



Full wwPDB EM Validation Report ⓘ

Nov 13, 2024 – 07:11 PM EST

PDB ID : 7TTU
EMDB ID : EMD-26124
Title : 50S ribosomal subunit from Staphylococcus aureus (Strain ATCC43300)
Authors : Belousoff, M.J.; Piper, S.; Johnson, R.
Deposited on : 2022-02-01
Resolution : 3.00 Å (reported)

This is a Full wwPDB EM Validation 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:

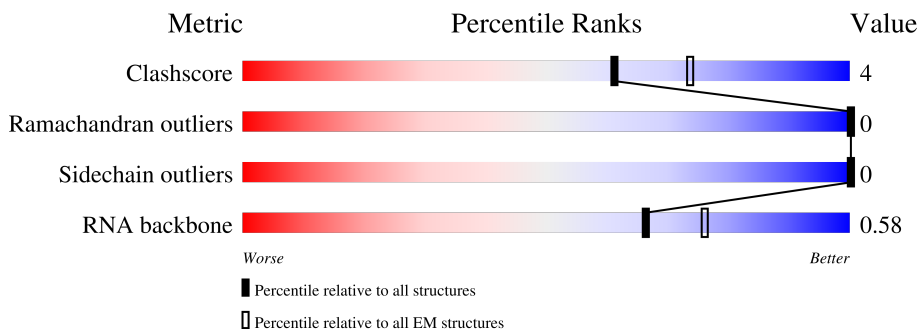
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 3.00 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.











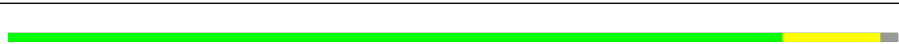

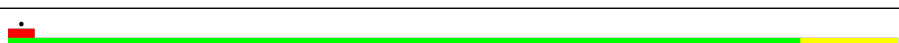


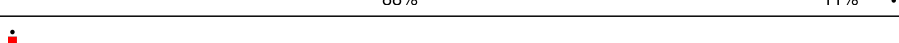
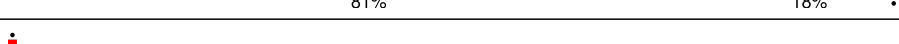
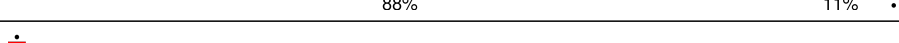
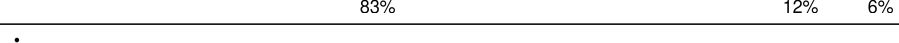

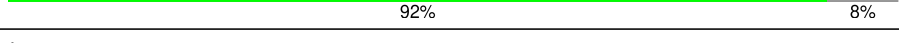

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	A	116	
2	B	277	
3	C	118	
4	D	102	
5	E	117	
6	F	87	
7	G	105	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	H	217	
9	I	94	
10	J	61	
11	K	73	
12	L	220	
13	M	59	
14	N	57	
15	O	49	
16	P	45	
17	Q	65	
18	R	37	
19	S	207	
20	V	145	
21	W	122	
22	X	146	
23	Y	144	
24	Z	122	
25	a	119	
26	1	2923	
27	2	115	

2 Entry composition [i](#)

There are 27 unique types of molecules in this entry. The entry contains 80724 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 L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	A	113	915	576	184	155	0	0

- Molecule 2 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	273	2085	1297	413	370	5	0	0

- Molecule 3 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	116	943	593	189	157	4	0	0

- Molecule 4 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	100	785	499	139	146	1	0	0

- Molecule 5 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	111	853	532	163	155	3	0	0

- Molecule 6 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	87	711	447	128	132	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	87	ASP	ILE	conflict	UNP W8TUB4

- Molecule 7 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	90	698	442	128	127	1	0	0

- Molecule 8 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	93	727	465	129	132	1	0	0

- Molecule 9 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	I	78	597	367	116	114	0	0

- Molecule 10 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	59	463	287	99	76	1	0	0

- Molecule 11 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	61	503	310	95	97	1	0	0

- Molecule 12 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	215	1628	1018	299	306	5	0	0

- Molecule 13 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	M	56	Total	C	N	O	0	0
			432	269	82	81		

- Molecule 14 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	50	Total	C	N	O	S	0	0
			397	241	83	68	5		

- Molecule 15 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	47	Total	C	N	O	S	0	0
			390	233	79	73	5		

- Molecule 16 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	44	Total	C	N	O	S	0	0
			372	228	90	53	1		

- Molecule 17 is a protein called 50S ribosomal protein L35.

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

- Molecule 18 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	37	Total	C	N	O	S	0	0
			296	186	60	45	5		

- Molecule 19 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	192	Total	C	N	O	S	0	0
			1472	924	271	275	2		

- Molecule 20 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	V	143	1138	710	209	217	2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	W	121	911	566	173	168	4	0	0

- Molecule 22 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	X	144	1082	669	213	200	0	0

- Molecule 23 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Y	136	1089	698	206	181	4	0	0

- Molecule 24 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	Z	121	955	586	183	185	1	0	0

- Molecule 25 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
25	a	110	857	536	165	156	0	0

- Molecule 26 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
26	1	2684	57543	25704	10562	18603	2674	0	0

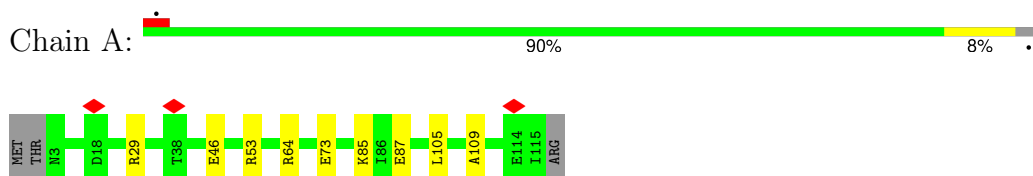
- Molecule 27 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
27	2	111	2361	1057	423	771	110	0	0

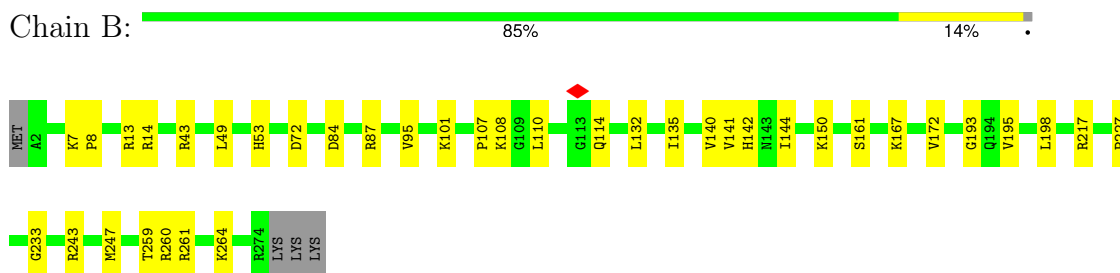
3 Residue-property plots [i](#)

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.

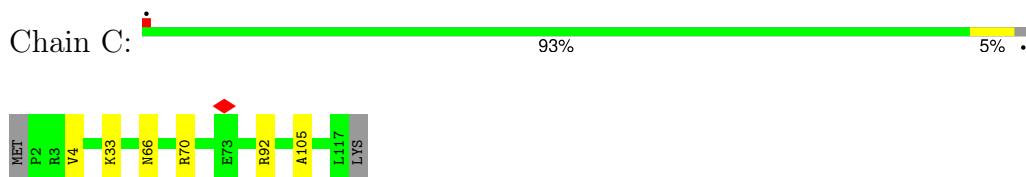
- Molecule 1: 50S ribosomal protein L19



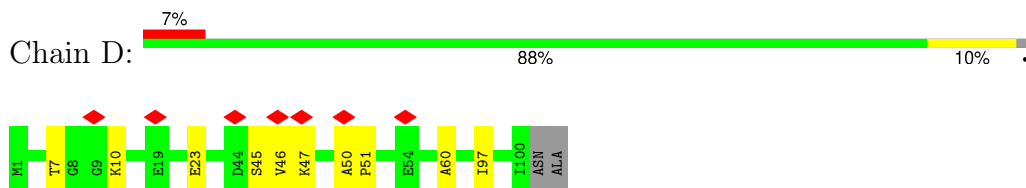
- Molecule 2: 50S ribosomal protein L2



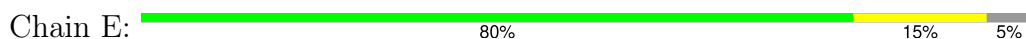
- Molecule 3: 50S ribosomal protein L20

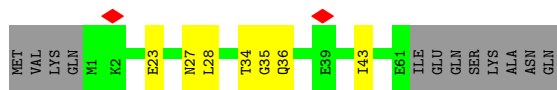


- Molecule 4: 50S ribosomal protein L21

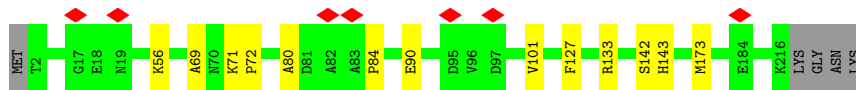


- Molecule 5: 50S ribosomal protein L22

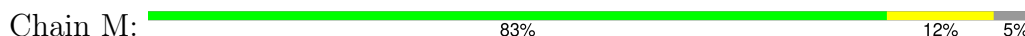




• Molecule 12: 50S ribosomal protein L3



• Molecule 13: 50S ribosomal protein L30



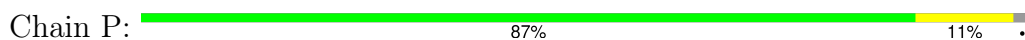
• Molecule 14: 50S ribosomal protein L32



• Molecule 15: 50S ribosomal protein L33



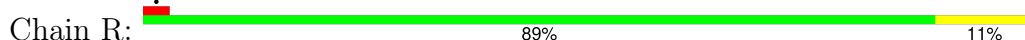
• Molecule 16: 50S ribosomal protein L34



• Molecule 17: 50S ribosomal protein L35

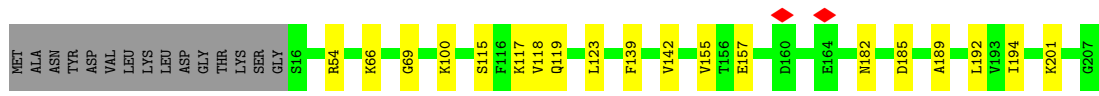
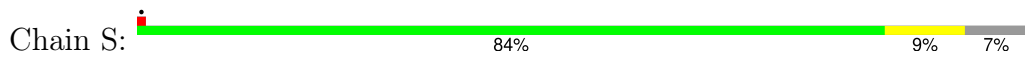


• Molecule 18: 50S ribosomal protein L36

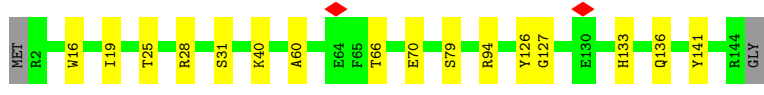
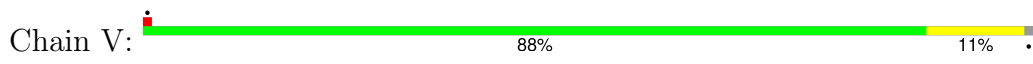




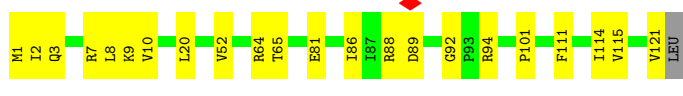
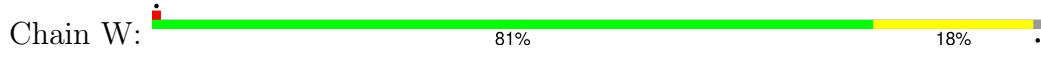
• Molecule 19: 50S ribosomal protein L4



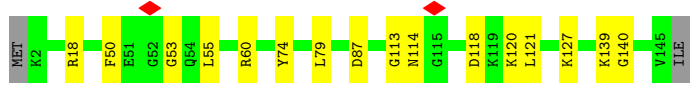
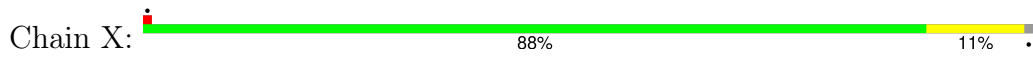
• Molecule 20: 50S ribosomal protein L13



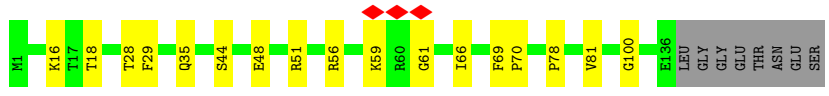
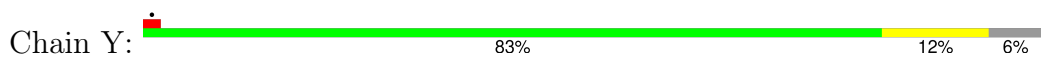
• Molecule 21: 50S ribosomal protein L14



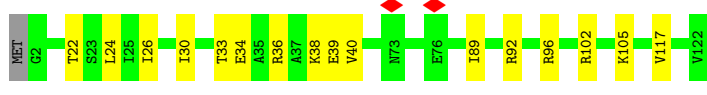
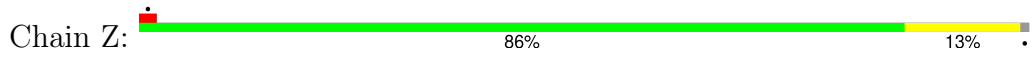
• Molecule 22: 50S ribosomal protein L15



• Molecule 23: 50S ribosomal protein L16



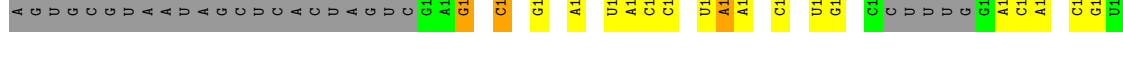
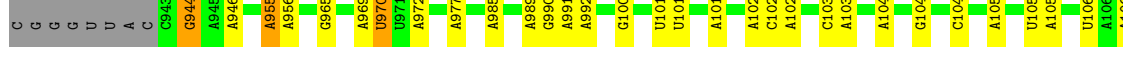
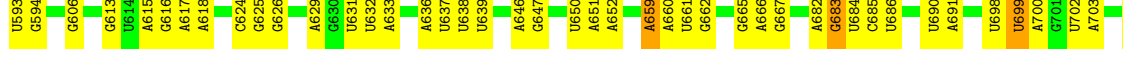
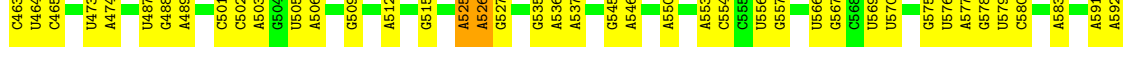
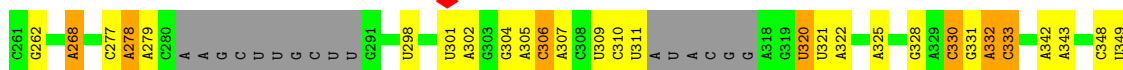
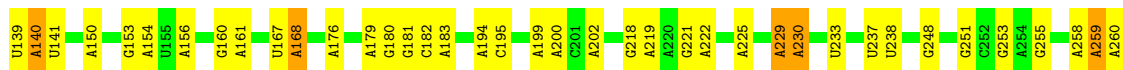
• Molecule 24: 50S ribosomal protein L17



• Molecule 25: 50S ribosomal protein L18

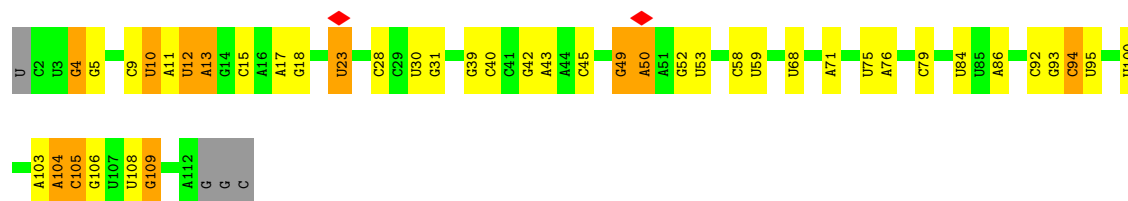


● Molecule 26: 23S rRNA



G2892	G2776	A2629	A2457	A2347	G2065	U1906	G1663	G1556	G1490	C1388
A2893	U2783	G2650	C2468	G2348	C2070	A1939	G1672	C1557	C1491	U1389
C2900	A2784	U2631	A2475	G2349	G2082	A1810	A1673	U1558	C1491	A1390
A2902	U2791	U2636	G2482	U2351	G2083	A1811	U1674	G1559	A1497	A1391
G2906	A2792	C2637	A2496	G2352	A2087	A1818	G1675	A1560	G1500	G1395
A2907	G2793	U2641	G2497	U2338	G2088	U1821	A1676	C1562	A1501	C1400
A2805	U2805	A2649	A2503	A2252	A2089	C1822	U1677	U1563	A1502	G1400
G2806	G2806	U2657	C2504	A2260	C2090	C1922	G1680	U1564	U1503	G1401
G2807	U2807	A2662	A2505	G2261	C2091	C1923	U1681	U1565	U1504	A1402
C2814	C2814	A2363	A2505	G2265	U2095	U1825	C1682	G1566	G1505	G1408
A2815	G2815	U2371	G2521	G2266	G2096	G1826	U1683	U1570	A1507	U1416
A2817	C2817	U2372	G2521	A2267	A2098	C1827	A1683	A1573	A1507	U1416
A2818	U2818	A2372	C2525	G2268	G2099	U1828	C1692	A1578	U1512	A1421
G2819	C2819	A2373	G2525	A2268	U2113	A1836	C1692	A1578	U1512	A1421
U2820	U2820	G2374	G2529	U2270	G2114	A1837	C1696	U1579	A1513	C1423
U2821	U2821	C2377	A2530	U2271	G2120	U1843	G1697	A	A1514	A1424
C2822	C2822	G2378	G2535	U2272	U2124	U1854	A1699	U	G1515	G1429
G2823	G2823	G2378	G2535	U2273	U2125	U1855	A1699	U	A1517	A1432
G2824	G2824	C2379	G2535	U2274	C2126	A1856	A1699	U	U1519	U1433
U2825	U2825	G2380	G2539	U2275	G	C1857	U1703	C1587	A1520	C1442
G2826	G2826	A2395	A2540	A2293	G	C1860	A1708	U1588	A1521	A1443
U2827	U2827	A2396	A2540	A2294	C	U1861	G1711	G1588	G1522	A1443
U2828	U2828	G2397	A2545	A2295	C	G1862	G1718	A1592	G1523	A1449
U2828	U2828	G2398	A2547	A2296	C	A	U1718	G1593	U	A1450
C2835	C2835	G2399	G2556	A2297	C	A	G1718	U1596	G	U1451
U2839	U2839	C2402	G2561	A2298	C	A	G1725	U1597	A	C1452
A2840	A2840	A2403	C2561	A2299	C	A	G1740	U1598	U	G1453
A2841	A2841	A2404	G2566	A2300	C	A	A1744	G1599	U	U1454
C2842	C2842	A2405	U2574	G2306	C	A	U1753	A1605	U	U
G2843	G2843	A2406	G2575	G2307	C	A	U1754	A1607	A	A
U2844	U2844	A2407	G2575	C2021	C	A	U1755	A1606	G	U1459
G2845	G2845	G2408	G2580	U2022	C	A	U1757	A1607	G	U1460
U2853	U2853	C2411	A2593	C2023	C	A	A1758	A1616	C	G1461
U2856	U2856	C2412	G2594	G2037	C	A	G1759	A1616	C	G1462
A2857	A2857	G2418	A2599	A2041	C	A	A1784	A1628	A	A1463
G2858	G2858	U2429	C2600	A2042	C	A	A1773	U1629	U	A1471
U2860	U2860	C2430	G2606	U2046	C	A	A1773	A1630	U	C1472
U2861	U2861	C2431	U2607	U2046	C	A	A1773	G1631	U	G1476
G2876	G2876	G2432	G2608	A2050	C	A	A1773	A1632	C	U1477
G2877	G2877	A2337	A2336	C2051	C	A	A1773	A1633	C	G1476
A2880	A2880	U2437	A2337	C2052	C	A	A1773	A1634	C	U1477
C2881	C2881	A2445	U2339	U2053	C	A	A1773	U1636	C	G1478
U2882	U2882	U2450	C2340	G2056	C	A	A1773	U1636	C	G1479
U2883	U2883	C2451	A2341	A2057	C	A	A1773	U1637	C	G1480
G2884	G2884	U2452	U2342	G2058	C	A	A1773	G1638	C	U1481
U2885	U2885	A2452	C2344	U2059	C	A	A1773	G1639	C	U1481
G2886	G2886	A2456	A2345	A2060	C	A	A1773	G1639	C	U1481
G2887	G2887	U2346	U2346	U2061	C	A	A1773	G1639	C	U1481
				C2063	C	A	A1773	G1639	C	U1481
				A2064	C	A	A1773	G1639	C	U1481
				G2217	C	A	A1773	G1639	C	U1481
				G2218	C	A	A1773	G1639	C	U1481
				A2226	C	A	A1773	G1639	C	U1481

• Molecule 27: 5S rRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	157000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	47.5	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.353	Depositor
Minimum map value	-0.211	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	400.96, 400.96, 400.96	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.895, 0.895, 0.895	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	A	0.23	0/927	0.57	0/1239
2	B	0.24	0/2120	0.53	0/2847
3	C	0.23	0/955	0.49	0/1265
4	D	0.24	0/795	0.51	0/1062
5	E	0.23	0/861	0.53	0/1159
6	F	0.24	0/719	0.50	0/959
7	G	0.23	0/704	0.48	0/938
8	H	0.24	0/735	0.47	0/986
9	I	0.25	0/603	0.55	0/801
10	J	0.23	0/469	0.54	0/625
11	K	0.22	0/504	0.53	0/670
12	L	0.25	0/1652	0.50	0/2216
13	M	0.22	0/434	0.51	0/585
14	N	0.24	0/404	0.54	0/537
15	O	0.23	0/393	0.57	0/523
16	P	0.26	0/376	0.59	0/491
17	Q	0.24	0/526	0.55	0/690
18	R	0.22	0/299	0.51	0/393
19	S	0.26	0/1494	0.51	0/2018
20	V	0.23	0/1160	0.48	0/1563
21	W	0.24	0/918	0.56	0/1232
22	X	0.24	0/1096	0.51	0/1461
23	Y	0.24	0/1113	0.53	0/1493
24	Z	0.23	0/959	0.54	0/1282
25	a	0.24	0/865	0.52	0/1154
26	1	0.21	0/64448	0.76	9/100506 (0.0%)
27	2	0.18	0/2640	0.79	3/4112 (0.1%)
All	All	0.21	0/88169	0.71	12/132807 (0.0%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	1	1865	C	C2-N1-C1'	7.37	126.91	118.80
26	1	1865	C	N1-C2-O2	7.17	123.20	118.90
26	1	1865	C	N3-C2-O2	-5.72	117.89	121.90
27	2	79	C	C2-N1-C1'	5.50	124.85	118.80
26	1	2825	U	N3-C2-O2	-5.45	118.39	122.20
26	1	104	C	C2-N1-C1'	5.44	124.79	118.80
26	1	402	C	C2-N1-C1'	5.32	124.65	118.80
26	1	1351	C	C2-N1-C1'	5.22	124.55	118.80
26	1	402	C	N1-C2-O2	5.14	121.99	118.90
26	1	1865	C	C6-N1-C1'	-5.06	114.73	120.80
27	2	23	U	C2-N1-C1'	5.04	123.75	117.70
27	2	105	C	N1-C2-O2	5.03	121.92	118.90

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	A	915	0	987	7	0
2	B	2085	0	2192	26	0
3	C	943	0	1014	6	0
4	D	785	0	825	6	0
5	E	853	0	914	11	0
6	F	711	0	743	4	0
7	G	698	0	756	9	0
8	H	727	0	777	3	0
9	I	597	0	607	6	0
10	J	463	0	501	4	0
11	K	503	0	536	4	0
12	L	1628	0	1667	10	0
13	M	432	0	472	5	0
14	N	397	0	407	5	0
15	O	390	0	396	7	0
16	P	372	0	420	4	0
17	Q	521	0	586	2	0
18	R	296	0	340	2	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	S	1472	0	1520	11	0
20	V	1138	0	1130	10	0
21	W	911	0	970	15	0
22	X	1082	0	1119	10	0
23	Y	1089	0	1155	12	0
24	Z	955	0	1002	10	0
25	a	857	0	903	0	0
26	1	57543	0	28959	376	0
27	2	2361	0	1197	19	0
All	All	80724	0	52095	533	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 4.

All (533) 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)
9:I:85:LYS:NZ	26:1:902:A:OP1	2.17	0.76
27:2:5:G:H1	27:2:108:U:H3	1.30	0.76
26:1:1862:G:H1	26:1:1932:C:H5	1.33	0.74
2:B:107:PRO:HD2	2:B:110:LEU:HD22	1.70	0.73
27:2:4:G:H22	27:2:109:G:H1	1.35	0.72
2:B:95:VAL:HG22	2:B:101:LYS:HG2	1.72	0.72
21:W:1:MET:HG2	21:W:2:ILE:HG12	1.72	0.72
26:1:2314:A:H62	26:1:2371:U:H3	1.39	0.71
1:A:53:ARG:NH2	26:1:2710:C:OP1	2.23	0.71
14:N:42:VAL:HG12	14:N:49:TYR:HB2	1.73	0.71
26:1:793:G:N2	26:1:796:A:OP2	2.25	0.70
26:1:1806:U:OP2	26:1:1811:A:N6	2.25	0.70
5:E:25:ARG:NH1	5:E:74:ALA:O	2.26	0.69
26:1:330:C:N3	26:1:397:U:O4	2.26	0.69
23:Y:56:ARG:NH1	26:1:2496:A:O2'	2.25	0.69
26:1:2608:G:OP2	26:1:2608:G:N2	2.21	0.68
16:P:41:LYS:HD3	26:1:505:U:H5''	1.75	0.67
26:1:1487:G:H22	26:1:1596:G:H22	1.43	0.67
2:B:150:LYS:NZ	26:1:2231:C:OP2	2.29	0.66
26:1:1514:A:H61	26:1:1566:G:H1	1.44	0.66
26:1:1941:C:O2'	26:1:1943:A:N1	2.29	0.66
26:1:277:C:N3	26:1:278:A:N6	2.44	0.66
26:1:331:G:HO2'	26:1:332:A:H8	1.41	0.66
26:1:2126:C:H42	26:1:2218:G:H1	1.44	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:1725:G:HO2'	26:1:1789:A:HO2'	1.41	0.65
26:1:944:G:N2	26:1:944:G:OP1	2.29	0.65
26:1:2822:C:H4'	26:1:2823:G:H2'	1.79	0.65
9:I:27:LYS:NZ	26:1:2288:C:OP1	2.29	0.65
21:W:88:ARG:HG2	21:W:89:ASP:H	1.61	0.65
26:1:1515:G:H22	26:1:1565:U:H3	1.43	0.65
24:Z:102:ARG:NH1	26:1:2902:A:OP1	2.29	0.65
23:Y:16:LYS:HG2	23:Y:18:THR:HG22	1.77	0.64
2:B:142:HIS:ND1	2:B:193:GLY:O	2.27	0.64
15:O:34:LYS:NZ	26:1:2374:C:OP1	2.31	0.64
14:N:6:ARG:NH2	26:1:2046:U:OP2	2.28	0.64
27:2:9:C:H42	27:2:104:A:H61	1.45	0.64
26:1:1462:G:OP2	26:1:1462:G:N2	2.25	0.64
6:F:48:VAL:HG11	6:F:82:LEU:HD13	1.80	0.64
19:S:117:LYS:NZ	19:S:189:ALA:O	2.31	0.64
1:A:85:LYS:HZ1	1:A:87:GLU:HG2	1.63	0.64
17:Q:39:LYS:NZ	26:1:2392:G:N7	2.46	0.63
26:1:506:A:C2	26:1:515:G:N2	2.67	0.63
26:1:632:U:H2'	26:1:633:A:H8	1.61	0.63
26:1:721:A:H8	26:1:2096:G:H21	1.45	0.63
26:1:1708:A:H61	26:1:2023:C:H42	1.45	0.63
26:1:2877:G:N2	26:1:2880:A:OP2	2.30	0.63
26:1:591:A:H4'	26:1:592:A:H5'	1.80	0.62
22:X:114:ASN:ND2	26:1:699:U:O4	2.33	0.62
20:V:126:TYR:OH	20:V:133:HIS:NE2	2.29	0.62
26:1:1780:G:N2	26:1:1783:G:OP2	2.30	0.62
20:V:31:SER:HG	26:1:1049:C:HO2'	1.48	0.62
26:1:153:G:H2'	26:1:154:A:H8	1.64	0.61
10:J:5:CYS:HB3	10:J:10:ARG:H	1.65	0.61
7:G:94:ALA:HB2	7:G:101:ILE:HD11	1.83	0.61
15:O:13:GLY:HA3	15:O:38:ARG:HD2	1.82	0.61
2:B:259:THR:HG1	26:1:1824:C:HO2'	1.49	0.60
12:L:71:LYS:HG3	26:1:2814:C:H4'	1.83	0.60
3:C:92:ARG:NH2	26:1:1197:C:OP1	2.33	0.60
14:N:16:ARG:NH2	26:1:1302:G:OP1	2.30	0.60
26:1:2580:G:H8	26:1:2609:G:H21	1.50	0.60
24:Z:105:LYS:HA	24:Z:117:VAL:HG12	1.83	0.60
26:1:200:A:N6	26:1:2457:A:O2'	2.34	0.60
2:B:107:PRO:HA	2:B:195:VAL:HA	1.84	0.60
26:1:221:G:H22	26:1:238:U:H4'	1.67	0.60
2:B:132:LEU:HD23	2:B:135:ILE:HD12	1.83	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:665:G:H4'	26:1:666:A:H5''	1.84	0.59
26:1:304:G:H2'	26:1:305:A:H8	1.65	0.59
26:1:409:G:OP2	26:1:409:G:N2	2.35	0.59
26:1:2355:A:H2'	26:1:2356:A:C8	2.38	0.59
26:1:342:A:N3	26:1:362:C:O2'	2.31	0.59
12:L:90:GLU:OE1	26:1:2662:U:O2'	2.18	0.59
26:1:2885:U:OP2	26:1:2886:G:O2'	2.18	0.59
19:S:182:ASN:ND2	19:S:185:ASP:OD2	2.32	0.59
21:W:64:ARG:NH1	21:W:101:PRO:O	2.33	0.59
26:1:920:A:N6	26:1:944:G:OP2	2.35	0.59
4:D:60:ALA:HB2	4:D:97:ILE:HD13	1.85	0.59
26:1:262:G:H21	26:1:666:A:H8	1.50	0.59
26:1:1512:U:H2'	26:1:1513:A:C8	2.37	0.58
26:1:1881:A:H62	26:1:1915:G:H8	1.49	0.58
9:I:82:ARG:NH2	27:2:10:U:O2'	2.36	0.58
19:S:54:ARG:NH1	26:1:718:C:OP1	2.33	0.58
22:X:55:LEU:HD23	22:X:60:ARG:HB3	1.85	0.58
26:1:1886:A:H62	26:1:1910:G:H8	1.50	0.58
7:G:69:GLN:HE21	26:1:378:C:H4'	1.69	0.58
26:1:320:U:OP1	26:1:325:A:N6	2.34	0.58
26:1:2816:C:H5	26:1:2913:G:H1	1.52	0.58
26:1:1708:A:H61	26:1:2023:C:N4	2.02	0.58
20:V:60:ALA:HB3	20:V:127:GLY:HA2	1.85	0.58
26:1:1522:G:HO2'	26:1:1607:A:HO2'	1.50	0.58
26:1:1482:U:H2'	26:1:1483:A:H8	1.69	0.57
26:1:1915:G:OP2	26:1:1915:G:N2	2.30	0.57
26:1:2824:G:H2'	26:1:2825:U:O2	2.04	0.57
26:1:1357:G:OP2	26:1:1357:G:N2	2.24	0.57
26:1:1422:A:O2'	26:1:1433:U:O2	2.21	0.57
26:1:1479:G:O6	26:1:1605:A:N6	2.37	0.57
7:G:42:LYS:O	26:1:526:A:O2'	2.19	0.57
1:A:85:LYS:NZ	1:A:87:GLU:HG2	2.17	0.57
26:1:331:G:H1	26:1:395:U:H3	1.52	0.57
21:W:3:GLN:NE2	26:1:2022:U:O2	2.38	0.57
26:1:1346:G:H21	26:1:1655:C:H5'	1.70	0.57
7:G:41:MET:SD	7:G:59:THR:OG1	2.63	0.56
26:1:787:U:H2'	26:1:788:A:C8	2.39	0.56
1:A:29:ARG:HG2	1:A:46:GLU:HG2	1.87	0.56
2:B:167:LYS:HG3	2:B:172:VAL:HG12	1.86	0.56
26:1:106:A:H2'	26:1:107:G:H8	1.70	0.56
26:1:1506:C:H2'	26:1:1507:A:C8	2.40	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:629:A:H62	26:1:1289:A:H2	1.53	0.56
26:1:2618:C:H2'	26:1:2619:G:H8	1.70	0.56
19:S:100:LYS:NZ	26:1:651:A:OP1	2.31	0.56
21:W:7:ARG:HE	21:W:20:LEU:HD12	1.69	0.56
21:W:1:MET:HB2	21:W:8:LEU:HD21	1.88	0.55
26:1:2624:G:H2'	26:1:2625:A:C8	2.41	0.55
26:1:1352:C:H2'	26:1:1353:A:H8	1.71	0.55
16:P:2:VAL:N	26:1:1663:G:HO2'	2.03	0.55
2:B:261:ARG:O	2:B:264:LYS:NZ	2.39	0.55
6:F:53:VAL:HG22	6:F:80:VAL:HG12	1.88	0.55
21:W:115:VAL:HG13	21:W:121:VAL:HG21	1.87	0.55
5:E:78:GLU:OE2	26:1:24:G:N2	2.37	0.55
5:E:42:ALA:HB2	26:1:2037:G:H5''	1.88	0.54
26:1:153:G:H2'	26:1:154:A:C8	2.43	0.54
26:1:328:G:H1	26:1:399:U:H3	1.55	0.54
26:1:1522:G:N1	26:1:1523:G:O6	2.40	0.54
26:1:1893:A:N6	26:1:1902:G:O2'	2.41	0.54
26:1:350:G:OP2	26:1:350:G:N2	2.40	0.54
26:1:2881:C:H2'	26:1:2882:A:H8	1.71	0.54
23:Y:56:ARG:HH12	26:1:2496:A:HO2'	1.51	0.54
26:1:2418:G:O2'	26:1:2451:C:N4	2.37	0.54
11:K:23:GLU:O	11:K:27:ASN:ND2	2.41	0.53
2:B:110:LEU:HD12	2:B:114:GLN:HG3	1.90	0.53
10:J:56:SER:HB3	26:1:418:G:C8	2.43	0.53
26:1:421:C:H2'	26:1:422:G:H8	1.74	0.53
26:1:2876:G:O6	26:1:2882:A:N6	2.41	0.53
24:Z:89:ILE:HG13	24:Z:92:ARG:HH21	1.74	0.52
26:1:1518:G:H1	26:1:1562:C:H42	1.56	0.52
26:1:1943:A:H5''	26:1:1944:U:H5	1.74	0.52
18:R:1:MET:HG2	18:R:33:LYS:HE3	1.90	0.52
2:B:7:LYS:NZ	26:1:751:A:OP1	2.32	0.52
3:C:105:ALA:HB2	4:D:47:LYS:HE2	1.89	0.52
26:1:1063:U:OP1	26:1:1079:U:O2'	2.21	0.52
26:1:1500:G:N7	26:1:1501:G:N2	2.58	0.52
16:P:25:THR:HG23	16:P:28:GLY:H	1.74	0.52
26:1:2058:A:N3	26:1:2482:G:O2'	2.41	0.52
27:2:11:A:O2'	27:2:13:A:OP2	2.27	0.52
26:1:509:G:N2	26:1:512:A:OP2	2.38	0.52
26:1:917:U:H2'	26:1:918:G:C8	2.45	0.52
26:1:1487:G:N2	26:1:1596:G:H22	2.07	0.52
26:1:917:U:H2'	26:1:918:G:H8	1.74	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:632:U:H2'	26:1:633:A:C8	2.44	0.51
26:1:787:U:H2'	26:1:788:A:H8	1.75	0.51
18:R:16:VAL:HG12	18:R:25:VAL:HG22	1.93	0.51
26:1:1981:G:O2'	26:1:1983:U:O4	2.19	0.51
27:2:92:C:H2'	27:2:93:G:O4'	2.11	0.51
8:H:33:GLY:O	8:H:36:THR:HG22	2.10	0.51
26:1:744:A:H8	26:1:1677:G:HO2'	1.58	0.51
26:1:1065:A:H61	26:1:1186:A:H61	1.57	0.51
26:1:116:G:OP2	26:1:118:A:O2'	2.29	0.51
26:1:683:G:H2'	26:1:684:U:C6	2.45	0.51
26:1:556:U:H4'	26:1:1273:G:H4'	1.93	0.51
27:2:12:U:OP2	27:2:68:U:O2'	2.29	0.51
7:G:6:GLY:HA2	7:G:22:LYS:HE2	1.92	0.51
19:S:139:PHE:HA	19:S:142:VAL:HG22	1.92	0.51
20:V:19:ILE:HG12	20:V:141:TYR:HB3	1.92	0.51
26:1:83:G:H21	26:1:102:A:H2	1.58	0.51
26:1:1516:C:H2'	26:1:1517:A:C8	2.46	0.51
26:1:460:C:H2'	26:1:461:A:H8	1.75	0.51
26:1:1423:C:H2'	26:1:1424:A:H8	1.76	0.51
26:1:66:C:H2'	26:1:67:G:H8	1.75	0.51
26:1:615:A:H61	26:1:2056:G:H8	1.57	0.51
26:1:896:U:H2'	26:1:897:A:H8	1.77	0.50
26:1:955:A:N3	26:1:2291:C:O2'	2.42	0.50
26:1:2056:G:OP2	26:1:2056:G:N2	2.29	0.50
2:B:13:ARG:HD2	26:1:773:G:H4'	1.93	0.50
5:E:11:ARG:NH2	5:E:98:LYS:HD2	2.26	0.50
7:G:10:LYS:HE2	7:G:18:GLY:HA2	1.93	0.50
2:B:227:PRO:HA	2:B:233:GLY:HA2	1.94	0.50
6:F:39:LYS:HG3	6:F:50:VAL:HG21	1.93	0.50
24:Z:96:ARG:NH1	26:1:2900:C:O2'	2.44	0.50
26:1:268:A:N6	26:1:474:A:N7	2.59	0.50
26:1:310:C:N4	26:1:407:G:H1	2.09	0.50
26:1:637:U:H2'	26:1:638:U:C6	2.47	0.50
26:1:2402:G:N2	26:1:2405:A:OP2	2.34	0.50
26:1:2618:C:H2'	26:1:2619:G:C8	2.46	0.50
23:Y:44:SER:HB3	23:Y:70:PRO:HG2	1.93	0.50
26:1:2574:U:H2'	26:1:2575:G:H8	1.76	0.50
23:Y:51:ARG:HD3	23:Y:66:ILE:HD11	1.94	0.50
26:1:2098:A:H2'	26:1:2099:G:C8	2.46	0.50
26:1:2052:C:H2'	26:1:2053:U:C6	2.47	0.50
26:1:2839:A:O2'	26:1:2841:A:N7	2.42	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:1083:G:H1	26:1:1160:C:H42	1.59	0.49
26:1:1185:U:H4'	26:1:1186:A:O4'	2.12	0.49
26:1:2574:U:H2'	26:1:2575:G:C8	2.47	0.49
26:1:872:U:O2'	26:1:2095:U:N3	2.45	0.49
26:1:1390:A:H3'	26:1:1391:A:H8	1.77	0.49
15:O:22:ASN:HB3	15:O:25:ASN:HB2	1.93	0.49
26:1:702:U:H2'	26:1:703:A:C8	2.48	0.49
26:1:1460:U:H3	26:1:1628:A:H61	1.60	0.49
26:1:460:C:H2'	26:1:461:A:C8	2.47	0.49
26:1:755:C:H2'	26:1:756:A:H8	1.78	0.49
2:B:140:VAL:HG13	2:B:161:SER:HB2	1.95	0.49
26:1:59:U:O2'	26:1:74:U:OP2	2.26	0.49
22:X:18:ARG:NH2	26:1:1288:G:N7	2.60	0.49
26:1:901:G:H2'	26:1:902:A:C8	2.48	0.49
26:1:1943:A:H5''	26:1:1944:U:C5	2.47	0.49
26:1:2359:C:O2'	26:1:2362:A:O2'	2.27	0.49
26:1:150:A:H61	26:1:179:A:H2	1.60	0.49
26:1:1487:G:H1	26:1:1596:G:H1	1.59	0.49
26:1:1836:A:H2'	26:1:1837:A:C8	2.47	0.49
26:1:2051:C:H2'	26:1:2052:C:C6	2.48	0.49
2:B:135:ILE:O	2:B:167:LYS:NZ	2.46	0.49
19:S:157:GLU:OE2	19:S:201:LYS:NZ	2.41	0.49
22:X:50:PHE:HE2	22:X:53:GLY:HA3	1.78	0.49
26:1:140:A:H2'	26:1:141:U:C6	2.48	0.49
26:1:1521:A:N6	26:1:1559:G:H22	2.11	0.49
2:B:43:ARG:HH11	2:B:49:LEU:HD13	1.78	0.48
19:S:123:LEU:HD12	19:S:192:LEU:HD23	1.95	0.48
26:1:1442:C:H2'	26:1:1443:A:C8	2.48	0.48
26:1:1487:G:H22	26:1:1596:G:H1	1.61	0.48
26:1:1891:U:OP1	26:1:2437:G:O2'	2.28	0.48
26:1:2431:C:H2'	26:1:2432:G:O4'	2.13	0.48
1:A:64:ARG:HB2	1:A:73:GLU:HG2	1.95	0.48
26:1:1442:C:H2'	26:1:1443:A:H8	1.77	0.48
26:1:1672:G:H2'	26:1:1673:A:H8	1.78	0.48
5:E:82:LEU:HB2	5:E:98:LYS:HB2	1.96	0.48
22:X:74:TYR:CZ	22:X:127:LYS:HD2	2.49	0.48
26:1:1025:A:OP2	26:1:1026:C:N4	2.41	0.48
26:1:1449:A:N1	26:1:1632:A:N6	2.61	0.48
10:J:3:LYS:HE2	10:J:33:LEU:HD12	1.96	0.48
26:1:2705:U:H2'	26:1:2706:A:H8	1.78	0.48
19:S:66:LYS:HE3	19:S:69:GLY:HA3	1.96	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:45:SER:OG	4:D:46:VAL:N	2.46	0.48
26:1:2881:C:H2'	26:1:2882:A:C8	2.49	0.47
3:C:33:LYS:HG2	26:1:1290:G:C2	2.49	0.47
26:1:1563:U:H2'	26:1:1564:G:H8	1.78	0.47
23:Y:28:THR:HG23	23:Y:29:PHE:CD1	2.49	0.47
26:1:194:A:H2'	26:1:195:C:H6	1.79	0.47
26:1:229:A:O2'	26:1:230:A:OP1	2.28	0.47
2:B:141:VAL:HG23	2:B:144:ILE:HD11	1.97	0.47
23:Y:78:PRO:HG2	23:Y:81:VAL:HG11	1.97	0.47
26:1:2041:A:H2'	26:1:2042:A:C8	2.49	0.47
26:1:422:G:H2'	26:1:423:A:C8	2.50	0.47
26:1:1506:C:H2'	26:1:1507:A:H8	1.77	0.47
3:C:33:LYS:HG2	26:1:1290:G:N3	2.30	0.47
26:1:84:A:N1	26:1:98:U:O2'	2.43	0.47
26:1:348:C:H2'	26:1:349:U:C6	2.49	0.47
26:1:1521:A:H61	26:1:1559:G:H22	1.62	0.47
5:E:66:THR:HA	5:E:69:LEU:HG	1.97	0.47
5:E:92:ARG:NH2	26:1:792:U:O2'	2.48	0.47
19:S:115:SER:HA	19:S:118:VAL:HG12	1.97	0.47
19:S:155:VAL:HG22	19:S:194:ILE:HG22	1.97	0.47
26:1:908:A:O2'	27:2:95:U:O2	2.26	0.47
26:1:1756:U:H3	26:1:1773:A:N6	2.13	0.47
26:1:1514:A:N6	26:1:1566:G:H1	2.11	0.47
5:E:28:ASN:HB3	5:E:31:GLU:HB2	1.97	0.47
20:V:70:GLU:OE1	20:V:94:ARG:NH2	2.47	0.47
26:1:1486:C:H2'	26:1:1487:G:C8	2.50	0.47
26:1:2360:A:H5''	26:1:2362:A:H1'	1.97	0.47
2:B:72:ASP:OD1	2:B:72:ASP:N	2.48	0.46
26:1:1353:A:H2'	26:1:1354:G:H8	1.80	0.46
1:A:29:ARG:HB2	1:A:87:GLU:HB2	1.98	0.46
4:D:50:ALA:HB1	4:D:51:PRO:HA	1.97	0.46
12:L:133:ARG:HG3	12:L:173:MET:HB3	1.98	0.46
27:2:52:G:H2'	27:2:53:U:C6	2.50	0.46
4:D:10:LYS:NZ	4:D:23:GLU:OE2	2.48	0.46
12:L:142:SER:OG	12:L:143:HIS:N	2.48	0.46
19:S:115:SER:O	19:S:119:GLN:HG3	2.15	0.46
23:Y:35:GLN:HE21	23:Y:100:GLY:HA2	1.80	0.46
26:1:106:A:H2'	26:1:107:G:C8	2.49	0.46
26:1:1063:U:HO2'	26:1:1065:A:H2	1.62	0.46
27:2:75:U:H3	27:2:94:C:H5	1.61	0.46
9:I:19:LYS:O	9:I:22:ARG:NH2	2.49	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:1873:G:H2'	26:1:1874:A:C8	2.50	0.46
26:1:1951:C:H2'	26:1:1952:C:C6	2.49	0.46
7:G:69:GLN:OE1	7:G:78:PRO:HB2	2.16	0.46
8:H:55:VAL:HG12	8:H:59:GLY:HA3	1.97	0.46
12:L:80:ALA:HB2	12:L:101:VAL:HG12	1.98	0.46
21:W:111:PHE:HB3	21:W:114:ILE:HD12	1.97	0.46
26:1:1501:G:H3'	26:1:1502:A:C8	2.51	0.46
13:M:29:LYS:HB3	13:M:29:LYS:HE3	1.70	0.46
24:Z:33:THR:HB	24:Z:36:ARG:HG3	1.96	0.46
26:1:2098:A:H2'	26:1:2099:G:H8	1.81	0.46
26:1:2342:U:H2'	26:1:2343:U:C6	2.51	0.46
15:O:31:GLU:OE2	15:O:46:ARG:NH1	2.49	0.46
26:1:135:G:H2'	26:1:136:A:H8	1.81	0.46
26:1:766:G:H2'	26:1:767:A:C8	2.51	0.46
26:1:1818:A:C2	26:1:1856:A:H4'	2.50	0.46
26:1:579:U:H2'	26:1:580:C:C6	2.51	0.46
26:1:873:U:H4'	26:1:876:G:N1	2.31	0.46
26:1:1708:A:N6	26:1:2023:C:H42	2.13	0.46
2:B:108:LYS:HD2	2:B:198:LEU:HD11	1.97	0.46
26:1:1315:C:H2'	26:1:1316:G:H8	1.81	0.46
12:L:127:PHE:CE2	26:1:1699:A:H1'	2.51	0.46
13:M:2:ALA:O	13:M:3:LYS:NZ	2.35	0.46
24:Z:39:GLU:OE1	26:1:2717:A:N6	2.41	0.46
26:1:886:A:H2'	26:1:887:A:H8	1.82	0.46
26:1:1508:C:H2'	26:1:1593:G:H22	1.80	0.46
14:N:40:HIS:HD1	26:1:2835:C:HO2'	1.64	0.45
21:W:9:LYS:HD2	21:W:81:GLU:OE2	2.16	0.45
21:W:52:VAL:HG22	21:W:94:ARG:HH11	1.81	0.45
26:1:105:C:H2'	26:1:106:A:H8	1.82	0.45
26:1:1453:G:H4'	26:1:1453:G:OP1	2.16	0.45
26:1:2606:C:H2'	26:1:2607:U:O2	2.16	0.45
26:1:754:U:H2'	26:1:755:C:C6	2.51	0.45
26:1:793:G:N3	26:1:793:G:H2'	2.31	0.45
26:1:1629:U:H3	26:1:1630:A:H62	1.62	0.45
26:1:1942:U:H5''	26:1:1943:A:H2	1.82	0.45
26:1:2649:U:O3'	26:1:2845:G:N2	2.49	0.45
12:L:127:PHE:HE2	26:1:1699:A:H1'	1.81	0.45
26:1:830:U:H4'	26:1:1806:U:H4'	1.98	0.45
27:2:4:G:N2	27:2:109:G:H1	2.10	0.45
26:1:2758:G:H2'	26:1:2759:G:C8	2.51	0.45
26:1:631:U:H2'	26:1:632:U:C6	2.52	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:1087:C:H42	26:1:1156:G:H1	1.64	0.45
26:1:1240:U:H2'	26:1:1241:A:H8	1.81	0.45
26:1:1509:G:O4'	26:1:1593:G:N2	2.49	0.45
2:B:43:ARG:NH1	2:B:49:LEU:HD13	2.31	0.45
7:G:66:SER:OG	26:1:378:C:O2	2.35	0.45
26:1:1423:C:H2'	26:1:1424:A:C8	2.52	0.45
26:1:2235:A:H2'	26:1:2236:C:C6	2.51	0.45
26:1:2457:A:N3	26:1:2457:A:H2'	2.32	0.45
21:W:88:ARG:N	21:W:92:GLY:O	2.39	0.45
26:1:268:A:N6	26:1:473:U:O2'	2.49	0.45
26:1:440:C:H2'	26:1:441:C:C6	2.51	0.45
24:Z:34:GLU:O	24:Z:38:LYS:HG2	2.16	0.45
26:1:390:A:H2'	26:1:391:A:C8	2.52	0.45
22:X:120:LYS:HE2	22:X:140:GLY:HA3	1.98	0.45
26:1:363:A:H4'	26:1:365:A:N7	2.32	0.45
26:1:422:G:H2'	26:1:423:A:H8	1.81	0.45
26:1:969:A:OP1	26:1:970:U:N3	2.50	0.45
26:1:1755:U:H2'	26:1:1756:U:C6	2.52	0.45
26:1:2060:A:O2'	26:1:2062:G:OP2	2.26	0.45
26:1:2318:U:H2'	26:1:2319:U:C6	2.52	0.45
3:C:66:ASN:O	3:C:70:ARG:HG2	2.17	0.45
26:1:909:G:H21	26:1:911:A:H61	1.62	0.45
26:1:1353:A:H2'	26:1:1354:G:C8	2.52	0.45
26:1:2318:U:OP1	26:1:2407:A:O2'	2.34	0.45
26:1:342:A:H2'	26:1:343:A:C8	2.52	0.44
26:1:1696:C:H2'	26:1:1697:G:O4'	2.18	0.44
1:A:105:LEU:HD12	1:A:109:ALA:HB1	2.00	0.44
26:1:2844:U:H2'	26:1:2845:G:O4'	2.18	0.44
26:1:659:A:H2'	26:1:659:A:N3	2.33	0.44
27:2:28:C:O2	27:2:52:G:N2	2.50	0.44
26:1:625:G:H2'	26:1:626:G:H8	1.81	0.44
26:1:702:U:H2'	26:1:703:A:H8	1.83	0.44
26:1:793:G:H22	26:1:796:A:H5'	1.82	0.44
26:1:1482:U:H2'	26:1:1483:A:C8	2.50	0.44
26:1:1821:U:H2'	26:1:1822:C:C6	2.53	0.44
22:X:121:LEU:HD23	22:X:121:LEU:H	1.83	0.44
26:1:5:A:H2'	26:1:6:A:C8	2.53	0.44
26:1:625:G:H2'	26:1:626:G:C8	2.52	0.44
26:1:955:A:H2'	26:1:956:A:C8	2.53	0.44
26:1:1636:U:H2'	26:1:1637:A:C8	2.51	0.44
26:1:2343:U:H2'	26:1:2344:C:C6	2.52	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:2359:C:HO2'	26:1:2362:A:HO2'	1.57	0.44
26:1:2857:A:H2'	26:1:2858:G:H8	1.83	0.44
26:1:2821:U:O2'	26:1:2823:G:N2	2.48	0.44
26:1:222:A:N3	26:1:237:U:O2'	2.39	0.44
26:1:747:U:H2'	26:1:748:U:C6	2.53	0.44
26:1:2336:A:H4'	26:1:2337:A:O5'	2.18	0.44
26:1:2340:C:H2'	26:1:2341:A:C8	2.52	0.44
5:E:10:ILE:HD13	5:E:103:ILE:HD12	2.00	0.44
26:1:685:C:H2'	26:1:686:U:C6	2.53	0.44
26:1:2343:U:H2'	26:1:2344:C:H6	1.83	0.44
26:1:2817:A:HO2'	26:1:2818:A:H8	1.61	0.44
22:X:79:LEU:HG	22:X:113:GLY:HA2	2.00	0.43
26:1:130:A:H2'	26:1:131:G:H8	1.83	0.43
26:1:745:G:O2'	26:1:1676:A:H8	2.01	0.43
26:1:991:A:H2'	26:1:992:A:C8	2.52	0.43
26:1:1966:U:OP1	26:1:2631:U:O2'	2.36	0.43
26:1:2883:U:H2'	26:1:2884:G:C8	2.53	0.43
7:G:8:ASN:HB3	7:G:71:LEU:HD12	1.99	0.43
11:K:35:GLY:O	11:K:36:GLN:NE2	2.51	0.43
13:M:18:THR:OG1	13:M:49:LYS:NZ	2.51	0.43
26:1:259:A:H2'	26:1:260:A:C8	2.53	0.43
26:1:1395:G:N1	26:1:1408:G:N7	2.66	0.43
26:1:2856:U:H2'	26:1:2857:A:C8	2.53	0.43
2:B:243:ARG:NH2	2:B:247:MET:SD	2.90	0.43
9:I:26:SER:OG	26:1:2298:G:OP1	2.36	0.43
26:1:1314:A:H2'	26:1:1315:C:C6	2.53	0.43
26:1:1806:U:O2	26:1:1810:A:N6	2.52	0.43
26:1:2051:C:H2'	26:1:2052:C:H6	1.81	0.43
26:1:306:C:H2'	26:1:307:A:C8	2.53	0.43
26:1:805:G:H2'	26:1:806:A:O4'	2.18	0.43
26:1:1235:C:C2	26:1:1236:G:C8	3.07	0.43
26:1:2747:U:C2	26:1:2748:A:C8	3.07	0.43
26:1:2901:U:H2'	26:1:2902:A:C8	2.54	0.43
21:W:7:ARG:NE	21:W:20:LEU:HD12	2.34	0.43
26:1:506:A:N1	26:1:515:G:C2	2.87	0.43
26:1:734:A:H2'	26:1:735:C:C6	2.54	0.43
20:V:66:THR:HG21	26:1:1185:U:H2'	2.00	0.43
26:1:487:U:H2'	26:1:488:G:C8	2.53	0.43
26:1:2260:A:H2'	26:1:2261:G:H8	1.84	0.43
26:1:2649:U:O2'	26:1:2845:G:N2	2.52	0.43
26:1:1221:C:H2'	26:1:1222:A:H8	1.84	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:1352:C:H2'	26:1:1353:A:C8	2.50	0.43
26:1:505:U:C5	26:1:515:G:N2	2.86	0.43
26:1:902:A:H61	26:1:965:G:H1	1.67	0.43
26:1:1424:A:H5'	26:1:1512:U:H1'	2.00	0.43
26:1:1636:U:H2'	26:1:1637:A:H8	1.82	0.43
26:1:1753:U:H2'	26:1:1754:C:C6	2.53	0.43
26:1:2377:C:H2'	26:1:2378:G:O4'	2.19	0.43
15:O:39:GLU:HB3	15:O:41:LYS:HG2	2.00	0.43
26:1:1481:A:O2'	26:1:1562:C:H4'	2.19	0.43
26:1:1806:U:H5	26:1:1811:A:N7	2.17	0.43
26:1:1865:C:H5	26:1:1928:A:H62	1.67	0.43
26:1:2050:A:H2'	26:1:2051:C:C6	2.54	0.43
26:1:2260:A:H2'	26:1:2261:G:C8	2.54	0.43
26:1:841:C:H2'	26:1:842:U:C6	2.54	0.43
26:1:2539:C:H2'	26:1:2540:A:O4'	2.19	0.43
2:B:135:ILE:HD13	2:B:141:VAL:HG11	2.00	0.42
26:1:47:C:C2	26:1:181:G:N2	2.87	0.42
26:1:684:U:H2'	26:1:685:C:C6	2.54	0.42
27:2:58:C:C2	27:2:59:U:C5	3.07	0.42
4:D:7:THR:O	4:D:7:THR:HG22	2.19	0.42
12:L:56:LYS:N	12:L:84:PRO:O	2.33	0.42
26:1:1070:A:N1	26:1:1178:C:N4	2.63	0.42
26:1:1856:A:H3'	26:1:1857:C:H6	1.85	0.42
26:1:1901:C:H3'	26:1:1902:G:H8	1.84	0.42
26:1:2270:U:H2'	26:1:2271:U:C6	2.55	0.42
5:E:6:VAL:HG22	5:E:104:THR:HG23	2.01	0.42
26:1:624:C:H2'	26:1:625:G:H8	1.84	0.42
27:2:76:A:H62	27:2:93:G:H21	1.67	0.42
26:1:753:U:H2'	26:1:754:U:C6	2.53	0.42
26:1:1579:C:HO2'	26:1:1588:U:H3	1.68	0.42
26:1:2050:A:H2'	26:1:2051:C:H6	1.84	0.42
13:M:20:ARG:HE	13:M:20:ARG:HB3	1.71	0.42
26:1:879:U:H2'	26:1:880:A:H8	1.84	0.42
26:1:1053:A:N3	26:1:1197:C:O2'	2.49	0.42
26:1:2313:A:H4'	26:1:2314:A:O4'	2.20	0.42
26:1:2856:U:H2'	26:1:2857:A:H8	1.84	0.42
27:2:15:C:N4	27:2:103:A:H2	2.16	0.42
2:B:84:ASP:OD2	2:B:87:ARG:HD3	2.19	0.42
20:V:25:THR:HB	20:V:28:ARG:HG3	2.02	0.42
24:Z:36:ARG:O	24:Z:40:VAL:HG23	2.20	0.42
26:1:167:U:H2'	26:1:168:A:H5''	2.01	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:181:G:H2'	26:1:182:C:O4'	2.19	0.42
26:1:1453:G:N2	26:1:1631:G:O4'	2.50	0.42
20:V:79:SER:HB2	26:1:2668:A:H5''	2.02	0.42
26:1:2064:A:H2'	26:1:2065:G:C8	2.55	0.42
3:C:4:VAL:HG22	26:1:1238:U:H1'	2.01	0.42
26:1:636:A:H2'	26:1:637:U:C6	2.55	0.42
26:1:1241:A:H2'	26:1:1242:A:C8	2.55	0.42
26:1:1311:A:N7	26:1:1690:A:O2'	2.44	0.42
26:1:2535:G:H1	26:1:2607:U:H5	1.65	0.42
2:B:53:HIS:HA	2:B:217:ARG:HB2	2.01	0.42
21:W:88:ARG:HG2	21:W:89:ASP:N	2.32	0.42
26:1:1083:G:H2'	26:1:1084:U:C6	2.55	0.42
26:1:2293:A:H4'	26:1:2294:A:N3	2.34	0.42
27:2:30:U:H2'	27:2:31:G:C8	2.55	0.42
26:1:1476:G:H2'	26:1:1477:U:C6	2.55	0.42
26:1:1573:A:N6	26:1:1592:A:N1	2.68	0.42
23:Y:48:GLU:OE2	23:Y:51:ARG:NH2	2.45	0.41
24:Z:22:THR:O	24:Z:26:ILE:HG12	2.20	0.41
26:1:2113:U:H2'	26:1:2114:G:C8	2.55	0.41
2:B:8:PRO:HB3	2:B:14:ARG:HA	2.01	0.41
20:V:16:TRP:CE2	20:V:136:GLN:HG2	2.55	0.41
22:X:118:ASP:HA	22:X:139:LYS:HE2	2.03	0.41
26:1:1087:C:N4	26:1:1156:G:H1	2.19	0.41
26:1:2406:G:H2'	26:1:2407:A:C8	2.55	0.41
27:2:17:A:H2'	27:2:18:G:H8	1.84	0.41
21:W:1:MET:SD	21:W:65:THR:HG22	2.61	0.41
26:1:638:U:H2'	26:1:639:U:C6	2.55	0.41
26:1:1013:U:H2'	26:1:1014:U:C6	2.55	0.41
26:1:1711:G:O2'	26:1:2018:U:O4	2.30	0.41
26:1:2842:G:O2'	26:1:2844:U:OP2	2.39	0.41
20:V:40:LYS:HE2	20:V:40:LYS:HB3	1.91	0.41
26:1:838:A:OP2	26:1:2098:A:O2'	2.38	0.41
26:1:2372:G:N3	26:1:2408:C:H2'	2.34	0.41
8:H:81:PRO:O	23:Y:35:GLN:NE2	2.39	0.41
22:X:87:ASP:N	22:X:87:ASP:OD1	2.53	0.41
26:1:29:U:C2	26:1:30:G:C8	3.09	0.41
26:1:441:C:H2'	26:1:442:G:H8	1.86	0.41
26:1:713:A:H2'	26:1:715:A:H62	1.86	0.41
26:1:744:A:H8	26:1:1677:G:O2'	2.03	0.41
26:1:1880:A:H2'	26:1:1881:A:C8	2.55	0.41
26:1:2860:U:H2'	26:1:2861:U:C6	2.55	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:1:2906:G:H2'	26:1:2907:A:H8	1.85	0.41
15:O:2:ARG:HG3	26:1:2311:U:OP2	2.21	0.41
15:O:5:VAL:HG11	15:O:21:LYS:HE3	2.02	0.41
26:1:332:A:H2'	26:1:333:C:C6	2.55	0.41
26:1:2767:A:H2'	26:1:2768:A:C8	2.56	0.41
26:1:613:G:H2'	26:1:2057:A:N7	2.36	0.41
26:1:1066:G:N2	26:1:1067:U:O4	2.47	0.41
14:N:50:ASN:OD1	14:N:51:GLY:N	2.53	0.41
21:W:10:VAL:HG11	21:W:86:ILE:HD11	2.03	0.41
26:1:566:U:H2'	26:1:567:G:C8	2.56	0.41
26:1:788:A:O2'	26:1:1703:U:OP1	2.39	0.41
26:1:886:A:H2'	26:1:887:A:C8	2.56	0.41
26:1:1598:U:H2'	26:1:1599:G:C8	2.56	0.41
26:1:1680:U:H2'	26:1:1681:U:C6	2.55	0.41
26:1:2083:G:H1	26:1:2639:C:H5	1.66	0.41
26:1:2268:A:H2'	26:1:2269:G:C8	2.56	0.41
2:B:260:ARG:NH1	26:1:1826:G:OP1	2.41	0.41
13:M:15:ARG:HD3	13:M:15:ARG:HA	1.87	0.41
23:Y:59:LYS:HG3	23:Y:61:GLY:H	1.86	0.41
24:Z:24:LEU:HD13	24:Z:30:ILE:HG12	2.02	0.41
26:1:464:U:H2'	26:1:465:C:C6	2.56	0.41
26:1:1674:U:H2'	26:1:1675:G:O4'	2.21	0.41
26:1:1939:A:O2'	26:1:1941:C:OP2	2.39	0.41
26:1:2676:U:H2'	26:1:2677:C:C6	2.55	0.41
9:I:80:LYS:O	9:I:84:LYS:HB2	2.21	0.41
12:L:71:LYS:HB3	12:L:72:PRO:HD3	2.03	0.41
17:Q:45:ARG:HD3	26:1:2445:A:OP1	2.20	0.41
26:1:569:U:H2'	26:1:570:U:C6	2.56	0.41
26:1:1086:G:HO2'	26:1:1087:C:H6	1.67	0.41
26:1:2348:G:H5'	26:1:2349:A:OP2	2.21	0.41
26:1:2705:U:H2'	26:1:2706:A:C8	2.55	0.41
27:2:11:A:H4'	27:2:13:A:H2'	2.03	0.41
26:1:557:G:OP1	26:1:1272:U:O2'	2.39	0.40
26:1:1328:C:H2'	26:1:1329:G:H8	1.86	0.40
26:1:2404:A:H2'	26:1:2405:A:C8	2.55	0.40
26:1:2858:G:H1	26:1:2900:C:H41	1.69	0.40
27:2:49:G:O2'	27:2:50:A:OP1	2.36	0.40
10:J:39:LEU:HB3	10:J:59:VAL:HG21	2.03	0.40
26:1:1203:U:H2'	26:1:1204:G:H8	1.87	0.40
26:1:1400:C:O2'	26:1:1836:A:N3	2.51	0.40
6:F:83:LYS:HE2	6:F:83:LYS:HB3	1.90	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:34:THR:OG1	11:K:36:GLN:OE1	2.36	0.40
12:L:56:LYS:HE3	12:L:69:ALA:HB2	2.04	0.40
26:1:774:G:H5'	26:1:775:A:H5''	2.04	0.40
26:1:830:U:H2'	26:1:831:C:C6	2.57	0.40
26:1:1031:C:H2'	26:1:1032:A:O4'	2.22	0.40
26:1:1823:U:H2'	26:1:1824:C:C6	2.56	0.40
16:P:4:ARG:HA	16:P:4:ARG:HD3	1.90	0.40
26:1:525:A:H1'	26:1:526:A:H5''	2.02	0.40
26:1:923:A:H2	26:1:946:A:C5	2.40	0.40
26:1:1725:G:O2'	26:1:1789:A:O2'	2.18	0.40
5:E:88:ARG:NH2	26:1:793:G:OP1	2.39	0.40
11:K:28:LEU:HD13	11:K:43:ILE:HD13	2.03	0.40
23:Y:69:PHE:HA	23:Y:70:PRO:HD3	1.85	0.40
26:1:651:A:H2'	26:1:652:A:C8	2.56	0.40
26:1:1072:A:N6	26:1:1169:G:H2'	2.36	0.40
26:1:2395:C:H2'	26:1:2396:A:H8	1.87	0.40
26:1:2698:A:H2'	26:1:2699:U:O4'	2.22	0.40

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	A	111/116 (96%)	106 (96%)	5 (4%)	0	100	100
2	B	271/277 (98%)	264 (97%)	7 (3%)	0	100	100
3	C	114/118 (97%)	114 (100%)	0	0	100	100
4	D	98/102 (96%)	93 (95%)	5 (5%)	0	100	100
5	E	109/117 (93%)	107 (98%)	2 (2%)	0	100	100
6	F	85/87 (98%)	84 (99%)	1 (1%)	0	100	100
7	G	86/105 (82%)	79 (92%)	7 (8%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	H	91/217 (42%)	87 (96%)	4 (4%)	0	100	100
9	I	76/94 (81%)	71 (93%)	5 (7%)	0	100	100
10	J	57/61 (93%)	55 (96%)	2 (4%)	0	100	100
11	K	59/73 (81%)	56 (95%)	3 (5%)	0	100	100
12	L	213/220 (97%)	205 (96%)	8 (4%)	0	100	100
13	M	54/59 (92%)	52 (96%)	2 (4%)	0	100	100
14	N	48/57 (84%)	44 (92%)	4 (8%)	0	100	100
15	O	45/49 (92%)	43 (96%)	2 (4%)	0	100	100
16	P	42/45 (93%)	42 (100%)	0	0	100	100
17	Q	62/65 (95%)	58 (94%)	4 (6%)	0	100	100
18	R	35/37 (95%)	35 (100%)	0	0	100	100
19	S	190/207 (92%)	180 (95%)	10 (5%)	0	100	100
20	V	141/145 (97%)	138 (98%)	3 (2%)	0	100	100
21	W	119/122 (98%)	116 (98%)	3 (2%)	0	100	100
22	X	142/146 (97%)	135 (95%)	7 (5%)	0	100	100
23	Y	134/144 (93%)	132 (98%)	2 (2%)	0	100	100
24	Z	119/122 (98%)	115 (97%)	4 (3%)	0	100	100
25	a	106/119 (89%)	102 (96%)	4 (4%)	0	100	100
All	All	2607/2904 (90%)	2513 (96%)	94 (4%)	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	A	99/102 (97%)	99 (100%)	0	100	100
2	B	220/224 (98%)	220 (100%)	0	100	100
3	C	96/98 (98%)	96 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	D	85/86 (99%)	85 (100%)	0	100	100
5	E	90/94 (96%)	90 (100%)	0	100	100
6	F	79/79 (100%)	79 (100%)	0	100	100
7	G	77/90 (86%)	77 (100%)	0	100	100
8	H	81/190 (43%)	81 (100%)	0	100	100
9	I	61/75 (81%)	61 (100%)	0	100	100
10	J	49/51 (96%)	49 (100%)	0	100	100
11	K	55/66 (83%)	55 (100%)	0	100	100
12	L	173/177 (98%)	173 (100%)	0	100	100
13	M	50/53 (94%)	50 (100%)	0	100	100
14	N	45/50 (90%)	45 (100%)	0	100	100
15	O	45/47 (96%)	45 (100%)	0	100	100
16	P	39/40 (98%)	39 (100%)	0	100	100
17	Q	55/56 (98%)	55 (100%)	0	100	100
18	R	35/35 (100%)	35 (100%)	0	100	100
19	S	158/170 (93%)	158 (100%)	0	100	100
20	V	122/123 (99%)	122 (100%)	0	100	100
21	W	99/100 (99%)	99 (100%)	0	100	100
22	X	110/112 (98%)	110 (100%)	0	100	100
23	Y	113/119 (95%)	113 (100%)	0	100	100
24	Z	101/102 (99%)	101 (100%)	0	100	100
25	a	87/95 (92%)	87 (100%)	0	100	100
All	All	2224/2434 (91%)	2224 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
26	1	2673/2923 (91%)	388 (14%)	5 (0%)
27	2	110/115 (95%)	21 (19%)	1 (0%)

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	2783/3038 (91%)	409 (14%)	6 (0%)

All (409) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
26	1	35	G
26	1	36	G
26	1	51	G
26	1	60	U
26	1	69	C
26	1	71	A
26	1	74	U
26	1	75	G
26	1	89	U
26	1	90	A
26	1	91	A
26	1	117	A
26	1	119	U
26	1	137	G
26	1	139	U
26	1	140	A
26	1	156	A
26	1	160	G
26	1	161	A
26	1	168	A
26	1	176	A
26	1	180	G
26	1	183	A
26	1	199	A
26	1	202	A
26	1	218	G
26	1	219	A
26	1	225	A
26	1	230	A
26	1	233	U
26	1	248	G
26	1	251	G
26	1	253	G
26	1	255	G
26	1	258	A
26	1	259	A
26	1	268	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	278	A
26	1	279	A
26	1	298	U
26	1	301	U
26	1	302	A
26	1	306	C
26	1	309	U
26	1	311	U
26	1	320	U
26	1	321	U
26	1	322	A
26	1	330	C
26	1	332	A
26	1	333	C
26	1	354	A
26	1	358	G
26	1	372	A
26	1	373	A
26	1	381	G
26	1	396	G
26	1	397	U
26	1	406	A
26	1	407	G
26	1	408	U
26	1	410	G
26	1	411	A
26	1	432	G
26	1	433	U
26	1	440	C
26	1	447	A
26	1	450	C
26	1	452	G
26	1	457	G
26	1	463	C
26	1	489	A
26	1	501	C
26	1	502	C
26	1	503	A
26	1	526	A
26	1	527	G
26	1	535	G
26	1	536	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	537	A
26	1	545	G
26	1	546	A
26	1	550	A
26	1	553	A
26	1	554	C
26	1	575	G
26	1	576	U
26	1	577	A
26	1	578	G
26	1	583	A
26	1	593	U
26	1	594	G
26	1	606	G
26	1	616	G
26	1	617	A
26	1	618	A
26	1	646	A
26	1	647	G
26	1	650	U
26	1	659	A
26	1	660	A
26	1	661	U
26	1	662	G
26	1	667	G
26	1	682	A
26	1	683	G
26	1	690	U
26	1	691	A
26	1	698	U
26	1	699	U
26	1	700	A
26	1	731	U
26	1	744	A
26	1	758	G
26	1	761	A
26	1	763	A
26	1	775	A
26	1	785	C
26	1	792	U
26	1	809	A
26	1	810	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	819	A
26	1	820	G
26	1	822	G
26	1	827	A
26	1	829	U
26	1	835	U
26	1	837	G
26	1	850	G
26	1	857	C
26	1	872	U
26	1	875	G
26	1	891	A
26	1	921	C
26	1	923	A
26	1	924	G
26	1	944	G
26	1	955	A
26	1	970	U
26	1	972	A
26	1	977	A
26	1	985	A
26	1	989	A
26	1	990	G
26	1	1005	G
26	1	1018	A
26	1	1027	A
26	1	1040	A
26	1	1046	G
26	1	1056	U
26	1	1057	A
26	1	1066	G
26	1	1070	A
26	1	1077	U
26	1	1087	C
26	1	1093	C
26	1	1094	A
26	1	1156	G
26	1	1160	C
26	1	1173	A
26	1	1176	U
26	1	1177	A
26	1	1179	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	1186	A
26	1	1187	A
26	1	1220	A
26	1	1250	G
26	1	1258	A
26	1	1274	G
26	1	1278	G
26	1	1288	G
26	1	1291	A
26	1	1294	G
26	1	1309	G
26	1	1310	A
26	1	1313	G
26	1	1321	A
26	1	1327	C
26	1	1337	A
26	1	1338	U
26	1	1358	A
26	1	1362	C
26	1	1366	U
26	1	1374	G
26	1	1387	C
26	1	1389	U
26	1	1395	G
26	1	1402	A
26	1	1416	U
26	1	1421	A
26	1	1429	G
26	1	1432	A
26	1	1433	U
26	1	1451	U
26	1	1452	C
26	1	1453	G
26	1	1454	U
26	1	1463	A
26	1	1471	A
26	1	1472	C
26	1	1489	A
26	1	1490	G
26	1	1491	C
26	1	1497	A
26	1	1503	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	1504	U
26	1	1516	C
26	1	1519	U
26	1	1557	C
26	1	1561	G
26	1	1566	G
26	1	1570	G
26	1	1578	A
26	1	1588	U
26	1	1593	G
26	1	1605	A
26	1	1606	C
26	1	1616	A
26	1	1628	A
26	1	1629	U
26	1	1634	A
26	1	1639	G
26	1	1651	C
26	1	1652	A
26	1	1654	A
26	1	1663	G
26	1	1683	U
26	1	1690	A
26	1	1691	G
26	1	1692	C
26	1	1711	G
26	1	1718	G
26	1	1740	G
26	1	1744	A
26	1	1758	A
26	1	1759	G
26	1	1773	A
26	1	1790	G
26	1	1791	G
26	1	1800	A
26	1	1811	A
26	1	1827	C
26	1	1828	U
26	1	1829	A
26	1	1836	A
26	1	1843	U
26	1	1854	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	1856	A
26	1	1860	C
26	1	1897	U
26	1	1898	C
26	1	1901	C
26	1	1910	G
26	1	1933	G
26	1	1940	A
26	1	1941	C
26	1	1942	U
26	1	1943	A
26	1	1944	U
26	1	1946	A
26	1	1957	G
26	1	1965	A
26	1	1982	U
26	1	1994	C
26	1	1997	A
26	1	1998	A
26	1	1999	G
26	1	2004	A
26	1	2009	U
26	1	2018	U
26	1	2020	U
26	1	2021	C
26	1	2050	A
26	1	2058	A
26	1	2059	G
26	1	2060	A
26	1	2070	C
26	1	2082	C
26	1	2083	G
26	1	2087	A
26	1	2088	G
26	1	2089	A
26	1	2090	C
26	1	2096	G
26	1	2120	G
26	1	2124	U
26	1	2126	C
26	1	2226	A
26	1	2231	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	2232	A
26	1	2238	U
26	1	2252	A
26	1	2265	G
26	1	2266	G
26	1	2295	A
26	1	2302	C
26	1	2306	G
26	1	2307	G
26	1	2310	C
26	1	2333	U
26	1	2335	G
26	1	2336	A
26	1	2337	A
26	1	2338	A
26	1	2339	U
26	1	2346	U
26	1	2348	G
26	1	2349	A
26	1	2350	G
26	1	2352	G
26	1	2361	U
26	1	2362	A
26	1	2363	A
26	1	2372	G
26	1	2374	C
26	1	2377	C
26	1	2398	G
26	1	2399	G
26	1	2410	G
26	1	2412	C
26	1	2429	U
26	1	2430	C
26	1	2450	U
26	1	2452	A
26	1	2456	G
26	1	2457	A
26	1	2468	C
26	1	2475	A
26	1	2497	G
26	1	2503	A
26	1	2505	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	2521	G
26	1	2525	C
26	1	2529	G
26	1	2530	A
26	1	2545	A
26	1	2547	C
26	1	2556	G
26	1	2561	C
26	1	2593	A
26	1	2594	G
26	1	2599	A
26	1	2600	C
26	1	2609	G
26	1	2612	U
26	1	2613	C
26	1	2629	A
26	1	2636	U
26	1	2637	C
26	1	2640	U
26	1	2641	A
26	1	2657	G
26	1	2663	U
26	1	2673	C
26	1	2677	C
26	1	2690	G
26	1	2712	G
26	1	2716	U
26	1	2717	A
26	1	2732	A
26	1	2741	G
26	1	2749	G
26	1	2753	U
26	1	2760	A
26	1	2771	G
26	1	2775	A
26	1	2778	G
26	1	2784	A
26	1	2791	A
26	1	2792	A
26	1	2793	G
26	1	2805	A
26	1	2807	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	2820	U
26	1	2821	U
26	1	2822	C
26	1	2823	G
26	1	2824	G
26	1	2827	A
26	1	2828	U
26	1	2840	A
26	1	2853	U
26	1	2887	G
26	1	2892	G
26	1	2893	A
26	1	2900	C
26	1	2911	A
26	1	2913	G
27	2	4	G
27	2	10	U
27	2	12	U
27	2	13	A
27	2	23	U
27	2	39	G
27	2	40	C
27	2	42	G
27	2	43	A
27	2	45	C
27	2	49	G
27	2	50	A
27	2	71	A
27	2	84	U
27	2	86	A
27	2	94	C
27	2	100	U
27	2	104	A
27	2	105	C
27	2	106	G
27	2	109	G

All (6) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
26	1	229	A
26	1	525	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
26	1	2336	A
26	1	2783	U
26	1	2827	A
27	2	49	G

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

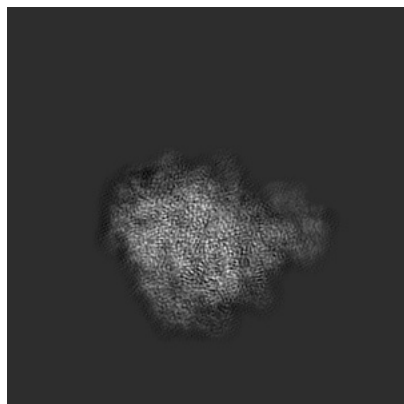
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-26124. These allow visual inspection of the internal detail of the map and identification of artifacts.

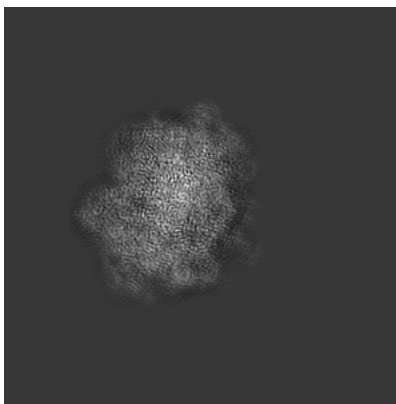
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

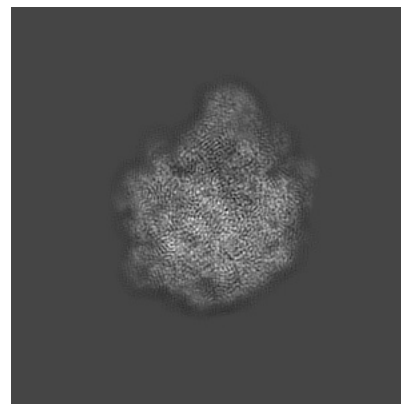
6.1.1 Primary map



X

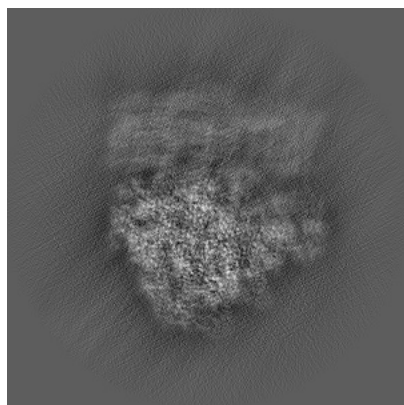


Y

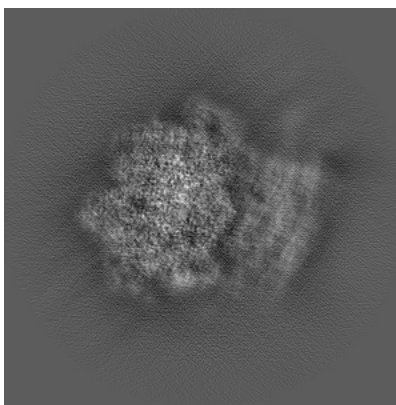


Z

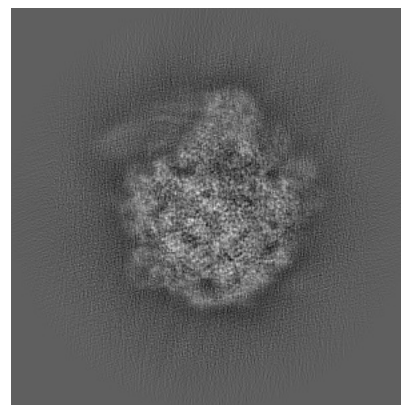
6.1.2 Raw map



X



Y

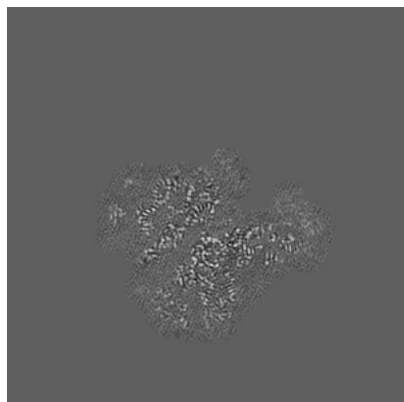


Z

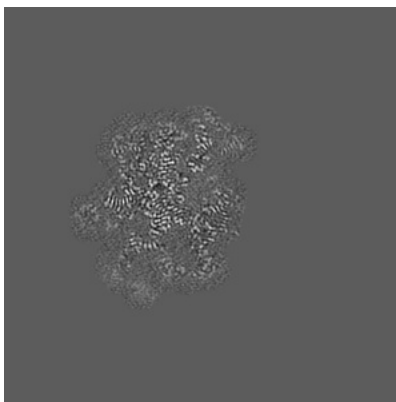
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

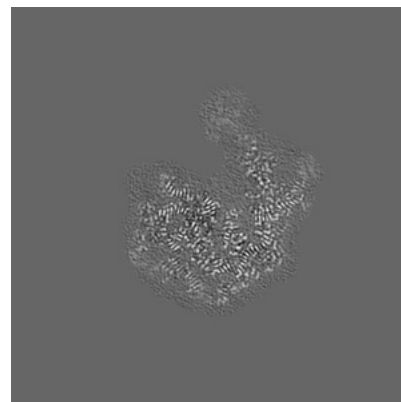
6.2.1 Primary map



X Index: 224

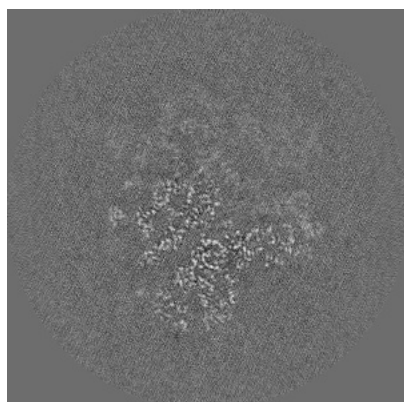


Y Index: 224

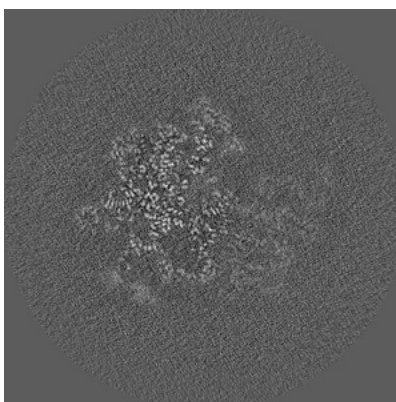


Z Index: 224

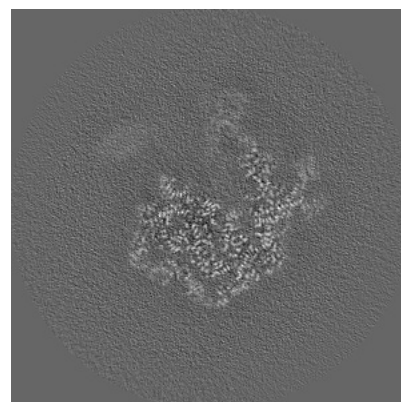
6.2.2 Raw map



X Index: 224



Y Index: 224

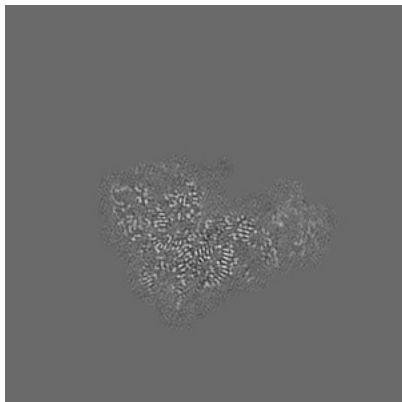


Z Index: 224

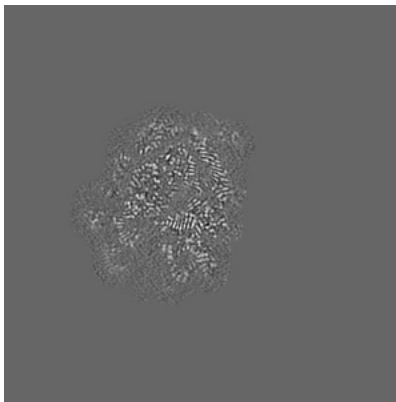
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

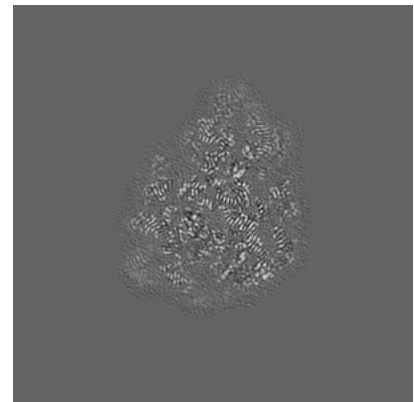
6.3.1 Primary map



X Index: 247

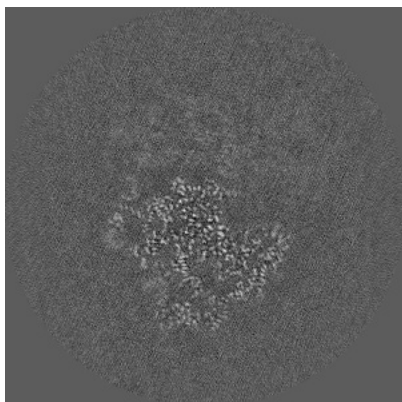


Y Index: 210

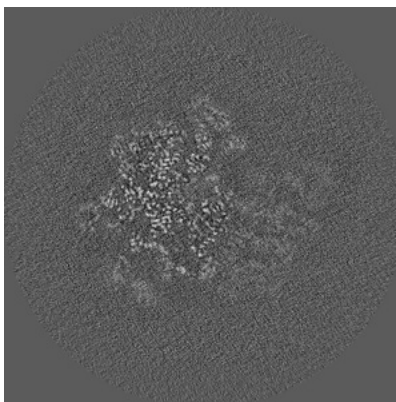


Z Index: 191

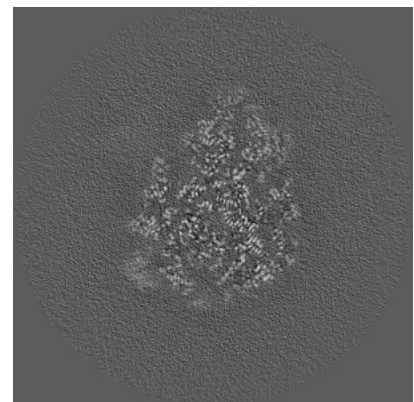
6.3.2 Raw map



X Index: 209



Y Index: 223

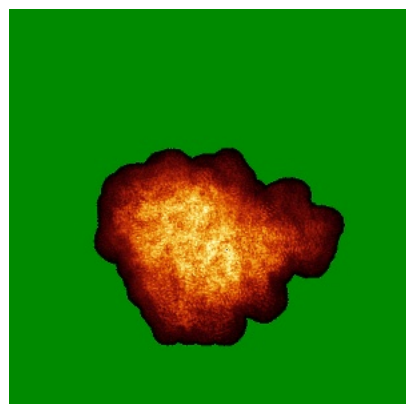


Z Index: 191

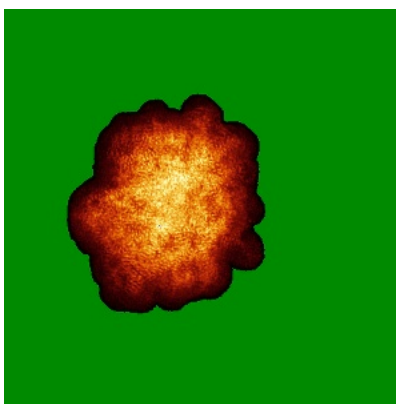
The images above show the largest variance slices of the map in three orthogonal directions.

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

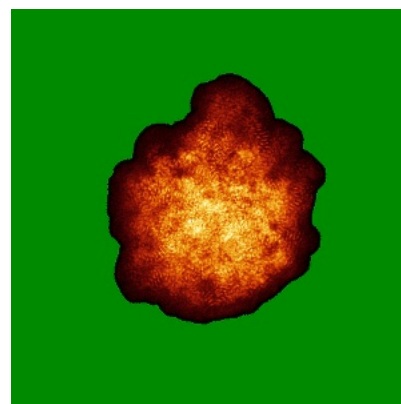
6.4.1 Primary map



X

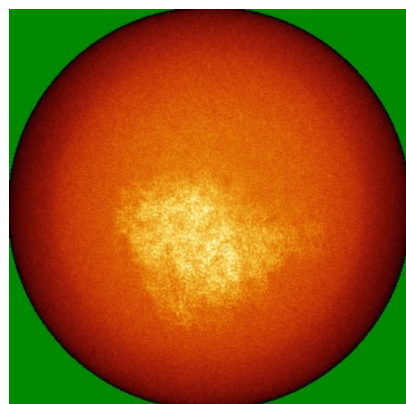


Y

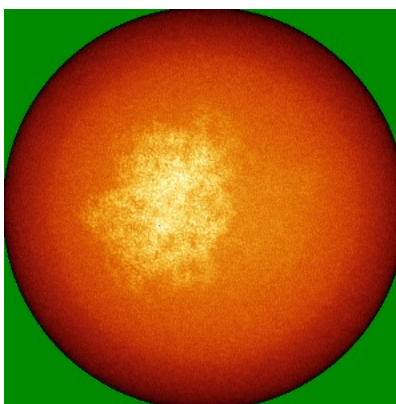


Z

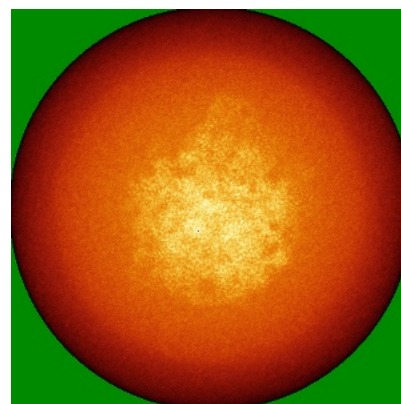
6.4.2 Raw map



X



Y

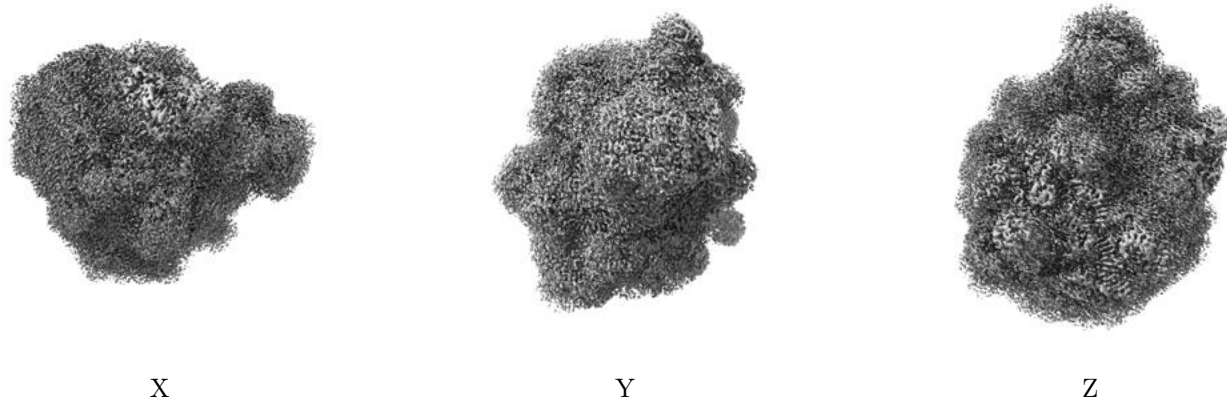


Z

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.

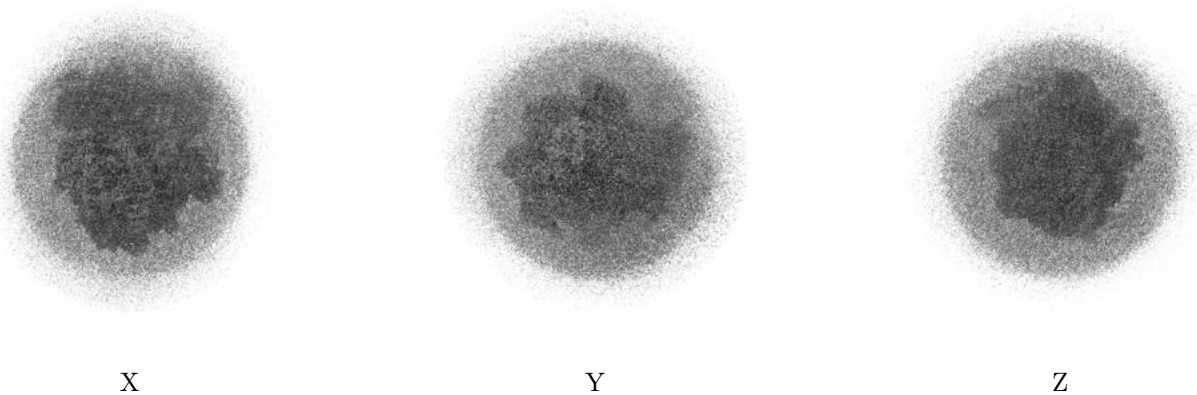
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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.

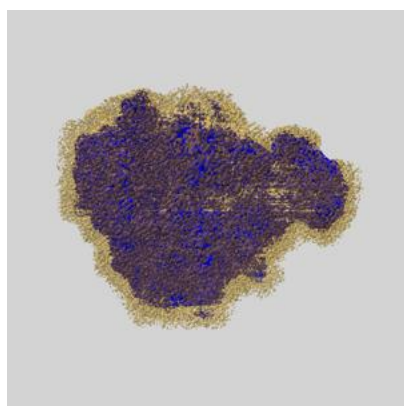
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

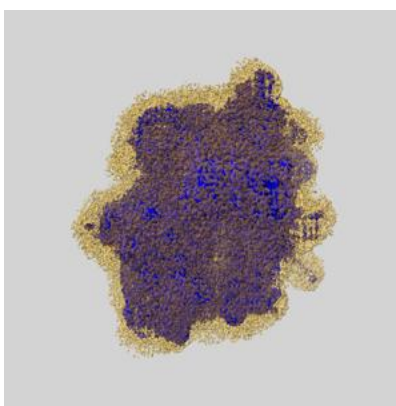
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

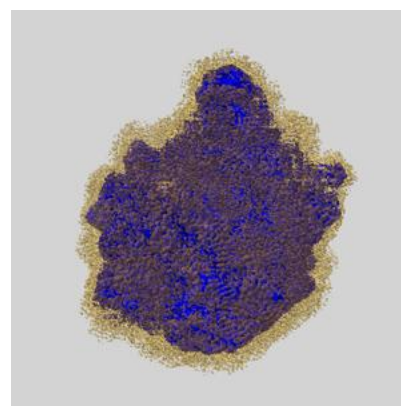
6.6.1 emd_26124_msk_1.map [i](#)



X



Y

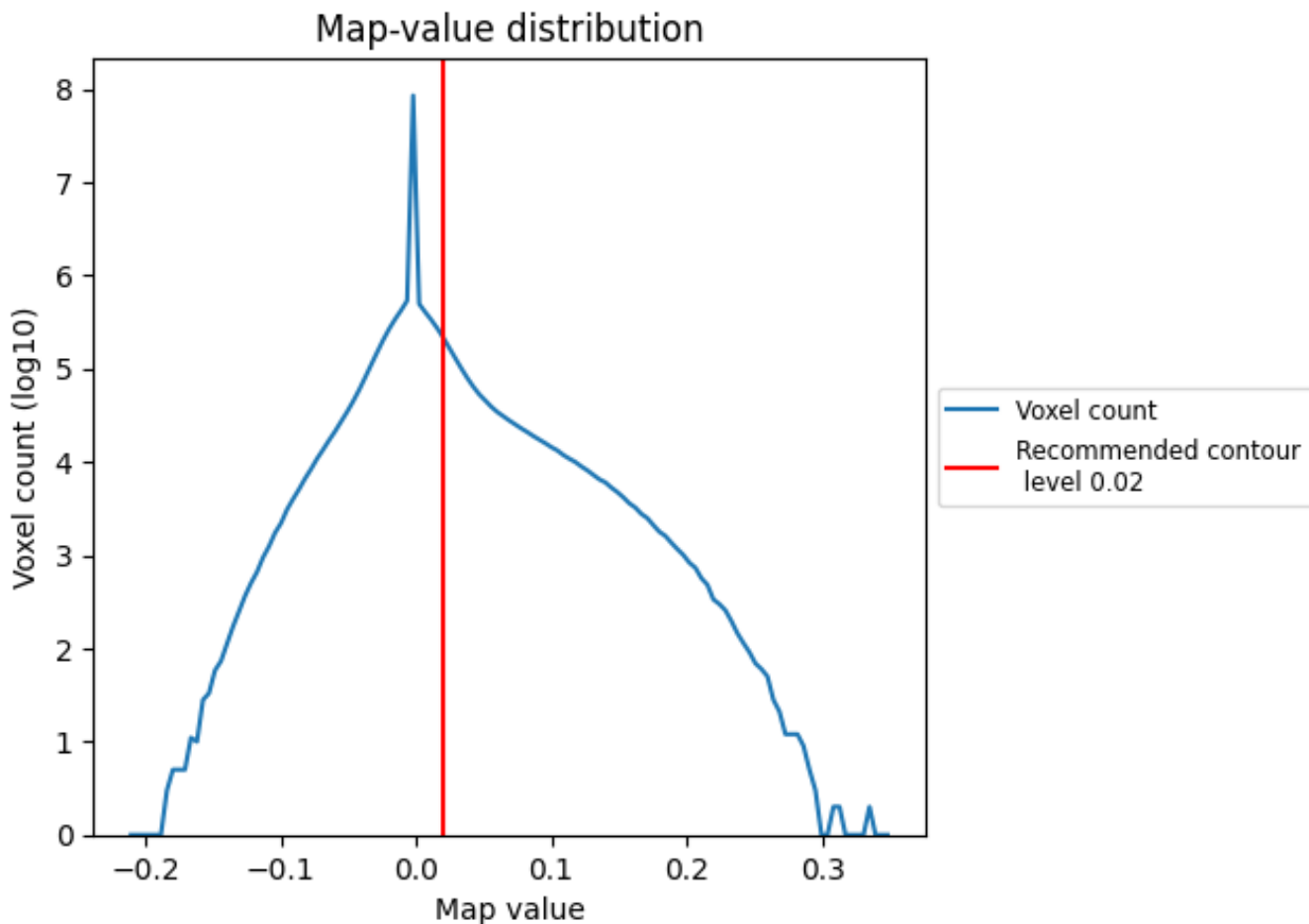


Z

7 Map analysis [i](#)

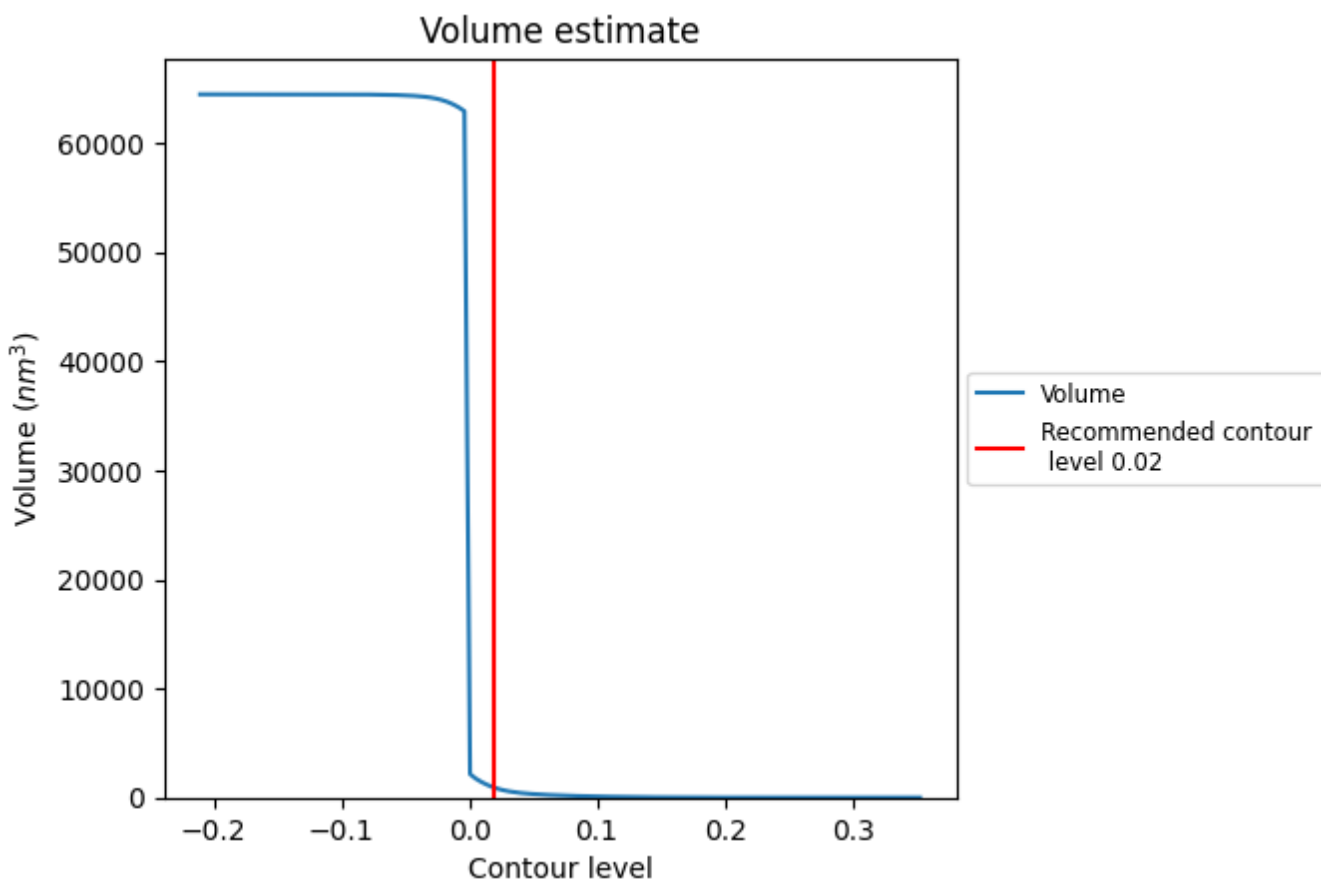
This section contains the results of statistical analysis of the map.

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.

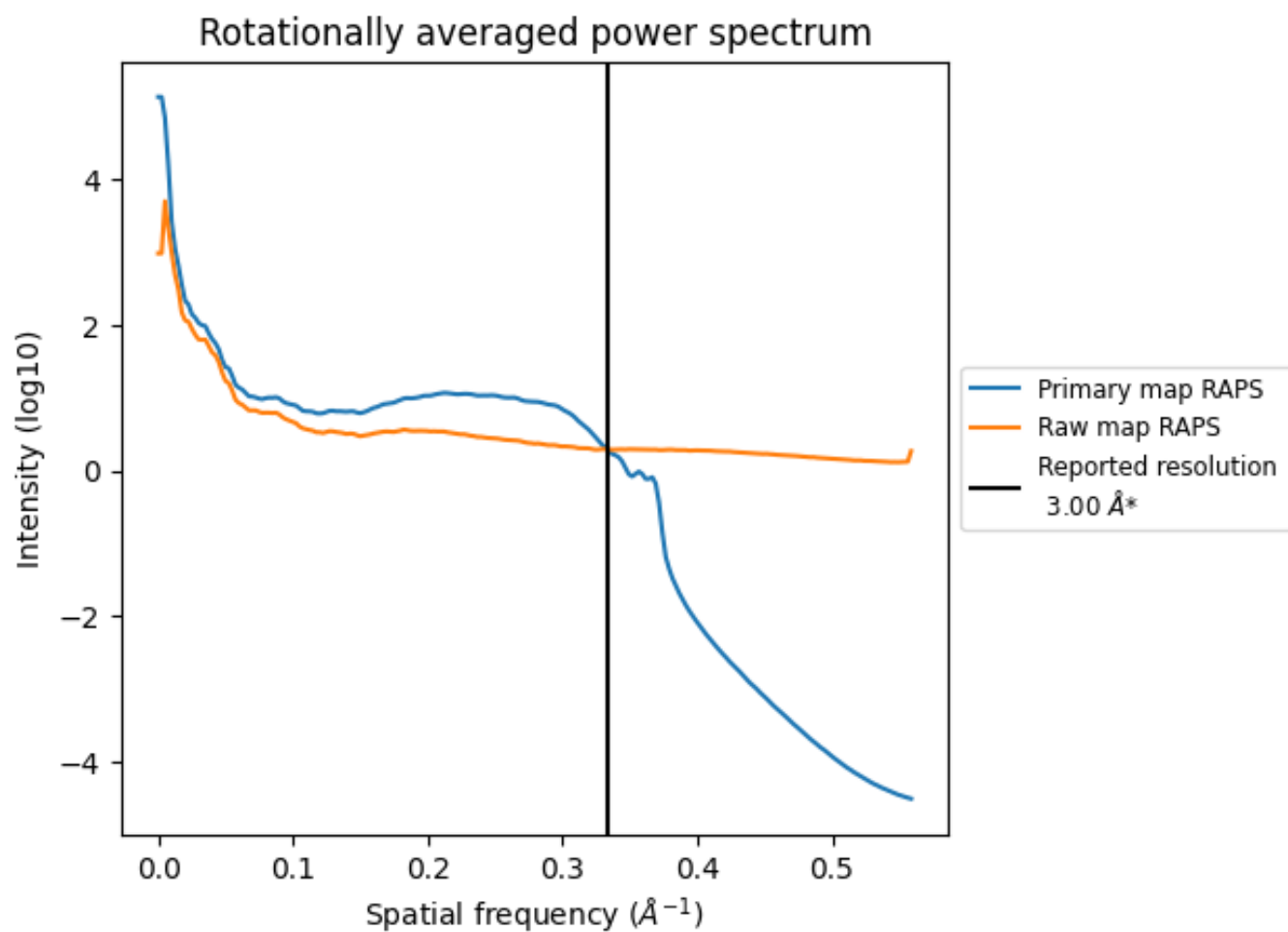
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 903 nm³; this corresponds to an approximate mass of 816 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

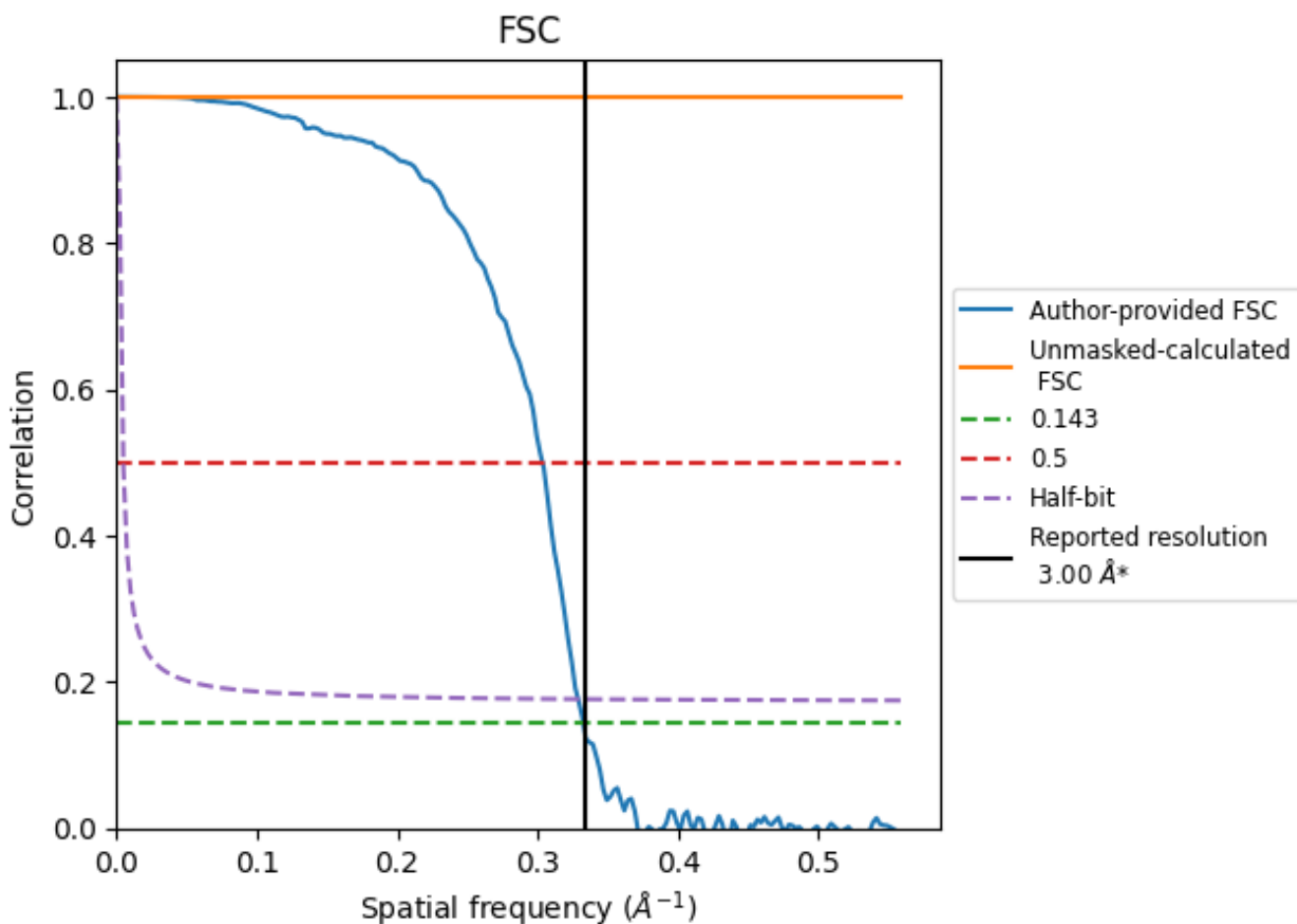


*Reported resolution corresponds to spatial frequency of 0.333 \AA^{-1}

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 0.333 Å⁻¹

8.2 Resolution estimates [i](#)

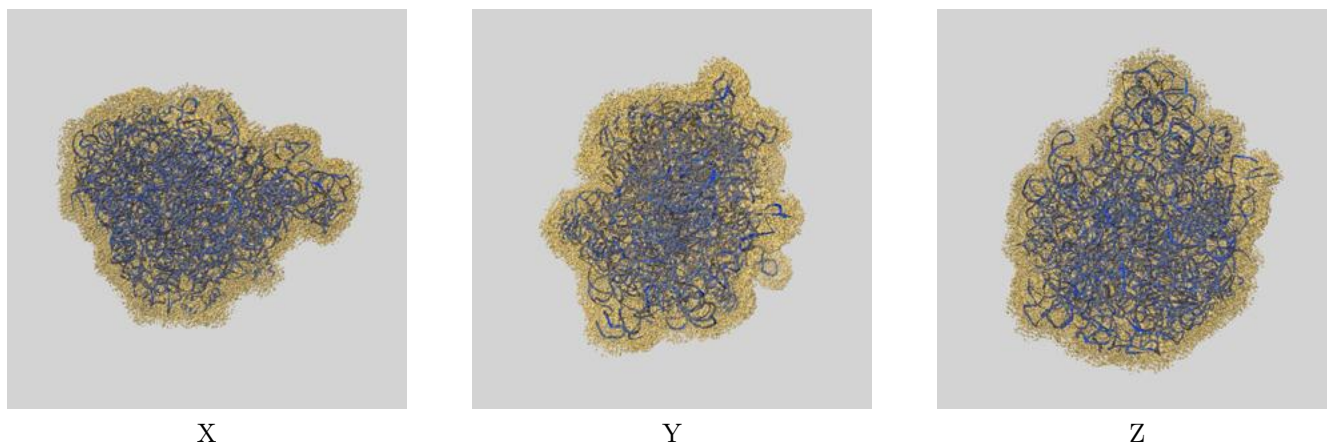
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	3.01	3.30	3.04
Unmasked-calculated*	-	-	-

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

9 Map-model fit [i](#)

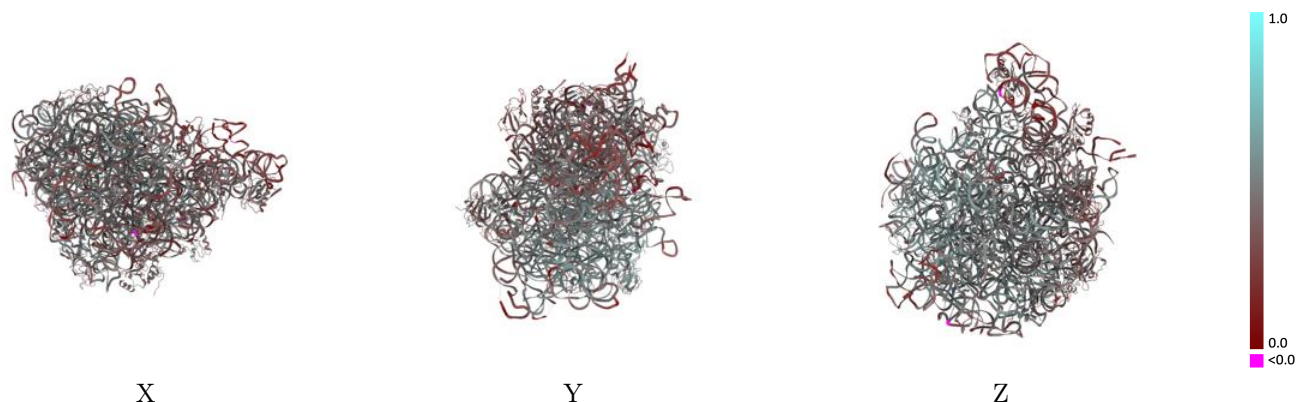
This section contains information regarding the fit between EMDB map EMD-26124 and PDB model 7TTU. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



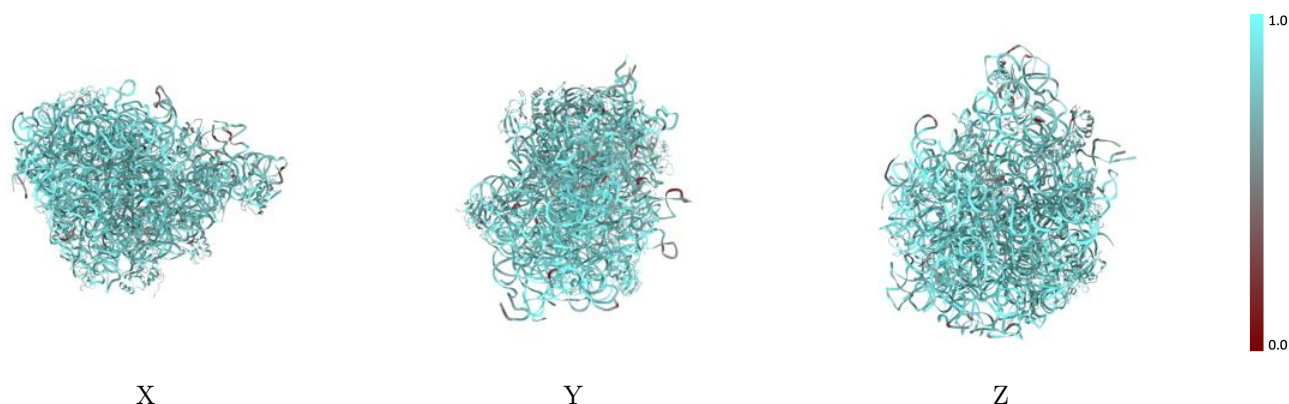
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



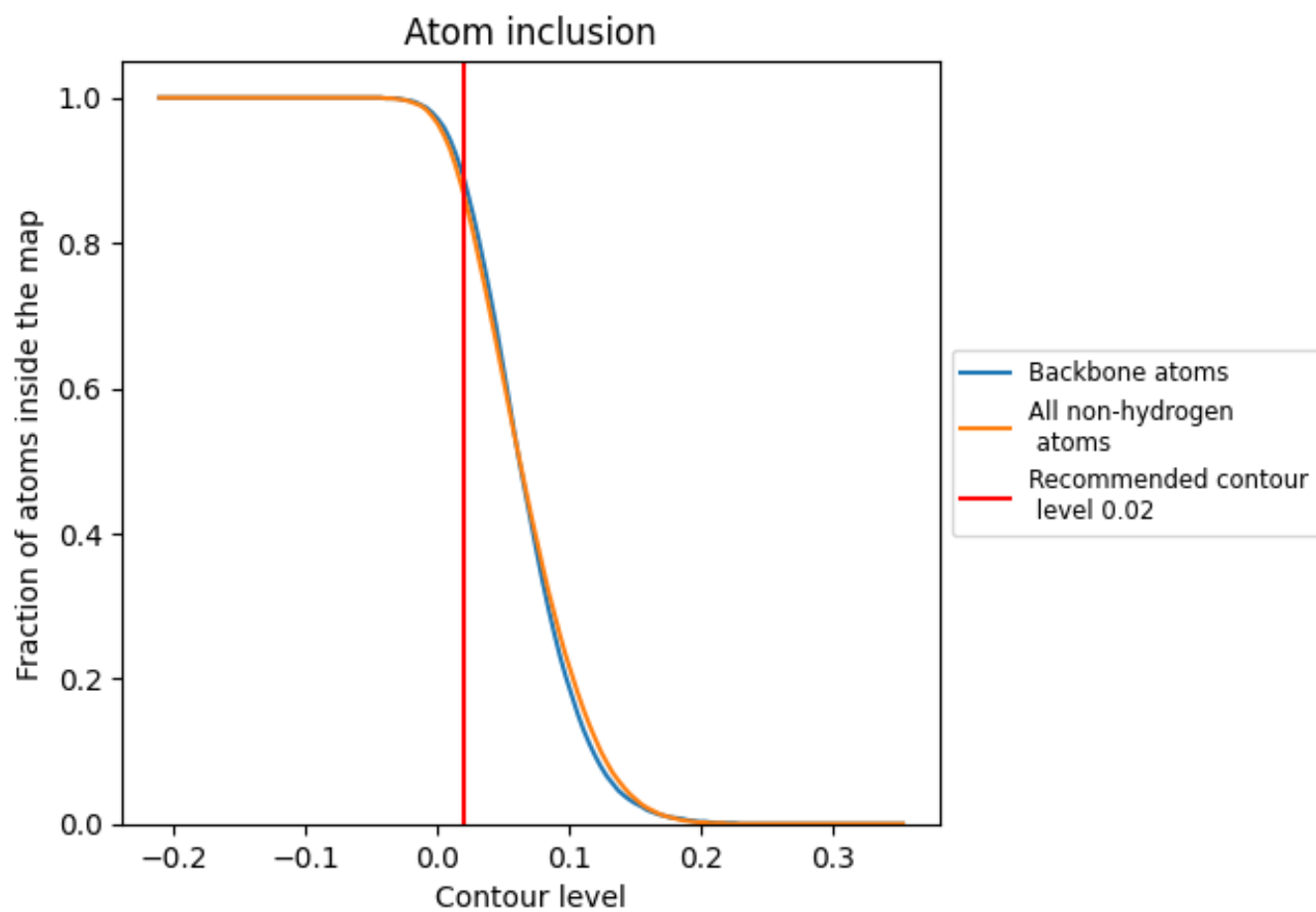
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

























































9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 87% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8680	 0.4470
1	 0.8870	 0.4580
2	 0.7760	 0.3340
A	 0.8080	 0.4420
B	 0.8940	 0.5270
C	 0.8230	 0.3960
D	 0.7570	 0.3500
E	 0.8650	 0.4600
F	 0.8670	 0.4760
G	 0.7610	 0.3820
H	 0.6440	 0.3270
I	 0.8110	 0.4240
J	 0.8840	 0.4930
K	 0.8500	 0.4090
L	 0.8340	 0.4280
M	 0.7880	 0.3850
N	 0.8960	 0.4520
O	 0.7900	 0.4180
P	 0.9540	 0.5620
Q	 0.8880	 0.5010
R	 0.7650	 0.3730
S	 0.8320	 0.4380
V	 0.8030	 0.3880
W	 0.8040	 0.4160
X	 0.8350	 0.4430
Y	 0.7910	 0.4120
Z	 0.8640	 0.4690
a	 0.7310	 0.3610

