



Full wwPDB EM Validation Report ⓘ

Dec 3, 2024 – 01:13 PM JST

PDB ID : 8Z71
EMDB ID : EMD-38657
Title : State 1a (S1a) of yeast 80S ribosome bound to open eEF3 and 2 tRNAs and eEF1A during mRNA decoding
Authors : Cheng, J.; Wu, C.L.; Li, J.X.; Zhang, X.Z.
Deposited on : 2024-04-19
Resolution : 3.60 Å(reported)

This is a Full wwPDB EM Validation 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:

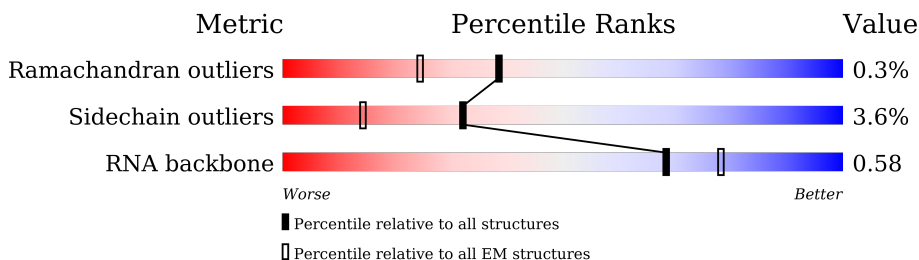
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

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 3.60 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	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	2	1799	
2	SA	222	
3	SB	206	
4	SC	92	
5	SD	121	
6	SE	117	
7	SF	141	
8	SG	121	

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Mol	Chain	Length	Quality of chain
9	SH	145	93% 94% 6%
10	SI	143	92% 95% 5%
11	SJ	100	91% 93% 7%
12	SK	108	73% 71% 5% 24%
13	SL	63	95% 98% .
14	SM	53	94% 89% 11%
15	SN	73	100% 92% 8%
16	SO	312	100% 94% 6%
17	SP	206	90% 98% .
18	SQ	232	92% 94% . .
19	SR	216	89% 96% .
20	SS	258	97% 98% .
21	ST	228	99% 97% .
22	SU	184	92% 98% .
23	SV	200	90% 91% . 6%
24	SW	184	97% 98% .
25	SX	142	86% 97% .
26	SY	150	86% 97% .
27	SZ	127	91% 94% 6%
28	Sa	87	92% 97% .
29	Sb	129	87% 99% .
30	Sc	144	95% 95% 5%
31	Sd	134	100% 97% .
32	Se	94	82% 95% 5%
33	Sf	81	93% 96% .

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Mol	Chain	Length	Quality of chain
34	Sg	60	100% 97%
35	s	77	99% 58% 40%
36	t	75	89% 76% 24%
37	B	121	10% 92% 8%
38	C	158	15% 83% 17%
39	T	188	76% 98%
40	Y	126	87% 98%
41	A	3394	24% 79% 15% 6%
42	D	251	69% 100%
43	E	386	64% 98% .. 5%
44	F	361	65% 98%
45	G	294	82% 97%
46	H	175	74% 93% .. 5%
47	I	223	65% 98%
48	J	233	76% 98%
49	K	191	77% 95% 5%
50	L	218	85% 96%
51	M	169	87% 97%
52	N	193	70% 97%
53	O	136	68% 97%
54	P	203	74% 97%
55	Q	197	62% 98%
56	R	183	55% 100%
57	S	185	66% 96%
58	U	171	66% 96%

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Mol	Chain	Length	Quality of chain
59	V	159	74% 94% 6%
60	W	100	91% 98%
61	X	136	76% 99%
62	Z	121	69% 100%
63	a	125	66% 98%
64	b	135	69% 94% 6%
65	c	148	67% 97%
66	d	58	76% 100%
67	e	96	74% 99%
68	f	109	65% 97%
69	g	127	65% 98%
70	h	106	62% 98%
71	i	112	74% 93% 7%
72	j	119	71% 96%
73	k	99	76% 95% 5%
74	l	81	51% 98%
75	m	77	90% 96%
76	n	50	84% 100%
77	o	52	77% 94% 6%
78	p	25	92% 96%
79	q	103	78% 98%
80	r	91	77% 95% 5%
81	x	462	95% 91% 5%
82	v	1044	88% 90% 6%

2 Entry composition [i](#)

There are 82 unique types of molecules in this entry. The entry contains 213525 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	2	1771	37739	16872	6683	12413	1771	0	0

- Molecule 2 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	SA	222	1729	1098	312	313	6	0	0

- Molecule 3 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	SB	206	1605	1005	299	298	3	0	0

- Molecule 4 is a protein called Small ribosomal subunit protein eS10A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	SC	92	752	487	122	141	2	0	0

- Molecule 5 is a protein called Small ribosomal subunit protein eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	SD	121	875	551	153	169	2	0	0

- Molecule 6 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	SE	117	916	583	171	155	7	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS9A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	SF	141	1105	708	203	194	0	0

- Molecule 8 is a protein called Small ribosomal subunit protein eS17A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	SG	121	961	599	182	178	2	0	0

- Molecule 9 is a protein called Small ribosomal subunit protein uS13A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	SH	145	1188	741	237	208	2	0	0

- Molecule 10 is a protein called Small ribosomal subunit protein eS19A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	SI	143	1112	694	208	208	2	0	0

- Molecule 11 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	SJ	100	797	506	144	146	1	0	0

- Molecule 12 is a protein called Small ribosomal subunit protein eS25A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	SK	82	651	416	123	112	0	0

- Molecule 13 is a protein called Small ribosomal subunit protein eS28A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	SL	63	491	303	96	91	1	0	0

- Molecule 14 is a protein called Small ribosomal subunit protein uS14A.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	SM	53	Total	C	N	O	S	0	0
			442	274	92	72	4		

- Molecule 15 is a protein called Small ribosomal subunit protein eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SN	73	Total	C	N	O	S	0	0
			556	352	105	95	4		

- Molecule 16 is a protein called Small ribosomal subunit protein RACK1.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SO	312	Total	C	N	O	S	0	0
			2383	1514	409	452	8		

- Molecule 17 is a protein called Small ribosomal subunit protein uS2A.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	SP	206	Total	C	N	O	S	0	0
			1603	1030	284	287	2		

- Molecule 18 is a protein called Small ribosomal subunit protein eS1A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	SQ	226	Total	C	N	O	S	0	0
			1798	1139	330	325	4		

- Molecule 19 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	SR	216	Total	C	N	O	S	0	0
			1626	1042	287	295	2		

- Molecule 20 is a protein called Small ribosomal subunit protein eS4A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	SS	258	Total	C	N	O	S	0	0
			2056	1308	387	358	3		

- Molecule 21 is a protein called Small ribosomal subunit protein eS6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	ST	228	1815	1138	351	323	3	0	0

- Molecule 22 is a protein called Small ribosomal subunit protein eS7A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	SU	184	1473	946	263	264	0	0

- Molecule 23 is a protein called Small ribosomal subunit protein eS8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	SV	187	1476	916	295	263	2	0	0

- Molecule 24 is a protein called Small ribosomal subunit protein uS4A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	SW	184	1479	935	285	258	1	0	0

- Molecule 25 is a protein called Small ribosomal subunit protein uS17A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	SX	142	1142	733	217	189	3	0	0

- Molecule 26 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	SY	150	1192	759	224	207	2	0	0

- Molecule 27 is a protein called Small ribosomal subunit protein uS11B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	SZ	127	891	545	182	163	1	0	0

- Molecule 28 is a protein called Small ribosomal subunit protein eS21A.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Sa	87	Total	C	N	O	S	0	0
			673	415	125	131	2		

- Molecule 29 is a protein called Small ribosomal subunit protein uS8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Sb	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 30 is a protein called Small ribosomal subunit protein uS12A.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Sc	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 31 is a protein called Small ribosomal subunit protein eS24A.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	Sd	134	Total	C	N	O	0	0
			1073	676	208	189		

- Molecule 32 is a protein called Small ribosomal subunit protein eS26A.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Se	94	Total	C	N	O	S	0	0
			750	462	157	126	5		

- Molecule 33 is a protein called Small ribosomal subunit protein eS27A.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Sf	81	Total	C	N	O	S	0	0
			610	382	110	113	5		

- Molecule 34 is a protein called Small ribosomal subunit protein eS30A.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Sg	60	Total	C	N	O	S	0	0
			472	298	97	76	1		

- Molecule 35 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
35	s	76	1616	723	291	527	75	0	0

- Molecule 36 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
36	t	75	1606	716	297	518	75	0	0

- Molecule 37 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
37	B	121	2579	1152	461	845	121	0	0

- Molecule 38 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
38	C	158	3353	1500	586	1109	158	0	0

- Molecule 39 is a protein called Large ribosomal subunit protein eL19A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
39	T	188	1515	932	323	260	0	0

- Molecule 40 is a protein called Large ribosomal subunit protein eL24A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	Y	126	836	525	165	145	1	0	0

- Molecule 41 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
41	A	3187	68170	30449	12289	22245	3187	0	0

- Molecule 42 is a protein called Large ribosomal subunit protein uL2A.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	D	251	Total	C	N	O	S	0	0
			1899	1182	385	331	1		

- Molecule 43 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	E	386	Total	C	N	O	S	0	0
			3075	1950	584	533	8		

- Molecule 44 is a protein called Large ribosomal subunit protein uL4A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	F	361	Total	C	N	O	S	0	0
			2748	1729	522	494	3		

- Molecule 45 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	G	294	Total	C	N	O	S	0	0
			2351	1484	410	455	2		

- Molecule 46 is a protein called Large ribosomal subunit protein eL6B.

Mol	Chain	Residues	Atoms				AltConf	Trace
46	H	167	Total	C	N	O	0	0
			1307	843	234	230		

- Molecule 47 is a protein called Large ribosomal subunit protein uL30A.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	I	222	Total	C	N	O	S	0	0
			1784	1151	324	308	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	22	ILE	THR	conflict	UNP P05737

- Molecule 48 is a protein called Large ribosomal subunit protein eL8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	J	233	Total	C	N	O	S	0	0
			1804	1151	323	327	3		

- Molecule 49 is a protein called Large ribosomal subunit protein uL6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	K	191	Total	C	N	O	S	0	0
			1508	957	274	273	4		

- Molecule 50 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	L	218	Total	C	N	O	S	0	0
			1764	1117	334	306	7		

- Molecule 51 is a protein called Large ribosomal subunit protein uL5B.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	M	169	Total	C	N	O	S	0	0
			1346	843	252	247	4		

- Molecule 52 is a protein called Large ribosomal subunit protein eL13A.

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

- Molecule 53 is a protein called Large ribosomal subunit protein eL14A.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	O	136	Total	C	N	O	S	0	0
			1053	675	199	177	2		

- Molecule 54 is a protein called Large ribosomal subunit protein eL15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	P	203	Total	C	N	O	S	0	0
			1720	1077	361	281	1		

- Molecule 55 is a protein called Large ribosomal subunit protein uL13A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	Q	197	1555	1003	289	262	1	197	0

- Molecule 56 is a protein called Large ribosomal subunit protein uL22A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
56	R	183	1416	879	284	253	0	0

- Molecule 57 is a protein called Large ribosomal subunit protein eL18A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	S	185	1441	908	290	241	2	0	0

- Molecule 58 is a protein called Large ribosomal subunit protein eL20A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	U	171	1437	925	266	243	3	0	0

- Molecule 59 is a protein called Large ribosomal subunit protein eL21A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	V	159	1272	802	245	221	4	0	0

- Molecule 60 is a protein called Large ribosomal subunit protein eL22A.

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

- Molecule 61 is a protein called Large ribosomal subunit protein uL14A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	X	136	1003	628	189	179	7	0	0

- Molecule 62 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	Z	121	964	620	169	173	2	0	0

- Molecule 63 is a protein called Large ribosomal subunit protein uL24A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	a	125	984	620	191	173		0	0

- Molecule 64 is a protein called Large ribosomal subunit protein eL27A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	b	135	1080	701	199	180		0	0

- Molecule 65 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	c	148	1169	747	231	188	3	0	0

- Molecule 66 is a protein called Large ribosomal subunit protein eL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	d	58	462	289	100	73		0	0

- Molecule 67 is a protein called Large ribosomal subunit protein eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	e	96	737	476	123	137	1	0	0

- Molecule 68 is a protein called Large ribosomal subunit protein eL31A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	f	109	876	556	167	152	1	0	0

- Molecule 69 is a protein called Large ribosomal subunit protein eL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	g	127	1013	642	205	165	1	0	0

- Molecule 70 is a protein called Large ribosomal subunit protein eL33A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	h	106	850	540	165	144	1	0	0

- Molecule 71 is a protein called Large ribosomal subunit protein eL34A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	i	112	880	545	179	152	4	0	0

- Molecule 72 is a protein called Large ribosomal subunit protein uL29A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	j	119	969	615	186	167	1	0	0

- Molecule 73 is a protein called Large ribosomal subunit protein eL36A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	k	99	766	478	154	132	2	0	0

- Molecule 74 is a protein called Large ribosomal subunit protein eL37A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
74	l	81	645	393	141	106	5	0	0

- Molecule 75 is a protein called Large ribosomal subunit protein eL38.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
75	m	77	612	391	115	106	0	0

- Molecule 76 is a protein called Large ribosomal subunit protein eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	n	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 77 is a protein called Large ribosomal subunit protein eL40A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	o	52	Total	C	N	O	S	0	0
			410	254	86	65	5		

- Molecule 78 is a protein called Large ribosomal subunit protein eL41A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	p	25	Total	C	N	O	S	0	0
			229	139	62	27	1		

- Molecule 79 is a protein called Large ribosomal subunit protein eL42A.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	q	103	Total	C	N	O	S	0	0
			824	517	167	135	5		

- Molecule 80 is a protein called Large ribosomal subunit protein eL43A.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	r	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 81 is a protein called Elongation factor 1-alpha 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	x	441	Total	C	N	O	S	0	0
			3379	2148	581	633	17		

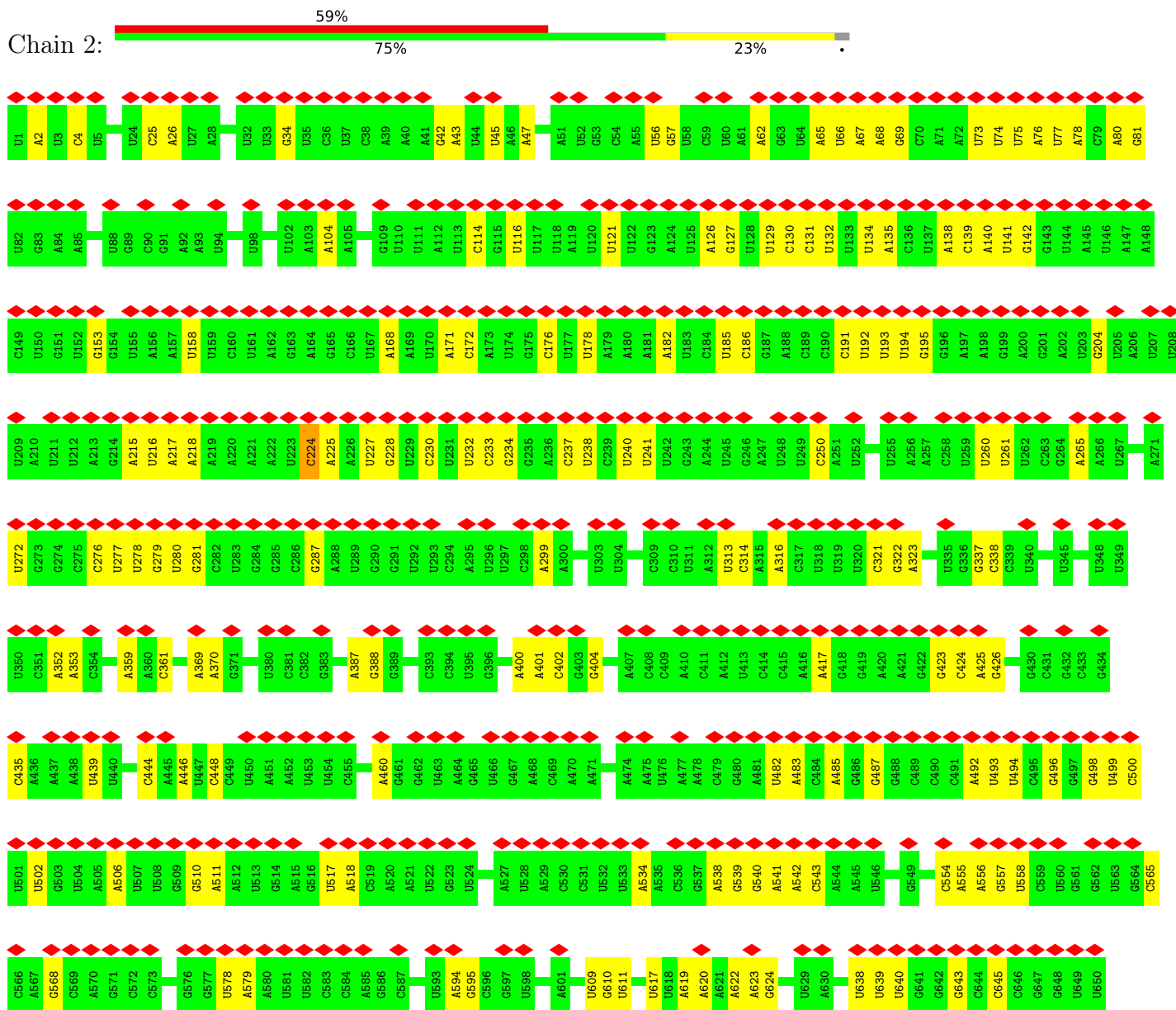
- Molecule 82 is a protein called Elongation factor 3A.

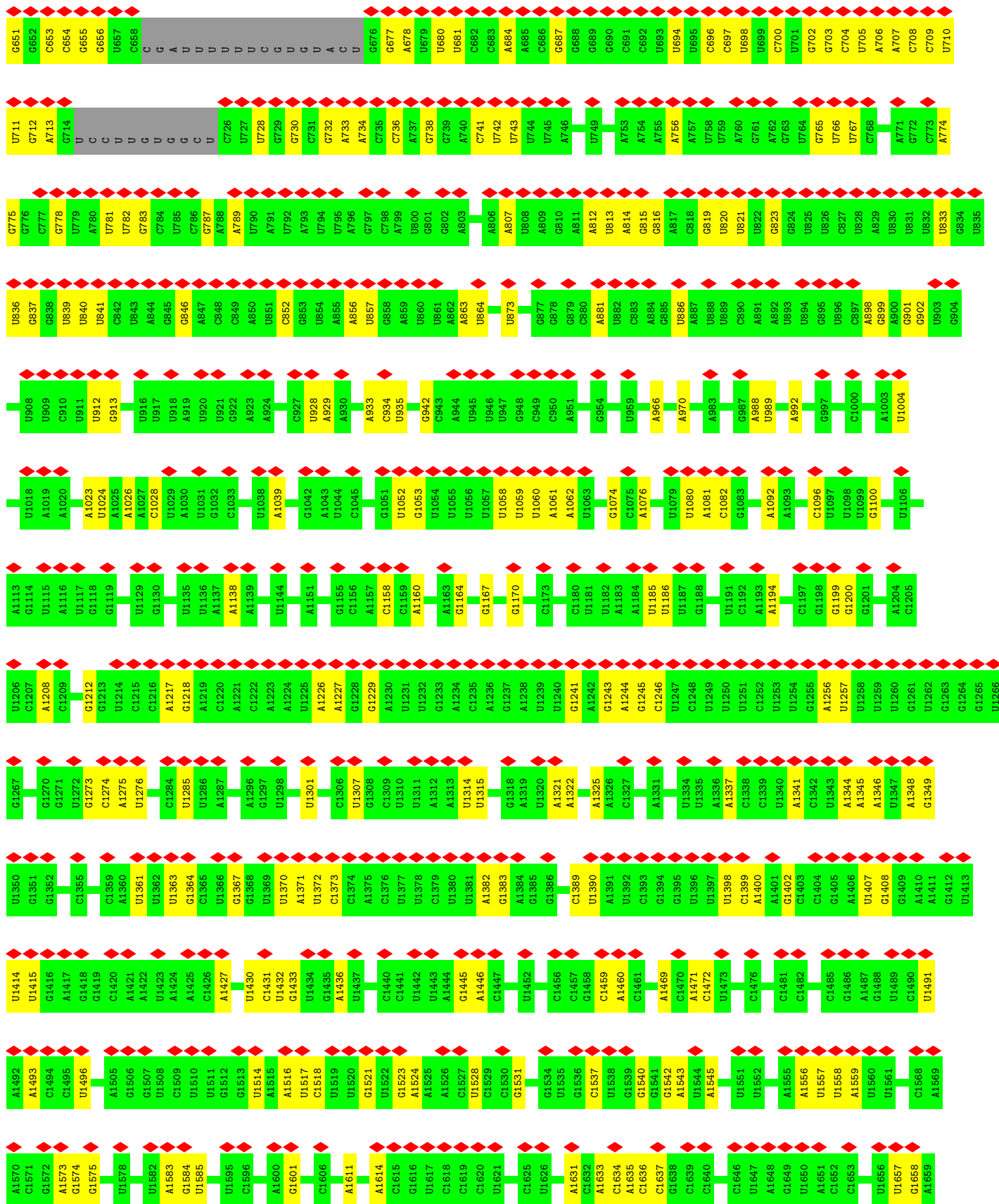
Mol	Chain	Residues	Atoms					AltConf	Trace
82	v	977	Total	C	N	O	S	0	0
			7476	4726	1295	1418	37		

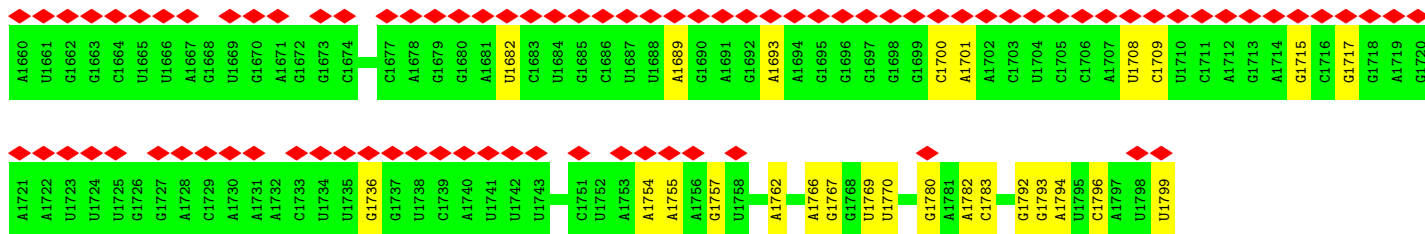
3 Residue-property plots

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.

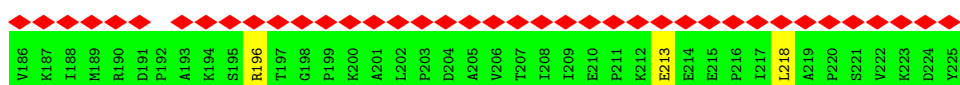
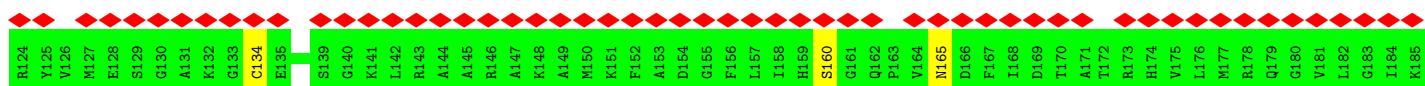
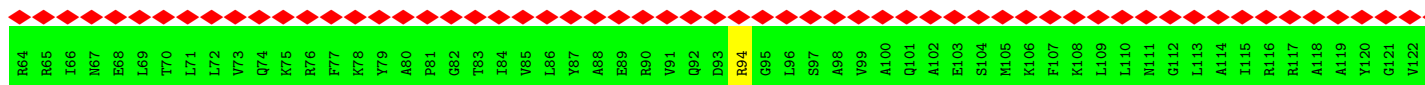
- Molecule 1: 18S rRNA



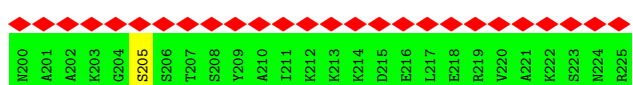
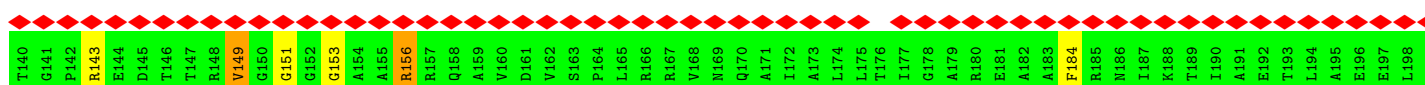
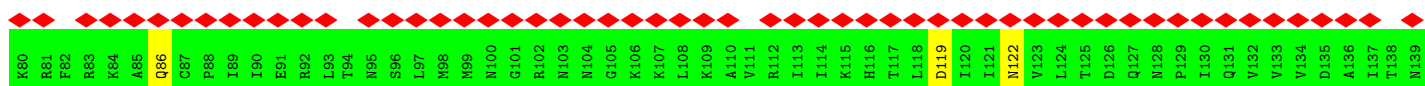
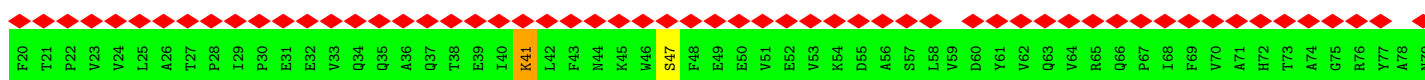




• Molecule 2: Small ribosomal subunit protein uS3

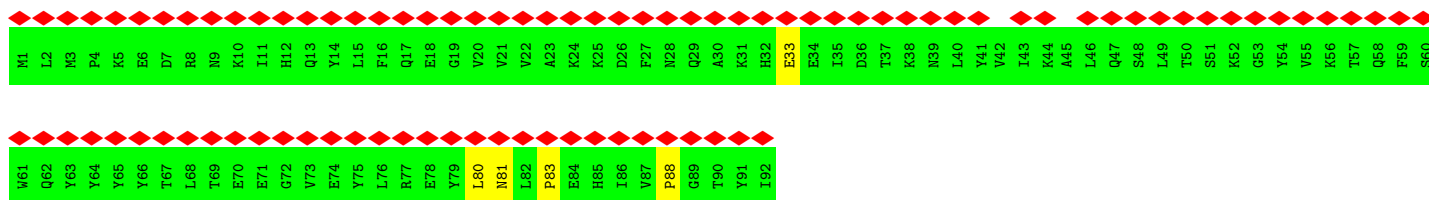


• Molecule 3: Small ribosomal subunit protein uS7

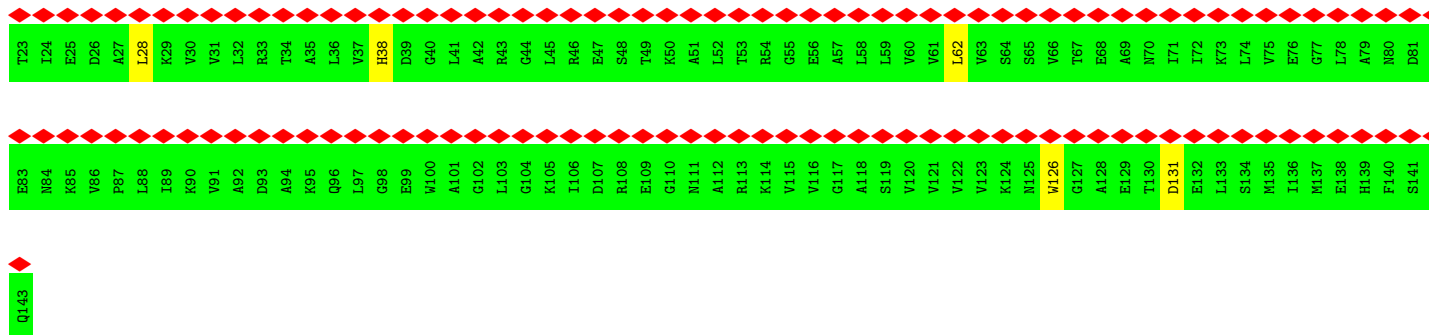


• Molecule 4: Small ribosomal subunit protein eS10A

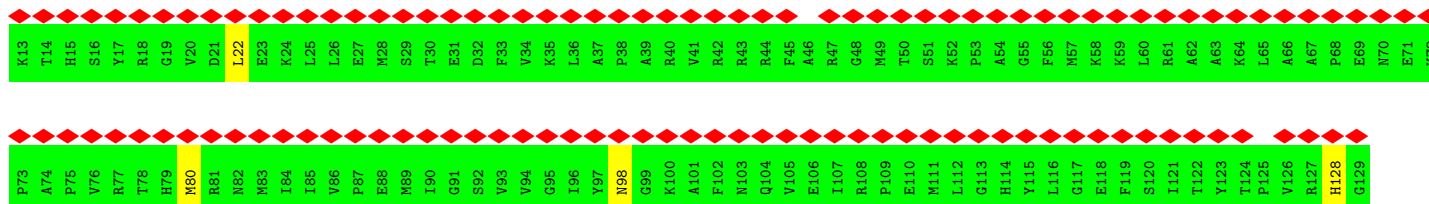




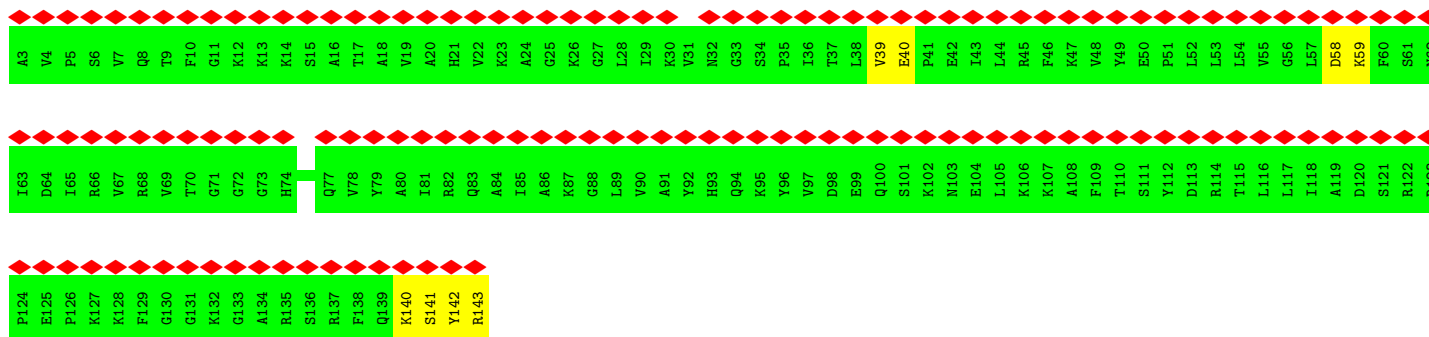
- Molecule 5: Small ribosomal subunit protein eS12



- Molecule 6: Small ribosomal subunit protein uS19



- Molecule 7: Small ribosomal subunit protein uS9A

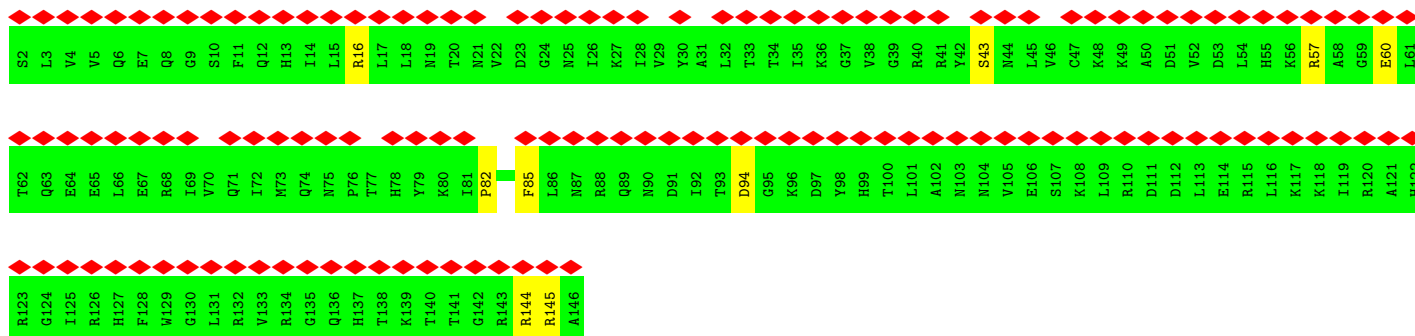


- Molecule 8: Small ribosomal subunit protein eS17A

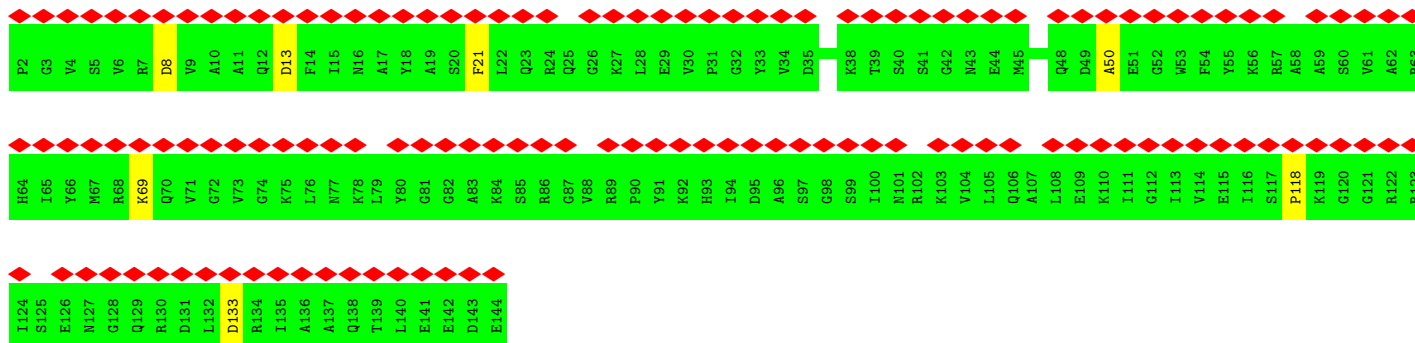
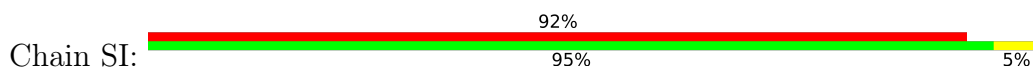




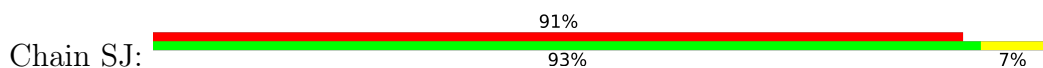
- Molecule 9: Small ribosomal subunit protein uS13A



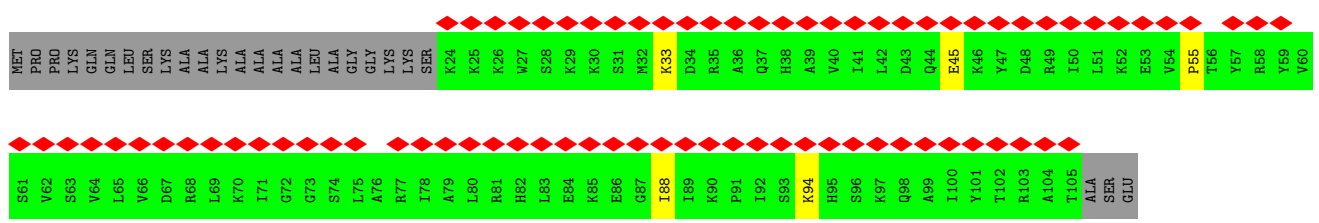
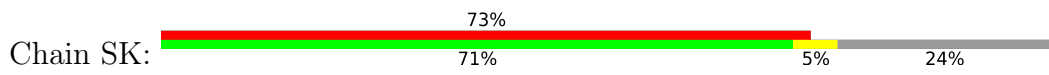
- Molecule 10: Small ribosomal subunit protein eS19A



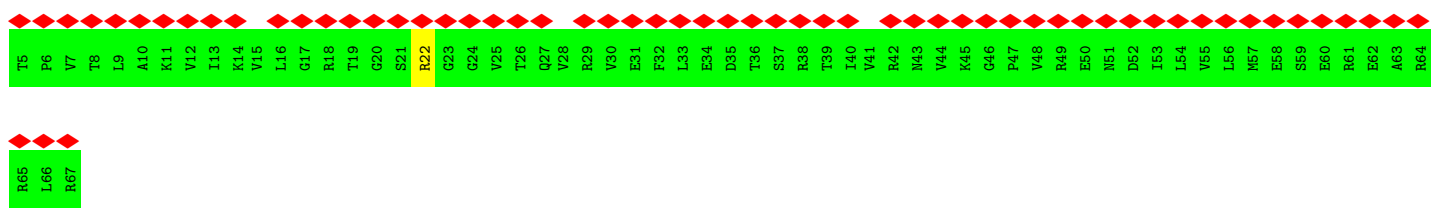
- Molecule 11: Small ribosomal subunit protein uS10



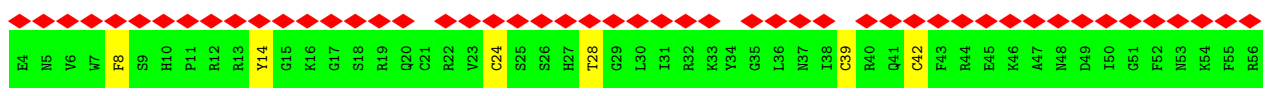
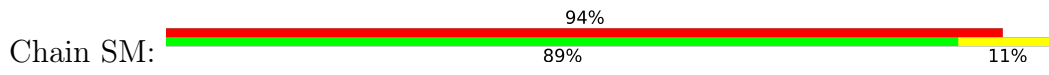
- Molecule 12: Small ribosomal subunit protein eS25A



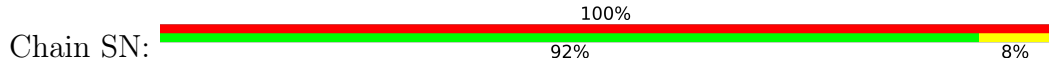
• Molecule 13: Small ribosomal subunit protein eS28A



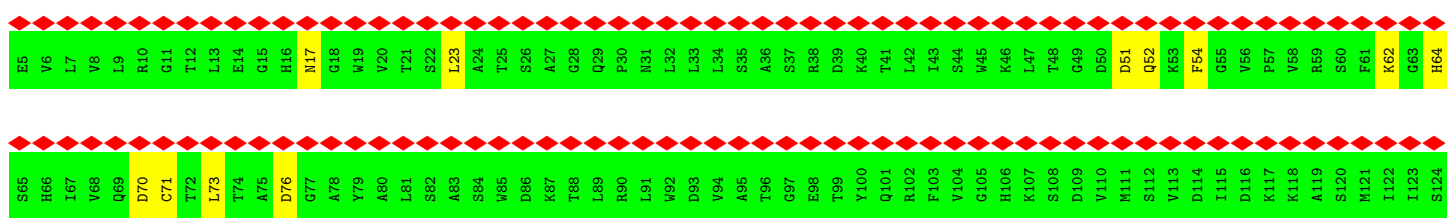
• Molecule 14: Small ribosomal subunit protein uS14A

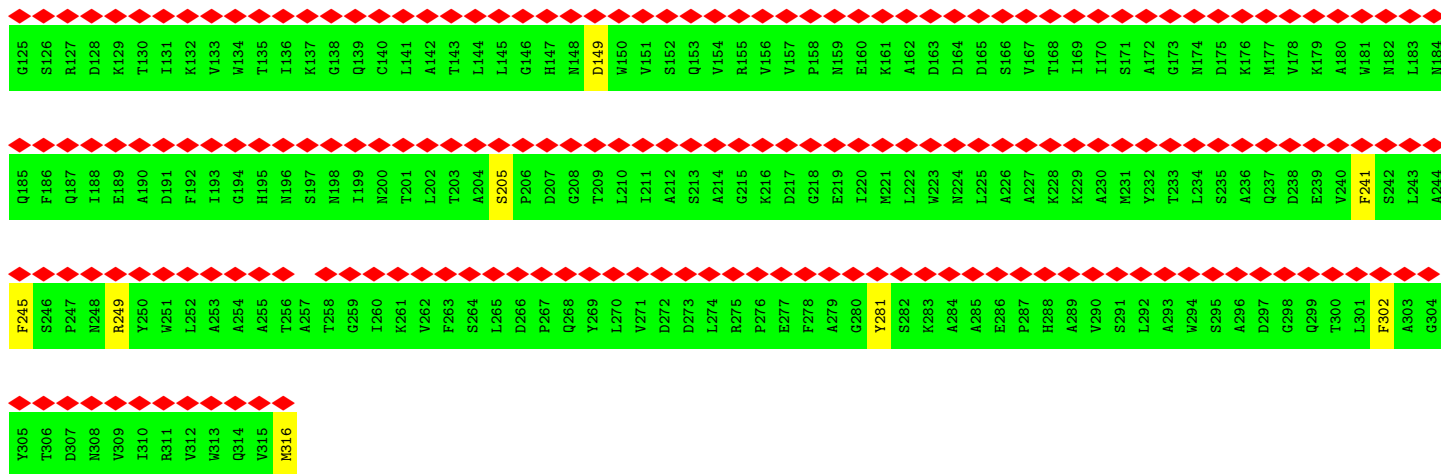


• Molecule 15: Small ribosomal subunit protein eS31

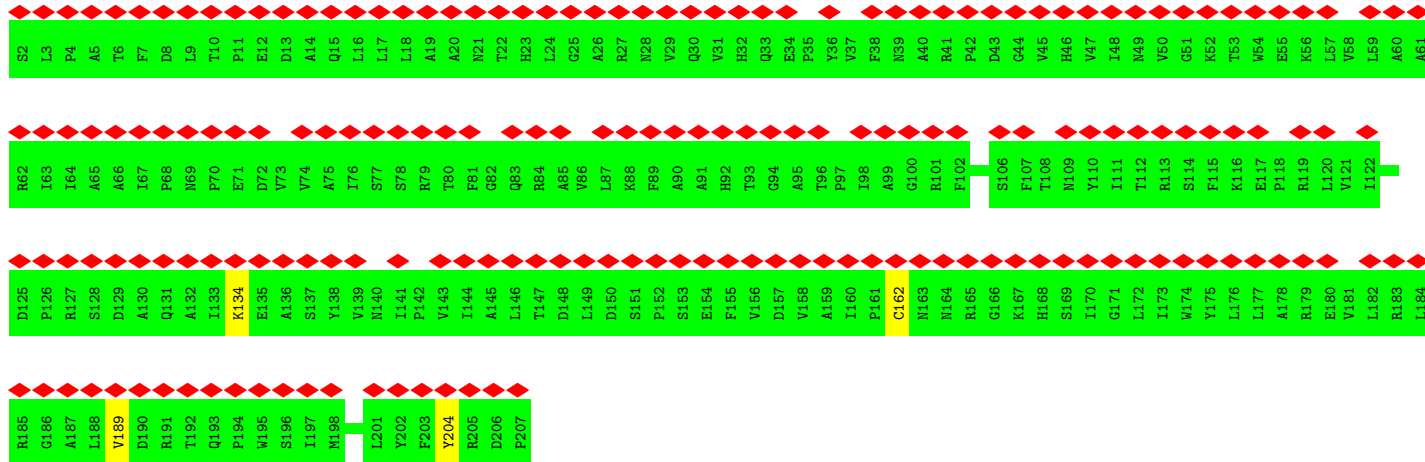
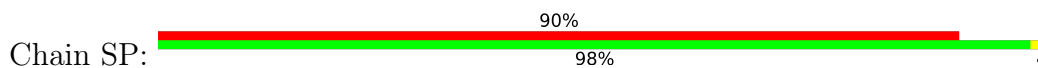


• Molecule 16: Small ribosomal subunit protein RACK1

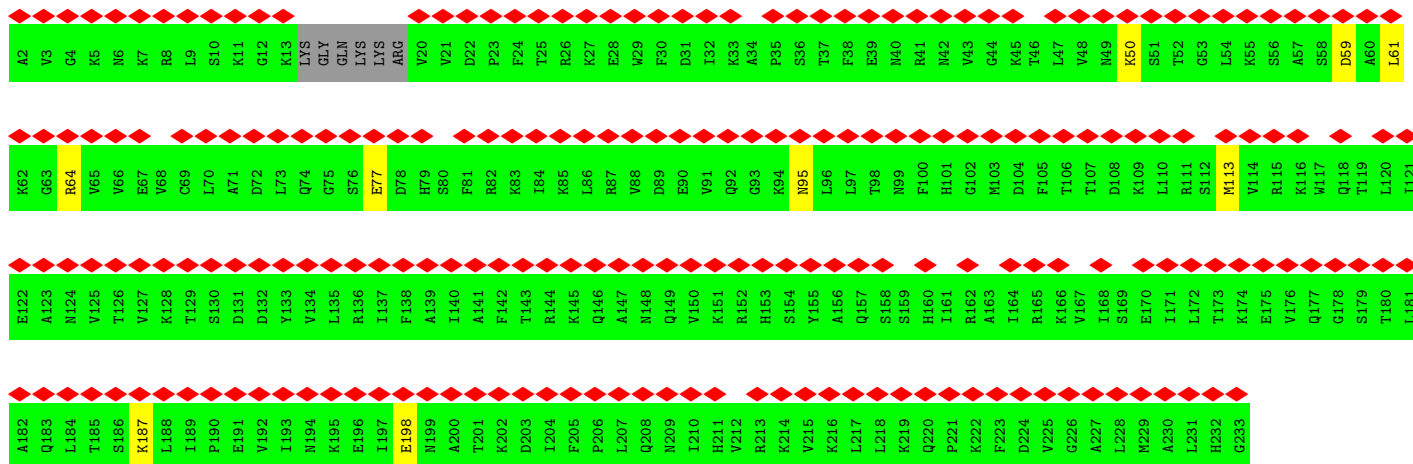
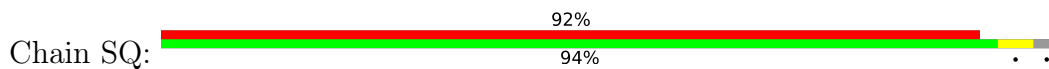




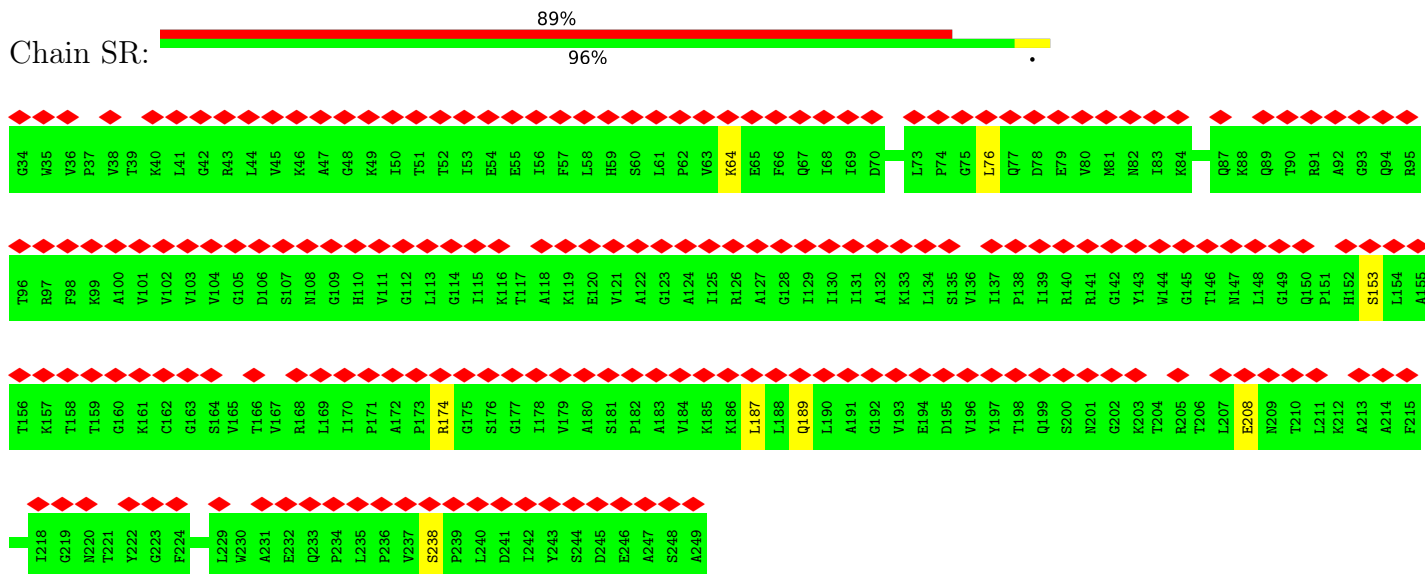
• Molecule 17: Small ribosomal subunit protein uS2A



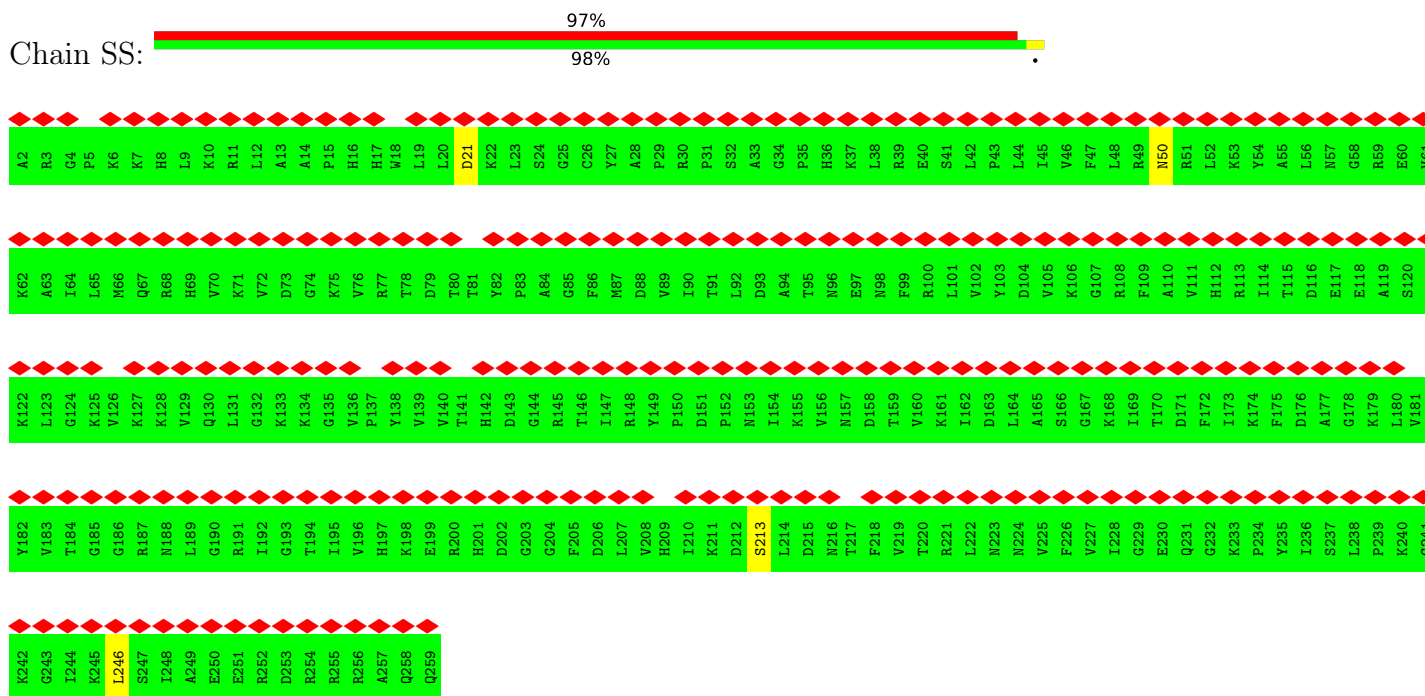
• Molecule 18: Small ribosomal subunit protein eS1A



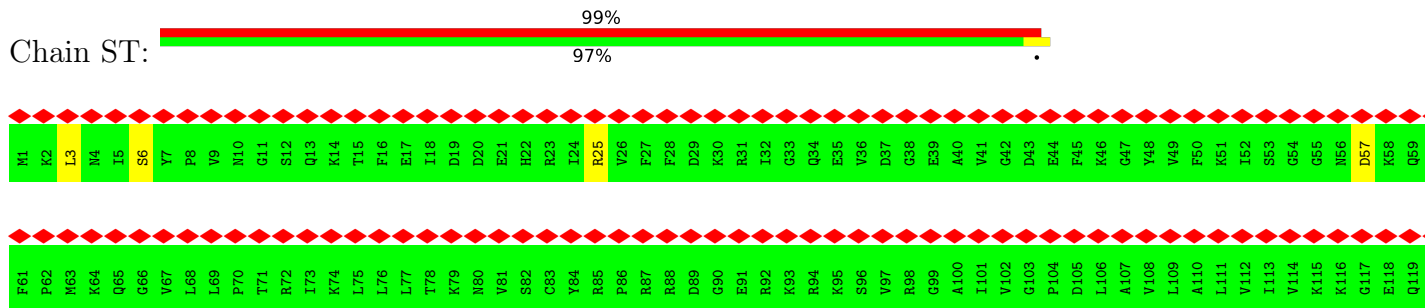
• Molecule 19: Small ribosomal subunit protein uS5

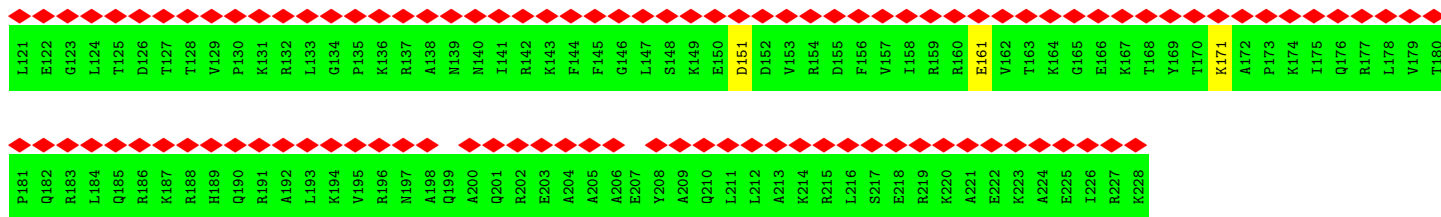


• Molecule 20: Small ribosomal subunit protein eS4A

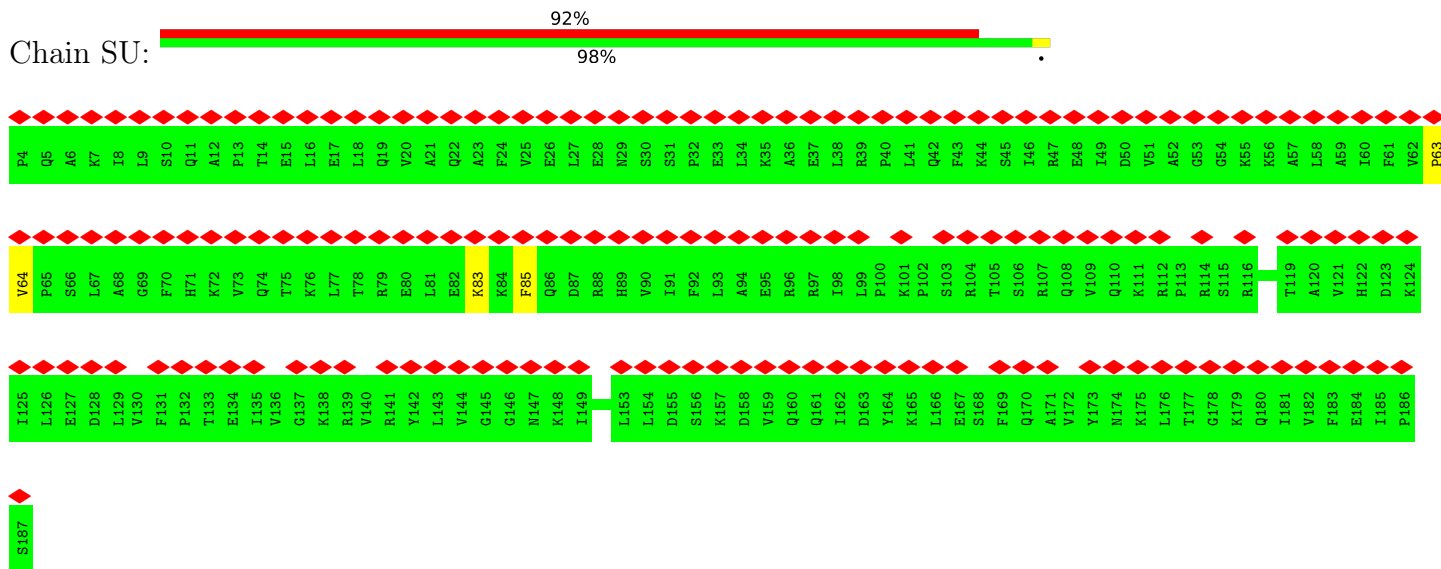


• Molecule 21: Small ribosomal subunit protein eS6A

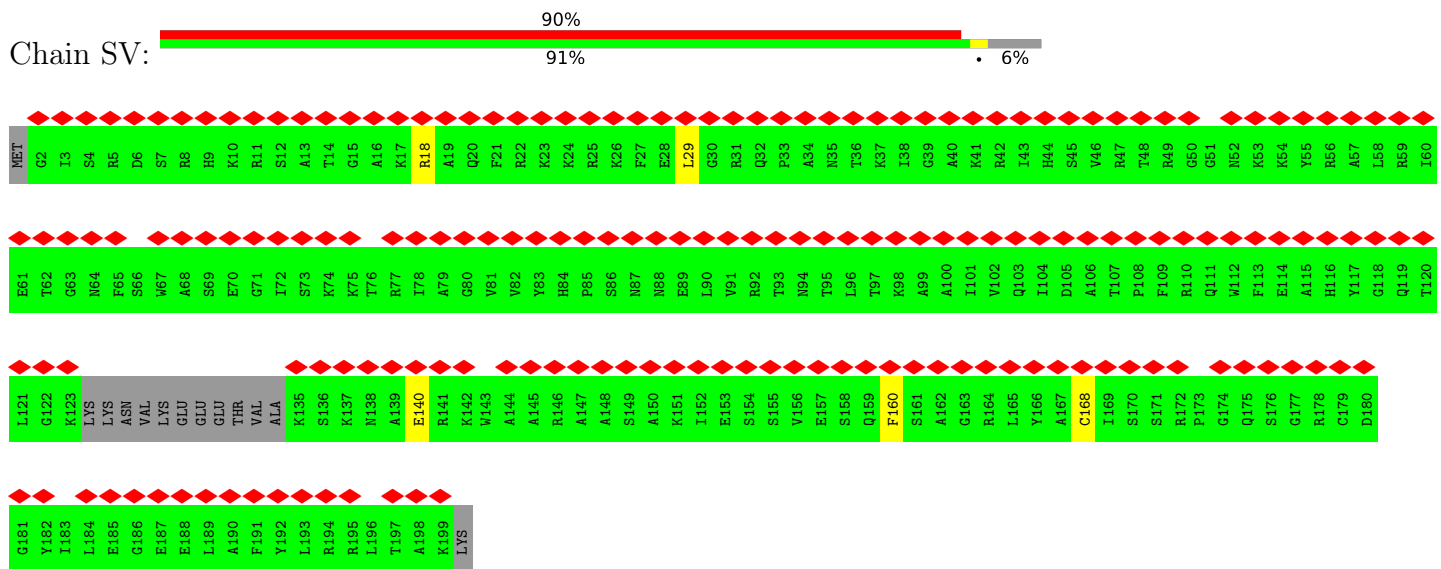




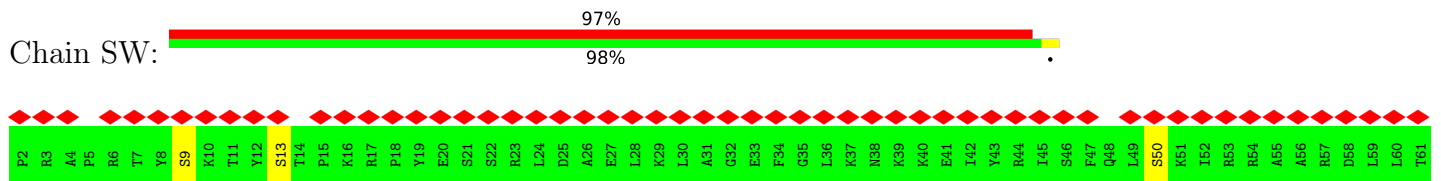
• Molecule 22: Small ribosomal subunit protein eS7A

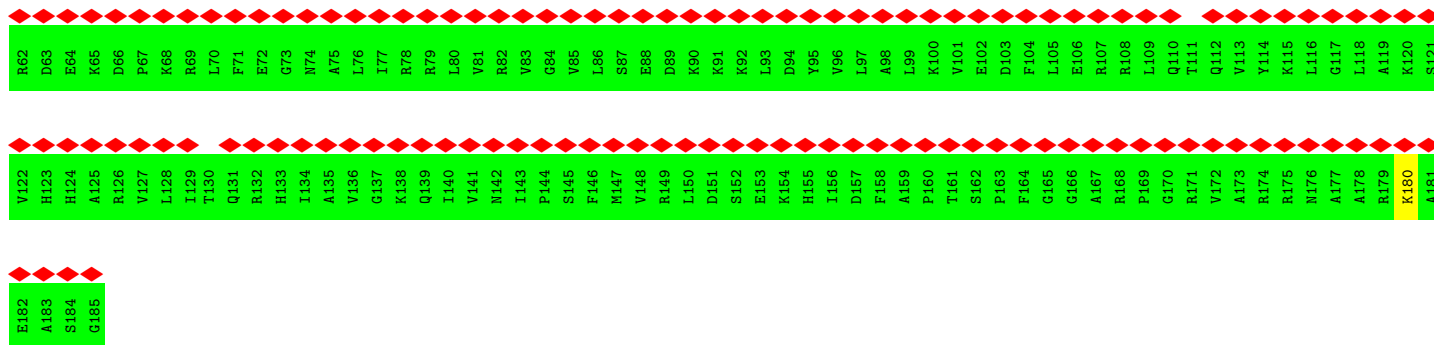


• Molecule 23: Small ribosomal subunit protein eS8A

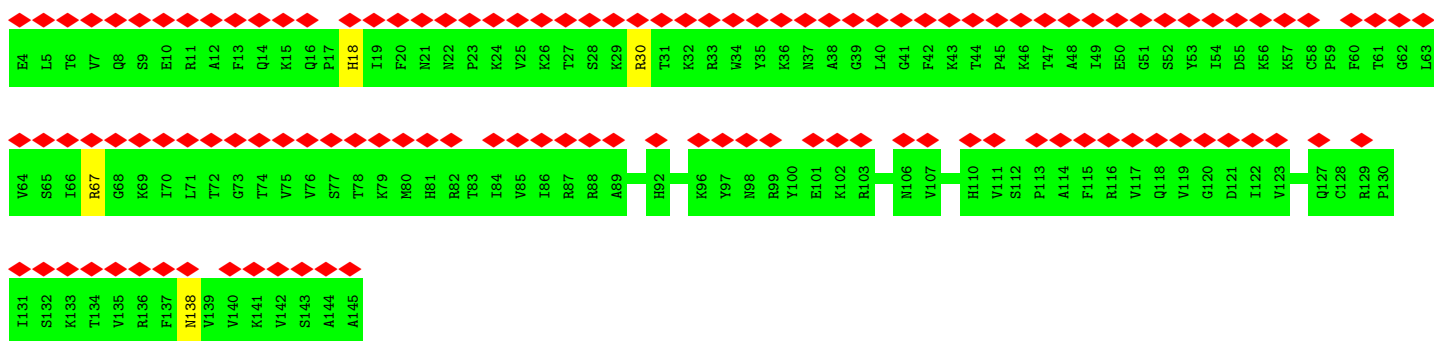
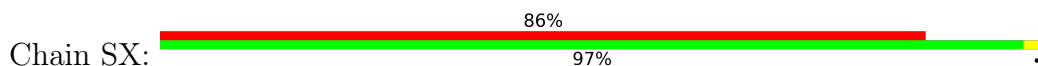


• Molecule 24: Small ribosomal subunit protein uS4A

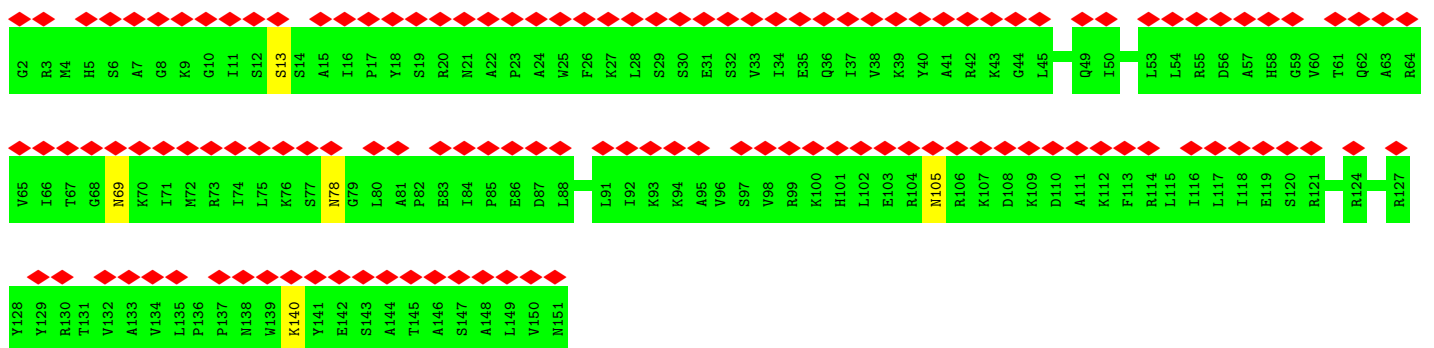
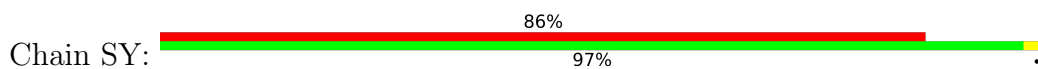




• Molecule 25: Small ribosomal subunit protein uS17A

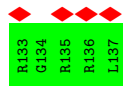
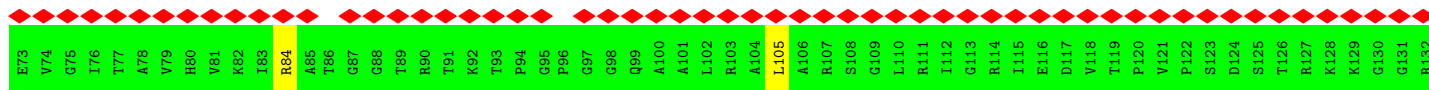


• Molecule 26: Small ribosomal subunit protein uS15

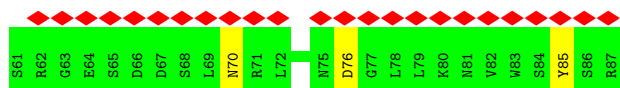
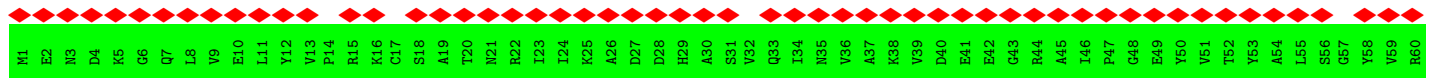


• Molecule 27: Small ribosomal subunit protein uS11B

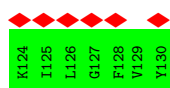
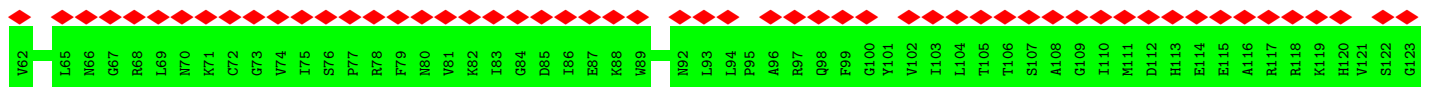
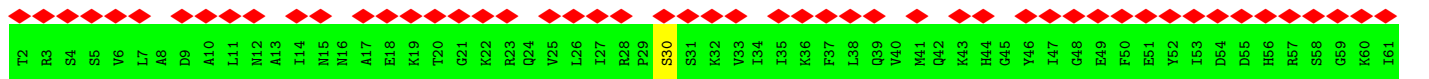
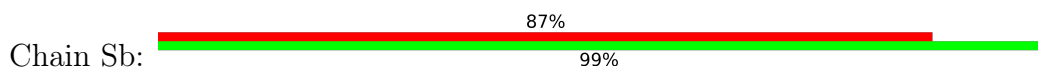




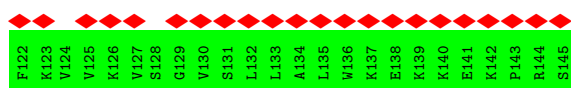
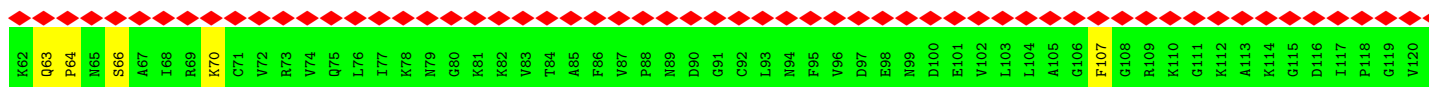
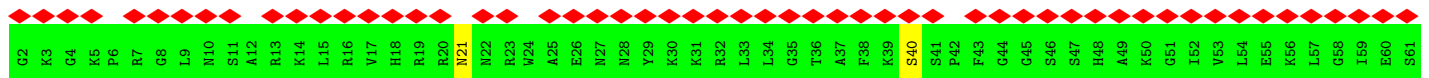
• Molecule 28: Small ribosomal subunit protein eS21A



• Molecule 29: Small ribosomal subunit protein uS8A

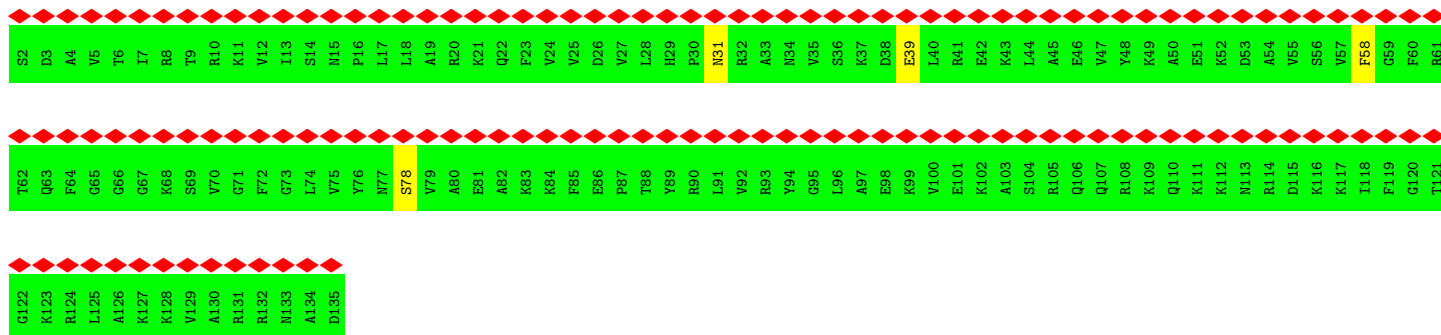


• Molecule 30: Small ribosomal subunit protein uS12A

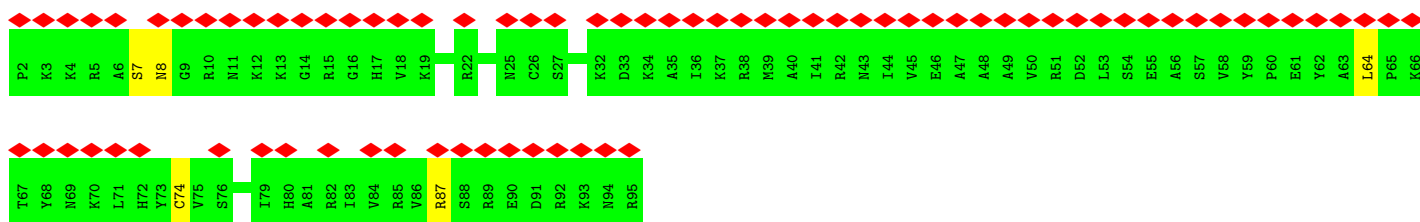
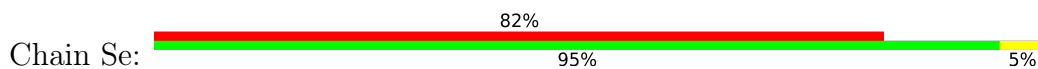


• Molecule 31: Small ribosomal subunit protein eS24A

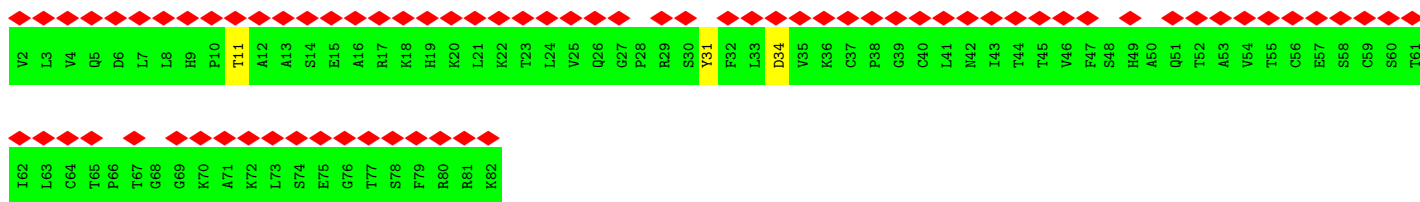




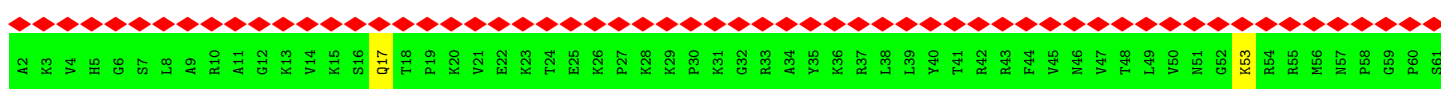
• Molecule 32: Small ribosomal subunit protein eS26A



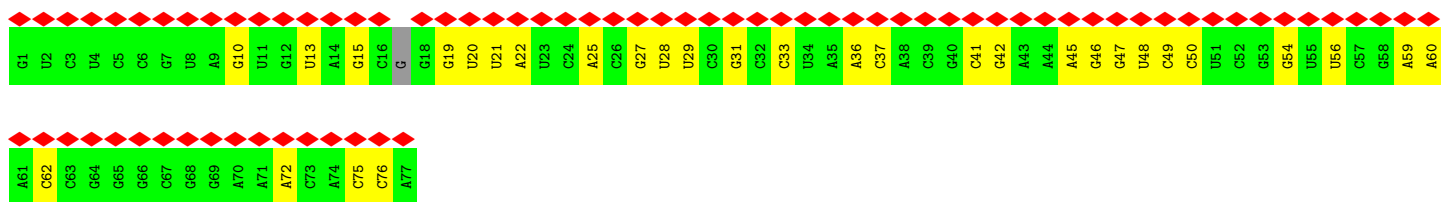
• Molecule 33: Small ribosomal subunit protein eS27A



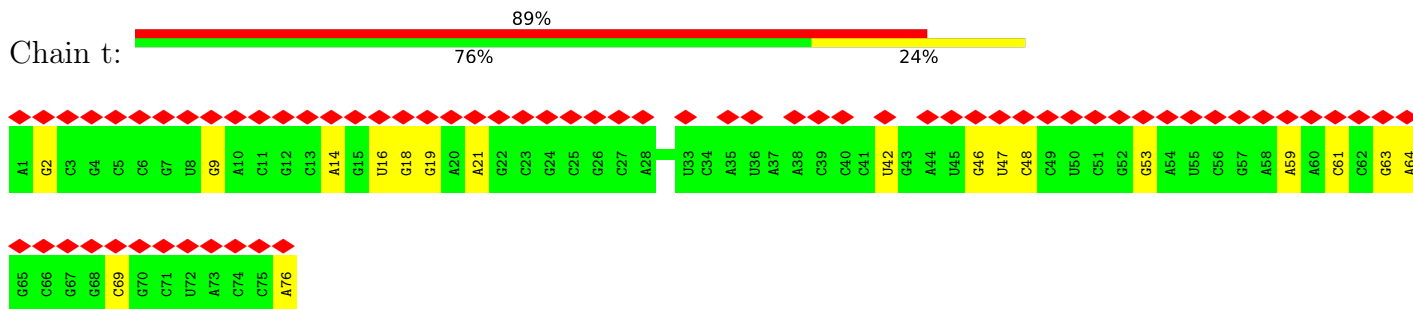
• Molecule 34: Small ribosomal subunit protein eS30A



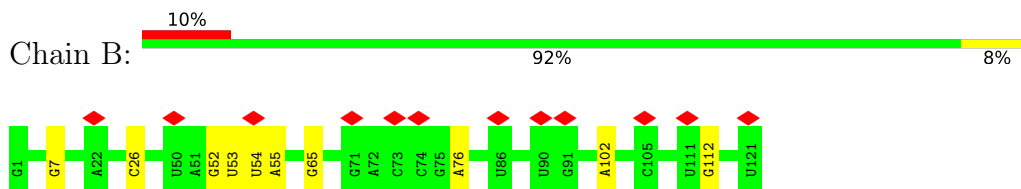
• Molecule 35: tRNA



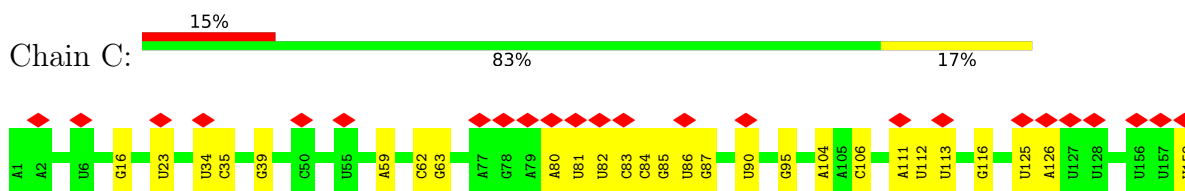
• Molecule 36: tRNA



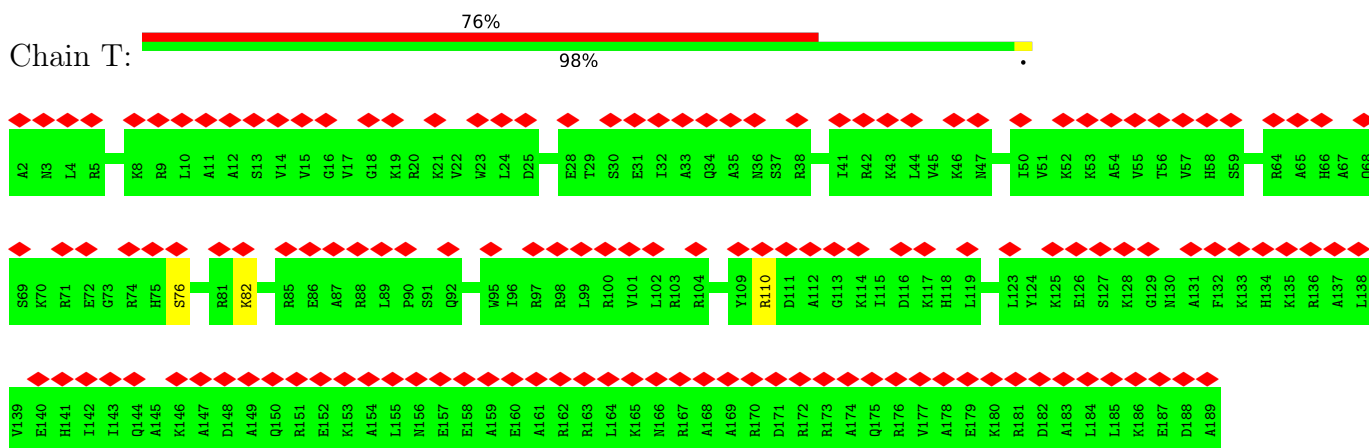
• Molecule 37: 5S rRNA



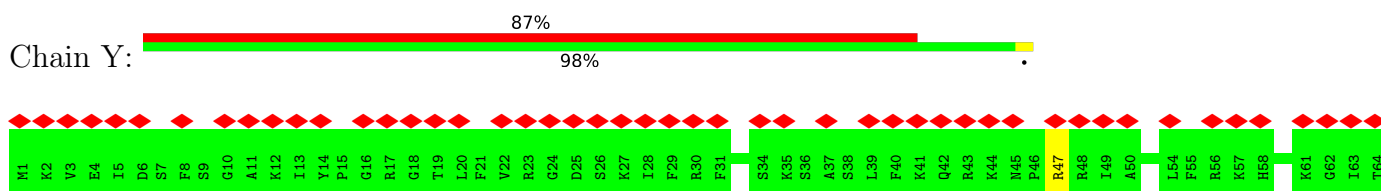
• Molecule 38: 5.8S rRNA

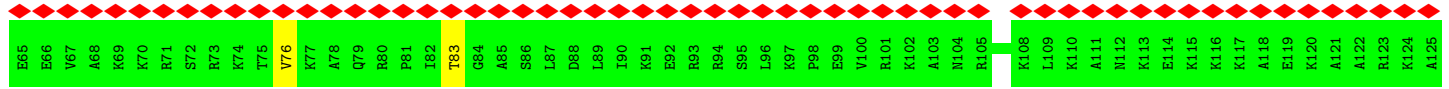


• Molecule 39: Large ribosomal subunit protein eL19A

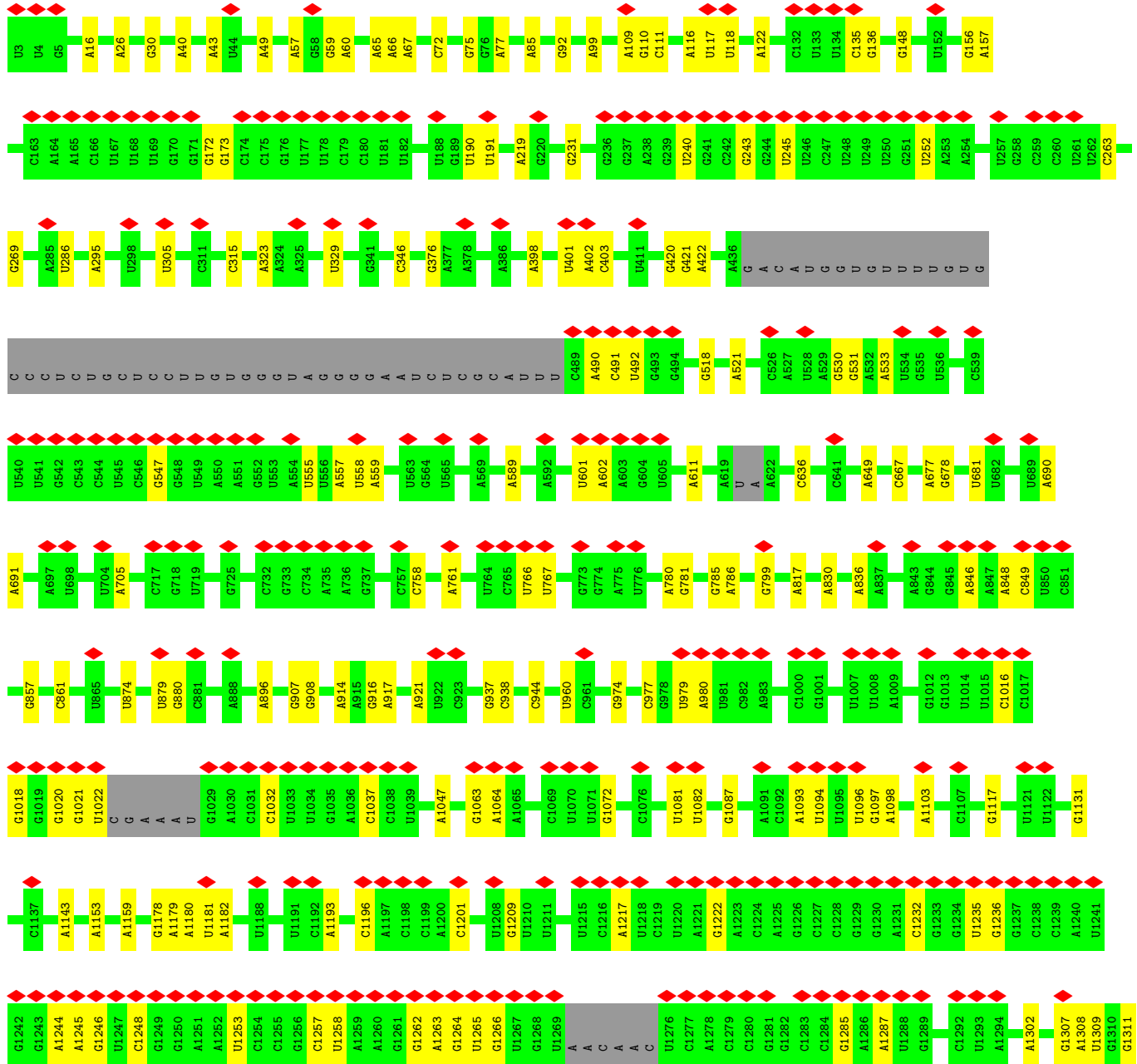
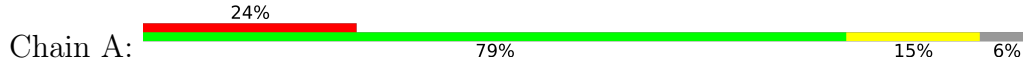


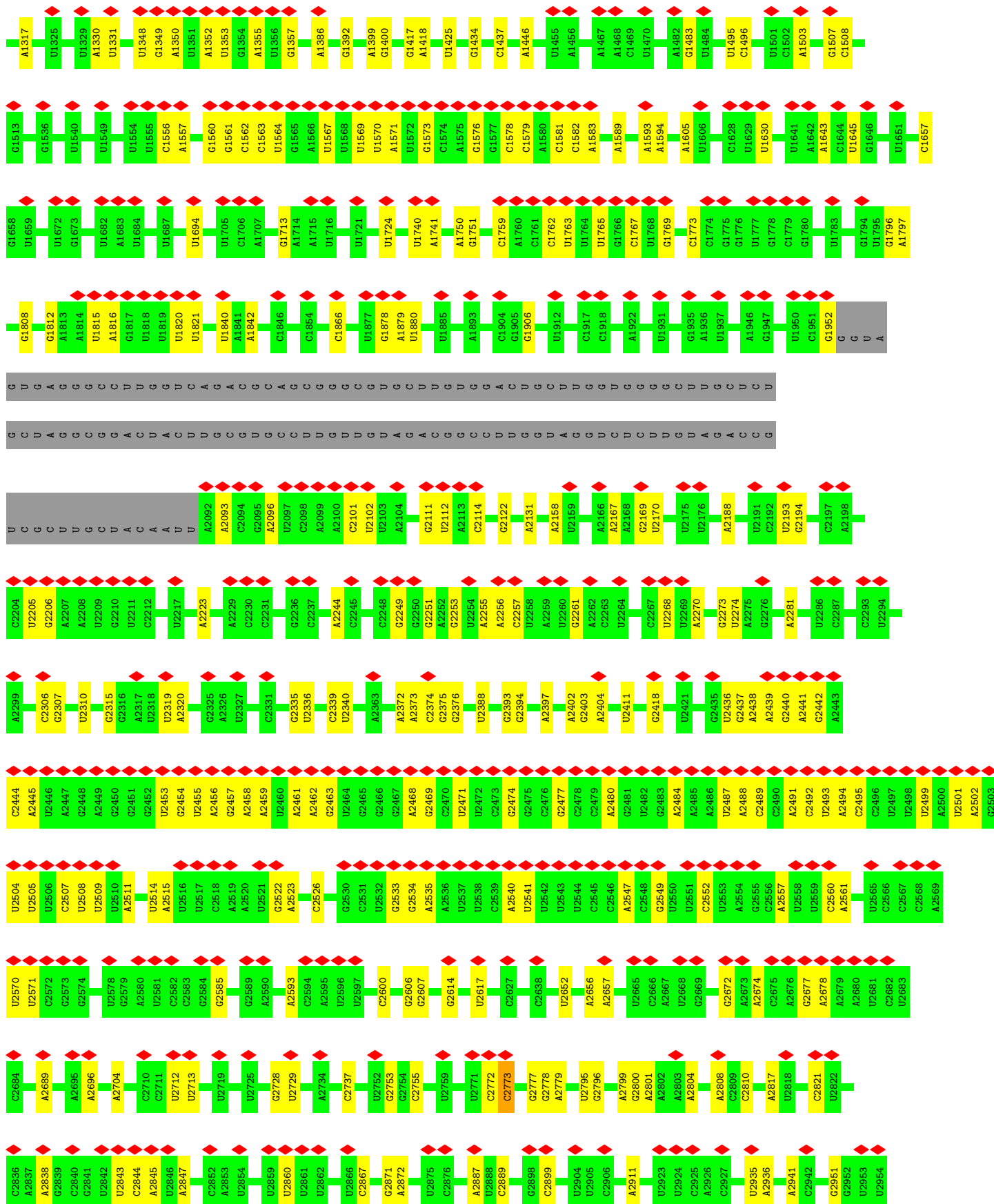
• Molecule 40: Large ribosomal subunit protein eL24A

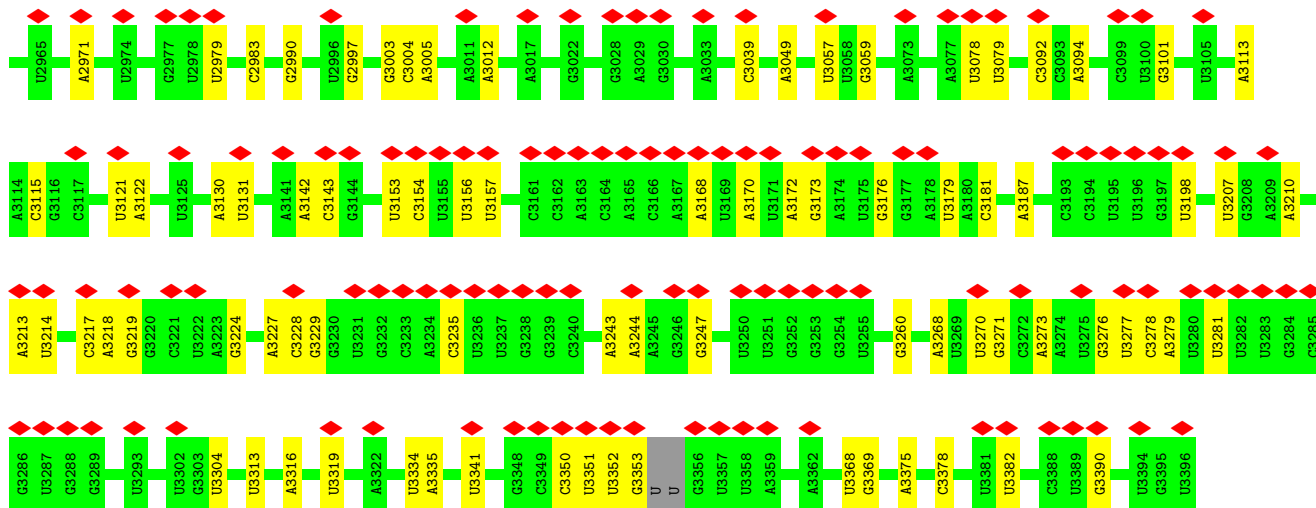




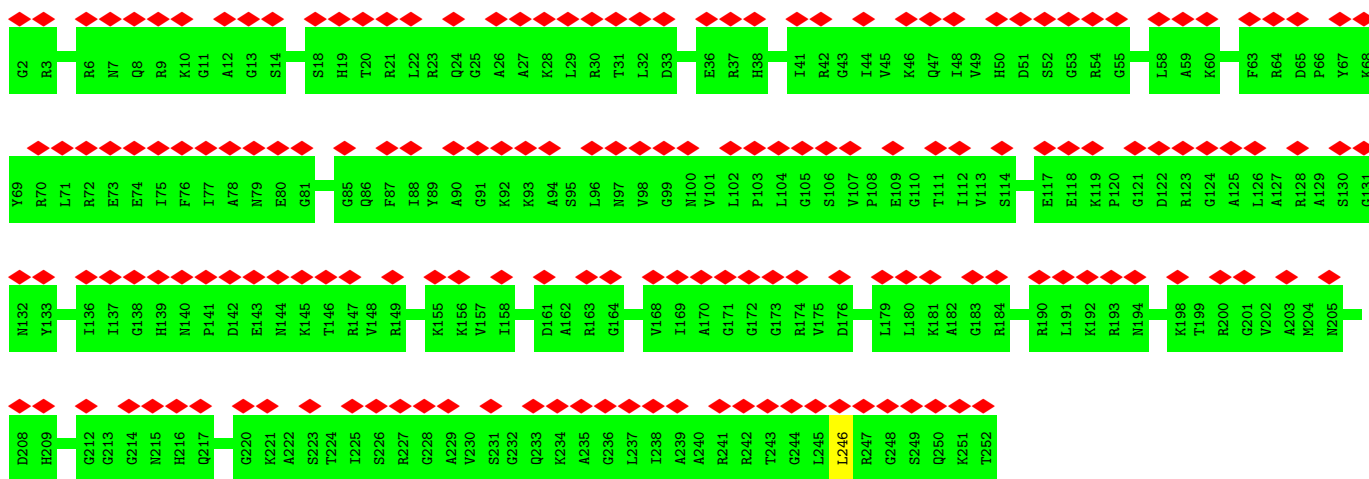
• Molecule 41: 25S rRNA



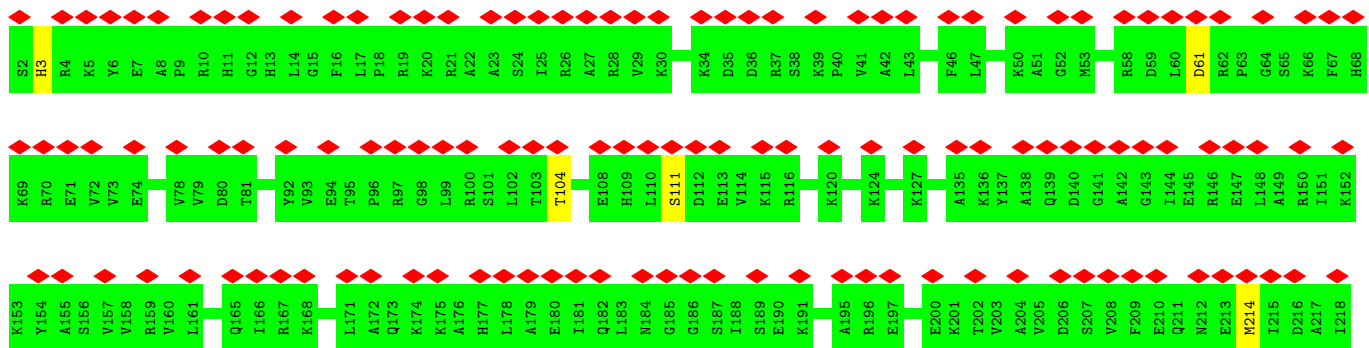




• Molecule 42: Large ribosomal subunit protein uL2A

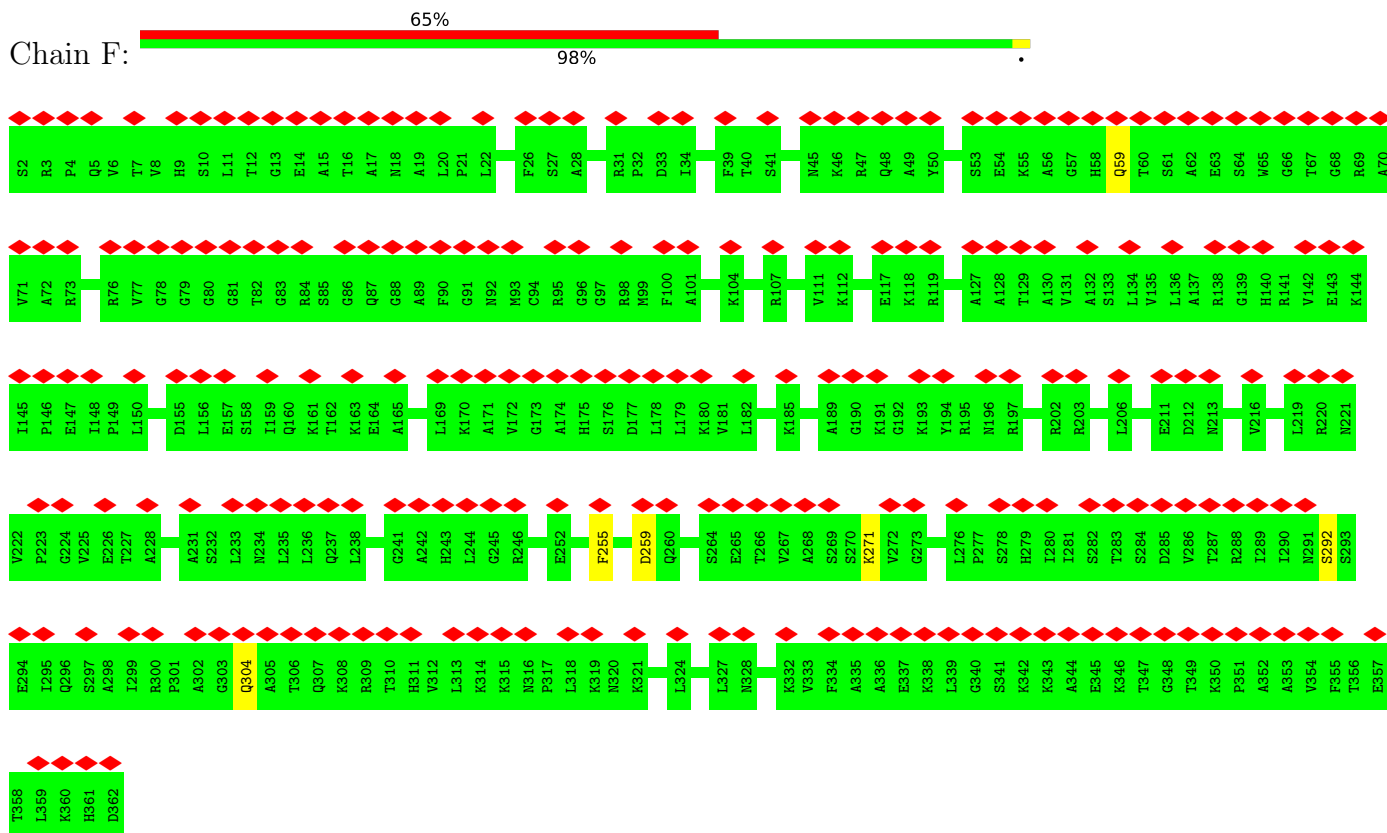


• Molecule 43: Large ribosomal subunit protein uL3

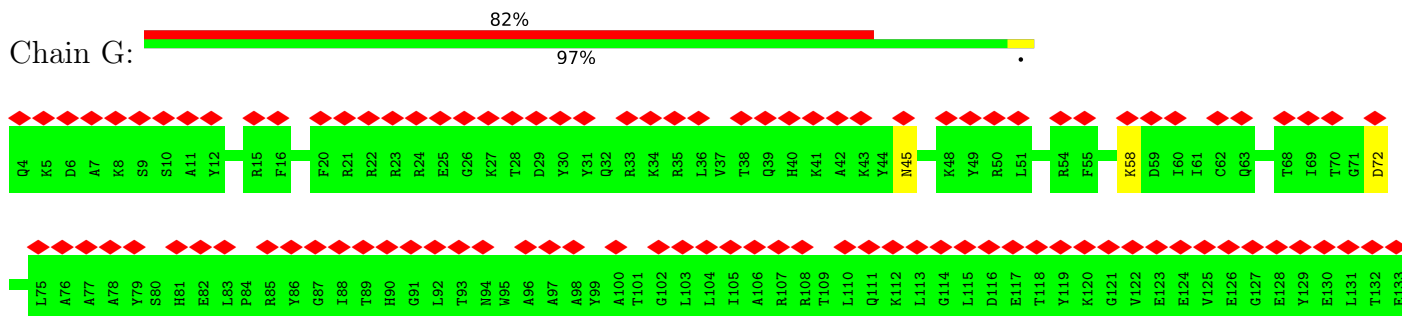


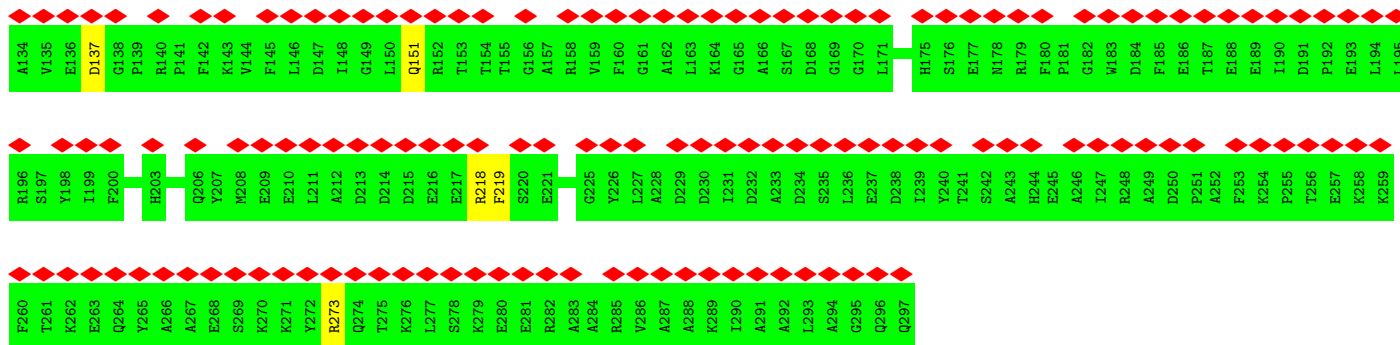


- Molecule 44: Large ribosomal subunit protein uL4A

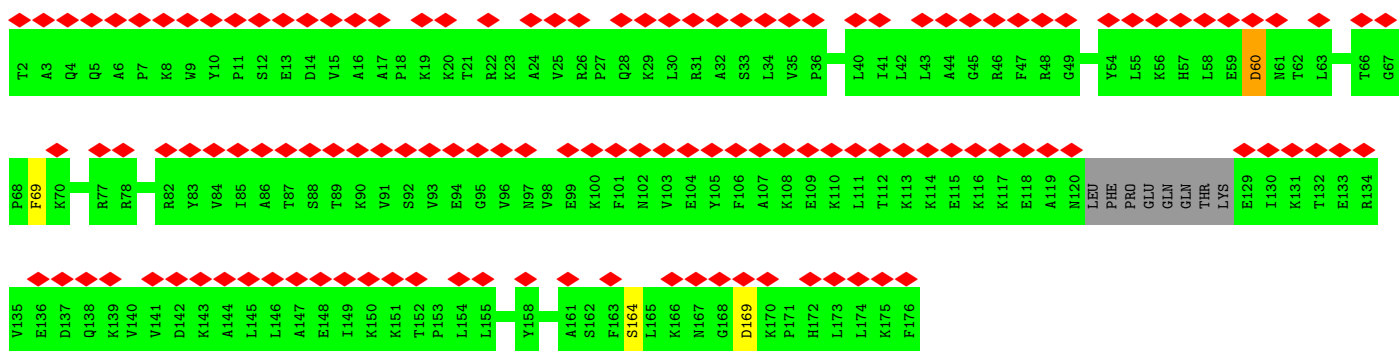
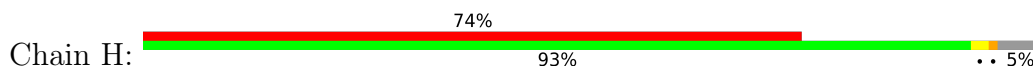


- Molecule 45: Large ribosomal subunit protein uL18

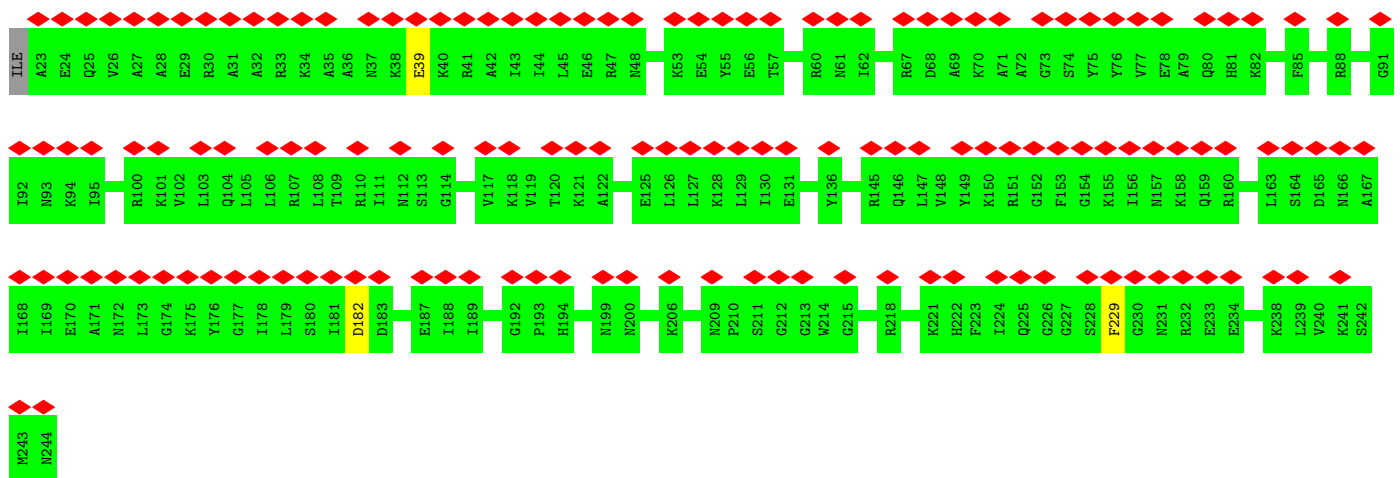




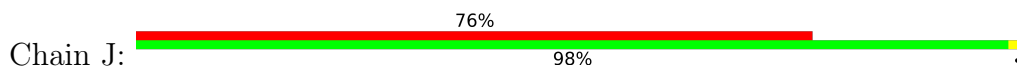
• Molecule 46: Large ribosomal subunit protein eL6B

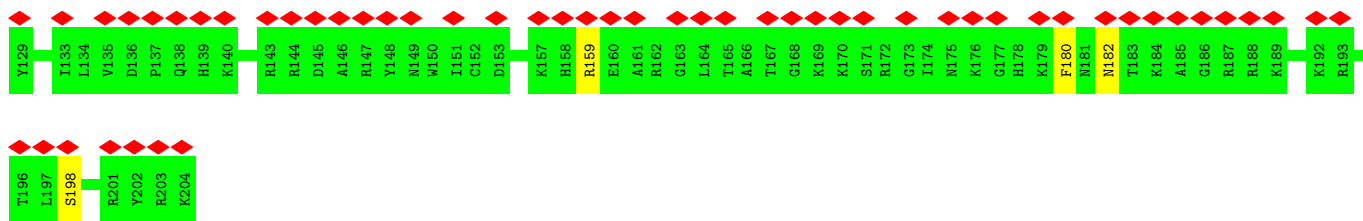


• Molecule 47: Large ribosomal subunit protein uL30A

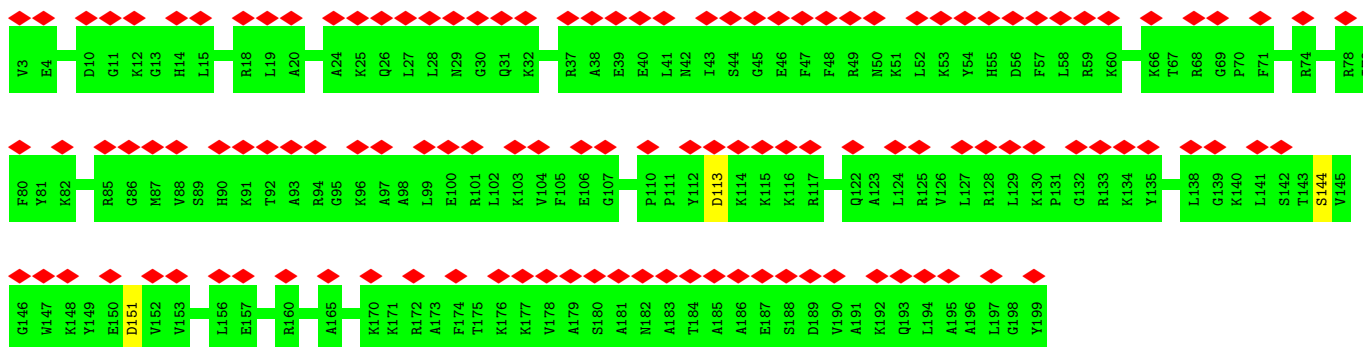


• Molecule 48: Large ribosomal subunit protein eL8A

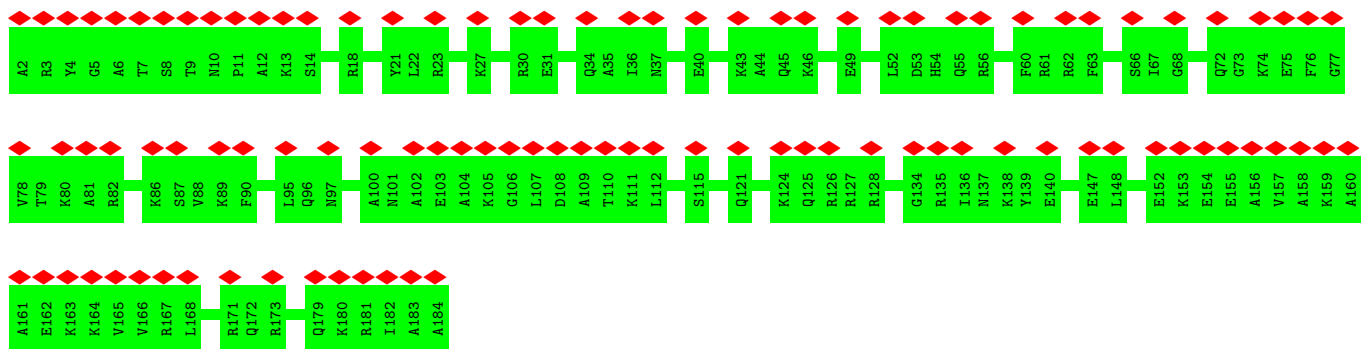




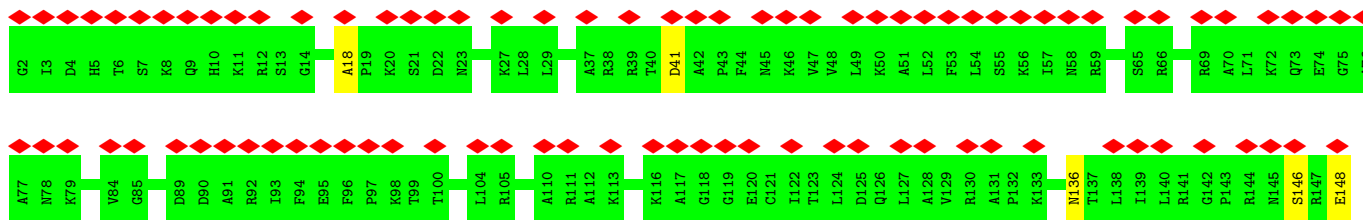
- Molecule 55: Large ribosomal subunit protein uL13A

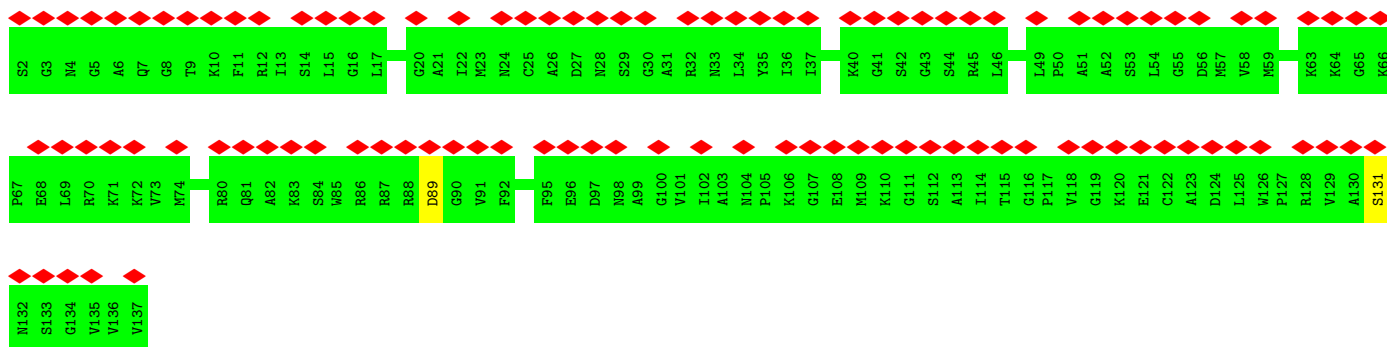


- Molecule 56: Large ribosomal subunit protein uL22A

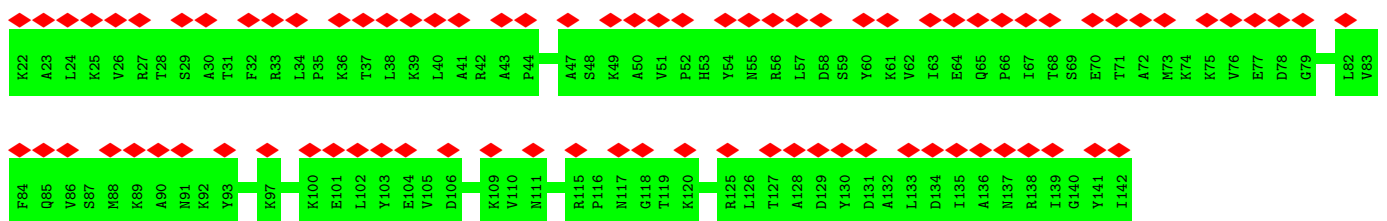


- Molecule 57: Large ribosomal subunit protein eL18A

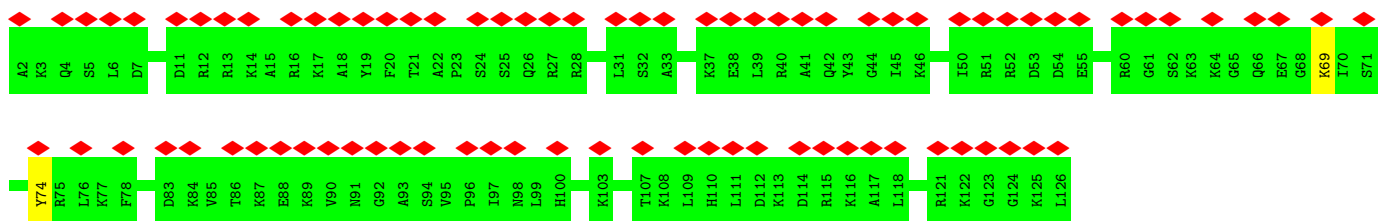




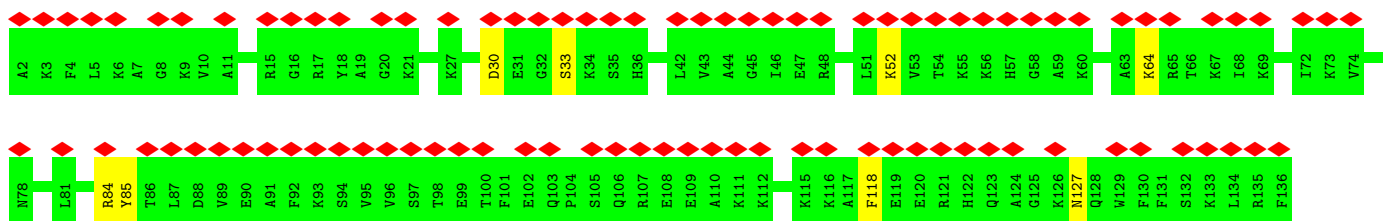
• Molecule 62: Large ribosomal subunit protein uL23



• Molecule 63: Large ribosomal subunit protein uL24A

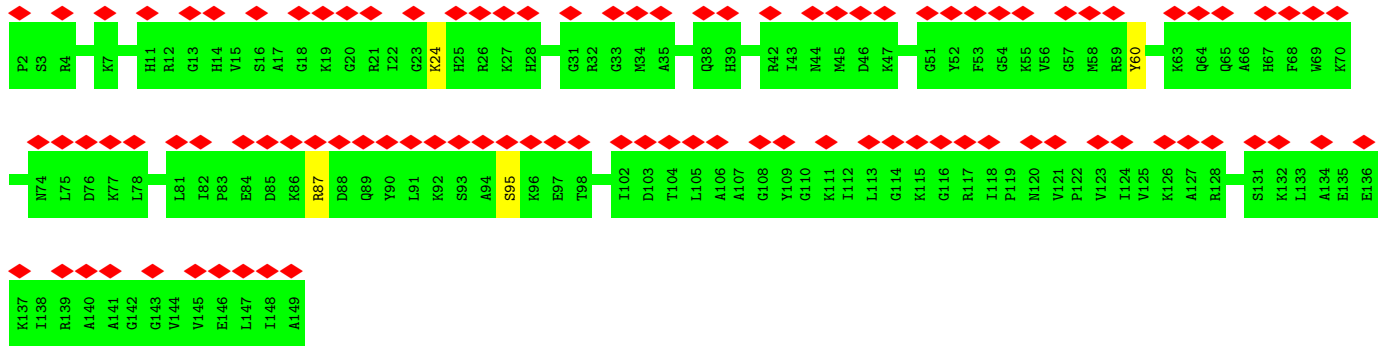


• Molecule 64: Large ribosomal subunit protein eL27A

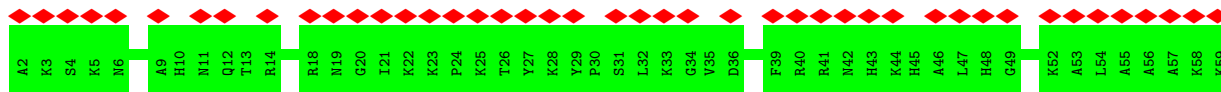
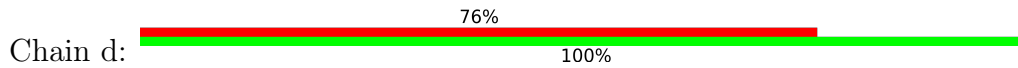


• Molecule 65: Large ribosomal subunit protein uL15

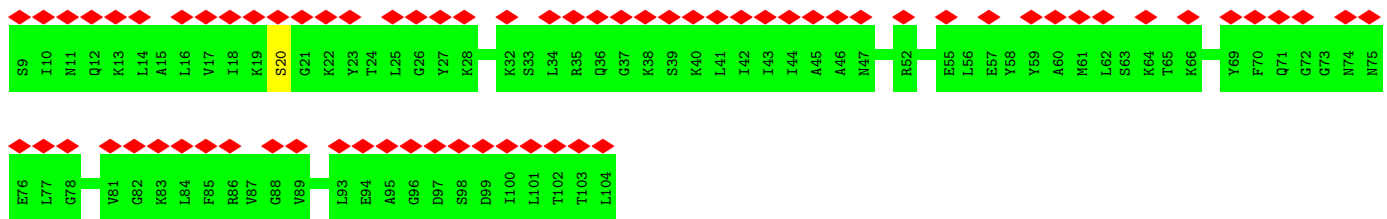
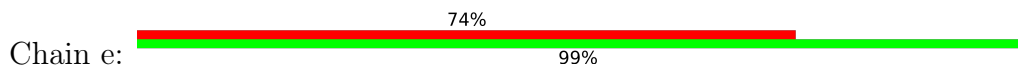




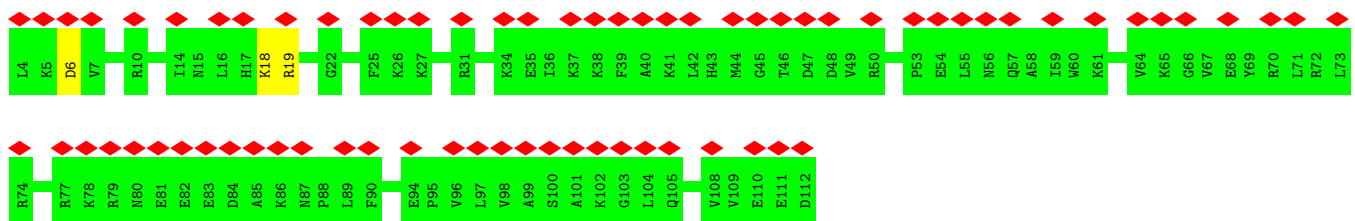
- Molecule 66: Large ribosomal subunit protein eL29



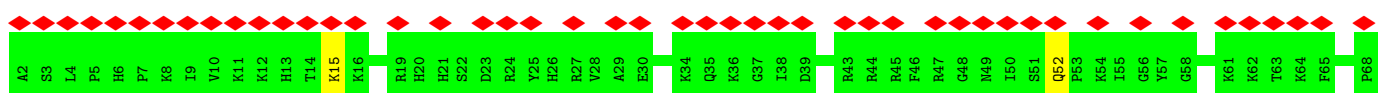
- Molecule 67: Large ribosomal subunit protein eL30

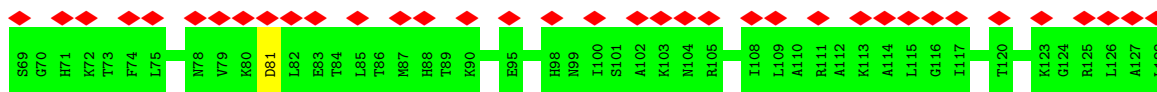


- Molecule 68: Large ribosomal subunit protein eL31A

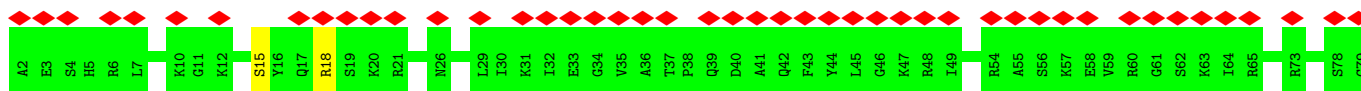


- Molecule 69: Large ribosomal subunit protein eL32

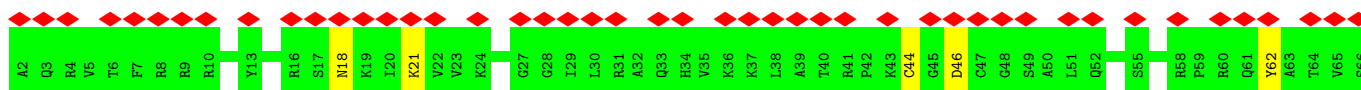
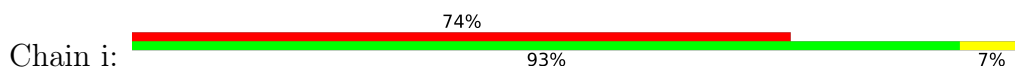




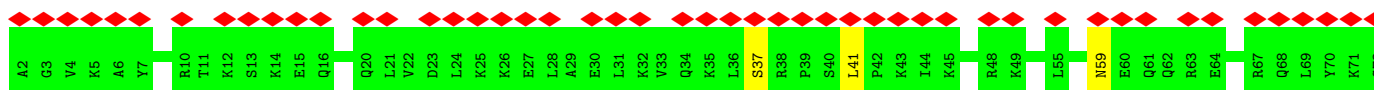
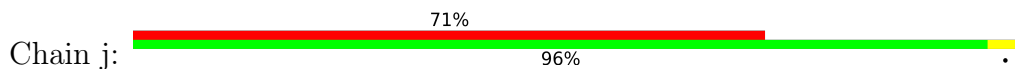
- Molecule 70: Large ribosomal subunit protein eL33A



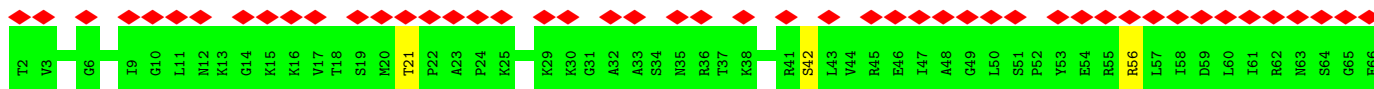
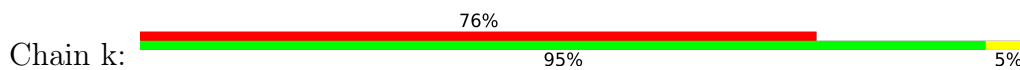
- Molecule 71: Large ribosomal subunit protein eL34A



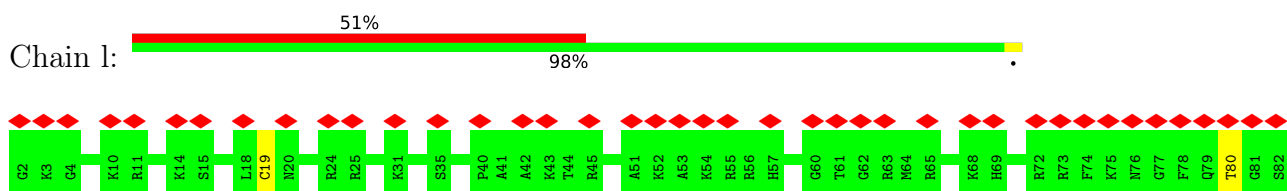
- Molecule 72: Large ribosomal subunit protein uL29A



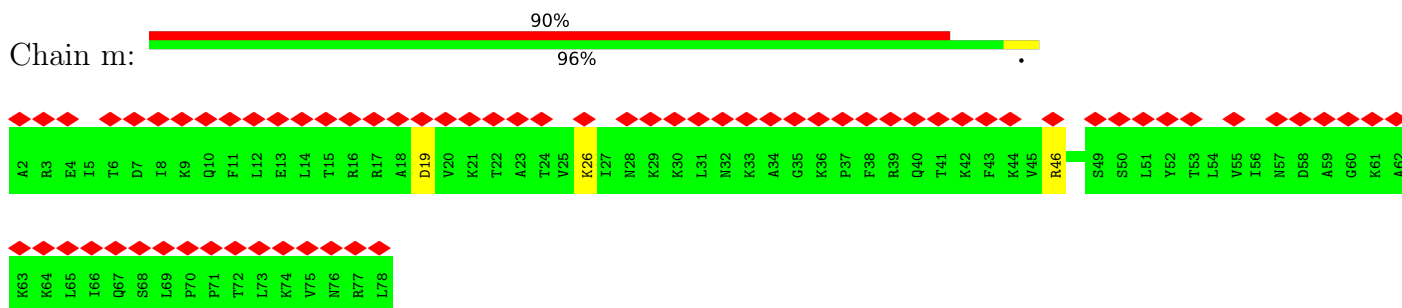
- Molecule 73: Large ribosomal subunit protein eL36A



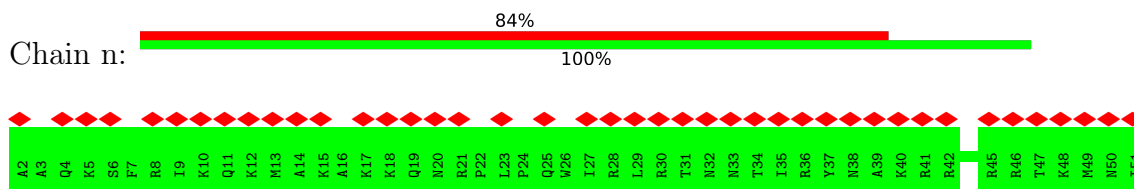
- Molecule 74: Large ribosomal subunit protein eL37A



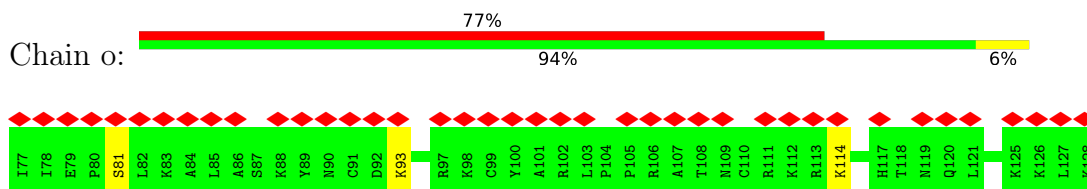
- Molecule 75: Large ribosomal subunit protein eL38



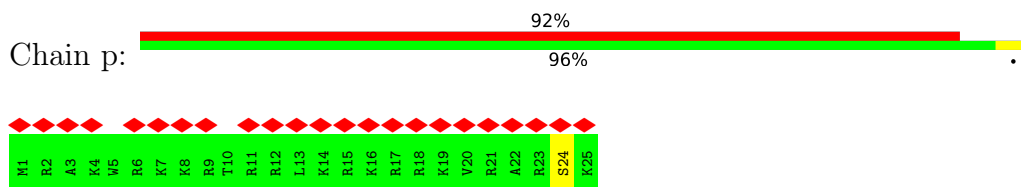
- Molecule 76: Large ribosomal subunit protein eL39



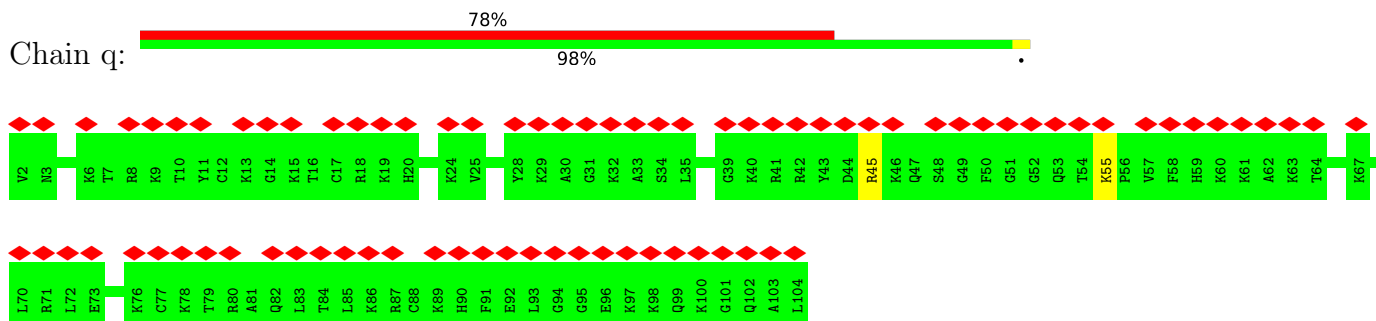
- Molecule 77: Large ribosomal subunit protein eL40A



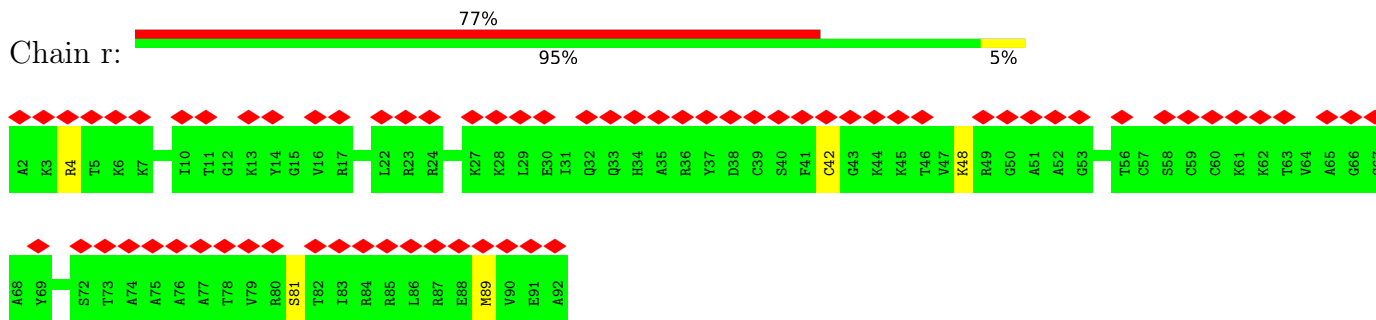
- Molecule 78: Large ribosomal subunit protein eL41A



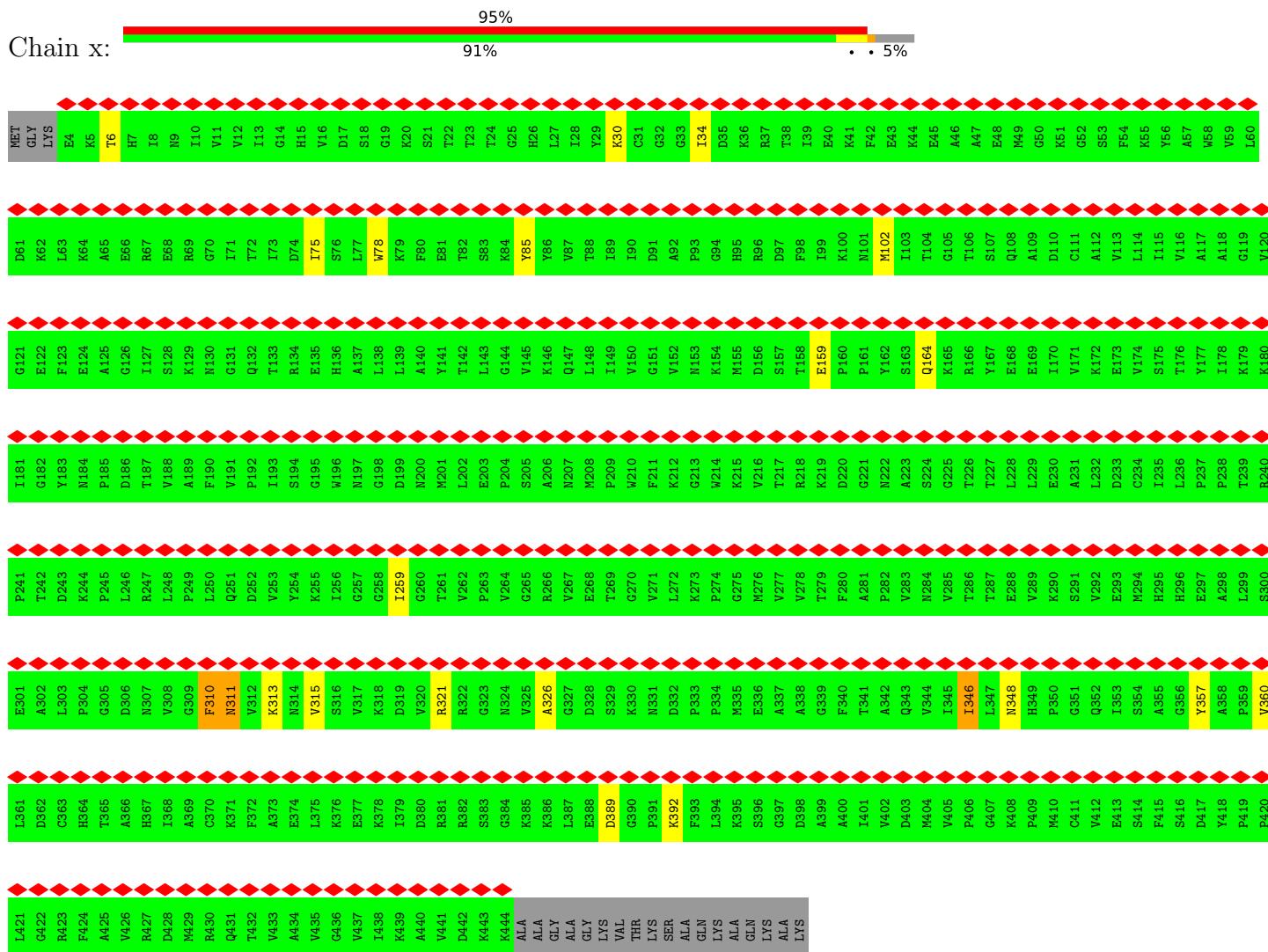
- Molecule 79: Large ribosomal subunit protein eL42A



• Molecule 80: Large ribosomal subunit protein eL43A



• Molecule 81: Elongation factor 1-alpha 1



MET	S1	D2	S3	Q4	Q5	S6	I7	K8	V9	L10	E11	E12	L13	F14	Q15	K16	V19	A20	T21	A22	D23	N24	R25	H26	E27	I28	A29	S30	E31	V32	A33	S34	F35	L36	N37	G38	N39	I40	I41	E42	H43	D44	V45	P46	E47	H48	F49	F50	G51	E52	L53	A54	K55	G56	I57	K58	D59	K60		
K61	T62	A63	A66	Q68	M67	A69	P130	V70	A71	H72	I73	E11	A74	N75	Q76	S77	N78	L79	S90	P81	S82	V83	E84	P85	S86	I87	V88	Q89	L90	V91	P92	A93	I94	C95	T96	A98	G99	N100	K101	D102	K103	E104	I105	Q106	S107	V108	A109	S110	E111	T112	L113	I114	S115	V116	N118	A119	V120	N121		
P122	V123	A124	I125	K126	A127	L128	L129	P130	H131	L132	T133	N134	A135	T136	V137	E138	T139	N140	K141	V142	Q143	E144	K145	I146	A147	V148	Q149	A150	A151	I152	V153	A154	M155	V156	D157	A158	G159	K160	Q161	Q162	E163	A164	L165	R166	M167	P168	E169	L170	I171	P172	V173	L174	S175	E176	T177	M178	V179	D180	T181	
K182	K183	E184	V185	K186	A187	A188	A189	T190	A191	A192	M193	T194	K195	A196	T197	E198	T199	V200	D201	S202	K203	D204	L205	E206	R207	F208	I209	P210	S211	L212	I213	Q214	C215	I216	A217	D218	G219	P220	E221	E224	T225	V226	K228	L228	P229	G230	A231	T232	T233	F234	V235	A236	E237	V238	T239	P240	A241	T242	E504	
L243	S244	I245	M246	L249	L250	R251	R252	G253	L254	M255	E256	R257	E258	T259	G260	I261	D262	K263	K264	S265	A266	V267	D270	M271	M272	C273	K274	L275	V276	E277	D278	P279	Q280	V281	I282	A283	P284	F285	L286	G287	K288	L289	P291	G292	L293	K294	S295	R296	M296	F297	A298	T299	I300	A301	D302	P303	E304			
A305	R306	E307	R311	A312	L313	K314	T315	L316	R317	R318	V319	G320	N321	A322	V322	G323	E324	D325	D326	A327	I328	P329	E330	V331	S332	H333	A334	G335	D336	V337	S338	T339	T340	L341	Q342	V343	V344	N345	E346	L347	L348	K349	K349	D350	E351	T352	V353	A354	P355	K356	F357	K358	I359	V360	A361	E362	Y363	I364	A365	A366
I367	G368	A369	D370	L371	L372	D373	E374	R375	L376	L377	D378	Q379	Q380	A381	W382	F383	T384	H385	I386	T387	P388	Y389	L392	F393	L394	H395	E396	K397	K398	A399	K400	D401	L402	L403	D404	E405	F406	R407	K408	R409	A410	V411	D412	N413	I414	P415	V416	G417	N418	F420	D421	D422	E423	E424	D425	E426	G427			
E428	D429	L430	C431	N432	C433	E434	F435	S436	L437	A438	Y439	G440	A441	K442	L443	L444	L445	N446	K447	T448	Q449	L450	R451	L452	K453	R454	A455	R456	R457	Y458	G459	L460	C461	G462	P463	N464	G465	C466	G467	K468	S469	T470	L471	H472	R473	A474	L475	M476	N477	G478	Q479	V480	D481	G482	F483	P484	T485	Q486	E487	
E488	C489	R490	T491	Y493	V494	E495	H496	L498	D499	G500	T501	H502	S503	D504	T505	S506	V507	L508	D509	F510	V511	F512	E513	S514	G515	V516	T518	K519	E520	A521	I522	K523	D524	K525	L526	I527	E528	F529	G530	F531	T532	D533	E534	M535	I536	A537	N538	P539	I540	S541	A542	L543	S544	G545	G546	W547				
K548	M549	R550	L551	A552	L553	A554	R555	A556	L558	R559	N560	A561	D562	I563	L564	L565	L566	D567	E568	P569	K630	C631	M632	A633	A634	R635	A636	Y637	E638	E639	L640	S641	V642	N643	T644	D644	L645	E646	F647	K648	G589	I590	T591	S592	I593	T594	I595	S596	H597	D598	S599	V600	F601	L602	D603	M604	V605	C606	G607	
Y608	I609	I610	N611	Y612	E613	G614	L615	R616	L617	R618	K619	Y620	K621	G622	M623	F624	T625	E626	F627	V628	R629	K630	C631	P632	A633	A634	R635	A636	Y637	E638	E639	L640	S641	V642	N643	T644	D644	L645	E646	F647	K648	G589	I590	T591	S592	I593	T594	I595	S596	H597	D598	S599	V600	F601	L602	D603	M604	V605	C606	G607
V668	T669	M670	M671	E672	F673	G674	V675	P676	G677	T678	S679	K680	P681	G682	I683	T684	D685	I686	M687	F688	Q689	C690	S694	R695	I696	A697	V698	I699	G700	P701	H702	G703	S641	V642	N643	T644	D644	L645	E646	F647	K648	G589	I590	T591	S592	I593	T594	I595	S596	H597	D598	S599	V600	F601	L602	D603	M604	V605	C606	G607
C730	R731	I732	A733	Y734	I735	K736	Q737	H738	A739	F740	A741	H742	I743	E744	S745	H746	L747	D748	K749	T750	F751	S752	E753	Y754	I755	Q756	Y757	R758	F759	Q760	T761	G762	E763	D764	G765	E766	T767	M768	T769	L769	I770	A771	N772	V773	L774	G775	N776	E777	N778	D779	A780	E781	A782	M783	N784	K785	I786	F787	K788	I789
E790	Q791	I792	P793	R794	R795	I796	A797	G798	I799	H800	S801	R802	R803	K804	F805	K806	M807	T808	Y809	E810	Y811	E812	C813	S814	F815	L816	L817	G818	E819	M820	I821	G822	M823	K824	S825	E826	R827	W828	V829	P830	M831	M832	S833	V834	D835	M836	A837	W838	I839	P840	R841	G842	E843	L844	V845	E846	S847	H848	S849	

K850	M851	V852	A853	E854	V855	D856	M857	K858	E859	A860	L861	S863	G864	Q865	F866	R867	P868	L869	T870	R871	K872	E873	I874	E875	E876	H877	C878	S879	M880	L881	G882	L883	D884	P885	E886	I887	V888	S889	H890	S891	R892	I893	R894	G895	L896	S897	G898	G899	Q900	K901	V902	K903	L904	V905	L906	G909	T910		
W911	Q912	R913	P914	H915	L916	I917	V918	L919	D920	E921	P922	T923	N924	Y925	L926	D927	R928	D929	S930	L931	G932	A933	L934	S935	K936	A937	L938	K939	E940	F941	E942	G943	G944	V945	I946	I947	I948	T949	H950	S951	A952	E953	F954	T955	K956	M957	L958	T959	E960	E961	V962	W963	A964	V965	K966	D967	G968	R969	M970
T971	P972	S973	G974	H975	N976	W977	VAL	SER	GLY	GLN	GLY	ALA	GLY	PRO	ARG	ILE	GLU	LYS	LYS	GLU	ASP	GLU	ASP	ASP	PHE	LYS	ASP	ASP	ALA	MET	GLY	ASN	LYS	ILE	ALA	GLY	GLY	LYS	LYS	LYS	LYS	LEU	SER	SER	ALA	LEU	ARG	LYS	LYS	LYS	GLU	ARG	MET	LYS	LYS	LYS	LYS		
GLU	LEU	GLY	ASP	ALA	TYR	VAL	SER	SER	ASP	GLU	GLU	PHE																																															

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	27708	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.588	Depositor
Minimum map value	-0.320	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.033	Depositor
Recommended contour level	0.219	Depositor
Map size (\AA)	528.0, 528.0, 528.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.32, 1.32, 1.32	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	2	0.13	0/42211	0.68	1/65773 (0.0%)
2	SA	0.26	0/1754	0.57	0/2361
3	SB	0.26	0/1625	0.54	0/2197
4	SC	0.25	0/769	0.49	1/1039 (0.1%)
5	SD	0.24	0/883	0.54	0/1199
6	SE	0.25	0/936	0.56	0/1259
7	SF	0.28	0/1125	0.57	0/1510
8	SG	0.25	0/971	0.62	1/1303 (0.1%)
9	SH	0.25	0/1207	0.58	1/1623 (0.1%)
10	SI	0.24	0/1130	0.51	0/1517
11	SJ	0.26	0/807	0.62	0/1091
12	SK	0.27	0/661	0.61	0/888
13	SL	0.23	0/493	0.60	0/663
14	SM	0.26	0/452	0.57	0/600
15	SN	0.26	0/567	0.57	0/764
16	SO	0.26	0/2436	0.59	0/3318
17	SP	0.24	0/1644	0.50	0/2249
18	SQ	0.25	0/1823	0.55	0/2447
19	SR	0.24	0/1656	0.50	0/2251
20	SS	0.25	0/2097	0.54	0/2823
21	ST	0.25	0/1839	0.54	0/2460
22	SU	0.27	0/1498	0.55	1/2019 (0.0%)
23	SV	0.27	0/1501	0.56	0/2006
24	SW	0.24	0/1504	0.52	0/2016
25	SX	0.24	0/1168	0.53	0/1575
26	SY	0.24	0/1215	0.49	0/1638
27	SZ	0.24	0/901	0.61	0/1217
28	Sa	0.27	0/682	0.61	0/921
29	Sb	0.24	0/1038	0.48	0/1395
30	Sc	0.26	0/1139	0.53	0/1518
31	Sd	0.26	0/1087	0.55	0/1449
32	Se	0.23	0/761	0.61	1/1016 (0.1%)
33	Sf	0.23	0/620	0.49	0/838
34	Sg	0.23	0/480	0.51	0/639

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	s	0.18	0/1805	0.72	0/2809
36	t	0.11	0/1796	0.66	0/2799
37	B	0.11	0/2883	0.65	0/4491
38	C	0.11	0/3746	0.66	0/5832
39	T	0.24	0/1532	0.54	0/2043
40	Y	0.25	0/850	0.47	0/1152
41	A	0.15	0/76303	0.73	2/118956 (0.0%)
42	D	0.24	0/1933	0.54	0/2598
43	E	0.24	0/3146	0.51	0/4228
44	F	0.24	0/2800	0.49	0/3790
45	G	0.25	0/2400	0.51	0/3239
46	H	0.26	0/1329	0.54	1/1794 (0.1%)
47	I	0.26	0/1821	0.48	0/2451
48	J	0.26	0/1836	0.48	0/2481
49	K	0.25	0/1529	0.52	1/2060 (0.0%)
50	L	0.25	0/1801	0.53	0/2416
51	M	0.25	0/1367	0.56	0/1834
52	N	0.25	0/1568	0.56	0/2106
53	O	0.24	0/1068	0.49	0/1438
54	P	0.23	0/1757	0.56	0/2354
55	Q	0.26	0/1585	0.47	0/2128
56	R	0.26	0/1439	0.53	0/1938
57	S	0.24	0/1465	0.53	0/1965
58	U	0.24	0/1473	0.51	0/1980
59	V	0.25	0/1296	0.54	1/1739 (0.1%)
60	W	0.26	0/812	0.52	0/1099
61	X	0.26	0/1018	0.53	0/1369
62	Z	0.24	0/979	0.51	0/1321
63	a	0.24	0/995	0.52	0/1329
64	b	0.26	0/1106	0.50	0/1485
65	c	0.23	0/1200	0.50	0/1607
66	d	0.24	0/473	0.46	0/629
67	e	0.25	0/745	0.48	0/1001
68	f	0.24	0/890	0.52	0/1196
69	g	0.23	0/1034	0.49	0/1385
70	h	0.27	0/868	0.54	0/1168
71	i	0.24	0/890	0.55	0/1189
72	j	0.26	0/978	0.51	0/1301
73	k	0.24	0/772	0.53	0/1026
74	l	0.32	0/660	0.59	0/875
75	m	0.26	0/618	0.56	0/826
76	n	0.23	0/443	0.56	0/588
77	o	0.25	0/416	0.57	0/553

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
78	p	0.24	0/230	0.72	0/296
79	q	0.25	0/836	0.50	0/1104
80	r	0.24	0/701	0.55	0/934
81	x	0.34	0/3449	0.54	1/4667 (0.0%)
82	v	0.30	0/7611	0.56	2/10322 (0.0%)
All	All	0.20	0/228932	0.65	14/335473 (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
81	x	0	1

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	SG	73	LEU	CA-CB-CG	6.00	129.09	115.30
59	V	106	LEU	CA-CB-CG	5.92	128.91	115.30
32	Se	64	LEU	CA-CB-CG	5.75	128.52	115.30
82	v	167	MET	CA-CB-CG	5.69	122.97	113.30
9	SH	82	PRO	CA-N-CD	-5.64	103.61	111.50
81	x	311	ASN	C-N-CA	-5.62	107.66	121.70
22	SU	63	PRO	CA-N-CD	-5.58	103.68	111.50
41	A	2773	C	N1-C2-O2	5.56	122.23	118.90
46	H	60	ASP	CB-CG-OD1	5.45	123.21	118.30
4	SC	80	LEU	CA-CB-CG	5.37	127.64	115.30
41	A	1311	G	C5-C6-O6	5.25	131.75	128.60
49	K	120	ASP	CB-CG-OD1	5.09	122.88	118.30
82	v	495	GLU	CA-CB-CG	5.03	124.47	113.40
1	2	224	C	P-O3'-C3'	5.02	125.72	119.70

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
81	x	159	GLU	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 [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	SA	220/222 (99%)	208 (94%)	11 (5%)	1 (0%)	25	59
3	SB	204/206 (99%)	186 (91%)	13 (6%)	5 (2%)	4	29
4	SC	90/92 (98%)	76 (84%)	12 (13%)	2 (2%)	5	32
5	SD	119/121 (98%)	99 (83%)	20 (17%)	0	100	100
6	SE	115/117 (98%)	104 (90%)	11 (10%)	0	100	100
7	SF	139/141 (99%)	130 (94%)	7 (5%)	2 (1%)	9	40
8	SG	119/121 (98%)	108 (91%)	11 (9%)	0	100	100
9	SH	143/145 (99%)	137 (96%)	6 (4%)	0	100	100
10	SI	141/143 (99%)	132 (94%)	8 (6%)	1 (1%)	19	53
11	SJ	98/100 (98%)	87 (89%)	11 (11%)	0	100	100
12	SK	80/108 (74%)	64 (80%)	14 (18%)	2 (2%)	4	29
13	SL	61/63 (97%)	58 (95%)	3 (5%)	0	100	100
14	SM	51/53 (96%)	47 (92%)	4 (8%)	0	100	100
15	SN	71/73 (97%)	49 (69%)	21 (30%)	1 (1%)	9	40
16	SO	310/312 (99%)	285 (92%)	24 (8%)	1 (0%)	37	67
17	SP	204/206 (99%)	191 (94%)	12 (6%)	1 (0%)	25	59
18	SQ	222/232 (96%)	203 (91%)	19 (9%)	0	100	100
19	SR	214/216 (99%)	204 (95%)	10 (5%)	0	100	100
20	SS	256/258 (99%)	240 (94%)	16 (6%)	0	100	100
21	ST	226/228 (99%)	220 (97%)	5 (2%)	1 (0%)	30	63
22	SU	182/184 (99%)	170 (93%)	11 (6%)	1 (0%)	25	59

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
23	SV	183/200 (92%)	172 (94%)	11 (6%)	0	100	100
24	SW	182/184 (99%)	176 (97%)	6 (3%)	0	100	100
25	SX	140/142 (99%)	132 (94%)	7 (5%)	1 (1%)	19	53
26	SY	148/150 (99%)	142 (96%)	6 (4%)	0	100	100
27	SZ	125/127 (98%)	113 (90%)	12 (10%)	0	100	100
28	Sa	85/87 (98%)	77 (91%)	8 (9%)	0	100	100
29	Sb	127/129 (98%)	119 (94%)	7 (6%)	1 (1%)	16	51
30	Sc	142/144 (99%)	136 (96%)	4 (3%)	2 (1%)	9	40
31	Sd	132/134 (98%)	126 (96%)	6 (4%)	0	100	100
32	Se	92/94 (98%)	79 (86%)	13 (14%)	0	100	100
33	Sf	79/81 (98%)	76 (96%)	3 (4%)	0	100	100
34	Sg	58/60 (97%)	53 (91%)	5 (9%)	0	100	100
39	T	186/188 (99%)	184 (99%)	2 (1%)	0	100	100
40	Y	124/126 (98%)	111 (90%)	11 (9%)	2 (2%)	8	38
42	D	249/251 (99%)	239 (96%)	10 (4%)	0	100	100
43	E	384/386 (100%)	370 (96%)	14 (4%)	0	100	100
44	F	359/361 (99%)	348 (97%)	11 (3%)	0	100	100
45	G	292/294 (99%)	279 (96%)	13 (4%)	0	100	100
46	H	163/175 (93%)	151 (93%)	12 (7%)	0	100	100
47	I	220/223 (99%)	216 (98%)	4 (2%)	0	100	100
48	J	231/233 (99%)	217 (94%)	13 (6%)	1 (0%)	30	63
49	K	189/191 (99%)	181 (96%)	8 (4%)	0	100	100
50	L	216/218 (99%)	207 (96%)	9 (4%)	0	100	100
51	M	167/169 (99%)	157 (94%)	10 (6%)	0	100	100
52	N	191/193 (99%)	178 (93%)	11 (6%)	2 (1%)	13	46
53	O	134/136 (98%)	128 (96%)	6 (4%)	0	100	100
54	P	201/203 (99%)	196 (98%)	5 (2%)	0	100	100
55	Q	195/197 (99%)	189 (97%)	6 (3%)	0	100	100
56	R	181/183 (99%)	172 (95%)	9 (5%)	0	100	100
57	S	183/185 (99%)	175 (96%)	7 (4%)	1 (0%)	25	59
58	U	169/171 (99%)	161 (95%)	8 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
59	V	157/159 (99%)	149 (95%)	8 (5%)	0	100	100
60	W	98/100 (98%)	89 (91%)	9 (9%)	0	100	100
61	X	134/136 (98%)	133 (99%)	1 (1%)	0	100	100
62	Z	119/121 (98%)	113 (95%)	6 (5%)	0	100	100
63	a	123/125 (98%)	120 (98%)	3 (2%)	0	100	100
64	b	133/135 (98%)	127 (96%)	6 (4%)	0	100	100
65	c	146/148 (99%)	138 (94%)	8 (6%)	0	100	100
66	d	56/58 (97%)	54 (96%)	2 (4%)	0	100	100
67	e	94/96 (98%)	92 (98%)	2 (2%)	0	100	100
68	f	107/109 (98%)	102 (95%)	5 (5%)	0	100	100
69	g	125/127 (98%)	124 (99%)	1 (1%)	0	100	100
70	h	104/106 (98%)	97 (93%)	7 (7%)	0	100	100
71	i	110/112 (98%)	104 (94%)	6 (6%)	0	100	100
72	j	117/119 (98%)	114 (97%)	3 (3%)	0	100	100
73	k	97/99 (98%)	93 (96%)	4 (4%)	0	100	100
74	l	79/81 (98%)	74 (94%)	5 (6%)	0	100	100
75	m	75/77 (97%)	69 (92%)	6 (8%)	0	100	100
76	n	48/50 (96%)	47 (98%)	1 (2%)	0	100	100
77	o	50/52 (96%)	48 (96%)	2 (4%)	0	100	100
78	p	23/25 (92%)	23 (100%)	0	0	100	100
79	q	101/103 (98%)	96 (95%)	5 (5%)	0	100	100
80	r	89/91 (98%)	84 (94%)	5 (6%)	0	100	100
81	x	439/462 (95%)	402 (92%)	30 (7%)	7 (2%)	8	38
82	v	975/1044 (93%)	872 (89%)	99 (10%)	4 (0%)	30	63
All	All	12391/12691 (98%)	11622 (94%)	730 (6%)	39 (0%)	38	67

All (39) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	SC	83	PRO
4	SC	88	PRO
7	SF	39	VAL
7	SF	40	GLU
12	SK	33	LYS

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Mol	Chain	Res	Type
12	SK	88	ILE
22	SU	64	VAL
25	SX	30	ARG
29	Sb	30	SER
30	Sc	64	PRO
48	J	158	ASP
81	x	164	GLN
82	v	181	THR
10	SI	50	ALA
16	SO	51	ASP
30	Sc	63	GLN
81	x	346	ILE
81	x	348	ASN
82	v	48	HIS
17	SP	189	VAL
40	Y	76	VAL
40	Y	83	THR
2	SA	218	LEU
52	N	136	GLU
81	x	259	ILE
81	x	315	VAL
82	v	664	ALA
3	SB	41	LYS
3	SB	156	ARG
21	ST	171	LYS
52	N	47	ALA
81	x	310	PHE
81	x	326	ALA
82	v	825	SER
15	SN	114	VAL
3	SB	151	GLY
3	SB	153	GLY
3	SB	149	VAL
57	S	18	ALA

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	
2	SA	182/182 (100%)	176 (97%)	6 (3%)	33	61
3	SB	172/173 (99%)	162 (94%)	10 (6%)	17	46
4	SC	77/85 (91%)	75 (97%)	2 (3%)	41	65
5	SD	88/98 (90%)	83 (94%)	5 (6%)	17	46
6	SE	95/98 (97%)	91 (96%)	4 (4%)	25	54
7	SF	117/117 (100%)	111 (95%)	6 (5%)	20	49
8	SG	105/110 (96%)	102 (97%)	3 (3%)	37	63
9	SH	127/128 (99%)	119 (94%)	8 (6%)	15	44
10	SI	115/115 (100%)	109 (95%)	6 (5%)	19	49
11	SJ	93/93 (100%)	86 (92%)	7 (8%)	11	37
12	SK	67/89 (75%)	64 (96%)	3 (4%)	23	53
13	SL	55/56 (98%)	54 (98%)	1 (2%)	54	74
14	SM	47/47 (100%)	41 (87%)	6 (13%)	3	19
15	SN	56/64 (88%)	51 (91%)	5 (9%)	8	32
16	SO	250/257 (97%)	232 (93%)	18 (7%)	12	38
17	SP	170/173 (98%)	167 (98%)	3 (2%)	54	74
18	SQ	200/205 (98%)	191 (96%)	9 (4%)	23	53
19	SR	175/175 (100%)	167 (95%)	8 (5%)	23	52
20	SS	220/220 (100%)	216 (98%)	4 (2%)	54	74
21	ST	189/195 (97%)	183 (97%)	6 (3%)	34	61
22	SU	163/165 (99%)	161 (99%)	2 (1%)	67	82
23	SV	148/161 (92%)	143 (97%)	5 (3%)	32	60
24	SW	156/157 (99%)	152 (97%)	4 (3%)	41	65
25	SX	126/127 (99%)	123 (98%)	3 (2%)	44	67
26	SY	127/127 (100%)	122 (96%)	5 (4%)	27	57
27	SZ	81/96 (84%)	74 (91%)	7 (9%)	8	33
28	Sa	71/74 (96%)	68 (96%)	3 (4%)	25	54
29	Sb	110/110 (100%)	110 (100%)	0	100	100
30	Sc	119/119 (100%)	114 (96%)	5 (4%)	25	54
31	Sd	112/112 (100%)	108 (96%)	4 (4%)	30	59
32	Se	81/81 (100%)	77 (95%)	4 (5%)	21	50
33	Sf	70/70 (100%)	67 (96%)	3 (4%)	25	54

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
34	Sg	50/51 (98%)	48 (96%)	2 (4%)	27	56
39	T	152/153 (99%)	149 (98%)	3 (2%)	50	72
40	Y	56/108 (52%)	55 (98%)	1 (2%)	54	74
42	D	190/193 (98%)	189 (100%)	1 (0%)	86	93
43	E	319/322 (99%)	310 (97%)	9 (3%)	38	64
44	F	288/288 (100%)	282 (98%)	6 (2%)	48	71
45	G	241/243 (99%)	233 (97%)	8 (3%)	33	61
46	H	139/154 (90%)	135 (97%)	4 (3%)	37	63
47	I	186/187 (100%)	183 (98%)	3 (2%)	58	76
48	J	187/191 (98%)	184 (98%)	3 (2%)	58	76
49	K	168/171 (98%)	160 (95%)	8 (5%)	21	51
50	L	185/185 (100%)	176 (95%)	9 (5%)	21	50
51	M	145/147 (99%)	140 (97%)	5 (3%)	32	60
52	N	154/154 (100%)	151 (98%)	3 (2%)	52	73
53	O	107/107 (100%)	103 (96%)	4 (4%)	29	58
54	P	175/175 (100%)	169 (97%)	6 (3%)	32	60
55	Q	160/160 (100%)	157 (98%)	3 (2%)	52	73
56	R	138/145 (95%)	138 (100%)	0	100	100
57	S	150/150 (100%)	144 (96%)	6 (4%)	27	56
58	U	155/155 (100%)	149 (96%)	6 (4%)	27	57
59	V	135/136 (99%)	126 (93%)	9 (7%)	13	41
60	W	87/87 (100%)	85 (98%)	2 (2%)	45	68
61	X	104/104 (100%)	102 (98%)	2 (2%)	52	73
62	Z	104/105 (99%)	104 (100%)	0	100	100
63	a	108/108 (100%)	106 (98%)	2 (2%)	52	73
64	b	112/115 (97%)	104 (93%)	8 (7%)	12	39
65	c	117/118 (99%)	113 (97%)	4 (3%)	32	60
66	d	46/46 (100%)	46 (100%)	0	100	100
67	e	81/81 (100%)	80 (99%)	1 (1%)	67	82
68	f	92/96 (96%)	89 (97%)	3 (3%)	33	61
69	g	107/109 (98%)	104 (97%)	3 (3%)	38	64

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
70	h	90/90 (100%)	88 (98%)	2 (2%)	47 69
71	i	95/95 (100%)	87 (92%)	8 (8%)	9 34
72	j	104/104 (100%)	99 (95%)	5 (5%)	21 51
73	k	80/81 (99%)	75 (94%)	5 (6%)	15 44
74	l	67/67 (100%)	65 (97%)	2 (3%)	36 63
75	m	68/68 (100%)	65 (96%)	3 (4%)	24 53
76	n	45/45 (100%)	45 (100%)	0	100 100
77	o	45/47 (96%)	42 (93%)	3 (7%)	13 41
78	p	22/23 (96%)	21 (96%)	1 (4%)	23 53
79	q	87/88 (99%)	85 (98%)	2 (2%)	45 68
80	r	71/71 (100%)	66 (93%)	5 (7%)	12 40
81	x	366/379 (97%)	350 (96%)	16 (4%)	24 53
82	v	789/890 (89%)	757 (96%)	32 (4%)	26 55
All	All	10331/10671 (97%)	9958 (96%)	373 (4%)	32 59

All (373) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	SA	94	ARG
2	SA	134	CYS
2	SA	160	SER
2	SA	165	ASN
2	SA	196	ARG
2	SA	213	GLU
3	SB	41	LYS
3	SB	47	SER
3	SB	86	GLN
3	SB	119	ASP
3	SB	122	ASN
3	SB	143	ARG
3	SB	149	VAL
3	SB	156	ARG
3	SB	184	PHE
3	SB	205	SER
4	SC	33	GLU
4	SC	81	ASN
5	SD	28	LEU

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Mol	Chain	Res	Type
5	SD	38	HIS
5	SD	62	LEU
5	SD	126	TRP
5	SD	131	ASP
6	SE	22	LEU
6	SE	80	MET
6	SE	98	ASN
6	SE	128	HIS
7	SF	58	ASP
7	SF	59	LYS
7	SF	140	LYS
7	SF	141	SER
7	SF	142	TYR
7	SF	143	ARG
8	SG	82	ASP
8	SG	93	LEU
8	SG	115	LEU
9	SH	16	ARG
9	SH	43	SER
9	SH	57	ARG
9	SH	60	GLU
9	SH	85	PHE
9	SH	94	ASP
9	SH	144	ARG
9	SH	145	ARG
10	SI	8	ASP
10	SI	13	ASP
10	SI	21	PHE
10	SI	69	LYS
10	SI	118	PRO
10	SI	133	ASP
11	SJ	28	SER
11	SJ	40	ASN
11	SJ	52	LYS
11	SJ	76	SER
11	SJ	80	GLU
11	SJ	90	TYR
11	SJ	98	GLN
12	SK	45	GLU
12	SK	55	PRO
12	SK	94	LYS
13	SL	22	ARG

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Mol	Chain	Res	Type
14	SM	8	PHE
14	SM	14	TYR
14	SM	24	CYS
14	SM	28	THR
14	SM	39	CYS
14	SM	42	CYS
15	SN	89	LYS
15	SN	116	LYS
15	SN	126	CYS
15	SN	136	LYS
15	SN	137	ASP
16	SO	17	ASN
16	SO	23	LEU
16	SO	52	GLN
16	SO	54	PHE
16	SO	62	LYS
16	SO	64	HIS
16	SO	70	ASP
16	SO	71	CYS
16	SO	73	LEU
16	SO	76	ASP
16	SO	149	ASP
16	SO	205	SER
16	SO	241	PHE
16	SO	245	PHE
16	SO	249	ARG
16	SO	281	TYR
16	SO	302	PHE
16	SO	316	MET
17	SP	134	LYS
17	SP	162	CYS
17	SP	204	TYR
18	SQ	50	LYS
18	SQ	59	ASP
18	SQ	61	LEU
18	SQ	64	ARG
18	SQ	77	GLU
18	SQ	95	ASN
18	SQ	113	MET
18	SQ	187	LYS
18	SQ	198	GLU
19	SR	64	LYS

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Mol	Chain	Res	Type
19	SR	76	LEU
19	SR	153	SER
19	SR	174	ARG
19	SR	187	LEU
19	SR	189	GLN
19	SR	208	GLU
19	SR	238	SER
20	SS	21	ASP
20	SS	50	ASN
20	SS	213	SER
20	SS	246	LEU
21	ST	3	LEU
21	ST	6	SER
21	ST	25	ARG
21	ST	57	ASP
21	ST	151	ASP
21	ST	161	GLU
22	SU	83	LYS
22	SU	85	PHE
23	SV	18	ARG
23	SV	29	LEU
23	SV	140	GLU
23	SV	160	PHE
23	SV	168	CYS
24	SW	9	SER
24	SW	13	SER
24	SW	50	SER
24	SW	180	LYS
25	SX	18	HIS
25	SX	67	ARG
25	SX	138	ASN
26	SY	13	SER
26	SY	69	ASN
26	SY	78	ASN
26	SY	105	ASN
26	SY	140	LYS
27	SZ	12	GLN
27	SZ	22	SER
27	SZ	41	ARG
27	SZ	49	LYS
27	SZ	56	SER
27	SZ	84	ARG

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Mol	Chain	Res	Type
27	SZ	105	LEU
28	Sa	70	ASN
28	Sa	76	ASP
28	Sa	85	TYR
30	Sc	21	ASN
30	Sc	40	SER
30	Sc	66	SER
30	Sc	70	LYS
30	Sc	107	PHE
31	Sd	31	ASN
31	Sd	39	GLU
31	Sd	58	PHE
31	Sd	78	SER
32	Se	7	SER
32	Se	8	ASN
32	Se	74	CYS
32	Se	87	ARG
33	Sf	11	THR
33	Sf	31	TYR
33	Sf	34	ASP
34	Sg	17	GLN
34	Sg	53	LYS
39	T	76	SER
39	T	82	LYS
39	T	110	ARG
40	Y	47	ARG
42	D	246	LEU
43	E	3	HIS
43	E	61	ASP
43	E	104	THR
43	E	111	SER
43	E	214	MET
43	E	226	PHE
43	E	323	MET
43	E	332	ARG
43	E	380	MET
44	F	59	GLN
44	F	255	PHE
44	F	259	ASP
44	F	271	LYS
44	F	292	SER
44	F	304	GLN

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Mol	Chain	Res	Type
45	G	45	ASN
45	G	58	LYS
45	G	72	ASP
45	G	137	ASP
45	G	151	GLN
45	G	218	ARG
45	G	219	PHE
45	G	273	ARG
46	H	60	ASP
46	H	69	PHE
46	H	164	SER
46	H	169	ASP
47	I	39	GLU
47	I	182	ASP
47	I	229	PHE
48	J	177	TYR
48	J	207	ASP
48	J	251	LYS
49	K	47	LYS
49	K	73	SER
49	K	77	ASN
49	K	92	TYR
49	K	115	ARG
49	K	129	ARG
49	K	130	ASP
49	K	177	ASP
50	L	27	PRO
50	L	36	LEU
50	L	71	CYS
50	L	74	LYS
50	L	167	LEU
50	L	168	SER
50	L	176	LEU
50	L	177	ASP
50	L	193	ASP
51	M	48	SER
51	M	77	GLU
51	M	132	ASN
51	M	137	ARG
51	M	145	LYS
52	N	10	LEU
52	N	23	LYS

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Mol	Chain	Res	Type
52	N	175	SER
53	O	14	LEU
53	O	22	LEU
53	O	77	ARG
53	O	121	MET
54	P	62	TYR
54	P	87	GLN
54	P	159	ARG
54	P	180	PHE
54	P	182	ASN
54	P	198	SER
55	Q	113[A]	ASP
55	Q	144[A]	SER
55	Q	151[A]	ASP
57	S	41	ASP
57	S	136	ASN
57	S	146	SER
57	S	148	GLU
57	S	178	ARG
57	S	182	LYS
58	U	3	HIS
58	U	6	GLU
58	U	8	GLN
58	U	27	MET
58	U	122	HIS
58	U	172	TYR
59	V	5	HIS
59	V	70	SER
59	V	71	SER
59	V	89	LEU
59	V	90	ASN
59	V	92	ARG
59	V	97	LYS
59	V	139	ARG
59	V	159	PHE
60	W	21	SER
60	W	33	TYR
61	X	89	ASP
61	X	131	SER
63	a	69	LYS
63	a	74	TYR
64	b	30	ASP

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Mol	Chain	Res	Type
64	b	33	SER
64	b	52	LYS
64	b	64	LYS
64	b	84	ARG
64	b	85	TYR
64	b	118	PHE
64	b	127	ASN
65	c	24	LYS
65	c	60	TYR
65	c	87	ARG
65	c	95	SER
67	e	20	SER
68	f	6	ASP
68	f	18	LYS
68	f	19	ARG
69	g	15	LYS
69	g	52	GLN
69	g	81	ASP
70	h	15	SER
70	h	18	ARG
71	i	18	ASN
71	i	21	LYS
71	i	44	CYS
71	i	46	ASP
71	i	62	TYR
71	i	76	TYR
71	i	106	LYS
71	i	110	GLU
72	j	37	SER
72	j	41	LEU
72	j	59	ASN
72	j	73	LYS
72	j	102	GLU
73	k	21	THR
73	k	42	SER
73	k	56	ARG
73	k	79	SER
73	k	92	ASN
74	l	19	CYS
74	l	80	THR
75	m	19	ASP
75	m	26	LYS

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Mol	Chain	Res	Type
75	m	46	ARG
77	o	81	SER
77	o	93	LYS
77	o	114	LYS
78	p	24	SER
79	q	45	ARG
79	q	55	LYS
80	r	4	ARG
80	r	42	CYS
80	r	48	LYS
80	r	81	SER
80	r	89	MET
81	x	6	THR
81	x	30	LYS
81	x	34	ILE
81	x	75	ILE
81	x	78	TRP
81	x	85	TYR
81	x	102	MET
81	x	310	PHE
81	x	311	ASN
81	x	313	LYS
81	x	321	ARG
81	x	346	ILE
81	x	357	TYR
81	x	360	VAL
81	x	389	ASP
81	x	392	LYS
82	v	35	PHE
82	v	39	ASN
82	v	95	CYS
82	v	128	LEU
82	v	155	MET
82	v	166	ARG
82	v	170	LEU
82	v	181	THR
82	v	318	ARG
82	v	378	ASP
82	v	409	ARG
82	v	435	PHE
82	v	449	GLN
82	v	483	PHE

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Mol	Chain	Res	Type
82	v	493	TYR
82	v	523	LYS
82	v	604	ASN
82	v	624	PHE
82	v	658	VAL
82	v	660	THR
82	v	723	GLU
82	v	754	TYR
82	v	778	ASN
82	v	809	TYR
82	v	823	MET
82	v	824	LYS
82	v	854	GLU
82	v	869	LEU
82	v	870	THR
82	v	873	GLU
82	v	919	LEU
82	v	935	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
16	SO	153	GLN
16	SO	314	GLN
27	SZ	29	HIS
31	Sd	15	ASN
31	Sd	22	GLN
42	D	132	ASN
44	F	311	HIS
51	M	43	GLN
56	R	137	ASN
57	S	126	GLN
81	x	324	ASN
81	x	348	ASN
81	x	352	GLN
81	x	367	HIS
82	v	68	GLN
82	v	577	ASN
82	v	711	ASN
82	v	756	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1768/1799 (98%)	408 (23%)	40 (2%)
35	s	74/77 (96%)	31 (41%)	0
36	t	74/75 (98%)	18 (24%)	0
37	B	120/121 (99%)	9 (7%)	1 (0%)
38	C	157/158 (99%)	26 (16%)	1 (0%)
41	A	3180/3394 (93%)	506 (15%)	9 (0%)
All	All	5373/5624 (95%)	998 (18%)	51 (0%)

All (998) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	2	A
1	2	4	C
1	2	25	C
1	2	26	A
1	2	34	G
1	2	42	G
1	2	43	A
1	2	45	U
1	2	47	A
1	2	56	U
1	2	57	G
1	2	62	A
1	2	65	A
1	2	66	U
1	2	67	A
1	2	68	A
1	2	69	G
1	2	73	U
1	2	74	U
1	2	75	U
1	2	76	A
1	2	77	U
1	2	78	A
1	2	80	A
1	2	81	G
1	2	104	A
1	2	114	C
1	2	116	U
1	2	121	U
1	2	126	A

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Mol	Chain	Res	Type
1	2	127	G
1	2	129	U
1	2	130	C
1	2	131	C
1	2	132	U
1	2	134	U
1	2	135	A
1	2	138	A
1	2	140	A
1	2	141	U
1	2	142	G
1	2	153	G
1	2	158	U
1	2	168	A
1	2	171	A
1	2	172	C
1	2	176	C
1	2	178	U
1	2	182	A
1	2	185	U
1	2	186	C
1	2	191	C
1	2	192	U
1	2	193	U
1	2	194	U
1	2	195	G
1	2	204	G
1	2	216	U
1	2	217	A
1	2	218	A
1	2	224	C
1	2	225	A
1	2	227	U
1	2	228	G
1	2	230	C
1	2	232	U
1	2	233	C
1	2	234	G
1	2	238	U
1	2	240	U
1	2	241	U
1	2	250	C

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Mol	Chain	Res	Type
1	2	260	U
1	2	261	U
1	2	265	A
1	2	272	U
1	2	276	C
1	2	277	U
1	2	278	U
1	2	279	G
1	2	280	U
1	2	281	G
1	2	287	G
1	2	299	A
1	2	313	U
1	2	314	C
1	2	316	A
1	2	321	C
1	2	322	G
1	2	323	A
1	2	337	G
1	2	338	C
1	2	352	A
1	2	353	A
1	2	359	A
1	2	361	C
1	2	369	A
1	2	370	A
1	2	388	G
1	2	400	A
1	2	401	A
1	2	402	C
1	2	404	G
1	2	417	A
1	2	423	G
1	2	424	C
1	2	425	A
1	2	426	G
1	2	435	C
1	2	439	U
1	2	444	C
1	2	446	A
1	2	448	C
1	2	460	A

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Mol	Chain	Res	Type
1	2	482	U
1	2	483	A
1	2	485	A
1	2	487	G
1	2	492	A
1	2	493	U
1	2	494	U
1	2	496	G
1	2	498	G
1	2	499	U
1	2	500	C
1	2	502	U
1	2	506	A
1	2	510	G
1	2	511	A
1	2	517	U
1	2	518	A
1	2	534	A
1	2	538	A
1	2	540	G
1	2	541	A
1	2	542	A
1	2	543	C
1	2	554	C
1	2	555	A
1	2	556	A
1	2	557	G
1	2	558	U
1	2	565	C
1	2	568	G
1	2	578	U
1	2	579	A
1	2	594	A
1	2	595	G
1	2	609	U
1	2	610	G
1	2	611	U
1	2	617	U
1	2	619	A
1	2	620	A
1	2	622	A
1	2	623	A

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Mol	Chain	Res	Type
1	2	624	G
1	2	638	U
1	2	639	U
1	2	640	U
1	2	643	G
1	2	645	C
1	2	651	G
1	2	653	C
1	2	654	C
1	2	655	G
1	2	656	G
1	2	677	G
1	2	678	A
1	2	680	U
1	2	681	U
1	2	684	A
1	2	687	G
1	2	694	U
1	2	696	C
1	2	697	C
1	2	698	U
1	2	700	C
1	2	702	G
1	2	703	G
1	2	704	C
1	2	705	U
1	2	706	A
1	2	707	A
1	2	708	C
1	2	709	C
1	2	710	U
1	2	711	U
1	2	712	G
1	2	713	A
1	2	728	U
1	2	730	G
1	2	732	G
1	2	733	A
1	2	734	A
1	2	736	C
1	2	738	G
1	2	741	C

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Mol	Chain	Res	Type
1	2	742	U
1	2	743	U
1	2	756	A
1	2	765	G
1	2	766	U
1	2	767	U
1	2	774	A
1	2	775	G
1	2	778	G
1	2	781	U
1	2	782	U
1	2	783	G
1	2	787	G
1	2	789	A
1	2	807	A
1	2	812	A
1	2	813	U
1	2	814	A
1	2	815	G
1	2	816	G
1	2	819	G
1	2	820	U
1	2	821	U
1	2	823	G
1	2	833	U
1	2	836	U
1	2	837	G
1	2	839	U
1	2	840	U
1	2	841	U
1	2	846	G
1	2	852	C
1	2	856	A
1	2	857	U
1	2	863	A
1	2	864	U
1	2	873	U
1	2	881	A
1	2	886	U
1	2	898	A
1	2	899	G
1	2	901	G

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Mol	Chain	Res	Type
1	2	902	G
1	2	912	U
1	2	913	G
1	2	929	A
1	2	933	A
1	2	934	C
1	2	935	U
1	2	942	G
1	2	966	A
1	2	970	A
1	2	988	A
1	2	989	U
1	2	992	A
1	2	1004	U
1	2	1024	U
1	2	1026	A
1	2	1028	C
1	2	1039	A
1	2	1052	U
1	2	1053	G
1	2	1058	U
1	2	1059	U
1	2	1060	U
1	2	1061	A
1	2	1062	A
1	2	1074	G
1	2	1076	A
1	2	1080	U
1	2	1081	A
1	2	1082	C
1	2	1092	A
1	2	1096	C
1	2	1100	G
1	2	1138	A
1	2	1158	C
1	2	1160	A
1	2	1164	G
1	2	1167	G
1	2	1170	G
1	2	1185	U
1	2	1186	U
1	2	1194	A

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Mol	Chain	Res	Type
1	2	1199	G
1	2	1200	G
1	2	1208	A
1	2	1212	G
1	2	1217	A
1	2	1218	G
1	2	1227	A
1	2	1229	G
1	2	1241	G
1	2	1243	G
1	2	1244	A
1	2	1245	G
1	2	1246	C
1	2	1256	A
1	2	1257	U
1	2	1274	C
1	2	1275	A
1	2	1276	U
1	2	1285	U
1	2	1301	U
1	2	1307	U
1	2	1314	U
1	2	1315	U
1	2	1321	A
1	2	1322	A
1	2	1325	A
1	2	1337	A
1	2	1341	A
1	2	1344	A
1	2	1345	A
1	2	1346	A
1	2	1348	A
1	2	1349	G
1	2	1361	U
1	2	1363	U
1	2	1364	G
1	2	1367	G
1	2	1370	U
1	2	1371	A
1	2	1372	U
1	2	1373	C
1	2	1382	A

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Mol	Chain	Res	Type
1	2	1383	G
1	2	1389	C
1	2	1390	U
1	2	1398	U
1	2	1399	C
1	2	1400	A
1	2	1402	G
1	2	1407	U
1	2	1408	G
1	2	1414	U
1	2	1415	U
1	2	1427	A
1	2	1431	C
1	2	1432	U
1	2	1433	G
1	2	1436	A
1	2	1445	G
1	2	1446	A
1	2	1459	C
1	2	1460	A
1	2	1469	A
1	2	1471	A
1	2	1472	C
1	2	1491	U
1	2	1493	A
1	2	1496	U
1	2	1514	U
1	2	1516	A
1	2	1517	U
1	2	1518	C
1	2	1521	G
1	2	1523	G
1	2	1524	A
1	2	1528	U
1	2	1531	G
1	2	1537	C
1	2	1540	G
1	2	1542	G
1	2	1543	A
1	2	1545	A
1	2	1556	A
1	2	1557	U

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Mol	Chain	Res	Type
1	2	1558	U
1	2	1559	A
1	2	1573	A
1	2	1574	G
1	2	1575	G
1	2	1583	A
1	2	1585	U
1	2	1601	G
1	2	1611	A
1	2	1614	A
1	2	1631	A
1	2	1634	C
1	2	1635	A
1	2	1637	C
1	2	1657	U
1	2	1658	G
1	2	1682	U
1	2	1689	A
1	2	1693	A
1	2	1700	C
1	2	1701	A
1	2	1708	U
1	2	1709	C
1	2	1715	G
1	2	1717	G
1	2	1736	G
1	2	1754	A
1	2	1755	A
1	2	1757	G
1	2	1762	A
1	2	1766	A
1	2	1767	G
1	2	1769	U
1	2	1770	U
1	2	1780	G
1	2	1782	A
1	2	1783	C
1	2	1792	G
1	2	1793	G
1	2	1794	A
1	2	1796	C
1	2	1799	U

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Mol	Chain	Res	Type
35	s	10	G
35	s	13	U
35	s	15	G
35	s	19	G
35	s	20	U
35	s	21	U
35	s	22	A
35	s	25	A
35	s	27	G
35	s	28	U
35	s	29	U
35	s	31	G
35	s	33	C
35	s	36	A
35	s	37	C
35	s	41	C
35	s	42	G
35	s	45	A
35	s	46	G
35	s	47	G
35	s	48	U
35	s	49	C
35	s	50	C
35	s	54	G
35	s	56	U
35	s	59	A
35	s	60	A
35	s	62	C
35	s	72	A
35	s	75	C
35	s	76	C
36	t	2	G
36	t	9	G
36	t	14	A
36	t	16	U
36	t	18	G
36	t	19	G
36	t	21	A
36	t	42	U
36	t	46	G
36	t	47	U
36	t	48	C

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Mol	Chain	Res	Type
36	t	53	G
36	t	59	A
36	t	61	C
36	t	63	G
36	t	64	A
36	t	69	C
36	t	76	A
37	B	7	G
37	B	26	C
37	B	53	U
37	B	54	U
37	B	55	A
37	B	65	G
37	B	76	A
37	B	102	A
37	B	112	G
38	C	16	G
38	C	23	U
38	C	34	U
38	C	35	C
38	C	39	G
38	C	59	A
38	C	62	C
38	C	63	G
38	C	80	A
38	C	81	U
38	C	82	U
38	C	83	C
38	C	84	C
38	C	86	U
38	C	87	G
38	C	90	U
38	C	95	G
38	C	104	A
38	C	106	C
38	C	111	A
38	C	112	U
38	C	113	U
38	C	116	G
38	C	125	U
38	C	126	A
38	C	158	U

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Mol	Chain	Res	Type
41	A	16	A
41	A	26	A
41	A	30	G
41	A	40	A
41	A	43	A
41	A	49	A
41	A	57	A
41	A	59	G
41	A	60	A
41	A	65	A
41	A	66	A
41	A	67	A
41	A	72	C
41	A	75	G
41	A	77	A
41	A	85	A
41	A	92	G
41	A	99	A
41	A	109	A
41	A	110	G
41	A	111	C
41	A	116	A
41	A	117	U
41	A	118	U
41	A	122	A
41	A	135	C
41	A	136	G
41	A	148	G
41	A	156	G
41	A	157	A
41	A	172	G
41	A	173	G
41	A	190	U
41	A	191	U
41	A	219	A
41	A	231	G
41	A	240	U
41	A	243	G
41	A	245	U
41	A	252	U
41	A	263	C
41	A	269	G

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Mol	Chain	Res	Type
41	A	286	U
41	A	295	A
41	A	305	U
41	A	315	C
41	A	323	A
41	A	329	U
41	A	346	C
41	A	376	G
41	A	398	A
41	A	401	U
41	A	402	A
41	A	403	C
41	A	420	G
41	A	421	G
41	A	422	A
41	A	490	A
41	A	491	C
41	A	492	U
41	A	518	G
41	A	521	A
41	A	530	G
41	A	531	G
41	A	533	A
41	A	547	G
41	A	555	U
41	A	557	A
41	A	558	U
41	A	559	A
41	A	589	A
41	A	601	U
41	A	602	A
41	A	611	A
41	A	636	C
41	A	649	A
41	A	667	C
41	A	677	A
41	A	678	G
41	A	681	U
41	A	690	A
41	A	691	A
41	A	705	A
41	A	758	C

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Mol	Chain	Res	Type
41	A	761	A
41	A	766	U
41	A	767	U
41	A	780	A
41	A	781	G
41	A	785	G
41	A	786	A
41	A	799	G
41	A	817	A
41	A	830	A
41	A	836	A
41	A	846	A
41	A	848	A
41	A	849	C
41	A	857	G
41	A	861	C
41	A	874	U
41	A	879	U
41	A	880	G
41	A	896	A
41	A	907	G
41	A	908	G
41	A	914	A
41	A	916	G
41	A	917	A
41	A	921	A
41	A	937	G
41	A	938	C
41	A	944	C
41	A	960	U
41	A	974	G
41	A	977	C
41	A	979	U
41	A	980	A
41	A	1016	C
41	A	1018	G
41	A	1020	G
41	A	1021	G
41	A	1022	U
41	A	1032	C
41	A	1037	C
41	A	1047	A

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Mol	Chain	Res	Type
41	A	1063	G
41	A	1064	A
41	A	1072	G
41	A	1081	U
41	A	1082	U
41	A	1087	G
41	A	1093	A
41	A	1094	U
41	A	1096	U
41	A	1097	G
41	A	1098	A
41	A	1103	A
41	A	1117	G
41	A	1131	G
41	A	1143	A
41	A	1153	A
41	A	1159	A
41	A	1178	G
41	A	1179	A
41	A	1180	A
41	A	1181	U
41	A	1182	A
41	A	1193	A
41	A	1196	C
41	A	1201	C
41	A	1209	G
41	A	1217	A
41	A	1222	G
41	A	1232	C
41	A	1235	U
41	A	1236	G
41	A	1244	A
41	A	1245	A
41	A	1246	G
41	A	1248	C
41	A	1253	U
41	A	1257	C
41	A	1258	U
41	A	1262	G
41	A	1263	A
41	A	1265	U
41	A	1266	G

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Mol	Chain	Res	Type
41	A	1285	G
41	A	1287	A
41	A	1302	A
41	A	1307	G
41	A	1308	A
41	A	1309	U
41	A	1317	A
41	A	1330	A
41	A	1331	U
41	A	1348	U
41	A	1349	G
41	A	1350	A
41	A	1352	A
41	A	1353	U
41	A	1355	A
41	A	1357	G
41	A	1386	A
41	A	1392	G
41	A	1399	A
41	A	1400	G
41	A	1417	G
41	A	1418	A
41	A	1425	U
41	A	1434	G
41	A	1437	C
41	A	1446	A
41	A	1483	G
41	A	1495	U
41	A	1496	C
41	A	1503	A
41	A	1507	G
41	A	1508	C
41	A	1556	C
41	A	1557	A
41	A	1560	G
41	A	1561	G
41	A	1562	C
41	A	1563	C
41	A	1564	U
41	A	1567	U
41	A	1569	U
41	A	1570	U

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Mol	Chain	Res	Type
41	A	1571	A
41	A	1573	G
41	A	1576	G
41	A	1578	C
41	A	1579	C
41	A	1581	C
41	A	1582	C
41	A	1583	A
41	A	1589	A
41	A	1593	A
41	A	1594	A
41	A	1605	A
41	A	1630	U
41	A	1643	A
41	A	1645	U
41	A	1657	C
41	A	1694	U
41	A	1713	G
41	A	1724	U
41	A	1740	U
41	A	1741	A
41	A	1750	A
41	A	1751	G
41	A	1759	C
41	A	1762	C
41	A	1763	U
41	A	1765	U
41	A	1767	C
41	A	1769	G
41	A	1773	C
41	A	1796	G
41	A	1797	A
41	A	1808	G
41	A	1812	G
41	A	1815	U
41	A	1816	A
41	A	1820	U
41	A	1821	U
41	A	1840	U
41	A	1842	A
41	A	1866	C
41	A	1878	G

Continued on next page...

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Mol	Chain	Res	Type
41	A	1879	A
41	A	1880	U
41	A	1906	G
41	A	1952	G
41	A	2093	A
41	A	2096	A
41	A	2101	C
41	A	2102	U
41	A	2111	G
41	A	2112	U
41	A	2114	C
41	A	2122	G
41	A	2131	A
41	A	2158	A
41	A	2167	A
41	A	2169	G
41	A	2170	U
41	A	2188	A
41	A	2194	G
41	A	2205	U
41	A	2206	G
41	A	2223	A
41	A	2244	A
41	A	2249	G
41	A	2251	G
41	A	2253	G
41	A	2256	A
41	A	2257	C
41	A	2261	G
41	A	2268	U
41	A	2270	A
41	A	2273	G
41	A	2274	U
41	A	2281	A
41	A	2306	C
41	A	2307	G
41	A	2310	U
41	A	2315	G
41	A	2319	U
41	A	2320	A
41	A	2335	G
41	A	2336	U

Continued on next page...

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Mol	Chain	Res	Type
41	A	2339	C
41	A	2340	U
41	A	2372	A
41	A	2373	A
41	A	2374	C
41	A	2375	G
41	A	2376	G
41	A	2388	U
41	A	2393	G
41	A	2394	G
41	A	2397	A
41	A	2402	A
41	A	2403	G
41	A	2404	A
41	A	2411	U
41	A	2418	G
41	A	2436	U
41	A	2437	G
41	A	2438	A
41	A	2439	A
41	A	2440	G
41	A	2441	A
41	A	2442	G
41	A	2444	C
41	A	2445	A
41	A	2453	U
41	A	2454	G
41	A	2455	U
41	A	2456	A
41	A	2457	G
41	A	2458	A
41	A	2459	A
41	A	2461	A
41	A	2462	A
41	A	2463	G
41	A	2468	A
41	A	2469	G
41	A	2471	U
41	A	2474	G
41	A	2477	G
41	A	2480	A
41	A	2484	A

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Mol	Chain	Res	Type
41	A	2487	U
41	A	2488	A
41	A	2489	C
41	A	2491	A
41	A	2492	C
41	A	2493	U
41	A	2494	A
41	A	2495	C
41	A	2499	U
41	A	2501	U
41	A	2502	A
41	A	2504	U
41	A	2505	U
41	A	2507	C
41	A	2508	U
41	A	2509	U
41	A	2511	A
41	A	2514	U
41	A	2515	A
41	A	2522	G
41	A	2523	A
41	A	2526	C
41	A	2533	G
41	A	2534	G
41	A	2535	A
41	A	2540	A
41	A	2541	U
41	A	2547	A
41	A	2549	G
41	A	2552	C
41	A	2557	A
41	A	2560	C
41	A	2561	A
41	A	2570	U
41	A	2571	U
41	A	2585	G
41	A	2593	A
41	A	2600	C
41	A	2606	G
41	A	2607	G
41	A	2614	G
41	A	2617	U

Continued on next page...

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Mol	Chain	Res	Type
41	A	2652	U
41	A	2656	A
41	A	2657	A
41	A	2672	G
41	A	2674	A
41	A	2677	G
41	A	2678	A
41	A	2689	A
41	A	2696	A
41	A	2704	A
41	A	2712	U
41	A	2713	U
41	A	2728	G
41	A	2729	U
41	A	2737	C
41	A	2753	G
41	A	2755	C
41	A	2772	C
41	A	2773	C
41	A	2777	G
41	A	2778	G
41	A	2779	A
41	A	2795	U
41	A	2796	G
41	A	2799	A
41	A	2800	G
41	A	2801	A
41	A	2804	A
41	A	2808	A
41	A	2810	C
41	A	2817	A
41	A	2821	C
41	A	2838	A
41	A	2843	U
41	A	2844	C
41	A	2845	A
41	A	2847	A
41	A	2860	U
41	A	2867	C
41	A	2871	G
41	A	2872	A
41	A	2887	A

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Mol	Chain	Res	Type
41	A	2889	C
41	A	2899	C
41	A	2911	A
41	A	2935	U
41	A	2936	A
41	A	2941	A
41	A	2951	G
41	A	2971	A
41	A	2979	U
41	A	2983	C
41	A	2990	G
41	A	2997	G
41	A	3003	G
41	A	3005	A
41	A	3012	A
41	A	3039	C
41	A	3049	A
41	A	3057	U
41	A	3059	G
41	A	3078	U
41	A	3079	U
41	A	3092	C
41	A	3094	A
41	A	3101	G
41	A	3113	A
41	A	3115	C
41	A	3122	A
41	A	3130	A
41	A	3131	U
41	A	3142	A
41	A	3143	C
41	A	3153	U
41	A	3154	C
41	A	3156	U
41	A	3157	U
41	A	3168	A
41	A	3170	A
41	A	3172	A
41	A	3173	G
41	A	3176	G
41	A	3179	U
41	A	3181	C

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Mol	Chain	Res	Type
41	A	3187	A
41	A	3198	U
41	A	3207	U
41	A	3210	A
41	A	3213	A
41	A	3214	U
41	A	3217	C
41	A	3218	A
41	A	3219	G
41	A	3224	G
41	A	3227	A
41	A	3228	C
41	A	3229	G
41	A	3235	C
41	A	3243	A
41	A	3244	A
41	A	3247	G
41	A	3260	G
41	A	3268	A
41	A	3270	U
41	A	3271	G
41	A	3273	A
41	A	3276	G
41	A	3277	U
41	A	3278	C
41	A	3279	A
41	A	3281	U
41	A	3304	U
41	A	3313	U
41	A	3316	A
41	A	3319	U
41	A	3334	U
41	A	3335	A
41	A	3341	U
41	A	3350	C
41	A	3351	U
41	A	3352	U
41	A	3353	G
41	A	3368	U
41	A	3369	G
41	A	3375	A
41	A	3378	C

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Mol	Chain	Res	Type
41	A	3382	U
41	A	3390	G

All (51) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	68	A
1	2	77	U
1	2	139	C
1	2	141	U
1	2	215	A
1	2	224	C
1	2	237	C
1	2	278	U
1	2	313	U
1	2	322	G
1	2	352	A
1	2	387	A
1	2	400	A
1	2	539	G
1	2	541	A
1	2	554	C
1	2	555	A
1	2	609	U
1	2	639	U
1	2	677	G
1	2	705	U
1	2	711	U
1	2	819	G
1	2	912	U
1	2	928	U
1	2	1023	A
1	2	1226	A
1	2	1245	G
1	2	1256	A
1	2	1273	G
1	2	1274	C
1	2	1344	A
1	2	1382	A
1	2	1430	U
1	2	1471	A
1	2	1557	U

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Mol	Chain	Res	Type
1	2	1573	A
1	2	1584	G
1	2	1633	A
1	2	1636	C
37	B	52	G
38	C	85	G
41	A	916	G
41	A	1264	G
41	A	1820	U
41	A	2193	U
41	A	2255	A
41	A	2339	C
41	A	2533	G
41	A	3004	C
41	A	3121	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 oligosaccharides 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.

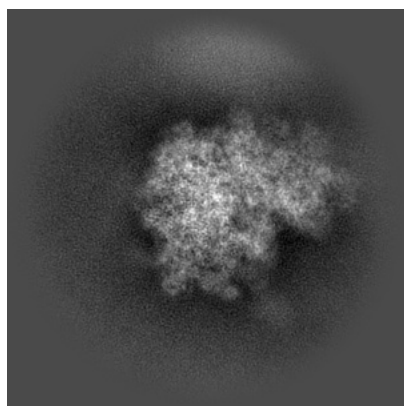
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-38657. These allow visual inspection of the internal detail of the map and identification of artifacts.

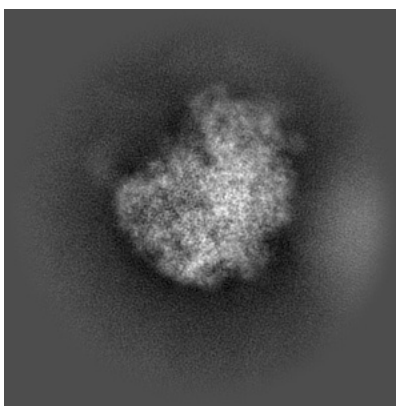
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

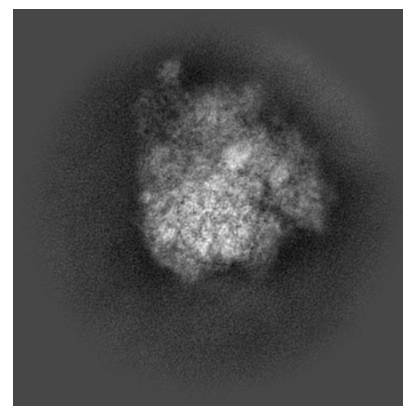
6.1.1 Primary map



X

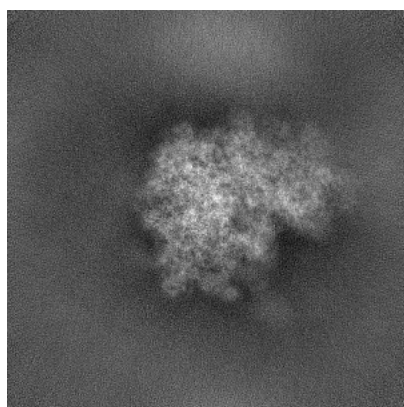


Y

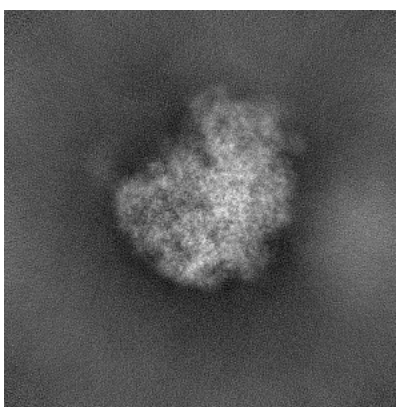


Z

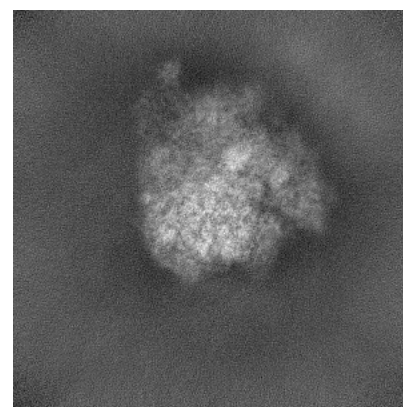
6.1.2 Raw map



X



Y

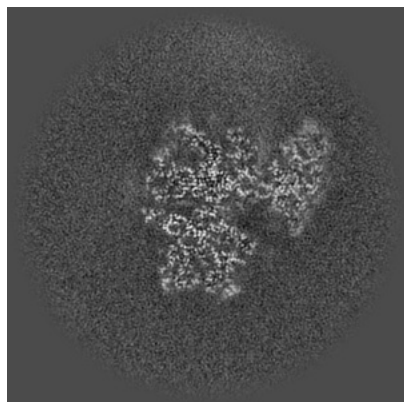


Z

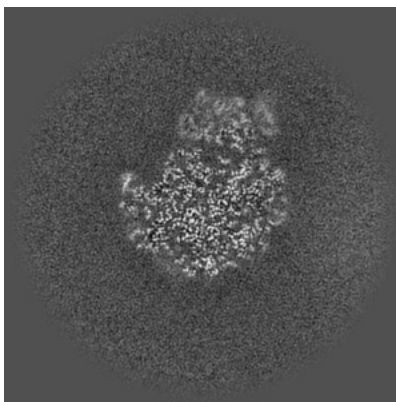
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

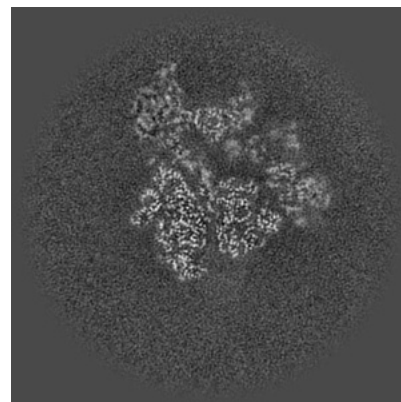
6.2.1 Primary map



X Index: 200

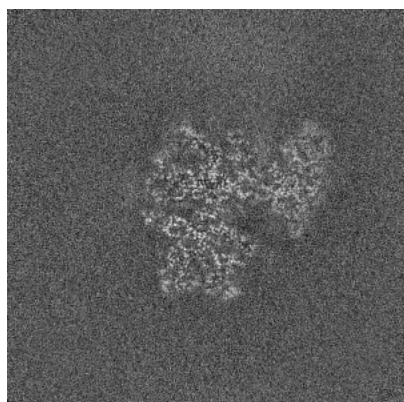


Y Index: 200

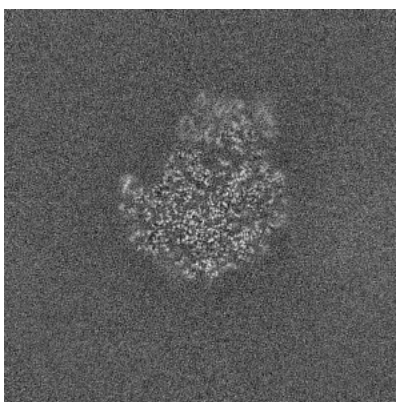


Z Index: 200

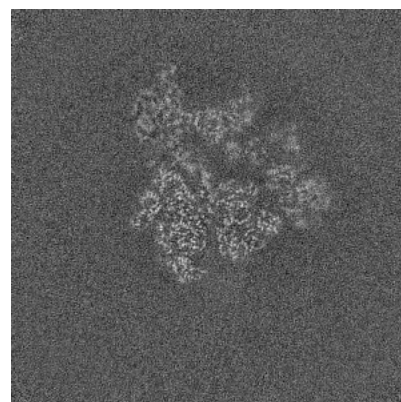
6.2.2 Raw map



X Index: 200



Y Index: 200

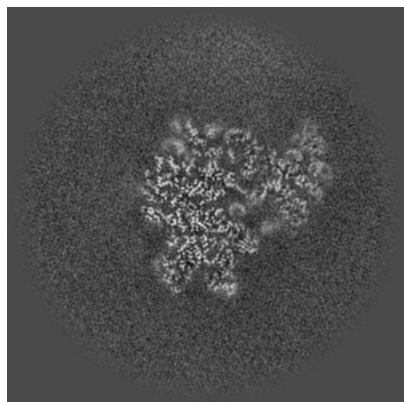


Z Index: 200

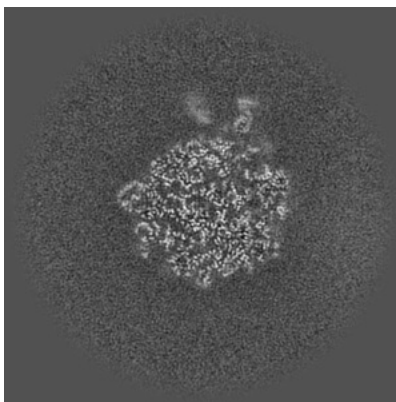
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

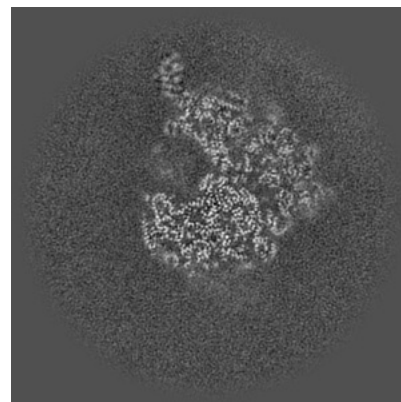
6.3.1 Primary map



X Index: 194

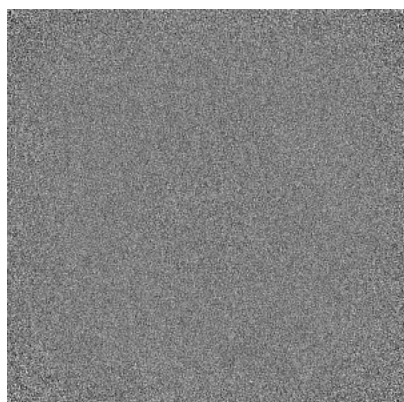


Y Index: 184

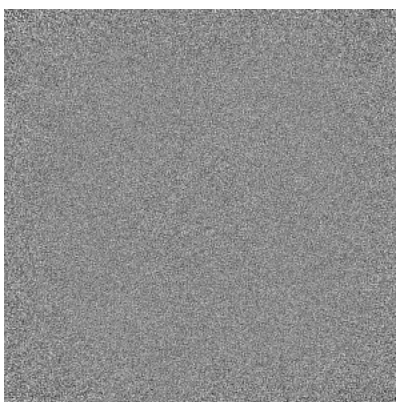


Z Index: 222

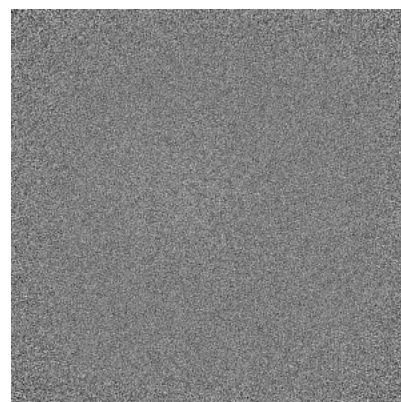
6.3.2 Raw map



X Index: 0



Y Index: 0

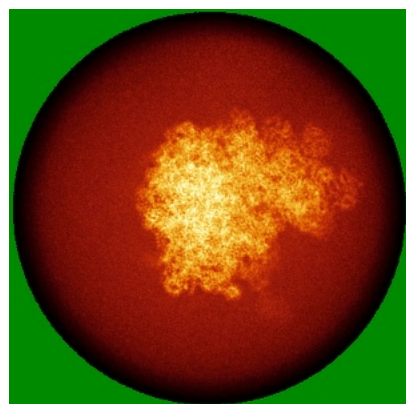


Z Index: 0

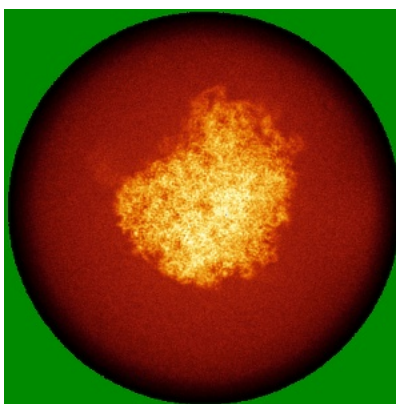
The images above show the largest variance slices of the map in three orthogonal directions.

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

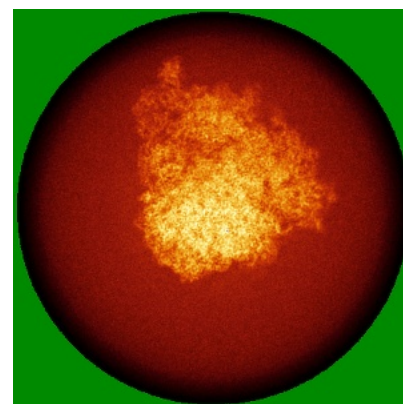
6.4.1 Primary map



X

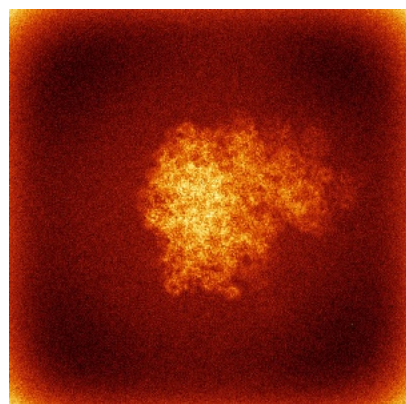


Y

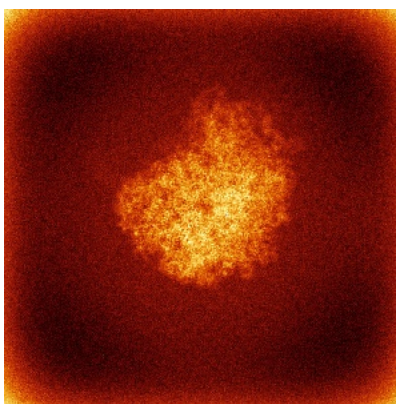


Z

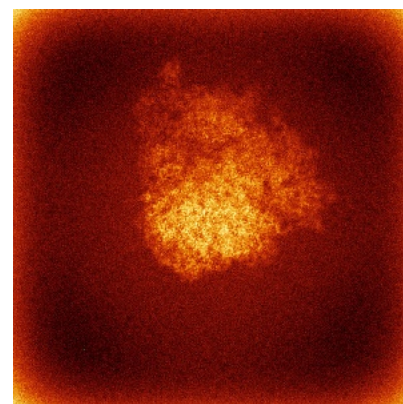
6.4.2 Raw map



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.

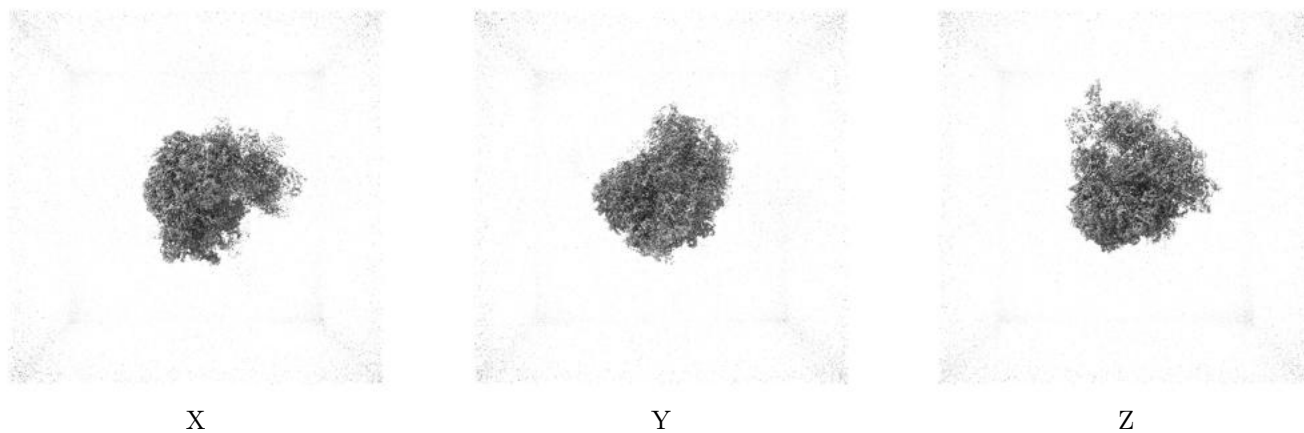
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.219. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 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.

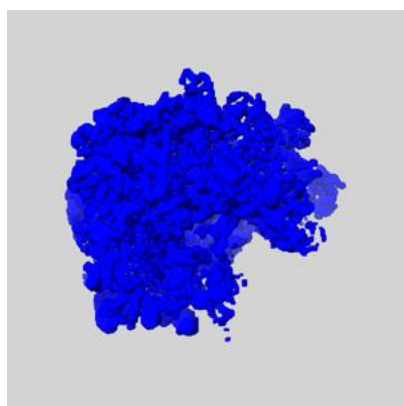
6.6 Mask visualisation [i](#)

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

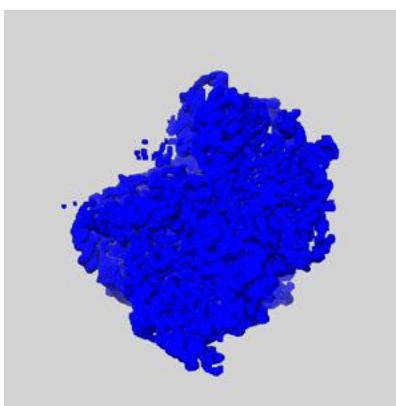
A mask typically either:

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

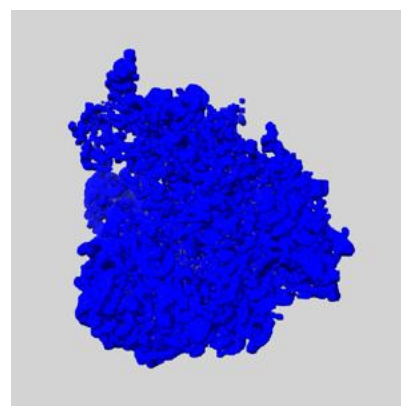
6.6.1 emd_38657_msk_1.map [i](#)



X



Y

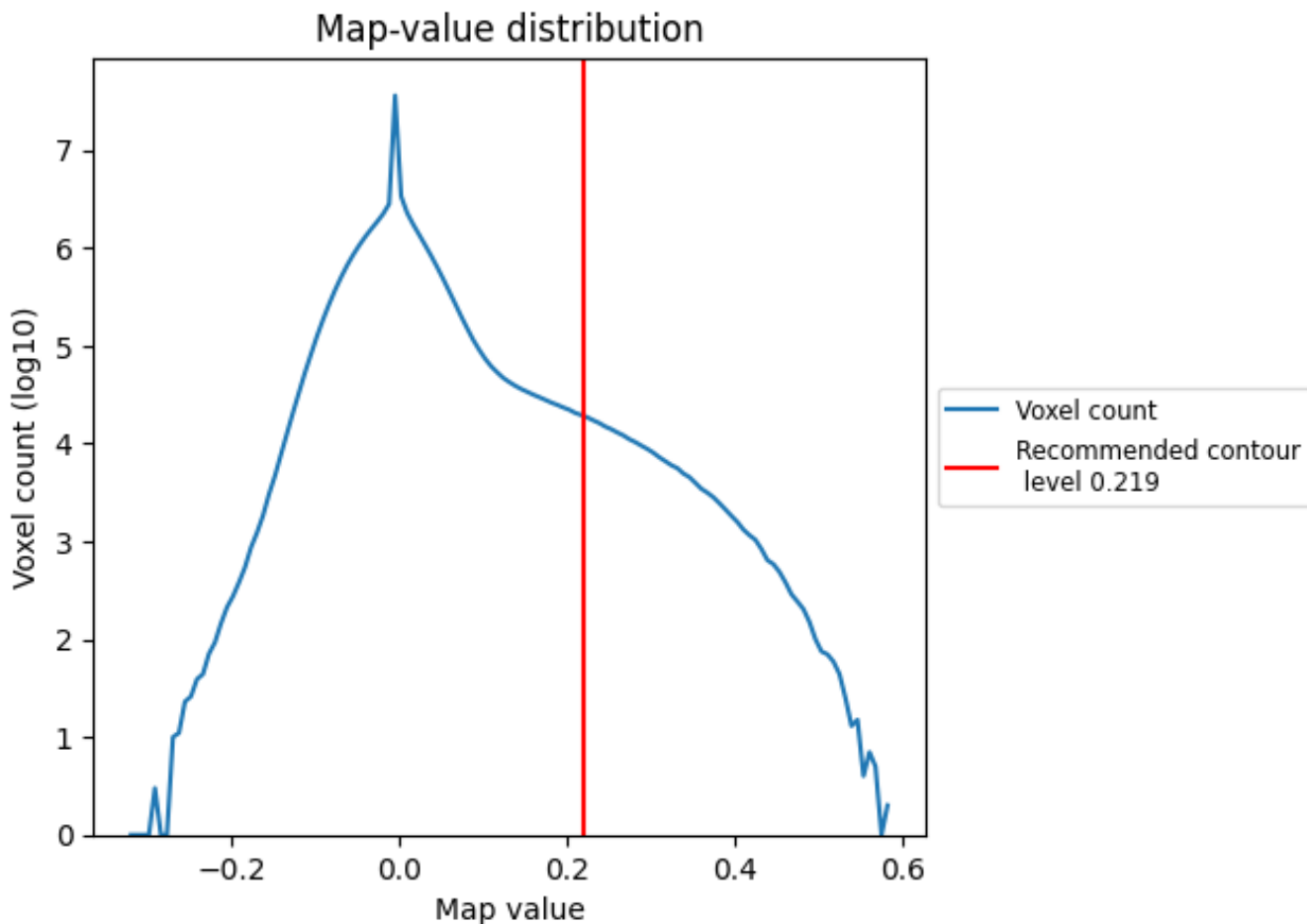


Z

7 Map analysis [i](#)

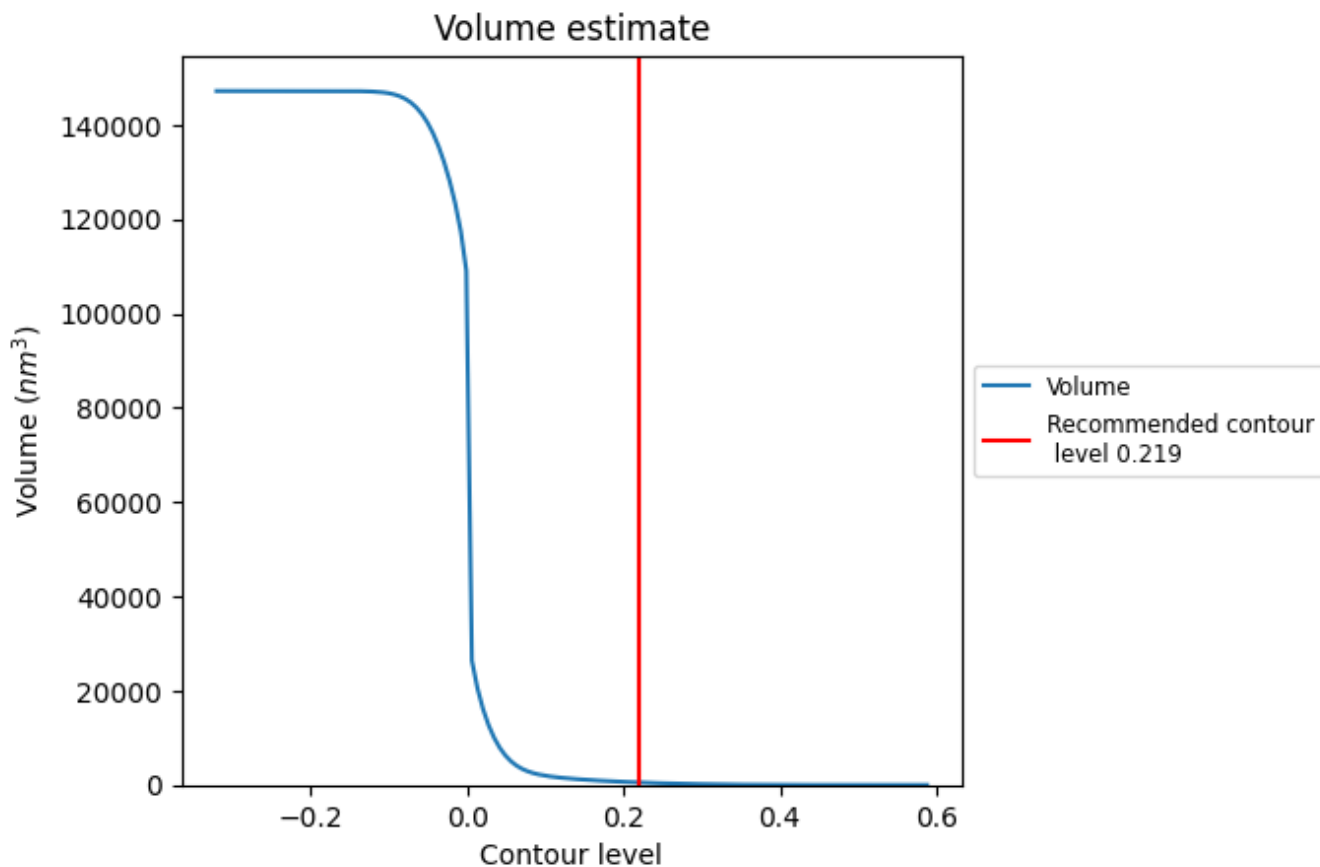
This section contains the results of statistical analysis of the map.

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.

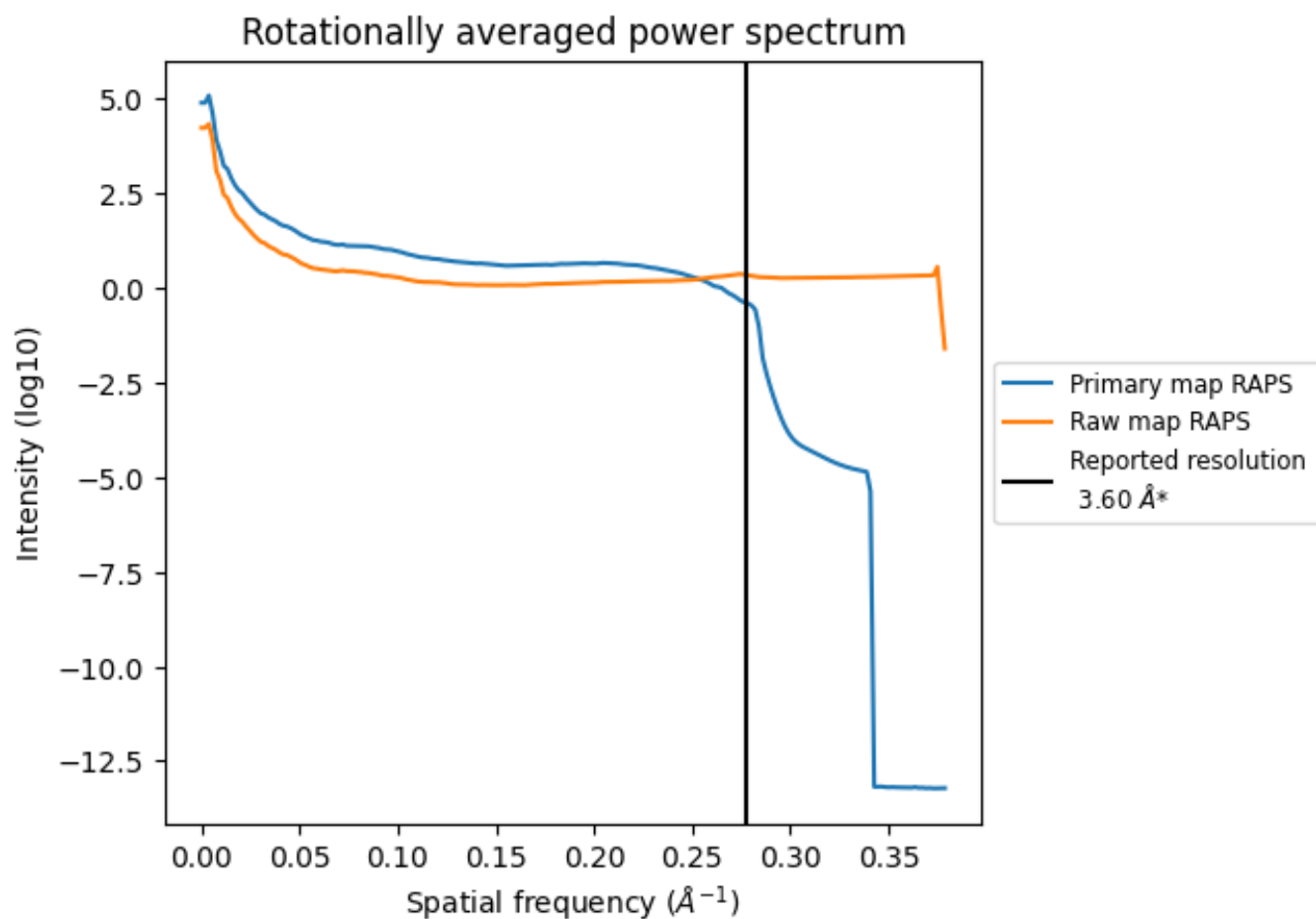
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 529 nm^3 ; this corresponds to an approximate mass of 478 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](#)

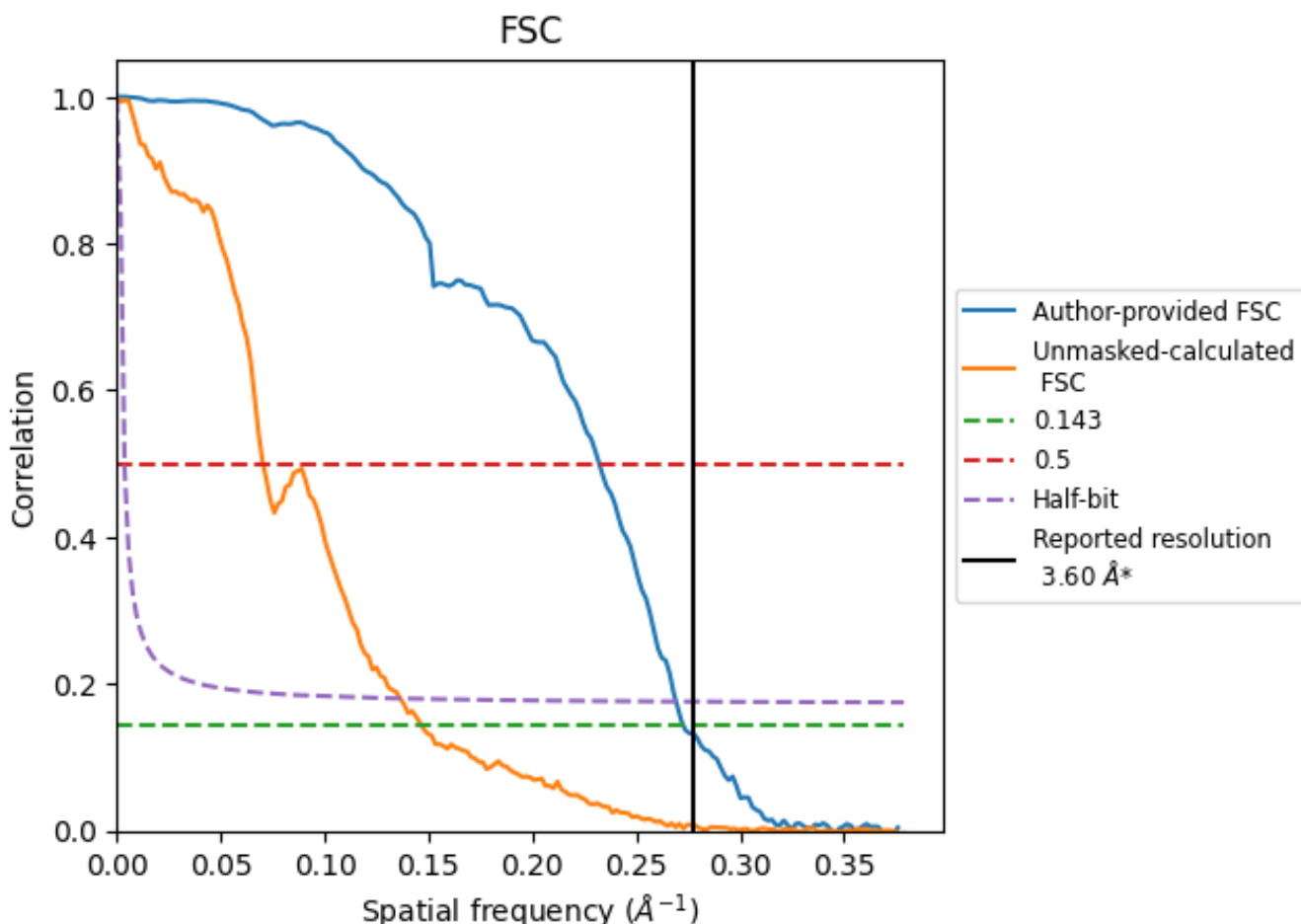


*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

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 0.278 \AA^{-1}

8.2 Resolution estimates [i](#)

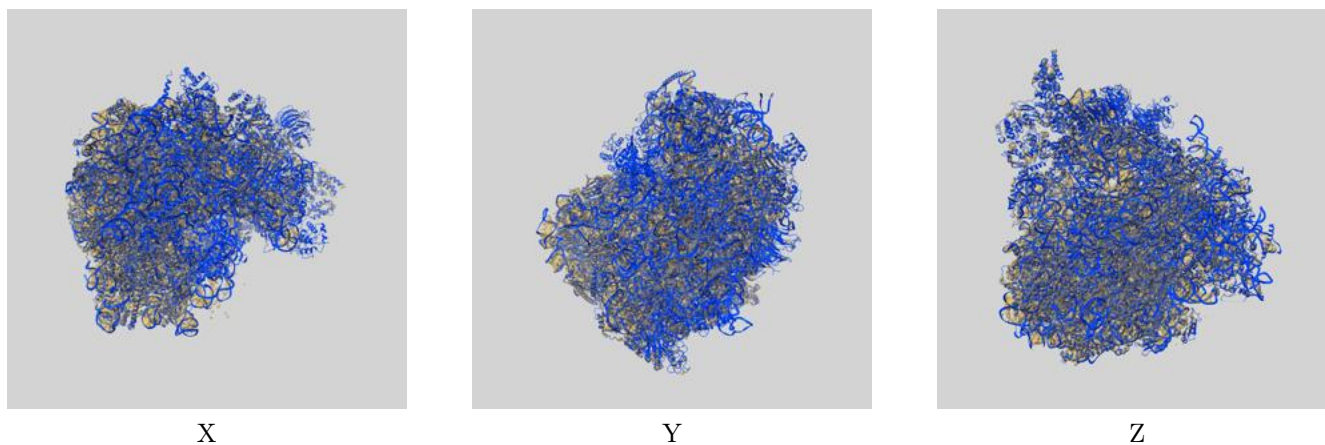
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.67	4.31	3.72
Unmasked-calculated*	6.82	14.22	7.33

*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 6.82 differs from the reported value 3.6 by more than 10 %

9 Map-model fit [i](#)

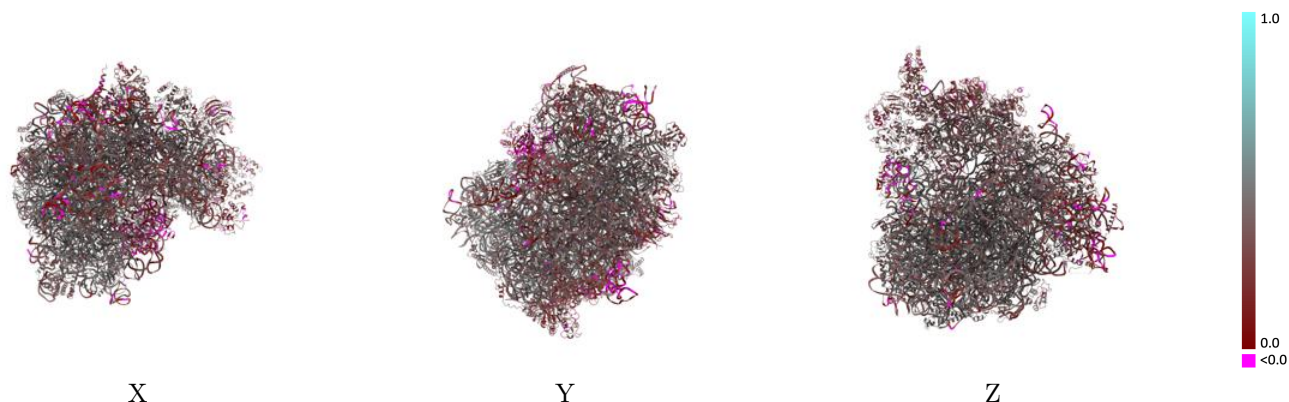
This section contains information regarding the fit between EMDB map EMD-38657 and PDB model 8Z71. Per-residue inclusion information can be found in section 3 on page 18.

9.1 Map-model overlay [i](#)



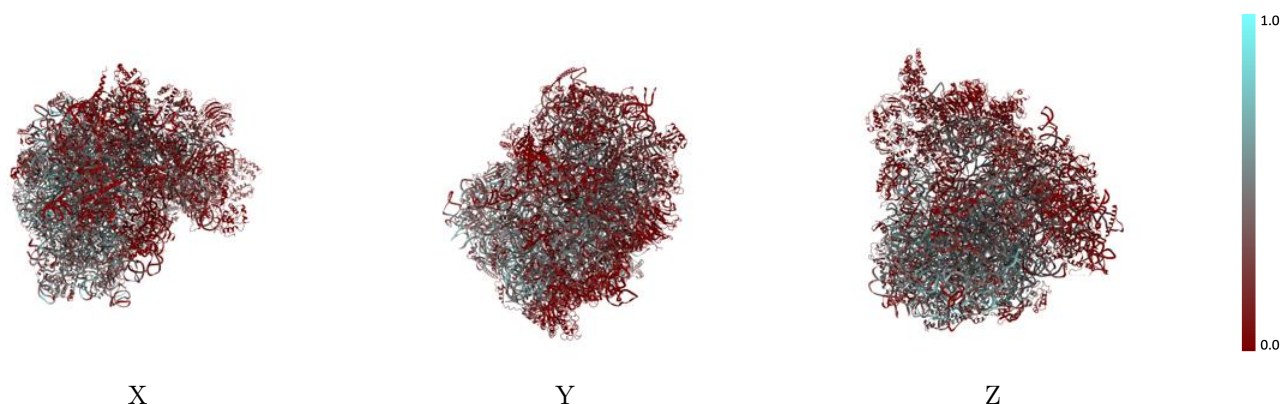
The images above show the 3D surface view of the map at the recommended contour level 0.219 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



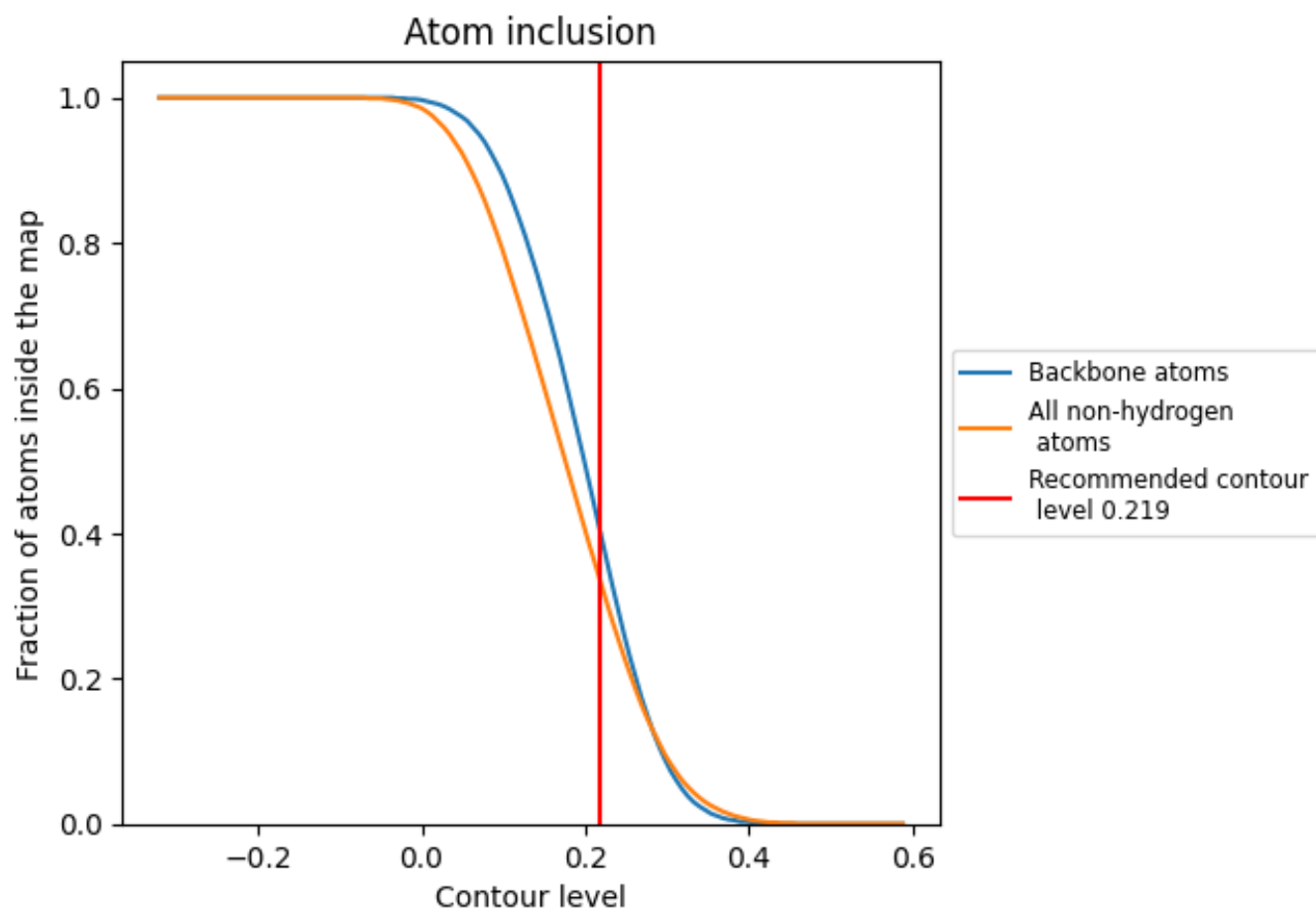
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.219).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 40% of all backbone atoms, 33% 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 (0.219) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.3320	 0.3680
2	 0.3340	 0.3450
A	 0.4980	 0.3800
B	 0.5730	 0.4150
C	 0.5660	 0.4230
D	 0.3190	 0.4540
E	 0.3360	 0.4360
F	 0.3330	 0.4380
G	 0.2520	 0.3730
H	 0.2490	 0.3830
I	 0.3470	 0.4290
J	 0.2750	 0.3920
K	 0.2590	 0.4080
L	 0.2340	 0.4020
M	 0.1900	 0.3670
N	 0.3150	 0.4180
O	 0.3300	 0.4080
P	 0.3470	 0.4480
Q	 0.3550	 0.4290
R	 0.3710	 0.4370
S	 0.3330	 0.4440
SA	 0.0800	 0.3470
SB	 0.1300	 0.3570
SC	 0.0740	 0.3110
SD	 0.0020	 0.1860
SE	 0.0650	 0.3300
SF	 0.1200	 0.3580
SG	 0.1330	 0.3170
SH	 0.1620	 0.3570
SI	 0.1860	 0.3530
SJ	 0.0930	 0.3350
SK	 0.0680	 0.2740
SL	 0.1140	 0.3660
SM	 0.1820	 0.3910
SN	 0.0070	 0.2020















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Chain	Atom inclusion	Q-score
SO	0.0300	0.2220
SP	0.1640	0.3840
SQ	0.1480	0.3810
SR	0.1830	0.4040
SS	0.0880	0.3720
ST	0.0530	0.3030
SU	0.1080	0.3260
SV	0.1640	0.3950
SW	0.1080	0.3430
SX	0.1980	0.4200
SY	0.2290	0.4010
SZ	0.1680	0.4130
Sa	0.1700	0.3850
Sb	0.2420	0.4160
Sc	0.1560	0.4130
Sd	0.0700	0.3030
Se	0.2360	0.3890
Sf	0.1270	0.3890
Sg	0.0720	0.3290
T	0.2840	0.3940
U	0.3340	0.4400
V	0.2880	0.4340
W	0.1830	0.3410
X	0.2620	0.4420
Y	0.1900	0.3600
Z	0.3130	0.4230
a	0.3120	0.4290
b	0.3150	0.4150
c	0.3480	0.4440
d	0.2700	0.4130
e	0.3150	0.4250
f	0.3240	0.4250
g	0.3470	0.4540
h	0.3760	0.4570
i	0.2940	0.4330
j	0.3200	0.4060
k	0.3010	0.3970
l	0.4100	0.4600
m	0.1770	0.3790
n	0.3180	0.4380
o	0.2600	0.4190
p	0.2790	0.4390

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Chain	Atom inclusion	Q-score
q	 0.2800	 0.4300
r	 0.2900	 0.4210
s	 0.0110	 0.1650
t	 0.2130	 0.3140
v	 0.0850	 0.2830
x	 0.0010	 0.0850