



Full wwPDB EM Validation Report ⓘ

Apr 22, 2024 – 03:30 PM EDT

PDB ID : 8V87
EMDB ID : EMD-43027
Title : 60S ribosome biogenesis intermediate (Dbp10 post-catalytic structure - Overall map)
Authors : Cruz, V.E.; Weirich, C.S.; Peddada, N.; Erzberger, J.P.
Deposited on : 2023-12-04
Resolution : 2.66 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.dev92
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

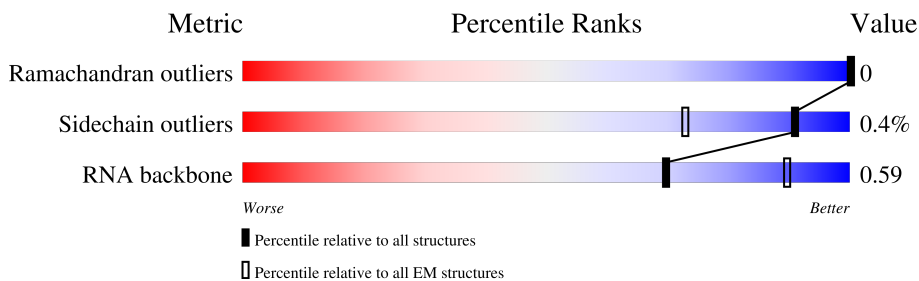
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.66 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	1	3396	
2	2	158	
3	3	995	
4	6	232	
5	7	204	
6	8	710	
7	A	291	
8	B	387	

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Mol	Chain	Length	Quality of chain
9	C	362	9% 99%
10	D	505	63% 86% 14%
11	E	176	21% 88% 11%
12	F	244	9% 88% 12%
13	G	256	9% 77% 23%
14	H	191	15% 98%
15	I	663	73% 79% 21%
16	J	427	24% 34% 66%
17	K	376	59% 74% 26%
18	L	199	6% 61% 39%
19	M	138	13% 99%
20	N	204	93% 7%
21	O	199	8% 98%
22	P	184	18% 89% 11%
23	Q	186	10% 68% 32%
24	R	189	57% 71% 29%
25	S	172	31% 98%
26	U	121	84% 84% 16%
27	V	137	48% 93% 7%
28	W	236	93% 98%
29	X	142	24% 96%
30	Y	127	7% 98%
31	Z	136	88% 99%
32	a	217	99% 98%
33	b	647	37% 72% 28%

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Mol	Chain	Length	Quality of chain
34	c	105	90% 92% 8%
35	d	113	77% 95% 5%
36	e	130	5% 96% .
37	f	107	. 99% .
38	g	121	40% 93% 7%
39	h	120	11% 99% .
40	i	100	. 72% 28%
41	j	88	. 83% 17%
42	k	78	77% 99% .
43	l	181	50% 97% . .
44	m	807	56% 82% . 17%
45	n	605	32% 70% 30%
46	o	220	31% 60% 40%
47	p	460	67% 66% . 33%
48	q	618	47% 60% 40%
49	r	261	42% 82% 18%
50	s	520	. 7% 93%
51	t	322	49% 89% 11%
52	u	199	33% 57% 43%
53	v	231	6% 56% 44%
54	w	841	20% 33% 67%
55	y	245	47% 100%
56	z	106	35% 52% 48%

2 Entry composition

There are 61 unique types of molecules in this entry. The entry contains 150186 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 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2489	53292	23794	9638	17371	2489	0	0

- Molecule 2 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	155	3291	1472	577	1087	155	0	0

- Molecule 3 is a protein called ATP-dependent RNA helicase DBP10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	3	656	5253	3347	925	960	21	0	0

- Molecule 4 is a RNA chain called ITS2 RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	6	87	1838	823	309	619	87	0	0

- Molecule 5 is a protein called 60S ribosomal subunit assembly/export protein LOC1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	7	134	1093	679	211	203	0	0

- Molecule 6 is a protein called Nucleolar complex protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	8	477	3868	2478	667	710	13	0	0

- Molecule 7 is a protein called Ribosome biogenesis protein BRX1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	A	248	2032	1294	359	373	6	0	0

- Molecule 8 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	B	336	2670	1696	493	475	6	0	0

- Molecule 9 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	C	358	2725	1717	517	488	3	0	0

- Molecule 10 is a protein called ATP-dependent RNA helicase HAS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	D	432	3451	2227	591	621	12	0	0

- Molecule 11 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	E	156	1239	800	222	216	1	0	0

- Molecule 12 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	F	215	1735	1122	316	296	1	0	0

- Molecule 13 is a protein called Large ribosomal subunit protein eL8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	G	198	1549	998	271	277	3	0	0

- Molecule 14 is a protein called Large ribosomal subunit protein uL6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	H	189	Total	C	N	O	S	0	0
			1502	953	272	273	4		

- Molecule 15 is a protein called Nucleolar complex-associated protein 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	I	526	Total	C	N	O	S	0	0
			4201	2665	717	799	20		

- Molecule 16 is a protein called rRNA-processing protein EBP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	J	145	Total	C	N	O	S	0	0
			1215	759	225	228	3		

- Molecule 17 is a protein called Proteasome-interacting protein CIC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	K	280	Total	C	N	O	S	0	0
			2248	1448	368	428	4		

- Molecule 18 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	L	121	Total	C	N	O	S	0	0
			991	623	208	160			

- Molecule 19 is a protein called 60S ribosomal protein L14-A.

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

- Molecule 20 is a protein called Large ribosomal subunit protein eL15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	N	189	Total	C	N	O	S	0	0
			1621	1015	343	262	1		

- Molecule 21 is a protein called Large ribosomal subunit protein uL13A.

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

- Molecule 22 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	P	164	1292	804	253	235	0	0

- Molecule 23 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Q	127	973	625	180	167	1	0	0

- Molecule 24 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
24	R	134	1082	679	220	183	0	0

- Molecule 25 is a protein called Large ribosomal subunit protein eL20A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	S	170	1432	922	265	242	3	0	0

- Molecule 26 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
26	U	102	808	524	132	152	0	0

- Molecule 27 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	V	127	939	593	173	166	7	0	0

- Molecule 28 is a protein called Ribosome assembly factor MRT4.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	W	232	Total	C	N	O	S	0	0
			1870	1184	321	360	5		

- Molecule 29 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	X	137	Total	C	N	O	S	0	0
			1068	682	192	192	2		

- Molecule 30 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
30	Y	126	Total	C	N	O	0	0
			993	625	192	176		

- Molecule 31 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	Z	135	Total	C	N	O	0	0
			1092	710	202	180		

- Molecule 32 is a protein called Large ribosomal subunit protein uL1A.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	a	214	Total	C	N	O	S	0	0
			1695	1083	295	308	9		

- Molecule 33 is a protein called Nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	b	469	Total	C	N	O	S	0	0
			3806	2419	662	708	17		

- Molecule 34 is a protein called 60S ribosomal protein L30.

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

- Molecule 35 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	d	107	873	553	165	154	1	0	0

- Molecule 36 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	e	125	1009	641	203	164	1	0	0

- Molecule 37 is a protein called 60S ribosomal protein L33-A.

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

- Molecule 38 is a protein called 60S ribosomal protein L34-A.

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

- Molecule 39 is a protein called 60S ribosomal protein L35-A.

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

- Molecule 40 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	i	72	578	358	121	98	1	0	0

- Molecule 41 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	j	73	580	353	126	96	5	0	0

- Molecule 42 is a protein called 60S ribosomal protein L38.

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

- Molecule 43 is a protein called 60S ribosome subunit biogenesis protein NIP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	l	176	Total	C	N	O	S	0	0
			1394	896	244	247	7		

- Molecule 44 is a protein called Ribosome biogenesis protein ERB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	m	666	Total	C	N	O	S	0	0
			5377	3421	936	1005	15		

- Molecule 45 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	n	425	Total	C	N	O	S	0	0
			3470	2241	600	615	14		

- Molecule 46 is a protein called Ribosome biogenesis protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	o	133	Total	C	N	O	S	0	0
			1107	716	198	189	4		

- Molecule 47 is a protein called YTM1 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	p	307	Total	C	N	O	S	0	0
			2391	1492	422	471	6		

- Molecule 48 is a protein called 25S rRNA (cytosine(2870)-C(5))-methyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	q	371	Total	C	N	O	S	0	0
			2902	1842	504	543	13		

- Molecule 49 is a protein called Ribosome biogenesis protein NSA2.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	r	214	Total	C	N	O	S	0	0
			1738	1096	332	304	6		

- Molecule 50 is a protein called Nuclear GTP-binding protein NUG1.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	s	36	Total	C	N	O	S	0	0
			301	184	69	46	2		

- Molecule 51 is a protein called Ribosome biogenesis protein RLP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	t	285	Total	C	N	O	S	0	0
			2293	1453	425	412	3		

- Molecule 52 is a protein called Ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	u	114	Total	C	N	O	S	0	0
			959	602	196	152	9		

- Molecule 53 is a protein called Nucleolar protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	v	130	Total	C	N	O	S	0	0
			1087	678	211	195	3		

- Molecule 54 is a protein called 27S pre-rRNA (guanosine(2922)-2'-O)-methyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	w	280	Total	C	N	O	S	0	0
			2241	1395	419	417	10		

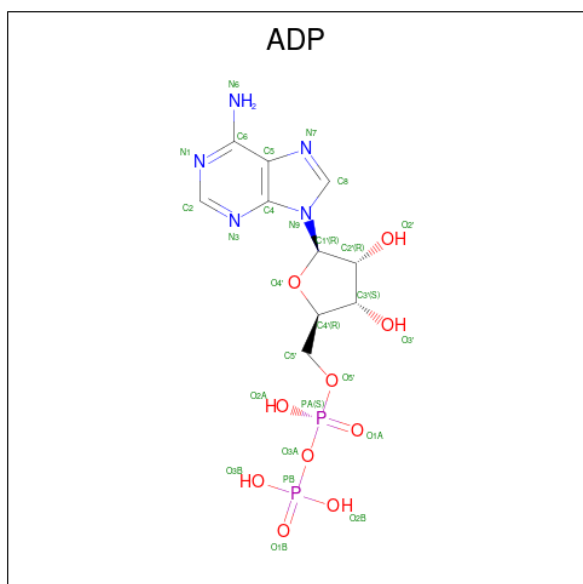
- Molecule 55 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	y	245	Total	C	N	O	S	0	0
			1855	1149	320	379	7		

- Molecule 56 is a protein called UPF0642 protein YBL028C.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
56	z	55	444	273	88	83	0	0

- Molecule 57 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
57	3	1	27	10	5	10	2	0

- Molecule 58 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
58	3	1	1	1	0
58	b	1	1	1	0

- Molecule 59 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



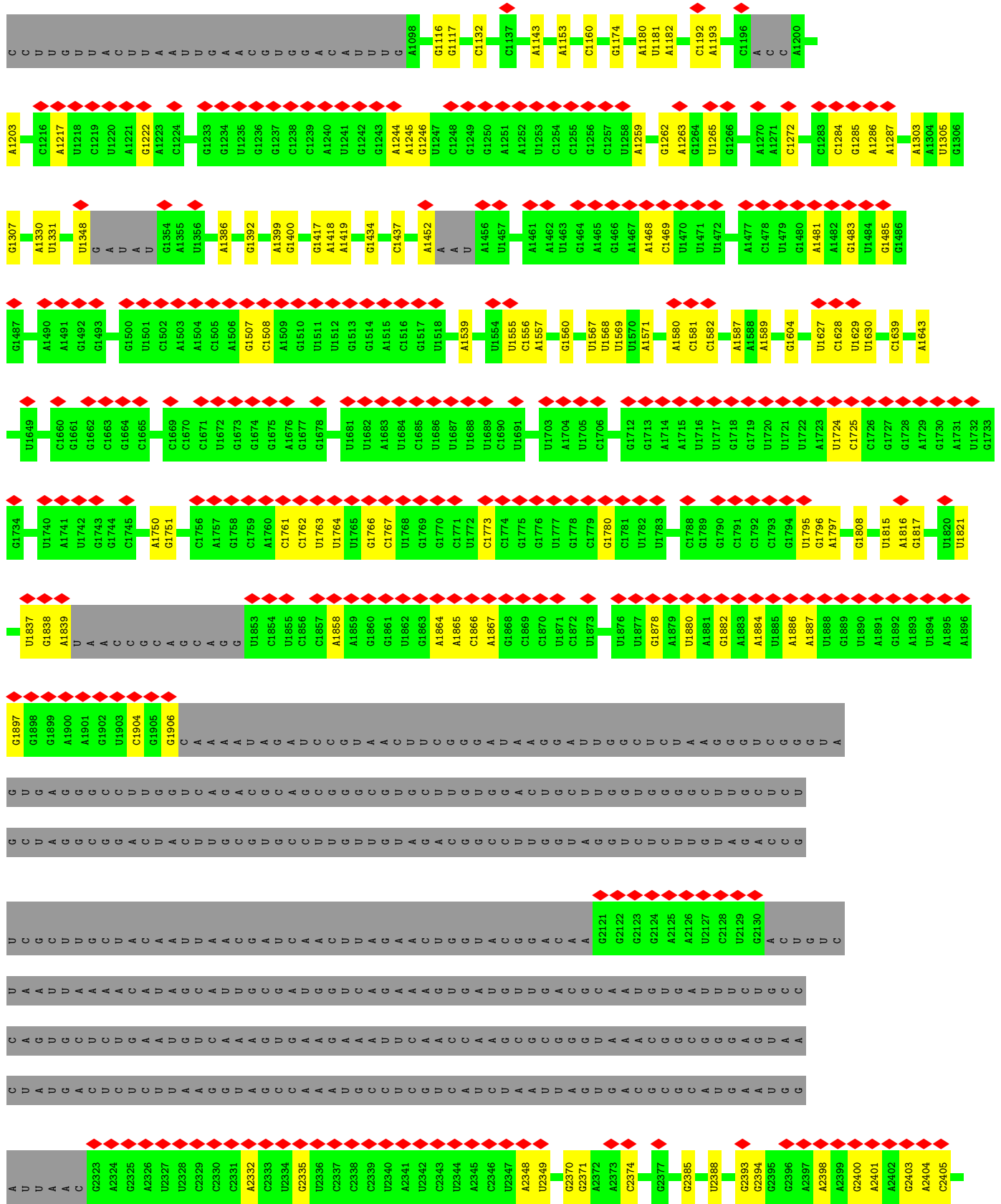
Mol	Chain	Residues	Atoms					AltConf
59	b	1	Total	C	N	O	P	0
			28	10	5	11	2	

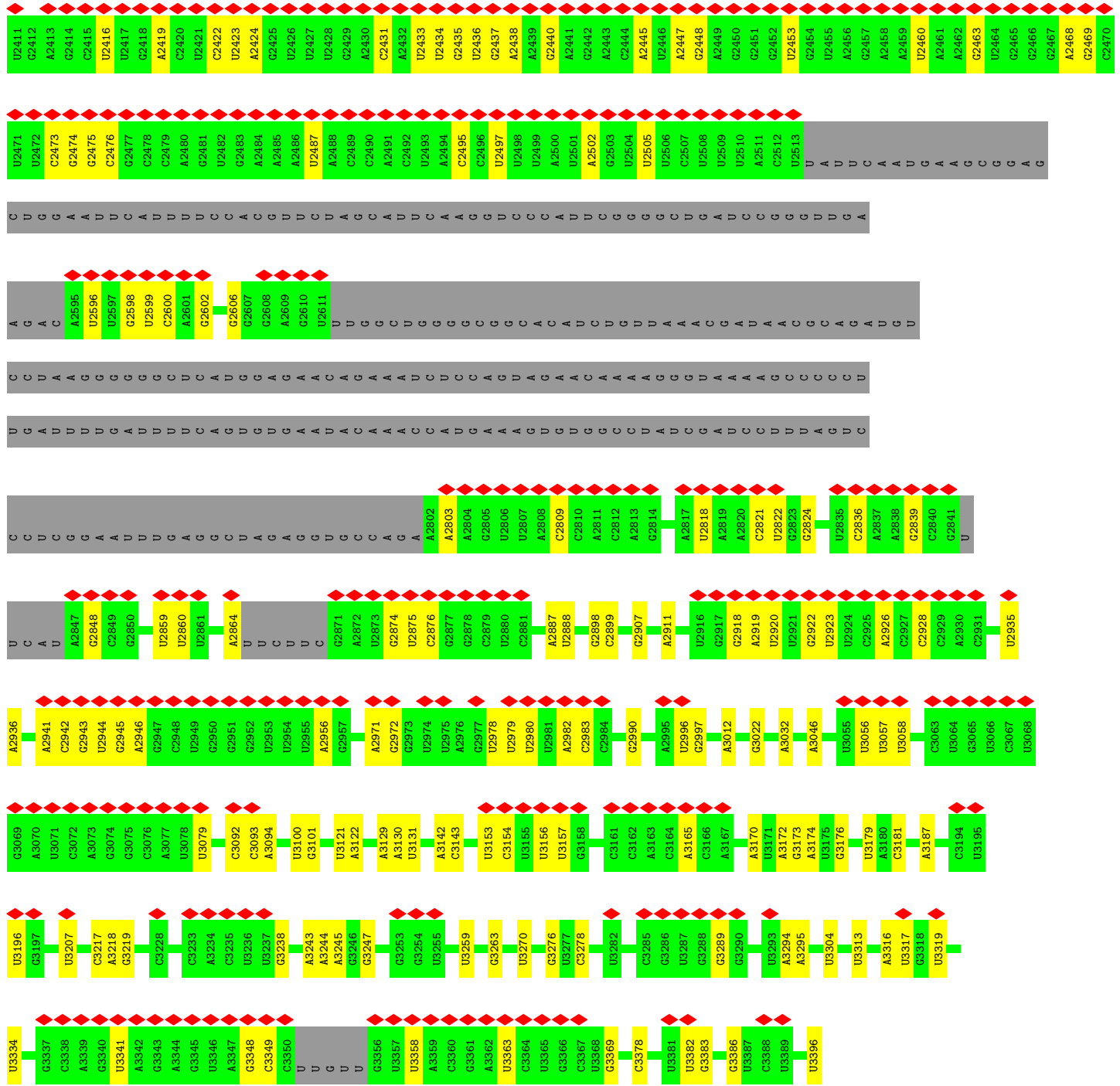
- Molecule 60 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
60	b	1	Total	K	0
			1	1	

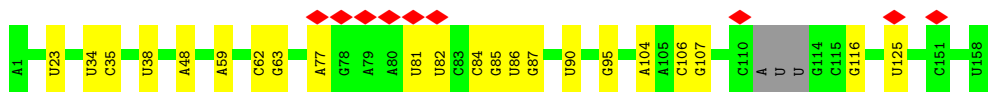
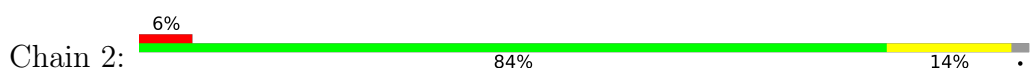
- Molecule 61 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
61	g	1	Total	Zn	0
			1	1	
61	j	1	Total	Zn	0
			1	1	

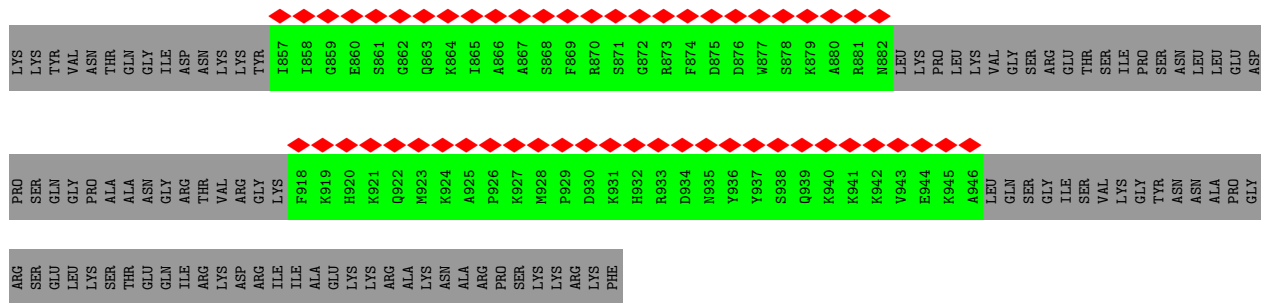




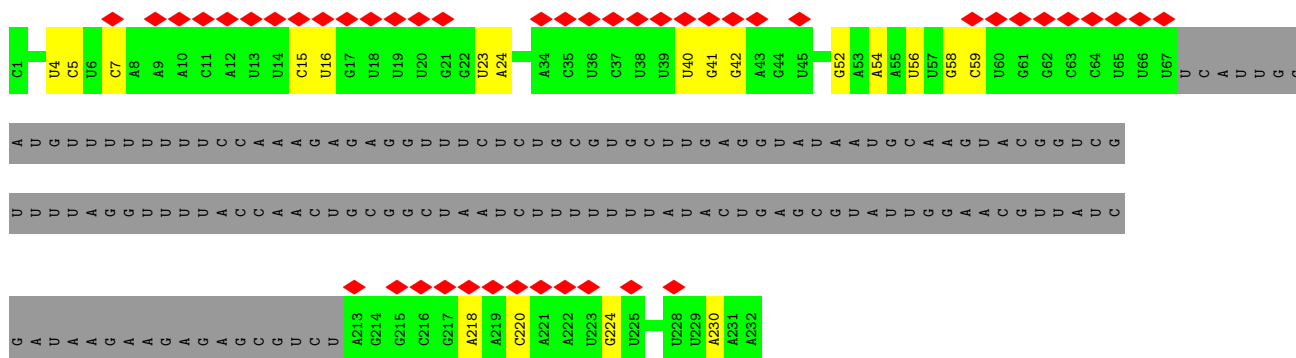
• Molecule 2: 5.8S ribosomal RNA



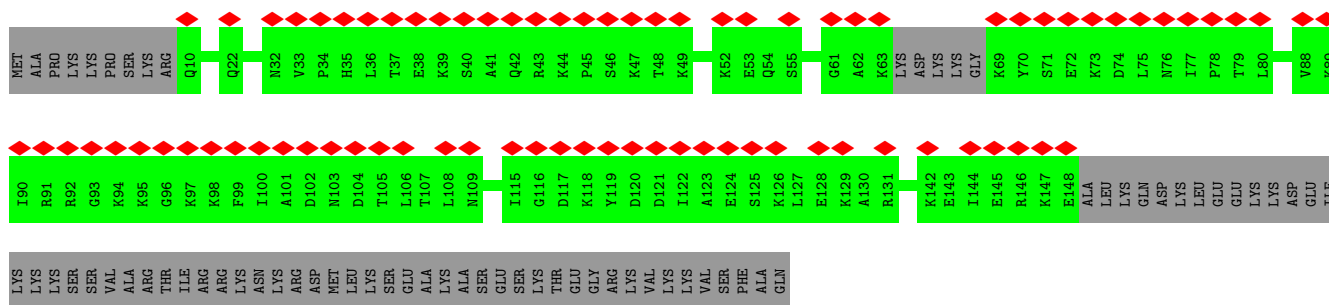
• Molecule 3: ATP-dependent RNA helicase DBP10



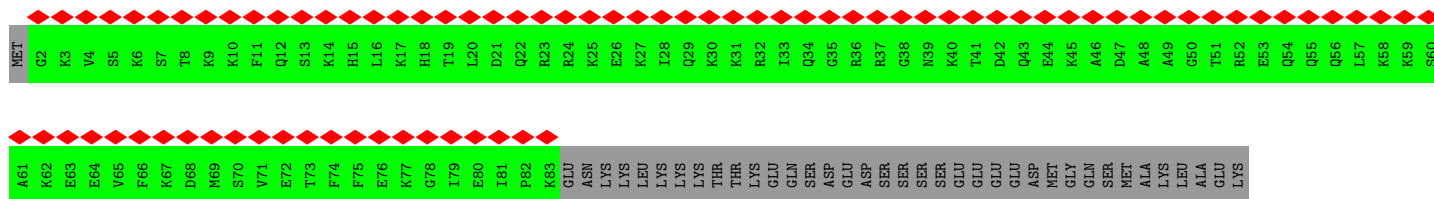
• Molecule 4: ITS2 RNA

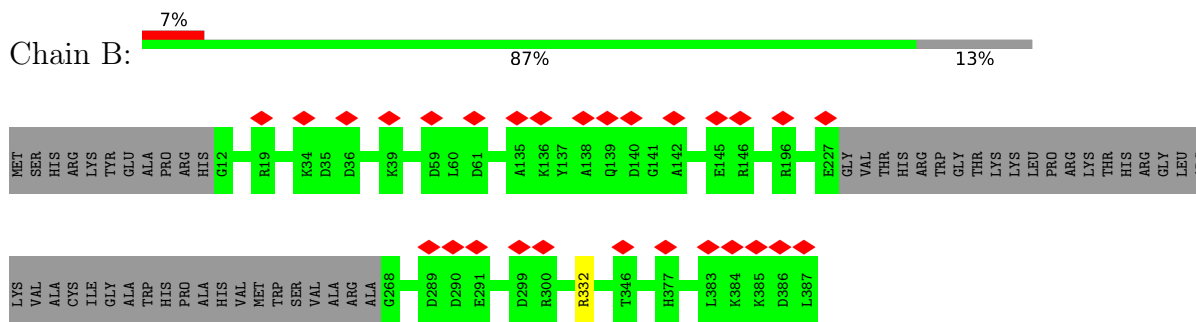


• Molecule 5: 60S ribosomal subunit assembly/export protein LOC1

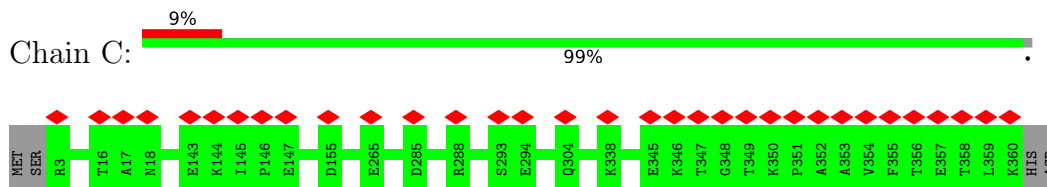


• Molecule 6: Nucleolar complex protein 2

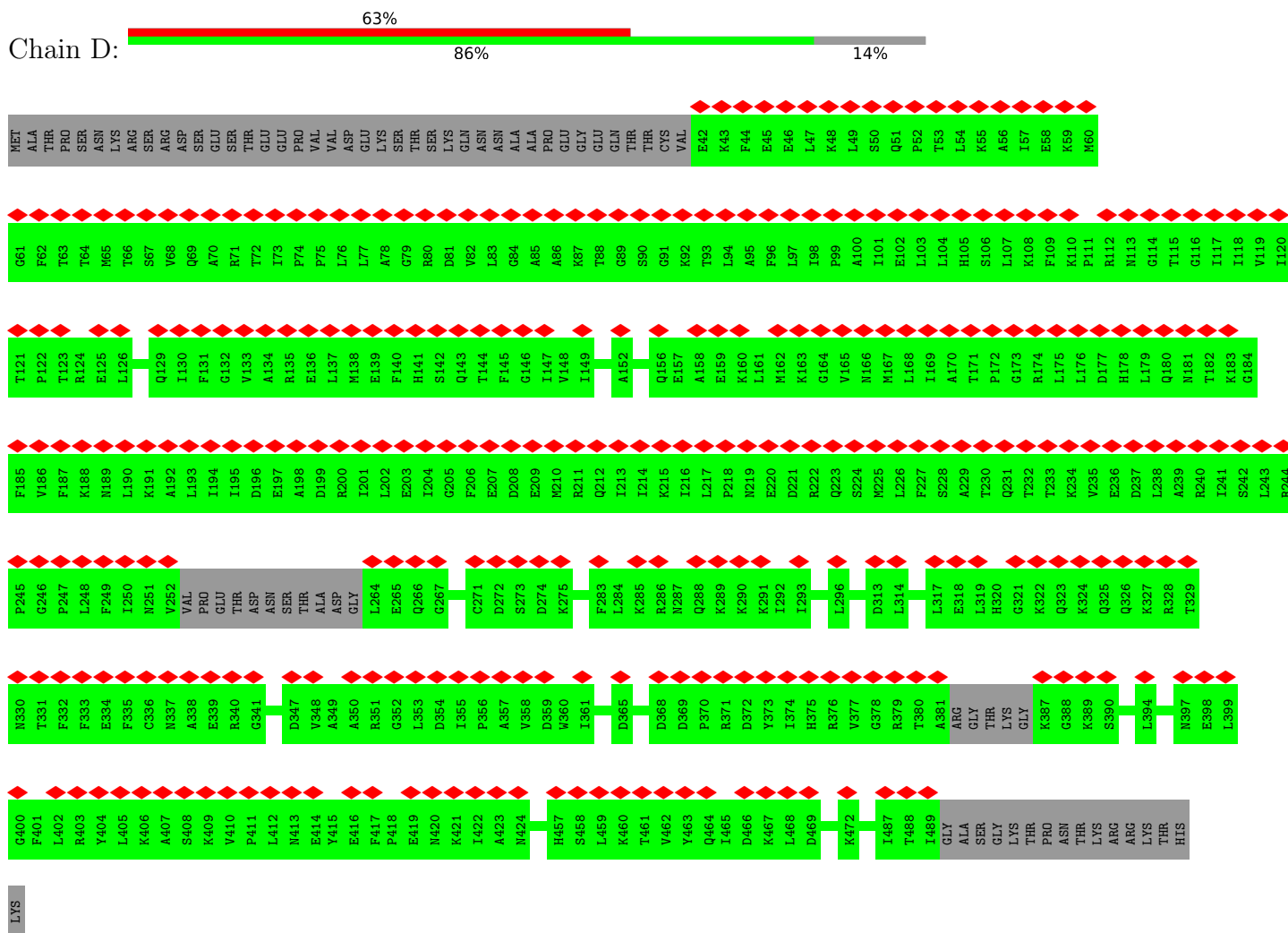




• Molecule 9: 60S ribosomal protein L4-A



• Molecule 10: ATP-dependent RNA helicase HAS1



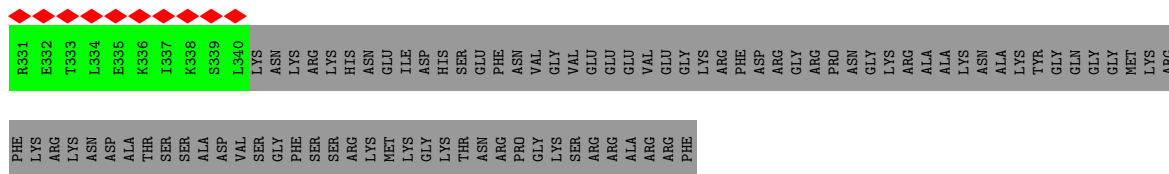
• Molecule 11: 60S ribosomal protein L6-A

ALA	ALA	T130	L181	A241	L301	L361	L425	M492	H552	G614
GLU	ALA	E131	V182	A242	L302	K362	I426	V493	F552	H615
LYS	LYS	E132	P183	A243	N303	K363	G427	D494	R556	F616
ASP	GLU	K133	V184	T244	E304	K364	S428	L495	S557	L617
PRO	ASP	I134	F185	Q245	E306	D365	E431	S496	K558	M618
ASP	PRO	L135	K186	V246	E307	R366	G432	F498	F619	E620
		L136	S187	S247	G308	V367	L433	V499	G560	D621
		L137	I188	L248	S309	H368	T434	D500	T561	M622
		L138	P189	G249	S309	H368	L433	D500	A562	P623
		L139	P190	G249	S309	H368	L433	D500	E563	S624
		L140	G191	L250	I310	S370	K435	G501	R564	R625
		L141	G191	L251	S311	S370	M438	L502	R564	R625
		L142	Y192	A252	F312	K371	M439	L503	A565	S626
		L143	R193	T253	E313	K372	D443	L504	F568	M627
		L144	R193	Q254	E313	R374	L444	L505	T569	P628
		L145	I194	Q254	E313	K375	L444	L506	K570	E629
		L146	R195	A255	L315	A376	L445	L507	A571	A630
		L147	P196	A256	R316	R377	G446	L508	L572	A630
		L148	P196	A256	R316	R377	G446	L509	L573	T632
		L149	L197	K257	I317	K378	D447	L510	M574	M633
		L150	L197	E258	F318	K378	V451	L511	C575	M634
		L151	L199	E259	N319	E379	E454	L512	L576	D635
		L152	E199	L259	K320	M380	E454	L513	S577	M636
		L153	T200	L260	I321	Q381	E454	L514	H578	A637
		L154	E201	S261	L322	Q382	L455	L515	L579	L638
		L155	K202	T262	L322	I383	L456	L516	P580	L639
		L156	K203	A263	K223	E384	L457	L517	E581	E640
		L157	E204	S264	T324	E385	D458	L518	K582	F641
		L158	K205	H265	R325	E386	L459	L519	L583	H642
		L159	K206	F266	N326	E386	L459	L520	T583	Y643
		L160	M207	N267	F327	M387	L460	L521	L584	C644
		L161	K208	F268	I329	R388	L461	L522	L585	F645
		L162	E209	R269	I329	N389	D462	L523	A586	V646
		L163	E210	F270	E330	A390	L463	L524	L588	T648
		L164	S211	T271	E331	E391	L464	L525	K589	R649
		L165	K212	I272	S332	Q392	L465	L526	F590	G650
		L166	K212	I272	S332	Q392	L466	L527	L591	L651
		L167	L213	F273	V333	A393	L467	L528	D592	R652
		L168	R214	T274	L334	V394	A467	L529	L593	L654
		L169	N215	L275	N335	S395	E468	L530	M596	S656
		L170	F216	L276	M336	A396	V469	L531	L597	R657
		L171	E217	L277	L337	E397	R470	L532	M599	S658
		L172	Q218	L278	L338	E398	K471	L533	F599	R659
		L173	A219	R279	S339	R399	A472	L534	L601	E660
		L174	L220	I280	L340	E400	L473	L535	G602	S662
		L175	Y221	C281	D341	R401	L474	L536	L604	L604
		L176	Y222	K282	V342	S404	L475	L537	L605	L605
		L177	N223	P283	L343	E405	L476	L538	S606	S606
		L178	Y224	R284	H344	K408	L477	L539	E608	E608
		L179	K225	R285	D345	F411	A479	L540	D609	D609
		L180	E226	S286	Y346	I413	F480	L541	R610	R610
		L181	Y227	T287	P347	M416	S481	L542	L611	L611
		L182	V228	D288	N349	I417	L482	L543	G612	G612
		L183	G229	P289	T350	L418	L483	L544	L613	L613
		L184	R230	T290	K351	Q487	S484	L545		
		L185	G231	S291	L352	L488	T486	L546		
		L186	L231	I292	L352	M485	Q487	L547		
		L187	Q232	Q293	LYS	L419	M489	L548		
		L188	S233	Q293	GLY	K419	M489	L549		
		L189	L234	I294	ASN	N420	M489	L550		
		L190	E235	Q296	VAL	A422	M489	D551		
		L191	S235	T297	SER	A422	M489			
		L192	K236	F298	ALA	A422	M489			
		L193	L237	T299	PRO	K423	M489			
		L194	P238	F299	K360	T424	M489			
		L195	E239	E299			M489			

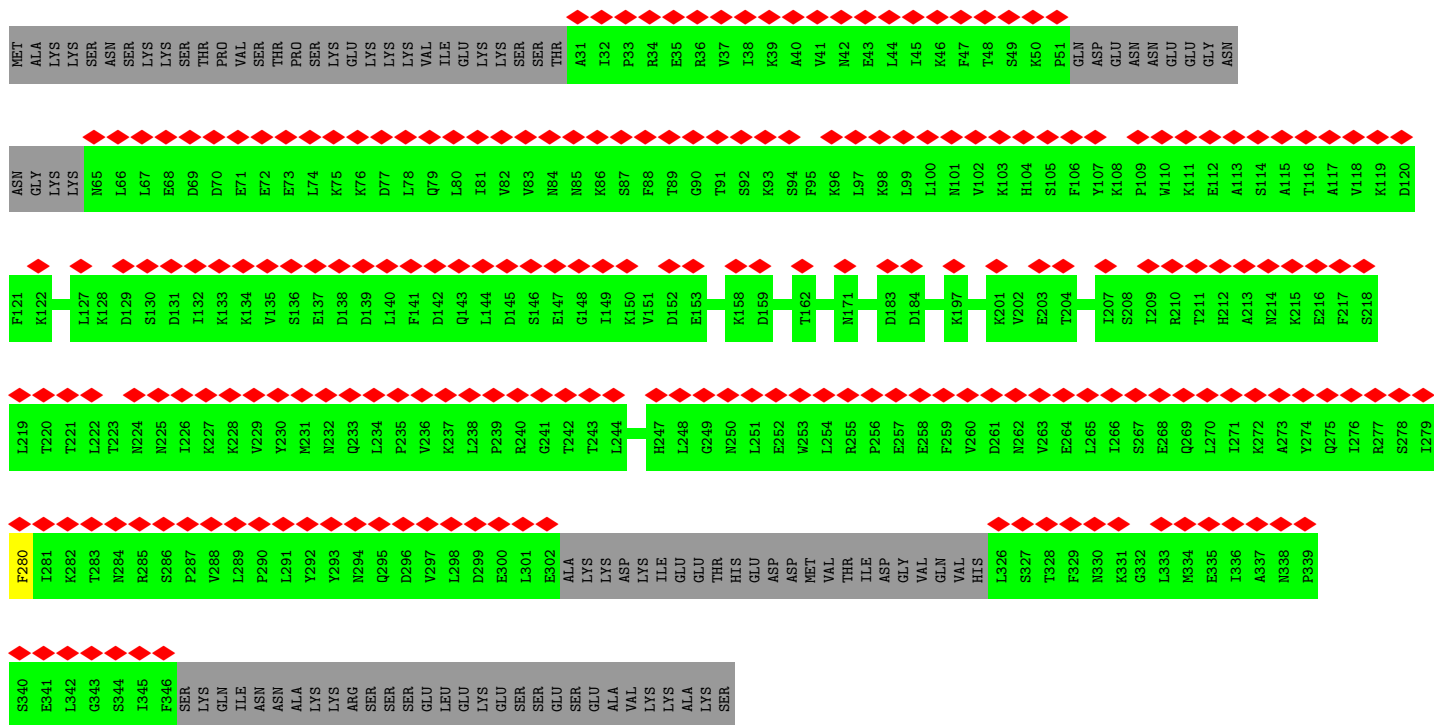
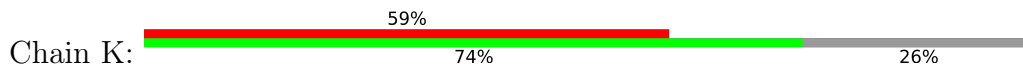
• Molecule 16: rRNA-processing protein EBP2



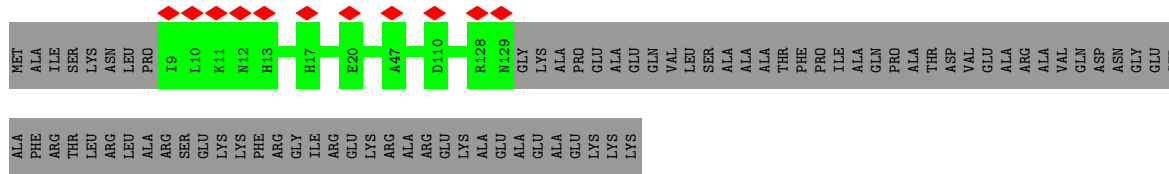
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ALA	LYS	GLU	ASP
GLY	GLU	GLU	SER
PHE	VAL	GLU	ASP
ALA	ALA	GLY	ALA
LYS	ASP	ARG	VAL
LEU	THR	LEU	VAL
LYS	THR	ASP	PRO
GLU	GLU	ASP	HIS
LEU	LEU	GLU	HIS
LEU	LEU	GLU	LYS
LEU	TYR	GLU	LYS
LEU	GLN	LEU	LEU
HIS	SER	LEU	LEU
HIS	GLN	ALA	THR
GLN	GLN	ALA	VAL
LYS	LYS	LYS	VAL
GLU	ILE	SER	N196
GLU	GLU	ASP	M197
GLU	GLU	ASP	T198
GLU	LYS	GLU	K199
LYS	LYS	SER	A200
ALA	GLU	GLU	K201
ALA	GLU	ASP	K202
LYS	LEU	SER	A204
LYS	LEU	SER	L205
ILE	LEU	ASN	E206
GLU	LEU	GLU	L207
ASP	LYS	GLU	L208
ASP	LYS	GLU	V208
ASP	LYS	GLU	Q209
ASP	LYS	GLU	L210
GLN	LEU	ASP	P211
LEU	LEU	ASP	K212
LEU	LEU	VAL	K213
LEU	THR	VAL	L214
LEU	LYS	ALA	K214
LEU	GLU	LYS	L215
THR	GLN	GLU	K300
ILE	LYS	SER	A301
VAL	MET	GLU	R302
THR	THR	GLU	E303
ALA	ALA	LYS	E304
THR	GLY	GLU	A305
ALA	SER	GLU	E306
ASN	GLU	GLU	R307
ASN	ASN	GLN	Q308
LEU	LEU	GLU	R309
LYS	LYS	GLU	Q310
LYS	LYS	GLU	L311
LEU	ARG	VAL	K312
GLU	GLU	PRO	L313
LYS	LYS	LEU	K314
LYS	LYS	SER	D235
ALA	ALA	ASP	F314
ASP	ASP	VAL	G315
VAL	GLU	ASP	G316
VAL	GLU	ASP	L316
GLU	GLU	ASP	Q317
VAL	GLU	ASP	V318
GLU	GLU	ASP	L323
GLU	GLU	ASP	Q324
GLU	GLU	ASP	K325
GLU	GLU	ASP	R326
GLU	GLU	ASP	Q327
GLU	GLU	ASP	L328
GLU	GLU	ASP	E329
GLU	GLU	ASP	K330



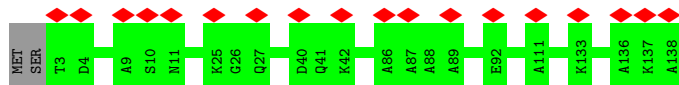
• Molecule 17: Proteasome-interacting protein CIC1



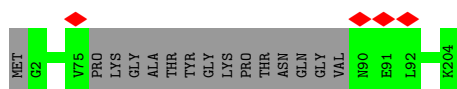
• Molecule 18: 60S ribosomal protein L13-A



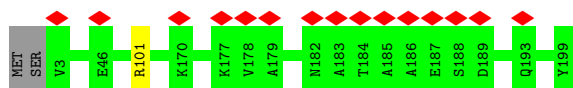
• Molecule 19: 60S ribosomal protein L14-A



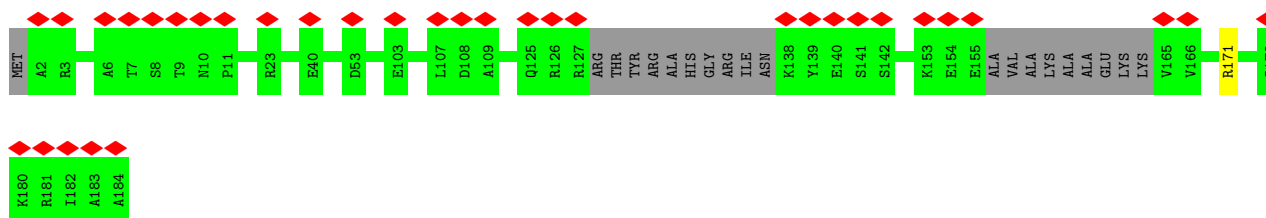
• Molecule 20: Large ribosomal subunit protein eL15A



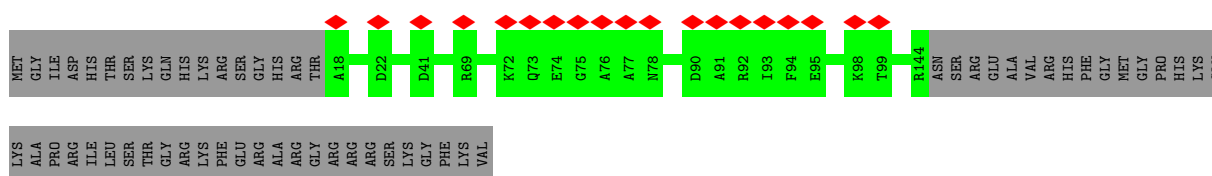
- Molecule 21: Large ribosomal subunit protein uL13A



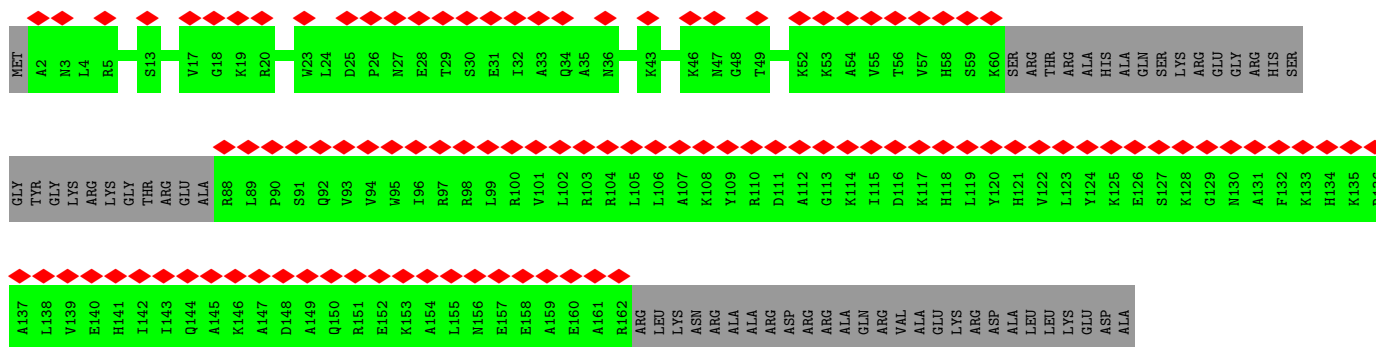
- Molecule 22: 60S ribosomal protein L17-A



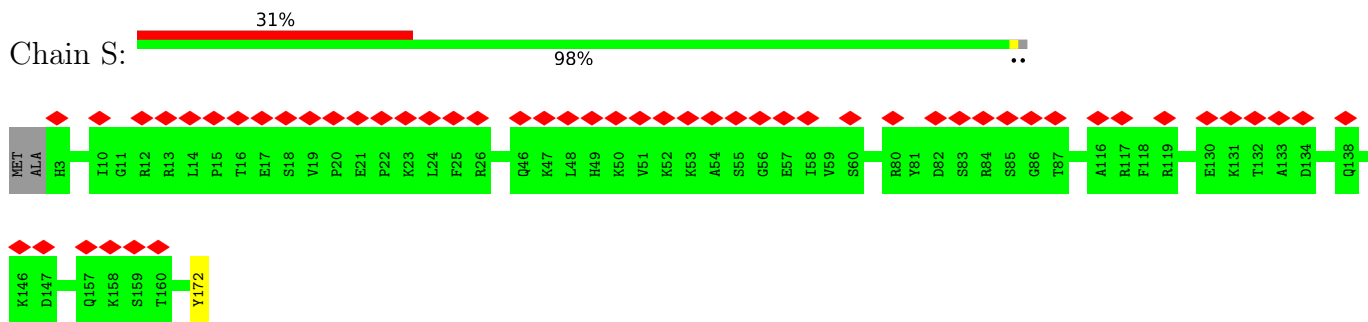
- Molecule 23: 60S ribosomal protein L18-A



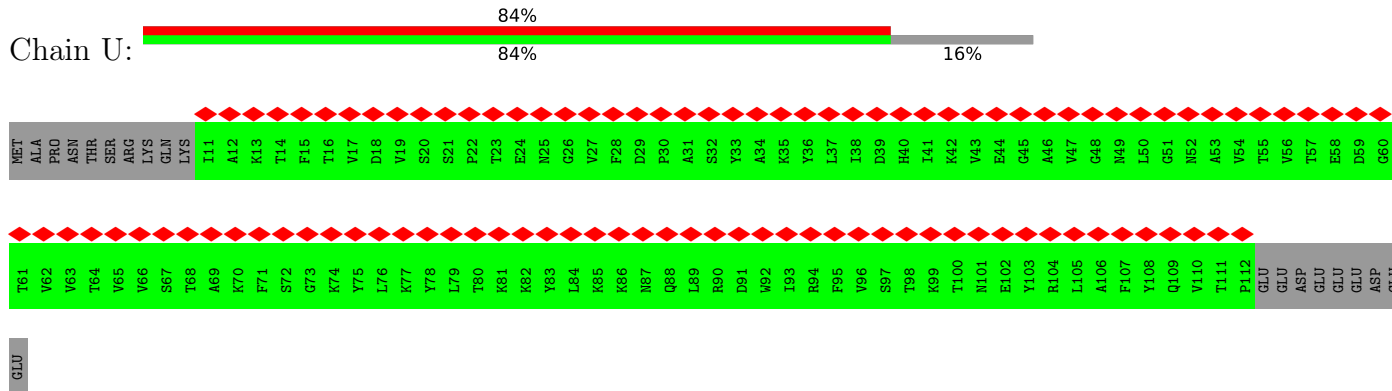
- Molecule 24: 60S ribosomal protein L19-A



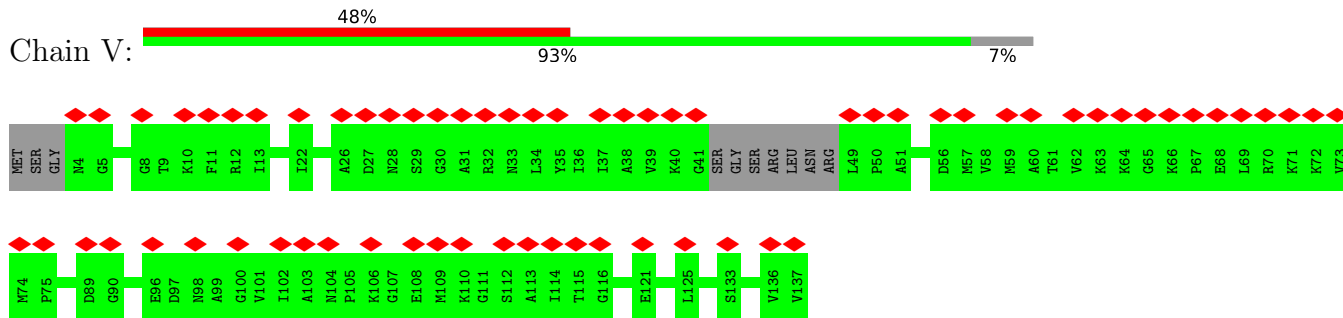
- Molecule 25: Large ribosomal subunit protein eL20A



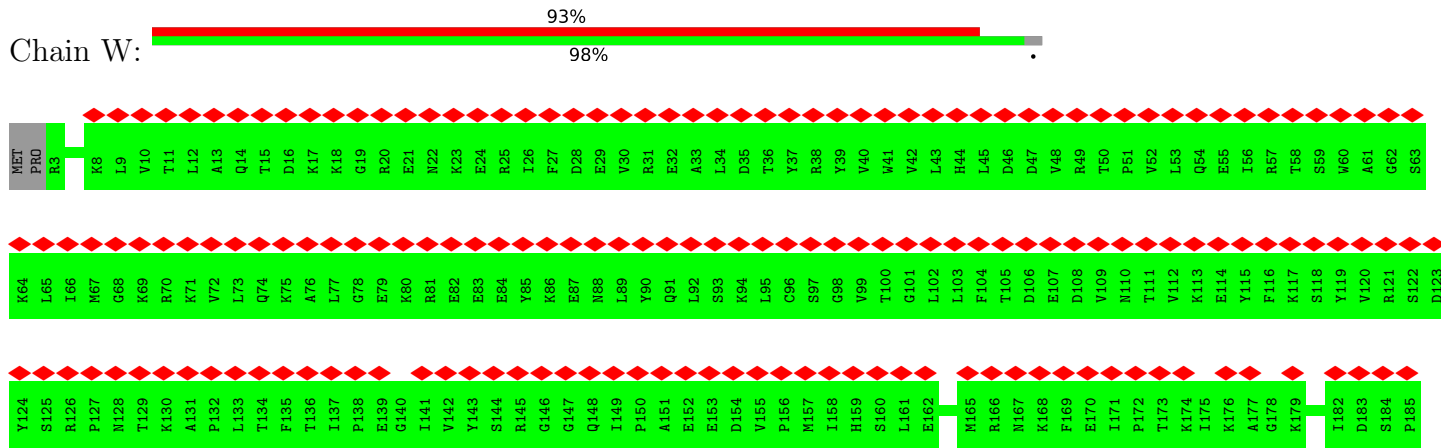
• Molecule 26: 60S ribosomal protein L22-A

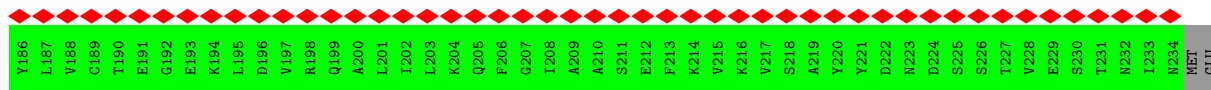


• Molecule 27: 60S ribosomal protein L23-A

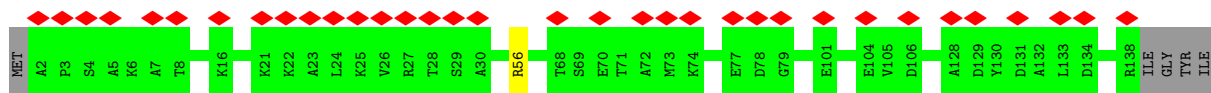


• Molecule 28: Ribosome assembly factor MRT4

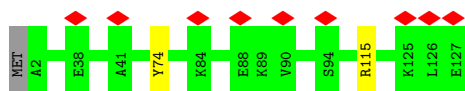




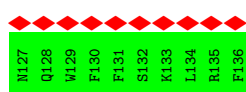
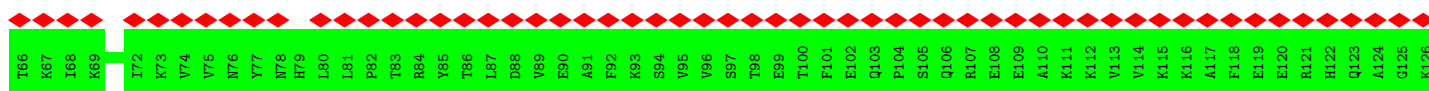
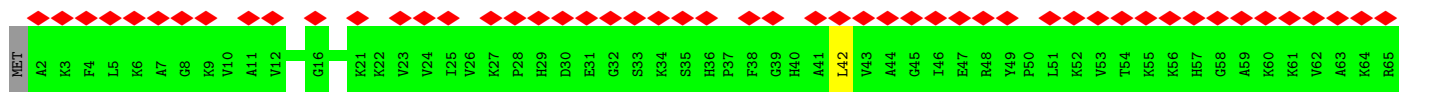
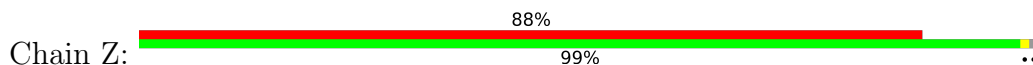
• Molecule 29: 60S ribosomal protein L25



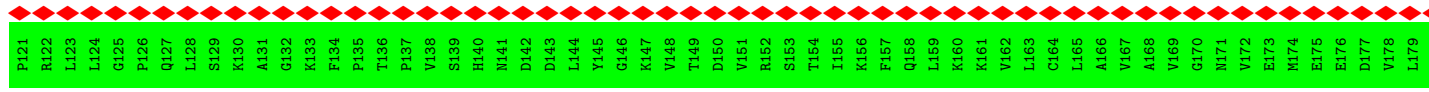
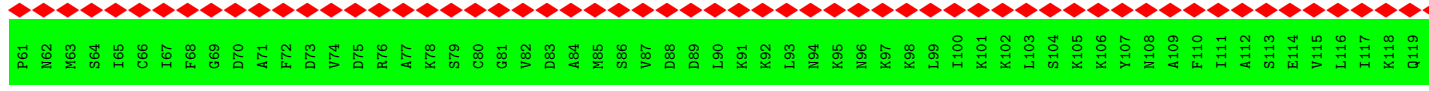
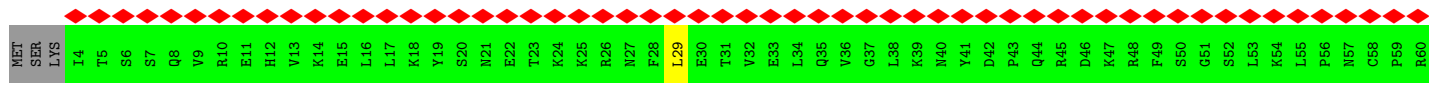
• Molecule 30: 60S ribosomal protein L26-A

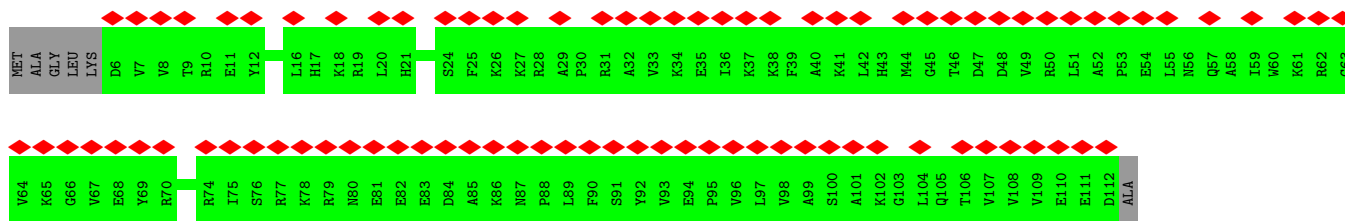


• Molecule 31: 60S ribosomal protein L27-A

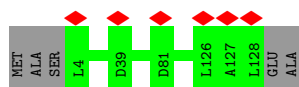


• Molecule 32: Large ribosomal subunit protein uL1A





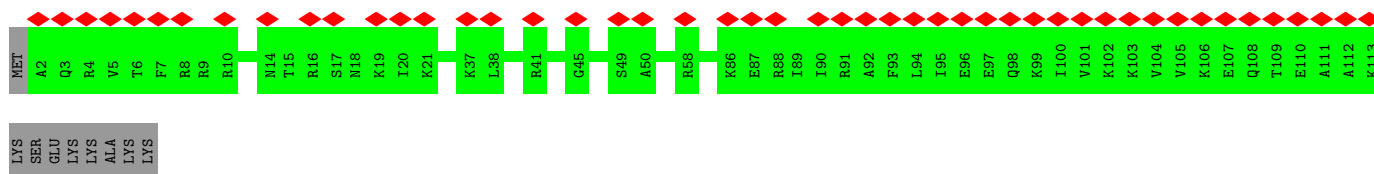
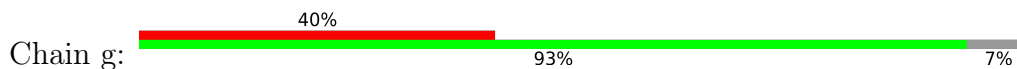
- Molecule 36: 60S ribosomal protein L32



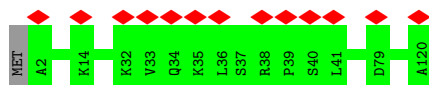
- Molecule 37: 60S ribosomal protein L33-A



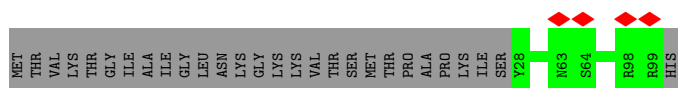
- Molecule 38: 60S ribosomal protein L34-A



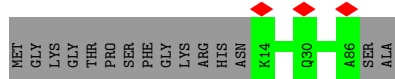
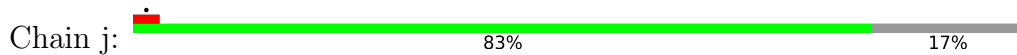
- Molecule 39: 60S ribosomal protein L35-A



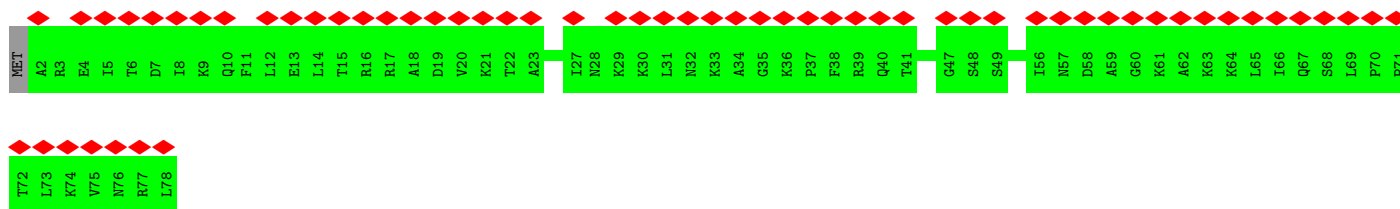
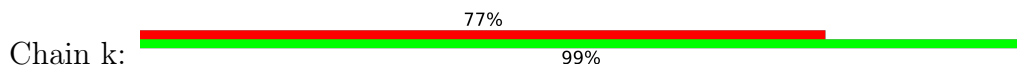
- Molecule 40: 60S ribosomal protein L36-A



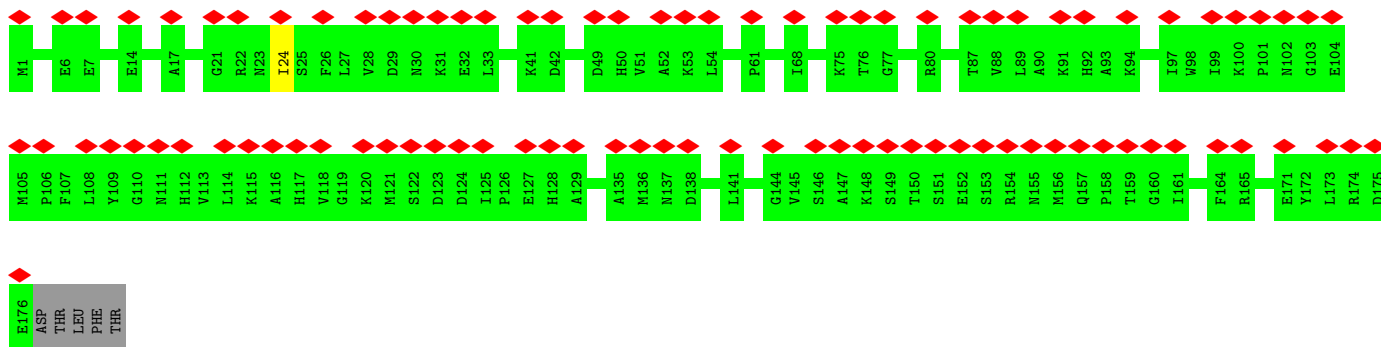
- Molecule 41: 60S ribosomal protein L37-A



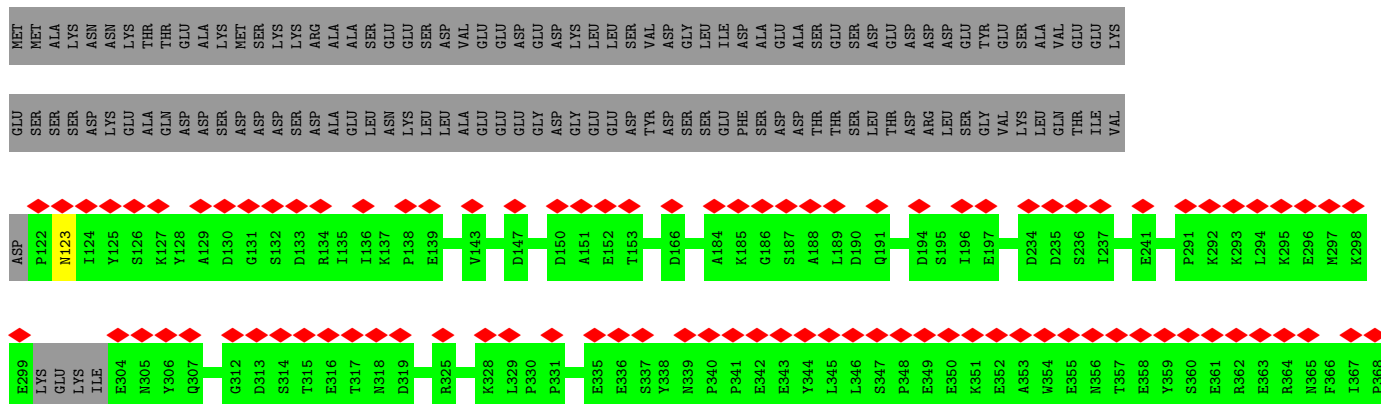
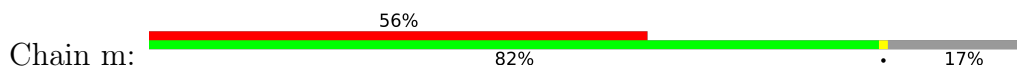
• Molecule 42: 60S ribosomal protein L38

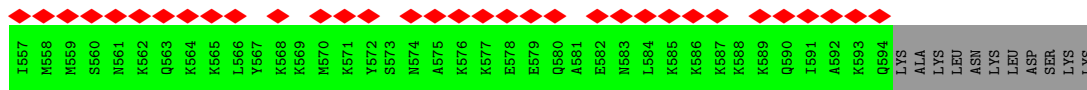


• Molecule 43: 60S ribosome subunit biogenesis protein NIP7

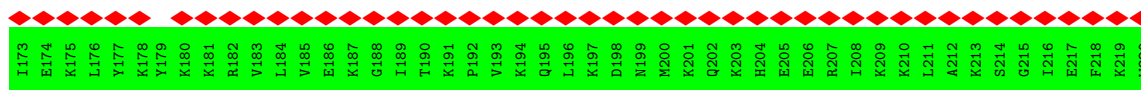
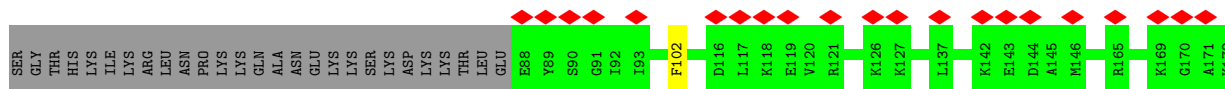
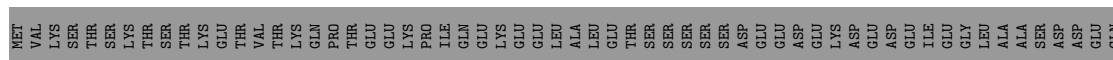


• Molecule 44: Ribosome biogenesis protein ERB1

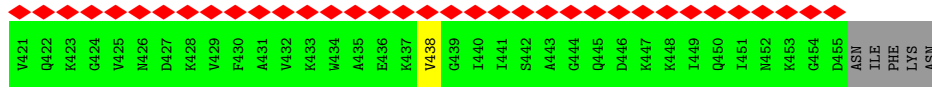
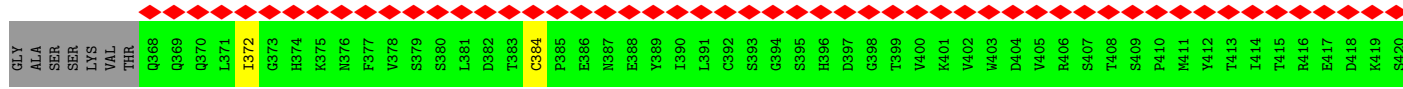
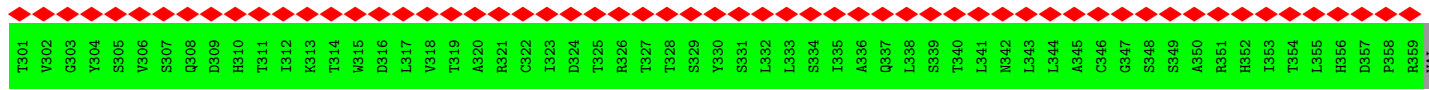
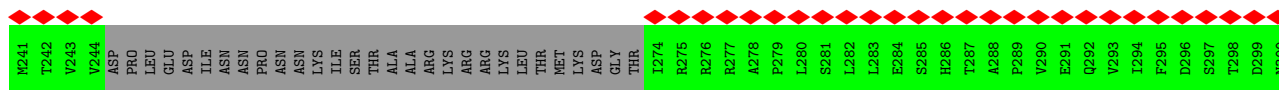
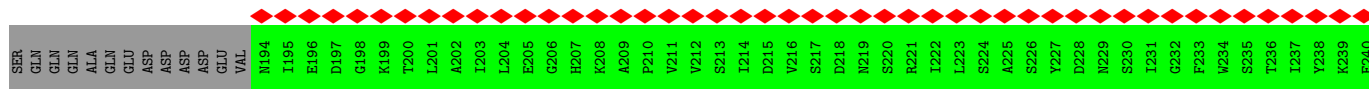
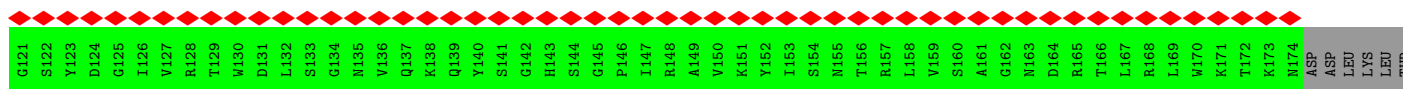
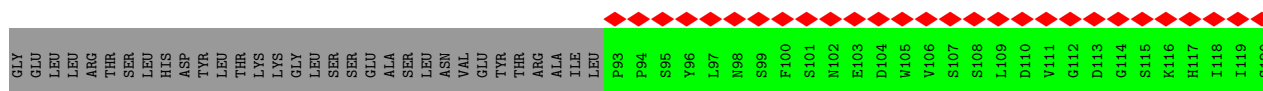
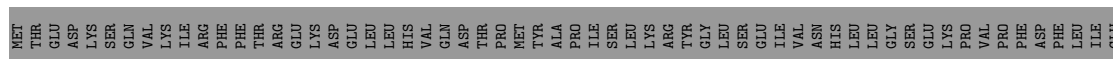




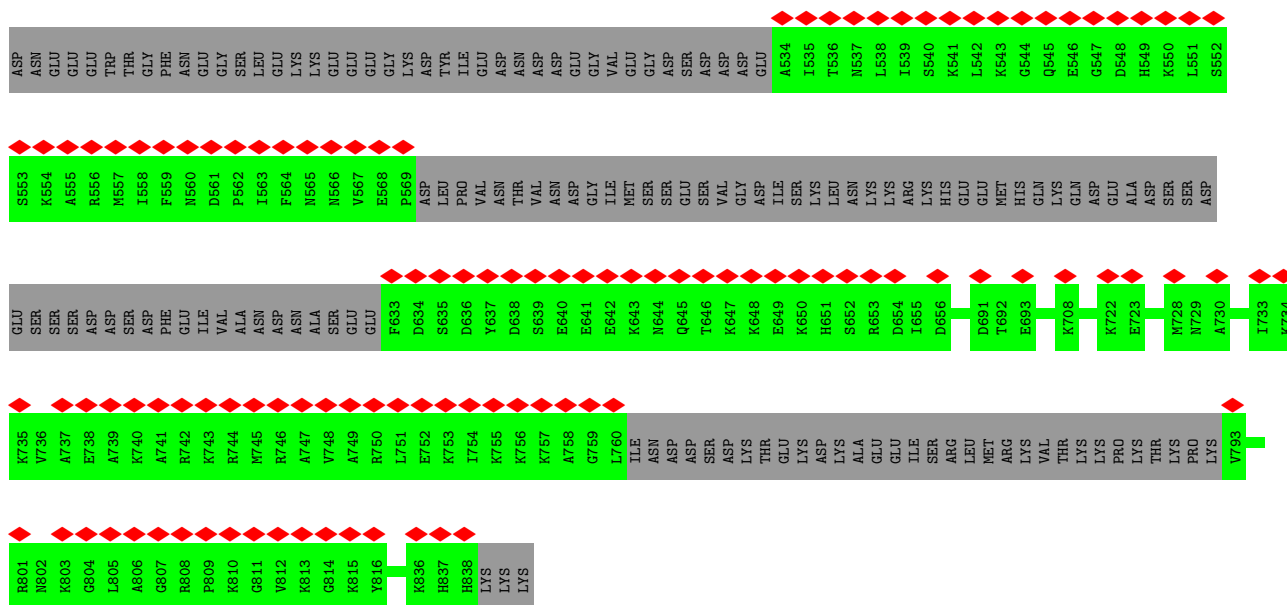
• Molecule 46: Ribosome biogenesis protein 15



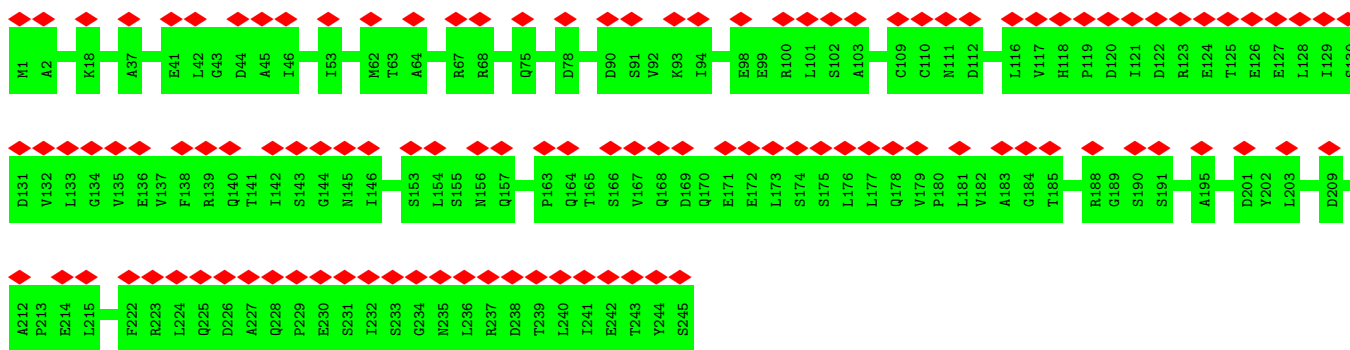
• Molecule 47: YTM1 isoform 1



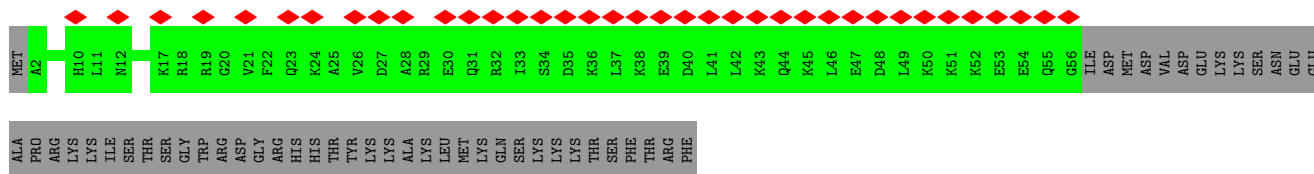
• Molecule 48: 25S rRNA (cytosine(2870)-C(5))-methyltransferase



● Molecule 55: Eukaryotic translation initiation factor 6



● Molecule 56: UPF0642 protein YBL028C



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	19700	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	39.3	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.348	Depositor
Minimum map value	-0.191	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.04	Depositor
Map size (\AA)	388.80002, 388.80002, 388.80002	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.08, 1.08, 1.08	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, K, ZN, GDP, ADP

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	1	0.21	0/59643	0.76	2/92963 (0.0%)
2	2	0.23	0/3676	0.77	0/5721
3	3	0.24	0/5348	0.47	0/7191
4	6	0.18	0/2050	0.75	0/3186
5	7	0.23	0/1102	0.50	0/1468
6	8	0.24	0/3937	0.44	0/5301
7	A	0.25	0/2078	0.47	0/2803
8	B	0.25	0/2724	0.51	0/3659
9	C	0.24	0/2776	0.49	0/3758
10	D	0.24	0/3516	0.46	0/4741
11	E	0.25	0/1260	0.48	0/1694
12	F	0.25	0/1772	0.48	0/2384
13	G	0.24	0/1575	0.45	0/2125
14	H	0.25	0/1523	0.50	0/2051
15	I	0.24	0/4262	0.44	0/5740
16	J	0.24	0/1232	0.45	0/1642
17	K	0.24	0/2284	0.44	0/3082
18	L	0.24	0/1009	0.55	0/1355
19	M	0.24	0/1068	0.49	0/1438
20	N	0.24	0/1654	0.57	0/2212
21	O	0.25	0/1585	0.49	0/2128
22	P	0.24	0/1311	0.52	0/1760
23	Q	0.25	0/987	0.50	0/1335
24	R	0.23	0/1095	0.48	0/1465
25	S	0.24	0/1468	0.50	0/1973
26	U	0.25	0/825	0.45	0/1120
27	V	0.26	0/953	0.51	0/1282
28	W	0.24	0/1902	0.48	0/2564
29	X	0.24	0/1083	0.46	0/1458
30	Y	0.24	0/1004	0.52	0/1341
31	Z	0.24	0/1118	0.45	0/1497
32	a	0.24	0/1722	0.46	0/2313

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	b	0.24	0/3877	0.46	0/5232
34	c	0.24	0/751	0.42	0/1008
35	d	0.24	0/887	0.52	0/1191
36	e	0.23	0/1030	0.50	0/1379
37	f	0.26	0/868	0.53	0/1168
38	g	0.24	0/891	0.53	0/1191
39	h	0.24	0/978	0.49	0/1301
40	i	0.25	0/582	0.54	0/770
41	j	0.25	0/592	0.58	0/785
42	k	0.24	0/618	0.50	0/826
43	l	0.24	0/1425	0.48	0/1922
44	m	0.24	0/5511	0.47	0/7471
45	n	0.25	0/3544	0.45	0/4766
46	o	0.24	0/1129	0.47	0/1502
47	p	0.24	0/2434	0.49	0/3299
48	q	0.24	0/2958	0.47	0/4000
49	r	0.24	0/1765	0.48	0/2353
50	s	0.24	0/301	0.55	0/386
51	t	0.24	0/2319	0.49	0/3108
52	u	0.25	0/979	0.53	0/1302
53	v	0.23	0/1100	0.49	0/1456
54	w	0.24	0/2265	0.46	0/3009
55	y	0.23	0/1878	0.51	0/2556
56	z	0.23	0/445	0.45	0/585
All	All	0.23	0/158669	0.62	2/227316 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	406	G	O4'-C1'-N9	7.31	114.05	108.20
1	1	1904	C	C2-N1-C1'	5.05	124.36	118.80

There are no chirality outliers.

There are no planarity outliers.

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

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	3	644/995 (65%)	632 (98%)	12 (2%)	0	100	100
5	7	130/204 (64%)	129 (99%)	1 (1%)	0	100	100
6	8	469/710 (66%)	466 (99%)	3 (1%)	0	100	100
7	A	246/291 (84%)	245 (100%)	1 (0%)	0	100	100
8	B	332/387 (86%)	325 (98%)	7 (2%)	0	100	100
9	C	356/362 (98%)	350 (98%)	6 (2%)	0	100	100
10	D	426/505 (84%)	419 (98%)	7 (2%)	0	100	100
11	E	152/176 (86%)	147 (97%)	5 (3%)	0	100	100
12	F	213/244 (87%)	210 (99%)	3 (1%)	0	100	100
13	G	194/256 (76%)	193 (100%)	1 (0%)	0	100	100
14	H	187/191 (98%)	182 (97%)	5 (3%)	0	100	100
15	I	522/663 (79%)	515 (99%)	7 (1%)	0	100	100
16	J	143/427 (34%)	143 (100%)	0	0	100	100
17	K	274/376 (73%)	270 (98%)	4 (2%)	0	100	100
18	L	119/199 (60%)	116 (98%)	3 (2%)	0	100	100
19	M	134/138 (97%)	131 (98%)	3 (2%)	0	100	100
20	N	185/204 (91%)	183 (99%)	2 (1%)	0	100	100
21	O	195/199 (98%)	194 (100%)	1 (0%)	0	100	100
22	P	158/184 (86%)	153 (97%)	5 (3%)	0	100	100
23	Q	125/186 (67%)	125 (100%)	0	0	100	100
24	R	130/189 (69%)	126 (97%)	4 (3%)	0	100	100
25	S	168/172 (98%)	163 (97%)	5 (3%)	0	100	100
26	U	100/121 (83%)	97 (97%)	3 (3%)	0	100	100
27	V	123/137 (90%)	123 (100%)	0	0	100	100
28	W	230/236 (98%)	225 (98%)	5 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	X	135/142 (95%)	133 (98%)	2 (2%)	0	100	100
30	Y	124/127 (98%)	120 (97%)	4 (3%)	0	100	100
31	Z	133/136 (98%)	132 (99%)	1 (1%)	0	100	100
32	a	212/217 (98%)	207 (98%)	5 (2%)	0	100	100
33	b	467/647 (72%)	458 (98%)	9 (2%)	0	100	100
34	c	95/105 (90%)	95 (100%)	0	0	100	100
35	d	105/113 (93%)	104 (99%)	1 (1%)	0	100	100
36	e	123/130 (95%)	119 (97%)	4 (3%)	0	100	100
37	f	104/107 (97%)	101 (97%)	3 (3%)	0	100	100
38	g	110/121 (91%)	108 (98%)	2 (2%)	0	100	100
39	h	117/120 (98%)	113 (97%)	4 (3%)	0	100	100
40	i	70/100 (70%)	68 (97%)	2 (3%)	0	100	100
41	j	71/88 (81%)	70 (99%)	1 (1%)	0	100	100
42	k	75/78 (96%)	74 (99%)	1 (1%)	0	100	100
43	l	174/181 (96%)	169 (97%)	5 (3%)	0	100	100
44	m	658/807 (82%)	636 (97%)	22 (3%)	0	100	100
45	n	417/605 (69%)	409 (98%)	8 (2%)	0	100	100
46	o	131/220 (60%)	128 (98%)	3 (2%)	0	100	100
47	p	299/460 (65%)	291 (97%)	8 (3%)	0	100	100
48	q	367/618 (59%)	358 (98%)	9 (2%)	0	100	100
49	r	206/261 (79%)	205 (100%)	1 (0%)	0	100	100
50	s	34/520 (6%)	34 (100%)	0	0	100	100
51	t	279/322 (87%)	275 (99%)	4 (1%)	0	100	100
52	u	112/199 (56%)	112 (100%)	0	0	100	100
53	v	124/231 (54%)	122 (98%)	2 (2%)	0	100	100
54	w	270/841 (32%)	266 (98%)	4 (2%)	0	100	100
55	y	243/245 (99%)	236 (97%)	7 (3%)	0	100	100
56	z	53/106 (50%)	52 (98%)	1 (2%)	0	100	100
All	All	11263/15599 (72%)	11057 (98%)	206 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	
3	3	573/870 (66%)	572 (100%)	1 (0%)	93	97
5	7	119/181 (66%)	119 (100%)	0	100	100
6	8	435/647 (67%)	435 (100%)	0	100	100
7	A	227/263 (86%)	227 (100%)	0	100	100
8	B	282/323 (87%)	281 (100%)	1 (0%)	91	95
9	C	285/289 (99%)	285 (100%)	0	100	100
10	D	378/440 (86%)	378 (100%)	0	100	100
11	E	134/153 (88%)	133 (99%)	1 (1%)	84	91
12	F	182/205 (89%)	182 (100%)	0	100	100
13	G	161/208 (77%)	161 (100%)	0	100	100
14	H	169/171 (99%)	167 (99%)	2 (1%)	71	84
15	I	479/602 (80%)	478 (100%)	1 (0%)	93	97
16	J	133/383 (35%)	133 (100%)	0	100	100
17	K	258/346 (75%)	257 (100%)	1 (0%)	91	95
18	L	100/159 (63%)	100 (100%)	0	100	100
19	M	107/109 (98%)	107 (100%)	0	100	100
20	N	165/176 (94%)	165 (100%)	0	100	100
21	O	160/162 (99%)	159 (99%)	1 (1%)	86	92
22	P	132/146 (90%)	131 (99%)	1 (1%)	81	89
23	Q	103/151 (68%)	103 (100%)	0	100	100
24	R	112/154 (73%)	112 (100%)	0	100	100
25	S	155/156 (99%)	154 (99%)	1 (1%)	86	92
26	U	89/107 (83%)	89 (100%)	0	100	100
27	V	97/105 (92%)	97 (100%)	0	100	100
28	W	209/213 (98%)	209 (100%)	0	100	100
29	X	114/118 (97%)	113 (99%)	1 (1%)	78	87

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	Y	109/110 (99%)	107 (98%)	2 (2%)	59	75
31	Z	115/116 (99%)	114 (99%)	1 (1%)	78	87
32	a	195/198 (98%)	194 (100%)	1 (0%)	88	94
33	b	423/573 (74%)	417 (99%)	6 (1%)	67	81
34	c	81/88 (92%)	81 (100%)	0	100	100
35	d	94/97 (97%)	94 (100%)	0	100	100
36	e	108/111 (97%)	108 (100%)	0	100	100
37	f	90/91 (99%)	90 (100%)	0	100	100
38	g	95/103 (92%)	95 (100%)	0	100	100
39	h	104/105 (99%)	104 (100%)	0	100	100
40	i	59/82 (72%)	59 (100%)	0	100	100
41	j	60/71 (84%)	60 (100%)	0	100	100
42	k	68/69 (99%)	68 (100%)	0	100	100
43	l	151/156 (97%)	150 (99%)	1 (1%)	84	91
44	m	599/723 (83%)	593 (99%)	6 (1%)	76	86
45	n	381/548 (70%)	380 (100%)	1 (0%)	92	96
46	o	118/199 (59%)	117 (99%)	1 (1%)	81	89
47	p	273/413 (66%)	270 (99%)	3 (1%)	73	85
48	q	316/535 (59%)	313 (99%)	3 (1%)	78	87
49	r	190/229 (83%)	190 (100%)	0	100	100
50	s	32/445 (7%)	32 (100%)	0	100	100
51	t	256/287 (89%)	256 (100%)	0	100	100
52	u	99/180 (55%)	99 (100%)	0	100	100
53	v	116/205 (57%)	115 (99%)	1 (1%)	78	87
54	w	237/745 (32%)	237 (100%)	0	100	100
55	y	211/211 (100%)	211 (100%)	0	100	100
56	z	48/95 (50%)	48 (100%)	0	100	100
All	All	9986/13622 (73%)	9949 (100%)	37 (0%)	91	95

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	3	525	ARG

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Mol	Chain	Res	Type
8	B	332	ARG
11	E	98	VAL
14	H	157	ASN
14	H	177	ASP
15	I	156	THR
17	K	280	PHE
21	O	101	ARG
22	P	171	ARG
25	S	172	TYR
29	X	56	ARG
30	Y	74	TYR
30	Y	115	ARG
31	Z	42	LEU
32	a	29	LEU
33	b	86	TYR
33	b	129	LYS
33	b	168	ARG
33	b	175	TYR
33	b	427	TRP
33	b	469	TYR
43	l	24	ILE
44	m	123	ASN
44	m	464	TRP
44	m	475	THR
44	m	613	GLN
44	m	720	ARG
44	m	779	LEU
45	n	131	ASP
46	o	102	PHE
47	p	372	ILE
47	p	384	CYS
47	p	438	VAL
48	q	183	THR
48	q	326	HIS
48	q	362	TYR
53	v	165	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
14	H	5	GLN
14	H	9	GLN

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Mol	Chain	Res	Type
14	H	59	ASN
17	K	269	GLN
48	q	391	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2469/3396 (72%)	407 (16%)	3 (0%)
2	2	153/158 (96%)	22 (14%)	0
4	6	85/232 (36%)	19 (22%)	0
All	All	2707/3786 (71%)	448 (16%)	3 (0%)

All (448) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	5	G
1	1	7	C
1	1	14	U
1	1	26	A
1	1	40	A
1	1	42	C
1	1	43	A
1	1	49	A
1	1	59	G
1	1	60	A
1	1	65	A
1	1	66	A
1	1	67	A
1	1	74	G
1	1	77	A
1	1	92	G
1	1	96	G
1	1	109	A
1	1	110	G
1	1	111	C
1	1	116	A
1	1	117	U
1	1	121	A
1	1	122	A
1	1	135	C
1	1	136	G

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Mol	Chain	Res	Type
1	1	155	G
1	1	156	G
1	1	165	A
1	1	170	G
1	1	190	U
1	1	191	U
1	1	200	C
1	1	210	U
1	1	213	A
1	1	218	G
1	1	219	A
1	1	220	G
1	1	241	G
1	1	252	U
1	1	255	A
1	1	264	G
1	1	265	A
1	1	266	A
1	1	268	A
1	1	269	G
1	1	284	A
1	1	285	A
1	1	286	U
1	1	295	A
1	1	311	C
1	1	323	A
1	1	329	U
1	1	337	G
1	1	339	C
1	1	349	A
1	1	368	G
1	1	376	G
1	1	398	A
1	1	401	U
1	1	402	A
1	1	403	C
1	1	421	G
1	1	422	A
1	1	439	C
1	1	440	A
1	1	521	A
1	1	533	A

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Mol	Chain	Res	Type
1	1	535	G
1	1	543	C
1	1	544	C
1	1	545	U
1	1	547	G
1	1	550	A
1	1	551	A
1	1	557	A
1	1	559	A
1	1	579	G
1	1	582	G
1	1	589	A
1	1	604	G
1	1	611	A
1	1	612	U
1	1	620	U
1	1	621	A
1	1	629	U
1	1	636	C
1	1	660	A
1	1	677	A
1	1	681	U
1	1	690	A
1	1	691	A
1	1	705	A
1	1	706	A
1	1	719	U
1	1	721	G
1	1	734	C
1	1	742	G
1	1	785	G
1	1	800	G
1	1	808	A
1	1	817	A
1	1	818	C
1	1	820	A
1	1	821	U
1	1	822	G
1	1	830	A
1	1	836	A
1	1	851	C
1	1	860	G

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Mol	Chain	Res	Type
1	1	861	C
1	1	862	U
1	1	871	U
1	1	894	G
1	1	895	A
1	1	896	A
1	1	904	A
1	1	907	G
1	1	908	G
1	1	910	G
1	1	917	A
1	1	919	U
1	1	930	U
1	1	932	U
1	1	936	A
1	1	944	C
1	1	960	U
1	1	961	C
1	1	962	A
1	1	965	A
1	1	979	U
1	1	982	C
1	1	991	G
1	1	1116	G
1	1	1117	G
1	1	1132	C
1	1	1143	A
1	1	1153	A
1	1	1160	C
1	1	1174	G
1	1	1180	A
1	1	1181	U
1	1	1182	A
1	1	1192	C
1	1	1193	A
1	1	1203	A
1	1	1217	A
1	1	1222	G
1	1	1244	A
1	1	1245	A
1	1	1246	G
1	1	1259	A

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Mol	Chain	Res	Type
1	1	1262	G
1	1	1263	A
1	1	1265	U
1	1	1272	C
1	1	1284	C
1	1	1285	G
1	1	1286	A
1	1	1287	A
1	1	1303	A
1	1	1305	U
1	1	1307	G
1	1	1330	A
1	1	1331	U
1	1	1348	U
1	1	1386	A
1	1	1392	G
1	1	1399	A
1	1	1400	G
1	1	1417	G
1	1	1418	A
1	1	1419	A
1	1	1434	G
1	1	1437	C
1	1	1452	A
1	1	1468	A
1	1	1469	C
1	1	1481	A
1	1	1483	G
1	1	1485	G
1	1	1507	G
1	1	1508	C
1	1	1539	A
1	1	1555	U
1	1	1556	C
1	1	1557	A
1	1	1560	G
1	1	1567	U
1	1	1568	U
1	1	1569	U
1	1	1571	A
1	1	1580	A
1	1	1581	C

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Mol	Chain	Res	Type
1	1	1582	C
1	1	1587	A
1	1	1589	A
1	1	1604	G
1	1	1627	U
1	1	1628	C
1	1	1629	U
1	1	1630	U
1	1	1639	C
1	1	1643	A
1	1	1724	U
1	1	1725	C
1	1	1750	A
1	1	1751	G
1	1	1761	C
1	1	1762	C
1	1	1763	U
1	1	1764	U
1	1	1766	G
1	1	1767	C
1	1	1773	C
1	1	1780	G
1	1	1795	U
1	1	1796	G
1	1	1797	A
1	1	1808	G
1	1	1815	U
1	1	1816	A
1	1	1817	G
1	1	1821	U
1	1	1837	U
1	1	1838	G
1	1	1839	A
1	1	1858	A
1	1	1864	A
1	1	1865	A
1	1	1866	C
1	1	1867	A
1	1	1878	G
1	1	1880	U
1	1	1882	G
1	1	1884	A

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Mol	Chain	Res	Type
1	1	1886	A
1	1	1887	A
1	1	1897	G
1	1	1906	G
1	1	2332	A
1	1	2335	G
1	1	2348	A
1	1	2349	U
1	1	2370	G
1	1	2371	G
1	1	2374	C
1	1	2385	G
1	1	2388	U
1	1	2393	G
1	1	2394	G
1	1	2398	A
1	1	2400	G
1	1	2401	A
1	1	2403	G
1	1	2404	A
1	1	2405	C
1	1	2416	U
1	1	2419	A
1	1	2422	C
1	1	2423	U
1	1	2424	A
1	1	2431	C
1	1	2433	U
1	1	2434	U
1	1	2435	G
1	1	2436	U
1	1	2437	G
1	1	2438	A
1	1	2440	G
1	1	2445	A
1	1	2447	A
1	1	2448	G
1	1	2453	U
1	1	2460	U
1	1	2463	G
1	1	2468	A
1	1	2469	G

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Mol	Chain	Res	Type
1	1	2473	C
1	1	2474	G
1	1	2475	G
1	1	2476	C
1	1	2487	U
1	1	2495	C
1	1	2497	U
1	1	2502	A
1	1	2505	U
1	1	2596	U
1	1	2598	G
1	1	2599	U
1	1	2600	C
1	1	2602	G
1	1	2606	G
1	1	2803	A
1	1	2809	C
1	1	2818	U
1	1	2821	C
1	1	2822	U
1	1	2824	G
1	1	2836	C
1	1	2839	G
1	1	2848	G
1	1	2859	U
1	1	2860	U
1	1	2864	A
1	1	2874	G
1	1	2875	U
1	1	2876	C
1	1	2887	A
1	1	2888	U
1	1	2898	G
1	1	2899	C
1	1	2907	G
1	1	2911	A
1	1	2918	G
1	1	2919	A
1	1	2920	U
1	1	2922	G
1	1	2923	U
1	1	2926	A

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Mol	Chain	Res	Type
1	1	2928	C
1	1	2935	U
1	1	2936	A
1	1	2941	A
1	1	2942	C
1	1	2943	G
1	1	2944	U
1	1	2945	G
1	1	2946	A
1	1	2956	A
1	1	2971	A
1	1	2972	G
1	1	2978	U
1	1	2979	U
1	1	2980	U
1	1	2982	A
1	1	2983	C
1	1	2990	G
1	1	2996	U
1	1	2997	G
1	1	3012	A
1	1	3022	G
1	1	3032	A
1	1	3046	A
1	1	3056	U
1	1	3057	U
1	1	3058	U
1	1	3079	U
1	1	3092	C
1	1	3093	C
1	1	3094	A
1	1	3100	U
1	1	3101	G
1	1	3122	A
1	1	3129	A
1	1	3130	A
1	1	3131	U
1	1	3142	A
1	1	3143	C
1	1	3153	U
1	1	3154	C
1	1	3156	U

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Mol	Chain	Res	Type
1	1	3157	U
1	1	3165	A
1	1	3170	A
1	1	3172	A
1	1	3173	G
1	1	3174	A
1	1	3176	G
1	1	3179	U
1	1	3181	C
1	1	3187	A
1	1	3196	U
1	1	3207	U
1	1	3217	C
1	1	3218	A
1	1	3219	G
1	1	3238	G
1	1	3243	A
1	1	3244	A
1	1	3245	A
1	1	3247	G
1	1	3259	U
1	1	3263	G
1	1	3270	U
1	1	3276	G
1	1	3278	C
1	1	3289	G
1	1	3294	A
1	1	3295	A
1	1	3304	U
1	1	3313	U
1	1	3316	A
1	1	3317	U
1	1	3319	U
1	1	3334	U
1	1	3341	U
1	1	3348	G
1	1	3349	C
1	1	3358	U
1	1	3363	U
1	1	3369	G
1	1	3378	C
1	1	3382	U

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Mol	Chain	Res	Type
1	1	3383	G
1	1	3386	G
1	1	3396	U
2	2	23	U
2	2	34	U
2	2	35	C
2	2	38	U
2	2	48	A
2	2	59	A
2	2	62	C
2	2	63	G
2	2	77	A
2	2	81	U
2	2	82	U
2	2	84	C
2	2	85	G
2	2	86	U
2	2	87	G
2	2	90	U
2	2	95	G
2	2	104	A
2	2	106	C
2	2	107	G
2	2	116	G
2	2	125	U
4	6	4	U
4	6	5	C
4	6	7	C
4	6	15	C
4	6	16	U
4	6	23	U
4	6	24	A
4	6	40	U
4	6	41	G
4	6	42	G
4	6	52	G
4	6	54	A
4	6	56	U
4	6	58	G
4	6	59	C
4	6	218	A
4	6	220	C

Continued on next page...

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Mol	Chain	Res	Type
4	6	224	G
4	6	230	A

All (3) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	116	A
1	1	263	C
1	1	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 5 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
57	ADP	3	1000	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
59	GDP	b	701	60,58	24,30,30	0.95	1 (4%)	30,47,47	1.30	4 (13%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
57	ADP	3	1000	-	-	1/12/32/32	0/3/3/3
59	GDP	b	701	60,58	-	0/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	3	1000	ADP	C5-C4	2.51	1.47	1.40
59	b	701	GDP	C6-N1	-2.39	1.34	1.37

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
57	3	1000	ADP	PA-O3A-PB	-3.53	120.72	132.83
59	b	701	GDP	PA-O3A-PB	-3.51	120.80	132.83
57	3	1000	ADP	C3'-C2'-C1'	3.22	105.82	100.98
57	3	1000	ADP	N3-C2-N1	-3.14	123.78	128.68
59	b	701	GDP	C3'-C2'-C1'	3.05	105.57	100.98
57	3	1000	ADP	C4-C5-N7	-2.67	106.62	109.40
59	b	701	GDP	C8-N7-C5	2.34	107.45	102.99
59	b	701	GDP	C5-C6-N1	2.27	117.96	113.95

There are no chirality outliers.

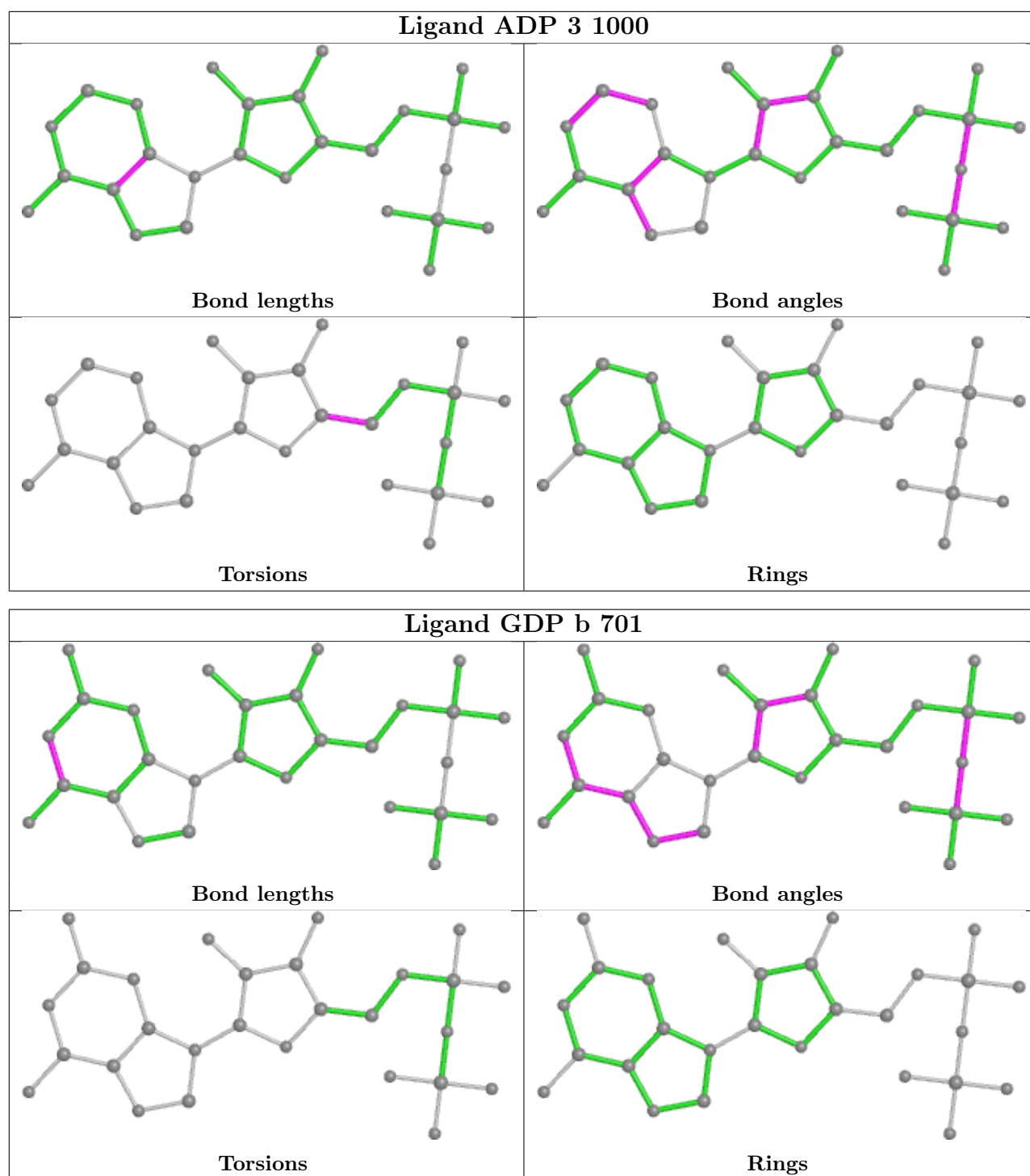
All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
57	3	1000	ADP	C3'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

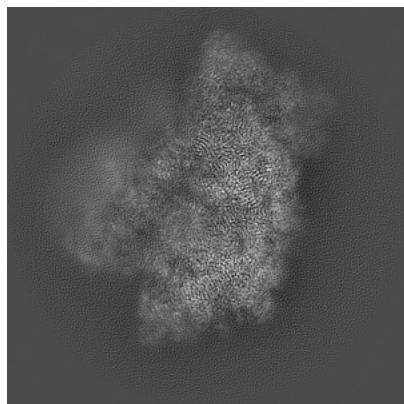
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-43027. These allow visual inspection of the internal detail of the map and identification of artifacts.

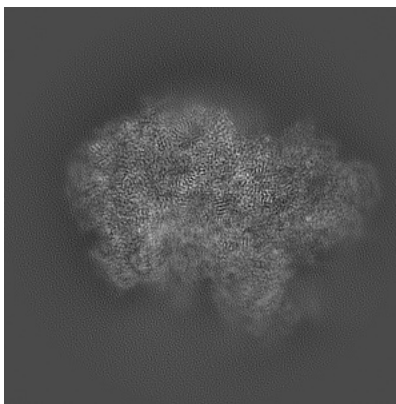
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

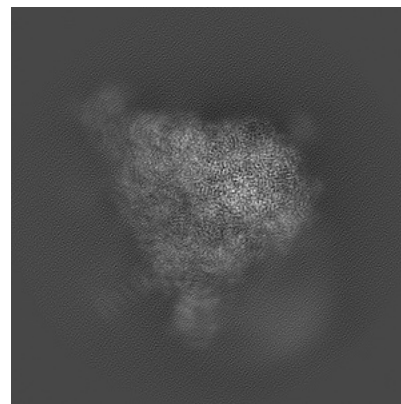
6.1.1 Primary map



X

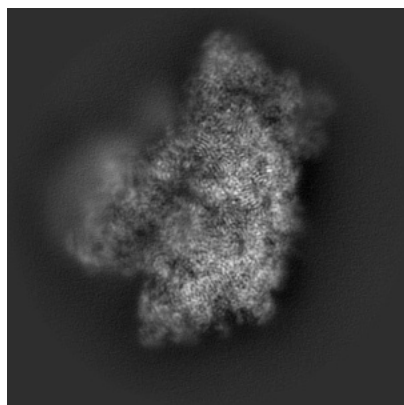


Y

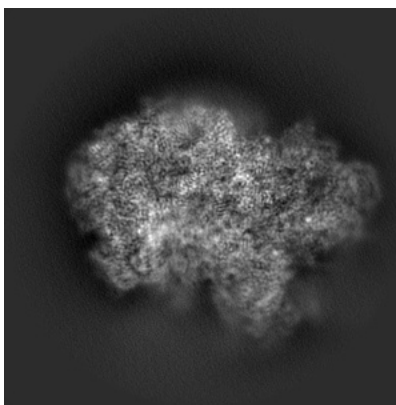


Z

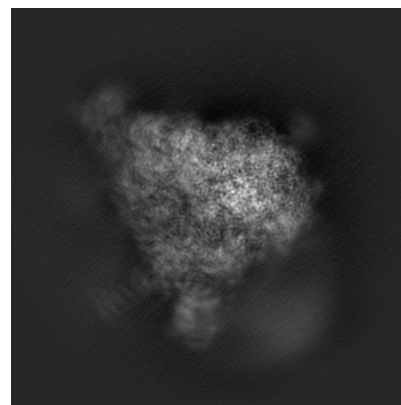
6.1.2 Raw map



X



Y

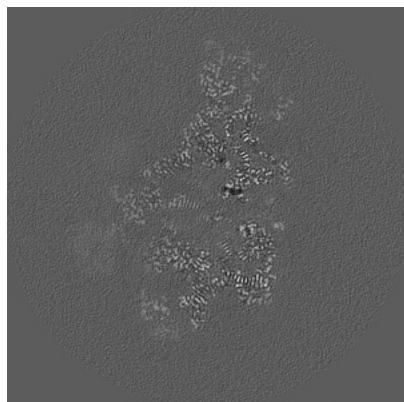


Z

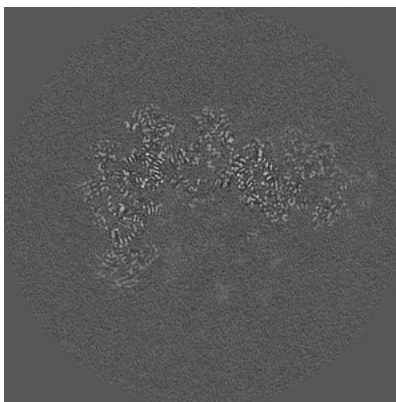
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

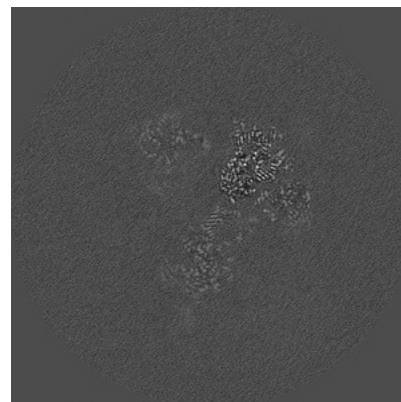
6.2.1 Primary map



X Index: 180

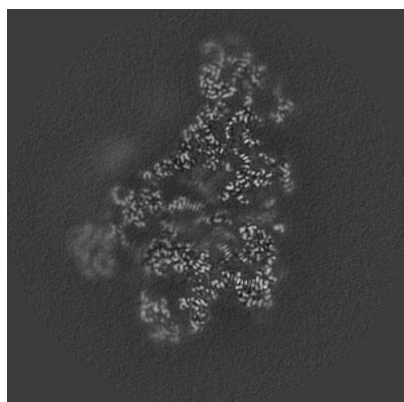


Y Index: 180

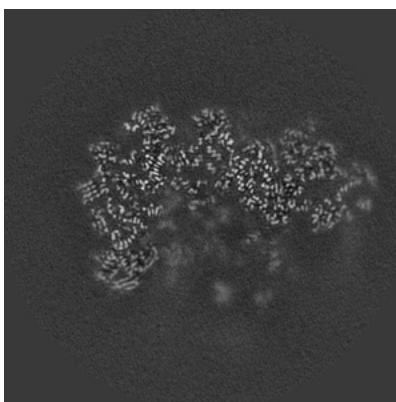


Z Index: 180

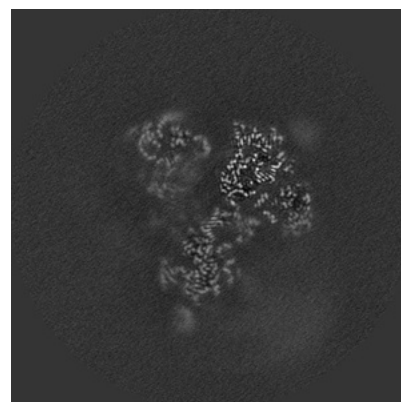
6.2.2 Raw map



X Index: 180



Y Index: 180

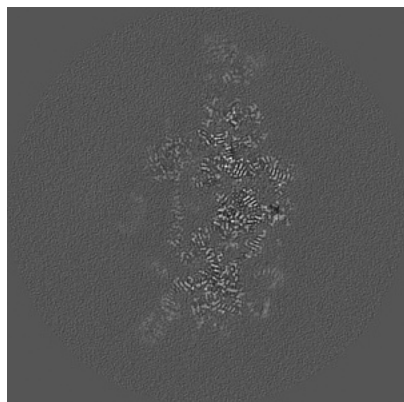


Z Index: 180

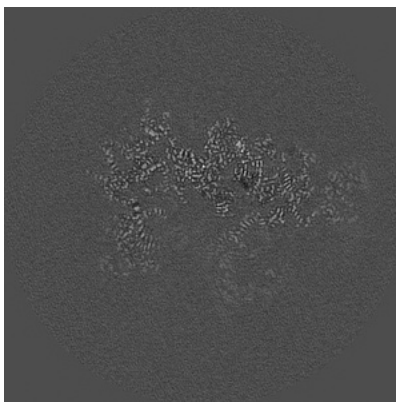
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

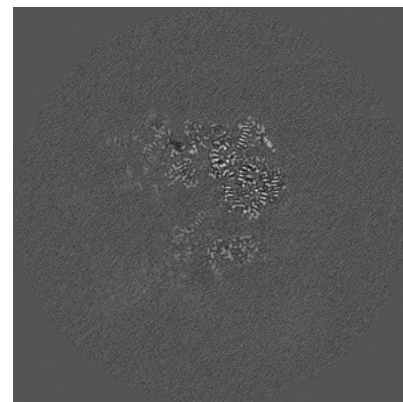
6.3.1 Primary map



X Index: 206

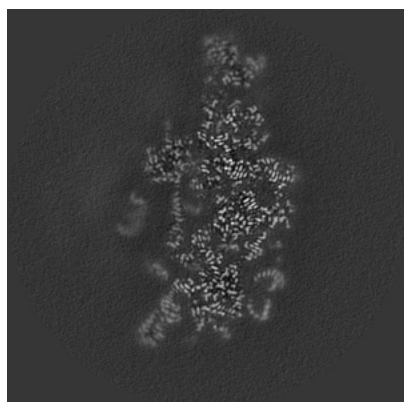


Y Index: 203

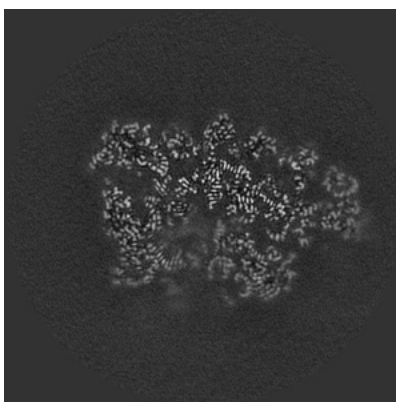


Z Index: 212

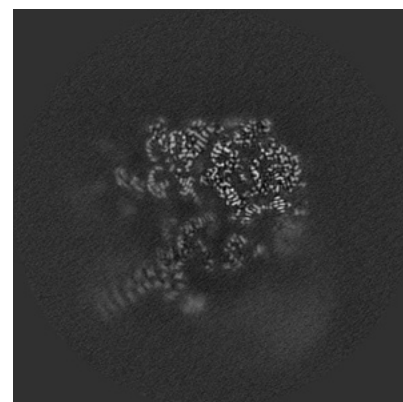
6.3.2 Raw map



X Index: 206



Y Index: 216

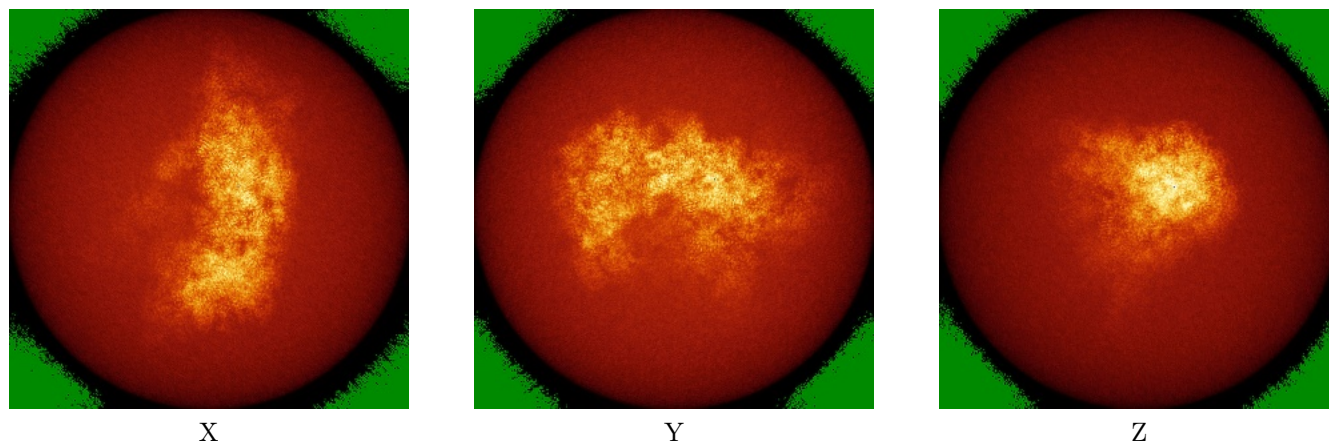


Z Index: 204

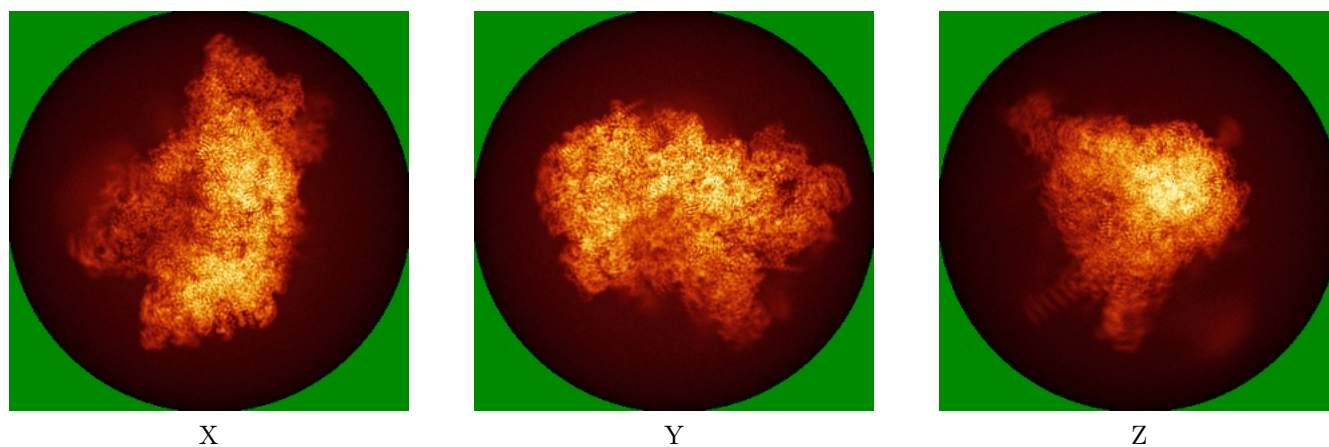
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



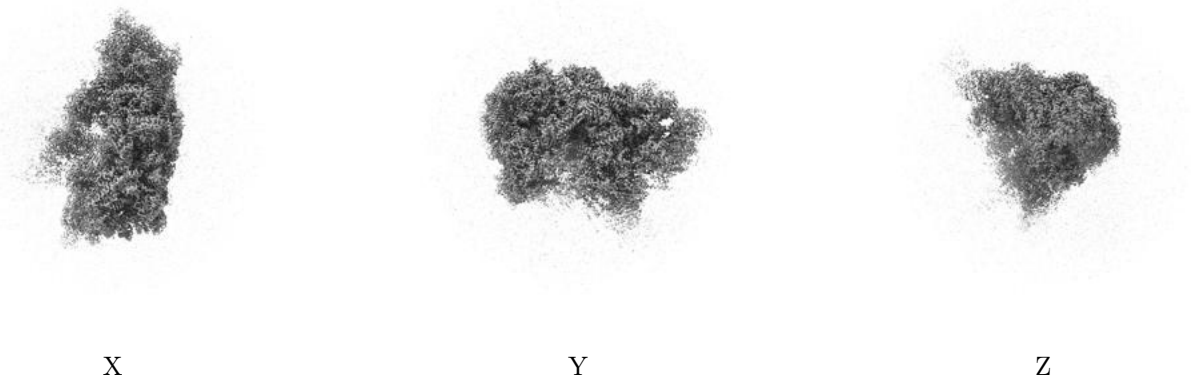
6.4.2 Raw map



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 0.04. 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.

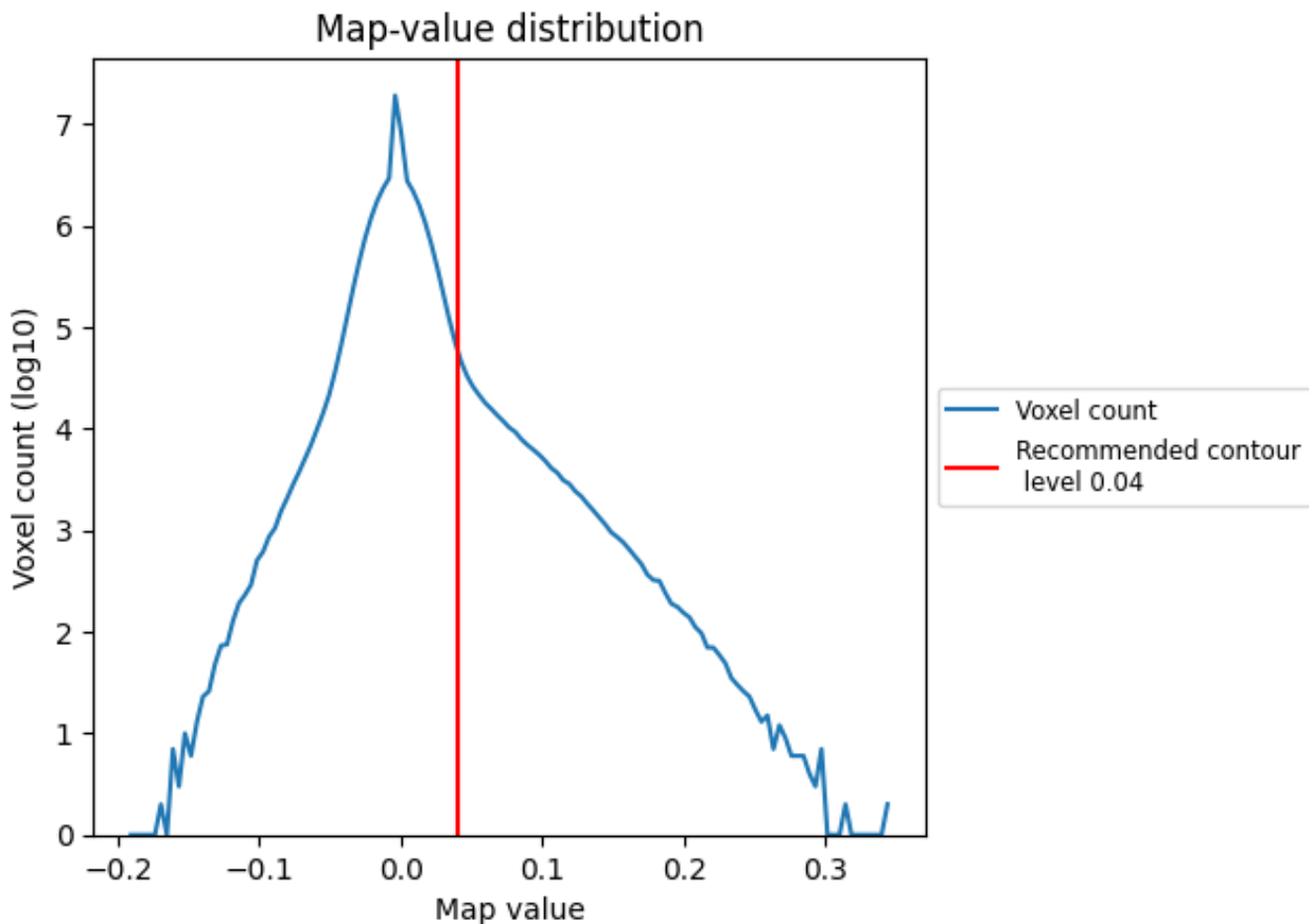
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

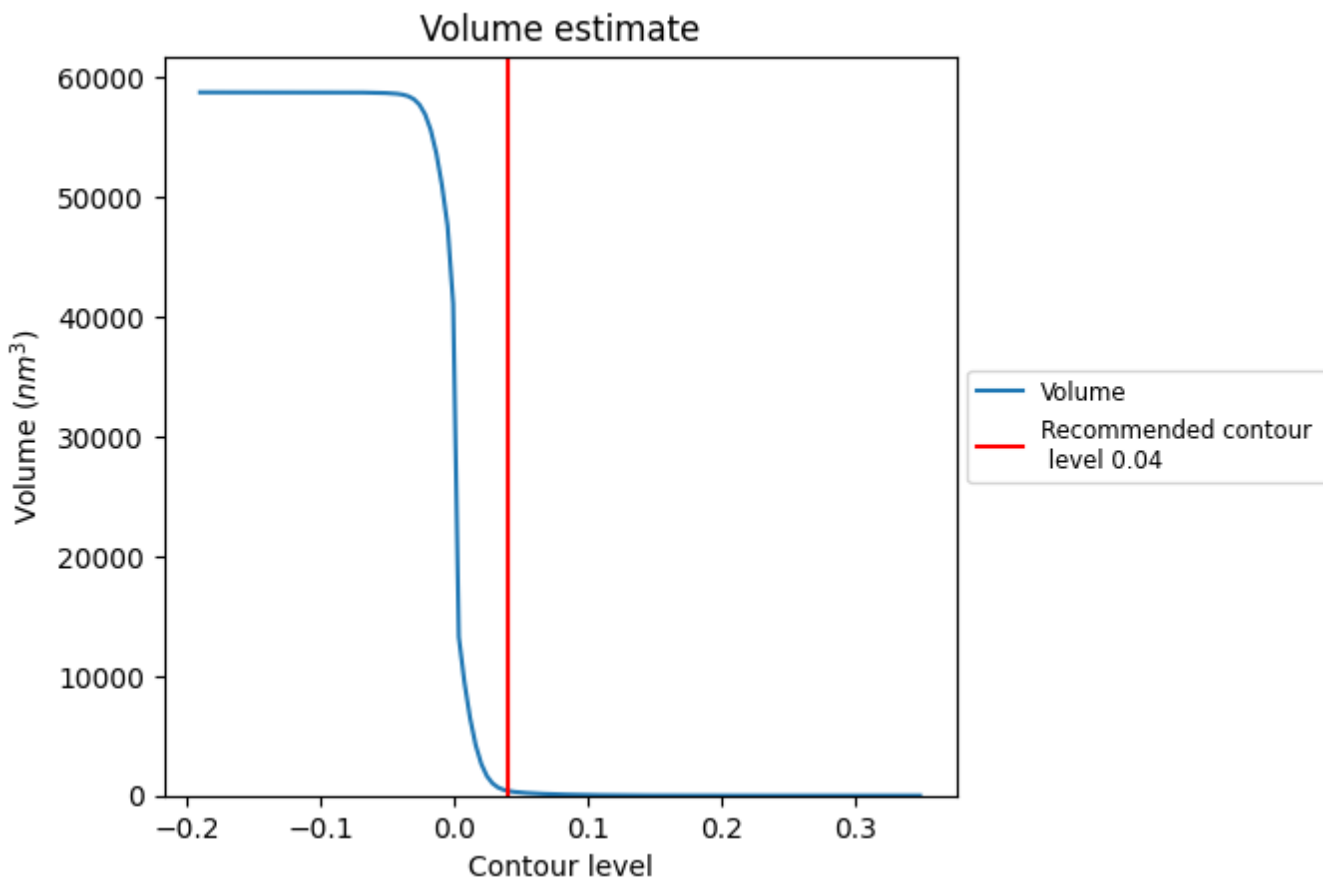
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

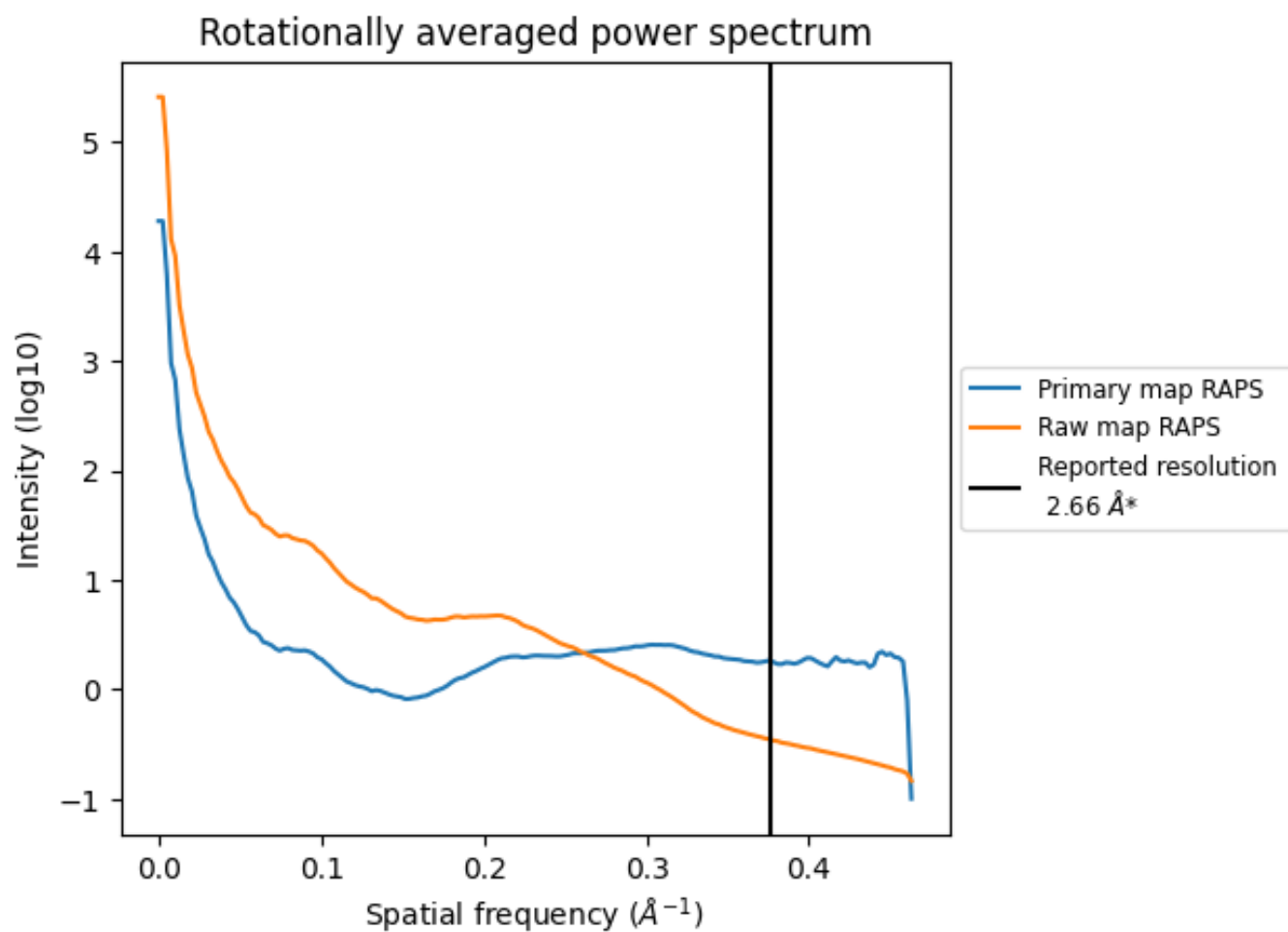
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 395 nm³; this corresponds to an approximate mass of 357 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

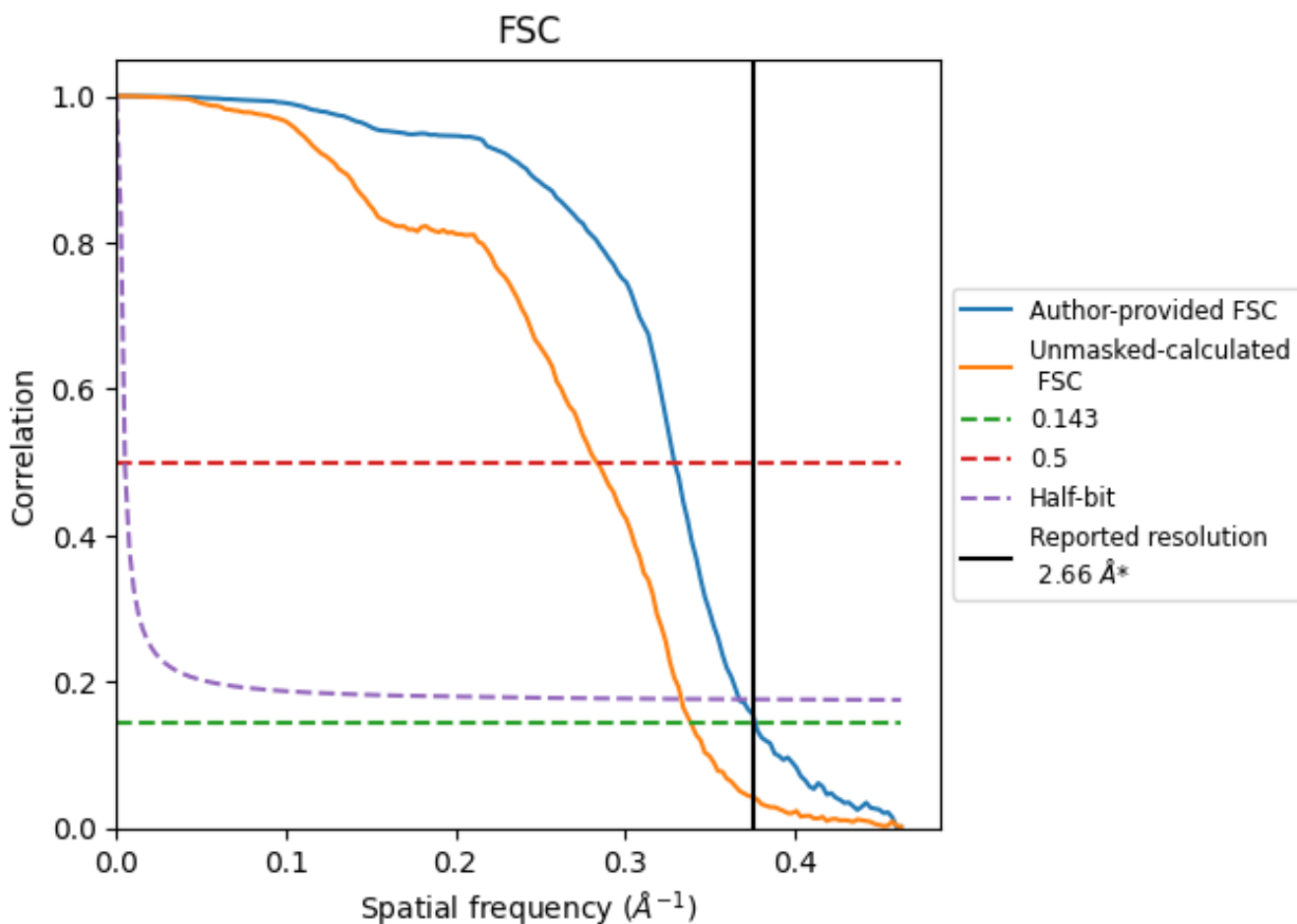


*Reported resolution corresponds to spatial frequency of 0.376 \AA^{-1}

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 0.376 Å⁻¹

8.2 Resolution estimates [i](#)

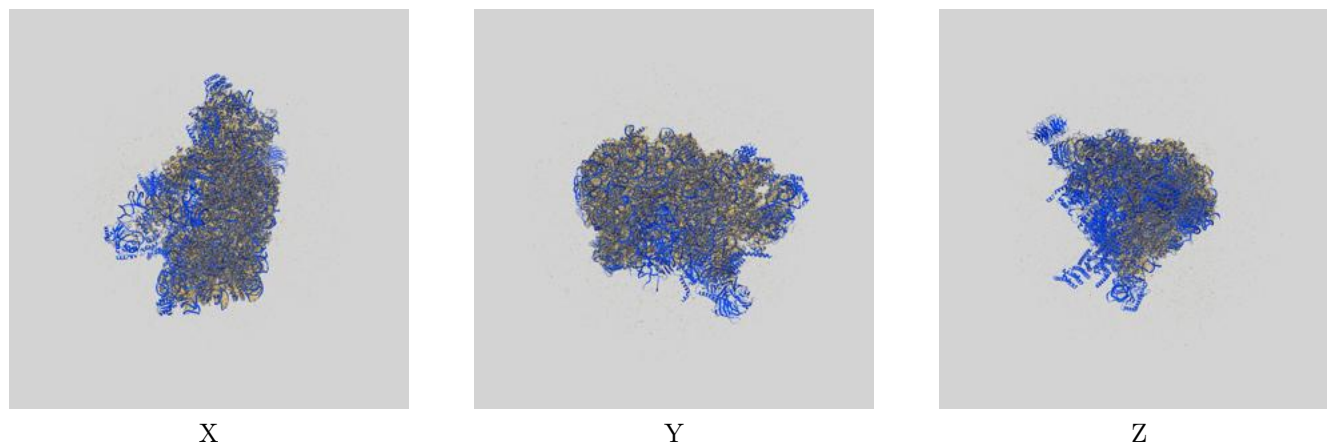
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.66	-	-
Author-provided FSC curve	2.65	3.04	2.72
Unmasked-calculated*	2.95	3.53	3.00

*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 2.95 differs from the reported value 2.66 by more than 10 %

9 Map-model fit [i](#)

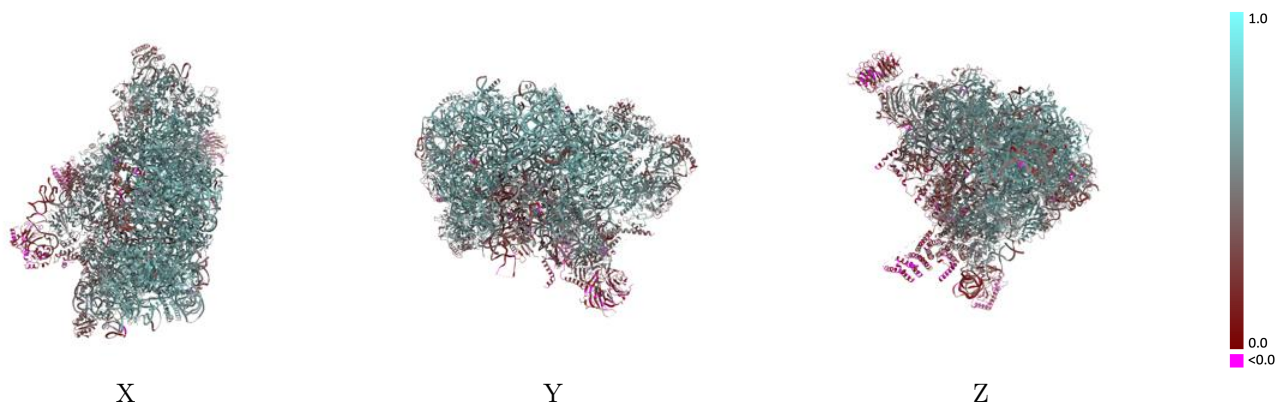
This section contains information regarding the fit between EMDB map EMD-43027 and PDB model 8V87. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



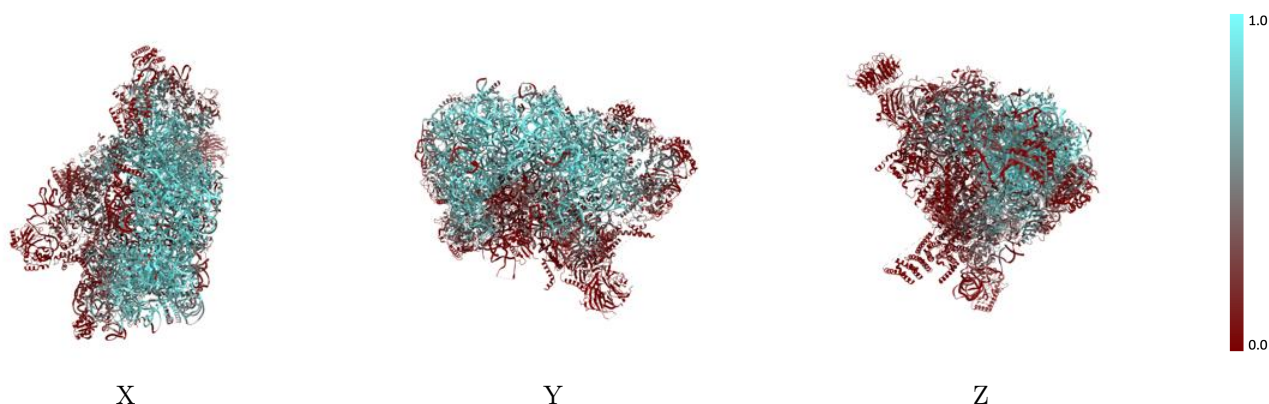
The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



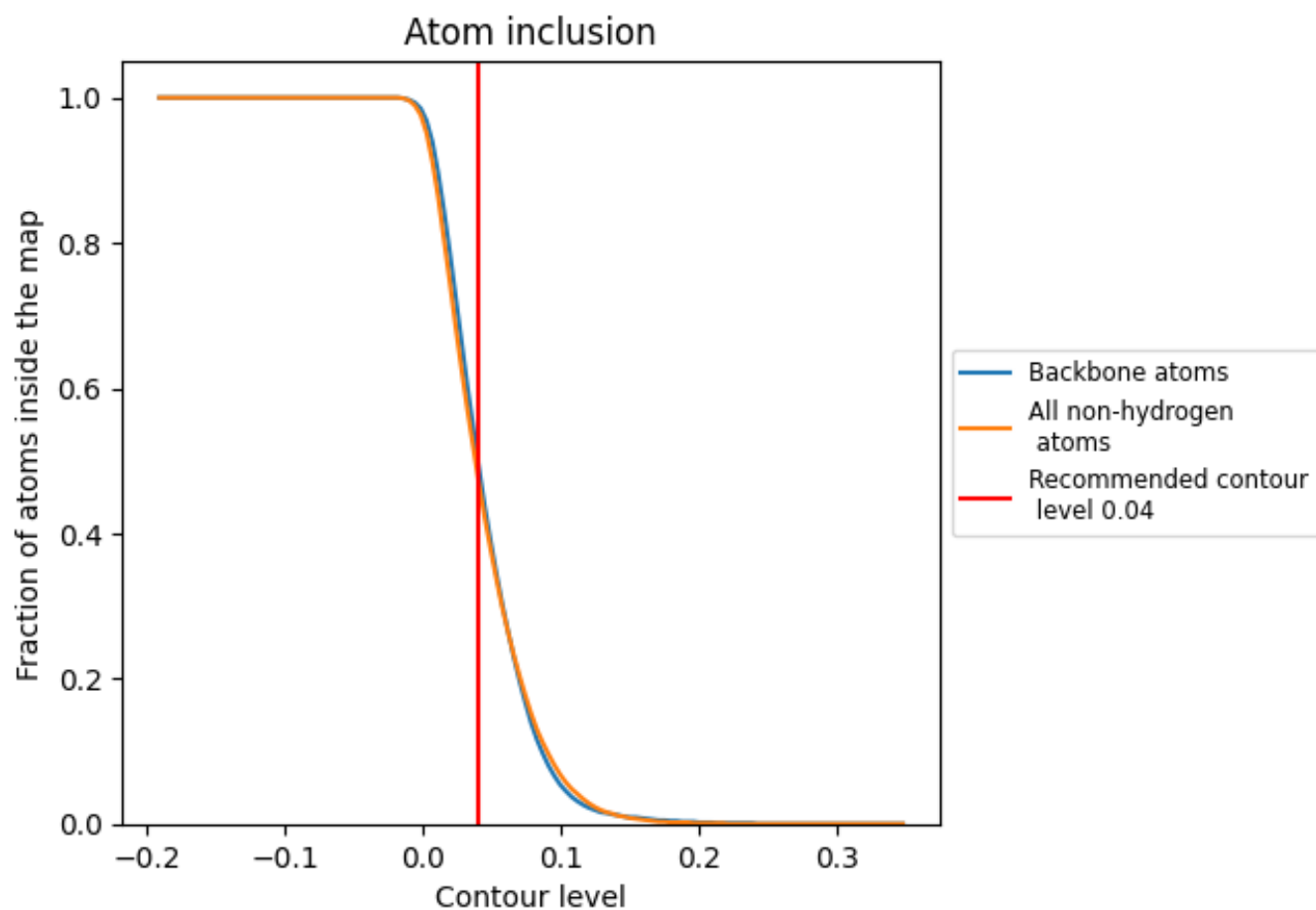
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.04).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 50% of all backbone atoms, 48% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4800	 0.5190
1	 0.6010	 0.5470
2	 0.8620	 0.6460
3	 0.0410	 0.3290
6	 0.3890	 0.5130
7	 0.3320	 0.4960
8	 0.0040	 0.1930
A	 0.4790	 0.5330
B	 0.7530	 0.6430
C	 0.7980	 0.6590
D	 0.2690	 0.4800
E	 0.6360	 0.6090
F	 0.7420	 0.6340
G	 0.7620	 0.6460
H	 0.6480	 0.6170
I	 0.1320	 0.4130
J	 0.3270	 0.4980
K	 0.2240	 0.4770
L	 0.7810	 0.6500
M	 0.7030	 0.6330
N	 0.9010	 0.6930
O	 0.8320	 0.6650
P	 0.7140	 0.6320
Q	 0.7030	 0.6270
R	 0.1710	 0.4040
S	 0.5580	 0.5790
U	 0.0470	 0.3510
V	 0.3910	 0.5580
W	 0.0940	 0.3840
X	 0.6470	 0.6070
Y	 0.7840	 0.6500
Z	 0.1770	 0.4600
a	 0.0010	 0.1180
b	 0.3920	 0.5160
c	 0.0290	 0.3270



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Chain	Atom inclusion	Q-score
d	 0.2670	 0.4980
e	 0.8200	 0.6660
f	 0.8960	 0.6940
g	 0.4230	 0.5410
h	 0.7430	 0.6430
i	 0.7080	 0.6380
j	 0.8850	 0.6940
k	 0.2440	 0.4690
l	 0.4130	 0.5590
m	 0.3060	 0.4860
n	 0.4800	 0.5660
o	 0.4040	 0.5080
p	 0.0030	 0.1780
q	 0.2190	 0.4680
r	 0.4000	 0.5310
s	 0.5920	 0.6200
t	 0.3810	 0.5380
u	 0.4050	 0.5380
v	 0.6860	 0.6080
w	 0.3340	 0.4460
y	 0.4060	 0.5270
z	 0.2930	 0.5090