



wwPDB EM Validation Summary Report ⓘ

Jun 24, 2026 – 12:57 PM EDT

PDB ID : 6OSK / pdb_00006osk
EMDB ID : EMD-20184
Title : RF1 accommodated 70S complex at 60 ms
Authors : Fu, Z.; Indrisiunaite, G.; Kaledhonkar, S.; Shah, B.; Sun, M.; Chen, B.; Grassucci, R.A.; Ehrenberg, M.; Frank, J.
Deposited on : 2019-05-01
Resolution : 3.60 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:

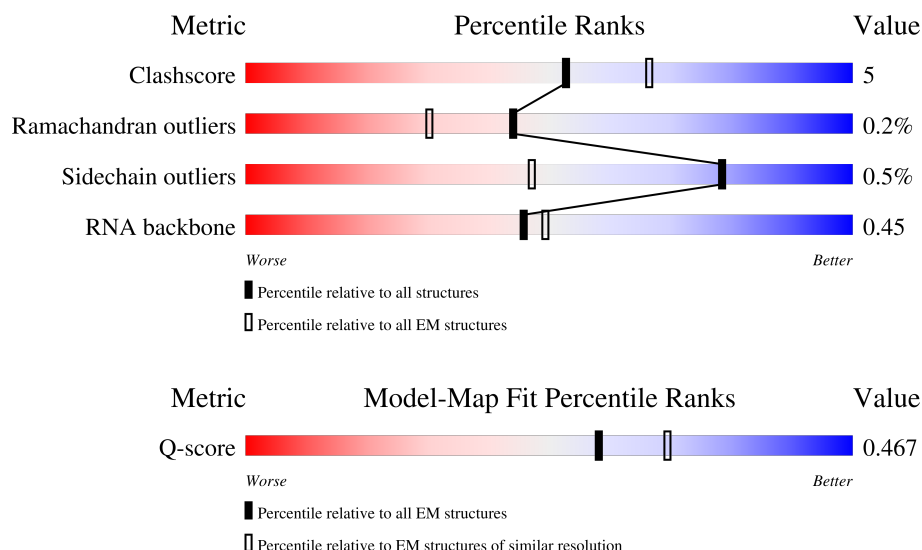
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 3.60 Å.

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



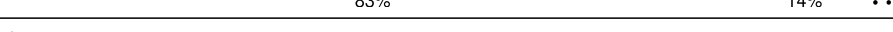
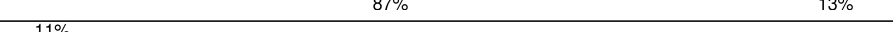
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	12797 (3.10 - 4.10)

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	2903	
2	2	1534	
3	3	120	

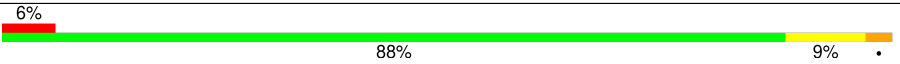
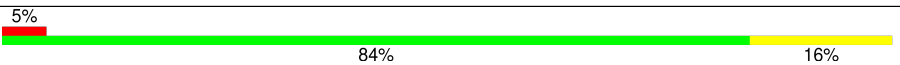
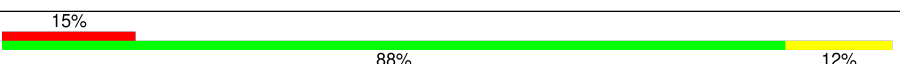
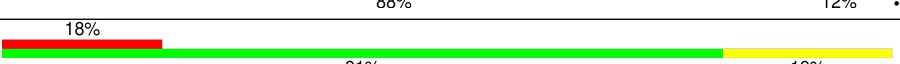
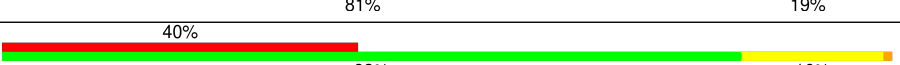
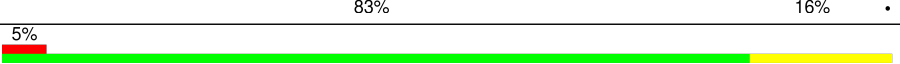
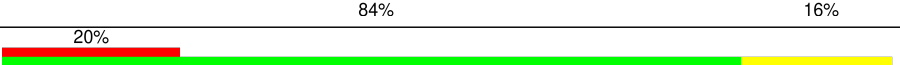
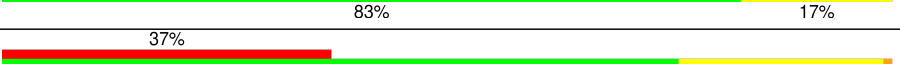
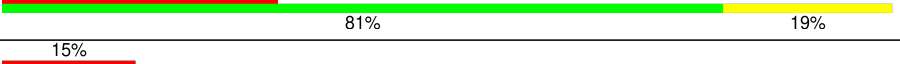
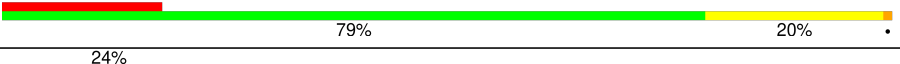
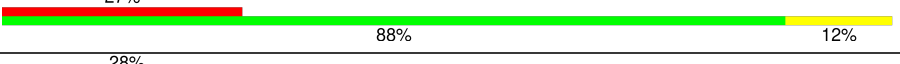
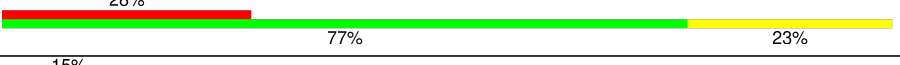
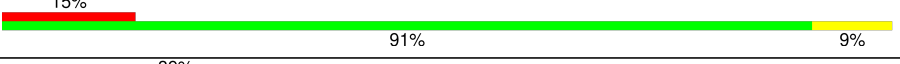
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Mol	Chain	Length	Quality of chain
4	4	9	
5	B	271	
6	C	209	
7	D	201	
8	E	177	
9	F	175	
10	G	149	
11	J	142	
12	K	123	
13	L	144	
14	M	136	
15	N	119	
16	O	116	
17	P	114	
18	Q	117	
19	R	103	
20	S	110	
21	T	94	
22	U	103	
23	V	94	
24	W	76	
25	X	77	
26	Y	62	
27	Z	58	
28	a	66	

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Mol	Chain	Length	Quality of chain
29	b	56	
30	c	52	
31	d	46	
32	e	64	
33	f	38	
34	g	225	
35	h	208	
36	i	205	
37	j	156	
38	k	104	
39	l	151	
40	m	129	
41	n	127	
42	o	99	
43	p	117	
44	q	123	
45	r	116	
46	s	100	
47	t	88	
48	u	82	
49	v	80	
50	w	66	
51	x	83	
52	y	86	
53	z	70	

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Mol	Chain	Length	Quality of chain
54	A	259	36% 82% 17%
55	5	76	20% 59% 33% 7%
56	6	3	67% 100%

2 Entry composition

There are 58 unique types of molecules in this entry. The entry contains 146659 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 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	1	2903	Total	C	N	O	P	0	0
			62336	27816	11470	20147	2903		

- Molecule 2 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	2	1534	Total	C	N	O	P	0	0
			32929	14693	6041	10661	1534		

- Molecule 3 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	3	120	Total	C	N	O	P	0	0
			2569	1144	468	837	120		

- Molecule 4 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	4	9	Total	C	N	O	P	0	0
			184	83	26	66	9		

- Molecule 5 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	B	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 6 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	C	209	Total	C	N	O	S	0	0
			1565	979	288	294	4		

- Molecule 7 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	D	201	Total	C	N	O	S	0	0
			1552	974	283	290	5		

- Molecule 8 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	E	177	Total	C	N	O	S	0	0
			1410	899	249	256	6		

- Molecule 9 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	F	175	Total	C	N	O	S	0	0
			1313	826	241	244	2		

- Molecule 10 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	G	149	Total	C	N	O	S	0	0
			1111	699	197	214	1		

- Molecule 11 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	J	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 12 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	K	123	Total	C	N	O	S	0	0
			946	593	181	166	6		

- Molecule 13 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	L	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 14 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	M	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 15 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	119	Total	C	N	O	S	0	0
			951	588	195	163	5		

- Molecule 16 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	O	116	Total	C	N	O	0	0
			892	552	178	162		

- Molecule 17 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	P	114	Total	C	N	O	S	0	0
			917	574	179	163	1		

- Molecule 18 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	Q	117	Total	C	N	O	0	0
			947	604	192	151		

- Molecule 19 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	R	103	Total	C	N	O	S	0	0
			816	516	153	145	2		

- Molecule 20 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	S	110	Total	C	N	O	S	0	0
			857	532	166	156	3		

- Molecule 21 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	T	94	Total	C	N	O	S	0	0
			746	470	140	134	2		

- Molecule 22 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	U	103	Total	C	N	O	S	0	0
			788	498	148	142			

- Molecule 23 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	V	94	Total	C	N	O	S	0	0
			753	479	137	134	3		

- Molecule 24 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	W	76	Total	C	N	O	S	0	0
			582	360	117	104	1		

- Molecule 25 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	X	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 26 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Y	62	Total	C	N	O	S	0	0
			501	308	98	94	1		

- Molecule 27 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Z	58	Total	C	N	O	S	0	0
			448	281	87	78	2		

- Molecule 28 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	a	66	Total	C	N	O	S	0	0
			522	323	99	94	6		

- Molecule 29 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	b	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 30 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	c	52	Total	C	N	O	S	0	0
			426	275	78	73			

- Molecule 31 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	d	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 32 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	e	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 33 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	f	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 34 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	g	225	Total	C	N	O	S	0	0
			1760	1113	316	323	8		

- Molecule 35 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	h	208	Total	C	N	O	S	0	0
			1636	1036	307	290	3		

- Molecule 36 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	i	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 37 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	j	156	Total	C	N	O	S	0	0
			1152	717	217	212	6		

- Molecule 38 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	k	104	Total	C	N	O	S	0	0
			848	536	153	152	7		

- Molecule 39 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	l	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

- Molecule 40 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	m	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 41 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	n	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 42 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	o	99	Total	C	N	O	S	0	0
			790	495	151	143	1		

- Molecule 43 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	p	117	Total	C	N	O	S	0	0
			877	540	174	160	3		

- Molecule 44 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	q	123	Total	C	N	O	S	0	0
			957	591	196	165	5		

- Molecule 45 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	r	116	Total	C	N	O	S	0	0
			900	558	181	158	3		

- Molecule 46 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	s	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

- Molecule 47 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	t	88	Total	C	N	O	S	0	0
			714	439	144	130	1		

- Molecule 48 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	u	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 49 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	v	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 50 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	w	66	Total	C	N	O	S	0	0
			544	344	102	97	1		

- Molecule 51 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	x	83	Total	C	N	O	S	0	0
			663	424	126	111	2		

- Molecule 52 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	y	86	Total	C	N	O	S	0	0
			669	414	138	114	3		

- Molecule 53 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	z	70	Total	C	N	O	S	0	0
			589	366	125	97	1		

- Molecule 54 is a protein called Peptide chain release factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	A	259	Total	C	N	O	S	0	0
			2014	1235	382	389	8		

- Molecule 55 is a RNA chain called P-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	5	76	Total	C	N	O	P S	0	0
			1627	727	296	527	76 1		

- Molecule 56 is a protein called FME-PHE-PHE.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	6	3	Total	C	N	O	S	0	0
			32	24	3	4	1		

- Molecule 57 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
57	1	292	Total	Mg	0
			292	292	
57	2	1	Total	Mg	0
			1	1	
57	3	8	Total	Mg	0
			8	8	
57	C	1	Total	Mg	0
			1	1	
57	b	1	Total	Mg	0
			1	1	
57	f	1	Total	Mg	0
			1	1	
57	i	1	Total	Mg	0
			1	1	
57	5	2	Total	Mg	0
			2	2	

- Molecule 58 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
58	a	1	Total	Zn	0
			1	1	
58	f	1	Total	Zn	0
			1	1	

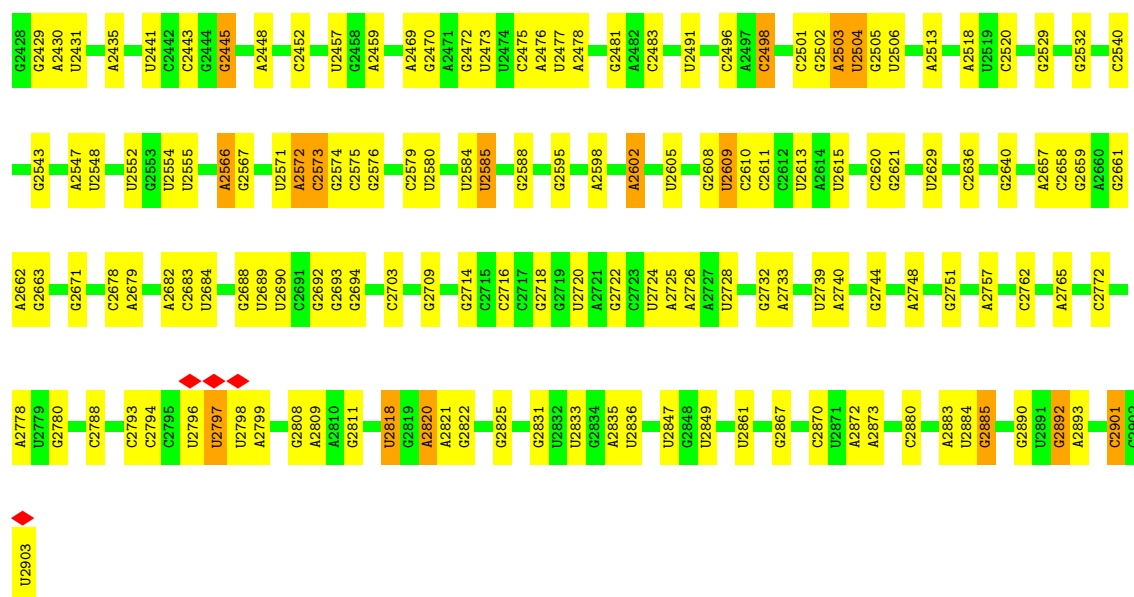
3 Residue-property plots

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.

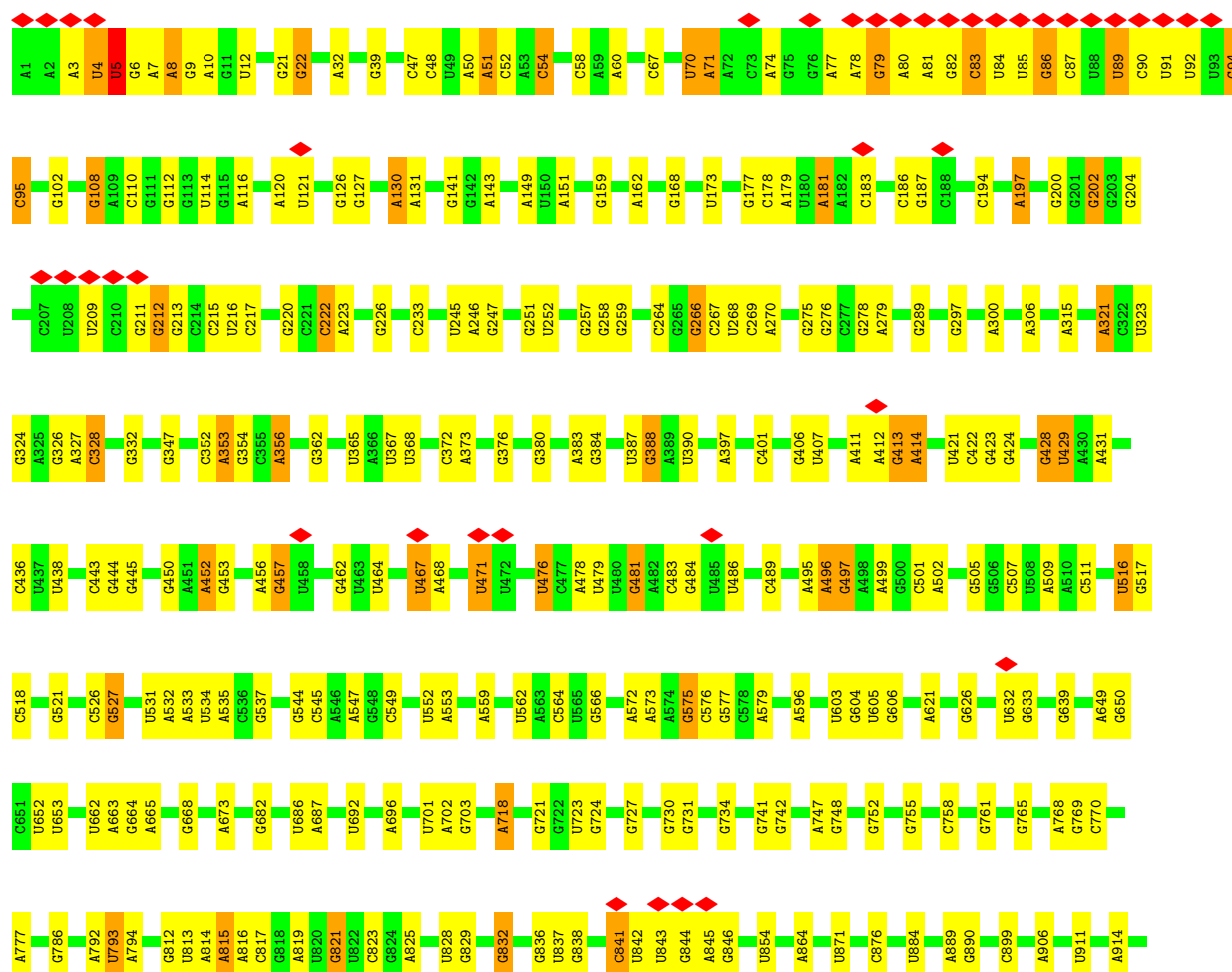
• Molecule 1: 23S ribosomal RNA

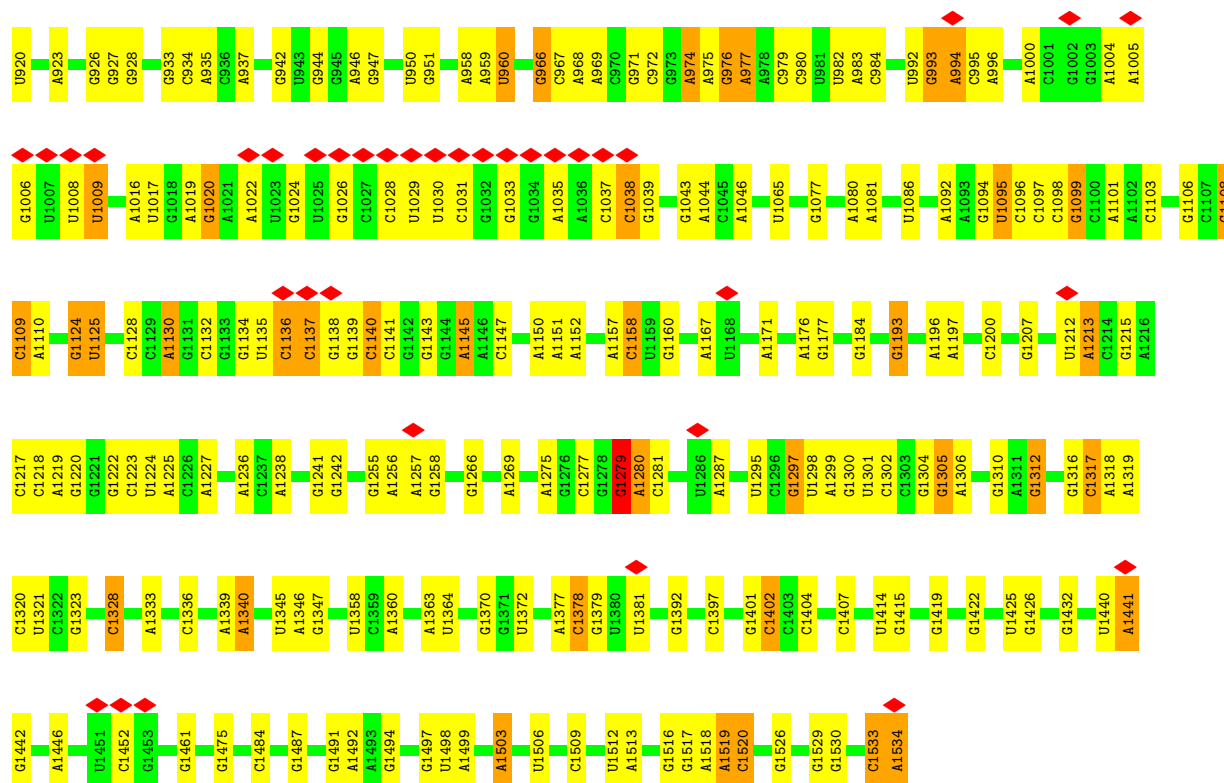


U2320	A2225	G2144	G1811	A1590	U1481	G1112	G1025
G2326	C2226	C2145	A1815	A1591	G1482	G1116	G1026
U2229	U2229	C2146	C1816	C1593	A1490	U1119	A1027
G2238	G2238	A2147	A1819	A1603	C1493	G1122	U1032
G2239	G2239	U2148	U1820	C1604	A1503	A1126	G1034
U2243	U2243	U2149	G1828	C1606	A1508	U1130	A1040
U2244	U2244	C2150	A1829	C1607	A1509	U1131	G1041
G2250	G2250	U2151	G1834	A1608	G1510	U1132	G1042
G2251	G2251	G2152	U1834	A1609	G1514	A1133	C1045
U2343	U2343	C2153	G1835	A1610	A1515	A1054	A1046
U2344	U2344	A2154	A1847	G1613	A1522	A1134	G1047
U2345	U2345	U2155	U1847	C1615	A1523	G1139	G1055
G2346	G2346	G2156	U1852	A1616	G1524	A1142	G1056
C2347	C2347	A2157	U1858	C1617	A1528	A1143	A1057
C2348	C2348	U2158	U1864	A1618	A1532	A1144	U1058
C2349	C2349	G2159	U1865	G1622	A1533	A1155	G1059
A2340	A2340	U2160	A1866	A1626	C1533	G1171	U1060
U2343	U2343	C2161	G1869	A1634	U1534	U1173	U1061
U2344	U2344	G2162	C1870	C1639	A1535	G1176	G1062
U2345	U2345	U2163	A1871	G1644	C1536	U1177	G1063
A2346	A2346	G2164	U1872	G1645	G1537	A1175	C1064
C2347	C2347	C2165	G1873	C1646	G1538	U1176	U1065
C2348	C2348	U2166	C1874	U1647	U1539	U1177	U1066
C2349	C2349	U2167	G1875	G1648	G1540	U1178	A1067
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G2357	G2357	C2175	A1913	G1666	C1567	U1181	U1078
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G2362	G2362	C2180	C1924	U1688	A1579	U1209	A1088
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G2364	G2364	G2182	U1930	U1693	U1583	G1211	U1094
G2365	G2365	U2183	A1936	G1695	U1584	A1213	A1095
G2366	G2366	A2184	A1937	A1698	A1585	A1214	U1097
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G2368	G2368	G2186	U1939	A1700	U1587	G1223	G1099
G2369	G2369	U2187	A2060	U1701	U1588		U1101
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G2371	G2371	A2188		U1703			G1110
G2372	G2372	G2189		U1704			A1111
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G2377	G2377	A2194		U1709			
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G2387	G2387	A2203		U1719			
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G2399	G2399	A2215		U1731			
G2400	G2400	U2216		U1732			
G2401	G2401	G2217		U1733			
G2402	G2402	C2218		U1734			
G2403	G2403	A2219		U1735			
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G2405	G2405	G2221		U1737			
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G2409	G2409	G2225		U1741			
G2410	G2410	C2226		U1742			
G2411	G2411	A2227		U1743			
G2412	G2412	U2228		U1744			
G2413	G2413	G2229		U1745			
G2414	G2414	C2230		U1746			
G2415	G2415	A2231		U1747			
G2416	G2416	U2232		U1748			
G2417	G2417	G2233		U1749			
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G2422	G2422	C2238		U1754			
G2423	G2423	A2239		U1755			
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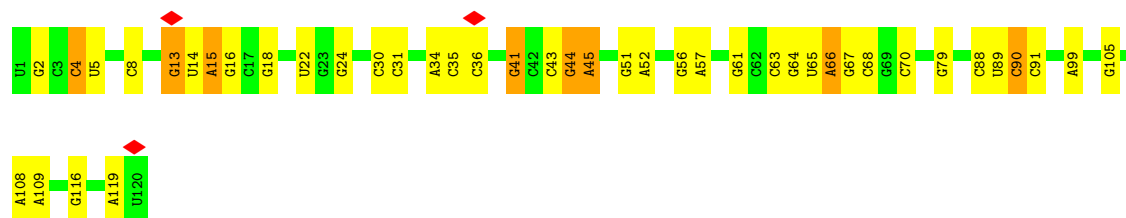


• Molecule 2: 16S ribosomal RNA





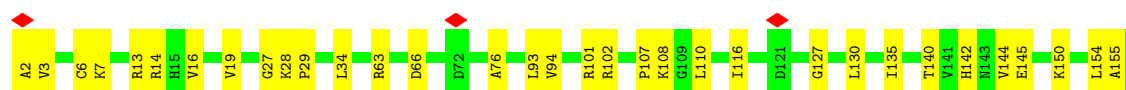
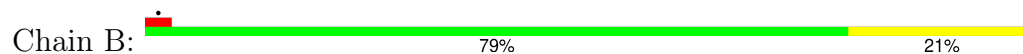
• Molecule 3: 5S ribosomal RNA



• Molecule 4: mRNA

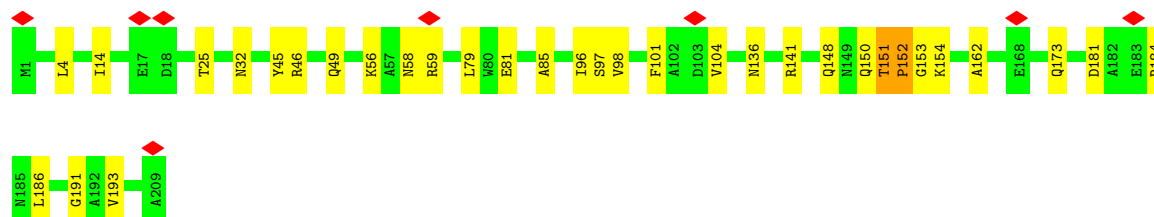
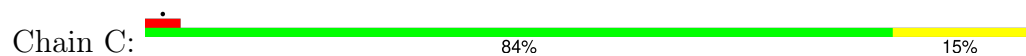


• Molecule 5: 50S ribosomal protein L2

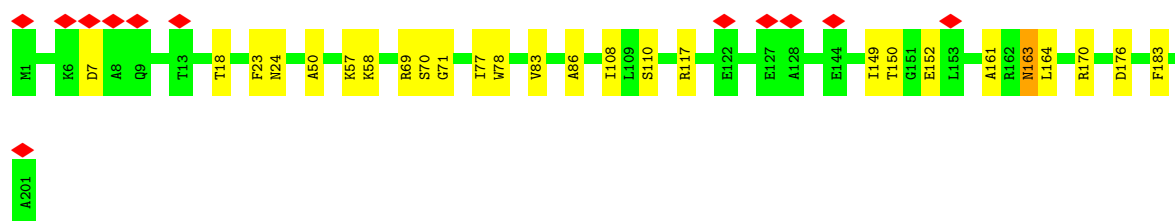
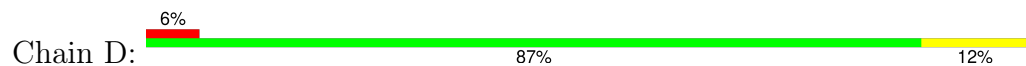




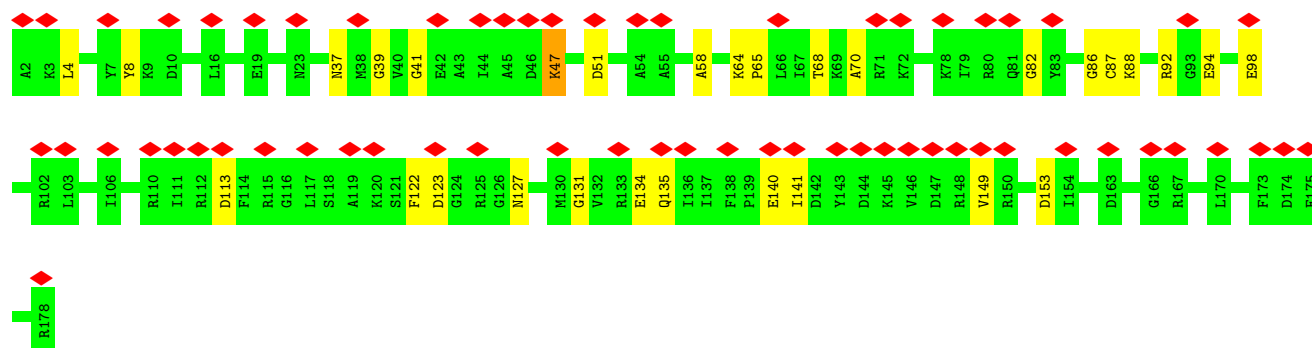
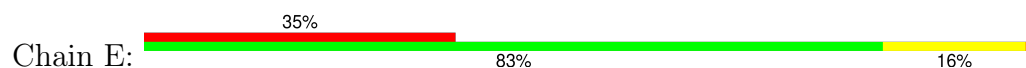
- Molecule 6: 50S ribosomal protein L3



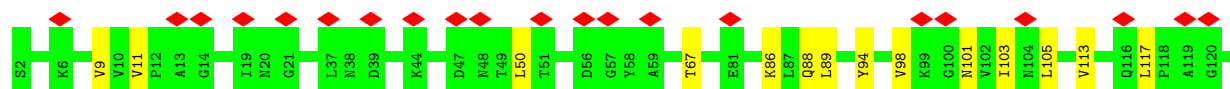
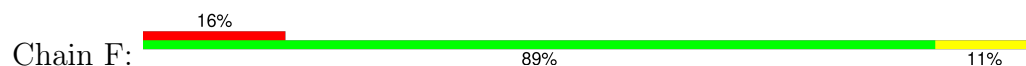
- Molecule 7: 50S ribosomal protein L4

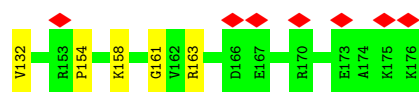


- Molecule 8: 50S ribosomal protein L5

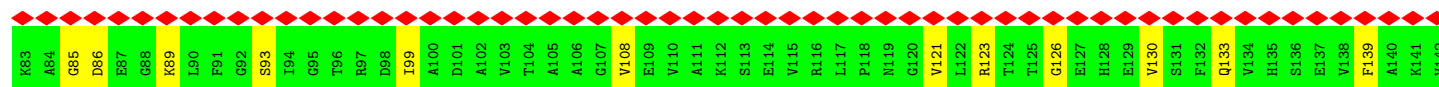
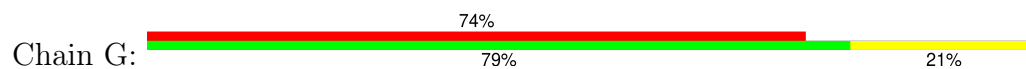


- Molecule 9: 50S ribosomal protein L6

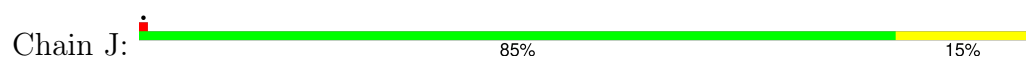




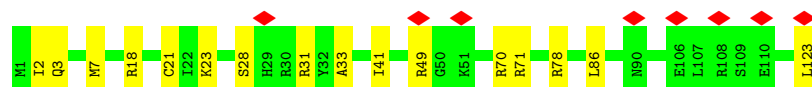
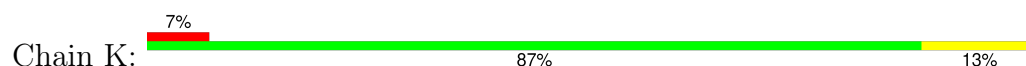
- Molecule 10: 50S ribosomal protein L9



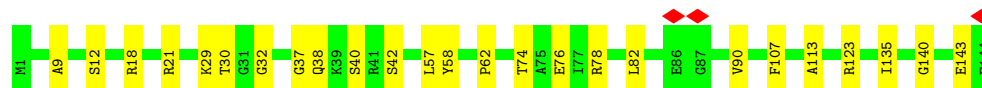
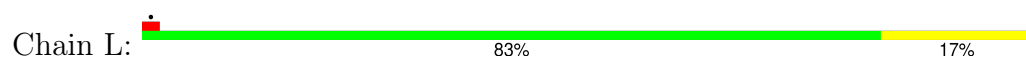
- Molecule 11: 50S ribosomal protein L13



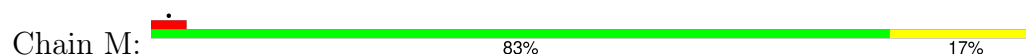
- Molecule 12: 50S ribosomal protein L14



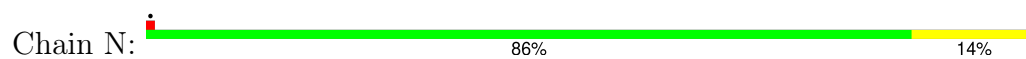
- Molecule 13: 50S ribosomal protein L15



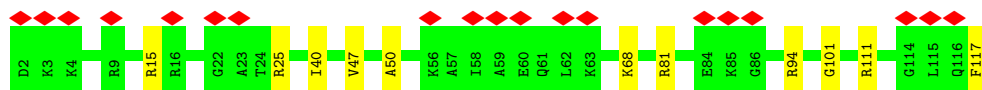
- Molecule 14: 50S ribosomal protein L16



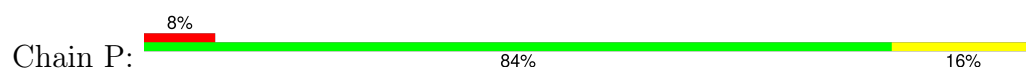
- Molecule 15: 50S ribosomal protein L17



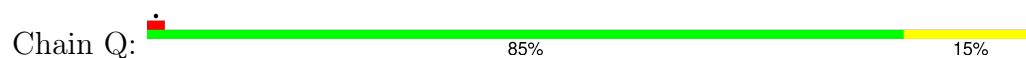
- Molecule 16: 50S ribosomal protein L18



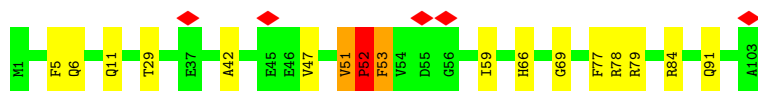
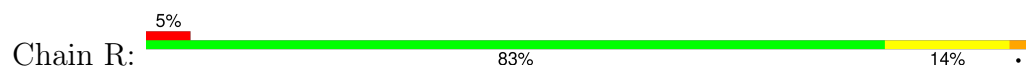
- Molecule 17: 50S ribosomal protein L19



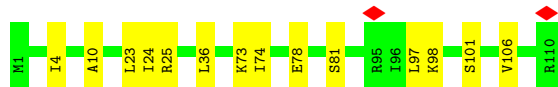
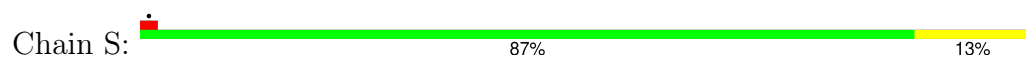
- Molecule 18: 50S ribosomal protein L20



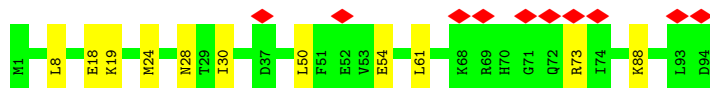
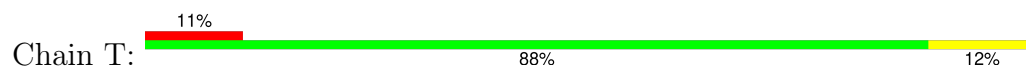
- Molecule 19: 50S ribosomal protein L21



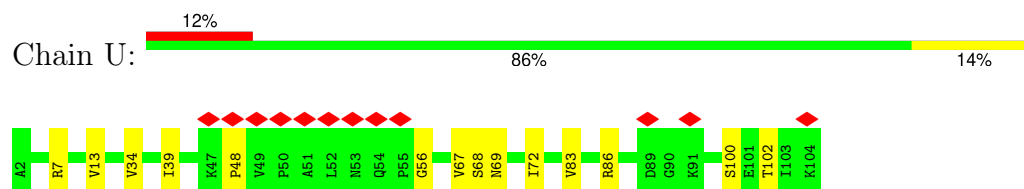
- Molecule 20: 50S ribosomal protein L22



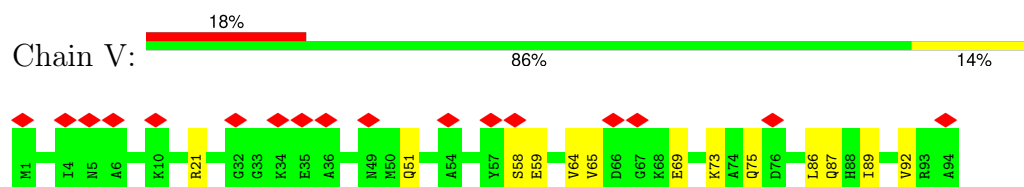
- Molecule 21: 50S ribosomal protein L23



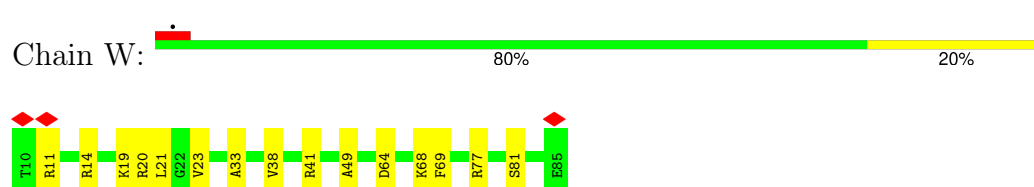
- Molecule 22: 50S ribosomal protein L24



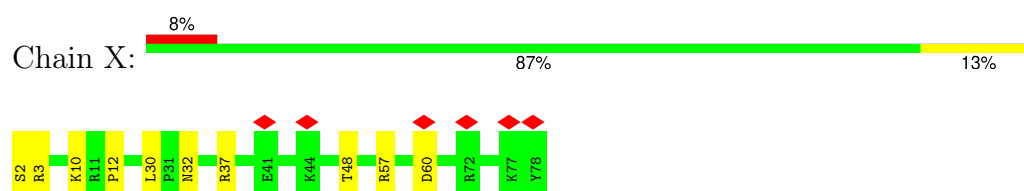
- Molecule 23: 50S ribosomal protein L25



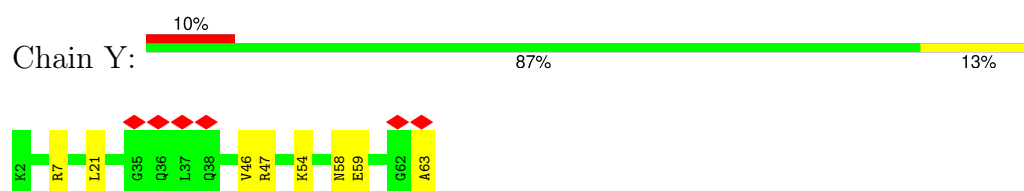
- Molecule 24: 50S ribosomal protein L27



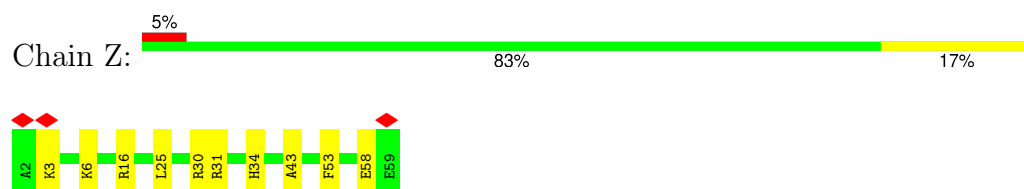
- Molecule 25: 50S ribosomal protein L28



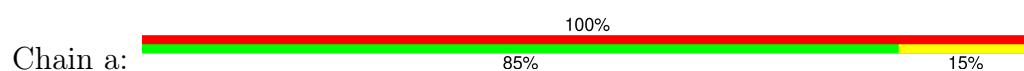
- Molecule 26: 50S ribosomal protein L29

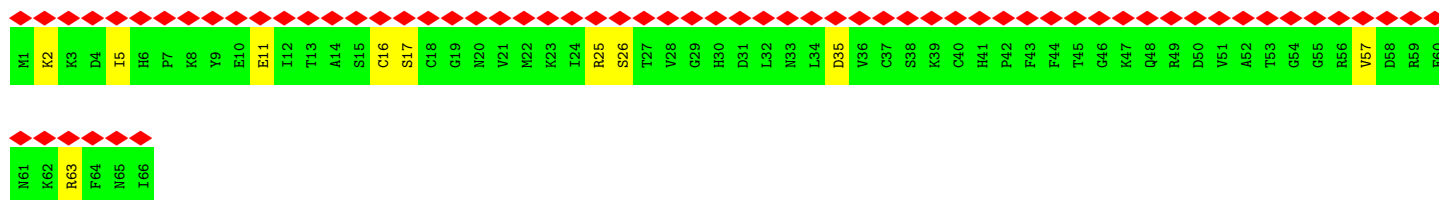


- Molecule 27: 50S ribosomal protein L30

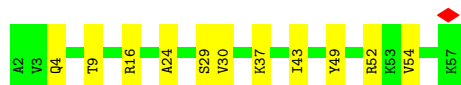
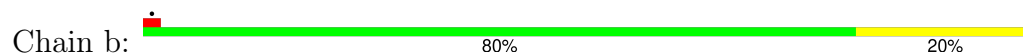


- Molecule 28: 50S ribosomal protein L31

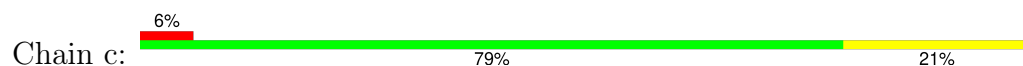




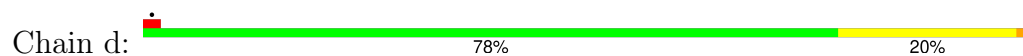
- Molecule 29: 50S ribosomal protein L32



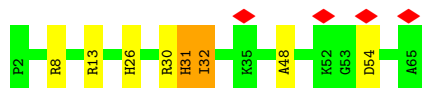
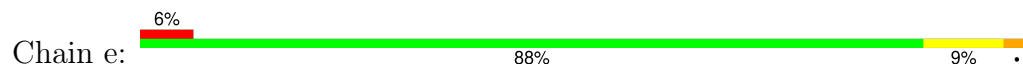
- Molecule 30: 50S ribosomal protein L33



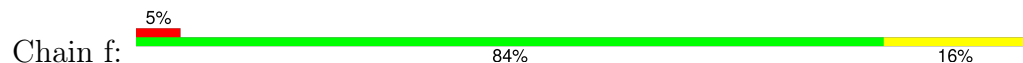
- Molecule 31: 50S ribosomal protein L34



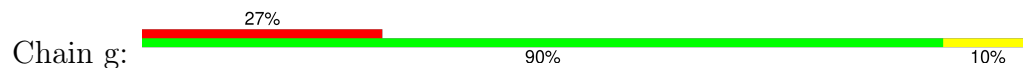
- Molecule 32: 50S ribosomal protein L35

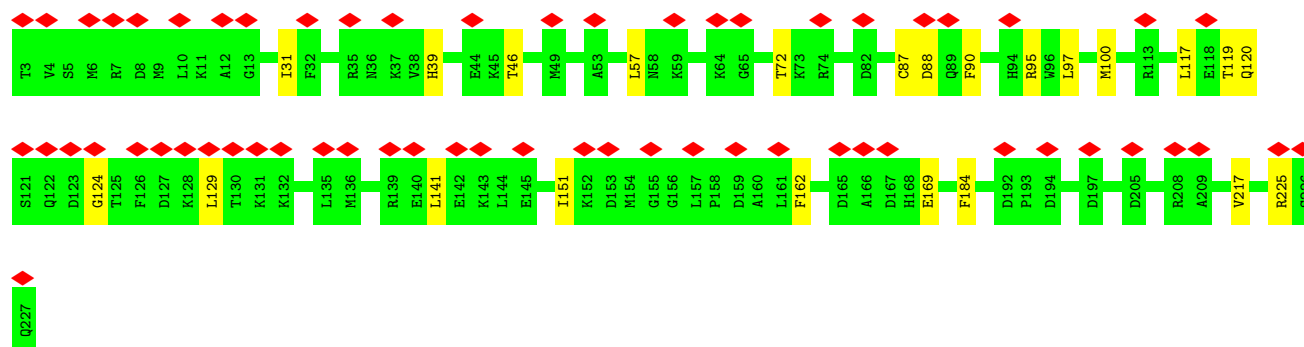


- Molecule 33: 50S ribosomal protein L36

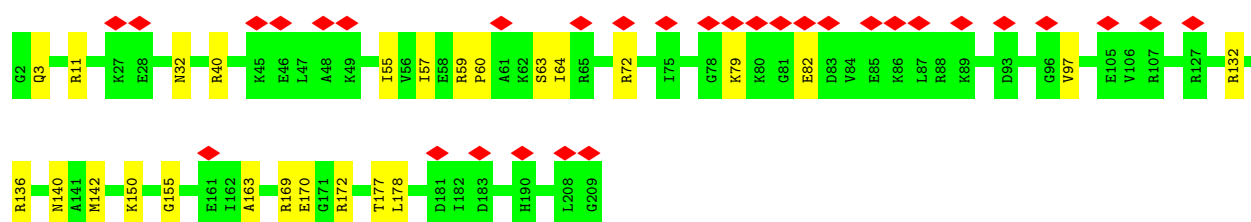
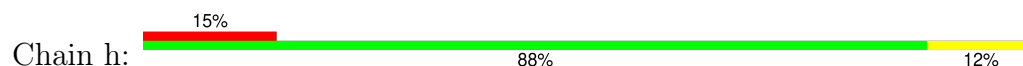


- Molecule 34: 30S ribosomal protein S2

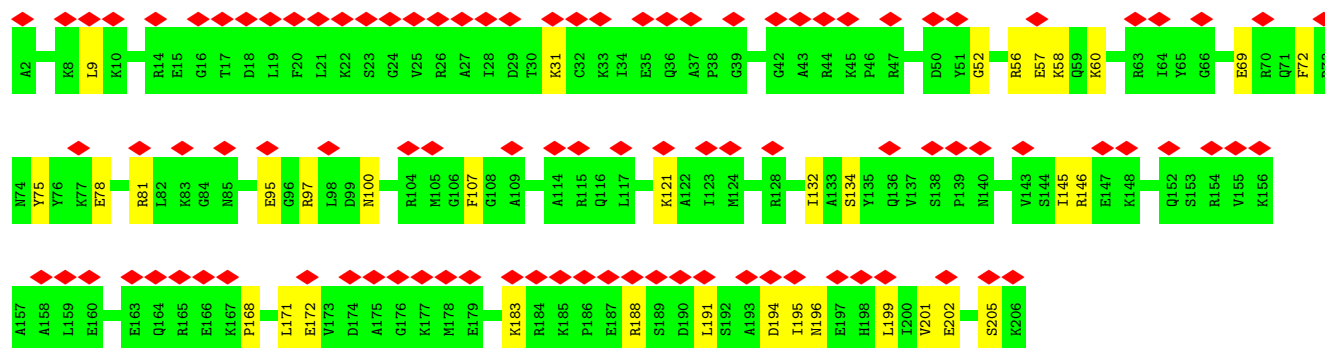
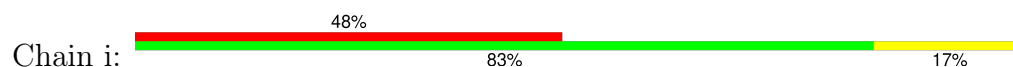




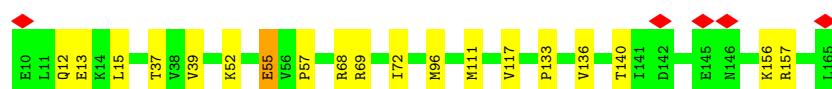
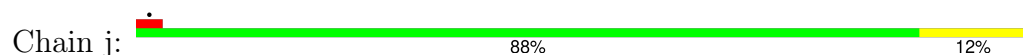
• Molecule 35: 30S ribosomal protein S3



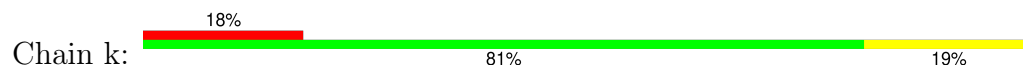
• Molecule 36: 30S ribosomal protein S4

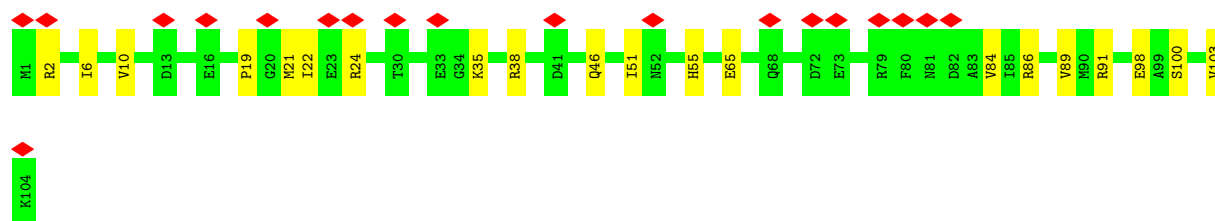


• Molecule 37: 30S ribosomal protein S5

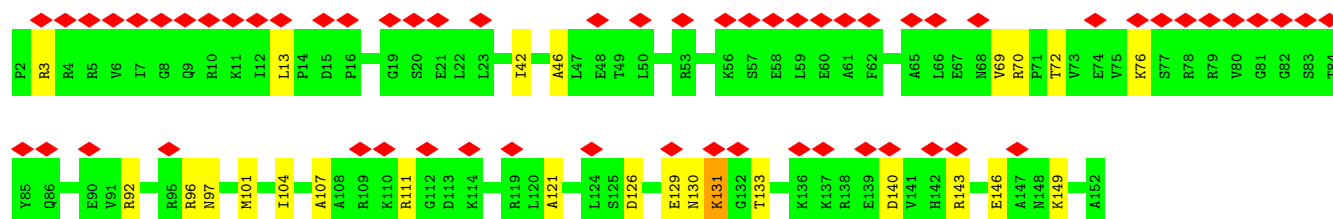
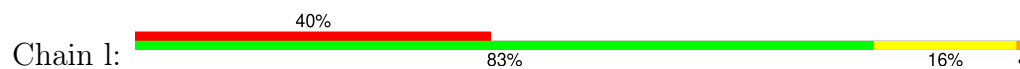


• Molecule 38: 30S ribosomal protein S6

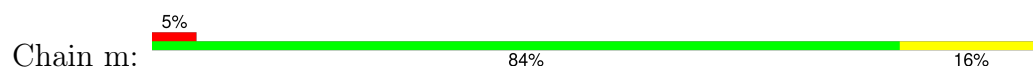




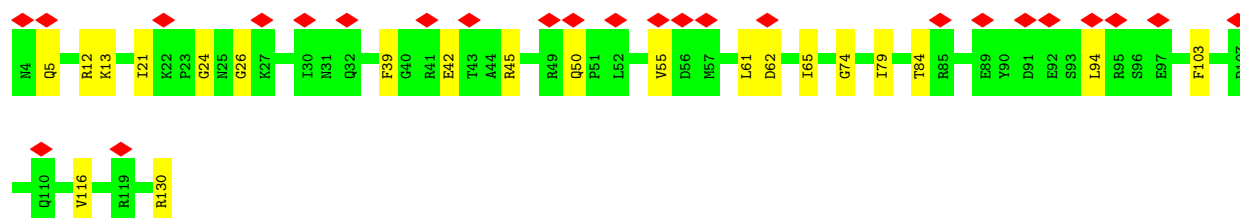
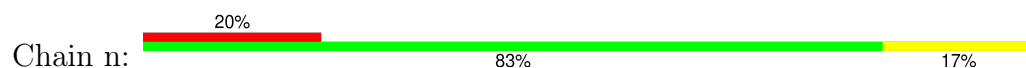
- Molecule 39: 30S ribosomal protein S7



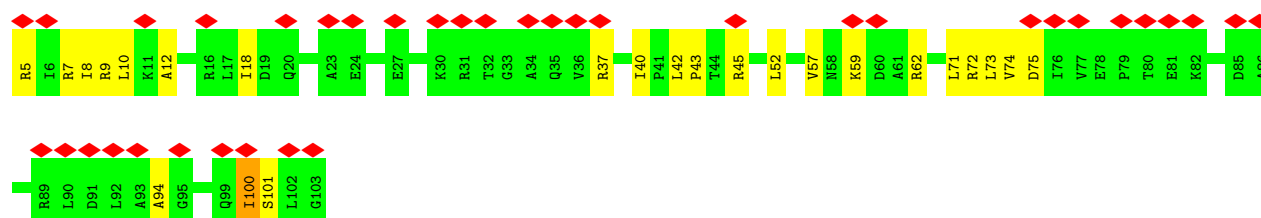
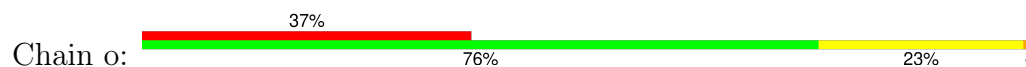
- Molecule 40: 30S ribosomal protein S8



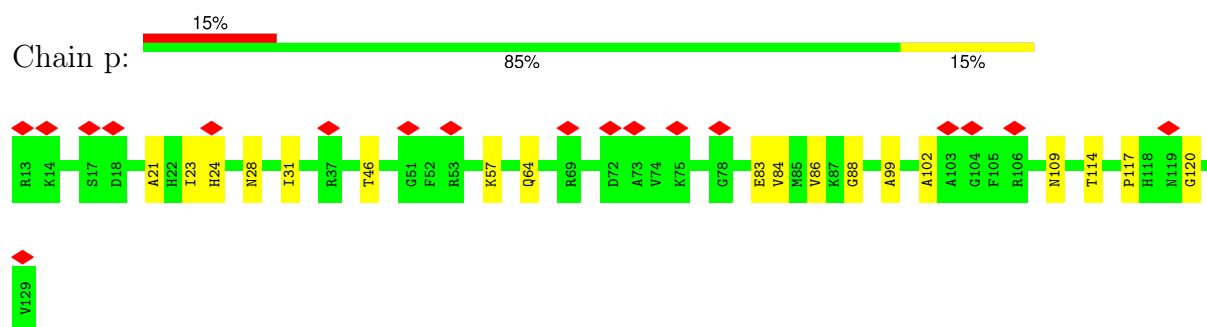
- Molecule 41: 30S ribosomal protein S9



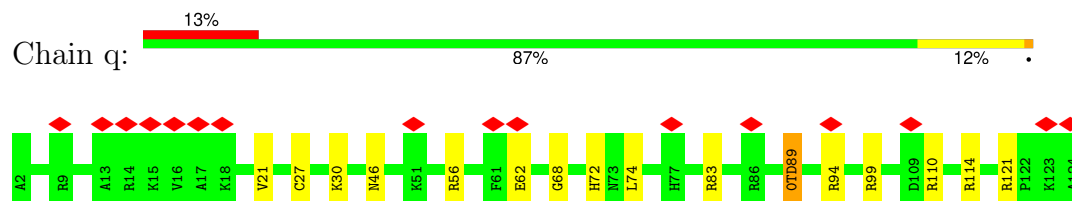
- Molecule 42: 30S ribosomal protein S10



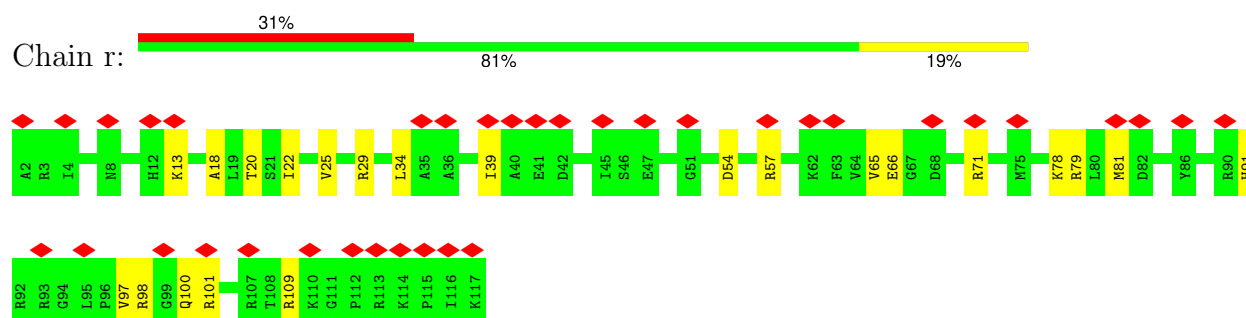
- Molecule 43: 30S ribosomal protein S11



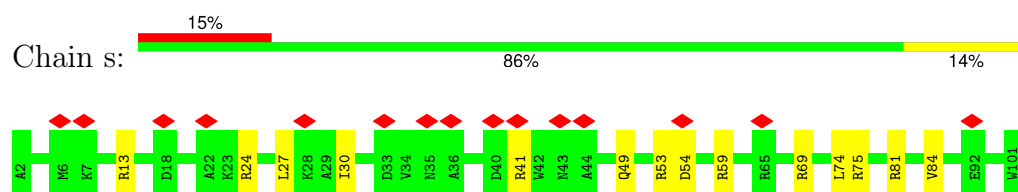
- Molecule 44: 30S ribosomal protein S12



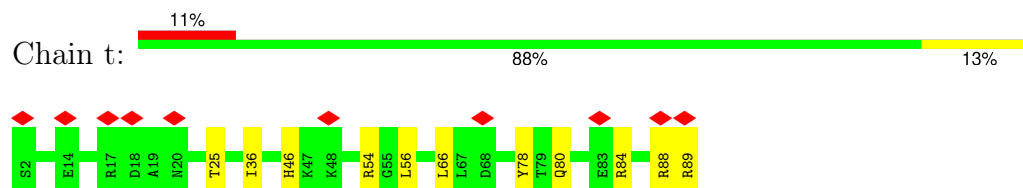
- Molecule 45: 30S ribosomal protein S13



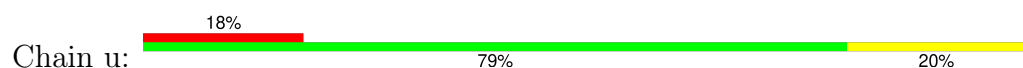
- Molecule 46: 30S ribosomal protein S14



- Molecule 47: 30S ribosomal protein S15

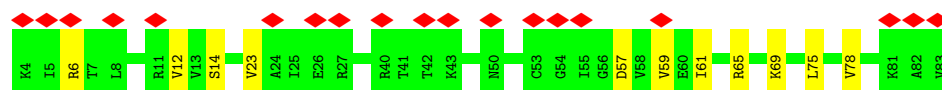
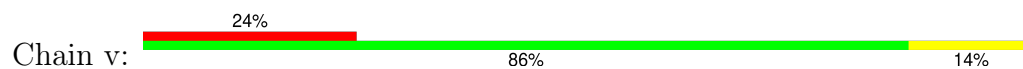


- Molecule 48: 30S ribosomal protein S16

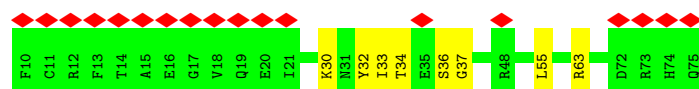
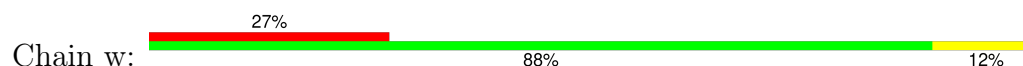




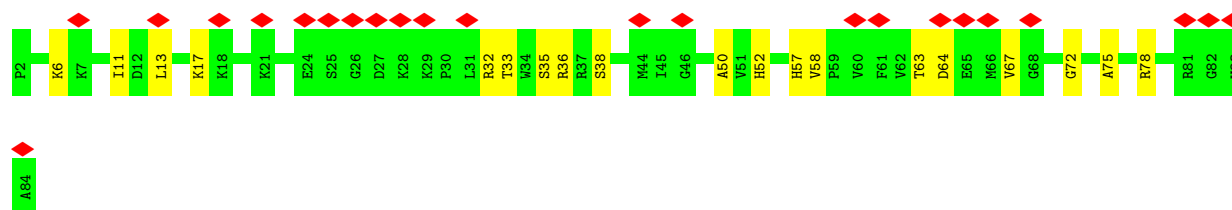
- Molecule 49: 30S ribosomal protein S17



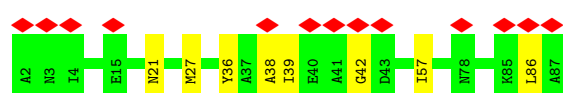
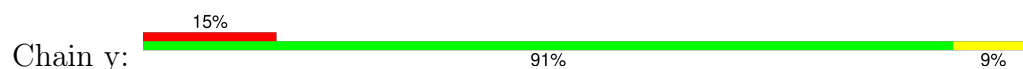
- Molecule 50: 30S ribosomal protein S18



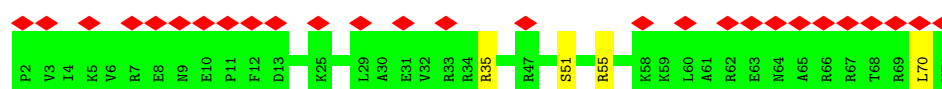
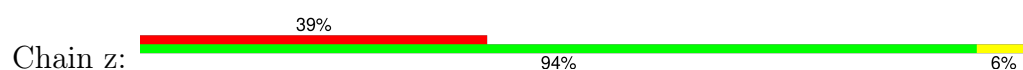
- Molecule 51: 30S ribosomal protein S19



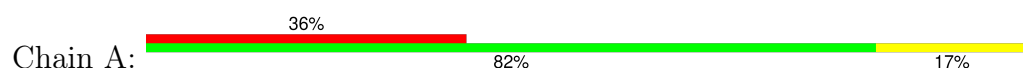
- Molecule 52: 30S ribosomal protein S20

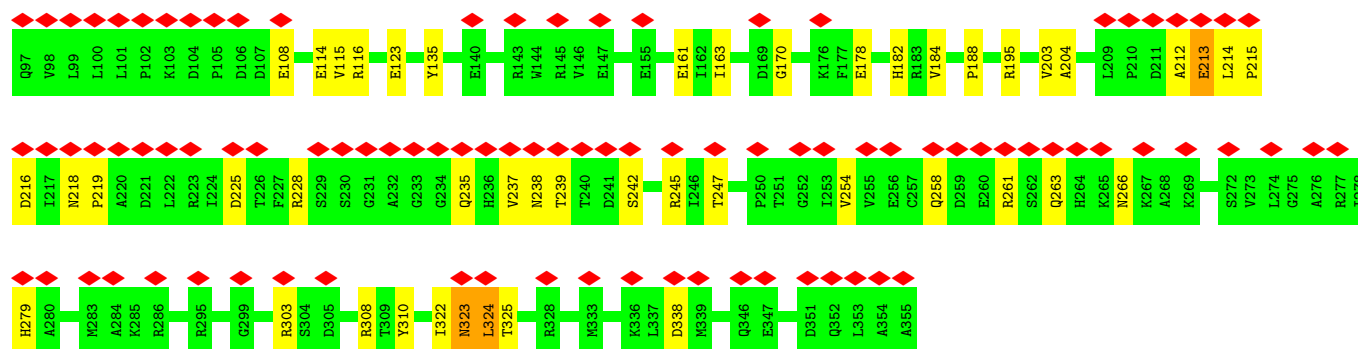


- Molecule 53: 30S ribosomal protein S21

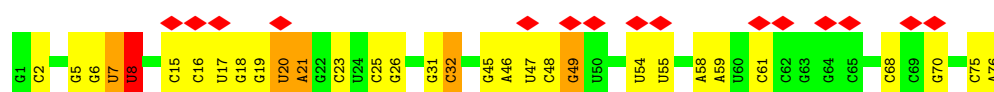


- Molecule 54: Peptide chain release factor 1





• Molecule 55: P-tRNA



• Molecule 56: FME-PHE-PHE



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	202103	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	41.6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.421	Depositor
Minimum map value	-0.221	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	421.12, 421.12, 421.12	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.645, 1.645, 1.645	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: G7M, 4SU, 4OC, 3TD, OMC, ZN, 2MG, 2MA, OMU, 5MU, MG, H2U, 5MC, MA6, 0TD, 1MG, FME, UR3, 6MZ, OMG, PSU

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	0.44	0/69286	0.41	5/108087 (0.0%)
2	2	0.33	0/36590	0.36	2/57074 (0.0%)
3	3	0.29	0/2872	0.34	0/4478
4	4	0.45	0/203	0.42	0/312
5	B	0.52	0/2121	0.66	0/2852
6	C	0.49	0/1586	0.64	0/2134
7	D	0.44	0/1571	0.61	0/2113
8	E	0.29	0/1434	0.58	0/1926
9	F	0.28	0/1333	0.52	0/1805
10	G	0.33	1/1122 (0.1%)	0.63	2/1515 (0.1%)
11	J	0.46	0/1152	0.58	0/1551
12	K	0.46	0/955	0.62	0/1279
13	L	0.44	0/1062	0.61	0/1413
14	M	0.41	0/1093	0.57	0/1460
15	N	0.49	0/964	0.69	0/1289
16	O	0.28	0/902	0.60	0/1209
17	P	0.42	0/929	0.57	0/1242
18	Q	0.56	0/960	0.67	0/1278
19	R	0.46	0/829	0.67	1/1107 (0.1%)
20	S	0.51	0/864	0.58	0/1156
21	T	0.37	0/752	0.60	0/1005
22	U	0.37	0/796	0.60	0/1062
23	V	0.31	0/766	0.55	0/1025
24	W	0.45	0/589	0.60	0/779
25	X	0.42	0/635	0.55	0/848
26	Y	0.33	0/502	0.51	0/667
27	Z	0.45	0/452	0.61	0/605
28	a	0.24	0/531	0.50	0/709
29	b	0.47	0/450	0.68	0/599
30	c	0.34	0/433	0.58	0/576
31	d	0.57	0/380	0.72	0/498

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	e	0.50	0/513	0.68	0/676
33	f	0.42	0/303	0.62	0/397
34	g	0.31	0/1791	0.65	2/2413 (0.1%)
35	h	0.33	0/1663	0.57	0/2241
36	i	0.26	0/1665	0.56	0/2227
37	j	0.39	0/1165	0.67	4/1568 (0.3%)
38	k	0.31	0/867	0.62	0/1171
39	l	0.27	0/1195	0.57	0/1602
40	m	0.35	0/989	0.57	0/1326
41	n	0.29	0/1034	0.63	0/1375
42	o	0.30	0/800	0.57	0/1082
43	p	0.31	0/893	0.51	0/1205
44	q	0.38	0/960	0.65	0/1286
45	r	0.27	0/909	0.62	0/1215
46	s	0.29	0/817	0.55	0/1088
47	t	0.33	0/722	0.59	0/964
48	u	0.31	0/659	0.62	0/884
49	v	0.26	0/657	0.58	0/881
50	w	0.30	0/553	0.55	0/743
51	x	0.26	0/680	0.49	0/915
52	y	0.28	0/675	0.56	0/895
53	z	0.29	0/597	0.64	0/792
54	A	0.38	0/2046	0.65	0/2759
55	5	0.29	0/1704	0.36	0/2654
56	6	0.56	0/23	0.92	0/29
All	All	0.40	1/157994 (0.0%)	0.46	16/236041 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	G	77	THR	CA-CB	7.35	1.66	1.53

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	404	A	C4'-C3'-O3'	8.79	122.58	109.40
1	1	2820	A	C4'-C3'-O3'	-6.85	102.72	113.00
10	G	30	LEU	CA-C-N	6.49	124.33	120.24
10	G	30	LEU	C-N-CA	6.49	124.33	120.24
1	1	2425	A	C4'-C3'-O3'	6.36	118.94	109.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1	62336	0	31367	360	0
2	2	32929	0	16587	202	0
3	3	2569	0	1301	21	0
4	4	184	0	95	1	0
5	B	2082	0	2154	41	0
6	C	1565	0	1616	36	0
7	D	1552	0	1619	18	0
8	E	1410	0	1444	22	0
9	F	1313	0	1358	10	0
10	G	1111	0	1148	18	0
11	J	1129	0	1162	14	0
12	K	946	0	1023	12	0
13	L	1053	0	1129	19	0
14	M	1074	0	1157	15	0
15	N	951	0	994	11	0
16	O	892	0	923	7	0
17	P	917	0	962	12	0
18	Q	947	0	1019	12	0
19	R	816	0	839	23	0
20	S	857	0	922	8	0
21	T	746	0	811	7	0
22	U	788	0	843	10	0
23	V	753	0	780	7	0
24	W	582	0	599	10	0
25	X	625	0	652	9	0
26	Y	501	0	531	7	0
27	Z	448	0	488	6	0
28	a	522	0	521	10	0
29	b	444	0	458	8	0
30	c	426	0	464	8	0
31	d	377	0	418	7	0
32	e	504	0	572	9	0
33	f	302	0	340	4	0
34	g	1760	0	1787	12	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
35	h	1636	0	1710	16	0
36	i	1643	0	1707	20	0
37	j	1152	0	1196	13	0
38	k	848	0	846	12	0
39	l	1181	0	1238	17	0
40	m	979	0	1031	14	0
41	n	1022	0	1070	15	0
42	o	790	0	831	20	0
43	p	877	0	887	11	0
44	q	957	0	1017	12	0
45	r	900	0	965	18	0
46	s	805	0	844	12	0
47	t	714	0	734	8	0
48	u	649	0	666	11	0
49	v	648	0	691	9	0
50	w	544	0	560	4	0
51	x	663	0	688	14	0
52	y	669	0	719	5	0
53	z	589	0	629	3	0
54	A	2014	0	1981	35	0
55	5	1627	0	833	9	0
56	6	32	0	28	4	0
57	1	292	0	0	0	0
57	2	1	0	0	0	0
57	3	8	0	0	0	0
57	5	2	0	0	0	0
57	C	1	0	0	0	0
57	b	1	0	0	0	0
57	f	1	0	0	0	0
57	i	1	0	0	0	0
58	a	1	0	0	0	0
58	f	1	0	0	0	0
All	All	146659	0	98954	1039	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

The worst 5 of 1039 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:C:151:THR:HG22	6:C:152:PRO:CD	1.23	1.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:C:151:THR:CG2	6:C:152:PRO:HD3	1.21	1.58
19:R:51:VAL:CG1	19:R:52:PRO:HD3	1.54	1.36
19:R:51:VAL:HG13	19:R:52:PRO:CD	1.53	1.34
19:R:52:PRO:O	19:R:53:PHE:CD2	1.84	1.29

There are no symmetry-related clashes.

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	
5	B	269/271 (99%)	254 (94%)	15 (6%)	0	100	100
6	C	207/209 (99%)	195 (94%)	10 (5%)	2 (1%)	12	45
7	D	199/201 (99%)	190 (96%)	9 (4%)	0	100	100
8	E	175/177 (99%)	163 (93%)	12 (7%)	0	100	100
9	F	173/175 (99%)	163 (94%)	10 (6%)	0	100	100
10	G	147/149 (99%)	135 (92%)	12 (8%)	0	100	100
11	J	140/142 (99%)	135 (96%)	5 (4%)	0	100	100
12	K	121/123 (98%)	116 (96%)	5 (4%)	0	100	100
13	L	142/144 (99%)	138 (97%)	4 (3%)	0	100	100
14	M	134/136 (98%)	131 (98%)	3 (2%)	0	100	100
15	N	117/119 (98%)	111 (95%)	6 (5%)	0	100	100
16	O	114/116 (98%)	110 (96%)	4 (4%)	0	100	100
17	P	112/114 (98%)	104 (93%)	8 (7%)	0	100	100
18	Q	115/117 (98%)	112 (97%)	3 (3%)	0	100	100
19	R	101/103 (98%)	90 (89%)	9 (9%)	2 (2%)	6	32
20	S	108/110 (98%)	100 (93%)	8 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
21	T	92/94 (98%)	89 (97%)	3 (3%)	0	100	100
22	U	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
23	V	92/94 (98%)	87 (95%)	5 (5%)	0	100	100
24	W	74/76 (97%)	71 (96%)	3 (4%)	0	100	100
25	X	75/77 (97%)	71 (95%)	4 (5%)	0	100	100
26	Y	60/62 (97%)	59 (98%)	1 (2%)	0	100	100
27	Z	56/58 (97%)	54 (96%)	2 (4%)	0	100	100
28	a	64/66 (97%)	60 (94%)	4 (6%)	0	100	100
29	b	54/56 (96%)	52 (96%)	2 (4%)	0	100	100
30	c	50/52 (96%)	50 (100%)	0	0	100	100
31	d	44/46 (96%)	42 (96%)	2 (4%)	0	100	100
32	e	62/64 (97%)	56 (90%)	5 (8%)	1 (2%)	7	36
33	f	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
34	g	223/225 (99%)	211 (95%)	12 (5%)	0	100	100
35	h	206/208 (99%)	193 (94%)	13 (6%)	0	100	100
36	i	203/205 (99%)	194 (96%)	9 (4%)	0	100	100
37	j	154/156 (99%)	144 (94%)	10 (6%)	0	100	100
38	k	102/104 (98%)	100 (98%)	2 (2%)	0	100	100
39	l	149/151 (99%)	143 (96%)	6 (4%)	0	100	100
40	m	127/129 (98%)	120 (94%)	7 (6%)	0	100	100
41	n	125/127 (98%)	115 (92%)	10 (8%)	0	100	100
42	o	97/99 (98%)	88 (91%)	9 (9%)	0	100	100
43	p	115/117 (98%)	108 (94%)	7 (6%)	0	100	100
44	q	120/123 (98%)	108 (90%)	12 (10%)	0	100	100
45	r	114/116 (98%)	106 (93%)	8 (7%)	0	100	100
46	s	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
47	t	86/88 (98%)	82 (95%)	4 (5%)	0	100	100
48	u	80/82 (98%)	76 (95%)	4 (5%)	0	100	100
49	v	78/80 (98%)	71 (91%)	7 (9%)	0	100	100
50	w	64/66 (97%)	60 (94%)	4 (6%)	0	100	100
51	x	81/83 (98%)	79 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
52	y	84/86 (98%)	83 (99%)	1 (1%)	0	100	100
53	z	68/70 (97%)	68 (100%)	0	0	100	100
54	A	257/259 (99%)	236 (92%)	18 (7%)	3 (1%)	10	41
56	6	1/3 (33%)	0	0	1 (100%)	0	0
All	All	5866/5969 (98%)	5551 (95%)	306 (5%)	9 (0%)	44	72

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
19	R	53	PHE
54	A	213	GLU
54	A	323	ASN
54	A	324	LEU
19	R	52	PRO

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	
5	B	216/216 (100%)	216 (100%)	0	100	100
6	C	164/164 (100%)	163 (99%)	1 (1%)	78	79
7	D	165/165 (100%)	164 (99%)	1 (1%)	78	79
8	E	148/148 (100%)	147 (99%)	1 (1%)	76	78
9	F	136/136 (100%)	135 (99%)	1 (1%)	76	78
10	G	114/114 (100%)	114 (100%)	0	100	100
11	J	116/116 (100%)	115 (99%)	1 (1%)	70	76
12	K	104/104 (100%)	104 (100%)	0	100	100
13	L	103/103 (100%)	103 (100%)	0	100	100
14	M	109/109 (100%)	109 (100%)	0	100	100
15	N	99/99 (100%)	98 (99%)	1 (1%)	68	75
16	O	86/86 (100%)	86 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
17	P	99/99 (100%)	98 (99%)	1 (1%)	68	75
18	Q	89/89 (100%)	89 (100%)	0	100	100
19	R	84/84 (100%)	83 (99%)	1 (1%)	63	73
20	S	93/93 (100%)	92 (99%)	1 (1%)	65	74
21	T	81/81 (100%)	80 (99%)	1 (1%)	63	73
22	U	84/84 (100%)	84 (100%)	0	100	100
23	V	78/78 (100%)	77 (99%)	1 (1%)	61	72
24	W	58/58 (100%)	58 (100%)	0	100	100
25	X	67/67 (100%)	67 (100%)	0	100	100
26	Y	54/54 (100%)	54 (100%)	0	100	100
27	Z	48/48 (100%)	47 (98%)	1 (2%)	47	65
28	a	59/59 (100%)	59 (100%)	0	100	100
29	b	47/47 (100%)	46 (98%)	1 (2%)	47	65
30	c	47/47 (100%)	47 (100%)	0	100	100
31	d	38/38 (100%)	37 (97%)	1 (3%)	40	62
32	e	51/51 (100%)	49 (96%)	2 (4%)	28	54
33	f	34/34 (100%)	33 (97%)	1 (3%)	37	60
34	g	187/187 (100%)	186 (100%)	1 (0%)	81	80
35	h	171/171 (100%)	170 (99%)	1 (1%)	78	79
36	i	172/172 (100%)	172 (100%)	0	100	100
37	j	119/119 (100%)	119 (100%)	0	100	100
38	k	91/91 (100%)	91 (100%)	0	100	100
39	l	124/124 (100%)	122 (98%)	2 (2%)	55	69
40	m	104/104 (100%)	104 (100%)	0	100	100
41	n	105/105 (100%)	105 (100%)	0	100	100
42	o	86/86 (100%)	85 (99%)	1 (1%)	63	73
43	p	90/90 (100%)	90 (100%)	0	100	100
44	q	102/102 (100%)	102 (100%)	0	100	100
45	r	94/94 (100%)	94 (100%)	0	100	100
46	s	83/83 (100%)	83 (100%)	0	100	100
47	t	76/76 (100%)	76 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
48	u	65/65 (100%)	64 (98%)	1 (2%)	57	70
49	v	74/74 (100%)	74 (100%)	0	100	100
50	w	57/57 (100%)	57 (100%)	0	100	100
51	x	72/72 (100%)	71 (99%)	1 (1%)	59	71
52	y	65/65 (100%)	65 (100%)	0	100	100
53	z	60/60 (100%)	60 (100%)	0	100	100
54	A	210/210 (100%)	209 (100%)	1 (0%)	81	80
56	6	2/2 (100%)	2 (100%)	0	100	100
All	All	4880/4880 (100%)	4855 (100%)	25 (0%)	78	80

5 of 25 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
32	e	31	HIS
34	g	129	LEU
54	A	184	VAL
33	f	26	ILE
35	h	72	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 72 such sidechains are listed below:

Mol	Chain	Res	Type
47	t	20	ASN
54	A	348	HIS
50	w	54	GLN
54	A	218	ASN
18	Q	44	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	2902/2903 (99%)	598 (20%)	9 (0%)
2	2	1532/1534 (99%)	295 (19%)	4 (0%)
3	3	119/120 (99%)	23 (19%)	0
4	4	8/9 (88%)	3 (37%)	0
55	5	75/76 (98%)	19 (25%)	2 (2%)
All	All	4636/4642 (99%)	938 (20%)	15 (0%)

5 of 938 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	10	A
1	1	15	G
1	1	34	U
1	1	35	G
1	1	46	G

5 of 15 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	2193	G
55	5	8	4SU
1	1	2425	A
55	5	17	U
2	2	516	PSU

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

40 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	2MG	2	1516	2	23,26,27	2.83	8 (34%)	33,38,41	2.40	12 (36%)
2	5MC	2	1407	2	19,22,23	3.77	8 (42%)	26,32,35	1.09	1 (3%)
2	UR3	2	1498	2	19,22,23	2.59	6 (31%)	26,32,35	1.64	3 (11%)
56	FME	6	77	56	8,9,10	0.99	0	8,9,11	0.71	0
2	G7M	2	527	2	23,26,27	3.54	11 (47%)	34,39,42	1.68	7 (20%)
1	PSU	1	2457	1	18,21,22	1.11	3 (16%)	21,30,33	2.58	6 (28%)
1	PSU	1	2580	1	18,21,22	1.15	3 (16%)	21,30,33	2.07	4 (19%)
2	4OC	2	1402	2	20,23,24	2.84	8 (40%)	25,32,35	1.18	3 (12%)
1	PSU	1	2605	1	18,21,22	1.11	2 (11%)	21,30,33	2.06	4 (19%)
1	OMG	1	2251	1,55	23,26,27	2.36	8 (34%)	32,38,41	1.96	7 (21%)
1	2MG	1	1835	1	23,26,27	2.86	7 (30%)	33,38,41	2.56	10 (30%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	OMC	1	2498	1,57	19,22,23	2.66	7 (36%)	25,31,34	1.16	2 (8%)
1	2MA	1	2503	1,57	22,25,26	3.54	9 (40%)	32,37,40	2.23	7 (21%)
2	2MG	2	966	2	23,26,27	2.94	7 (30%)	33,38,41	2.41	8 (24%)
55	4SU	5	8	55	18,21,22	3.71	7 (38%)	25,30,33	2.29	5 (20%)
55	PSU	5	55	55	18,21,22	1.15	1 (5%)	21,30,33	1.90	4 (19%)
1	5MC	1	1962	1	19,22,23	3.66	8 (42%)	26,32,35	1.16	2 (7%)
1	5MU	1	747	1	19,22,23	4.49	7 (36%)	27,32,35	3.98	12 (44%)
1	2MG	1	2445	1	23,26,27	2.81	8 (34%)	33,38,41	2.64	13 (39%)
55	H2U	5	20	55	18,21,22	3.20	5 (27%)	19,30,33	1.50	4 (21%)
1	3TD	1	1915	1,57	19,22,23	4.31	5 (26%)	23,32,35	2.01	4 (17%)
44	0TD	q	89	44	8,9,10	1.70	1 (12%)	6,11,13	2.34	2 (33%)
1	6MZ	1	2030	1	22,25,26	2.95	6 (27%)	29,36,39	4.78	14 (48%)
2	MA6	2	1519	2	23,26,27	1.56	4 (17%)	33,38,41	2.77	12 (36%)
2	2MG	2	1207	2	23,26,27	2.90	9 (39%)	33,38,41	2.38	12 (36%)
1	6MZ	1	1618	1	22,25,26	2.87	5 (22%)	29,36,39	4.39	13 (44%)
1	PSU	1	746	1,57	18,21,22	1.13	3 (16%)	21,30,33	2.04	5 (23%)
2	PSU	2	516	2	18,21,22	1.41	3 (16%)	21,30,33	2.07	6 (28%)
1	PSU	1	2504	1,57	18,21,22	1.16	2 (11%)	21,30,33	2.30	4 (19%)
1	G7M	1	2069	1	23,26,27	2.55	8 (34%)	34,39,42	2.36	10 (29%)
2	5MC	2	967	2	19,22,23	3.80	8 (42%)	26,32,35	0.89	1 (3%)
55	4OC	5	32	55	20,23,24	2.95	8 (40%)	25,32,35	0.92	1 (4%)
1	PSU	1	1911	1	18,21,22	1.17	2 (11%)	21,30,33	1.93	4 (19%)
2	MA6	2	1518	2	23,26,27	1.60	4 (17%)	33,38,41	2.85	11 (33%)
55	5MU	5	54	55	19,22,23	4.83	7 (36%)	27,32,35	3.78	9 (33%)
1	PSU	1	955	1	18,21,22	1.18	2 (11%)	21,30,33	2.07	4 (19%)
1	OMU	1	2552	1,57	19,22,23	2.81	7 (36%)	25,31,34	1.97	5 (20%)
1	5MU	1	1939	1	19,22,23	4.65	7 (36%)	27,32,35	3.92	9 (33%)
1	PSU	1	1917	1	18,21,22	1.11	2 (11%)	21,30,33	1.94	4 (19%)
1	1MG	1	745	1	23,26,27	2.67	7 (30%)	33,39,42	2.23	11 (33%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	2MG	2	1516	2	-	0/9/27/28	0/3/3/3
2	5MC	2	1407	2	-	0/7/25/26	0/2/2/2
2	UR3	2	1498	2	-	0/7/25/26	0/2/2/2
56	FME	6	77	56	-	5/7/9/11	-
2	G7M	2	527	2	-	3/7/25/26	0/3/3/3
1	PSU	1	2457	1	-	0/7/25/26	0/2/2/2
1	PSU	1	2580	1	-	0/7/25/26	0/2/2/2
2	4OC	2	1402	2	-	2/9/29/30	0/2/2/2
1	PSU	1	2605	1	-	0/7/25/26	0/2/2/2
1	OMG	1	2251	1,55	-	0/9/27/28	0/3/3/3
1	2MG	1	1835	1	-	2/9/27/28	0/3/3/3
1	OMC	1	2498	1,57	-	1/9/27/28	0/2/2/2
1	2MA	1	2503	1,57	-	0/7/25/26	0/3/3/3
2	2MG	2	966	2	-	2/9/27/28	0/3/3/3
55	4SU	5	8	55	-	2/7/25/26	0/2/2/2
55	PSU	5	55	55	-	0/7/25/26	0/2/2/2
1	5MC	1	1962	1	-	0/7/25/26	0/2/2/2
1	5MU	1	747	1	-	1/7/25/26	0/2/2/2
1	2MG	1	2445	1	-	2/9/27/28	0/3/3/3
55	H2U	5	20	55	-	4/7/38/39	0/2/2/2
1	3TD	1	1915	1,57	-	2/7/25/26	0/2/2/2
44	0TD	q	89	44	-	1/7/12/14	-
1	6MZ	1	2030	1	-	2/9/27/28	0/3/3/3
2	MA6	2	1519	2	-	4/11/29/30	0/3/3/3
2	2MG	2	1207	2	-	0/9/27/28	0/3/3/3
1	6MZ	1	1618	1	-	2/9/27/28	0/3/3/3
1	PSU	1	746	1,57	-	3/7/25/26	0/2/2/2
2	PSU	2	516	2	-	3/7/25/26	0/2/2/2
1	PSU	1	2504	1,57	-	1/7/25/26	0/2/2/2
1	G7M	1	2069	1	-	1/7/25/26	0/3/3/3
2	5MC	2	967	2	-	0/7/25/26	0/2/2/2
55	4OC	5	32	55	-	0/9/29/30	0/2/2/2
1	PSU	1	1911	1	-	0/7/25/26	0/2/2/2
2	MA6	2	1518	2	-	0/11/29/30	0/3/3/3
55	5MU	5	54	55	-	0/7/25/26	0/2/2/2
1	PSU	1	955	1	-	0/7/25/26	0/2/2/2
1	OMU	1	2552	1,57	-	0/9/27/28	0/2/2/2
1	5MU	1	1939	1	-	0/7/25/26	0/2/2/2
1	PSU	1	1917	1	-	0/7/25/26	0/2/2/2
1	1MG	1	745	1	-	0/7/25/26	0/3/3/3

The worst 5 of 223 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	1915	3TD	C6-C5	13.58	1.50	1.35
55	5	54	5MU	C2-N1	11.43	1.56	1.38
1	1	1618	6MZ	C6-N6	11.19	1.47	1.34
1	1	2030	6MZ	C6-N6	10.97	1.46	1.34
1	1	2503	2MA	C4-N3	10.73	1.48	1.34

The worst 5 of 255 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	2030	6MZ	C4-N9-C8	15.42	121.93	105.74
1	1	1618	6MZ	C4-N9-C8	13.29	119.69	105.74
1	1	1939	5MU	C5-C4-N3	12.70	126.36	115.32
55	5	54	5MU	C5-C4-N3	12.60	126.27	115.32
1	1	2030	6MZ	N9-C8-N7	-11.48	97.65	113.94

There are no chirality outliers.

5 of 43 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	1	746	PSU	C2'-C1'-C5-C4
1	1	1618	6MZ	C5-C6-N6-C9
1	1	1618	6MZ	N1-C6-N6-C9
1	1	1915	3TD	O4'-C1'-C5-C4
1	1	1915	3TD	O4'-C1'-C5-C6

There are no ring outliers.

8 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
56	6	77	FME	1	0
1	1	2251	OMG	1	0
55	5	8	4SU	2	0
1	1	1915	3TD	1	0
44	q	89	0TD	1	0
1	1	2030	6MZ	1	0
1	1	746	PSU	1	0
55	5	32	4OC	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 309 ligands modelled in this entry, 309 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

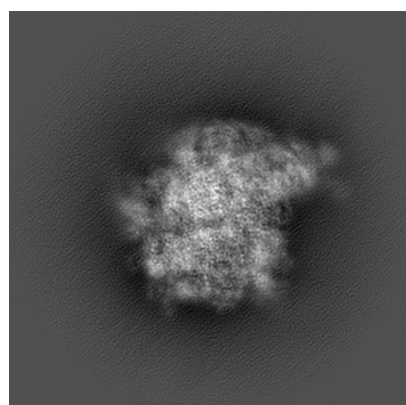
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20184. These allow visual inspection of the internal detail of the map and identification of artifacts.

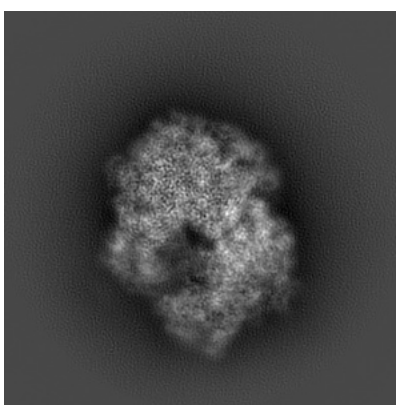
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

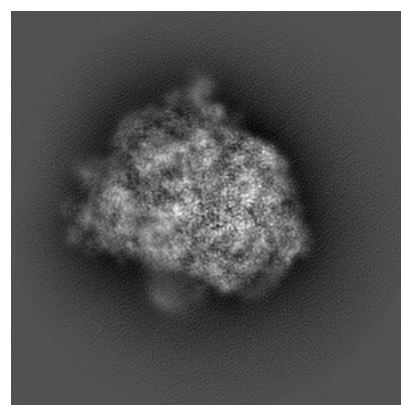
6.1.1 Primary map



X



Y

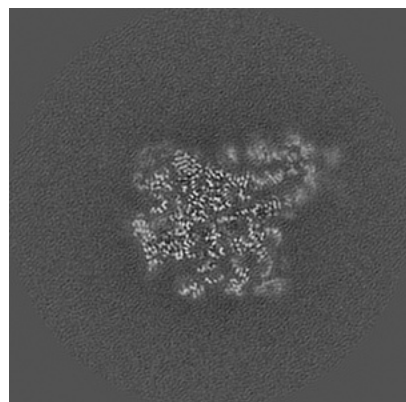


Z

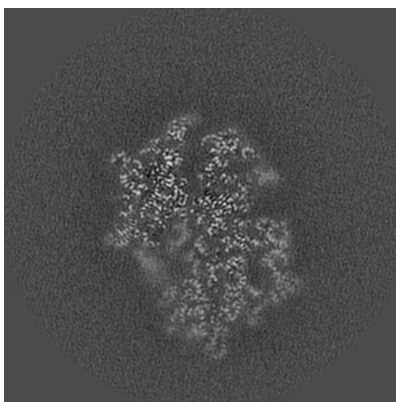
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

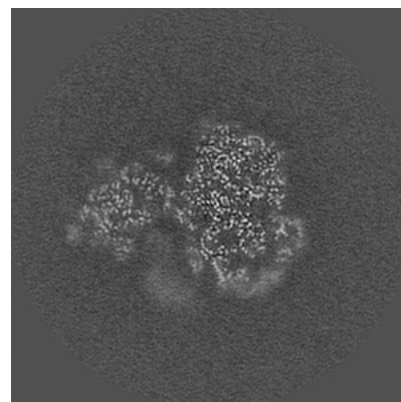
6.2.1 Primary map



X Index: 128



Y Index: 128

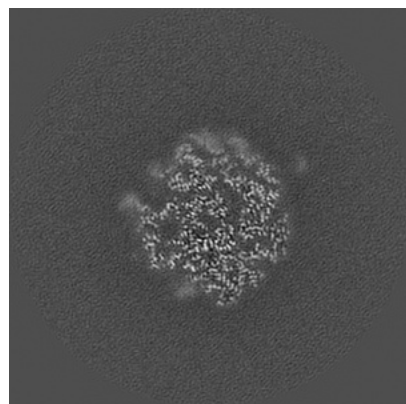


Z Index: 128

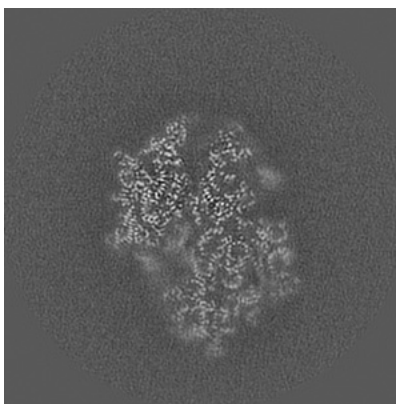
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

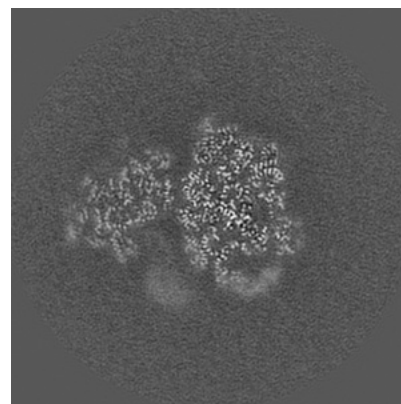
6.3.1 Primary map



X Index: 148



Y Index: 126

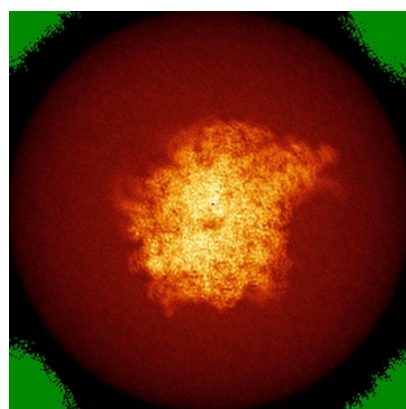


Z Index: 130

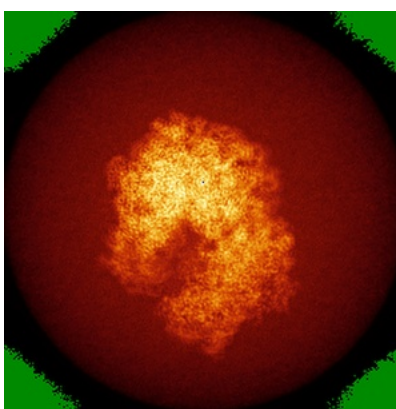
The images above show the largest variance slices of the map in three orthogonal directions.

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

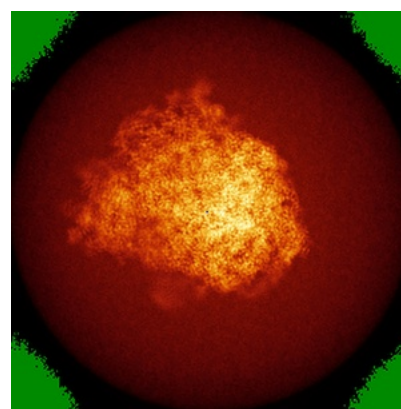
6.4.1 Primary map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

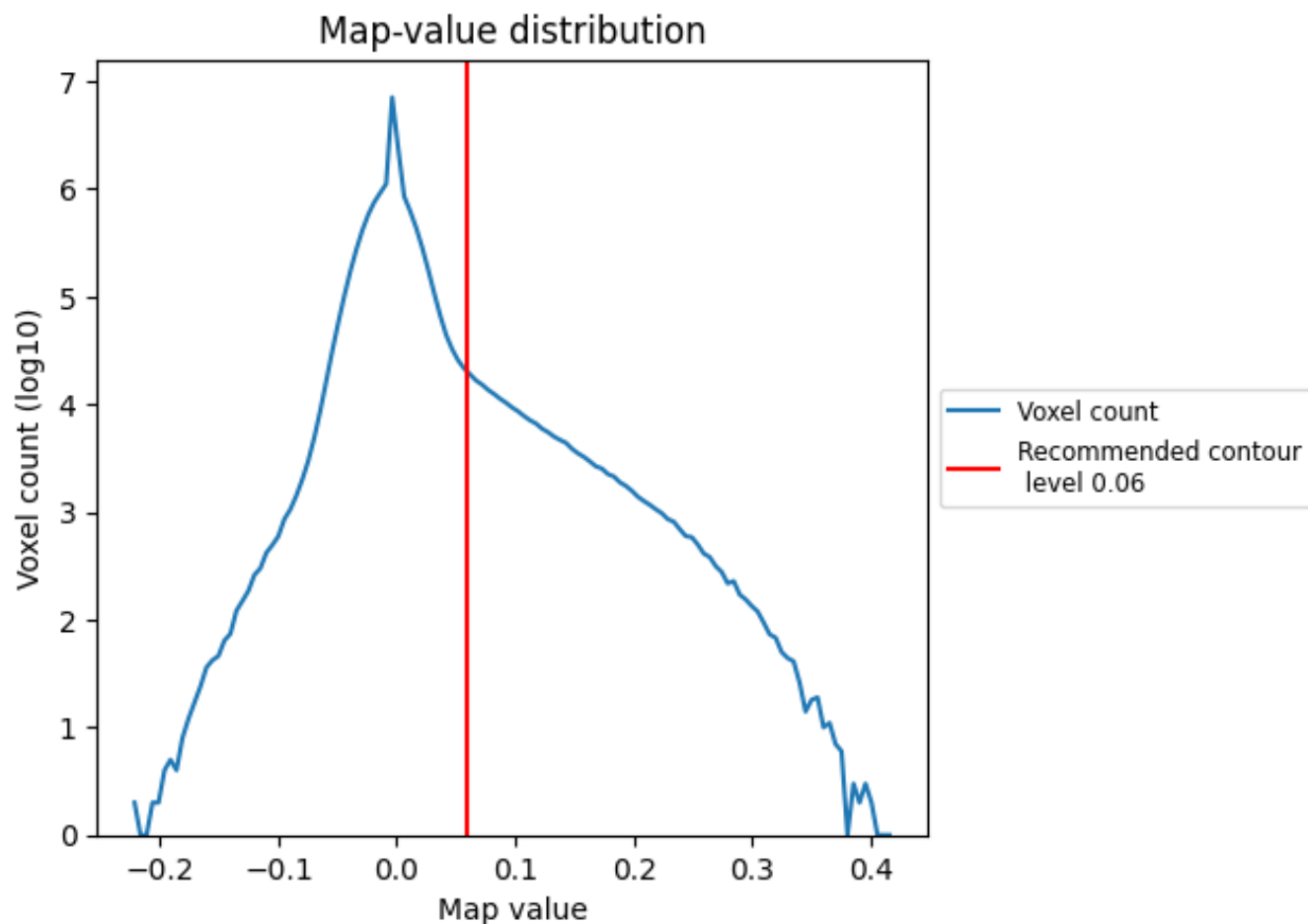
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

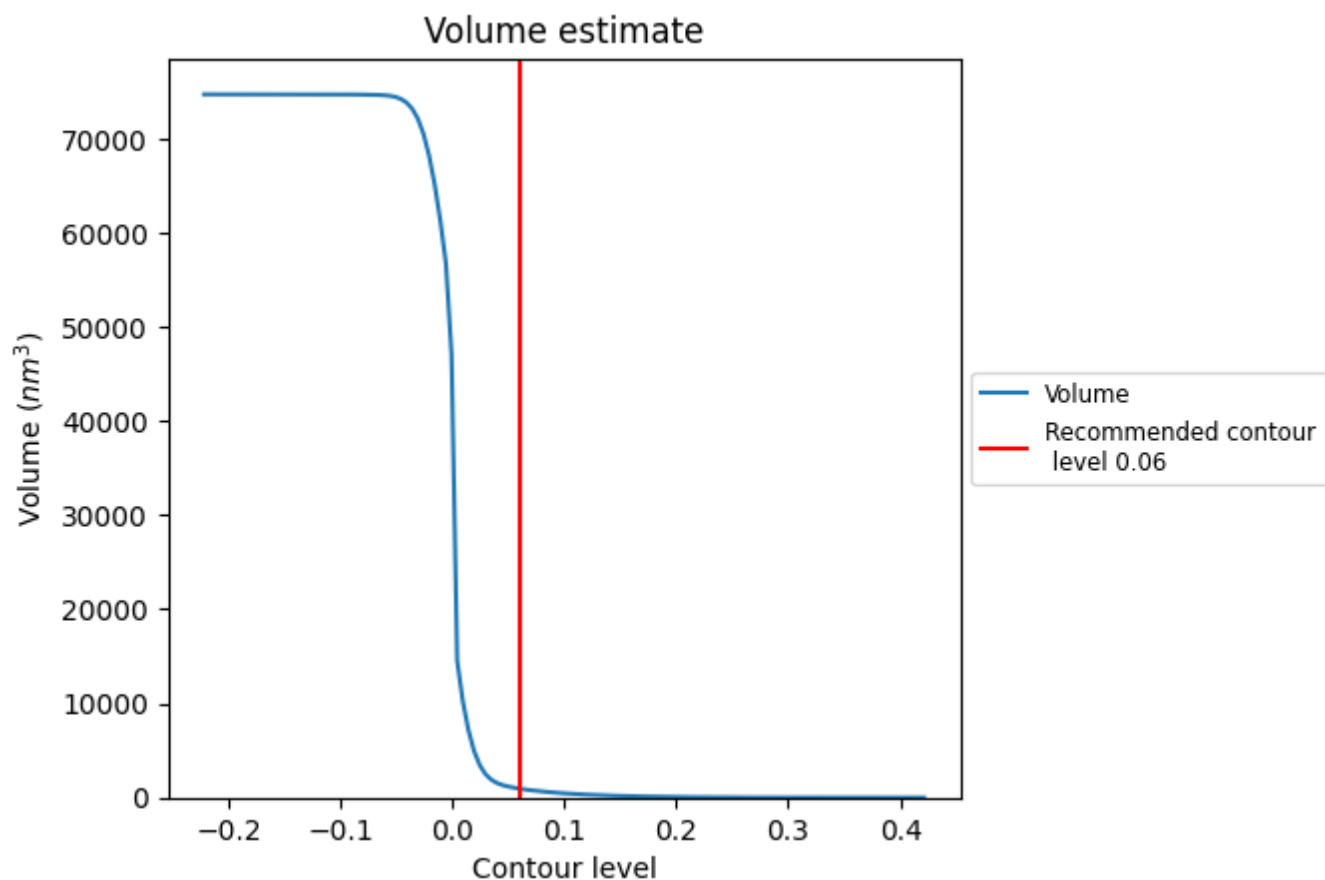
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

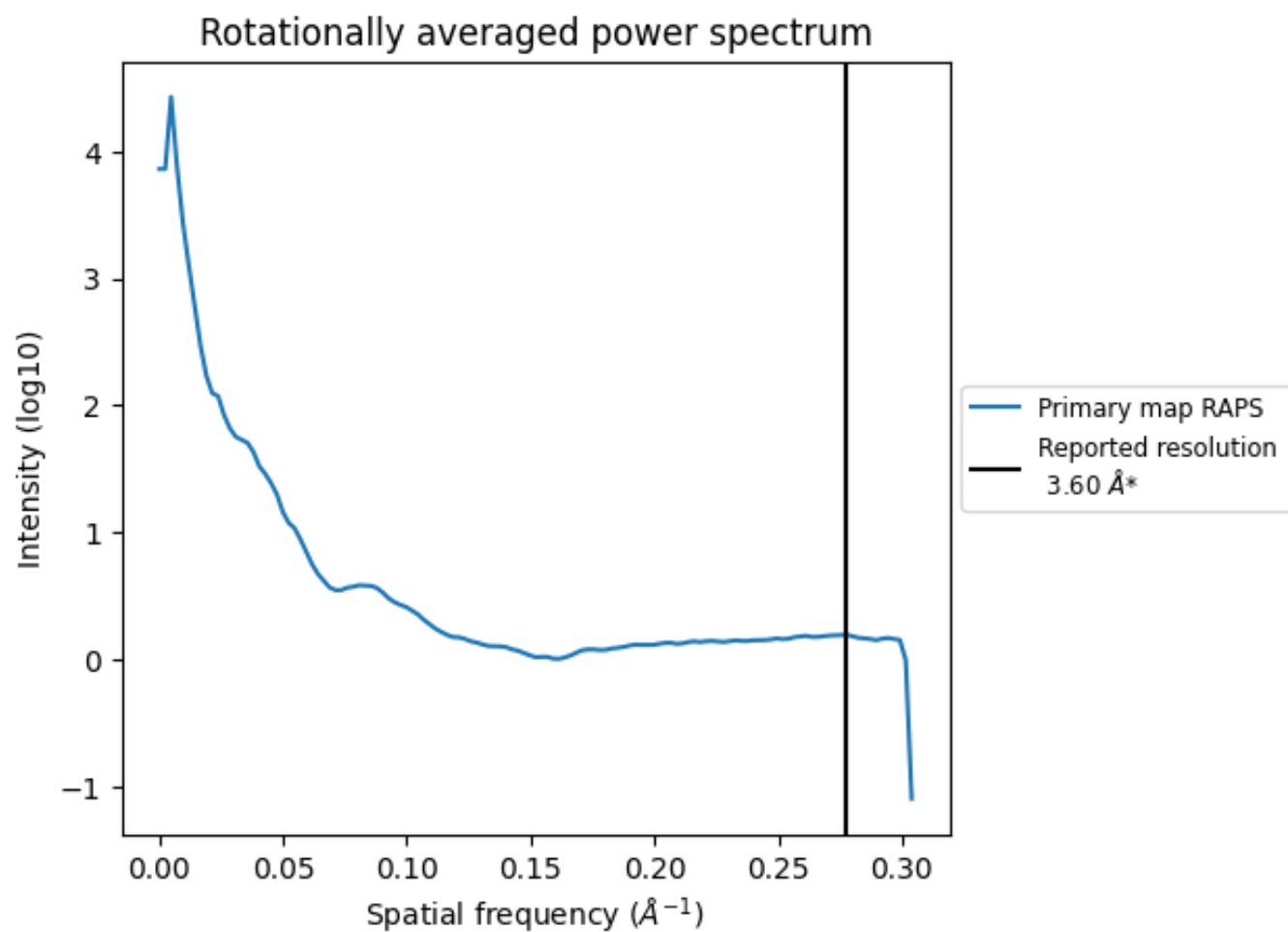
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 945 nm³; this corresponds to an approximate mass of 854 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 ⓘ



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

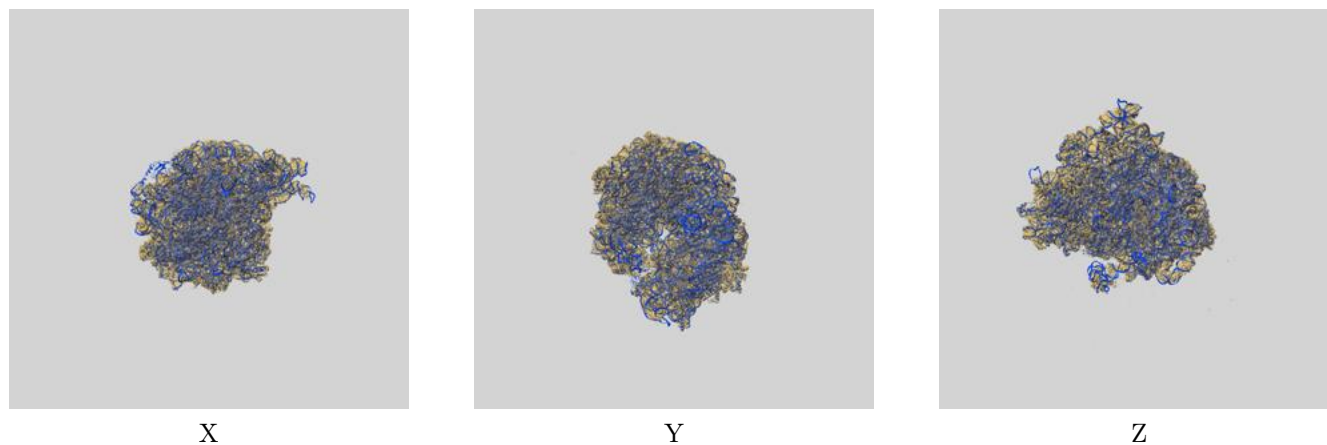
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

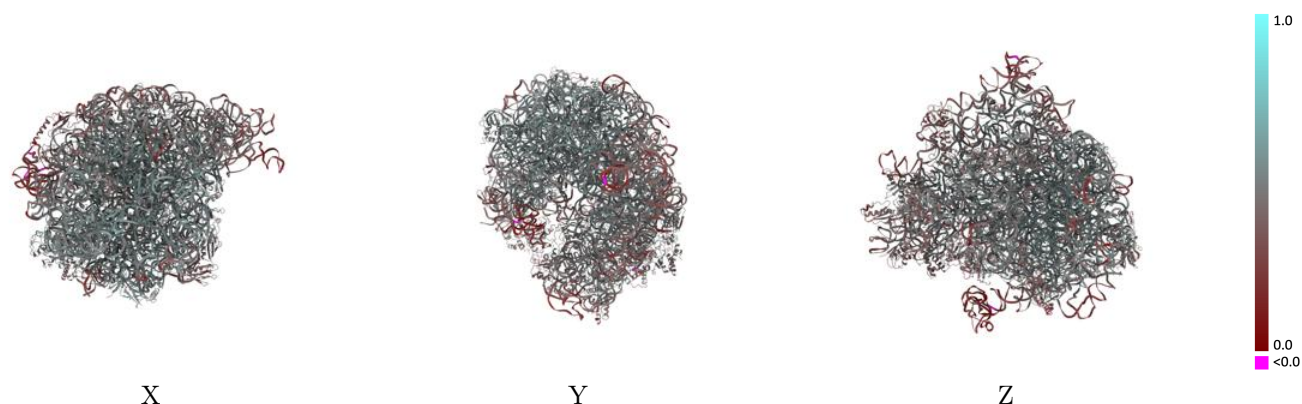
This section contains information regarding the fit between EMDB map EMD-20184 and PDB model 6OSK. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



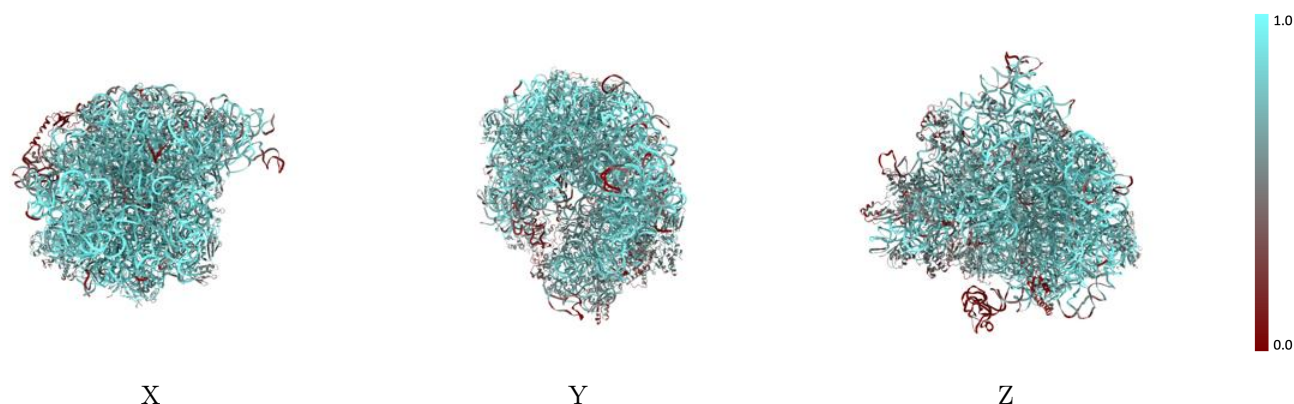
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



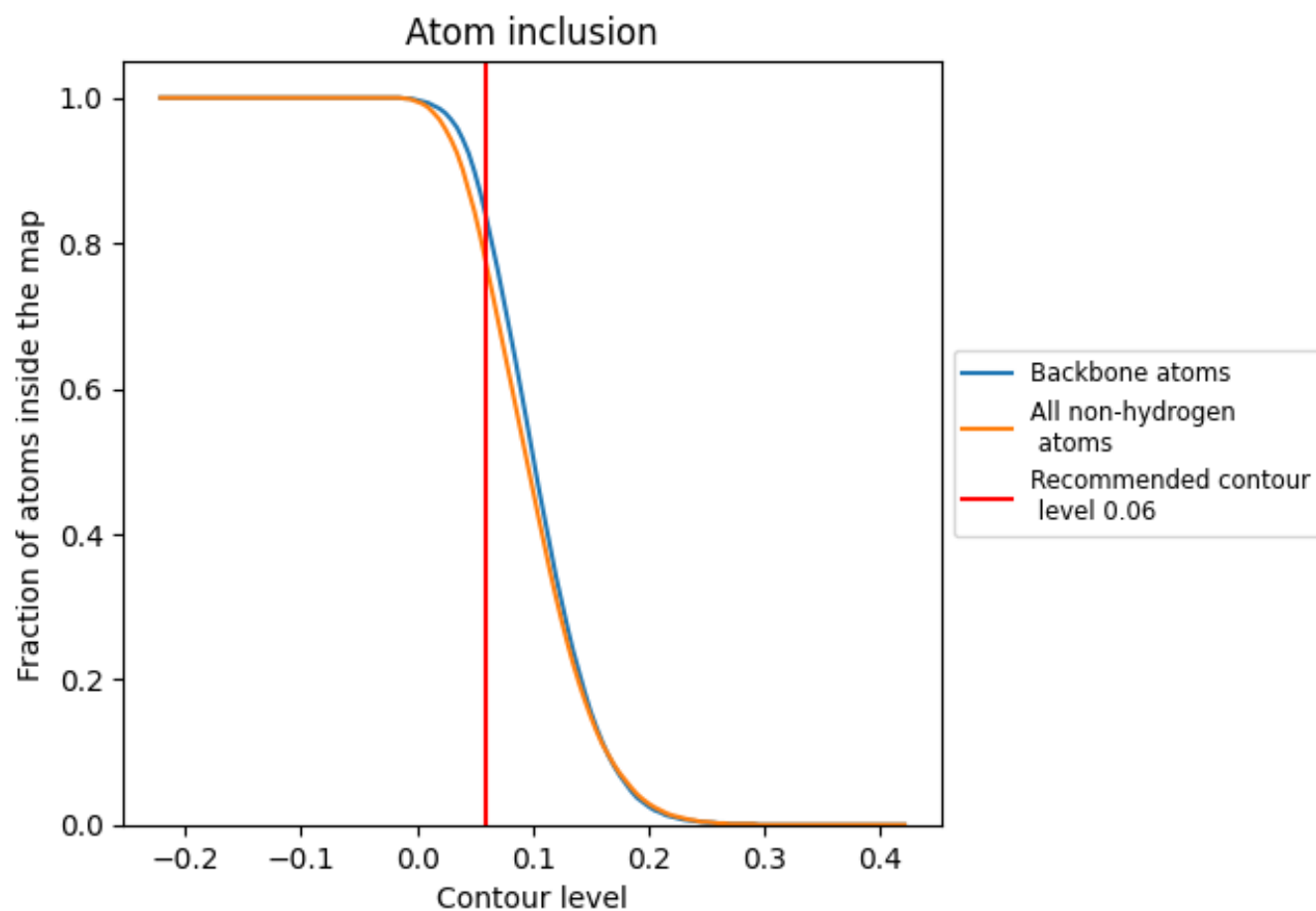
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.06).

9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 77% 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 (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7710	 0.4670
1	 0.8550	 0.4830
2	 0.8330	 0.4470
3	 0.8300	 0.4240
4	 0.7770	 0.5030
5	 0.6320	 0.3710
6	 0.4380	 0.4210
A	 0.4730	 0.4330
B	 0.7560	 0.5360
C	 0.7670	 0.5280
D	 0.7140	 0.5080
E	 0.4600	 0.3880
F	 0.5860	 0.4280
G	 0.1960	 0.3400
J	 0.7750	 0.5330
K	 0.6840	 0.5190
L	 0.7280	 0.5180
M	 0.6900	 0.5080
N	 0.8160	 0.5370
O	 0.6140	 0.4280
P	 0.6960	 0.5160
Q	 0.7900	 0.5270
R	 0.7620	 0.5270
S	 0.7430	 0.5330
T	 0.6660	 0.4940
U	 0.6300	 0.4720
V	 0.6060	 0.4440
W	 0.7330	 0.5200
X	 0.7210	 0.5010
Y	 0.6690	 0.4600
Z	 0.7500	 0.5200
a	 0.0000	 0.1790
b	 0.7670	 0.5140
c	 0.6700	 0.5070
d	 0.7910	 0.5390



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Chain	Atom inclusion	Q-score
e	 0.7370	 0.5360
f	 0.7140	 0.5170
g	 0.5410	 0.4240
h	 0.5820	 0.4570
i	 0.4150	 0.3750
j	 0.6840	 0.4930
k	 0.6110	 0.4380
l	 0.4510	 0.4100
m	 0.6570	 0.4760
n	 0.5480	 0.4110
o	 0.4720	 0.4160
p	 0.6250	 0.4500
q	 0.6280	 0.4920
r	 0.5200	 0.4180
s	 0.6030	 0.4560
t	 0.6350	 0.4650
u	 0.6050	 0.4620
v	 0.5440	 0.4340
w	 0.5330	 0.4300
x	 0.5160	 0.4090
y	 0.5570	 0.4350
z	 0.4620	 0.3950