



wwPDB EM Validation Summary Report ⓘ

Mar 7, 2024 – 01:58 pm GMT

PDB ID : 7ASP
EMDB ID : EMD-11903
Title : Staphylococcus aureus 70S after 50 minutes incubation at 37C
Authors : Camicata, G.; Bashan, A.; Yonath, A.
Deposited on : 2020-10-27
Resolution : 2.86 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:

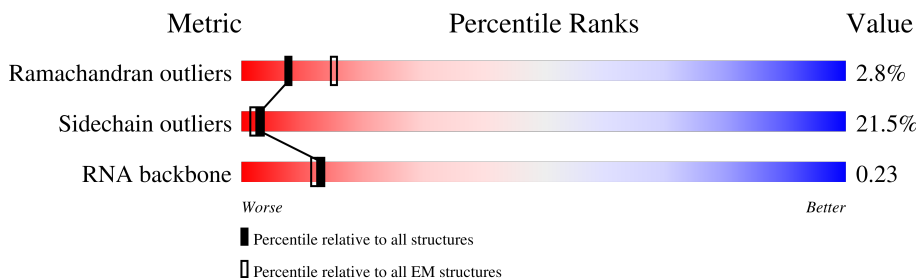
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance

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




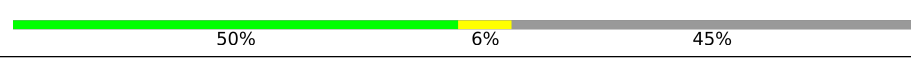




The reported resolution of this entry is 2.86 Å.

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



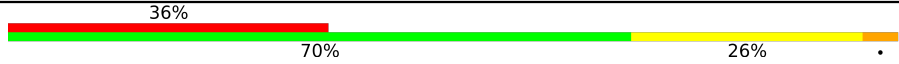
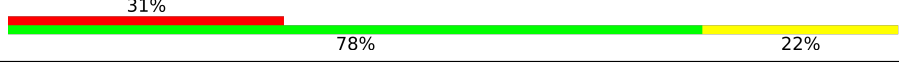
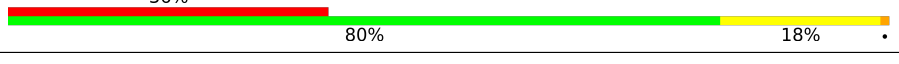
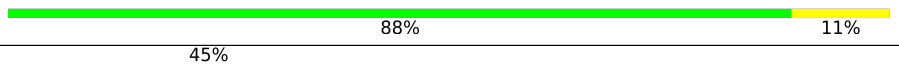

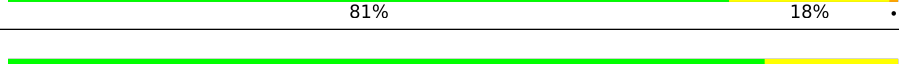

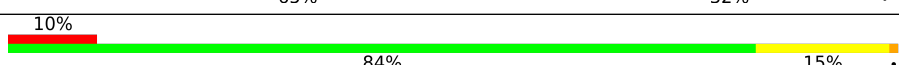
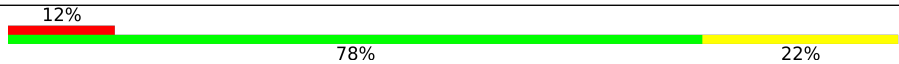

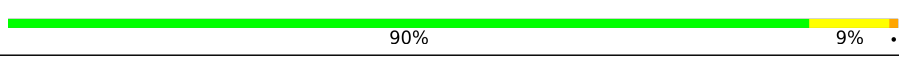
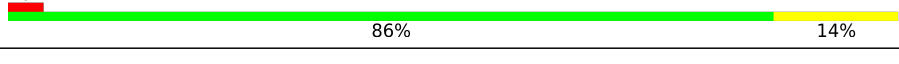
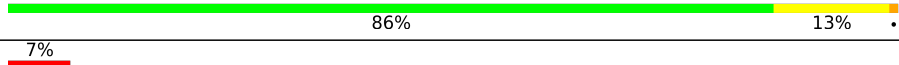

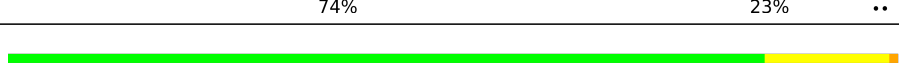


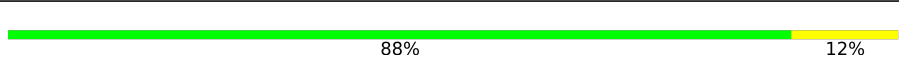
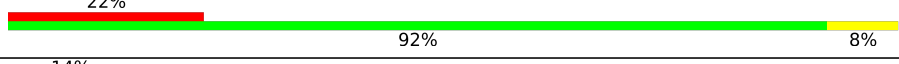






Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	Y	2923	
2	X	1552	
3	3	114	
4	1	105	
4	A	105	
5	B	43	
6	2	64	
7	4	37	

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Mol	Chain	Length	Quality of chain
8	a	80	
9	b	114	
10	c	136	
11	C	274	
12	d	113	
13	D	215	
14	E	206	
15	e	60	
16	f	88	
17	g	83	
18	G	175	
19	H	145	
20	h	80	
21	I	122	
22	i	56	
23	j	78	
24	J	146	
25	k	202	
26	K	137	
27	L	120	
28	l	198	
29	m	156	
30	M	119	
31	n	95	
32	N	114	

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Mol	Chain	Length	Quality of chain
33	o	130	 5% 76% 22% •
34	O	116	 88% 12%
35	p	155	 26% 78% 21% ••
36	P	102	 78% 21% •
37	q	127	 26% 75% 24% •
38	Q	112	 90% 10%
39	R	89	 81% 18% •
40	S	103	 83% 17%
41	T	94	 82% 18%
42	U	79	 82% 16% •
43	V	49	 82% 16% •
44	W	67	 78% 22%
45	Z	47	 83% 17%
46	F	158	 92% 6% •

2 Entry composition [i](#)

There are 46 unique types of molecules in this entry. The entry contains 128828 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	Y	2723	58376	26062	10687	18904	2723	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	X	1447	31009	13847	5680	10037	1445	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	3	114	2430	1086	436	794	114	0	0

- Molecule 4 is a protein called 50S ribosomal protein L33,50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A	47	390	238	78	70	4	0	0
4	1	58	449	280	85	84		0	0

- Molecule 5 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	43	367	225	89	52	1	0	0

- Molecule 6 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	2	64	Total	C	N	O	S	0	0
			521	324	113	82	2		

- Molecule 7 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	4	37	Total	C	N	O	S	0	0
			295	186	60	44	5		

- Molecule 8 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	a	80	Total	C	N	O	0	0
			626	394	116	116		

- Molecule 9 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	b	114	Total	C	N	O	S	0	0
			826	507	158	159	2		

- Molecule 10 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	c	136	Total	C	N	O	S	0	0
			976	611	190	173	2		

- Molecule 11 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	C	274	Total	C	N	O	S	0	0
			2094	1303	415	371	5		

- Molecule 12 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	d	113	Total	C	N	O	S	0	0
			828	510	168	149	1		

- Molecule 13 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	D	215	Total	C	N	O	S	0	0
			1627	1018	299	305	5		

- Molecule 14 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	E	206	Total	C	N	O	S	0	0
			1572	986	288	296	2		

- Molecule 15 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	e	60	Total	C	N	O	S	0	0
			497	314	99	79	5		

- Molecule 16 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	f	88	Total	C	N	O	S	0	0
			713	441	148	123	1		

- Molecule 17 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	g	83	Total	C	N	O	S	0	0
			537	335	105	96	1		

- Molecule 18 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	G	165	Total	C	N	O	S	0	0
			1184	739	226	216	3		

- Molecule 19 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	H	145	Total	C	N	O	S	0	0
			1143	714	208	218	3		

- Molecule 20 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	h	80	Total	C	N	O	0	0
			520	327	97	96		

- Molecule 21 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	I	122	Total	C	N	O	S	0	0
			918	572	174	168	4		

- Molecule 22 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	i	56	Total	C	N	O	S	0	0
			458	292	88	76	2		

- Molecule 23 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	j	77	Total	C	N	O	S	0	0
			498	300	99	98	1		

- Molecule 24 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	J	146	Total	C	N	O	S	0	0
			1086	674	214	197	1		

- Molecule 25 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	k	202	Total	C	N	O	S	0	0
			1551	979	293	278	1		

- Molecule 26 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	K	137	Total	C	N	O	S	0	0
			1071	689	203	175	4		

- Molecule 27 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	L	120	932	576	182	173	1	0	0

- Molecule 28 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	l	198	1058	634	211	213		0	0

- Molecule 29 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	m	156	1153	727	211	213	2	0	0

- Molecule 30 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	M	119	882	549	174	159		0	0

- Molecule 31 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	n	95	785	496	138	149	2	0	0

- Molecule 32 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	N	114	889	563	175	151		0	0

- Molecule 33 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	o	130	1007	639	180	184	4	0	0

- Molecule 34 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	O	116	942	593	189	156	4	0	0

- Molecule 35 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	p	154	1155	719	219	214	3	0	0

- Molecule 36 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	P	102	790	503	142	144	1	0	0

- Molecule 37 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	q	127	975	605	194	175	1	0	0

- Molecule 38 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	Q	112	854	534	164	153	3	0	0

- Molecule 39 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	R	89	715	453	127	131	4	0	0

- Molecule 40 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	S	103	770	486	142	141	1	0	0

- Molecule 41 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	T	94	Total	C	N	O	0	0
			722	463	130	129		

- Molecule 42 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	U	79	Total	C	N	O	0	0
			597	369	117	111		

- Molecule 43 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	V	49	Total	C	N	O	0	0
			379	234	82	63		

- Molecule 44 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
44	W	67	Total	C	N	O	0	0
			541	333	102	106		

- Molecule 45 is a protein called 50S ribosomal protein L32p.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Z	47	Total	C	N	O	S	0	0
			355	219	76	58	2		

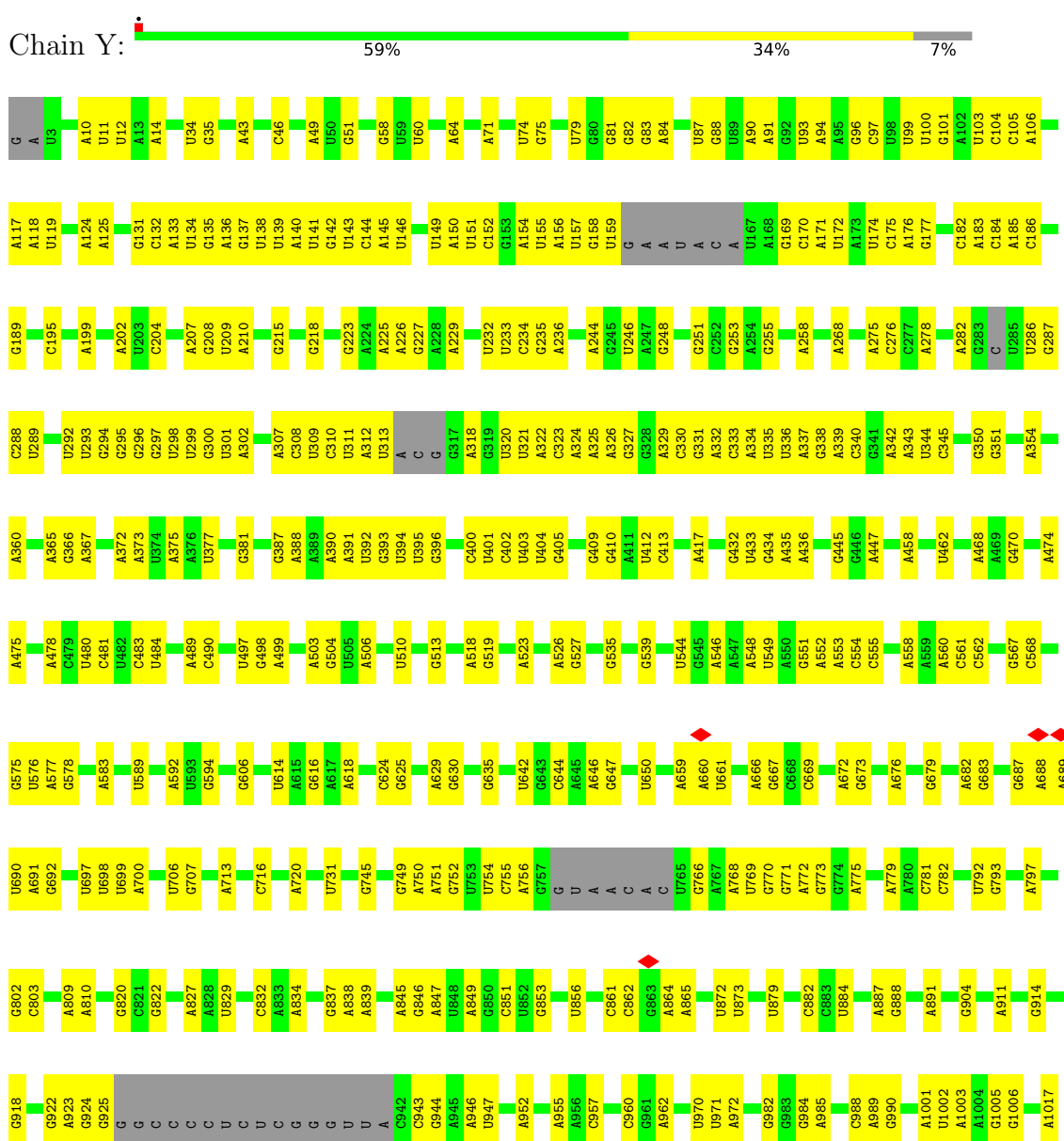
- Molecule 46 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms				AltConf	Trace
46	F	155	Total	C	N	O	0	0
			765	455	155	155		

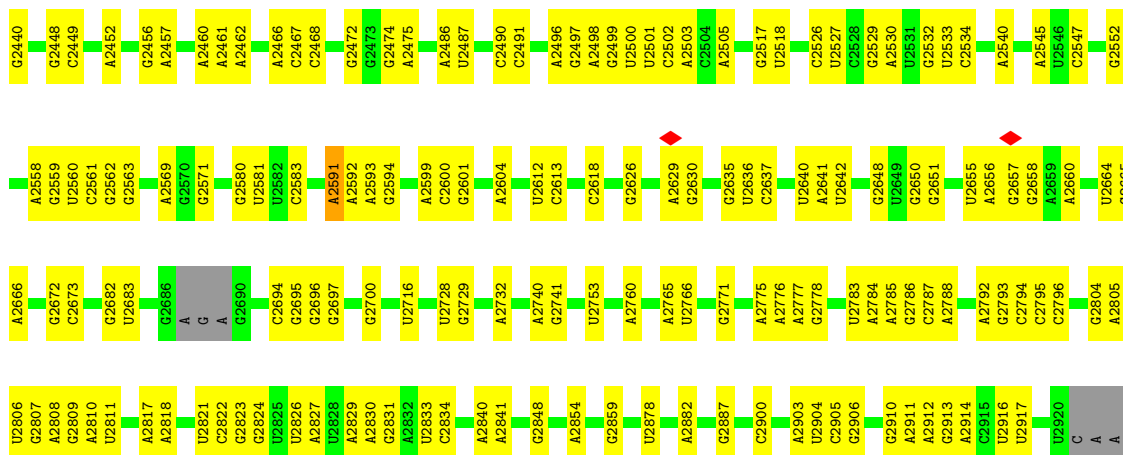
3 Residue-property plots

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

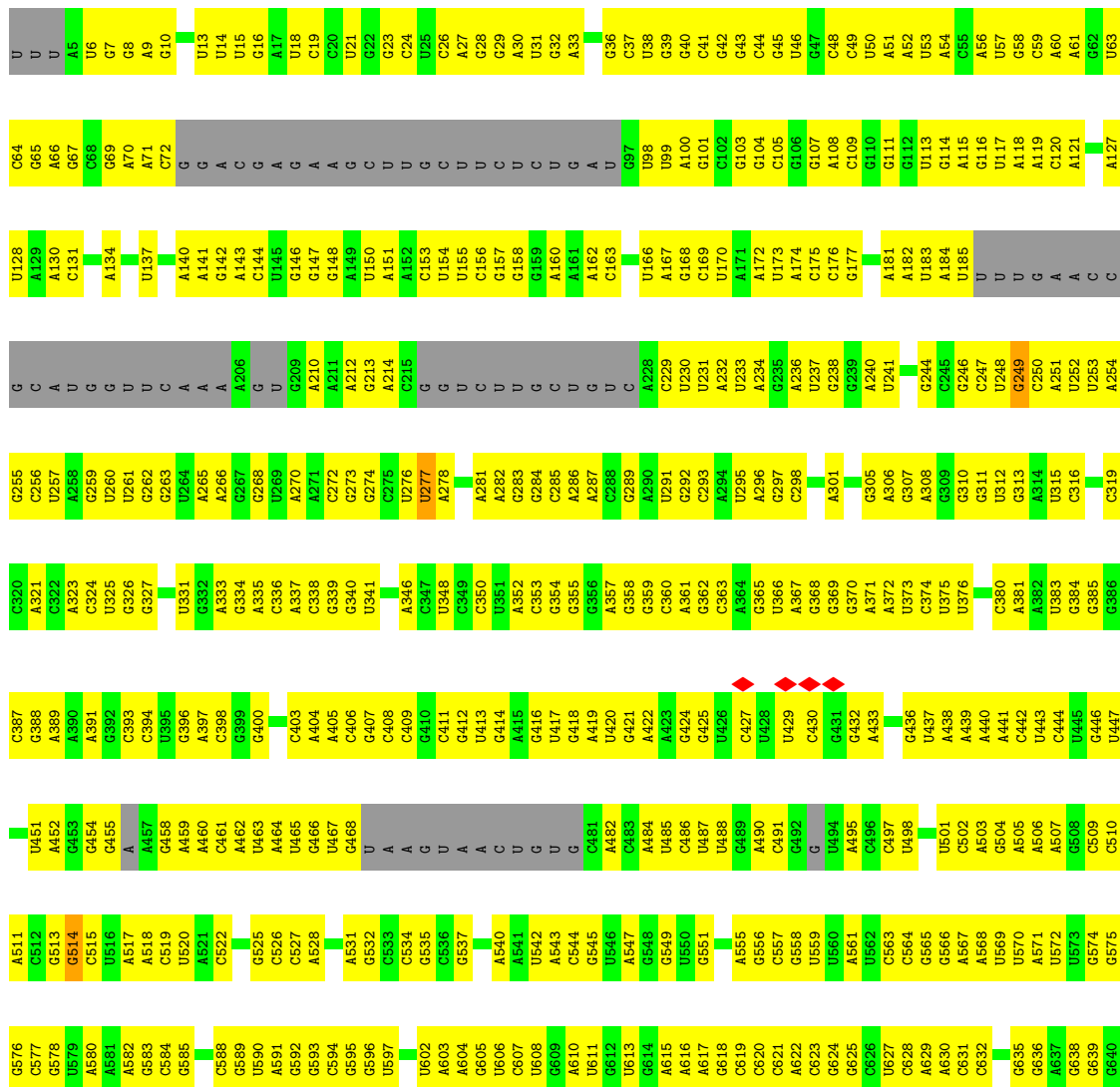
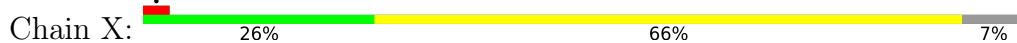
• Molecule 1: 23S rRNA



A2325	G2002	A1811	G1915	A1680	C1579	A1517	A1321	U1176	A1018
G2326	U2003	A1814	A1916	C1661	A	G1518	A1321	A1177	A1027
U2329	A2004	A1818	A1917	A1662	U	U1519	A1337	C1178	G1028
G2330	U2011	A1827	G1918	G1677	U	A1520	U1338	C1179	C1029
G2331	G2012	C1827	C1919	A1678	G	A1521	U1339	G1180	C1030
U2332	G2013	U1828	C1920	U1683	A	G1522	C1342	G1181	C1031
U2333	U2014	U1829	C1921	A1690	C	U1523	U1343	G1185	G1032
G2209	G2015	A1839	C1922	G1691	U	C1524	G1357	U1186	A1034
C2210	A2016	G1839	U1838	G1692	U	U1525	A1358	A1186	C1035
U2211	C2017	G1839	U1839	G1693	G	U1526	A1359	U1194	A1040
A2336	G2018	G1839	C1939	U1693	U	A1527	A1360	A1195	U1043
A2337	U2018	A1842	U1921	A1709	U	U1528	G1361	G1198	U1052
A2338	G2019	U1843	C1921	G1718	U	U1529	U1362	C1362	A1052
U2339	U2020	G1844	U1922	A1721	U	A1530	U1363	G1201	A1053
C2340	A2024	U1844	C1923	G1748	U	U	U1363	G1201	A1054
A2345	C2033	A1856	C1935	G1748	U	U	U1366	U1205	A1055
U2346	U2033	G1856	C1936	U1755	G	U	C1367	G1207	U1056
A2347	A2050	G1866	U1937	U1756	C	U	G1369	A1208	U1057
G2348	G2050	U1866	G1937	G1757	U	U	U1370	C1214	U1060
U2352	G2054	C1870	C1941	U1758	U	U	U1373	U1217	G1066
A2225	A2058	U1871	U1942	U1757	U	U	G1374	G1218	U1067
A2226	G2059	A1874	A1943	U1757	U	U	U1389	G1219	G1068
C2231	A2060	A1875	U1944	U1757	U	U	U1396	C1221	G1069
A2232	G2063	G1877	A1945	U1758	U	U	C1399	G1229	A1070
U2233	C2063	U1877	C1946	U1759	U	U	C1400	G1245	U1077
C2234	G2063	U1878	C1947	G1759	U	U	G1401	G1245	U1077
U2237	C2070	U1879	G1948	U1760	U	U	A1402	A1263	C1082
U2238	G2077	A1880	U1949	U1761	U	U	G1405	A1267	G1083
A2239	C2077	U1881	U1950	A1765	U	U	U1416	A1275	G1086
U2240	U2077	G1882	C1951	G1767	U	U	G1417	G1276	G1086
C2241	A2082	A1882	U1952	U1768	U	U	A1421	C1277	C1089
G2242	G2083	U1884	C1953	C1768	U	U	A1422	G1278	A1090
U2244	C2087	G1884	U1954	U1770	U	U	A1423	C1279	G1091
G2245	G2088	A1885	A1955	A1773	U	U	A1424	U1280	A1092
U2246	A2089	U1887	G1956	G1775	U	U	G1425	G1285	C1093
G2247	G2096	G1888	U1957	U1785	U	U	G1429	A1285	A1094
A2252	U2096	U1889	A1958	G1785	U	U	A1430	A1291	A1095
G2265	G2103	G1890	G1960	U1788	U	U	A1440	A1292	C1096
G2266	A1965	U1891	U1967	A1789	U	U	U1446	U1293	U1097
G2269	G2120	U1892	U1967	G1791	U	U	U1447	G1309	A1098
A2295	U2124	C1896	U1978	A1796	U	U	A1448	U1310	G
G2306	U2125	U1897	U1982	U1800	U	U	U1449	A1311	A
G2209	G2127	C1898	C1990	A1806	U	U	A1450	A1312	U
C2310	U2128	U1899	U1991	U1806	U	U	U1451	G1313	U
A2314	G2132	G1900	C1992	U1807	U	U	U1452	A1314	G
A2315	A2132	U1901	A1993	A1807	U	U	G1515	G1315	G
U2323	U2135	A1902	C1994	A1807	U	U	C1516		
C	U	A1904	U1994	A1807	U	U			
U	G	U1907	A1997	C1651	U	U			
A	U	A1908	A1998	G1569	U	U			
A	U	U1909	G1999	A1570	U	U			
A	C	A1912		A1571	U	U			
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				G1574	U	U			
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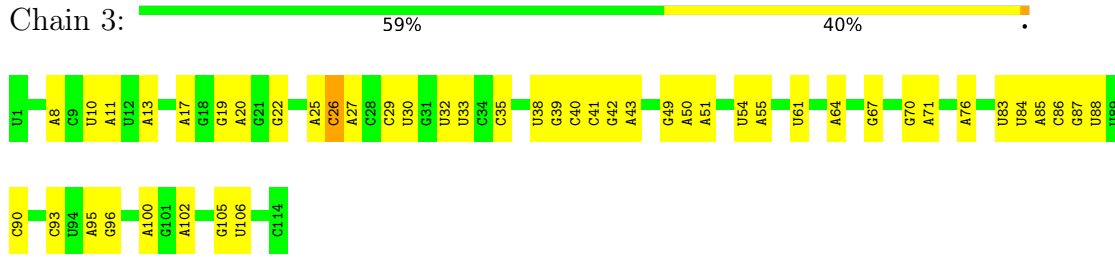


● Molecule 2: 16S rRNA

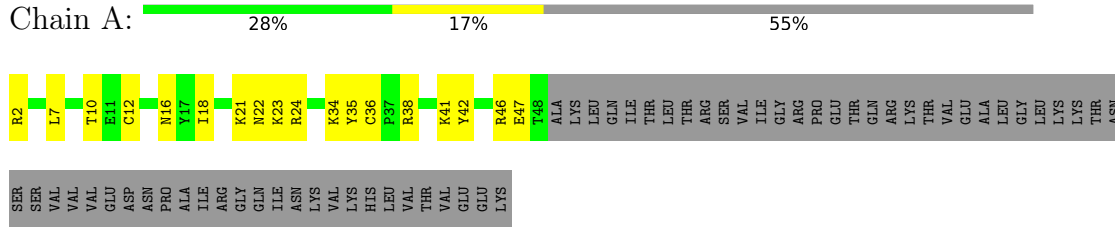


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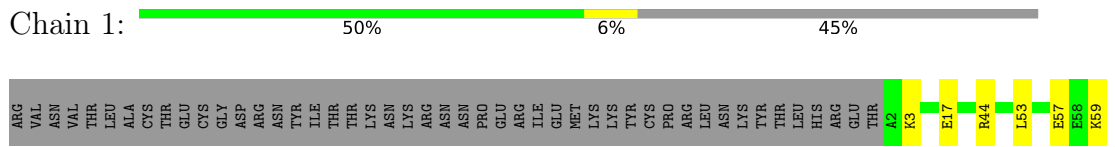
● Molecule 3: 5S rRNA



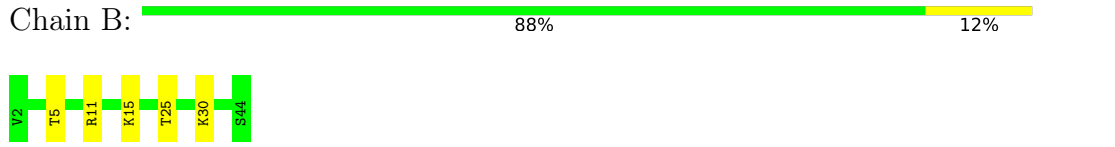
• Molecule 4: 50S ribosomal protein L33,50S ribosomal protein L30



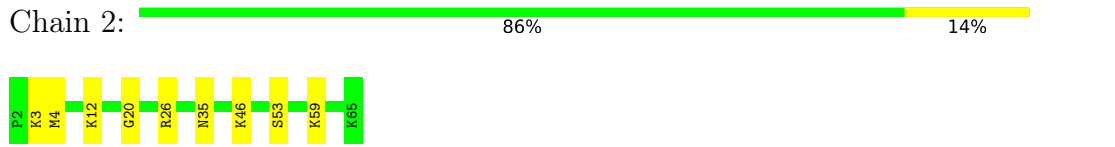
• Molecule 4: 50S ribosomal protein L33,50S ribosomal protein L30



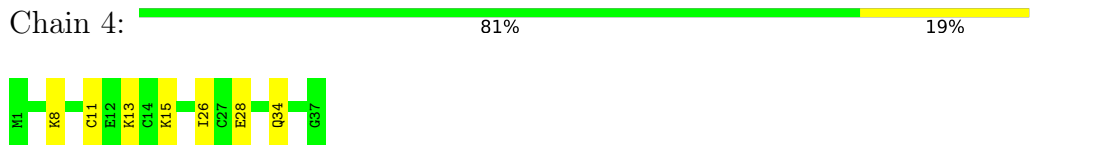
• Molecule 5: 50S ribosomal protein L34



• Molecule 6: 50S ribosomal protein L35

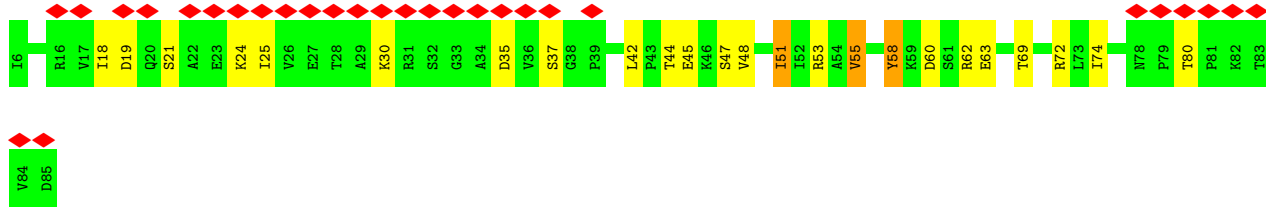


• Molecule 7: 50S ribosomal protein L36

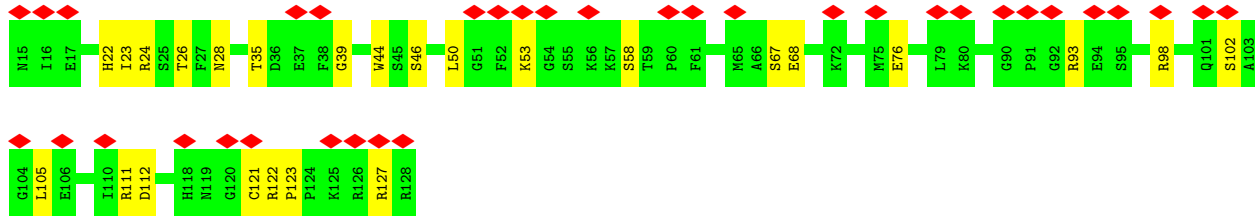
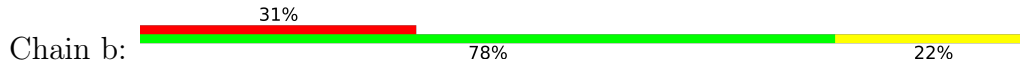


• Molecule 8: 30S ribosomal protein S10

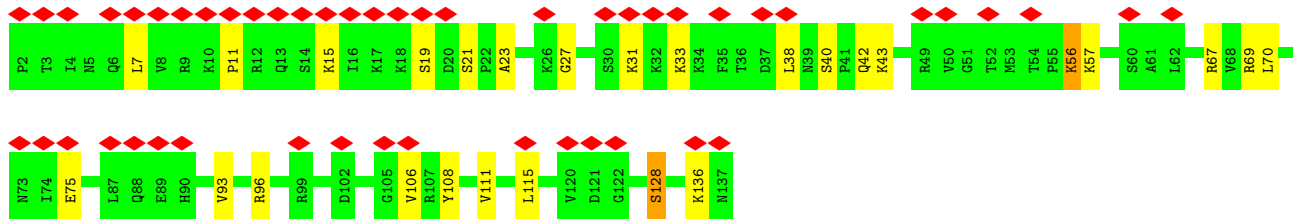
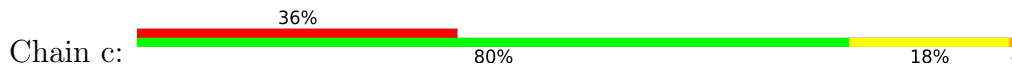




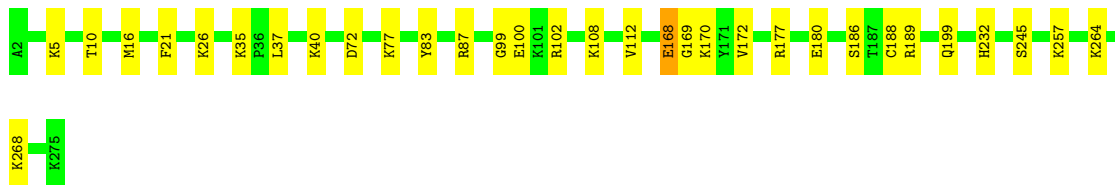
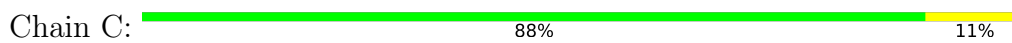
• Molecule 9: 30S ribosomal protein S11



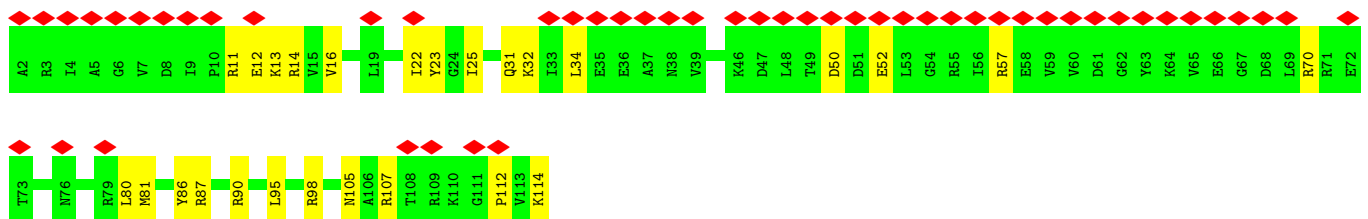
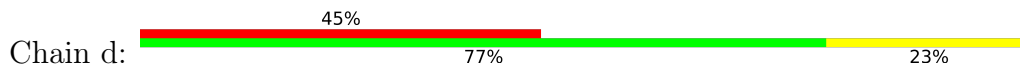
• Molecule 10: 30S ribosomal protein S12



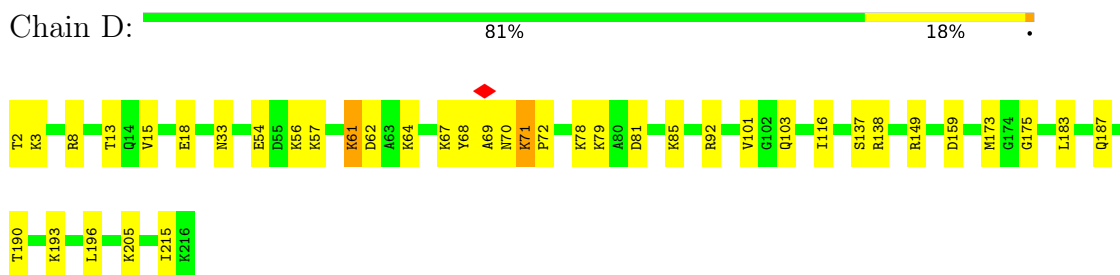
• Molecule 11: 50S ribosomal protein L2



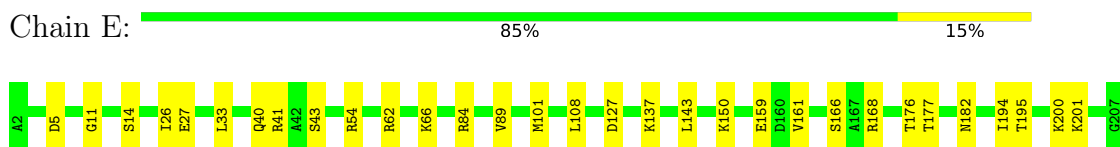
• Molecule 12: 30S ribosomal protein S13



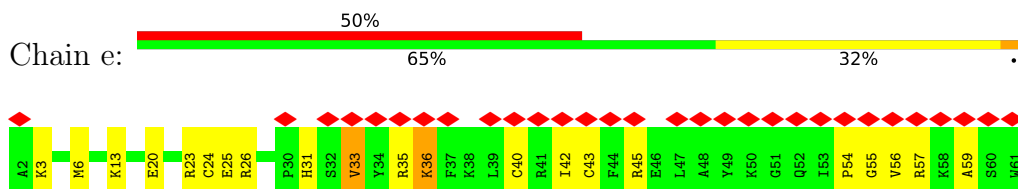
• Molecule 13: 50S ribosomal protein L3



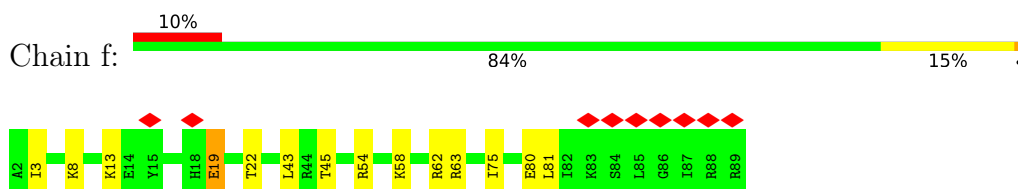
• Molecule 14: 50S ribosomal protein L4



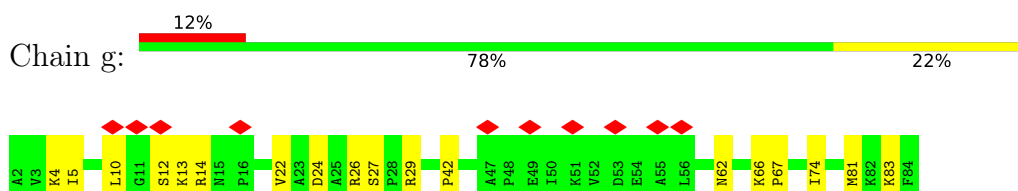
• Molecule 15: 30S ribosomal protein S14 type Z



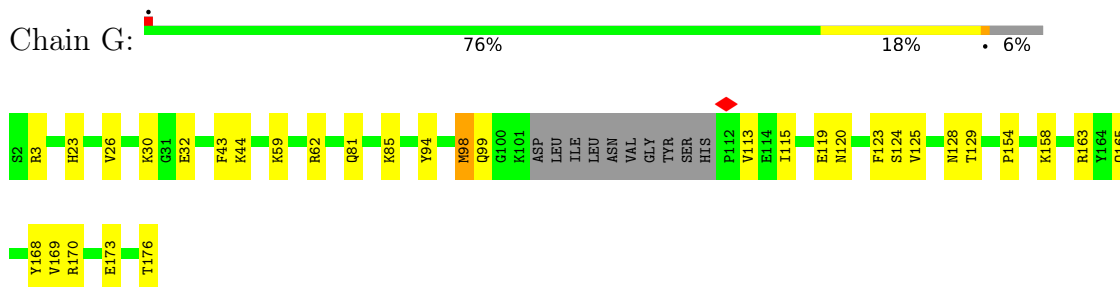
• Molecule 16: 30S ribosomal protein S15



• Molecule 17: 30S ribosomal protein S16



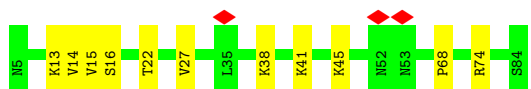
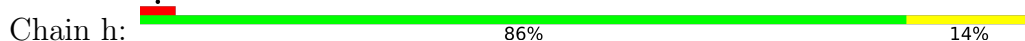
• Molecule 18: 50S ribosomal protein L6



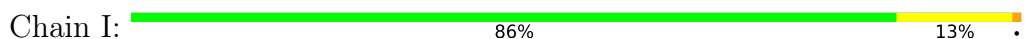
• Molecule 19: 50S ribosomal protein L13



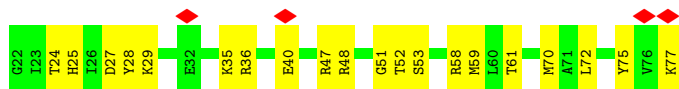
• Molecule 20: 30S ribosomal protein S17



• Molecule 21: 50S ribosomal protein L14



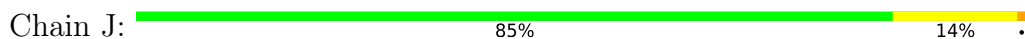
• Molecule 22: 30S ribosomal protein S18



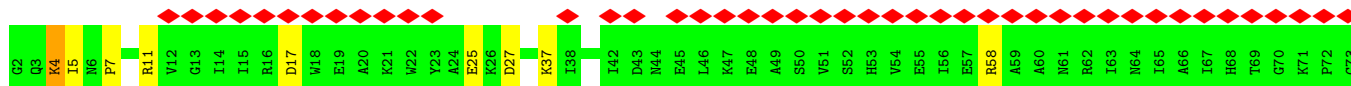
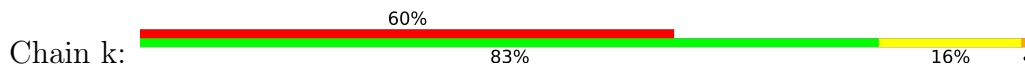
• Molecule 23: 30S ribosomal protein S20

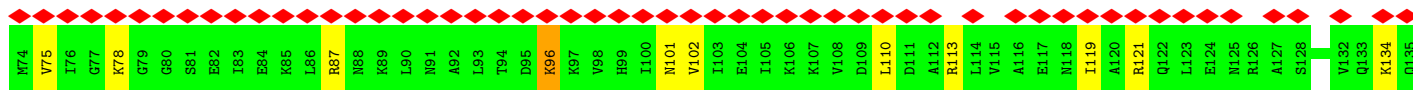


• Molecule 24: 50S ribosomal protein L15

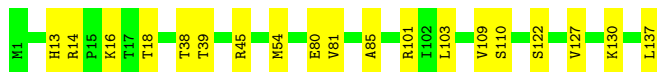
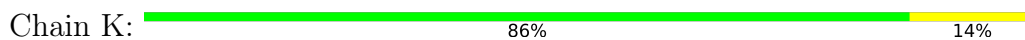


• Molecule 25: 30S ribosomal protein S3

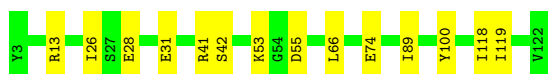
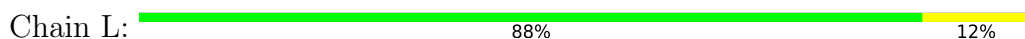




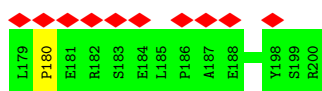
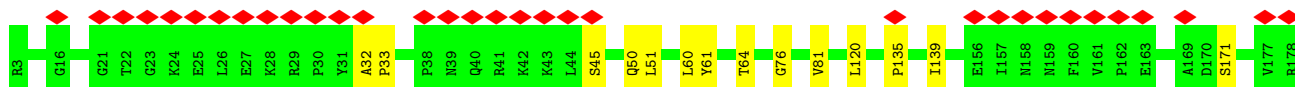
• Molecule 26: 50S ribosomal protein L16



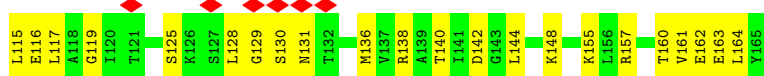
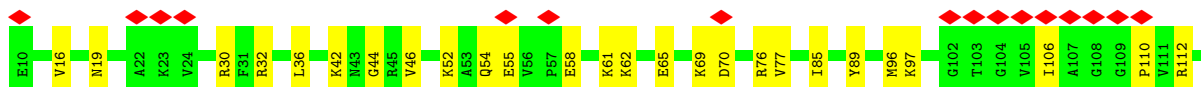
• Molecule 27: 50S ribosomal protein L17



• Molecule 28: 30S ribosomal protein S4



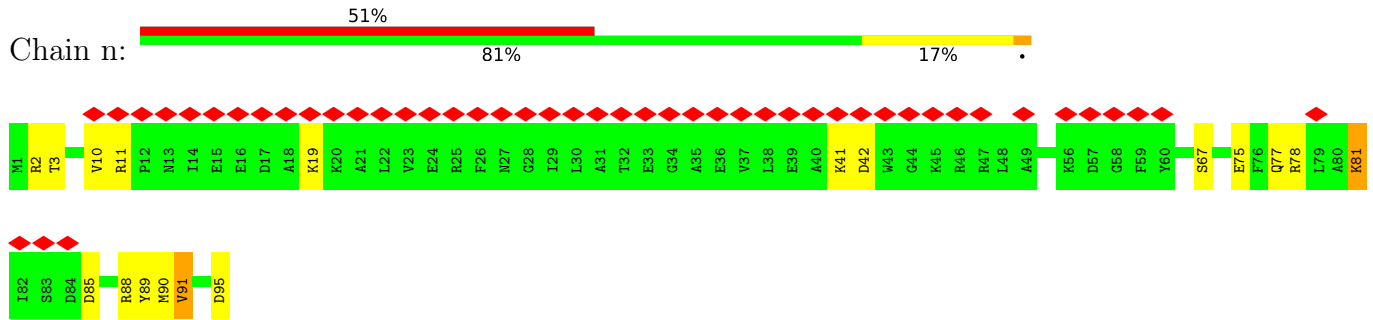
• Molecule 29: 30S ribosomal protein S5



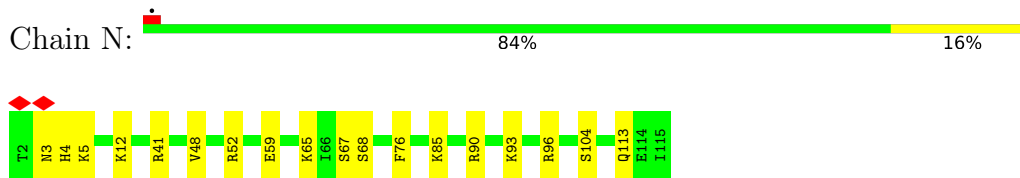
• Molecule 30: 50S ribosomal protein L18



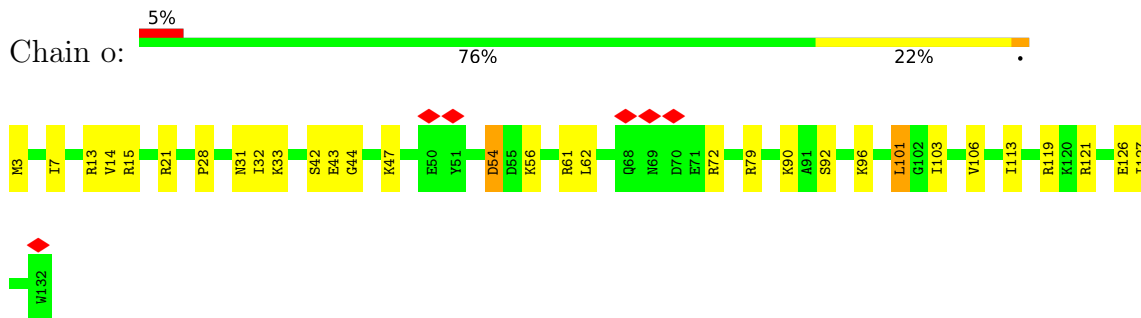
- Molecule 31: 30S ribosomal protein S6



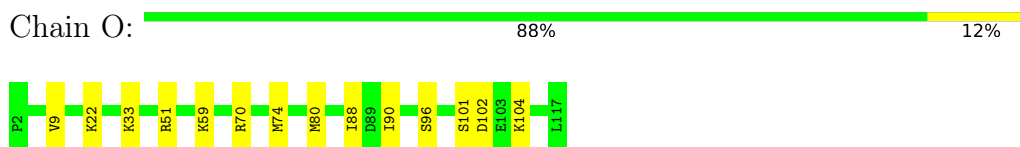
- Molecule 32: 50S ribosomal protein L19



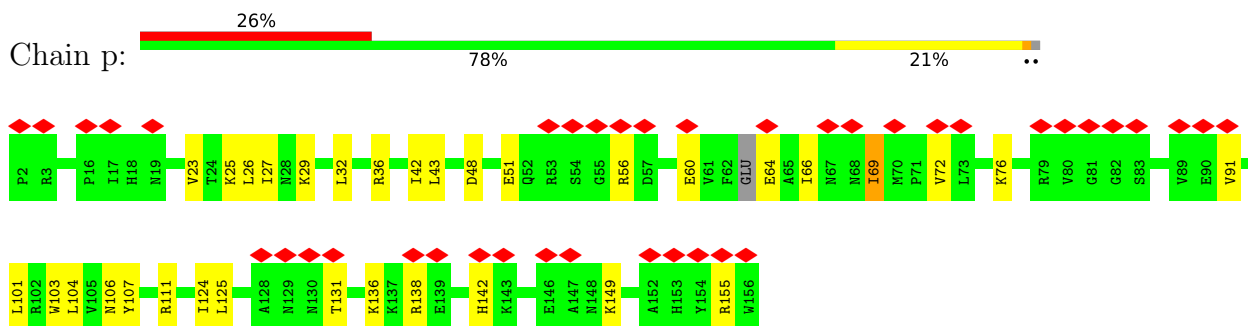
- Molecule 33: 30S ribosomal protein S8




- Molecule 34: 50S ribosomal protein L20



- Molecule 35: 30S ribosomal protein S7




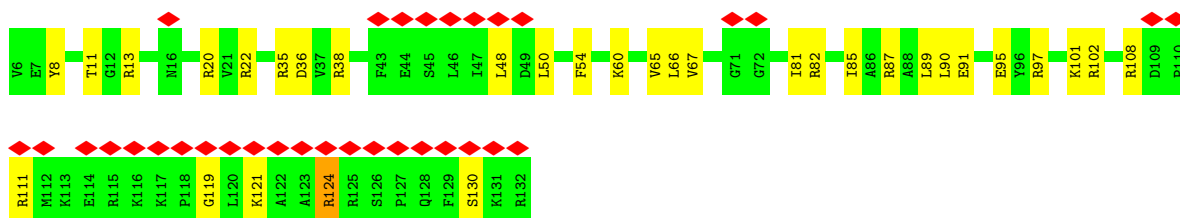
- Molecule 36: 50S ribosomal protein L21

Chain P:  78% 21%




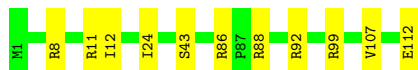
- Molecule 37: 30S ribosomal protein S9

Chain q:  26% 75% 24%




- Molecule 38: 50S ribosomal protein L22

Chain Q:  90% 10%




- Molecule 39: 50S ribosomal protein L23

Chain R:  81% 18%




- Molecule 40: 50S ribosomal protein L24

Chain S:  83% 17%




- Molecule 41: 50S ribosomal protein L25

Chain T:  82% 18%

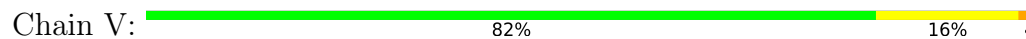


- Molecule 42: 50S ribosomal protein L27

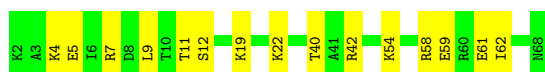
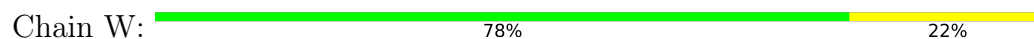
Chain U:  82% 16%



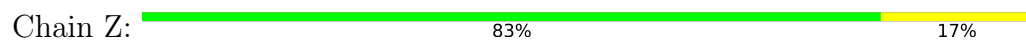
- Molecule 43: 50S ribosomal protein L28



- Molecule 44: 50S ribosomal protein L29



- Molecule 45: 50S ribosomal protein L32p



- Molecule 46: 50S ribosomal protein L5



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	192105	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	47	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.076	Depositor
Minimum map value	-0.028	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.0045	Depositor
Map size (\AA)	408.0, 408.0, 408.0	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.85, 0.85, 0.85	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	Y	0.21	0/65368	0.63	2/101922 (0.0%)
2	X	0.20	0/34716	0.64	6/54120 (0.0%)
3	3	0.21	0/2717	0.64	1/4232 (0.0%)
4	1	0.65	0/451	0.57	0/606
4	A	0.62	0/395	0.57	0/530
5	B	0.61	0/371	0.56	0/484
6	2	0.62	0/526	0.57	0/690
7	4	0.64	0/298	0.57	0/392
8	a	0.67	0/637	0.62	0/865
9	b	0.67	0/840	0.60	0/1137
10	c	0.68	0/991	0.60	0/1337
11	C	0.64	0/2129	0.60	0/2858
12	d	0.68	0/835	0.59	0/1123
13	D	0.65	0/1651	0.59	0/2215
14	E	0.64	0/1595	0.57	0/2154
15	e	0.63	0/507	0.58	0/674
16	f	0.65	0/721	0.56	0/964
17	g	0.71	0/541	0.62	0/733
18	G	0.69	0/1199	0.62	0/1621
19	H	0.64	0/1165	0.57	0/1570
20	h	0.72	0/527	0.60	0/721
21	I	0.65	0/925	0.58	0/1242
22	i	0.64	0/465	0.56	0/620
23	j	0.72	0/496	0.71	0/669
24	J	0.65	0/1100	0.59	0/1467
25	k	0.66	0/1573	0.59	0/2121
26	K	0.64	0/1095	0.58	0/1472
27	L	0.65	0/936	0.57	0/1253
28	l	0.78	0/1062	0.64	0/1465
29	m	0.67	0/1167	0.61	0/1576
30	M	0.66	0/891	0.59	0/1194
31	n	0.64	0/796	0.56	0/1069
32	N	0.64	0/901	0.56	0/1209
33	o	0.66	0/1019	0.59	0/1371

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
34	O	0.62	0/954	0.55	0/1264
35	p	0.67	0/1170	0.65	0/1580
36	P	0.64	0/800	0.57	0/1070
37	q	0.65	0/990	0.60	0/1332
38	Q	0.64	0/862	0.57	0/1161
39	R	0.64	0/723	0.56	0/966
40	S	0.66	0/779	0.59	0/1043
41	T	0.67	0/730	0.59	0/981
42	U	0.65	0/603	0.58	0/802
43	V	0.65	0/384	0.58	0/515
44	W	0.65	0/542	0.55	0/722
45	Z	0.65	0/361	0.59	0/482
46	F	0.84	0/763	0.83	0/1059
All	All	0.39	0/140267	0.62	9/210653 (0.0%)

There are no bond length outliers.

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	Y	2591	A	C2'-C3'-O3'	7.59	126.20	109.50
3	3	26	C	C2'-C3'-O3'	7.59	126.20	109.50
2	X	1431	U	C2'-C3'-O3'	7.43	125.85	109.50
2	X	514	G	C2'-C3'-O3'	6.51	124.11	113.70
2	X	277	U	C2'-C3'-O3'	6.34	123.84	113.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	1	56/105 (53%)	51 (91%)	5 (9%)	0	100	100
4	A	45/105 (43%)	41 (91%)	3 (7%)	1 (2%)	6	21
5	B	41/43 (95%)	38 (93%)	3 (7%)	0	100	100
6	2	62/64 (97%)	48 (77%)	13 (21%)	1 (2%)	9	28
7	4	35/37 (95%)	32 (91%)	2 (6%)	1 (3%)	4	15
8	a	78/80 (98%)	51 (65%)	22 (28%)	5 (6%)	1	3
9	b	112/114 (98%)	85 (76%)	22 (20%)	5 (4%)	2	7
10	c	134/136 (98%)	101 (75%)	26 (19%)	7 (5%)	2	5
11	C	272/274 (99%)	230 (85%)	38 (14%)	4 (2%)	10	30
12	d	111/113 (98%)	88 (79%)	20 (18%)	3 (3%)	5	16
13	D	213/215 (99%)	179 (84%)	27 (13%)	7 (3%)	4	13
14	E	204/206 (99%)	181 (89%)	21 (10%)	2 (1%)	15	40
15	e	58/60 (97%)	44 (76%)	9 (16%)	5 (9%)	1	1
16	f	86/88 (98%)	73 (85%)	12 (14%)	1 (1%)	13	35
17	g	81/83 (98%)	54 (67%)	22 (27%)	5 (6%)	1	3
18	G	161/175 (92%)	126 (78%)	31 (19%)	4 (2%)	5	18
19	H	143/145 (99%)	125 (87%)	15 (10%)	3 (2%)	7	22
20	h	78/80 (98%)	60 (77%)	17 (22%)	1 (1%)	12	33
21	I	120/122 (98%)	105 (88%)	14 (12%)	1 (1%)	19	46
22	i	54/56 (96%)	42 (78%)	10 (18%)	2 (4%)	3	11
23	j	73/78 (94%)	56 (77%)	15 (20%)	2 (3%)	5	16
24	J	144/146 (99%)	123 (85%)	18 (12%)	3 (2%)	7	22
25	k	200/202 (99%)	159 (80%)	35 (18%)	6 (3%)	4	14
26	K	135/137 (98%)	119 (88%)	13 (10%)	3 (2%)	6	21
27	L	118/120 (98%)	108 (92%)	9 (8%)	1 (1%)	19	46
28	l	196/198 (99%)	154 (79%)	33 (17%)	9 (5%)	2	7
29	m	154/156 (99%)	116 (75%)	32 (21%)	6 (4%)	3	10
30	M	117/119 (98%)	98 (84%)	15 (13%)	4 (3%)	3	12
31	n	93/95 (98%)	72 (77%)	19 (20%)	2 (2%)	6	21
32	N	112/114 (98%)	100 (89%)	10 (9%)	2 (2%)	8	25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
33	o	128/130 (98%)	88 (69%)	35 (27%)	5 (4%)	3	10
34	O	114/116 (98%)	108 (95%)	3 (3%)	3 (3%)	5	17
35	p	150/155 (97%)	127 (85%)	20 (13%)	3 (2%)	7	23
36	P	100/102 (98%)	84 (84%)	14 (14%)	2 (2%)	7	23
37	q	125/127 (98%)	98 (78%)	23 (18%)	4 (3%)	4	13
38	Q	110/112 (98%)	96 (87%)	13 (12%)	1 (1%)	17	43
39	R	87/89 (98%)	77 (88%)	8 (9%)	2 (2%)	6	20
40	S	101/103 (98%)	83 (82%)	14 (14%)	4 (4%)	3	9
41	T	92/94 (98%)	82 (89%)	8 (9%)	2 (2%)	6	21
42	U	77/79 (98%)	69 (90%)	6 (8%)	2 (3%)	5	17
43	V	47/49 (96%)	39 (83%)	6 (13%)	2 (4%)	2	8
44	W	65/67 (97%)	58 (89%)	6 (9%)	1 (2%)	10	30
45	Z	45/47 (96%)	38 (84%)	5 (11%)	2 (4%)	2	8
46	F	151/158 (96%)	110 (73%)	32 (21%)	9 (6%)	1	4
All	All	4878/5094 (96%)	4016 (82%)	724 (15%)	138 (3%)	8	16

5 of 138 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	a	63	GLU
10	c	57	LYS
12	d	95	LEU
13	D	71	LYS
17	g	66	LYS

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	1	52/97 (54%)	46 (88%)	6 (12%)	5	15
4	A	44/97 (45%)	27 (61%)	17 (39%)	0	0

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	B	39/39 (100%)	34 (87%)	5 (13%)	4	11
6	2	55/55 (100%)	47 (86%)	8 (14%)	3	8
7	4	35/35 (100%)	29 (83%)	6 (17%)	2	5
8	a	67/73 (92%)	45 (67%)	22 (33%)	0	0
9	b	85/90 (94%)	65 (76%)	20 (24%)	1	1
10	c	95/118 (80%)	73 (77%)	22 (23%)	1	1
11	C	221/221 (100%)	192 (87%)	29 (13%)	4	10
12	d	75/97 (77%)	52 (69%)	23 (31%)	0	0
13	D	173/173 (100%)	138 (80%)	35 (20%)	1	3
14	E	168/168 (100%)	139 (83%)	29 (17%)	2	5
15	e	51/52 (98%)	33 (65%)	18 (35%)	0	0
16	f	74/80 (92%)	60 (81%)	14 (19%)	1	3
17	g	36/70 (51%)	23 (64%)	13 (36%)	0	0
18	G	115/153 (75%)	86 (75%)	29 (25%)	0	1
19	H	122/123 (99%)	110 (90%)	12 (10%)	8	21
20	h	35/75 (47%)	25 (71%)	10 (29%)	0	1
21	I	100/100 (100%)	83 (83%)	17 (17%)	2	5
22	i	49/50 (98%)	31 (63%)	18 (37%)	0	0
23	j	37/65 (57%)	19 (51%)	18 (49%)	0	0
24	J	109/112 (97%)	89 (82%)	20 (18%)	1	4
25	k	151/164 (92%)	120 (80%)	31 (20%)	1	2
26	K	108/114 (95%)	92 (85%)	16 (15%)	3	8
27	L	96/101 (95%)	83 (86%)	13 (14%)	4	9
28	l	23/174 (13%)	17 (74%)	6 (26%)	0	1
29	m	120/122 (98%)	78 (65%)	42 (35%)	0	0
30	M	83/95 (87%)	55 (66%)	28 (34%)	0	0
31	n	82/83 (99%)	64 (78%)	18 (22%)	1	2
32	N	93/100 (93%)	77 (83%)	16 (17%)	2	5
33	o	107/111 (96%)	79 (74%)	28 (26%)	0	1
34	O	96/96 (100%)	85 (88%)	11 (12%)	5	15
35	p	114/131 (87%)	83 (73%)	31 (27%)	0	1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
36	P	84/86 (98%)	63 (75%)	21 (25%)	0	1
37	q	96/105 (91%)	67 (70%)	29 (30%)	0	0
38	Q	89/91 (98%)	79 (89%)	10 (11%)	6	16
39	R	78/80 (98%)	62 (80%)	16 (20%)	1	2
40	S	81/88 (92%)	67 (83%)	14 (17%)	2	5
41	T	78/82 (95%)	63 (81%)	15 (19%)	1	3
42	U	59/62 (95%)	46 (78%)	13 (22%)	1	2
43	V	39/41 (95%)	31 (80%)	8 (20%)	1	2
44	W	58/60 (97%)	44 (76%)	14 (24%)	0	1
45	Z	35/43 (81%)	29 (83%)	6 (17%)	2	5
All	All	3607/4172 (86%)	2830 (78%)	777 (22%)	3	2

5 of 777 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
29	m	62	LYS
33	o	92	SER
29	m	117	LEU
29	m	61	LYS
30	M	119	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 39 such sidechains are listed below:

Mol	Chain	Res	Type
32	N	14	GLN
41	T	13	GLN
32	N	31	HIS
34	O	91	ASN
41	T	84	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	Y	2709/2923 (92%)	1004 (37%)	48 (1%)
2	X	1436/1552 (92%)	1029 (71%)	56 (3%)
3	3	113/114 (99%)	47 (41%)	2 (1%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	4258/4589 (92%)	2080 (48%)	106 (2%)

5 of 2080 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	Y	10	A
1	Y	11	U
1	Y	12	U
1	Y	14	A
1	Y	34	U

5 of 106 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	X	334	G
2	X	730	G
2	X	1431	U
2	X	384	G
2	X	589	G

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

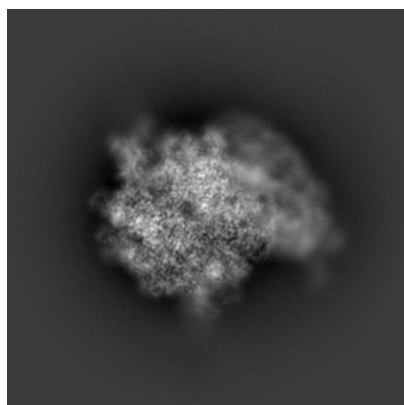
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11903. These allow visual inspection of the internal detail of the map and identification of artifacts.

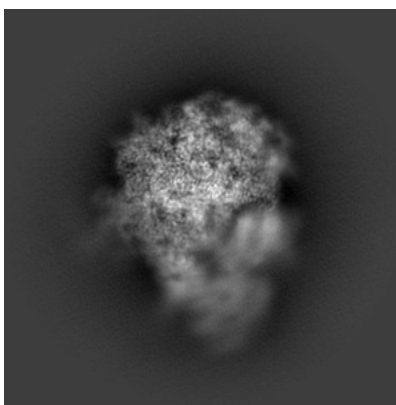
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

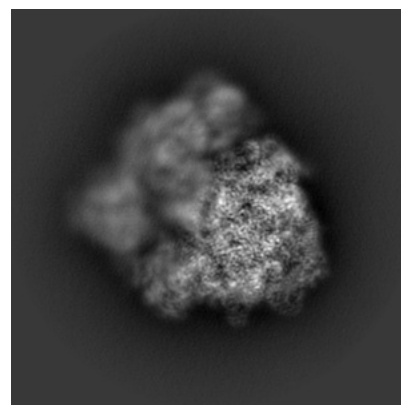
6.1.1 Primary map



X



Y

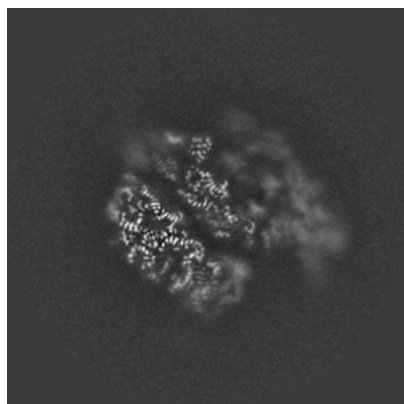


Z

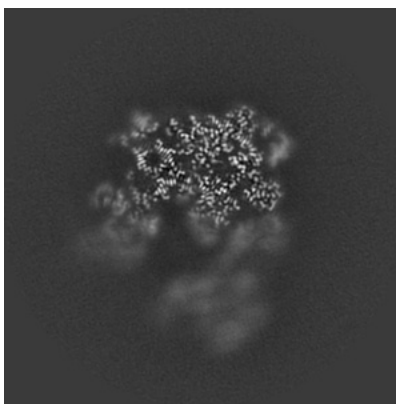
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

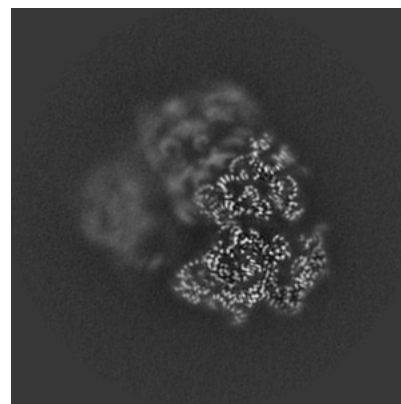
6.2.1 Primary map



X Index: 240



Y Index: 240

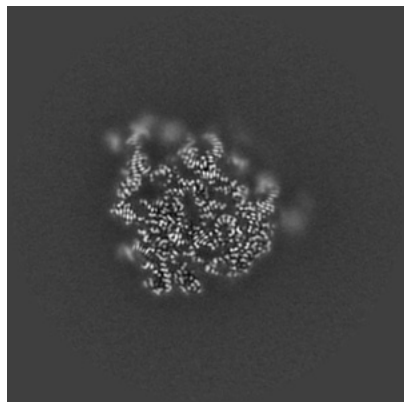


Z Index: 240

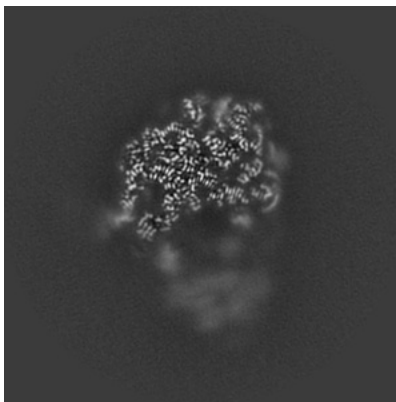
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

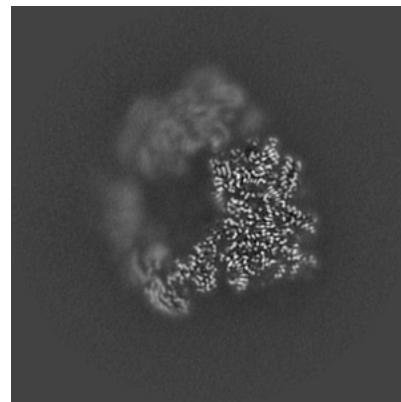
6.3.1 Primary map



X Index: 294



Y Index: 206

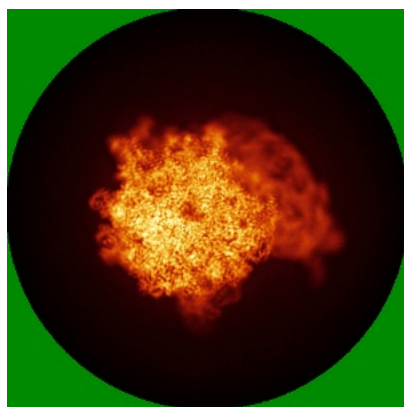


Z Index: 213

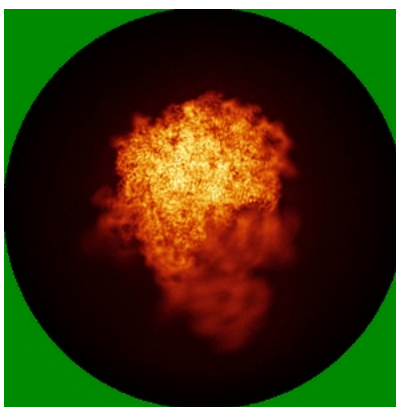
The images above show the largest variance slices of the map in three orthogonal directions.

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

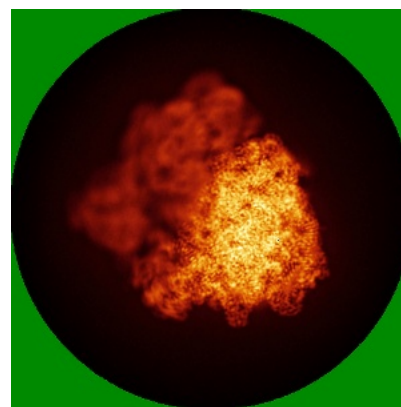
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

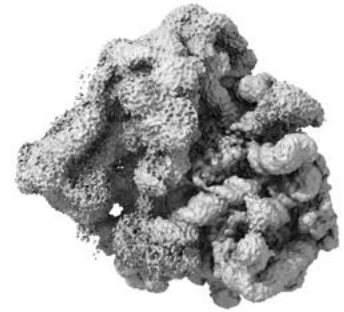
6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

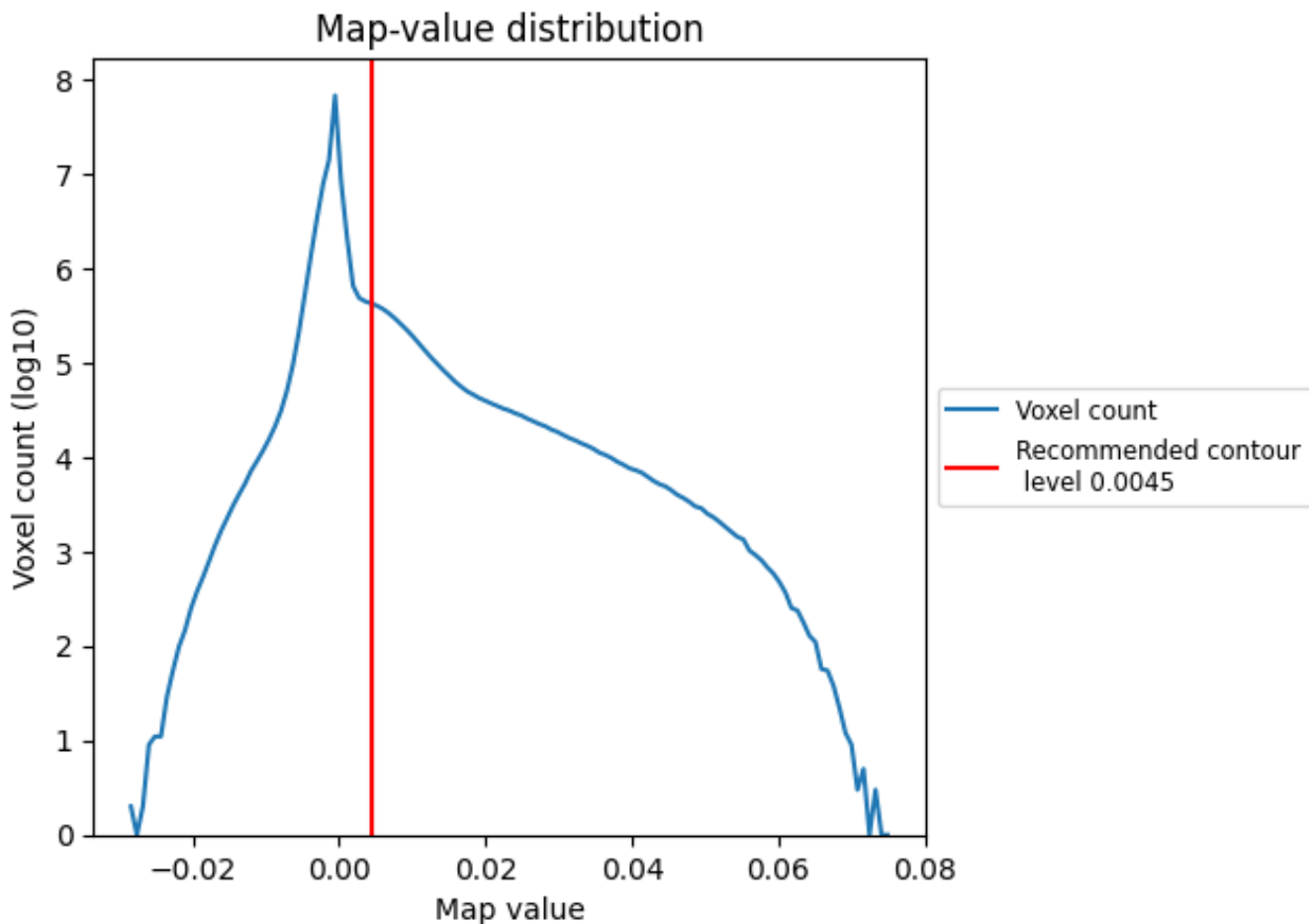
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

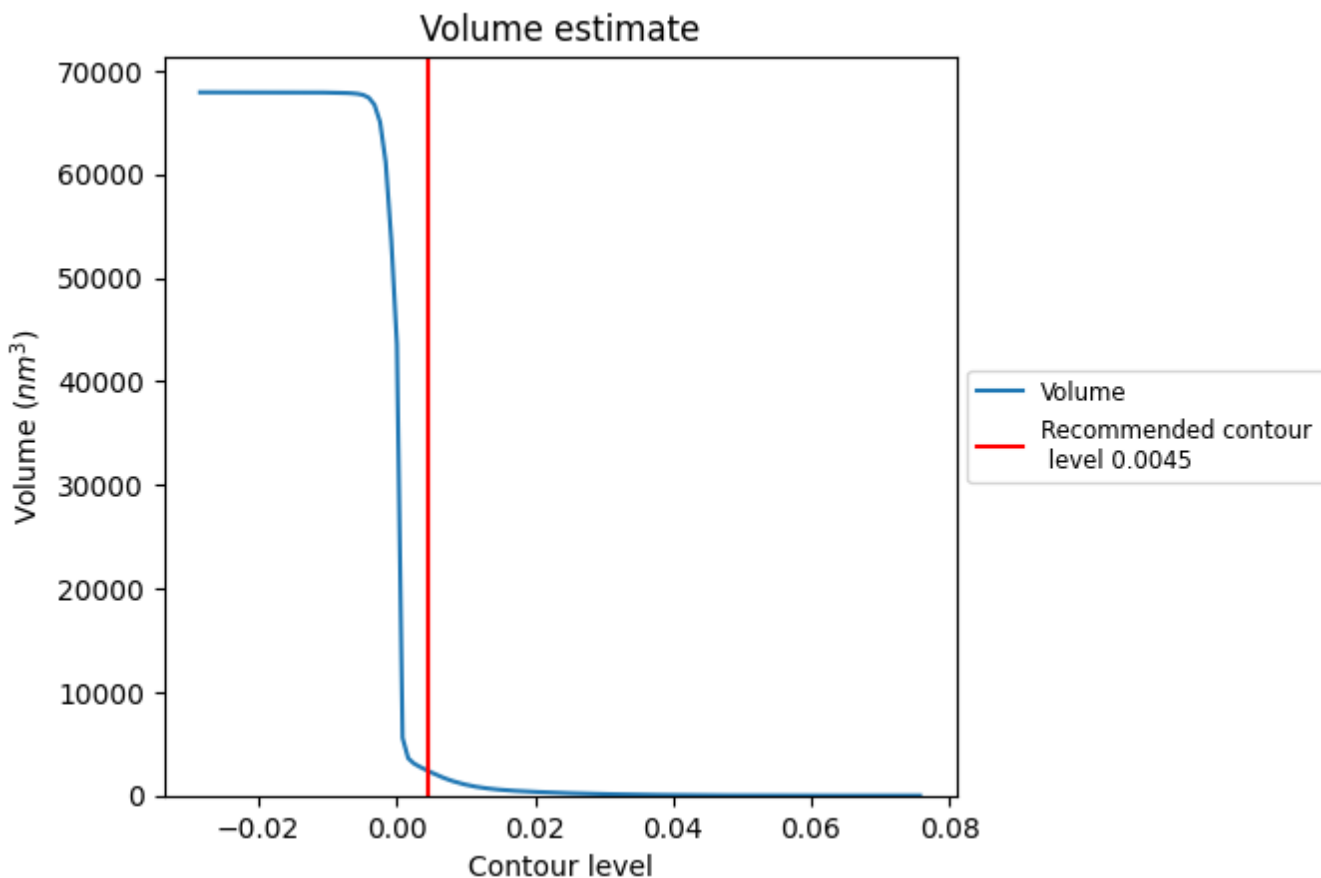
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

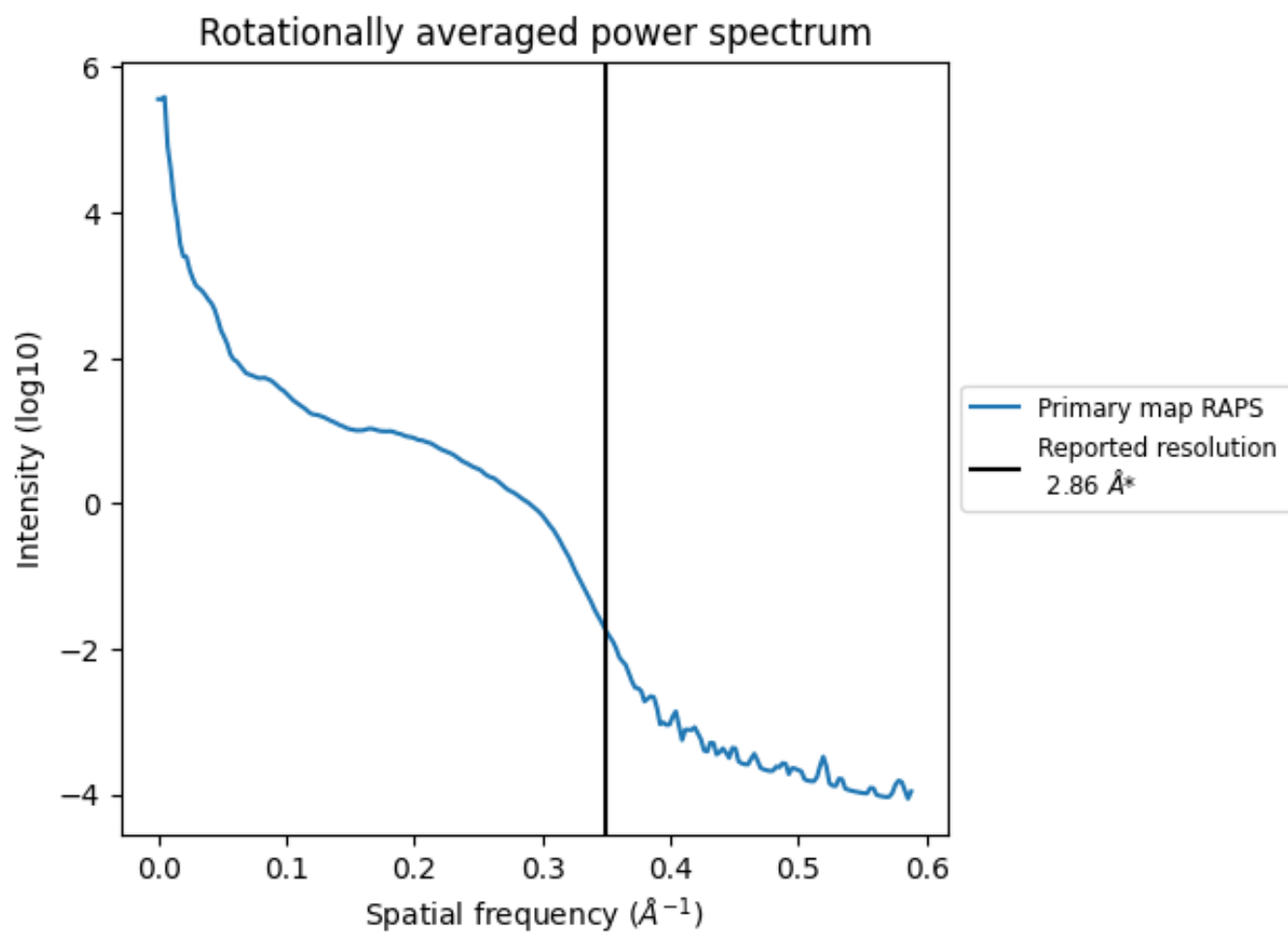
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2394 nm³; this corresponds to an approximate mass of 2163 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 0.350 Å⁻¹

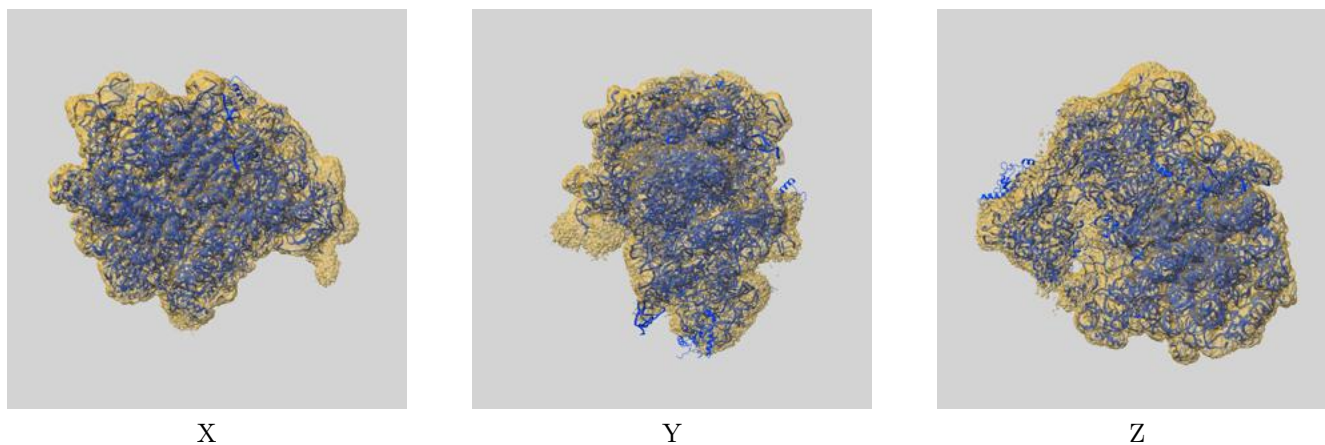
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

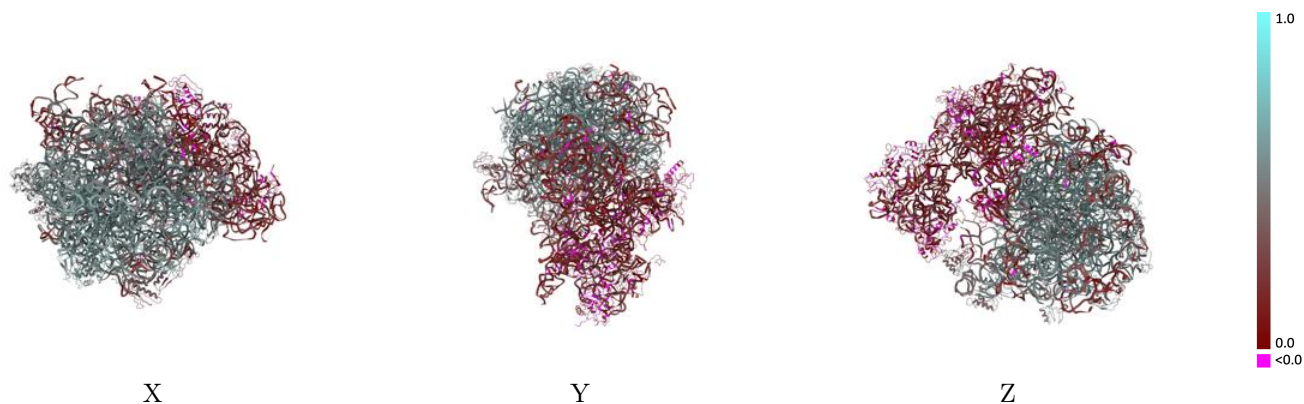
This section contains information regarding the fit between EMDB map EMD-11903 and PDB model 7ASP. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



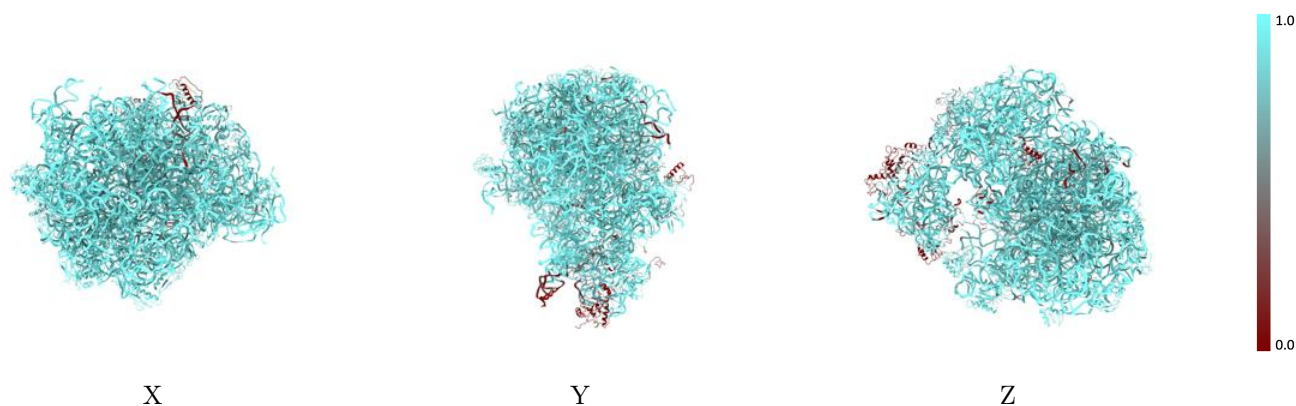
The images above show the 3D surface view of the map at the recommended contour level 0.0045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



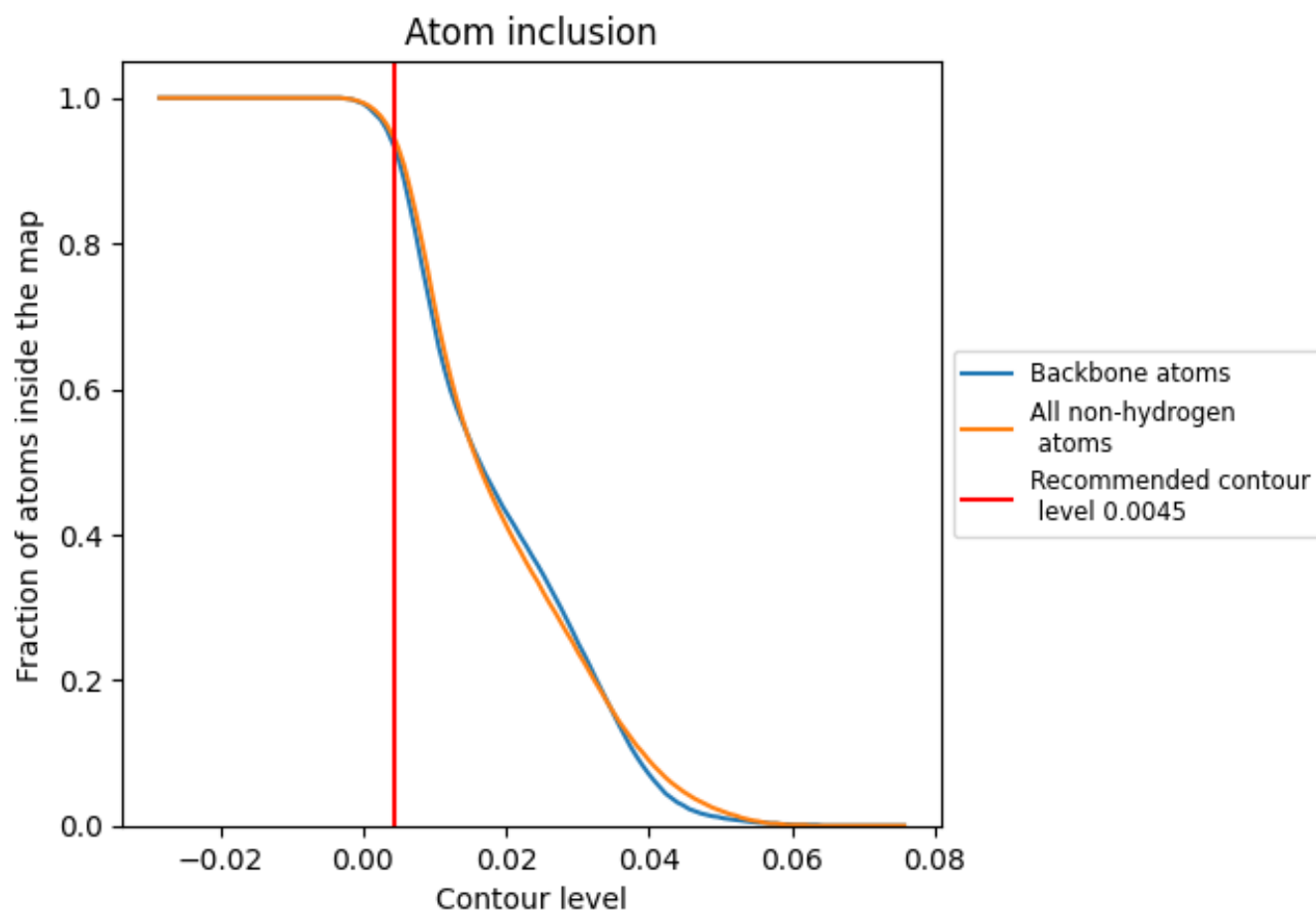
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0045).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 94% 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 (0.0045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9420	 0.3760
1	 0.9820	 0.5540
2	 0.9760	 0.5590
3	 0.9980	 0.4340
4	 0.9340	 0.5020
A	 0.8800	 0.4910
B	 0.9830	 0.5810
C	 0.9670	 0.5420
D	 0.9770	 0.5480
E	 0.9810	 0.5310
F	 0.9910	 0.3300
G	 0.9660	 0.2980
H	 0.9810	 0.5560
I	 0.9740	 0.5610
J	 0.9880	 0.5380
K	 0.9800	 0.5410
L	 0.9810	 0.5530
M	 0.9920	 0.4440
N	 0.9620	 0.5490
O	 0.9860	 0.5680
P	 0.9880	 0.5600
Q	 0.9710	 0.5490
R	 0.9830	 0.5250
S	 0.9800	 0.4750
T	 0.9450	 0.4880
U	 0.9670	 0.5580
V	 0.9780	 0.5240
W	 0.9890	 0.4400
X	 0.9560	 0.1800
Y	 0.9810	 0.4900
Z	 0.9850	 0.5060
a	 0.6290	 0.0890
b	 0.6160	 0.0970
c	 0.5690	 0.1800
d	 0.5130	 0.0780



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Chain	Atom inclusion	Q-score
e	 0.4830	 0.0600
f	 0.9010	 0.1860
g	 0.8350	 0.0730
h	 0.9060	 0.1110
i	 0.8730	 0.1350
j	 0.9780	 0.1810
k	 0.4020	 0.0840
l	 0.7630	 0.0860
m	 0.7940	 0.0820
n	 0.4670	 0.0870
o	 0.8880	 0.1140
p	 0.7240	 0.0840
q	 0.7210	 0.1080