



wwPDB EM Validation Summary Report ⓘ

Feb 19, 2024 – 01:29 PM JST

PDB ID : 8WI8
EMDB ID : EMD-37560
Title : Cryo- EM structure of Mycobacterium smegmatis 50S ribosomal subunit (body 1) of 70S ribosome, bS1 and RafH.
Authors : Kumar, N.; Sharma, S.; Kaushal, P.S.
Deposited on : 2023-09-24
Resolution : 2.70 Å(reported)
Based on initial model : 8WHX

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:

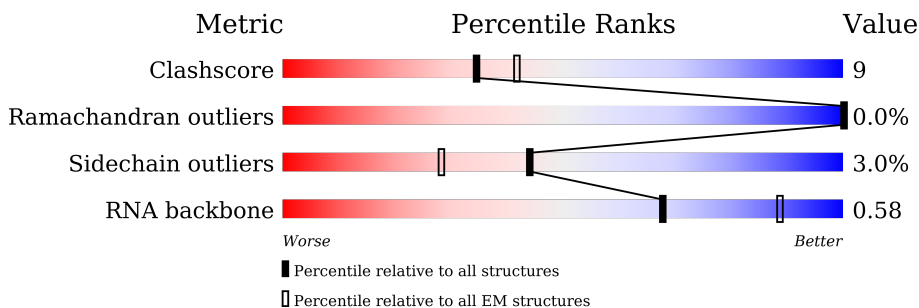
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

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 2.70 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	E	278	83% 15% .
2	F	217	84% 13% .
3	G	215	85% 12% .
4	H	187	5% 72% 24% . .
5	I	179	31% 56% 35% . 8%
6	J	151	17% 10% . 73%
7	M	147	84% 16% .

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Mol	Chain	Length	Quality of chain
8	N	122	82% 18%
9	O	147	82% 17%
10	Q	199	47% 13% 41%
11	R	127	79% 19%
12	S	113	82% 16%
13	T	129	81% 15%
14	U	103	79% 18%
15	V	153	65% 10% 25%
16	W	100	85% 9% 5%
17	X	105	63% 23% 11%
18	Z	88	72% 15% 14%
19	1	64	81% 16%
20	2	77	57% 26% 17%
21	3	61	72% 25%
22	5	57	77% 18% 5%
23	6	55	45% 38% 13%
24	7	47	79% 19%
25	8	64	77% 20%
26	4	75	44% 19% 36%
27	A	3119	51% 38% 8%
28	B	118	53% 38% 8%

2 Entry composition [i](#)

There are 28 unique types of molecules in this entry. The entry contains 89877 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 L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	E	275	2110	1298	438	370	4	0	0

- Molecule 2 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	F	214	1587	982	310	290	5	0	0

- Molecule 3 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	G	209	1569	969	295	303	2	0	0

- Molecule 4 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	H	182	1445	907	271	261	6	0	0

- Molecule 5 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	I	165	1260	792	229	238	1	0	0

- Molecule 6 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	J	41	308	195	55	57	1	0	0

- Molecule 7 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	M	146	1130	722	207	200	1	0	0

- Molecule 8 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	N	122	938	586	179	170	3	0	0

- Molecule 9 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	O	145	1078	676	205	194	3	0	0

- Molecule 10 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	Q	118	928	583	180	163	2	0	0

- Molecule 11 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	R	126	956	586	199	171	0	0

- Molecule 12 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	S	113	907	570	171	165	1	0	0

- Molecule 13 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	T	124	988	613	203	172	0	0

- Molecule 14 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
14	U	100	754	478	137	139	0	0

- Molecule 15 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
15	V	114	873	543	171	159	0	0

- Molecule 16 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
16	W	95	747	474	136	137	0	0

- Molecule 17 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	X	93	710	443	133	132	2	0	0

- Molecule 18 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
18	Z	76	568	352	120	96	0	0

- Molecule 19 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	1	63	470	283	103	80	4	0	0

- Molecule 20 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	2	64	531	324	103	103	1	0	0

- Molecule 21 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	3	59	Total	C	N	O	0	0
			474	292	95	87		

- Molecule 22 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	5	54	Total	C	N	O	S	0	0
			423	260	93	69	1		

- Molecule 23 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	6	48	Total	C	N	O	S	0	0
			397	244	81	68	4		

- Molecule 24 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	7	46	Total	C	N	O	S	0	0
			377	225	97	54	1		

- Molecule 25 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	8	62	Total	C	N	O	0	0
			498	300	114	84		

- Molecule 26 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	4	48	Total	C	N	O	S	0	0
			364	225	63	71	5		

- Molecule 27 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	A	3025	Total	C	N	O	P	0	0
			64965	28956	11946	21038	3025		

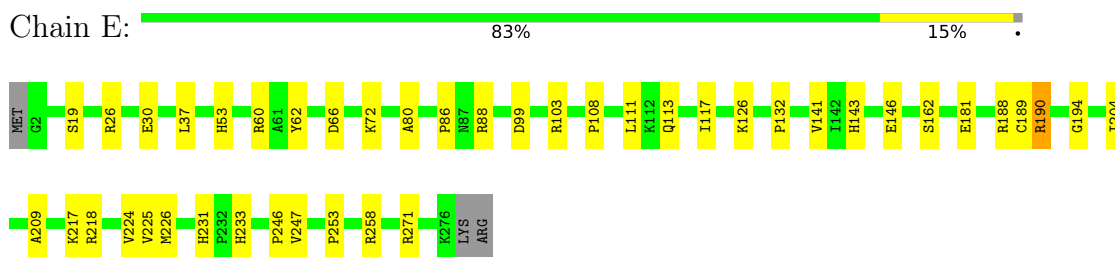
- Molecule 28 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
28	B	118	2522	1126	468	810	118	0	0

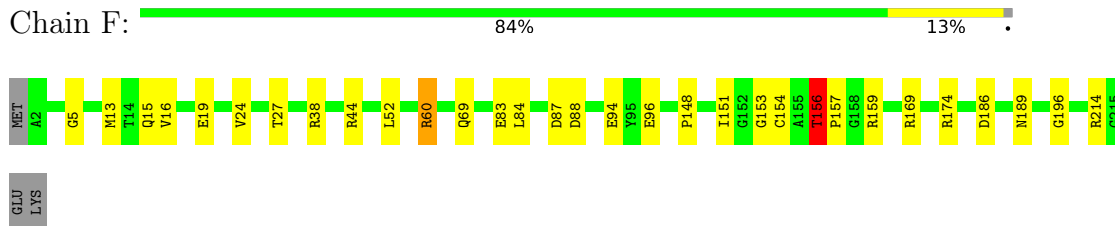
3 Residue-property plots [i](#)

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.

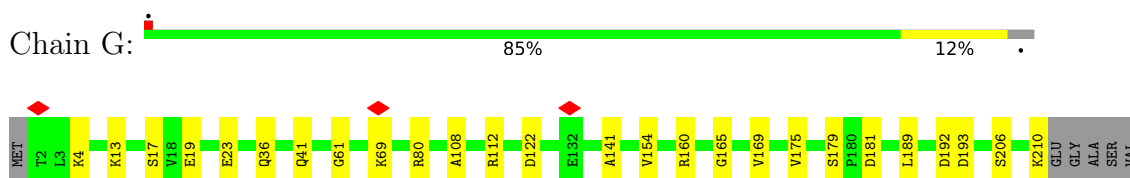
- Molecule 1: 50S ribosomal protein L2



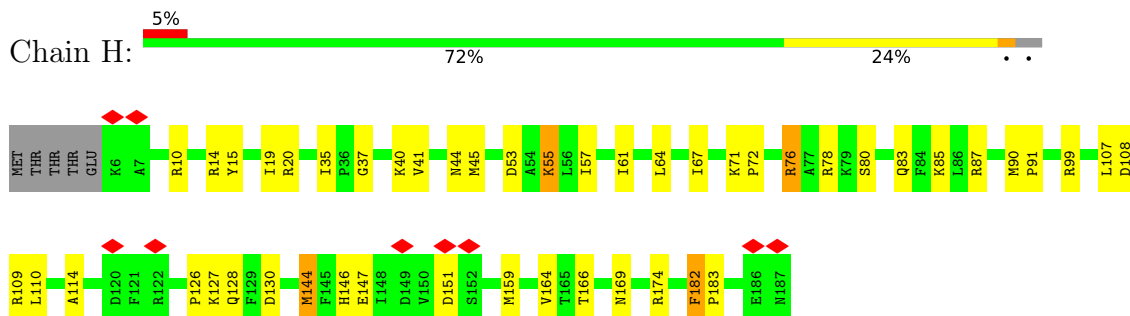
- Molecule 2: 50S ribosomal protein L3



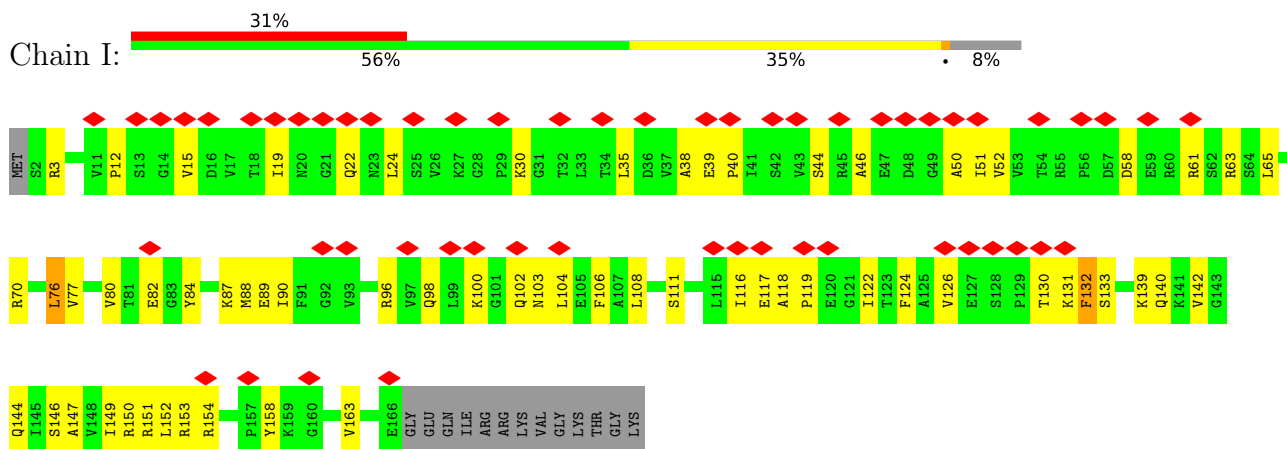
- Molecule 3: 50S ribosomal protein L4



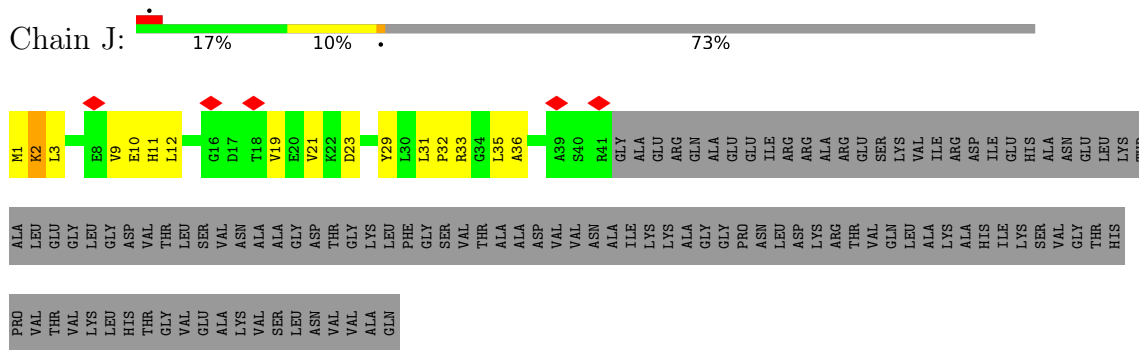
- Molecule 4: 50S ribosomal protein L5



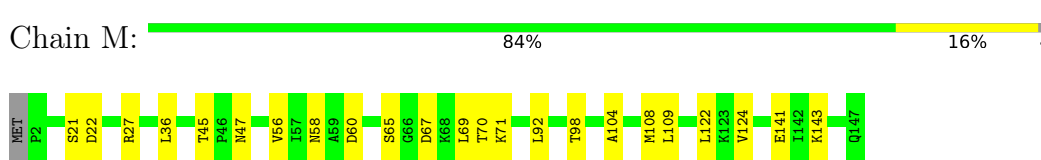
• Molecule 5: 50S ribosomal protein L6



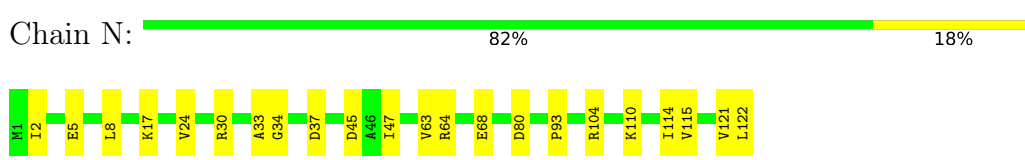
• Molecule 6: 50S ribosomal protein L9



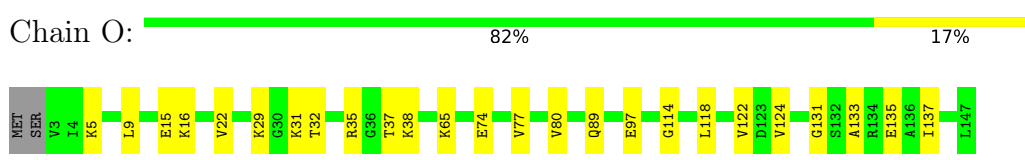
• Molecule 7: 50S ribosomal protein L13



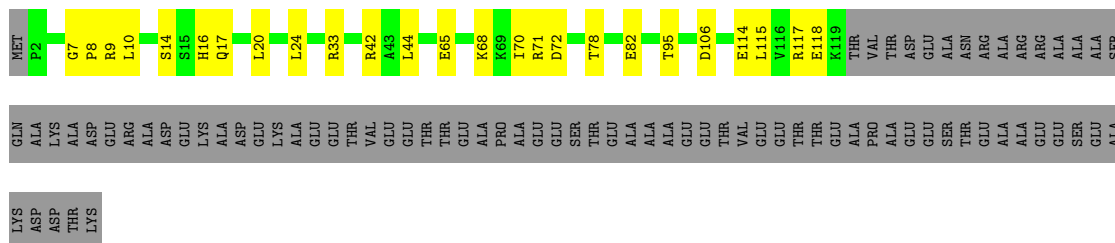
• Molecule 8: 50S ribosomal protein L14



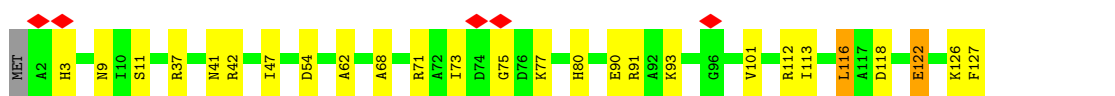
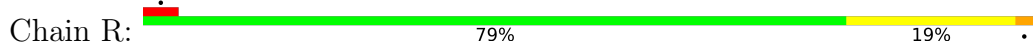
• Molecule 9: 50S ribosomal protein L15



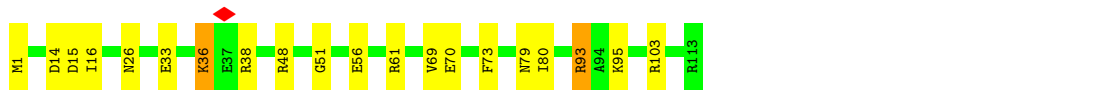
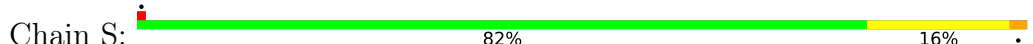
• Molecule 10: 50S ribosomal protein L17



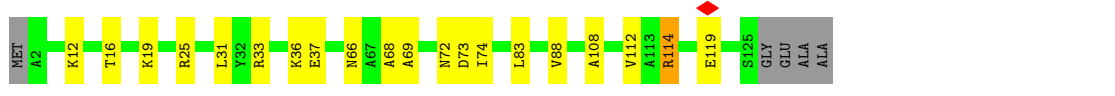
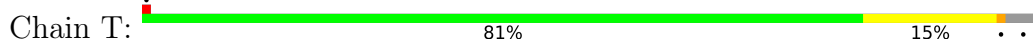
● Molecule 11: 50S ribosomal protein L18



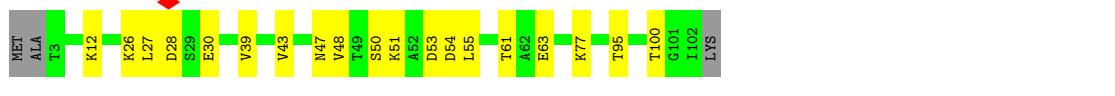
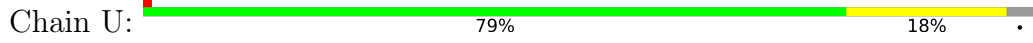
● Molecule 12: 50S ribosomal protein L19



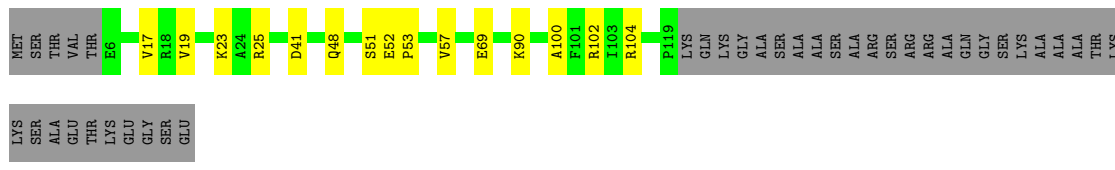
● Molecule 13: 50S ribosomal protein L20



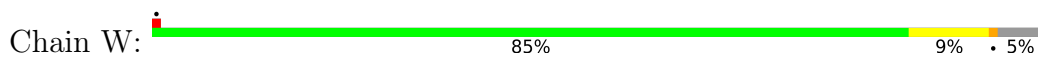
● Molecule 14: 50S ribosomal protein L21



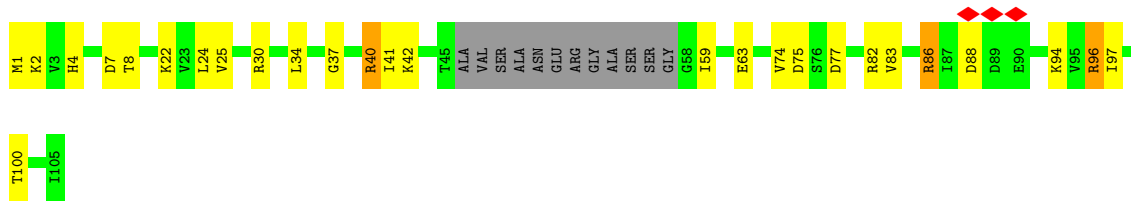
● Molecule 15: 50S ribosomal protein L22



• Molecule 16: 50S ribosomal protein L23



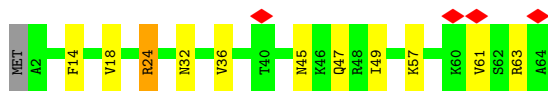
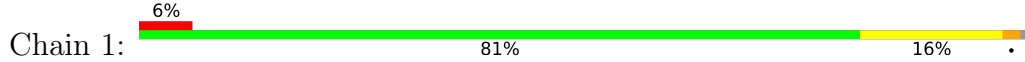
• Molecule 17: 50S ribosomal protein L24



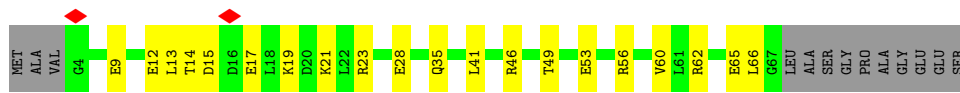
• Molecule 18: 50S ribosomal protein L27



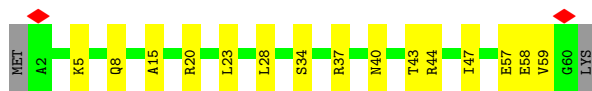
• Molecule 19: 50S ribosomal protein L28



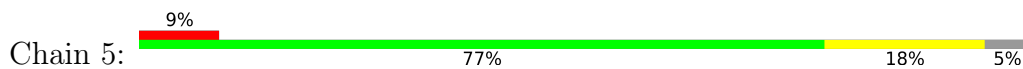
• Molecule 20: 50S ribosomal protein L29



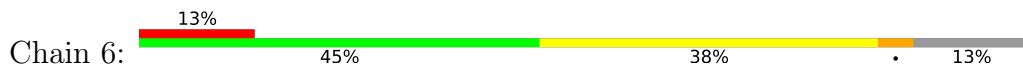
• Molecule 21: 50S ribosomal protein L30



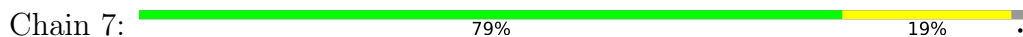
• Molecule 22: 50S ribosomal protein L32



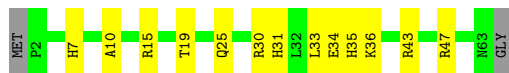
• Molecule 23: 50S ribosomal protein L33



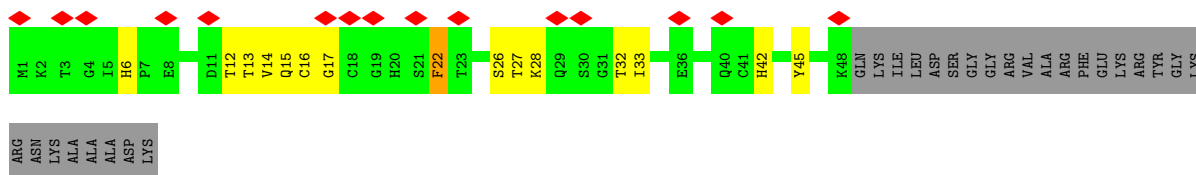
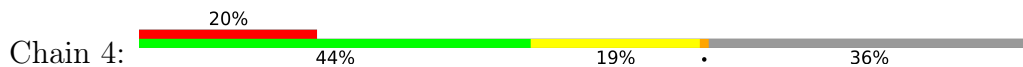
• Molecule 24: 50S ribosomal protein L34



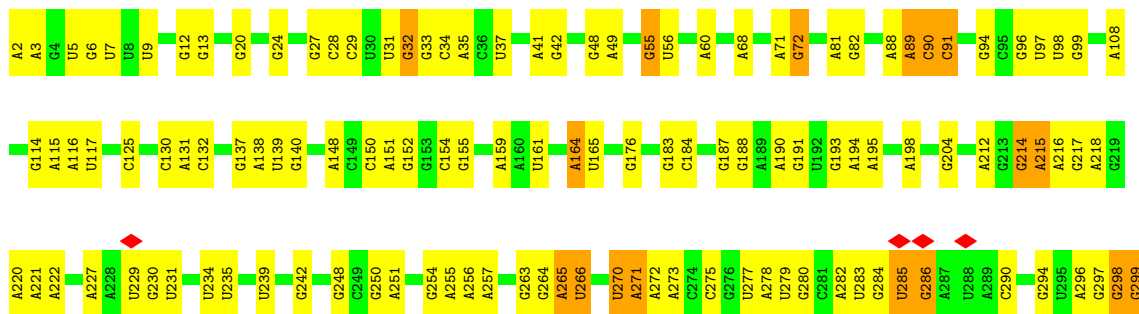
• Molecule 25: 50S ribosomal protein L35



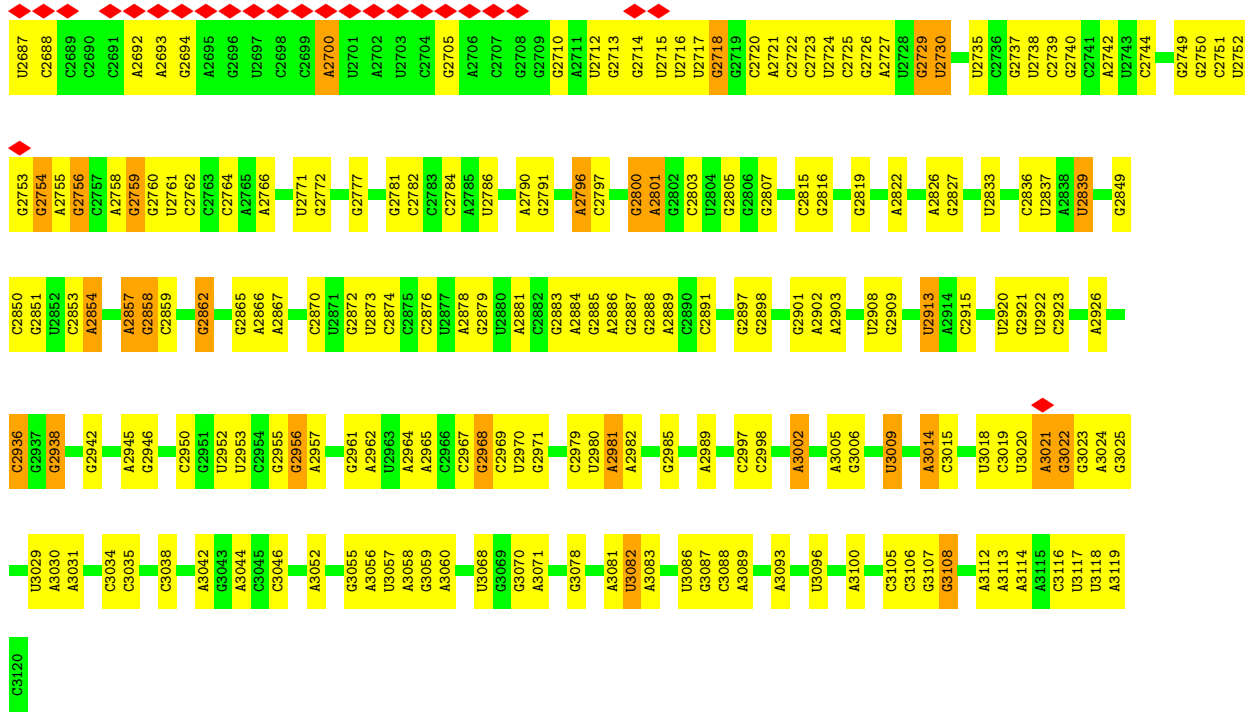
• Molecule 26: 50S ribosomal protein L31



• Molecule 27: 23S rRNA



A2602	A2603	U2604	C2605	G2606	G2607	G2608	A2609	C2610	G2613	U2614	C2622	A2623	C2624	C2625	U2626	C2627	A2630	A2635	A2636	G2639	U2640	G2641	G2642	U2643	A2644	A2645	G2646	A2647	A2648	A2649	A2650	G2651	G2652	G2653	A2654	U2655	A2659	C2665	G2671	A2672	U2673	A2674	A2677	G2678	G2679	C2680	U2681	G2682	A2683	U2684	C2685	U2686			
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G2216	U2217	C2218	U2219	C2220	A2221	C2224	C2235	U2236	A2237	A2238	A2239	U2240	A2244	C2245	U2246	A2247	C2248	G2249	A2250	G2251	A2254	A2255	G2256	A2257	U2258	U2261	C2262	G2263	U2265	A2266	C2267	C2271	G2272	A2275	G2276	C2279	G2280	A2283	A2284	G2285	A2286	C2287	C2288	U2289	A2294	C2295	G2296	U2297							
A2084	C2085	U1981	U2086	C2087	C2088	C2089	U2090	U2091	U2092	G2093	C2094	G2095	C2096	G2097	U2098	G2099	A2106	G2107	A2108	A2109	G2130	G2131	A2137	U2141	U2147	C2148	A2151	A2152	G2153	G2154	A2160	A2161	A2162	U2163	U2170	C2171	A2176	U2179	C2191	A2194	U2195	G2196	A2211	C2212	U2215										
A1975	C1866	G1867	U1870	G1871	A1872	U1875	A1876	U1877	A1886	A1887	C1888	U1889	G1892	A1896	A1897	C1900	U1906	A1907	A1908	C1909	U1909	C2012	G2016	C2017	G2018	C2025	A2026	A2029	C2030	U2033	G2034	A2042	C2043	A2046	C2047	G2048	U2061	G2062	C2063	A2064	A2065	A2070	A2071	G2074	G2075	C2079	G2080	C1973	U2081						
G1734	U1735	G1736	A1737	G1738	C1739	G1740	G1754	A1755	U1756	U1757	A1759	G1762	G1763	U1787	G1770	U1771	G1786	A1787	G1788	A1789	A1790	A1791	A1792	U1798	A1803	G1804	G1805	G1815	C1816	A1825	A1826	A1832	A1714	A1715	A1716	U1717	C1718	C1719	G1720	A1728	U1729	U1730	A1731	U1732	C1733										
A1865	C1866	G1867	U1870	G1871	A1872	U1875	A1876	U1877	A1886	A1887	C1888	U1889	G1892	A1896	A1897	C1900	U1906	A1907	A1908	C1909	U1909	C2012	G2016	C2017	G2018	C2025	A2026	A2029	C2030	U2033	G2034	A2042	C2043	A2046	C2047	G2048	U2061	G2062	C2063	A2064	A2065	A2070	A2071	G2074	G2075	C2079	G2080	C1973	U2081						
U1646	G1647	A1648	C1649	G1650	G1651	C1652	U1653	U1654	A1656	A1657	G1658	U1659	A1660	U1665	A1666	G1670	A1673	G1674	U1675	G1676	U1677	U1678	A1679	U1681	A1690	A1691	G1696	U1703	U1704	C1705	A1706	G1707	A1710	G1711	A1714	A1715	A1716	U1717	C1718	C1719	G1720	A1728	U1729	U1730	A1731	U1732	C1733								
U1523	G1524	U1525	U1529	G1530	C1531	G1532	U1533	C1534	C1535	A1536	U1537	G1538	A1539	U1540	G1541	A1542	A1543	U1544	C1545	A1546	G1547	C1548	G1549	G1550	U1551	A1552	C1553	U1554	A1555	A1556	C1557	C1558	A1559	U1560	C1561	C1562	A1563	A	A	A	C	C	C	A	C	C	C	C	C	U					



• Molecule 28: 5S rRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	110934	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE; CTF correction in Relion3.1.4	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.34	Depositor
Minimum defocus (nm)	1800	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.213	Depositor
Minimum map value	-0.038	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.045	Depositor
Map size (\AA)	406.6, 406.6, 406.6	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.07, 1.07, 1.07	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	E	0.26	0/2153	0.56	0/2895
2	F	0.27	0/1609	0.59	0/2165
3	G	0.25	0/1592	0.50	0/2153
4	H	0.25	0/1467	0.54	0/1973
5	I	0.25	0/1281	0.58	0/1733
6	J	0.31	0/311	0.65	0/419
7	M	0.26	0/1157	0.53	0/1567
8	N	0.26	0/946	0.55	0/1268
9	O	0.26	0/1091	0.53	0/1457
10	Q	0.25	0/945	0.51	0/1267
11	R	0.28	0/966	0.64	1/1298 (0.1%)
12	S	0.26	0/921	0.57	0/1236
13	T	0.26	0/1000	0.55	0/1341
14	U	0.28	0/764	0.52	0/1030
15	V	0.26	0/887	0.55	0/1204
16	W	0.27	0/757	0.56	0/1018
17	X	0.27	0/716	0.57	0/957
18	Z	0.29	0/577	0.59	0/774
19	1	0.24	0/478	0.55	0/641
20	2	0.26	0/534	0.58	0/713
21	3	0.26	0/477	0.57	0/640
22	5	0.23	0/427	0.60	0/572
23	6	0.28	0/405	0.58	0/542
24	7	0.24	0/380	0.66	0/500
25	8	0.23	0/503	0.58	0/667
26	4	0.28	0/372	0.51	0/503
27	A	0.23	0/72743	0.79	28/113499 (0.0%)
28	B	0.22	0/2821	0.84	5/4396 (0.1%)
All	All	0.24	0/98280	0.75	34/148428 (0.0%)

There are no bond length outliers.

The worst 5 of 34 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	B	62	C	N3-C2-O2	-9.05	115.56	121.90
27	A	2089	C	N3-C2-O2	-8.76	115.77	121.90
27	A	2245	C	C2-N1-C1'	7.66	127.23	118.80
27	A	2245	C	N1-C2-O2	7.37	123.32	118.90
27	A	1428	U	C2-N1-C1'	7.19	126.32	117.70

There are no chirality outliers.

There are no planarity outliers.

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	E	2110	0	2165	28	0
2	F	1587	0	1630	21	0
3	G	1569	0	1607	18	0
4	H	1445	0	1476	33	0
5	I	1260	0	1300	48	0
6	J	308	0	323	10	0
7	M	1130	0	1167	17	0
8	N	938	0	1000	15	0
9	O	1078	0	1151	20	0
10	Q	928	0	972	15	0
11	R	956	0	991	18	0
12	S	907	0	938	13	0
13	T	988	0	1038	13	0
14	U	754	0	802	11	0
15	V	873	0	909	12	0
16	W	747	0	794	6	0
17	X	710	0	760	20	0
18	Z	568	0	586	12	0
19	1	470	0	484	9	0
20	2	531	0	541	11	0
21	3	474	0	500	10	0
22	5	423	0	463	8	0
23	6	397	0	407	22	0
24	7	377	0	411	6	0
25	8	498	0	538	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	4	364	0	352	13	0
27	A	64965	0	32687	936	0
28	B	2522	0	1285	37	0
All	All	89877	0	57277	1264	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 9.

The worst 5 of 1264 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)
27:A:2971:G:H21	27:A:2981:A:N6	1.45	1.14
27:A:2971:G:N2	27:A:2981:A:H62	1.52	1.05
27:A:1610:C:H2'	27:A:1611:A:C8	1.96	0.99
27:A:1547:G:H1	27:A:1623:U:H3	1.01	0.96
27:A:1550:G:H1	27:A:1620:U:H3	1.13	0.96

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	E	273/278 (98%)	265 (97%)	8 (3%)	0	100	100
2	F	212/217 (98%)	204 (96%)	7 (3%)	1 (0%)	29	54
3	G	207/215 (96%)	205 (99%)	2 (1%)	0	100	100
4	H	180/187 (96%)	173 (96%)	7 (4%)	0	100	100
5	I	163/179 (91%)	162 (99%)	1 (1%)	0	100	100
6	J	39/151 (26%)	39 (100%)	0	0	100	100
7	M	144/147 (98%)	141 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	N	120/122 (98%)	117 (98%)	3 (2%)	0	100	100
9	O	143/147 (97%)	131 (92%)	12 (8%)	0	100	100
10	Q	116/199 (58%)	114 (98%)	2 (2%)	0	100	100
11	R	124/127 (98%)	124 (100%)	0	0	100	100
12	S	111/113 (98%)	104 (94%)	7 (6%)	0	100	100
13	T	122/129 (95%)	120 (98%)	2 (2%)	0	100	100
14	U	98/103 (95%)	95 (97%)	3 (3%)	0	100	100
15	V	112/153 (73%)	111 (99%)	1 (1%)	0	100	100
16	W	93/100 (93%)	92 (99%)	1 (1%)	0	100	100
17	X	89/105 (85%)	88 (99%)	1 (1%)	0	100	100
18	Z	74/88 (84%)	71 (96%)	3 (4%)	0	100	100
19	1	61/64 (95%)	60 (98%)	1 (2%)	0	100	100
20	2	62/77 (80%)	60 (97%)	2 (3%)	0	100	100
21	3	57/61 (93%)	55 (96%)	2 (4%)	0	100	100
22	5	52/57 (91%)	51 (98%)	1 (2%)	0	100	100
23	6	46/55 (84%)	42 (91%)	4 (9%)	0	100	100
24	7	44/47 (94%)	44 (100%)	0	0	100	100
25	8	60/64 (94%)	58 (97%)	2 (3%)	0	100	100
26	4	46/75 (61%)	45 (98%)	1 (2%)	0	100	100
All	All	2848/3260 (87%)	2771 (97%)	76 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	F	156	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	E	215/218 (99%)	212 (99%)	3 (1%)	67 86
2	F	160/163 (98%)	152 (95%)	8 (5%)	24 51
3	G	169/173 (98%)	167 (99%)	2 (1%)	71 88
4	H	151/156 (97%)	140 (93%)	11 (7%)	14 33
5	I	139/150 (93%)	135 (97%)	4 (3%)	42 71
6	J	31/116 (27%)	28 (90%)	3 (10%)	8 19
7	M	119/120 (99%)	117 (98%)	2 (2%)	60 84
8	N	100/100 (100%)	100 (100%)	0	100 100
9	O	112/114 (98%)	111 (99%)	1 (1%)	78 92
10	Q	97/158 (61%)	94 (97%)	3 (3%)	40 69
11	R	93/94 (99%)	90 (97%)	3 (3%)	39 68
12	S	100/100 (100%)	95 (95%)	5 (5%)	24 51
13	T	97/99 (98%)	95 (98%)	2 (2%)	53 80
14	U	81/83 (98%)	78 (96%)	3 (4%)	34 63
15	V	90/117 (77%)	90 (100%)	0	100 100
16	W	83/85 (98%)	79 (95%)	4 (5%)	25 53
17	X	79/86 (92%)	74 (94%)	5 (6%)	18 40
18	Z	55/63 (87%)	54 (98%)	1 (2%)	59 83
19	1	50/51 (98%)	49 (98%)	1 (2%)	55 81
20	2	58/66 (88%)	56 (97%)	2 (3%)	37 66
21	3	52/54 (96%)	52 (100%)	0	100 100
22	5	43/46 (94%)	42 (98%)	1 (2%)	50 78
23	6	46/52 (88%)	44 (96%)	2 (4%)	29 57
24	7	35/36 (97%)	35 (100%)	0	100 100
25	8	53/54 (98%)	50 (94%)	3 (6%)	20 44
26	4	43/63 (68%)	42 (98%)	1 (2%)	50 78
All	All	2351/2617 (90%)	2281 (97%)	70 (3%)	44 70

5 of 70 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
17	X	88	ASP
18	Z	39	ARG
23	6	27	LYS

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Mol	Chain	Res	Type
5	I	3	ARG
4	H	182	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
12	S	28	HIS
12	S	82	HIS
23	6	20	HIS
5	I	102	GLN
5	I	98	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
27	A	3022/3119 (96%)	539 (17%)	16 (0%)
28	B	117/118 (99%)	16 (13%)	1 (0%)
All	All	3139/3237 (96%)	555 (17%)	17 (0%)

5 of 555 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
27	A	7	U
27	A	12	G
27	A	20	G
27	A	31	U
27	A	32	G

5 of 17 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
27	A	2381	A
28	B	10	G
27	A	974	G
27	A	1002	C
27	A	1004	C

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.

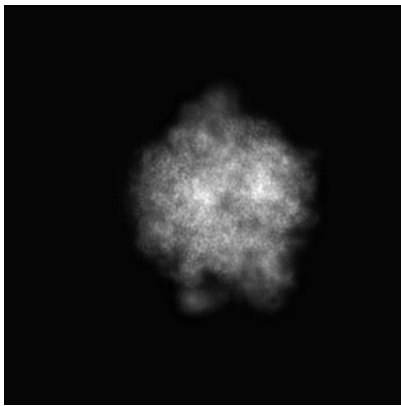
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37560. These allow visual inspection of the internal detail of the map and identification of artifacts.

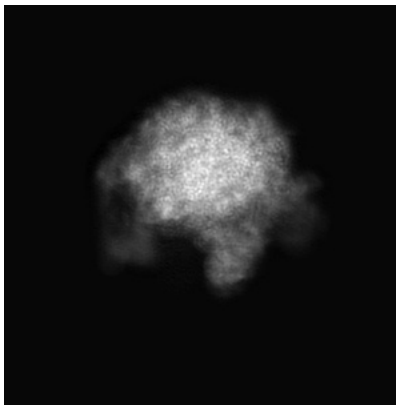
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

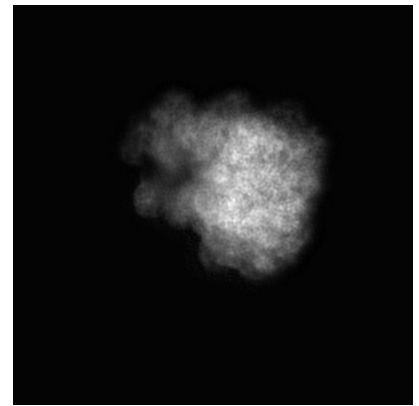
6.1.1 Primary map



X

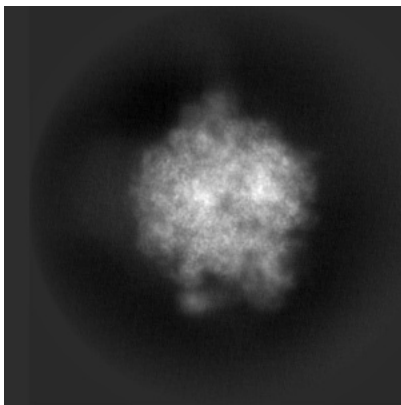


Y

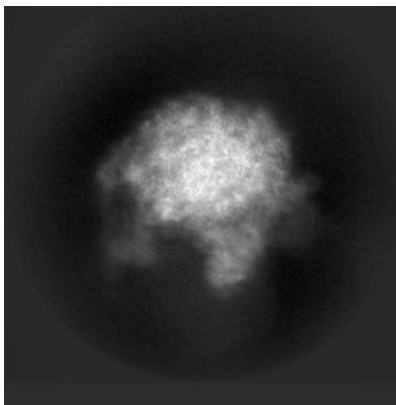


Z

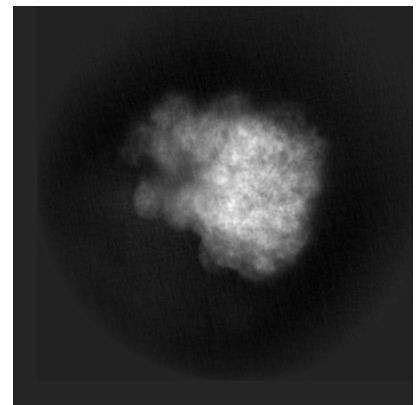
6.1.2 Raw map



X



Y

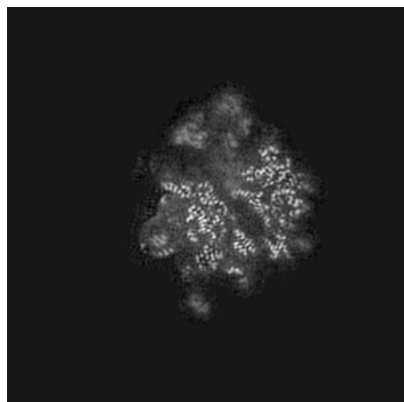


Z

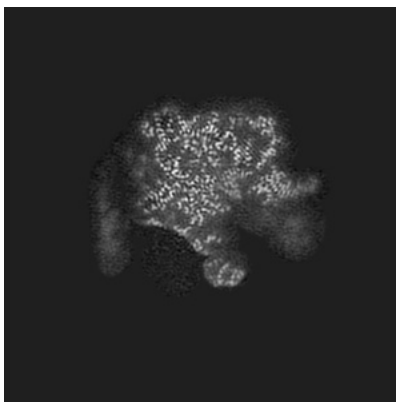
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

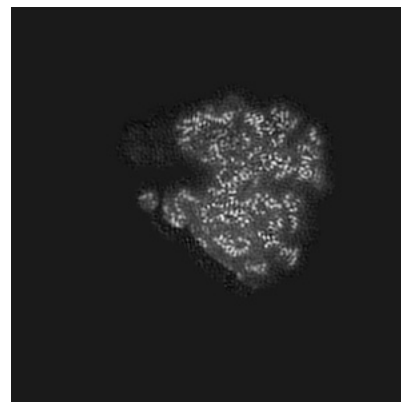
6.2.1 Primary map



X Index: 190

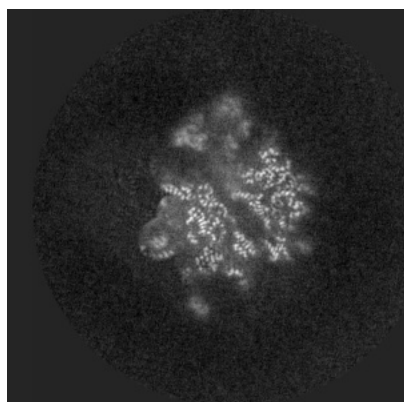


Y Index: 190

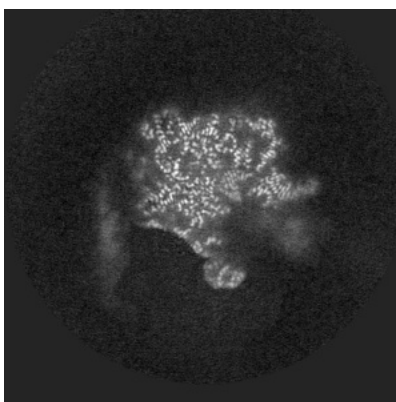


Z Index: 190

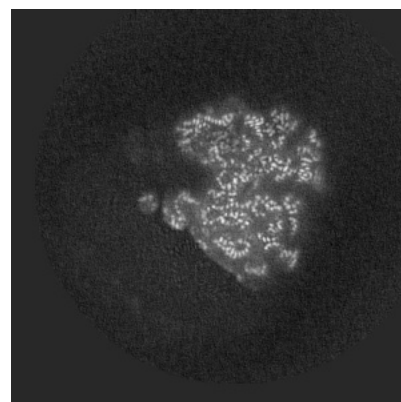
6.2.2 Raw map



X Index: 190



Y Index: 190

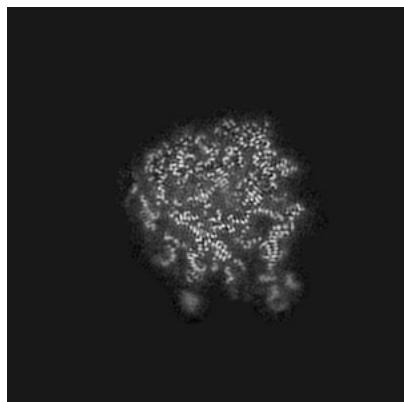


Z Index: 190

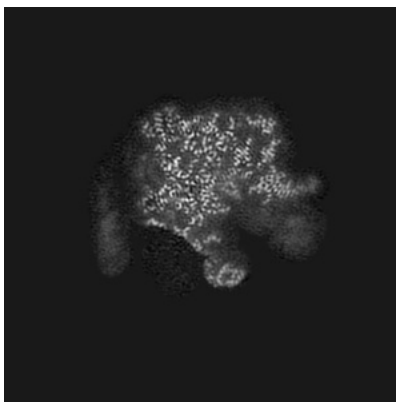
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

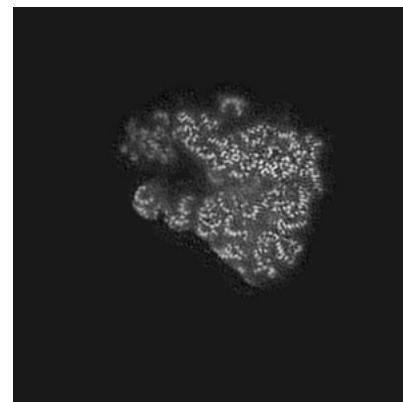
6.3.1 Primary map



X Index: 230

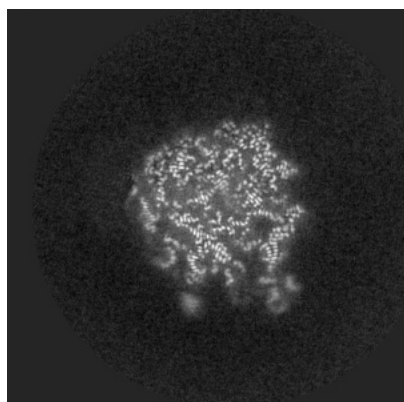


Y Index: 191

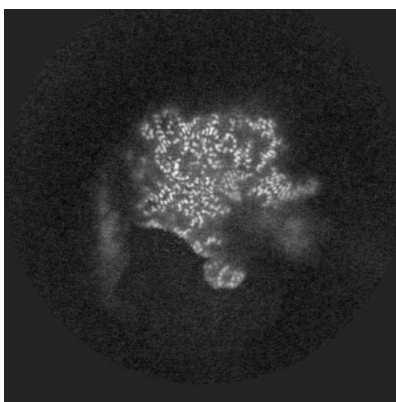


Z Index: 200

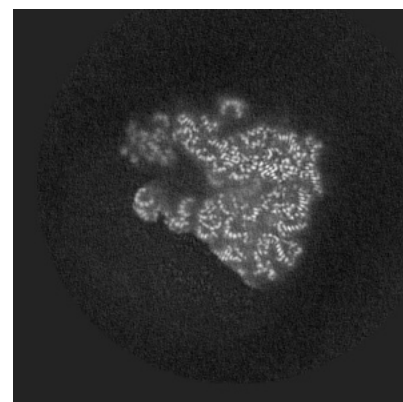
6.3.2 Raw map



X Index: 230



Y Index: 190

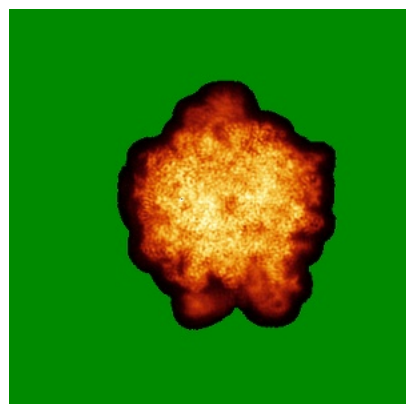


Z Index: 200

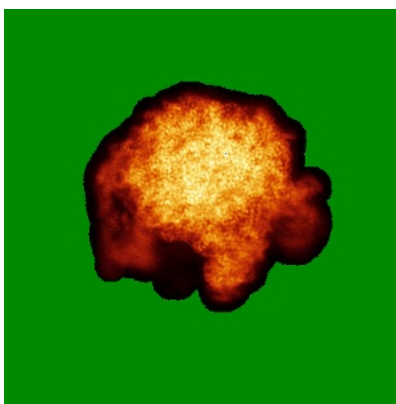
The images above show the largest variance slices of the map in three orthogonal directions.

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

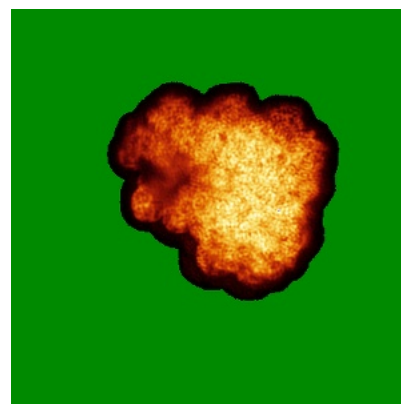
6.4.1 Primary map



X

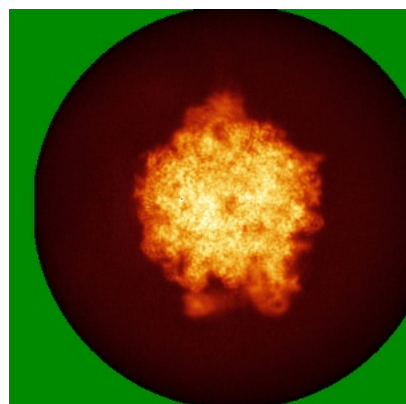


Y

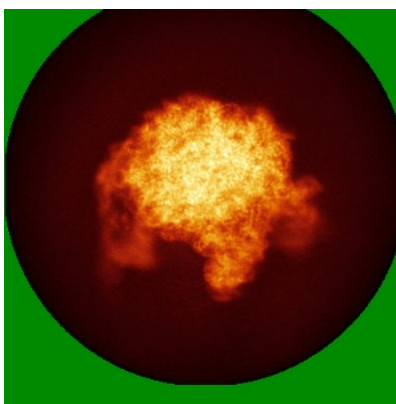


Z

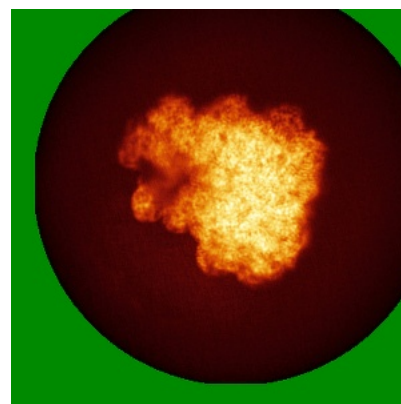
6.4.2 Raw map



X



Y

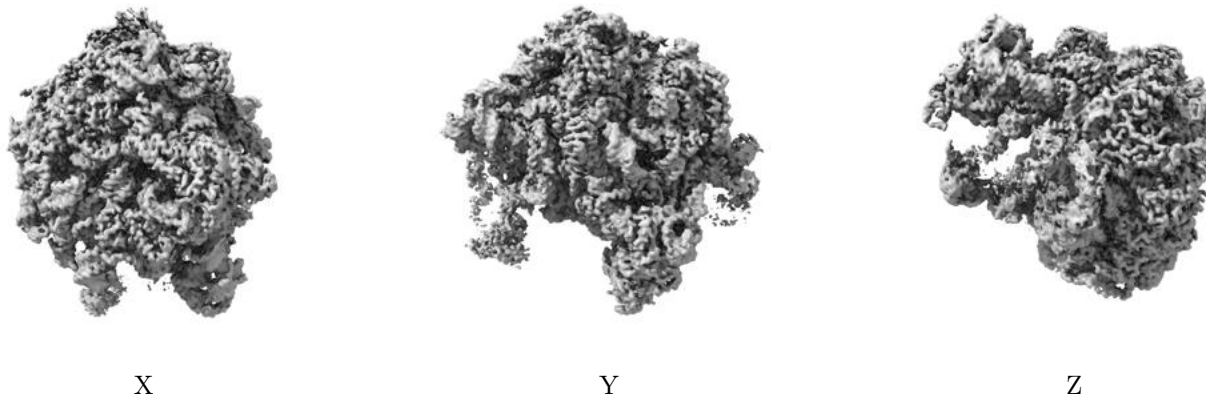


Z

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

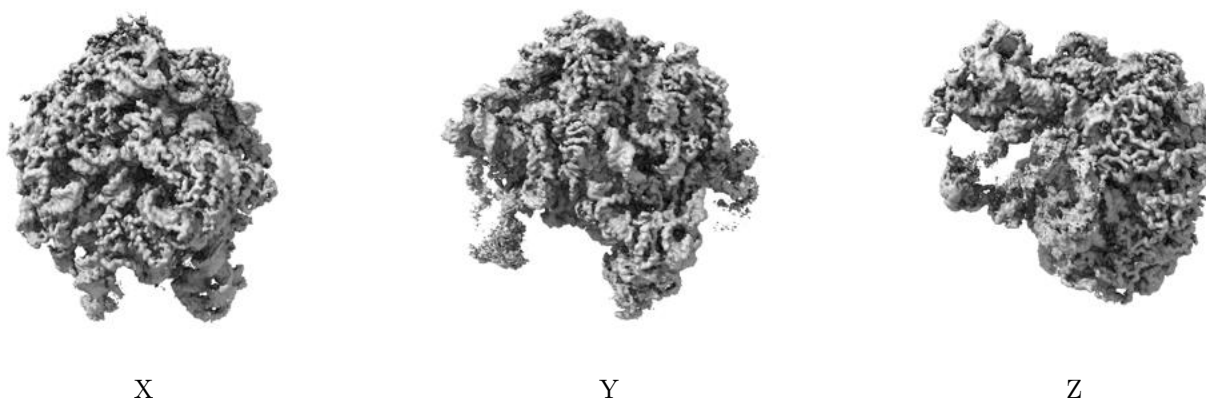
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

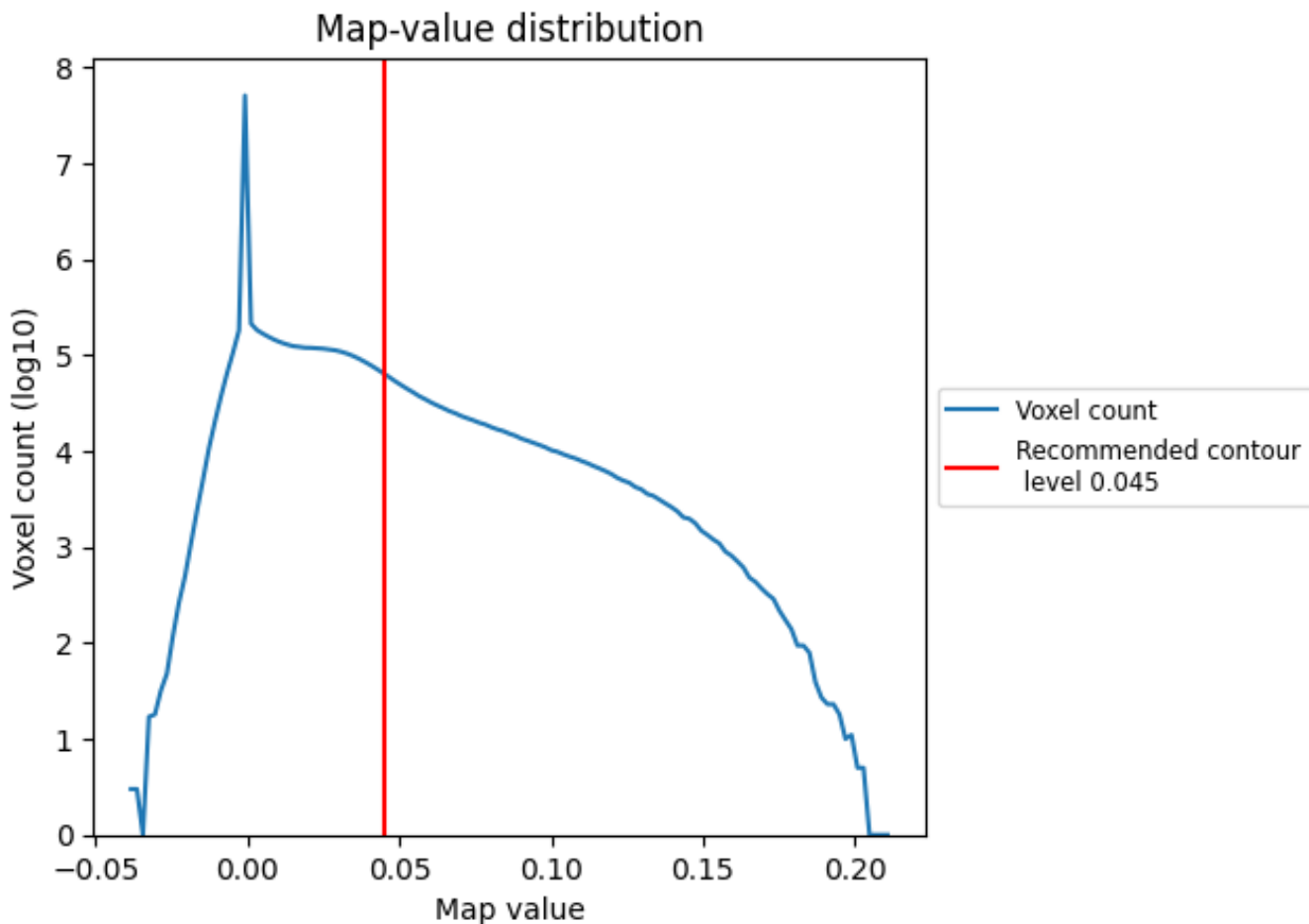
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

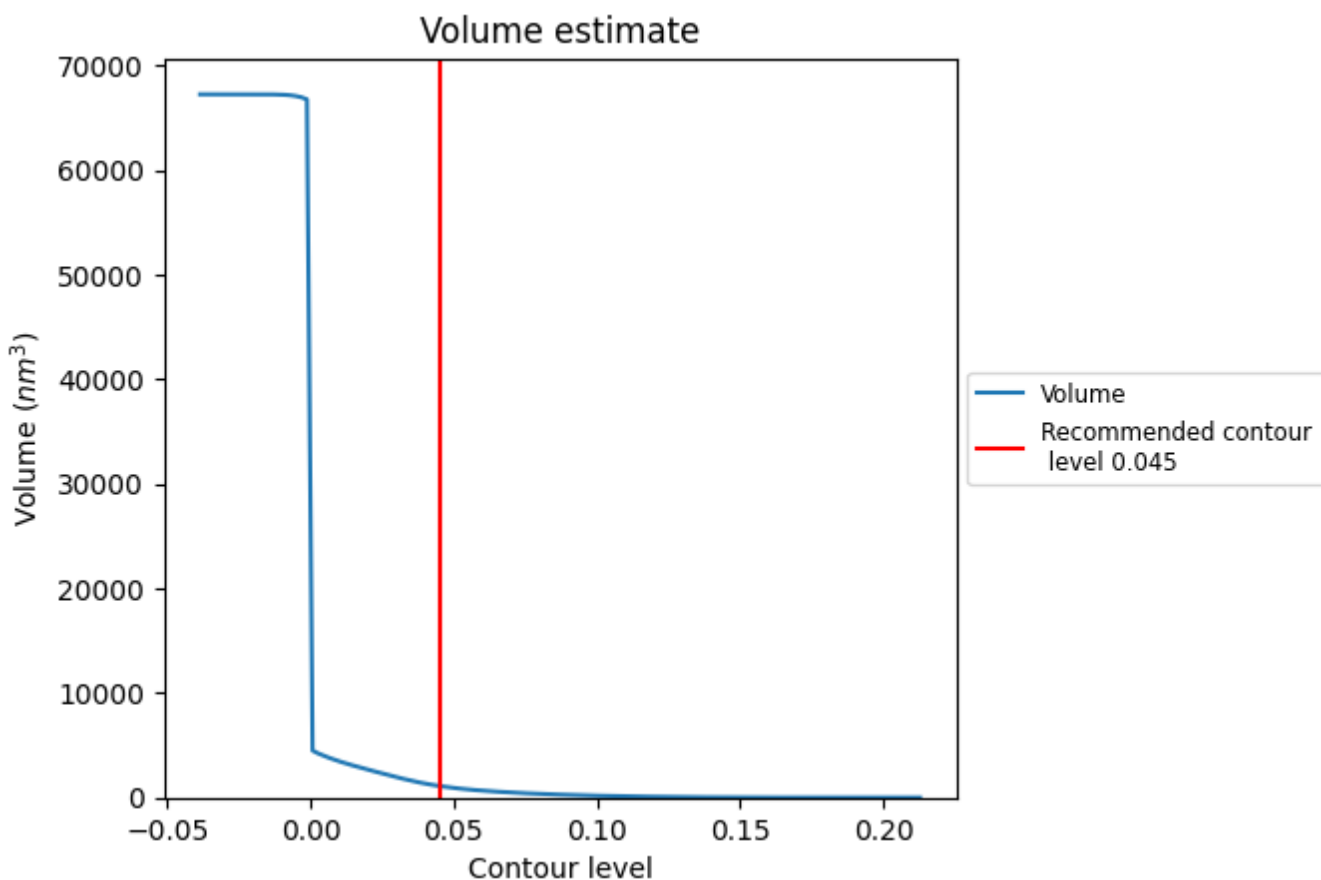
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

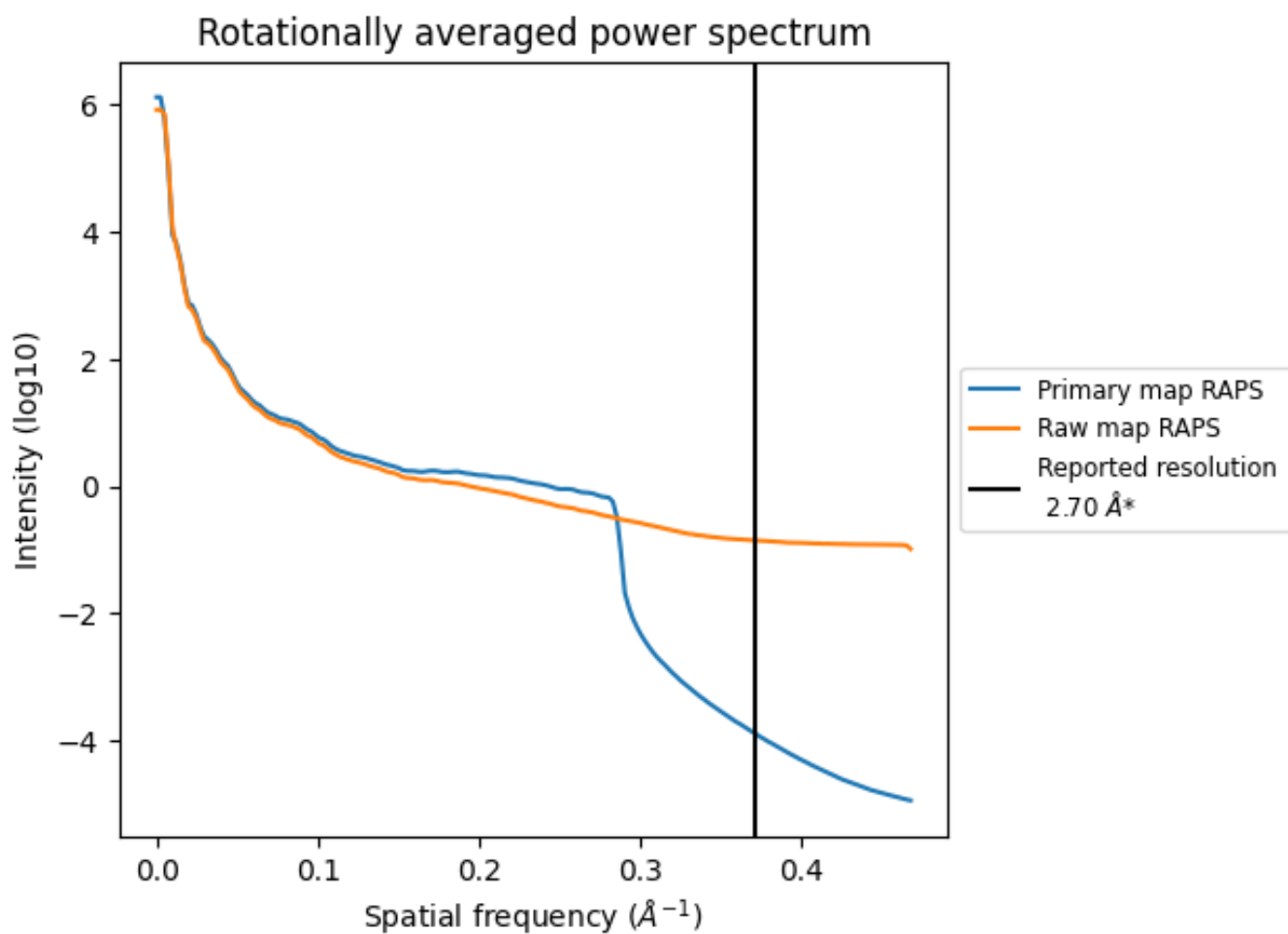
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1110 nm³; this corresponds to an approximate mass of 1002 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](#)

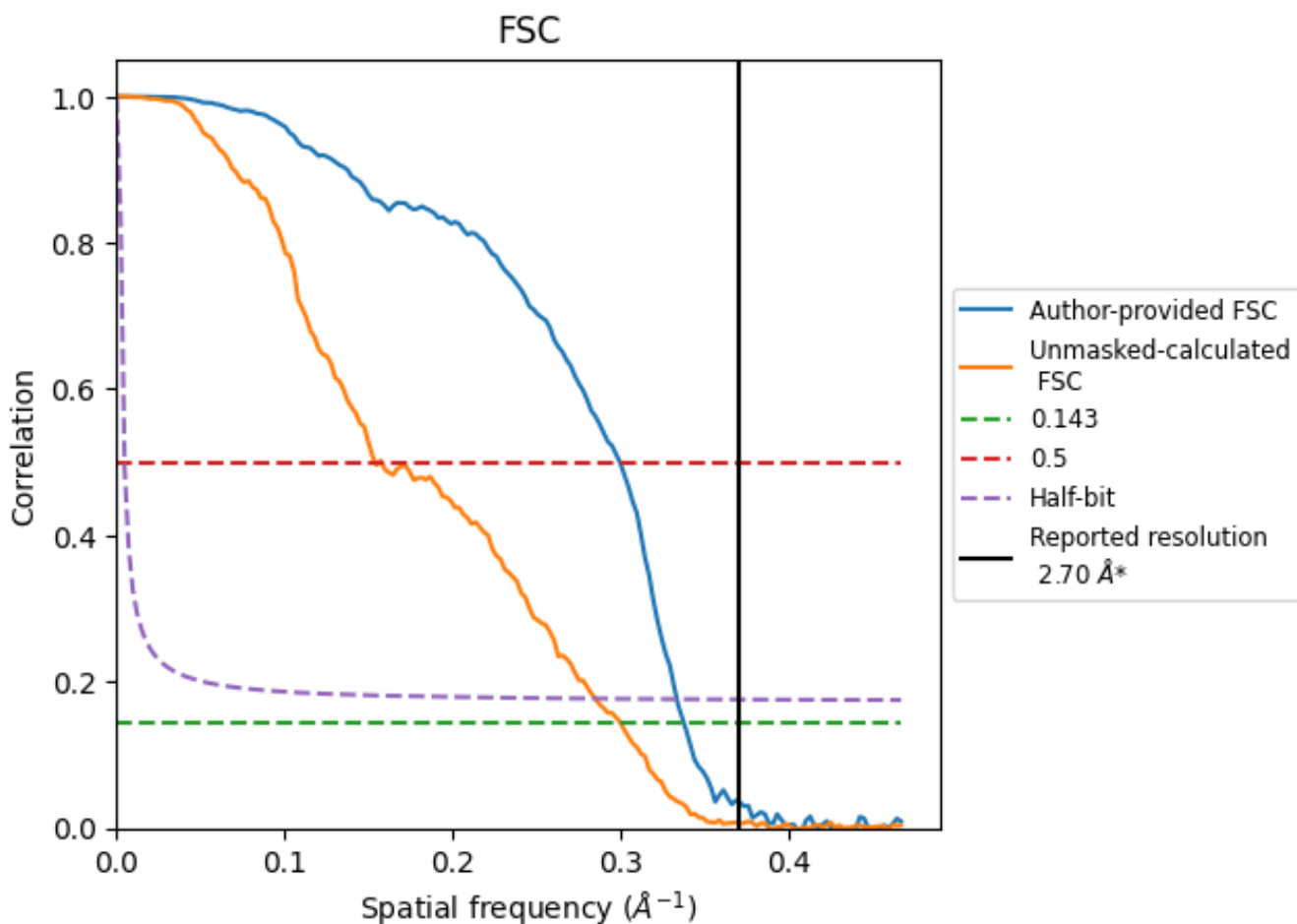


*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



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

8.2 Resolution estimates

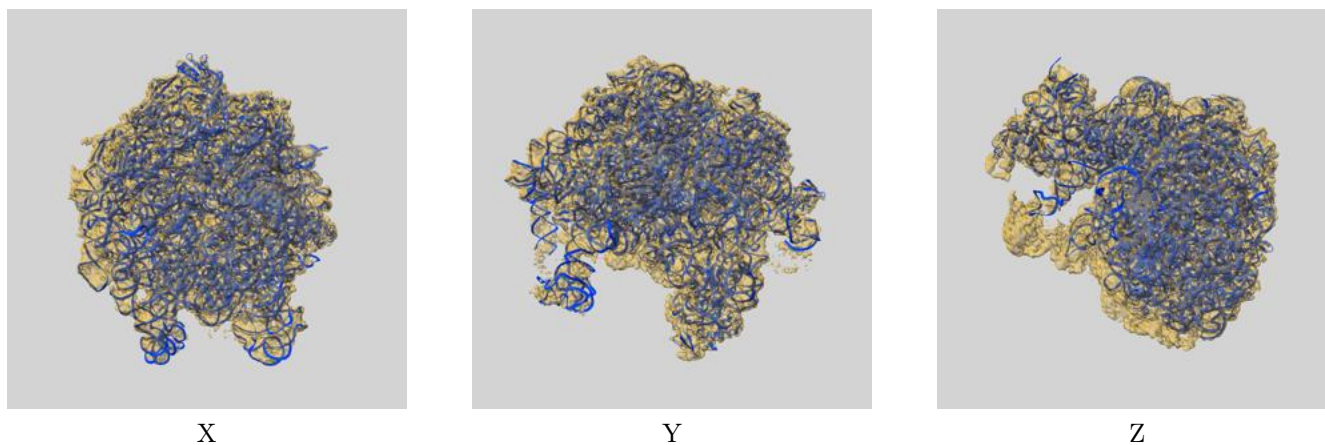
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	2.96	3.33	3.00
Unmasked-calculated*	3.33	6.49	3.51

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.33 differs from the reported value 2.7 by more than 10 %

9 Map-model fit [i](#)

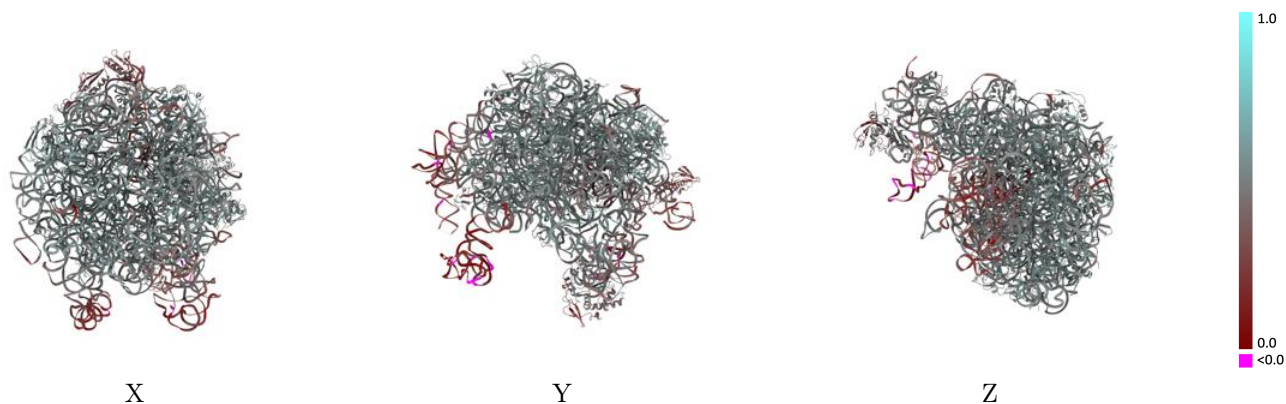
This section contains information regarding the fit between EMDB map EMD-37560 and PDB model 8WI8. Per-residue inclusion information can be found in section [3](#) on page [9](#).

9.1 Map-model overlay [i](#)



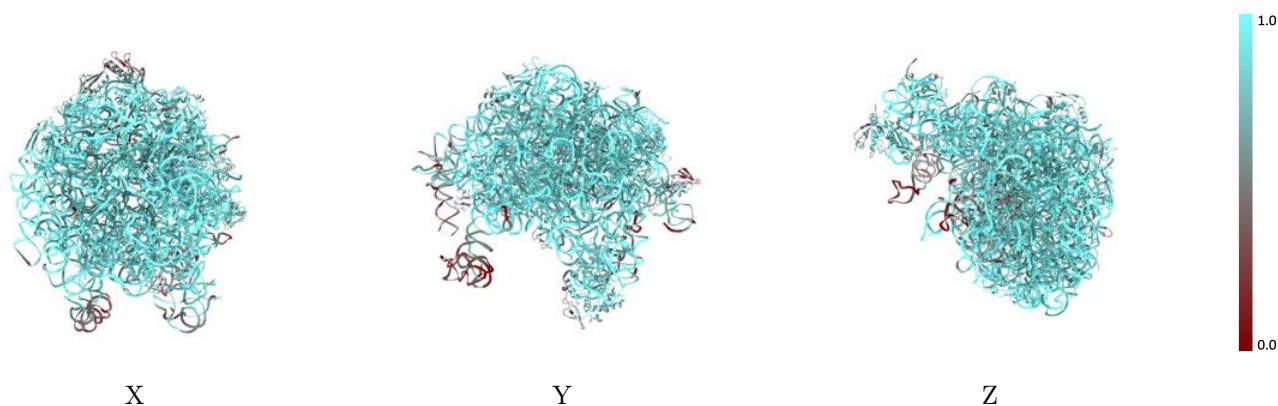
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



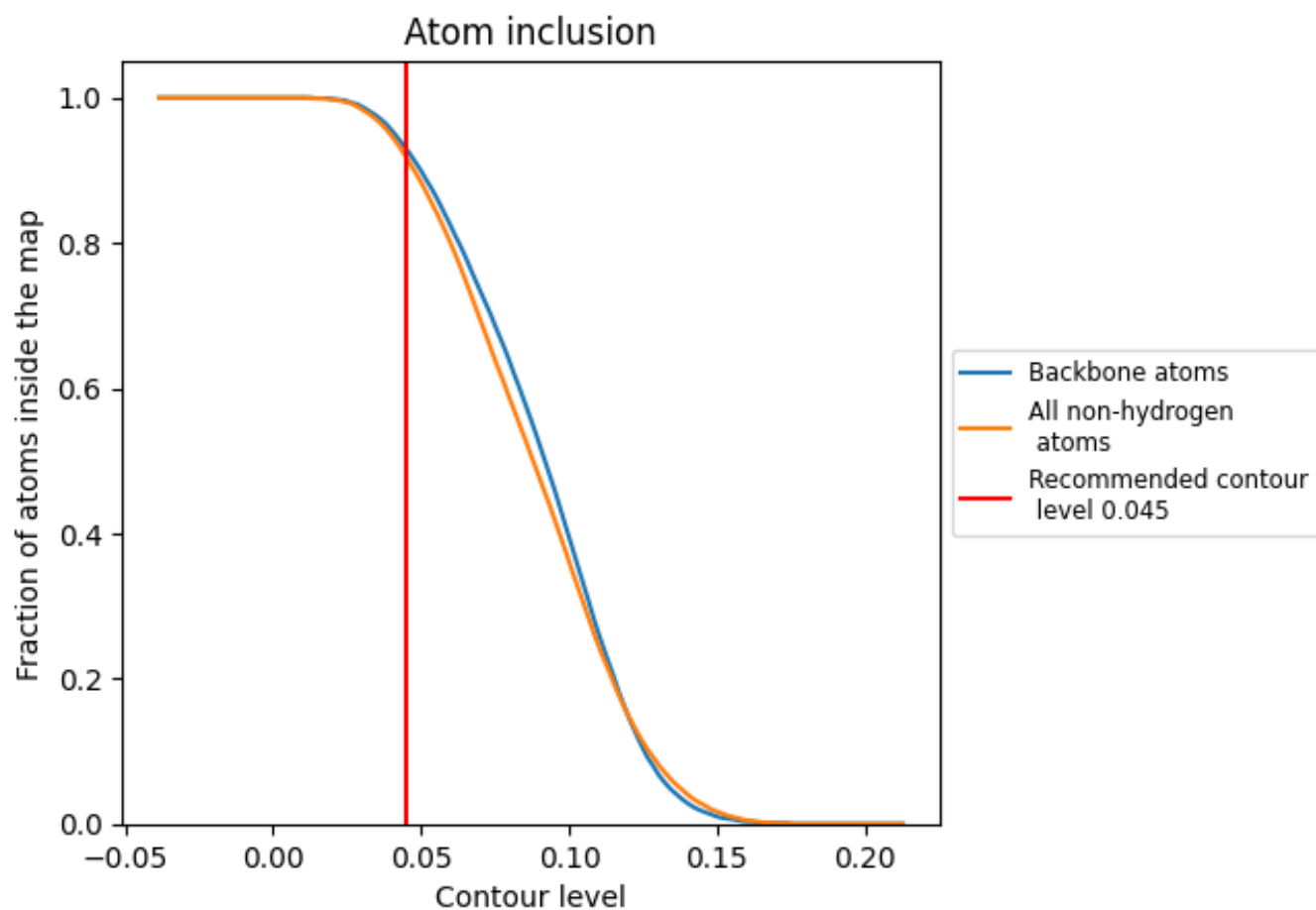
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.045).



























































9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 92% 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 (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9180	 0.4740
1	 0.8980	 0.4910
2	 0.8470	 0.4960
3	 0.9060	 0.5350
4	 0.5580	 0.2870
5	 0.8480	 0.5190
6	 0.7050	 0.4680
7	 0.9970	 0.5480
8	 0.9080	 0.5400
A	 0.9290	 0.4650
B	 0.9560	 0.4540
E	 0.9730	 0.5470
F	 0.9340	 0.5390
G	 0.8950	 0.5170
H	 0.8070	 0.4310
I	 0.5430	 0.3030
J	 0.6970	 0.4270
M	 0.9410	 0.5370
N	 0.9500	 0.5350
O	 0.8930	 0.5270
Q	 0.9700	 0.5470
R	 0.8190	 0.4670
S	 0.9330	 0.5260
T	 0.9540	 0.5340
U	 0.8940	 0.5500
V	 0.9690	 0.5430
W	 0.9060	 0.5270
X	 0.8350	 0.4990
Z	 0.9530	 0.5360

