



wwPDB EM Validation Summary Report ⓘ

Mar 19, 2022 – 06:59 am GMT

PDB ID : 7QV1
EMDB ID : EMD-14157
Title : Bacillus subtilis collided disome (Leading 70S)
Authors : Filbeck, S.; Pfeffer, S.
Deposited on : 2022-01-19
Resolution : 3.50 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

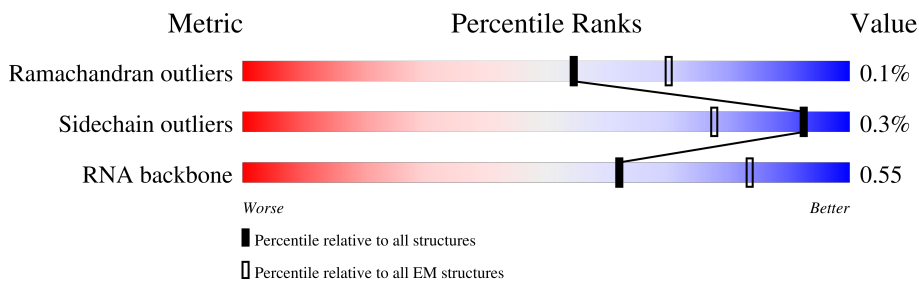
EMDB validation analysis : 0.0.0.dev97
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.27

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 3.50 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.



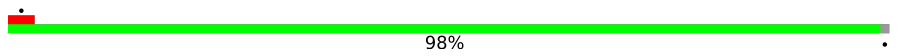
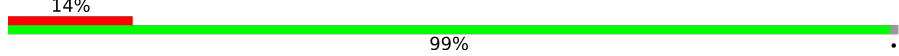
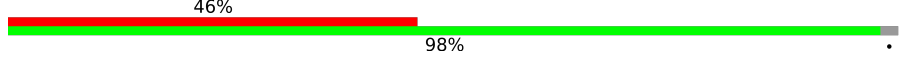
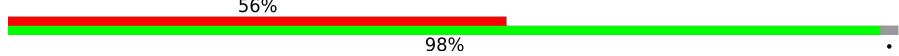

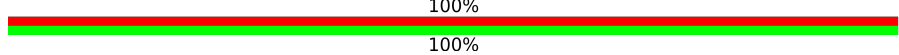
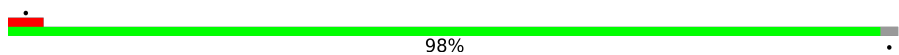


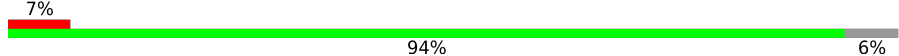
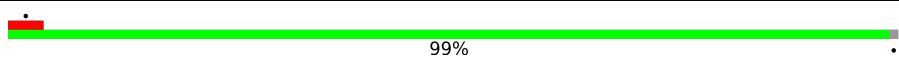

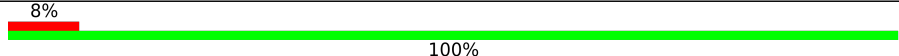
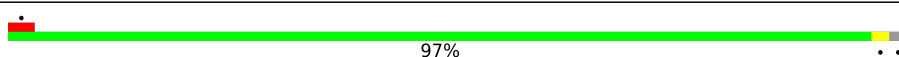
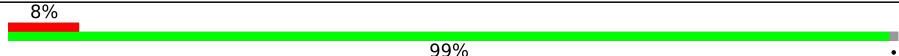
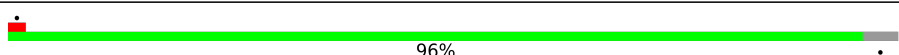
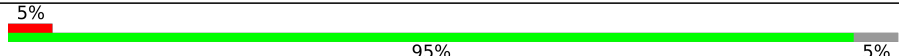
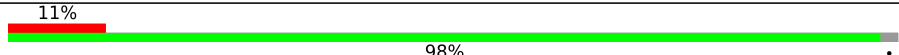
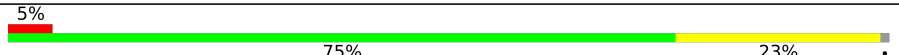
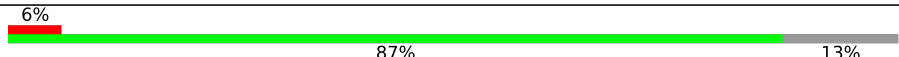
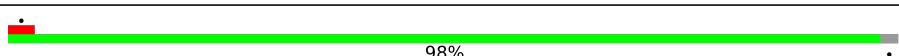
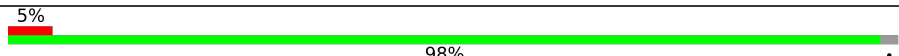

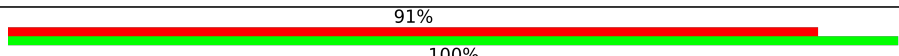

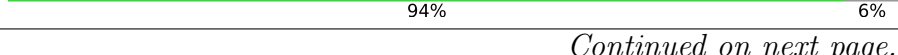
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	0	59	
2	1	49	
3	2	44	
4	3	66	
5	4	37	
6	6	66	
7	B	112	
8	C	277	

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Mol	Chain	Length	Quality of chain
9	D	209	 98%
10	E	207	 99%
11	F	179	 98%
12	G	179	 98%
13	H	77	 81% 19%
14	I	24	 100%
15	J	145	 98%
16	K	122	 100%
17	L	146	 100%
18	M	144	 94% 6%
19	N	120	 99%
20	O	120	 100%
21	P	115	 100%
22	Q	119	 97%
23	R	102	 99%
24	S	113	 96%
25	T	95	 95% 5%
26	U	103	 98%
27	V	2928	 75% 23%
28	W	94	 87% 13%
29	Y	66	 98%
30	Z	59	 98%
31	a	1533	 83% 17%
32	b	57	 91%
33	c	218	 82%
			 94% 6%

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Mol	Chain	Length	Quality of chain
34	d	200	16% 96%
35	e	166	5% 99%
36	f	95	23% 97%
37	g	156	19% 97%
38	h	132	99%
39	i	130	26% 79% 21%
40	j	102	59% 93% 7%
41	k	131	25% 90% 10%
42	l	138	7% 99%
43	m	121	39% 75% 24%
44	n	61	90% 97%
45	o	89	94%
46	p	90	9% 98%
47	q	87	7% 97%
48	r	79	16% 80% 19%
49	s	92	60% 83% 16%
50	t	88	94% 6%
51	u	62	11% 94% 6%
52	X	149	83% 97%
53	A	26	65% 31% 54% 15%

2 Entry composition

There are 53 unique types of molecules in this entry. The entry contains 140774 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 protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	54	426	262	86	71	7	0	0

- Molecule 2 is a protein called 50S ribosomal protein L33 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1	48	401	244	80	73	4	0	0

- Molecule 3 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	44	367	222	89	54	2	0	0

- Molecule 4 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	64	512	321	107	82	2	0	0

- Molecule 5 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	37	296	186	60	45	5	0	0

- Molecule 6 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	6	63	499	312	91	91	5	0	0

- Molecule 7 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	B	112	2392	1068	435	778	111	0	0

- Molecule 8 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	C	272	2083	1296	408	373	6	0	0

- Molecule 9 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	D	206	1569	985	289	290	5	0	0

- Molecule 10 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	E	205	1561	980	289	290	2	0	0

- Molecule 11 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	F	176	1386	882	241	256	7	0	0

- Molecule 12 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	G	175	1342	835	248	257	2	0	0

- Molecule 13 is a RNA chain called P-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
13	H	77	1643	731	290	545	77	0	0

- Molecule 14 is a protein called Nascent chain.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	I	24	Total	C	N	O	0	0
			120	72	24	24		

- Molecule 15 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	J	142	Total	C	N	O	S	0	0
			1123	710	206	202	5		

- Molecule 16 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	K	122	Total	C	N	O	S	0	0
			920	571	173	172	4		

- Molecule 17 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	L	146	Total	C	N	O	S	0	0
			1081	671	207	201	2		

- Molecule 18 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	M	135	Total	C	N	O	S	0	0
			1076	690	205	176	5		

- Molecule 19 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	N	119	Total	C	N	O	S	0	0
			953	583	186	180	4		

- Molecule 20 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	O	120	Total	C	N	O	S	0	0
			912	564	176	171	1		

- Molecule 21 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	P	115	Total	C	N	O	S	0	0
			944	600	185	158	1		

- Molecule 22 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Q	117	Total	C	N	O	S	0	0
			940	591	189	156	4		

- Molecule 23 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	R	101	Total	C	N	O	0	0
			786	501	139	146		

- Molecule 24 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	S	109	Total	C	N	O	S	0	0
			842	525	164	150	3		

- Molecule 25 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	T	90	Total	C	N	O	S	0	0
			725	452	134	136	3		

- Molecule 26 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	U	101	Total	C	N	O	S	0	0
			762	478	142	138	4		

- Molecule 27 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	V	2887	Total	C	N	O	P	0	0
			61998	27661	11460	19993	2884		

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	243	G	A	conflict	GB 1491848961
V	325	A	-	insertion	GB 1491848961
V	326	A	-	insertion	GB 1491848961
V	327	G	-	insertion	GB 1491848961
V	328	G	-	insertion	GB 1491848961
V	640	U	C	conflict	GB 1491848961
V	2232	A	G	conflict	GB 1491848961

- Molecule 28 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
28	W	82	630	390	123	117	0	0

- Molecule 29 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	Y	65	530	328	102	98	2	0	0

- Molecule 30 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	Z	58	455	281	89	84	1	0	0

- Molecule 31 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
31	a	1533	32891	14667	6034	10657	1533	0	0

- Molecule 32 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	b	57	476	295	97	83	1	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	30	ALA	GLN	conflict	UNP P21478

- Molecule 33 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	c	206	1619	1011	304	301	3	0	0

- Molecule 34 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	d	195	1568	991	291	284	2	0	0

- Molecule 35 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	e	164	1218	767	225	224	2	0	0

- Molecule 36 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	f	92	755	476	132	146	1	0	0

- Molecule 37 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	g	151	1203	755	224	218	6	0	0

- Molecule 38 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	h	131	1036	655	191	187	3	0	0

- Molecule 39 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
39	i	103	784	485	151	148	0	0

- Molecule 40 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	j	95	Total	C	N	O	S	0	0
			761	479	139	141	2		

- Molecule 41 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	k	118	Total	C	N	O	S	0	0
			871	537	171	161	2		

- Molecule 42 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	l	136	Total	C	N	O	S	0	0
			1052	653	211	186	2		

- Molecule 43 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	m	92	Total	C	N	O	0	0
			740	459	145	136		

- Molecule 44 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	n	60	Total	C	N	O	S	0	0
			497	317	98	77	5		

- Molecule 45 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	o	85	Total	C	N	O	S	0	0
			710	436	144	129	1		

- Molecule 46 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	p	88	Total	C	N	O	S	0	0
			695	441	128	124	2		

- Molecule 47 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	q	84	Total	C	N	O	S	0	0
			691	435	128	126	2		

- Molecule 48 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	r	64	Total	C	N	O	S	0	0
			518	332	96	88	2		

- Molecule 49 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	s	77	Total	C	N	O	S	0	0
			624	403	110	109	2		

- Molecule 50 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	t	83	Total	C	N	O	S	0	0
			637	390	130	116	1		

- Molecule 51 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	u	58	Total	C	N	O	S	0	0
			444	275	92	75	2		

- Molecule 52 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	X	149	Total	C	N	O	S	0	0
			1151	726	205	219	1		

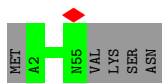
- Molecule 53 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	A	26	Total	C	N	O	P	0	0
			559	251	106	176	26		

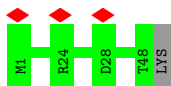
3 Residue-property plots [i](#)

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: 50S ribosomal protein L32



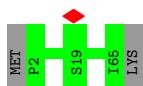
- Molecule 2: 50S ribosomal protein L33 1



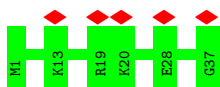
- Molecule 3: 50S ribosomal protein L34



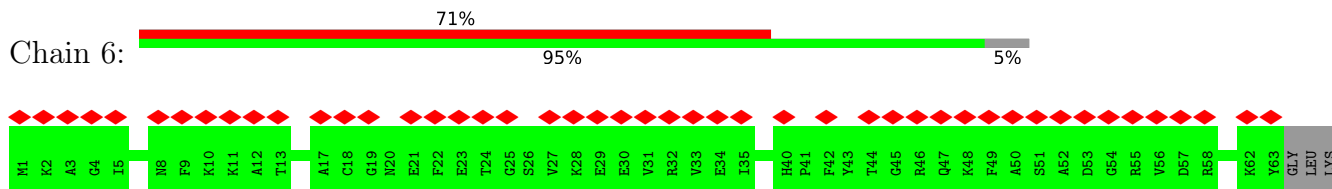
- Molecule 4: 50S ribosomal protein L35



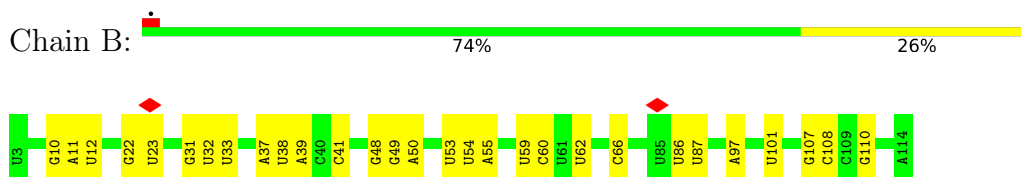
- Molecule 5: 50S ribosomal protein L36



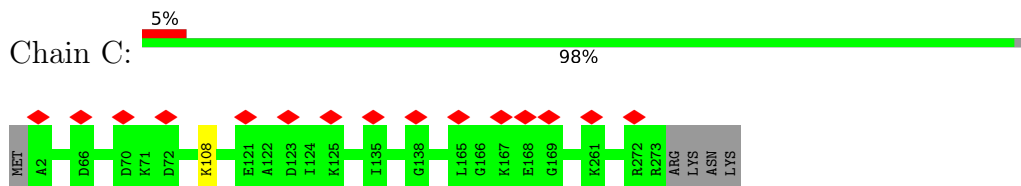
• Molecule 6: 50S ribosomal protein L31



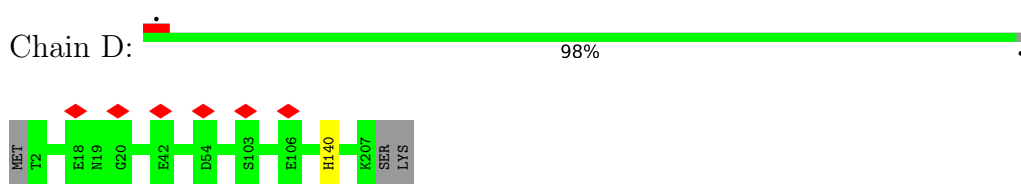
• Molecule 7: 5S ribosomal RNA



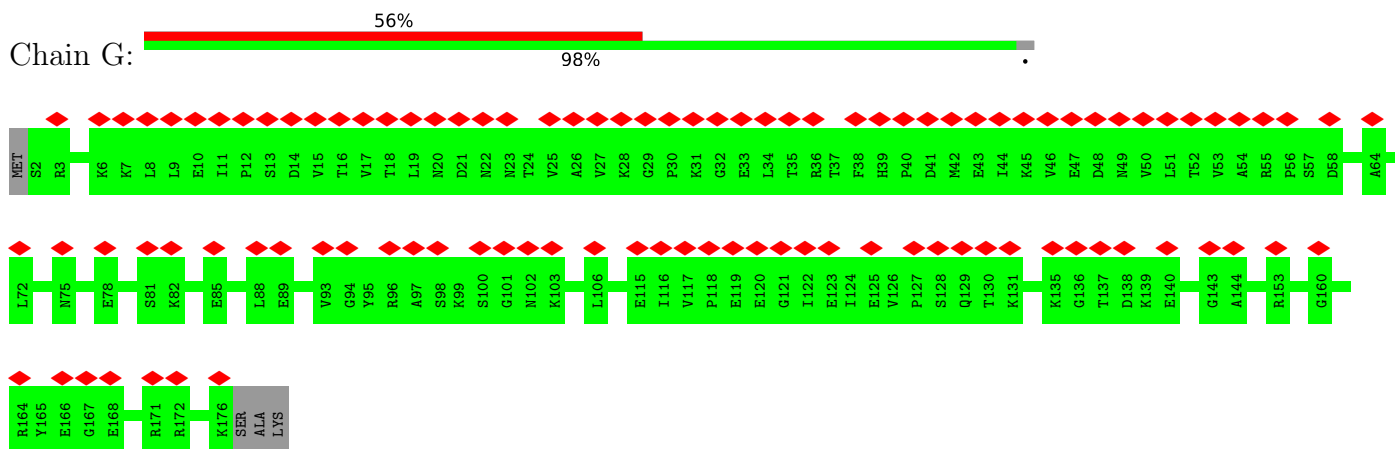
• Molecule 8: 50S ribosomal protein L2



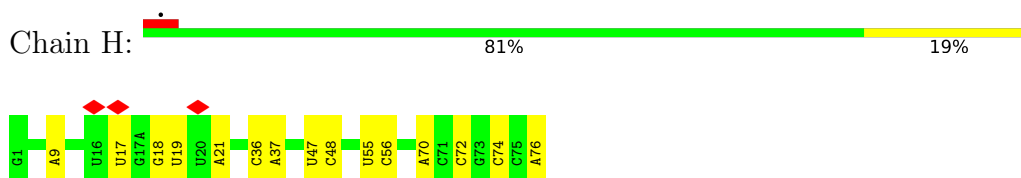
• Molecule 9: 50S ribosomal protein L3



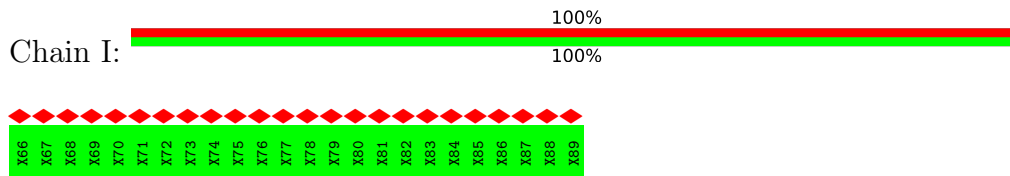
- Molecule 12: 50S ribosomal protein L6



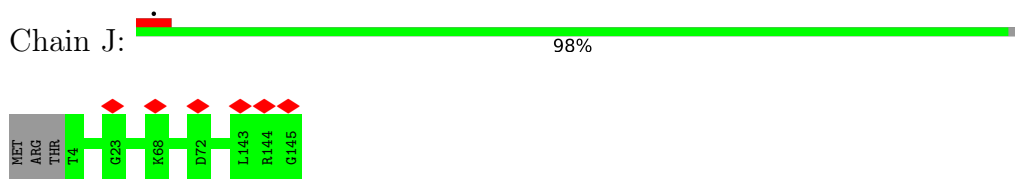
- Molecule 13: P-site tRNA



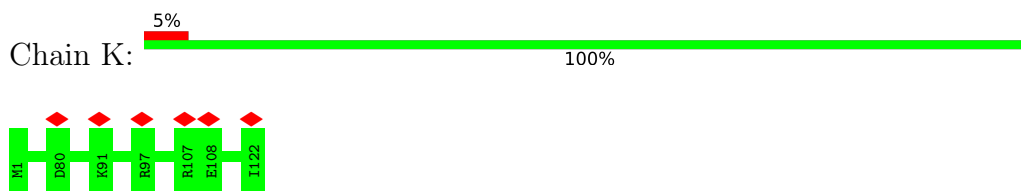
- Molecule 14: Nascent chain



- Molecule 15: 50S ribosomal protein L13

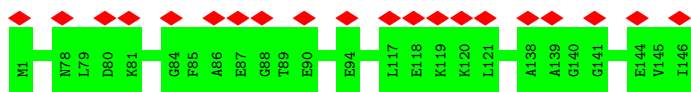


- Molecule 16: 50S ribosomal protein L14

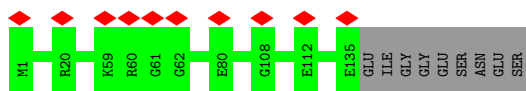


- Molecule 17: 50S ribosomal protein L15

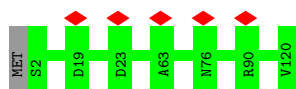




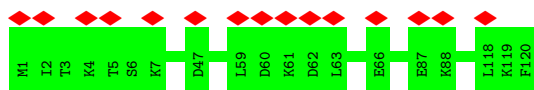
- Molecule 18: 50S ribosomal protein L16



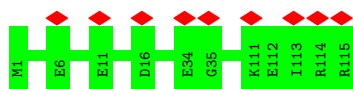
- Molecule 19: 50S ribosomal protein L17



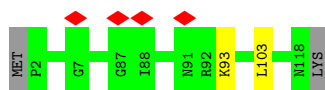
- Molecule 20: 50S ribosomal protein L18



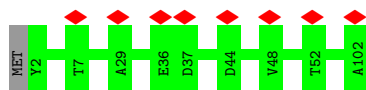
- Molecule 21: 50S ribosomal protein L19



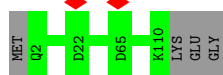
- Molecule 22: 50S ribosomal protein L20



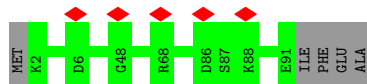
- Molecule 23: 50S ribosomal protein L21



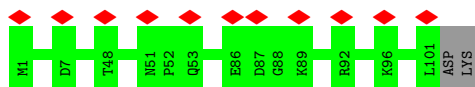
- Molecule 24: 50S ribosomal protein L22



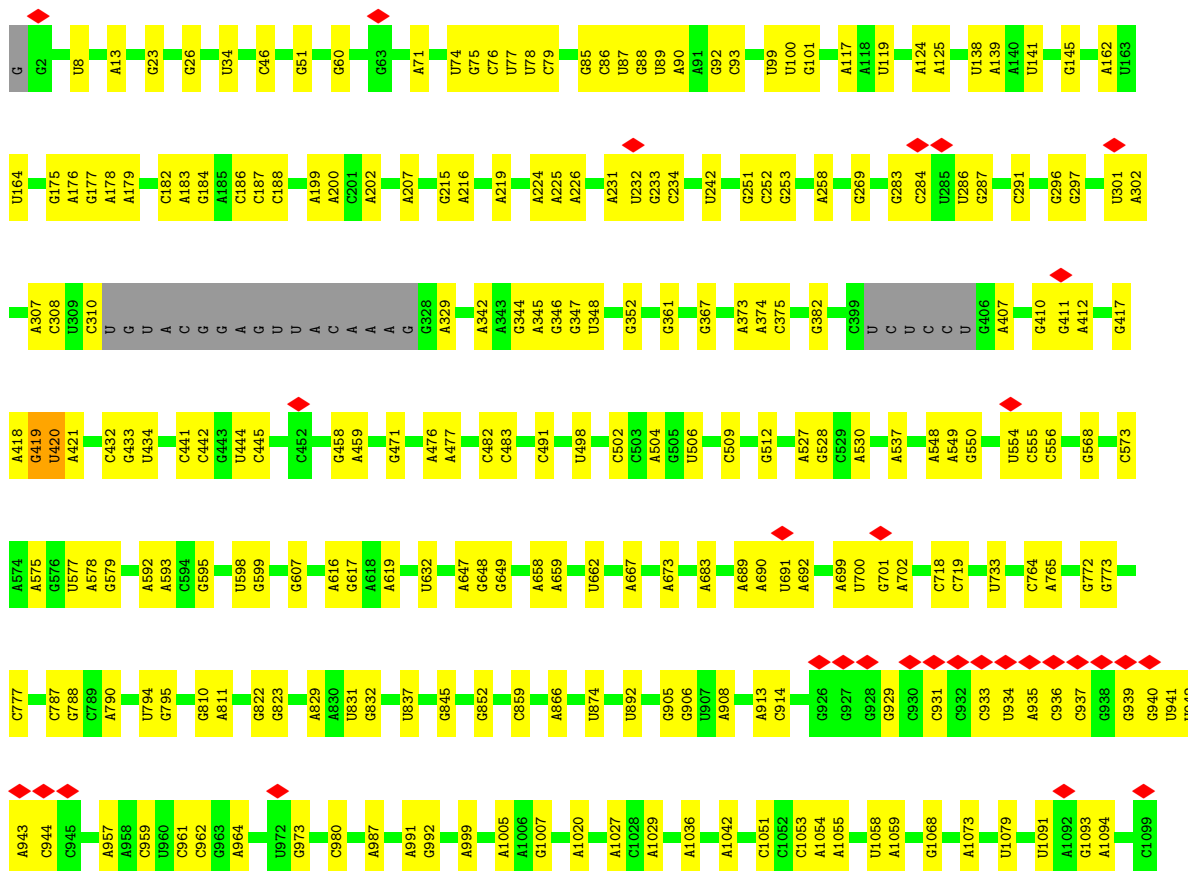
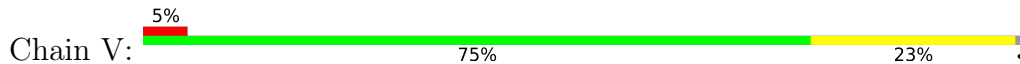
- Molecule 25: 50S ribosomal protein L23



- Molecule 26: 50S ribosomal protein L24

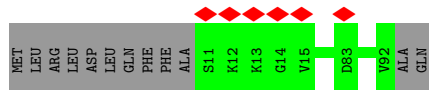
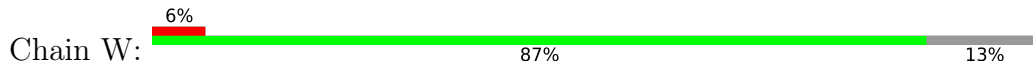


- Molecule 27: 23S ribosomal RNA

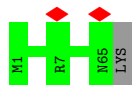


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A1100	G1101	G1102	A1103	U1106	U1107	G1108	G1109	C1110	U1111	U1112	A1113	G1114	A1115	A1116	G1117	C1118	A1119	G1120	C1121	C1122	A1123	C1124	C1125	A1126	U1127	U1128	U1129	A1134	G1135	U1136	G1137	C1138	G1139	U1140	A1141	U1142	U1143	A1144	G1145	A1149	C1150	G1158	U1159	G1160	A1161	A1172	A1173	U1178	A1179	C1180	C1181	G1182																																																	
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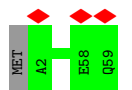
• Molecule 28: 50S ribosomal protein L27



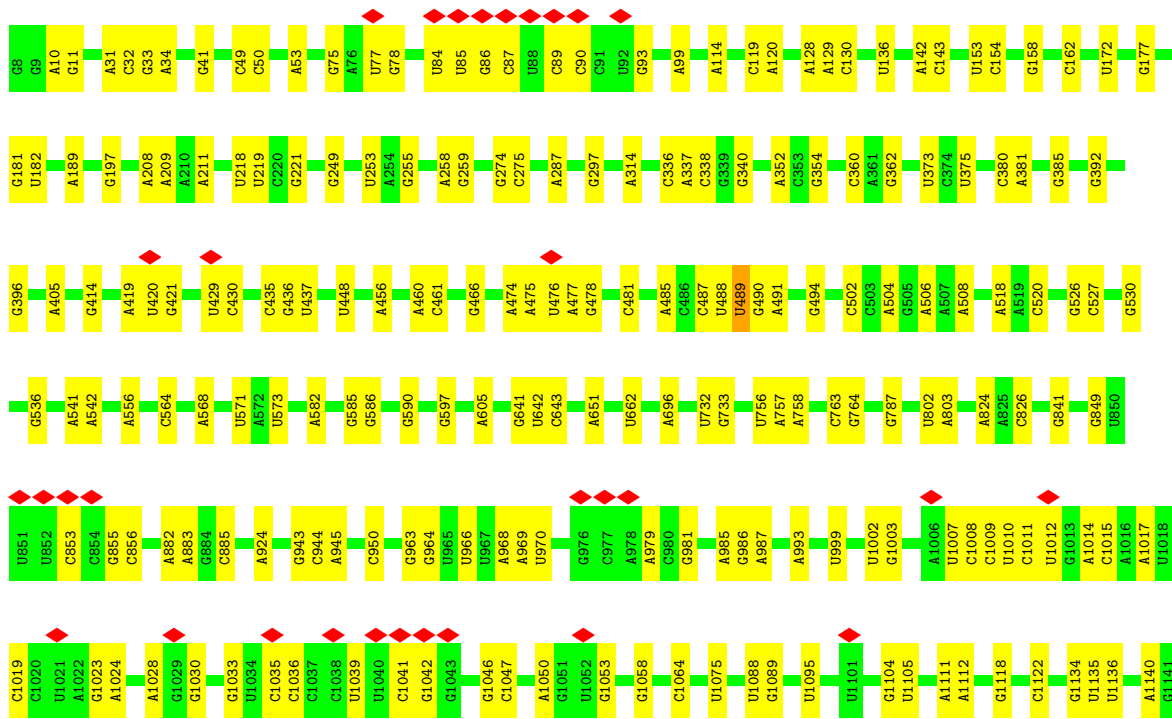
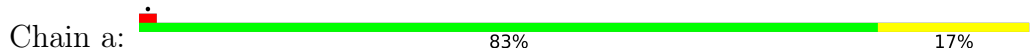
• Molecule 29: 50S ribosomal protein L29

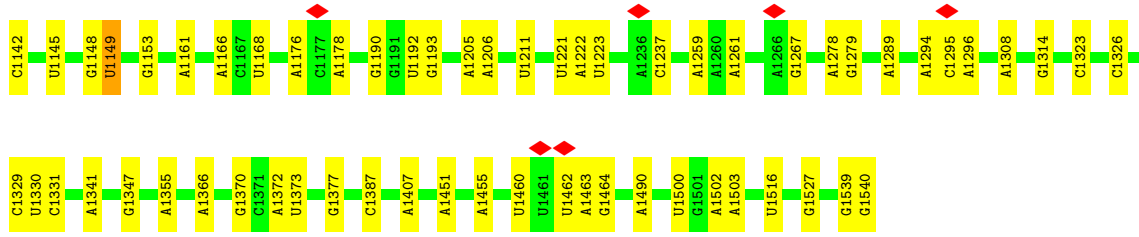


• Molecule 30: 50S ribosomal protein L30

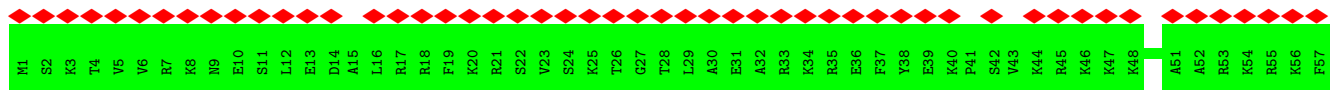


• Molecule 31: 16S ribosomal RNA

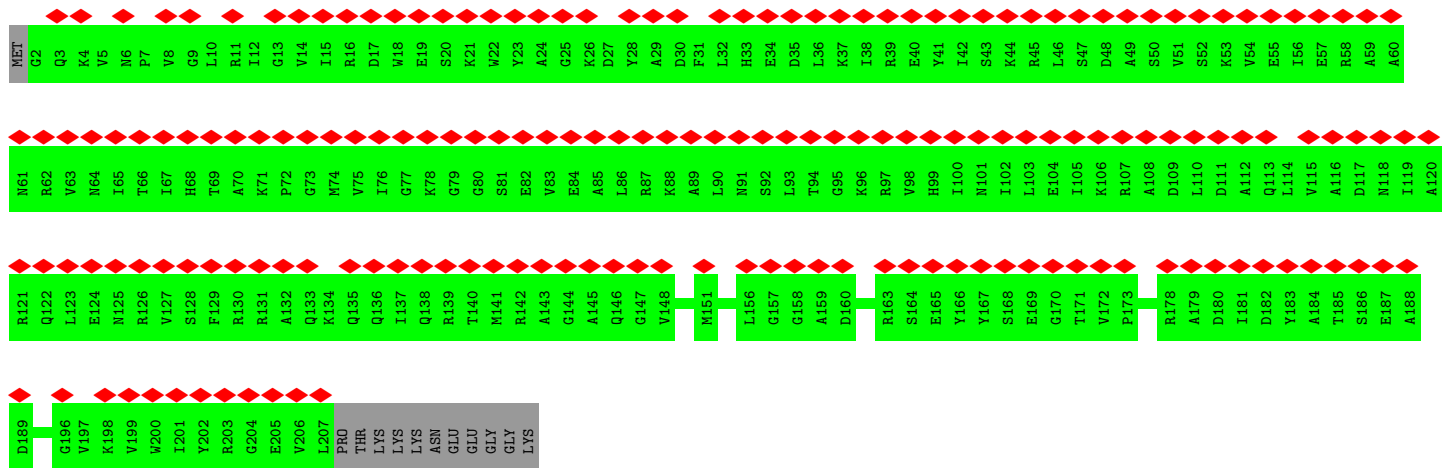
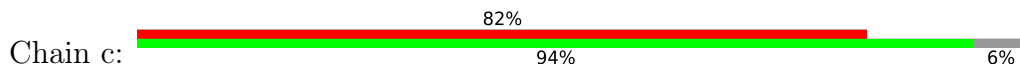




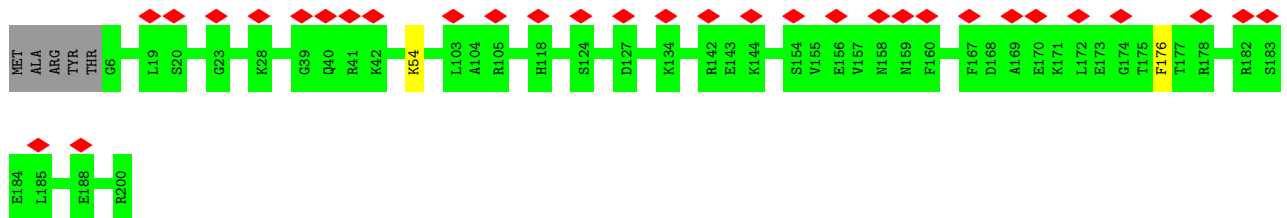
• Molecule 32: 30S ribosomal protein S21



• Molecule 33: 30S ribosomal protein S3

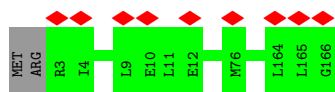


• Molecule 34: 30S ribosomal protein S4

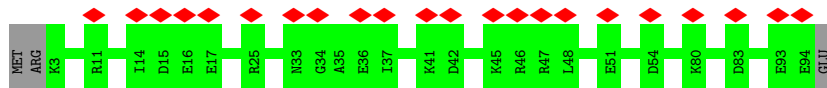


• Molecule 35: 30S ribosomal protein S5

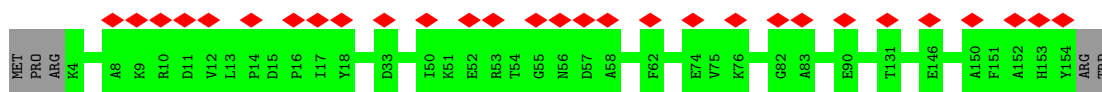




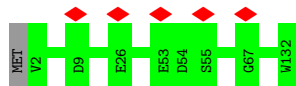
- Molecule 36: 30S ribosomal protein S6



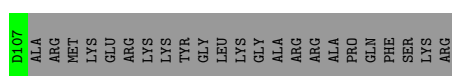
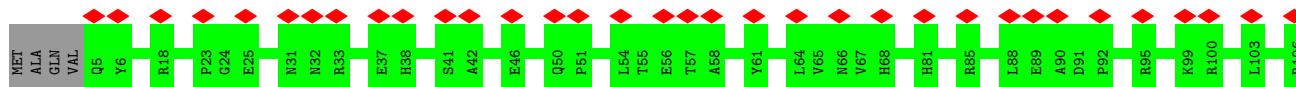
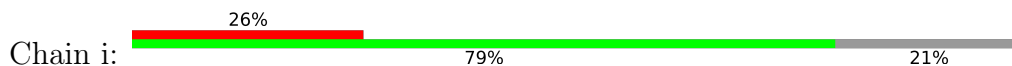
- Molecule 37: 30S ribosomal protein S7



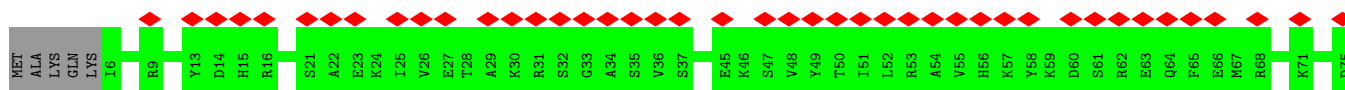
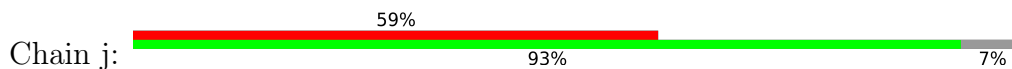
- Molecule 38: 30S ribosomal protein S8



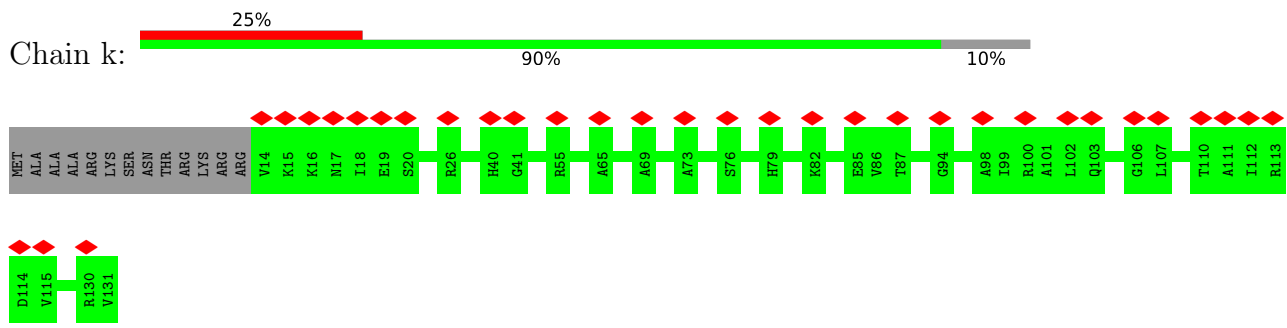
- Molecule 39: 30S ribosomal protein S9



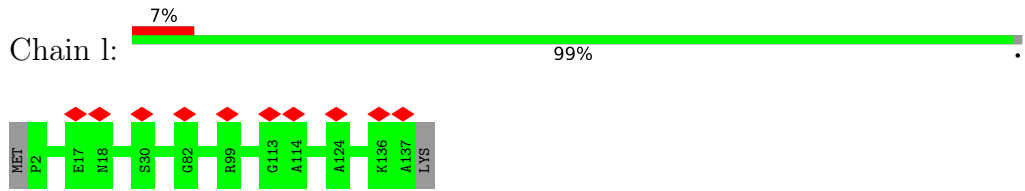
- Molecule 40: 30S ribosomal protein S10



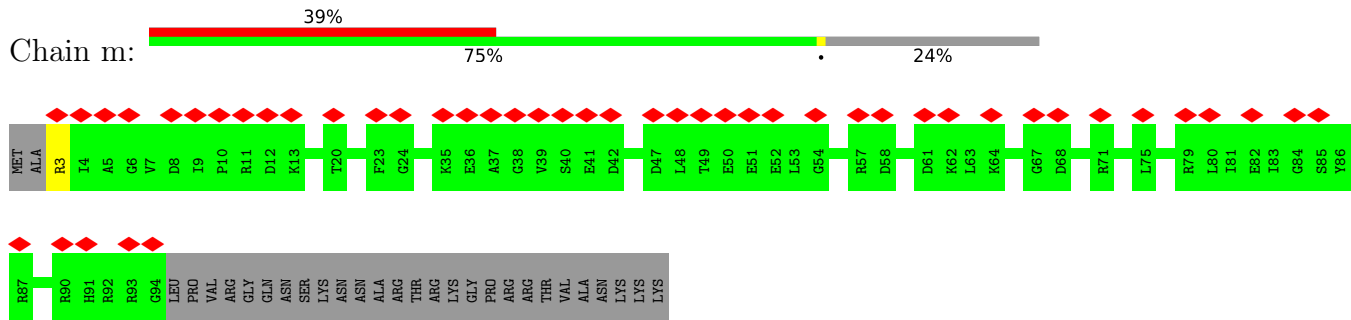
- Molecule 41: 30S ribosomal protein S11



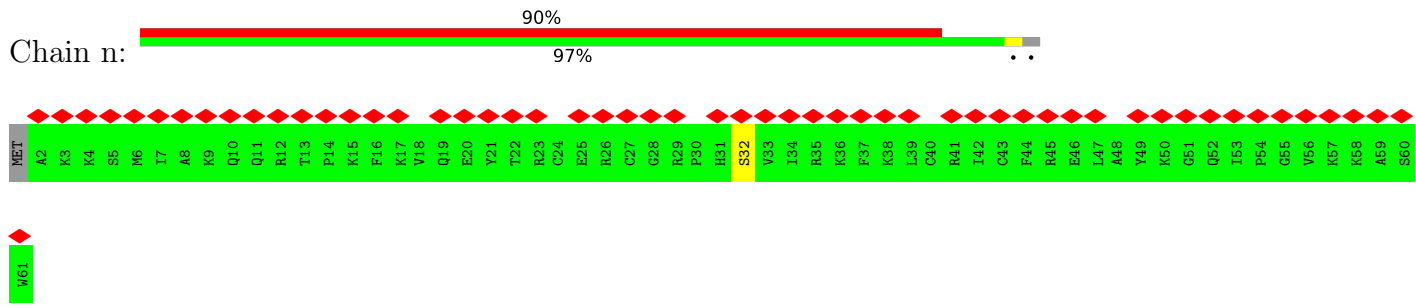
• Molecule 42: 30S ribosomal protein S12



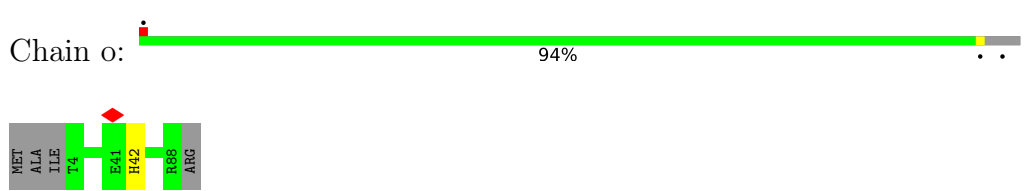
• Molecule 43: 30S ribosomal protein S13



• Molecule 44: 30S ribosomal protein S14

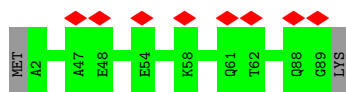


• Molecule 45: 30S ribosomal protein S15

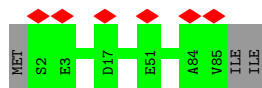


• Molecule 46: 30S ribosomal protein S16

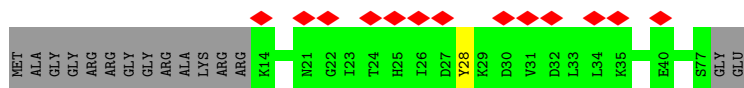
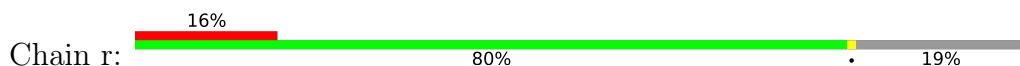




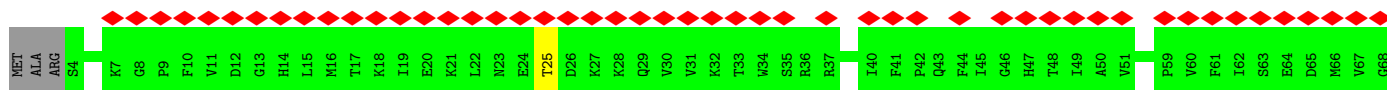
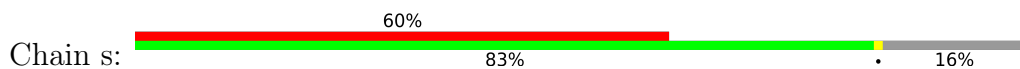
- Molecule 47: 30S ribosomal protein S17



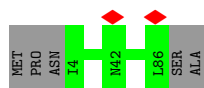
- Molecule 48: 30S ribosomal protein S18



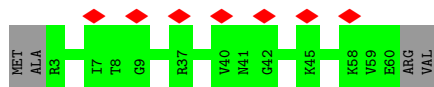
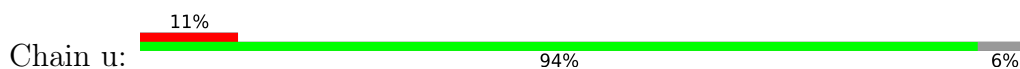
- Molecule 49: 30S ribosomal protein S19



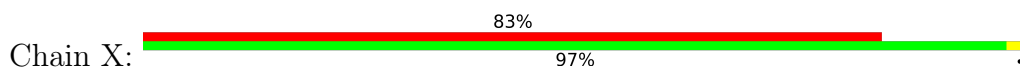
- Molecule 51: 50S ribosomal protein L28

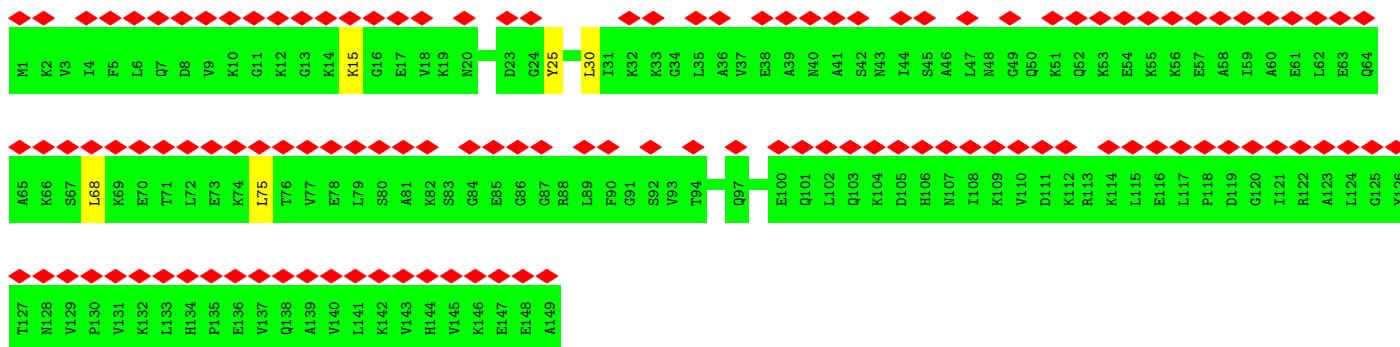


- Molecule 52: 50S ribosomal protein L9



- Molecule 53: 50S ribosomal protein L9





• Molecule 53: mRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	27833	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	46.5	Depositor
Minimum defocus (nm)	750	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	43.238	Depositor
Minimum map value	-15.141	Depositor
Average map value	-0.028	Depositor
Map value standard deviation	1.347	Depositor
Recommended contour level	5.0	Depositor
Map size (\AA)	590.64, 590.64, 590.64	wwPDB
Map dimensions	368, 368, 368	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.605, 1.605, 1.605	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	0	0.25	0/433	0.41	0/574
2	1	0.25	0/406	0.44	0/540
3	2	0.26	0/370	0.42	0/483
4	3	0.24	0/519	0.41	0/680
5	4	0.25	0/299	0.40	0/393
6	6	0.26	0/509	0.40	0/678
7	B	0.17	0/2675	0.73	0/4170
8	C	0.25	0/2120	0.43	0/2845
9	D	0.25	0/1591	0.45	0/2132
10	E	0.24	0/1580	0.41	0/2132
11	F	0.25	0/1405	0.41	0/1887
12	G	0.24	0/1360	0.42	0/1832
13	H	0.16	0/1834	0.72	0/2858
15	J	0.24	0/1146	0.41	0/1542
16	K	0.26	0/927	0.45	0/1245
17	L	0.26	0/1093	0.44	0/1457
18	M	0.25	0/1099	0.41	0/1468
19	N	0.23	0/960	0.41	0/1284
20	O	0.24	0/921	0.43	0/1236
21	P	0.25	0/957	0.43	0/1279
22	Q	0.25	0/952	0.40	0/1266
23	R	0.26	0/797	0.46	0/1070
24	S	0.24	0/851	0.43	0/1146
25	T	0.24	0/731	0.41	0/974
26	U	0.25	0/772	0.43	0/1032
27	V	0.22	0/69444	0.76	20/108334 (0.0%)
28	W	0.25	0/638	0.43	0/847
29	Y	0.24	0/531	0.37	0/707
30	Z	0.23	0/457	0.43	0/613
31	a	0.20	0/36826	0.73	4/57450 (0.0%)
32	b	0.26	0/480	0.42	0/628
33	c	0.25	0/1641	0.43	0/2208
34	d	0.25	0/1598	0.40	0/2147
35	e	0.25	0/1230	0.43	0/1655

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
36	f	0.24	0/766	0.41	0/1031
37	g	0.23	0/1220	0.38	0/1637
38	h	0.25	0/1048	0.45	0/1407
39	i	0.23	0/794	0.43	0/1074
40	j	0.23	0/773	0.40	0/1044
41	k	0.25	0/885	0.44	0/1196
42	l	0.25	0/1069	0.45	0/1435
43	m	0.23	0/744	0.41	0/994
44	n	0.24	0/507	0.40	0/672
45	o	0.23	0/718	0.42	0/960
46	p	0.25	0/708	0.41	0/950
47	q	0.25	0/699	0.42	0/933
48	r	0.24	0/526	0.40	0/705
49	s	0.24	0/640	0.43	0/861
50	t	0.23	0/639	0.39	0/852
51	u	0.23	0/448	0.46	0/596
52	X	0.24	0/1162	0.41	0/1551
53	A	0.72	2/627 (0.3%)	1.17	8/975 (0.8%)
All	All	0.22	2/153125 (0.0%)	0.69	32/229665 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	A	41	C	C1'-N1	5.26	1.56	1.48
53	A	50	C	C1'-N1	5.02	1.56	1.48

The worst 5 of 32 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
27	V	138	U	OP1-P-O3'	-39.33	18.68	105.20
27	V	139	A	OP1-P-OP2	-12.74	100.50	119.60
53	A	32	U	P-O3'-C3'	-9.19	108.67	119.70
27	V	1449	C	P-O3'-C3'	-8.30	109.74	119.70
53	A	37	G	P-O3'-C3'	-8.23	109.82	119.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	
1	0	52/59 (88%)	50 (96%)	2 (4%)	0	100	100
2	1	46/49 (94%)	44 (96%)	2 (4%)	0	100	100
3	2	42/44 (96%)	42 (100%)	0	0	100	100
4	3	62/66 (94%)	60 (97%)	2 (3%)	0	100	100
5	4	35/37 (95%)	33 (94%)	2 (6%)	0	100	100
6	6	61/66 (92%)	60 (98%)	1 (2%)	0	100	100
8	C	270/277 (98%)	260 (96%)	10 (4%)	0	100	100
9	D	204/209 (98%)	193 (95%)	11 (5%)	0	100	100
10	E	203/207 (98%)	193 (95%)	10 (5%)	0	100	100
11	F	174/179 (97%)	165 (95%)	9 (5%)	0	100	100
12	G	173/179 (97%)	165 (95%)	8 (5%)	0	100	100
15	J	140/145 (97%)	133 (95%)	7 (5%)	0	100	100
16	K	120/122 (98%)	117 (98%)	3 (2%)	0	100	100
17	L	144/146 (99%)	139 (96%)	5 (4%)	0	100	100
18	M	133/144 (92%)	132 (99%)	1 (1%)	0	100	100
19	N	117/120 (98%)	113 (97%)	4 (3%)	0	100	100
20	O	118/120 (98%)	113 (96%)	5 (4%)	0	100	100
21	P	113/115 (98%)	108 (96%)	5 (4%)	0	100	100
22	Q	115/119 (97%)	107 (93%)	6 (5%)	2 (2%)	9	42
23	R	99/102 (97%)	88 (89%)	11 (11%)	0	100	100
24	S	107/113 (95%)	102 (95%)	5 (5%)	0	100	100
25	T	88/95 (93%)	87 (99%)	1 (1%)	0	100	100
26	U	99/103 (96%)	92 (93%)	7 (7%)	0	100	100
28	W	80/94 (85%)	76 (95%)	4 (5%)	0	100	100
29	Y	63/66 (96%)	62 (98%)	1 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
30	Z	56/59 (95%)	53 (95%)	3 (5%)	0	100	100
32	b	55/57 (96%)	53 (96%)	2 (4%)	0	100	100
33	c	204/218 (94%)	194 (95%)	10 (5%)	0	100	100
34	d	193/200 (96%)	176 (91%)	17 (9%)	0	100	100
35	e	162/166 (98%)	155 (96%)	7 (4%)	0	100	100
36	f	90/95 (95%)	87 (97%)	3 (3%)	0	100	100
37	g	149/156 (96%)	144 (97%)	5 (3%)	0	100	100
38	h	129/132 (98%)	116 (90%)	13 (10%)	0	100	100
39	i	101/130 (78%)	95 (94%)	6 (6%)	0	100	100
40	j	93/102 (91%)	87 (94%)	6 (6%)	0	100	100
41	k	116/131 (88%)	110 (95%)	6 (5%)	0	100	100
42	l	134/138 (97%)	124 (92%)	10 (8%)	0	100	100
43	m	90/121 (74%)	85 (94%)	5 (6%)	0	100	100
44	n	58/61 (95%)	52 (90%)	5 (9%)	1 (2%)	9	42
45	o	83/89 (93%)	79 (95%)	4 (5%)	0	100	100
46	p	86/90 (96%)	81 (94%)	5 (6%)	0	100	100
47	q	82/87 (94%)	76 (93%)	6 (7%)	0	100	100
48	r	62/79 (78%)	56 (90%)	5 (8%)	1 (2%)	9	43
49	s	75/92 (82%)	69 (92%)	6 (8%)	0	100	100
50	t	81/88 (92%)	79 (98%)	2 (2%)	0	100	100
51	u	56/62 (90%)	54 (96%)	2 (4%)	0	100	100
52	X	147/149 (99%)	135 (92%)	12 (8%)	0	100	100
All	All	5160/5478 (94%)	4894 (95%)	262 (5%)	4 (0%)	54	84

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
22	Q	103	LEU
48	r	28	TYR
44	n	32	SER
22	Q	93	LYS

5.3.2 Protein sidechains

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	
1	0	48/53 (91%)	48 (100%)	0	100	100
2	1	46/47 (98%)	46 (100%)	0	100	100
3	2	39/39 (100%)	39 (100%)	0	100	100
4	3	54/56 (96%)	54 (100%)	0	100	100
5	4	35/35 (100%)	35 (100%)	0	100	100
6	6	53/55 (96%)	53 (100%)	0	100	100
8	C	220/225 (98%)	219 (100%)	1 (0%)	88	94
9	D	167/170 (98%)	166 (99%)	1 (1%)	86	94
10	E	169/170 (99%)	169 (100%)	0	100	100
11	F	151/154 (98%)	151 (100%)	0	100	100
12	G	148/151 (98%)	148 (100%)	0	100	100
15	J	120/123 (98%)	120 (100%)	0	100	100
16	K	101/101 (100%)	101 (100%)	0	100	100
17	L	110/110 (100%)	110 (100%)	0	100	100
18	M	109/116 (94%)	109 (100%)	0	100	100
19	N	99/100 (99%)	99 (100%)	0	100	100
20	O	93/93 (100%)	93 (100%)	0	100	100
21	P	100/100 (100%)	100 (100%)	0	100	100
22	Q	96/98 (98%)	96 (100%)	0	100	100
23	R	83/84 (99%)	83 (100%)	0	100	100
24	S	90/93 (97%)	90 (100%)	0	100	100
25	T	81/85 (95%)	81 (100%)	0	100	100
26	U	85/87 (98%)	85 (100%)	0	100	100
28	W	64/74 (86%)	64 (100%)	0	100	100
29	Y	56/57 (98%)	56 (100%)	0	100	100
30	Z	52/53 (98%)	52 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	b	51/51 (100%)	51 (100%)	0	100	100
33	c	168/178 (94%)	168 (100%)	0	100	100
34	d	169/173 (98%)	167 (99%)	2 (1%)	71	87
35	e	128/130 (98%)	128 (100%)	0	100	100
36	f	81/84 (96%)	81 (100%)	0	100	100
37	g	127/132 (96%)	127 (100%)	0	100	100
38	h	111/112 (99%)	111 (100%)	0	100	100
39	i	81/102 (79%)	81 (100%)	0	100	100
40	j	86/92 (94%)	86 (100%)	0	100	100
41	k	90/100 (90%)	90 (100%)	0	100	100
42	l	114/116 (98%)	114 (100%)	0	100	100
43	m	80/104 (77%)	79 (99%)	1 (1%)	69	86
44	n	53/54 (98%)	53 (100%)	0	100	100
45	o	80/83 (96%)	79 (99%)	1 (1%)	69	86
46	p	74/76 (97%)	74 (100%)	0	100	100
47	q	77/80 (96%)	77 (100%)	0	100	100
48	r	56/64 (88%)	56 (100%)	0	100	100
49	s	69/81 (85%)	68 (99%)	1 (1%)	67	85
50	t	66/70 (94%)	66 (100%)	0	100	100
51	u	47/50 (94%)	47 (100%)	0	100	100
52	X	124/124 (100%)	119 (96%)	5 (4%)	31	64
All	All	4401/4585 (96%)	4389 (100%)	12 (0%)	92	97

5 of 12 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
52	X	15	LYS
52	X	25	TYR
52	X	75	LEU
52	X	30	LEU
34	d	176	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
34	d	137	GLN
36	f	27	ASN
40	j	78	ASN
46	p	72	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
13	H	76/77 (98%)	14 (18%)	2 (2%)
27	V	2881/2928 (98%)	637 (22%)	62 (2%)
31	a	1532/1533 (99%)	266 (17%)	0
53	A	25/26 (96%)	12 (48%)	5 (20%)
7	B	111/112 (99%)	28 (25%)	4 (3%)
All	All	4625/4676 (98%)	957 (20%)	73 (1%)

5 of 957 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
7	B	10	G
7	B	11	A
7	B	12	U
7	B	22	G
7	B	23	U

5 of 73 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
27	V	2336	G
53	A	39	U
27	V	2454	A
27	V	2805	A
27	V	1264	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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

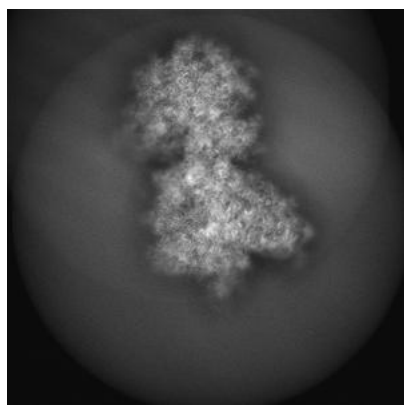
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14157. These allow visual inspection of the internal detail of the map and identification of artifacts.

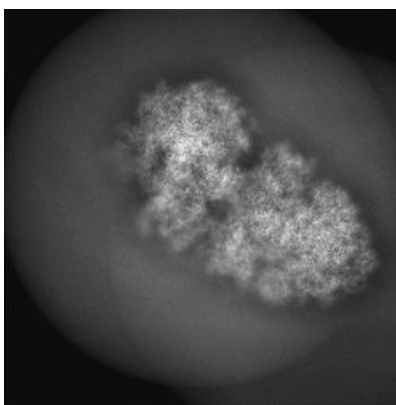
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

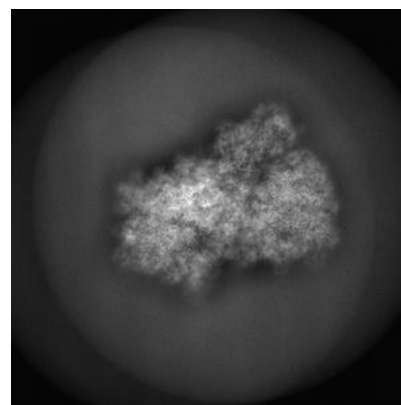
6.1.1 Primary map



X



Y

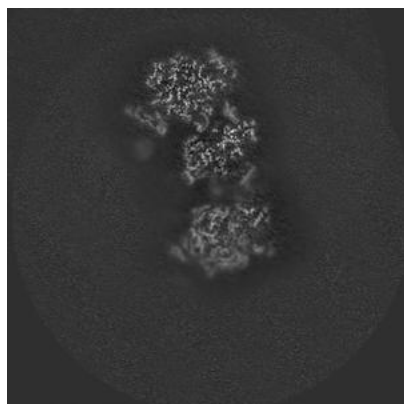


Z

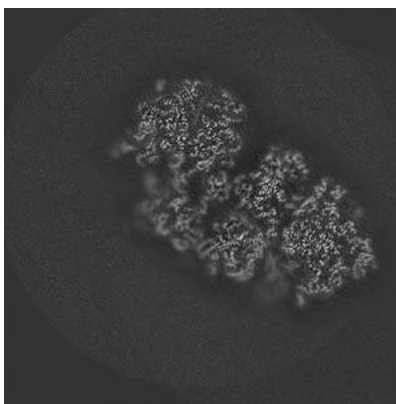
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

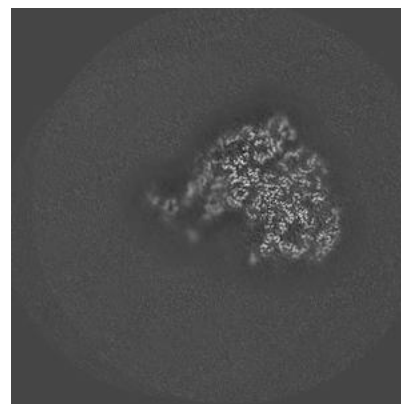
6.2.1 Primary map



X Index: 184



Y Index: 184

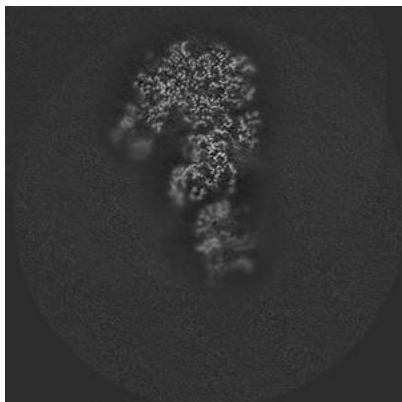


Z Index: 184

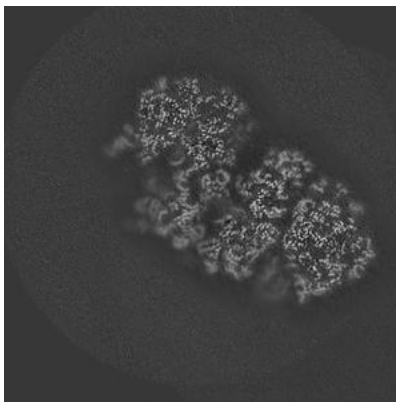
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

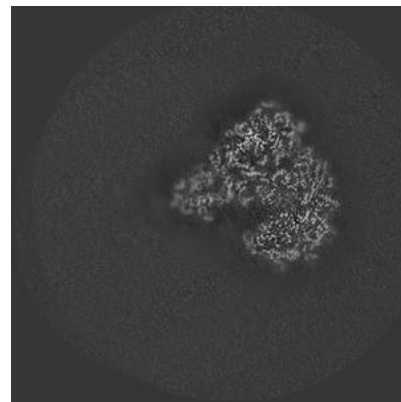
6.3.1 Primary map



X Index: 163



Y Index: 187



Z Index: 169

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 5.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

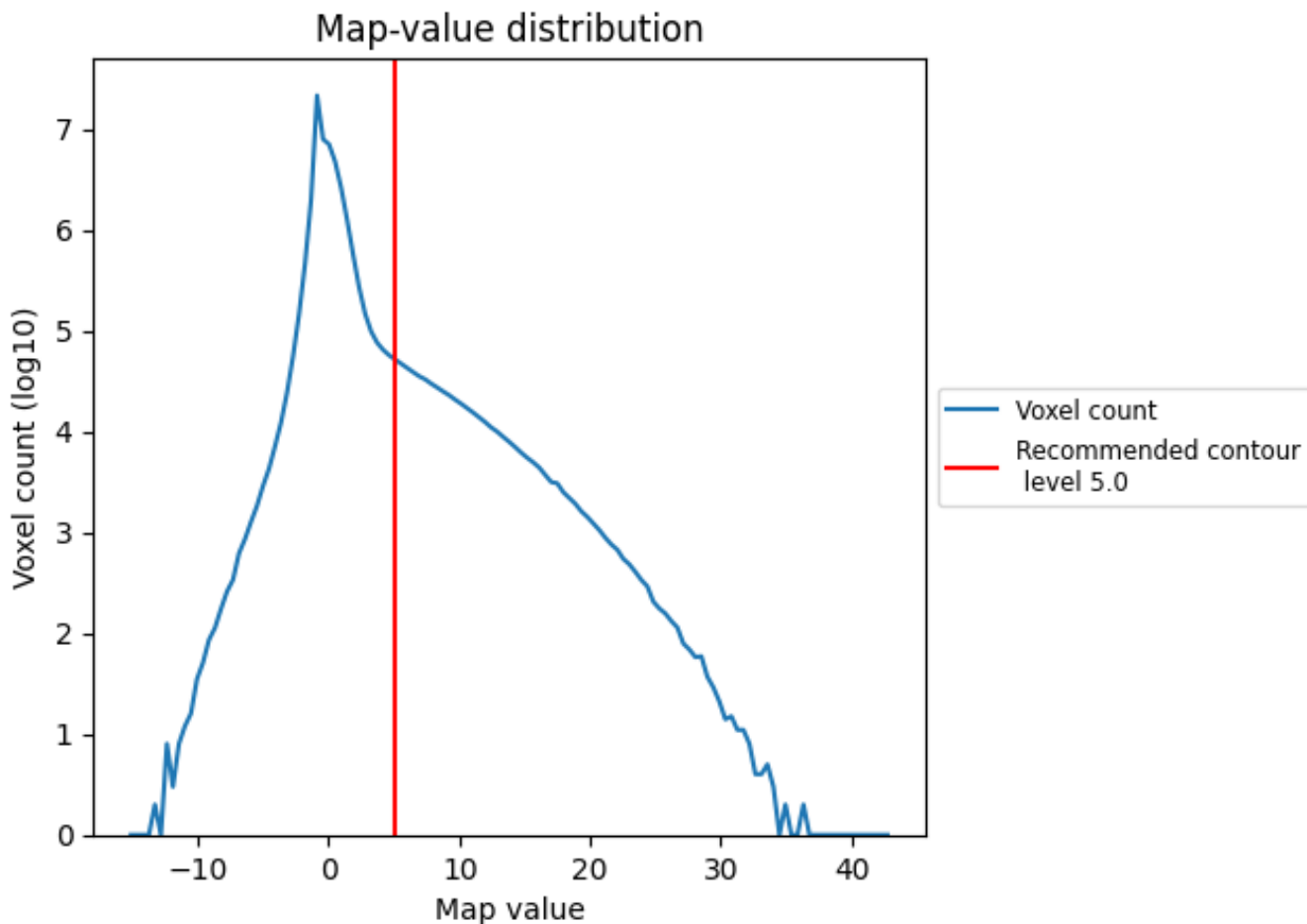
6.5 Mask visualisation

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

7 Map analysis [i](#)

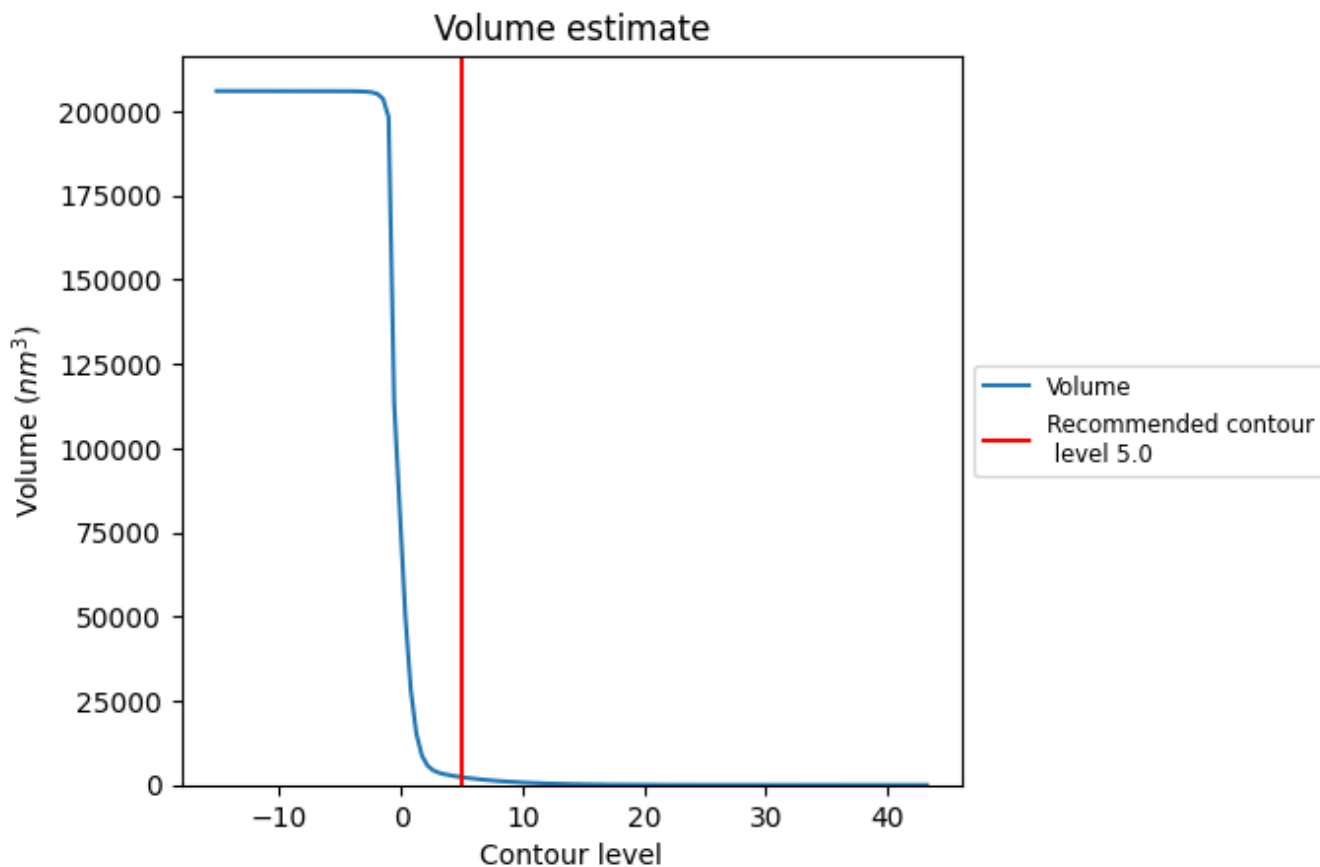
This section contains the results of statistical analysis of the map.

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.

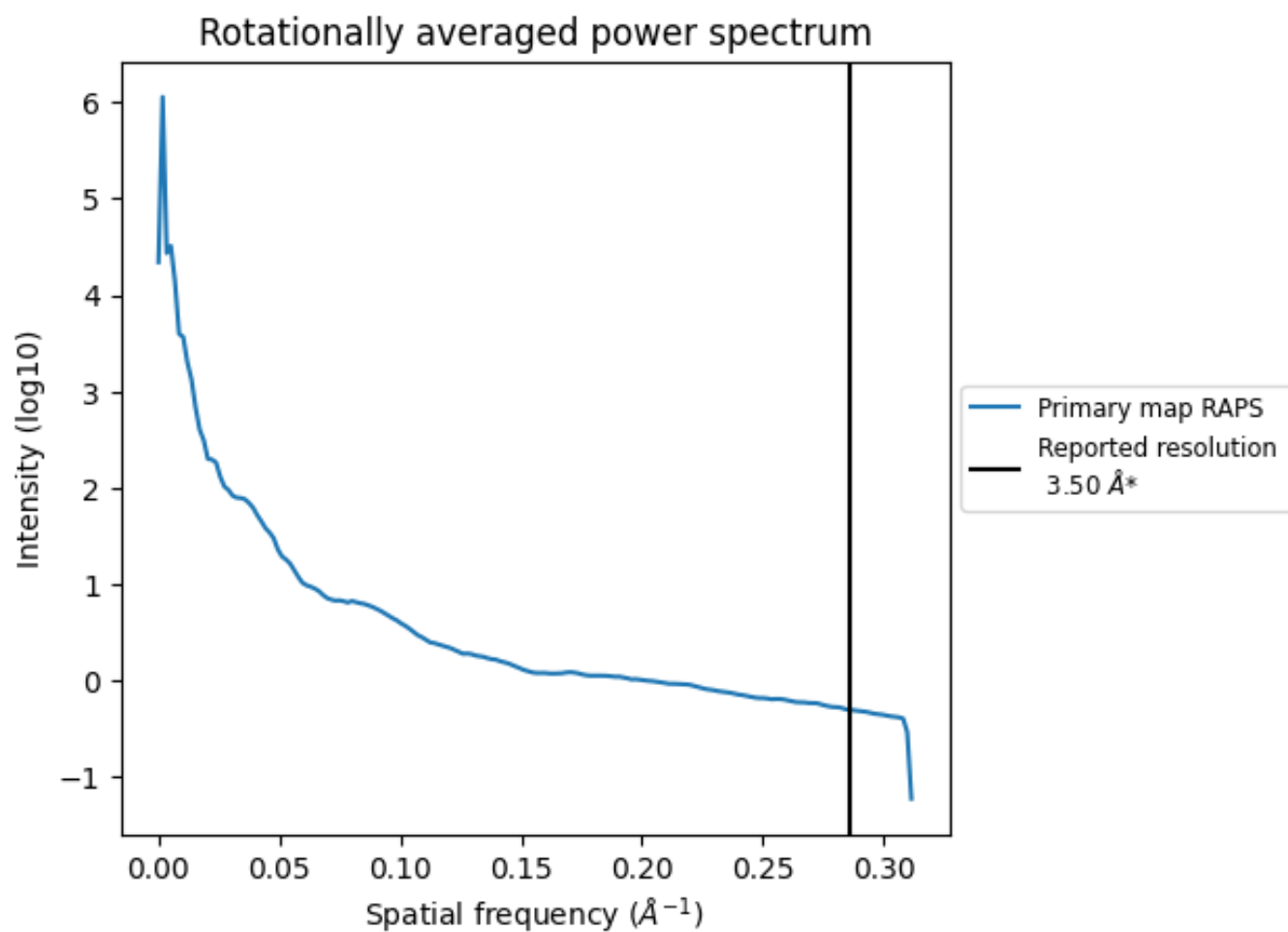
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2302 nm³; this corresponds to an approximate mass of 2079 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 0.286 Å⁻¹

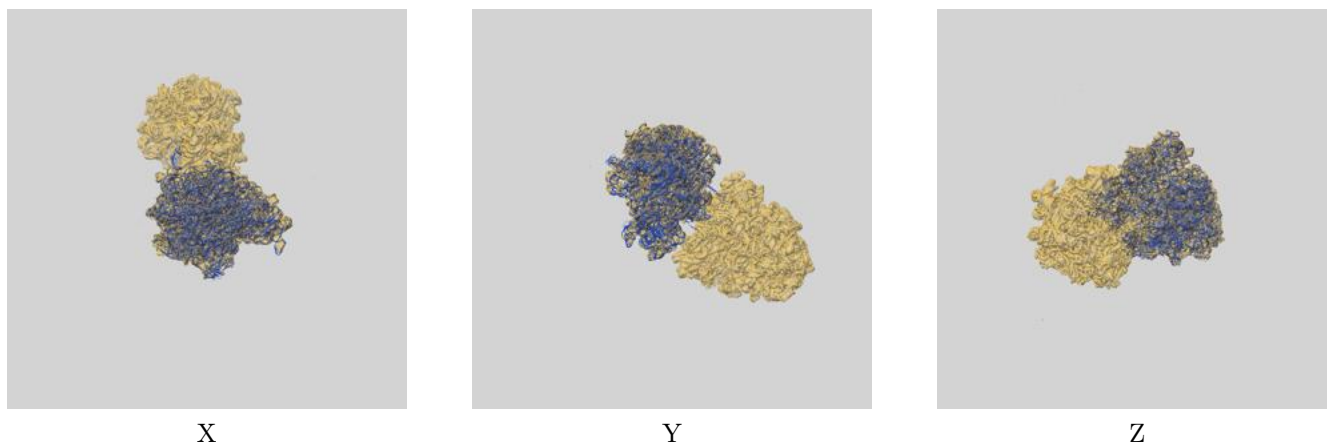
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

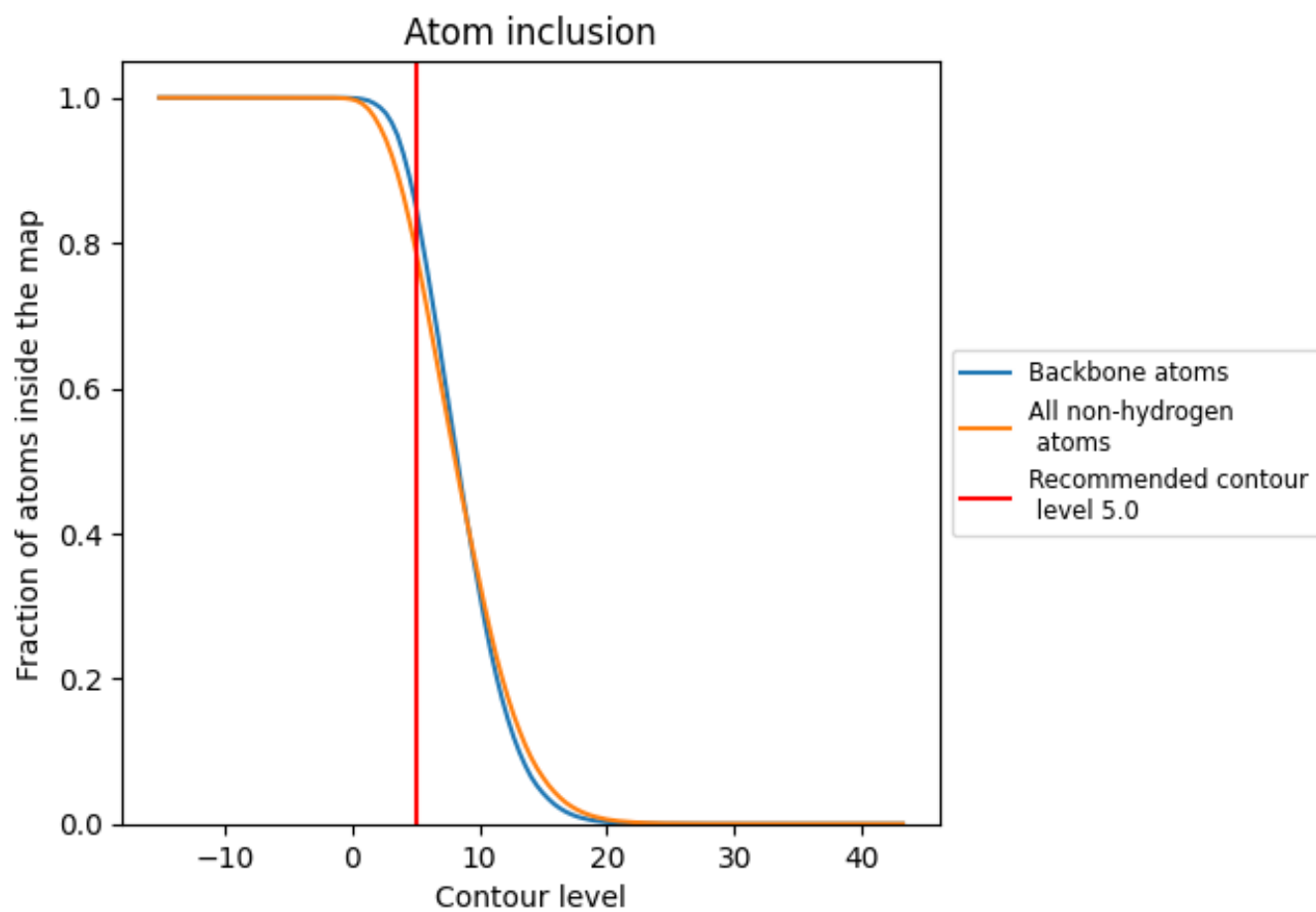
This section contains information regarding the fit between EMDB map EMD-14157 and PDB model 7QV1. Per-residue inclusion information can be found in section 3 on page 13.

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 5.0 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 Atom inclusion [i](#)



At the recommended contour level, 85% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.