



wwPDB EM Validation Summary Report ⓘ

Nov 21, 2022 – 02:32 PM EST

PDB ID : 8ETC
EMDB ID : EMD-24398
Title : Fkbp39 associated nascent 60S ribosome State 4
Authors : Zhou, X.; Bilokapic, S.; Deshmukh, A.A.; Halic, M.
Deposited on : 2022-10-16
Resolution : 3.10 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

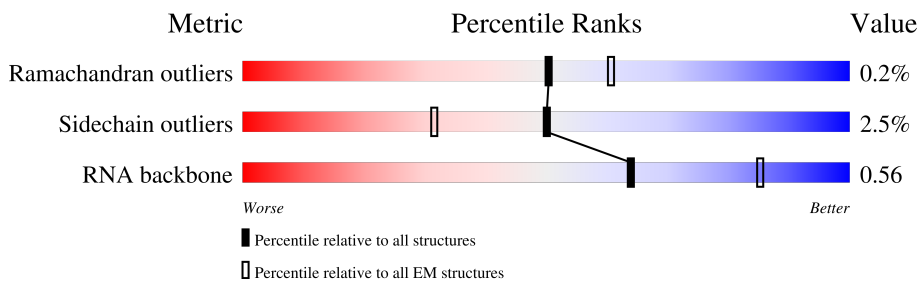
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

1 Overall quality at a glance

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

The reported resolution of this entry is 3.10 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	3497	
2	2	165	
3	3	302	
4	8	51	
5	B	388	
6	C	363	
7	E	195	
8	F	250	

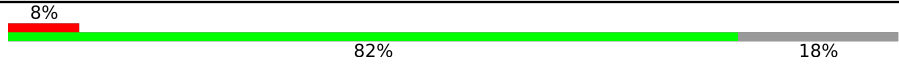

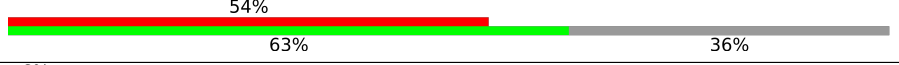
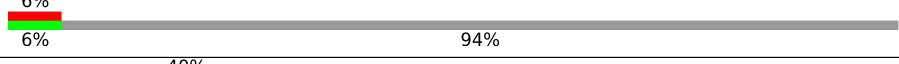

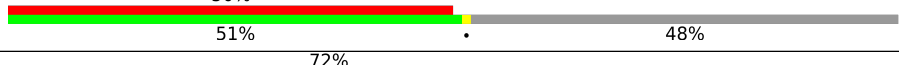
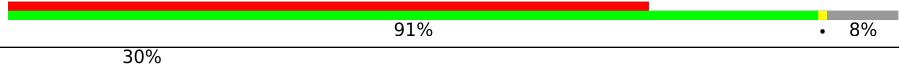


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Mol	Chain	Length	Quality of chain
9	G	259	12% 68% 30%
10	H	190	40% 95%
11	L	208	28% 84% 13%
12	M	134	6% 91% 7%
13	N	201	81% 17%
14	O	197	8% 97%
15	P	187	28% 90% 10%
16	Q	187	72% 28%
17	R	193	42% 62% 36%
18	S	176	23% 91% 5%
19	U	117	68% 84% 16%
20	V	139	82% 96%
21	W	241	86% 89% 11%
22	X	141	11% 79% 19%
23	Y	126	98%
24	Z	136	88% 99%
25	a	148	11% 61% 36%
26	b	642	59% 62% 35%
27	c	117	78% 83% 17%
28	d	113	39% 90% 10%
29	e	127	91% 7%
30	f	108	96%
31	g	112	91% 88% 5% 6%
32	h	122	99%
33	i	99	39% 92% 5%

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Mol	Chain	Length	Quality of chain
34	j	91	
35	k	74	
36	r	260	
37	s	470	
38	u	192	
39	w	802	
40	y	244	
41	z	117	
42	T	160	

2 Entry composition [i](#)

There are 43 unique types of molecules in this entry. The entry contains 95651 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 RNA (2151-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	2140	45843	20476	8349	14878	2140	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	1746	C	U	conflict	GB 157310483

- Molecule 2 is a RNA chain called RNA (147-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	147	3131	1401	560	1023	147	0	0

- Molecule 3 is a protein called Protein mak16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	3	114	969	614	181	168	6	0	0

- Molecule 4 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	8	49	428	267	97	63	1	0	0

- Molecule 5 is a protein called 60S ribosomal protein L3-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	365	2903	1837	542	514	10	0	0

- Molecule 6 is a protein called 60S ribosomal protein L4-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	C	359	Total	C	N	O	S	0	0
			2795	1765	536	491	3		

- Molecule 7 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	E	163	Total	C	N	O	S	0	0
			1260	807	232	218	3		

- Molecule 8 is a protein called 60S ribosomal protein L7-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	F	218	Total	C	N	O	S	0	0
			1770	1141	324	302	3		

- Molecule 9 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	G	182	Total	C	N	O	S	2	0
			1453	931	263	257	2		

- Molecule 10 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	H	183	Total	C	N	O	S	0	0
			1451	914	266	265	6		

- Molecule 11 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	180	Total	C	N	O	S	0	0
			1427	891	284	251	1		

- Molecule 12 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	125	Total	C	N	O	S	0	0
			1007	644	191	168	4		

- Molecule 13 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	166	Total	C	N	O	S	0	0
			1406	883	291	229	3		

- Molecule 14 is a protein called 60S ribosomal protein L16-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	196	Total	C	N	O	S	0	0
			1557	999	297	257	4		

- Molecule 15 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	169	Total	C	N	O	S	0	0
			1339	848	252	236	3		

- Molecule 16 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	135	Total	C	N	O	S	0	0
			1047	658	202	186	1		

- Molecule 17 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	R	124	Total	C	N	O	S	0	0
			1038	651	217	165	5		

- Molecule 18 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	S	168	Total	C	N	O	S	0	0
			1408	909	263	231	5		

- Molecule 19 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	U	98	Total	C	N	O	0	0
			484	288	98	98		

- Molecule 20 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	V	138	1032	647	194	183	8	0	0

- Molecule 21 is a protein called Ribosome assembly factor mrt4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	W	215	1057	627	215	215		0	0

- Molecule 22 is a protein called 60S ribosomal protein L25-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	X	114	914	584	167	162	1	0	0

- Molecule 23 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Y	125	998	622	201	173	2	0	0

- Molecule 24 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
24	Z	134	662	393	134	135	0	0

- Molecule 25 is a protein called 60S ribosomal protein L28-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
25	a	94	747	474	142	131	0	0

- Molecule 26 is a protein called Probable nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	b	415	2837	1765	535	534	3	0	0

- Molecule 27 is a protein called 60S ribosomal protein L30-2.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	c	97	Total	C	N	O	0	0
			477	282	97	98		

- Molecule 28 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	d	102	Total	C	N	O	S	0	0
			849	534	165	147	3		

- Molecule 29 is a protein called 60S ribosomal protein L32-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	e	118	Total	C	N	O	S	0	0
			944	591	191	157	5		

- Molecule 30 is a protein called 60S ribosomal protein L33-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	f	106	Total	C	N	O	S	0	0
			839	534	162	140	3		

- Molecule 31 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	g	105	Total	C	N	O	S	0	0
			853	534	176	141	2		

- Molecule 32 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	h	121	Total	C	N	O	0	0
			999	629	194	176		

- Molecule 33 is a protein called 60S ribosomal protein L36-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	i	94	Total	C	N	O	S	0	0
			754	469	158	126	1		

- Molecule 34 is a protein called 60S ribosomal protein L37-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	j	75	Total	C	N	O	S	0	0
			600	367	131	95	7		

- Molecule 35 is a protein called 60S ribosomal protein L38-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	k	70	Total	C	N	O	S	0	0
			564	357	104	102	1		

- Molecule 36 is a protein called Ribosome biogenesis protein nsa2.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	r	166	Total	C	N	O	S	0	0
			1086	656	224	205	1		

- Molecule 37 is a protein called GTPase grn1.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	s	30	Total	C	N	O	0	0
			253	154	58	41		

- Molecule 38 is a protein called Ribosome biogenesis protein rlp24.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	u	114	Total	C	N	O	S	0	0
			944	598	190	147	9		

- Molecule 39 is a protein called AdoMet-dependent rRNA methyltransferase spb1.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	w	420	Total	C	N	O	S	0	0
			3377	2152	589	621	15		

- Molecule 40 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	y	225	Total	C	N	O	S	0	0
			1697	1058	293	341	5		

- Molecule 41 is a protein called UPF0642 protein C32H8.05.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
41	z	35	292	183	63	46	0	0

- Molecule 42 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
42	T	21	159	101	28	30	0	0

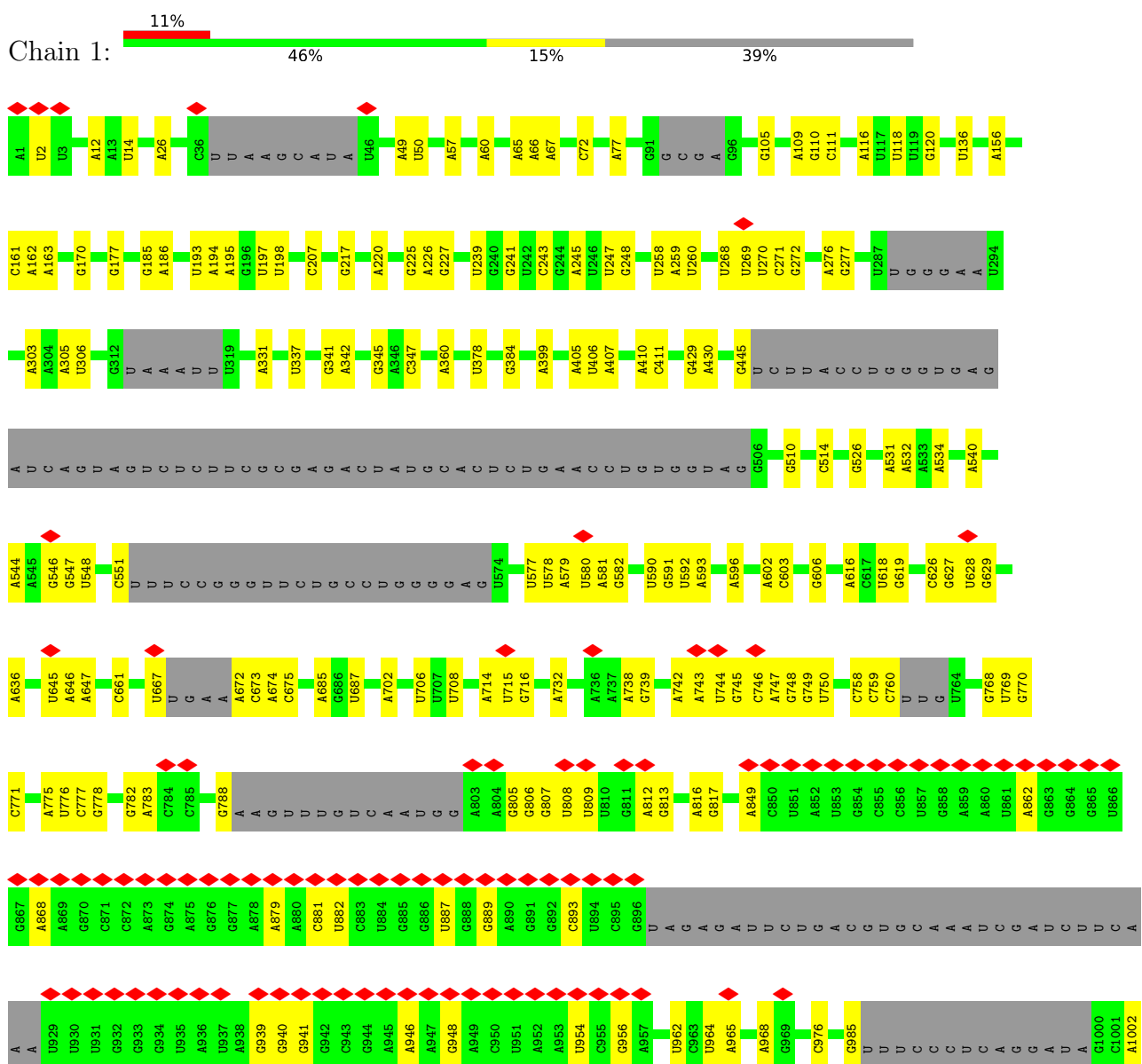
- Molecule 43 is ZINC ION (three-letter code: ZN) (formula: Zn).

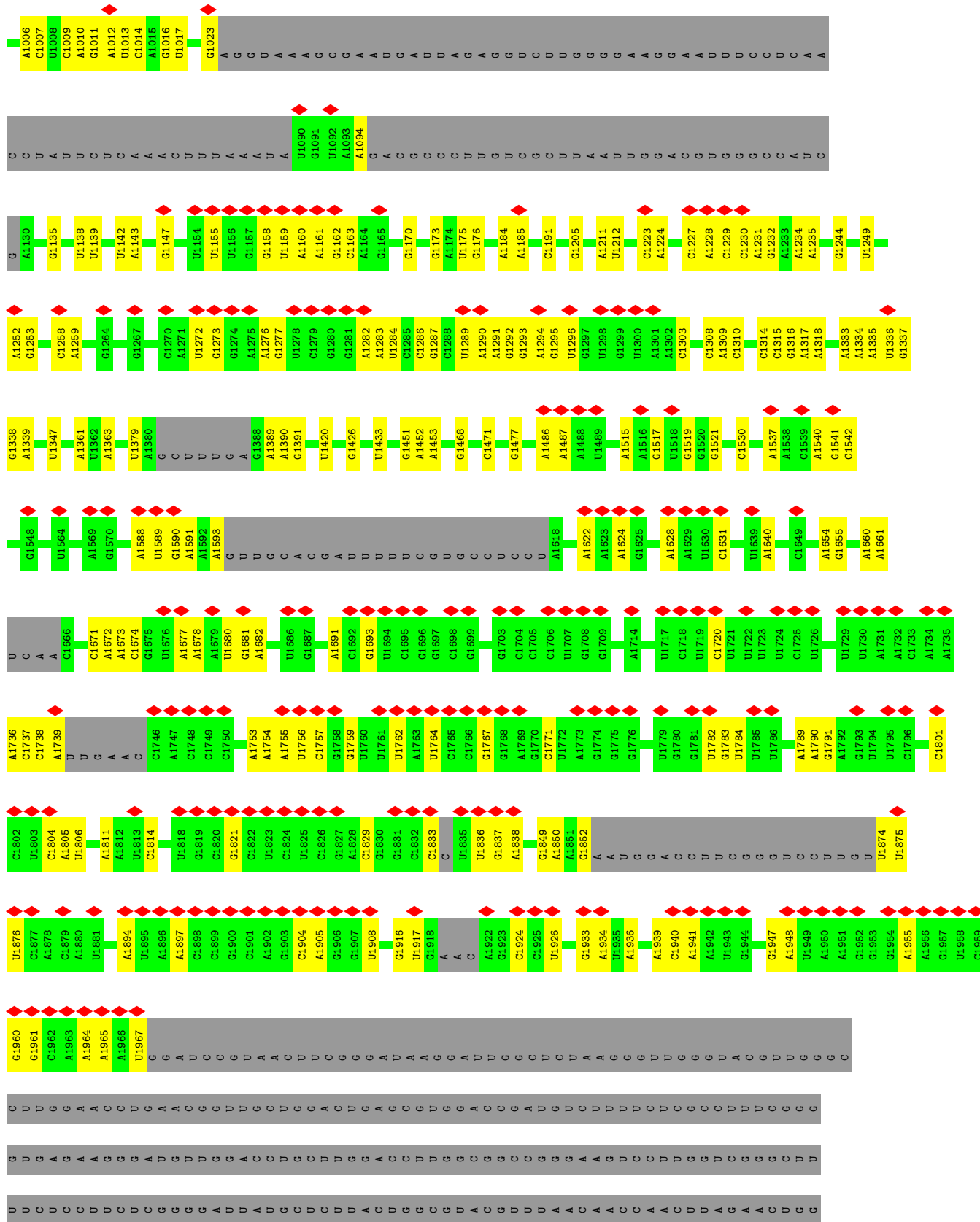
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
43	j	1	1	1	0

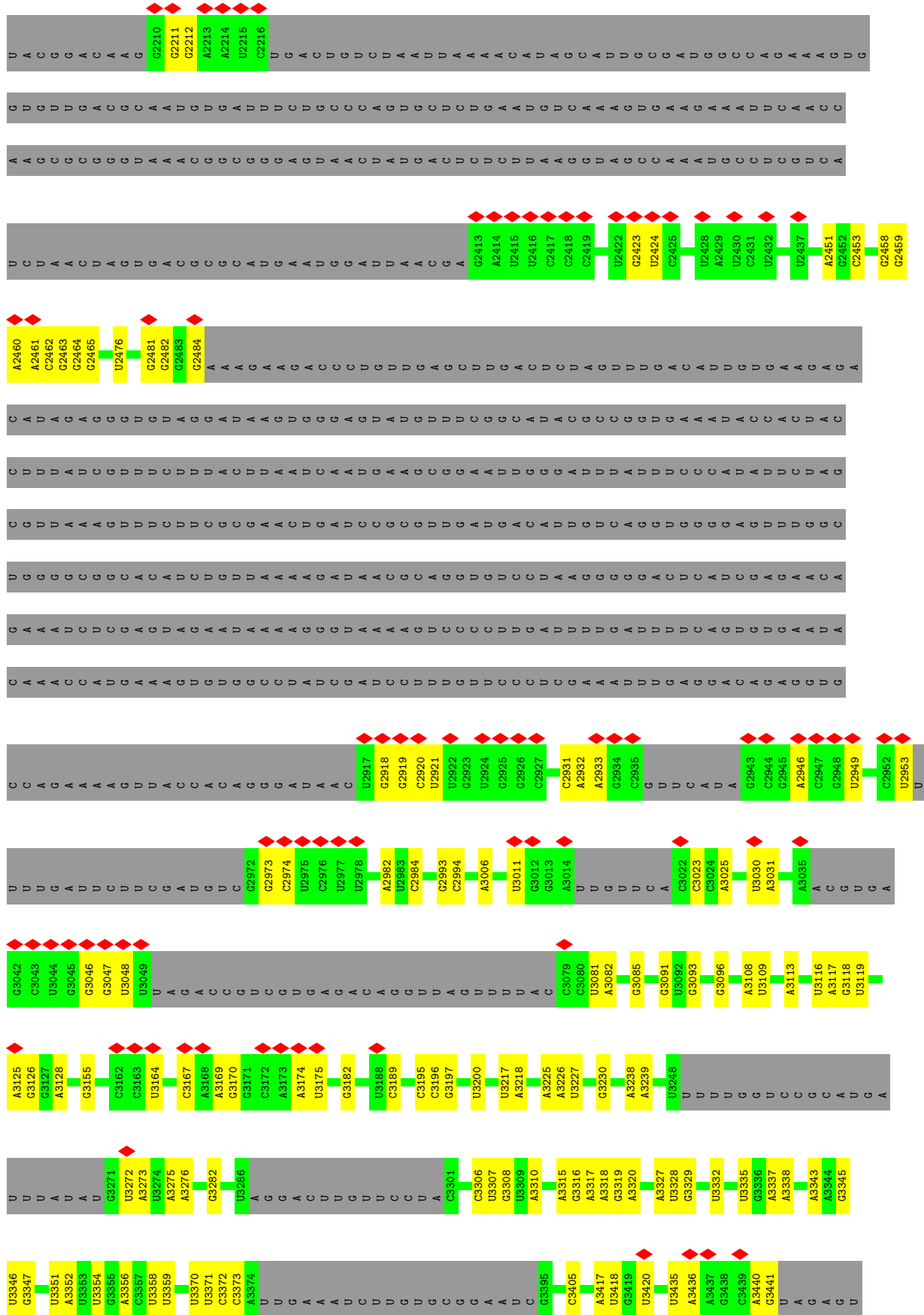
3 Residue-property plots

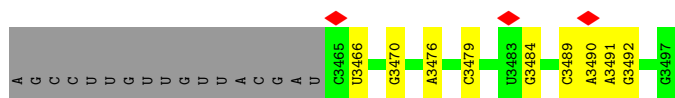
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: RNA (2151-MER)

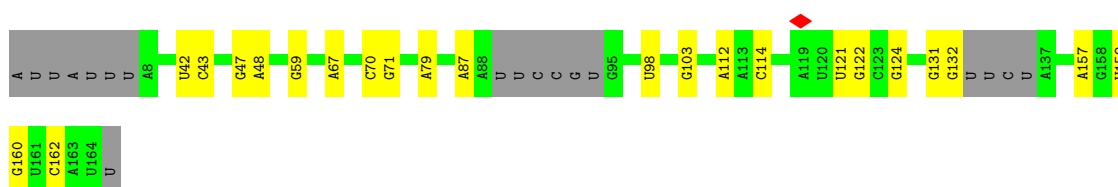
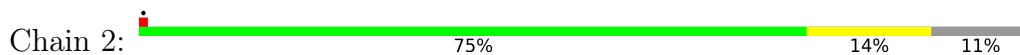




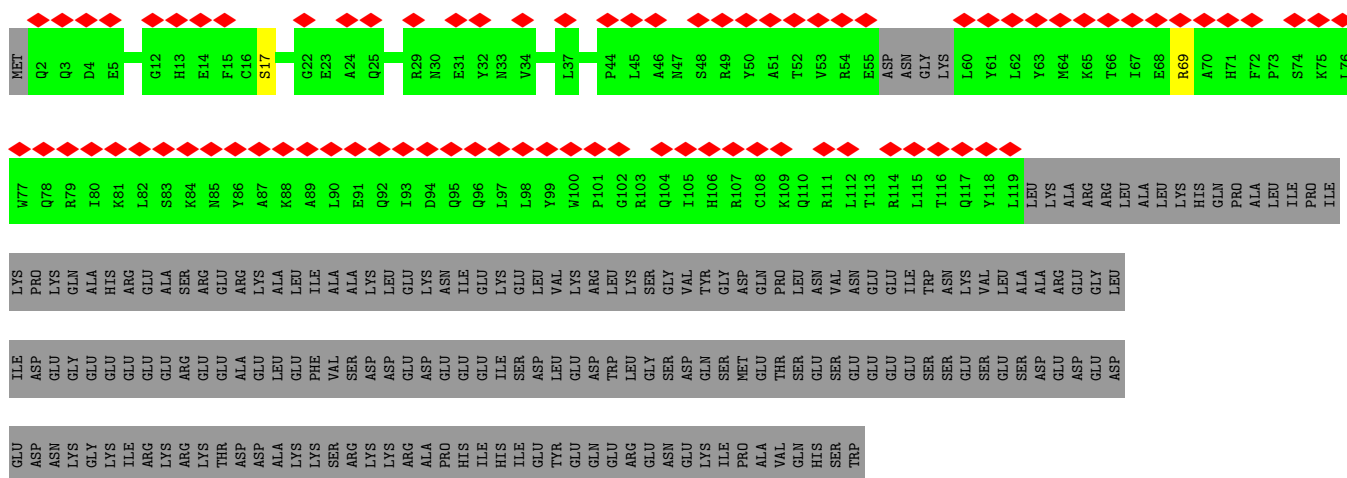




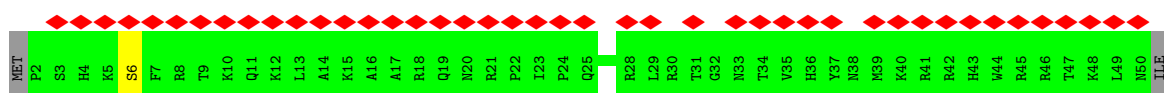
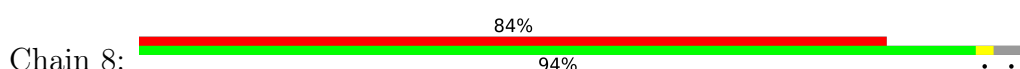
• Molecule 2: RNA (147-MER)



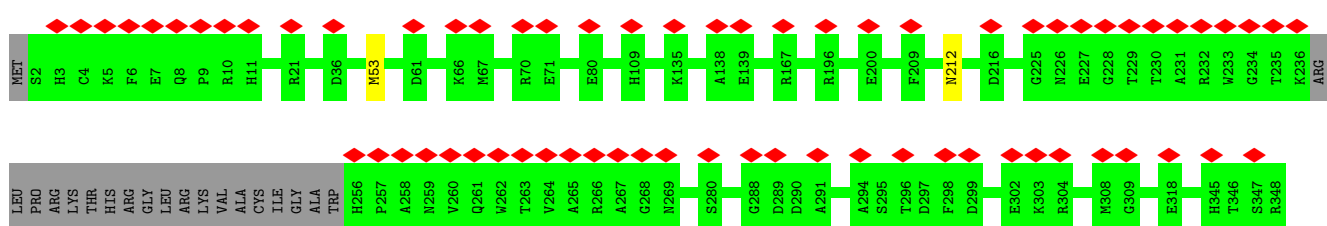
• Molecule 3: Protein mak16

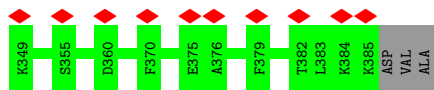


• Molecule 4: 60S ribosomal protein L39

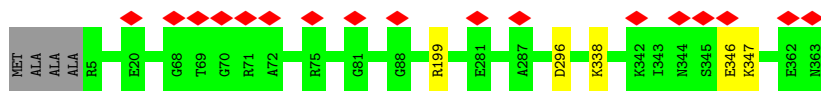


• Molecule 5: 60S ribosomal protein L3-A

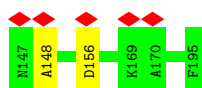
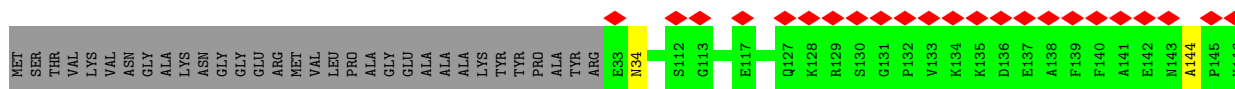
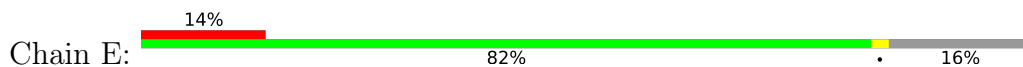




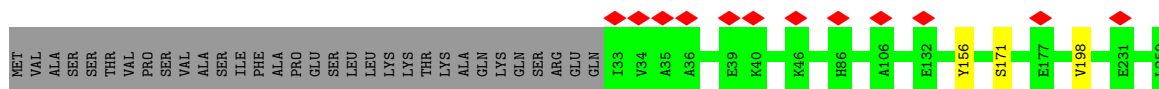
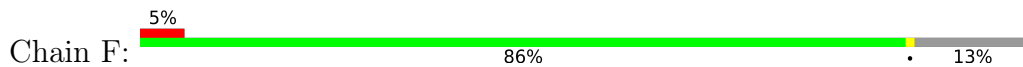
- Molecule 6: 60S ribosomal protein L4-B



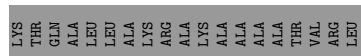
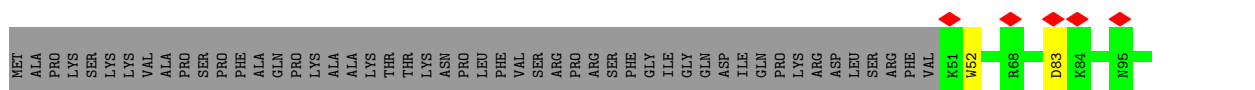
- Molecule 7: 60S ribosomal protein L6



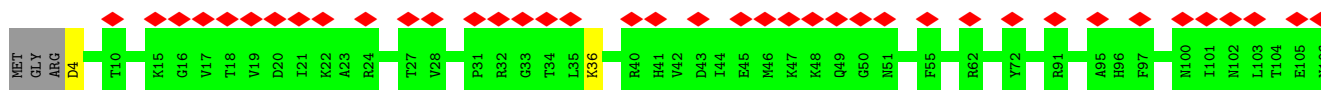
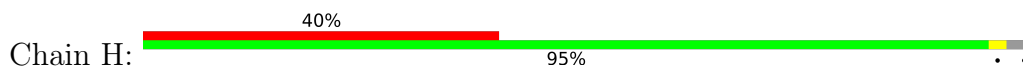
- Molecule 8: 60S ribosomal protein L7-B

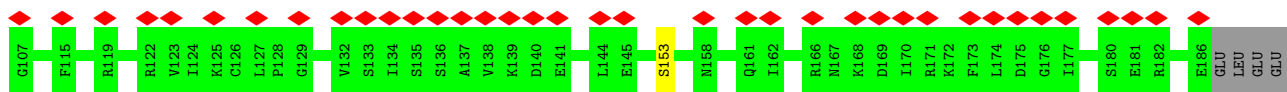


- Molecule 9: 60S ribosomal protein L8

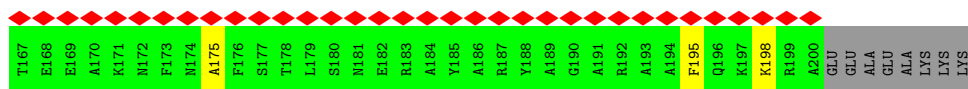
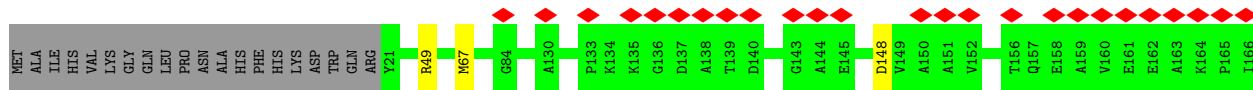
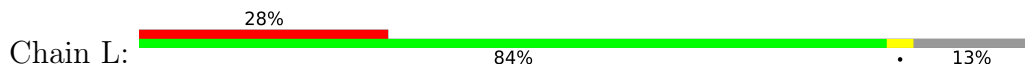


- Molecule 10: 60S ribosomal protein L9-A

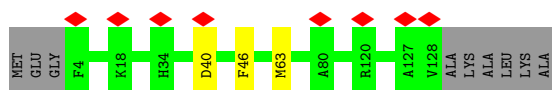
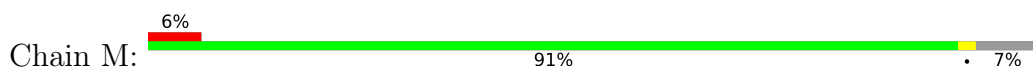




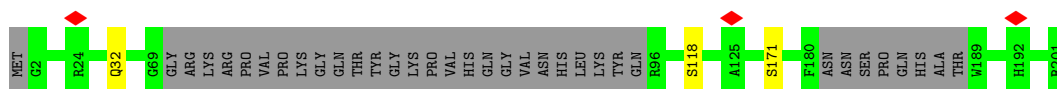
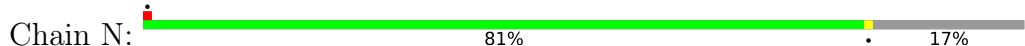
• Molecule 11: 60S ribosomal protein L13



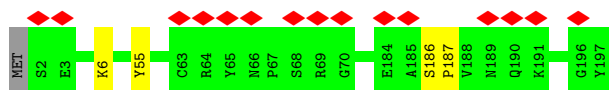
• Molecule 12: 60S ribosomal protein L14



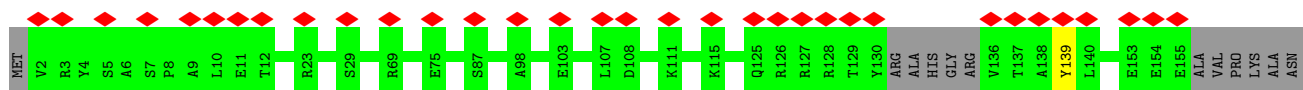
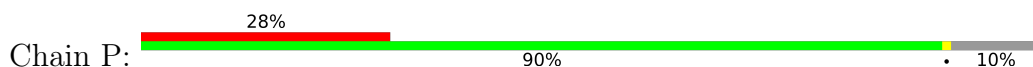
• Molecule 13: 60S ribosomal protein L15-A



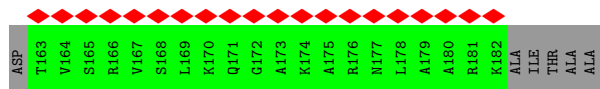
• Molecule 14: 60S ribosomal protein L16-B



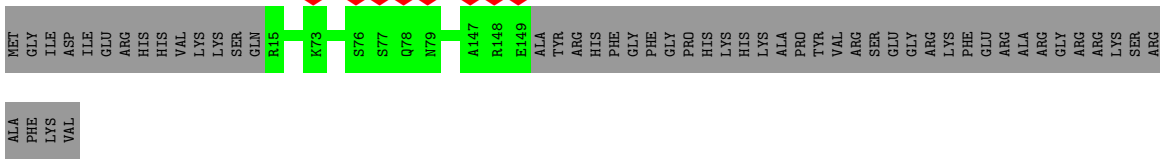
• Molecule 15: 60S ribosomal protein L17-A



• Molecule 16: 60S ribosomal protein L18-A

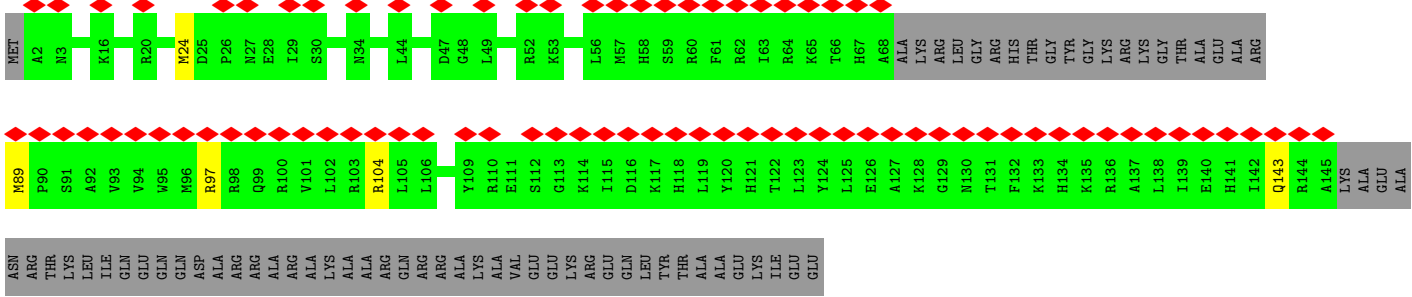


Chain Q:



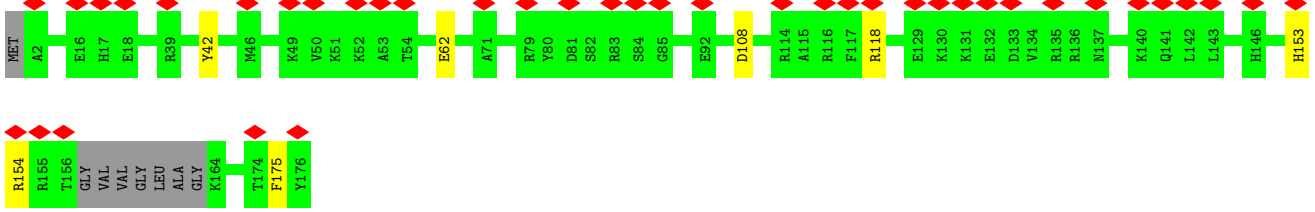
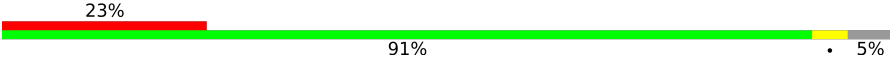
• Molecule 17: 60S ribosomal protein L19-A

Chain R:



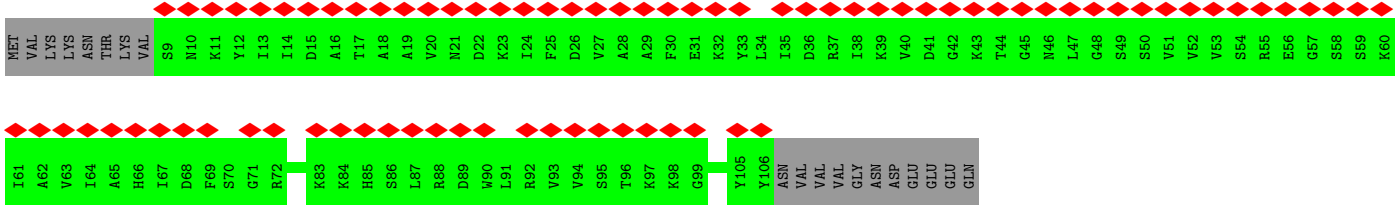
• Molecule 18: 60S ribosomal protein L20-A

Chain S:



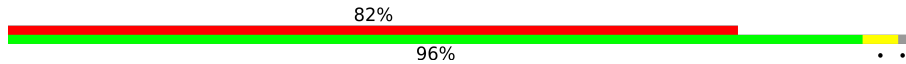
• Molecule 19: 60S ribosomal protein L22

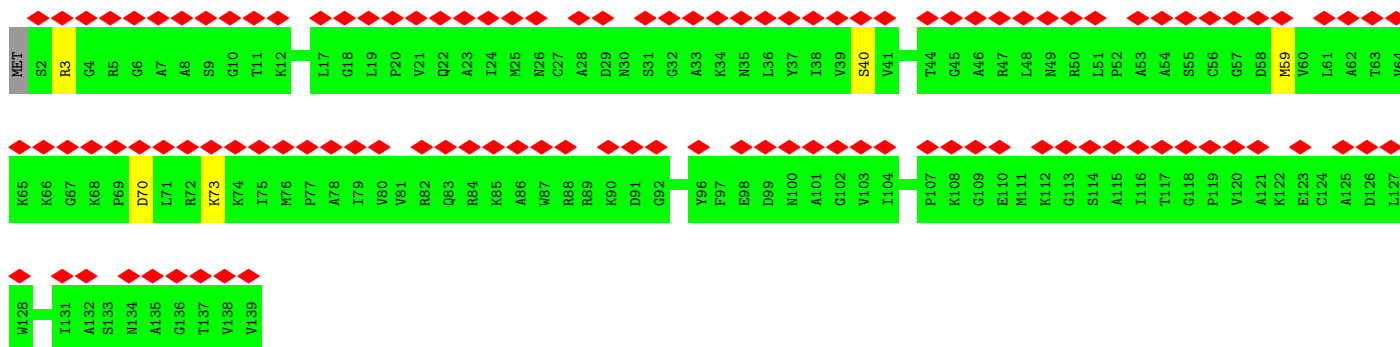
Chain U:



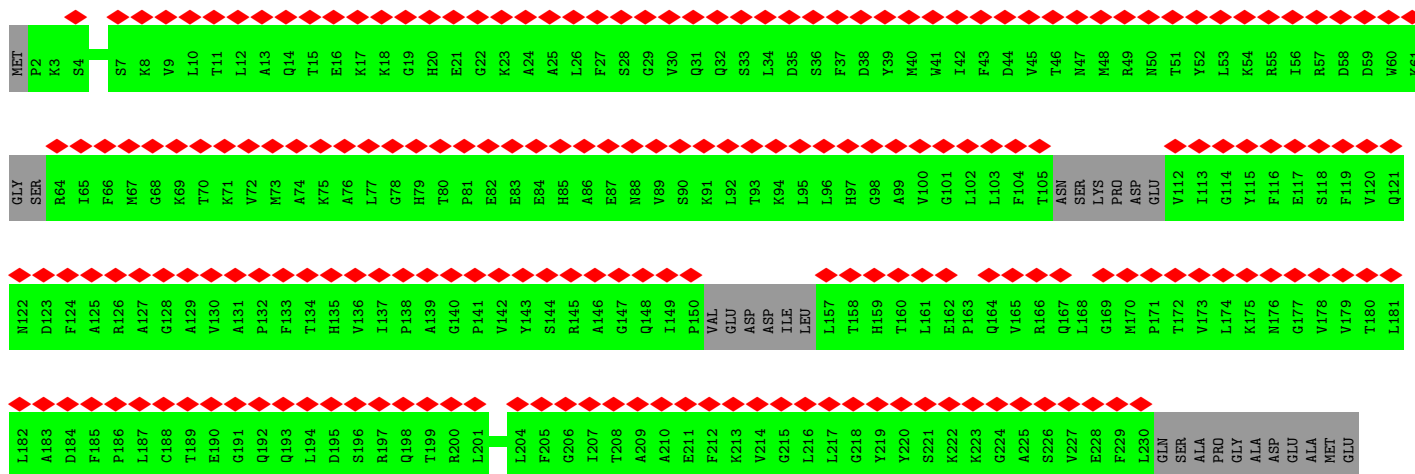
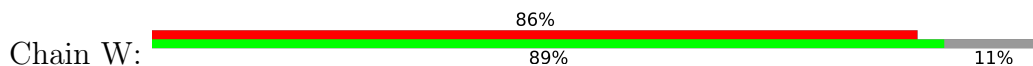
• Molecule 20: 60S ribosomal protein L23-A

Chain V:

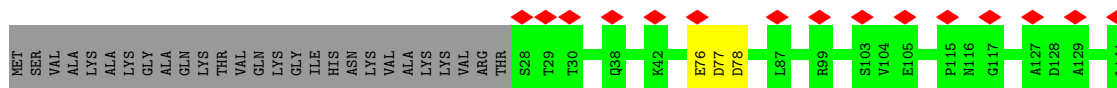
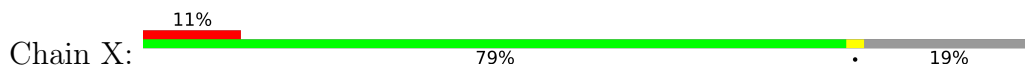




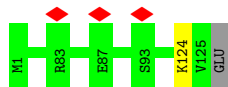
• Molecule 21: Ribosome assembly factor mrt4



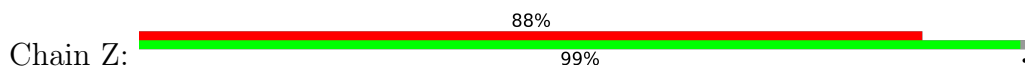
• Molecule 22: 60S ribosomal protein L25-A

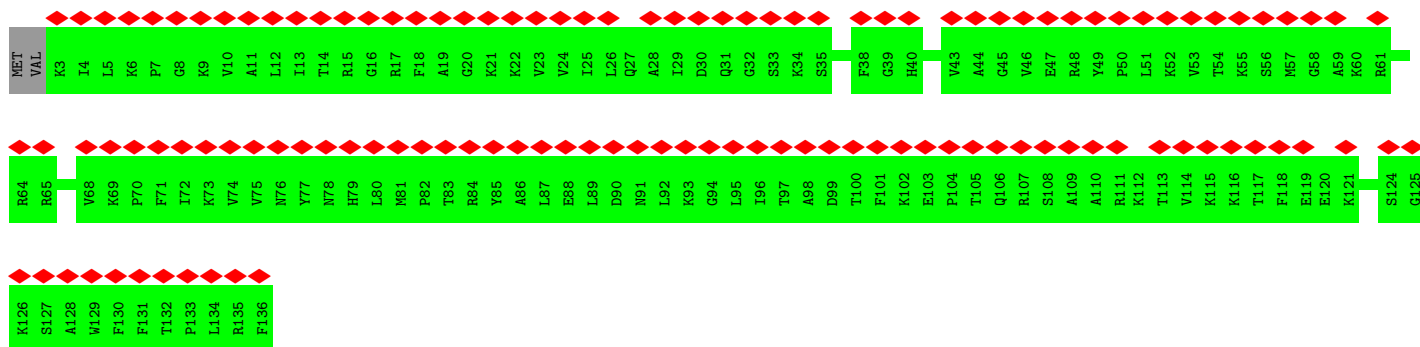


• Molecule 23: 60S ribosomal protein L26

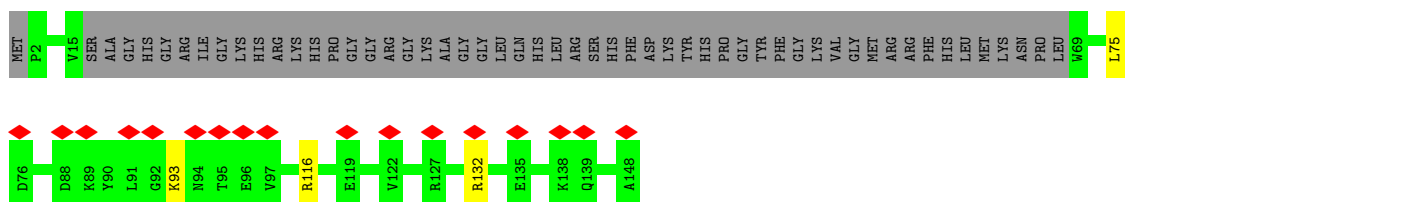


• Molecule 24: 60S ribosomal protein L27-A

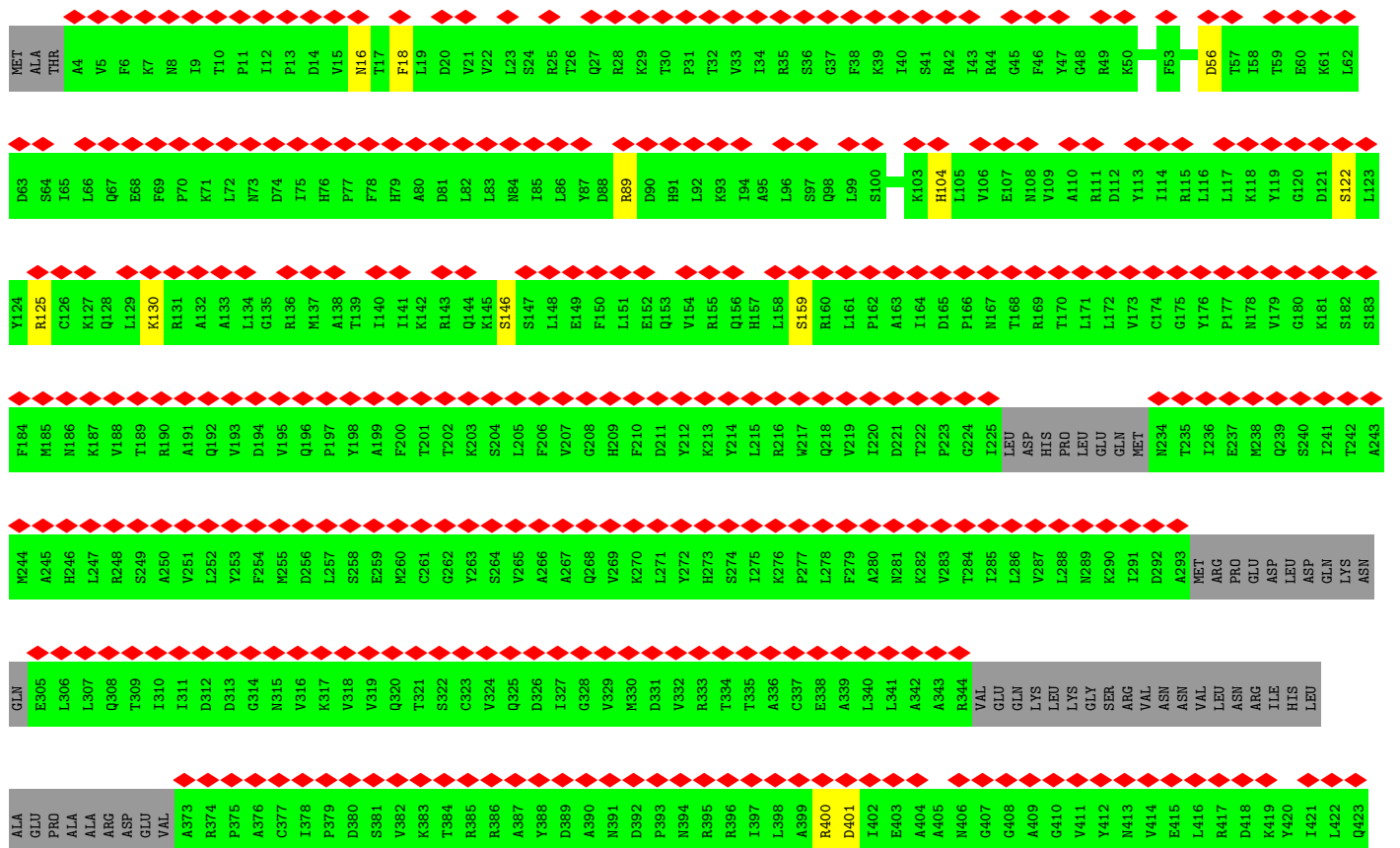


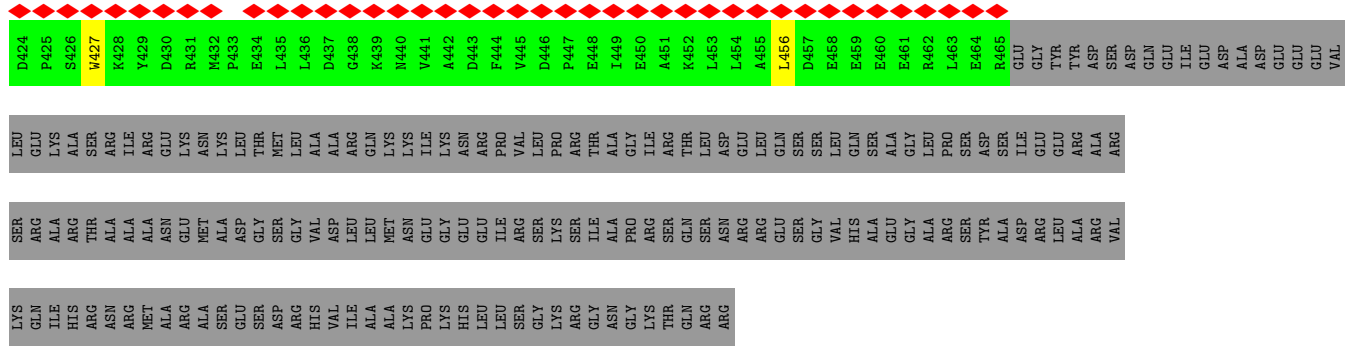


• Molecule 25: 60S ribosomal protein L28-A

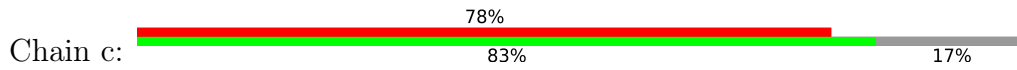


• Molecule 26: Probable nucleolar GTP-binding protein 1

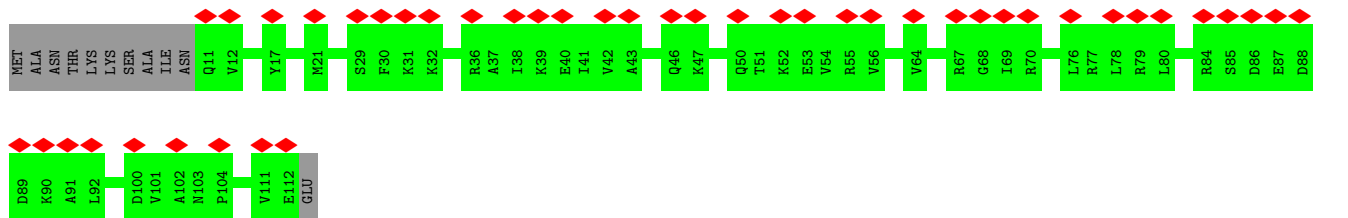
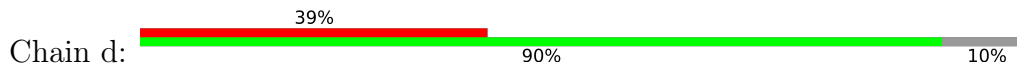




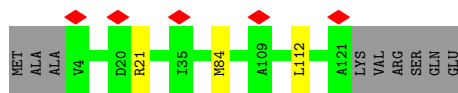
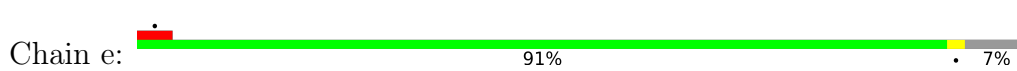
● Molecule 27: 60S ribosomal protein L30-2



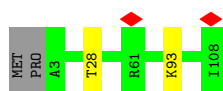
● Molecule 28: 60S ribosomal protein L31



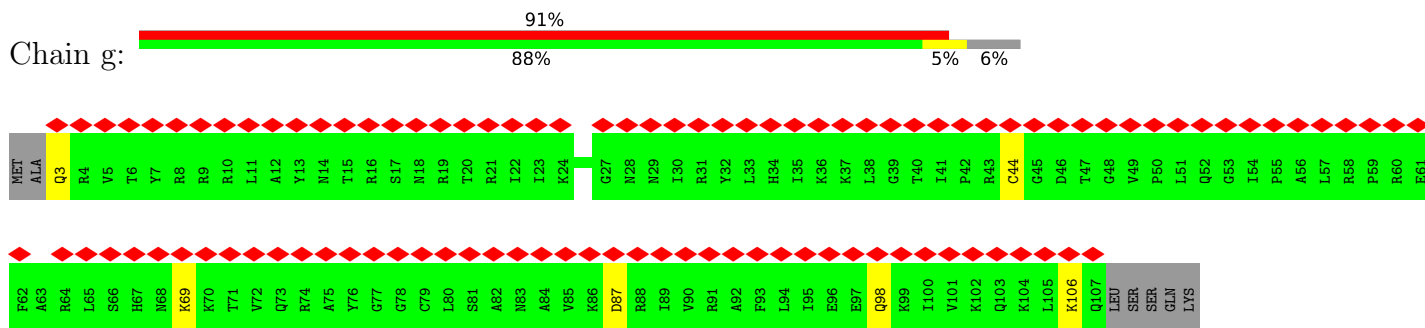
● Molecule 29: 60S ribosomal protein L32-A



● Molecule 30: 60S ribosomal protein L33-B



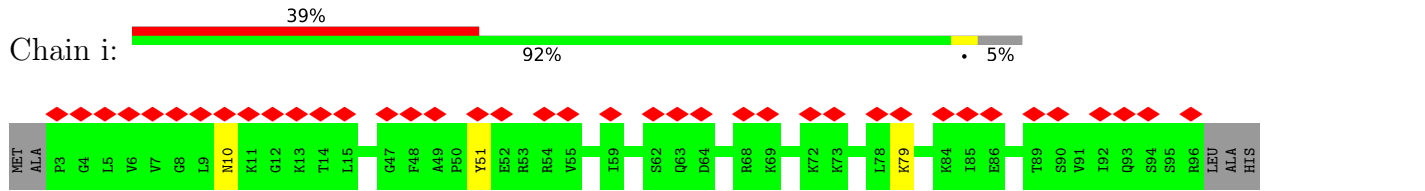
● Molecule 31: 60S ribosomal protein L34-A



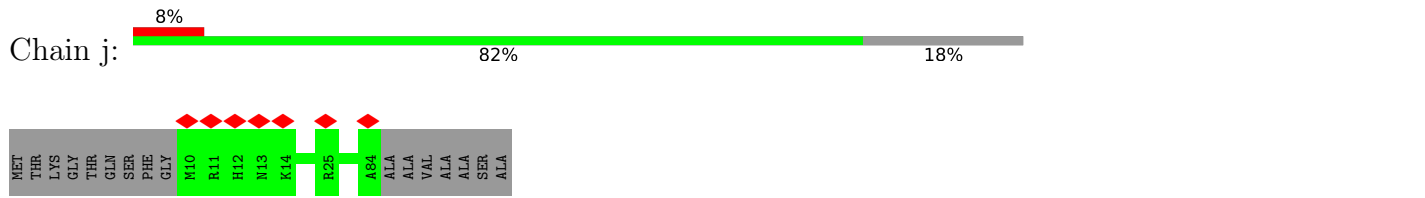
• Molecule 32: 60S ribosomal protein L35



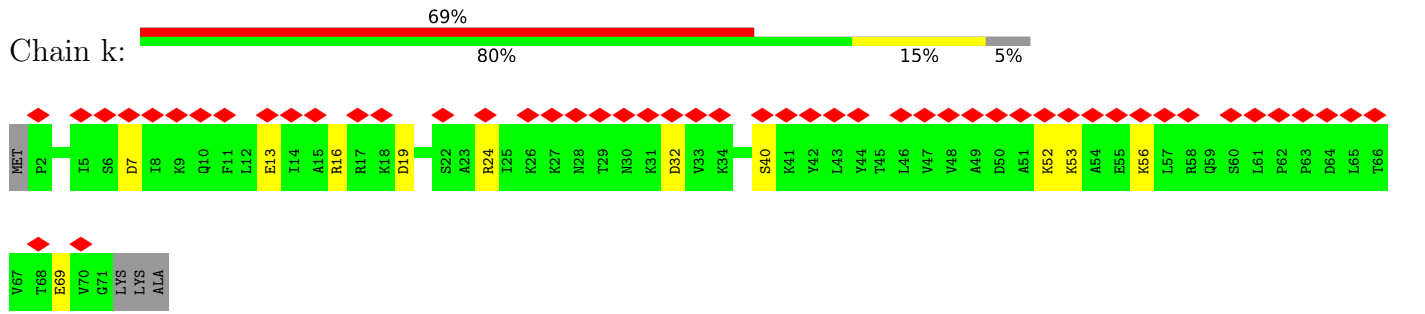
• Molecule 33: 60S ribosomal protein L36-B



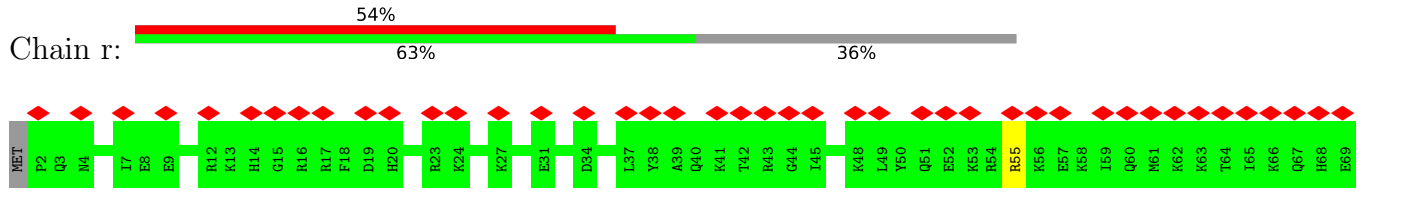
• Molecule 34: 60S ribosomal protein L37-B

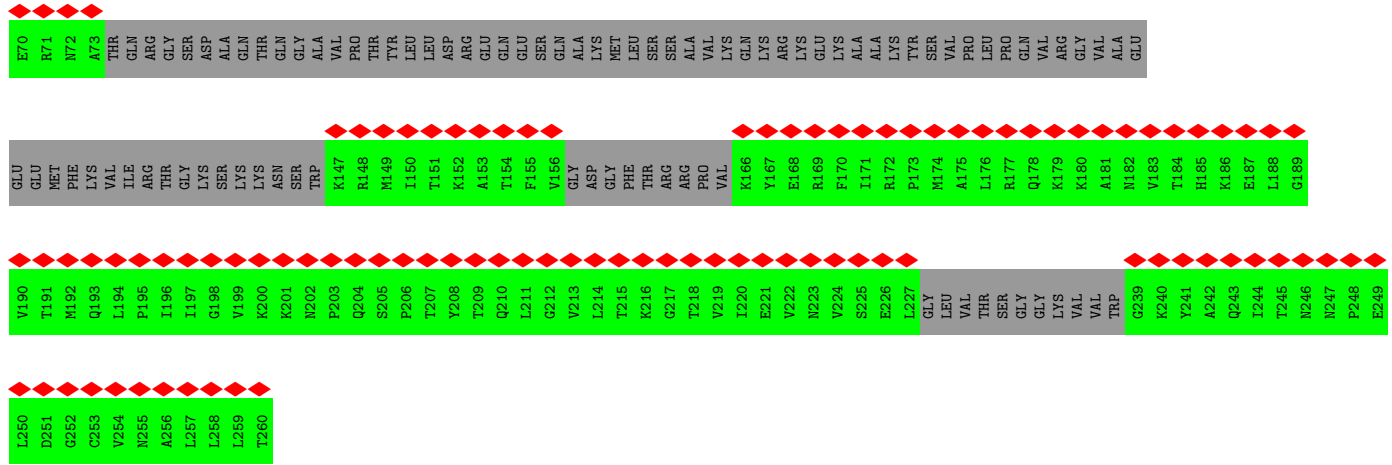


• Molecule 35: 60S ribosomal protein L38-1

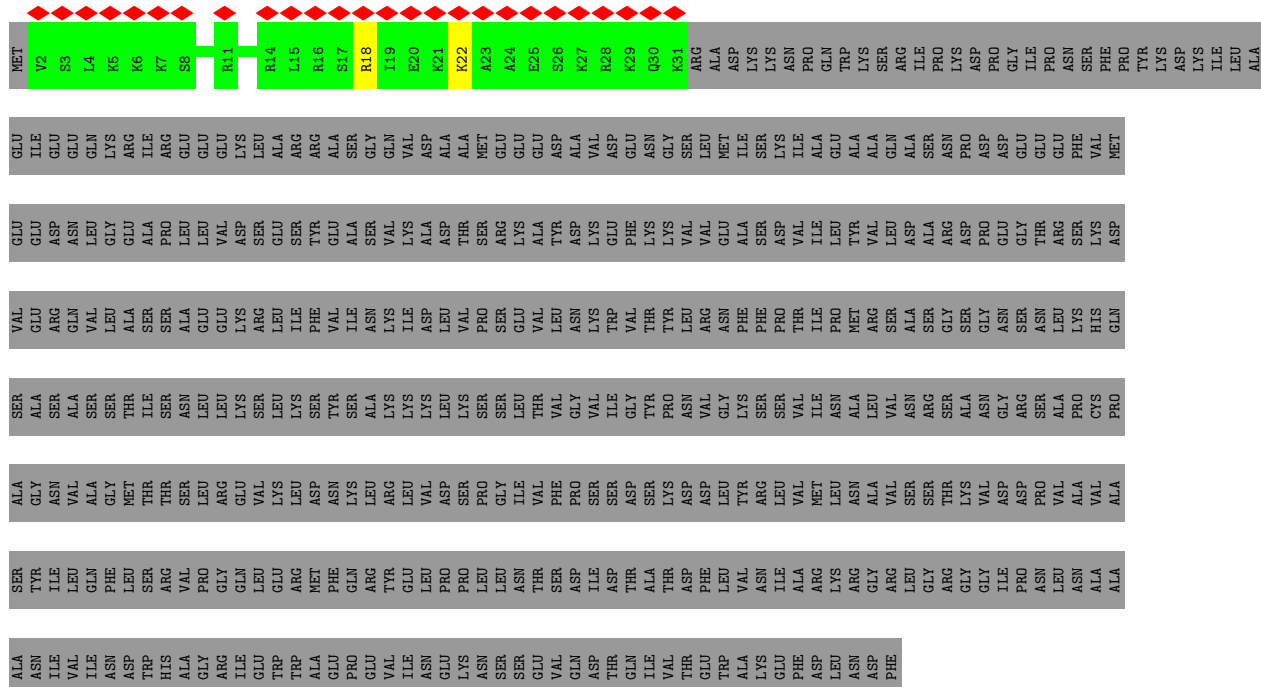


• Molecule 36: Ribosome biogenesis protein nsa2

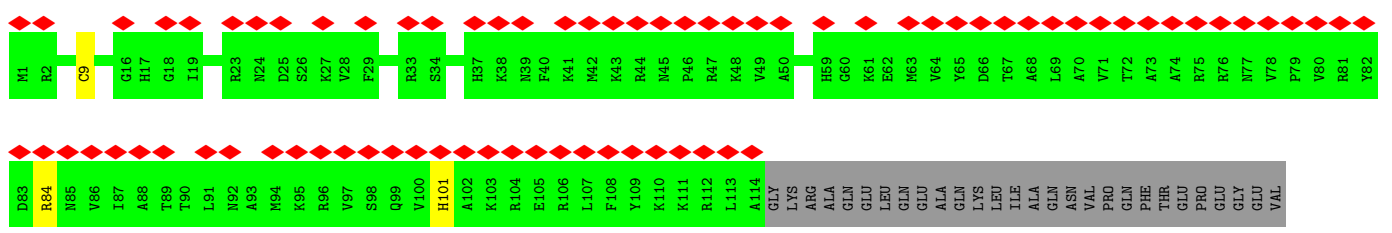
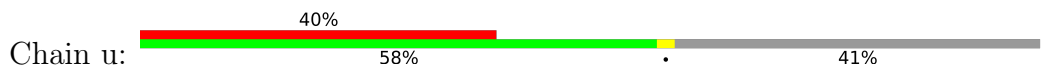




• Molecule 37: GTPase grn1

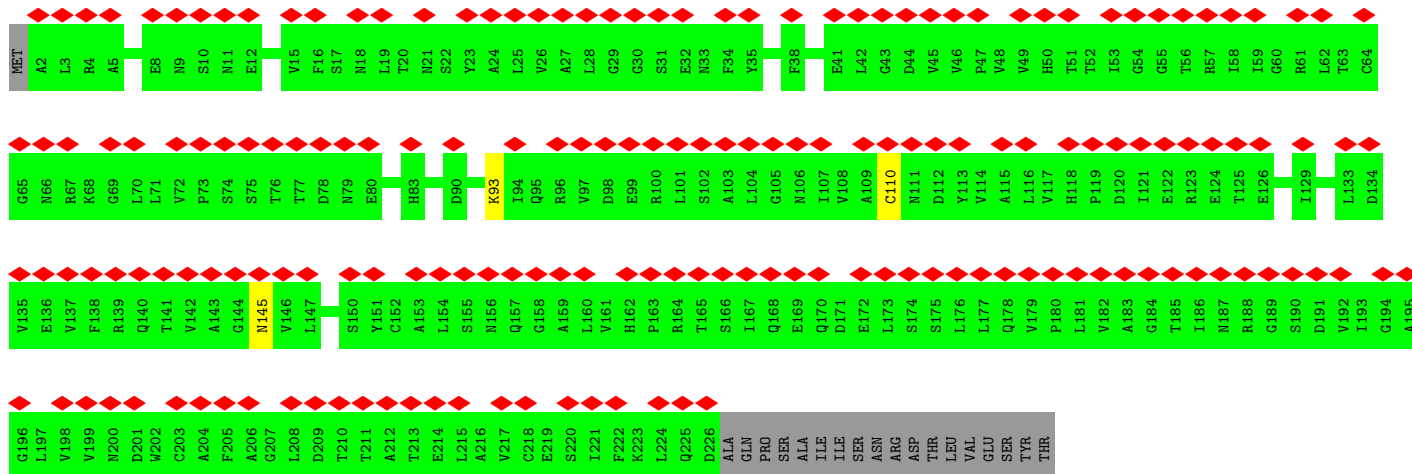
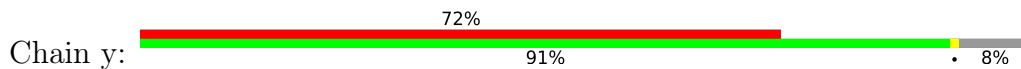


• Molecule 38: Ribosome biogenesis protein rlp24

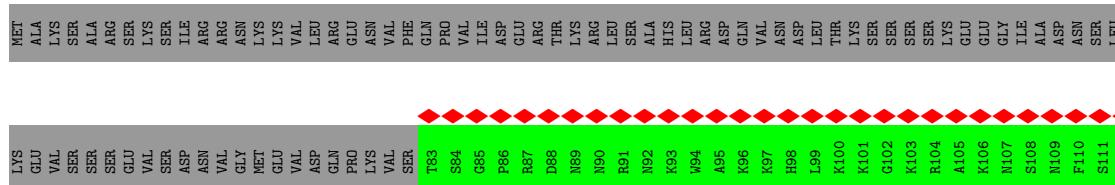




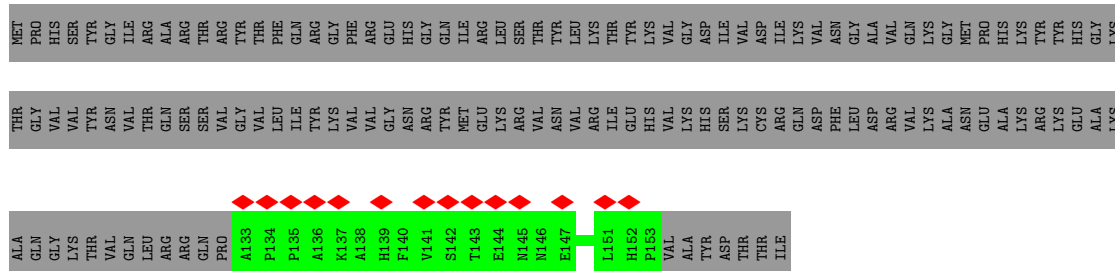
- Molecule 40: Eukaryotic translation initiation factor 6



- Molecule 41: UPF0642 protein C32H8.05



- Molecule 42: 60S ribosomal protein L21-A



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	18000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.558	Depositor
Minimum map value	-0.297	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	542.72, 542.72, 542.72	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	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	0.18	0/51306	0.72	0/79930
2	2	0.18	0/3500	0.69	0/5446
3	3	0.26	0/990	0.59	0/1333
4	8	0.23	0/439	0.56	0/586
5	B	0.25	0/2965	0.53	0/3988
6	C	0.26	0/2848	0.55	0/3842
7	E	0.27	0/1284	0.54	0/1731
8	F	0.25	0/1806	0.50	0/2424
9	G	0.26	0/1475	0.50	0/1988
10	H	0.26	0/1470	0.57	0/1982
11	L	0.26	0/1452	0.59	0/1955
12	M	0.26	0/1024	0.57	0/1375
13	N	0.24	0/1436	0.58	0/1920
14	O	0.26	0/1588	0.52	0/2128
15	P	0.26	0/1361	0.53	0/1823
16	Q	0.25	0/1057	0.56	0/1419
17	R	0.24	0/1054	0.58	0/1404
18	S	0.27	0/1444	0.56	0/1939
19	U	0.24	0/483	0.41	0/671
20	V	0.26	0/1048	0.58	0/1410
21	W	0.23	0/1053	0.45	0/1457
22	X	0.25	0/930	0.54	0/1251
23	Y	0.25	0/1008	0.60	0/1341
24	Z	0.25	0/661	0.40	0/917
25	a	0.25	0/760	0.59	0/1026
26	b	0.31	0/2868	0.59	0/3902
27	c	0.24	0/476	0.40	0/658
28	d	0.26	0/864	0.58	0/1161
29	e	0.25	0/958	0.60	0/1278
30	f	0.25	0/859	0.52	0/1152
31	g	0.26	0/865	0.67	0/1159
32	h	0.26	0/1008	0.56	0/1340

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	i	0.28	0/761	0.71	0/1009
34	j	0.25	0/613	0.58	0/811
35	k	0.32	0/570	0.68	0/762
36	r	0.27	0/1091	0.55	0/1464
37	s	0.25	0/252	0.64	0/325
38	u	0.29	0/966	0.67	0/1292
39	w	0.25	0/3444	0.52	0/4638
40	y	0.25	0/1720	0.54	0/2345
41	z	0.27	0/297	0.52	0/388
42	T	0.30	0/165	0.56	0/228
All	All	0.22	0/102219	0.65	0/149198

There are no bond length outliers.

There are no bond angle outliers.

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 [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	
3	3	110/302 (36%)	105 (96%)	5 (4%)	0	100	100
4	8	47/51 (92%)	44 (94%)	3 (6%)	0	100	100
5	B	361/388 (93%)	343 (95%)	18 (5%)	0	100	100
6	C	357/363 (98%)	338 (95%)	17 (5%)	2 (1%)	25	59
7	E	161/195 (83%)	148 (92%)	11 (7%)	2 (1%)	13	44

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	F	216/250 (86%)	210 (97%)	5 (2%)	1 (0%)	29	64
9	G	180/259 (70%)	169 (94%)	8 (4%)	3 (2%)	9	36
10	H	181/190 (95%)	173 (96%)	8 (4%)	0	100	100
11	L	178/208 (86%)	168 (94%)	9 (5%)	1 (1%)	25	59
12	M	123/134 (92%)	118 (96%)	5 (4%)	0	100	100
13	N	160/201 (80%)	156 (98%)	4 (2%)	0	100	100
14	O	194/197 (98%)	189 (97%)	4 (2%)	1 (0%)	29	64
15	P	163/187 (87%)	157 (96%)	6 (4%)	0	100	100
16	Q	133/187 (71%)	128 (96%)	5 (4%)	0	100	100
17	R	120/193 (62%)	116 (97%)	4 (3%)	0	100	100
18	S	164/176 (93%)	156 (95%)	8 (5%)	0	100	100
19	U	96/117 (82%)	92 (96%)	4 (4%)	0	100	100
20	V	136/139 (98%)	132 (97%)	3 (2%)	1 (1%)	22	57
21	W	207/241 (86%)	195 (94%)	12 (6%)	0	100	100
22	X	112/141 (79%)	107 (96%)	5 (4%)	0	100	100
23	Y	123/126 (98%)	119 (97%)	4 (3%)	0	100	100
24	Z	132/136 (97%)	129 (98%)	3 (2%)	0	100	100
25	a	90/148 (61%)	88 (98%)	2 (2%)	0	100	100
26	b	407/642 (63%)	399 (98%)	7 (2%)	1 (0%)	47	79
27	c	95/117 (81%)	95 (100%)	0	0	100	100
28	d	100/113 (88%)	99 (99%)	1 (1%)	0	100	100
29	e	116/127 (91%)	113 (97%)	3 (3%)	0	100	100
30	f	104/108 (96%)	98 (94%)	6 (6%)	0	100	100
31	g	103/112 (92%)	98 (95%)	5 (5%)	0	100	100
32	h	119/122 (98%)	116 (98%)	3 (2%)	0	100	100
33	i	92/99 (93%)	90 (98%)	2 (2%)	0	100	100
34	j	73/91 (80%)	71 (97%)	2 (3%)	0	100	100
35	k	68/74 (92%)	66 (97%)	2 (3%)	0	100	100
36	r	158/260 (61%)	156 (99%)	2 (1%)	0	100	100
37	s	28/470 (6%)	28 (100%)	0	0	100	100
38	u	112/192 (58%)	107 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
39	w	412/802 (51%)	378 (92%)	33 (8%)	1 (0%)	47	79
40	y	223/244 (91%)	214 (96%)	9 (4%)	0	100	100
41	z	33/117 (28%)	32 (97%)	1 (3%)	0	100	100
42	T	19/160 (12%)	17 (90%)	2 (10%)	0	100	100
All	All	6006/8379 (72%)	5757 (96%)	236 (4%)	13 (0%)	50	79

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	L	175	ALA
20	V	3	ARG
6	C	346	GLU
39	w	476	LYS
7	E	144	ALA

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	3	104/271 (38%)	102 (98%)	2 (2%)	57	81
4	8	45/47 (96%)	44 (98%)	1 (2%)	52	78
5	B	308/326 (94%)	306 (99%)	2 (1%)	86	94
6	C	296/297 (100%)	293 (99%)	3 (1%)	76	90
7	E	133/155 (86%)	131 (98%)	2 (2%)	65	85
8	F	182/210 (87%)	180 (99%)	2 (1%)	73	89
9	G	154/212 (73%)	148 (96%)	6 (4%)	32	65
10	H	164/170 (96%)	161 (98%)	3 (2%)	59	82
11	L	144/167 (86%)	139 (96%)	5 (4%)	36	68
12	M	108/113 (96%)	105 (97%)	3 (3%)	43	73
13	N	146/176 (83%)	143 (98%)	3 (2%)	53	79
14	O	161/162 (99%)	158 (98%)	3 (2%)	57	81

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	P	138/149 (93%)	137 (99%)	1 (1%)	84	93
16	Q	115/159 (72%)	115 (100%)	0	100	100
17	R	111/162 (68%)	106 (96%)	5 (4%)	27	60
18	S	150/154 (97%)	143 (95%)	7 (5%)	26	59
20	V	106/107 (99%)	102 (96%)	4 (4%)	33	66
22	X	101/122 (83%)	98 (97%)	3 (3%)	41	71
23	Y	110/111 (99%)	109 (99%)	1 (1%)	78	91
25	a	81/122 (66%)	77 (95%)	4 (5%)	25	57
26	b	214/556 (38%)	201 (94%)	13 (6%)	18	49
28	d	93/102 (91%)	93 (100%)	0	100	100
29	e	100/107 (94%)	97 (97%)	3 (3%)	41	71
30	f	89/91 (98%)	87 (98%)	2 (2%)	52	78
31	g	91/97 (94%)	85 (93%)	6 (7%)	16	47
32	h	106/107 (99%)	106 (100%)	0	100	100
33	i	81/84 (96%)	78 (96%)	3 (4%)	34	66
34	j	62/71 (87%)	62 (100%)	0	100	100
35	k	63/66 (96%)	52 (82%)	11 (18%)	2	8
36	r	63/224 (28%)	62 (98%)	1 (2%)	62	84
37	s	28/409 (7%)	26 (93%)	2 (7%)	14	44
38	u	99/168 (59%)	96 (97%)	3 (3%)	41	71
39	w	369/697 (53%)	360 (98%)	9 (2%)	49	76
40	y	189/206 (92%)	186 (98%)	3 (2%)	62	84
41	z	31/107 (29%)	31 (100%)	0	100	100
42	T	18/139 (13%)	18 (100%)	0	100	100
All	All	4553/6623 (69%)	4437 (98%)	116 (2%)	50	75

5 of 116 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	a	93	LYS
39	w	238	ARG
26	b	427	TRP
39	w	122	ASN
37	s	18	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
15	P	118	GLN
35	k	59	GLN
36	r	72	ASN
36	r	68	HIS
11	L	28	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2109/3497 (60%)	502 (23%)	28 (1%)
2	2	144/165 (87%)	22 (15%)	1 (0%)
All	All	2253/3662 (61%)	524 (23%)	29 (1%)

5 of 524 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	2	U
1	1	12	A
1	1	14	U
1	1	26	A
1	1	49	A

5 of 29 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	1272	U
1	1	3328	U
1	1	1338	G
1	1	3081	U
1	1	1333	A

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 1 ligands modelled in this entry, 1 is 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.

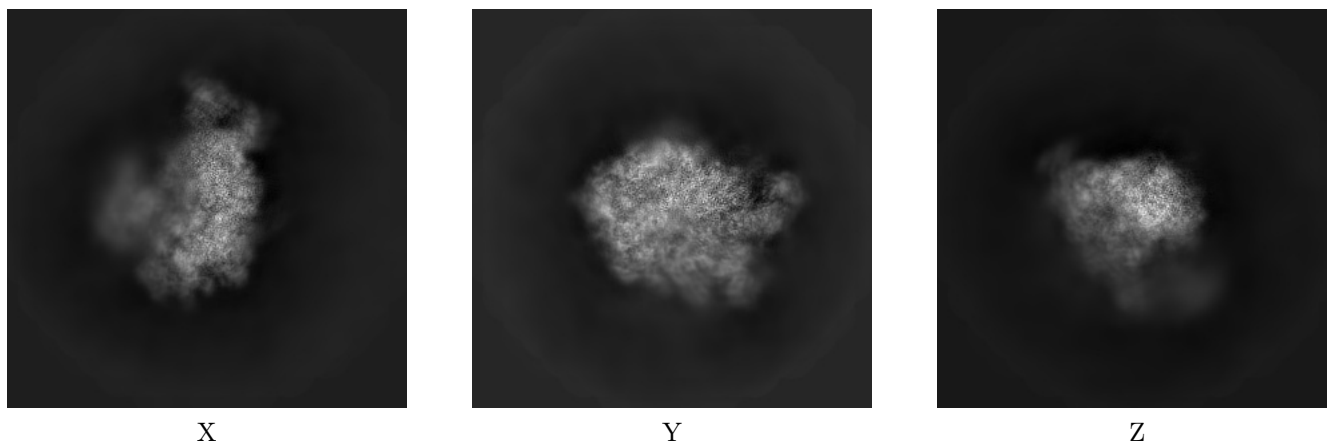
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-24398. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections [i](#)

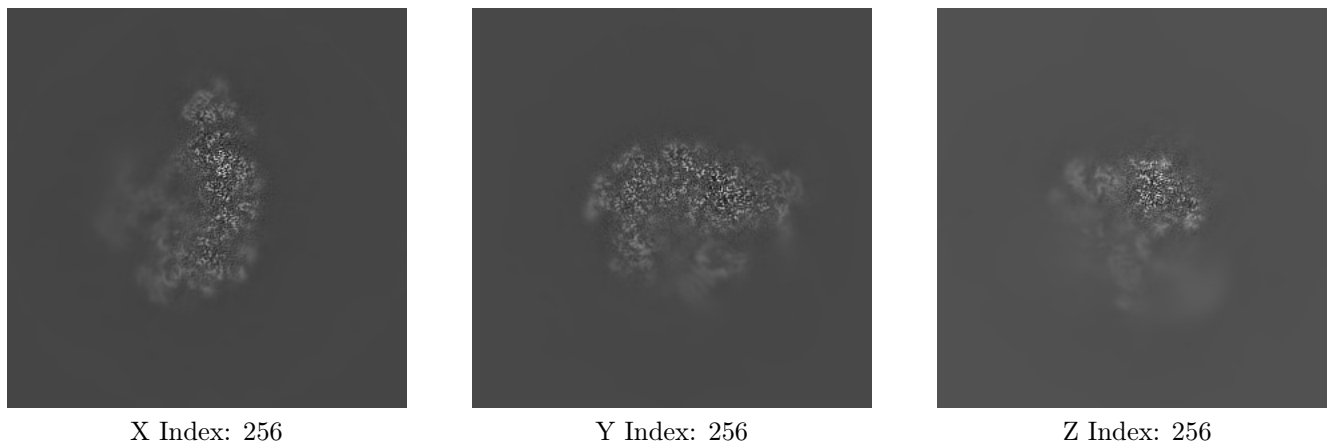
6.1.1 Primary map



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

6.2 Central slices [i](#)

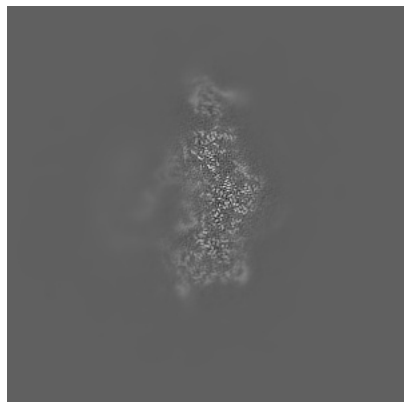
6.2.1 Primary map



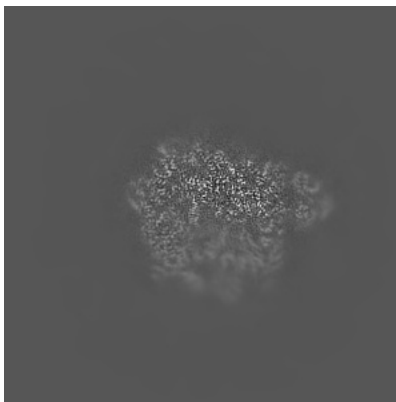
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

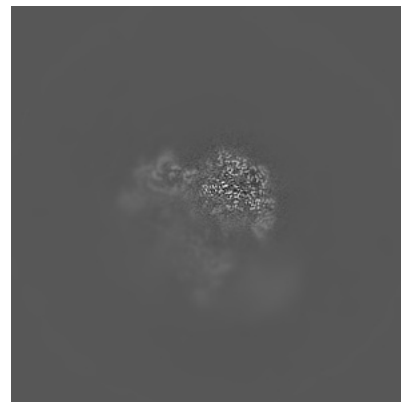
6.3.1 Primary map



X Index: 282



Y Index: 272



Z Index: 273

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

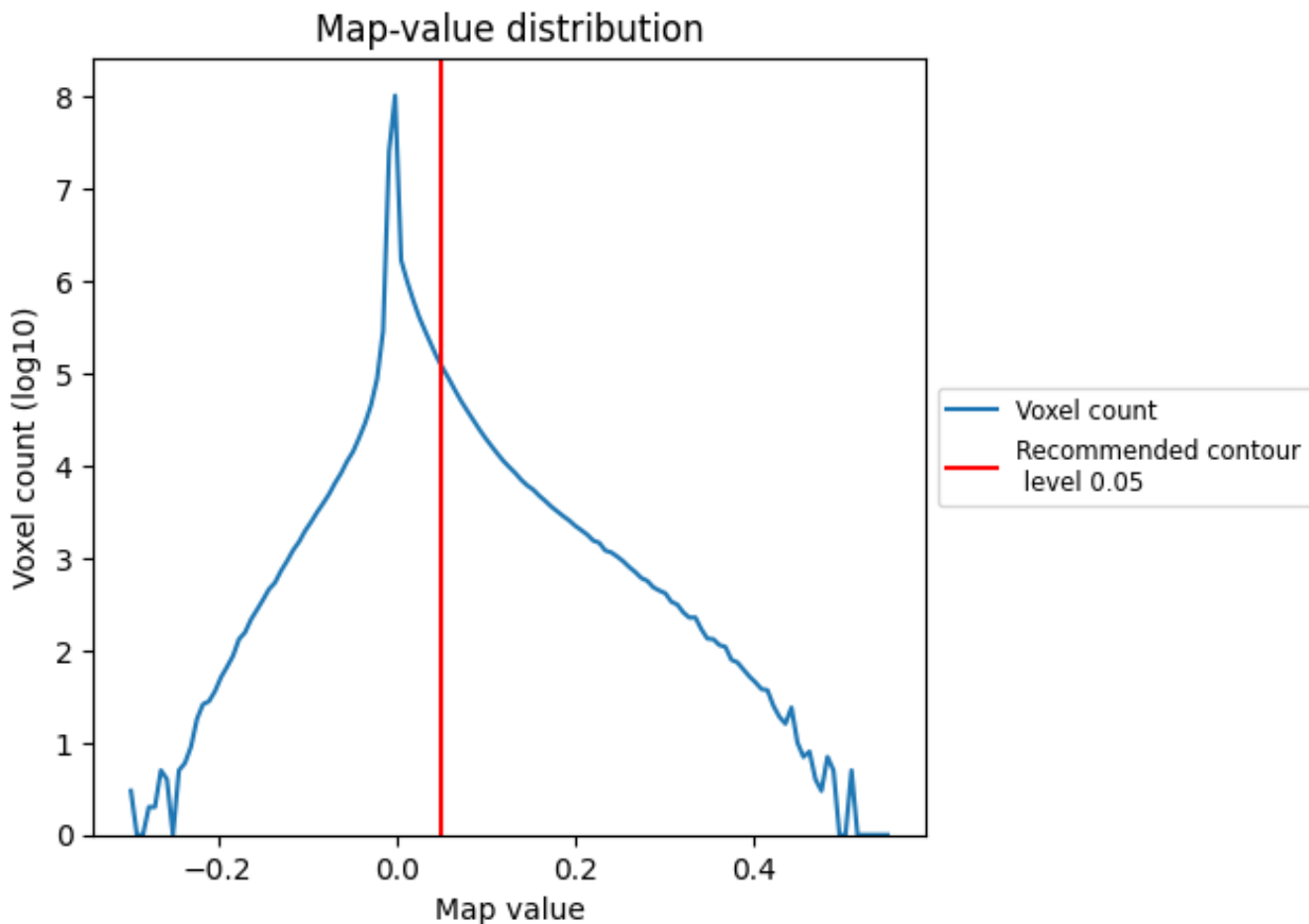
6.5 Mask visualisation

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

7 Map analysis [i](#)

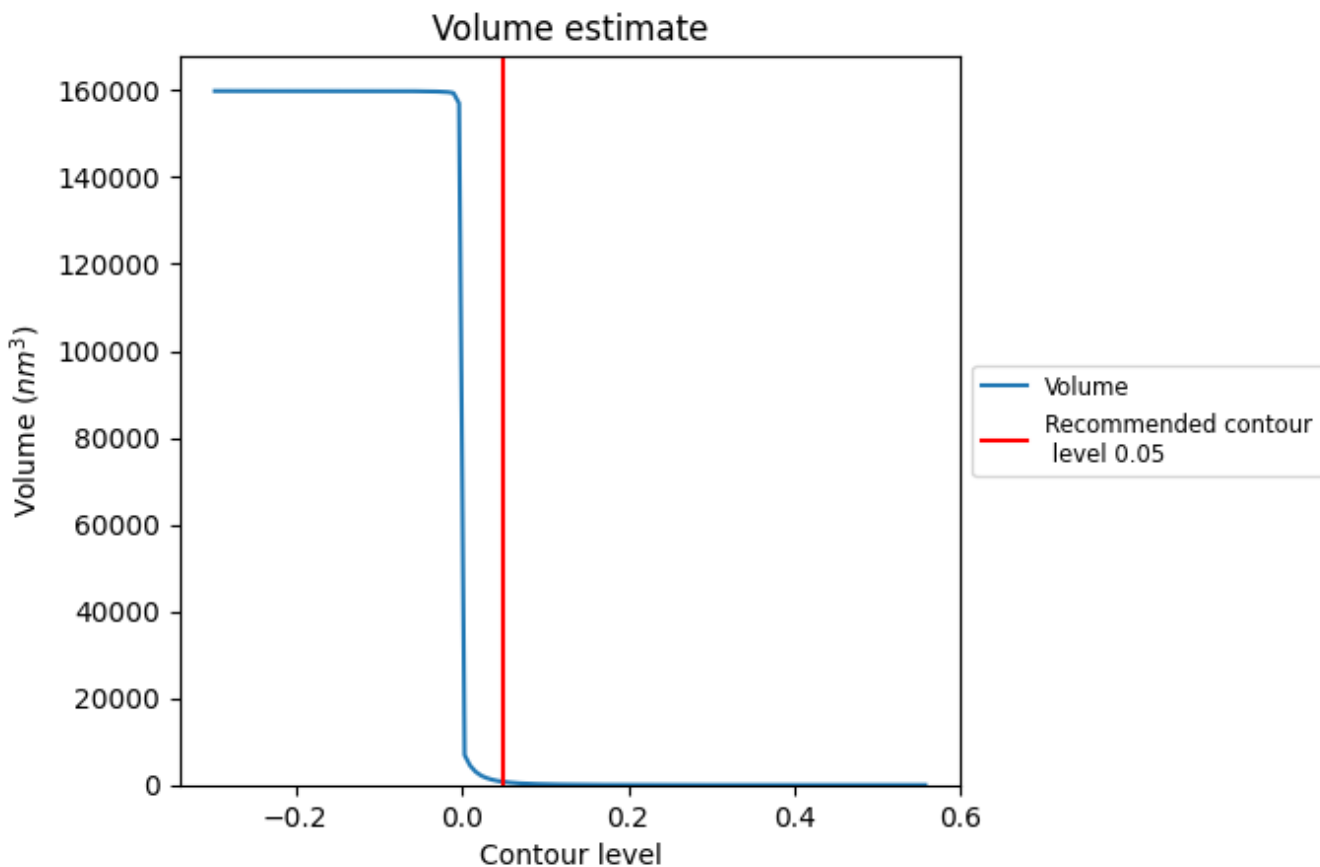
This section contains the results of statistical analysis of the map.

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.

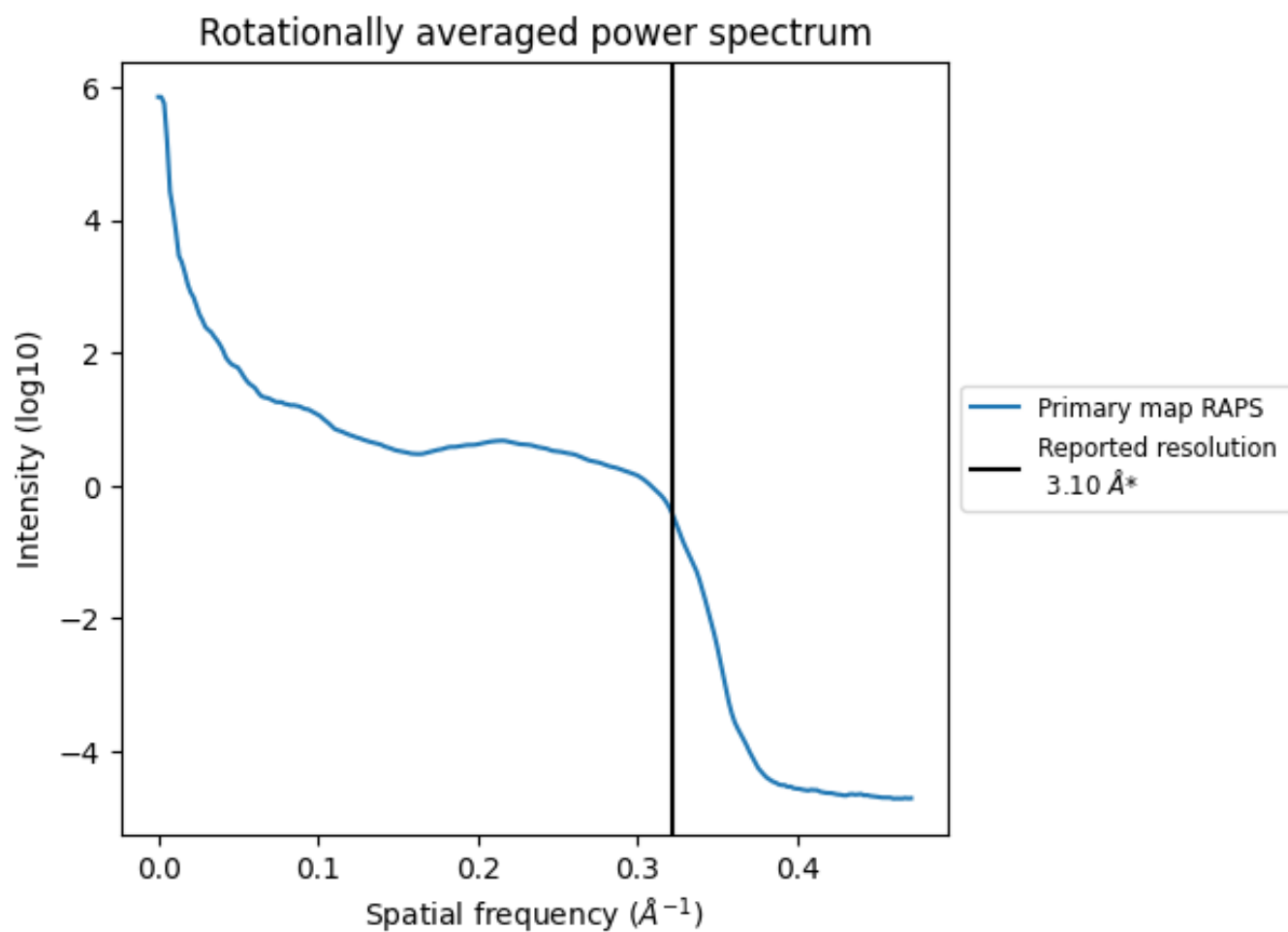
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 720 nm^3 ; this corresponds to an approximate mass of 650 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 0.323\AA^{-1}

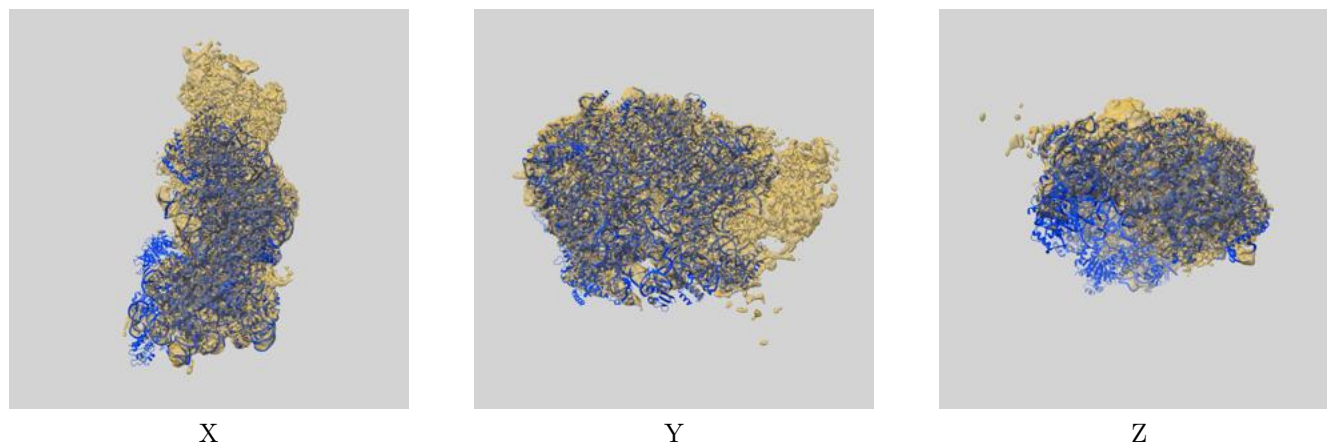
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

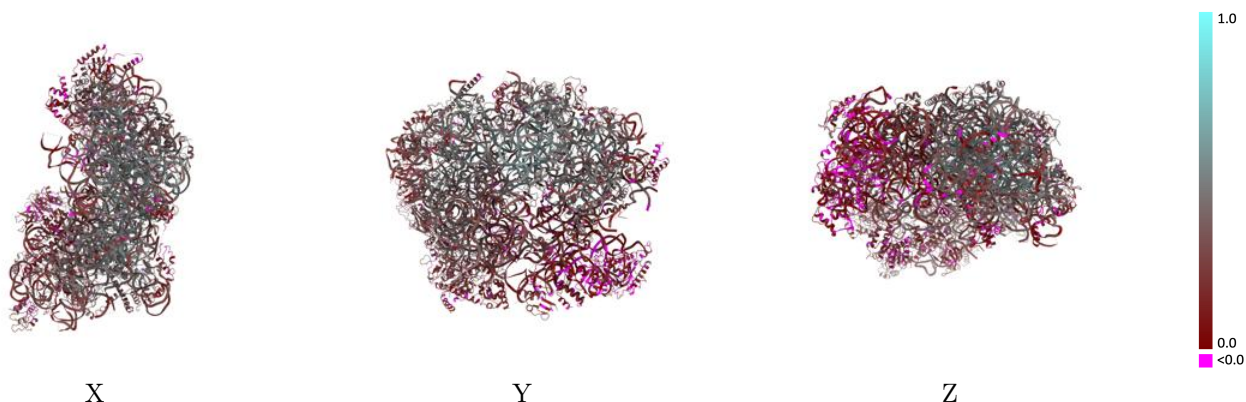
This section contains information regarding the fit between EMDB map EMD-24398 and PDB model 8ETC. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



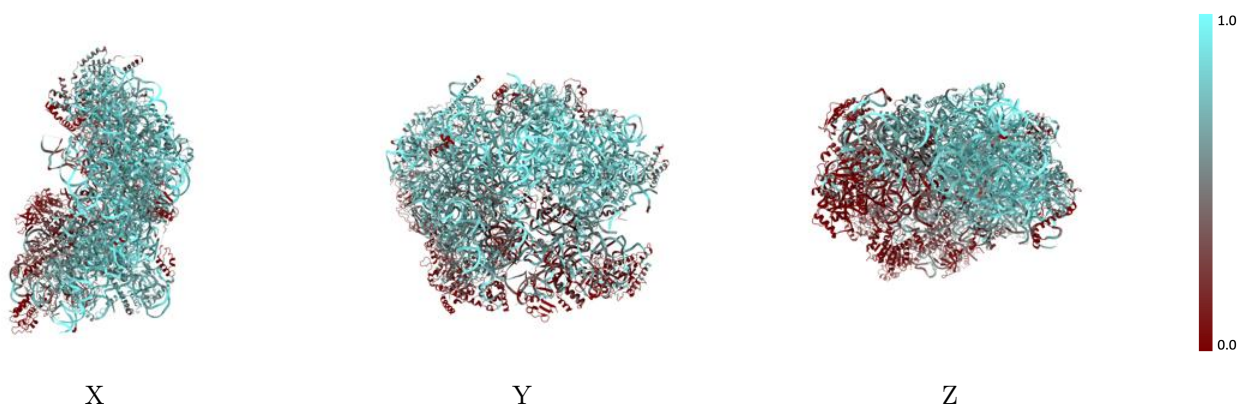
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



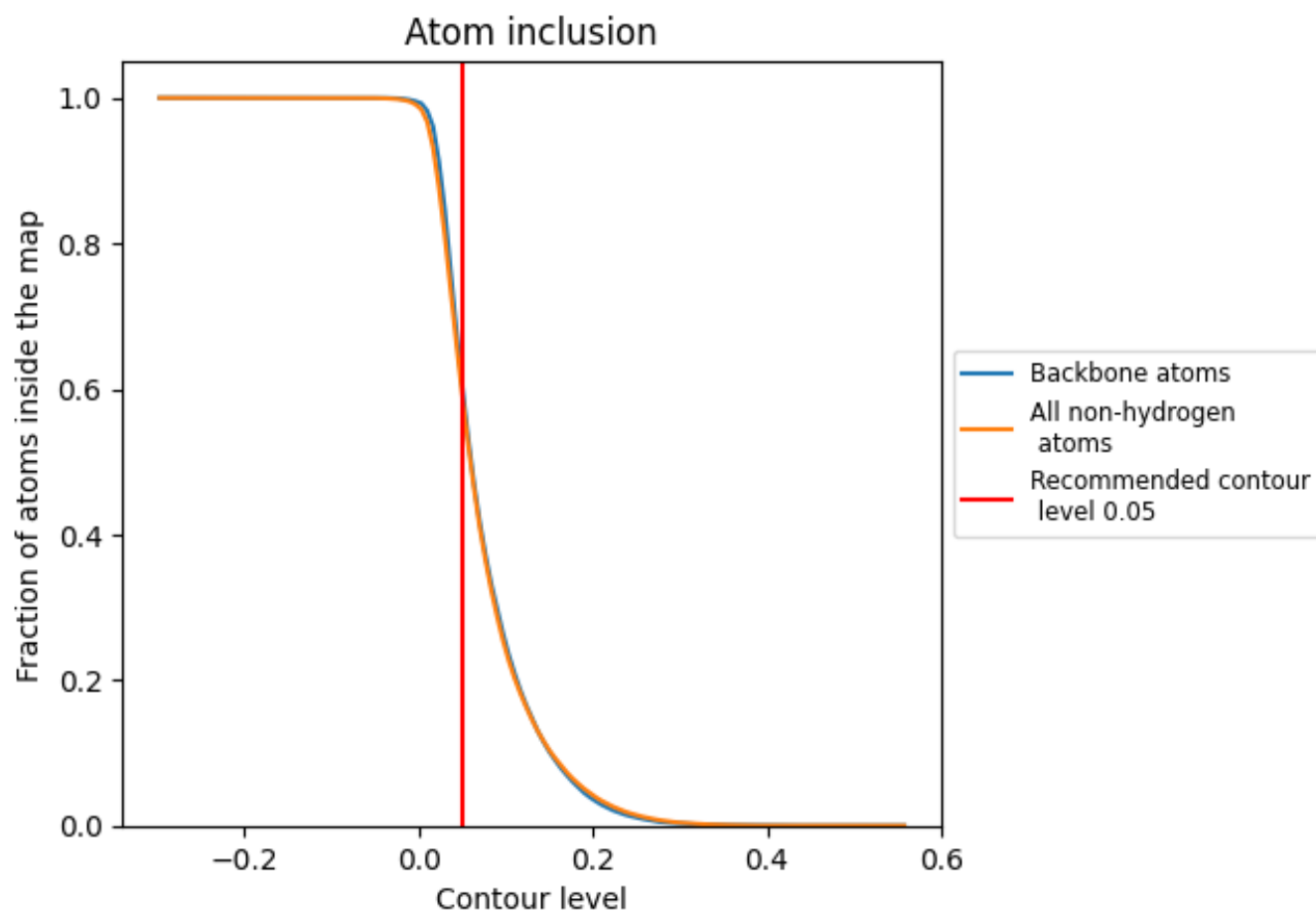
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.05).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 61% of all backbone atoms, 59% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5922	 0.3000
1	 0.7051	 0.3110
2	 0.8569	 0.4040
3	 0.2831	 0.2110
8	 0.1818	 0.1040
B	 0.5872	 0.3250
C	 0.7944	 0.4560
E	 0.5958	 0.3320
F	 0.7399	 0.3960
G	 0.6098	 0.2220
H	 0.4433	 0.2780
L	 0.5716	 0.3200
M	 0.7042	 0.3570
N	 0.8211	 0.4210
O	 0.6970	 0.4020
P	 0.5234	 0.2620
Q	 0.7527	 0.4250
R	 0.2558	 0.1580
S	 0.5837	 0.3140
T	 0.3522	 0.3050
U	 0.1694	 0.2040
V	 0.1952	 0.2250
W	 0.0445	 0.2350
X	 0.6447	 0.3210
Y	 0.7921	 0.4310
Z	 0.1224	 0.0450
a	 0.6119	 0.3680
b	 0.0954	 0.1760
c	 0.0692	 0.0840
d	 0.4695	 0.2520
e	 0.8055	 0.4590
f	 0.7926	 0.4660
g	 0.0562	 0.0230
h	 0.7484	 0.3690
i	 0.5090	 0.1890



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Chain	Atom inclusion	Q-score
j	 0.7878	 0.4290
k	 0.2564	 0.0370
r	 0.2041	 0.2060
s	 0.1618	 0.1830
u	 0.2911	 0.1950
w	 0.0500	 0.1440
y	 0.2132	 0.1980
z	 0.0807	 0.2260