wwPDB EM Validation Summary Report ⓘ

Nov 20, 2022 – 02:11 am GMT

PDB ID	:	6GC8
EMDB ID	:	EMD-4383
Title	:	50S ribosomal subunit assembly intermediate - 50S rec*
Authors	:	Nikolay, R.; Hilal, T.; Qin, B.; Loerke, J.; Buerger, J.; Mielke, T.; Spahn, C.M.T.
Deposited on	:	2018-04-17
Resolution	:	3.80 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

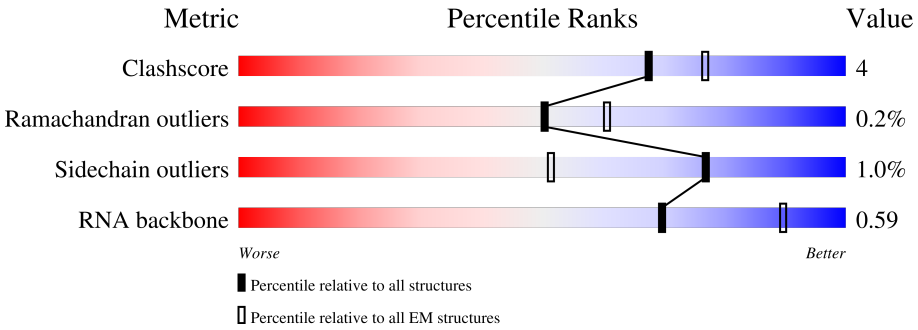
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.80 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	2904	5% 75% 22%
2	B	119	71% 26%
3	C	271	80% 20%
4	D	209	8% 86% 14%
5	E	201	16% 90% 10%
6	F	177	31% 84% 16%
7	G	176	29% 85% 15%

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Mol	Chain	Length	Quality of chain
8	H	54	39% 80% 19%
9	J	142	81% 18%
10	K	122	8% 80% 20%
11	L	143	11% 81% 18%
12	M	136	23% 87% 12%
13	N	120	88% 11%
14	O	116	9% 84% 15%
15	P	114	6% 89% 11%
16	Q	117	85% 14%
17	R	103	14% 88% 12%
18	S	110	5% 89% 11%
19	T	93	6% 80% 20%
20	U	102	15% 86% 13%
21	V	94	13% 91% 7%
22	W	76	84% 16%
23	X	77	82% 17%
24	Y	63	10% 81% 17%
25	Z	58	14% 78% 21%
26	0	56	11% 89% 11%
27	1	50	36% 78% 22%
28	2	46	89% 11%
29	3	64	8% 89% 9%

2 Entry composition (i)

There are 32 unique types of molecules in this entry. The entry contains 88884 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2897	62195	27745	11446	20107	2897	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	119	2548	1135	466	829	118	0	0

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	271	2083	1288	423	365	7	0	0

- Molecule 4 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	209	1565	979	288	294	4	0	0

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	201	1552	974	283	290	5	0	0

- Molecule 6 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	177	1411	899	249	257	6	0	0

- Molecule 7 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 8 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	54	Total	C	N	O	S	0	0
			417	267	75	74	1		

- Molecule 9 is a protein called 50S ribosomal protein L13.

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

- Molecule 10 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	122	Total	C	N	O	S	0	0
			939	587	180	166	6		

- Molecule 11 is a protein called 50S ribosomal protein L15.

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

- Molecule 12 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 13 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	120	Total	C	N	O	S	0	0
			961	593	196	167	5		

- Molecule 14 is a protein called 50S ribosomal protein L18.

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

- Molecule 15 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	114	Total 917	C 574	N 179	O 163	S 1	0	0

- Molecule 16 is a protein called 50S ribosomal protein L20.

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

- Molecule 17 is a protein called 50S ribosomal protein L21.

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

- Molecule 18 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	S	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 19 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	T	93	Total 739	C 466	N 139	O 132	S 2	0	0

- Molecule 20 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	U	102	Total 780	C 492	N 146	O 142	0	0

- Molecule 21 is a protein called 50S ribosomal protein L25.

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

- Molecule 22 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	76	Total	C	N	O	S	0	0
			575	356	117	101	1		

- Molecule 23 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 24 is a protein called 50S ribosomal protein L29.

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

- Molecule 25 is a protein called 50S ribosomal protein L30.

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

- Molecule 26 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	0	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 27 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	1	50	Total	C	N	O	0	0
			410	263	75	72		

- Molecule 28 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	2	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 29 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	3	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 30 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
30	A	1	Total	Zn	0
			1	1	

- Molecule 31 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
31	B	4	Total	Mg	0
			4	4	
31	Q	1	Total	Mg	0
			1	1	

- Molecule 32 is water.

Mol	Chain	Residues	Atoms		AltConf
32	A	17	Total	O	0
			17	17	
32	B	14	Total	O	0
			14	14	
32	C	2	Total	O	0
			2	2	
32	D	1	Total	O	0
			1	1	
32	E	1	Total	O	0
			1	1	
32	F	1	Total	O	0
			1	1	
32	L	2	Total	O	0
			2	2	
32	N	2	Total	O	0
			2	2	

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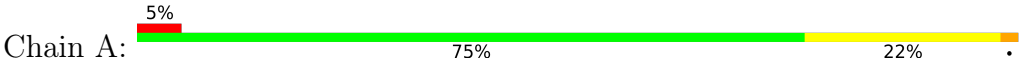
Mol	Chain	Residues	Atoms	AltConf
32	S	1	Total O 1 1	0
32	2	1	Total O 1 1	0

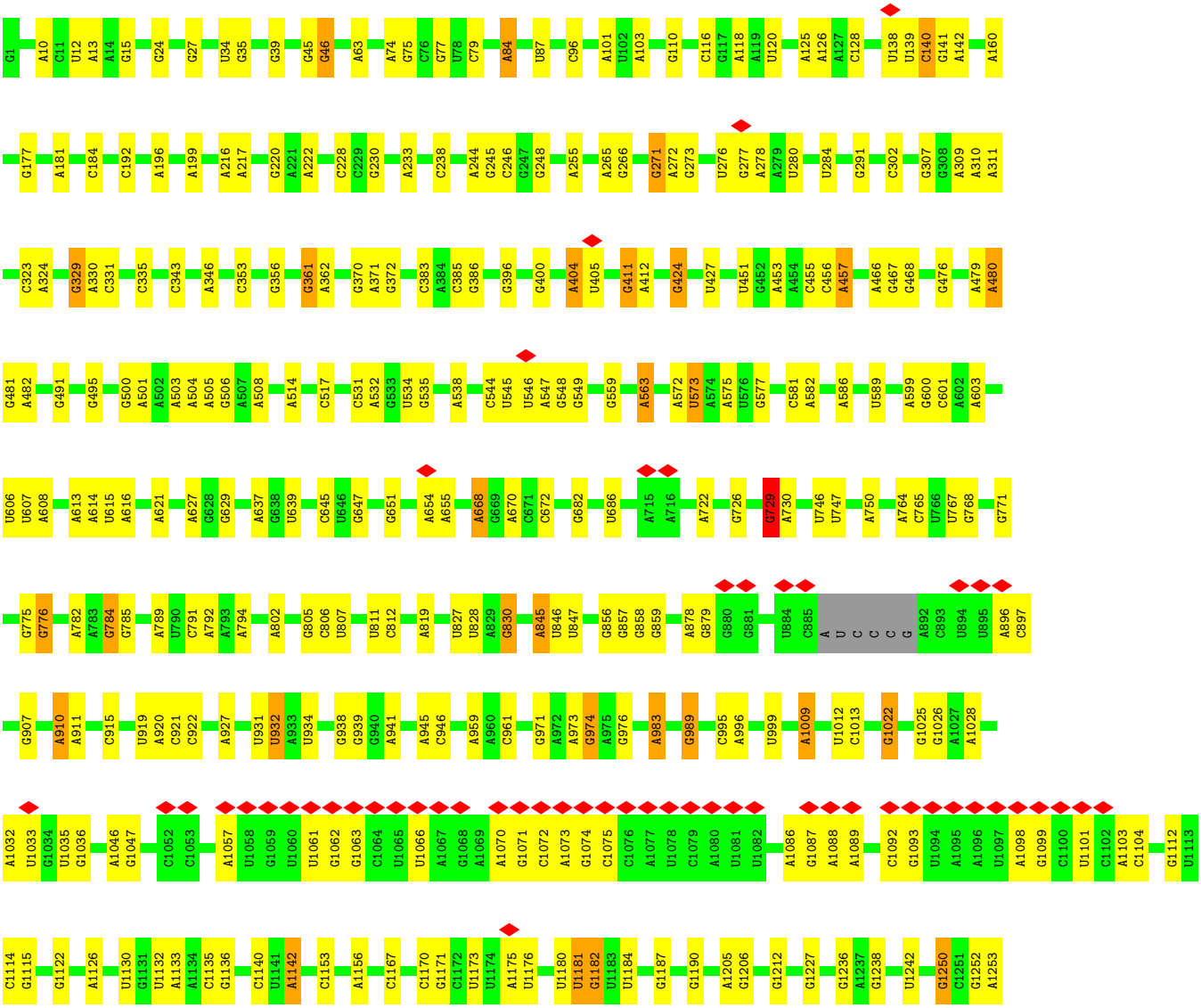
3 Residue-property plots (i)

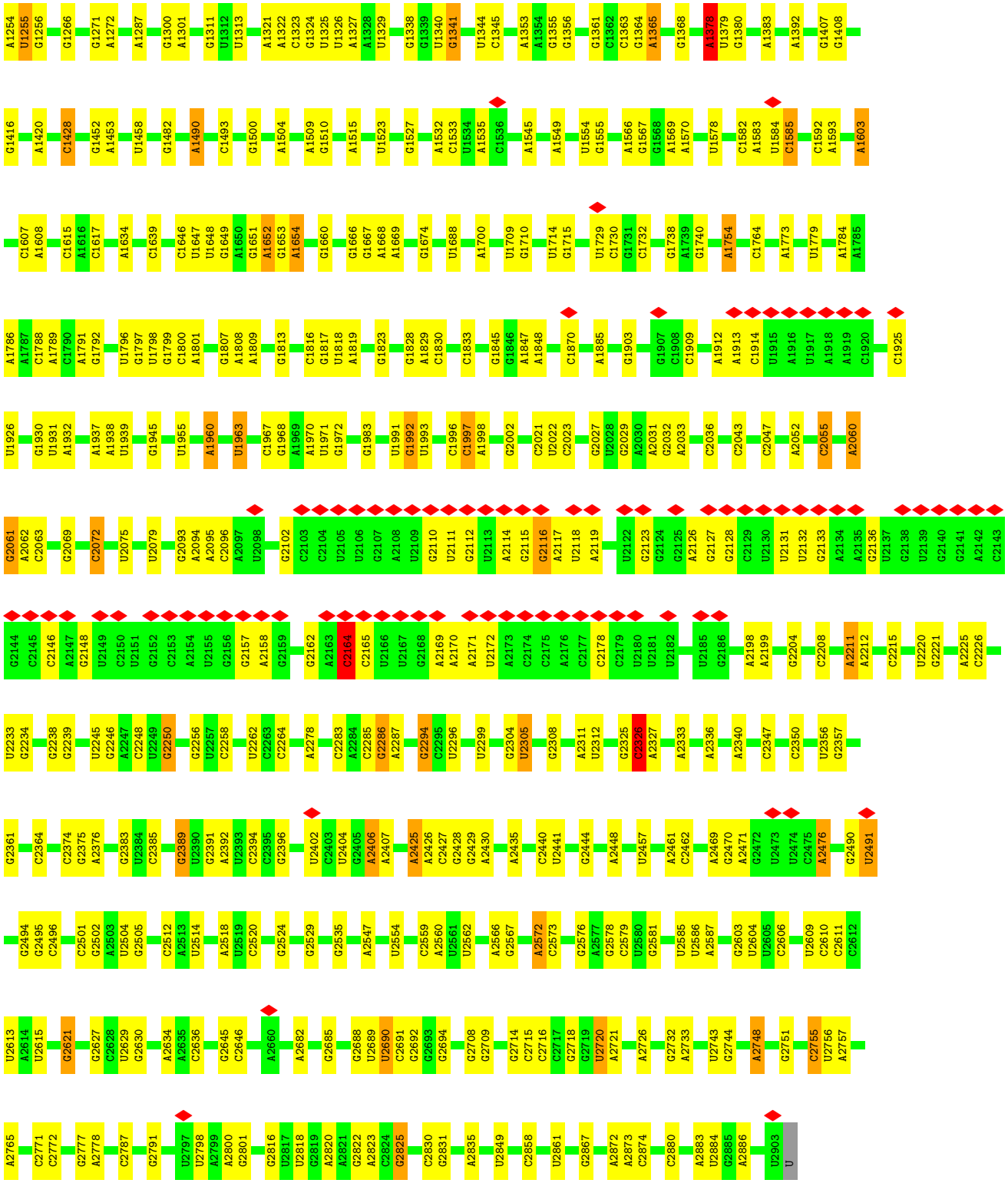
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 23S ribosomal RNA

Chain A:

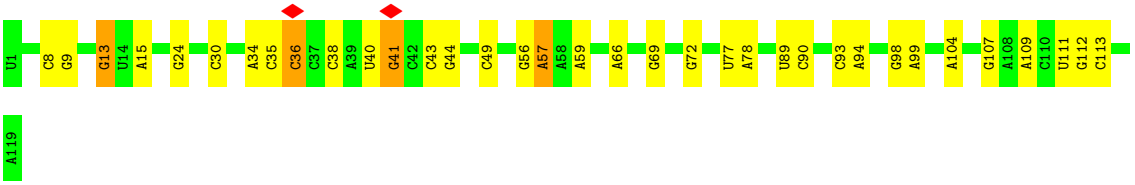




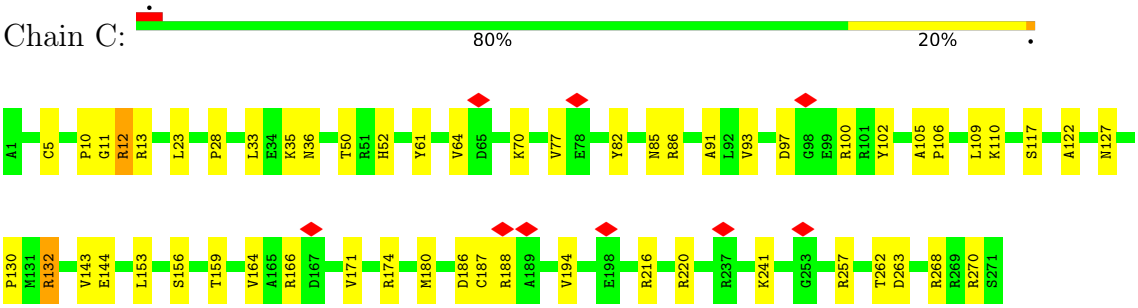


• Molecule 2: 5S ribosomal RNA

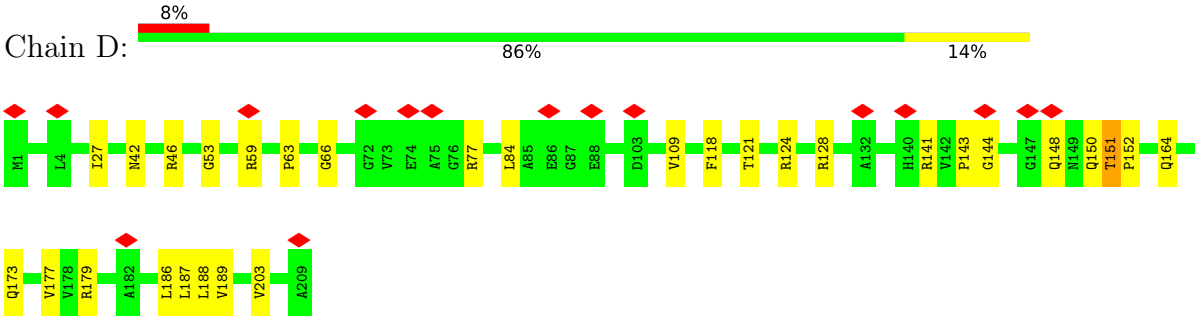
Chain B:



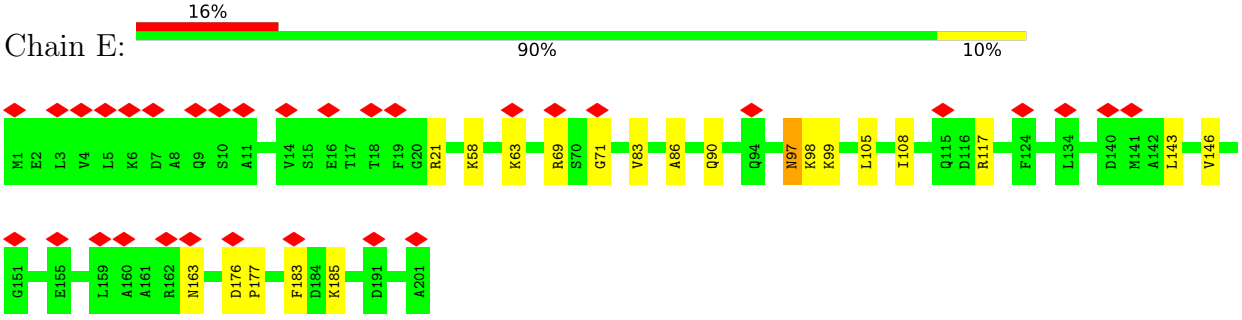
• Molecule 3: 50S ribosomal protein L2



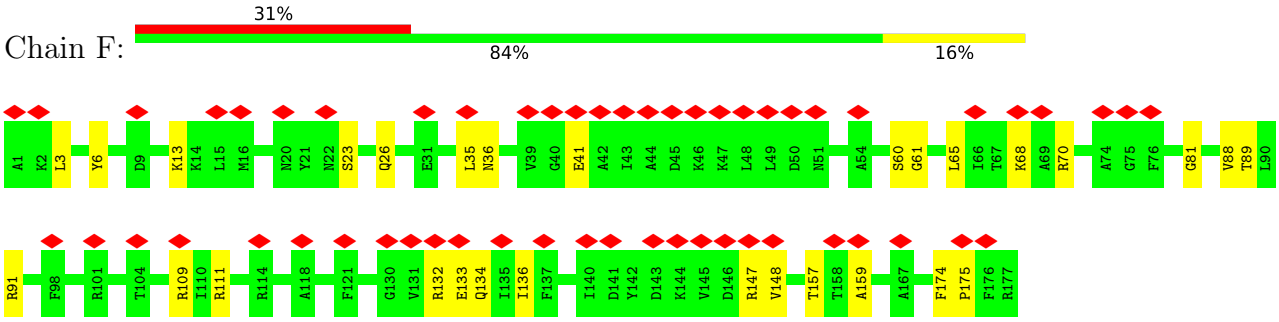
• Molecule 4: 50S ribosomal protein L3



• Molecule 5: 50S ribosomal protein L4

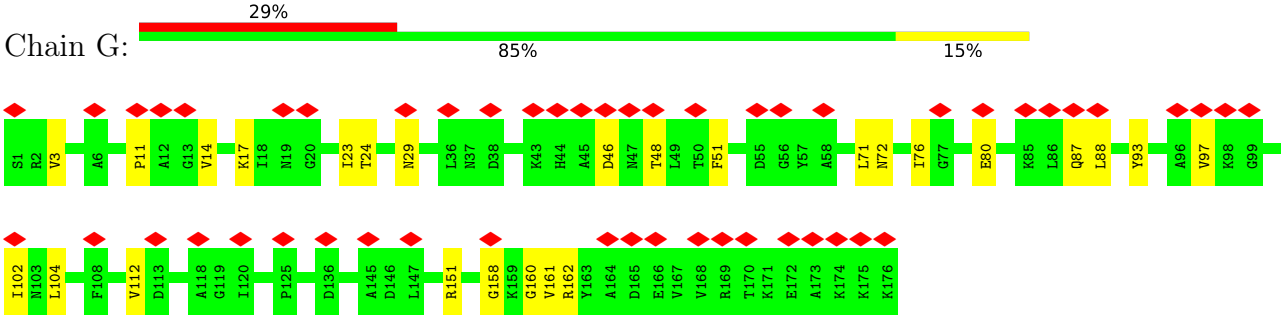


• Molecule 6: 50S ribosomal protein L5



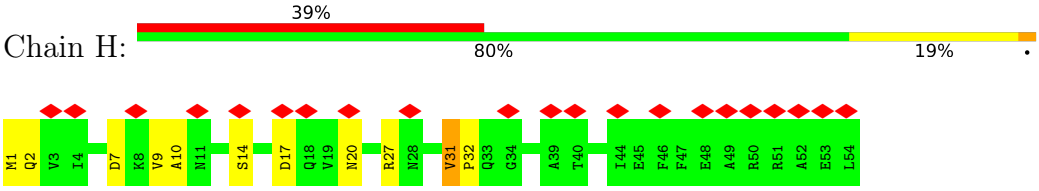
• Molecule 7: 50S ribosomal protein L6

Chain G:



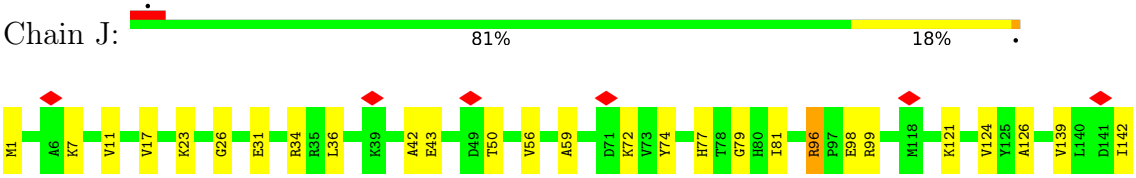
• Molecule 8: 50S ribosomal protein L9

Chain H:



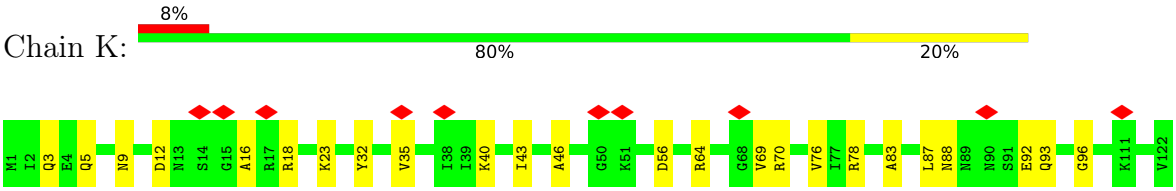
• Molecule 9: 50S ribosomal protein L13

Chain J:



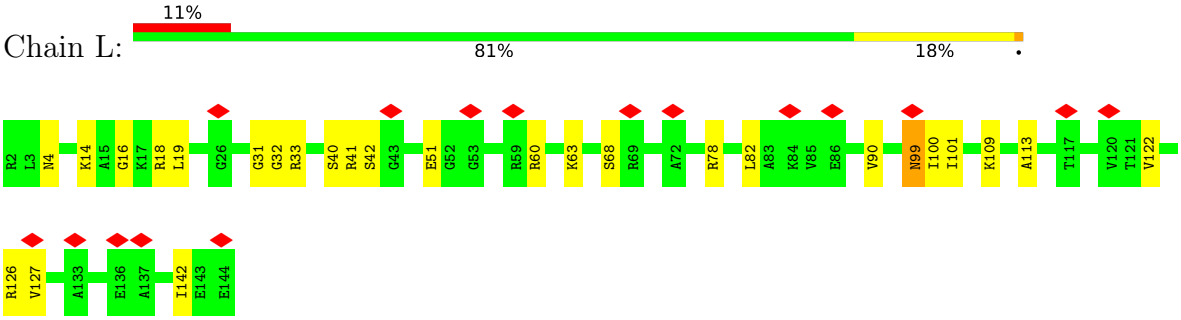
• Molecule 10: 50S ribosomal protein L14

Chain K:



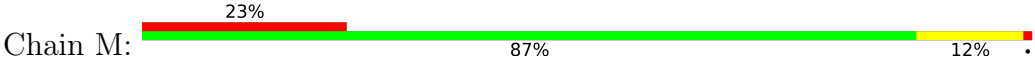
• Molecule 11: 50S ribosomal protein L15

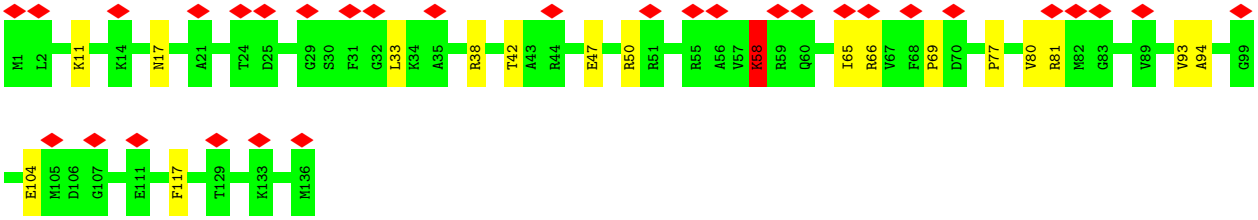
Chain L:



• Molecule 12: 50S ribosomal protein L16

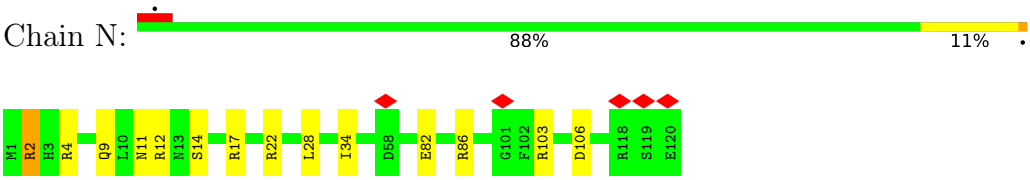
Chain M:





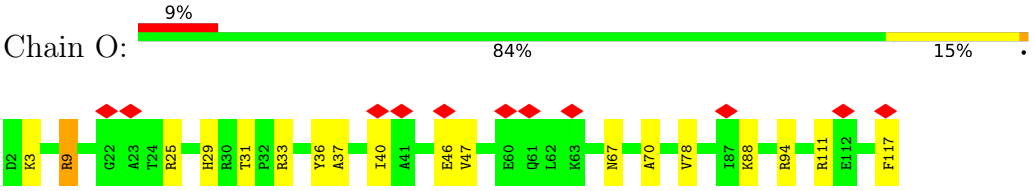
• Molecule 13: 50S ribosomal protein L17

Chain N:



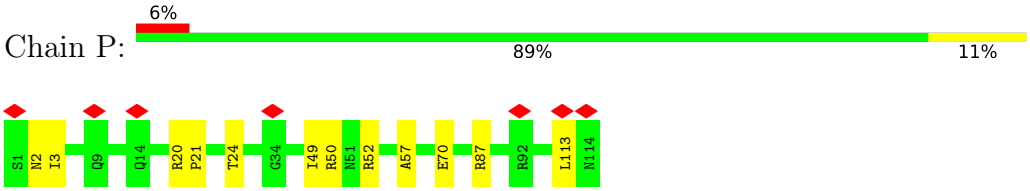
• Molecule 14: 50S ribosomal protein L18

Chain O:



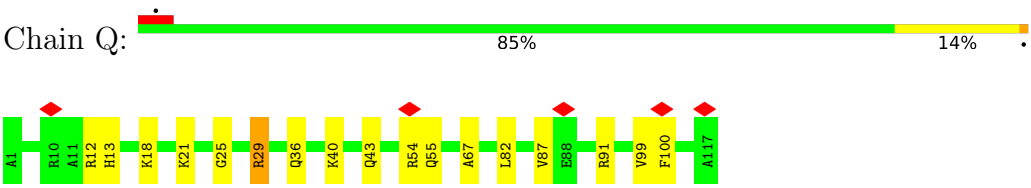
• Molecule 15: 50S ribosomal protein L19

Chain P:



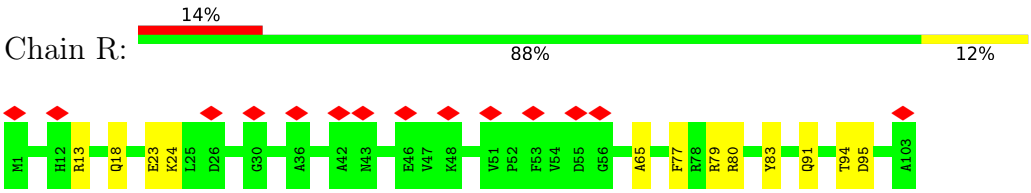
• Molecule 16: 50S ribosomal protein L20

Chain Q:



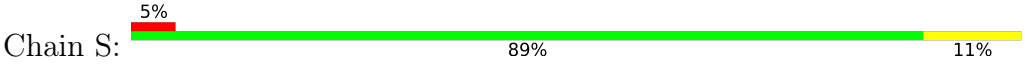
• Molecule 17: 50S ribosomal protein L21

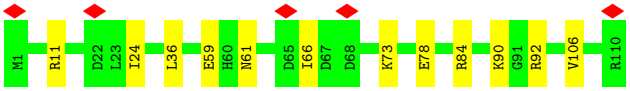
Chain R:



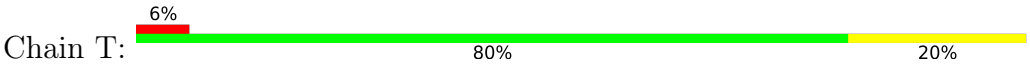
• Molecule 18: 50S ribosomal protein L22

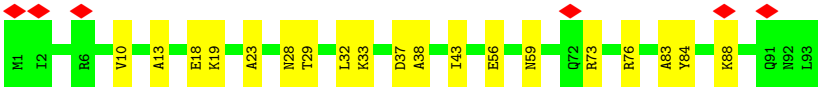
Chain S:



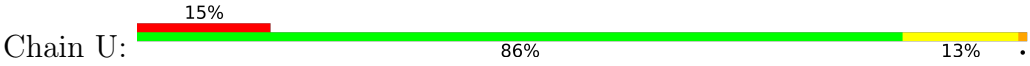


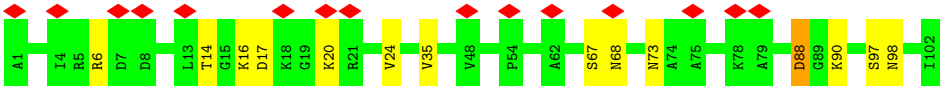
• Molecule 19: 50S ribosomal protein L23



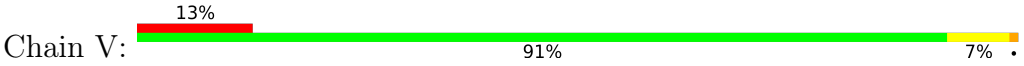


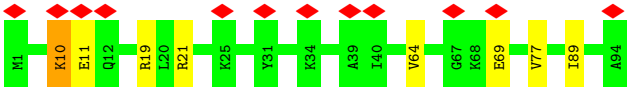
• Molecule 20: 50S ribosomal protein L24



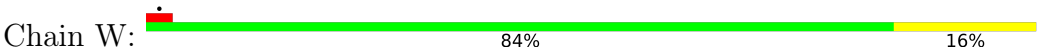


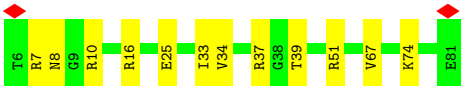
• Molecule 21: 50S ribosomal protein L25



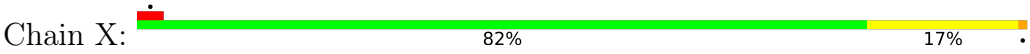


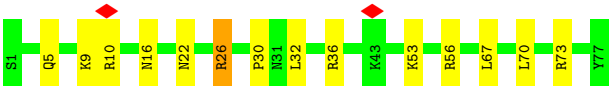
• Molecule 22: 50S ribosomal protein L27



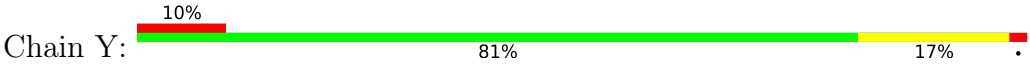


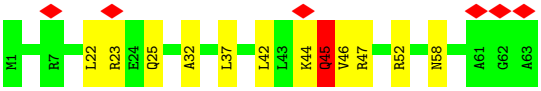
• Molecule 23: 50S ribosomal protein L28





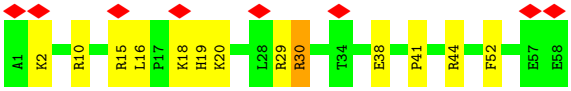
• Molecule 24: 50S ribosomal protein L29





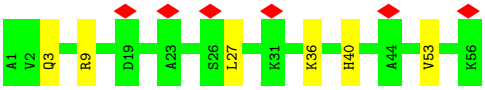
• Molecule 25: 50S ribosomal protein L30

Chain Z:



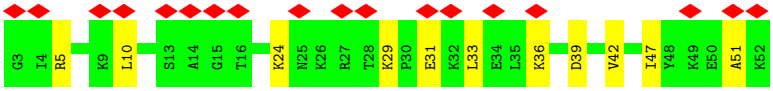
• Molecule 26: 50S ribosomal protein L32

Chain 0:



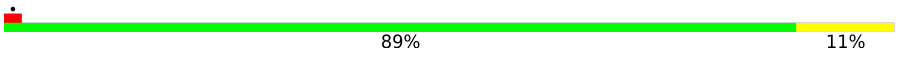
• Molecule 27: 50S ribosomal protein L33

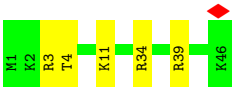
Chain 1:



• Molecule 28: 50S ribosomal protein L34

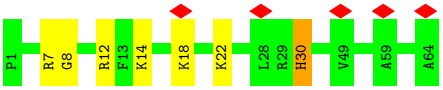
Chain 2:





• Molecule 29: 50S ribosomal protein L35

Chain 3:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	60906	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	31000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	10.808	Depositor
Minimum map value	-5.740	Depositor
Average map value	0.070	Depositor
Map value standard deviation	0.537	Depositor
Recommended contour level	1.5	Depositor
Map size (Å)	334.8, 334.8, 334.8	wwPDB
Map dimensions	270, 270, 270	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.24, 1.24, 1.24	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG

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	0.19	0/69657	0.78	16/108664 (0.0%)
2	B	0.18	0/2847	0.78	0/4440
3	C	0.26	0/2122	0.54	0/2852
4	D	0.27	0/1586	0.51	0/2134
5	E	0.25	0/1571	0.47	0/2113
6	F	0.27	0/1435	0.52	0/1926
7	G	0.26	0/1343	0.49	0/1816
8	H	0.29	0/422	0.68	0/567
9	J	0.24	0/1152	0.45	0/1551
10	K	0.26	0/948	0.53	0/1268
11	L	0.27	0/1054	0.60	1/1403 (0.1%)
12	M	0.26	0/1093	0.49	0/1460
13	N	0.27	0/974	0.52	0/1301
14	O	0.26	0/902	0.50	0/1209
15	P	0.25	0/929	0.48	1/1242 (0.1%)
16	Q	0.24	0/960	0.41	0/1278
17	R	0.25	0/829	0.49	0/1107
18	S	0.23	0/864	0.46	0/1156
19	T	0.26	0/745	0.54	0/994
20	U	0.31	0/788	0.60	1/1051 (0.1%)
21	V	0.25	0/766	0.46	0/1025
22	W	0.27	0/582	0.49	0/769
23	X	0.24	0/635	0.44	0/848
24	Y	0.24	0/510	0.56	0/677
25	Z	0.24	0/453	0.44	0/605
26	0	0.24	0/450	0.51	0/599
27	1	0.24	0/417	0.47	0/554
28	2	0.24	0/380	0.49	0/498
29	3	0.24	0/513	0.51	0/676
All	All	0.21	0/96927	0.73	19/145783 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	C	0	1
4	D	0	1
6	F	0	2
8	H	0	2
10	K	0	1
12	M	0	1
20	U	0	2
24	Y	0	1
26	0	0	1
29	3	0	1
All	All	0	13

There are no bond length outliers.

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1378	A	P-O3'-C3'	6.72	127.77	119.70
1	A	271	G	P-O3'-C3'	6.50	127.50	119.70
1	A	140	C	C2-N1-C1'	6.33	125.76	118.80
1	A	2326	C	P-O3'-C3'	6.33	127.29	119.70
1	A	140	C	N1-C2-O2	6.24	122.64	118.90

There are no chirality outliers.

5 of 13 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	11	GLY	Peptide
4	D	151	THR	Peptide
6	F	174	PHE	Peptide
6	F	175	PRO	Peptide
8	H	10	ALA	Peptide

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	62195	0	31282	248	0
2	B	2548	0	1292	19	0
3	C	2083	0	2157	40	0
4	D	1565	0	1616	22	0
5	E	1552	0	1619	14	0
6	F	1411	0	1447	17	0
7	G	1323	0	1374	14	0
8	H	417	0	440	5	0
9	J	1129	0	1162	17	0
10	K	939	0	1012	14	0
11	L	1045	0	1117	17	0
12	M	1074	0	1157	10	0
13	N	961	0	1000	13	0
14	O	892	0	923	11	0
15	P	917	0	965	8	0
16	Q	947	0	1022	14	0
17	R	816	0	839	9	0
18	S	857	0	922	8	0
19	T	739	0	807	13	0
20	U	780	0	834	7	0
21	V	753	0	780	5	0
22	W	575	0	589	10	0
23	X	625	0	655	9	0
24	Y	509	0	543	8	0
25	Z	449	0	491	8	0
26	0	444	0	461	4	0
27	1	410	0	440	8	0
28	2	377	0	418	4	0
29	3	504	0	574	6	0
30	A	1	0	0	0	0
31	B	4	0	0	0	0
31	Q	1	0	0	0	0
32	2	1	0	0	0	0
32	A	17	0	0	1	0
32	B	14	0	0	1	0
32	C	2	0	0	0	0
32	D	1	0	0	0	0
32	E	1	0	0	0	0
32	F	1	0	0	0	0
32	L	2	0	0	1	0
32	N	2	0	0	0	0
32	S	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	88884	0	57938	446	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.

The worst 5 of 446 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)
1:A:2709:G:H5'	13:N:22:ARG:HH22	1.60	0.67
2:B:78:A:H62	2:B:98:G:H21	1.43	0.67
11:L:14:LYS:HD3	11:L:16:GLY:H	1.61	0.65
1:A:606:U:H5"	5:E:97:ASN:HD21	1.63	0.64
3:C:10:PRO:HA	3:C:13:ARG:HB2	1.80	0.63

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
3	C	269/271 (99%)	248 (92%)	20 (7%)	1 (0%)	34 70
4	D	207/209 (99%)	198 (96%)	9 (4%)	0	100 100
5	E	199/201 (99%)	190 (96%)	9 (4%)	0	100 100
6	F	175/177 (99%)	161 (92%)	14 (8%)	0	100 100
7	G	174/176 (99%)	166 (95%)	8 (5%)	0	100 100
8	H	52/54 (96%)	40 (77%)	12 (23%)	0	100 100
9	J	140/142 (99%)	134 (96%)	6 (4%)	0	100 100
10	K	120/122 (98%)	106 (88%)	14 (12%)	0	100 100
11	L	141/143 (99%)	124 (88%)	17 (12%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
12	M	134/136 (98%)	129 (96%)	4 (3%)	1 (1%)	22 60
13	N	118/120 (98%)	108 (92%)	10 (8%)	0	100 100
14	O	114/116 (98%)	109 (96%)	4 (4%)	1 (1%)	17 54
15	P	112/114 (98%)	108 (96%)	4 (4%)	0	100 100
16	Q	115/117 (98%)	111 (96%)	4 (4%)	0	100 100
17	R	101/103 (98%)	95 (94%)	6 (6%)	0	100 100
18	S	108/110 (98%)	104 (96%)	4 (4%)	0	100 100
19	T	91/93 (98%)	80 (88%)	11 (12%)	0	100 100
20	U	100/102 (98%)	88 (88%)	11 (11%)	1 (1%)	15 52
21	V	92/94 (98%)	92 (100%)	0	0	100 100
22	W	74/76 (97%)	70 (95%)	4 (5%)	0	100 100
23	X	75/77 (97%)	73 (97%)	2 (3%)	0	100 100
24	Y	61/63 (97%)	55 (90%)	4 (7%)	2 (3%)	4 32
25	Z	56/58 (97%)	54 (96%)	2 (4%)	0	100 100
26	0	54/56 (96%)	50 (93%)	4 (7%)	0	100 100
27	1	48/50 (96%)	46 (96%)	2 (4%)	0	100 100
28	2	44/46 (96%)	42 (96%)	2 (4%)	0	100 100
29	3	62/64 (97%)	58 (94%)	4 (6%)	0	100 100
All	All	3036/3090 (98%)	2839 (94%)	191 (6%)	6 (0%)	50 79

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
24	Y	46	VAL
3	C	12	ARG
14	O	88	LYS
24	Y	45	GLN
12	M	58	LYS

5.3.2 Protein sidechains (i)

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

The Analysed column shows the number of residues for which the sidechain conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	C	216/216 (100%)	214 (99%)	2 (1%)	78 88
4	D	164/164 (100%)	163 (99%)	1 (1%)	86 92
5	E	165/165 (100%)	162 (98%)	3 (2%)	59 77
6	F	148/148 (100%)	147 (99%)	1 (1%)	84 91
7	G	137/137 (100%)	135 (98%)	2 (2%)	65 81
8	H	43/43 (100%)	42 (98%)	1 (2%)	50 72
9	J	116/116 (100%)	115 (99%)	1 (1%)	78 88
10	K	103/103 (100%)	102 (99%)	1 (1%)	76 86
11	L	102/102 (100%)	101 (99%)	1 (1%)	76 86
12	M	109/109 (100%)	108 (99%)	1 (1%)	78 88
13	N	100/100 (100%)	99 (99%)	1 (1%)	76 86
14	O	86/86 (100%)	85 (99%)	1 (1%)	71 84
15	P	99/99 (100%)	98 (99%)	1 (1%)	76 86
16	Q	89/89 (100%)	88 (99%)	1 (1%)	73 85
17	R	84/84 (100%)	84 (100%)	0	100 100
18	S	93/93 (100%)	93 (100%)	0	100 100
19	T	80/80 (100%)	78 (98%)	2 (2%)	47 70
20	U	83/83 (100%)	82 (99%)	1 (1%)	71 84
21	V	78/78 (100%)	77 (99%)	1 (1%)	69 82
22	W	56/58 (97%)	56 (100%)	0	100 100
23	X	67/67 (100%)	66 (98%)	1 (2%)	65 81
24	Y	55/55 (100%)	54 (98%)	1 (2%)	59 77
25	Z	48/48 (100%)	46 (96%)	2 (4%)	30 58
26	0	47/47 (100%)	47 (100%)	0	100 100
27	1	45/45 (100%)	45 (100%)	0	100 100
28	2	38/38 (100%)	38 (100%)	0	100 100
29	3	51/51 (100%)	51 (100%)	0	100 100
All	All	2502/2504 (100%)	2476 (99%)	26 (1%)	77 86

5 of 26 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	N	2	ARG
16	Q	29	ARG
25	Z	2	LYS
15	P	2	ASN
19	T	28	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 29 such sidechains are listed below:

Mol	Chain	Res	Type
10	K	88	ASN
24	Y	45	GLN
15	P	65	ASN
20	U	73	ASN
15	P	2	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2893/2904 (99%)	434 (15%)	9 (0%)
2	B	118/119 (99%)	15 (12%)	0
All	All	3011/3023 (99%)	449 (14%)	9 (0%)

5 of 449 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A
1	A	12	U
1	A	27	G
1	A	34	U
1	A	35	G

5 of 9 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	2425	A
1	A	2756	U
1	A	1378	A
1	A	2127	G
1	A	2304	G

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	2098:U	O3'	2099:U	P	9.02
1	A	2190:G	O3'	2191:A	P	4.43

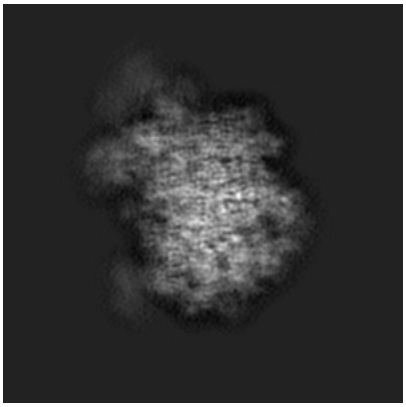
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-4383. These allow visual inspection of the internal detail of the map and identification of artifacts.

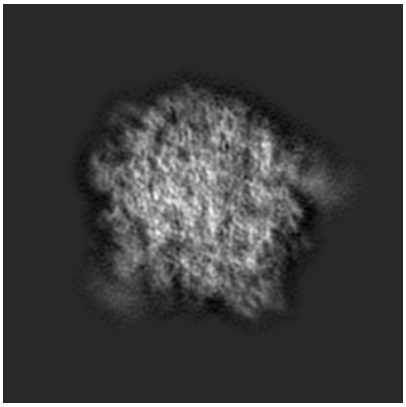
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

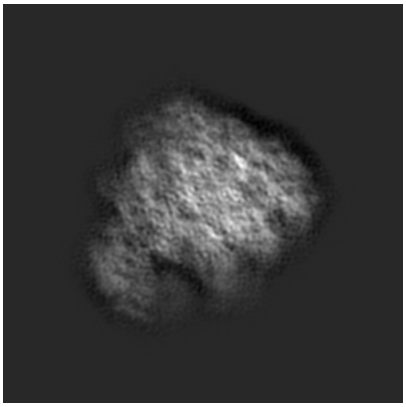
6.1.1 Primary map



X



Y

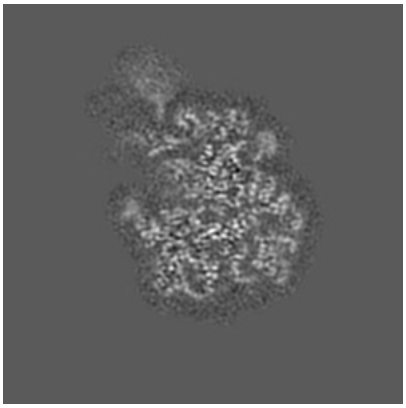


Z

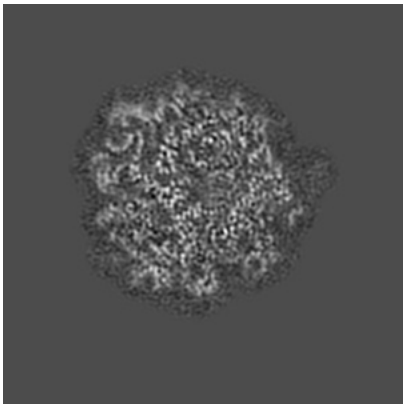
The images above show the map projected in three orthogonal directions.

6.2 Central slices

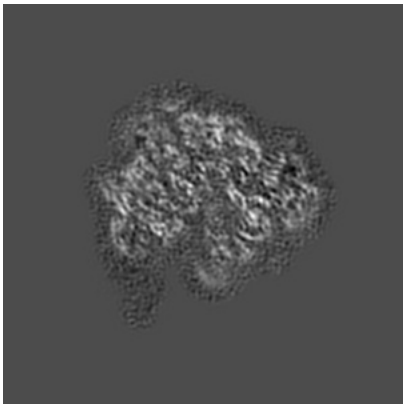
6.2.1 Primary map



X Index: 135



Y Index: 135

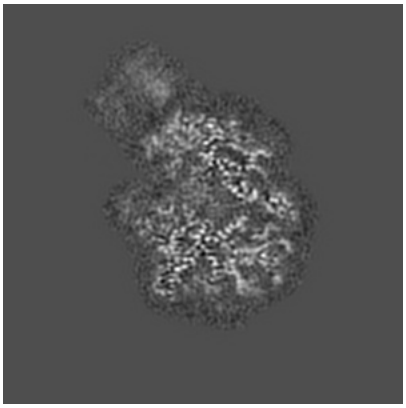


Z Index: 135

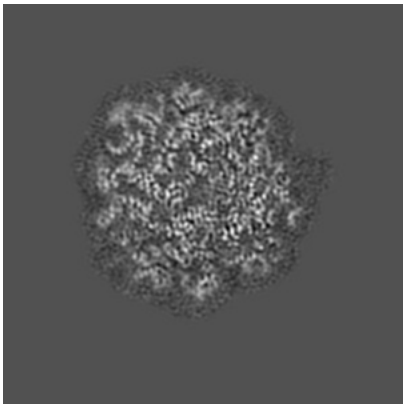
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

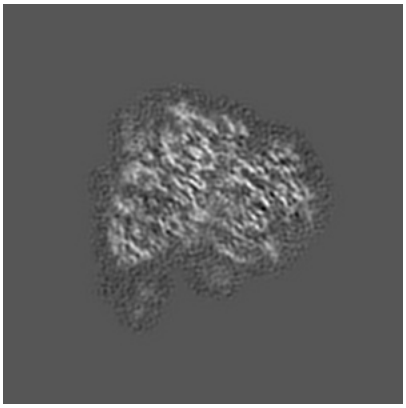
6.3.1 Primary map



X Index: 140



Y Index: 137

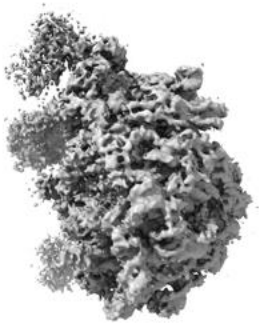


Z Index: 140

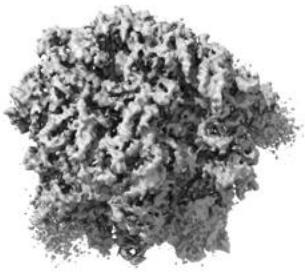
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map



X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 1.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

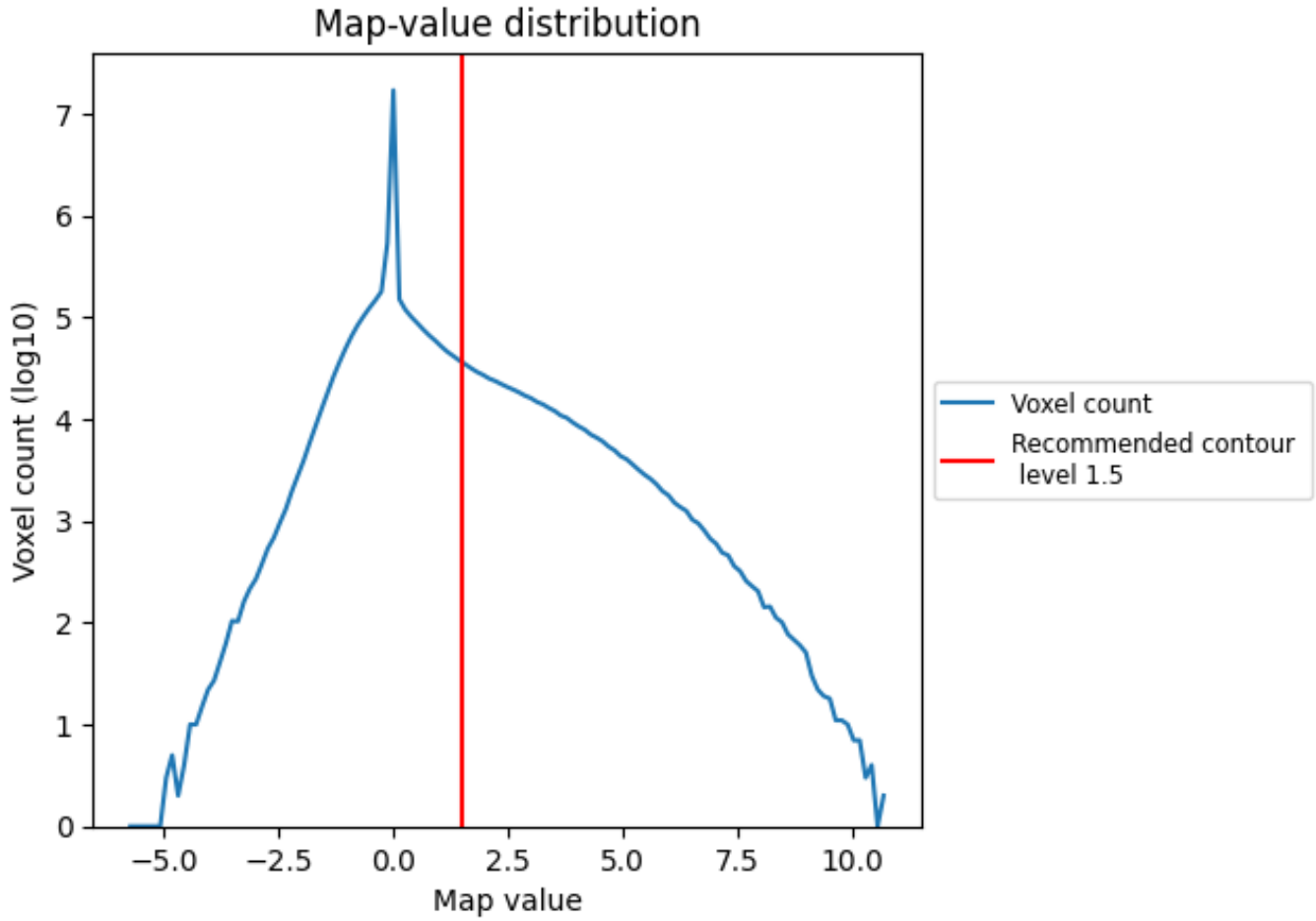
6.5 Mask visualisation (i)

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

7 Map analysis

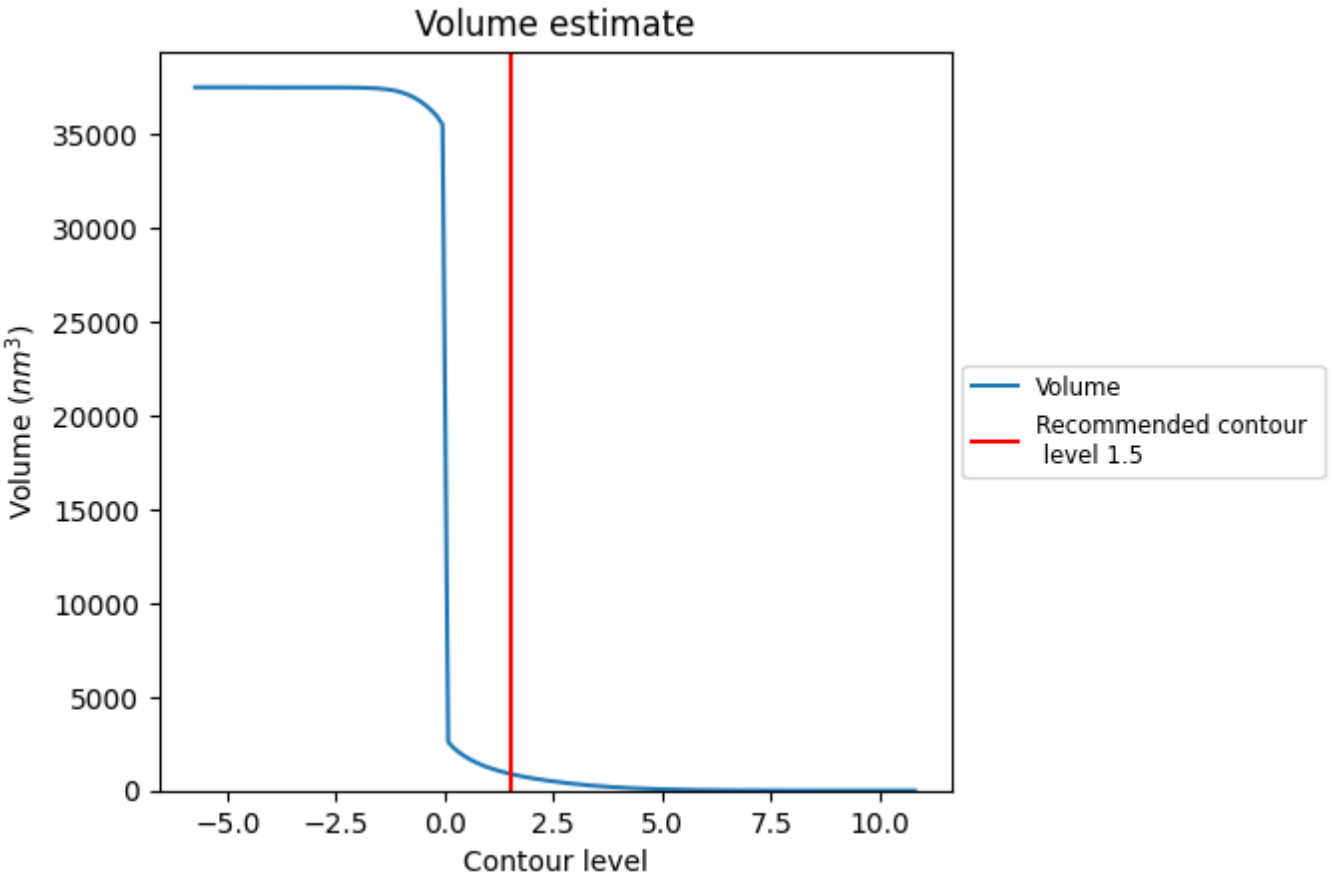
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

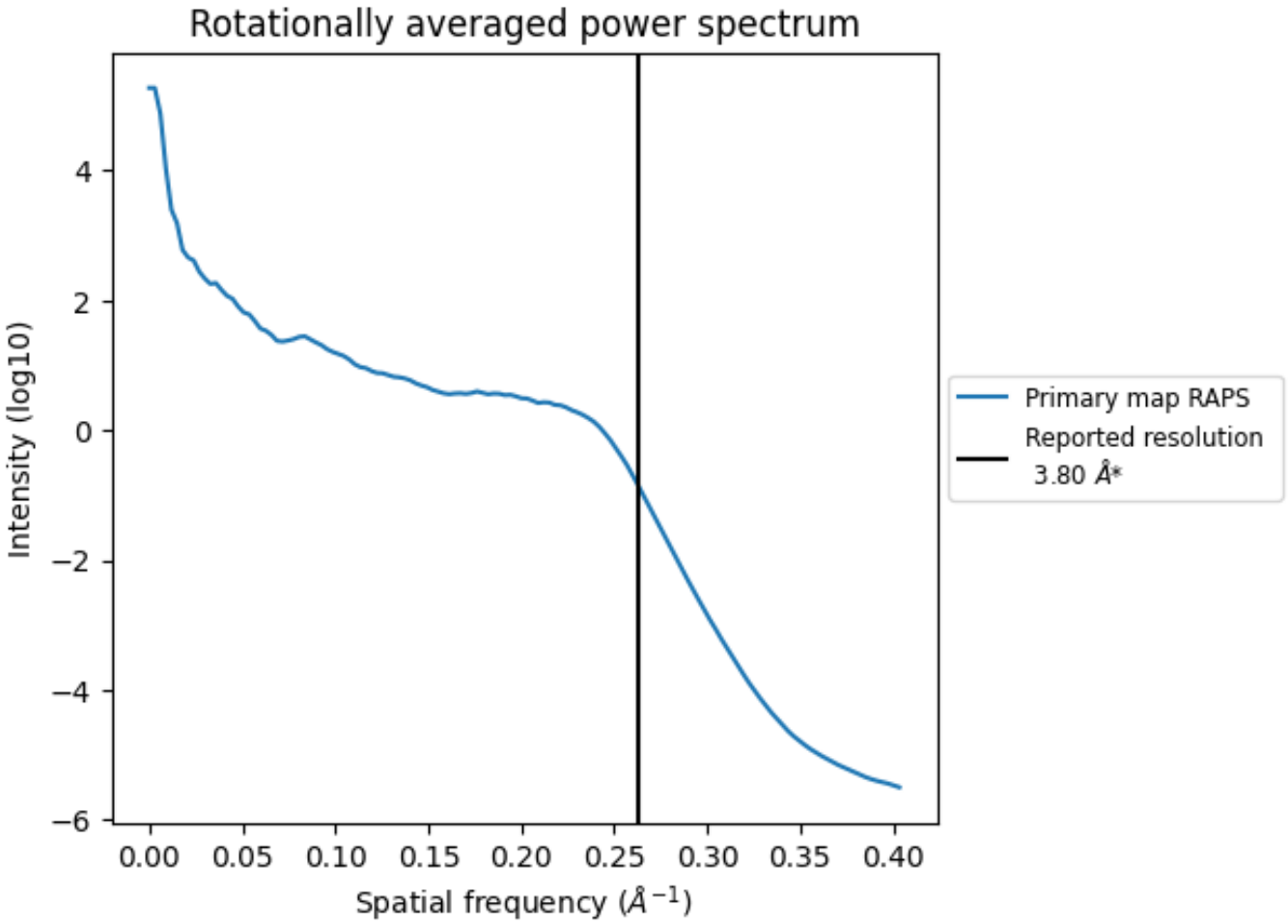
7.2 Volume estimate (i)



The volume at the recommended contour level is 894 nm^3; this corresponds to an approximate mass of 808 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 0.263 Å^{-1}

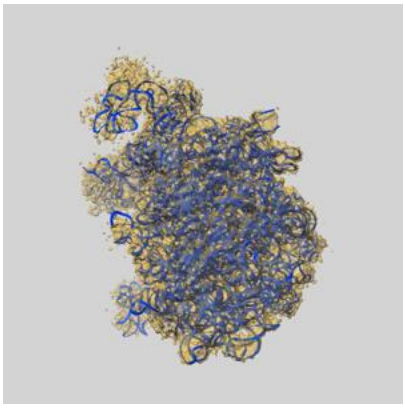
8 Fourier-Shell correlation (i)

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

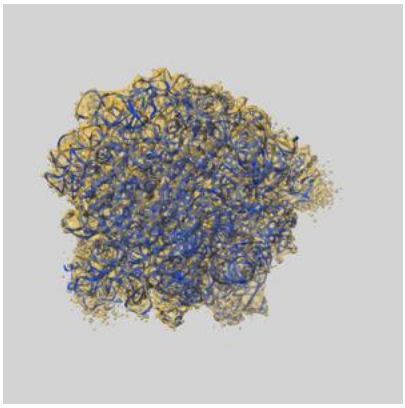
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-4383 and PDB model 6GC8. Per-residue inclusion information can be found in section 3 on page 10.

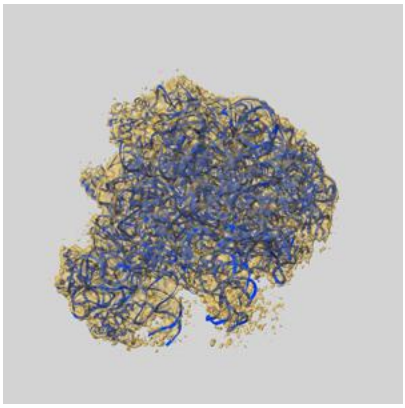
9.1 Map-model overlay



X



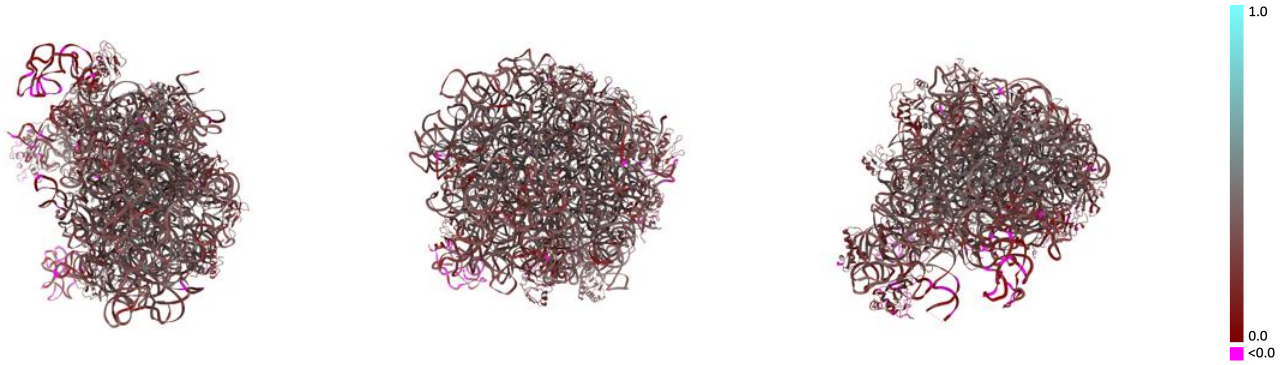
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 1.5 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.

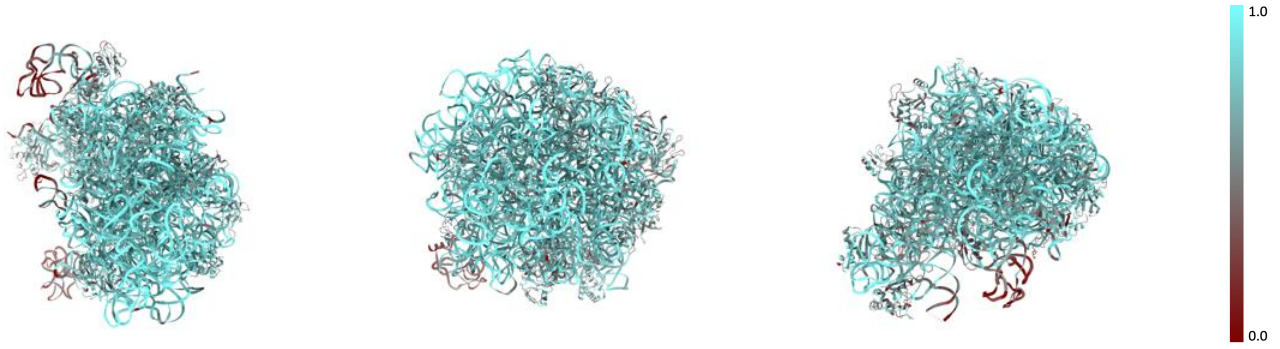
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

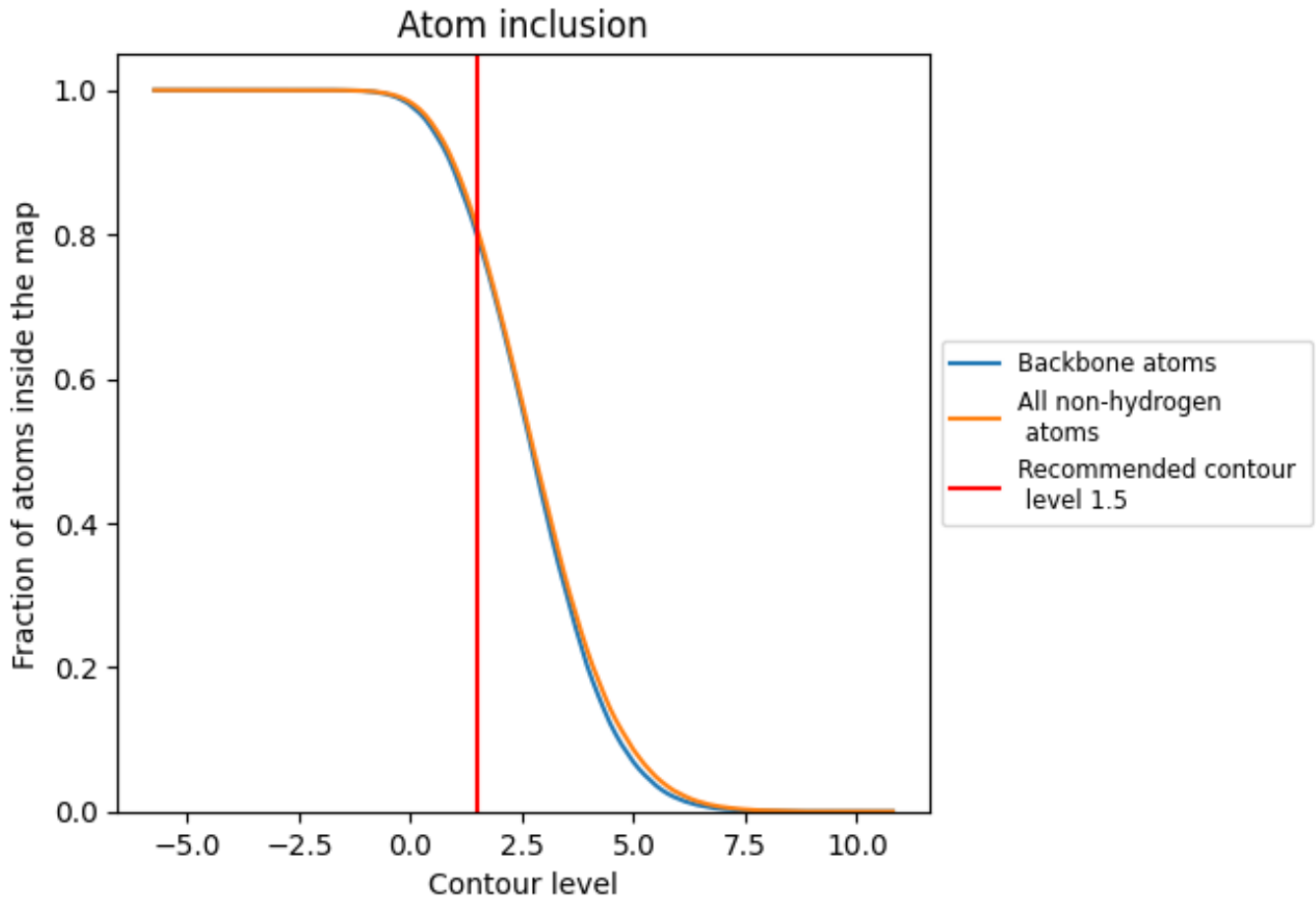
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (1.5).

9.4 Atom inclusion (i)



At the recommended contour level, 80% of all backbone atoms, 81% 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 (1.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8065	0.3050
0	0.7079	0.3200
1	0.4925	0.2410
2	0.7775	0.3260
3	0.6640	0.3120
A	0.8609	0.3150
B	0.8593	0.3100
C	0.7531	0.3180
D	0.7113	0.3080
E	0.6467	0.2610
F	0.5357	0.1570
G	0.5266	0.2020
H	0.4512	0.1610
J	0.7455	0.3400
K	0.7298	0.2590
L	0.6703	0.2730
M	0.5432	0.3010
N	0.7324	0.3150
O	0.6999	0.2530
P	0.7083	0.2570
Q	0.7558	0.3350
R	0.6524	0.2730
S	0.7213	0.3250
T	0.7358	0.3120
U	0.6185	0.2250
V	0.6152	0.2940
W	0.6887	0.3360
X	0.7421	0.3080
Y	0.7042	0.2380
Z	0.6522	0.3190