



wwPDB EM Validation Summary Report ⓘ

Aug 24, 2026 – 11:27 AM EDT

PDB ID : 9EBB / pdb_00009ebb
EMDB ID : EMD-47876
Title : Cryo-EM structure of the MPY and ribosome-tunnel occluding hibernation factors bound to the Mycobacterium tuberculosis C- 70S ribosome
Authors : Majumdar, S.; Ojha, A.K.; Agrawal, R.K.
Deposited on : 2024-11-12
Resolution : 2.70 Å(reported)
Based on initial model : 7MT7

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.dev133
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) : 2.50

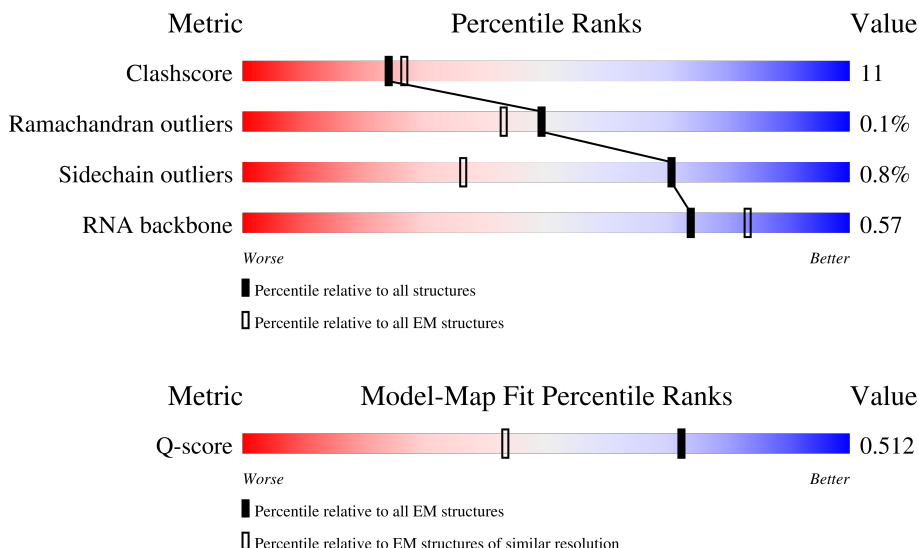
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.70 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.



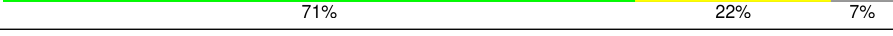
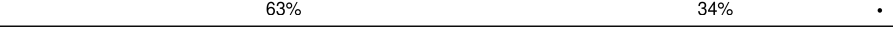
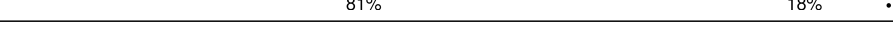
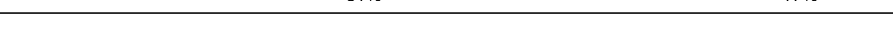
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	10327 (2.20 - 3.20)

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	b	54	41% 41% 9% 9%
2	1	62	68% 15% 18%
3	0	57	61% 30% 7%

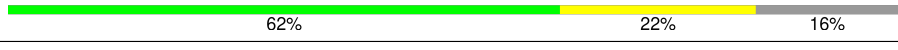
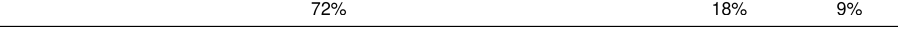
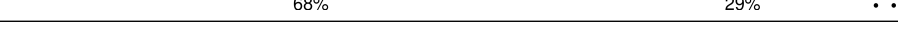
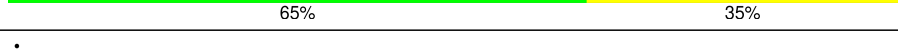
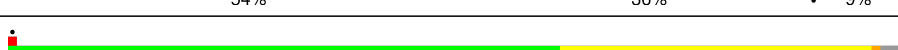
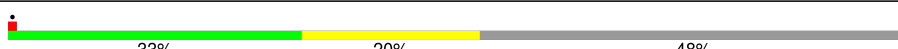
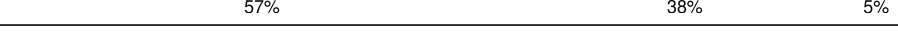
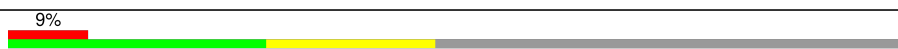
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Mol	Chain	Length	Quality of chain
4	2	47	
5	3	64	
6	4	37	
7	6	80	
8	I	3138	
9	B	115	
10	C	280	
11	D	217	
12	E	223	
13	F	187	
14	G	179	
15	H	152	
16	J	195	
17	K	122	
18	L	146	
19	M	138	
20	N	180	
21	O	122	
22	P	113	
23	Q	129	
24	R	104	
25	S	197	
26	T	100	
27	U	105	
28	V	215	

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Mol	Chain	Length	Quality of chain
29	W	86	
30	Y	77	
31	Z	65	
32	a	1537	
33	c	274	
34	d	201	
35	e	220	
36	f	96	
37	g	156	
38	h	132	
39	i	151	
40	j	101	
41	k	139	
42	l	124	
43	m	124	
44	o	89	
45	p	162	
46	q	135	
47	s	93	
48	t	86	
49	x	33	
50	A	214	
51	r	88	
52	9	101	
53	y	78	

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Mol	Chain	Length	Quality of chain
54	7	24	 75% 17% 8%

2 Entry composition

There are 54 unique types of molecules in this entry. The entry contains 145491 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 Large ribosomal subunit protein bL33.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	b	49	Total	C	N	O	0	0
			424	263	89	72		

- Molecule 2 is a protein called DUF5302 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	51	Total	C	N	O	S	0	0
			395	231	87	76	1		

- Molecule 3 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	0	53	Total	C	N	O	0	0
			421	262	93	66		

- Molecule 4 is a protein called 50S ribosomal protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	2	42	Total	C	N	O	S	0	0
			358	212	94	51	1		

- Molecule 5 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	3	62	Total	C	N	O	0	0
			494	298	112	84		

- Molecule 6 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	4	37	Total	C	N	O	S	0	0
			294	179	63	47	5		

- Molecule 7 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	45	Total	C	N	O	S	0	0
			345	214	60	66	5		

- Molecule 8 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	3118	Total	C	N	O	P	0	0
			66956	29845	12340	21653	3118		

- Molecule 9 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	B	115	Total	C	N	O	P	0	0
			2458	1097	456	790	115		

- Molecule 10 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	C	272	Total	C	N	O	S	0	0
			2088	1277	437	369	5		

- Molecule 11 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	D	213	Total	C	N	O	S	0	0
			1590	985	307	292	6		

- Molecule 12 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	E	207	Total	C	N	O	S	0	0
			1552	958	303	289	2		

- Molecule 13 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	F	170	Total	C	N	O	S	0	0
			1335	834	254	242	5		

- Molecule 14 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	G	174	Total	C	N	O	S	0	0
			1330	836	249	244	1		

- Molecule 15 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	H	47	Total	C	N	O	S	0	0
			350	220	64	65	1		

- Molecule 16 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	J	146	Total	C	N	O	S	0	0
			1143	724	217	199	3		

- Molecule 17 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	K	121	Total	C	N	O	S	0	0
			934	585	179	168	2		

- Molecule 18 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	L	142	Total	C	N	O	S	0	0
			1060	656	215	187	2		

- Molecule 19 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	M	134	Total	C	N	O	S	0	0
			1072	679	215	177	1		

- Molecule 20 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	N	116	Total	C	N	O	S	0	0
			908	574	175	158	1		

- Molecule 21 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	O	116	Total	C	N	O	0	0
			886	541	188	157		

- Molecule 22 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	P	112	Total	C	N	O	S	0	0
			907	573	174	159	1		

- Molecule 23 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	Q	122	Total	C	N	O	0	0
			980	608	205	167		

- Molecule 24 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	R	98	Total	C	N	O	0	0
			742	472	136	134		

- Molecule 25 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	S	113	Total	C	N	O	0	0
			860	533	178	149		

- Molecule 26 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				AltConf	Trace
26	T	95	Total	C	N	O	0	0
			741	469	138	134		

- Molecule 27 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	U	90	Total	C	N	O	S	0	0
			699	430	138	129	2		

- Molecule 28 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	V	177	Total	C	N	O	0	0
			1319	822	243	254		

- Molecule 29 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	W	74	Total	C	N	O	0	0
			546	336	111	99		

- Molecule 30 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Y	65	Total	C	N	O	S	0	0
			541	331	106	103	1		

- Molecule 31 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	Z	59	Total	C	N	O	0	0
			476	293	101	82		

- Molecule 32 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	a	1519	Total	C	N	O	P	0	0
			32610	14525	5961	10605	1519		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
33	c	207	Total	C	N	O	S	0	0
			1654	1030	322	298	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
34	d	201	Total	C	N	O	S	0	0
			1658	1041	317	297	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
35	e	160	Total	C	N	O	S	0	0
			1149	726	214	206	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
36	f	95	Total	C	N	O	S	0	0
			757	480	133	141	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
37	g	152	Total	C	N	O	S	0	0
			1193	742	234	215	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
38	h	130	Total	C	N	O	S	0	0
			999	627	187	184	1		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
39	i	127	Total	C	N	O	0	0
			993	628	195	170		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
40	j	99	Total	C	N	O	S	0	0
			789	496	146	144	3		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
41	k	117	Total	C	N	O	0	0
			873	540	175	158		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
42	l	123	Total	C	N	O	S	0	0
			967	599	198	167	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
43	m	113	Total	C	N	O	S	0	0
			919	562	190	164	3		

- Molecule 44 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	o	87	Total	C	N	O	S	0	0
			718	449	144	125			

- Molecule 45 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	p	85	Total	C	N	O	S	0	0
			688	438	130	119	1		

- Molecule 46 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	q	94	Total	C	N	O	S	0	0
			763	477	151	132	3		

- Molecule 47 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	s	81	Total	C	N	O	S	0	0
			657	421	123	112	1		

- Molecule 48 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	t	82	Total	C	N	O	S	0	0
			631	381	137	113			

- Molecule 49 is a protein called Mitochondrial domain of uncharacterized function (DUF1713).

Mol	Chain	Residues	Atoms					AltConf	Trace
49	x	29	Total	C	N	O	S	0	0
			237	146	57	33	1		

- Molecule 50 is a protein called Ribosome hibernation promoting factor.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	A	102	Total	C	N	O	S	0	0
			852	529	173	148	2		

- Molecule 51 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	r	71	Total	C	N	O	S	0	0
			560	345	110	104	1		

- Molecule 52 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	9	100	Total	C	N	O	S	0	0
			798	484	181	133			

- Molecule 53 is a protein called Large ribosomal subunit protein bL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	y	78	Total	C	N	O	S	0	0
			636	386	143	106	1		

- Molecule 54 is a protein called 50S ribosomal protein bL37.

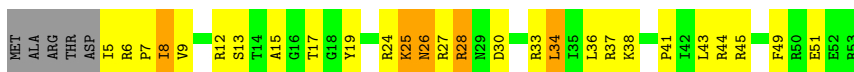
Mol	Chain	Residues	Atoms					AltConf	Trace
54	7	22	Total	C	N	O	S	0	0
			186	111	47	28			

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: Large ribosomal subunit protein bL33

Chain b: 



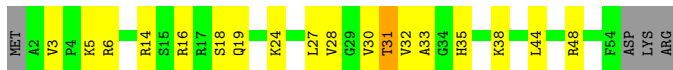
- Molecule 2: DUF5302 domain-containing protein

Chain 1: 



- Molecule 3: 50S ribosomal protein L32

Chain 0: 



- Molecule 4: 50S ribosomal protein bL34

Chain 2: 



- Molecule 5: 50S ribosomal protein L35

Chain 3: 



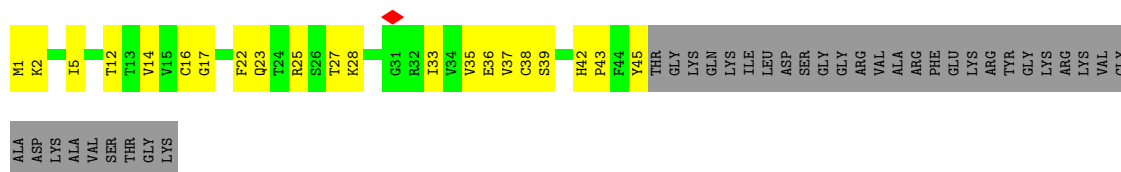
- Molecule 6: 50S ribosomal protein L36

Chain 4:  78% 16% 5%



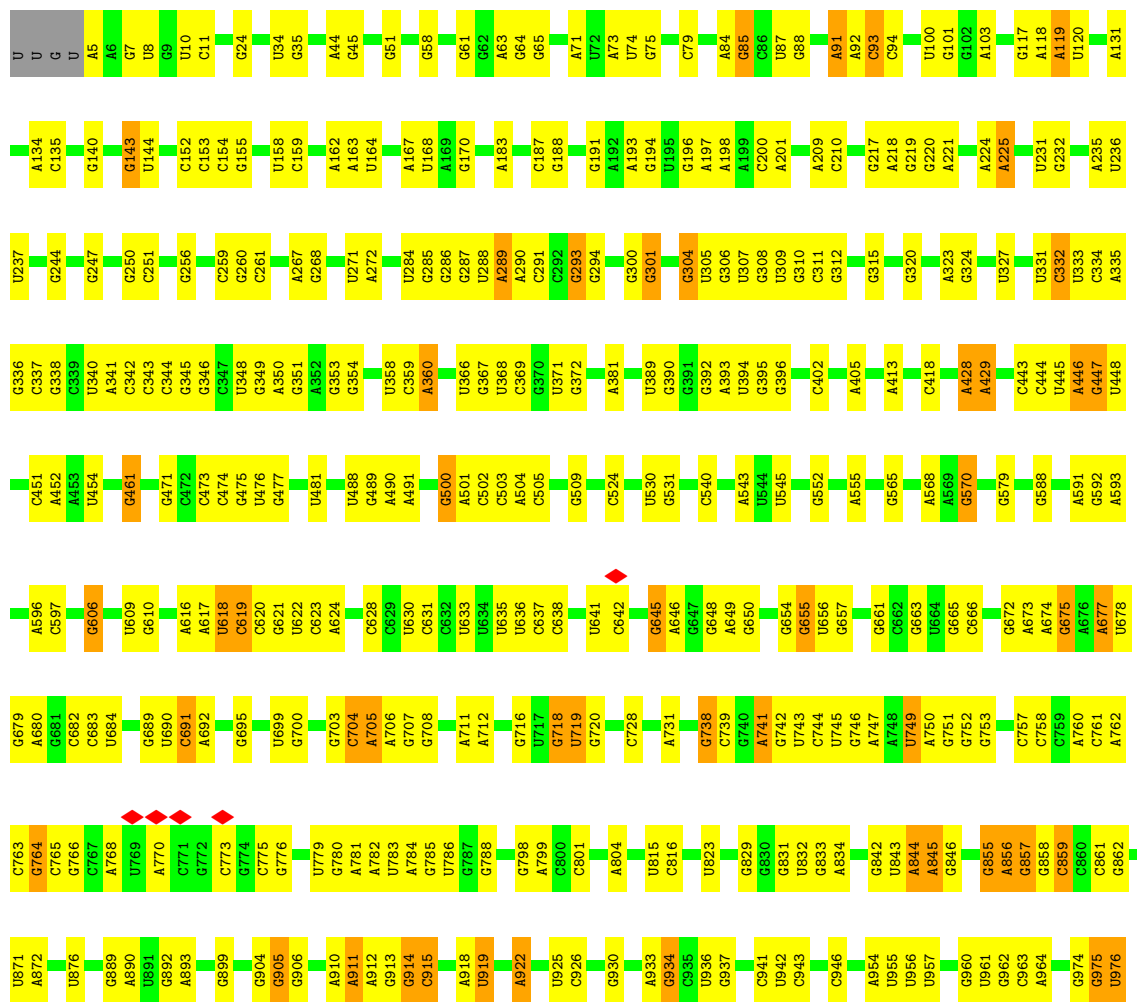
• Molecule 7: 50S ribosomal protein L31

Chain 6:  30% 26% 44%

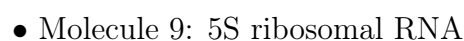


• Molecule 8: 23S ribosomal RNA

Chain I:  61% 33% 5%



G2358	U2375	G2171	A2046	C1918	U1676	G1608	U1539	A1403	U1256	G1163	A1060	U977
U2359	C2276	A2174	G2051	G1930	A1677	U1609	G1540	G1408	A1257	G1171	A1061	C978
G2360	A2280	A2175	U2052	A1806	A1686	G1610	G1544	A1409	U1261	A1173	G1062	A979
G2361	C2281	A2176	G2058	A1807	G1687	U1611	G1546	A1410	A1262	G1176	G1064	C981
A2363	G2284	C2180	A2059	U1949	A1680	G1612	C1547	G1423	G1263	A1177	U1071	G985
G2364	U2181	U2181	C2060	U1951	G1691	G1613	C1548	A1432	C1264	G1177	A1072	A986
A2365	A2292	C2180	A2059	A1950	A1680	A1614	C1549	C1437	G1267	G1183	A1073	G987
G2366	C2293	U2184	G2062	C1952	G1692	G1615	C1550	G1437	U1270	G1184	A1075	G988
U2367	G2294	C2185	A2063	U1954	G1693	G1616	C1551	U1271	A1272	G1187	C1076	G991
G2368	C2294	G1955	G1955	G1955	C1698	U1617	G1552	G1442	A1272	U1189	G1080	A992
U2369	A2298	A1956	A1956	A1956	G1704	C1618	U1553	U1443	A1273	G1188	G1081	G993
G2370	G2299	A1957	A1957	A1957	G1706	U1619	G1554	C1444	U1273	U1190	G1082	C994
A2371	A2300	A1957	A1957	A1957	G1706	G1620	U1557	U1447	C1280	G1193	G1083	U1002
G2372	C2301	A1957	A1957	A1957	A1707	G1621	A1558	G1448	C1283	U1194	U1086	G1007
A2373	C2302	A1957	A1957	A1957	A1708	G1622	C1561	C1457	A1295	U1196	A1087	A1008
C2303	C2303	A1957	A1957	A1957	G1720	C1624	G1566	C1456	A1296	G1197	A1088	G1012
C2304	C2304	A1957	A1957	A1957	A1721	U1625	U1567	C1457	C1299	A1198	G1089	C
G2307	G2307	A1957	A1957	A1957	G1722	G1626	A1568	U1460	C1303	G1200	C1092	C
A2308	A2308	A1957	A1957	A1957	A1723	G1627	C1571	U1460	U1304	A1199	A1096	C
C2309	C2309	A1957	A1957	A1957	G1724	G1628	A1575	G1463	U1305	G1201	C1097	U
U2310	U2310	A1957	A1957	A1957	A1727	G1632	C1578	C1466	U1306	A1202	G1098	A
U2311	U2311	A1957	A1957	A1957	G1741	A1633	A1579	A1467	U1307	G1203	U1099	U
U2312	U2312	A1957	A1957	A1957	U1742	C1634	A1580	C1466	G1308	C1204	A1103	G
C2313	C2313	A1957	A1957	A1957	G1749	A1635	A1581	A1467	G1309	A1206	C1111	U1023
C2314	C2314	A1957	A1957	A1957	C1750	U1636	A1582	U1471	U1310	C1207	A1112	C1026
C2315	C2315	A1957	A1957	A1957	G1751	U1637	A1583	G1472	G1311	C1208	G1113	U1027
U2316	U2316	A1957	A1957	A1957	U1752	U1638	C1584	C1481	U1211	U1210	G1116	G1028
A2317	A2317	A1957	A1957	A1957	G1753	G1639	G1585	G1482	G1212	A1213	C1123	A1029
C2318	C2318	A1957	A1957	A1957	A1754	U1641	G1586	U1483	A1214	G1124	G1125	C1036
U2319	U2319	A1957	A1957	A1957	G1755	G1642	A1587	C1494	A1215	A1129	A1130	A1039
G2330	G2330	A1957	A1957	A1957	U1755	G1643	U1588	A1496	G1216	G1131	G1132	A1040
U2334	U2334	A1957	A1957	A1957	A1765	G1646	C1589	G1499	U1378	U1223	G1140	C1043
U2335	U2335	A1957	A1957	A1957	U1766	U1647	G1590	U1504	G1379	A1224	G1141	G1044
C2336	C2336	A1957	A1957	A1957	A1767	A1648	A1591	U1510	U1380	U1226	G1142	G1045
G2337	G2337	A1957	A1957	A1957	G1768	U1649	C1592	A1515	G1381	A1232	G1143	C1046
G2338	G2338	A1957	A1957	A1957	U1769	C1651	U1593	A1516	U1385	C1232	U1143	G1049
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C2341	C2341	A1957	A1957	A1957	U1771	A1653	U1596	G1518	G1387	U1234	U1053	U1053
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G2349	G2349	A1957	A1957	A1957	U1778	C1660	C1603					
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C2411	C2411	A1957	A1957	A1957	G1785	U1667	U1610					
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C2416	C2416	A1957	A1957	A1957	U1790	U1672	G1615					
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[illegible]

- Molecule 10: 50S ribosomal protein L2

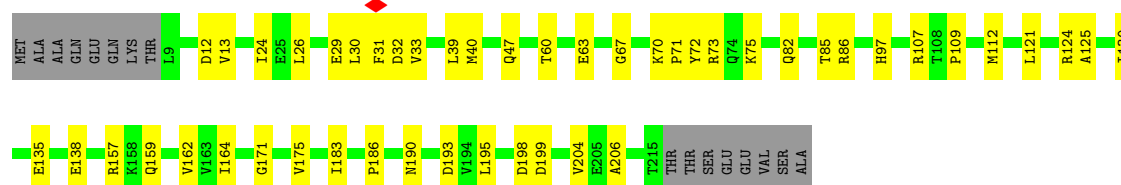
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Met	A2	I3	R4	P8	R14	I24	T25	R26	K31	A45	R52	K59	R63	D66	R69	K72	R88	Y97	I98	D99	R103	P108	N109	G110	L111	D124	I125	G128	N129	L155	A156	R157	S158	S162	I163	M177	E181

- Molecule 11: 50S ribosomal protein L3

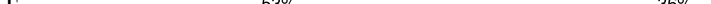
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I6	100
F17	100
D18	100
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S20	100
V23	100
V26	100
G32	100
P33	100
N34	100
V35	100
V36	100
T37	100
R38	100
E43	100
Q51	100
L52	100
A53	100
Y54	100
G55	100
E56	100
K61	100
K64	100
V75	100
D68	100
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Q96	100
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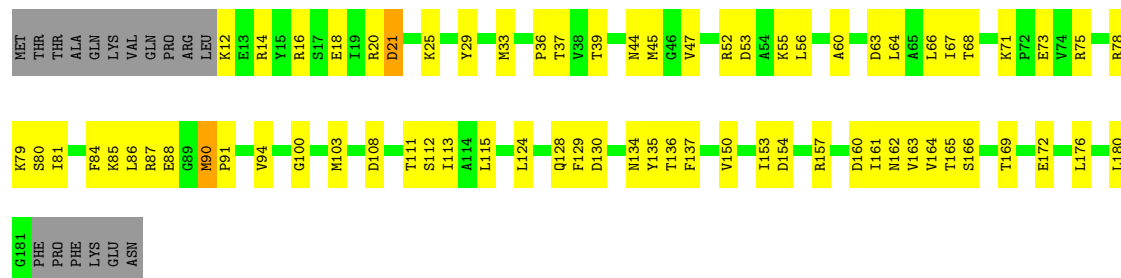
- Molecule 12: 50S ribosomal protein L4

Chain E: 71% 22% 7%

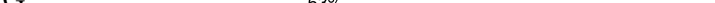


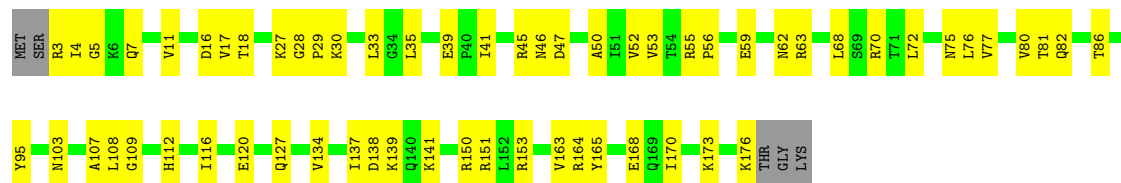
- Molecule 13: 50S ribosomal protein L5

Chain F:  53% 36% 9%

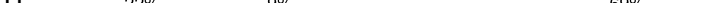


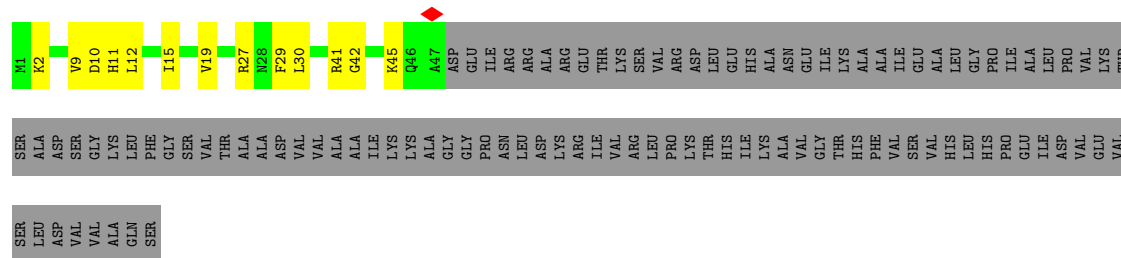
- Molecule 14: 50S ribosomal protein L6

Chain G:  63% 34%

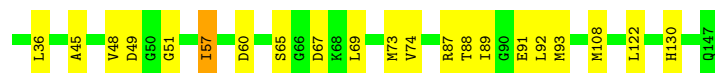
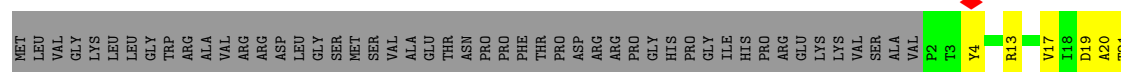


- Molecule 15: 50S ribosomal protein L9

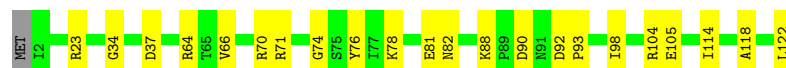
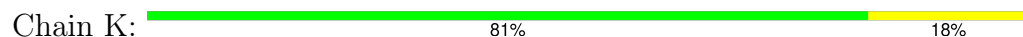
Chain H:  22% 9% 69%



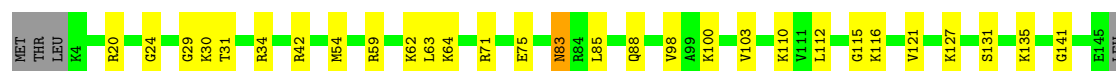
- Molecule 16: 50S ribosomal protein L13



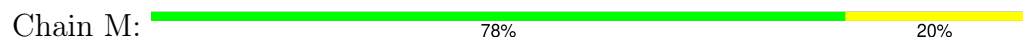
- Molecule 17: Large ribosomal subunit protein uL14



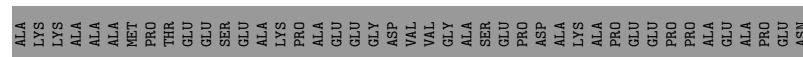
- Molecule 18: 50S ribosomal protein L15



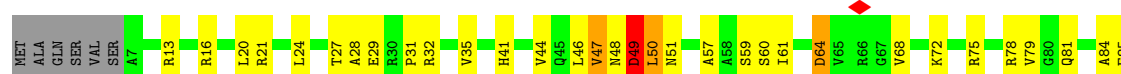
- Molecule 19: 50S ribosomal protein L16



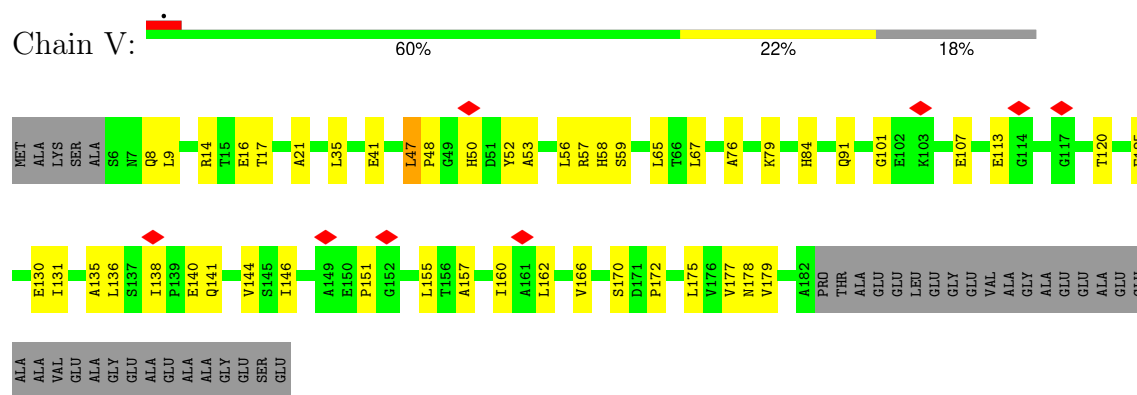
- Molecule 20: 50S ribosomal protein L17



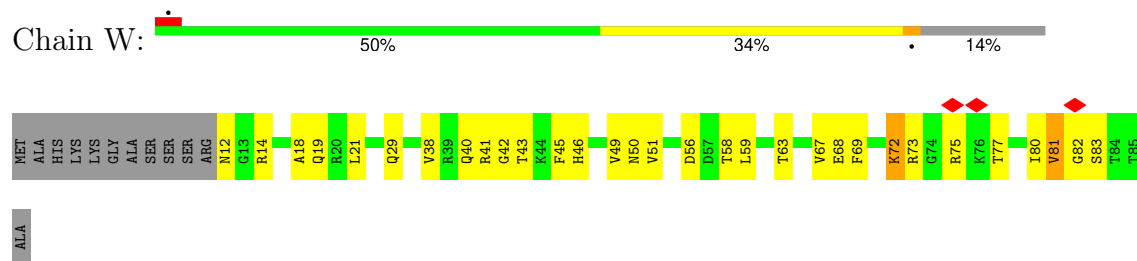
- Molecule 21: 50S ribosomal protein L18



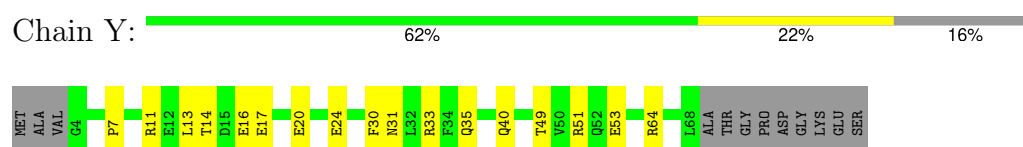
- Molecule 28: 50S ribosomal protein L25



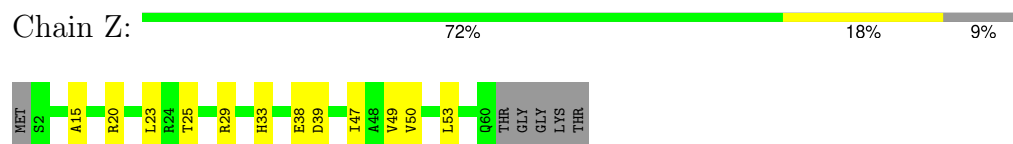
- Molecule 29: 50S ribosomal protein L27



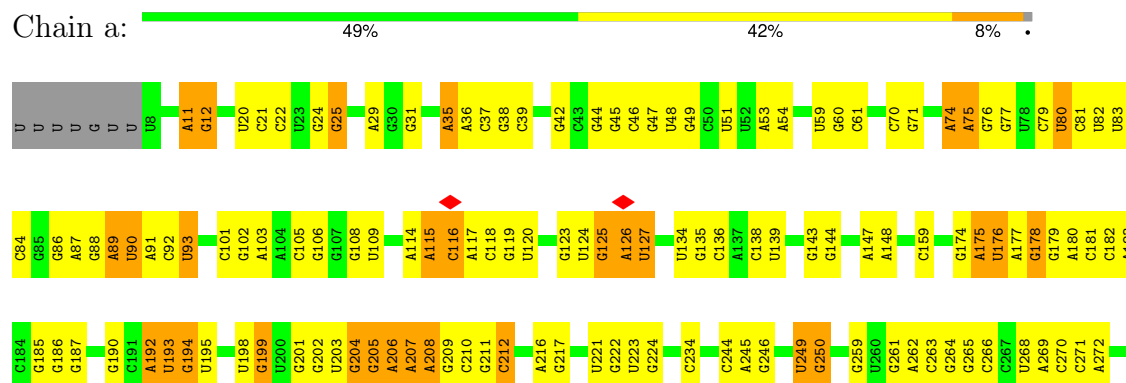
- Molecule 30: 50S ribosomal protein L29



- Molecule 31: 50S ribosomal protein L30

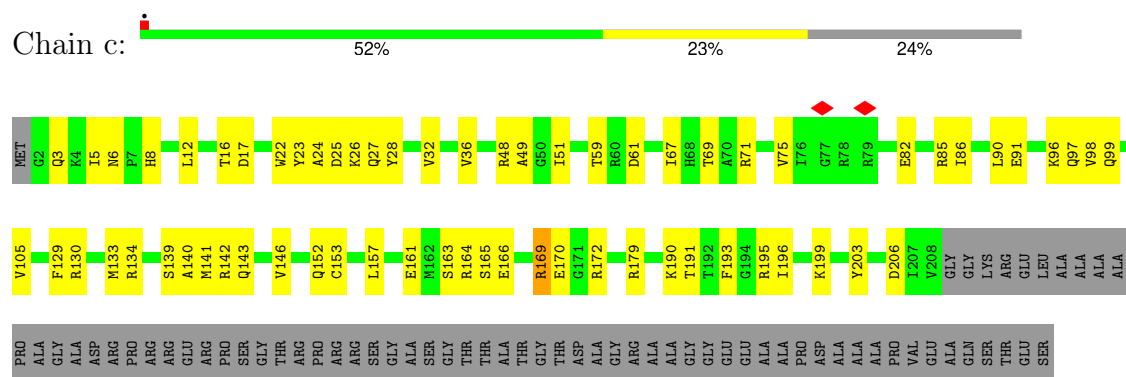


- Molecule 32: 16S ribosomal RNA

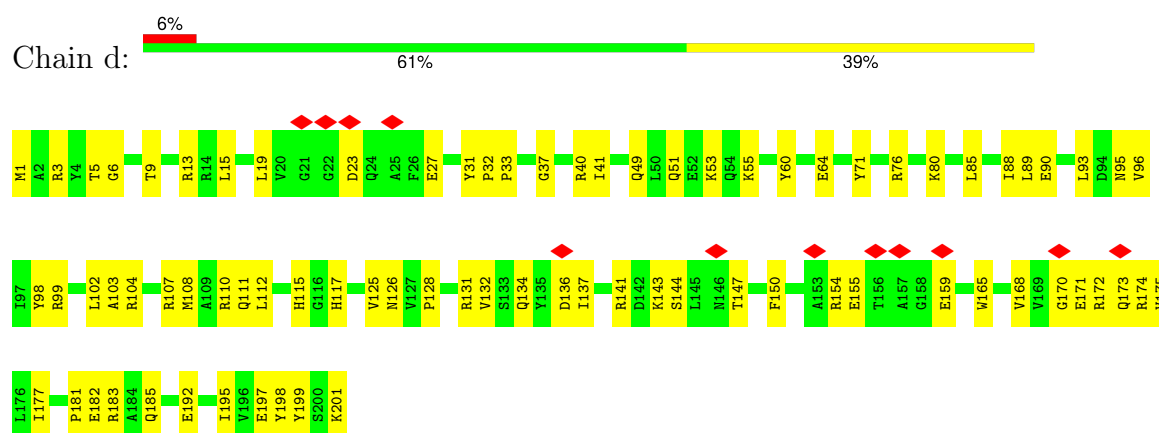


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A1492		G1296	G1212	G1337	A1046	G980	C905	A783	G705	U596	G512	G449	A373	C279
G1496	G1379	G1297	G1213	A1338	G1047	G982	A906	A785	A706		C513	A450	G280	G280
G1498	C1381	G1304	G1215	C1339	G1048		A907		C708	U601	A514	A451	A251	A251
		U1305	U1216	U1140	G1049	U985	G909	G790	A707	C602	G515	G452	G379	
	U1384	U1306	U1217	C1141	C1050	G986	U913		A709	U603	C516	G453	C380	G288
	G1385	U1307	C1218	G1142	U1051	A987	U914	C802	C710	C604	C517	U454	A381	
		U1308	A1219	G1143	G1052	C988	G915	G803	C711		C518	C455	A382	C293
	A1391	C1309	C1220	G1144	U1053	A989	G916	A806	U714	C609	C519	C456	A388	C294
	G1394	A1310	A1221	G1148	C1054	U990	A916	A807	G715	U610	G520	C457	U295	U295
		A1311	C1222	A1149	G1055	G991	C917	C808	A719	U611	G521	C458	U389	G296
		C1312				C992	G918		A720	A612	U522	C459	C390	A297
	G1403	U1313	G1225	C1150	U1061	A993	G919	G812		U615	A523	U460	C391	G298
	U1404	C1314	C1226	C1151	C1062	C994	G920	G813	A726	G616	A524	C462	A299	A299
	C1405	G1315	U1227	G1152	G1063	A995	G926	G814	G726		G528	U463	G395	C306
	A1511	A1316	A1228	C1153	U1064	G996	C927	U815	U727		U529	C464	A396	
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		C1318	A1230	G1155		A998	C929	C817	U729	C642	G531	U466	C398	C310
	U1417	C1319	G1236	G1156	U1077	C999	A928	U818	G730	U643		G467	C400	
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	G1518	G1326	A1243	C1160	C1088	U1003					G537	U471	G405	G323
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	C1424		G1247	C1162	G1090	A1006	A938	C831	G737	A654		G473	G407	
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		A1331	U1249	U1164	A1092	C1008	C941	U833	A739	G656	C540	G475	G409	U327
	A1524	C1334	G1250	G1167	G1097	U1009	A942	U834	C741		U543	G476	A410	A328
		G1335	C1251	A1168	C1098	A1010	U943	C835	U742	U659	G544	U477	U411	C329
	C1428	C1336	A1252	G1169	G1099	U1011	G944	U836	G743	G664	U545	U478	G412	G350
	C1429	U1337	A1253	G1170	C1100	A1012	U945	U837	A744	G665	C546	G479	G413	G331
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		U1340		G1173	U1106	G1016	A948	C844	U748	U668	A550	A484	G416	A335
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		A1342	G1262	G1175	G1108	U1018	A952	U852		C670	U553	A486	U420	G337
			U1263	G1176	U1109	C1019	U953		A753	U675	A554	G487	C421	C338
		G1345	U1264	G1177	C1110	C1020	G956	A858	C755	G676	C555	G488	G422	U339
		C1346	U1265	G1178	U1111	C1021	A957	C859	G756	U677	A564	A489		A343
		A1347	A1266	G1179	C1112	U1022	U958	A869		G679	A565	A490	U426	C344
		A1349	A1267	A1180		U1023	G959		A759	C680	G566	G491	G427	G345
				G1185	U1115	G1024	A962	C875	C761	G681	U570	C495	A429	U428
			A1271	A1186	U1116	U1025		C876	G762	G682	C569	C496	A430	A351
			U1272	A1188	G1117	G1026	G966	U877	U763	U683	U571	G497	A431	A352
			C1274	A1189	G1118	G1027	A967	G883			G572	C498	C432	G353
				G1190	A1121	C1028	A968		A768	A866		C499	U434	
				U1191	A1124	C1029	A969	G891	G769	U688		A500	C435	G359
					C1125	U1030	G969		C770	A501	U582	U436	U437	G361
					G1126	U1032	A970	A894	G771	C682	U584	C502	U438	A362
					A1129		A971	G895		A693	C585	C503	U439	A363
					U1130	G1035	C973	G896	A775	C694	G586	A504	A440	U364
					G1039	U974	U975		G776	A695		C505	A443	A365
								A901	U780	C699	G591	U507	U444	U366
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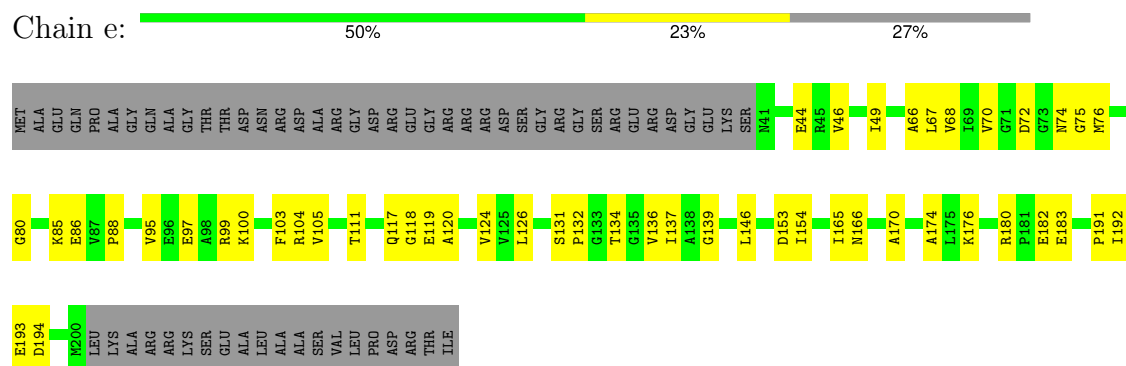
- Molecule 33: 30S ribosomal protein S3



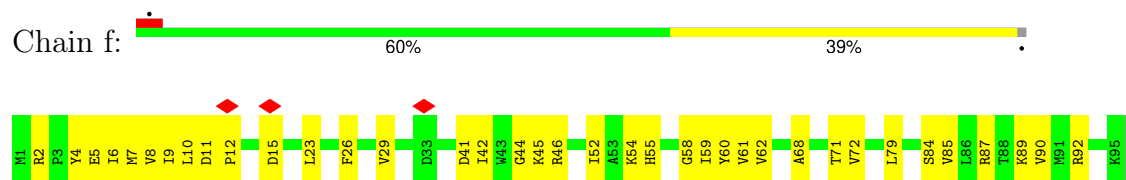
- Molecule 34: 30S ribosomal protein S4



- Molecule 35: 30S ribosomal protein S5

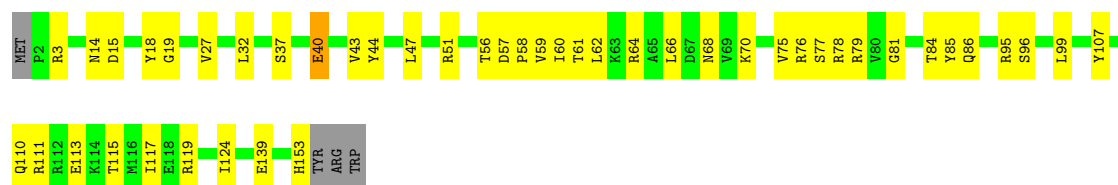


- Molecule 36: 30S ribosomal protein S6



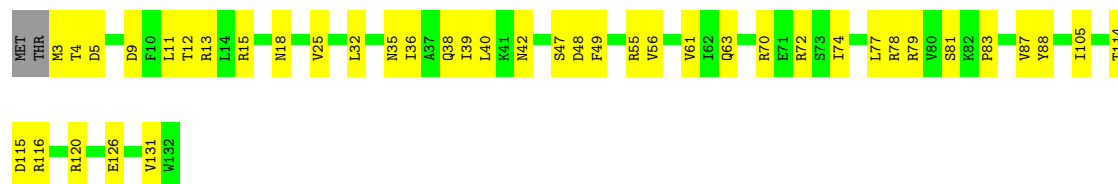
- Molecule 37: 30S ribosomal protein S7

Chain g:  68% 29% ..



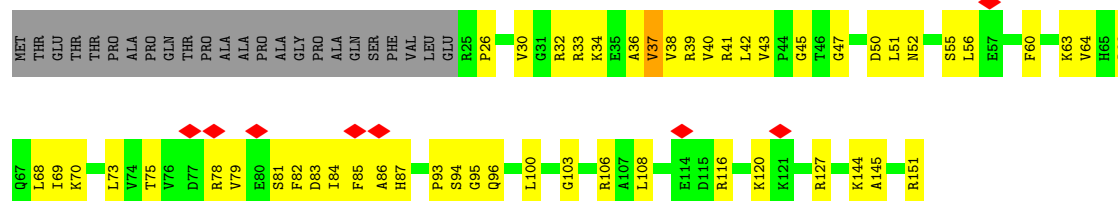
• Molecule 38: 30S ribosomal protein S8

Chain h:  67% 31% .



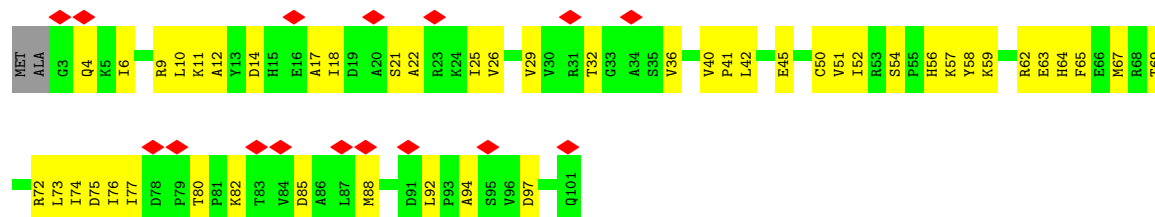
• Molecule 39: 30S ribosomal protein S9

Chain i:  5% 50% 34% 16% .



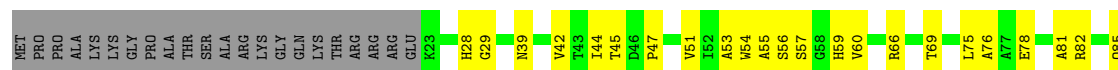
• Molecule 40: 30S ribosomal protein S10

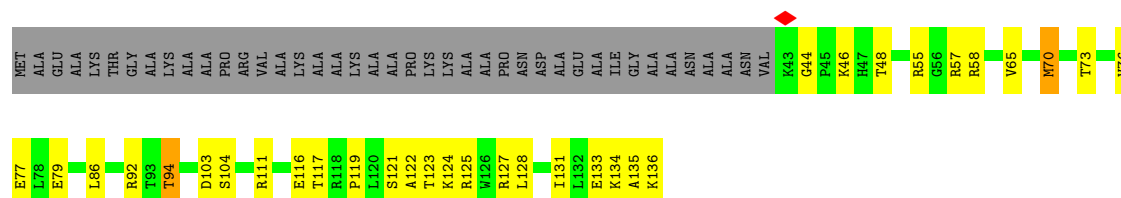
Chain j:  16% 51% 47% .



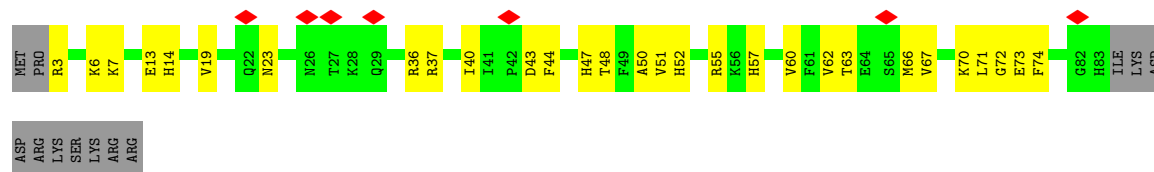
• Molecule 41: 30S ribosomal protein S11

Chain k:  63% 21% 16%

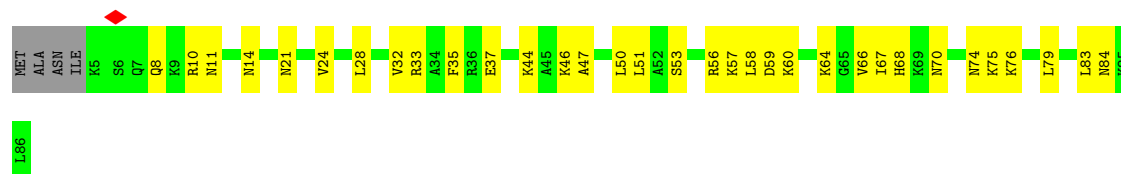




• Molecule 47: 30S ribosomal protein S19



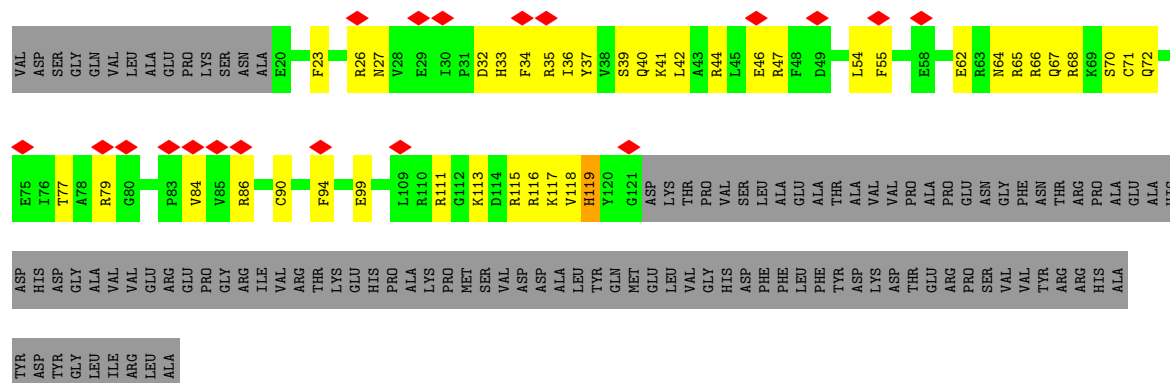
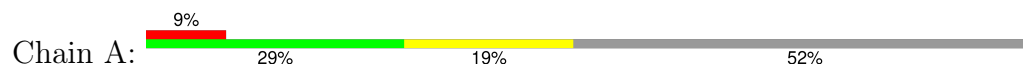
• Molecule 48: 30S ribosomal protein S20



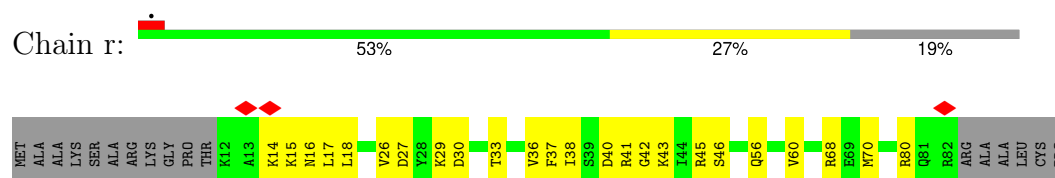
• Molecule 49: Mitochondrial domain of uncharacterized function (DUF1713)



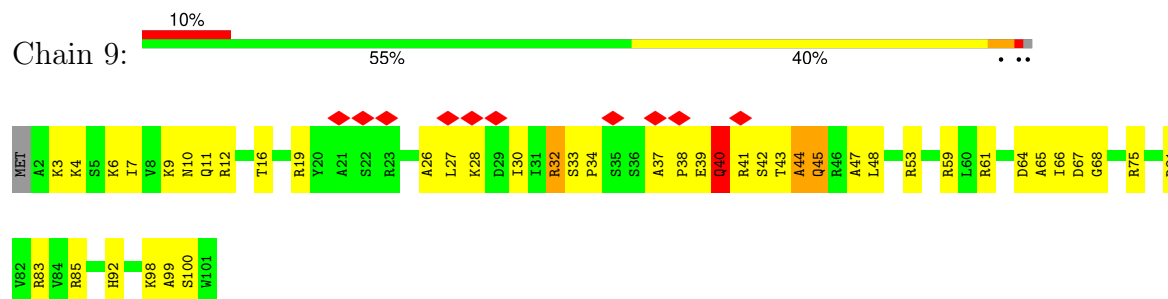
• Molecule 50: Ribosome hibernation promoting factor



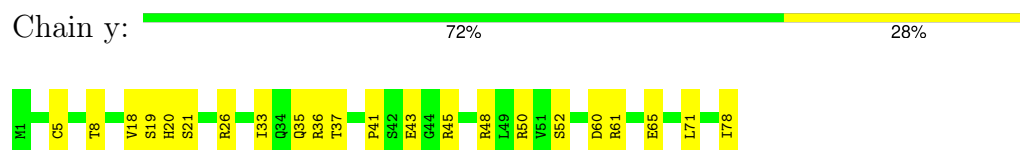
- Molecule 51: Small ribosomal subunit protein bS18



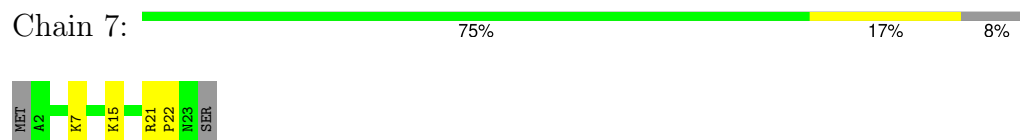
- Molecule 52: Small ribosomal subunit protein uS14



- Molecule 53: Large ribosomal subunit protein bL28



- Molecule 54: 50S ribosomal protein bL37



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	25583	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50.75	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	64000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.346	Depositor
Minimum map value	-0.487	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.060	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	429.19998, 429.19998, 429.19998	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.073, 1.073, 1.073	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	b	1.22	0/431	1.15	1/578 (0.2%)
2	1	0.21	0/399	0.50	0/522
3	0	0.67	1/427 (0.2%)	0.63	0/570
4	2	0.25	0/361	0.38	0/473
5	3	0.24	0/499	0.41	0/664
6	4	0.84	0/298	0.66	0/395
7	6	0.23	0/353	0.65	0/478
8	I	0.23	0/74973	0.28	0/116979
9	B	0.19	0/2749	0.24	0/4284
10	C	0.26	0/2129	0.44	0/2861
11	D	0.27	0/1613	0.50	0/2174
12	E	0.25	0/1575	0.46	0/2129
13	F	0.25	0/1352	0.57	2/1817 (0.1%)
14	G	0.22	0/1351	0.49	0/1824
15	H	0.24	0/353	0.52	0/474
16	J	0.24	0/1170	0.38	0/1584
17	K	0.25	0/944	0.41	0/1268
18	L	0.25	0/1073	0.40	0/1432
19	M	0.41	0/1098	0.49	0/1481
20	N	0.25	0/925	0.41	0/1242
21	O	0.38	0/895	0.59	1/1202 (0.1%)
22	P	0.35	0/922	0.51	1/1236 (0.1%)
23	Q	0.25	0/992	0.39	0/1329
24	R	0.25	0/751	0.35	0/1009
25	S	0.24	0/874	0.39	0/1186
26	T	0.32	0/751	0.42	0/1012
27	U	0.30	0/705	0.55	0/941
28	V	0.20	0/1336	0.50	0/1820
29	W	0.30	0/551	0.70	1/735 (0.1%)
30	Y	0.19	0/544	0.35	0/727
31	Z	0.27	0/480	0.51	0/645
32	a	0.18	0/36501	0.27	0/56956
33	c	0.17	0/1678	0.42	0/2254
34	d	0.22	0/1691	0.48	0/2279

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	e	0.24	0/1165	0.52	0/1578
36	f	0.24	0/767	0.57	0/1036
37	g	0.20	0/1210	0.50	1/1631 (0.1%)
38	h	0.24	0/1014	0.49	0/1369
39	i	0.25	0/1011	0.52	0/1356
40	j	0.21	0/803	0.55	0/1086
41	k	0.23	0/891	0.47	0/1204
42	l	0.24	0/978	0.60	0/1306
43	m	0.26	0/927	0.66	1/1239 (0.1%)
44	o	0.21	0/727	0.47	0/973
45	p	0.25	0/701	0.51	0/944
46	q	0.23	0/775	0.65	2/1035 (0.2%)
47	s	0.16	0/674	0.40	0/906
48	t	0.21	0/633	0.42	0/838
49	x	0.59	0/237	0.57	0/307
50	A	0.16	0/865	0.43	0/1155
51	r	0.21	0/564	0.51	0/755
52	9	0.28	0/810	0.56	1/1083 (0.1%)
53	y	0.24	0/646	0.42	0/864
54	7	0.26	0/188	0.30	0/243
All	All	0.24	1/158330 (0.0%)	0.35	11/237468 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
12	E	0	1
29	W	0	1
50	A	0	1
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	0	30	VAL	CA-C	-6.72	1.47	1.52

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
43	m	97	PRO	CA-N-CD	-9.39	98.85	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
21	O	49	ASP	N-CA-C	-8.70	92.27	110.80
37	g	40	GLU	CA-CB-CG	7.16	128.42	114.10
13	F	90	MET	CA-C-N	-7.03	112.41	119.93
13	F	90	MET	C-N-CA	-7.03	112.41	119.93

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
50	A	119	HIS	Peptide
12	E	13	VAL	Peptide
29	W	81	VAL	Peptide

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	b	424	0	442	35	0
2	1	395	0	389	10	0
3	0	421	0	461	18	0
4	2	358	0	390	2	0
5	3	494	0	533	7	0
6	4	294	0	315	6	0
7	6	345	0	332	20	0
8	I	66956	0	33720	795	0
9	B	2458	0	1253	16	0
10	C	2088	0	2123	41	0
11	D	1590	0	1633	41	0
12	E	1552	0	1593	35	0
13	F	1335	0	1372	75	0
14	G	1330	0	1390	56	0
15	H	350	0	367	9	0
16	J	1143	0	1173	21	0
17	K	934	0	993	17	0
18	L	1060	0	1119	25	0
19	M	1072	0	1115	22	0
20	N	908	0	956	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	O	886	0	924	34	0
22	P	907	0	947	17	0
23	Q	980	0	1028	25	0
24	R	742	0	799	9	0
25	S	860	0	903	13	0
26	T	741	0	792	12	0
27	U	699	0	738	17	0
28	V	1319	0	1365	35	0
29	W	546	0	567	34	0
30	Y	541	0	551	13	0
31	Z	476	0	509	8	0
32	a	32610	0	16406	653	0
33	c	1654	0	1694	55	0
34	d	1658	0	1683	58	0
35	e	1149	0	1207	33	0
36	f	757	0	796	36	0
37	g	1193	0	1256	38	0
38	h	999	0	1034	31	0
39	i	993	0	1052	58	0
40	j	789	0	821	57	0
41	k	873	0	887	22	0
42	l	967	0	1056	40	0
43	m	919	0	961	40	0
44	o	718	0	760	26	0
45	p	688	0	726	27	0
46	q	763	0	824	34	0
47	s	657	0	671	28	0
48	t	631	0	681	33	0
49	x	237	0	271	7	0
50	A	852	0	865	41	0
51	r	560	0	588	19	0
52	9	798	0	845	51	0
53	y	636	0	659	15	0
54	7	186	0	202	4	0
All	All	145491	0	96737	2547	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 11.

The worst 5 of 2547 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)
32:a:77:G:H1	32:a:91:A:N6	1.44	1.14
52:9:34:PRO:HG2	52:9:37:ALA:HB2	1.44	0.96
33:c:22:TRP:HD1	33:c:24:ALA:H	1.13	0.94
32:a:457:G:H1	32:a:465:U:H3	1.09	0.93
52:9:43:THR:HA	52:9:45:GLN:HE21	1.31	0.92

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	b	47/54 (87%)	45 (96%)	2 (4%)	0	100	100
2	1	49/62 (79%)	45 (92%)	4 (8%)	0	100	100
3	0	51/57 (90%)	45 (88%)	6 (12%)	0	100	100
4	2	40/47 (85%)	35 (88%)	5 (12%)	0	100	100
5	3	60/64 (94%)	56 (93%)	4 (7%)	0	100	100
6	4	35/37 (95%)	34 (97%)	1 (3%)	0	100	100
7	6	43/80 (54%)	34 (79%)	9 (21%)	0	100	100
10	C	270/280 (96%)	252 (93%)	18 (7%)	0	100	100
11	D	211/217 (97%)	194 (92%)	17 (8%)	0	100	100
12	E	205/223 (92%)	191 (93%)	14 (7%)	0	100	100
13	F	168/187 (90%)	152 (90%)	16 (10%)	0	100	100
14	G	172/179 (96%)	159 (92%)	13 (8%)	0	100	100
15	H	45/152 (30%)	43 (96%)	2 (4%)	0	100	100
16	J	144/195 (74%)	141 (98%)	3 (2%)	0	100	100
17	K	119/122 (98%)	116 (98%)	3 (2%)	0	100	100
18	L	140/146 (96%)	134 (96%)	6 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	M	132/138 (96%)	125 (95%)	7 (5%)	0	100	100
20	N	114/180 (63%)	107 (94%)	7 (6%)	0	100	100
21	O	114/122 (93%)	102 (90%)	11 (10%)	1 (1%)	14	35
22	P	110/113 (97%)	102 (93%)	8 (7%)	0	100	100
23	Q	120/129 (93%)	115 (96%)	5 (4%)	0	100	100
24	R	96/104 (92%)	94 (98%)	2 (2%)	0	100	100
25	S	111/197 (56%)	108 (97%)	3 (3%)	0	100	100
26	T	93/100 (93%)	91 (98%)	2 (2%)	0	100	100
27	U	86/105 (82%)	75 (87%)	10 (12%)	1 (1%)	10	27
28	V	175/215 (81%)	153 (87%)	21 (12%)	1 (1%)	21	44
29	W	72/86 (84%)	62 (86%)	10 (14%)	0	100	100
30	Y	63/77 (82%)	60 (95%)	3 (5%)	0	100	100
31	Z	57/65 (88%)	50 (88%)	7 (12%)	0	100	100
33	c	205/274 (75%)	196 (96%)	9 (4%)	0	100	100
34	d	199/201 (99%)	180 (90%)	19 (10%)	0	100	100
35	e	158/220 (72%)	138 (87%)	19 (12%)	1 (1%)	21	44
36	f	93/96 (97%)	81 (87%)	12 (13%)	0	100	100
37	g	150/156 (96%)	141 (94%)	9 (6%)	0	100	100
38	h	128/132 (97%)	117 (91%)	11 (9%)	0	100	100
39	i	125/151 (83%)	105 (84%)	20 (16%)	0	100	100
40	j	97/101 (96%)	91 (94%)	6 (6%)	0	100	100
41	k	115/139 (83%)	104 (90%)	11 (10%)	0	100	100
42	l	121/124 (98%)	100 (83%)	21 (17%)	0	100	100
43	m	111/124 (90%)	104 (94%)	7 (6%)	0	100	100
44	o	85/89 (96%)	78 (92%)	6 (7%)	1 (1%)	10	27
45	p	83/162 (51%)	77 (93%)	6 (7%)	0	100	100
46	q	92/135 (68%)	82 (89%)	10 (11%)	0	100	100
47	s	79/93 (85%)	74 (94%)	5 (6%)	0	100	100
48	t	80/86 (93%)	76 (95%)	4 (5%)	0	100	100
49	x	27/33 (82%)	27 (100%)	0	0	100	100
50	A	100/214 (47%)	91 (91%)	9 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
51	r	69/88 (78%)	65 (94%)	4 (6%)	0	100	100
52	9	98/101 (97%)	91 (93%)	6 (6%)	1 (1%)	12	32
53	y	76/78 (97%)	74 (97%)	1 (1%)	1 (1%)	9	25
54	7	20/24 (83%)	20 (100%)	0	0	100	100
All	All	5453/6554 (83%)	5032 (92%)	414 (8%)	7 (0%)	49	73

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
21	O	49	ASP
44	o	47	LYS
27	U	95	VAL
28	V	47	LEU
53	y	18	VAL

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	b	46/50 (92%)	42 (91%)	4 (9%)	9	24
2	1	40/50 (80%)	40 (100%)	0	100	100
3	0	43/47 (92%)	42 (98%)	1 (2%)	44	73
4	2	36/40 (90%)	36 (100%)	0	100	100
5	3	53/54 (98%)	53 (100%)	0	100	100
6	4	34/35 (97%)	32 (94%)	2 (6%)	18	42
7	6	40/66 (61%)	40 (100%)	0	100	100
10	C	212/219 (97%)	212 (100%)	0	100	100
11	D	163/166 (98%)	163 (100%)	0	100	100
12	E	159/172 (92%)	159 (100%)	0	100	100
13	F	139/155 (90%)	137 (99%)	2 (1%)	59	82
14	G	143/147 (97%)	142 (99%)	1 (1%)	76	90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	H	36/121 (30%)	35 (97%)	1 (3%)	38	68
16	J	120/161 (74%)	119 (99%)	1 (1%)	73	88
17	K	100/101 (99%)	100 (100%)	0	100	100
18	L	106/110 (96%)	104 (98%)	2 (2%)	50	77
19	M	110/114 (96%)	110 (100%)	0	100	100
20	N	94/139 (68%)	94 (100%)	0	100	100
21	O	88/93 (95%)	85 (97%)	3 (3%)	32	62
22	P	98/99 (99%)	97 (99%)	1 (1%)	68	86
23	Q	95/99 (96%)	95 (100%)	0	100	100
24	R	79/83 (95%)	78 (99%)	1 (1%)	61	83
25	S	87/140 (62%)	87 (100%)	0	100	100
26	T	81/83 (98%)	79 (98%)	2 (2%)	42	71
27	U	77/88 (88%)	74 (96%)	3 (4%)	28	57
28	V	142/164 (87%)	142 (100%)	0	100	100
29	W	54/62 (87%)	53 (98%)	1 (2%)	50	77
30	Y	58/66 (88%)	58 (100%)	0	100	100
31	Z	51/55 (93%)	51 (100%)	0	100	100
33	c	170/210 (81%)	169 (99%)	1 (1%)	78	91
34	d	177/177 (100%)	177 (100%)	0	100	100
35	e	114/159 (72%)	113 (99%)	1 (1%)	70	87
36	f	84/85 (99%)	84 (100%)	0	100	100
37	g	127/131 (97%)	127 (100%)	0	100	100
38	h	106/108 (98%)	106 (100%)	0	100	100
39	i	102/120 (85%)	101 (99%)	1 (1%)	68	86
40	j	89/90 (99%)	89 (100%)	0	100	100
41	k	90/107 (84%)	90 (100%)	0	100	100
42	l	105/105 (100%)	105 (100%)	0	100	100
43	m	96/104 (92%)	95 (99%)	1 (1%)	68	86
44	o	77/79 (98%)	77 (100%)	0	100	100
45	p	72/125 (58%)	72 (100%)	0	100	100
46	q	84/105 (80%)	82 (98%)	2 (2%)	43	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
47	s	73/85 (86%)	73 (100%)	0	100	100
48	t	62/65 (95%)	62 (100%)	0	100	100
49	x	24/31 (77%)	24 (100%)	0	100	100
50	A	89/182 (49%)	89 (100%)	0	100	100
51	r	60/71 (84%)	59 (98%)	1 (2%)	53	79
52	9	81/82 (99%)	78 (96%)	3 (4%)	30	59
53	y	67/68 (98%)	67 (100%)	0	100	100
54	7	18/20 (90%)	18 (100%)	0	100	100
All	All	4551/5288 (86%)	4516 (99%)	35 (1%)	70	88

5 of 35 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
43	m	65	LYS
46	q	70	MET
52	9	32	ARG
18	L	83	ASN
16	J	57	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 44 such sidechains are listed below:

Mol	Chain	Res	Type
37	g	68	ASN
44	o	48	HIS
37	g	153	HIS
39	i	66	GLN
45	p	57	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
32	a	1518/1537 (98%)	242 (15%)	0
8	I	3116/3138 (99%)	423 (13%)	12 (0%)
9	B	114/115 (99%)	9 (7%)	0
All	All	4748/4790 (99%)	674 (14%)	12 (0%)

5 of 674 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
8	I	34	U
8	I	35	G
8	I	51	G
8	I	63	A
8	I	71	A

5 of 12 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
8	I	1605	G
8	I	1624	C
8	I	2666	G
8	I	1653	A
8	I	913	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 [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

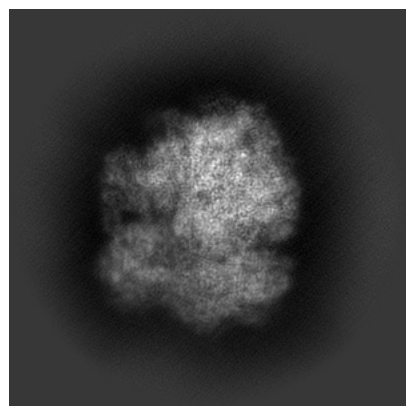
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-47876. These allow visual inspection of the internal detail of the map and identification of artifacts.

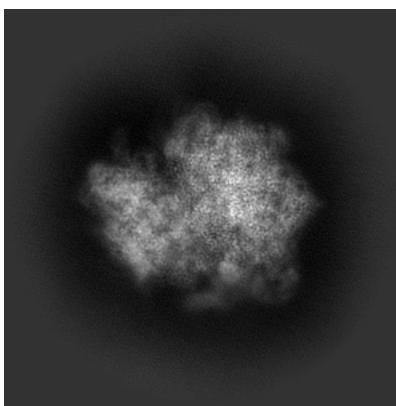
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

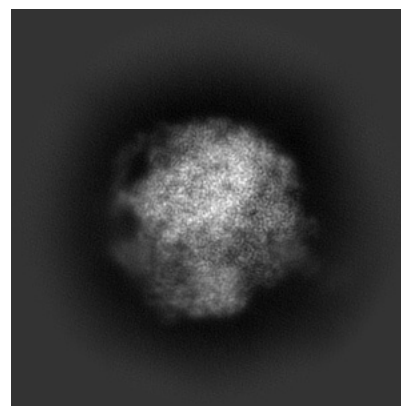
6.1.1 Primary map



X

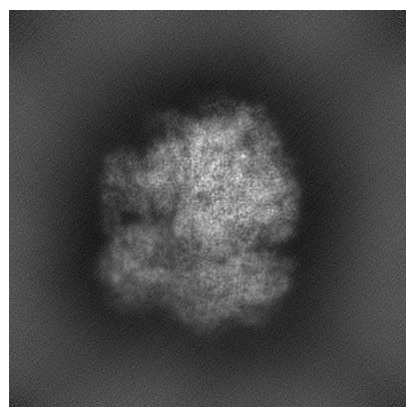


Y

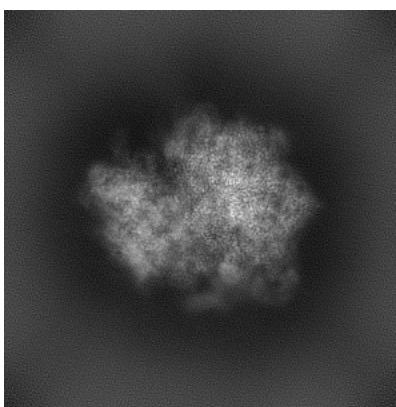


Z

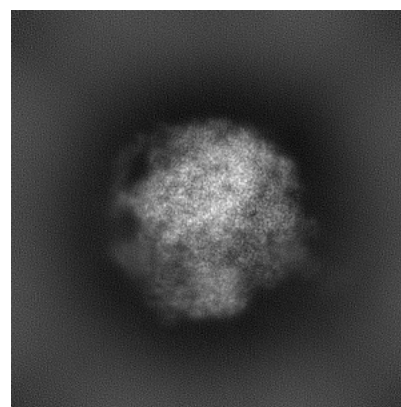
6.1.2 Raw map



X



Y

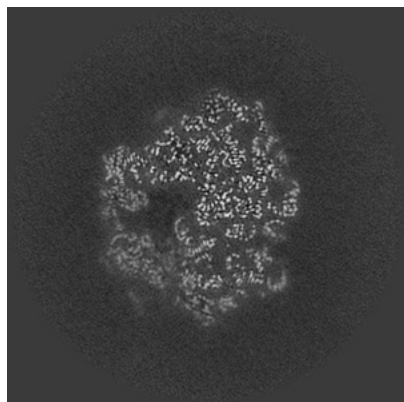


Z

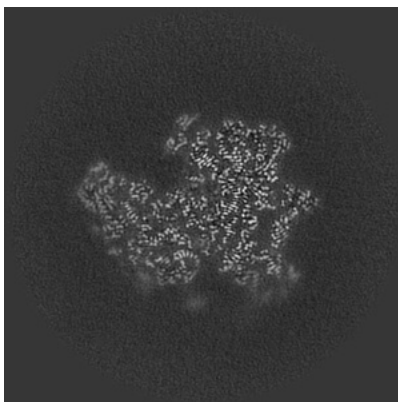
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

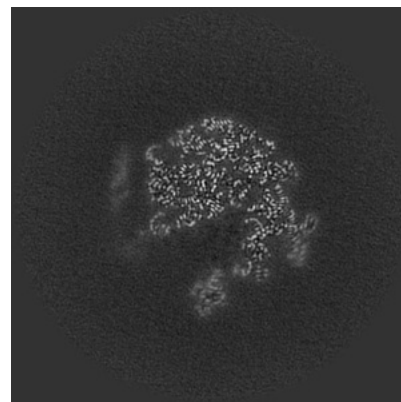
6.2.1 Primary map



X Index: 200

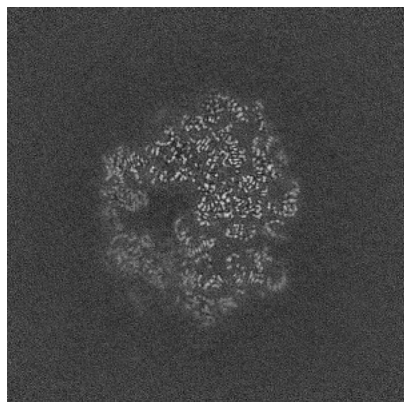


Y Index: 200

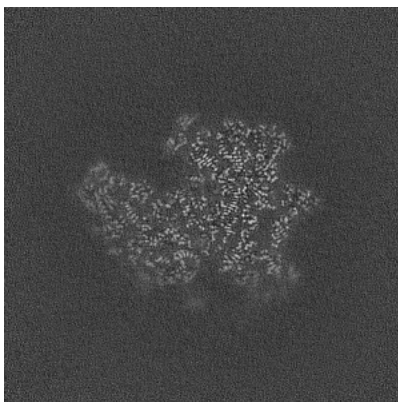


Z Index: 200

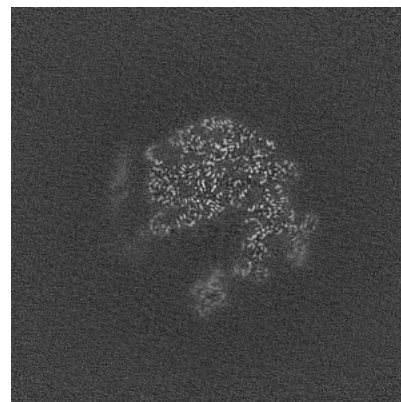
6.2.2 Raw map



X Index: 200



Y Index: 200

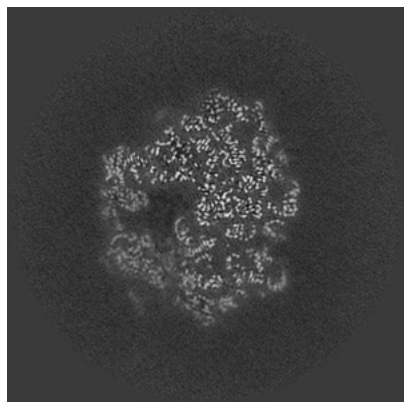


Z Index: 200

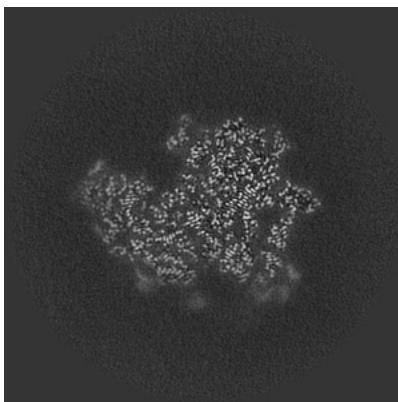
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

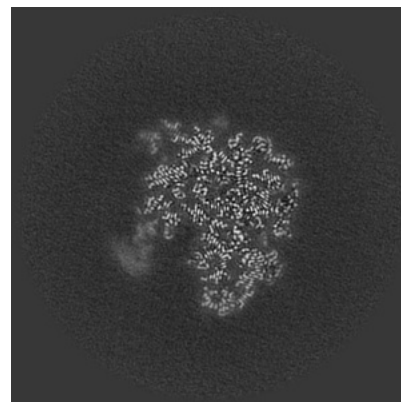
6.3.1 Primary map



X Index: 200

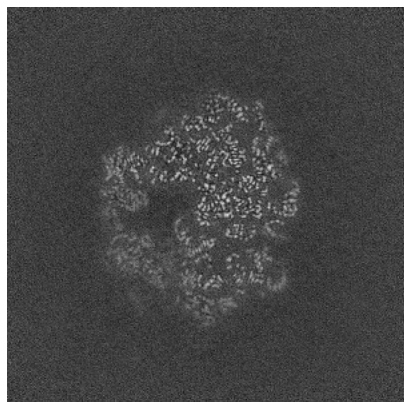


Y Index: 203

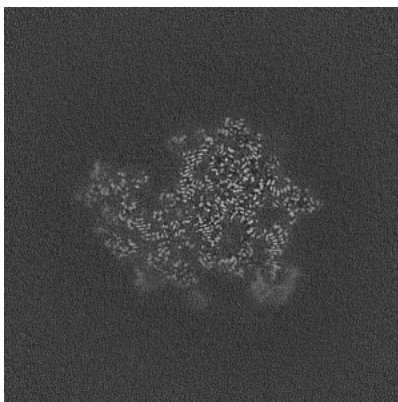


Z Index: 229

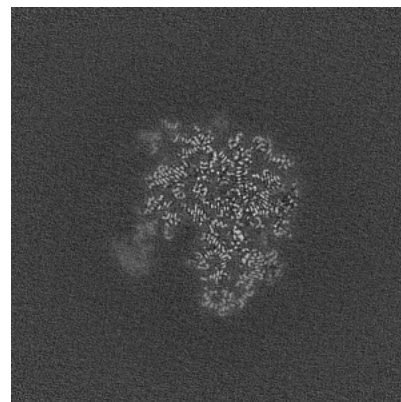
6.3.2 Raw map



X Index: 200



Y Index: 207

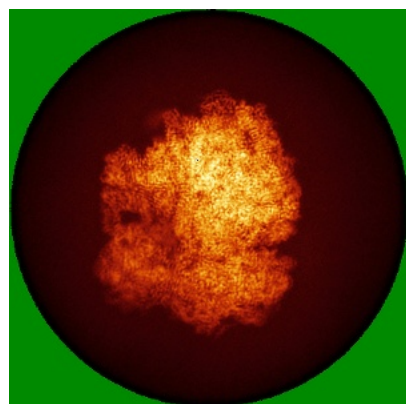


Z Index: 229

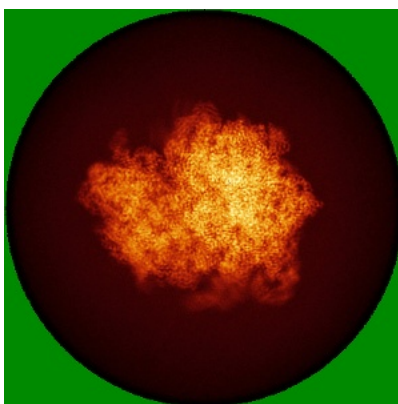
The images above show the largest variance slices of the map in three orthogonal directions.

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

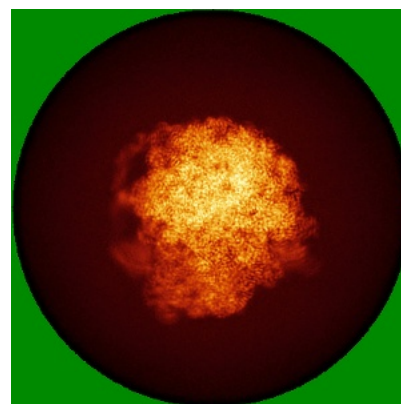
6.4.1 Primary map



X

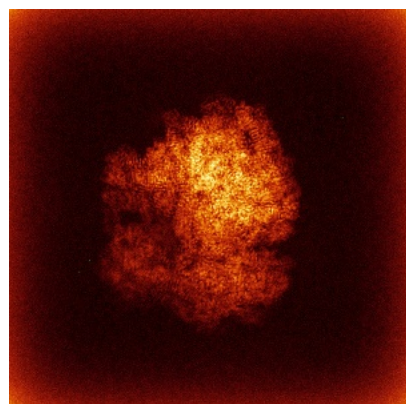


Y

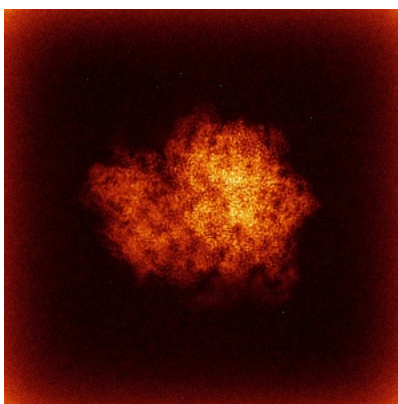


Z

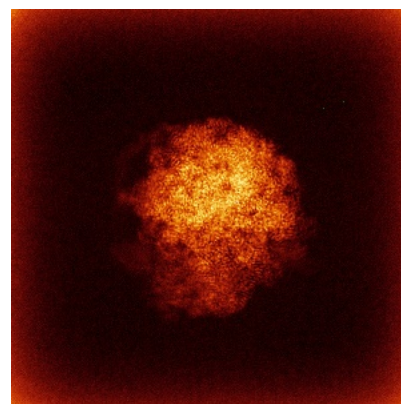
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



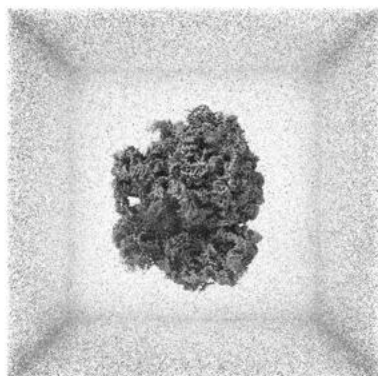
Y



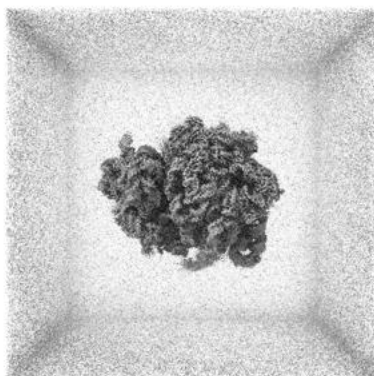
Z

The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

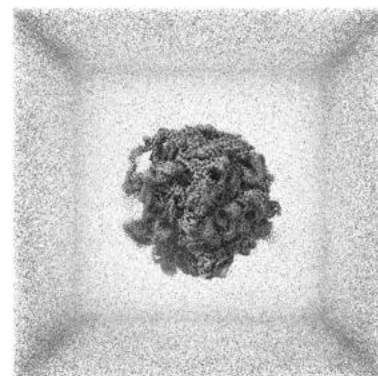
6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

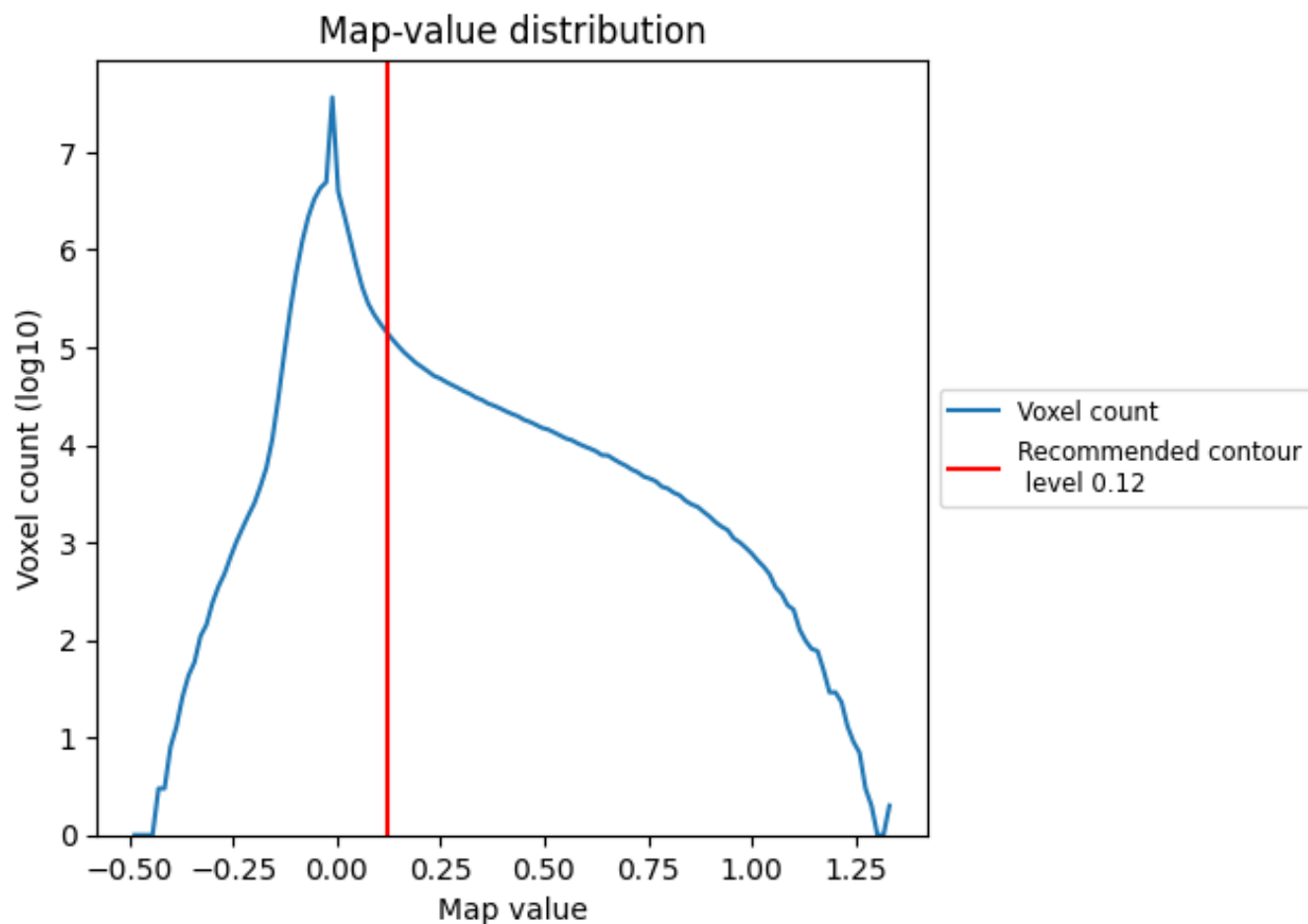
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

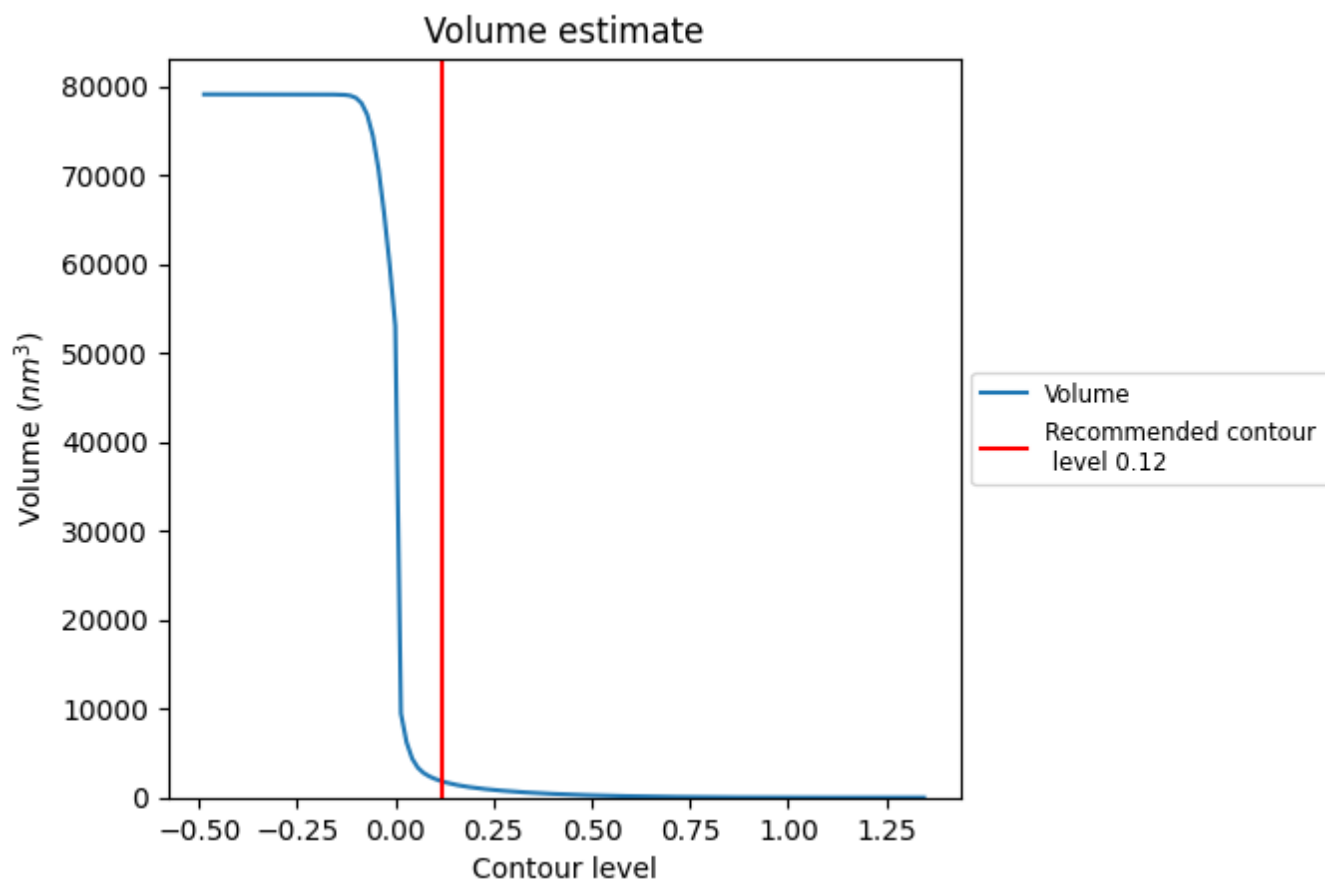
This section contains the results of statistical analysis of the map.

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.

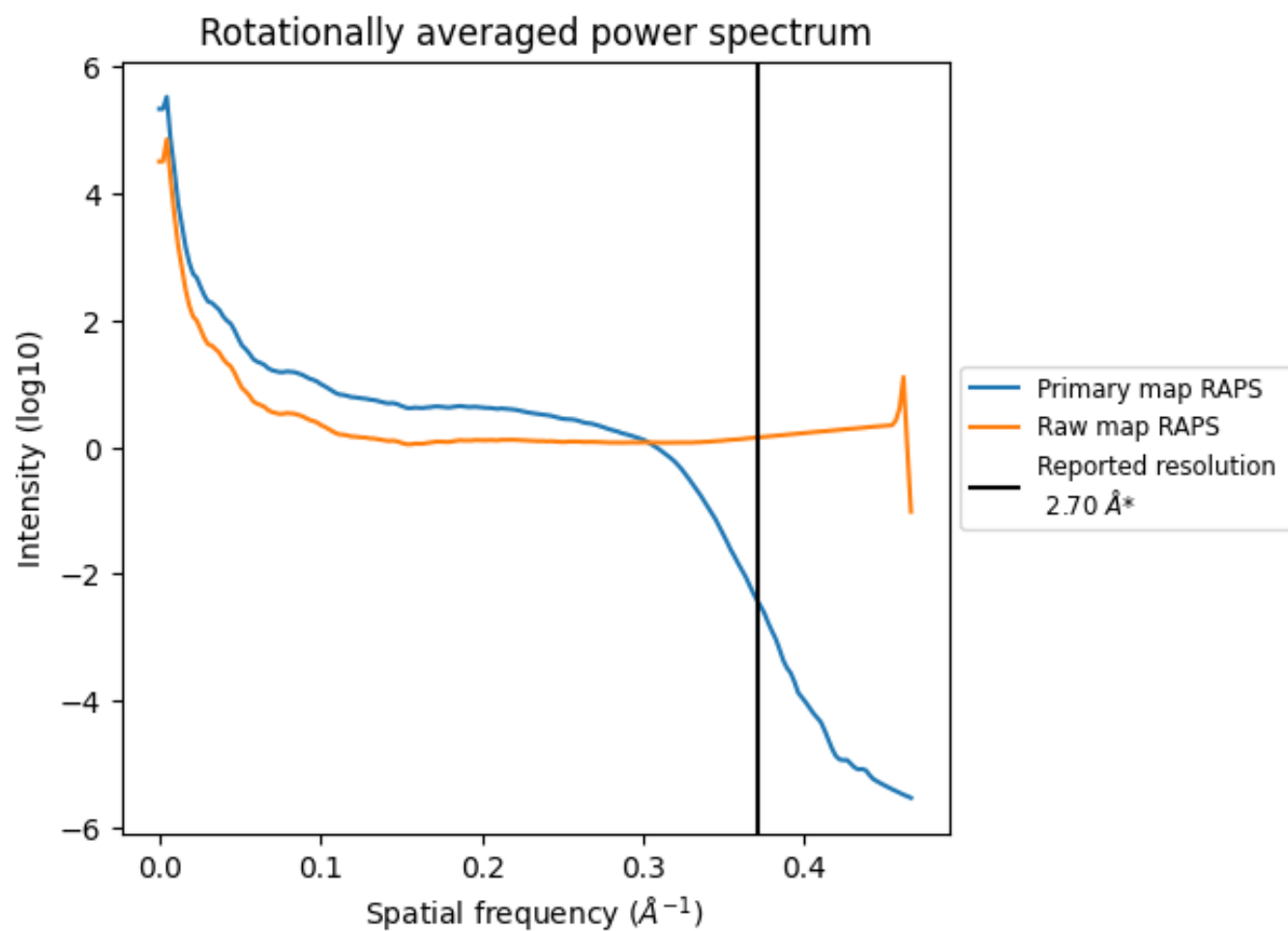
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1814 nm³; this corresponds to an approximate mass of 1638 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 ⓘ

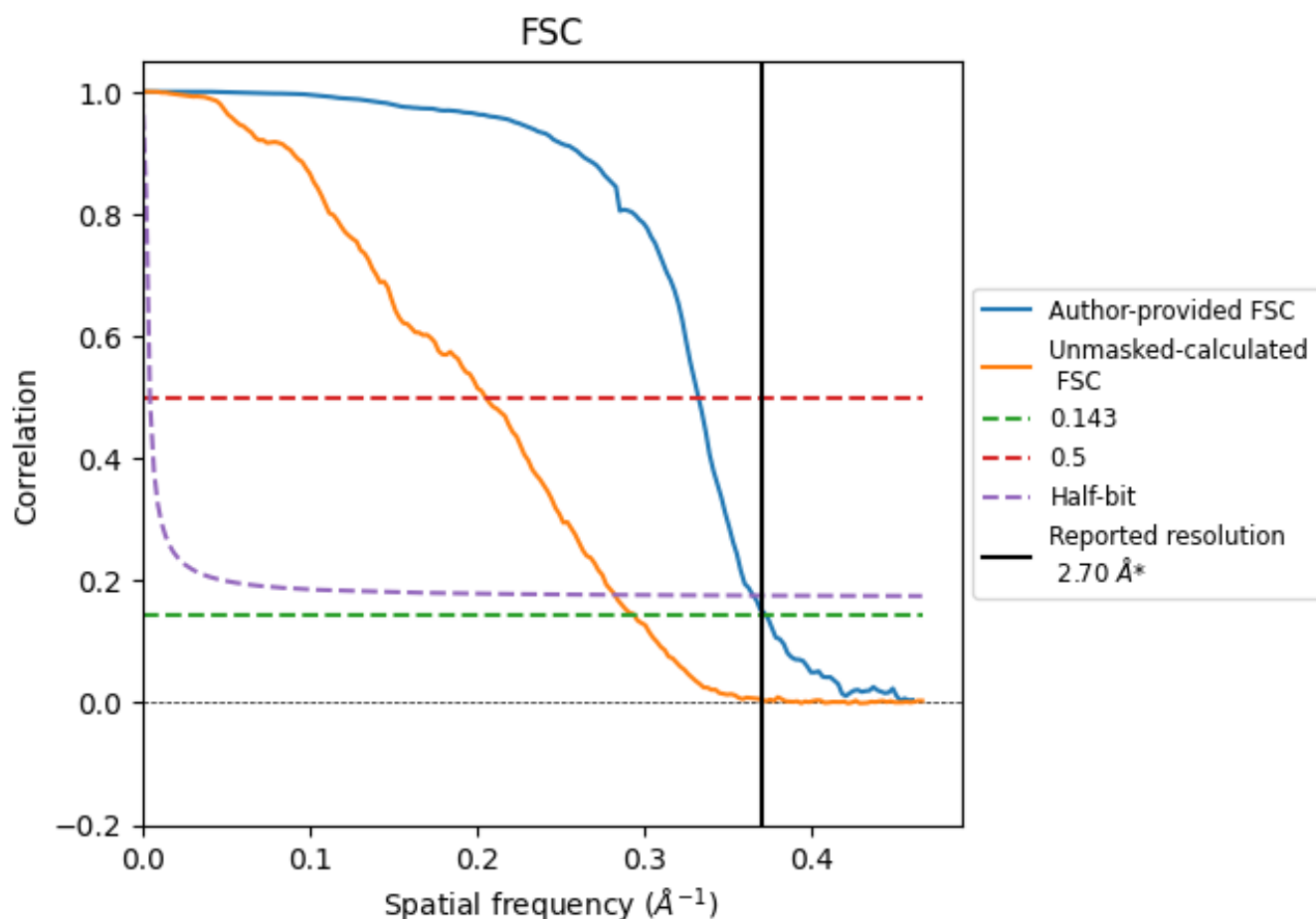


*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

8.2 Resolution estimates [i](#)

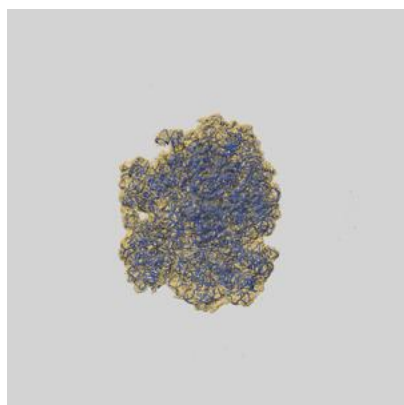
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	2.68	3.01	2.74
Unmasked-calculated*	3.40	4.88	3.54

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.40 differs from the reported value 2.7 by more than 10 %

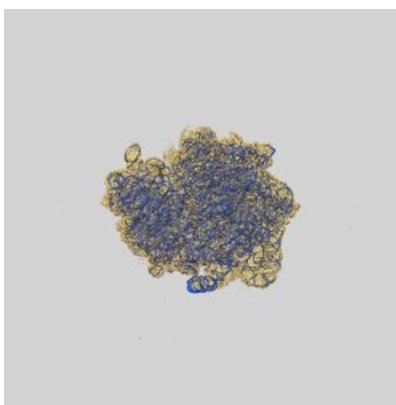
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-47876 and PDB model 9EBB. Per-residue inclusion information can be found in section 3 on page 14.

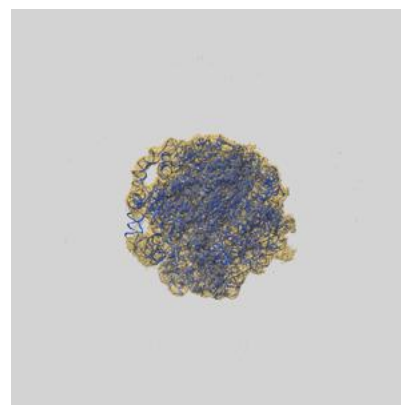
9.1 Map-model overlay [i](#)



X



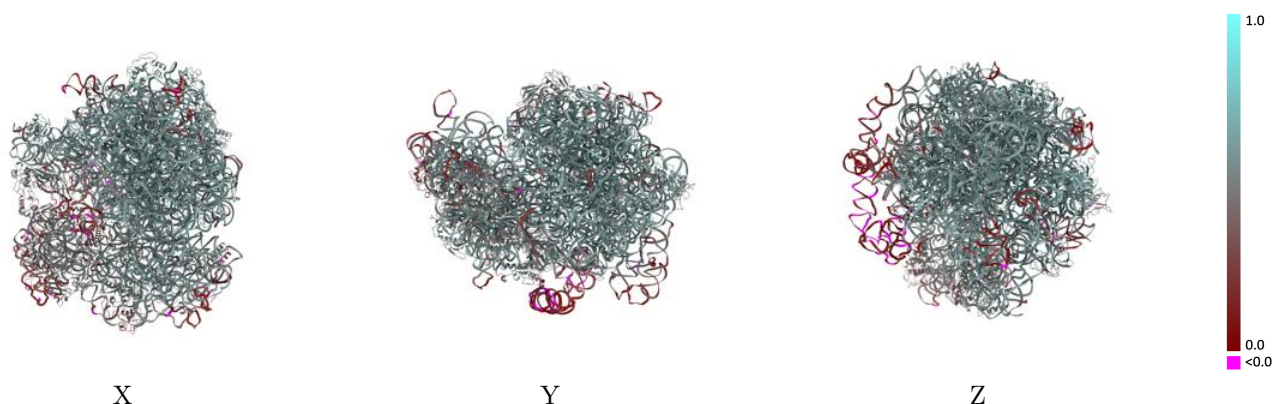
Y



Z

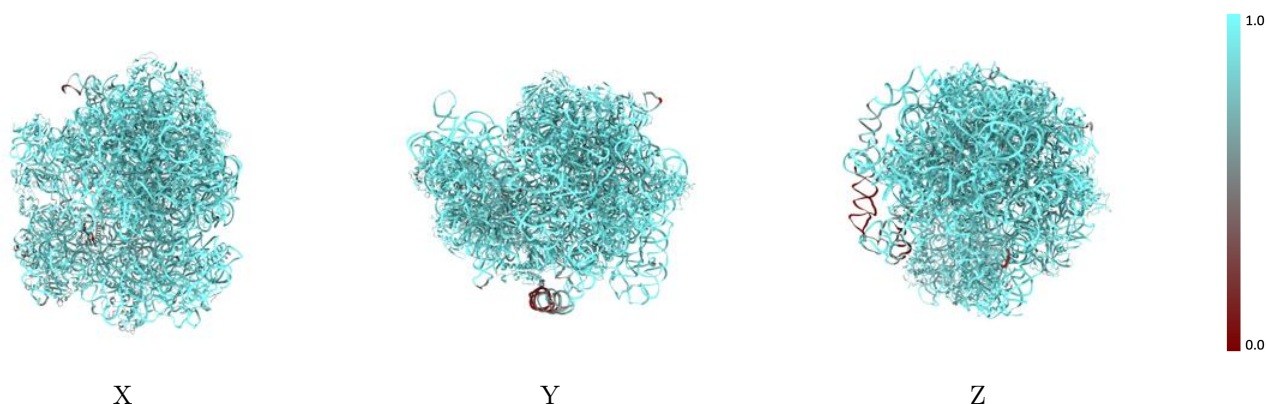
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



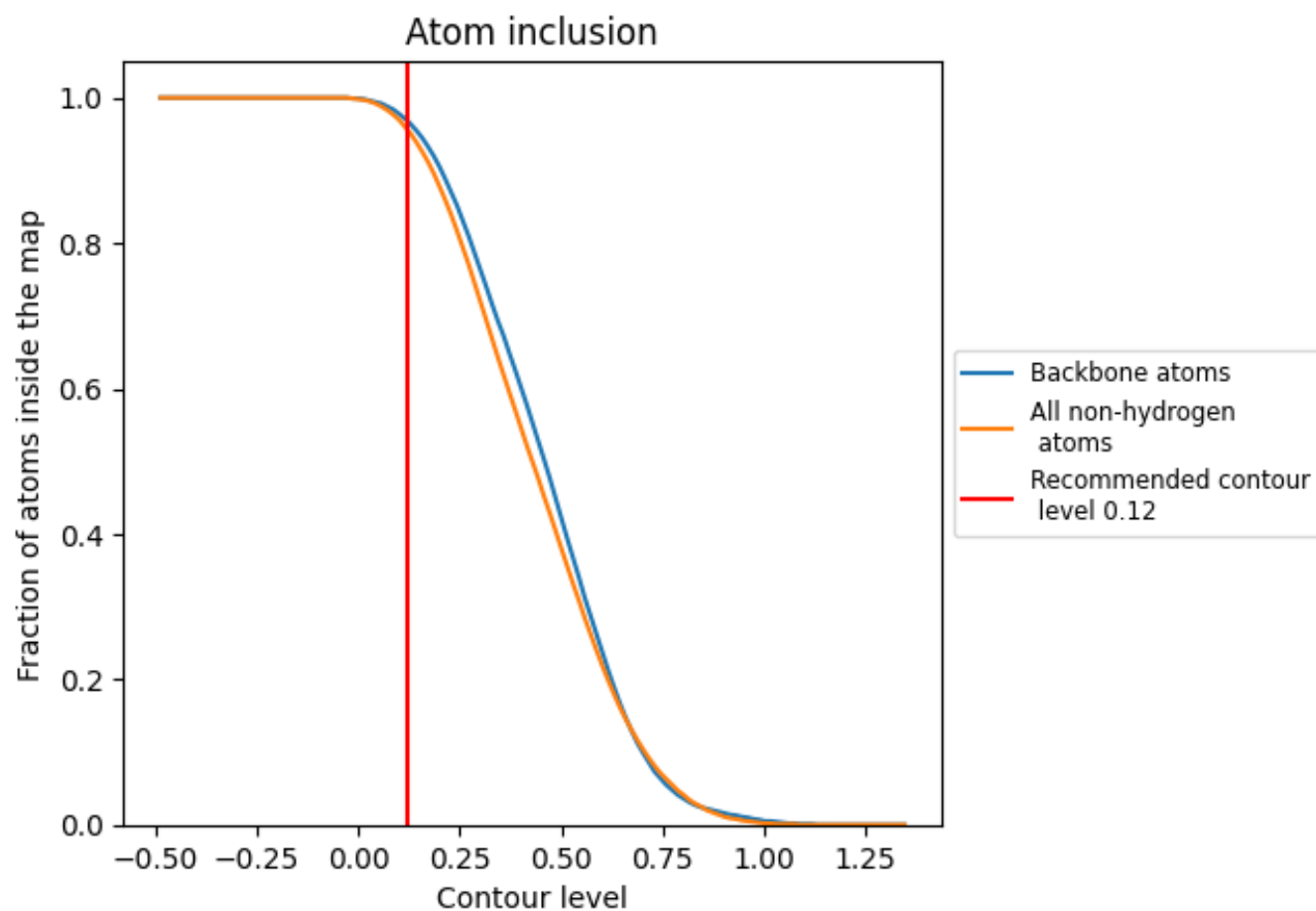
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.12).

9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 96% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9570	 0.5120
0	 0.9780	 0.5720
1	 0.9660	 0.5290
2	 0.9880	 0.5920
3	 0.9980	 0.6060
4	 0.9930	 0.5930
6	 0.8730	 0.4320
7	 0.9940	 0.6210
9	 0.8120	 0.4210
A	 0.6240	 0.3540
B	 0.9970	 0.5350
C	 0.9860	 0.5950
D	 0.9790	 0.5810
E	 0.9670	 0.5720
F	 0.9330	 0.4730
G	 0.9490	 0.4990
H	 0.9560	 0.5110
I	 0.9560	 0.5180
J	 0.9800	 0.5850
K	 0.9930	 0.5960
L	 0.9920	 0.5900
M	 0.9920	 0.5900
N	 0.9940	 0.6000
O	 0.9680	 0.5430
P	 0.9730	 0.5840
Q	 0.9920	 0.5920
R	 0.9840	 0.6010
S	 0.9960	 0.6010
T	 0.9920	 0.5840
U	 0.9470	 0.5170
V	 0.8790	 0.4520
W	 0.9430	 0.5380
Y	 0.9690	 0.5440
Z	 0.9740	 0.5560
a	 0.9850	 0.5050



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Chain	Atom inclusion	Q-score
b	 0.9700	 0.5560
c	 0.8860	 0.4600
d	 0.8550	 0.3540
e	 0.9630	 0.5090
f	 0.8890	 0.4370
g	 0.9290	 0.4480
h	 0.9760	 0.5330
i	 0.8330	 0.2770
j	 0.7440	 0.2660
k	 0.9650	 0.5110
l	 0.9100	 0.4680
m	 0.8700	 0.3640
o	 0.9570	 0.5060
p	 0.9460	 0.4550
q	 0.9330	 0.4660
r	 0.9390	 0.5020
s	 0.8160	 0.2980
t	 0.9130	 0.4320
x	 0.9870	 0.5730
y	 0.9880	 0.5730