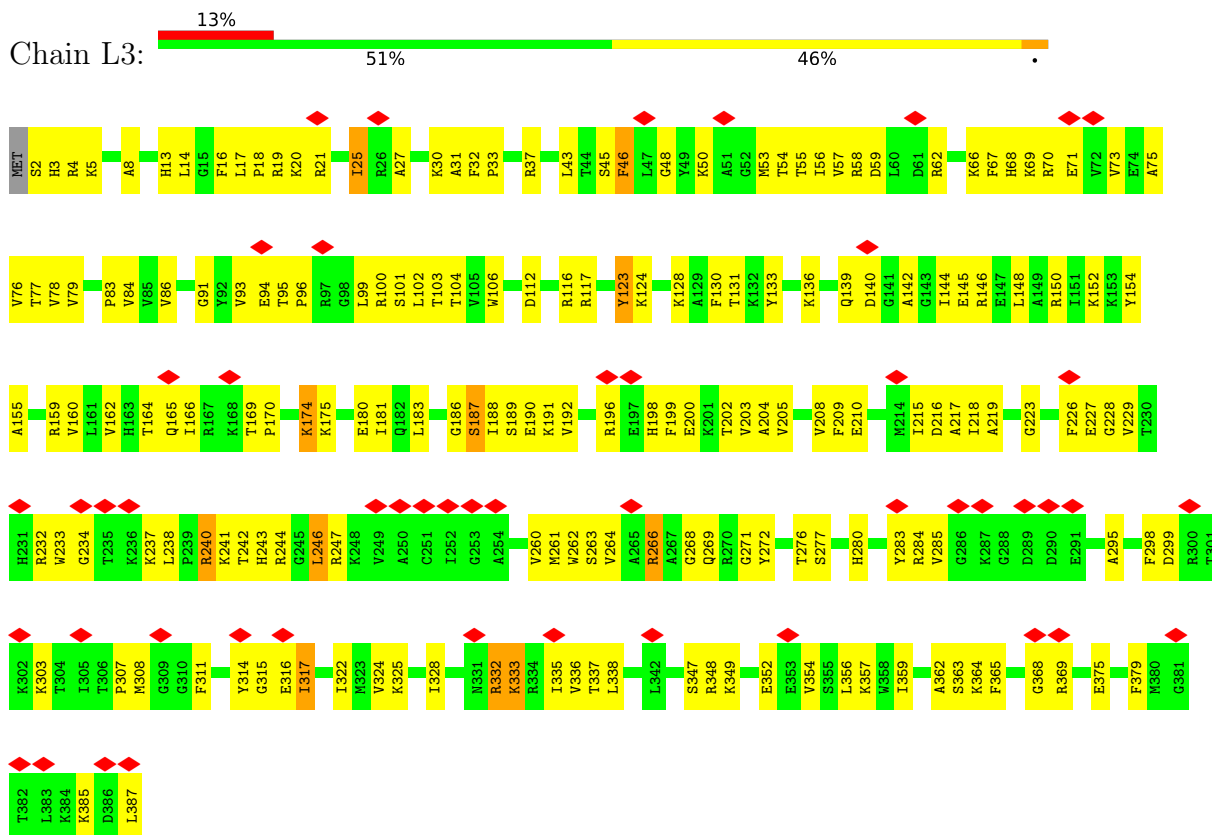
• Molecule 1: 60S ribosomal protein L1

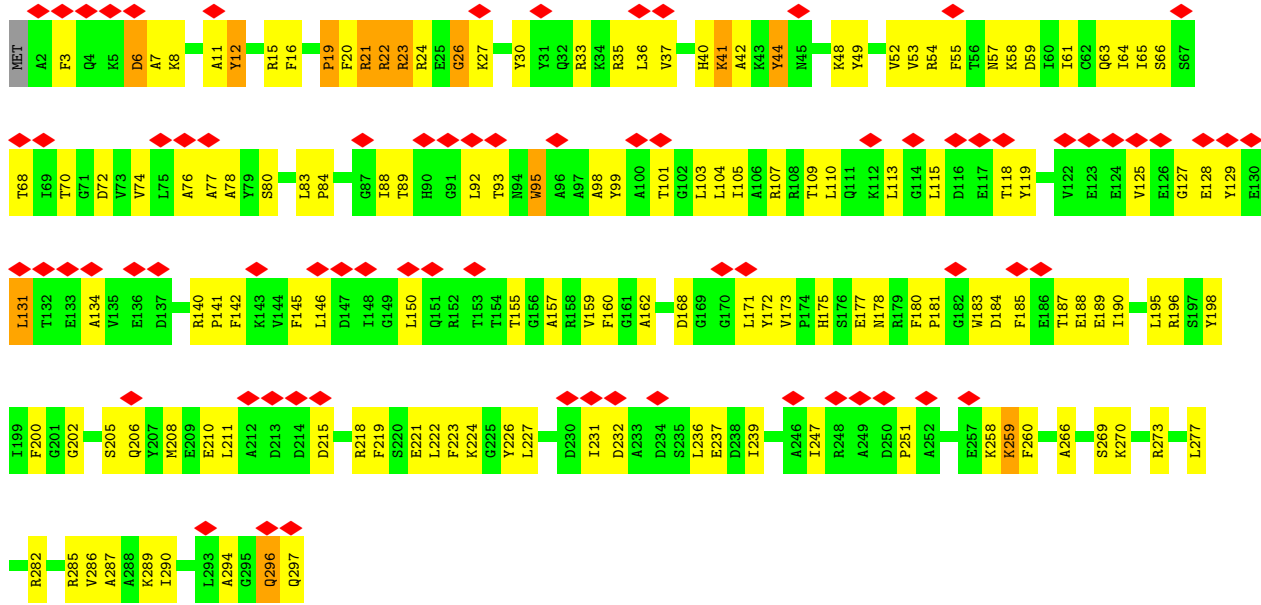


• Molecule 2: 60S ribosomal protein L2

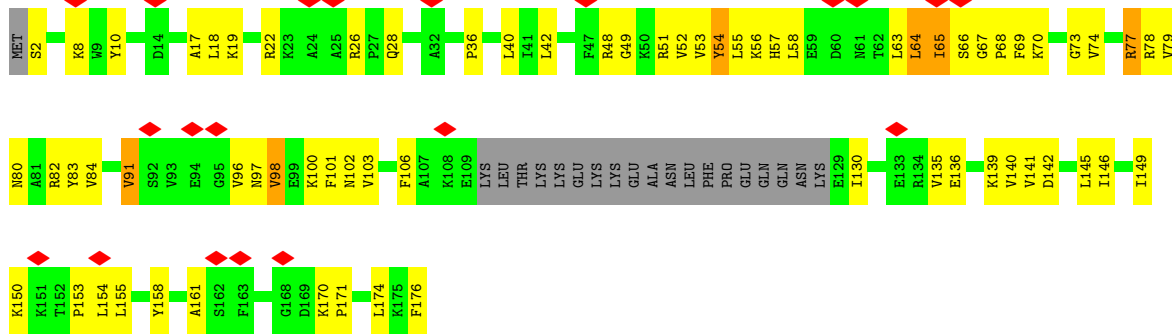


• Molecule 3: 60S ribosomal protein L3

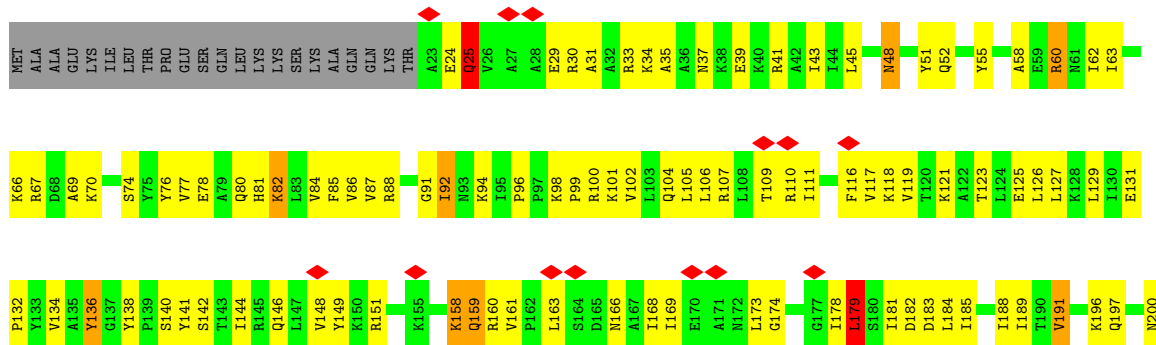


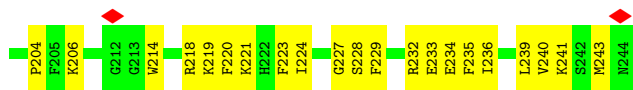


• Molecule 6: 60S ribosomal protein L6

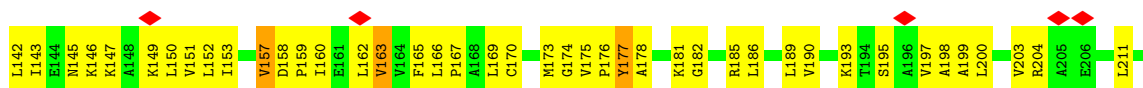
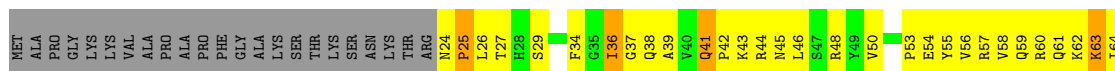


• Molecule 7: 60S ribosomal protein L7

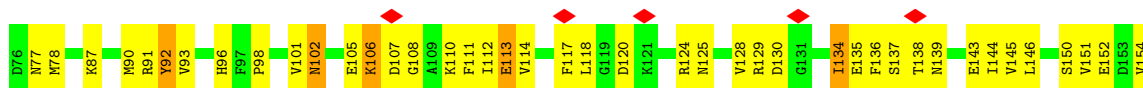
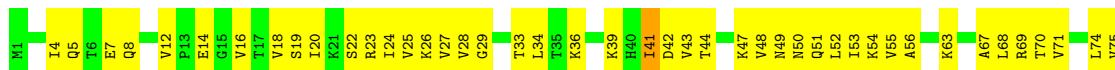




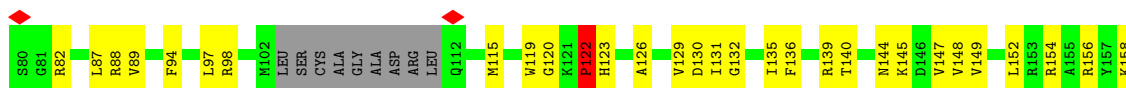
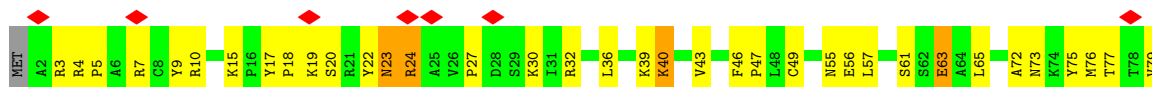
• Molecule 8: 60S ribosomal protein L8



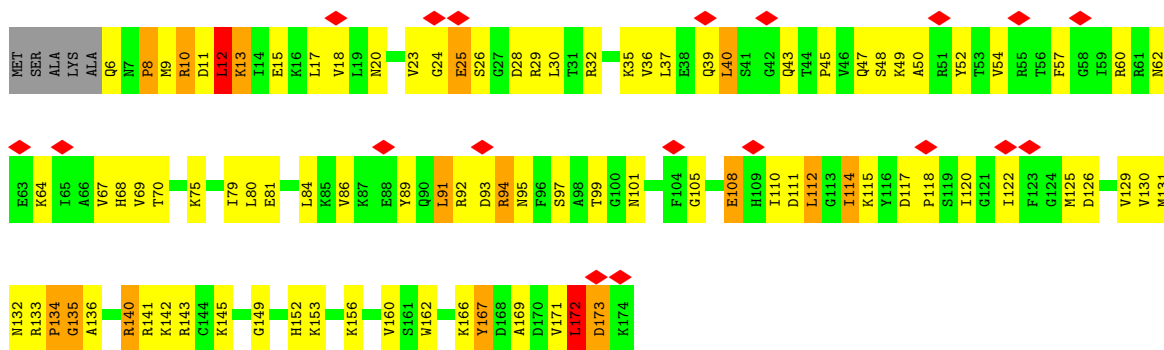
• Molecule 9: 60S ribosomal protein L9



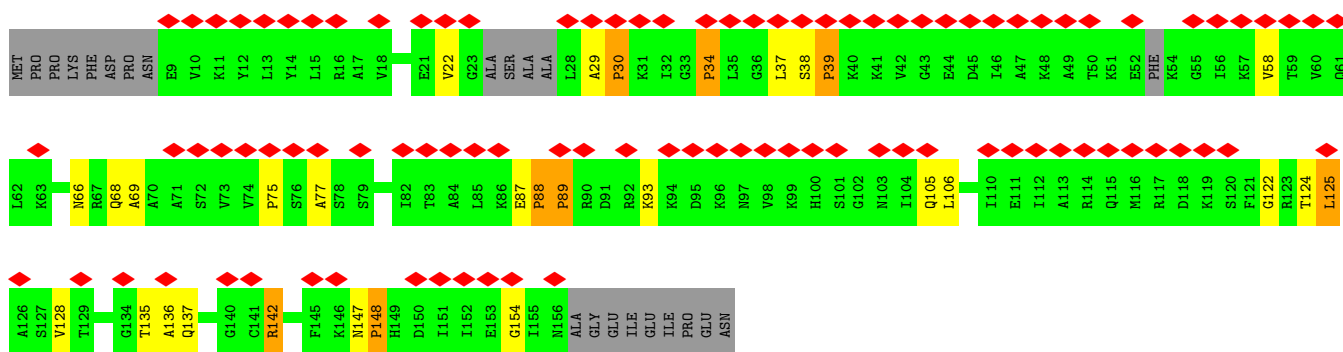
• Molecule 10: 60S ribosomal protein L10



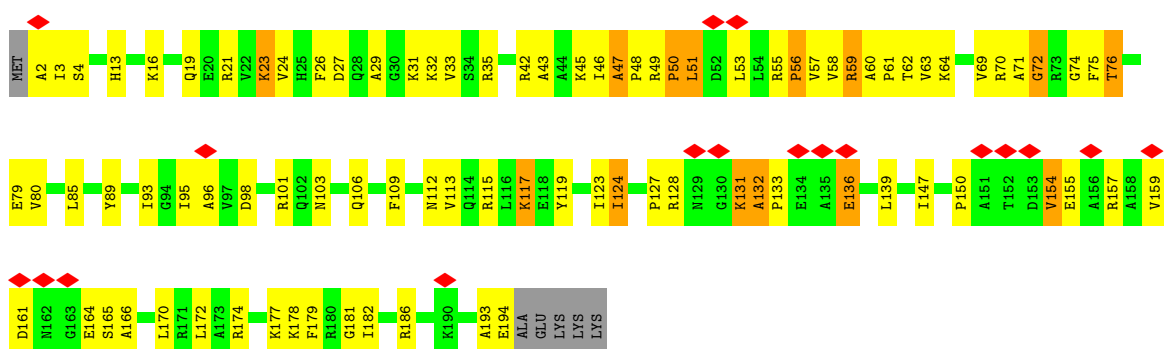
• Molecule 11: 60S ribosomal protein L11



• Molecule 12: 60S ribosomal protein L12

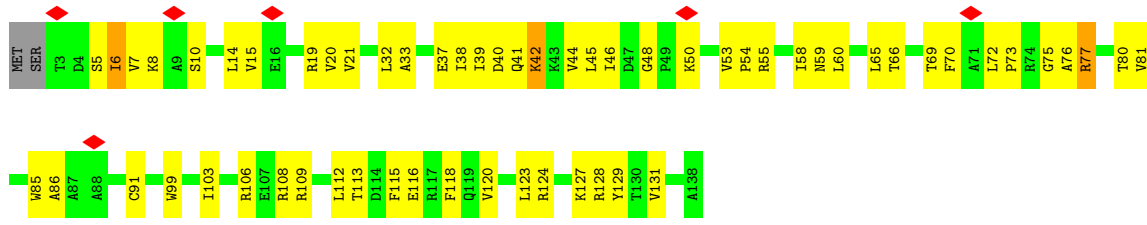


• Molecule 13: 60S ribosomal protein L13

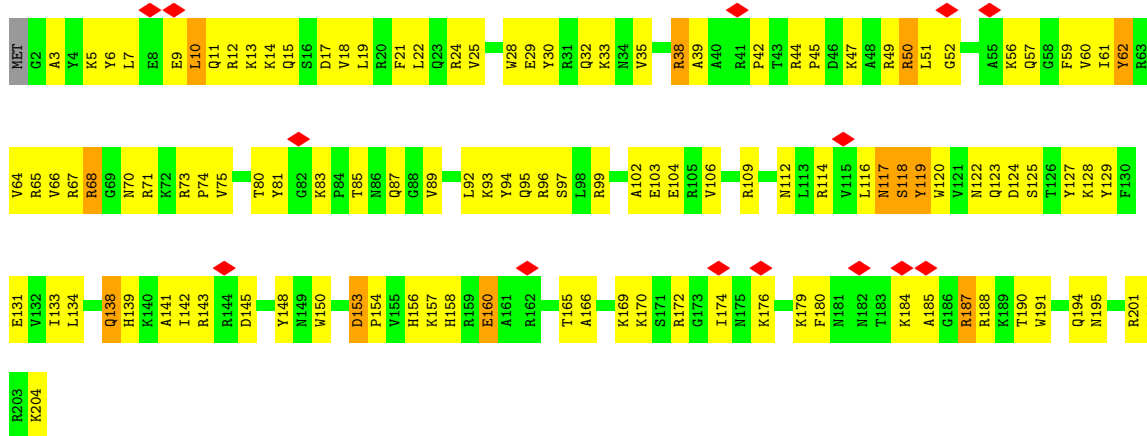


• Molecule 14: 60S ribosomal protein L14

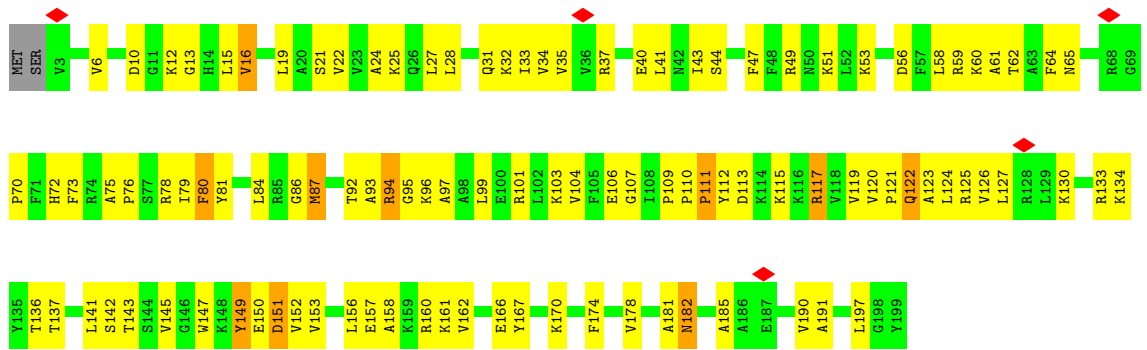




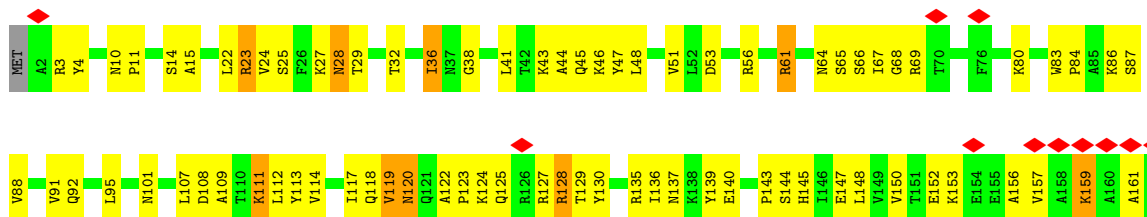
• Molecule 15: 60S ribosomal protein L15



• Molecule 16: 60S ribosomal protein L16

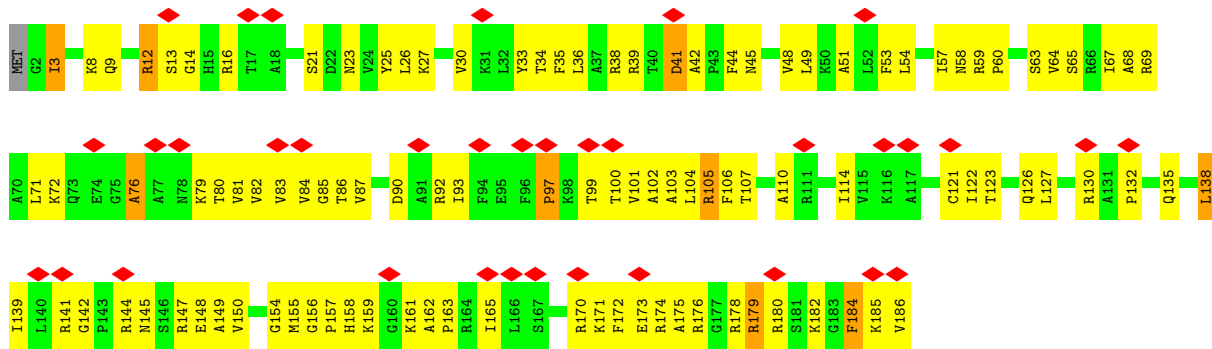


• Molecule 17: 60S ribosomal protein L17

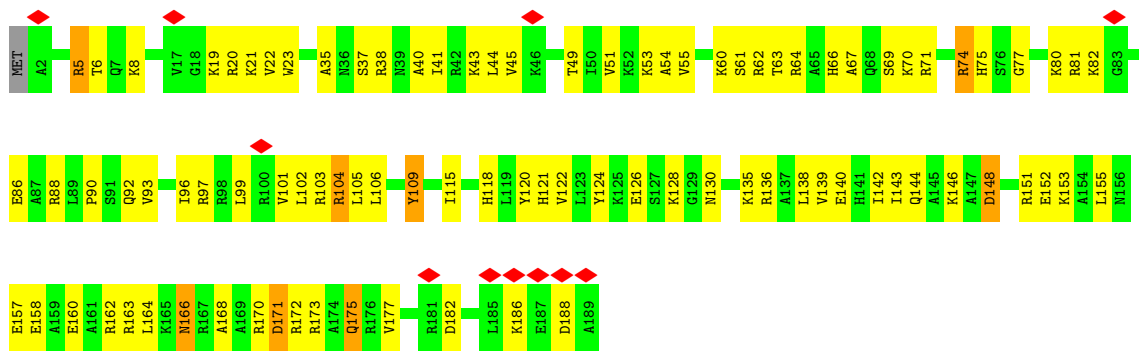




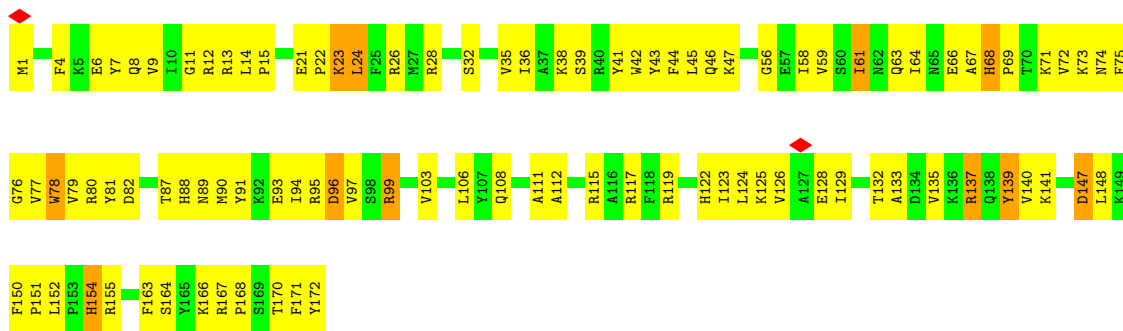
• Molecule 18: 60S ribosomal protein L18



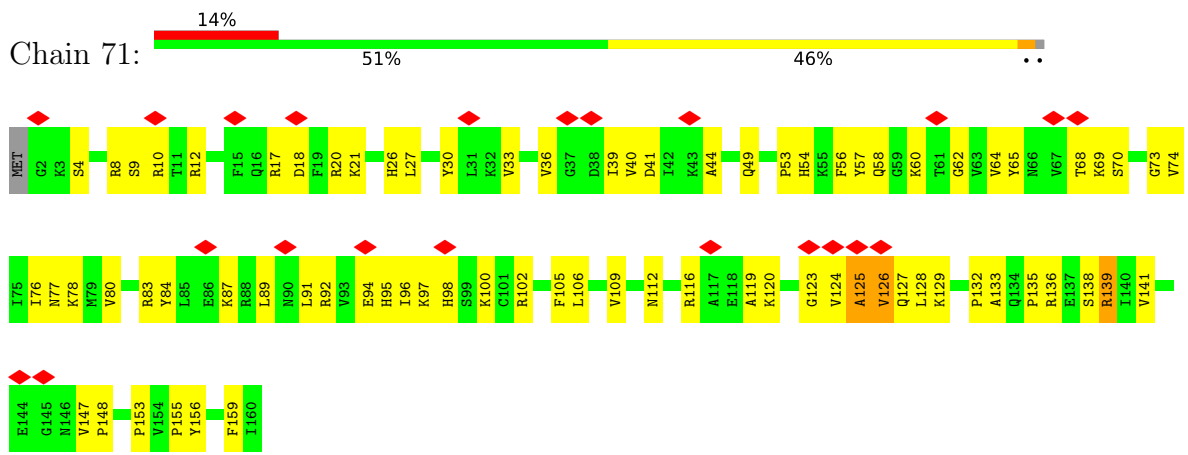
• Molecule 19: 60S ribosomal protein L19



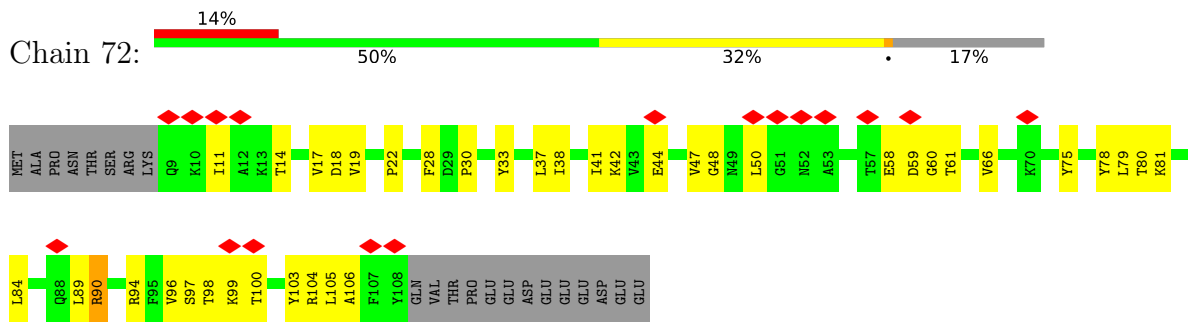
• Molecule 20: 60S ribosomal protein L20



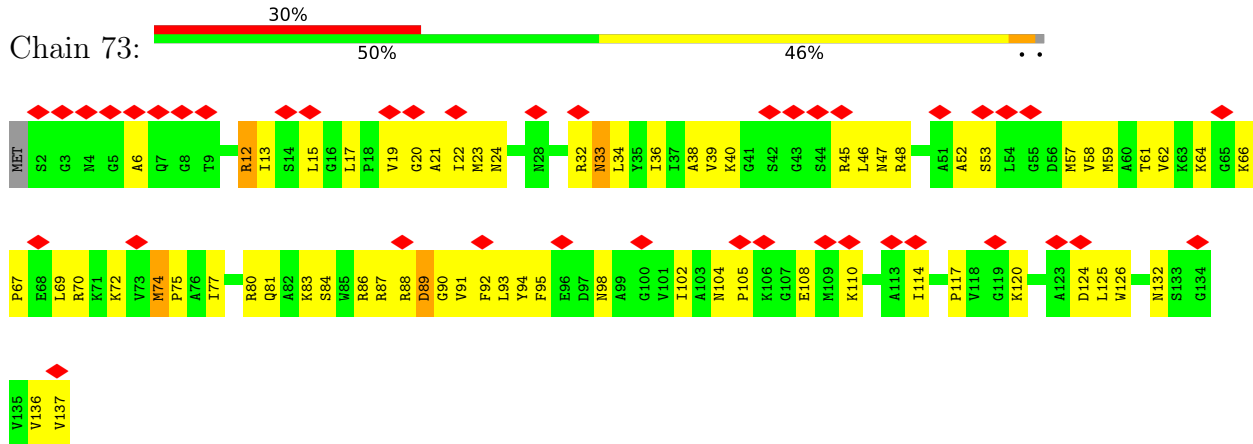
• Molecule 21: 60S ribosomal protein L21



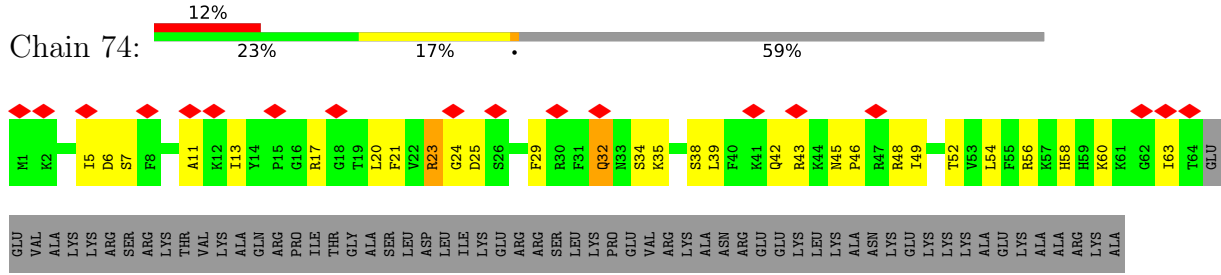
• Molecule 22: 60S ribosomal protein L22



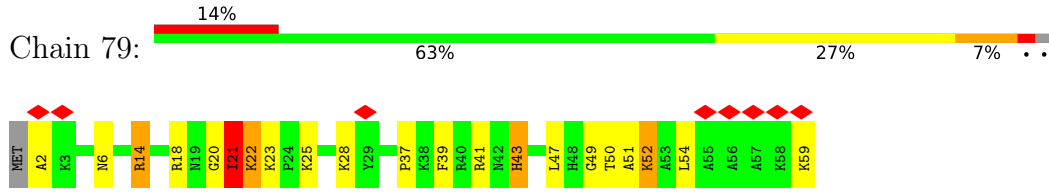
• Molecule 23: 60S ribosomal protein L23



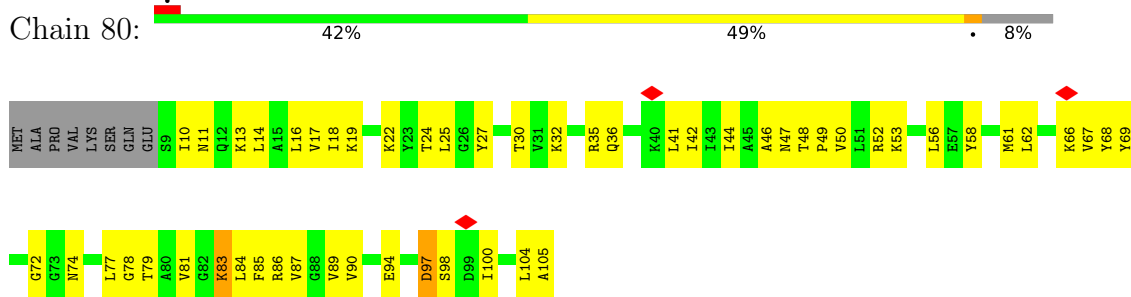
• Molecule 24: 60S ribosomal protein L24



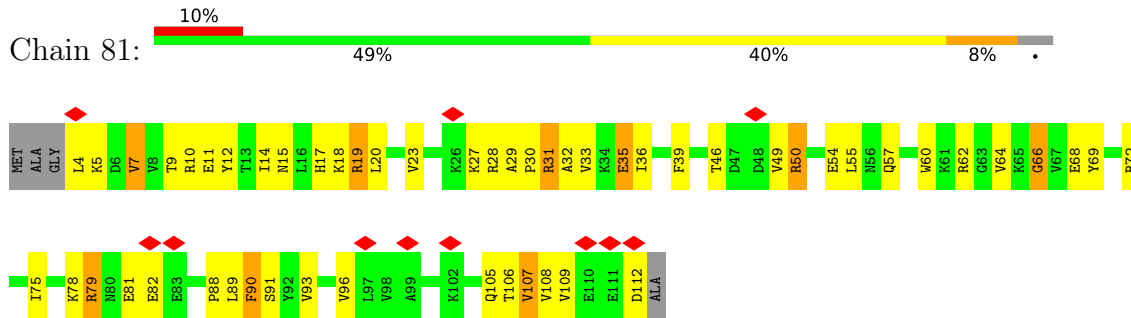
• Molecule 29: 60S ribosomal protein L29



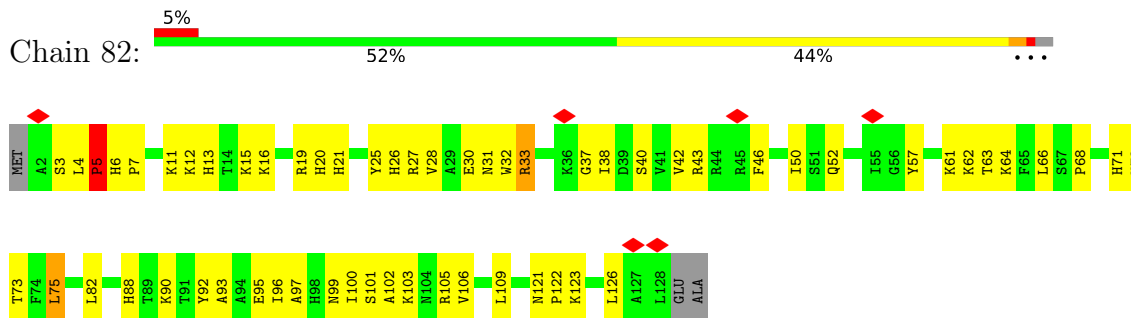
• Molecule 30: 60S ribosomal protein L30



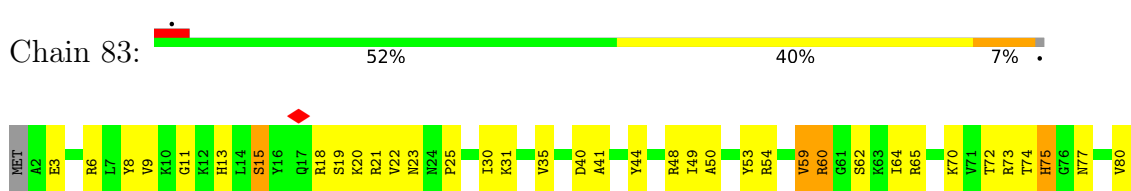
• Molecule 31: 60S ribosomal protein L31

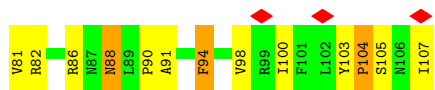


• Molecule 32: 60S ribosomal protein L32

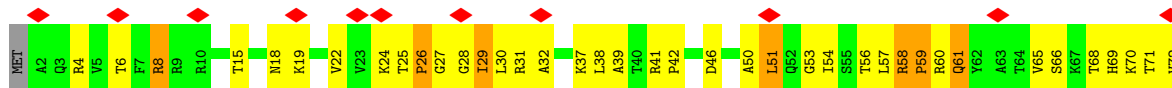


• Molecule 33: 60S ribosomal protein L33

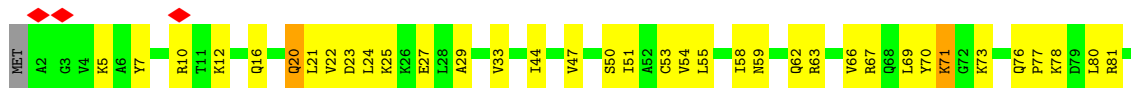




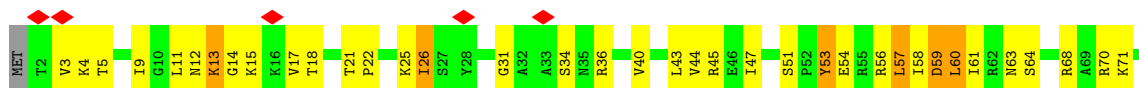
• Molecule 34: 60S ribosomal protein L34



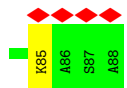
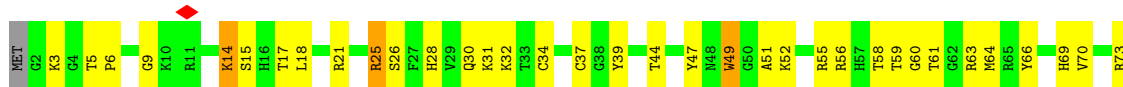
• Molecule 35: 60S ribosomal protein L35



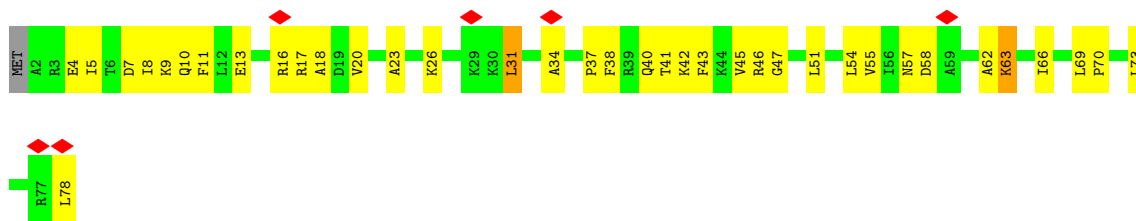
• Molecule 36: 60S ribosomal protein L36



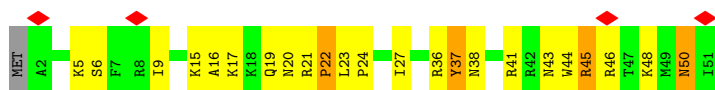
• Molecule 37: 60S ribosomal protein L37



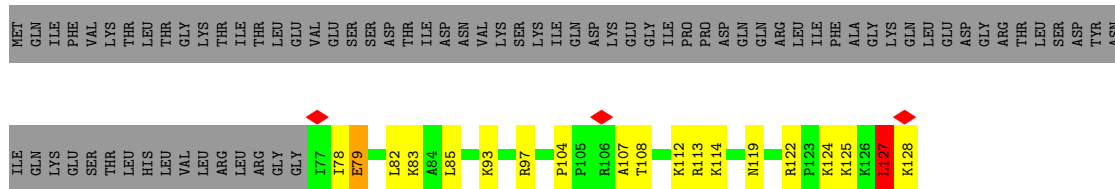
• Molecule 38: 60S ribosomal protein L38



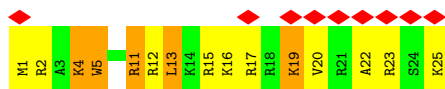
• Molecule 39: 60S ribosomal protein L39



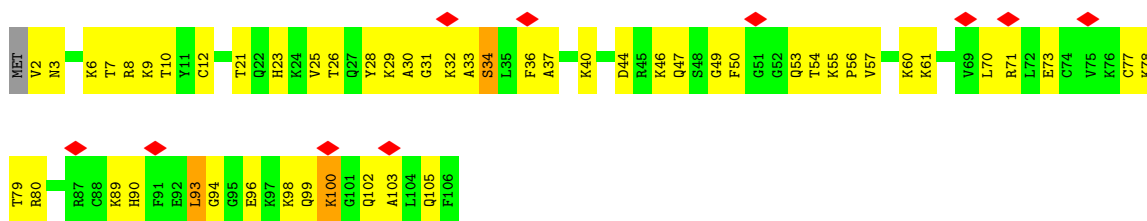
• Molecule 40: 60S ribosomal protein L40



• Molecule 41: 60S ribosomal protein L41



• Molecule 42: 60S ribosomal protein L42

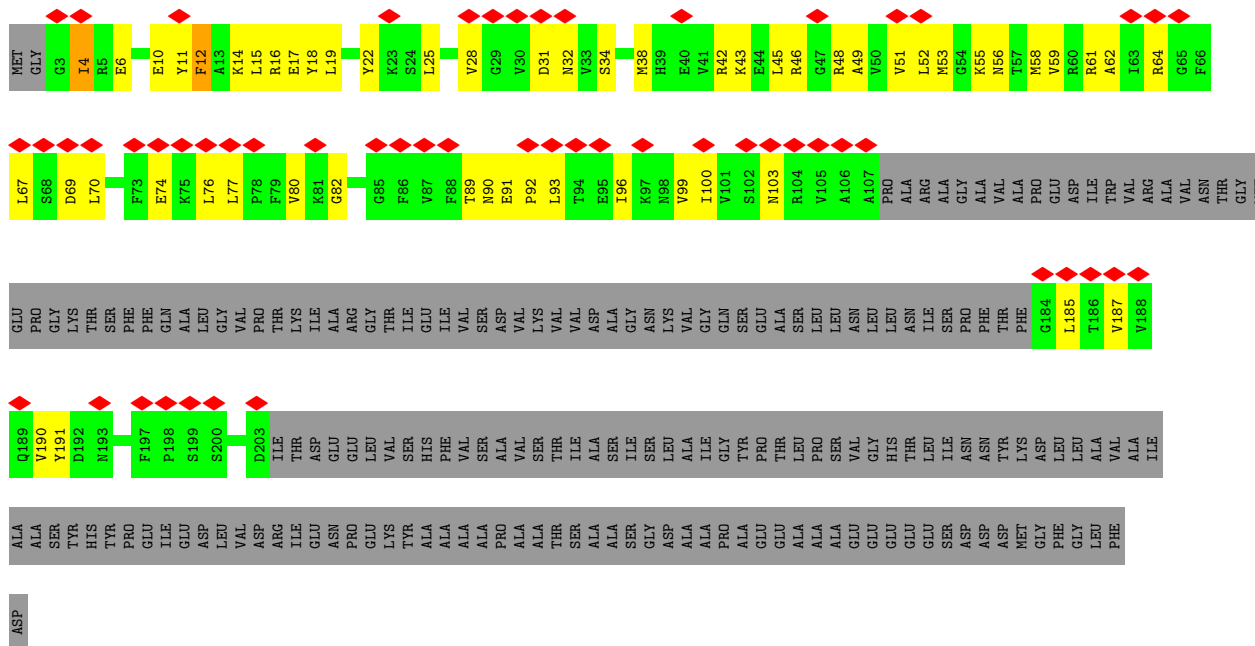


• Molecule 43: 60S ribosomal protein L43

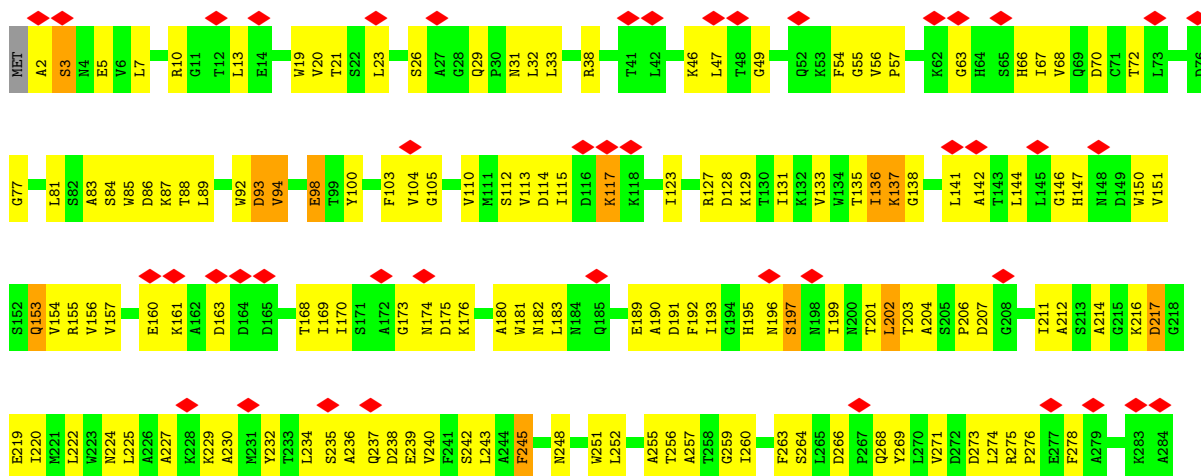


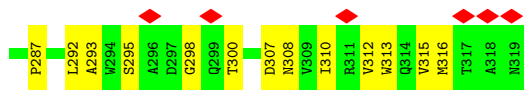


• Molecule 44: 60S acidic ribosomal protein P0

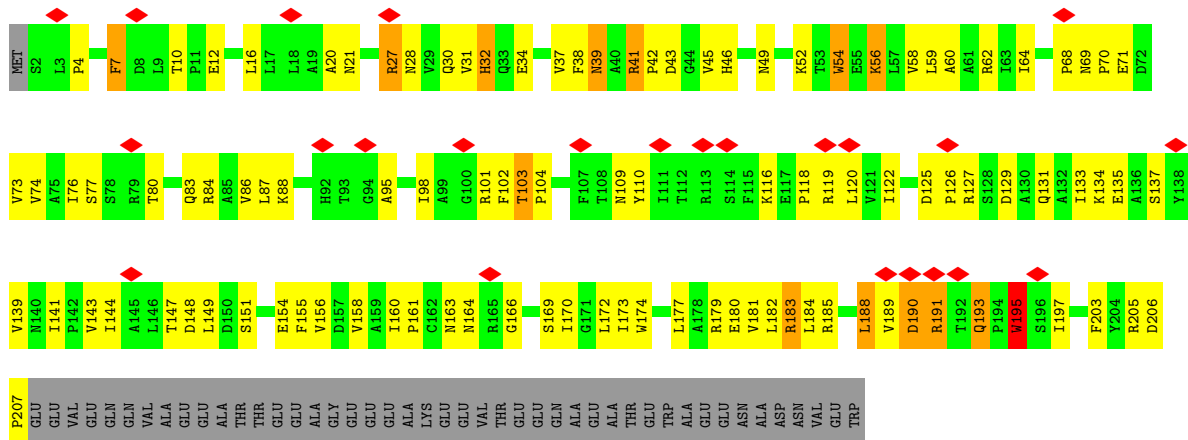


• Molecule 45: Guanine nucleotide-binding protein subunit beta-like protein

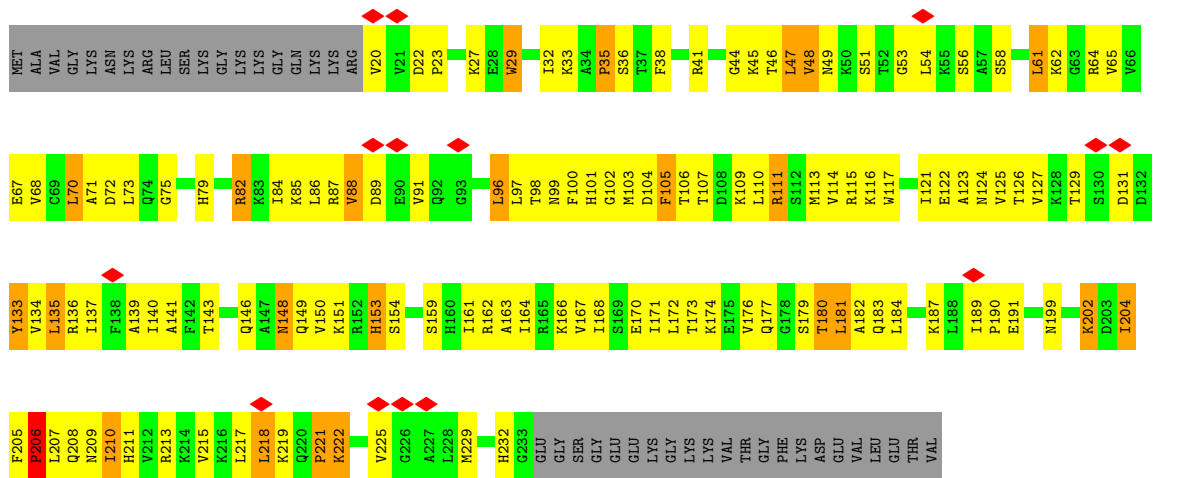




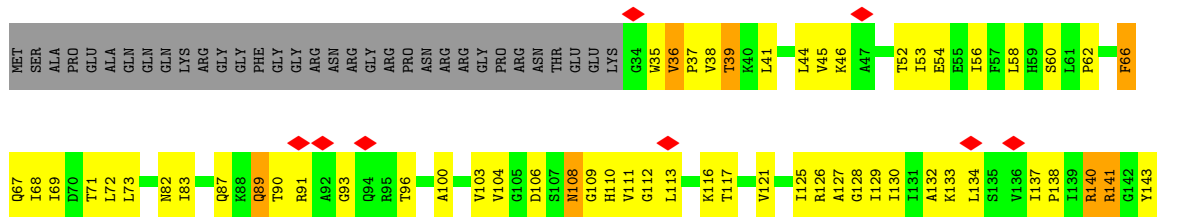
• Molecule 46: 40S ribosomal protein S0

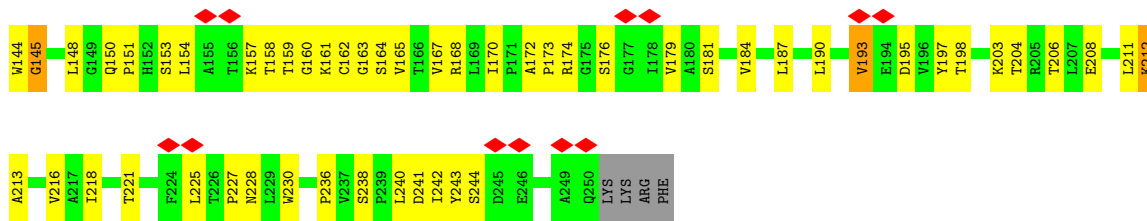


• Molecule 47: 40S ribosomal protein S1

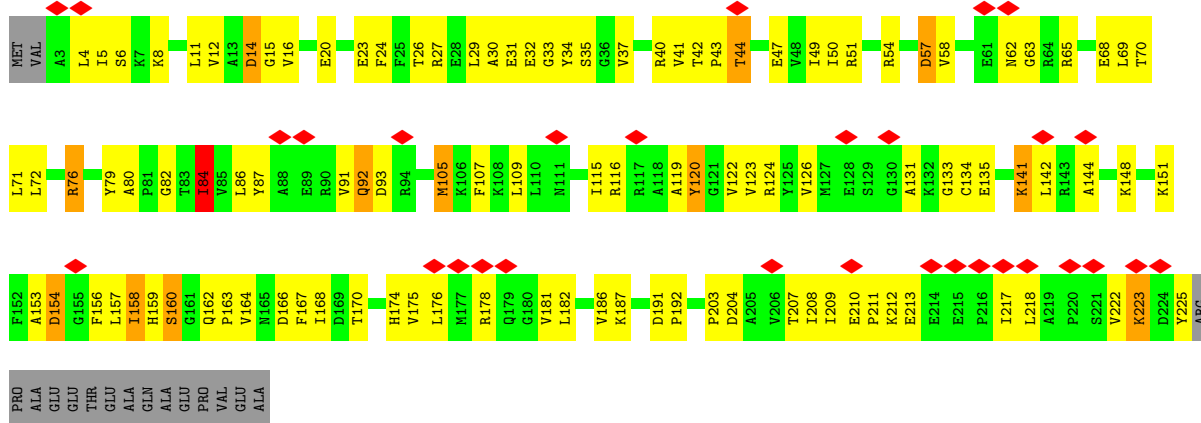


• Molecule 48: 40S ribosomal protein S2

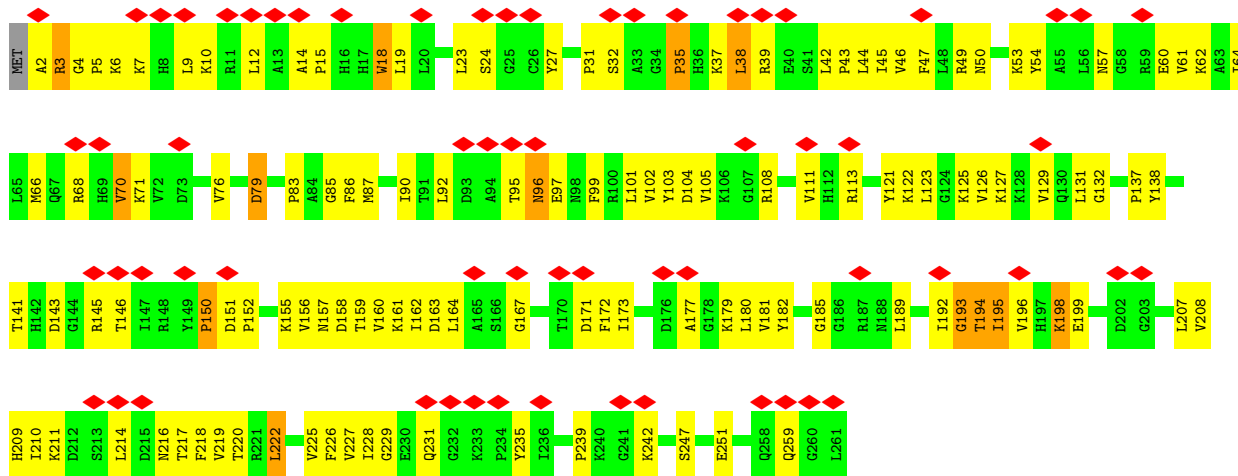




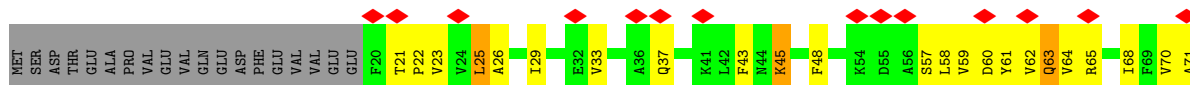
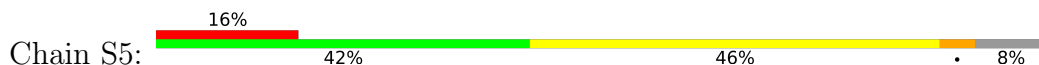
• Molecule 49: 40S ribosomal protein S3

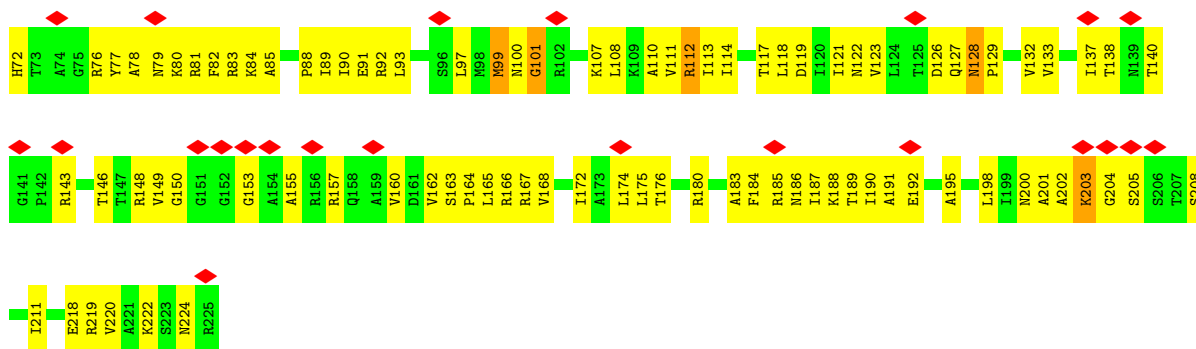


• Molecule 50: 40S ribosomal protein S4

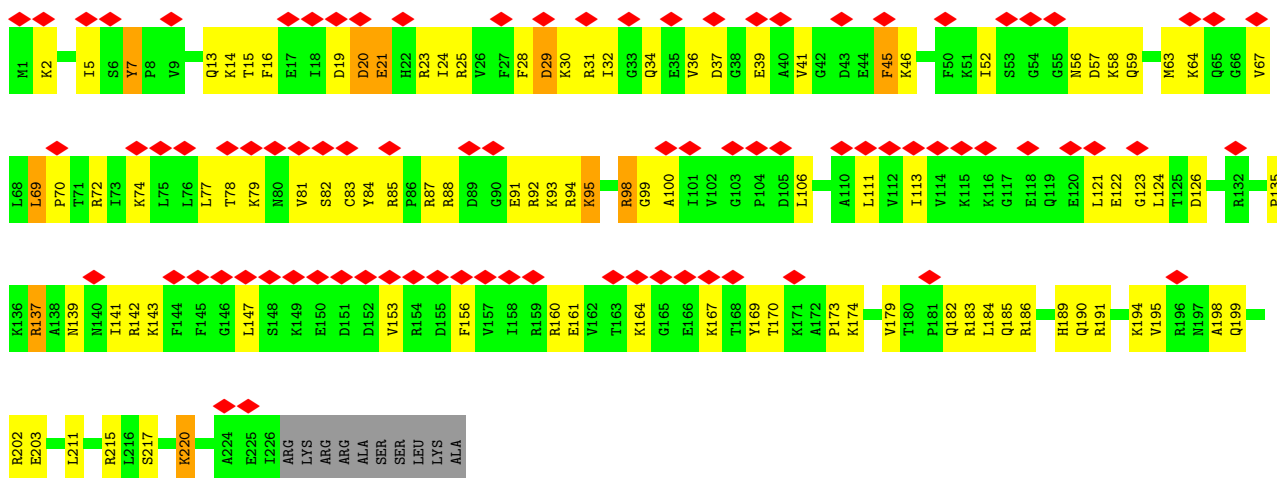


• Molecule 51: 40S ribosomal protein S5

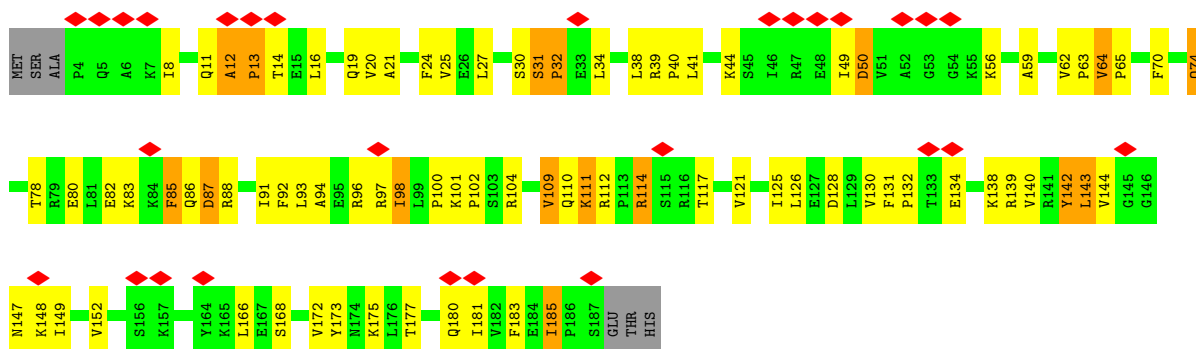




• Molecule 52: 40S ribosomal protein S6

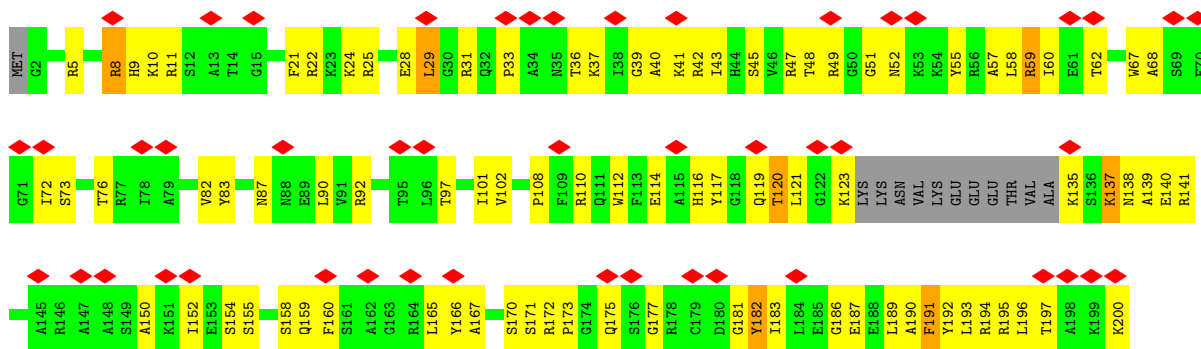


• Molecule 53: 40S ribosomal protein S7

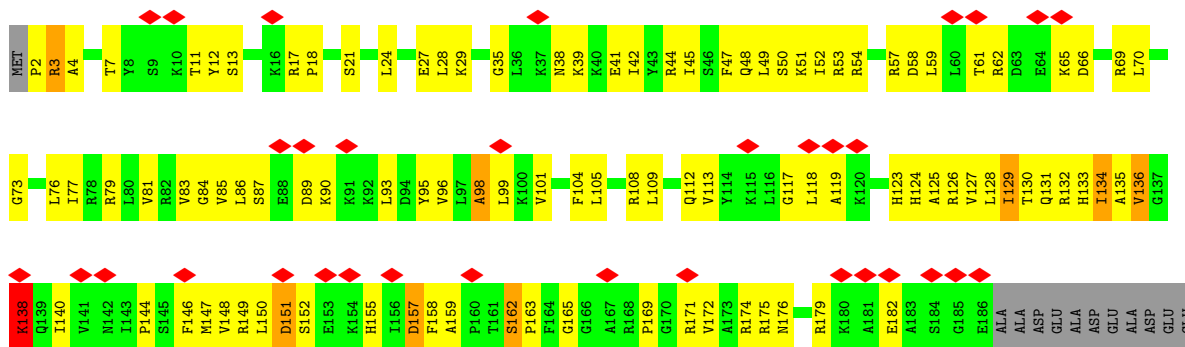


• Molecule 54: 40S ribosomal protein S8

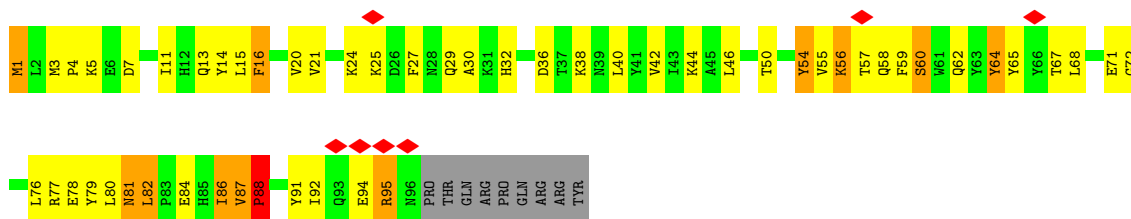
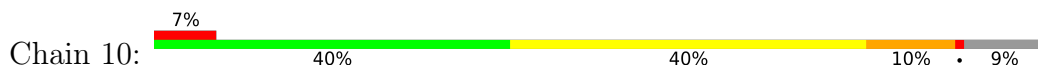




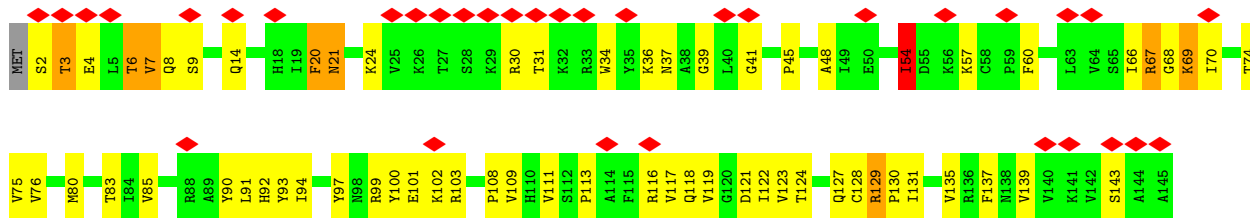
• Molecule 55: 40S ribosomal protein S9



• Molecule 56: 40S ribosomal protein S10

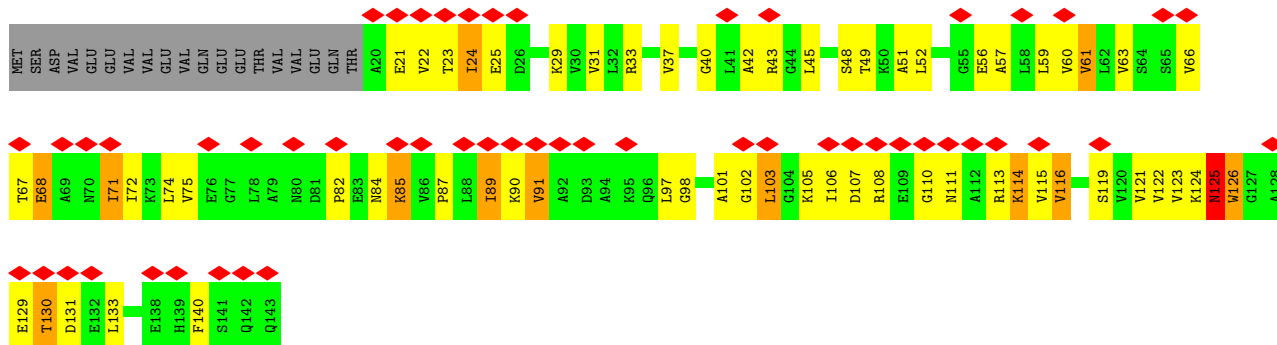
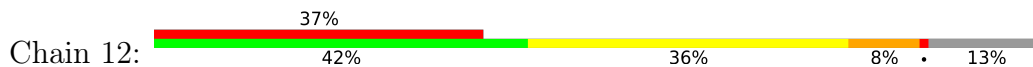


• Molecule 57: 40S ribosomal protein S11

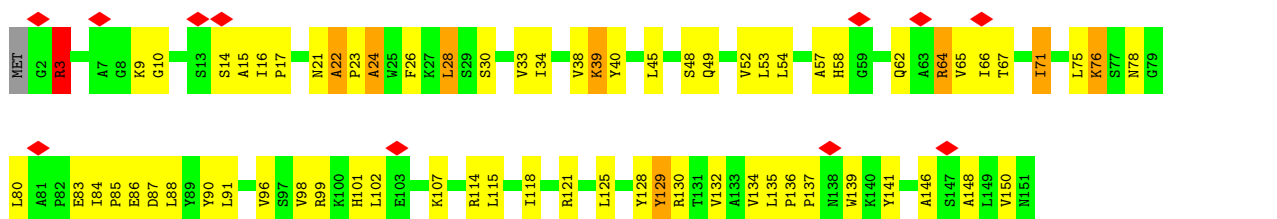




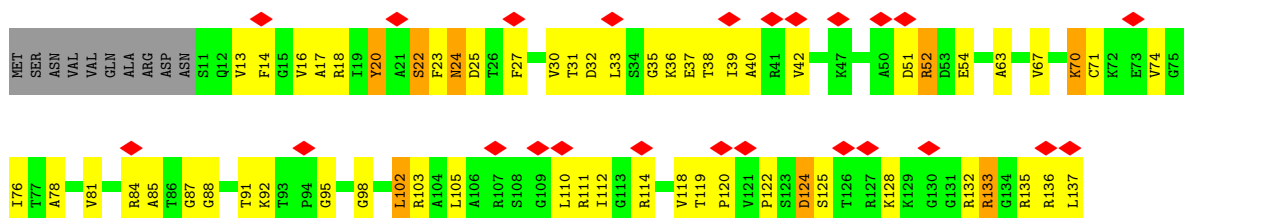
• Molecule 58: 40S ribosomal protein S12



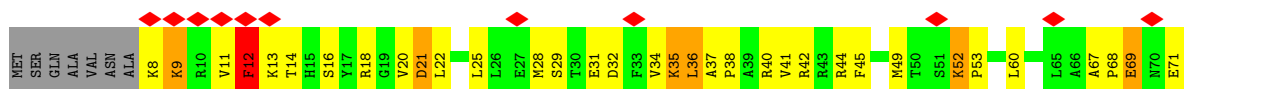
• Molecule 59: 40S ribosomal protein S13

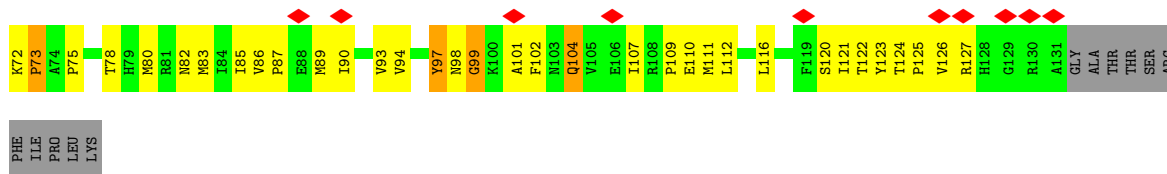


• Molecule 60: 40S ribosomal protein S14

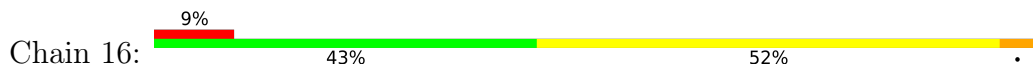


• Molecule 61: 40S ribosomal protein S15

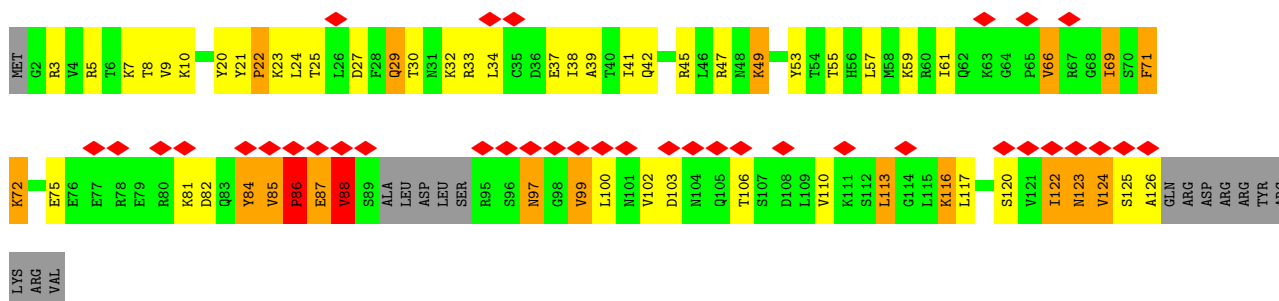




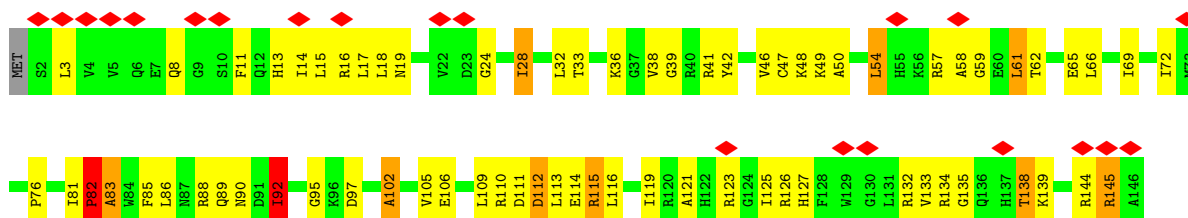
• Molecule 62: 40S ribosomal protein S16



• Molecule 63: 40S ribosomal protein S17

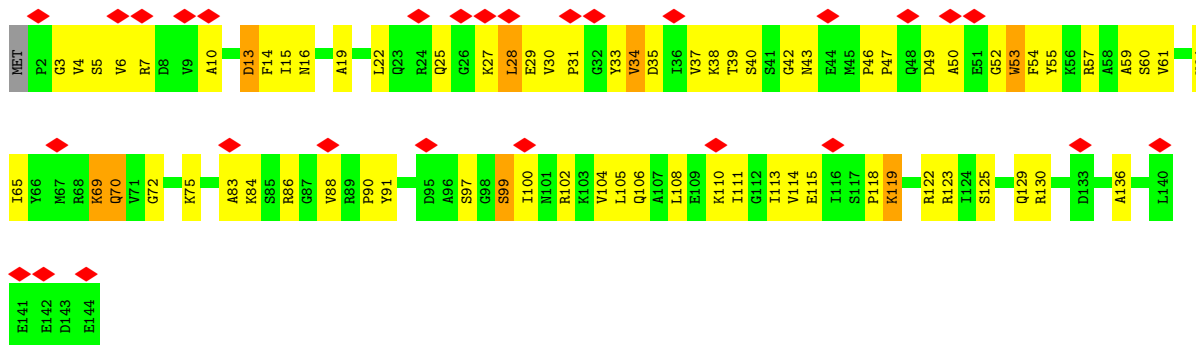


• Molecule 64: 40S ribosomal protein S18

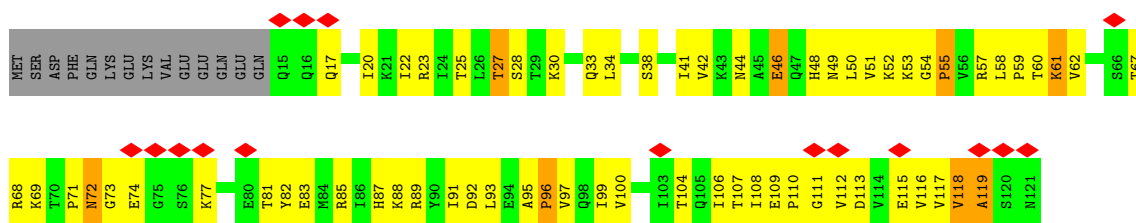


• Molecule 65: 40S ribosomal protein S19

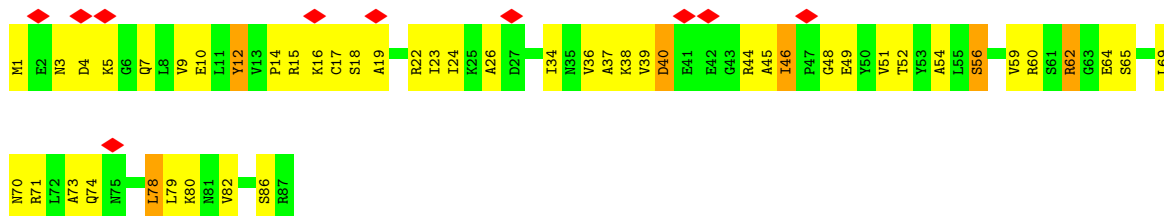




• Molecule 66: 40S ribosomal protein S20



• Molecule 67: 40S ribosomal protein S21

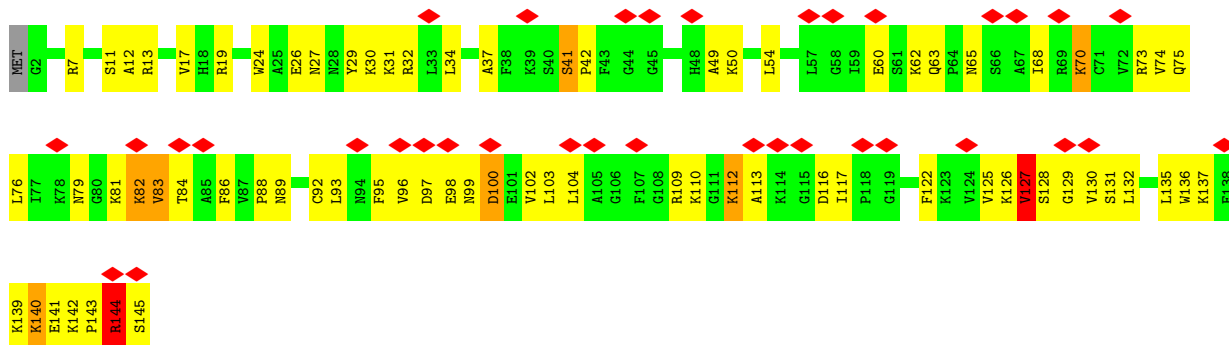


• Molecule 68: 40S ribosomal protein S22

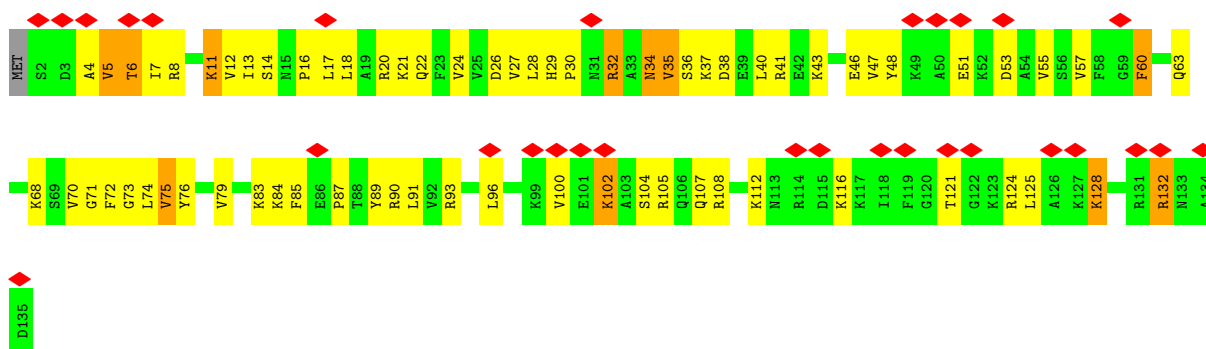


• Molecule 69: 40S ribosomal protein S23

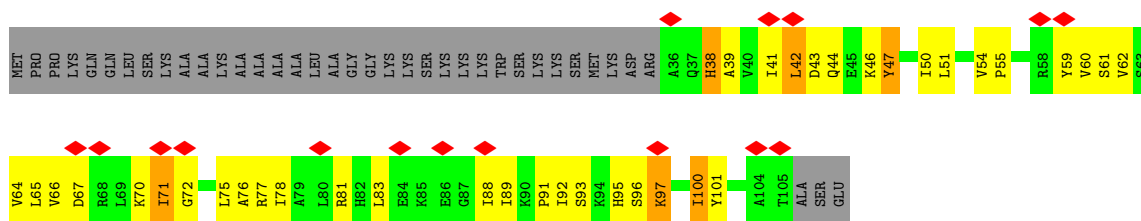
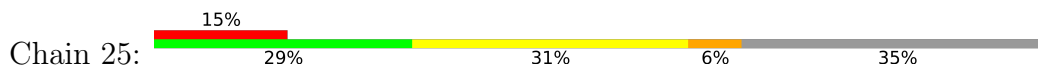




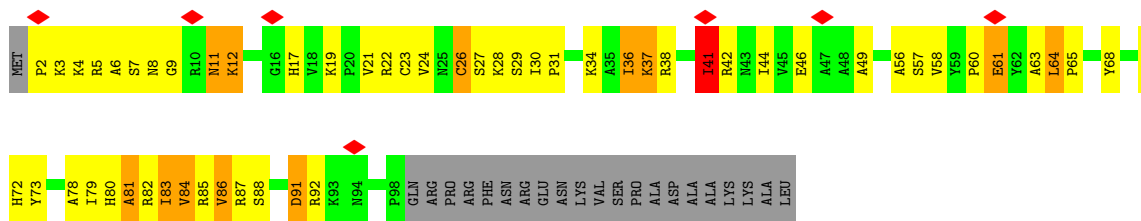
• Molecule 70: 40S ribosomal protein S24



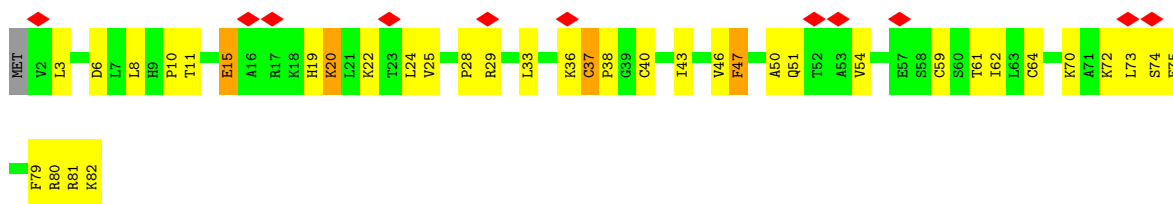
• Molecule 71: 40S ribosomal protein S25



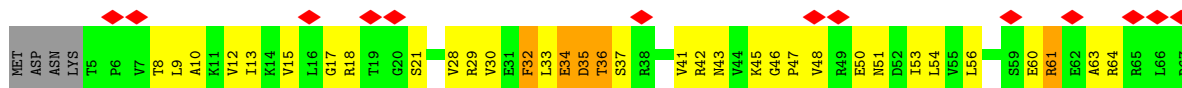
• Molecule 72: 40S ribosomal protein S26



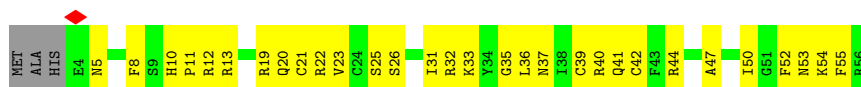
• Molecule 73: 40S ribosomal protein S27



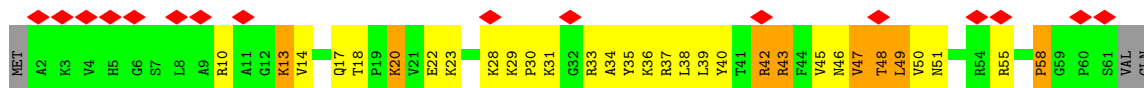
- Molecule 74: 40S ribosomal protein S28



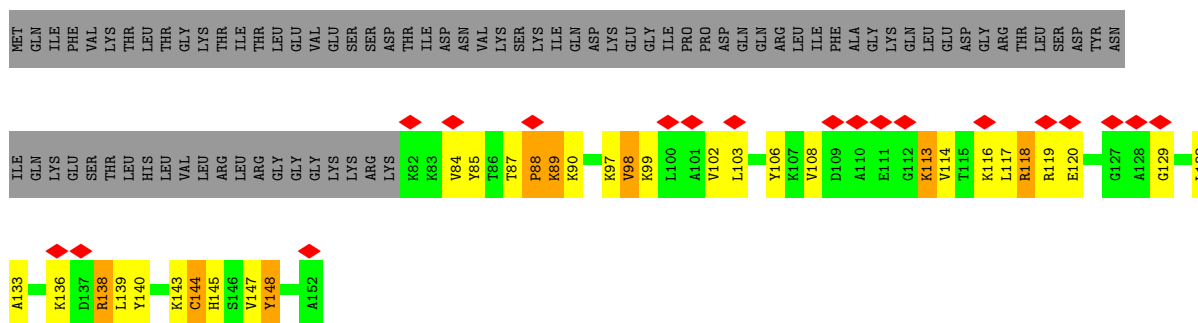
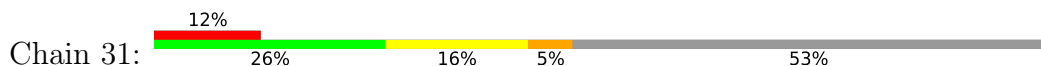
- Molecule 75: 40S ribosomal protein S29



- Molecule 76: 40S ribosomal protein S30

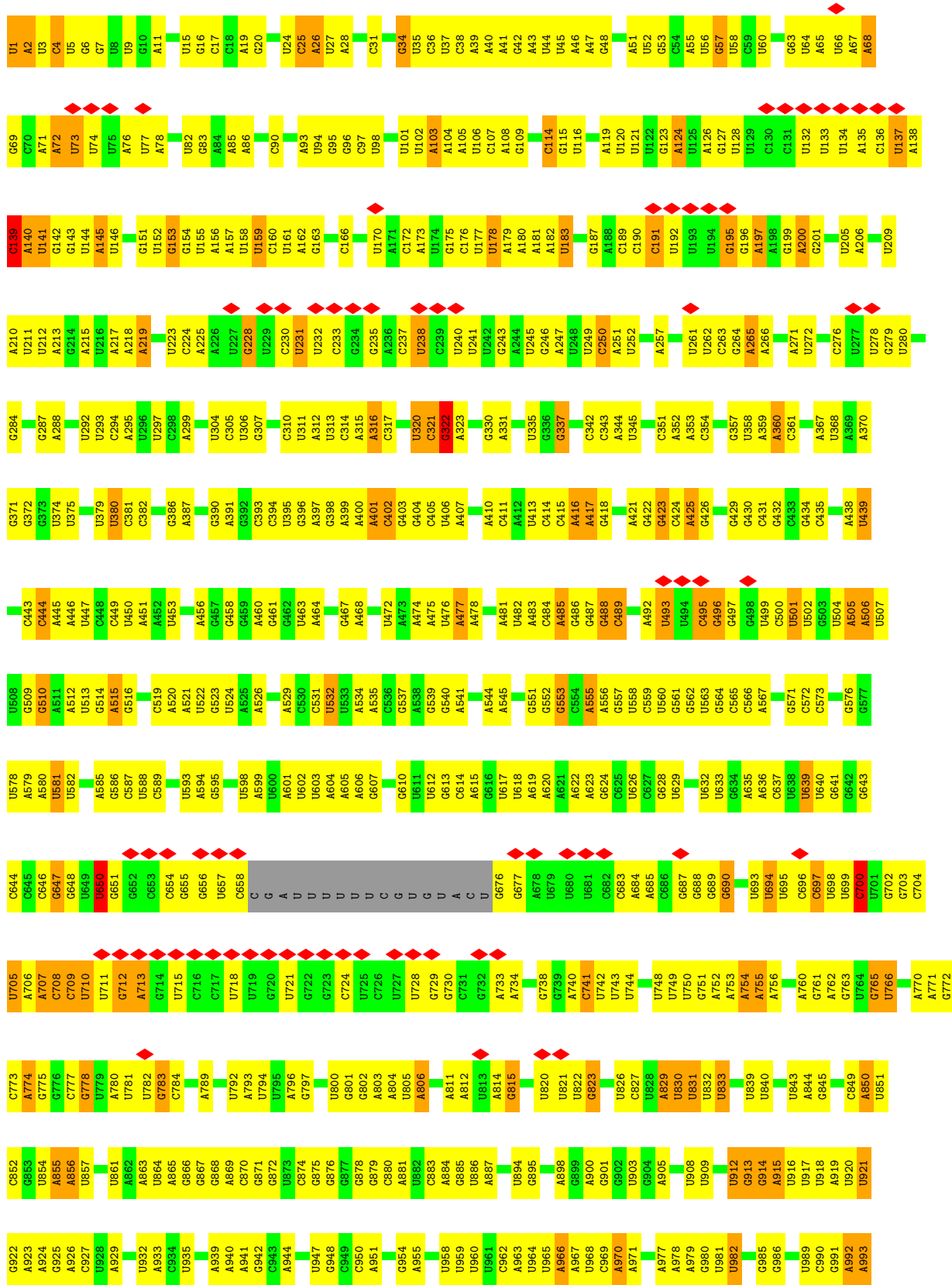


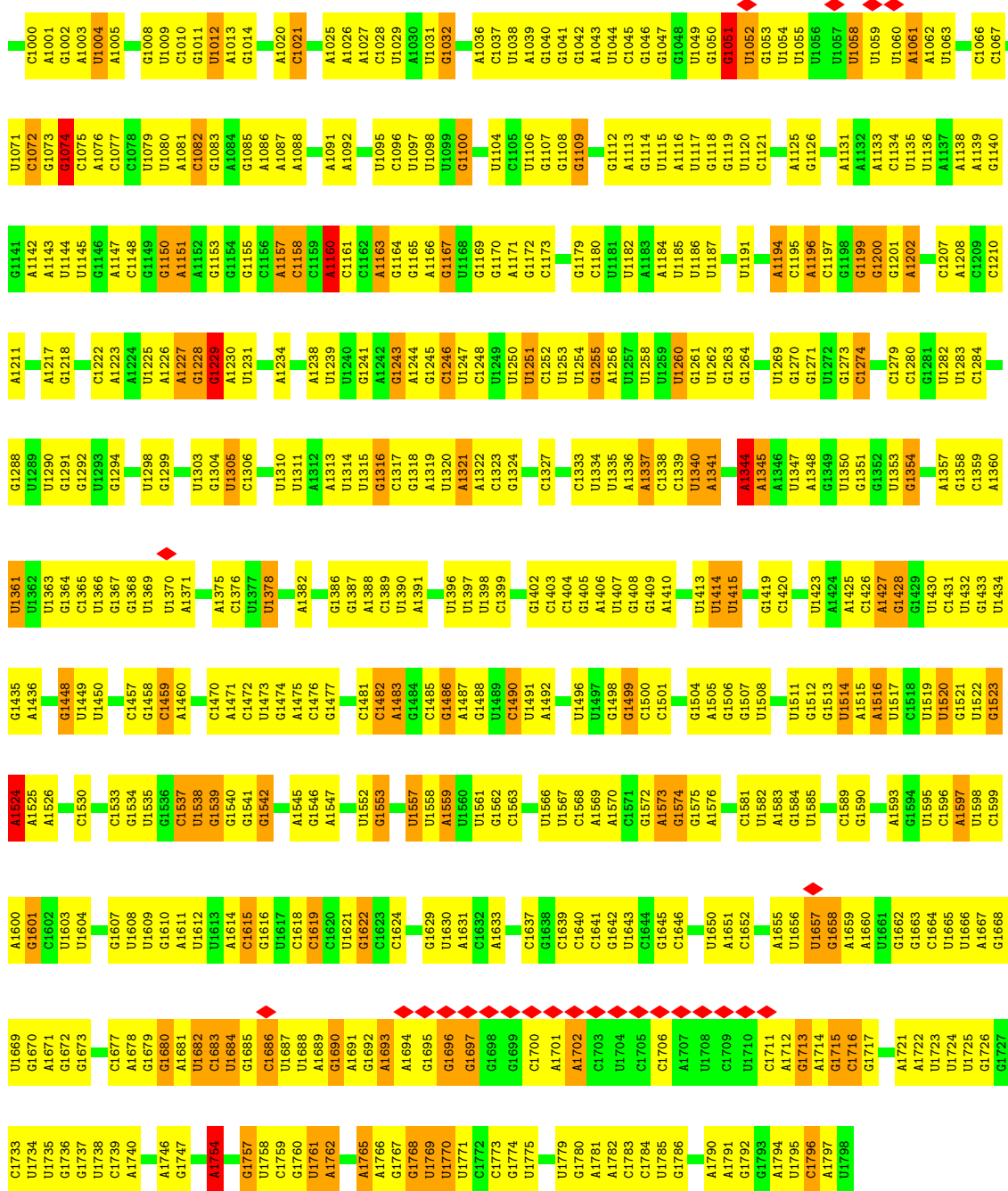
- Molecule 77: 40S ribosomal protein S31



- Molecule 78: 18S ribosomal RNA

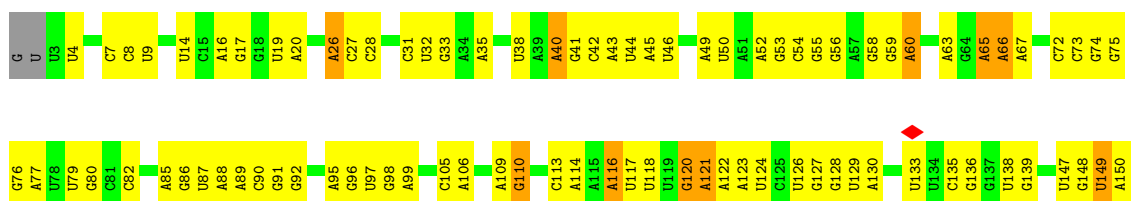




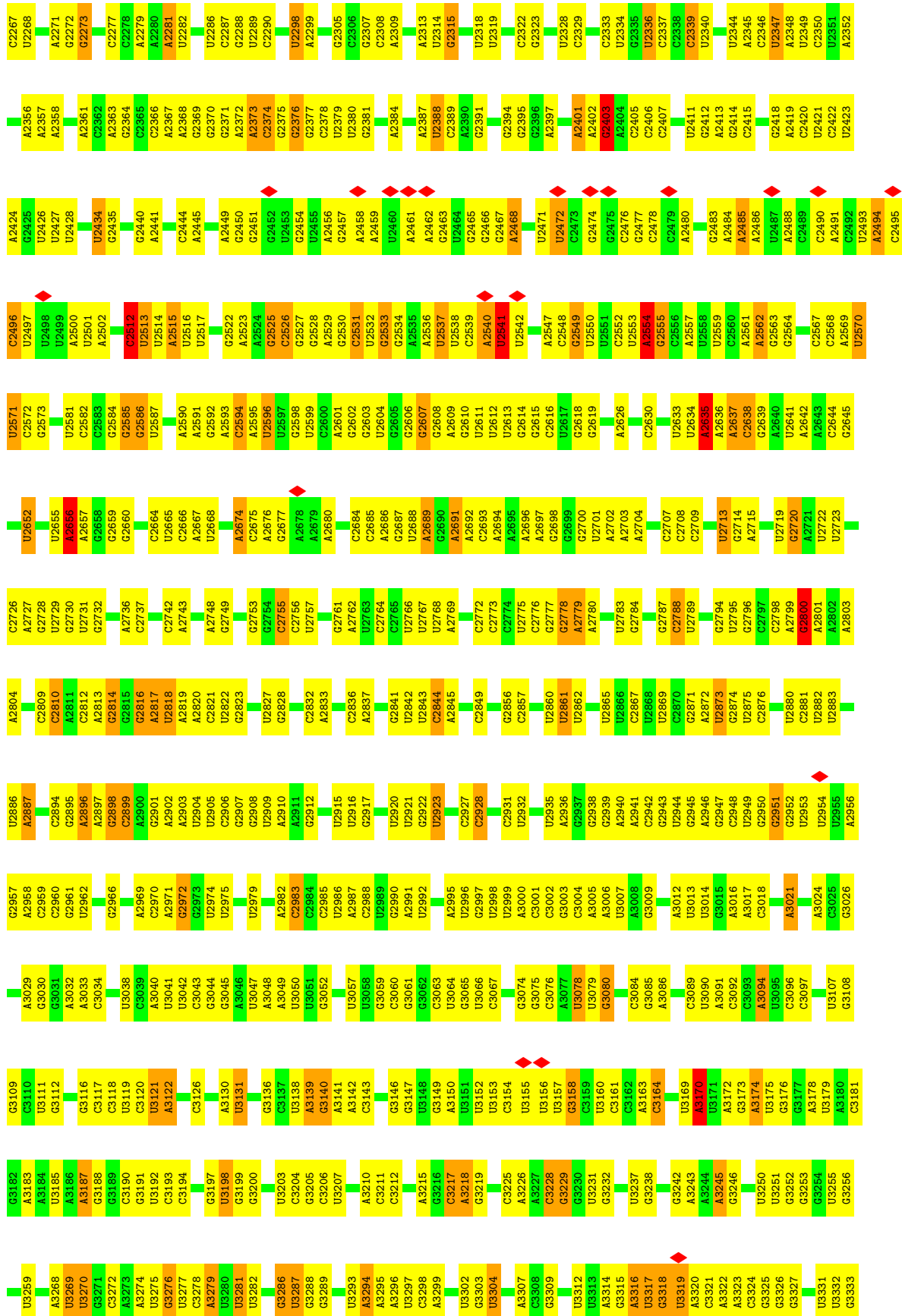


• Molecule 79: 25S ribosomal RNA

Chain 2S: 39% 49% 9% ..

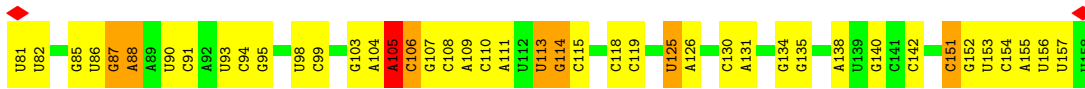
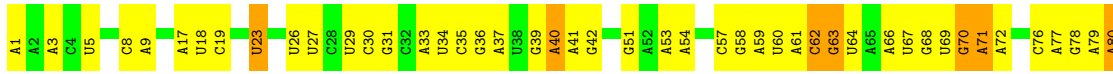


G1145	A1064	U990	U850	G781	A705	A622	G535	U	U881	G297	A219	U153
C1146	A1065	G991	G856	A784	A709	U627	U536	C	U882	U298	G220	U154
A1150	A1066	A992	G857	A785	A710	A628	G785	U	G383	G299	A221	G155
G1152	U1067	G993	A858	A786	A711	U629	U540	U	A386	G301	A222	G156
A1154	U1068	A996	G860	G787	G712	U631	G542	U	A389	U305	C224	A157
C1155	A1085	A997	C861	A789	U713	G632	C543	G	A396	A306	C225	G158
G1156	C1086	U930	C862	A790	U714	C633	C544	G	G394	A307	C226	A159
G1157	G1001	U931	C863	A791	A715	G634	U545	G	A395	A308	G229	G161
A1158	A1002	G932	C864	G792	G718	C635	C546	U	A396	U230	U230	G162
A1159	A1003	A933	U865	G793	U719	C636	G547	A	A397	C312	C233	C163
U1162	U1006	G935	G867	G794	U720	C637	G548	G	A398	A313	G234	A164
U1163	U1007	U936	G868	G795	U721	C638	G549	G	A399	U314	A235	A165
A1165	U1008	U937	U871	G796	G725	G639	A550	G	A400	C315	G236	U167
G1166	U1009	G938	C872	U797	G726	U640	A557	A	A401	U319	U240	U168
G1167	G1010	U939	C873	G801	G727	U641	U558	A	A402	A319	G241	U169
A1170	A1011	G940	U874	C802	G728	U642	U559	U	A403	U322	C242	G170
G1174	A1012	G875	G803	C803	G729	U643	G560	C	A404	A323	G243	G171
C1175	G1013	A876	C804	C804	C730	U644	G561	U	U405	U328	U250	G172
G1176	U1014	G877	G805	A806	G731	A645	C562	C	G406	U329	G251	U178
G1177	U1015	U879	U806	A807	G732	A646	U563	C	A407	U329	U252	C179
U1178	C1016	G880	G807	A808	G733	C648	A570	U	G412	U329	G257	C180
A1179	G950	U886	G809	G809	A736	A649	U571	C	U413	A388	U257	U181
G1180	A951	C886	U810	U810	G737	G652	A572	U	A418	C389	U257	U182
U1181	U952	A888	G812	G812	G740	G653	C576	U	G421	G341	G258	G183
A1182	U955	U889	G815	G815	U741	C654	C577	C	A422	A344	C259	U184
C1183	U956	C890	A816	A816	G742	A655	C578	U	G426	G345	G267	U186
G1184	C957	U891	G817	G817	G743	A656	G579	C	G427	C346	G268	U187
C1185	U958	G892	C818	C818	A744	A657	A585	C	U428	A349	G268	U188
G1186	C959	U895	U819	U819	C745	U662	A586	U	U429	C350	G269	G189
U1187	G960	A895	A820	A820	A751	U663	G590	U	U434	A351	G271	U190
U1188	A962	U896	G820	G820	C752	U664	A591	C	C435	A352	A273	U191
C1189	G963	U897	C823	C823	C753	U665	A592	U	A436	G353	G274	A198
G1192	G968	U899	G900	G900	C757	U666	C593	C	G437	U359	U275	A199
A1193	U969	U903	U903	U903	A758	U667	U594	U	A438	G360	U276	C200
U1194	G971	A904	U904	U904	U759	U668	A598	C	A440	A361	G277	A199
U1195	A972	U905	A906	A906	G760	U669	C599	U	U441	U362	U278	C200
C1198	G974	G907	G907	G907	A761	U670	G600	U	G442	G363	U279	A201
C1199	A974	U908	U908	U908	U762	U671	A603	C	G443	G364	G282	G203
A1200	C975	G908	G908	G908	G763	U681	G604	U	U448	A367	G283	A204
A1202	U976	U909	G909	A936	U764	U682	G608	U	U449	G368	A284	C205
A1203	U977	G910	G910	A937	C765	U683	A608	U	G450	A369	A285	G206
A1204	U979	C911	C911	G938	U766	G684	G609	U	U451	U370	U286	U207
G1209	A980	G912	G912	C939	U767	G685	G510	U	C	G371	G287	C208
U1210	U981	U913	U913	C940	C768	G686	A611	U	G	A372	C288	A209
U1211	A982	A914	A914	G942	G769	U687	U612	U	C	A373	A289	U210
A1212	A983	G915	G915	G942	G770	U688	U613	U	C	A374	G290	A211
G1213	G984	G916	G916	G942	A771	U689	U614	U	C	A375	C291	G212
U1214	U985	A917	A917	G945	U772	A690	G616	U	C	G376	C292	G213
U1215	U986	C918	C918	A946	G773	U698	G617	U	C	U380	U292	G214
U1218	U987	U919	U919	A947	U774	A699	C618	U	C	C379	U293	G215
	U988	A920	A920	A948	U775	C700	G619	U	C	U380	U294	G215
	U989	A921	A921	C949	A780	G701	U620	U	C		A295	G218
							A621					

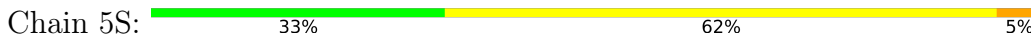




• Molecule 80: 5.8S ribosomal RNA



• Molecule 81: 5S ribosomal RNA



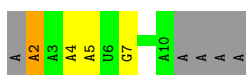
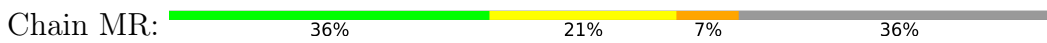
• Molecule 82: P/E-site initiator transfer RNAfMet



• Molecule 82: P/E-site initiator transfer RNAfMet



• Molecule 83: messenger RNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	23163	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	CTFFIND3, FREALIGN per micrograph	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	30	Depositor
Minimum defocus (nm)	1159	Depositor
Maximum defocus (nm)	4844	Depositor
Magnification	133333	Depositor
Image detector	FEI FALCON I (4k x 4k)	Depositor
Maximum map value	0.430	Depositor
Minimum map value	-0.198	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.048	Depositor
Recommended contour level	0.12	Depositor
Map size (\AA)	377.99997, 377.99997, 377.99997	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.05, 1.05, 1.05	Depositor

5 Model quality

5.1 Standard geometry

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	L1	0.61	0/1634	0.67	0/2195
2	L2	0.43	0/1952	0.59	0/2622
3	L3	0.48	0/3153	0.56	0/4239
4	L4	0.46	0/2802	0.58	0/3792
5	L5	0.53	0/2426	0.58	0/3271
6	L6	0.52	0/1261	0.62	0/1694
7	L7	0.50	0/1822	0.60	1/2451 (0.0%)
8	L8	0.49	0/1850	0.60	0/2495
9	L9	0.50	0/1540	0.59	0/2073
10	60	0.49	0/1754	0.56	0/2350
11	61	0.51	0/1375	0.58	0/1842
12	62	0.52	0/700	0.72	7/968 (0.7%)
13	63	0.48	0/1568	0.60	0/2106
14	64	0.50	0/1069	0.56	0/1438
15	65	0.47	0/1758	0.54	0/2354
16	66	0.49	0/1586	0.57	0/2128
17	67	0.49	0/1466	0.56	0/1968
18	68	0.48	0/1466	0.57	0/1965
19	69	0.42	0/1539	0.56	0/2050
20	70	0.52	0/1482	0.58	0/1990
21	71	0.50	0/1301	0.56	0/1743
22	72	0.57	0/812	0.57	0/1099
23	73	0.46	0/1019	0.57	0/1369
24	74	0.51	0/540	0.56	0/717
25	75	0.50	0/984	0.60	0/1325
26	76	0.46	0/1005	0.58	1/1341 (0.1%)
27	77	0.51	0/1119	0.53	0/1497
28	78	0.46	0/1205	0.59	0/1612
29	79	0.48	0/474	0.60	0/629
30	80	0.52	0/751	0.55	0/1008
31	81	0.46	0/904	0.59	0/1213
32	82	0.46	0/1041	0.58	0/1394
33	83	0.51	0/869	0.56	0/1168
34	84	0.48	0/891	0.59	0/1191

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	85	0.45	0/979	0.57	0/1301
36	86	0.46	0/779	0.63	0/1034
37	87	0.48	0/697	0.54	0/923
38	88	0.52	0/619	0.55	0/826
39	89	0.46	0/444	0.54	0/588
40	90	0.44	0/424	0.58	0/562
41	91	0.46	0/235	0.58	0/300
42	92	0.49	0/861	0.58	0/1136
43	93	0.44	0/702	0.55	0/934
44	P0	0.62	0/1002	0.65	0/1348
45	RC	0.54	0/2498	0.60	0/3398
46	S0	0.55	0/1653	0.60	0/2261
47	S1	0.50	0/1735	0.59	0/2335
48	S2	0.50	0/1665	0.59	0/2263
49	S3	0.52	0/1759	0.58	0/2368
50	S4	0.50	0/2110	0.62	0/2839
51	S5	0.49	0/1630	0.59	0/2202
52	S6	0.51	0/1844	0.59	0/2464
53	S7	0.52	0/1506	0.62	0/2028
54	S8	0.49	0/1515	0.60	0/2021
55	S9	0.50	0/1519	0.62	0/2035
56	10	0.58	0/837	0.64	0/1131
57	11	0.53	0/1273	0.58	0/1712
58	12	0.56	0/943	0.68	0/1274
59	13	0.49	0/1216	0.59	0/1638
60	14	0.48	0/953	0.58	0/1279
61	15	0.54	0/1012	0.65	0/1356
62	16	0.52	0/1126	0.63	0/1510
63	17	0.58	0/974	0.70	0/1304
64	18	0.50	0/1212	0.61	0/1628
65	19	0.52	0/1131	0.60	0/1517
66	20	0.54	0/866	0.57	0/1169
67	21	0.51	0/694	0.57	0/935
68	22	0.49	0/1039	0.60	0/1395
69	23	0.48	0/1140	0.59	0/1518
70	24	0.53	0/1088	0.58	0/1449
71	25	0.52	0/571	0.67	0/768
72	26	0.47	0/782	0.57	0/1047
73	27	0.51	0/621	0.57	0/838
74	28	0.50	0/500	0.59	0/670
75	29	0.55	0/454	0.59	0/602
76	30	0.51	0/483	0.63	0/643
77	31	0.56	0/505	0.72	2/682 (0.3%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
78	1S	0.76	3/42445 (0.0%)	0.74	18/66138 (0.0%)
79	2S	0.72	5/79038 (0.0%)	0.72	22/123226 (0.0%)
80	8S	0.72	1/3747 (0.0%)	0.71	0/5832
81	5S	0.73	1/2884 (0.0%)	0.70	0/4491
82	ET	0.83	1/1836 (0.1%)	0.73	0/2859
82	PT	0.76	1/1836 (0.1%)	0.73	0/2859
83	MR	0.93	1/219 (0.5%)	0.75	0/339
All	All	0.65	13/224719 (0.0%)	0.68	51/330272 (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
78	1S	0	23
79	2S	3	56
80	8S	0	6
All	All	3	85

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
80	8S	1	A	OP3-P	-7.03	1.52	1.61
78	1S	1	U	OP3-P	-6.96	1.52	1.61
81	5S	1	G	OP3-P	-6.89	1.52	1.61
79	2S	486	A	P-O5'	6.74	1.66	1.59
82	PT	1	C	OP3-P	-6.69	1.53	1.61

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
78	1S	829	A	C2'-C3'-O3'	9.04	129.39	109.50
79	2S	2065	U	C2'-C3'-O3'	8.72	128.69	109.50
79	2S	2512	C	C2'-C3'-O3'	8.22	127.58	109.50
79	2S	493	U	N1-C1'-C2'	7.81	124.15	114.00
77	31	144	CYS	N-CA-C	-6.92	92.32	111.00

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
79	2S	65	A	C3'

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Mol	Chain	Res	Type	Atom
79	2S	2065	U	C3'
79	2S	2512	C	C3'

5 of 85 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
78	1S	183	U	Sidechain
78	1S	199	G	Sidechain
78	1S	228	G	Sidechain
78	1S	287	G	Sidechain
78	1S	313	U	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	L1	1609	0	1701	103	0
2	L2	1918	0	1987	162	0
3	L3	3082	0	3165	181	0
4	L4	2750	0	2863	153	0
5	L5	2376	0	2325	130	0
6	L6	1240	0	1326	77	0
7	L7	1785	0	1862	126	0
8	L8	1818	0	1908	129	0
9	L9	1519	0	1587	90	0
10	60	1718	0	1754	88	0
11	61	1354	0	1383	81	0
12	62	703	0	324	7	0
13	63	1543	0	1608	85	0
14	64	1054	0	1149	55	0
15	65	1721	0	1779	132	0
16	66	1556	0	1659	93	0
17	67	1443	0	1485	85	0
18	68	1442	0	1543	113	0
19	69	1522	0	1617	82	0
20	70	1446	0	1487	97	0
21	71	1277	0	1323	80	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
22	72	796	0	812	36	0
23	73	1004	0	1048	77	0
24	74	528	0	558	30	0
25	75	969	0	1036	56	0
26	76	994	0	1081	47	0
27	77	1093	0	1155	44	0
28	78	1174	0	1215	74	0
29	79	463	0	491	18	0
30	80	743	0	797	43	0
31	81	890	0	938	52	0
32	82	1020	0	1090	54	0
33	83	851	0	880	59	0
34	84	881	0	949	62	0
35	85	970	0	1078	42	0
36	86	772	0	849	50	0
37	87	682	0	687	46	0
38	88	613	0	682	37	0
39	89	437	0	475	16	0
40	90	418	0	459	18	0
41	91	234	0	284	16	0
42	92	848	0	918	46	0
43	93	695	0	738	46	0
44	P0	987	0	999	46	0
45	RC	2445	0	2401	115	0
46	S0	1612	0	1623	107	0
47	S1	1709	0	1784	141	0
48	S2	1635	0	1723	101	0
49	S3	1734	0	1817	95	0
50	S4	2069	0	2154	121	0
51	S5	1610	0	1675	112	0
52	S6	1820	0	1918	81	0
53	S7	1481	0	1572	82	0
54	S8	1490	0	1525	80	0
55	S9	1494	0	1573	105	0
56	10	817	0	804	55	0
57	11	1245	0	1314	64	0
58	12	935	0	975	45	0
59	13	1193	0	1255	67	0
60	14	942	0	979	63	0
61	15	991	0	1035	62	0
62	16	1106	0	1166	82	0
63	17	965	0	1026	68	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
64	18	1193	0	1222	72	0
65	19	1113	0	1124	65	0
66	20	856	0	917	72	0
67	21	685	0	672	39	0
68	22	1022	0	1060	77	0
69	23	1122	0	1196	84	0
70	24	1074	0	1132	55	0
71	25	563	0	603	41	0
72	26	769	0	818	66	0
73	27	611	0	633	33	0
74	28	498	0	535	33	0
75	29	444	0	436	27	0
76	30	475	0	525	32	0
77	31	498	0	441	22	0
78	1S	37949	0	19093	951	0
79	2S	70616	0	35486	1791	0
80	8S	3354	0	1695	74	0
81	5S	2580	0	1304	75	0
82	ET	1644	0	836	30	0
82	PT	1644	0	836	25	0
83	MR	195	0	98	3	0
All	All	209136	0	154035	7478	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 21.

The worst 5 of 7478 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)
1:L1:30:GLU:HB2	1:L1:34:LEU:HD11	1.32	1.10
78:1S:712:G:H2'	78:1S:713:A:H5''	1.34	1.09
1:L1:93:LEU:HD21	1:L1:118:LYS:HD2	1.35	1.08
79:2S:1604:G:H4'	79:2S:1835:A:H4'	1.35	1.08
79:2S:1971:C:H2'	79:2S:1972:A:H4'	1.27	1.07

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	
1	L1	202/217 (93%)	140 (69%)	50 (25%)	12 (6%)	1	17
2	L2	250/254 (98%)	205 (82%)	34 (14%)	11 (4%)	2	22
3	L3	384/387 (99%)	328 (85%)	47 (12%)	9 (2%)	6	34
4	L4	359/362 (99%)	290 (81%)	53 (15%)	16 (4%)	2	21
5	L5	294/297 (99%)	251 (85%)	32 (11%)	11 (4%)	3	24
6	L6	152/176 (86%)	131 (86%)	19 (12%)	2 (1%)	12	48
7	L7	220/244 (90%)	182 (83%)	32 (14%)	6 (3%)	5	31
8	L8	231/256 (90%)	191 (83%)	30 (13%)	10 (4%)	2	22
9	L9	189/191 (99%)	163 (86%)	22 (12%)	4 (2%)	7	36
10	60	207/221 (94%)	183 (88%)	21 (10%)	3 (1%)	11	46
11	61	167/174 (96%)	131 (78%)	23 (14%)	13 (8%)	1	13
12	62	137/165 (83%)	79 (58%)	37 (27%)	21 (15%)	0	3
13	63	191/199 (96%)	158 (83%)	20 (10%)	13 (7%)	1	15
14	64	134/138 (97%)	110 (82%)	21 (16%)	3 (2%)	6	35
15	65	201/204 (98%)	160 (80%)	33 (16%)	8 (4%)	3	23
16	66	195/199 (98%)	173 (89%)	17 (9%)	5 (3%)	5	31
17	67	181/184 (98%)	153 (84%)	23 (13%)	5 (3%)	5	30
18	68	183/186 (98%)	155 (85%)	21 (12%)	7 (4%)	3	24
19	69	186/189 (98%)	169 (91%)	16 (9%)	1 (0%)	29	69
20	70	170/172 (99%)	142 (84%)	21 (12%)	7 (4%)	3	22
21	71	157/160 (98%)	137 (87%)	15 (10%)	5 (3%)	4	26
22	72	98/121 (81%)	81 (83%)	14 (14%)	3 (3%)	4	27
23	73	134/137 (98%)	118 (88%)	14 (10%)	2 (2%)	10	45
24	74	62/155 (40%)	50 (81%)	10 (16%)	2 (3%)	4	26
25	75	119/142 (84%)	99 (83%)	14 (12%)	6 (5%)	2	20

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	76	124/127 (98%)	116 (94%)	8 (6%)	0	100	100
27	77	133/136 (98%)	102 (77%)	25 (19%)	6 (4%)	2	21
28	78	146/149 (98%)	119 (82%)	22 (15%)	5 (3%)	3	26
29	79	56/59 (95%)	50 (89%)	4 (7%)	2 (4%)	3	25
30	80	95/105 (90%)	82 (86%)	11 (12%)	2 (2%)	7	36
31	81	107/113 (95%)	93 (87%)	11 (10%)	3 (3%)	5	30
32	82	125/130 (96%)	111 (89%)	13 (10%)	1 (1%)	19	60
33	83	104/107 (97%)	82 (79%)	14 (14%)	8 (8%)	1	13
34	84	110/121 (91%)	87 (79%)	18 (16%)	5 (4%)	2	21
35	85	117/120 (98%)	108 (92%)	7 (6%)	2 (2%)	9	42
36	86	97/100 (97%)	83 (86%)	8 (8%)	6 (6%)	1	16
37	87	85/88 (97%)	70 (82%)	14 (16%)	1 (1%)	13	50
38	88	75/78 (96%)	66 (88%)	8 (11%)	1 (1%)	12	48
39	89	48/51 (94%)	40 (83%)	7 (15%)	1 (2%)	7	36
40	90	50/128 (39%)	41 (82%)	7 (14%)	2 (4%)	3	23
41	91	23/25 (92%)	23 (100%)	0	0	100	100
42	92	103/106 (97%)	83 (81%)	18 (18%)	2 (2%)	8	38
43	93	89/92 (97%)	77 (86%)	11 (12%)	1 (1%)	14	52
44	P0	121/312 (39%)	107 (88%)	13 (11%)	1 (1%)	19	60
45	RC	316/319 (99%)	262 (83%)	44 (14%)	10 (3%)	4	26
46	S0	204/252 (81%)	161 (79%)	37 (18%)	6 (3%)	4	29
47	S1	212/255 (83%)	162 (76%)	39 (18%)	11 (5%)	2	19
48	S2	215/254 (85%)	177 (82%)	30 (14%)	8 (4%)	3	24
49	S3	221/240 (92%)	188 (85%)	25 (11%)	8 (4%)	3	25
50	S4	258/261 (99%)	202 (78%)	45 (17%)	11 (4%)	2	22
51	S5	204/225 (91%)	170 (83%)	25 (12%)	9 (4%)	2	22
52	S6	224/236 (95%)	196 (88%)	24 (11%)	4 (2%)	8	40
53	S7	182/190 (96%)	145 (80%)	27 (15%)	10 (6%)	2	19
54	S8	184/200 (92%)	141 (77%)	34 (18%)	9 (5%)	2	20
55	S9	183/197 (93%)	151 (82%)	20 (11%)	12 (7%)	1	15
56	10	94/105 (90%)	69 (73%)	17 (18%)	8 (8%)	1	11

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
57	11	153/156 (98%)	122 (80%)	23 (15%)	8 (5%)	2	19
58	12	122/143 (85%)	81 (66%)	26 (21%)	15 (12%)	0	5
59	13	148/151 (98%)	133 (90%)	11 (7%)	4 (3%)	5	31
60	14	125/137 (91%)	95 (76%)	25 (20%)	5 (4%)	3	23
61	15	122/142 (86%)	97 (80%)	18 (15%)	7 (6%)	1	18
62	16	139/143 (97%)	118 (85%)	17 (12%)	4 (3%)	4	29
63	17	116/136 (85%)	90 (78%)	18 (16%)	8 (7%)	1	14
64	18	143/146 (98%)	114 (80%)	20 (14%)	9 (6%)	1	16
65	19	141/144 (98%)	118 (84%)	16 (11%)	7 (5%)	2	20
66	20	105/121 (87%)	83 (79%)	16 (15%)	6 (6%)	1	18
67	21	85/87 (98%)	68 (80%)	11 (13%)	6 (7%)	1	14
68	22	127/130 (98%)	112 (88%)	11 (9%)	4 (3%)	4	27
69	23	142/145 (98%)	107 (75%)	30 (21%)	5 (4%)	3	25
70	24	132/135 (98%)	106 (80%)	18 (14%)	8 (6%)	1	16
71	25	68/108 (63%)	51 (75%)	14 (21%)	3 (4%)	2	22
72	26	95/119 (80%)	64 (67%)	20 (21%)	11 (12%)	0	6
73	27	79/82 (96%)	61 (77%)	18 (23%)	0	100	100
74	28	61/67 (91%)	46 (75%)	13 (21%)	2 (3%)	4	26
75	29	51/56 (91%)	43 (84%)	7 (14%)	1 (2%)	7	38
76	30	58/63 (92%)	44 (76%)	8 (14%)	6 (10%)	0	8
77	31	69/152 (45%)	44 (64%)	14 (20%)	11 (16%)	0	3
All	All	11389/12574 (91%)	9340 (82%)	1579 (14%)	470 (4%)	5	22

5 of 470 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L1	20	SER
1	L1	151	VAL
2	L2	41	ILE
2	L2	115	ASN
2	L2	192	LYS

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	
1	L1	185/198 (93%)	172 (93%)	13 (7%)	15	40
2	L2	194/196 (99%)	185 (95%)	9 (5%)	27	52
3	L3	322/323 (100%)	310 (96%)	12 (4%)	34	58
4	L4	288/289 (100%)	276 (96%)	12 (4%)	30	54
5	L5	244/245 (100%)	236 (97%)	8 (3%)	38	61
6	L6	134/153 (88%)	128 (96%)	6 (4%)	27	52
7	L7	186/205 (91%)	178 (96%)	8 (4%)	29	53
8	L8	191/208 (92%)	178 (93%)	13 (7%)	16	40
9	L9	171/171 (100%)	158 (92%)	13 (8%)	13	37
10	60	180/187 (96%)	167 (93%)	13 (7%)	14	39
11	61	147/150 (98%)	134 (91%)	13 (9%)	10	31
13	63	154/159 (97%)	146 (95%)	8 (5%)	23	48
14	64	107/109 (98%)	103 (96%)	4 (4%)	34	58
15	65	175/176 (99%)	163 (93%)	12 (7%)	15	40
16	66	160/162 (99%)	150 (94%)	10 (6%)	18	43
17	67	145/146 (99%)	135 (93%)	10 (7%)	15	40
18	68	150/151 (99%)	142 (95%)	8 (5%)	22	47
19	69	153/154 (99%)	142 (93%)	11 (7%)	14	39
20	70	156/156 (100%)	145 (93%)	11 (7%)	14	39
21	71	136/137 (99%)	132 (97%)	4 (3%)	42	64
22	72	87/107 (81%)	84 (97%)	3 (3%)	37	60
23	73	104/105 (99%)	99 (95%)	5 (5%)	25	51
24	74	56/129 (43%)	55 (98%)	1 (2%)	59	77
25	75	105/118 (89%)	93 (89%)	12 (11%)	5	21
26	76	109/110 (99%)	103 (94%)	6 (6%)	21	47
27	77	115/116 (99%)	111 (96%)	4 (4%)	36	59

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
28	78	118/119 (99%)	111 (94%)	7 (6%)	19	45
29	79	46/47 (98%)	40 (87%)	6 (13%)	4	18
30	80	81/88 (92%)	76 (94%)	5 (6%)	18	43
31	81	96/97 (99%)	88 (92%)	8 (8%)	11	34
32	82	109/111 (98%)	103 (94%)	6 (6%)	21	47
33	83	90/91 (99%)	88 (98%)	2 (2%)	52	71
34	84	95/103 (92%)	89 (94%)	6 (6%)	18	43
35	85	104/105 (99%)	98 (94%)	6 (6%)	20	45
36	86	81/82 (99%)	74 (91%)	7 (9%)	10	32
37	87	70/71 (99%)	68 (97%)	2 (3%)	42	64
38	88	68/69 (99%)	63 (93%)	5 (7%)	13	38
39	89	45/46 (98%)	39 (87%)	6 (13%)	4	18
40	90	47/116 (40%)	46 (98%)	1 (2%)	53	72
41	91	23/23 (100%)	18 (78%)	5 (22%)	1	6
42	92	90/91 (99%)	87 (97%)	3 (3%)	38	61
43	93	71/72 (99%)	69 (97%)	2 (3%)	43	65
44	P0	105/254 (41%)	98 (93%)	7 (7%)	16	41
45	RC	261/262 (100%)	242 (93%)	19 (7%)	14	39
46	S0	173/210 (82%)	158 (91%)	15 (9%)	10	31
47	S1	191/224 (85%)	171 (90%)	20 (10%)	7	24
48	S2	176/205 (86%)	167 (95%)	9 (5%)	24	48
49	S3	182/195 (93%)	167 (92%)	15 (8%)	11	34
50	S4	221/222 (100%)	209 (95%)	12 (5%)	22	47
51	S5	173/191 (91%)	166 (96%)	7 (4%)	31	55
52	S6	193/201 (96%)	183 (95%)	10 (5%)	23	48
53	S7	165/170 (97%)	154 (93%)	11 (7%)	16	41
54	S8	150/161 (93%)	143 (95%)	7 (5%)	26	51
55	S9	158/166 (95%)	151 (96%)	7 (4%)	28	53
56	10	89/98 (91%)	79 (89%)	10 (11%)	6	22
57	11	136/137 (99%)	128 (94%)	8 (6%)	19	45
58	12	100/119 (84%)	90 (90%)	10 (10%)	7	26

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
59	13	127/128 (99%)	118 (93%)	9 (7%)	14	39
60	14	96/105 (91%)	89 (93%)	7 (7%)	14	39
61	15	104/118 (88%)	95 (91%)	9 (9%)	10	31
62	16	117/119 (98%)	111 (95%)	6 (5%)	24	48
63	17	109/124 (88%)	95 (87%)	14 (13%)	4	18
64	18	128/129 (99%)	116 (91%)	12 (9%)	8	28
65	19	115/116 (99%)	109 (95%)	6 (5%)	23	48
66	20	100/114 (88%)	94 (94%)	6 (6%)	19	44
67	21	74/74 (100%)	69 (93%)	5 (7%)	16	40
68	22	110/111 (99%)	103 (94%)	7 (6%)	17	42
69	23	119/120 (99%)	112 (94%)	7 (6%)	19	45
70	24	112/113 (99%)	105 (94%)	7 (6%)	18	43
71	25	61/89 (68%)	55 (90%)	6 (10%)	8	27
72	26	83/101 (82%)	76 (92%)	7 (8%)	11	33
73	27	70/71 (99%)	65 (93%)	5 (7%)	14	39
74	28	56/60 (93%)	53 (95%)	3 (5%)	22	47
75	29	47/49 (96%)	47 (100%)	0	100	100
76	30	51/54 (94%)	47 (92%)	4 (8%)	12	36
77	31	43/135 (32%)	38 (88%)	5 (12%)	5	21
All	All	9583/10436 (92%)	8985 (94%)	598 (6%)	22	43

5 of 598 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
58	12	24	ILE
71	25	100	ILE
59	13	64	ARG
57	11	151	LYS
64	18	28	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 223 such sidechains are listed below:

Mol	Chain	Res	Type
38	88	40	GLN

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Mol	Chain	Res	Type
76	30	51	ASN
47	S1	209	ASN
74	28	43	ASN
64	18	104	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
78	1S	1780/1798 (98%)	329 (18%)	16 (0%)
79	2S	3298/3395 (97%)	474 (14%)	23 (0%)
80	8S	157/158 (99%)	22 (14%)	1 (0%)
81	5S	120/121 (99%)	8 (6%)	0
82	ET	76/77 (98%)	11 (14%)	1 (1%)
82	PT	76/77 (98%)	7 (9%)	0
83	MR	8/14 (57%)	1 (12%)	0
All	All	5515/5640 (97%)	852 (15%)	41 (0%)

5 of 852 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
78	1S	2	A
78	1S	4	C
78	1S	25	C
78	1S	26	A
78	1S	34	G

5 of 41 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
79	2S	2065	U
79	2S	3218	A
79	2S	2101	C
79	2S	2541	U
79	2S	3269	U

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

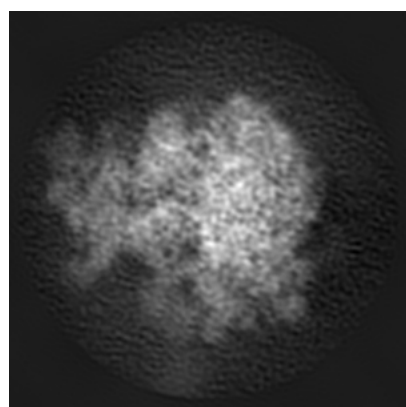
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-5977. These allow visual inspection of the internal detail of the map and identification of artifacts.

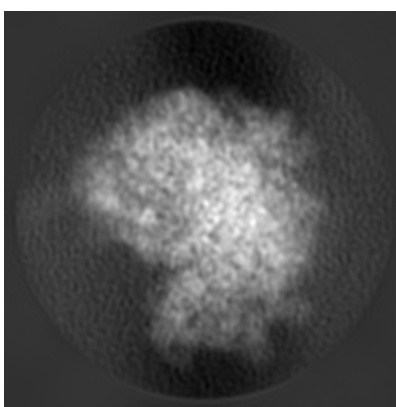
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

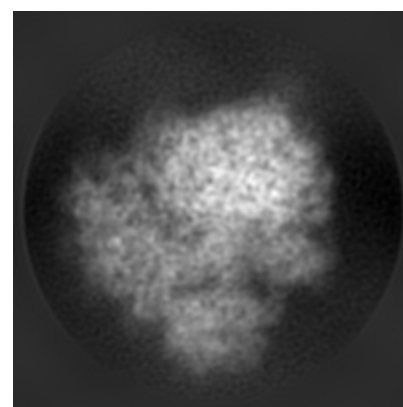
6.1.1 Primary map



X



Y

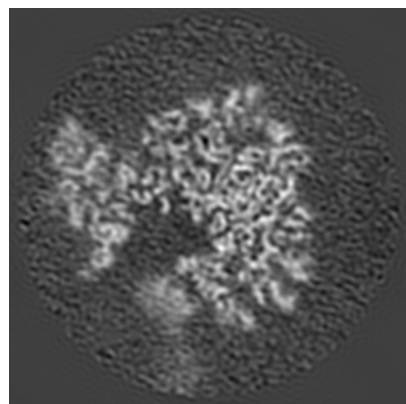


Z

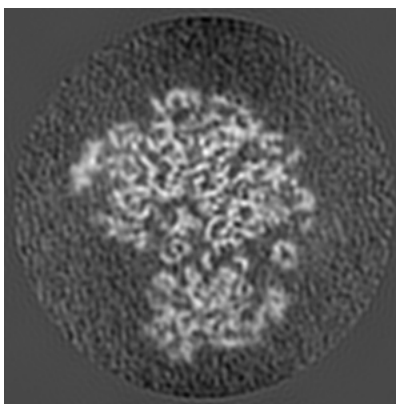
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

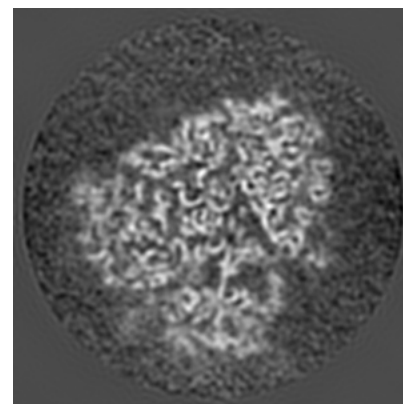
6.2.1 Primary map



X Index: 180



Y Index: 180

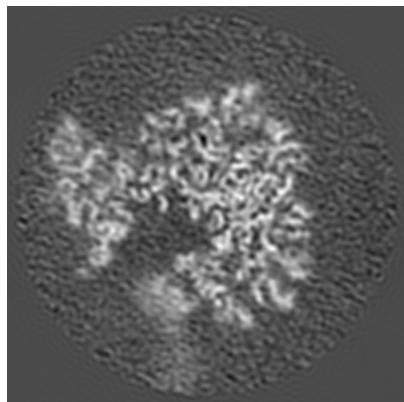


Z Index: 180

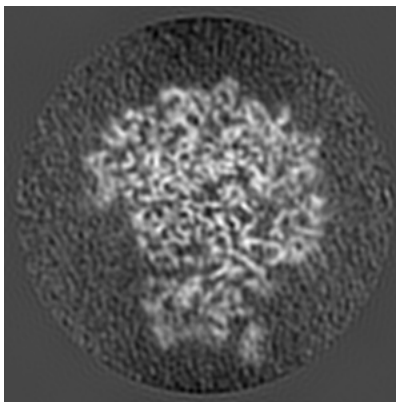
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

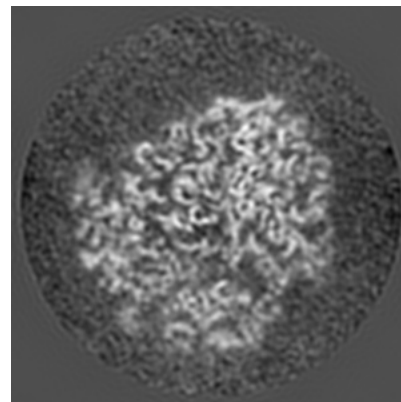
6.3.1 Primary map



X Index: 181



Y Index: 205

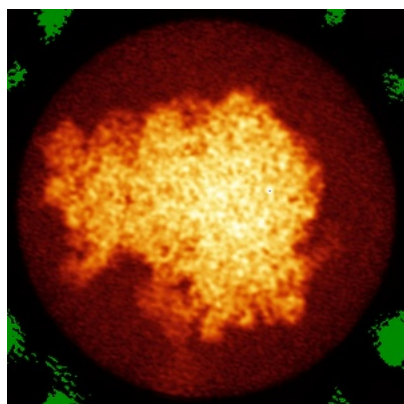


Z Index: 175

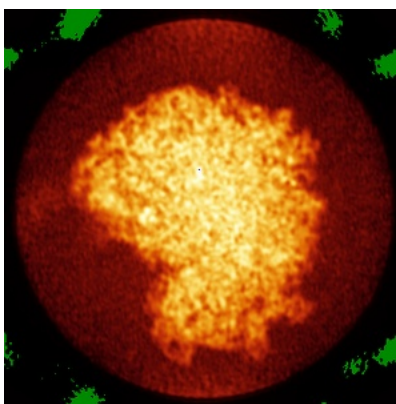
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [\(i\)](#)

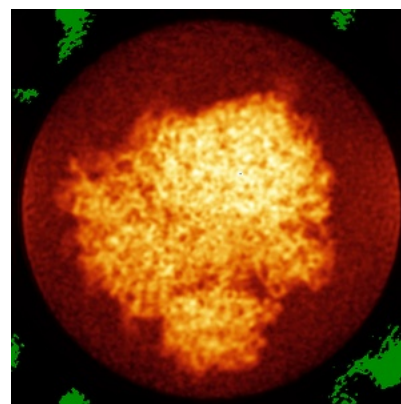
6.4.1 Primary map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

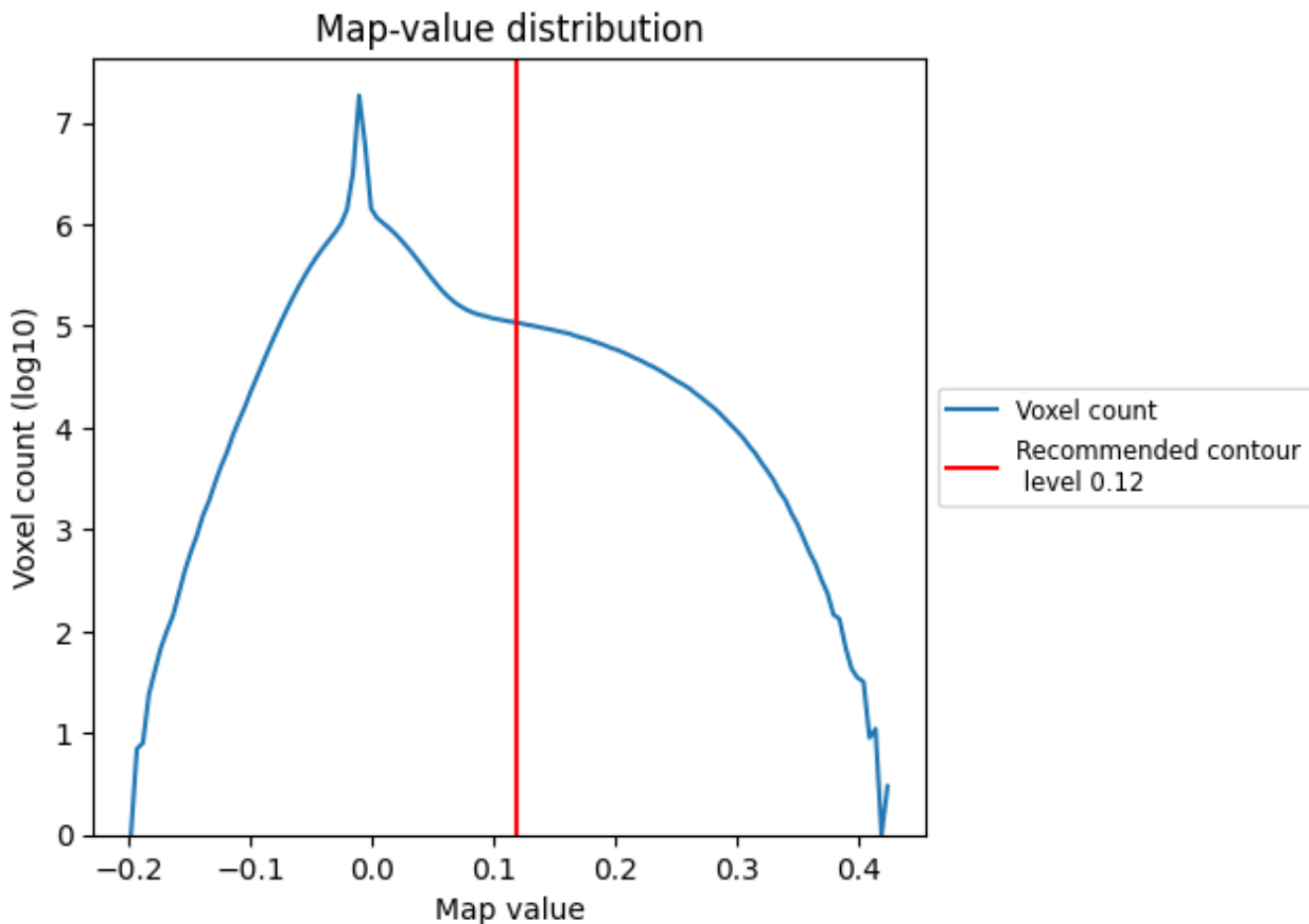
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

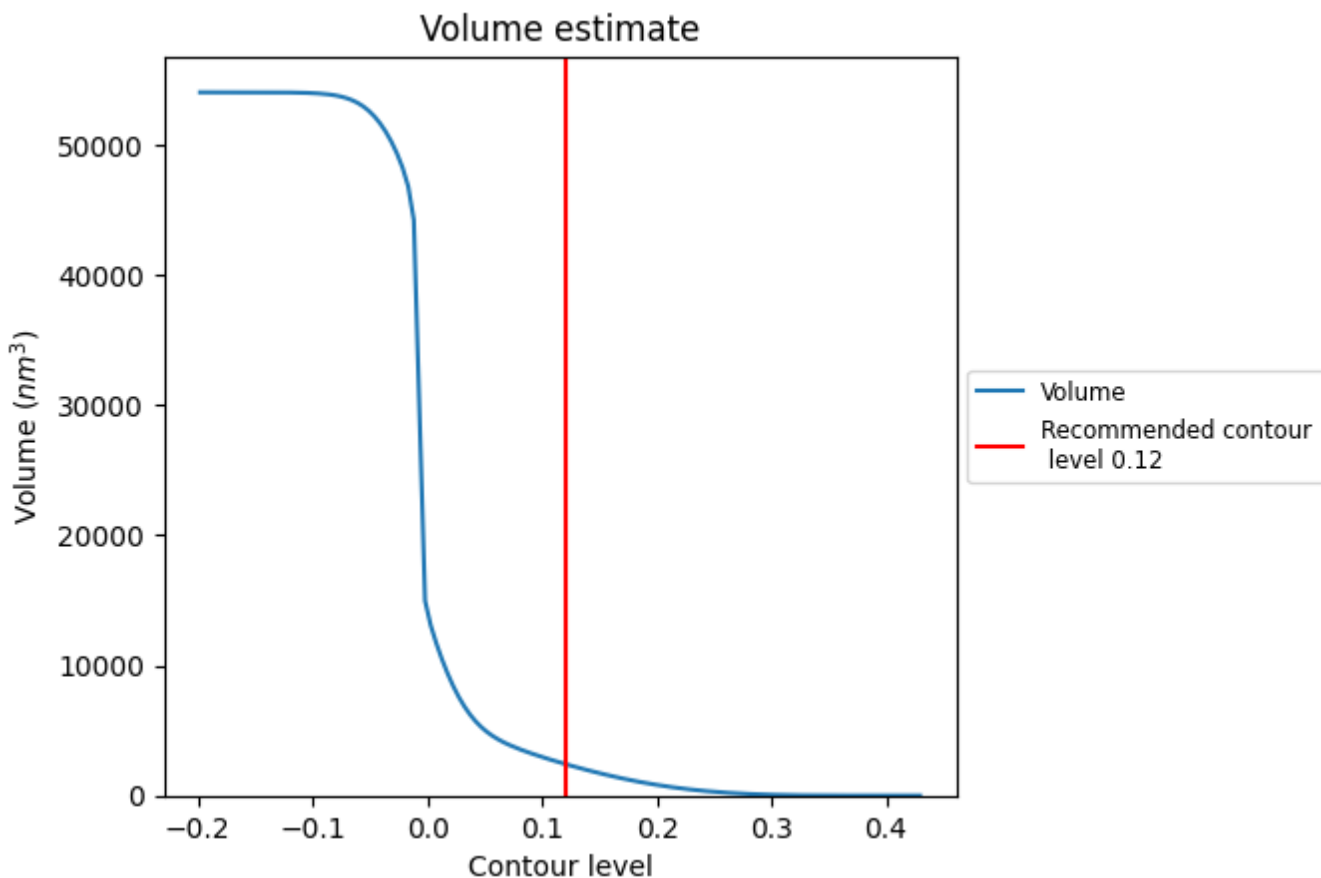
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

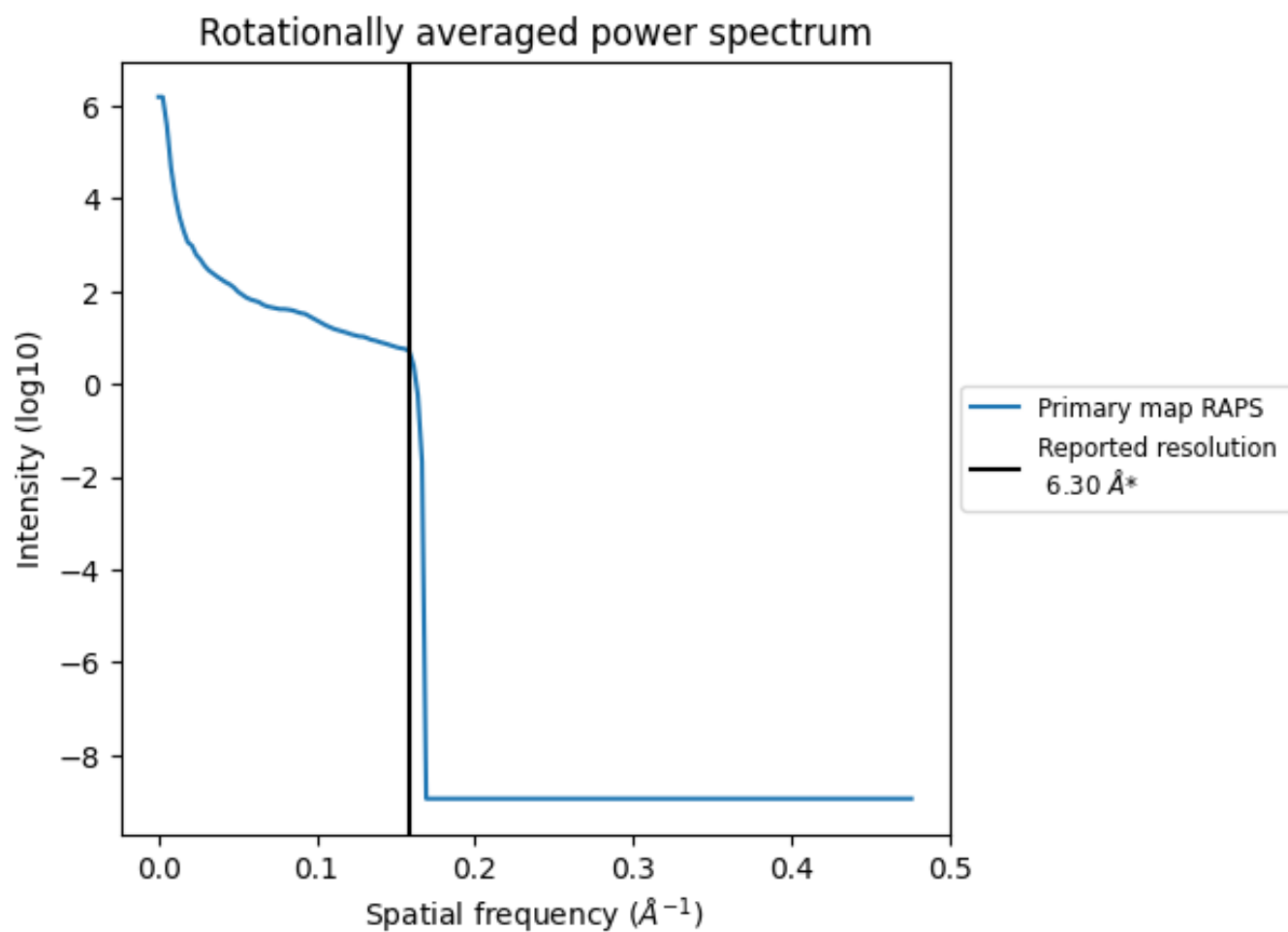
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2429 nm³; this corresponds to an approximate mass of 2194 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.159 Å⁻¹

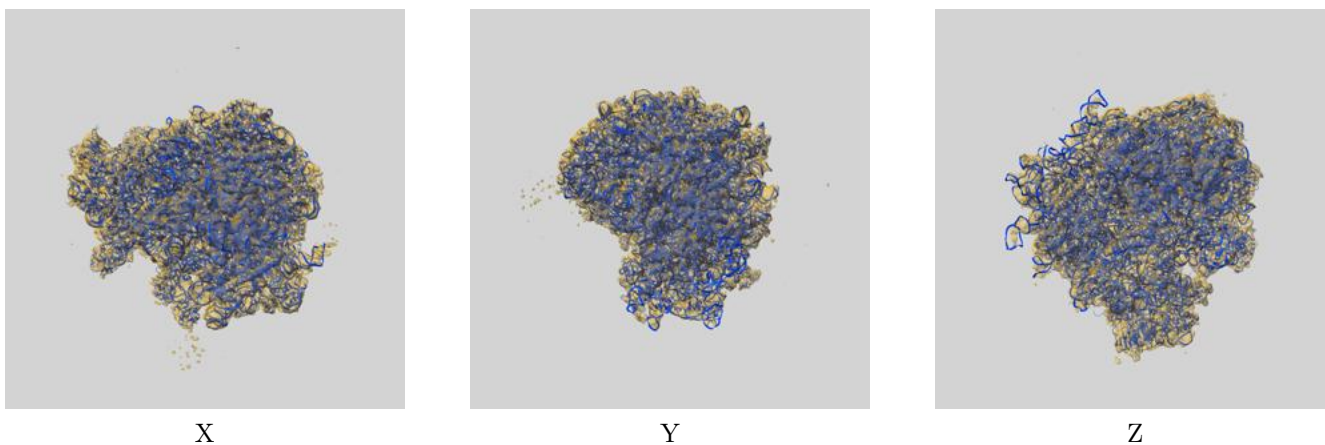
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

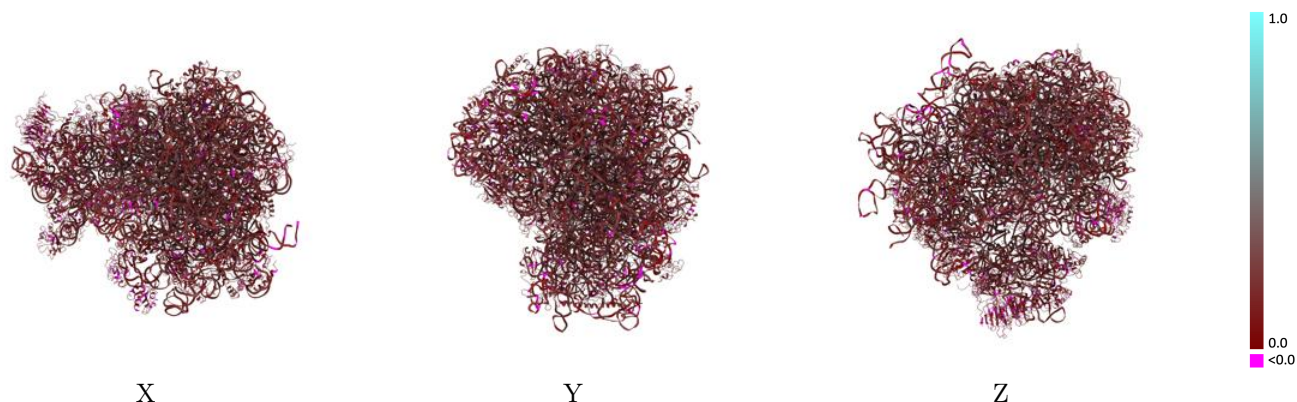
This section contains information regarding the fit between EMDB map EMD-5977 and PDB model 3J78. Per-residue inclusion information can be found in section 3 on page 19.

9.1 Map-model overlay [i](#)



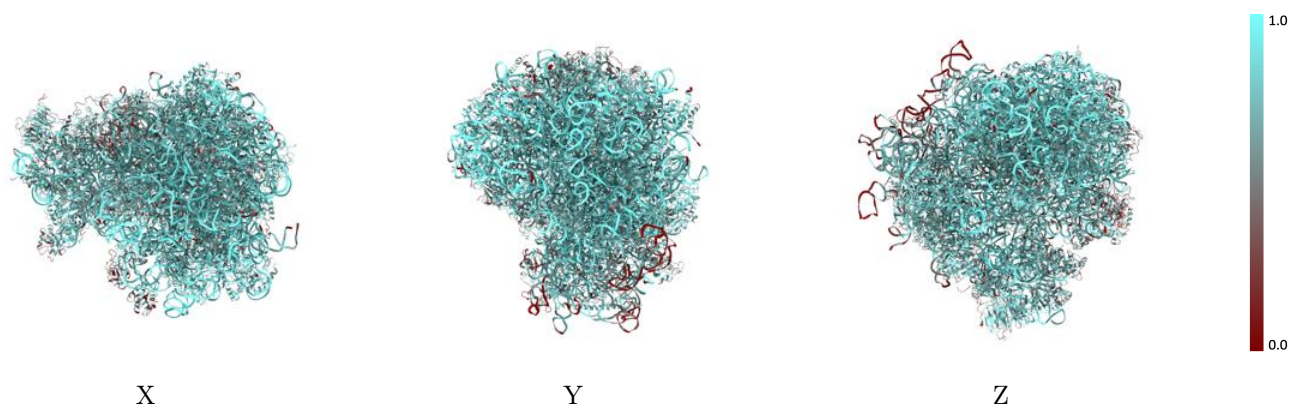
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



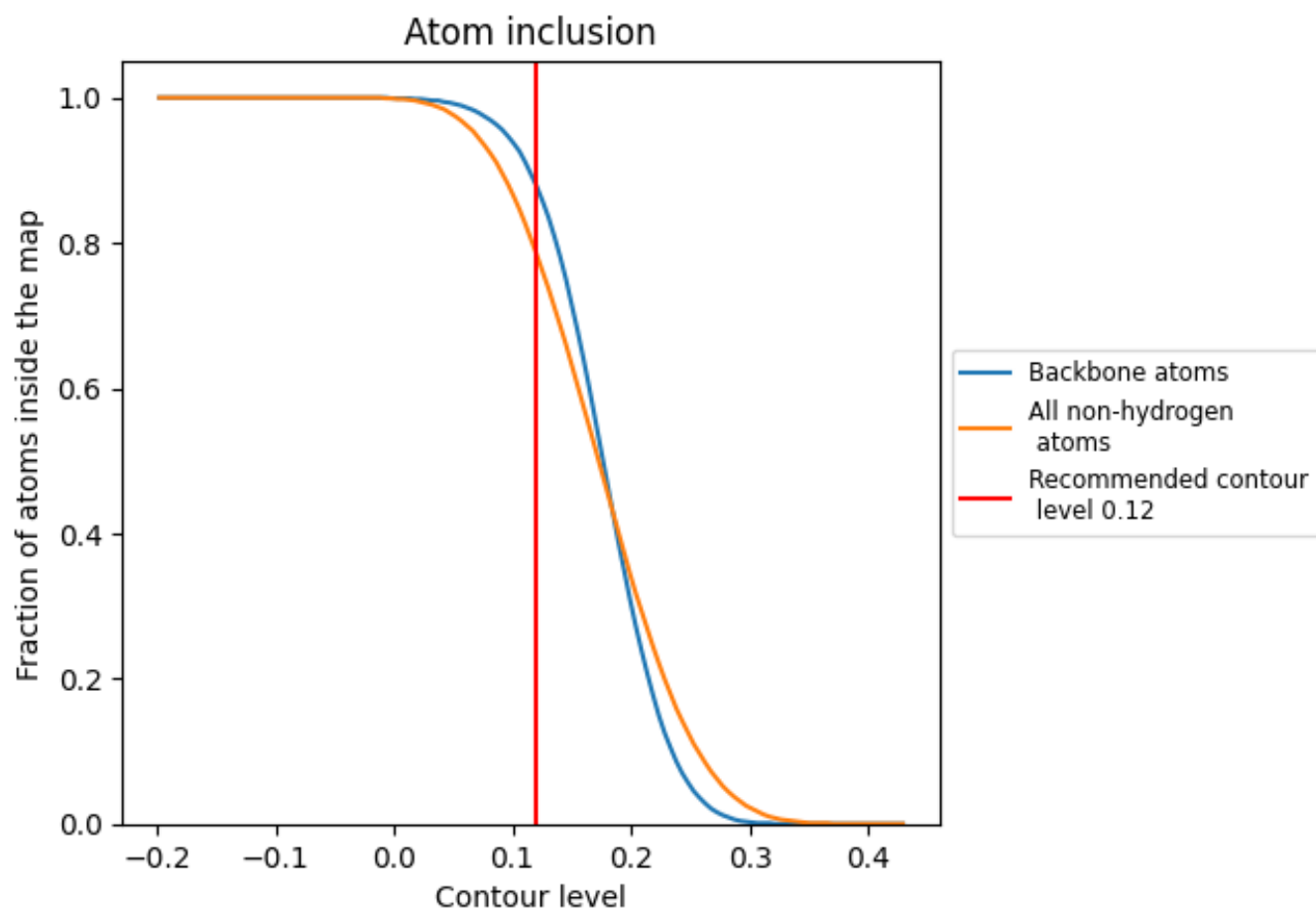
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.12).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary





















































































The table lists the average atom inclusion at the recommended contour level (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7860	 0.1940
10	 0.7590	 0.1590
11	 0.5310	 0.1750
12	 0.4390	 0.1490
13	 0.6820	 0.1710
14	 0.6320	 0.1620
15	 0.6560	 0.1700
16	 0.6830	 0.1470
17	 0.5680	 0.1490
18	 0.6220	 0.1700
19	 0.6420	 0.1380
1S	 0.8550	 0.2100
20	 0.6440	 0.1340
21	 0.6590	 0.1750
22	 0.6340	 0.1650
23	 0.5260	 0.1700
24	 0.5850	 0.1460
25	 0.5670	 0.1490
26	 0.7250	 0.1870
27	 0.7160	 0.2000
28	 0.6110	 0.1770
29	 0.7390	 0.1500
2S	 0.9050	 0.2190
30	 0.5840	 0.1850
31	 0.6500	 0.1730
5S	 0.9530	 0.2160
60	 0.7440	 0.1820
61	 0.6400	 0.1590
62	 0.3440	 0.1490
63	 0.6580	 0.1850
64	 0.7880	 0.1660
65	 0.7160	 0.1430
66	 0.7890	 0.1720
67	 0.7120	 0.1590
68	 0.6190	 0.1620



















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Chain	Atom inclusion	Q-score
69	 0.6810	 0.1640
70	 0.7900	 0.1600
71	 0.6570	 0.1810
72	 0.6090	 0.1840
73	 0.5300	 0.1780
74	 0.5600	 0.1860
75	 0.7030	 0.1850
76	 0.7390	 0.1670
77	 0.7560	 0.1820
78	 0.6160	 0.1530
79	 0.6230	 0.1780
80	 0.7390	 0.1800
81	 0.6520	 0.1620
82	 0.7600	 0.1870
83	 0.7690	 0.1340
84	 0.6840	 0.1510
85	 0.7290	 0.1670
86	 0.6800	 0.1780
87	 0.7450	 0.1500
88	 0.6650	 0.1830
89	 0.7430	 0.1780
8S	 0.9480	 0.2310
90	 0.7200	 0.1700
91	 0.4180	 0.0950
92	 0.6210	 0.1710
93	 0.7000	 0.1740
ET	 0.8290	 0.2000
L1	 0.1550	 0.1110
L2	 0.6870	 0.1700
L3	 0.6540	 0.1700
L4	 0.6830	 0.1680
L5	 0.5690	 0.1600
L6	 0.7060	 0.1620
L7	 0.7150	 0.1600
L8	 0.7350	 0.1780
L9	 0.7340	 0.1670
MR	 0.8770	 0.2750
P0	 0.4760	 0.0970
PT	 0.8440	 0.2340
RC	 0.6930	 0.1390
S0	 0.6940	 0.1780
S1	 0.6950	 0.1780

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Chain	Atom inclusion	Q-score
S2	 0.6880	 0.1760
S3	 0.6800	 0.1820
S4	 0.5750	 0.1590
S5	 0.6080	 0.1620
S6	 0.4890	 0.1690
S7	 0.6370	 0.1740
S8	 0.5610	 0.1520
S9	 0.6300	 0.1550