



wwPDB EM Validation Summary Report ⓘ

Nov 20, 2022 – 09:03 am GMT

PDB ID : 6HCJ
EMDB ID : EMD-0194
Title : Structure of the rabbit 80S ribosome on globin mRNA in the rotated state with A/P and P/E tRNAs
Authors : Juszkiwicz, S.; Chandrasekaran, V.; Lin, Z.; Kraatz, S.; Ramakrishnan, V.; Hegde, R.S.
Deposited on : 2018-08-15
Resolution : 3.80 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:

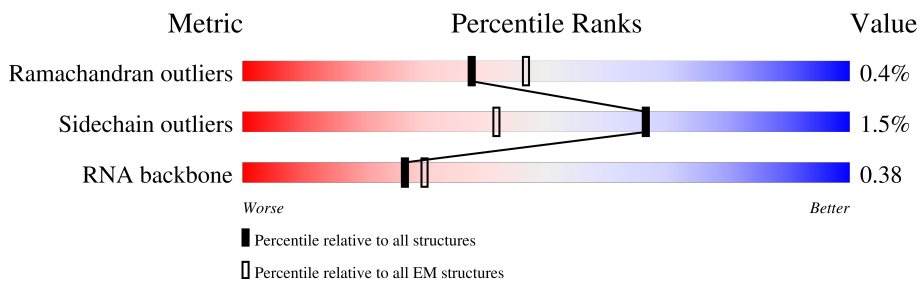
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 3.80 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)
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	51	3635	
2	71	120	
3	81	156	
4	A2	1869	
5	B2	295	
6	C2	264	
7	D2	293	
8	E2	243	

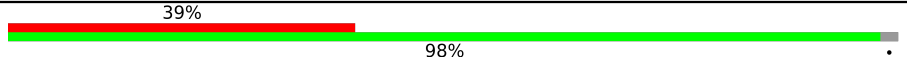

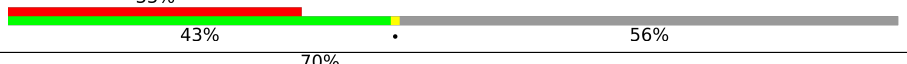
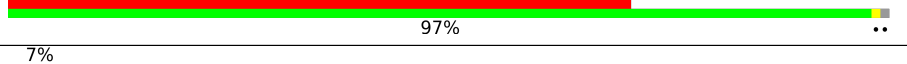
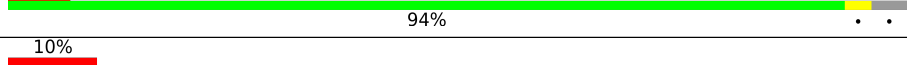
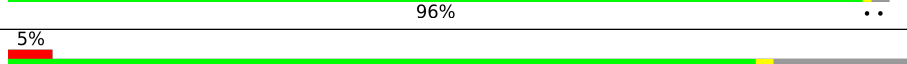
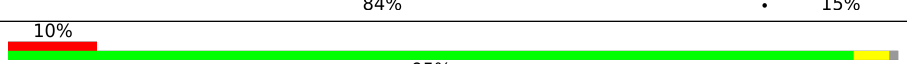
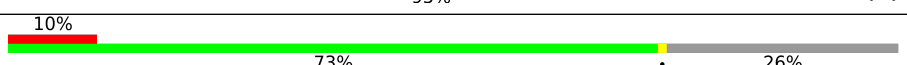
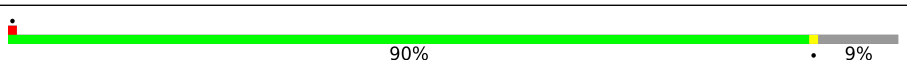

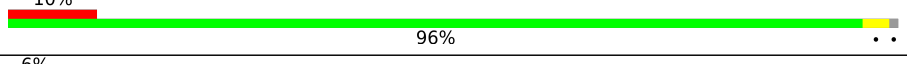
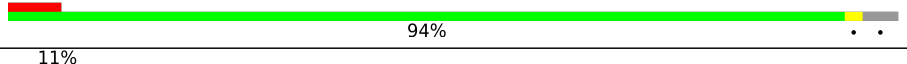
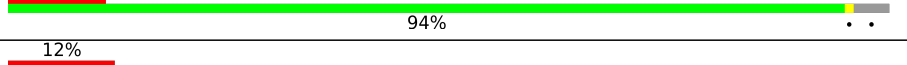
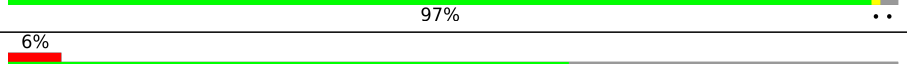
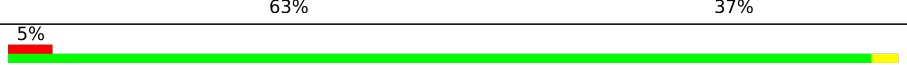
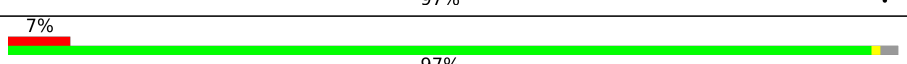

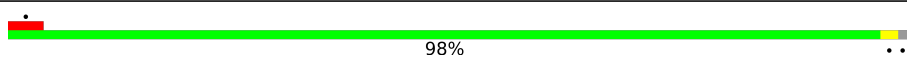

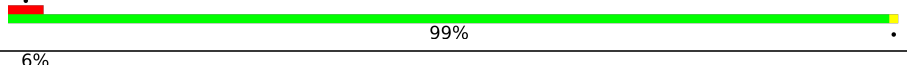
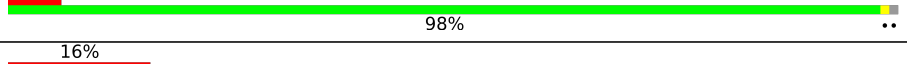

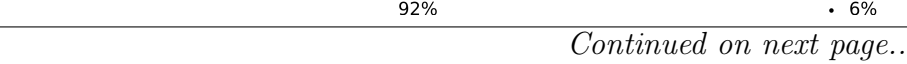


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Mol	Chain	Length	Quality of chain
9	F2	263	32% 98%
10	G2	204	46% 90% 9%
11	H2	249	47% 88% 5%
12	I2	194	34% 94% 5%
13	J2	208	34% 92% 6%
14	K2	194	47% 91% 5%
15	L2	165	34% 57% 42%
16	M2	158	13% 89% 9%
17	N2	132	79% 89% 11%
18	O2	151	18% 98%
19	P2	168	21% 79% 19%
20	Q2	145	28% 81% 17%
21	R2	146	53% 95%
22	S2	135	51% 98%
23	T2	152	40% 93% 5%
24	U2	145	44% 95%
25	V2	119	53% 83% 16%
26	W2	83	27% 99%
27	X2	130	7% 98%
28	Y2	143	16% 97%
29	Z2	130	50% 93% 5%
30	a2	125	34% 60% 40%
31	b2	115	19% 88% 12%
32	c2	84	33% 98%
33	d2	69	49% 90% 10%

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Mol	Chain	Length	Quality of chain
34	e2	56	
35	f2	133	
36	g2	156	
37	h2	317	
38	A3	257	
39	B3	403	
40	C3	425	
41	D3	297	
42	E3	291	
43	F3	247	
44	G3	319	
45	H3	192	
46	I3	214	
47	J3	178	
48	L3	211	
49	M3	218	
50	N3	204	
51	O3	203	
52	P3	184	
53	Q3	188	
54	R3	196	
55	S3	176	
56	T3	160	
57	U3	128	
58	V3	140	

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Mol	Chain	Length	Quality of chain
59	X3	156	
60	Y3	145	
61	Z3	136	
62	a3	148	
63	b3	245	
64	c3	115	
65	d3	125	
66	e3	135	
67	f3	110	
68	g3	117	
69	h3	123	
70	i3	105	
71	j3	97	
72	k3	70	
73	l3	51	
74	m3	102	
75	n3	25	
76	o3	106	
77	p3	92	
78	r3	137	
79	q3	74	
80	t3	318	
81	u3	165	
82	v3	22	
83	33	75	

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Mol	Chain	Length	Quality of chain
84	w3	217	100%
			96%
85	1	22	95%
			100%

2 Entry composition [i](#)

There are 87 unique types of molecules in this entry. The entry contains 219683 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 28S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	51	3635	77827	34654	14241	25297	3635	0	0

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	71	120	2558	1141	456	842	119	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	81	151	3208	1432	564	1062	150	0	0

- Molecule 4 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	A2	1740	37141	16578	6668	12156	1739	0	0

- Molecule 5 is a protein called uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B2	217	1710	1086	300	316	8	0	0

- Molecule 6 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	C2	213	1729	1098	309	308	14	0	0

- Molecule 7 is a protein called uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	D2	221	1716	1111	295	301	9	0	0

- Molecule 8 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	E2	228	1765	1125	316	316	8	0	0

- Molecule 9 is a protein called eS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	F2	262	2076	1324	386	358	8	0	0

- Molecule 10 is a protein called Ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G2	185	1471	921	277	266	7	0	0

- Molecule 11 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	H2	237	1923	1200	387	329	7	0	0

- Molecule 12 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	I2	185	1488	952	271	264	1	0	0

- Molecule 13 is a protein called eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	J2	206	1686	1058	332	291	5	0	0

- Molecule 14 is a protein called Ribosomal protein S9 (Predicted).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	K2	185	1525	969	306	248	2	0	0

- Molecule 15 is a protein called eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	L2	96	810	530	143	131	6	0	0

- Molecule 16 is a protein called Ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	M2	143	1175	749	222	198	6	0	0

- Molecule 17 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	N2	117	908	570	161	169	8	0	0

- Molecule 18 is a protein called uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	O2	149	1202	770	228	203	1	0	0

- Molecule 19 is a protein called uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	P2	136	1016	621	199	190	6	0	0

- Molecule 20 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	Q2	120	997	635	187	168	7	0	0

- Molecule 21 is a protein called Ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	R2	142	1128	717	213	195	3	0	0

- Molecule 22 is a protein called eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	S2	132	1068	670	199	195	4	0	0

- Molecule 23 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	T2	144	1190	746	241	202	1	0	0

- Molecule 24 is a protein called eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	U2	141	1097	688	211	195	3	0	0

- Molecule 25 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	V2	100	795	498	152	141	4	0	0

- Molecule 26 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	W2	83	636	393	117	121	5	0	0

- Molecule 27 is a protein called Ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	X2	129	1034	659	193	176	6	0	0

- Molecule 28 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	Y2	141	1098	693	219	183	3	0	0

- Molecule 29 is a protein called eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	Z2	124	1011	640	198	168	5	0	0

- Molecule 30 is a protein called eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	a2	75	598	382	111	104	1	0	0

- Molecule 31 is a protein called eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	b2	101	814	507	170	132	5	0	0

- Molecule 32 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	c2	83	651	408	121	115	7	0	0

- Molecule 33 is a protein called Ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	d2	62	488	297	97	92	2	0	0

- Molecule 34 is a protein called uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	e2	55	459	286	94	74	5	0	0

- Molecule 35 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	f2	55	Total	C	N	O	S	0	0
			443	274	97	71	1		

- Molecule 36 is a protein called Ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	g2	68	Total	C	N	O	S	0	0
			555	351	103	94	7		

- Molecule 37 is a protein called RACK1.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	h2	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

- Molecule 38 is a protein called Ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	A3	248	Total	C	N	O	S	0	0
			1898	1189	389	314	6		

- Molecule 39 is a protein called uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	B3	394	Total	C	N	O	S	0	0
			3172	2020	597	542	13		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B3	1	MET	-	initiating methionine	UNP G1TL06

- Molecule 40 is a protein called uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	C3	362	Total	C	N	O	S	0	0
			2883	1812	577	480	14		

- Molecule 41 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	D3	293	2391	1512	438	427	14	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D3	1	MET	-	initiating methionine	UNP G1SYJ6

- Molecule 42 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	E3	216	1729	1115	329	282	3	0	0

- Molecule 43 is a protein called uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	F3	225	1875	1205	358	303	9	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F3	61	ARG	GLY	conflict	UNP G1TUB1
F3	93	ARG	GLY	conflict	UNP G1TUB1
F3	131	MET	VAL	conflict	UNP G1TUB1
F3	153	ILE	VAL	conflict	UNP G1TUB1

- Molecule 44 is a protein called eL8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	G3	233	1879	1199	361	315	4	0	0

- Molecule 45 is a protein called uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	H3	190	1516	954	284	272	6	0	0

- Molecule 46 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	I3	205	1664	1056	321	274	13	0	0

- Molecule 47 is a protein called Ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	J3	170	1362	861	254	241	6	0	0

- Molecule 48 is a protein called eL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	L3	207	1674	1047	348	275	4	0	0

- Molecule 49 is a protein called Ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	M3	138	1137	727	221	182	7	0	0

- Molecule 50 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	N3	203	1701	1072	359	266	4	0	0

- Molecule 51 is a protein called uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	O3	199	1630	1051	319	255	5	0	0

- Molecule 52 is a protein called uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	P3	153	1242	777	241	215	9	0	0

- Molecule 53 is a protein called eL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	Q3	187	Total	C	N	O	S	0	0
			1515	946	315	250	4		

- Molecule 54 is a protein called eL19.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	R3	180	Total	C	N	O	S	0	0
			1508	933	328	238	9		

- Molecule 55 is a protein called eL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	S3	176	Total	C	N	O	S	0	0
			1462	930	285	236	11		

- Molecule 56 is a protein called eL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	T3	159	Total	C	N	O	S	0	0
			1298	823	252	217	6		

- Molecule 57 is a protein called eL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	U3	99	Total	C	N	O	S	0	0
			809	519	141	147	2		

- Molecule 58 is a protein called Ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	V3	131	Total	C	N	O	S	0	0
			979	618	184	172	5		

- Molecule 59 is a protein called uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	X3	118	Total	C	N	O	S	0	0
			967	618	181	167	1		

- Molecule 60 is a protein called Ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	Y3	132	1102	692	223	184	3	0	0

- Molecule 61 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	Z3	135	1107	714	208	182	3	0	0

- Molecule 62 is a protein called uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	a3	147	1162	734	239	185	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a3	1	MET	-	initiating methionine	UNP G1SNY0

- Molecule 63 is a protein called eL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	b3	104	848	527	189	129	3	0	0

- Molecule 64 is a protein called eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	c3	98	761	481	134	140	6	0	0

- Molecule 65 is a protein called eL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	d3	107	888	560	171	155	2	0	0

- Molecule 66 is a protein called eL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	e3	128	1053	667	216	165	5	0	0

- Molecule 67 is a protein called eL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	f3	109	876	555	174	143	4	0	0

- Molecule 68 is a protein called eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	g3	114	906	566	187	147	6	0	0

- Molecule 69 is a protein called uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	h3	122	1013	640	204	168	1	0	0

- Molecule 70 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	i3	102	830	520	176	129	5	0	0

- Molecule 71 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	j3	86	705	434	155	111	5	0	0

- Molecule 72 is a protein called eL38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	k3	69	569	366	103	99	1	0	0

- Molecule 73 is a protein called eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	l3	50	Total	C	N	O	S	0	0
			447	286	96	64	1		

- Molecule 74 is a protein called eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	m3	52	Total	C	N	O	S	0	0
			429	266	90	67	6		

- Molecule 75 is a protein called eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	n3	25	Total	C	N	O	S	0	0
			239	145	64	27	3		

- Molecule 76 is a protein called eL42.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	o3	104	Total	C	N	O	S	0	0
			851	533	174	138	6		

- Molecule 77 is a protein called eL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	p3	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 78 is a protein called eL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	r3	124	Total	C	N	O	S	0	0
			994	616	205	167	6		

- Molecule 79 is a RNA chain called A/P RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	q3	74	Total	C	N	O	P	0	0
			1579	705	285	516	73		

- Molecule 80 is a protein called uL10.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	t3	196	Total	C	N	O	S	0	0
			1507	959	263	276	9		

- Molecule 81 is a protein called Ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	u3	153	Total	C	N	O	S	0	0
			1160	722	218	217	3		

- Molecule 82 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	v3	22	Total	C	N	O	P	0	0
			463	207	77	157	22		

- Molecule 83 is a RNA chain called P/E tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	33	75	Total	C	N	O	P	0	0
			1604	717	298	515	74		

- Molecule 84 is a protein called uL1.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	w3	217	Total	C	N	O	S	0	0
			1741	1113	312	307	9		

- Molecule 85 is a protein called nascent chain.

Mol	Chain	Residues	Atoms				AltConf	Trace
85	1	22	Total	C	N	O	0	0
			110	66	22	22		

- Molecule 86 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
86	51	200	Total	Mg	0
			200	200	
86	71	6	Total	Mg	0
			6	6	
86	81	6	Total	Mg	0
			6	6	

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Mol	Chain	Residues	Atoms		AltConf
86	A2	76	Total 76	Mg 76	0
86	G2	1	Total 1	Mg 1	0
86	b2	1	Total 1	Mg 1	0
86	g2	1	Total 1	Mg 1	0
86	B3	2	Total 2	Mg 2	0
86	D3	1	Total 1	Mg 1	0
86	N3	1	Total 1	Mg 1	0
86	P3	1	Total 1	Mg 1	0
86	V3	1	Total 1	Mg 1	0
86	a3	1	Total 1	Mg 1	0
86	e3	1	Total 1	Mg 1	0
86	q3	1	Total 1	Mg 1	0

- Molecule 87 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
87	b2	1	Total 1	Zn 1	0
87	e2	1	Total 1	Zn 1	0
87	g2	1	Total 1	Zn 1	0
87	g3	1	Total 1	Zn 1	0
87	j3	1	Total 1	Zn 1	0
87	m3	1	Total 1	Zn 1	0
87	o3	1	Total 1	Zn 1	0

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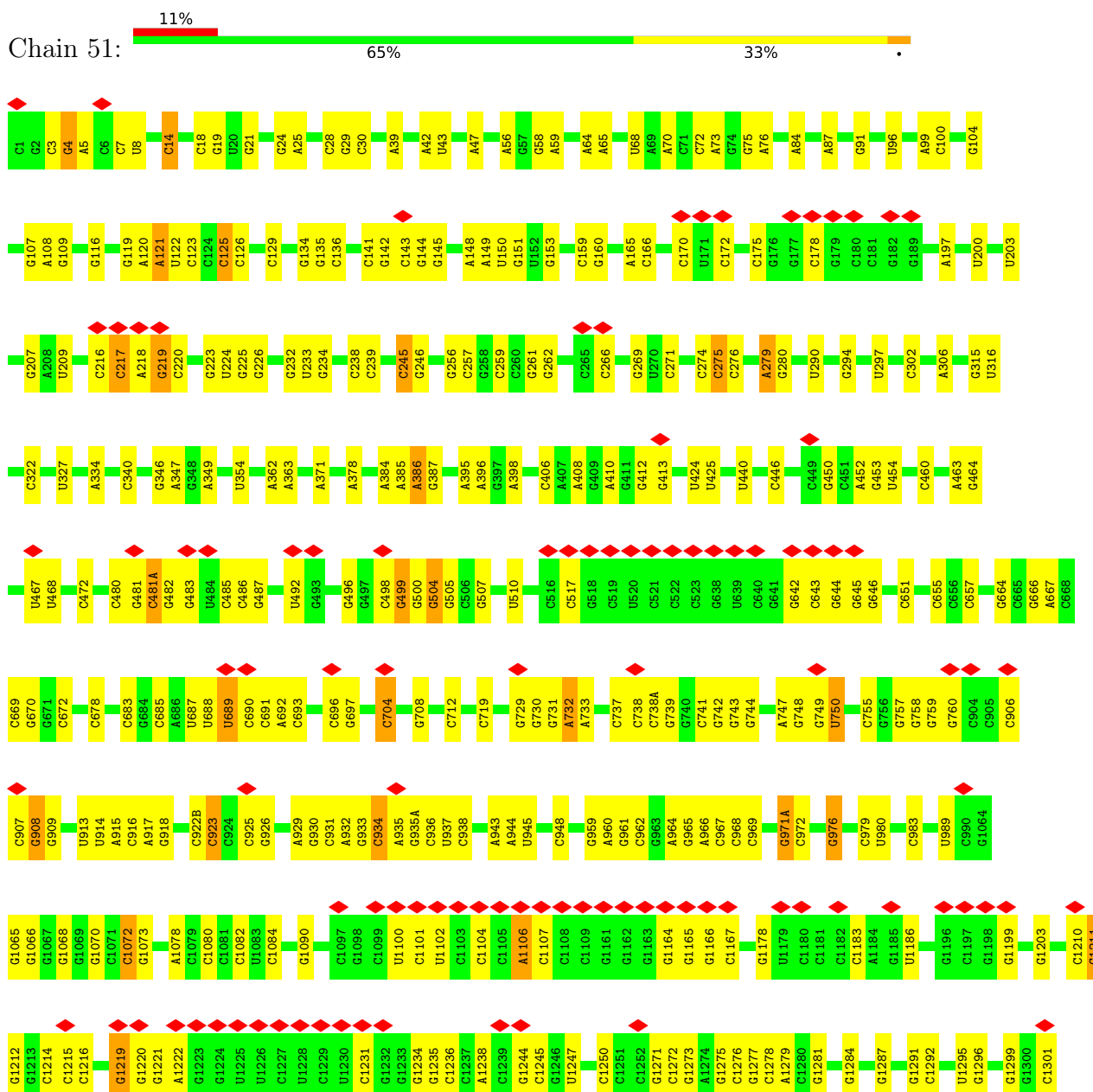
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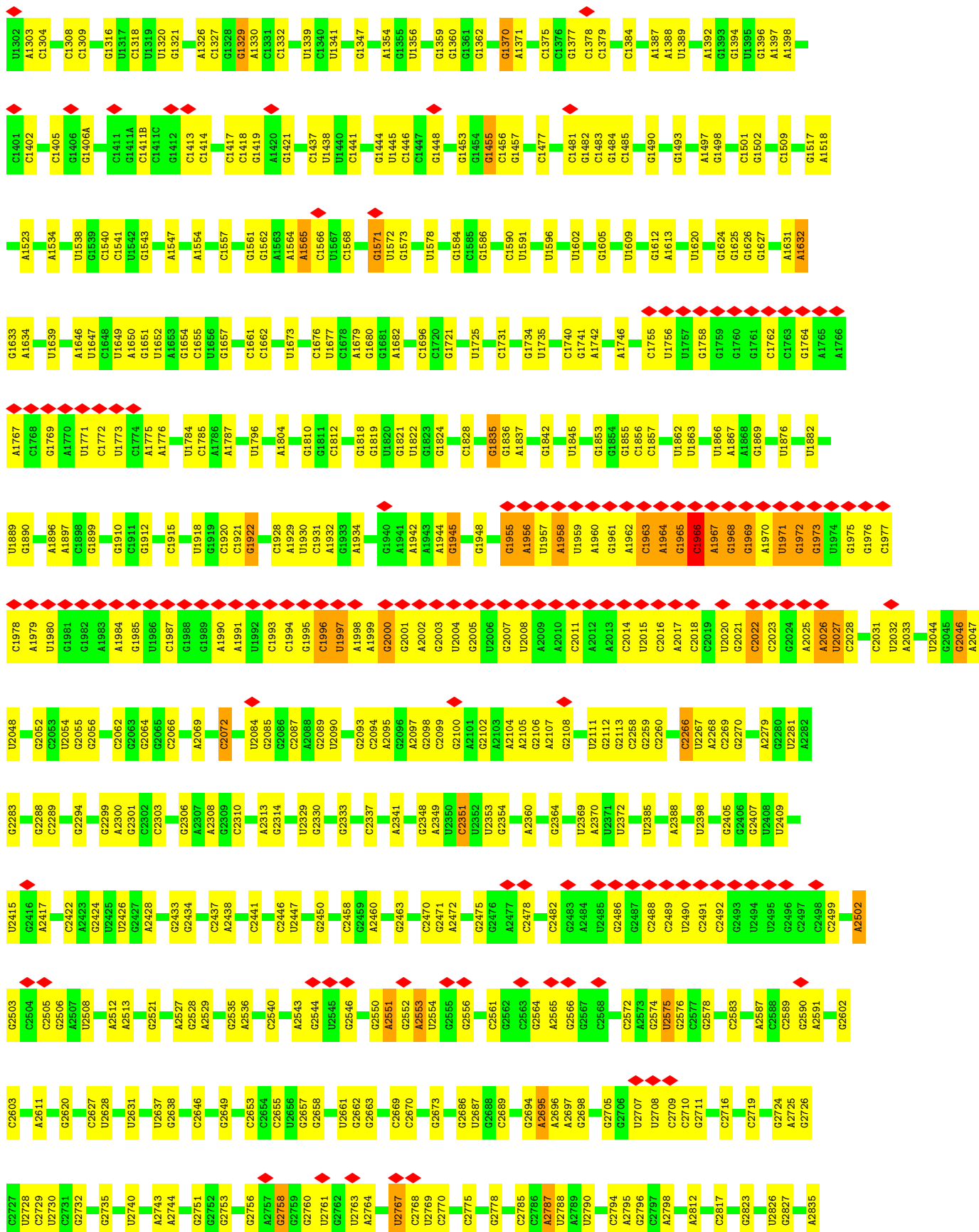
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
87	p3	1	1	1	0

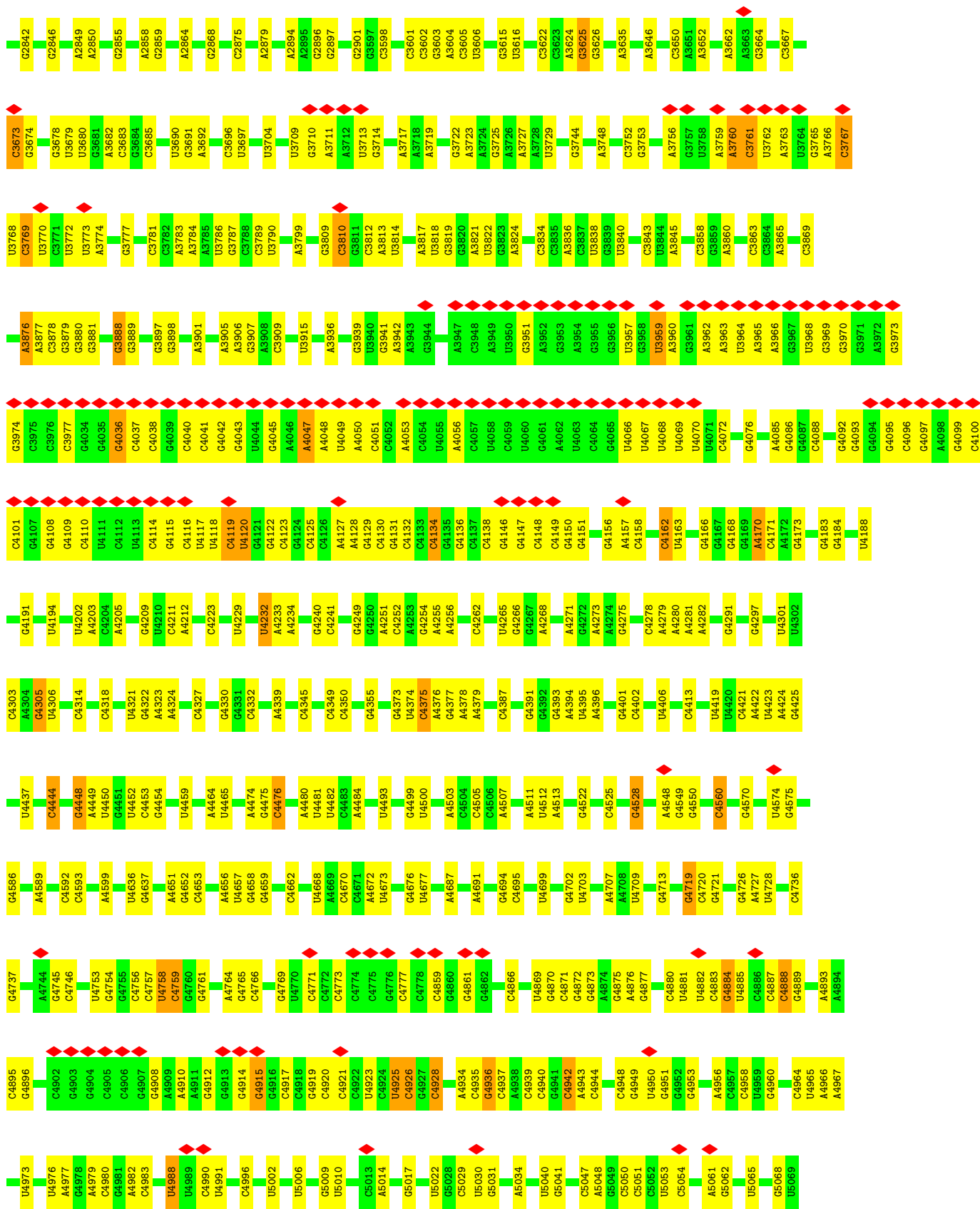
3 Residue-property plots

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

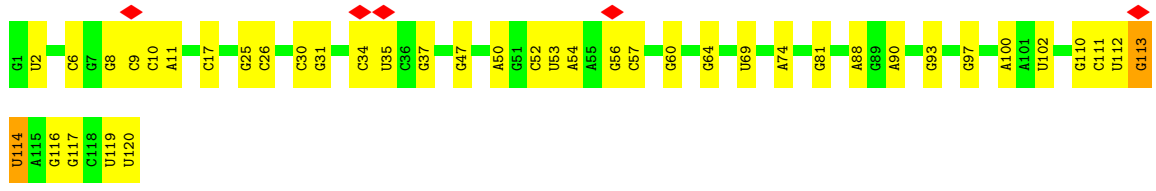
- Molecule 1: 28S ribosomal RNA



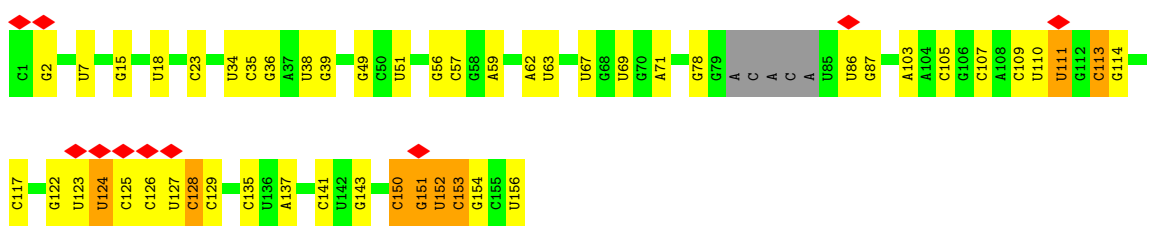




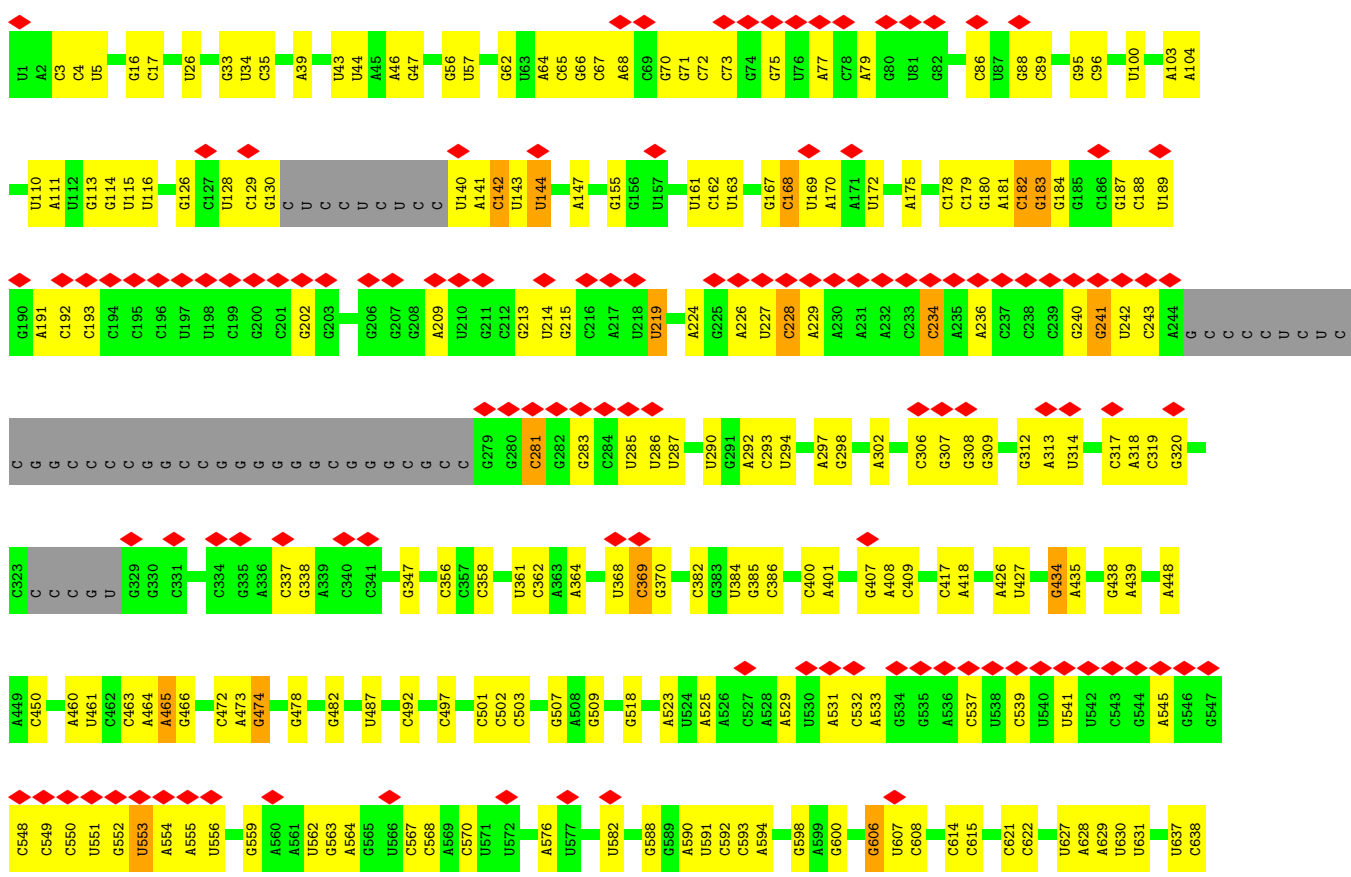
• Molecule 2: 5S ribosomal RNA

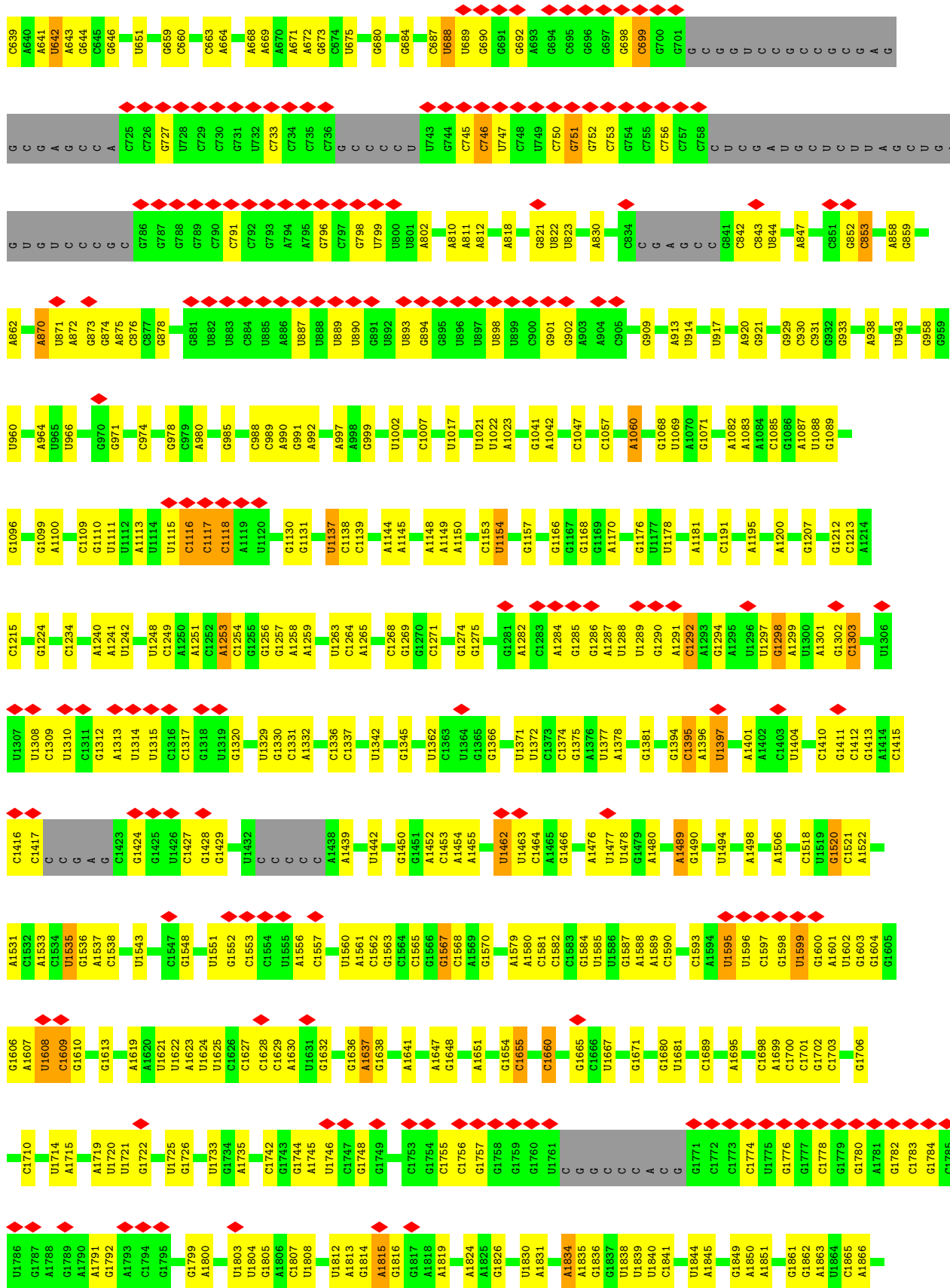


• Molecule 3: 5.8S ribosomal RNA



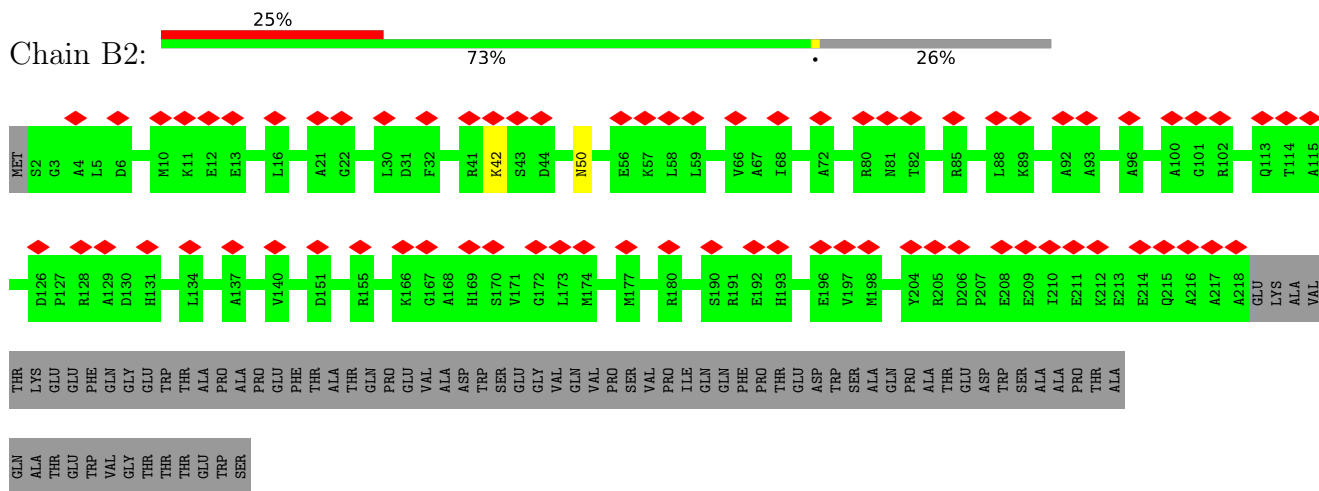
• Molecule 4: 18S ribosomal RNA



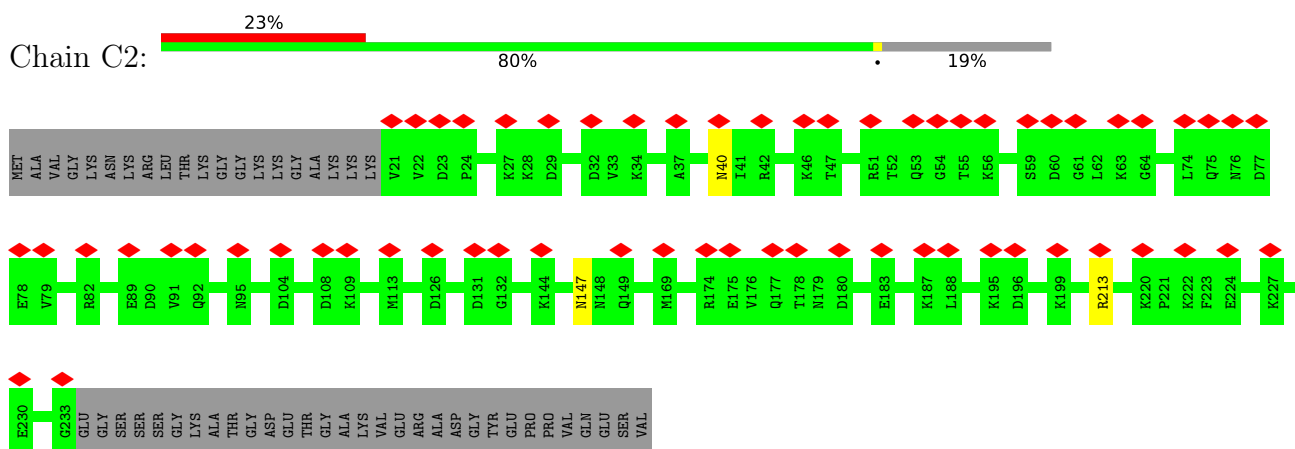


A1869

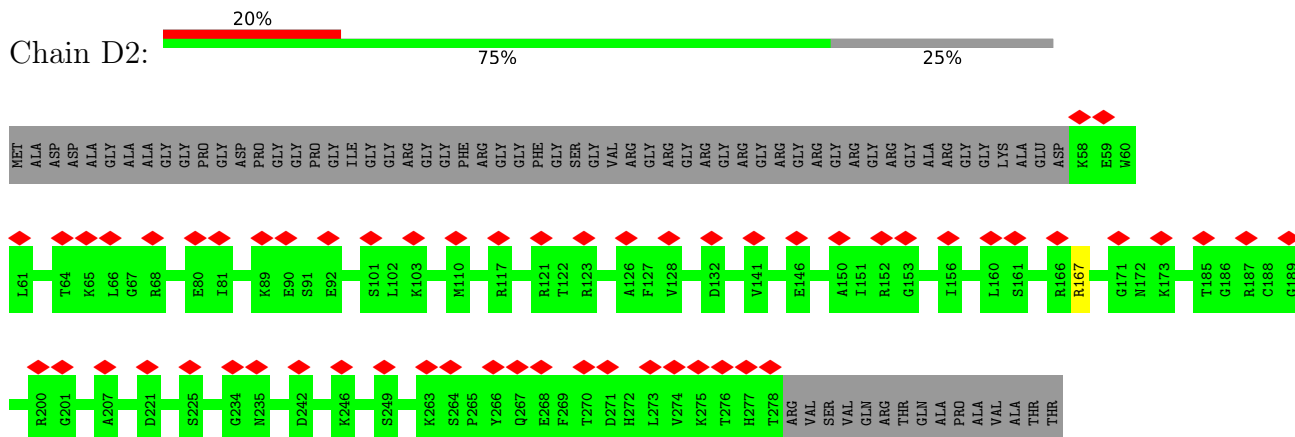
• Molecule 5: uS2



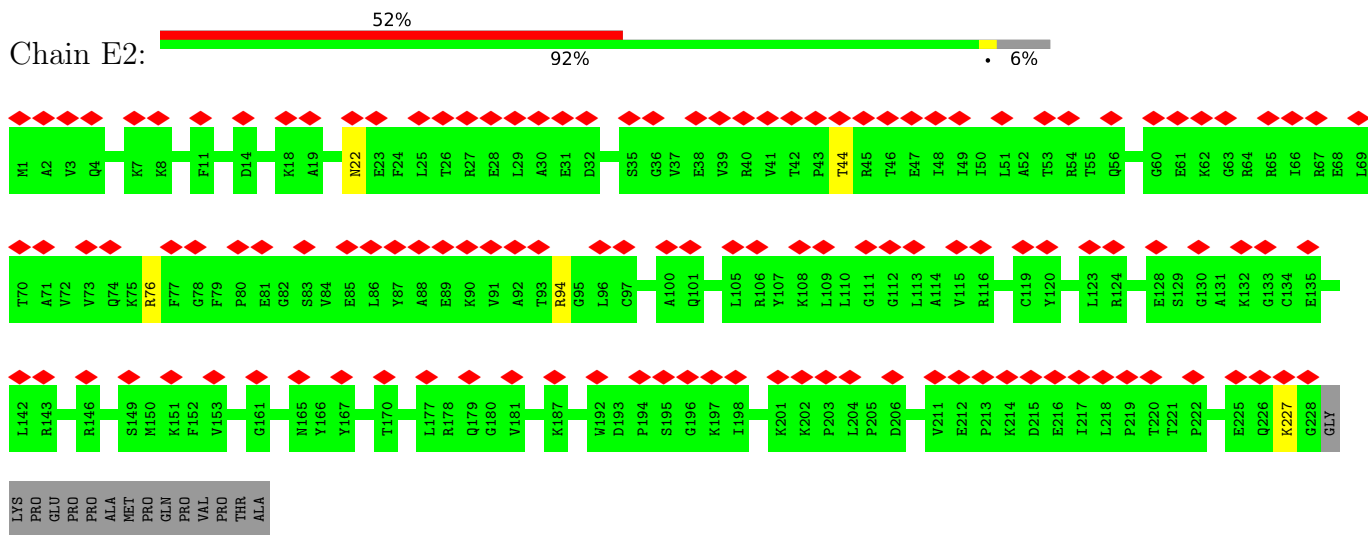
• Molecule 6: 40S ribosomal protein S3a



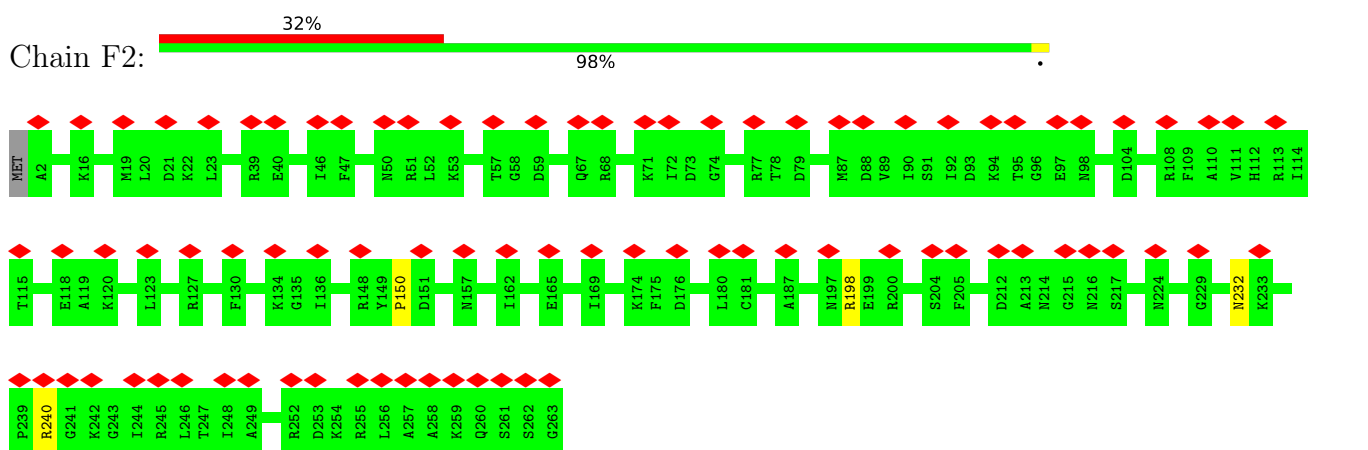
• Molecule 7: uS5



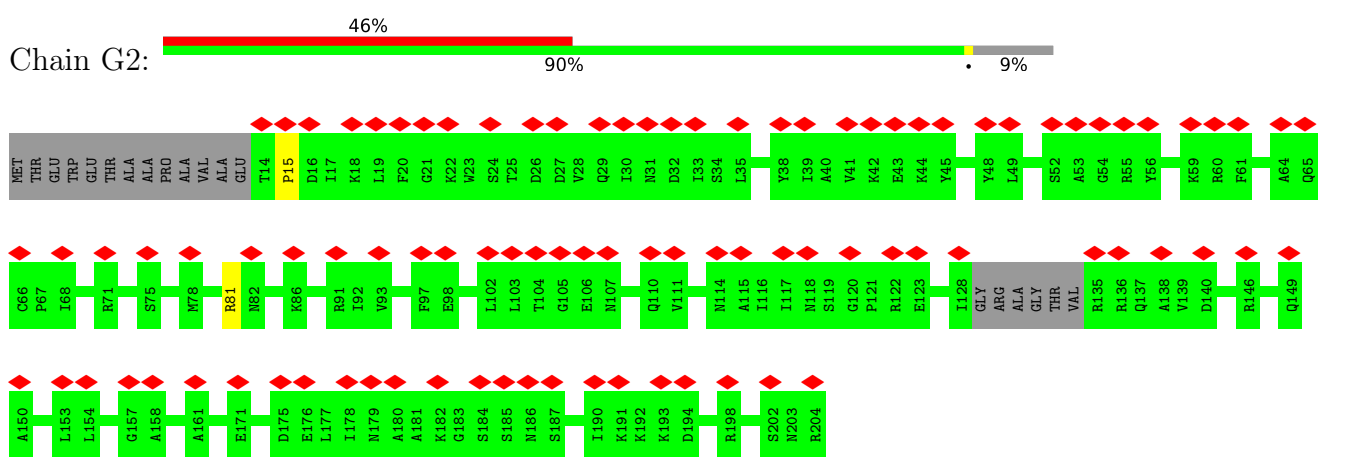
• Molecule 8: uS3



• Molecule 9: eS4

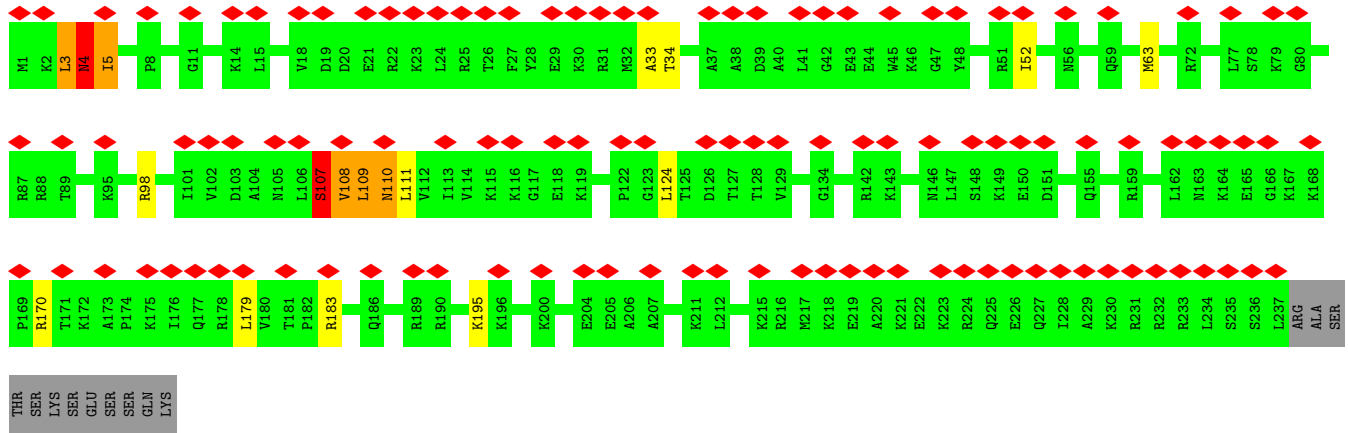


• Molecule 10: Ribosomal protein S5

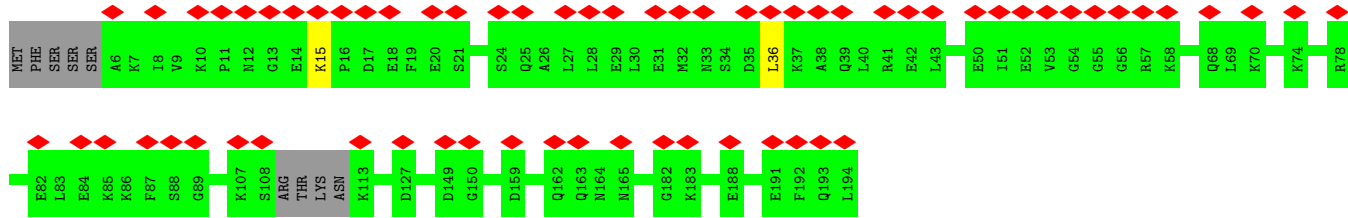


• Molecule 11: 40S ribosomal protein S6

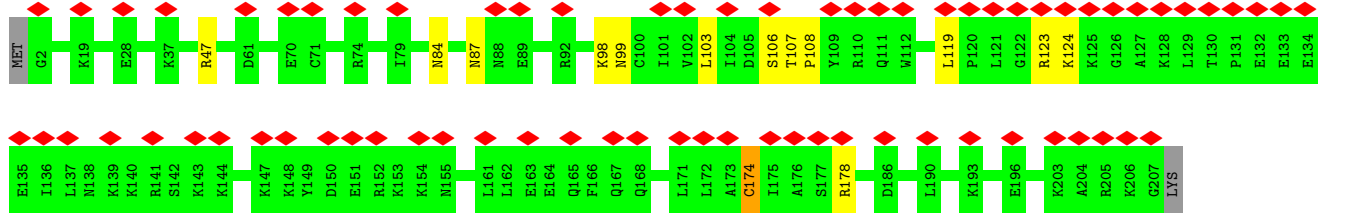




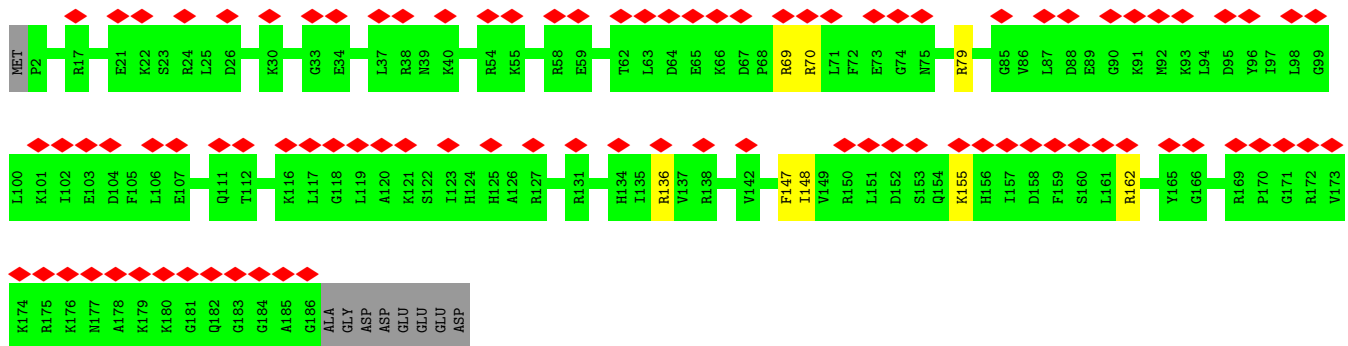
• Molecule 12: 40S ribosomal protein S7

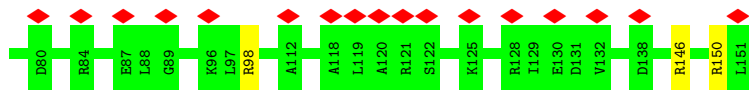


• Molecule 13: eS8

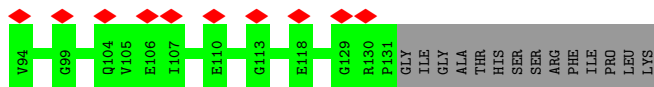
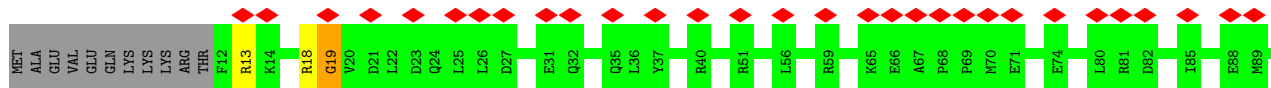
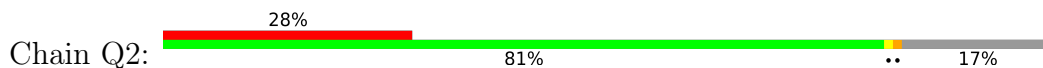


• Molecule 14: Ribosomal protein S9 (Predicted)

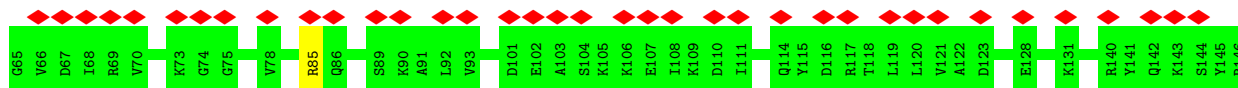
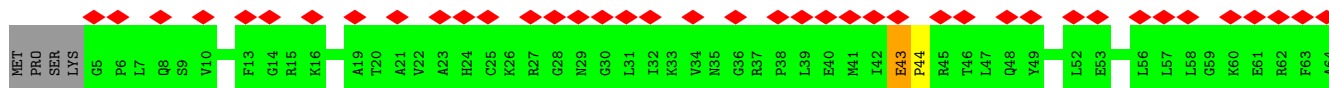




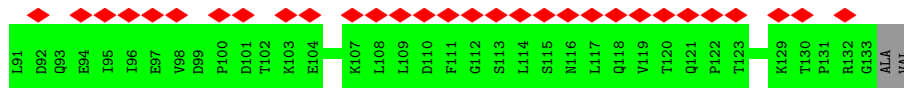
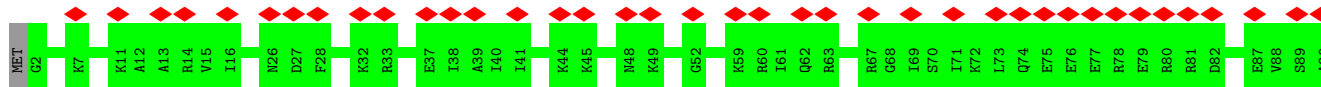
• Molecule 20: uS19



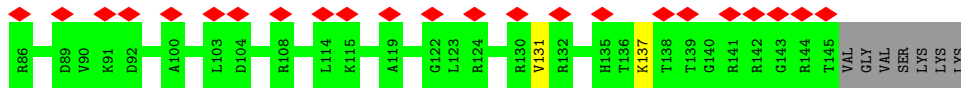
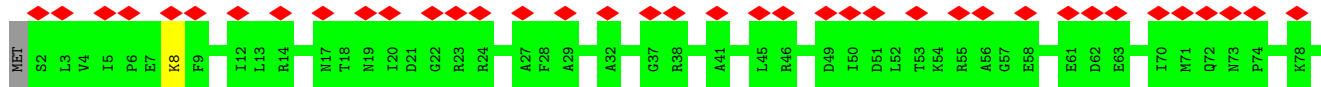
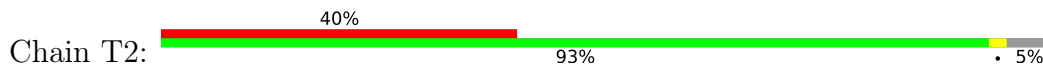
• Molecule 21: Ribosomal protein S16



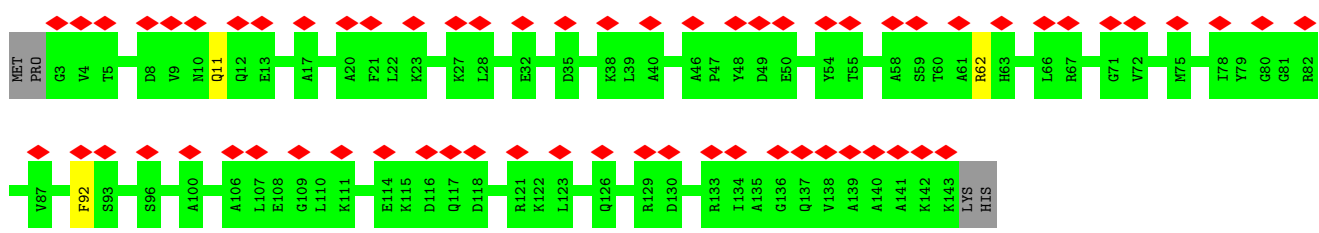
• Molecule 22: eS17



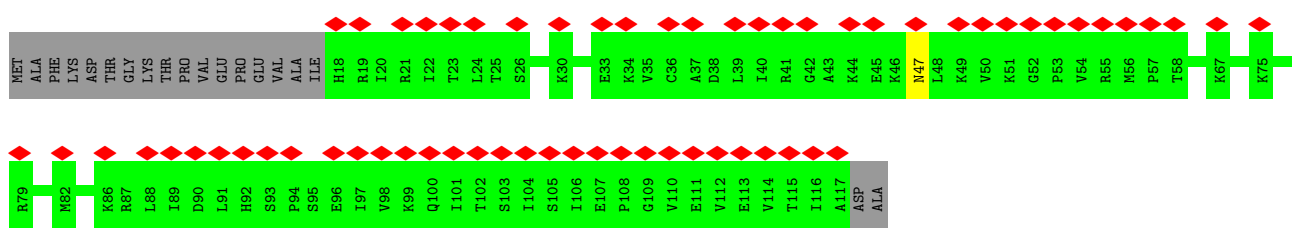
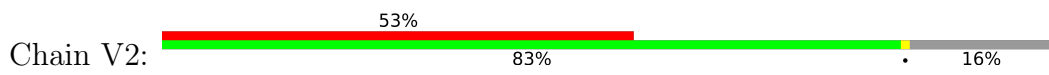
• Molecule 23: uS13



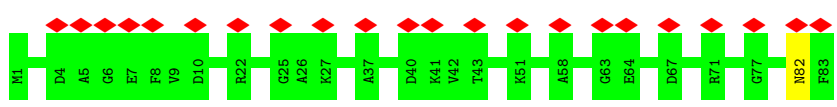
• Molecule 24: eS19



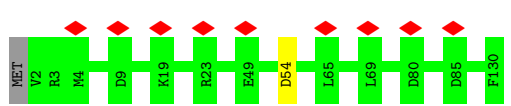
• Molecule 25: uS10



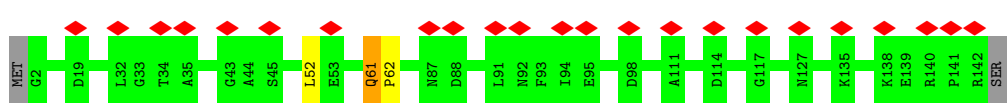
• Molecule 26: eS21



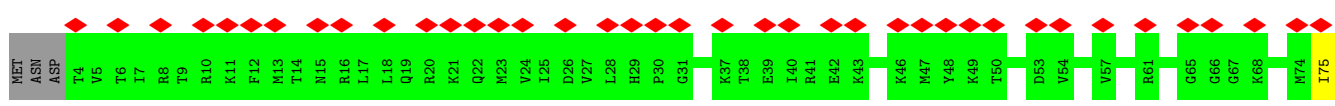
• Molecule 27: Ribosomal protein S15a

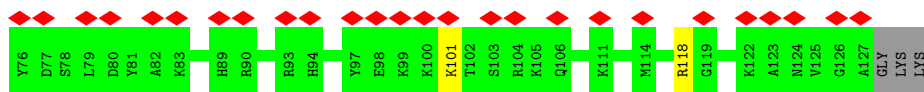


• Molecule 28: uS12

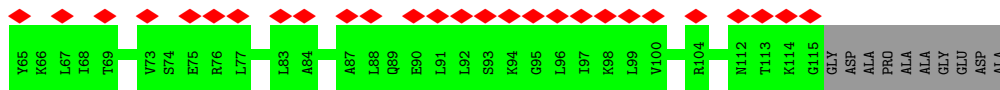
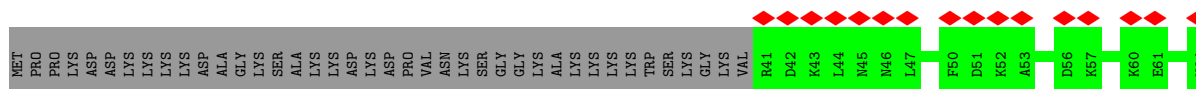


• Molecule 29: eS24

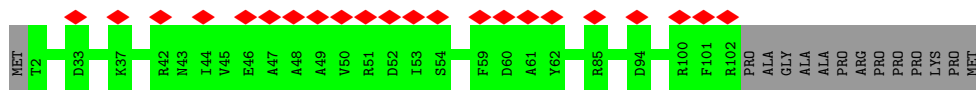
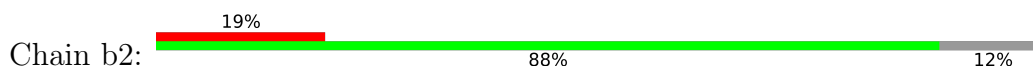




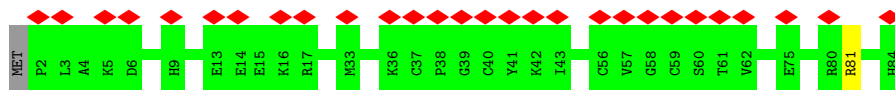
• Molecule 30: eS25



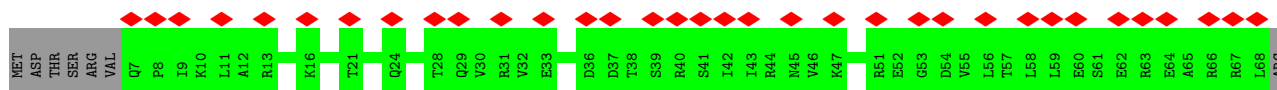
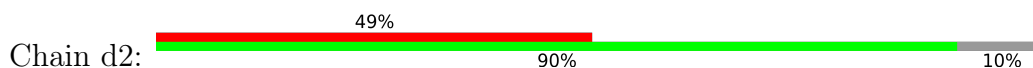
• Molecule 31: eS26



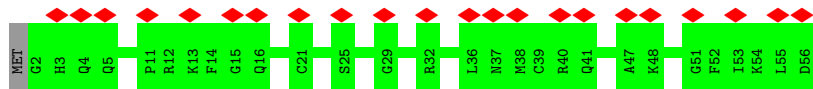
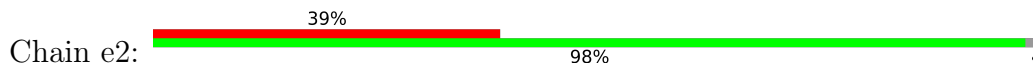
• Molecule 32: 40S ribosomal protein S27



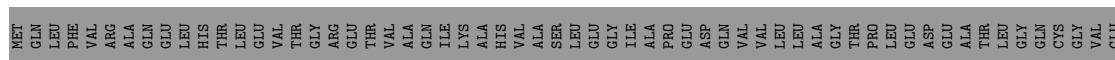
• Molecule 33: Ribosomal protein S28

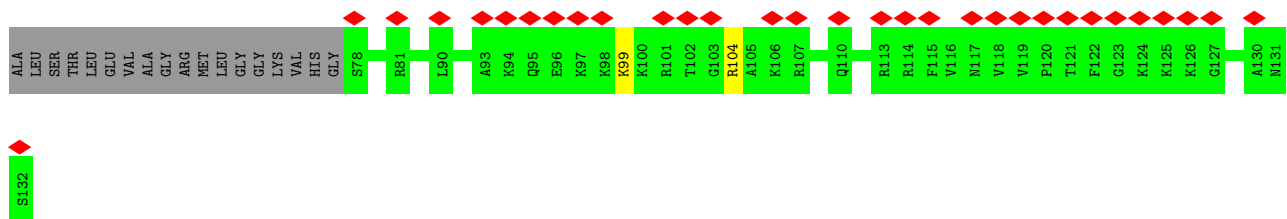


• Molecule 34: uS14

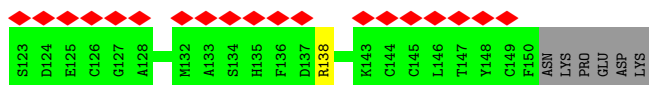
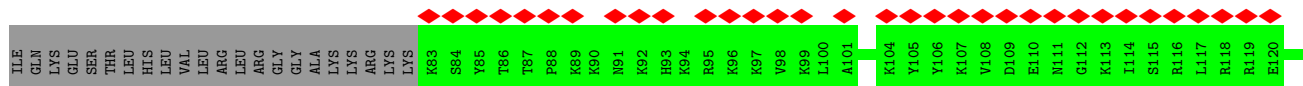
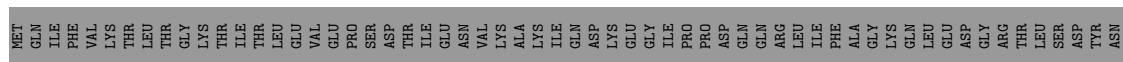


• Molecule 35: 40S ribosomal protein S30

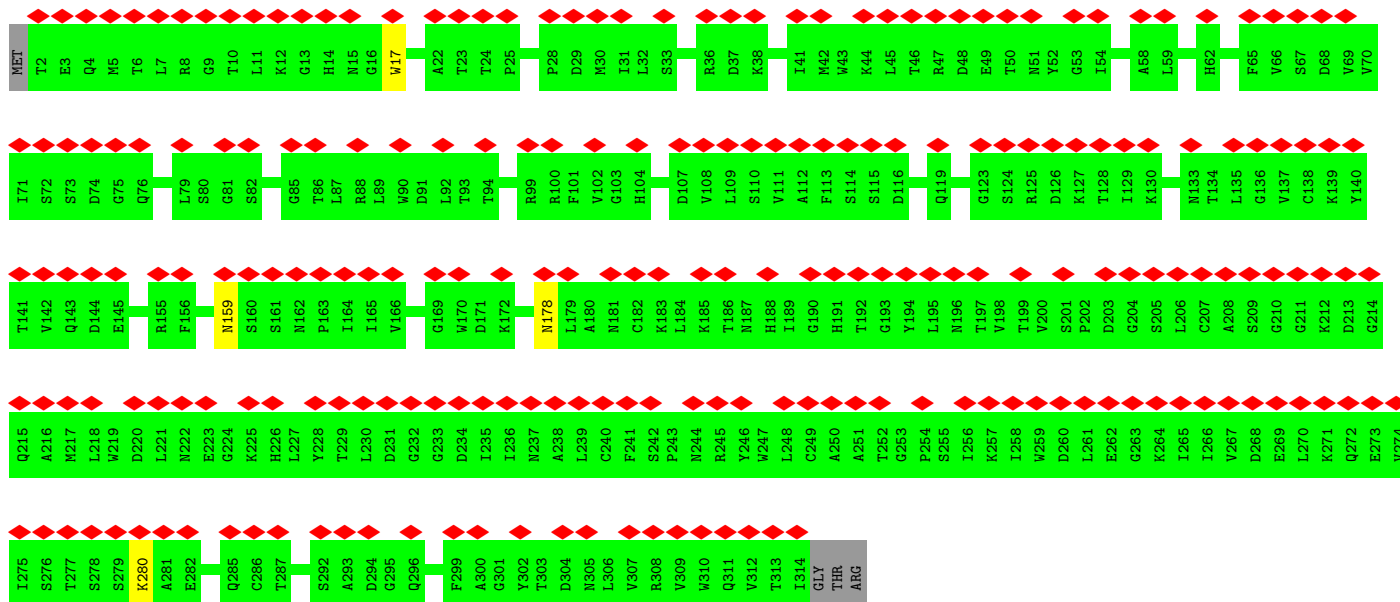




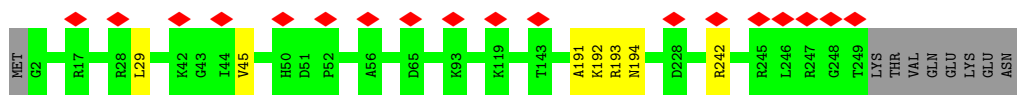
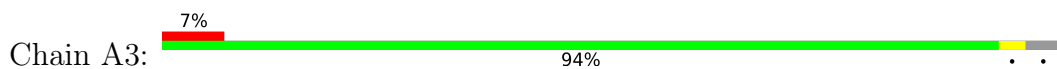
• Molecule 36: Ribosomal protein S27a



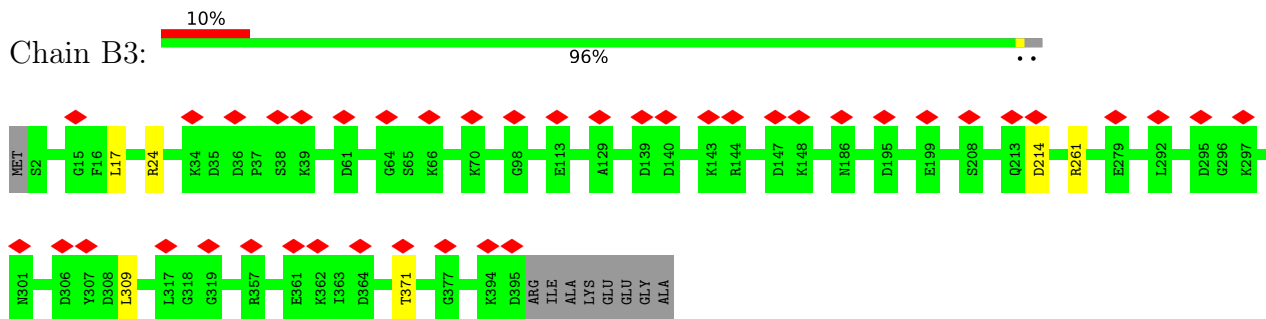
• Molecule 37: RACK1



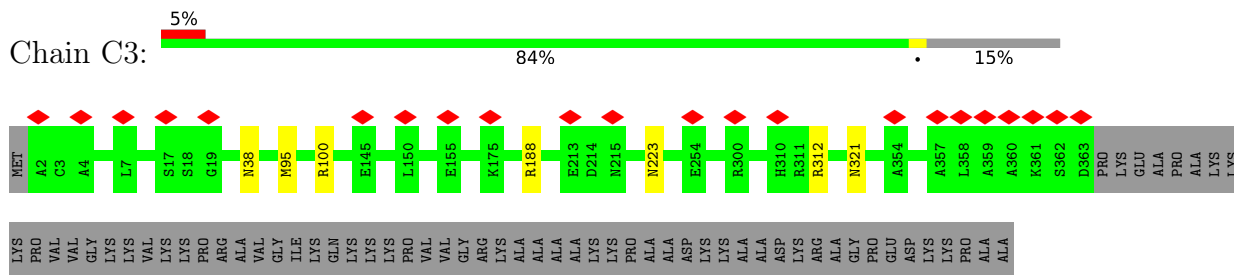
• Molecule 38: Ribosomal protein L8



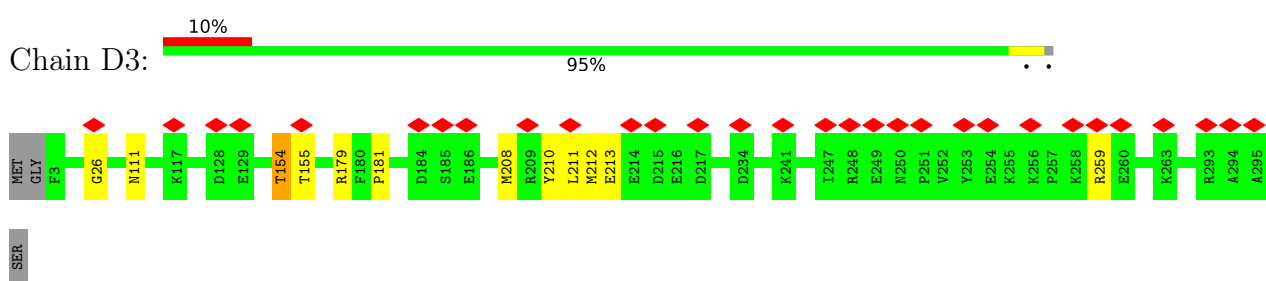
• Molecule 39: uL3



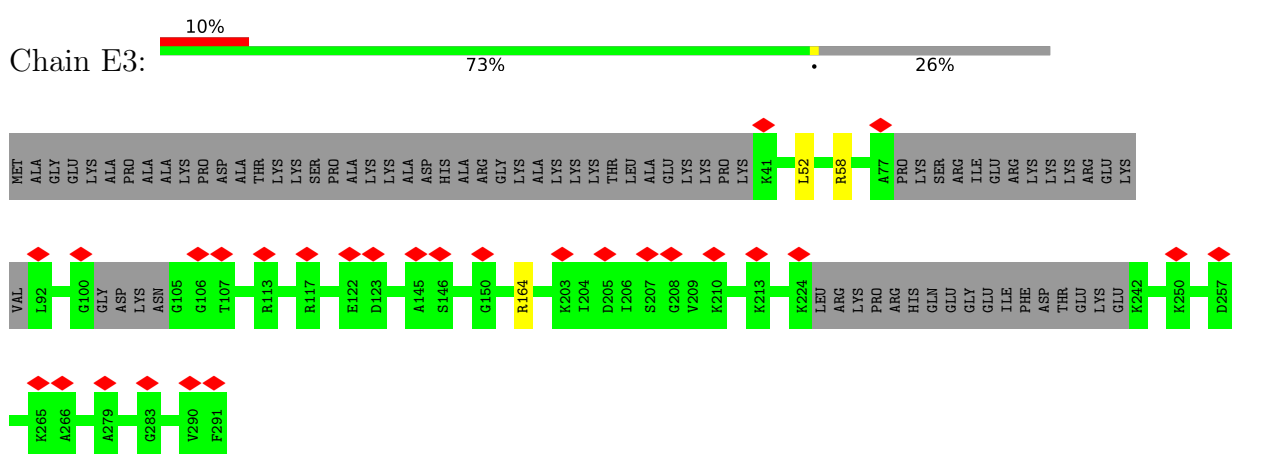
• Molecule 40: uL4



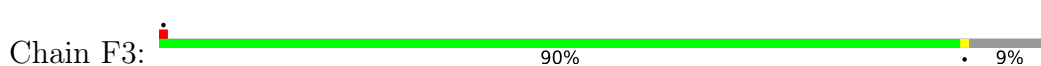
• Molecule 41: 60S ribosomal protein L5

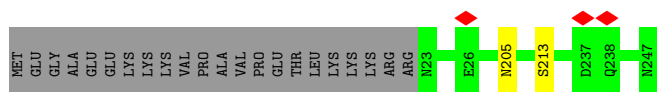


• Molecule 42: 60S ribosomal protein L6

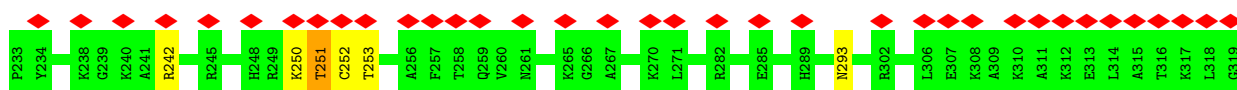
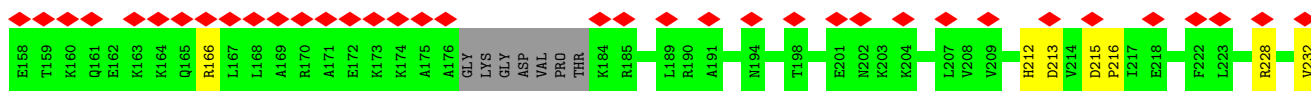
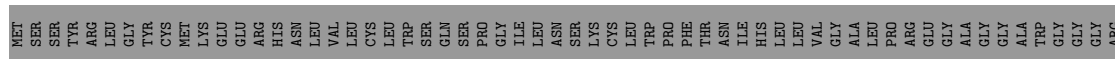


• Molecule 43: uL30

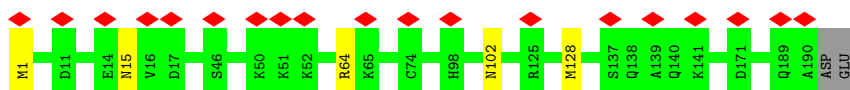




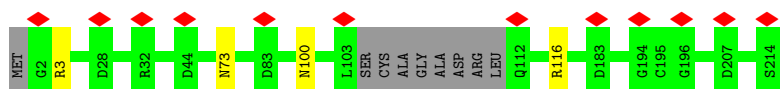
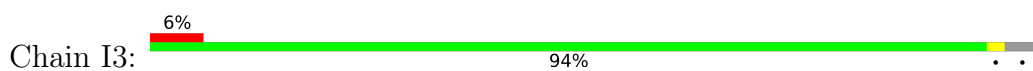
• Molecule 44: eL8



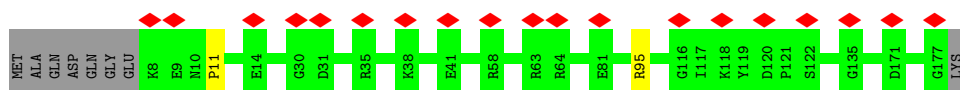
• Molecule 45: uL6



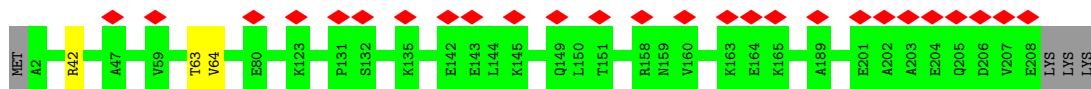
• Molecule 46: 60S ribosomal protein L10



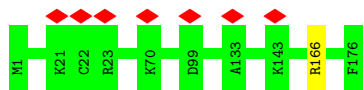
• Molecule 47: Ribosomal protein L11



• Molecule 48: eL13



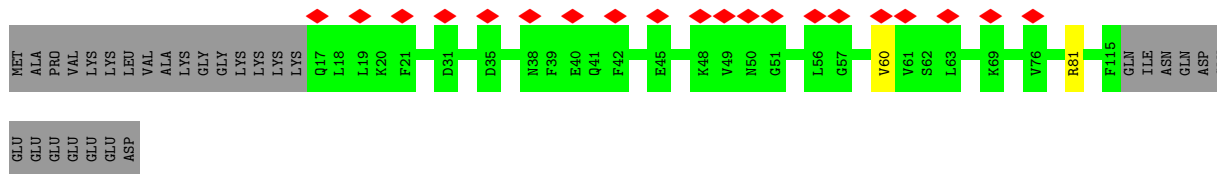
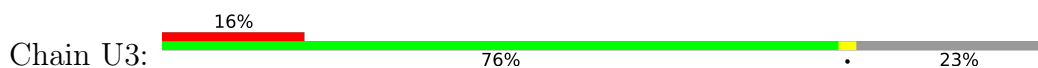
• Molecule 55: eL20



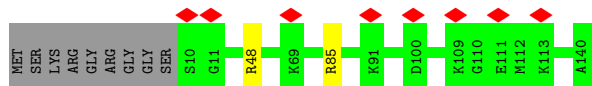
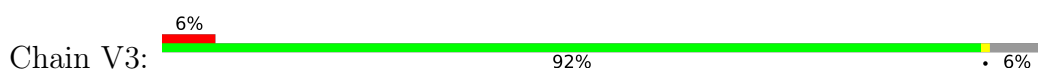
• Molecule 56: eL21



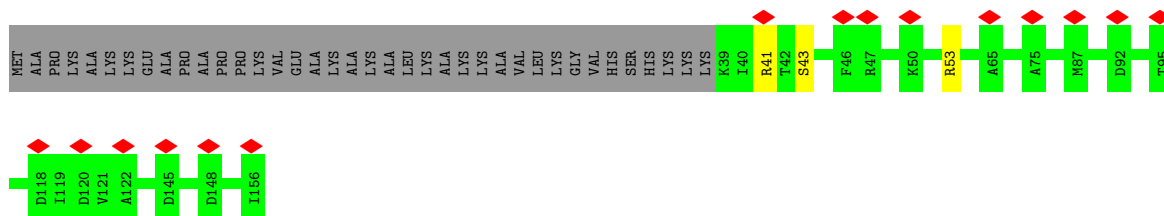
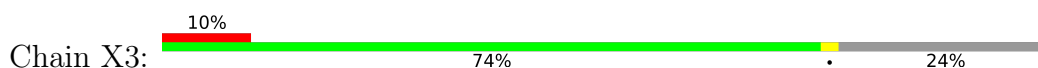
• Molecule 57: eL22



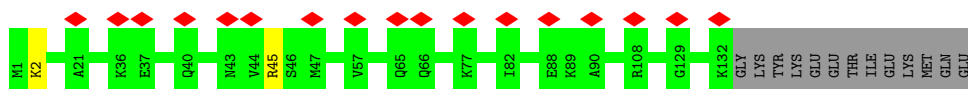
• Molecule 58: Ribosomal protein L23



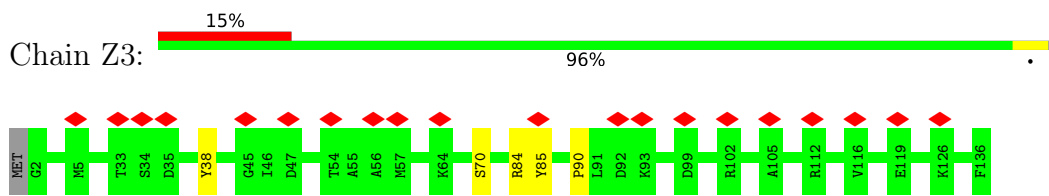
• Molecule 59: uL23



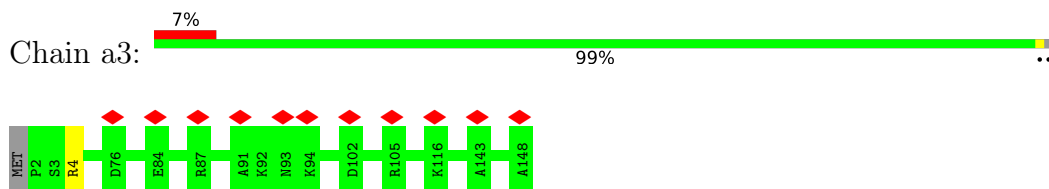
• Molecule 60: Ribosomal protein L26



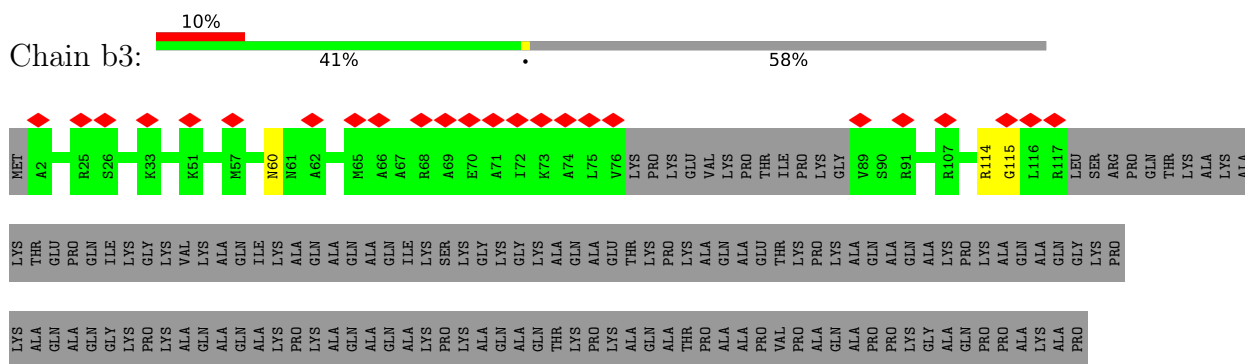
• Molecule 61: 60S ribosomal protein L27



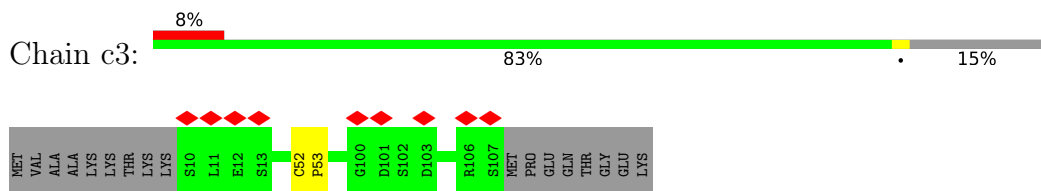
• Molecule 62: uL15



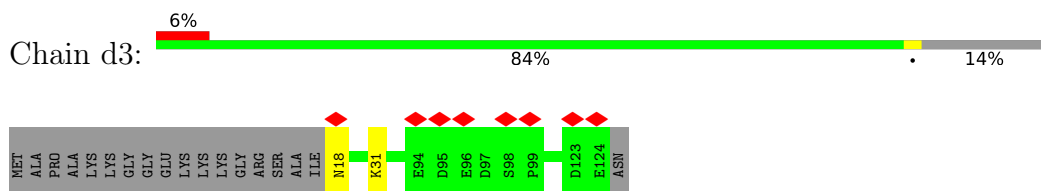
• Molecule 63: eL29



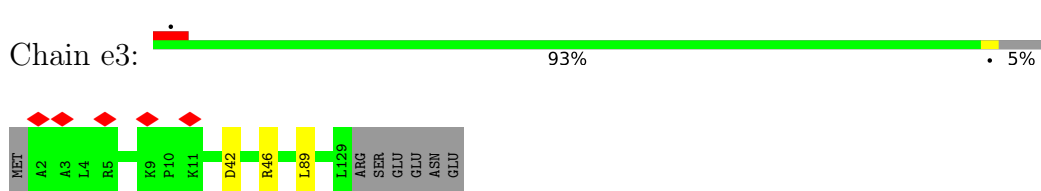
• Molecule 64: eL30



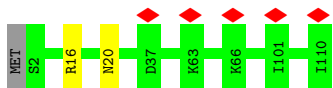
• Molecule 65: eL31



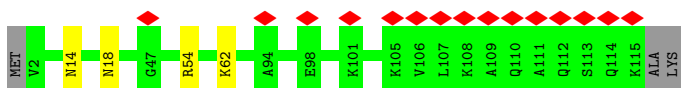
• Molecule 66: eL32



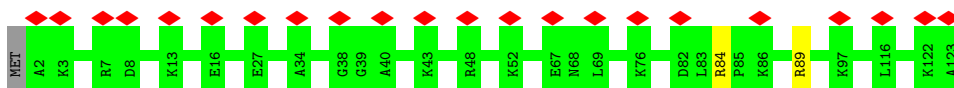
• Molecule 67: eL33



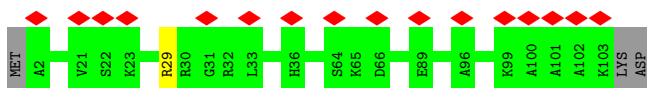
- Molecule 68: eL34



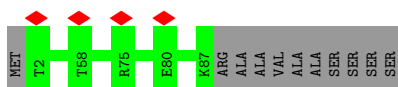
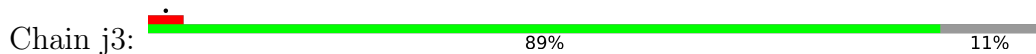
- Molecule 69: uL29



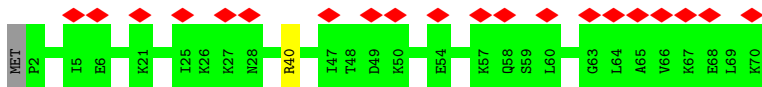
- Molecule 70: 60S ribosomal protein L36



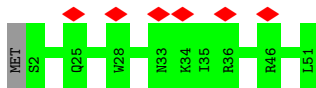
- Molecule 71: Ribosomal protein L37

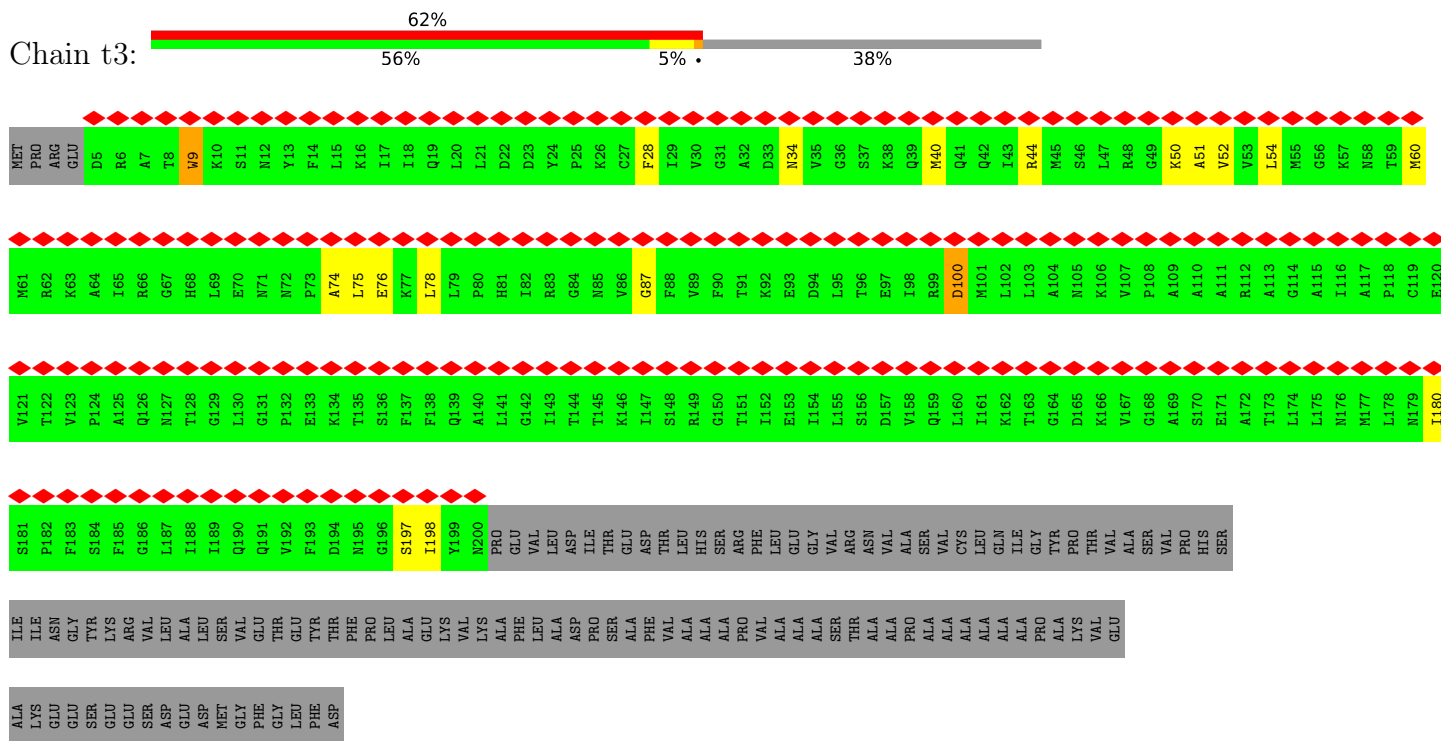


- Molecule 72: eL38

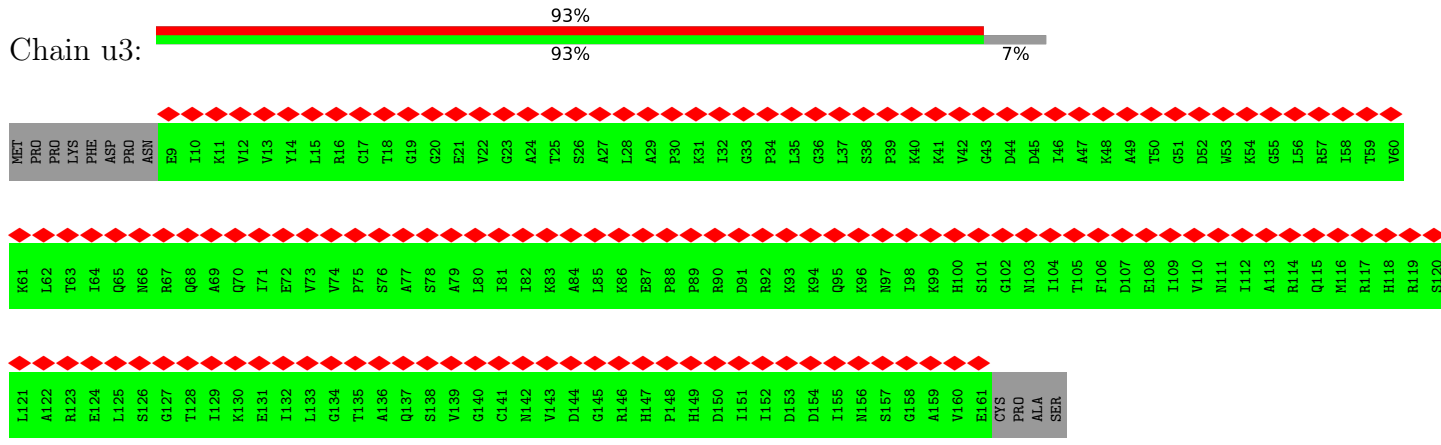


- Molecule 73: eL39

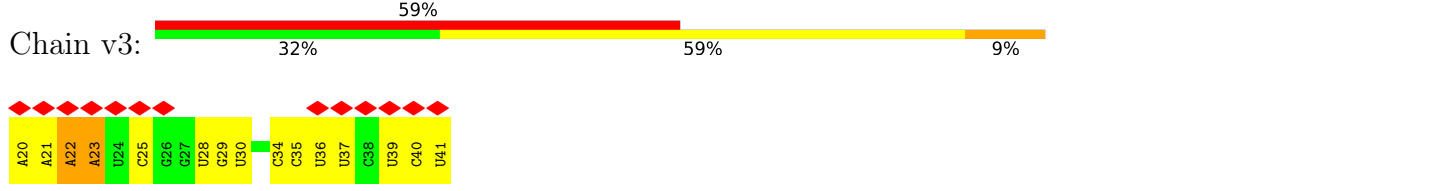




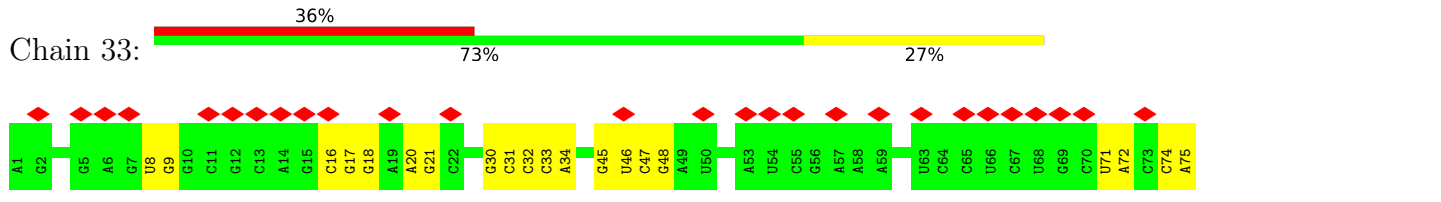
• Molecule 81: Ribosomal protein L12



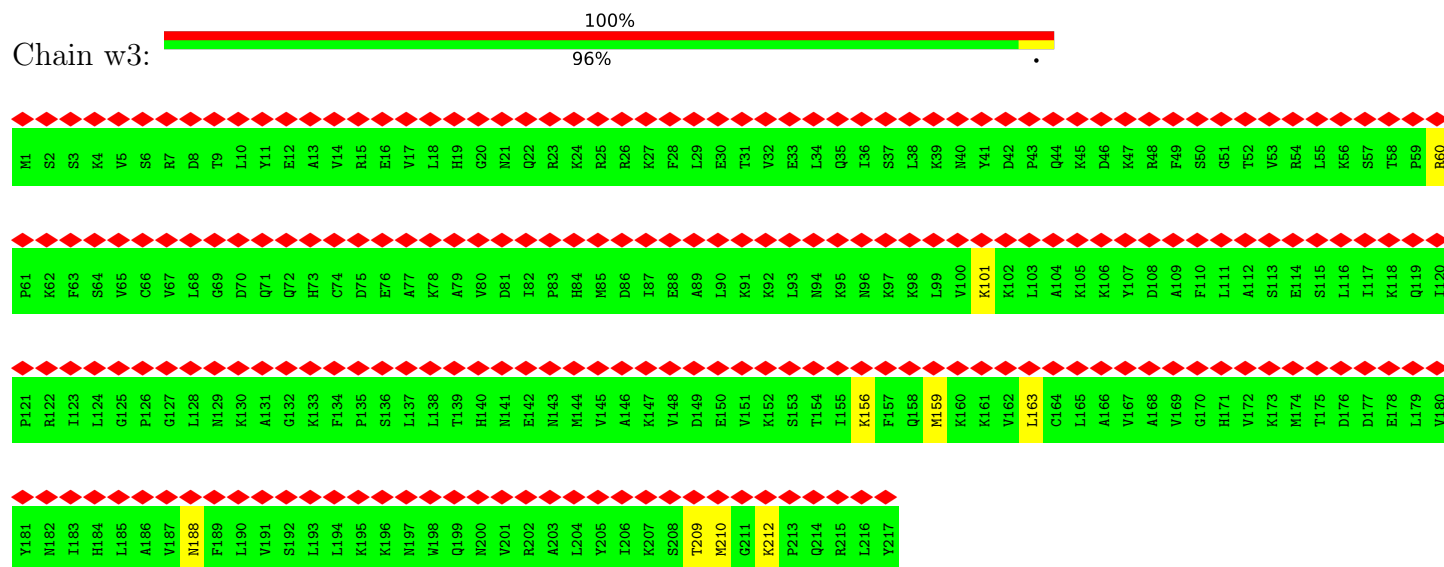
• Molecule 82: mRNA



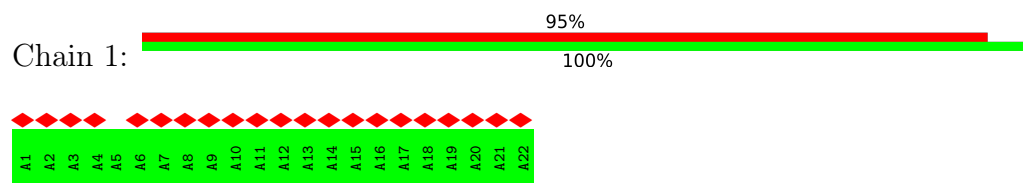
• Molecule 83: P/E tRNA



- Molecule 84: uL1



- Molecule 85: nascent chain



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	98611	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 ($e^-/\text{\AA}^2$)	1.79	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	1.111	Depositor
Minimum map value	-0.731	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.033	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	541.12, 541.12, 541.12	wwPDB
Map dimensions	356, 356, 356	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.52, 1.52, 1.52	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: ZN, MG

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	51	1.66	16/87039 (0.0%)	1.29	419/135714 (0.3%)
2	71	0.76	0/2858	1.00	4/4455 (0.1%)
3	81	4.86	13/3581 (0.4%)	1.67	40/5577 (0.7%)
4	A2	0.62	0/41516	1.07	200/64670 (0.3%)
5	B2	0.34	0/1747	0.58	0/2374
6	C2	0.35	0/1756	0.57	0/2350
7	D2	0.39	0/1753	0.58	0/2369
8	E2	0.33	0/1793	0.59	0/2413
9	F2	0.32	0/2118	0.58	0/2849
10	G2	0.32	0/1492	0.59	0/2005
11	H2	0.32	0/1946	0.78	6/2590 (0.2%)
12	I2	0.30	0/1510	0.60	1/2022 (0.0%)
13	J2	0.36	0/1715	0.71	3/2287 (0.1%)
14	K2	0.37	0/1550	0.65	0/2069
15	L2	0.34	0/834	0.62	0/1125
16	M2	0.36	0/1195	0.55	0/1597
17	N2	0.31	0/918	0.67	0/1233
18	O2	0.32	0/1226	0.54	0/1649
19	P2	0.36	0/1029	0.58	0/1380
20	Q2	0.35	0/1017	0.58	0/1358
21	R2	0.34	0/1146	0.57	0/1534
22	S2	0.29	0/1082	0.53	0/1452
23	T2	0.35	0/1208	0.64	0/1618
24	U2	0.37	0/1115	0.62	0/1493
25	V2	0.32	0/805	0.57	0/1081
26	W2	0.33	0/643	0.56	0/860
27	X2	0.37	0/1051	0.57	0/1406
28	Y2	0.35	0/1116	0.59	1/1490 (0.1%)
29	Z2	0.34	0/1028	0.60	0/1366
30	a2	0.30	0/604	0.63	0/810
31	b2	0.37	0/828	0.57	0/1109
32	c2	0.30	0/665	0.55	0/891

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	d2	0.30	0/490	0.56	0/656
34	e2	0.38	0/470	0.54	0/623
35	f2	0.30	0/447	0.50	0/587
36	g2	0.35	0/567	0.63	0/753
37	h2	0.32	0/2493	0.63	1/3394 (0.0%)
38	A3	0.44	0/1936	0.68	1/2596 (0.0%)
39	B3	0.43	0/3240	0.61	3/4339 (0.1%)
40	C3	0.43	0/2937	0.59	0/3946
41	D3	0.41	0/2437	0.59	0/3264
42	E3	0.39	0/1762	0.61	1/2362 (0.0%)
43	F3	0.47	1/1911 (0.1%)	0.60	0/2549
44	G3	2.74	1/1909 (0.1%)	0.81	2/2566 (0.1%)
45	H3	0.38	0/1535	0.58	0/2063
46	I3	0.40	0/1702	0.54	0/2272
47	J3	0.38	0/1385	0.60	0/1852
48	L3	0.42	0/1705	0.59	0/2283
49	M3	0.45	0/1158	0.58	0/1547
50	N3	0.49	0/1746	0.62	0/2338
51	O3	0.43	0/1662	0.60	0/2222
52	P3	0.44	0/1268	0.55	0/1700
53	Q3	0.43	0/1539	0.61	0/2054
54	R3	0.43	0/1524	0.75	2/2013 (0.1%)
55	S3	0.45	0/1501	0.59	0/2012
56	T3	0.44	0/1326	0.53	0/1770
57	U3	0.38	0/823	0.62	0/1104
58	V3	0.39	0/993	0.58	0/1332
59	X3	0.36	0/984	0.63	1/1323 (0.1%)
60	Y3	0.42	0/1119	0.56	0/1488
61	Z3	0.42	0/1130	0.63	0/1507
62	a3	0.43	0/1191	0.56	0/1590
63	b3	1.87	1/861 (0.1%)	0.62	2/1138 (0.2%)
64	c3	0.37	0/771	0.57	0/1034
65	d3	0.41	0/903	0.58	0/1216
66	e3	0.43	0/1071	0.60	1/1429 (0.1%)
67	f3	0.47	0/895	0.63	0/1198
68	g3	0.43	0/916	0.65	0/1220
69	h3	2.07	2/1021 (0.2%)	1.10	4/1348 (0.3%)
70	i3	0.34	0/841	0.61	0/1112
71	j3	0.43	0/720	0.60	0/952
72	k3	0.34	0/575	0.63	0/761
73	l3	0.39	0/459	0.53	0/608
74	m3	0.38	0/435	0.54	0/575
75	n3	0.38	0/240	0.70	0/305

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	o3	0.42	0/864	0.57	0/1140
77	p3	0.43	0/718	0.71	1/953 (0.1%)
78	r3	0.44	0/1010	0.60	0/1354
79	q3	0.44	0/1762	1.19	21/2739 (0.8%)
80	t3	0.54	1/1530 (0.1%)	0.97	10/2064 (0.5%)
81	u3	0.30	0/1174	0.67	0/1582
82	v3	0.60	0/515	1.24	4/799 (0.5%)
83	33	0.46	0/1795	0.98	2/2798 (0.1%)
84	w3	0.29	0/1769	0.64	1/2371 (0.0%)
85	1	0.24	0/109	0.31	0/151
All	All	1.27	35/235728 (0.0%)	1.05	731/346148 (0.2%)

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	51	0	1
5	B2	0	1
8	E2	0	1
11	H2	0	8
13	J2	0	4
14	K2	0	1
20	Q2	0	2
21	R2	0	1
23	T2	0	1
27	X2	0	1
28	Y2	0	1
38	A3	0	1
44	G3	0	10
50	N3	0	4
54	R3	0	1
57	U3	0	1
61	Z3	0	3
63	b3	0	1
64	c3	0	1
66	e3	0	1
67	f3	0	1
69	h3	0	1
75	n3	0	1
77	p3	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
80	t3	0	8
84	w3	0	2
All	All	0	59

The worst 5 of 35 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	51	1244	G	N7-C5	223.92	2.73	1.39
1	51	1244	G	C8-N7	220.37	2.63	1.30
1	51	1244	G	N9-C8	179.65	2.63	1.37
1	51	1244	G	N9-C4	159.88	2.65	1.38
1	51	1244	G	C5-C4	151.21	2.44	1.38

The worst 5 of 731 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	51	1966	C	C6-N1-C2	-202.29	39.38	120.30
1	51	1966	C	N1-C2-N3	-112.99	40.11	119.20
1	51	1966	C	N3-C2-O2	44.23	152.86	121.90
1	51	1966	C	C4-C5-C6	-43.75	95.53	117.40
1	51	1966	C	N3-C4-C5	-37.03	107.09	121.90

There are no chirality outliers.

5 of 59 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	51	1966	C	Sidechain
5	B2	42	LYS	Peptide
8	E2	44	THR	Peptide
11	H2	3	LEU	Peptide
11	H2	4	ASN	Peptide

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles

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	
5	B2	215/295 (73%)	190 (88%)	25 (12%)	0	100	100
6	C2	211/264 (80%)	191 (90%)	20 (10%)	0	100	100
7	D2	219/293 (75%)	202 (92%)	17 (8%)	0	100	100
8	E2	226/243 (93%)	206 (91%)	20 (9%)	0	100	100
9	F2	260/263 (99%)	233 (90%)	26 (10%)	1 (0%)	34	70
10	G2	181/204 (89%)	164 (91%)	16 (9%)	1 (1%)	25	62
11	H2	235/249 (94%)	185 (79%)	44 (19%)	6 (3%)	5	36
12	I2	181/194 (93%)	167 (92%)	14 (8%)	0	100	100
13	J2	204/208 (98%)	167 (82%)	35 (17%)	2 (1%)	15	52
14	K2	183/194 (94%)	157 (86%)	25 (14%)	1 (0%)	29	66
15	L2	94/165 (57%)	84 (89%)	10 (11%)	0	100	100
16	M2	139/158 (88%)	130 (94%)	9 (6%)	0	100	100
17	N2	115/132 (87%)	97 (84%)	18 (16%)	0	100	100
18	O2	147/151 (97%)	141 (96%)	6 (4%)	0	100	100
19	P2	134/168 (80%)	122 (91%)	12 (9%)	0	100	100
20	Q2	118/145 (81%)	105 (89%)	12 (10%)	1 (1%)	19	57
21	R2	140/146 (96%)	127 (91%)	11 (8%)	2 (1%)	11	46
22	S2	130/135 (96%)	120 (92%)	10 (8%)	0	100	100
23	T2	142/152 (93%)	116 (82%)	25 (18%)	1 (1%)	22	60
24	U2	139/145 (96%)	121 (87%)	16 (12%)	2 (1%)	11	46
25	V2	98/119 (82%)	91 (93%)	7 (7%)	0	100	100
26	W2	81/83 (98%)	74 (91%)	7 (9%)	0	100	100
27	X2	127/130 (98%)	118 (93%)	9 (7%)	0	100	100
28	Y2	139/143 (97%)	125 (90%)	12 (9%)	2 (1%)	11	46
29	Z2	122/130 (94%)	107 (88%)	15 (12%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
30	a2	73/125 (58%)	65 (89%)	8 (11%)	0	100	100
31	b2	99/115 (86%)	92 (93%)	7 (7%)	0	100	100
32	c2	81/84 (96%)	76 (94%)	5 (6%)	0	100	100
33	d2	60/69 (87%)	58 (97%)	2 (3%)	0	100	100
34	e2	53/56 (95%)	48 (91%)	5 (9%)	0	100	100
35	f2	53/133 (40%)	48 (91%)	5 (9%)	0	100	100
36	g2	66/156 (42%)	53 (80%)	13 (20%)	0	100	100
37	h2	311/317 (98%)	253 (81%)	58 (19%)	0	100	100
38	A3	246/257 (96%)	200 (81%)	44 (18%)	2 (1%)	19	57
39	B3	392/403 (97%)	352 (90%)	40 (10%)	0	100	100
40	C3	360/425 (85%)	329 (91%)	31 (9%)	0	100	100
41	D3	291/297 (98%)	256 (88%)	31 (11%)	4 (1%)	11	46
42	E3	208/291 (72%)	192 (92%)	16 (8%)	0	100	100
43	F3	223/247 (90%)	204 (92%)	19 (8%)	0	100	100
44	G3	227/319 (71%)	188 (83%)	35 (15%)	4 (2%)	8	42
45	H3	188/192 (98%)	176 (94%)	12 (6%)	0	100	100
46	I3	201/214 (94%)	179 (89%)	22 (11%)	0	100	100
47	J3	168/178 (94%)	152 (90%)	15 (9%)	1 (1%)	25	62
48	L3	205/211 (97%)	185 (90%)	18 (9%)	2 (1%)	15	52
49	M3	136/218 (62%)	124 (91%)	12 (9%)	0	100	100
50	N3	201/204 (98%)	179 (89%)	22 (11%)	0	100	100
51	O3	197/203 (97%)	182 (92%)	15 (8%)	0	100	100
52	P3	151/184 (82%)	143 (95%)	8 (5%)	0	100	100
53	Q3	185/188 (98%)	169 (91%)	16 (9%)	0	100	100
54	R3	178/196 (91%)	156 (88%)	21 (12%)	1 (1%)	25	62
55	S3	174/176 (99%)	159 (91%)	14 (8%)	1 (1%)	25	62
56	T3	157/160 (98%)	143 (91%)	14 (9%)	0	100	100
57	U3	97/128 (76%)	79 (81%)	18 (19%)	0	100	100
58	V3	129/140 (92%)	119 (92%)	10 (8%)	0	100	100
59	X3	116/156 (74%)	98 (84%)	17 (15%)	1 (1%)	17	54
60	Y3	130/145 (90%)	122 (94%)	8 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
61	Z3	133/136 (98%)	114 (86%)	17 (13%)	2 (2%)	10	46
62	a3	145/148 (98%)	134 (92%)	11 (8%)	0	100	100
63	b3	100/245 (41%)	94 (94%)	6 (6%)	0	100	100
64	c3	96/115 (84%)	84 (88%)	11 (12%)	1 (1%)	15	52
65	d3	105/125 (84%)	96 (91%)	9 (9%)	0	100	100
66	e3	126/135 (93%)	115 (91%)	11 (9%)	0	100	100
67	f3	107/110 (97%)	95 (89%)	12 (11%)	0	100	100
68	g3	112/117 (96%)	101 (90%)	11 (10%)	0	100	100
69	h3	120/123 (98%)	113 (94%)	7 (6%)	0	100	100
70	i3	100/105 (95%)	90 (90%)	10 (10%)	0	100	100
71	j3	84/97 (87%)	74 (88%)	10 (12%)	0	100	100
72	k3	67/70 (96%)	53 (79%)	14 (21%)	0	100	100
73	l3	48/51 (94%)	42 (88%)	6 (12%)	0	100	100
74	m3	50/102 (49%)	47 (94%)	3 (6%)	0	100	100
75	n3	23/25 (92%)	20 (87%)	2 (9%)	1 (4%)	2	26
76	o3	102/106 (96%)	93 (91%)	9 (9%)	0	100	100
77	p3	89/92 (97%)	71 (80%)	17 (19%)	1 (1%)	14	51
78	r3	122/137 (89%)	110 (90%)	12 (10%)	0	100	100
80	t3	194/318 (61%)	154 (79%)	39 (20%)	1 (0%)	29	66
81	u3	151/165 (92%)	126 (83%)	25 (17%)	0	100	100
84	w3	215/217 (99%)	183 (85%)	30 (14%)	2 (1%)	17	54
85	1	20/22 (91%)	19 (95%)	1 (5%)	0	100	100
All	All	11645/13457 (86%)	10347 (89%)	1255 (11%)	43 (0%)	38	70

5 of 43 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	H2	34	THR
11	H2	108	VAL
11	H2	109	LEU
23	T2	137	LYS
41	D3	213	GLU

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	B2	180/245 (74%)	179 (99%)	1 (1%)	86	92
6	C2	194/231 (84%)	191 (98%)	3 (2%)	65	81
7	D2	187/225 (83%)	186 (100%)	1 (0%)	88	94
8	E2	189/202 (94%)	185 (98%)	4 (2%)	53	74
9	F2	224/225 (100%)	221 (99%)	3 (1%)	69	82
10	G2	158/170 (93%)	157 (99%)	1 (1%)	86	92
11	H2	207/218 (95%)	200 (97%)	7 (3%)	37	64
12	I2	165/174 (95%)	164 (99%)	1 (1%)	86	92
13	J2	178/180 (99%)	172 (97%)	6 (3%)	37	64
14	K2	161/168 (96%)	155 (96%)	6 (4%)	34	62
15	L2	87/136 (64%)	85 (98%)	2 (2%)	50	72
16	M2	130/142 (92%)	127 (98%)	3 (2%)	50	72
17	N2	99/108 (92%)	99 (100%)	0	100	100
18	O2	130/131 (99%)	129 (99%)	1 (1%)	81	89
19	P2	106/130 (82%)	103 (97%)	3 (3%)	43	68
20	Q2	109/130 (84%)	108 (99%)	1 (1%)	78	88
21	R2	117/121 (97%)	116 (99%)	1 (1%)	78	88
22	S2	119/121 (98%)	119 (100%)	0	100	100
23	T2	125/132 (95%)	124 (99%)	1 (1%)	81	89
24	U2	111/115 (96%)	110 (99%)	1 (1%)	78	88
25	V2	92/107 (86%)	91 (99%)	1 (1%)	73	85
26	W2	67/67 (100%)	66 (98%)	1 (2%)	65	81
27	X2	112/113 (99%)	112 (100%)	0	100	100
28	Y2	113/115 (98%)	113 (100%)	0	100	100
29	Z2	107/112 (96%)	104 (97%)	3 (3%)	43	68
30	a2	66/103 (64%)	66 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
31	b2	88/98 (90%)	88 (100%)	0	100	100
32	c2	75/76 (99%)	74 (99%)	1 (1%)	69	82
33	d2	55/62 (89%)	55 (100%)	0	100	100
34	e2	48/49 (98%)	48 (100%)	0	100	100
35	f2	46/106 (43%)	44 (96%)	2 (4%)	29	58
36	g2	61/140 (44%)	60 (98%)	1 (2%)	62	79
37	h2	272/275 (99%)	269 (99%)	3 (1%)	73	85
38	A3	190/199 (96%)	187 (98%)	3 (2%)	62	79
39	B3	342/348 (98%)	339 (99%)	3 (1%)	78	88
40	C3	302/347 (87%)	295 (98%)	7 (2%)	50	72
41	D3	247/250 (99%)	238 (96%)	9 (4%)	35	63
42	E3	190/251 (76%)	188 (99%)	2 (1%)	73	85
43	F3	196/215 (91%)	195 (100%)	1 (0%)	88	94
44	G3	200/272 (74%)	192 (96%)	8 (4%)	31	59
45	H3	169/171 (99%)	164 (97%)	5 (3%)	41	66
46	I3	175/181 (97%)	171 (98%)	4 (2%)	50	72
47	J3	143/149 (96%)	142 (99%)	1 (1%)	84	91
48	L3	172/176 (98%)	171 (99%)	1 (1%)	86	92
49	M3	117/161 (73%)	117 (100%)	0	100	100
50	N3	171/172 (99%)	169 (99%)	2 (1%)	71	84
51	O3	171/173 (99%)	168 (98%)	3 (2%)	59	77
52	P3	134/163 (82%)	133 (99%)	1 (1%)	84	91
53	Q3	164/165 (99%)	161 (98%)	3 (2%)	59	77
54	R3	159/175 (91%)	154 (97%)	5 (3%)	40	65
55	S3	157/157 (100%)	157 (100%)	0	100	100
56	T3	139/140 (99%)	137 (99%)	2 (1%)	67	81
57	U3	89/114 (78%)	88 (99%)	1 (1%)	73	85
58	V3	101/107 (94%)	99 (98%)	2 (2%)	55	75
59	X3	106/134 (79%)	105 (99%)	1 (1%)	78	88
60	Y3	123/135 (91%)	121 (98%)	2 (2%)	62	79
61	Z3	117/118 (99%)	117 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
62	a3	119/120 (99%)	118 (99%)	1 (1%)	81	89
63	b3	84/184 (46%)	83 (99%)	1 (1%)	71	84
64	c3	84/98 (86%)	84 (100%)	0	100	100
65	d3	98/110 (89%)	96 (98%)	2 (2%)	55	75
66	e3	114/121 (94%)	113 (99%)	1 (1%)	78	88
67	f3	88/89 (99%)	87 (99%)	1 (1%)	73	85
68	g3	98/100 (98%)	94 (96%)	4 (4%)	30	59
69	h3	109/110 (99%)	109 (100%)	0	100	100
70	i3	86/89 (97%)	85 (99%)	1 (1%)	71	84
71	j3	73/80 (91%)	73 (100%)	0	100	100
72	k3	64/65 (98%)	63 (98%)	1 (2%)	62	79
73	l3	47/48 (98%)	47 (100%)	0	100	100
74	m3	48/90 (53%)	48 (100%)	0	100	100
75	n3	24/24 (100%)	24 (100%)	0	100	100
76	o3	92/94 (98%)	91 (99%)	1 (1%)	73	85
77	p3	74/75 (99%)	73 (99%)	1 (1%)	67	81
78	r3	108/121 (89%)	106 (98%)	2 (2%)	57	76
80	t3	164/258 (64%)	159 (97%)	5 (3%)	41	66
81	u3	126/137 (92%)	126 (100%)	0	100	100
84	w3	195/196 (100%)	191 (98%)	4 (2%)	53	74
All	All	10147/11409 (89%)	9998 (98%)	149 (2%)	66	81

5 of 149 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
54	R3	173	ARG
80	t3	197	SER
58	V3	48	ARG
68	g3	14	ASN
29	Z2	75	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 96 such sidechains are listed below:

Mol	Chain	Res	Type
43	F3	118	ASN
52	P3	25	HIS
43	F3	205	ASN
46	I3	73	ASN
54	R3	36	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	51	3594/3635 (98%)	1186 (32%)	44 (1%)
2	71	119/120 (99%)	40 (33%)	0
3	81	149/156 (95%)	46 (30%)	1 (0%)
4	A2	1717/1869 (91%)	578 (33%)	23 (1%)
79	q3	70/74 (94%)	35 (50%)	0
82	v3	21/22 (95%)	14 (66%)	0
83	33	74/75 (98%)	17 (22%)	1 (1%)
All	All	5744/5951 (96%)	1916 (33%)	69 (1%)

5 of 1916 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	51	3	C
1	51	4	G
1	51	5	A
1	51	7	C
1	51	8	U

5 of 69 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	A2	751	G
4	A2	870	A
4	A2	1489	A
1	51	2266	C
1	51	2259	G

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](#)

Of 308 ligands modelled in this entry, 308 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	51	32
4	A2	12
79	q3	3
44	G3	1
43	F3	1

The worst 5 of 49 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	51	2113:G	O3'	2258:C	P	42.01
1	51	1252:C	O3'	1271:G	P	37.73
1	51	990:C	O3'	1064:G	P	18.57
1	51	1696:C	O3'	1720:C	P	18.37
1	51	1109:C	O3'	1161:G	P	18.08

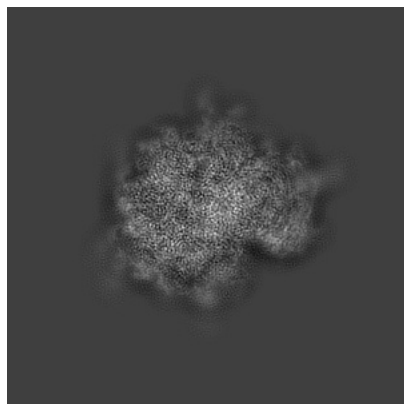
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0194. These allow visual inspection of the internal detail of the map and identification of artifacts.

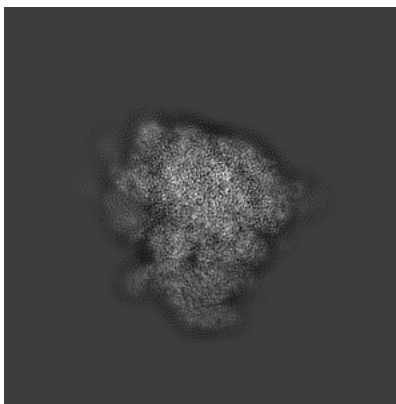
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

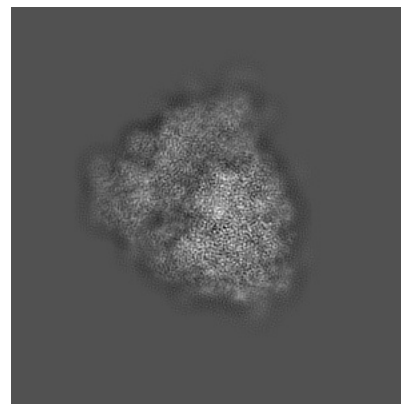
6.1.1 Primary map



X

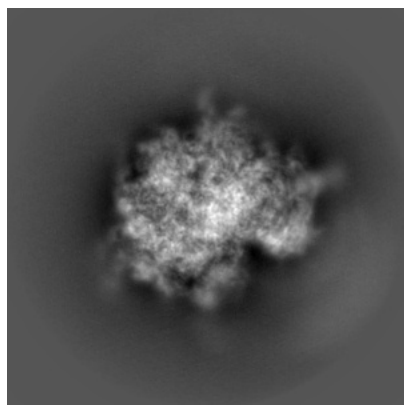


Y

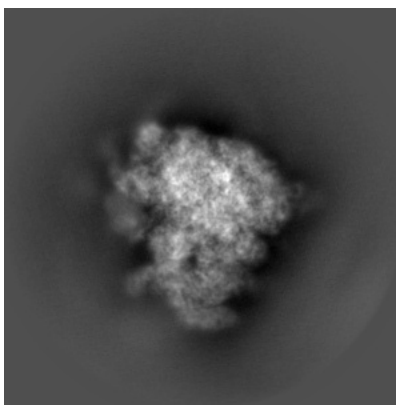


Z

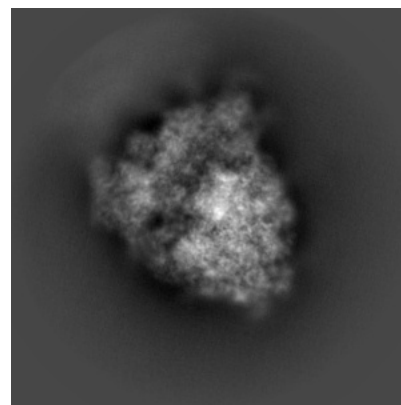
6.1.2 Raw map



X



Y

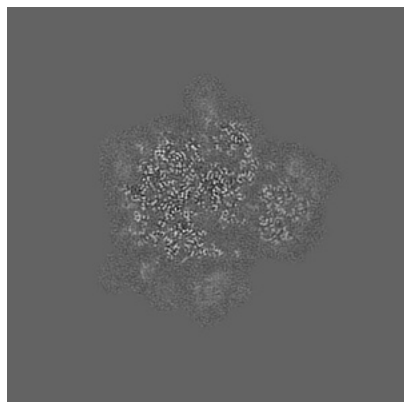


Z

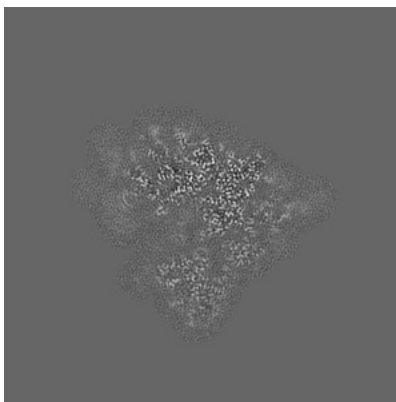
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

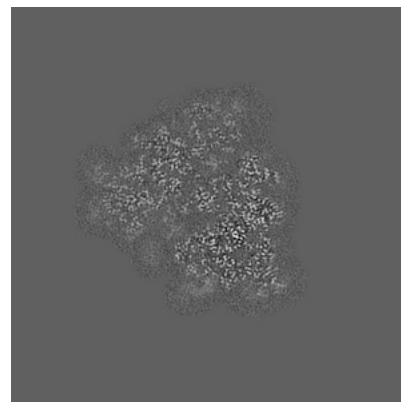
6.2.1 Primary map



X Index: 178

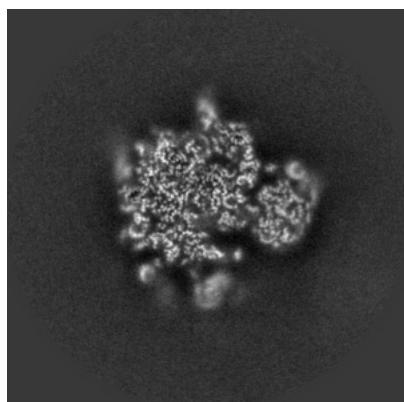


Y Index: 178

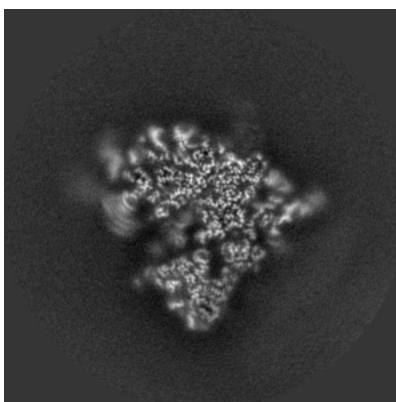


Z Index: 178

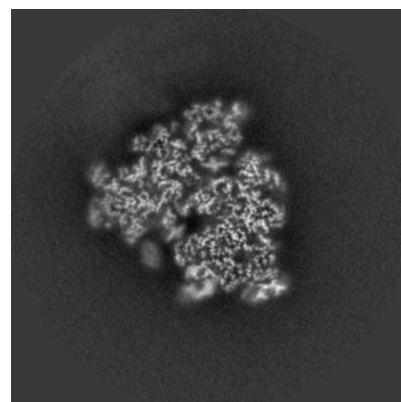
6.2.2 Raw map



X Index: 178



Y Index: 178

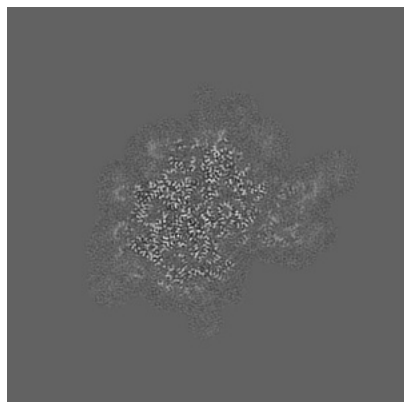


Z Index: 178

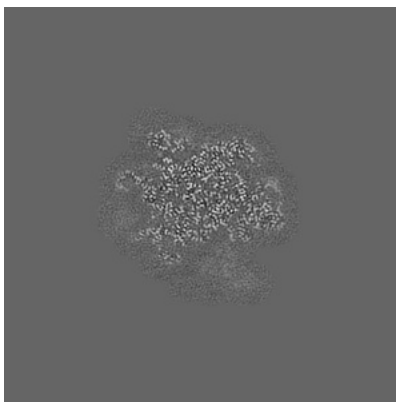
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

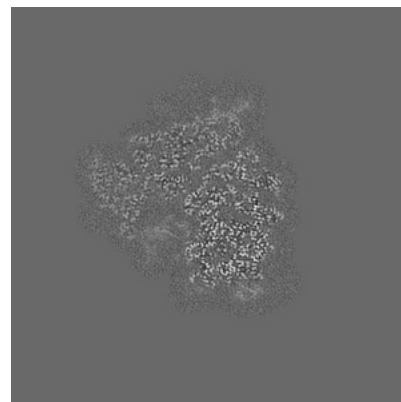
6.3.1 Primary map



X Index: 204

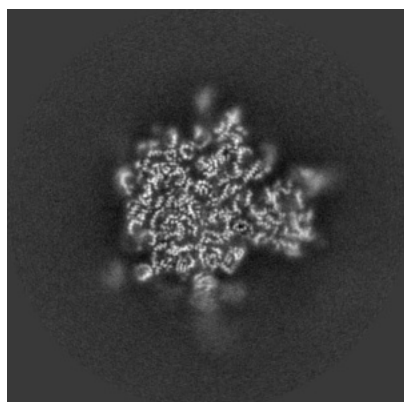


Y Index: 143

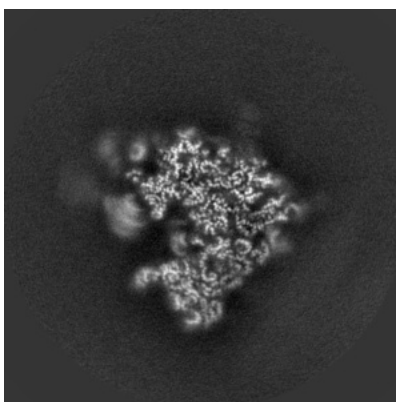


Z Index: 186

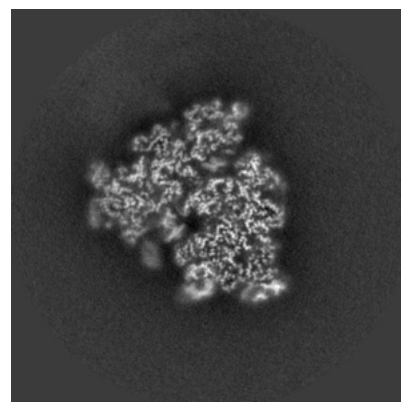
6.3.2 Raw map



X Index: 188



Y Index: 185

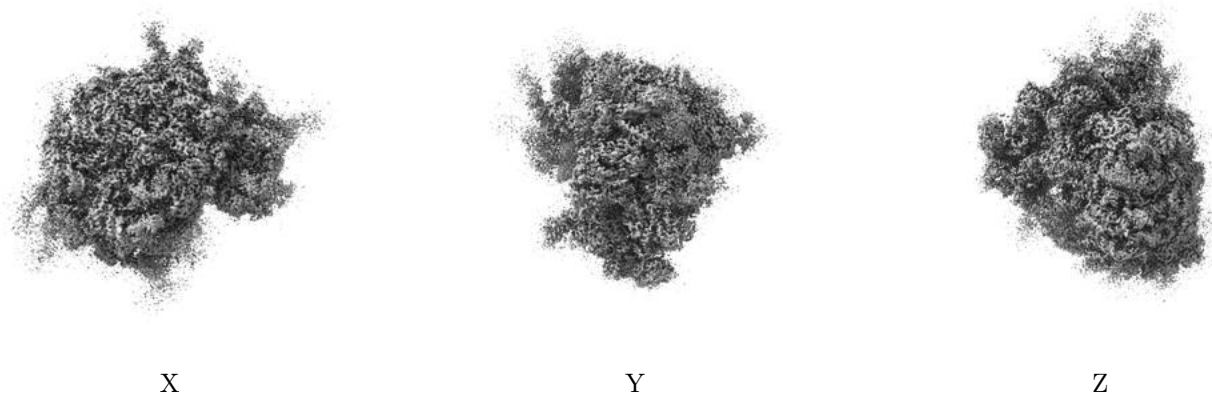


Z Index: 179

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



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.

6.4.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

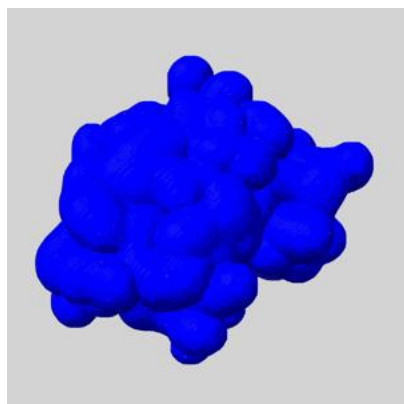
6.5 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

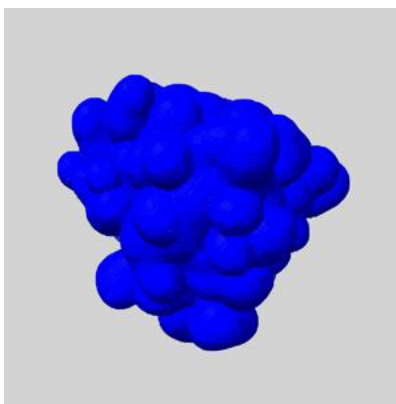
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

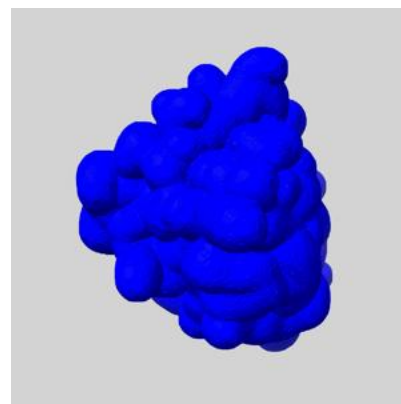
6.5.1 emd_0194_msk_1.map [i](#)



X



Y

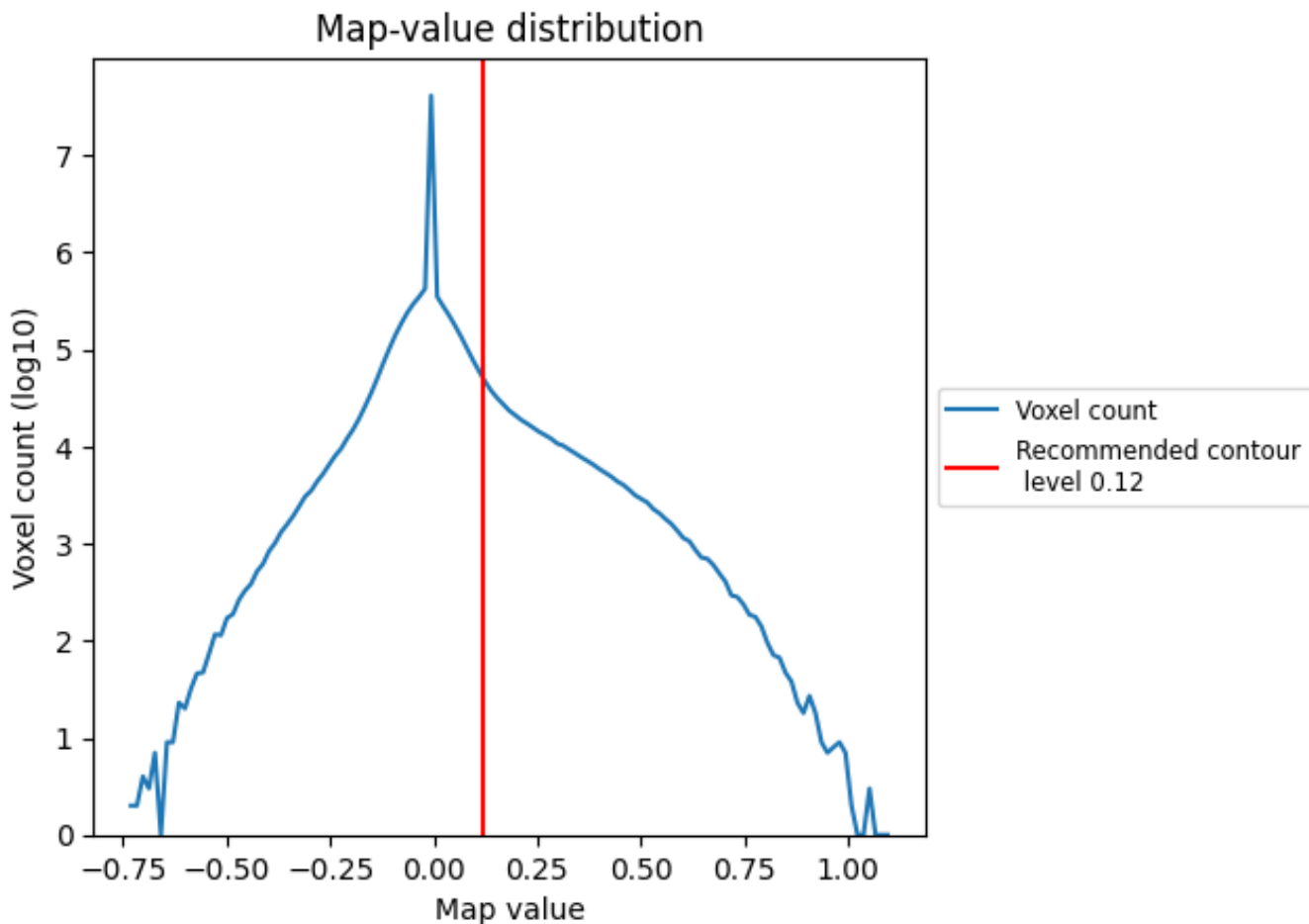


Z

7 Map analysis [i](#)

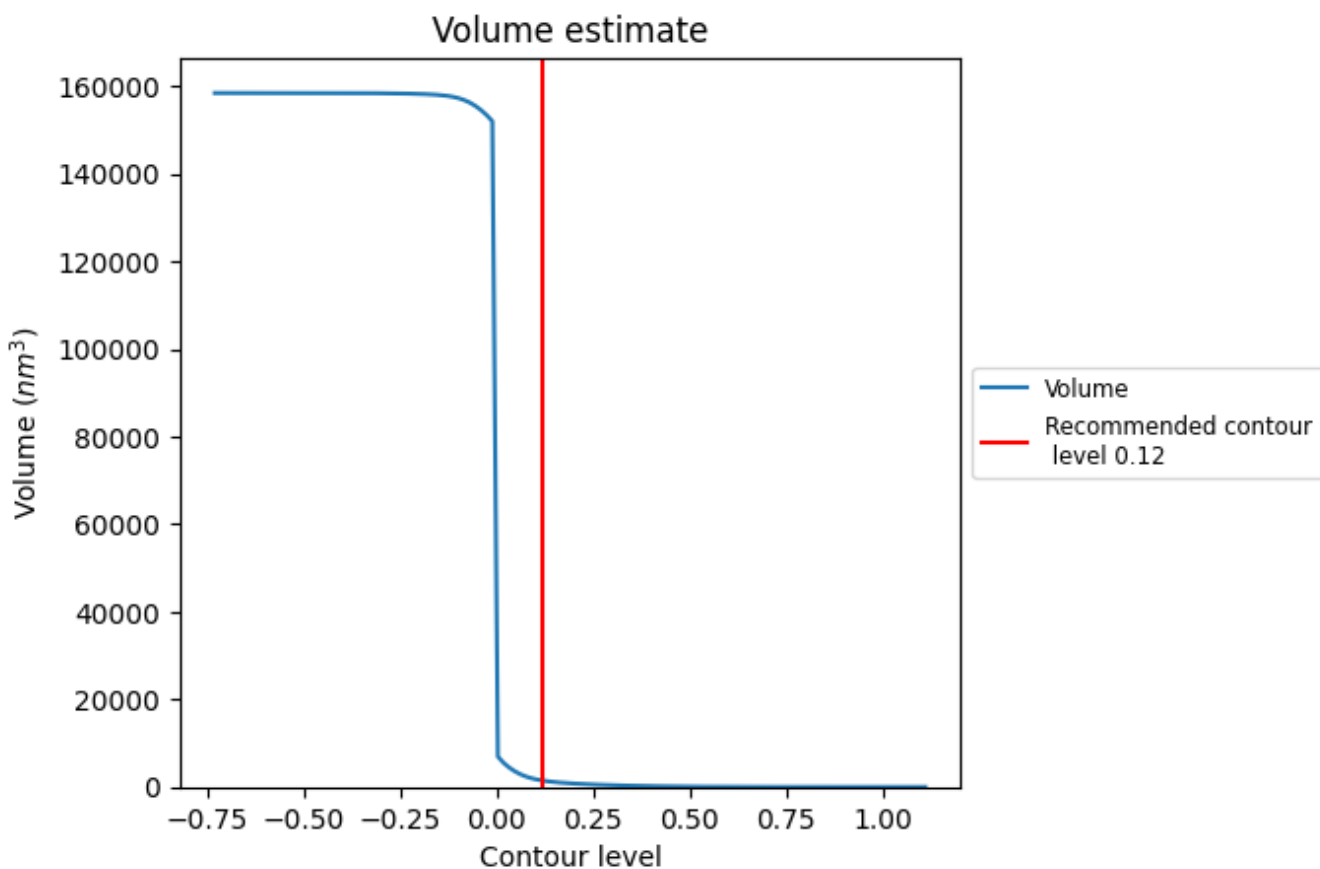
This section contains the results of statistical analysis of the map.

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.

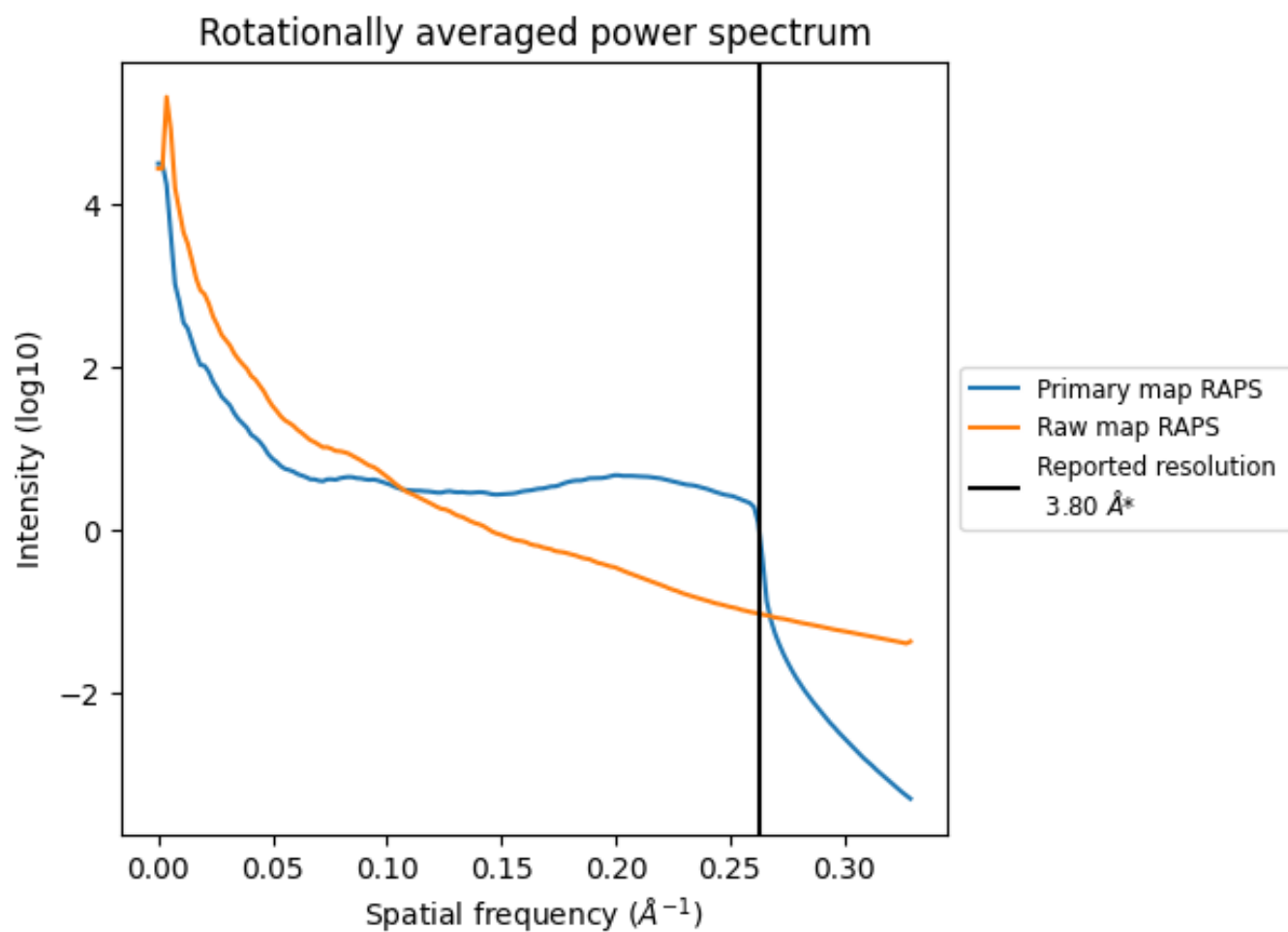
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1440 nm³; this corresponds to an approximate mass of 1301 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

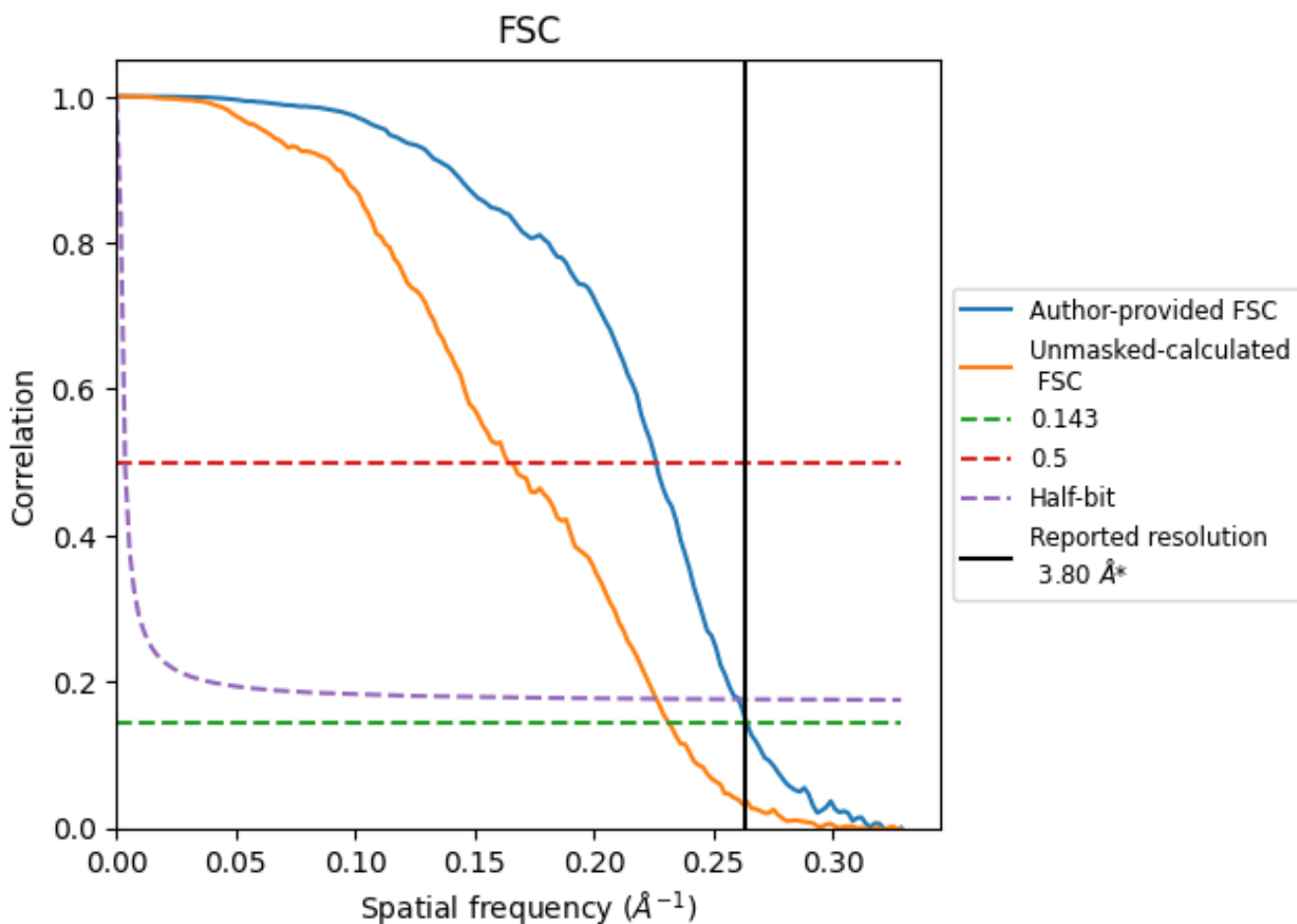


*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

8.2 Resolution estimates [i](#)

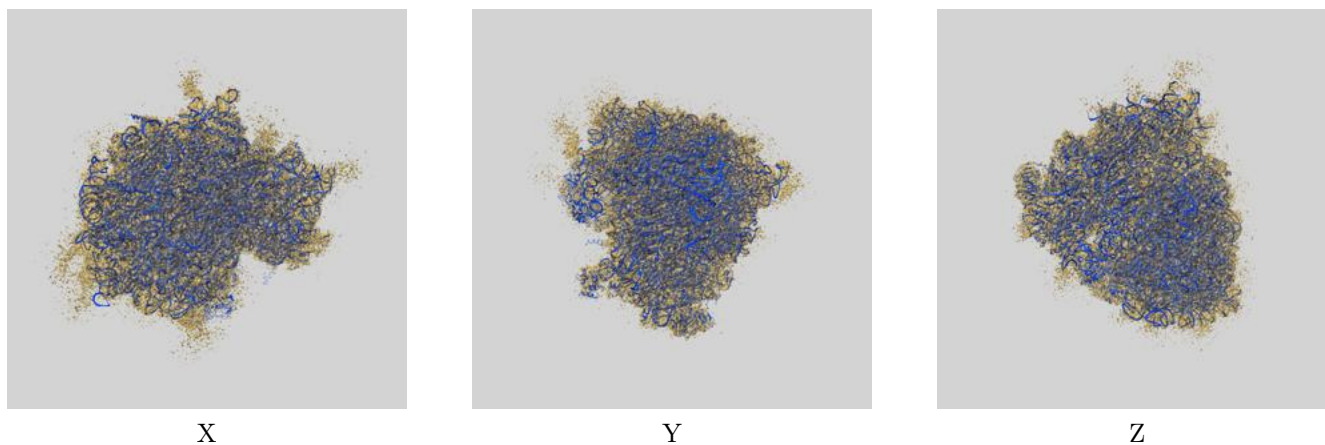
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.79	4.42	3.84
Unmasked-calculated*	4.32	6.09	4.42

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.32 differs from the reported value 3.8 by more than 10 %

9 Map-model fit [i](#)

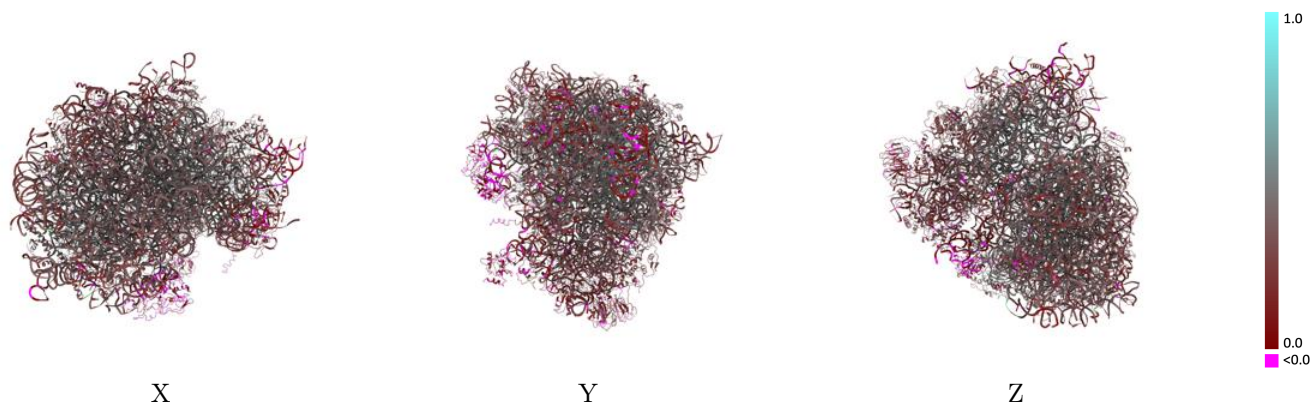
This section contains information regarding the fit between EMDB map EMD-0194 and PDB model 6HCJ. Per-residue inclusion information can be found in section 3 on page 22.

9.1 Map-model overlay [i](#)



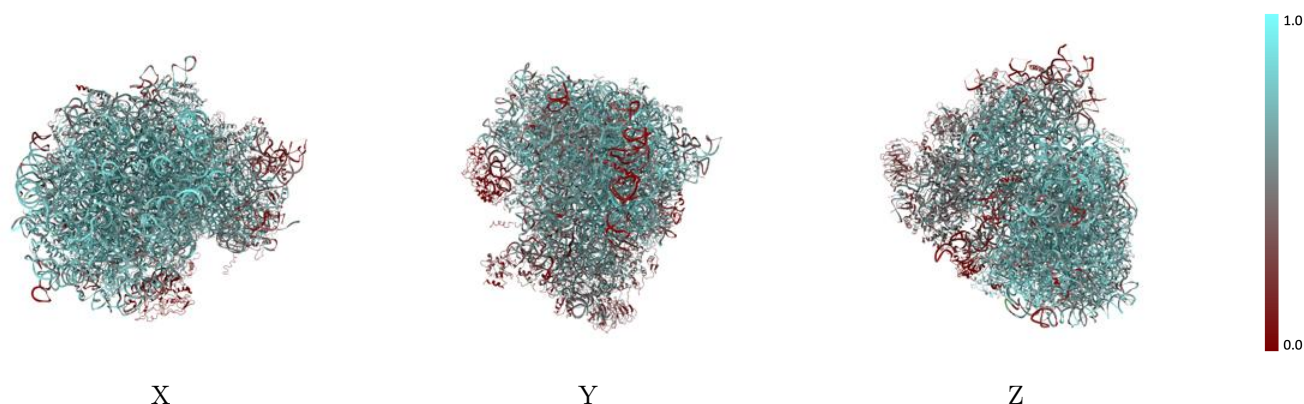
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



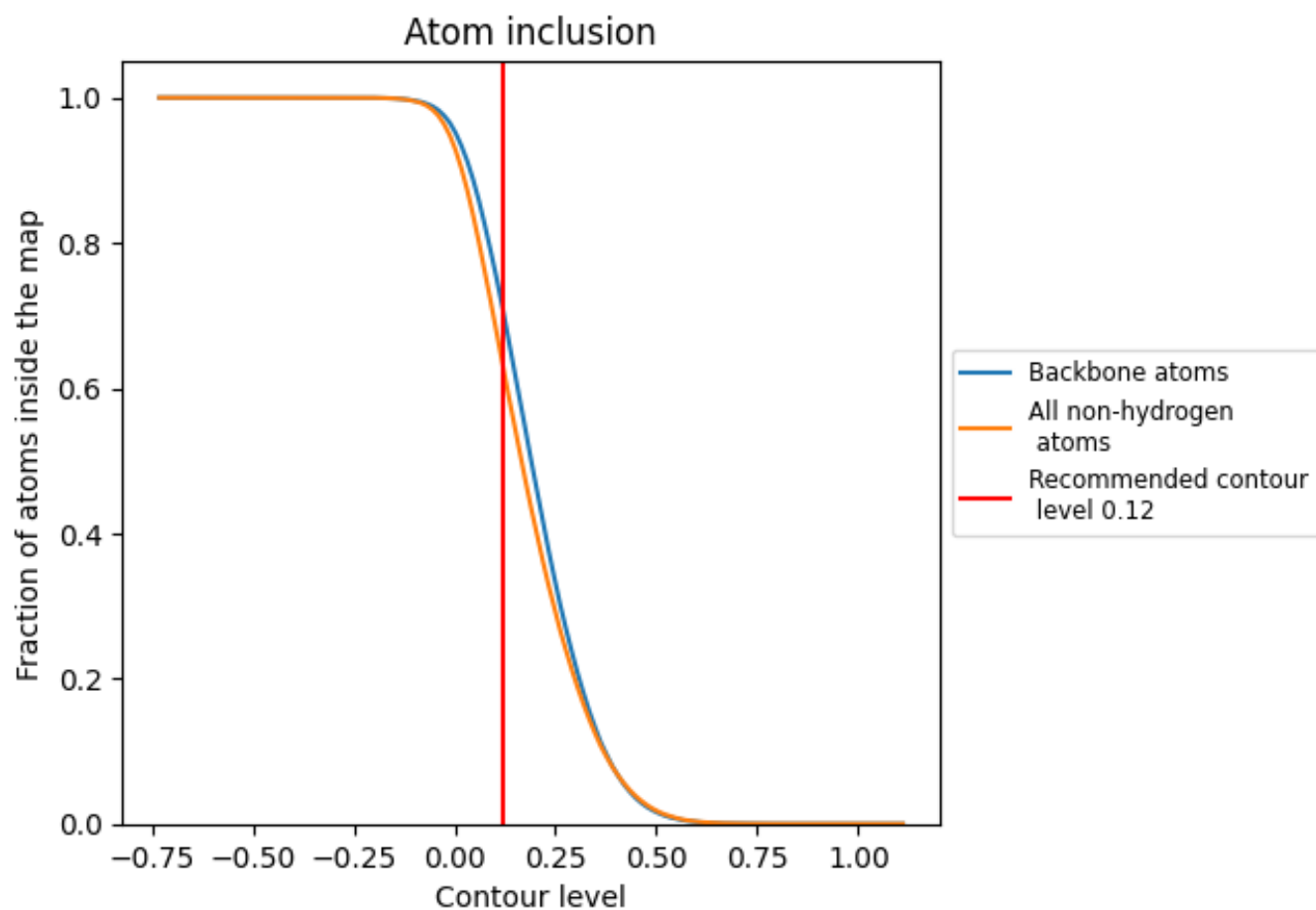
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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, 71% of all backbone atoms, 63% 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	 0.6303	 0.3350
1	 0.0818	 0.2160
33	 0.4769	 0.2560
51	 0.7358	 0.3730
71	 0.8198	 0.4150
81	 0.7362	 0.3320
A2	 0.6230	 0.3160
A3	 0.6975	 0.4090
B2	 0.4901	 0.2870
B3	 0.6627	 0.3370
C2	 0.5115	 0.3100
C3	 0.6979	 0.3660
D2	 0.5451	 0.3290
D3	 0.6819	 0.3870
E2	 0.3730	 0.2380
E3	 0.6307	 0.3010
F2	 0.5007	 0.3240
F3	 0.7668	 0.4470
G2	 0.4110	 0.2270
G3	 0.4800	 0.2190
H2	 0.4086	 0.2480
H3	 0.6292	 0.3250
I2	 0.4914	 0.3540
I3	 0.7051	 0.4330
J2	 0.4997	 0.3240
J3	 0.6329	 0.3810
K2	 0.4096	 0.2300
L2	 0.3633	 0.1830
L3	 0.6345	 0.3270
M2	 0.6105	 0.4170
M3	 0.6506	 0.3150
N2	 0.1600	 0.1160
N3	 0.7033	 0.3700
O2	 0.6063	 0.4180
O3	 0.6874	 0.3580





















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Chain	Atom inclusion	Q-score
P2	0.5279	0.3240
P3	0.6794	0.3390
Q2	0.5016	0.2860
Q3	0.7393	0.4420
R2	0.3974	0.2220
R3	0.5926	0.3340
S2	0.4037	0.2650
S3	0.7251	0.4160
T2	0.4638	0.2530
T3	0.7078	0.4530
U2	0.4424	0.2300
U3	0.5449	0.2730
V2	0.3243	0.2050
V3	0.7025	0.4350
W2	0.5241	0.3320
X2	0.6505	0.4080
X3	0.5989	0.3030
Y2	0.6013	0.3900
Y3	0.6160	0.2830
Z2	0.4016	0.2320
Z3	0.6244	0.3430
a2	0.3722	0.2350
a3	0.7431	0.4280
b2	0.5696	0.3520
b3	0.6221	0.3920
c2	0.4977	0.3560
c3	0.6344	0.4010
d2	0.3404	0.2220
d3	0.6651	0.3570
e2	0.5068	0.2840
e3	0.7191	0.3850
f2	0.3615	0.2600
f3	0.7090	0.3540
g2	0.2491	0.1930
g3	0.6494	0.3710
h2	0.2911	0.1950
h3	0.5761	0.2790
i3	0.5842	0.3070
j3	0.7281	0.3960
k3	0.5530	0.3140
l3	0.7002	0.3790
m3	0.6659	0.3680

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Chain	Atom inclusion	Q-score
n3	 0.6560	 0.3890
o3	 0.6683	 0.4180
p3	 0.6807	 0.4240
q3	 0.2013	 0.2000
r3	 0.6949	 0.3490
t3	 0.0269	 0.0290
u3	 0.0246	 0.0320
v3	 0.3261	 0.2070
w3	 0.0216	 0.0340