wwPDB EM Validation Summary Report

Apr 22, 2024 – 04:59 PM EDT

PDB ID	:	8V83
EMDB ID	:	EMD-43017
Title	:	60S ribosome biogenesis intermediate (Dbp10 pre-catalytic structure - Overall map)
Authors	:	Cruz, V.E.; Weirich, C.S.; Peddada, N.; Erzberger, J.P.
Deposited on	:	2023-12-04
Resolution	:	2.53 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

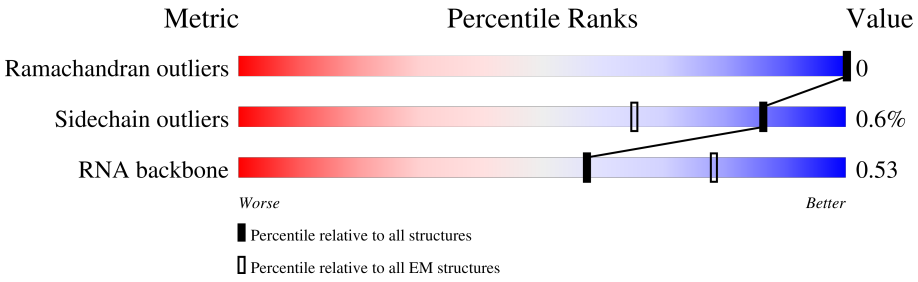
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.53 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 <=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	17% 48% 12% 41%
2	2	158	15% 77% 18% 5%
3	6	232	10% 17% 8% 75%
4	7	204	5% 5% 95%
5	8	434	25% 33% 67%
6	A	291	39% 87% 12%
7	B	387	7% 86% 14%
8	C	362	94% 5%

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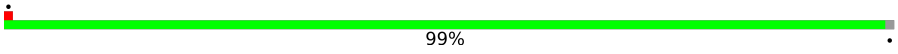
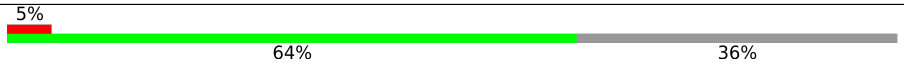
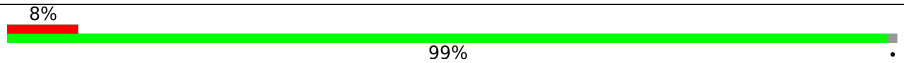
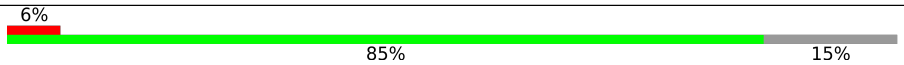
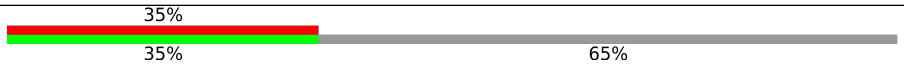
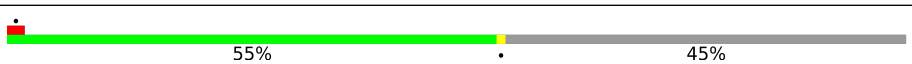
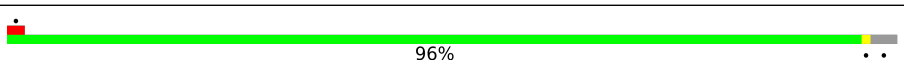
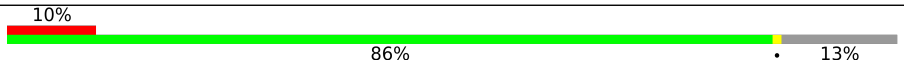
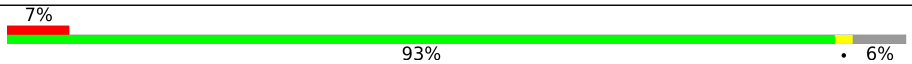
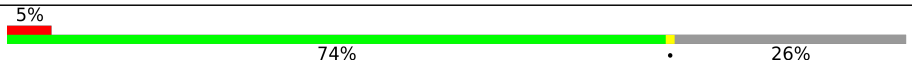
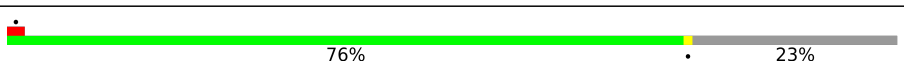
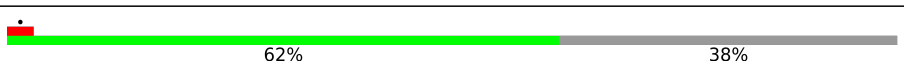
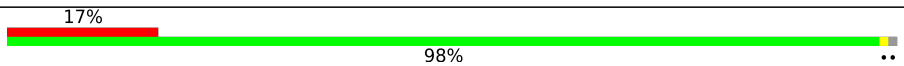
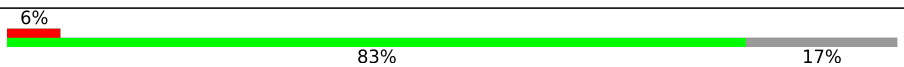
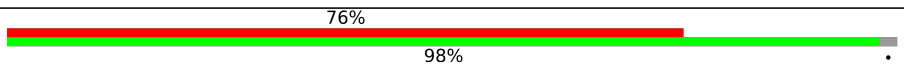
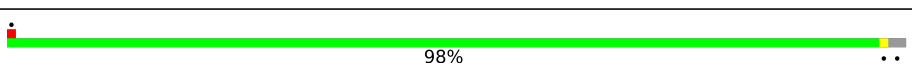
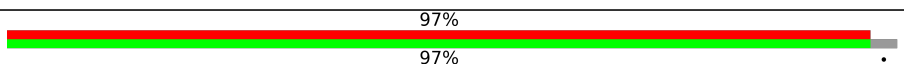
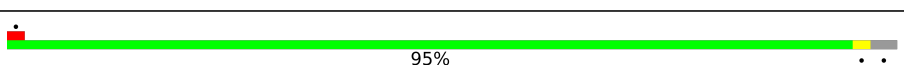
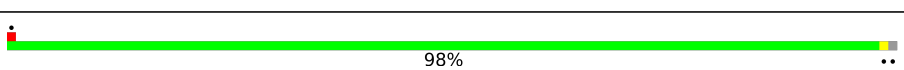
Mol	Chain	Length	Quality of chain
9	D	505	
10	E	176	
11	F	244	
12	G	256	
13	H	191	
14	I	463	
15	J	427	
16	K	376	
17	L	199	
18	M	138	
19	N	204	
20	O	199	
21	P	184	
22	Q	186	
23	R	306	
24	S	172	
25	T	250	
26	V	137	
27	W	236	
28	Y	127	
29	Z	453	
30	a	217	
31	b	647	
32	e	130	
33	f	107	

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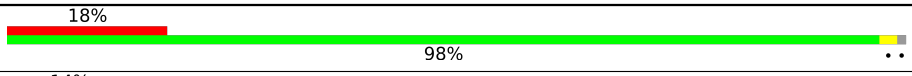
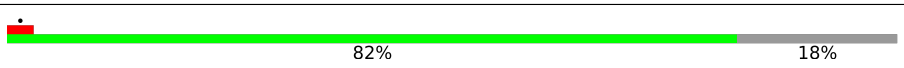
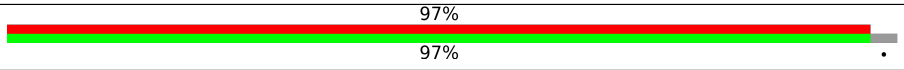
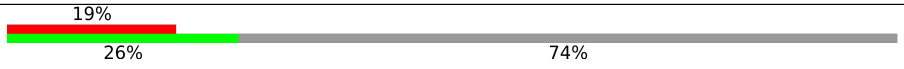
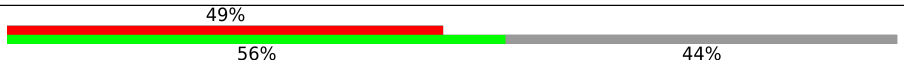
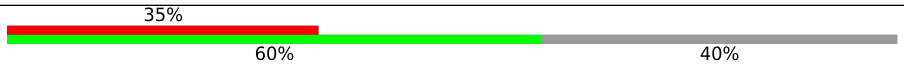
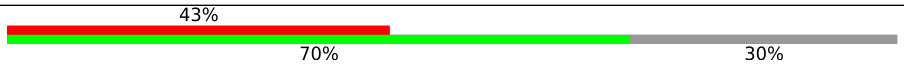
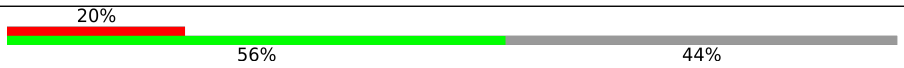
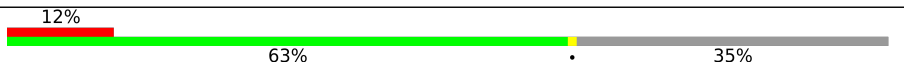
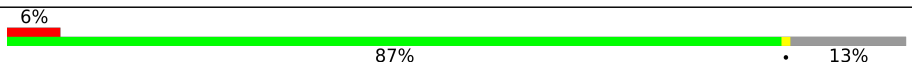
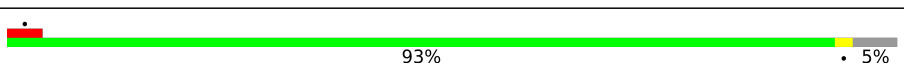
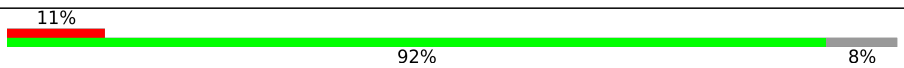
Mol	Chain	Length	Quality of chain
34	h	120	
35	i	100	
36	j	88	
37	l	181	
38	m	807	
39	n	605	
40	o	220	
41	q	618	
42	r	261	
43	t	322	
44	u	199	
45	v	231	
46	w	278	
47	x	295	
48	y	245	

2 Entry composition (i)

There are 49 unique types of molecules in this entry. The entry contains 119224 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 Saccharomyces cerevisiae S288C 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2015	43147	19266	7811	14055	2015	0	0

- Molecule 2 is a RNA chain called Saccharomyces cerevisiae S288C 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	150	3189	1426	563	1050	150	0	0

- Molecule 3 is a RNA chain called Saccharomyces cerevisiae ITS-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	6	58	1227	550	210	409	58	0	0

- Molecule 4 is a protein called 60S ribosomal subunit assembly/export protein LOC1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	7	11	87	56	15	16	0	0

- Molecule 5 is a protein called Ribosomal RNA-processing protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	8	143	1203	743	240	216	4	0	0

- Molecule 6 is a protein called Ribosome biogenesis protein BRX1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	A	255	2080	1326	372	376	6	0	0

- Molecule 7 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B	331	Total	C	N	O	S	0	0
			2626	1669	484	467	6		

- Molecule 8 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	C	343	Total	C	N	O	S	0	0
			2611	1643	499	466	3		

- Molecule 9 is a protein called ATP-dependent RNA helicase HAS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	D	423	Total	C	N	O	S	0	0
			3377	2183	573	609	12		

- Molecule 10 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	E	151	Total	C	N	O	S	0	0
			1205	780	215	209	1		

- Molecule 11 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	F	241	Total	C	N	O	S	0	0
			1936	1246	351	338	1		

- Molecule 12 is a protein called Large ribosomal subunit protein eL8A.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	G	164	Total	C	N	O	S	0	0
			1272	818	217	235	2		

- Molecule 13 is a protein called Large ribosomal subunit protein uL6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	H	189	Total	C	N	O	S	0	0
			1502	952	272	275	3		

- Molecule 14 is a protein called Ribosome biogenesis protein NSA1.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	I	394	Total	C	N	O	S	0	0
			3126	1997	525	593	11		

- Molecule 15 is a protein called rRNA-processing protein EBP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	J	151	Total	C	N	O	S	0	0
			1271	793	240	235	3		

- Molecule 16 is a protein called Proteasome-interacting protein CIC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	K	268	Total	C	N	O	S	0	0
			2155	1387	355	409	4		

- Molecule 17 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	L	110	Total	C	N	O	0	0
			884	552	185	147		

- Molecule 18 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	M	134	Total	C	N	O	S	0	0
			1041	668	197	174	2		

- Molecule 19 is a protein called Large ribosomal subunit protein eL15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	N	177	Total	C	N	O	S	0	0
			1513	948	320	244	1		

- Molecule 20 is a protein called Large ribosomal subunit protein uL13A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	O	188	Total	C	N	O	S	0	0
			1486	960	275	250	1		

- Molecule 21 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	P	137	Total	C	N	O	0	0
			1062	666	198	198		

- Molecule 22 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Q	144	Total	C	N	O	S	0	0
			1110	704	213	192	1		

- Molecule 23 is a protein called Protein MAK16.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	R	190	Total	C	N	O	S	0	0
			1578	996	297	275	10		

- Molecule 24 is a protein called Large ribosomal subunit protein eL20A.

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

- Molecule 25 is a protein called Ribosomal RNA-processing protein 15.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	T	79	Total	C	N	O	0	0
			625	390	109	126		

- Molecule 26 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	V	114	Total	C	N	O	S	0	0
			845	535	154	149	7		

- Molecule 27 is a protein called Ribosome assembly factor MRT4.

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

- Molecule 28 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	Y	125	Total 984	C 620	N 191	O 173	0	0

- Molecule 29 is a protein called Ribosome biogenesis protein SSF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Z	253	Total 2020	C 1280	N 361	O 370	S 9	0	0

- Molecule 30 is a protein called Large ribosomal subunit protein uL1A.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	a	210	Total 1668	C 1067	N 291	O 301	S 9	0	0

- Molecule 31 is a protein called Nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	b	423	Total 3429	C 2193	N 586	O 632	S 18	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
32	e	126	Total 1018	C 646	N 204	O 167	S 1	0	0

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

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

- Molecule 34 is a protein called 60S ribosomal protein L35-A.

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

- Molecule 35 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	i	84	Total	C	N	O	S	0	0
			665	413	136	114	2		

- Molecule 36 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	j	72	Total	C	N	O	S	0	0
			571	347	124	95	5		

- Molecule 37 is a protein called 60S ribosome subunit biogenesis protein NIP7.

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

- Molecule 38 is a protein called Ribosome biogenesis protein ERB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	m	211	Total	C	N	O	S	0	0
			1759	1116	305	333	5		

- Molecule 39 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	n	337	Total	C	N	O	S	0	0
			2760	1804	462	486	8		

- Molecule 40 is a protein called Ribosome biogenesis protein 15.

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

- Molecule 41 is a protein called 25S rRNA (cytosine(2870)-C(5))-methyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	q	358	Total	C	N	O	S	0	0
			2799	1779	490	518	12		

- Molecule 42 is a protein called Ribosome biogenesis protein NSA2.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	r	184	Total	C	N	O	S	0	0
			1489	937	286	261	5		

- Molecule 43 is a protein called Ribosome biogenesis protein RLP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	t	249	Total	C	N	O	S	0	0
			1973	1258	352	360	3		

- Molecule 44 is a protein called Ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	u	112	Total	C	N	O	S	0	0
			944	594	191	150	9		

- Molecule 45 is a protein called Nucleolar protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	v	149	Total	C	N	O	S	0	0
			1242	778	242	219	3		

- Molecule 46 is a protein called Ribosomal RNA-processing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	w	243	Total	C	N	O	S	0	0
			2058	1334	353	366	5		

- Molecule 47 is a protein called Ribosome production factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	x	279	Total	C	N	O	S	0	0
			2362	1500	427	431	4		

- Molecule 48 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	y	225	Total	C	N	O	S	0	0
			1701	1056	295	343	7		

- Molecule 49 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

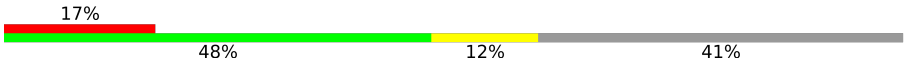
Mol	Chain	Residues	Atoms	AltConf
49	j	1	Total Zn 1 1	0
49	u	1	Total Zn 1 1	0

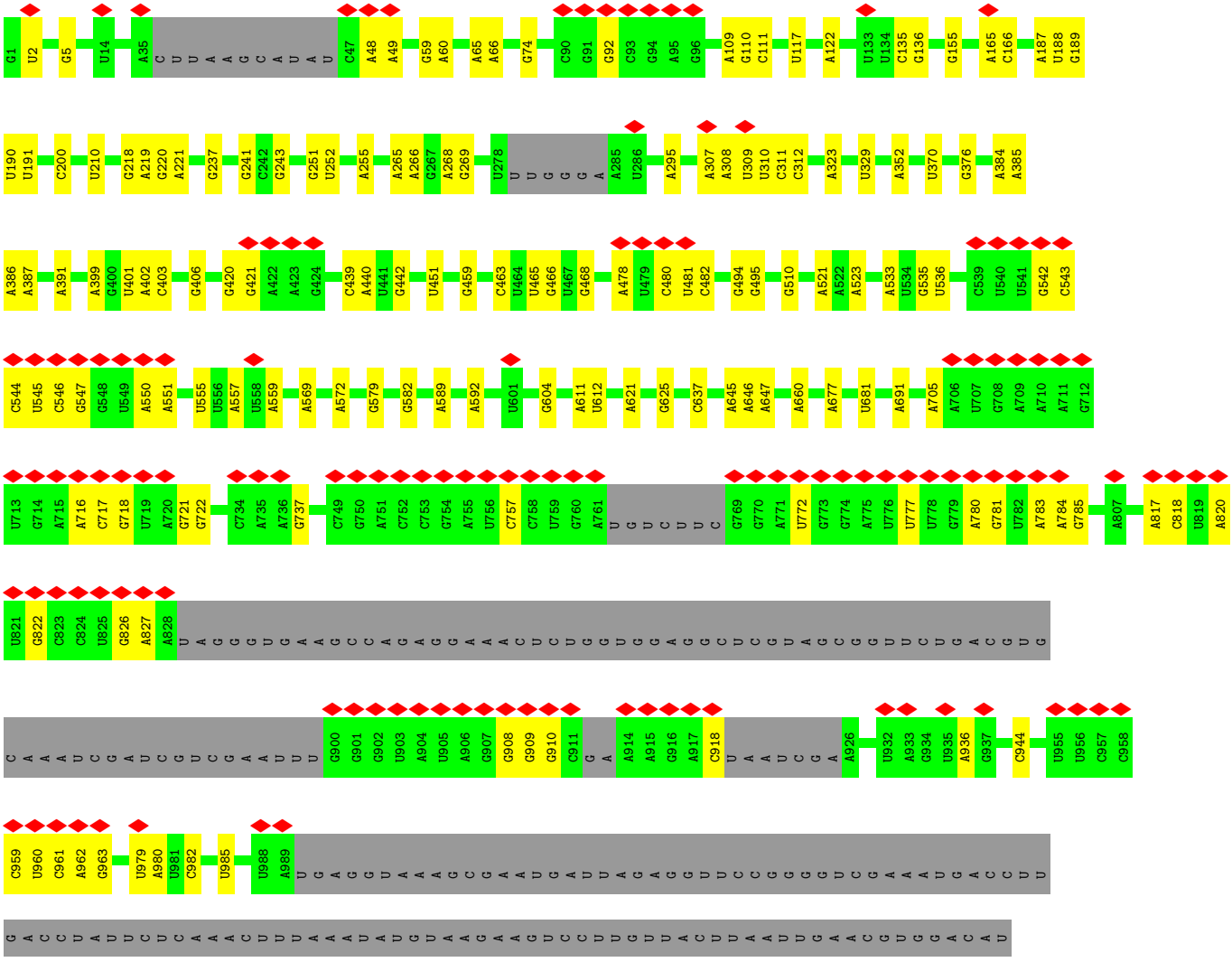
3 Residue-property plots (i)

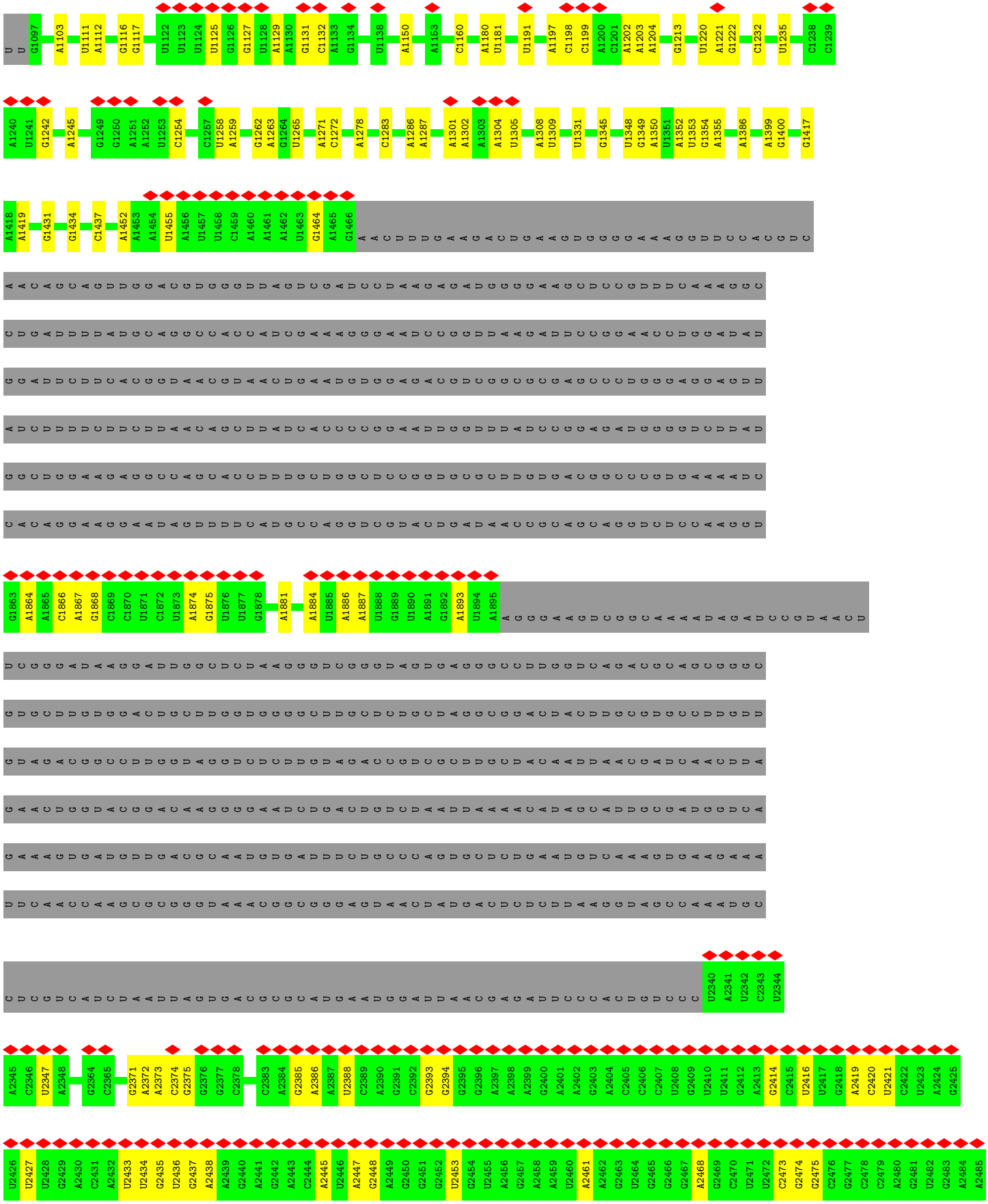
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Saccharomyces cerevisiae S288C 25S ribosomal RNA

Chain 1:

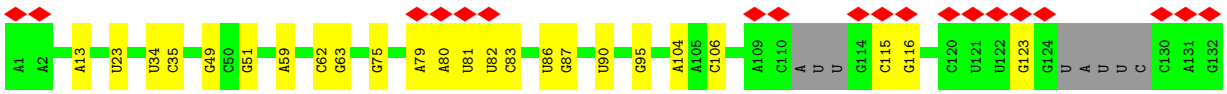


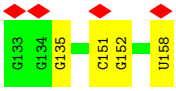



U U G1097 A1103 U1111 A1112 G1116 G1117 U1122 U1123 U1124 U1125 G1126 G1127 U1128 A1129 A1130 G1131 C1132 A1133 G1134 U1138 A1150 A1153 C1160 A1180 U1181 U1191 A1197 C1198 C1199 A1200 C1201 A1202 A1203 A1204 G1213 U1220 A1221 G1222 C1232 U1235 C1238 C1239
A1240 U1241 G1242 A1245 G1249 G1250 A1251 A1252 U1253 C1254 C1257 U1258 A1259 G1262 A1263 G1264 U1265 A1271 C1272 A1278 C1283 A1286 A1287 A1301 A1302 A1303 A1304 U1305 A1308 U1309 U1331 G1345 U1348 G1349 A1350 U1351 A1352 U1353 G1354 A1355 A1386 A1399 G1400 G1417
A1418 A1419 G1431 G1434 C1437 A1452 A1453 A1454 U1455 A1456 U1457 U1458 C1459 A1460 A1461 A1462 U1463 G1464 A1465 G1466
G1863 A1864 A1865 C1866 A1867 G1868 C1869 C1870 U1871 C1872 U1873 A1874 G1875 U1876 U1877 G1878 A1881 A1884 U1885 A1886 A1887 U1888 G1889 U1890 A1891 G1892 A1893 U1894 A1895
U2340 A2341 U2342 C2343 U2344
A2345 C2346 U2347 A2348 G2364 C2365 G2371 A2372 A2373 C2374 G2375 G2376 G2377 C2378 C2383 A2384 G2385 A2386 A2387 U2388 C2389 A2390 G2391 C2392 G2393 G2394 G2395 G2396 A2397 A2398 A2399 G2400 A2401 A2402 G2403 A2404 C2405 C2406 C2407 U2408 G2409 U2410 U2411 G2412 A2413 G2414 C2415 U2416 U2417 G2418 A2419 C2420 U2421 C2422 U2423 A2424 G2425
U2426 U2427 U2428 G2429 A2430 C2431 A2432 U2433 U2434 G2435 U2436 G2437 A2438 A2439 G2440 A2441 G2442 A2443 C2444 A2445 U2446 A2447 G2448 A2449 G2450 G2451 G2452 U2453 G2454 U2455 A2456 C2457 A2458 A2459 U2460 A2461 A2462 G2463 U2464 G2465 G2466 C2467 A2468 G2469 C2470 U2471 U2472 C2473 G2474 G2475 C2476 G2477 C2478 C2479 A2480 C2481 U2482 G2483 A2484 A2485

• Molecule 2: Saccharomyces cerevisiae S288C 5.8S ribosomal RNA

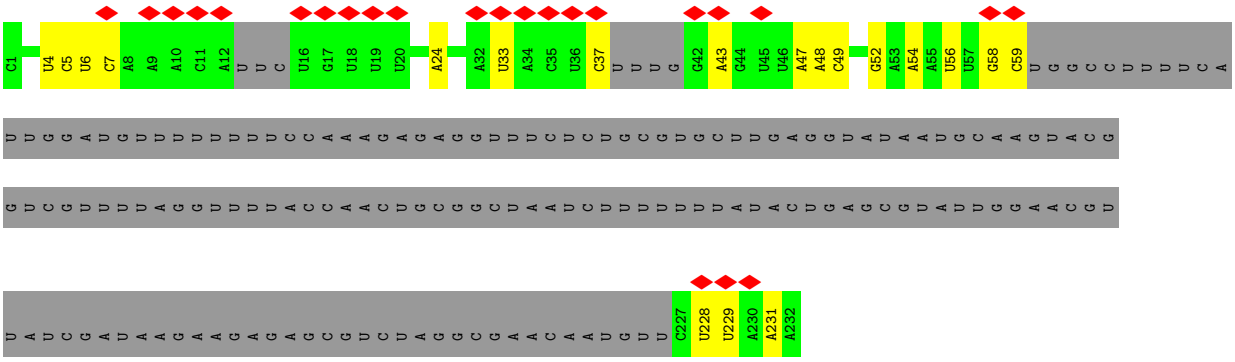
Chain 2:





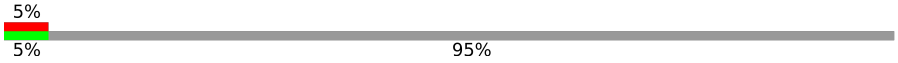
• Molecule 3: Saccharomyces cerevisiae ITS-2

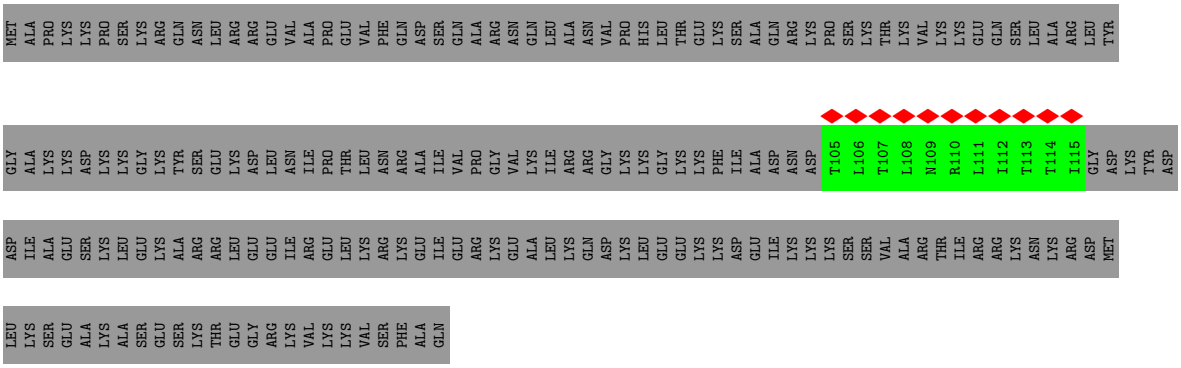
Chain 6:



• Molecule 4: 60S ribosomal subunit assembly/export protein LOC1

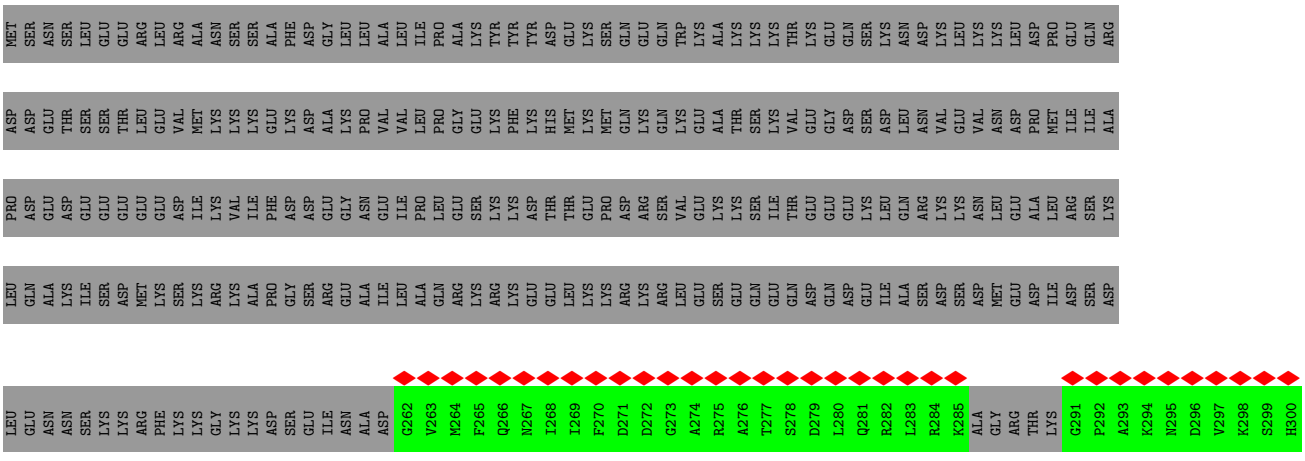
Chain 7:

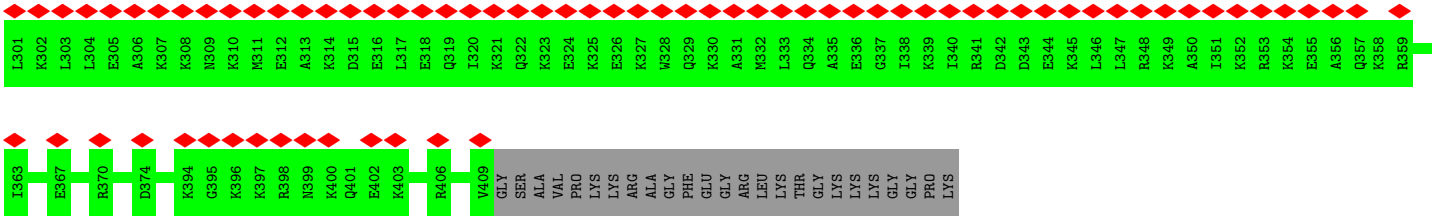




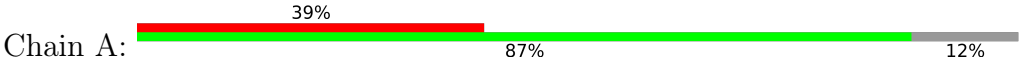
• Molecule 5: Ribosomal RNA-processing protein 14

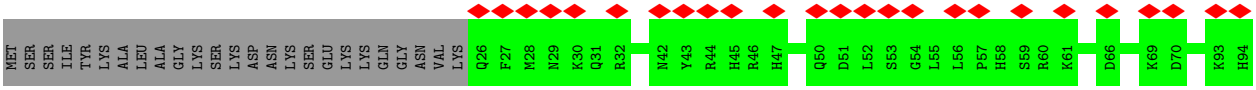
Chain 8:

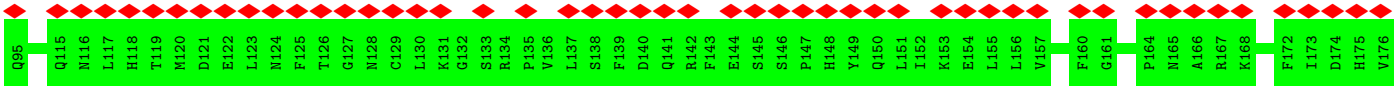


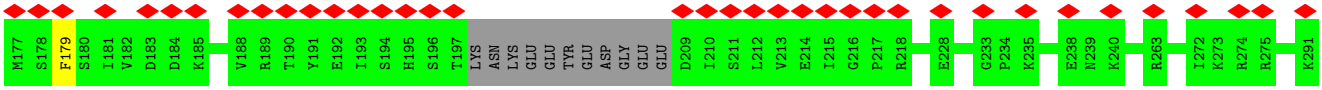


• Molecule 6: Ribosome biogenesis protein BRX1

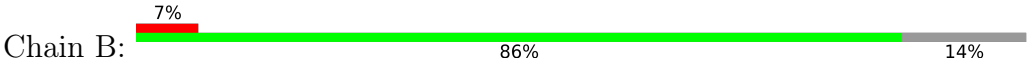


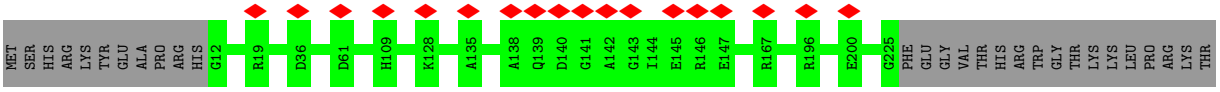




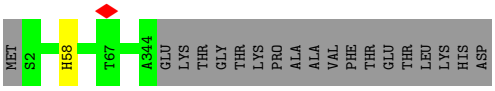


• Molecule 7: 60S ribosomal protein L3

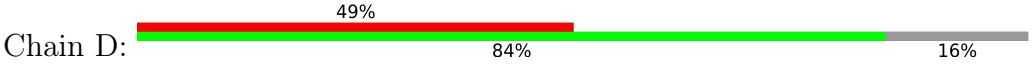


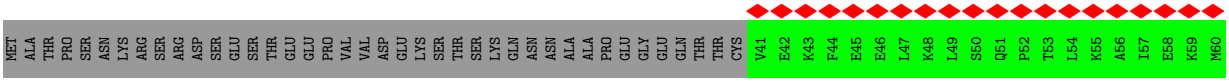


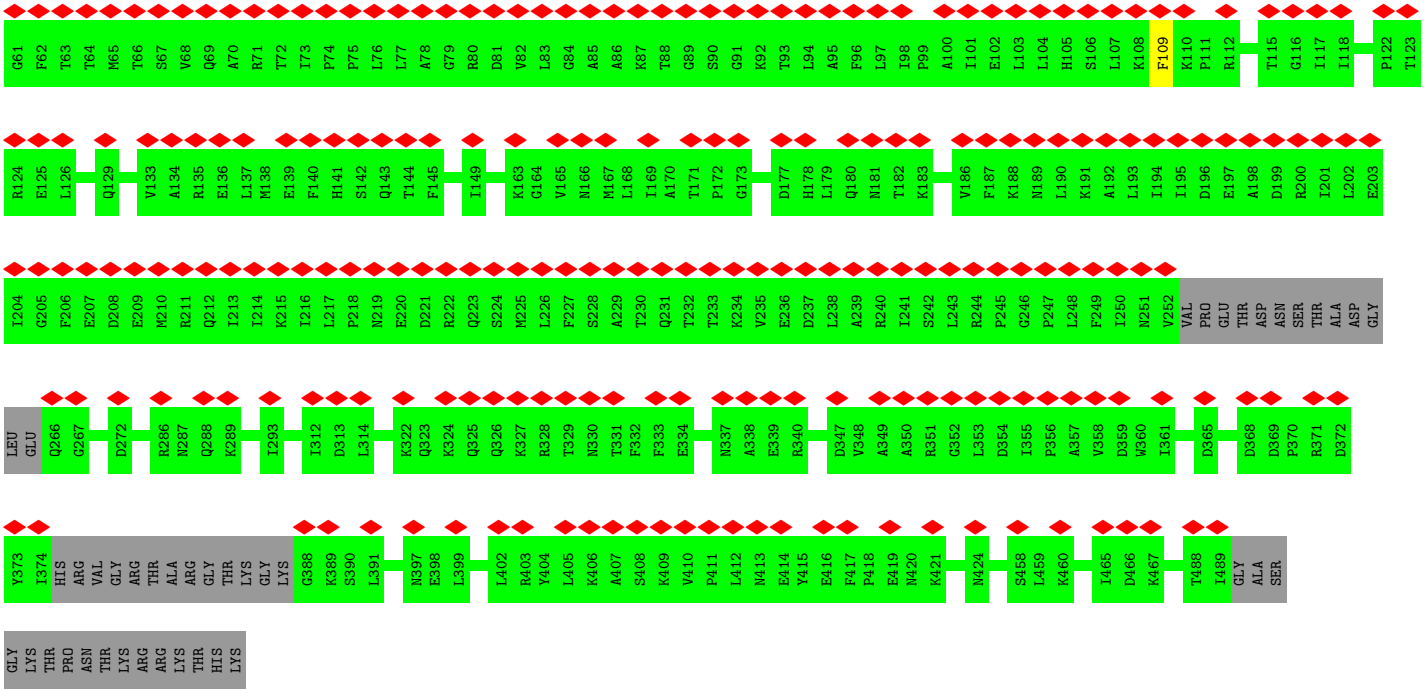
• Molecule 8: 60S ribosomal protein L4-A



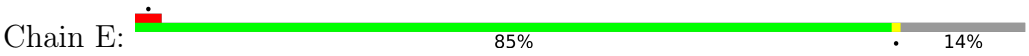
• Molecule 9: ATP-dependent RNA helicase HAS1

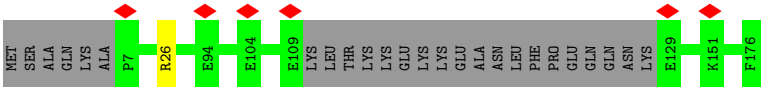




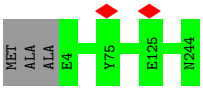


• Molecule 10: 60S ribosomal protein L6-A

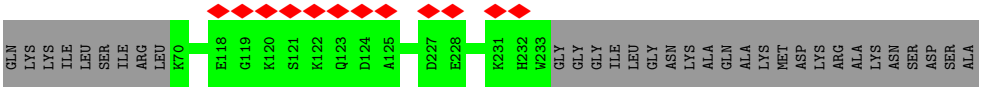




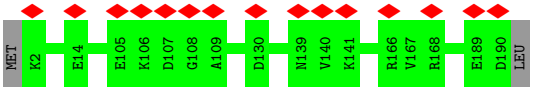
• Molecule 11: 60S ribosomal protein L7-A



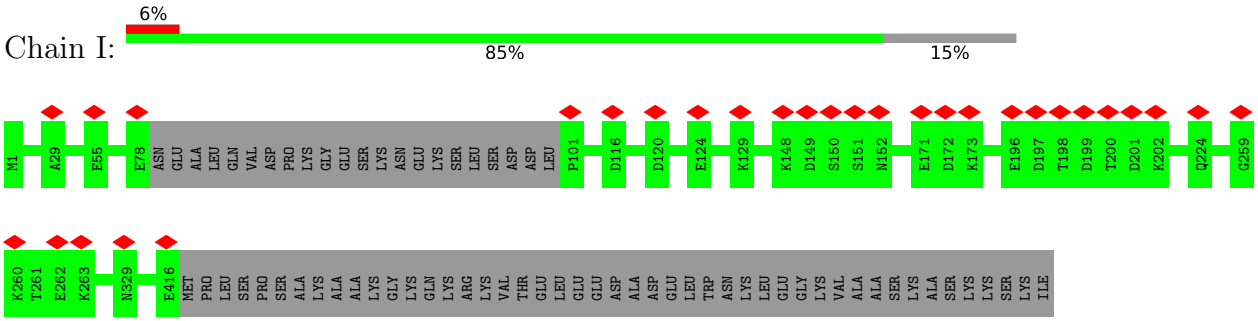
• Molecule 12: Large ribosomal subunit protein eL8A



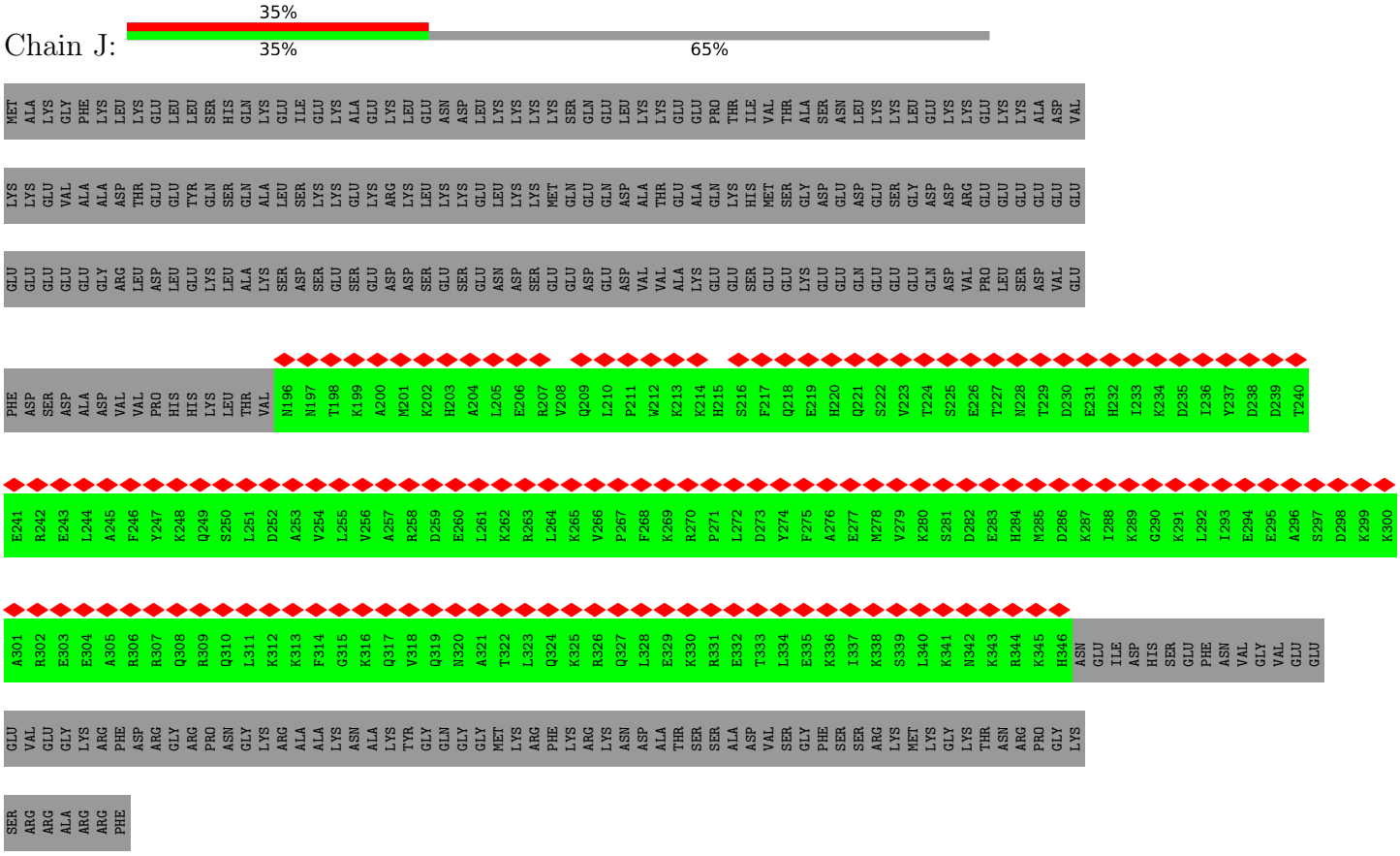
• Molecule 13: Large ribosomal subunit protein uL6A



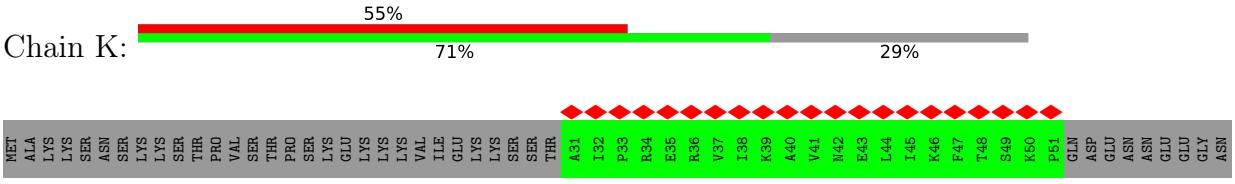
• Molecule 14: Ribosome biogenesis protein NSA1

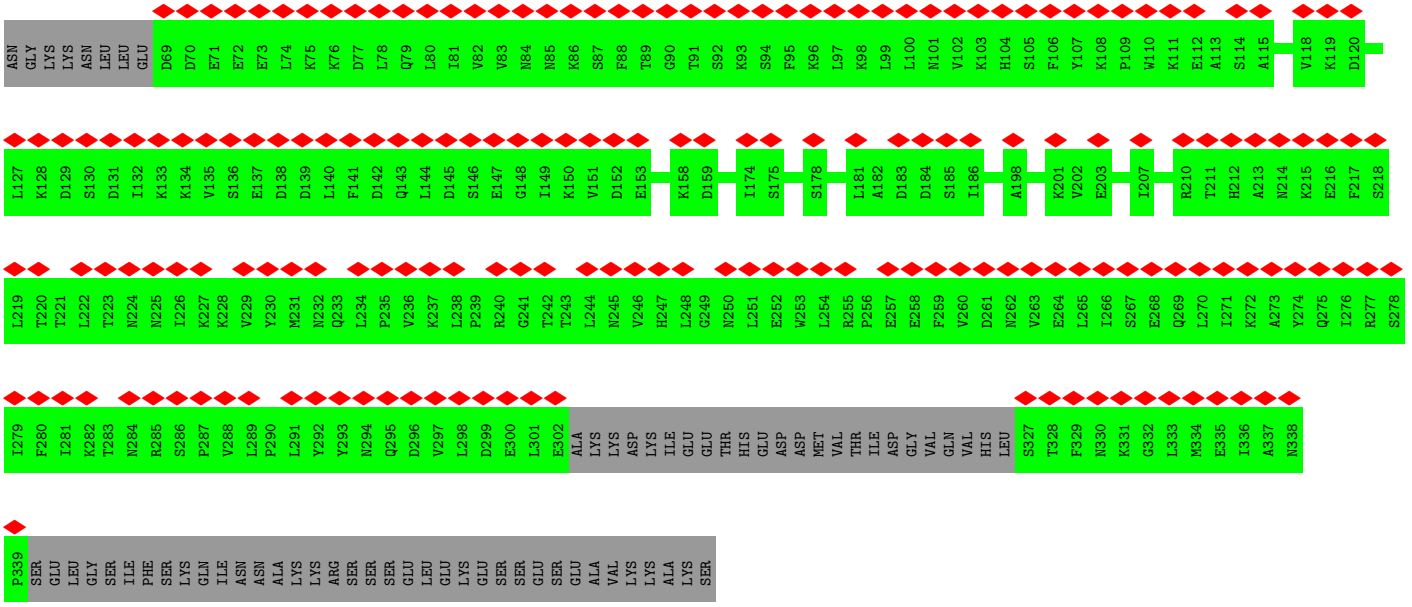


• Molecule 15: rRNA-processing protein EBP2

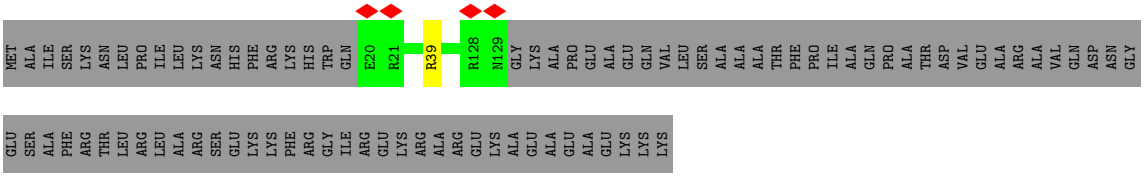


• Molecule 16: Proteasome-interacting protein CIC1

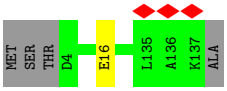




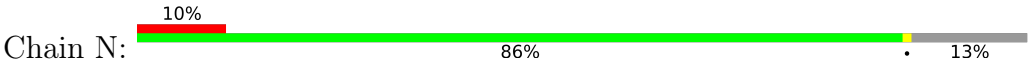
• Molecule 17: 60S ribosomal protein L13-A

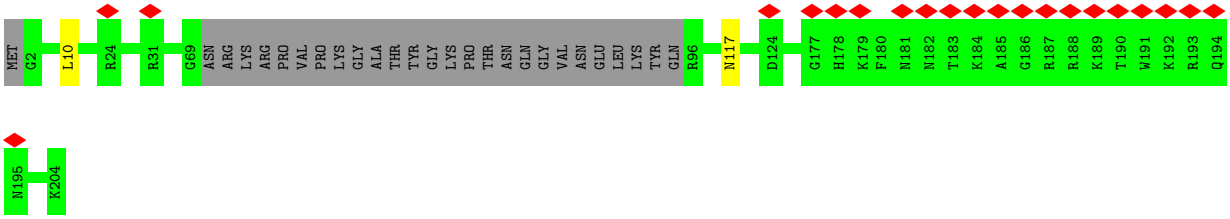


• Molecule 18: 60S ribosomal protein L14-A

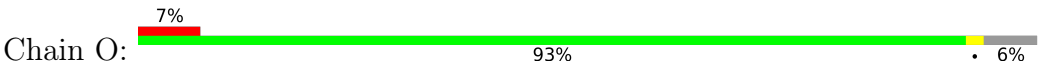


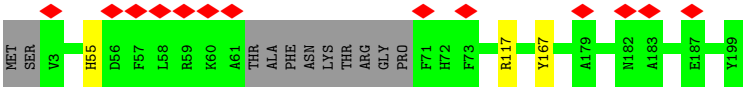
• Molecule 19: Large ribosomal subunit protein eL15A



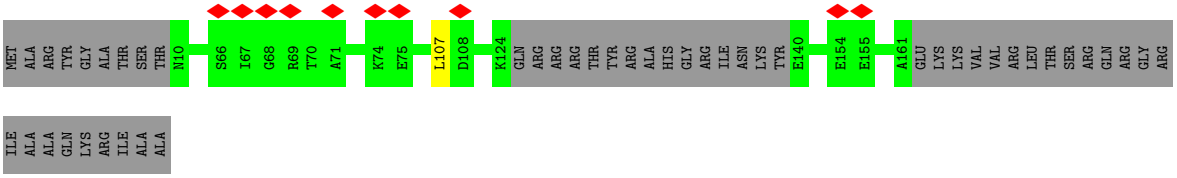


• Molecule 20: Large ribosomal subunit protein uL13A

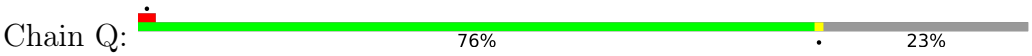


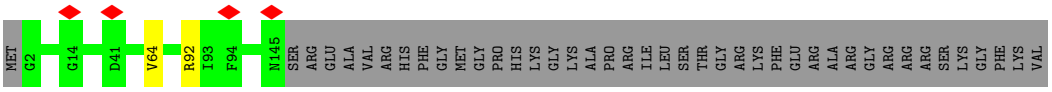


• Molecule 21: 60S ribosomal protein L17-A

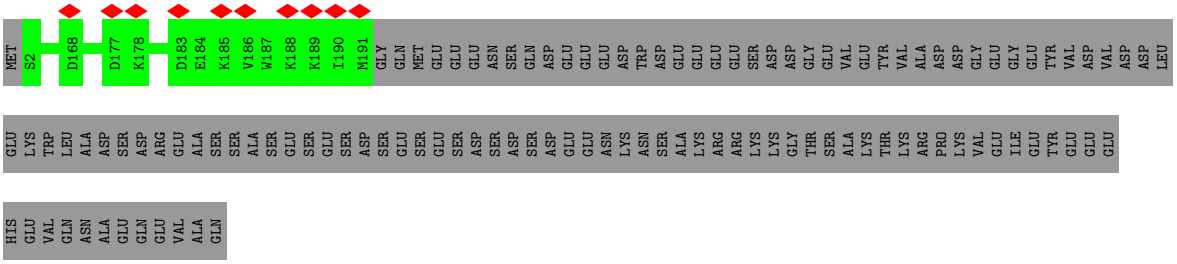


• Molecule 22: 60S ribosomal protein L18-A

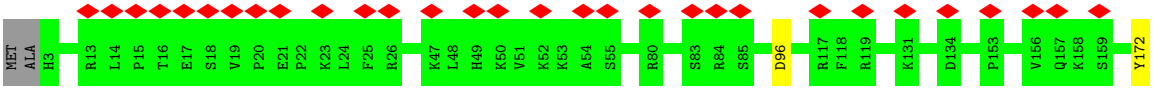




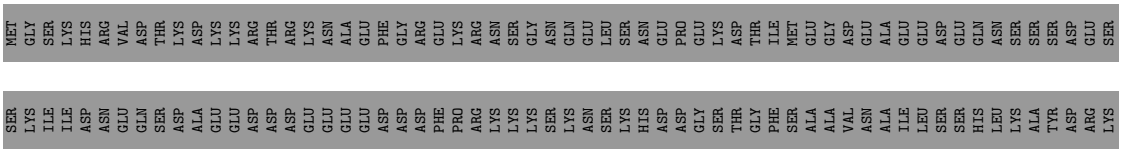
• Molecule 23: Protein MAK16

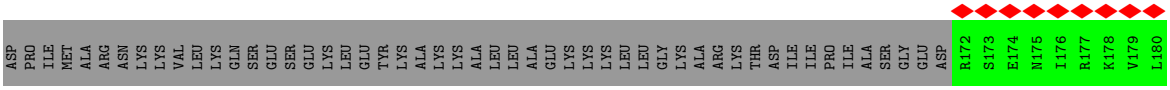


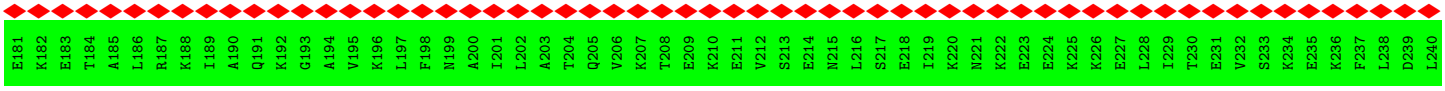
• Molecule 24: Large ribosomal subunit protein eL20A

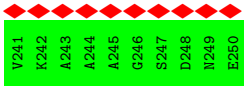


• Molecule 25: Ribosomal RNA-processing protein 15



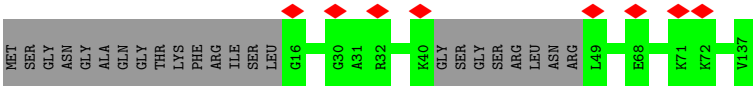






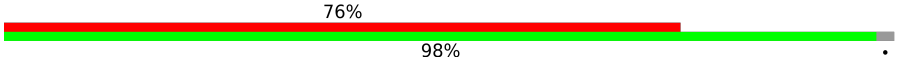
• Molecule 26: 60S ribosomal protein L23-A

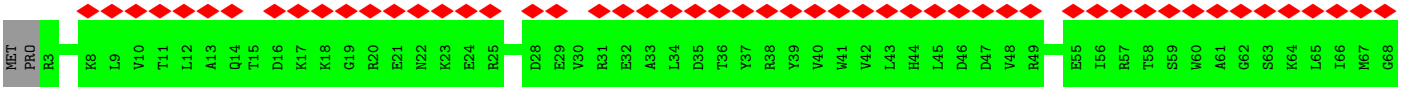
Chain V:

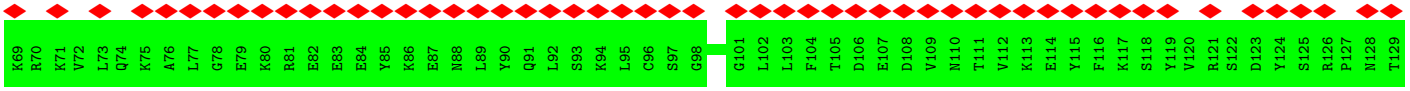


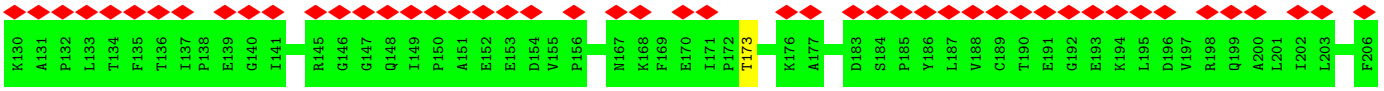
• Molecule 27: Ribosome assembly factor MRT4

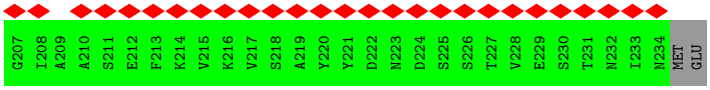
Chain W:





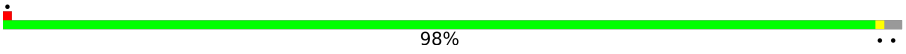


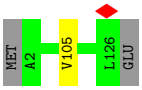




• Molecule 28: 60S ribosomal protein L26-A

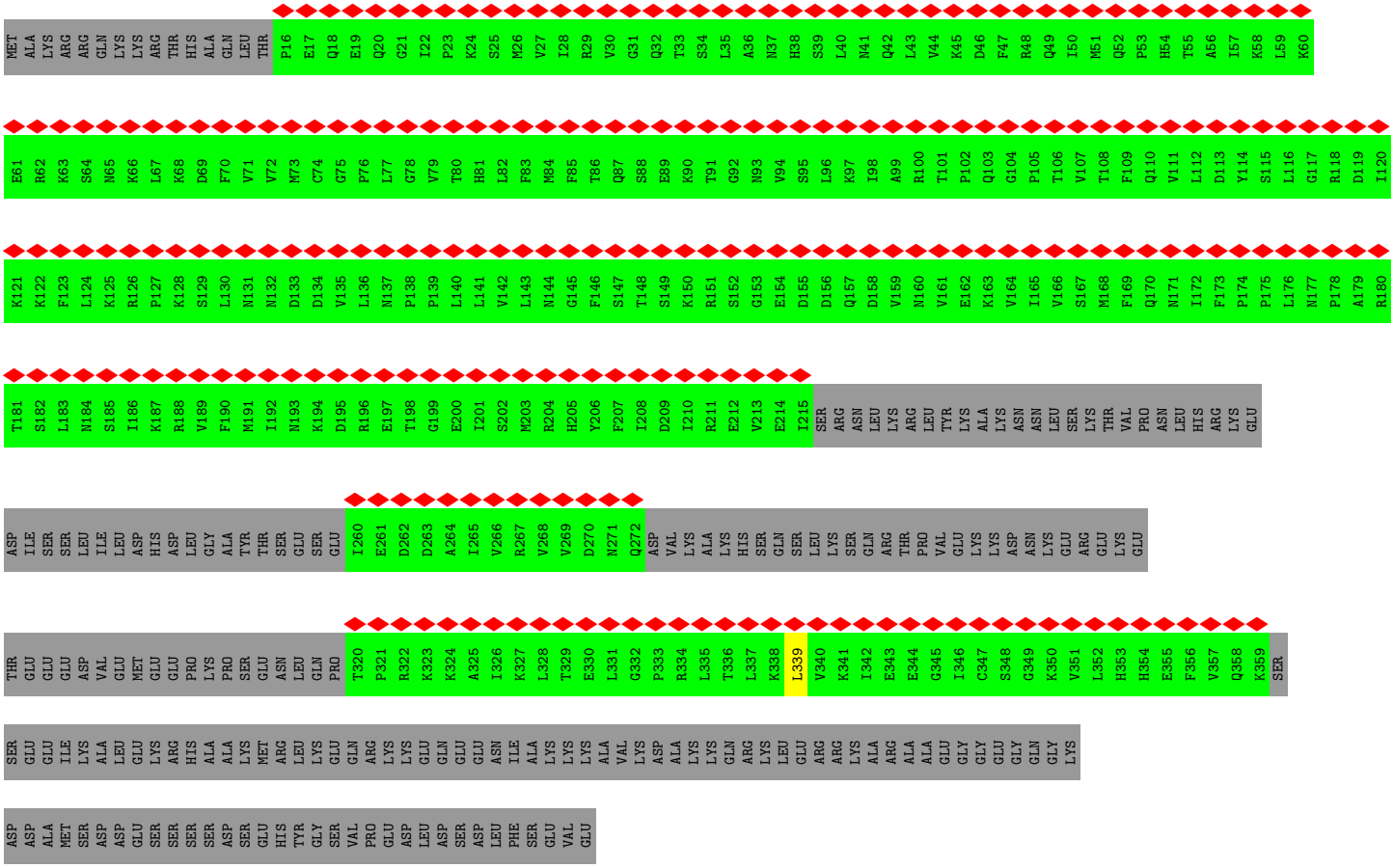
Chain Y:



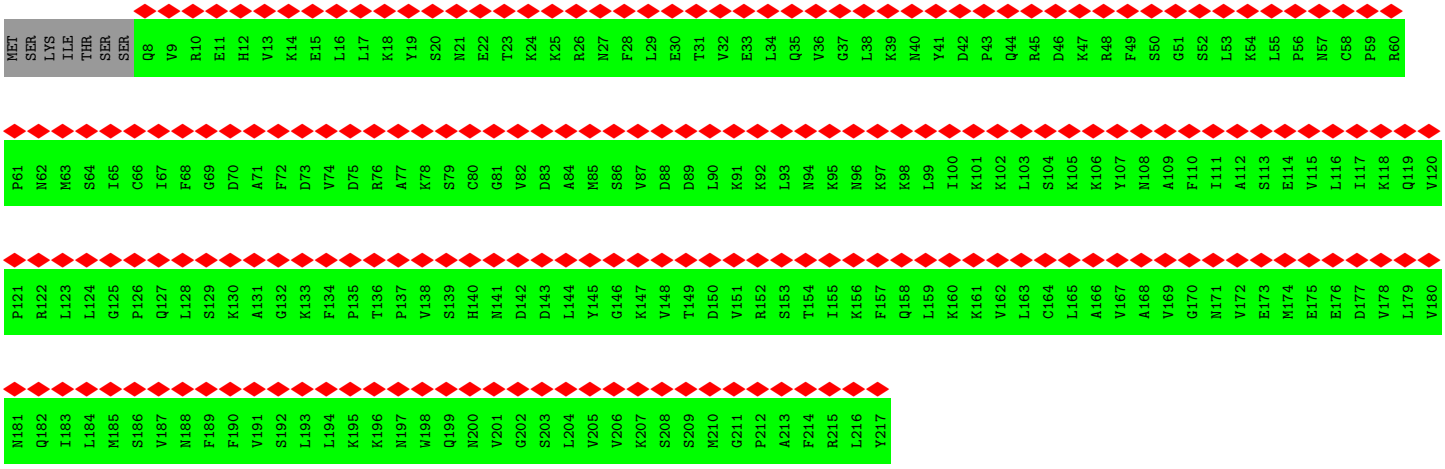


• Molecule 29: Ribosome biogenesis protein SSF1

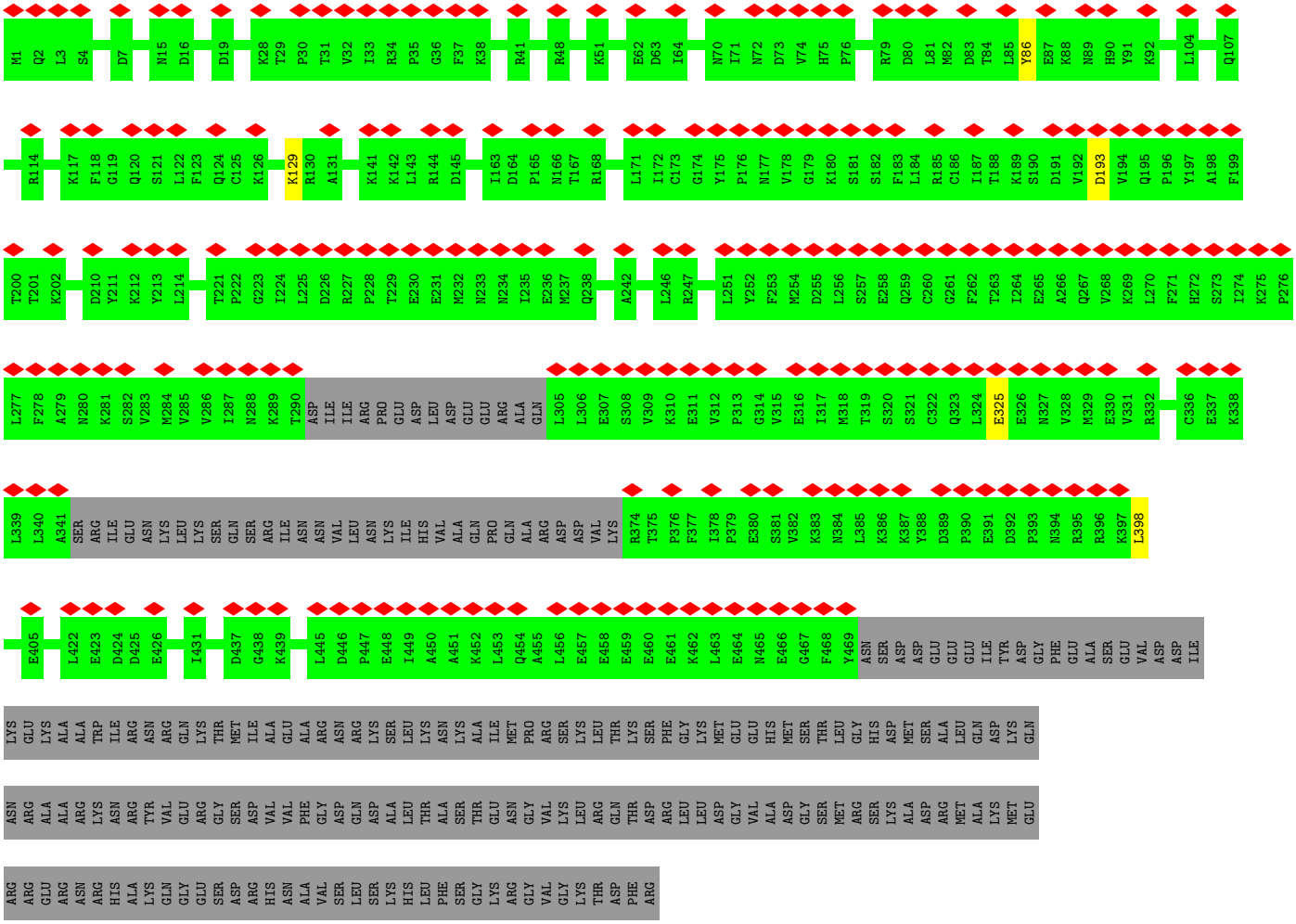
Chain Z:



• Molecule 30: Large ribosomal subunit protein uL1A

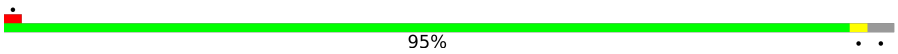


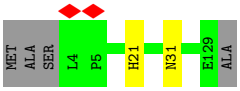
• Molecule 31: Nucleolar GTP-binding protein 1



• Molecule 32: 60S ribosomal protein L32

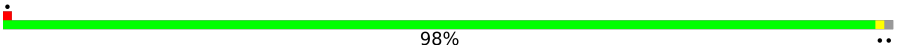
Chain e:

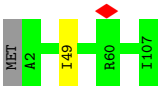




• Molecule 33: 60S ribosomal protein L33-A

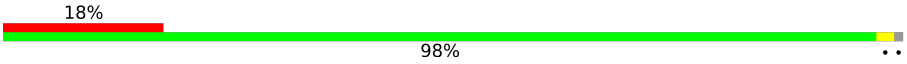
Chain f:

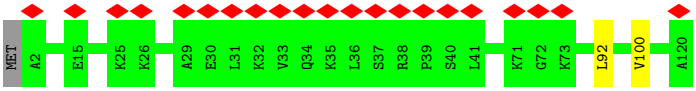




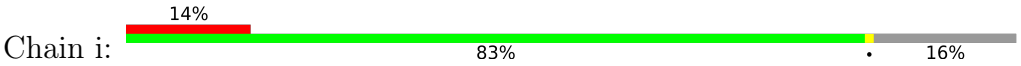
• Molecule 34: 60S ribosomal protein L35-A

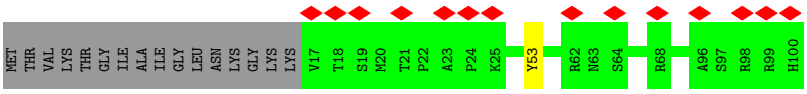
Chain h:



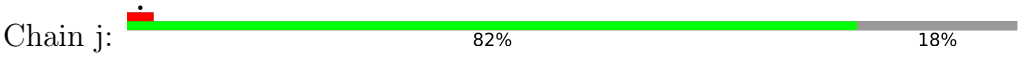


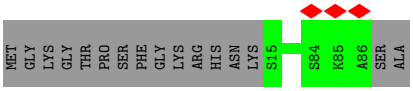
• Molecule 35: 60S ribosomal protein L36-A



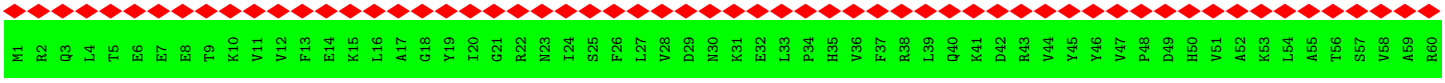


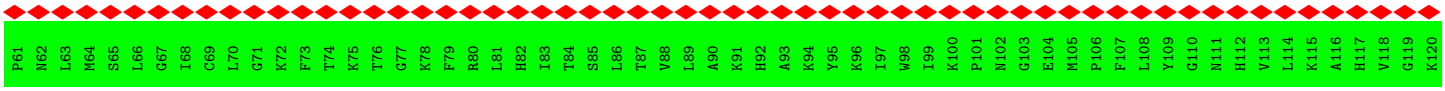
• Molecule 36: 60S ribosomal protein L37-A

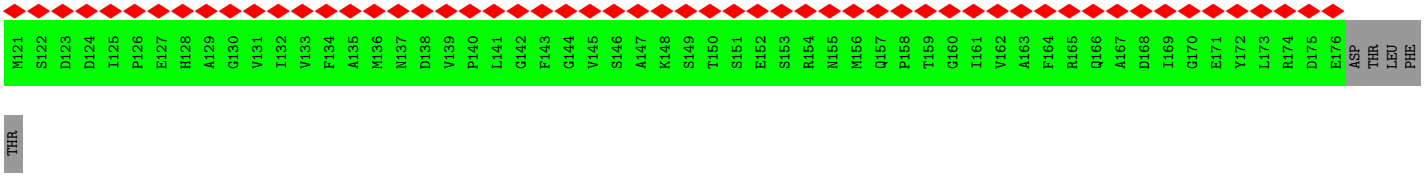




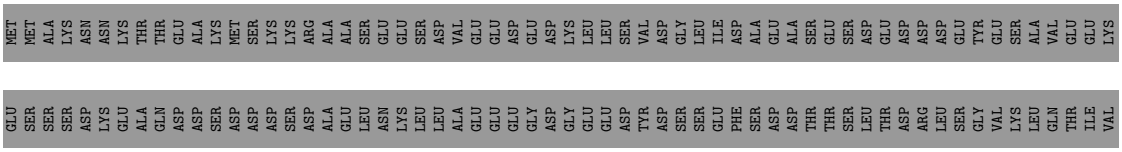
• Molecule 37: 60S ribosome subunit biogenesis protein NIP7

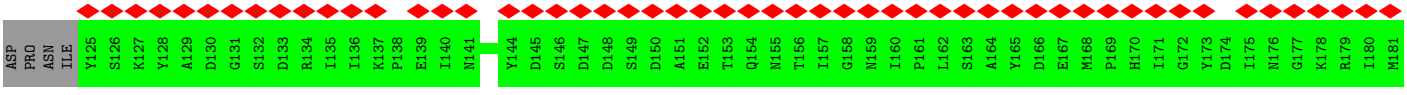


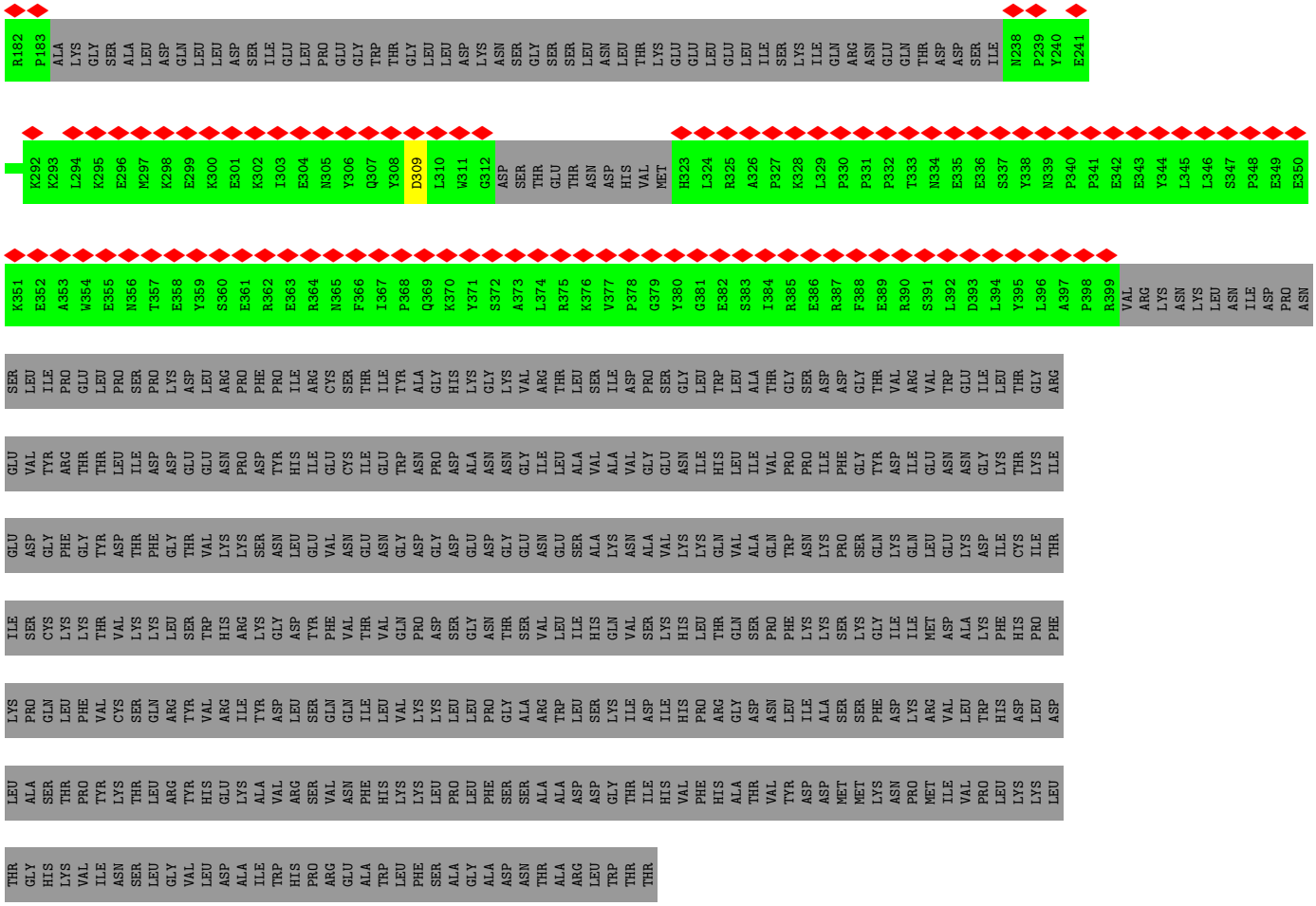




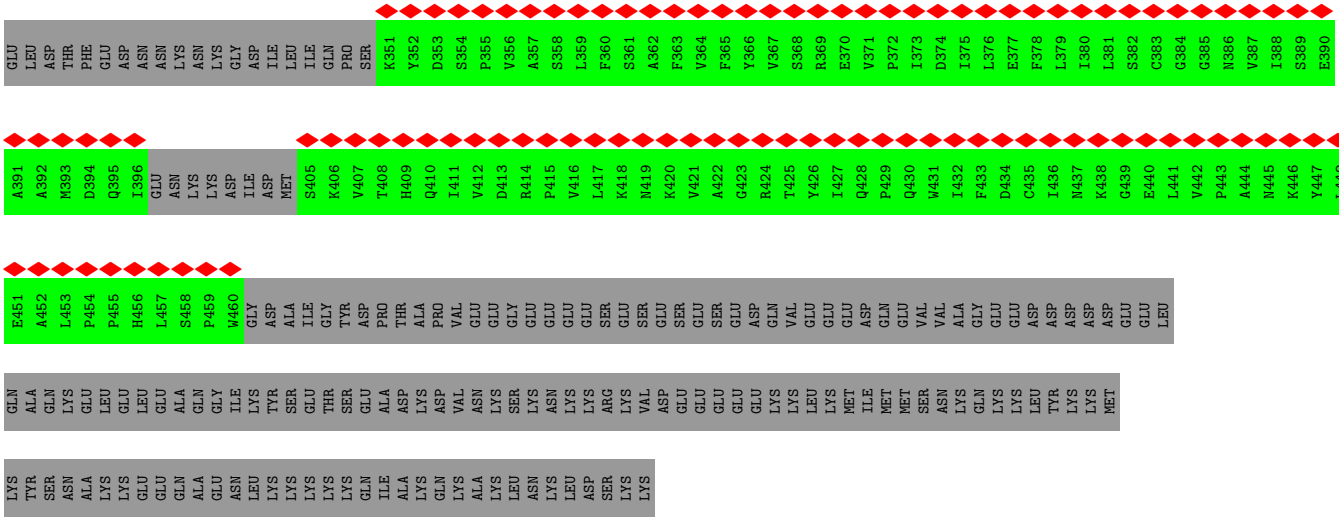
• Molecule 38: Ribosome biogenesis protein ERB1





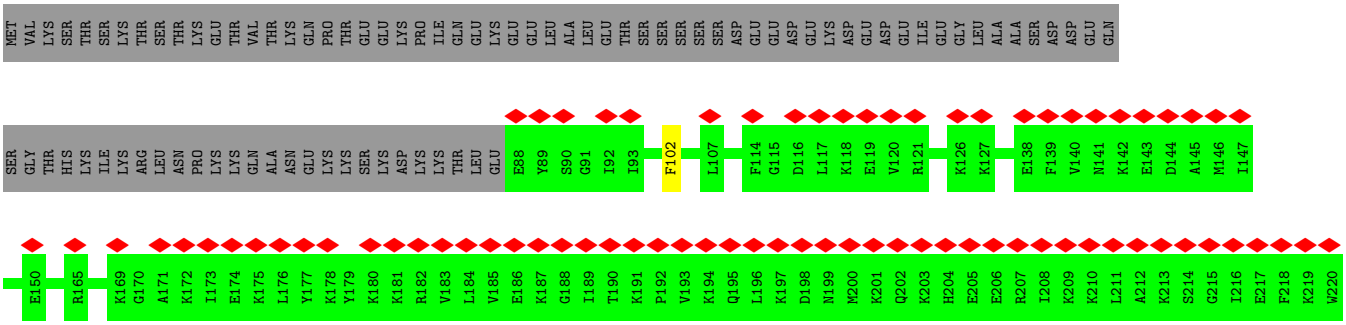


• Molecule 39: Pescadillo homolog



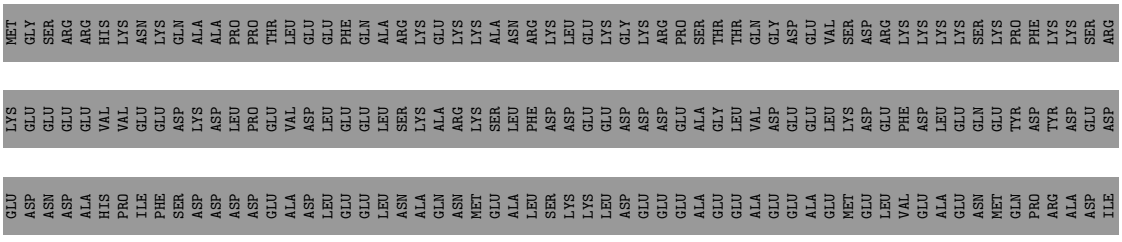
• Molecule 40: Ribosome biogenesis protein 15

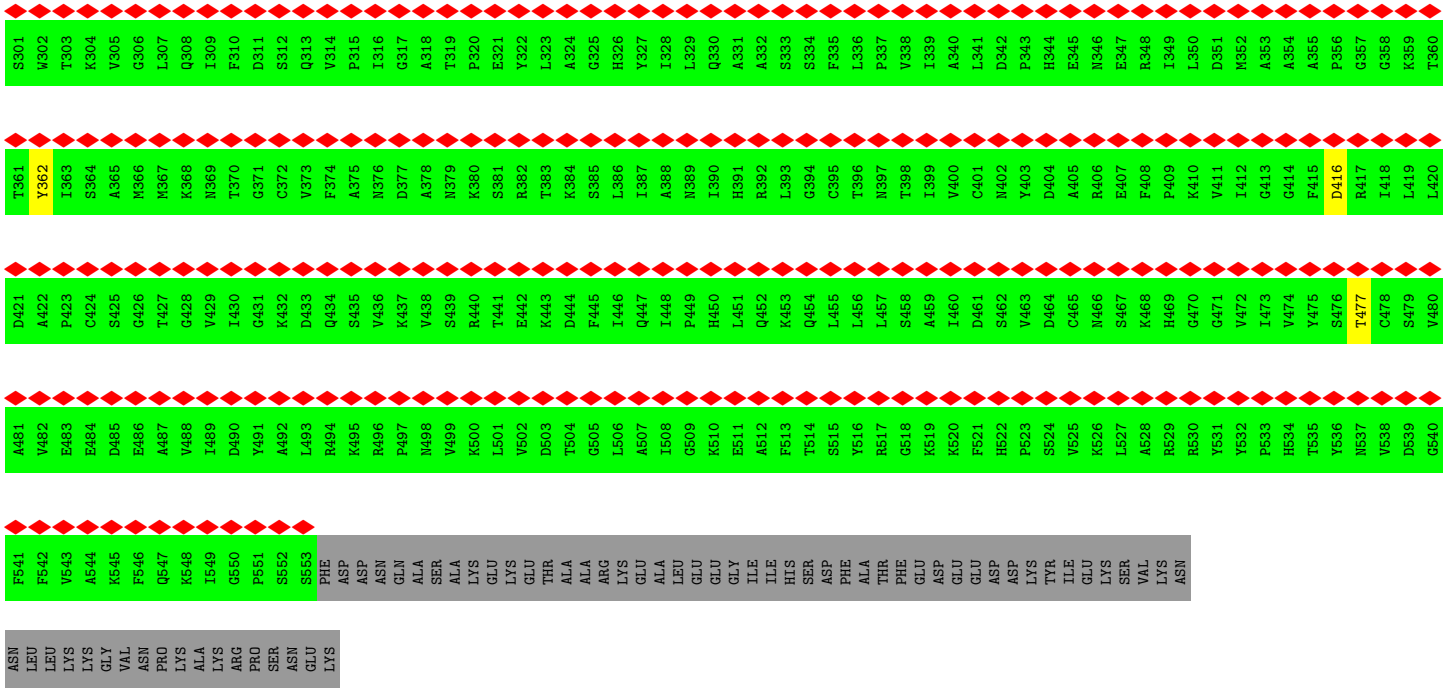
Chain o:



• Molecule 41: 25S rRNA (cytosine(2870)-C(5))-methyltransferase

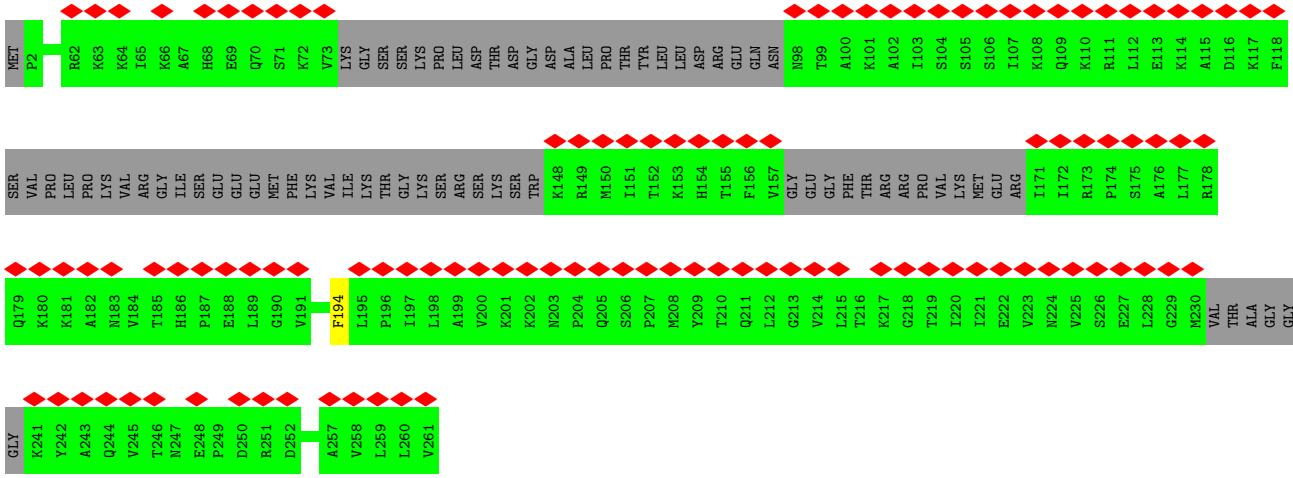
Chain q:





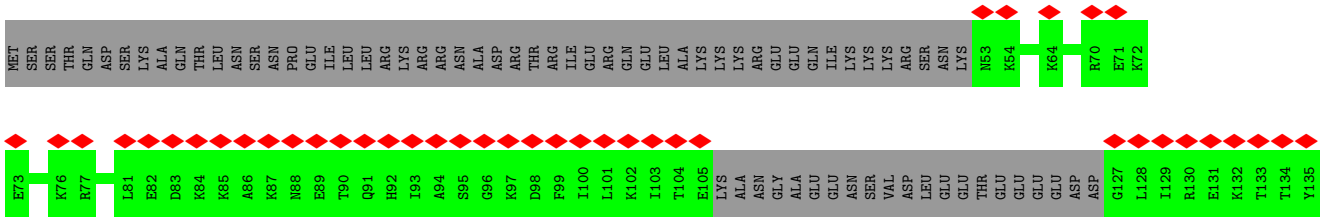
• Molecule 42: Ribosome biogenesis protein NSA2

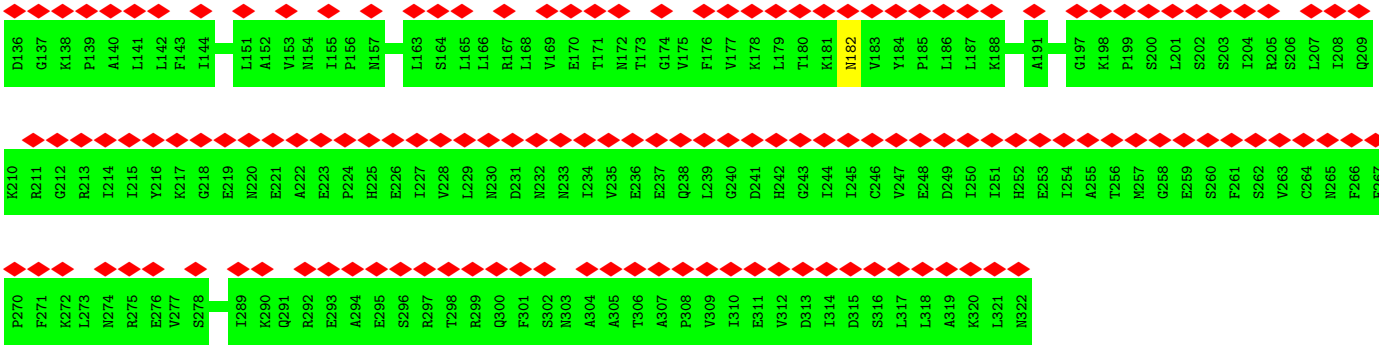
Chain r:



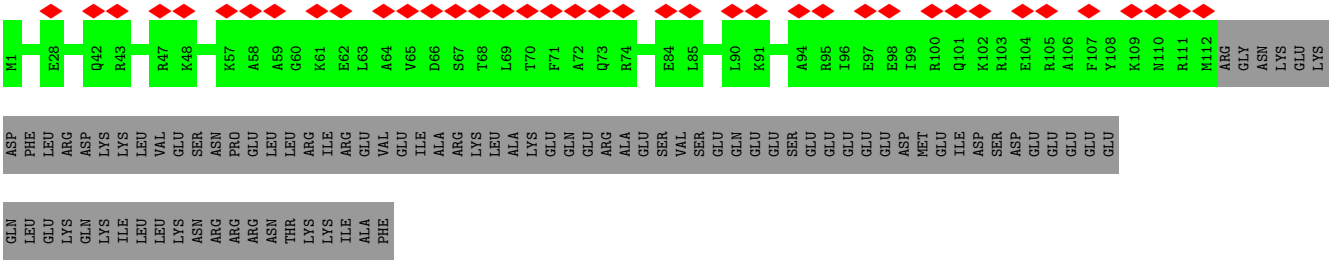
• Molecule 43: Ribosome biogenesis protein RLP7

Chain t:

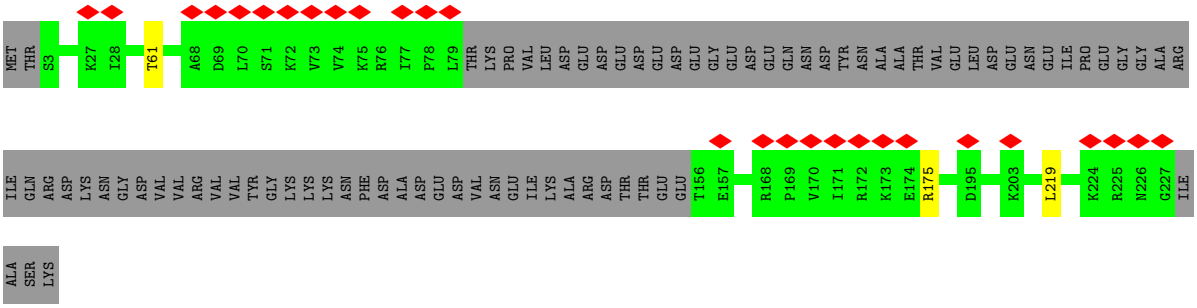




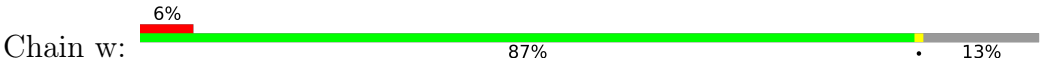
• Molecule 44: Ribosome biogenesis protein RLP24

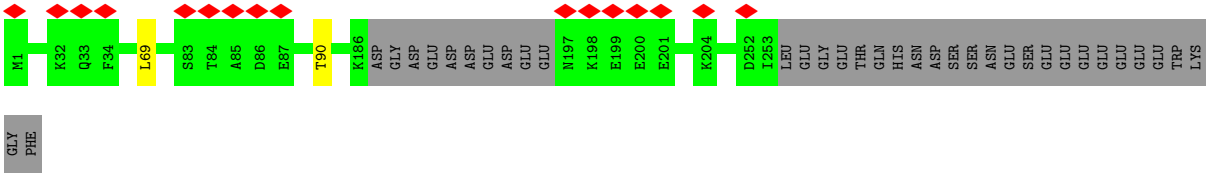


• Molecule 45: Nucleolar protein 16

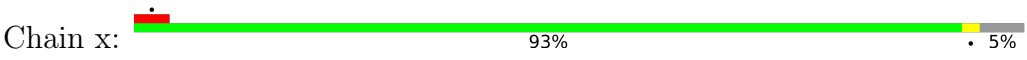


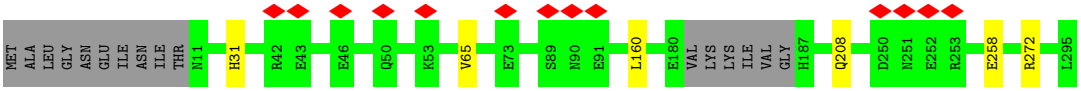
• Molecule 46: Ribosomal RNA-processing protein 1



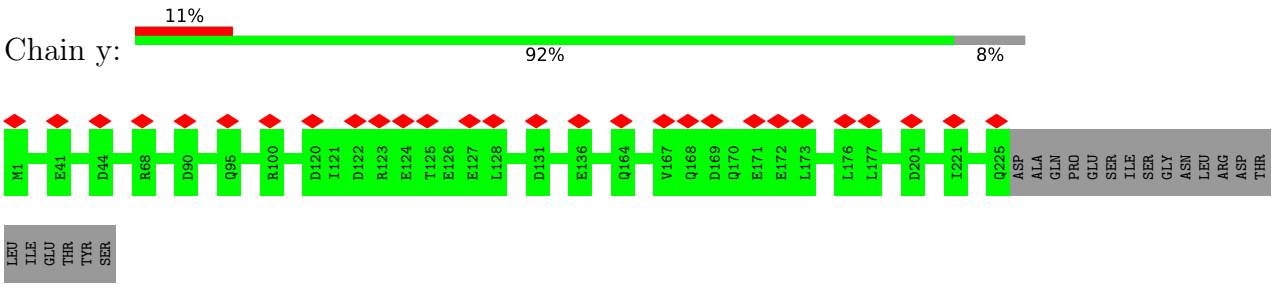


• Molecule 47: Ribosome production factor 1





• Molecule 48: Eukaryotic translation initiation factor 6



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	374572	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 ($e^-/Å^2$)	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	0.300	Depositor
Minimum map value	-0.185	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	444.78, 444.78, 444.78	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.059, 1.059, 1.059	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	0.45	0/48286	0.79	3/75246 (0.0%)
2	2	0.47	0/3562	0.79	0/5542
3	6	0.26	0/1367	0.79	0/2118
4	7	0.22	0/86	0.51	0/117
5	8	0.24	0/1210	0.50	0/1590
6	A	0.26	0/2126	0.47	0/2868
7	B	0.29	0/2679	0.53	0/3600
8	C	0.31	0/2660	0.53	0/3601
9	D	0.27	0/3441	0.46	0/4642
10	E	0.30	0/1226	0.50	0/1648
11	F	0.31	0/1974	0.50	0/2654
12	G	0.29	0/1294	0.48	0/1751
13	H	0.29	0/1523	0.51	0/2052
14	I	0.29	0/3182	0.50	0/4288
15	J	0.24	0/1289	0.45	0/1715
16	K	0.25	0/2190	0.45	0/2955
17	L	0.32	0/897	0.59	0/1205
18	M	0.28	0/1056	0.51	0/1421
19	N	0.30	0/1544	0.59	0/2065
20	O	0.32	0/1513	0.52	0/2029
21	P	0.28	0/1080	0.50	0/1455
22	Q	0.29	0/1127	0.53	0/1521
23	R	0.31	0/1609	0.51	0/2157
24	S	0.30	0/1468	0.51	0/1973
25	T	0.24	0/626	0.40	0/831
26	V	0.29	0/858	0.51	0/1156
27	W	0.26	0/1902	0.49	0/2564
28	Y	0.30	0/995	0.56	0/1329
29	Z	0.25	0/2051	0.46	0/2758
30	a	0.25	0/1695	0.47	0/2276
31	b	0.27	0/3495	0.47	0/4714
32	e	0.30	0/1039	0.55	0/1391

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	f	0.34	0/868	0.55	0/1168
34	h	0.28	0/978	0.50	0/1301
35	i	0.27	0/672	0.55	0/894
36	j	0.32	0/583	0.59	0/774
37	l	0.25	0/1425	0.49	0/1922
38	m	0.27	0/1806	0.48	0/2443
39	n	0.25	0/2828	0.45	0/3825
40	o	0.26	0/1129	0.48	0/1502
41	q	0.25	0/2854	0.48	0/3860
42	r	0.26	0/1508	0.48	0/2007
43	t	0.26	0/1999	0.48	0/2690
44	u	0.27	0/964	0.55	0/1283
45	v	0.26	0/1258	0.52	0/1670
46	w	0.28	0/2104	0.46	0/2832
47	x	0.30	0/2408	0.52	0/3230
48	y	0.27	0/1722	0.54	0/2343
All	All	0.36	0/126156	0.65	3/180976 (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
17	L	0	1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	406	G	O4'-C1'-N9	9.93	116.14	108.20
1	1	1283	C	N3-C2-O2	-5.64	117.95	121.90
1	1	2889	C	P-O3'-C3'	5.05	125.76	119.70

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
17	L	39	ARG	Sidechain

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	
4	7	9/204 (4%)	9 (100%)	0	0	100	100
5	8	139/434 (32%)	137 (99%)	2 (1%)	0	100	100
6	A	251/291 (86%)	245 (98%)	6 (2%)	0	100	100
7	B	327/387 (84%)	320 (98%)	7 (2%)	0	100	100
8	C	341/362 (94%)	334 (98%)	7 (2%)	0	100	100
9	D	417/505 (83%)	408 (98%)	9 (2%)	0	100	100
10	E	147/176 (84%)	144 (98%)	3 (2%)	0	100	100
11	F	239/244 (98%)	236 (99%)	3 (1%)	0	100	100
12	G	162/256 (63%)	153 (94%)	9 (6%)	0	100	100
13	H	187/191 (98%)	184 (98%)	3 (2%)	0	100	100
14	I	390/463 (84%)	384 (98%)	6 (2%)	0	100	100
15	J	149/427 (35%)	147 (99%)	2 (1%)	0	100	100
16	K	262/376 (70%)	253 (97%)	9 (3%)	0	100	100
17	L	108/199 (54%)	106 (98%)	2 (2%)	0	100	100
18	M	132/138 (96%)	129 (98%)	3 (2%)	0	100	100
19	N	173/204 (85%)	172 (99%)	1 (1%)	0	100	100
20	O	184/199 (92%)	182 (99%)	2 (1%)	0	100	100
21	P	133/184 (72%)	129 (97%)	4 (3%)	0	100	100
22	Q	142/186 (76%)	142 (100%)	0	0	100	100
23	R	188/306 (61%)	186 (99%)	2 (1%)	0	100	100
24	S	168/172 (98%)	163 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	T	77/250 (31%)	76 (99%)	1 (1%)	0	100	100
26	V	110/137 (80%)	109 (99%)	1 (1%)	0	100	100
27	W	230/236 (98%)	221 (96%)	9 (4%)	0	100	100
28	Y	123/127 (97%)	121 (98%)	2 (2%)	0	100	100
29	Z	247/453 (54%)	243 (98%)	4 (2%)	0	100	100
30	a	208/217 (96%)	197 (95%)	11 (5%)	0	100	100
31	b	417/647 (64%)	404 (97%)	13 (3%)	0	100	100
32	e	124/130 (95%)	122 (98%)	2 (2%)	0	100	100
33	f	104/107 (97%)	102 (98%)	2 (2%)	0	100	100
34	h	117/120 (98%)	116 (99%)	1 (1%)	0	100	100
35	i	82/100 (82%)	79 (96%)	3 (4%)	0	100	100
36	j	70/88 (80%)	67 (96%)	3 (4%)	0	100	100
37	l	174/181 (96%)	171 (98%)	3 (2%)	0	100	100
38	m	205/807 (25%)	201 (98%)	4 (2%)	0	100	100
39	n	329/605 (54%)	319 (97%)	10 (3%)	0	100	100
40	o	131/220 (60%)	126 (96%)	5 (4%)	0	100	100
41	q	356/618 (58%)	349 (98%)	7 (2%)	0	100	100
42	r	174/261 (67%)	171 (98%)	3 (2%)	0	100	100
43	t	245/322 (76%)	240 (98%)	5 (2%)	0	100	100
44	u	110/199 (55%)	108 (98%)	2 (2%)	0	100	100
45	v	145/231 (63%)	140 (97%)	5 (3%)	0	100	100
46	w	239/278 (86%)	232 (97%)	7 (3%)	0	100	100
47	x	275/295 (93%)	264 (96%)	11 (4%)	0	100	100
48	y	223/245 (91%)	211 (95%)	12 (5%)	0	100	100
All	All	8763/12778 (69%)	8552 (98%)	211 (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	
4	7	11/181 (6%)	11 (100%)	0	100	100
5	8	128/388 (33%)	128 (100%)	0	100	100
6	A	232/263 (88%)	231 (100%)	1 (0%)	91	97
7	B	278/323 (86%)	278 (100%)	0	100	100
8	C	273/289 (94%)	272 (100%)	1 (0%)	91	97
9	D	371/440 (84%)	370 (100%)	1 (0%)	92	97
10	E	131/153 (86%)	130 (99%)	1 (1%)	81	92
11	F	204/205 (100%)	204 (100%)	0	100	100
12	G	133/208 (64%)	133 (100%)	0	100	100
13	H	169/171 (99%)	169 (100%)	0	100	100
14	I	352/410 (86%)	352 (100%)	0	100	100
15	J	139/383 (36%)	139 (100%)	0	100	100
16	K	247/346 (71%)	247 (100%)	0	100	100
17	L	89/159 (56%)	89 (100%)	0	100	100
18	M	106/109 (97%)	105 (99%)	1 (1%)	78	91
19	N	153/176 (87%)	151 (99%)	2 (1%)	69	86
20	O	153/162 (94%)	150 (98%)	3 (2%)	55	78
21	P	109/146 (75%)	108 (99%)	1 (1%)	78	91
22	Q	118/151 (78%)	116 (98%)	2 (2%)	60	81
23	R	171/274 (62%)	171 (100%)	0	100	100
24	S	155/156 (99%)	153 (99%)	2 (1%)	69	86
25	T	69/219 (32%)	69 (100%)	0	100	100
26	V	88/105 (84%)	88 (100%)	0	100	100
27	W	209/213 (98%)	208 (100%)	1 (0%)	88	95
28	Y	108/110 (98%)	107 (99%)	1 (1%)	78	91
29	Z	234/413 (57%)	233 (100%)	1 (0%)	91	97
30	a	191/198 (96%)	191 (100%)	0	100	100
31	b	380/573 (66%)	375 (99%)	5 (1%)	69	86
32	e	109/111 (98%)	107 (98%)	2 (2%)	59	80
33	f	90/91 (99%)	89 (99%)	1 (1%)	73	88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
34	h	104/105 (99%)	102 (98%)	2 (2%)	57 79
35	i	70/82 (85%)	69 (99%)	1 (1%)	67 85
36	j	59/71 (83%)	59 (100%)	0	100 100
37	l	151/156 (97%)	151 (100%)	0	100 100
38	m	193/723 (27%)	192 (100%)	1 (0%)	88 95
39	n	305/548 (56%)	304 (100%)	1 (0%)	92 97
40	o	118/199 (59%)	117 (99%)	1 (1%)	81 92
41	q	304/535 (57%)	301 (99%)	3 (1%)	76 89
42	r	163/229 (71%)	162 (99%)	1 (1%)	86 94
43	t	220/287 (77%)	219 (100%)	1 (0%)	88 95
44	u	98/180 (54%)	98 (100%)	0	100 100
45	v	134/205 (65%)	131 (98%)	3 (2%)	52 75
46	w	225/257 (88%)	223 (99%)	2 (1%)	78 91
47	x	263/276 (95%)	257 (98%)	6 (2%)	50 74
48	y	193/211 (92%)	193 (100%)	0	100 100
All	All	7800/11190 (70%)	7752 (99%)	48 (1%)	86 94

5 of 48 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
35	i	53	TYR
42	r	194	PHE
38	m	309	ASP
41	q	362	TYR
45	v	61	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 23 such sidechains are listed below:

Mol	Chain	Res	Type
31	b	195	GLN
32	e	49	ASN
31	b	272	HIS
38	m	305	ASN
18	M	105	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	1993/3396 (58%)	396 (19%)	5 (0%)
2	2	147/158 (93%)	28 (19%)	0
3	6	54/232 (23%)	19 (35%)	0
All	All	2194/3786 (57%)	443 (20%)	5 (0%)

5 of 443 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	2	U
1	1	5	G
1	1	48	A
1	1	49	A
1	1	59	G

All (5) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	1886	A
1	1	2420	C
1	1	2889	C
1	1	3121	U
1	1	3386	G

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

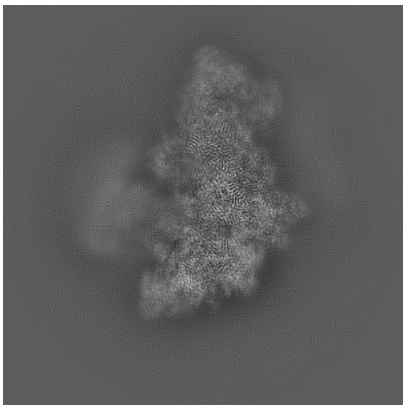
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-43017. These allow visual inspection of the internal detail of the map and identification of artifacts.

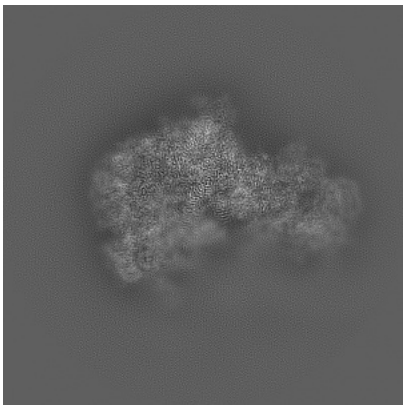
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

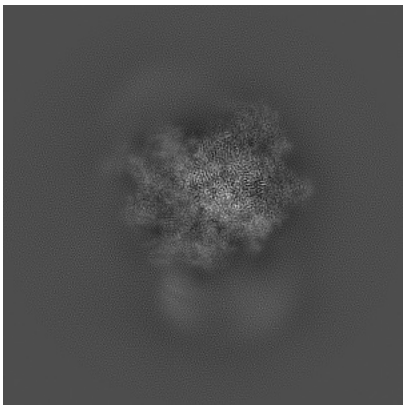
6.1.1 Primary map



X

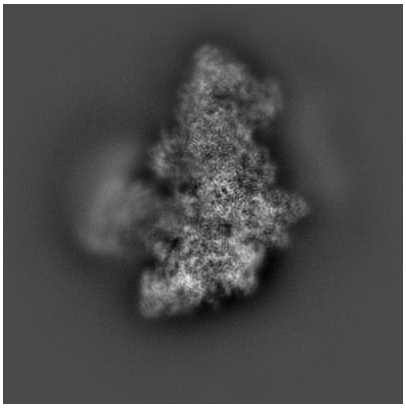


Y

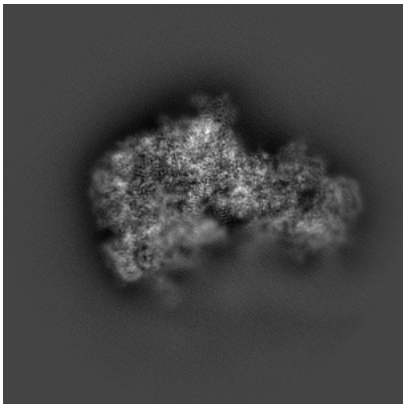


Z

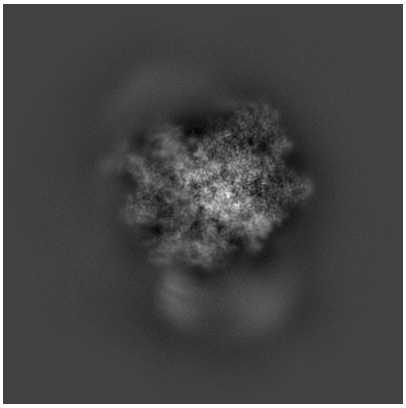
6.1.2 Raw map



X



Y

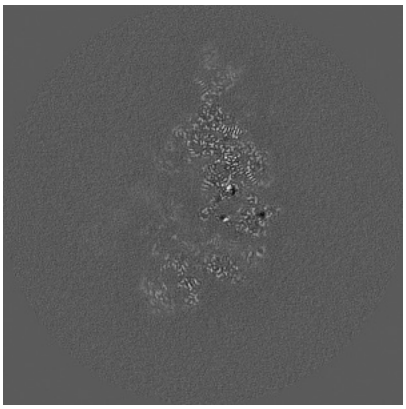


Z

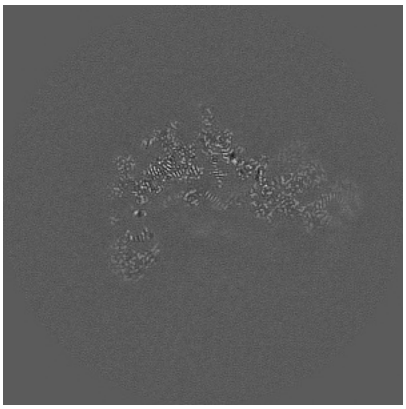
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

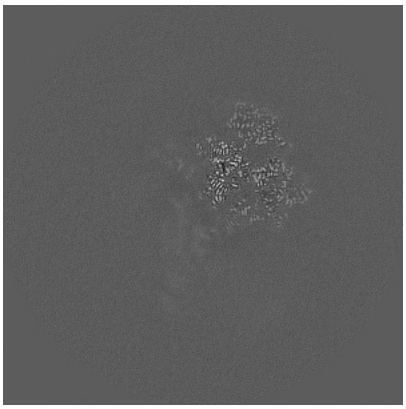
6.2.1 Primary map



X Index: 210

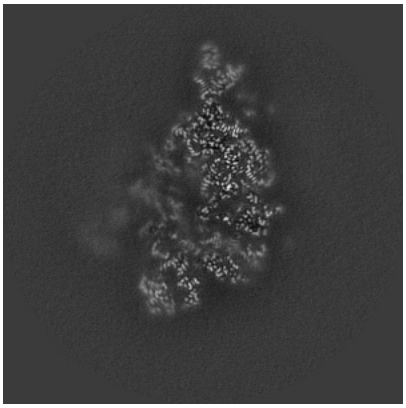


Y Index: 210

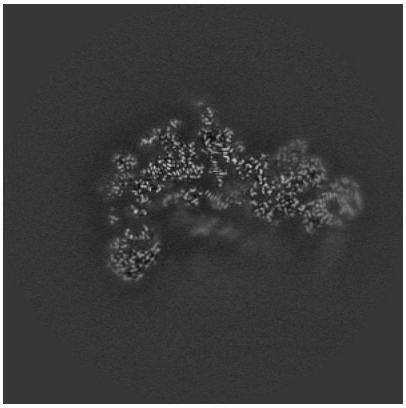


Z Index: 210

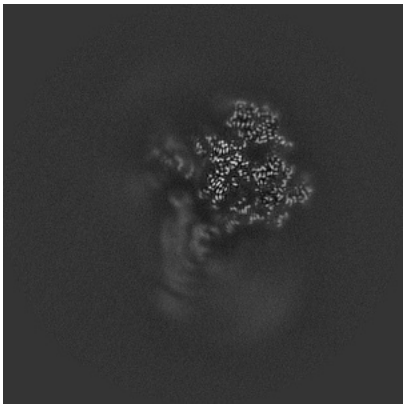
6.2.2 Raw map



X Index: 210



Y Index: 210

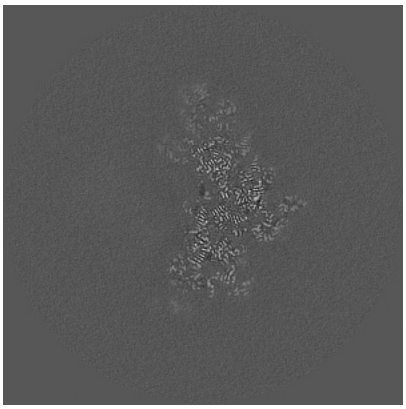


Z Index: 210

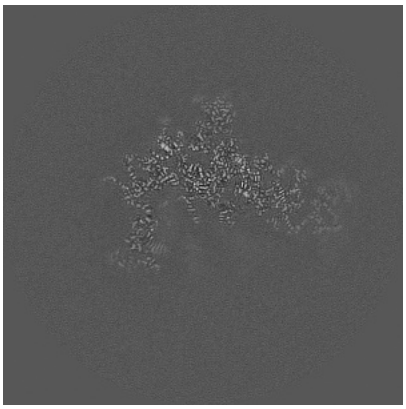
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



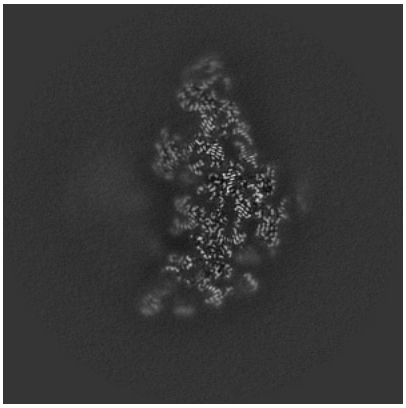
X Index: 246



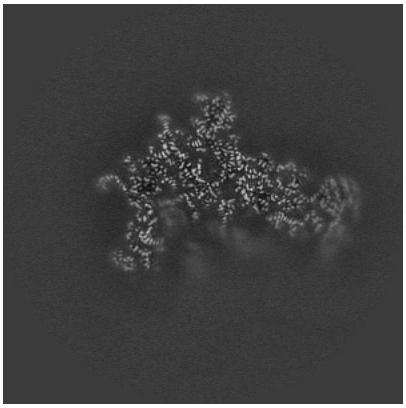
Y Index: 228

Z Index: 207

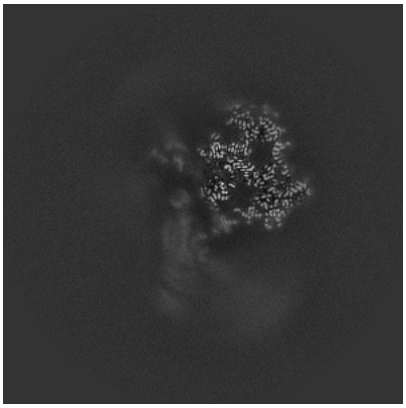
6.3.2 Raw map



X Index: 237



Y Index: 225

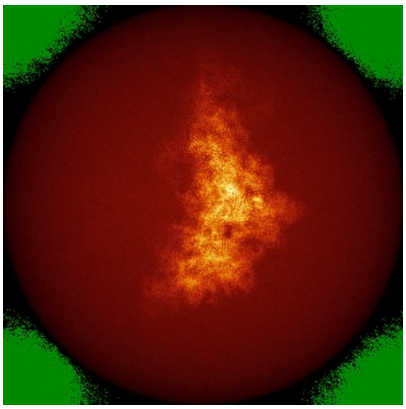


Z Index: 214

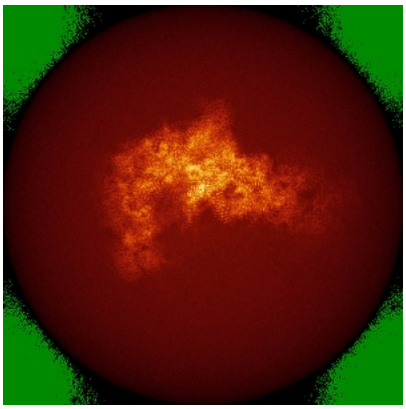
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

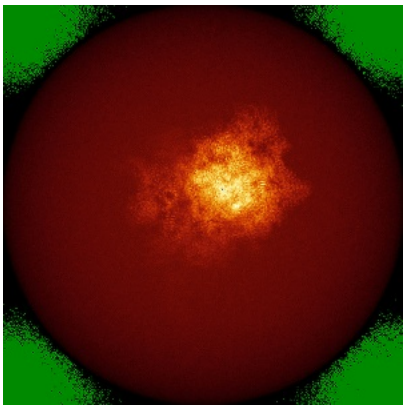
6.4.1 Primary map



X

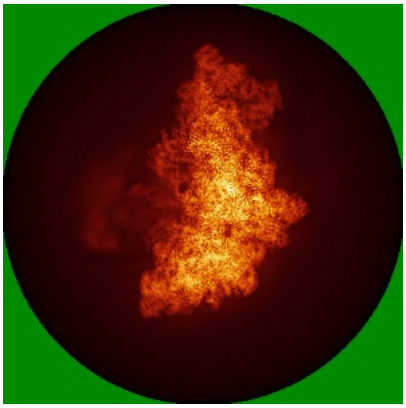


Y

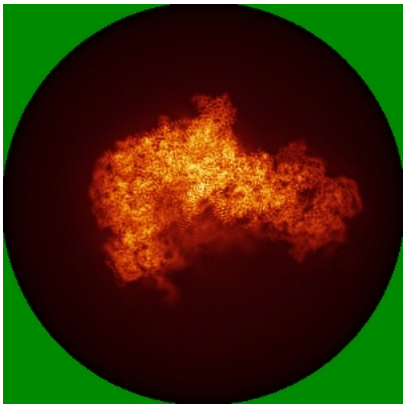


Z

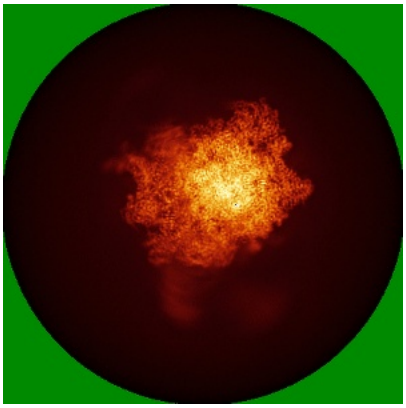
6.4.2 Raw map



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

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.025. 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

X Y Z

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.

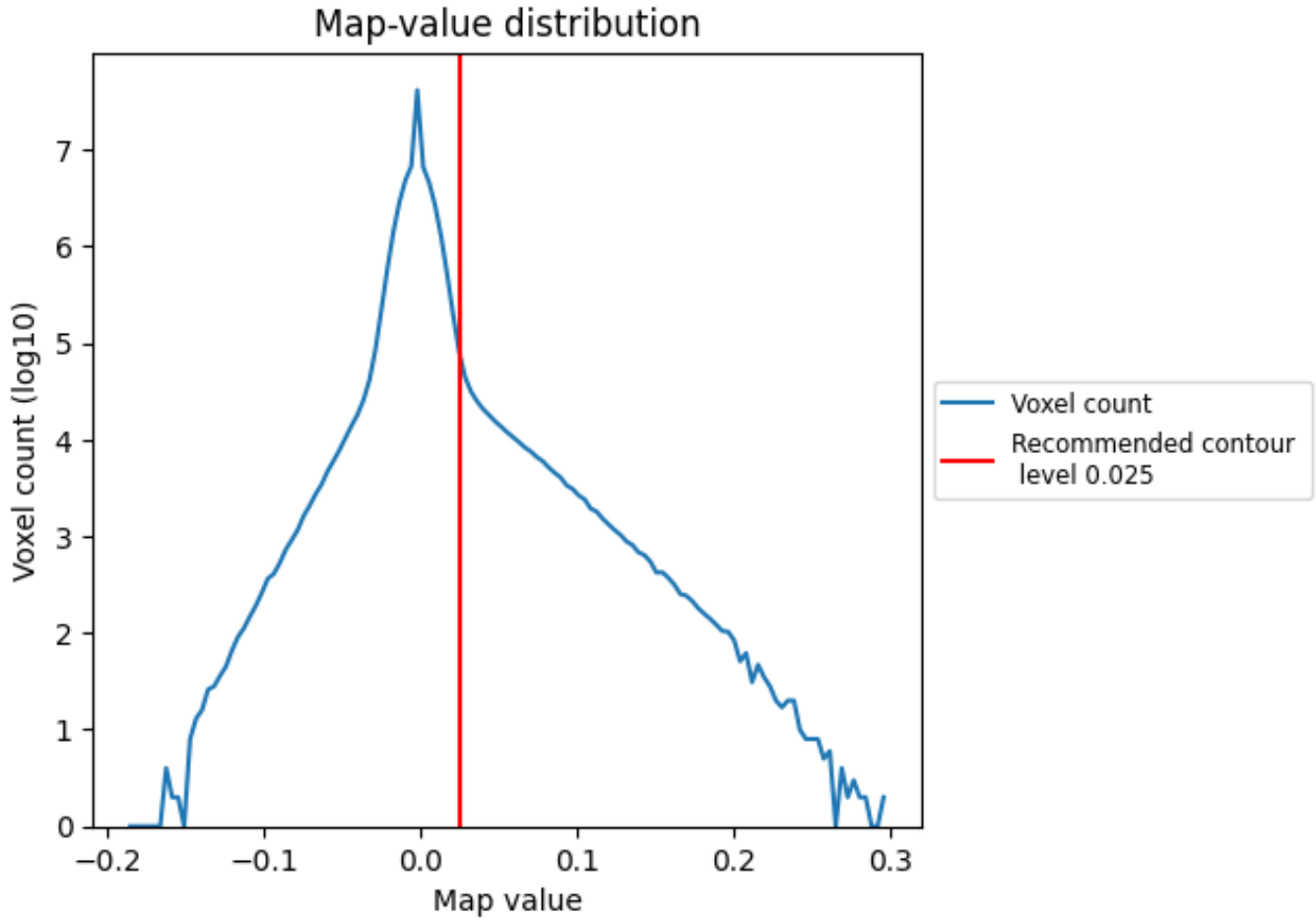
6.6 Mask visualisation (i)

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

7 Map analysis

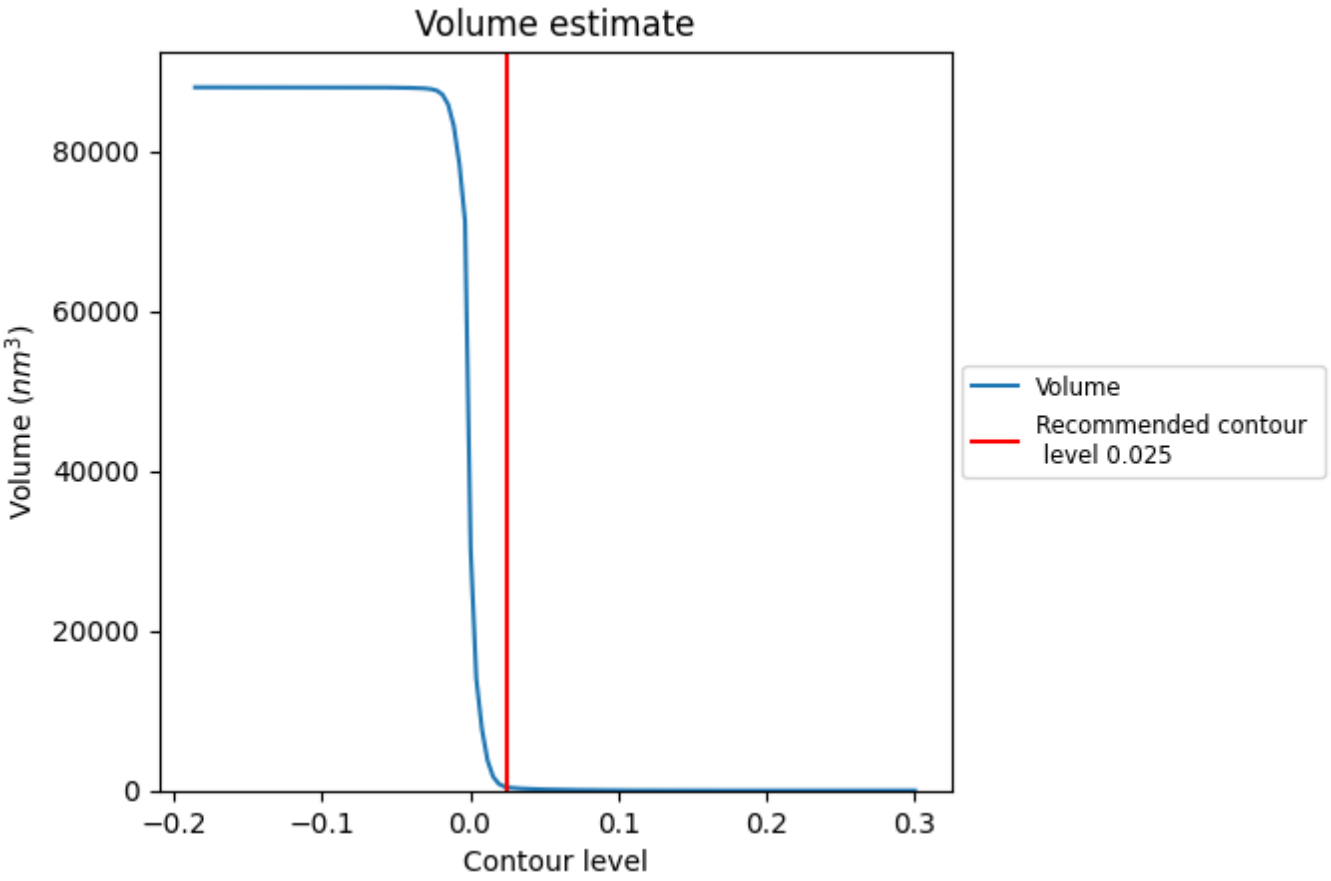
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

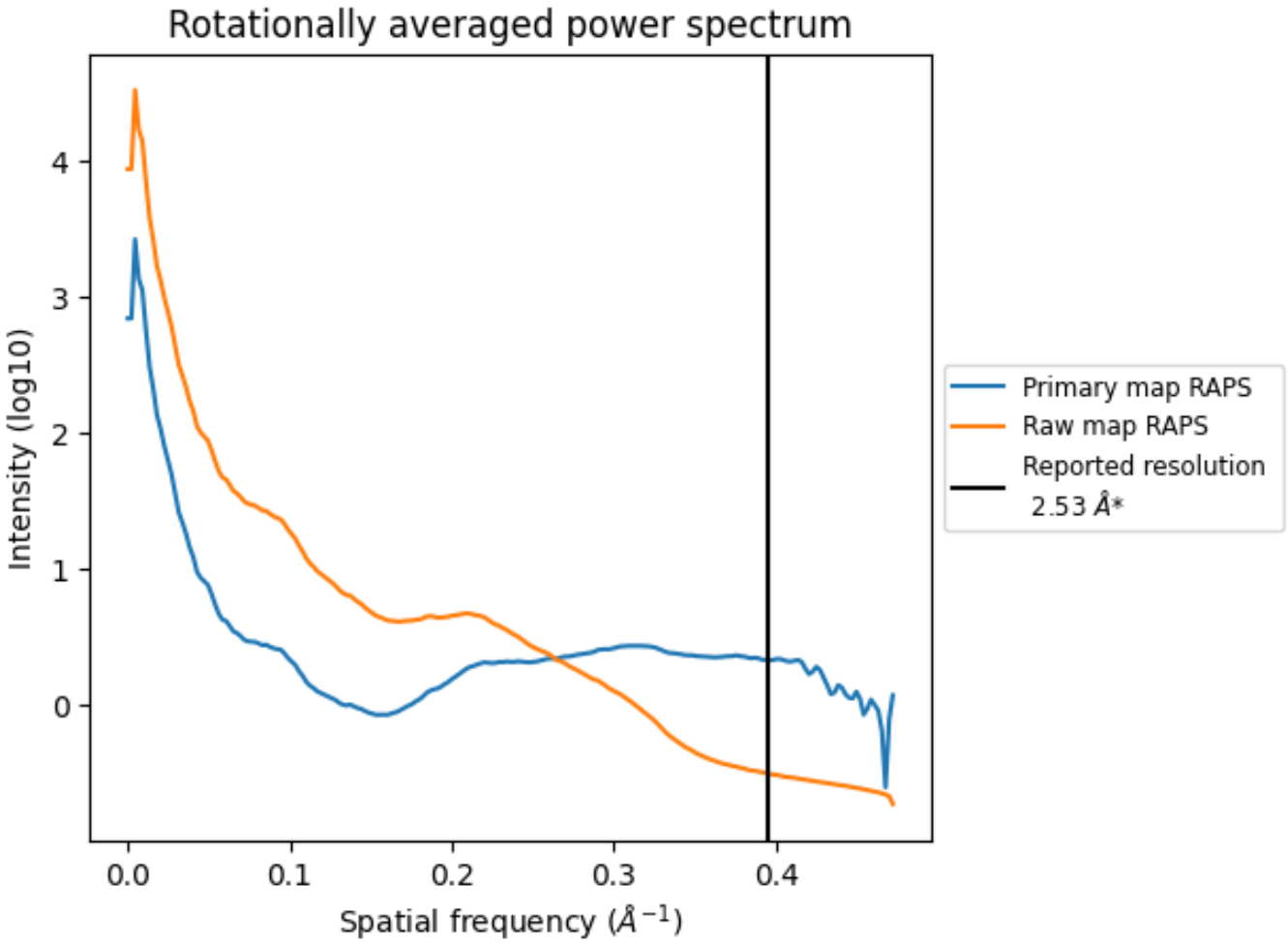
7.2 Volume estimate (i)



The volume at the recommended contour level is 427 nm^3; this corresponds to an approximate mass of 386 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)

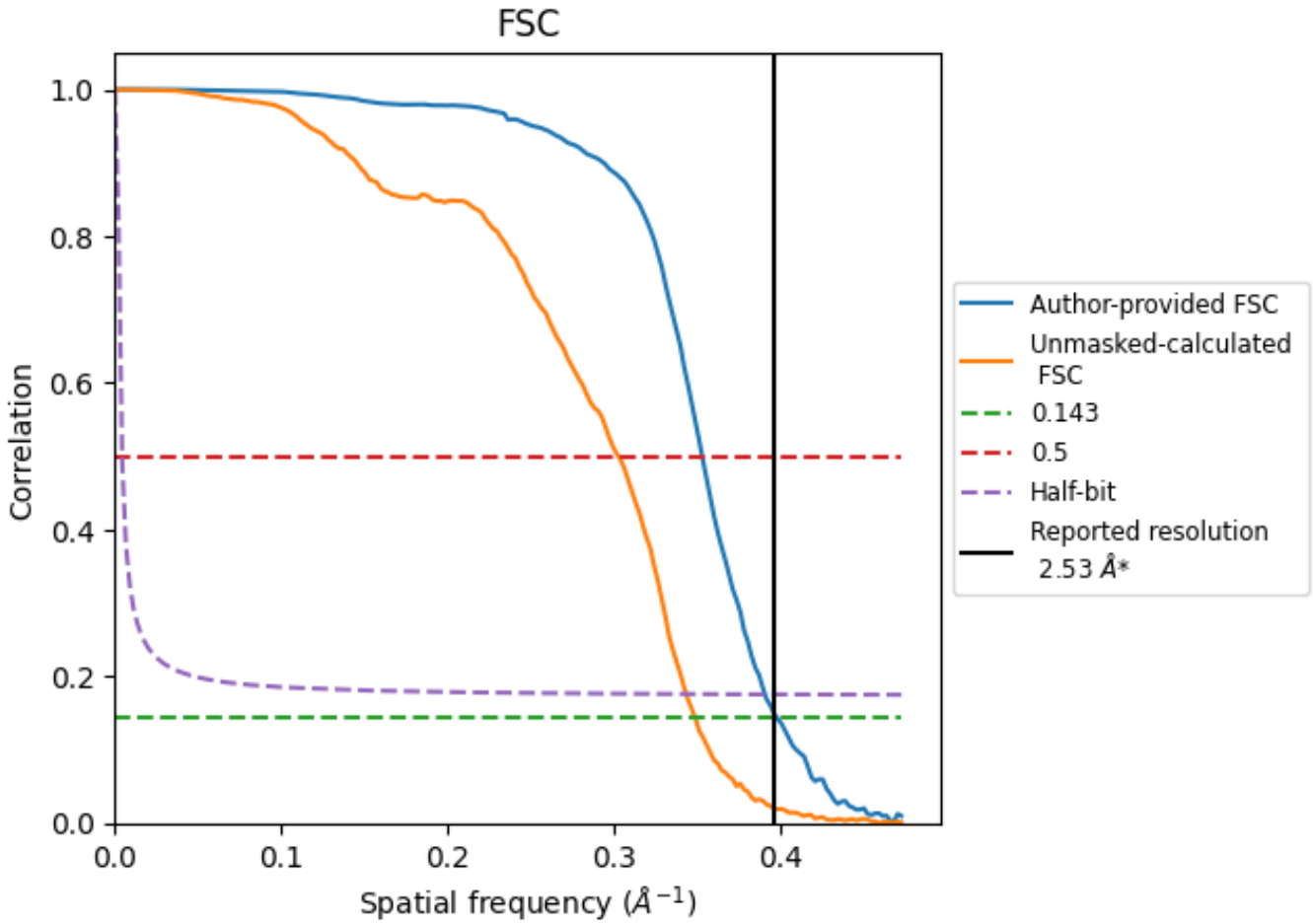


*Reported resolution corresponds to spatial frequency of 0.395 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.395 Å^{-1}

8.2 Resolution estimates (i)

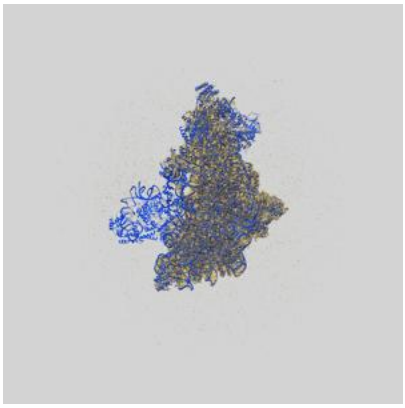
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.53	-	-
Author-provided FSC curve	2.52	2.84	2.56
Unmasked-calculated*	2.87	3.31	2.92

*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 2.87 differs from the reported value 2.53 by more than 10 %

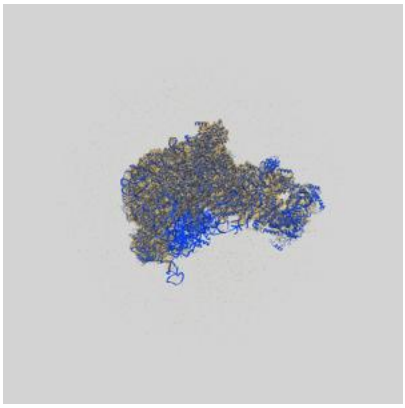
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-43017 and PDB model 8V83. Per-residue inclusion information can be found in section 3 on page 13.

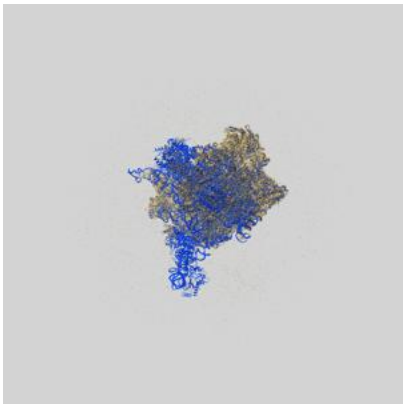
9.1 Map-model overlay



X



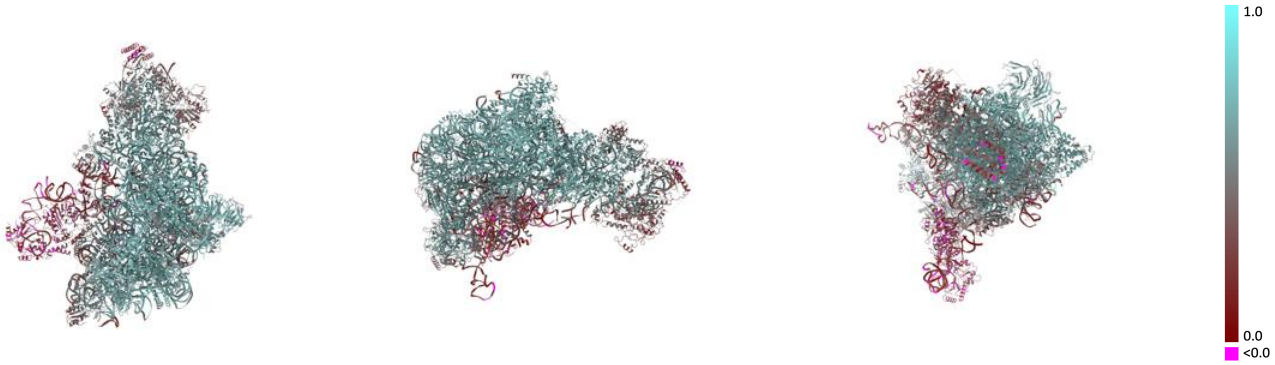
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.025 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.

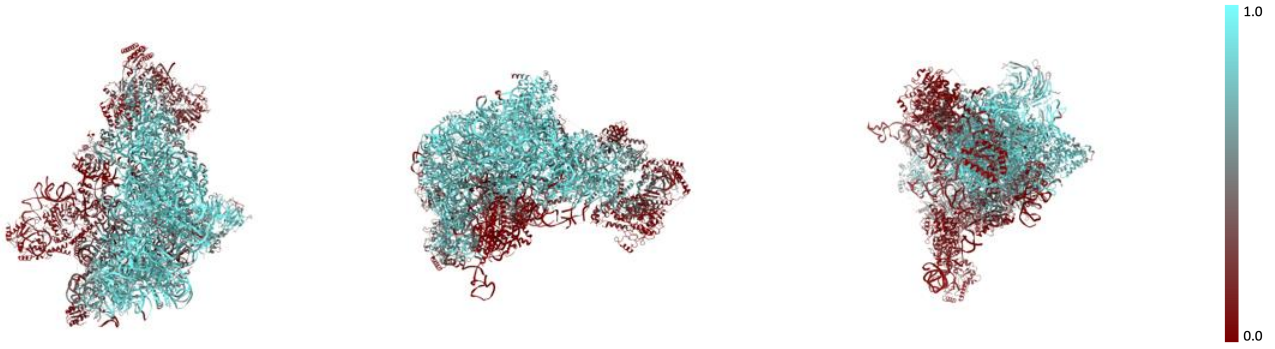
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

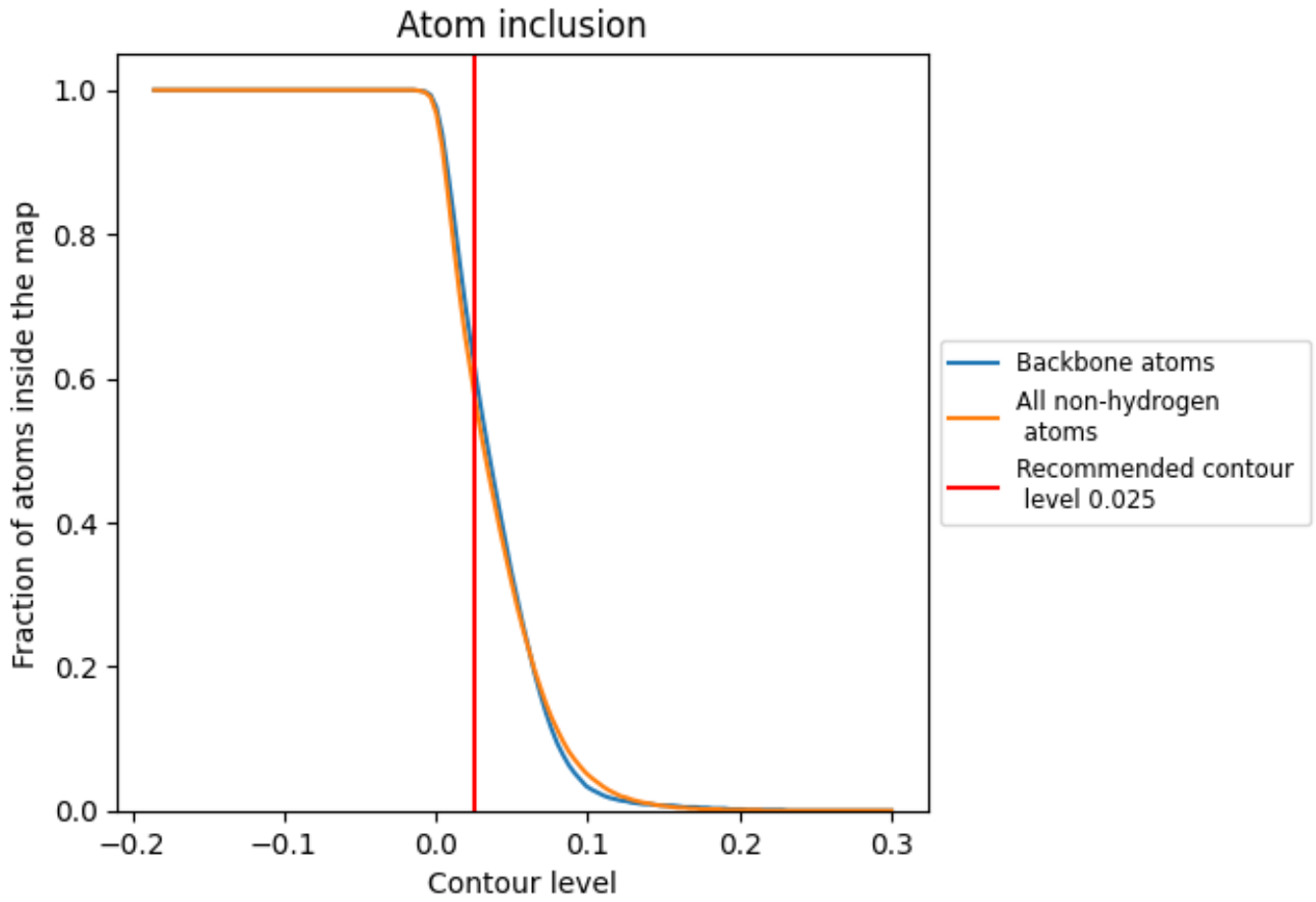
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.025).

9.4 Atom inclusion (i)



At the recommended contour level, 62% of all backbone atoms, 58% 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 (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5830	0.5300
1	0.6480	0.5310
2	0.7780	0.6090
6	0.4710	0.4920
7	0.0000	0.1490
8	0.2450	0.4480
A	0.4400	0.5340
B	0.7660	0.6210
C	0.9430	0.7060
D	0.3700	0.5020
E	0.8420	0.6540
F	0.8750	0.6720
G	0.8170	0.6480
H	0.7820	0.6360
I	0.7930	0.6450
J	0.0890	0.3730
K	0.2360	0.4210
L	0.8890	0.6820
M	0.8580	0.6640
N	0.8160	0.6540
O	0.8440	0.6680
P	0.7870	0.6530
Q	0.8930	0.6820
R	0.8700	0.6810
S	0.7080	0.6190
T	0.0020	0.2290
V	0.7060	0.5970
W	0.2570	0.4550
Y	0.8870	0.6900
Z	0.0070	0.2720
a	0.0000	0.1330
b	0.3790	0.4920
e	0.9260	0.6990
f	0.9290	0.7010
h	0.6650	0.6070

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Chain	Atom inclusion	Q-score
i	0.6680	0.6010
j	0.9140	0.6930
l	0.0010	0.1510
m	0.2710	0.4340
n	0.1620	0.3940
o	0.3630	0.4340
q	0.0020	0.1470
r	0.3540	0.4950
t	0.2530	0.4450
u	0.5420	0.5320
v	0.6850	0.6060
w	0.8080	0.6390
x	0.8300	0.6550
y	0.6770	0.5810