



wwPDB EM Validation Summary Report ⓘ

Feb 19, 2024 – 03:02 PM JST

PDB ID : 8WIC
EMDB ID : EMD-37563
Title : Cryo- EM structure of Mycobacterium smegmatis 50S ribosomal subunit (body 1) of 70S ribosome, E- tRNA and RafH.
Authors : Kumar, N.; Sharma, S.; Kaushal, P.S.
Deposited on : 2023-09-24
Resolution : 3.50 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:

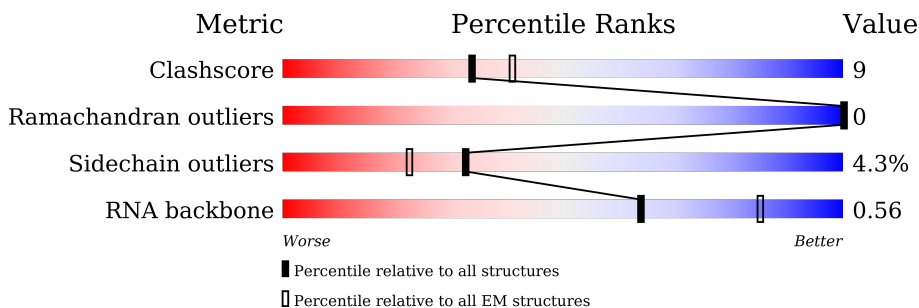
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.50 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
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	85% 13% .
2	F	217	76% 19% . .
3	G	215	77% 19% . .
4	H	187	57% 36% . .
5	I	179	32% 51% 38% . 8%
6	J	151	6% 13% 13% . 73%
7	M	147	85% 14% . .

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Mol	Chain	Length	Quality of chain
8	N	122	89% 11%
9	O	147	83% 16%
10	Q	199	50% 8% 41%
11	R	127	63% 34%
12	S	113	81% 15%
13	T	129	76% 19% 5%
14	U	103	85% 12%
15	V	153	65% 8% 26%
16	W	100	82% 12%
17	X	105	7% 67% 19% 12%
18	Z	88	73% 13% 13%
19	1	64	67% 28%
20	2	77	56% 25% 18%
21	3	61	77% 18% 5%
22	5	57	5% 81% 12% 5%
23	6	55	5% 40% 44% 13%
24	7	47	72% 23%
25	8	64	77% 22%
26	4	75	21% 40% 20% 36%
27	A	3119	55% 34% 8%
28	B	118	52% 39% 8%
29	C	76	36% 45% 20%

2 Entry composition [i](#)

There are 29 unique types of molecules in this entry. The entry contains 91332 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	209	1563	969	305	285	4	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	208	1562	965	294	301	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	180	1428	897	267	258	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	Total	C	N	O	S	0	0
			1130	722	207	200	1		

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	Q	117	Total	C	N	O	S	0	0
			919	577	178	162	2		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	R	125	Total	C	N	O	0	0
			951	583	198	170		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	S	112	Total	C	N	O	0	0
			899	565	170	164		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	T	123	Total	C	N	O	0	0
			982	610	202	170		

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

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

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

Mol	Chain	Residues	Atoms				AltConf	Trace
15	V	113	Total	C	N	O	0	0
			864	538	170	156		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
16	W	96	Total	C	N	O	0	0
			751	476	137	138		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	X	92	Total	C	N	O	S	0	0
			706	441	132	131	2		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
18	Z	77	Total	C	N	O	0	0
			574	355	121	98		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	1	62	Total	C	N	O	S	0	0
			465	280	102	79	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
20	2	63	Total	C	N	O	S	0	0
			527	322	102	102	1		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
21	3	58	Total	C	N	O	0	0
			470	290	94	86		

- 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 L33A.

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	63	Total	C	N	O	0	0
			502	302	115	85		

- 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	3022	Total	C	N	O	P	0	0
			64906	28929	11938	21017	3022		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
28	B	117	2502	1117	465	803	117	0	0

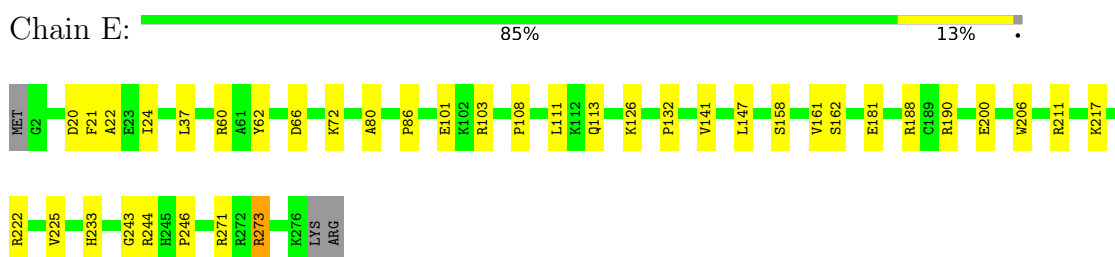
- Molecule 29 is a RNA chain called E-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
29	C	76	1622	723	294	529	76	0	0

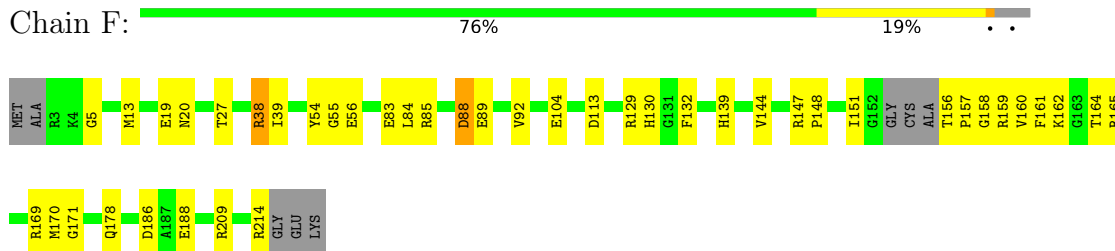
3 Residue-property plots [i](#)

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.

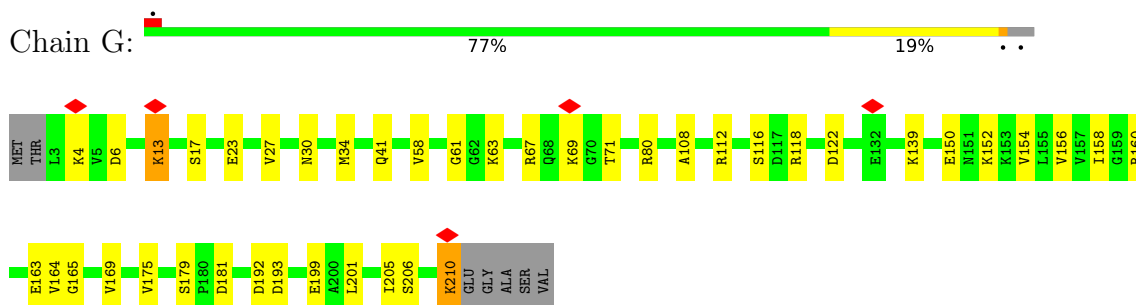
- Molecule 1: 50S ribosomal protein L2



- Molecule 2: 50S ribosomal protein L3



- Molecule 3: 50S ribosomal protein L4

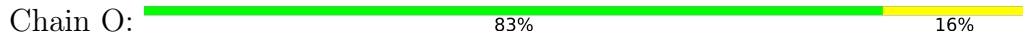


- Molecule 4: 50S ribosomal protein L5





- Molecule 9: 50S ribosomal protein L15



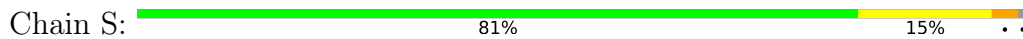
- Molecule 10: 50S ribosomal protein L17



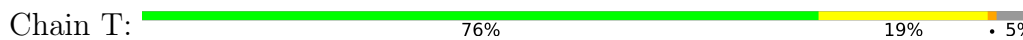
- Molecule 11: 50S ribosomal protein L18



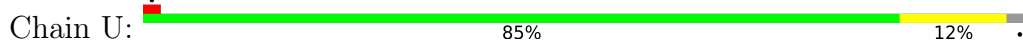
- Molecule 12: 50S ribosomal protein L19

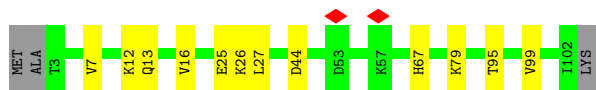


- Molecule 13: 50S ribosomal protein L20

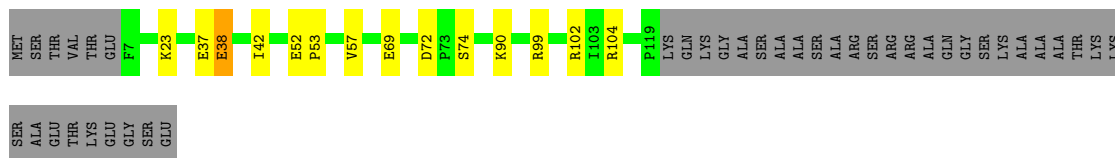


- Molecule 14: 50S ribosomal protein L21

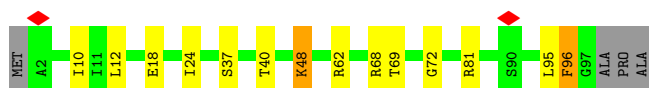
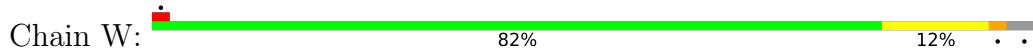




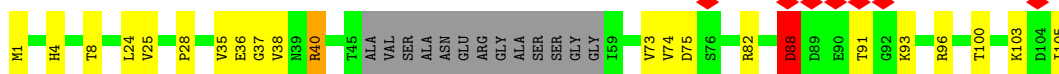
• Molecule 15: 50S ribosomal protein L22



• Molecule 16: 50S ribosomal protein L23



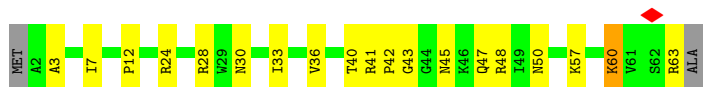
• Molecule 17: 50S ribosomal protein L24



• Molecule 18: 50S ribosomal protein L27



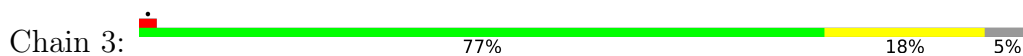
• Molecule 19: 50S ribosomal protein L28



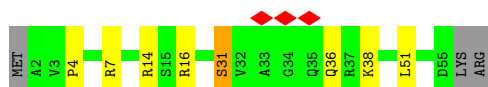
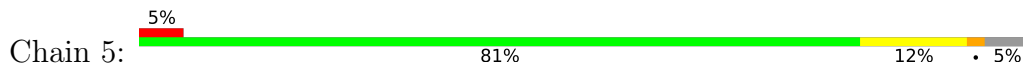
• Molecule 20: 50S ribosomal protein L29



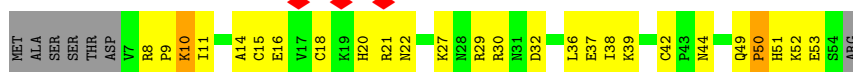
• Molecule 21: 50S ribosomal protein L30



• Molecule 22: 50S ribosomal protein L32



• Molecule 23: 50S ribosomal protein L33A



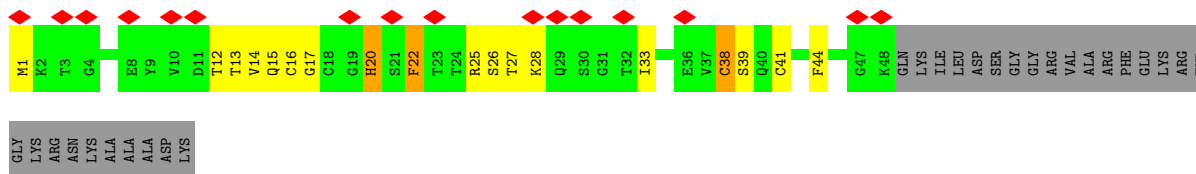
• Molecule 24: 50S ribosomal protein L34



• Molecule 25: 50S ribosomal protein L35

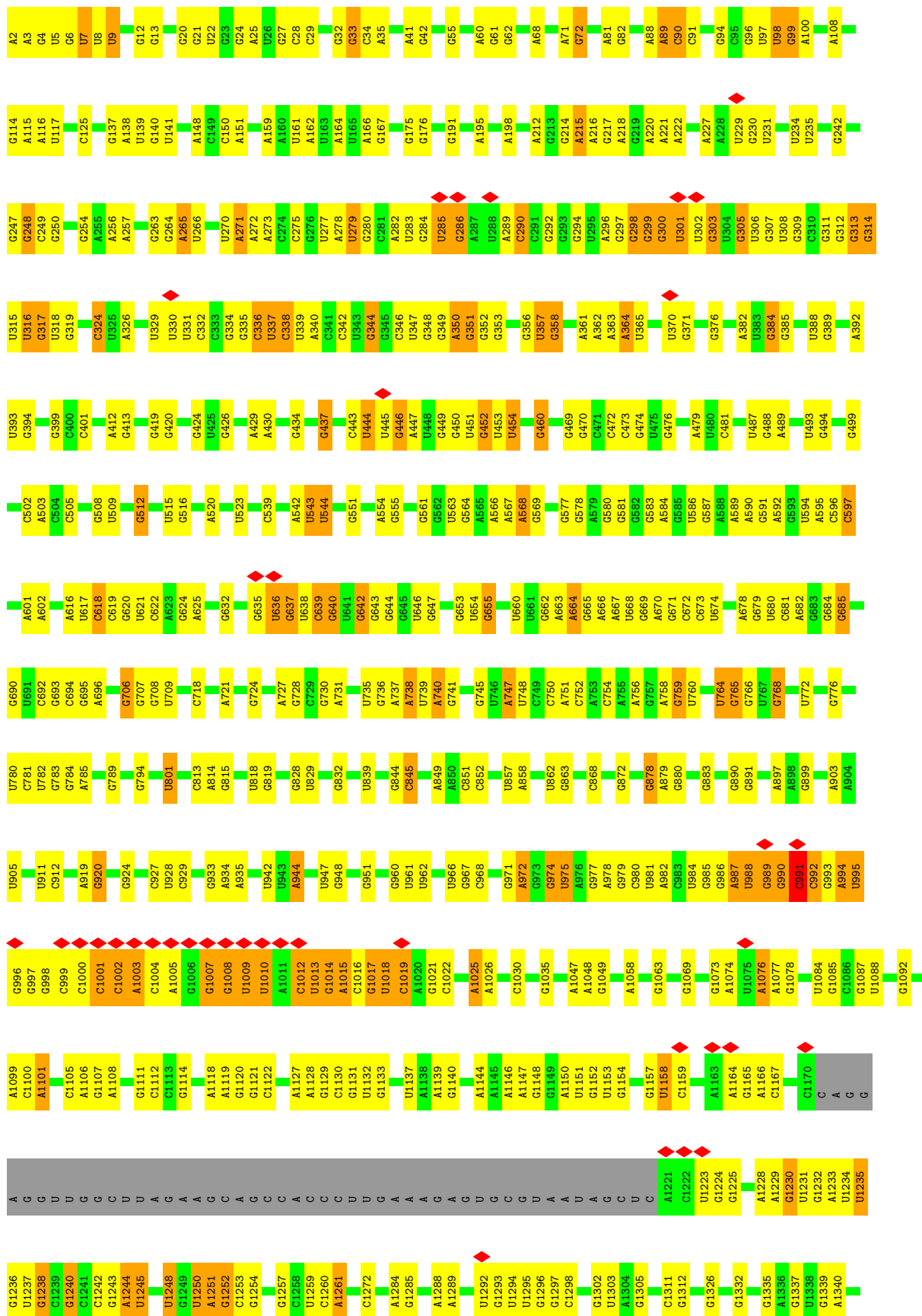


• Molecule 26: 50S ribosomal protein L31

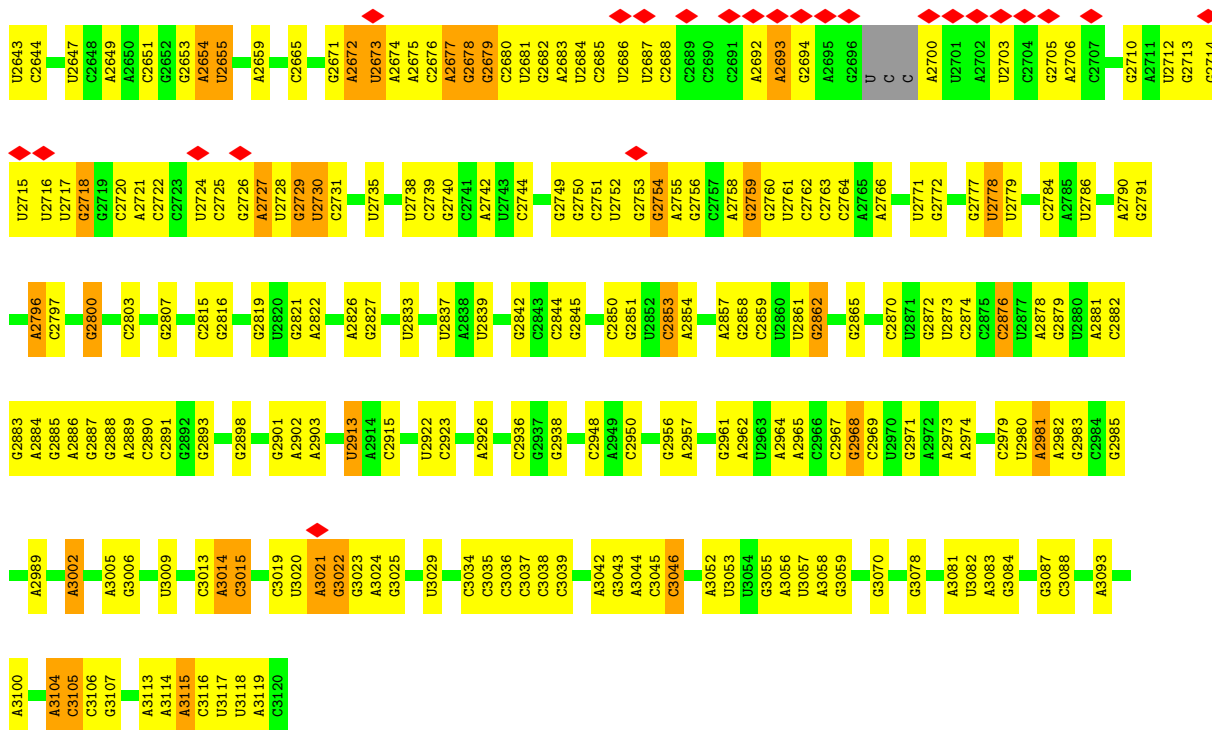


• Molecule 27: 23S rRNA

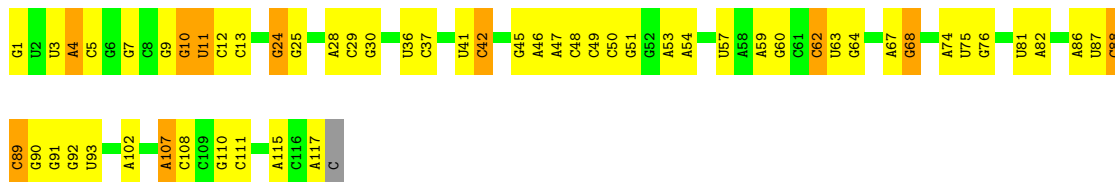




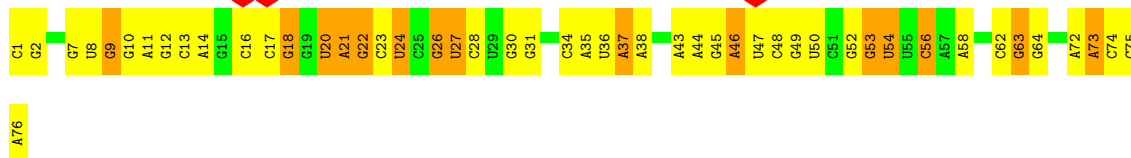
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A2552	U2464	G2224	G2093	G1840	C1610	G1550	C1465	G1348
G2553	A2465	C2244	G2094	U1854	A1611	U1551	U1467	U1349
U2554	G2466	G2236	G2095	A1855	U1612	A1552	A1468	A1352
C2555	U2467	A2237	G2096	C1705	G1613	C1553	A1469	G1353
A2556	U2468	U2238	U2097	A1859	G1614	U1554	G1470	G1359
A2557	G2469	U2239	U2098	G1860	G1615	A1555	G1471	
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A2560	U2472	A2242	G2107	U1877	C1618	C1558	G1477	
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A2573	G2504	G2259	C2144	G1892	U1630	C	G1396	
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A2598	U2529	U2285	A2212	G1950	G1676	C	A1543	
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A2600	U2531	U2287	U2216	C1957	U1678	C	C1545	
A2601	U2532	A2288	U2216	U1973	A1680	U	A1546	
A2602	U2533	C2289	U2216	C1973	U1681	C	G1547	
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A2604	U2535	G2291	U2216	U1973				
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A2609	U2540	U2296	U2216	U1973				
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A2627	U2558	G2314	U2216	U1973				
A2628	U2559	C2315	U2216	U1973				
A2629	U2560	U2316	U2216	U1973				
A2630	U2561	G2317	U2216	U1973				
A2631	U2562	C2318	U2216	U1973				
A2632	U2563	U2319	U2216	U1973				
A2633	U2564	G2320	U2216	U1973				
A2634	U2565	C2321	U2216	U1973				
A2635	U2566	U2322	U2216	U1973				
A2636	U2567	G2323	U2216	U1973				
A2637	U2568	C2324	U2216	U1973				
A2638	U2569	U2325	U2216	U1973				
A2639	U2570	G2326	U2216	U1973				
A2640	U2571	C2327	U2216	U1973				
A2641	U2572	U2328	U2216	U1973				
A2642	U2573	G2329	U2216	U1973				
A2643	U2574	C2330	U2216	U1973				
A2644	U2575	U2331	U2216	U1973				
A2645	U2576	G2332	U2216	U1973				
A2646	U2577	C2333	U2216	U1973				
A2647	U2578	U2334	U2216	U1973				
A2648	U2579	G2335	U2216	U1973				
A2649	U2580	C2336	U2216	U1973				
A2650	U2581	U2337	U2216	U1973				
A2651	U2582	G2338	U2216	U1973				
A2652	U2583	C2339	U2216	U1973				
A2653	U2584	U2340	U2216	U1973				
A2654	U2585	G2341	U2216	U1973				
A2655	U2586	C2342	U2216	U1973				
A2656	U2587	U2343	U2216	U1973				
A2657	U2588	G2344	U2216	U1973				
A2658	U2589	C2345	U2216	U1973				
A2659	U2590	U2346	U2216	U1973				
A2660	U2591	G2347	U2216	U1973				
A2661	U2592	C2348	U2216	U1973				
A2662	U2593	U2349	U2216	U1973				
A2663	U2594	G2350	U2216	U1973				
A2664	U2595	C2351	U2216	U1973				
A2665	U2596	U2352	U2216	U1973				
A2666	U2597	G2353	U2216	U1973				
A2667	U2598	C2354	U2216	U1973				
A2668	U2599	U2355	U2216	U1973				
A2669	U2600	G2356	U2216	U1973				
A2670	U2601	C2357	U2216	U1973				
A2671	U2602	U2358	U2216	U1973				
A2672	U2603	G2359	U2216	U1973				
A2673	U2604	C2360	U2216	U1973				
A2674	U2605	U2361	U2216	U1973				
A2675	U2606	G2362	U2216	U1973				
A2676	U2607	C2363	U2216	U1973				
A2677	U2608	U2364	U2216	U1973				
A2678	U2609	G2365	U2216	U1973				
A2679	U2610	C2366	U2216	U1973				
A2680	U2611	U2367	U2216	U1973				
A2681	U2612	G2368	U2216	U1973				
A2682	U2613	C2369	U2216	U1973				
A2683	U2614	U2370	U2216	U1973				
A2684	U2615	G2371	U2216	U1973				
A2685	U2616	C2372	U2216	U1973				
A2686	U2617	U2373	U2216	U1973				
A2687	U2618	G2374	U2216	U1973				
A2688	U2619	C2375	U2216	U1973				
A2689	U2620	U2376	U2216	U1973				
A2690	U2621	G2377	U2216	U1973				
A2691	U2622	C2378	U2216	U1973				
A2692	U2623	U2379	U2216	U1973				
A2693	U2624	G2380	U2216	U1973				
A2694	U2625	C2381	U2216	U1973				
A2695	U2626	U2382	U2216	U1973				
A2696	U2627	G2383	U2216	U1973				
A2697	U2628	C2384	U2216	U1973				
A2698	U2629	U2385	U2216	U1973				
A2699	U2630	G2386	U2216	U1973				
A2700	U2631	C2387	U2216	U1973				
A2701	U2632	U2388	U2216	U1973				
A2702	U2633	G2389	U2216	U1973				
A2703	U2634	C2390	U2216	U1973				
A2704	U2635	U2391	U2216	U1973				
A2705	U2636	G2392	U2216	U1973				
A2706	U2637	C2393	U2216	U1973				
A2707	U2638	U2394	U2216	U1973				
A2708	U2639	G2395	U2216	U1973				
A2709	U2640	C2396	U2216	U1973				
A2710	U2641	U2397	U2216	U1973				
A2711	U2642	G2398	U2216	U1973				
A2712	U2643	C2399	U2216	U1973				
A2713	U2644	U2399	U2216	U1973				
A2714	U2645	G2400	U2216	U1973				
A2715	U2646	C2401	U2216	U1973				
A2716	U2647	U2402	U2216	U1973				



• Molecule 28: 5S rRNA



• Molecule 29: E-tRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	44299	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	NONE; CTF correction in Relion	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	0.218	Depositor
Minimum map value	-0.037	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	0.40	0/2153	0.59	0/2895
2	F	0.39	0/1584	0.59	0/2130
3	G	0.40	0/1585	0.60	0/2143
4	H	0.31	0/1450	0.59	0/1951
5	I	0.30	0/1281	0.62	0/1733
6	J	0.47	0/311	0.69	0/419
7	M	0.38	0/1157	0.52	0/1567
8	N	0.39	0/946	0.59	0/1268
9	O	0.36	0/1091	0.55	0/1457
10	Q	0.37	0/936	0.57	0/1256
11	R	0.36	0/961	0.71	1/1291 (0.1%)
12	S	0.41	0/913	0.61	0/1226
13	T	0.40	0/994	0.61	0/1333
14	U	0.41	0/764	0.53	0/1030
15	V	0.38	0/878	0.60	0/1192
16	W	0.38	0/761	0.56	0/1023
17	X	0.36	0/712	0.63	1/952 (0.1%)
18	Z	0.40	0/583	0.59	0/782
19	1	0.39	0/473	0.65	0/634
20	2	0.36	0/530	0.68	0/708
21	3	0.39	0/473	0.63	0/635
22	5	0.30	0/427	0.64	0/572
23	6	0.42	0/405	0.83	1/542 (0.2%)
24	7	0.38	0/380	0.71	0/500
25	8	0.30	0/507	0.61	0/672
26	4	0.35	0/372	0.58	0/503
27	A	0.65	0/72677	0.83	31/113395 (0.0%)
28	B	0.58	2/2799 (0.1%)	0.96	14/4362 (0.3%)
29	C	0.41	1/1812 (0.1%)	0.86	3/2821 (0.1%)
All	All	0.59	3/99915 (0.0%)	0.79	51/150992 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
29	C	1	C	OP3-P	-10.71	1.48	1.61
28	B	88	C	N3-C4	-8.56	1.27	1.33
28	B	88	C	C2-N3	-5.64	1.31	1.35

The worst 5 of 51 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	B	88	C	C2-N3-C4	12.35	126.07	119.90
28	B	88	C	N1-C2-O2	11.79	125.97	118.90
23	6	50	PRO	CA-N-CD	-9.27	98.52	111.50
28	B	62	C	N3-C2-O2	-8.99	115.61	121.90
28	B	88	C	N3-C4-N4	8.35	123.85	118.00

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	26	0
2	F	1563	0	1608	30	0
3	G	1562	0	1600	28	0
4	H	1428	0	1457	58	0
5	I	1260	0	1300	63	0
6	J	308	0	323	14	0
7	M	1130	0	1167	18	0
8	N	938	0	1000	9	0
9	O	1078	0	1151	14	0
10	Q	919	0	959	15	0
11	R	951	0	986	36	0
12	S	899	0	926	12	0
13	T	982	0	1033	17	0
14	U	754	0	802	9	0
15	V	864	0	903	10	0
16	W	751	0	797	10	0
17	X	706	0	757	15	0
18	Z	574	0	591	11	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	1	465	0	479	16	0
20	2	527	0	538	11	0
21	3	470	0	497	8	0
22	5	423	0	463	9	0
23	6	397	0	407	14	0
24	7	377	0	411	5	0
25	8	502	0	541	8	0
26	4	364	0	352	12	0
27	A	64906	0	32656	870	0
28	B	2502	0	1274	40	0
29	C	1622	0	825	30	0
All	All	91332	0	57968	1313	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 1313 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	1.55	1.04
27:A:1550:G:H1	27:A:1620:U:H3	1.04	1.04
27:A:2086:U:H3	27:A:2096:G:H1	1.01	0.97
27:A:1754:G:H1	27:A:1759:A:H61	1.13	0.97
27:A:2971:G:N2	27:A:2981:A:H62	1.61	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%)	267 (98%)	6 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	F	205/217 (94%)	200 (98%)	5 (2%)	0	100	100
3	G	206/215 (96%)	199 (97%)	7 (3%)	0	100	100
4	H	178/187 (95%)	173 (97%)	5 (3%)	0	100	100
5	I	163/179 (91%)	159 (98%)	4 (2%)	0	100	100
6	J	39/151 (26%)	37 (95%)	2 (5%)	0	100	100
7	M	144/147 (98%)	143 (99%)	1 (1%)	0	100	100
8	N	120/122 (98%)	117 (98%)	3 (2%)	0	100	100
9	O	143/147 (97%)	133 (93%)	10 (7%)	0	100	100
10	Q	115/199 (58%)	112 (97%)	3 (3%)	0	100	100
11	R	123/127 (97%)	122 (99%)	1 (1%)	0	100	100
12	S	110/113 (97%)	104 (94%)	6 (6%)	0	100	100
13	T	121/129 (94%)	120 (99%)	1 (1%)	0	100	100
14	U	98/103 (95%)	96 (98%)	2 (2%)	0	100	100
15	V	111/153 (72%)	109 (98%)	2 (2%)	0	100	100
16	W	94/100 (94%)	93 (99%)	1 (1%)	0	100	100
17	X	88/105 (84%)	86 (98%)	2 (2%)	0	100	100
18	Z	75/88 (85%)	71 (95%)	4 (5%)	0	100	100
19	1	60/64 (94%)	56 (93%)	4 (7%)	0	100	100
20	2	61/77 (79%)	59 (97%)	2 (3%)	0	100	100
21	3	56/61 (92%)	54 (96%)	2 (4%)	0	100	100
22	5	52/57 (91%)	52 (100%)	0	0	100	100
23	6	46/55 (84%)	43 (94%)	3 (6%)	0	100	100
24	7	44/47 (94%)	44 (100%)	0	0	100	100
25	8	61/64 (95%)	60 (98%)	1 (2%)	0	100	100
26	4	46/75 (61%)	45 (98%)	1 (2%)	0	100	100
All	All	2832/3260 (87%)	2754 (97%)	78 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	85
2	F	159/163 (98%)	150 (94%)	9 (6%)	20	53
3	G	168/173 (97%)	162 (96%)	6 (4%)	35	66
4	H	149/156 (96%)	136 (91%)	13 (9%)	10	38
5	I	139/150 (93%)	130 (94%)	9 (6%)	17	50
6	J	31/116 (27%)	25 (81%)	6 (19%)	1	7
7	M	119/120 (99%)	118 (99%)	1 (1%)	81	91
8	N	100/100 (100%)	98 (98%)	2 (2%)	55	79
9	O	112/114 (98%)	109 (97%)	3 (3%)	44	73
10	Q	96/158 (61%)	94 (98%)	2 (2%)	53	79
11	R	93/94 (99%)	91 (98%)	2 (2%)	52	78
12	S	99/100 (99%)	94 (95%)	5 (5%)	24	57
13	T	96/99 (97%)	94 (98%)	2 (2%)	53	79
14	U	81/83 (98%)	80 (99%)	1 (1%)	71	87
15	V	89/117 (76%)	87 (98%)	2 (2%)	52	78
16	W	83/85 (98%)	80 (96%)	3 (4%)	35	66
17	X	79/86 (92%)	76 (96%)	3 (4%)	33	65
18	Z	56/63 (89%)	53 (95%)	3 (5%)	22	55
19	1	50/51 (98%)	49 (98%)	1 (2%)	55	79
20	2	58/66 (88%)	53 (91%)	5 (9%)	10	38
21	3	52/54 (96%)	52 (100%)	0	100	100
22	5	43/46 (94%)	42 (98%)	1 (2%)	50	77
23	6	46/52 (88%)	39 (85%)	7 (15%)	3	17
24	7	35/36 (97%)	32 (91%)	3 (9%)	10	38
25	8	53/54 (98%)	50 (94%)	3 (6%)	20	53
26	4	43/63 (68%)	37 (86%)	6 (14%)	3	19
All	All	2344/2617 (90%)	2243 (96%)	101 (4%)	33	62

5 of 101 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
12	S	15	ASP
17	X	96	ARG
26	4	41	CYS
12	S	93	ARG
15	V	99	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
12	S	2	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
27	A	3018/3119 (96%)	553 (18%)	15 (0%)
28	B	116/118 (98%)	17 (14%)	1 (0%)
29	C	75/76 (98%)	29 (38%)	3 (4%)
All	All	3209/3313 (96%)	599 (18%)	19 (0%)

5 of 599 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
27	A	7	U
27	A	9	U
27	A	12	G
27	A	20	G
27	A	29	C

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
27	A	2729	G
29	C	20	U
29	C	53	G
29	C	17	C
27	A	1002	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.

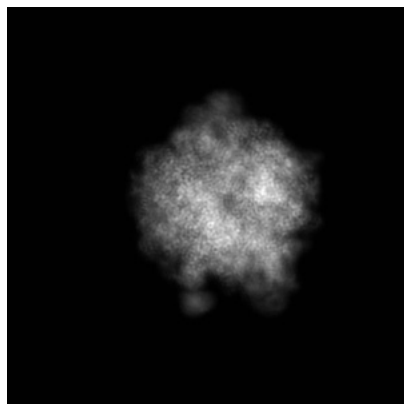
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-37563. These allow visual inspection of the internal detail of the map and identification of artifacts.

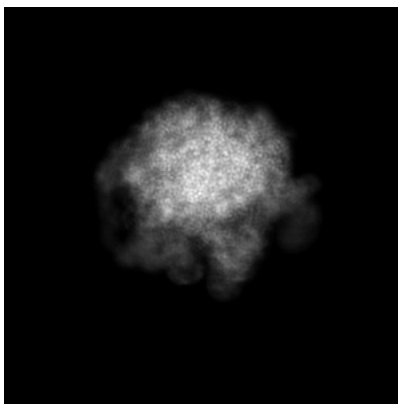
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

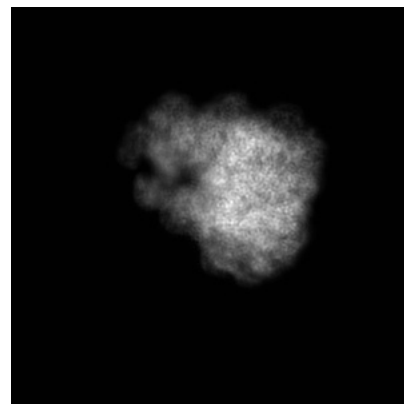
6.1.1 Primary map



X

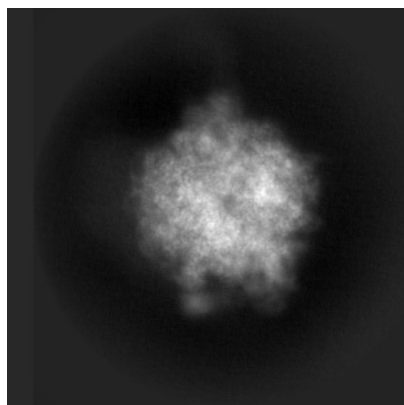


Y

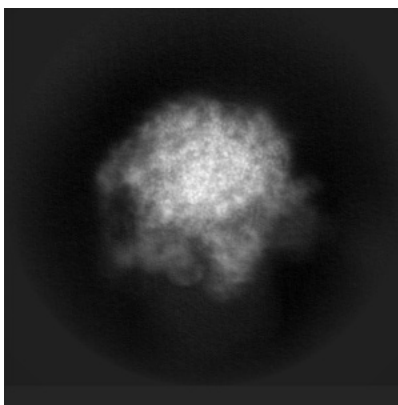


Z

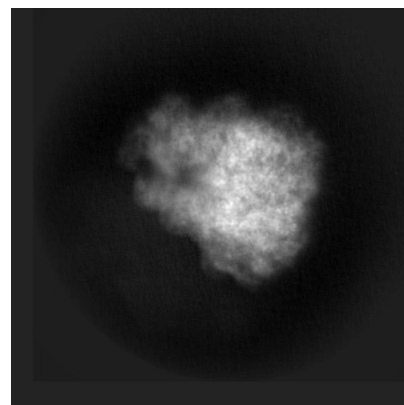
6.1.2 Raw map



X



Y

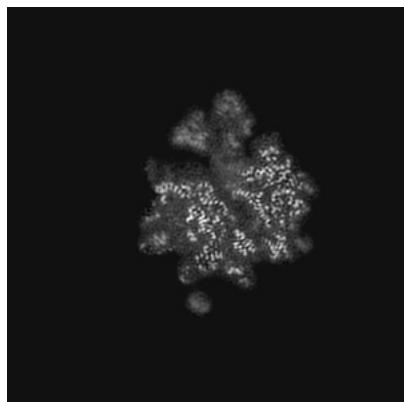


Z

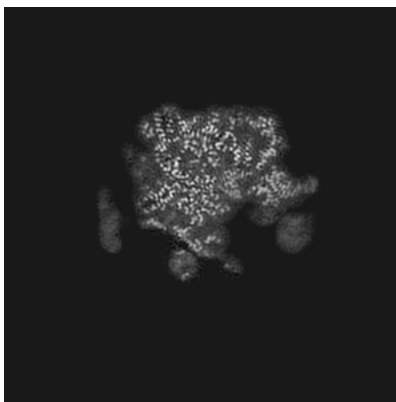
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

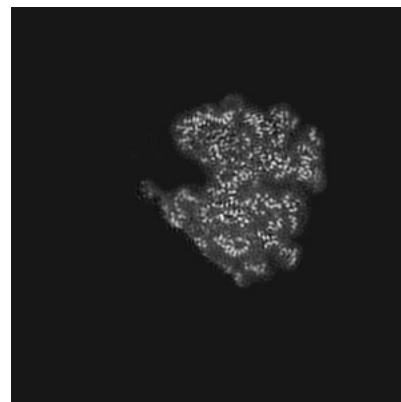
6.2.1 Primary map



X Index: 190

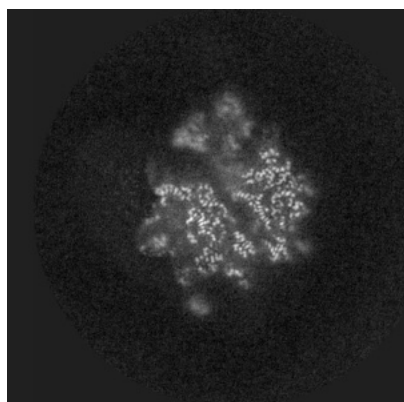


Y Index: 190

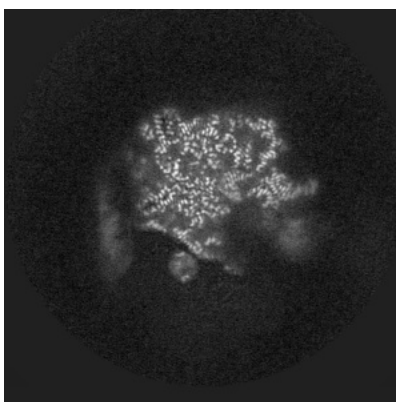


Z Index: 190

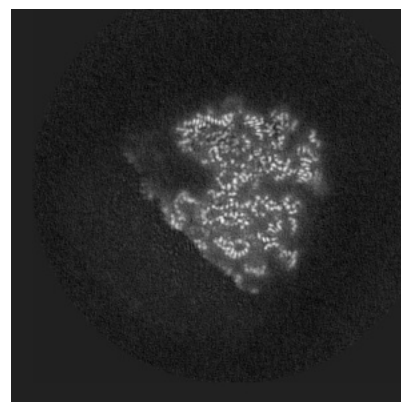
6.2.2 Raw map



X Index: 190



Y Index: 190

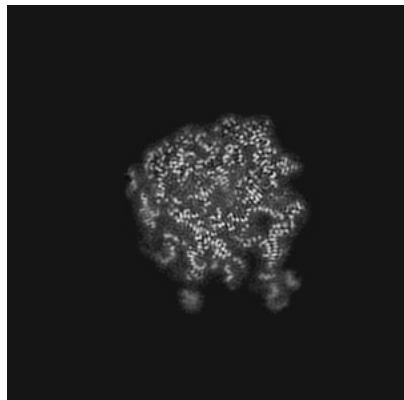


Z Index: 190

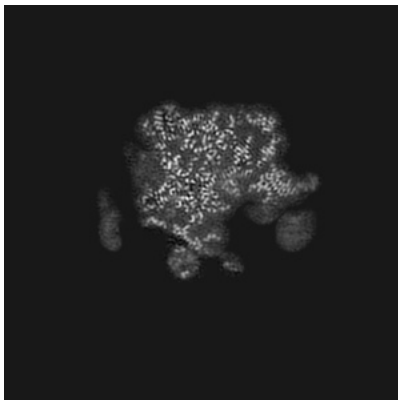
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

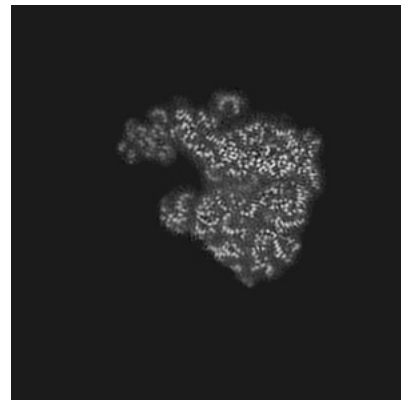
6.3.1 Primary map



X Index: 230

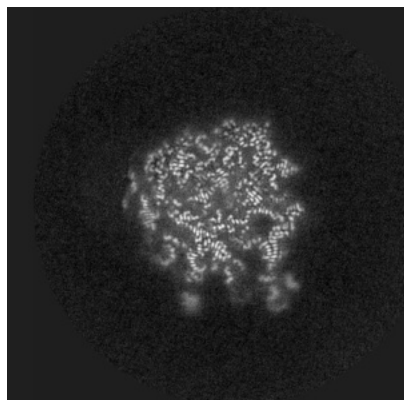


Y Index: 191

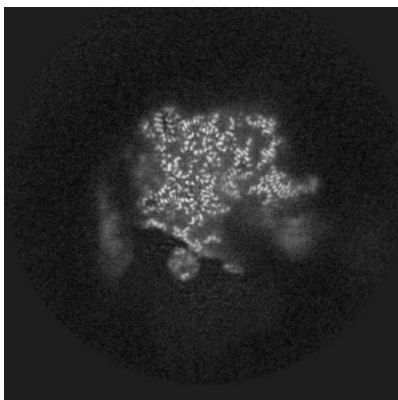


Z Index: 200

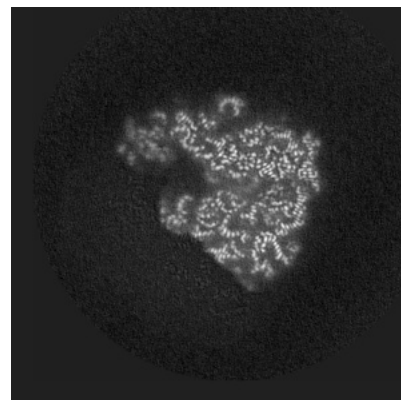
6.3.2 Raw map



X Index: 230



Y Index: 191

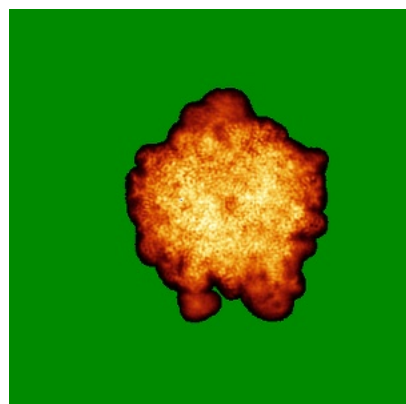


Z Index: 199

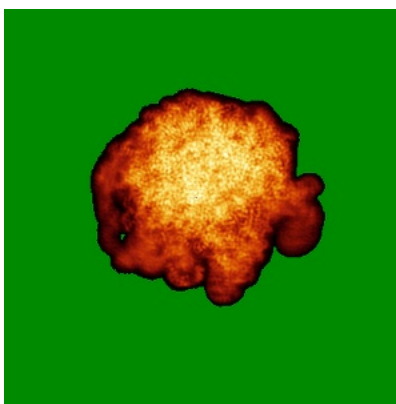
The images above show the largest variance slices of the map in three orthogonal directions.

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

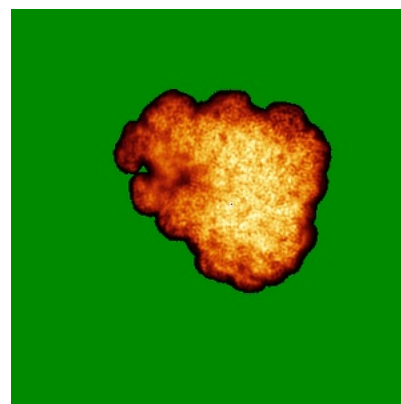
6.4.1 Primary map



X

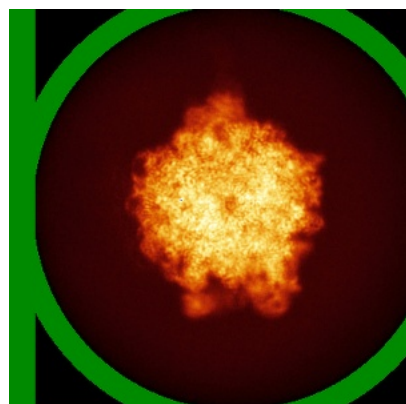


Y



Z

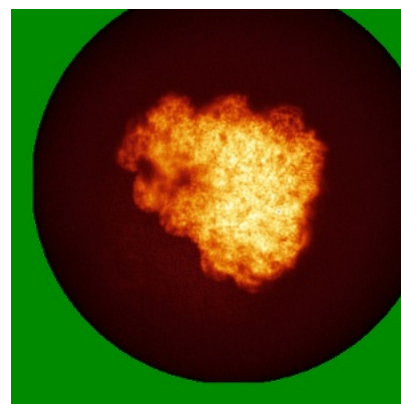
6.4.2 Raw map



X



Y

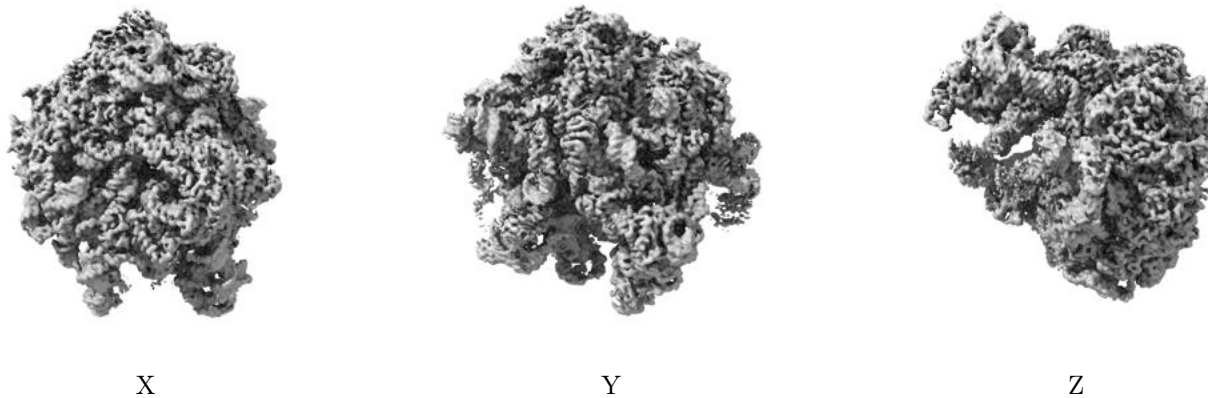


Z

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.

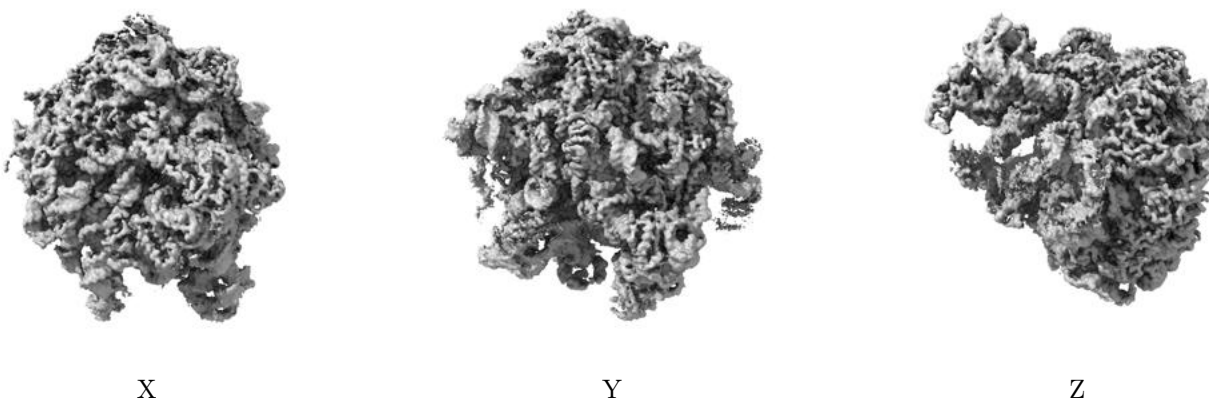
6.5 Orthogonal surface views [i](#)

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.

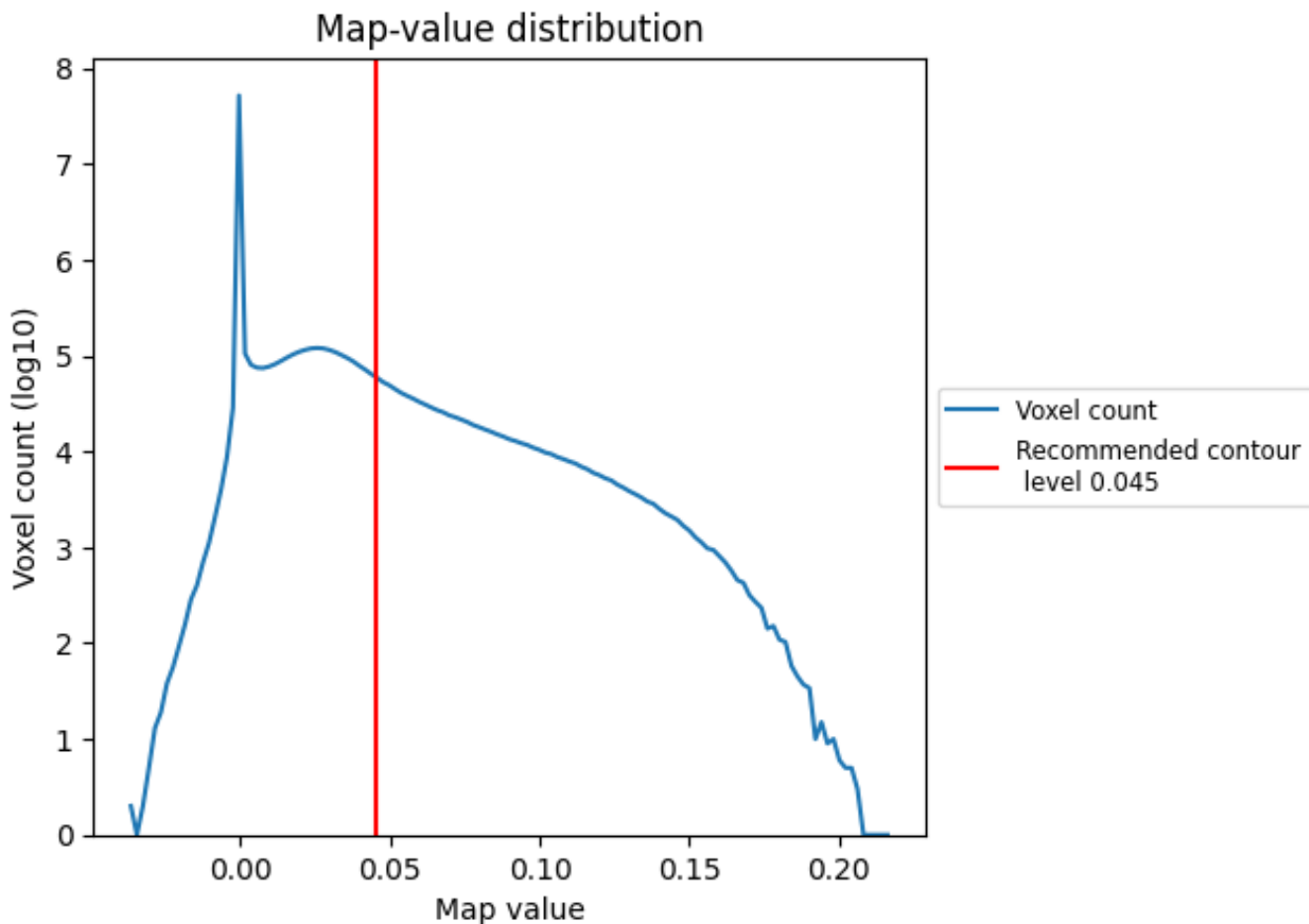
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

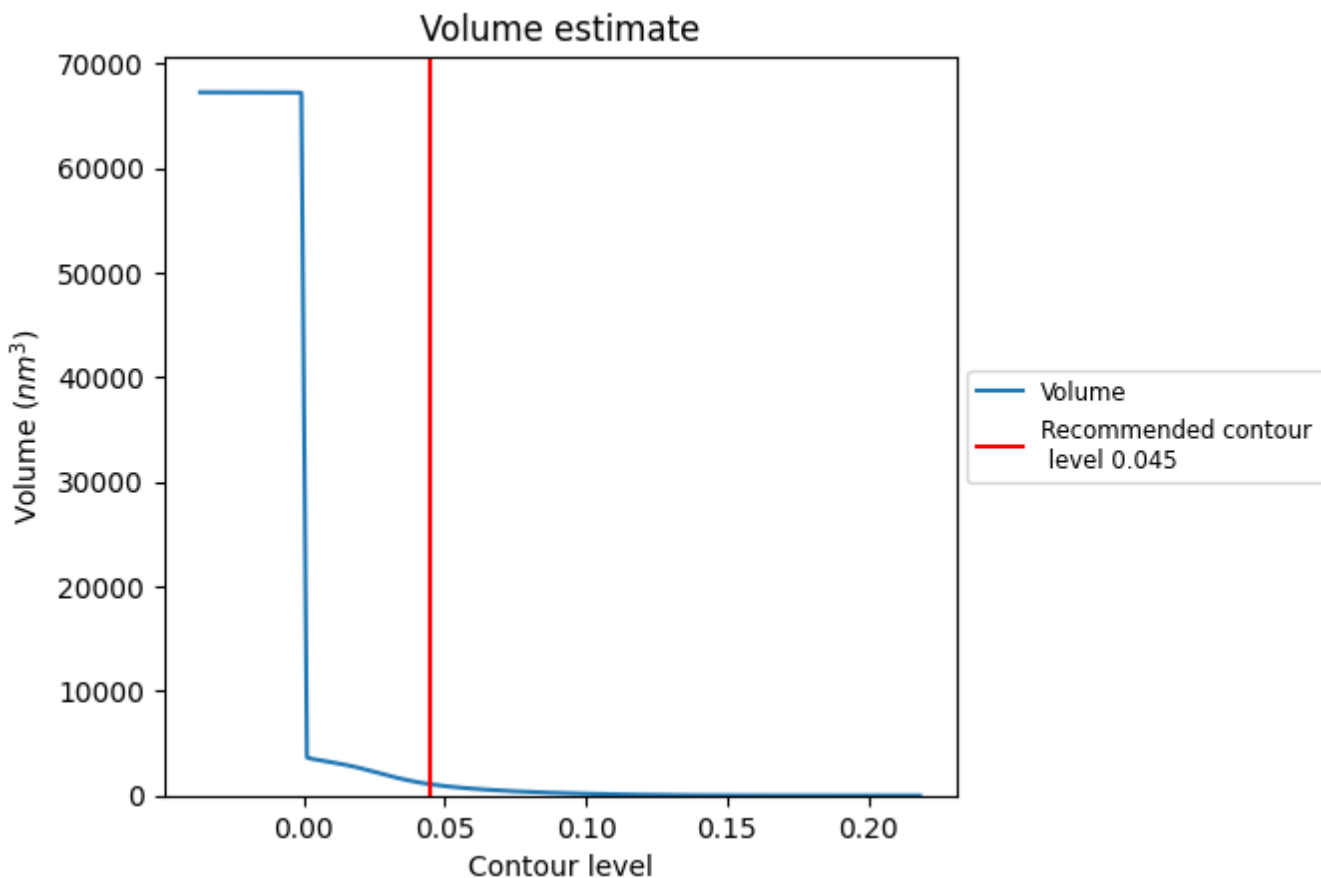
This section contains the results of statistical analysis of the map.

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.

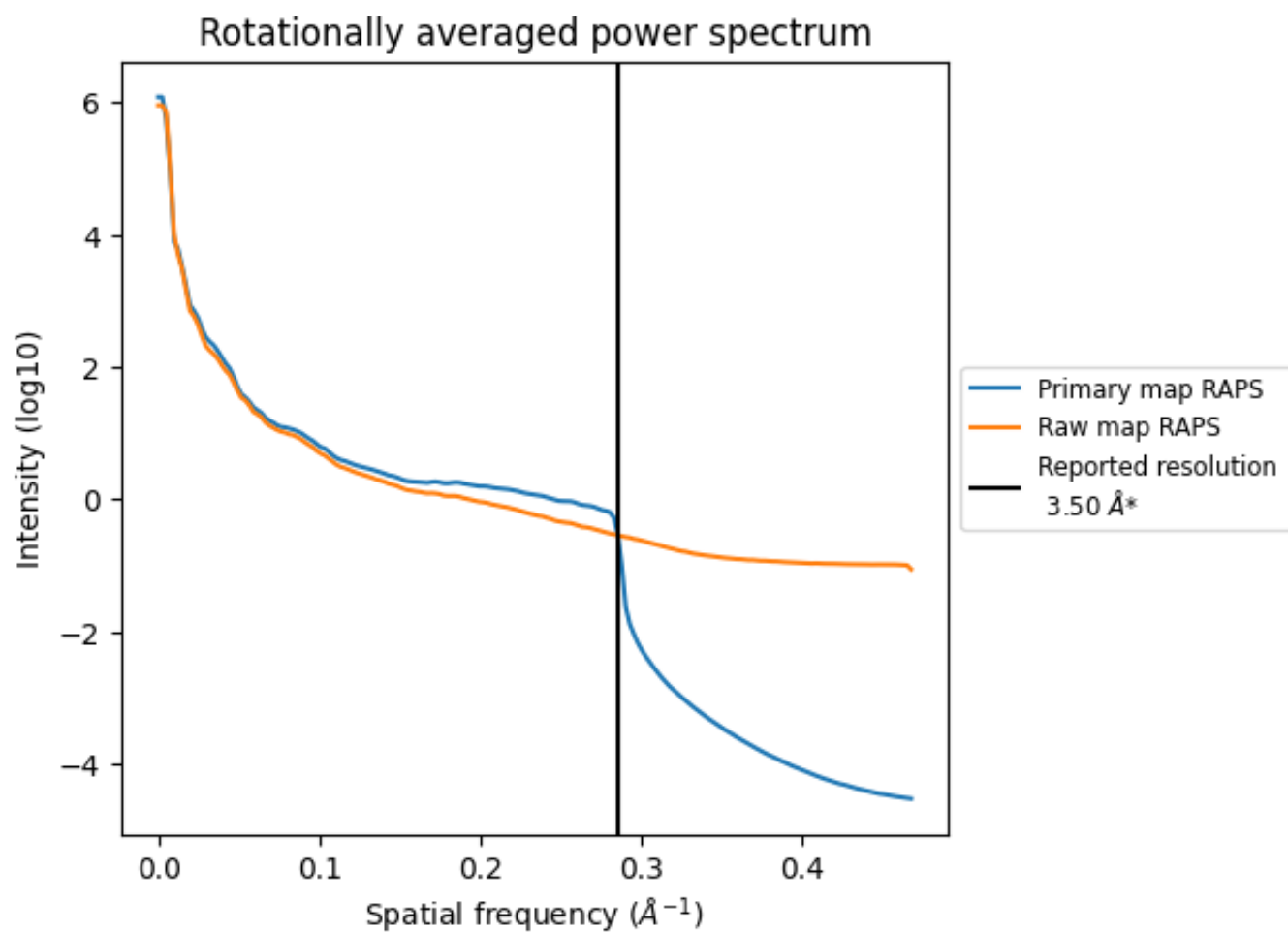
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1077 nm^3 ; this corresponds to an approximate mass of 973 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum i

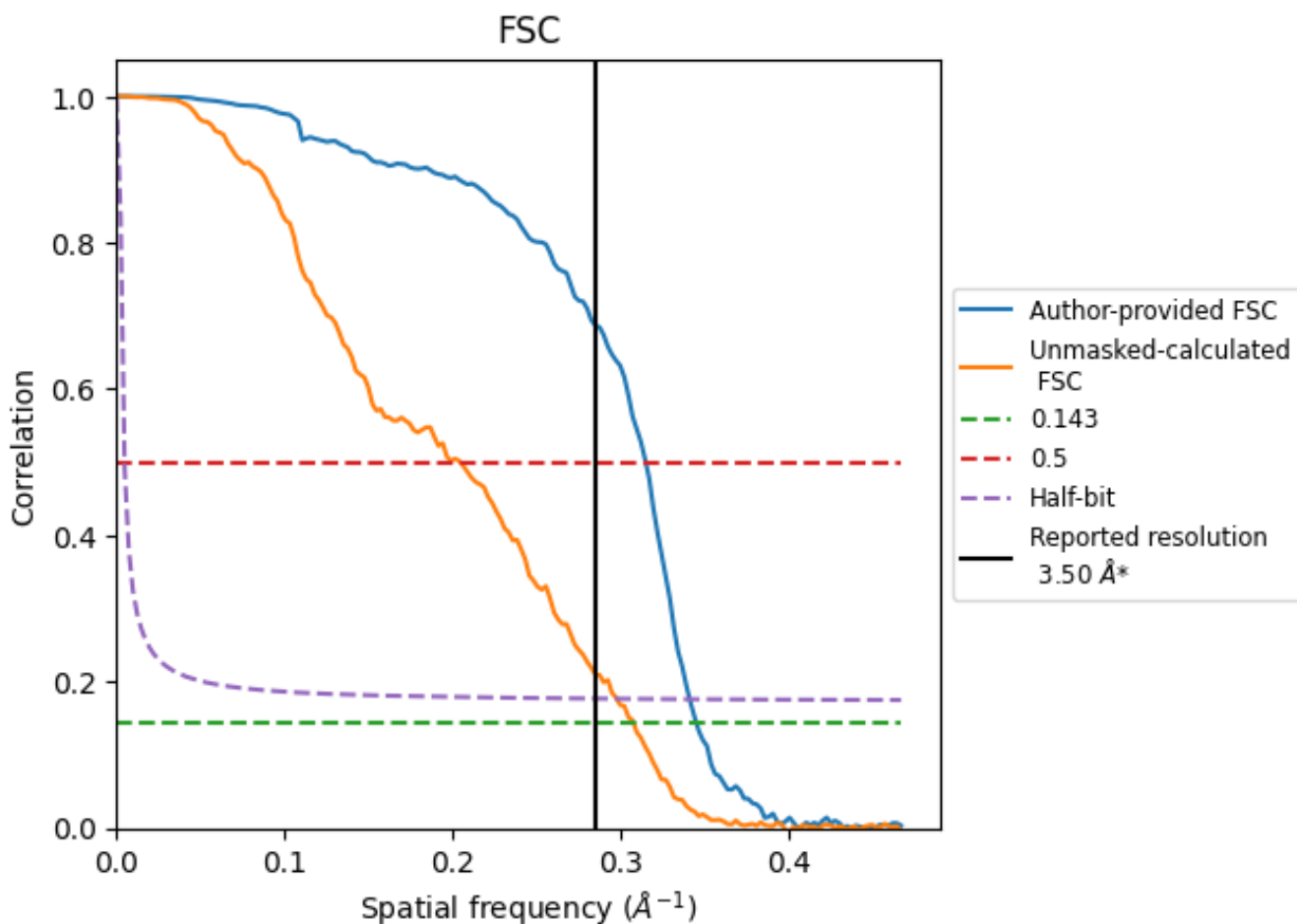


*Reported resolution corresponds to spatial frequency of 0.286 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 0.286 Å⁻¹

8.2 Resolution estimates [i](#)

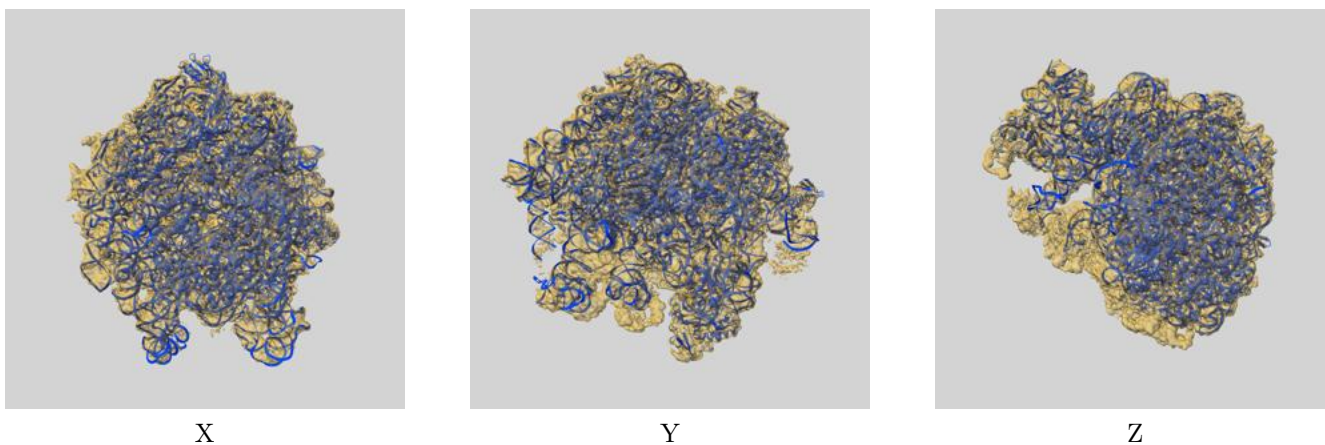
Resolution estimate (Å)	Estimation criterion (FSC cut-off)			
	0.143	0.5	Half-bit	Other
Reported by author	-	-	-	3.50
Author-provided FSC curve	2.90	3.17	2.93	-
Unmasked-calculated*	3.25	4.89	3.36	-

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

9 Map-model fit [i](#)

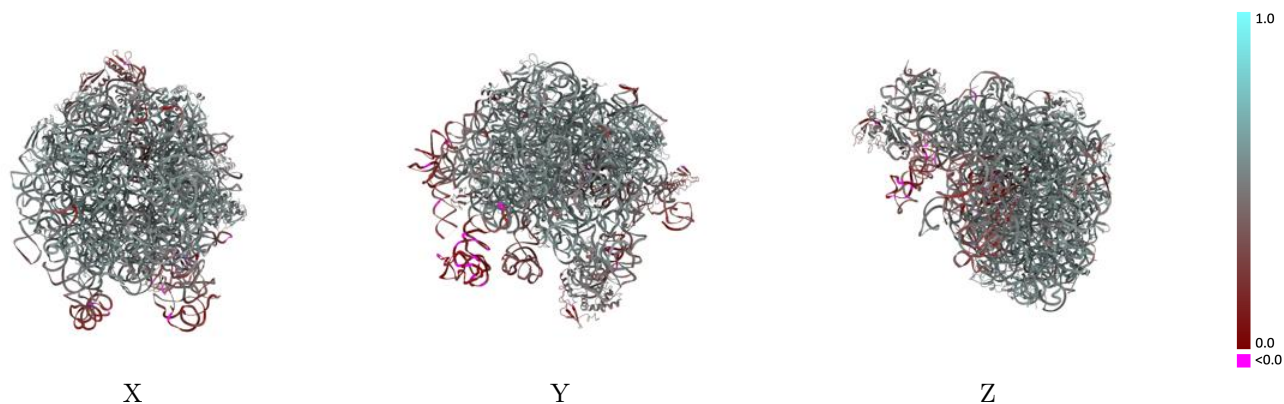
This section contains information regarding the fit between EMDB map EMD-37563 and PDB model 8WIC. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



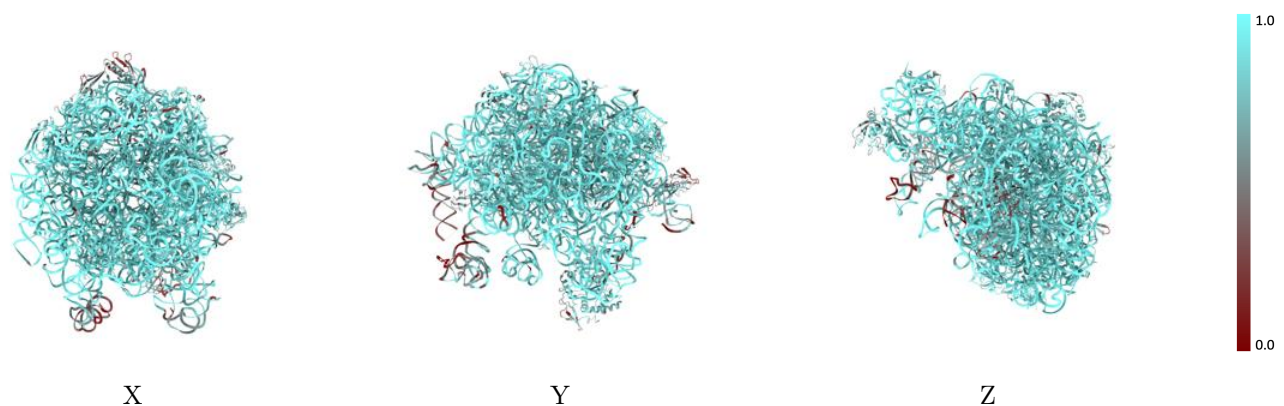
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



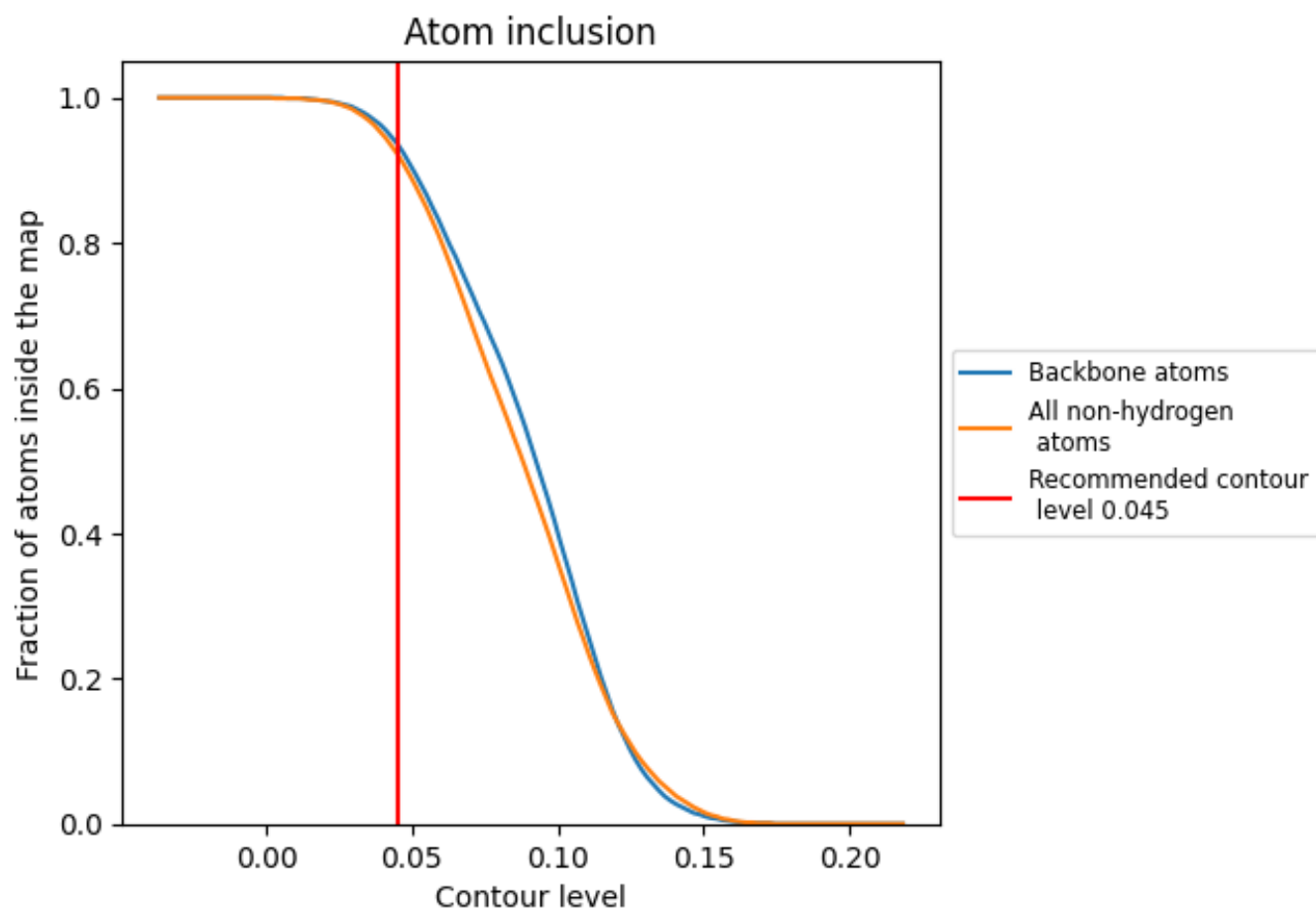
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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, 94% 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	 0.9220	 0.4790
1	 0.9330	 0.5030
2	 0.8750	 0.5020
3	 0.9080	 0.5350
4	 0.5750	 0.2580
5	 0.8580	 0.5330
6	 0.8320	 0.4410
7	 0.9940	 0.5520
8	 0.9540	 0.5470
A	 0.9350	 0.4760
B	 0.9700	 0.4650
C	 0.8740	 0.2920
E	 0.9700	 0.5510
F	 0.9260	 0.5370
G	 0.8770	 0.5180
H	 0.8110	 0.4510
I	 0.5250	 0.2920
J	 0.6430	 0.3650
M	 0.9310	 0.5380
N	 0.9420	 0.5390
O	 0.9030	 0.5340
Q	 0.9620	 0.5480
R	 0.8480	 0.4800
S	 0.9210	 0.5280
T	 0.9510	 0.5440
U	 0.8850	 0.5530
V	 0.9540	 0.5450
W	 0.9060	 0.5270
X	 0.8140	 0.4930
Z	 0.9370	 0.5390

