wwPDB EM Validation Summary Report (i)

Nov 10, 2024 – 02:35 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 (i) 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 (i)) were used in the production of this report:

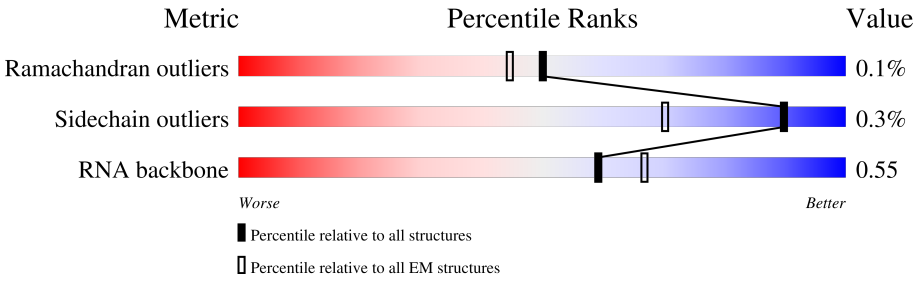
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 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	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	0	59	92% 8%
2	1	49	6% 98%
3	2	44	100%
4	3	66	97%
5	4	37	14% 100%
6	6	66	71% 95% 5%
7	B	112	74% 26%
8	C	277	5% 98%

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Mol	Chain	Length	Quality of chain
9	D	209	98%
10	E	207	14% 99%
11	F	179	46% 98%
12	G	179	56% 98%
13	H	77	81% 19%
14	I	24	100% 100%
15	J	145	98%
16	K	122	5% 100%
17	L	146	14% 100%
18	M	144	7% 94% 6%
19	N	120	99%
20	O	120	12% 100%
21	P	115	8% 100%
22	Q	119	97%
23	R	102	8% 99%
24	S	113	96%
25	T	95	5% 95% 5%
26	U	103	11% 98%
27	V	2928	5% 75% 23%
28	W	94	6% 87% 13%
29	Y	66	98%
30	Z	59	5% 98%
31	a	1533	83% 17%
32	b	57	91% 100%
33	c	218	82% 94% 6%

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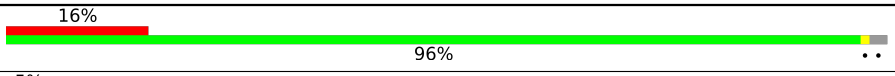
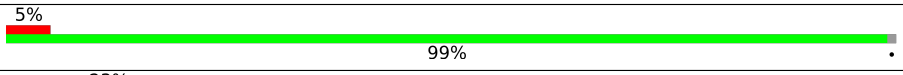
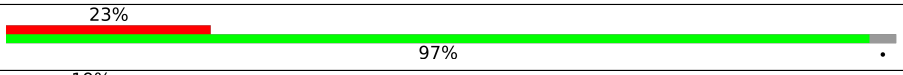
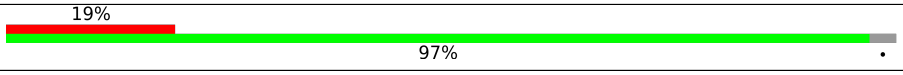
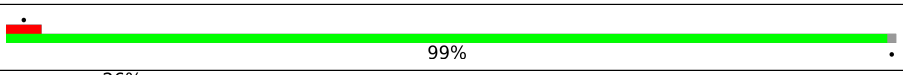
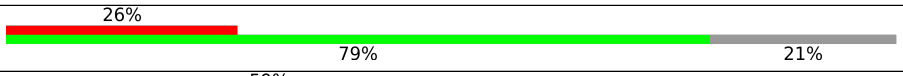
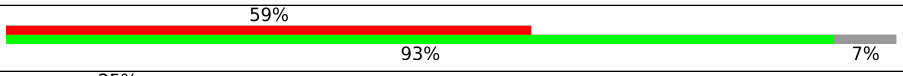
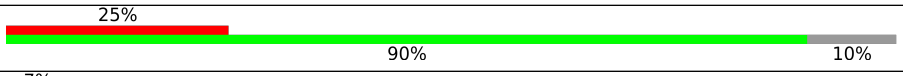
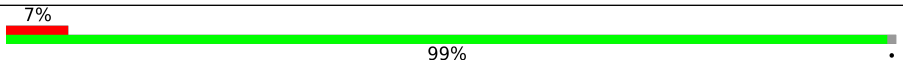
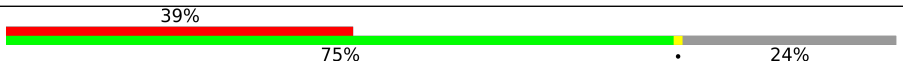
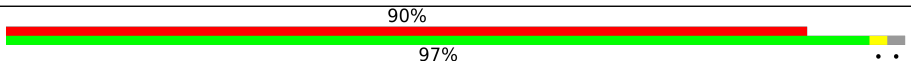
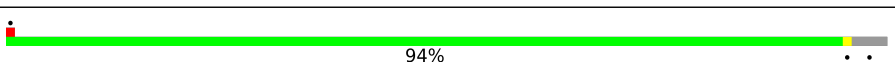
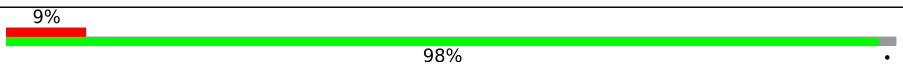
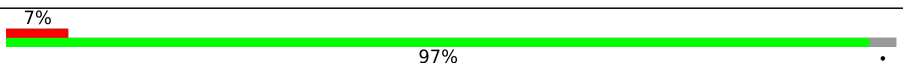
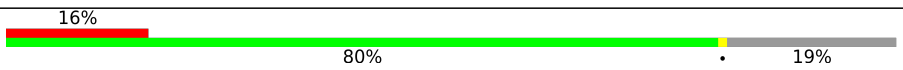
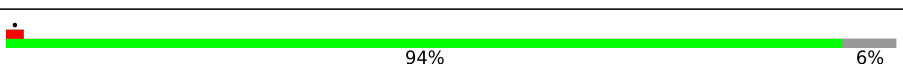
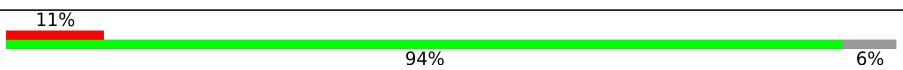
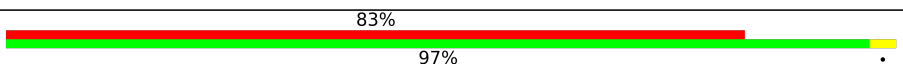
Mol	Chain	Length	Quality of chain
34	d	200	
35	e	166	
36	f	95	
37	g	156	
38	h	132	
39	i	130	
40	j	102	
41	k	131	
42	l	138	
43	m	121	
44	n	61	
45	o	89	
46	p	90	
47	q	87	
48	r	79	
49	s	92	
50	t	88	
51	u	62	
52	X	149	
53	A	26	

2 Entry composition (i)

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
7	B	112	Total	C	N	O	P	0	0
			2392	1068	435	778	111		

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

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

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

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

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

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

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

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

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

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

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

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

- 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
28	W	82	Total	C	N	O	0	0
			630	390	123	117		

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

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

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

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

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

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

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

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

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
33	c	206	Total	C	N	O	S	0	0
			1619	1011	304	301	3		

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- 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.

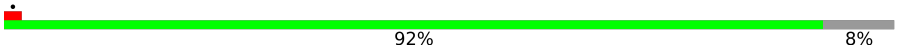
Mol	Chain	Residues	Atoms					AltConf	Trace
53	A	26	Total	C	N	O	P	0	0
			559	251	106	176	26		

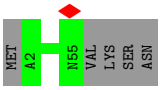
3 Residue-property plots (i)

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

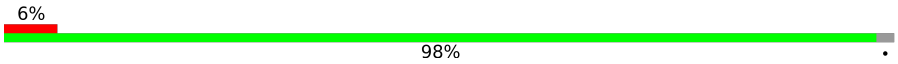
Chain 0:

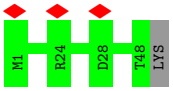




• Molecule 2: 50S ribosomal protein L33 1

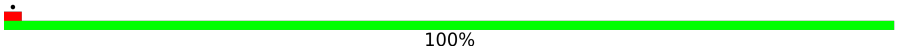
Chain 1:





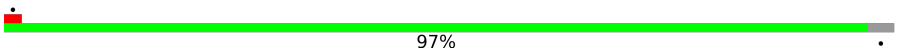
• Molecule 3: 50S ribosomal protein L34

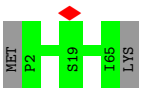
Chain 2:



• Molecule 4: 50S ribosomal protein L35

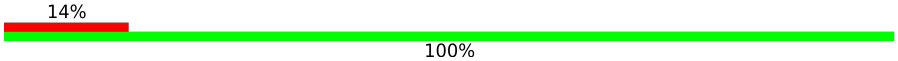
Chain 3:

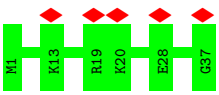




• Molecule 5: 50S ribosomal protein L36

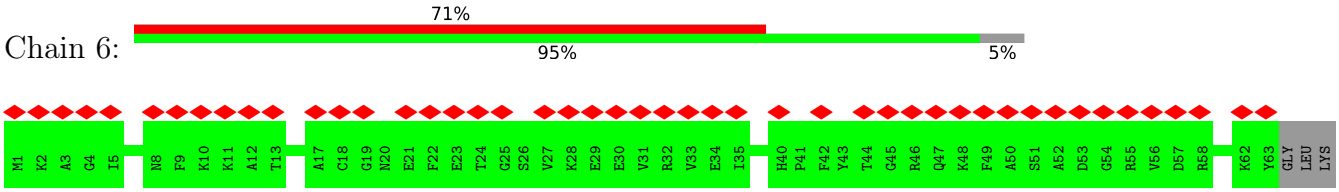
Chain 4:





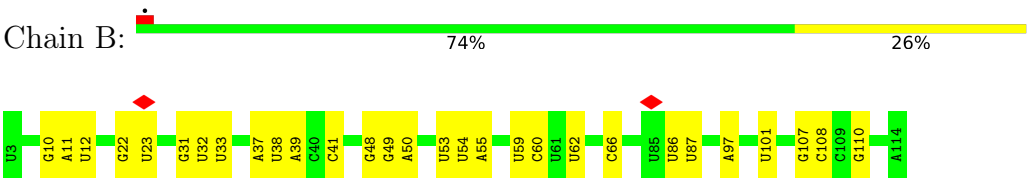
• Molecule 6: 50S ribosomal protein L31

Chain 6:



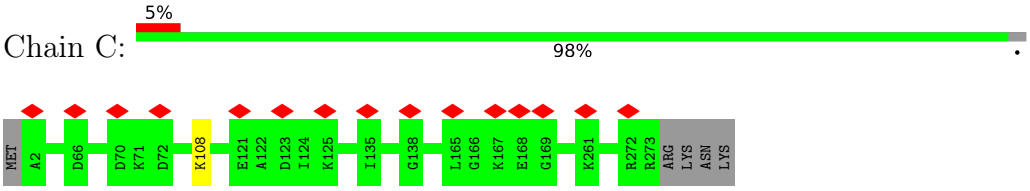
• Molecule 7: 5S ribosomal RNA

Chain B:



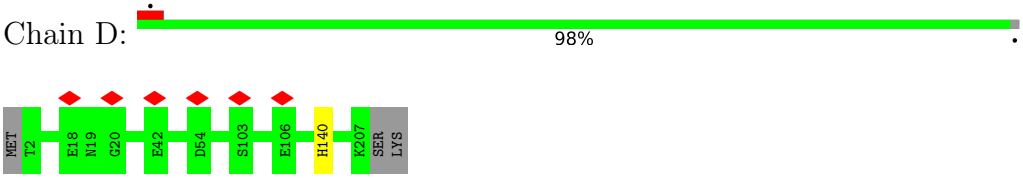
• Molecule 8: 50S ribosomal protein L2

Chain C:



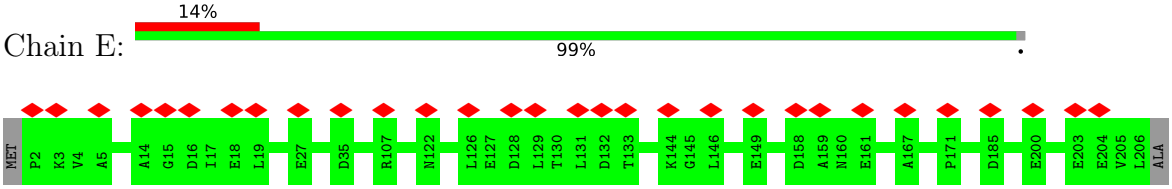
• Molecule 9: 50S ribosomal protein L3

Chain D:



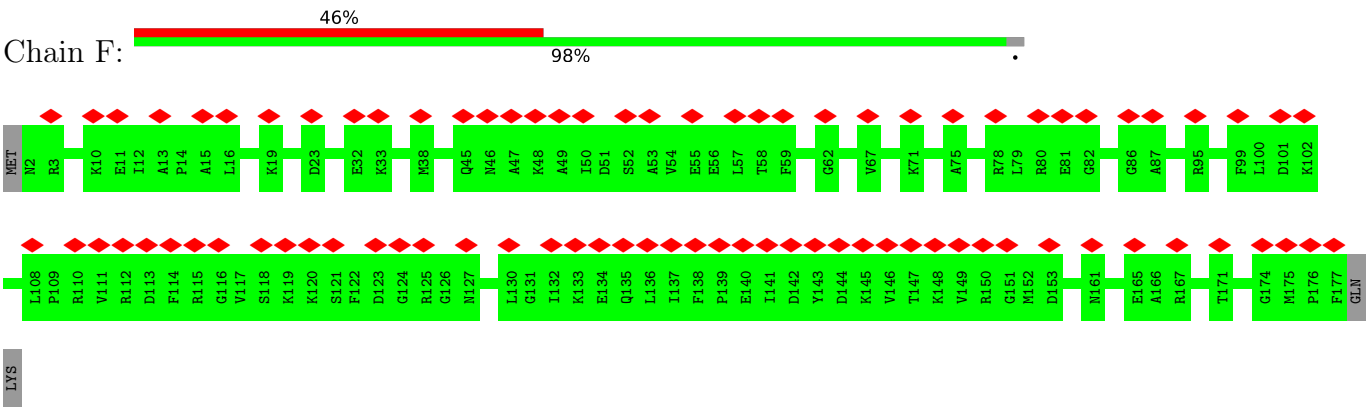
• Molecule 10: 50S ribosomal protein L4

Chain E:



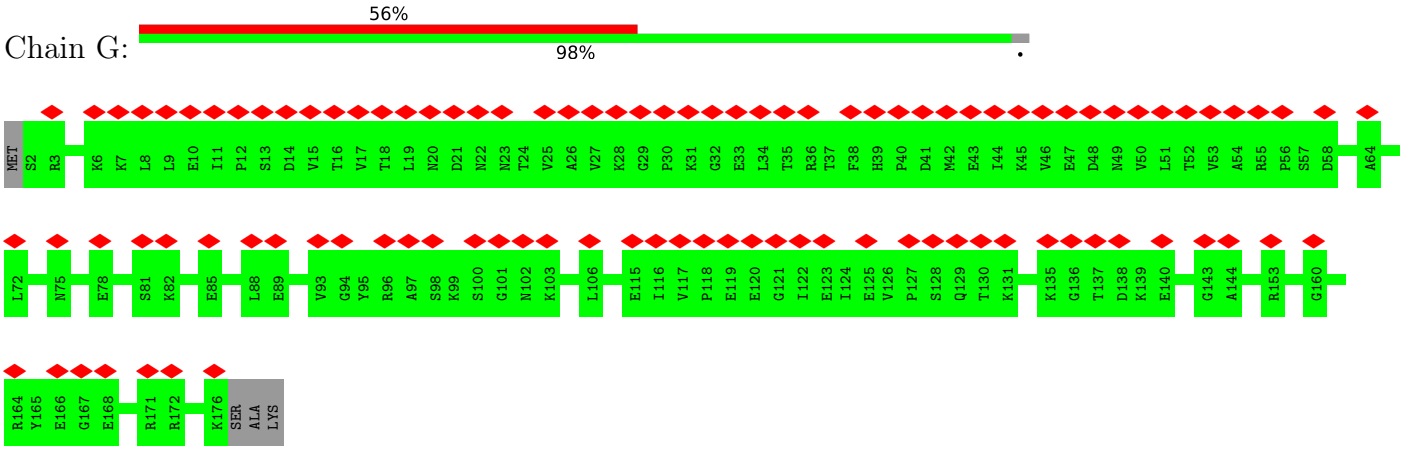
• Molecule 11: 50S ribosomal protein L5

Chain F:



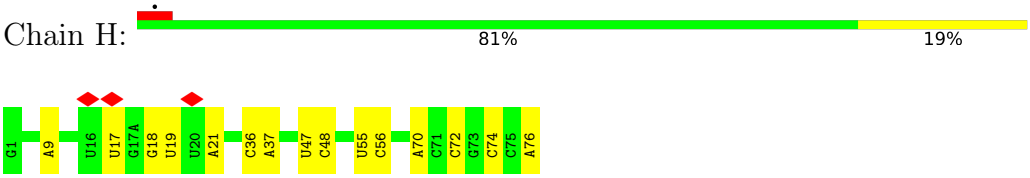
• Molecule 12: 50S ribosomal protein L6

Chain G:



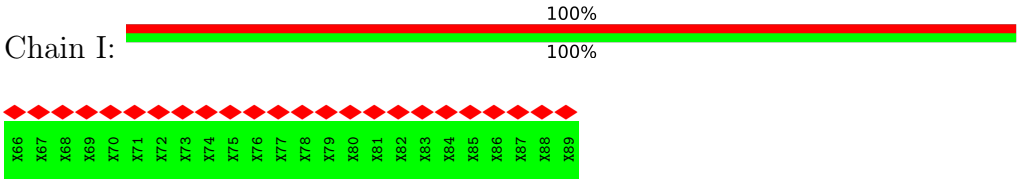
• Molecule 13: P-site tRNA

Chain H:



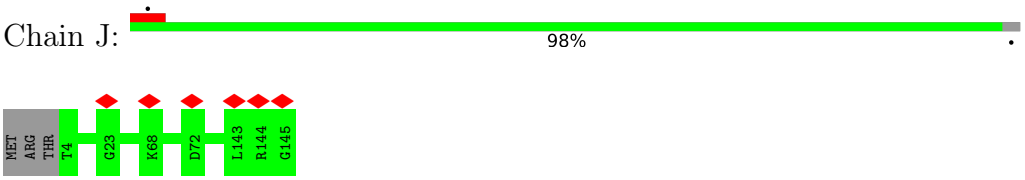
• Molecule 14: Nascent chain

Chain I:



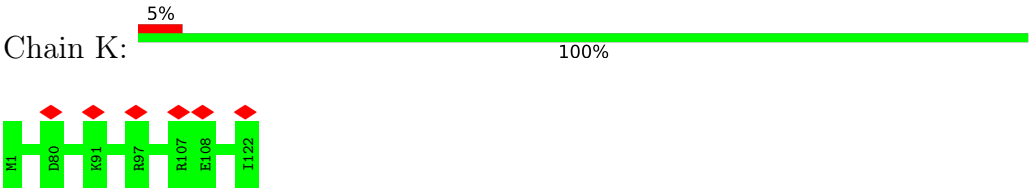
• Molecule 15: 50S ribosomal protein L13

Chain J:



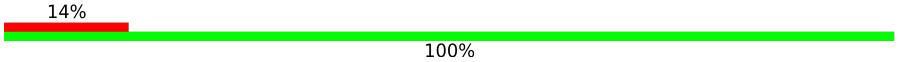
• Molecule 16: 50S ribosomal protein L14

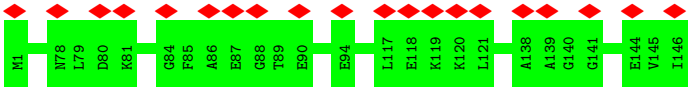
Chain K:



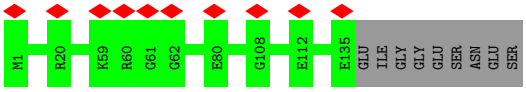
• Molecule 17: 50S ribosomal protein L15

Chain L:

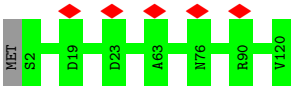




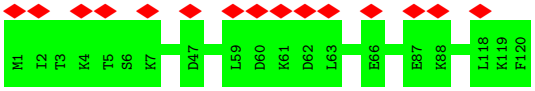
• Molecule 18: 50S ribosomal protein L16



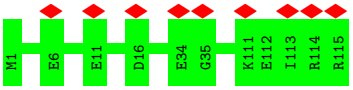
• Molecule 19: 50S ribosomal protein L17



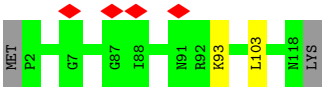
• Molecule 20: 50S ribosomal protein L18



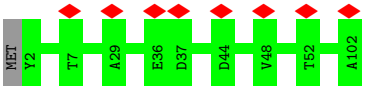
• Molecule 21: 50S ribosomal protein L19



• Molecule 22: 50S ribosomal protein L20

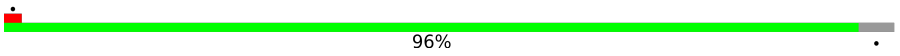


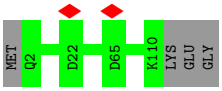
• Molecule 23: 50S ribosomal protein L21



• Molecule 24: 50S ribosomal protein L22

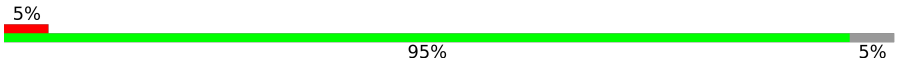
Chain S:

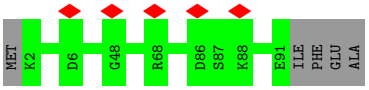




• Molecule 25: 50S ribosomal protein L23

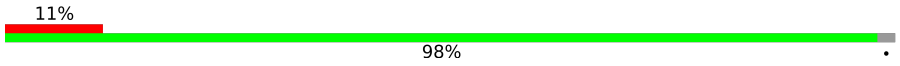
Chain T:

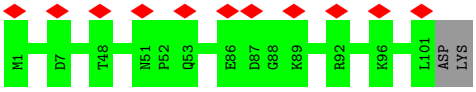




• Molecule 26: 50S ribosomal protein L24

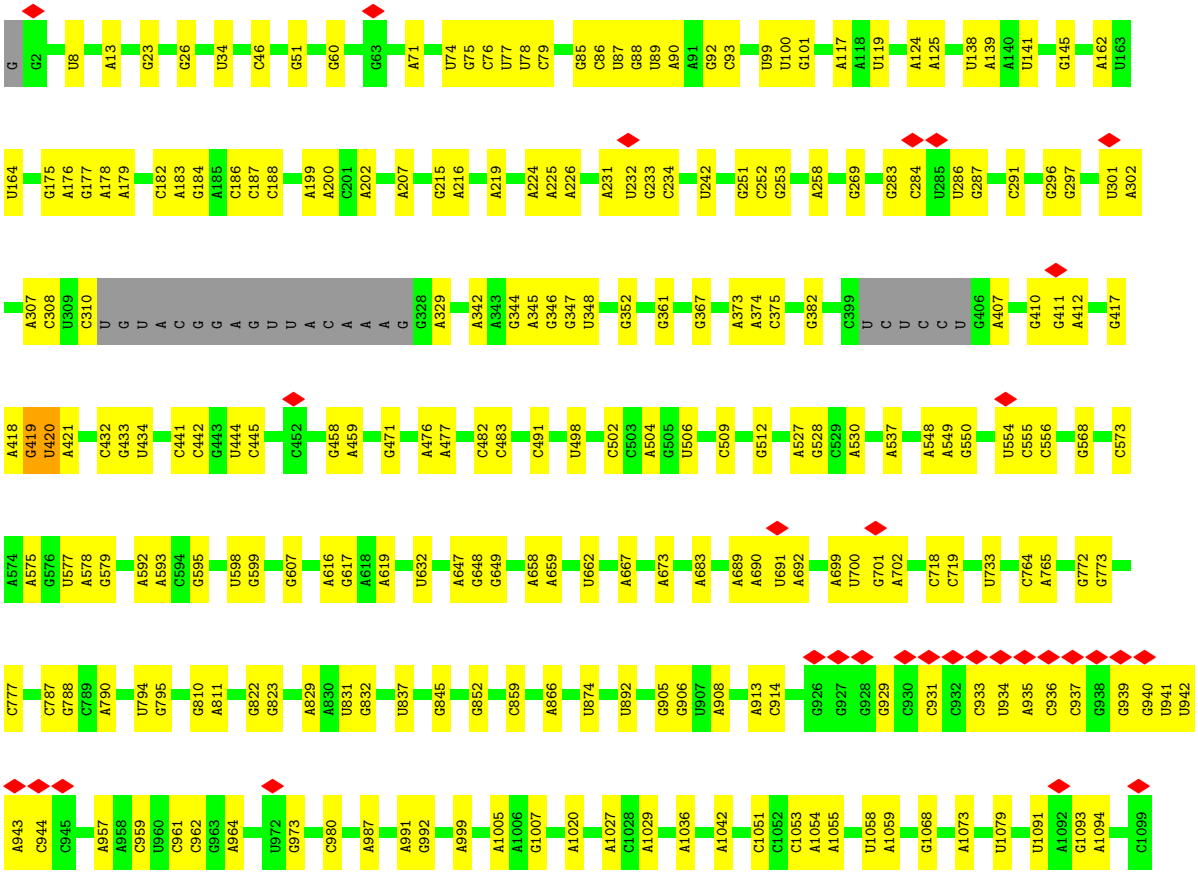
Chain U:

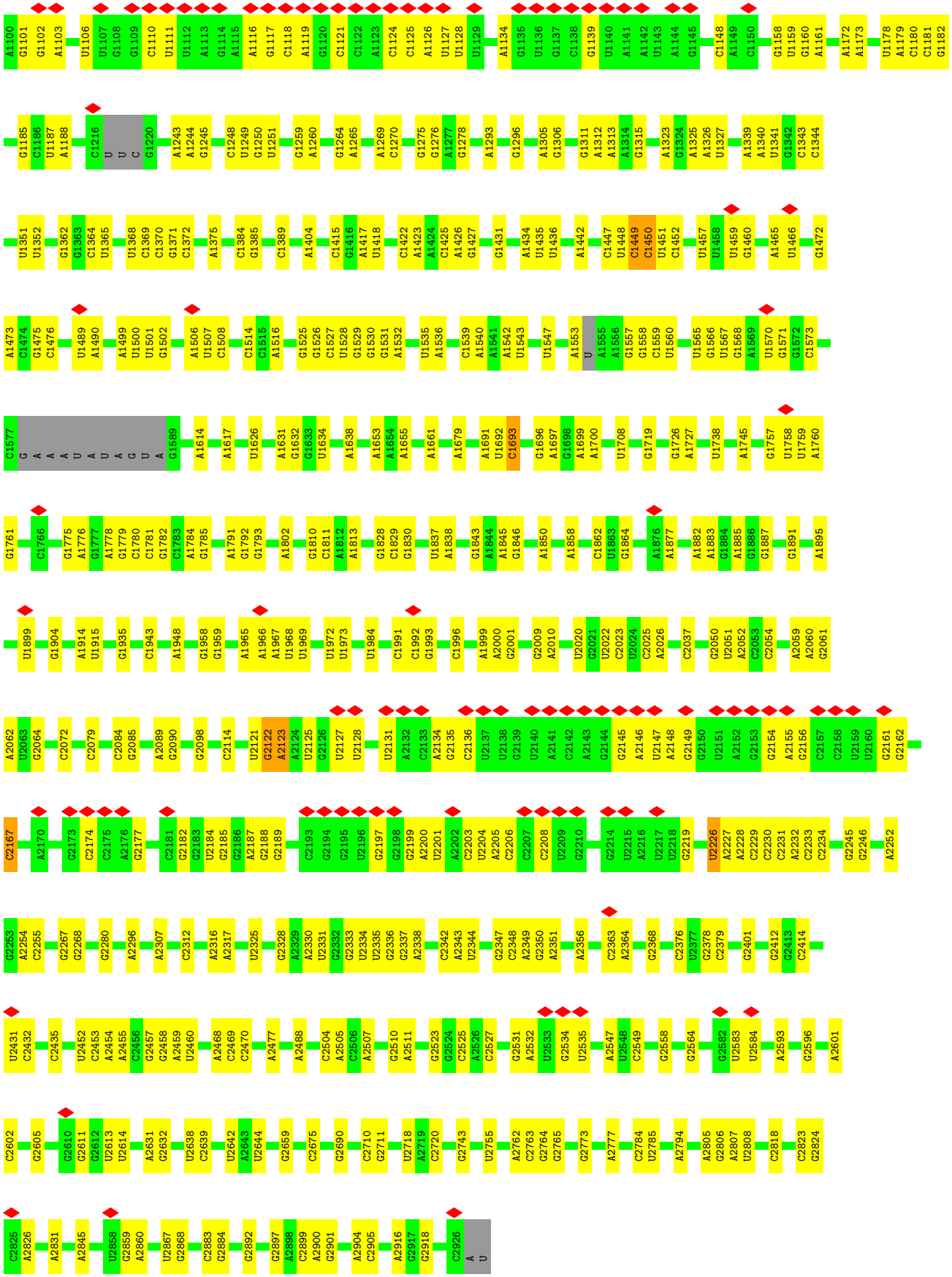




• Molecule 27: 23S ribosomal RNA

Chain V:

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G1185 C1186 U1187 A1188 C1216 U U C G1220 A1243 A1244 G1245 C1248 U1249 G1250 U1251 G1259 A1260 G1264 A1265 A1269 C1270 G1275 G1276 A1277 G1278 A1293 G1296 A1305 G1306 G1311 A1312 A1313 A1314 G1315 A1323 G1324 A1325 A1326 U1327 A1339 A1340 U1341 G1342 C1343 C1344
U1351 U1352 G1362 G1363 C1364 U1365 U1368 C1369 C1370 G1371 C1372 A1375 C1384 G1385 C1389 A1404 C1415 G1416 A1417 U1418 C1422 A1423 A1424 C1425 A1426 G1427 G1431 A1434 U1435 U1436 A1442 C1447 U1448 C1449 C1450 U1451 C1452 U1457 U1458 U1459 G1460 A1465 U1466 G1472
A1473 C1474 G1475 C1476 U1489 A1490 A1499 U1500 U1501 G1502 A1506 U1507 C1508 C1514 C1515 A1516 G1525 G1526 C1527 U1528 G1529 G1530 G1531 A1532 U1535 A1536 C1539 A1540 A1541 A1542 U1543 U1547 A1553 U A1555 A1556 G1557 G1558 C1559 U1560 U1565 G1566 U1567 G1568 A1569 U1570 G1571 G1572 C1573
C1577 G A A A U A U A G U A G1589 A1614 A1617 U1626 A1631 G1632 G1633 U1634 A1638 A1653 A1654 A1655 A1661 A1679 A1691 U1692 C1693 G1696 A1697 G1698 A1699 A1700 U1708 G1719 G1726 A1727 U1738 A1745 G1757 U1758 U1759 A1760
G1761 C1766 G1775 A1776 G1777 A1778 G1779 C1780 C1781 G1782 C1783 A1784 G1785 A1791 G1792 G1793 A1802 G1810 C1811 A1812 A1813 G1828 C1829 G1830 U1837 A1838 G1843 A1844 A1845 G1846 A1850 A1858 C1862 U1863 G1864 A1876 A1877 A1882 A1883 G1884 A1885 G1886 G1887 G1891 A1895
U1899 G1904 A1914 U1915 G1935 C1943 A1948 G1958 G1959 A1965 A1966 A1967 U1968 U1969 U1972 U1973 U1984 C1991 C1992 G1993 C1996 A1999 A2000 G2001 G2009 A2010 U2020 G2021 U2022 C2023 U2024 C2025 A2026 C2037 G2050 U2051 A2052 C2053 C2054 A2059 A2060 G2061
A2062 U2063 G2064 C2072 C2079 C2084 G2085 A2089 G2090 G2098 C2114 U2121 G2122 A2123 A2124 U2125 G2126 U2127 U2128 U2131 A2132 C2133 A2134 G2135 C2136 U2137 U2138 G2139 U2140 A2141 C2142 A2143 G2144 G2145 A2146 U2147 A2148 G2149 G2150 U2151 A2152 G2153 G2154 A2155 A2156 C2157 C2158 U2159 U2160 G2161 G2162
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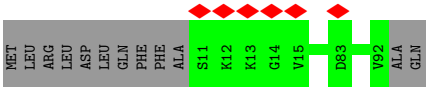
G2253 A2254 C2255 G2267 G2268 G2280 A2296 A2307 C2312 A2316 A2317 U2325 G2328 A2329 A2330 U2331 G2332 G2333 U2334 U2335 G2336 G2337 A2338 C2342 A2343 U2344 G2347 C2348 A2349 G2350 A2351 A2356 C2363 A2364 G2368 C2376 U2377 G2378 C2379 G2401 G2412 G2413 C2414
U2431 C2432 C2435 U2452 C2453 A2454 A2455 C2456 G2457 G2458 A2459 U2460 A2468 C2469 C2470 A2477 A2488 C2504 A2505 C2506 A2507 G2510 A2511 G2523 G2524 C2525 A2526 C2527 G2531 A2532 U2533 G2534 U2535 A2547 U2548 C2549 G2558 G2564 G2582 U2583 U2584 A2593 G2596 A2601
C2602 G2605 G2610 G2611 G2612 U2613 U2614 A2631 G2632 U2638 C2639 U2642 A2643 U2644 G2659 C2675 G2690 C2710 G2711 U2718 A2719 C2720 G2743 U2755 A2762 C2763 G2764 G2765 G2773 A2777 C2784 U2785 A2794 A2805 G2806 A2807 U2808 C2818 C2823 G2824
C2825 A2826 A2831 A2845 U2858 G2859 A2860 U2867 C2868 C2883 C2884 G2892 G2897 A2898 C2899 A2900 G2901 A2904 C2905 A2916 G2917 G2918 C2926 A U

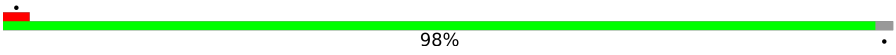
• Molecule 28: 50S ribosomal protein L27

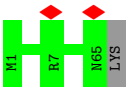
Chain W:



• Molecule 29: 50S ribosomal protein L29

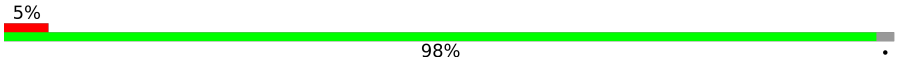
Chain Y:

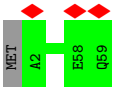




• Molecule 30: 50S ribosomal protein L30

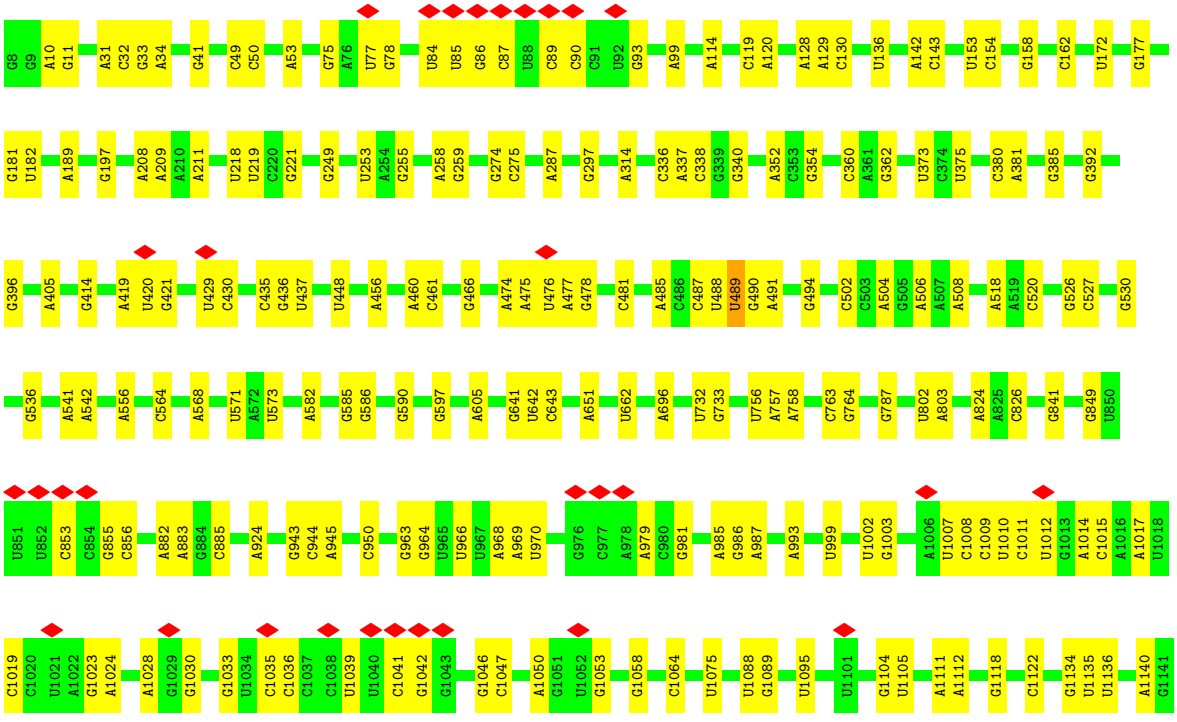
Chain Z:

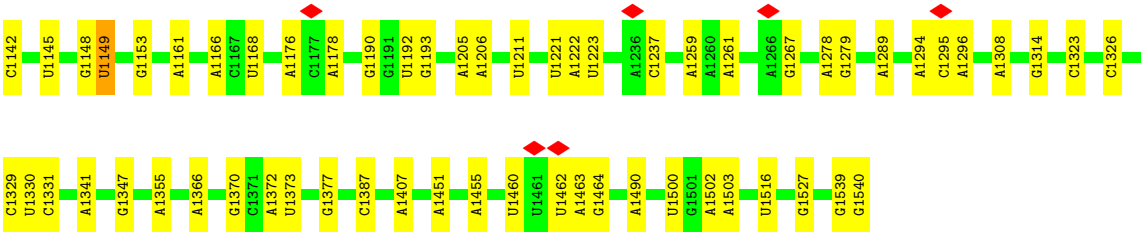




• Molecule 31: 16S ribosomal RNA

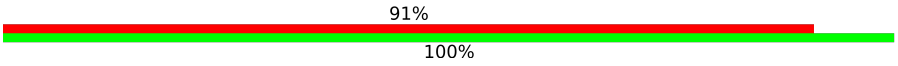
Chain a:

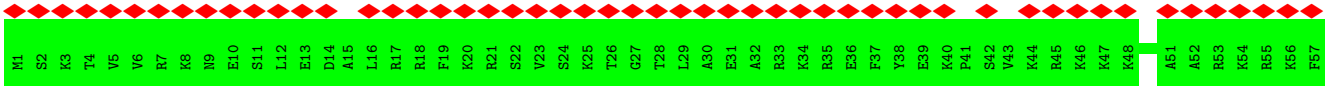




• Molecule 32: 30S ribosomal protein S21

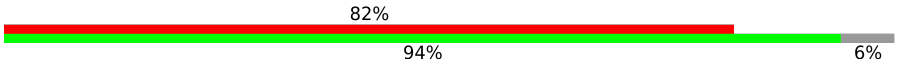
Chain b:

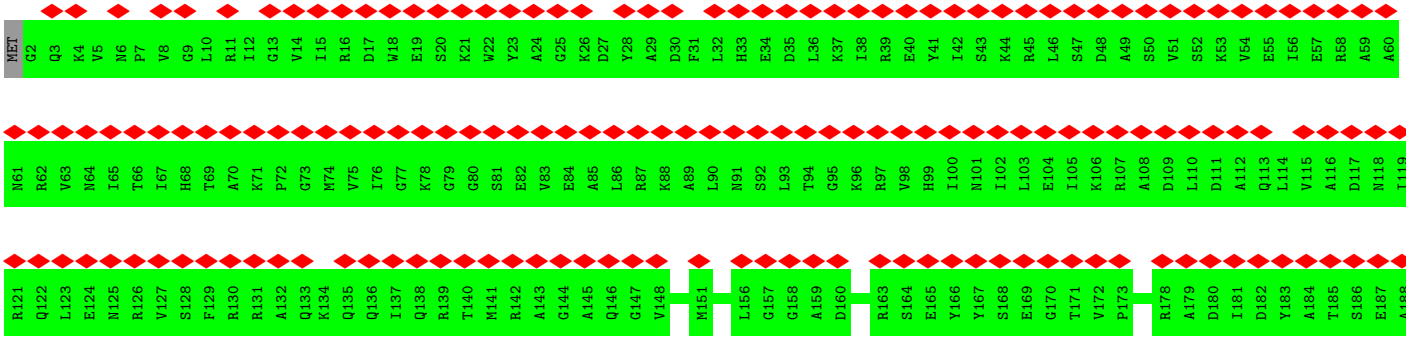




• Molecule 33: 30S ribosomal protein S3

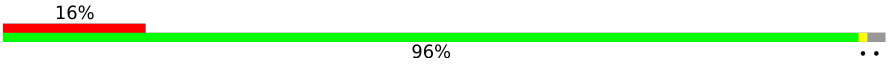
Chain c:

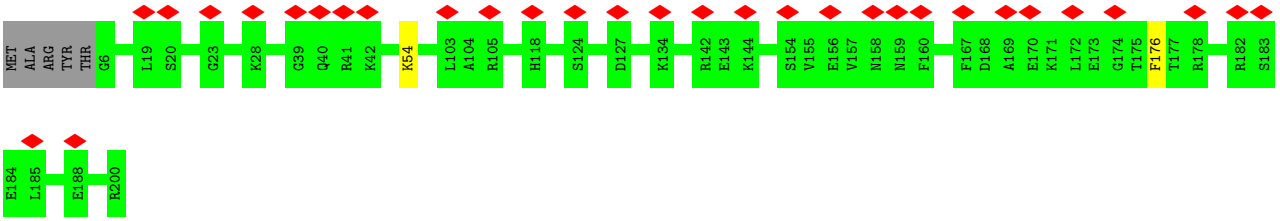




• Molecule 34: 30S ribosomal protein S4

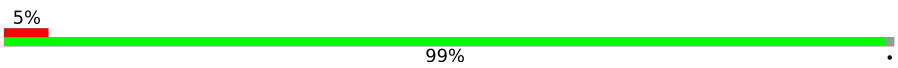
Chain d:

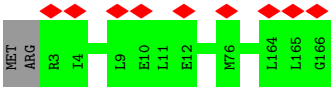




• Molecule 35: 30S ribosomal protein S5

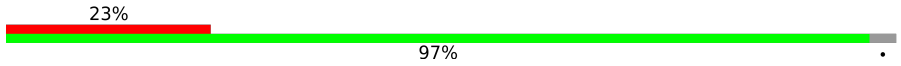
Chain e:

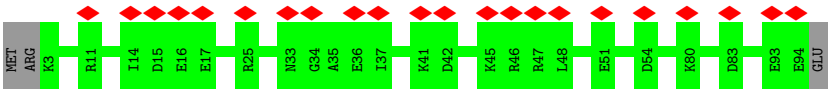




• Molecule 36: 30S ribosomal protein S6

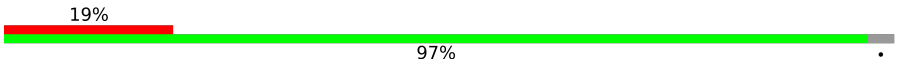
Chain f:

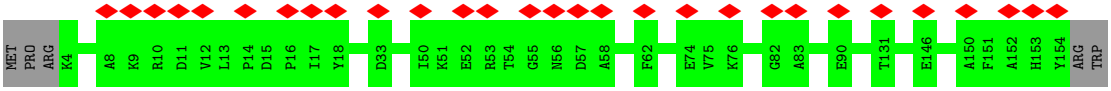




• Molecule 37: 30S ribosomal protein S7

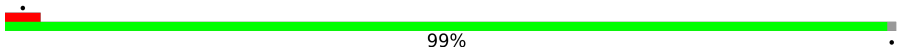
Chain g:

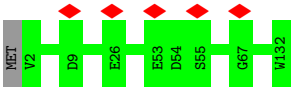




• Molecule 38: 30S ribosomal protein S8

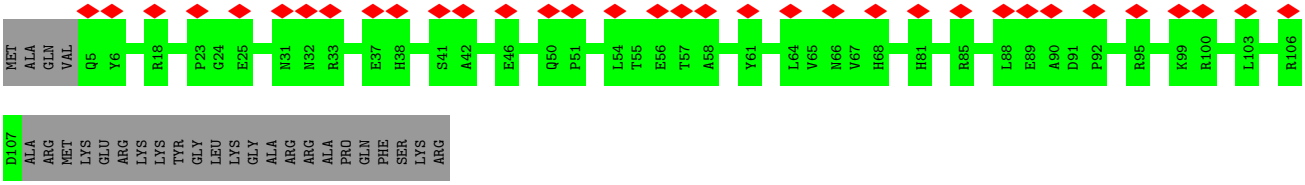
Chain h:





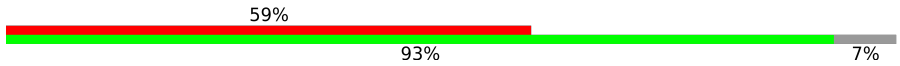
• Molecule 39: 30S ribosomal protein S9

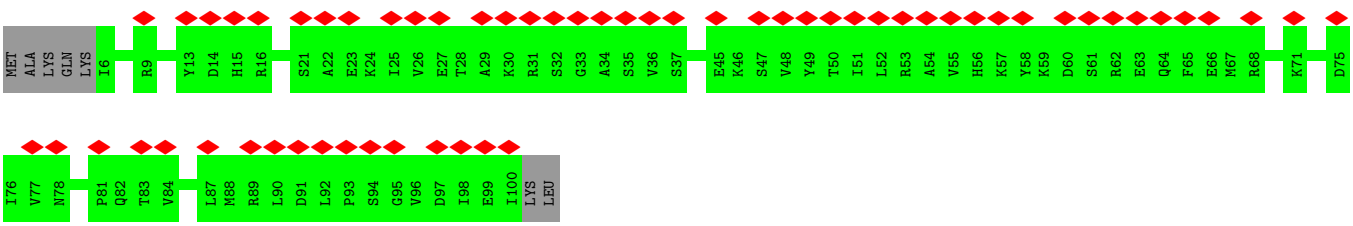
Chain i:



• Molecule 40: 30S ribosomal protein S10

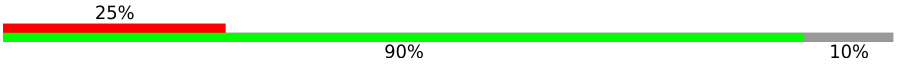
Chain j:

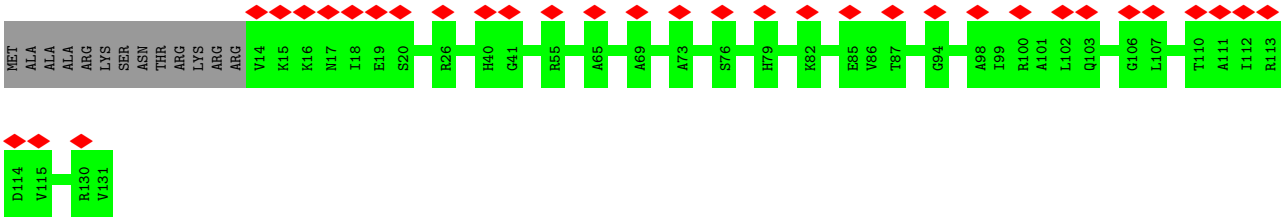




• Molecule 41: 30S ribosomal protein S11

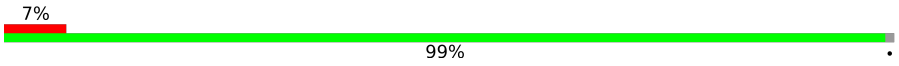
Chain k:

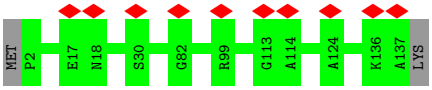




• Molecule 42: 30S ribosomal protein S12

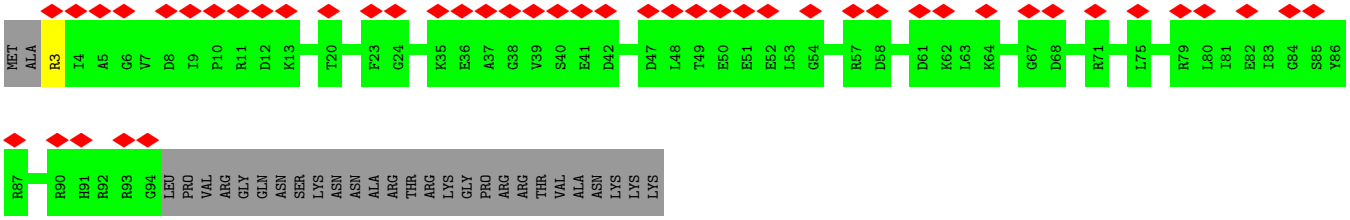
Chain l:





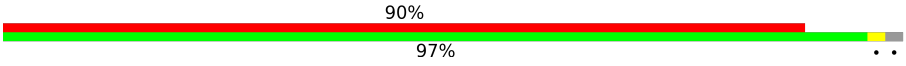
• Molecule 43: 30S ribosomal protein S13

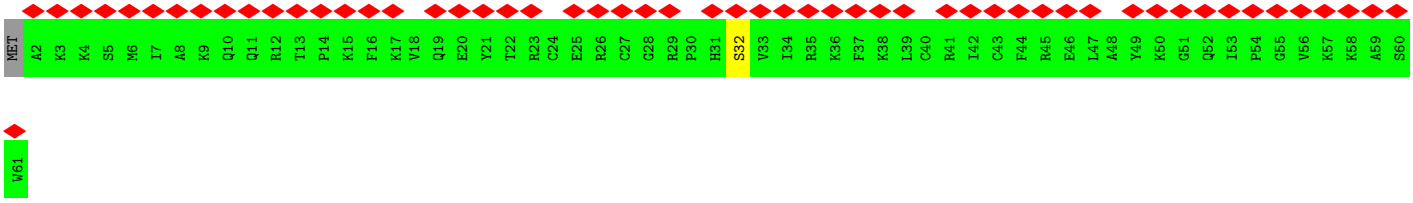
Chain m:



• Molecule 44: 30S ribosomal protein S14

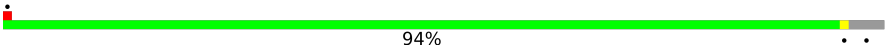
Chain n:

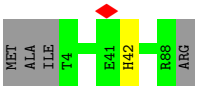




• Molecule 45: 30S ribosomal protein S15

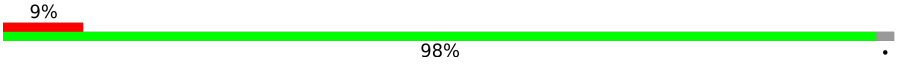
Chain o:

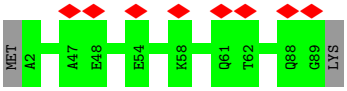




• Molecule 46: 30S ribosomal protein S16

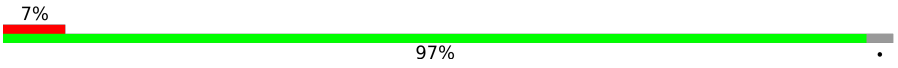
Chain p:

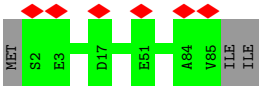




• Molecule 47: 30S ribosomal protein S17

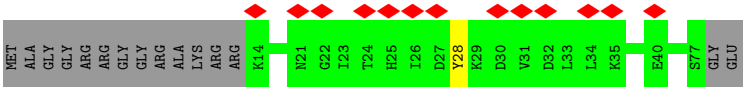
Chain q:





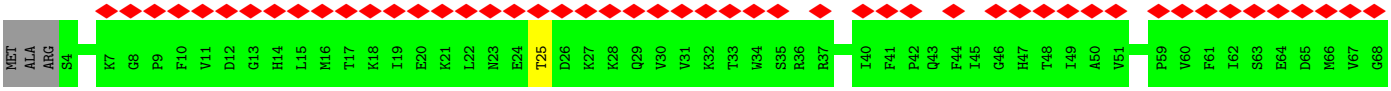
• Molecule 48: 30S ribosomal protein S18

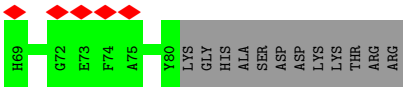
Chain r:



• Molecule 49: 30S ribosomal protein S19

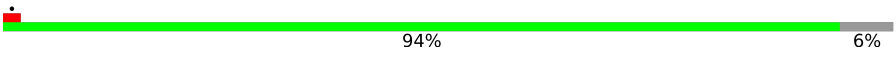
Chain s:

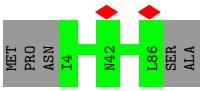




• Molecule 50: 30S ribosomal protein S20

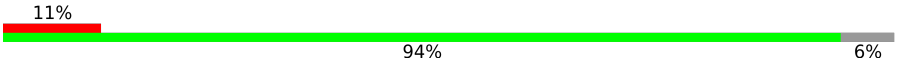
Chain t:

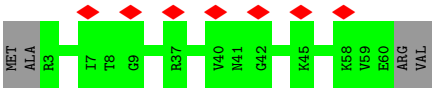




• Molecule 51: 50S ribosomal protein L28

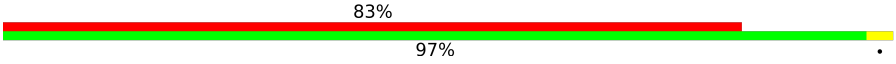
Chain u:

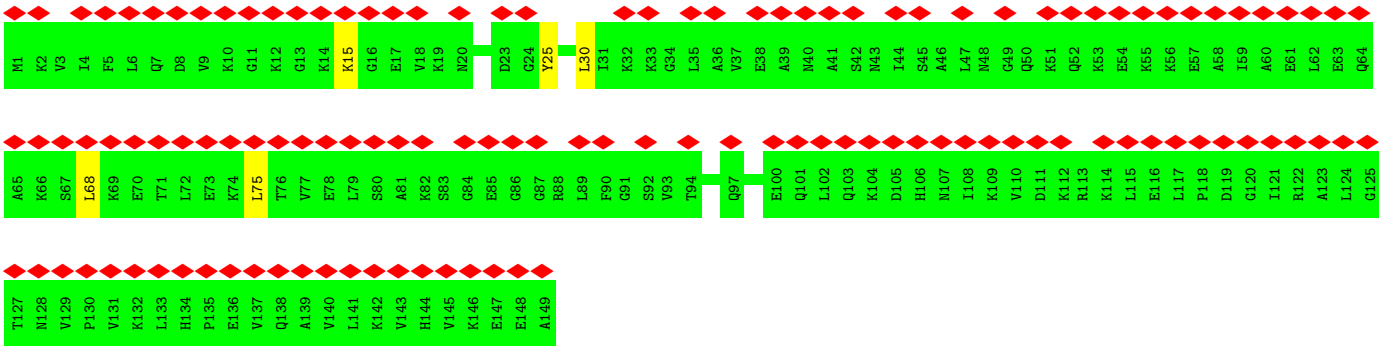




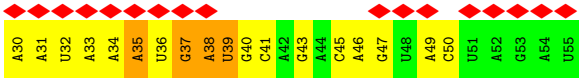
• Molecule 52: 50S ribosomal protein L9

Chain X:





• Molecule 53: mRNA



4 Experimental information (i)

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 ($e^-/Å^2$)	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	Depositor
Map size (Å)	590.64, 590.64, 590.64	wwPDB
Map dimensions	368, 368, 368	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	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(^{o})	Ideal(^{o})
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 (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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%)	7	36
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

Continued on next page...

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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%)	7 36
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%)	8 38
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%)	50 79

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 (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
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%)	86	93
9	D	167/170 (98%)	166 (99%)	1 (1%)	84	91
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%)	67 82
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%)	65 81
44	n	53/54 (98%)	53 (100%)	0	100 100
45	o	80/83 (96%)	79 (99%)	1 (1%)	65 81
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%)	62 79
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%)	27 56
All	All	4401/4585 (96%)	4389 (100%)	12 (0%)	90 96

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 oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

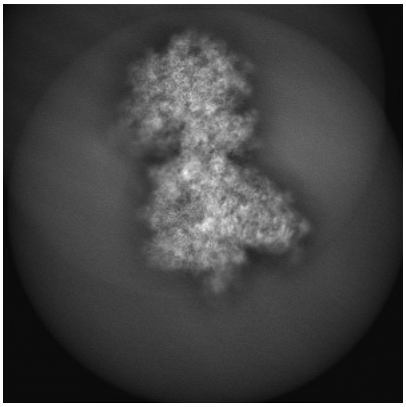
6 Map visualisation

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.

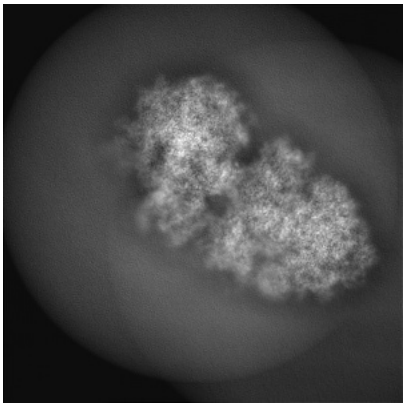
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

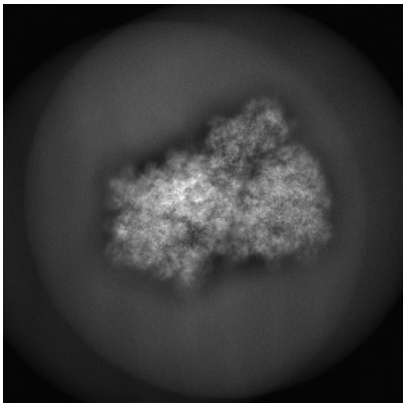
6.1.1 Primary map



X



Y

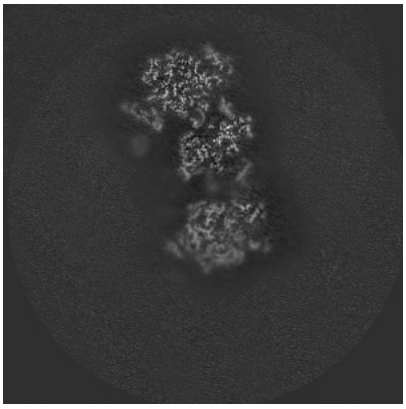


Z

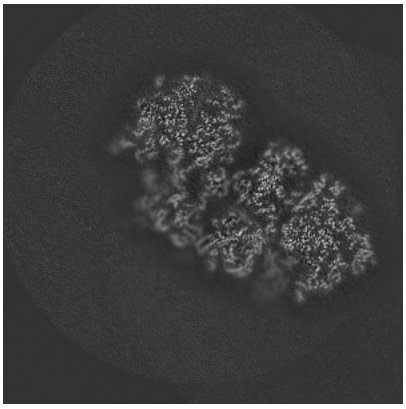
The images above show the map projected in three orthogonal directions.

6.2 Central slices

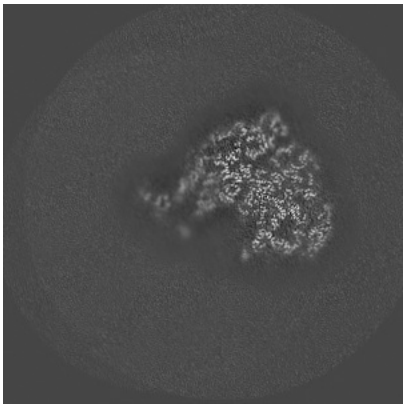
6.2.1 Primary map



X Index: 184



Y Index: 184

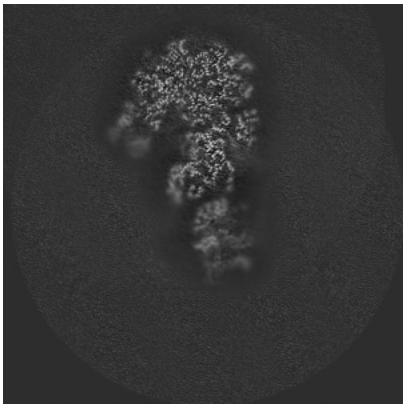


Z Index: 184

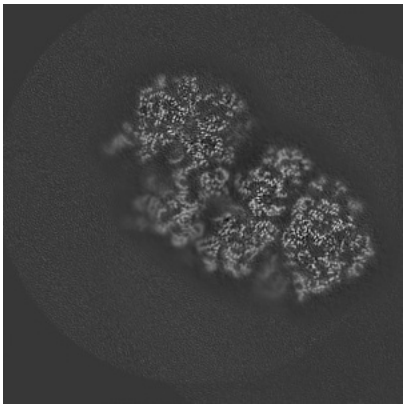
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

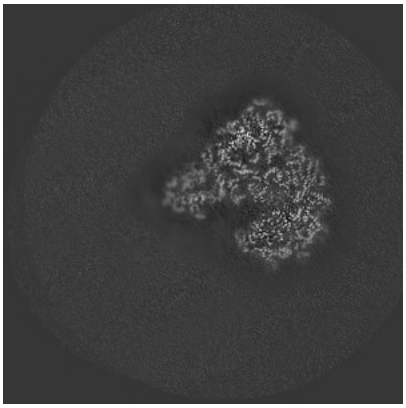
6.3.1 Primary map



X Index: 163



Y Index: 187

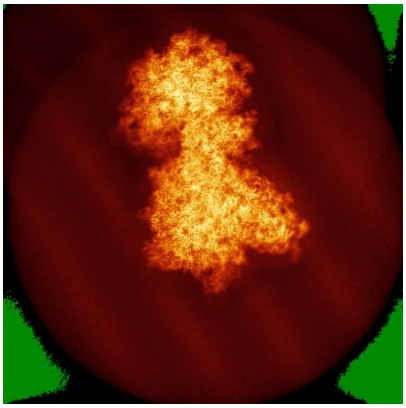


Z Index: 169

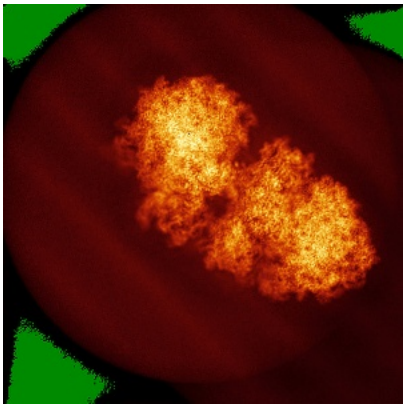
The images above show the largest variance slices of the map in three orthogonal directions.

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

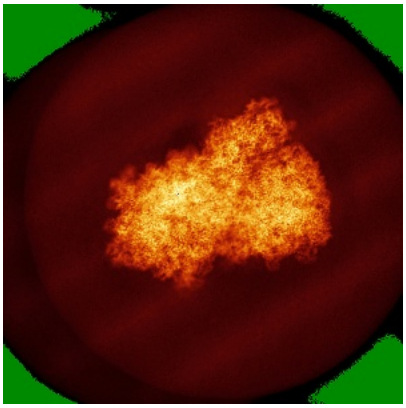
6.4.1 Primary map



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

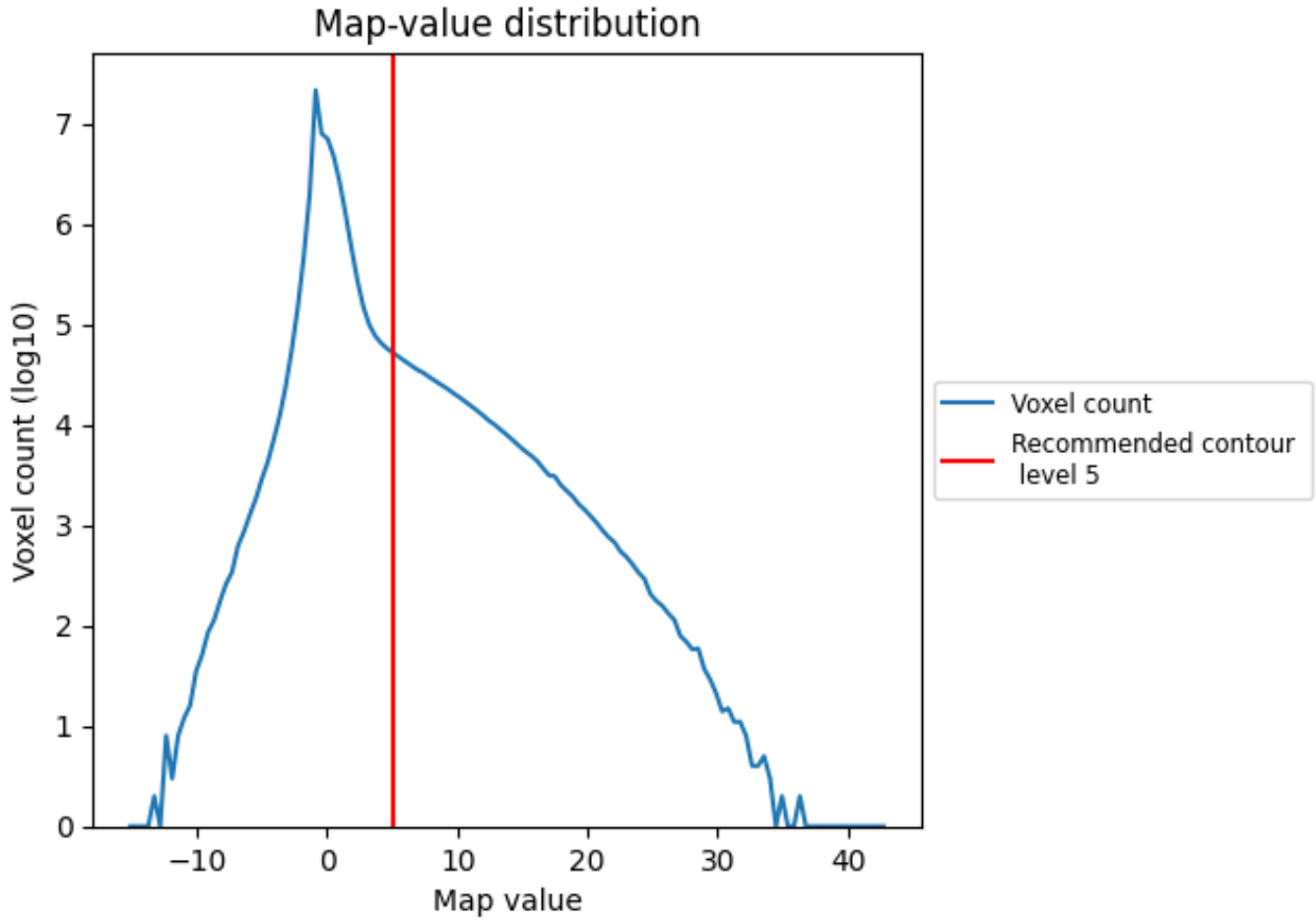
6.6 Mask visualisation (i)

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

7 Map analysis

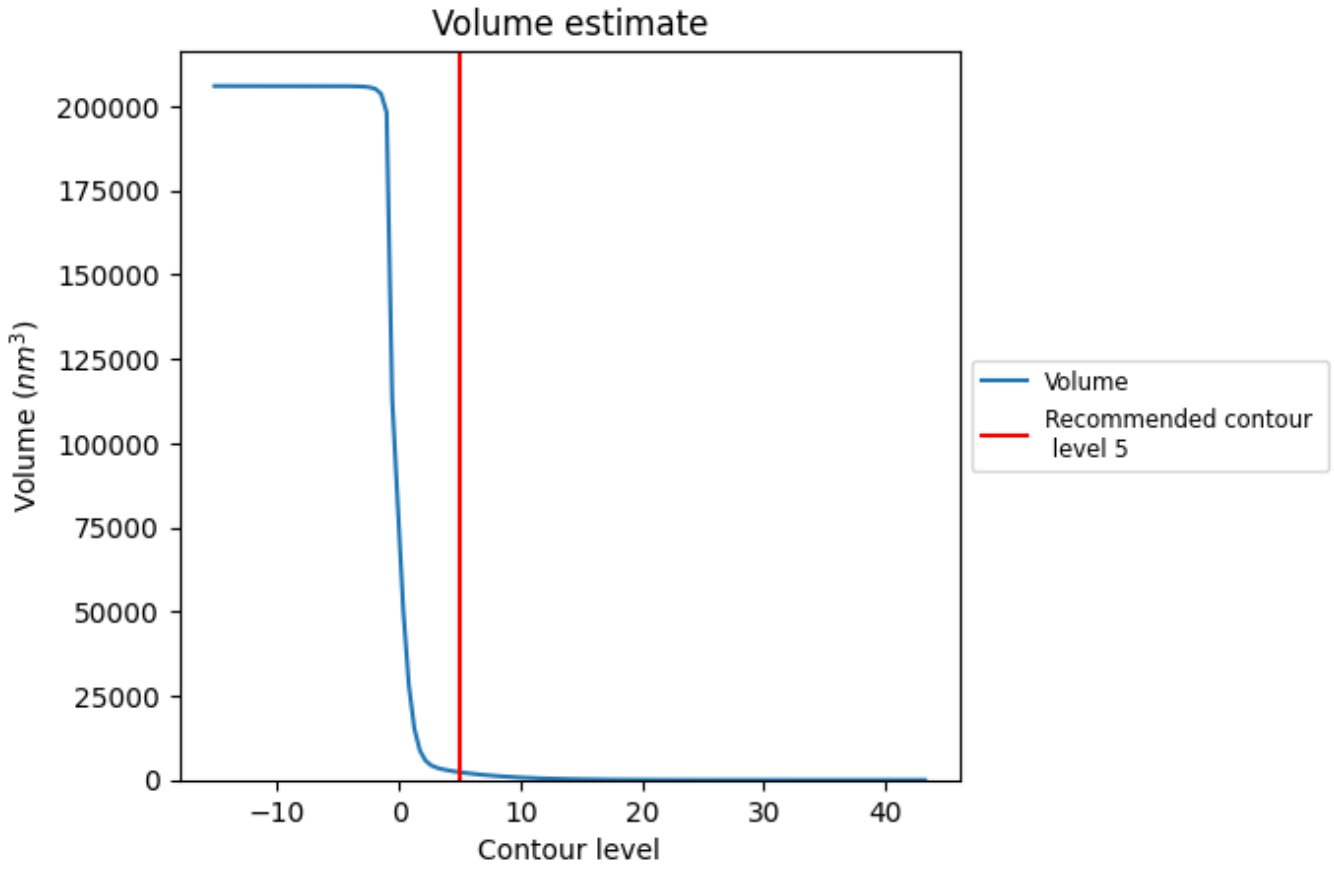
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

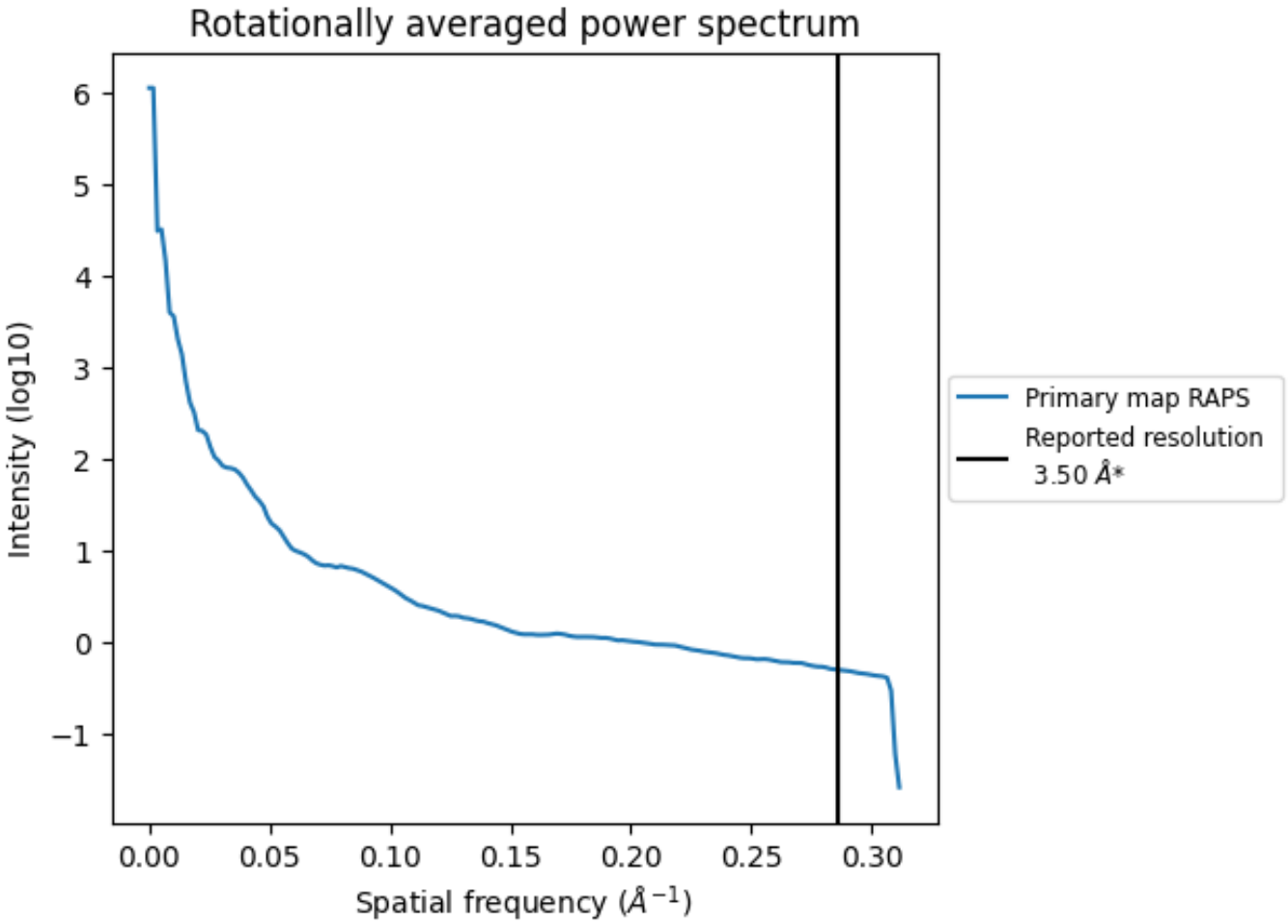
7.2 Volume estimate



The volume at the recommended contour level is 2302 nm^3; 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}

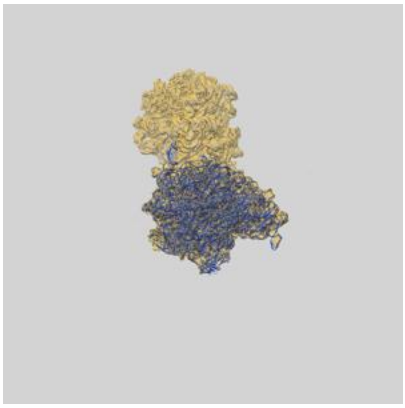
8 Fourier-Shell correlation (i)

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

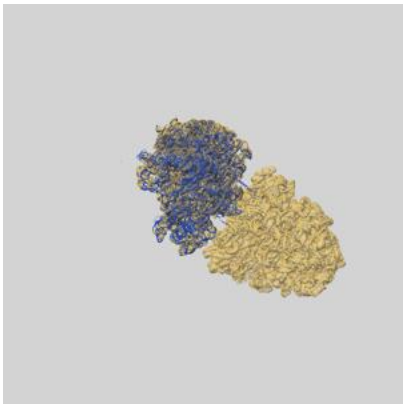
9 Map-model fit

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.

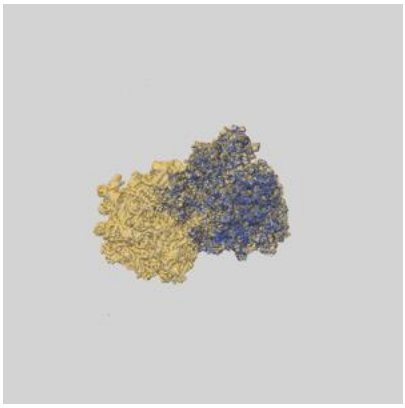
9.1 Map-model overlay



X



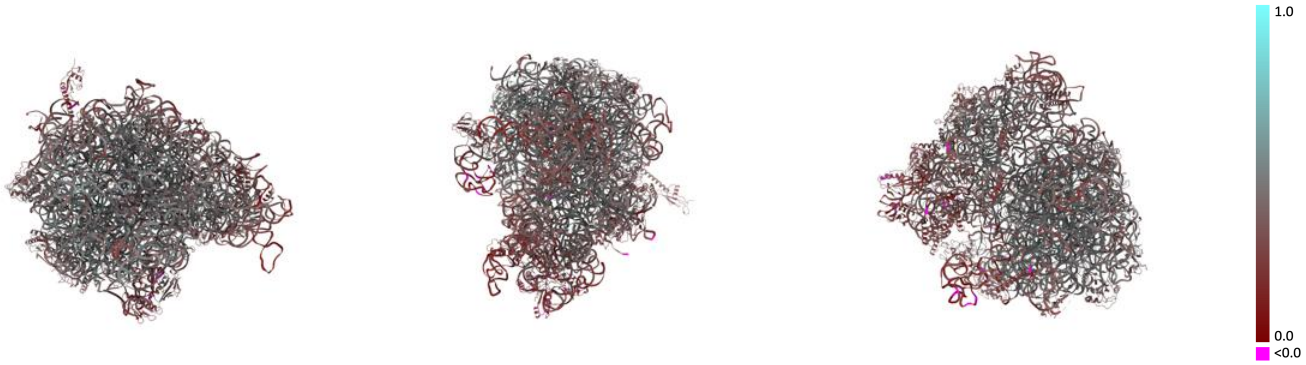
Y



Z

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.

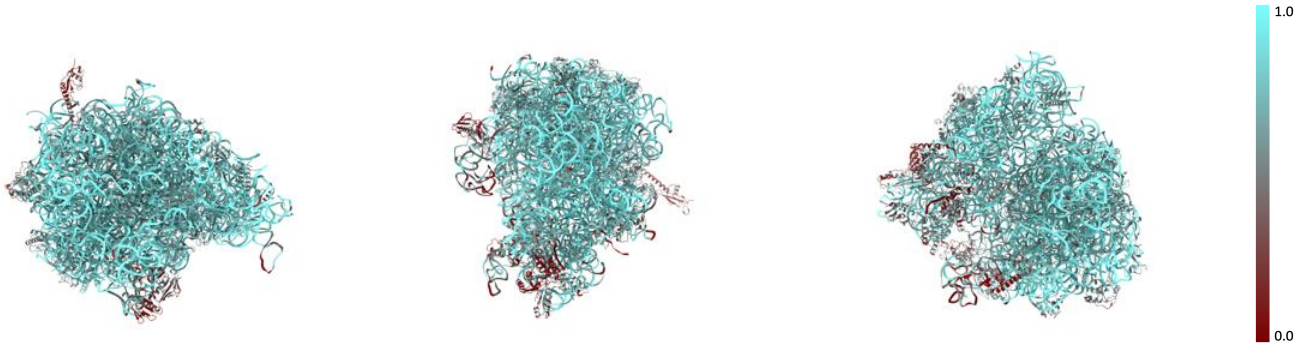
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

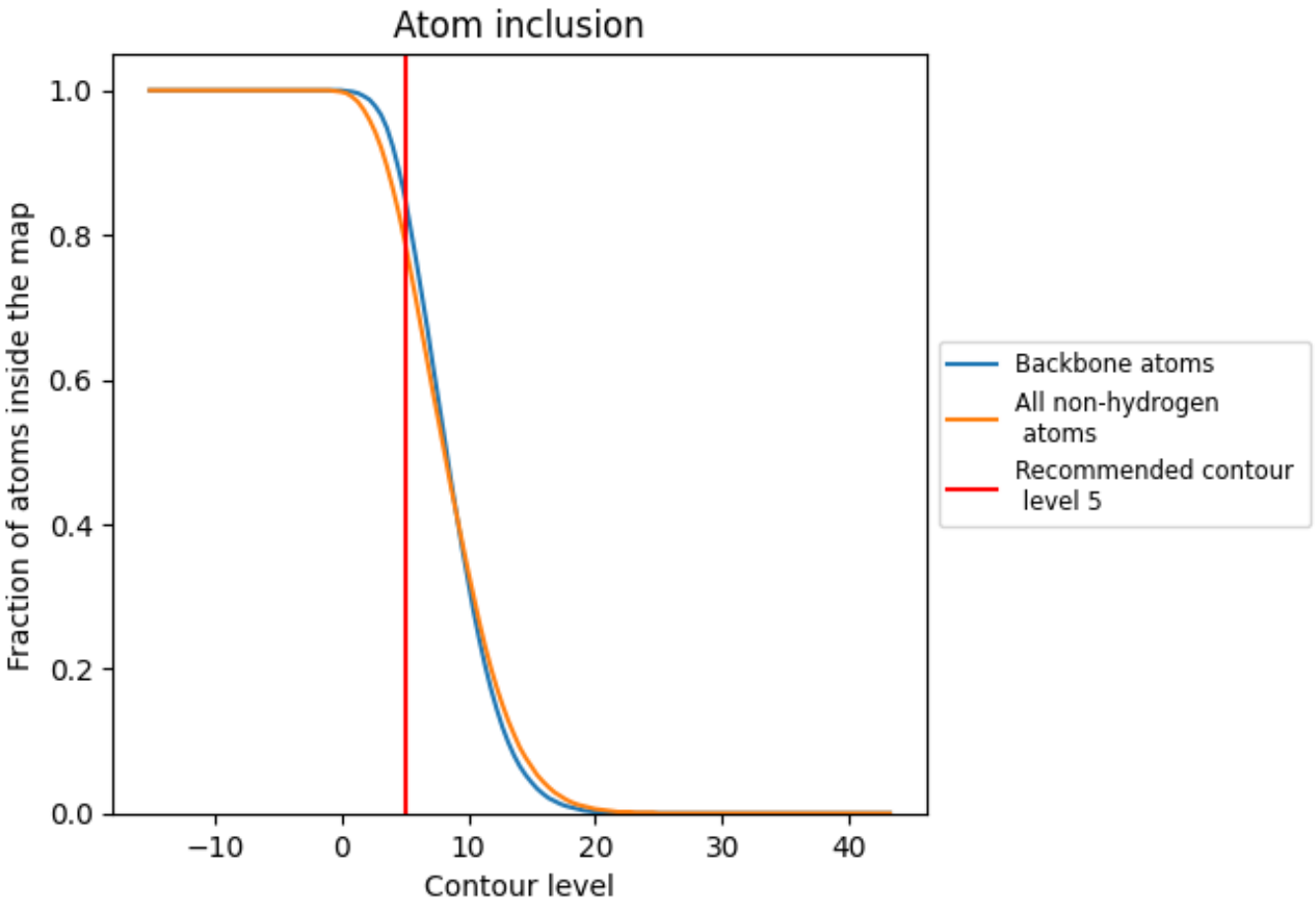
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (5).

9.4 Atom inclusion (i)



At the recommended contour level, 85% of all backbone atoms, 79% 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 (5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7890	0.3970
0	0.7630	0.4840
1	0.6850	0.4460
2	0.8090	0.5000
3	0.7940	0.5060
4	0.6520	0.4430
6	0.2470	0.2700
A	0.3130	0.2370
B	0.8800	0.3830
C	0.6950	0.4620
D	0.7130	0.4770
E	0.6390	0.4250
F	0.4020	0.3070
G	0.3290	0.3280
H	0.8210	0.3310
I	0.0670	0.1630
J	0.7480	0.4690
K	0.6860	0.4570
L	0.6700	0.4510
M	0.6470	0.4270
N	0.6910	0.4260
O	0.6400	0.3770
P	0.6700	0.4260
Q	0.7680	0.4450
R	0.6560	0.4430
S	0.6960	0.4580
T	0.6820	0.4380
U	0.6540	0.4170
V	0.8730	0.4300
W	0.7270	0.4700
X	0.1740	0.2560
Y	0.6580	0.3690
Z	0.6670	0.4320
a	0.8900	0.3720
b	0.1360	0.2300

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Chain	Atom inclusion	Q-score
c	0.1380	0.2590
d	0.6180	0.3220
e	0.6780	0.4020
f	0.5460	0.3340
g	0.5330	0.2620
h	0.7340	0.3970
i	0.4990	0.2050
j	0.3570	0.2350
k	0.5220	0.3260
l	0.6730	0.3890
m	0.4040	0.2180
n	0.1670	0.2750
o	0.7150	0.3530
p	0.7010	0.3410
q	0.6670	0.3650
r	0.5780	0.3690
s	0.2330	0.2030
t	0.6750	0.3040
u	0.7110	0.4660