



wwPDB EM Validation Summary Report ⓘ

Dec 11, 2022 – 04:00 pm GMT

PDB ID : 5AKA
EMDB ID : EMD-2917
Title : EM structure of ribosome-SRP-FtsY complex in closed state
Authors : von Loeffelholz, O.; Jiang, Q.; Ariosa, A.; Karuppasamy, M.; Huard, K.;
Berger, I.; Shan, S.; Schaffitzel, C.
Deposited on : 2015-03-03
Resolution : 5.70 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

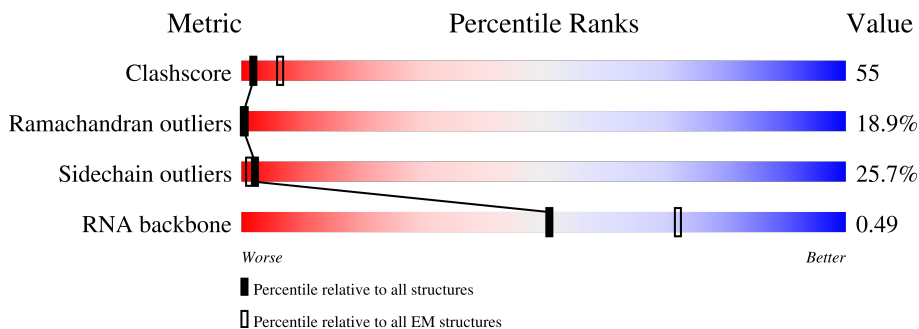
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

1 Overall quality at a glance

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

The reported resolution of this entry is 5.70 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	0	56	
2	1	54	
3	2	46	
4	3	64	
5	4	38	
6	5	109	
7	6	8	

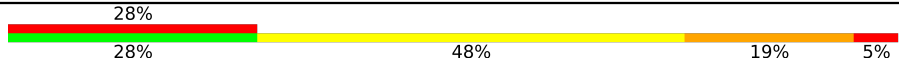

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Mol	Chain	Length	Quality of chain
8	7	74	16% 55% 43%
9	A	120	9% 28% 56% 13%
10	B	2904	24% 58% 15%
11	C	273	38% 13% 42% 35% 8%
12	D	209	35% 13% 51% 33%
13	E	201	28% 15% 52% 27% 5%
14	F	178	31% 24% 48% 25%
15	G	176	25% 25% 56% 17%
16	H	149	32% 27% 52% 19%
17	I	141	32% 30% 65%
18	J	142	41% 9% 52% 35%
19	K	123	26% 20% 54% 20%
20	L	144	39% 19% 29% 26% 22%
21	M	136	36% 18% 46% 25% 11%
22	N	127	37% 17% 50% 30%
23	O	117	38% 20% 46% 30%
24	P	114	44% 11% 38% 41% 10%
25	Q	117	38% 16% 60% 21%
26	R	103	33% 13% 53% 30%
27	S	110	28% 30% 45% 18% 6%
28	T	100	39% 19% 49% 25% 6%
29	U	103	12% 17% 47% 29% 6%
30	V	94	15% 24% 60% 15%
31	W	84	45% 17% 44% 29% 11%
32	X	63	16% 22% 46% 32%

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Mol	Chain	Length	Quality of chain
33	Y	58	 28% 48% 19% 5%
34	Z	70	 24% 21% 43% 23% 13%

2 Entry composition

There are 36 unique types of molecules in this entry. The entry contains 92737 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	56	444	269	94	80	1	0	0

- Molecule 2 is a protein called 50S RIBOSOMAL PROTEIN L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	1	54	441	284	81	76	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	46	377	228	90	57	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	504	323	105	74	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	38	302	185	65	48	4	0	0

- Molecule 6 is a protein called SIGNAL RECOGNITION PARTICLE PROTEIN.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	5	109	850	523	159	153	15	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
5	406	SER	CYS	conflict	UNP P0AGD7

- Molecule 7 is a protein called ALA-ALA-ALA-ALA-ALA-ALA-ALA-ALA.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	6	8	41	24	8	9	0	0

- Molecule 8 is a RNA chain called 4.5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	7	74	1591	709	298	511	73	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
9	A	117	2507	1116	459	815	117	0	0

- Molecule 10 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
10	B	2841	60995	27210	11229	19715	2841	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	2798	U	UNK	conflict	GB 731469900
B	2800	A	UNK	conflict	GB 731469900

- Molecule 11 is a protein called 50S RIBOSOMAL PROTEIN L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	C	267	2053	1271	416	359	7	0	0

- Molecule 12 is a protein called 50S RIBOSOMAL PROTEIN L3.

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

- Molecule 13 is a protein called 50S RIBOSOMAL PROTEIN L4.

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

- Molecule 14 is a protein called 50S RIBOSOMAL PROTEIN L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	F	178	Total	C	N	O	S	0	0
			1420	905	251	258	6		

- Molecule 15 is a protein called 50S RIBOSOMAL PROTEIN L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	G	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 16 is a protein called 50S RIBOSOMAL PROTEIN L9.

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

- Molecule 17 is a protein called 50S RIBOSOMAL PROTEIN L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	I	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 18 is a protein called 50S RIBOSOMAL PROTEIN L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	J	140	Total	C	N	O	S	0	0
			1112	704	210	194	4		

- Molecule 19 is a protein called 50S RIBOSOMAL PROTEIN L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	K	121	930	582	179	164	5	0	0

- Molecule 20 is a protein called 50S RIBOSOMAL PROTEIN L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	L	138	1002	623	197	181	1	0	0

- Molecule 21 is a protein called 50S RIBOSOMAL PROTEIN L16.

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

- Molecule 22 is a protein called 50S RIBOSOMAL PROTEIN L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	N	127	1008	621	204	178	5	0	0

- Molecule 23 is a protein called 50S RIBOSOMAL PROTEIN L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	O	117	900	557	179	163	1	0	0

- Molecule 24 is a protein called 50S RIBOSOMAL PROTEIN L19.

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

- Molecule 25 is a protein called 50S RIBOSOMAL PROTEIN L20.

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

- Molecule 26 is a protein called 50S RIBOSOMAL PROTEIN L21.

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

- Molecule 27 is a protein called 50S RIBOSOMAL PROTEIN L22.

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

- Molecule 28 is a protein called 50S RIBOSOMAL PROTEIN L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	T	99	Total	C	N	O	S	0	0
			777	491	145	139	2		

- Molecule 29 is a protein called 50S RIBOSOMAL PROTEIN L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	U	102	Total	C	N	O	0	0
			779	492	146	141		

- Molecule 30 is a protein called 50S RIBOSOMAL PROTEIN L25.

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

- Molecule 31 is a protein called 50S RIBOSOMAL PROTEIN L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	W	84	Total	C	N	O	S	0	0
			634	391	129	113	1		

- Molecule 32 is a protein called 50S RIBOSOMAL PROTEIN L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	X	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 33 is a protein called 50S RIBOSOMAL PROTEIN L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Y	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 34 is a protein called 50S RIBOSOMAL PROTEIN L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Z	70	Total	C	N	O	S	0	0
			549	339	104	100	6		

- Molecule 35 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
35	B	110	Total	Mg	0
			110	110	

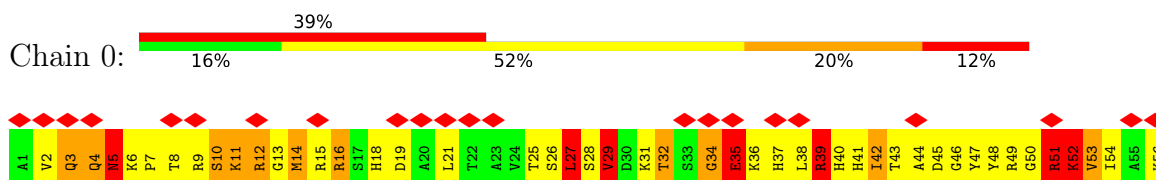
- Molecule 36 is water.

Mol	Chain	Residues	Atoms		AltConf
36	B	497	Total	O	0
			497	497	
36	C	1	Total	O	0
			1	1	
36	E	5	Total	O	0
			5	5	
36	L	2	Total	O	0
			2	2	
36	N	1	Total	O	0
			1	1	

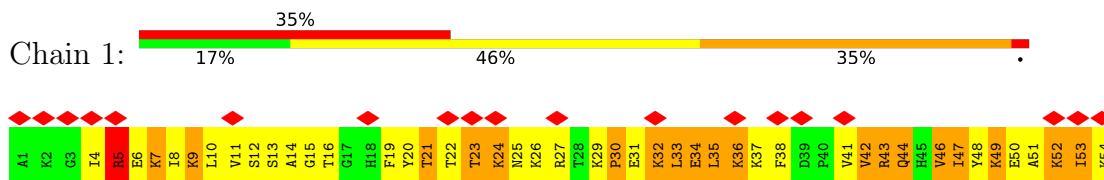
3 Residue-property plots [i](#)

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

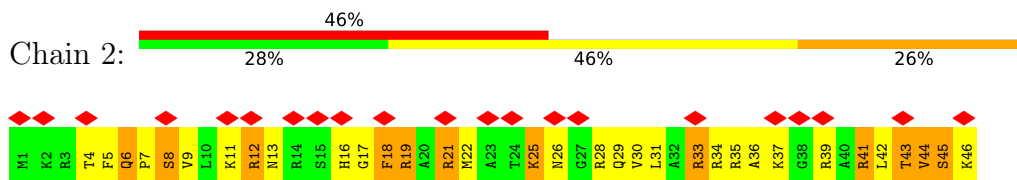
- Molecule 1: 50S RIBOSOMAL PROTEIN L32



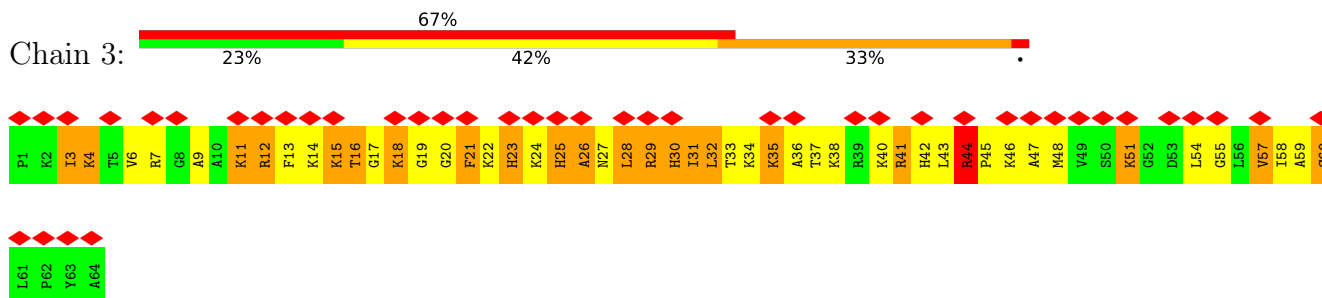
- Molecule 2: 50S RIBOSOMAL PROTEIN L33



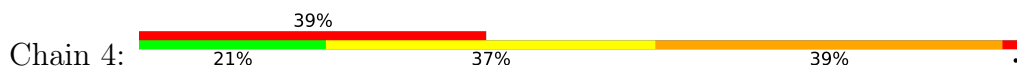
- Molecule 3: 50S RIBOSOMAL PROTEIN L34

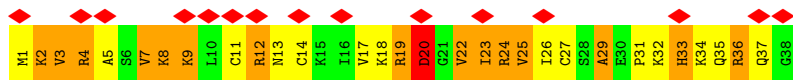


- Molecule 4: 50S RIBOSOMAL PROTEIN L35

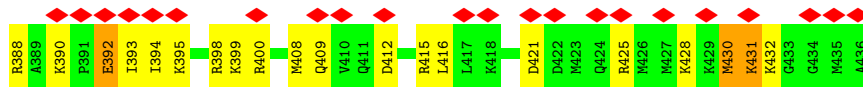
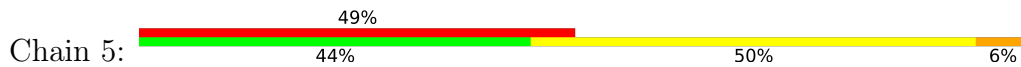


- Molecule 5: 50S RIBOSOMAL PROTEIN L36

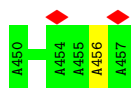
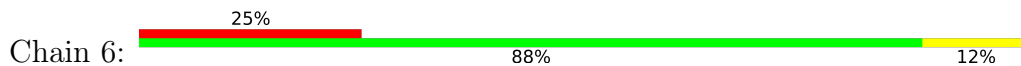




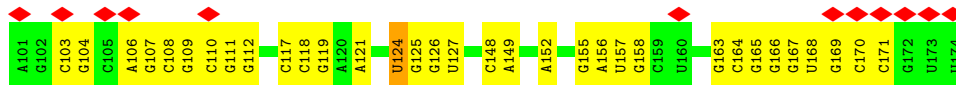
• Molecule 6: SIGNAL RECOGNITION PARTICLE PROTEIN



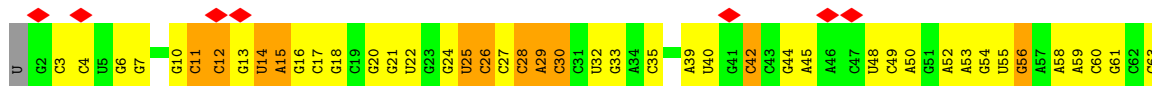
• Molecule 7: ALA-ALA-ALA-ALA-ALA-ALA-ALA-ALA



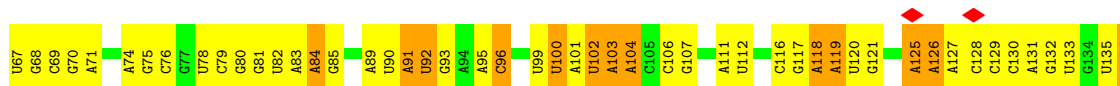
• Molecule 8: 4.5S ribosomal RNA

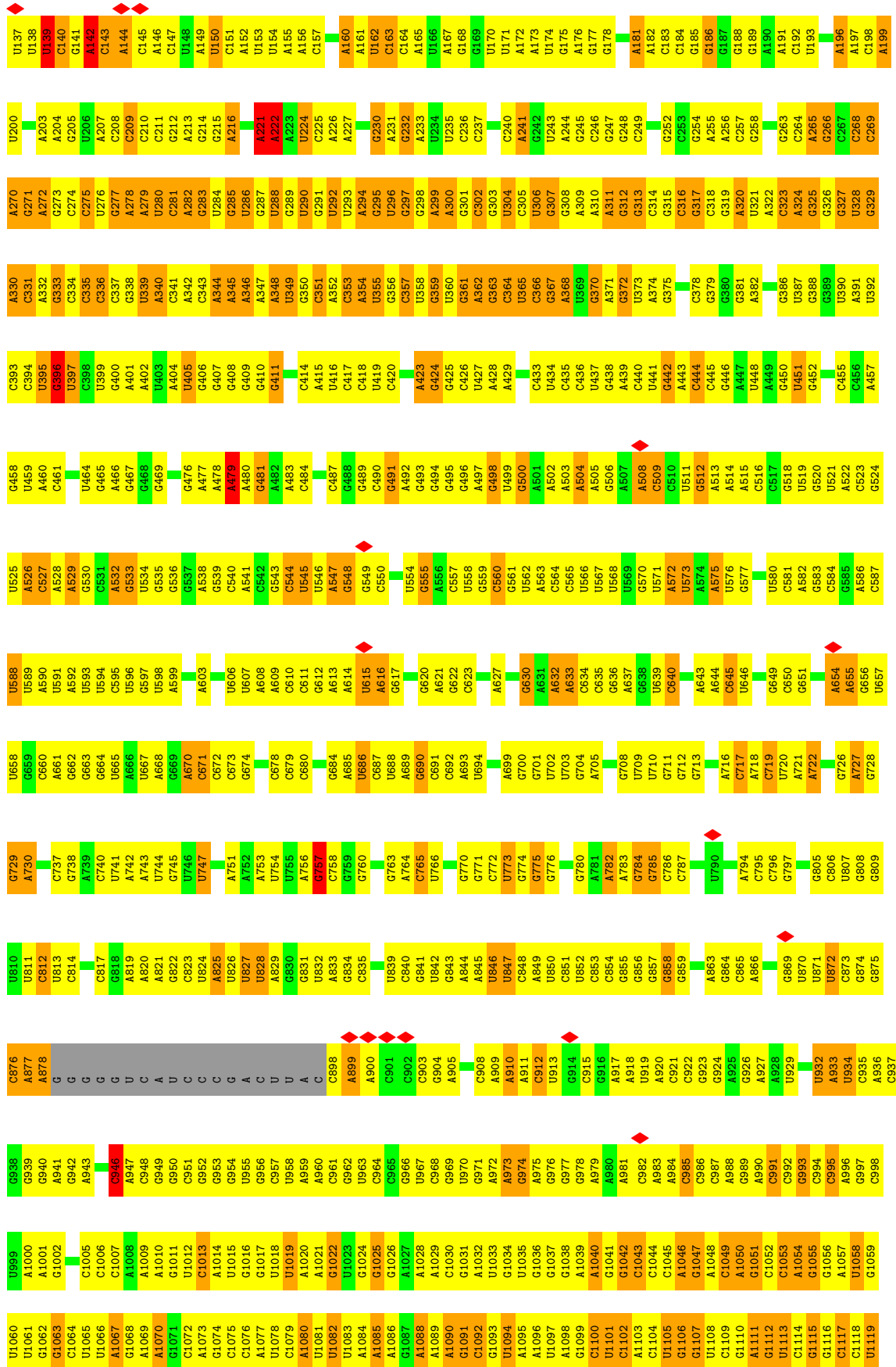


• Molecule 9: 5S ribosomal RNA



• Molecule 10: 23S ribosomal RNA



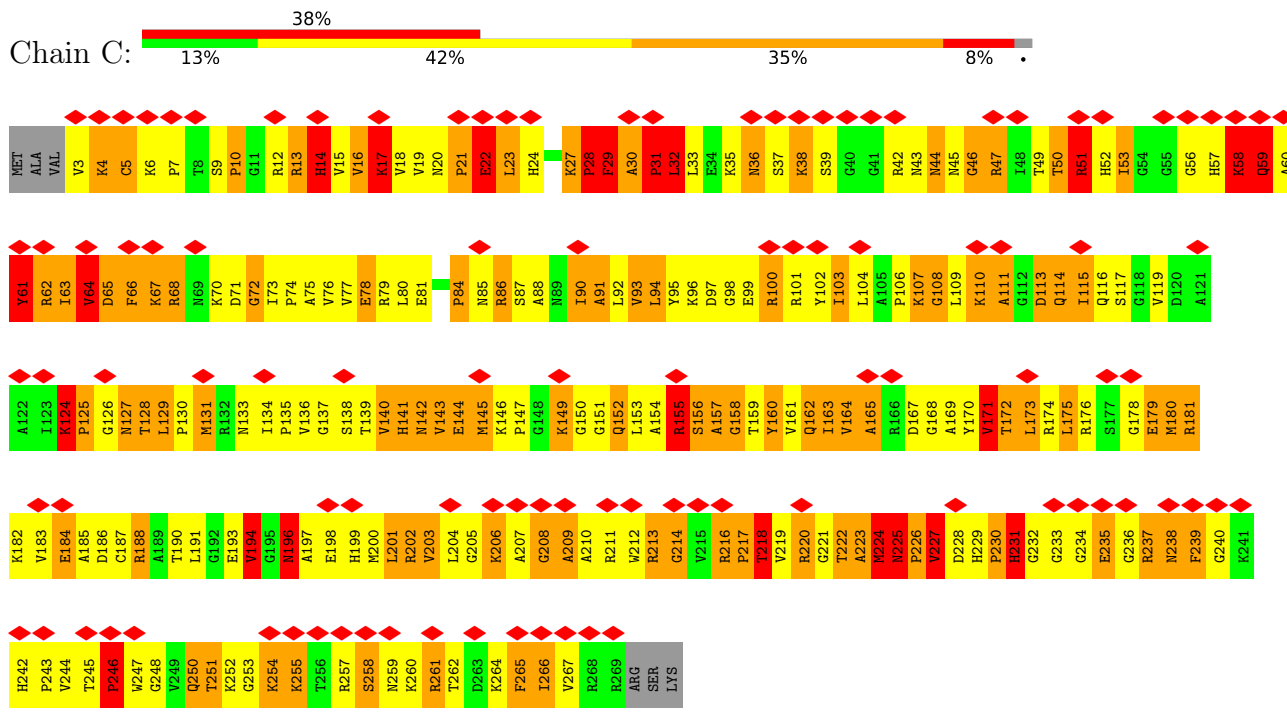


G1922	G1846	A1780	G1715	G1649	U1578	G1516	G1450	C1314	U1249	U1184	G1120
U1923	A1847	U1781	U1716	A1652	A1579	G1517	C1451	C1315	G1260	G1185	C1121
C1924	A1848	U1782	A1717	G1653	A1580	C1518	A1452	U1316	G1261	G1186	G1122
	U1851	A1783	G1718	G1654	G1653	C1519	A1453	G1317	C1261	G1187	G1252
A1927	U1852	A1784	U1719	A1654	U1584	C1520	G1454	U1318	A1263	U1188	G1124
A1928	A1785	A1784	U1720	A1655	U1584	G1521	G1455	U1319	A1264	A1189	G1245
G1929	A1853	A1786	G1721	C1656	C1585	A1522	G1456	C1320	U1255	U1190	A1126
G1930	A1854	U1787	A1722	U1657	A1586	U1523	U1457	A1321	G1266	G1191	
U1931	C1788	C1788	G1723	G1658	U1587	G1524	U1458	A1322	G1267	G1192	U1130
A1932	A1789	G1789	G1724	G1661	G1588	A1525	G1459	C1323	U1268	G1193	G1131
G1933	C1790	A1790	U1725	G1662	U1589	C1526	U1460	G1324	U1269	A1194	U1132
C1934	A1791	A1791	G1726	A1662	A1590	G1527	C1461	U1325	A1260	A1195	A1133
G1935	G1792	G1792	U1727	G1663	A1591	A1528	C1462	U1326	C1261	C1196	A1134
A1936	C1793	C1793	C1728	A1664	C1592	G1529	C1463	A1327	G1197	G1197	C1135
A1937	U1794	U1794	U1729	A1665	A1593	G1530	U1464	U1328	U1266	U1198	G1136
A1938	C1795	C1795	G1730	G1666	A1593	C1531	G1465	U1329	U1267	U1199	G1137
G1939	G1796	A1796	U1731	A1667	U1594	A1532	A1466	C1330	A1269	U1200	G1138
U1940	C1797	G1797	G1732	A1668	C1595	G1533	A1467	G1331	C1201	U1201	G1139
	G1798	U1798	C1733	A1669	A1596	U1534	A1468	U1332	U1202	C1202	C1140
U1943	U1799	G1799	G1734	A1670	A1597	U1535	G1471	G1333	U1203	U1203	U1141
U1944	C1800	C1800	G1735	C1671	A1598	A1536	G1472	G1334	A1204	A1204	A1142
G1945	A1801	A1801	U1736	A1672	A1598	G1537	C1473	U1335	U1273	A1205	A1143
U1946	A1802	A1802	G1737	G1673	C1600	U1538	U1474	C1336	A1274	A1206	A1144
C1947	C1803	C1803	G1738	G1674	G1601	U1539	G1475	G1337	A1275	G1207	C1145
G1948	C1804	C1804	U1739	C1675	U1602	G1540	U1476	U1338	A1276	A1276	
C1949	A1805	A1805	A1740	A1676	A1603	C1541	G1477	G1341	G1210	G1210	G1149
U1950	A1877	C1741	U1742	A1677	C1606	U1542	G1478	C1342	G1211	C1211	C1150
G1951	A1808	A1808	G1743	G1681	C1607	U1543	G1479	C1343	G1212	G1212	A1151
U1952	A1809	A1809	A1744	G1682	C1608	A1544	C1480	G1344	G1213	G1213	C1152
A1953	U1880	U1880	G1745	A1683	A1609	A1545	U1481	A1347	G1214	G1214	C1153
G1954	G1811	G1811	A1746	U1684	A1610	G1546	U1482	C1348	G1215	G1215	G1154
U1955	U1812	U1812	U1747	C1685	C1611	U1547	G1483	C1349	G1216	G1216	A1155
U1956	U1883	U1883	U1748	C1686	G1612	A1548	U1484	C1350	G1217	G1217	A1156
C1957	G1884	C1748	C1749	G1687	U1613	A1549	U1485	C1351	U1218	U1218	G1157
A1885	A1815	A1815	A1749	A1688	G1613	A1550	U1486	C1352	A1286	A1286	C1158
	C1816	C1816	U1750	A1689	A1616	A1551	U1487	A1353	A1287	A1287	U1159
G1888	G1817	G1817	C1752	A1690	C1617	A1552	C1488	A1354	G1288	G1288	G1160
A1889	U1818	U1818	G1753	A1691	A1618	A1553	C1489	G1355	U1224	U1224	C1161
A1890	A1819	A1819	U1754	C1692	G1622	U1554	A1490	C1359	G1225	G1225	G1162
U1898	U1820	U1820	G1755	U1693	G1623	C1556	C1493	G1360	A1226	A1226	G1163
U1899	A1821	A1821	U1756	G1694	U1624	C1557	A1494	G1361	G1227	G1227	C1164
A1901	C1822	C1822	G1757	G1695	U1629	C1558	A1495	C1362	G1228	G1228	A1165
C1902	G1824	G1824	U1758	G1696	U1629	U1559	A1496	C1363	C1229	C1229	G1166
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G1842	G1710	G1710	U1645	U1645	A1642	A1642	G1510	U1445	U1244	U1244	C1178
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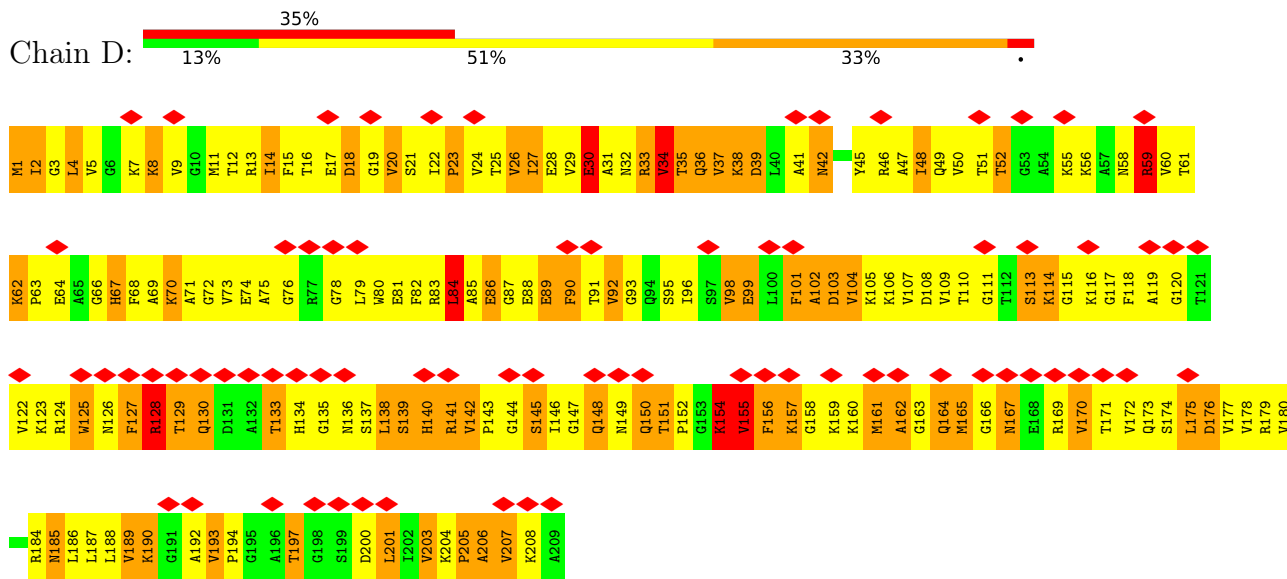
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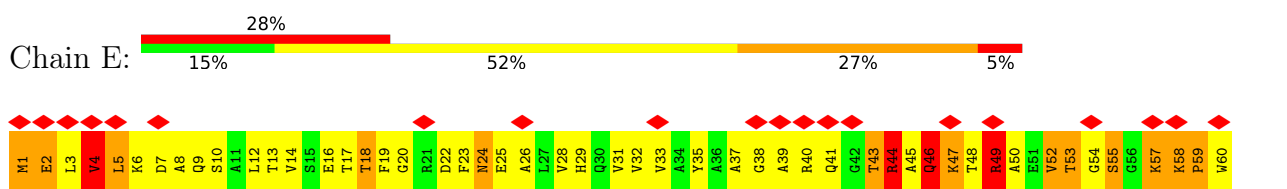
• Molecule 11: 50S RIBOSOMAL PROTEIN L2

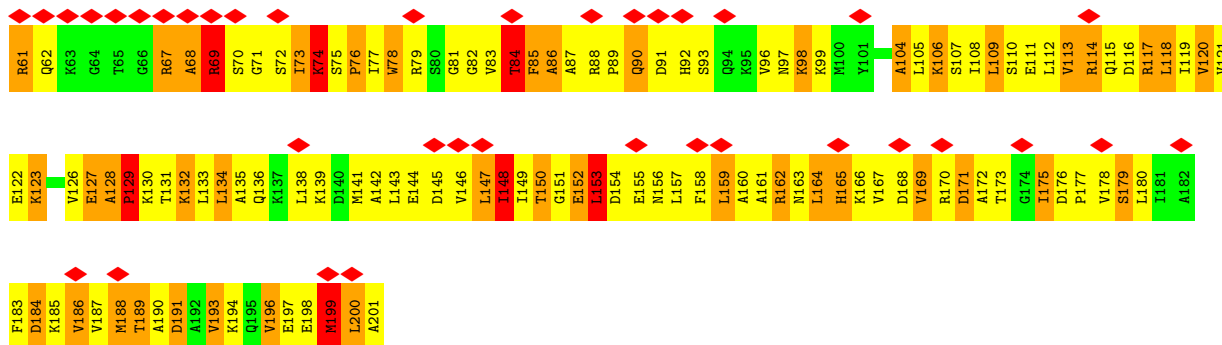


• Molecule 12: 50S RIBOSOMAL PROTEIN L3

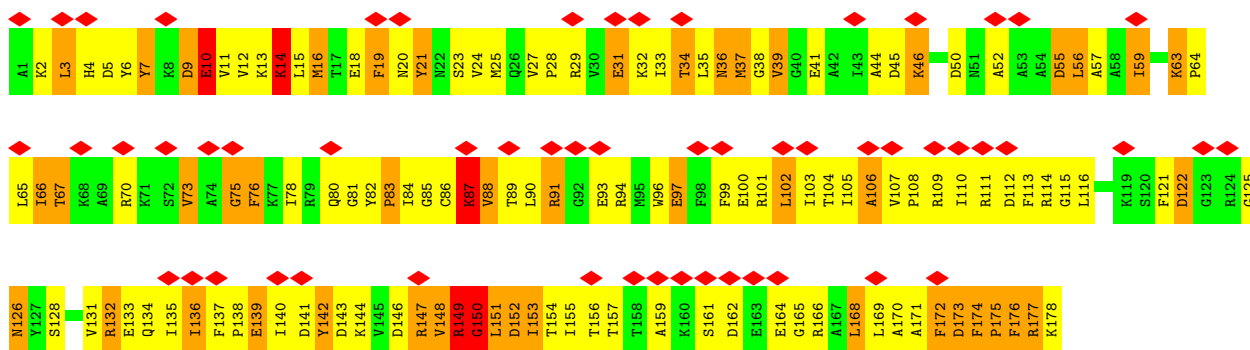


• Molecule 13: 50S RIBOSOMAL PROTEIN L4

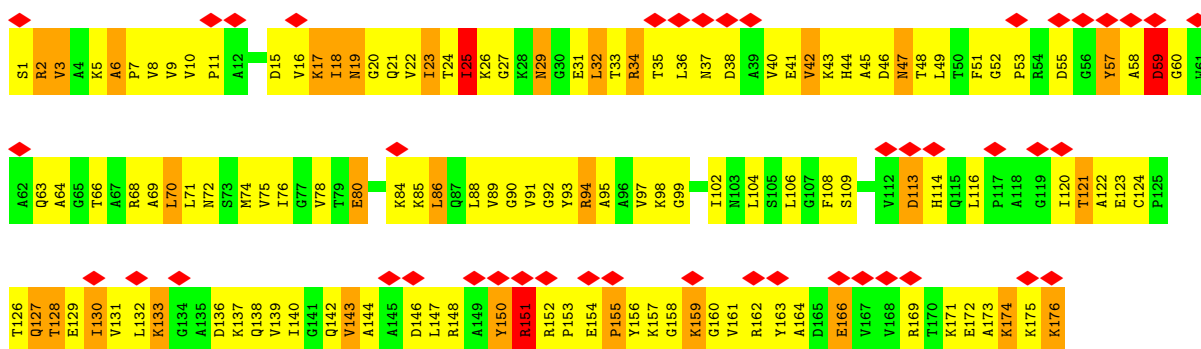




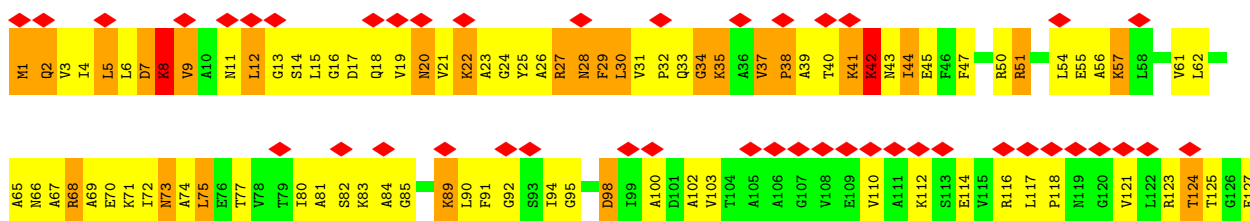
• Molecule 14: 50S RIBOSOMAL PROTEIN L5

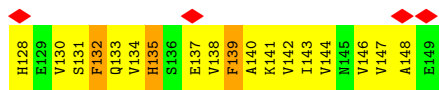


• Molecule 15: 50S RIBOSOMAL PROTEIN L6

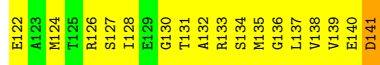
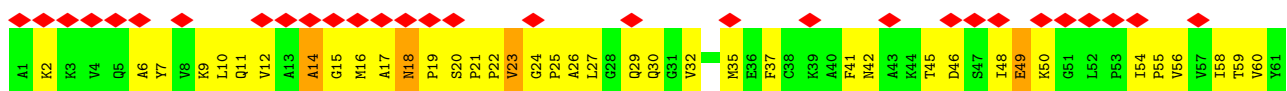


• Molecule 16: 50S RIBOSOMAL PROTEIN L9

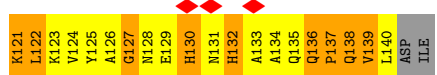
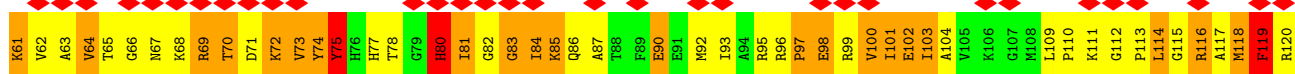
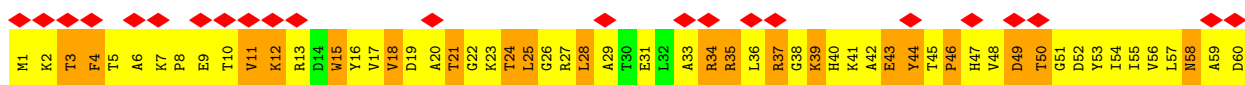




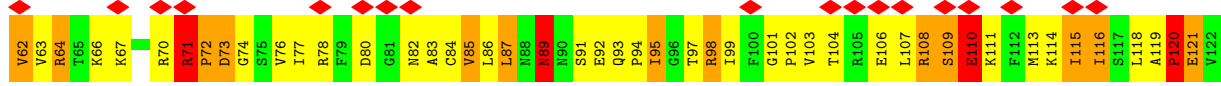
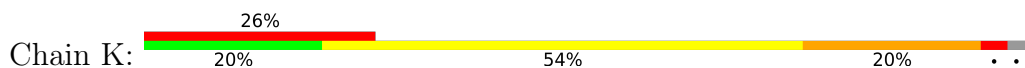
• Molecule 17: 50S RIBOSOMAL PROTEIN L11



• Molecule 18: 50S RIBOSOMAL PROTEIN L13



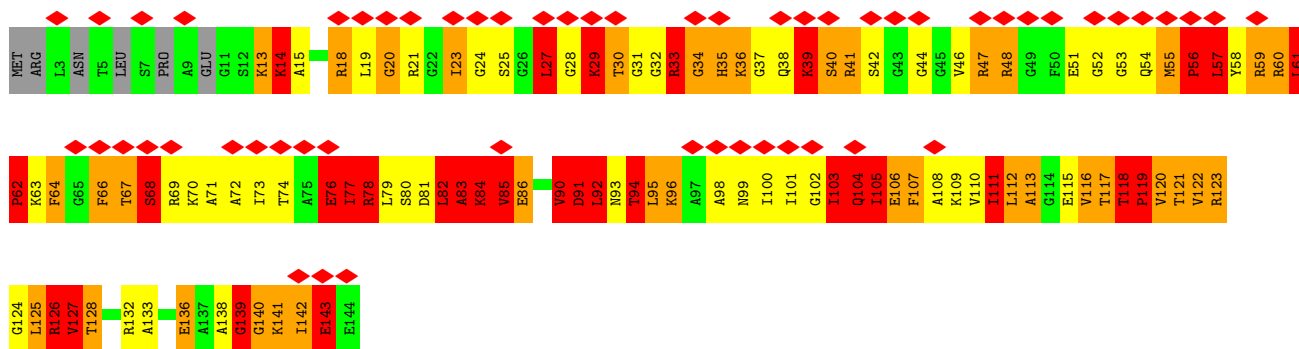
• Molecule 19: 50S RIBOSOMAL PROTEIN L14



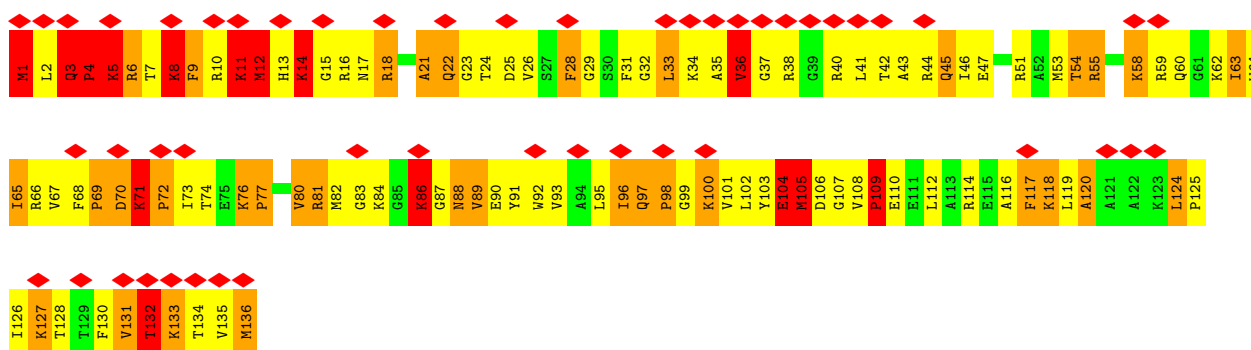
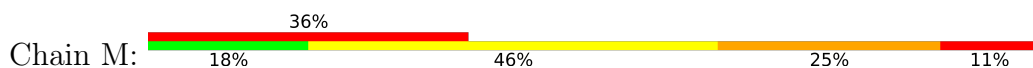
• Molecule 20: 50S RIBOSOMAL PROTEIN L15



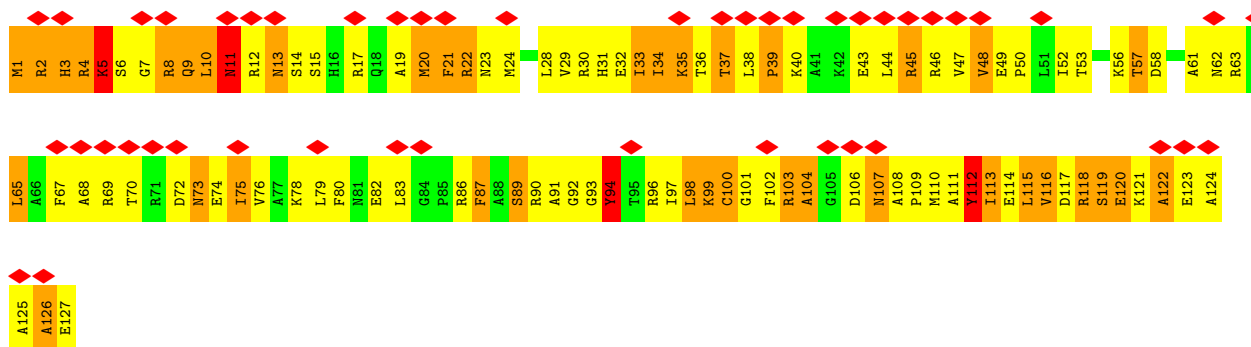
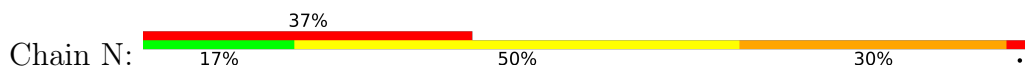
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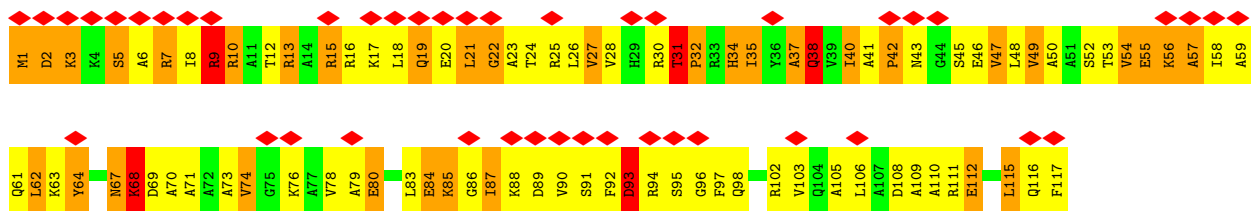
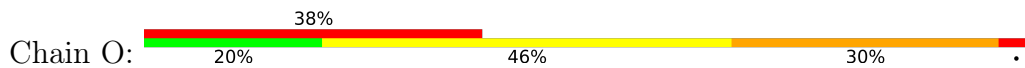
• Molecule 21: 50S RIBOSOMAL PROTEIN L16



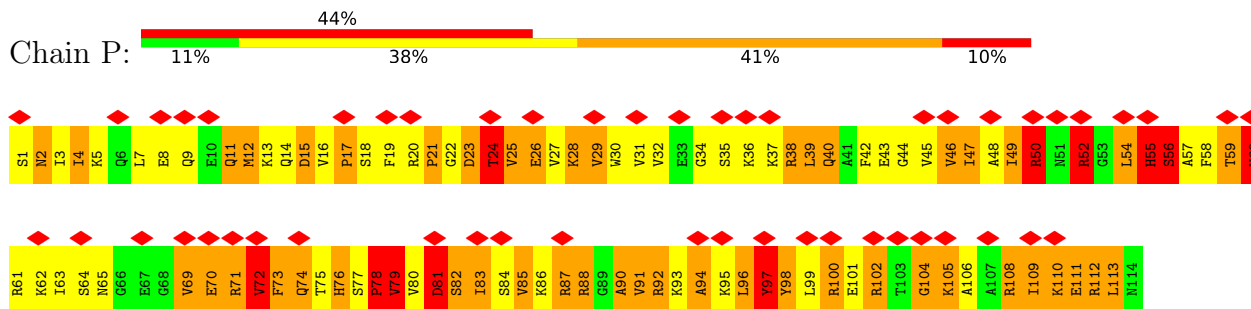
• Molecule 22: 50S RIBOSOMAL PROTEIN L17



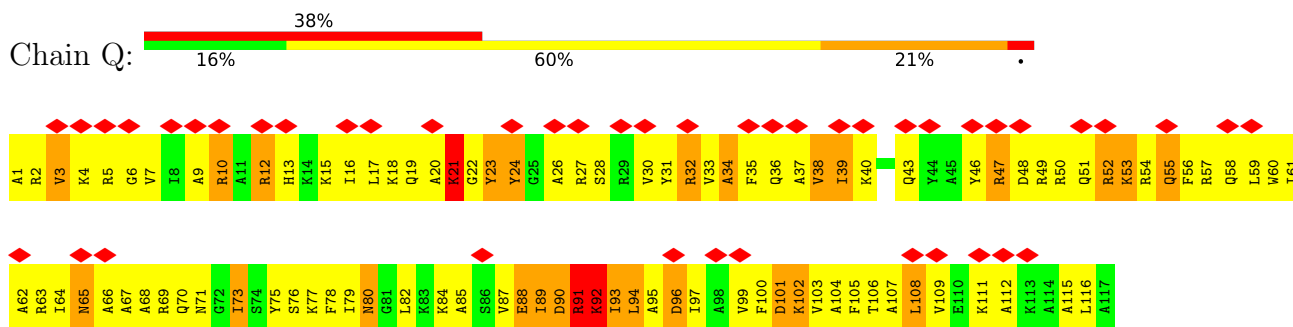
• Molecule 23: 50S RIBOSOMAL PROTEIN L18



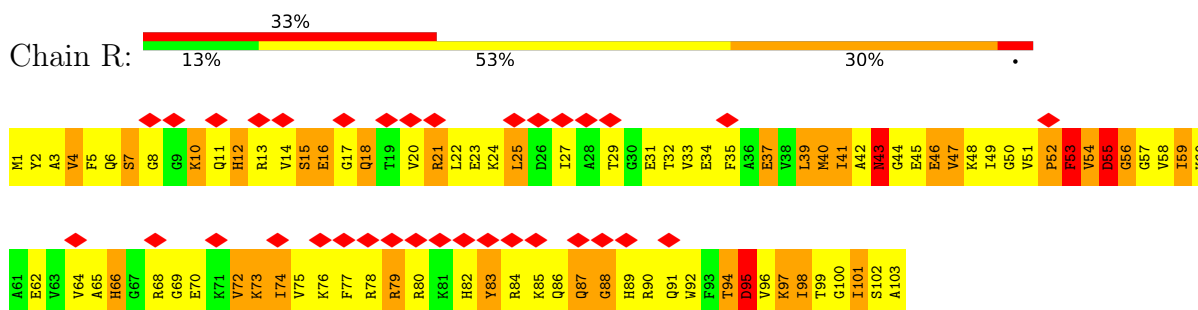
• Molecule 24: 50S RIBOSOMAL PROTEIN L19



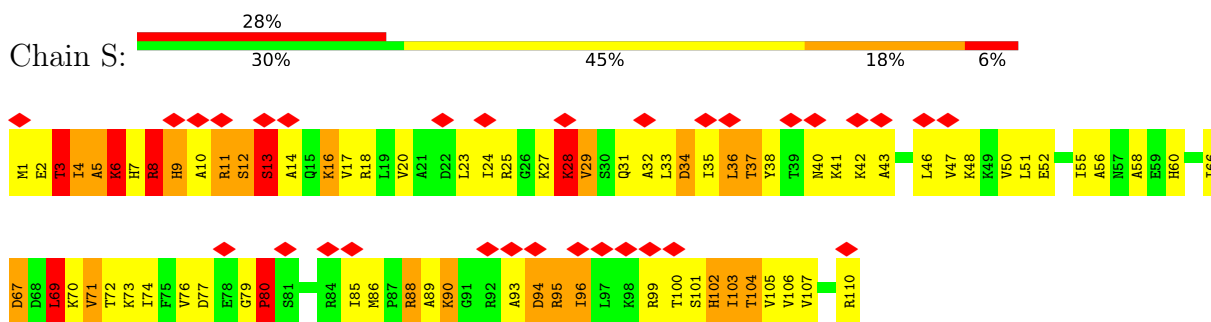
• Molecule 25: 50S RIBOSOMAL PROTEIN L20



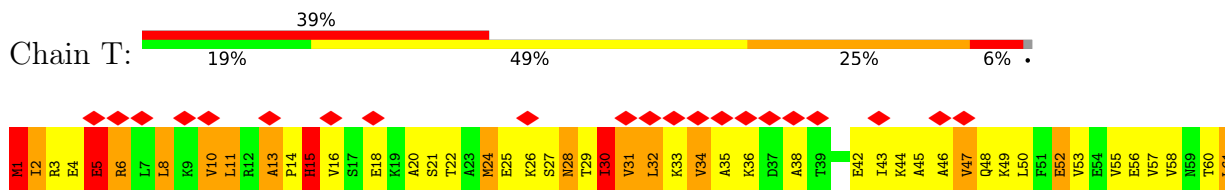
• Molecule 26: 50S RIBOSOMAL PROTEIN L21

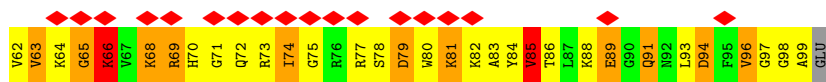


• Molecule 27: 50S RIBOSOMAL PROTEIN L22

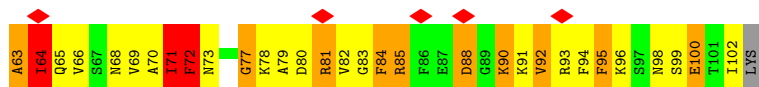
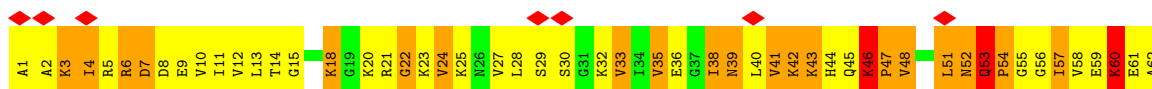
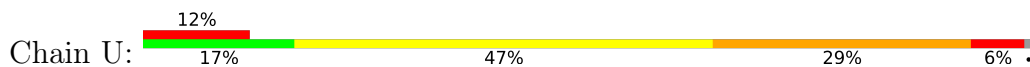


• Molecule 28: 50S RIBOSOMAL PROTEIN L23

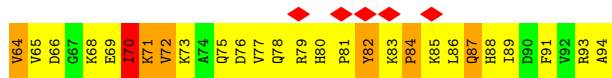
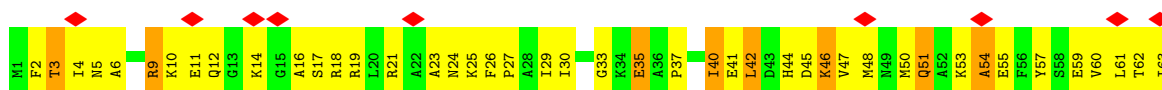




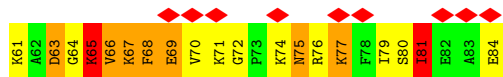
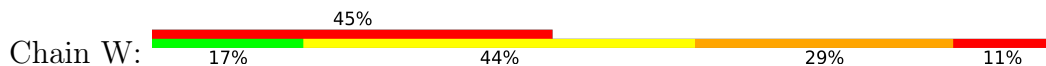
• Molecule 29: 50S RIBOSOMAL PROTEIN L24



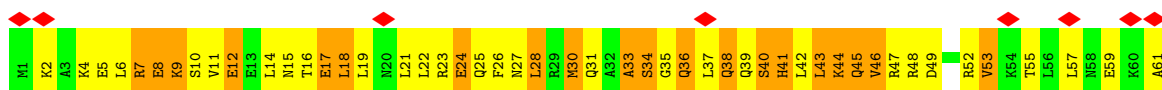
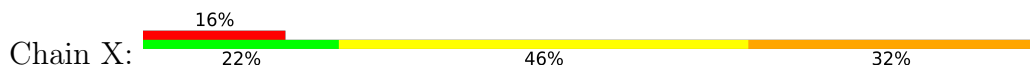
• Molecule 30: 50S RIBOSOMAL PROTEIN L25



• Molecule 31: 50S RIBOSOMAL PROTEIN L27



• Molecule 32: 50S RIBOSOMAL PROTEIN L29

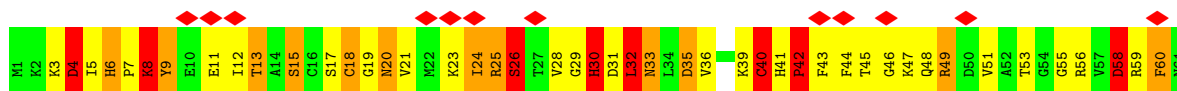
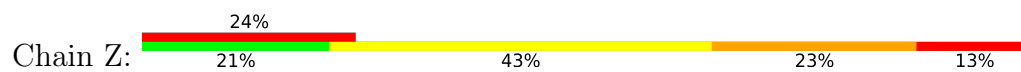


• Molecule 33: 50S RIBOSOMAL PROTEIN L30





- Molecule 34: 50S RIBOSOMAL PROTEIN L31



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	32170	Depositor
Resolution determination method	Not provided	
CTF correction method	PER MICROGRAPH	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	24	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	77769	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.158	Depositor
Minimum map value	-0.099	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.02	Depositor
Map size (\AA)	360.0, 360.0, 360.0	wwPDB
Map dimensions	180, 180, 180	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	2.0, 2.0, 2.0	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MG

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	0.53	1/450 (0.2%)	1.15	7/599 (1.2%)
2	1	0.36	0/448	0.71	0/594
3	2	0.33	0/380	0.64	0/498
4	3	0.47	0/513	0.96	1/676 (0.1%)
5	4	0.40	0/303	0.73	0/397
6	5	0.24	0/855	0.38	0/1124
7	6	0.37	0/40	0.26	0/53
8	7	0.13	0/1781	0.63	0/2779
9	A	0.27	0/2803	0.74	0/4371
10	B	0.32	11/68314 (0.0%)	0.77	54/106569 (0.1%)
11	C	0.40	0/2092	0.88	7/2813 (0.2%)
12	D	0.40	0/1586	0.80	2/2134 (0.1%)
13	E	0.45	1/1571 (0.1%)	0.88	6/2113 (0.3%)
14	F	0.33	0/1444	0.87	5/1937 (0.3%)
15	G	0.31	0/1343	0.69	0/1816
16	H	0.27	0/1122	0.59	0/1515
17	I	0.26	0/1046	0.58	0/1410
18	J	0.41	1/1135 (0.1%)	0.72	3/1529 (0.2%)
19	K	0.35	0/939	0.99	2/1258 (0.2%)
20	L	0.71	0/1006	1.61	29/1331 (2.2%)
21	M	0.48	0/1093	1.03	8/1460 (0.5%)
22	N	0.34	0/1021	0.78	4/1364 (0.3%)
23	O	0.30	0/910	0.67	1/1219 (0.1%)
24	P	0.55	0/929	1.40	16/1242 (1.3%)
25	Q	0.41	0/960	0.86	2/1278 (0.2%)
26	R	1.06	6/829 (0.7%)	1.42	13/1107 (1.2%)
27	S	0.28	0/864	0.69	1/1156 (0.1%)
28	T	0.38	0/784	0.77	4/1048 (0.4%)
29	U	0.48	0/787	0.74	3/1051 (0.3%)
30	V	0.30	0/766	0.53	0/1025
31	W	0.36	0/642	0.96	5/848 (0.6%)
32	X	0.29	0/509	0.81	1/674 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	Y	0.30	0/453	0.64	0/605
34	Z	0.48	0/559	1.04	5/745 (0.7%)
All	All	0.35	20/100277 (0.0%)	0.80	179/150338 (0.1%)

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
10	B	0	55
11	C	0	3
18	J	0	2
20	L	0	1
24	P	0	1
25	Q	0	1
26	R	0	1
All	All	0	64

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	R	53	PHE	CB-CG	17.81	1.81	1.51
26	R	54	VAL	N-CA	-11.64	1.23	1.46
26	R	54	VAL	CA-CB	11.12	1.78	1.54
10	B	2196	C	O3'-P	10.16	1.73	1.61
10	B	2052	A	C4'-C3'	-8.24	1.44	1.53

The worst 5 of 179 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	2791	G	O5'-P-OP1	-28.73	76.22	110.70
10	B	2791	G	O5'-P-OP2	18.24	132.59	110.70
26	R	53	PHE	CA-C-N	-17.34	79.05	117.20
26	R	54	VAL	CB-CA-C	15.12	140.12	111.40
10	B	2790	U	OP1-P-O3'	14.24	136.52	105.20

There are no chirality outliers.

5 of 64 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
10	B	136	G	Sidechain
10	B	139	U	Sidechain
10	B	142	A	Sidechain
10	B	143	C	Sidechain
10	B	51	G	Sidechain

5.2 Too-close contacts [i](#)

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	0	444	0	461	105	0
2	1	441	0	485	68	0
3	2	377	0	418	50	0
4	3	504	0	574	108	0
5	4	302	0	343	45	0
6	5	850	0	897	94	0
7	6	41	0	39	1	0
8	7	1591	0	806	24	0
9	A	2507	0	1270	86	0
10	B	60995	0	30659	4160	0
11	C	2053	0	2122	432	0
12	D	1565	0	1616	377	0
13	E	1552	0	1617	282	0
14	F	1420	0	1460	167	0
15	G	1323	0	1374	165	0
16	H	1111	0	1148	190	0
17	I	1032	0	1088	199	0
18	J	1112	0	1147	217	0
19	K	930	0	1000	119	0
20	L	1002	0	1070	287	0
21	M	1074	0	1157	244	0
22	N	1008	0	1036	232	0
23	O	900	0	935	129	0
24	P	917	0	965	205	0
25	Q	947	0	1022	173	0
26	R	816	0	838	166	0
27	S	857	0	922	120	0
28	T	777	0	840	129	0
29	U	779	0	831	255	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	V	753	0	780	104	0
31	W	634	0	656	157	0
32	X	509	0	541	68	0
33	Y	449	0	491	57	0
34	Z	549	0	552	114	0
35	B	110	0	0	0	0
36	B	497	0	0	17	0
36	C	1	0	0	0	0
36	E	5	0	0	0	0
36	L	2	0	0	0	0
36	N	1	0	0	0	0
All	All	92737	0	61160	8365	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 55.

The worst 5 of 8365 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)
10:B:1062:G:H21	17:I:134:SER:CB	1.09	1.62
10:B:1059:G:C5'	17:I:117:THR:HG23	1.22	1.60
26:R:54:VAL:CA	26:R:54:VAL:CB	1.78	1.59
26:R:53:PHE:CB	26:R:53:PHE:CG	1.81	1.58
10:B:80:G:C5'	10:B:346:A:C8	1.88	1.53

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	0	54/56 (96%)	30 (56%)	15 (28%)	9 (17%)	0 3

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	1	52/54 (96%)	19 (36%)	23 (44%)	10 (19%)	0	2
3	2	44/46 (96%)	23 (52%)	14 (32%)	7 (16%)	0	3
4	3	62/64 (97%)	30 (48%)	25 (40%)	7 (11%)	0	7
5	4	36/38 (95%)	18 (50%)	9 (25%)	9 (25%)	0	1
6	5	107/109 (98%)	83 (78%)	19 (18%)	5 (5%)	2	21
7	6	6/8 (75%)	5 (83%)	1 (17%)	0	100	100
11	C	265/273 (97%)	103 (39%)	82 (31%)	80 (30%)	0	0
12	D	207/209 (99%)	90 (44%)	69 (33%)	48 (23%)	0	1
13	E	199/201 (99%)	98 (49%)	60 (30%)	41 (21%)	0	2
14	F	176/178 (99%)	95 (54%)	48 (27%)	33 (19%)	0	2
15	G	174/176 (99%)	118 (68%)	39 (22%)	17 (10%)	0	9
16	H	147/149 (99%)	85 (58%)	47 (32%)	15 (10%)	0	8
17	I	139/141 (99%)	124 (89%)	11 (8%)	4 (3%)	4	29
18	J	138/142 (97%)	67 (49%)	42 (30%)	29 (21%)	0	2
19	K	119/123 (97%)	71 (60%)	32 (27%)	16 (13%)	0	4
20	L	132/144 (92%)	55 (42%)	36 (27%)	41 (31%)	0	0
21	M	134/136 (98%)	69 (52%)	37 (28%)	28 (21%)	0	2
22	N	125/127 (98%)	71 (57%)	34 (27%)	20 (16%)	0	3
23	O	115/117 (98%)	64 (56%)	26 (23%)	25 (22%)	0	2
24	P	112/114 (98%)	39 (35%)	36 (32%)	37 (33%)	0	0
25	Q	115/117 (98%)	81 (70%)	22 (19%)	12 (10%)	0	8
26	R	101/103 (98%)	44 (44%)	31 (31%)	26 (26%)	0	1
27	S	108/110 (98%)	63 (58%)	27 (25%)	18 (17%)	0	3
28	T	97/100 (97%)	41 (42%)	39 (40%)	17 (18%)	0	3
29	U	100/103 (97%)	30 (30%)	47 (47%)	23 (23%)	0	1
30	V	92/94 (98%)	62 (67%)	22 (24%)	8 (9%)	1	11
31	W	82/84 (98%)	29 (35%)	26 (32%)	27 (33%)	0	0
32	X	60/63 (95%)	28 (47%)	20 (33%)	12 (20%)	0	2
33	Y	56/58 (97%)	29 (52%)	17 (30%)	10 (18%)	0	3
34	Z	68/70 (97%)	29 (43%)	26 (38%)	13 (19%)	0	2
All	All	3422/3507 (98%)	1793 (52%)	982 (29%)	647 (19%)	0	2

5 of 647 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	0	10	SER
1	0	29	VAL
1	0	35	GLU
2	1	46	VAL
3	2	4	THR

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	47/47 (100%)	31 (66%)	16 (34%)	0	1
2	1	48/48 (100%)	33 (69%)	15 (31%)	0	2
3	2	38/38 (100%)	27 (71%)	11 (29%)	0	2
4	3	51/51 (100%)	33 (65%)	18 (35%)	0	1
5	4	34/34 (100%)	22 (65%)	12 (35%)	0	1
6	5	92/92 (100%)	89 (97%)	3 (3%)	38	61
11	C	213/218 (98%)	145 (68%)	68 (32%)	0	2
12	D	164/164 (100%)	112 (68%)	52 (32%)	0	2
13	E	165/165 (100%)	115 (70%)	50 (30%)	0	2
14	F	149/149 (100%)	119 (80%)	30 (20%)	1	7
15	G	137/137 (100%)	105 (77%)	32 (23%)	1	4
16	H	114/114 (100%)	87 (76%)	27 (24%)	1	4
17	I	109/109 (100%)	106 (97%)	3 (3%)	43	64
18	J	114/116 (98%)	84 (74%)	30 (26%)	0	3
19	K	102/104 (98%)	78 (76%)	24 (24%)	1	4
20	L	97/103 (94%)	57 (59%)	40 (41%)	0	0
21	M	109/109 (100%)	77 (71%)	32 (29%)	0	2
22	N	103/103 (100%)	78 (76%)	25 (24%)	0	4
23	O	87/87 (100%)	58 (67%)	29 (33%)	0	2

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
24	P	99/99 (100%)	77 (78%)	22 (22%)	1	6
25	Q	89/89 (100%)	66 (74%)	23 (26%)	0	3
26	R	84/84 (100%)	68 (81%)	16 (19%)	1	8
27	S	93/93 (100%)	72 (77%)	21 (23%)	1	5
28	T	83/84 (99%)	60 (72%)	23 (28%)	0	3
29	U	83/84 (99%)	58 (70%)	25 (30%)	0	2
30	V	78/78 (100%)	66 (85%)	12 (15%)	2	14
31	W	62/62 (100%)	46 (74%)	16 (26%)	0	3
32	X	55/55 (100%)	40 (73%)	15 (27%)	0	3
33	Y	48/48 (100%)	36 (75%)	12 (25%)	0	3
34	Z	62/62 (100%)	43 (69%)	19 (31%)	0	2
All	All	2809/2826 (99%)	2088 (74%)	721 (26%)	2	3

5 of 721 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
22	N	1	MET
26	R	66	HIS
22	N	57	THR
21	M	136	MET
24	P	24	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 102 such sidechains are listed below:

Mol	Chain	Res	Type
19	K	82	ASN
24	P	2	ASN
34	Z	30	HIS
20	L	38	GLN
22	N	73	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	B	2837/2904 (97%)	552 (19%)	19 (0%)
8	7	73/74 (98%)	3 (4%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
9	A	116/120 (96%)	23 (19%)	0
All	All	3026/3098 (97%)	578 (19%)	19 (0%)

5 of 578 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
8	7	121	A
8	7	124	U
8	7	168	U
9	A	11	C
9	A	12	C

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
10	B	2258	C
10	B	2425	A
10	B	2756	U
10	B	2336	A
10	B	1236	G

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 110 ligands modelled in this entry, 110 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
32	X	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	X	1:MET	C	2:LYS	N	3.26

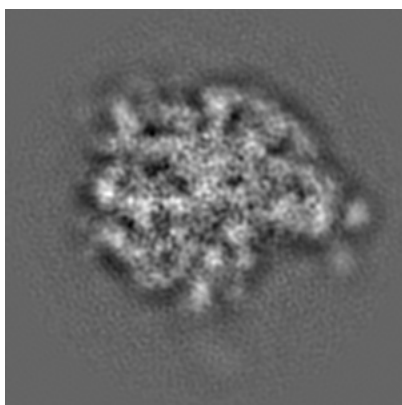
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-2917. These allow visual inspection of the internal detail of the map and identification of artifacts.

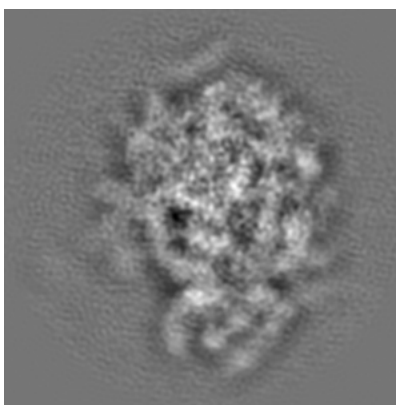
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

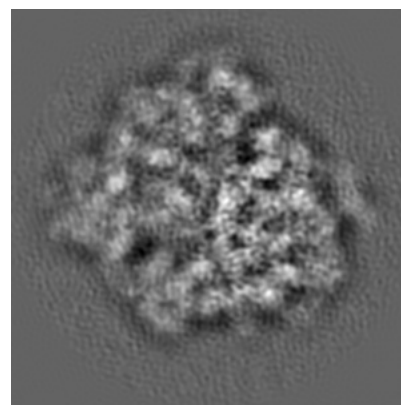
6.1.1 Primary map



X



Y

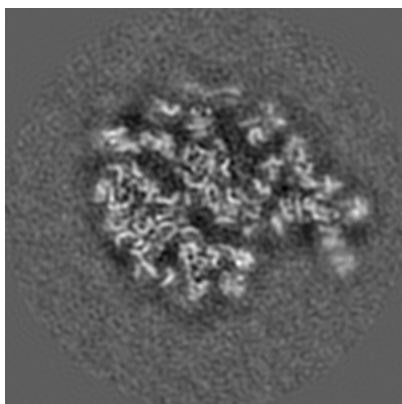


Z

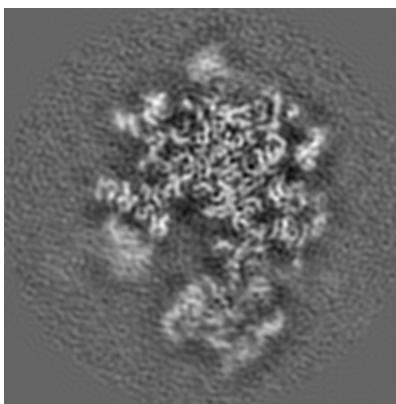
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

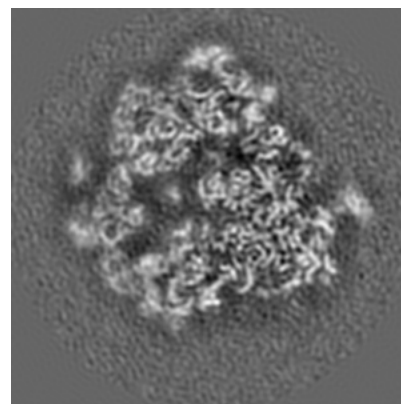
6.2.1 Primary map



X Index: 90



Y Index: 90

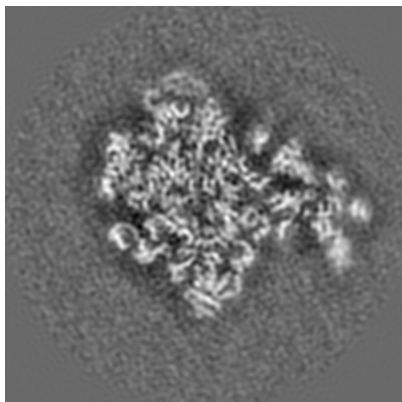


Z Index: 90

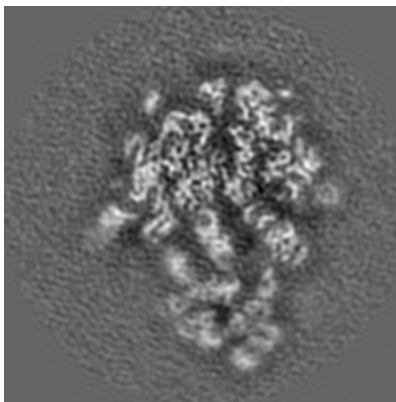
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

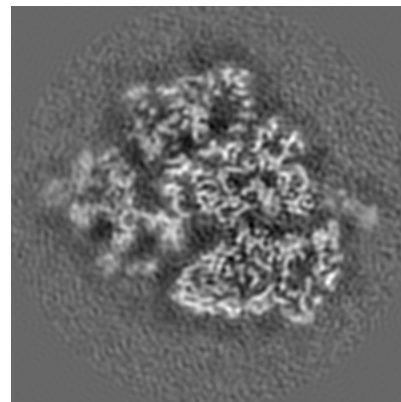
6.3.1 Primary map



X Index: 95



Y Index: 79



Z Index: 98

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

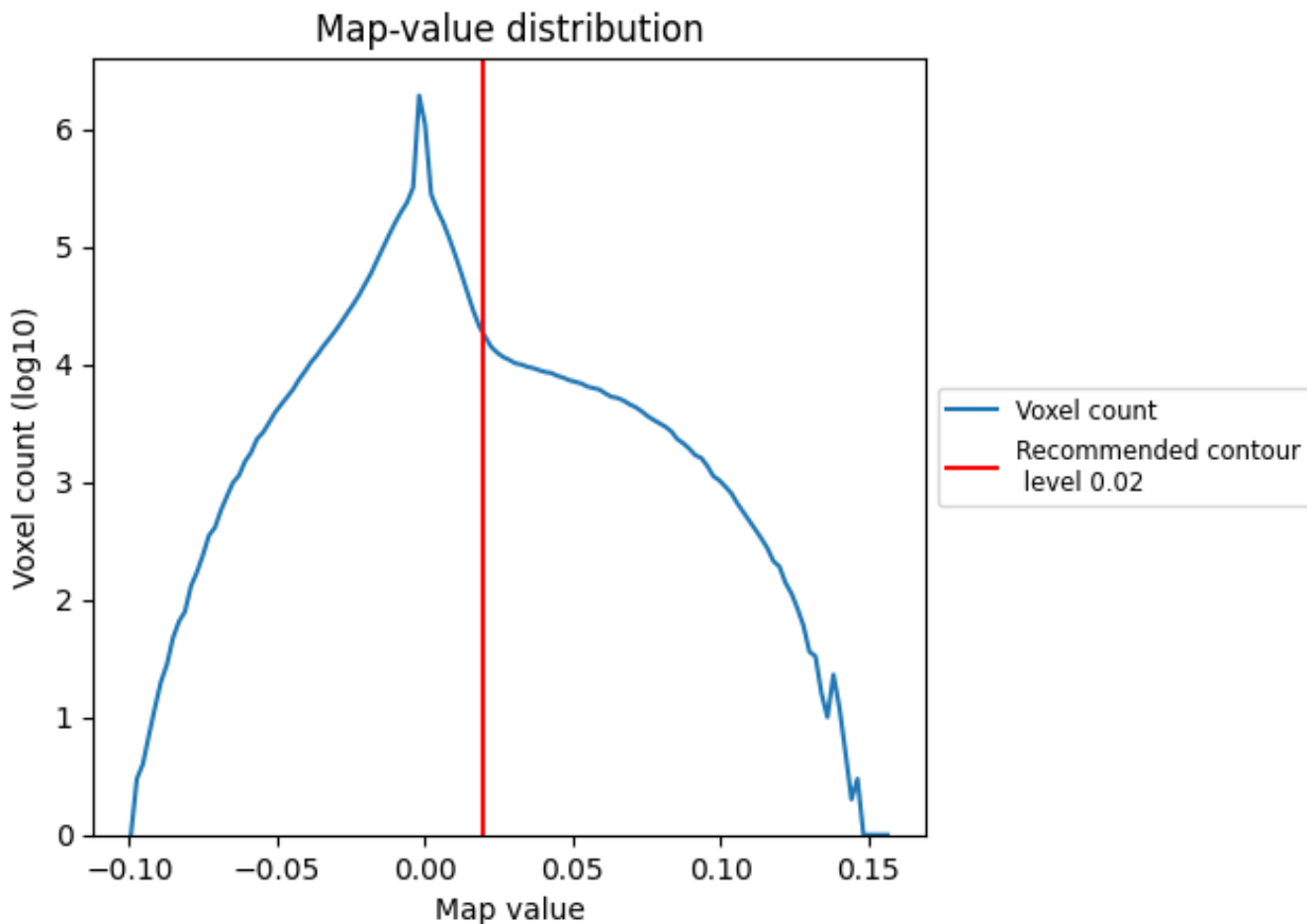
6.5 Mask visualisation

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

7 Map analysis [i](#)

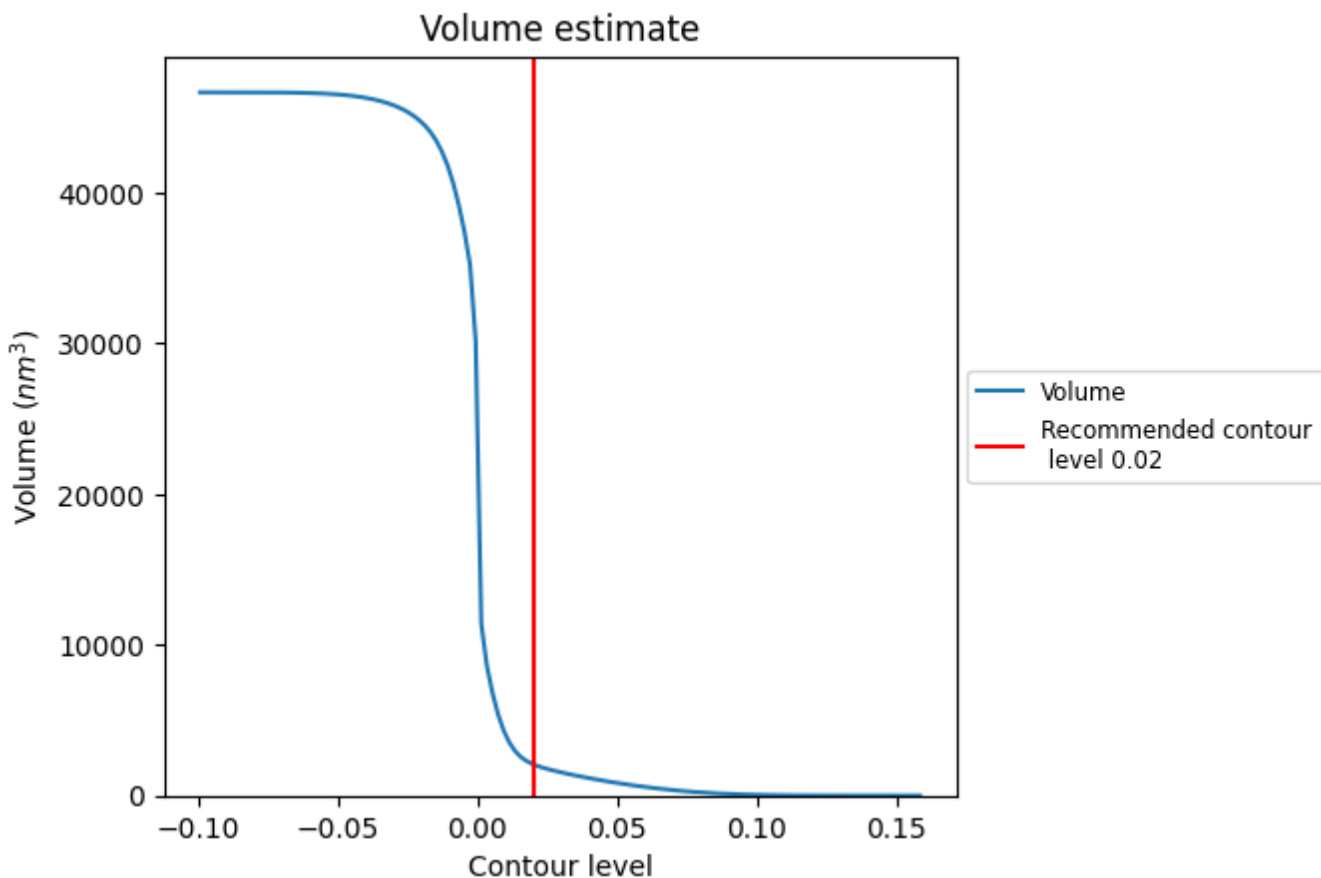
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

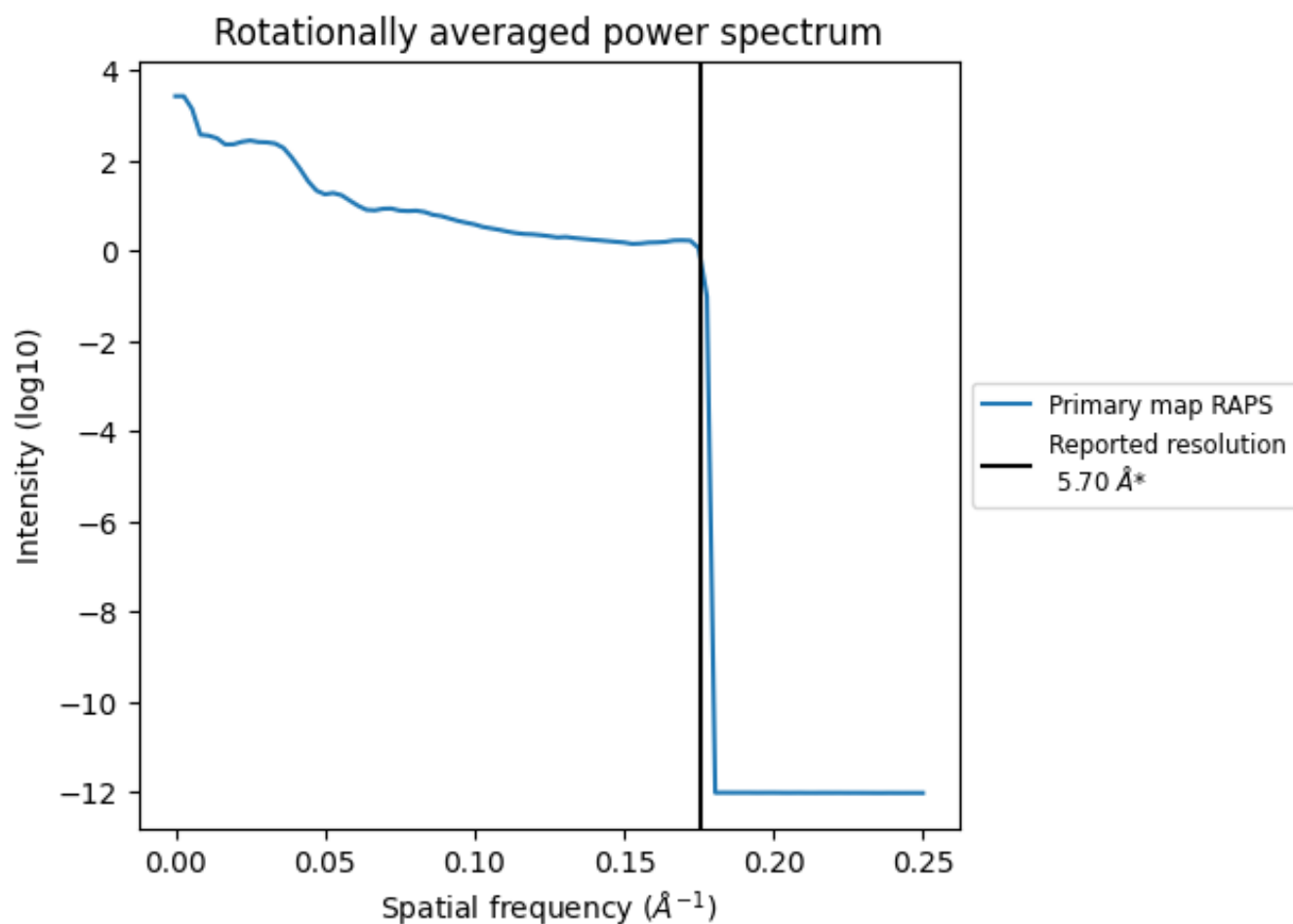
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2076 nm³; this corresponds to an approximate mass of 1875 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 [\(i\)](#)

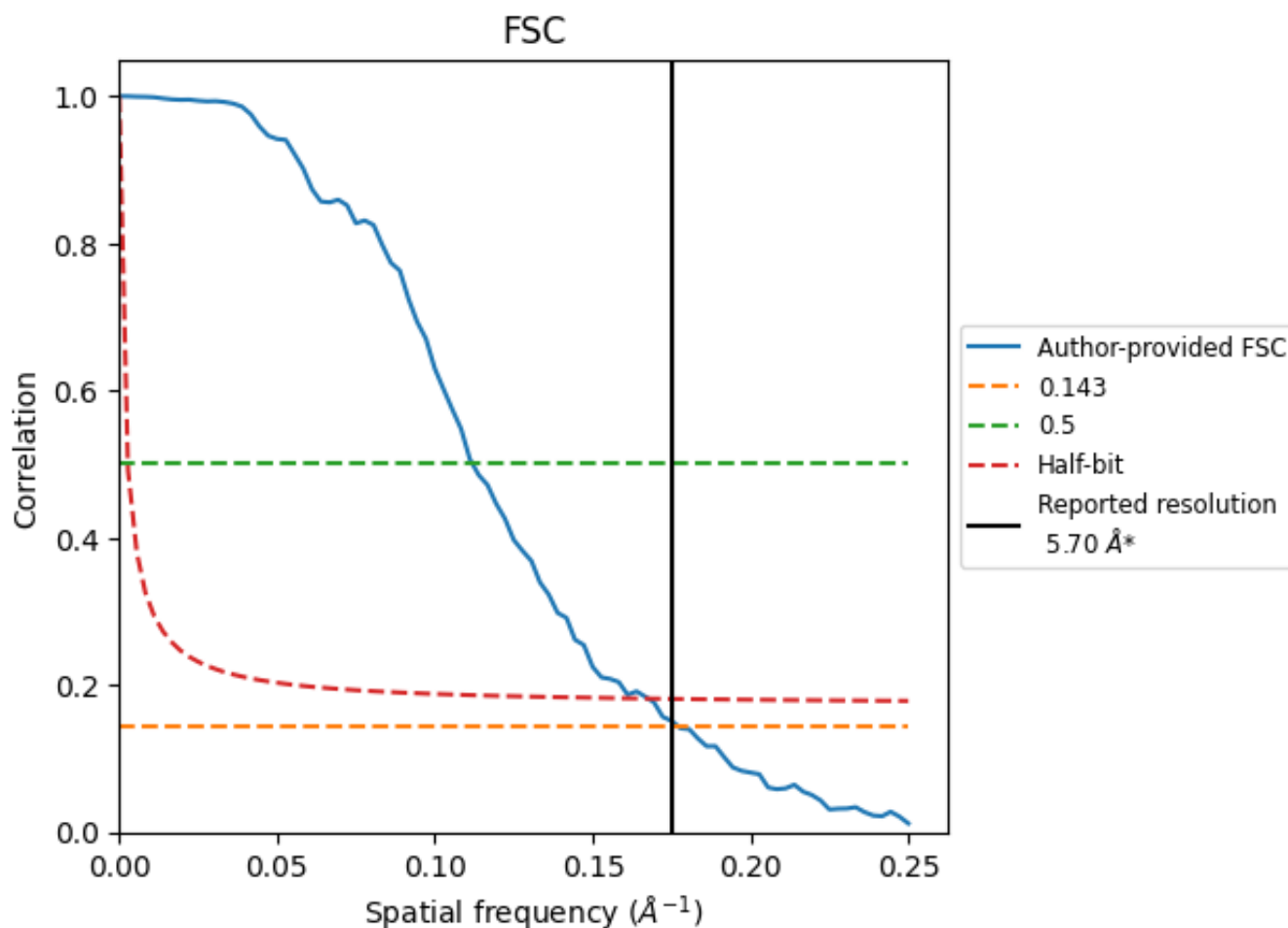


*Reported resolution corresponds to spatial frequency of 0.175 Å⁻¹

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 0.175 Å⁻¹

8.2 Resolution estimates [i](#)

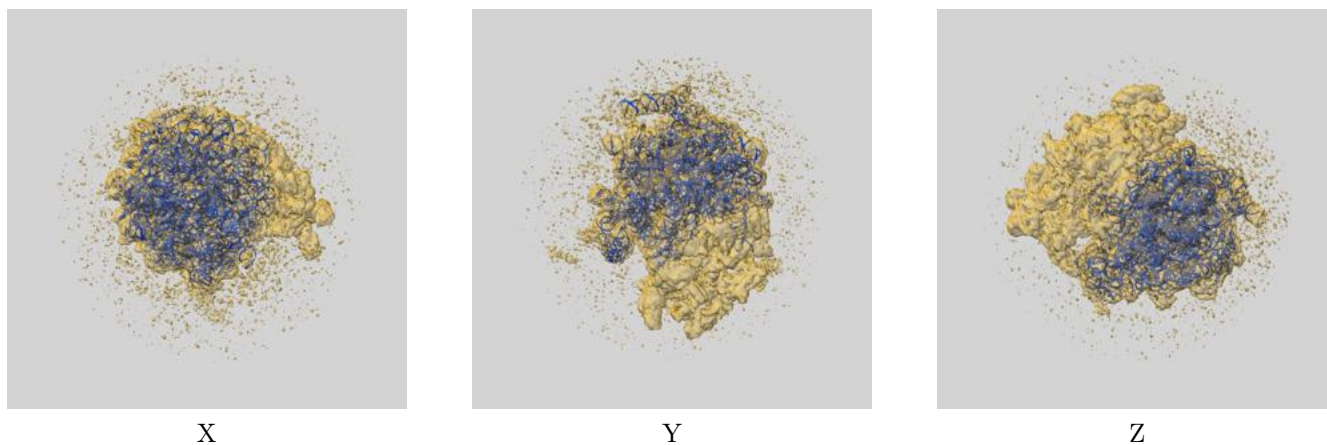
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	-	-	-
Author-provided FSC curve	5.64	8.93	5.97
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

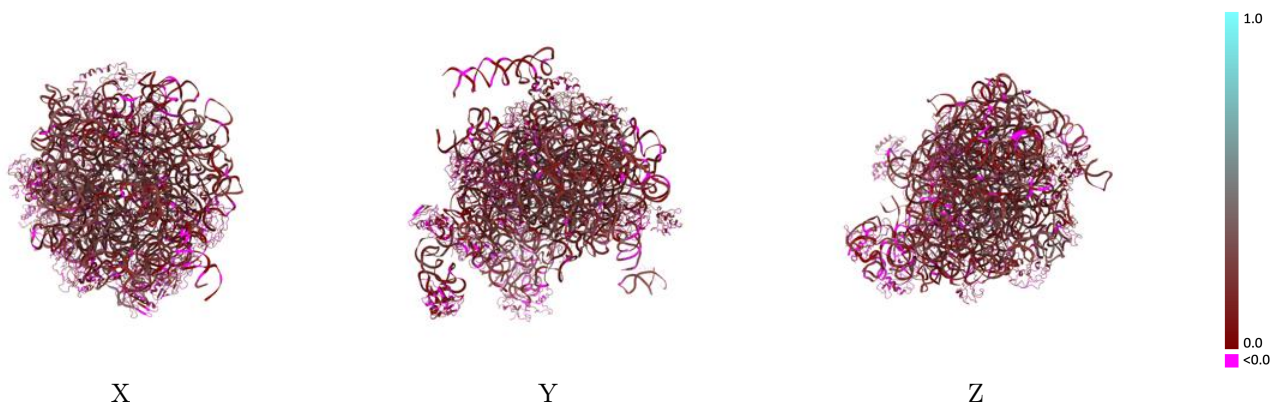
This section contains information regarding the fit between EMDB map EMD-2917 and PDB model 5AKA. Per-residue inclusion information can be found in section [3](#) on page [11](#).

9.1 Map-model overlay [i](#)



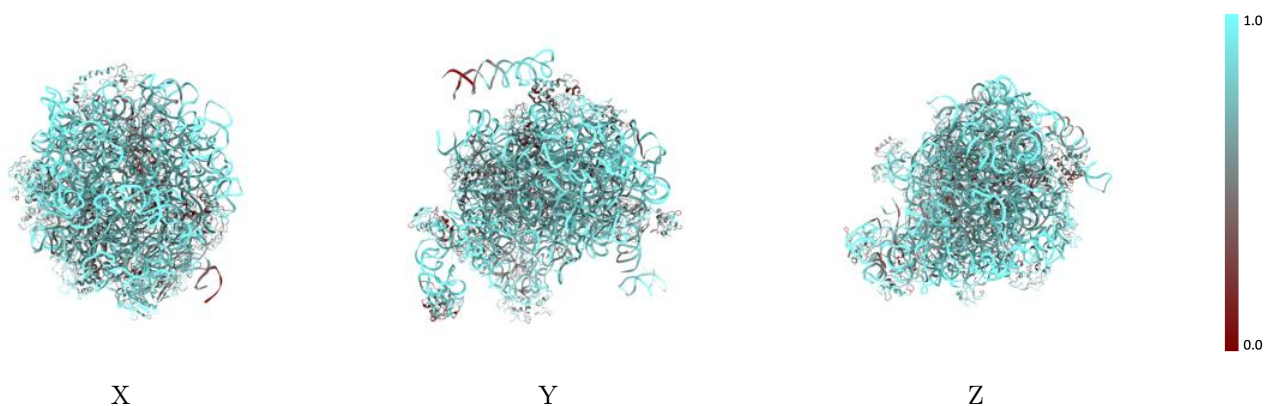
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



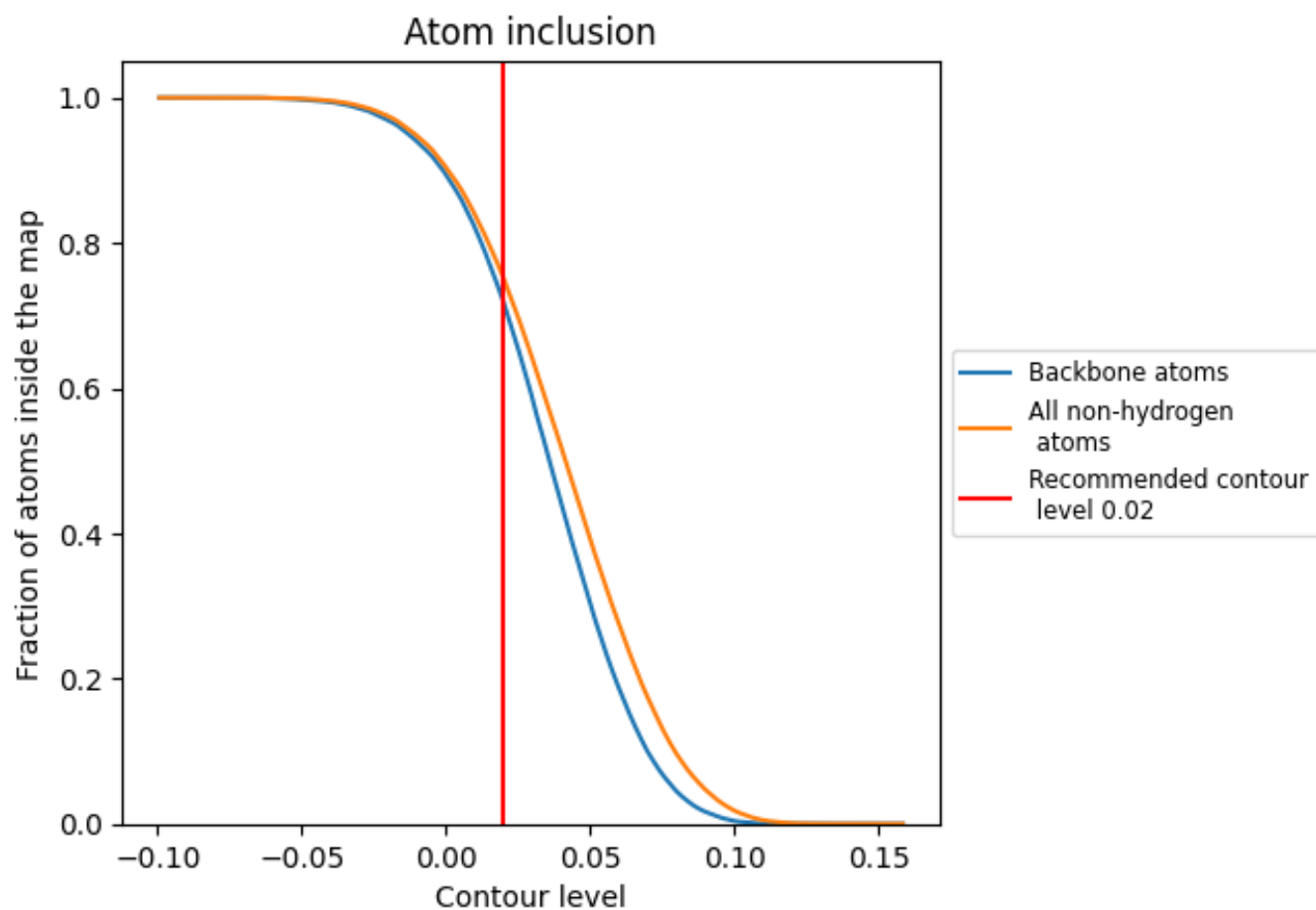
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 75% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7515	 0.1560
0	 0.5397	 0.1450
1	 0.5497	 0.0750
2	 0.4197	 0.1470
3	 0.3116	 0.1210
4	 0.4384	 0.0500
5	 0.4329	 0.1280
6	 0.6585	 0.3100
7	 0.7373	 0.0860
A	 0.7894	 0.1070
B	 0.8416	 0.1890
C	 0.5048	 0.0930
D	 0.5273	 0.0790
E	 0.5941	 0.1120
F	 0.6182	 0.0300
G	 0.6461	 0.0400
H	 0.5766	 0.1080
I	 0.5861	 0.0720
J	 0.5014	 0.0970
K	 0.5713	 0.1020
L	 0.4923	 0.0690
M	 0.5096	 0.0930
N	 0.5258	 0.1220
O	 0.5304	 0.0150
P	 0.4707	 0.0770
Q	 0.5374	 0.0980
R	 0.5847	 0.0930
S	 0.5287	 0.1330
T	 0.4915	 0.1170
U	 0.7497	 0.1510
V	 0.6978	 0.0690
W	 0.4466	 0.0640
X	 0.6740	 0.1360
Y	 0.6133	 0.1120
Z	 0.5446	 0.0960

