



wwPDB EM Validation Summary Report ⓘ

Nov 12, 2022 – 11:02 PM EST

PDB ID : 6VYU
EMDB ID : EMD-21472
Title : Escherichia coli transcription-translation complex C2 (TTC-C2) containing a
27 nt long mRNA spacer
Authors : Molodtsov, V.; Wang, C.; Su, M.; Ebright, R.H.
Deposited on : 2020-02-27
Resolution : 7.00 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

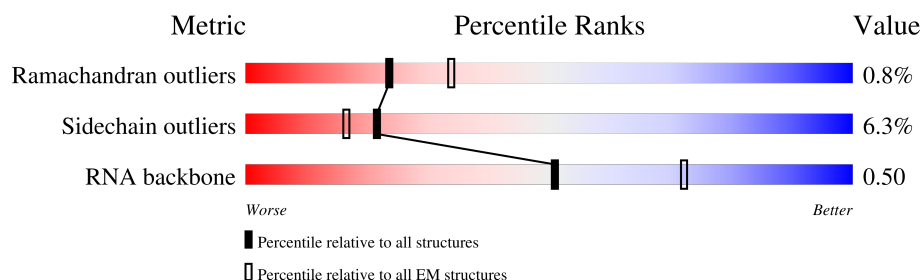
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 7.00 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.















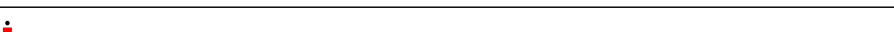

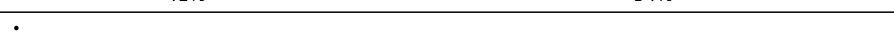

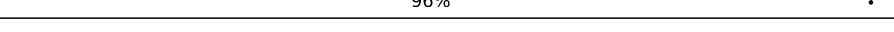



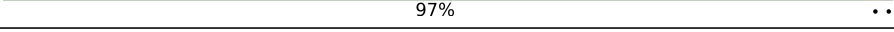
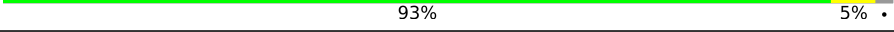



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	0	103	
2	1	110	
3	2	100	
4	3	104	
5	4	94	
6	5	36	
7	6	36	
8	7	16	


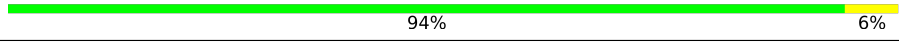
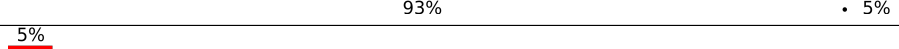
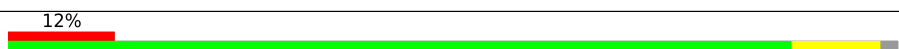
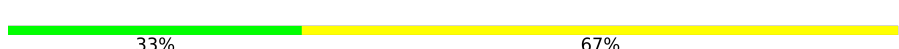


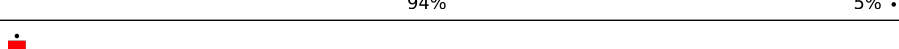
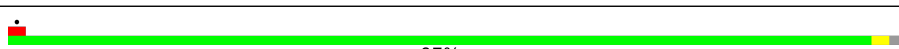
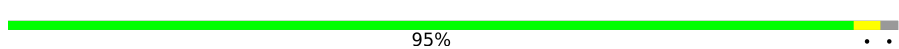

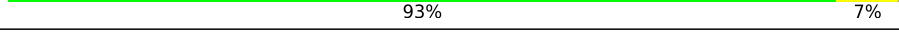

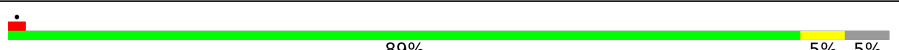
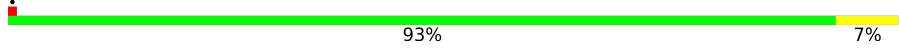
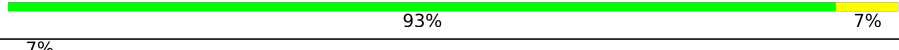
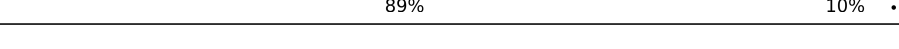

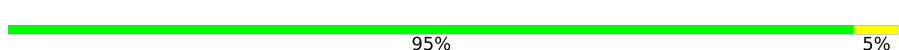
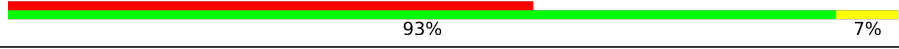
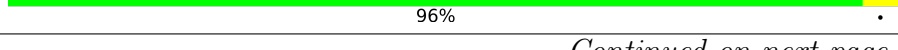



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Mol	Chain	Length	Quality of chain
9	A	76	
9	B	76	
10	AA	1342	
11	AB	181	
12	AC	329	
12	AD	329	
13	AE	1407	
14	AF	91	
15	C	75	
16	D	1542	
17	E	87	
18	F	71	
19	G	241	
20	H	557	
21	I	233	
22	J	206	
23	K	167	
24	L	135	
25	M	179	
26	N	130	
27	O	130	
28	P	103	
29	Q	129	
30	R	124	
31	S	101	

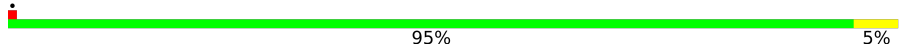
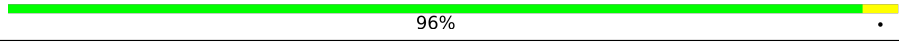
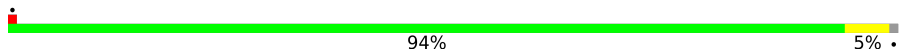
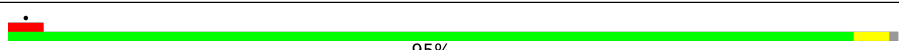
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Mol	Chain	Length	Quality of chain
32	T	89	
33	U	82	
34	V	84	
35	W	92	
36	X	118	
37	Y	3	
38	a	2904	
39	b	85	
40	c	78	
41	d	120	
42	e	63	
43	f	59	
44	g	70	
45	h	273	
46	i	57	
47	j	209	
48	k	55	
49	l	201	
50	m	46	
51	n	179	
52	o	65	
53	p	177	
54	q	38	
55	r	149	
56	s	142	

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Mol	Chain	Length	Quality of chain
57	t	123	 95%5%
58	u	144	 96%.
59	v	136	 96%.
60	w	127	 87%6%6%
61	x	117	 94%5%.
62	y	115	 95%. .
63	z	118	 97%. .

2 Entry composition

There are 65 unique types of molecules in this entry. The entry contains 299446 atoms, of which 125487 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 L21.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	0	103	Total	C	H	N	O	S	0	0
			1655	516	839	153	145	2		

- Molecule 2 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	1	110	Total	C	H	N	O	S	0	0
			1779	532	922	166	156	3		

- Molecule 3 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	2	94	Total	C	H	N	O	S	0	0
			1557	470	811	140	134	2		

- Molecule 4 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	103	Total	C	H	N	O	0	0
			1632	498	844	148	142		

- Molecule 5 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	4	94	Total	C	H	N	O	S	0	0
			1533	479	780	137	134	3		

- Molecule 6 is a DNA chain called NT DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	5	23	Total	C	H	N	O	P	0	0
			732	225	260	87	137	23		

- Molecule 7 is a DNA chain called T DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	6	27	Total	C	H	N	O	P	0	0
			847	259	305	89	167	27		

- Molecule 8 is a RNA chain called mRNA with a 27 nt long spacer.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	7	16	Total	C	H	N	O	P	0	0
			515	154	168	62	115	16		

- Molecule 9 is a RNA chain called E-site fMet-tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	A	76	Total	C	H	N	O	P	0	0
			2446	723	826	295	527	75		
9	B	76	Total	C	H	N	O	P	0	0
			2433	723	813	295	527	75		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	U	deletion	GB 1848954948
B	?	-	U	deletion	GB 1848954948

- Molecule 10 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	AA	1322	Total	C	H	N	O	S	0	0
			20852	6539	10427	1817	2026	43		

- Molecule 11 is a protein called Transcription termination/antitermination protein NusG.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	AB	98	Total	C	H	N	O	S	0	0
			1573	505	783	139	140	6		

- Molecule 12 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	AC	230	Total	C	H	N	O	S	0	0
			3599	1112	1813	317	351	6		

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Mol	Chain	Residues	Atoms						AltConf	Trace
12	AD	228	Total	C	H	N	O	S	0	0
			3556	1100	1789	312	349	6		

- Molecule 13 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	AE	1335	Total	C	H	N	O	S	0	0
			20999	6526	10611	1854	1958	50		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AE	1384	VAL	MET	conflict	UNP A0A4S1NBU2

- Molecule 14 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	AF	83	Total	C	H	N	O	S	0	0
			1318	399	663	123	132	1		

- Molecule 15 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	C	66	Total	C	H	N	O	S	0	0
			1103	344	559	102	97	1		

- Molecule 16 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	D	1524	Total	C	H	N	O	P	0	0
			49126	14585	16423	6003	10591	1524		

- Molecule 17 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	E	86	Total	C	H	N	O	S	0	0
			1388	414	719	138	114	3		

- Molecule 18 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	F	70	Total	C	H	N	O	S	0	0
			1218	366	629	125	97	1		

- Molecule 19 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	G	225	Total	C	H	N	O	S	0	0
			3545	1113	1785	316	323	8		

- Molecule 20 is a protein called 30S ribosomal protein S1.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	H	259	Total	C	H	N	O	S	0	0
			3184	1073	1454	305	349	3		

- Molecule 21 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms						AltConf	Trace
21	I	208	Total	C	H	N	O	S	0	0
			3346	1036	1710	307	290	3		

- Molecule 22 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	J	205	Total	C	H	N	O	S	0	0
			3350	1026	1707	315	298	4		

- Molecule 23 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	K	156	Total	C	H	N	O	S	0	0
			2348	717	1196	217	212	6		

- Molecule 24 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms						AltConf	Trace
24	L	104	Total	C	H	N	O	S	0	0
			1694	536	846	153	152	7		

- Molecule 25 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	M	151	Total	C	H	N	O	S	0	0
			2416	735	1235	227	215	4		

- Molecule 26 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	N	129	Total	C	H	N	O	S	0	0
			2010	616	1031	173	184	6		

- Molecule 27 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	O	127	Total	C	H	N	O	S	0	0
			2092	634	1070	206	179	3		

- Molecule 28 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms						AltConf	Trace
28	P	99	Total	C	H	N	O	S	0	0
			1621	495	831	151	143	1		

- Molecule 29 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms						AltConf	Trace
29	Q	117	Total	C	H	N	O	S	0	0
			1764	540	887	174	160	3		

- Molecule 30 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms						AltConf	Trace
30	R	121	Total	C	H	N	O	S	0	0
			1940	580	1001	194	161	4		

- Molecule 31 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms						AltConf	Trace
31	S	100	Total	C	H	N	O	S	0	0
			1649	499	844	164	139	3		

- Molecule 32 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms						AltConf	Trace
32	T	88	Total	C	H	N	O	S	0	0
			1448	439	734	144	130	1		

- Molecule 33 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms						AltConf	Trace
33	U	82	Total	C	H	N	O	S	0	0
			1315	406	666	128	114	1		

- Molecule 34 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms						AltConf	Trace
34	V	80	Total	C	H	N	O	S	0	0
			1339	411	691	121	113	3		

- Molecule 35 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms						AltConf	Trace
35	W	83	Total	C	H	N	O	S	0	0
			1351	424	688	126	111	2		

- Molecule 36 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms						AltConf	Trace
36	X	116	Total	C	H	N	O	S	0	0
			1864	558	964	181	158	3		

- Molecule 37 is a RNA chain called mRNA in the ribosomal RNA entrance pore.

Mol	Chain	Residues	Atoms						AltConf	Trace
37	Y	3	Total	C	H	N	O	P	0	0
			90	27	30	6	24	3		

- Molecule 38 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
38	a	2880	Total	C	H	N	O	P	0	0
			92918	27587	31077	11398	19976	2880		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	887	A	U	conflict	GB 937521852

- Molecule 39 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms						AltConf	Trace
39	b	76	Total	C	H	N	O	S	0	0
			1181	360	599	117	104	1		

- Molecule 40 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms						AltConf	Trace
40	c	77	Total	C	H	N	O	S	0	0
			1277	388	652	129	106	2		

- Molecule 41 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
41	d	120	Total	C	H	N	O	P	0	0
			3870	1144	1301	468	837	120		

- Molecule 42 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms						AltConf	Trace
42	e	62	Total	C	H	N	O	S	0	0
			1032	308	531	98	94	1		

- Molecule 43 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms						AltConf	Trace
43	f	58	Total	C	H	N	O	S	0	0
			936	281	488	87	78	2		

- Molecule 44 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms						AltConf	Trace
44	g	66	Total	C	H	N	O	S	0	0
			1042	323	520	99	94	6		

- Molecule 45 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms						AltConf	Trace
45	h	271	Total	C	H	N	O	S	0	0
			4236	1288	2154	423	364	7		

- Molecule 46 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms						AltConf	Trace
46	i	56	Total	C	H	N	O	S	0	0
			903	269	459	94	80	1		

- Molecule 47 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms						AltConf	Trace
47	j	209	Total	C	H	N	O	S	0	0
			3182	979	1617	288	294	4		

- Molecule 48 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms						AltConf	Trace
48	k	52	Total	C	H	N	O		0	0
			890	275	464	78	73			

- Molecule 49 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms						AltConf	Trace
49	l	201	Total	C	H	N	O	S	0	0
			3171	974	1619	283	290	5		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
50	m	46	Total	C	H	N	O	S	0	0
			795	228	418	90	57	2		

- Molecule 51 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms						AltConf	Trace
51	n	177	Total	C	H	N	O	S	0	0
			2853	899	1443	249	256	6		

- Molecule 52 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms						AltConf	Trace
52	o	64	Total	C	H	N	O	S	0	0
			1076	323	572	105	74	2		

- Molecule 53 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms						AltConf	Trace
53	p	175	Total	C	H	N	O	S	0	0
			2671	826	1358	241	244	2		

- Molecule 54 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms						AltConf	Trace
54	q	38	Total	C	H	N	O	S	0	0
			645	185	343	65	48	4		

- Molecule 55 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms						AltConf	Trace
55	r	149	Total	C	H	N	O	S	0	0
			2259	699	1148	197	214	1		

- Molecule 56 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms						AltConf	Trace
56	s	142	Total	C	H	N	O	S	0	0
			2291	714	1162	212	199	4		

- Molecule 57 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms						AltConf	Trace
57	t	123	Total	C	H	N	O	S	0	0
			1969	593	1023	181	166	6		

- Molecule 58 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms						AltConf	Trace
58	u	144	Total	C	H	N	O	S	0	0
			2182	654	1129	207	190	2		

- Molecule 59 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms						AltConf	Trace
59	v	136	Total	C	H	N	O	S	0	0
			2231	686	1157	205	177	6		

- Molecule 60 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms						AltConf	Trace
60	w	119	Total	C	H	N	O	S	0	0
			1945	588	994	195	163	5		

- Molecule 61 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms						AltConf	Trace
61	x	116	Total	C	H	N	O		0	0
			1815	552	923	178	162			

- Molecule 62 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms						AltConf	Trace
62	y	114	Total	C	H	N	O	S	0	0
			1879	574	962	179	163	1		

- Molecule 63 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms						AltConf	Trace
63	z	117	Total	C	H	N	O		0	0
			1967	604	1020	192	151			

- Molecule 64 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
64	7	1	Total	Mg	0
			1	1	

- Molecule 65 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
65	AA	2	Total	Zn	0
			2	2	

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.

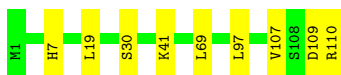
- Molecule 1: 50S ribosomal protein L21

Chain 0:  93% 7%




- Molecule 2: 50S ribosomal protein L22

Chain 1:  92% 8%



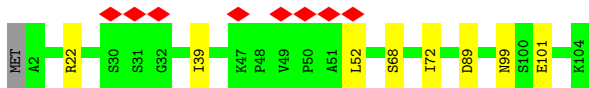
- Molecule 3: 50S ribosomal protein L23

Chain 2:  6% 89% 5% 6%



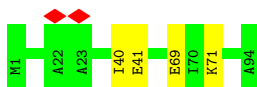
- Molecule 4: 50S ribosomal protein L24

Chain 3:  8% 91% 8%



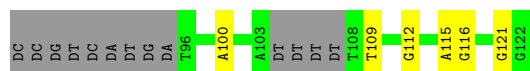
- Molecule 5: 50S ribosomal protein L25

Chain 4:  96%



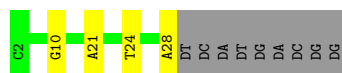
- Molecule 6: NT DNA

Chain 5:  47% 17% 36%

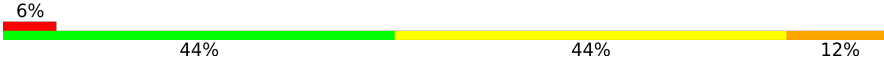


• Molecule 7: T DNA

Chain 6:  64% 11% 25%



• Molecule 8: mRNA with a 27 nt long spacer

Chain 7:  6% 44% 44% 12%



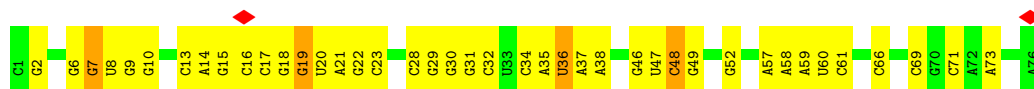
• Molecule 9: E-site fMet-tRNA

Chain A:  58% 38% .



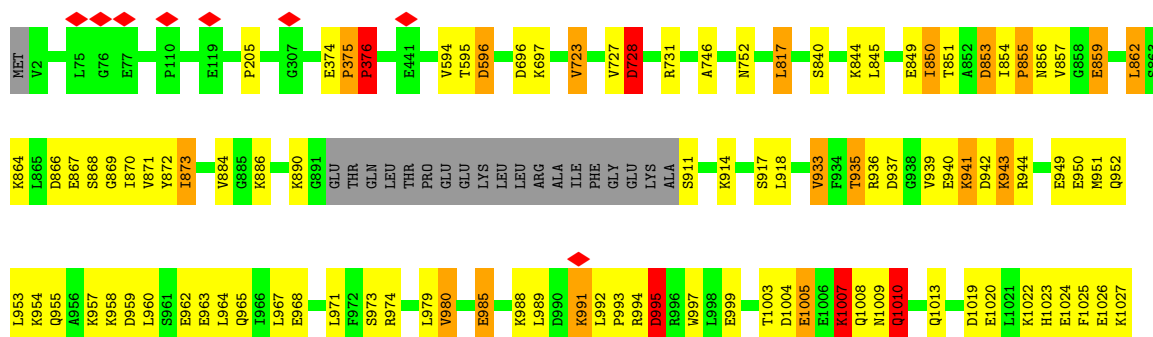
• Molecule 9: E-site fMet-tRNA

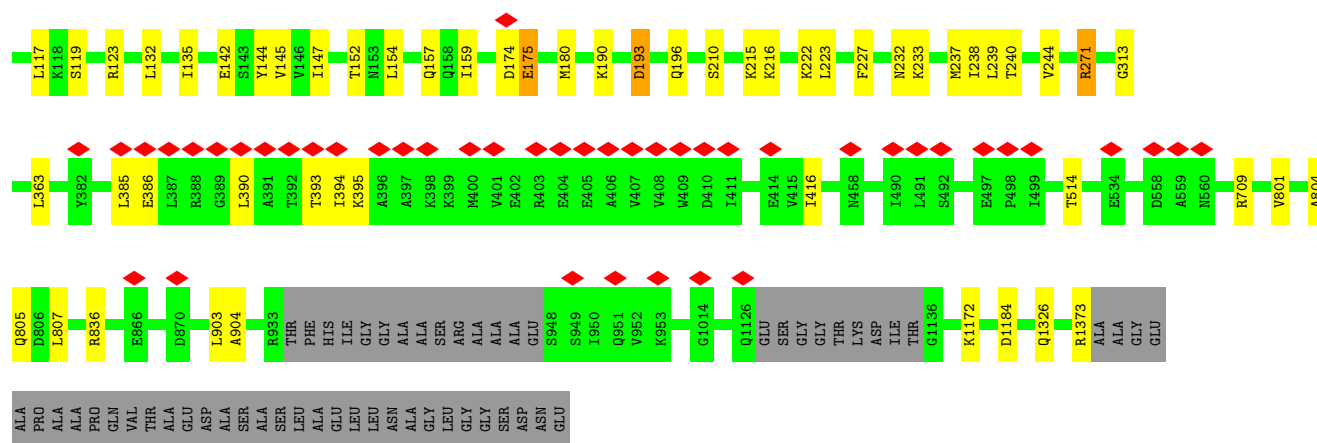
Chain B:  46% 49% 5%



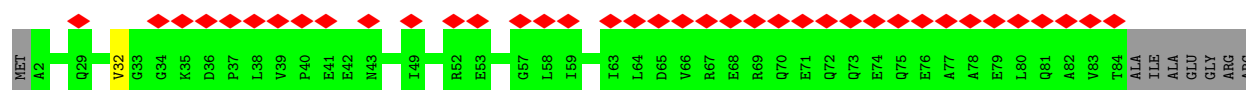
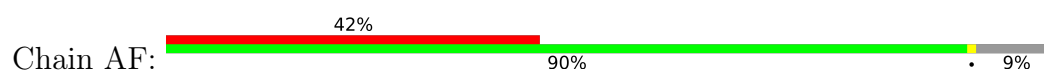
• Molecule 10: DNA-directed RNA polymerase subunit beta

Chain AA:  89% 8% ..

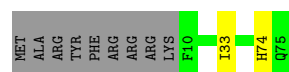
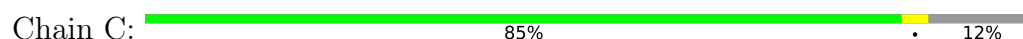




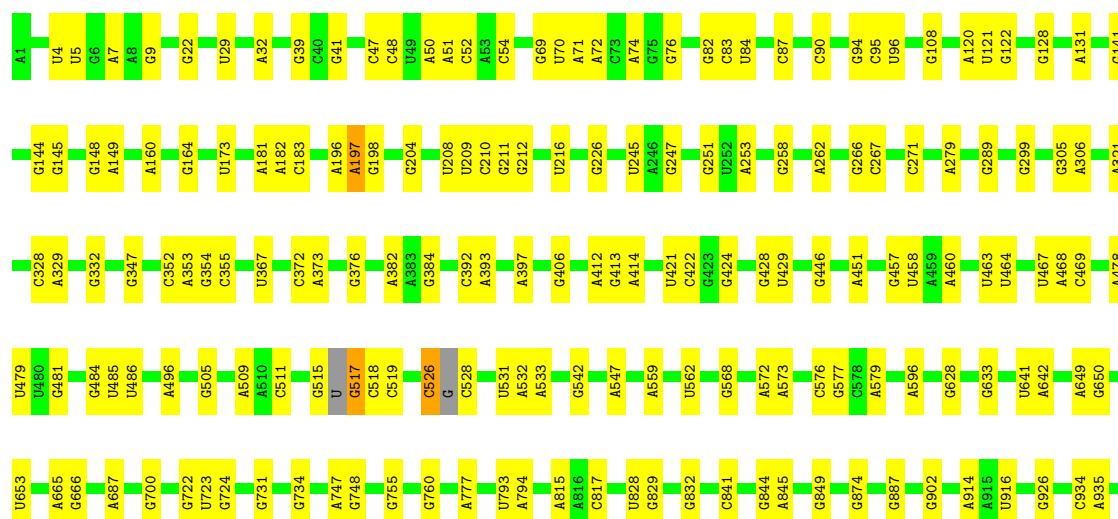
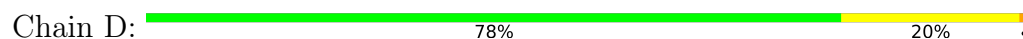
- Molecule 14: DNA-directed RNA polymerase subunit omega

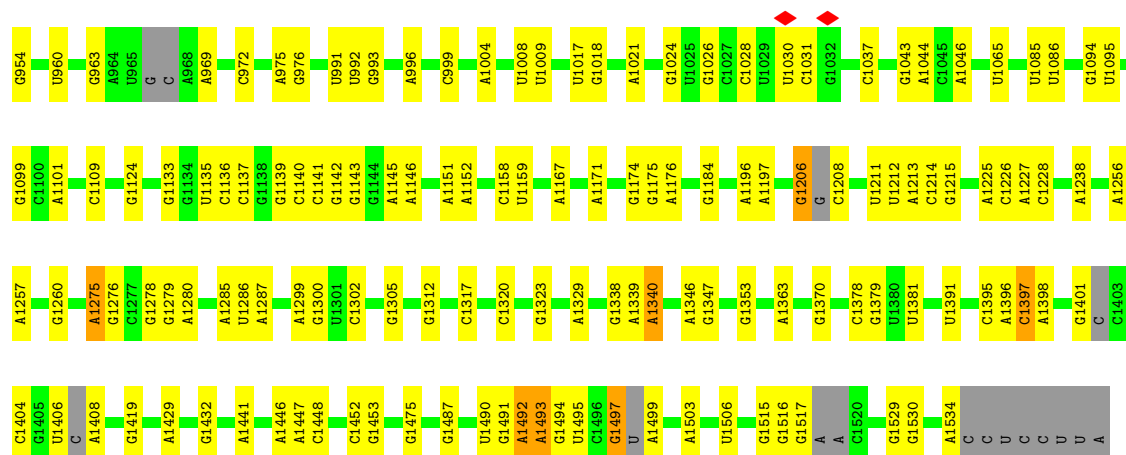


- Molecule 15: 30S ribosomal protein S18

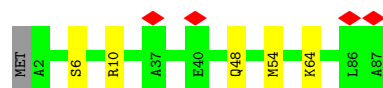
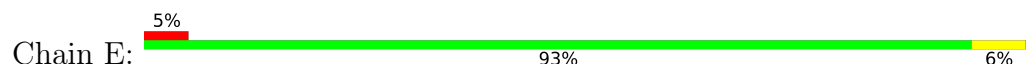


- Molecule 16: 16S rRNA





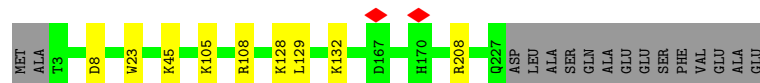
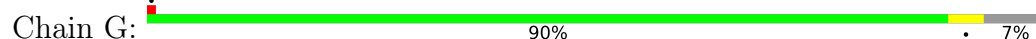
- Molecule 17: 30S ribosomal protein S20



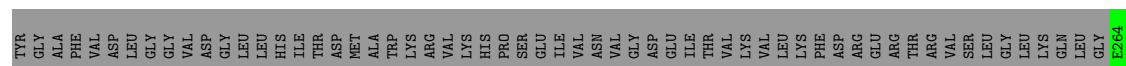
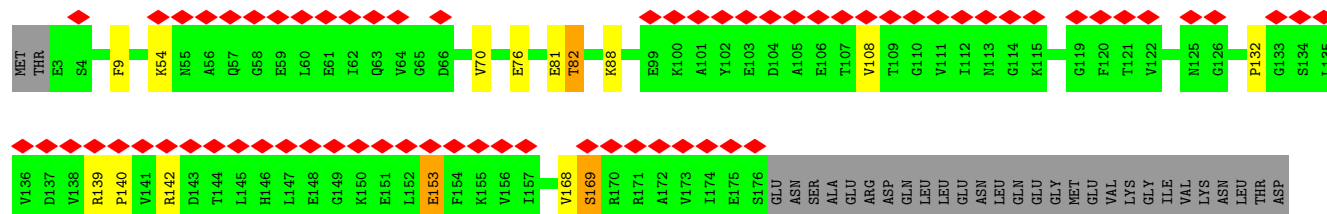
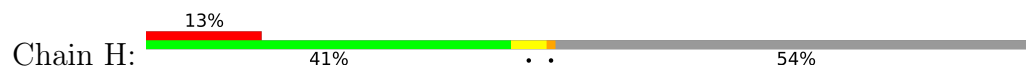
- Molecule 18: 30S ribosomal protein S21



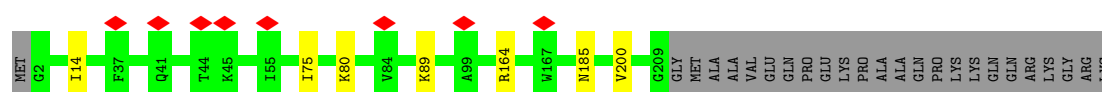
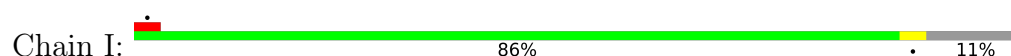
- Molecule 19: 30S ribosomal protein S2



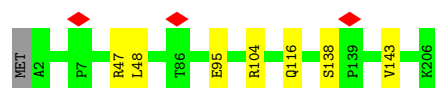
- Molecule 20: 30S ribosomal protein S1



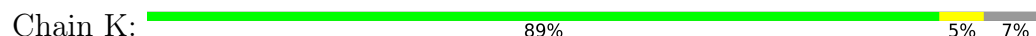
- Molecule 21: 30S ribosomal protein S3



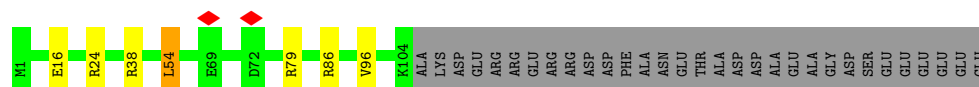
- Molecule 22: 30S ribosomal protein S4



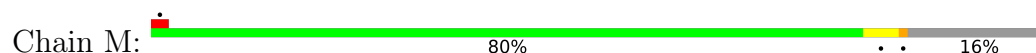
- Molecule 23: 30S ribosomal protein S5



- Molecule 24: 30S ribosomal protein S6

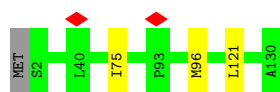


- Molecule 25: 30S ribosomal protein S7



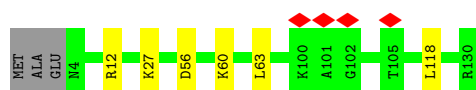
- Molecule 26: 30S ribosomal protein S8

Chain N:  97% ..




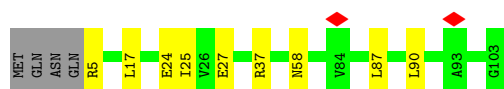
- Molecule 27: 30S ribosomal protein S9

Chain O:  93% 5% .




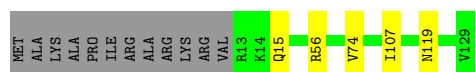
- Molecule 28: 30S ribosomal protein S10

Chain P:  87% 9% .



- Molecule 29: 30S ribosomal protein S11

Chain Q:  87% . 9%



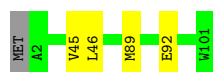
- Molecule 30: 30S ribosomal protein S12

Chain R:  92% 6% .




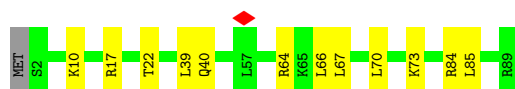
- Molecule 31: 30S ribosomal protein S14

Chain S:  95% ..



- Molecule 32: 30S ribosomal protein S15

Chain T:  85% 13% .



- Molecule 33: 30S ribosomal protein S16

Chain U:  94% 6%




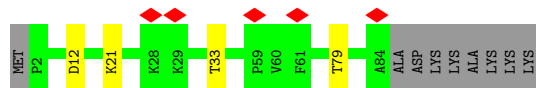
- Molecule 34: 30S ribosomal protein S17

Chain V:  93% 5%




- Molecule 35: 30S ribosomal protein S19

Chain W:  5% 86% 10%



- Molecule 36: 30S ribosomal protein S13

Chain X:  12% 88% 10%




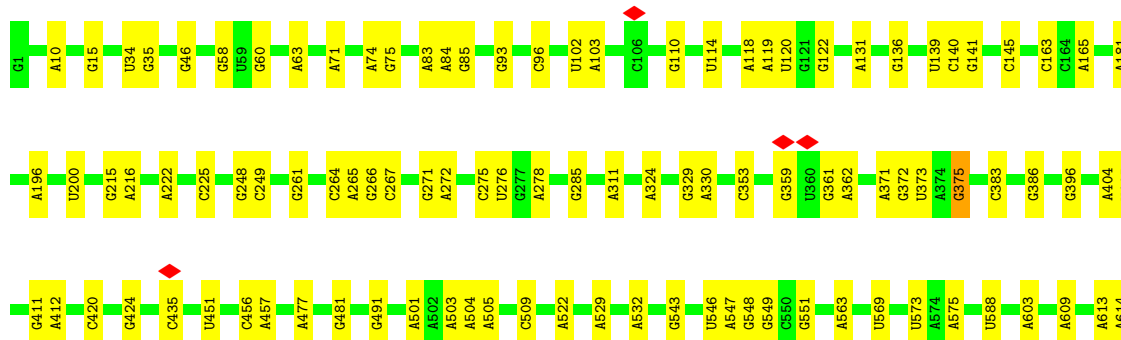
- Molecule 37: mRNA in the ribosomal RNA entrance pore

Chain Y:  33% 67%




- Molecule 38: 23S rRNA

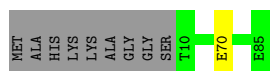
Chain a:  81% 18%



U2903	U2869	G2502	A2346	A2191	U2109	C	C1816	A1580	A1383	G1112	C995	U615
U	U2890	A	C2347	U2192	G2110	U1963	A1829	G1581	A1387	U1119	A996	A616
		U	C2350	U2194	U2111	C1965	C1833	C1582			U999	G617
	G2714	G2506	G2361		U2113	A1966	U1834	U1584	A1395	G1122	C1005	G618
	G2722	C2507	U2372	A2198	U2114	C1967	G	U1589	U1406	U1130		A621
	A2726	A2513	A2376	G2204	G2115	A1970	C1836	A1590	G1407	A1133	U1012	A627
	G2744	A2518		U2210	A2117	U1971	U1847	A1608	G1408	A1134	C1013	A637
	A2748	U2519	U2384	A2212	U2118	G1972	A1848	A1609	U1411	C1135	G1022	C645
		C2520	C2385	U2213	G2121	A1987	A1858	A1610		U1141	U1023	U646
	A2757	G2525		A2225	G2123	U1991	U1859	C1617	C1414	A1142	G1026	G647
	A2758	G2529	U2402	C2226	G2124	U1993	G1862	A	U1415	A1169		A654
	A2765	G2535	C2403	U2229	A2126	U1997	U1864	U1647	G1417	U1170	U1033	
			A2406		G2127	C1997	G1873	U1648	G1418	G1041	G1041	G664
	G2777	A2547	U2423	G2238	G2128	G2002	G1870	G1649	A1419	G881	C1045	A668
	A2778		C2424	G2239	U2131	U2022	C1870	G1651	A1420	U1173	A1046	
	G2791	C2551	A2425	U2243	G2132	C2023	A1871	G1651	C1428	U1174	G1047	U884
	A2792	U	A2426	U2244	G2133	C2022	A1872		G1452	A1176	C885	C885
	C2793	G2553		U2245	A2134	G2027	G1873	G1674	A1453	G1177	U1066	U886
		U2554	G2429			U2028		G1677	U1460	U1180	U1061	U710
	U2796	A2566	A2430	G2250	U2139	G2029	C1905			G1186	G1062	
	U2797	G2567	U2431	G	G2140	A	G1906	G1703	G1478		G1063	C717
	U2798		A2435	G2252	G2141	U2031	G1907				C1064	A730
	A2799	U	A2436	A2268	C2146	G2032	G1910	U1714	G1482	G1230	U1065	
	A2800				A2147	A2033	U	G1715			U1066	G738
	G2801		U2441	A2278	A2154	C2043	A1912	U1718	A1490	G1238	A1067	
	U2804	C2579	G2444	C2283	G2157	A2051	A1913	U1729	U1497	G1248	G1068	A742
	U2818	U	G	A2287	A2158	A2052	C1914	C1730			A1069	A743
	G2819	G2581	G2446		G2159	A2055	U	G1731	A1503	A1253	A1070	U744
	A2823	U2585	G2447	A2297	G2162	G2056	A1918	C1732	A1508	G1256	C1071	G
	C2824	U2586		A2298	A2163	G2056	C1920	G1738	A1509	G1266	A1073	U
	G2825	A2602	C2456	U2299	C2164	A2060	G1921		G1510		G1074	
	U2849	G2603	U		C2165	G2061	U1922	G1750	A1515	G1271	C1075	G748
	A2850	U2604	G2458	U2305	U2167	A2062	C1924	A1755	G1529	U1273	G1076	
		U	G2470	G2308	G2168	U2068	C1925		U1534	A1301	C1079	
	G2859	C2606		A2309	A2169	G	U1926	U1758	A1535	A1321	A1080	G757
	A2860	U2609	U2474	G2315	A2170	A2070	A1927		A1536		U1081	A764
	U2861	C2611	C2475		A2171	A1928	G1929	C1764	C1536	A941	U1082	C765
	G2867	U2612	U2477	A2322	U2172	C2073	G1930	A1773	G1537	A945	U1083	G775
	C2880	U2613	A2478		C2178	U2075			U1554	C1345	G1087	G776
	U2884	U2629		G2325	U2182	U2076	A1936	U1791	U1559	U1352	A1088	A782
	G2885	G2663	G2484	A2327	A2183	A2077	A1937	C1800	U1566	A1365	A1089	A783
			U2491	A2333	A2184	A2097	U	A1801	A1569		A1090	G784
	U2891		A2497	U2099	U2185	U2098	U1940		A1578	G1368	A1095	G785
	G2902		C	G2100	U2188	G2100	U1955	A1808	A1569	A1378	A1096	A800
			G2499	U2189	U2189	U2099	U1961	G1811	U1578	U1379	A1096	G801
				G2190	G2190	A2108	C1961		A1579	G1380	G1107	A802
											G1110	G805

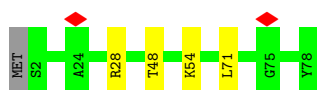
- Molecule 39: 50S ribosomal protein L27

Chain b:  88% 11%




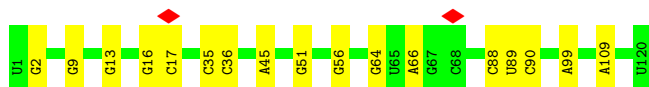
- Molecule 40: 50S ribosomal protein L28

Chain c:  94% 5%



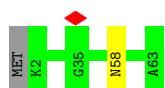
- Molecule 41: 5S rRNA

Chain d:  86% 14%



- Molecule 42: 50S ribosomal protein L29

Chain e:  97%




- Molecule 43: 50S ribosomal protein L30

Chain f:  95%



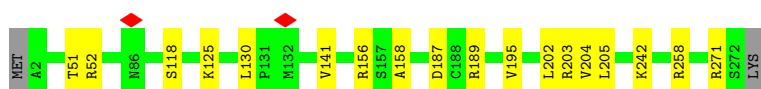
- Molecule 44: 50S ribosomal protein L31

Chain g:  86% 9% 6%




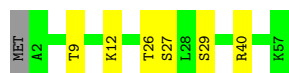
- Molecule 45: 50S ribosomal protein L2

Chain h:  93% 7%



- Molecule 46: 50S ribosomal protein L32

Chain i:  88% 11%




- Molecule 47: 50S ribosomal protein L3

Chain j:  97%



- Molecule 48: 50S ribosomal protein L33

Chain k:  89% 5% 5%



- Molecule 49: 50S ribosomal protein L4

Chain l:  93% 7%




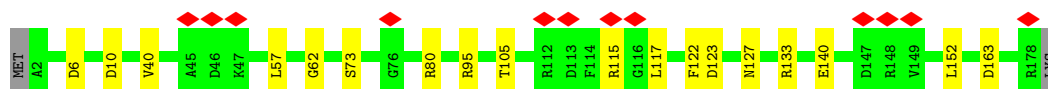
- Molecule 50: 50S ribosomal protein L34

Chain m:  93% 7%




- Molecule 51: 50S ribosomal protein L5

Chain n:  7% 89% 10%



- Molecule 52: 50S ribosomal protein L35

Chain o:  91% 8%



- Molecule 53: 50S ribosomal protein L6

Chain p:  97%



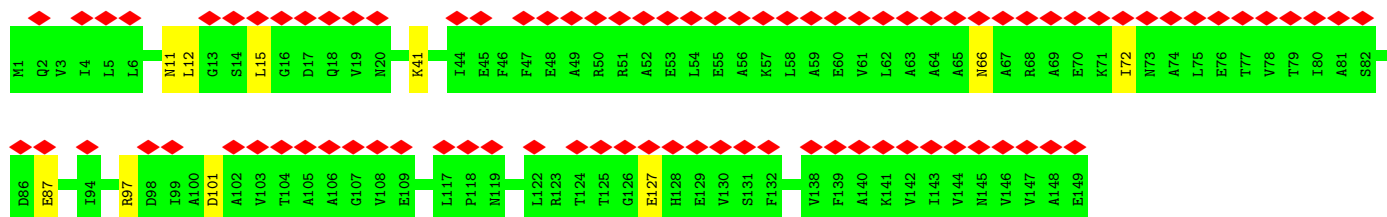
- Molecule 54: 50S ribosomal protein L36

Chain q:  95%



- Molecule 55: 50S ribosomal protein L9

Chain r:  59%



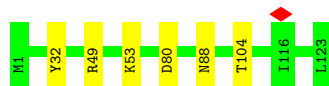
- Molecule 56: 50S ribosomal protein L13

Chain s:  96%



- Molecule 57: 50S ribosomal protein L14

Chain t:  95%



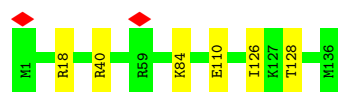
- Molecule 58: 50S ribosomal protein L15

Chain u:  96%




- Molecule 59: 50S ribosomal protein L16

Chain v:  96% .



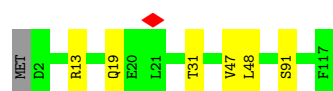
- Molecule 60: 50S ribosomal protein L17

Chain w:  87% 6% 6%



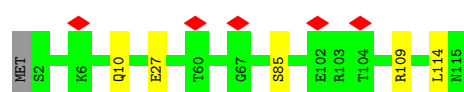
- Molecule 61: 50S ribosomal protein L18

Chain x:  94% 5% .



- Molecule 62: 50S ribosomal protein L19

Chain y:  95% . .



- Molecule 63: 50S ribosomal protein L20

Chain z:  97% . .



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	8928	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 ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.411	Depositor
Minimum map value	-0.108	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.023	Depositor
Recommended contour level	0.026	Depositor
Map size (\AA)	564.28796, 564.28796, 564.28796	wwPDB
Map dimensions	192, 192, 192	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	2.939, 2.939, 2.939	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0	0.38	0/829	0.67	0/1107
2	1	0.48	0/864	0.83	0/1156
3	2	0.42	0/752	0.71	0/1005
4	3	0.35	0/796	0.66	2/1062 (0.2%)
5	4	0.40	0/766	0.68	0/1025
6	5	1.13	6/528 (1.1%)	0.97	1/810 (0.1%)
7	6	1.11	4/603 (0.7%)	0.97	0/926
8	7	0.95	4/388 (1.0%)	1.04	0/604
9	A	0.39	0/1810	0.75	1/2821 (0.0%)
9	B	0.46	1/1810 (0.1%)	0.86	7/2821 (0.2%)
10	AA	0.58	2/10591 (0.0%)	0.76	19/14289 (0.1%)
11	AB	0.43	0/808	0.59	0/1088
12	AC	0.47	0/1808	0.61	1/2450 (0.0%)
12	AD	0.39	0/1789	0.56	0/2425
13	AE	0.51	4/10545 (0.0%)	0.66	5/14236 (0.0%)
14	AF	0.47	0/657	0.67	0/886
15	C	0.48	0/553	0.83	0/743
16	D	0.34	10/36610 (0.0%)	0.74	30/57091 (0.1%)
17	E	0.57	0/675	0.85	0/895
18	F	0.56	0/597	0.87	0/792
19	G	0.49	0/1791	0.71	0/2413
20	H	0.55	1/1746 (0.1%)	1.03	13/2382 (0.5%)
21	I	0.43	0/1663	0.71	0/2241
22	J	0.47	0/1665	0.73	0/2227
23	K	0.45	0/1165	0.75	0/1568
24	L	0.43	0/867	0.75	1/1171 (0.1%)
25	M	0.50	0/1195	0.81	0/1602
26	N	0.41	0/989	0.70	0/1326
27	O	0.43	0/1034	0.75	0/1375
28	P	0.43	0/800	0.75	0/1082
29	Q	0.40	0/893	0.70	0/1205
30	R	0.35	0/952	0.74	0/1274

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	S	0.49	0/817	0.79	0/1088
32	T	0.53	0/722	0.86	0/964
33	U	0.44	0/659	0.79	0/884
34	V	0.34	0/657	0.62	0/881
35	W	0.38	0/680	0.62	0/915
36	X	0.49	0/909	0.87	0/1215
37	Y	0.26	0/65	0.74	0/98
38	a	0.39	3/69247 (0.0%)	0.72	18/107985 (0.0%)
39	b	0.39	0/589	0.70	0/779
40	c	0.48	0/635	0.81	1/848 (0.1%)
41	d	0.30	0/2872	0.70	0/4478
42	e	0.54	0/502	0.83	0/667
43	f	0.45	0/452	0.78	0/605
44	g	0.43	0/531	0.68	0/709
45	h	0.39	0/2121	0.78	0/2852
46	i	0.40	0/450	0.79	0/599
47	j	0.44	0/1586	0.70	0/2134
48	k	0.35	0/433	0.65	0/576
49	l	0.46	0/1571	0.77	0/2113
50	m	0.53	0/380	0.99	0/498
51	n	0.49	0/1434	0.88	3/1926 (0.2%)
52	o	0.45	0/513	0.83	0/676
53	p	0.39	0/1333	0.67	0/1805
54	q	0.37	0/303	0.77	0/397
55	r	0.44	0/1122	0.69	0/1515
56	s	0.50	0/1152	0.75	0/1551
57	t	0.41	0/955	0.78	0/1279
58	u	0.40	0/1062	0.76	0/1413
59	v	0.47	0/1093	0.82	0/1460
60	w	0.52	0/964	0.87	0/1289
61	x	0.46	0/902	0.81	0/1209
62	y	0.41	0/929	0.72	1/1242 (0.1%)
63	z	0.60	0/960	0.91	0/1278
All	All	0.43	35/187139 (0.0%)	0.74	103/276026 (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
9	A	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
9	B	0	2
10	AA	0	12
13	AE	0	5
14	AF	0	1
20	H	0	3
36	X	0	1
All	All	0	26

The worst 5 of 35 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	D	1516	G	O3'-P	-13.47	1.45	1.61
16	D	1339	A	O3'-P	10.59	1.73	1.61
10	AA	374	GLU	C-N	10.41	1.54	1.34
13	AE	88	CYS	CB-SG	-10.19	1.65	1.82
6	5	109	DT	O3'-P	8.67	1.71	1.61

The worst 5 of 103 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	D	1516	G	P-O3'-C3'	-18.97	96.94	119.70
16	D	1516	G	O3'-P-O5'	13.77	130.17	104.00
10	AA	1007	LYS	O-C-N	-13.03	101.85	122.70
10	AA	1250	SER	C-N-CA	11.17	149.62	121.70
38	a	2252	G	N9-C1'-C2'	-10.97	99.74	114.00

There are no chirality outliers.

5 of 26 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
9	A	19	G	Sidechain
9	A	7	G	Sidechain
10	AA	205	PRO	Peptide
10	AA	594	VAL	Peptide
10	AA	595	THR	Peptide

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	0	101/103 (98%)	97 (96%)	3 (3%)	1 (1%)	15	54
2	1	108/110 (98%)	104 (96%)	4 (4%)	0	100	100
3	2	92/100 (92%)	90 (98%)	2 (2%)	0	100	100
4	3	101/104 (97%)	96 (95%)	4 (4%)	1 (1%)	15	54
5	4	92/94 (98%)	91 (99%)	1 (1%)	0	100	100
10	AA	1318/1342 (98%)	1145 (87%)	140 (11%)	33 (2%)	5	32
11	AB	94/181 (52%)	88 (94%)	6 (6%)	0	100	100
12	AC	228/329 (69%)	214 (94%)	12 (5%)	2 (1%)	17	57
12	AD	226/329 (69%)	212 (94%)	14 (6%)	0	100	100
13	AE	1329/1407 (94%)	1198 (90%)	122 (9%)	9 (1%)	22	63
14	AF	81/91 (89%)	74 (91%)	7 (9%)	0	100	100
15	C	64/75 (85%)	63 (98%)	1 (2%)	0	100	100
17	E	84/87 (97%)	83 (99%)	1 (1%)	0	100	100
18	F	68/71 (96%)	68 (100%)	0	0	100	100
19	G	223/241 (92%)	210 (94%)	13 (6%)	0	100	100
20	H	255/557 (46%)	189 (74%)	54 (21%)	12 (5%)	2	21
21	I	206/233 (88%)	196 (95%)	9 (4%)	1 (0%)	29	69
22	J	203/206 (98%)	198 (98%)	5 (2%)	0	100	100
23	K	154/167 (92%)	146 (95%)	7 (4%)	1 (1%)	25	66
24	L	102/135 (76%)	97 (95%)	4 (4%)	1 (1%)	15	54
25	M	149/179 (83%)	144 (97%)	4 (3%)	1 (1%)	22	63
26	N	127/130 (98%)	121 (95%)	5 (4%)	1 (1%)	19	60
27	O	125/130 (96%)	115 (92%)	9 (7%)	1 (1%)	19	60
28	P	97/103 (94%)	88 (91%)	8 (8%)	1 (1%)	15	54
29	Q	115/129 (89%)	104 (90%)	9 (8%)	2 (2%)	9	42

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
30	R	117/124 (94%)	116 (99%)	1 (1%)	0	100	100
31	S	98/101 (97%)	96 (98%)	2 (2%)	0	100	100
32	T	86/89 (97%)	82 (95%)	4 (5%)	0	100	100
33	U	80/82 (98%)	75 (94%)	4 (5%)	1 (1%)	12	48
34	V	78/84 (93%)	74 (95%)	4 (5%)	0	100	100
35	W	81/92 (88%)	78 (96%)	3 (4%)	0	100	100
36	X	114/118 (97%)	107 (94%)	5 (4%)	2 (2%)	8	40
39	b	74/85 (87%)	69 (93%)	5 (7%)	0	100	100
40	c	75/78 (96%)	72 (96%)	3 (4%)	0	100	100
42	e	60/63 (95%)	57 (95%)	3 (5%)	0	100	100
43	f	56/59 (95%)	53 (95%)	3 (5%)	0	100	100
44	g	64/70 (91%)	63 (98%)	1 (2%)	0	100	100
45	h	269/273 (98%)	259 (96%)	9 (3%)	1 (0%)	34	72
46	i	54/57 (95%)	51 (94%)	3 (6%)	0	100	100
47	j	207/209 (99%)	198 (96%)	9 (4%)	0	100	100
48	k	50/55 (91%)	50 (100%)	0	0	100	100
49	l	199/201 (99%)	190 (96%)	8 (4%)	1 (0%)	29	69
50	m	44/46 (96%)	43 (98%)	1 (2%)	0	100	100
51	n	175/179 (98%)	162 (93%)	11 (6%)	2 (1%)	14	52
52	o	62/65 (95%)	59 (95%)	3 (5%)	0	100	100
53	p	173/177 (98%)	161 (93%)	12 (7%)	0	100	100
54	q	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
55	r	147/149 (99%)	136 (92%)	11 (8%)	0	100	100
56	s	140/142 (99%)	135 (96%)	5 (4%)	0	100	100
57	t	121/123 (98%)	111 (92%)	10 (8%)	0	100	100
58	u	142/144 (99%)	135 (95%)	7 (5%)	0	100	100
59	v	134/136 (98%)	129 (96%)	5 (4%)	0	100	100
60	w	117/127 (92%)	107 (92%)	10 (8%)	0	100	100
61	x	114/117 (97%)	108 (95%)	6 (5%)	0	100	100
62	y	112/115 (97%)	105 (94%)	7 (6%)	0	100	100
63	z	115/118 (98%)	110 (96%)	4 (4%)	1 (1%)	17	57

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	9136/10149 (90%)	8457 (93%)	604 (7%)	75 (1%)	24 60

5 of 75 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
10	AA	596	ASP
10	AA	853	ASP
10	AA	859	GLU
10	AA	862	LEU
10	AA	937	ASP

5.3.2 Protein sidechains ⓘ

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	0	84/84 (100%)	78 (93%)	6 (7%)	14 39
2	1	93/93 (100%)	84 (90%)	9 (10%)	8 27
3	2	81/84 (96%)	76 (94%)	5 (6%)	18 43
4	3	84/85 (99%)	78 (93%)	6 (7%)	14 39
5	4	78/78 (100%)	74 (95%)	4 (5%)	24 48
10	AA	1140/1157 (98%)	1043 (92%)	97 (8%)	10 33
11	AB	86/158 (54%)	84 (98%)	2 (2%)	50 70
12	AC	198/286 (69%)	184 (93%)	14 (7%)	14 39
12	AD	196/286 (68%)	194 (99%)	2 (1%)	76 86
13	AE	1120/1168 (96%)	1051 (94%)	69 (6%)	18 43
14	AF	70/75 (93%)	70 (100%)	0	100 100
15	C	57/65 (88%)	55 (96%)	2 (4%)	36 59
17	E	65/66 (98%)	60 (92%)	5 (8%)	13 37
18	F	60/61 (98%)	57 (95%)	3 (5%)	24 49
19	G	187/199 (94%)	178 (95%)	9 (5%)	25 50
20	H	137/461 (30%)	128 (93%)	9 (7%)	16 41

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	I	171/190 (90%)	165 (96%)	6 (4%)	36	59
22	J	172/173 (99%)	165 (96%)	7 (4%)	30	55
23	K	119/126 (94%)	112 (94%)	7 (6%)	19	45
24	L	91/116 (78%)	85 (93%)	6 (7%)	16	41
25	M	124/147 (84%)	116 (94%)	8 (6%)	17	42
26	N	104/105 (99%)	102 (98%)	2 (2%)	57	75
27	O	105/107 (98%)	100 (95%)	5 (5%)	25	50
28	P	86/90 (96%)	78 (91%)	8 (9%)	9	28
29	Q	90/99 (91%)	87 (97%)	3 (3%)	38	61
30	R	101/104 (97%)	94 (93%)	7 (7%)	15	40
31	S	83/84 (99%)	79 (95%)	4 (5%)	25	50
32	T	76/77 (99%)	64 (84%)	12 (16%)	2	13
33	U	65/65 (100%)	61 (94%)	4 (6%)	18	43
34	V	74/78 (95%)	72 (97%)	2 (3%)	44	65
35	W	72/79 (91%)	68 (94%)	4 (6%)	21	46
36	X	94/96 (98%)	85 (90%)	9 (10%)	8	27
39	b	58/63 (92%)	57 (98%)	1 (2%)	60	78
40	c	67/68 (98%)	64 (96%)	3 (4%)	27	52
42	e	54/55 (98%)	53 (98%)	1 (2%)	57	75
43	f	48/49 (98%)	46 (96%)	2 (4%)	30	54
44	g	59/62 (95%)	53 (90%)	6 (10%)	7	25
45	h	216/218 (99%)	199 (92%)	17 (8%)	12	35
46	i	47/48 (98%)	41 (87%)	6 (13%)	4	18
47	j	164/164 (100%)	157 (96%)	7 (4%)	29	53
48	k	47/49 (96%)	44 (94%)	3 (6%)	17	42
49	l	165/165 (100%)	151 (92%)	14 (8%)	10	33
50	m	38/38 (100%)	35 (92%)	3 (8%)	12	35
51	n	148/150 (99%)	134 (90%)	14 (10%)	8	27
52	o	51/52 (98%)	46 (90%)	5 (10%)	8	26
53	p	136/138 (99%)	132 (97%)	4 (3%)	42	64
54	q	34/34 (100%)	32 (94%)	2 (6%)	19	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
55	r	114/114 (100%)	104 (91%)	10 (9%)	10	31
56	s	116/116 (100%)	110 (95%)	6 (5%)	23	48
57	t	104/104 (100%)	98 (94%)	6 (6%)	20	45
58	u	103/103 (100%)	97 (94%)	6 (6%)	20	45
59	v	109/109 (100%)	103 (94%)	6 (6%)	21	47
60	w	99/103 (96%)	91 (92%)	8 (8%)	11	35
61	x	86/87 (99%)	80 (93%)	6 (7%)	15	40
62	y	99/100 (99%)	95 (96%)	4 (4%)	31	55
63	z	89/90 (99%)	87 (98%)	2 (2%)	52	71
All	All	7614/8421 (90%)	7136 (94%)	478 (6%)	21	43

5 of 478 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
19	G	132	LYS
57	t	80	ASP
28	P	25	ILE
56	s	57	LEU
62	y	27	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
10	AA	1010	GLN
10	AA	1013	GLN
19	G	18	HIS
36	X	105	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
16	D	1515/1542 (98%)	289 (19%)	35 (2%)
37	Y	2/3 (66%)	2 (100%)	0
38	a	2859/2904 (98%)	531 (18%)	0
41	d	119/120 (99%)	17 (14%)	0
8	7	15/16 (93%)	7 (46%)	0
9	A	75/76 (98%)	29 (38%)	6 (8%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
9	B	75/76 (98%)	35 (46%)	6 (8%)
All	All	4660/4737 (98%)	910 (19%)	47 (1%)

5 of 910 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
8	7	56	U
8	7	57	G
8	7	58	A
8	7	59	U
8	7	60	U

5 of 47 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
16	D	722	G
16	D	1211	U
16	D	793	U
16	D	1109	C
16	D	1213	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 3 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](#)

There are no chain breaks in this entry.

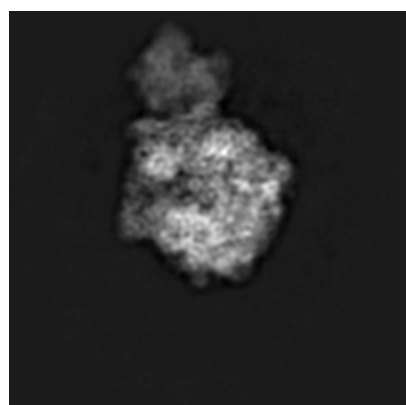
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-21472. These allow visual inspection of the internal detail of the map and identification of artifacts.

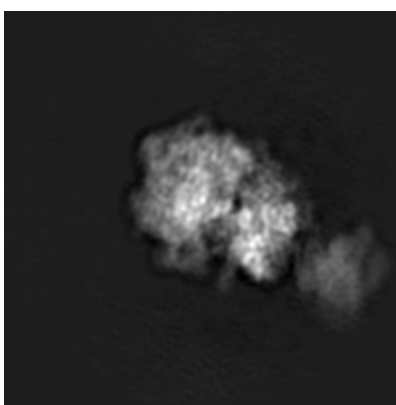
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

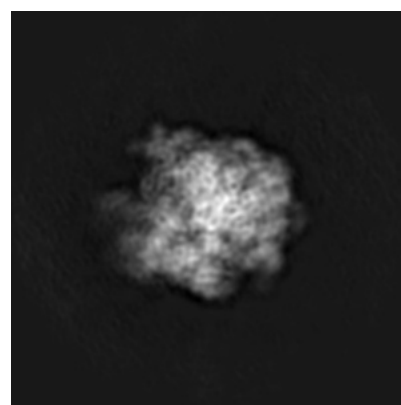
6.1.1 Primary map



X



Y

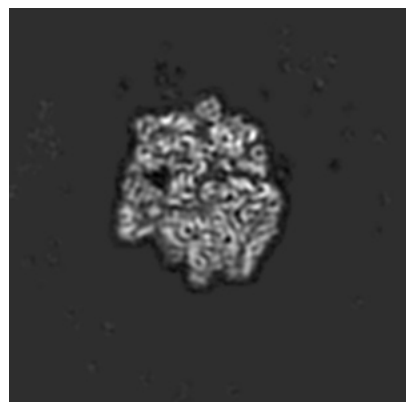


Z

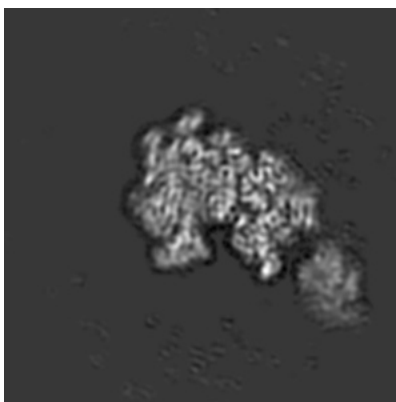
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

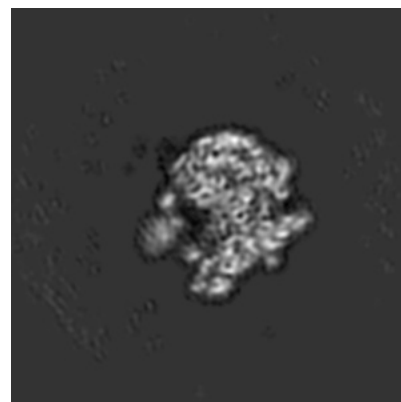
6.2.1 Primary map



X Index: 96



Y Index: 96

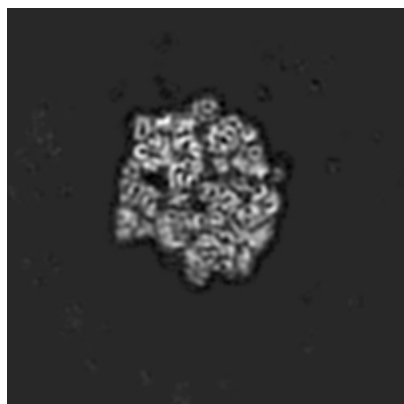


Z Index: 96

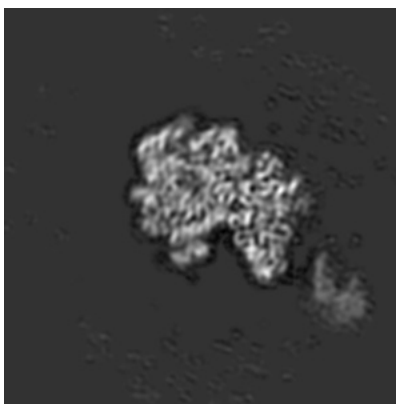
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

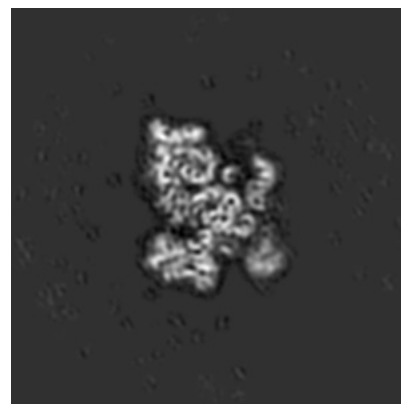
6.3.1 Primary map



X Index: 94



Y Index: 101



Z Index: 116

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 0.026. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

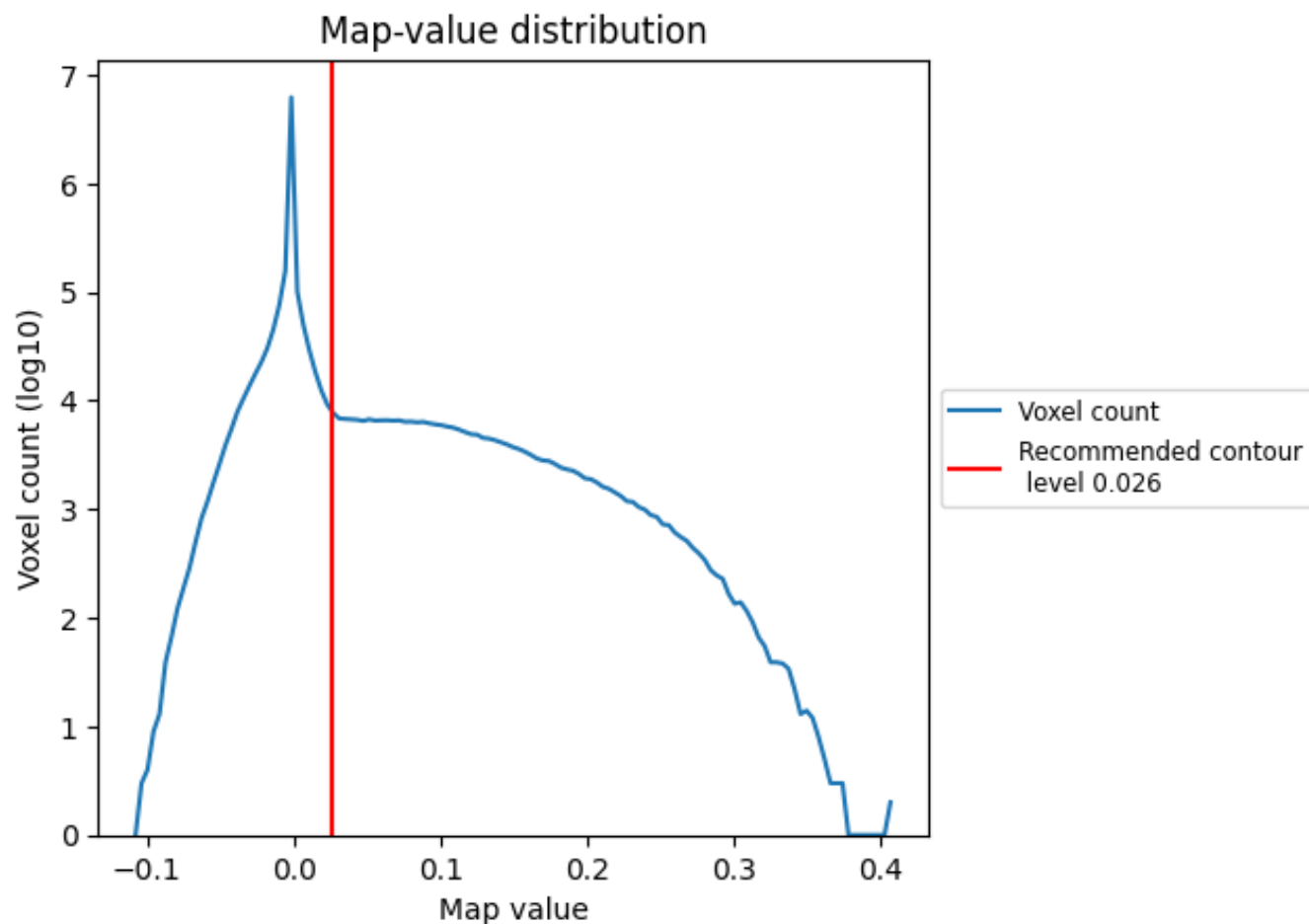
6.5 Mask visualisation

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

7 Map analysis [i](#)

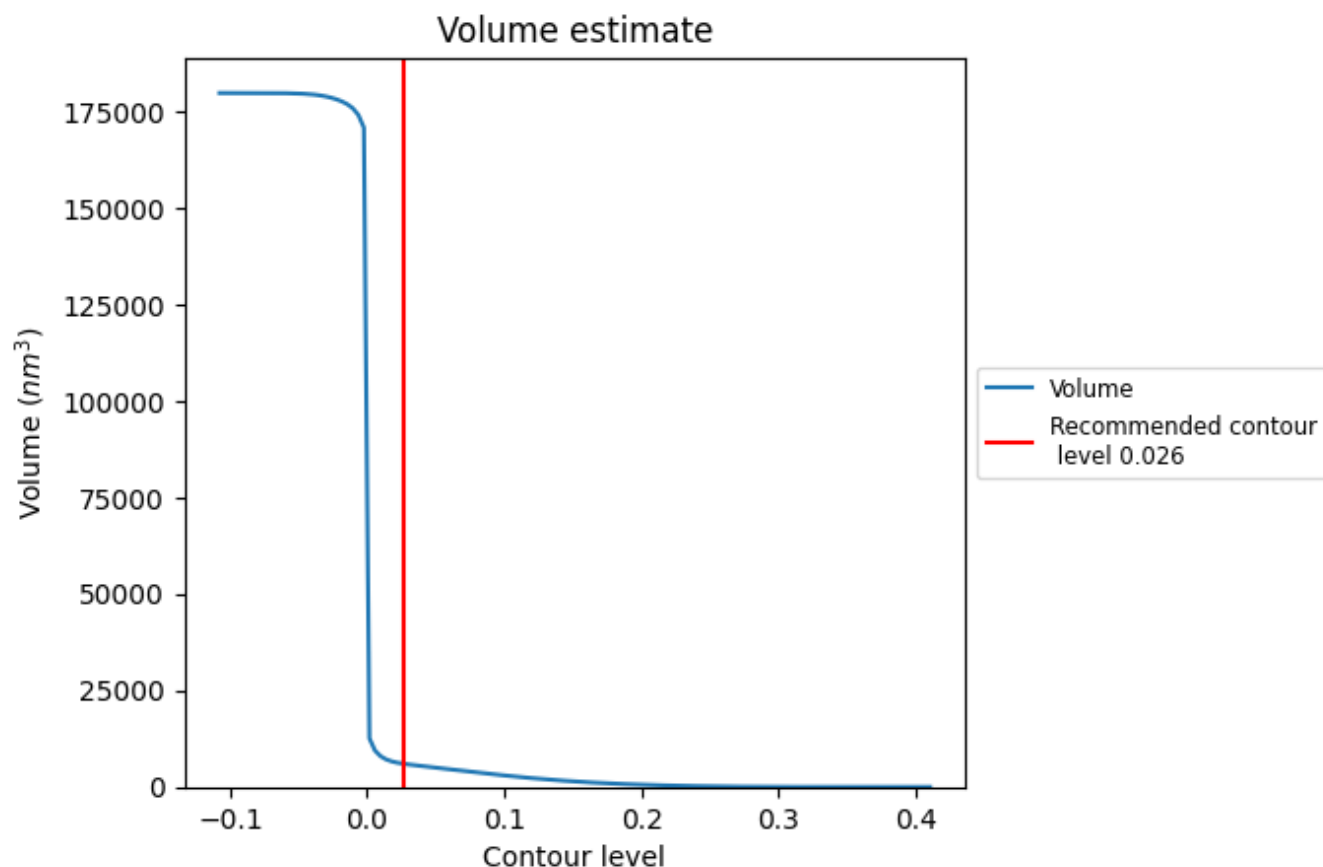
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

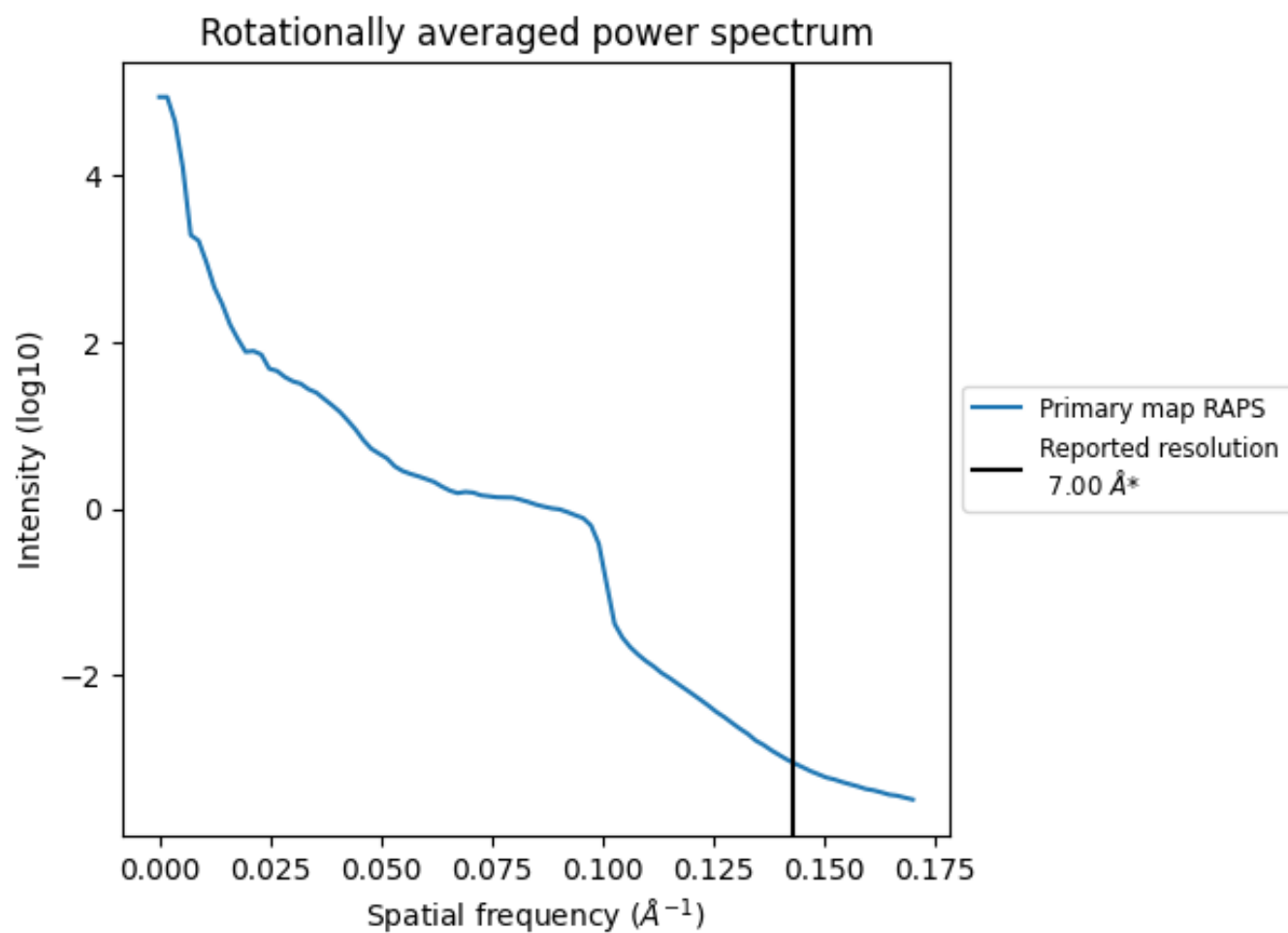
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 6037 nm³; this corresponds to an approximate mass of 5453 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.143 Å⁻¹

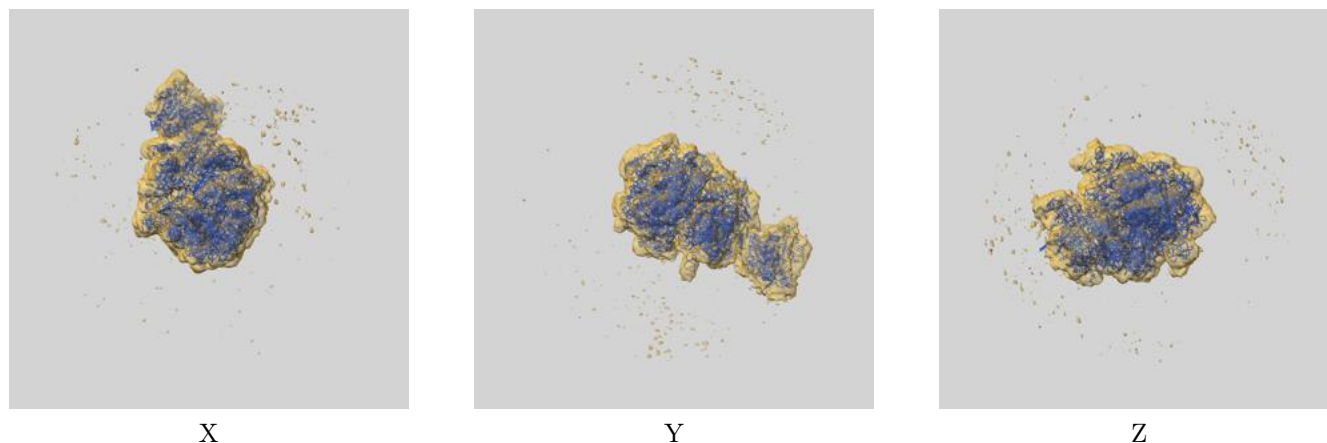
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

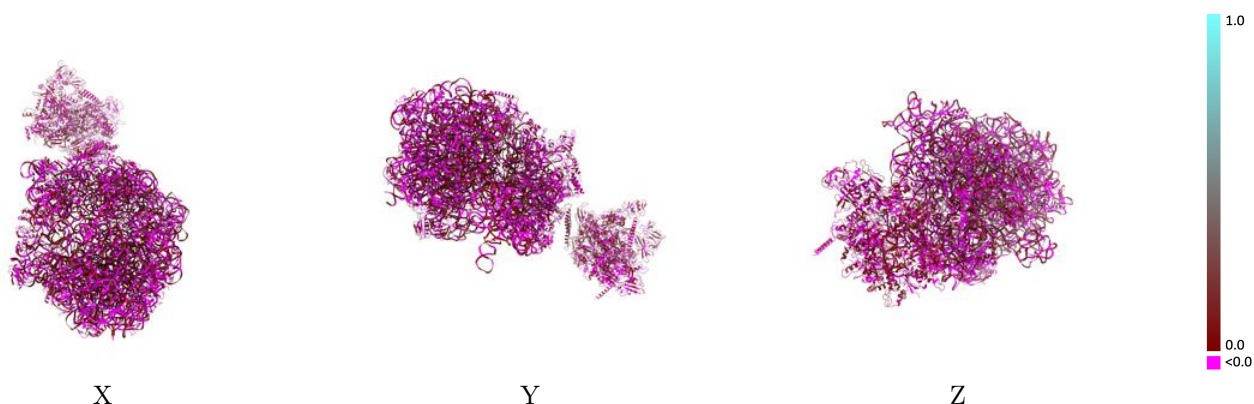
This section contains information regarding the fit between EMDB map EMD-21472 and PDB model 6VYU. Per-residue inclusion information can be found in [section 3](#) on [page 16](#).

9.1 Map-model overlay [i](#)



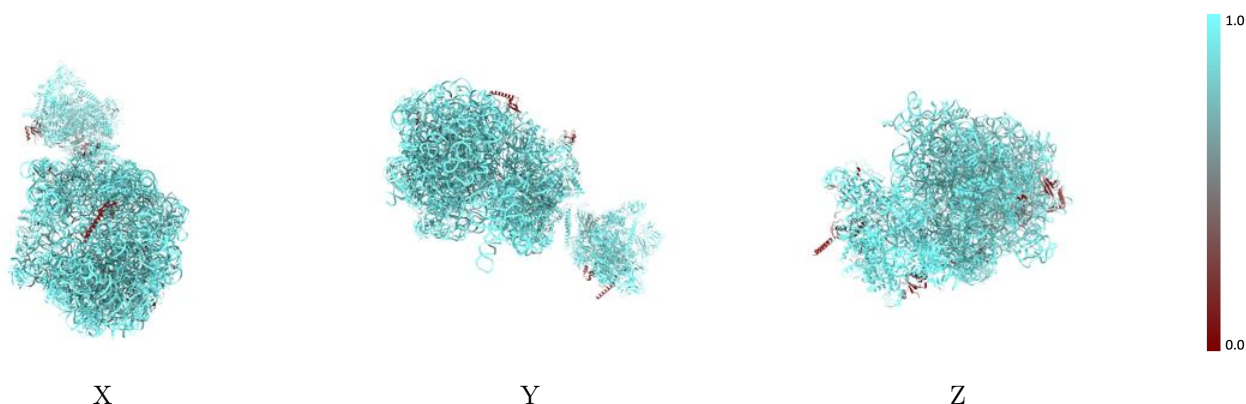
The images above show the 3D surface view of the map at the recommended contour level 0.026 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



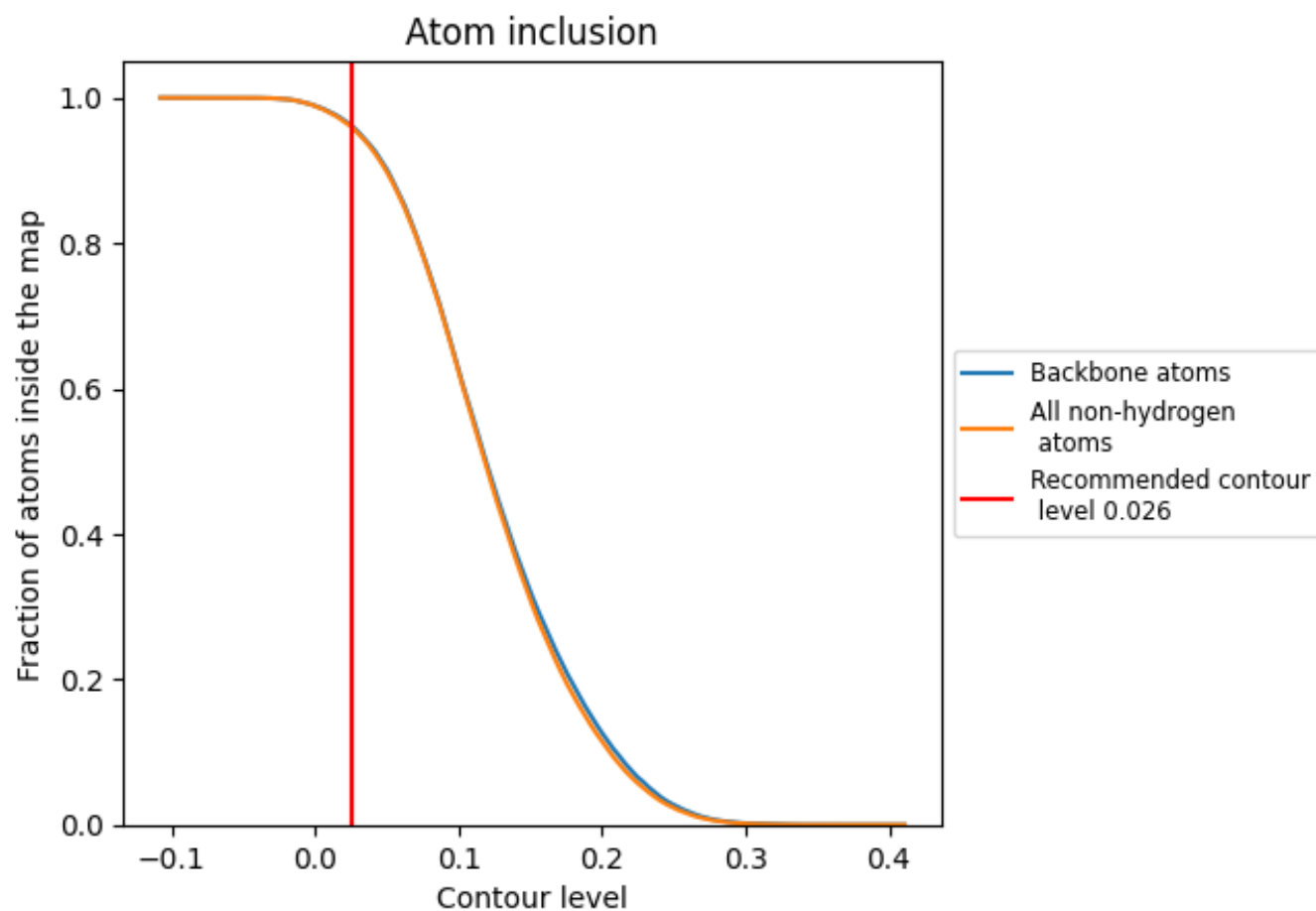
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.026).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 96% 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 (0.026) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9590	 0.0280
0	 0.9975	 0.0130
1	 0.9928	 0.0090
2	 0.9233	 -0.0270
3	 0.9149	 -0.0170
4	 0.9675	 0.0010
5	 1.0000	 0.0610
6	 1.0000	 0.0810
7	 0.9282	 0.0680
A	 0.9586	 0.0910
AA	 0.9778	 0.0610
AB	 0.3964	 -0.0310
AC	 0.9617	 0.0360
AD	 0.8804	 0.0020
AE	 0.9485	 0.0270
AF	 0.4867	 -0.0120
B	 0.9377	 0.0470
C	 0.9885	 -0.0290
D	 0.9793	 0.0400
E	 0.9312	 -0.0220
F	 0.9803	 0.0660
G	 0.9670	 -0.0190
H	 0.7634	 0.0160
I	 0.9119	 -0.0170
J	 0.9686	 -0.0280
K	 0.9673	 0.0090
L	 0.9589	 0.0160
M	 0.9580	 -0.0040
N	 0.9583	 -0.0300
O	 0.9428	 -0.0200
P	 0.9830	 0.0110
Q	 0.9801	 0.0160
R	 0.9646	 0.0570
S	 0.9961	 -0.0090
T	 0.9739	 0.0110



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Chain	Atom inclusion	Q-score
U	 0.9920	 -0.0330
V	 0.9335	 0.0290
W	 0.9304	 -0.0060
X	 0.8767	 -0.0230
Y	 0.9500	 0.0910
a	 0.9777	 0.0390
b	 1.0000	 -0.0210
c	 0.9634	 0.0090
d	 0.9541	 0.0150
e	 0.9714	 -0.0360
f	 0.9931	 0.0090
g	 0.9667	 0.0200
h	 0.9812	 0.0180
i	 0.9766	 -0.0220
j	 0.9538	 -0.0140
k	 0.9450	 -0.0030
l	 0.9816	 0.0020
m	 0.9915	 -0.0120
n	 0.9075	 0.0100
o	 0.9919	 -0.0180
p	 0.9814	 0.0150
q	 0.9932	 -0.0050
r	 0.3805	 -0.0470
s	 0.9664	 -0.0160
t	 0.9544	 0.0060
u	 0.9912	 0.0200
v	 0.9626	 0.0350
w	 0.9923	 -0.0270
x	 0.9930	 -0.0320
y	 0.9459	 -0.0190
z	 0.9879	 -0.0450