



## wwPDB EM Validation Summary Report ⓘ

Jan 16, 2025 – 12:32 am GMT

PDB ID : 9HA7  
EMDB ID : EMD-51979  
Title : Pooled 50S subunit C-CP\_(L22)- H61 precursor states supplemented with Api137  
Authors : Lauer, S.; Nikolay, R.; Spahn, C.M.T.  
Deposited on : 2024-11-01  
Resolution : 4.37 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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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) : 2.40

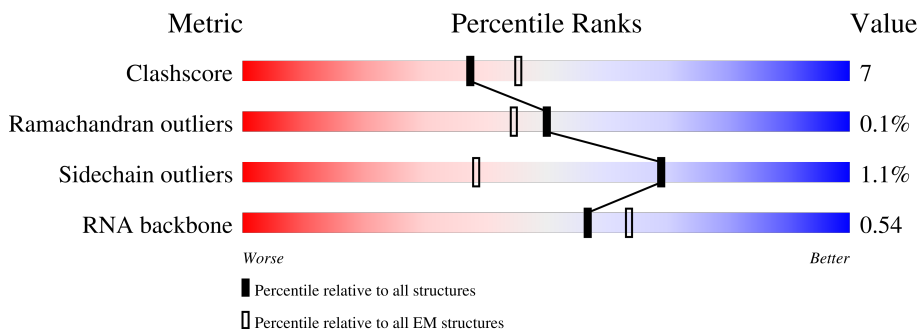
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.37 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  $\geq 3$ , 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	2	46	
2	B	120	
3	F	177	
4	J	142	
5	L	143	
6	N	120	
7	O	116	

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Mol	Chain	Length	Quality of chain
8	Q	117	85% 15%
9	R	103	77% 22%
10	T	93	86% 14%
11	U	102	82% 17%
12	V	94	77% 23%
13	W	75	81% 19%
14	Y	63	89% 11%
15	Z	58	81% 19%
16	A	2903	41% 23% 5% 32%
17	D	209	68% 14% 17%
18	E	201	64% 23% 12%
19	y	17	59% 94% 6%

## 2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 59416 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 Large ribosomal subunit protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	2	38	309	185	77	46	1	0	0

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	120	2572	1145	471	836	120	0	0

- Molecule 3 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	F	177	1410	899	249	256	6	0	0

- Molecule 4 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	J	142	1129	714	212	199	4	0	0

- Molecule 5 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	L	143	1045	649	206	189	1	0	0

- Molecule 6 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	N	120	957	592	196	164	5	0	0

- Molecule 7 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	O	116	892	552	178	162	0	0

- Molecule 8 is a protein called Large ribosomal subunit protein bL20.

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

- Molecule 9 is a protein called Large ribosomal subunit protein bL21.

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

- Molecule 10 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	T	93	738	466	139	131	2	0	0

- Molecule 11 is a protein called Large ribosomal subunit protein uL24.

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

- Molecule 12 is a protein called Large ribosomal subunit protein bL25.

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

- Molecule 13 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	W	75	575	356	116	102	1	0	0

- Molecule 14 is a protein called Large ribosomal subunit protein uL29.

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

- Molecule 15 is a protein called Large ribosomal subunit protein uL30.

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

- Molecule 16 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	A	1988	Total	C	N	O	P	0	0
			42736	19062	7924	13762	1988		

- Molecule 17 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	D	173	Total	C	N	O	S	0	0
			1284	805	231	244	4		

- Molecule 18 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	E	176	Total	C	N	O	S	0	0
			1368	862	243	258	5		

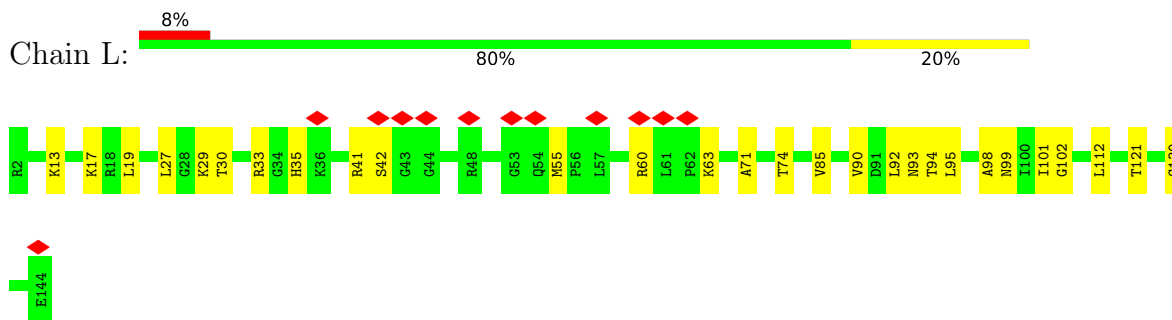
- Molecule 19 is a protein called Apidaecins type 22.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	y	17	Total	C	N	O	0	0
			148	94	33	21		

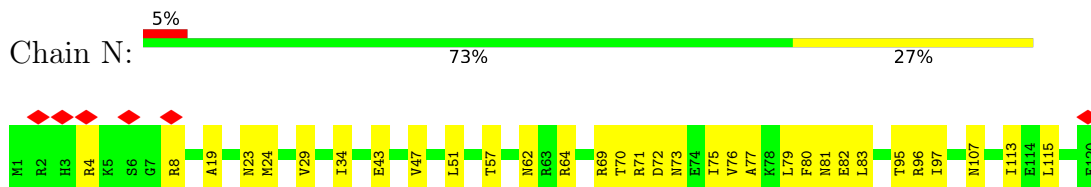
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
y	10	ARG	GLN	conflict	UNP P35581

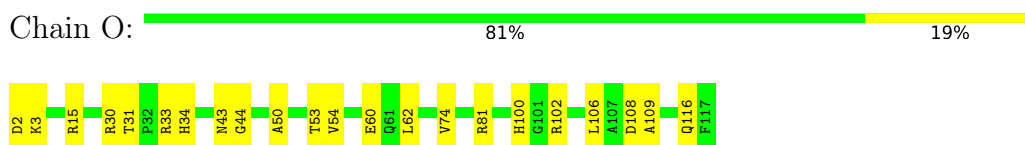




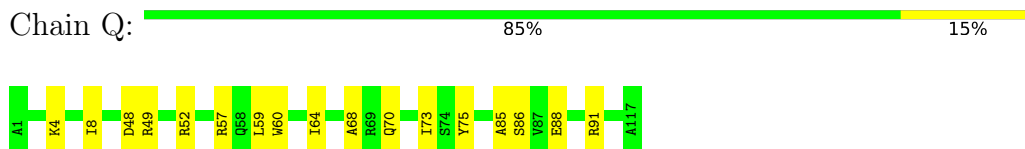
- Molecule 6: Large ribosomal subunit protein bL17



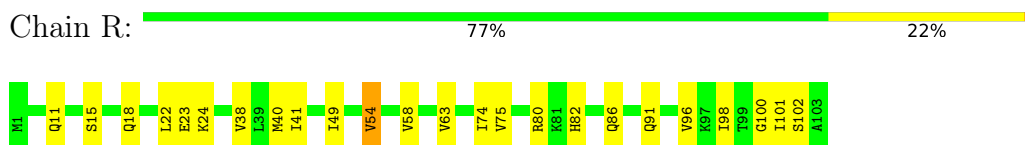
- Molecule 7: Large ribosomal subunit protein uL18



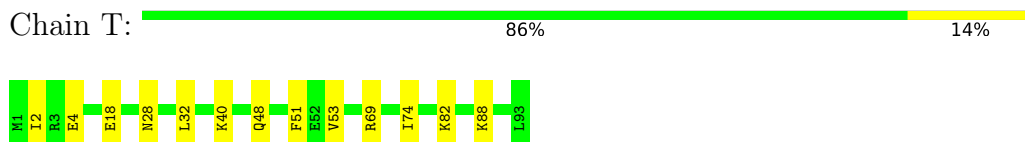
- Molecule 8: Large ribosomal subunit protein bL20



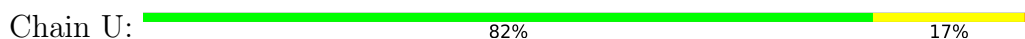
- Molecule 9: Large ribosomal subunit protein bL21



- Molecule 10: Large ribosomal subunit protein uL23



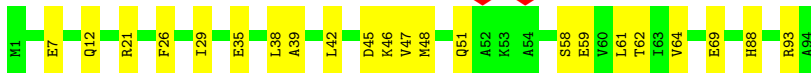
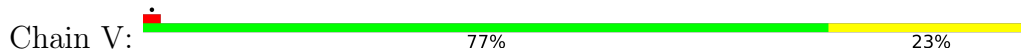
- Molecule 11: Large ribosomal subunit protein uL24



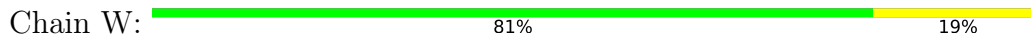




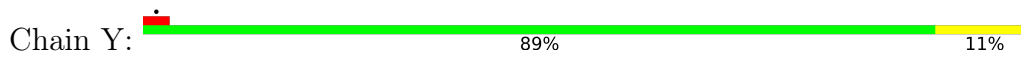
- Molecule 12: Large ribosomal subunit protein bL25



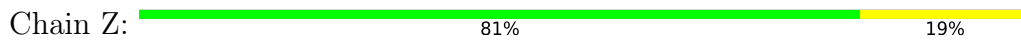
- Molecule 13: Large ribosomal subunit protein bL27



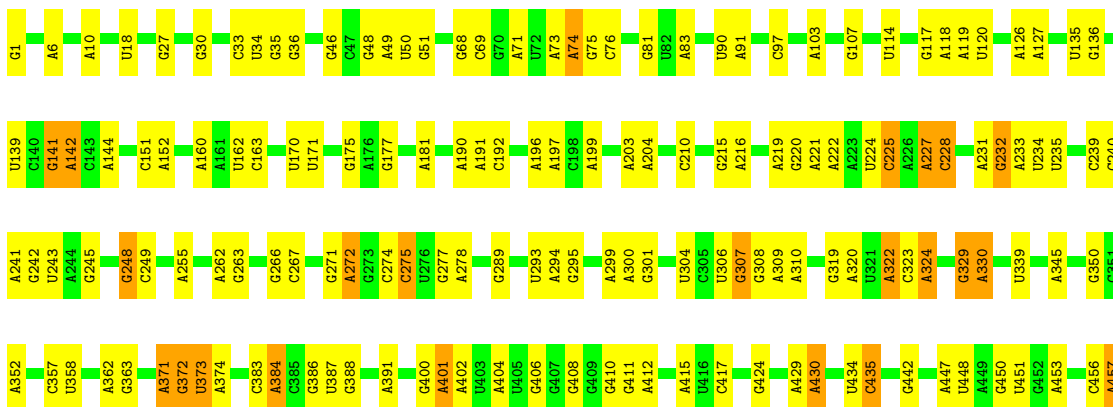
- Molecule 14: Large ribosomal subunit protein uL29



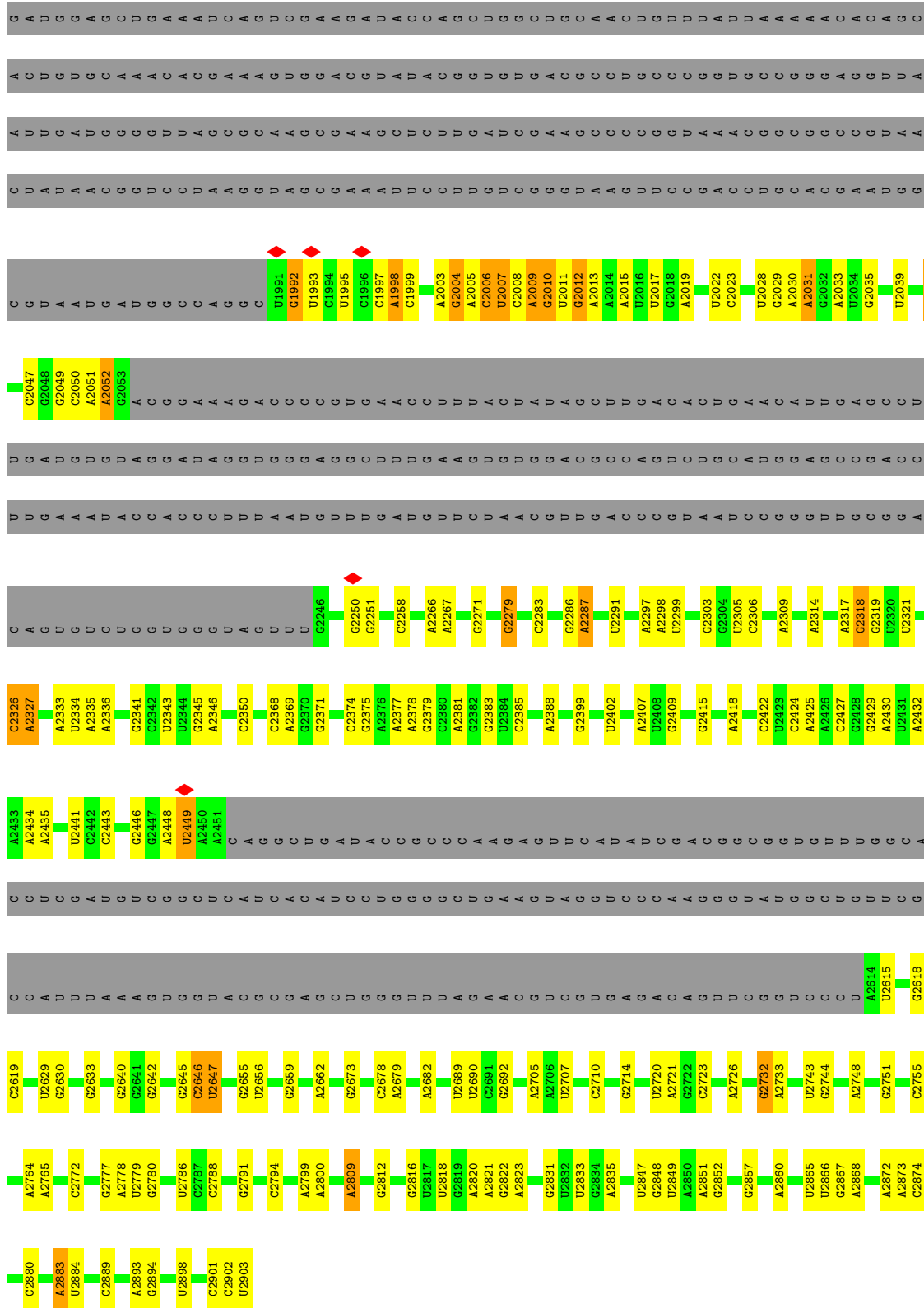
- Molecule 15: Large ribosomal subunit protein uL30



- Molecule 16: 23S ribosomal RNA

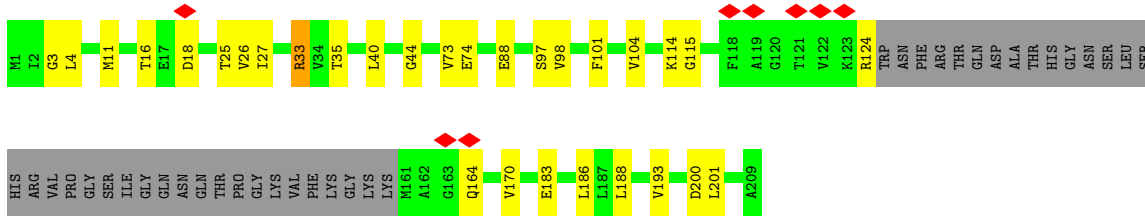


G	A1603	A1585	A1383	G1210	A975	A1794	G669	U568	G458
C	C1604	C1536	A1384	C1211	G976	G801	A670	U569	U459
A	C1607	G1537	A1385	G1212	A981	A802	C671	G570	G463
A	A1608	C1541	C1386	A1225	A982	A805	C672	U571	U464
A	A1609	U1542	A1387	G1225	A983	G806	C673	A572	A465
U	A1610	G1543	G1388	U1234	A984	C906	G674	U573	A466
G	C1611	U1466	U1389	G1235	C985	U807	A675	A574	A471
G	C1612	U1467	U1390	G1236	C986	U810	C678	A575	A472
G	G1613	A1469	U1391	U1236	C987	U811	G684	A576	A473
U	A1614	C1547	A1392	A1237	C988	C812	A	A577	G474
U	A1615	U1548	U1393	A1244	C989	A819	U	A578	C475
C	A1616	U1394	A1328	G1245	C990	A820	U	A579	A479
C	A1617	U1395	U1329	G1246	C991	U827	A	A580	A480
G	A1618	U1396	C1330	A1246	C992	U828	U	A581	G481
A	U1619	U1397	G1332	A1250	C993	U829	A	A582	G491
A	U1620	U1400	G1333	A1253	C994	A829	U	A583	U499
C	U1621	U1401	G1334	A1254	C995	U830	U	A584	G500
U	G1622	U1402	G1334	U1255	C996	U831	A	A585	A505
U	G1627	U1403	C1335	U1256	C997	U832	U	A586	C509
C	G1628	U1404	G1335	U1257	C998	U833	U	A587	C510
G	U1629	G1407	C1341	U1263	C999	U834	U	A588	A514
G	U1630	U1485	A1342	A1264	C1000	U835	U	A589	A526
A	U1631	U1486	U1344	A1265	C1007	U836	U	A590	A529
G	A1634	U1486	G1345	G1266	A1008	U837	U	A591	G530
A	A1635	G1492	G1346	U1267	A1009	U838	U	A592	C531
A	A1636	G1493	A1347	A1268	C1010	U839	U	A593	G532
G	U1637	A1494	A1348	U1269	C1011	U840	U	A594	U534
C	A1638	A1495	C1349	A1270	C1012	U841	U	A595	C542
A	C1638	A1496	C1350	G1271	U1023	U842	U	A596	G543
C	C1644	U1497	U1351	A1272	G1024	U843	U	A597	C544
C	U1647	C1498	U1352	U1273	G1025	U844	U	A598	U545
G	U1648	G1501	A1353	A1274	G1026	U845	U	A599	U546
U	G1649	A1504	A1354	A1275	A1027	U846	U	A600	A547
A	A1650	A1505	A1355	G1276	A1028	U847	U	A601	G548
U	G1651	U1578	G1357	C1278	G1031	U848	U	A602	G549
U	A1652	U1579	G1358	U1279	A	U849	U	A603	C550
U	G1653	A1583	A1359	G1280	A	U850	U	A604	G551
U	A1654	G1510	C1360	A1281	A	U851	U	A605	U554
U	A1655	G1511	G1361	A1282	A	U852	U	A606	G555
A	C1656	A1434	C1362	A1284	A	U853	U	A607	U562
G	U1657	G1435	G1363	U1287	A	U854	U	A608	A563
G	G1660	G1436	G1364	G1288	A	U855	U	A609	U567
U	U1661	G1437	A1365	C1289	A	U856	U	A610	
A	U1662	U1442	A1366	U1300	A	U857	U	A611	
C	G1663	U1443	G1438	A1301	A	U858	U	A612	
G	A1664	G1444	G1445	A1302	A	U859	U	A613	
U	G1665	U1524	U1445	G1303	A	U860	U	A614	
U	G1666	A1525	G1446	A1304	A	U861	U	A615	
C	A1667	U1528	G1447	C1305	A	U862	U	A616	
U	A1668	G1529	U1448	U1306	A	U863	U	A617	
C	A1669	U1532	G1449	A1307	A	U864	U	A618	
C	A	C1533	U1451	U1308	A	U865	U	A619	
C	U	G1452	A1451	G1309	A	U866	U	A620	
G	A	U1602	G1452	U1312	A	U867	U	A621	
G			C1454	U1312	A	U868	U	A622	

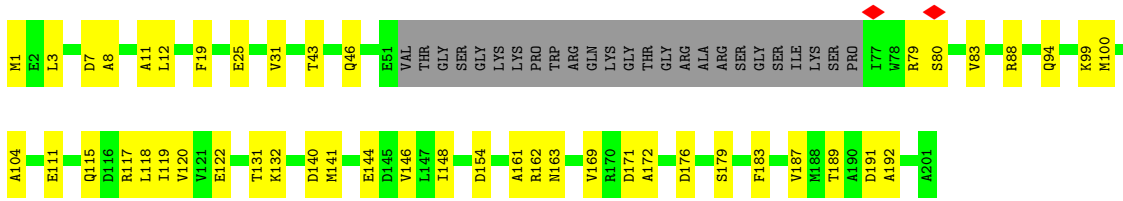


• Molecule 17: 50S ribosomal protein L3

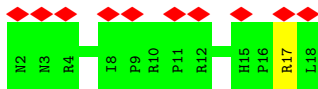
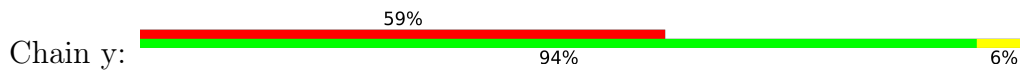




• Molecule 18: Large ribosomal subunit protein uL4



• Molecule 19: Apidaecins type 22



## 4 Experimental information i

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	28649	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	46.2	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.499	Depositor
Minimum map value	-0.761	Depositor
Average map value	-0.012	Depositor
Map value standard deviation	0.142	Depositor
Recommended contour level	0.255	Depositor
Map size ( $\text{\AA}$ )	399.6, 399.6, 399.6	wwPDB
Map dimensions	200, 200, 200	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.998, 1.998, 1.998	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	2	0.23	0/310	0.65	0/405
2	B	0.24	1/2876 (0.0%)	0.69	0/4483
3	F	0.25	0/1434	0.52	0/1926
4	J	0.24	0/1152	0.49	0/1551
5	L	0.25	0/1054	0.57	0/1403
6	N	0.25	0/970	0.58	0/1297
7	O	0.24	0/902	0.54	0/1209
8	Q	0.24	0/960	0.52	0/1278
9	R	0.25	0/829	0.53	0/1107
10	T	0.24	0/744	0.50	0/994
11	U	0.25	0/787	0.51	0/1051
12	V	0.25	0/766	0.49	0/1025
13	W	0.25	0/582	0.53	0/769
14	Y	0.25	0/510	0.49	0/677
15	Z	0.24	0/453	0.54	0/605
16	A	0.16	1/47875 (0.0%)	0.72	6/74684 (0.0%)
17	D	0.25	0/1296	0.52	0/1742
18	E	0.24	0/1382	0.47	0/1860
19	y	0.48	0/155	0.65	0/212
All	All	0.19	2/65037 (0.0%)	0.68	6/98278 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	A	1	G	OP3-P	-10.70	1.48	1.61
2	B	1	U	OP3-P	-10.57	1.48	1.61

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	A	1541	C	N3-C2-O2	-7.06	116.96	121.90
16	A	1541	C	N1-C2-O2	6.82	122.99	118.90
16	A	1512	C	N3-C2-O2	-5.58	117.99	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	A	363	G	N1-C2-N2	-5.55	111.21	116.20
16	A	1529	G	N3-C4-N9	5.39	129.23	126.00

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	2	309	0	344	5	0
2	B	2572	0	1302	33	0
3	F	1410	0	1447	46	0
4	J	1129	0	1162	22	0
5	L	1045	0	1117	23	0
6	N	957	0	998	22	0
7	O	892	0	923	17	0
8	Q	947	0	1022	16	0
9	R	816	0	839	16	0
10	T	738	0	807	10	0
11	U	779	0	834	14	0
12	V	753	0	780	17	0
13	W	575	0	592	9	0
14	Y	509	0	543	5	0
15	Z	449	0	491	11	0
16	A	42736	0	21494	377	0
17	D	1284	0	1339	24	0
18	E	1368	0	1421	35	0
19	y	148	0	151	0	0
All	All	59416	0	37606	621	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 7.

The worst 5 of 621 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)
16:A:239:C:HO2'	16:A:622:G:HO2'	1.07	0.95
16:A:1007:C:OP2	16:A:1008:A:O2'	1.90	0.88
16:A:1667:G:N2	16:A:1669:A:N6	2.24	0.86
4:J:134:ALA:O	16:A:2898:U:O2'	1.94	0.86
16:A:951:C:N4	16:A:952:G:O6	2.10	0.85

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	2	36/46 (78%)	36 (100%)	0	0	100	100
3	F	175/177 (99%)	169 (97%)	6 (3%)	0	100	100
4	J	140/142 (99%)	139 (99%)	1 (1%)	0	100	100
5	L	141/143 (99%)	129 (92%)	12 (8%)	0	100	100
6	N	118/120 (98%)	107 (91%)	11 (9%)	0	100	100
7	O	114/116 (98%)	111 (97%)	3 (3%)	0	100	100
8	Q	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
9	R	101/103 (98%)	97 (96%)	3 (3%)	1 (1%)	13	48
10	T	91/93 (98%)	86 (94%)	5 (6%)	0	100	100
11	U	100/102 (98%)	89 (89%)	11 (11%)	0	100	100
12	V	92/94 (98%)	89 (97%)	3 (3%)	0	100	100
13	W	73/75 (97%)	71 (97%)	2 (3%)	0	100	100
14	Y	61/63 (97%)	59 (97%)	2 (3%)	0	100	100
15	Z	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
17	D	169/209 (81%)	163 (96%)	6 (4%)	0	100	100
18	E	172/201 (86%)	168 (98%)	3 (2%)	1 (1%)	22	59

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	y	15/17 (88%)	11 (73%)	4 (27%)	0	100	100
All	All	1769/1876 (94%)	1692 (96%)	75 (4%)	2 (0%)	50	83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	R	54	VAL
18	E	83	VAL

### 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	2	30/38 (79%)	30 (100%)	0	100	100
3	F	148/148 (100%)	143 (97%)	5 (3%)	32	53
4	J	116/116 (100%)	114 (98%)	2 (2%)	56	73
5	L	102/102 (100%)	102 (100%)	0	100	100
6	N	99/100 (99%)	99 (100%)	0	100	100
7	O	86/86 (100%)	86 (100%)	0	100	100
8	Q	89/89 (100%)	89 (100%)	0	100	100
9	R	84/84 (100%)	83 (99%)	1 (1%)	67	79
10	T	80/80 (100%)	80 (100%)	0	100	100
11	U	83/83 (100%)	82 (99%)	1 (1%)	67	79
12	V	78/78 (100%)	77 (99%)	1 (1%)	65	77
13	W	57/57 (100%)	56 (98%)	1 (2%)	54	71
14	Y	55/55 (100%)	55 (100%)	0	100	100
15	Z	48/48 (100%)	48 (100%)	0	100	100
17	D	134/164 (82%)	132 (98%)	2 (2%)	60	75
18	E	146/165 (88%)	144 (99%)	2 (1%)	62	76
19	y	17/17 (100%)	16 (94%)	1 (6%)	16	38

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1452/1510 (96%)	1436 (99%)	16 (1%)	69 80

5 of 16 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
18	E	163	ASN
18	E	19	PHE
11	U	98	ASN
17	D	33	ARG
9	R	22	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
8	Q	70	GLN
9	R	18	GLN
19	y	3	ASN
18	E	94	GLN
6	N	107	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
16	A	1981/2903 (68%)	428 (21%)	17 (0%)
2	B	119/120 (99%)	14 (11%)	2 (1%)
All	All	2100/3023 (69%)	442 (21%)	19 (0%)

5 of 442 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	B	4	C
2	B	12	C
2	B	13	G
2	B	35	C
2	B	41	G

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
16	A	1534	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
16	A	2326	C
16	A	2655	G
16	A	2318	G
16	A	644	A

#### 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.

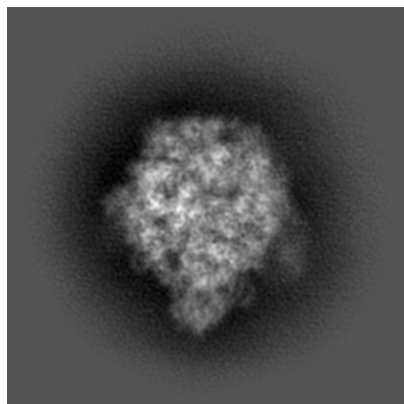
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-51979. These allow visual inspection of the internal detail of the map and identification of artifacts.

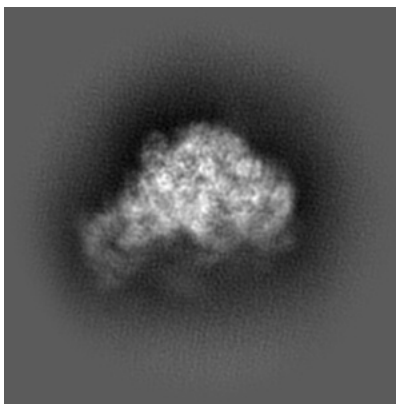
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

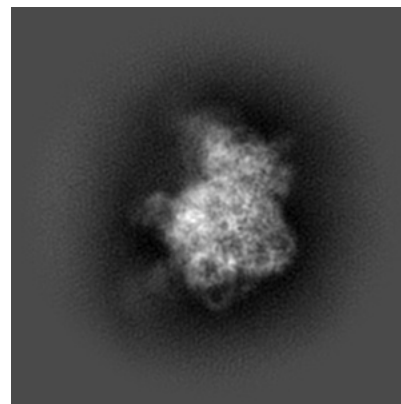
#### 6.1.1 Primary map



X

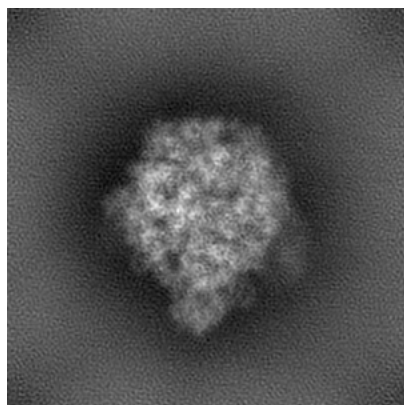


Y

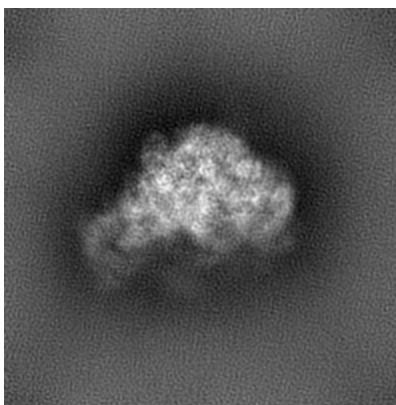


Z

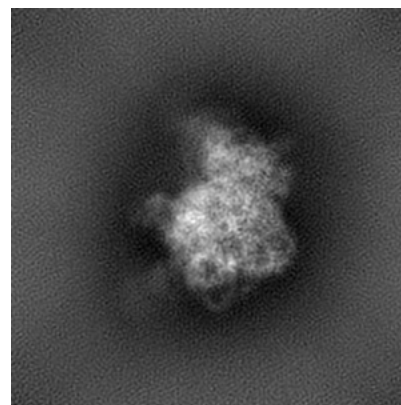
#### 6.1.2 Raw map



X



Y

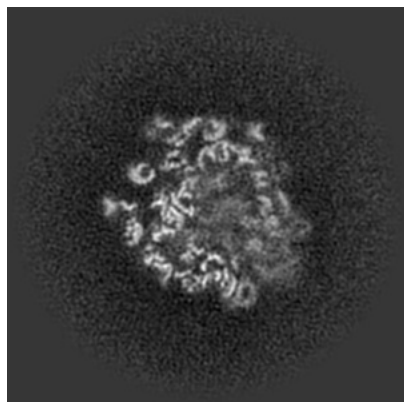


Z

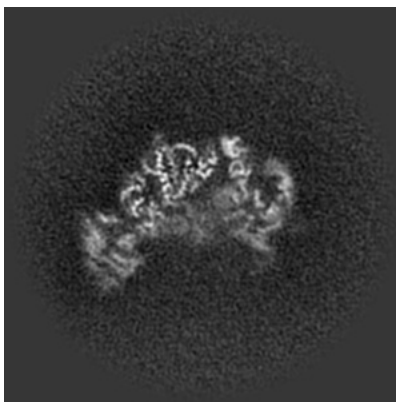
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

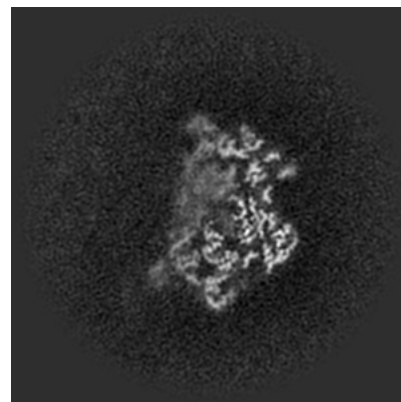
### 6.2.1 Primary map



X Index: 100

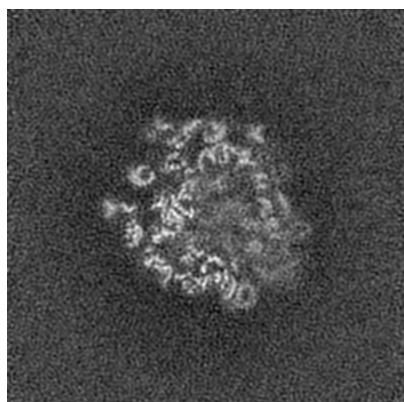


Y Index: 100

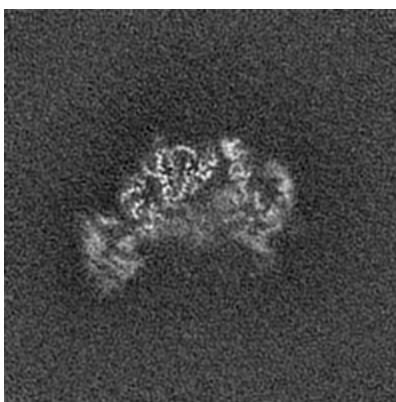


Z Index: 100

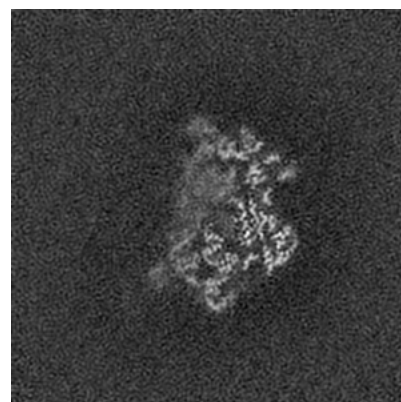
### 6.2.2 Raw map



X Index: 100



Y Index: 100

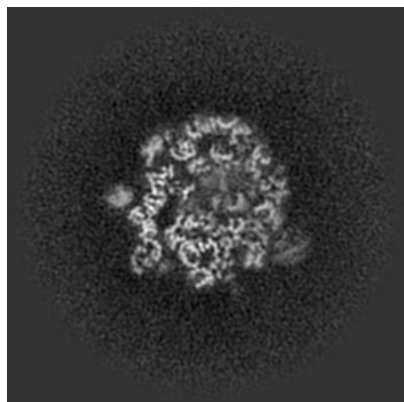


Z Index: 100

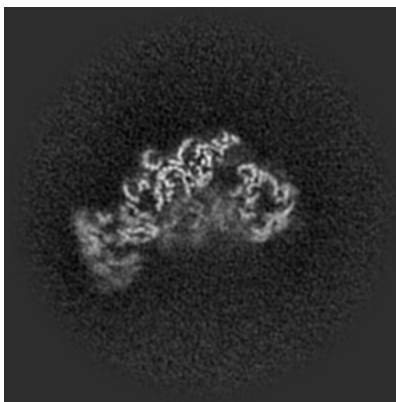
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

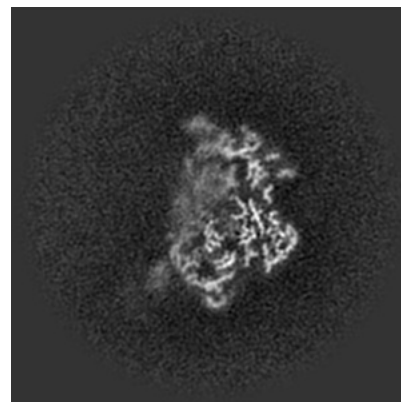
### 6.3.1 Primary map



X Index: 109

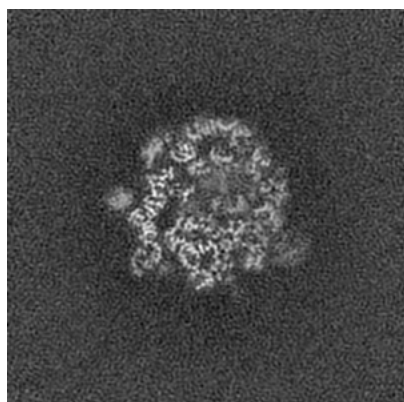


Y Index: 95

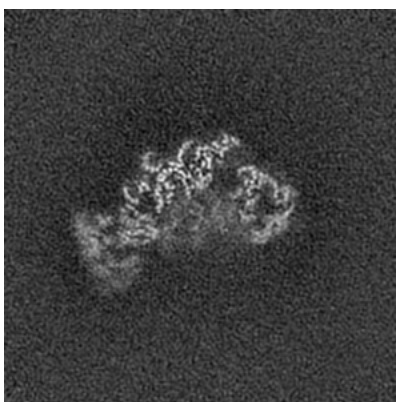


Z Index: 99

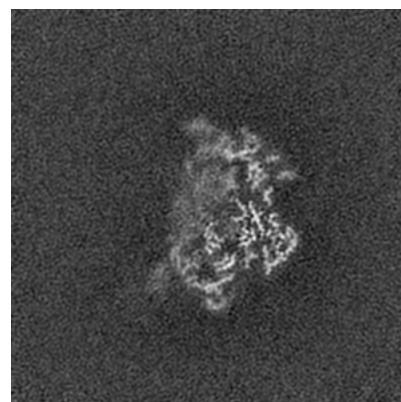
### 6.3.2 Raw map



X Index: 109



Y Index: 95



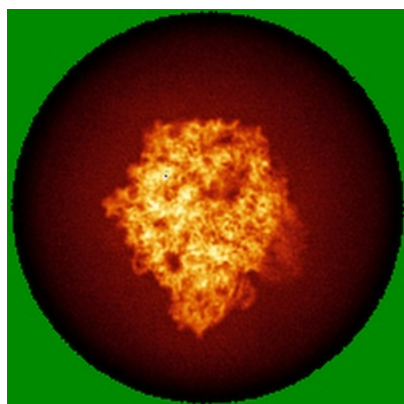
Z Index: 99

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

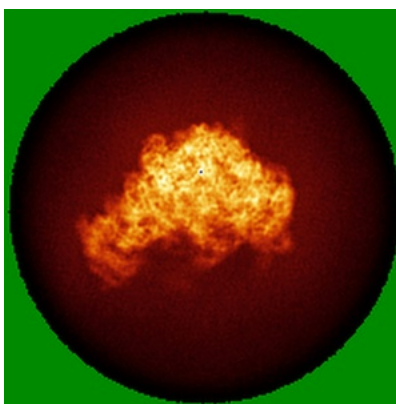


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

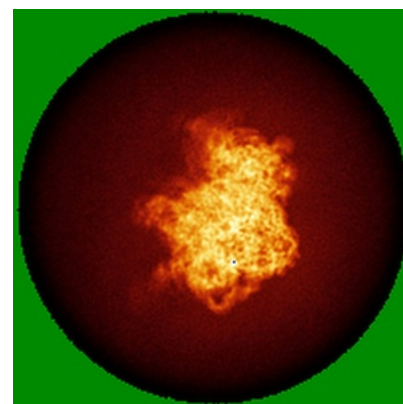
### 6.4.1 Primary map



X

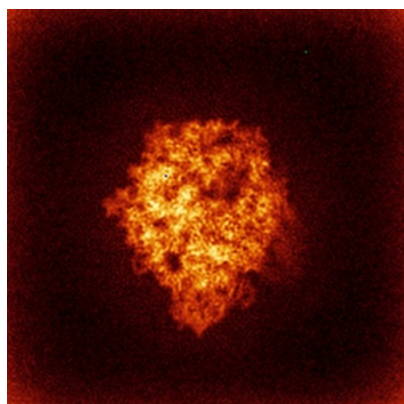


Y

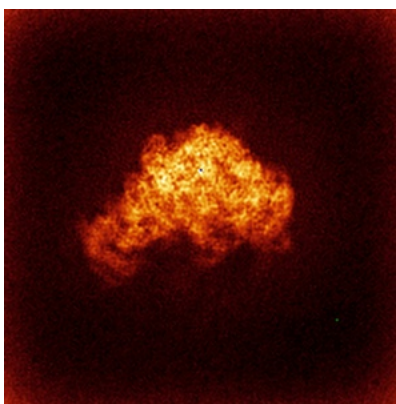


Z

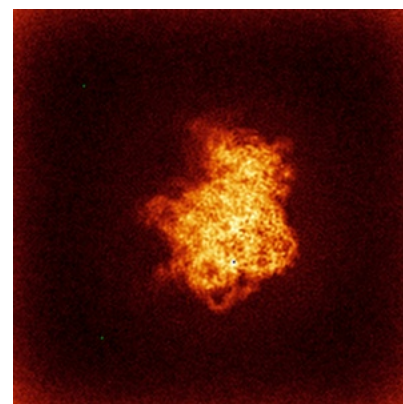
### 6.4.2 Raw map



X



Y

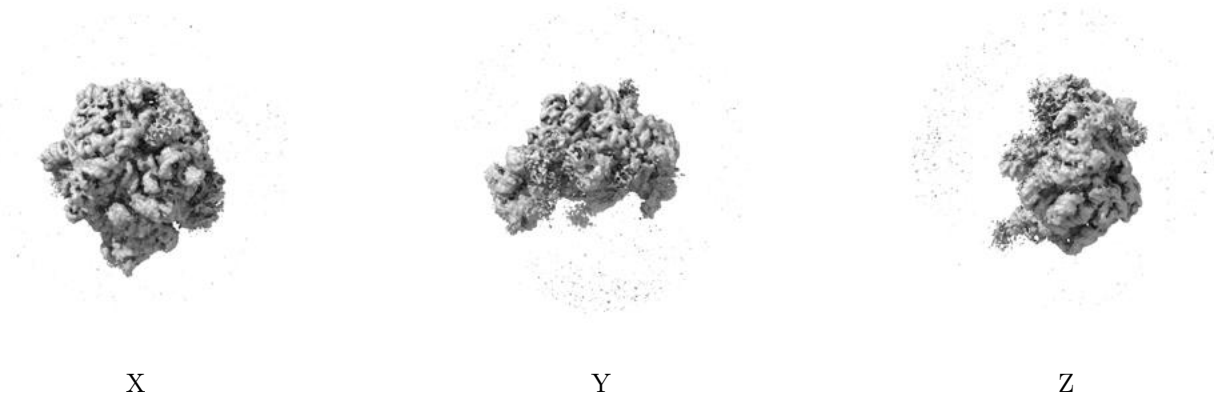


Z

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.

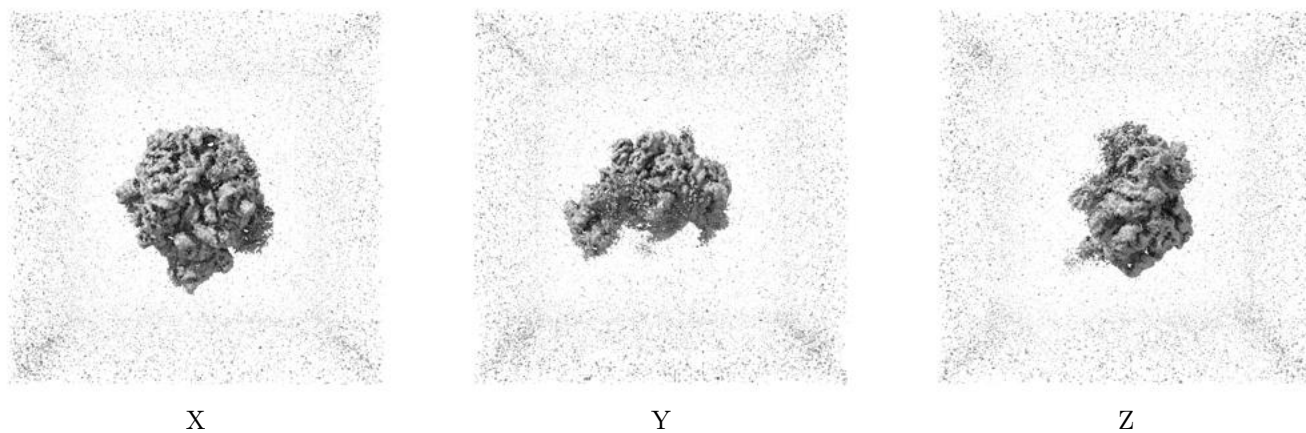
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.255. 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.



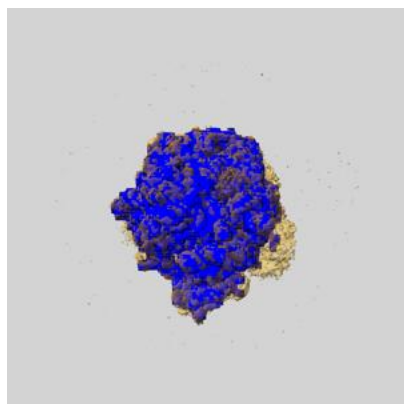
## 6.6 Mask visualisation [i](#)

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

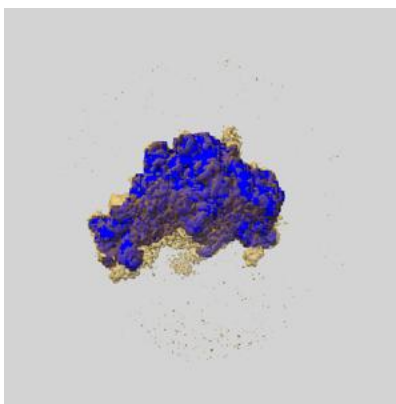
A mask typically either:

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

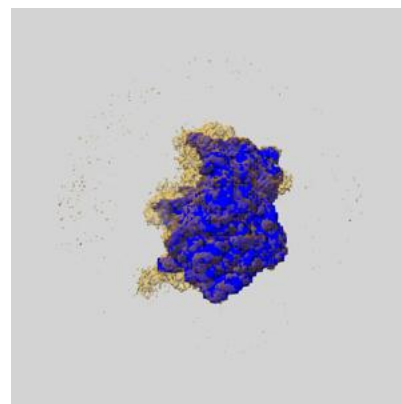
### 6.6.1 emd\_51979\_msk\_1.map [i](#)



X



Y

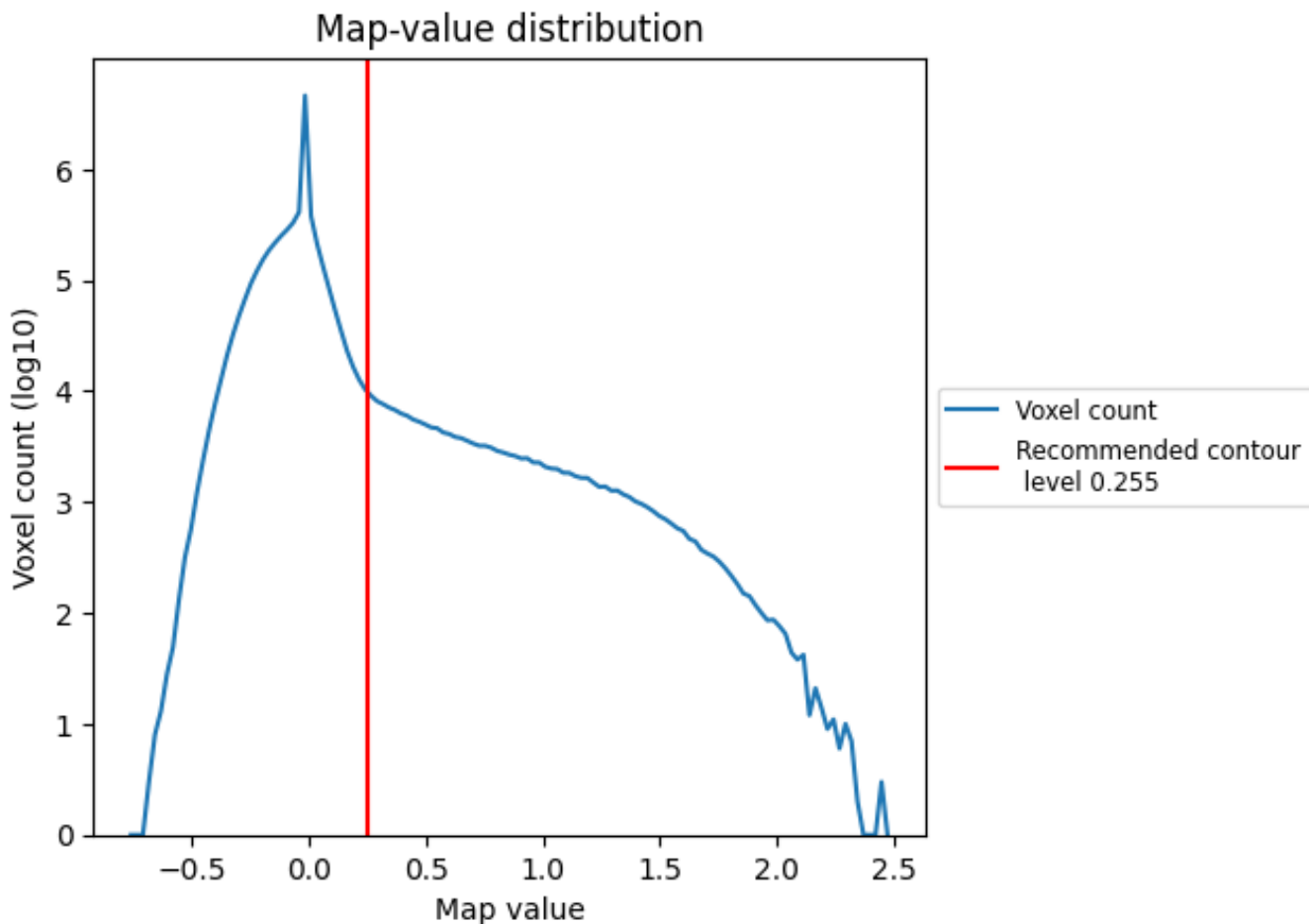


Z

## 7 Map analysis [i](#)

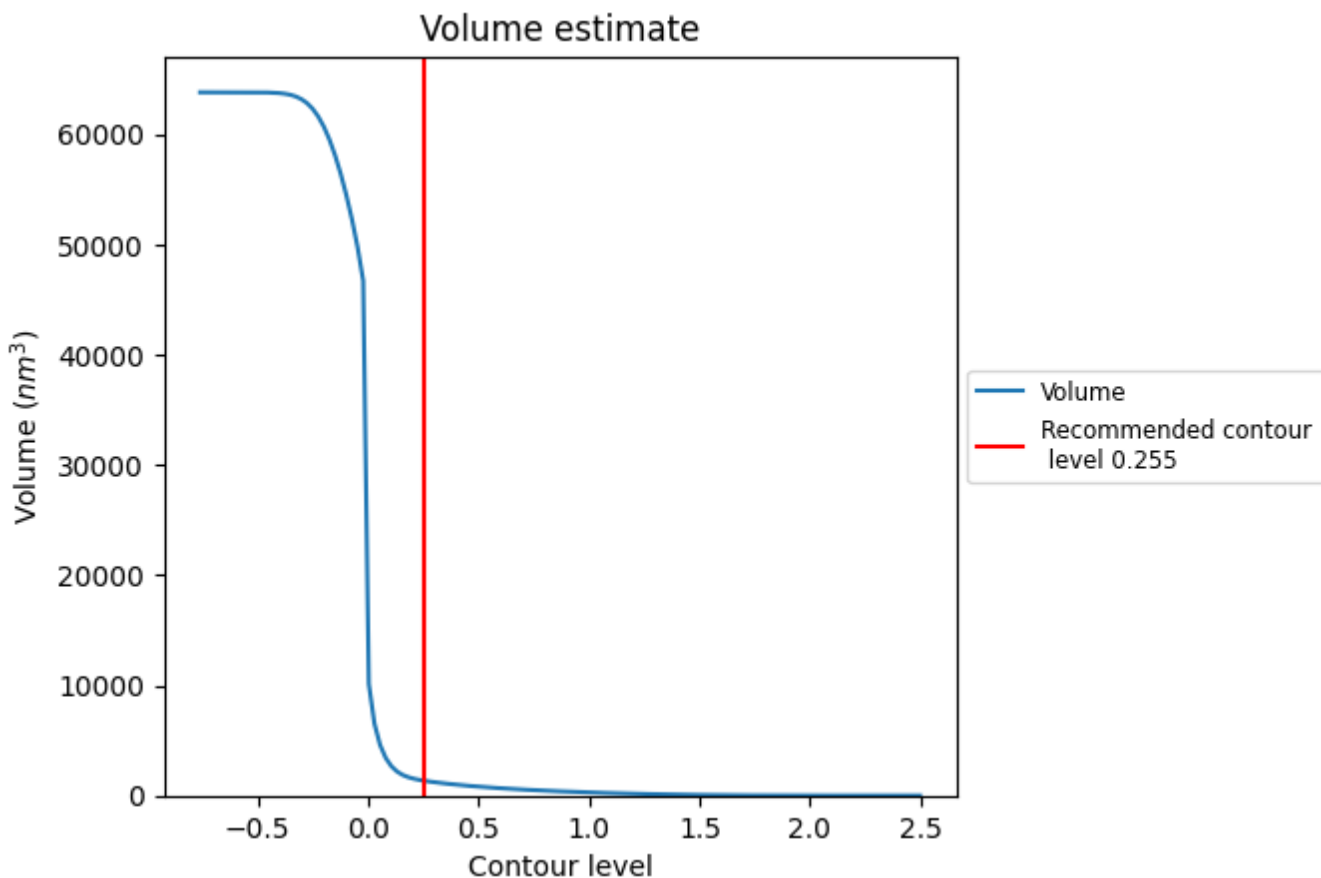
This section contains the results of statistical analysis of the map.

### 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.

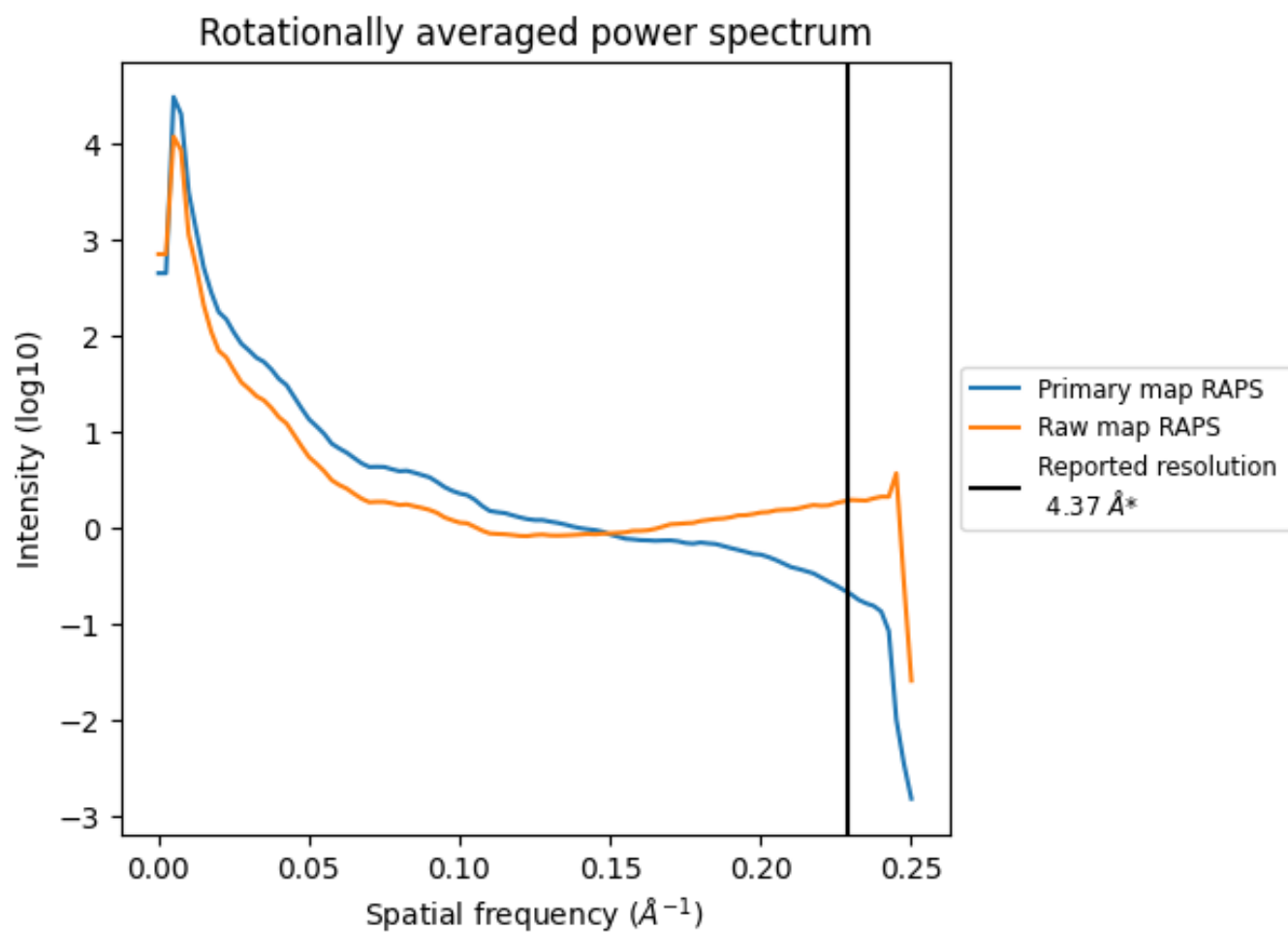
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1342  $\text{nm}^3$ ; this corresponds to an approximate mass of 1212 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 [\(i\)](#)

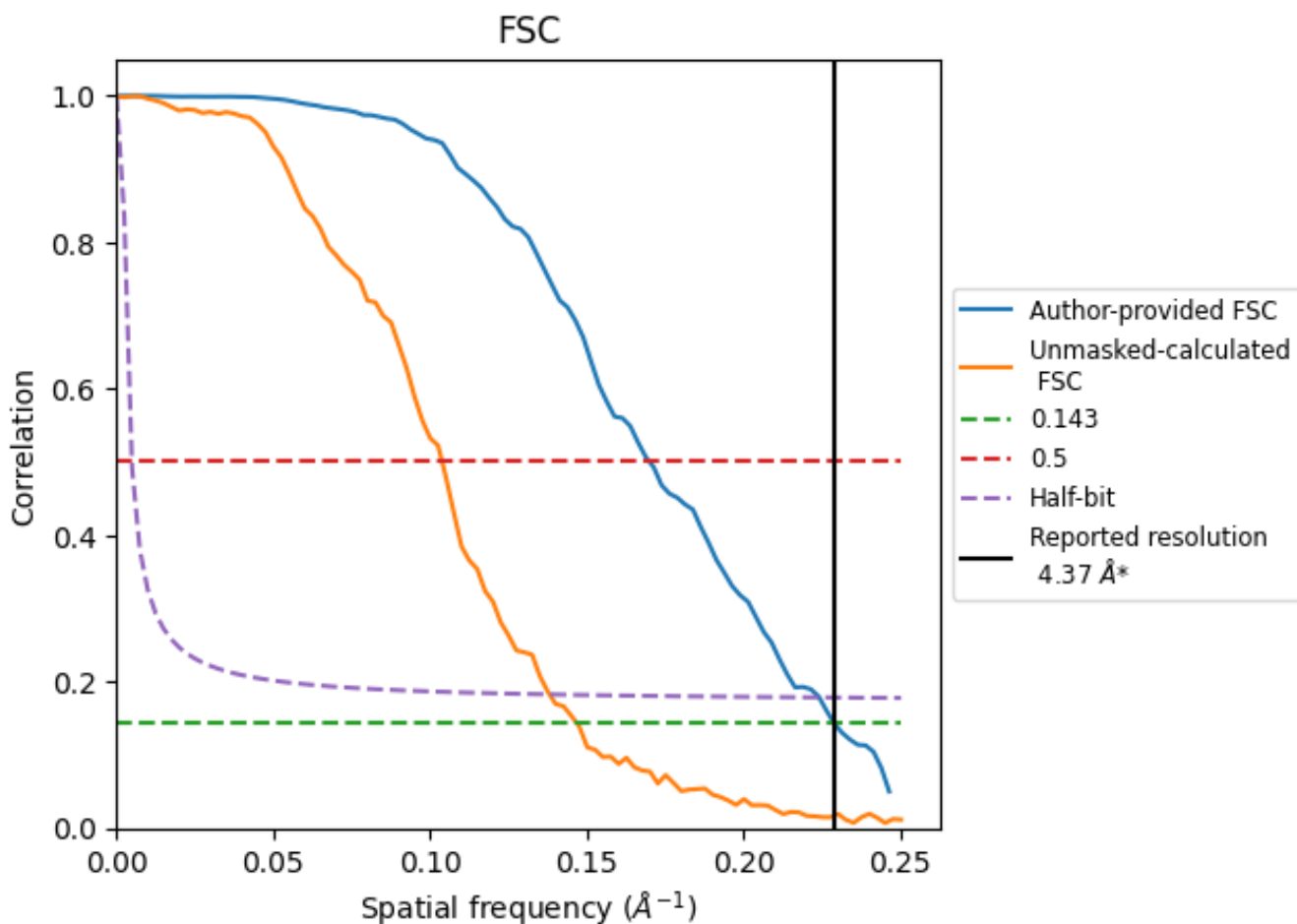


\*Reported resolution corresponds to spatial frequency of 0.229 Å<sup>-1</sup>

## 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 0.229 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

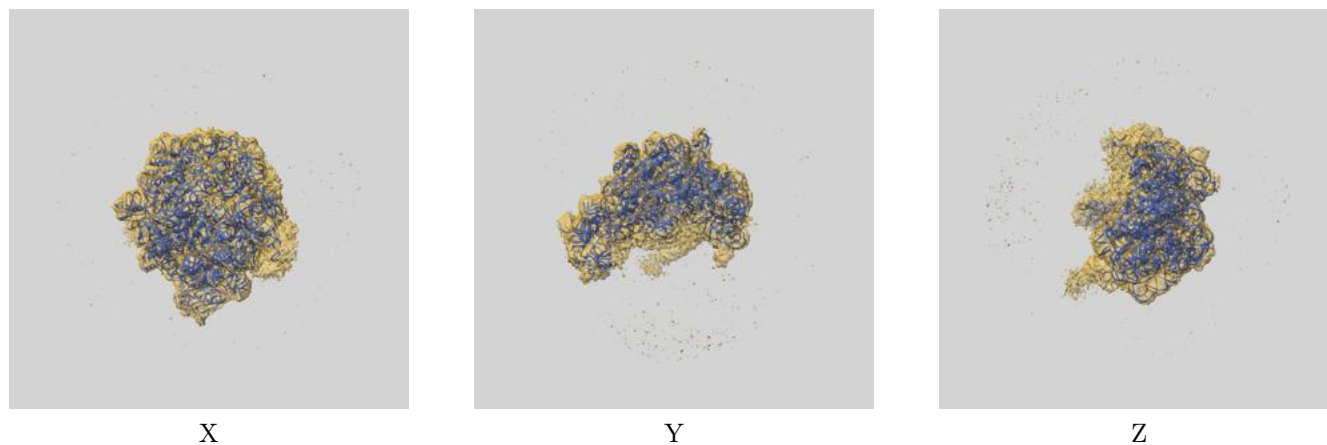
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.37	-	-
Author-provided FSC curve	4.37	5.88	4.46
Unmasked-calculated*	6.81	9.62	7.24

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.81 differs from the reported value 4.37 by more than 10 %

## 9 Map-model fit [i](#)

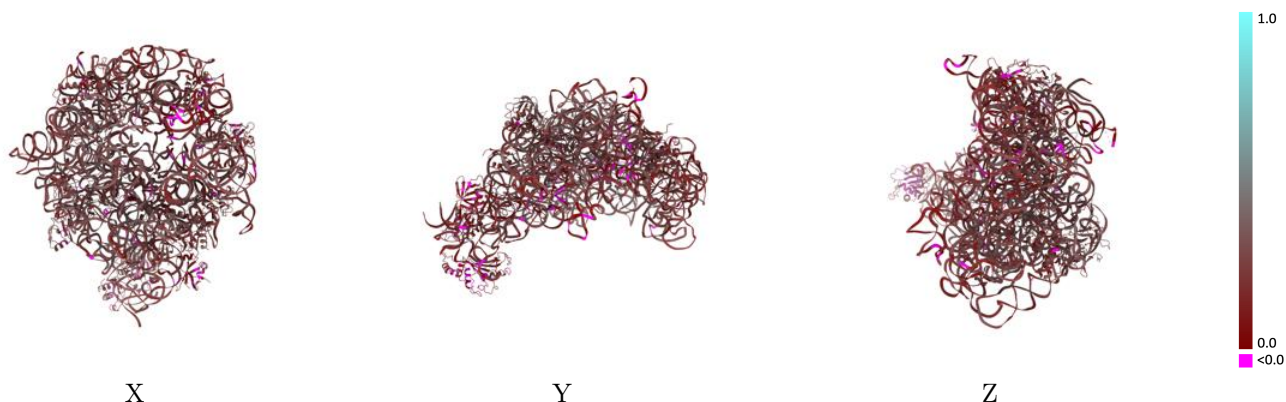
This section contains information regarding the fit between EMDB map EMD-51979 and PDB model 9HA7. Per-residue inclusion information can be found in section 3 on page 7.

### 9.1 Map-model overlay [i](#)



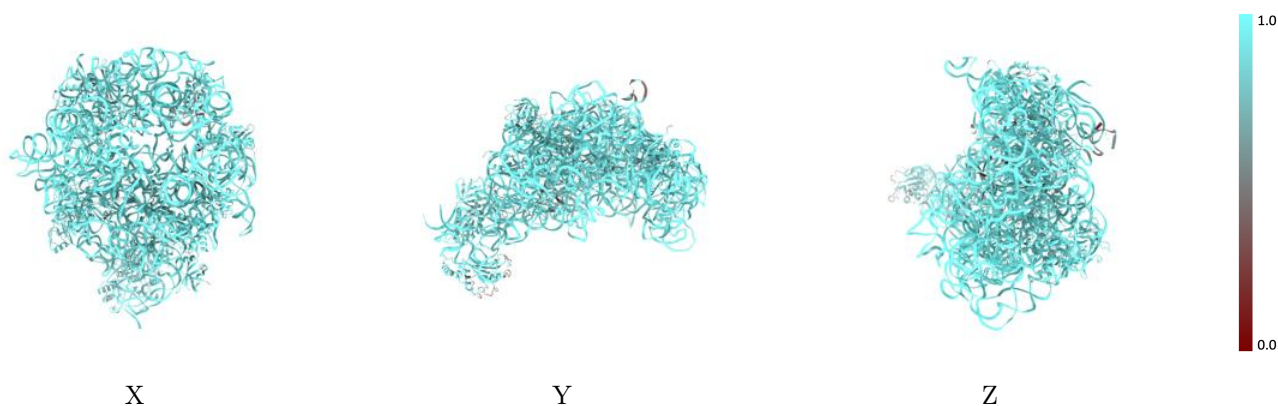
The images above show the 3D surface view of the map at the recommended contour level 0.255 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

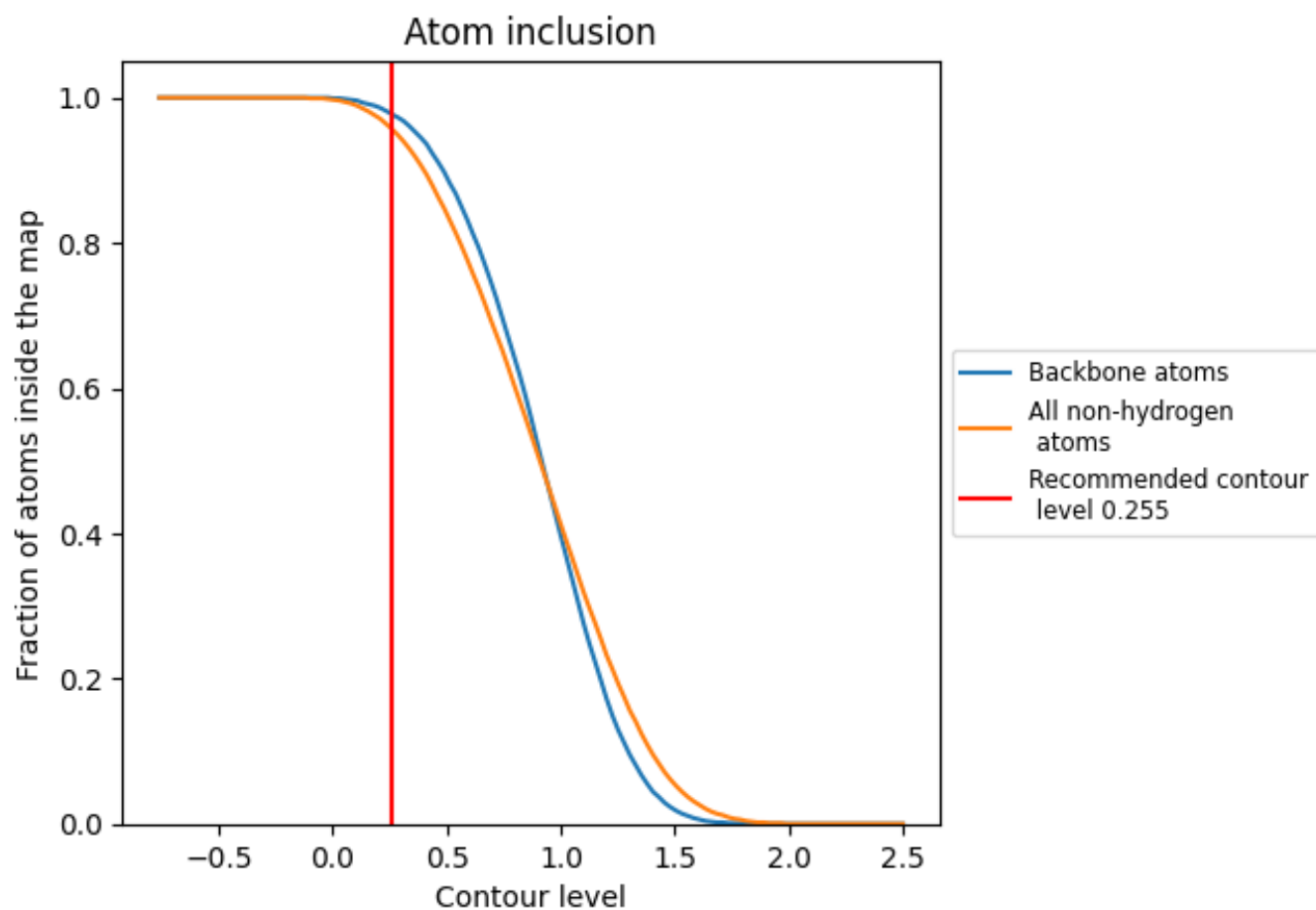
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.255).











































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 96% 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 (0.255) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9580	 0.2430
2	 0.9030	 0.2520
A	 0.9810	 0.2550
B	 0.9760	 0.1940
D	 0.8870	 0.1710
E	 0.8960	 0.2690
F	 0.8030	 0.1160
J	 0.9370	 0.2770
L	 0.8130	 0.1800
N	 0.8760	 0.1920
O	 0.9300	 0.1730
Q	 0.9350	 0.2620
R	 0.9250	 0.3000
T	 0.8890	 0.2500
U	 0.9330	 0.2920
V	 0.8560	 0.1370
W	 0.9120	 0.2270
Y	 0.8790	 0.2260
Z	 0.9290	 0.2440
y	 0.4100	 0.0950

